

quattro box



QUATTRO BOX ASSEMBLY

Using the Quattro Box may cause a spontaneous boost in confidence and an uncontrollable urge to buy more filament than common sense allows.

VERSION 2025-06-28

TABLE OF CONTENTS

quattro box

INTRODUCTION	03
ASSEMBLY FLEXIBILITY	04
PRINT BED COMPATIBILITY	05
BEFORE YOU START	06
CALIBRATION TOOL	07
PRINT GUIDELINES	09
STL FILE KEY	10
HEATSET INSERTS	12
HARDWARE REFERENCES	13
ACKNOWLEDGMENTS	16
WIRING	18
HUB ENCODER	26
HUB	40
EXTRUDER WITH BMG GEARBOX	46
EXTRUDER WITHOUT GEARBOX	62

EJECT BUTTON	77
FILAMENTALIST	86
BOX 2 PARTS	111
BOX 4 PARTS	125
LOGO SEPARATES PARTS	144
LOGO MMU	152
LOGO ASSEMBLY IN THE BOX	159
HUB ASSEMBLY IN THE BOX	161
FILAMENTALIST ASSEMBLY IN THE BOX	163
PTFE EXTRUDERS	166
EXTRUDER ASSEMBLY IN THE BOX	171
ELECTRONICS	177
BOTTOM COVER	192
ENCLOSURE	197
REPORTING AN ISSUE	224

Quattro Box is a project designed to bring multi-material printing capabilities to 3D printers using only a Direct Drive printhead. While it was originally developed for VORON printers, its modular and flexible design allows for easy adaptation to any 3D printer running the Klipper firmware.

The project combines affordable components, open-source technology, and a fully customizable design, enabling makers and enthusiasts to implement multi-material printing in an accessible and efficient way.



<https://github.com/Batalhoti/QuattroBox>



The Quattro Box was designed to be highly modular, allowing different combinations of components depending on what the user already has available or prefers to use. Currently, the project supports three extruder options and two hub options, which can be mixed and matched freely:

Extruder options:

- Extruder with BMG gear reduction and **NEMA 14**
 - Makes the Quattro Box lighter
 - Slower load/unload speeds
- Extruder with BMG gear reduction and **NEMA 17** (up to 48 mm in length)
 - Adds more weight
 - Faster load/unload speeds
- Extruder without BMG gear reduction, using a **NEMA 17 pancake**
 - Recommended: lighter, quieter, and enables faster load/unload speeds

Hub options:

- Hub with Binky encoder
 - Improves jam detection
 - Assists in system calibration
- Hub without encoder
 - Simpler setup, but requires [Quattro Sync](#) for effective jam detection

This flexibility allows users to make the most of the components they already have, reducing costs and simplifying the assembly process.

The Quattro Box includes large parts, so it has been designed with variants that support different bed sizes. The minimum recommended bed size is 250 mm, and the project provides different versions of the parts depending on your printer's build volume:

- **For 250 mm beds:**
 - Use the enclosure split into 4 parts
 - Use the bottom cover split into 2 parts
 - Use the enclosure sides split into 2 parts
- **For 300 mm beds or larger:**
 - You can use the enclosure split into 2 parts
 - The bottom cover can be printed as a single piece
 - The enclosure sides can be printed as single full parts

These options ensure the project remains accessible even to users with smaller printers, without sacrificing functionality or overall appearance.

Before printing the **Quattro Box** parts, it's essential to ensure your printer is well-calibrated for ABS.

Many components in this project have large dimensions and tight tolerances. For example, one of the side panels is approximately 200 mm long with a tolerance of only 0.5%.

Improper calibration can lead to warping or poor fit, potentially compromising the entire assembly.

We strongly recommend:

- Performing a dimensional calibration using the tool on the next page.
- Using the Calilantern by Vector3D, which helps ensure your printer is producing parts with accurate and consistent dimensions.

🔗 <https://vector3d.shop/products/calilantern-calibration>

💡 Spending time to properly prepare your printer will significantly increase your chances of a successful build and optimal **Quattro Box** performance.





The Quattro Box relies on multiple press-fit joints, such as for bearings, shafts, ECAS connectors, threaded holes, LEDs, and switches.

Therefore, proper printer calibration is essential to ensure good fitment and avoid breakage or misalignment.

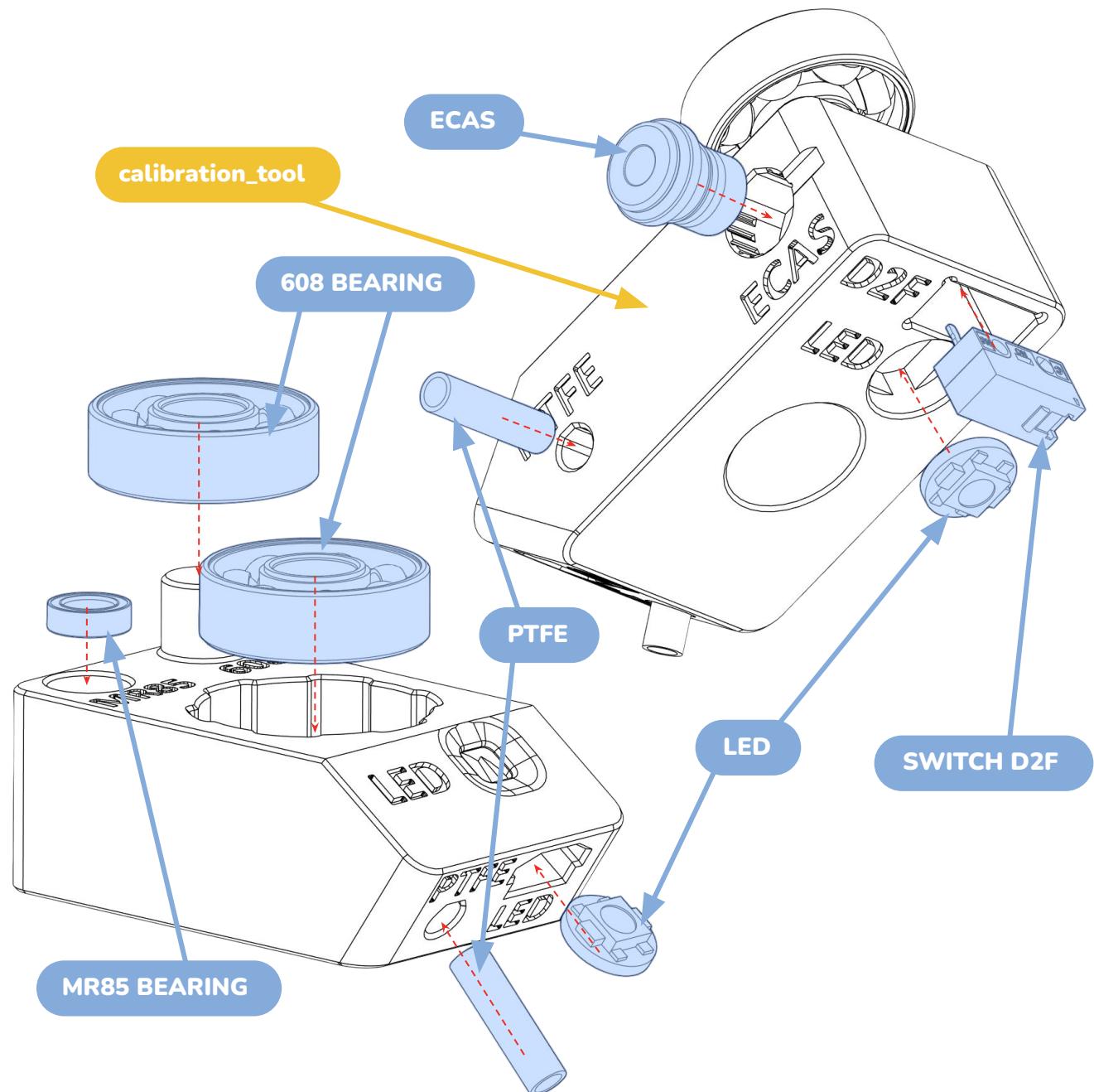
The file **calibration_tool.stl** is included in the project.

🔧 We strongly recommend printing this block before any Quattro Box parts.

After printing the calibration tool:

1. Insert the corresponding hardware into the designated slots on the block.
2. The **ECAS** connector should fit firmly by pressure. You can support the block on a solid surface to assist the insertion.
 - The plastic must not crack when inserting the **ECAS**, and it must not feel loose.
3. The **608** and **MR85** bearings should be manually press-fit into place.
 - A bit of extra force is acceptable, as long as the part doesn't crack or deform.
4. For the **LED**, which slides into a groove, it's best to solder the wires beforehand, as shown on page 19, before testing the fit.

📄 Before printing any functional parts, check the next page for the minimum recommended slicer settings.



PART PRINTING GUIDELINES

Below are the printing guidelines used during the tests

3D PRINTING PROCESS

Fused Deposition Modeling (FDM)

INFILL TYPE

Grid, Gyroid, Honeycomb, Triangle or Cubic

MATERIAL

ABS/ASA

INFILL PERCENTAGE

Recommended: 30%

LAYER HEIGHT

Recommended: 0.2mm

WALL COUNT

Recommended: 3

EXTRUSION WIDTH

Recommended: Forced 0.4mm

Arachne is the preferred slicing engine.

SOLID TOP/BOTTOM LAYERS

Recommended: 5

CHAMBER

For the enclosure, it's recommended to use a chamber with temperatures above 60 °C to prevent parts from warping or detaching from the build plate during printing.

BRIM

It's not required for most parts, but if you're experiencing warping issues with the enclosure pieces, it's recommended to enable brim to improve bed adhesion.

FILE NAMING

By this time you should have already downloaded our STL files from the Quattro Box GitHub. You might have noticed that we have used the Voron naming convention for the files. This is how to use them.

PRIMARY COLOR

Example:
`extruder_no_gearbox_x2.stl`
These files will have nothing at the start of the filename.

ACCENT COLOR

Example: `[a]_jst_mount_x8.stl`
These files have an “[a]_” prefix to denote that they should be printed with an accent color.

QUANTITY REQUIRED

Example: `[a]_jst_mount_x8.stl`
If any file ends with “_x#”, that is telling you the quantity of that part required to build the machine.

CLEAR/TRANSPARENT

Example: `[c]_led_diffuser_x4.stl`
We have added “[c]” to the front of any STL file that is intended to be printed with clear or transparent filament (cloudy is better than clear; white or light grey may also work in a pinch).

OPAQUE

Example: `[o]_led_cover_x4.stl`
We have added “[o]” to the front of any STL file that is intended to be printed with an opaque filament (blocks light, dark colours and blacks).

OPTIONAL MULTIMATERIAL

Example: `[mm]_led_name_mmu.stl`
These files have a “[mm]” prefix to denote that they should be printed in multiple colors. We always include single-color versions of these files too, for your first build.



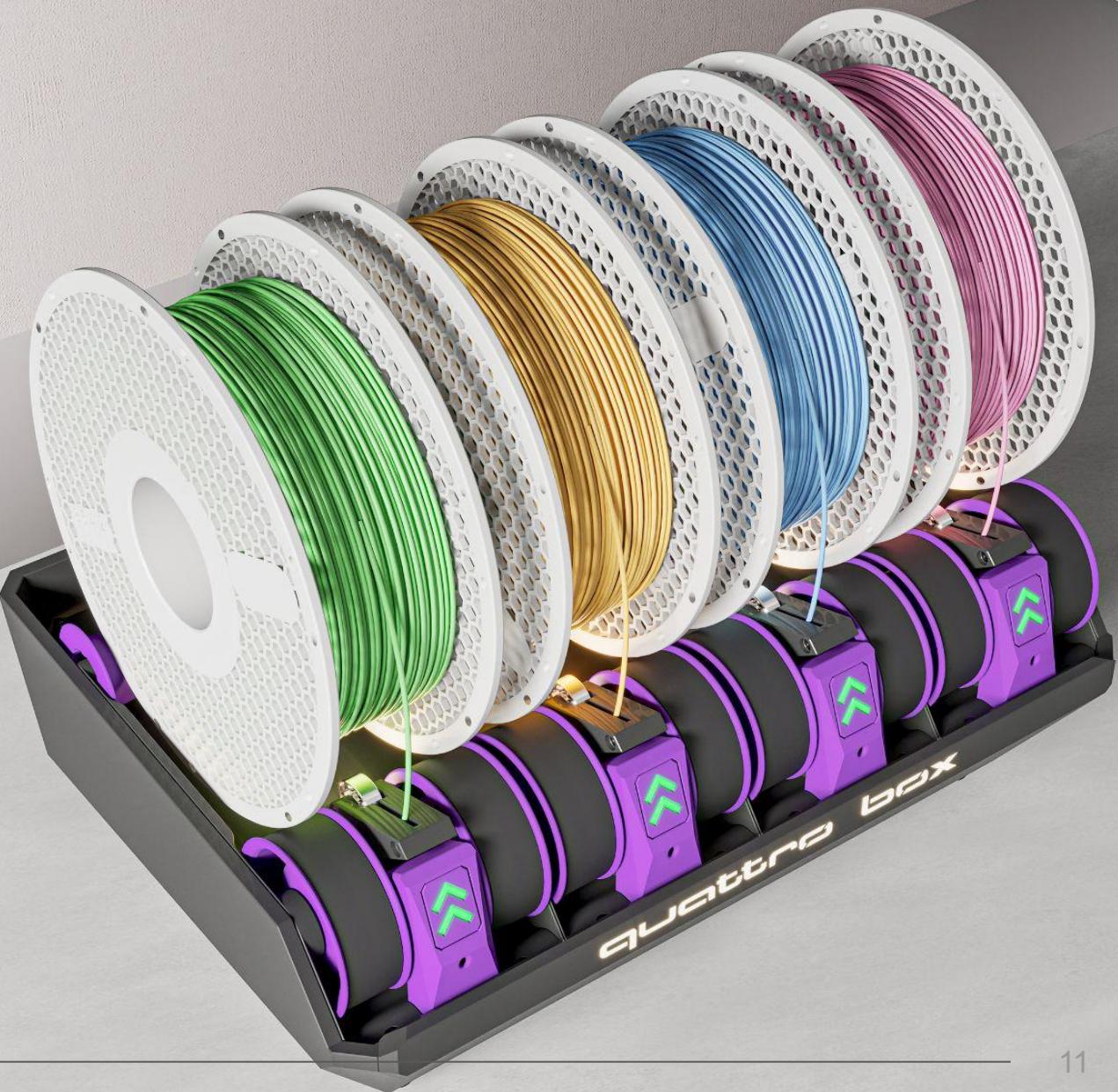
ATTENTION BUBBLE

This logo denotes steps that are common areas that mistakes can occur.



QUATTRO BOX LOGO

Look for the Quattro Box logo next to the part. It indicates that this is a part that is usually printed in the accent color.



This design relies on heat set inserts. Make sure you have the proper inserts (check the hardware reference for a close-up picture, and the BOM for dimensions).

If you've never worked with heat set inserts before, we recommend you watch the linked guide.

<https://voron.link/m5ybt4d>

Here is a list of all the pages of this manual where you need to add the headset inserts into the 3D printed parts, so you can add the headset inserts all at once if desired:

HUB WITH ENCODER [29](#)

HUB WITHOUT ENCODER [42](#)

EXTRUDER WITH BMG GEARBOX [48](#)

EXTRUDER WITHOUT GEARBOX [65](#)

FILAMENTALIST [89](#)

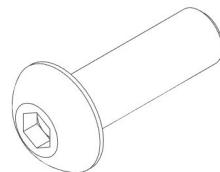
BOX 2 PARTS [114 of 119](#)

BOX 4 PARTS [128 of 134](#)

LOGO SEPARATES PARTS [146](#)

LOGO MMU [155](#)

ENCLOSURE [200 of 205](#)

**BUTTON HEAD CAP BOLT (BHCS)**

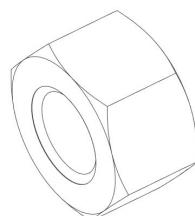
Metric fastener with a domed shape head and hex drive. Most commonly found in locations where M3 fasteners are used.

ISO 7380-1

**FLAT HEAD COUNTERSUNK BOLT (FHCS)**

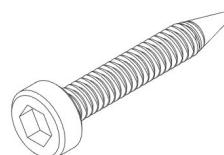
Metric fastener with a cone shaped head and a flat top.

ISO 10642

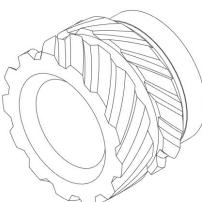
**HEX NUT**

Hex nuts couple with bolts to create a tight, secure joint. You will use it on the Filamentalist's wheels

ISO 4032

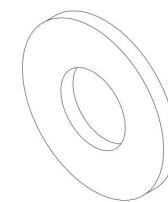
**SELF TAPPING SCREW**

Fastener with a pronounced thread profile that is bolted directly into plastic.

**HEAT SET INSERT**

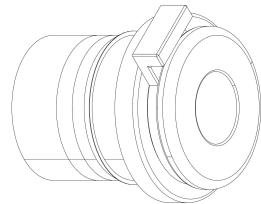
Heat inserts with a soldering tip so that they melt the plastic when installed.

As the plastic cools, it solidifies around the knurls and ridges on the insert for excellent resistance to both torque and pull-out.

**WASHER**

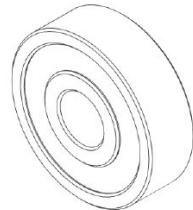
Usually stamped from sheet metal this type of spacer is not as consistent in thickness as the shims are. Only used in M3 size.

DIN 125



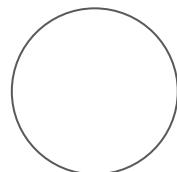
ECAS FITTING

4mm Push -Fit PTFE tubing fitting.



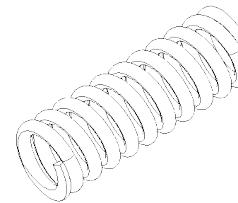
623 BEARING

A ball bearing used in extruders.



4MM BALL BEARING

Bearing balls used in the extruder sensors



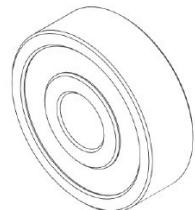
SPRING

For the Filamentist, 304 Stainless Steel, 6mm OD, 0.6mm Wire Size, 15mm Free Length spring used in Tensioner Assembly.



608 BEARING

For the Filamentist, the 2RS (sealed) style is preferred but can be used with the open or ZZ (shielded) style.

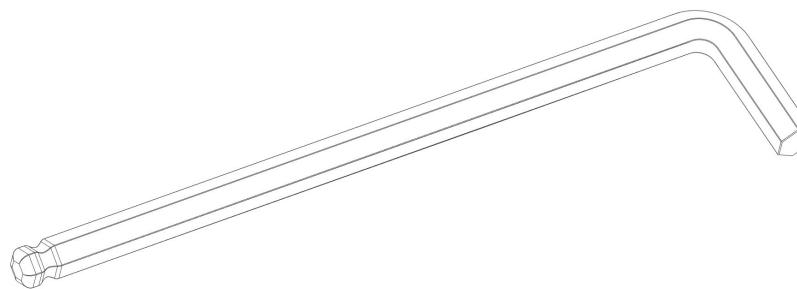


MR63 BEARING

Bearing used in the hub sensor.

BALL-END DRIVER

Some parts of this design require the use of a ball-end hex driver for assembly. We recommend you get a 2.0mm, 2.5mm and 3mm one.

**2.5MM HEX DRIVER**

The 2.5mm hex driver will see a lot of use in this build. A quality driver is strongly recommended. Refer to the sourcing guide for suggestions.



ACKNOWLEDGMENTS

quattro box

This project would not have been possible without the support and inspiration from many members of the community. I offer my sincere thanks to everyone who contributed in any way.

SkiBike, for the amazing Filamentalist design.

ArmoredTurtle, for the BoxTurtle design, both of which inspired this project.

To Moggie, for developing the outstanding HappyHare, without it, the QuattroBox simply wouldn't work.

Ulta, AmfKuna, and Yogi Bear, for testing parts and providing valuable feedback during development.

igliannakas, for the idea of an extruder without gearbox, which became one of the best configurations in the project.

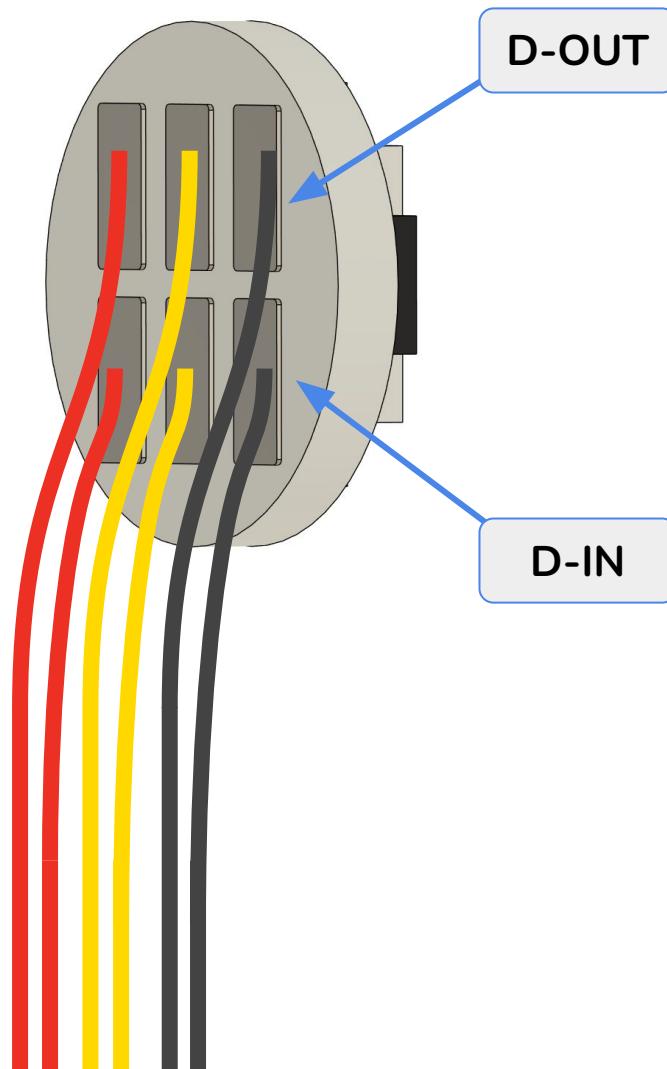
mneuhau, for the work on Binky and Encoder Designer, which are key to the system's accuracy

Diem, for helping publish the project on GitHub and for sharing insightful suggestions that helped shape Quattro Box.

Thank you all!



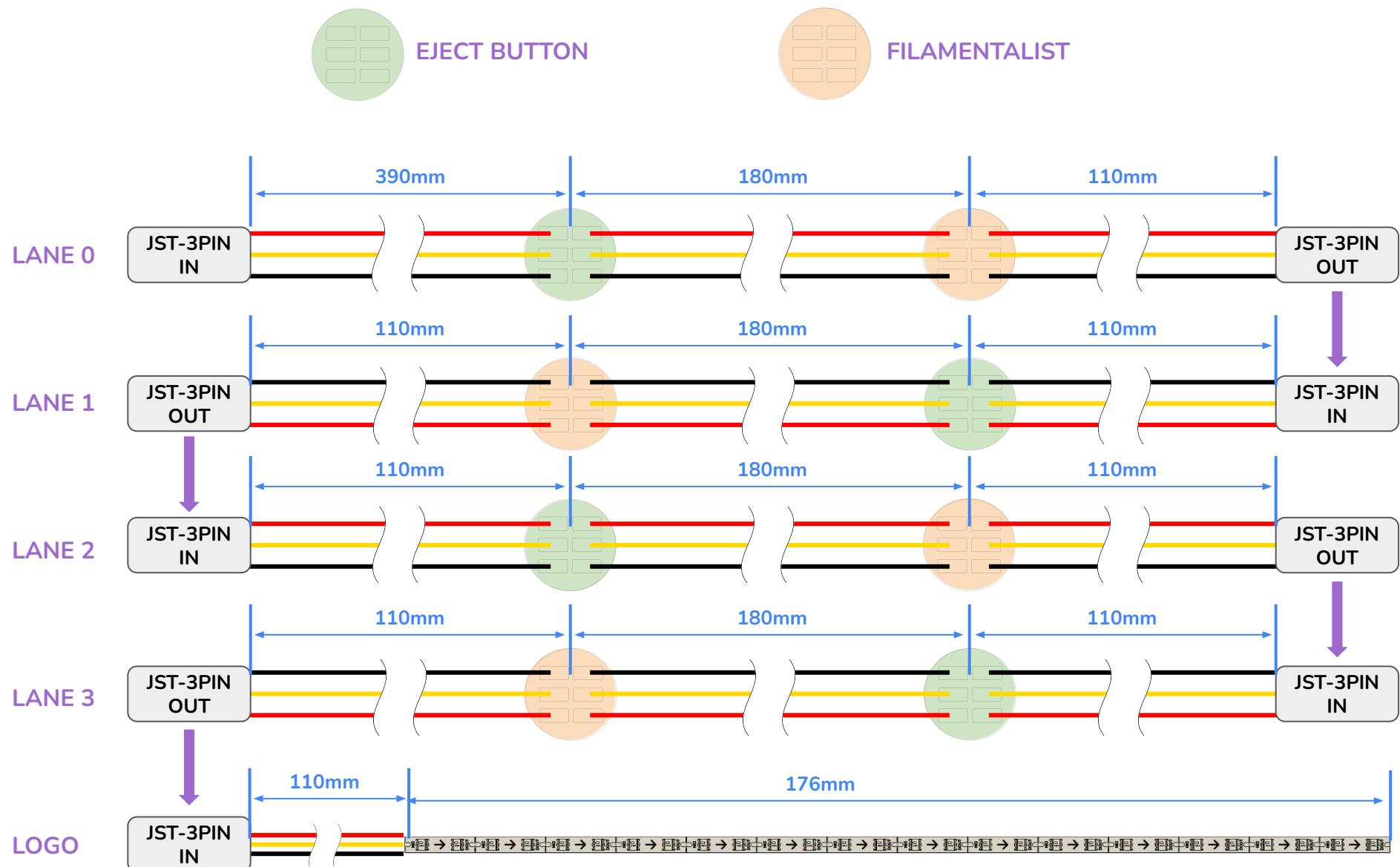
This page intentionally left blank.



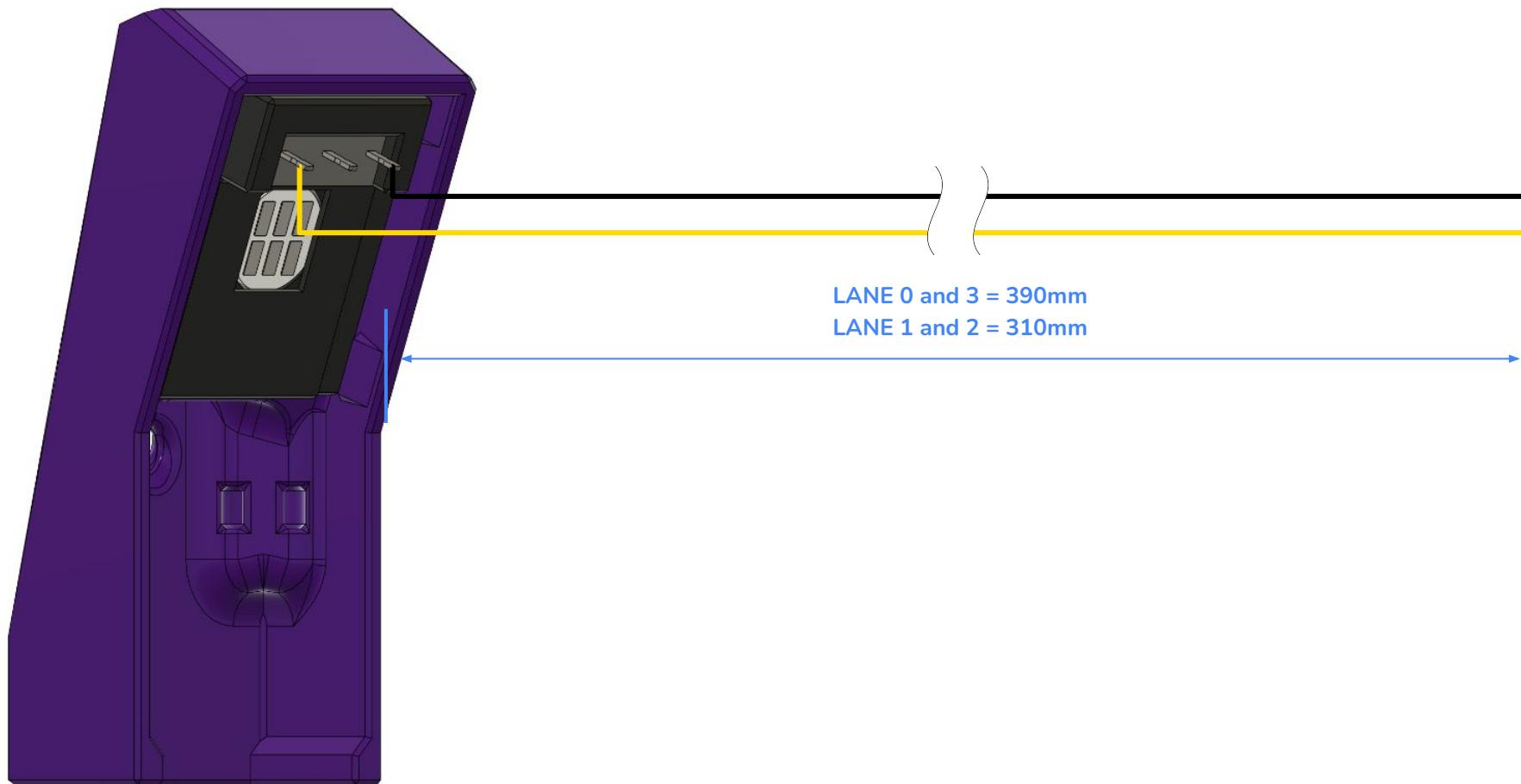
The LEDs must be soldered exactly as shown in the reference image.

⚠ Important: The wires must follow the specified orientation only, any deviation may interfere with proper assembly or cause malfunction.

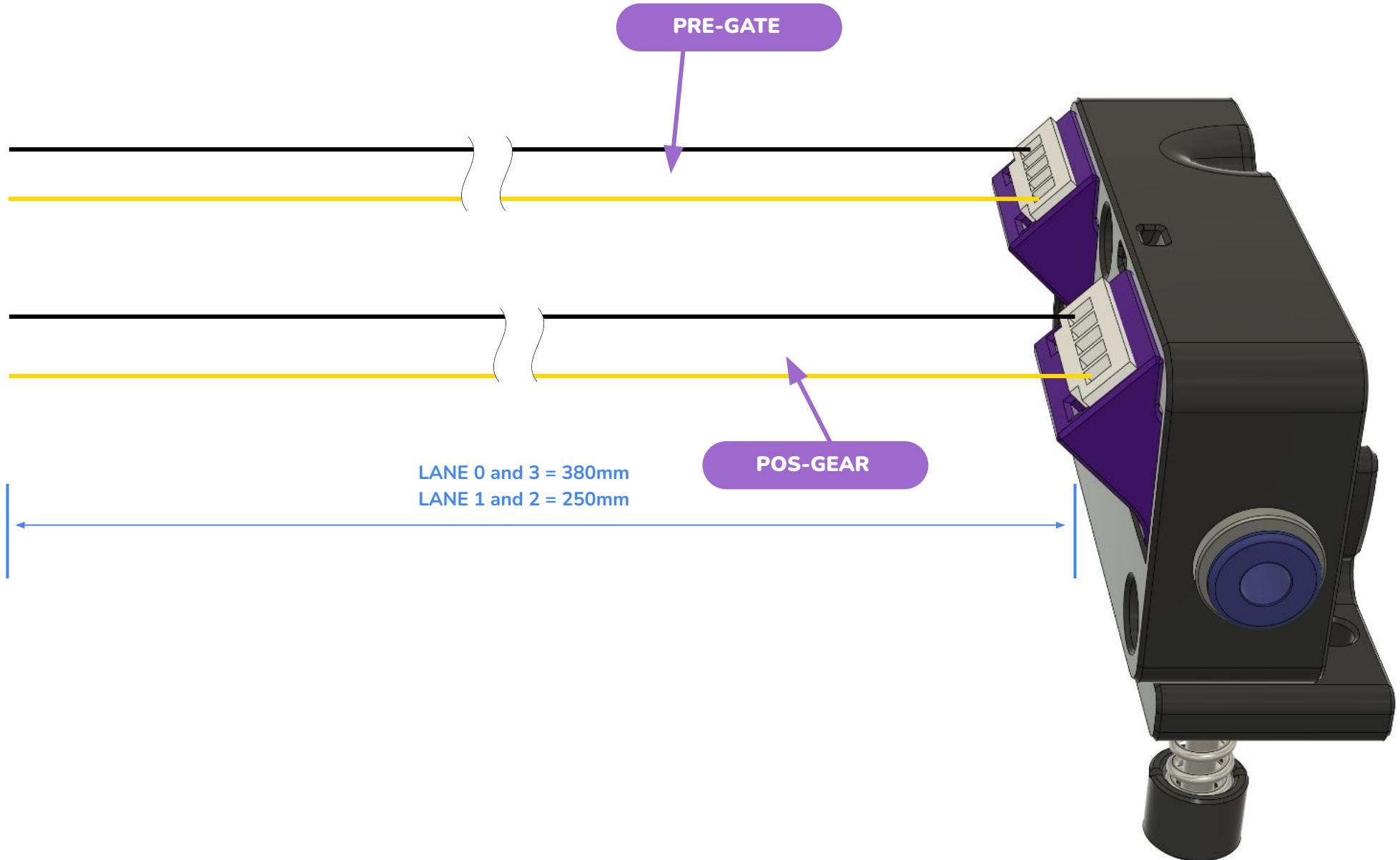
SCHEMATIC LEDs



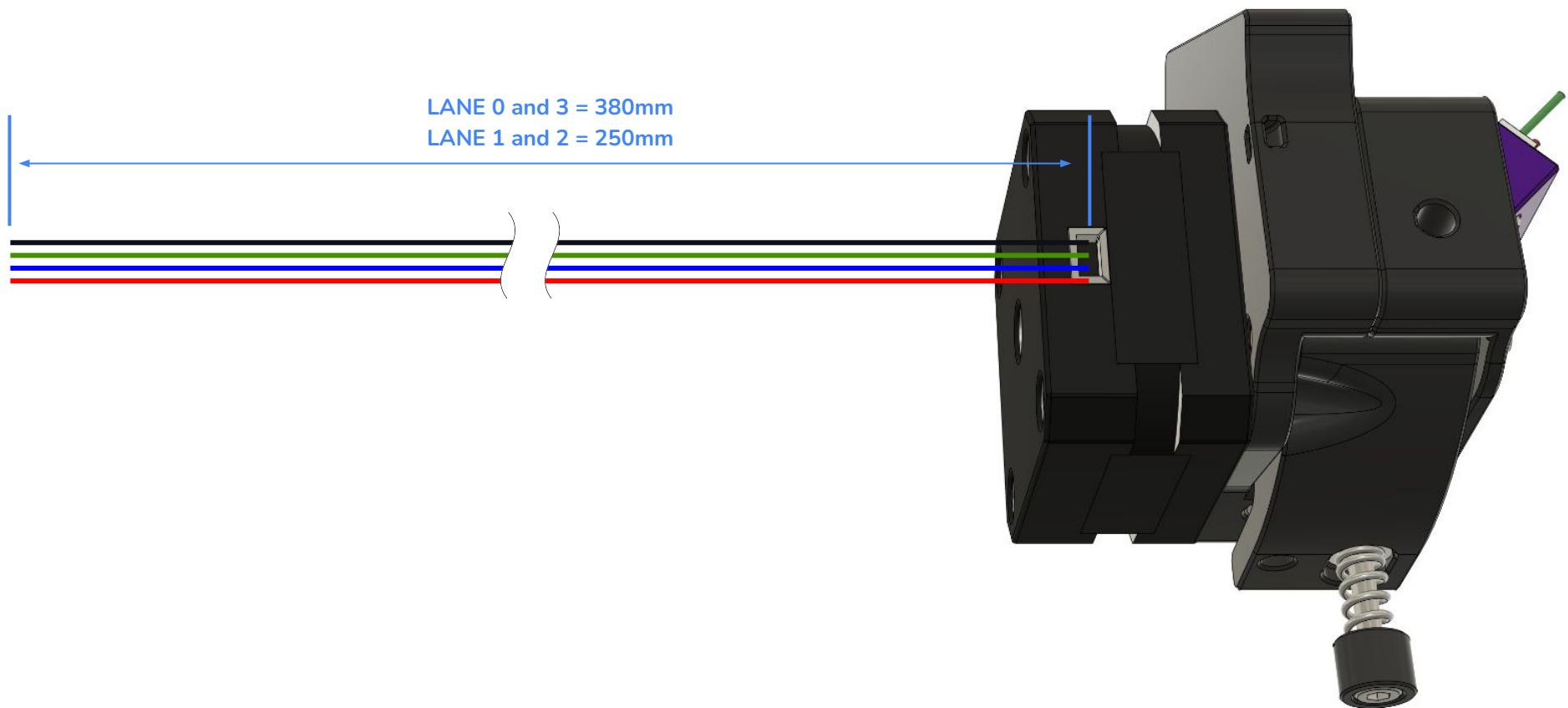
EJECT BUTTON



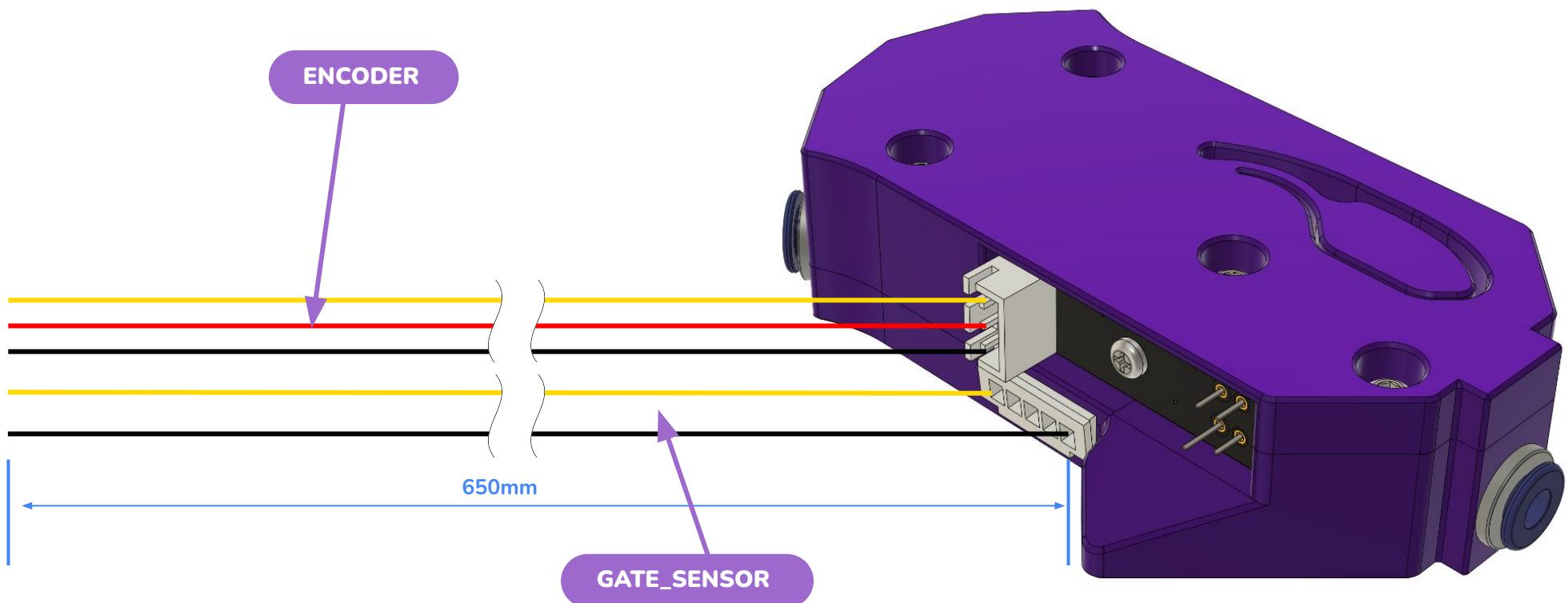
PRE-GATE AND POS-GEAR



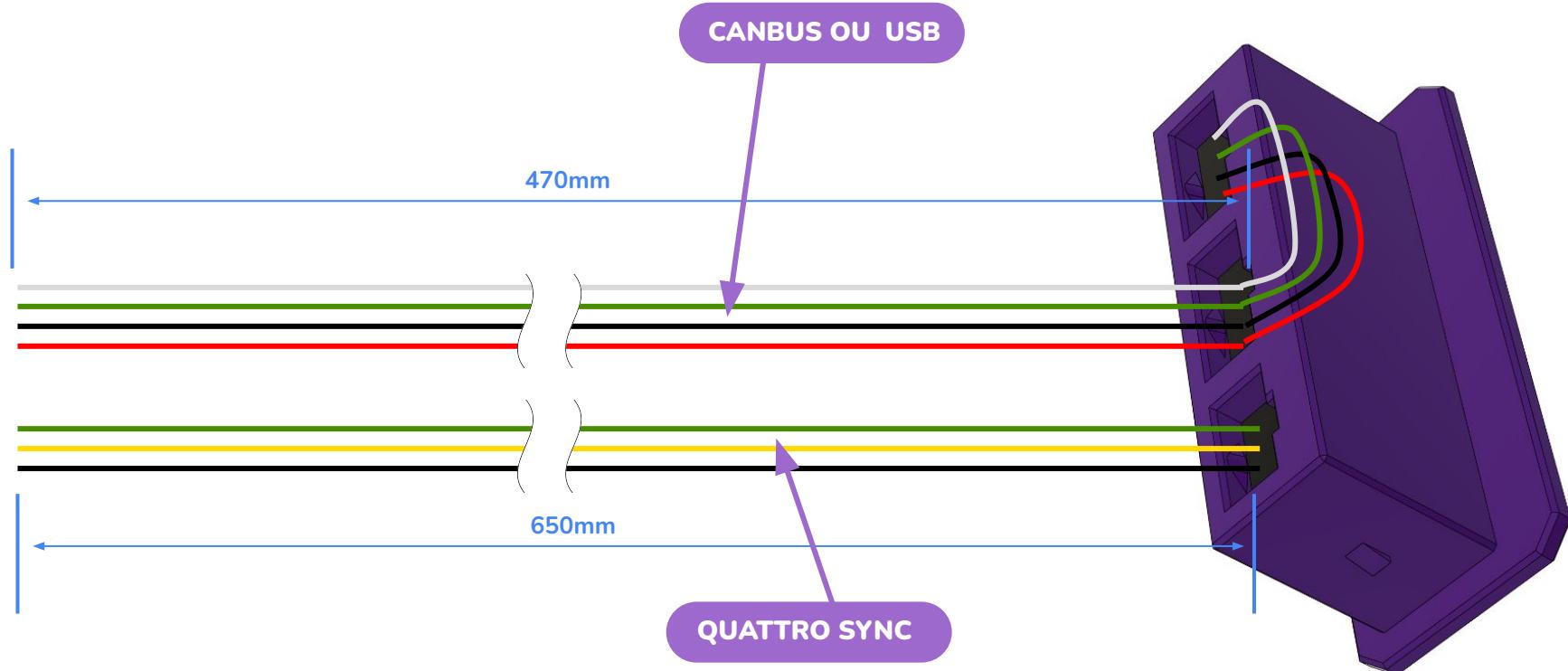
STEPPER EXTRUDER



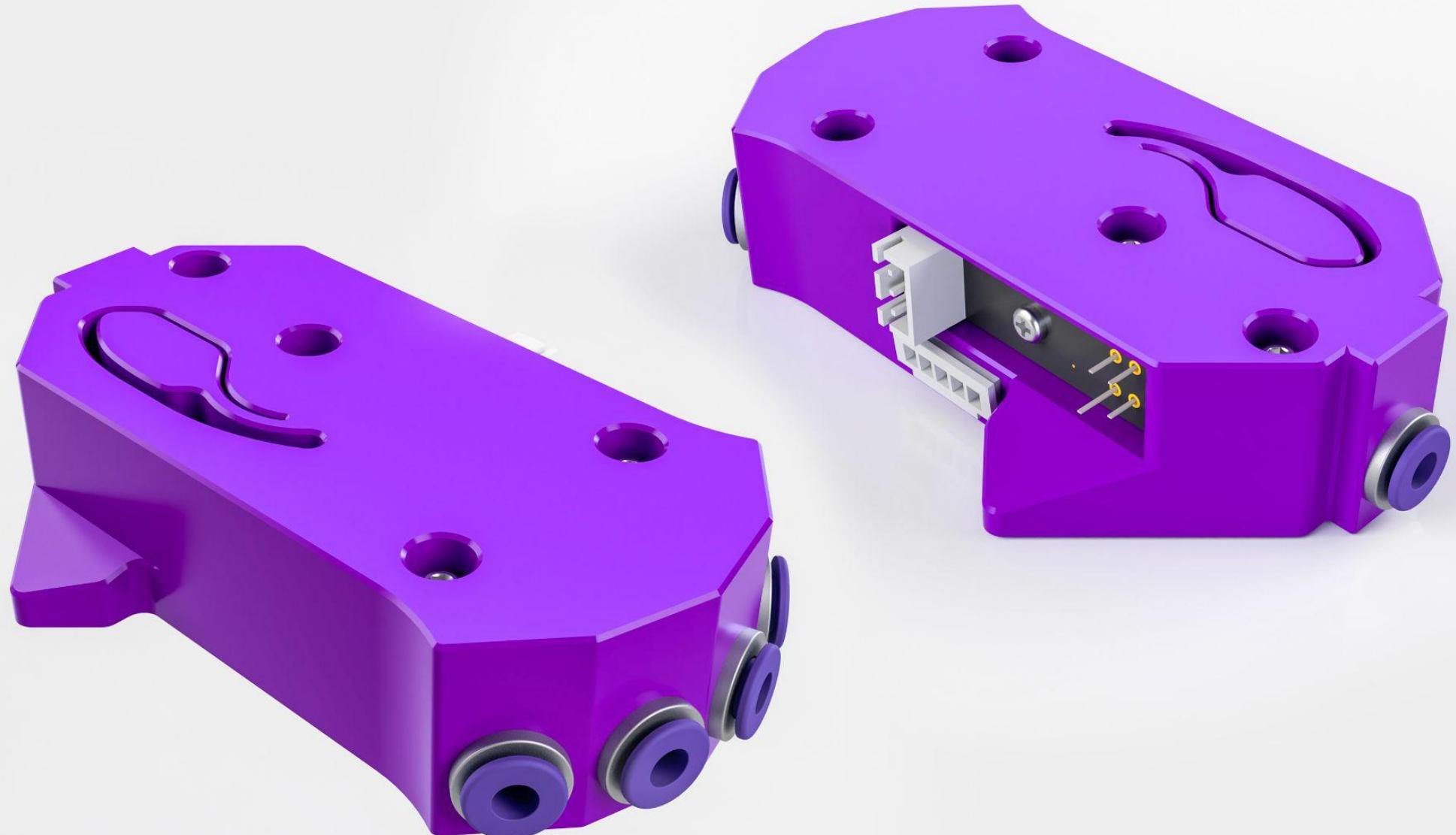
HUB



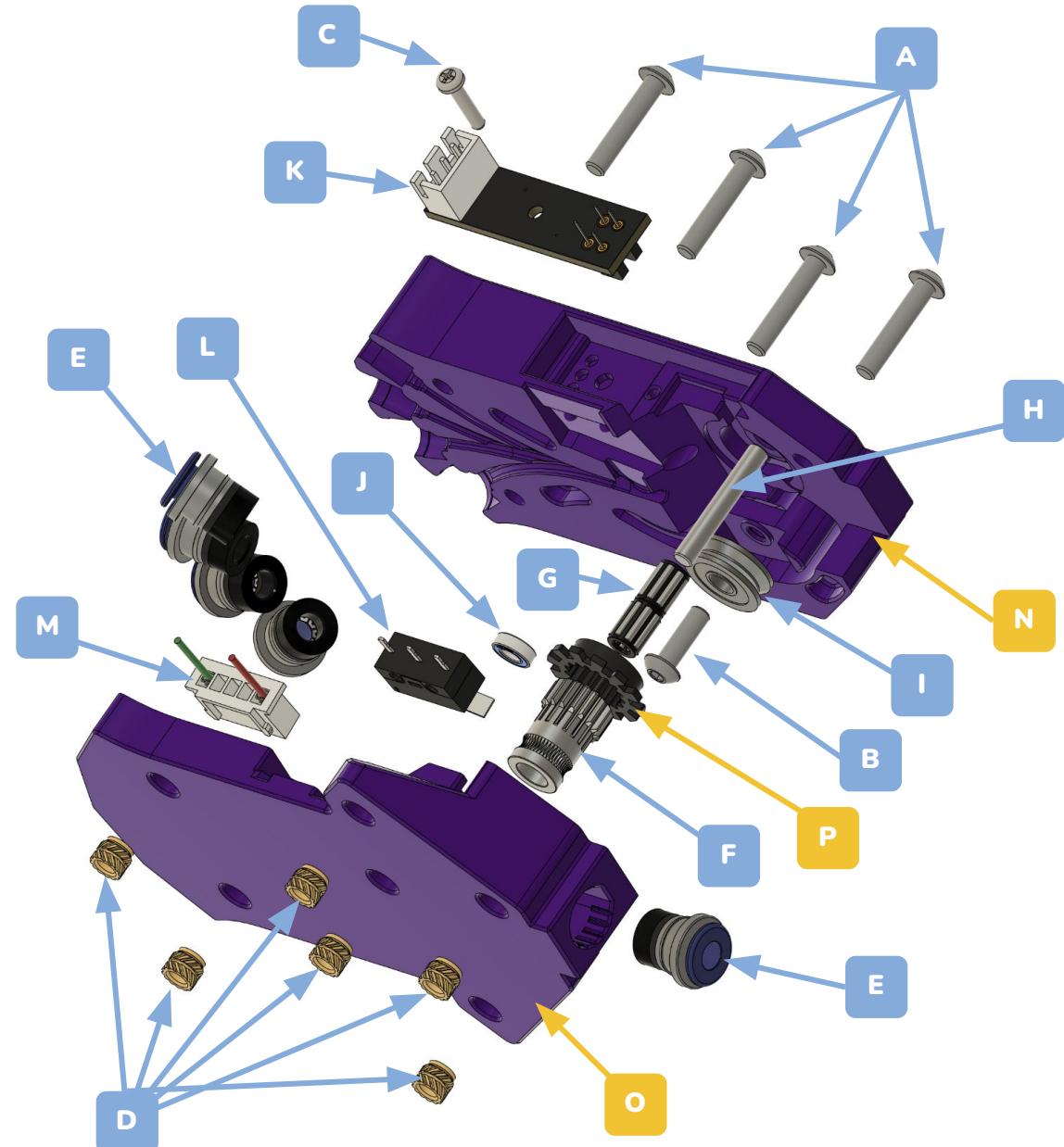
CONNECTORS



This page intentionally left blank.



EXPLODED VIEW



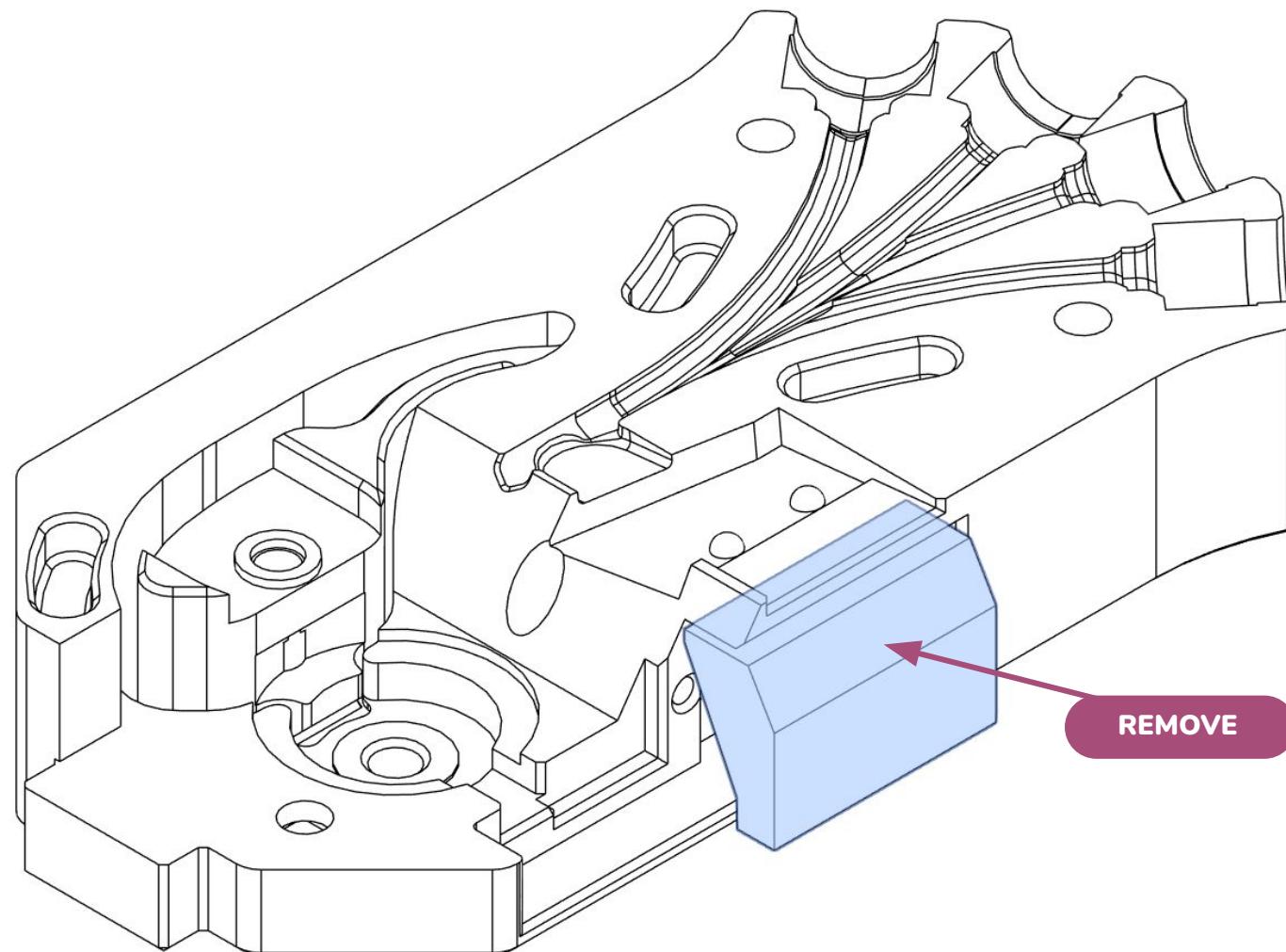
A
 4x M3x12mm BHCS
B
 1x M3x8mm BHCS
C
 1x M2x10mm Self tapping screw
D
 6x M3 Threaded Inserts
E
 5x ECAS
F
 1x BMG Idler Gear (without set screw)
G
 2x BMG Needle Bearings
H
 1x BMG 3x20mm Stainless Rod
I
 1x V623ZZ Bearing
J
 1x MR63 Bearing
K
 1x Binky PCB
L
 1x D2F-L Microswitch
M
 1x JST XH 2.54mm Female

N
 1x [a]_hub_encoder_top
O
 1x [a]_hub_encoder_bottom
P
 1x [o]_hub_encoder_slotted_wheel

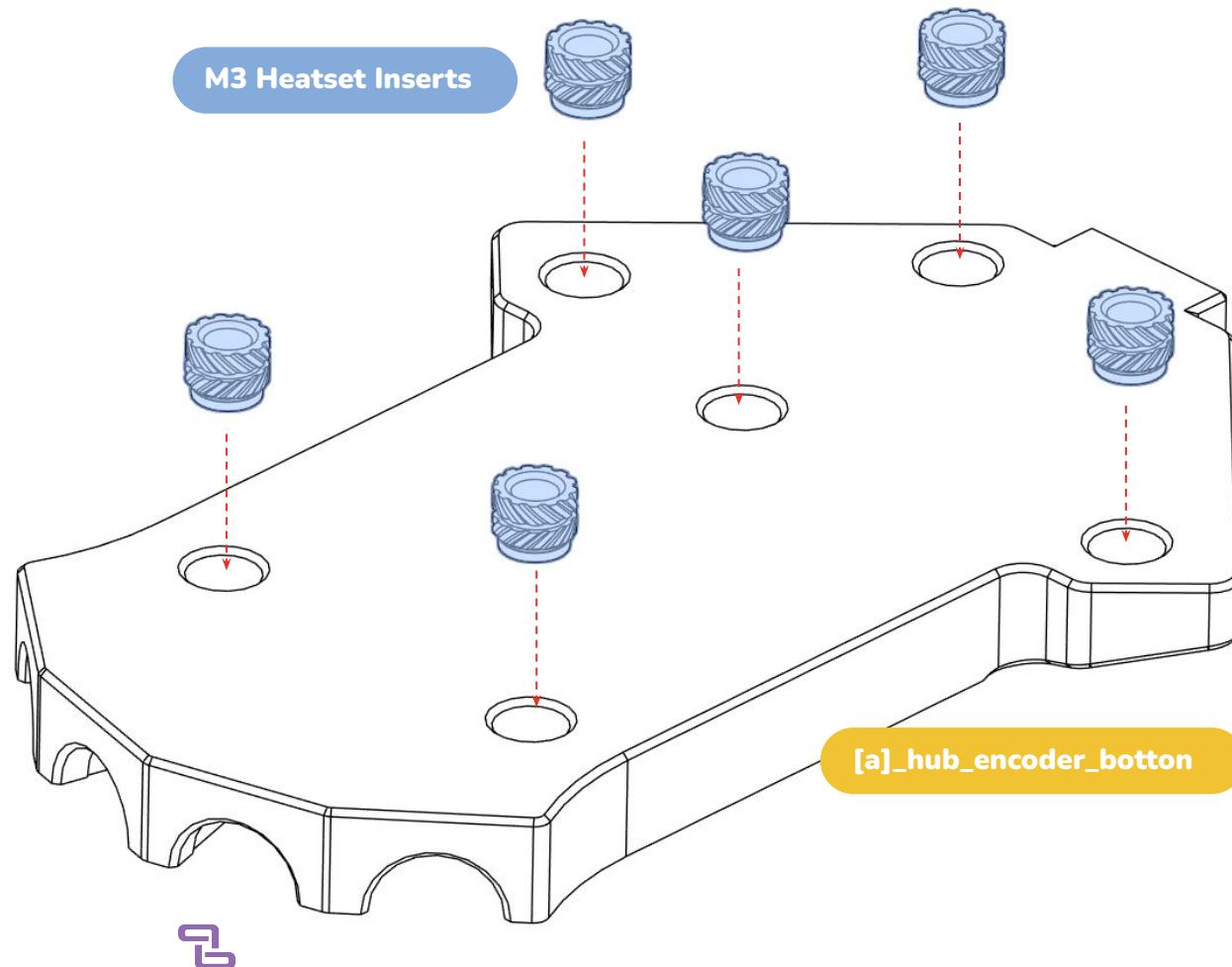
The detailed instructions are on the following pages

ENCODER PREPARATION

2.1 REMOVE BUILT-IN SUPPORTS



ENCODER PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

ENCODER PREPARATION

INSTALL ENCODER WHEEL

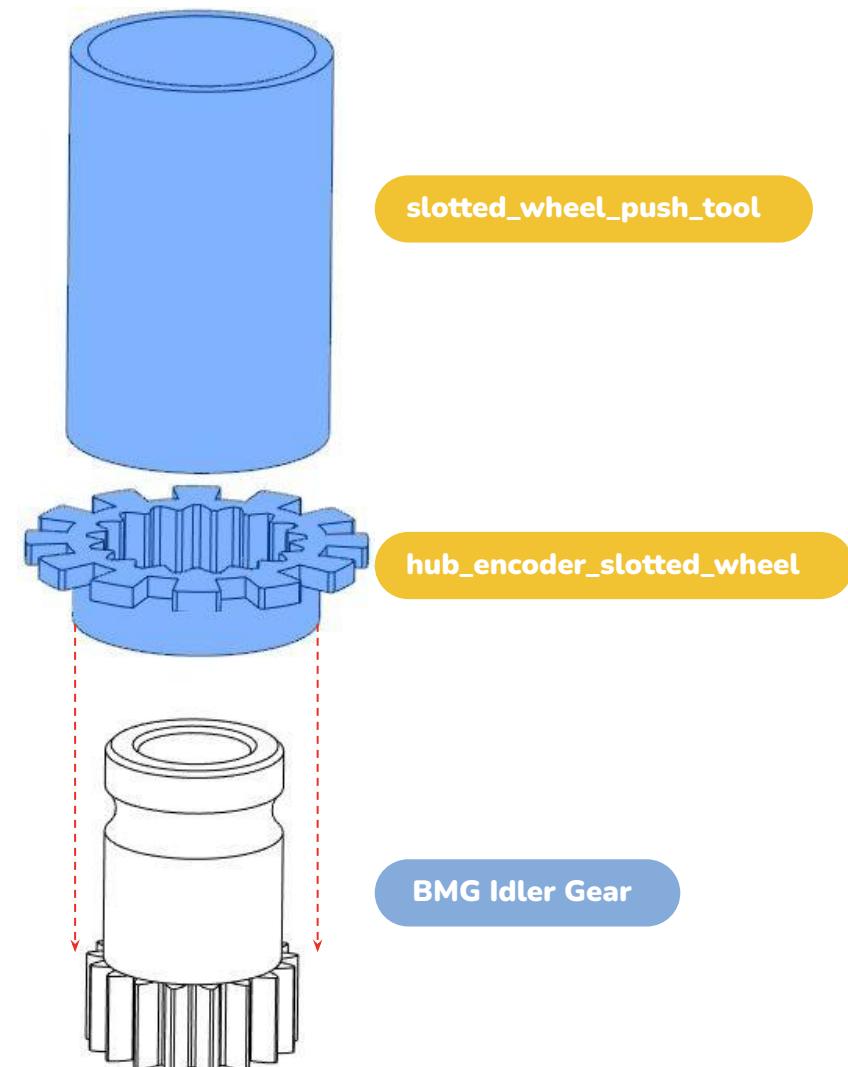
Before fitting the **hub_encoder_slotted_wheel** to the Bondtech gear, make sure the top surface of the wheel and its vanes are smooth and clean. If there are defects from printing, carefully sand or trim them so that they are flush.

Place the Bondtech gear as shown in the diagram on a hard surface and slide the **hub_encoder_slotted_wheel** onto the gear until it reaches the teeth.

Use the **slotted_wheel_push_tool** to gently push the **hub_encoder_slotted_wheel** into place until it is flush with the end of the gear. Gently use a small hammer if necessary.

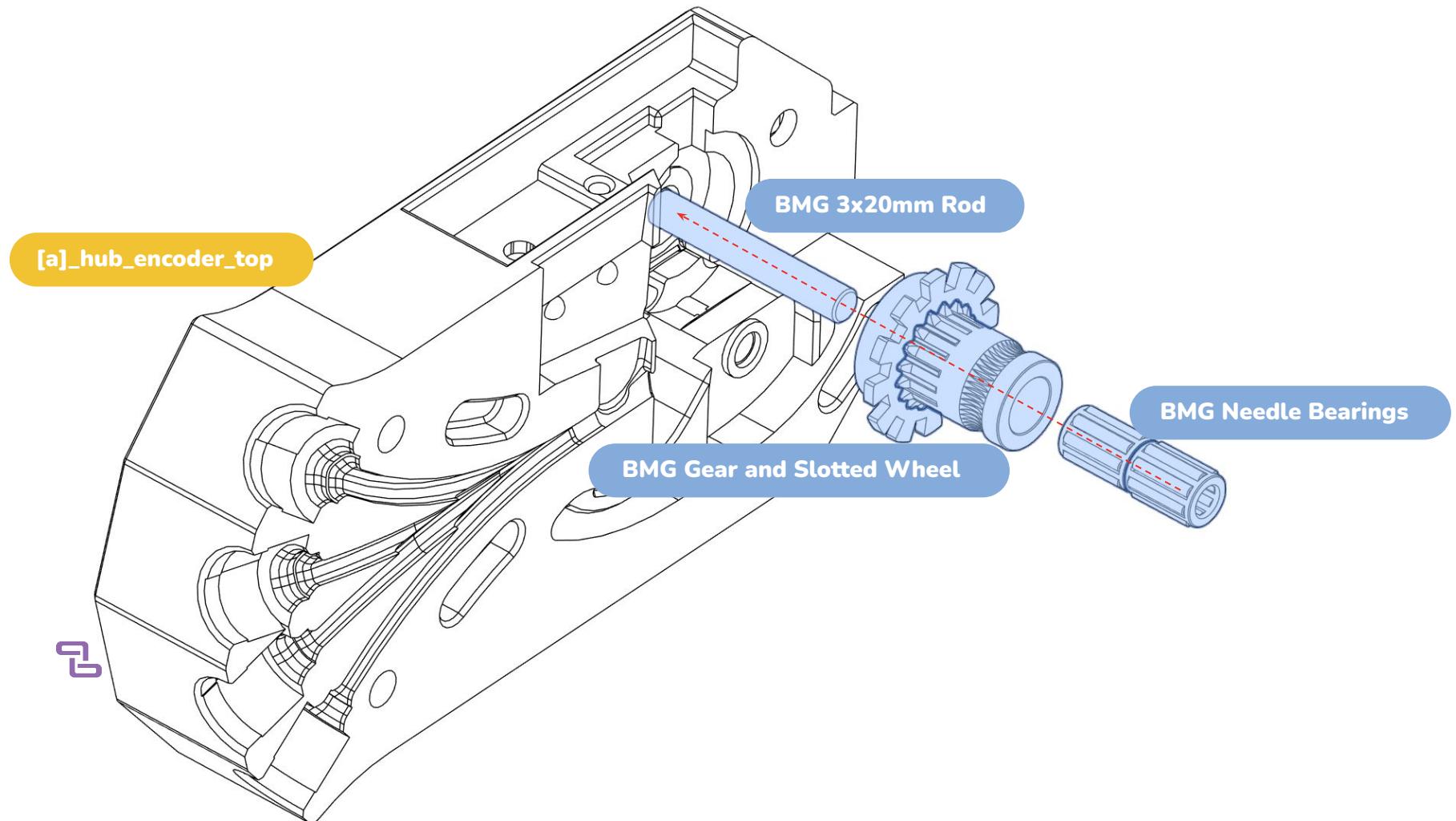
The **hub_encoder_slotted_wheel** should fit firmly on the Bondtech gear. Make sure it isn't damaged or cracked, and doesn't move easily.

NOTE: The **hub_encoder_slotted_wheel** must be printed in black to prevent light shining through the vanes of the wheel and causing false readings!



This instruction page was adapted from the ERCF manual.
Thanks to the community for the original content.

ENCODER ASSEMBLY



ASSEMBLING THE ENCODER ASSEMBLY

Start by inserting the 3x20 mm shaft into the hub_encoder_top part.

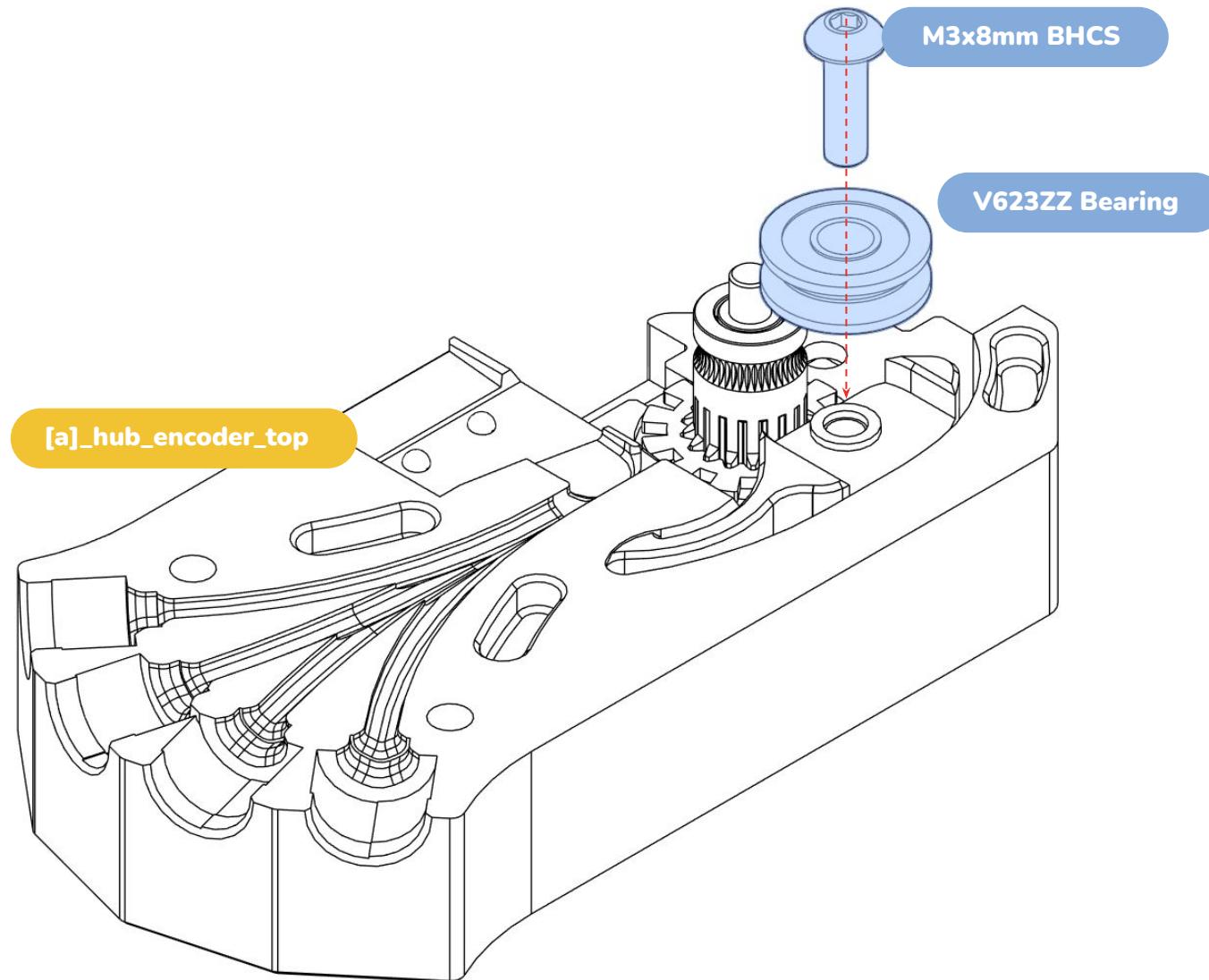
Then, slide the needle bearings onto the shaft.

Position the BMG gear / grooved wheel assembly in place.

You'll need to pull the tension spring down by about 1–2 mm so the grooved wheel can pass the brake and fit properly.

The grooved wheel should sit nearly flush with the housing, but make sure it is not touching or rubbing against the enclosure.

ENCODER ASSEMBLY

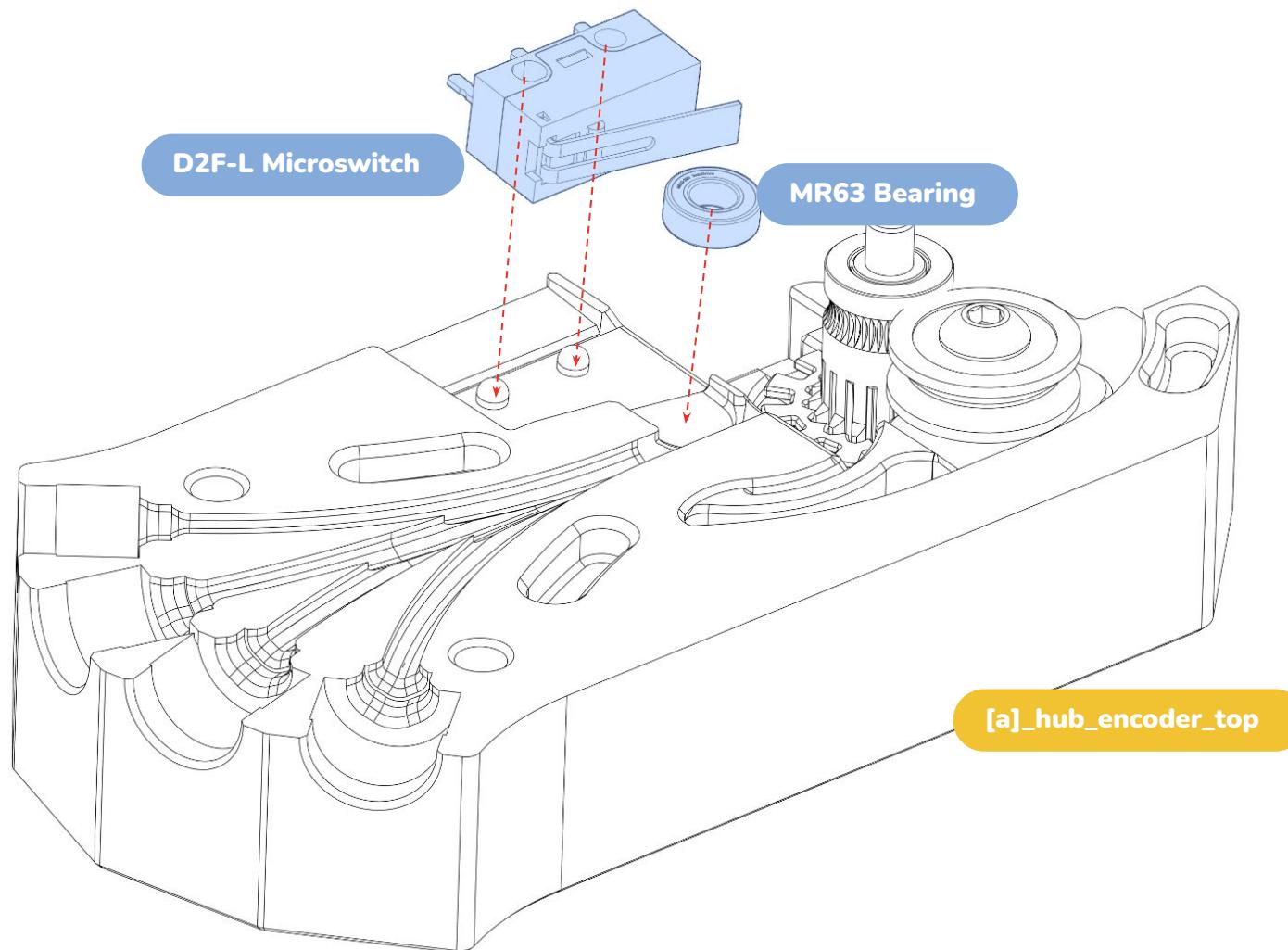


INSTALLING V623 BEARING

Hold the tension spring and attach the V623 bearing to it using an M3x10mm screw.

Be careful not to overtighten it to avoid stripping the part.

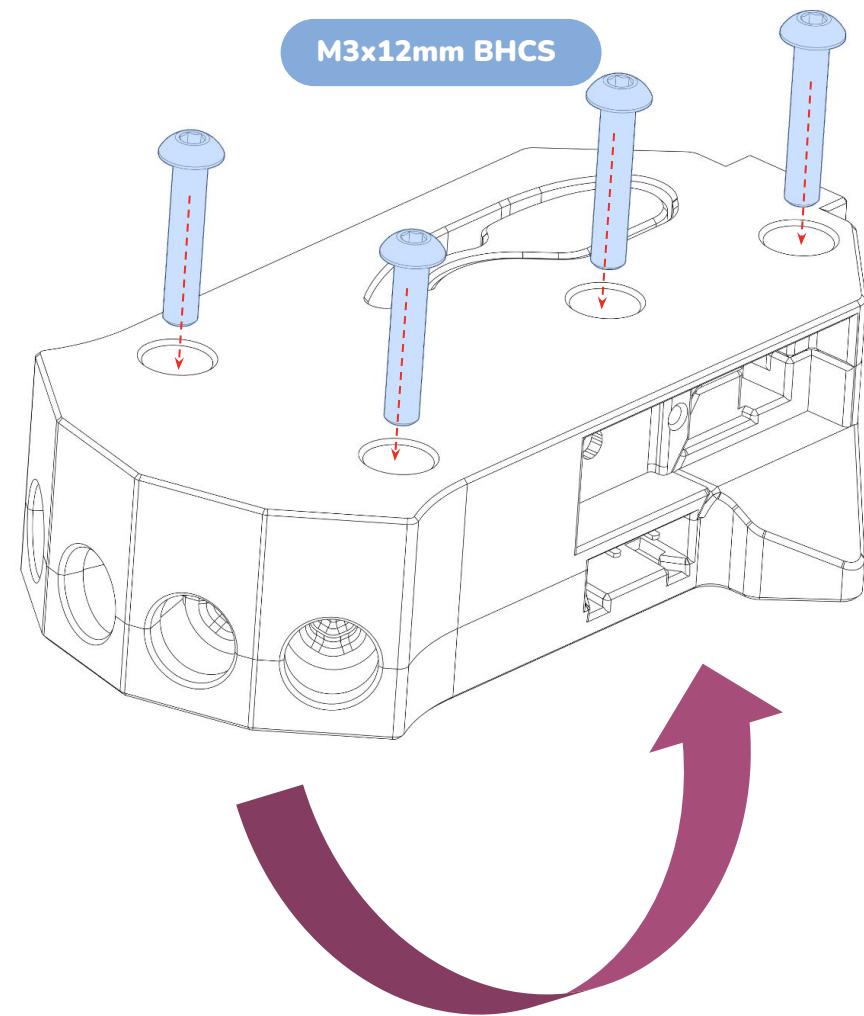
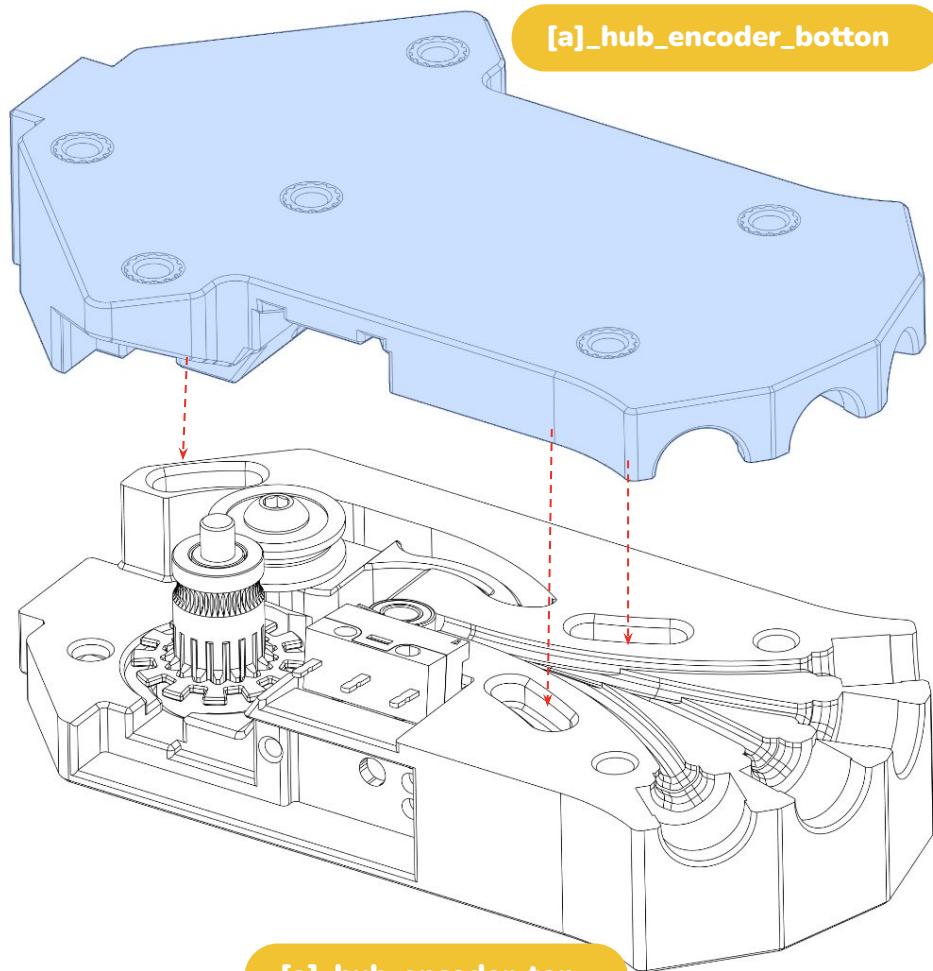
ENCODER ASSEMBLY



INSTALLING THE MICROSWITCH AND BEARING

Insert the D2F-L microswitch, fitting it securely into the pins on the part. Then place the MR63 bearing into its designated cavity, ensuring it is firmly seated, with no play or risk of popping out.

ENCODER ASSEMBLY



CLOSING THE ENCODER ASSEMBLY

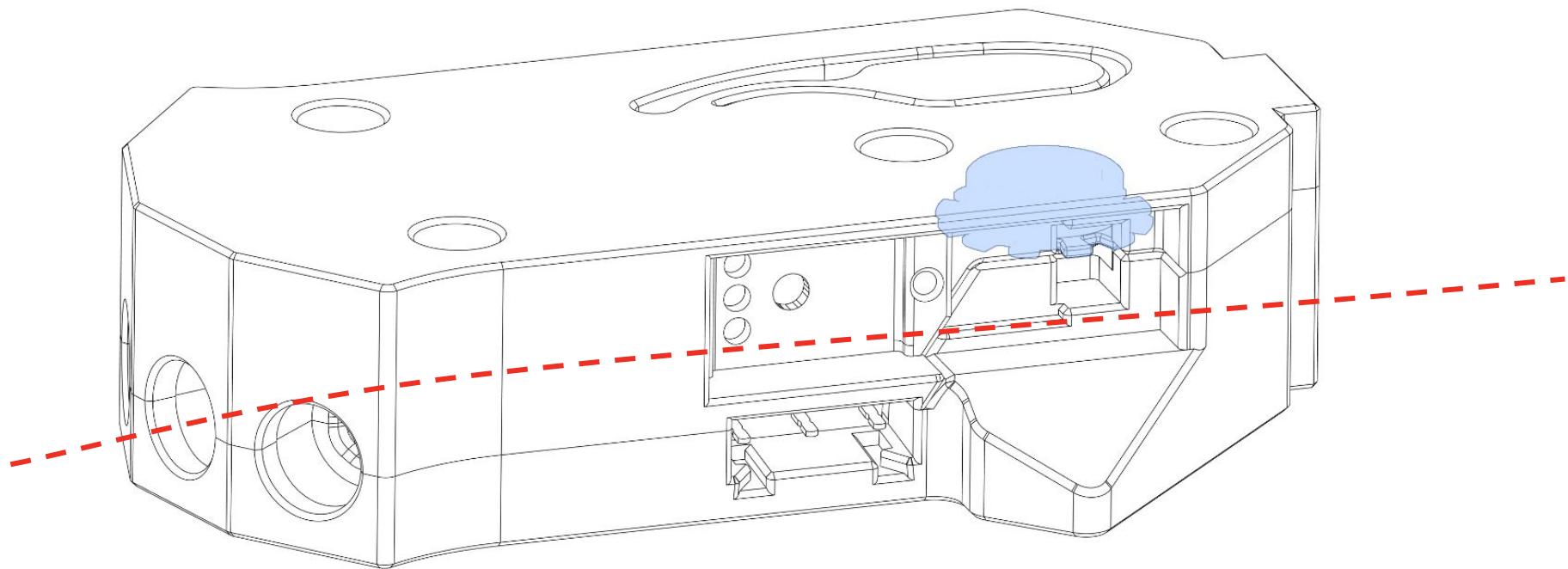
Align the two halves of the encoder carefully.

Press them together until they snap firmly into place.

Before proceeding, ensure the MR63 bearing is still properly seated, it should not have shifted during assembly.

Flip the assembly over and secure the two halves using four M3x12 BHCS screws.

ENCODER ASSEMBLY

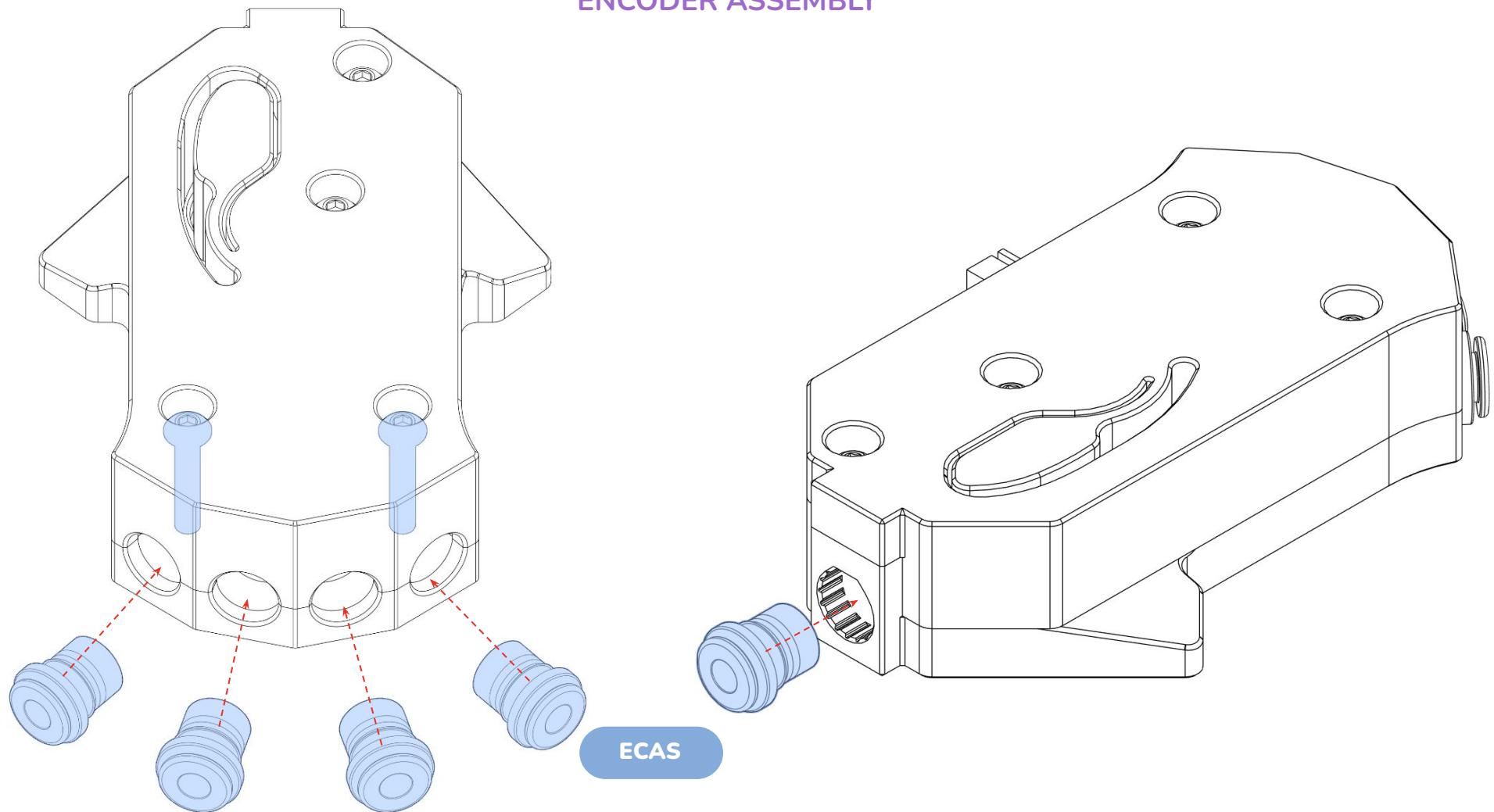


CHECKING THE HUB'S SLOTTED WHEEL

Feed a piece of filament at least 50 cm long through the hub path.
Check if the slotted wheel rotates properly as the filament moves.
Test at various speeds to ensure smooth operation.

⚠ If the wheel is jamming, there may be an issue with your printed parts.
Disassemble the unit and inspect for misalignment, burrs, or looseness.

ENCODER ASSEMBLY



INSTALLING THE ECAS CONNECTORS

Slightly loosen the two M3x12 BHCS screws on the structure.

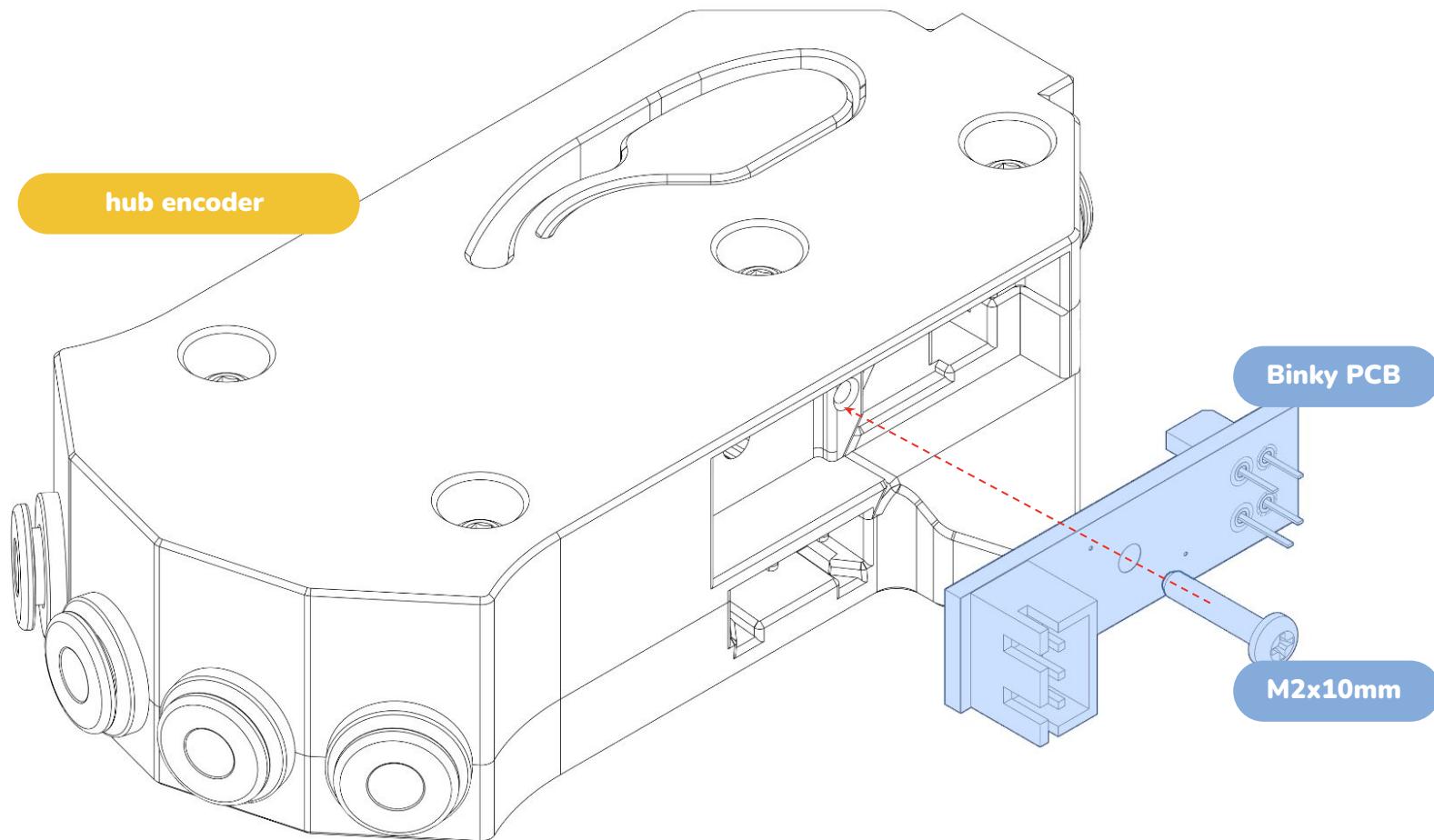
Insert the 4 ECAS connectors into their designated positions.

Once all ECAS are in place, retighten the M3x12 screws to secure everything.

On the opposite side, insert the ECAS into the designated location.

To assist with installation, you can support the part on a firm surface and gently press it in until fully seated.

ENCODER ASSEMBLY



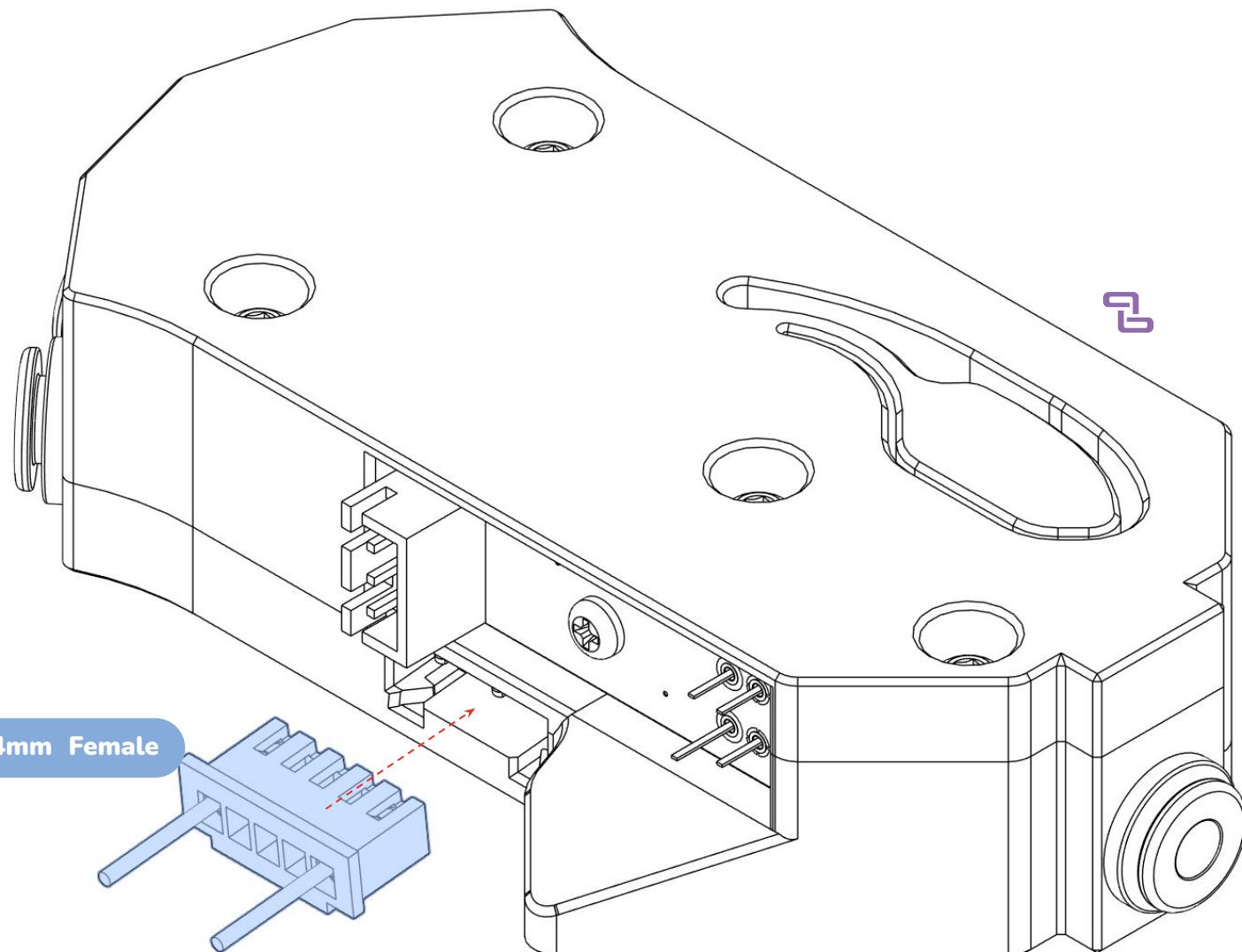
INSTALLING THE BINKY BOARD

Insert the Binky board into the designated slot in the hub.

Secure it using one M2x10 mm screw.

The sensor should fit snugly into its cutout, with no gaps or misalignment.

ENCODER ASSEMBLY



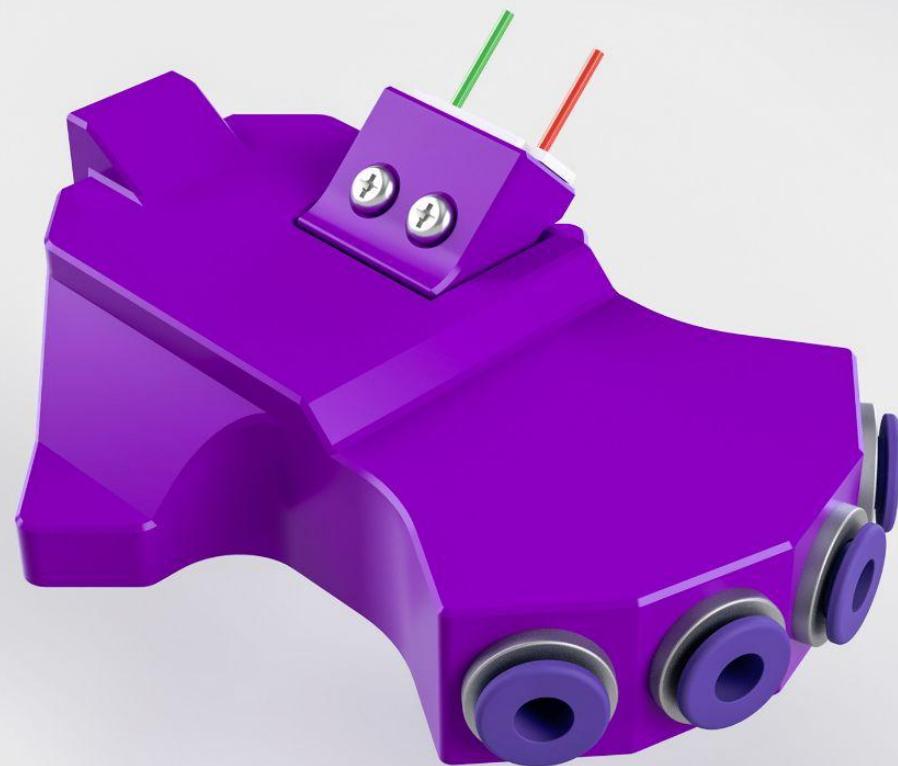
ASSEMBLY

To connect the microswitch, use a JST XH 2.54mm connector. Crimp only the outer pins (1 and 5), leaving the others empty. Then, insert the connector from the side and press it in fully to ensure contact with the switch.

This page intentionally left blank.

HUB

quattro box



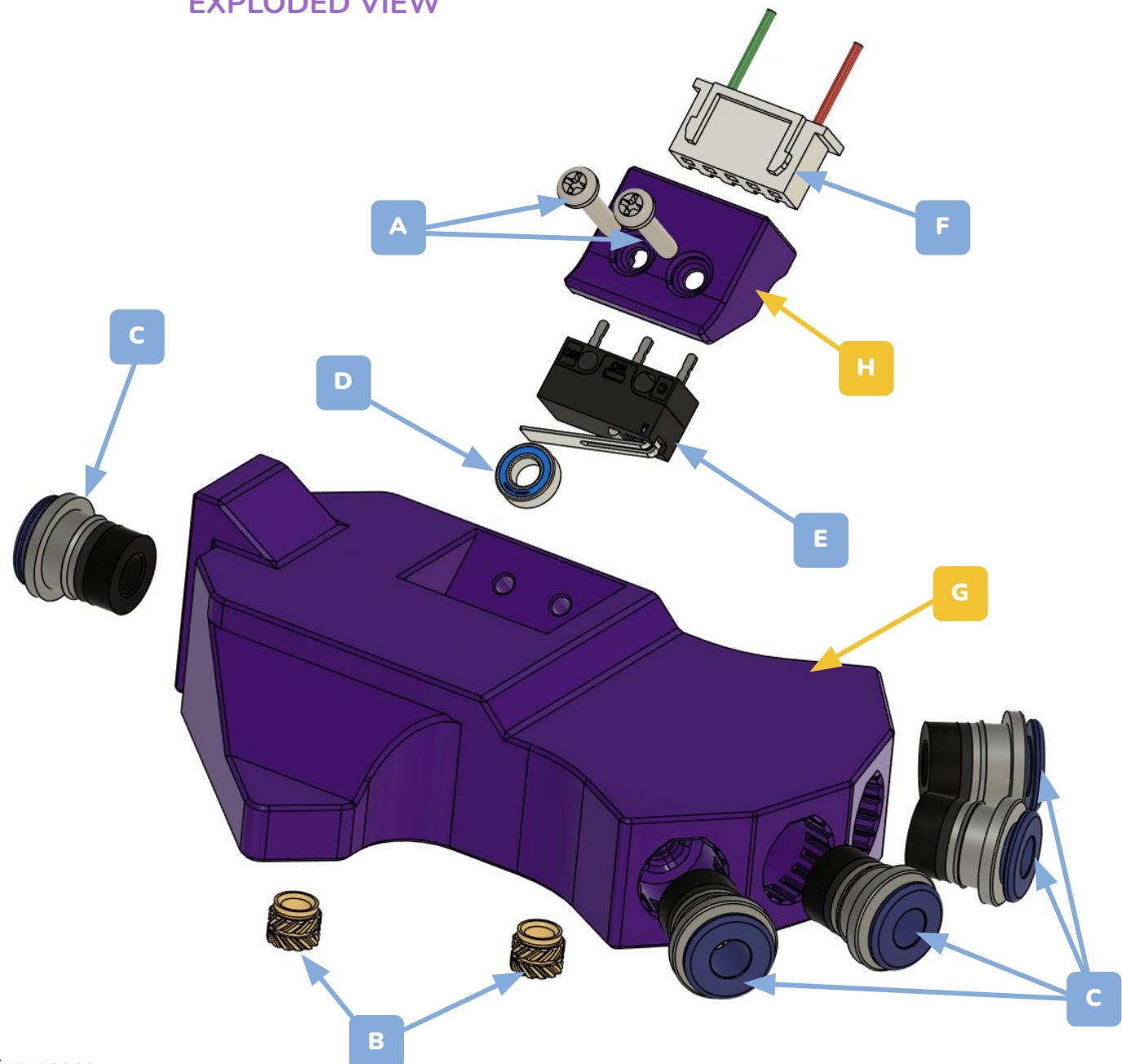
EXPLODED VIEW

A
B
C
D
E
F

2x M2x10mm Self tapping screw
2x M3 Threaded Inserts
5x ECAS
1x MR63 Bearing
1x D2F-L Microswitch
1x JST XH 2.54mm Female

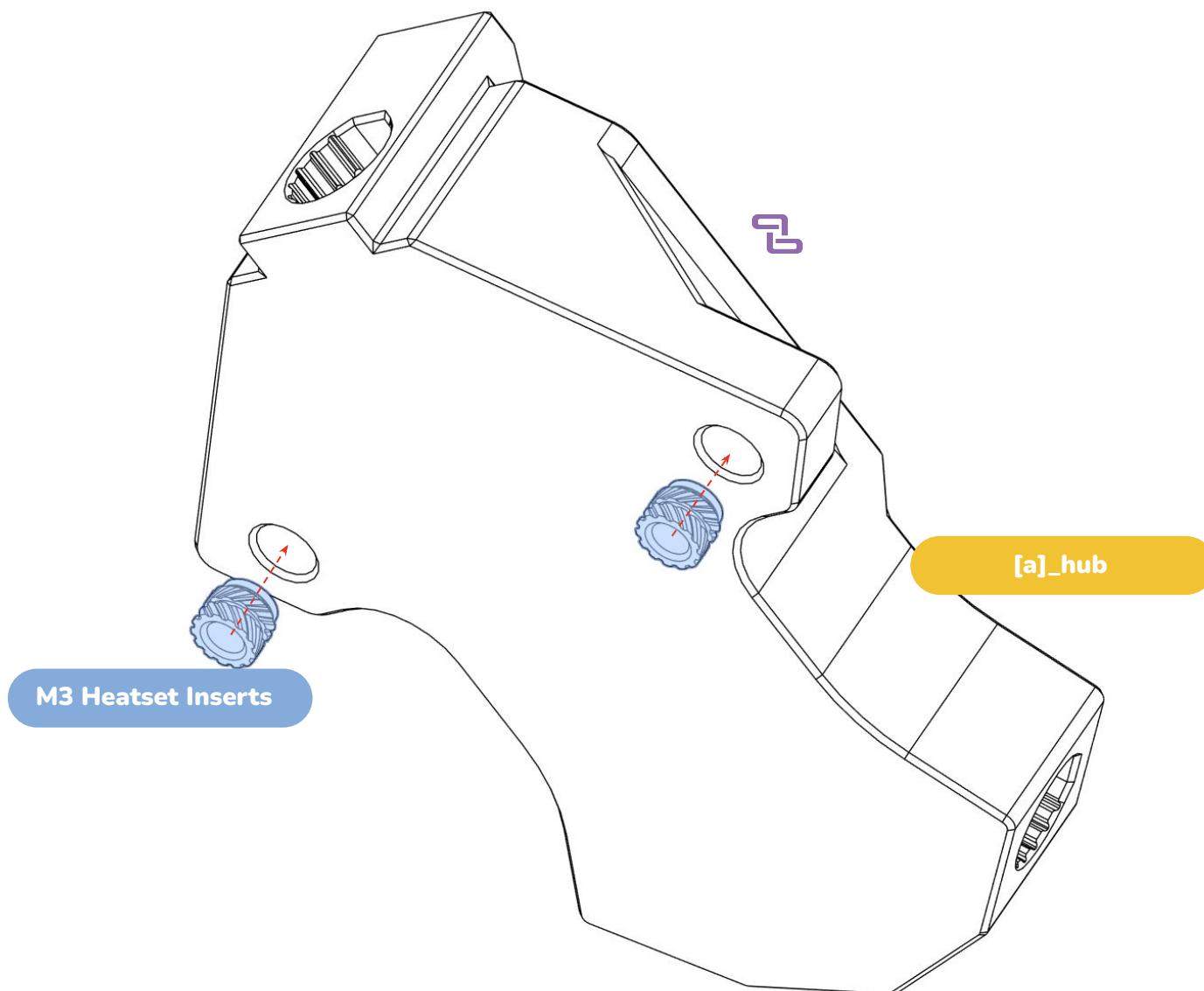
G
H

1x [a]_hub
1x [a]_hub_jst_mount



The detailed instructions are on the following pages

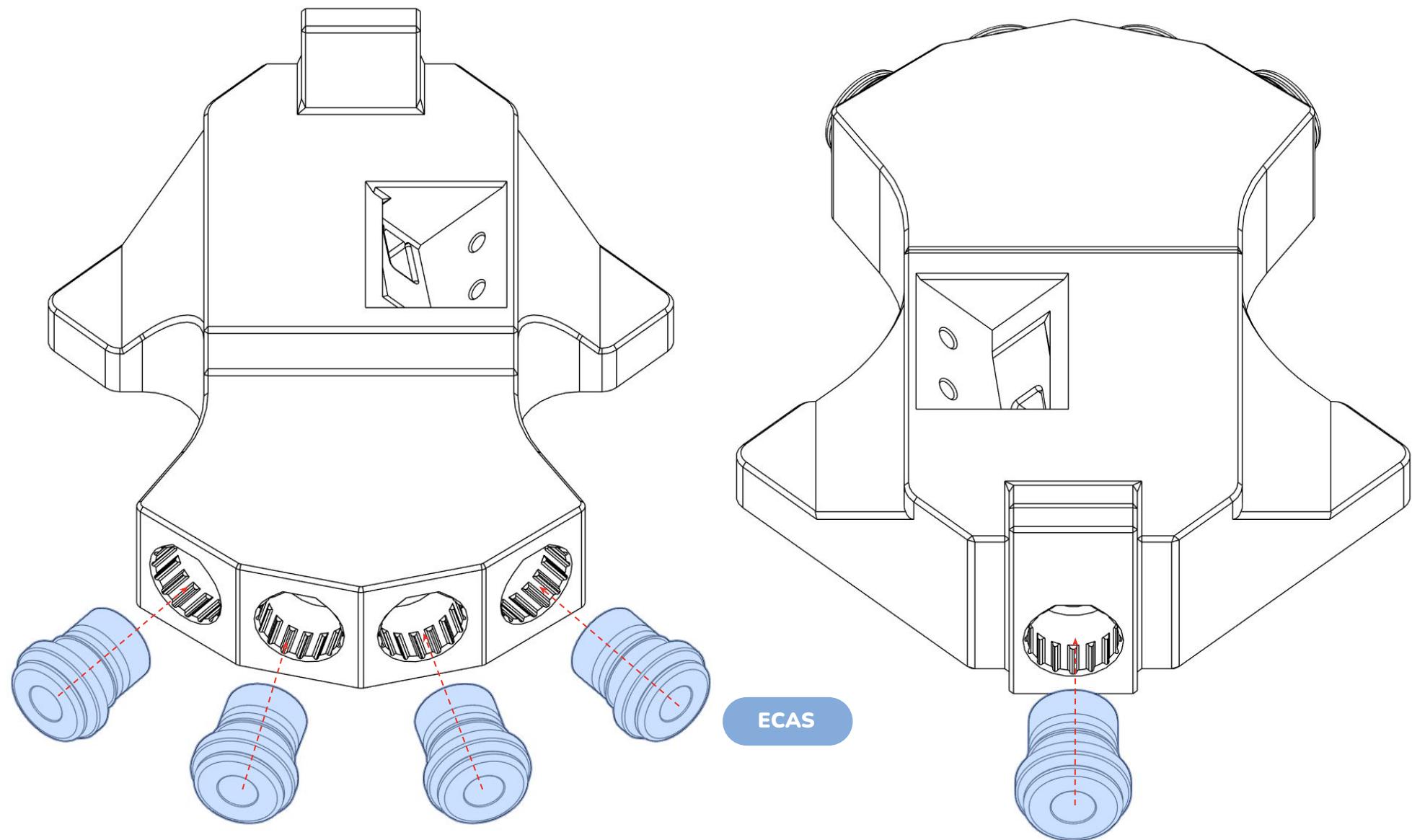
HUB PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

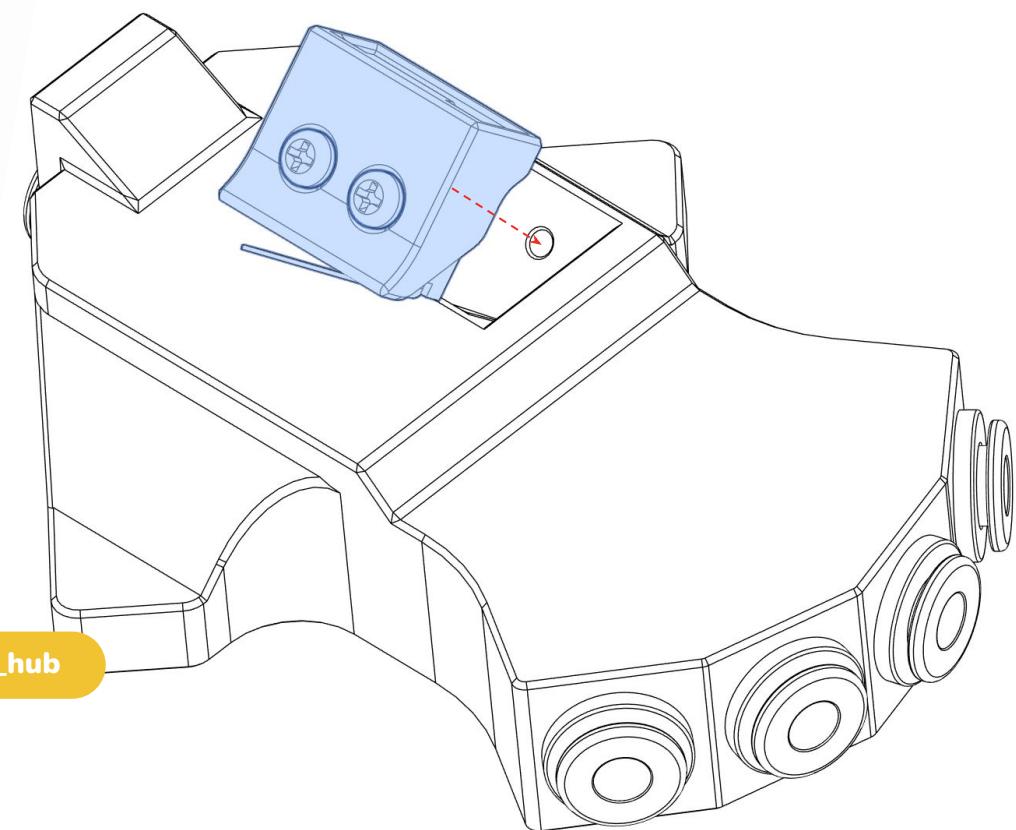
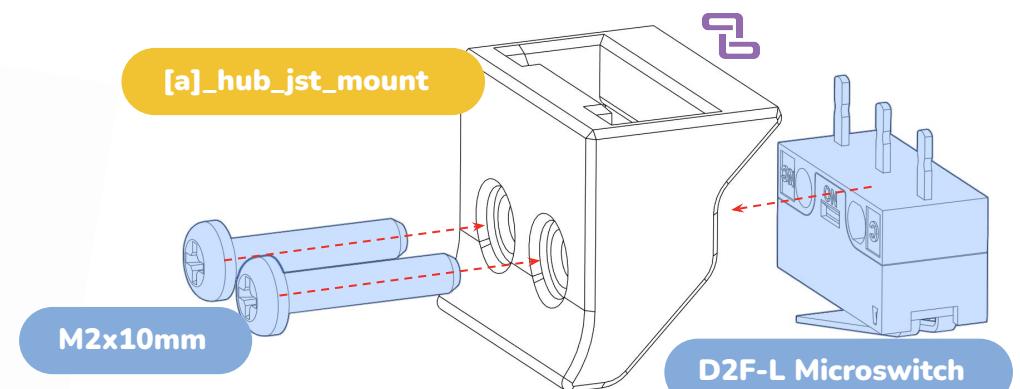
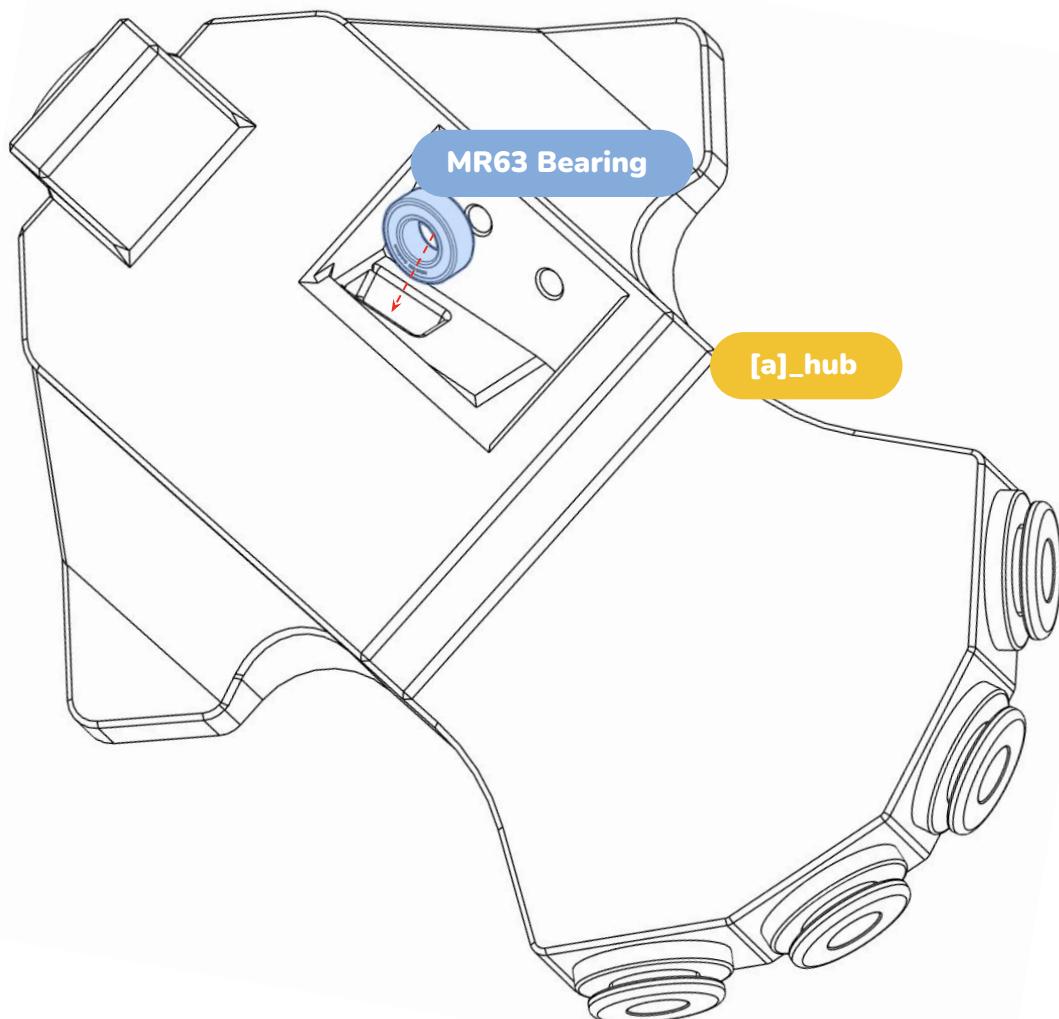
HUB ASSEMBLY



INSTALLING THE ECAS CONNECTORS

Insert the ECAS into the designated location. To assist with installation, you can support the part on a firm surface and gently press it in until fully seated

HUB ASSEMBLY



INSTALLING THE MR63 BEARING AND MICROSWITCH IN THE HUB

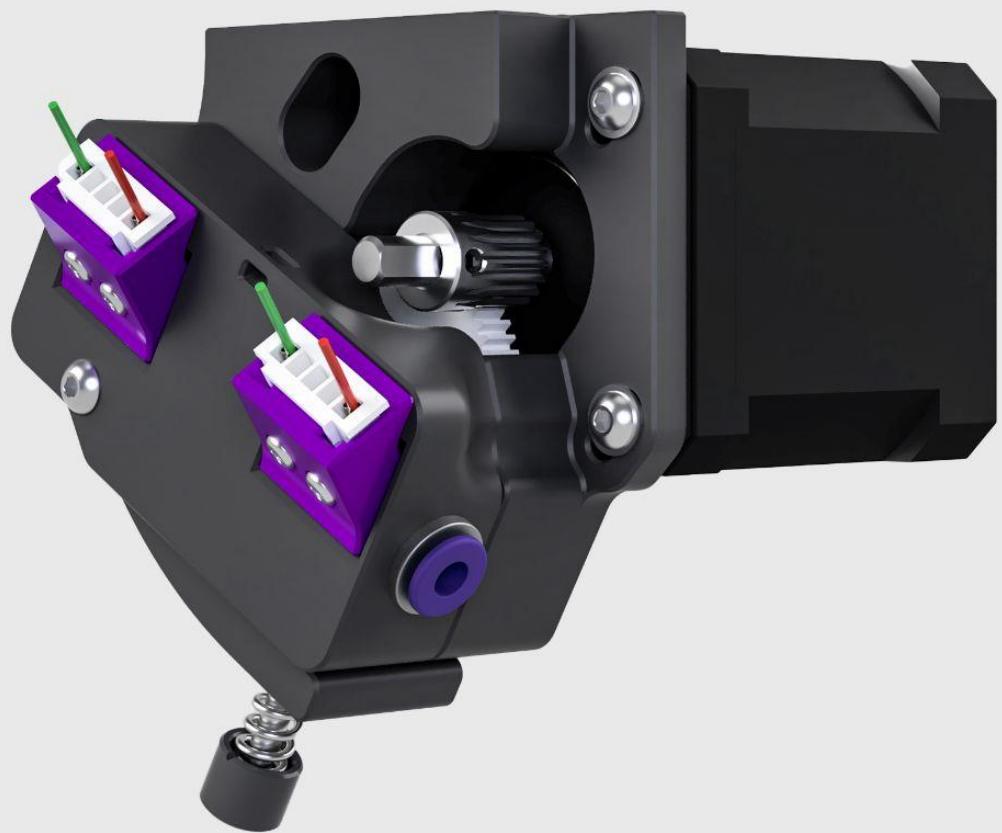
Insert the MR63 bearing into the designated slot.

Attach the microswitch to the **hub_jst_mount** using two M2x10 screws.

Install the assembled unit onto the Hub, ensuring proper alignment.

Connect the microswitch using a 2.54 mm JST XH connector, crimping only pins 1 and 5, leave the other positions empty.

This page intentionally left blank.



Yeah, it looks like a manual for a robot from the future... but I swear it'll all fit together just fine

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T

2x M3x8mm BHCS

3x M3x10mm BHCS (or 4x M3x10mm if using NEMA 17)

1x M3x25mm BHCS

1x M3x30mm SHCS or M3x20mm Thumb Screw

4x M2x10mm Self tapping screw

2x M3 Washer (or 3x M3 Washer if using NEMA 17)

7x M3 Threaded Inserts

1x NEMA 14 or NEMA 17

1x ECAS Coupler

1x BMG Gear

1x 50T Drive Gear

1x BMG Idler Gear (without set screw)

2x BMG Needle Bearings

1x BMG 3x20mm Stainless Rod

1x BMG Spring

2x MR85 Bearing

2x 4mm Steel Ball

2x D2F-L Microswitch

2x JST XH 2.54mm Female

1x 623 Bearing (optional assembly)

U
V
W
X
Y
Z

1x extruder_BMG

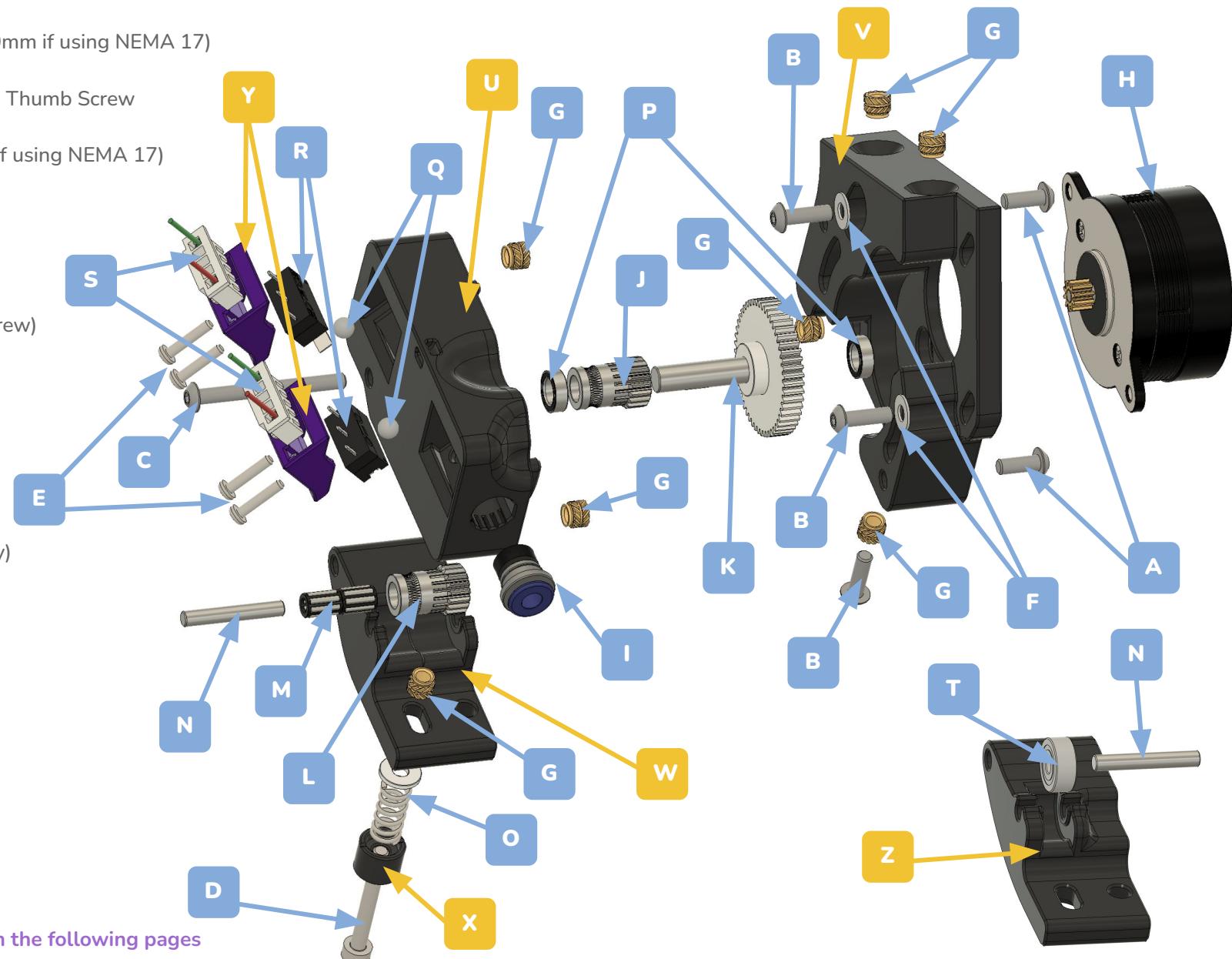
1x extruder_BMG_motor

1x BMG_latch

1x tensioner collar

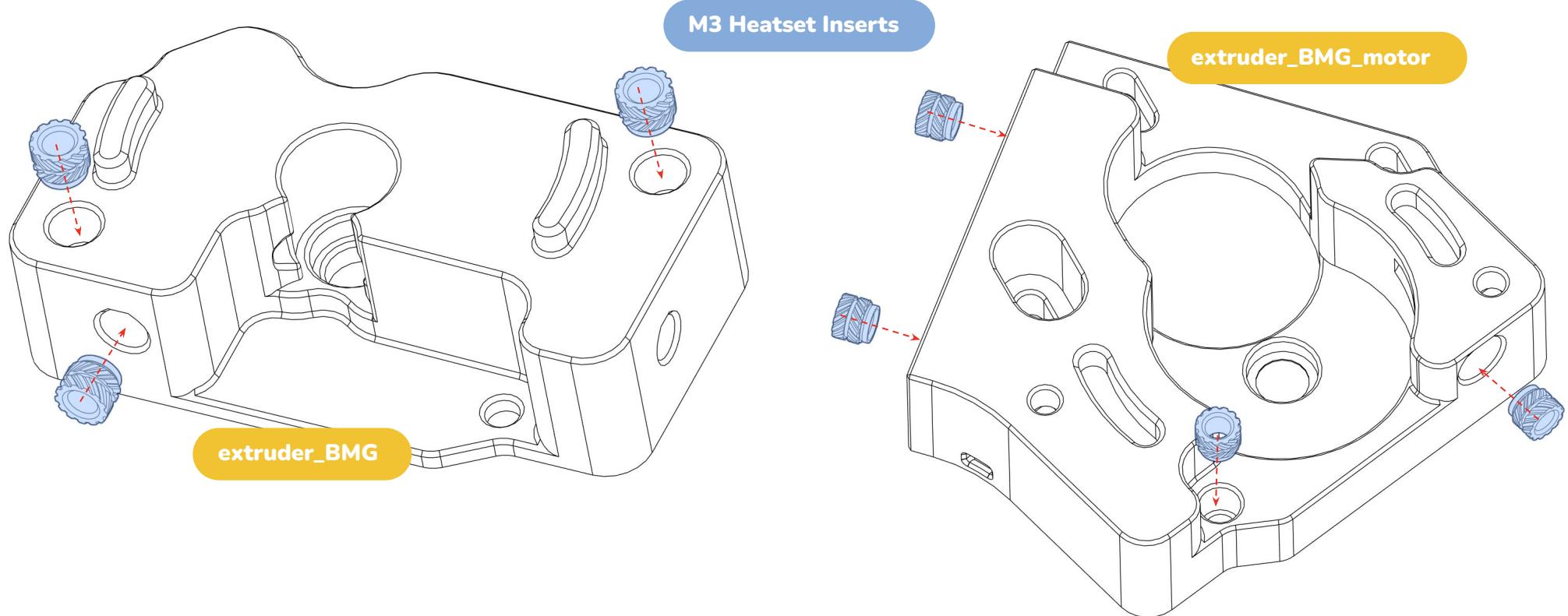
1x [a]_JST_mount

1x BMG_latch_623



The detailed instructions are on the following pages

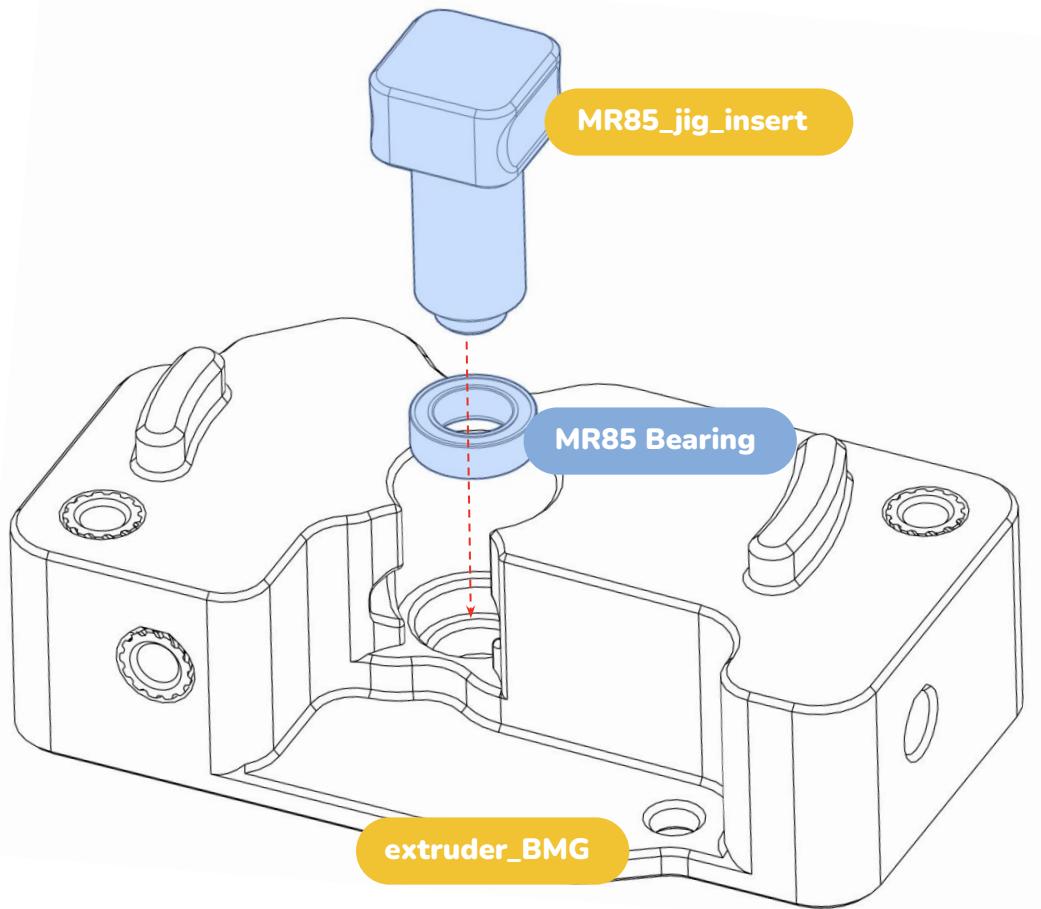
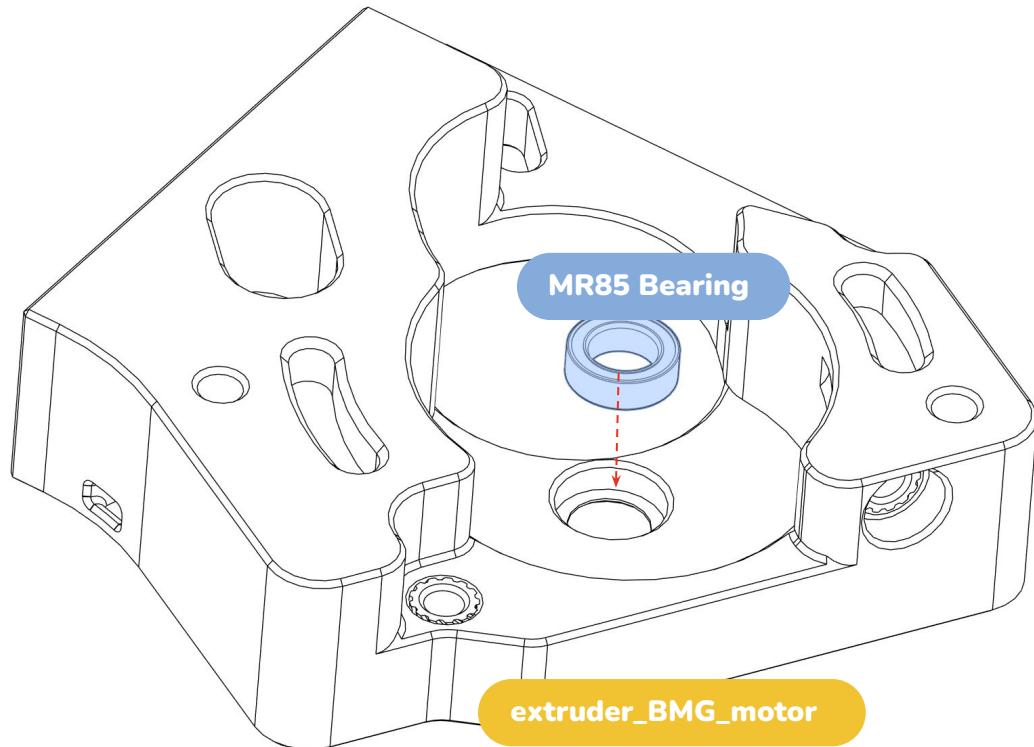
EXTRUDER PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

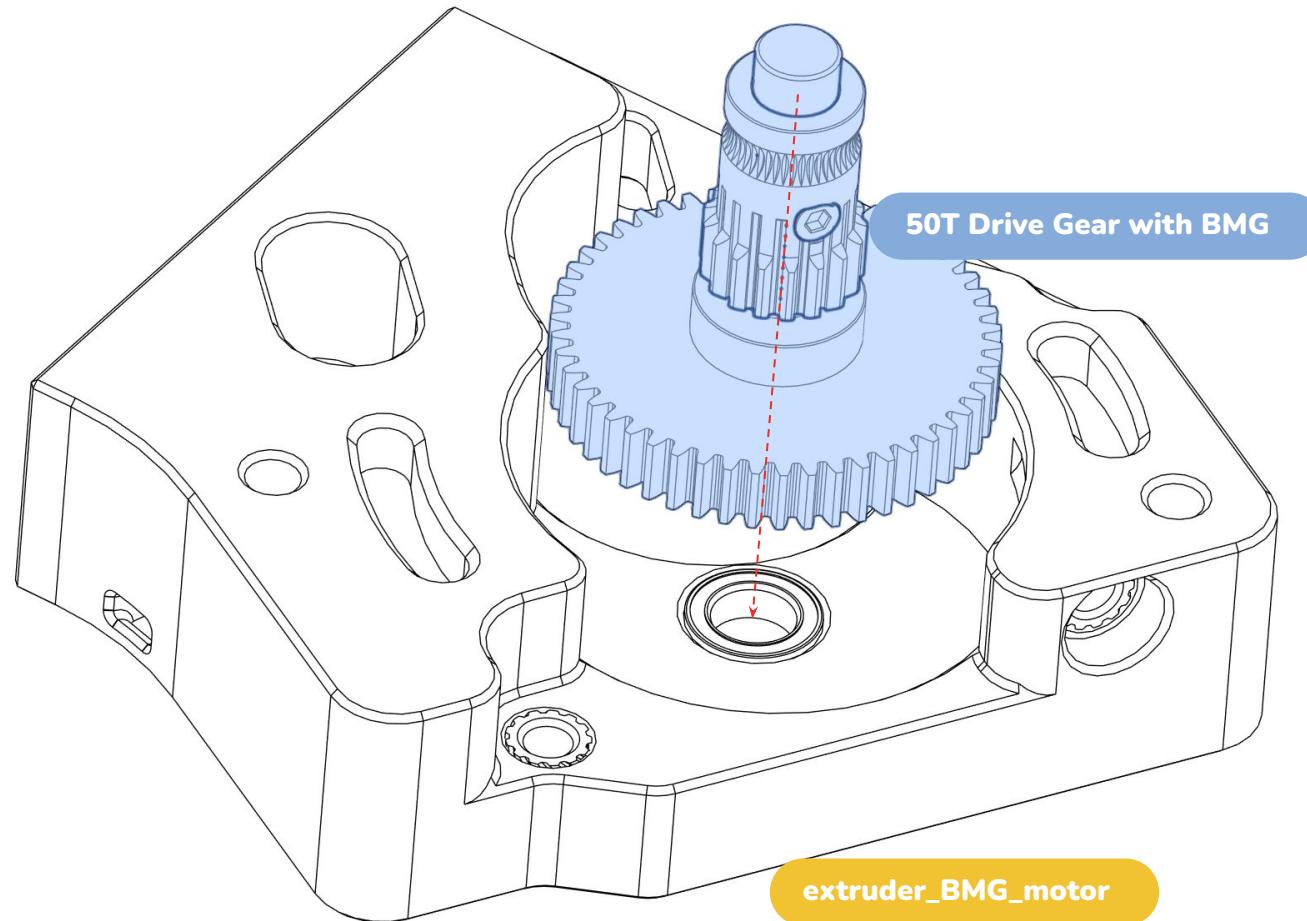
EXTRUDER ASSEMBLY



BEARING INSTALLATION

Insert the MR85 bearings into the extruder_BMG_motor and extruder_BMG parts. To make installation easier, use the MR85_jig_insert tool to help seat the bearings properly.

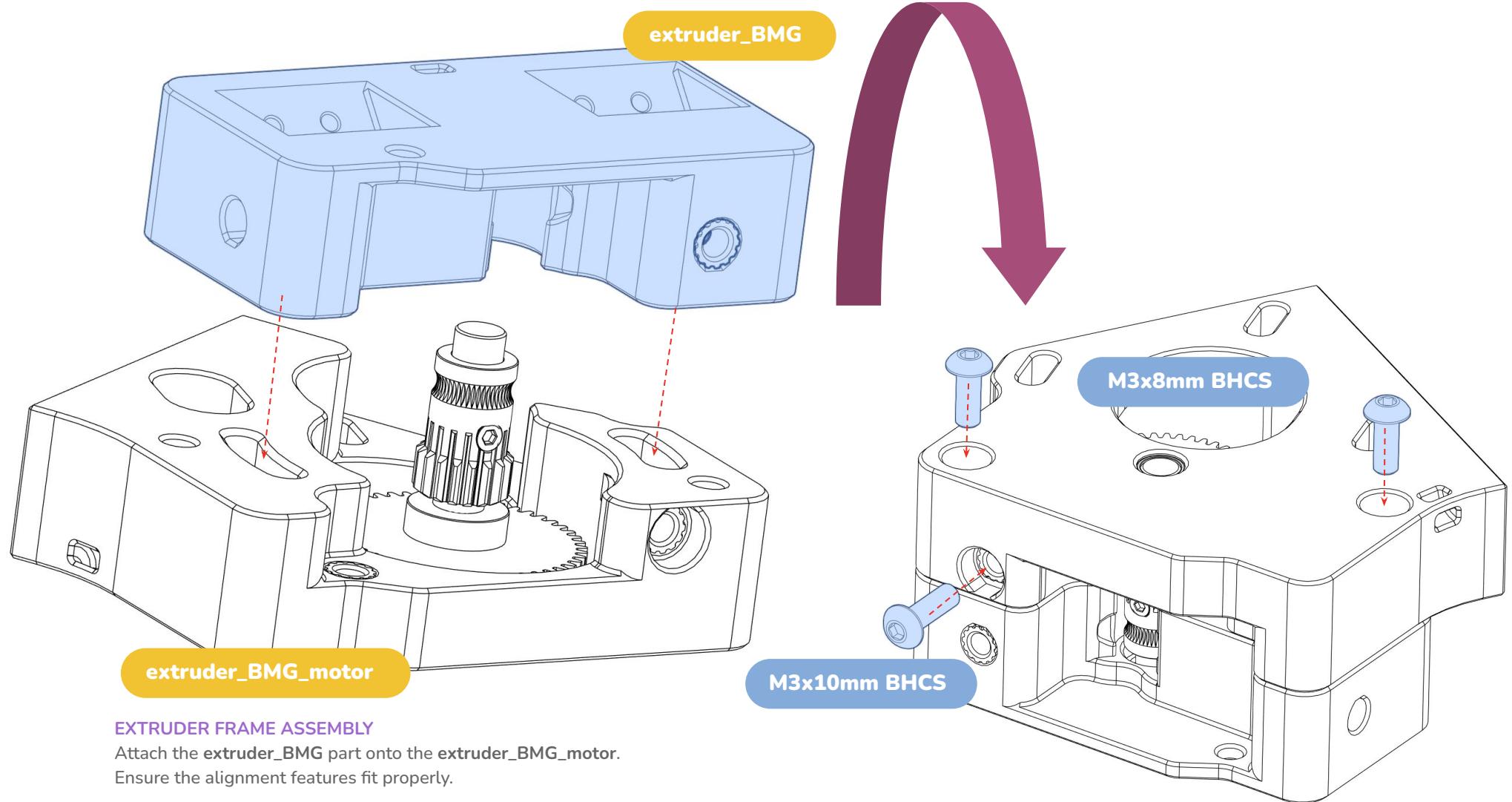
EXTRUDER ASSEMBLY



50T DRIVE GEAR WITH BMG

Install 50T Drive Gear with BMG

EXTRUDER ASSEMBLY



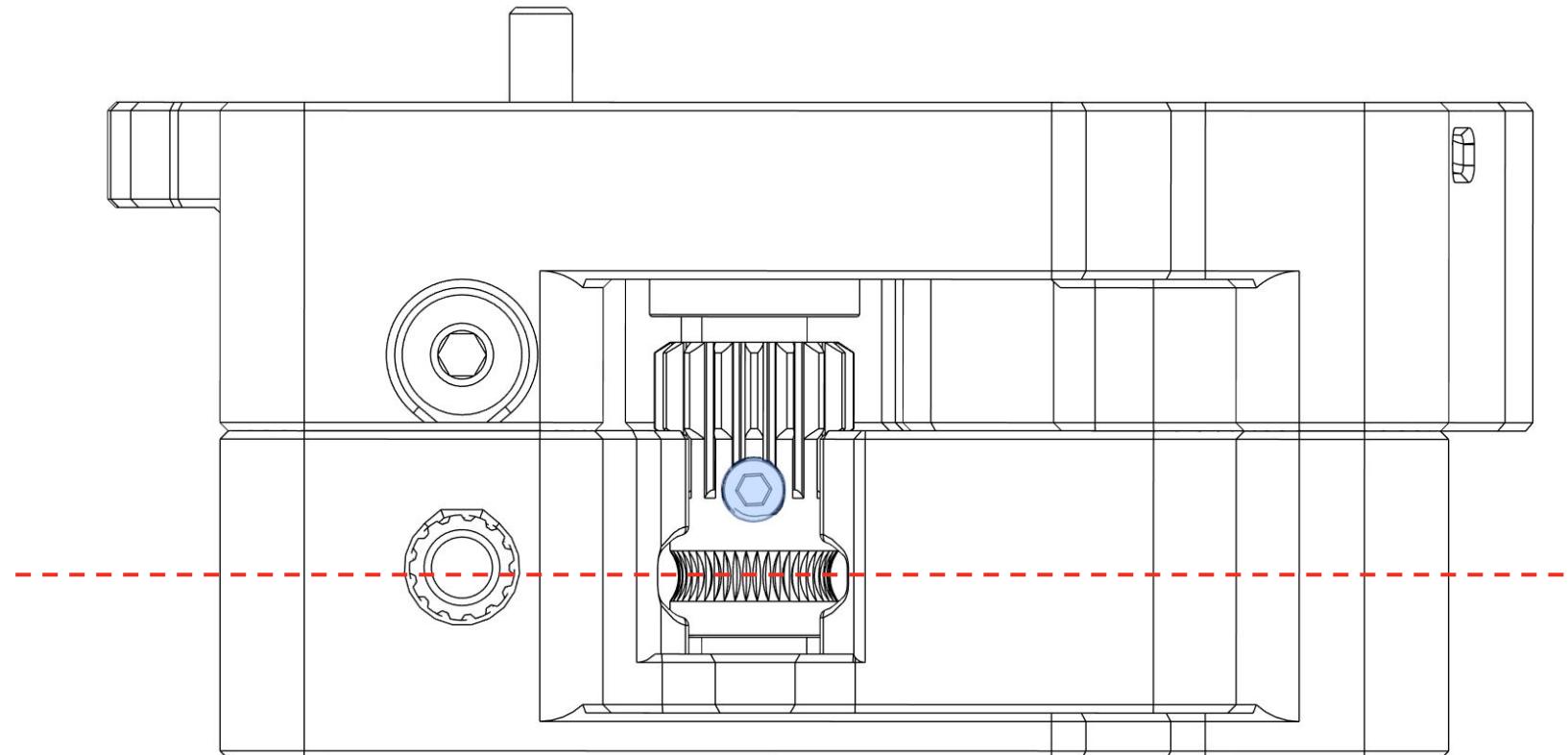
EXTRUDER FRAME ASSEMBLY

Attach the **extruder_BMG** part onto the **extruder_BMG_motor**. Ensure the alignment features fit properly.

Flip the assembly and secure it using two **M3x8mm BHCS** screws.

On the side where the latch will be installed, insert an **M3x10mm BHCS** screw. This screw will act as a spring pressure relief for the latch, which will be installed in the next steps.

EXTRUDER ALIGNMENT



GEAR ALIGNMENT WITH FILAMENT PATH

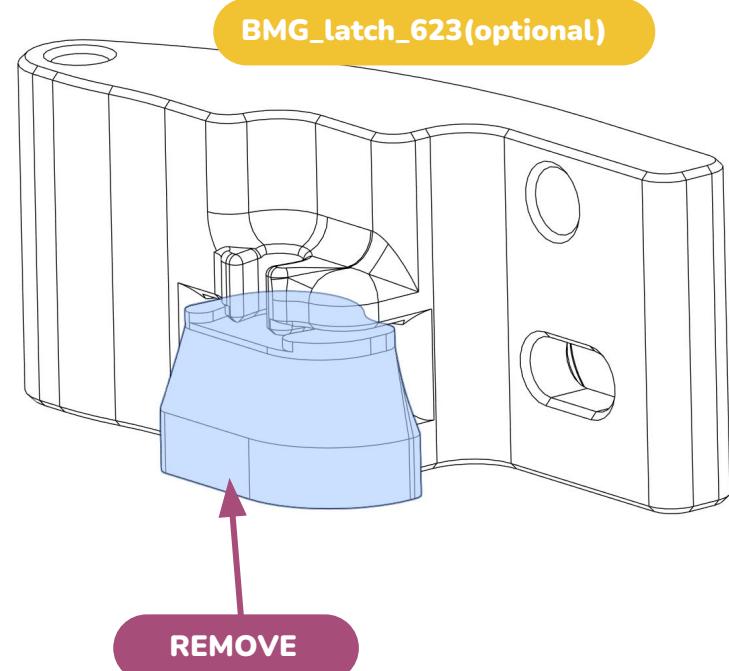
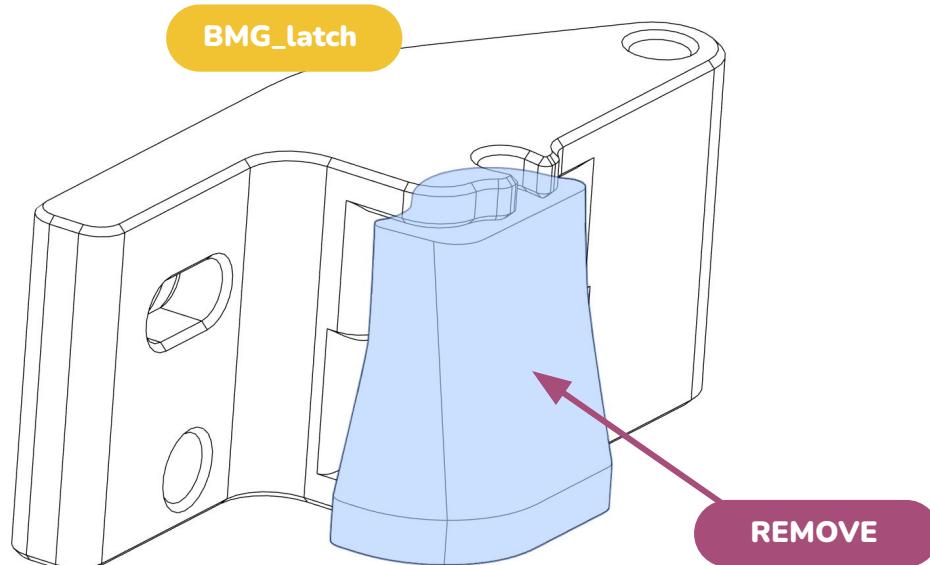
Loosen the grub screw already installed in the BMG gear.

Insert a piece of filament through the extruder's filament path until it comes out the other side.

With the filament in place, the BMG gear will naturally align to the correct position.

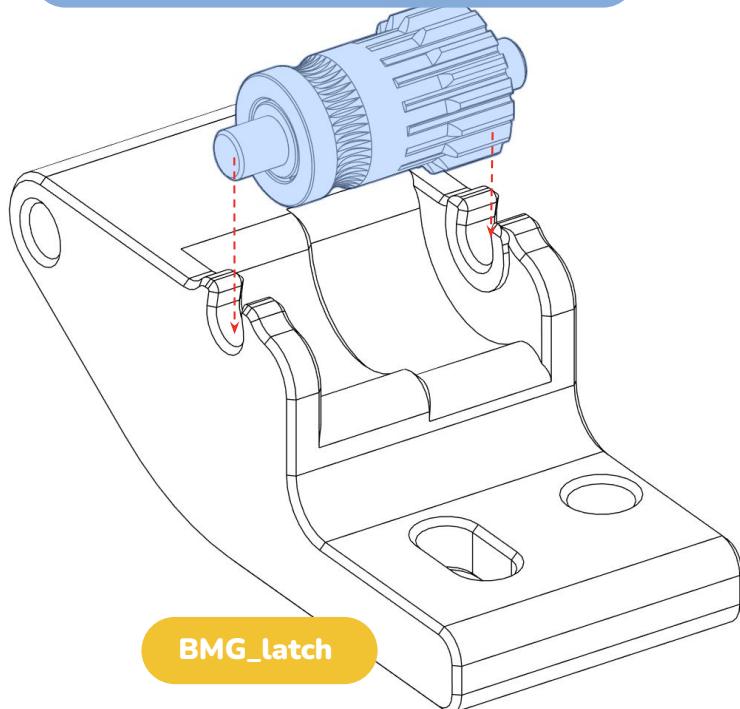
While keeping the filament in place, tighten the grub screw to secure the gear.

LATCH PREPARATION

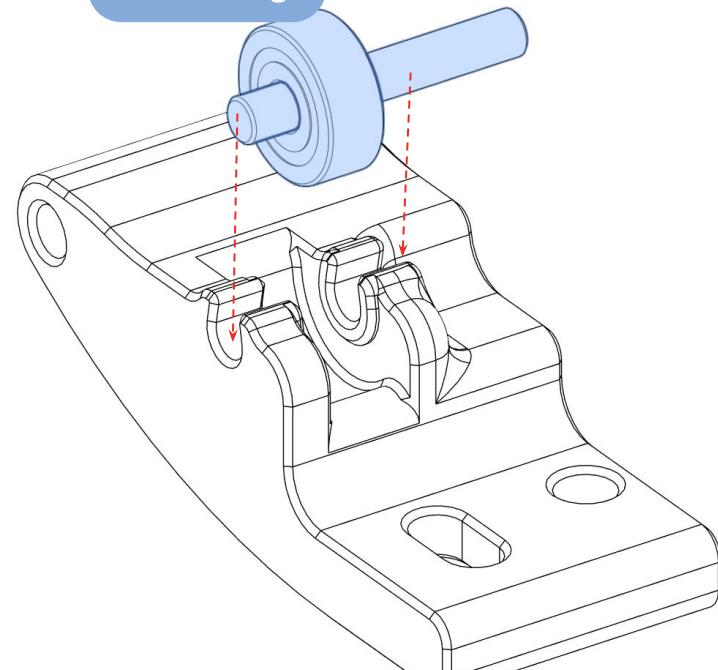


EXTRUDER ASSEMBLY

BMG Idler Gear (without set screw)



623 Bearing



IDLER INSTALLATION

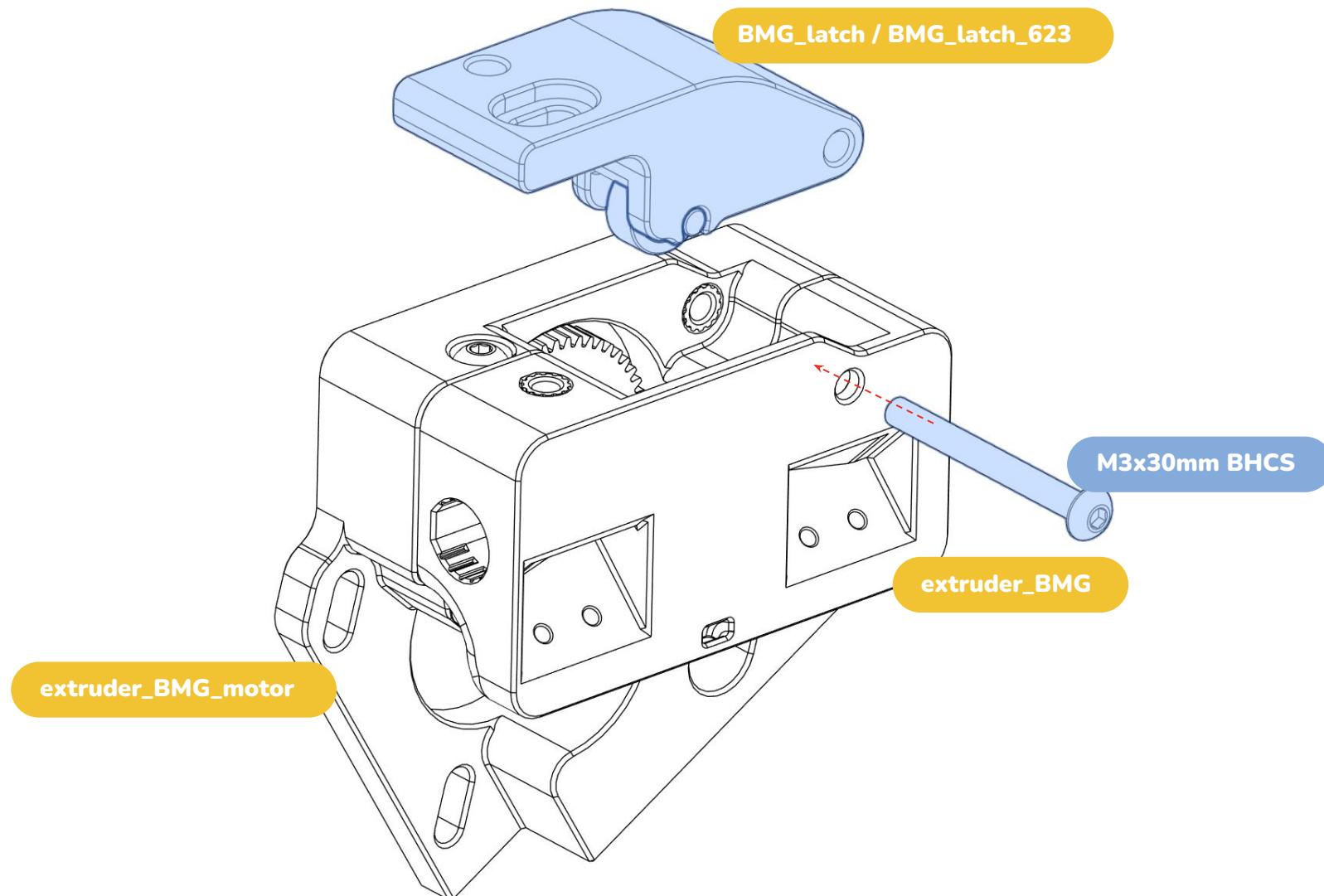
At this stage, you can choose between two mounting options:

BMG Idler and 623 Bearing

In both cases, the idler must be press-fit into the latch.

Support the part on a firm surface and gently press the idler in until fully seated.

EXTRUDER ASSEMBLY

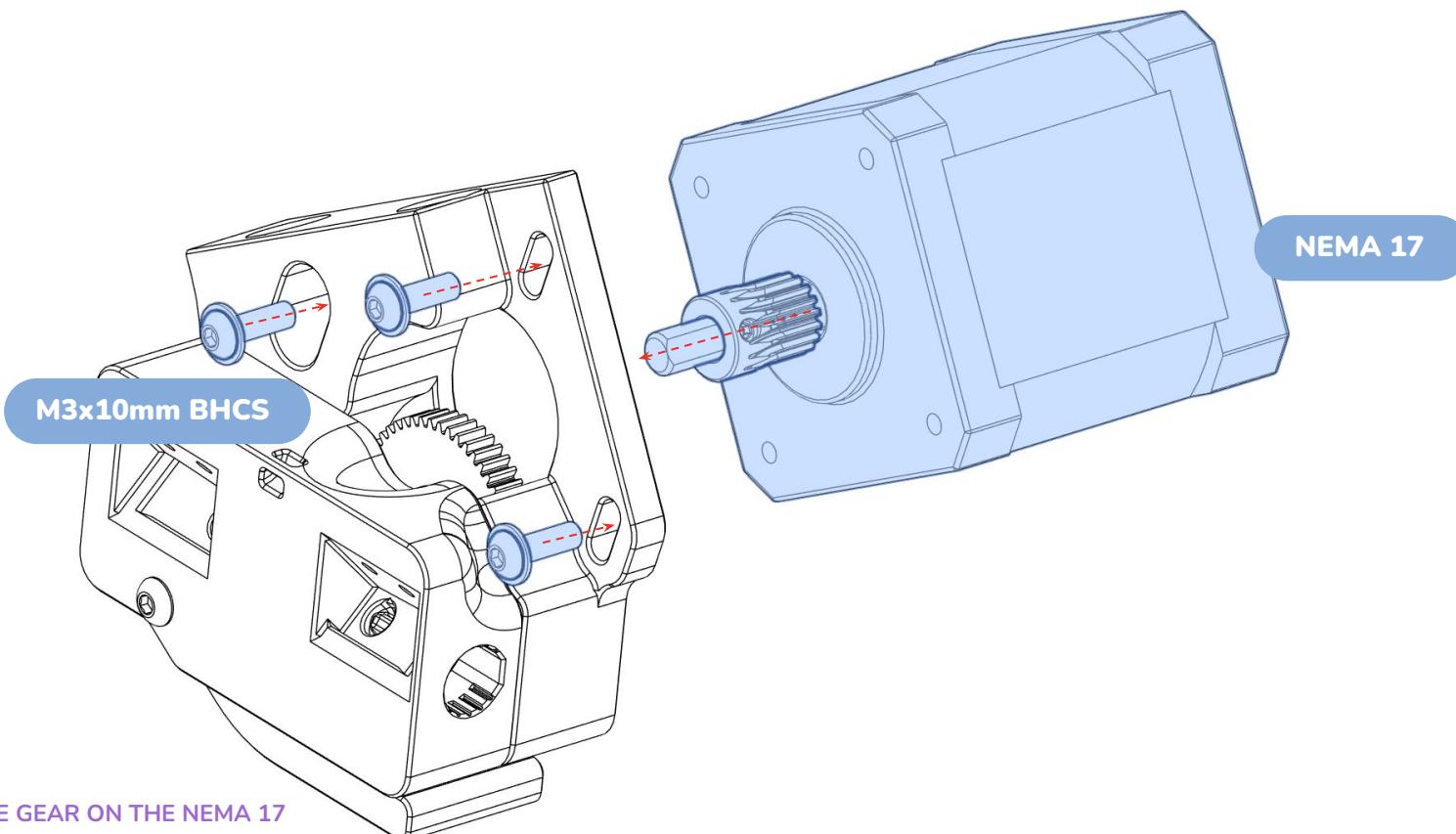


ATTACHING THE LATCH TO THE EXTRUDER

With the latch assembled, insert it into the extruder and secure it using an M3x30 BHCS screw.

⚠ Be careful not to overtighten the screw, as the latch must move freely

EXTRUDER ASSEMBLY



INSTALLING THE GEAR ON THE NEMA 17

If you opted to use the NEMA 17:

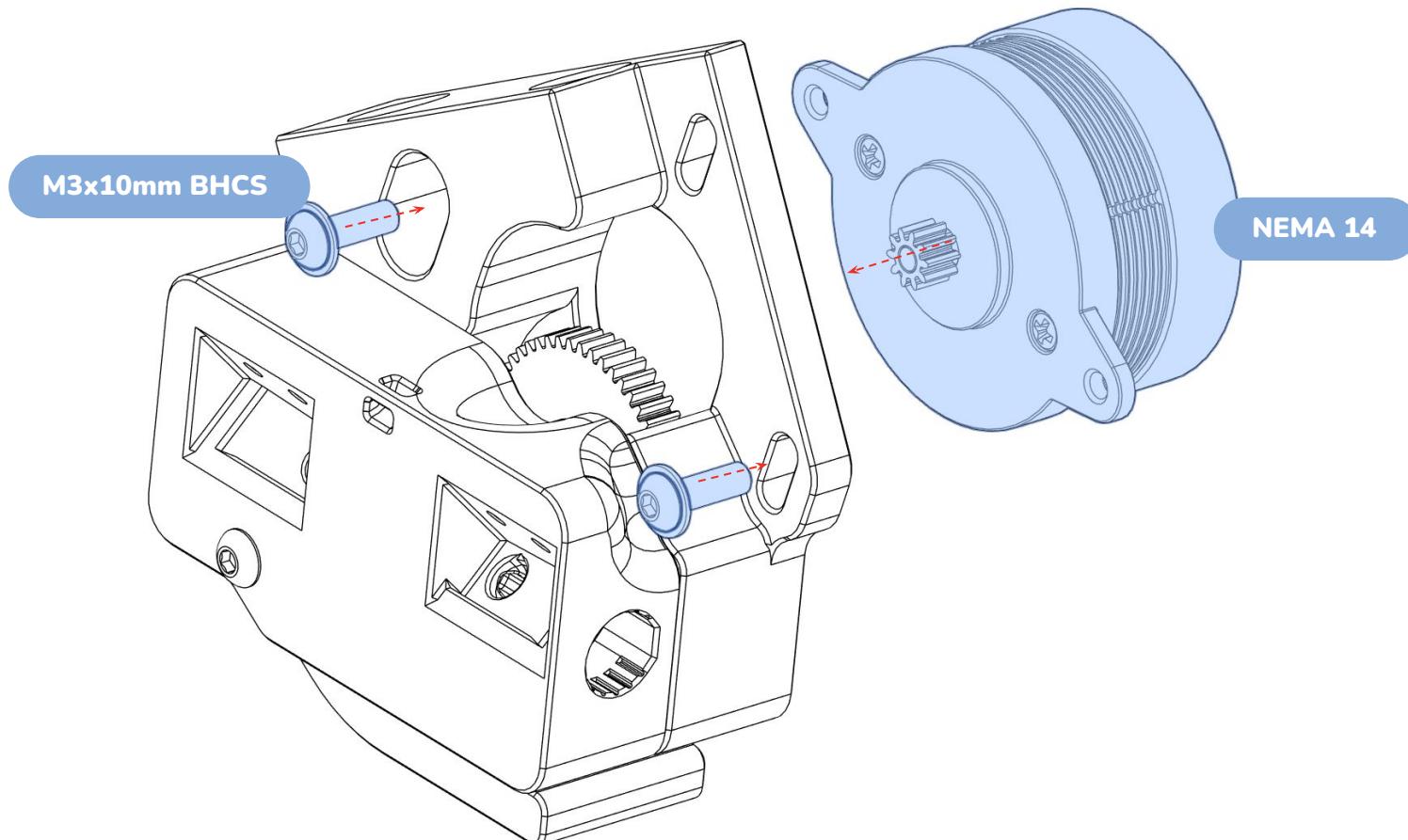
Insert the 17-tooth gear onto the motor shaft.

Secure the motor to the extruder using three M3x10mm BHCS screws with washers.

Before fully tightening the screws, ensure the 17-tooth gear is not pressing too hard against the BMG gear.

Ideally, there should be a slight clearance between them to minimize friction.

EXTRUDER ASSEMBLY



INSTALLING THE GEAR ON THE NEMA 14

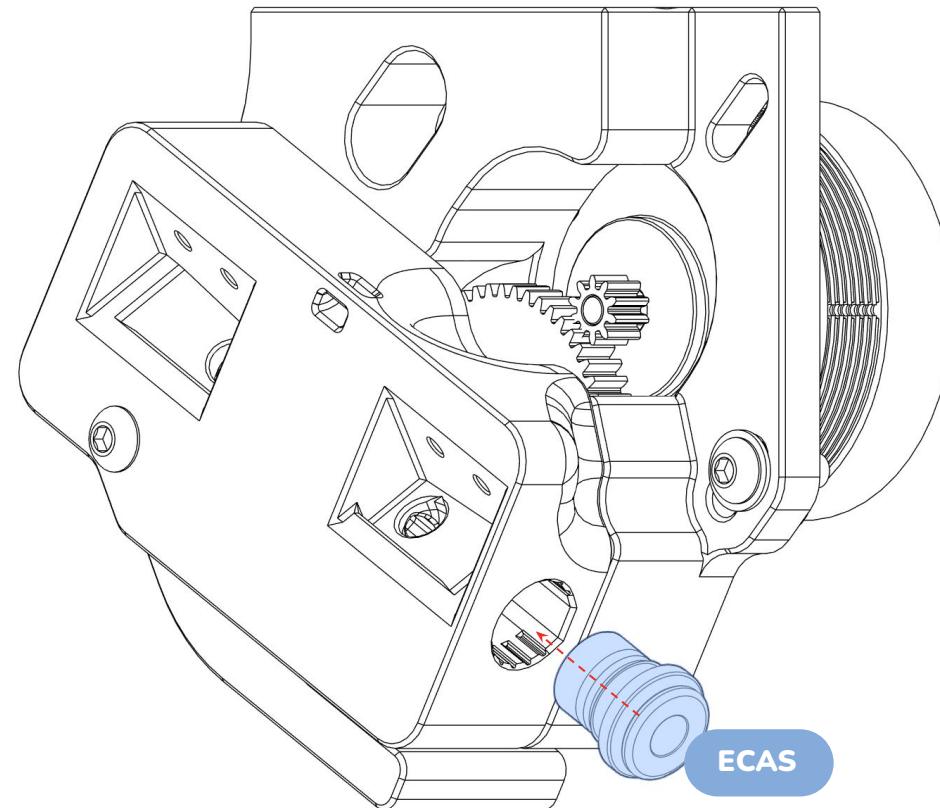
If you opted to use the NEMA 14:

Secure the motor to the extruder using two M3x10mm BHCS screws with washers.

Before fully tightening the screws, ensure the NEMA 14 gear is not pressing too hard against the BMG gear.

Ideally, there should be a slight clearance between them to minimize friction

EXTRUDER ASSEMBLY

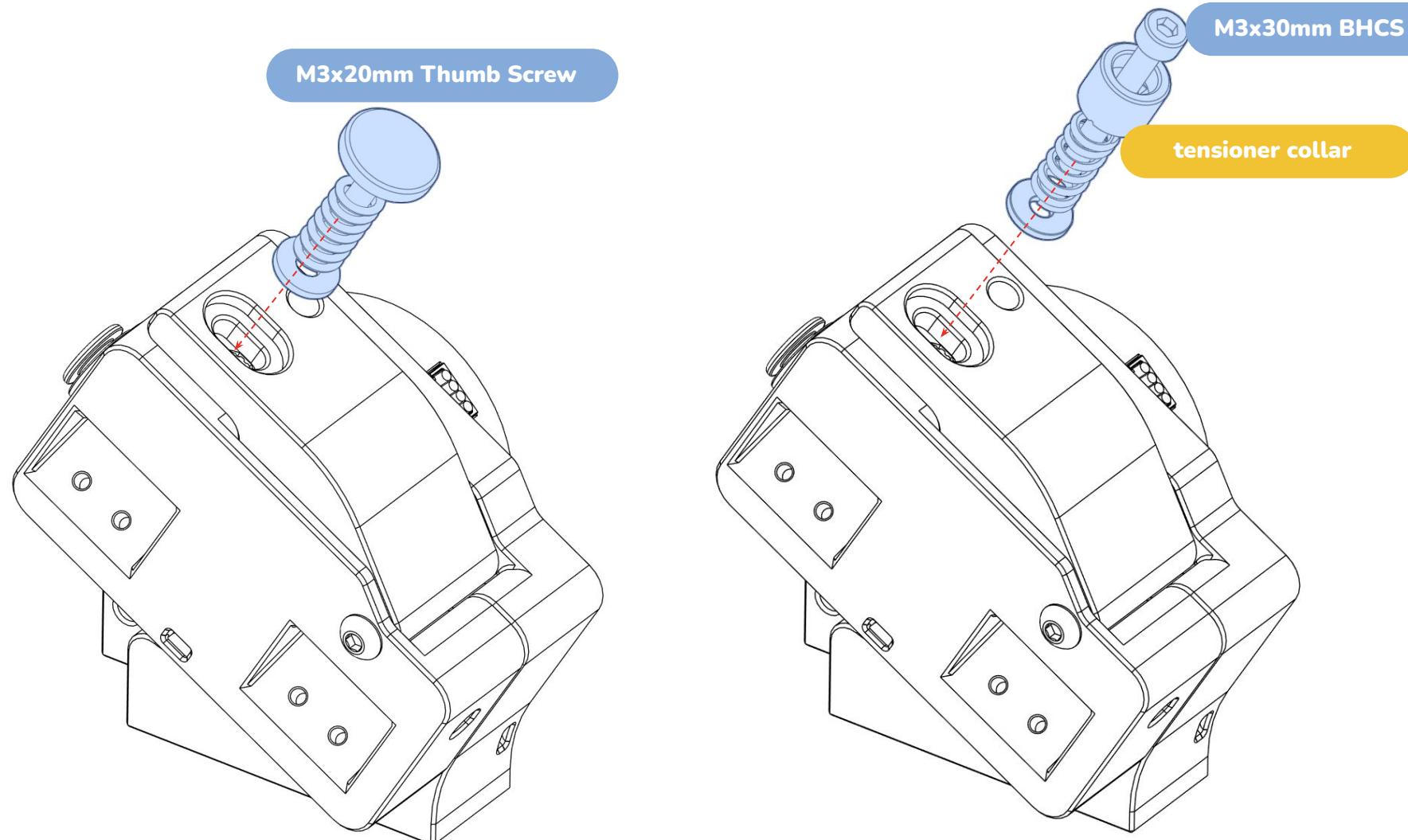


INSTALLING THE ECAS

Insert the ECAS into the designated location.

To assist with installation, you can support the part on a firm surface and gently press it in until fully seated.

EXTRUDER ASSEMBLY



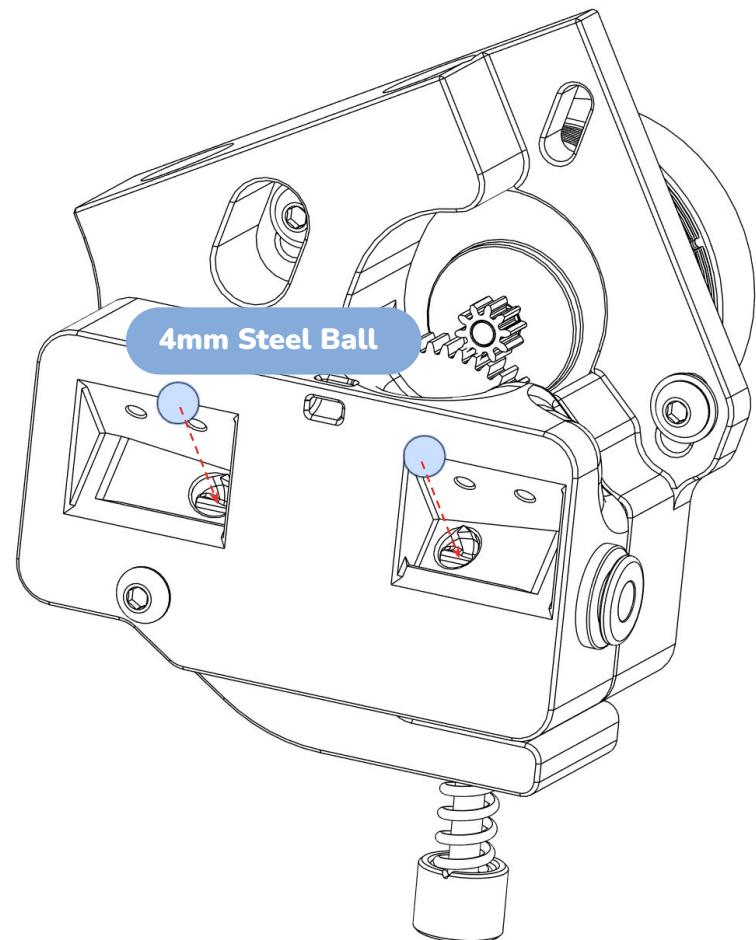
INSTALLING THE SPRING ON THE EXTRUDER

To install the spring on the extruder, you can either:

Use a thumb screw;

Or print the `tensioner_collar` and secure it with an **M3x30 BHCS** screw

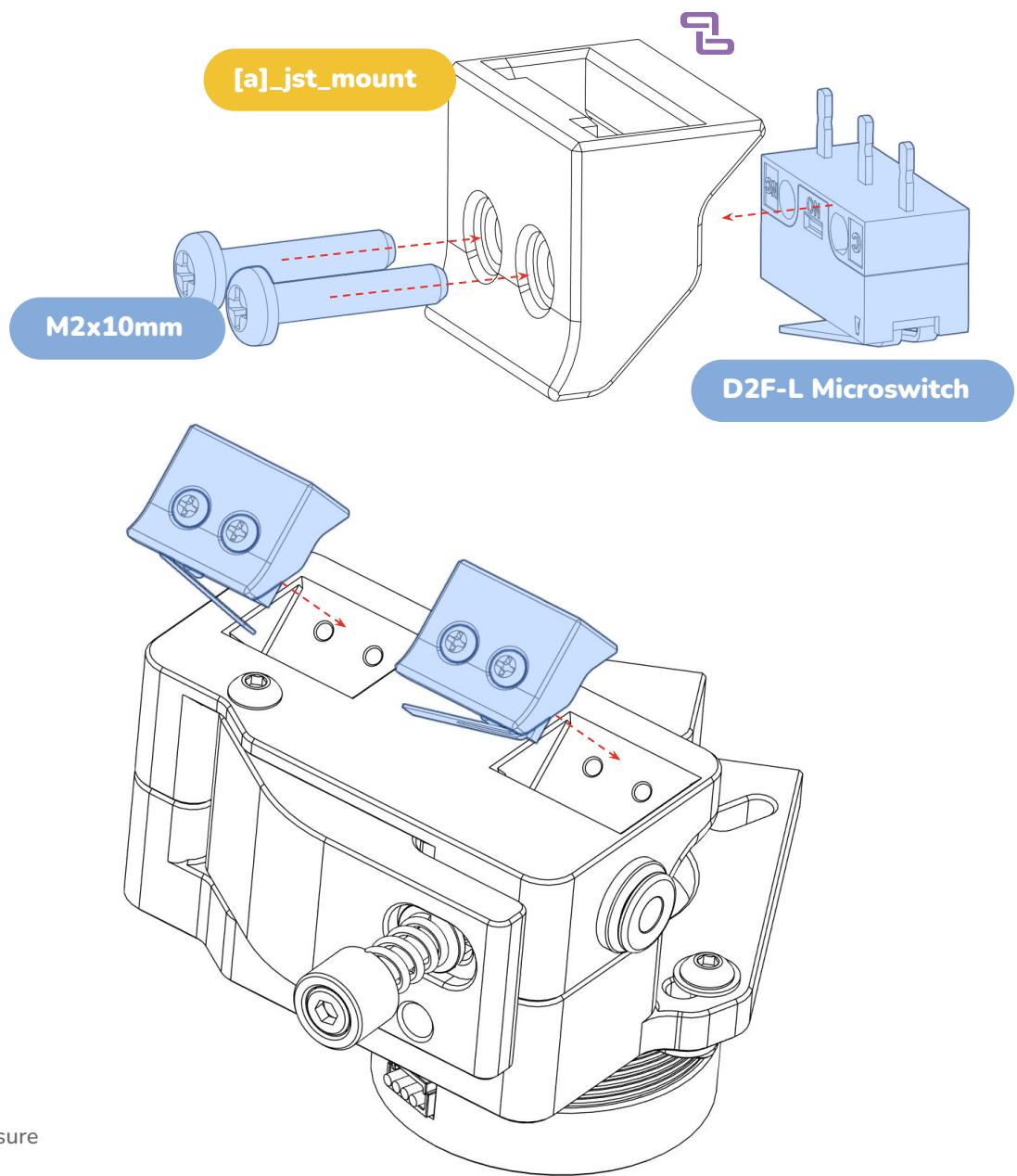
EXTRUDER ASSEMBLY



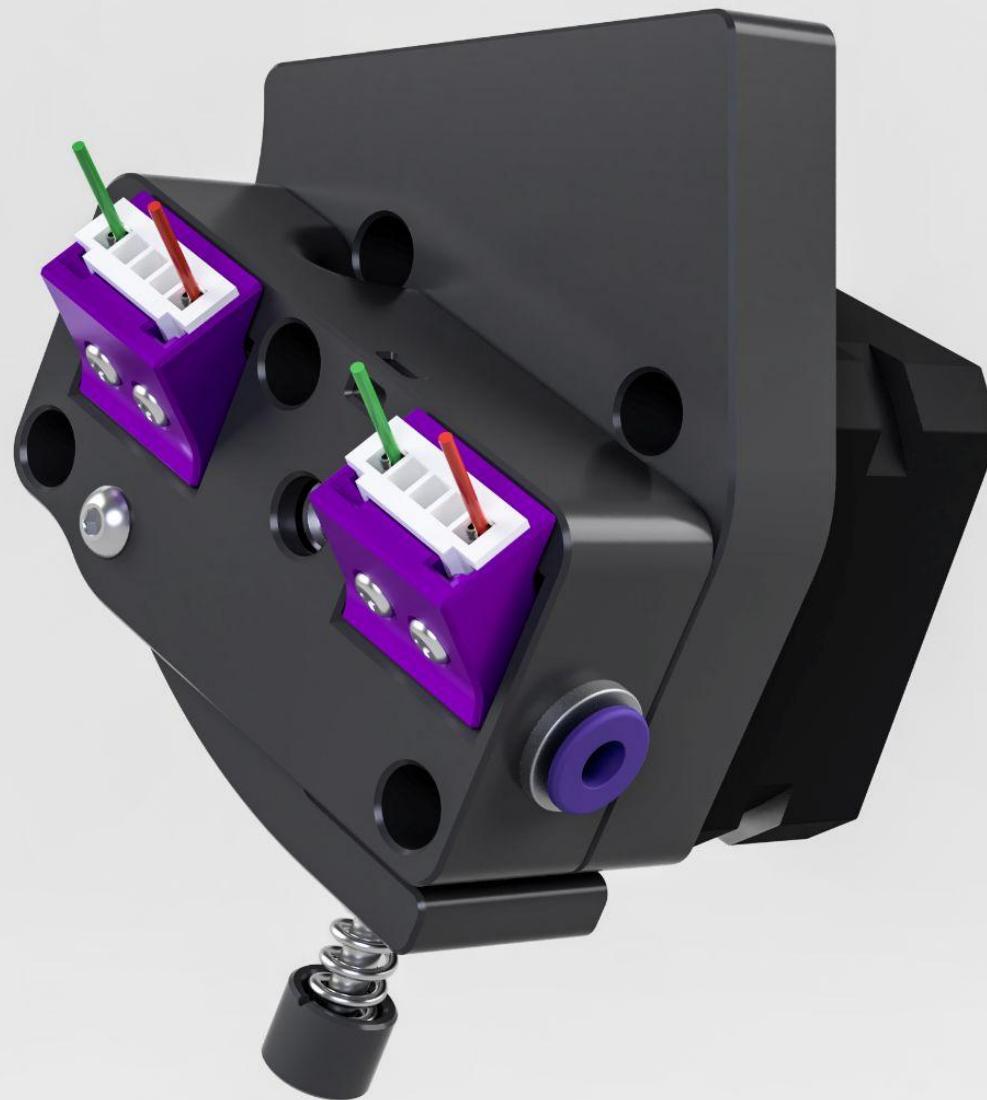
INSTALLING THE FILAMENT SENSOR SWITCHES

Insert the 4 mm steel balls into the extruder.
Fit the D2F-L switch into the **jst_mount** piece.
Place the M2x10mm screws and fasten the assembly to the extruder.

⚠ Pay attention to the switch position! Make sure it is properly aligned to ensure correct operation.



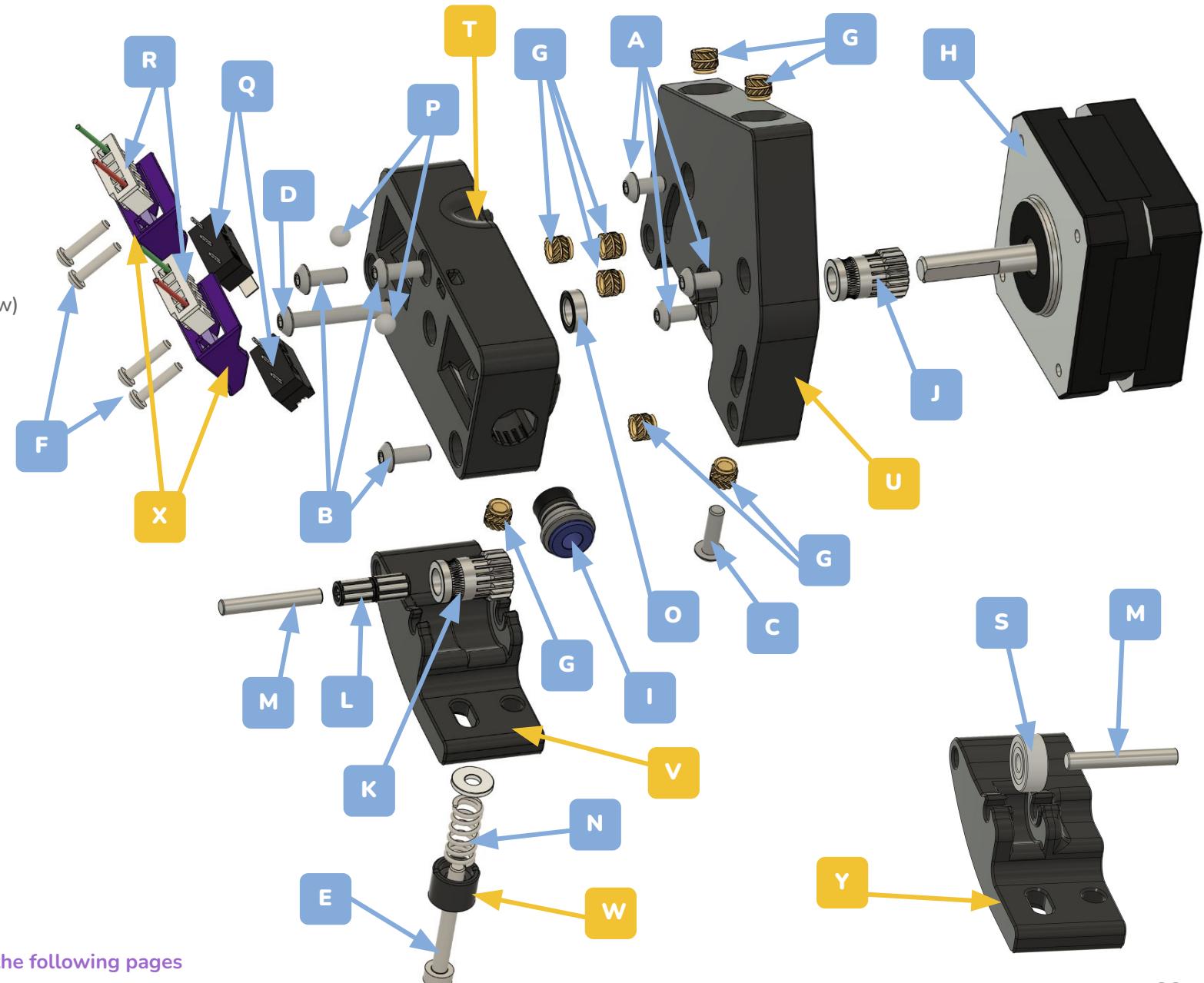
This page intentionally left blank.



EXPLODED VIEW

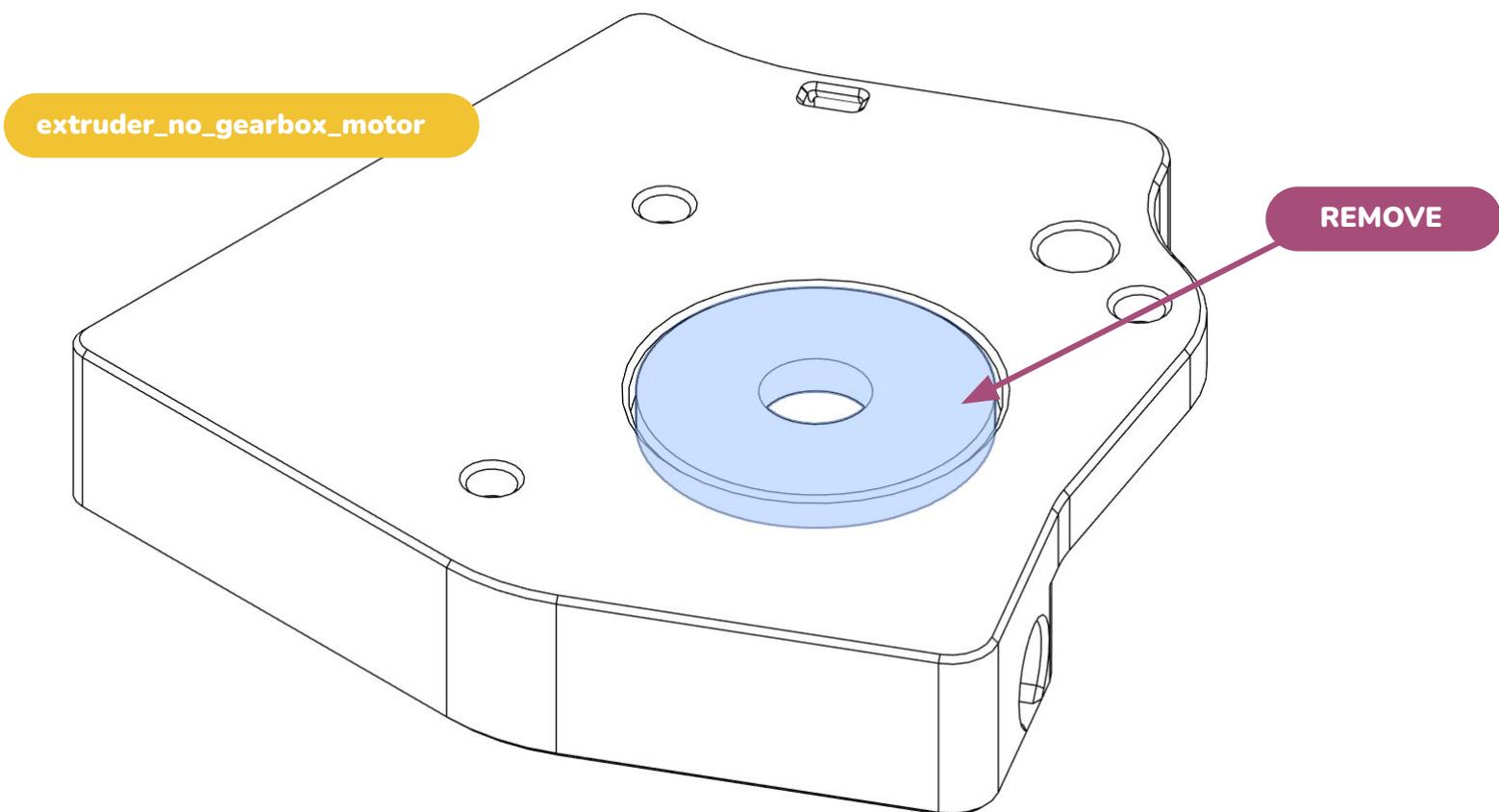
Yeah, looks like rocket science, smells like rocket science but it's not rocket science.

A	3x M3x6mm BHCS
B	3x M3x8mm BHCS
C	1x M3x10mm BHCS
D	1x M3x25mm BHCS
E	1x M3x30mm SHCS
F	4x M2x10mm Self tapping screw
G	8x M3 Threaded Inserts
H	1x NEMA 17 Pancake
I	1x ECAS Coupler
J	1x BMG Gear
K	1x BMG Idler Gear (without set screw)
L	2x BMG Needle Bearings
M	1x BMG 3x20mm Stainless Rod
N	1x BMG Spring
O	1x MR85 Bearing
P	2x 4mm Steel Ball
Q	2x D2F-L Microswitch
R	2x JST XH 2.54mm Female
S	1x 623 Bearing (optional assembly)

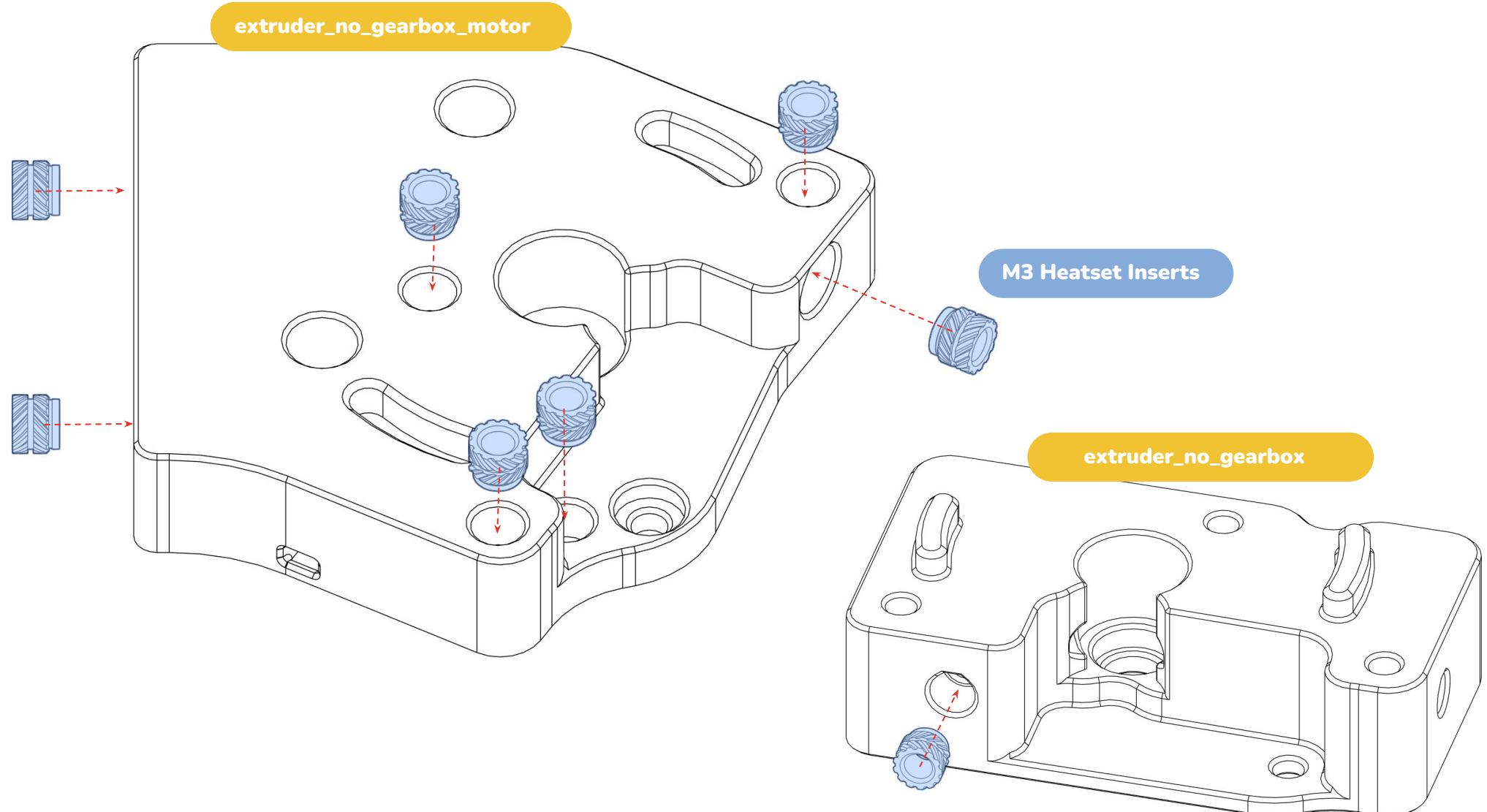


The detailed instructions are on the following pages

EXTRUDER PREPARATION



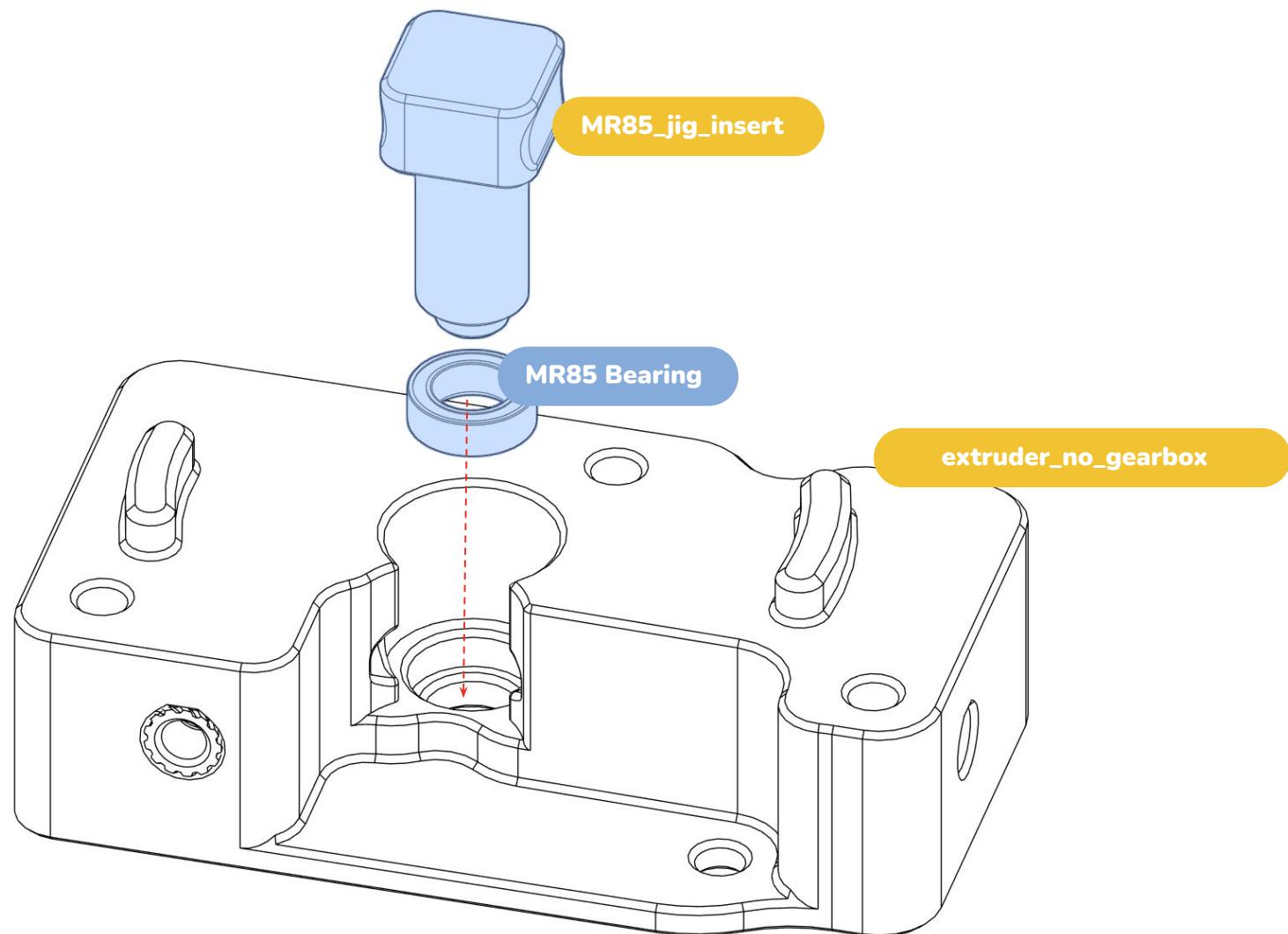
EXTRUDER PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

EXTRUDER ASSEMBLY



BEARING INSTALLATION

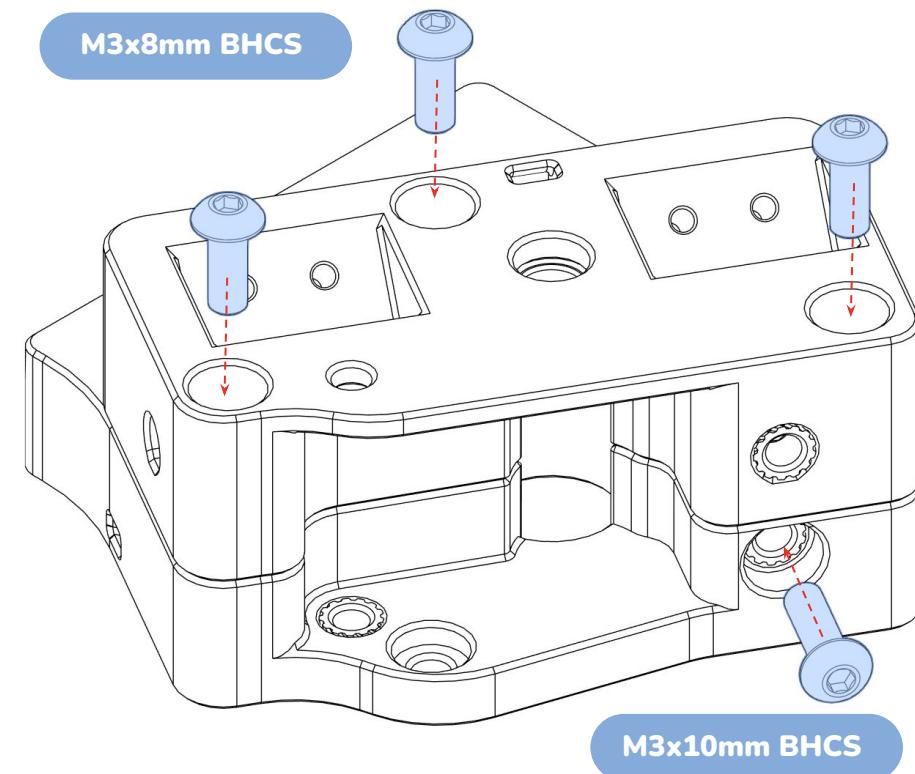
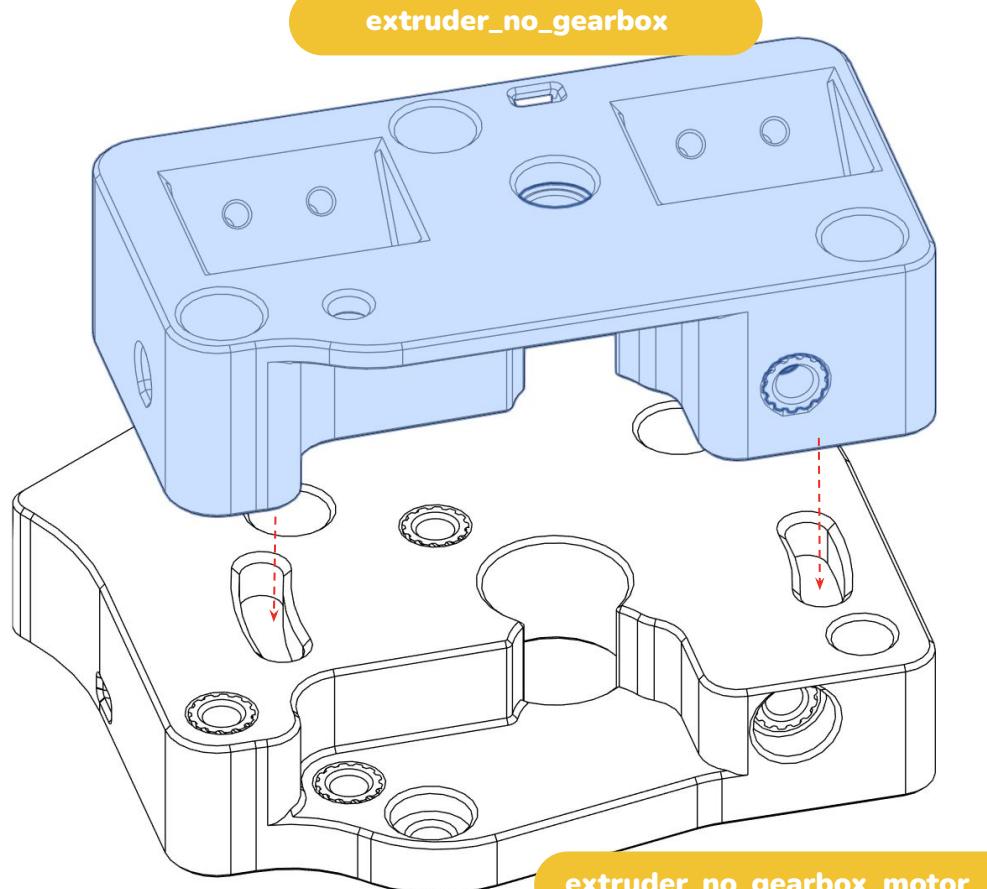
If your motor does not have a long enough shaft to reach this bearing, you can skip this step, the bearing is only needed for motors with extended shafts.

If needed:

Insert the MR85 bearings into the extrude_no_gearbox part.

To ease installation, use the **MR85_jig_insert** tool to help seat the bearings properly.

EXTRUDER ASSEMBLY

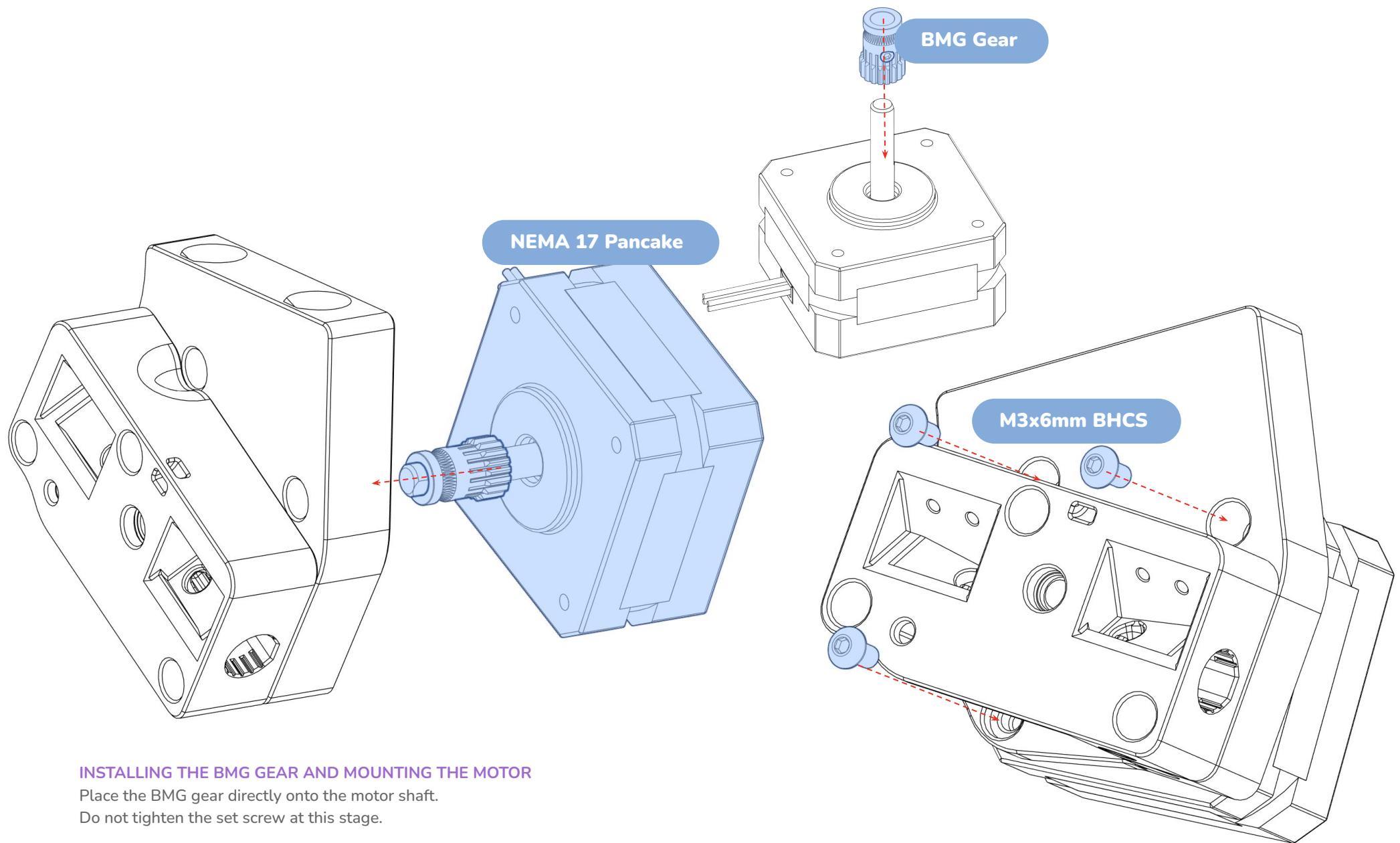


EXTRUDER FRAME ASSEMBLY

Fit the **extruder_no_gearbox** part onto the **extruder_no_gearbox_motor**. Secure the assembly using three M3x8mm BHCS screws.

On the side where the latch will be installed, insert an M3x10mm BHCS screw. This screw will act as a spring pressure relief for the latch, which will be installed in the next steps.

EXTRUDER ASSEMBLY



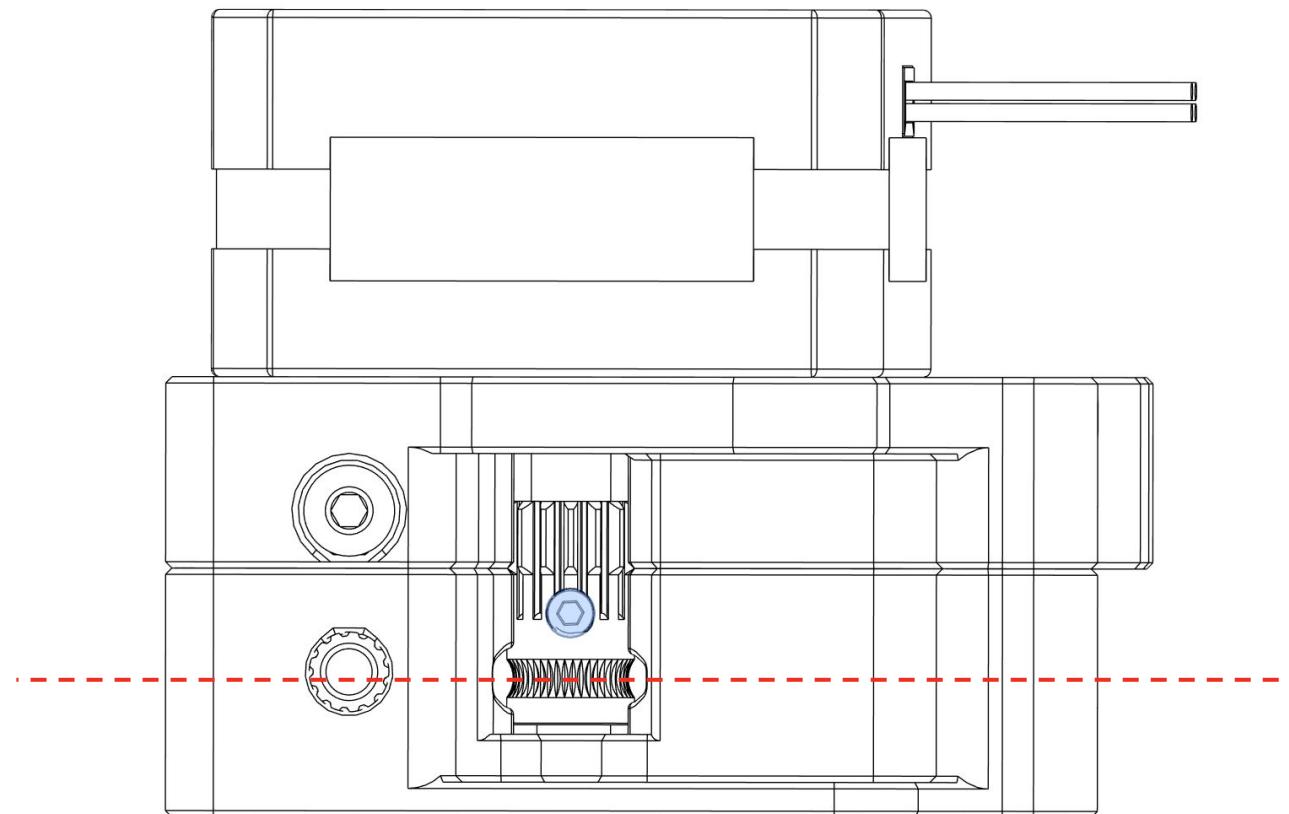
INSTALLING THE BMG GEAR AND MOUNTING THE MOTOR

Place the BMG gear directly onto the motor shaft.

Do not tighten the set screw at this stage.

Position the motor on the extruder and secure it using three M3x6mm BHCS screws

EXTRUDER ALIGNMENT



GEAR ALIGNMENT WITH FILAMENT PATH

Loosen the grub screw already installed in the BMG gear.

Insert a piece of filament through the extruder's filament path until it comes out the other side.

With the filament in place, the BMG gear will naturally align to the correct position.

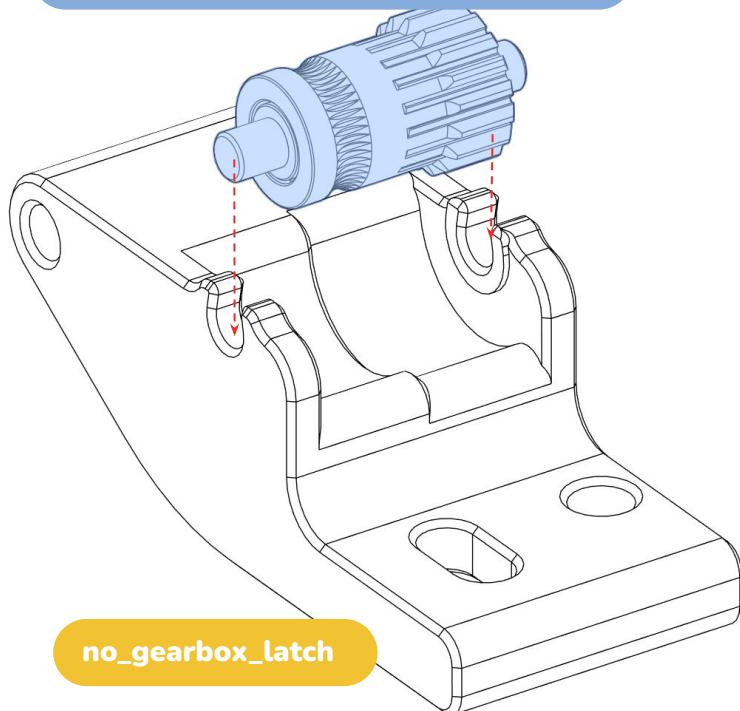
While keeping the filament in place, tighten the grub screw to secure the gear.

LATCH PREPARATION

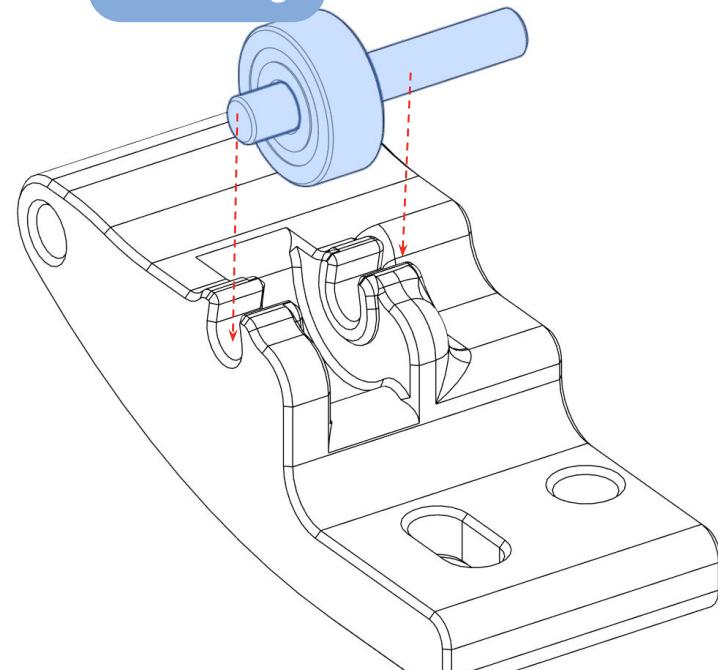


LATCH ASSEMBLY

BMG Idler Gear (without set screw)



623 Bearing



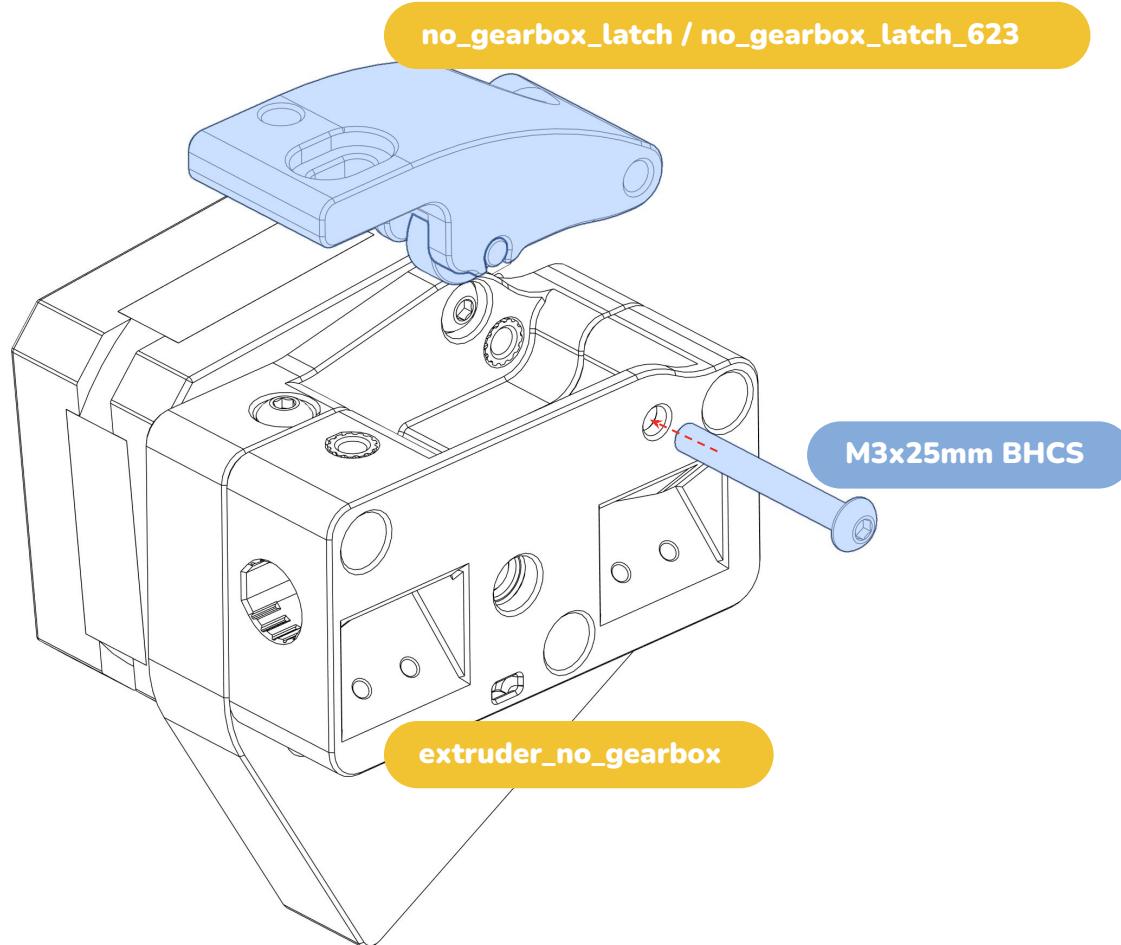
IDLER INSTALLATION

At this stage, you can choose between two mounting options:

BMG Idler and 623 Bearing

In both cases, the idler must be press-fit into the latch.

Support the part on a firm surface and gently press the idler in until fully seated.

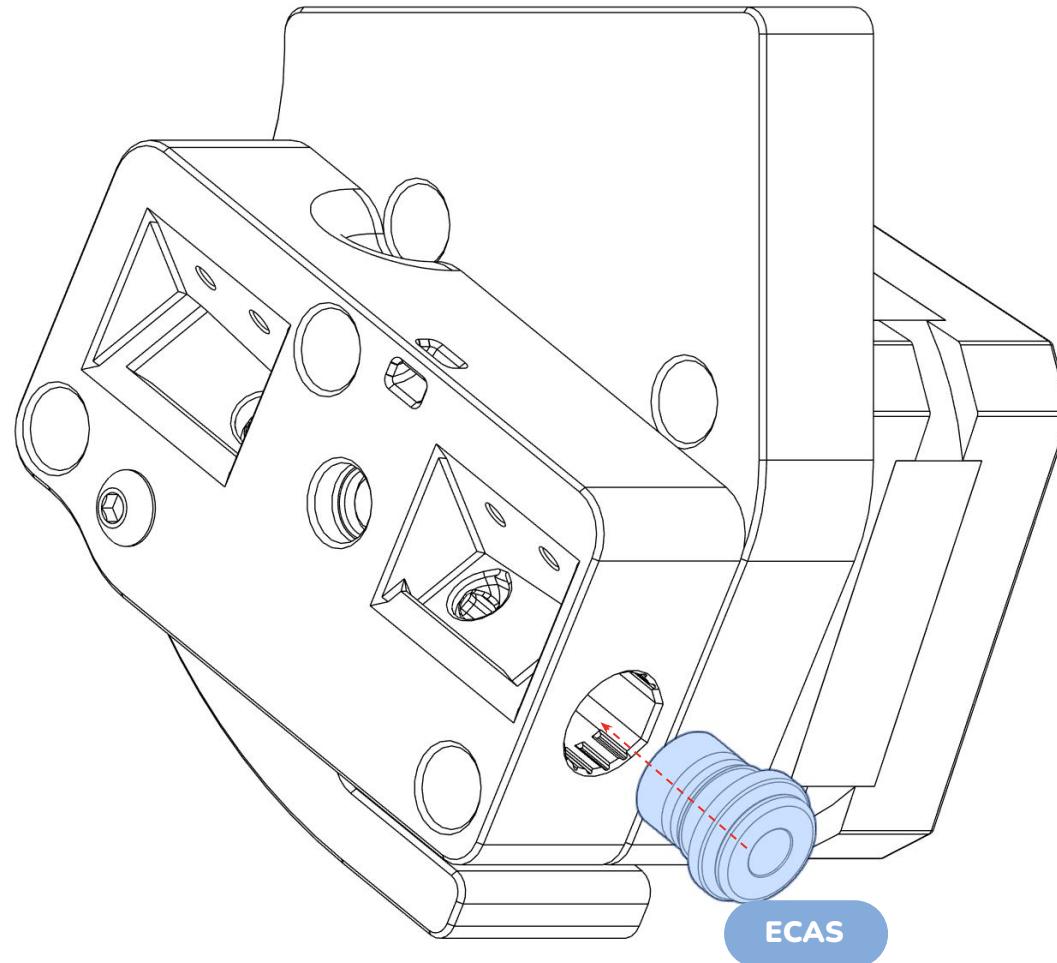


ATTACHING THE LATCH TO THE EXTRUDER

With the latch assembled, insert it into the extruder and secure it using an M3x30 BHCS screw.

⚠ Be careful not to overtighten the screw, as the latch must move freely

EXTRUDER ASSEMBLY

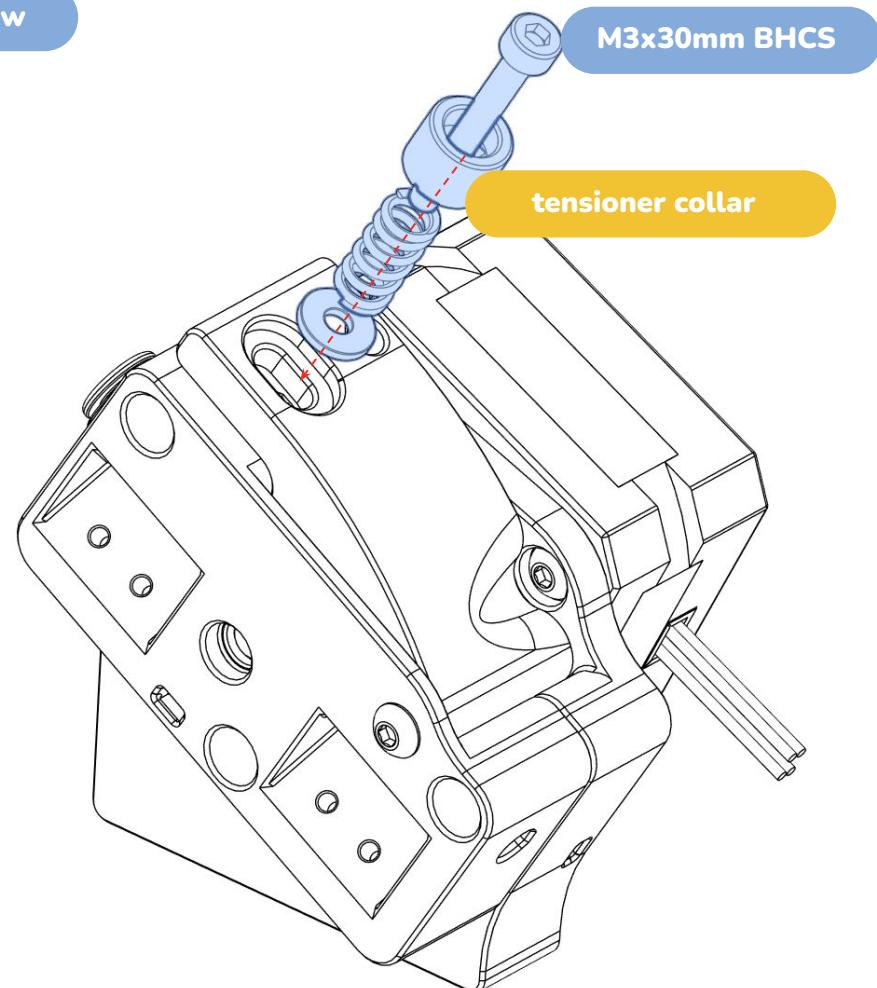
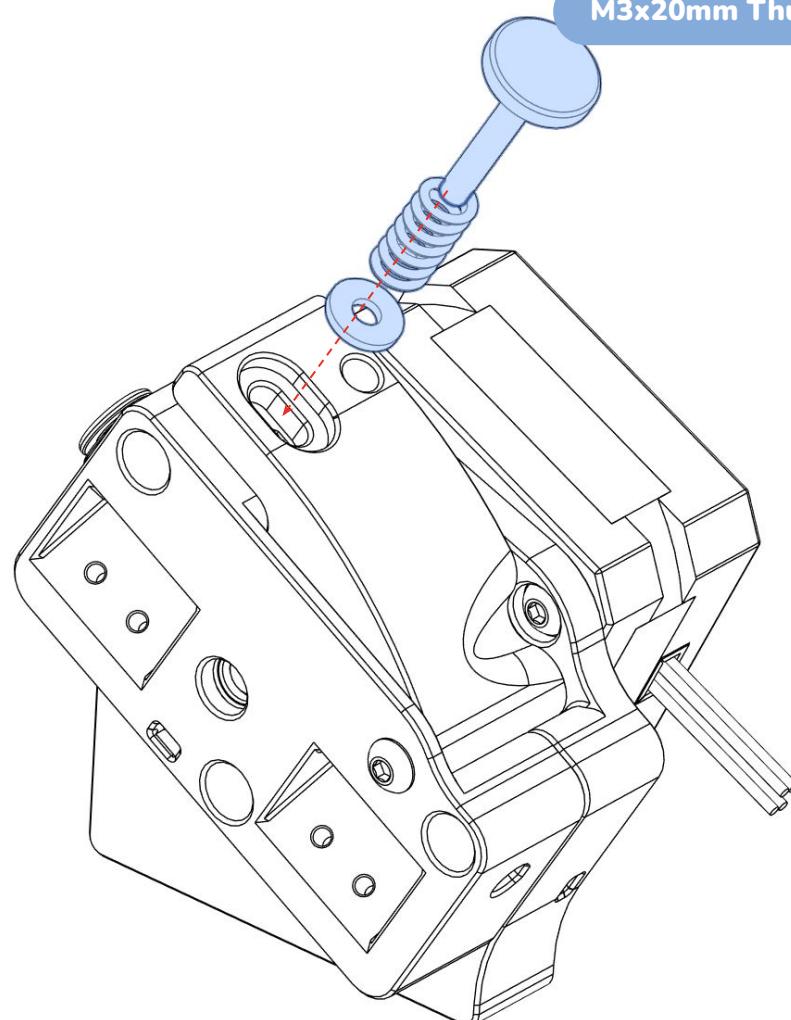


INSTALLING THE ECAS

Insert the ECAS into the designated location.

To assist with installation, you can support the part on a firm surface and gently press it in until fully seated.

EXTRUDER ASSEMBLY

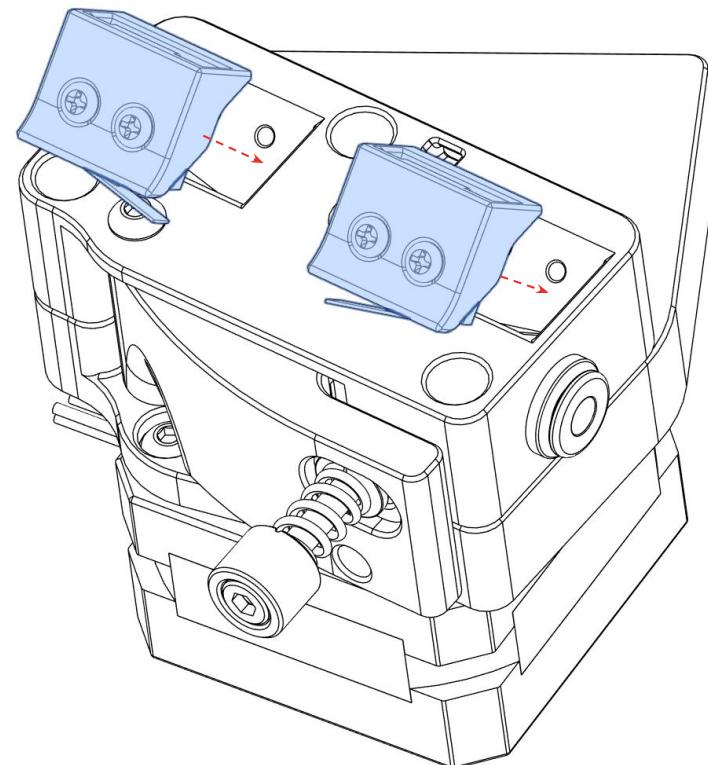
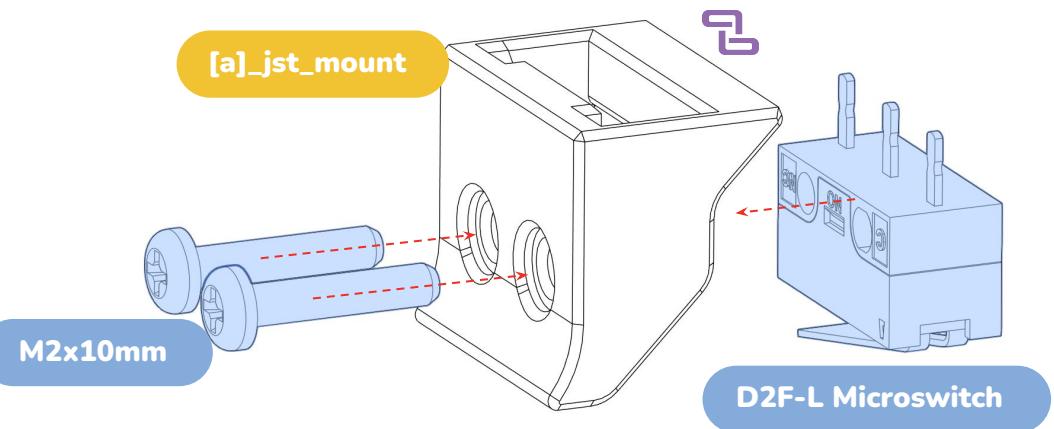
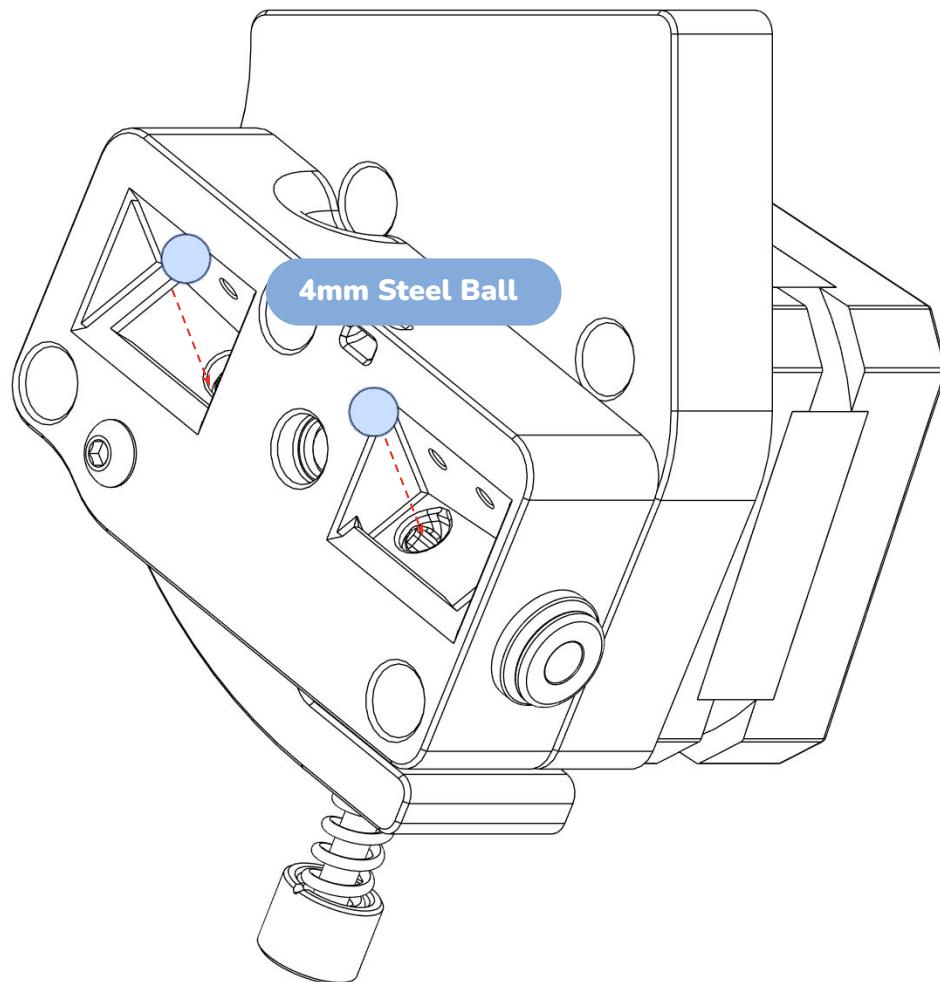


INSTALLING THE SPRING ON THE EXTRUDER

To install the spring on the extruder, you can either:

- Use a thumb screw;
- Or print the **tensioner_collar** and secure it with an M3x30 BHCS screw

SWITCH ASSEMBLY



INSTALLING THE FILAMENT SENSOR SWITCHES

Insert the 4 mm steel balls into the extruder.
Fit the D2F-L switch into the **jst_mount** piece.
Place the M2x10mm screws and fasten the assembly to the extruder.

⚠ Pay attention to the switch position! Make sure it is properly aligned to ensure correct operation.

This page intentionally left blank.

EJECT BUTTON

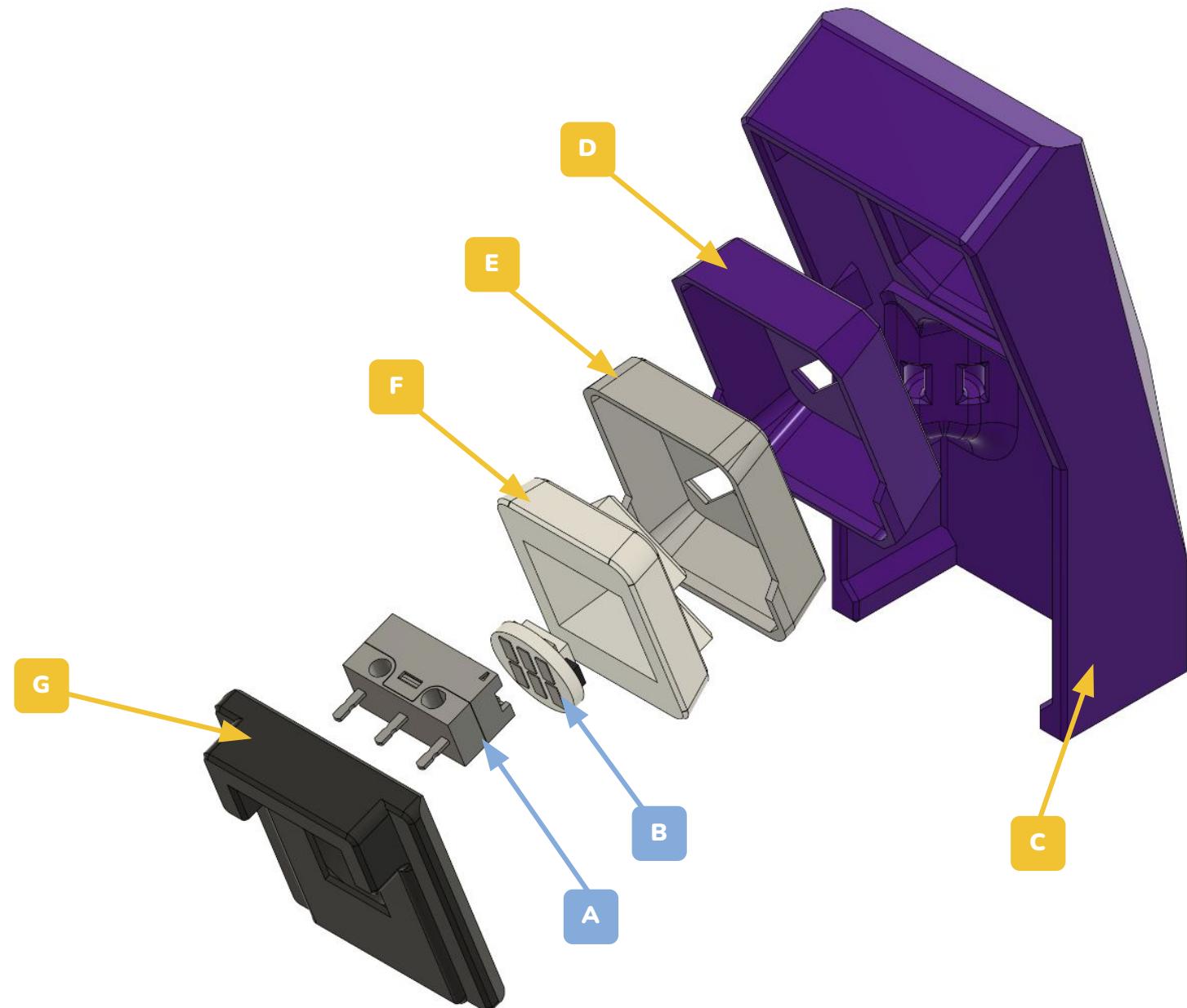
quattro box



EXPLODED VIEW

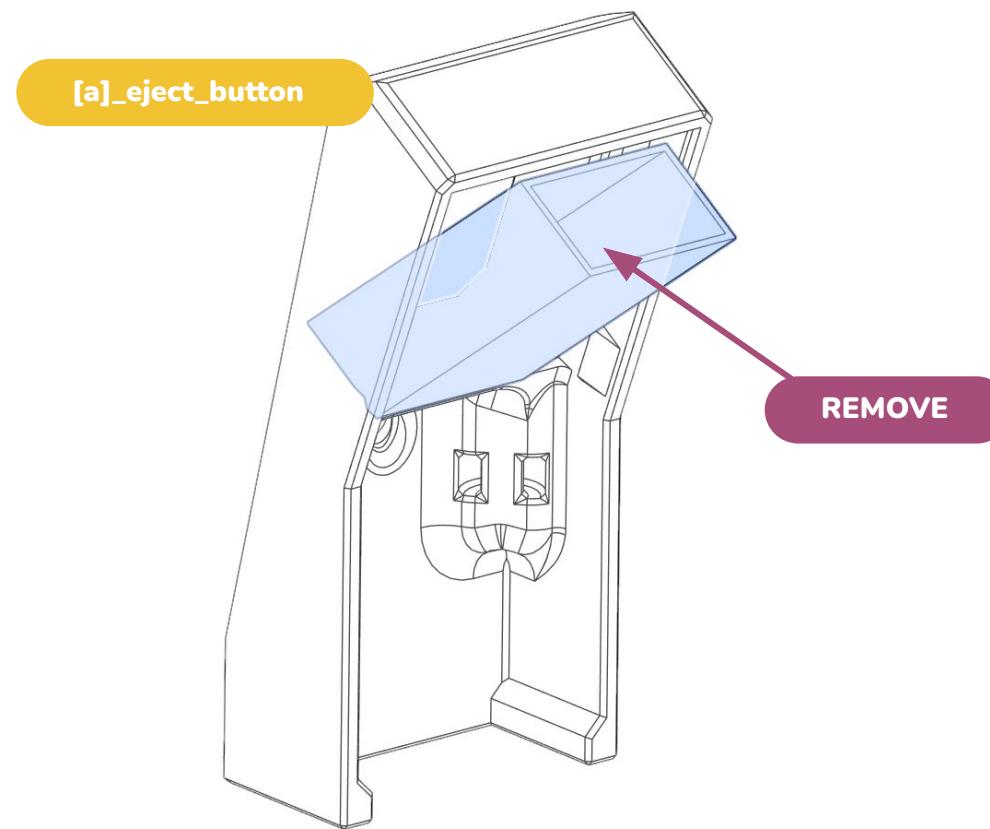
A
B
1x D2F Microswitch
1x Neopixel LED PCB

C
D
E
F
G
1x [a]_eject_button
1x [a]_button_cover
1x [o]_led_cover
1x [c]_led_diffuser
1x [o]_led_switch_mount

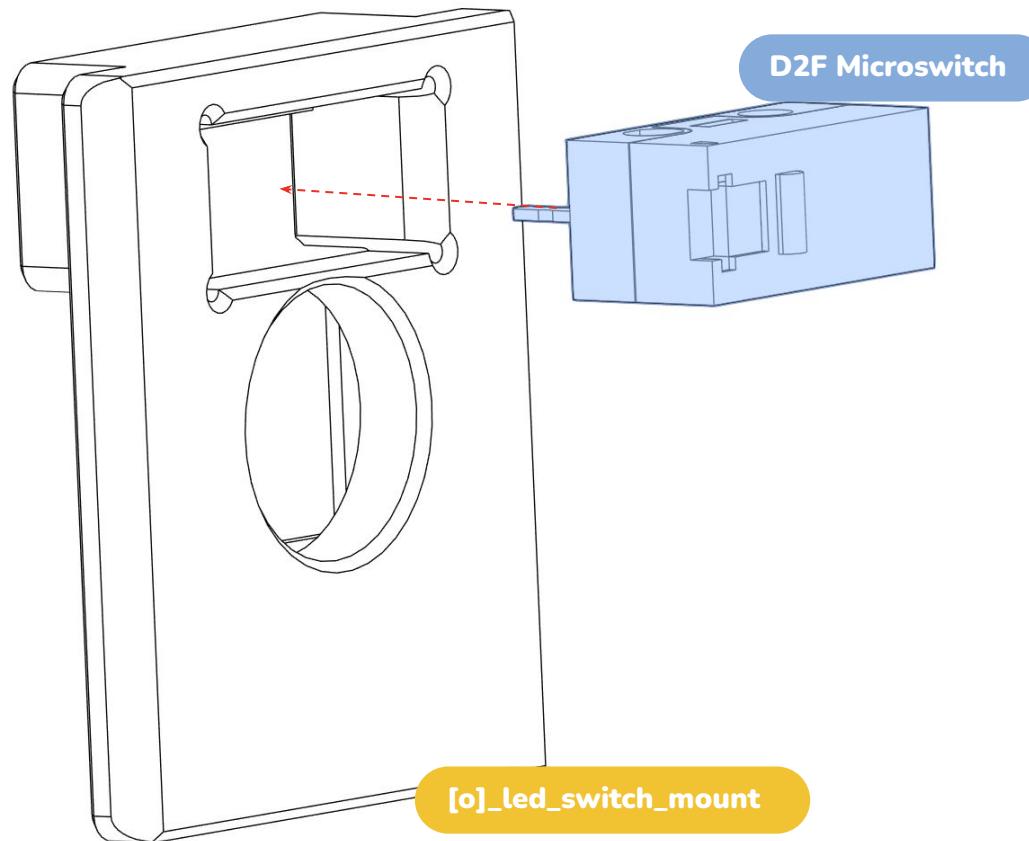


The detailed instructions are on the following pages

BUTTON PREPARATION



EJECT BUTTON ASSEMBLY



INSTALLING THE BUTTON SWITCH

With the wires already soldered to the switch, as shown on page 20, insert the switch into the **[o]_led_switch_mount** part.

Align the switch as shown in the reference image and push it all the way in until it rests against the internal stop.

⚠ Important: the switch used for the button is the D2F model without lever. Make sure you are using the correct type to ensure proper operation

EJECT BUTTON ASSEMBLY



INSTALLING THE LED

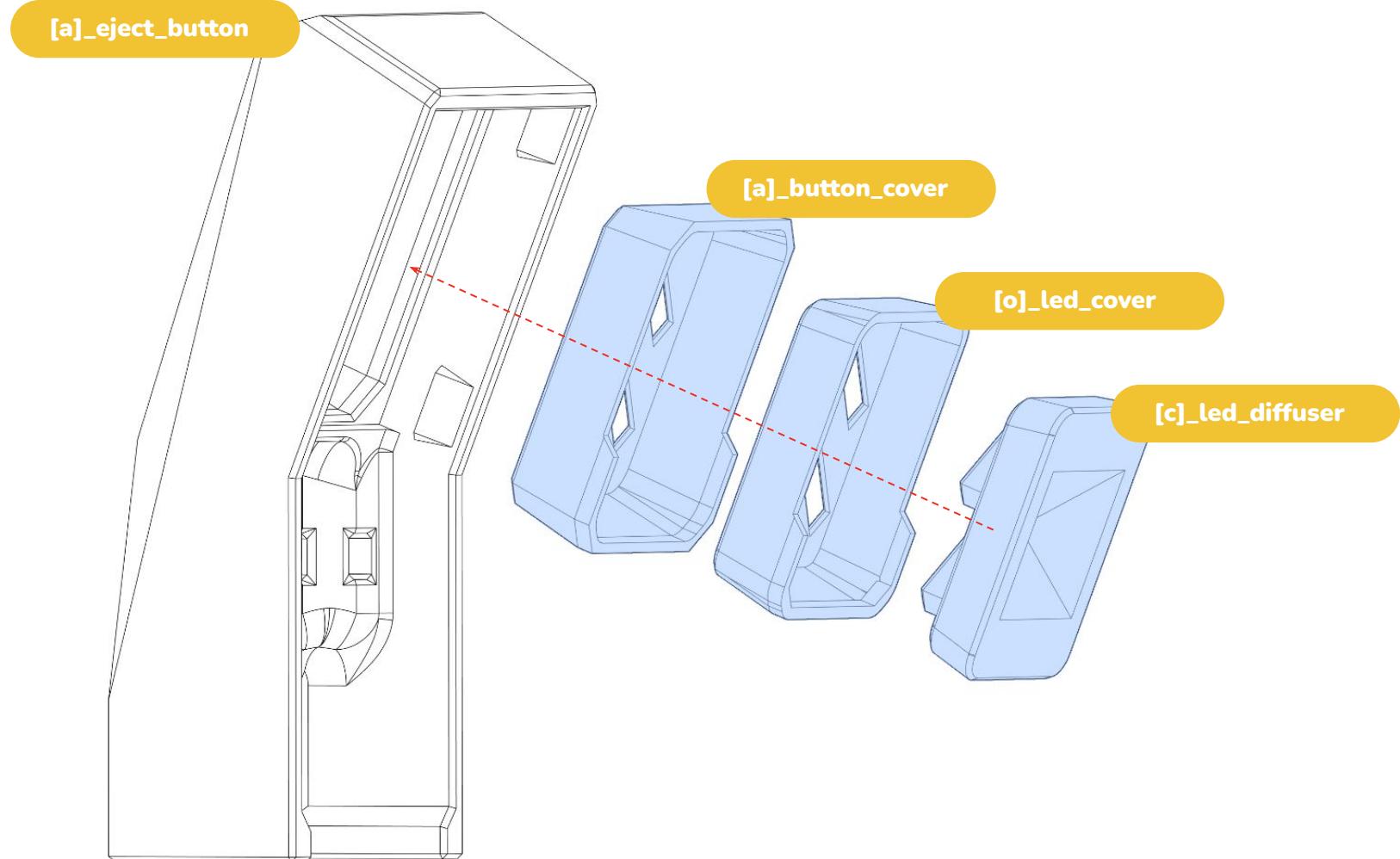
With the wires already soldered to the LED, as shown on [pages 18 and 19](#):

Insert the LED through the hole at a 45° angle.

Once it passes through, push the LED again until it fully snaps into place.

⚠ Important: make sure the LED wires are aligned with the bottom exit of the button

EJECT BUTTON ASSEMBLY

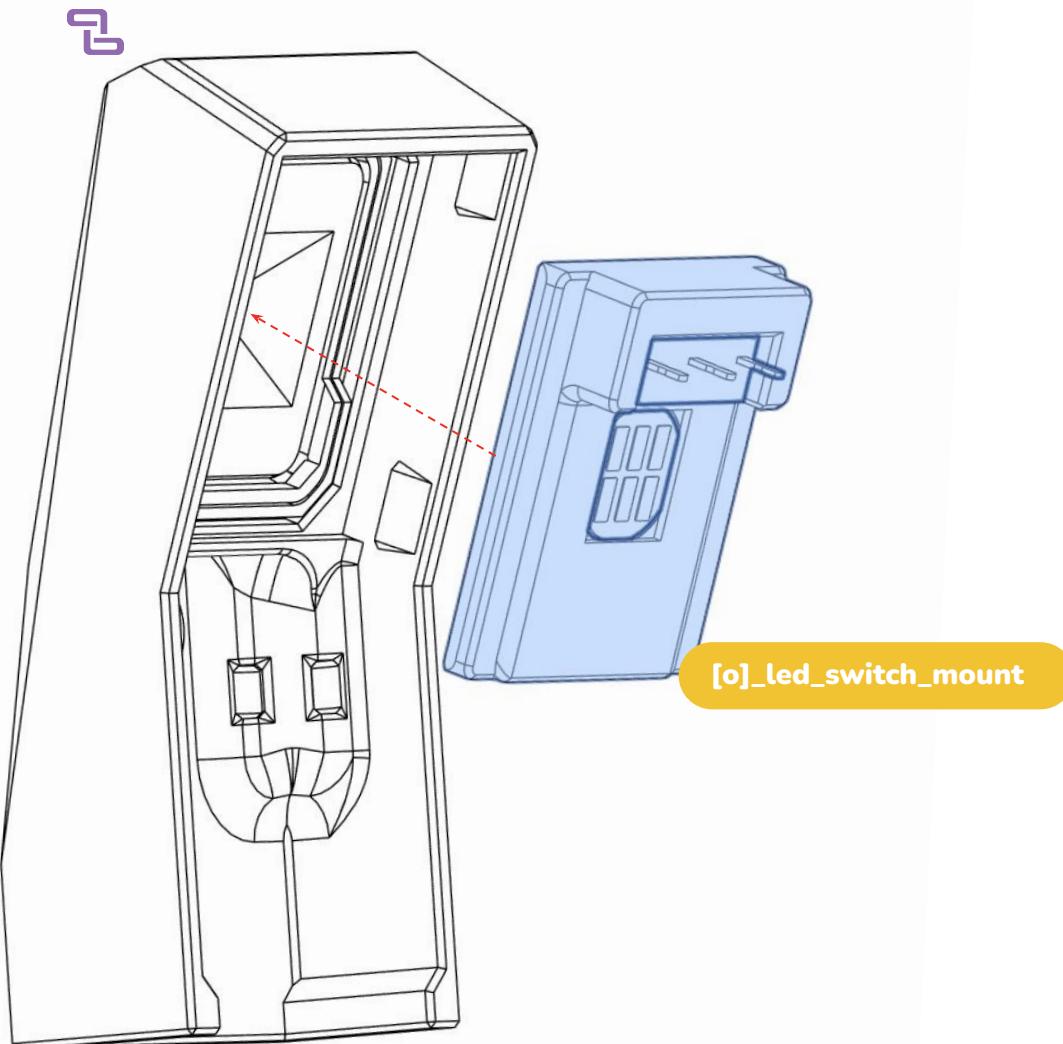


ASSEMBLING THE BUTTON SECTION

Join the parts following the orientation shown in the reference image.

Note that the [o]_led_cover has a slot specifically for the [c]_led_diffuser, make sure the diffuser is properly seated in place.

EJECT BUTTON ASSEMBLY

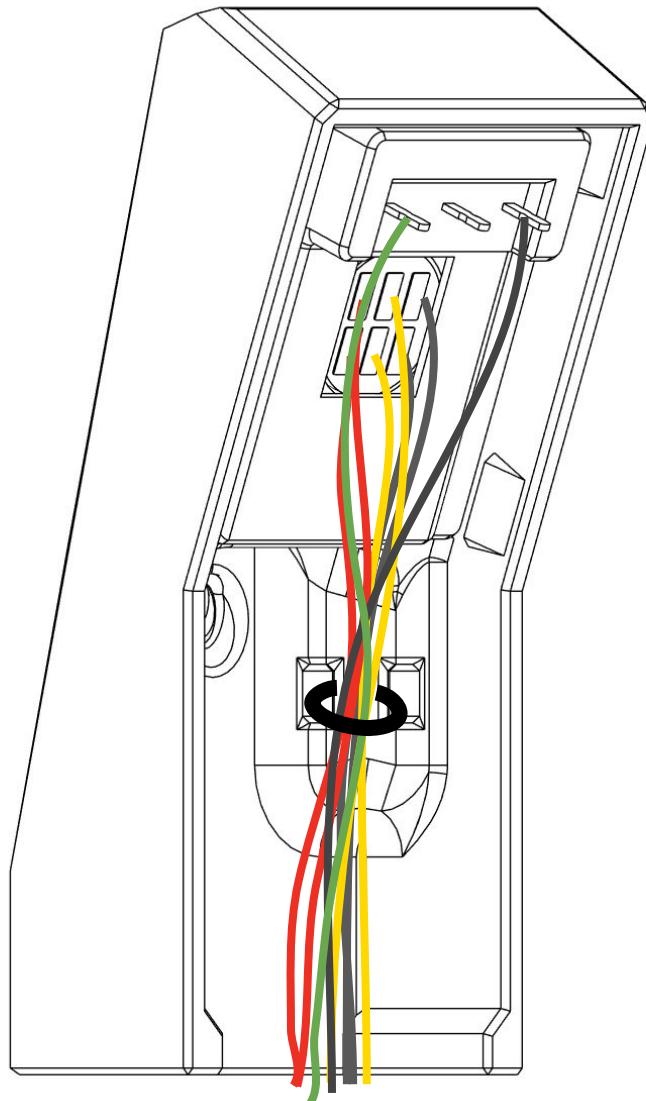


INSTALLING THE SWITCH MOUNT ON THE BUTTON

Fit the [o]_led_switch_mount into the button assembly.

Ensure the switch is being properly actuated when pressing the button, it should click smoothly and reliably.

EJECT BUTTON ASSEMBLY



CABLE MANAGEMENT

The wires should be arranged as shown in the reference image.

To keep everything tidy, you can use a zip tie to bundle and secure the wires in place.

This page intentionally left blank.

LANES



In side™

quattro box

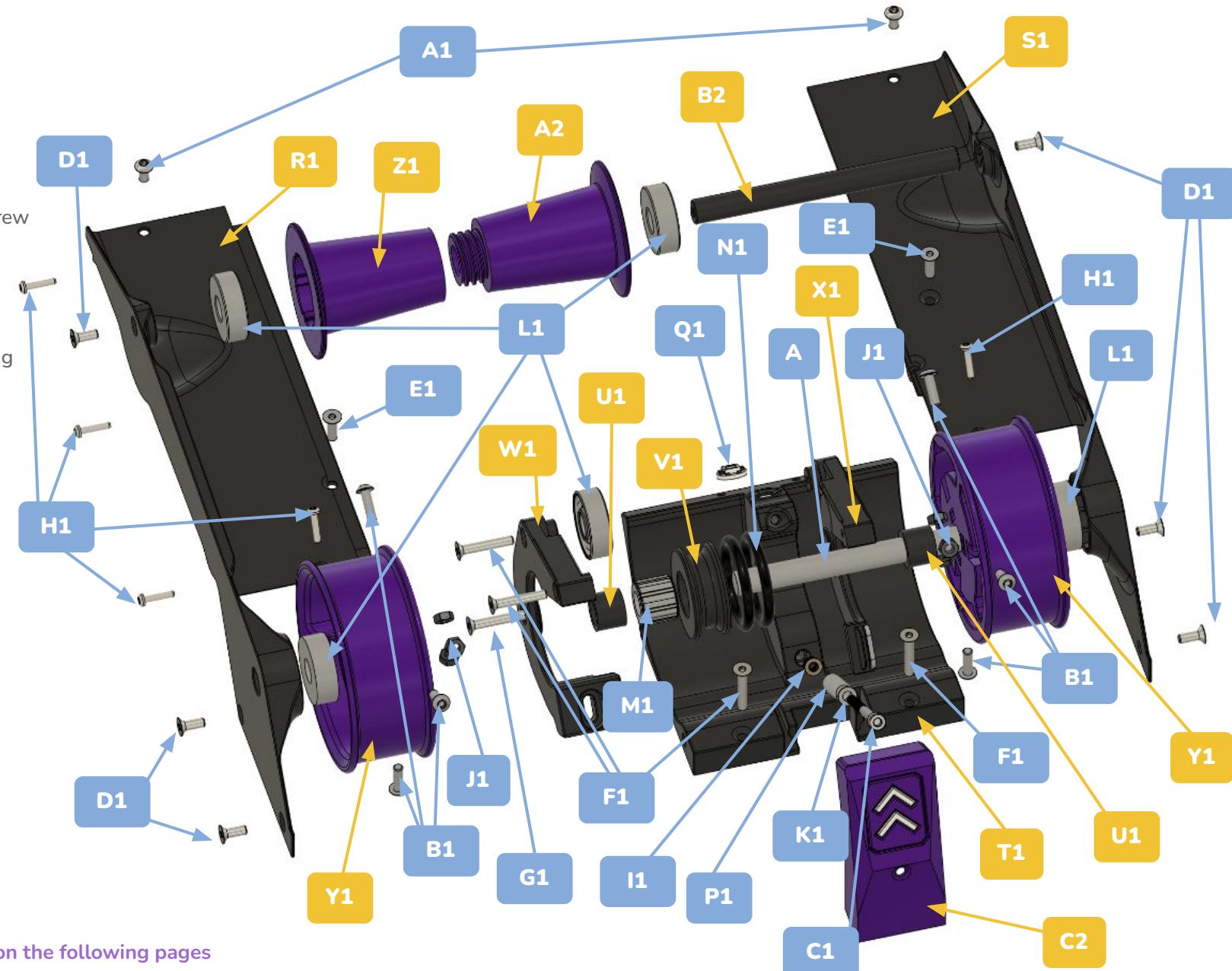


EXPLODED VIEW

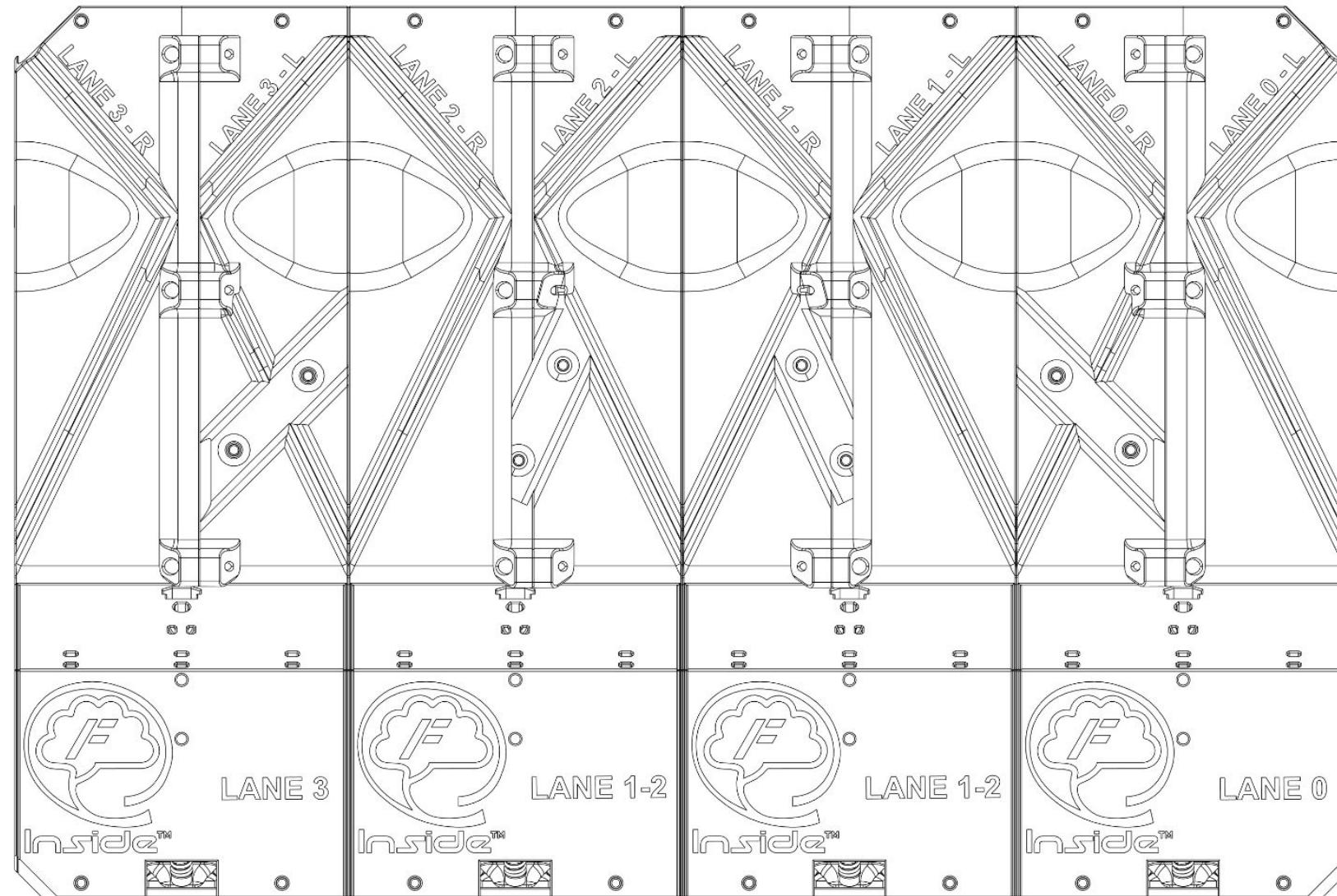
Is it explanatory? No. Is it confident? Absolutely.

A1	2x M3x6mm BHCS
B1	6x M3x10mm BHCS
C1	1x M3x35mm BHCS
D1	6x M3x8mm FHCS
E1	2x M3x10mm FHCS
F1	4x M3x16mm FHCS
G1	1x M3x20mm FHCS
H1	5x M2x10mm Self tapping screw
I1	1x M3 Threaded Inserts
J1	6x M3 Hex nut
K1	1x M3 Washer
L1	5x 608 Bearing
M1	1x HF081412 one-way bearing
N1	2x O'ring 28x20x4mm
O1	1x 8mmx80mm shaft
P1	1x Springs 15mm
Q1	1x Neopixel LED PCB

R1	1x left_base
S1	1x right_base
T1	1x tensioner_mount_load
U1	2x spacer
V1	1x center_drive_roller
W1	1x tensioner_arm_left
X1	1x tensioner_arm_right
Y1	2x [a]_rim_roller
Z1	1x [a]_idler_roller_(female)
A2	1x [a]_idler_roller_(male)
B2	1x idler_roller_axle
C2	1x button_eject



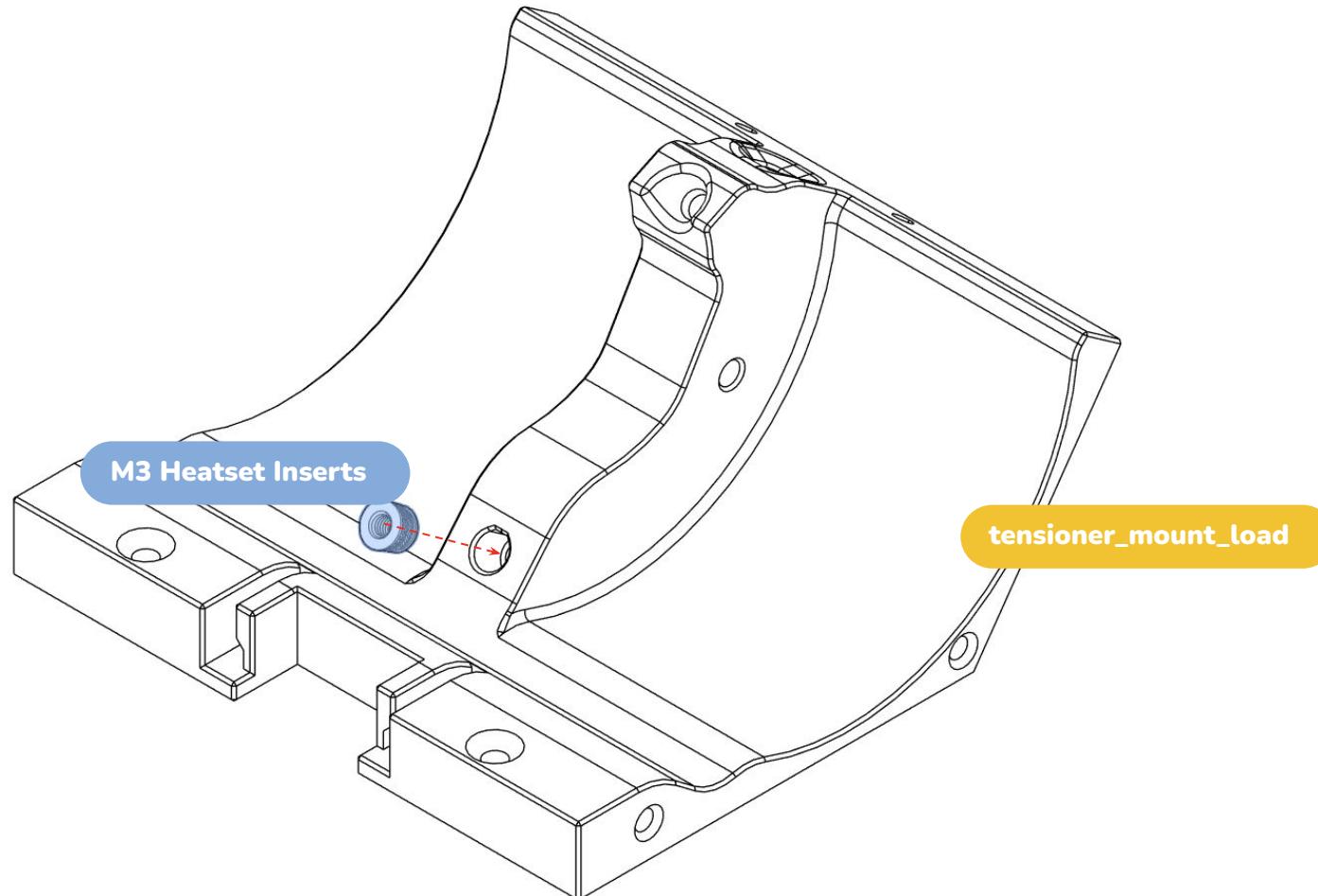
The detailed instructions are on the following pages



LANE IDENTIFICATION ON THE PARTS

To make assembly easier, each part is labeled on the bottom with the lane it represents (corresponding filament path)

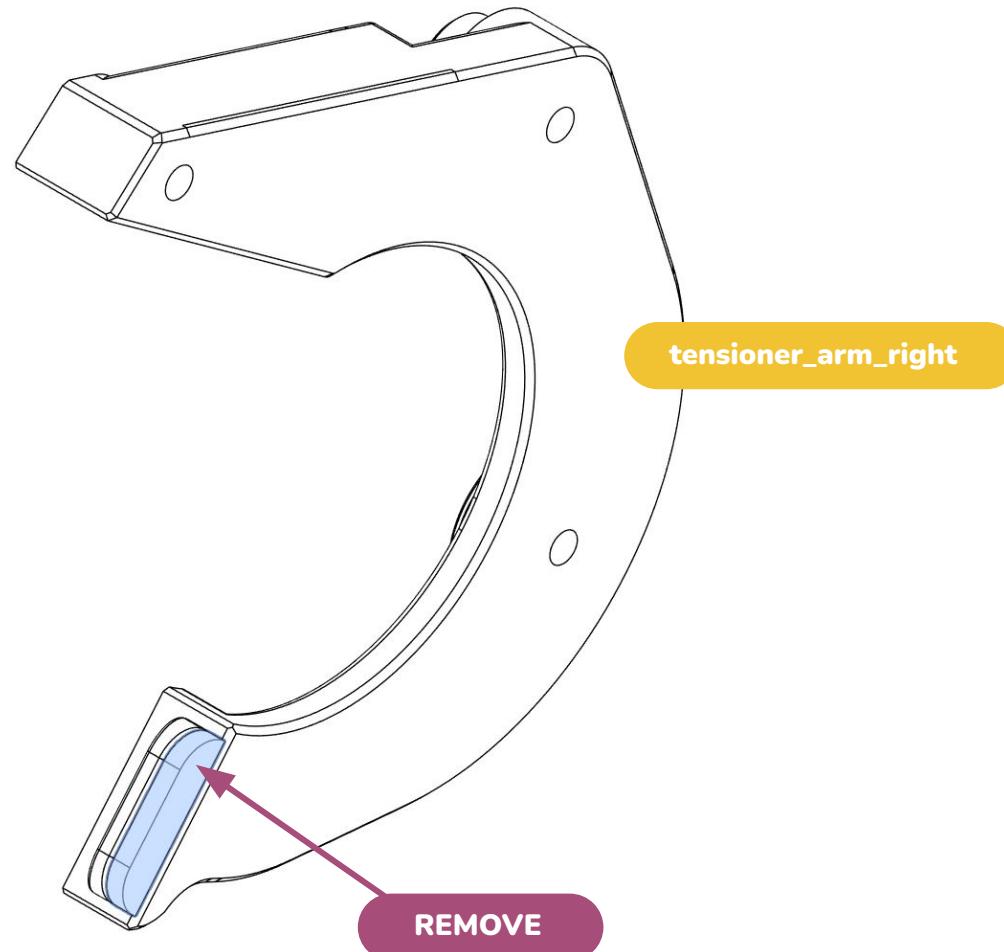
FILAMENTALIST PREPARATION



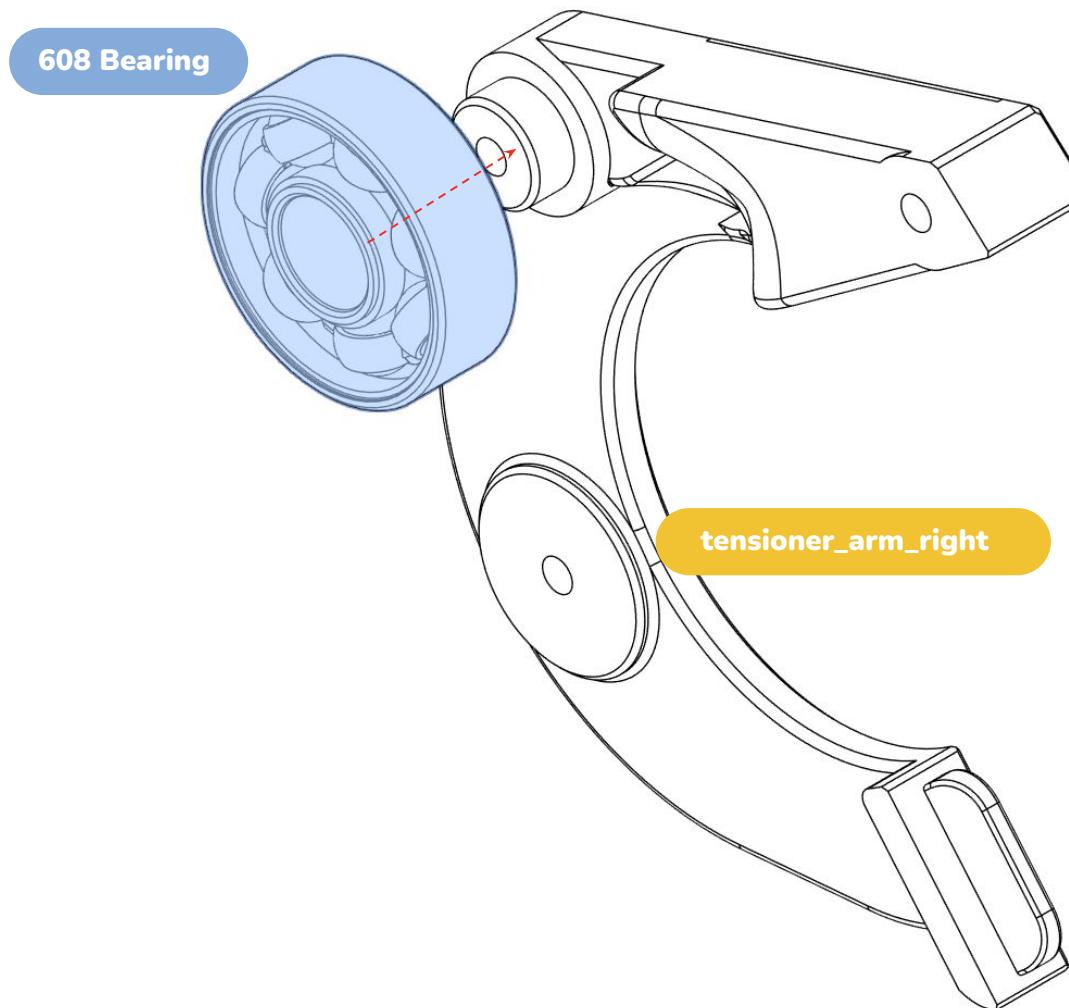
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

TENSIONER ARM PREPARATION



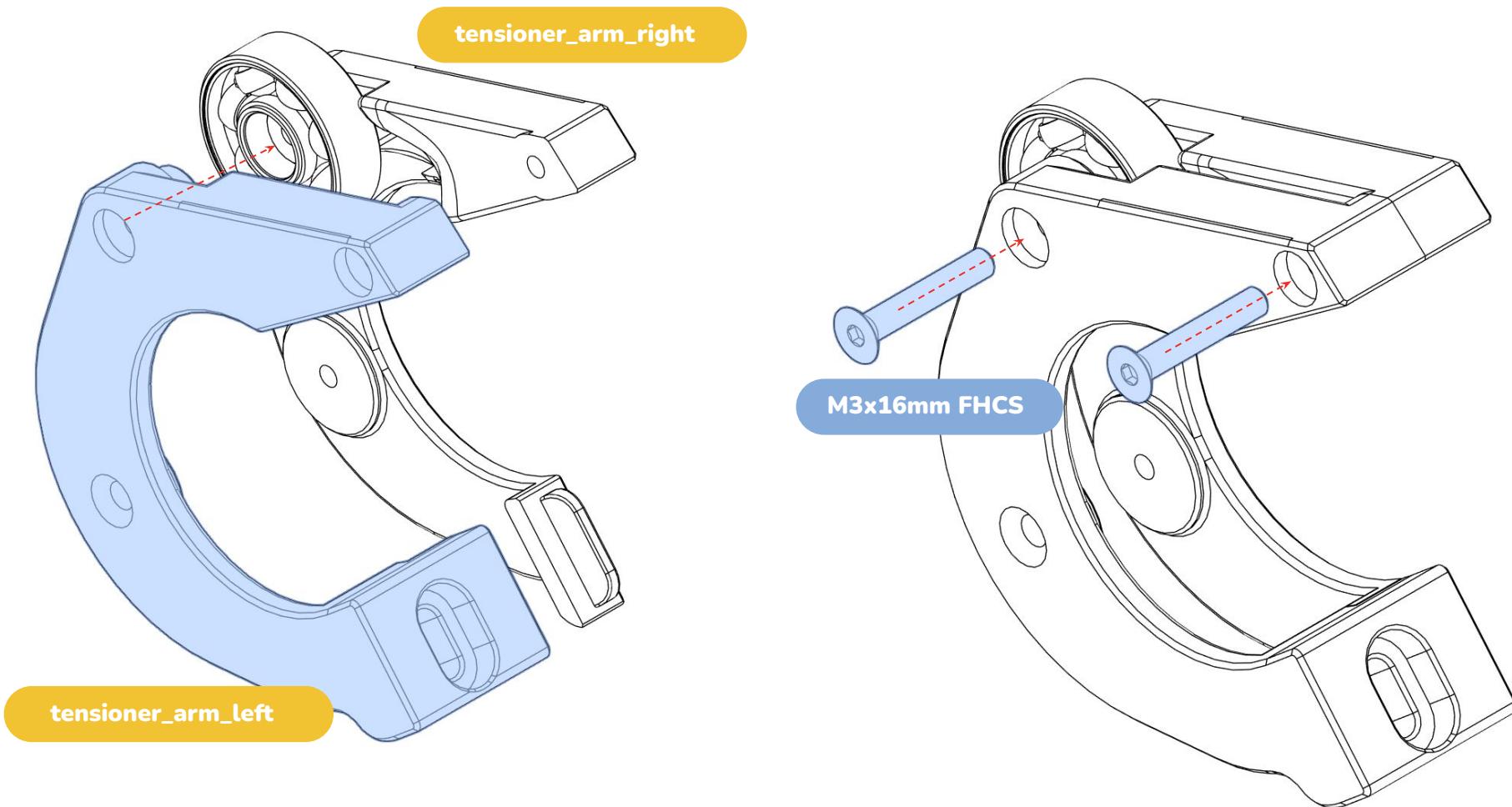
TENSIONER ARM ASSEMBLY



INSTALLING THE BEARING ON THE TENSION ARM

Insert a 608 bearing into the **tensioner_arm_right**, making sure it fits snugly

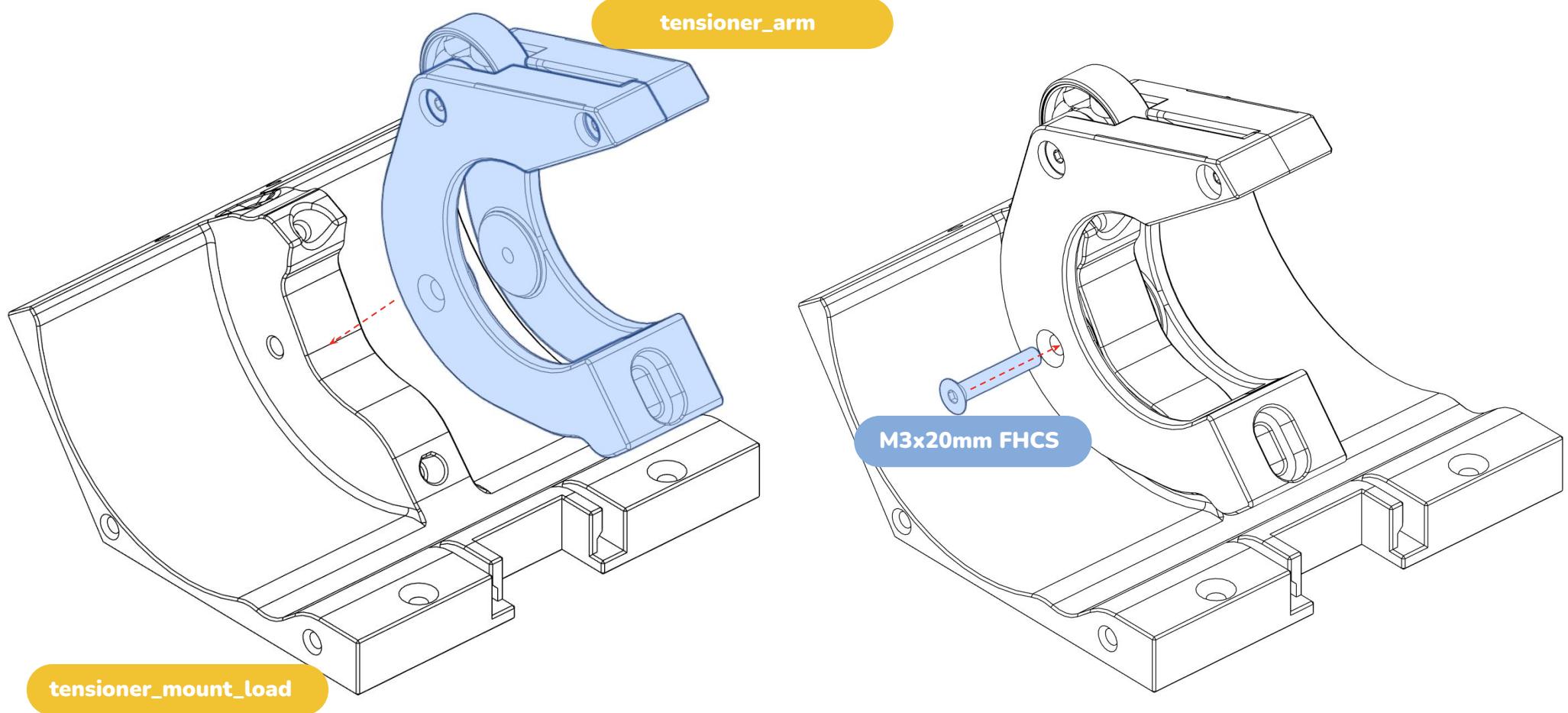
TENSIONER ARM ASSEMBLY



ASSEMBLING THE TENSION ARMS

Insert the **tensioner_arm_left** into the **tensioner_arm_right**. Secure both arms together with 2 M3x16 FHCS screws.

TENSIONER ARM ASSEMBLY

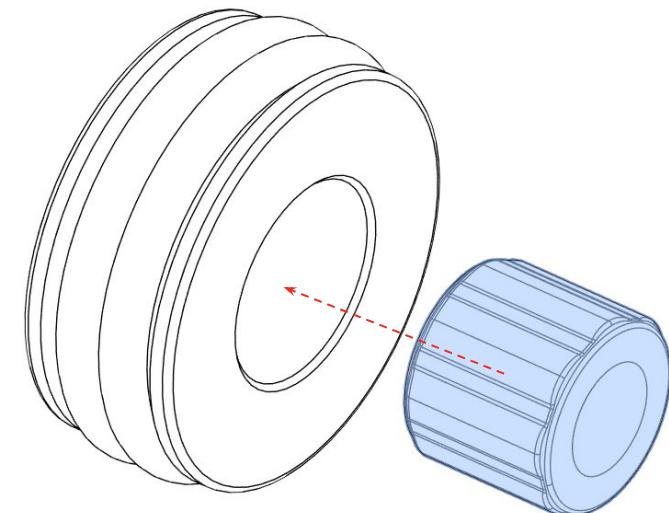
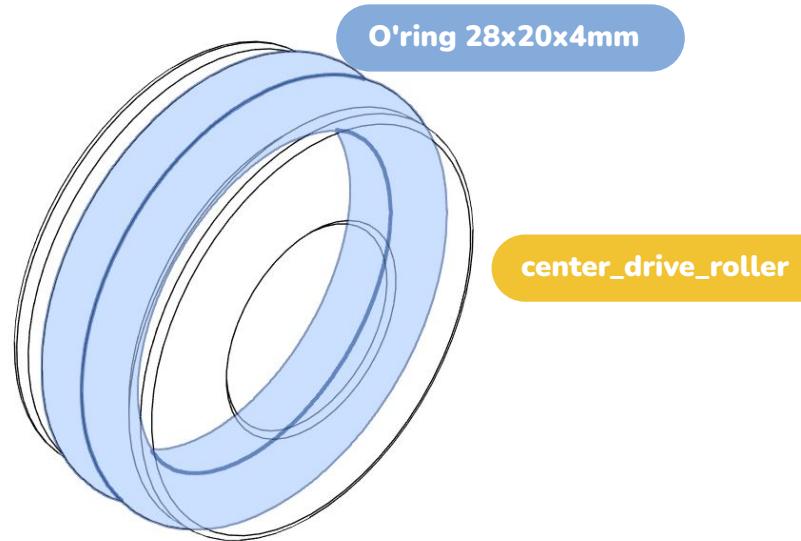


ASSEMBLING THE TENSION ARM

Mount the **tensioner_arm** onto the **tensioner_mount_load**. Secure it using 1 M3x20 FHCS screw.

⚠ Warning: Do not overtighten the screw, the arm must be free to move smoothly.

WHEELS ASSEMBLY

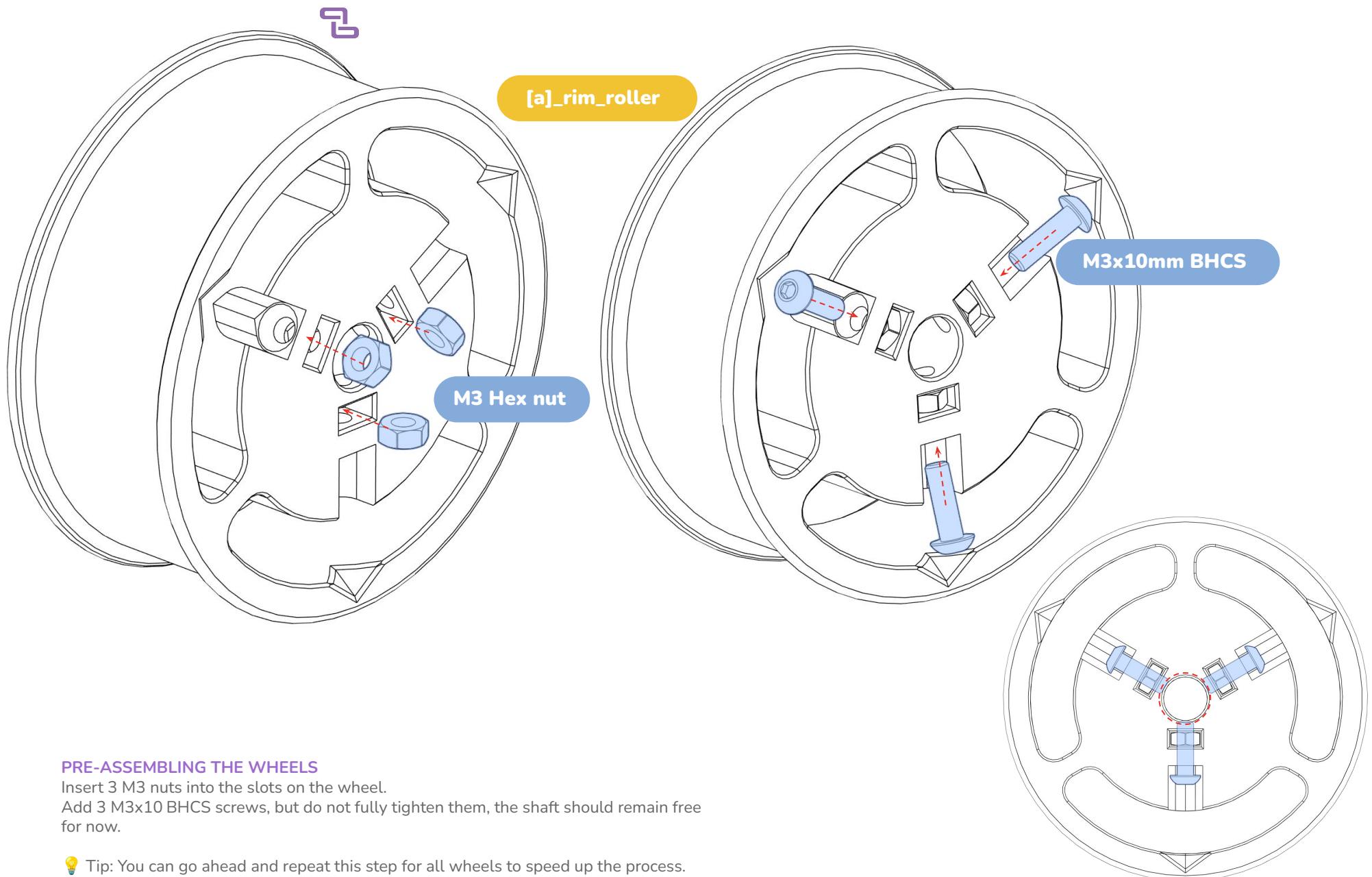


HF081412 one-way bearing

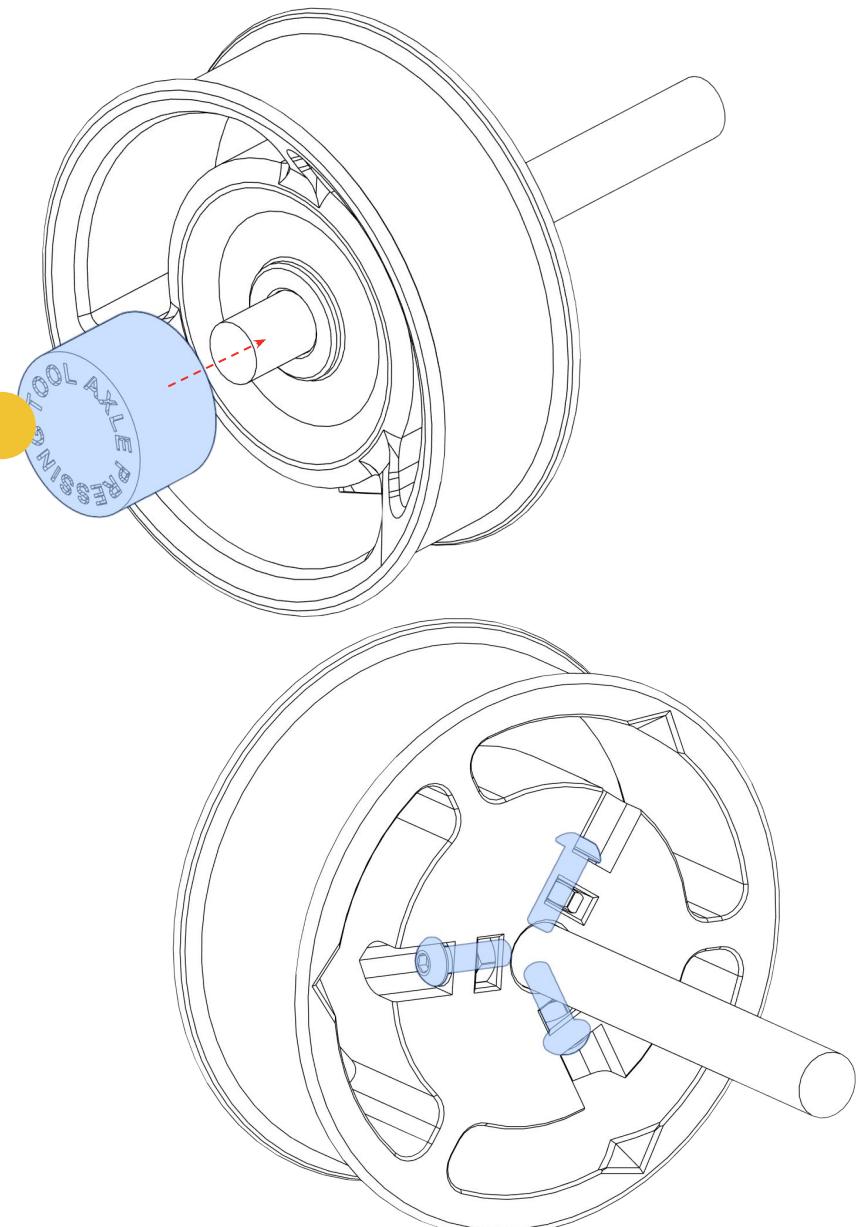
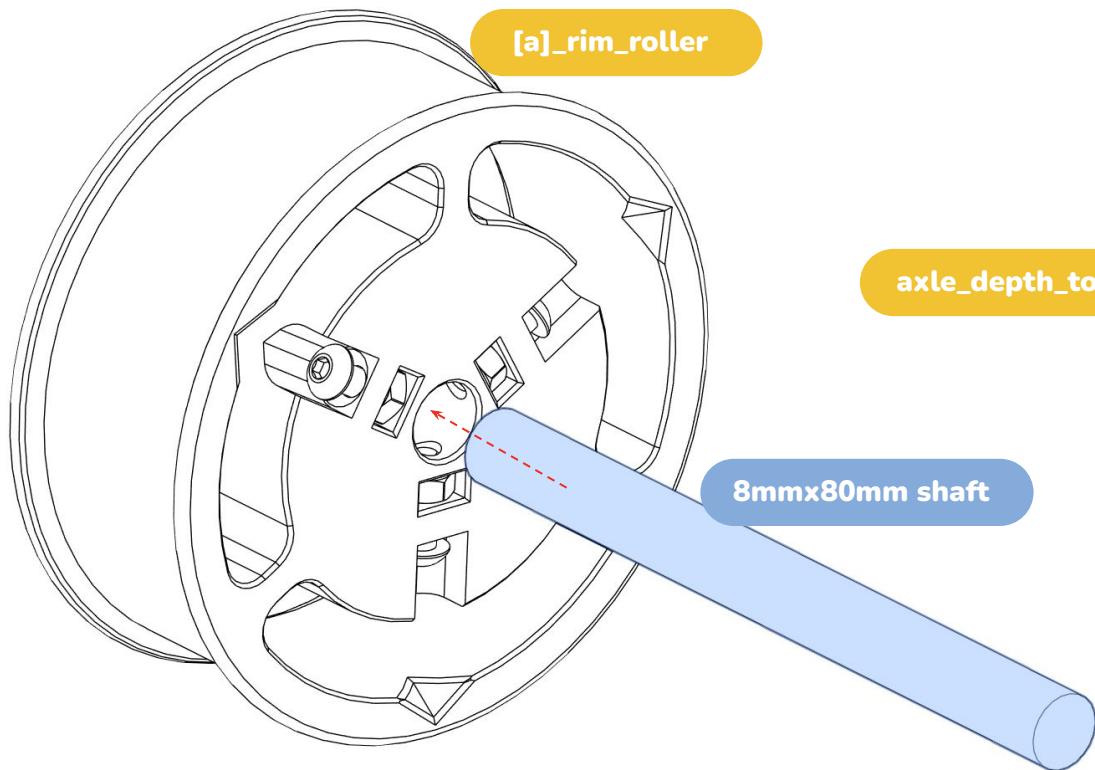
ASSEMBLING THE CENTER DRIVE ROLLER

Insert 2 O-rings onto the **center_drive_roller**, making sure they are well aligned in the grooves.
Then, install the HF081412 one-way bearing into the center of the part, ensuring it is fully seated.

WHEELS ASSEMBLY



WHEELS ASSEMBLY



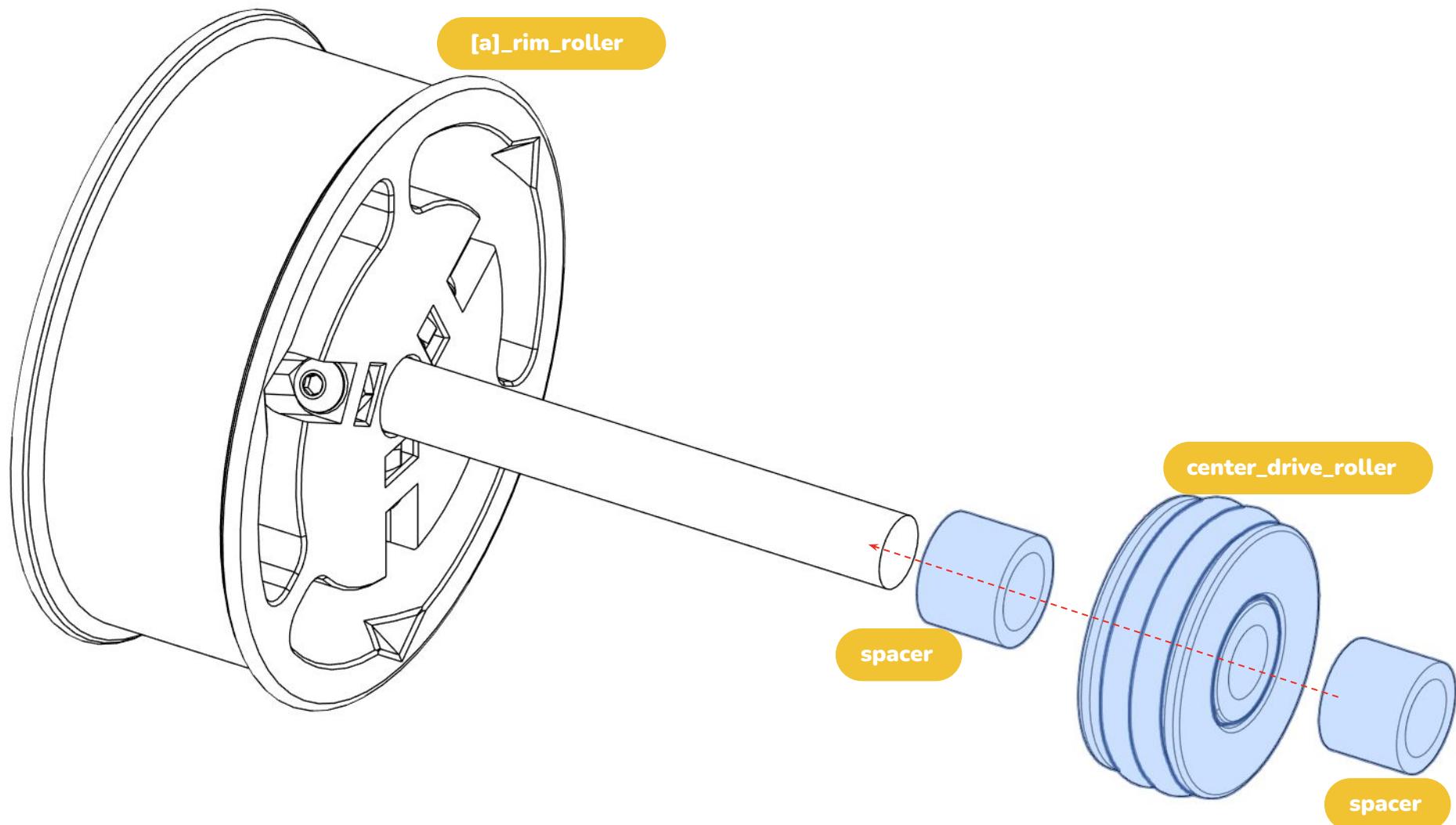
INSTALLING THE AXLE INTO THE WHEELS

Insert the 8 mm x 80 mm shaft into one of the pre-assembled wheels.

Use the **axle_depth_tool** to measure and ensure the shaft is inserted to the correct depth.

Once the shaft is properly aligned, tighten the 3 M3x10 BHCS screws to secure it firmly to the wheel.

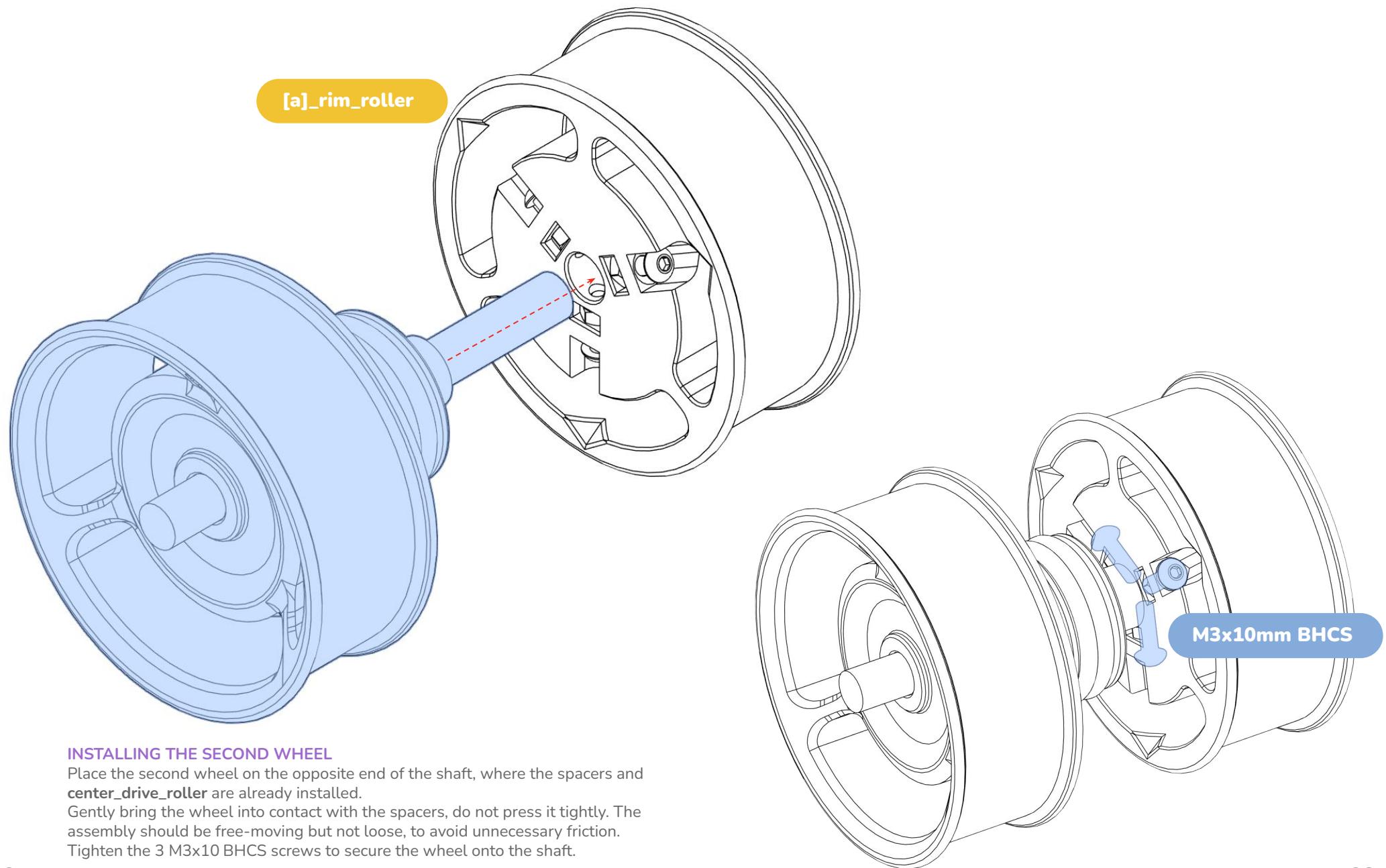
WHEELS ASSEMBLY



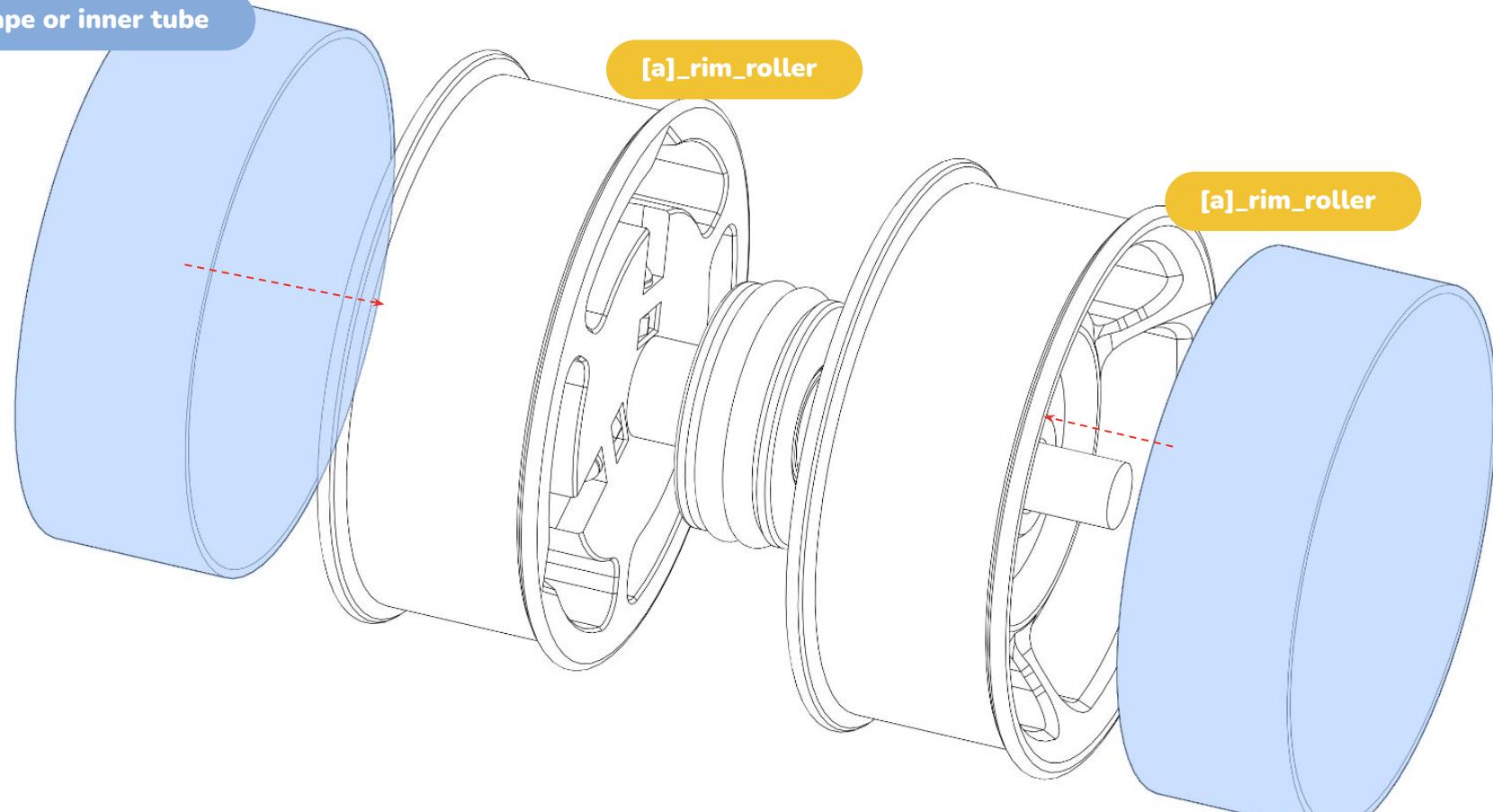
ASSEMBLY ON THE CENTER DRIVE ROLLER SHAFT

On the shaft of the already assembled wheel, insert one spacer.
Then, slide in the **center_drive_roller** with the bearing and O-rings already installed.
Finish by adding another spacer

WHEELS ASSEMBLY



WHEELS ASSEMBLY

EVA foam tape or inner tube**[a]_rim_roller****[a]_rim_roller****EVA foam tape or inner tube****EVA TAPE ON THE ROLLERS**

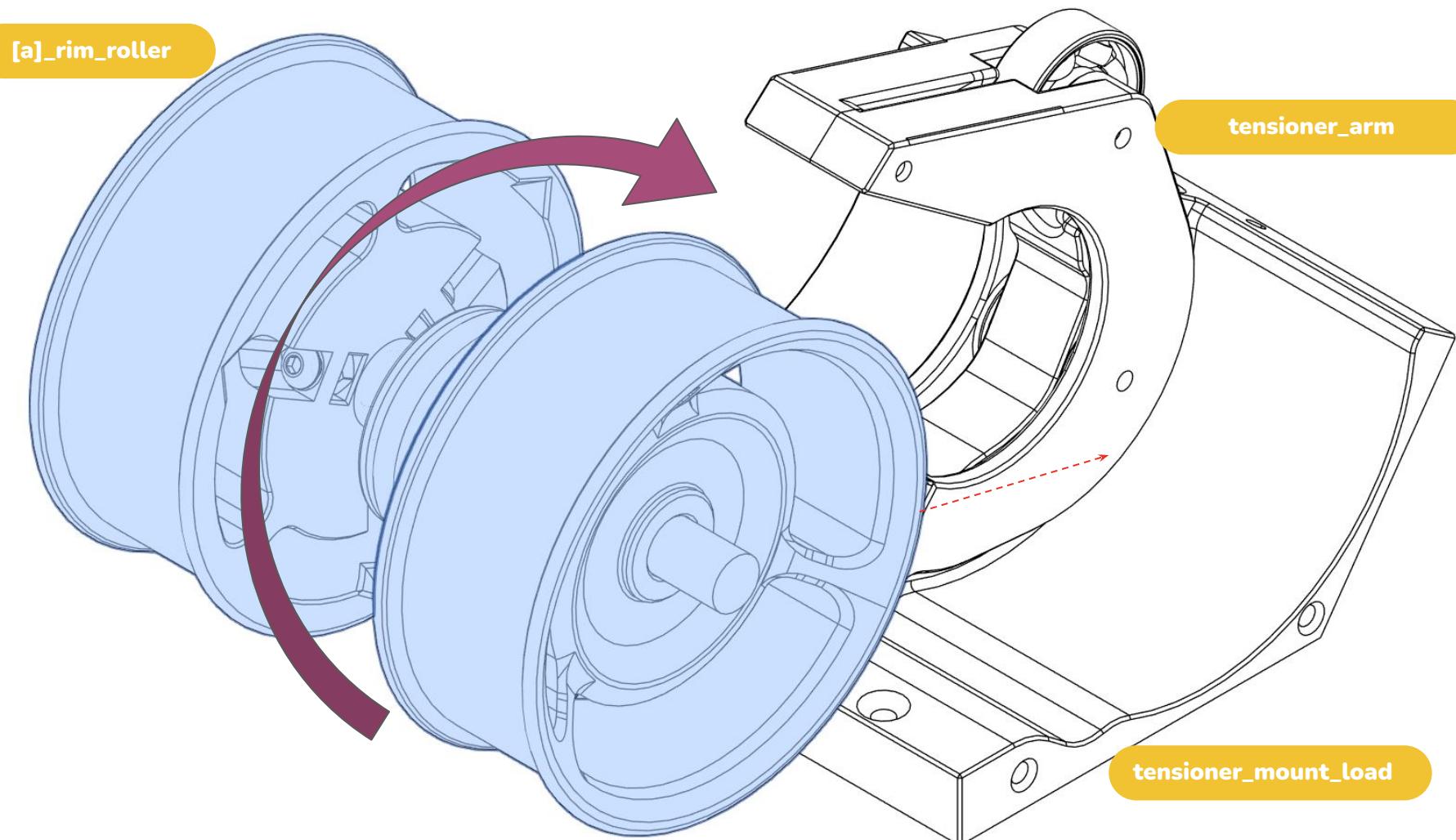
Now you can glue the EVA tape onto the rollers.

It acts like rubber to prevent the filament from slipping during movement.

Alternatively, you can use bicycle inner tube, cut to the correct size.

It works well too, but takes a bit more effort to install.

WHEELS ASSEMBLY



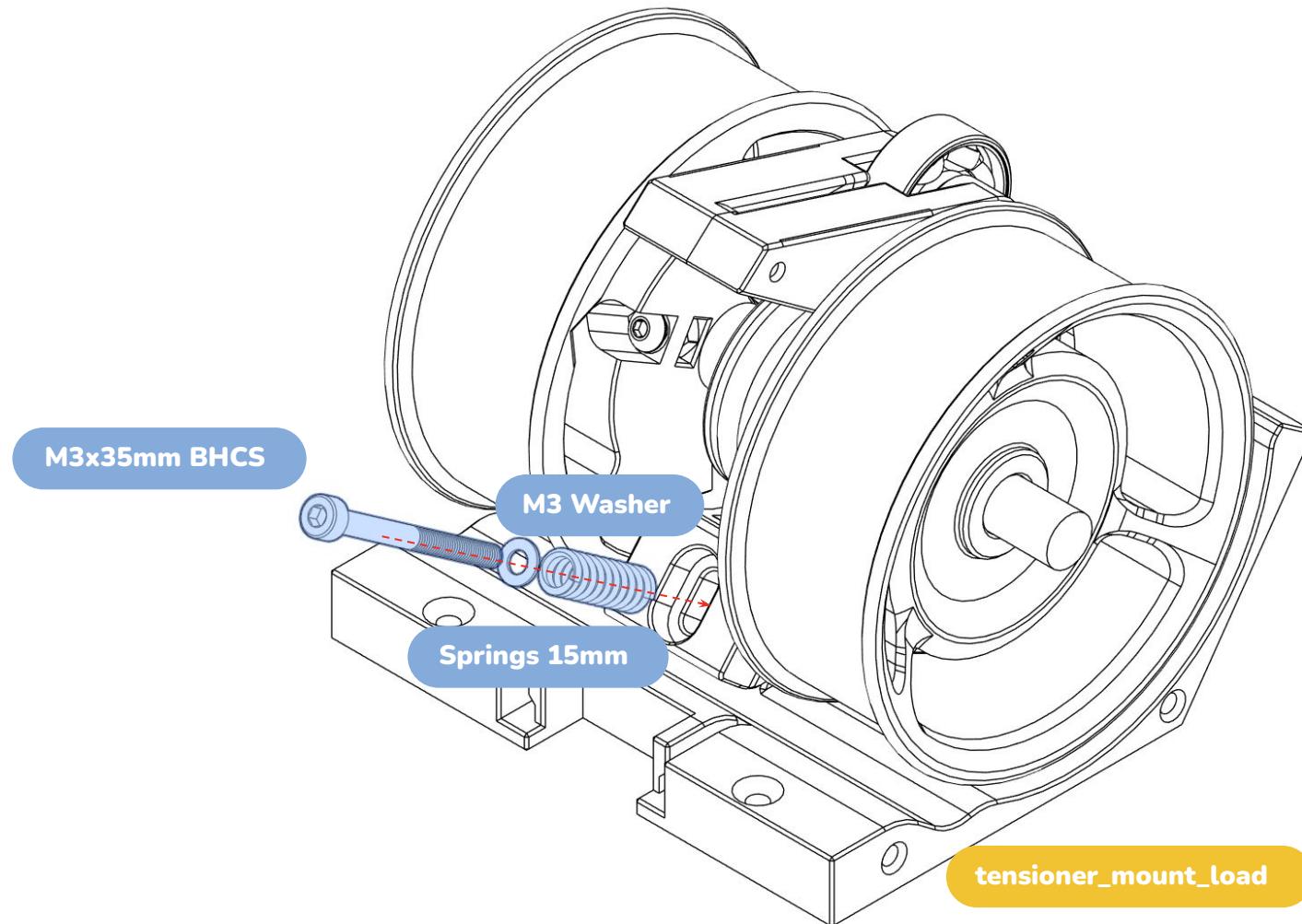
INSTALLING THE WHEELS ON TO THE TENSIONER MOUNT

Insert the assembled wheel unit into the tensioner_mount_load.

Be careful with the orientation of the one-way bearing (HF081412):

It should rotate freely in the filament loading direction, as shown by the purple arrow in the reference image.

FILAMENTALIST ASSEMBLY

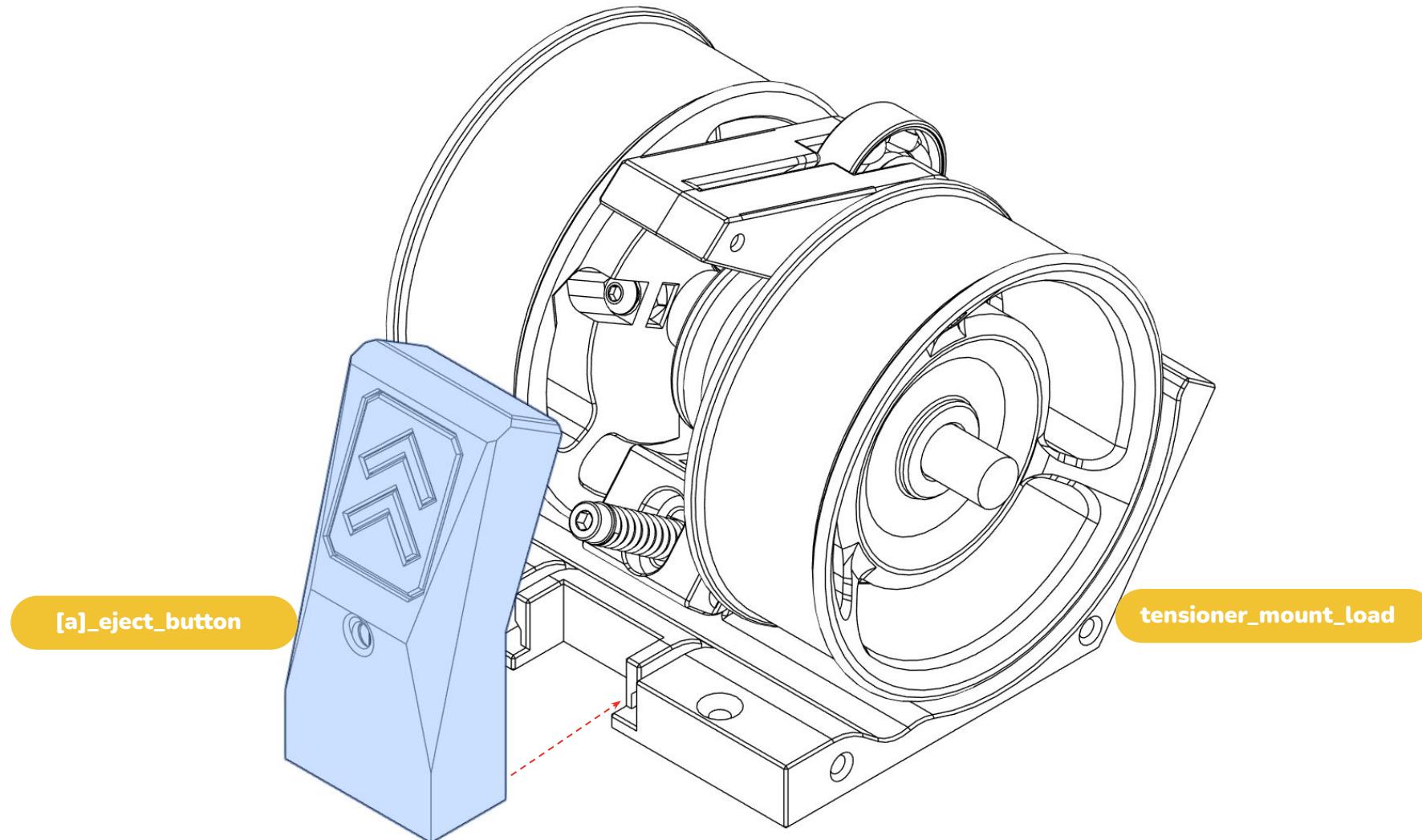


SECURING THE TENSION ARM WITH SPRING

Use 1 M3x35 BHCS screw, 1 washer, and 1 15 mm spring to attach the **tensioner_arm** to the **tensioner_mount_load**.

At this stage, leave the spring slightly loose, allowing the arm to move freely

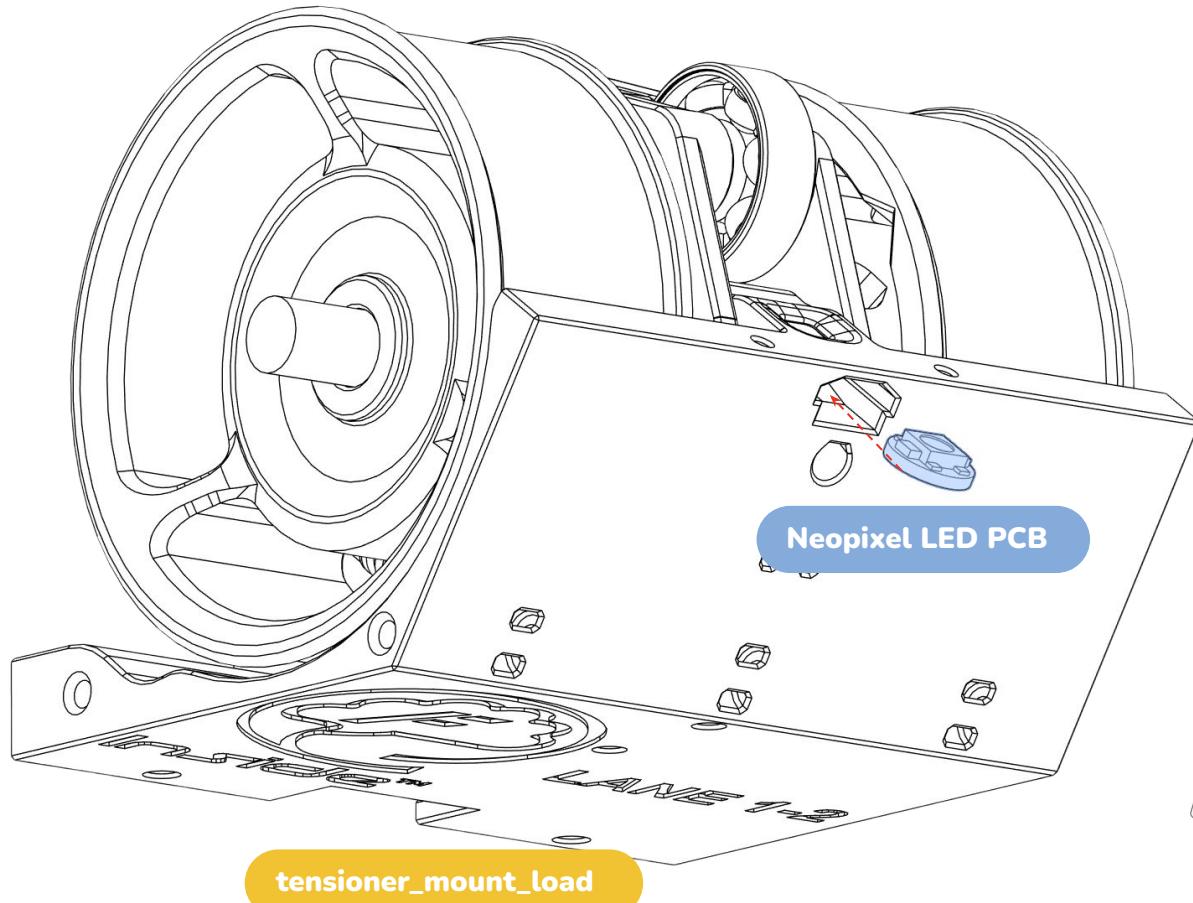
FILAMENTALIST ASSEMBLY



INSTALLING THE BUTTON ON THE TENSIONER MOUNT

Insert the previously assembled button into the **tensioner_mount_load**.
Make sure the button is properly seated and aligned

FILAMENTALIST ASSEMBLY

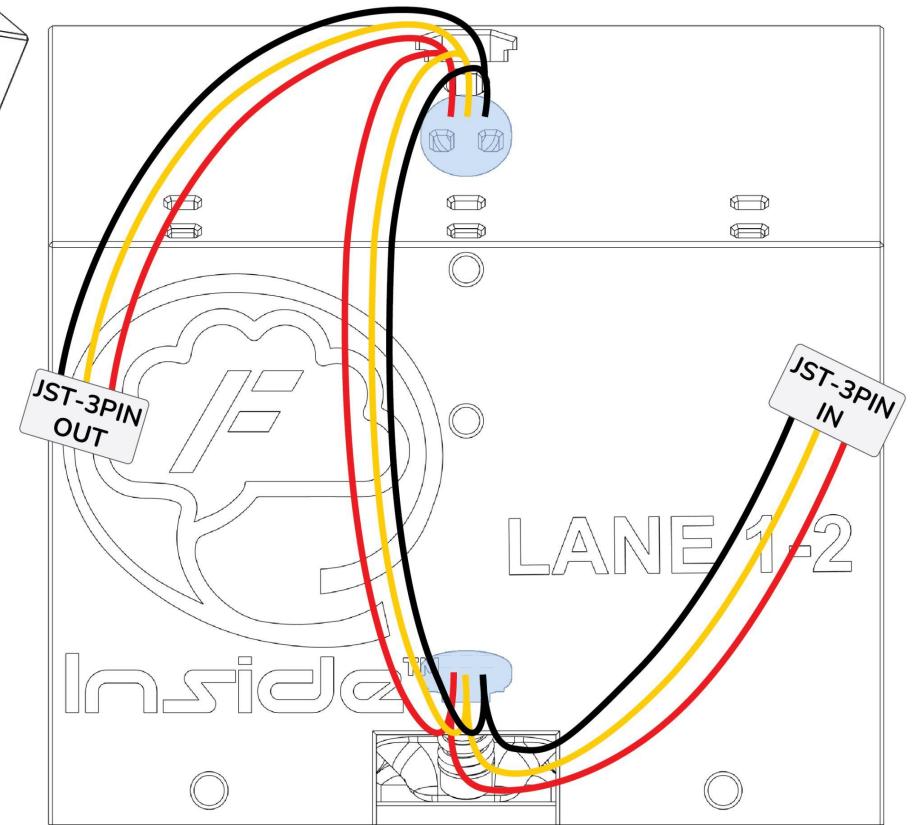


INSTALLING THE LED ON THE TENSIONER MOUNT

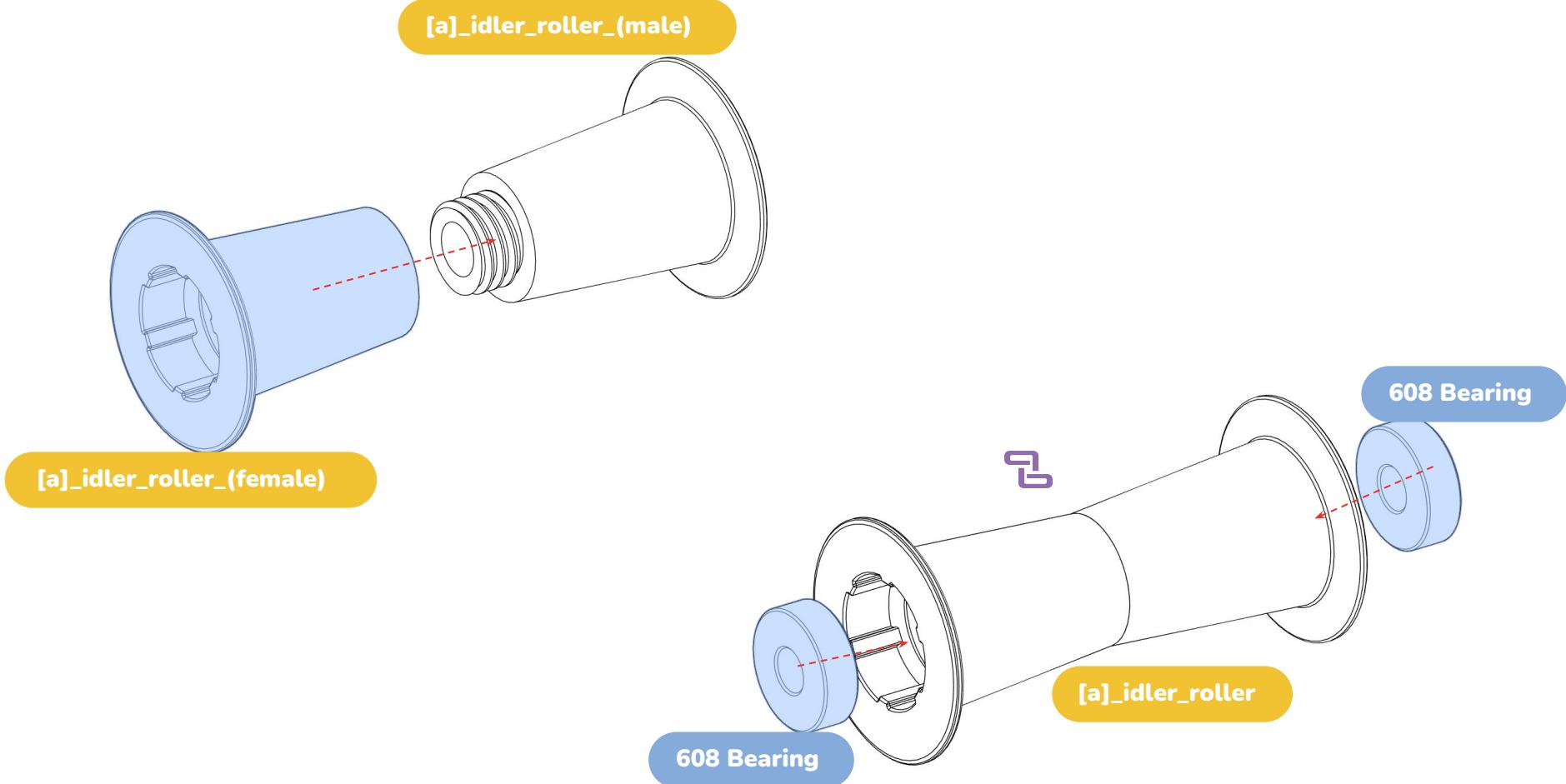
Install the LED that comes with the button into the **tensioner_mount_load**.

You can use a flathead screwdriver to push it in fully.

Refer to the schematic nearby showing the correct wiring between the button LED and the **tensioner_mount_load** LED.



FILAMENTALIST ASSEMBLY

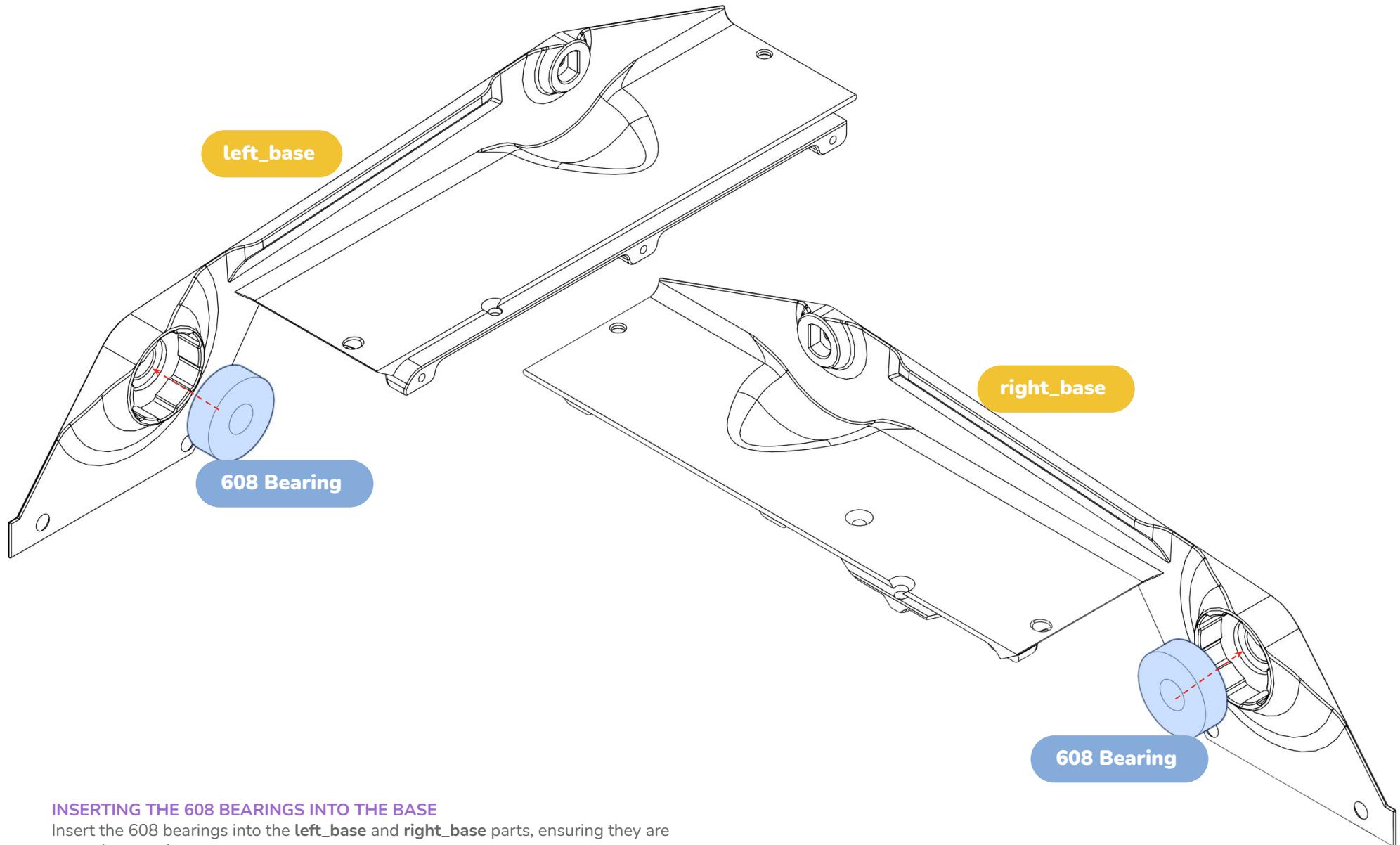


ASSEMBLING THE IDLER ROLLER

Screw the 2 parts of the **idler_roller** together, being careful not to overtighten to prevent damage.

Insert 1 608 bearing on each side of the assembly

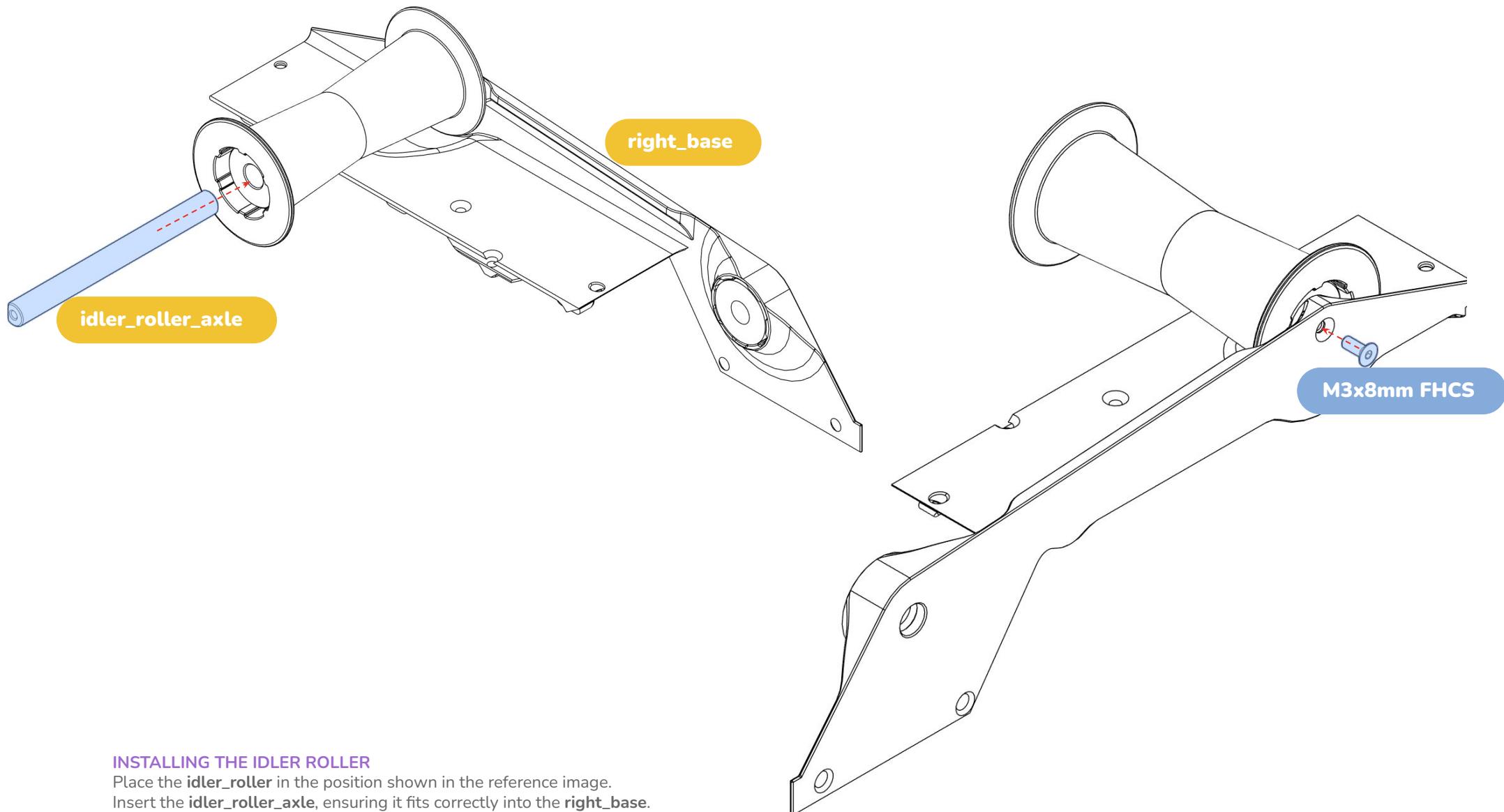
FILAMENTALIST ASSEMBLY



INSERTING THE 608 BEARINGS INTO THE BASE

Insert the 608 bearings into the **left_base** and **right_base** parts, ensuring they are properly seated.

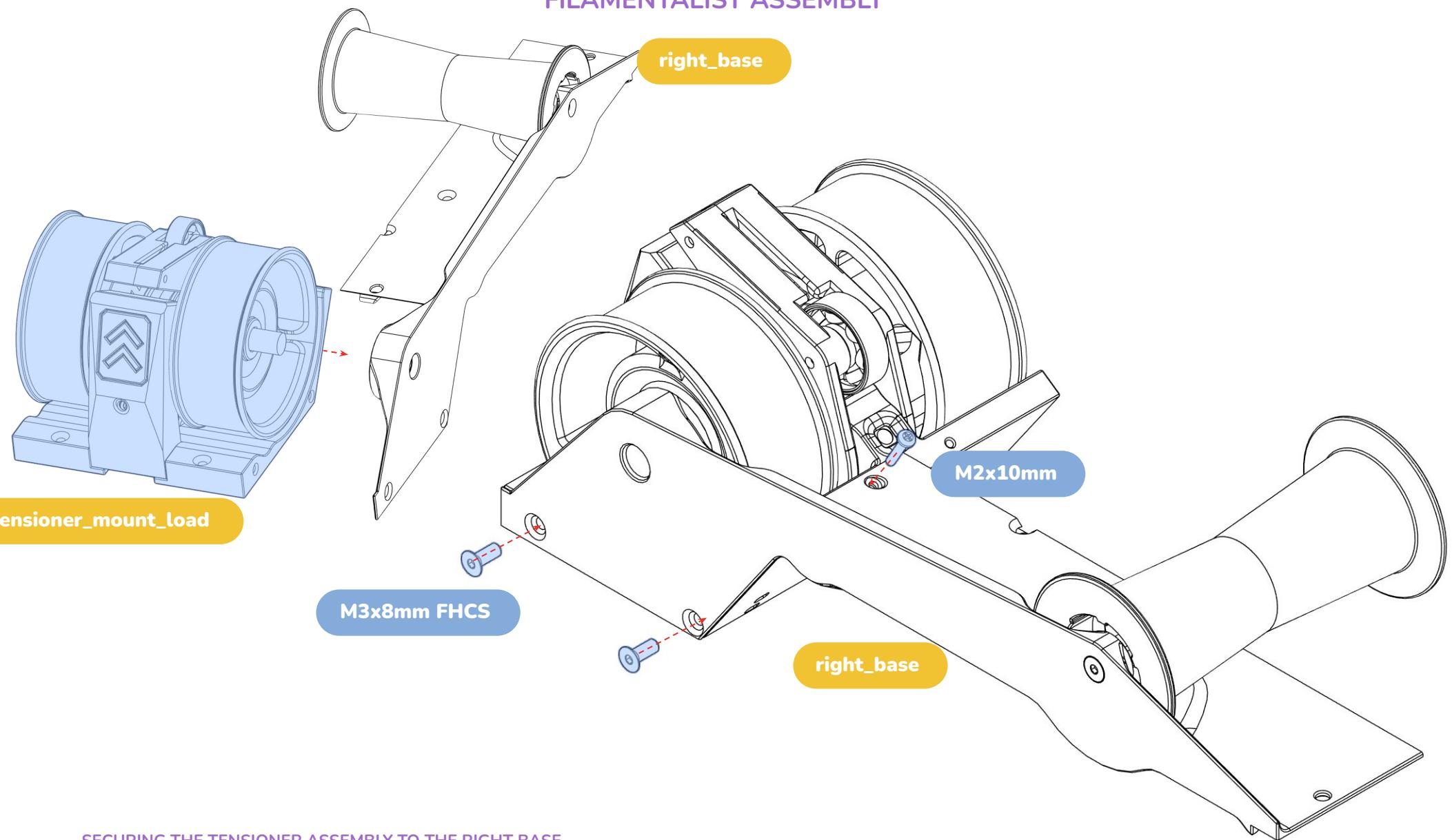
FILAMENTALIST ASSEMBLY



INSTALLING THE IDLER ROLLER

Place the **idler_roller** in the position shown in the reference image.
Insert the **idler_roller_axle**, ensuring it fits correctly into the **right_base**.
Then, secure it using an M3x8 FHCS screw.

FILAMENTALIST ASSEMBLY

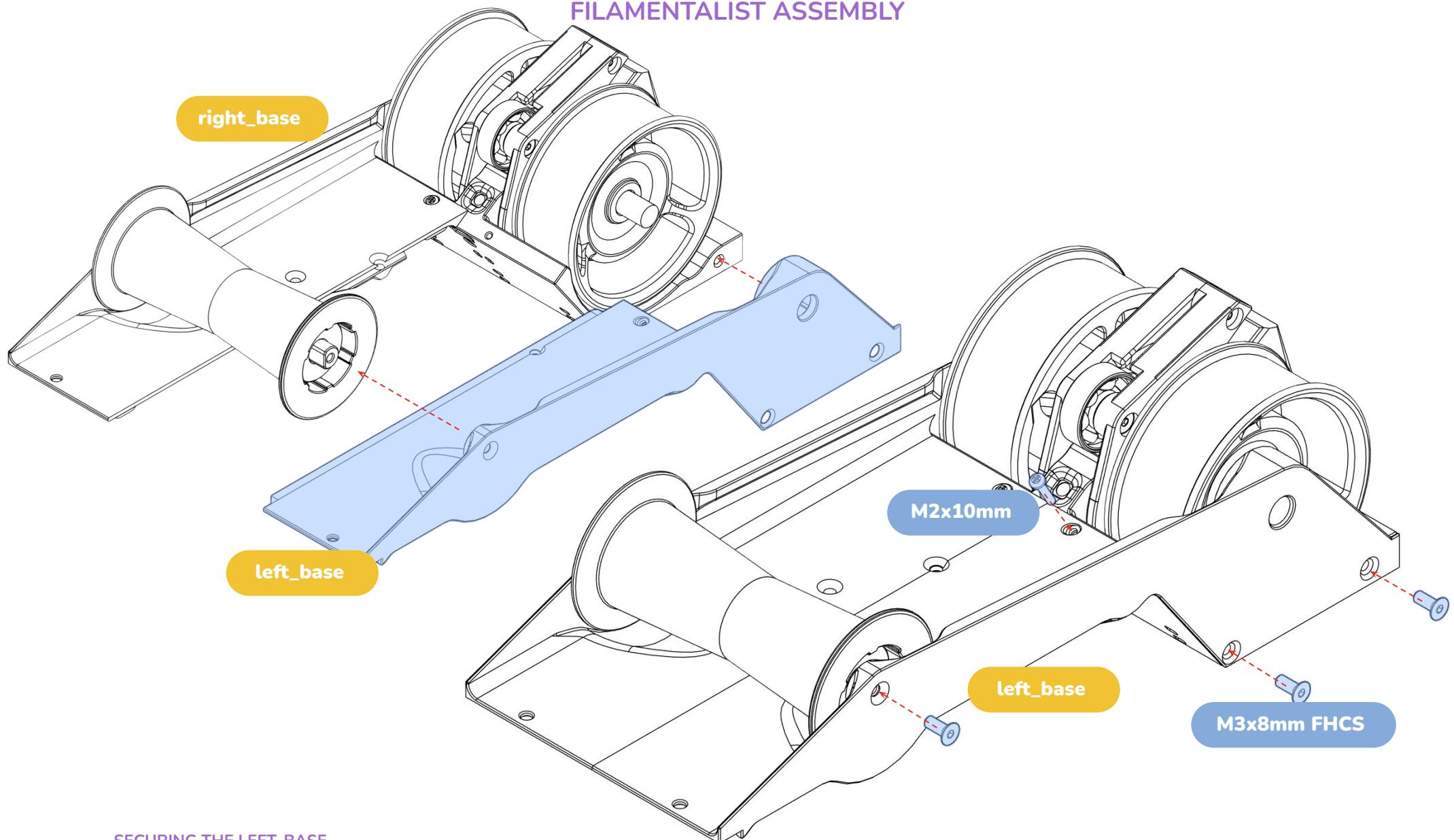


SECURING THE TENSIONER ASSEMBLY TO THE RIGHT BASE

Position the pre-assembled **tensioner_mount_load** onto the **right_base**, making sure the parts are properly aligned.

Secure the assembly using 2 M3x8 FHCS screws and 1 M2x10 screw

FILAMENTALIST ASSEMBLY

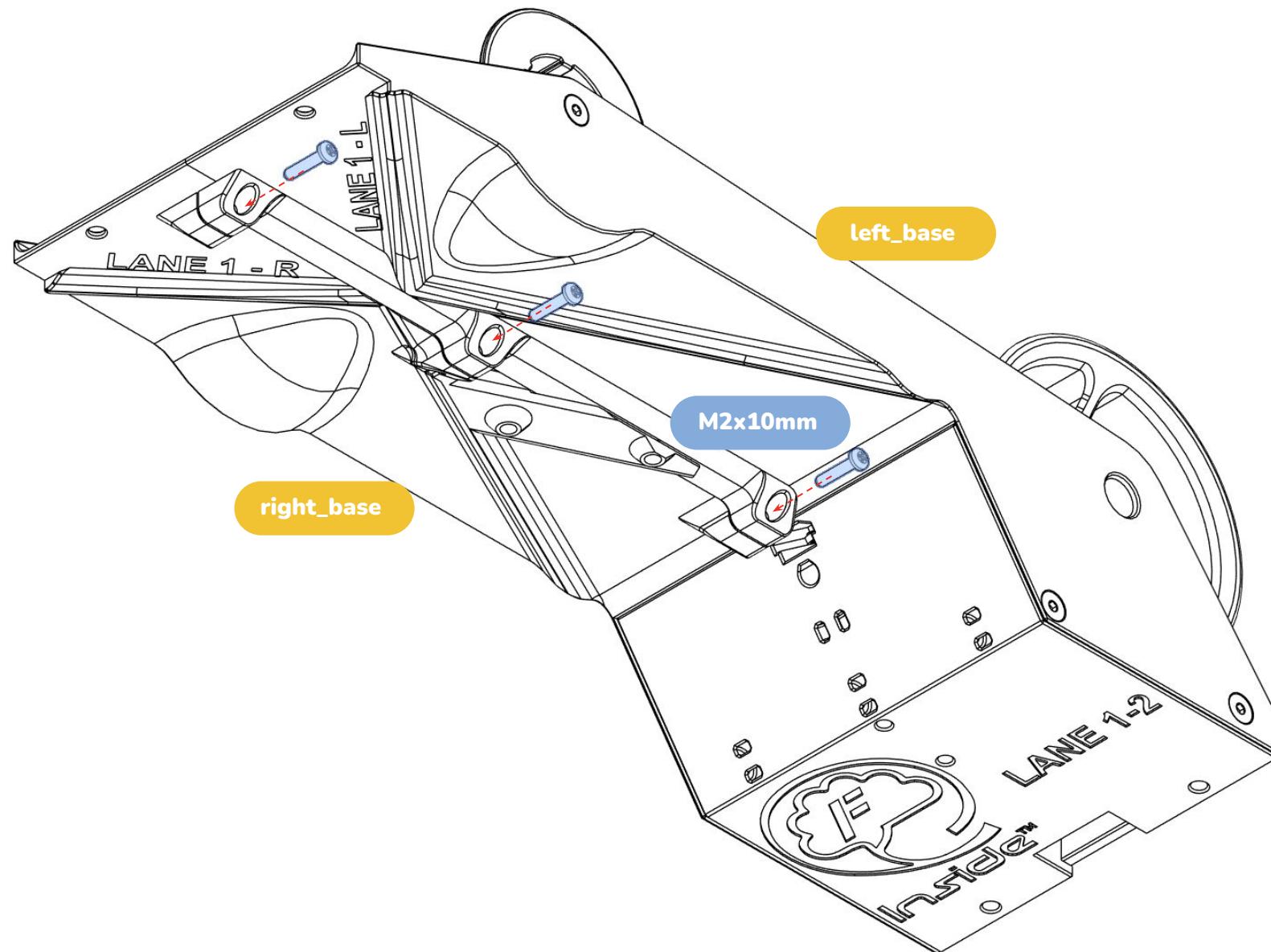


SECURING THE LEFT_BASE

Fit the **left_base** onto the assembled unit, aligning it properly with the **right_base** and **tensioner_mount_load**.

Secure the **left_base** using 3 M3x8 FHCS screws and 1 M2x10 screw.

FILAMENTALIST ASSEMBLY



3 M2x10 screws on the bottom side

This page intentionally left blank.

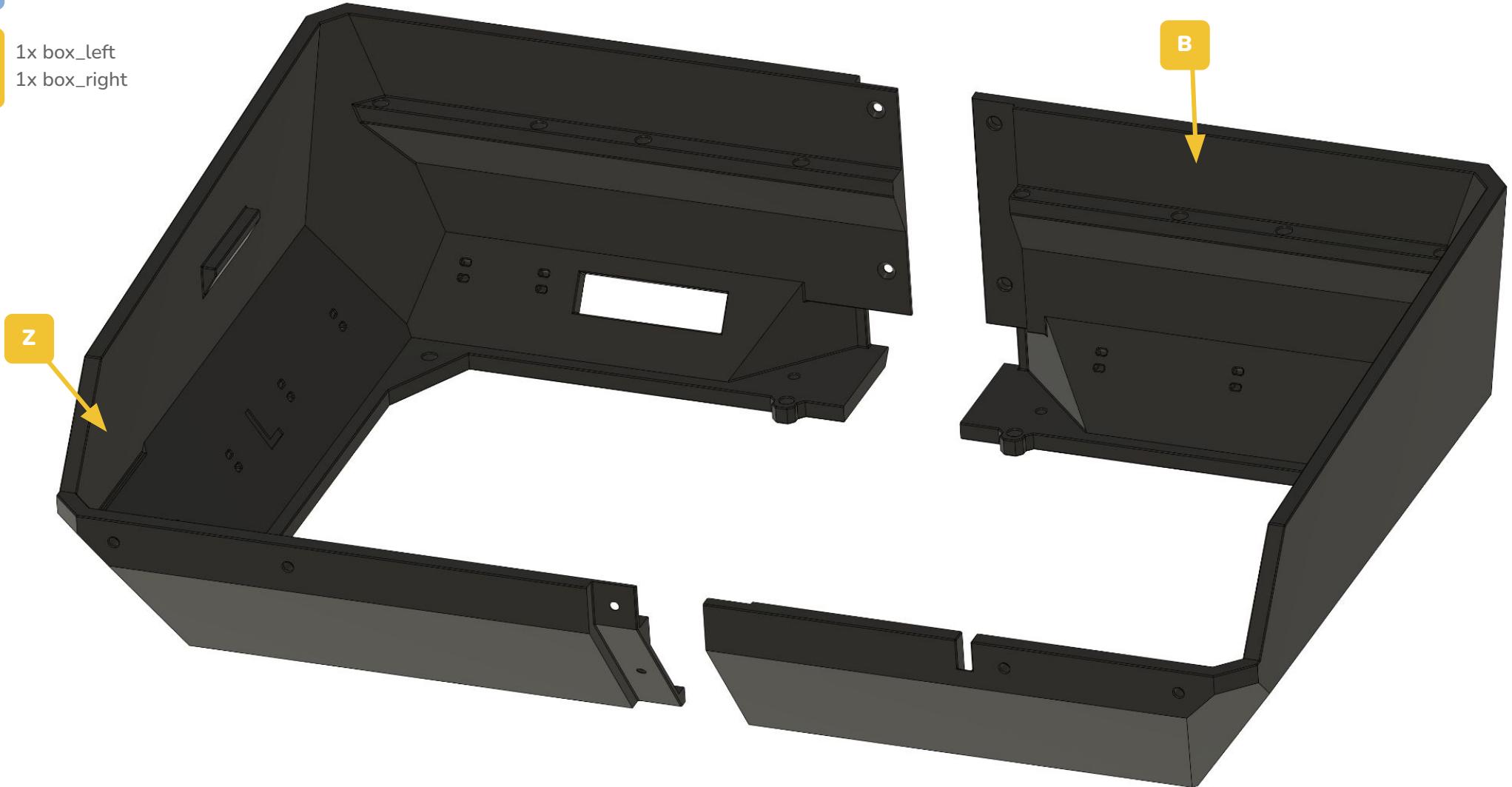


EXPLODED VIEW

4x M3x5mm FHCS
2x M3x10mm FHCS
24x M3x4x5 Threaded Inserts
4x M3x3x5 Threaded Inserts

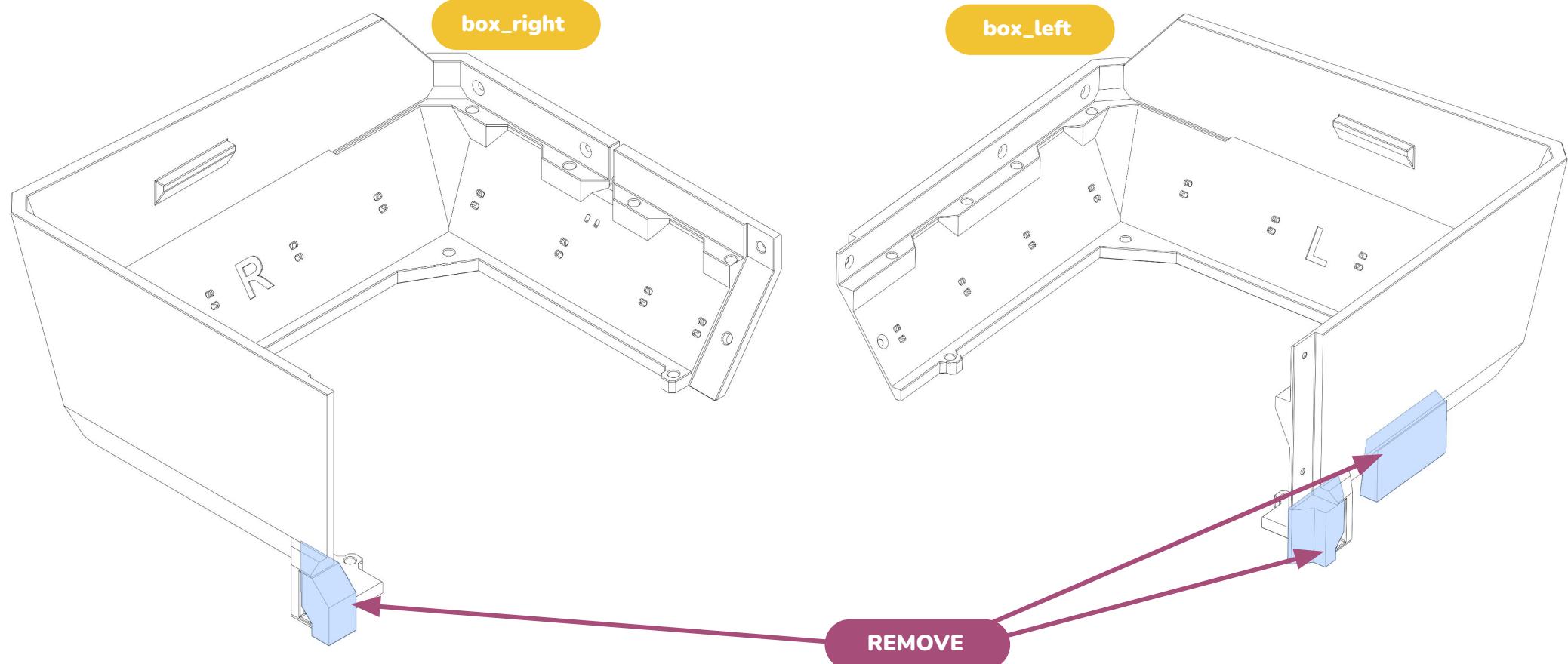
Yep, not much labeled here. With the screws and inserts invited, would've looked like a party of arrow

A
B
1x box_left
1x box_right

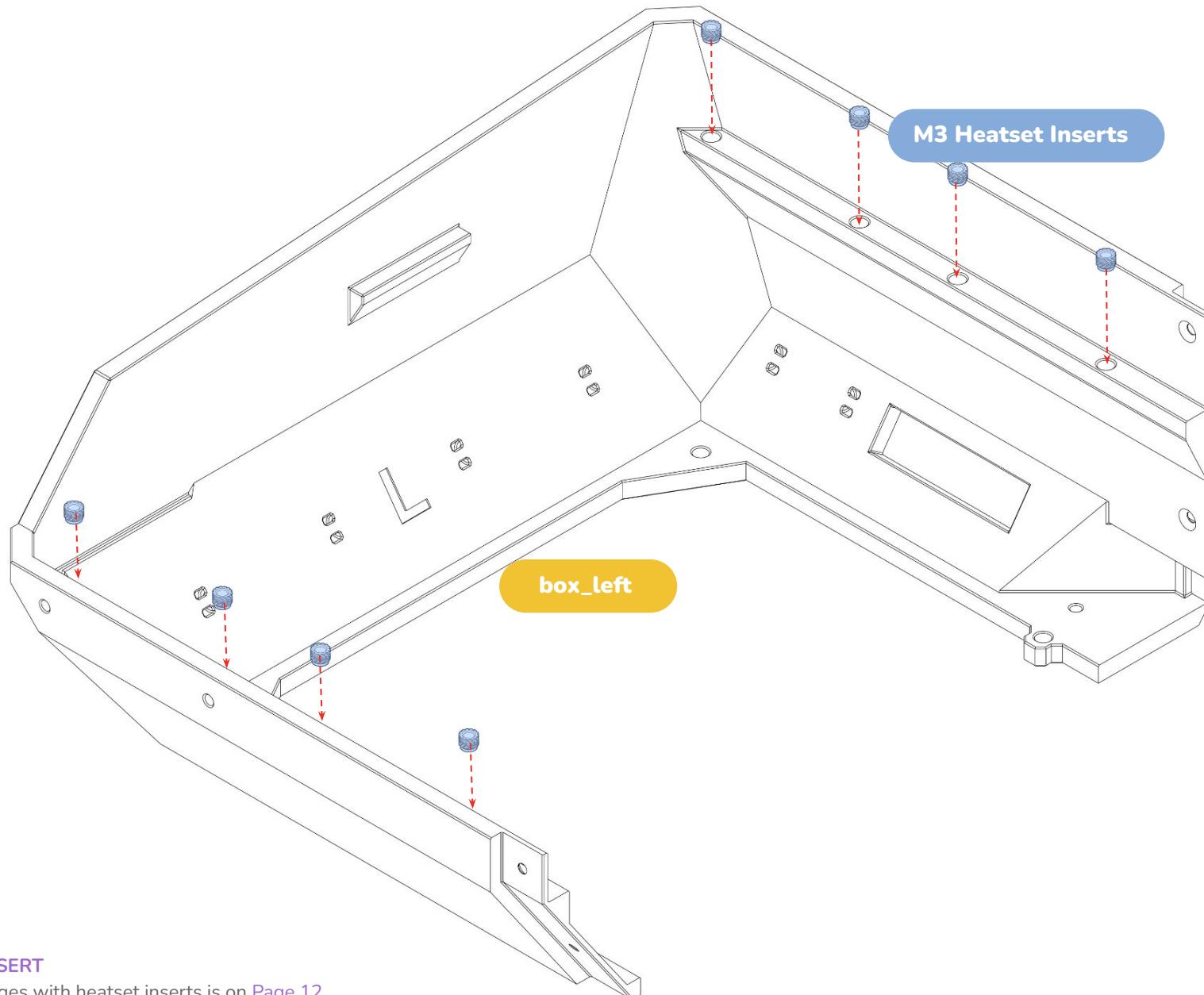


The detailed instructions are on the following pages

BOX PREPARATION



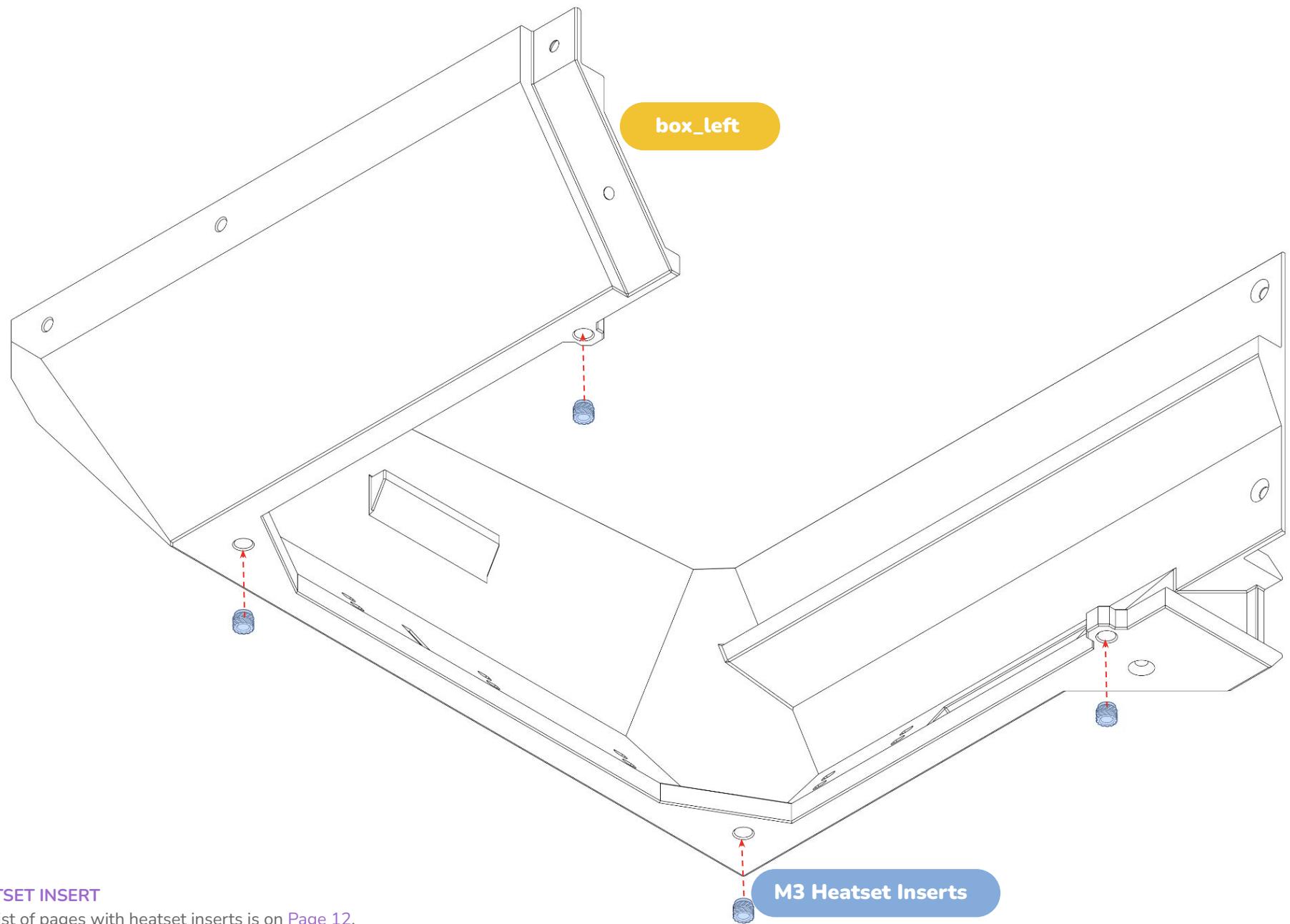
BOX PREPARATION



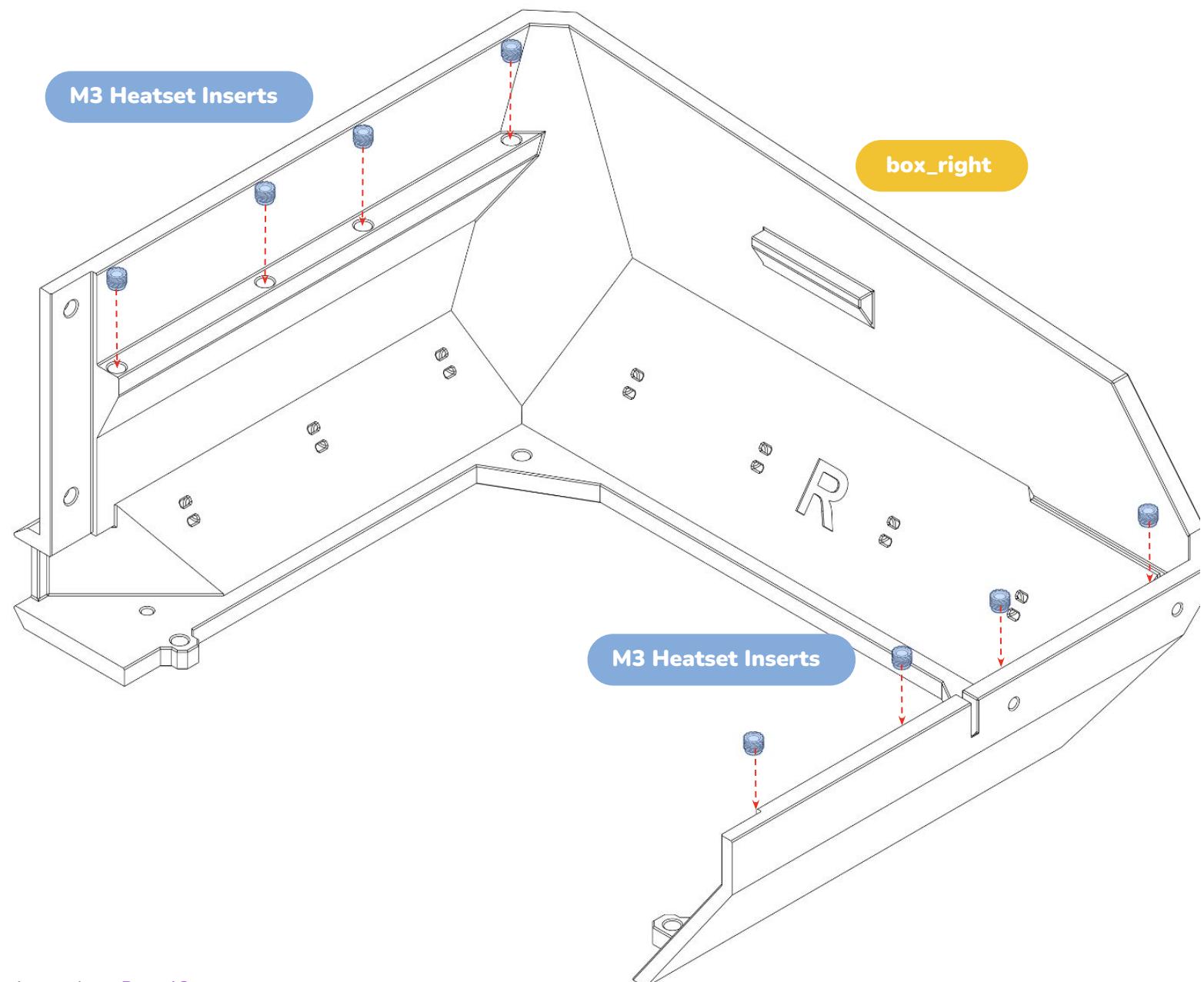
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

BOX PREPARATION



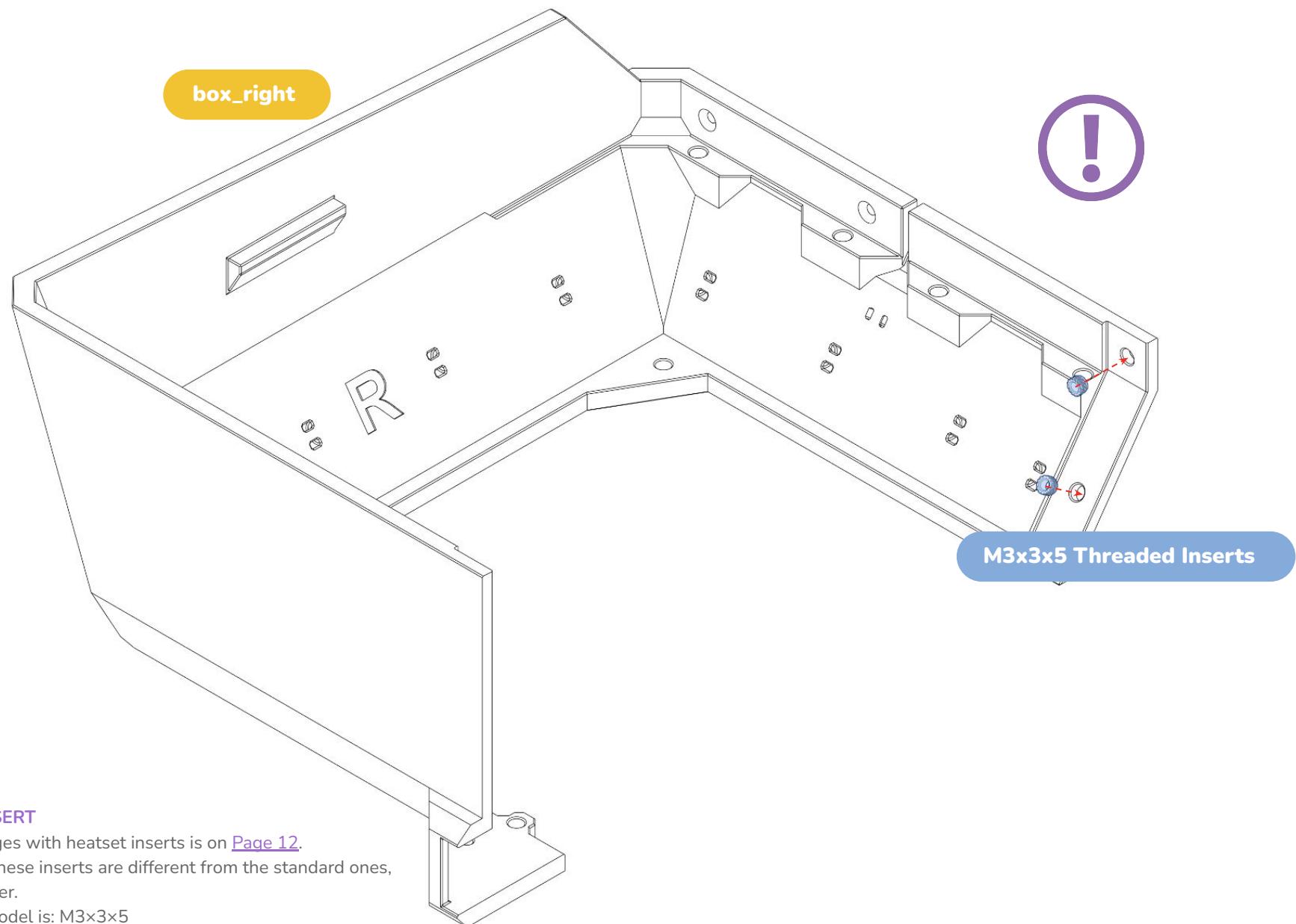
BOX PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

BOX PREPARATION



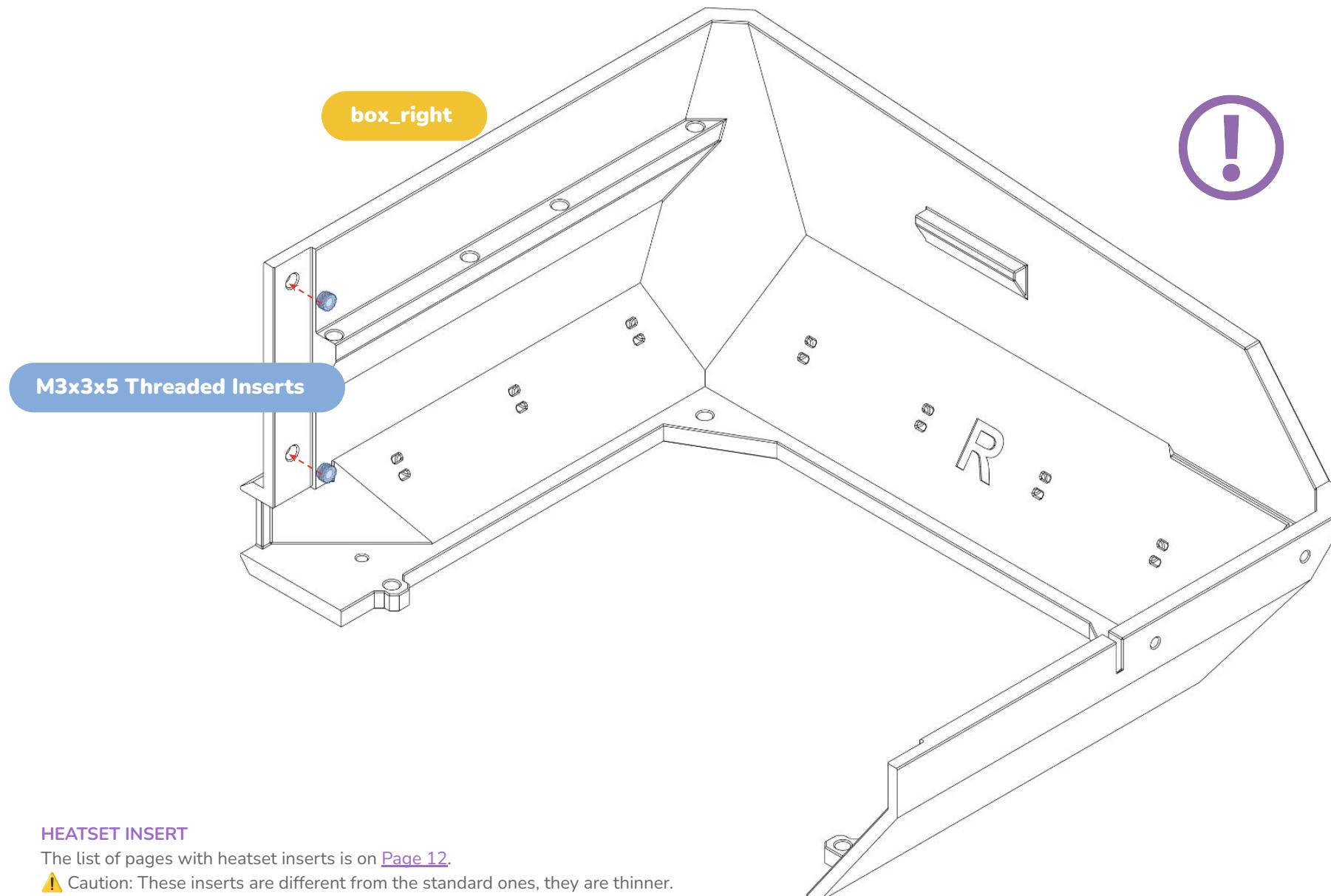
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

BOX PREPARATION



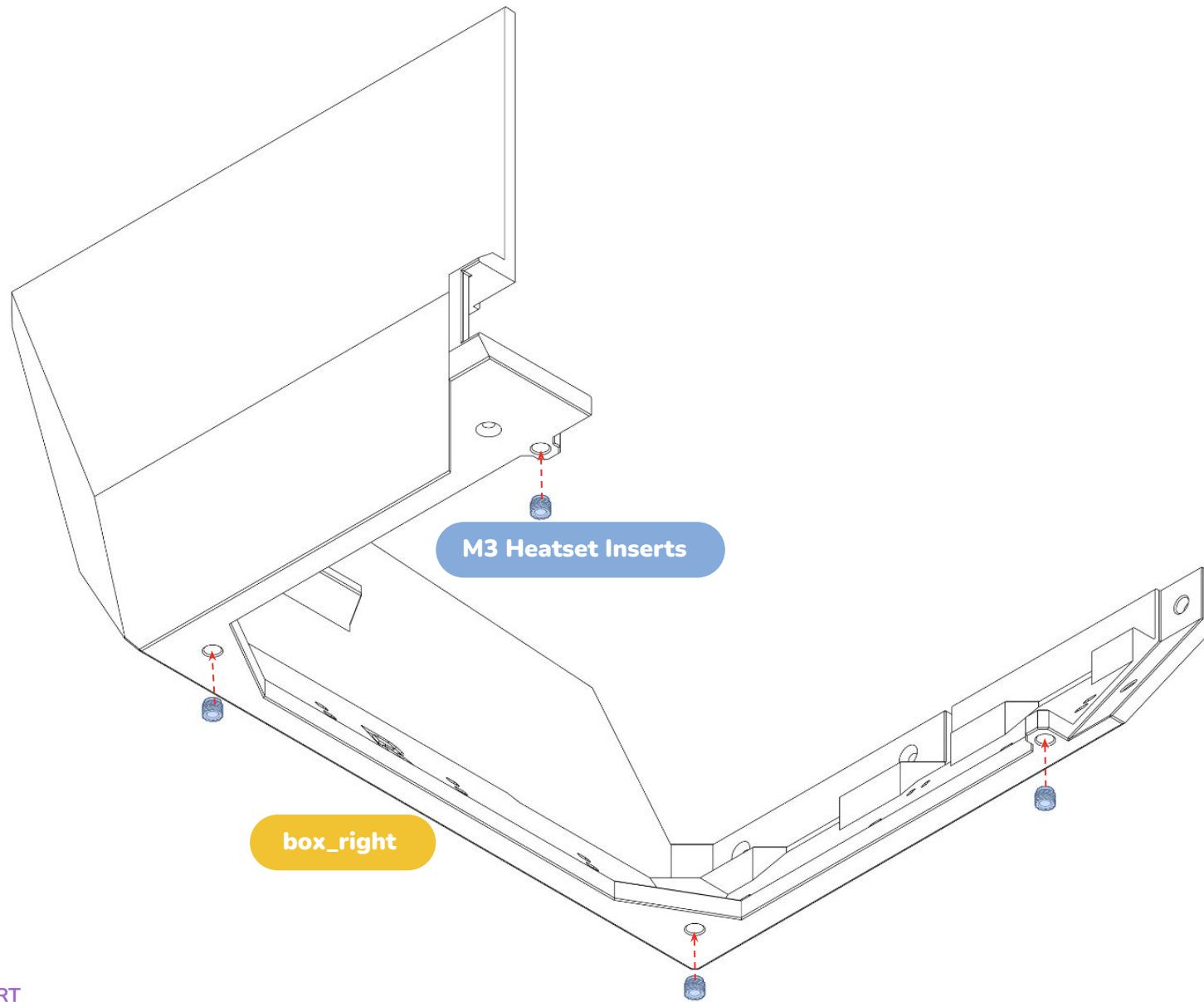
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

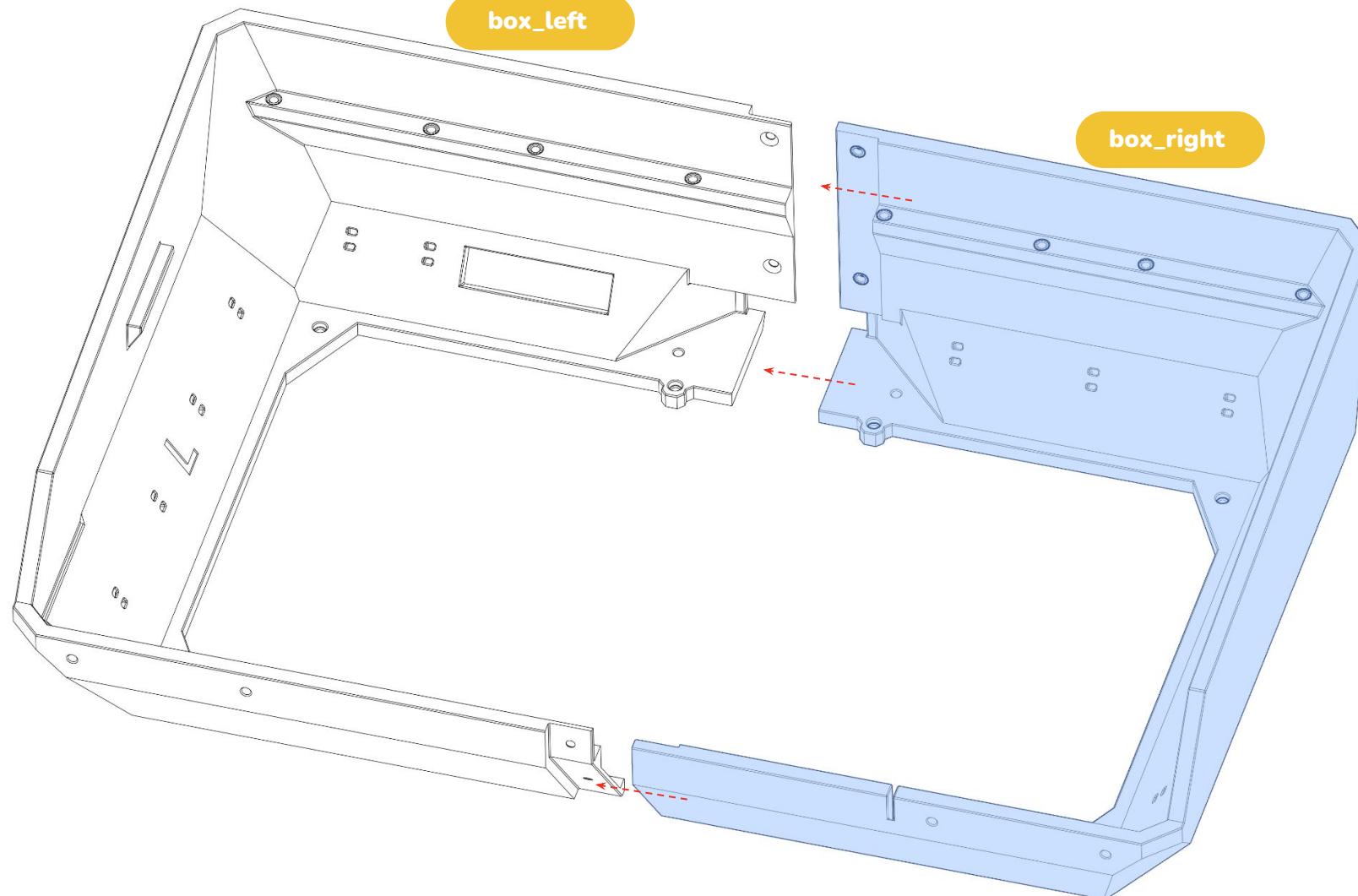
BOX PREPARATION



HEATSET INSERT

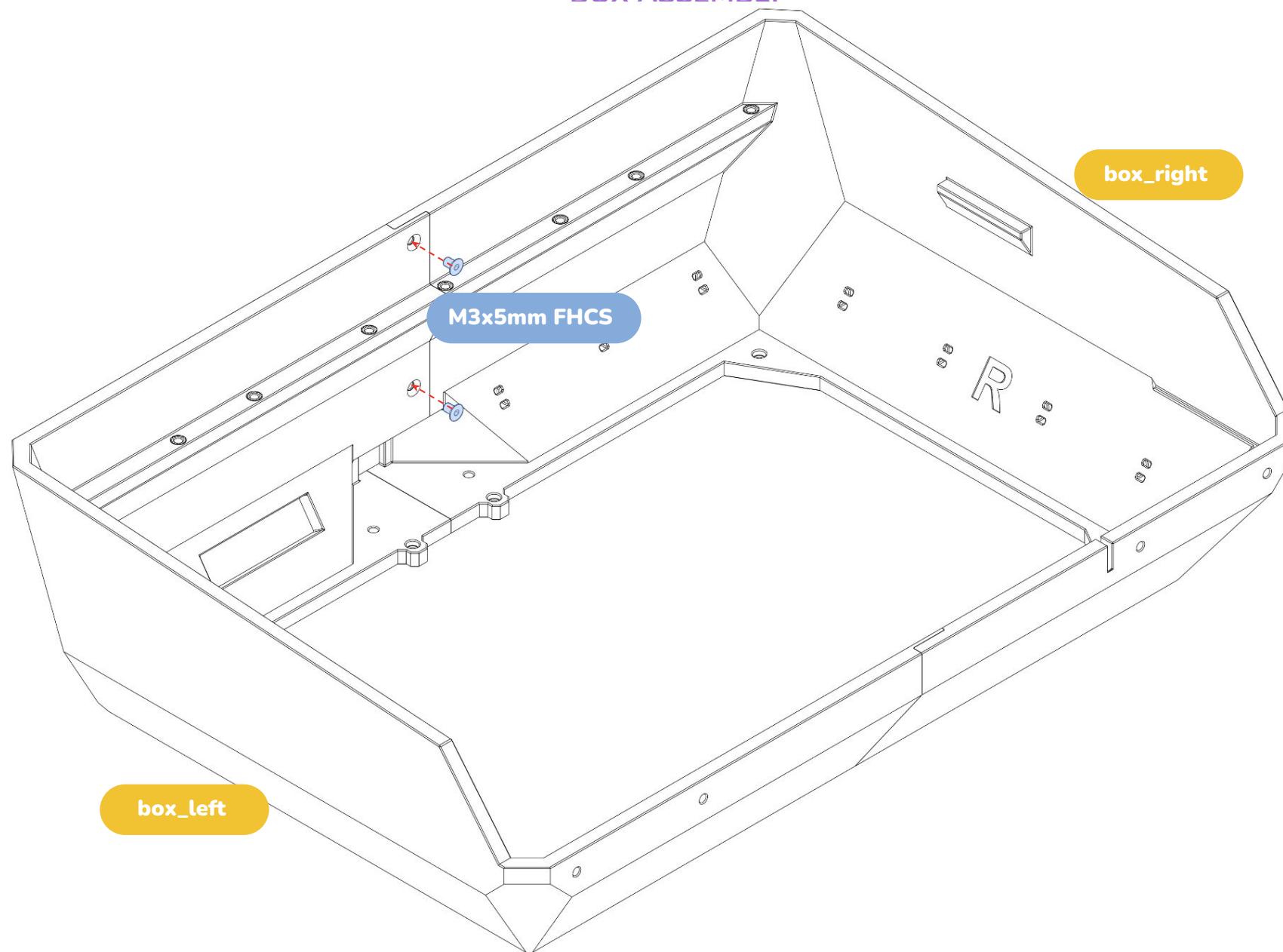
The list of pages with heatset inserts is on [Page 12](#).

BOX ASSEMBLY



Join the **box_left** part with the **box_right**

BOX ASSEMBLY

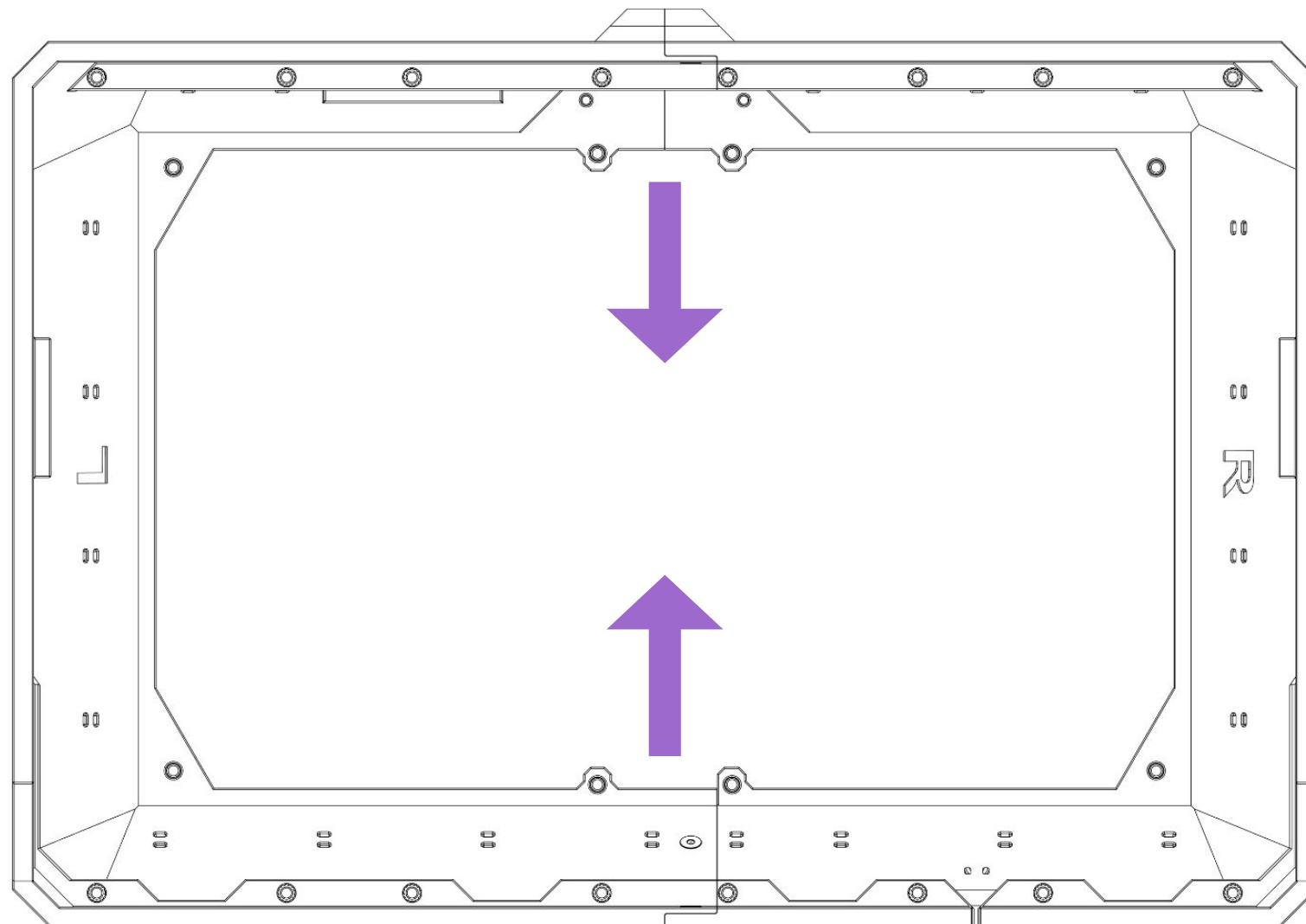


Once box_left and box_right are aligned, secure both parts using 2 M3x5 FHCS screws

BOX ASSEMBLY



Once box_left and box_right are aligned, secure both parts using 2 M3x5 FHCS screws

**NOTE ON BOX CLOSING**

After assembly, the box may appear slightly closed at the center, as indicated by the arrows in the image.

Don't worry, once the Filamentalist is installed inside the box, it will properly align.

This page intentionally left blank.

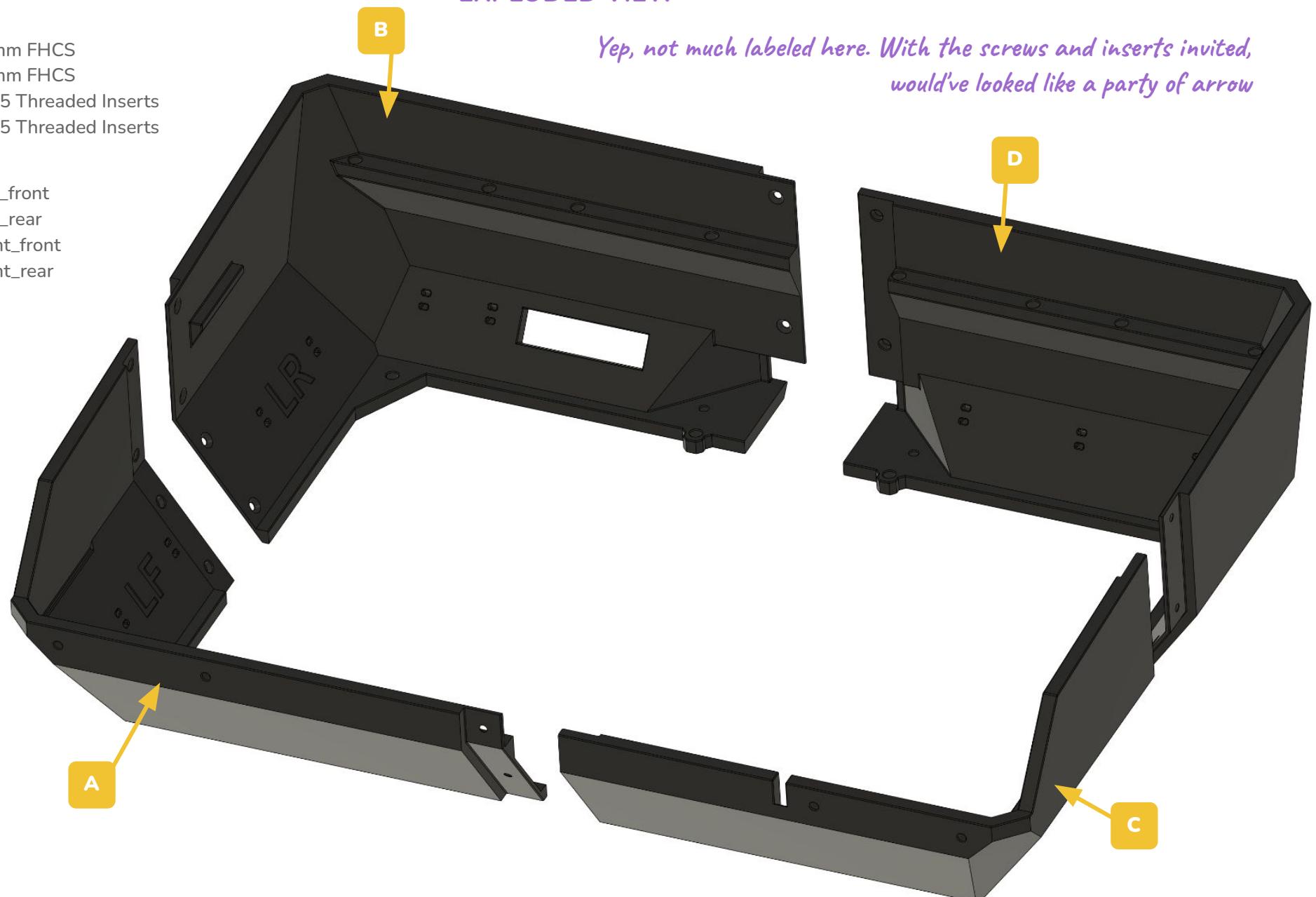


EXPLODED VIEW

12x M3x5mm FHCS
2x M3x10mm FHCS
24x M3x4x5 Threaded Inserts
12x M3x3x5 Threaded Inserts

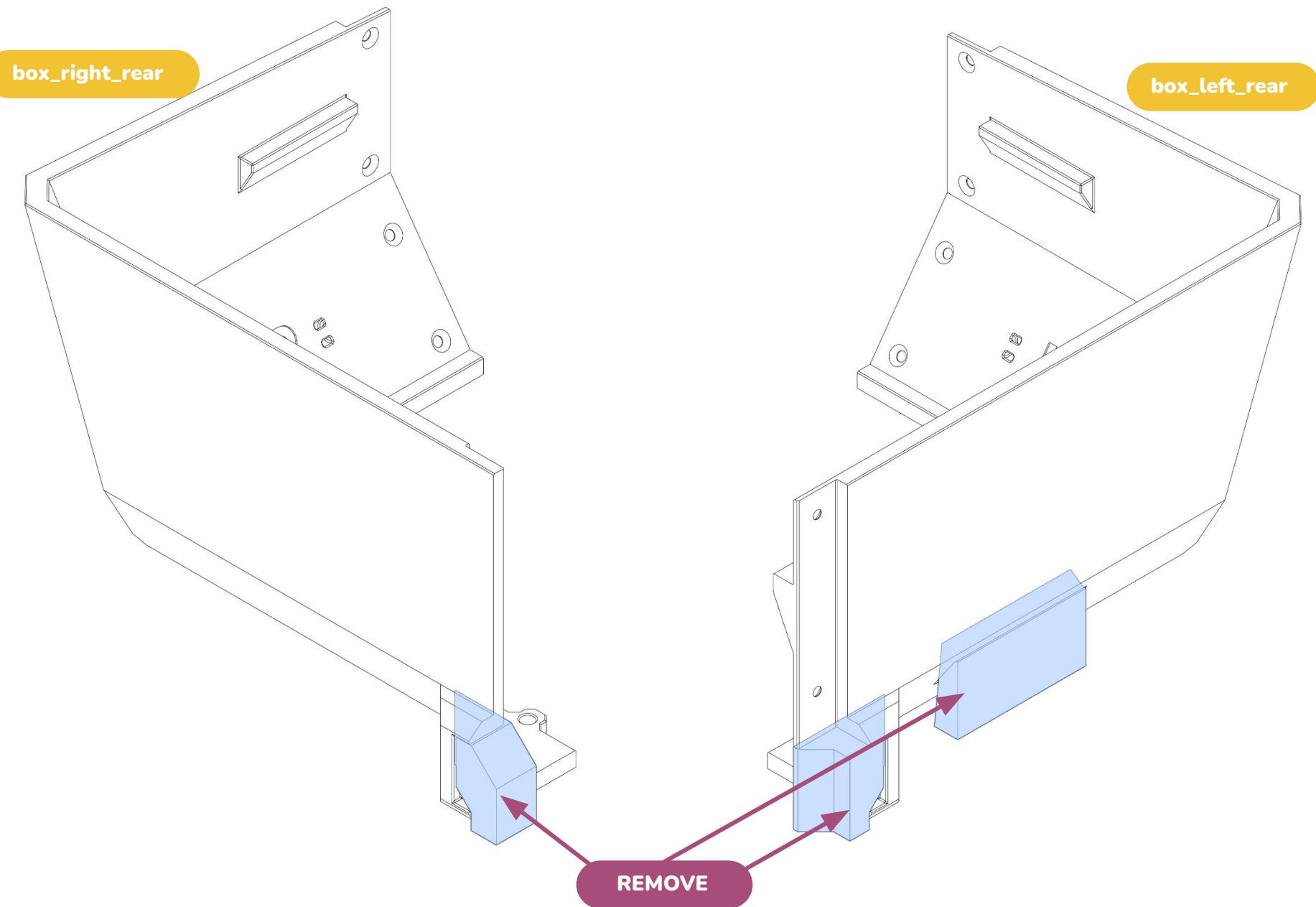
A
B
C
D

1x box_left_front
1x box_left_rear
1x box_right_front
1x box_right_rear

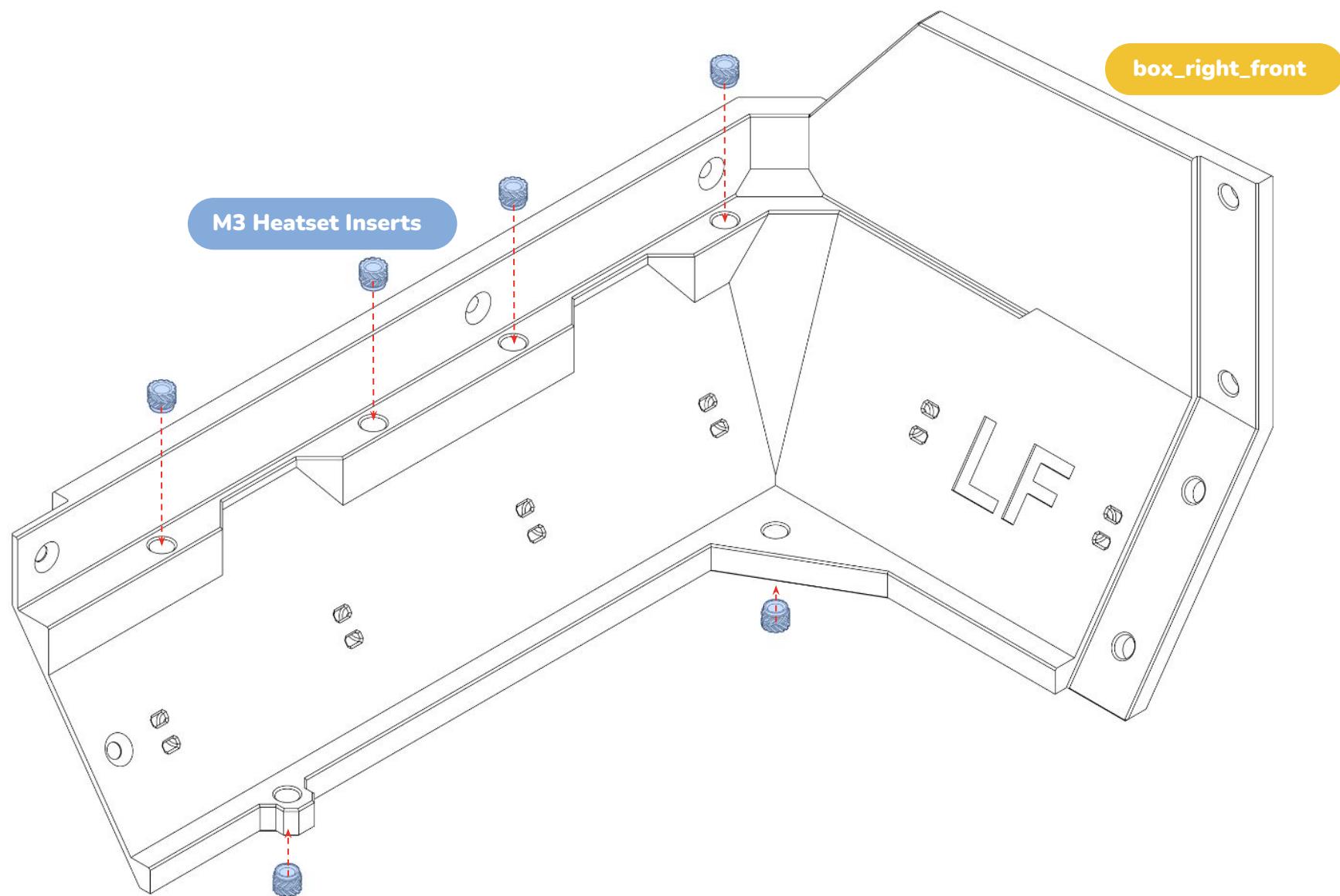


The detailed instructions are on the following pages

BOX PREPARATION



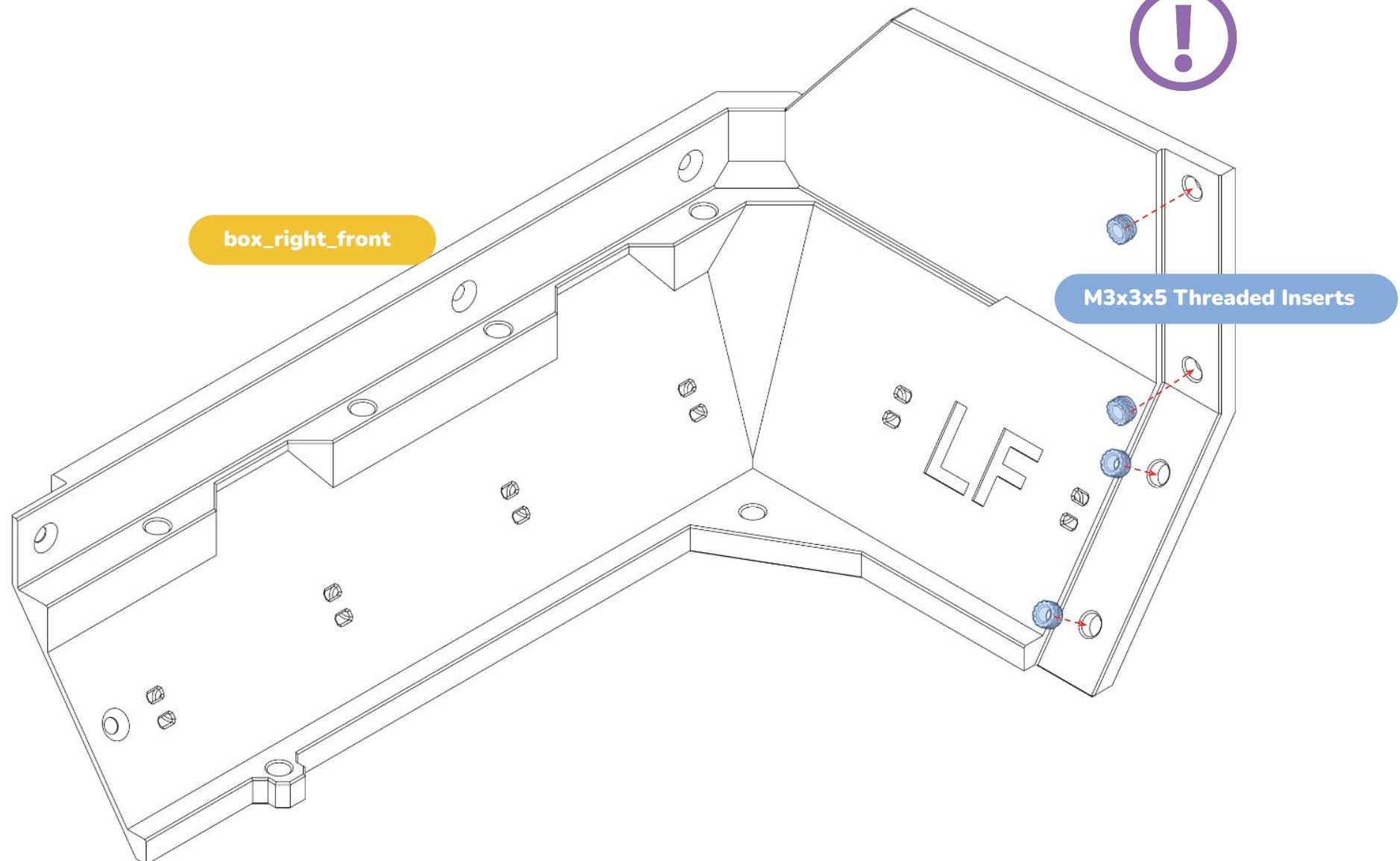
BOX PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

BOX PREPARATION



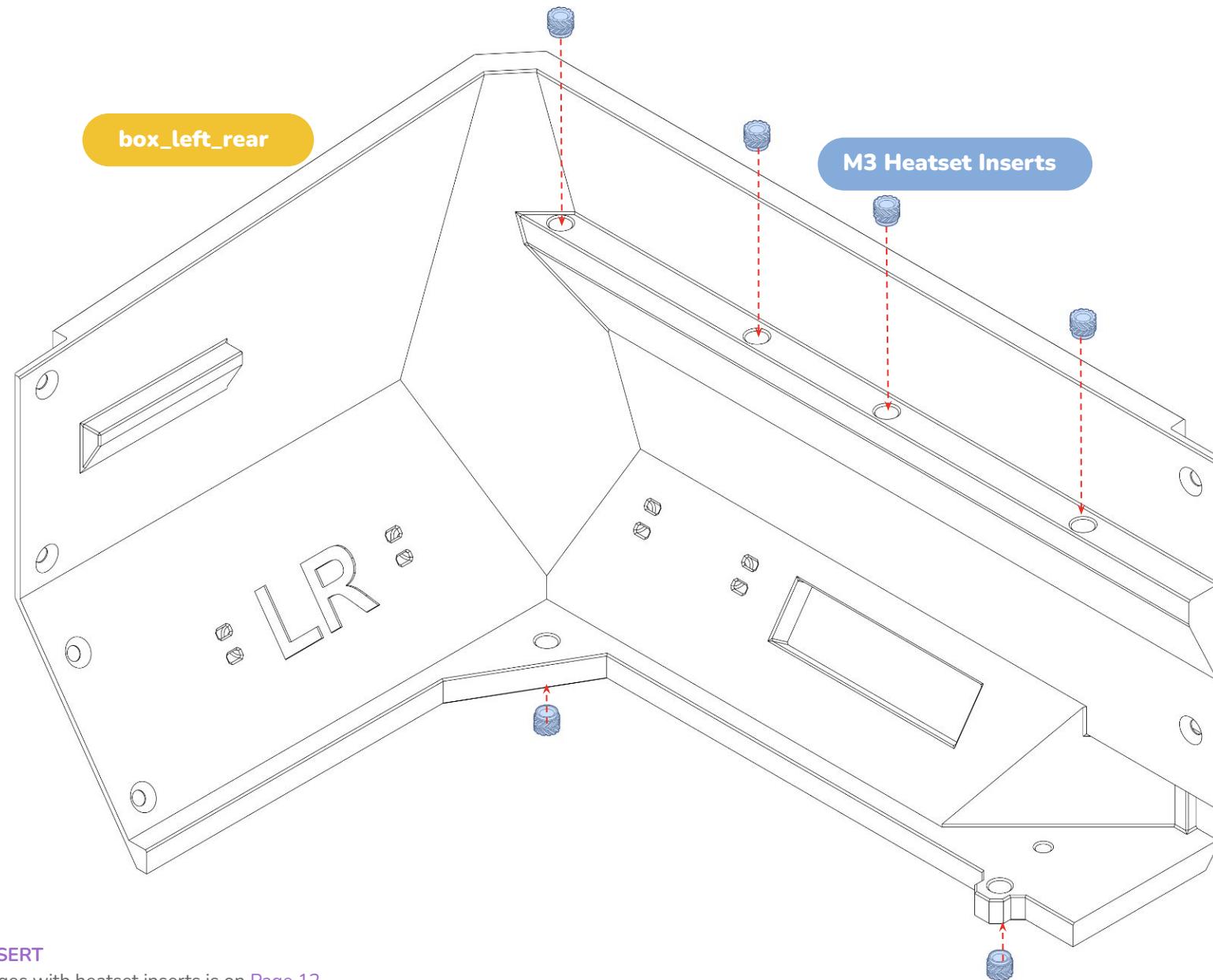
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

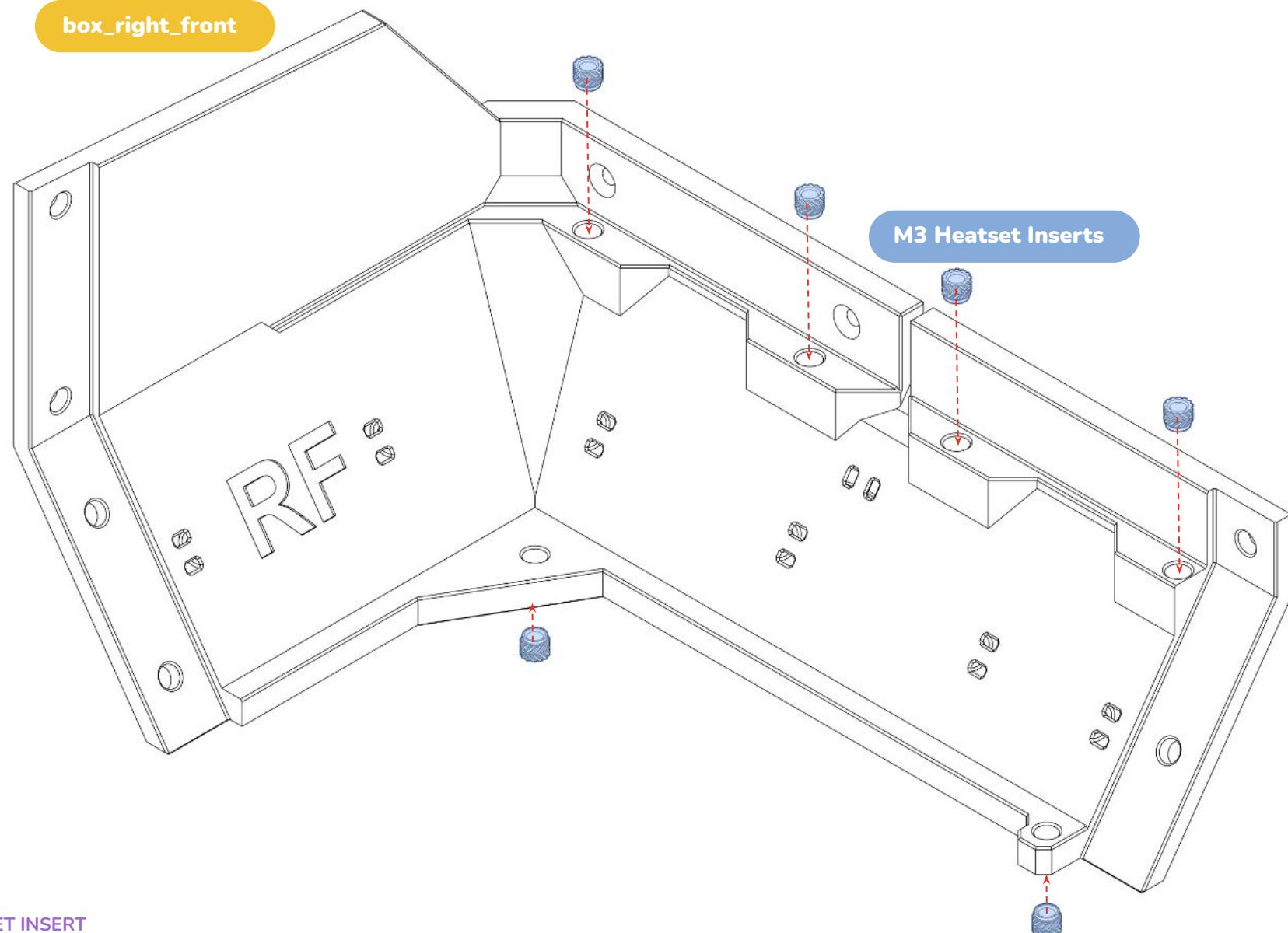
BOX PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

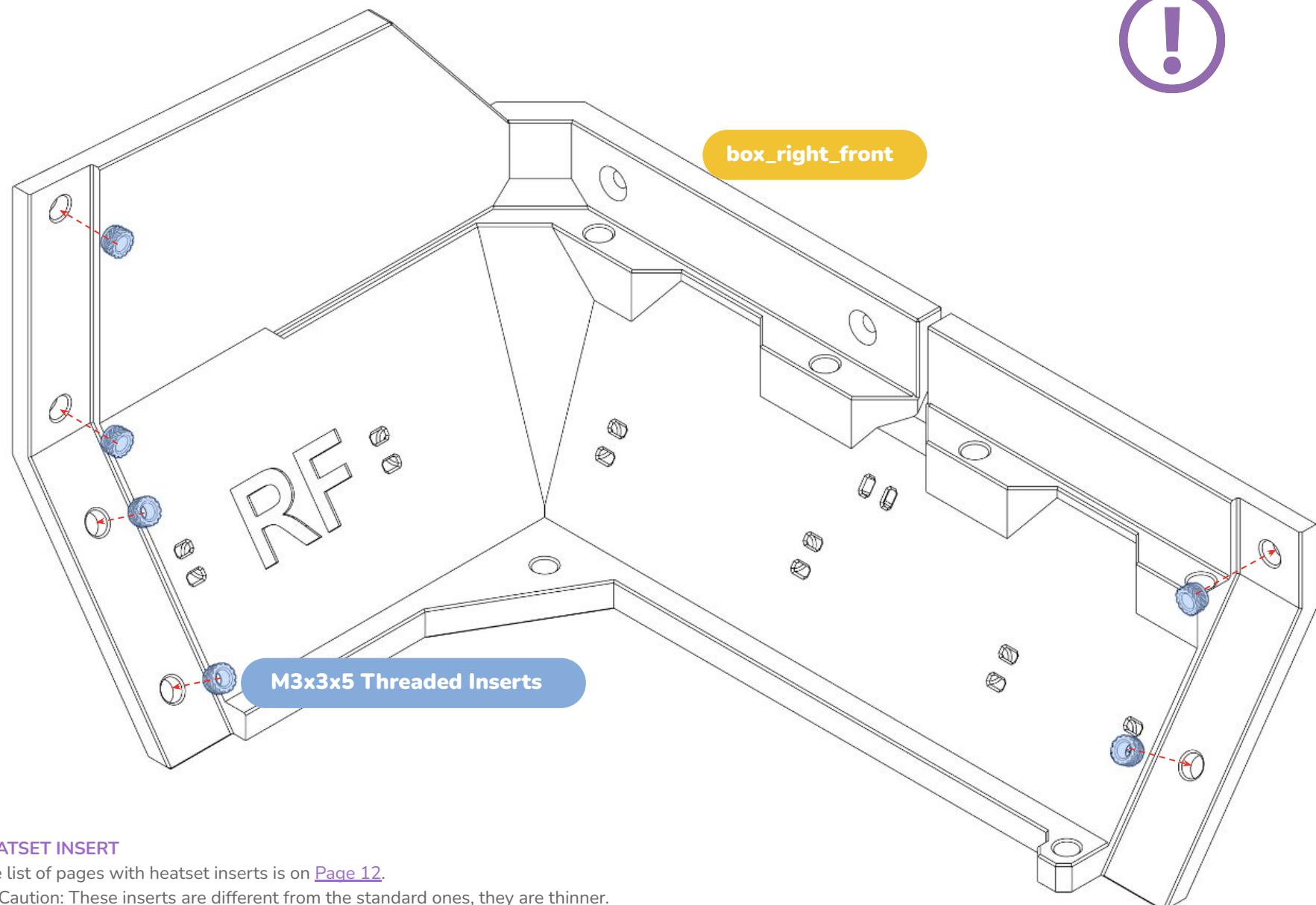
BOX PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

BOX PREPARATION



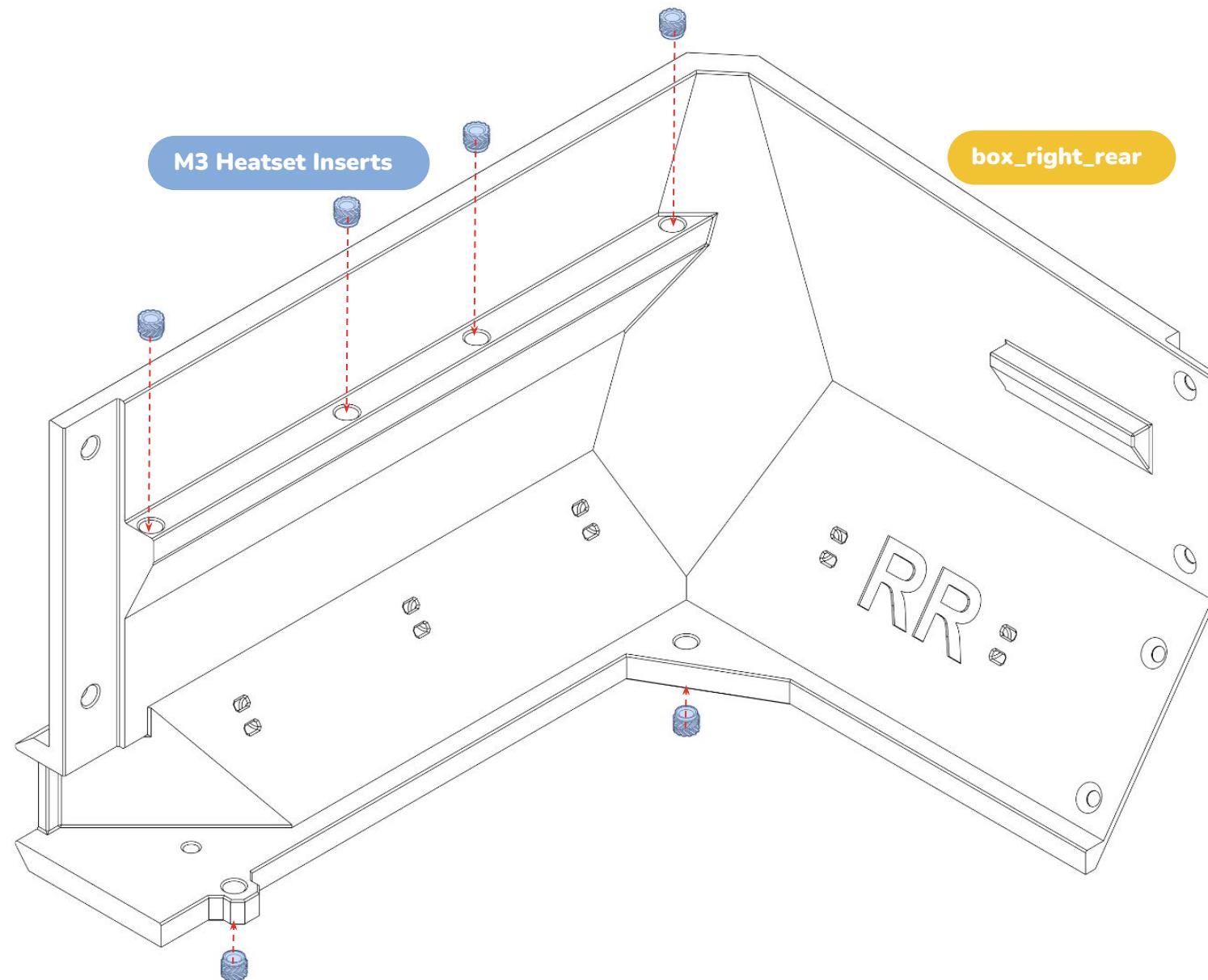
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

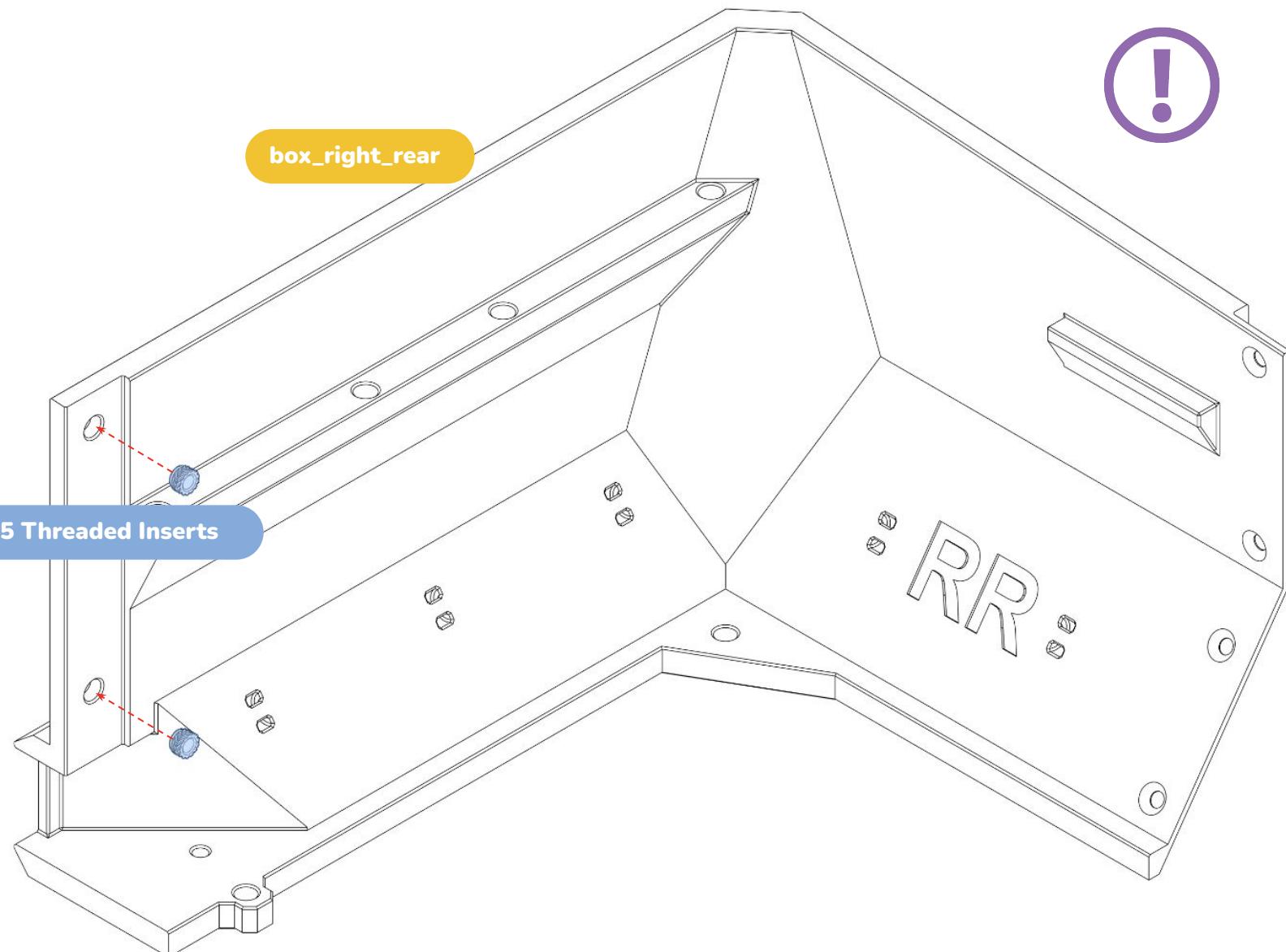
BOX PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

BOX PREPARATION



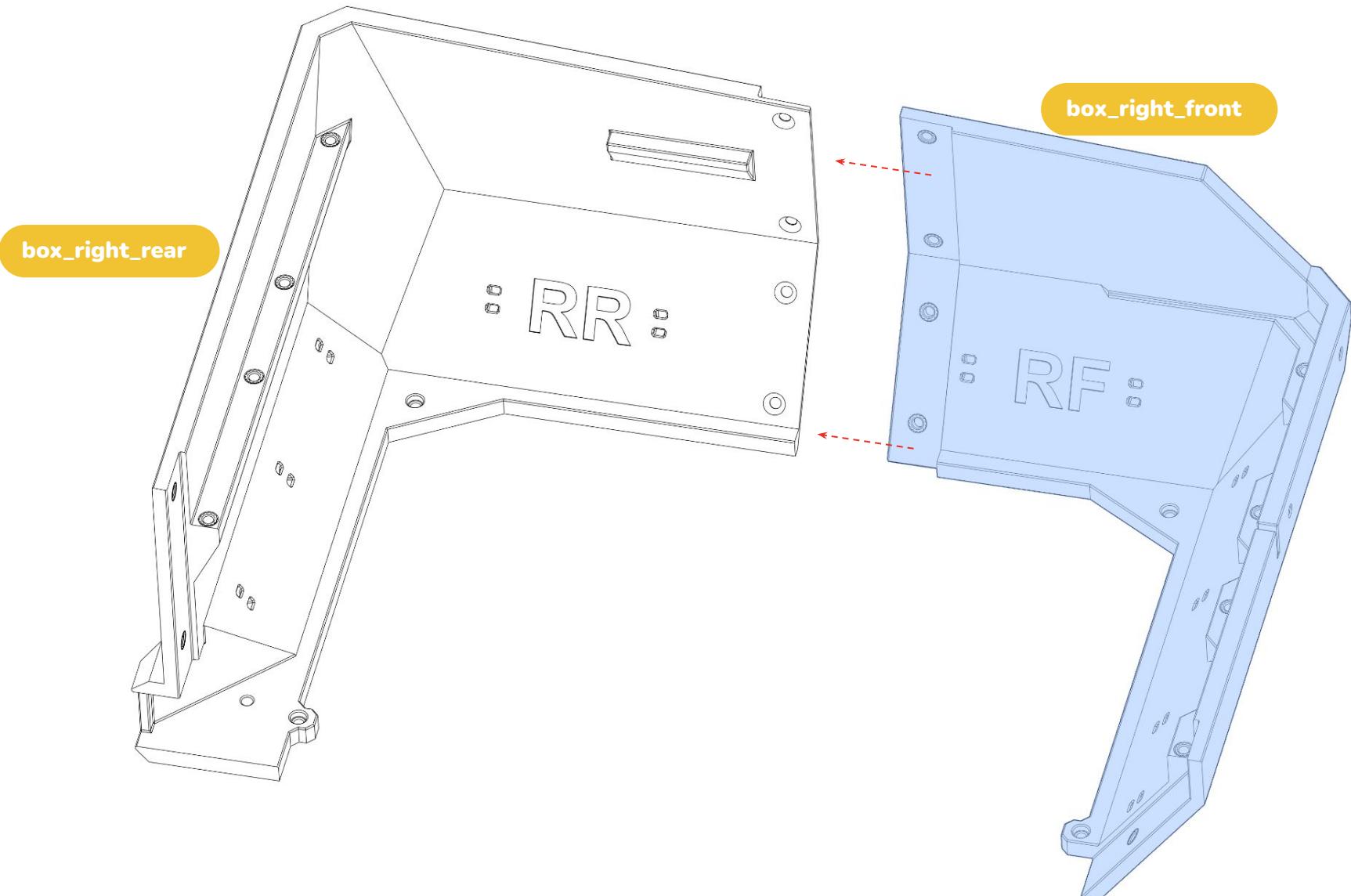
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

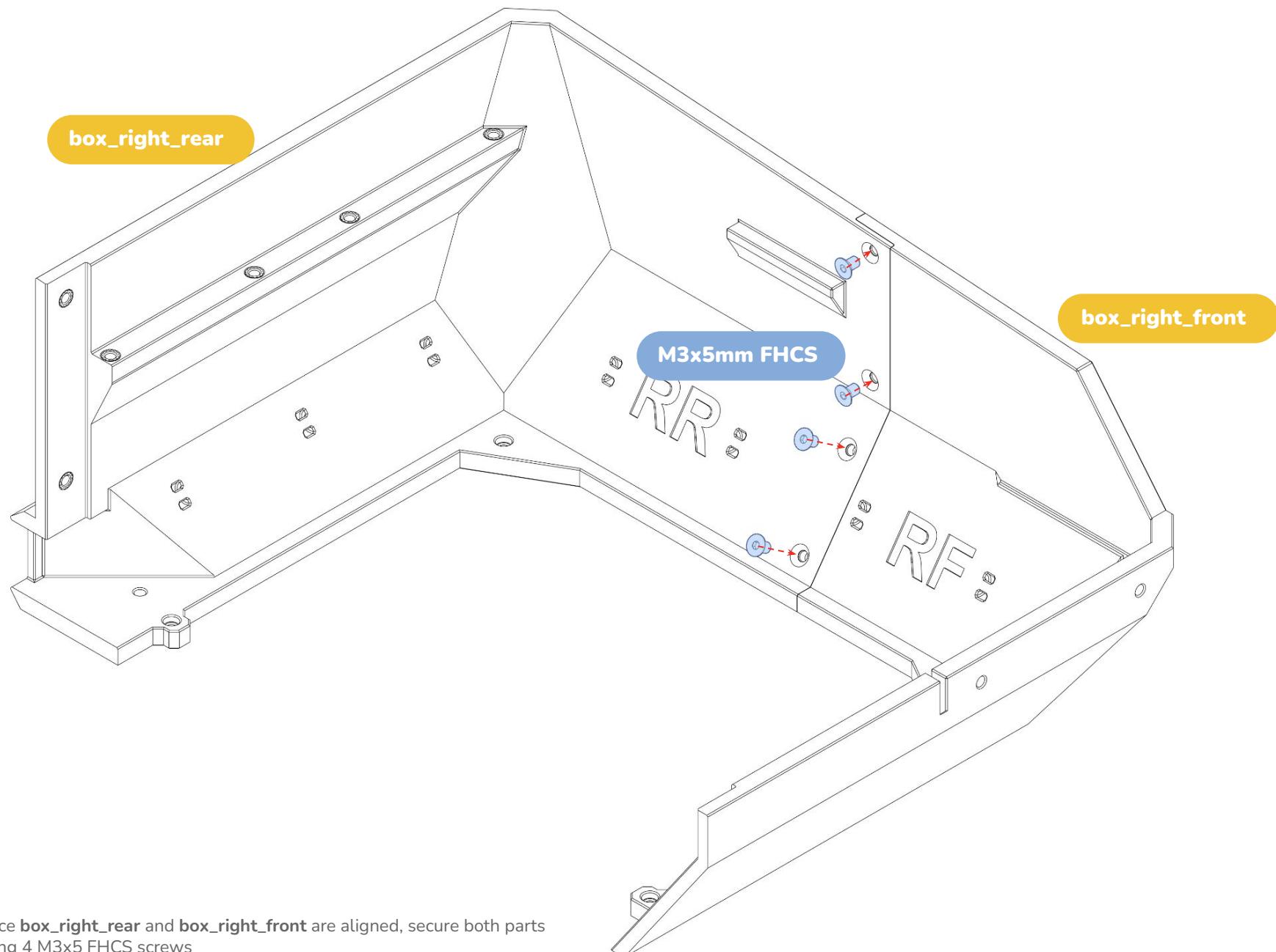
The correct model is: M3x3x5

BOX ASSEMBLY

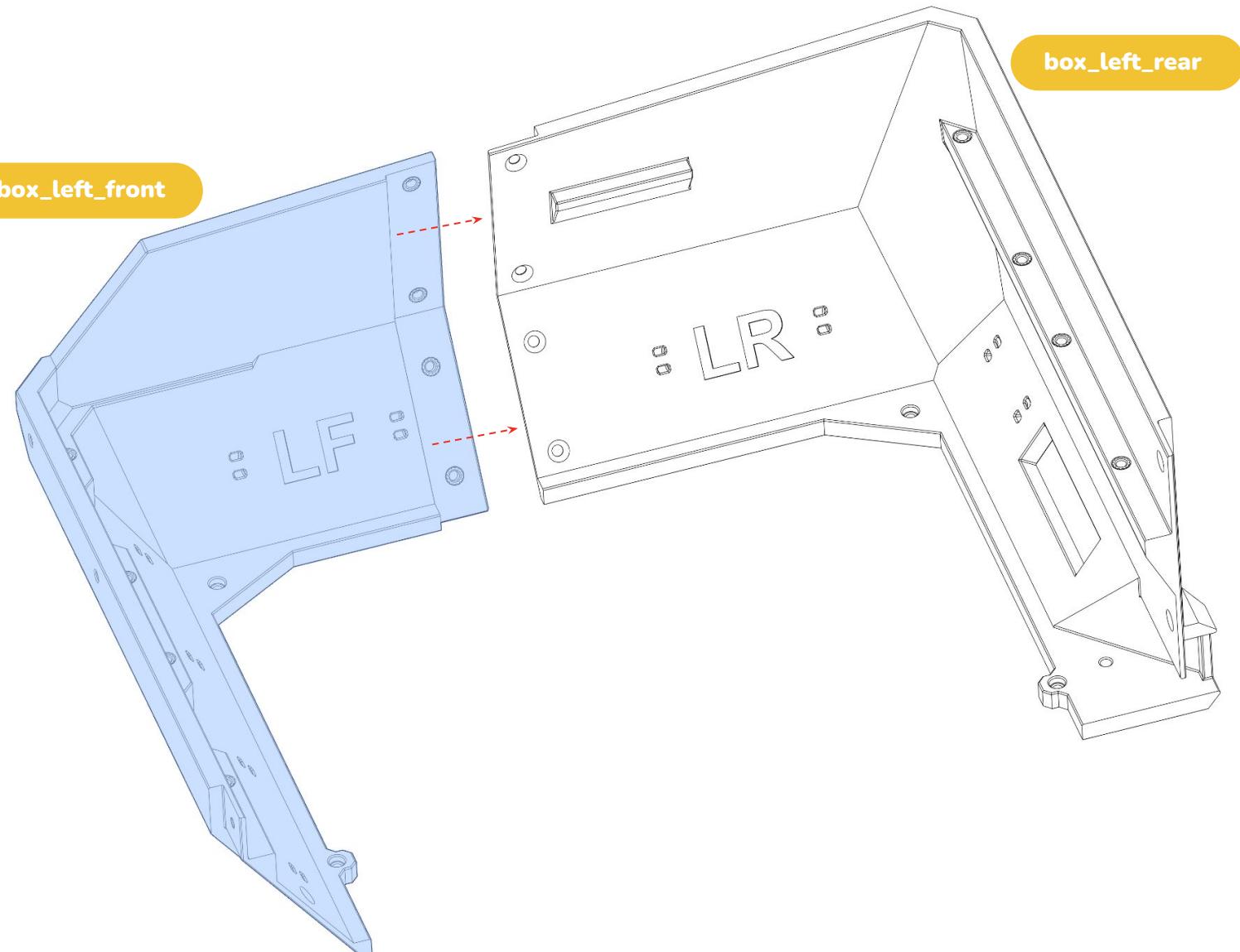


Join the **box_right_rear** part with the **box_right_front**

BOX ASSEMBLY



BOX ASSEMBLY



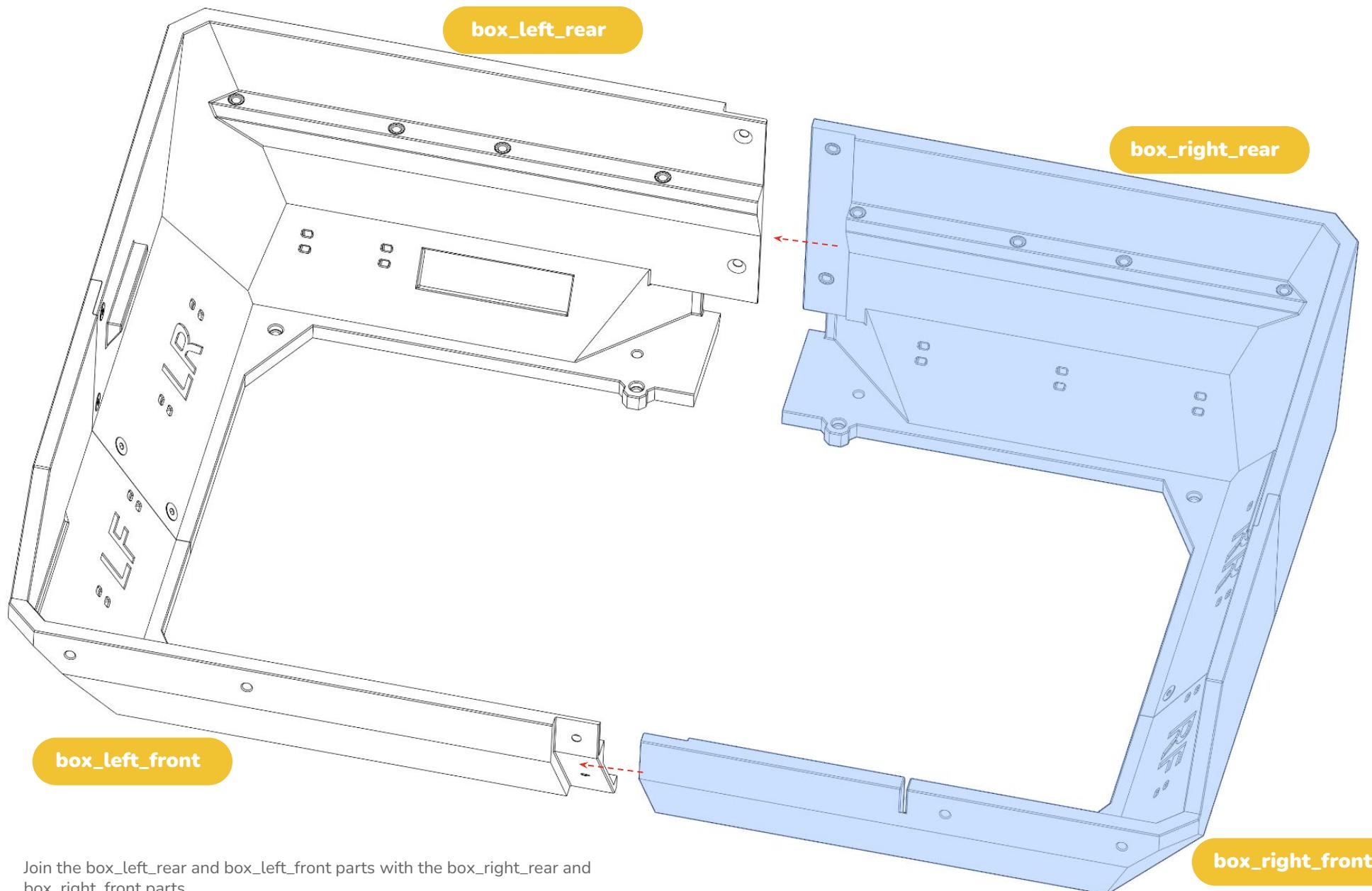
Join the **box_left_rear** part with the **box_left_front**

BOX ASSEMBLY



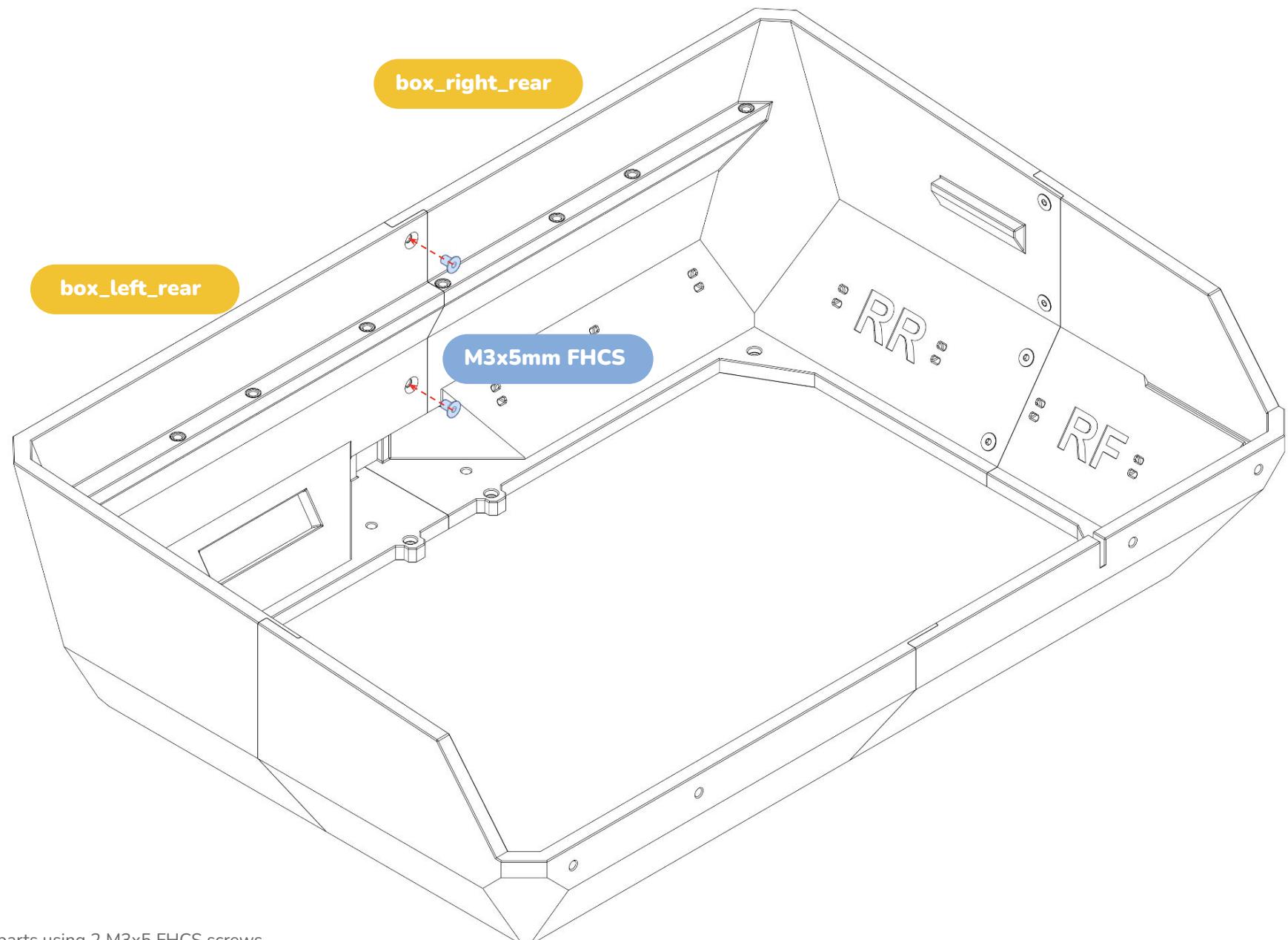
Once **box_left_rear** and **box_left_front** are aligned, secure both parts using 4 M3x5 FHCS screws

BOX ASSEMBLY



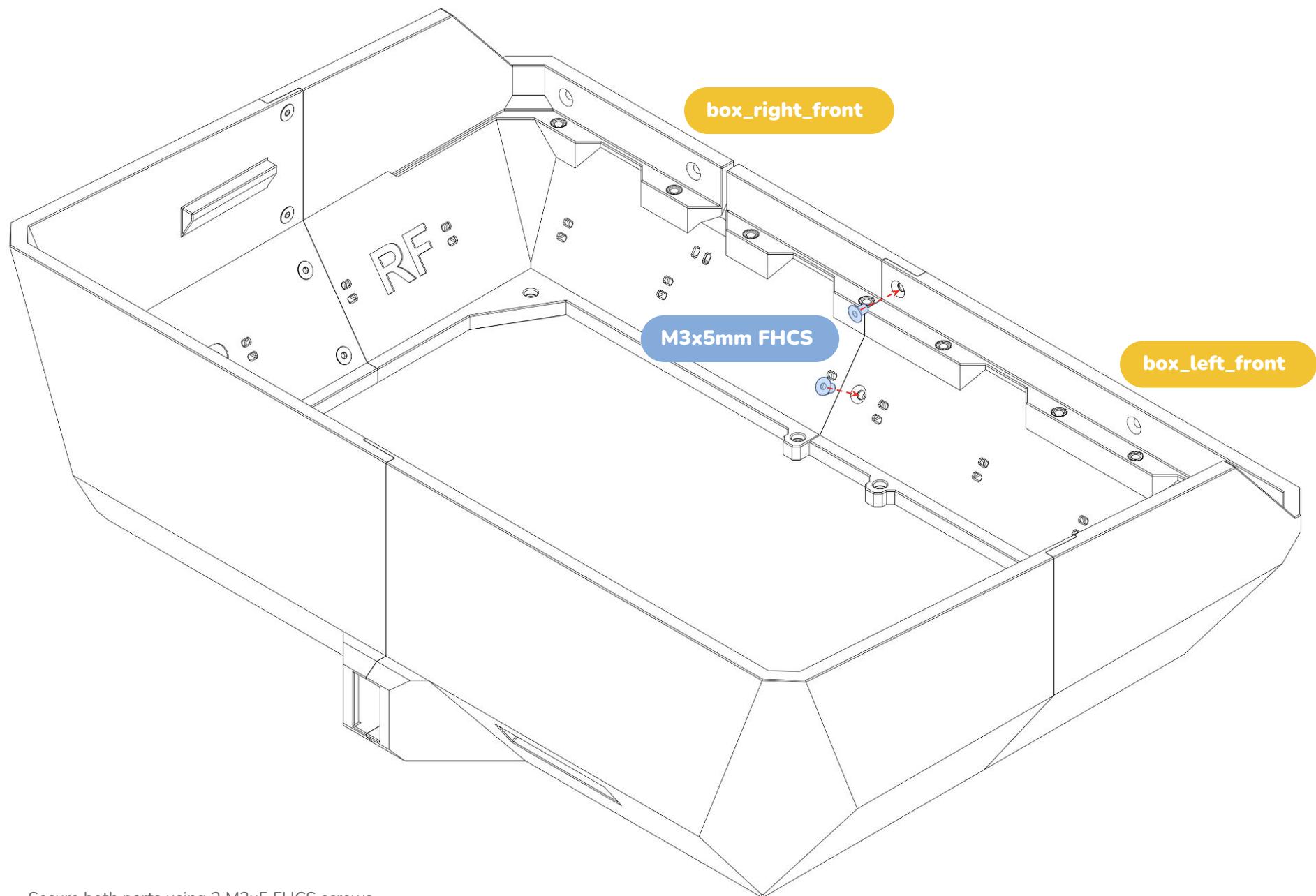
Join the box_left_rear and box_left_front parts with the box_right_rear and box_right_front parts

BOX ASSEMBLY

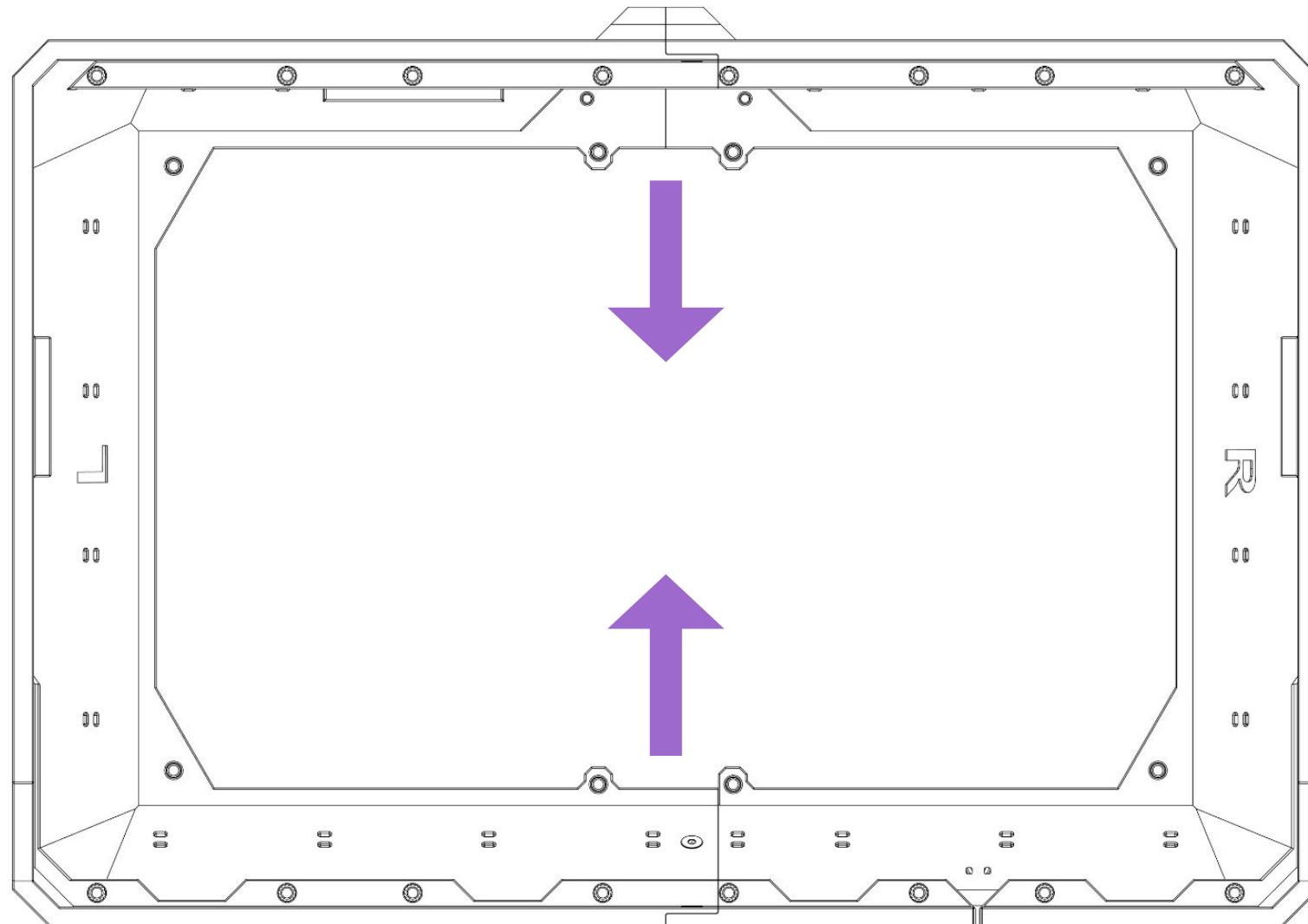


Secure both parts using 2 M3x5 FHCS screws

BOX ASSEMBLY



Secure both parts using 2 M3x5 FHCS screws

**NOTE ON BOX CLOSING**

After assembly, the box may appear slightly closed at the center, as indicated by the arrows in the image.

Don't worry, once the Filamentalist is installed inside the box, it will properly align.

This page intentionally left blank.

quattro box



EXPLODED VIEW

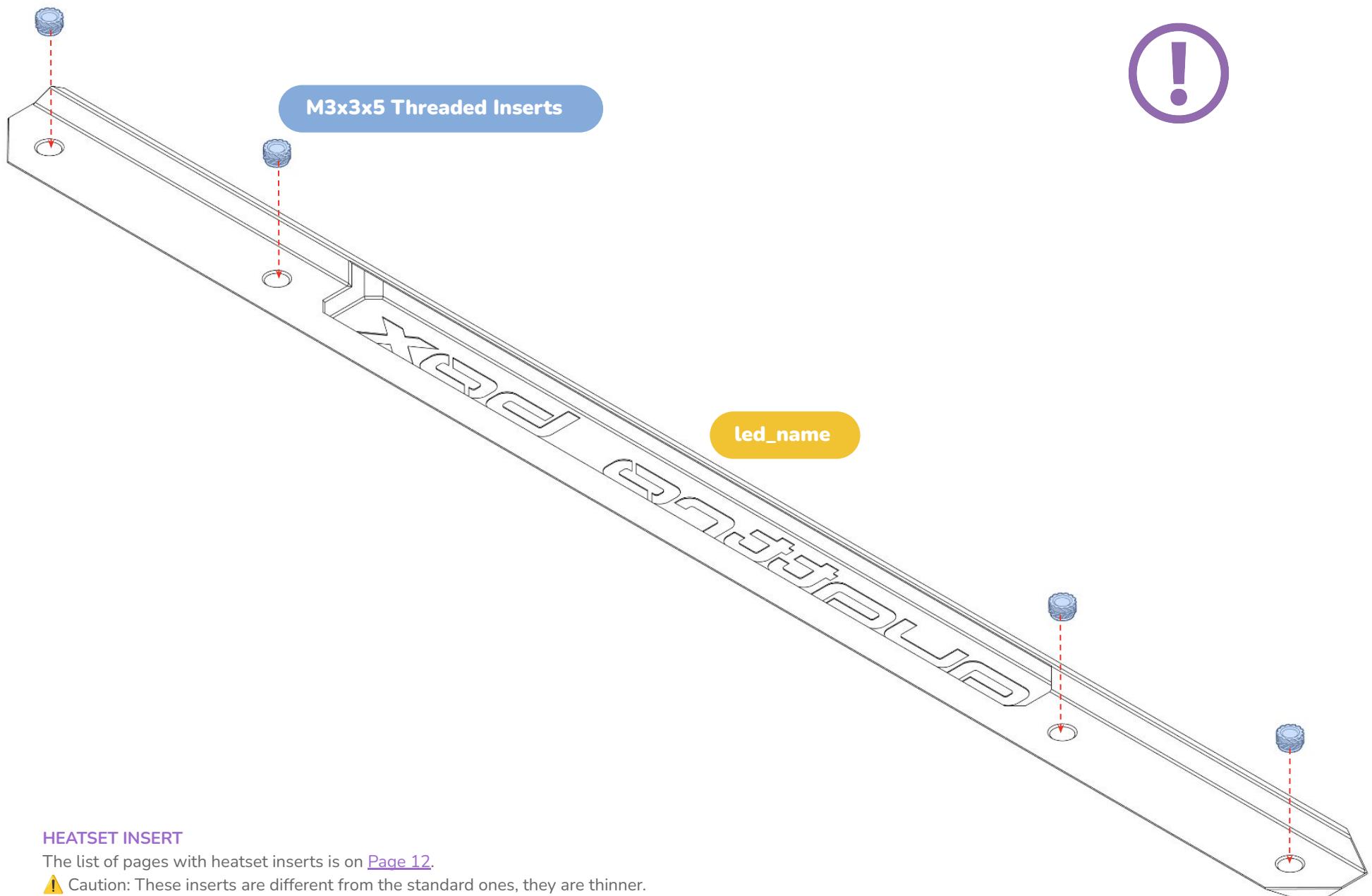
A
B
 4x M3x3x5 Threaded Inserts
 175mm WS2812B 2.7MM LED Strip

C
D
E
F
G
 1x led_name
 1x [o]_led_name_cover
 1x [c]_led_name_difuser
 1x [c]_led_name_difuser_mount
 1x [o]_led_name_mount



The detailed instructions are on the following pages

LOGO PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

LOGO ASSEMBLY



PREPARING AND MOUNTING THE WS2812B LED STRIP

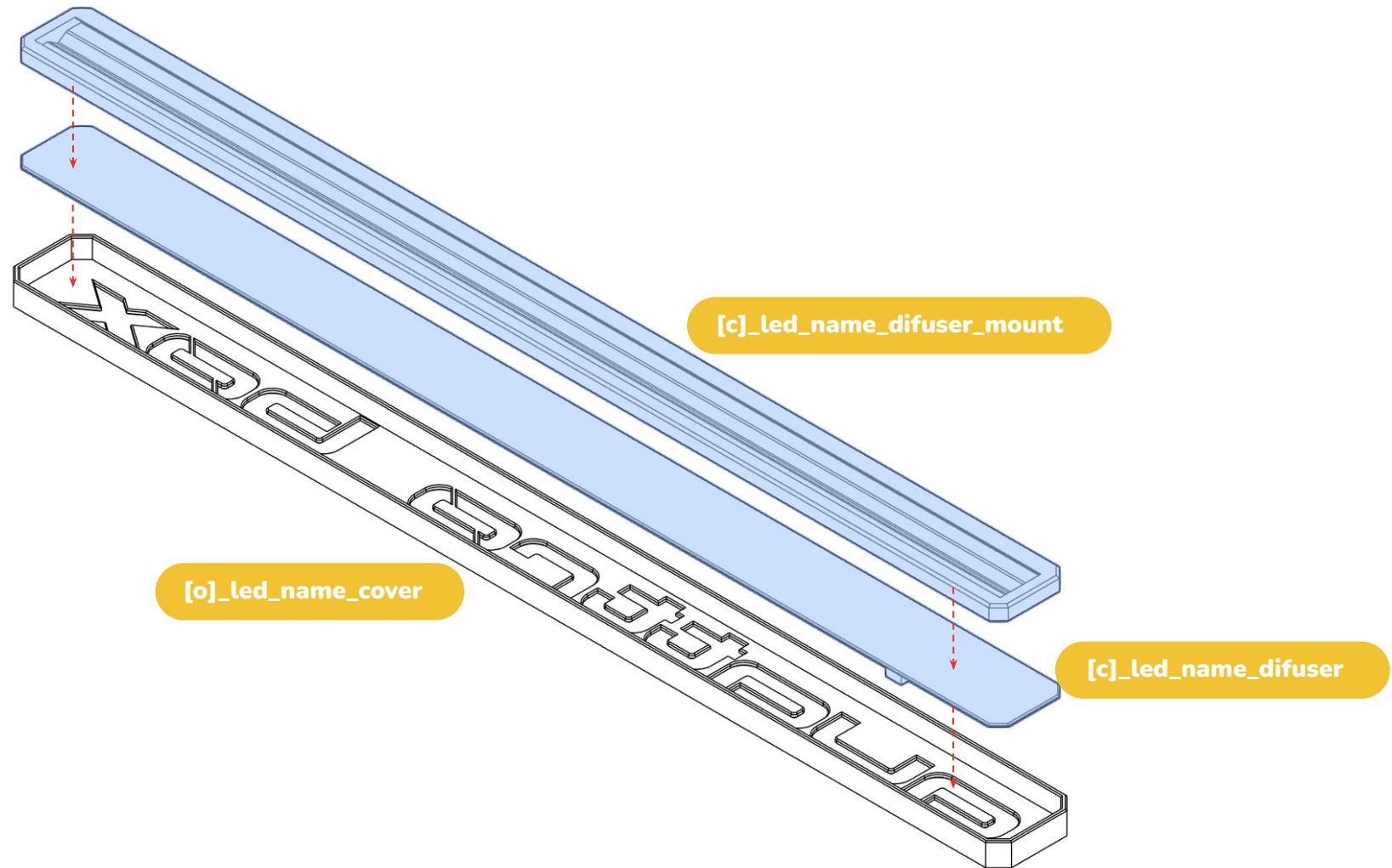
Cut 175 mm from the WS2812B 2.7 mm LED strip.

Solder the wires as shown on [page 20](#).

⚠ Be very careful when soldering wires to this LED strip, as it is quite sensitive.

Glue the strip onto the led_name_mount, making sure the wire is positioned towards the arrow shown at the bottom

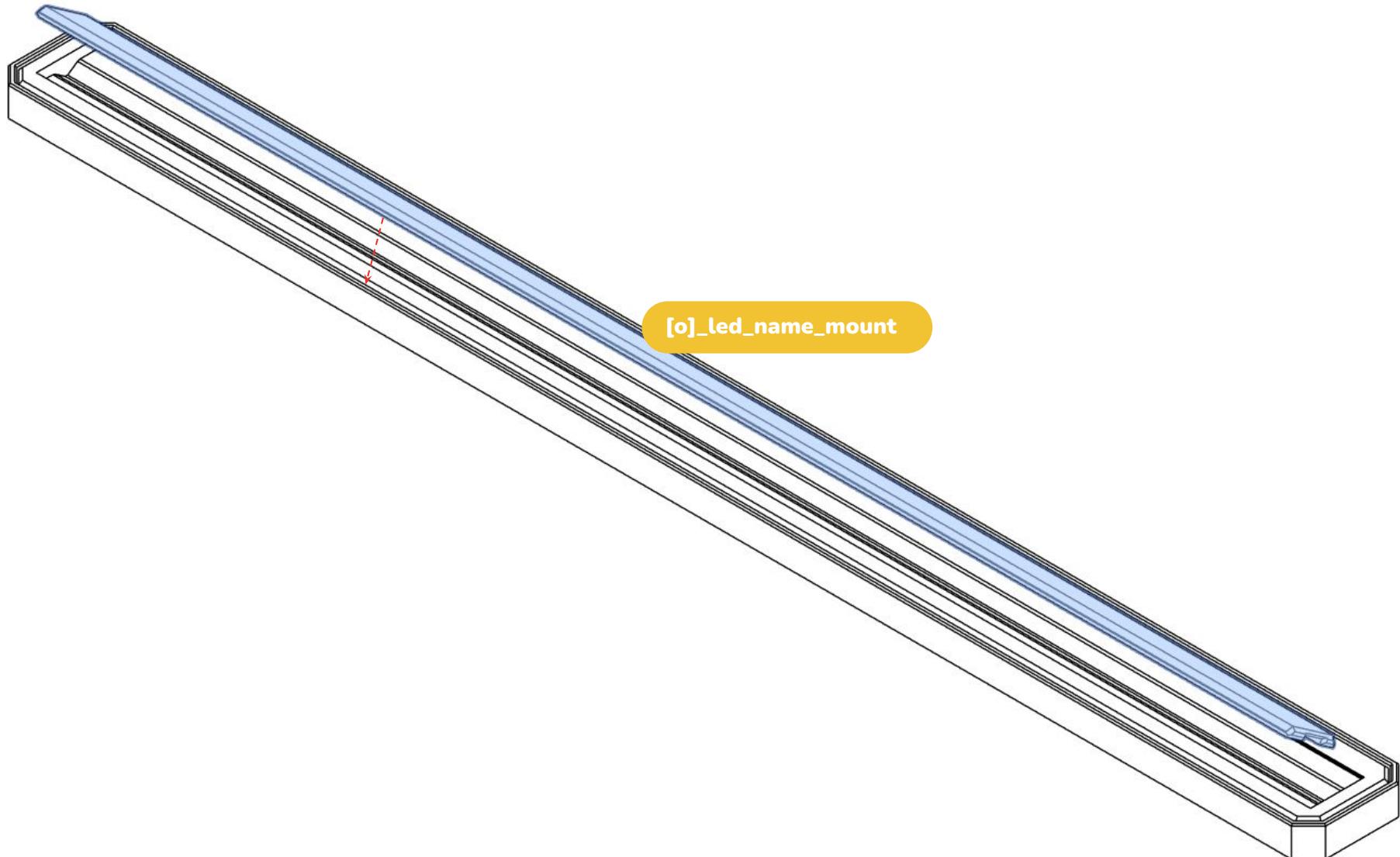
LOGO ASSEMBLY



ASSEMBLING THE LED DIFFUSER

Insert the **led_name_diffuser** and **led_name_diffuser_mount** into the **led_name_cover**, as shown in the image.

LOGO ASSEMBLY

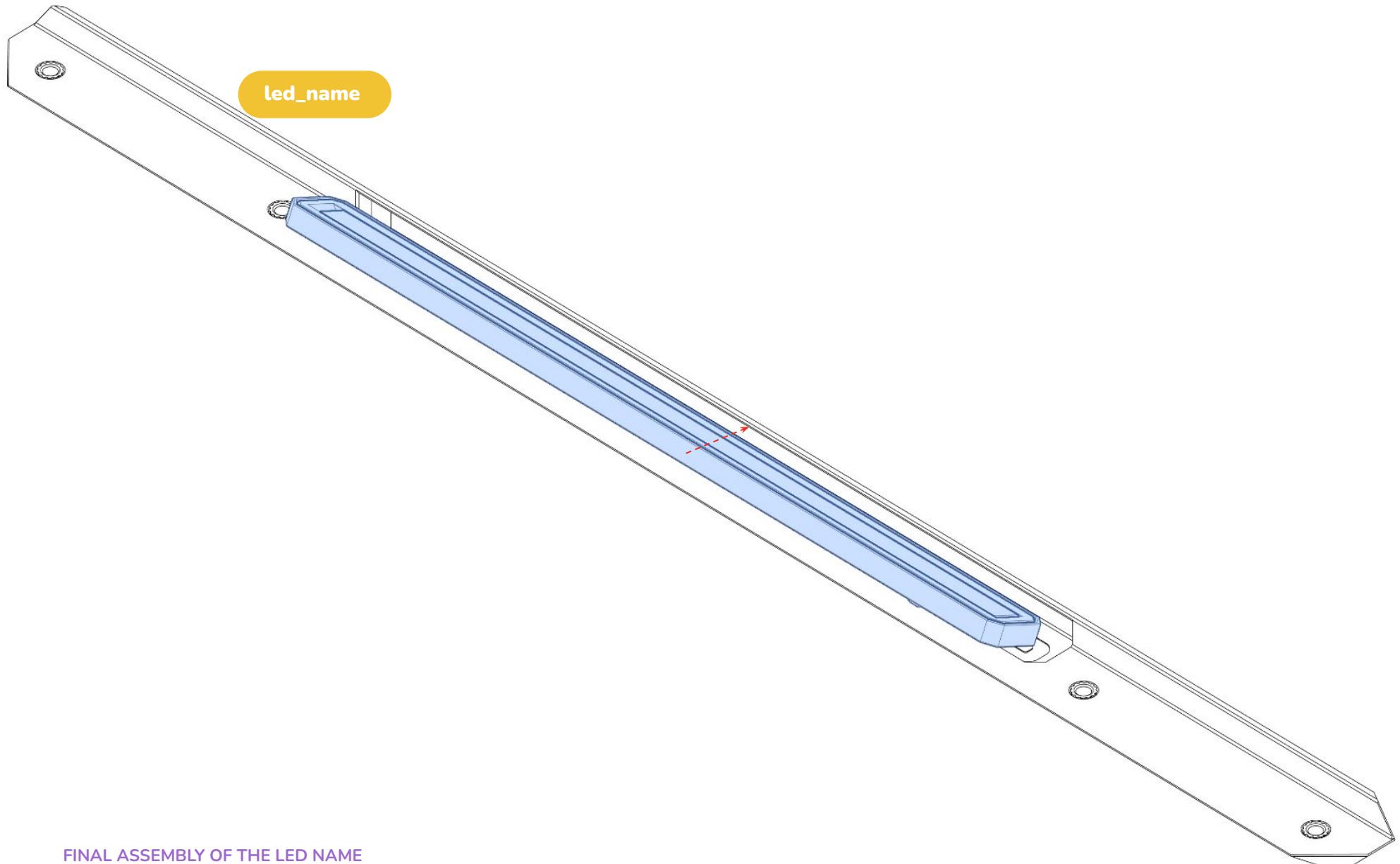


INSTALLING THE LED_NAME_MOUNT

Insert the led_name_mount with the LED already glued.

Ensure the end with the wire is positioned at the "X" at the end of the logo

LOGO ASSEMBLY



FINAL ASSEMBLY OF THE LED NAME

Insert the entire previous assembly into the led_name.

This page intentionally left blank.

quattro box

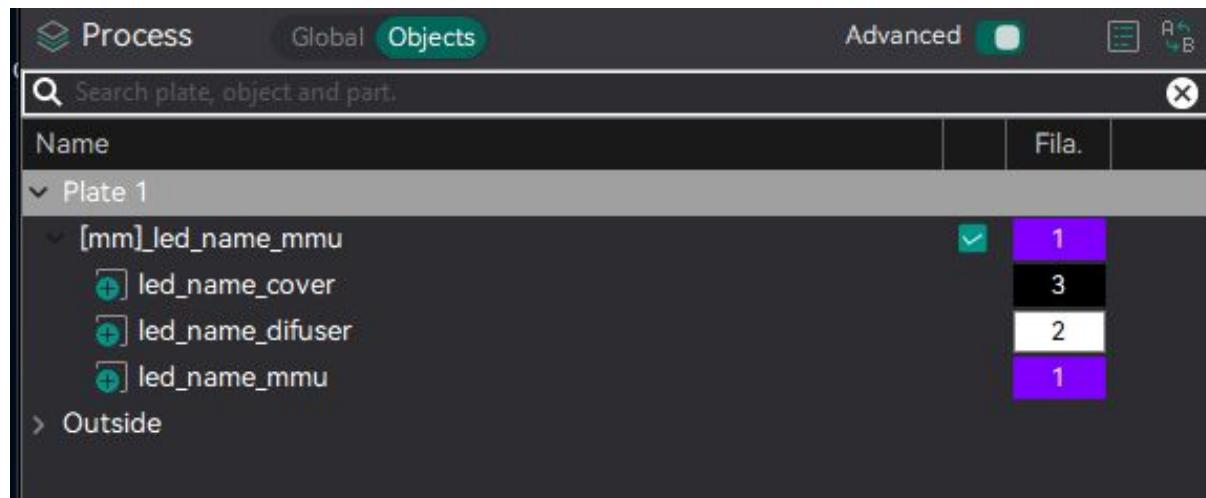


EXPLODED VIEW

- A** 4x M3x3x5 Threaded Inserts
- B** 175mm WS2812B 2.7MM LED Strip
- C** 1x [mm]_led_name_mmu
- D** 1x [o]_led_name_mount_mmu



The detailed instructions are on the following pages



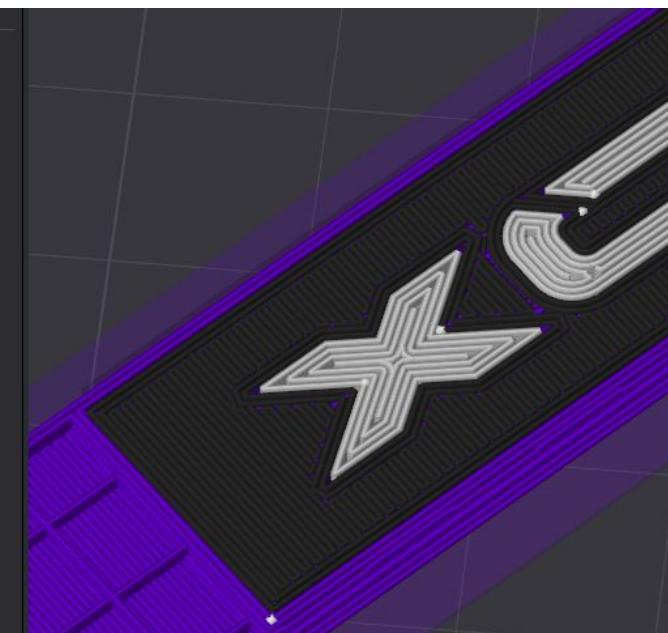
Advanced

Use beam interlocking

Interface shells

Maximum width of a segmented region 0 mm

Interlocking depth of a segmented region 0 mm



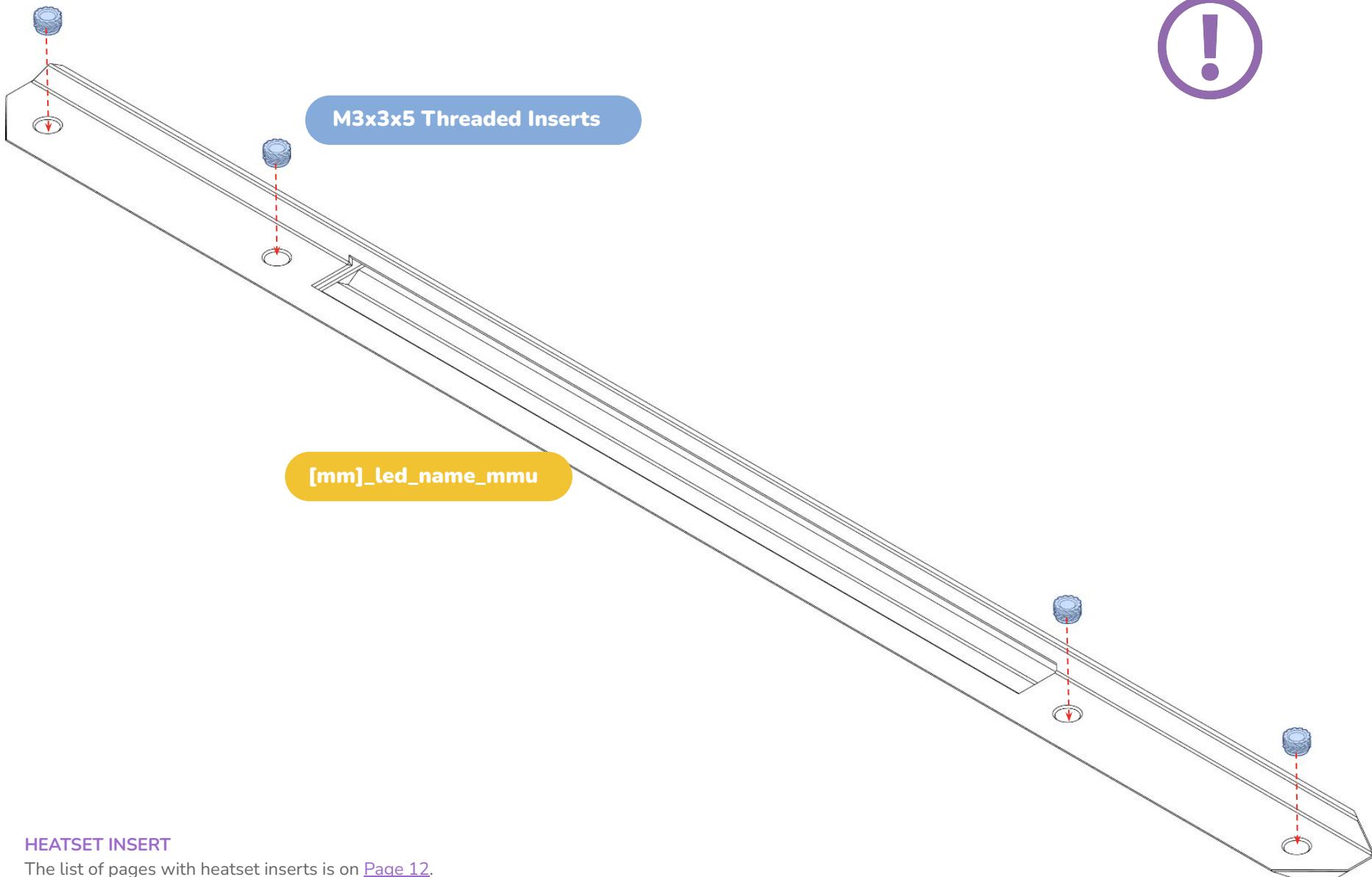
SLICER TIPS FOR THE MMU PRINTED LOGO

Import the [mm]_led_name_mm.3mf file and assign colors to the objects.

It is recommended to enable the "interface shells" feature, so the slicer creates a bottom layer at the color change.

This helps create a shield to prevent light bleed between colors

LOGO PREPARATION



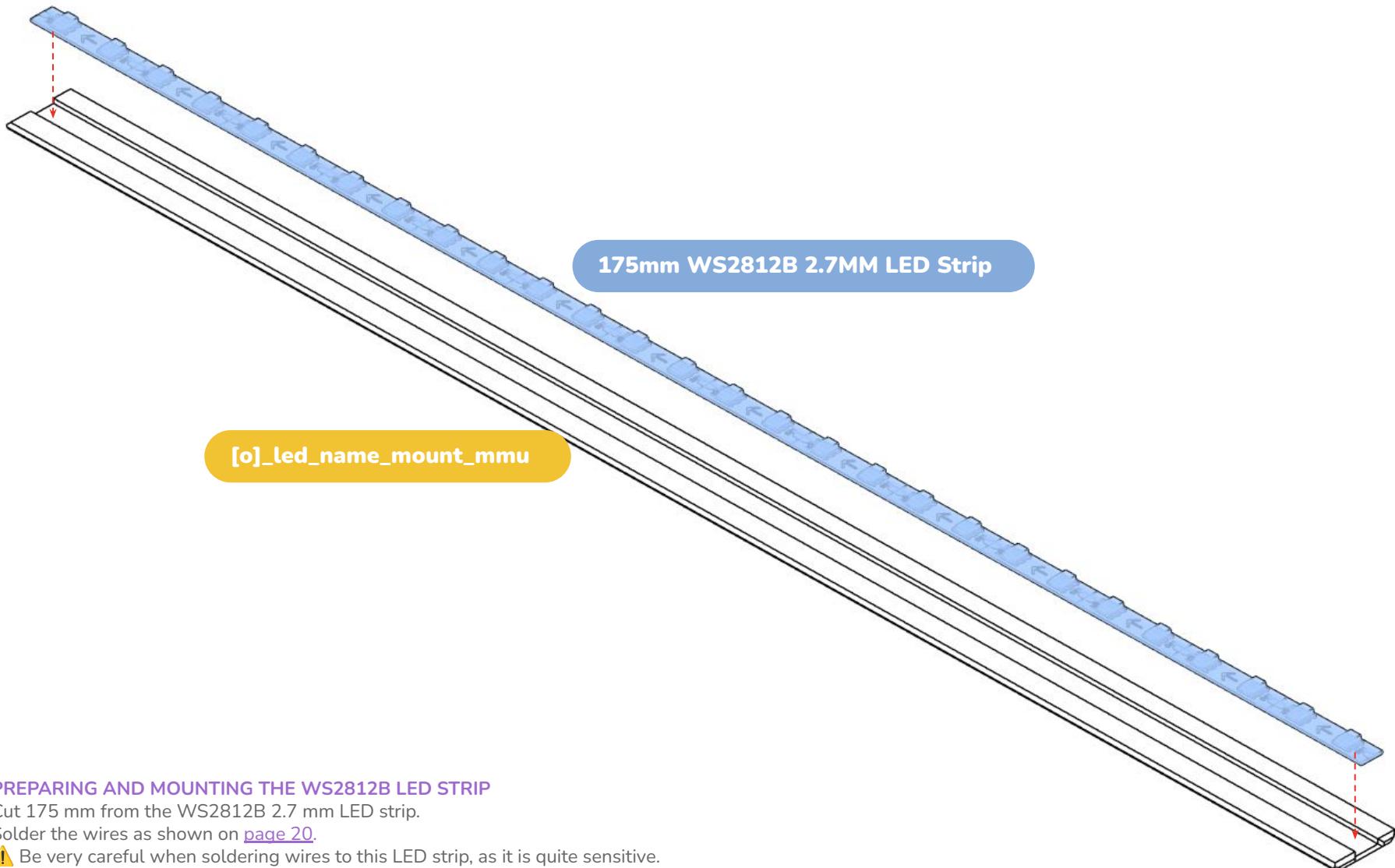
HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

⚠ Caution: These inserts are different from the standard ones, they are thinner.

The correct model is: M3x3x5

LOGO ASSEMBLY



PREPARING AND MOUNTING THE WS2812B LED STRIP

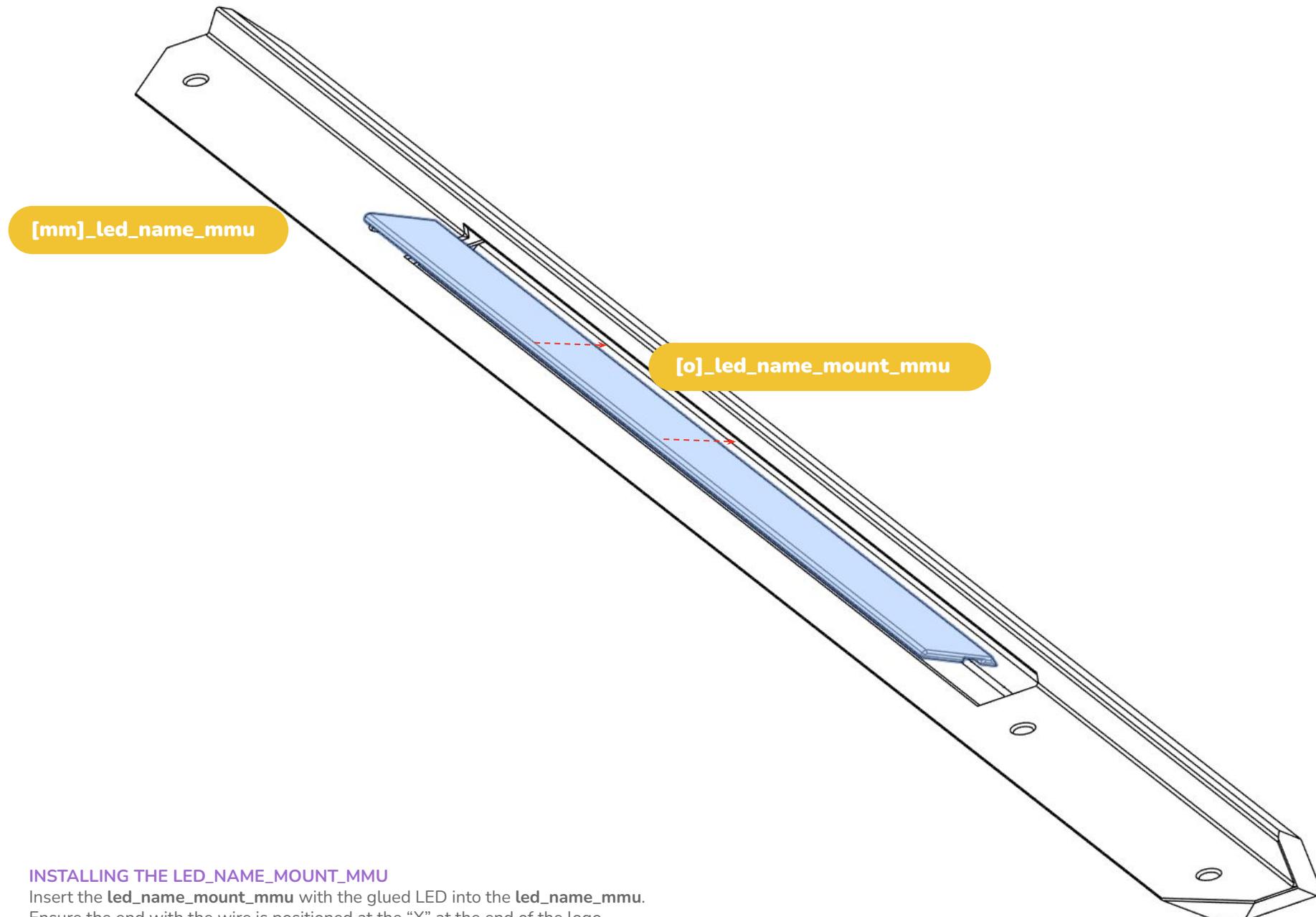
Cut 175 mm from the WS2812B 2.7 mm LED strip.

Solder the wires as shown on [page 20](#).

⚠ Be very careful when soldering wires to this LED strip, as it is quite sensitive.

Glue the strip onto the led_name_mount, making sure the wire is positioned towards the arrow shown at the bottom

LOGO ASSEMBLY

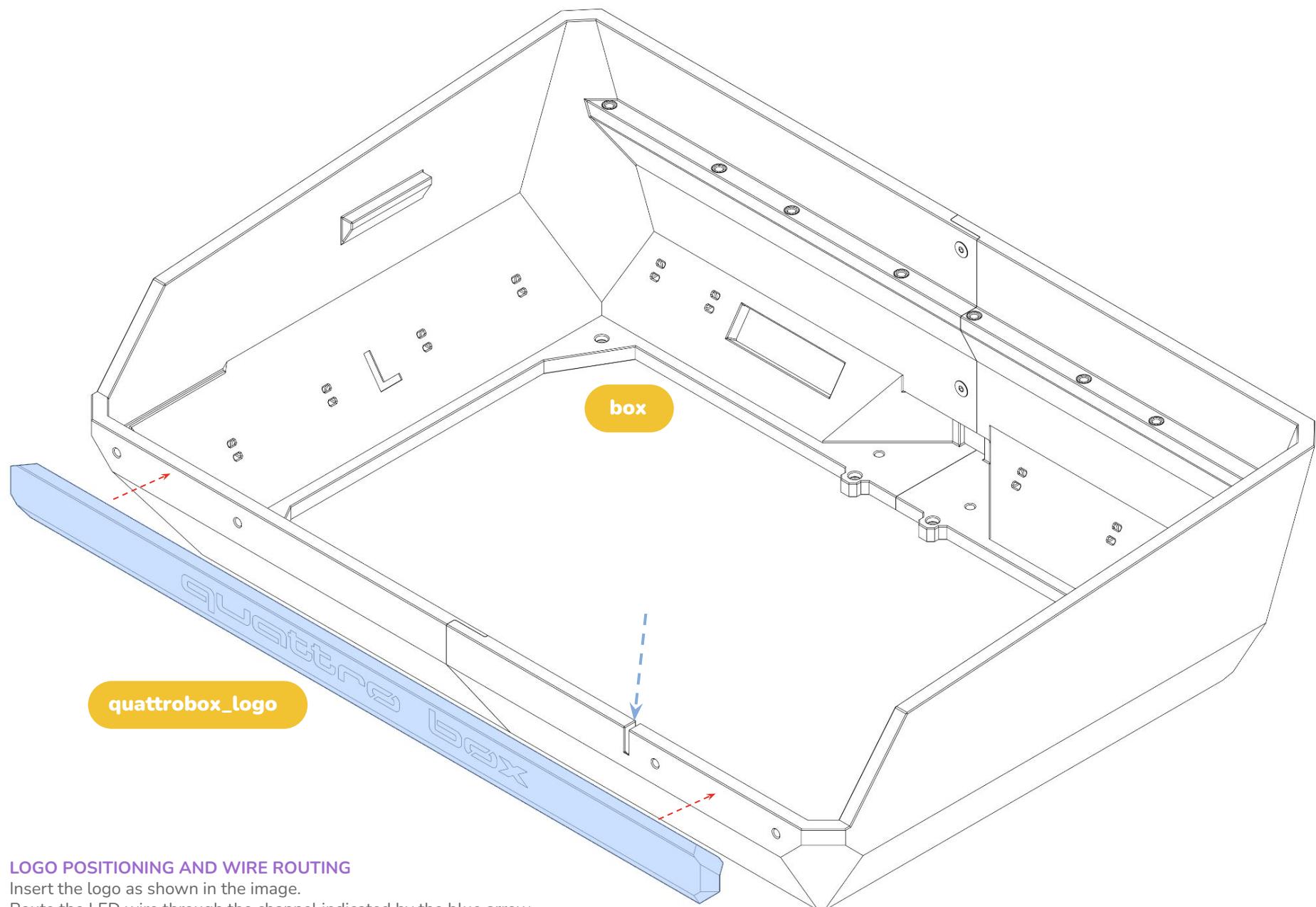


INSTALLING THE LED_NAME_MOUNT_MMU

Insert the led_name_mount_mm with the glued LED into the led_name_mm.
Ensure the end with the wire is positioned at the "X" at the end of the logo

This page intentionally left blank.

LOGO ASSEMBLY



LOGO POSITIONING AND WIRE ROUTING

Insert the logo as shown in the image.

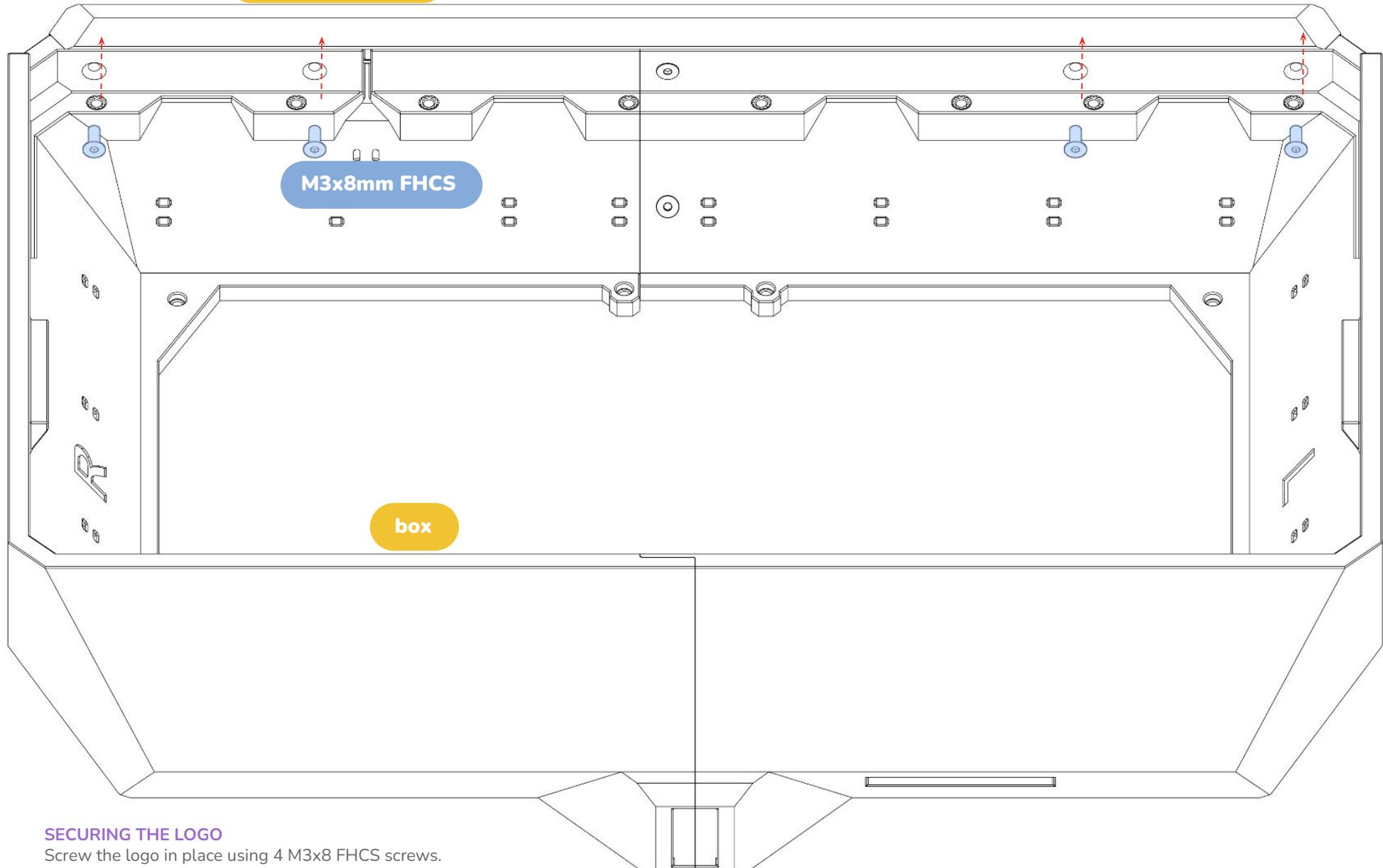
Route the LED wire through the channel indicated by the blue arrow.

LOGO ASSEMBLY

quattrobox_logo

M3x8mm FHCS

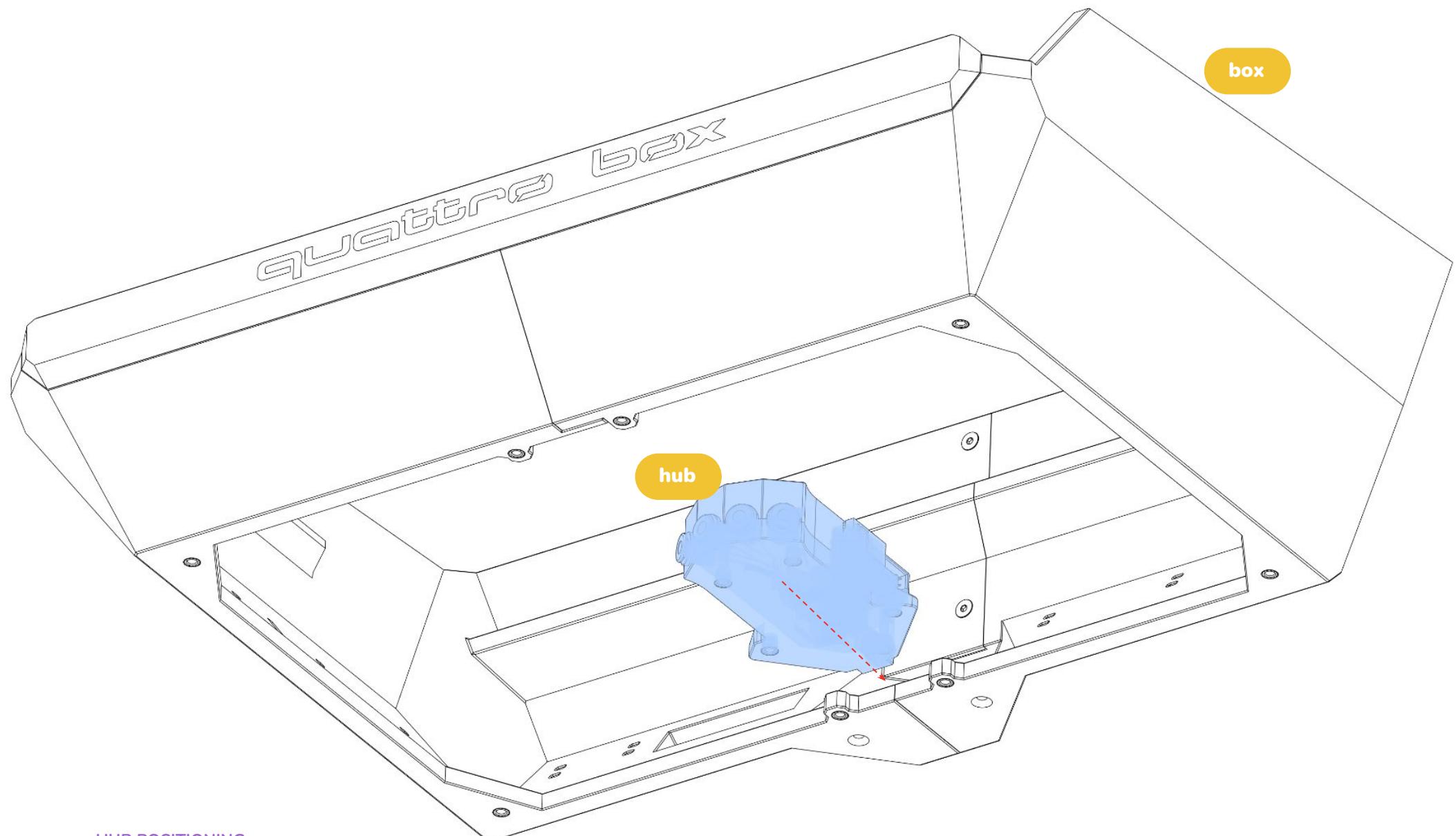
box



SECURING THE LOGO

Screw the logo in place using 4 M3x8 FHCS screws.

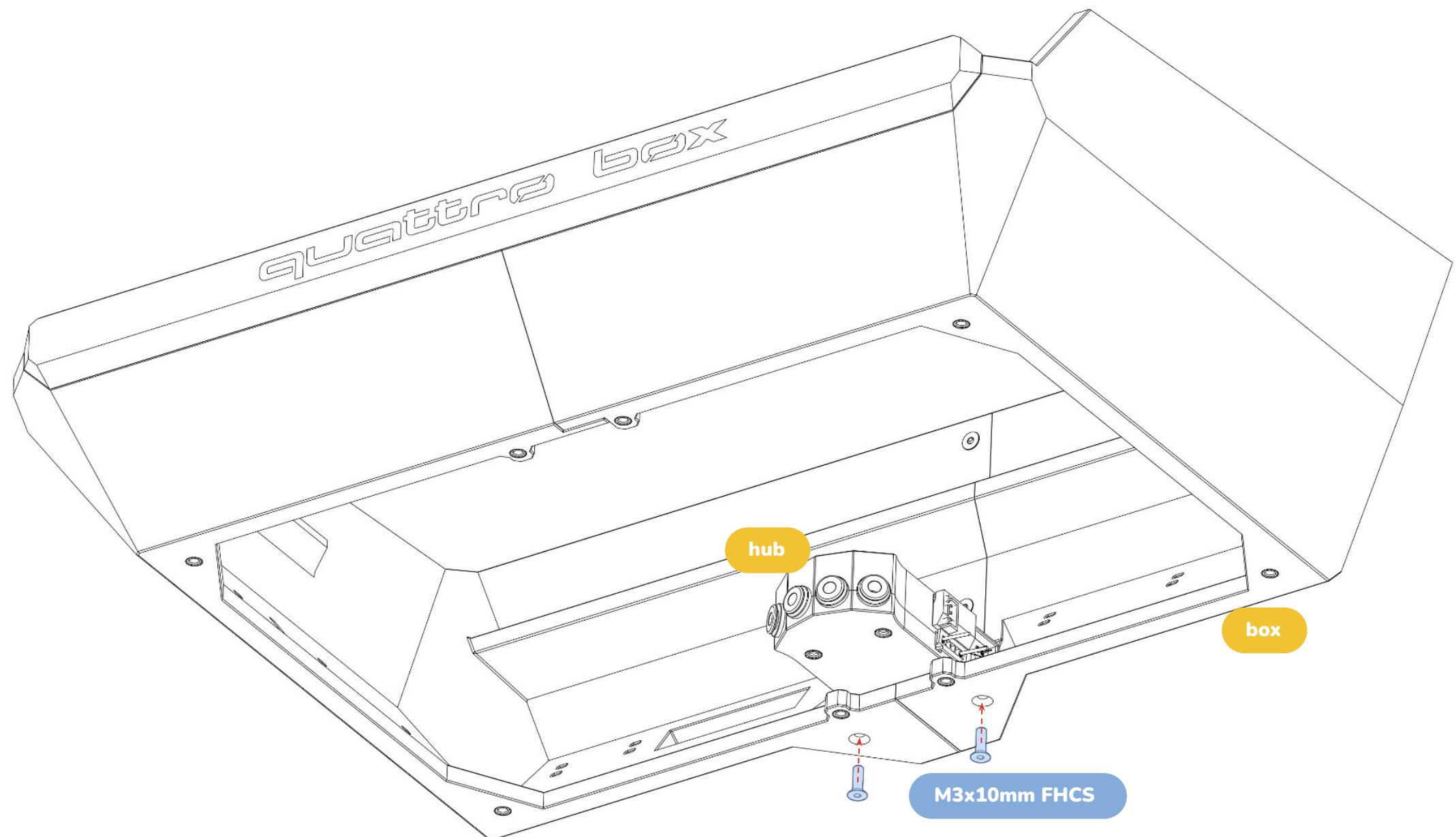
HUB ASSEMBLY



HUB POSITIONING

Insert the hub into its designated location as shown in the image.

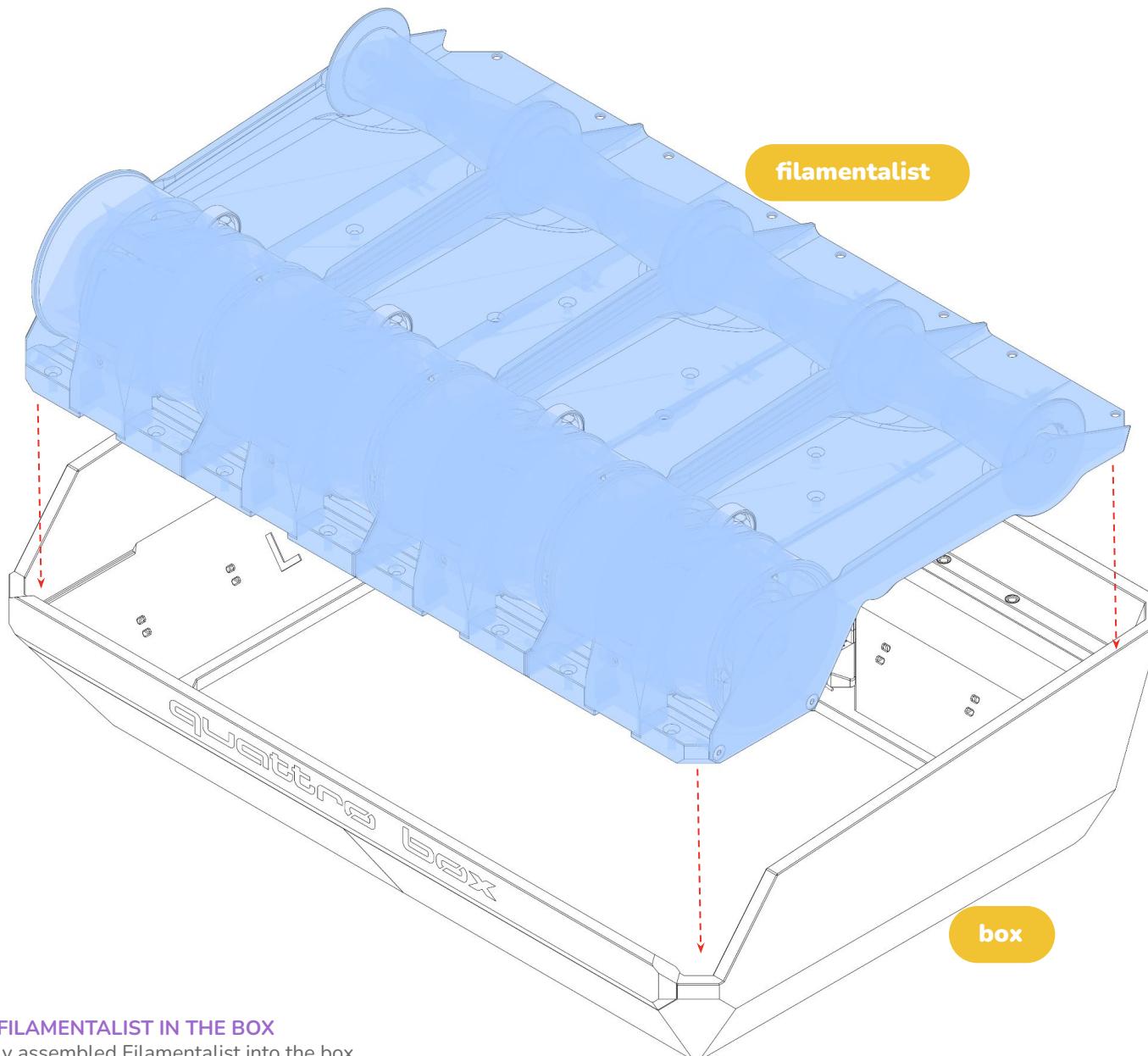
HUB ASSEMBLY



SECURING THE HUB

Screw the hub using 2 M3x10 FHCS screws.

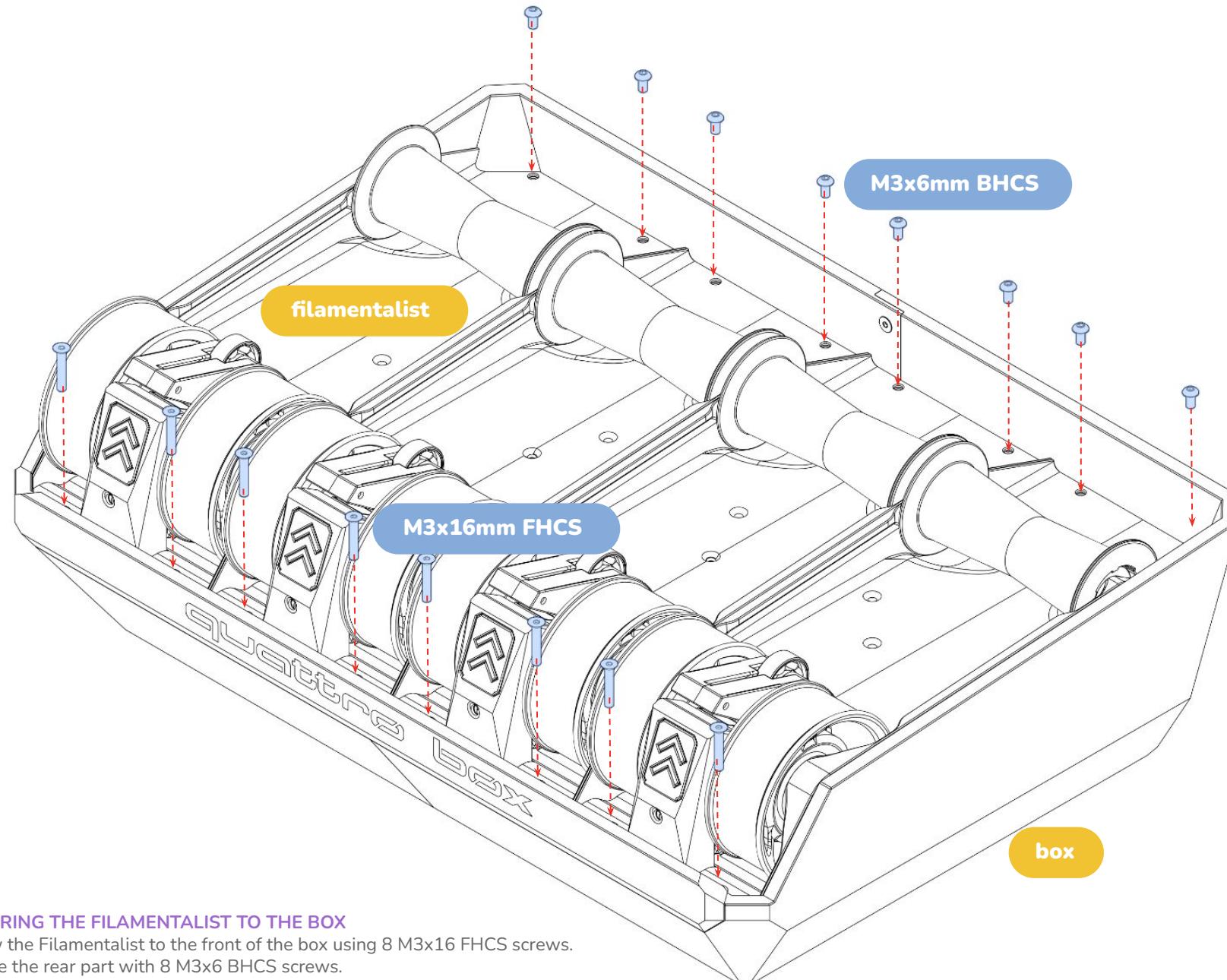
FILAMENTALIST ASSEMBLY



INSTALLING THE FILAMENTALIST IN THE BOX

Insert the previously assembled Filamentalist into the box.

FILAMENTALIST ASSEMBLY

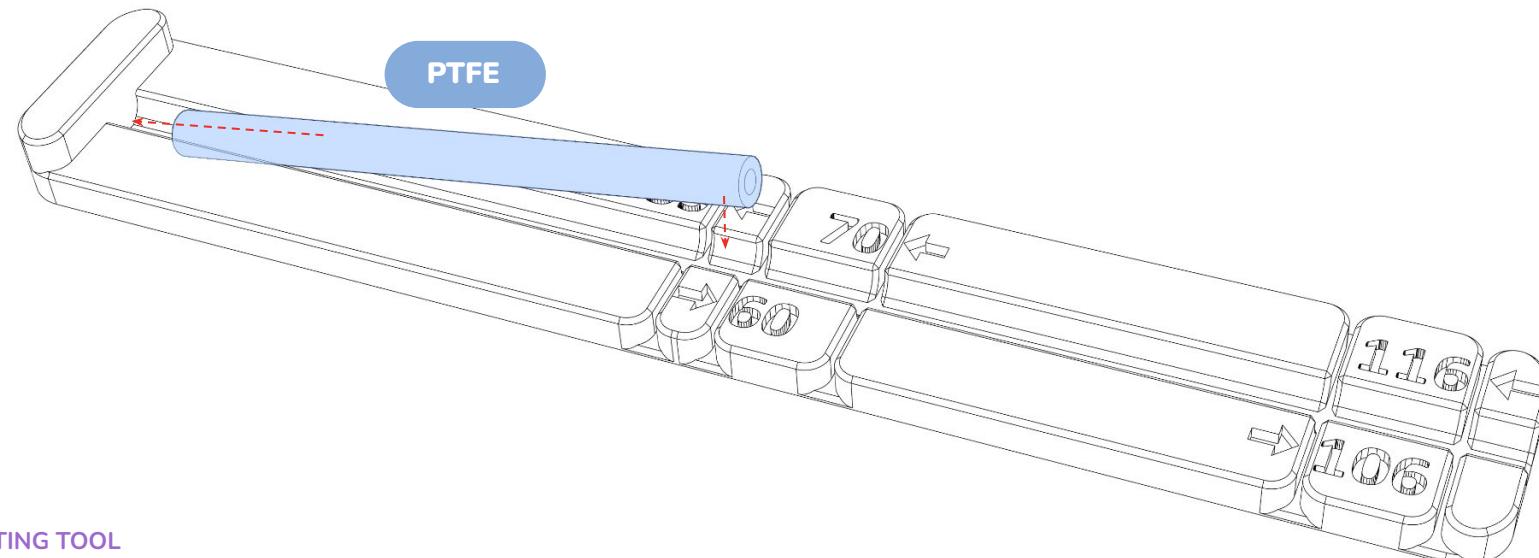
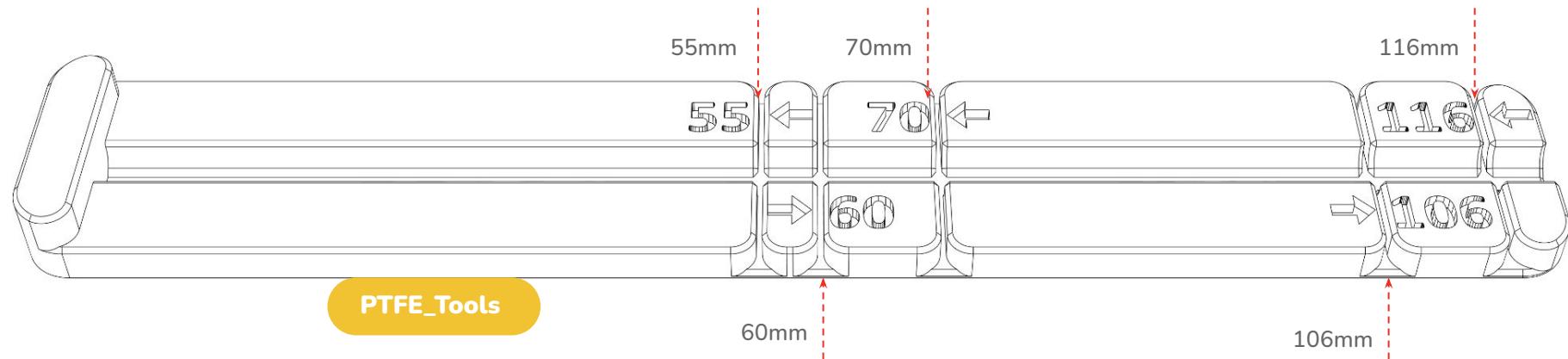


SECURING THE FILAMENTALIST TO THE BOX

Screw the Filamentalist to the front of the box using 8 M3x16 FHCS screws.
Secure the rear part with 8 M3x6 BHCS screws.

This page intentionally left blank.

PTFE TOOLS

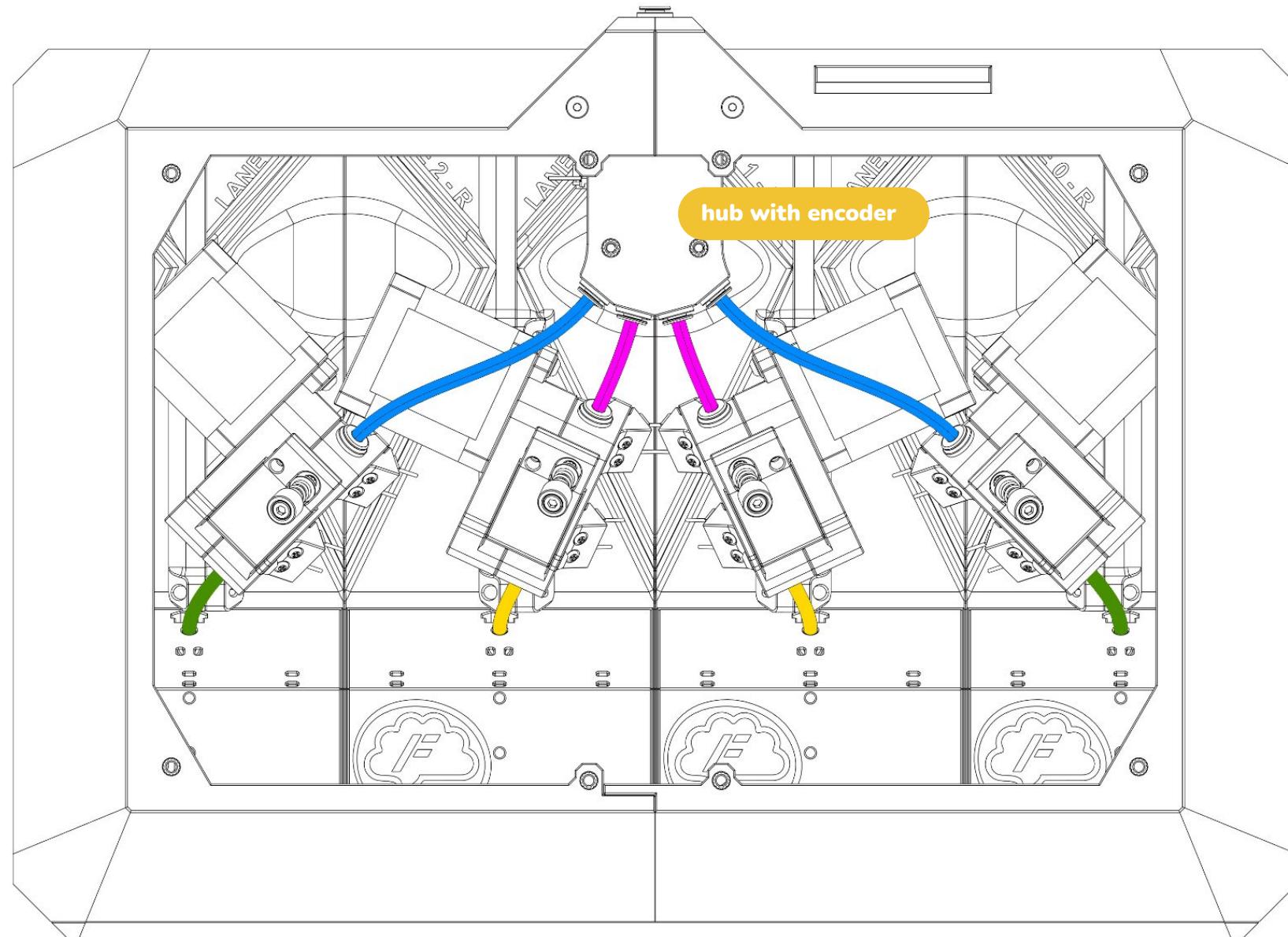


PTFE CUTTING TOOL

This is the PTFE cutting tool, which will be used in the following steps where the exact PTFE tube lengths are shown.

HUB WITH ENCODER

- Filamentist to extruder 60mm Filamentist to extruder 55mm Extruder to Hub with Encoder 106mm Extruder to Hub with Encoder 55mm



HUB WITHOUT ENCODER



Filamentalist to extruder 60mm



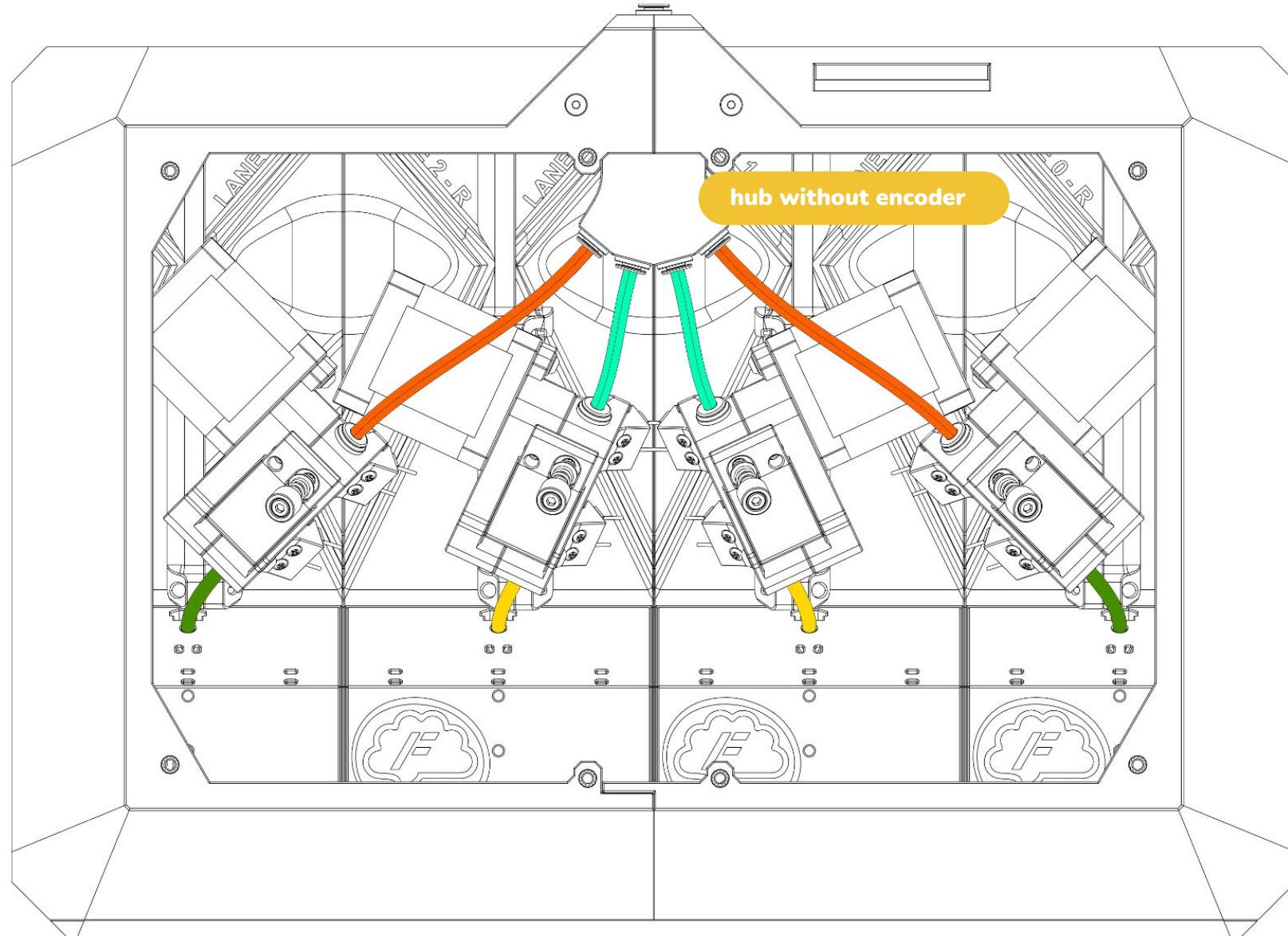
Filamentalist to extruder 55mm



Extruder to Hub without Encoder 106mm

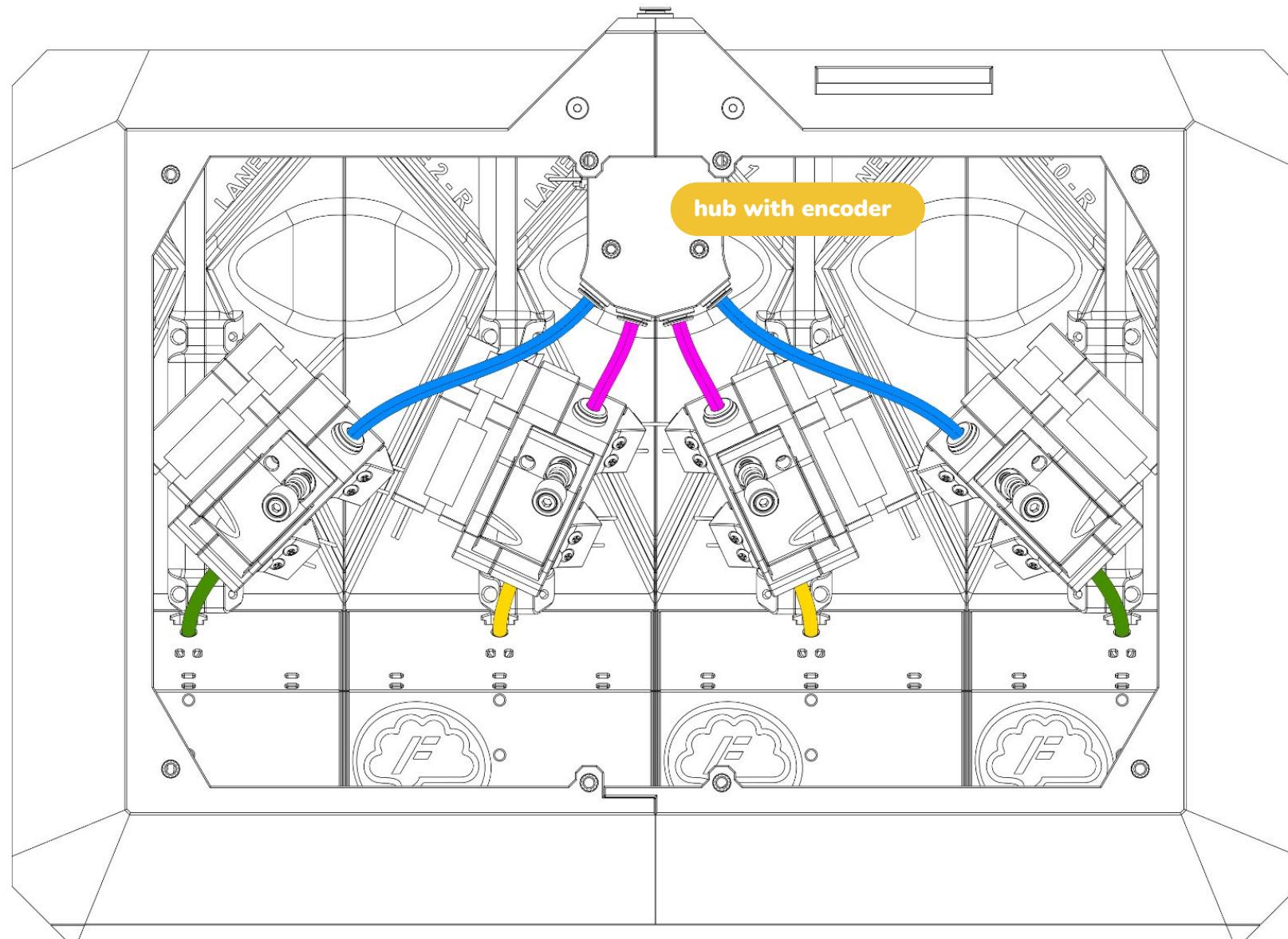


Extruder to Hub without Encoder 55mm



HUB WITH ENCODER

- Filamentist to extruder 60mm Filamentist to extruder 55mm Extruder to Hub with Encoder 106mm Extruder to Hub with Encoder 55mm



HUB WITHOUT ENCODER



Filamentalist to extruder 60mm



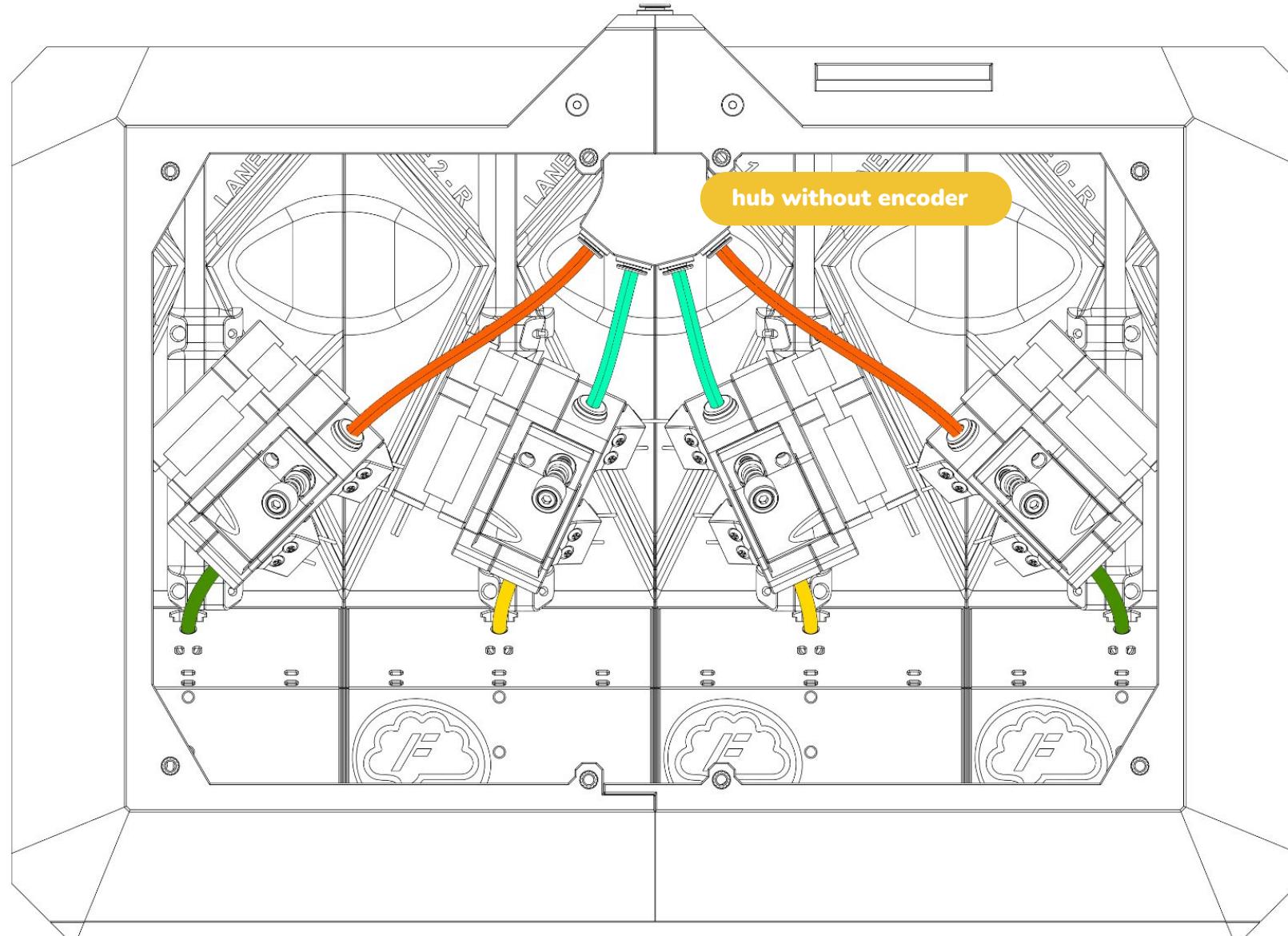
Filamentalist to extruder 55mm



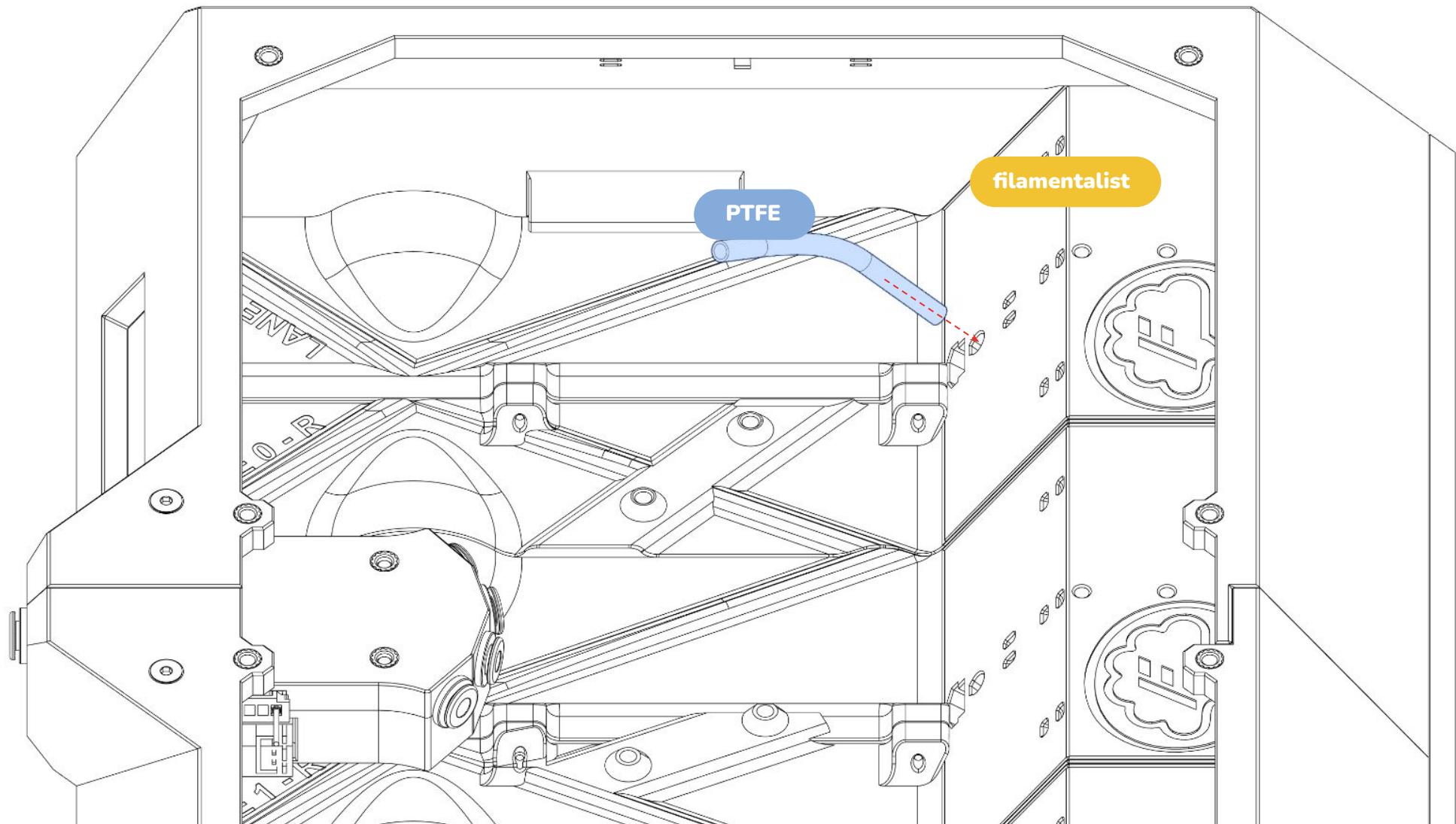
Extruder to Hub without Encoder 106mm



Extruder to Hub without Encoder 55mm



EXTRUDER ASSEMBLY

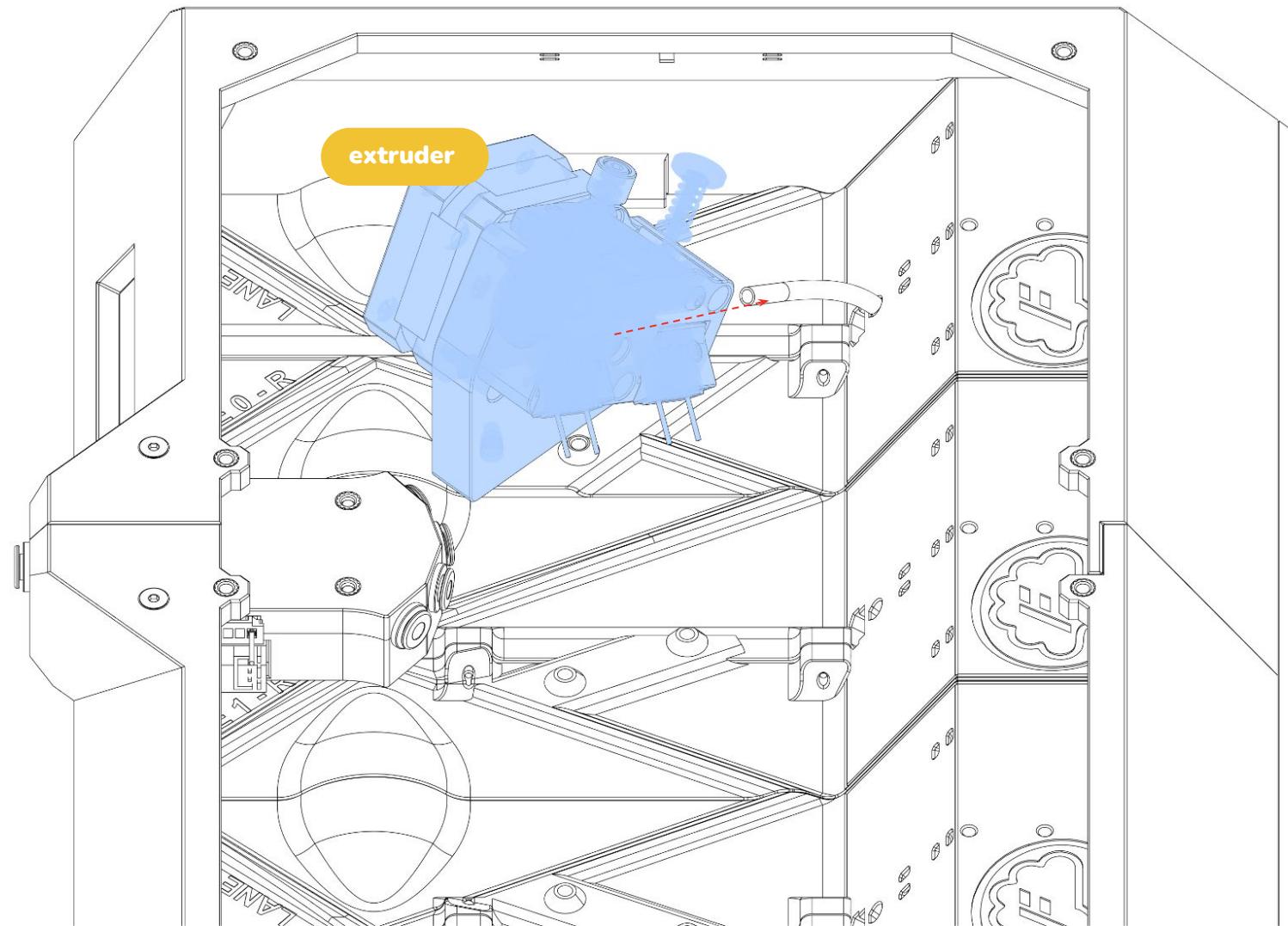


INSERTING THE PTFE INTO THE FILAMENTALIST

Insert the PTFE tube into the Filamentalist as shown.

Use the length specified on the previous page, according to your extruder and hub type.

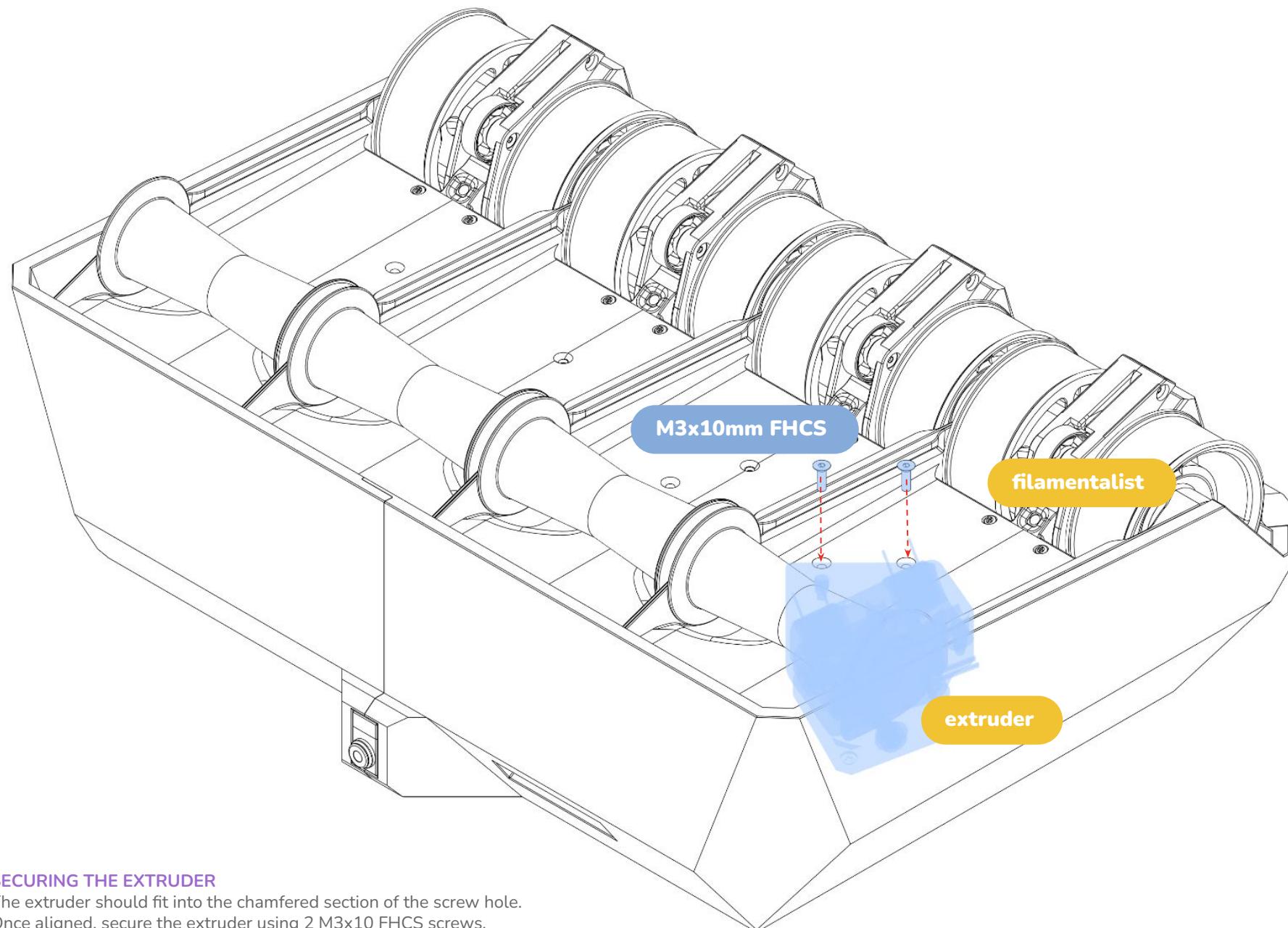
EXTRUDER ASSEMBLY



CONNECTING THE EXTRUDER TO THE PTFE

Insert the extruder into the PTFE tube

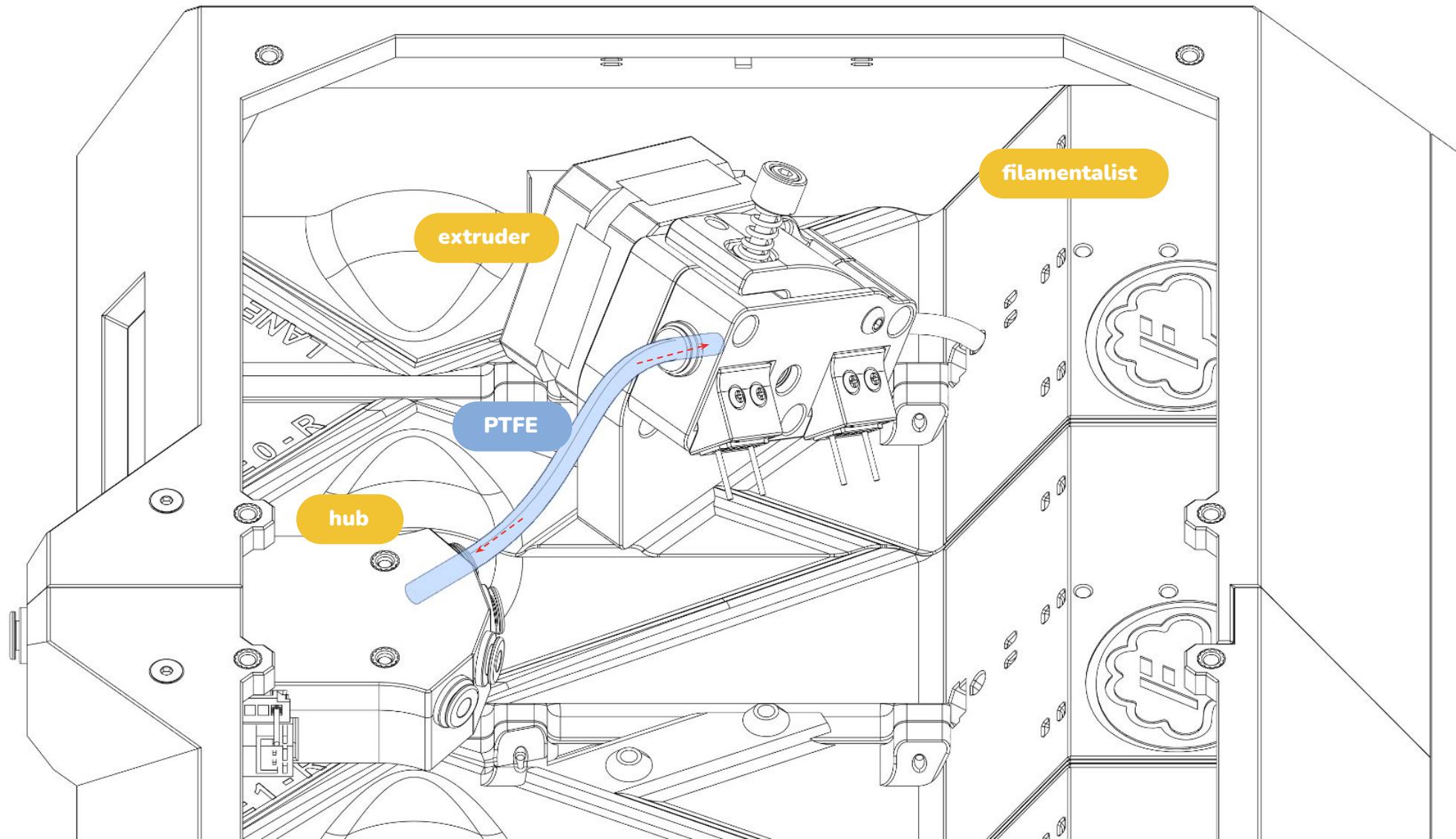
EXTRUDER ASSEMBLY



SECURING THE EXTRUDER

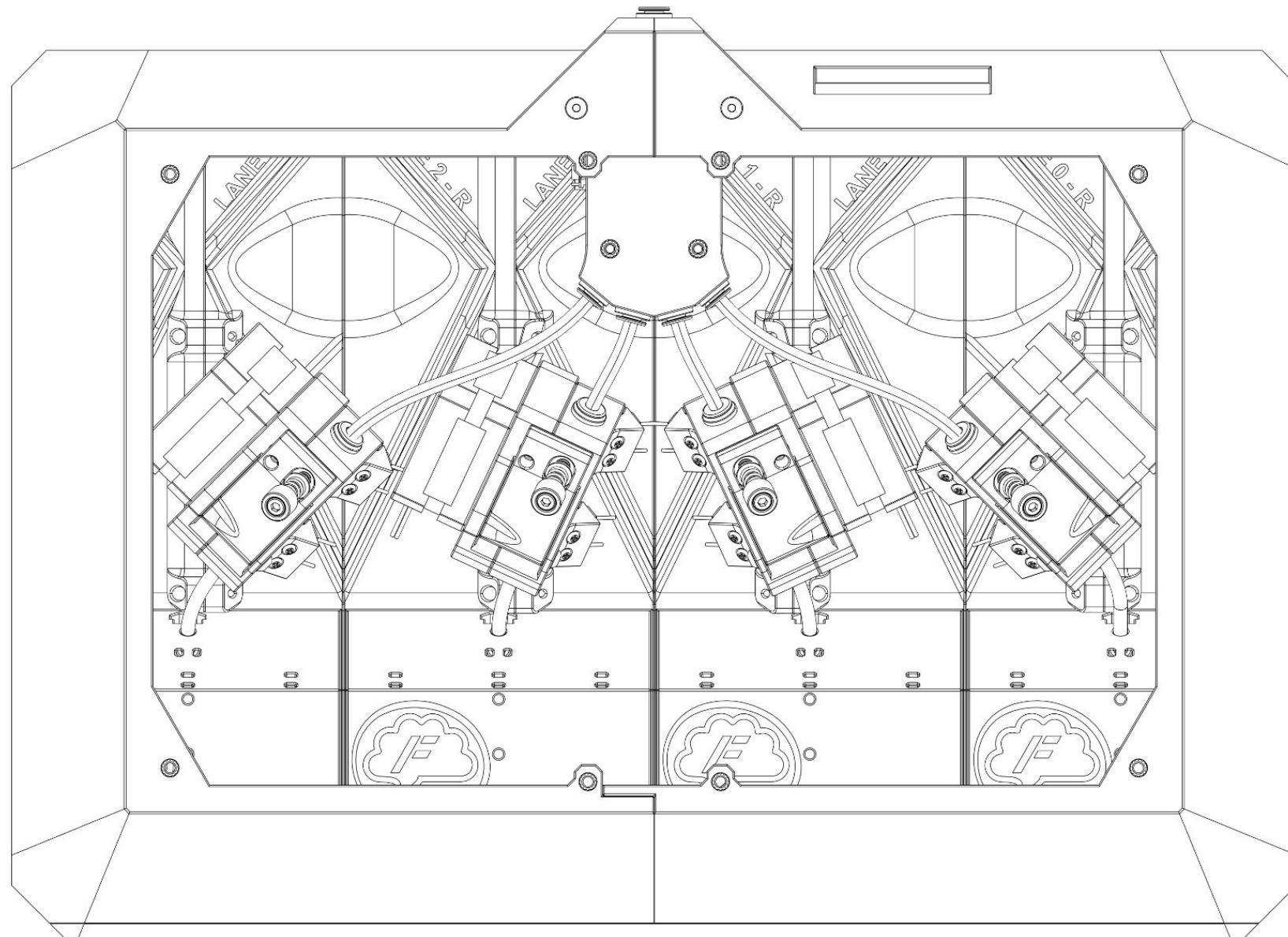
The extruder should fit into the chamfered section of the screw hole. Once aligned, secure the extruder using 2 M3x10 FHCS screws.

EXTRUDER ASSEMBLY



INSERTING THE PTFE INTO THE EXTRUDER AND HUB

Insert the PTFE tube into the extruder and hub, using the length specified on the previous page, according to your extruder and hub type.

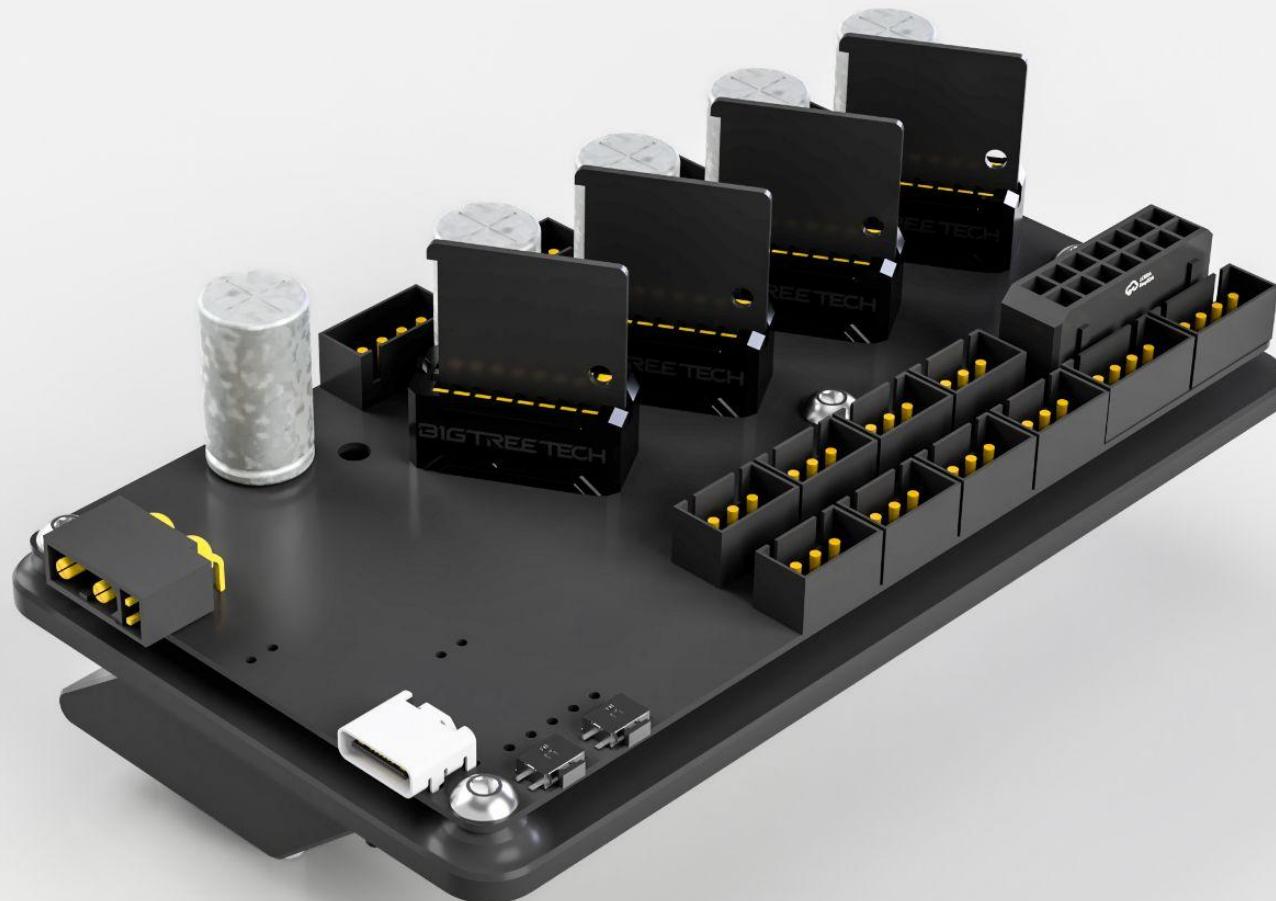


ASSEMBLING THE REMAINING EXTRUDERS

Assemble the other extruders following the same previous steps.

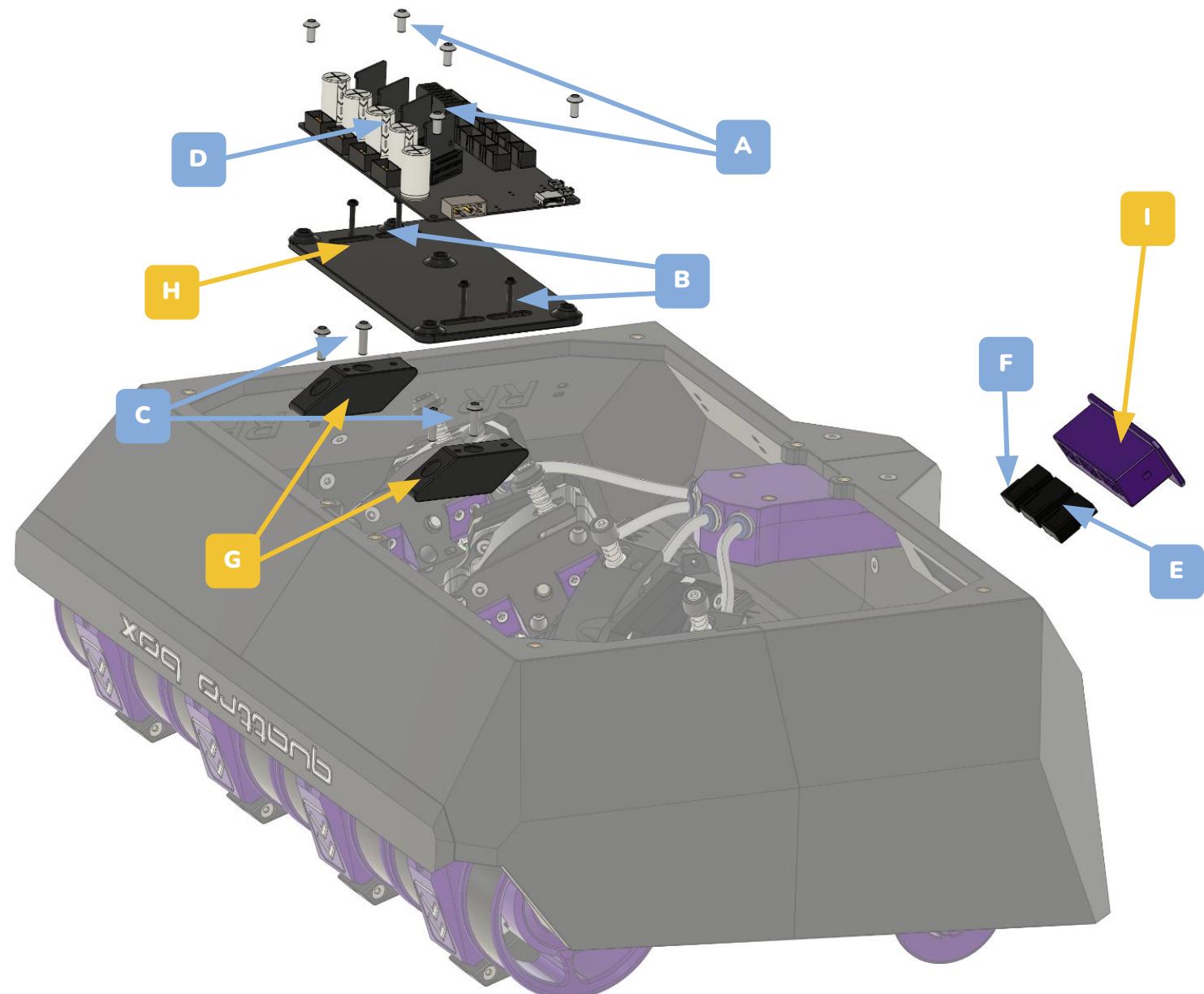
They should all be positioned as shown in the image once assembled

This page intentionally left blank.



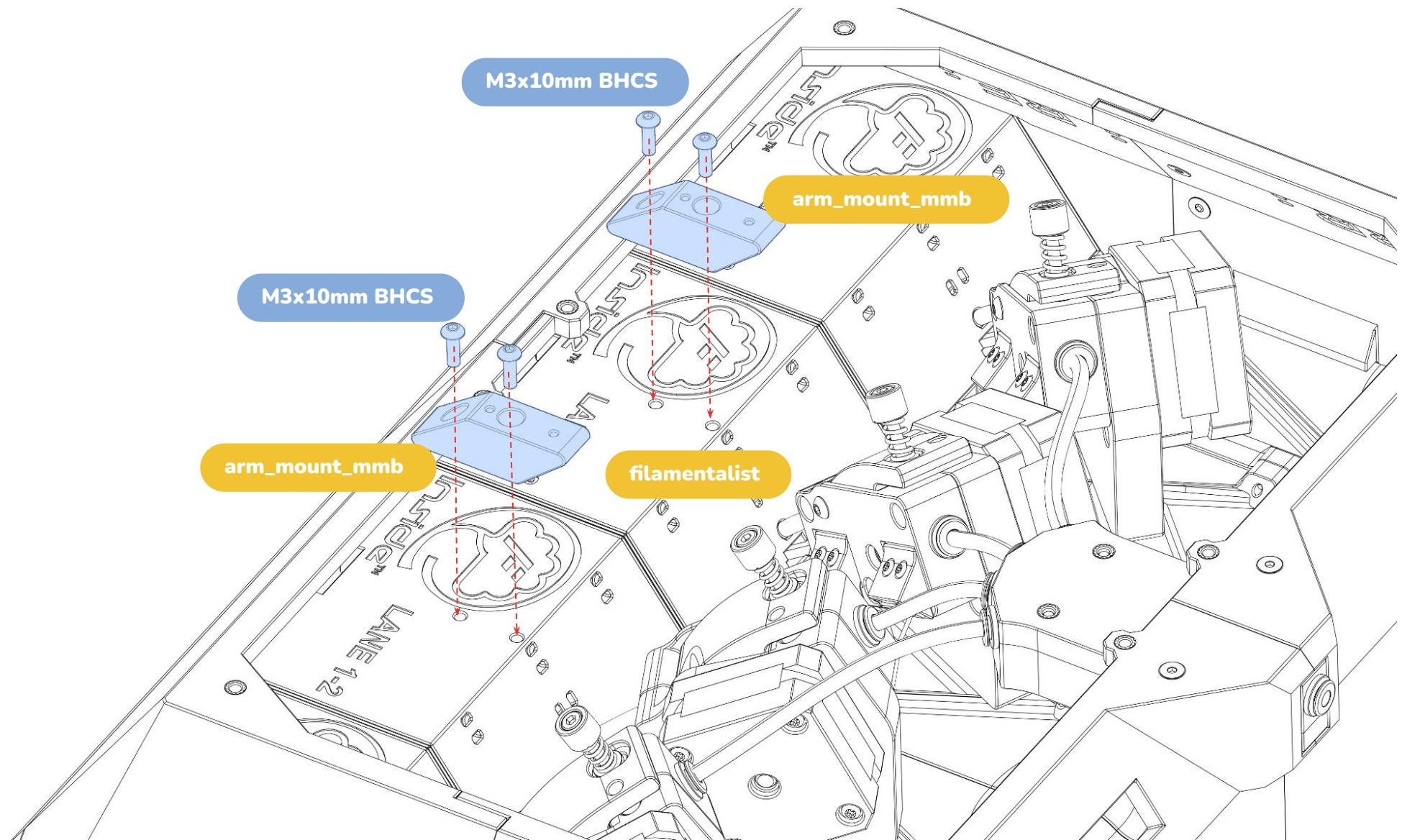
EXPLODED VIEW

A	5x M3x6mm BHCS
B	4x M2x10mm
C	4x M3x10mm BHCS
D	1x BTT MMB v2
E	2x Microfit plug Male 4Pin
F	1x Microfit plug Male 3Pin
G	2x arm_mount_mmb
H	1x mmb_v2_mount
I	1x [a]_connector_canbus_mount



The detailed instructions are on the following pages

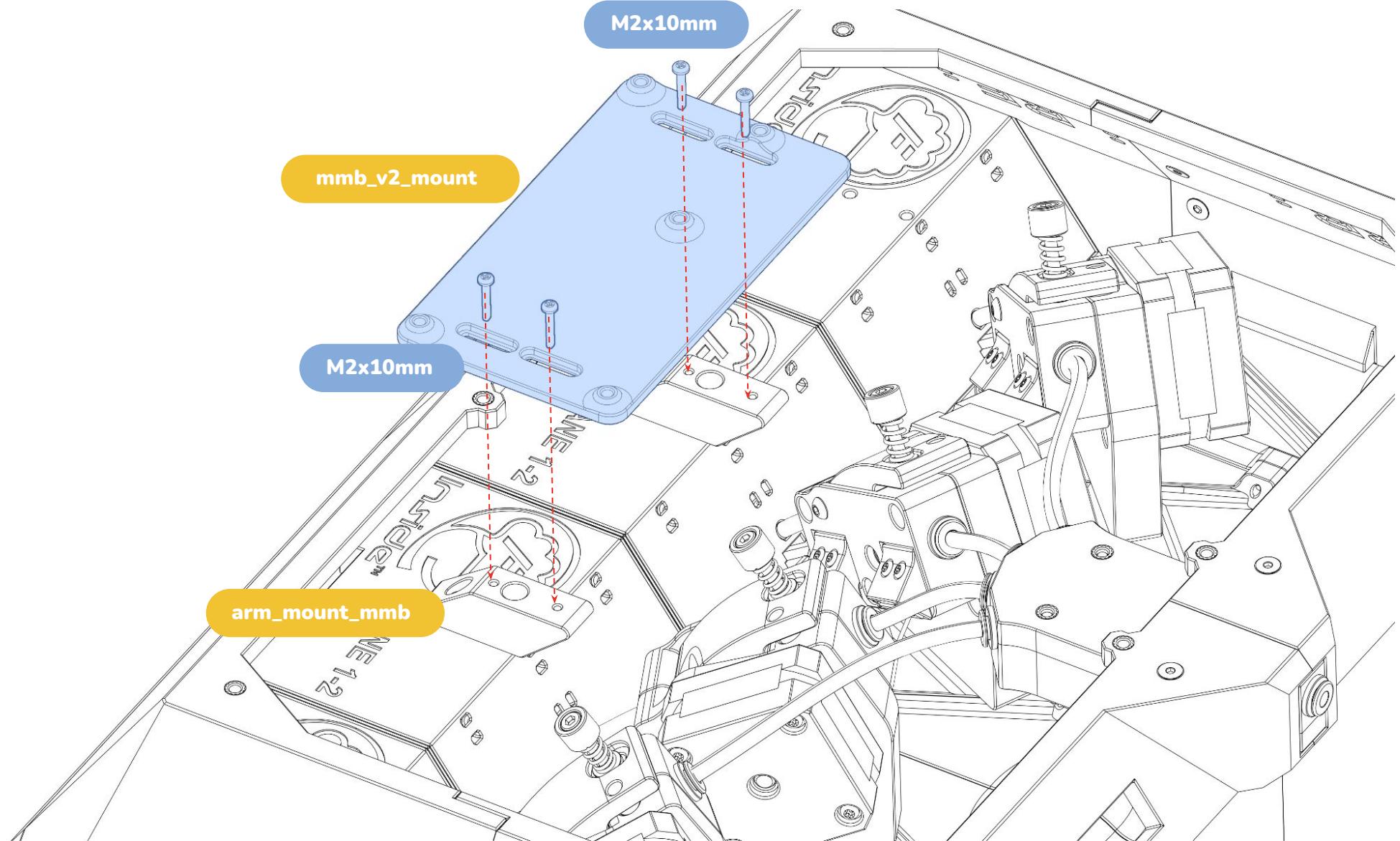
ELECTRONICS ASSEMBLY



ATTACHING THE ARM MOUNTS TO THE FILAMENTALIST

Attach the two arm_mount_mmb to the Filamentalists on lane 1 and lane 2.
Use 4 M3x10 BHCS screws to secure them.

ELECTRONICS ASSEMBLY

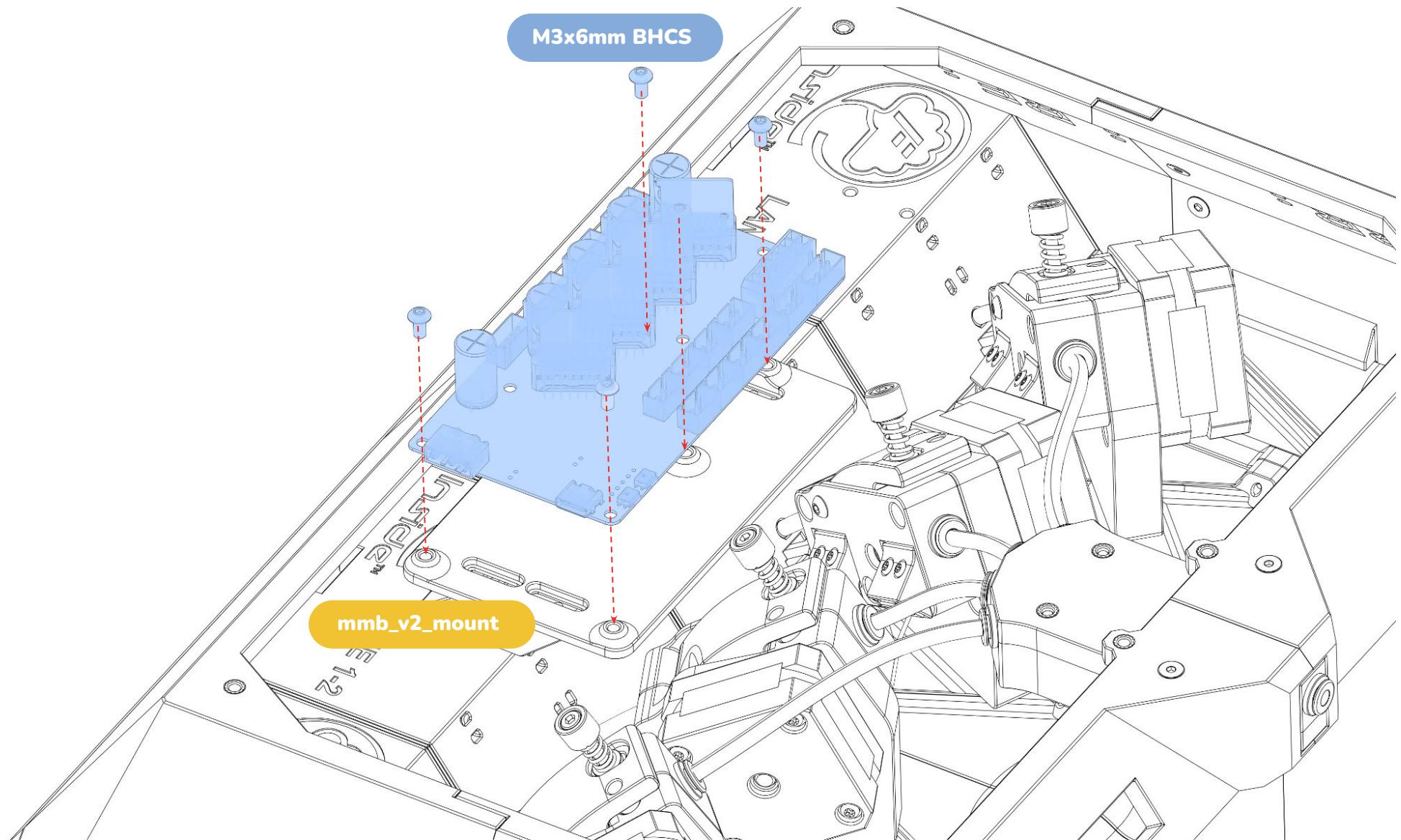


ASSEMBLING THE MMB V2 MOUNT

Assemble the mmb_v2_mount using 4 M2x10 screws.

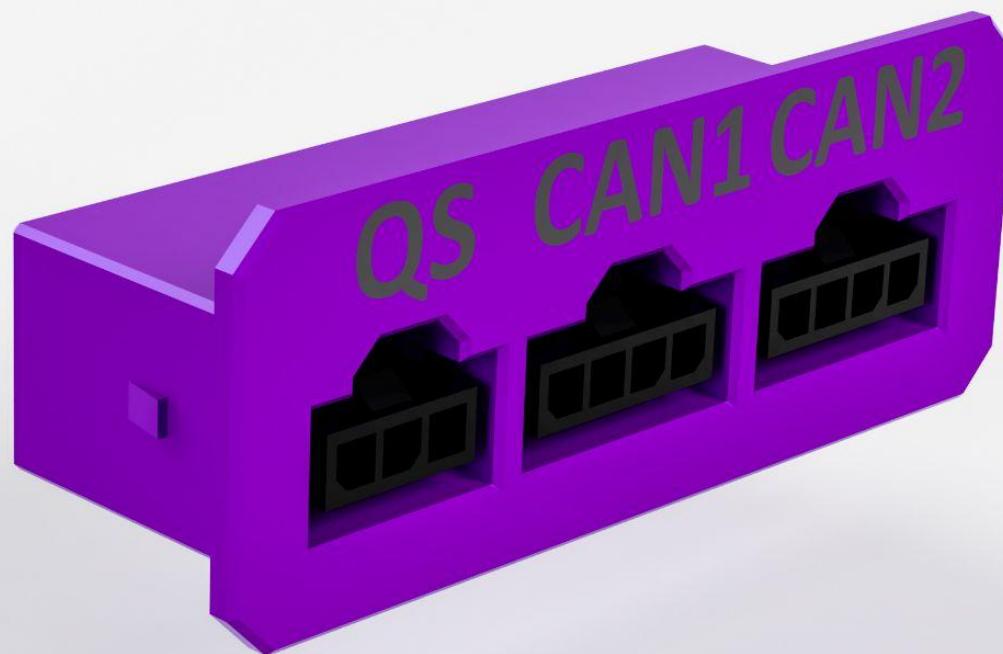
Do not overtighten the screws – this allows the board to slide forward and backward, making wire installation easier.

ELECTRONICS ASSEMBLY

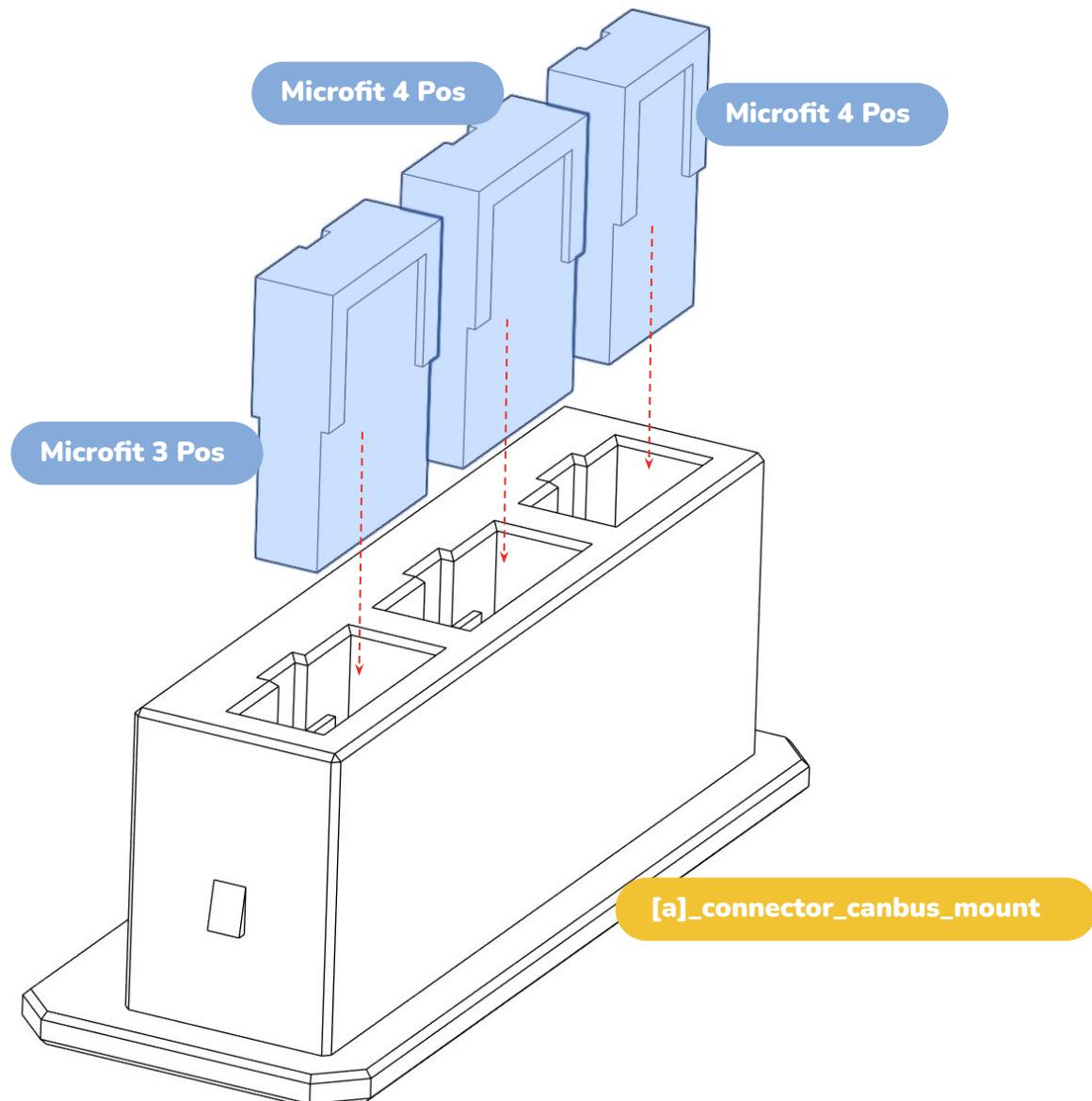
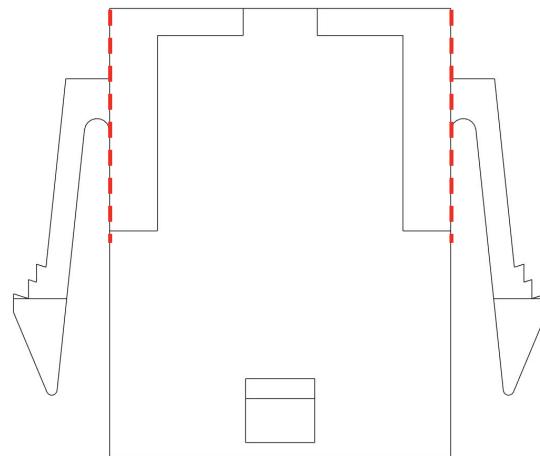


MOUNTING THE MMB V2 TO THE BRACKET

Attach the MMB V2 to the mmb_v2_mount using 5 M3x6 BHCS screws



CONNECTOR CANBUS



PREPARING AND INSTALLING THE MICROFIT CONNECTORS CANBUS

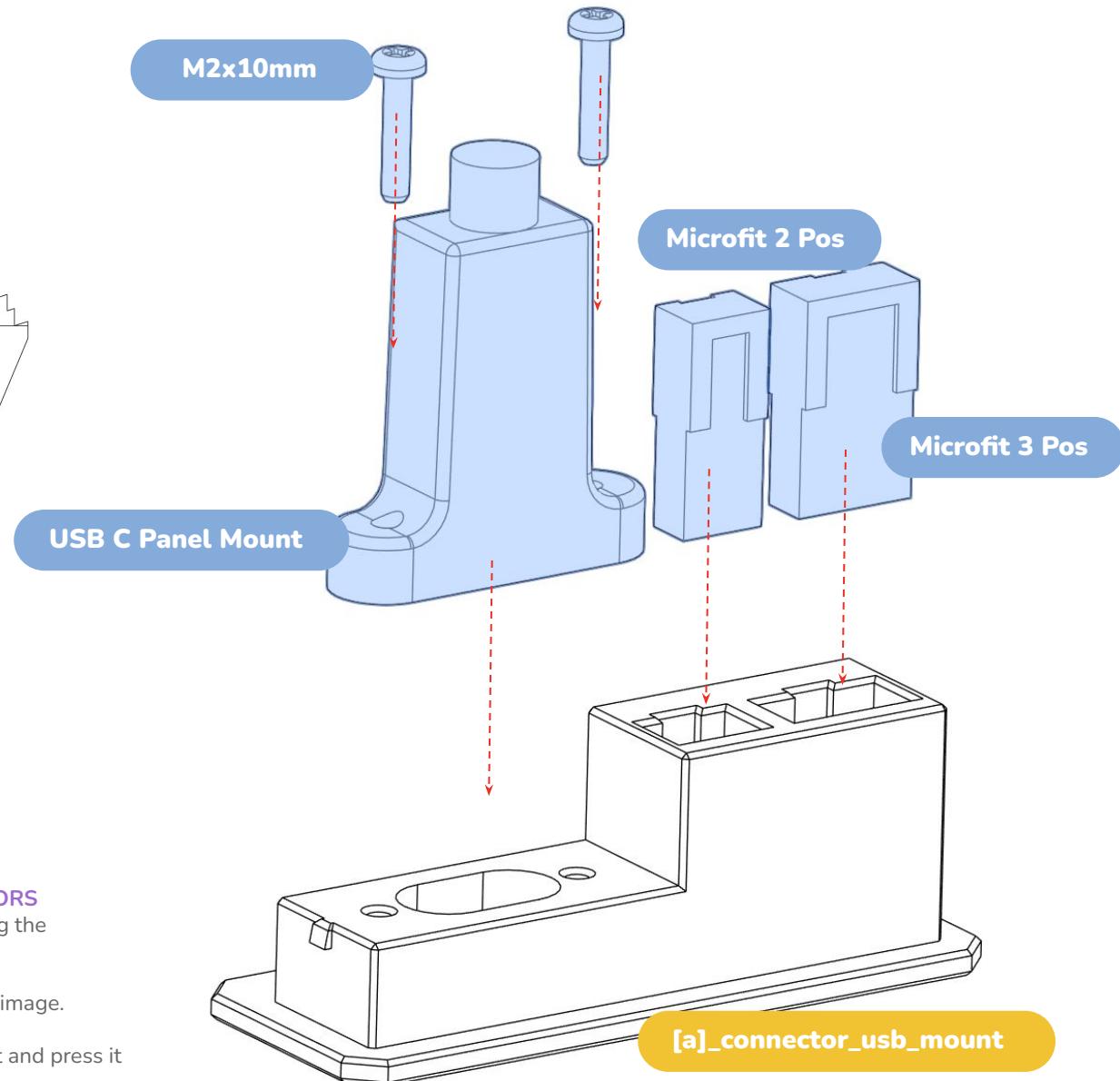
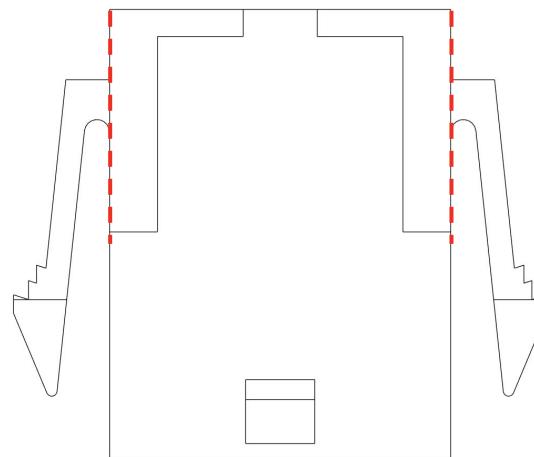
Crimp the wires for the MicroFit connectors following the dimensions shown on [page 25](#).

Trim the side tabs of the connector, as shown in the image.

Insert the connector into the connector_canbus_mount and press it in fully to ensure a secure fit.



CONNECTOR USB



INSTALLING THE MICROFIT AND USB CONNECTORS

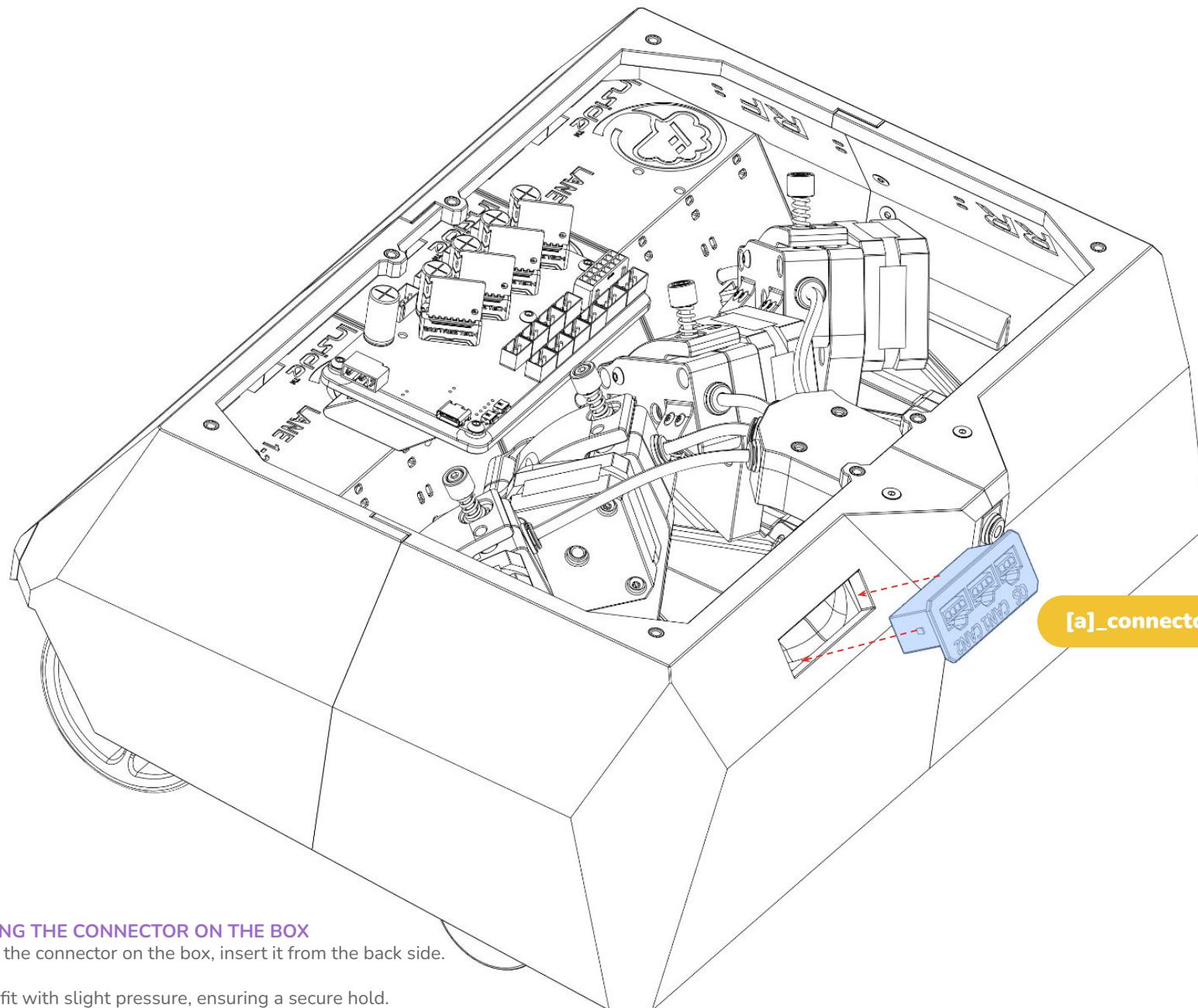
Crimp the wires for the MicroFit connectors following the dimensions on [page 25](#).

Trim the side tabs of the connector as shown in the image.

Insert the MicroFit into the connector_canbus_mount and press it in fully for a proper fit.

For the USB connector, insert it into the designated slot and secure it with 2 M2x10 screws.

ELECTRONICS ASSEMBLY



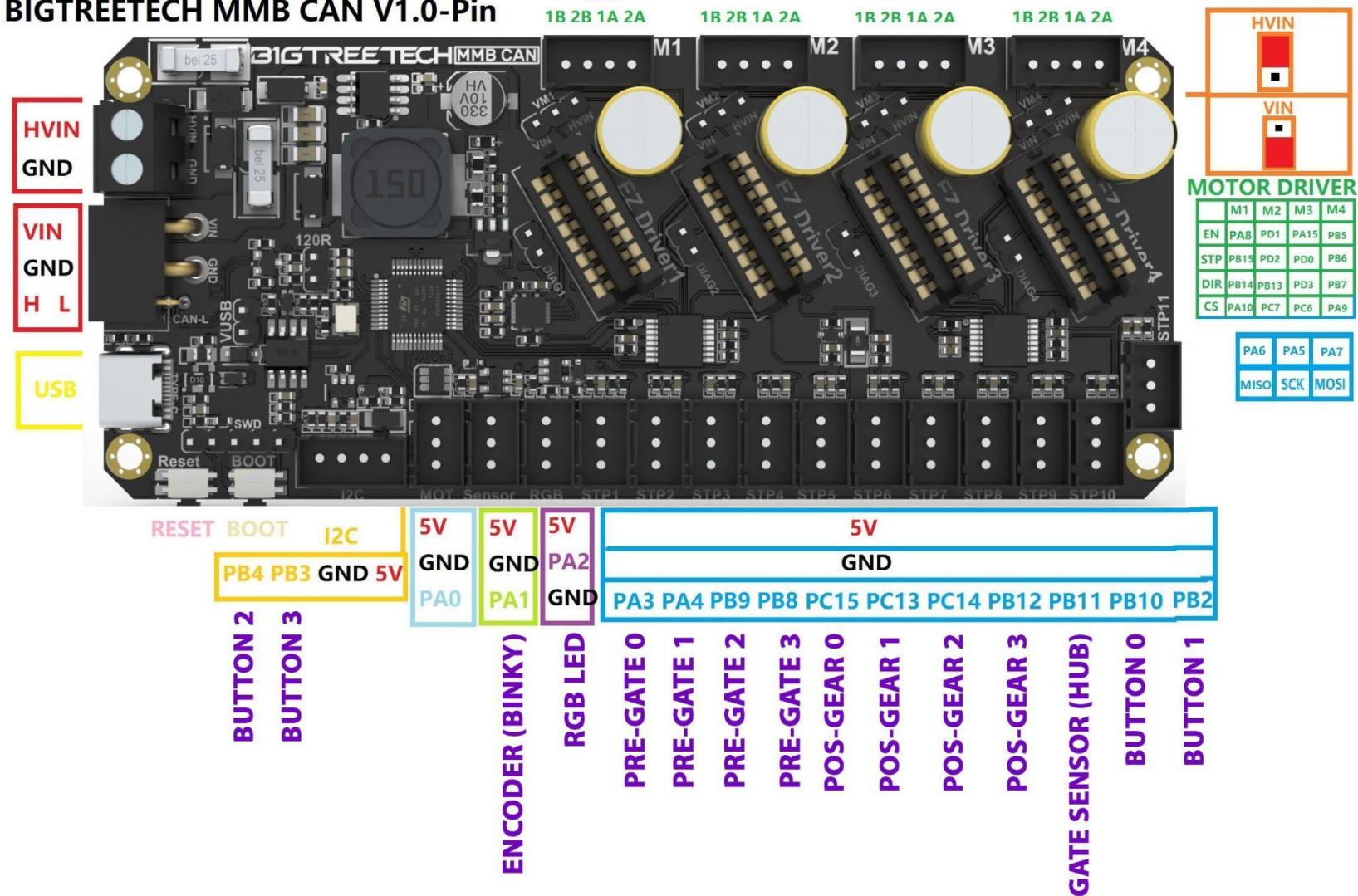
MOUNTING THE CONNECTOR ON THE BOX

To install the connector on the box, insert it from the back side.

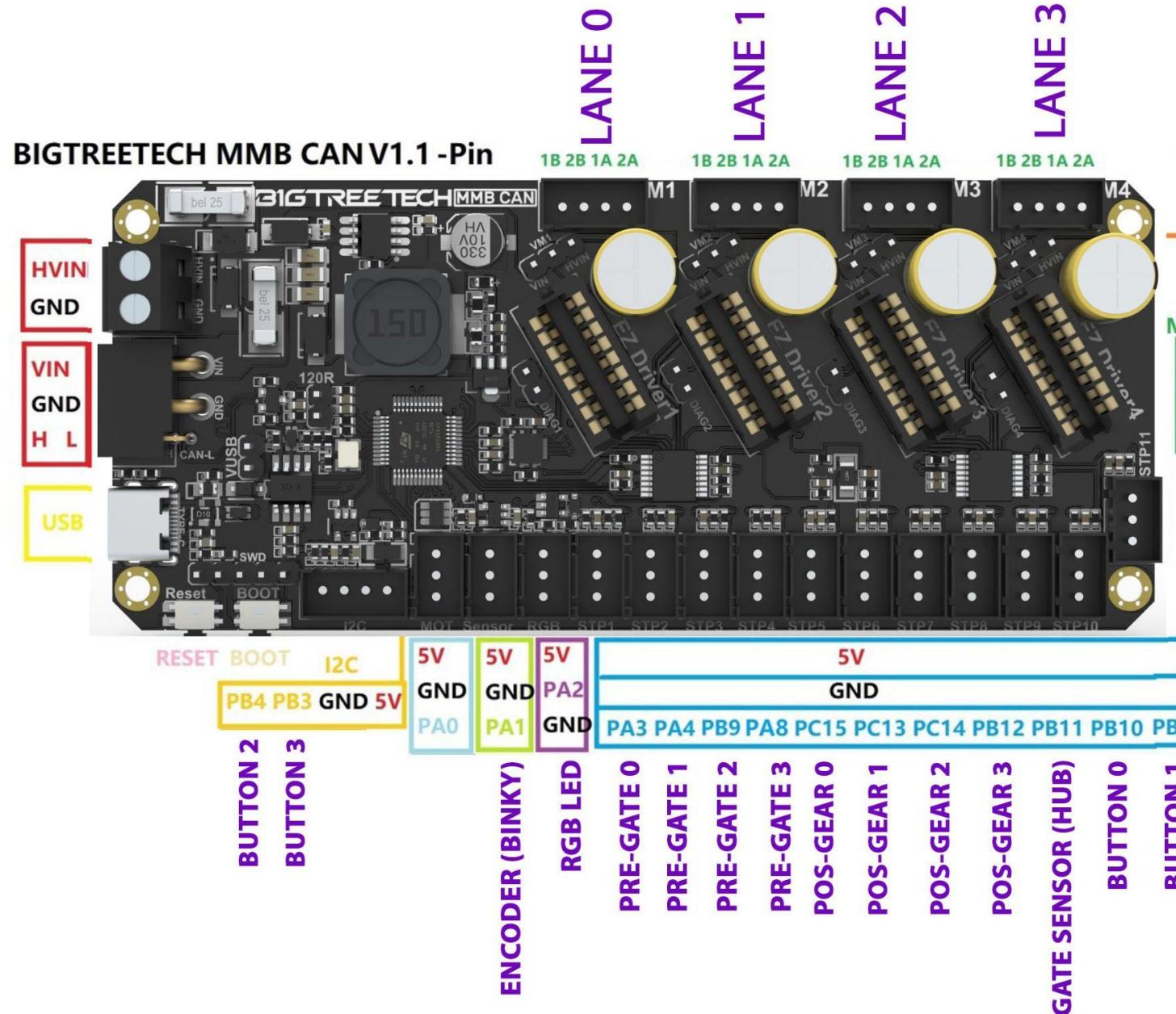
It should fit with slight pressure, ensuring a secure hold.

This page intentionally left blank.

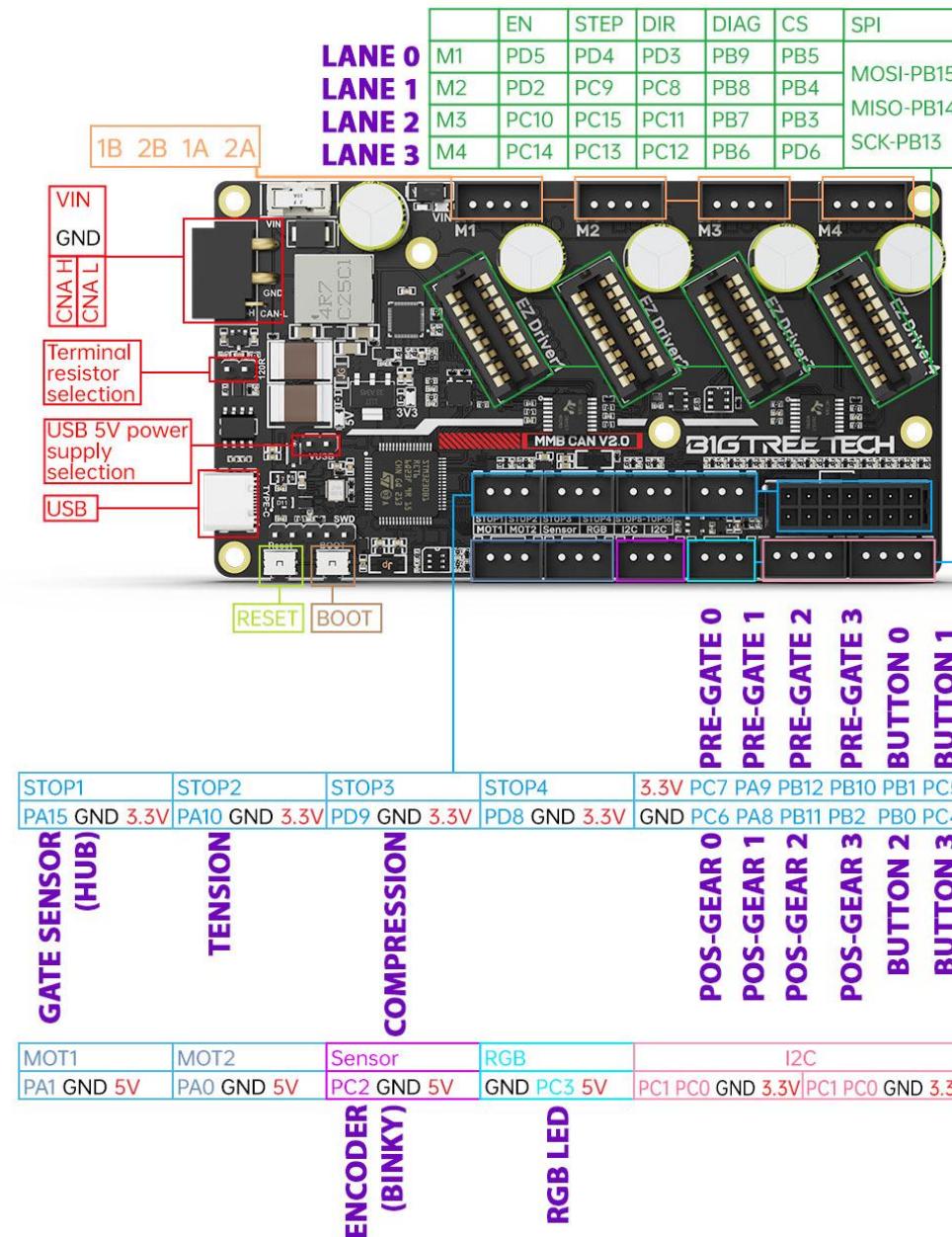
MMB V1.0

BIGTREETECH MMB CAN V1.0-Pin

MMB V1.1



MMB V2.0

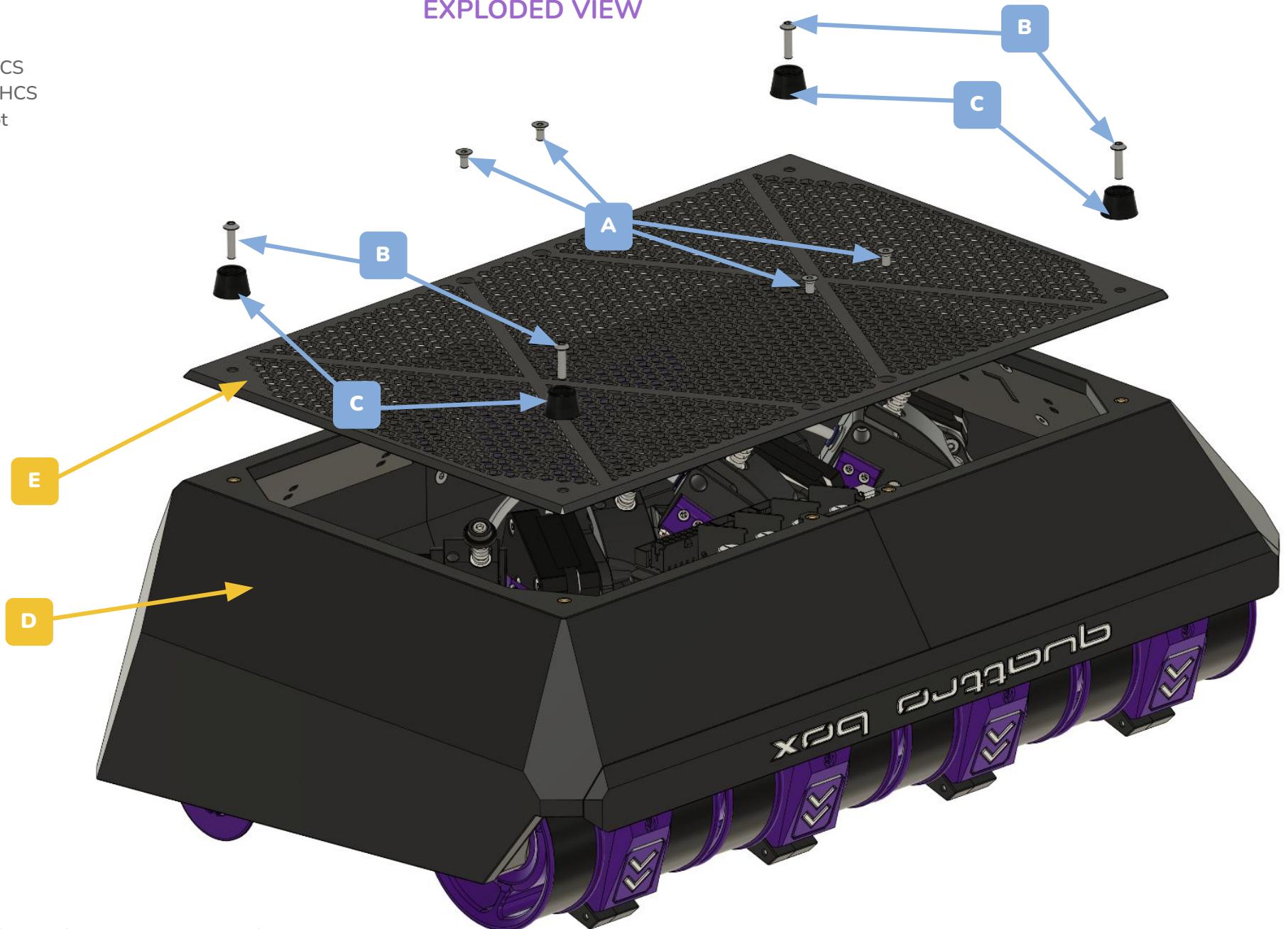


This page intentionally left blank.

A
4x M3x6mm FHCS
6x M3x12mm BHCS
4x 13x10x7 Foot

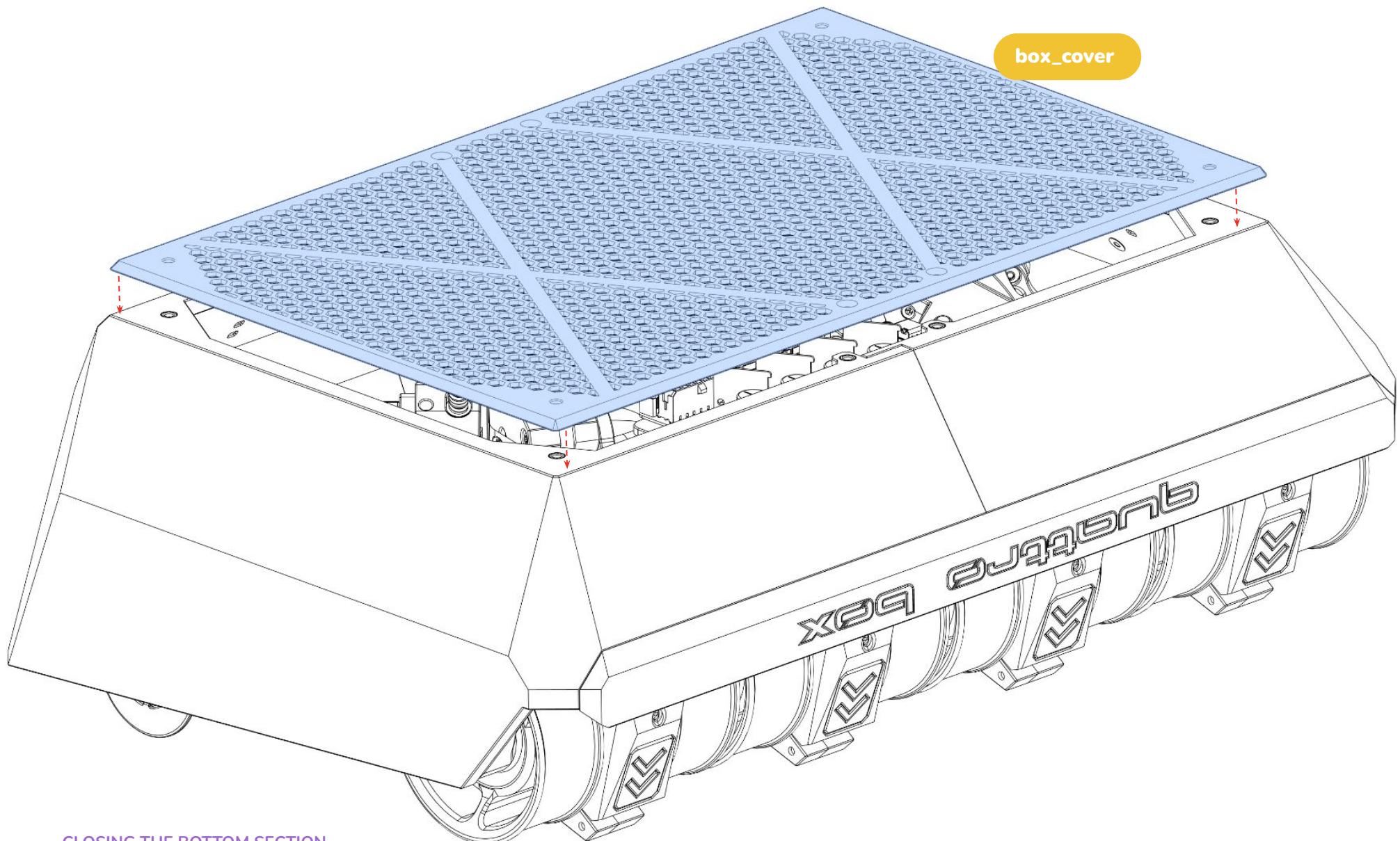
D
1x box
E
1x box_cover

EXPLODED VIEW



The detailed instructions are on the following pages

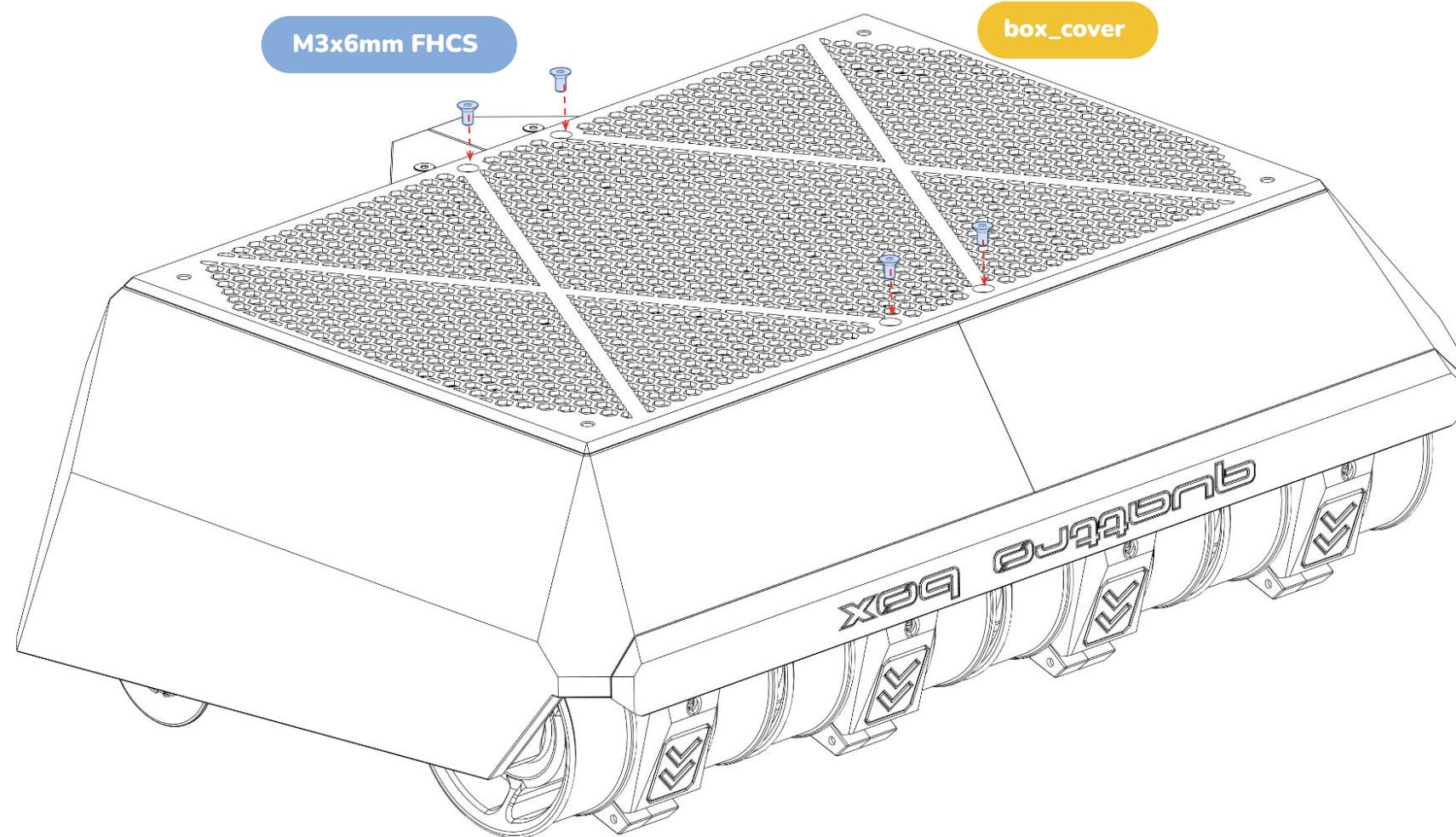
COVER ASSEMBLY



CLOSING THE BOTTOM SECTION

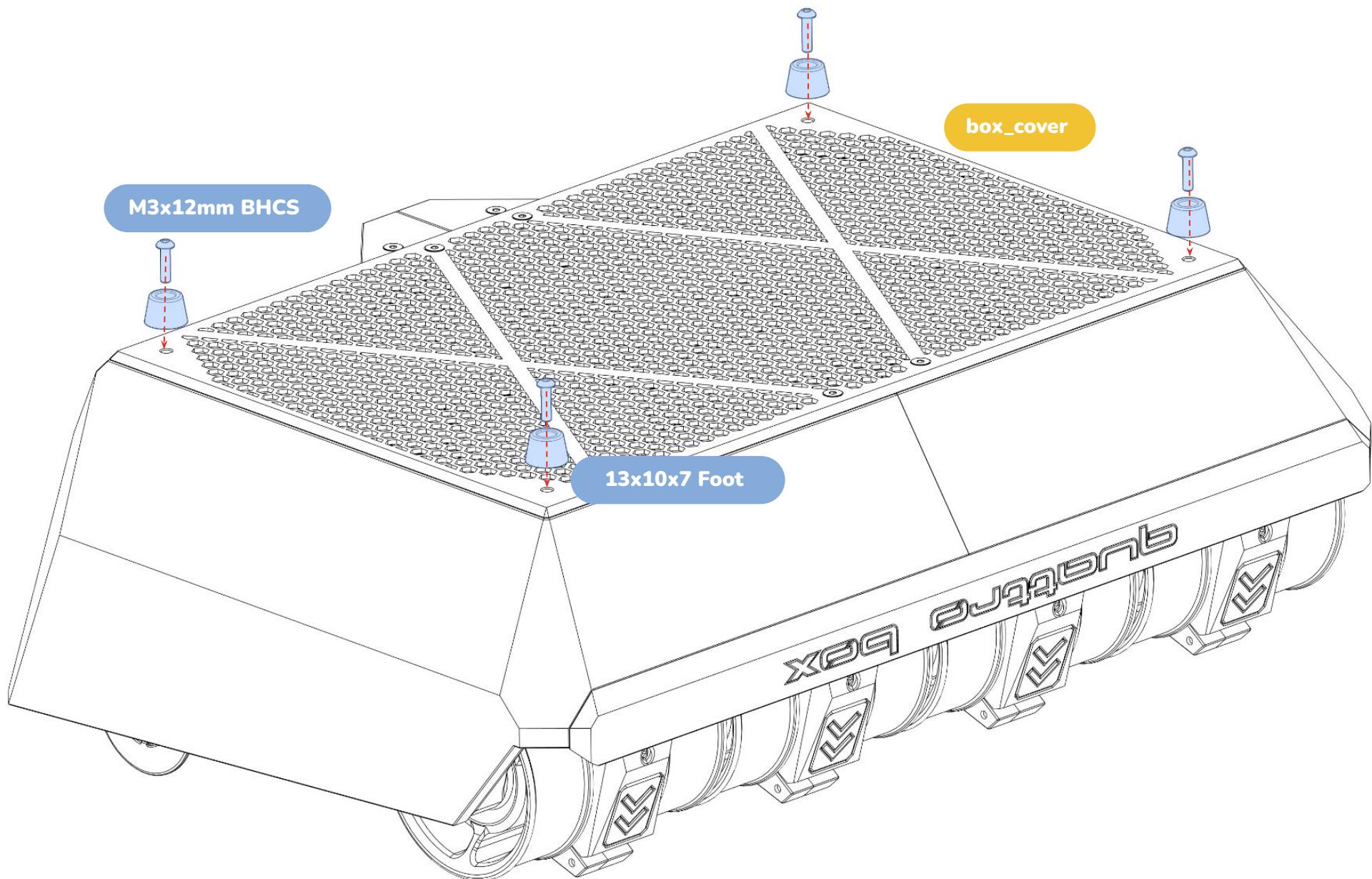
After finishing all the electronics, position the **box_cover** to close the bottom section of the box.

COVER ASSEMBLY



In the center section of the **box_cover**, secure it using 4 M3x6 FHCS screws

COVER ASSEMBLY

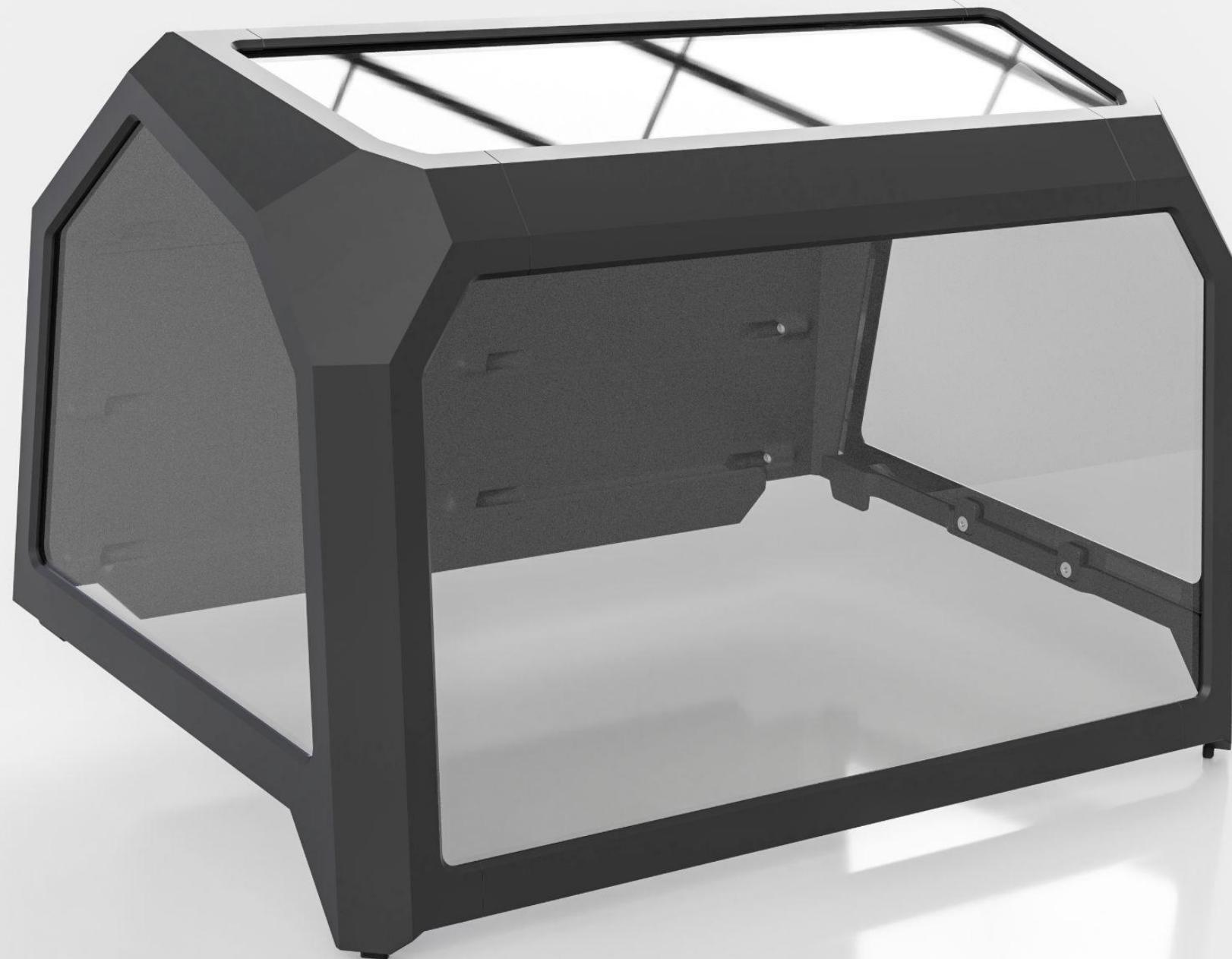


On the edges of the box, attach the support feet using 4 M3x12 BHCS screws

This page intentionally left blank.

ENCLOSURE

quattro box

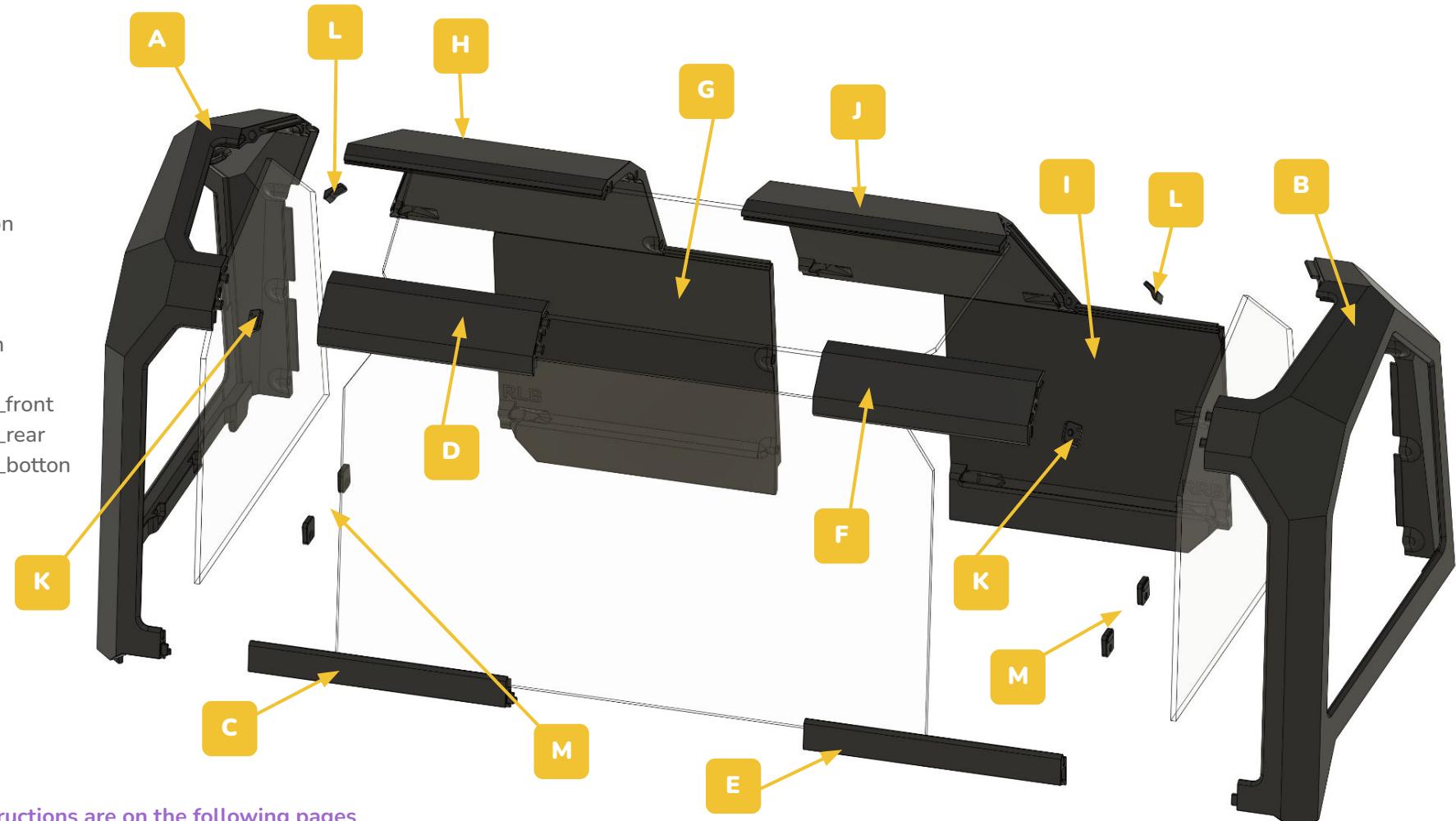


EXPLODED VIEW

29x M3x4x5 Threaded Inserts
 21x M3x10mm BHCS
 8x M3x6mm FHCS
 1x panel_front
 1x panel_left
 1x panel_right
 1x panel_top

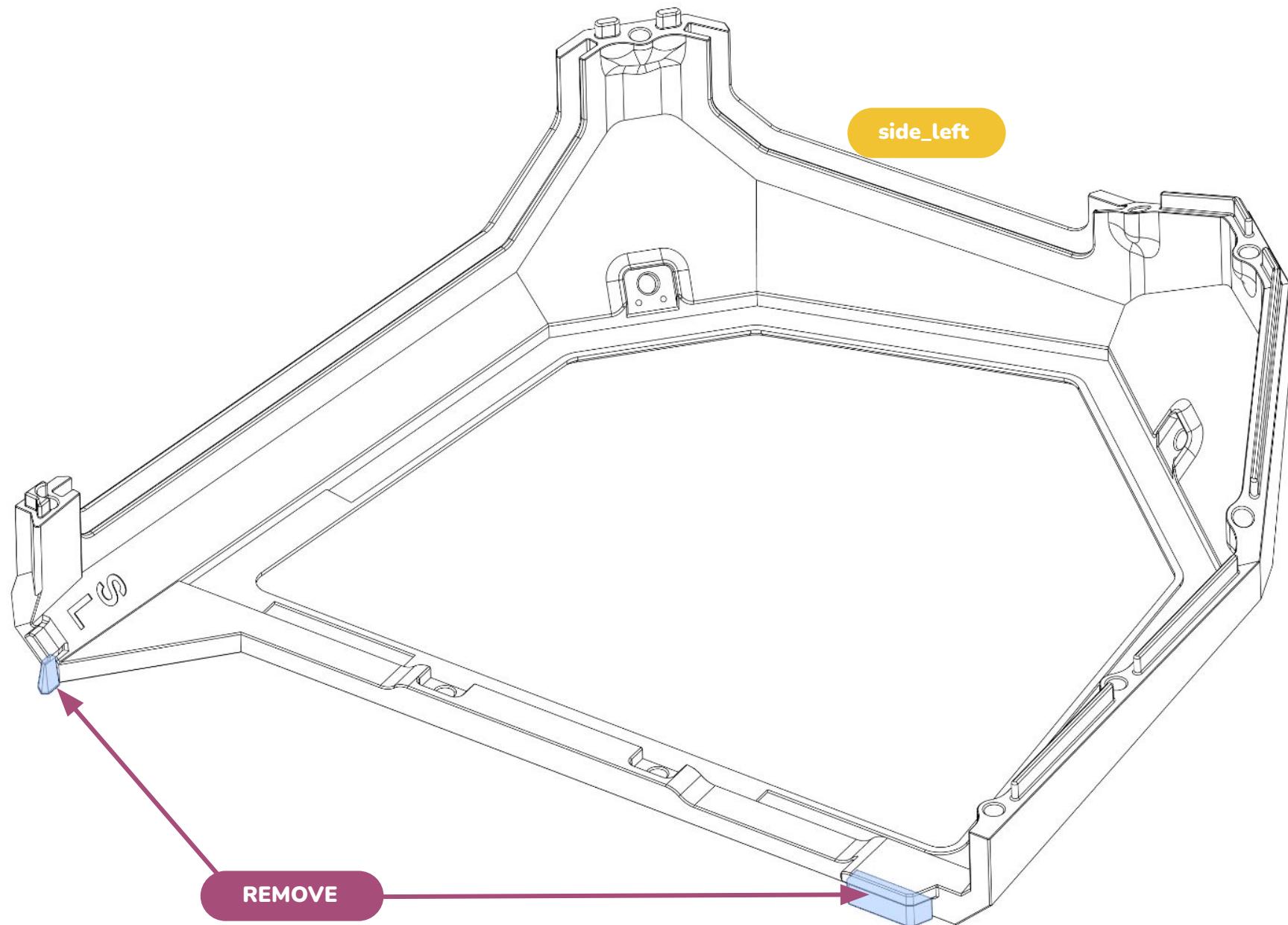
Yep, not much labeled here. With the screws and inserts invited, would've looked like a party of arrows

A
 1x side_left
B
 1x side_right
C
 1x front_left_bottom
D
 1x front_left_top
E
 1x front_right_bottom
F
 1x front_right_top
G
 1x rear_left_bottom
H
 1x rear_left_top
I
 1x rear_right_bottom
J
 1x rear_right_top
K
 2x clips_side_panel_front
L
 2x clips_side_panel_rear
M
 4x clips_side_panel_button

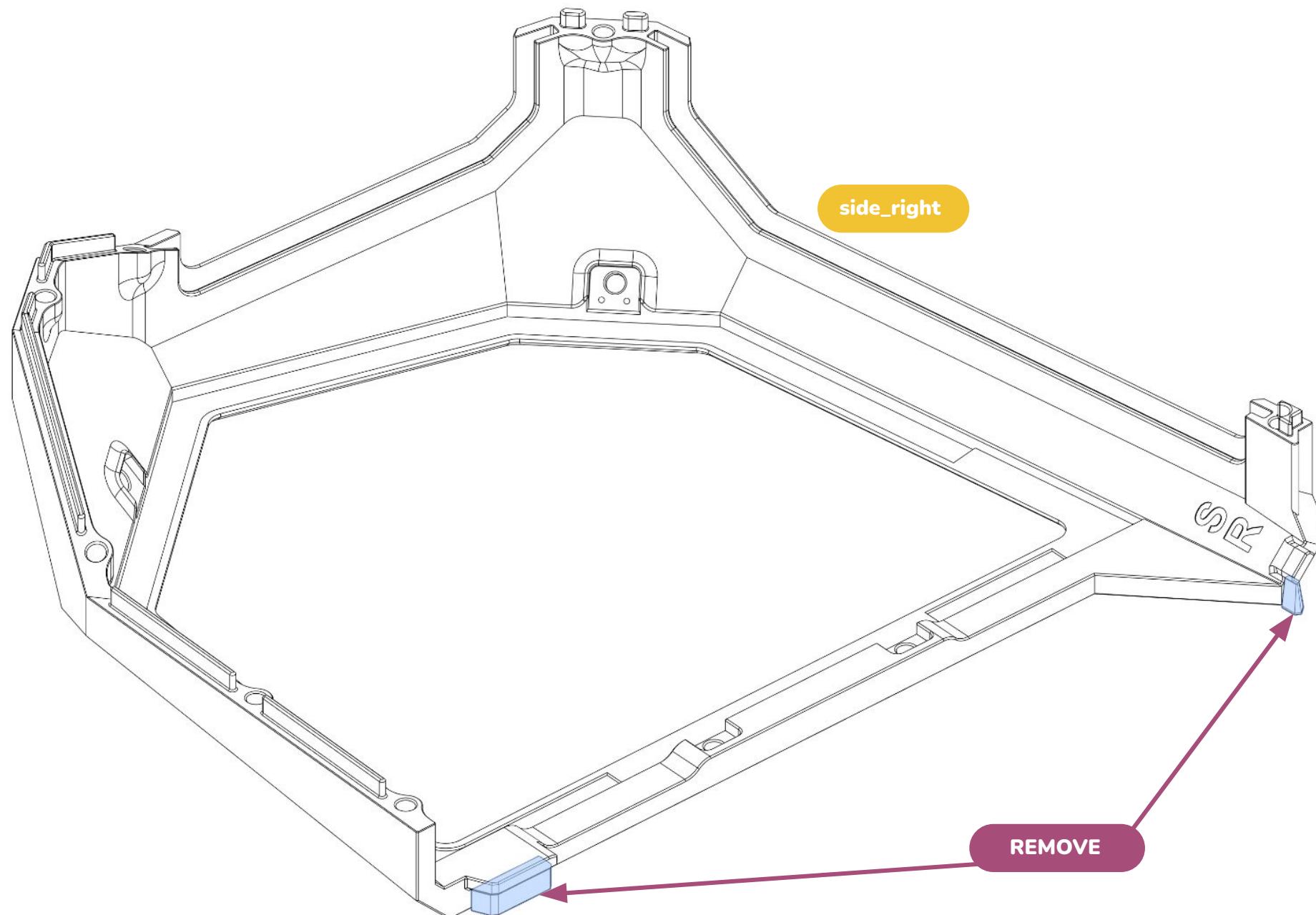


The detailed instructions are on the following pages

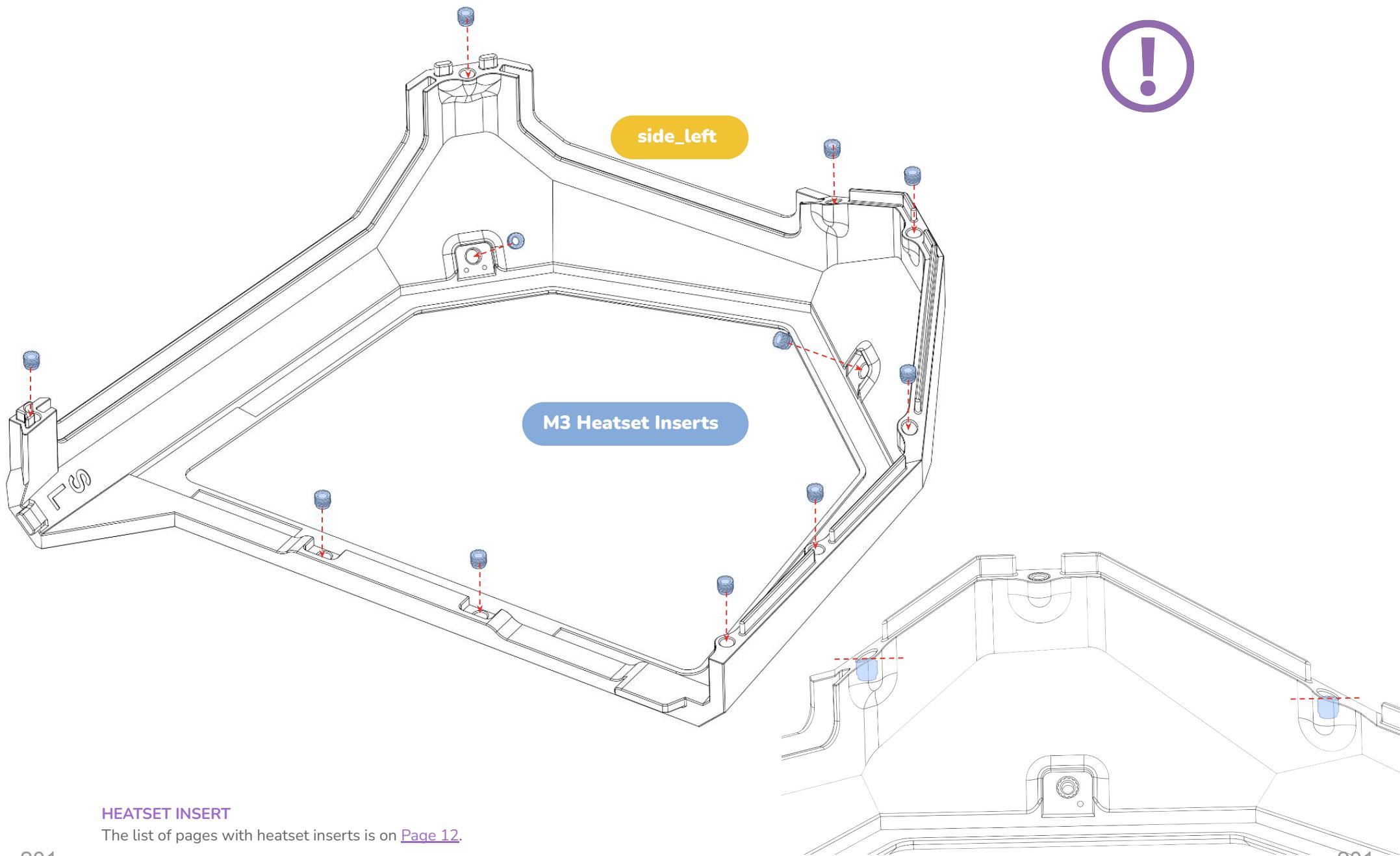
ENCLOSURE PREPARATION



ENCLOSURE PREPARATION



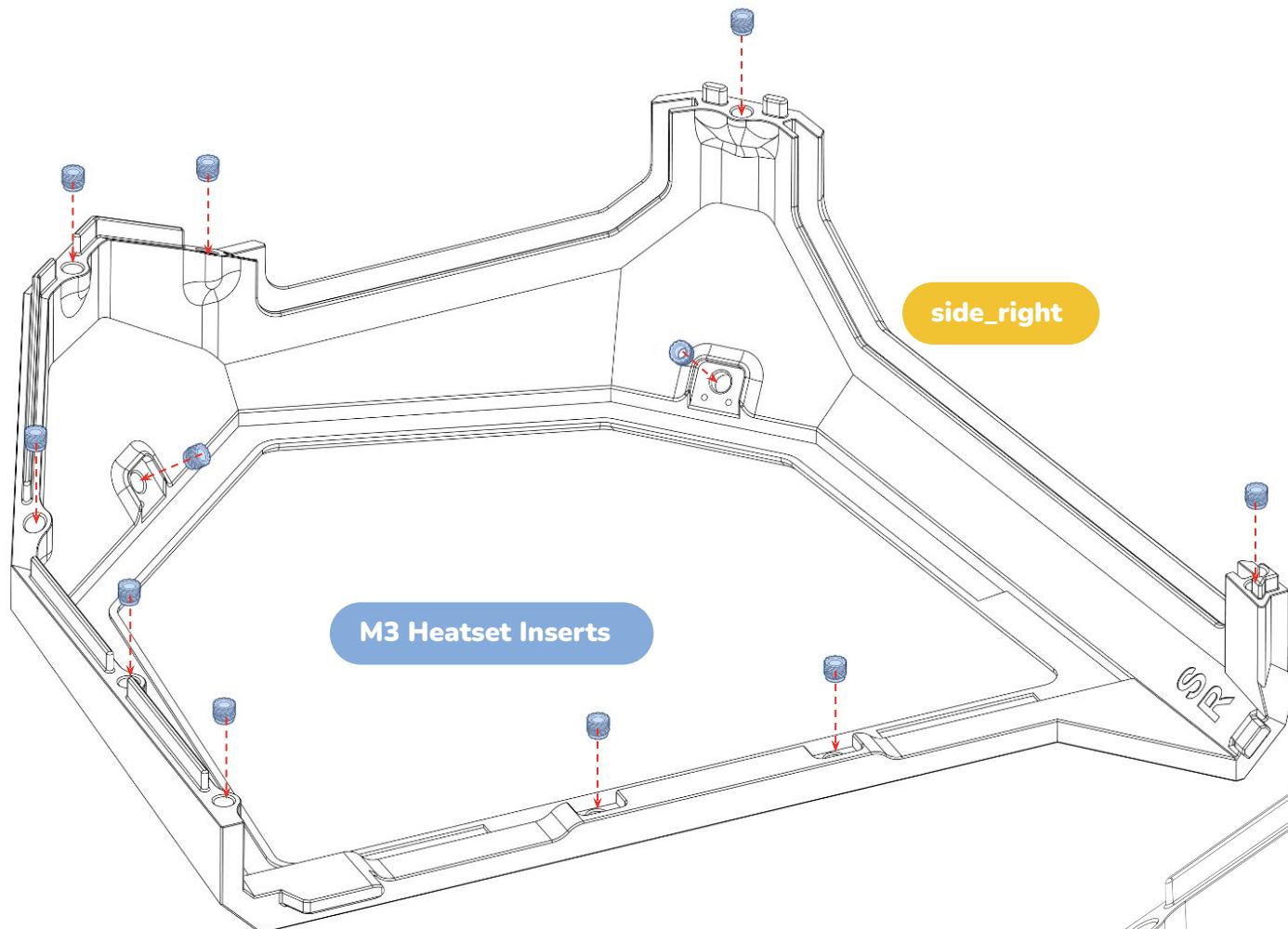
ENCLOSURE PREPARATION



HEATSET INSERT

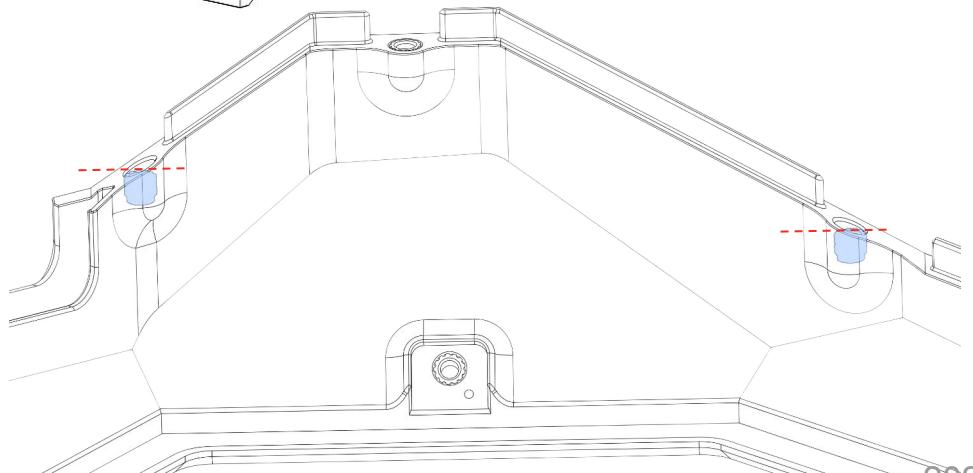
The list of pages with heatset inserts is on [Page 12](#).

ENCLOSURE PREPARATION

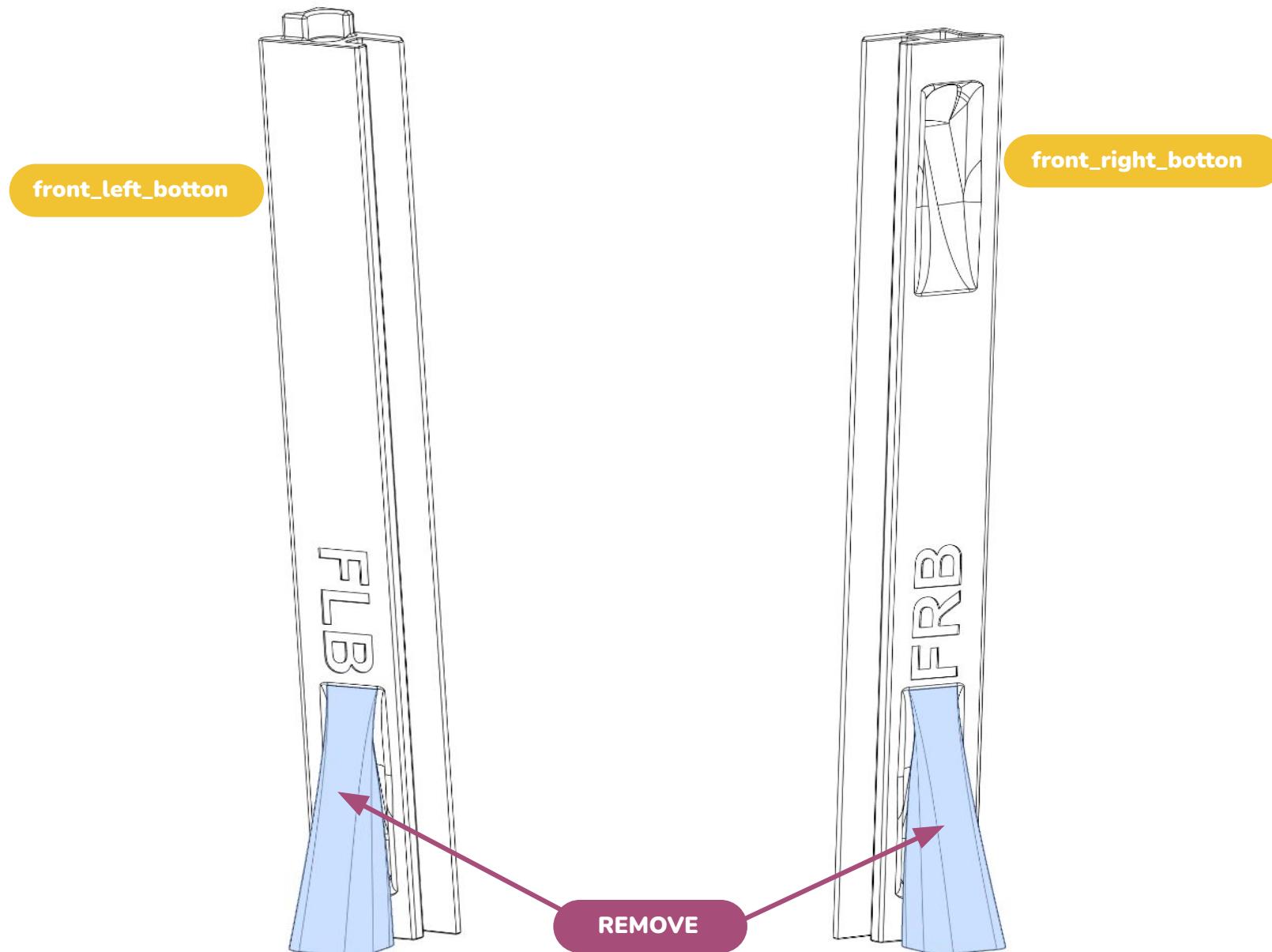


HEATSET INSERT

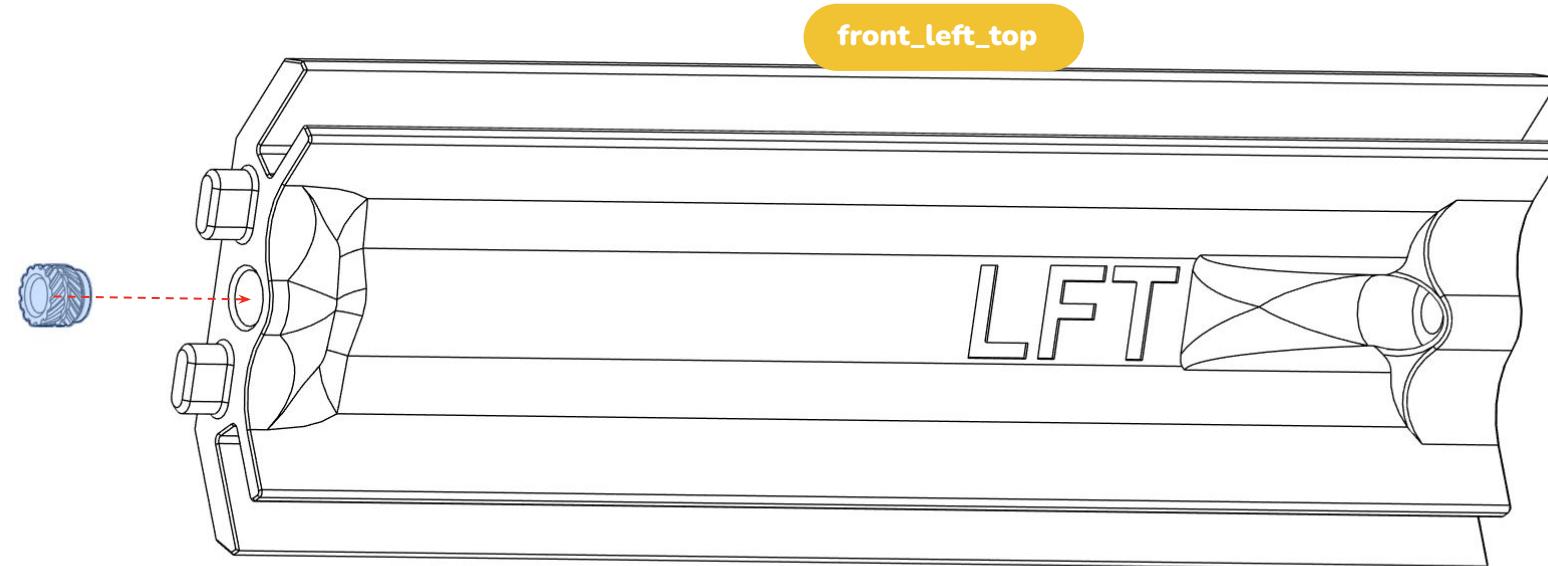
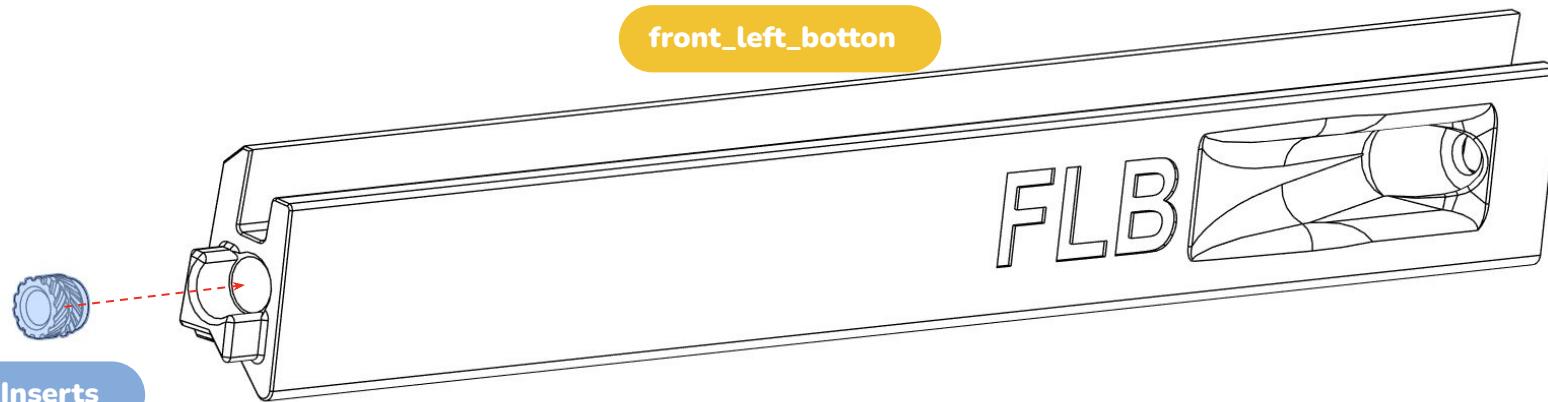
The list of pages with heatset inserts is on [Page 12](#).



ENCLOSURE PREPARATION



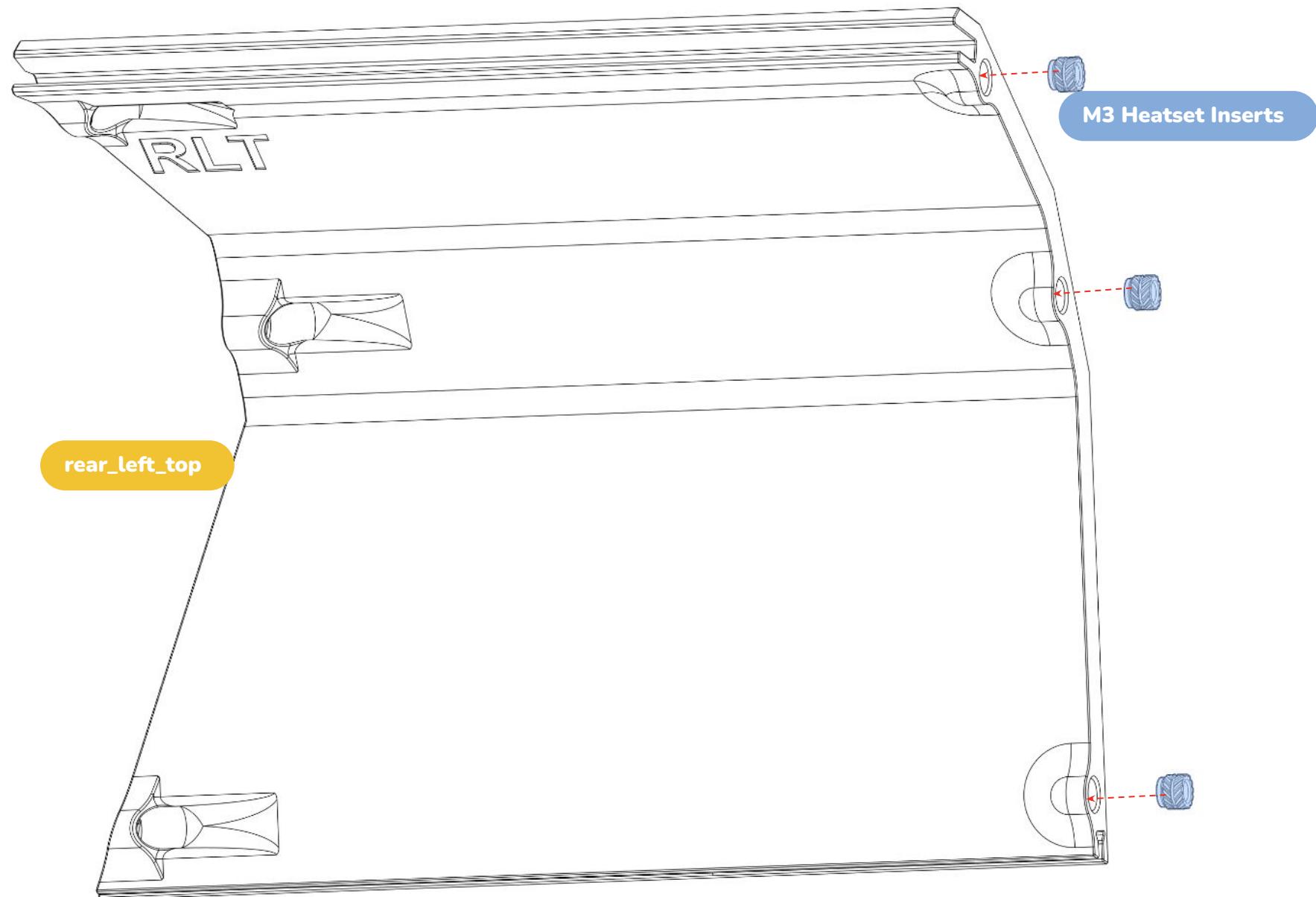
ENCLOSURE PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

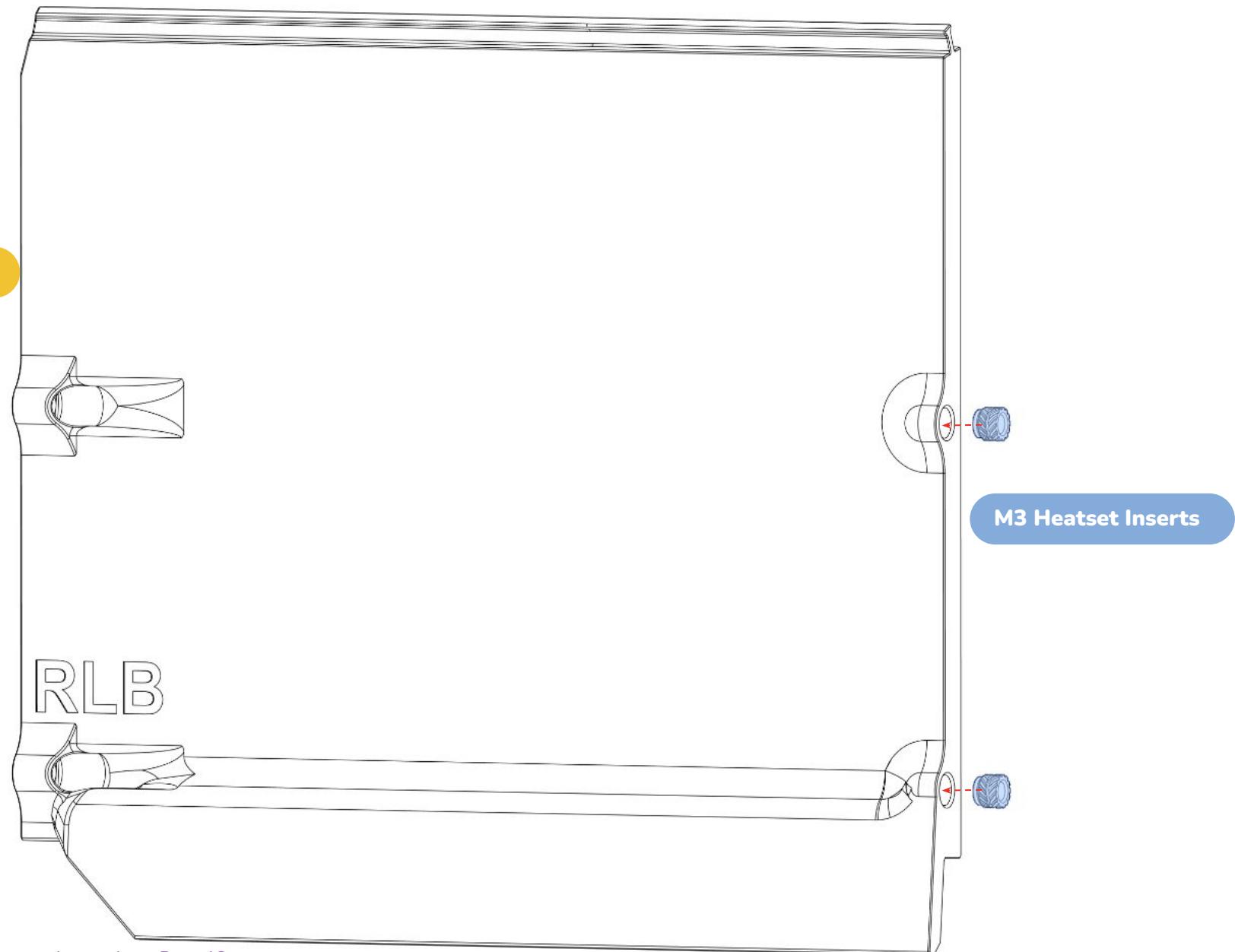
ENCLOSURE PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

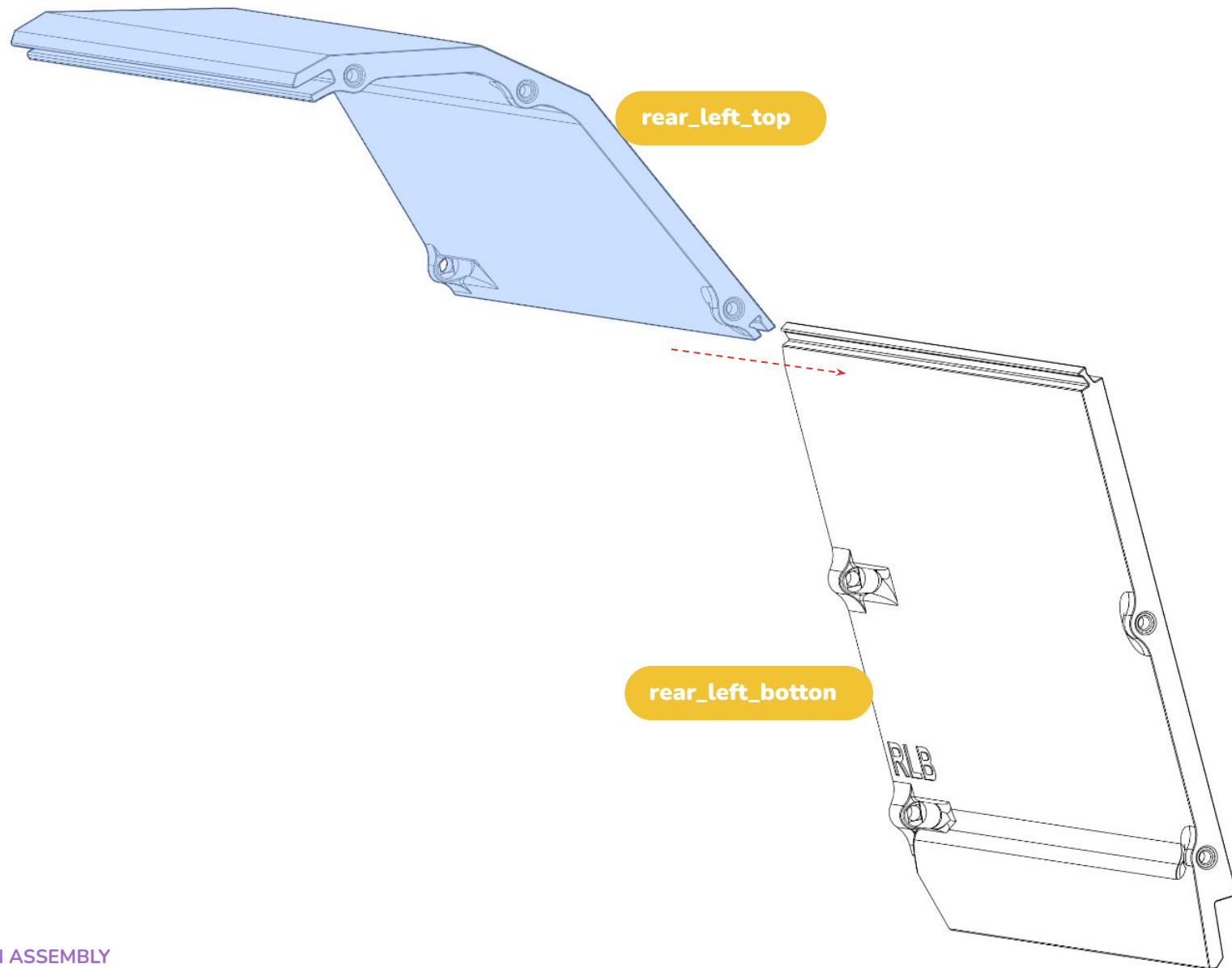
ENCLOSURE PREPARATION



HEATSET INSERT

The list of pages with heatset inserts is on [Page 12](#).

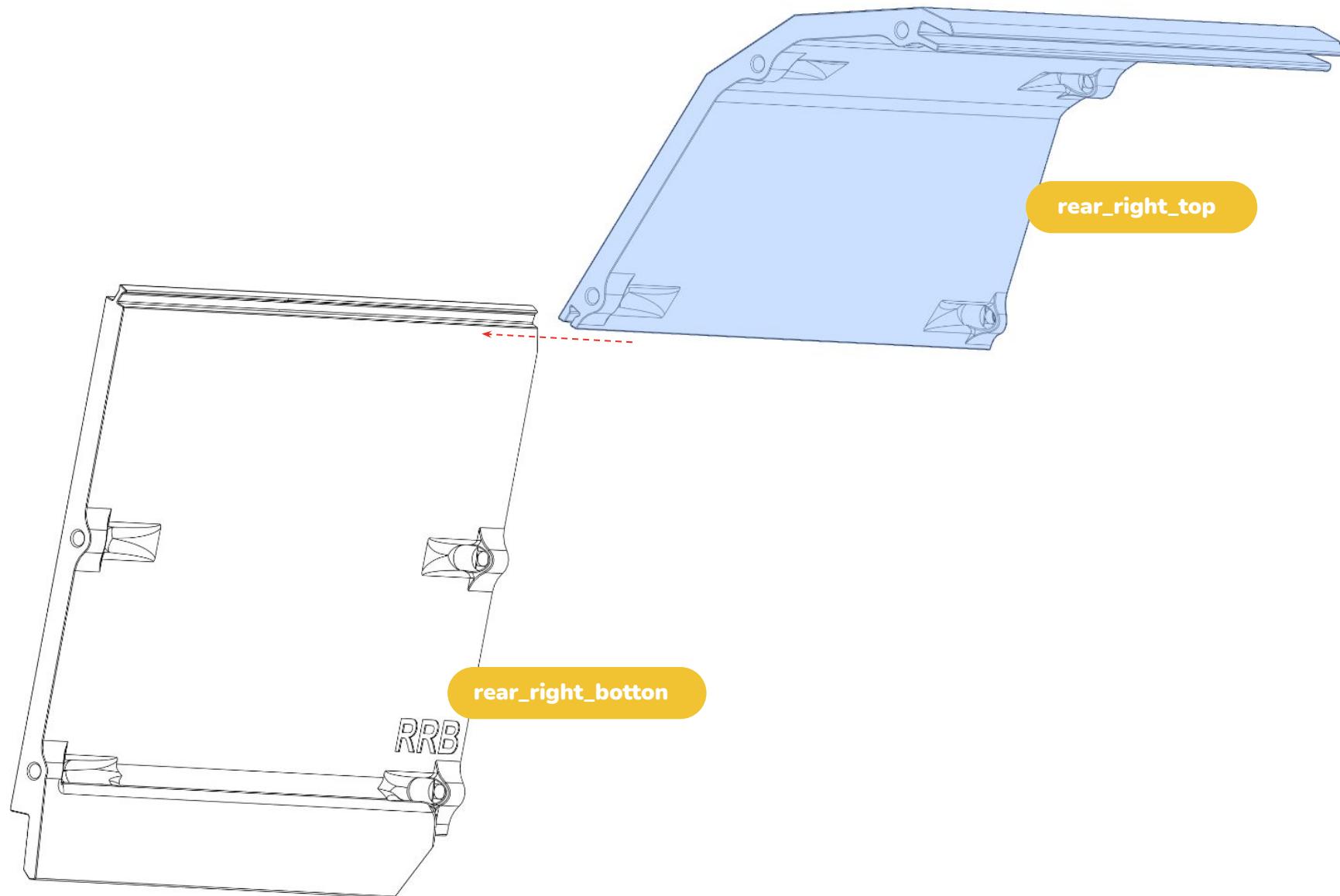
ENCLOSURE ASSEMBLY



REAR SECTION ASSEMBLY

To assemble the rear section, slide the **rear_left_top** onto the **rear_left_bottom**.

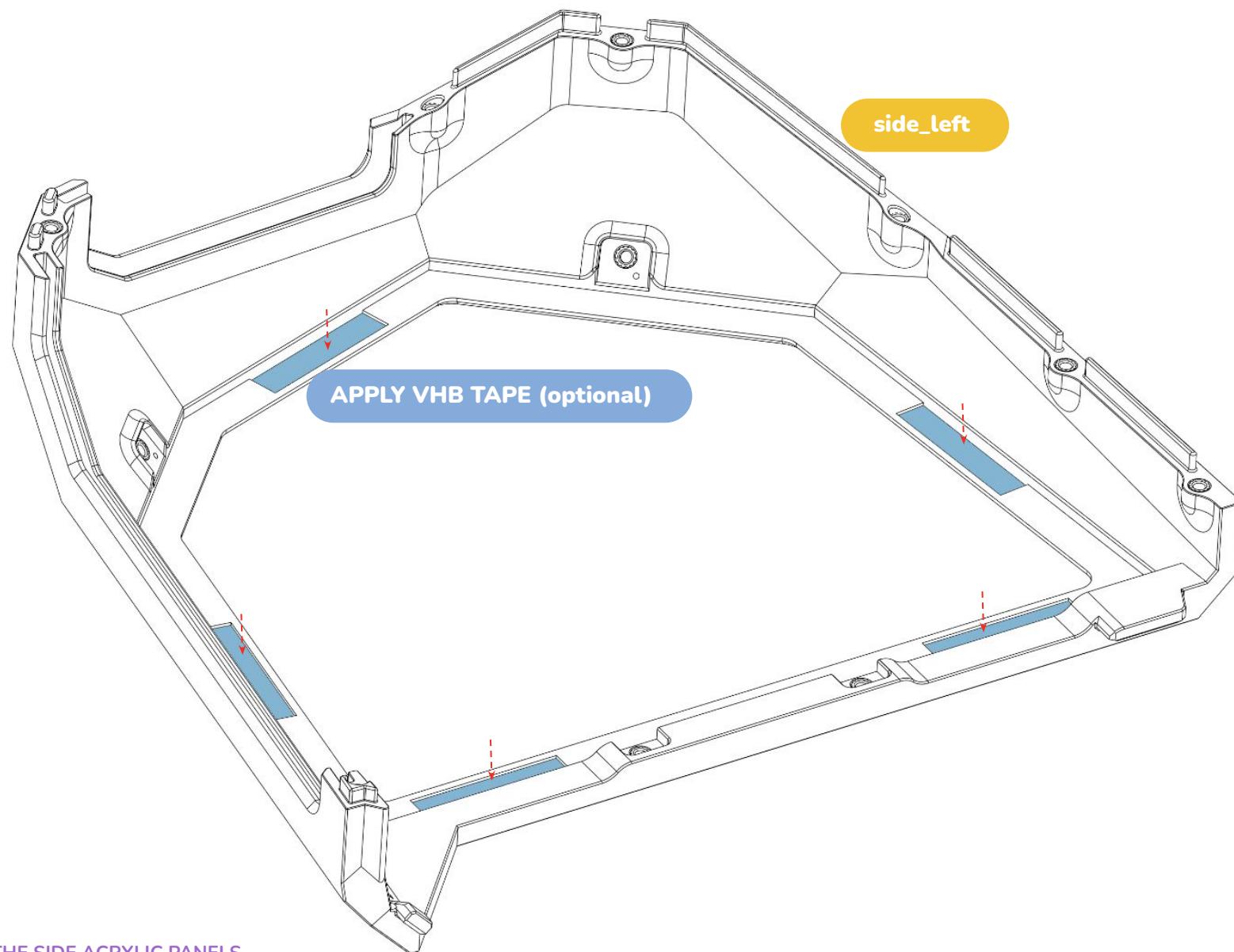
ENCLOSURE ASSEMBLY



REAR SECTION ASSEMBLY

To assemble the rear section, slide the **rear_right_top** onto the **rear_right_bottom**.

ENCLOSURE ASSEMBLY

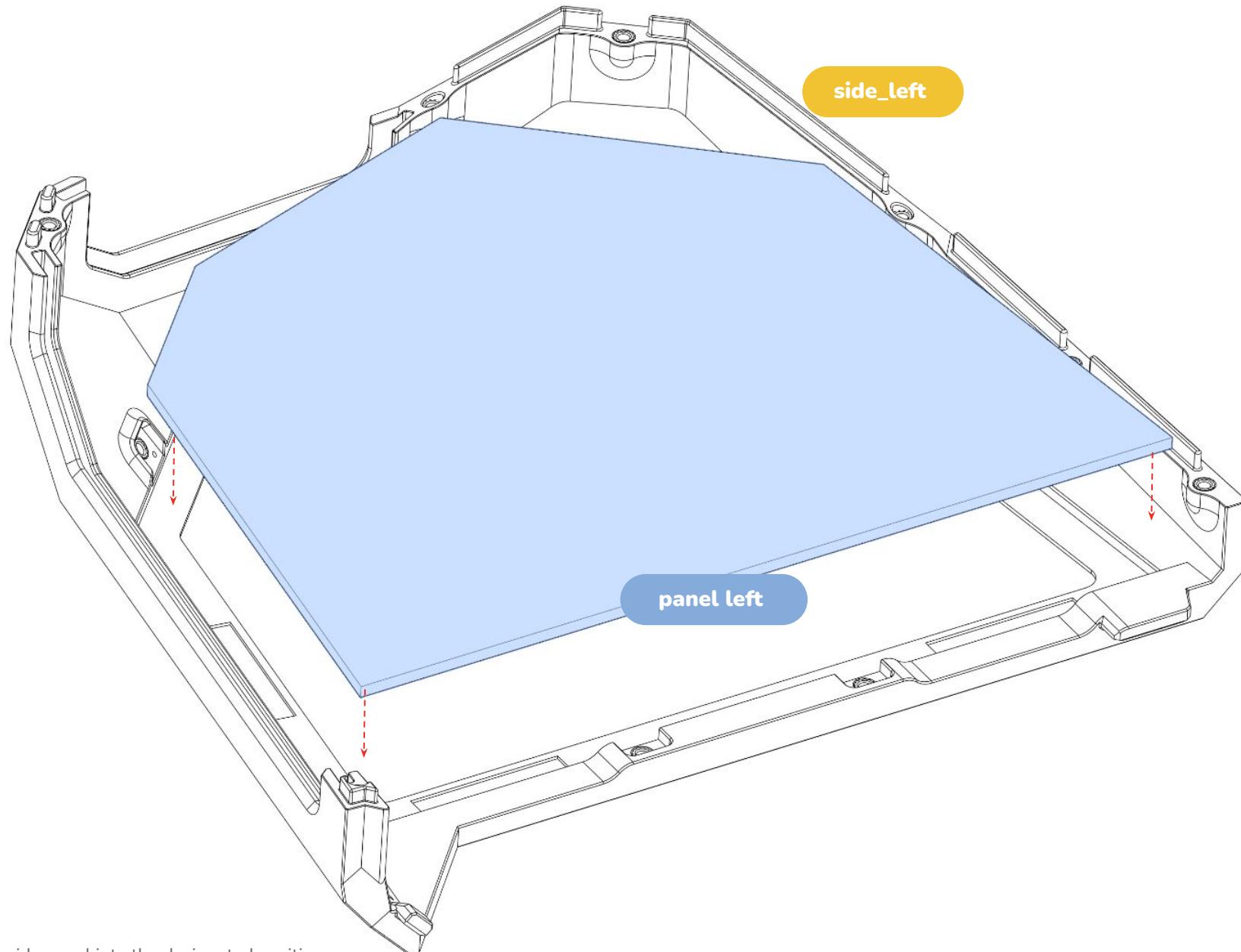


ATTACHING THE SIDE ACRYLIC PANELS

If you prefer, you can attach the side acrylic panels using VHB tape.

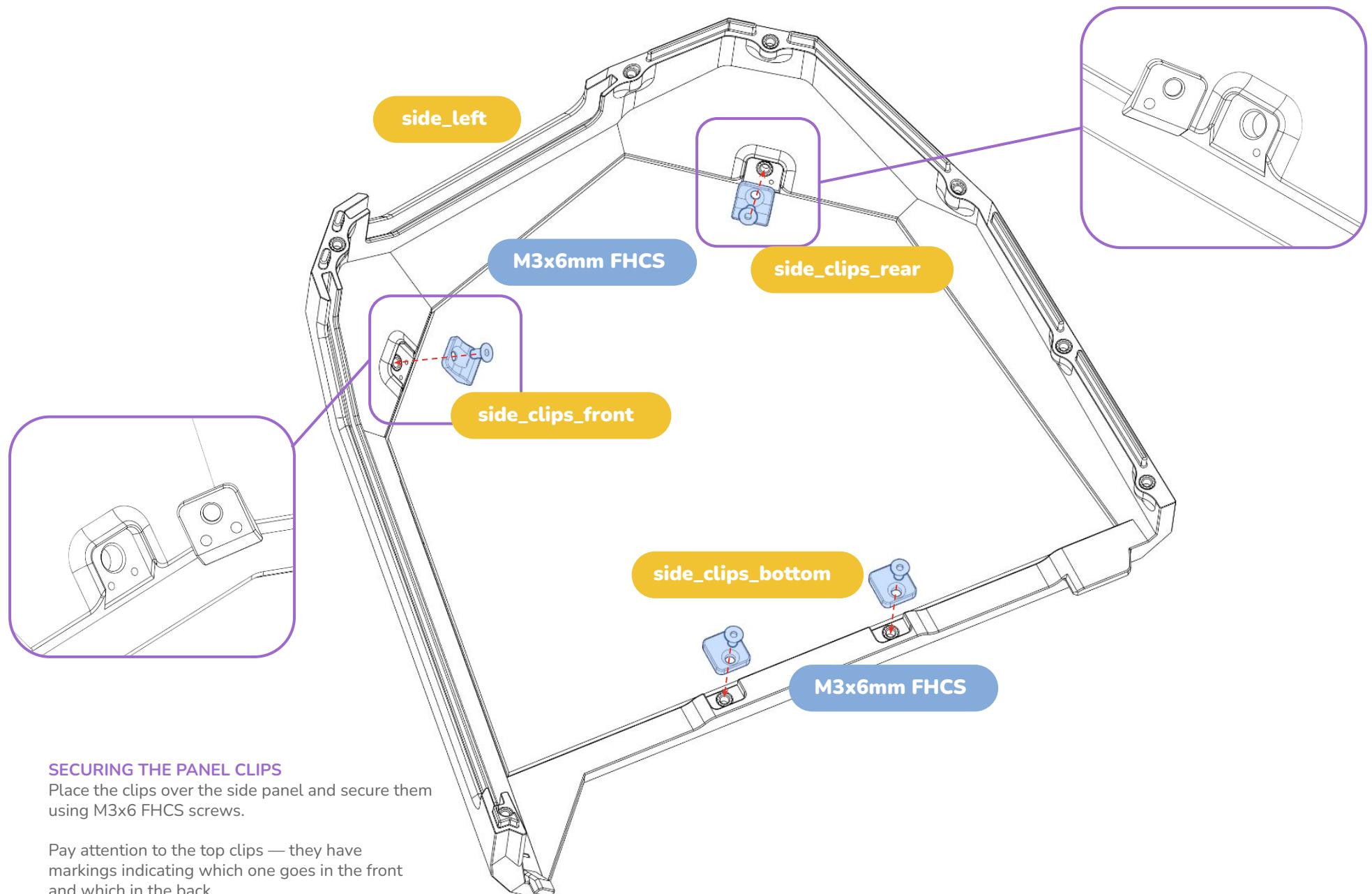
However, in our tests, the clips alone provided a very secure hold.

ENCLOSURE ASSEMBLY

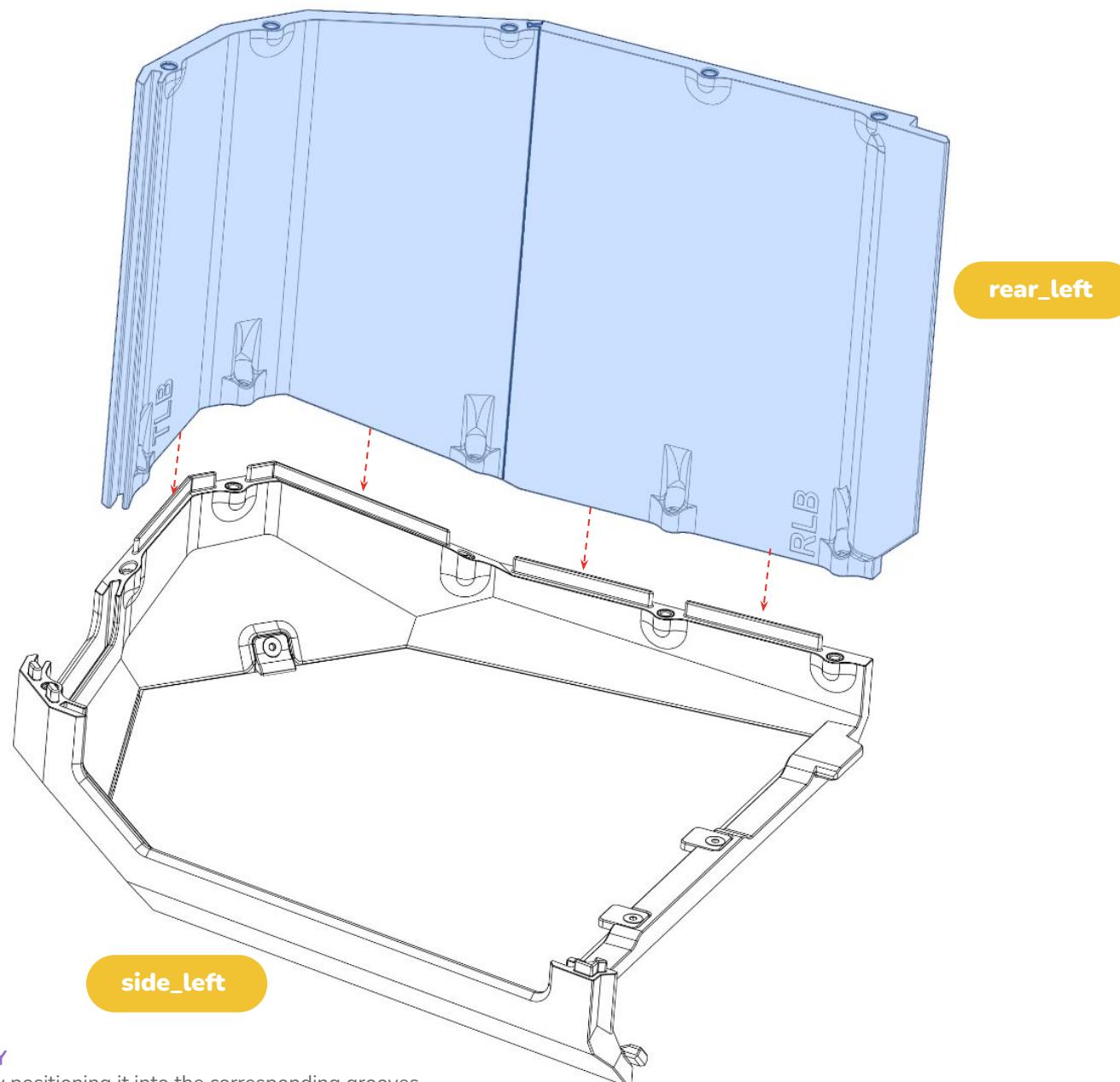


Insert the side panel into the designated position

ENCLOSURE ASSEMBLY



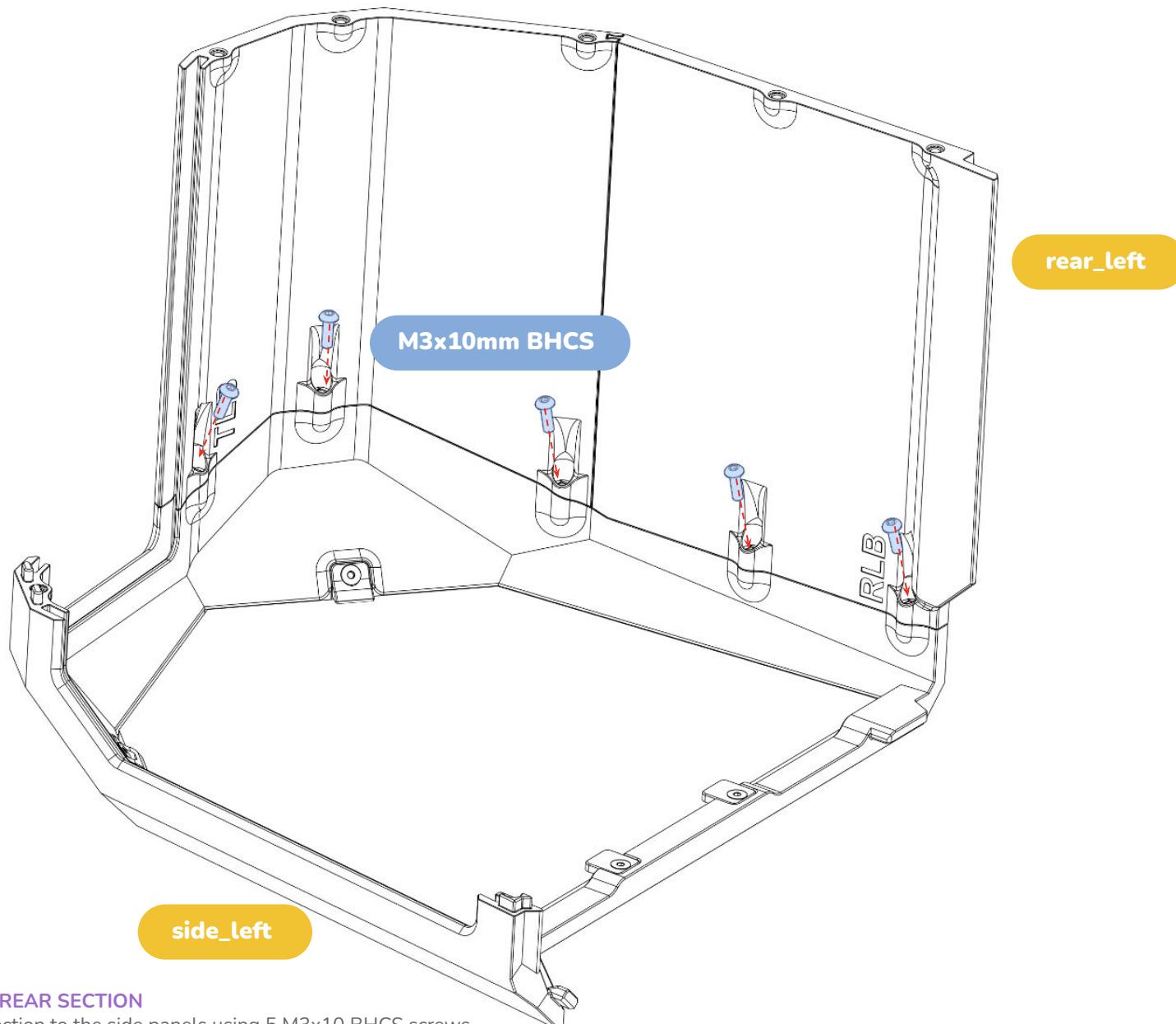
ENCLOSURE ASSEMBLY



REAR SECTION ASSEMBLY

Fit the rear section, carefully positioning it into the corresponding grooves.

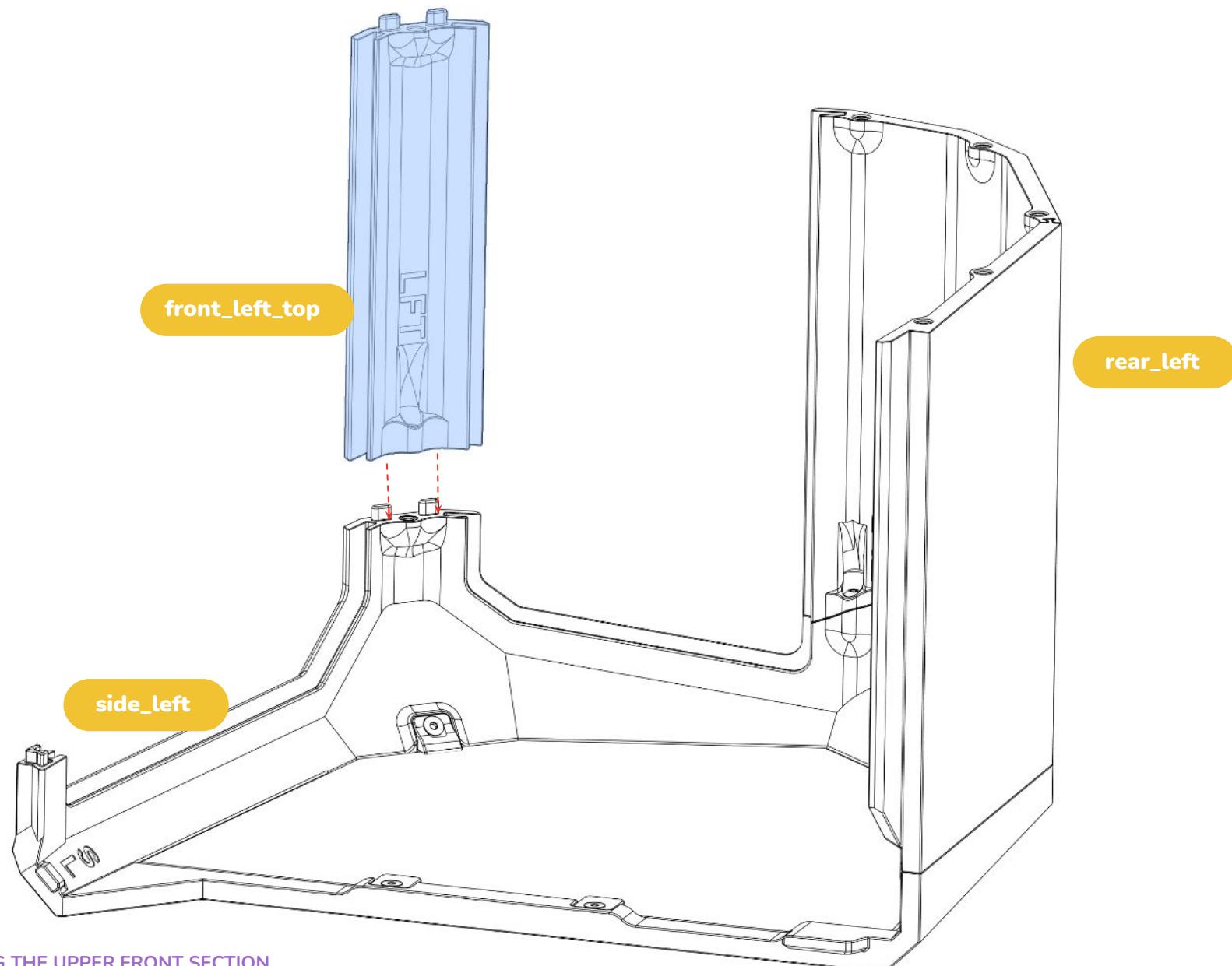
ENCLOSURE ASSEMBLY



SECURING THE REAR SECTION

Screw the rear section to the side panels using 5 M3x10 BHCS screws.

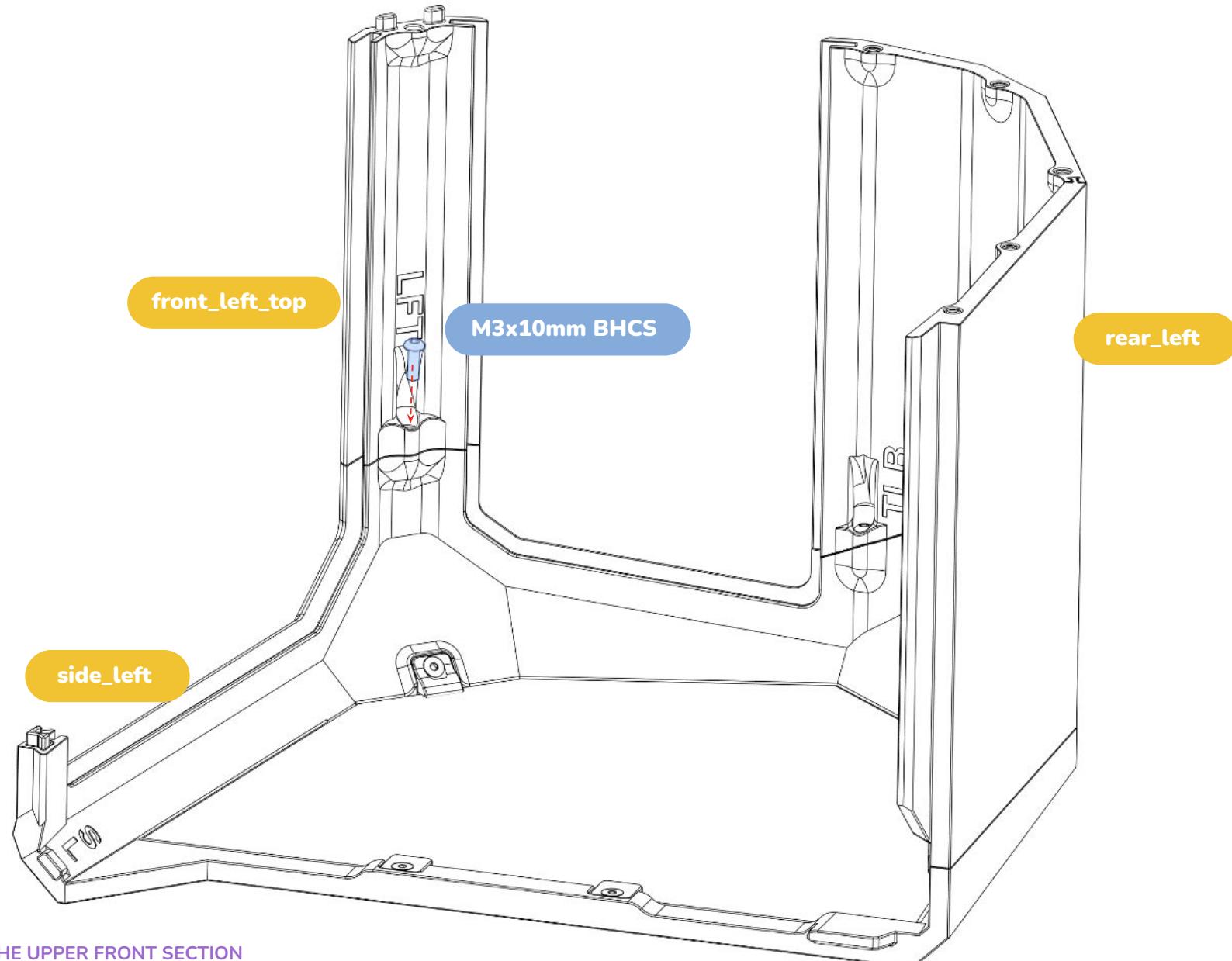
ENCLOSURE ASSEMBLY



INSTALLING THE UPPER FRONT SECTION

Fit the upper front section carefully into the designated grooves.

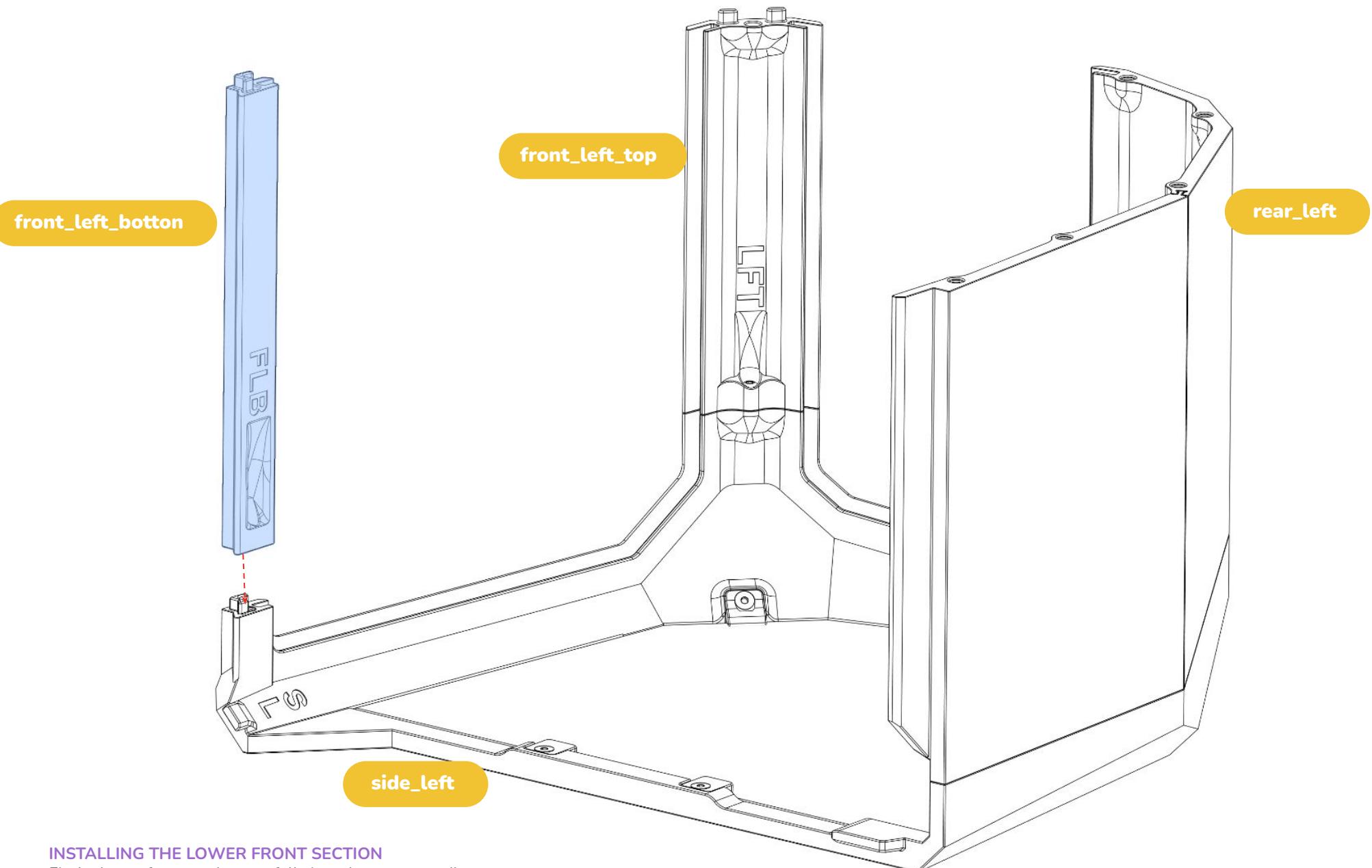
ENCLOSURE ASSEMBLY



SECURING THE UPPER FRONT SECTION

Secure the upper front section using 1 M3x10 BHCS screw.

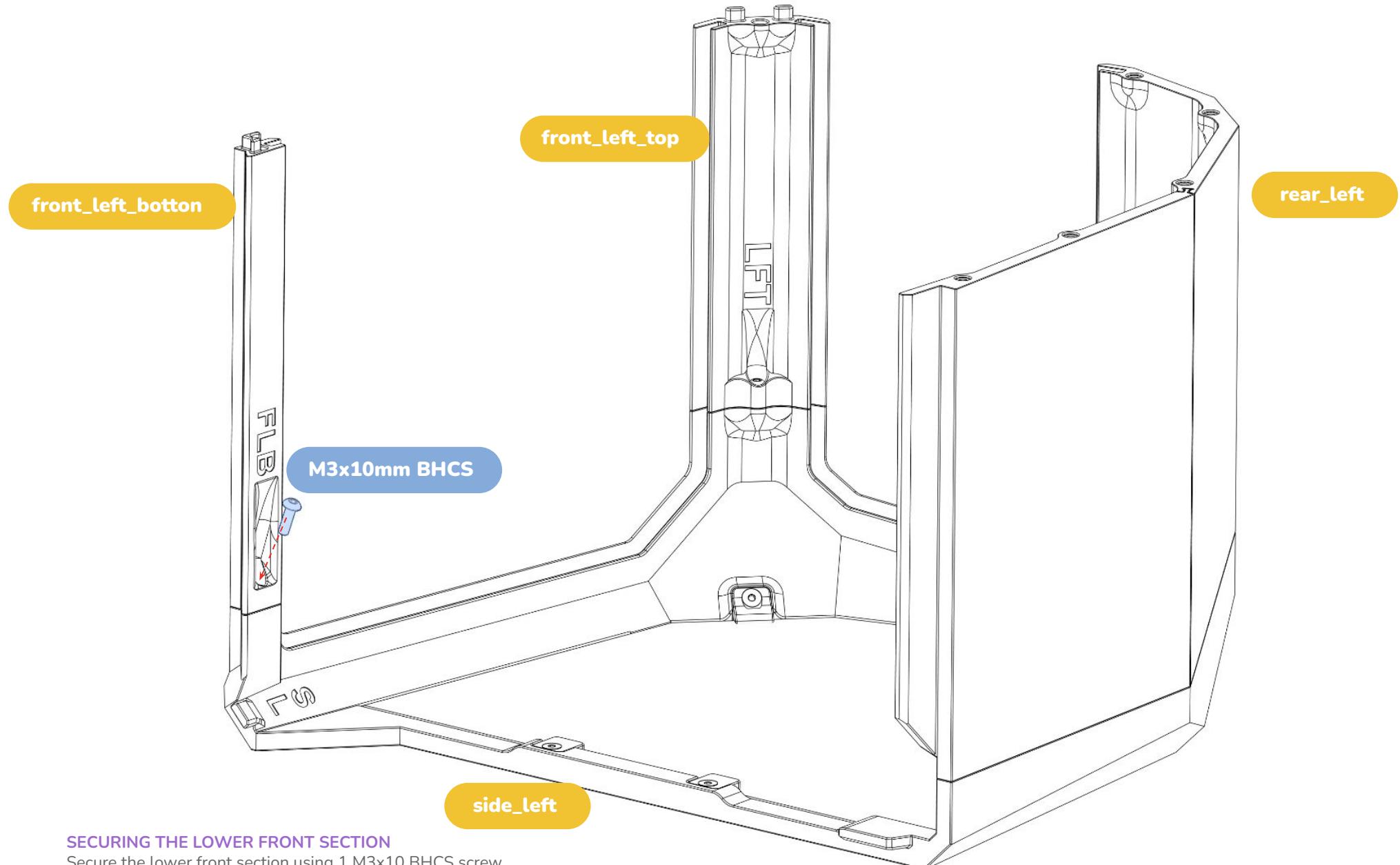
ENCLOSURE ASSEMBLY



INSTALLING THE LOWER FRONT SECTION

Fit the lower front section carefully into the corresponding grooves.

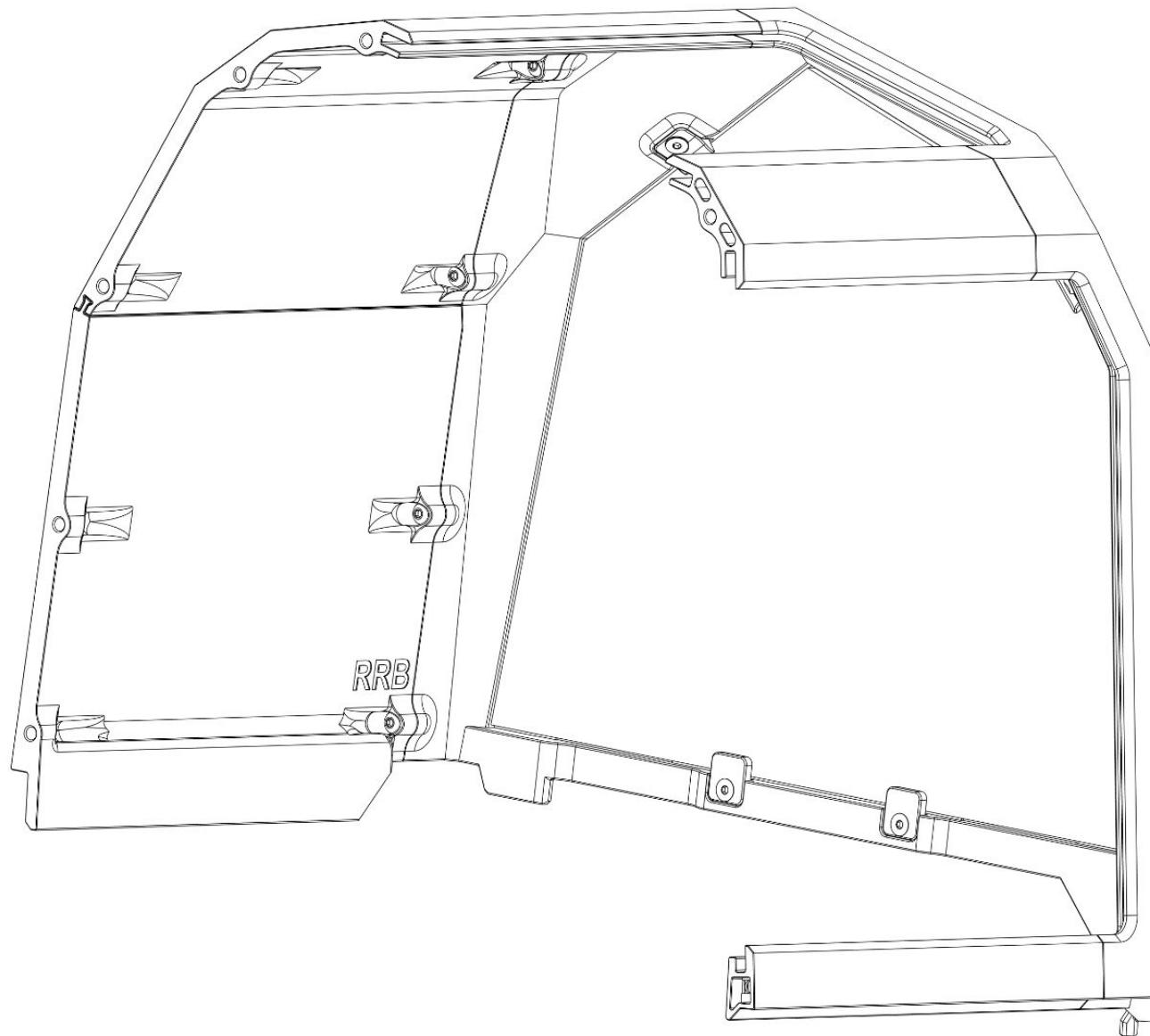
ENCLOSURE ASSEMBLY



SECURING THE LOWER FRONT SECTION

Secure the lower front section using 1 M3x10 BHCS screw.

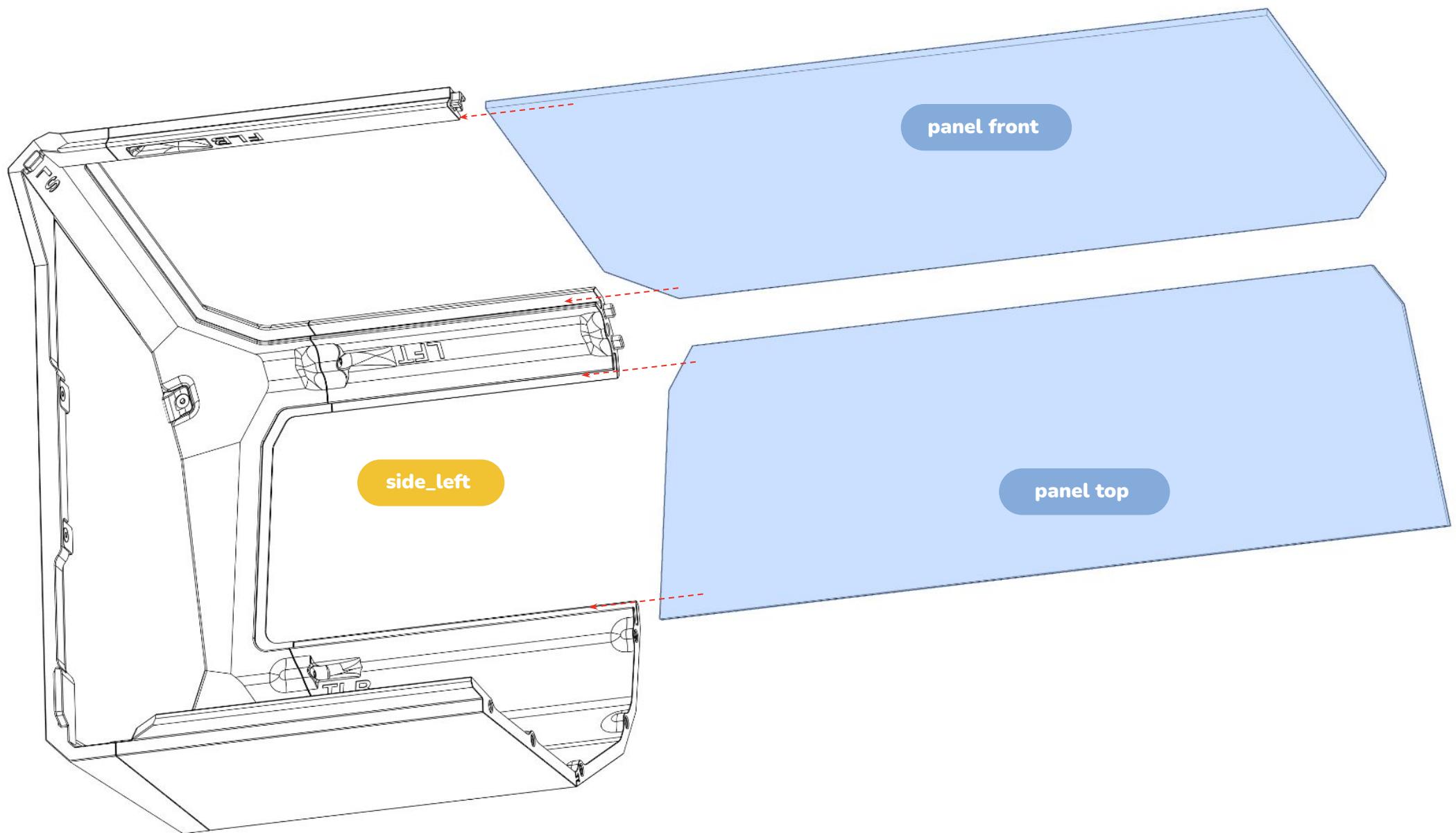
ENCLOSURE ASSEMBLY



RIGHT SIDE ASSEMBLY

Repeat all the steps done on the left side, now on the right side of the box.
This includes installing the rear, upper front, and lower front sections, and securing them with the appropriate screws.

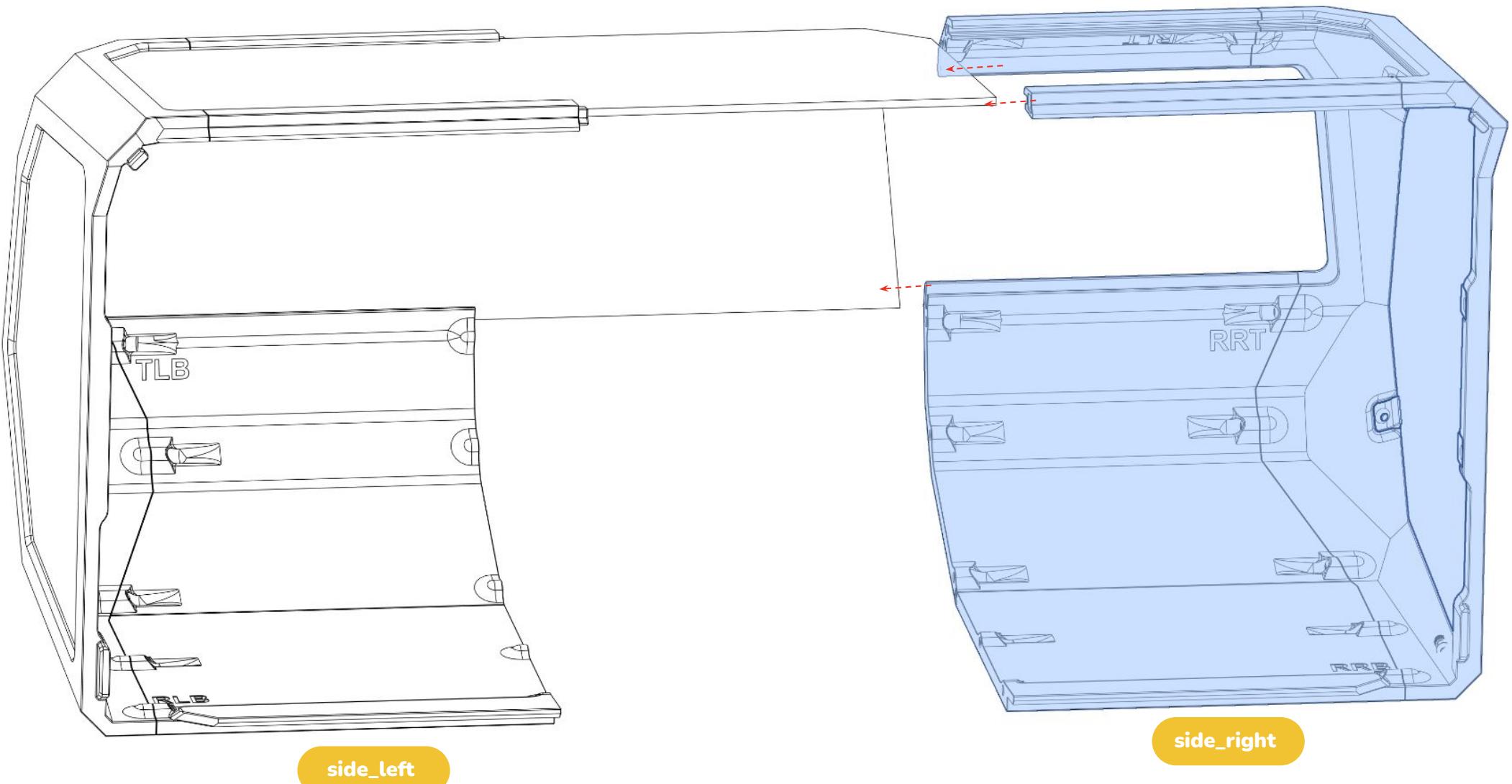
ENCLOSURE ASSEMBLY



INSTALLING THE FRONT AND TOP ACRYLIC PANELS

Slide the front and top acrylic panels into the designated channels, making sure they are properly aligned and fully seated.

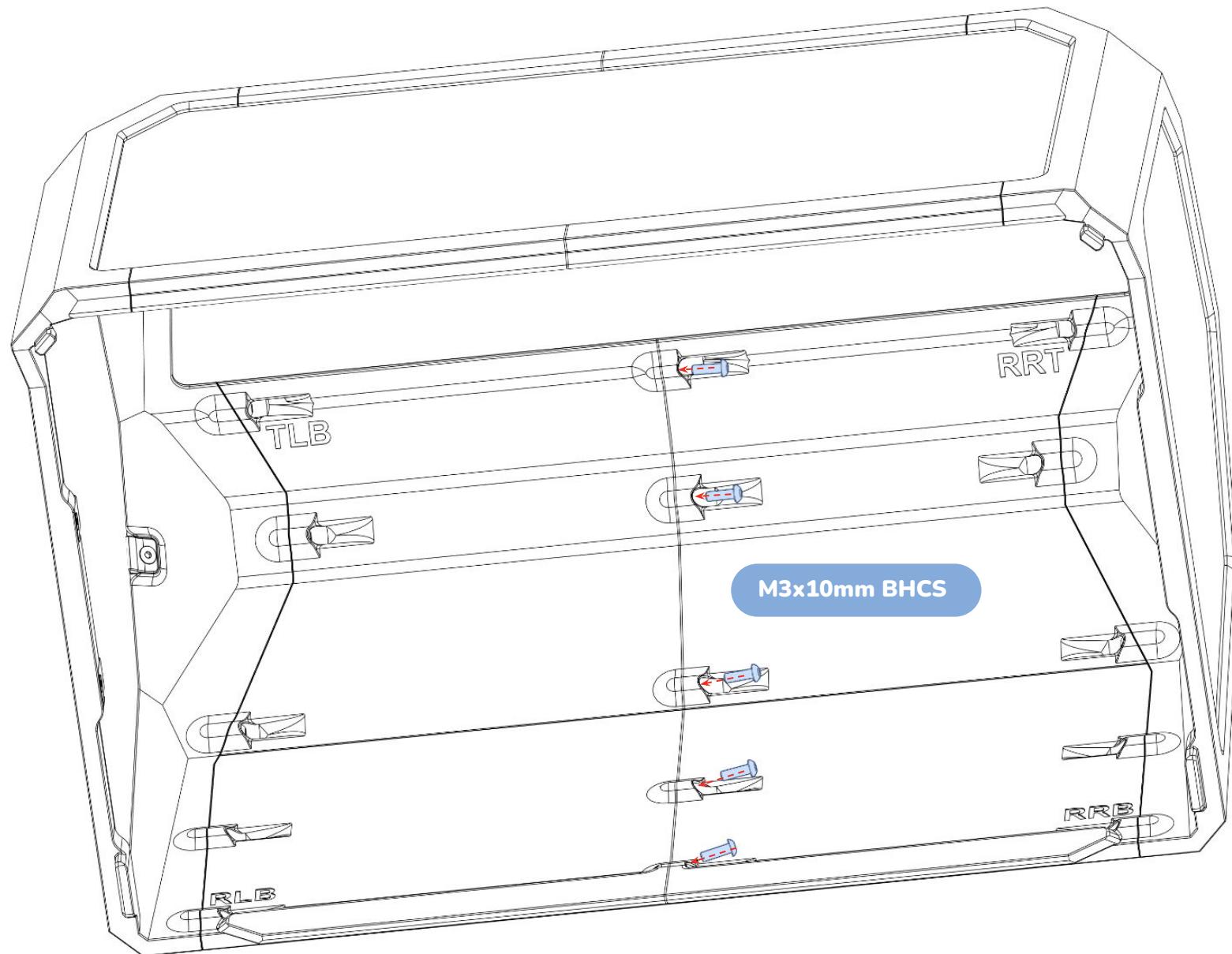
ENCLOSURE ASSEMBLY



SLIDING THE RIGHT SIDE ASSEMBLY ONTO THE ACRYLIC PANELS

Slide the right side assembly carefully onto the front and top acrylic panels, making sure it fits properly into the channels.

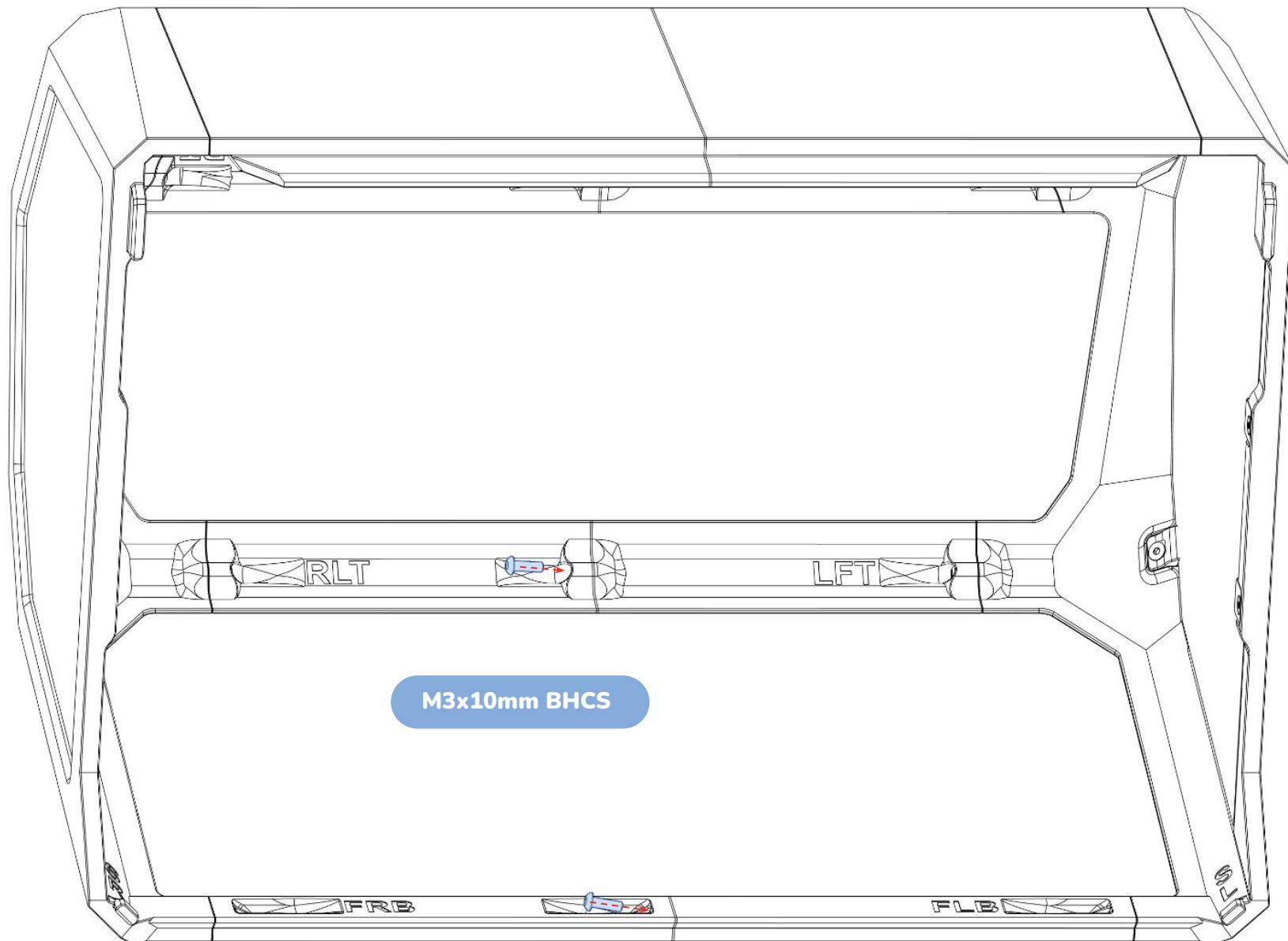
ENCLOSURE ASSEMBLY



SECURING THE RIGHT SIDE TO THE REAR SECTION

Secure the right side assembly to the rear section using 5 M3x10 BHCS screws.

ENCLOSURE ASSEMBLY

**SECURING THE FRONT SECTION**

Secure the front section using 2 M3x10 BHCS screws.

*The End. If something goes wrong, just blame the filament!
Now all that's left is to calibrate it... may the odds be ever in your favor* 



Should you find an issue in the documentation or have a suggestion for an improvement please consider opening an issue on GitHub (<https://github.com/Batalhoti/QuattroBox/issues>). When raising an issue please include the relevant page numbers and a short description; annotated screenshots are also very welcome. We periodically update the manual based on the feedback we get.



quattro box

