



## MetalFab Laser Welder 1200W



**Quick Start Guide**

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\* The English version is the original instructions verified by the manufacturer.



## List of items

### For the main unit:



① Main unit



② Key



③ USB flash drive



④ Tube (external diameter: 10 mm)



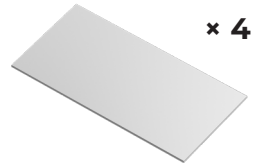
⑤ Power cable



The power cable varies according to the region in which the product is delivered.



⑥ Workpiece sensing cable



⑦ 304 stainless steel sheet (thickness: 2 mm) × 4

### For the welding head:



⑧ Components for welding head cradle



⑨ Cutting tip



⑩ Welding nozzle (for autogenous welding)



⑪ Cleaning nozzle (for handheld use)



The factory-installed nozzle on the welding head is typically used for wire-filled welding.



⑫ Lens protector (spare part) × 5

## For the wire feeder:



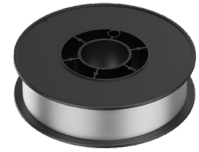
⑬ Wire feeder



⑭ Wire feeding tube



⑮ Wire feeder cable



⑯ Stainless steel wire 1 mm



⑰ Drive roll 0.8 mm / 1.0 mm



⑱ Drive roll 1.2 mm / 1.6 mm



⑲ Wire feeding nozzle 1.2 / 1.6



The wire feeding tube is pre-installed with a 0.8 / 1.0 wire feeding nozzle.

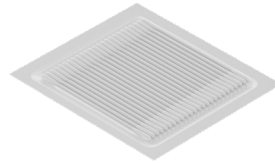
## Tools:



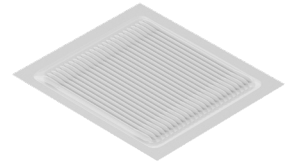
⑳ Hex key 2 mm



㉑ Hex key 2.5 mm



㉒ Round tip cotton swab



㉓ Pointed tip cotton swab

## Personal protective equipment (PPE):



㉔ 1080 nm laser safety goggles



㉕ Heat-resistant gloves

## Product documentation:



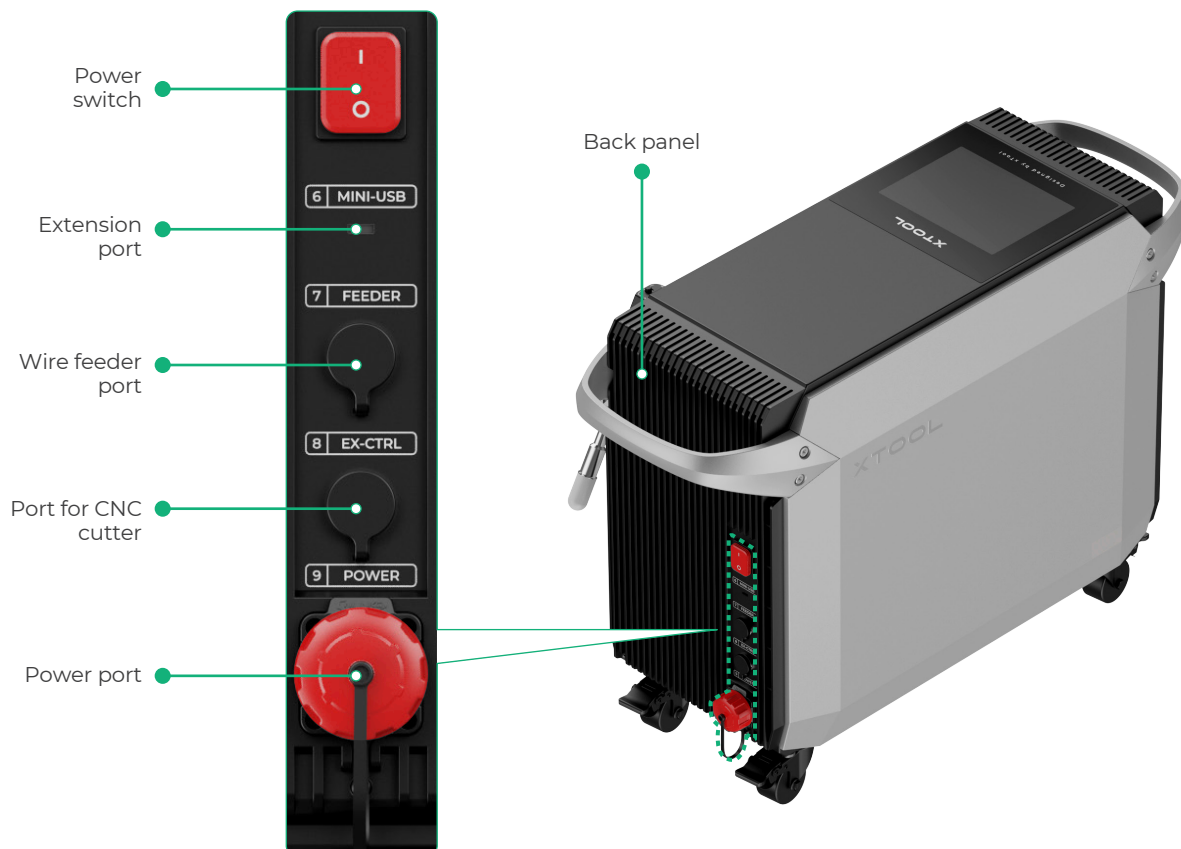
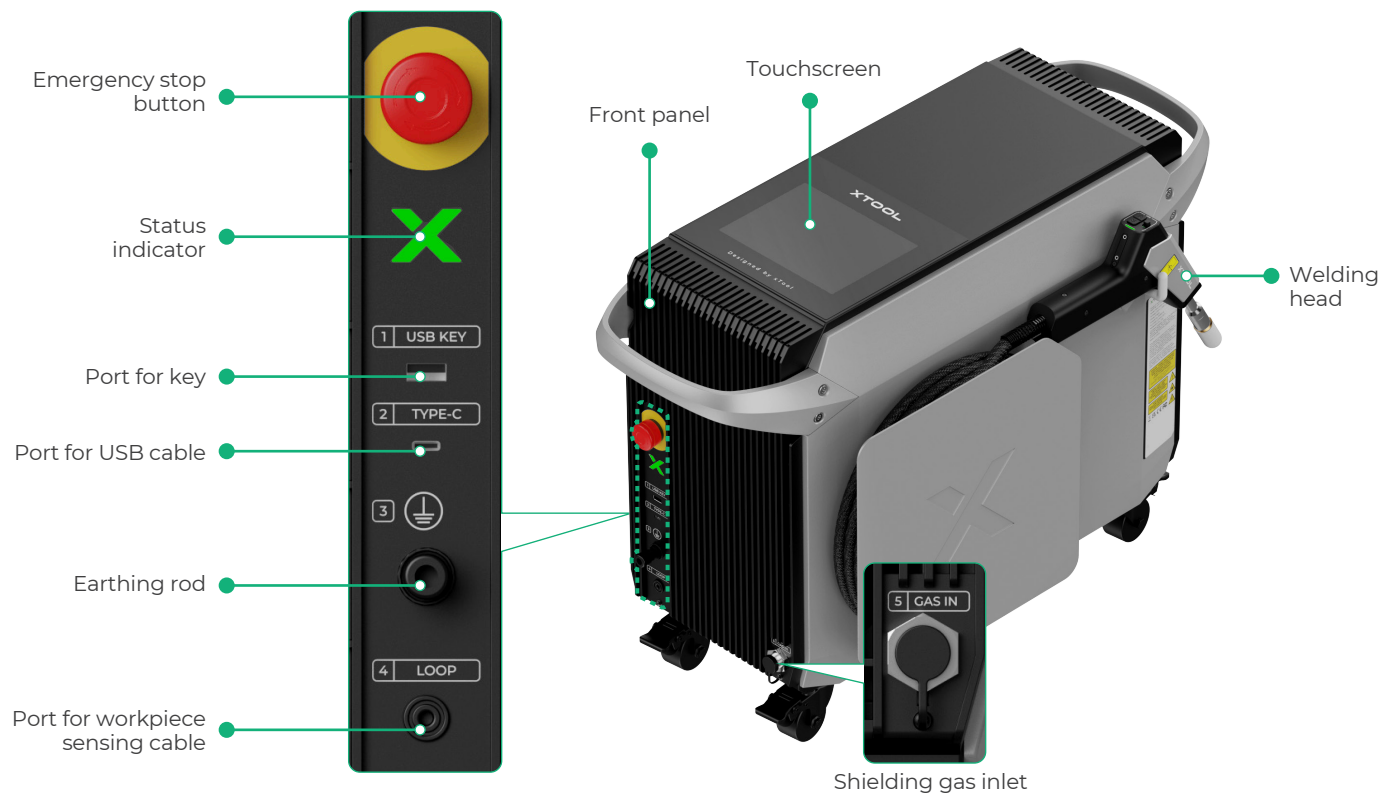
㉖ Safety Instructions



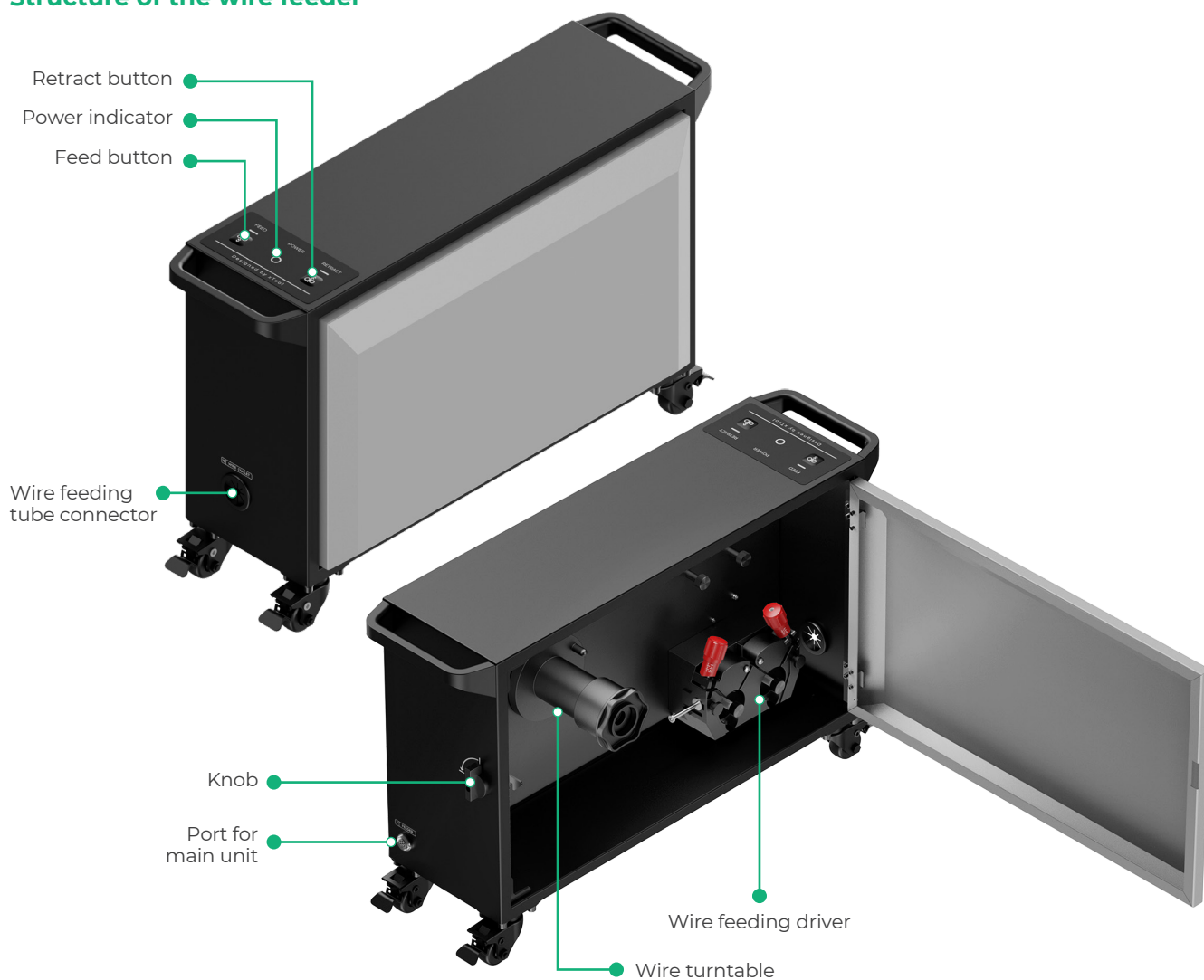
㉗ Quick Start Guide

## Meet xTool MetalFab Laser Welder 1200W

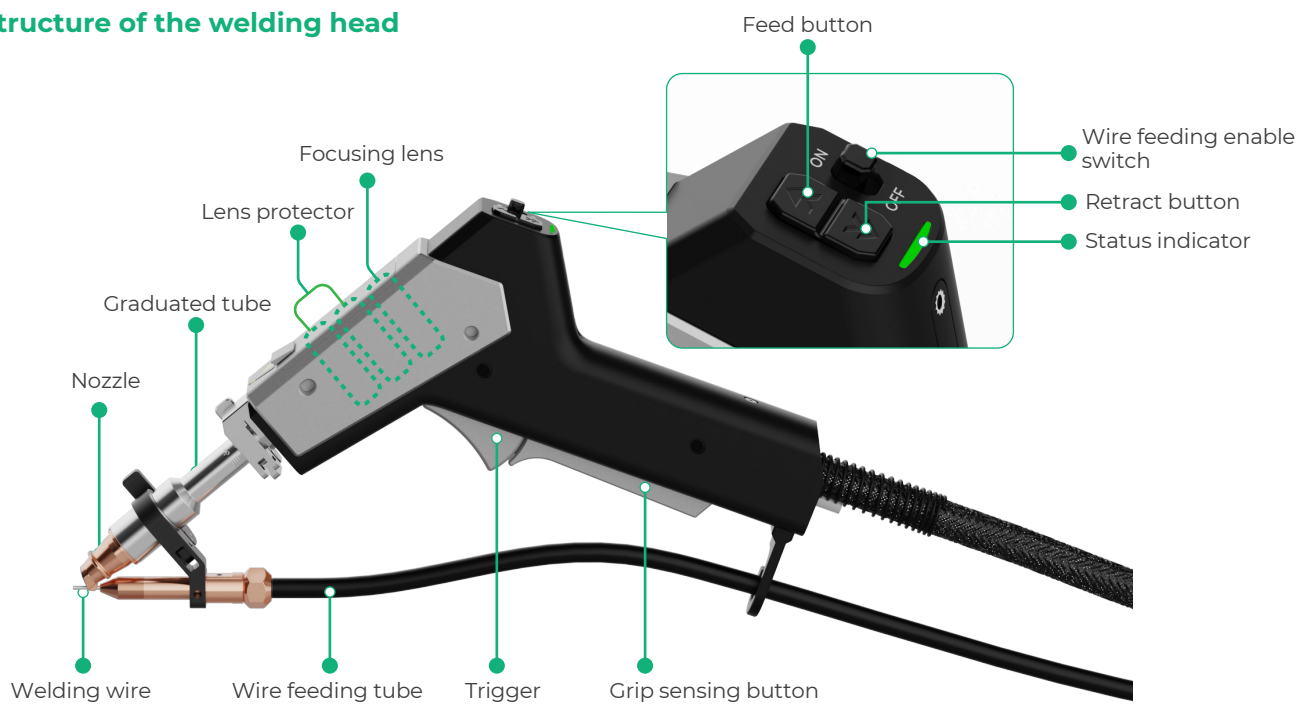
### Structure of the main unit



## Structure of the wire feeder



## Structure of the welding head



Indicator and buzzer explained



Buzzer	Status indicators	Device status
/	Solid white	Powered on, but not ready for laser emission. To emit laser beams, the device must meet all of the following requirements: <ul style="list-style-type: none"><li>■ Safety interlock loop closed</li><li>■ Lasering function enabled</li><li>■ Grip sensing button pressed</li></ul>
	Blinking green slowly	Ready for laser emission. You can press the trigger on the welding head to emit laser beams.
	Solid green	Emitting laser.
Three consecutive beeps	Solid red	Exceptions occur or device malfunctions.



The indicators on the main unit and the welding head are synchronized and indicate the same status.




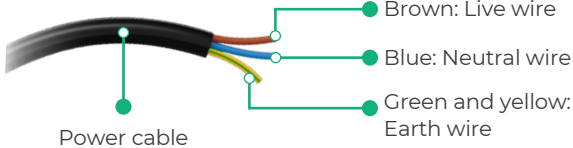

## Specifications

<b>Main unit</b>	Model	MHJ-K001-240
	Dimensions (W × D × H)	327 mm × 728 mm × 512 mm
	Weight	38.2 kg
	Rated voltage	220 V to 240 V
	Full load current	21 A
	Rated power	4200 W
	Working temperature	-10°C to +40°C
	Storage temperature	-10°C to +60°C
	Ambient humidity	10% to 85%
	Cooling mode of the laser module	Forced air cooling
<b>Laser</b>	Working mode	Continuous wave (CW) / Modulated wave (MW)
	Laser wavelength	1080 ± 10 nm
	Output power	1200 W
	Length of the welding head cable	5 m
	Bend radius of the welding head cable	≥ 150 mm
<b>Wire feeder</b>	Dimensions (W × D × H)	232 mm × 664 mm × 417 mm
	Weight	13.2 kg
	Wire feeding speed	2 mm/s to 100 mm/s
	Working voltage	24 V DC
	Maximum wire spool weight supported	15 kg
	Maximum external diameter of wire spool supported	300 mm
	Maximum thickness of wire spool supported	105 mm
	Supported wire diameters	0.8 mm, 1.0 mm, 1.2 mm, 1.6 mm
	Length of the wire feeding tube	3 m

## Prepare for installation

### Power supply

xTool MetalFab Laser Welder 1200W requires a 220 V – 240 V AC power supply, and works at a rated power of 4200 W. An individual branch circuit with a current-carrying capacity of 25 A or above is recommended. Requirements on electrical facilities vary with power cables. Please consult a qualified electrician before installing the device to ensure that the device is installed in accordance with local electrical codes.

<p><b>US standard</b></p>  <p>NEMA 6-30P</p>	<ul style="list-style-type: none"> <li>■ Use a NEMA 6-30R outlet</li> </ul>
<p><b>Other standards</b></p>  <p>Brown: Live wire Blue: Neutral wire Green and yellow: Earth wire</p> <p>Power cable</p>	<p>Choose one of the following methods:</p> <ul style="list-style-type: none"> <li>■ Use a 32 A CEE industrial socket (blue, IP44 or higher)</li> <li>■ Use the hardwiring method</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f9f9f9;">  <p>Do not connect the device to a 16 A domestic circuit, as it may cause overload tripping or cable overheating.</p> </div>



- Ensure that the current-carrying capacity of your circuit meets the requirements. Do not connect the product to a standard household circuit, as it may damage both the product and the circuit.
- Ensure that the welder is powered separately. Do not use it with other high power equipment on the same circuit.
- To ensure safety, it is recommended that you install a 25 A air circuit breaker between the power supply and xTool MetalFab Laser Welder 1200W.

### Workroom

Ensure that the workroom is well ventilated.

### Shielding gas

xTool MetalFab Laser Welder 1200W requires the use of shielding gas. Supported gas types include **nitrogen and argon, and the gas purity must be over 99.99%**.

Different processing types have different requirements on gas supply:

Processing type	Gas flow/pressure requirement	Necessary accessory
Laser welding	Flow rate: 15 L/min – 30 L/min	Gas flow meter
Laser cleaning	Gas pressure: 100 kPa – 200 kPa Flow rate: 20 L/min – 30 L/min (Both conditions need to be met)	Gas pressure regulator + gas flow meter
Laser cutting	Gas pressure: 800 kPa – 1200 kPa	Gas pressure regulator

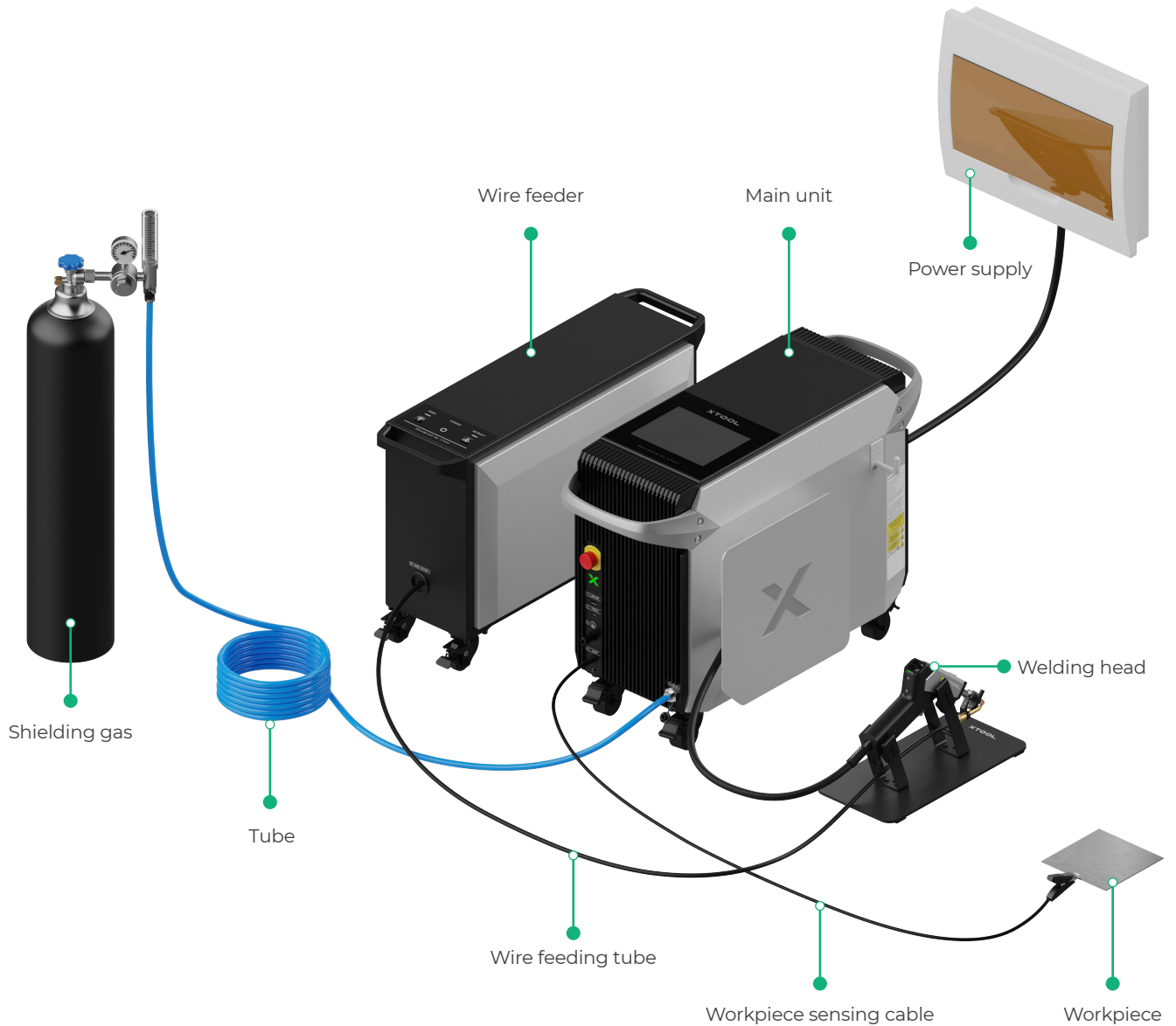


xTool MetalFab Laser Welder 1200W does not come with gas cylinders, gas generators, or related accessories. Please prepare them separately.

## Install xTool MetalFab Laser Welder 1200W

### Cabling diagram

The following picture shows the cabling diagram of xTool MetalFab Laser Welder 1200W. Please follow the detailed step-by-step instructions to complete the installation.

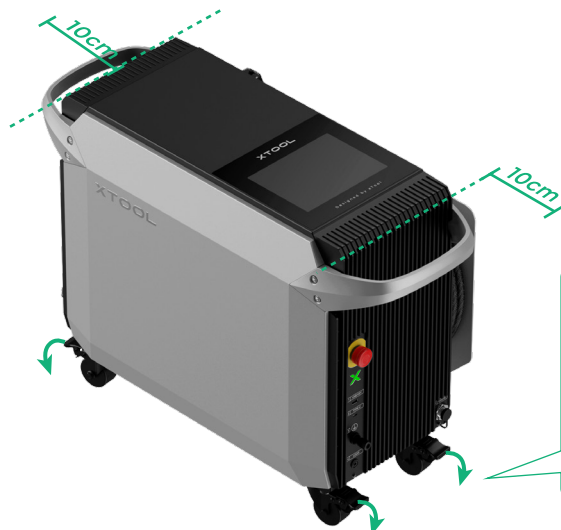


## 1 Place the main unit



① Main unit

Place the main unit in a proper place, leaving a gap of not less than 10 cm at the front and back to ensure good ventilation and heat dissipation. Step on the pedals of the four caster wheels to lock the main unit in position.



Lock the caster wheel

## 2 Connect the shielding gas cylinder

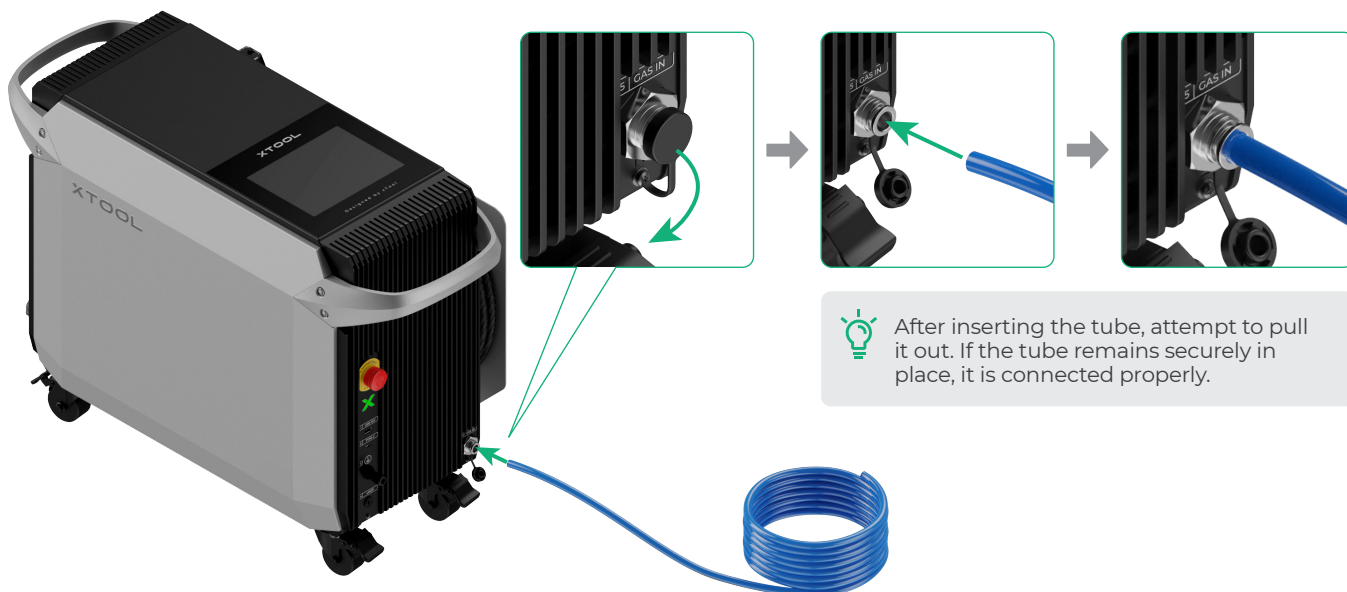


④ Tube (external diameter: 10 mm)



Shielding gas cylinder (Not provided)

(1) Insert one end of the tube into the shielding gas inlet on the main unit.



To remove the tube, push and hold the collet of the shielding gas inlet and pull out the tube.

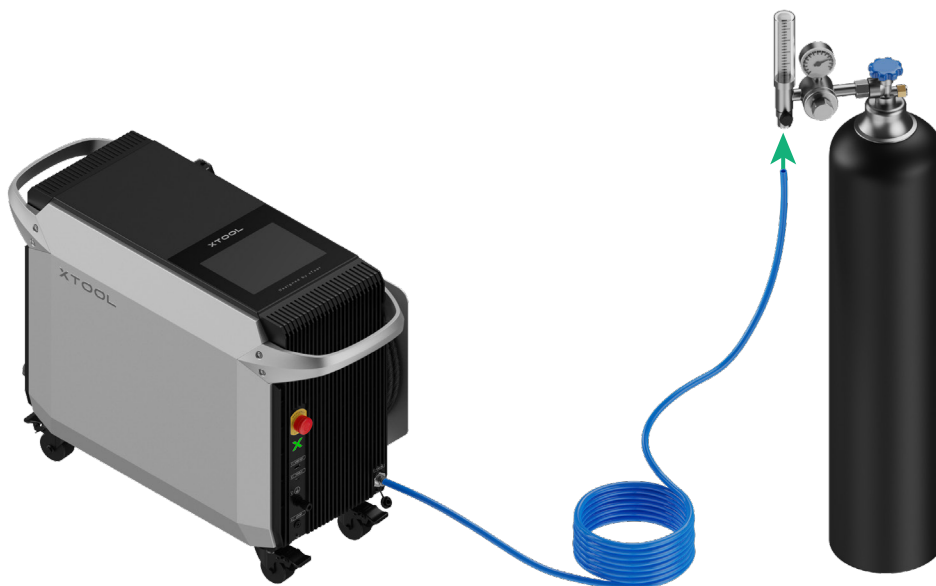
(2) Install a gas regulator on the shielding gas cylinder (or gas generator).

(Installing a gas flow meter on a cylinder is used as an example.)



Tighten the nut to prevent gas leakage.

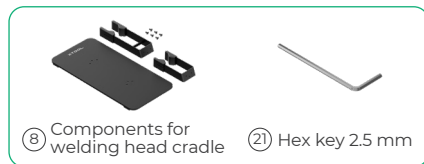
(3) Connect the other end of the tube to the cylinder (or gas generator).



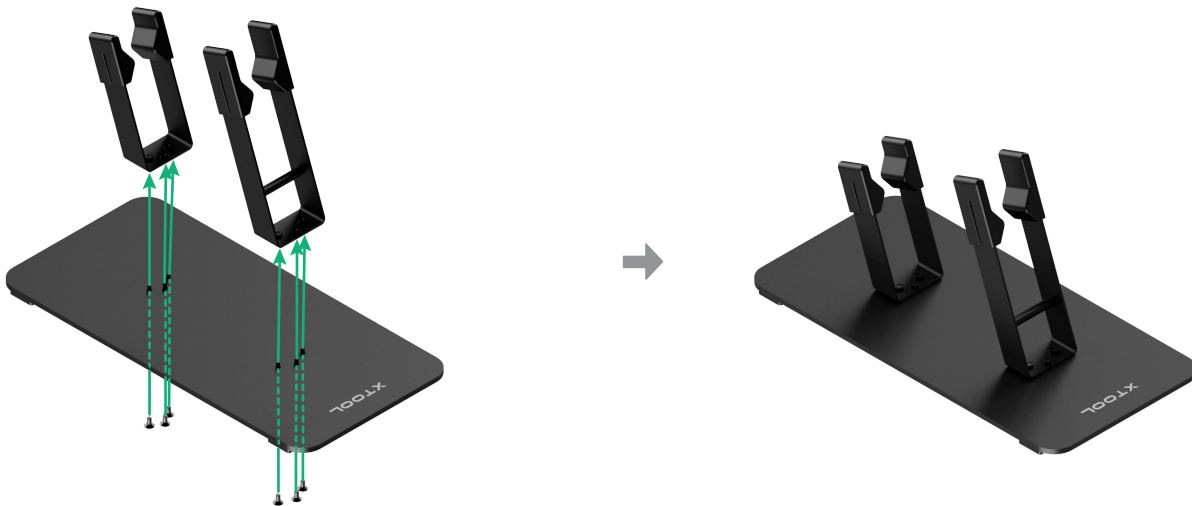
Do not open the gas cylinder valve yet. Open it only before laser processing.



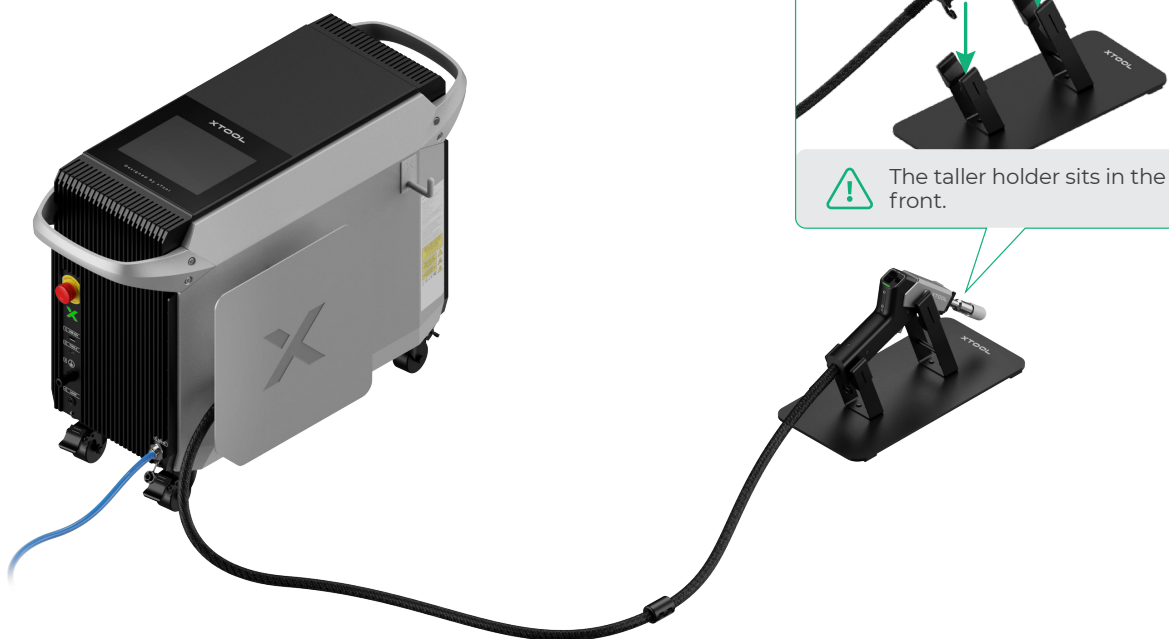
### 3 Place the welding head



(1) Assemble the welding head cradle.



(2) Take the welding head off the main unit and place it on the cradle.

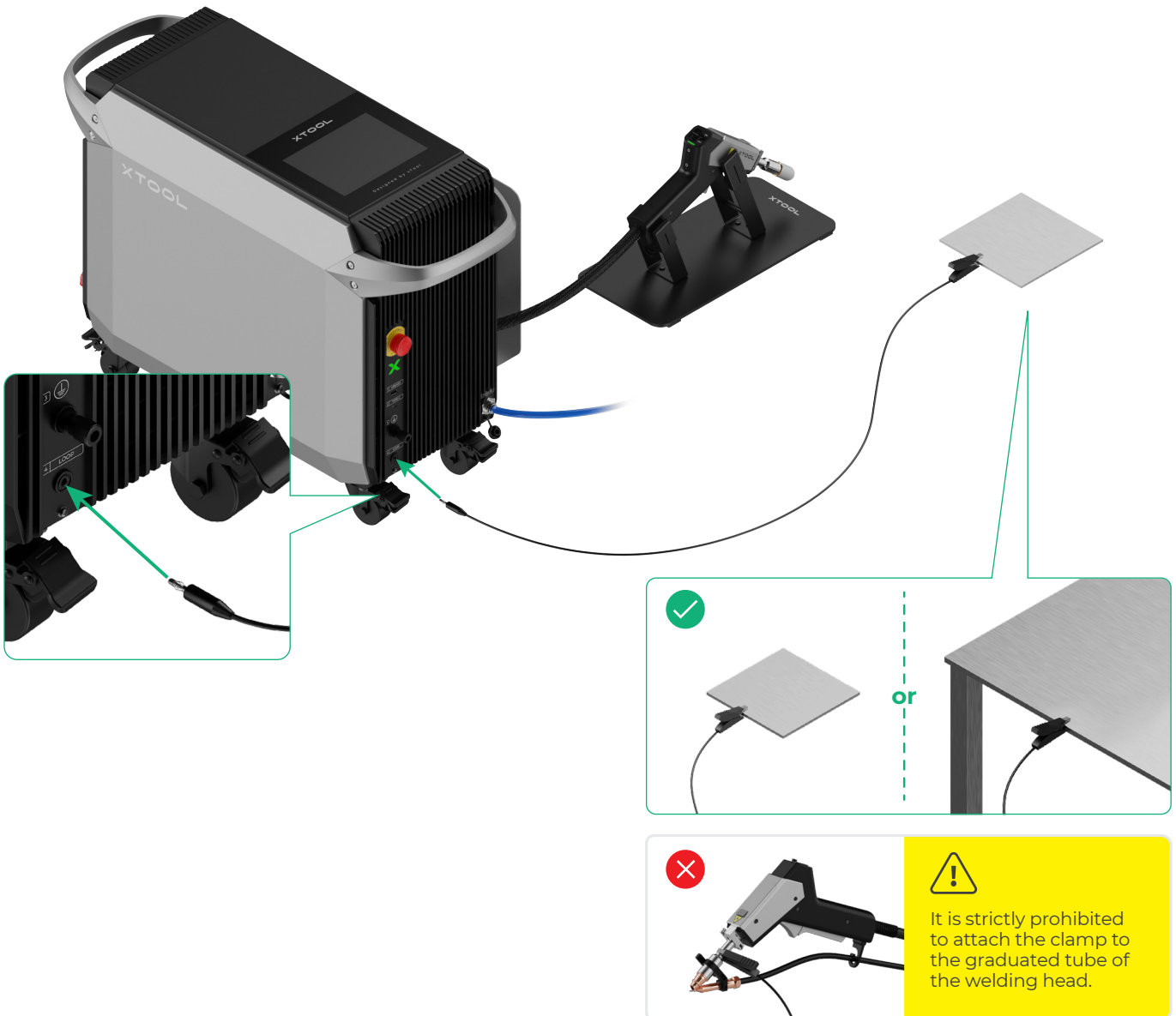


! Do not pull the cable forcefully when taking the welding head off, as this can damage the optical fiber.

#### 4 Connect the workpiece sensing cable



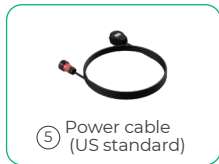
Insert the connector end into the port for the workpiece sensing cable, and attach the clamp on the other end to the workpiece to be processed or a conductive worktable connected with the workpiece.



#### Safety interlock loop

A safety interlock loop exists between the welding head nozzle, the workpiece, and the main unit. Only when the welding head is in contact with the workpiece can the safety interlock loop be closed and allow the welding head to emit laser beams.

## 5 Connect to a power supply

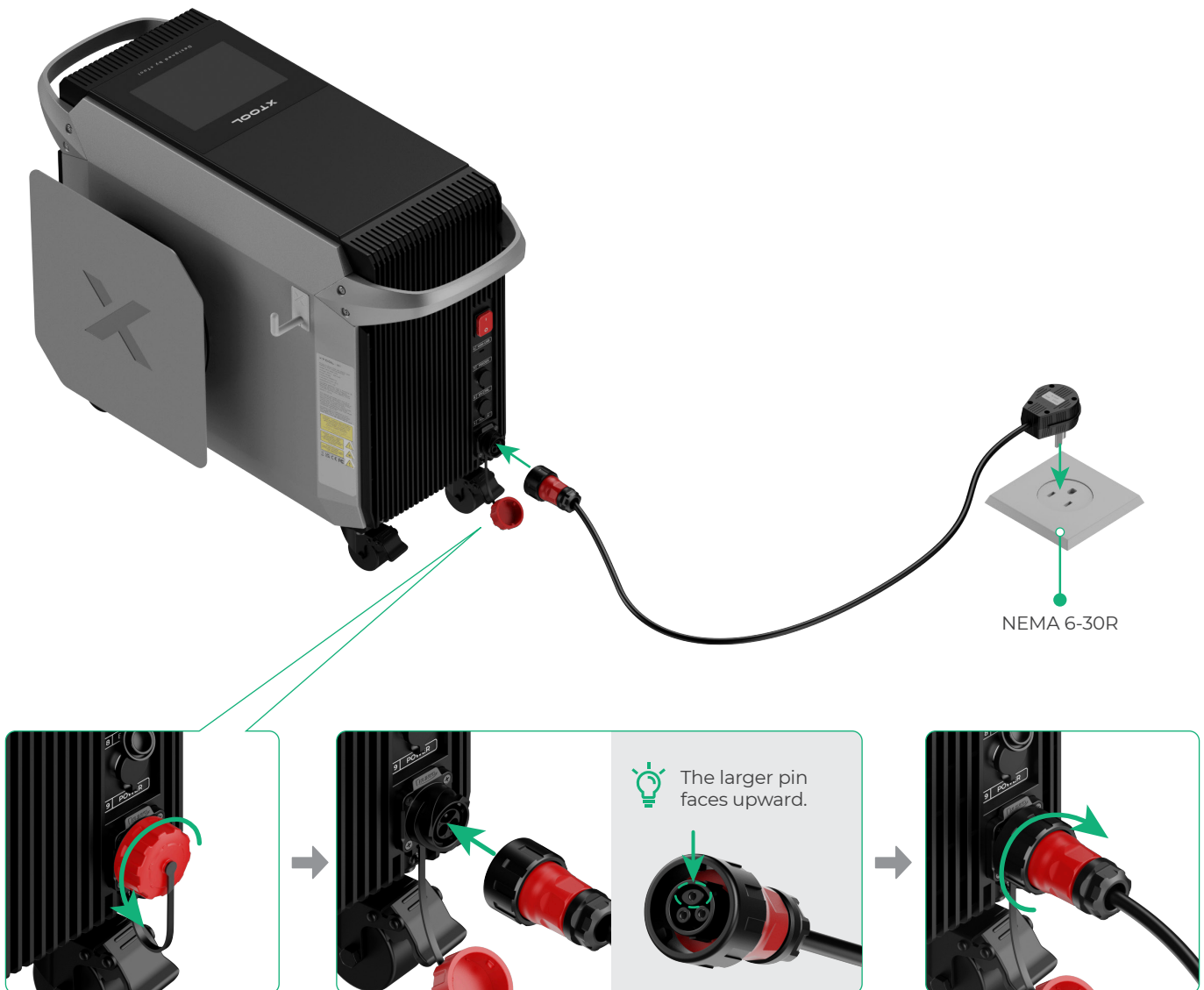


The connection of power cables varies with their standards. The following instructions are for US standard power cable only. Power cable of other standards should be connected by a professional electrician in accordance with local electrical codes.



- Ensure that the current-carrying capacity of your circuit meets the requirements. Do not connect the product to a standard household circuit, as it may damage both the product and the circuit.
- To ensure safety, it is recommended that you install a 25 A air circuit breaker between the power supply and xTool MetalFab Laser Welder 1200W.

Attach the round connector of the power cable to the main unit, and the other end to the power supply.



If the power cable you receive has a PUSH button at the connector, directly push the connector into the power port. To remove the connector, press and hold the PUSH button and pull the connector out.



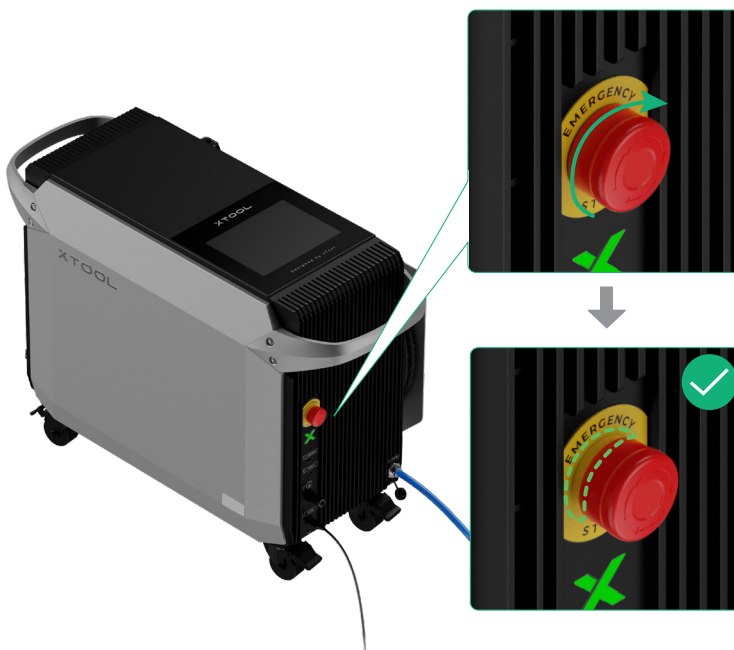
Ensure that the device is grounded. If the power supply is not grounded, please use an earth cable (not provided) to connect the device to a grounded object.



Connect the earth cable to the metal part of the earthing rod

## 6 Check the emergency stop button

Ensure that the emergency stop button is released. If it is pressed, rotate to release it.



### Emergency stop button

If an emergency occurs, press the emergency stop button to shut off the laser module and stop laser emission.

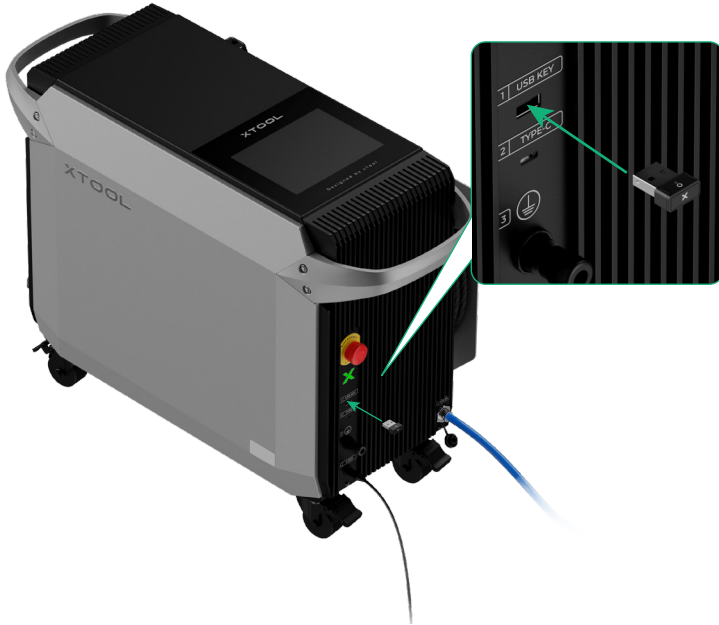


After dealing with the emergency, rotate the emergency stop button to release it.

## 7 Insert the key



Insert the key into its designated port.



You can use the key either as an access-control key or a remote interlock connector.

### ■ Access-control key

Removing the key can disable the machine's processing and related functions.

### ■ Remote interlock connector

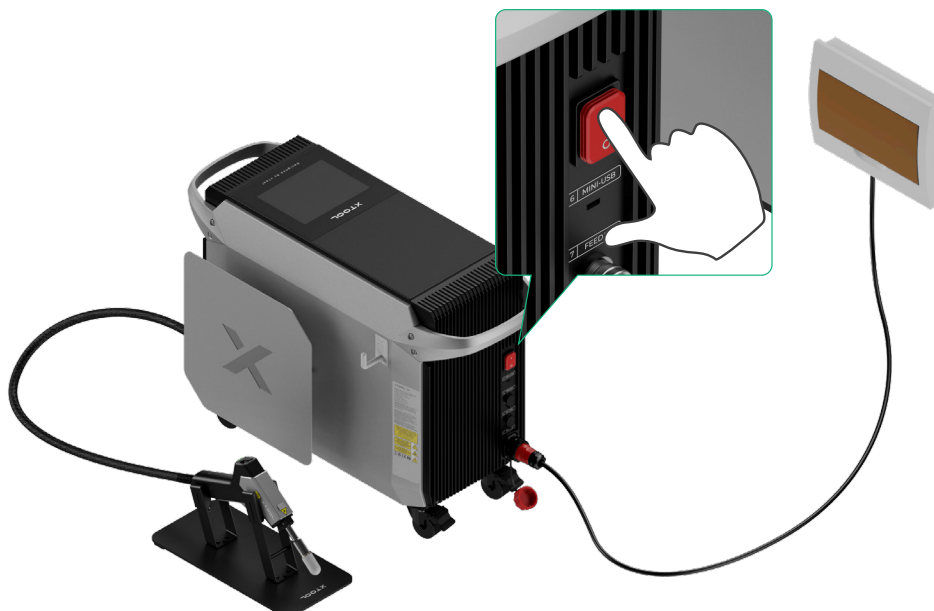
For detailed instructions, scan the QR code or visit the link.



[support.xtool.com/article/1367](https://support.xtool.com/article/1367)

## 8 Power on

On the back panel of the main unit, turn on the power switch to power on the device.





## 9 Unlock the device

(1) The first time you turn on the device, you will see a QR code displayed on the touchscreen. Scan the QR code or visit [s.xtool.com/doc/hj/si](https://s.xtool.com/doc/hj/si) to watch the safety training videos.

**xTool MetalFab Laser Welder 1200W Safety Training**

- The xTool MetalFab Laser Welder 1200W uses a 1200W invisible light source. To ensure safe operation and avoid potential hazards caused by improper use, please carefully watch the training video before operation.
- After watching the complete video, you can obtain the corresponding unlock password by entering the device's SN.



1. Scan the QR code on the left or directly visit the following URL to view the safety training video.

<https://s.xtool.com/doc/hj/si>

2. After completing the training, enter the device SN below to obtain the startup password.


MHJK001240241225H123456

**Enter the password**

(2) After watching the video, input the serial number (SN) shown on the touchscreen to the web to generate an unlock password for your device.

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2. After completing the training, enter the device SN below to obtain the startup password.

MHJK001240241225H123456

**Enter the password**

**Safety training completed**

You have fully watched the device tutorial and can now enter the device's SN to obtain the password.

**Please enter the device SN**

The device SN is displayed on the Metal Welder interface. Please enter them below and click (Generate Password)


Cancel

Generate Password

(3) On the touchscreen of your device, tap **Enter the password**. Then, enter the password generated to unlock your device.

**xTool MetalFab Laser Welder 1200W Safety Training**

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<https://s.xtool.com/doc/hj/si>

2. After completing the training, enter the device SN below to obtain the startup password.

MHJK001240241225H123456

**Enter the password**

**Please enter an 8-digit password**

1	2	3	
4	5	6	0
7	8	9	✕

Back

Confirm



Ensure that all users watch the safety training videos before using the device. You can access the videos by scanning the QR code or visiting the link.

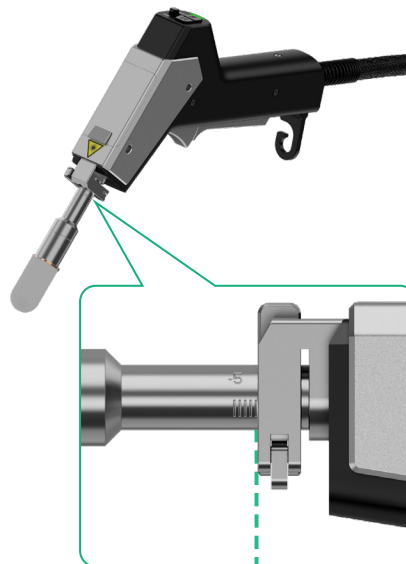


[s.xtool.com/doc/hj/si](https://s.xtool.com/doc/hj/si)

## 10 Calibrate the focus for the welding head

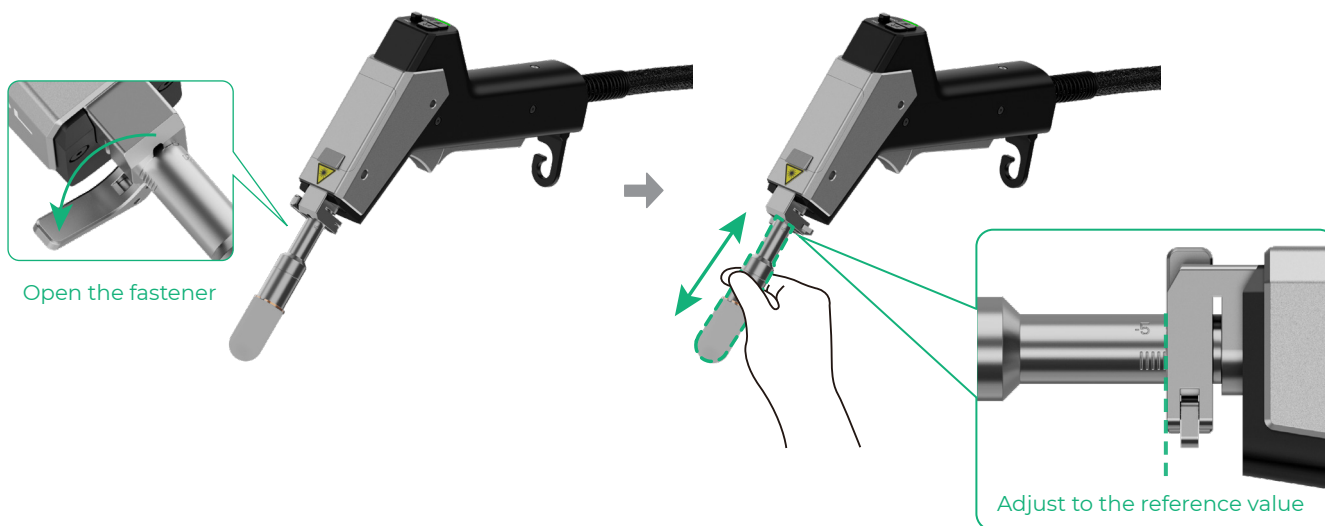
(1) On the home page of the touchscreen, tap System settings and check whether the Focus scale reference is the same as the actual value on the graduated tube. If the values are the same, no calibration is needed; if they are not, go to step (2).

xTOOL	Machine information		Machine settings
Standard mode	Device name	xTool MetalFab Laser Welder 1200W	
Advanced mode	Machine serial number	MHJK001240241225H123456	
	Laser module serial number	LX2BDJB02972	
Technique library	Machine firmware version	V40.70.001.2425.01	
Machine status	Screen firmware version	40.70.001.2540.01.B01	
	Laser control firmware version	40.70.001.2622.01.B01	
System settings	Welding head firmware version	40.70.001.2722.01.B06	
	Wire feeder firmware version	40.211.001.5022.01.B07	
Wire feeder	Focus scale reference	-1	
Safety interlock loop			



Keep at the same value

(2) Open the fastener, push or pull the graduated tube to adjust it to the reference value shown on the touchscreen.



## Connect the wire feeder



The wire feeder is used to feed wire in laser welding, and it is not needed in metal cleaning or cutting.

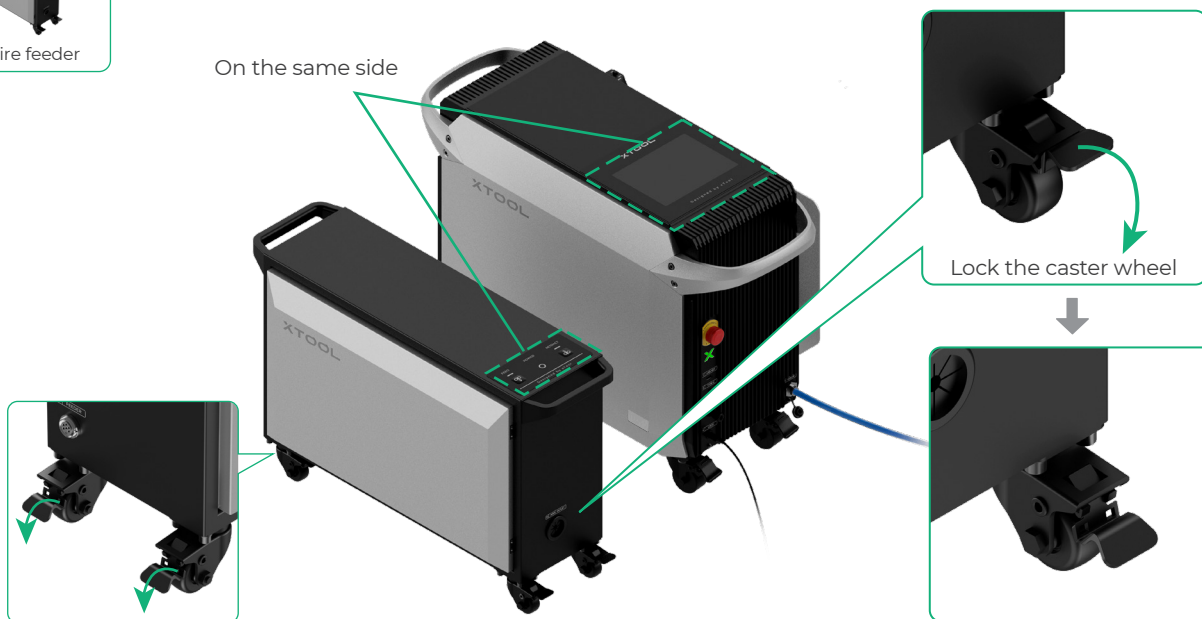
### 1 Place the wire feeder



⑬ Wire feeder

Place and fix the wire feeder in a proper place. To facilitate subsequent operations, it is recommended that you place the wire feeder on the left side of the main unit.

On the same side



### 2 Connect to the main unit

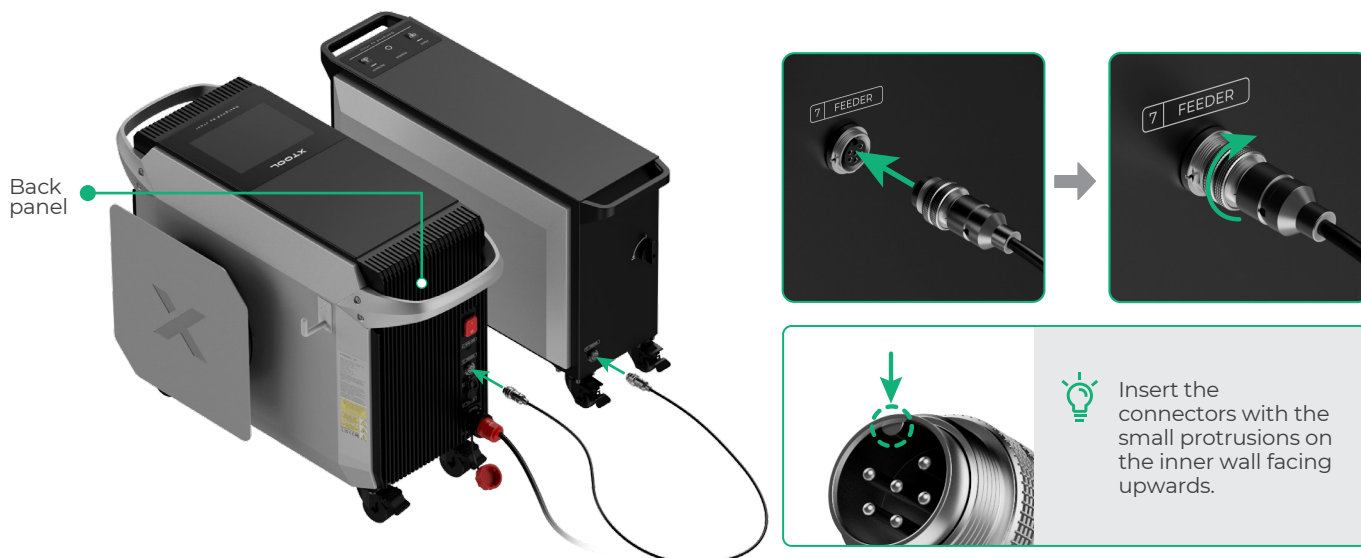


⑮ Wire feeder cable

On the back of the wire feeder and main unit, insert the wire feeder cable to connect them.



The wire feeder cable has identical connectors on both ends. You do not need to distinguish between them.



### 3 Install the drive rolls



⑰ Drive roll 0.8 mm / 1.0 mm



⑱ Drive roll 1.2 mm / 1.6 mm



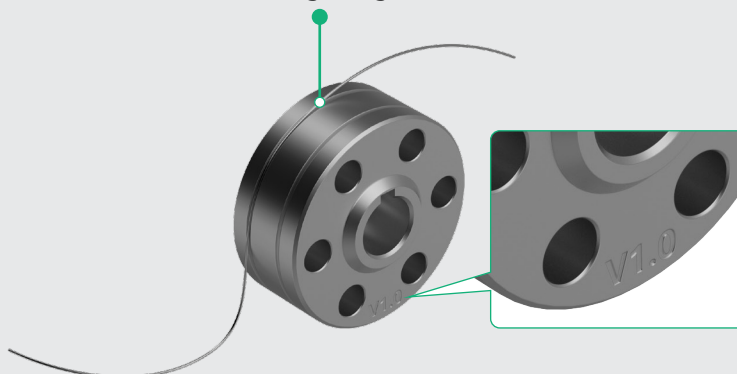
This guide exemplifies installing 1 mm welding wire (provided) on the 1 mm guiding rail.



#### How to check the specifications of the drive roll

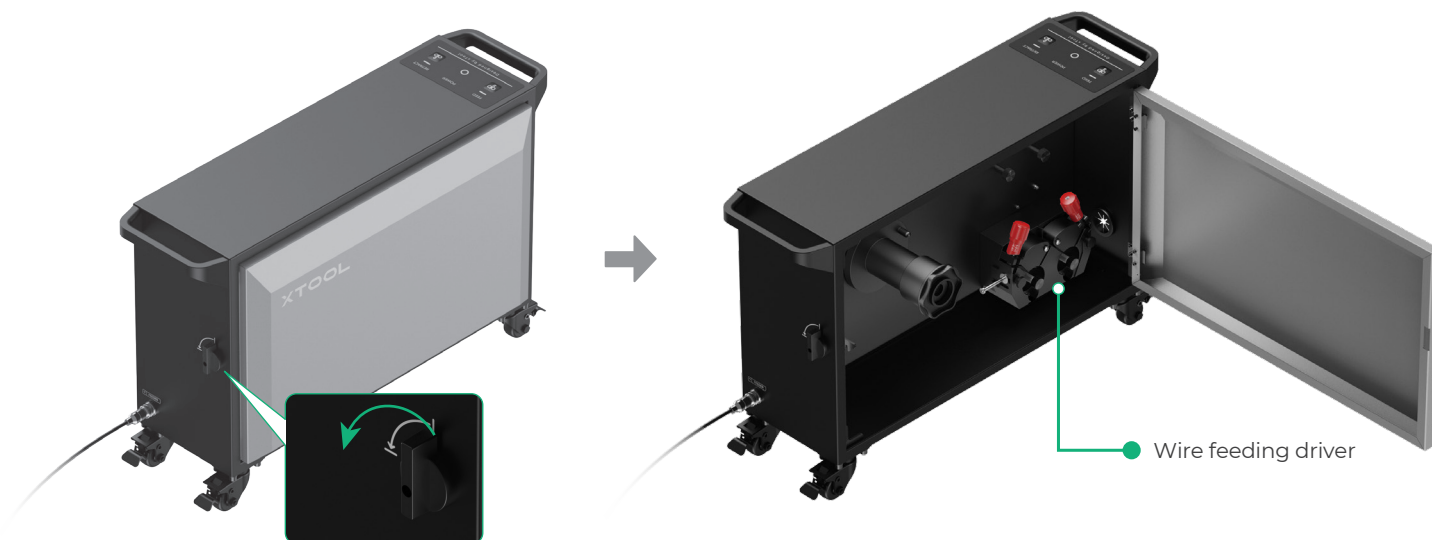
Each drive roll has two rails, and the size of each rail is marked on the cross-section that is not adjacent to the rail. When the drive roll is installed on the wire feeding driver, its inner rail is used to guide wire, while its outer side shows the rail size.

Wire guiding rail 1 mm

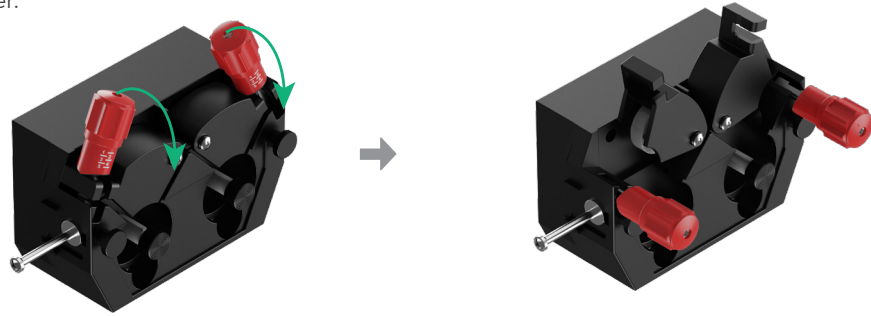


Determine the specifications of drive rolls based on the diameter of the welding wire to be used.

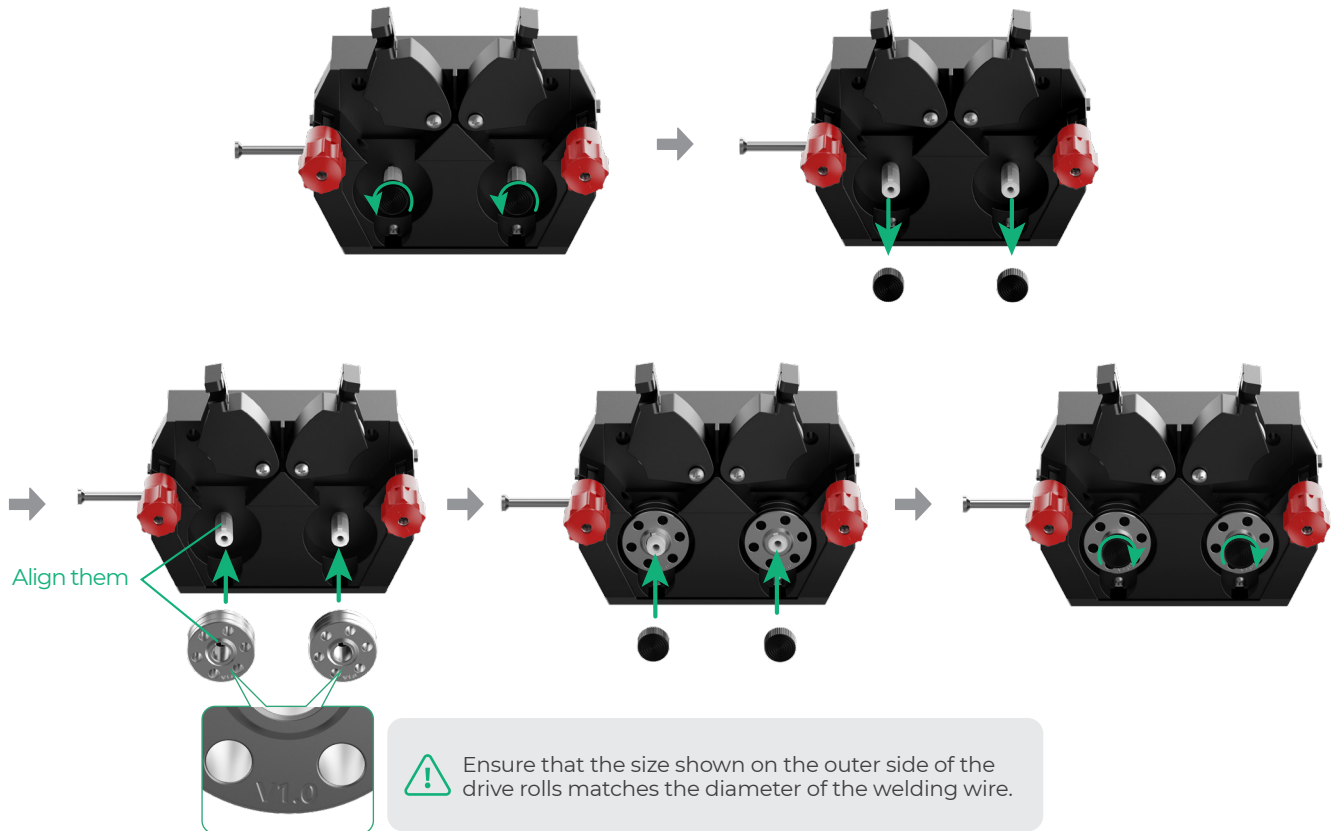
(1) Open the wire feeder.



(2) Open the wire feeding driver.



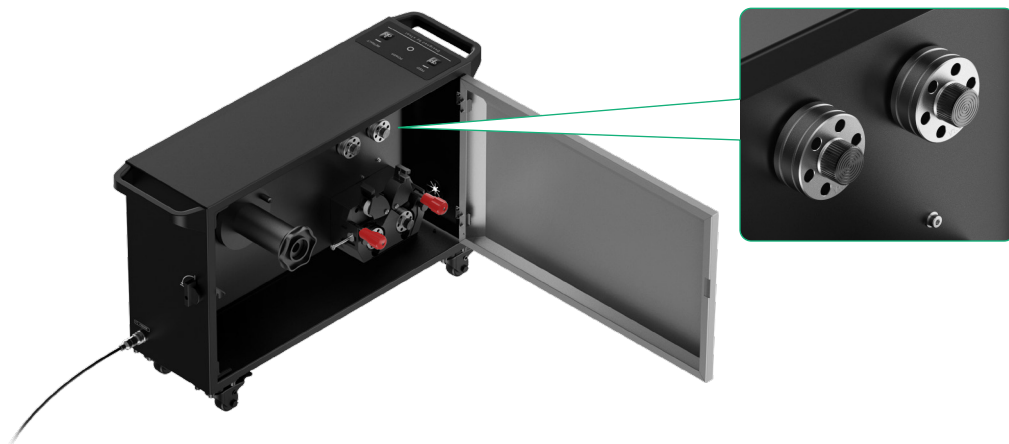
(3) Install the drive rolls.



Ensure that the size shown on the outer side of the drive rolls matches the diameter of the welding wire.



The other pair of drive rolls supplied with this product can be stored in the wire feeder for replacement.

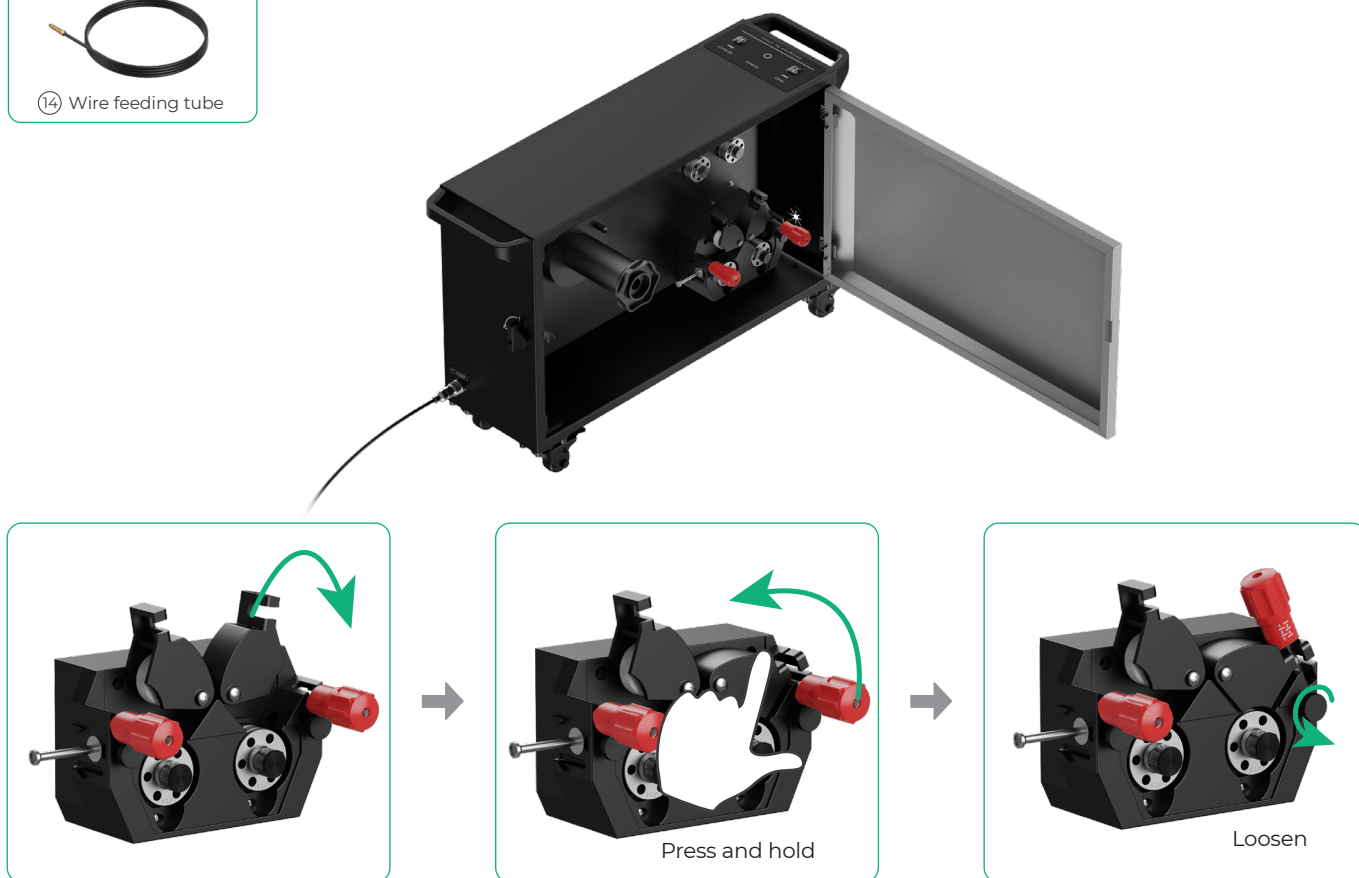




#### 4 Install the wire feeding tube

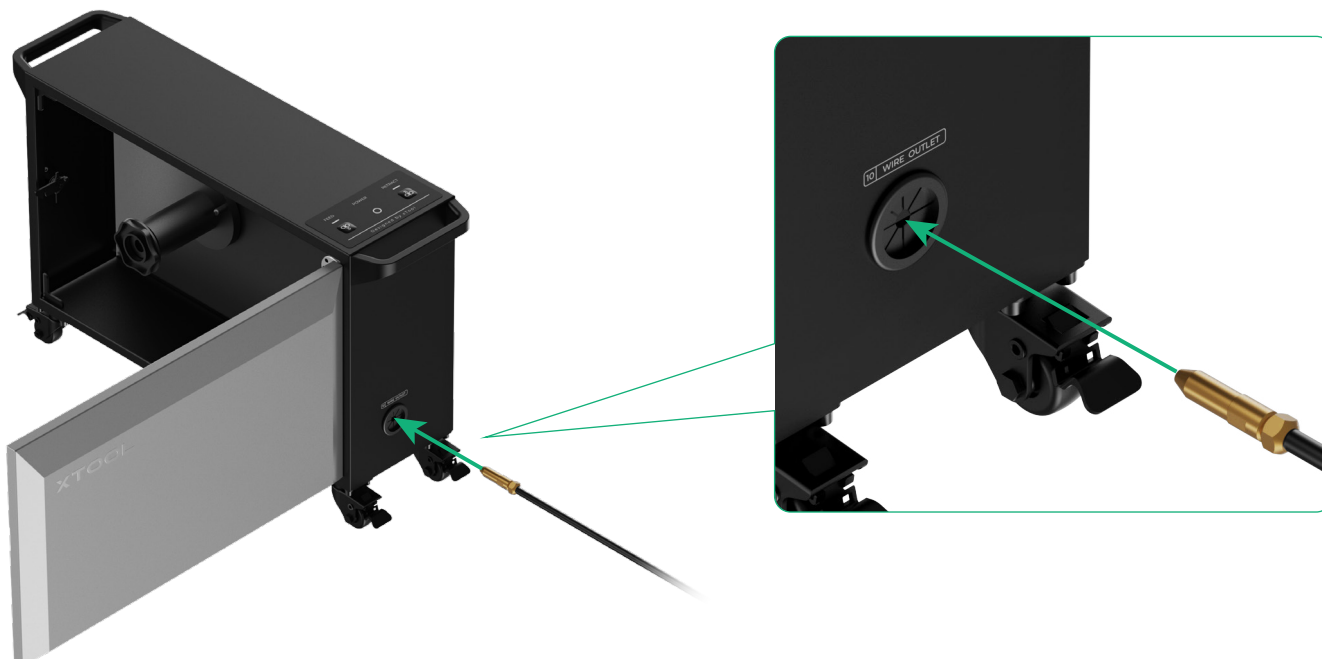


(1) Loosen the screw on the right side of the wire feeding driver.

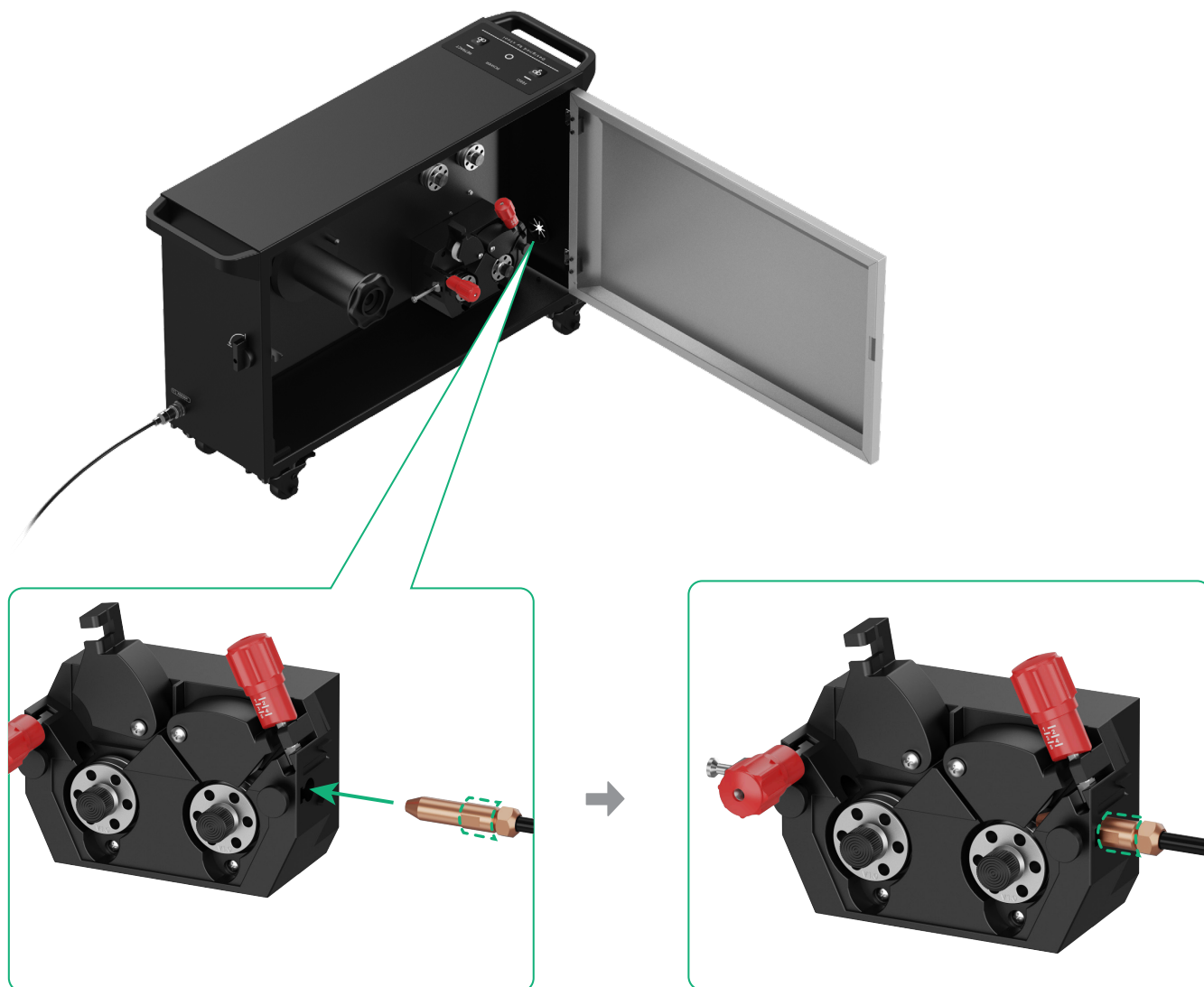


Close the right tensioner to avoid affecting the movement of the screw.

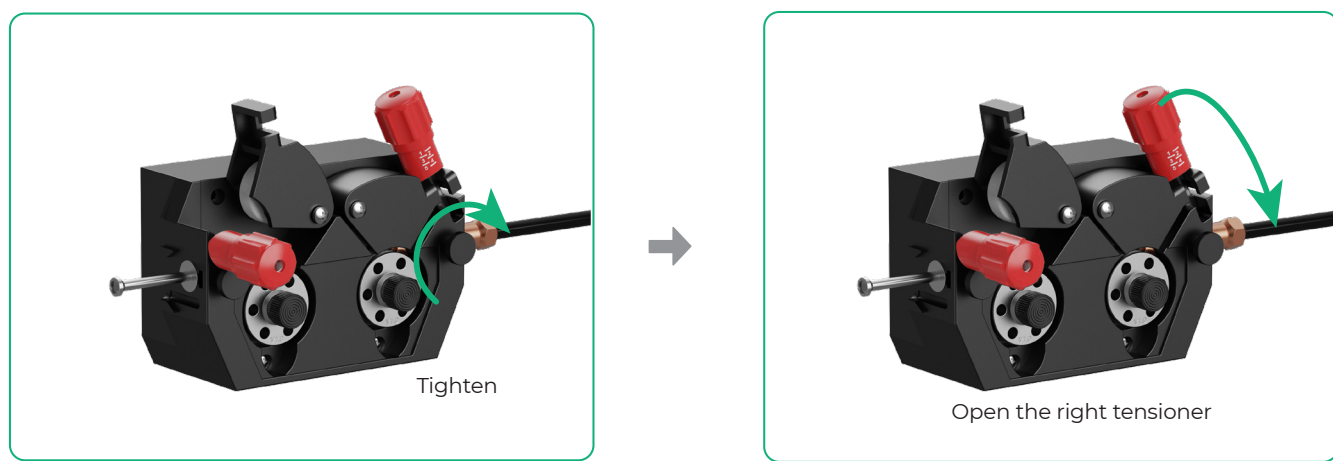
(2) Insert the end of the wire feeding tube without a fastener to the wire feeder.



(3) Lead the nozzle in until its stem presses against the right panel of the wire feeding driver.



(4) Tighten the screw to fix the nozzle.



## 5 Load the welding wire

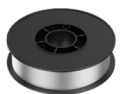


### Select a proper wire

Refer to the following table to select a proper wire based on the material type of the workpiece to be welded.

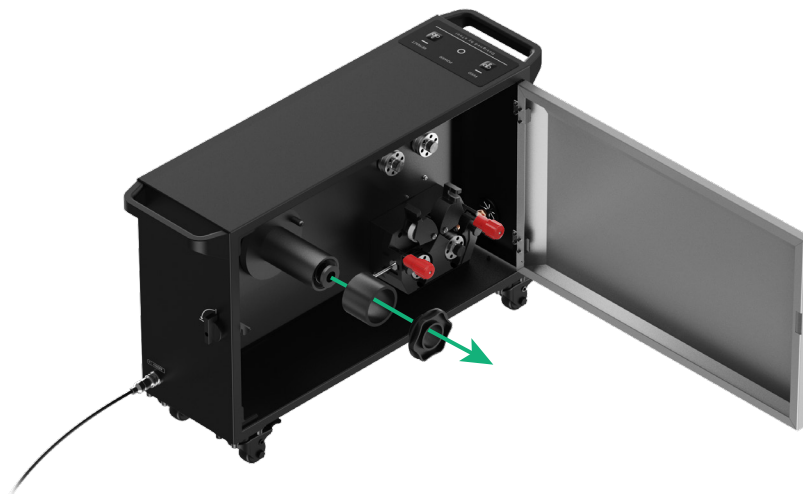
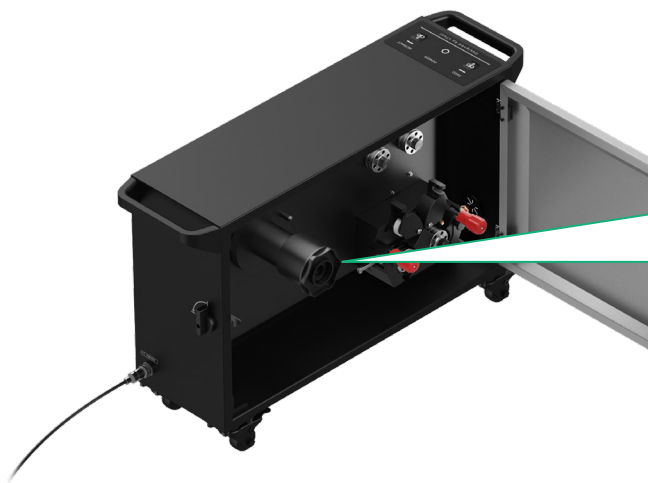
Workpiece material type	Recommended welding wire
Stainless steel	Stainless steel wire
Carbon steel	Solid iron wire
Galvanized steel	Solid iron wire
Brass	Tin brass wire
Aluminum	Aluminum wire

A roll of 1 mm stainless steel wire is included with this product. Use it as needed.



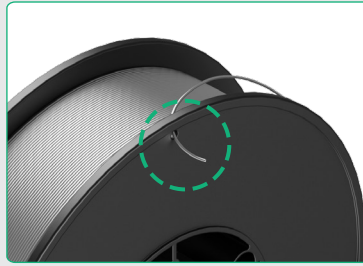
⑯ Stainless steel wire 1 mm

(1) Install the wire spool to the turntable.

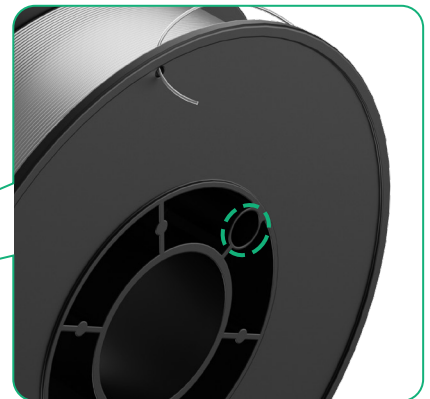
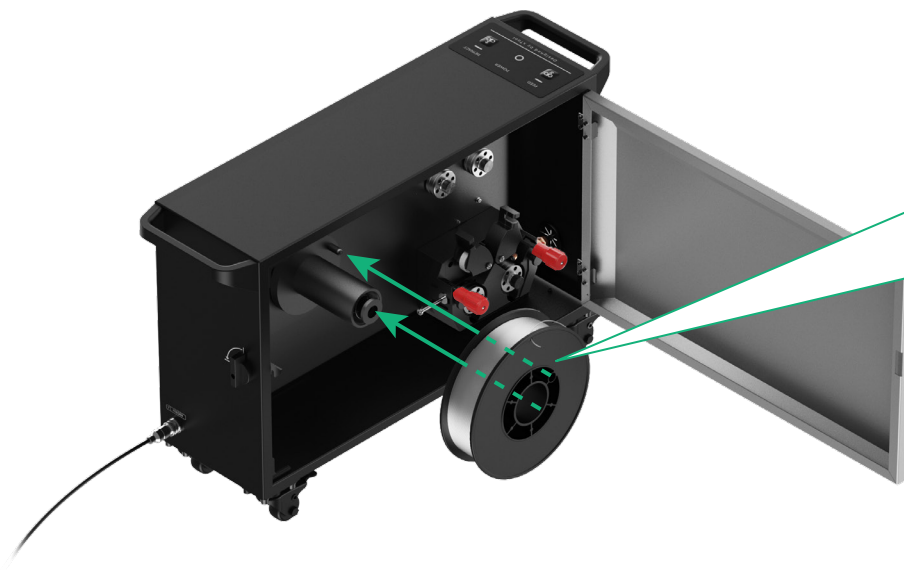
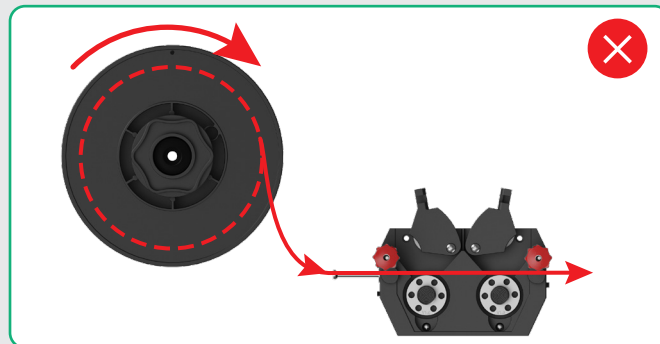
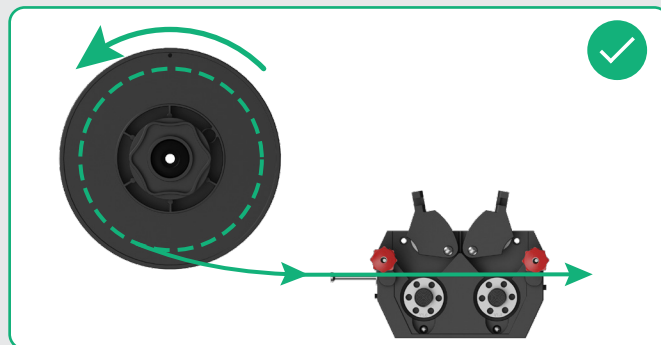




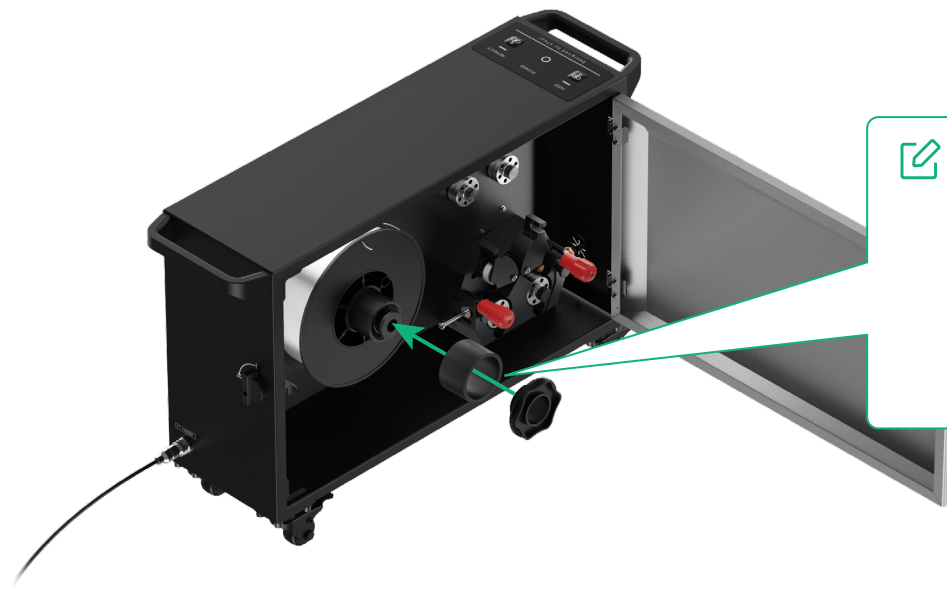
■ When installing the wire spool, keep the end of the wire fixed. Do not release the wire yet, as it may unravel and become unusable.



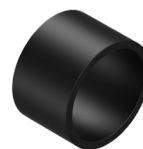
■ Ensure that the wire spool is installed in the correct direction. After released, the wire comes out from the bottom of the wire spool to enter the wire feeding driver. During wire feeding, the wire spool rotates counterclockwise.



The hole in the wire spool aligns with the pin on the turntable.



If you use a large wire spool, do not install the sleeve. Please keep it properly for future use.

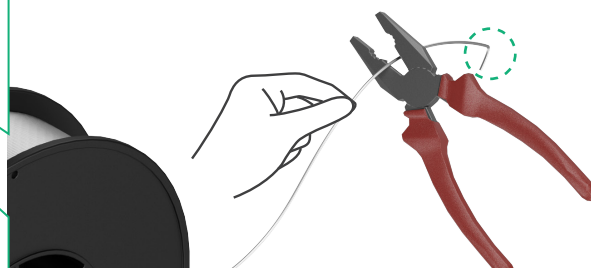
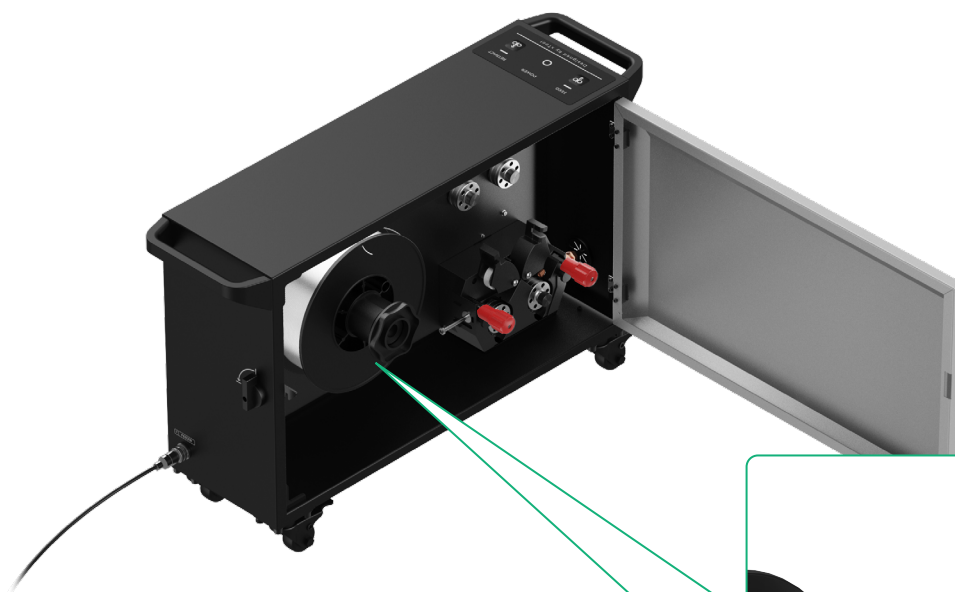


(Sleeve)



Pliers (not provided)

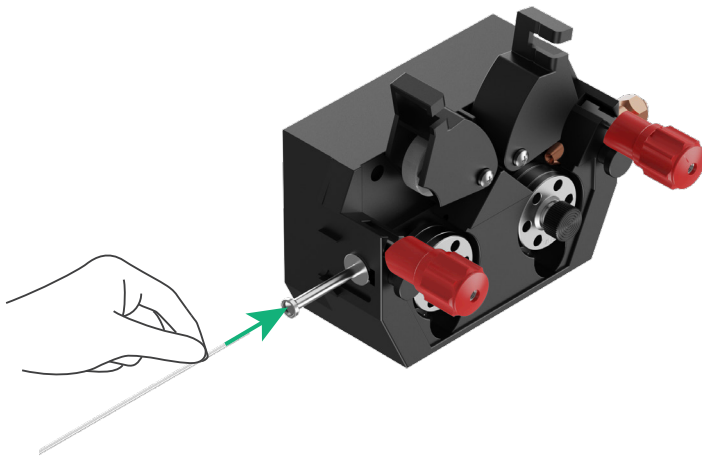
(2) Cut off the bent end of the wire and thread the wire into the wire feeding driver.



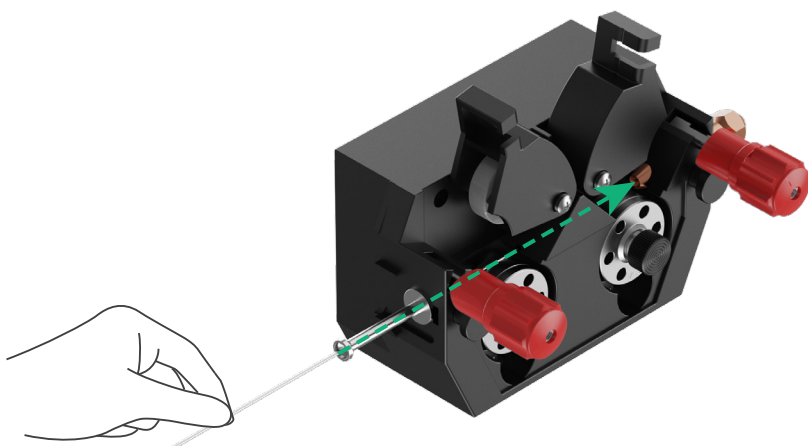
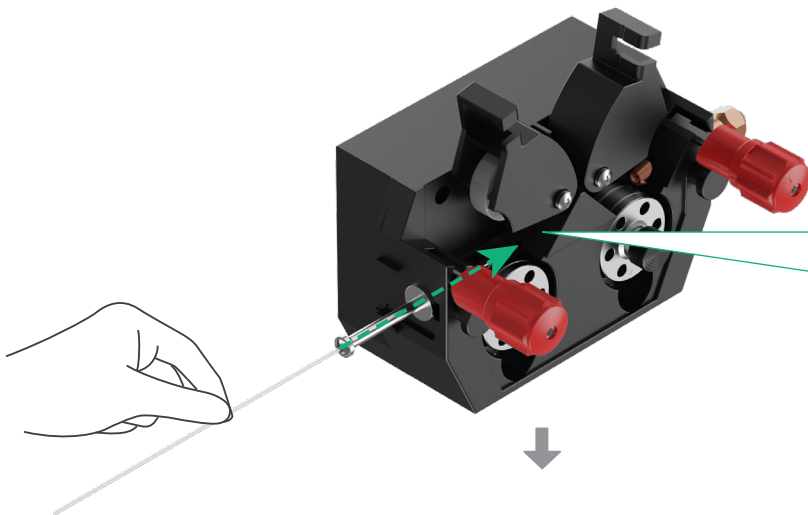
Pinch the left side of the wire to prevent it from unraveling.



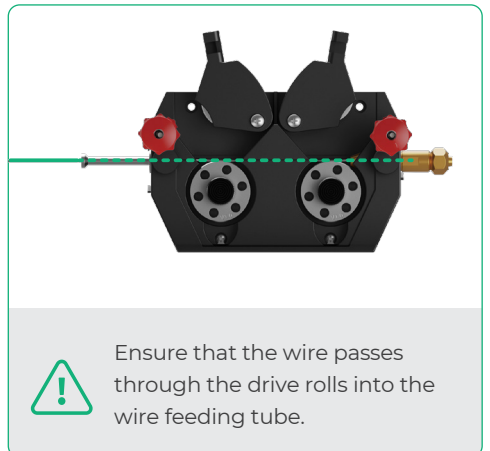
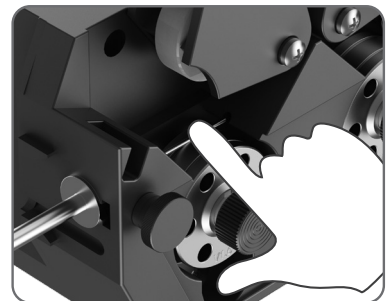
When inserting the wire, pinch the wire to prevent it from moving backward and unraveling.



Welding wire



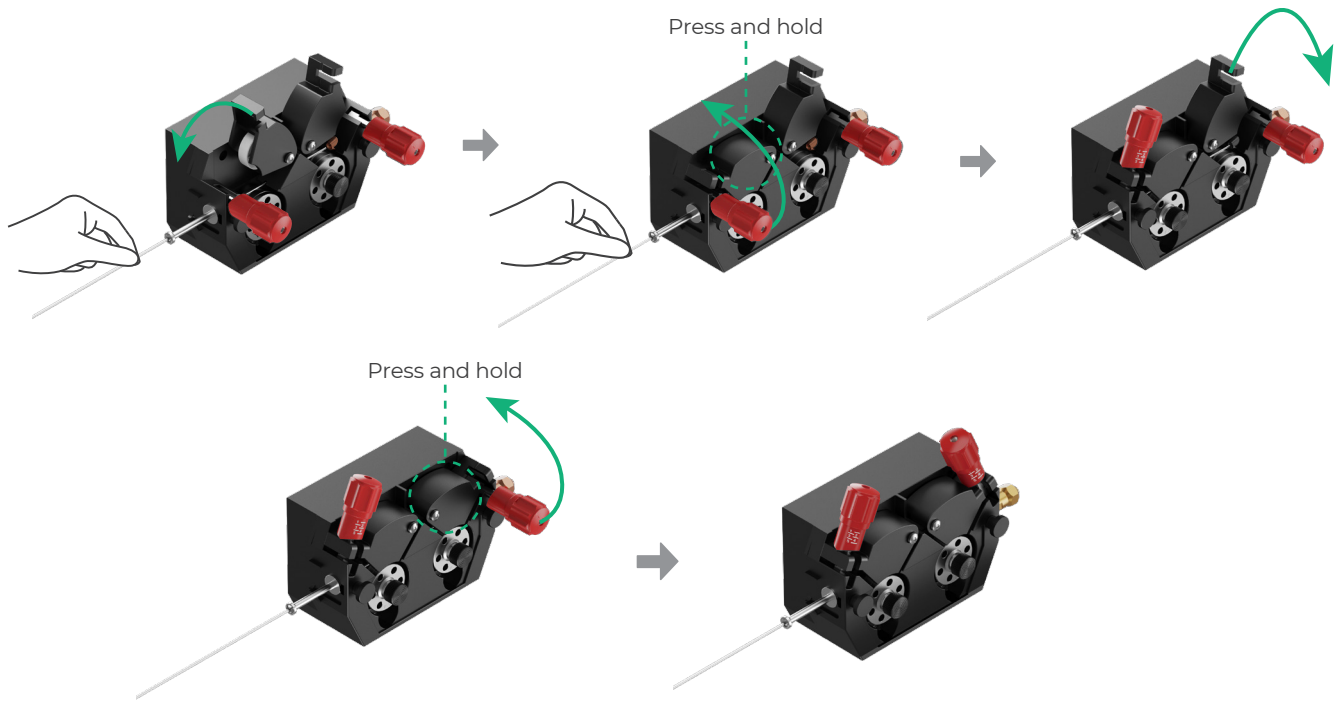
When the wire passes over a drive roll, press the wire slightly to make it pass through.



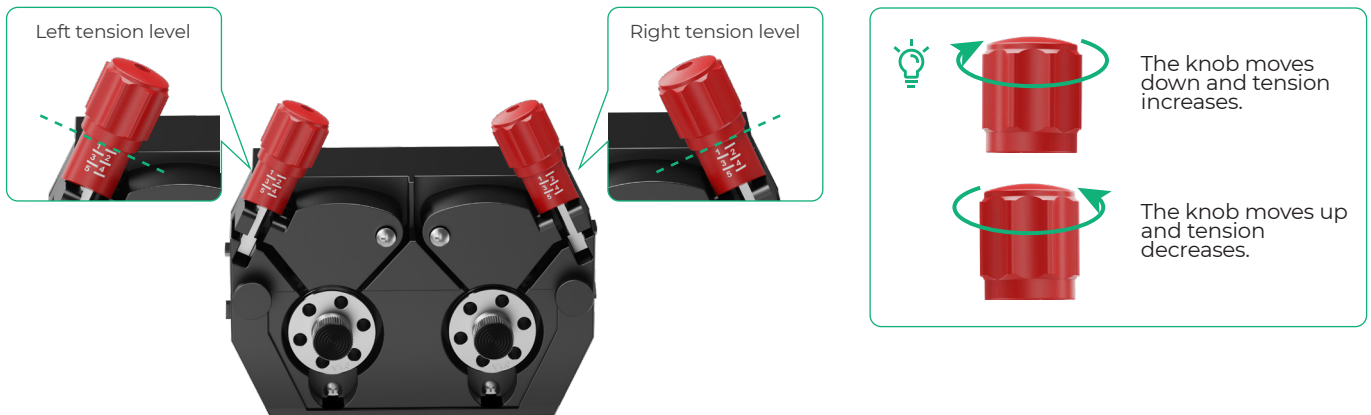
Ensure that the wire passes through the drive rolls into the wire feeding tube.



Pinch the wire until you close a tensioner.



(3) Rotate the tensioners' knobs to adjust the wire feed tension. The number reached by the knob indicates the tension level. A larger number indicates a higher tension.



Adjust the roller tensioners based on the wire diameter by referring to the table below. Then, fine-tune the tension according to the actual situation.

Welding wire diameter (mm)	Left tension level	Right tension level
0.8	2.5	2
1	2.5	2
1.2	2	1.5
1.6	2.5	2

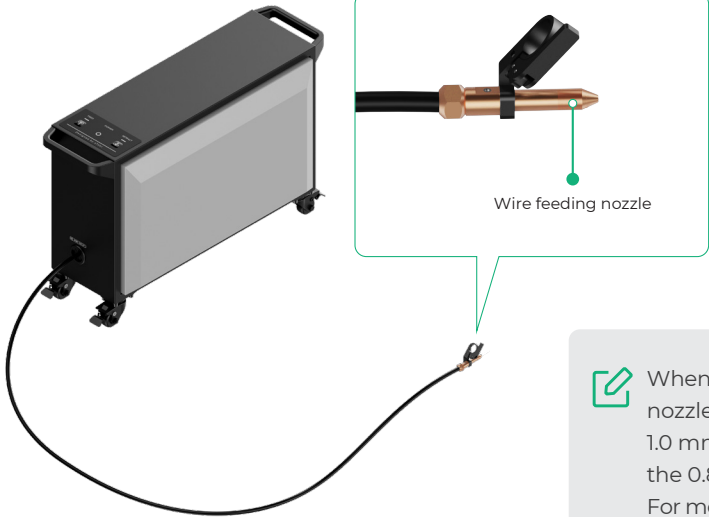


## 6 Feed the welding wire






The wire feeder is powered by the main unit. To feed wire electrically, ensure that the main unit is turned on and properly connected to the wire feeder.

(1) Based on the table below, check if the wire feeding nozzle is of the right size to feed the wire you use.

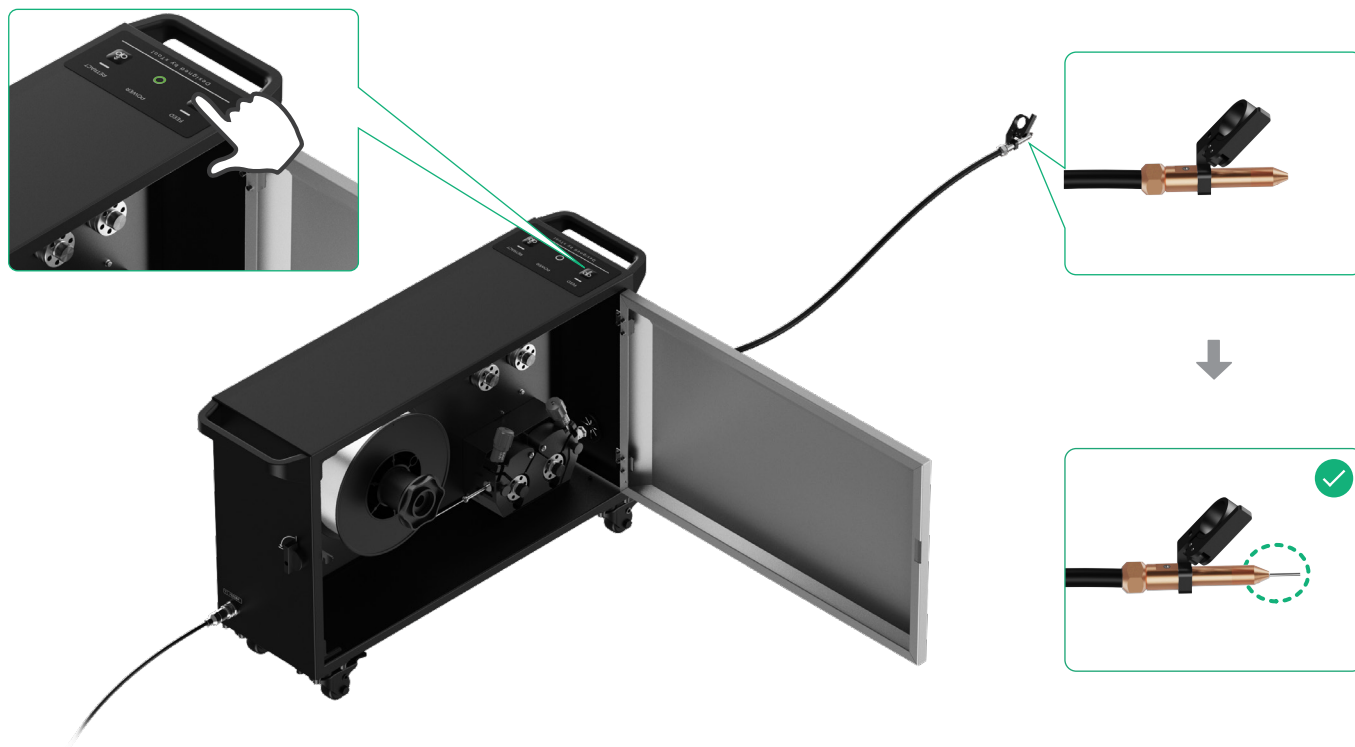


Wire feeding nozzle

Wire feeding nozzle	Supported wire diameter
0.8/1.0 	0.8 mm / 1.0 mm
1.2/1.6 	1.2 mm / 1.6 mm

 When delivered, the wire feeding tube is installed with a 0.8 / 1.0 nozzle at the end with a fastener, and can feed either 0.8 mm or 1.0 mm wire. If you use a 1.2 mm or 1.6 mm wire, please replace the 0.8 / 1.0 nozzle with the provided 1.2 / 1.6 wire feeding nozzle. For more replacement instructions, see the "Maintenance" chapter.

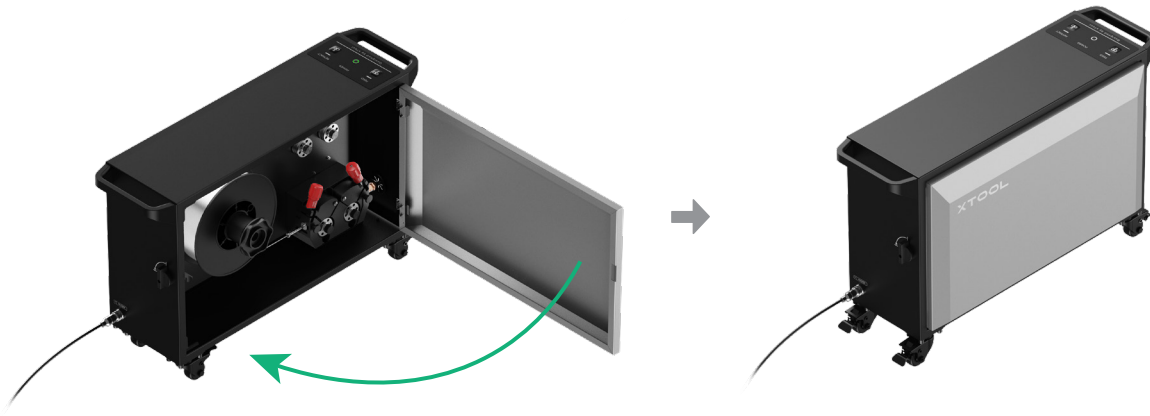
(2) Press and hold the feed button on the wire feeder until the wire extends out of the nozzle.



When feeding the wire, observe the inside of the wire feeder. If the wire spool rotates counterclockwise at a constant speed, the wire feeder is working properly.



(3) Close the door of the wire feeder.

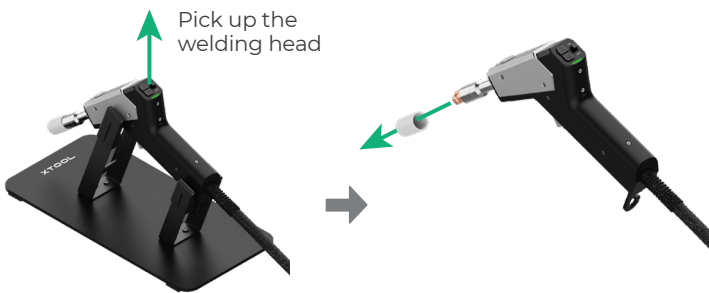


## 7 Install the wire feeding tube on the welding head

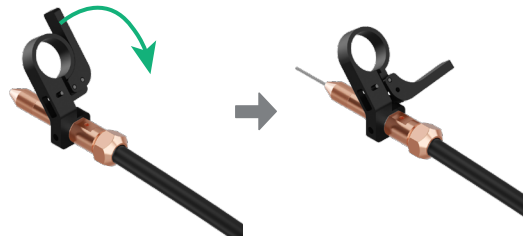


To prevent accidentally triggering laser emission, ensure that **Enable lasering** is off on the touchscreen before operations.

(1) Pick up the welding head and remove the dustproof cap.

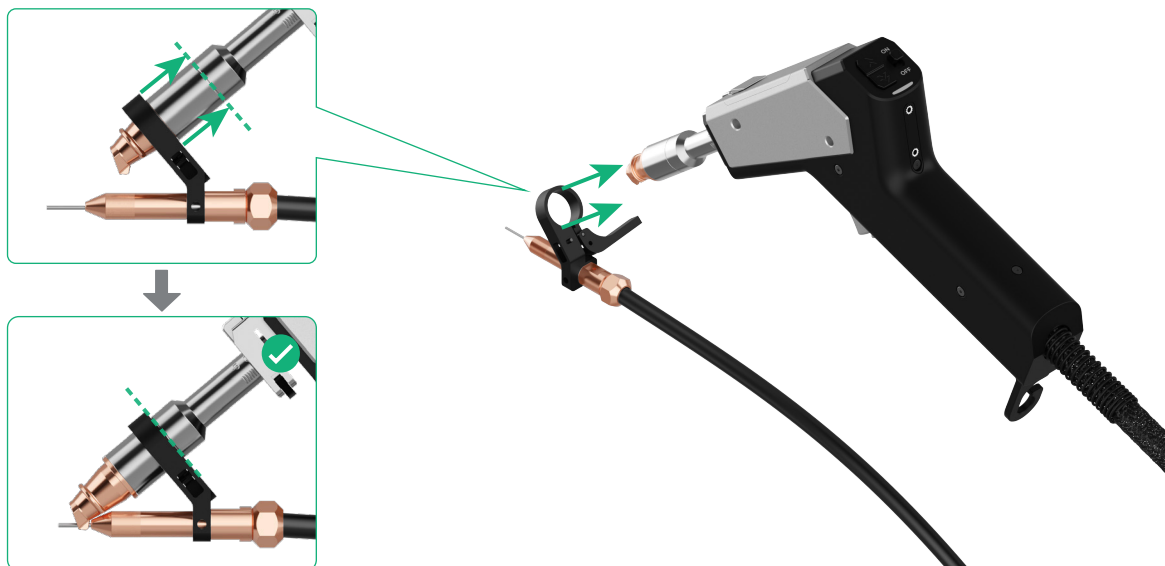


(2) Open the fastener on the wire feeding tube.

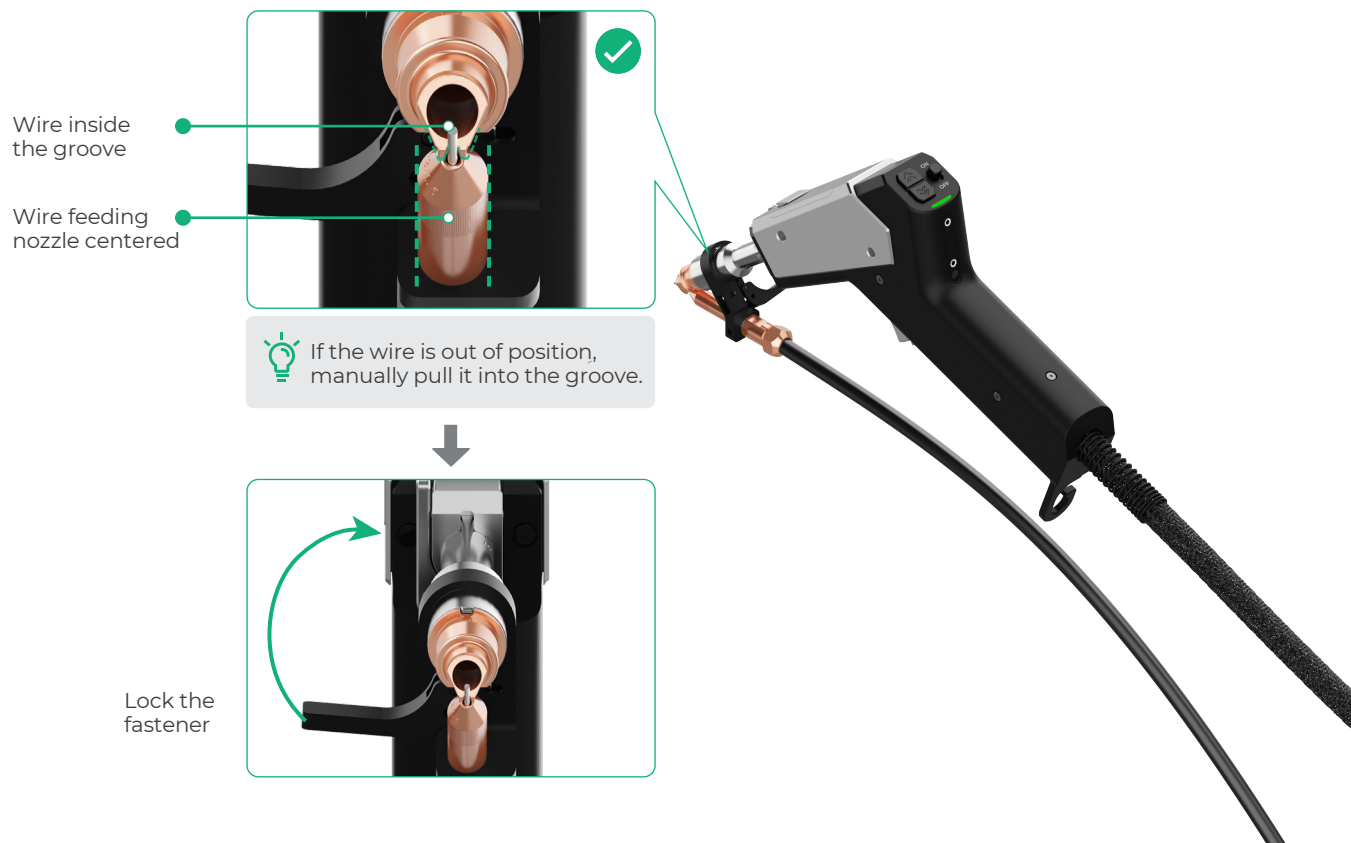


Keep the dustproof cap properly. When you are not using the welding head, cover the welding tip with the cap to prevent dust from getting inside and damaging the welding head.

(3) Slide the fastener onto the welding head until the ring reaches the marking line. (You can further fine tune its position as needed.)



(4) Ensure that the wire feeding nozzle is centered and that the wire comes out from the groove of the welding nozzle. Then, lock the fastener.



(5) Secure the wire feeding tube in the wire clamp of the welding head. Then, place the welding head back to the cradle.



For more information on how to use the wire feeder, scan the QR code or visit the link.



[support.xtool.com/product/56](https://support.xtool.com/product/56)

## Use xTool MetalFab Laser Welder 1200W



Before operating the device, please follow the Safety Instructions to put on PPE and take proper safety precautions. Necessary PPE includes: laser safety goggles, welding helmets, dust mask, laser and heat resistant gloves, clothing, and aprons.



### Safety instructions

Each time you turn on the device (except for the first time you unlock it), the touchscreen will display the safety instructions. Please read and familiarize yourself with all the safety instructions, and then tap **Confirm having read and understood the safety instructions** to enter the operation interface.

**Safety instructions**

- Only personnel professionally trained in welding and laser safety are authorized to operate this device within laser-controlled areas.
- Before laser activation, ensure wearing compliant protective eyewear, masks, and clothing.
- Do not clamp the safety circuit frame to any part of the welding gun or wire feeder.
- Do not touch workpieces or parts immediately after welding to avoid burns.
- Gas cylinders must be kept away from heat sources and avoid exposure to laser beams or direct sunlight.
- The welding area must be well ventilated, or equipped with exhaust and purification systems.
- Flammable materials, explosives, or volatile solvents must not be placed within 10 meters of the equipment.
- Ensure the device is properly grounded before turning it on. Never omit the ground connection, as this may pose safety risks including electric shock, fire, or equipment damage.

Confirm having read and understood the safety instructions

### Operation interface

	Weld	Clean	Cut			
<b>Standard mode</b>	Material type					
	Stainless steel	Carbon steel	Galvanized steel	Aluminium	Brass	
<b>Advanced mode</b>	Material thickness					
	0.5mm	1mm	2mm	3mm	4mm	5mm
<b>Technique library</b>	Wire diameter					
	0.8mm	1mm	1.2mm	1.6mm		
<b>Machine status</b>	Switch to advanced mode with current settings>			Enable wire feeding	Enable lasering	
<b>System settings</b>						
<b>Wire Feeder</b>						
<b>Safety interlock loop</b>						

#### ■ Standard mode:

Allows you to switch between welding, cleaning, and cutting modes, set basic processing parameters, and quickly start processing.

#### ■ Advanced mode:

Offers more welding modes, and allows you to adjust more processing parameters and save the parameter settings to the technique library.

#### ■ Technique library:

Stores parameter settings categorized by processing modes and processing scenarios. You can quickly apply these settings to processing.



For more information about the touchscreen and processing parameters, scan the QR code or visit the link.



[support.xtool.com/product/56](https://support.xtool.com/product/56)

## Laser welding (in standard mode)

**1** Supply the shielding gas and adjust the gas flow rate.



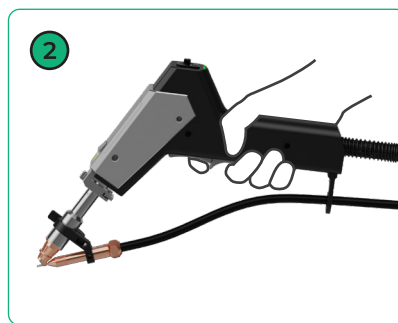
- Ensure that a gas flow meter is fitted to the gas cylinder (or gas generator) to control the gas flow rate for welding.
- The way of opening the valve may differ for different types of gas cylinders. The picture is for illustration only.



Ensure that Enable lasering is off when you adjust the gas flow rate.



(1) Open the gas cylinder valve

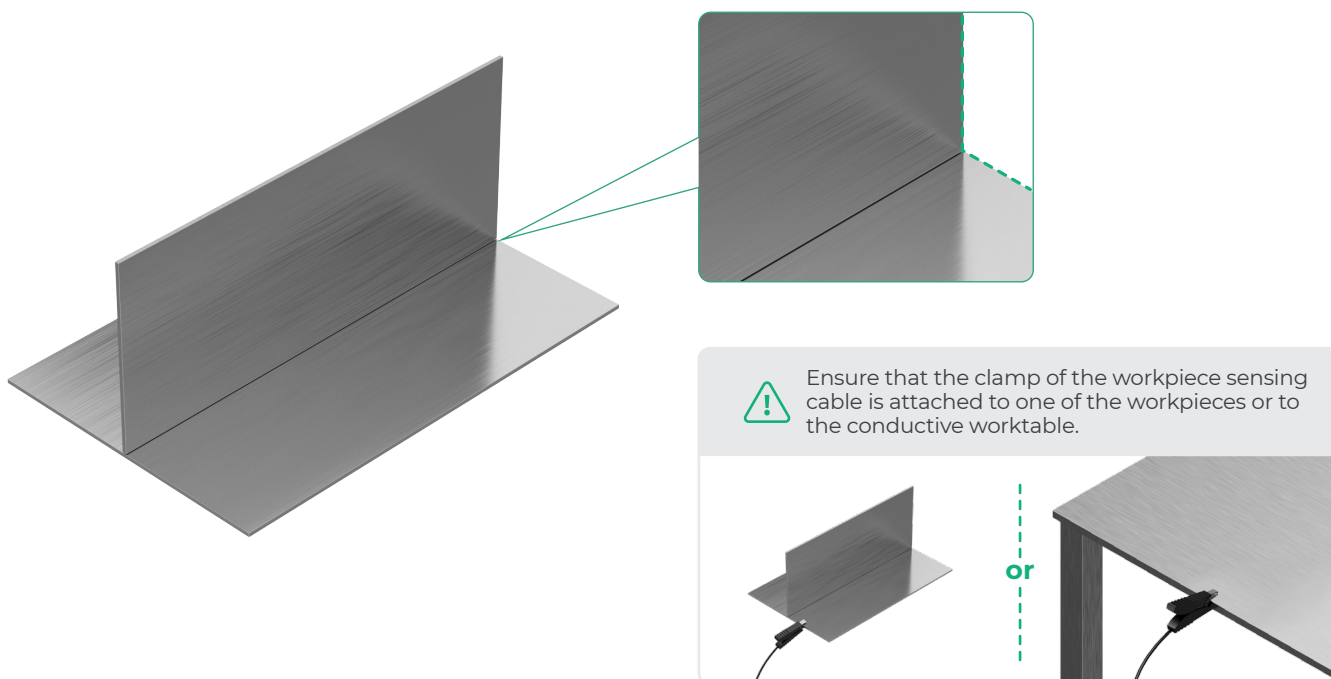


(2) Press and hold the grip sensing button and trigger to allow gas flow

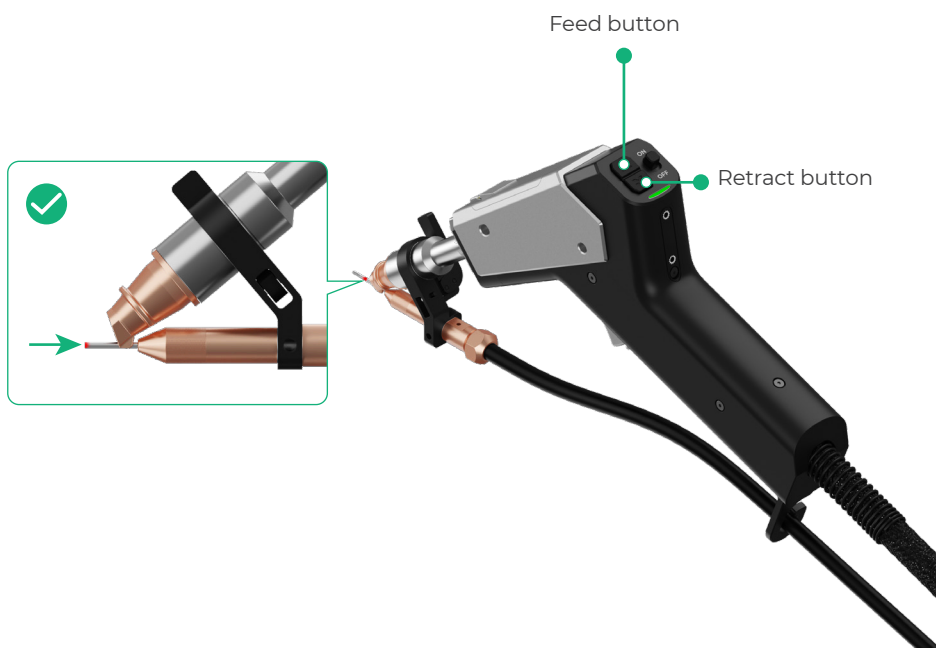


(3) Adjust the gas flow rate to 15 L/min – 30 L/min

- 2** Place the workpieces stably on the worktable, with the welding parts aligned to each other.

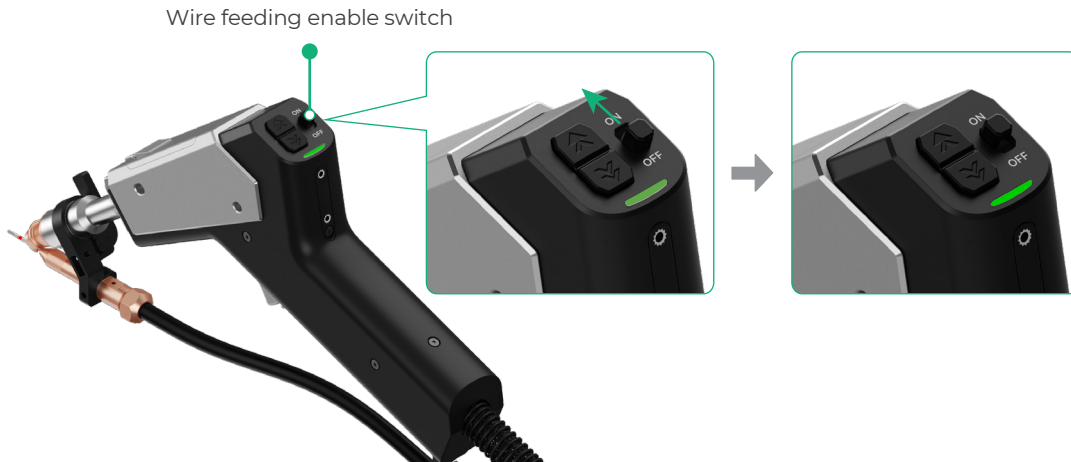


- 3** Press the feed and retract buttons on the welding head to adjust the wire until its tip coincides with the red spot.



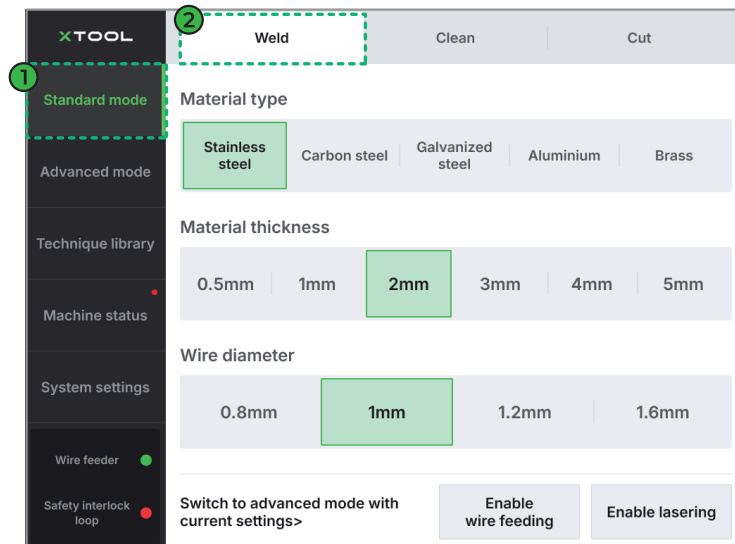
Calibrate the welding head if the red spot falls at the left or right side of the extended wire or if the spot is not visible or blurred. Refer to the "Maintenance" chapter to calibrate the position of the red spot before welding.

- 4 Turn on the wire feeding enable switch to enable the auto feeding function.

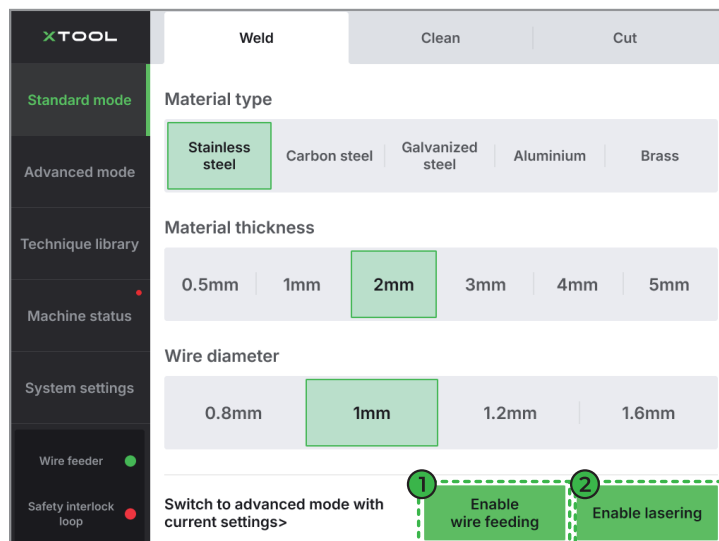


Wire feeding enable switch: The welding head feeds wire automatically only after you turn on the wire feeding enable switch.

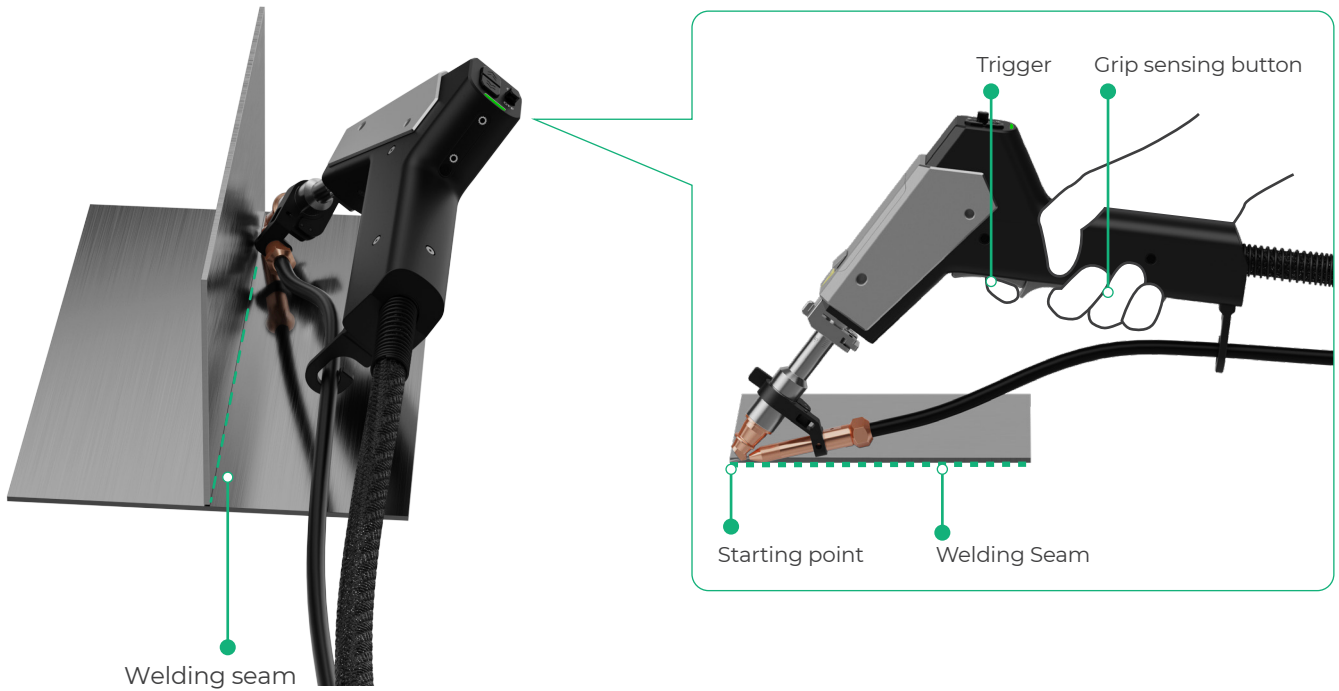
- 5 On the touchscreen, choose **Standard mode** > **Weld**. Select the material type, material thickness, and wire diameter according to the actual situation.



- 6 On the touchscreen, tap **Enable wire feeding** to allow wire feeding and **Enable lasering** to allow laser emission.



- 7** Aiming the welding nozzle at the starting point, press and hold the grip sensing button and trigger to start welding. Ensure that the welding head moves in the same direction as the welding seam.



- Ensure that the welding head tip contacts with the welding target, so that the safety interlock loop can be closed and the welding head can emit laser.
- As the welding head feeds the wire forward, a reaction force is generated from the welding point that pushes the welding head backward. Simply hold the welding head steady and guide the direction. To avoid wire sticking, do not press the welding head downward.
- After the welding is completed, the workpiece and parts of the welding head (such as the nozzle and the graduated tube) will remain hot for some time. Do not touch the hot areas without protection.



For more information about the processing modes and operating instructions, scan the QR code or visit the link.



[support.xtool.com/product/56](https://support.xtool.com/product/56)

## Maintenance



Turn off the power before replacing accessories.

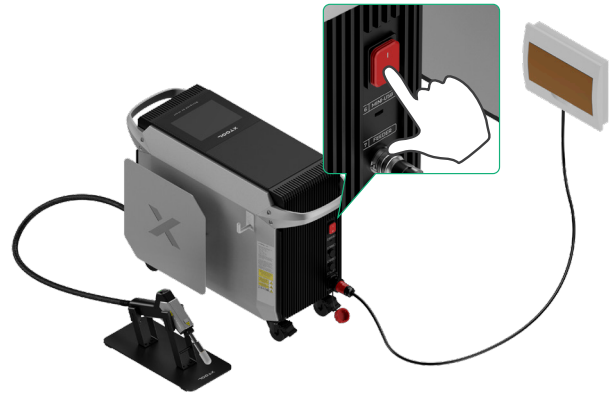
### Replace the welding head nozzle

#### ■ Replace with cutting nozzle

(1) On the touchscreen, tap **System settings** and take down the value of **Focus scale reference**.

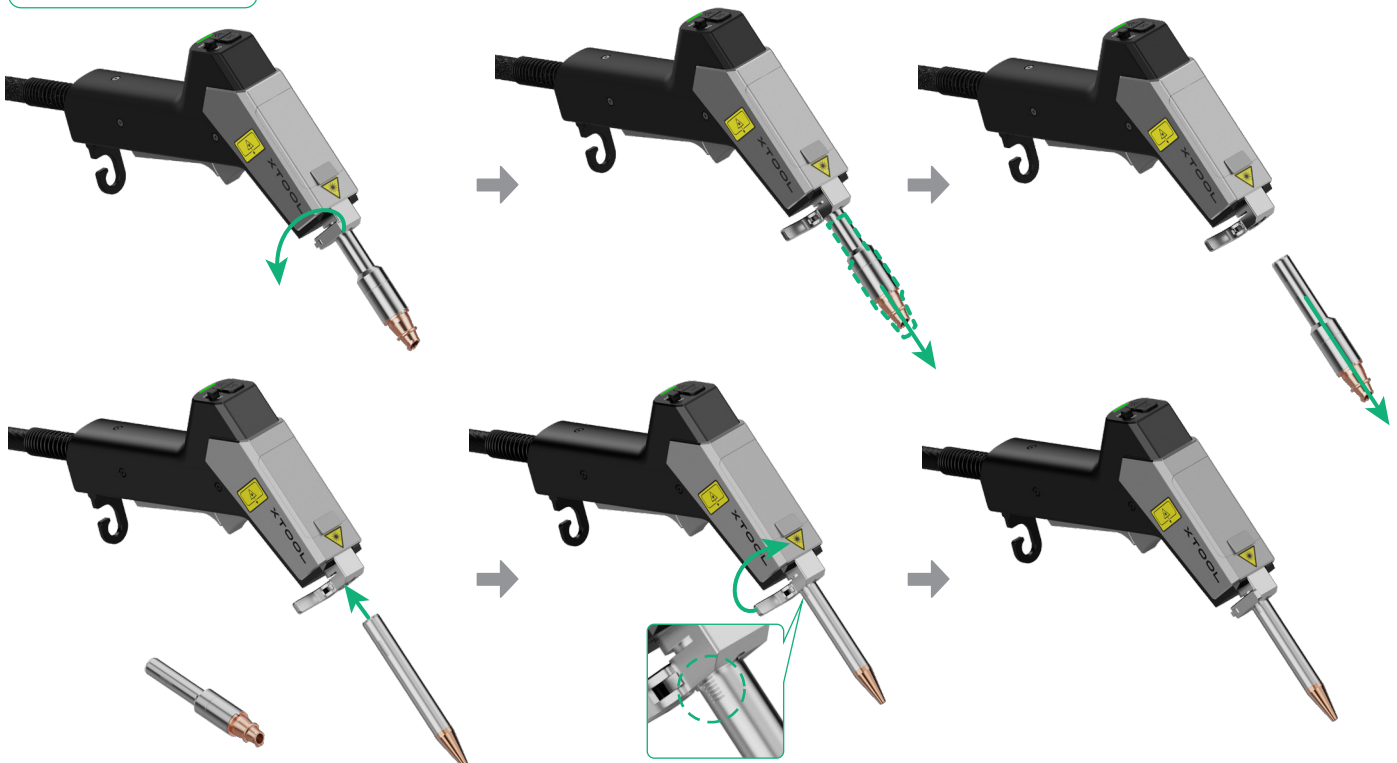
(2) Turn off the device.

	Machine information	Machine settings
Standard mode	Device name	xTool MetalFab Laser Welder 1200W
	Machine serial number	WWWWW456SN123456SN13455
Advanced mode	Laser module serial number	LX2BDJB02972
	Machine firmware version	V40.70.001.2425.01
Technique library	Screen firmware version	V1
Machine status	Laser control firmware version	V1
1	System settings	Welding head firmware version V1
	Wire feeder	Wire feeder firmware version V1
	2	Focus reference scale -1
	Safety interlock loop	



⑨ Cutting tip

(3) Replace the nozzle.



Keep consistent with **Focus scale reference**



After installing the cutting tip, turn on the device and check if the welding head emits a clear and integral red spot. If not, please calibrate the red spot position, so as to avoid burning the nozzle during laser cutting.



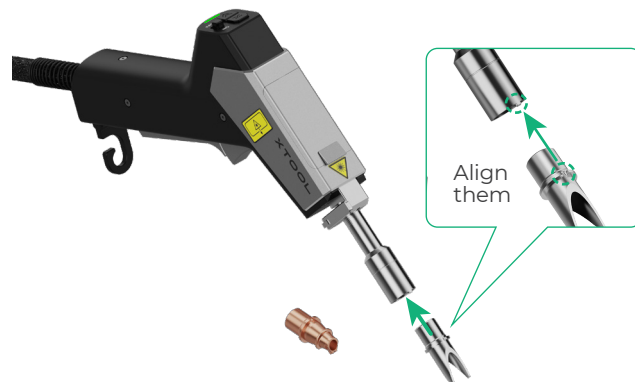
## ■ Replace with welding or cleaning nozzle



⑪ Cleaning nozzle  
(for handheld use)



The welding and cleaning nozzles can be replaced in the same way.



## Replace the wire feeding nozzle



⑲ Wire feeding  
nozzle 1.2 / 1.6



The wire feeding tube has an end with a fastener and a replaceable nozzle. You need to replace the nozzle based on the diameter of the welding wire.

Wire feeding nozzle	Supported wire diameter
0.8/1.0 	0.8 mm / 1.0 mm
1.2/1.6 	1.2 mm / 1.6 mm



## Clean or replace the lens protector in the welding head

If the laser power decreases and the welding spark weakens, the welding head's lens protector may get dirty or damaged. Clean or replace it as needed.

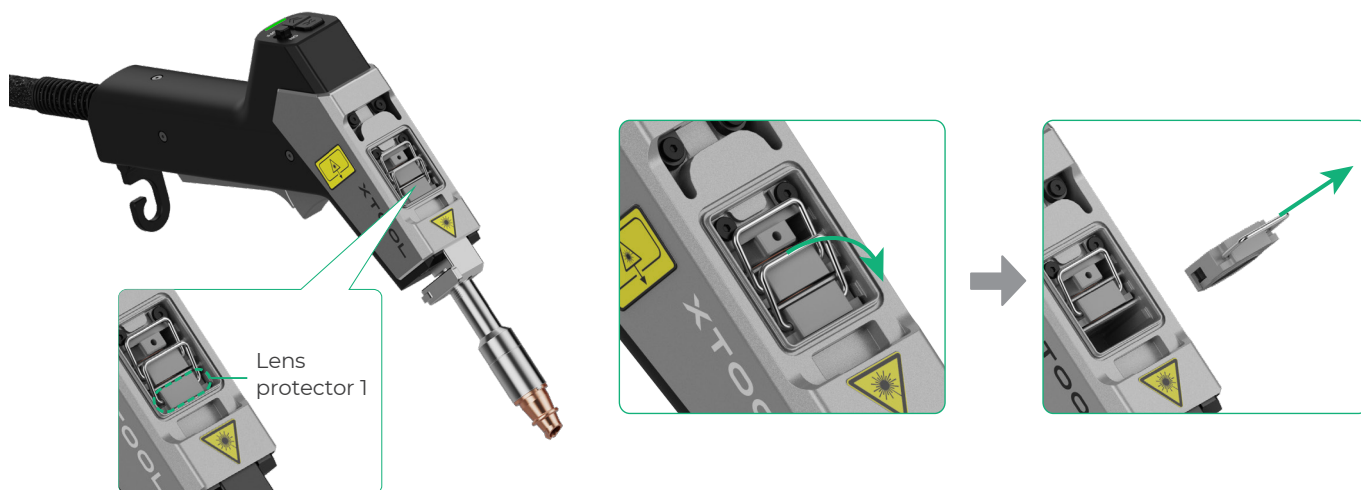


Please clean or replace the lens protector in a dust-free or relatively clean environment. Before operations, clean the welding head with lint-free paper or lint-free cloth, and wash your hands or wear lint-free gloves (not provided).

### (1) Remove the cover on the top of the welding head.



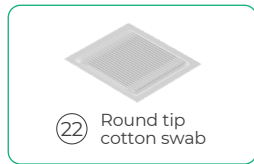
### (2) Remove the lens protector 1.



After the lens protector is removed, it is recommended that you put the cover back to prevent dust from falling inside the welding head and causing damage.



### (3) Check the lens protector.

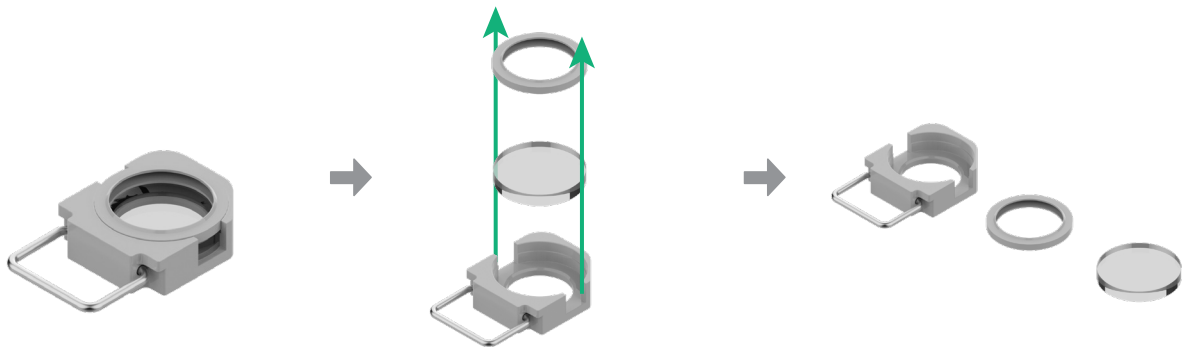


■ If the lens protector is dirty, use a cotton swab dipped with alcohol to clean it. Then, install it back to the welding head.



■ If the lens protector is burned or heavily dirty and uncleanable, it needs to be replaced.

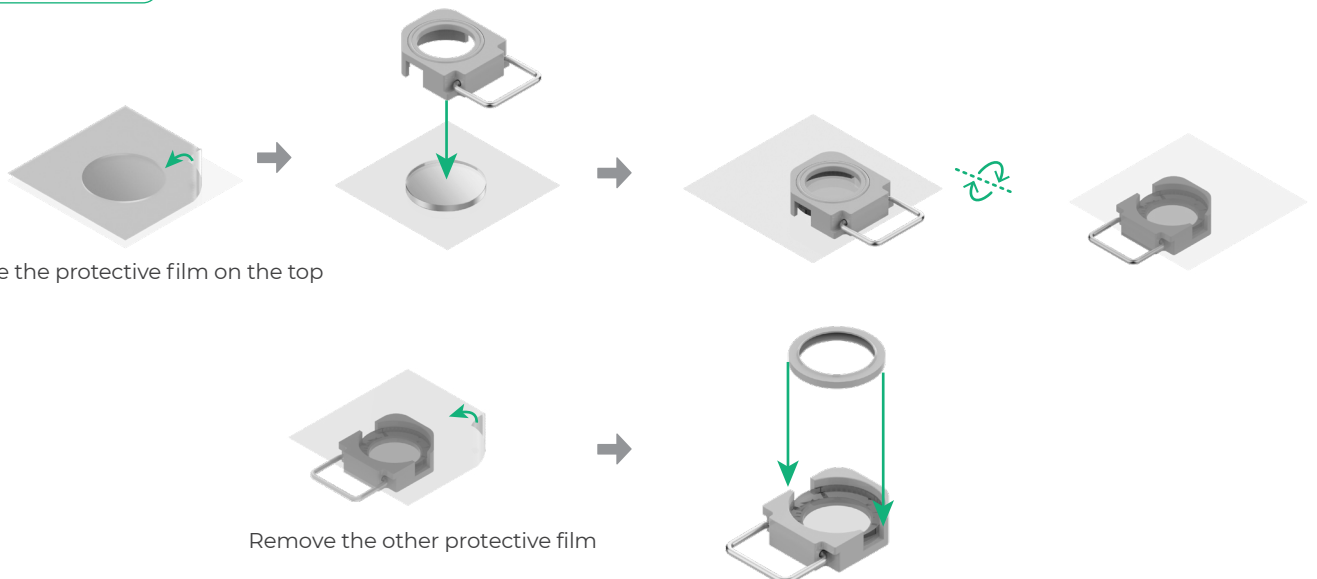
### (4) Keep your hands clean or wear lint-free gloves to remove the gasket and lens protector.



### (5) Install a new lens protector.



Do not touch the glass with your fingers or other tools during replacement as the glass may get dirty. If the glass accidentally gets dirty or dusty, use a cotton swab to clean it.



Remove the protective film on the top

Remove the other protective film

After replacing the glass, install the lens protector back to the welding head.

## Calibrate the red spot position for the welding head



### Red spot offset

- Perform left/right offset calibration when the laser spot deviates left or right from the wire, despite proper nozzle installation.
- If the red spot is not visible or blurred, the light beam may deviate too much that it hits on the inner wall of the nozzle, getting blocked or reflected. Try calibrating the left/right offset. If the problem persists, reset the red spot position offset to zero and try calibrating the up/down offset.

### Calibrate the left/right offset

(1) On the touchscreen of the main unit, tap **System settings** > **Machine settings** > **Enter administrator settings**. Then, input the 8-digit password: 88888888.

The screenshot shows the XTOOL main menu. On the left sidebar, 'System settings' is highlighted with a green dashed box and a circled '1'. In the main area, 'Machine settings' is highlighted with a green dashed box and a circled '2'. Below it, 'Enter administrator settings' is highlighted with a green dashed box and a circled '3'. An arrow points to the next screen.

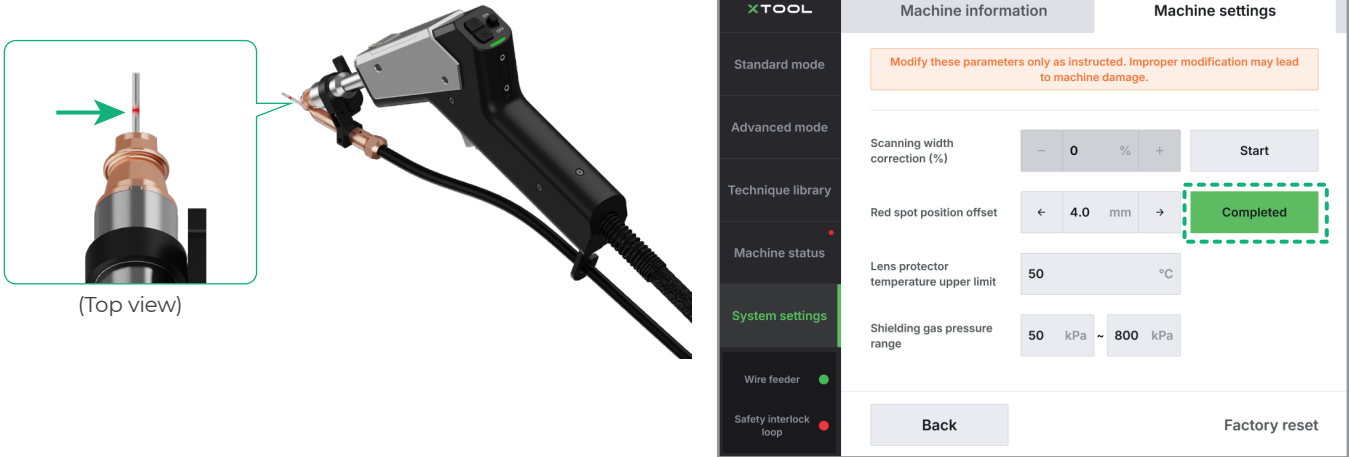
The next screen is titled 'Please enter an 8-digit password'. It shows the password '88888888' entered. Below the input field is a numeric keypad with digits 1-9, 0, and a backspace icon. At the bottom are 'Back' and 'Confirm' buttons.

(2) To the right of **Red spot position offset**, tap **Start**. Then, tap the left arrow to decrease the offset and move the red spot leftward; tap the right arrow to increase the offset and move the red spot rightward.

The screenshot shows the XTOOL 'Machine settings' screen. A warning message at the top states: 'Modify these parameters only as instructed. Improper modification may lead to machine damage.' The 'Red spot position offset' parameter is set to '0.0 mm'. The 'Start' button next to it is highlighted with a green dashed box. An arrow points to the next screen.

The next screen shows the 'Red spot position offset' parameter now set to '4.0 mm'. The 'Start' button is now labeled 'Completed' and is highlighted with a green dashed box. The 'Back' and 'Factory reset' buttons are at the bottom.

(3) When the center of the red spot falls at the welding wire, tap **Completed** to save the calibration result.



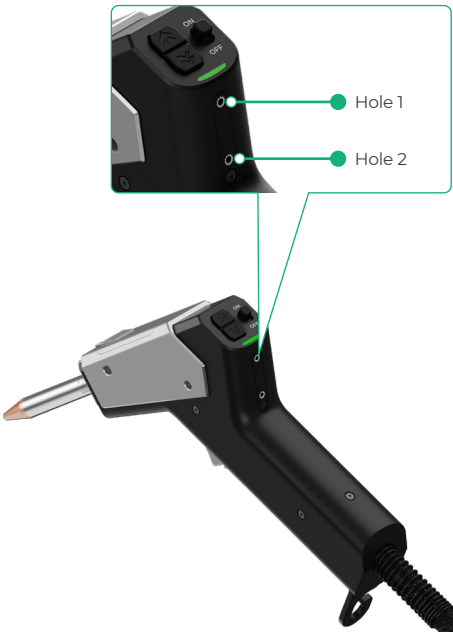
If the red spot remains invisible or blurred no matter how much you increase or decrease the offset, the red spot may deviate upward or downward. Reset the red spot position offset to zero and try calibrating the up/down offset.

Calibrate the up/down offset

When a cutting nozzle is used, the laser beam may strike the nozzle's inner wall, resulting in either blockage (no visible spot) or reflection (blurred spot). In such cases, perform up/down offset calibration. (Welding and cleaning nozzles have larger apertures and typically do not require such adjustment.)



On the back of the welding head, you can find two small holes. By rotating the screws inside the holes, you can move the red spot upward or downward.



Holes	Rotate direction	Red spot movement
Hole 1		
Hole 2		

**Refer to the following steps to calibrate the up/down offset:**



(1) Insert the hex key into hole 1, and slowly turn the screw counterclockwise to loosen it while observing the light emitting from the nozzle.

- If a clear red spot appears, stop turning the screw and go to step (4).
- If the screw cannot be loosened further but no clear red spot appears, go to step (2).



(2) Retighten the screw in hole 1 clockwise.



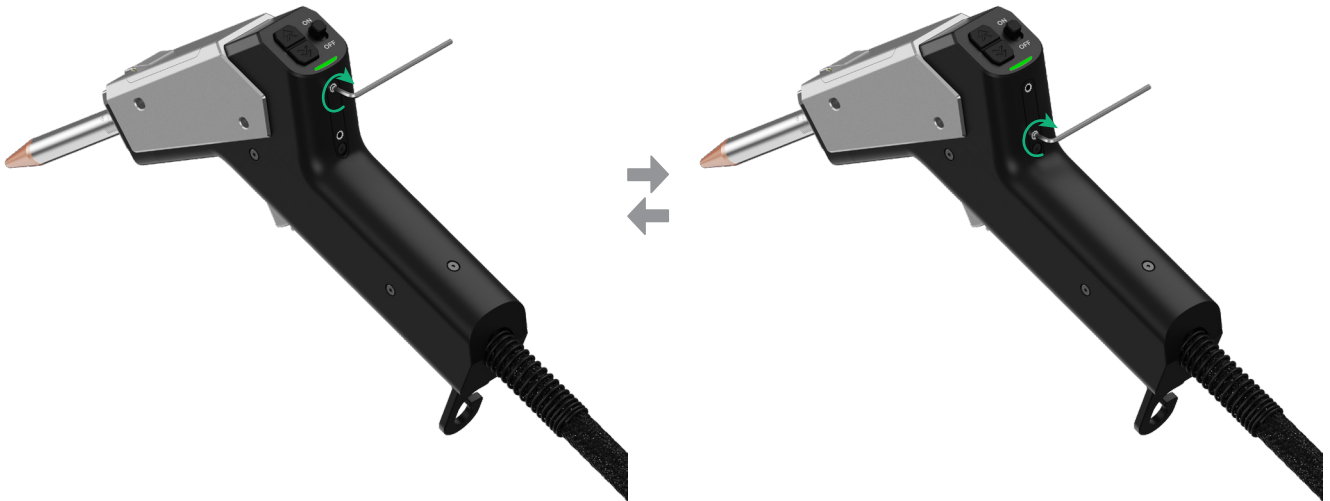
(3) Insert the hex key into hole 2, and slowly turn the screw counterclockwise to loosen it while observing the light emitting from the nozzle. When a clear red spot appears, stop turning the screw.



(4) Turn the screws in holes 1 and 2 clockwise alternately to slowly tighten them, while keeping the red spot visible and clear.



Tighten only a little bit each time. Otherwise, the light beam may shift significantly and hit on the inner wall of the nozzle.



Scan the QR code or visit the link to watch the video tutorial on calibrating the position of the welding head red dot.



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