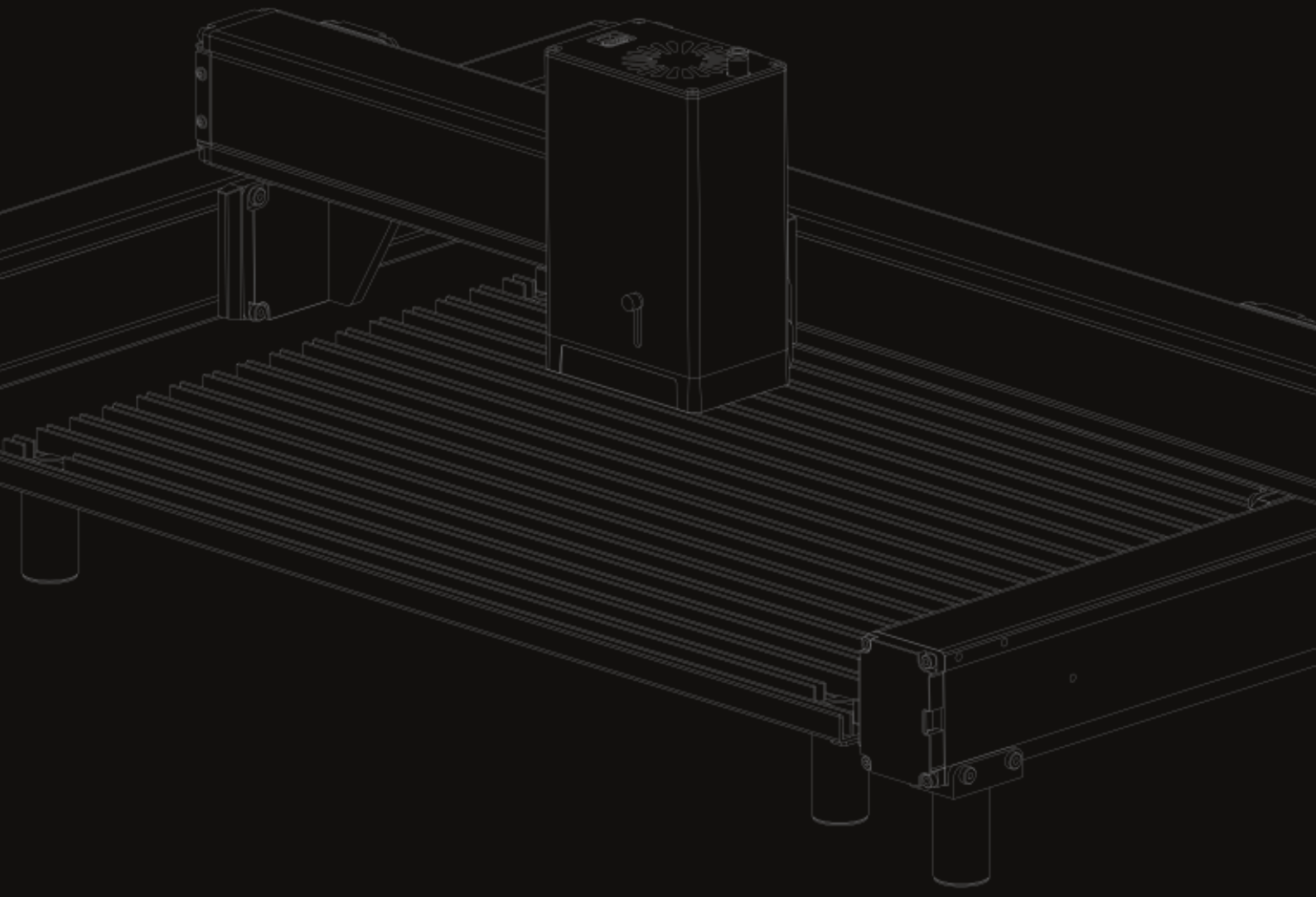
snapmaker | Ray

# ASSEMBLY GUIDE



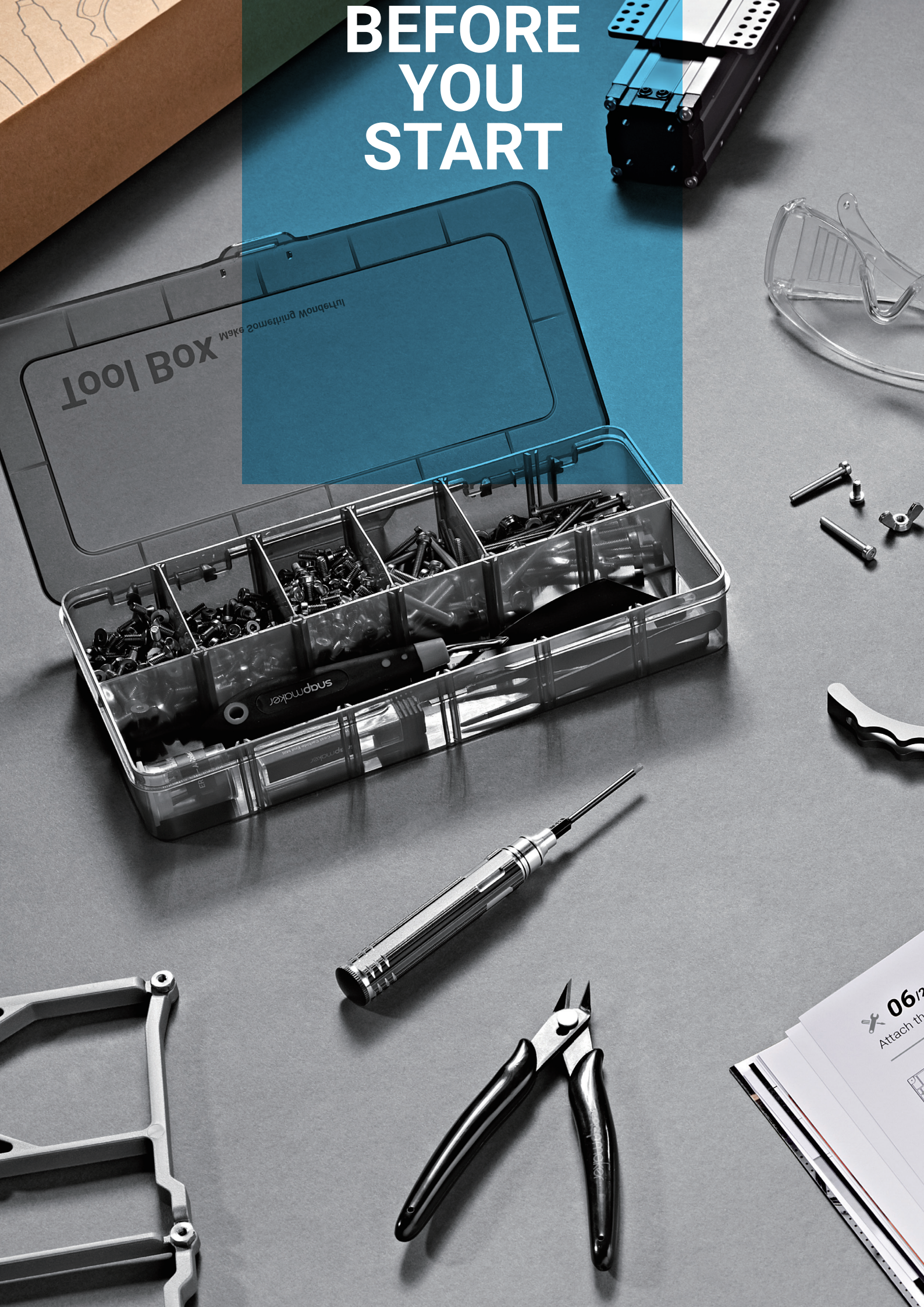
MAKE SOMETHING WONDERFUL

# CONTENTS



Note: If you have purchased the Ray bundle with the 20W/40W Laser Module and Enclosure, please assemble in the above order. If you have purchased other bundles, skip the steps that include items you do not have.

# BEFORE YOU START



# 1.1 Parts List

## 1.1.1 Parts List of the Machine Body

20W/40W Laser Module
× 1

Integrated Controller
× 1

Air Assist Pump
× 1

Cylindrical Foot
× 8

Quick-swap Toolhead Bracket
× 1

X-axis Linear Module
× 1

Y-axis Linear Module
× 2

Toolhead cable
× 1

Right Linear Module Connector
× 1

Left Linear Module Connector
× 1

Foot Connector
× 4

Wi-Fi Antenna
× 1

Safety Key
× 2

Laser Engraving and Cutting Platform
× 1

AC Power Cable
× 1

Laser Safety Goggles
× 1

Foot
× 4

Foot Holder
× 4

M8 Air Tube Connector
× 1

M5 Air Tube Connector
× 1

Cable Tie
× 2

Cable Collector
× 1

USB Cable
× 1

Cable Clip
× 14



Basswood Plywood
× 1



Cotton Swab
× 5

Laser Lens Protector
× 1

M5 × 12 Screw
× 36

M5 × 16 Screw
× 5

H3.0 Hex Key
× 1

microSD Card Reader
× 1


microSD Card
× 1

Air Tube
× 1

The Laser Module and the Air Assist Pump are not included if you purchase the Ray Machine Body separately.

# 1.1.2 Parts List of the Enclosure

Long Beam-1 (with air inlets)
× 1

Long Beam-3 (with Enclosure converter)
× 1

Long Beam-4 (with hinges)
× 1

Long Beam-2 (with hall switch)
× 1



Column
× 4



Short Beam (with LED strip)
× 2



Short Beam
× 2

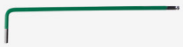
Enclosure Door
× 1

Front/Back Panel
× 2

Left Side Panel
× 1

Right Side Panel
× 1

H3.0 Hex Key
× 1



H2.5 Hex Key
× 1

M5 × 30 Screw
× 18

M4 × 40 Screw
× 5

M4 Wing Nut
× 5

M5 × 12 Screw
× 18

M4 × 12 Screw
× 4

Snap Bushing
× 1

Sealing Plug
× 9

Sealing Strip
× 1

Profile Connector
× 8

Hose Connector
× 1

Exhaust Fan Guard
× 1

Exhaust Fan
× 1

Hose
× 1

Hose Clamp
× 1

# 1.2 Environment Requirements

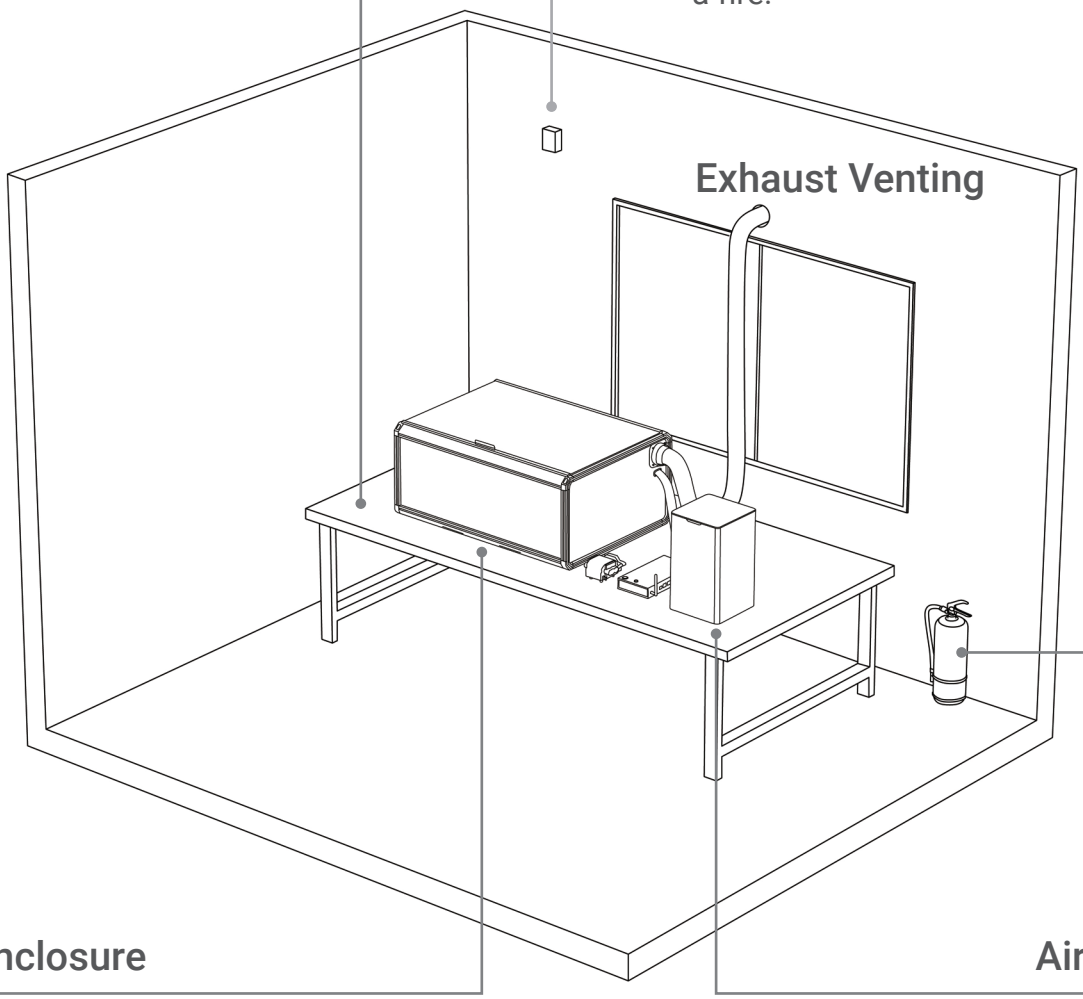
### Fire Extinguisher

Ensure that there are no flammable and explosive materials within the work area or around the machine during operation, as they may cause a fire.

### Solid Horizontal Table

Always operate this machine indoors on a solid horizontal table or workbench.

### Smoke Detector



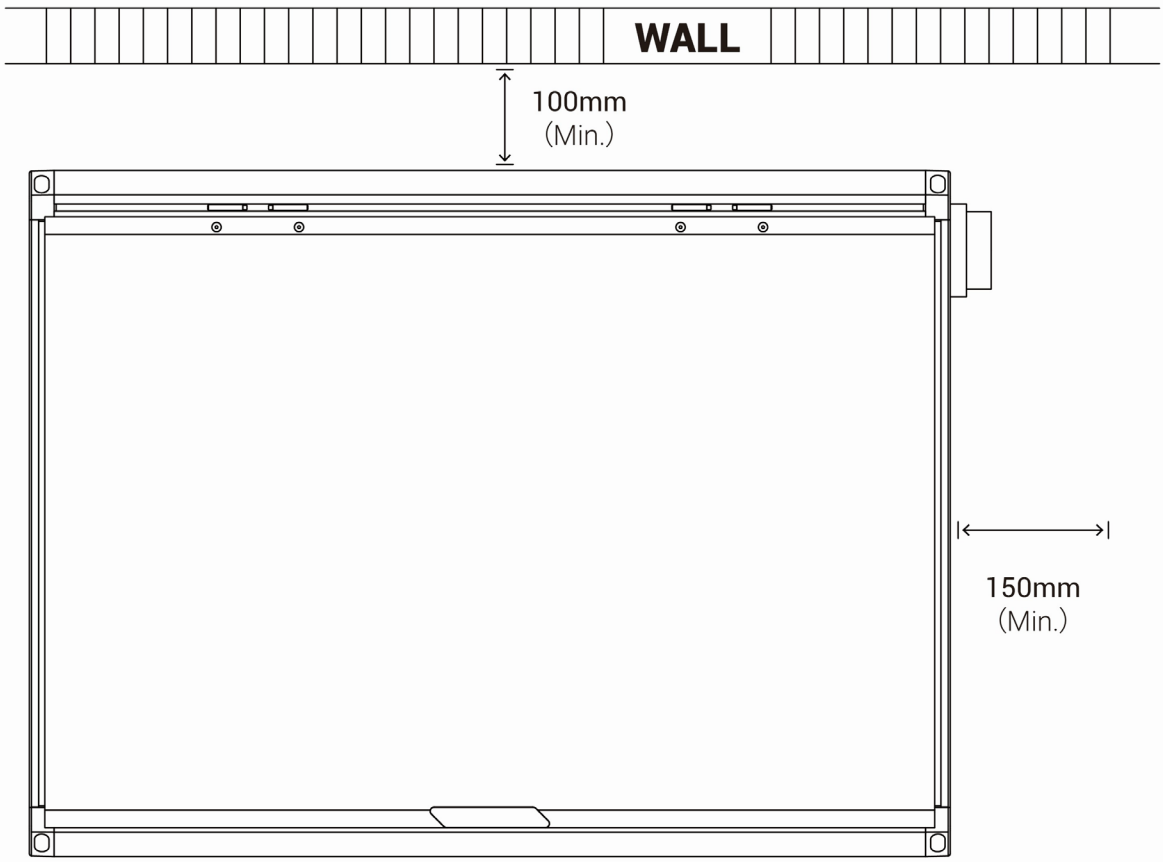

### Enclosure

The Snapmaker Enclosure helps prevent the risk of laser leakage during the laser process by effectively filtering laser radiation.

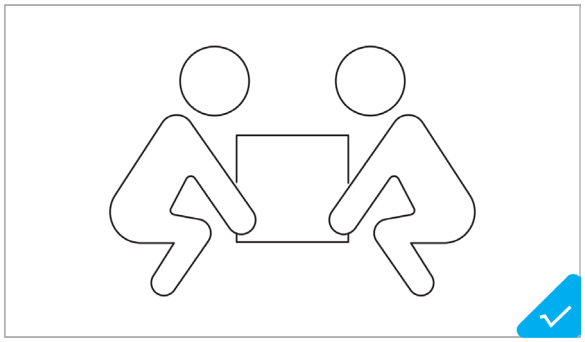
### Air Purifier

An air purifier should be used depending on the type and constituent of the materials you use, as some materials may release hazardous and toxic fumes when laser engraved or cut.

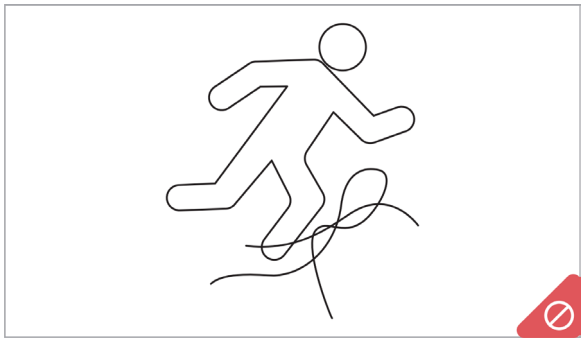
# 1.3 Space Requirements



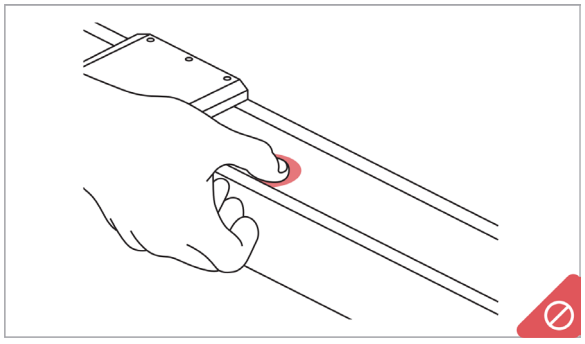
# 1.4 Tips and Notes for Assembly



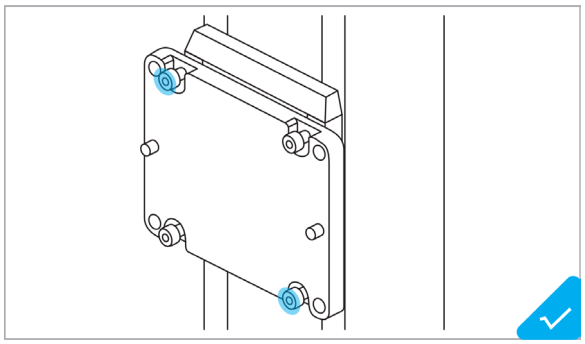
It is recommended that at least two people lift the machine and the Enclosure.



Collect and sort the cables in time lest anyone should trip over them.



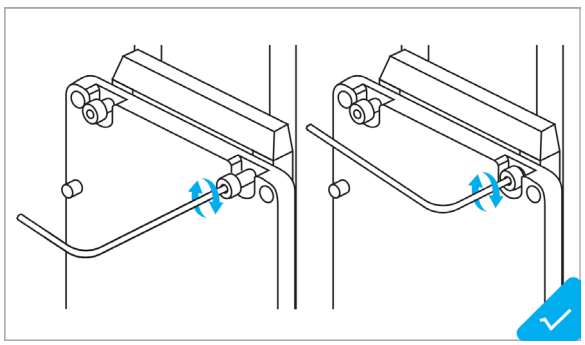
Do NOT press the steel strip.



To install multiple screws in one step:

1. Pre-tighten the screws at the outermost corner;
2. Pre-tighten the remaining screws;
3. Tighten all the screws in the pre-tightening order.

* Pre-tighten: To screw the screw into the hole, yet not fully tighten it.



To install screws with the provided hex key:

1. Screw the screw into the hole with the long handle;
2. Tighten the screw with the short handle.

# 1.5 Used Symbols

| | | |
|---|---|---|
|  | **WARNING** | Ignoring this type of message might result in malfunction or damage of the product and injuries to users. |
|  | **CAUTION** | Details you should be aware of throughout the process. |
|  | **EXPLANATION** | Provides supplementary information for a better understanding of the instruction. |
|  | **TIPS** | Tips offer you convenient operations and additional options. |
|  | **ORIENTATION** | Make sure that the highlighted part is facing the right way. |
|  | | Do not tighten the screws when this symbol appears. Always tighten the screws when it is absent. |

# Assembling the Machine

# 01/37

Attach the foot holder to the cylindrical foot.

# 02/37

Attach the cylindrical foot to the foot connector.

# 03/37

Identify one Linear Module labeled with "Y" on the cable connector. It will be the left Y axis.

Y-axis Linear Module × 1


Take care to avoid injury from sharp edges of the steel strip.

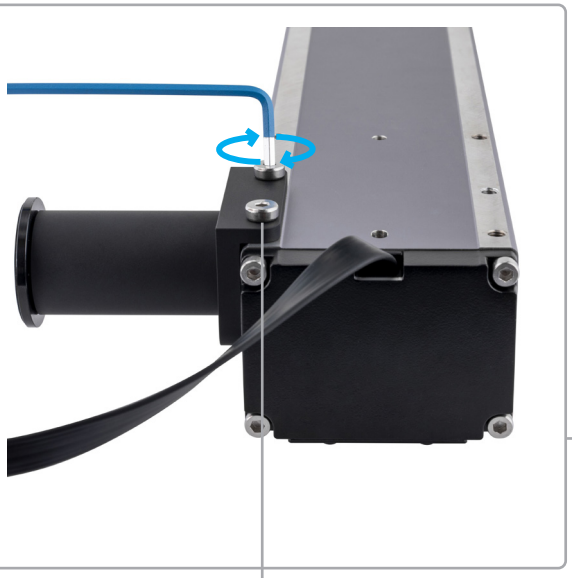
Do not press the steel strip.

# 04/37

Attach two foot components to the left Y axis.

Ensure that the foot connector is aligned with the linear module.

H3.0 Hex Key × 1



M5 × 12 Screw × 4

# 05/37

Identify one Linear Module labeled with "Y" on the cable connector. It will be the right Y axis.

Y-axis Linear Module × 1

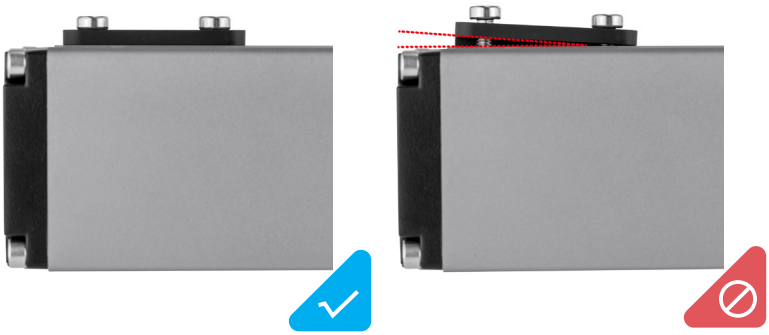

Take care to avoid injury from sharp edges of the steel strip.

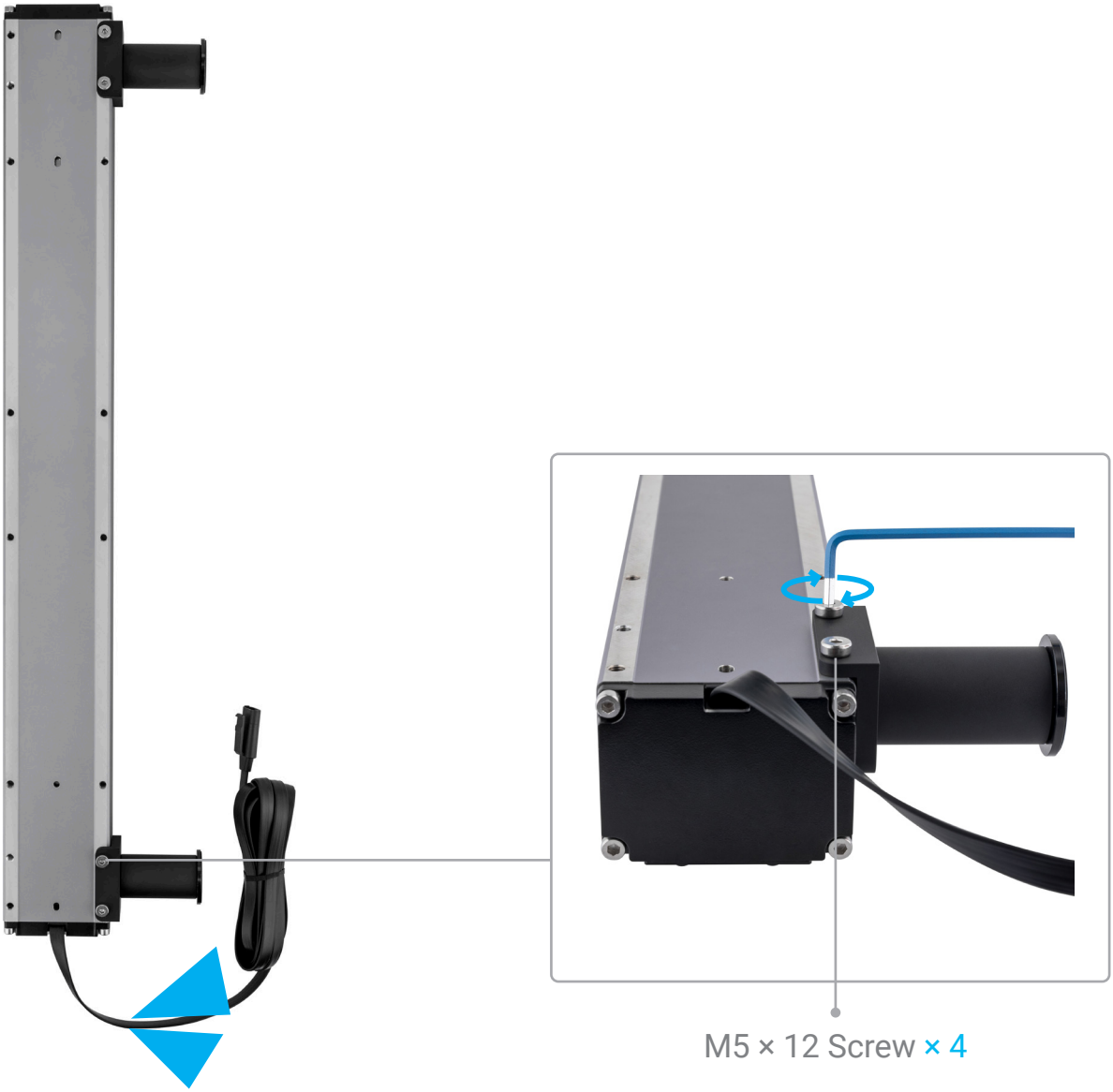
Do not press the steel strip.

# 06/37

Attach two foot components to the right Y axis.

Ensure that the foot connector is aligned with the linear module.

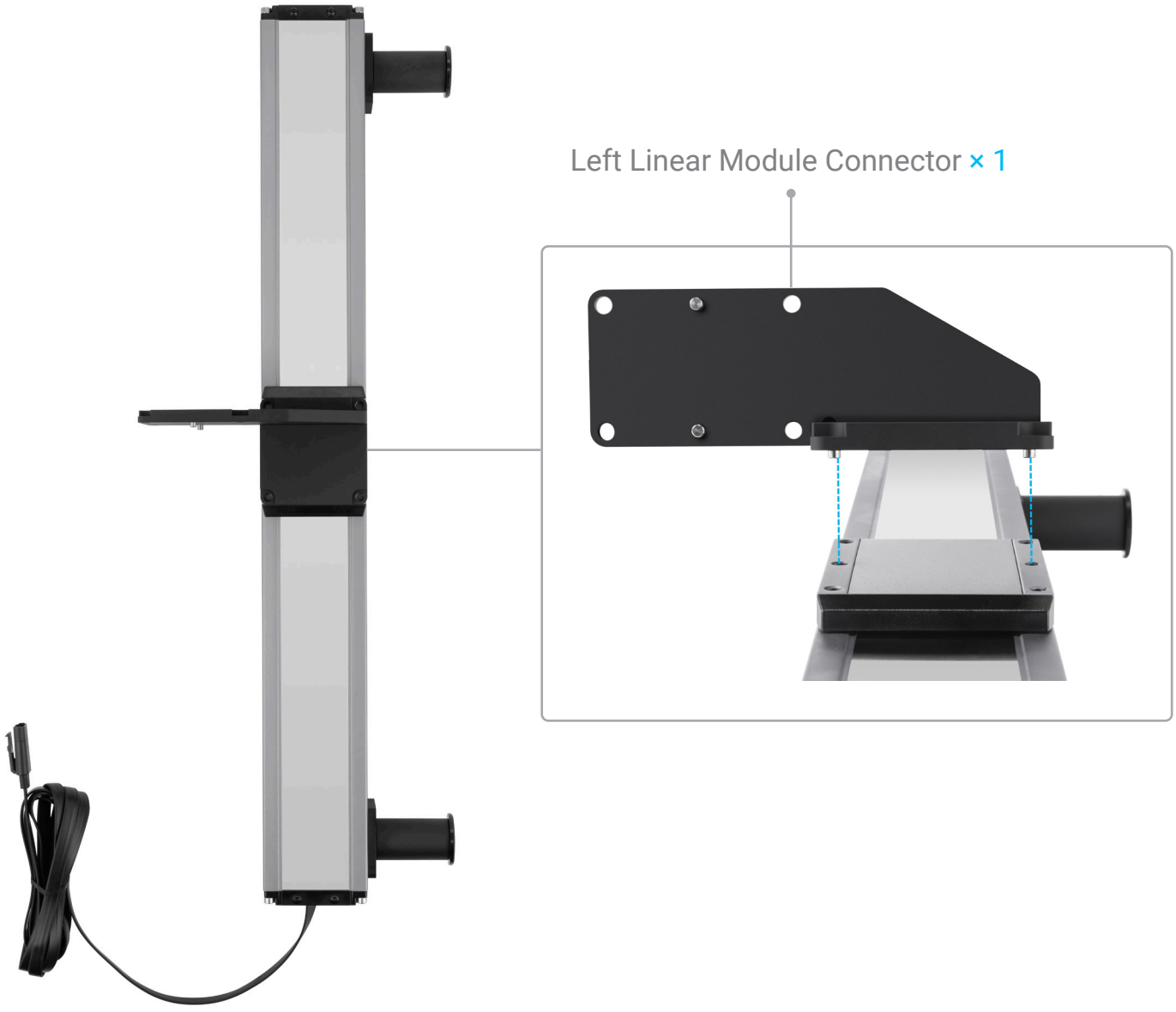




M5 × 12 Screw × 4

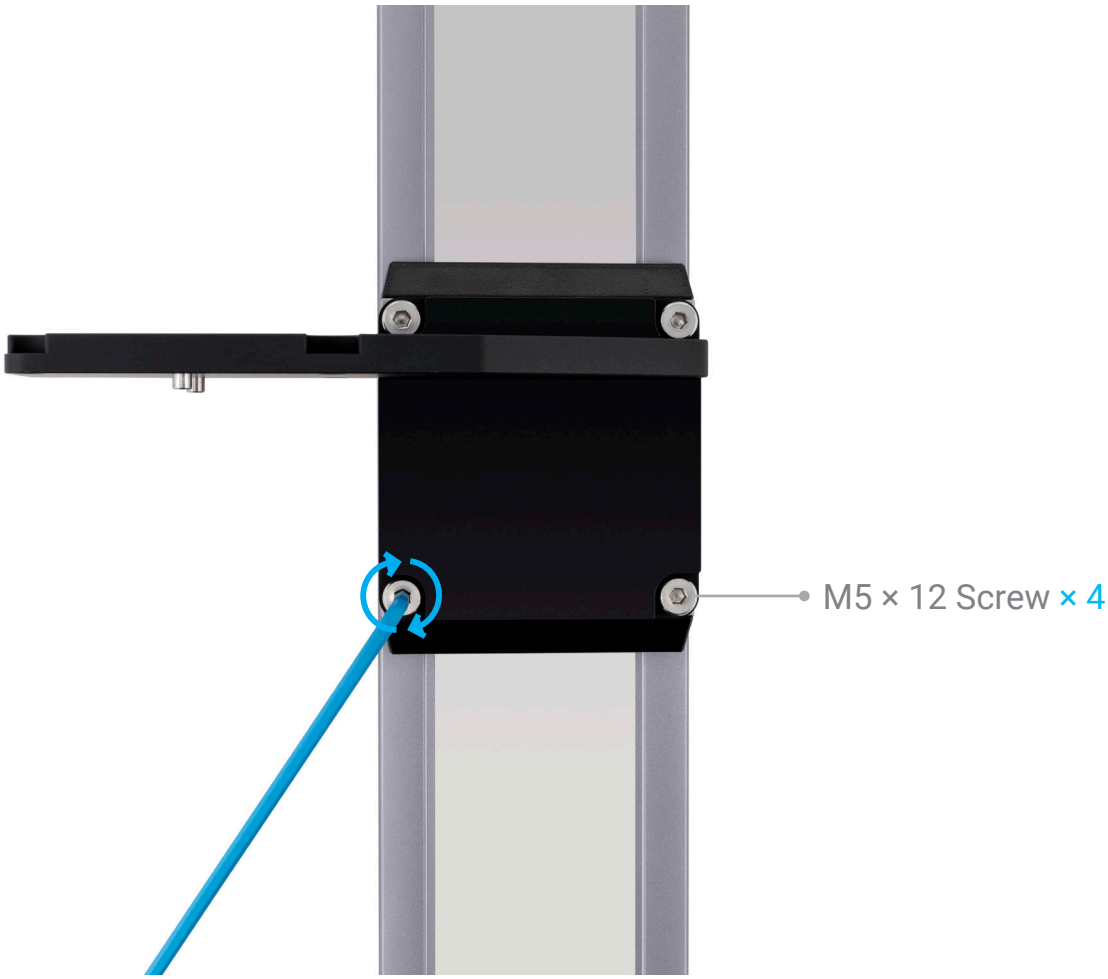
# 07/37

Insert the dowels of the left linear module connector into the dowel holes of the left Y-axis slider.



# 08/37

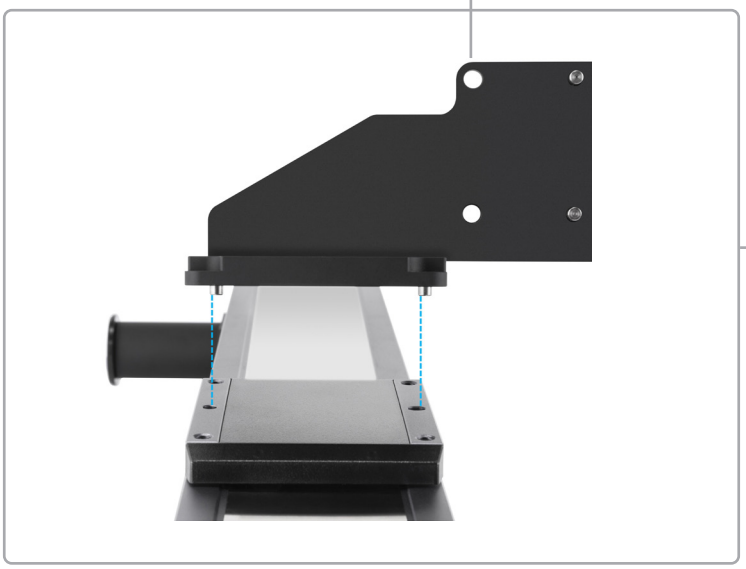
Attach the left linear module connector to the left Y axis.

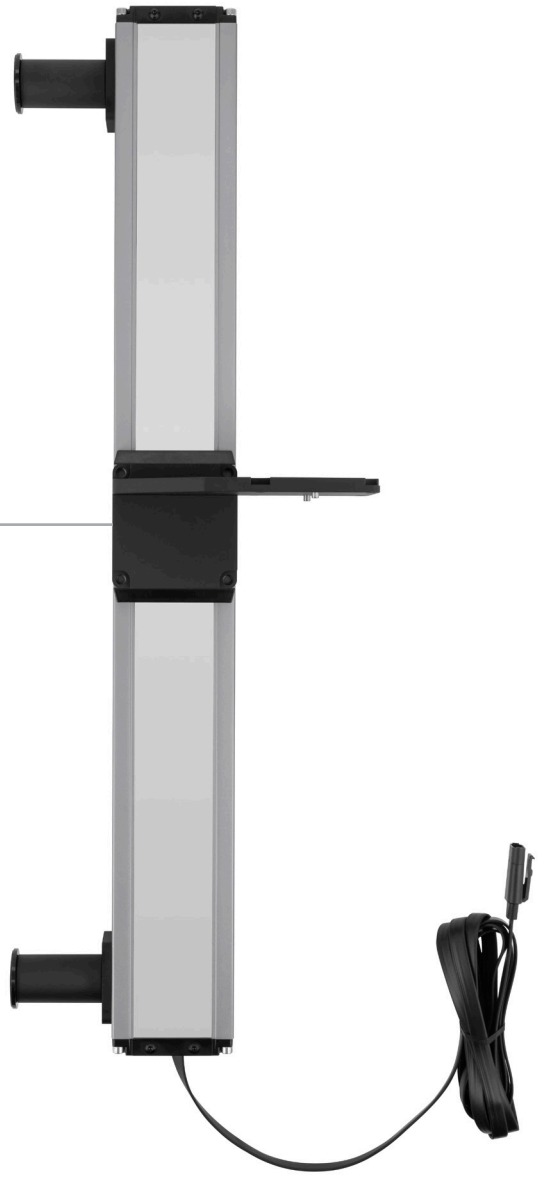


# 09/37

Insert the dowels of the right linear module connector into the dowel holes of the right Y-axis slider.

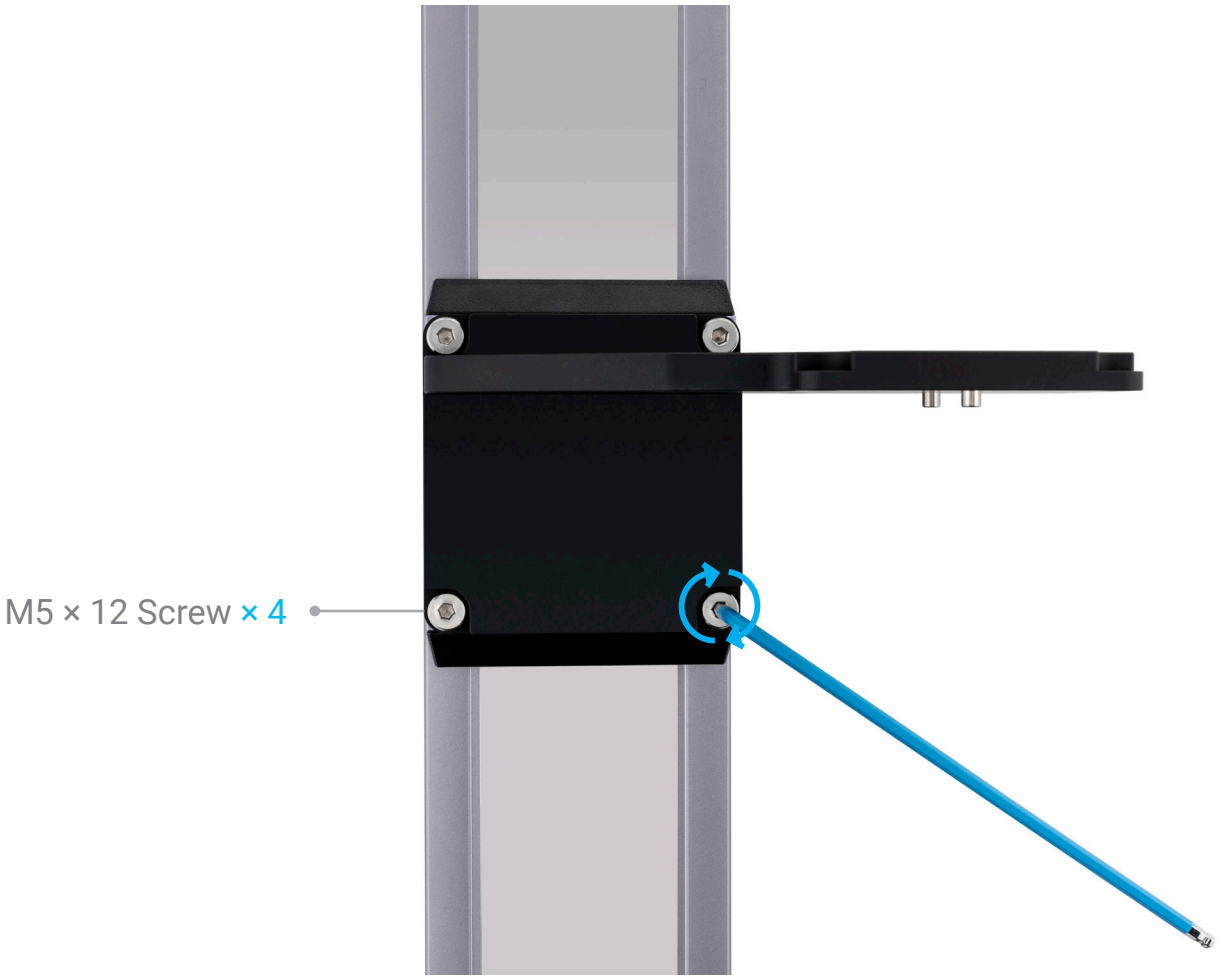
Right Linear Module Connector × 1





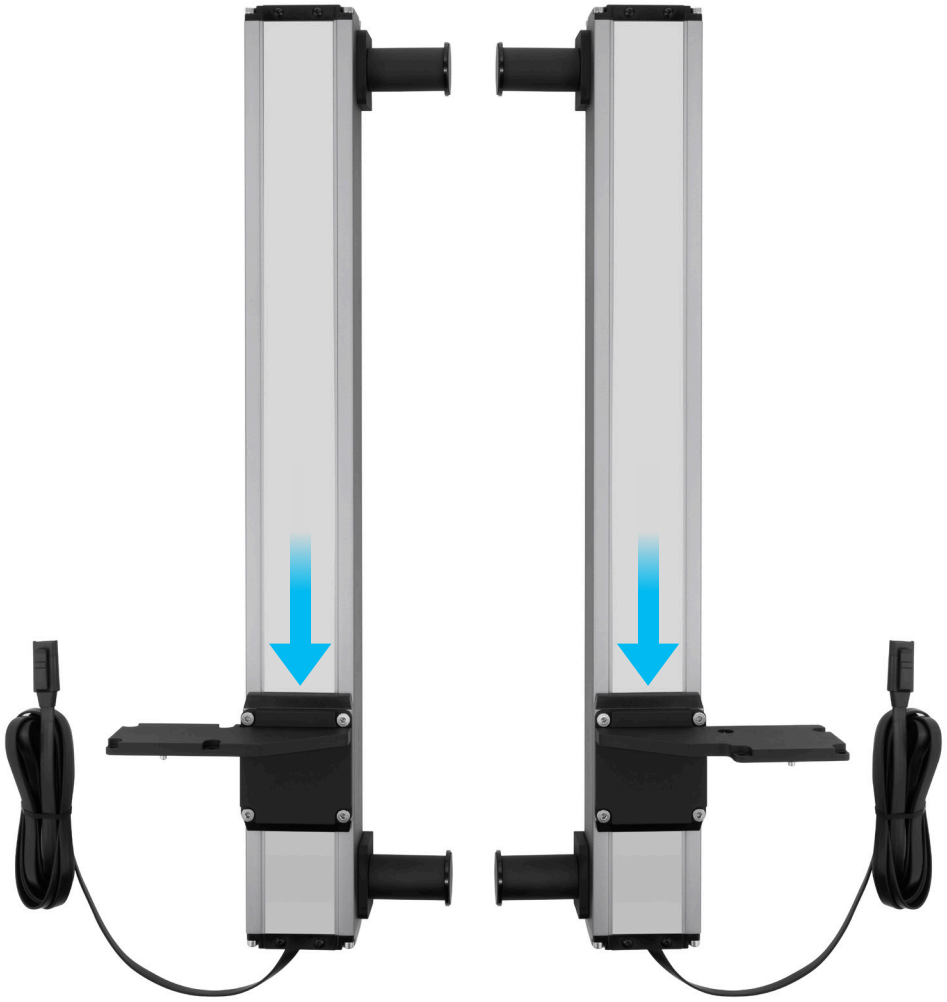
# 10/37

Attach the right linear module connector to the right Y axis.



# 11/37

Move the linear module connectors to their lowest reachable points.

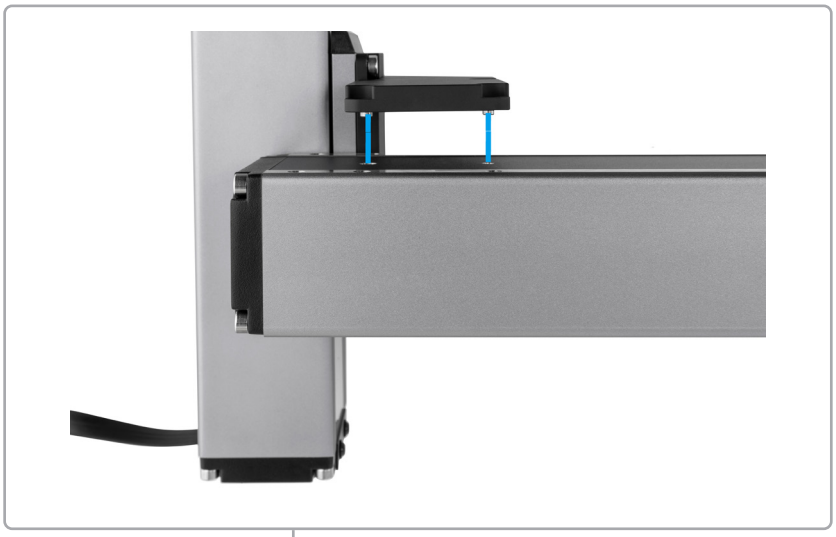


Take care to avoid injury from sharp edges of the steel strip.

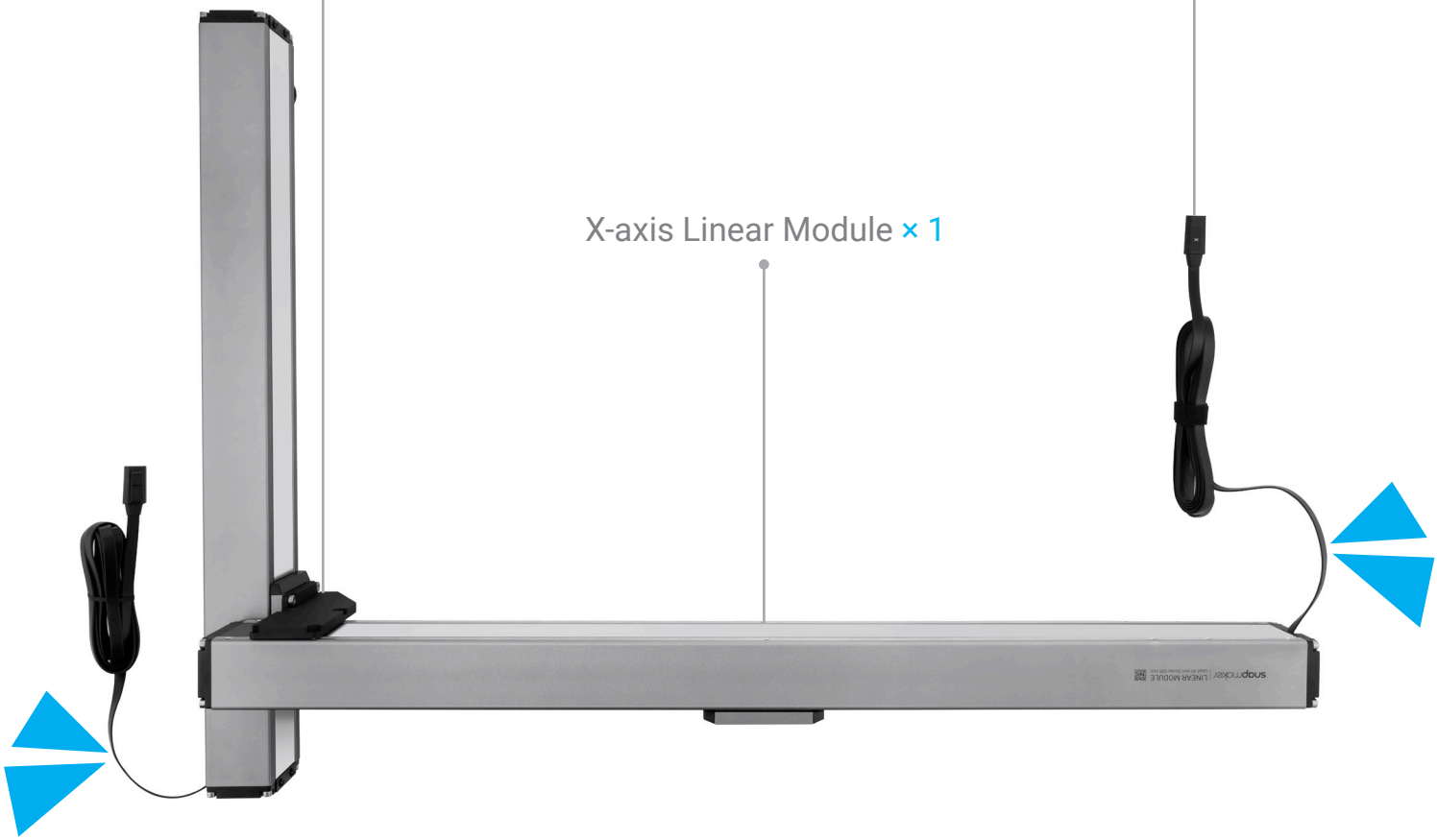
Do not press the steel strip.

# 12/37

The Linear Module labeled with "X" on the cable connector will be the X axis. Insert the dowels of the left linear module connector into the dowel holes of the X axis.

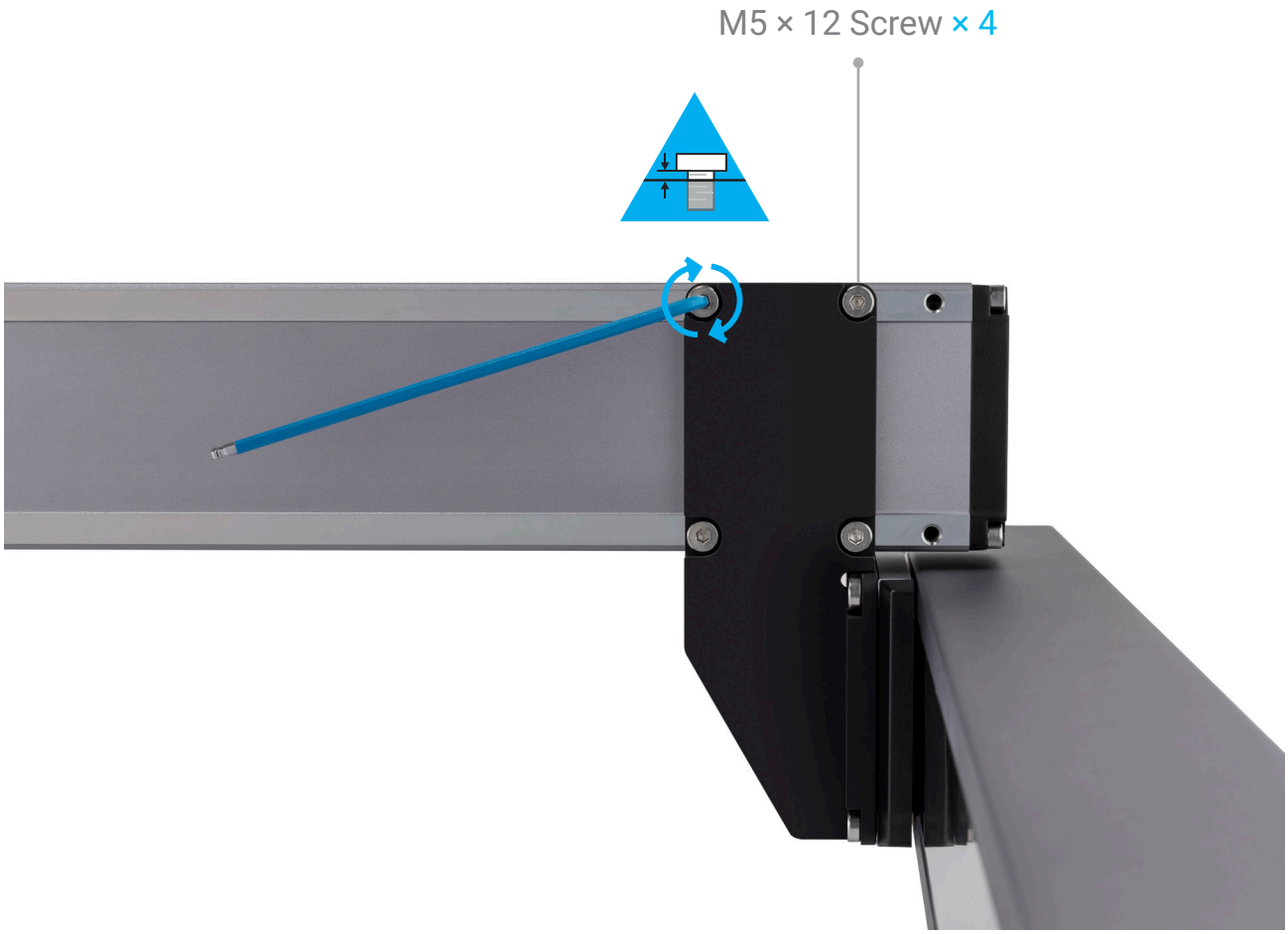



X-axis Linear Module × 1



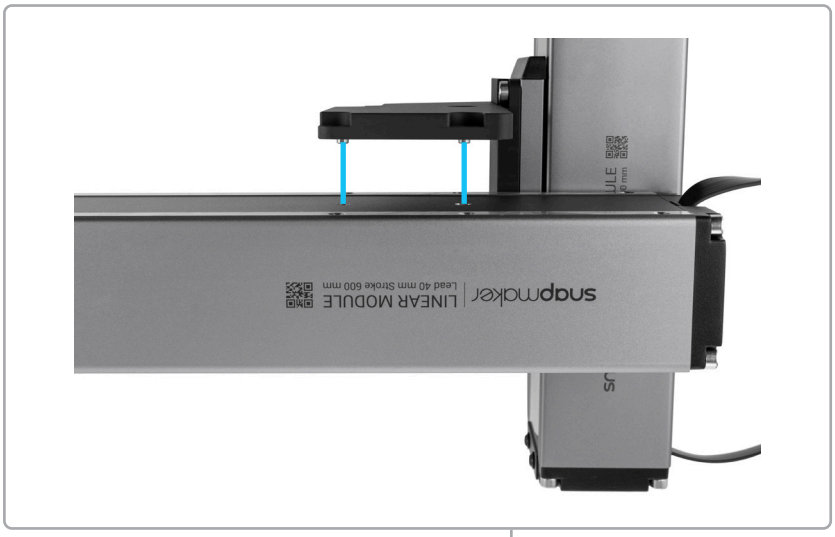
# 13/37

Attach the X axis to the left linear module connector. The screws installed in this step should not be fully tightened until Step 17.



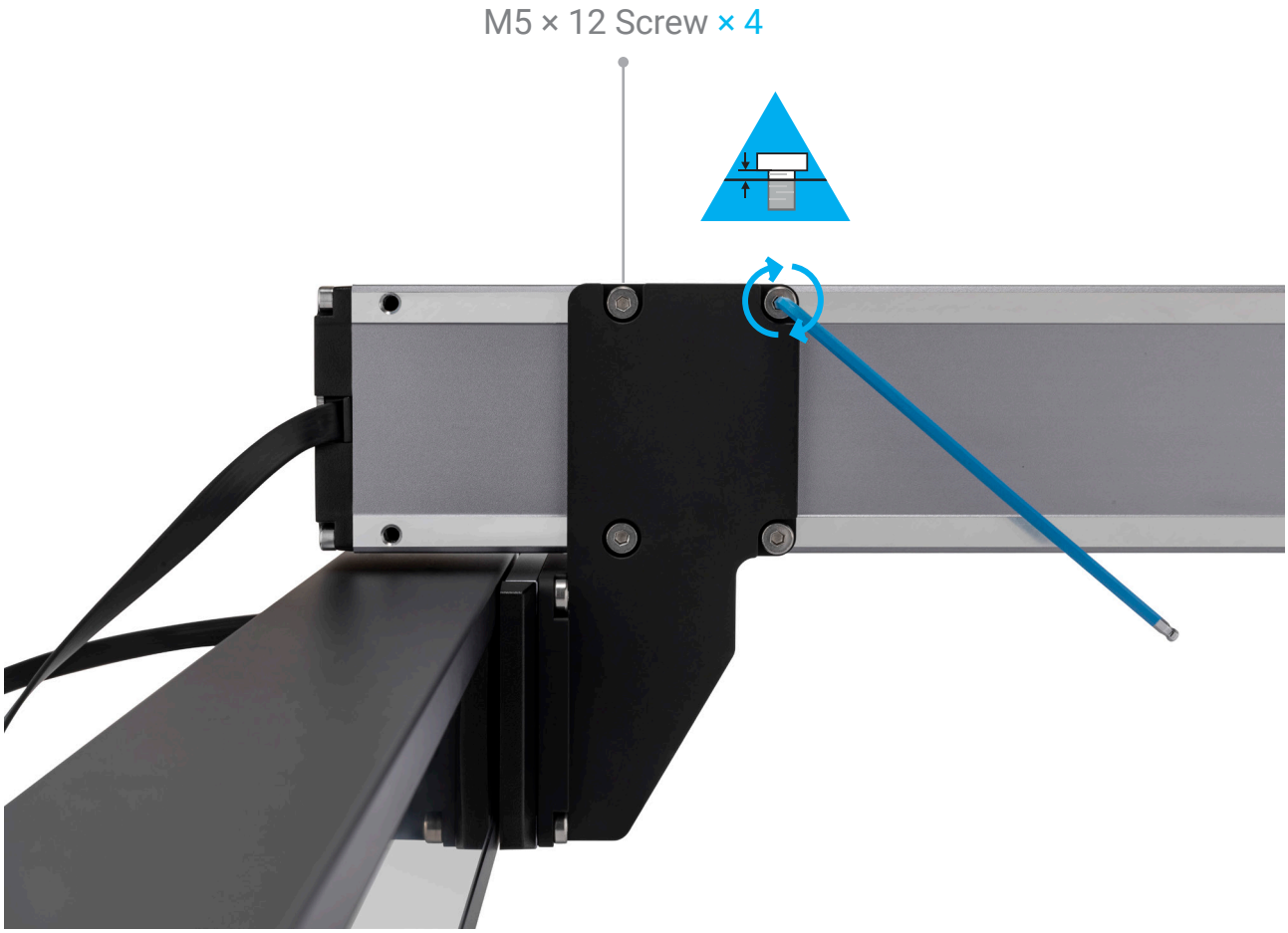
# 14/37

Insert the dowels of the right linear module connector into the dowel holes of the X axis.



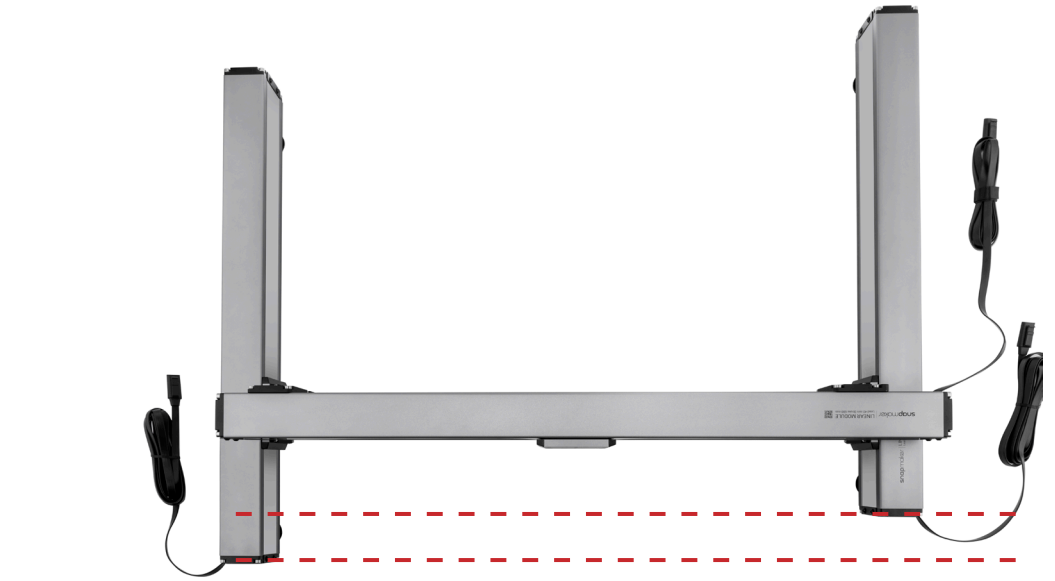

# 15/37

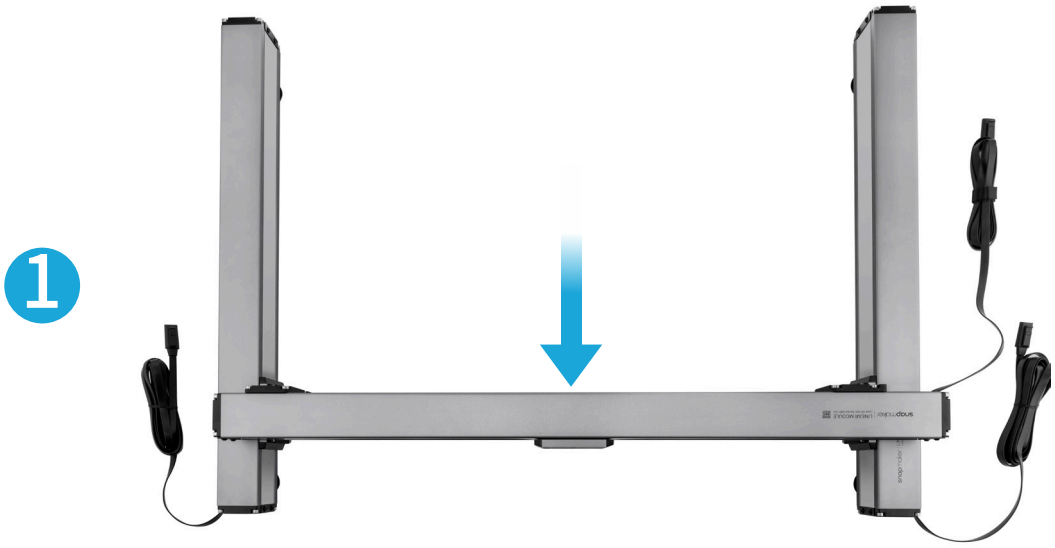
Attach the X axis to the right linear module connector. The screws installed in this step should not be fully tightened until Step 17.

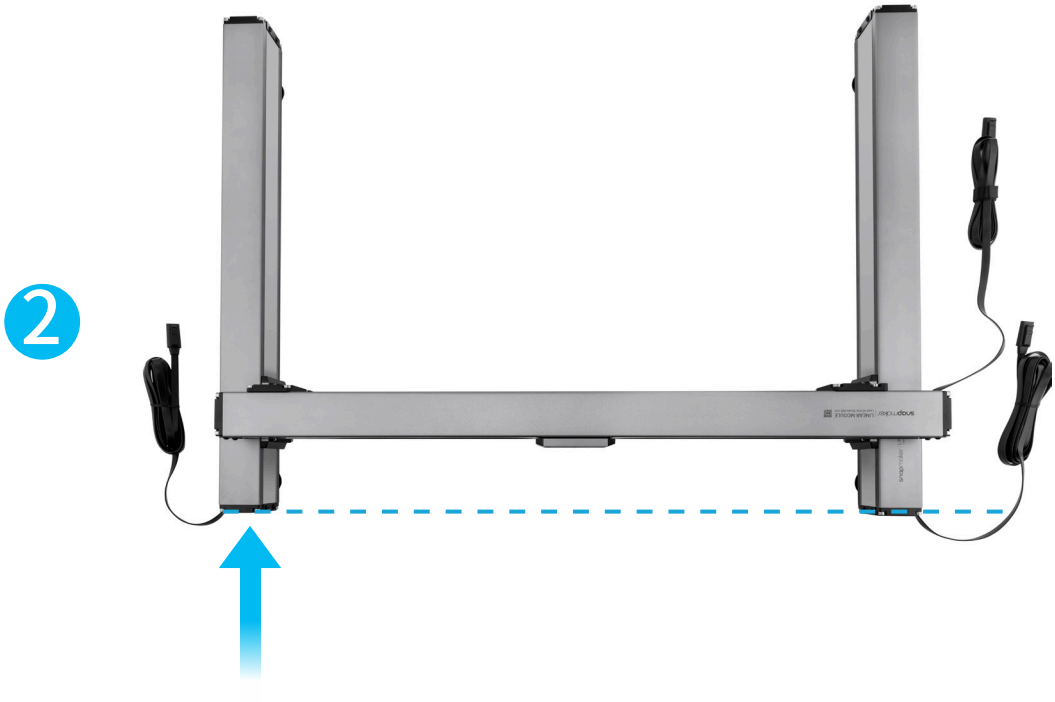


# 16/37

Move the X axis to its lowest possible position, adjust the Y-axis position to ensure that the Y axes are level with each other.





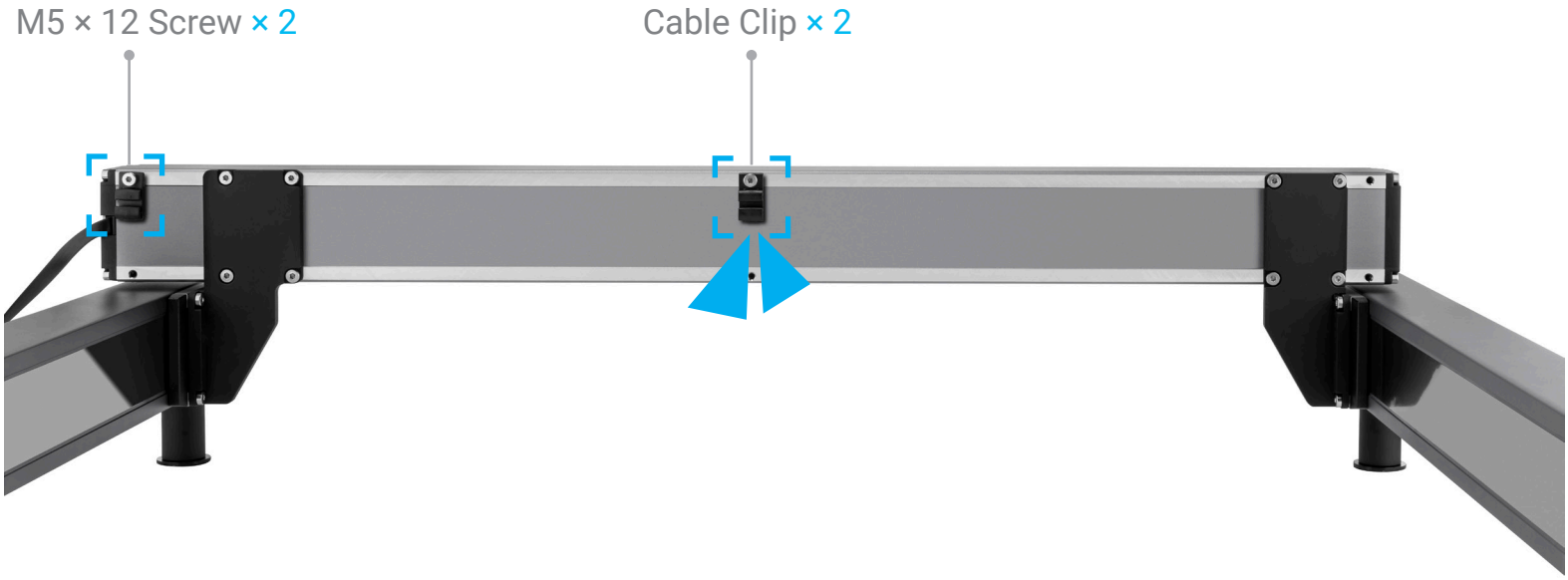



# 17/37

Tighten the screws on the linear module connectors.

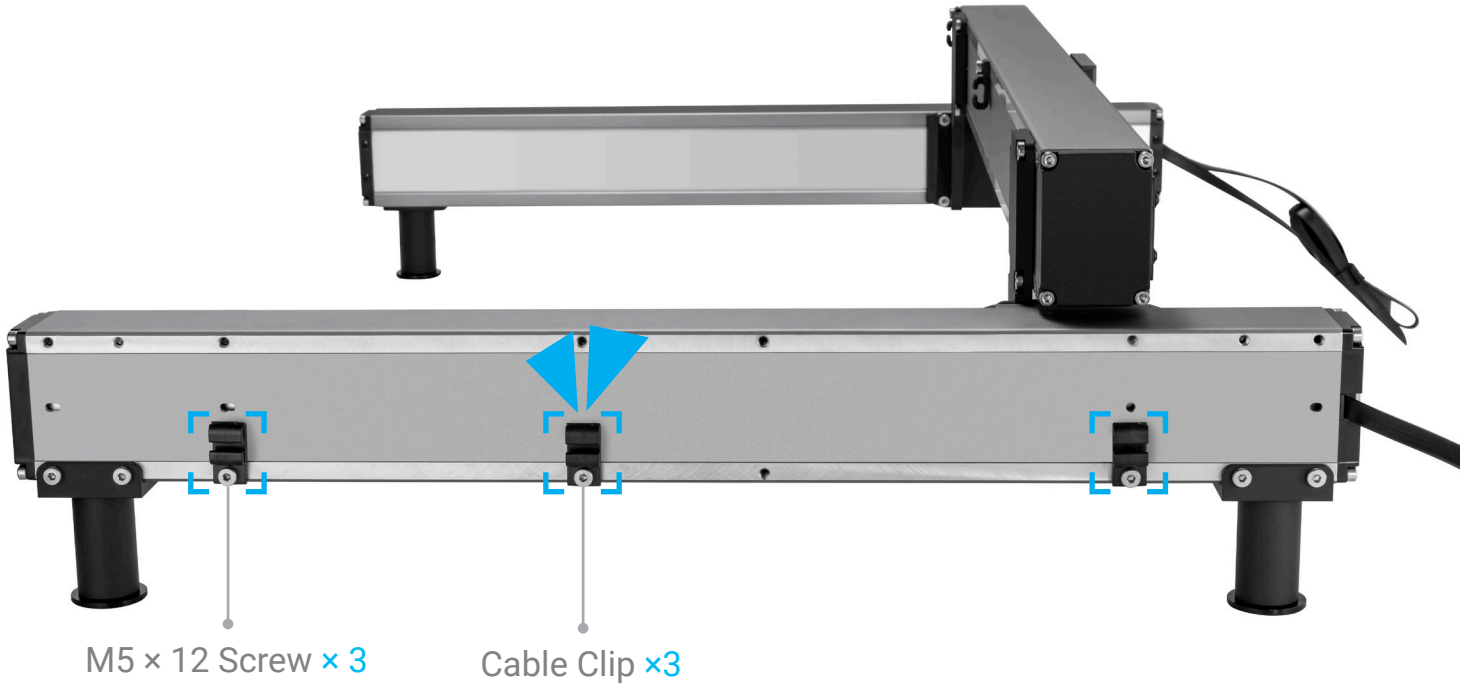
# 18/37

Attach the cable clips to the X axis.



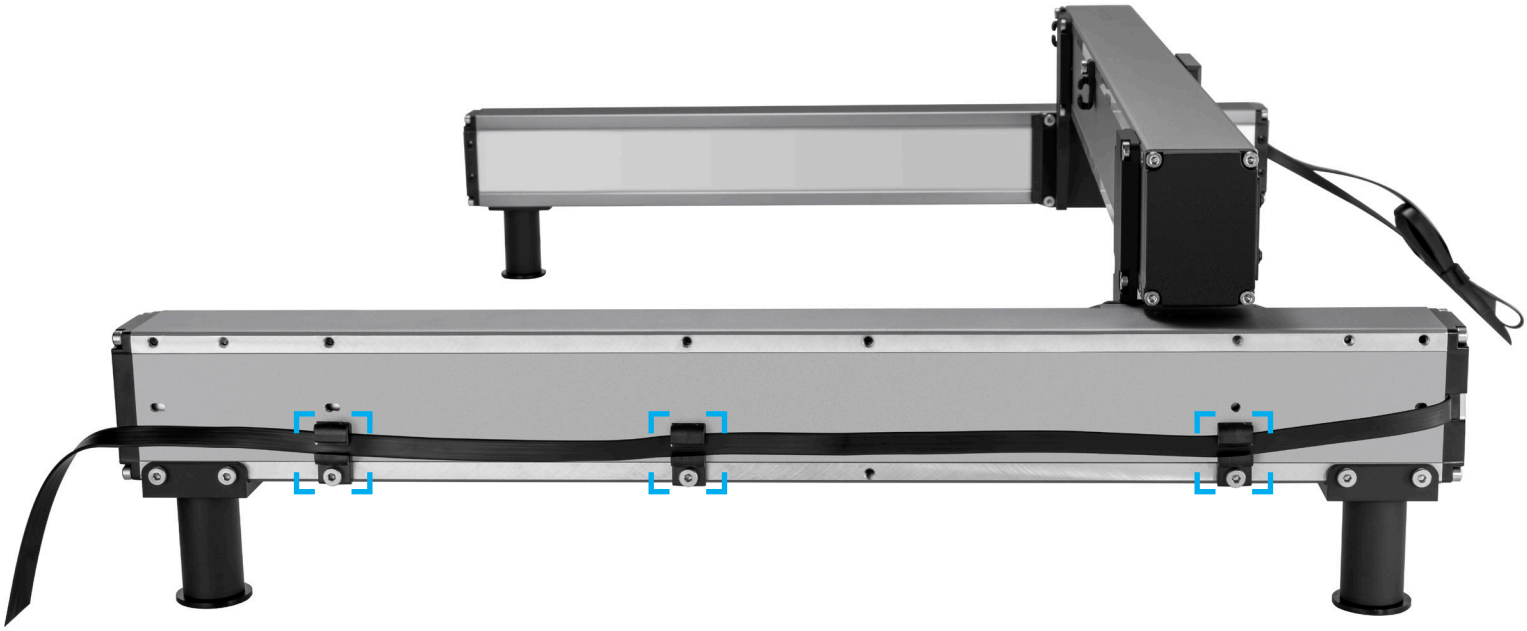
# 19/37

Attach the cable clips to the left Y axis.



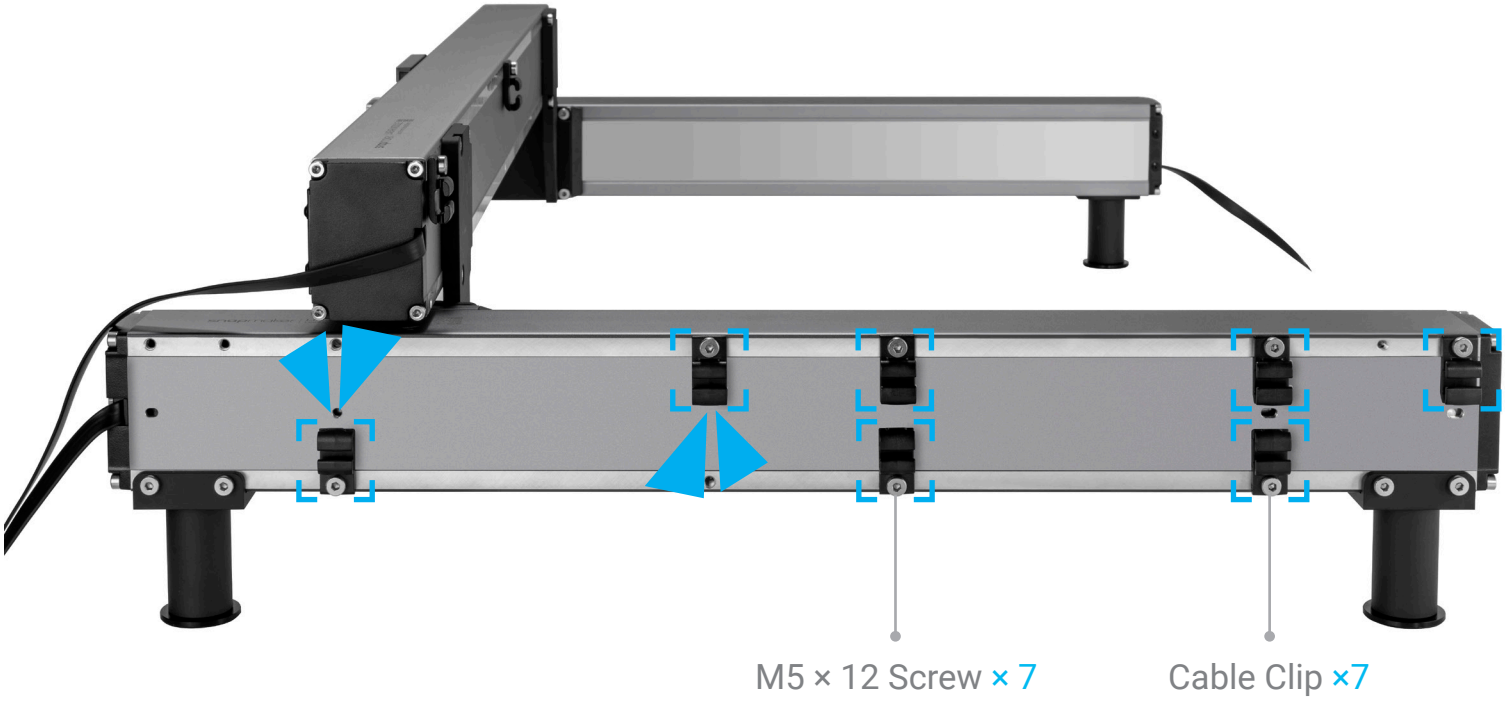
# 20/37

Fix the left Y-axis cable to the cable clips on the left Y axis.



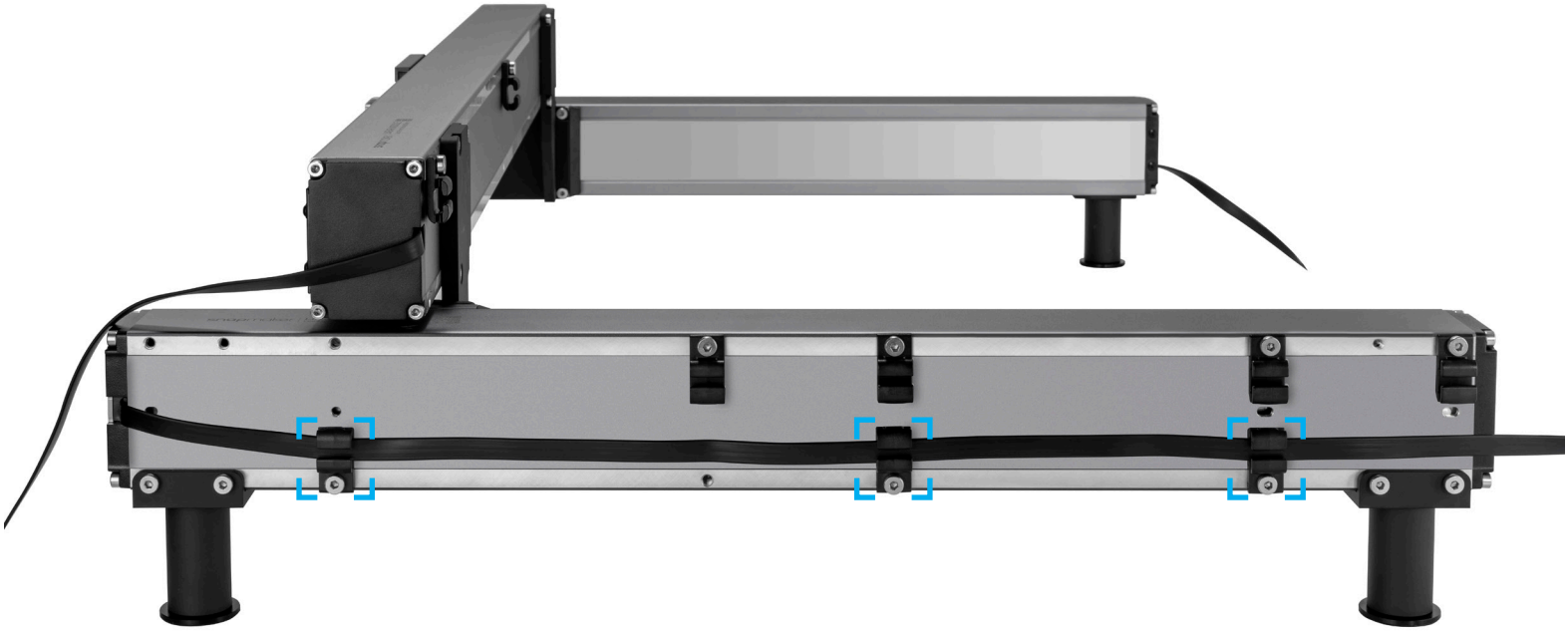
# 21/37

Attach the cable clips to the right Y axis.



# 22/37

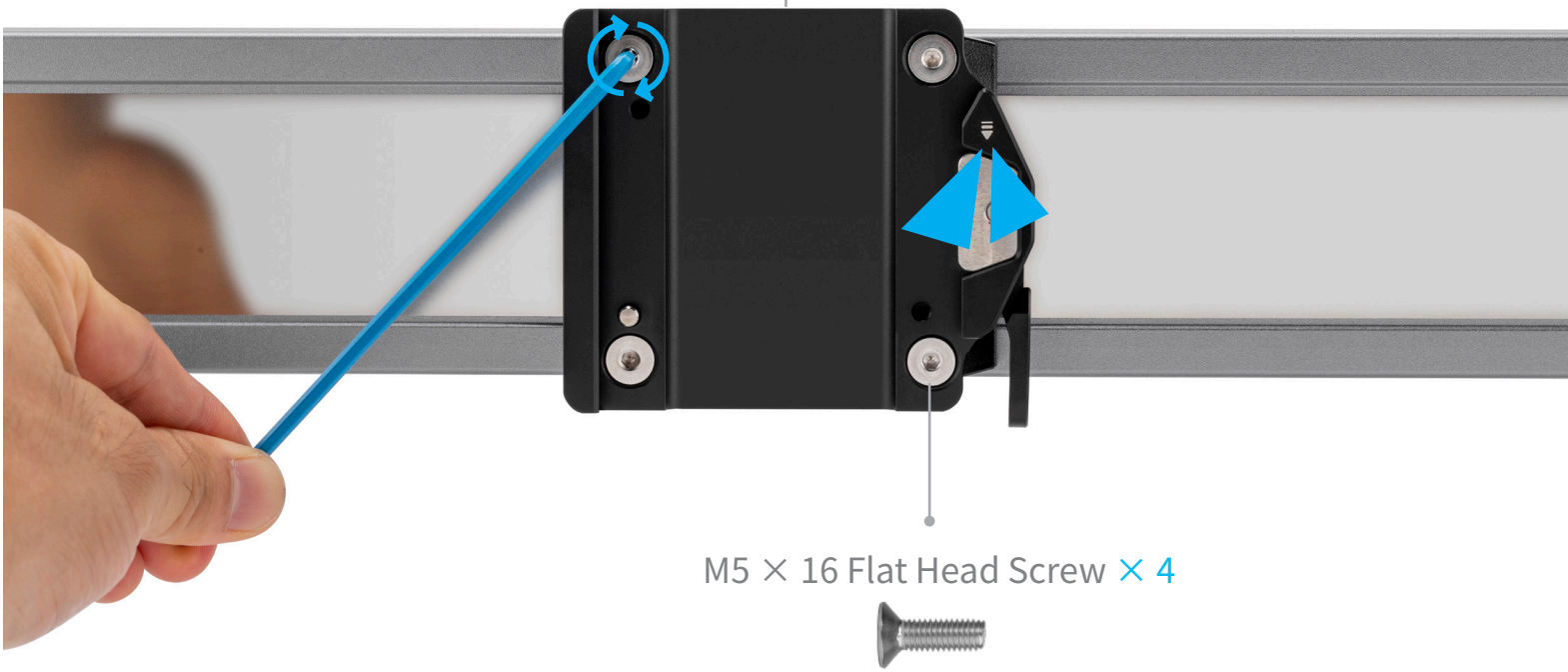
Fix the right Y-axis cable to the cable clips on the right Y axis.



# 23/37

Attach the toolhead bracket to the X axis.

Toolhead Bracket × 1



M5 × 16 Flat Head Screw × 4

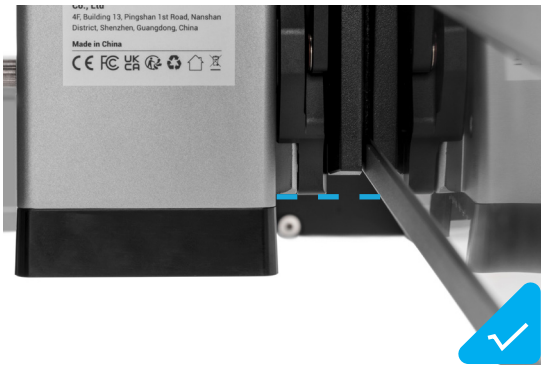
# 24/37

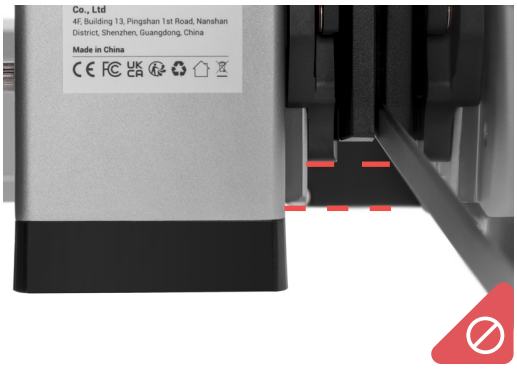
Loosen the handle of the toolhead bracket, and slide the toolhead into the bracket.

Laser Module × 1

# 25/37

Adjust the height of the toolhead vertically until the bottom of the slider is level with the bottom of the bracket. Then, tighten the handle of the bracket.

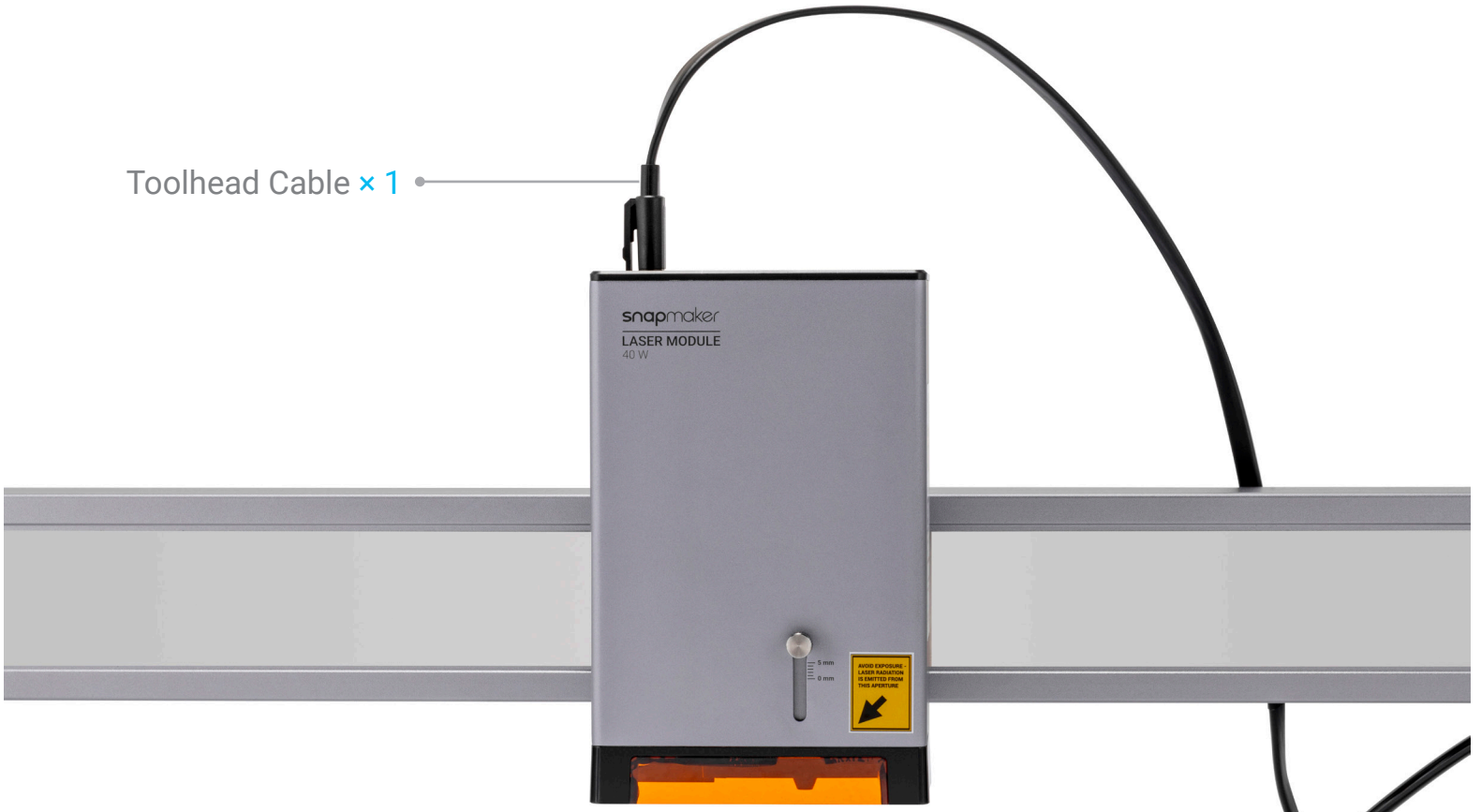


The purpose of adjusting the height of the toolhead is to ensure that it does not interfere with the subsequent placement of the laser engraving and cutting platform.

# 26/37

Insert the toolhead cable into the toolhead.

Toolhead Cable × 1

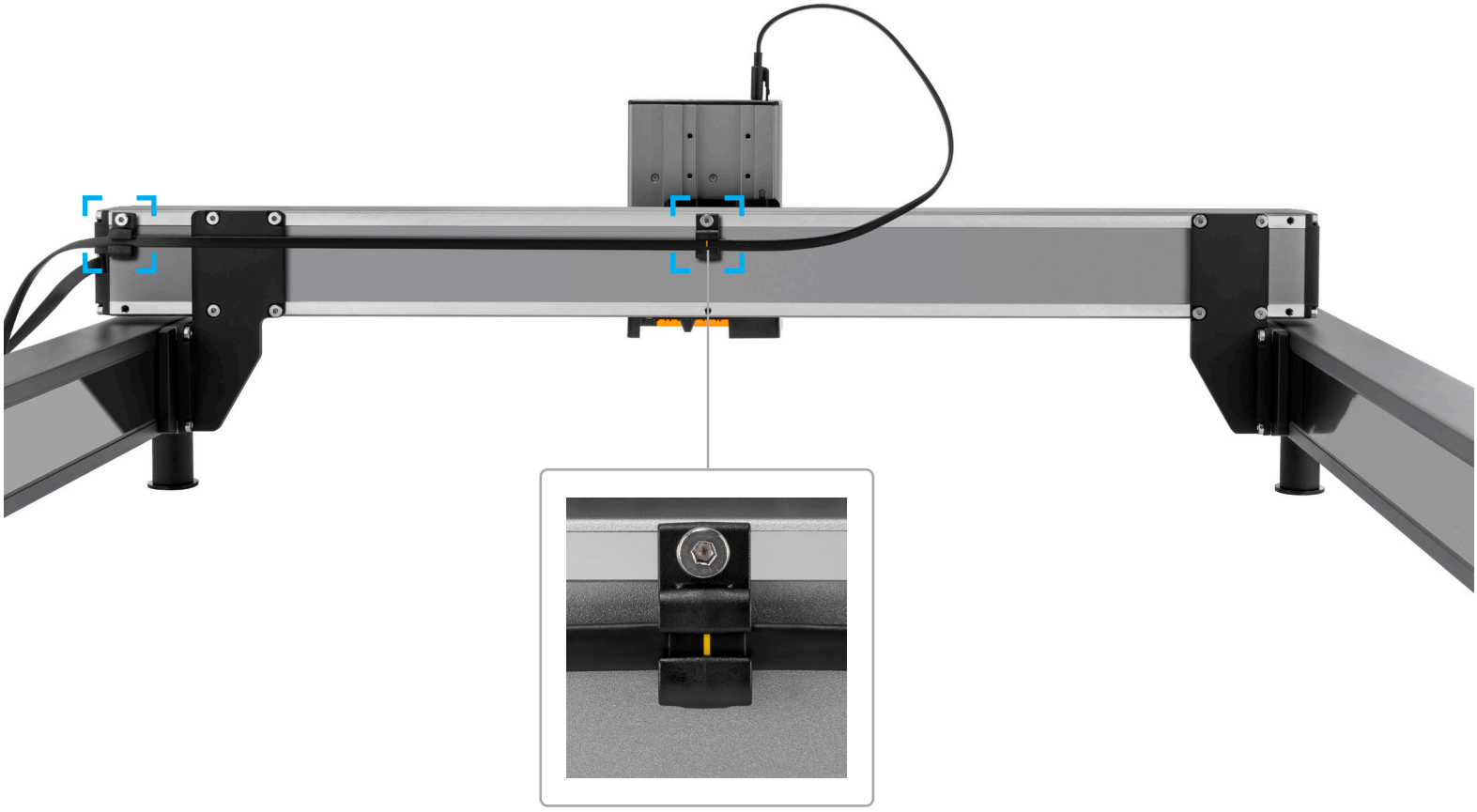




Make sure the connector is in the right orientation.

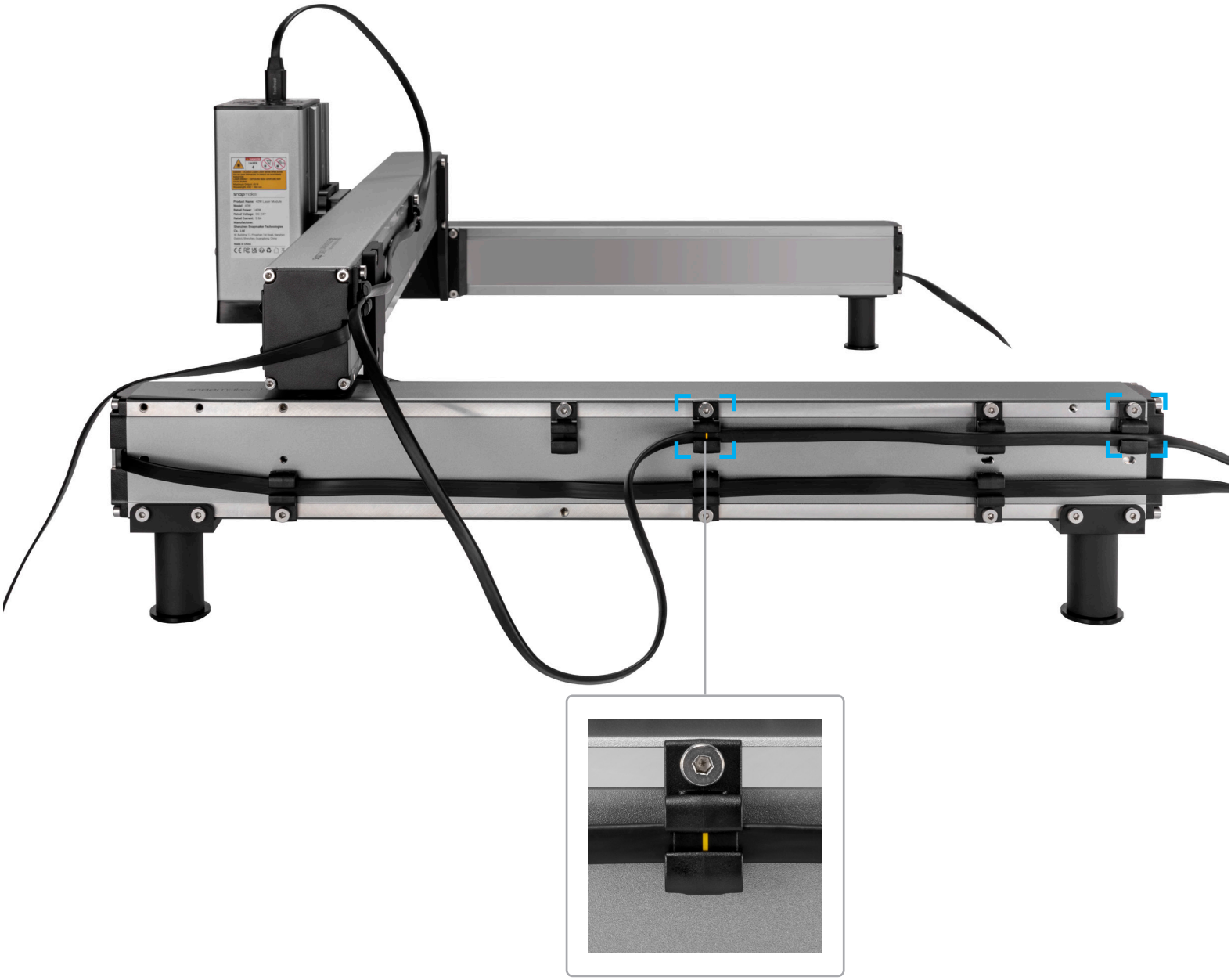
# 27/37

Fix the toolhead cable with the cable clips on the X axis.



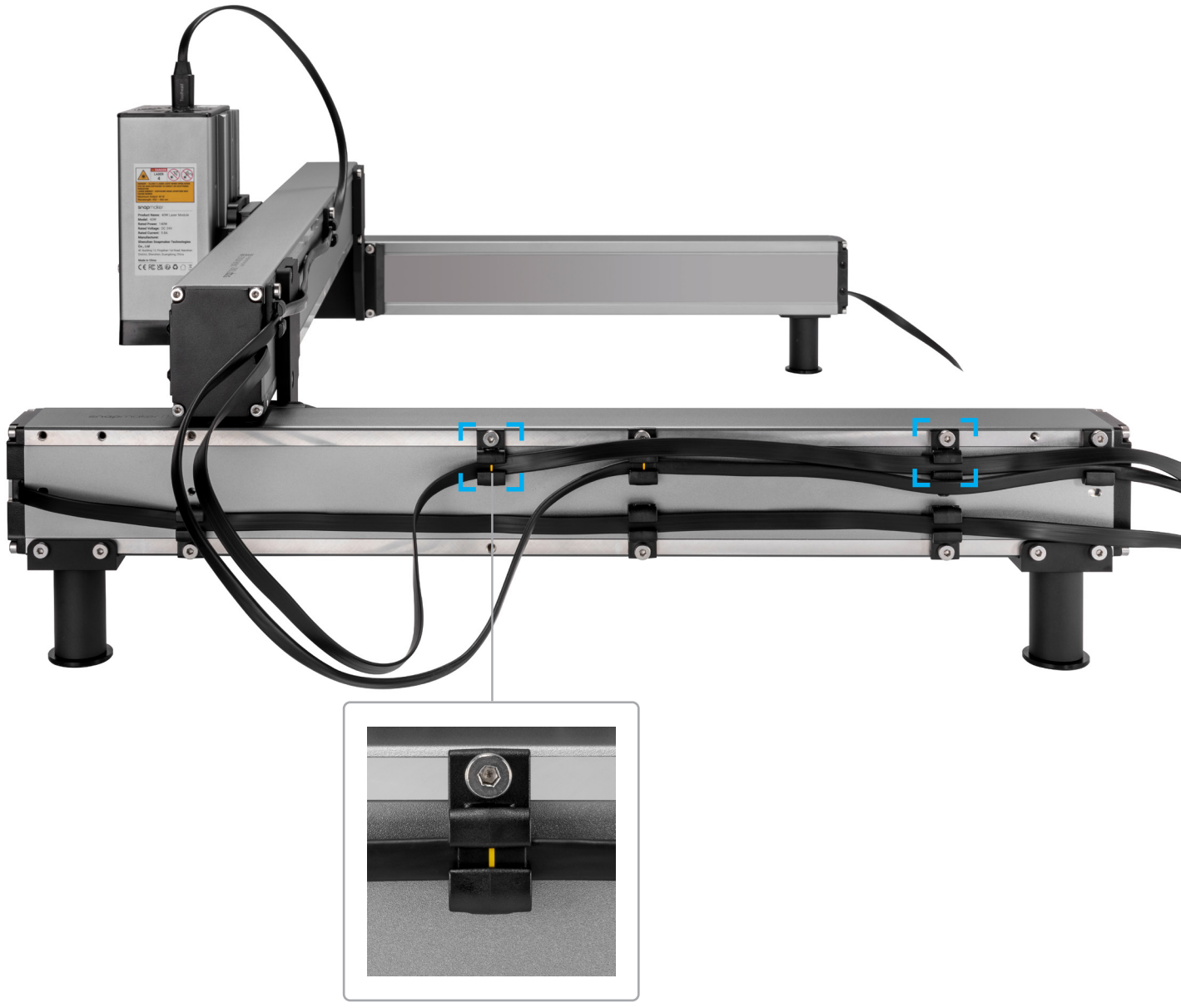
# 28/37

Fix the toolhead cable with the cable clips on the right Y axis.



# 29/37

Fix the X-axis cable with the cable clips on the right Y axis.

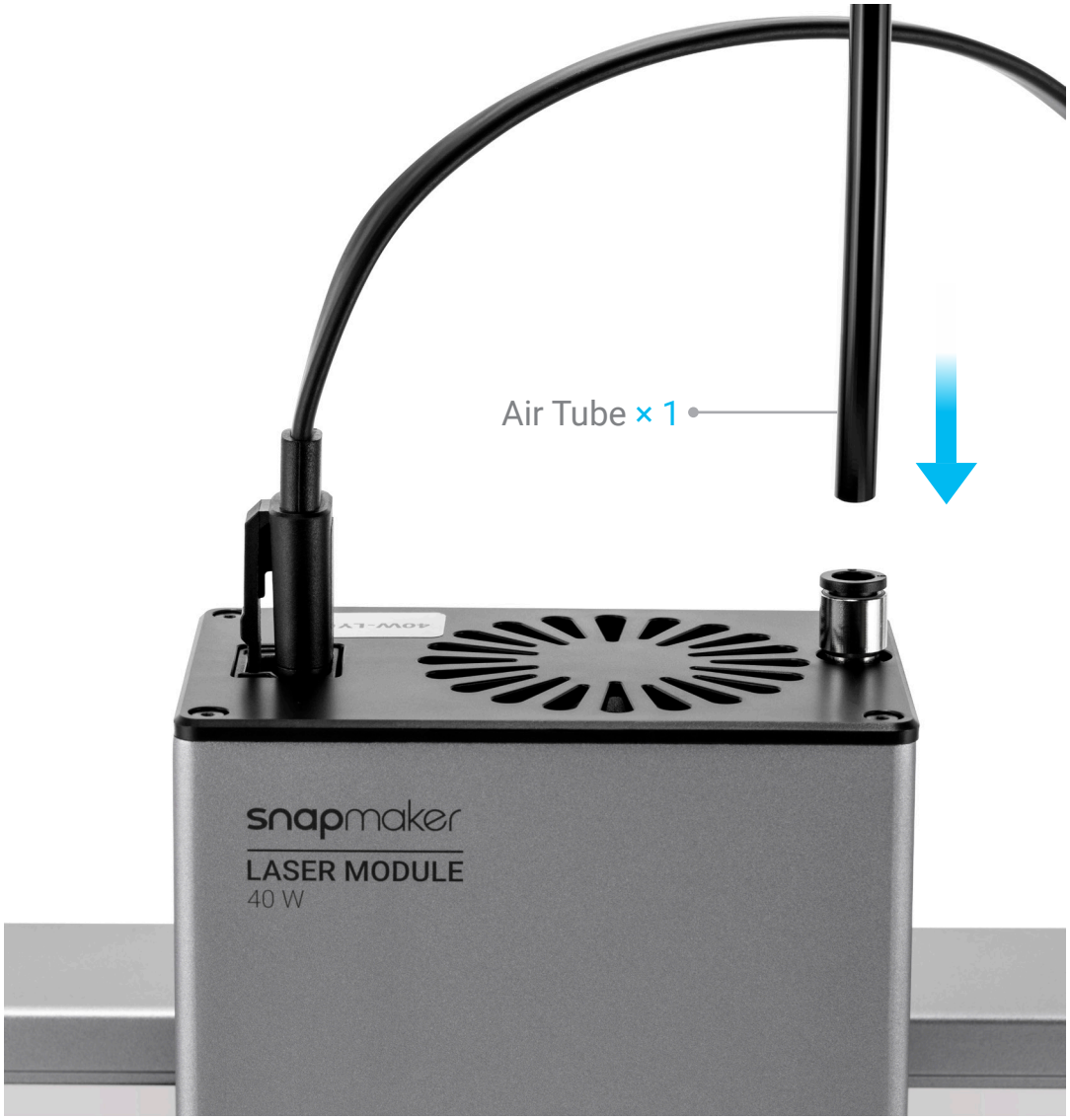


# 30/37

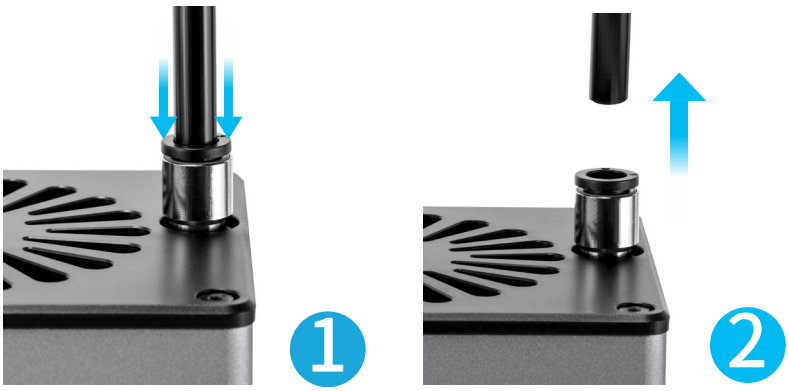
Attach the M5 air tube connector to the toolhead.

# 31/37

Insert the air tube into the M5 air tube connector.

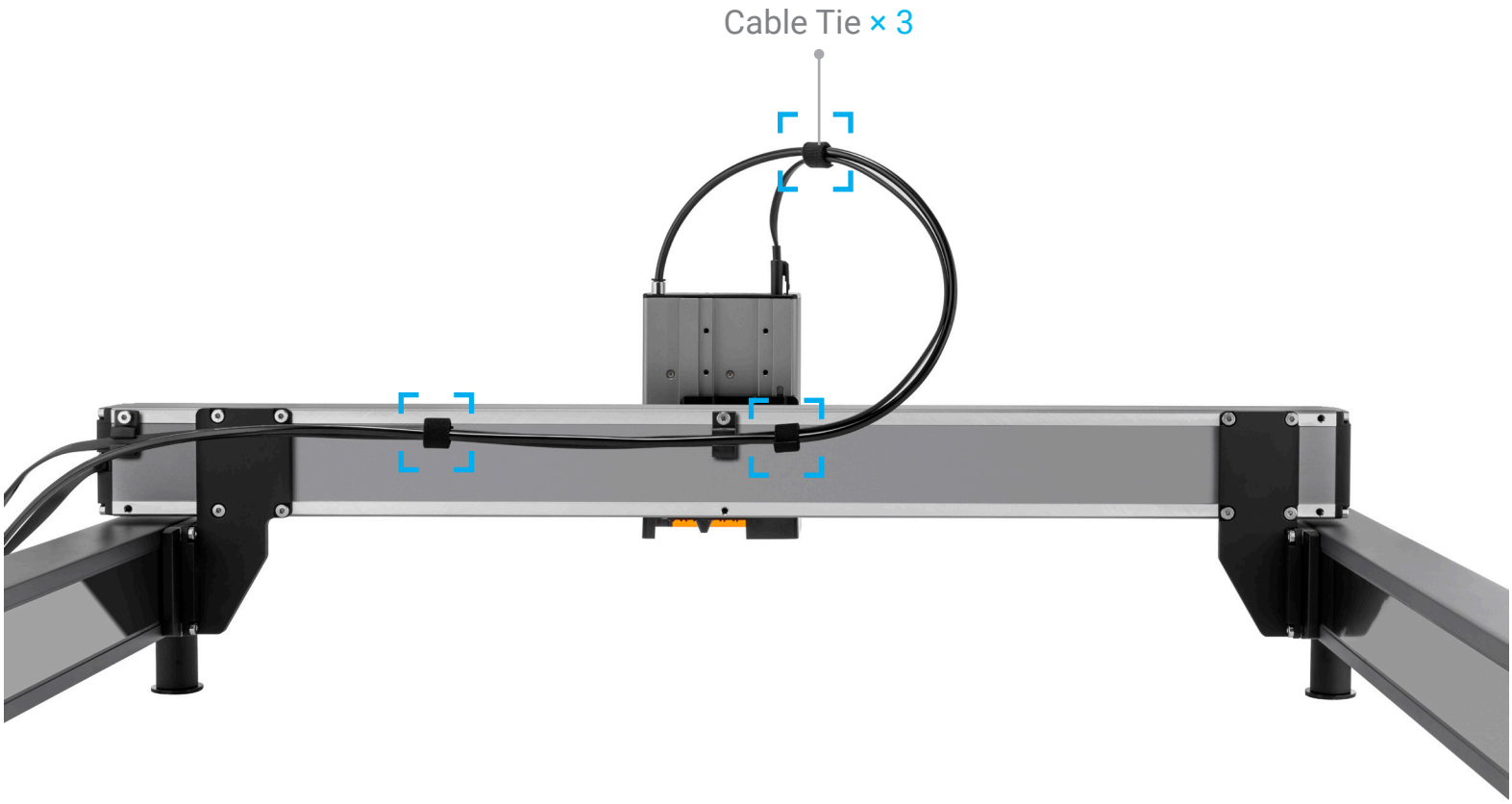



To pull out the air tube, firmly press the round clamp of the air tube connector while pulling.



# 32/37

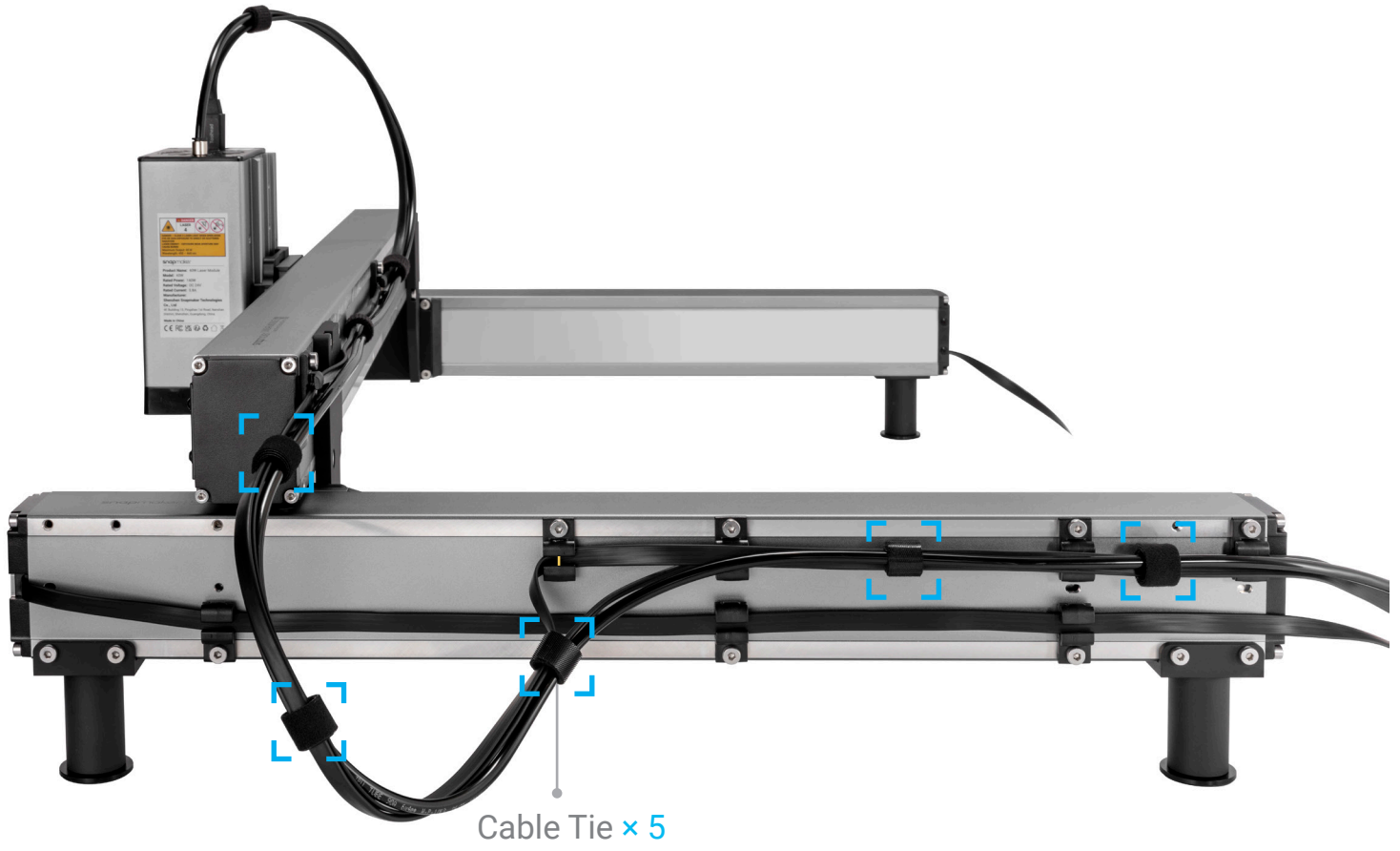
Fix the toolhead cable and the air tube with cable ties, as illustrated.




You can cut a longer cable tie into multiple shorter cable ties for use.

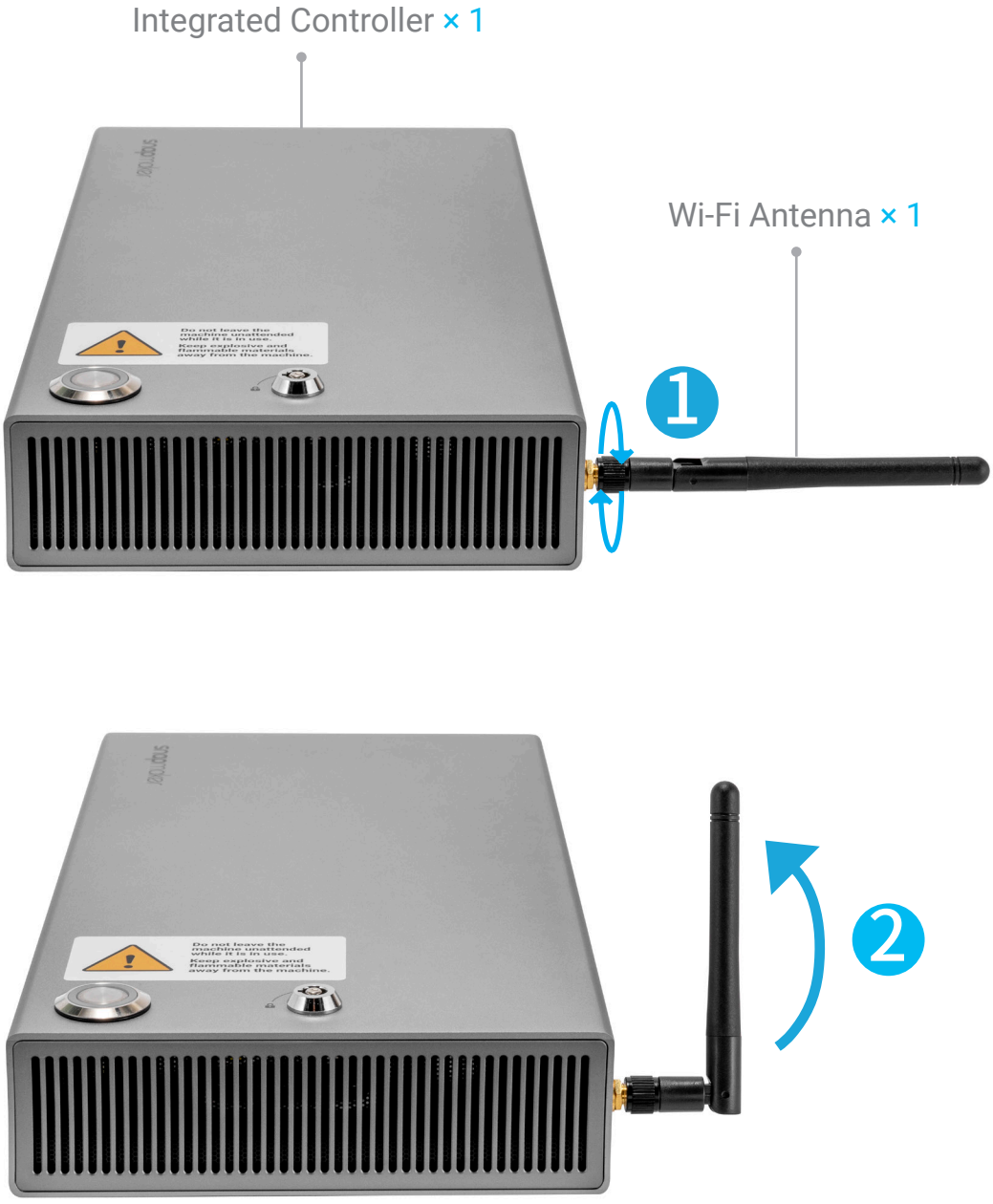
# 33/37

Fix the toolhead cable, the X-axis cable, and the air tube with cable ties, as illustrated.



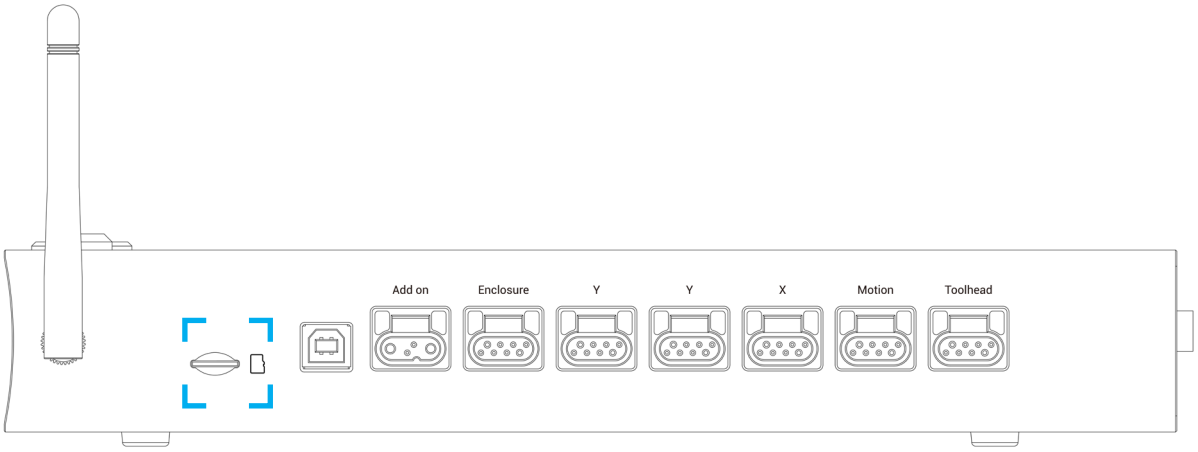
# 34/37

Screw the Wi-Fi antenna into the integrated controller, then rotate the antenna so that it is facing upwards.



# 35/37

Insert the microSD card into the integrated controller.





microSD Card × 1

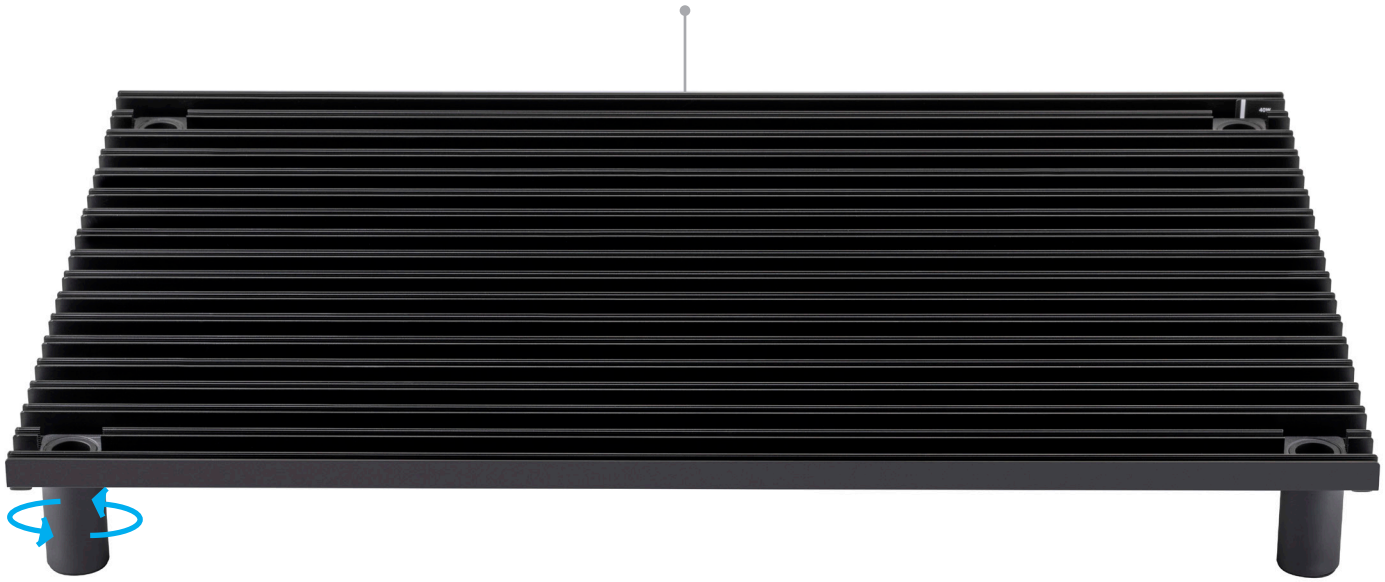
# 36/37

Attach the foot to the cylindrical foot.

# 37/37

Attach the cylindrical foot to the laser engraving and cutting platform.

Laser Engraving and Cutting Platform × 1



For instructions on how to place the platform, refer to section **3.2 Placing the laser engraving and cutting platform**, in the online Quick Start Guide at: https://wiki.snapmaker.com/en/snapmaker_ray/manual/quick_start_guide.

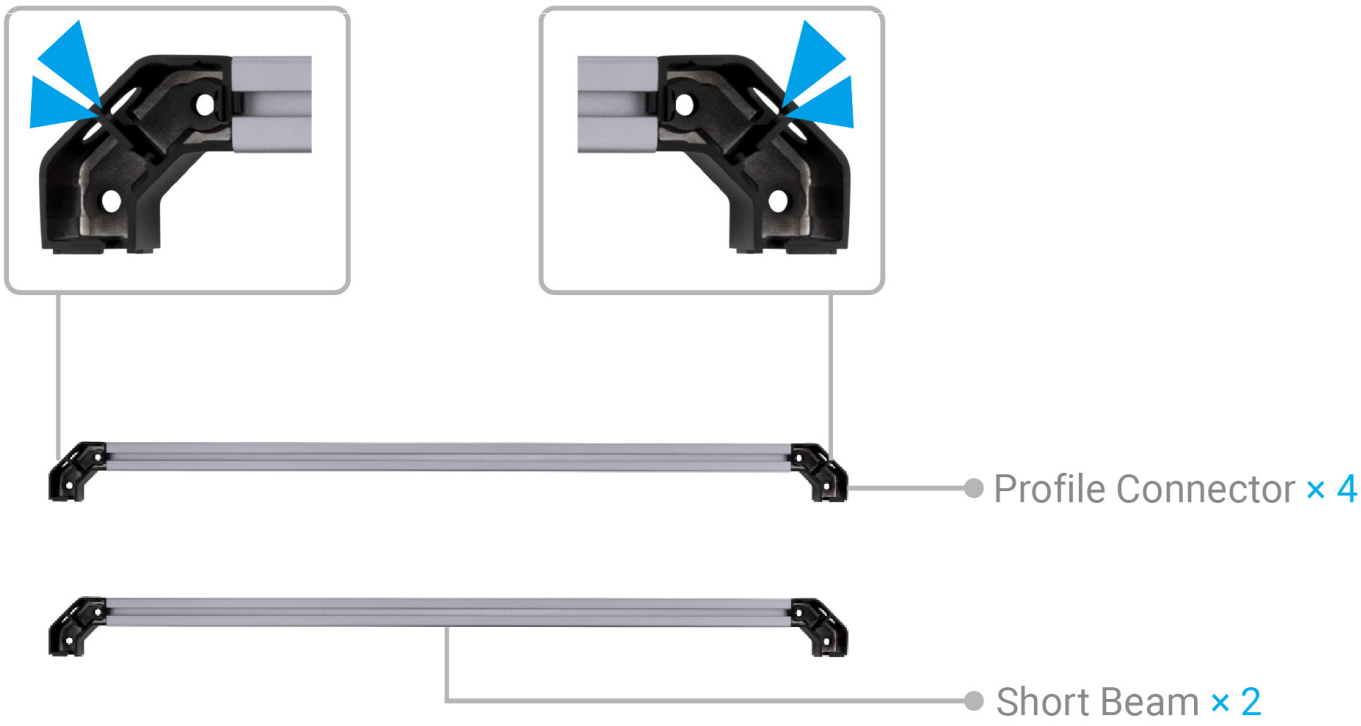
# Assembling the Enclosure

# 01/29

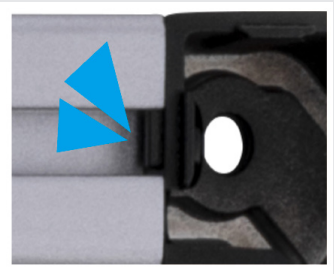
Identify two short beams (without any LED strips) and attach four profile connectors to both ends of the beams.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 12 | 4 | H3.0 |

Profiles rank by length: long beam > short beam > column.



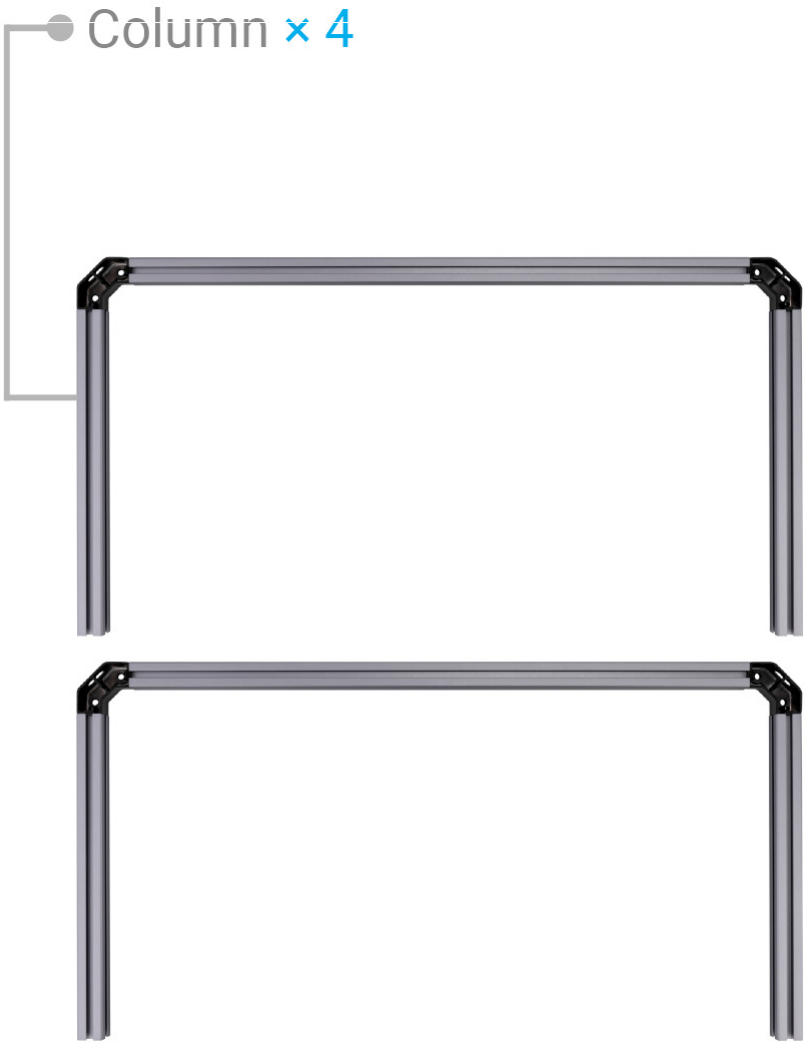

Make sure the alignment tabs of the profile connectors are inside the profile grooves. You need to pay attention to this detail also in subsequent similar steps.



# 02/29

Attach the four columns to the profile connectors.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 12 | 4 | H3.0 |



# 03/29

Identify the long beam-3 (with the Enclosure converter) and attach it to the profile connectors.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 30 | 4 | H3.0 |

Make sure the inside of all profile connectors faces inward.

# 04/29

Identify the long beam-1 (with the air inlet) and attach it to the profile connectors.

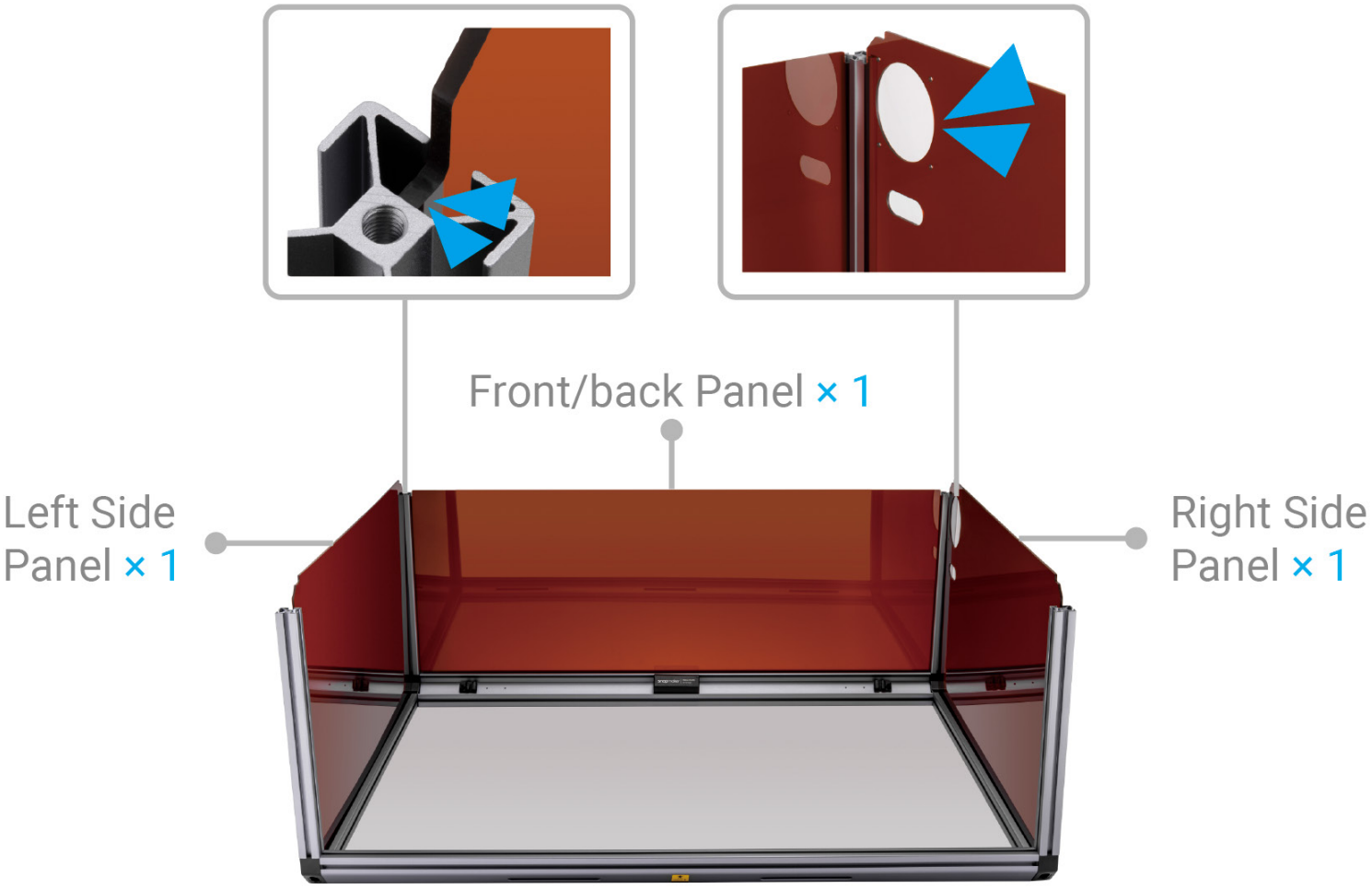
| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 30 | 4 | H3.0 |

# 05/29

Insert one of the front/back panels, the left side panel, and the right side panel into the frame.

Make sure the opening for the exhaust fan is positioned near the back panel with the snap bushing opening located beneath.

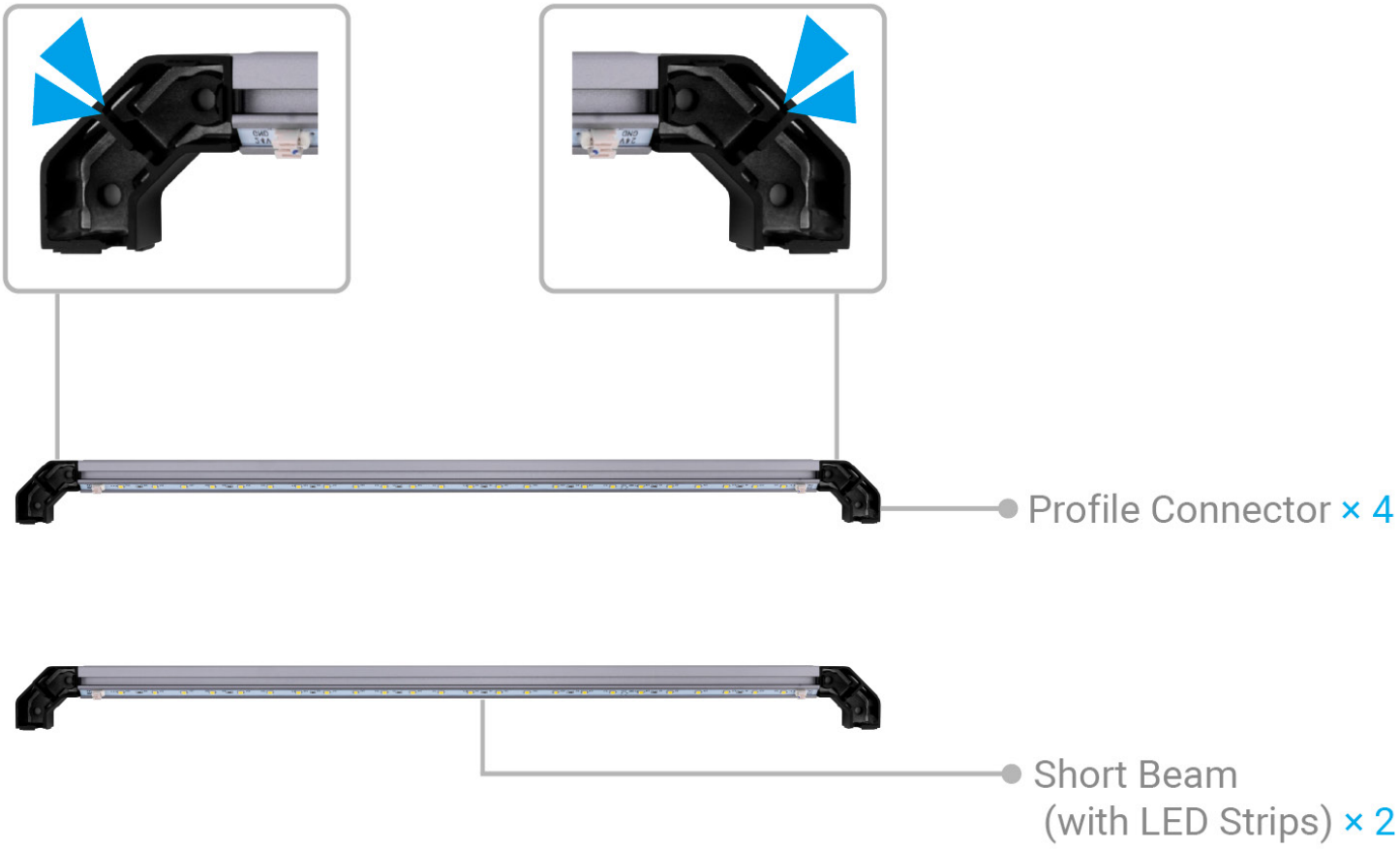
Make sure the edges of all panels are inserted into the grooves of the corresponding profiles. You need to pay attention to this detail also in subsequent similar steps.



# 06/29

Identify two short beams (with LED strips) and attach four profile connectors to both ends of the beams.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 12 | 4 | H3.0 |

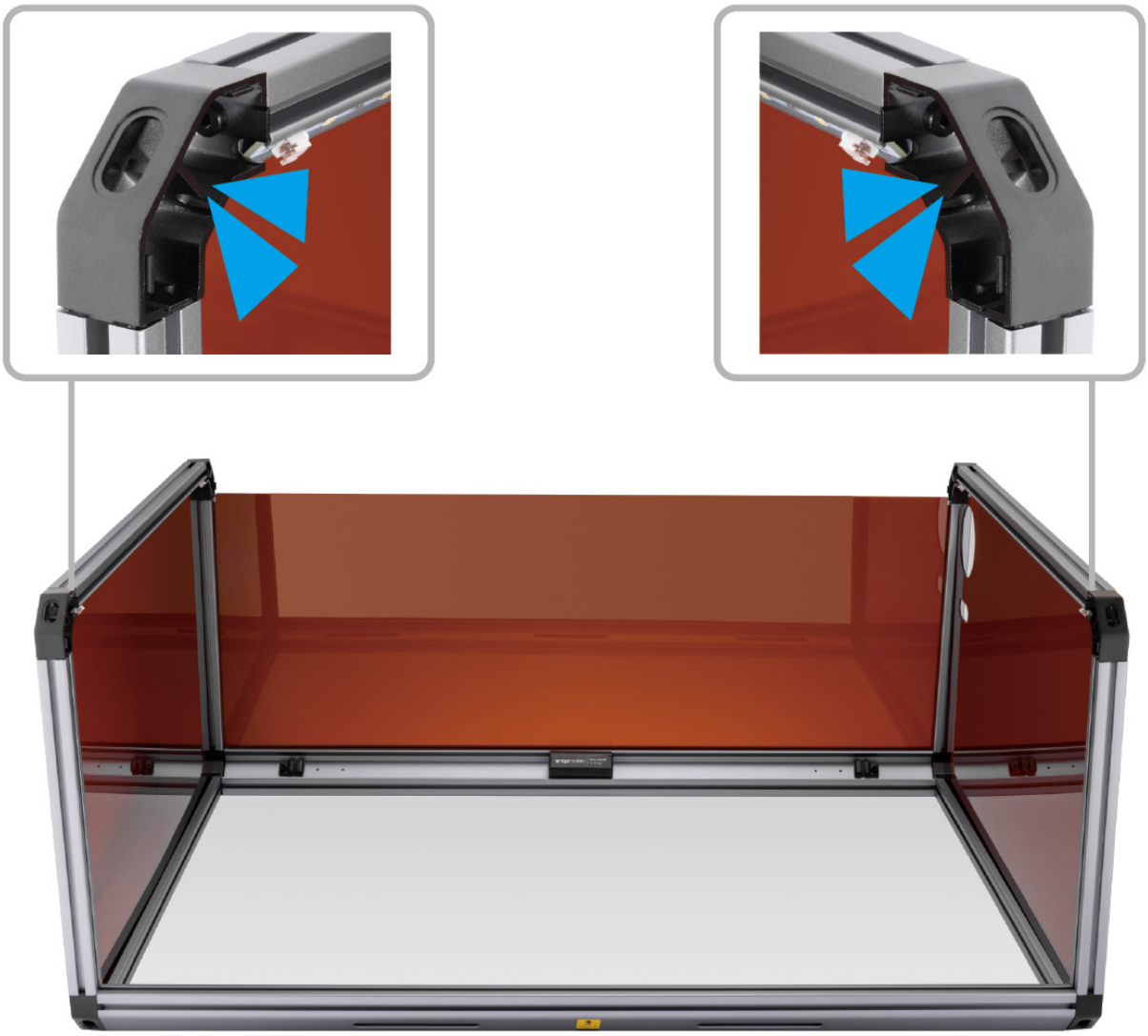


# 07/29

Attach the short beams (with LED strips) installed with the profile connectors to the columns.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 12 | 4 | H3.0 |

Make sure the inside of all profile connectors faces inward.

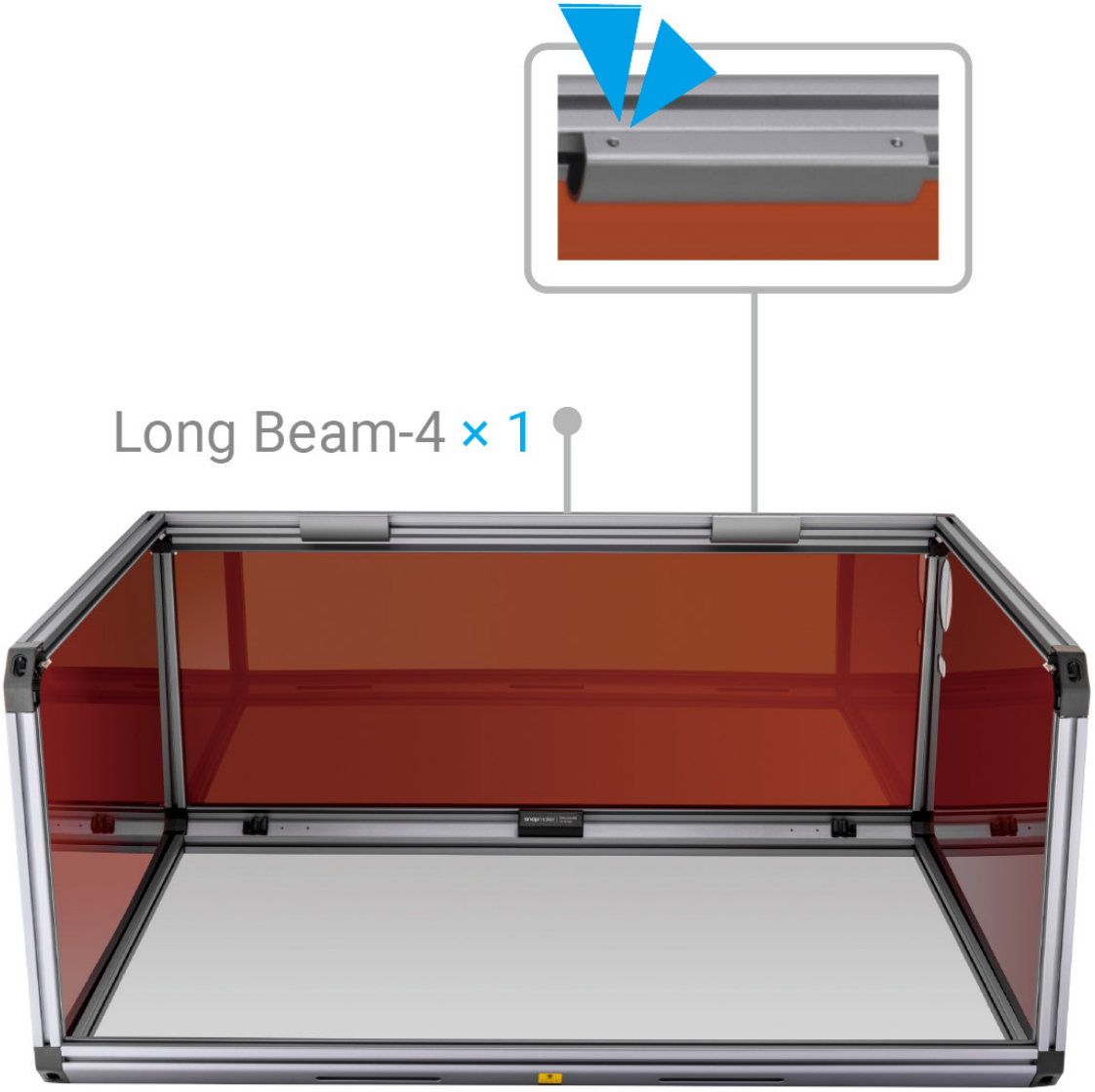


# 08/29

Identify the long beam-4 (with the hinges) and attach it to the profile connectors.

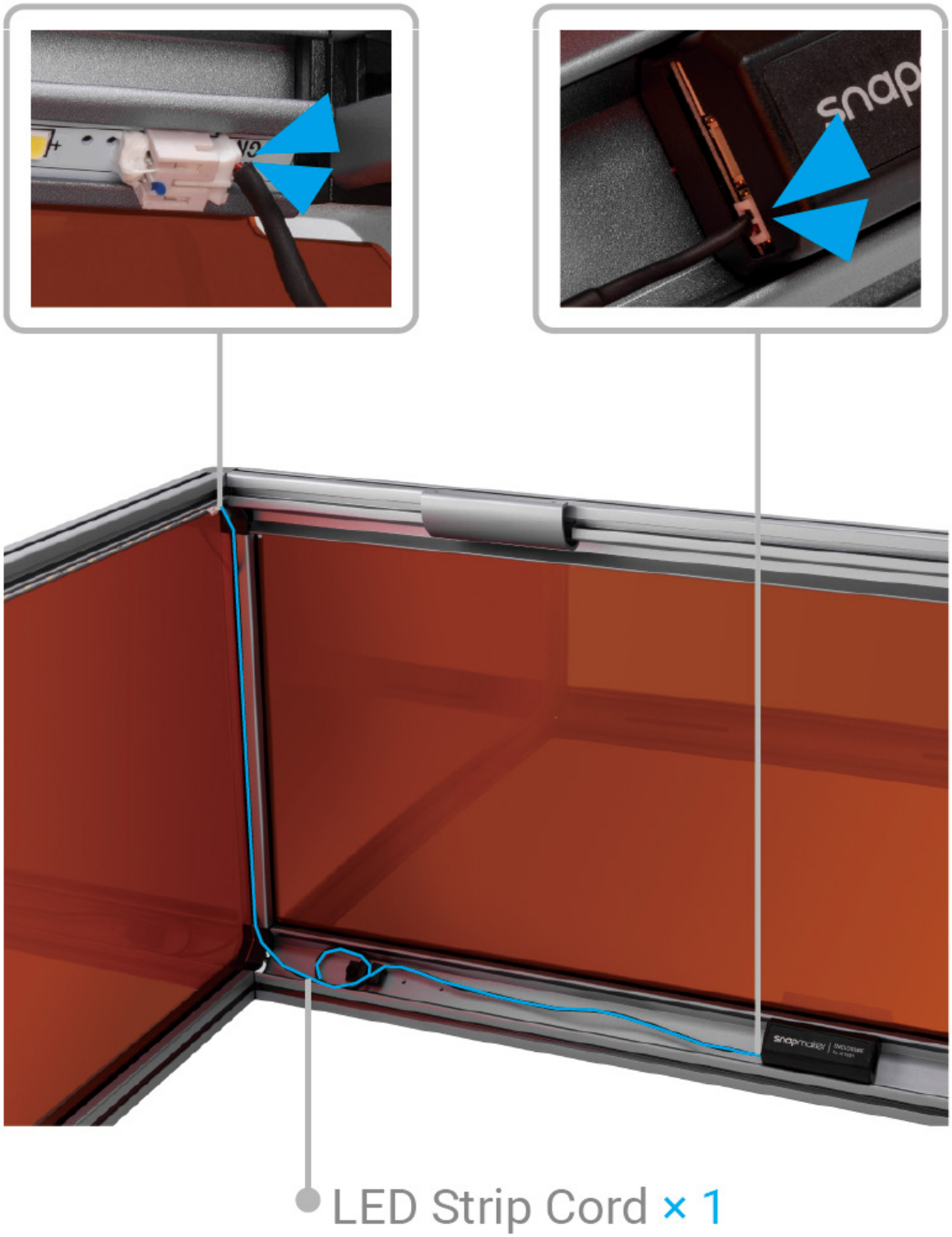
| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 30 | 4 | H3.0 |

Make sure the screw holes of the hinges on the long beam-4 face upward.



# 09/29

Insert the LED strip cord into the socket of the left LED strip and the 2-pin socket on the left side of the Enclosure converter, and tuck the cord into the gap between the left-rear column and the left side panel.



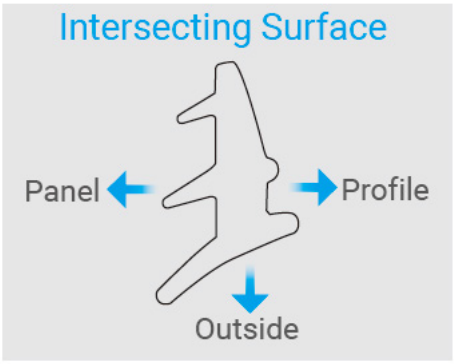
# 10/29

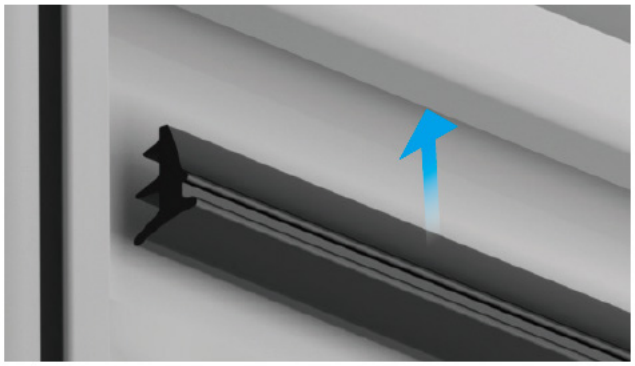
Insert the eight sealing plugs into the outer side of all profile connectors.

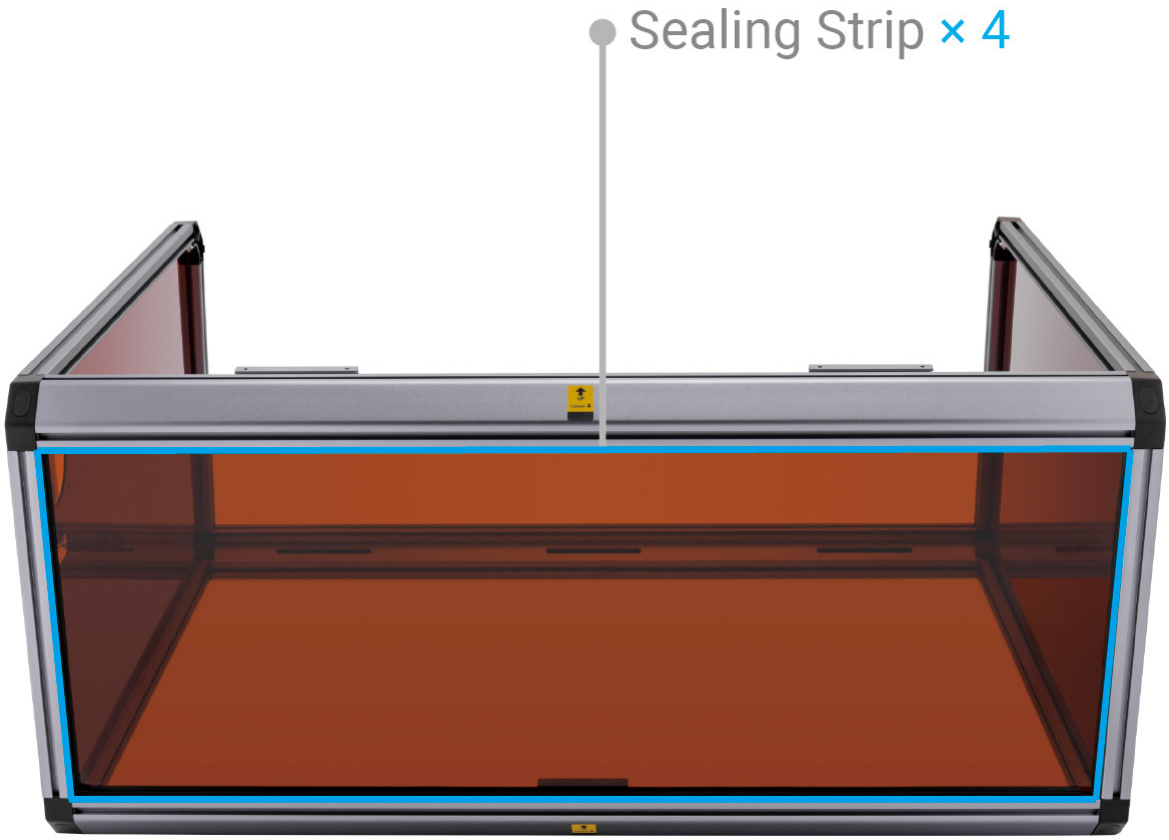
# 11/29

Rotate the frame 180° horizontally, then cut out 4 appropriately-sized sealing strips and press them respectively into the outer gaps between profiles and the back panel.

Make sure to install the sealing strips correctly.





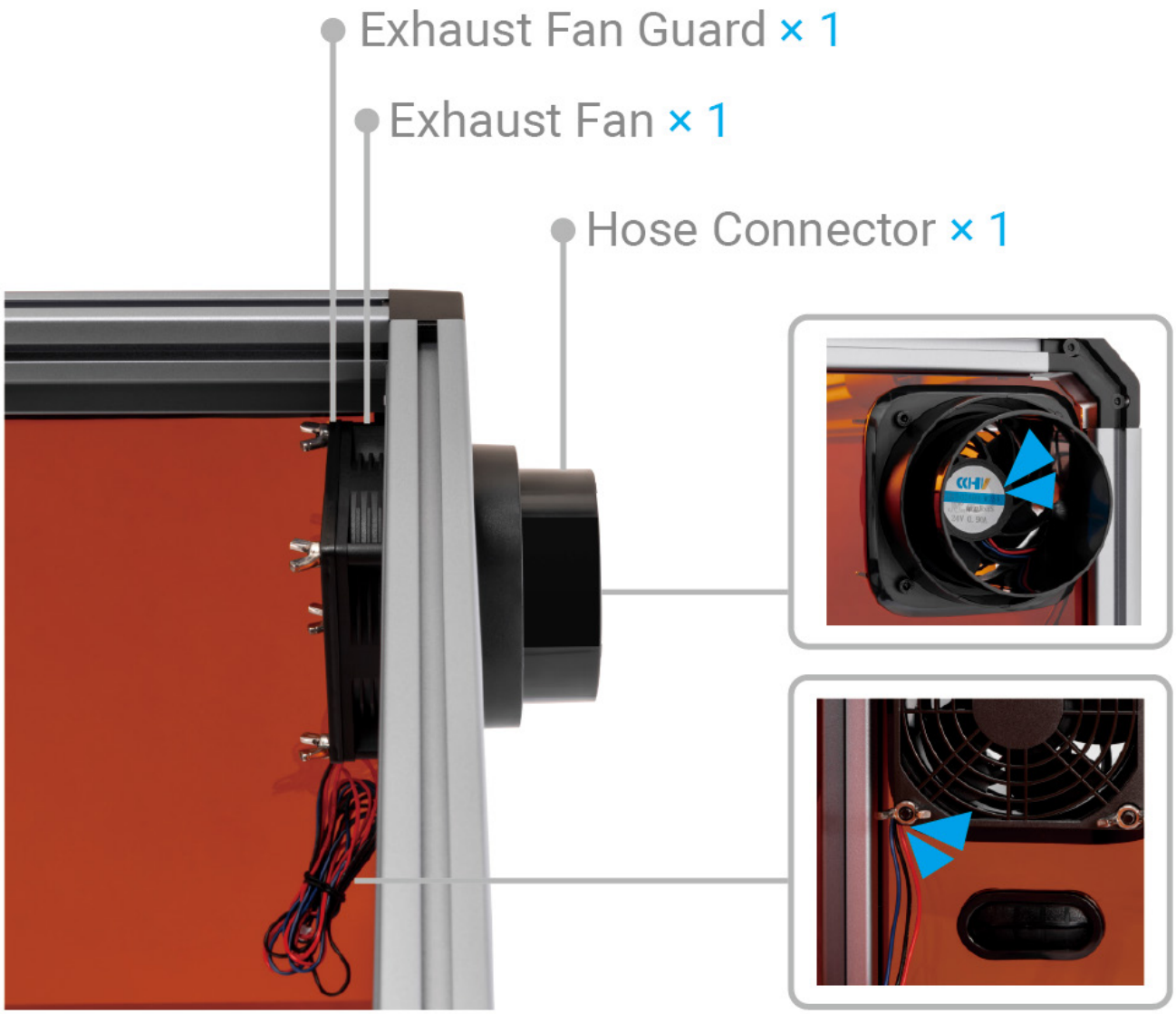
# 12/29

Attach the snap bushing to the right side panel.

# 13/29

Attach the exhaust fan guard, the exhaust fan, and the hose connector to the right side panel.

| Screw | Number | Screwdriver |
|---|---|---|
| M4 × 40 & Wing Nut | 4 | H2.5 |



# 14/29

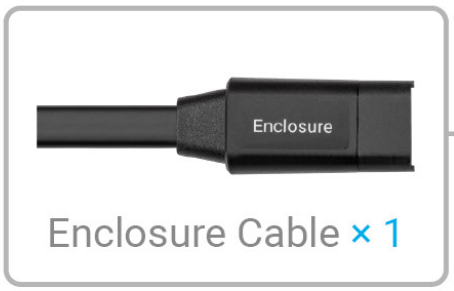
Insert the exhaust fan cord into the middle socket on the left side of the Enclosure converter, and secure it with the cable clip.

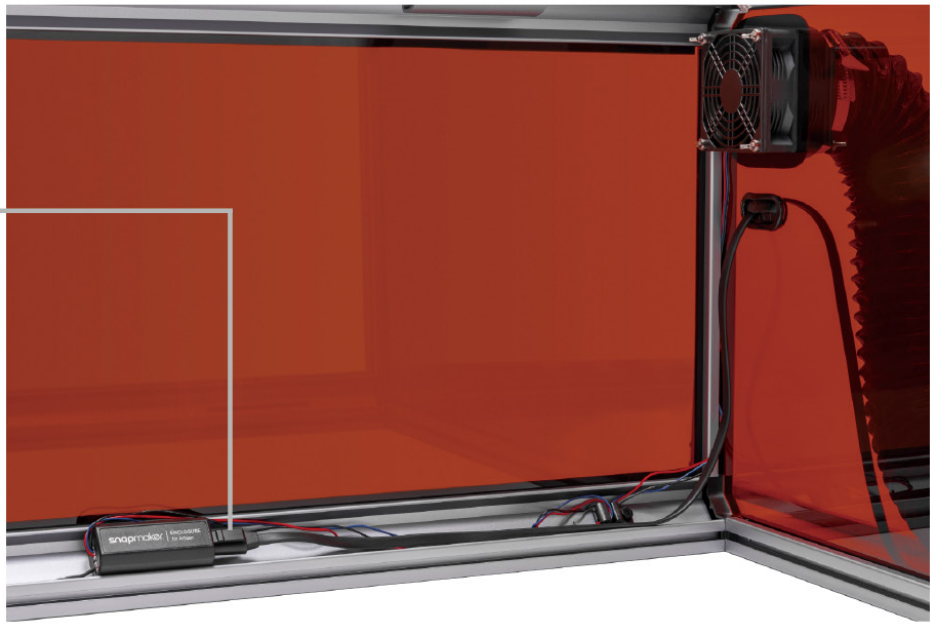
# 15/29

Put the hose into the hose clamp and secure the hose to the hose connector.

# 16/29

Insert the Enclosure cable into the right side of the Enclosure converter and thread the cable through the snap bushing from the inside out.

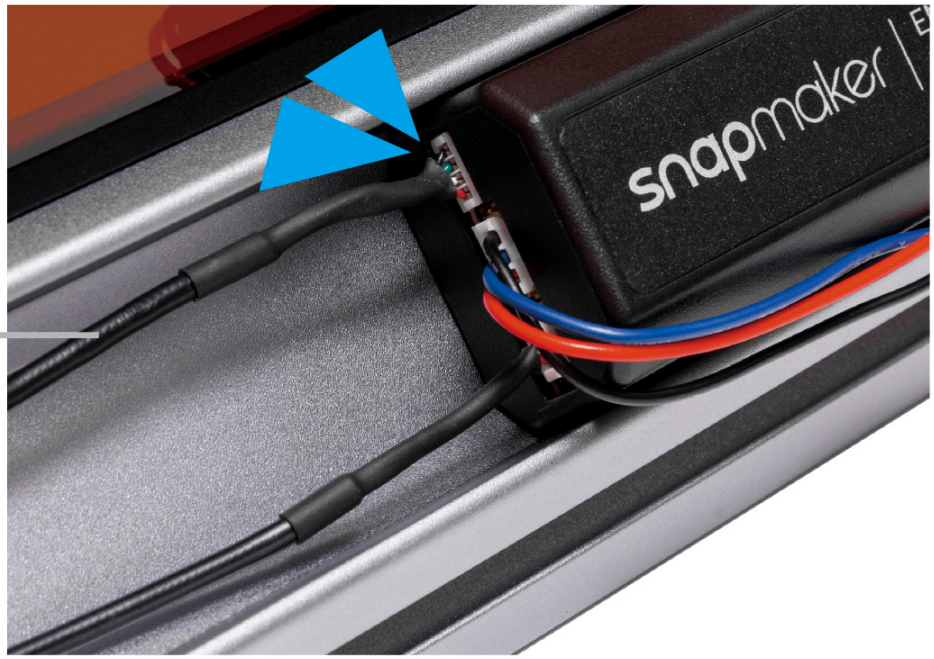


# 17/29

Take out the hall switch cord and insert it into the 4-pin socket on the left side of the Enclosure converter.

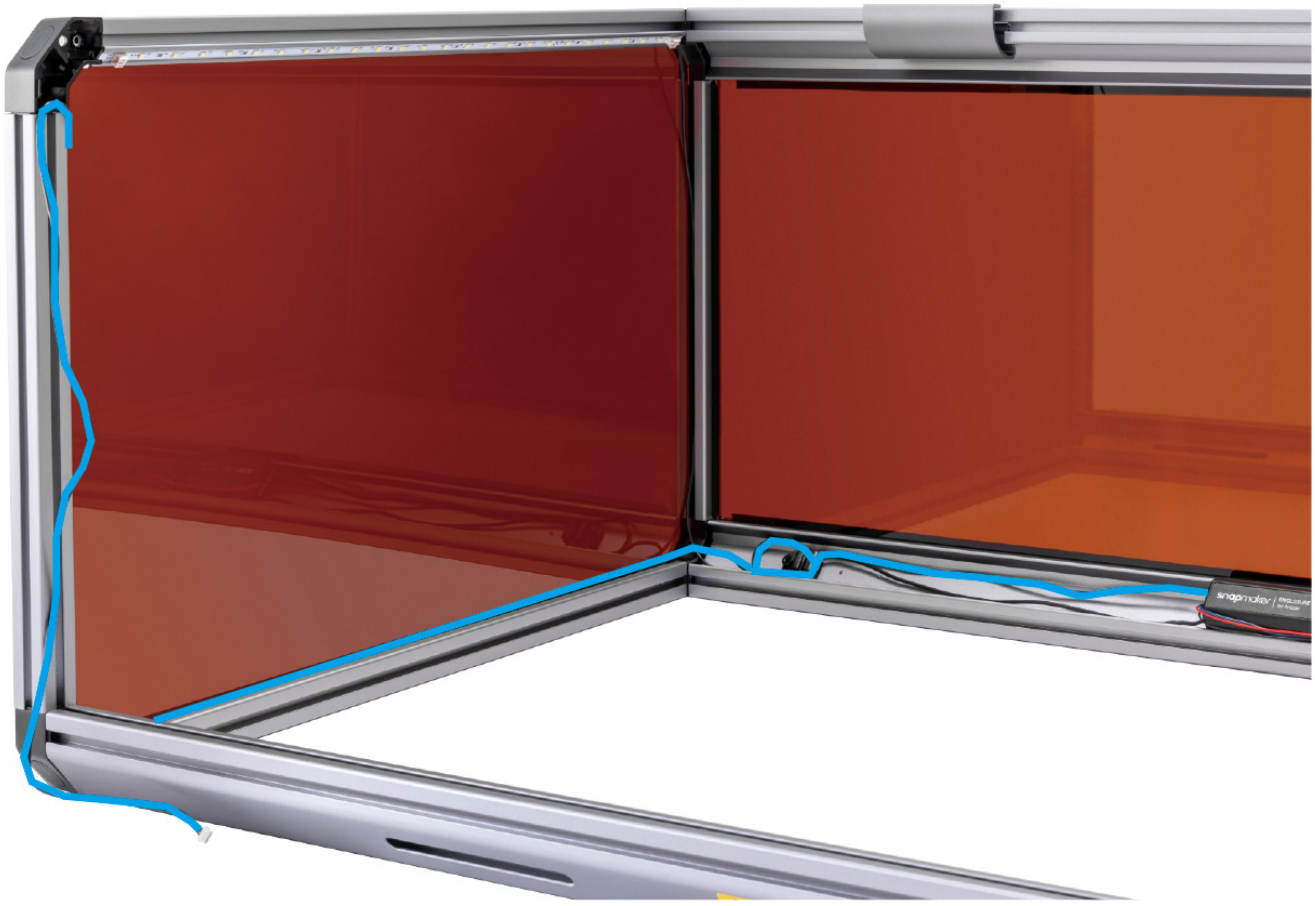
Hall Switch Cord × 1




Cords rank by length: hall switch cord > LED strip cord.

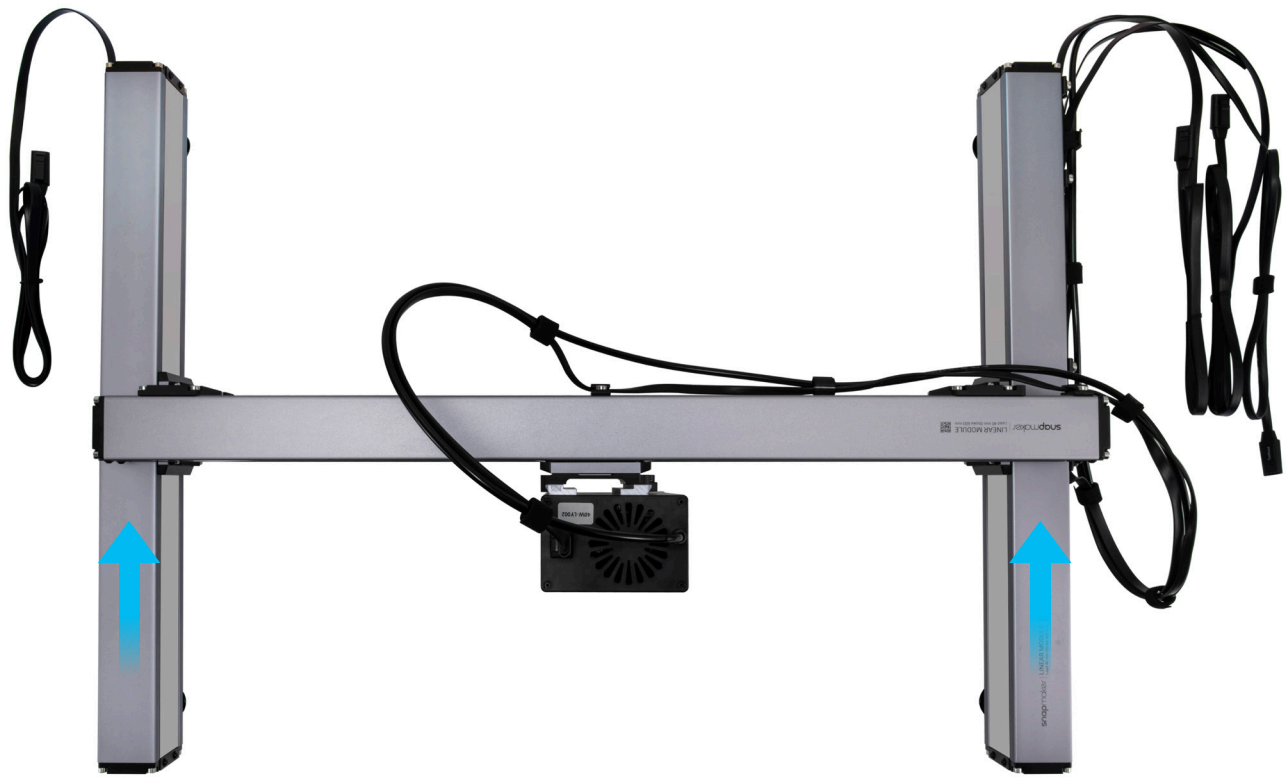
# 18/29

Insert the hall switch cord into the gap between the left-front column and the left-bottom short beam and the panels, then secure it with the cable clip.



# 19/29

Move the X axis to the indicated position to prevent collision between the toolhead and other parts of the machine during the process of moving the machine into the Enclosure.

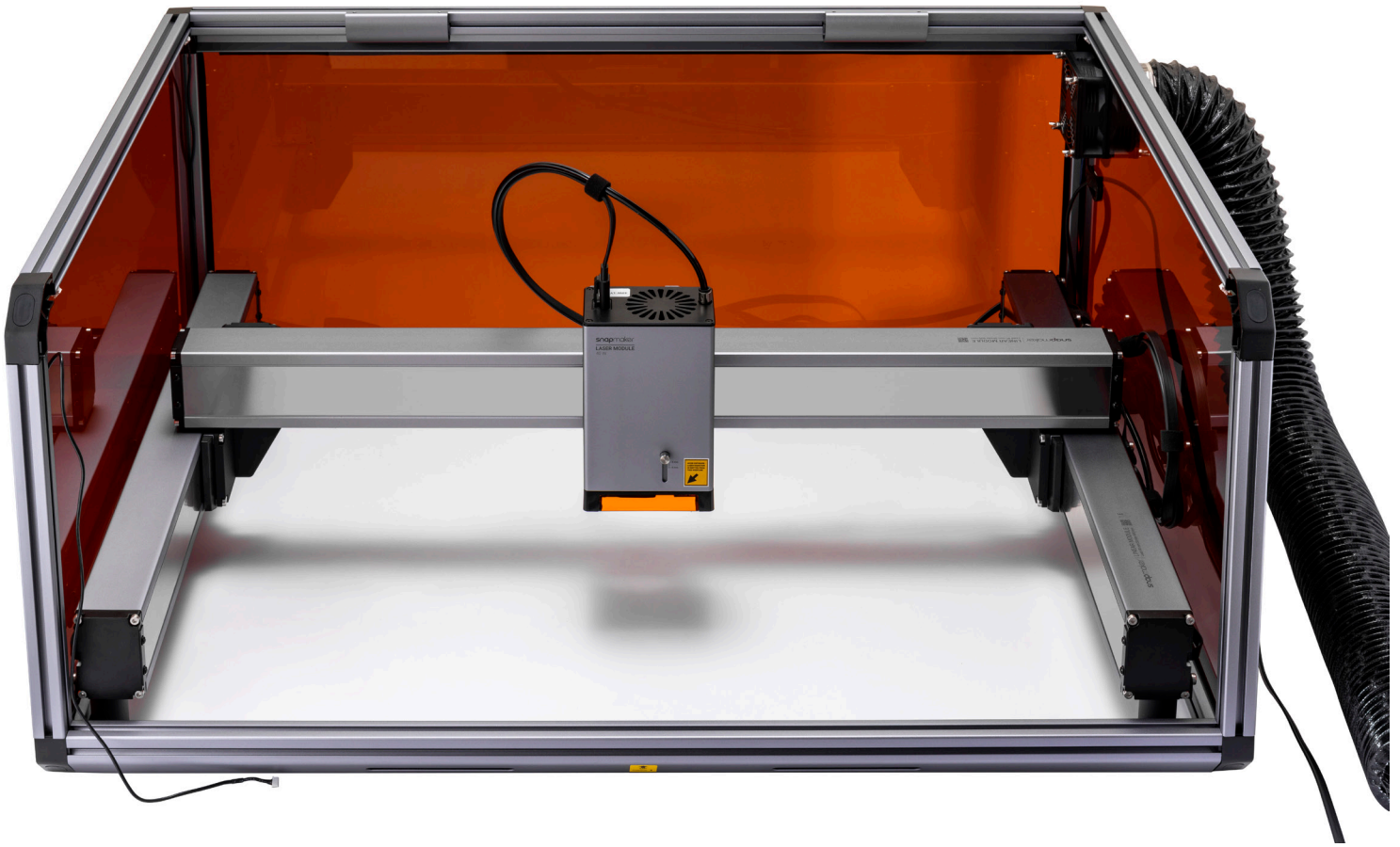


Take care to avoid injury from sharp edges of the steel strip.

Do not press the steel strip.

# 20/29

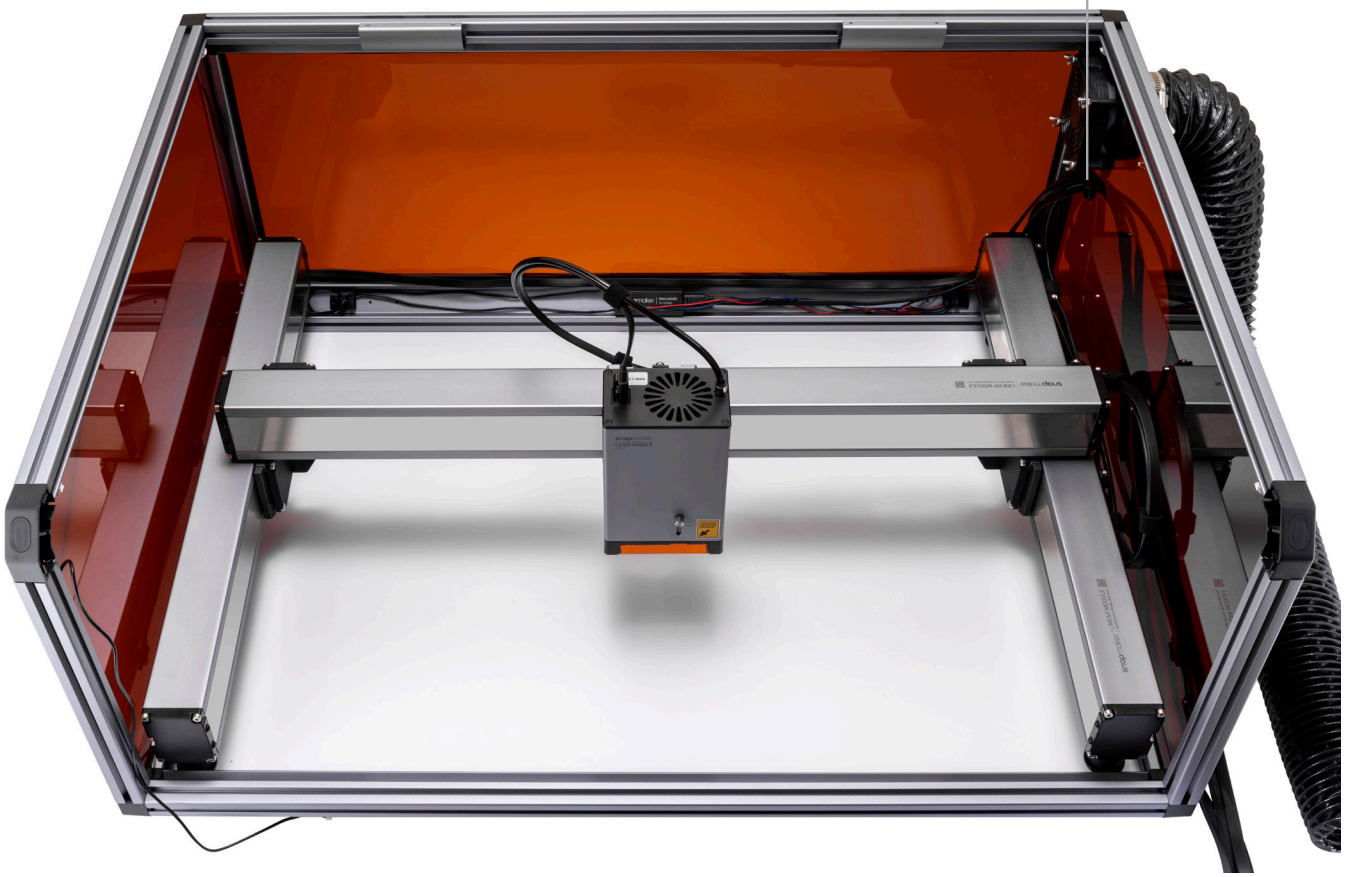
Move the machine into the Enclosure.



Make sure the machine does not collide with the Enclosure while moving. It is recommended that at least two people operate together.

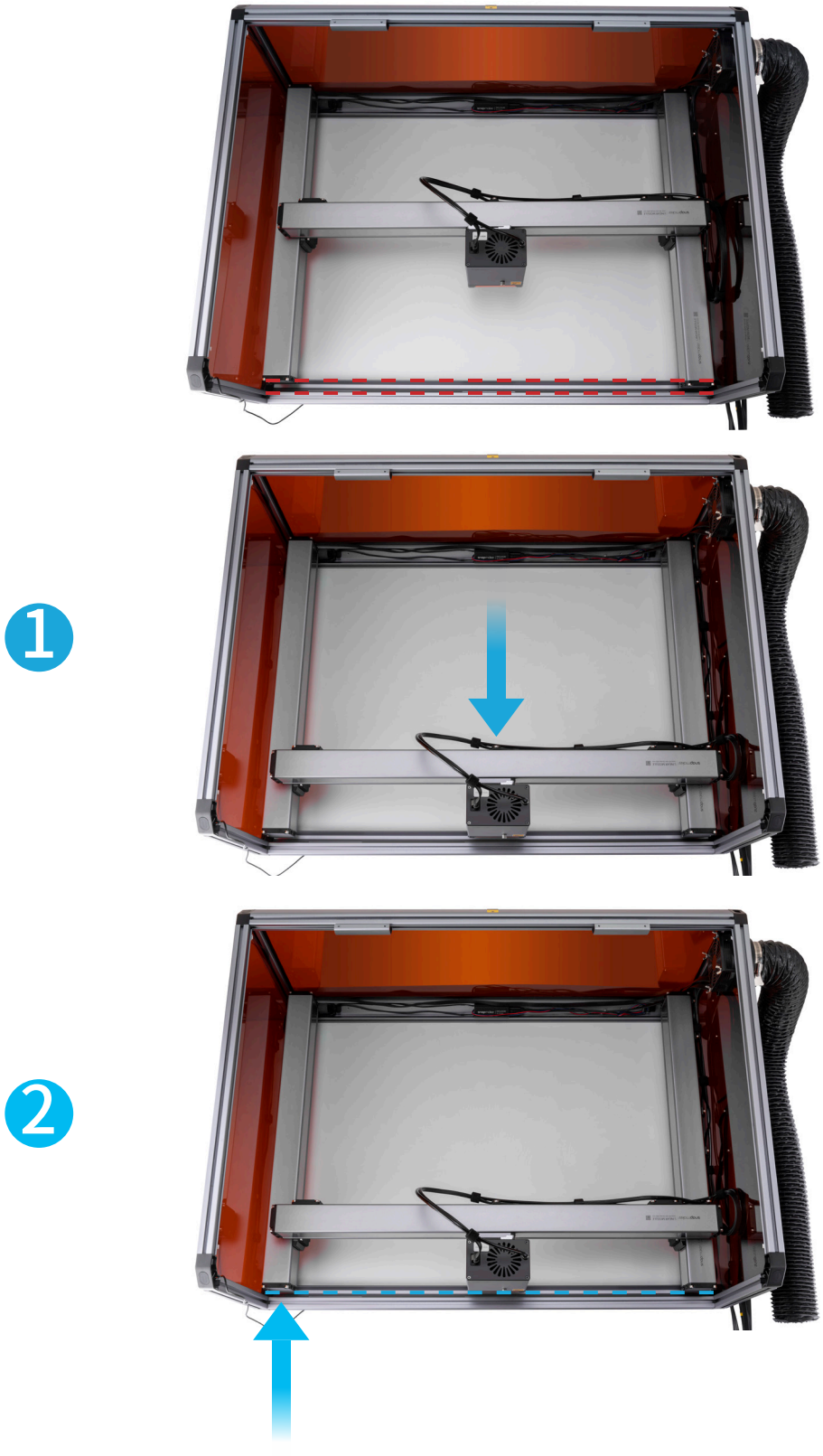
# 21/29

Thread the toolhead cable, the air tube, and the three linear module cables through the snap bushing from the inside out.



# 22/29

Move the X axis to its maximum forward position, then adjust the position of the Y axes to ensure that the Y axes are aligned with each other.

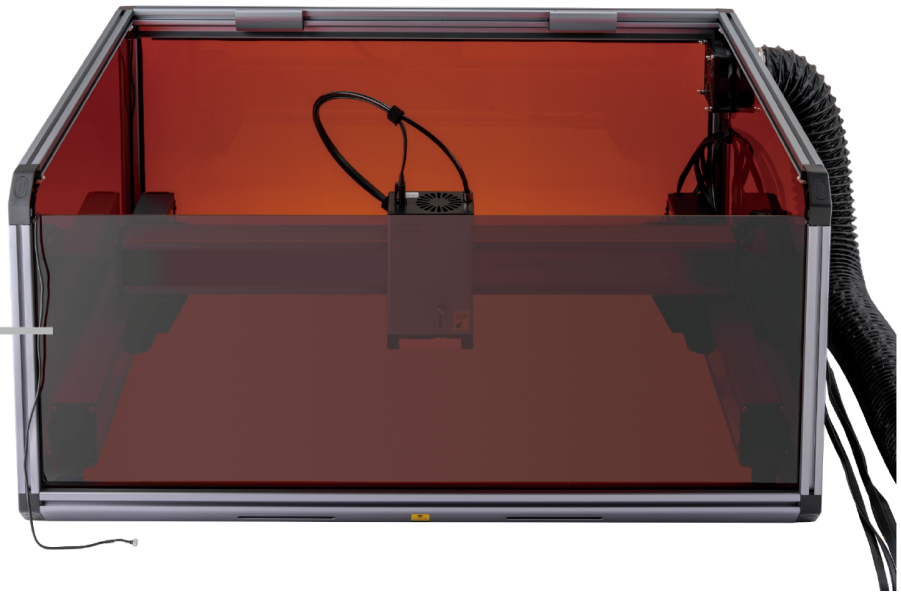



The axes of the machine are likely to slide when moved into the Enclosure. Please ensure that the Y axis is aligned with each other.

# 23/29

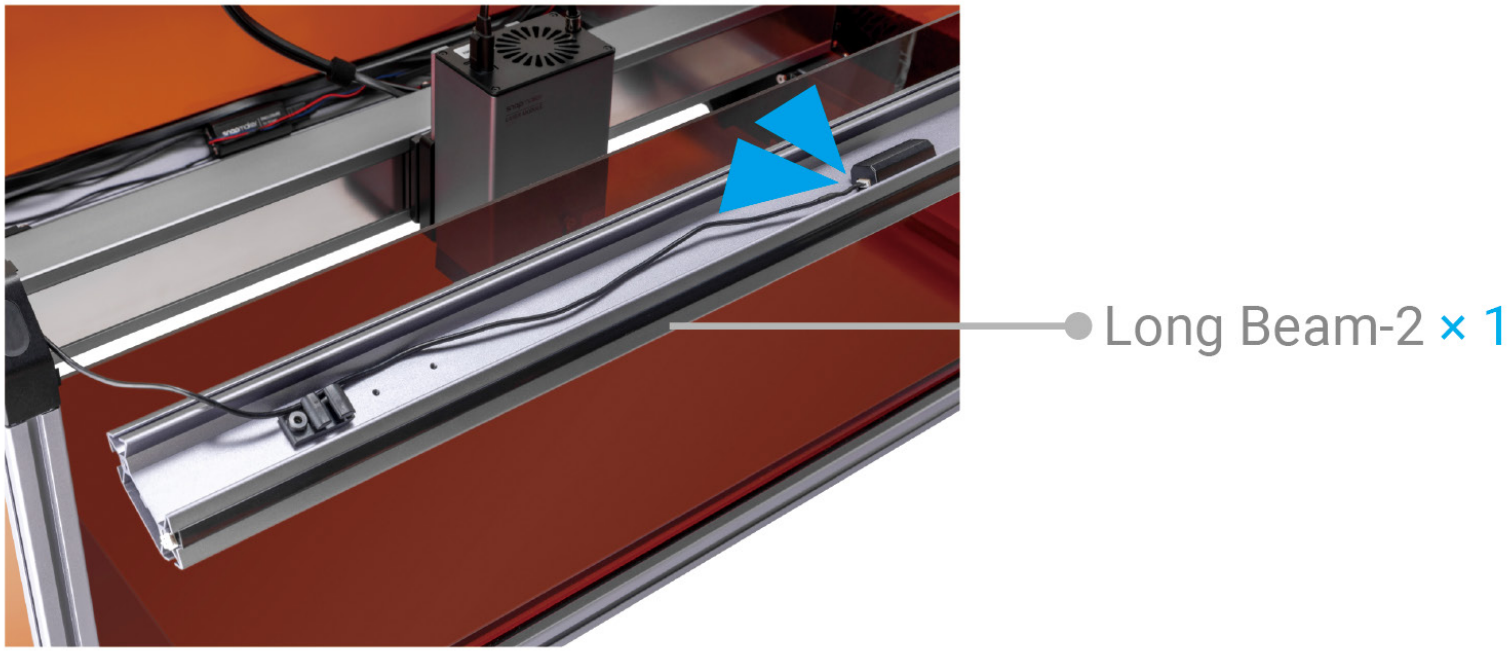
Insert the last panel into the frame as the front panel.

Front/back Panel × 1



# 24/29

Insert the other end of the Hall switch line into the Hall switch of the long beam-2 (with the hall switch).

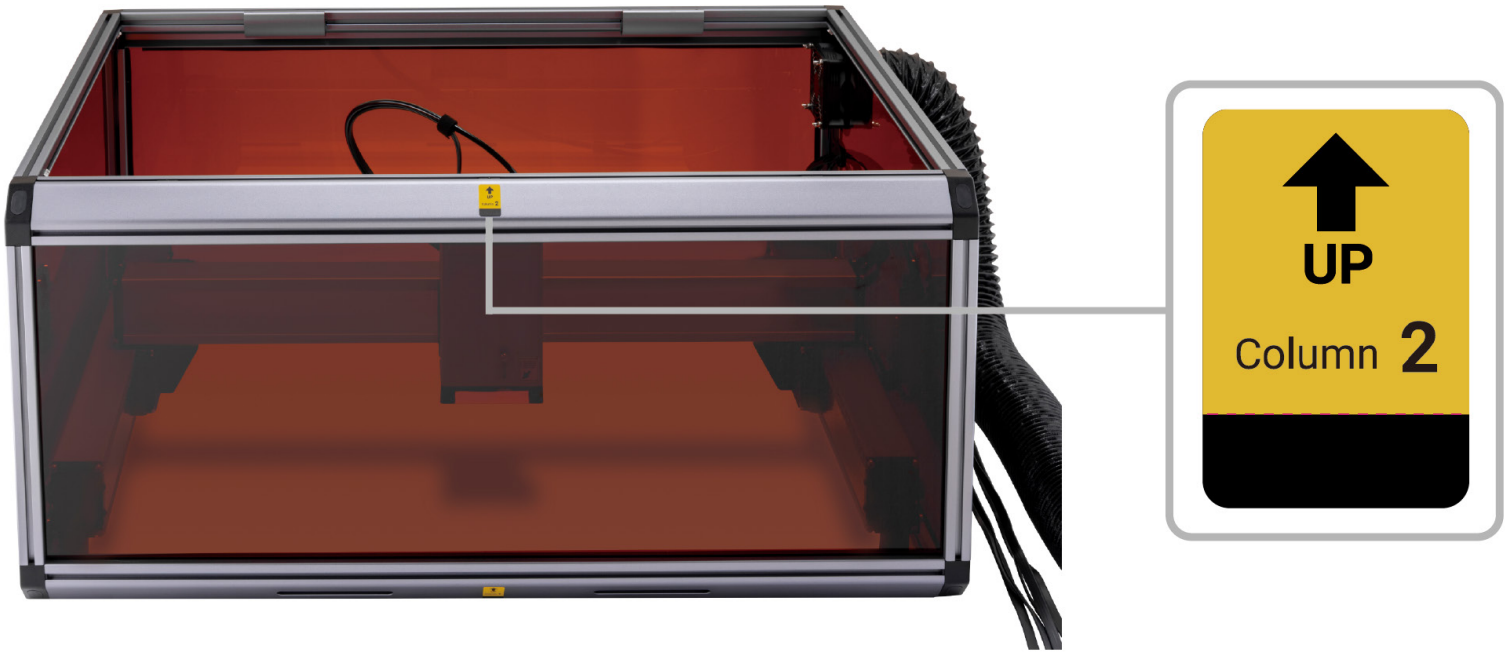


# 25/29

Identify the long beam-2 and attach it to the profile connectors. Then, secure the hall switch cord with the cable clip.

| Screw | Number | Screwdriver |
|---|---|---|
| M5 × 30 | 4 | H3.0 |

Make sure the "UP" word in the label faces upward.



# 26/29

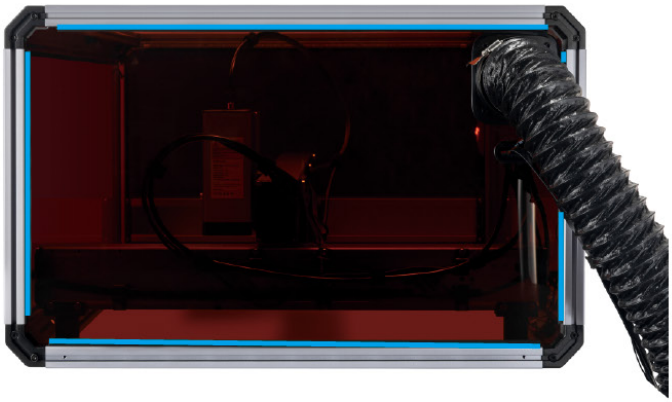
Connect the left and right LED strips with the LED strip cord tucked inside the groove of the long beam-2.

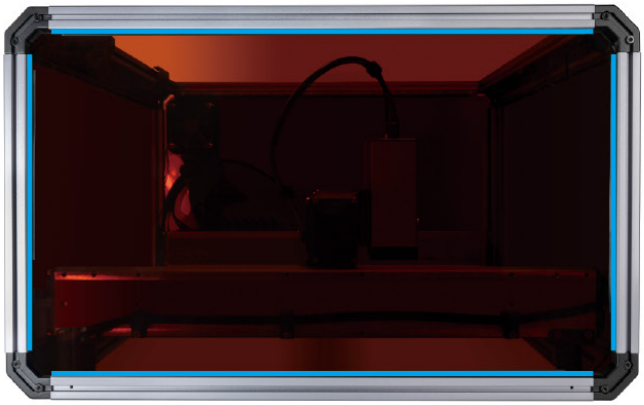
Left

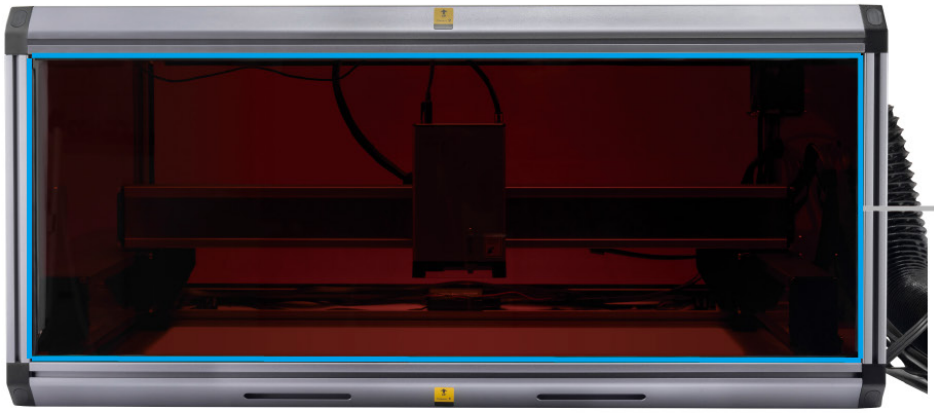
Right

# 27/29

Cut out 12 appropriately-sized sealing strips and press them respectively into the outer gaps between profiles and the remaining panels.



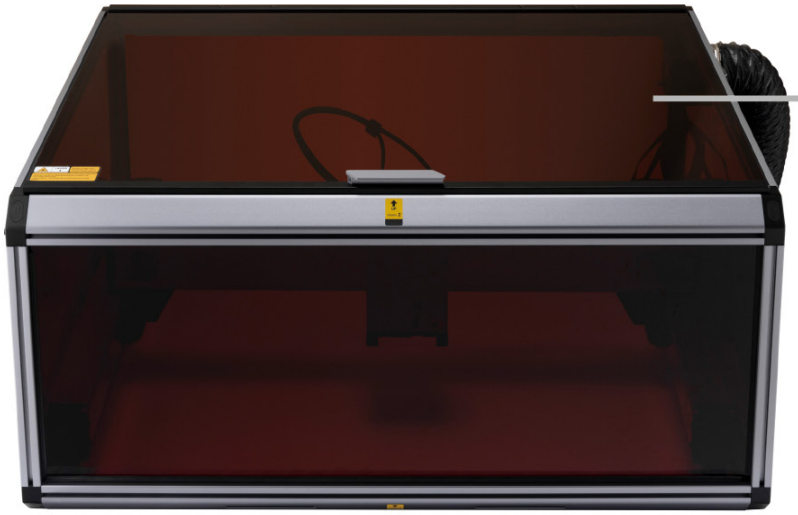




# 28/29

Attach the Enclosure door and complete the Enclosure assembly.

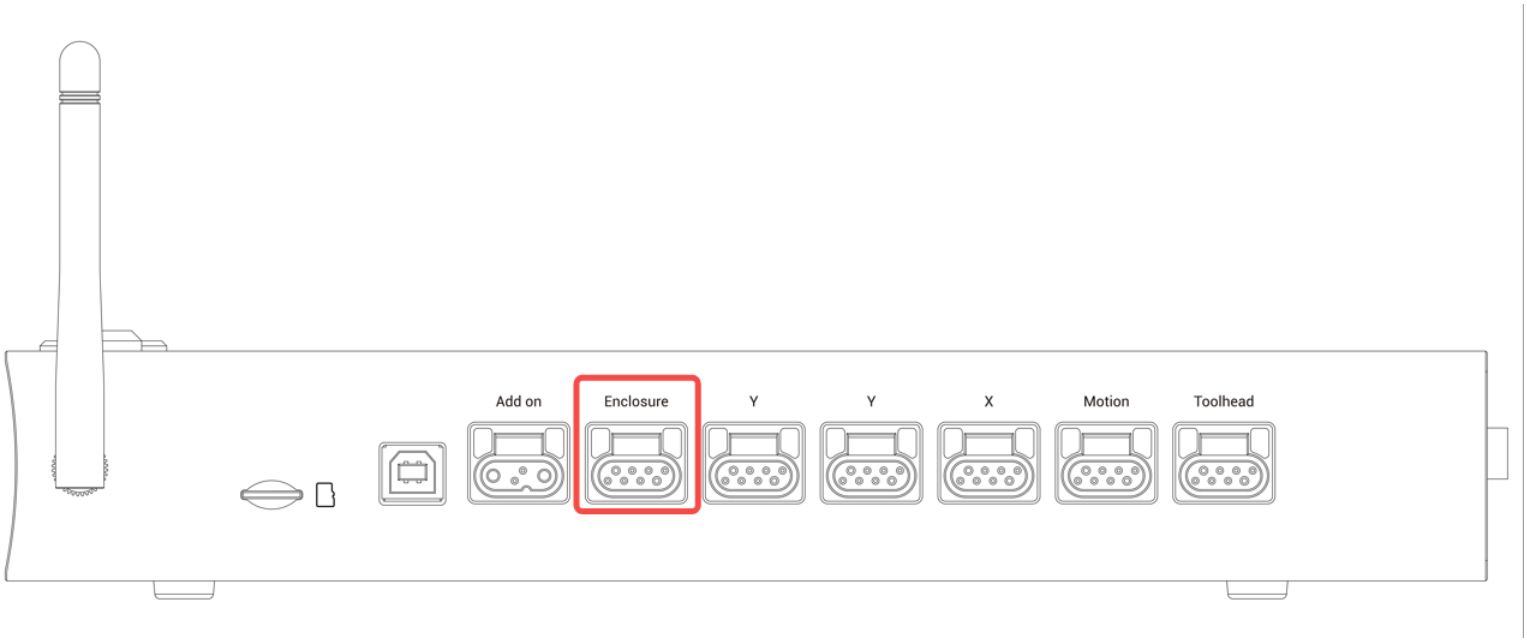
| Screw | Number | Screwdriver |
|---|---|---|
| M4 × 12 | 4 | H2.5 |



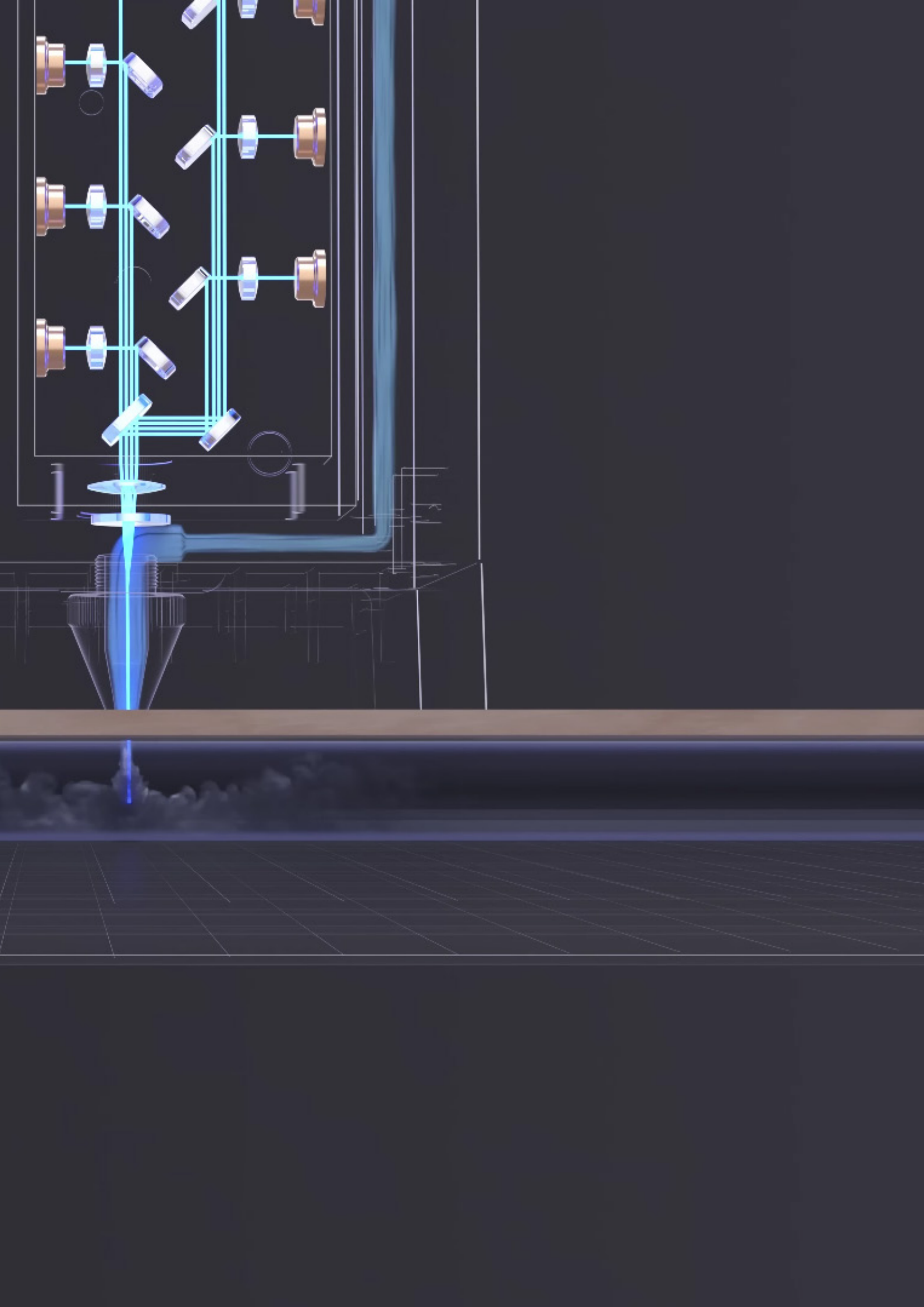
Enclosure Door × 1

# 29/29

Inserted the Enclosure cable into the **Enclosure** socket of the integrated controller, as illustrated.



# Installing the Air Assist Pump



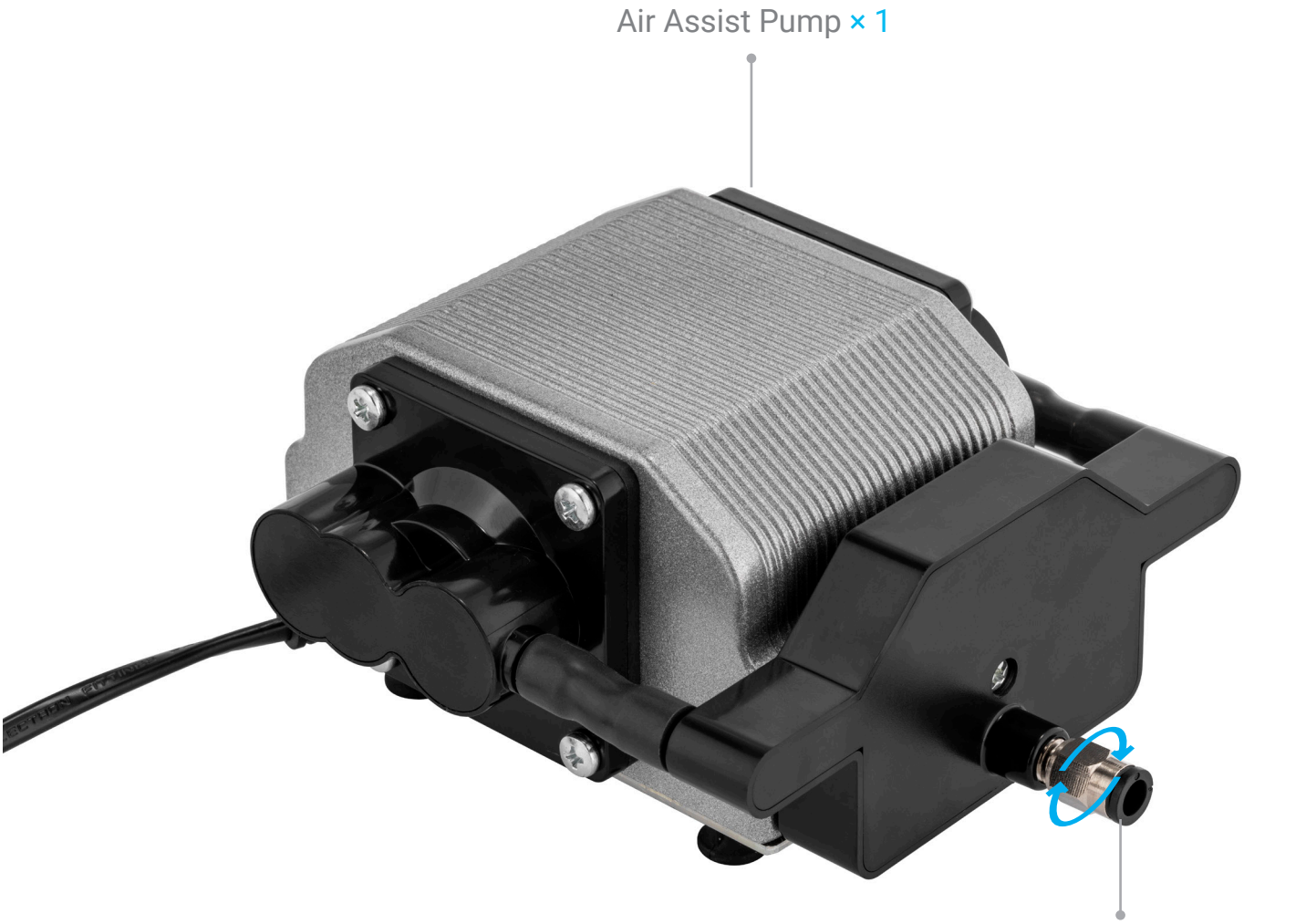
## 01/04

Use the cable collector to organize the air tube together with other cables.


It takes a machine with an Enclosure installed as illustrating, the step demonstrated applies to the scenario of the machine without the Enclosure.

# 02/04

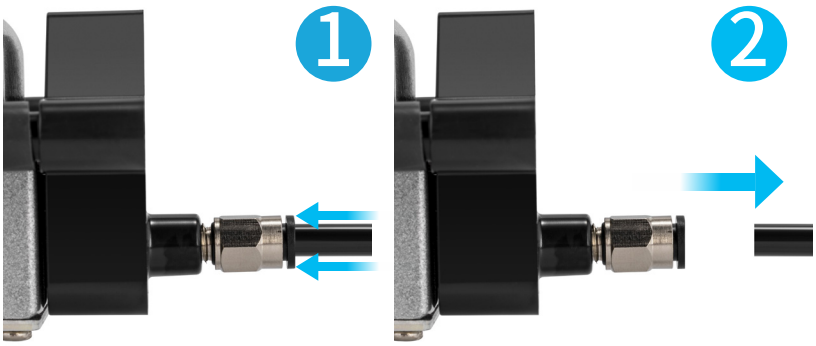
Attach the M8 air tube connector to the air assist pump.



# 03/04

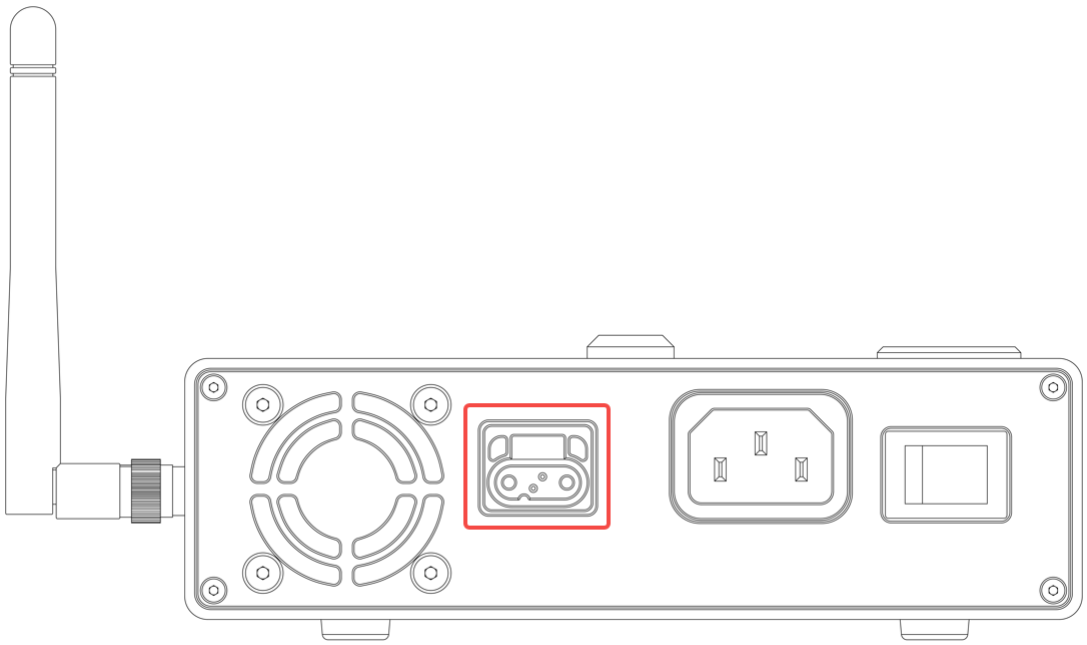
Insert the other end of the air tube into the M8 air tube connector.


To pull out the air tube, firmly press the round clamp of the air tube connector while pulling.



# 04/04

Insert the cable of the air assist pump into the illustrated port of the integrated controller.



# Initial Setup

To complete the initial setup and the Luban's example project tailored for your first creative experience, refer to the online instructions in Wiki at: https://wiki.snapmaker.com/en/snapmaker_ray/manual/quick_start_guide.