

ARCBRO[®]

Spark SERIES

CNC Plate Cutting Machine install Manual



Operator Manual

ARCBRO | Revision 2 | English

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Technical Support

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Wish you enjoy a wonderful CNC cutting travel.

ARCBRO CNC Technical Support & Solutions

7x24 Hours

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by arcbro / August 7, 2015

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Contact ARCBRO Portable CNC Cutting Machine

We will reply as soon as possible



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- ❖ This User’s Manual is only available for **Spark** CNC Plate Cutting Machine.
- ❖ Ensure that the operator has read and understood this User’s Manual before any operation on **Spark** CNC Plate Cutting Machine.
- ❖ There may be few differences between the pictures in this User’s Manual and the machine you received.
- ❖ Never hesitate to contact us for on-line technical service when you have any questions or you need help, and it's our pleasure to be there for help.

Contents

Technical Support	2
Technical Parameters.....	4

Service Support Spirit

Notes 5

Safety..... 6

 1.Information for your safety 6

1. Stinger Description 8

 1.1. What is Stinger?..... 8

 1.2. Application..... 9

 1.3. Programming and Nesting 9

2. Packing List 9

 2.1. Introduction..... 9

 2.2. Packing List 9

3. Installation 11

 3.1 Mechanical Assemble Steps 11

 3.2 Basic assemble steps: 12

 Step: Unpack the equipment box and remove all items..... 12

 Step 1: Assemble the legs of the Equipment steel frame. 13

 Step 2: Assemble the Water Table and fixture. 16

 Step 3: Assemble Y axis Frames and tracks to the Equipment steel frame..... 18

 Step 4: Install X axis Frames and tracks to Y axis Frames..... 20

 Step 5: Install drag chain Brackets and drag chain..... 22

 Step 6: Install DIV Box to the Equipment steel frame..... 24

 Step 7: Connect CNC controller box 25

 Step 8: Adjust the diagonal of the Spark. 26

 Step 9: Spark is wired with plasma. 27

Technical Parameters

Type	Spark
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Service Support Spirit

Effective cutting range	X-Axis:1200mm, Y-Axis1200mm, Z-Axis: Auto sensing
Input power supply	1 phase, 110V, 220V, 50Hz/60Hz
Input capacity	480W
Cutting model	Plasma cutting
Max travel speed	12000mm/min
Drive motor	Smart servo motor
CNC SYSTEM	
Display	7" color LCD screen
CPU	Industrial ARM9 chip
Internal library	24 kinds of shapes
External format	TXT or NC format
Language	English, Spanish, Russian, French, Japanese, Czech, Slovenia
PLASMA CUTTING MODE	
Max cutting speed	12000mm/min
Max cutting thickness	Depends on plasma power source
THC	Arc voltage Auto Torch Height Controller
Accuracy	Cutting tolerance smaller than $\pm 0.3\text{mm}$

Notes

Note 1: Nesting software standard Wizard is included in standard package.

Note 2: The machine must be grounded reliably when it is working. (Connect the plate and the earth)

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Note 3: Clean dust regularly to keep the rail and rack clean for smooth movement.

Note 4: Avoid damage for the LED display screen of CNC system.

Note 5: Equipment use environment:

Ambient temperature: -10°C — $+50^{\circ}\text{C}$

Environment humidity: 90% RH below

Storage temperature: -20°C — $+65^{\circ}\text{C}$

Sea level elevation: An altitude of 1000 m below

Safety

1. Information for your safety

The operator must read and understood the contents of this user's manual before any operation on **Spark**

Never hesitate to contact us for assistance when you have any questions or you need help, and you can reduce the account of time your troubles takes and solve your problem efficiently.

Note: Each of the following description must be verified before any operation on **Stinger**.

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-1. The operator should wear face shield, welding gloves, caps, membrane filter dust mask and sound insulation earmuff. It is strictly forbidden to observe directly or approach to the plasma arc with exposed skin.



-2. The operator can't load external program in internal storage of the machine in case of the virus. Only the special software recognized by ARCBRO can be applied.

-3. During cutting period, when the floating voltage is too high, the operator should check the ground connection, neutral connection and insulation of the torch handle. Then isolate the workbench from the ground, Or install no-load open-circuit relay in the electrical control system.



-4. The cutting operator and assistant must wear labor protection articles by regulation and take safety measures to prevent electric shock, high-altitude falling, gas poisoning, fire or any other accidents.

-5. The site should build rain-proof, damp-proof and sun-proof machine shed, and install corresponding fire equipment. The machine should keep away from flammable and combustible materials.

-6. As the operation and maintenance has potential dangerous, operator should be careful in case getting injured. It's forbidden to wear loosen cloths or cotton ropes in case being entangled by the machine.

-7. The high voltage of plasma CNC cutter is fatal, so operator should install the machine step by step as the manufacturer stipulate.

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-8. Only trained personnel can be allowed to operate the equipment. Any maintenance should obey the user's manual and before that the power should be cut off. Only experience technician is allowed to change assemblies.

1. Stinger Description

1.1. What is Stinger?

The CNC plasma cutting machine, Spark Pro, has a very lightweight structure. The total weight is just 200kg, but it is in a higher working size. And it is also higher configured with THC for plasma cutting. It is a very good choice for the studio and for the university and for smaller workshops.

If you have such a working scene, for small parts production, furniture decoration, or any other metal works, stop outsourcing your cutting needs and put a production-capable machine in your shop at a fraction of the price. COMPACT, SMART, AND AFFORDABLE. Spark Pro takes its advantages to the limit.

1.2. Application

Spark is an ideal CNC Plate Cutting Machine widely used in industry field, such as shipbuilding industry, metallurgic industry, petrochemical industry and water resources & electric power. It can cut various metal plates in seconds, for instance: copper and aluminum (plasma cutting).

1.3. Programming and Nesting

Using ARCBRO plate nesting software, you can edit and do the nesting process for your pattern designed by CAD, then generate a G-code cutting file in txt format. This txt cutting file can be recognized and carried out by our CNC system when you import it by a USB drive. Now, running **Spark**, you can achieve accurate profiling of this pattern automatically.

2. Packing List

2.1. Introduction

Spark is packed carefully in one wooden boxes. All equipment in the boxes are protected fully to avoid any damages during transportation.

The boxes have to be carried with care always and with the top cover up during handling and transportation.

2.2. Packing List

Open the top cover of the boxes. And remove all the screws fixing the cover to the box body.

The **Stinger** transportation boxes contain:

- ▶ This accessory is standard configuration, if your machine is customized, the accessories are according to the order requirements.

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🔊 The bolts of the machine are fixed to the machine.

🔊 Packing List:

No.	Name	No.	Name
1	Equipment steel frame-1Pcs	2	Spark legs-4Pcs
3	Water table and fixture-1pcs	4	CNC controller box-1Set
5	Y axis Frames and tracks -1 Set	6	X axis Frames and tracks -1 Set
7	Drag chains Brackets -1 Set	8	Plasma hold -1Set
9	DIV box-1pcs	10	Line Protective case-1Set
11	ARC start line -1se	12	Feedback line -1set

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13	ARC+/- Line -1set	14	Spark power line-1se
15	USB disk and Nesting Software-1pcs	16	Manual-1Pcs

3. Installation

3.1 Mechanical Assemble Steps

This part describe how to install **Spark** portable CNC cutting machine step by step.

Please assemble according to below steps carefully. Any questions or help needed, please do not hesitate to contact ARCBRO after sale service engineer, we will provide help as soon as possible.

- ▶ The installer needs to prepare: electric drill, spirit level, forklift. Two installation mechanical engineers are needed for faster installation.
- ▶ In order to install the machine faster, please read the installation steps carefully before installation, it will save installation time.

3.2 Basic assemble steps:

- ◆ Step 1: Assemble the legs of the Equipment steel frame.
- ◆ Step 2: Assemble the Water Table and fixture.
- ◆ Step 3: Assemble Y axis Frames and tracks to the Equipment steel frame.
- ◆ Step 4: Install X axis Frames and tracks to Y axis Frames.
- ◆ Step 5: Install drag chain Brackets and drag chain.
- ◆ Step 6: Install DIV Box to the Equipment steel frame.
- ◆ Step 7: Connect CNC controller box.
- ◆ Step 8: Adjust the diagonal of the Spark.
- ◆ Step 9: Spark is wired with plasma.

Step: Unpack the equipment box and remove all items

Remove all the screws which are fixed the box, check and confirm all the spare parts be inside and well, and then move all the parts out safely.

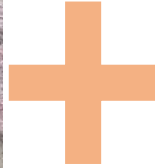


Step 1: Assemble the legs of the Equipment steel frame.

Note: Install the machine carefully step by step as the following instructions:

The Equipment steel frame assembly:

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Assemble Step:

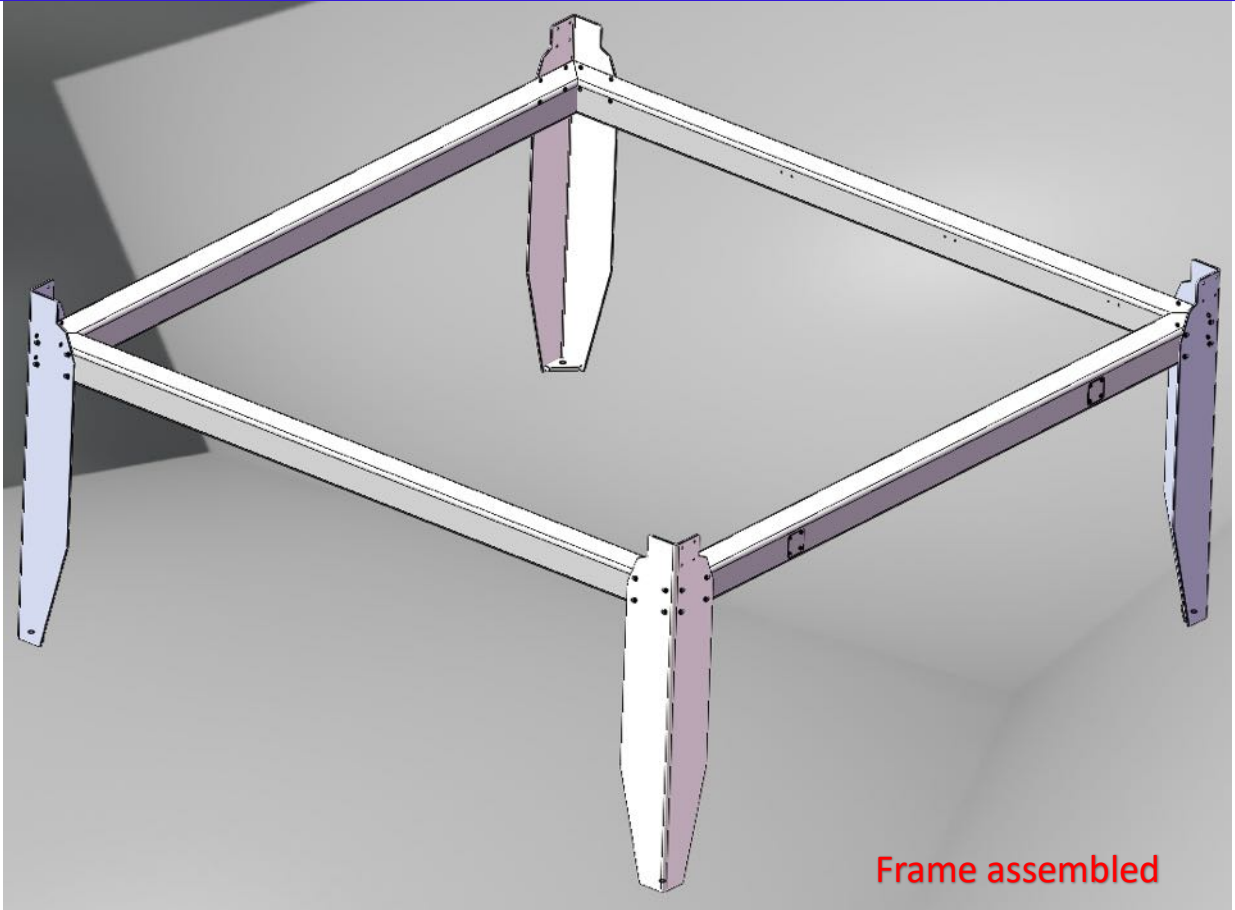
1. Lift the Equipment steel frame;
2. Put the steel legs bolted to the frame.
Each support leg is fixed by four bolts;
3. Install 4 support legs;

Note: The marks of the 4 support legs correspond to the equipment steel frame one by one;



The Equipment steel Frame assembled:

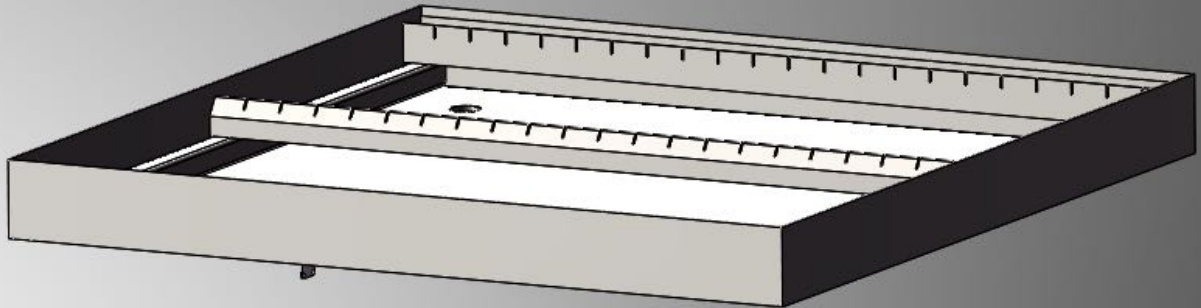
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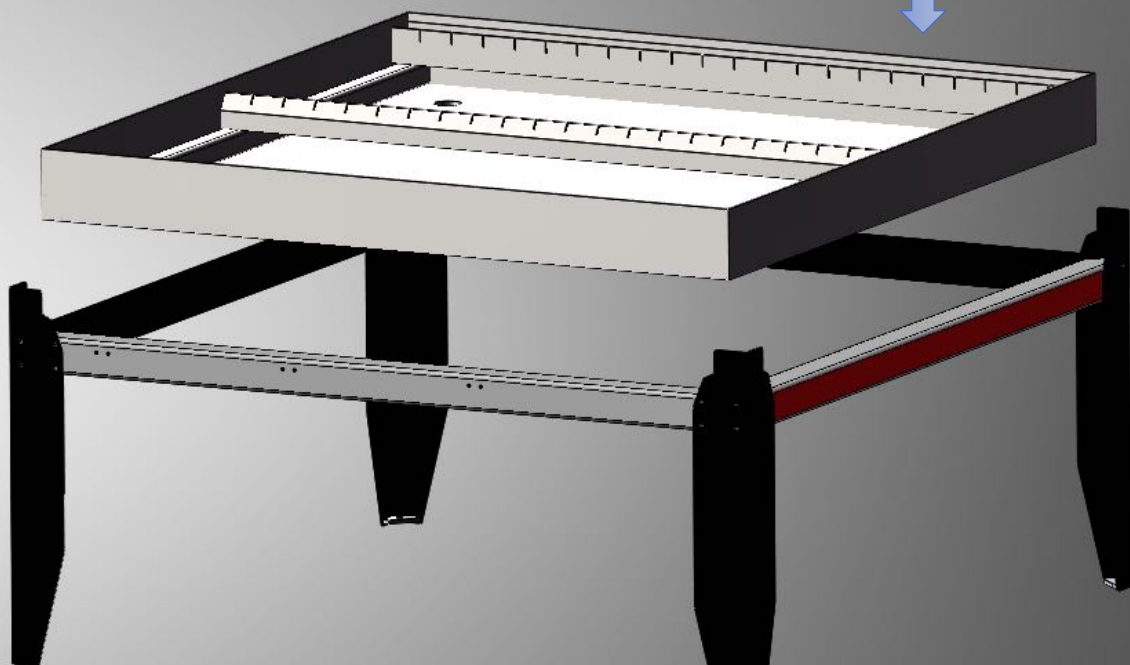
Step 2: Assemble the Water Table and fixture.

The water table



Assemble Step:

1. Lift the whole water table;
2. Insert the water table into the equipment steel frame.

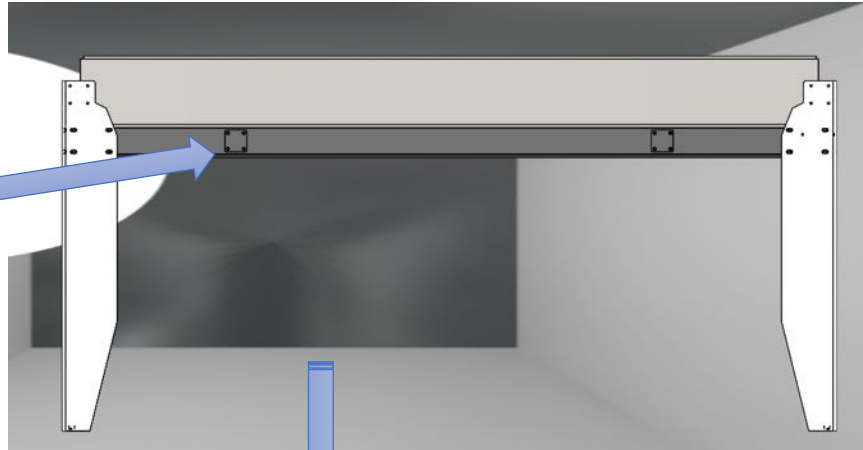
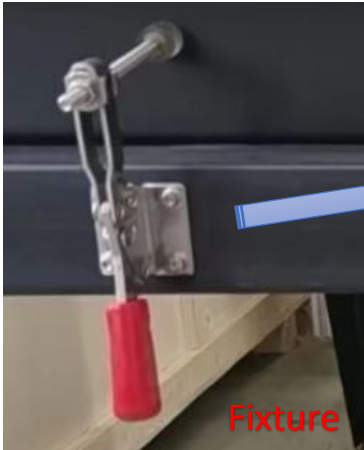


The water table assembled

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Assemble Step:

- Put the fixture bolted to the equipment steel frame. Each fixture is fixed by four bolts;
- Press the water table with the fixture;



Step 3: Assemble Y axis Frames and tracks to the Equipment steel frame.

Fix each Side Board onto the frame leg by screws.

**Assemble Step:**

1. Lift the Y axis Frames and tracks;
2. Put the Y axis Frames and tracks bolted to the equipment steel frame. Each Connect the plate is fixed by four bolts;

NOTE: When installing, the orientation of the Y axis Frames and tracks and the equipment steel frame is consistent;



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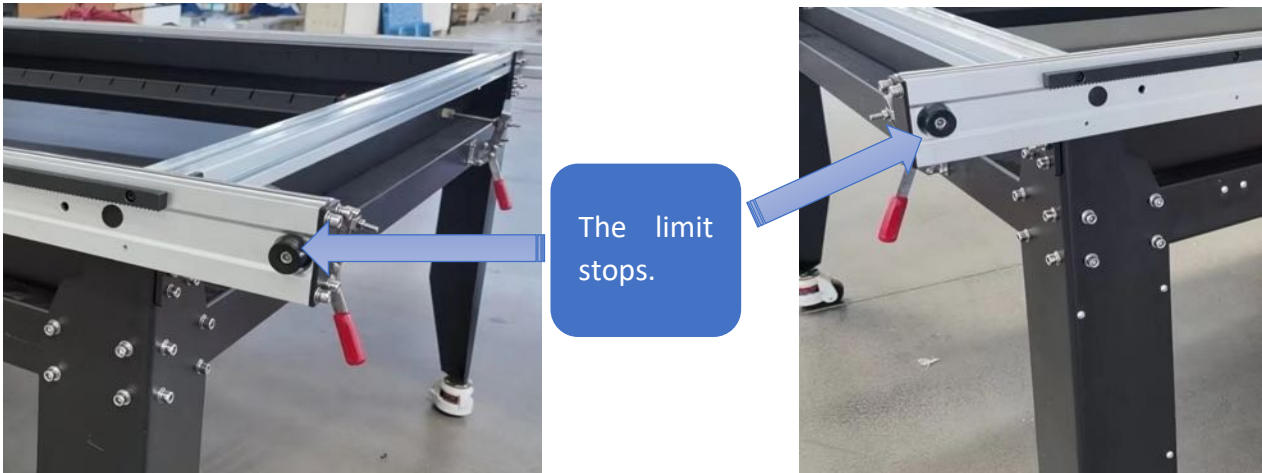
The Y axis Frames and tracks assembled:



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Step 4: Install X axis Frames and tracks to Y axis Frames.

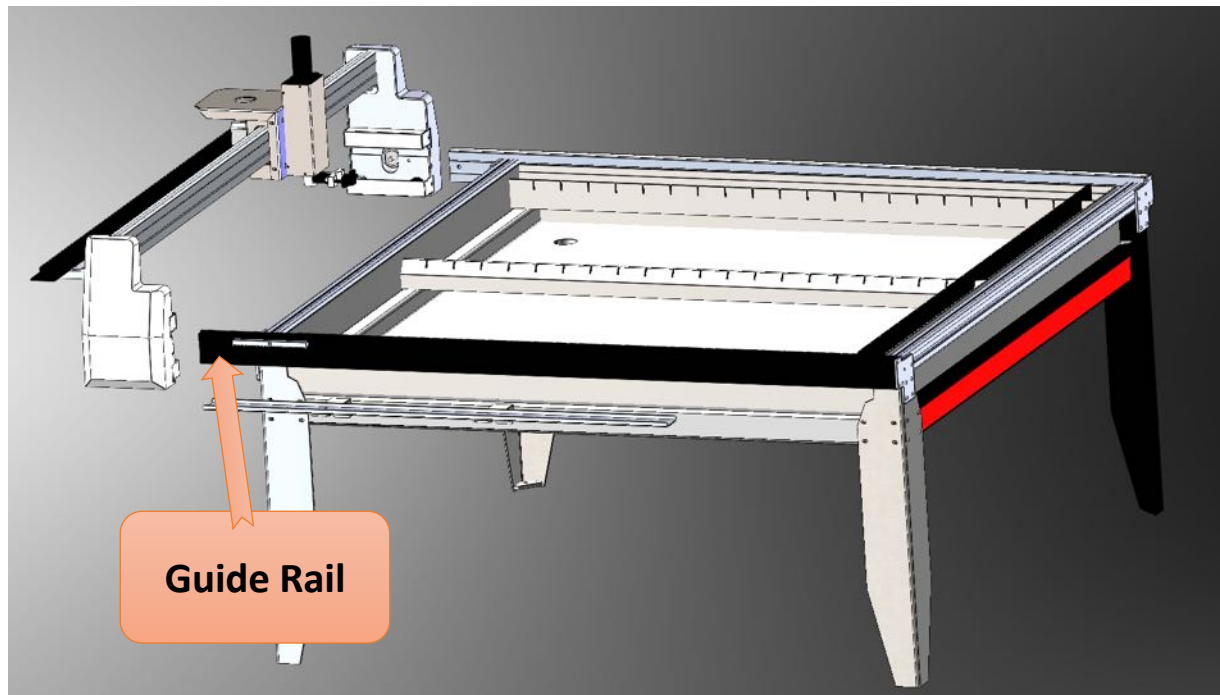
Fix each drag chain trough onto the frame leg by screws;-- 3 support frames.



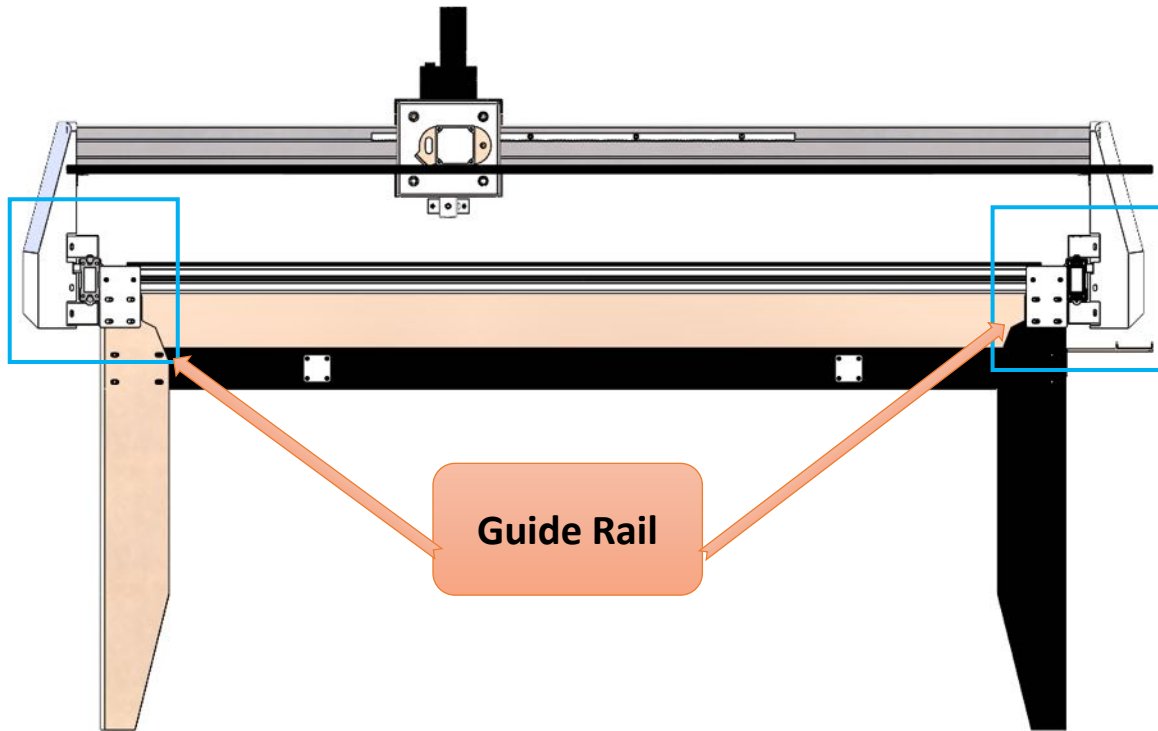
Assemble Step:

1. Remove the two limit stops-- At the back of X axis Frames and tracks.
2. Lift the X axis Frames and tracks;
3. Align the wheels of the X axis Frames and tracks and the guiding rail, Push the X axis Frames and tracks to slide in along the Guide Rail.
4. Reinstall the two limit stops;

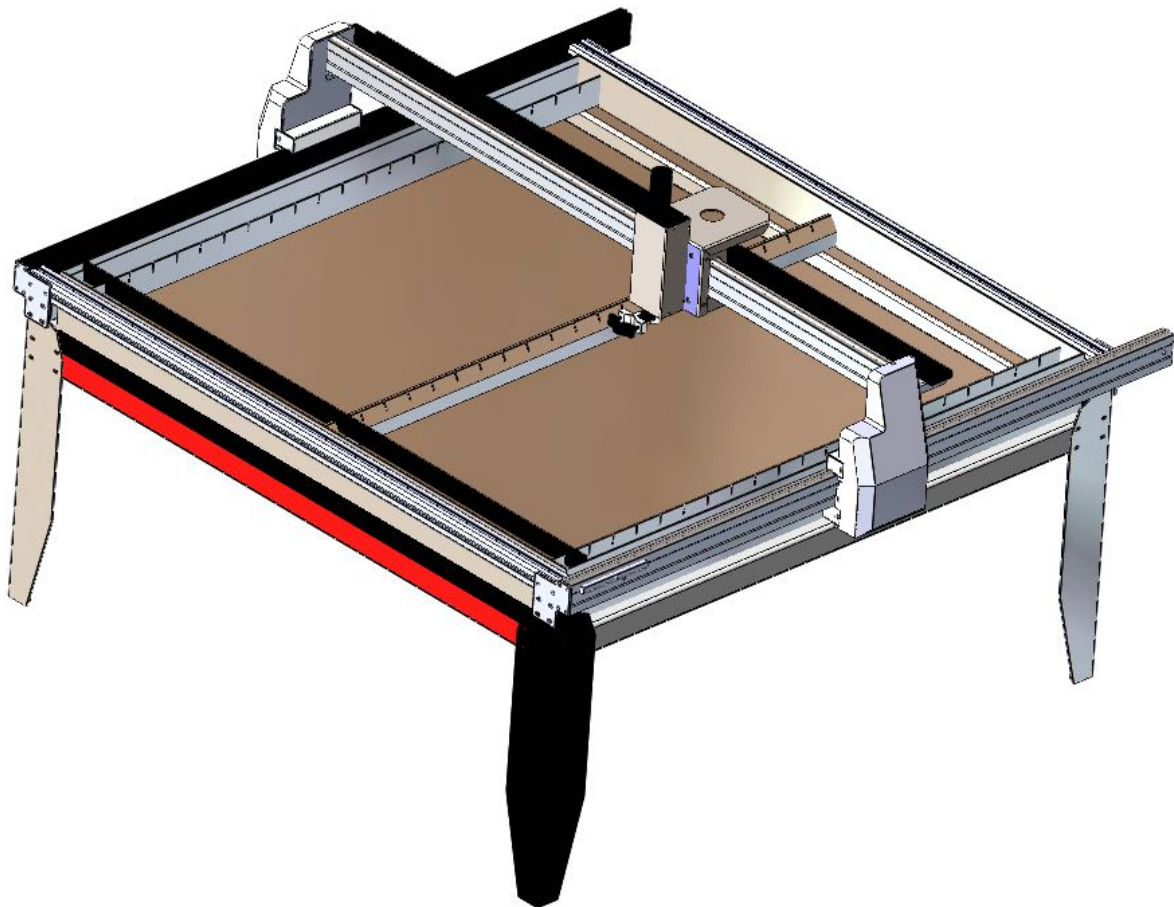
NOTE: Installation requires simultaneous access to the guiding rail



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The X axis Frames and tracks assembled:



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Step 5: Install drag chain Brackets and drag chain.

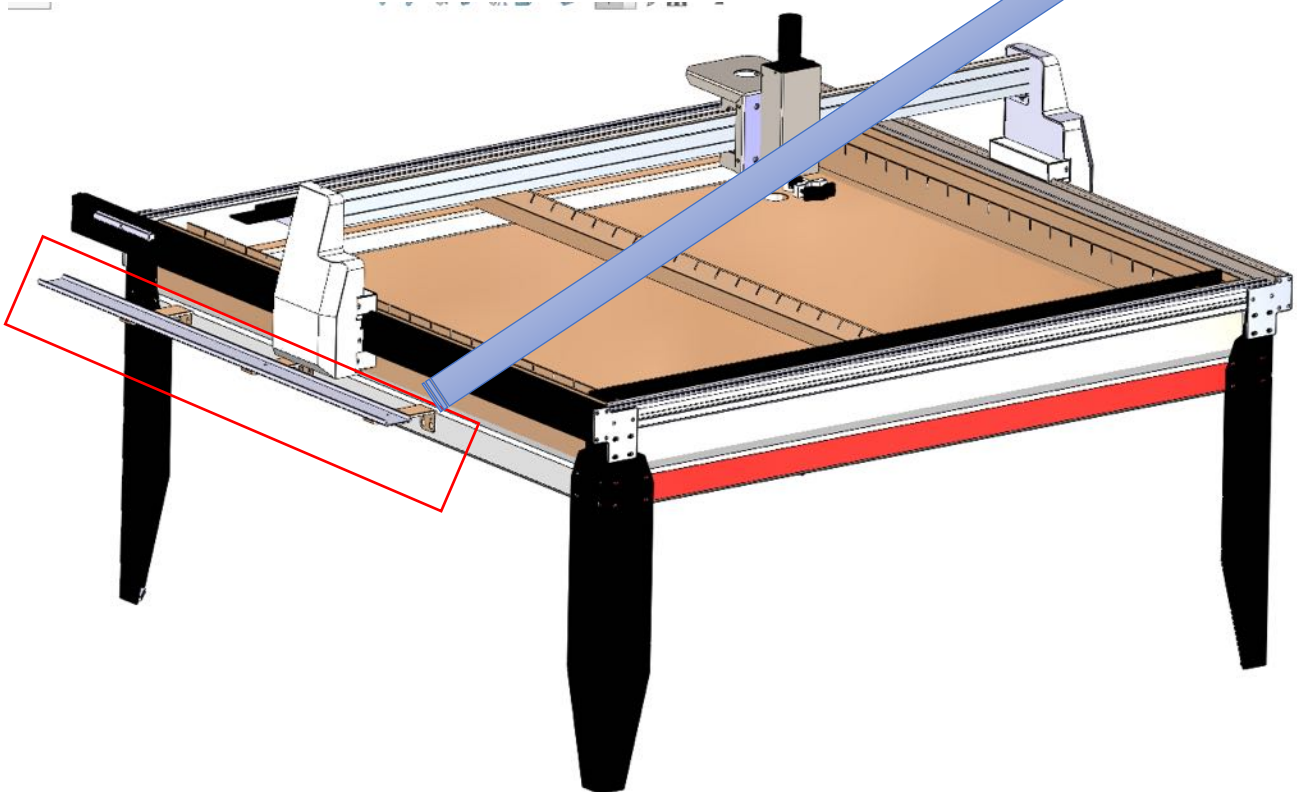
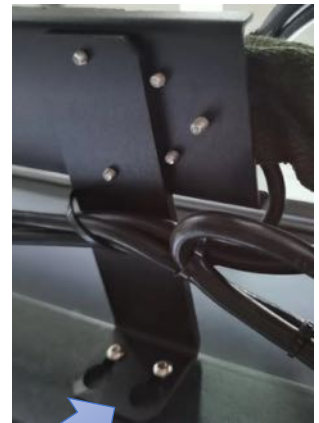
The drag chain Brackets:



Assemble Step:

1. Put the drag chain Brackets bolted to the equipment steel frame. Each Connect the plate is fixed by two bolts.

NOTE: The bracket requires a snap main bolt.

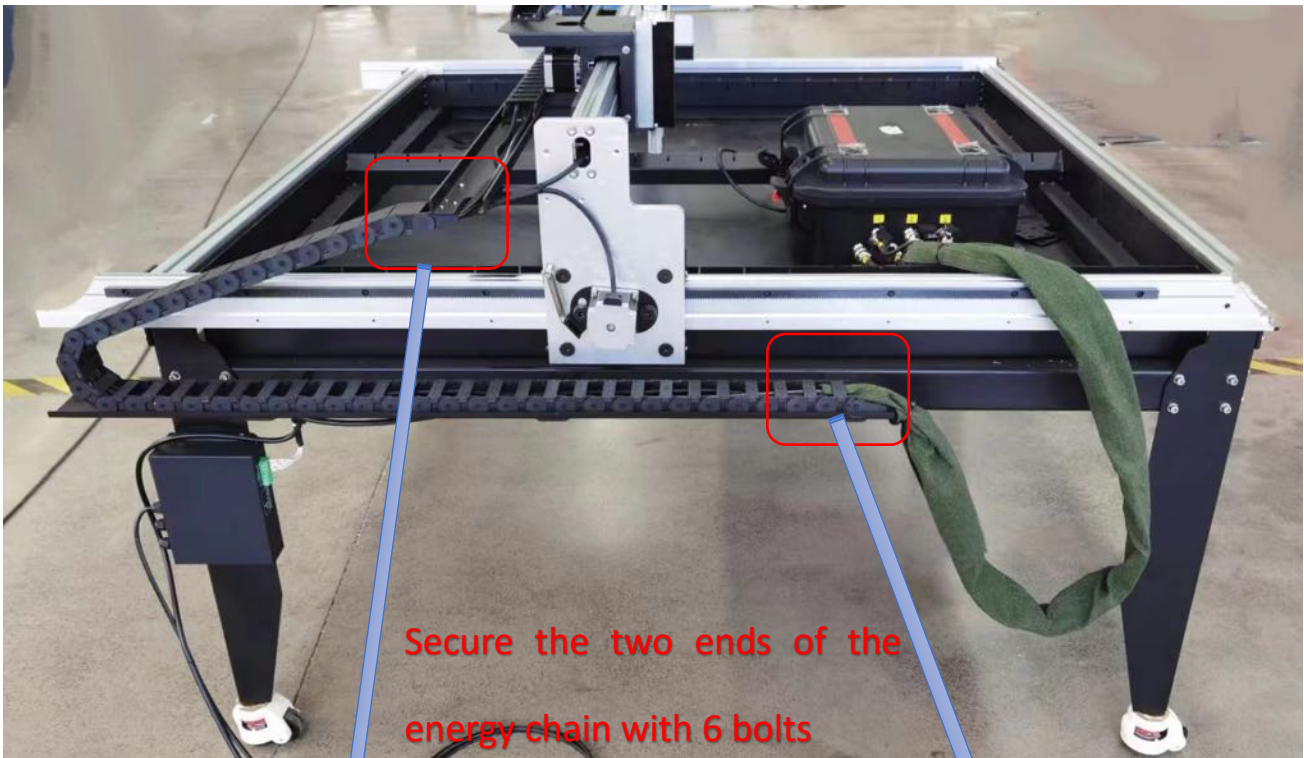


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Assemble Step:

2. Remove the drag chain from the beam; The the drag chain are fixed in the X-axis drag chain groove and the Y-axis the drag chain groove respectively

Secure the two ends of the energy chain with 6 bolts

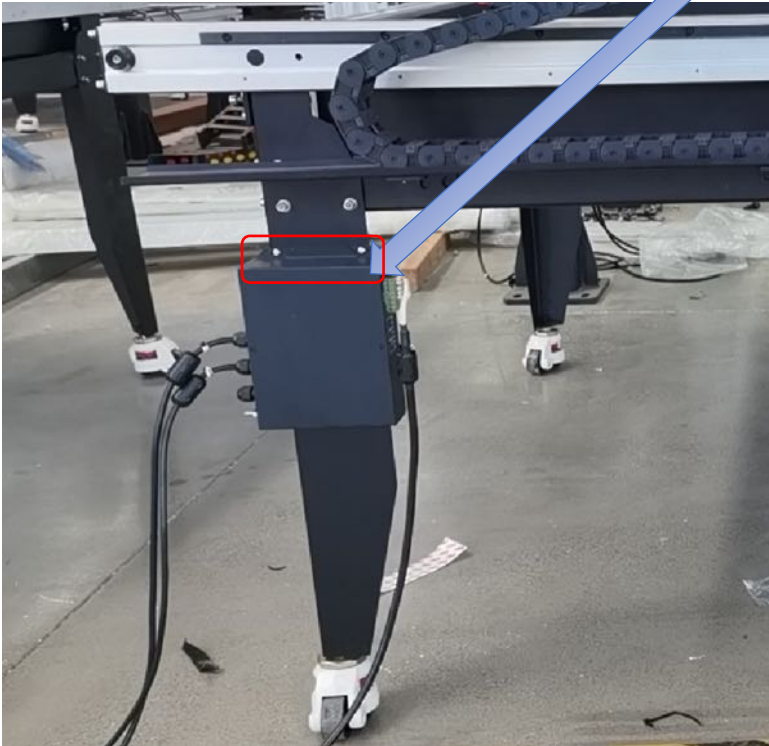
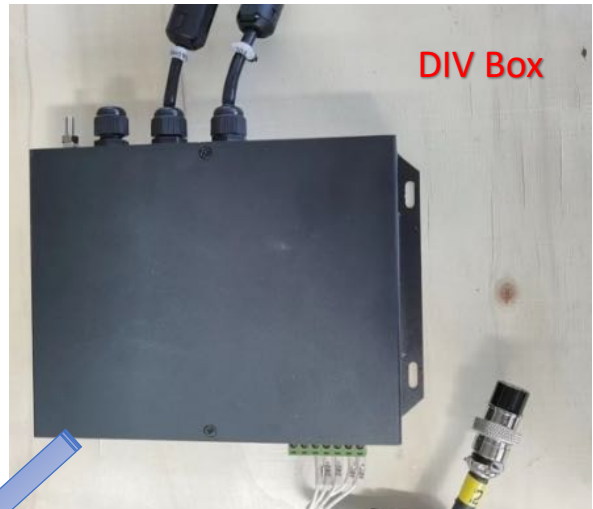


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Step 6: Install DIV Box to the Equipment steel frame.

Assemble Step:

1. Put the DIV box bolted to the equipment steel frame. Each Connect the plate is fixed by two bolts

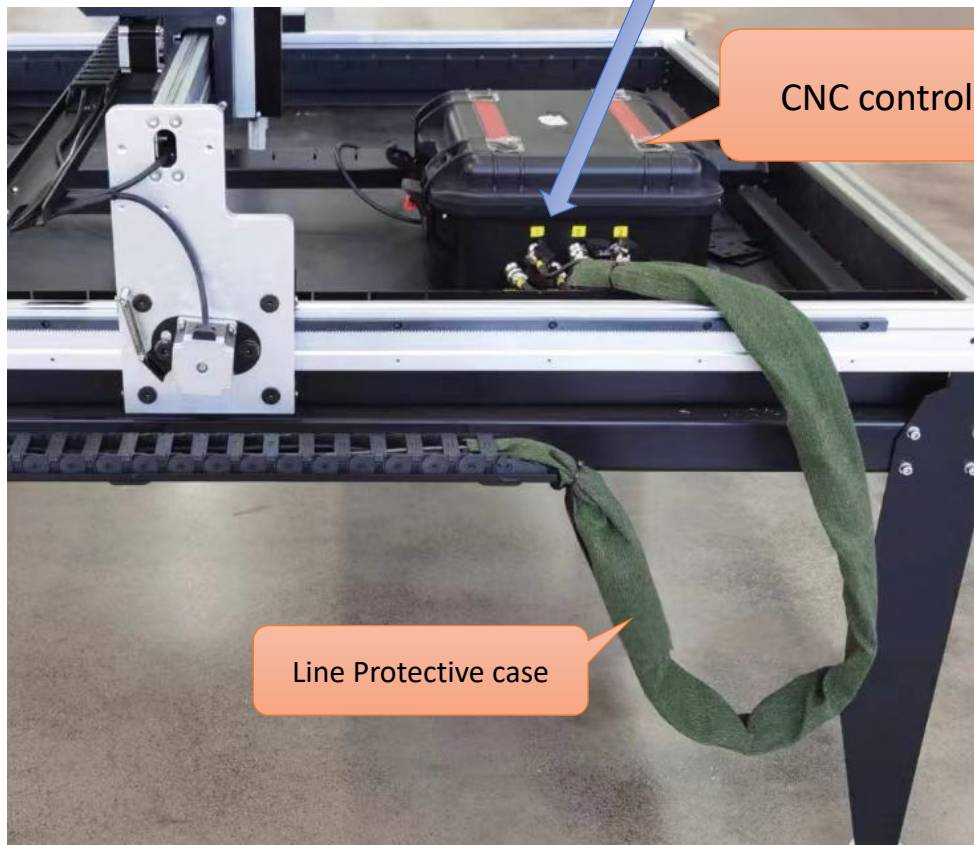


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Step 7: Connect CNC controller box

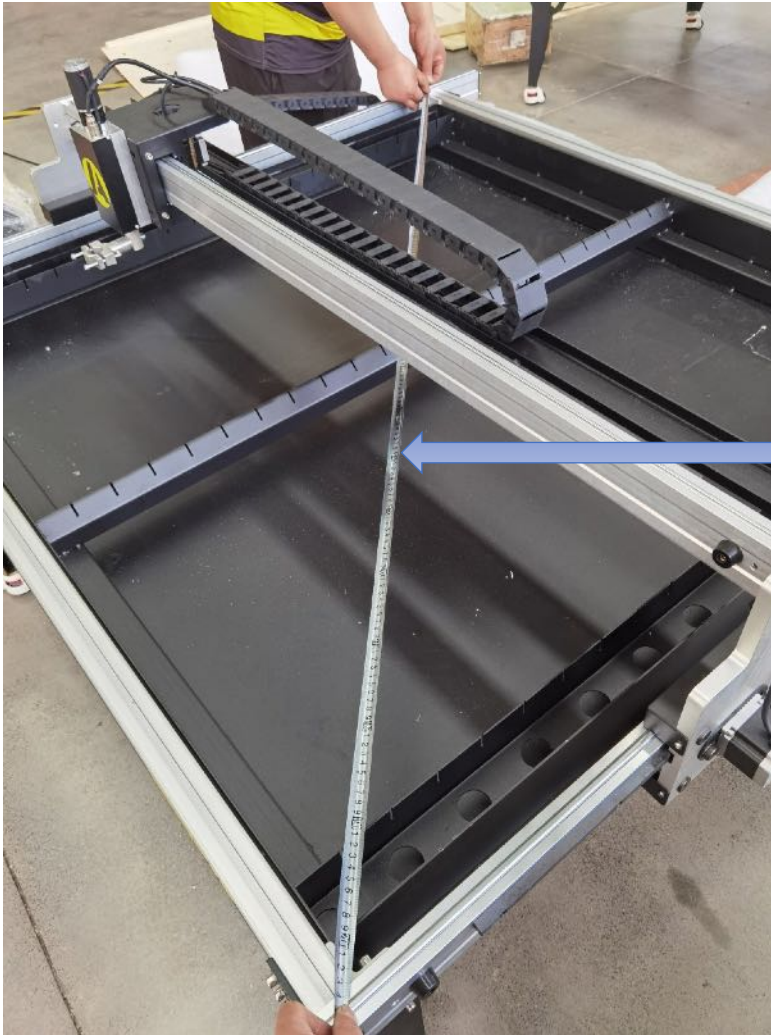
Assemble Step:

1. Put the DIV box bolted to the equipment steel frame. Each Connect the plate is fixed by two bolts
2. 2
- 3.



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Step 8: Adjust the diagonal of the Spark.



Assemble Step:

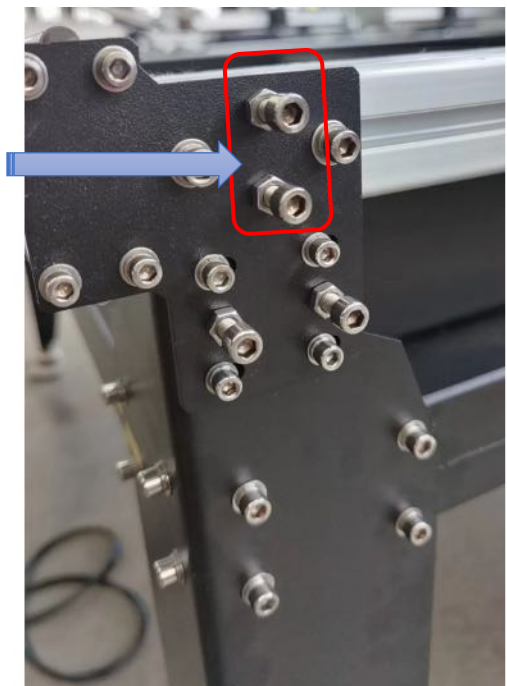
The diagonal of the device is adjusted to ensure the perpendicularity of the X and Y axes;

1. Measure the diagonal of the Y-axis frame with a ruler; Make sure that the length error of the two diagonals is controlled within 0.5mm;

Assemble Step:

Adjust the diagonal of the frame by adjusting the bolts in front of the frame;

Note: It is necessary to measure the diagonal of the device while adjusting;



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Step 9: Spark is wired with plasma.

Wire connection:

Connect the all cables accordingly:

- Power Supply cable,
- Ground wire to cutting plate,
- ARC START cable to plug of the plasma power source,
- Feedback cable to plug of the plasma power source.

Note: Ref. your plasma power source handbook for recommended Torch Height for different thickness.

🔊 For detailed wiring solution, please refer to www.arcbro.com/troubleshooting