

# FW xU Series CNC High Speed Wire Cut EDM



## Scope of Supply

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**AgieCharmilles**

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# FW 1U FW 2U FW 3U

## Scope of Supply

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## 1 Machine Introduction

### 1.1 Mechanical

#### Machine body

- Rectangle bed (FW 1U) or T type bed (FW 2U/3U).
- High quality cast, three points support the base.
- Structure compact, high rigidity and good consistency of precision.

#### X Y, U, V, Z axes

- The precision level linear rolling guides and precision-level ball lead-screw pairs, which increase the movement accuracy.
- X, Y, U, V axes are driven by stepping motors.
  - Note:** AC servo for X and Y axes as option.
- Z axis (FW 2U/3U) is controlled by Numerical Control, easy for operation.

#### Wire system

- Wire running system is controlled by constant tension to confirm high machining accuracy.
- Semiautomatic winding wire.
- Speed of wire controlled by Frequency Converter.
- Big capacity of wire cylinder.
- Stop position of wire cylinder can be set at left or right limit position.

#### Dielectric unit

- The filtrate system is equipped with filter can make the dielectric enjoy a longer life.
- Dielectric: DIC-206 cutting liquid.

### 1.2 Generator

- The generator is equipped with industrial PC board.
- PCB boards are soldered by wave welding machine automatically and tested by static test machine and simulator.
- The generators are run at 40 °C room temperature for a long time.
- High performances of generator.
- 17" LCD, USB, RS232, LAN port.

#### Handbox

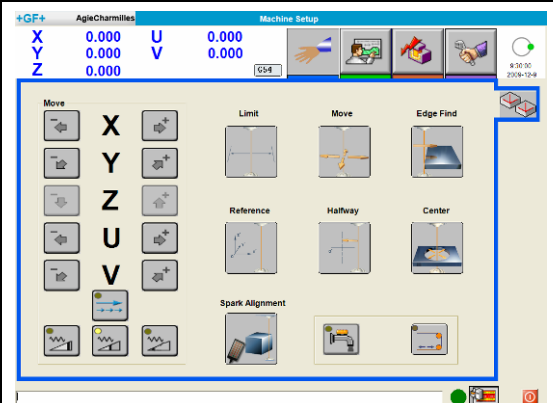
- High, low, step speed of moving axes.
- Turn on/off bump for dielectric.
- Turn on/off wire cylinder rotation.
- Pause/continue machining.



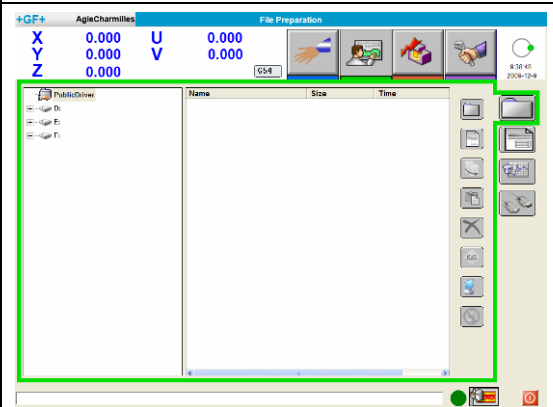
### 1.3 Software

- Multi-times cutting function
- Mainly 4 pages: Machine Setup, File Preparation, Erosion Process and configuration
- Display error messages on the pages

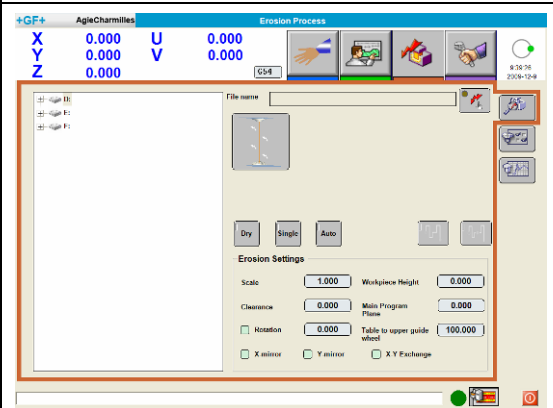
- Machine Setup:
  - Move
  - Return limit point, set/return reference point, return halfway
  - Edge find, center find, spark alignment
  - Flushing, wire run



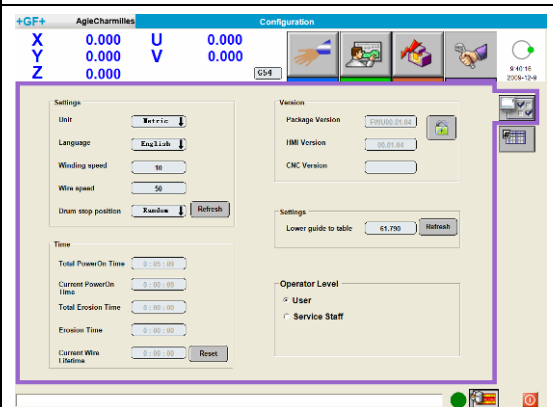
- File Preparation:
  - File management: new folder, new file, copy, paste, rename, delete, LAN connection
  - File editor: find, save
  - Graphic check



- Erosion Process:
  - File selection
  - Erosion status
  - Graphic trace



- Configuration:
  - Machining setup
  - Machining condition/parameters



- X, Y, U, V axes move simultaneously to perform taper cutting and 3D cutting

- Offset setting automatically to ensure the workpiece accuracy
- Technology for steel, Al, copper
- Power failure recovery strategy
- LAN connection function

#### 1.4 Standard Configuration

- Wire alignment device
- Wire guide (wire diameter  $\leq \Phi 0.18\text{mm}$ )

**Note:**

The standard wire guide with  $\Phi 0.18\text{mm}$  wire is used for the following cutting:

- One time cut without taper;
- Multi-times cut without taper.

Remove wire guide if cutting workpiece with taper.

- Molybdenum wire  $\Phi 0.18\text{mm}$  (1 roll)
- Dielectric unit
- Clamping fixture
- Cutting liquid: DIC-206 (1 barrel: 10Kg)
- Technical documents

**Note: “FW /Fikus 2D software (including softdog)” as mandatory option**

#### 1.5 Technology

Material	Wire dia.	Height	Number of cuts	Remark
Steel	$\Phi 0.13\text{ mm}$	10 – 90 mm	1	Standard
	$\Phi 0.15\text{ mm}$	10 – 100 mm	1	
	$\Phi 0.18\text{ mm}$	10 – 80 mm	3	
		100 mm	4	
$\Phi 0.20\text{ mm}$	10 – 400 mm	1		
Copper	$\Phi 0.20\text{ mm}$	10 – 200 mm	1	
Al	$\Phi 0.20\text{ mm}$	10 – 60 mm	1	
	$\Phi 0.20\text{ mm}$	30 – 400 mm	1	<b>Need Option:</b> “Contact assy. of wire cylinder”

## 2 Options, Wear Parts and Consumables

### 2.1 Options

**Note:**

If the frequency of power supply for FW xU Series machine is 60Hz, please mark it on the order.

No.	Part No.	Description	Qty.	Remarks
1	388.017.361	Packing "C" in Airtight crates	1 x	FW 1U
2	388.017.363	Packing "C" in Airtight crates	1 x	FW 2U
3	388.017.365	Packing "C" in Airtight crates	1 x	FW 3U
4	388.017.372	Contact assy. of wire cylinder	1 x	For aluminium machining: Φ0.20mm molybdenum wire; H = 30 – 400 mm
5	340.505.385	External transformer	1 x	Used for 3-phases 200V, 220V, 250V, 340V, 440V, 460V, 480V, 500V
6	372.508.369	FW Fikus 2D software (including softdog)	1 x	<b>Mandatory option</b>
7	388.017.371	Wear parts list, including:	1 x	A set of wear parts enough for 3~6 month use
	326.450.528	Molybdenum wire Φ0.18mm	2 rolls	1400 ± 50m/roll
	371.010.462	DIC-206 cutting liquid	1 barrel	10Kg/barrel
	333.501.521	Air filter net	2	non-woven fabric
	326.008.816	Dielectric filter	1	Dimension: Φ150xΦ31.5x375
	335.015.107	Ruby main guide wheel	2	Dia. 30mm
	321.004.104	Bearing	4	D1000096 / 6x15x5
	321.004.103	Bearing	2	D60026 / 6x19x6
	335.009.506	Electric contact, carbide Φ55XΦ15x16	2	
	343.500.506	Fuse, Φ5 x 20, 2.5A	1	IMC-B01 PCB
	343.500.070	Fuse, Φ5 x 20, 5A	5	WID-B05 PCB and TM2
	326.007.059	Halogen bulb, 24v/20w	1	for working lamp
	371.450.451	Lubrication grease	1 barrel	Silicium ZL2 (SY1412-75)
8	388.020.085	AC servo option for X and Y axes of FW 1 U	1	Order with the machine
9	388.020.086	AC servo option for X and Y axes of FW 2 U	1	Order with the machine
10	388.020.087	AC servo option for X and Y axes of FW 3 U	1	Order with the machine

## 2.2 Wear Parts

No.	Part No.	Description	Remarks
1	335.015.107	Ruby main guide wheel, $\Phi 30\text{mm}$	
2	321.004.103	Bearing, D60026 / 6x19x6	
3	321.004.104	Bearing, D1000096 / 6x15x5	
4	335.004.669	Steel guide wheel, $\Phi 40\text{mm}$	
5	335.009.506	Electric contact, carbide $\Phi 55 \times \Phi 15 \times 16$	
6	335.005.237	Ceramic main guide wheel, $\Phi 30\text{mm}$	
7	326.007.059	Halogen bulb, 24v/20w	for working lamp
8	387.009.207	Auxiliary guide wheel assy.	
9	387.017.373	Ruby main guide wheel assy.	
10	343.500.070	Fuse, $\Phi 5 \times 20$ , 5A	
11	343.500.506	Fuse, $\Phi 5 \times 20$ , 2.5A	
12	333.501.521	Air filter net, non-woven fabric, 350x260x10	for cabinet
13	333.016.574	Wire guide	wire dia. $\leq \Phi 0.18\text{mm}$

## 2.3 Consumables

No.	Part No.	Description	Life time (month)	Remarks
1	371.010.462	Soluble cutting liquid, DIC-206, sale unit: 10kg/barrel	12	
2	326.450.526	Molybdenum wire $\Phi 0.12\text{mm}$ , sale unit: 2500m/roll	1.5	
3	326.450.527	Molybdenum wire $\Phi 0.15\text{mm}$ , sale unit: 2000m/roll	1.5	
4	326.450.528	Molybdenum wire $\Phi 0.18\text{mm}$ , sale unit: 1400m/roll	1.5	
5	326.000.155	Molybdenum wire $\Phi 0.20\text{mm}$ , sale unit: 1000m/roll		
6	326.017.369	Molybdenum wire $\Phi 0.18\text{mm}$ , sale unit: 400m/roll		
7	371.450.451	Lubrication grease 0.9Kg/barrel	3	
8	326.008.816	Dielectric filter cartridge, $\Phi 150 \times \Phi 31.5 \times 375$	3	

### 3 Specification

Model	Unit	FW 1U	FW 2U	FW 3U
<b>Mechanical body</b>				
Bed		Cast HT250	Cast HT250	Cast HT250
Dimensions (LxWxH)	mm	1625×1225×1730	1790×1715×2050	2310×1940×2408
Machine weight	kg	1580	2440	3260
Machine floor space	m <sup>2</sup>	3 x 2	3.3 x 2.8	3.7 x 3.3
Worktable size (LxW)	mm	650 x 420	800 x 500	930 x 650
Travel X/Y	mm	350 x 320	500 x 400	630 x 500
Travel U/V	mm	36 (±18)	36 (±18)	44 (±22)
Max. taper angle	°	±3 (H=150mm)	±3 (H=180mm)	±3 (H=250mm)
Accuracy of taper cutting		≤3° error 1'30"	> 3°~6° error 8' ≤ 3° error 1'30"	> 3°~6° error 8' ≤ 3° error 1'30"
Travel Z	mm	150	250 (NC)	350 (NC)
Working lamp		Standard	Standard	Standard
<b>Work piece</b>				
Maximum weight	kg	300	600	800
Maximum size	mm	630 x 400 x 200	800 x 500 x 300	930 x 650 x 400
Distance between table surface and floor	mm	800	800	900
<b>Axis</b>				
Manual speed	mm/s	0.001 - 5	0.001 - 5	0.001 - 5
Edging speed	mm/s	0.5 - 5	0.5 - 5	0.5 - 5
Minimum resolution (X/Y/U/V axis)	mm	0.001	0.001	0.001
Ball -screw grade 3 (X/Y axis)	mm	pitch 4mm	pitch 5mm	pitch 5mm
Step motor pulse (X/Y axis)		4000	5000	5000
Guide type (X/Y axis)		linear guide way	linear guide way	linear guide way
Ball screw (U/V axis)	mm	Pitch 0.4mm	Pitch 0.4mm	Pitch 0.4mm
Step motor pulse (U/V axis)		400	400	400
Guide type (U/V axis)		M-V guide way	M-V guide way	M-V guide way
Pitch error correction		X/Y/U/V axis	X/Y/U/V axis	X/Y/U/V axis
<b>Model</b>	<b>Unit</b>	<b>FW 1U/2U/3U</b>		
<b>Wire system</b>				
Wire diameter (molybdenum wire)	mm	0.12 – 0.20		
Wire speed	m/s	Adjustable, ≤8.9 ( 534 m/min )		
Drum dimension (radius × length)	mm	Φ178×258		
Speed of wire cylinder	rpm	920		

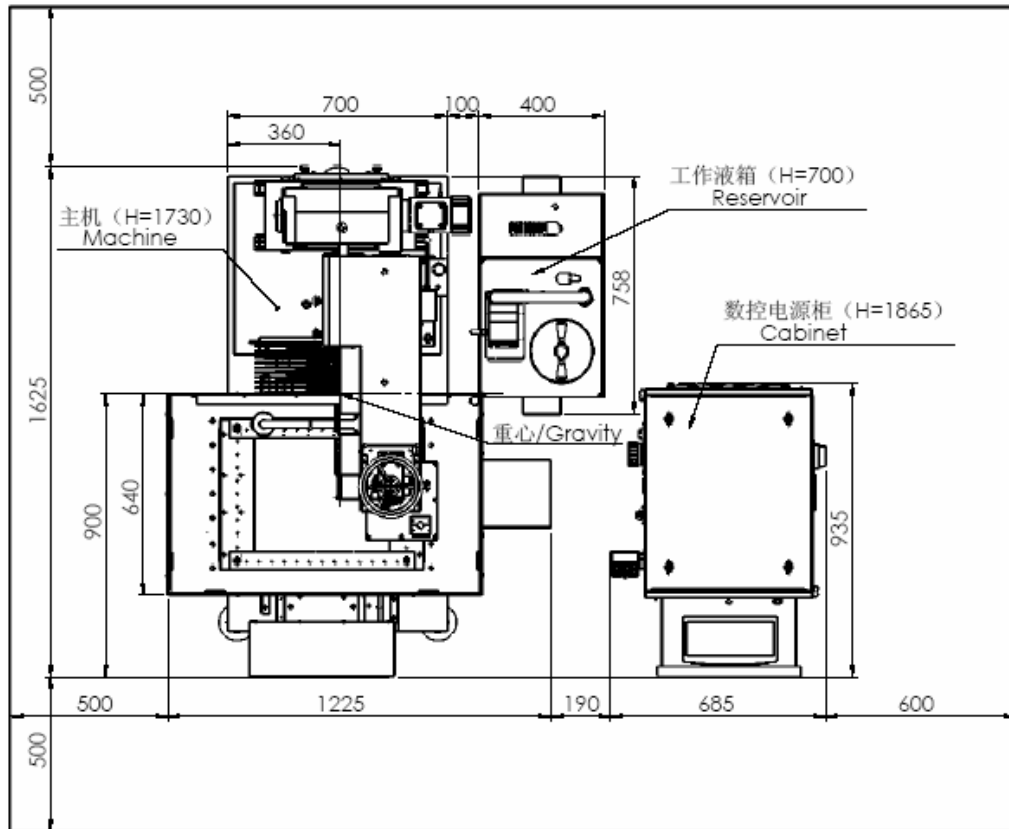


Capacity of wire cylinder	m	400
Wire tension adjustment		3 kind of weight setting (total 4.6kg)
Wire tension during machining	kg	Dia. 0.18mm → 1.1 Kg
V guide wheel		ruby wheel, mounted on bearing
Wire alignment		manual / use of alignment block
Wire installation		manually, with an adjustable brake
Wire threading		manual
Electric contact		multi-position carbide contact
<b>Dielectric unit</b>		
Dimension	mm	400 x 650 x 500
Weight	kg	30 (without dielectric)
Dielectric capacity	L	50
Pre-filtration		Washable metallic net filter
Filter type		Paper cartridge
Dielectric type		Soluble cutting liquid DIC-206
Flushing		manual adjust / automatic ON/OFF
<b>Cabinet</b>		
Max. machining current	A	10
Pulse type		transistor type, limitation by resistor
Pulse range		Ton: 1-32 μS, Toff : 5-160 μS
Machining condition storage capacity	KB	512
Max. machining speed	mm <sup>2</sup> /min	180
Best surface finish Ra	μm	1.0
Weight	kg	240
Dimension	mm	930 x 685 x 1865
Filtration type		non woven type
<b>HMI</b>		
Operating system		Windows XP
Hard disk		80G
Input type		MDI
Display		17" LCD
Port		USB, LAN, RS232
Restart		standard : position-program stored and saved on HD no battery back-up needed
Language		Chinese / English / Spanish / Portuguese
Control axis		4, simultaneous
Positioning command		incremental / absolute
Command system input		inch / metric
Interpolation function		linear / circular
Minimum input command		0.001 mm / 0.00001 inch
Maximum input command		+/- 999.999 mm / +/- 999.99999 inch
Minimum increment		0.001 mm

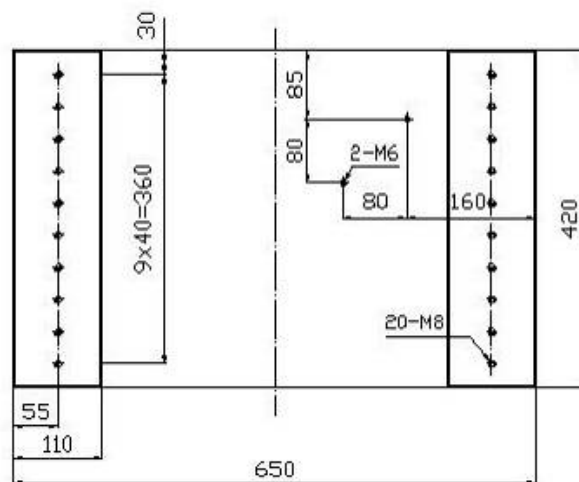
Coordinates correction		X/Y/U/V: Pitch error correction and backlash compensation
CAD/CAM- Fikus 2D (mandatory option, installed on FW xU machine or the customer's PC)		
CAD		<ul style="list-style-type: none"> <li>- Basic 2D CAD functions: lines, arcs, circle, ellipse, points creation, selection and modification.</li> <li>- Entity information and properties: distance between points, length</li> <li>- Groups</li> <li>- Generation functions: rectangular and polar array</li> <li>- Views</li> <li>- Drawing plane</li> <li>- Visualization</li> <li>- Data interfaces: VCM (Fikus), DXF</li> <li>- Dimensioning functions</li> <li>- Gear function</li> </ul>
CAM		<ul style="list-style-type: none"> <li>- 2D cuts (including constant taper angle)</li> <li>- Processes included: constant conic, pocket</li> <li>- Functions to define the entry motion</li> <li>- Simulation</li> <li>- Postprocessor for FW machines</li> <li>- Support for FW machines</li> <li>- Tech points</li> <li>- Wizard or quickwire</li> <li>- Sort</li> </ul>
Computer configuration for CAD/CAM software		<p>Computer: the minimum requirements are a Pentium III with a clock speed of 1000MHz. A Pentium IV is recommended.</p> <p>Memory: 512MB RAM is the minimum requirements.</p> <p>Graphic Card: with OpenGL support, GForce II or higher is recommended.</p> <p>OS: Microsoft Windows 2000/XP</p> <p>Hard Disk: 500MB</p> <p>Mouse with three buttons</p> <p>IE6.0 explorer</p>
<b>Power supply</b>		
Standard voltage	V	3x380 (If not, please order the option External transformer.)
Frequency	Hz	50 (If it is 60Hz, please mark it on the order.)
Max. Power	kVA	2
External fuse	A	15
Fluctuation admissible	V	380 V $\pm$ 10%
	Hz	50 $\pm$ 1

4 Floor Space and Table Size

4.1 FW 1U

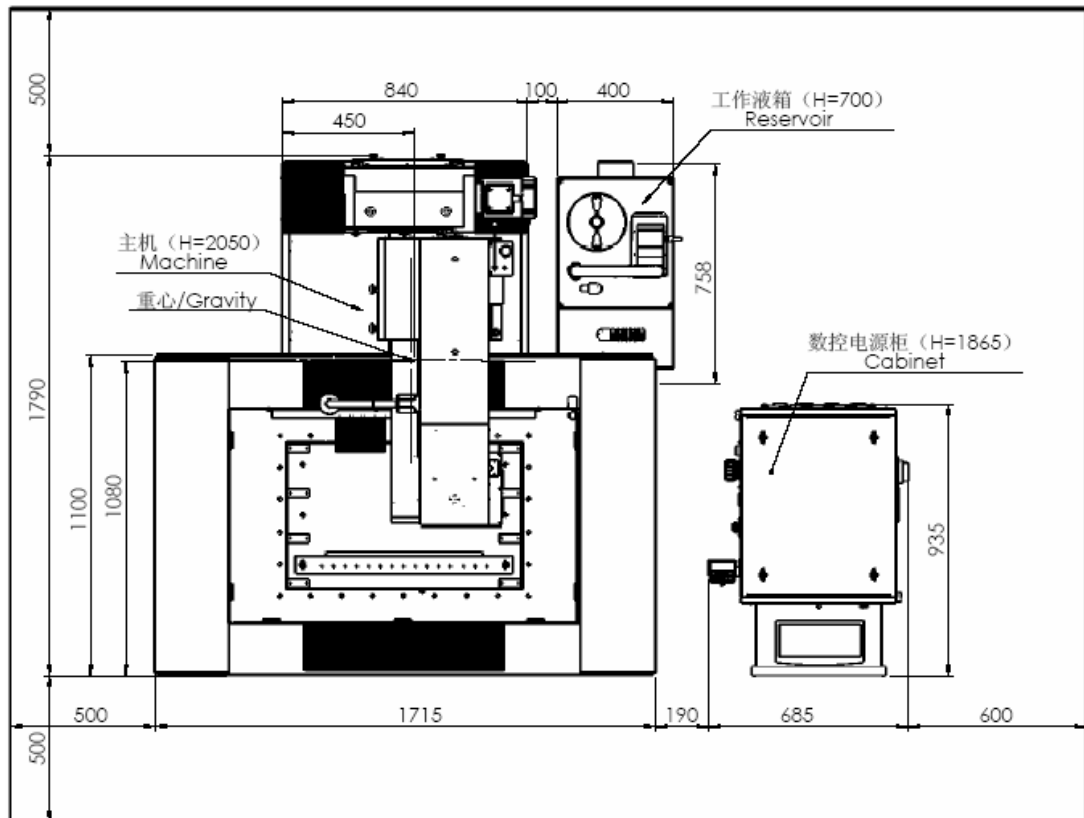


FW 1U installation plan

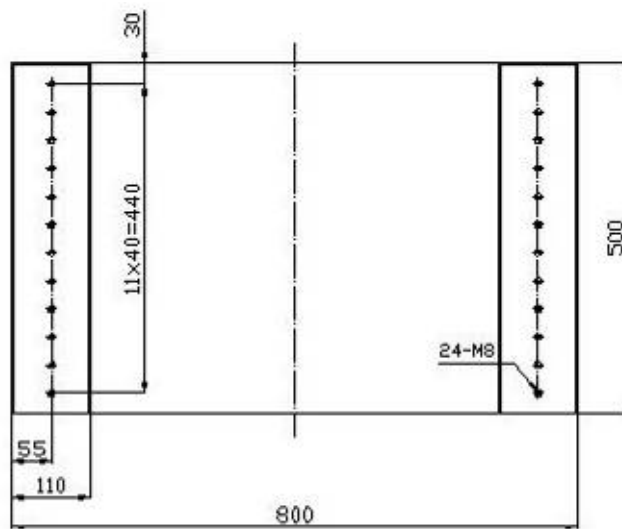


FW 1U work table size

4.2 FW 2U

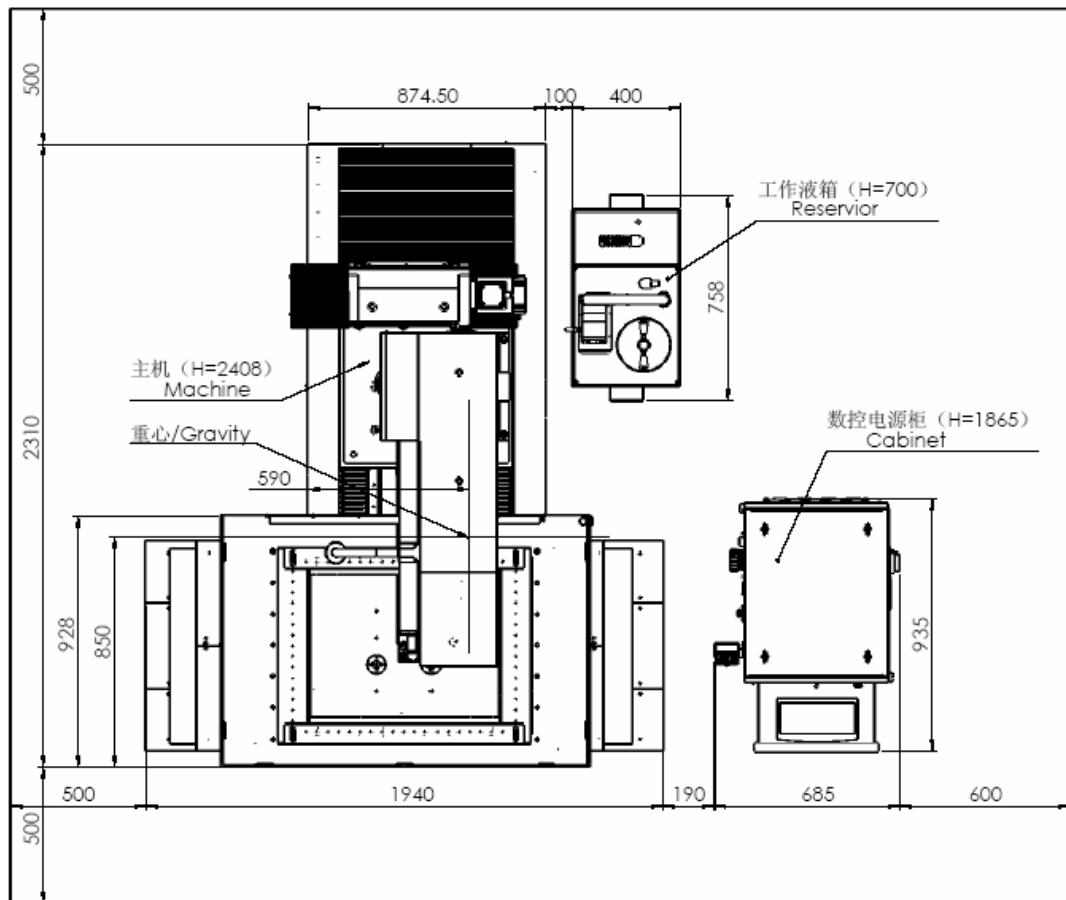


FW 2U installation plan

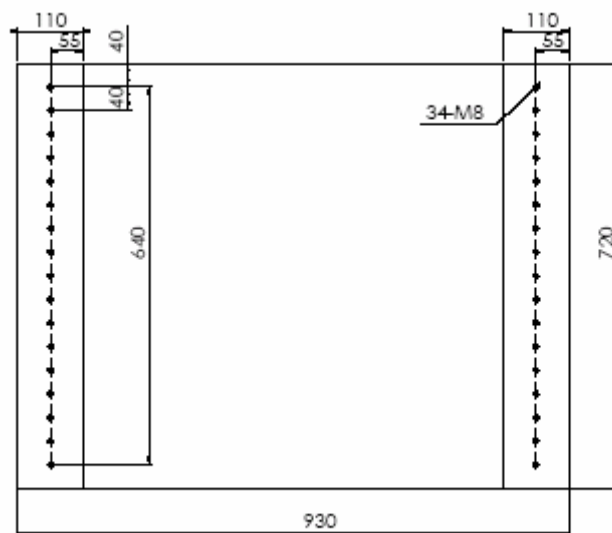


FW 2U work table size

## 4.3 FW 3U



FW 3U installation plan



FW 3U work table size

## **5 Permissible Ambient Conditions**

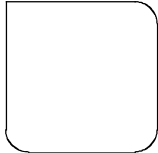
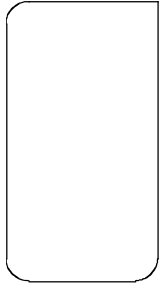
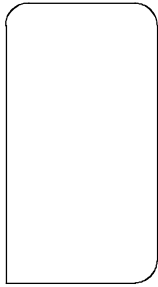
- a) The air must be clean and dust-free and no direct sunlight.
- b) Avoid premises in which the air is contaminated with abrasive particles (grinding machine room) and which is far from vibration source.
- c) Avoid high humidity areas (relative humidity should be between 40% and 80%).
- d) Permissible ambient temperature range:
  - for guaranteed accuracy: 20 °C ± 3°C
  - for operation of the equipment: 15°C to 30°C.

## **6 Appendix**

### **6.1 FW 1U Packing List**

### **6.2 FW 2U Packing List**

### **6.3 FW 3U Packing List**



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**FW 1U**

## **Packing List**



07.2009

**+GF+ AgieCharmilles**

Serial No.

Id. No. 372350635 A

## FW 1U Packing List

ID-RN	Item Delivered	Type & Model	Quantity Delivered	Remark
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394900152	Machine body + Cabinet		1 set (2 boxes)	The details are as follows:
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386900352	Machine body	FW 1U Machine model, LxWxH: 2120X1720X2110, Gross weight: 1870 kg, Net weight: 1580 kg	1 set (1 box)	
382900667	Cabinet	FW 10U Generator, LxWxH: 1160x1020x2230, Gross weight: 390 kg, Net weight: 230 kg	1 set (1 box)	

### Parts packed in cabinet box

Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	382900667	FW10U wire cut machine control cabinet	1 x	

### Parts packed in machine body box

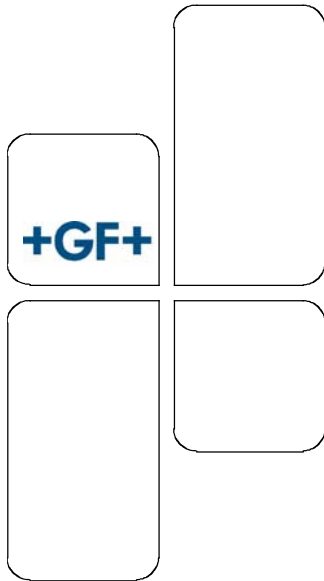
Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	386900352	FW 1U wire cut machine body	1 x	



2	384013409	Dielectric unit	1 x	
3	334000899	Dielectric collector	1 x	Please fix it under the base after machine installed.
4	331000906	Splash protect plate of organic glass	2 x	Put them in two sides of work tank
5	331004085	Splash protect plate of organic glass	1 x	Put it in front side of work tank
6	387008105	Machine feet	3x	
7	387001630	Crank	1 x	To turn wire container wheel manually for set-up
8	332001144	Clamping fixture	1 set	Consisting of following 10 lines of parts
	333001145	Pressure plate	4 x	
	333020079	Support assy.	4 x	333001146+333001147
	333001148	Short bolt	4 x	
	333001149	Long bolt	4 x	
	313006002	Screw, M8x40/GB70	4 x	
	313000305	Screw, M8x30/GB70	2 x	
	313006919	Screw, M8x50/GB70	2 x	
	314000226	Nut, M8/GB6170	4 x	
	314000441	Washer, 8/GB97.2	4 x	
9	327008742	Wire-alignment device	1 x	DF55-J50
10	333007258	Position pin	1 x	Guide wheel assembly tool set
	333004631	Copper bar 3	1 x	
	333004632	Copper bar 1	1 x	
	333004687	Shaft	1 x	
11	333004623	Weight for the wire tension	1 x	
12	326017369	Molybdenum wire	1 Volume	Φ0.18, 400m
13	371010462	DIC-206 Cutting fluid	1 Barrel	10Kg/Barrel, additional defoamer
14		Technical documents	1 bag	Consisting of following 7 lines of parts
	372350649	User's manual	1 x	Orange_line
	372350641	Certificate of accuracy	1 x	Orange_line
	372350647	Mechanical document	1 x	Orange_line
	372350635	Packing list	1 x	Orange_line
	372350478	Acceptance protocol	1 x	
	372350653	Set up check list	1 x	

15	332004789	Bridge fixture	2 sets	Each set consisting of following 5 lines
	333001488	Support plate	1 x	These 3 items have been assembled together before packing.
	333001489	Support bracket	1 x	
	313000266	Socket screw, M6x16/GB70	12 x	
	313001286	Socket screw, M8x30/GB70	2 x	
	314000447	Washer, 8/GB97-85	2 x	
16	330001143	Test part for set-up	1 x	
17	387017367	Guider assy.	2 Sets	Consisting of following 3 lines of parts
	333017382	Guider cannula	1 x	
	333016574	Guider	1 x	Used for $\Phi 0.18$ Molybdenum wire
	109045403	Holding screw, M3x3	1x	

Inspected by: \_\_\_\_\_ year \_\_\_\_\_ month \_\_\_\_\_ date



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**FW 2U**

## **Packing List**



07.2009

+GF+ AgieCharmilles

Serial No.

Id. No. 372350637A

## FW 2U Packing List

ID-RN	Item Delivered	Type & Model	Quantity Delivered	Remark
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394900153	Machine body + Cabinet		1 set (2 boxes)	The details are as follows:
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386900353	Machine body	FW 2U Machine model, LxWxH: 2140X2100X2440, Gross weight: 3000 kg, Net weight: 2440 kg	1 set (1 box)	
382900668	Cabinet	FW12U Generator, LxWxH: 1160x1020x2230, Gross weight: 400 kg, Net weight: 240 kg	1 set (1 box)	

Parts packed in cabinet box				
Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	382900668	FW12U wire cut machine control cabinet	1 x	

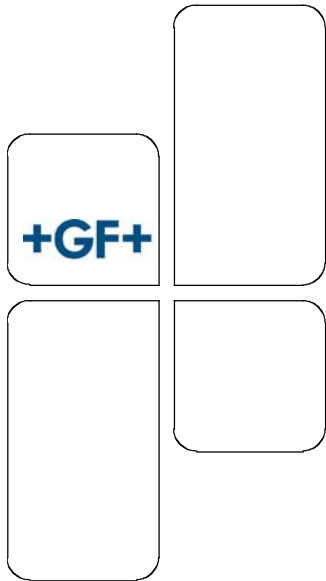
Serial No.  
372350637A

Id. No.

<b>Parts packed in machine body box</b>				
Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	386900353	FW 2U wire cut machine body	1 x	
2	384013409	Dielectric unit	1x	
3	334000899	Dielectric collector	1 x	Please fix it under the base after machine installed.
4	331007136	Splash protect plate of organic glass	2 x	Put them in two sides of work tank
5	331007137	Splash protect plate of organic glass	2 x	Put it in front side of work tank
6	387015300	Machine feet	3x	
7	387001630	Crank	1 x	To turn wire container wheel manually for set-up
8	332001144	Clamping fixture	1 set	Consisting of following 10 lines of parts
	333001145	Pressure plate	4 x	
	333020079	Support assy.	4 x	333001146+333001147
	333001148	Short bolt	4 x	
	333001149	Long bolt	4 x	
	313006002	Screw, M8x40/GB70	4 x	
	313000305	Screw, M8x30/GB70	2 x	
	313006919	Screw, M8x50/GB70	2 x	
	314000226	Nut, M8/GB6170	4 x	
	314000441	Washer, 8/GB97.2	4 x	
9	327008742	Wire-alignment device	1 x	DF55-J50
10	333007258	Position pin	1 x	Guide wheel assembly tool set
	333004631	Copper bar 3	1 x	
	333004632	Copper bar 1	1 x	
	333004687	Shaft	1 x	
11	333004623	Weight for the wire tension	1 x	
12	326017369	Molybdenum wire	1 Volume	Φ0.18, 400m

13	371010462	DIC-206 Cutting fluid	1 Barrel	10Kg/Barrel, additional defoamer
14		Technical documents	1 bag	Consisting of following 7 lines of parts
	372350649	User's manual	1 x	Orange_line
	372350643	Certificate of accuracy	1 x	Orange_line
	372350647	Mechanical document	1 x	Orange_line
	372350637	Packing list	1 x	Orange_line
	372350478	Acceptance protocol	1 x	
	372350653	Set up check list	1 x	
15	332007140	Bridge fixture	2 set	Each set consisting of following 5 lines
	333007138	Support plate	1 x	These 3 items have been assembled together before packing.
	333007139	Support bracket	1 x	
	313000266	Socket screw, M6x16/GB70	14 x	
	313001286	Socket screw, M8x30/GB70	2 x	
	314000447	Washer, 8/GB97-85	2 x	
16	330001143	Test part for set-up	1 x	
17	387017367	Guider assy.	2 Sets	Consisting of following 3 lines of parts
	333017382	Guider cannula	1 x	
	333016574	Guider	1 x	Used for $\Phi 0.18$ Molybdenum wire
	109045403	Holding screw, M3x3	1x	

Inspected by: \_\_\_\_\_ year \_\_\_\_\_ month \_\_\_\_\_ date



**AgieCharmilles**

**FW 3U**

## Packing List



07.2009

+GF+ AgieCharmilles

Serial No.

Id. No. 372350639 A

## FW 3U Packing List

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ID-RN	Item Delivered	Type & Model	Quantity Delivered	Remark
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394900154	Machine body + Cabinet		1 set (2 boxes)	The details are as follows:
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386900354	Machine body	Machine model, LxWxH: 2820X2220X2530, Gross weight: 3710 kg, Net weight: 3260 kg	1 set (1 box)	
382900668	Cabinet	Generator, LxWxH: 1160x1020x2230, Gross weight: 400 kg, Net weight: 240 kg	1 set (1 box)	

Parts packed in cabinet box				
Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	382900668	FW12U wire cut machine control cabinet	1 x	



<b>Parts packed in machine body box</b>				
Item Delivered	ID-NR	Detailed description	Quantity	Remark
1	386900354	Wire cut machine body	1 x	
2	384013409	Dielectric unit	1x	
3	334000899	Dielectric collector	1 x	Please fix it under the base after machine installed.
4	331012724	Splash protect plate of organic glass	2 x	Put them in two sides of work tank
5	331012725	Splash protect plate of organic glass	2 x	Put it in front side of work tank
6	387015300	Machine feet	3 x	
7	387001630	Crank	1 x	To turn wire container wheel manually for set-up
8	332001144	Clamping fixture	2 set	Consisting of following 10 lines of parts
	333001145	Pressure plate	8 x	
	333020079	Support assy.	8 x	333001146+333001147
	333001148	Short bolt	8 x	
	333001149	Long bolt	4 x	
	313006002	Screw, M8x40/GB70	8 x	
	313000305	Screw, M8x30/GB70	4 x	
	313006919	Screw, M8x50/GB70	4 x	
	314000226	Nut, M8/GB6170	8 x	
	314000441	Washer, 8/GB97.2	8 x	
9	327008742	Wire-alignment device	1 x	DF55-J50
10	333007258	Position pin	1 x	Guide wheel assembly tool set
	333004631	Copper bar 3	1 x	
	333004632	Copper bar 1	1 x	
	333004687	Shaft	1 x	
11	333004623	Weight for the wire tension	1 x	
12	326017369	Molybdenum wire	1 Volume	Φ0.18, 400m
13	371010462	DIC-206 Cutting fluid	1 Barrel	10Kg/Barrel additional defoamer

14		Technical documents	1 bag	Consisting of following 7 lines of parts
	372350649	User's manual	1 x	Orange_line
	372350645	Certificate of accuracy	1 x	Orange_line
	372350647	Mechanical document	1 x	Orange_line
	372350639	Packing list	1 x	Orange_line
	372350478	Acceptance protocol	1 x	
	372350653	Set up check list	1 x	
15	387012659	Bridge fixture	1 set	Consisting of following 5 lines of parts
	333012657	Support plate	2 x	
	333012658	Support bracket	2 x	
	313000294	Socket screw, M6x20/GB70	36 x	
	313006003	Socket screw, M8x45/GB70	4 x	
	314000447	Washer, 8/GB97-85	4 x	
16	330001143	Test part for set-up	1 x	
17	387017367	Guider assy.	2 Sets	Consisting of following 3 lines of parts
	333017382	Guider cannula	1 x	
	333016574	Guider	1 x	Used for $\Phi 0.18$ Molybdenum wire
	109045403	Holding screw, M3x3	1x	

Inspected by: \_\_\_\_\_ year \_\_\_\_\_ month \_\_\_\_\_ date