

# ARCBRO<sup>®</sup>

## Tube-mini SERIES

### CNC PIPE Cutting Machine install Manual



## Operator Manual

ARCBRO | Revision 2 | English

Date of issue: August, 2020

## Technical Support

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Wish you enjoy a wonderful CNC cutting travel.

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by arcbro / August 7, 2015

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- ❖ No parts of this manual may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronically, mechanically, by photocopy, recording or otherwise, without the prior written permission of ARCBRO Company.
- ❖ This User's Manual is only available for **Tube-Mini** CNC PIPE Cutting Machine.
- ❖ Ensure that the operator has read and understood this User's Manual before any operation on **Tube-Mini** CNC PIPE 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.

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## Technical Parameters

Type	Tube-Mini	
Effective cutting range	φ 50-300/3000mm	φ 50-300/6000mm
Actual machine size	6800x1200x1300	3800x1200x1300
Input power supply	1 phase, 110V, 220V, 50Hz/60Hz	
Input capacity	800W	
Cutting model	Plasma cutting	
Max travel speed	0-8000mm/min	
Drive motor	Server Driver motor	
CNC SYSTEM		
Display	10" color LCD screen	
CPU	Industrial ARM9 chip	
External format	TXT or NC format	
Language	English, Spanish, Russian, French, Japanese, Czech, Slovenia	
PLASMA CUTTING MODE		
Max cutting speed	6000mm/min	
Max cutting thickness	Depends on plasma power source	
Plasma power source	Support up to 125A ( not include in standard package )	
THC	Arc voltage Auto Torch Height Controller	
Accuracy	±0.4 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).

**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:  $-10^{\circ}\text{C}$ — $+50^{\circ}\text{C}$

Environment humidity: 90 % RH below

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

Sea level elevation: An altitude of 1000 m below

## Safety


### 1. Information for your safety

The operator must read and understand the contents of this user's manual before any operation on **Tube-Mini**

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

**Note:** Each of the following descriptions must be verified before any operation on **Tube-Mini**.

- 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.



Precautions for safe use & machine working properly, Please must obey the following rules:  
(A) Do not move the equipment body during working;  
(B) Without permission, Do not open the equipment cover;  
(C) Read the directions carefully before using the equipment.



**CAUTION**



**ROLLING**  
Keep clear

-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



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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.

-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. Tube-mini Description

### 1.1. What is Tube mini?

**Tube mini** is an economic & practical automatic equipment specially designed for pipe cutting with the following specialties:

The newest up and down automatic design and Dust removal design can help the user fix different size pipes quickly and keep a clean work environment, keep work health and effective work.

Each feature on this machine has been engineered to increase efficiency, standardize cut quality, and expand the capabilities of your works.

1. Easy assembling mechanical design.
2. Electronic system for Chuck up/down.
3. Adjustable roller supporters.
4. Quick-react computer numerical control.
5. Advanced technology assures high precise & stable cutting performance.
6. High efficiency CNC system for both time and money.

With **Tube mini**, various fast auto nesting, high accurate drawing, or efficient cutting tasks can be achieved in seconds with the help of our nesting software.

### 1.2. Application

**Tube-mini** 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: carbon steel (flame cutting), stainless steel, 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 **Tube-mini** you can achieve accurate profiling of this pattern automatically.

## 2. Packing List

### 2.1. Introduction

Tube-Mini is packed carefully in one wooden boxes. (If the machine is cut off, it is two 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 Tube-Mini transportation boxes contain:

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

Standard configuration	Tube-mini-6M Standard Package				ARCBRO Make Work Simple
1. Tube-mini machine-1Set	2. Manual-1Pcs	3. USB disk -1pcs	4. Nesting Software-1pcs	5. Locating ring-1Pcs	
6. Plasma hold-1 Set	7. Chuck Spanner-1Pcs	8. Dowel pin for Connection frame-4Pcs	9. Screws for Connection frame-4Pcs	10. Screws for Mounting rail and rack -Some Pcs	

## 3. Installation

### 3.1 Mechanical Assemble Steps

This part described how to install **Tube-Mini** 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.

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### 3.2 Basic assemble steps:

- ◆ Step 1: Connect the two Pieces of Machine Body.
  
- ◆ Step 2: Assemble the Z axis.
  
- ◆ Step 3: Adjust Machine Level.
  
- ◆ Step 4: Plasma cutting part assemble.
  
- ◆ Step 5: Loading the Pipe.
  
- ◆ Step 6: Adjust the Torch Location.

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## 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.



### Tube-MINI-6M Standard Package

No.	Name	No.	Name
1	Tube-mini machine-1Set	2	Manual-1Pcs
3	USB disk -1pcs	4	Nesting Software-1pcs
5	Locating ring-1Pcs	6	Plasma hold-1 Set
7	Chuck Spanner-1Pcs	8	Dowel pin for Connection frame-4Pcs
9	Screws for Connection frame-4Pcs	10	Screws for Mounting rail and rack -Some Pcs

If the machine is not CUT-OFF, it is two boxes, The machine does not contain 8,9,10.

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### Step 1: Connect the two Pieces of Machine Body.

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

The machine is not cut off.

#### Assemble Step:

The machine assembly:

1. Lift the body by Forklift.
2. I Remove the packaging of the machine and place the electrical box on the ground.

Note: Keep the machine stable.





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The machine is cut off.

Assemble Step:

Joint Connection:

Specification of Joint-two Pieces of the machine body:

Piece 1– Chuck & Table; Piece 2-the Extended Table

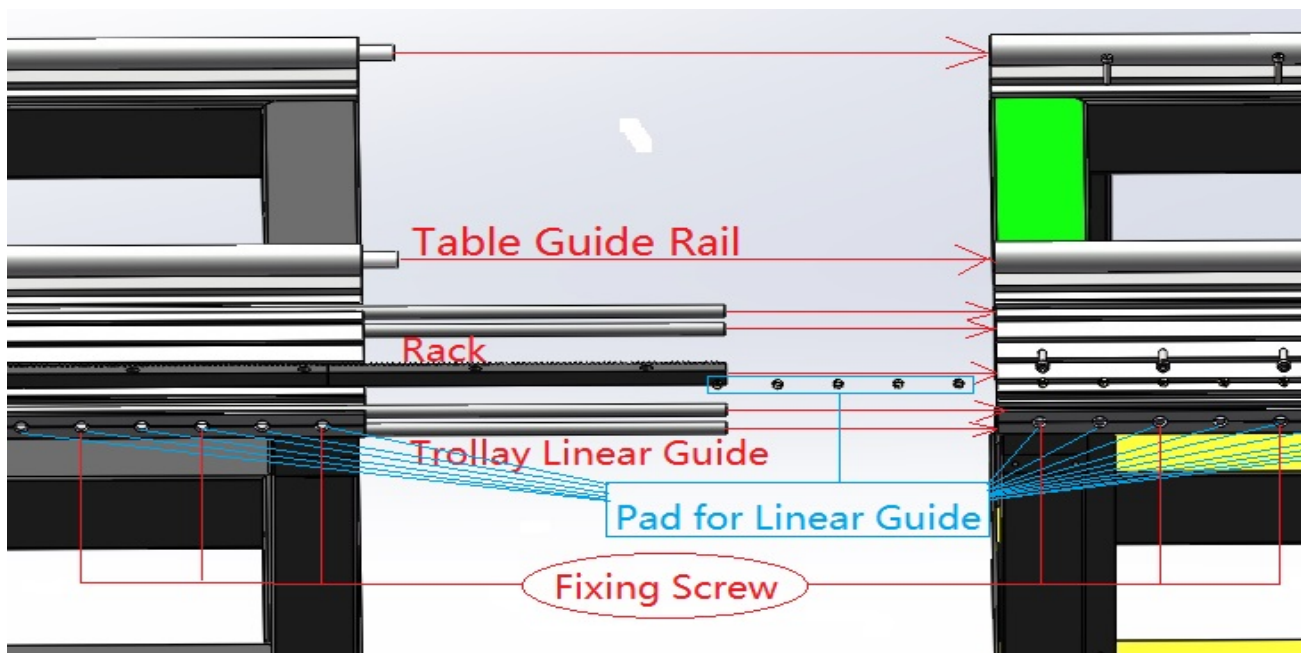
Assemble Step:

-1: Position the two parts face to face in same level and same lane for each guide and rail, Push the two pieces together correspondingly. And make sure no obvious gap for each connection of rail, linear guide and rack.

Push the inner pad to each hole by hammer, Fix two screws aside of the joint; Fix the rest screws by each other one.

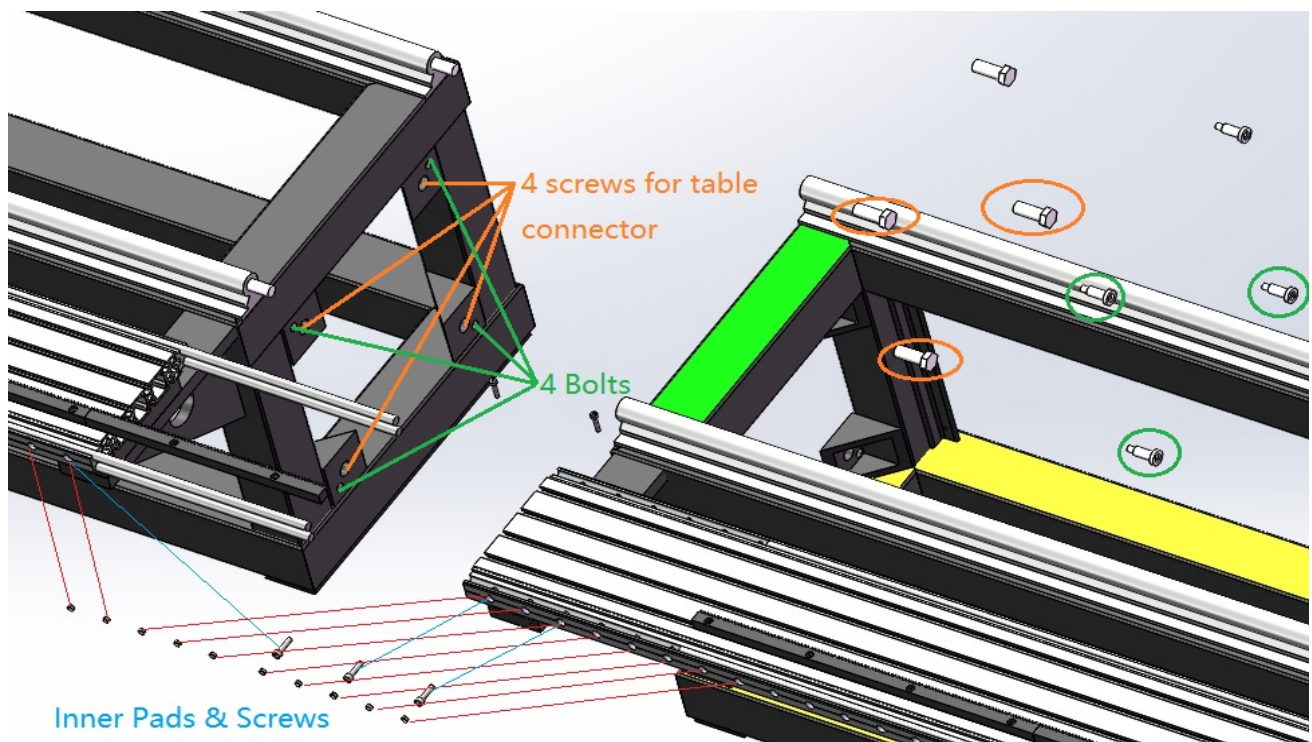
Note:

If there is any obvious gap at the joint of the guide or rack, Pls. put a wood pad onto the end of Piece 2 and hit the corresponding position to smaller the gap firstly.



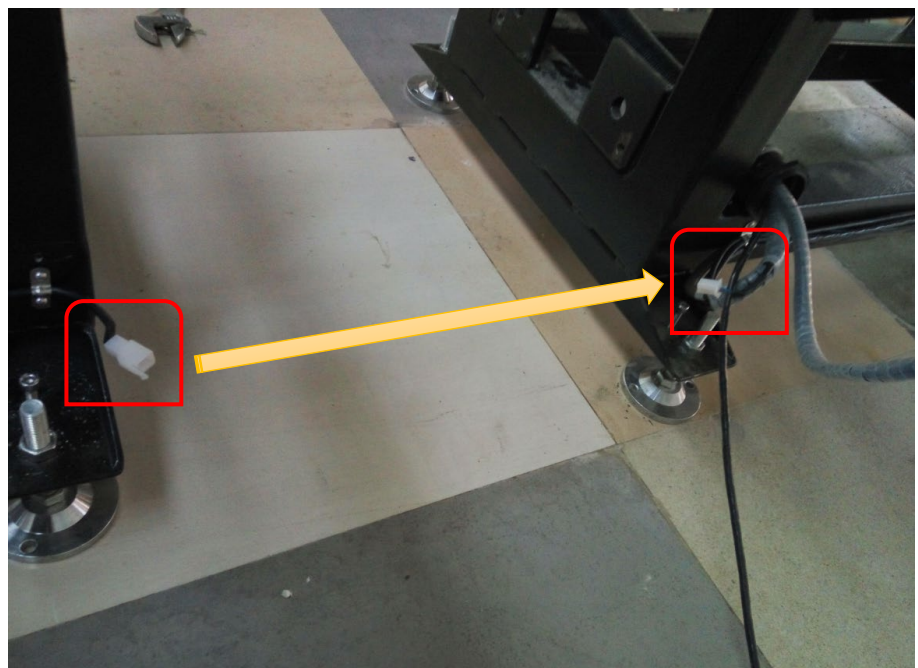
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-2: Fix the 8 connectors of the table leg joints by 4 screws. Double fix the connectors by 4 bolts (show below).



-3: Using a short piece of rack to bite the joint of the machine rack, make sure the teeth bite straight and properly, then fix onto the Aluminium profile structure.

-4: Connect the cable of the electronic limit.





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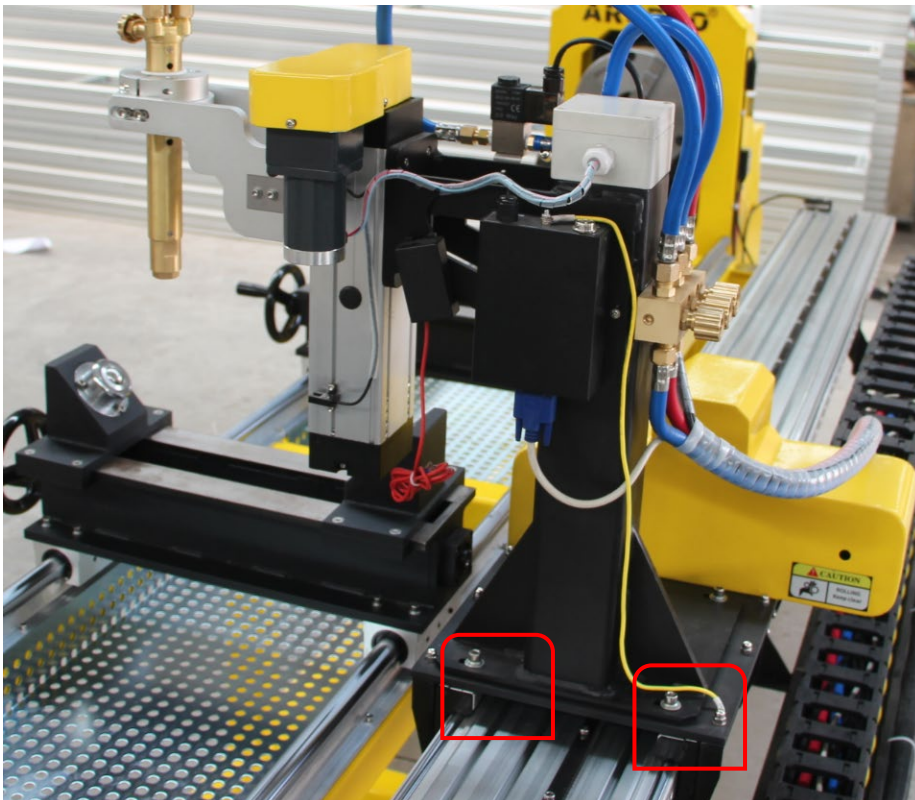
Frame assembled:



Frame assembled

### Step 2: Assemble the Z axis.

- 1: Turn the whole Z axis up-towards and fix well (to save packing space the Z axis was fixed horizontally).
- 2: Use four bolts to fix the z-axis column, and one bolt to connect the Ground line;



Unique Solution

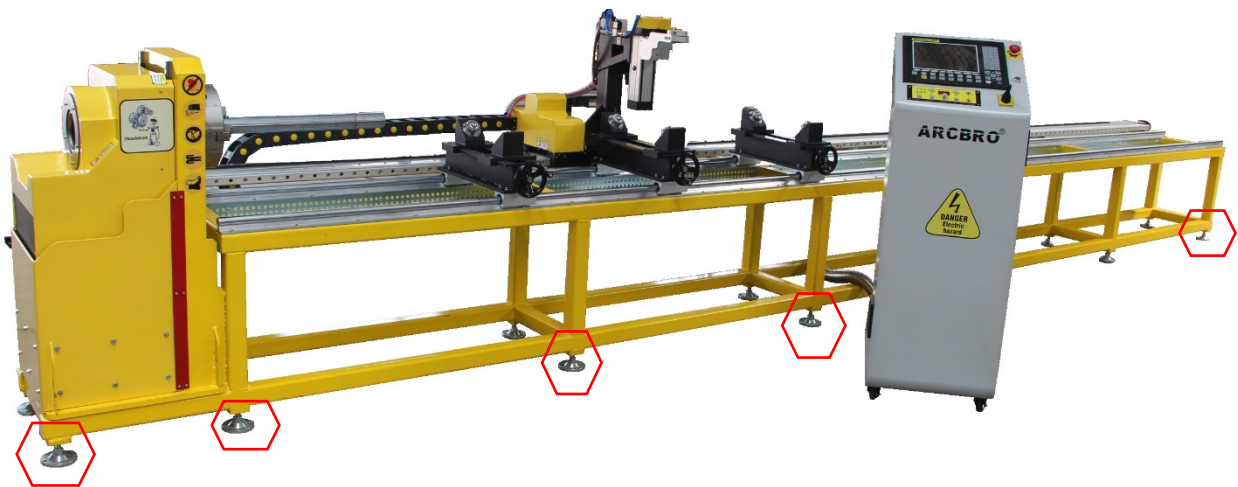
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### Step 3: Adjust Machine Level

In order to ensure the smooth operation of the machine, the machine needs to be fixed to the ground.

-1: Adjust the [Level screws] according to measurement of Level Gauge, to make sure the 2 guide rails of the pipe supporters on same horizontal level. [The level precision request:  $\pm 1\text{mm}$ ];



-2: Fix the table feet level tightly by the lower screw.



The fixed to  
the ground.

**Fix Bolt**



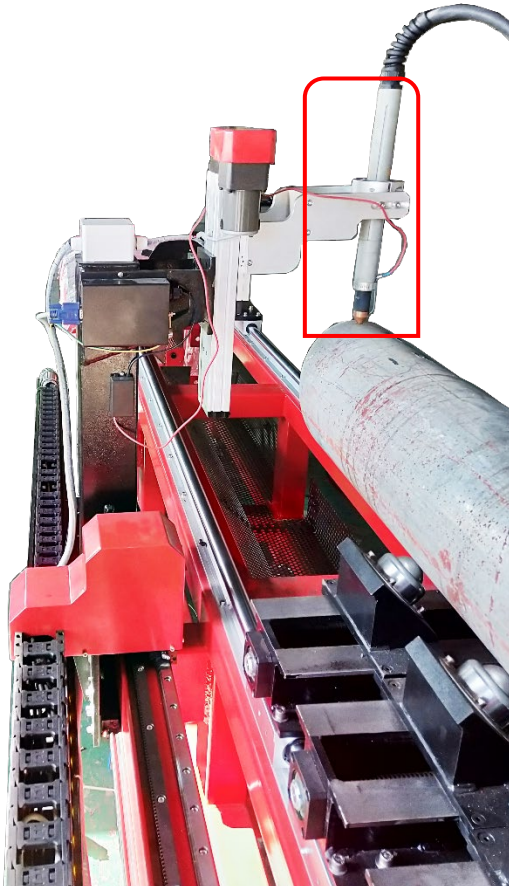
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### Step 4: Plasma cutting part assemble.

1. Load the plasma torch to the holder.
2. Connected the plug to the IHS box.

#### IHS wire Connection:

3. Connect the IHS wire to the shield of the plasma torch.



#### 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,
- DIV ARC +/- cable to Original Arc Voltage ports inside 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](http://www.arcbro.com/troubleshooting)



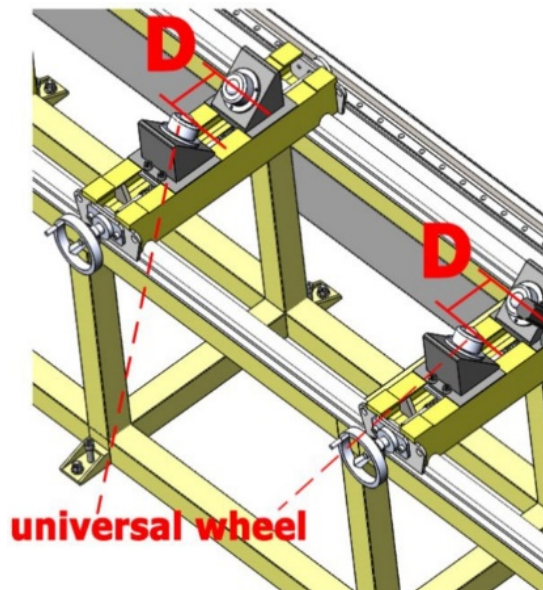
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### Step 5: Loading the Pipe

$\varphi$  = Pipe diameter;

D = Distance between two universal wheels of each supporter.

Step 1: Adjust each pipe supporter by their handle to make sure the pipe in a proper position according to the formula:  $D = 0.7R$ .



$$D = \varphi 210\text{mm}$$



Step 2: Adjust the distance of each supporter by hand, then load the pipe onto the supporters.

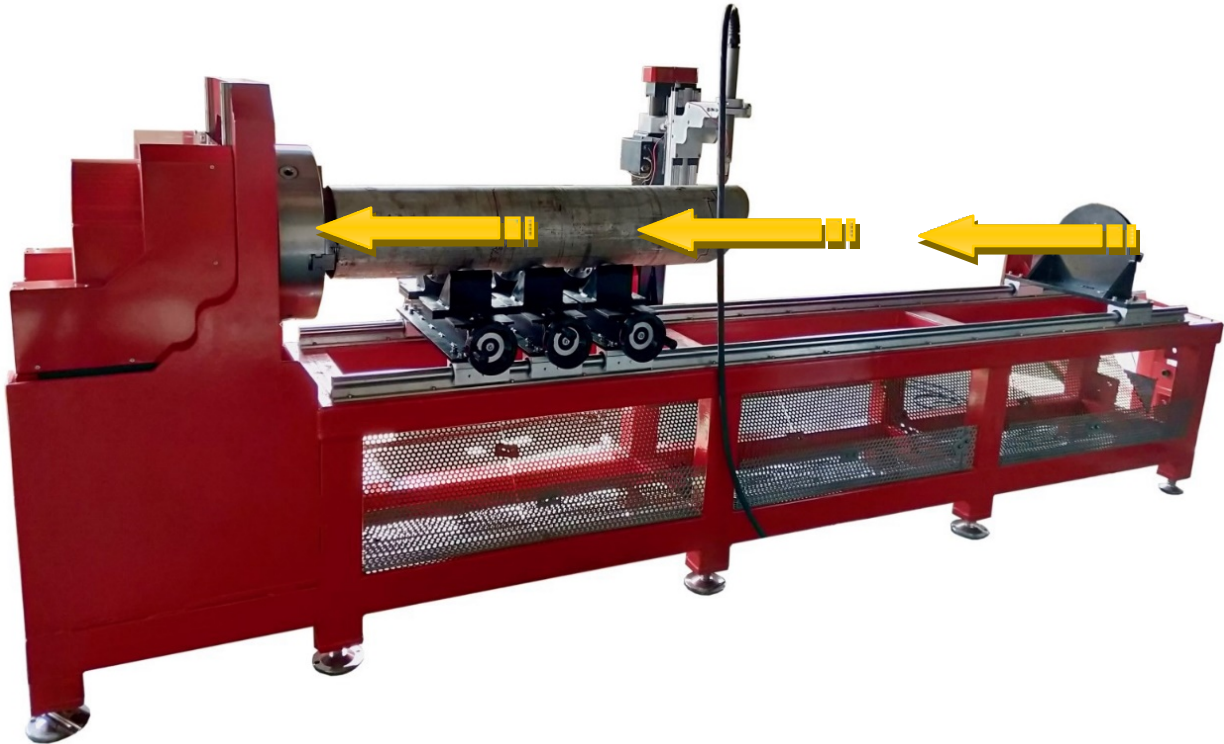
Step 3: Press the Chuck up/down button to adjust the chuck up and down so that the centerline of the pipe and the centerline of the chuck remain coincident;



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Step 4: Adjust the diameter of the chuck according to the pipe diameter;

Step 5: Push the pipe onto the Chuck and fix it by Chuck spanner.



Note: The centrelines of the pipe and the centrelines of the chuck remain coincident;

### Step 6: Adjust the Torch Location:

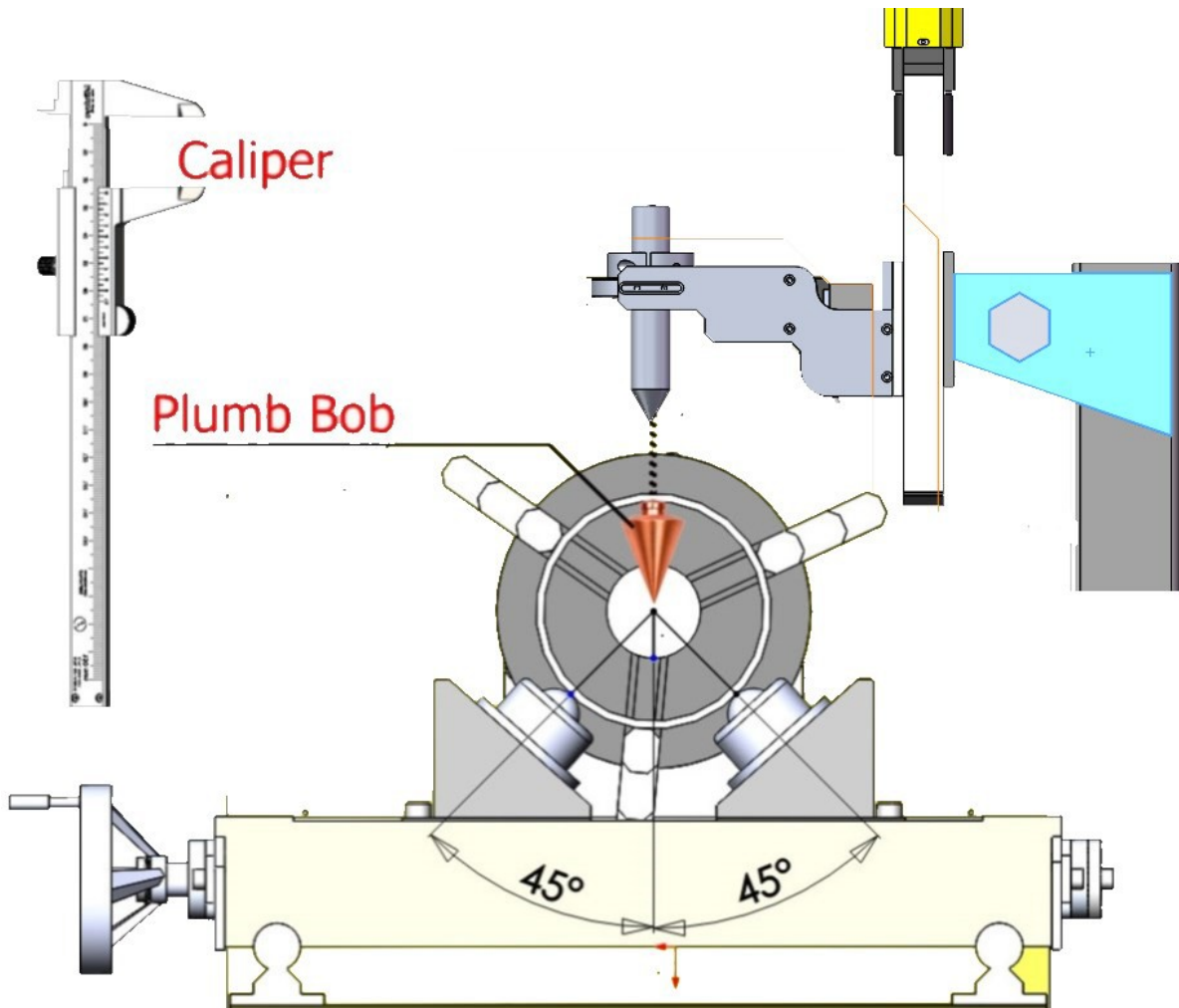
Step 1: Push the Trolley to the end of the pipe;

Step 2: Find the center of the pipe by Calipers;

Step 3: Find the proper position for torch using a Plumb-bob;

Step 4: Move the [Horizontal Shaft of torch holder] forward or backward to make sure torch tip points this position, then fix its screw.

Note: Make sure the torch is vertical before find the position and fix the shaft.



Step 5: Adjust the torch height along Z Track to a proper position for different thickness cutting.

Note: Ref. your plasma power source hand- book for recommended Torch Height for different thickness.

