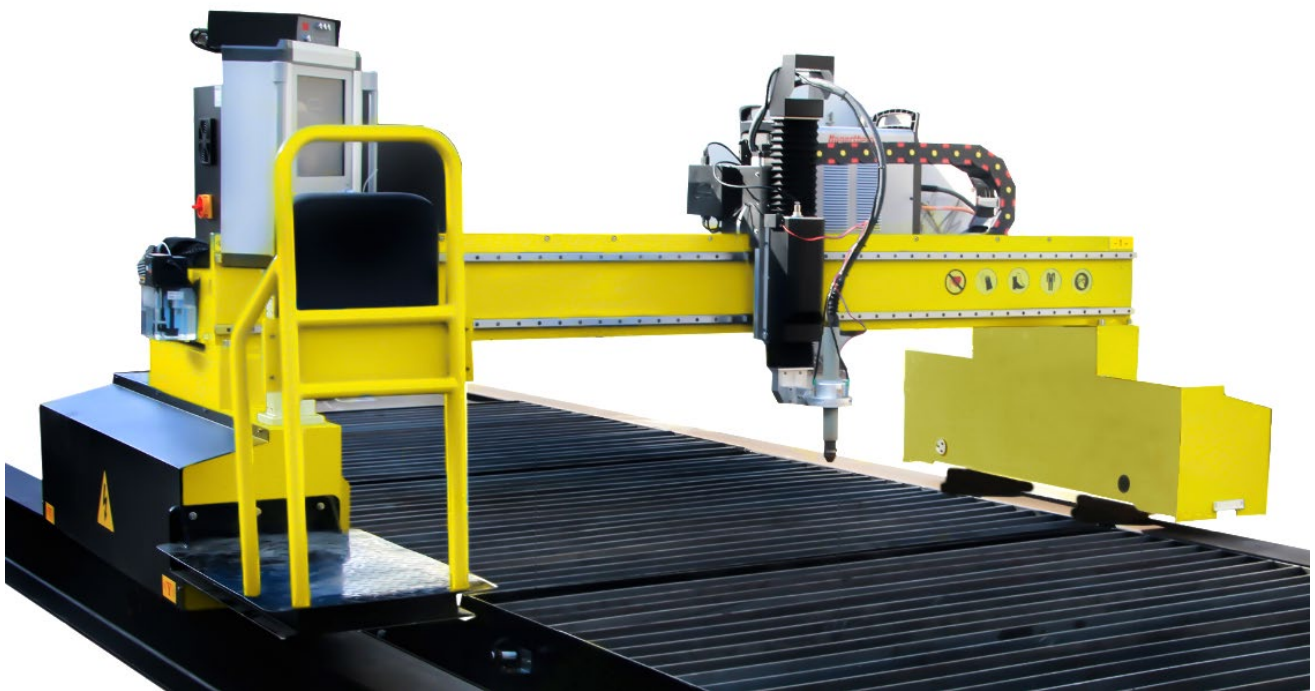


ARCBRO®

X-PRO SERIES

CNC Plate 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.

ARCBRO CNC Technical Support & Solutions

7x24 Hours

+86-10-65798995

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by arcbro / August 7, 2015

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E-mail: Please leave message to us by live chat —

>>

Contact ARCBRO Portable CNC Cutting Machine

We will reply as soon as possible



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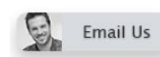
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- ❖ This User's Manual is only available for **X-PRO** CNC Plate Cutting Machine.
- ❖ Ensure that the operator has read and understood this User's Manual before any operation on **X-PRO** CNC Plate Cutting Machine.
- ❖ There may be few differences 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.

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Technical Parameters

Type	X-PRO
Effective cutting range	Width: $\geq 3000\text{mm}$, Length: $\geq 3000\text{mm}$
Input power supply	1 phase, 110V, 220V, 50Hz/60Hz
Cutting model	Plasma cutting/Flame cutting
Max travel speed	18000mm/min
Drive motor	Smart servo motor with reducer
CNC SYSTEM	
Display	10" /15" color LCD screen
CPU	ICP/Industrial ARM9 chip
Internal library	48 kinds of shapes
External format	TXT or NC format
Language	English, Spanish, Russian, French, Japanese, Czech, Slovenia
PLASMA CUTTING MODE	
Max cutting speed	10000mm/min
Max cutting thickness	Depends on plasma power source
THC	Arc voltage Auto Torch Height Controller
Accuracy	$\pm 0.3\text{mm}$
Flame CUTTING MODE	
Max cutting speed	8000mm/min
Max cutting thickness	10-350mm
THC	Capacity Torch Height Controller

Accuracy	±0.3mm
Cutting gas	Oxygen, acetylene, propane

Notes

Note 1: Propane cutting nozzles are included in standard package. Acetylene nuzzles can be ordered.

Note 2: Specific torch assembly must be ordered for Gasoline project.

Note 3: Nesting software standard Wizard is included in standard package.

Note 4: The machine must be grounded reliably when it is working. (Connect the plate and the earth)

Note 5: Clean dust regularly to keep the rail and rack clean for smooth movement.

Note 6: Avoid damage for the LED display screen of CNC system.

Note 7: Equipment use environment:

Ambient temperature: -10°C—+50°C

Environment humidity: 90 % RH below

Storage temperature: -20°C—+65°C

Sea level elevation: An altitude of 1000 m below

Safety

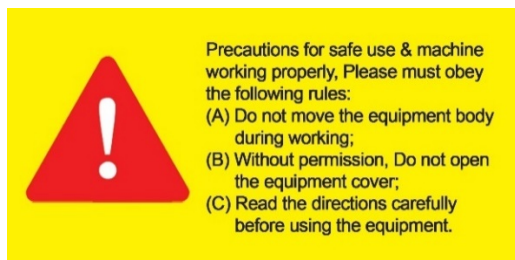
1. Information for your safety

The operator must read and understand the contents of this user's manual before any operation on X-PRO

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 X-PRO.

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



-2. The operator can't load external programs in internal storage of the machine in case of a 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 a no-load open-circuit relay in the electrical control system.



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- 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. X-PRO Description

1.1 What is Thunder X-PRO?

X-PRO is a kind of computer control, precision mechanical transmission, and the flame or plasma cutting technology with the combination of high efficiency, high precision, and high reliable automatic cutting equipment.

Performance characteristics:

X-PRO series is designed for cutting complex plane figure dedicated automation equipment, the structure is very stable. It can acquire many cutting torch, and even can realize long straight cutting, cutting large range; For enterprises of plane material processing achieve high efficiency and low cost of production to provide a strong guarantee.

X-PRO CNC control system is controlled by PLC for input and output, make the electric system has good stability and strong anti-interference, applies all kinds of plasma power source at home and abroad; When the X-PRO equipped with flame output to control the electromagnetic valve of gas path, contactor coil, etc., realize the pneumatic sequential control.

X-PRO beam: the square pipe butt welding structure with good rigidity, high precision, light weight, inertia small features. All weldments' vibration aging to deal with the stress, effectively prevent the structural deformation.

X-PRO longitudinal and lateral drive: adopt precision gear rack transmission. Horizontal, vertical track is made from precision machining quality rails, ensure the smooth operation of the cutting machine, high precision, and durable, clean and beautiful; Using planetary gear reducer, the very perfect ensure the accuracy of movement and balance.

X-PRO On both ends of the longitudinal drive frame (frame) : the guide wheel is equipped with level, adjustable driving eccentric at the bottom of the compaction degree of guide way, keep the machine in motion stability of orientation。 Equipped with dust collector, scraping and accumulation on the surface of the track, sundries at any time.

X-PRO Stable cutting torch lifting mechanism, by the spirit track through the motor drive screw, smooth implementation of cutting torch. Cutting torch move smooth, reliable operation.

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1.2 Application

Main applications:

Suitable for shipbuilding, shipbuilding, boiler manufacturing, container manufacturing, construction, Bridges, plank in the field of machinery, steel structure manufacture....

Suitable for carbon steel, manganese steel, stainless steel and other metal materials of large, medium and small steel plate.

1.3 Programming and Nesting

Simple and easy to use automatic programming system, make the NC programming complex, no longer easily.

Within the system there are some plane figure, can be directly transferred to use. Customers can choose its own demand graphics to use directly.

Through computer aided design software drawing you need structure. Again through the ARCBRO Libellula/Fastcam nesting software will be automatically converted into G code (see detailed Libellula/Fastcam operating instructions).

G code within the system can through the USB interface transmission to the X-PRO. G code can automatically control the X-PRO cutting operation.

G code can also be easily saved to the memory of the X-PRO.

2. Maintenance

2.1 Daily maintenance

The use of the X-PRO is very frequent. Therefore, for the daily maintenance of cutting machine and maintenance is very important. Let us together to know about the below, is how to maintain the X-PRO.

- ❖ The track does not allow workers to stand, trod, by heavy pressure, more do not allow the impact, Guide way using compressed air dust removal after each class with gauze dipped in lubricating oil wipe the rail surface. Keep track surface clean and smooth.
- ❖ Drive on the rack with lubricating oil should be cleaning every day, do not allow the thing have particles splash on the rack.
- ❖ Operators are only allowed to remove the cutting nozzle, the rest of the parts cannot be taken apart, electrical junction box allows only relevant personnel maintenance, can open.
- ❖ If the equipment malfunction, please maintenance personnel should be timely treatment, large fault must have rich experience and technical personnel to determine the maintenance plan. It is strictly prohibited to teardown check.
- ❖ Every day with technical personnel carefully check every working part of the X-PRO, if you have found the parts wear and tear should change in time, do not use damaged completely before replacement. Completely after damage will affect the cutting quality and efficiency and bring security hidden danger.

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3. Packing list

3.1 Introduce

The machine is packed with PVC plastic film. Machine must be careful to transport and handling also notice the top sealing packaging.

3.2 Packing list

Unpack the machine. Manual have a detailed packing list, please reference!

Accessories of The X-PRO 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

X-Pro Standard Package



1. X-pro machine-1Set



2. Manual-1Pcs



3. USB disk and Nesting Software-1pcs



4. Towline -1Pcs



1 set plate

5. Y axis Track -1 Set Contains: track pressure plate and track pad plate, bolts, 1-Track/3-set plate



6. Y axis rack-1set
L:1000mm-2M
1 Rack/ 4Pcs bolt



7. Bolts, spring washers, flat washers-1Set

X-Pro Standard Package



8. Oxygen and gas pipe-1Set



9. Flame cutting nozzle-4Pcs



10. Y axis mechanical limit-4Pcs 80-80mm



11. Machine seat-1Pcs Install bolts to fix to the machine



Standard configuration

🔊 Packing List:

X-Pro Standard Package



No.	Name	No.	Name
1	X-pro machine-1Set	2	Manual-1Pcs
3	USB disk and Nesting Software-1pcs	4	Towline -1Pcs
5	Y axis Track -1 Set Contains: track pressure plate and track pad plate, bolts, 1-Track/3-set plate	6	Y axis rack-1set L:1000mm-2M 1 Rack/ 4Pcs bolt
7	Bolts, spring washers, flat washers-1Set	8	Oxygen and gas pipe-1Set
9	Power cable3*10m ² -1Set	10	Y axis mechanical limit-4Pcs 80-80mm
11	Machine seat-1Pcs Install bolts to fix to the machine	12	



Standard configuration

3. Installation

3.1 Mechanical Assemble Steps

This part describe how to install **X-PRO** 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.

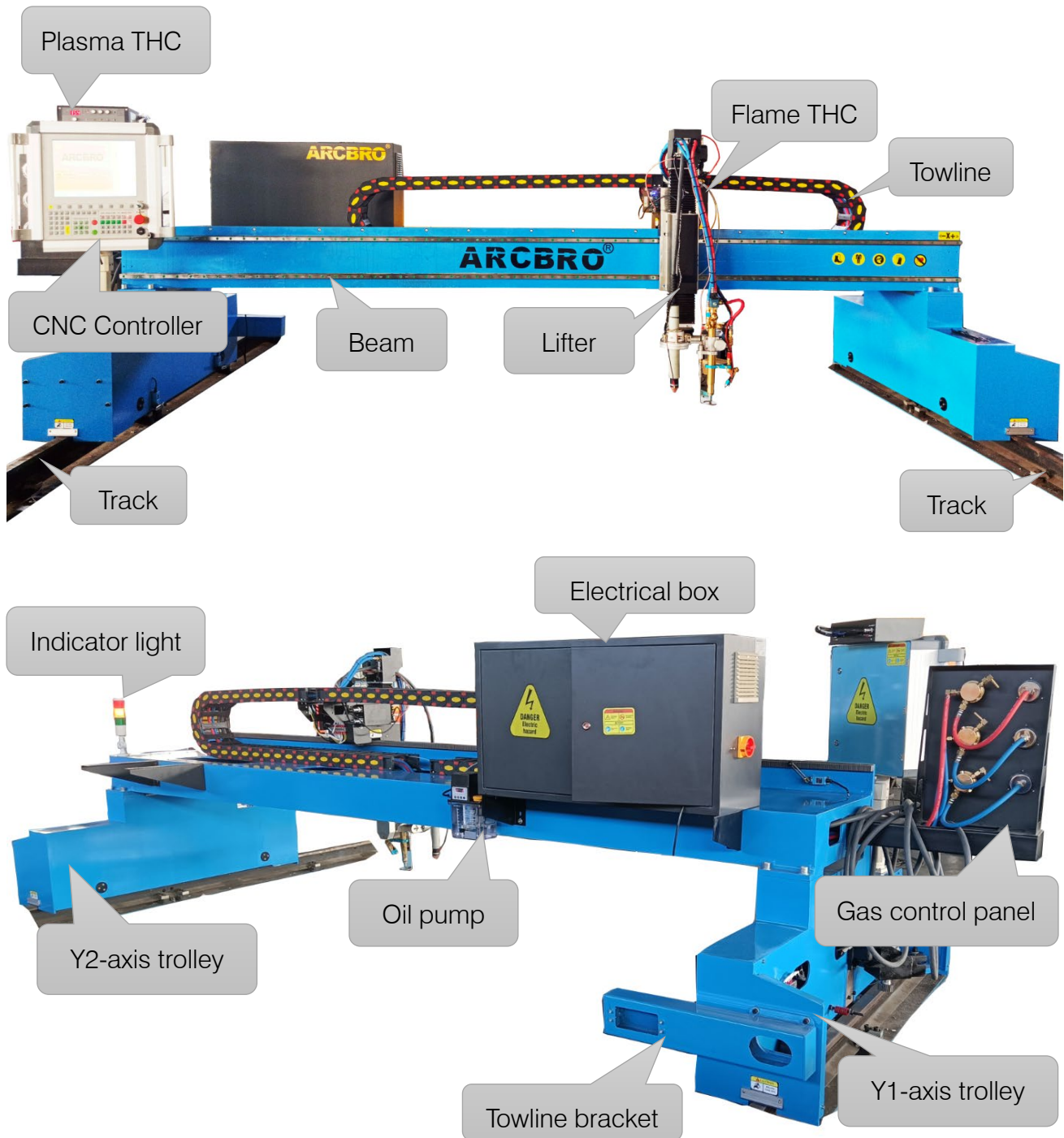
- ▶ The installer needs to prepare: electric drill, spirit level, forklift, welding machine Straightness measuring instrument. Two installation mechanical engineers are needed for faster installation.
- ▶ In order to install the machine faster, please read the installation steps carefully before installation,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

3.2 Basic assemble steps:

- ◆ Step 1 Building the track infrastructure.
- ◆ Step 2 Install the track.
- ◆ Step 3 Install rack.
- ◆ Step 4 Install the gantry.
- ◆ Step 5 Install Y axis the motor.
- ◆ Step 6 Install the towline bracket and towline.
- ◆ Step 7 Install the machine seat.
- ◆ Step 8 Install limit block and Mechanical limit.
- ◆ Step 9 Install the dust removal board.
- ◆ Step 10 Install plasma hold and Flame hold.
- ◆ Step 11 Connect the Power Cable and ARC Start, Feedback, ARC+/ARC-.

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- ◆ Step 12 Install flame Oxygen pipe, gas pipe.
- ◆ Step 13 Install the Y-axis trolley cover.
- ◆ Step 14 The oil pump Description.



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Step: Unpack the equipment and remove all items

Check and confirm all the spare parts be inside and well, and then move all the parts out safely.

X-Pro Standard Package



No.	Name	No.	Name
1	X-pro machine-1Set	2	Manual-1Pcs
3	USB disk and Nesting Software-1pcs	4	Towline -1Pcs
5	Y axis Track -1 Set Contains: track pressure plate and track pad plate, bolts, 1-Track/3-set plate	6	Y axis rack-1set L:1000mm-2M 1 Rack/ 4Pcs bolt
7	Bolts, spring washers, flat washers-1Set	8	Oxygen and gas pipe-1Set
9	Flame cutting nozzle-4Pcs	10	Y axis mechanical limit-4Pcs 80-80mm
11	Machine seat-1PcsInstall bolts to fix to the machine	12	

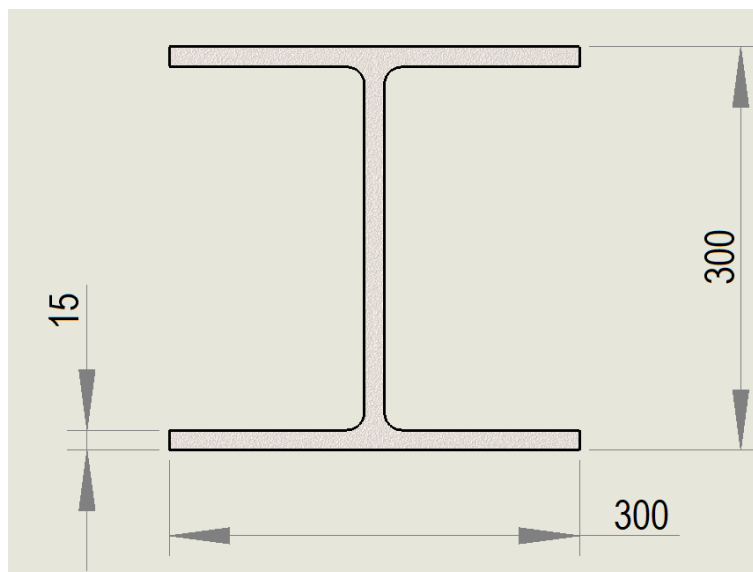


Standard configuration

Step 1 Building the track infrastructure -- Very important step.

-1. The track needs to be installed on the foundation; the foundation should be constructed with I-beam. Generally use 200-200 I-beam or 300-300 I-beam;

Install with 300*300 I-beam:



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I-beam is two parallel foundations, Height error $\leq 3\text{mm}$.

The center distance of the two I-beams = the center distance of X-pro.

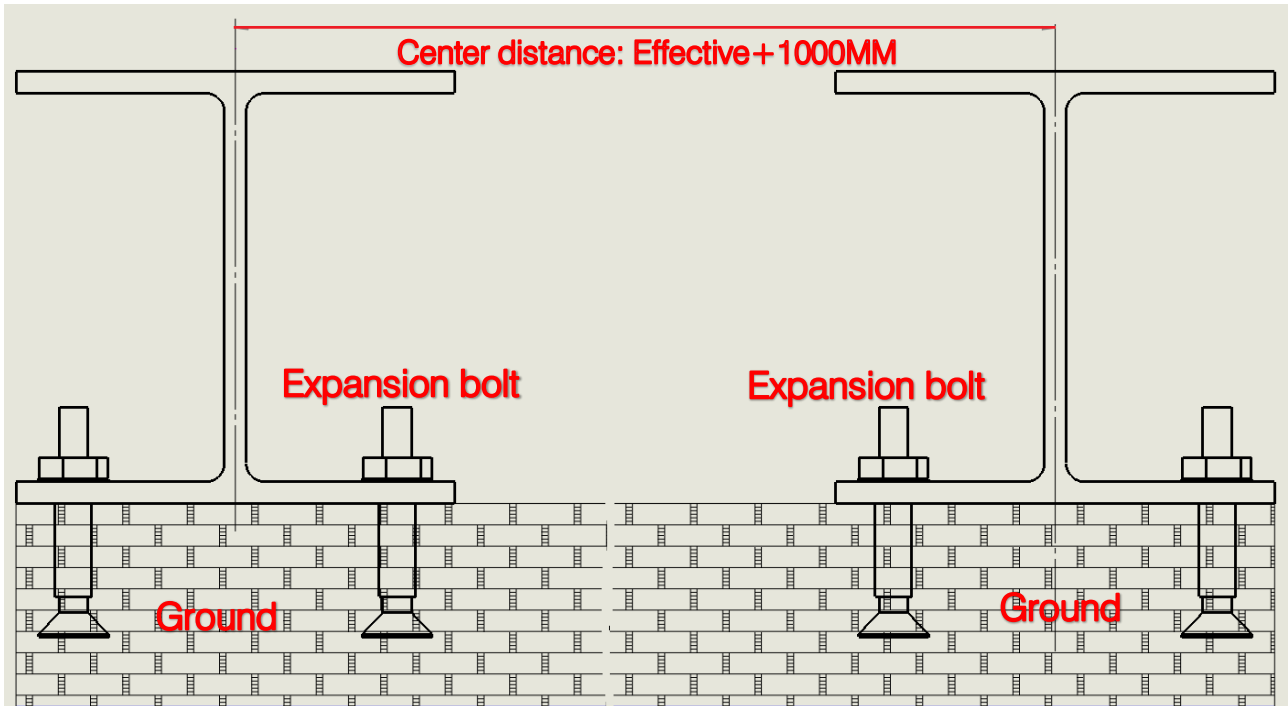
X-PRO center distance of standard configuration: effective + 1000mm.

Example:

effective size 3000*6000mm.

Center distance of I-beam: $3000 + 1000 = 4000\text{mm}$.

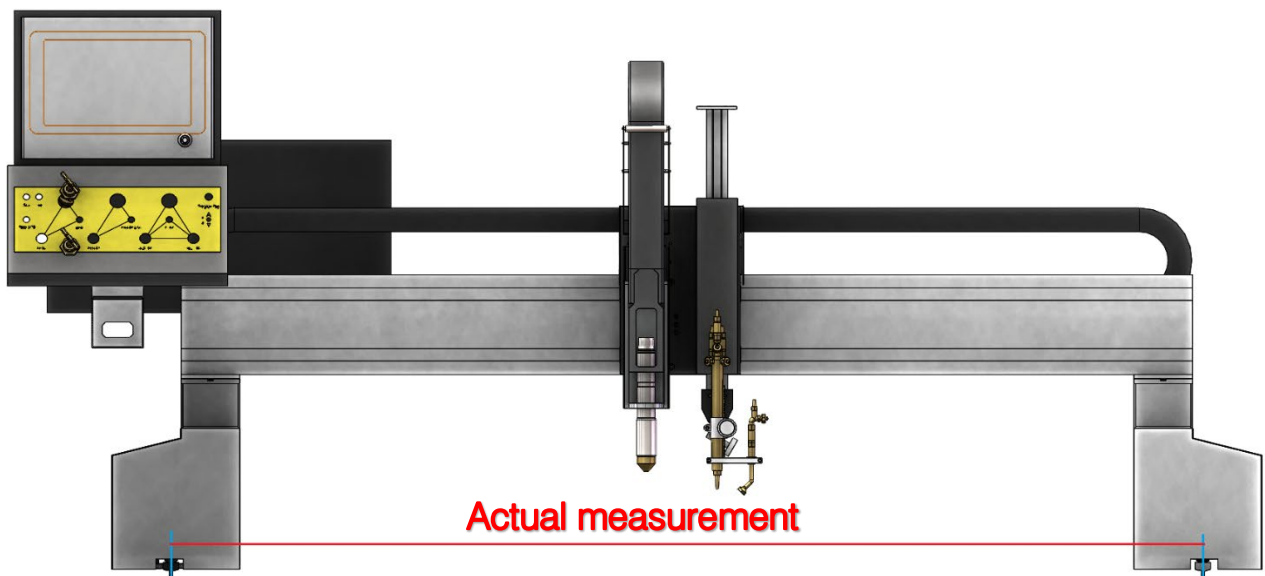
Length of I-beam: $6000 + 2000 = 8000\text{mm}$.



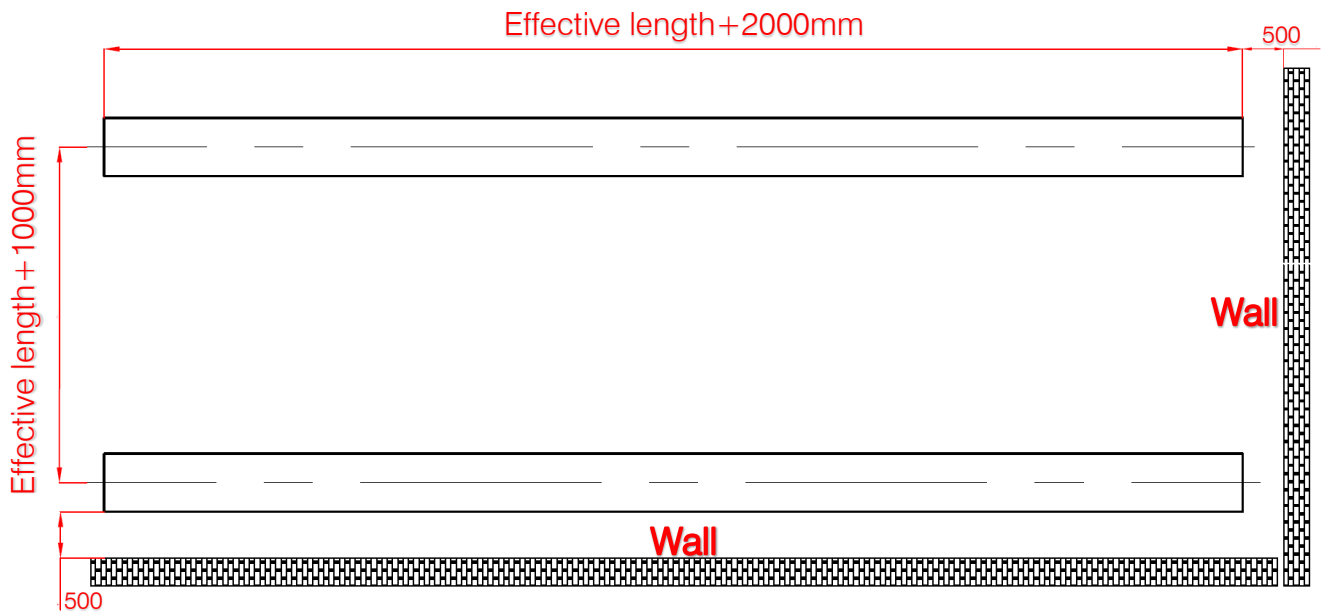
After determining the center distance and length, fix the I-beam to the ground with expansion bolts.

The I-beam needs to be machined with bolt holes and fixed with M8 expansion bolts.

Customers can also perform actual measurement, the center distance of the machine track.



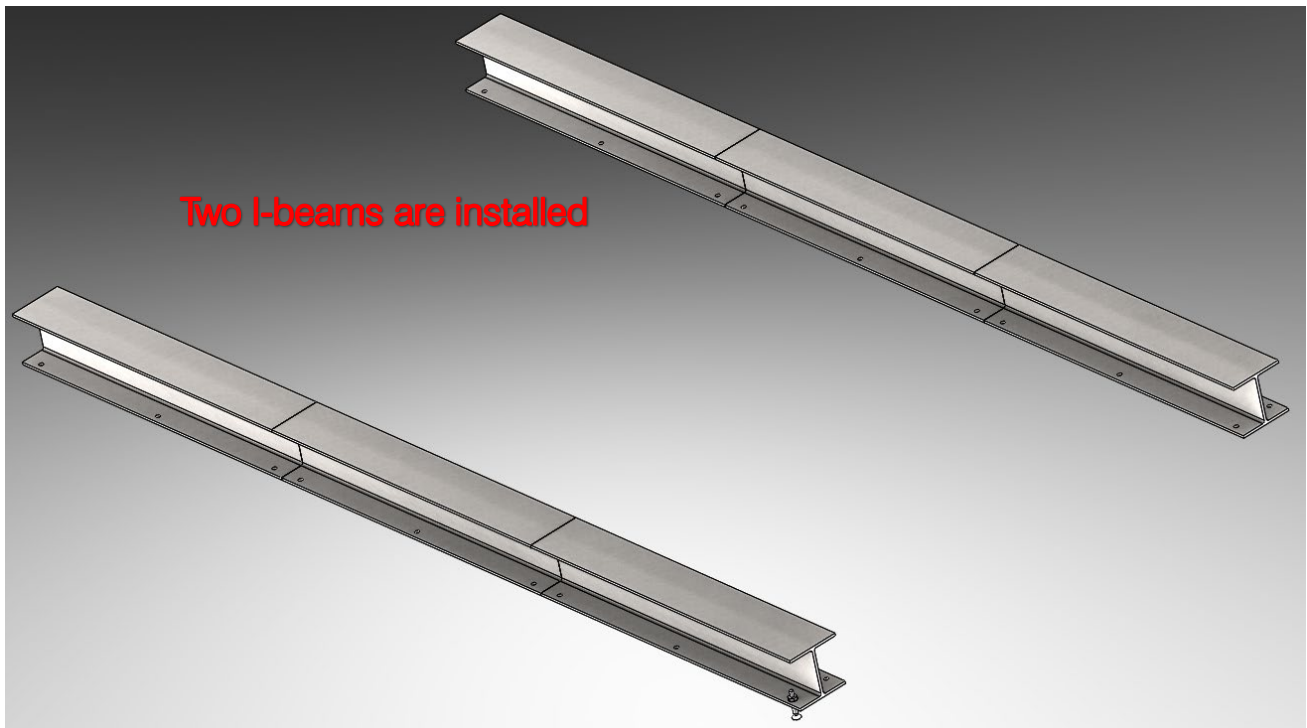
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If there is a wall near the machine, please reserve a distance of 500mm.

Two I-beams are installed:

◀ **Note:** Parallelism $\leq 3\text{mm}$, Straightness $\leq 5\text{mm}$.



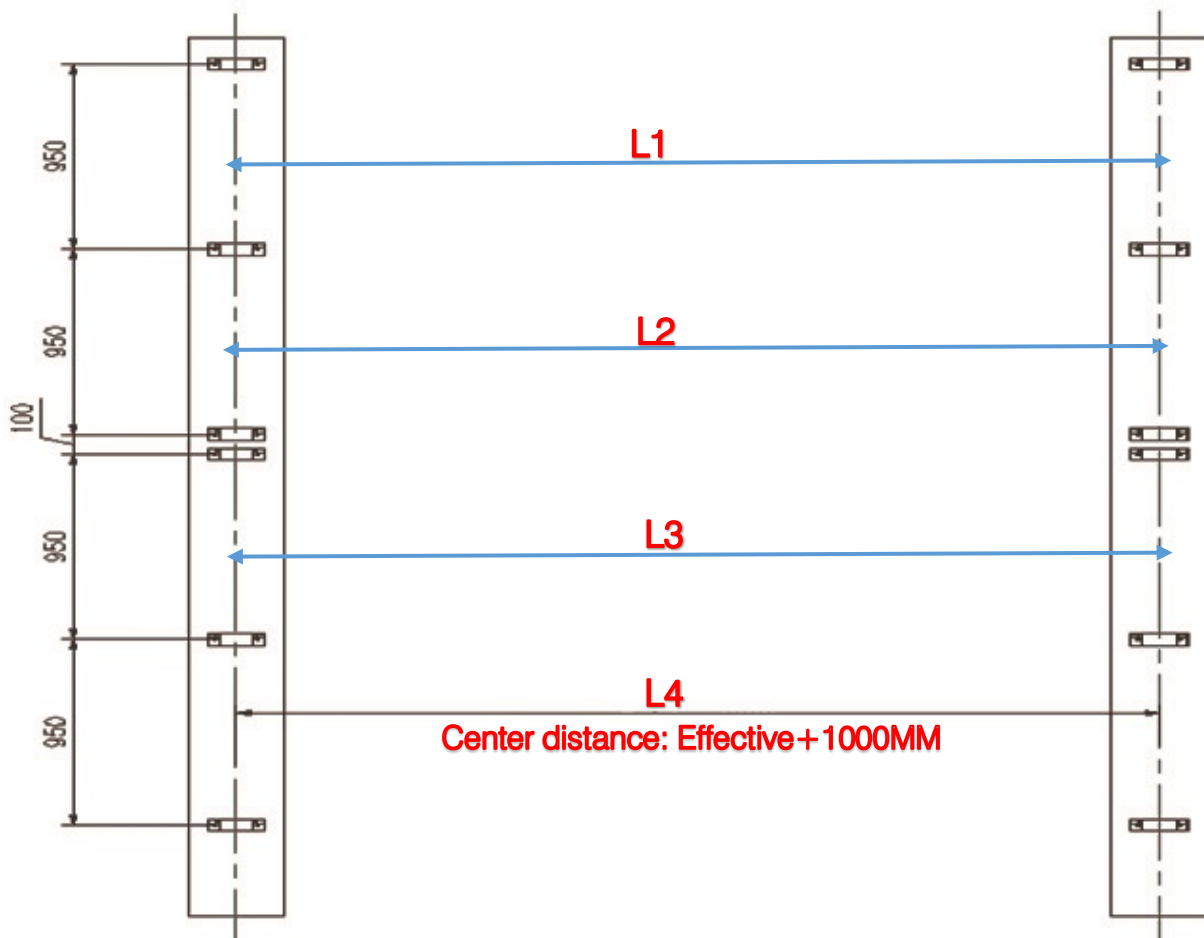
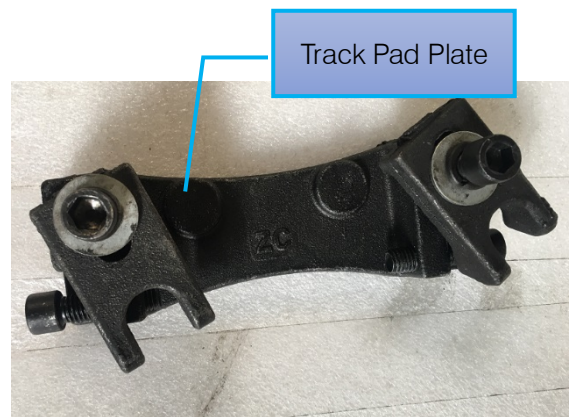
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Step 2 Install the track.

2.1 Install the track pad plate.

-1. Draw the center line for each side base I-beam.

Install all track pad plates onto the I-beam base along the center line. Following the measurement in sketch below: 3 Track pad plates for each track.



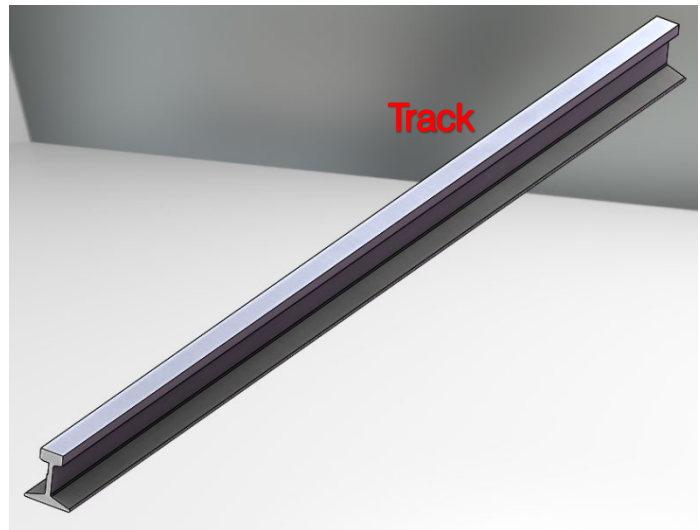
◀ **Note:** Measure the level height difference between each two blocks, it should be $\leq 5\text{mm}$. Measure the center distance (L1/L2/L3/L4) per 1000mm of base length and keep the Tolerance: $\pm 1\text{mm}$ to make sure each track pad plate would be straight and parallel enough.

-2. After determining the center distance and length, First Use electric welding to fix one side, then measure center distance and track pad plate, then fix the other side track pad plate.

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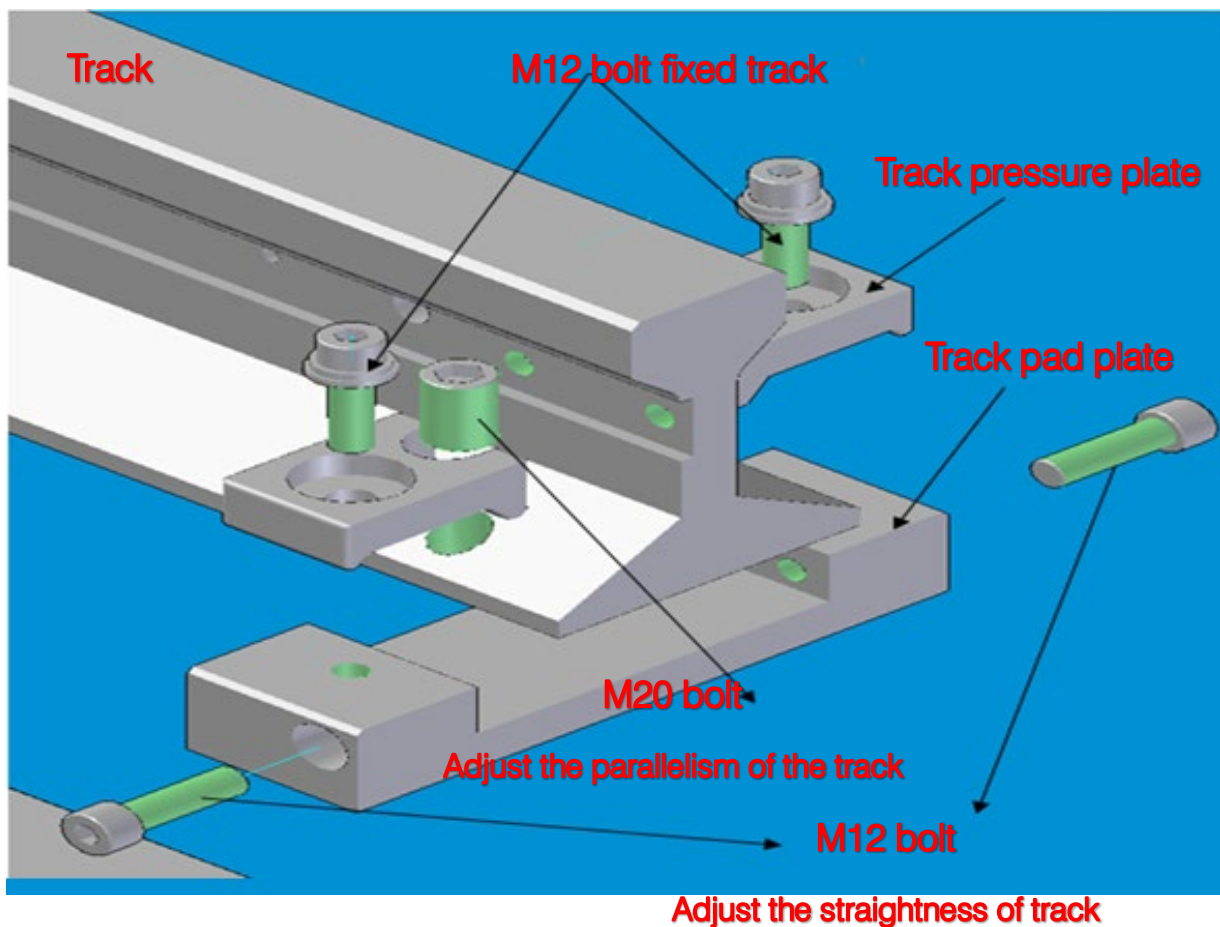
2.2 Install the track and track pressure plate.

-1. Install all track onto track pad plates along the center line.



-2. Fix the track with a pressure plate. 2 Track pressure plates for each Track pad plates.

◀ Note: First fix the track on one side. When installing, ensure that the center of the rail coincides with the center of the track pressure plate. It can be adjusted by straightness bolts.



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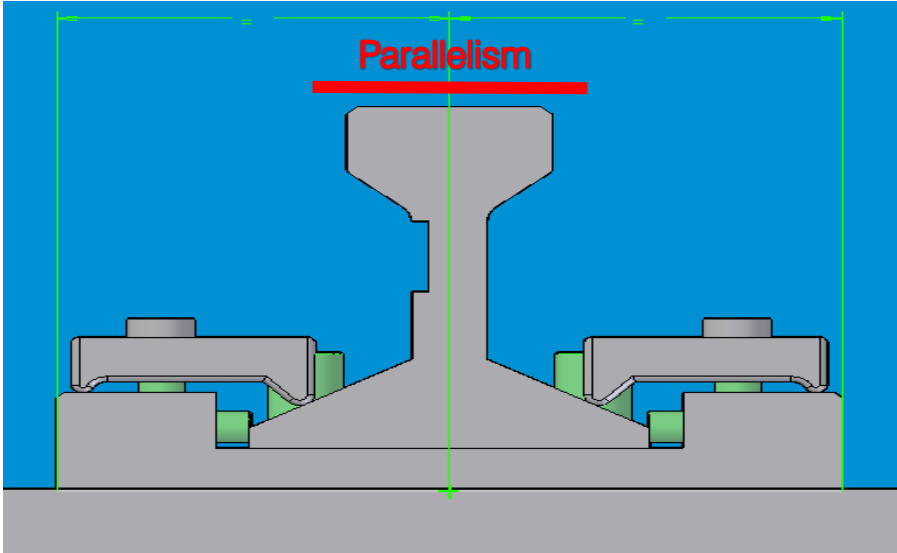
-3. Adjust the straightness and parallelism of the track.

Make sure the straightness tolerance is less than 0.1 mm for each 1000mm track.

Make sure the parallelism tolerance is less than 0.1 mm for each 1000mm track.

Straightness and parallelism can be adjusted by bolts.

Fix the track with a pressure plate--- Check the straightness and parallelism after fixing.



NOTE: In order to ensure the cutting effect, please debug the track repeatedly.

-4. Install another track in the same way.

Install another track to ensure the center distance and the parallelism of the tracks on both sides within the error range.

Installed the track:

Re-check the two sides' whole length track for their levelness and parallelism.

Overall track straightness ≤ 0.5 , Overall track parallelism ≤ 0.3 .



12

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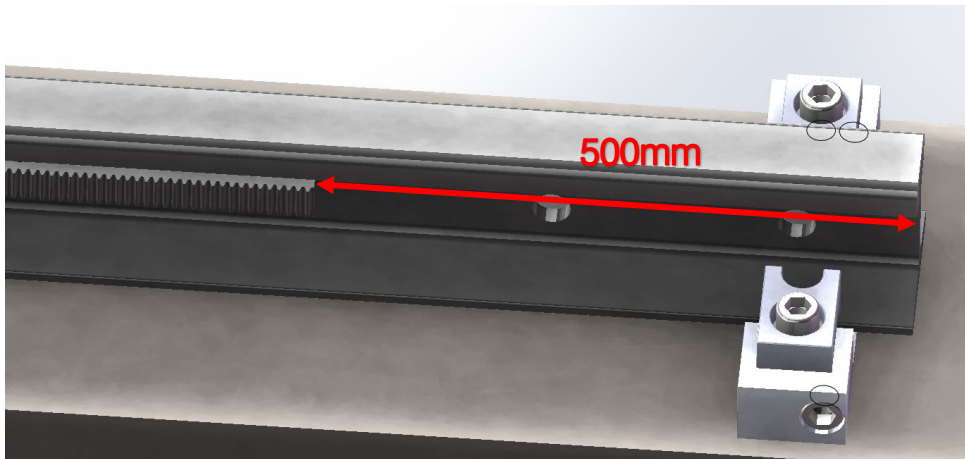
Step 3 Install rack onto track

Take out the rack and bolt.

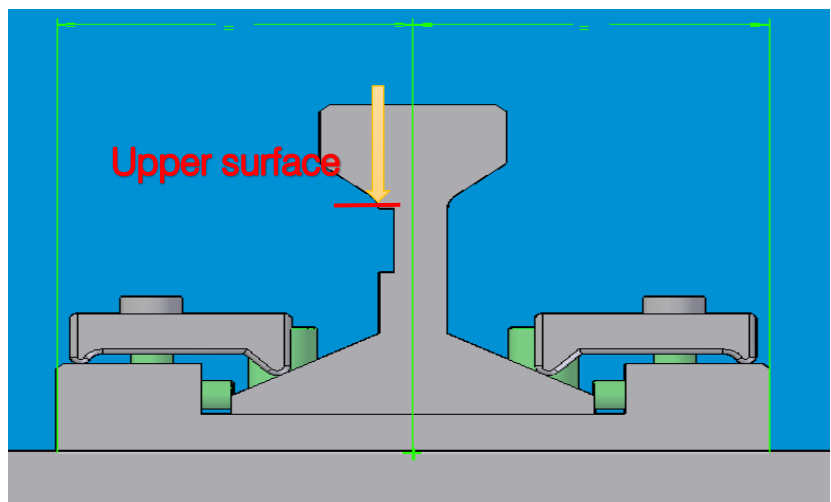


The track has reserved rack mounting holes.

NOTE: 1. Install the rack from one end of the track. The distance between one end of the rack and the end of the track is 500mm. This distance is to ensure the range of machine movement.



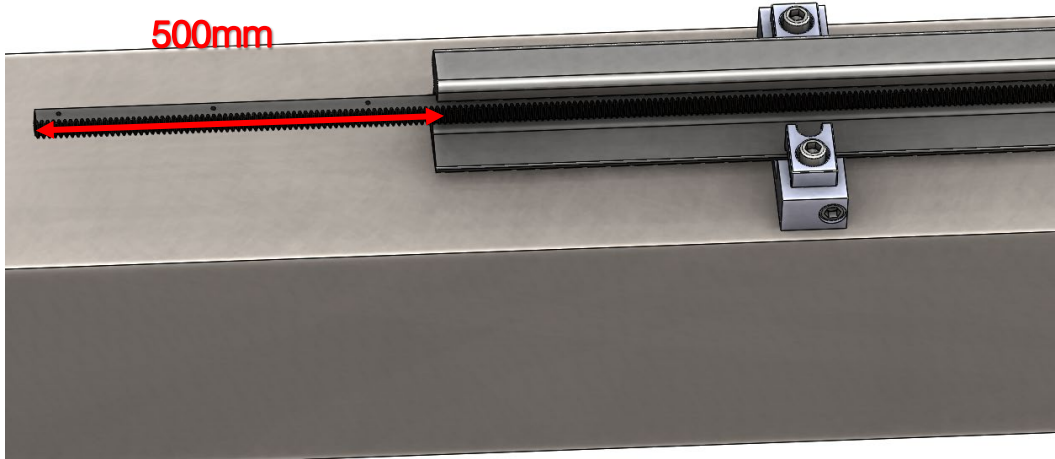
2. Track reserved rack positioning slot. When the rack is installed, it is close to the upper surface of the positioning groove.



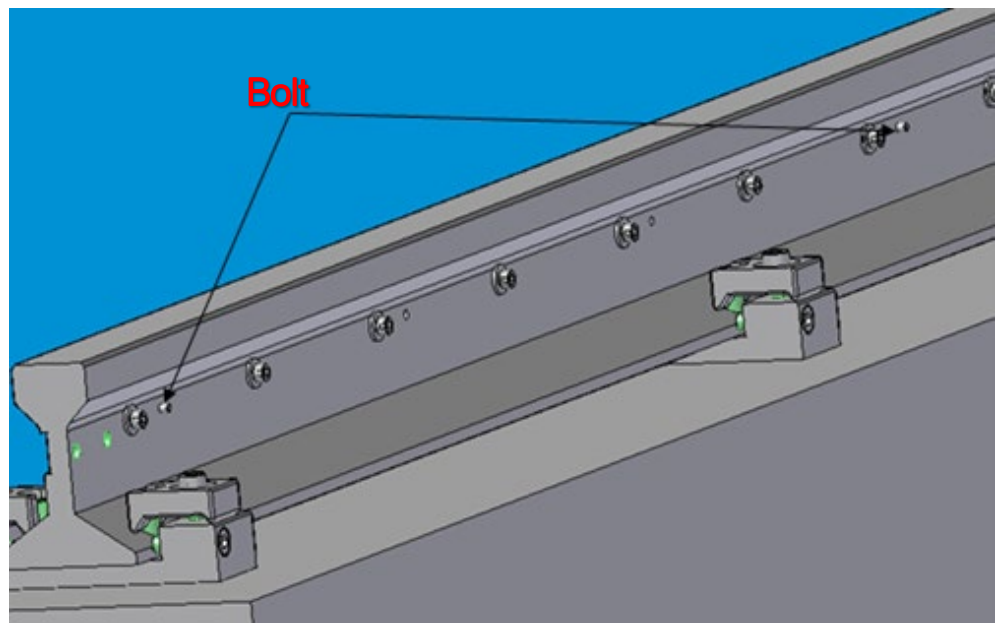
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-3. The other end of the gear is more than 500mm, In order to ensure that the butt joint of the rack and the butt of the track do not overlap.

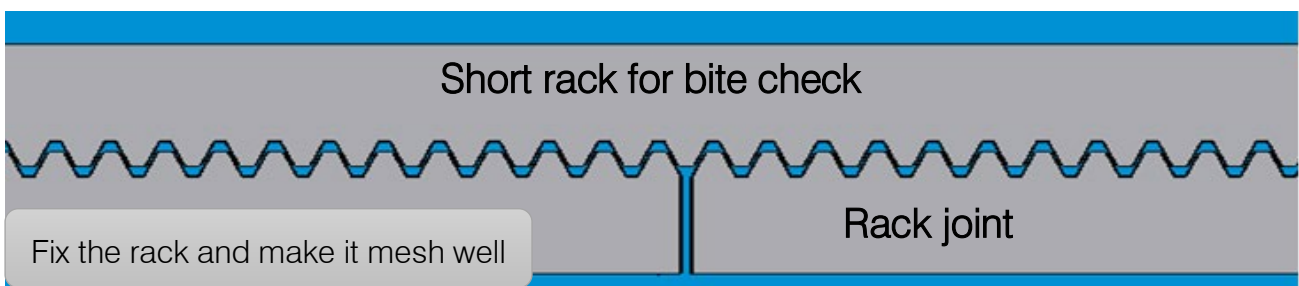
Thereby improving the smoothness of the machine's movement.



Fix each rack with bolts:



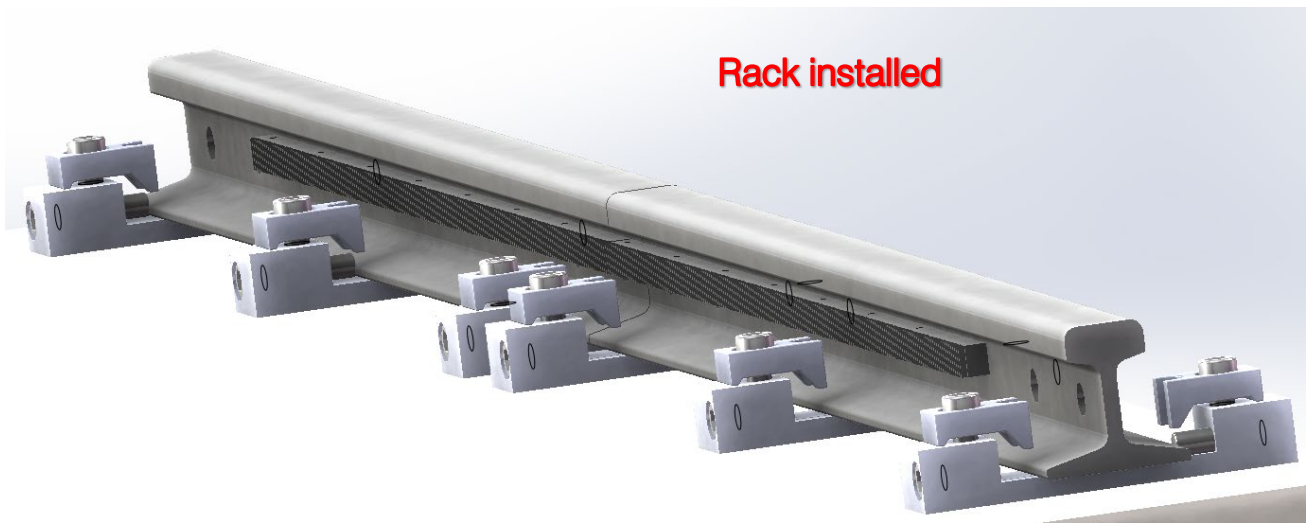
Make sure the meshing degree at the rack joint. Check by another short rack, shows below), then fix it by screws.



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Installed the rack:

Mount each rack according the way above.

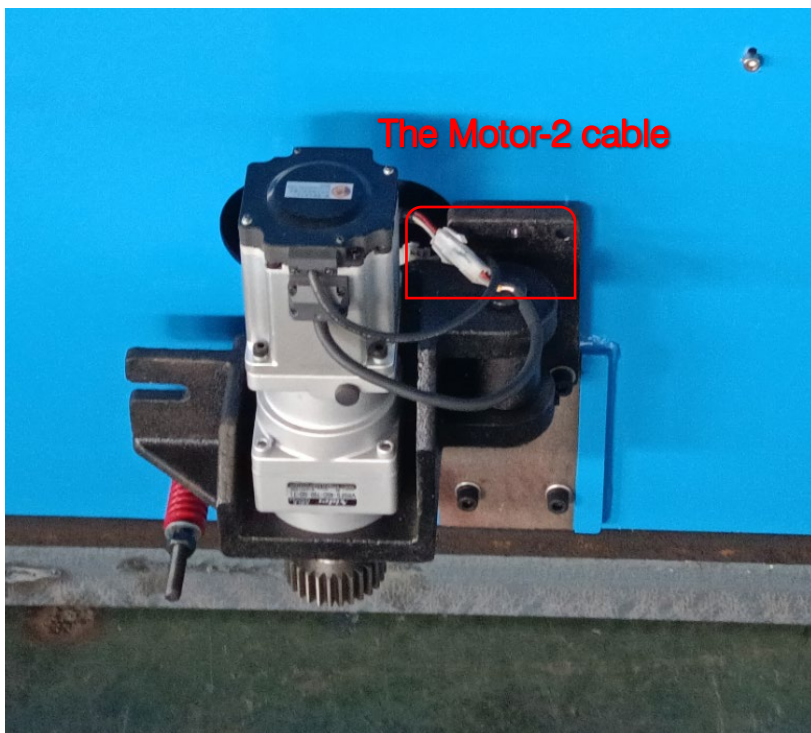


Step 4 Install the gantry.

4.1 Remove the motors on both sides of the trolley.

The motor $\leq 1000W$, please refer to the operation steps:

- Plug off the wires of the Motor-2 cable;
- Loosen the bolts to remove the motor, (To Avoid damage reducer and motor、 track when we load the gantry). Shows below:



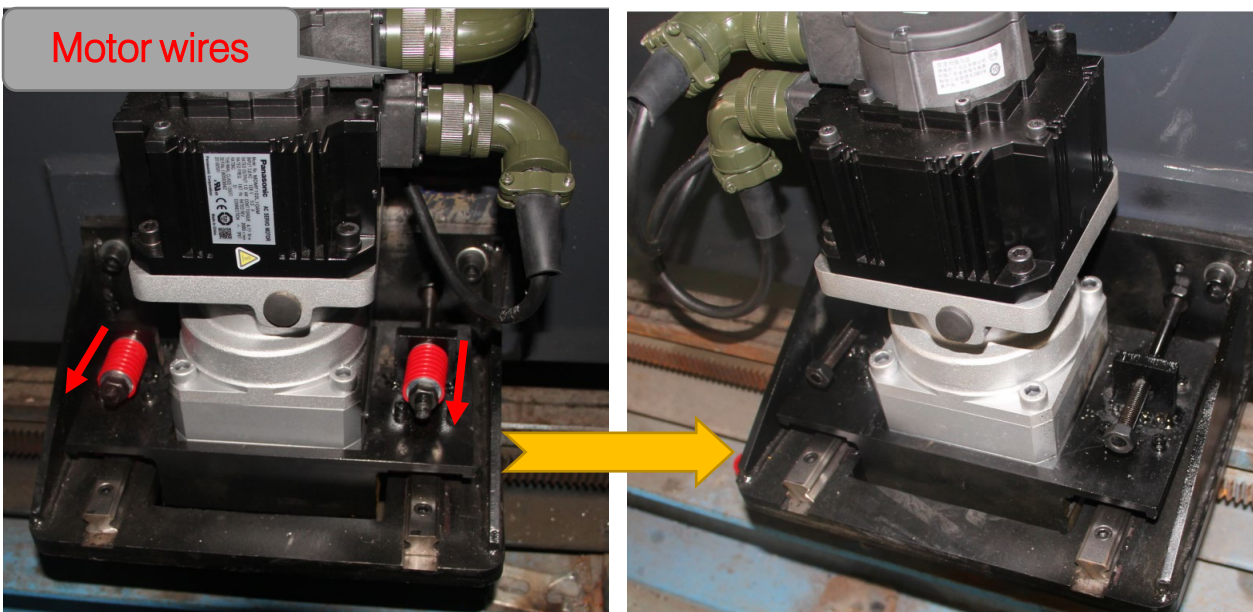
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-- Remove the reducer as the steps above. The same steps for the other side reducer to get the whole gantry ready for loading.

The motor is 1000W, please refer to the operation steps:

--Plug off the wires of the Motor-2 cable;

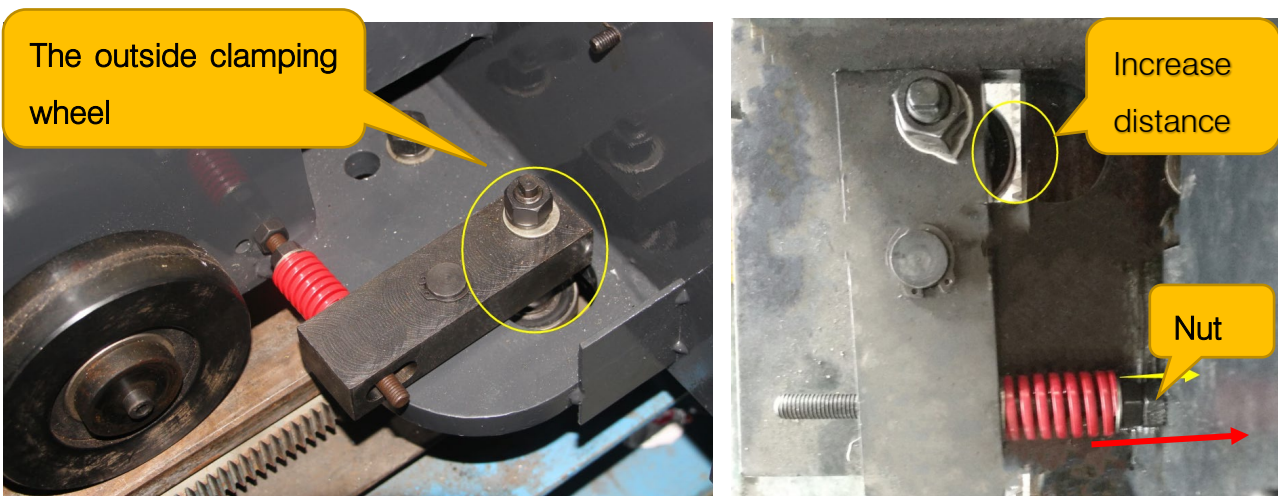
--Unload the screws to remove its springs, pull the reducer(with motor) outwards to extend the width between the two side of reducers(to avoid damage reducer and motor、 track when we load the gantry). Shows below:



-- The same steps for the other side reducer to get the whole gantry ready for loading.

4.2 Disengage the outside clamping wheels of the gantry

--Loosen the nut as indicated by the arrow as showed below.



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Disengage the outside eccentric clamping wheel to extend the clamping width range of the two clamping wheel to avoid damage when we load the gantry onto the track guide later as showed below.

The same steps for the outside clamping wheels for the rest ends of gantry.

4.3 Install the gantry and fix the guide clamping wheels

--Lift the gantry, face the two side gantry feet to the two side track carefully, then load it onto the track carefully.

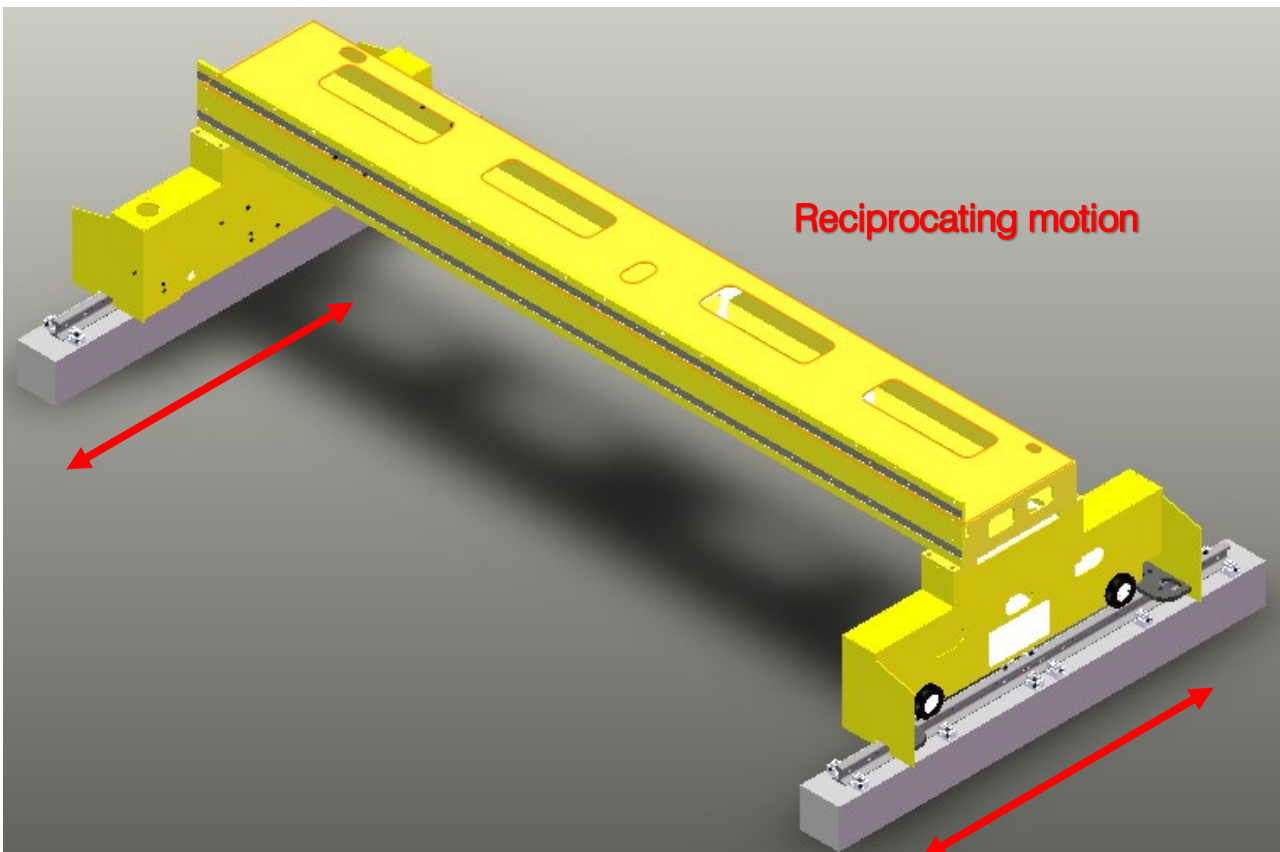
--Observe the 4 wheels of each gantry end to make sure:

- ❖ The center of the wheels coincides with the center of the track;
- ❖ Loosen the bolt, Adjust the outside clamping wheel to make sure they properly clamp the guide in a **proper tightness** so that the gantry moves smoothly.
- ❖ Adjust another the outside clamping wheel.

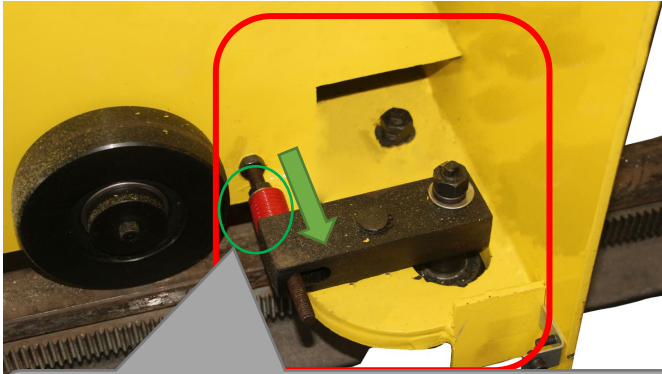
--Push the machine, do reciprocating motion on the entire track. Check whether the machine smooth motion.

Note:

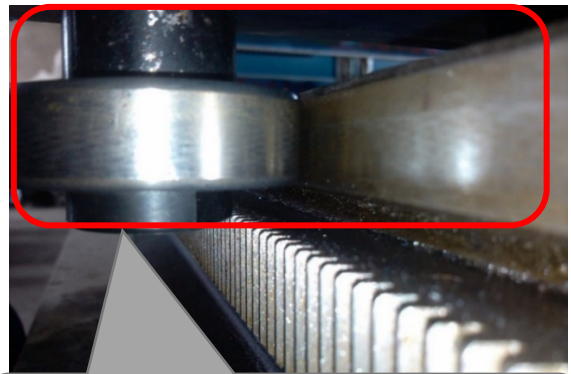
- 1- In the process of pushing the gantry onto the two side track, make sure the top pressing wheel center line and the track center line aligned.
- 2- When the surface of the eccentric clamping wheel is in contact with the surface of the guide rail, it is necessary to be elastic.



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Loosen the bolt to Pull the outside clamping wheel back.



Fix the inside clamping wheel to guide properly.

Step 5 Install Y axis the motor.

The motor $\leq 1000W$, please refer to the operation steps:

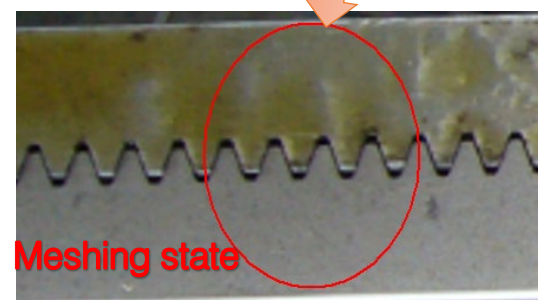
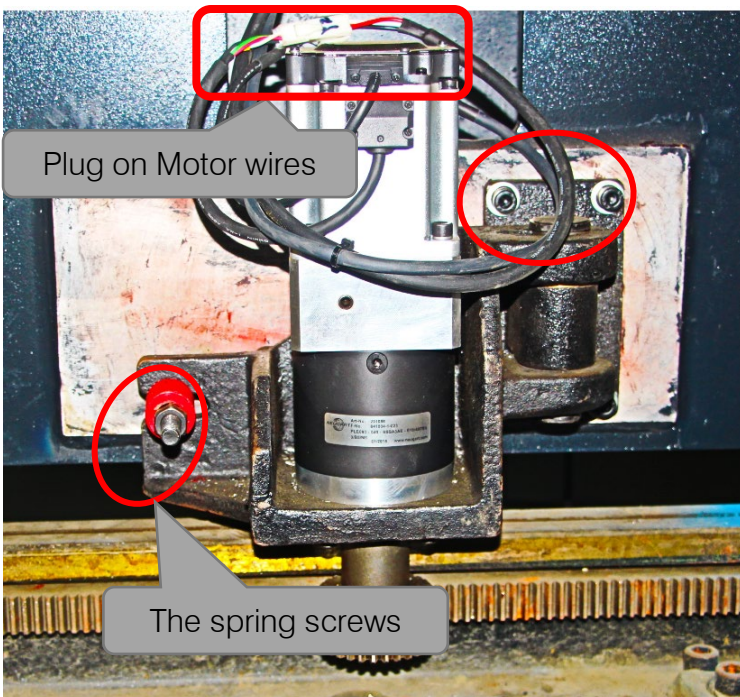
--Fix the motor with 4 bolts.

--Place the gear rightly facing to the rack and push the reducer and motor in to bite rack well in a proper tightness, then fix the reducer by screwing the spring screws;

--Plug in the motor wires;

Note: If the rack and pinion do not fully meshing, pull the reducer outward and rotate the pinion to make the rack and pinion mesh well(Plug off the wires of the Motor rotate the pinion).

--Install the other side motor in the same way.



Unique Solution

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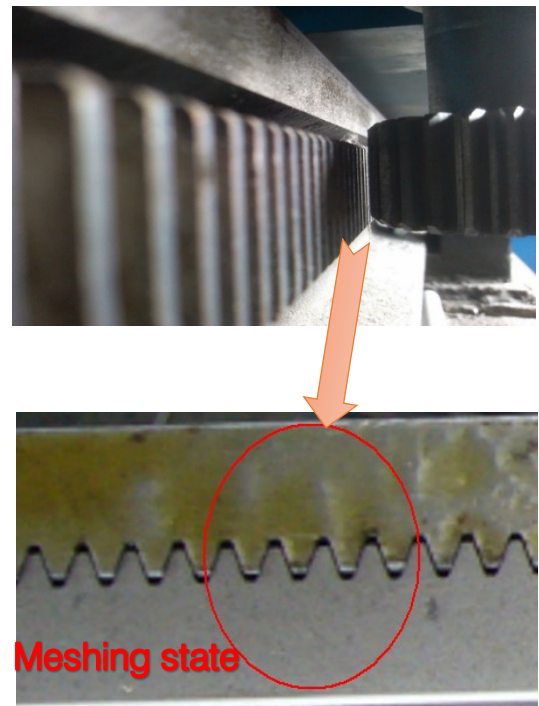
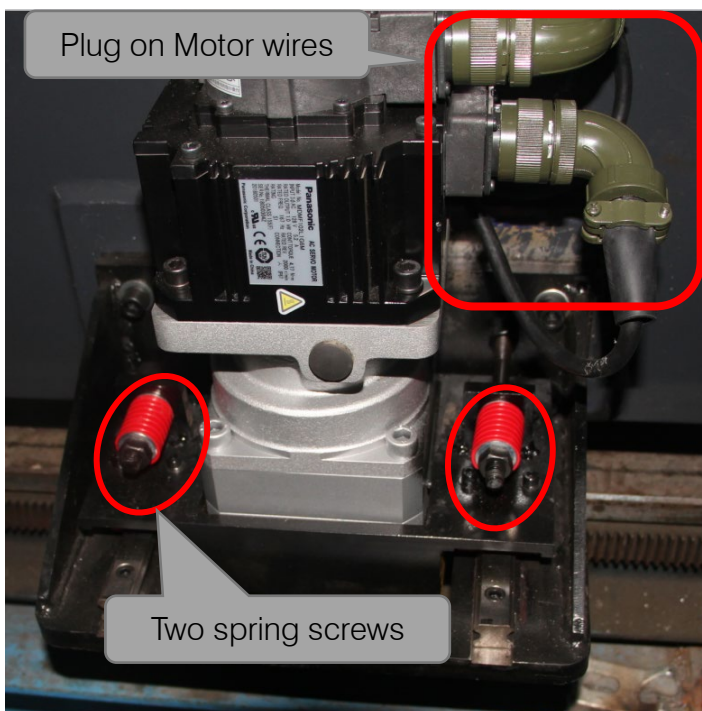
The motor $\geq 1000\text{W}$, please refer to the operation steps:

--Place the gear rightly facing to the rack and push the reducer and motor in to bite rack well in a proper tightness, then fix the reducer by screwing the two spring screws;

--Plug in the motor wires;

Note: If the rack and pinion do not fully meshing, pull the reducer outward and rotate the pinion to make the rack and pinion mesh well(Plug off the wires of the Motor rotate the pinion).

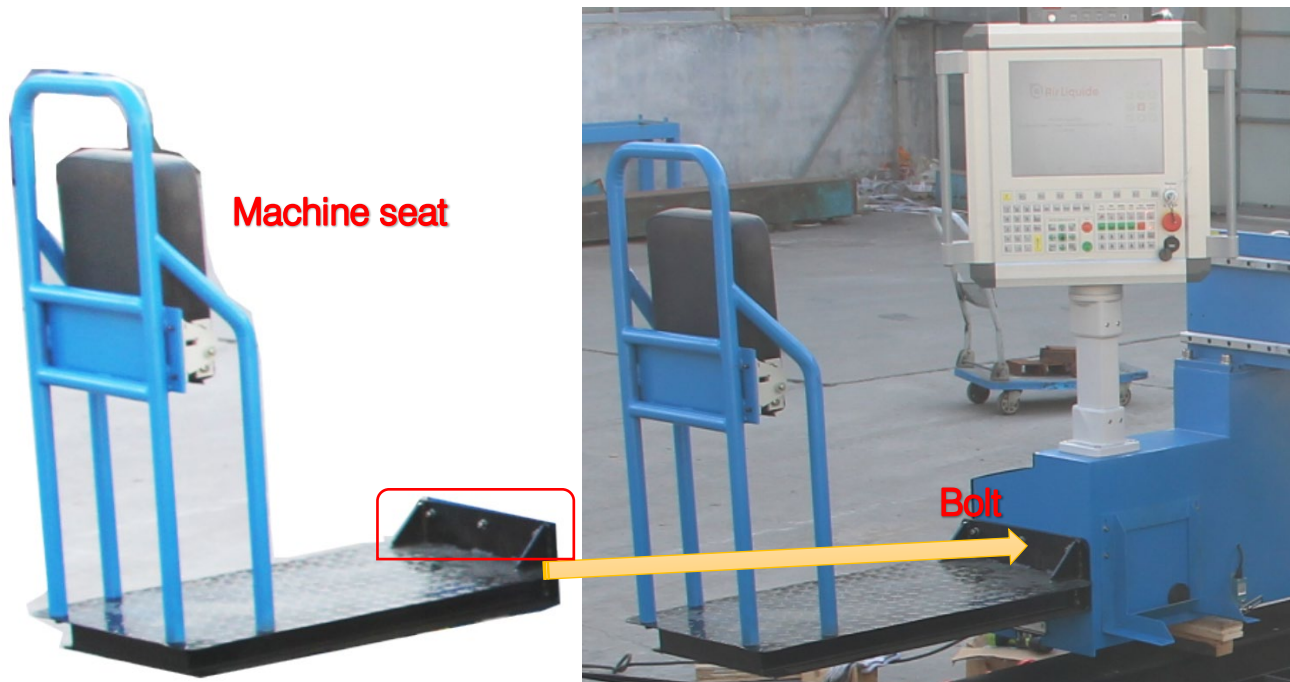
--Install the other side motor in the same way.



Service Support Spirit

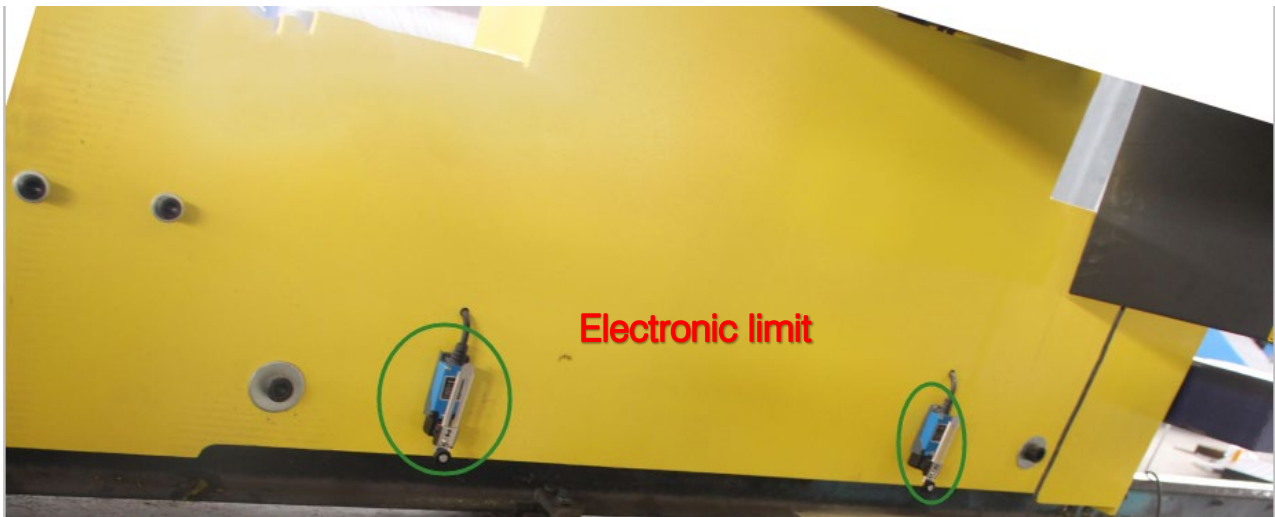
Step 6 Install the machine seat.

--Fix the machine seat with bolts.



Step 7 Install limit block and Mechanical limit.

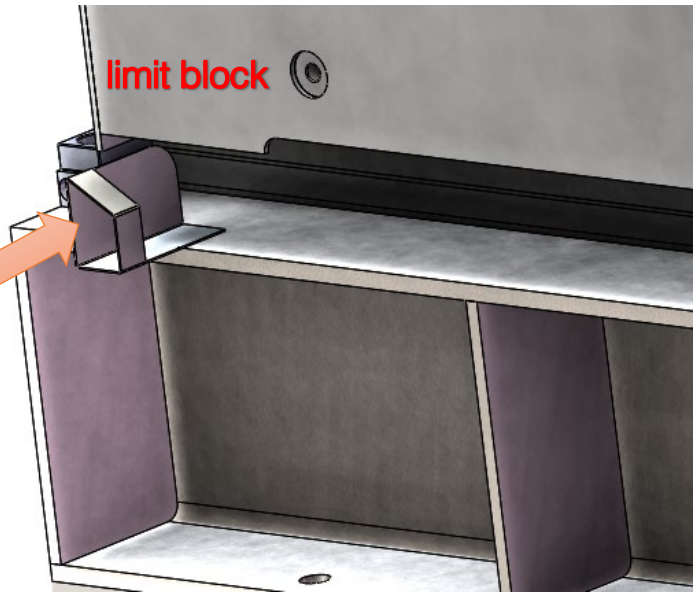
Install the Limit Switch and Limit Block.



Adjust the height of the electronic limit extension rod so that it can touch the limit block.

The position of the limit block: move the machine, block the machine when the gear and rack are about to disengage, and then adjust the limit block and electronic limit.

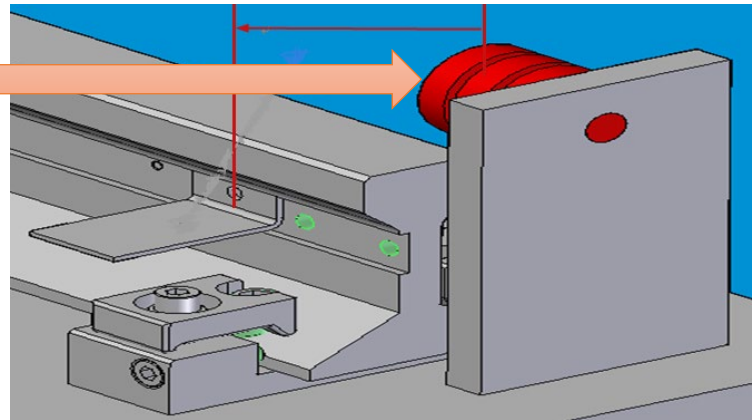
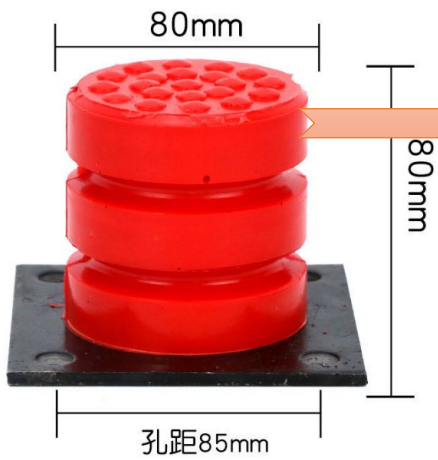
Service Support Spirit



--The same steps to finish the another Limit Switch installation.

Install Mechanical limit.

Make a mounting plate for the mechanical limit, and then install the mechanical limit with bolts.

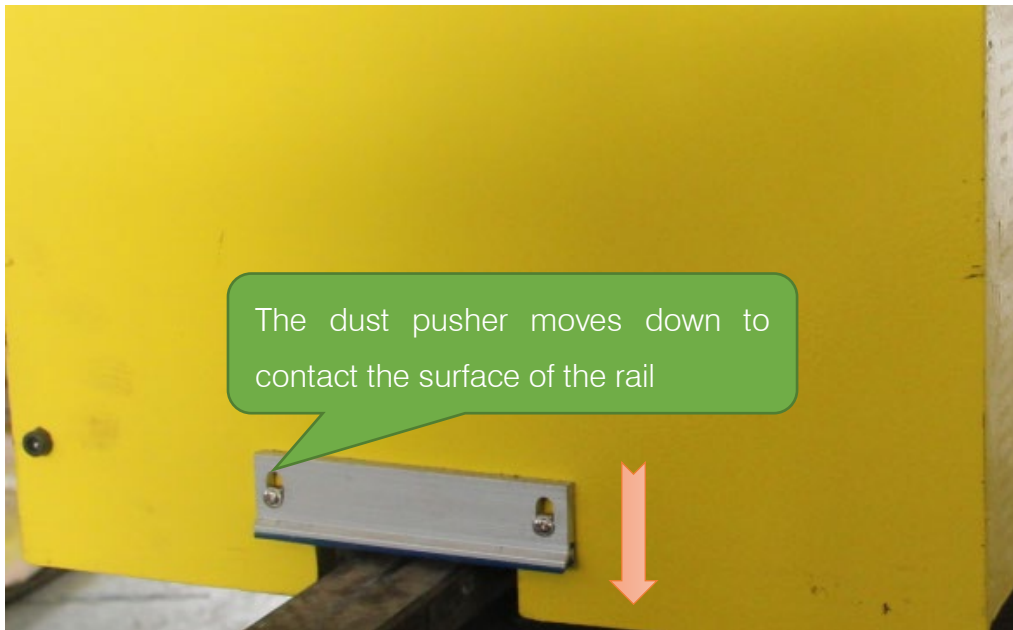


Note: Install the other three mechanical limits in the same way.

Service Support Spirit

Step 8 Install the dust removal board.

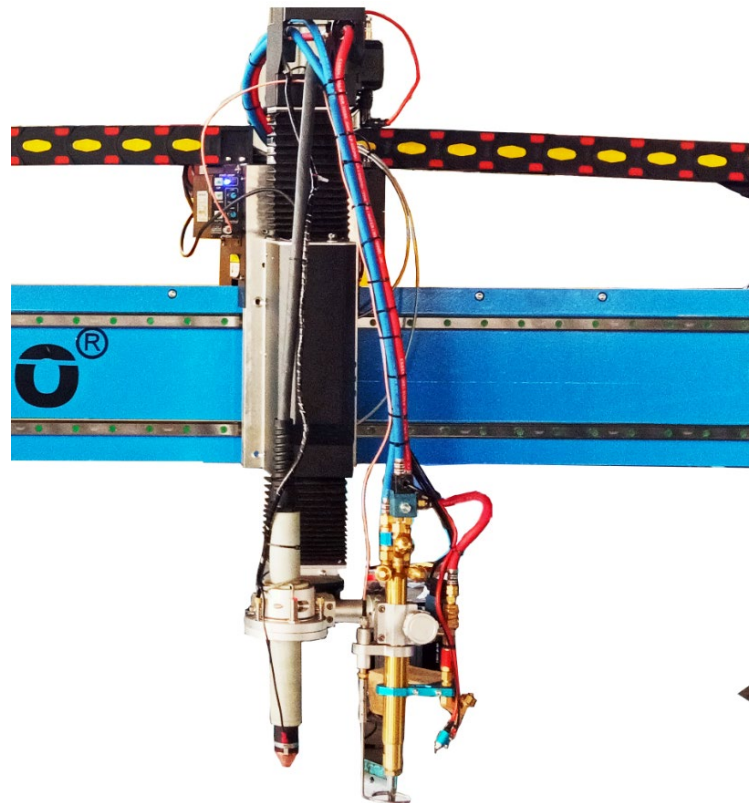
The dust pusher moves down to contact the surface of the track.



--The same steps to finish the other 3 Dust removal board.

Step 9 Install plasma hold and Flame hold.

If the torch hold is removed, please install.



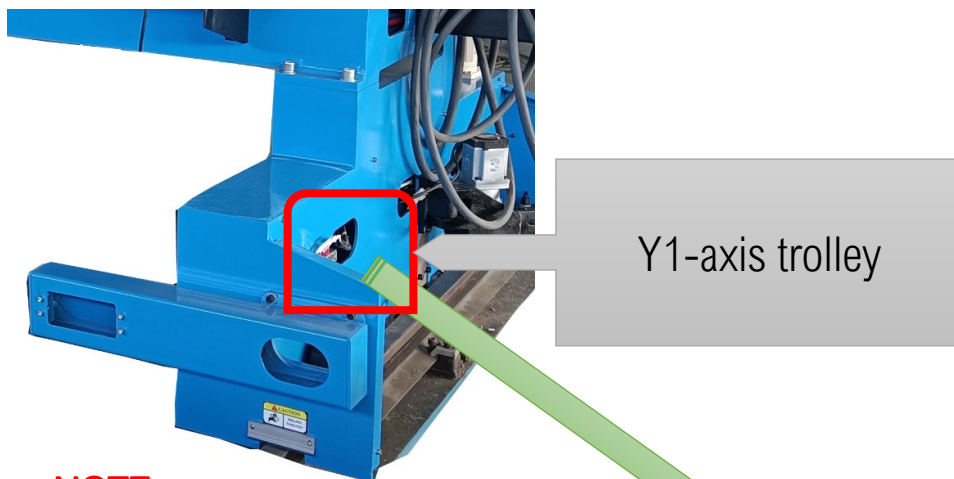
Service Support Spirit

Step 10 Connect the Power Cable and ARC Start, Feedback, ARC Signal.

10.1 Connect the arc start, feedback , Arc+ /ARC- Signal.

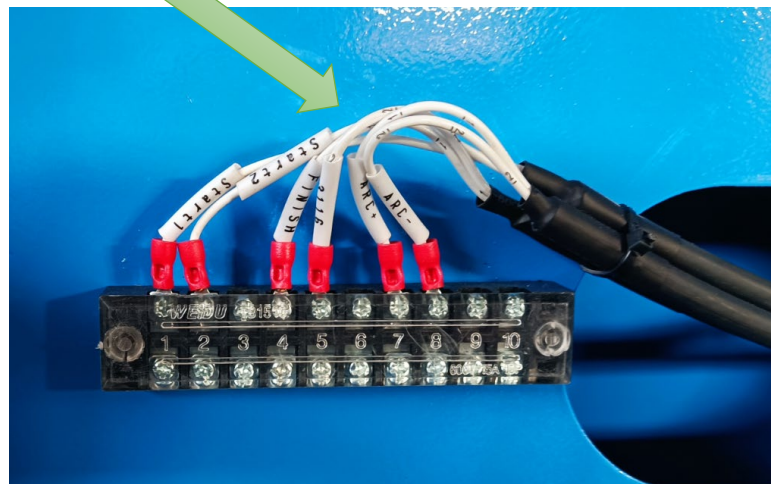
◆ Need to prepare 3Pcs/ 2-core cables.

Machine	Cable	Terminal No.	Description
X-PRO connect terminal	2-core	START	The CNC plasma arc initiation signal
		START	
	2-core	TRANS/FEEDBACK	Notifies the CNC that an arc transfer has occurred
		TRANS/FEEDBACK	
	2-core	ARC+	The CNC arc voltage signal
		ARC-	



NOTE:

1. The length of the signal cable needs to be determined according to the effective size of the machine and the actual installation needs.
2. The signal cable needs to pass through the trolley and the longitudinal drag chain.



Service Support Spirit

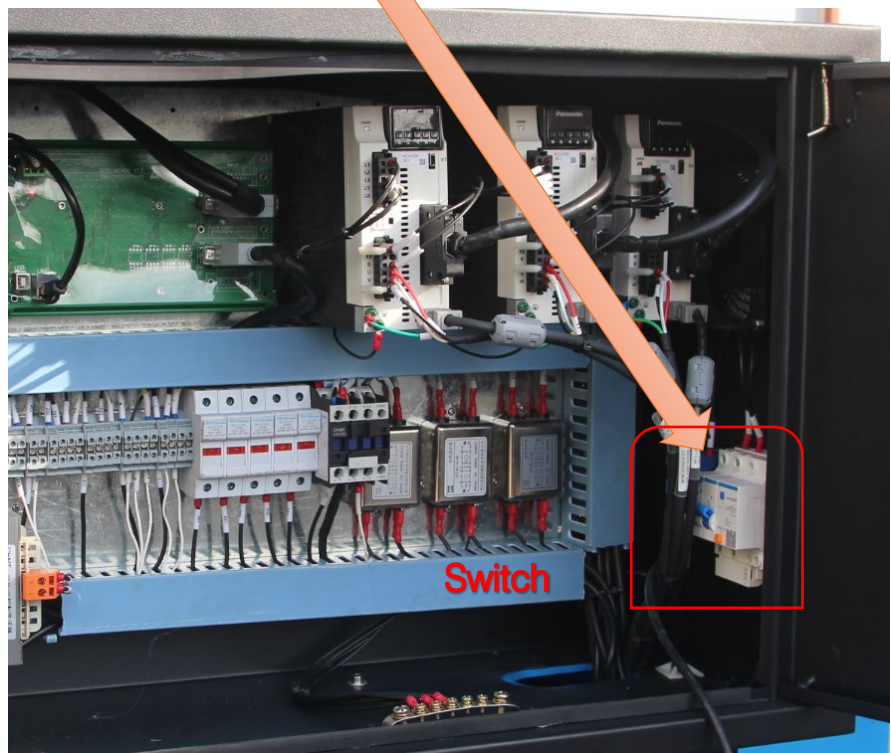
10.2 Connect the Power Cable.

--Need to prepare a 3-core cable 10 square cable:

--Connect one end of the cable to the switch in the electrical box.



--The length of the power cable needs to be determined according to the effective size of the machine and the actual installation needs.



◀ Note: The power cable needs to pass through the trolley and the longitudinal drag chain.

Service Support Spirit

Step 11 Install flame Oxygen pipe, gas pipe.

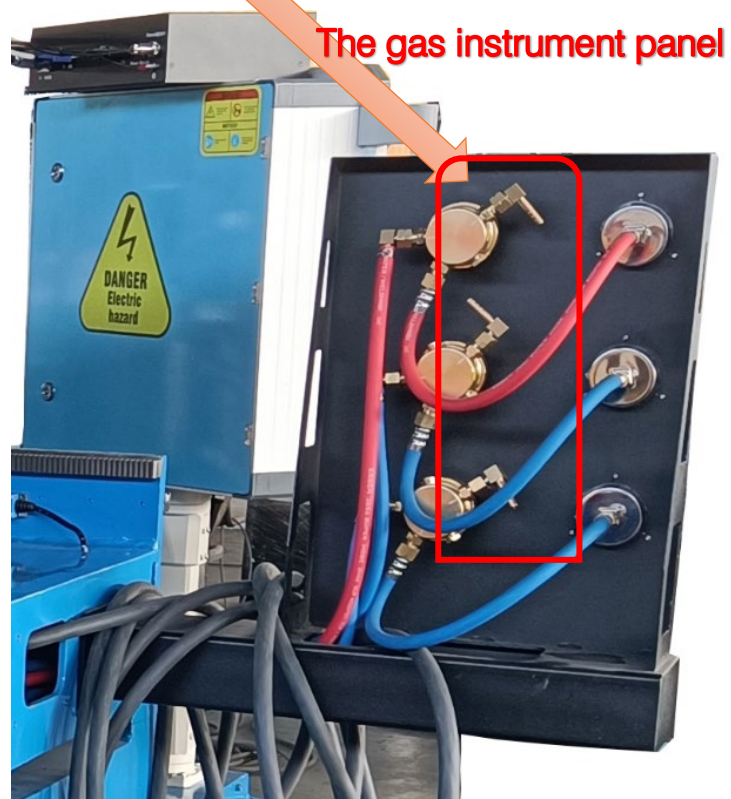
Install the oxygen (red) gas (blue) pipe according to the color, and connect it to the gas instrument panel with a nut.

--The other end of the trachea is connected to the gas and oxygen tanks and fixed with a hose clamp.



NOTE:

1. The flame Oxygen pipe, gas pipe needs to pass through the longitudinal drag chain.
2. Install the oxygen (red) gas (blue) pipe according to the color, and connect it to the gas instrument panel with a nut.



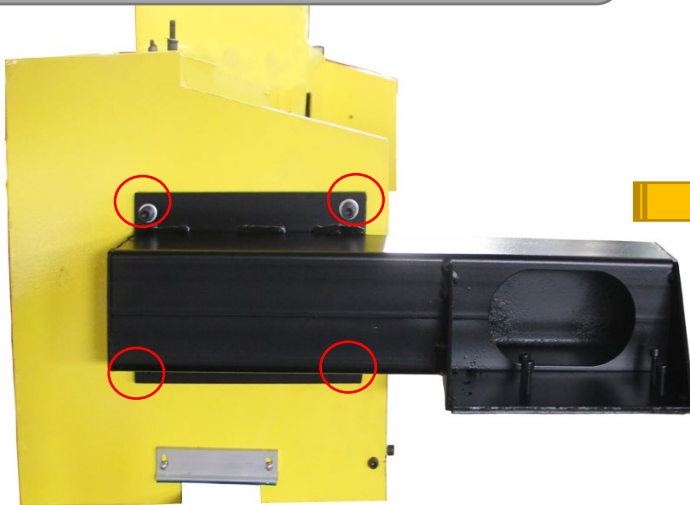
Service Support Spirit

Step 12 Install the towline bracket and towline.

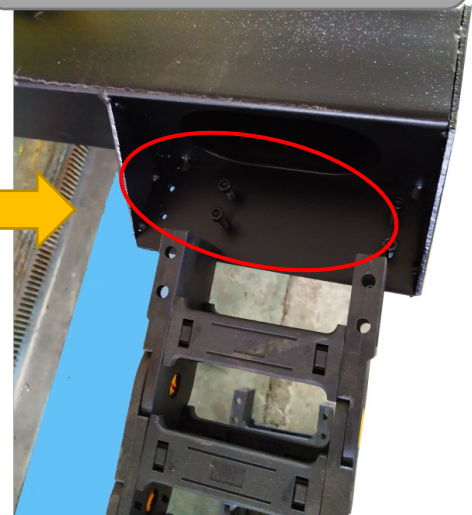
--Install the towline bracket on the machine with screws.

--Install the towline on the towline bracket with screws.

Install the towline bracket on the machine with screws.



Install the towline on the towline bracket with screws.

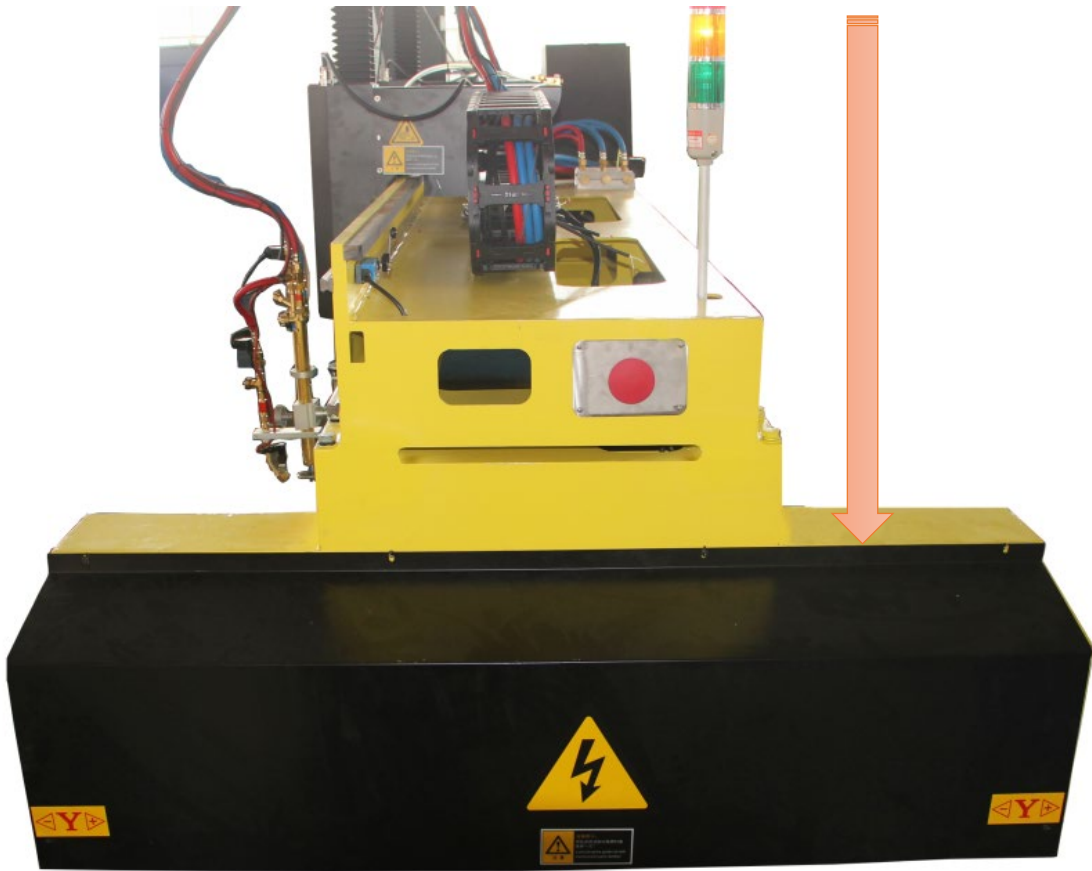


Step 13 Install the Y-axis trolley cover.

Fix the one side covers back to the gantry. The cover on the other side, wait for the plasma to be connected before installing.



Fix with bolts

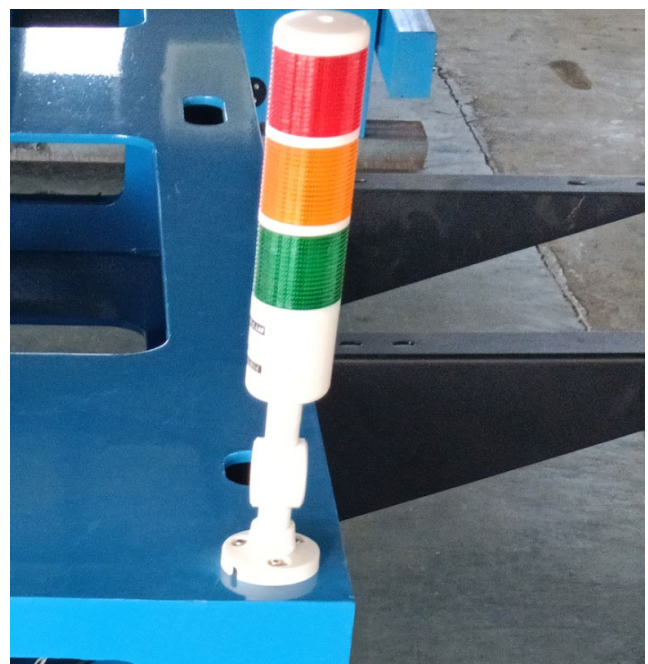


Step 14 Installation machine indicator

Install the operation indicator on the machine with screws.

NOTE:

1. Recovery indicator installation,
2. If the machine has no indicator light, please ignore this step.



Service Support Spirit

Step 14 The oil pump Description.

Description of the oil pump:

The oil pump has lubrication, intermittent, setting and other functions. Lubrication and intermittent time can be set manually. The ACT green light is on for the automatic fuel supply time, and the time range is 1-60s.

The INT red light is on for intermittent time and the time range is 10-999min. Press the SET button for 3 seconds to enter the lubrication program setting program. At this time, the number on the display flashes (green light), press ▲ or ▼ to increase or decrease to the required time; press the set button again, the display jumps to the intermittent time setting (red light is on), then the number flashes ▲ or ▼ Increase or decrease to the required time, press the set button to complete the setting. The oil pump starts working automatically at the new set time.

When the oil pump works abnormally, the number flashes and there is a buzzer sound, and the oil pump stops working, indicating that there is a shortage, and it is necessary to add lubricating oil.



Machine installation is complete

