XTOOL | X1 Galvo Source

User Manual



Statement ---------- 01

Essential guidelines ---------- 01

List of items ---------- 01

Meet the galvo source ---------- 03

Install the galvo source ---------- 05

Use the galvo source ---------- 21

Compliance statements ---------- 23

After-sales services ---------- 23

Statement

Thank you for choosing xTool products!

If you use the product for the first time, read carefully all the accompanying materials of the product to improve your experience with it. To the extent permitted by applicable law, the Company shall not be liable for any loss or damage resulting from your failure to use the product in accordance with the instructions and requirements set forth in the Manual, or from your misuse or improper operation of the product.

The Company has collated the content of the Manual rigorously and carefully, but errors or omissions may remain.

The Company is committed to continuously improving product functions and service quality, and therefore reserves the right to change any product or software described in the Manual and the content of the Manual at any time.

The Manual is intended to help you use the product properly and does not include any description of hardware and software configuration. For product configuration, refer to the related contract (if any) and packing list, or consult your distributor. Images in the Manual are for reference only and the actual product may vary.

Protected by copyright laws and regulations, the Manual shall not be reproduced or transcribed in any way, or be transmitted on any wired or wireless network in any manner, or be translated into any language, or be modified in any way, such as content, image, or layout modification, without the prior written authorization of the Company.

The Company is committed to continuously improving the product and related materials. The product and the Manual are subject to change, and updates can be found at xtool.com.

Essential guidelines

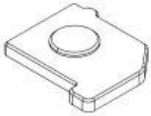
- This product is available in 5 W, 30 W, and 60 W models. Processing capability and included accessories vary by model.
- Use this product only with xTool X1. Before use, read and follow Safety Instructions and Quick Start Guide of xTool X1.
- This product provides only the laser source. To process materials, you need to additionally install the 20W diode galvo module on xTool X1.

List of items

Common items



Optical window



Steering mirror



Connection cable



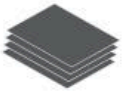
Screw



Screwdriver



Installation tool for optical window



Calibration card

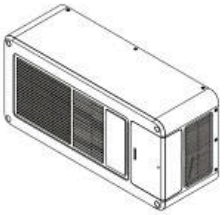


Laser calibration tool

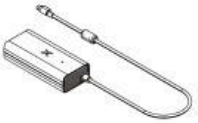


User manual

Items for 5W UV galvo source



5W UV galvo source



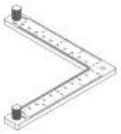
Power adapter (25 V, 8 A)



Power cable

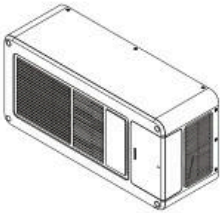


UV/Fiber/MOPA lens

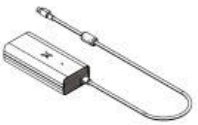


Positioning piece for
UV inner engraving

Items for 30W fiber galvo source



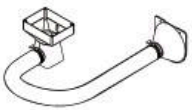
30W fiber galvo source



Power adapter (25 V, 8 A)



Power cable

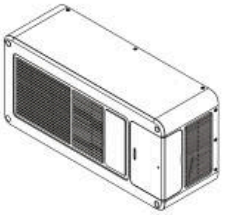


Exhaust assembly for embossing

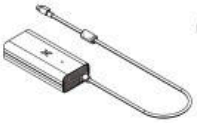


Thumb screw

Items for 60W MOPA galvo source



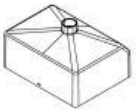
60W MOPA galvo source



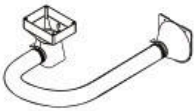
Power adapter (24 V, 14.5 A)



Power cable



Narrow-aperture lens guard



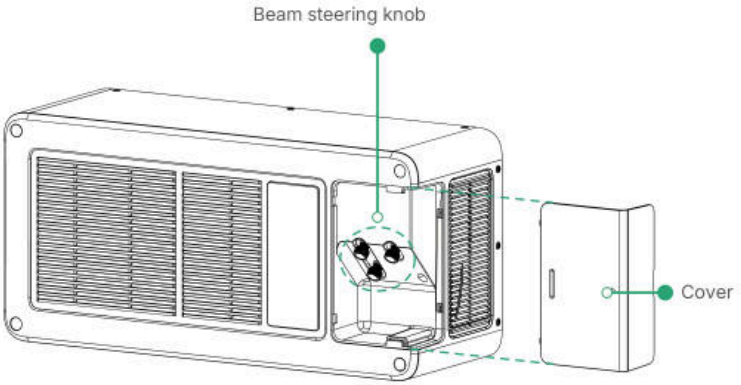
Exhaust assembly for embossing



Thumb screw

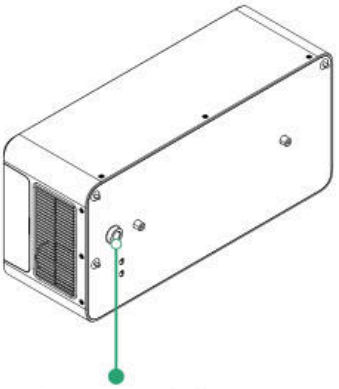
Meet the galvo source

Product structure

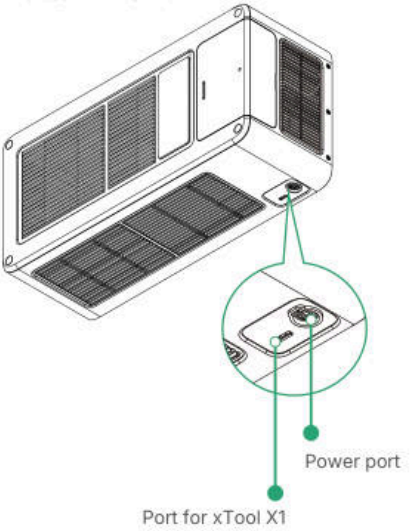


Adjust the beam steering knob only as instructed by the software. Random adjustments may shift the optical path and affect processing.

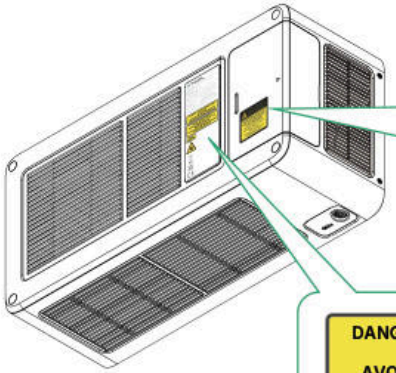
Rear view:



Bottom view:



Warning and instruction signs



For 5W UV galvo source

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

DANGER-INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT
Average output power: < 6 W
Wavelength: 355 nm
Classification to IEC 60825-1:2014 & EN 60825-1: 2014+A11: 2021
For professional use only

DANGER – CLASS 4 INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION



For 60W MOPA galvo source

CLASS 4 LASER PRODUCT
Average output power: < 67 W
Wavelength: 1064 ± 5 nm
Classification to IEC 60825-1:2014 & EN 60825-1: 2014+A11: 2021

For 30W fiber galvo source

CLASS 4 LASER PRODUCT
Average output power: < 34 W
Wavelength: 1060 nm – 1070 nm
Classification to IEC 60825-1:2014 & EN 60825-1: 2014+A11: 2021

For 5W UV galvo source

CLASS 4 LASER PRODUCT
Average output power: < 6 W
Wavelength: 355 nm
Classification to IEC 60825-1:2014 & EN 60825-1: 2014+A11: 2021

The device shall be reclassified as a Class 4 laser product if xTool X1 5W UV Galvo Source is installed. Refer to the user manuals for detailed safety instructions. Such a combination of device and galvo source is intended for professional use only and is not intended for consumer use.

Laser specifications

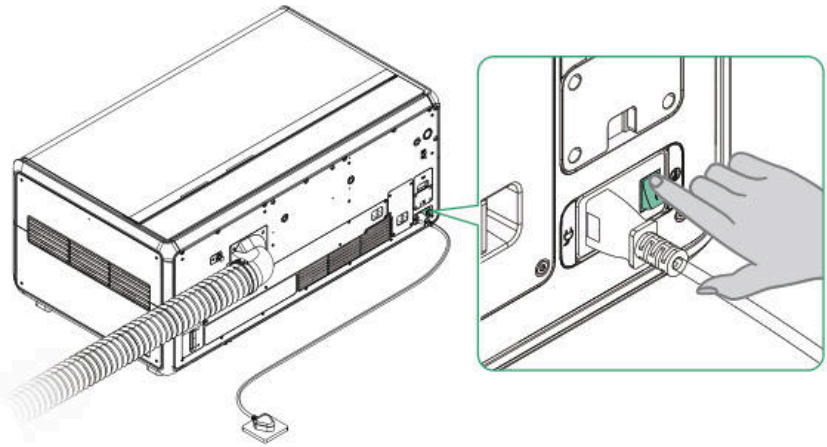
Product name	Laser type	Wavelength	Beam divergence	Average output power	Pulse duration	Repetition rate
xTool X1 5W UV Galvo Source	Ultraviolet	355 nm	< 0.2 mrad	< 6 W	< 15 ns	40 kHz
xTool X1 30W Fiber Galvo Source	Infrared	1060 nm – 1070 nm	0.2 mrad – 0.5 mrad	< 34 W	110 ns – 140 ns	40 kHz – 60 kHz
xTool X1 60W MOPA Galvo Source	Infrared	1064 ± 5 nm	< 0.5 mrad	< 67 W	2 ns – 500 ns	1 kHz – 4000 kHz

Working temperature

Product name	Working temperature
xTool X1 5W UV Galvo Source	10°C – 35°C
xTool X1 30W Fiber Galvo Source	0°C – 35°C
xTool X1 60W MOPA Galvo Source	

Install the galvo source

1 Power off xTool X1.



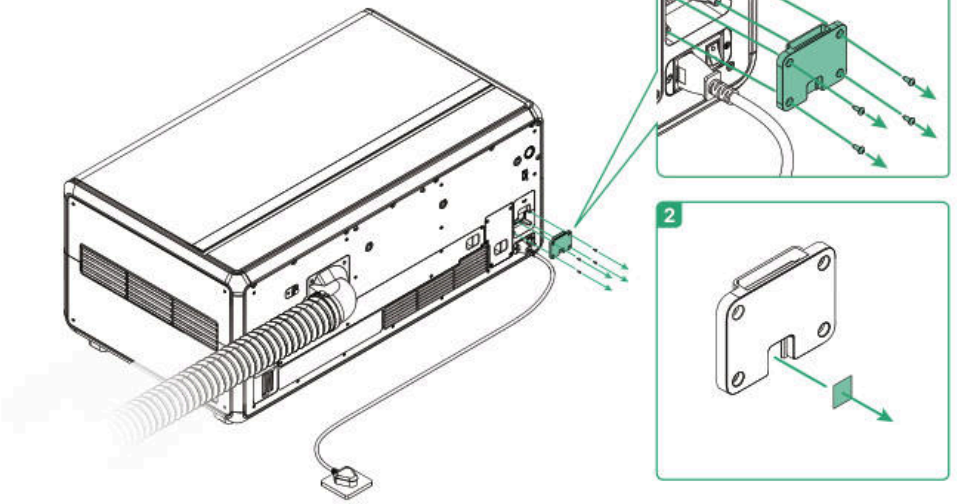
After powering off, reposition xTool X1 if necessary. Ensure that there is sufficient space at the rear for installation of the galvo source.

2 Connect the power cable.

(1) Remove the power port cover on the rear of xTool X1. Then, remove the dust cover at the opening of the power port cover.



2-in-1 screwdriver (Phillips + hex):
Use the Phillips end
(included in the package of xTool X1)

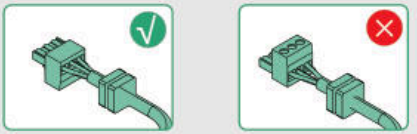


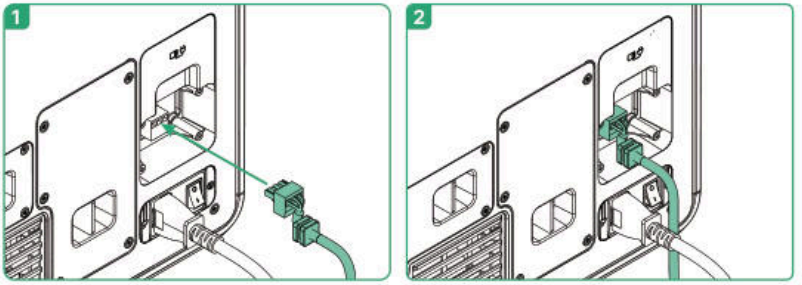
(2) Insert the power cable.



Power cable

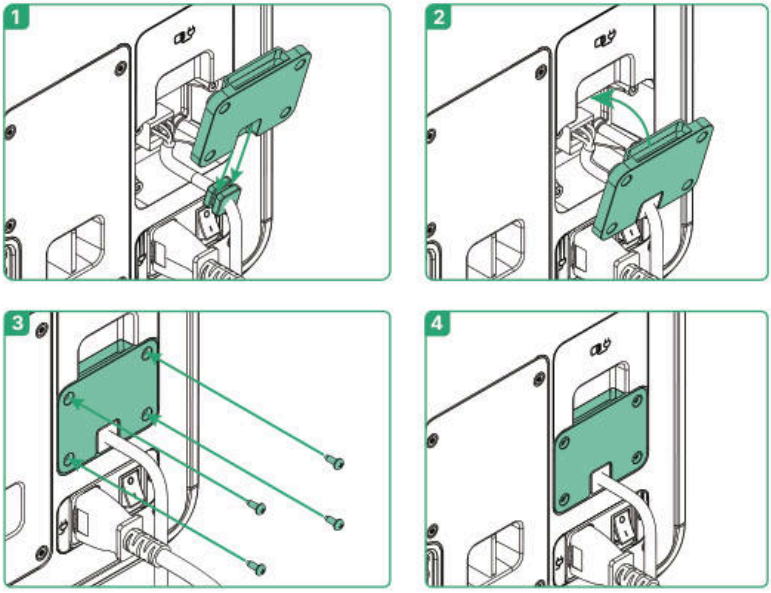
Ensure the plug is properly oriented when inserting the power cable. Do not insert it the wrong way.





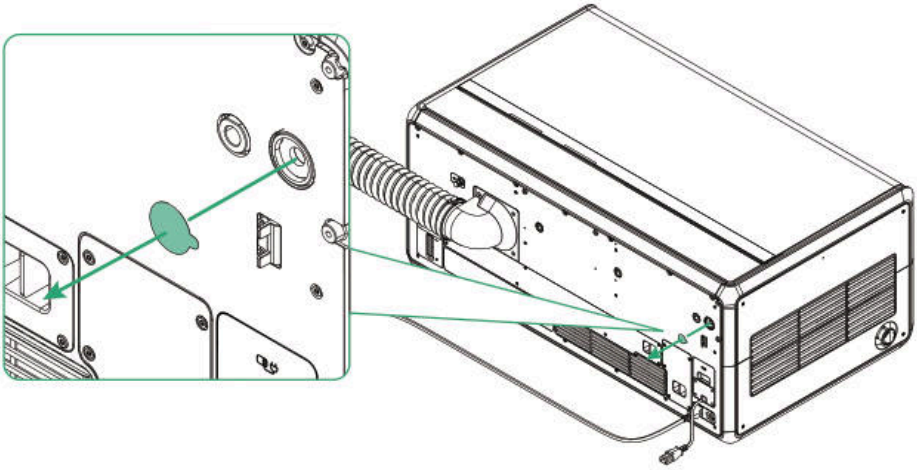
The actual length of the power cable may vary. The image is for reference only.

(3) Reinstall the power port cover.



3 Install the galvo source.

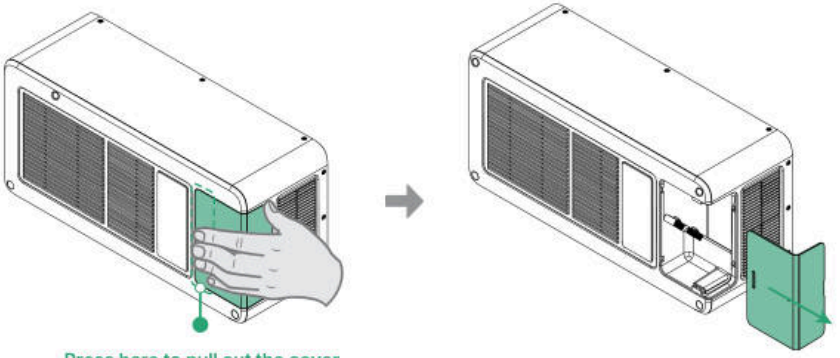
(1) Remove the dustproof sticker from the laser input window on the rear of xTool X1.



(2) Remove the cover of the galvo source.

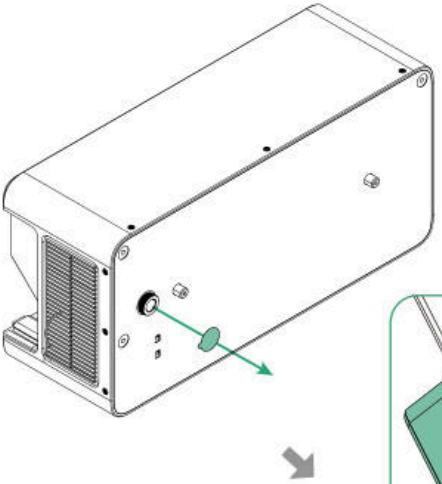


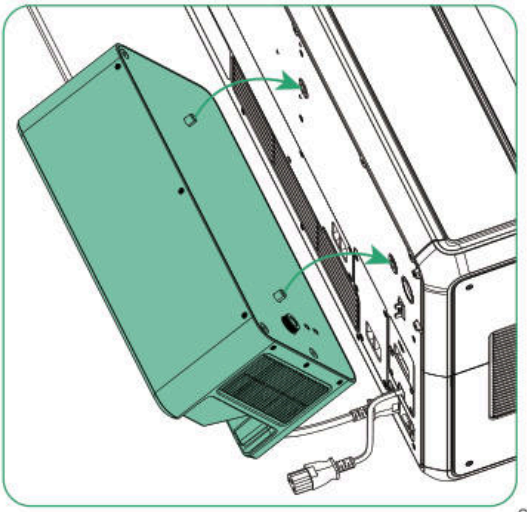
Galvo source



Press here to pull out the cover

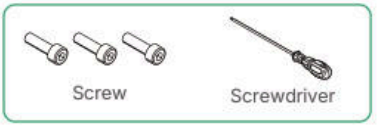
(3) Remove the dustproof sticker from the laser output window of the galvo source. Then, align the locating pins with the locating holes, and mount the galvo source onto the rear of xTool X1.



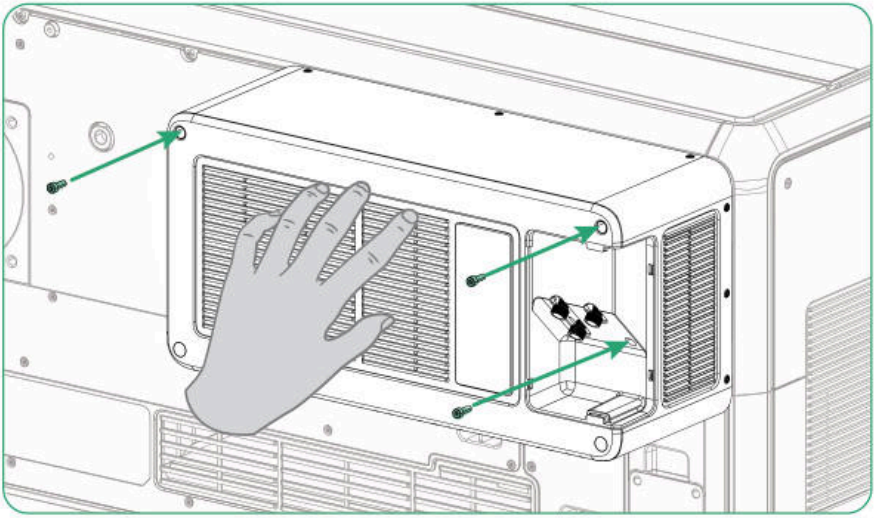


After mounting the galvo source, hold it by hand to prevent it from falling.

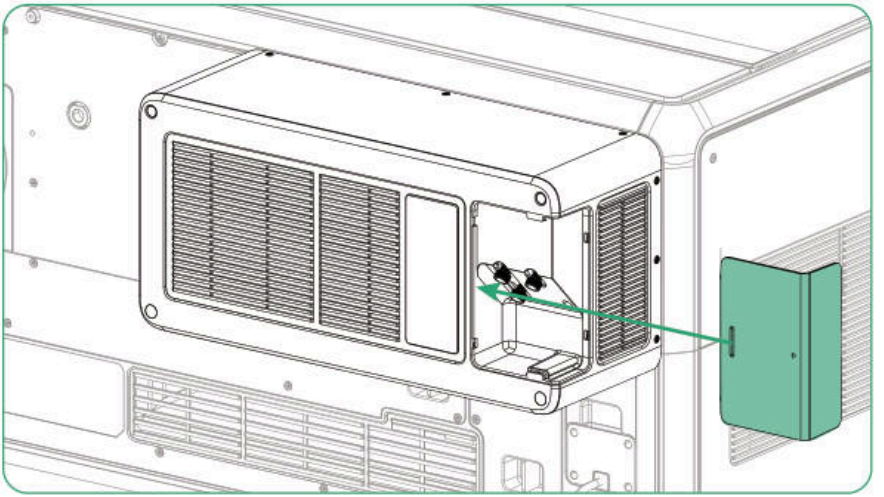
(4) Hold the galvo source in place and install the three screws to secure it.



- Two people are recommended for this step: one to hold the galvo source and the other to install the screws.
- After all three screws are installed, tighten them securely.

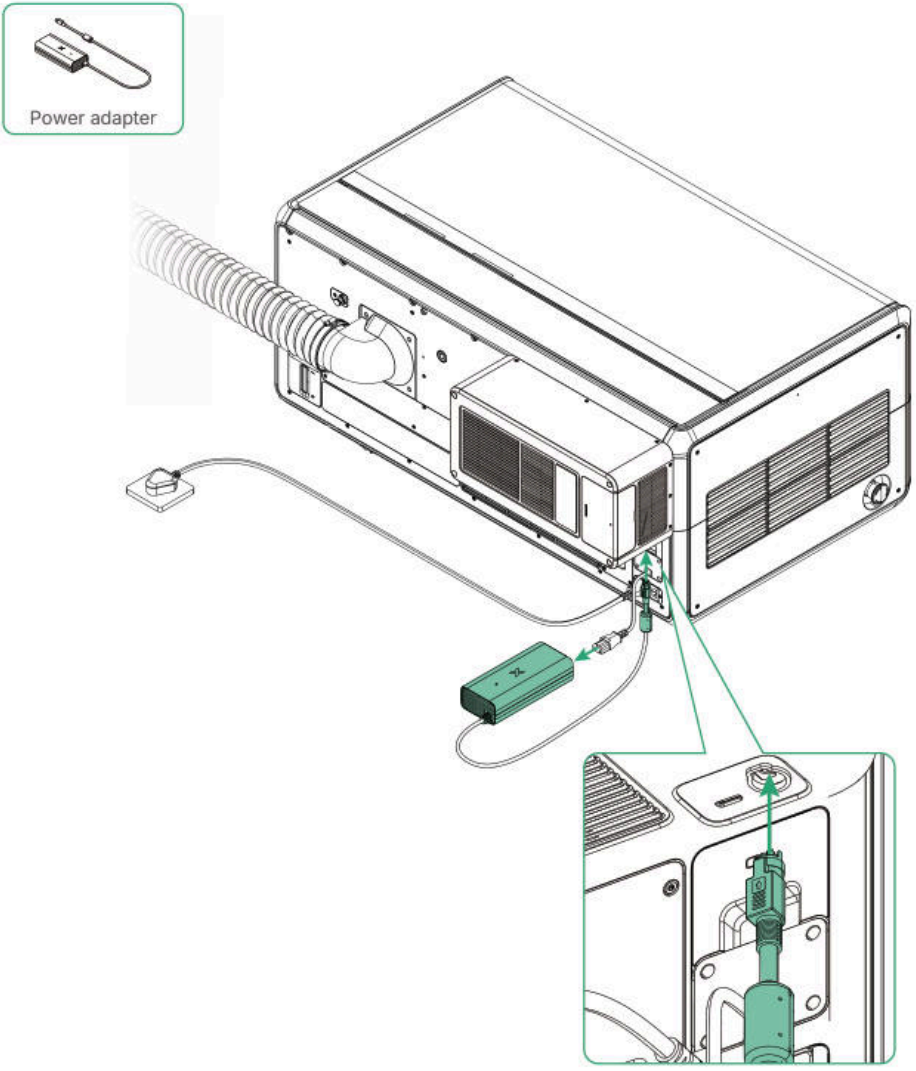


(5) Reinstall the cover of the galvo source.



4 Connect the power adapter.

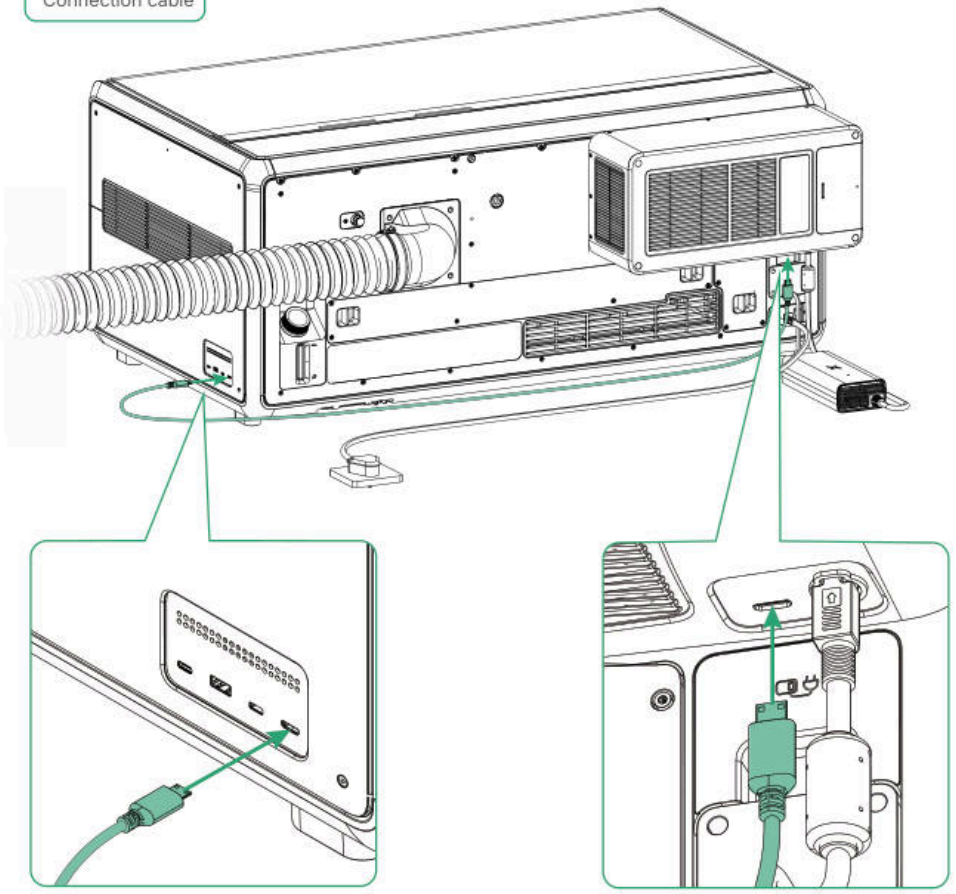
Connect the power cable to the power adapter. Then, connect the adapter to the galvo source.



5 Connect xTool X1.

Connect one end of the connection cable to the galvo source and the other end to the galvo source port on xTool X1.

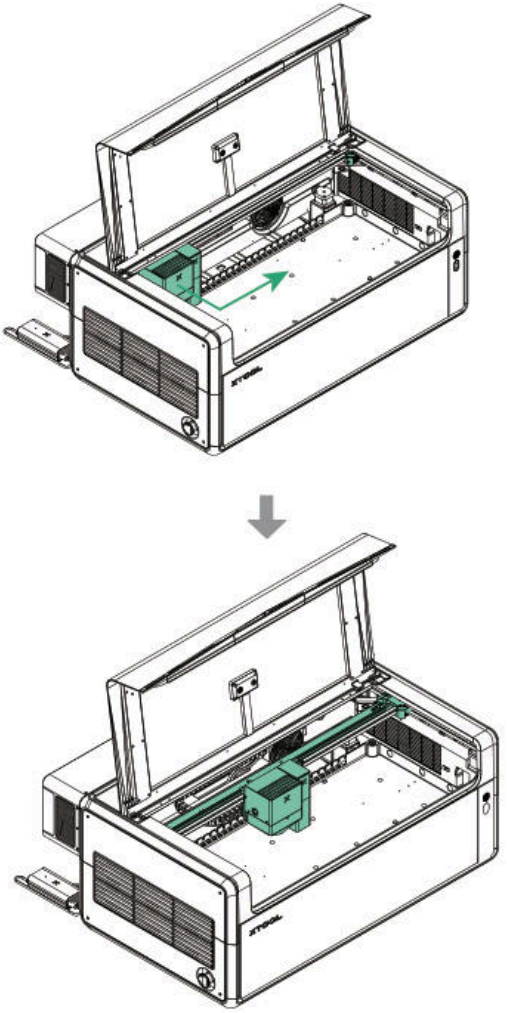




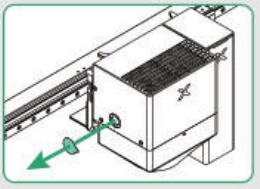
6 Install the optical window and steering mirror.

Perform the installation in a dust-free or relatively clean environment. Before operations, wash your hands or wear lint-free gloves (not provided).

(1) Open the lid of xTool X1. Adjust the x-axis guide rail and carriage position to facilitate the installation of the optical window and steering mirror.



Before using the galvo source, remove the dustproof sticker from the left side of the 20W diode galvo module.



(2) Screw in the optical window by hand. Then, tighten it using the installation tool for optical window.



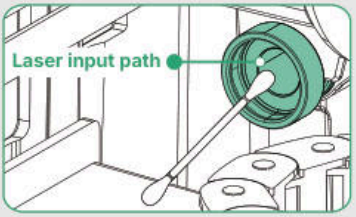
Optical window

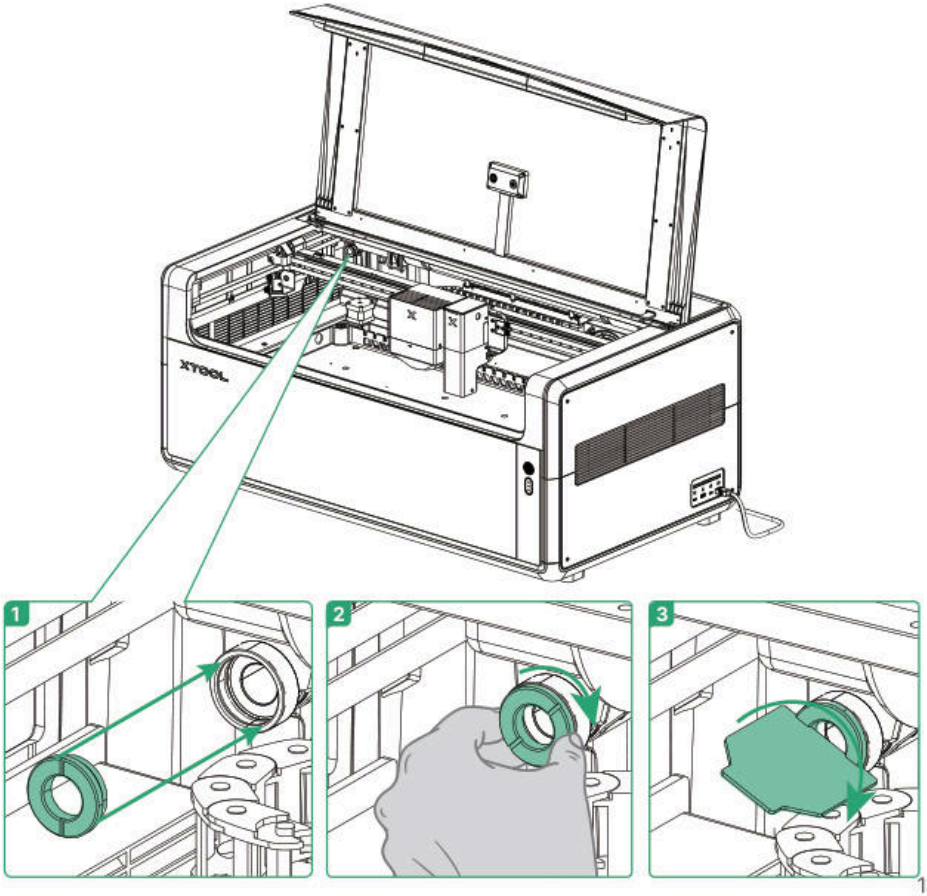


Installation tool for optical window

■ To prevent contamination, do not touch the glass during installation. If the glass becomes dirty, clean it with a cotton swab moistened with alcohol.

■ Before operation, check the laser input path for dust. If dust is present, clean it with a cotton swab (not included).



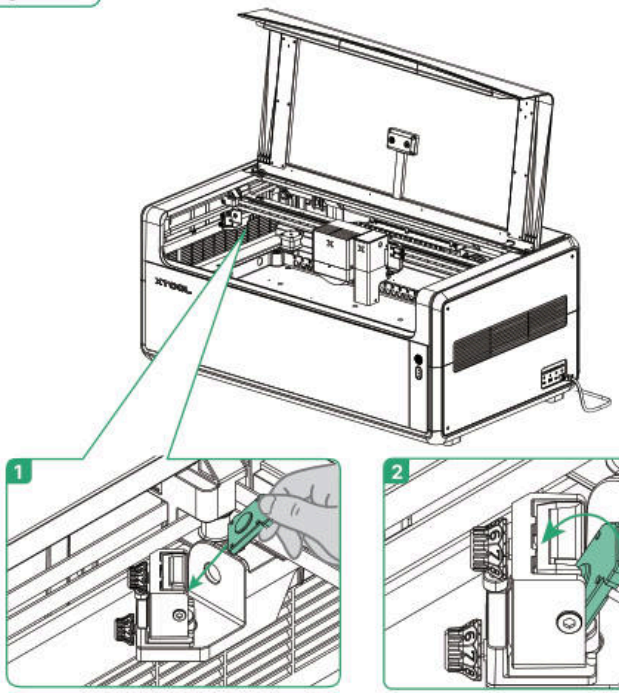


(3) Install the steering mirror.

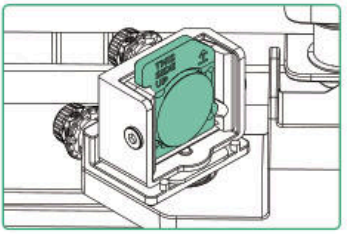


Steering mirror

To prevent contamination, do not touch the glass during installation. If the glass becomes dirty, clean it with a cotton swab moistened with alcohol.



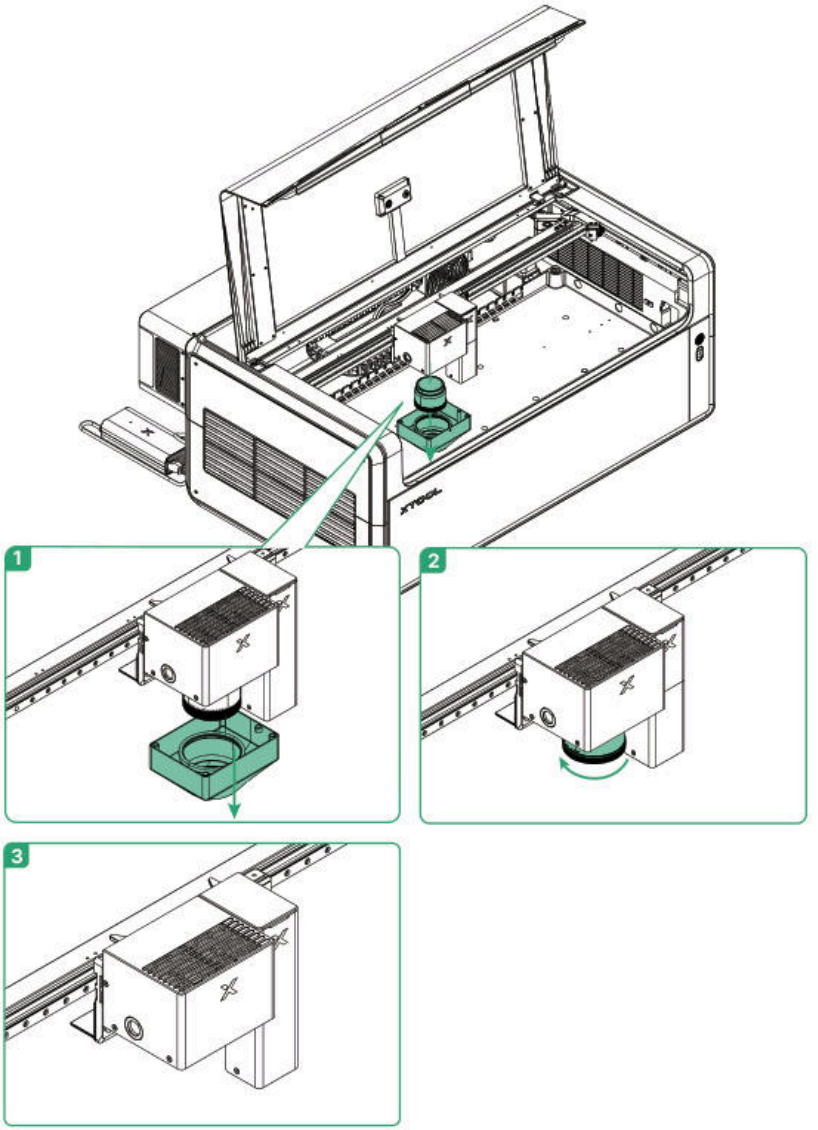
Alternate view:



(For 5W UV) Install the UV/Fiber/MOPA lens

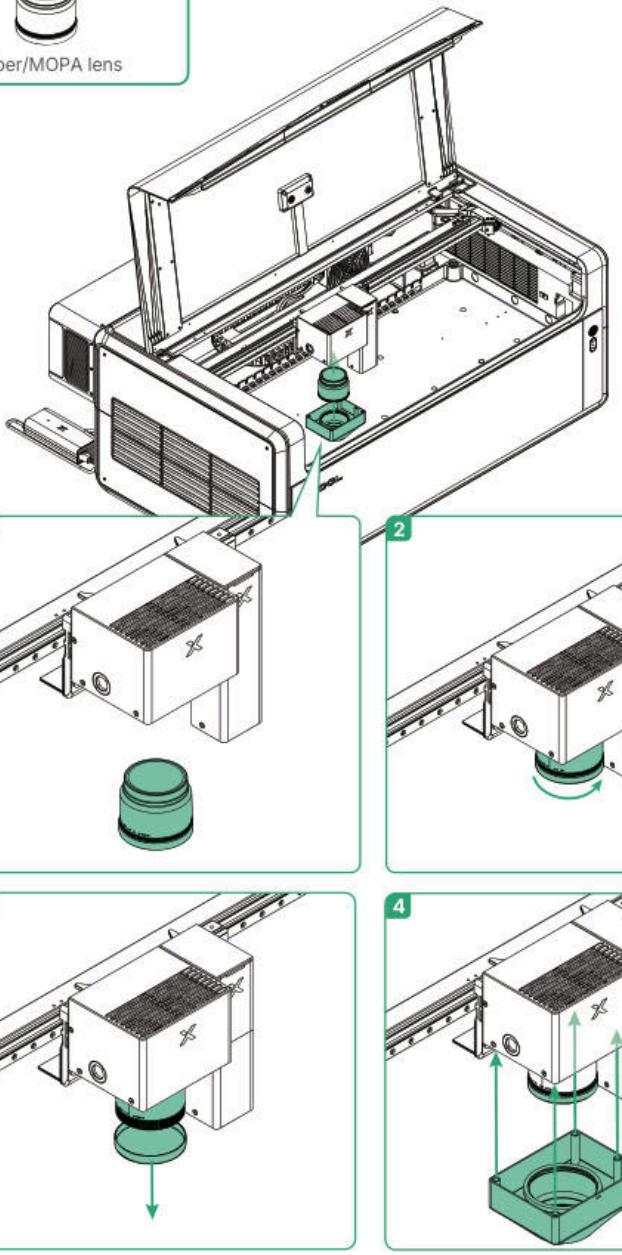
- To use the 5W UV galvo source, install the UV/Fiber/MOPA lens.
- Before the installation, ensure that the 20W diode galvo module is installed on xTool X1.
- After the installation, follow the instructions of xTool software to complete the calibration task.

(1) Remove the wide-aperture lens guard and the pre-installed field lens.



(2) Install the UV/Fiber/MOPA lens and the wide-aperture lens guard.



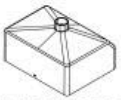


The UV/Fiber/MOPA lens supports UV, Fiber infrared, MOPA infrared, and blue-light laser processing. Therefore, if you switch to another laser source, you do not need to replace the field lens.

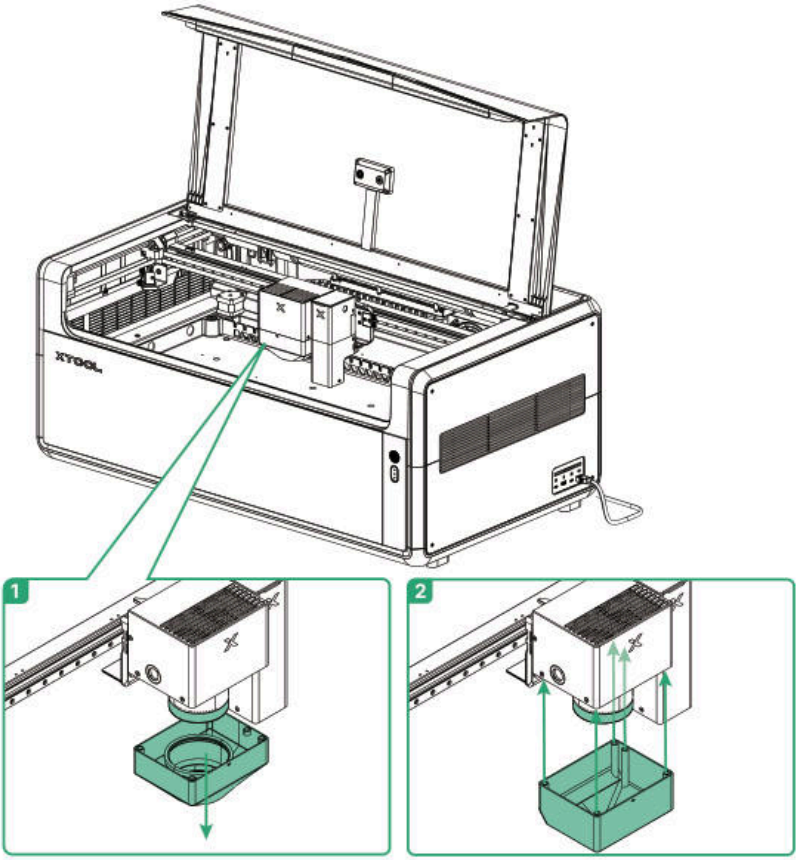
(Optional) Install the narrow-aperture lens guard

■ To use the 60W MOPA galvo source for metal cutting, install the narrow-aperture lens guard.
■ Before installing the narrow-aperture lens guard, ensure that the 20W diode galvo module is installed on xTool X1.

Remove the wide-aperture lens guard and install the narrow-aperture lens guard.



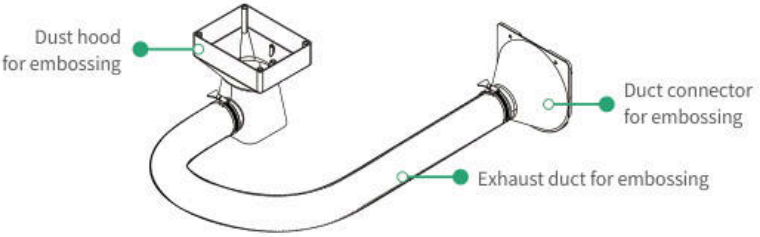
Narrow-aperture lens guard



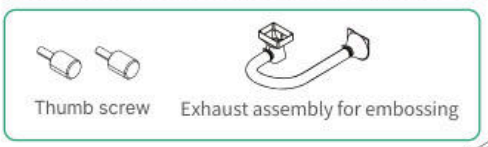
(Optional) Install the dust hood for embossing

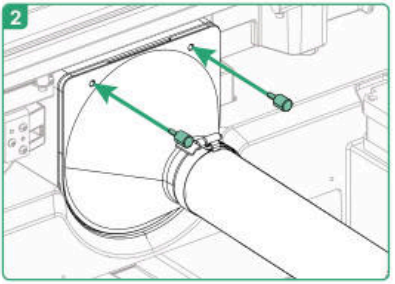
■ To use the 30W fiber galvo source or 60W MOPA galvo source for embossing, install the dust hood for embossing.

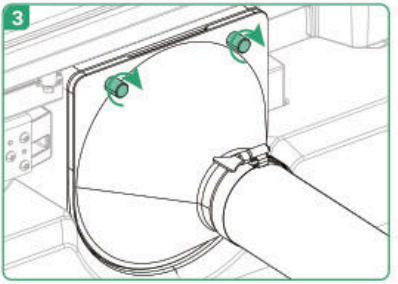
■ Before installing the dust hood, ensure that the 20W diode galvo module is installed on xTool X1.



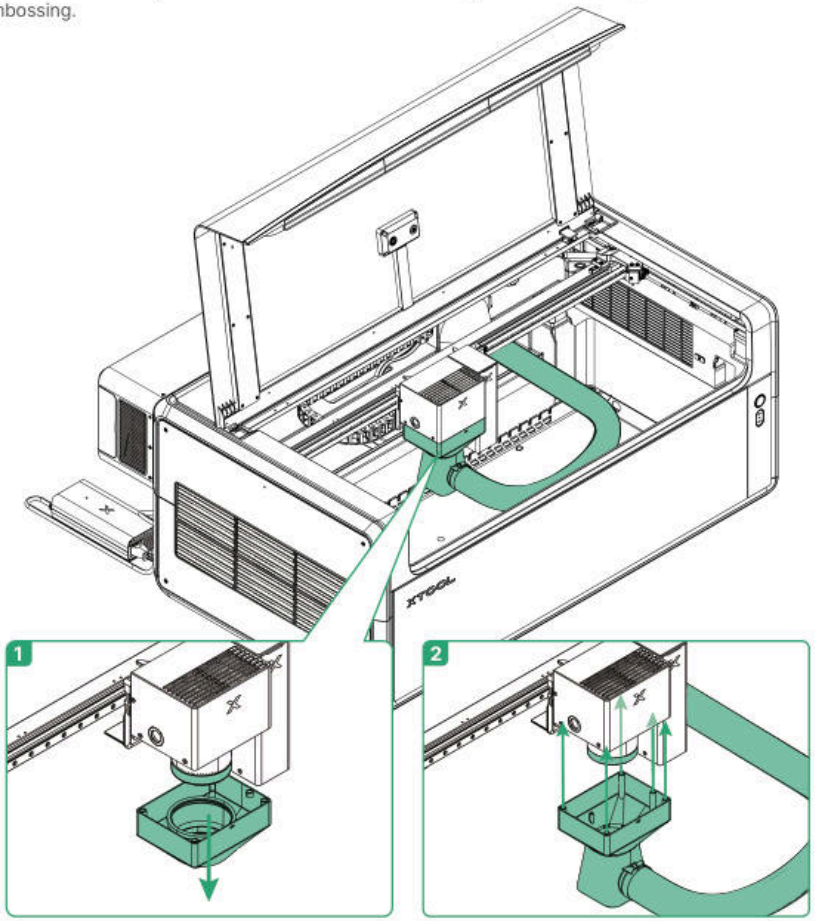
(1) Install the duct connector for embossing onto the smoke outlet of xTool X1.



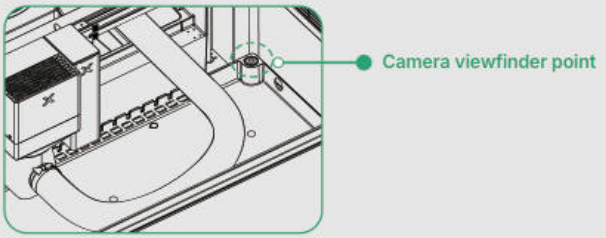




(2) Remove the lens guard installed under the 20W diode galvo module. Then, install the dust hood for embossing.



After installation, adjust the position of the exhaust duct to ensure that it does not block the camera viewfinder point on the baseplate of the main unit.

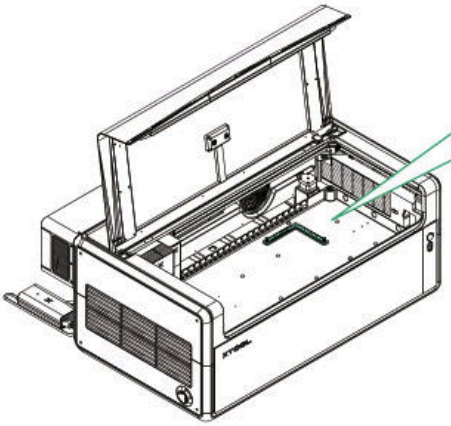


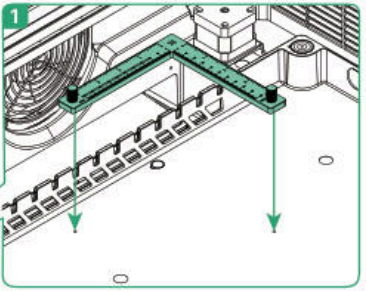
(Optional) Install the positioning piece for UV inner engraving

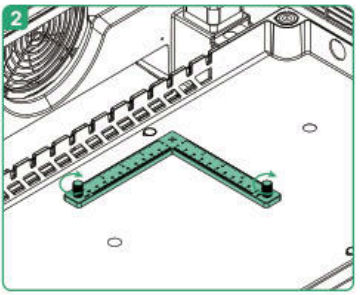
- To inner engrave a workpiece with UV light, install the positioning piece for UV inner engraving.
- Before the installation, ensure that the 20W diode galvo module, the 5W UV galvo source, and the UV/Fiber/MOPA lensare installed on xTool X1. Also, ensure that the calibration task is done with xTool software.
- After processing, remove the positioning piece to avoid interfering with subsequent operations.

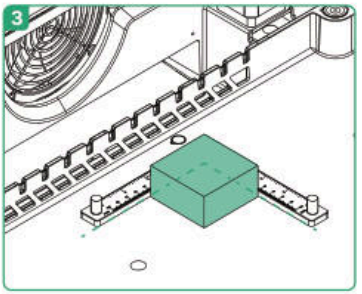


Positioning piece for UV inner engraving









When placing the material, align its edge flush against the right angle of the positioning piece. The illustration is for reference only; please prepare your own material for processing.

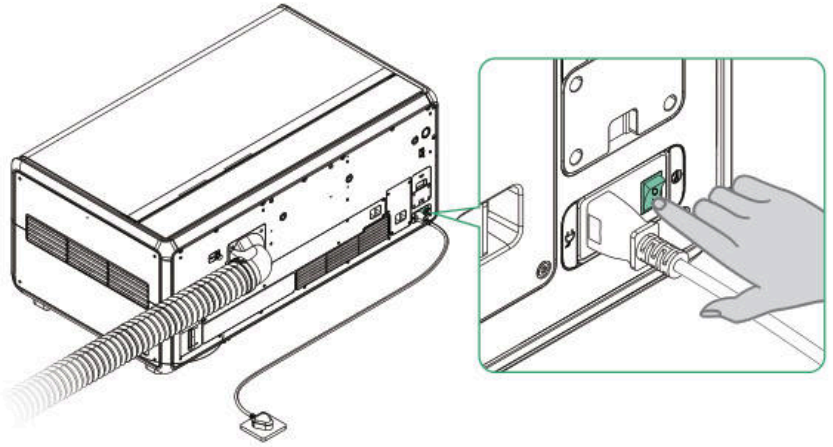
Use the galvo source

1 Get the xTool software.

Go to **s.xtool.com/software** to download and install xTool software.

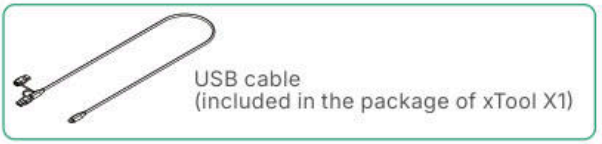


2 Turn on xTool X1.



3 Connect xTool X1 with the software.

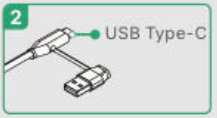
Use the USB cable to connect xTool X1 to your computer. Then, open xTool software and connect xTool X1 in the software.



USB cable
(included in the package of xTool X1)

The other end of the USB cable can be connected to a USB Type-A or Type-C port. Choose between the connectors based on your needs.





To view connection instructions, scan the QR code or visit the link.

support.xtool.com/article/3123

4 Calibrate the optical path.

Upon first use of the galvo source, xTool software will prompt you to calibrate the optical path. Follow the on-screen instructions to complete the calibration.

5 Use the galvo source.

Scan the QR code or visit the link to view detailed instructions on how to use the galvo source.

support.xtool.com/article/3154

Compliance statements

EU declaration of conformity

Hereby, Makeblock Co., Ltd., declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU and the RoHS Directive 2011/65/EU & (EU) 2015/863. The full text of the EU declaration of conformity is available at the following internet address: support.xtool.com/article/2084

EU responsible person

EU responsible person: Makeblock Europe B.V.
Address: Westplein 12, 3016 BM, Rotterdam, the Netherlands
E-mail address: support@info.xtool.com

FCC statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Responsibility party: XTL US INC.
Responsibility party address: 2019 LEGHORN STREET, MOUNTAIN VIEW, CA 94043
Website: support.xtool.com

After-sales services

For technical support, contact us at support@info.xtool.com.
For more information about after-sales services, visit support.xtool.com.

XTOOL