



# STEALTH PRESS

## ASSEMBLY MANUAL

# INTRODUCTION

## BEFORE WE BEGIN

### About the project

Stealth Press is open-source heat-set insert press designed and created by **Mairis Skuja [Iconic FAB]**.

Project is designed with **easiness to source and build** in mind. It is **mostly 3D printed**, however uses multiple high quality and precision parts which you will need to source separately before build.

### Motivation

There are multiple projects like this available for free download and build. Almost all of them relies on Misumi standard 2020 or 4020 extrusions to provide precision which adds extra cost, time and complexity to the build.

Stealth press build **relies on precision provided by 300mm MGN12H linear** rail instead which provides a stable *spine* to build every other component around it.

**Integrated, printable build plate** adds another critical element for precision and easiness to work with.

Stealth press uses **KEY-BAK** key reel with kevlar belt loop to ensure **longevity** (proven to last more than 1-million pulls) and has some other quirks, features and QoL improvements comparing to the similar projects.

### Licence

**Stealth Press is licensed under the GNU General Public License v3.0.**

#### Permissions

- 👍 Commercial use
- 👍 Modification
- 👍 Distribution
- 👍 Patent use
- 👍 Private use

#### Limitations

- ❌ Liability
- ❌ Warranty

#### Conditions

- 🔥 License and copyright notice
- 🔥 State changes
- 🔥 Disclose source
- 🔥 Same license

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# PRINT SETTINGS

## PART PRINTING GUIDELINES

Here are print guidelines for you to follow in order to have decent success with printing parts:

### 3D PRINTING PROCESS

👉 Fused Deposition Modeling (FDM)

### MATERIAL

👉 ASA, ASA-CF, ABS, ABS+, ABS-CF

### LAYER HEIGHT

👉 Recommended: 0.2mm

### EXTRUSION WIDTH

👉 Recommended: Forced 0.4mm

### INFILL TYPE

👉 Grid, Gyroid, Honeycomb, Triangle or Cubic

### INFILL PERCENTAGE

👉  $\geq 40\%$

### WALL COUNT

👉 Recommended: 4

### SOLID TOP/BOTTOM LAYERS

👉 Recommended: 5

## SIDE NOTES TO THE GUIDELINES ABOVE

You can succeed with *Support cubic* infill type (slicer support may vary) and as less as 25% infill for all parts if are aiming to faster print speeds and less filament usage.

PLA, PLA+ and PETG are also considerable as a filament choices. However, take into account that soldering iron radiates some indirect heat. Usage of less temperature stable filaments may result in part deformations over time.

**It is recommended to use ASA or ABS at least for “arm” and “iron mount” parts.**

Wall count of 4 is absolute must to ensure structural integrity of the parts.

There are no need to go over the top with this. 4 are 👉 for this particular build.

# PARTS

## FILE NAMING

The parts use this naming convention:

### PRIMARY COLOR

These files will have nothing at the start of the filename.

👉 Example: **buildplate\_x1.stl**

### ACCENT COLOR

Files has “[a]” to the front of any STL file that is intended to be printed with accent color.

👉 Example: **[a]\_bushing\_x1.stl**

### COUNT OF PARTS

Files has “x1” to “x4” to the end of any STL file. Number represents **count of identical parts** to be printed.

👉 Example:  
**[a]\_m5\_1mm\_spacer\_x4** (In this case you will need to print 4 identical spacers)

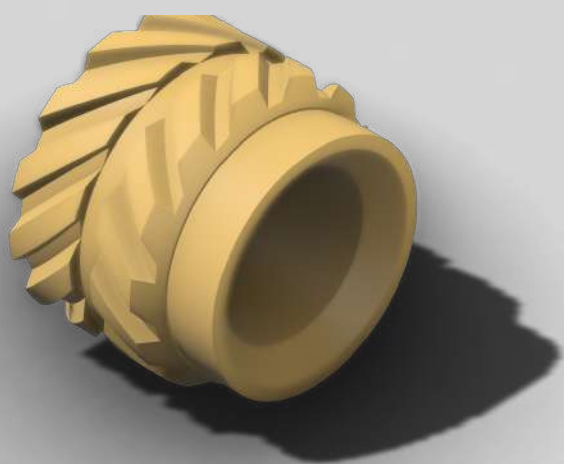
## SIDE NOTES (AGAIN) TO THE GUIDELINES ABOVE

Primary colors and accent colors are just how it’s envisioned.  
**Go crazy with this, nobody will mind.**

This manual is designed to be a simple reference manual. For additional information, it is recommended downloading the CAD file from project Github repository. **See links at the last page.** It can sometimes be easier to follow along when you have the whole assembly in front of you.

# ASSEMBLY

## LEG



### M3 Threaded Inserts

All inserts have same size:  
M3x5x4 (VORON)

### ADD HEAT-SET INSERTS

These are made of brass ,  
threaded on the inside and and  
has ridges on the outside.

Heat them up to approx 250C\*  
with a soldering iron and push  
them into the plastic.

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

\* Perfect temperature to set is print  
temperature of filament used +/- 10C.

8 — Insert M3x5x4: Do not forget insert in back!

1 — Insert M3x5x4

6 — Insert M3x5x4

2 — Insert M3x5x4

4 — Insert M3x5x4

5 — Insert M3x5x4

7 — Insert M3x5x4



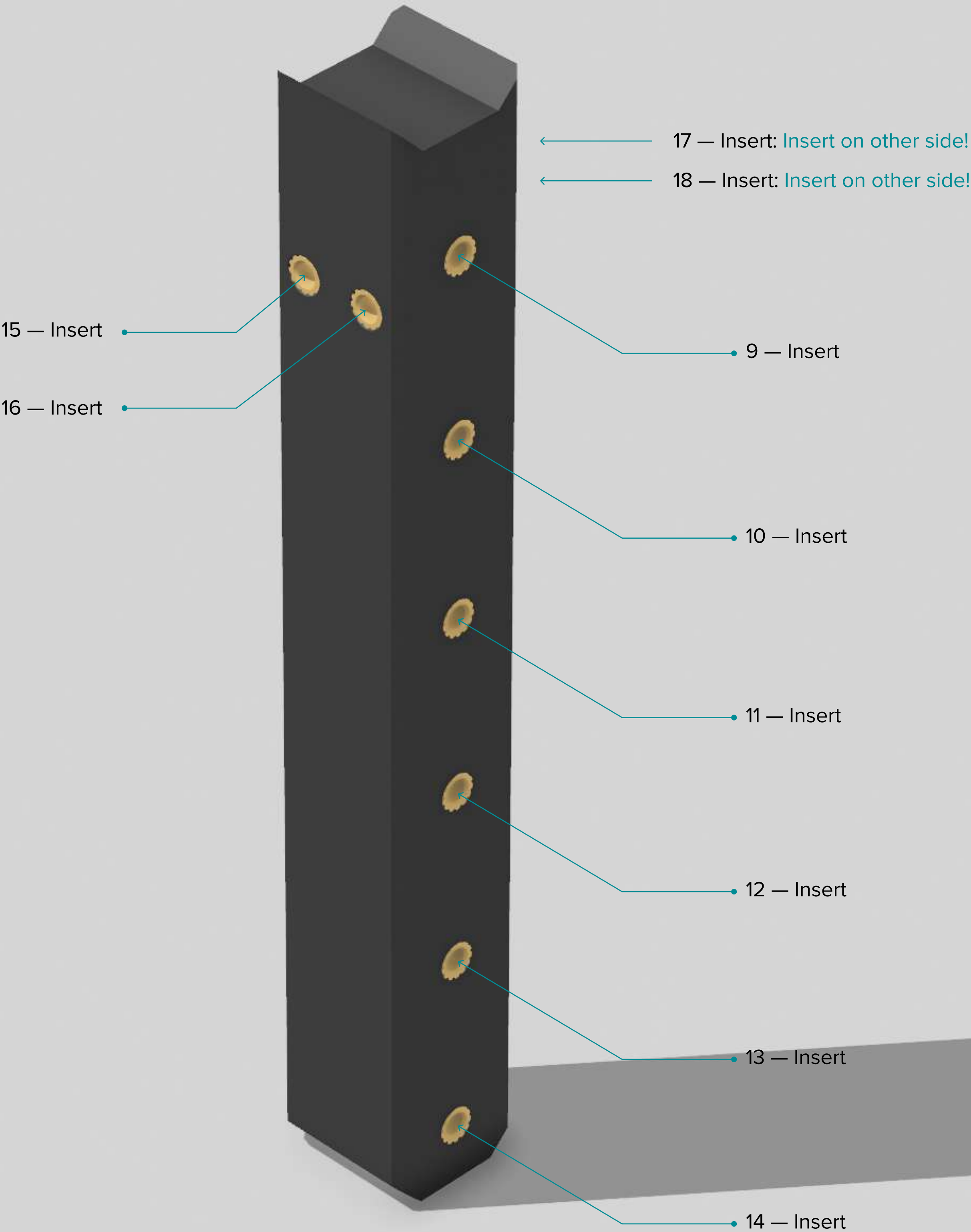
# ASSEMBLY

## CENTER

### ADD HEAT-SET INSERTS

Add heat-set inserts for center part.

Inserts here is meant to securely fix linear rail and support arms.



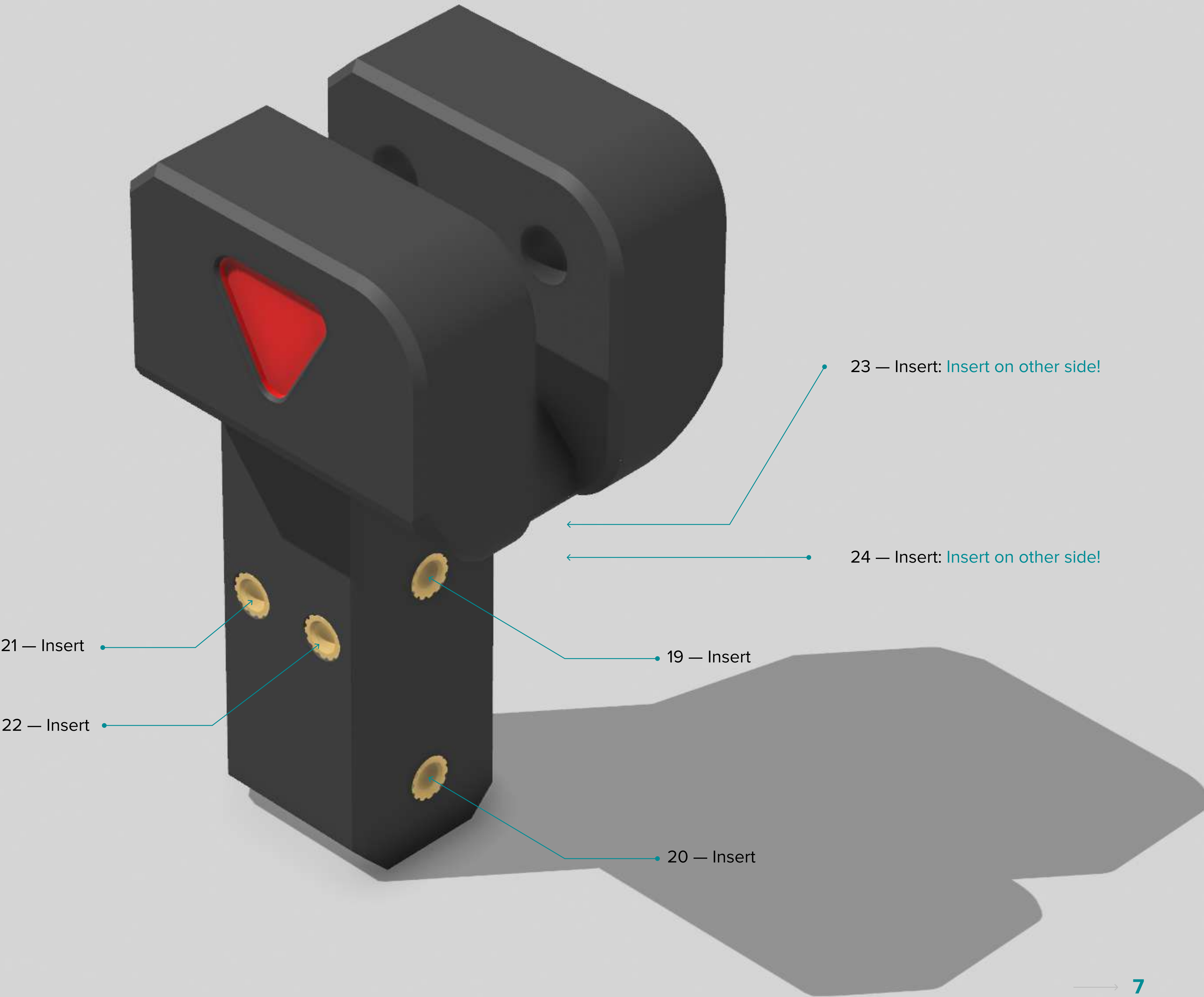
# ASSEMBLY

## TOP

### ADD HEAT-SET INSERTS

Add heat-set inserts for bearing assembly (top) part.

Inserts here is meant to fix bearing assembly part to the linear rail and top end of support arms.





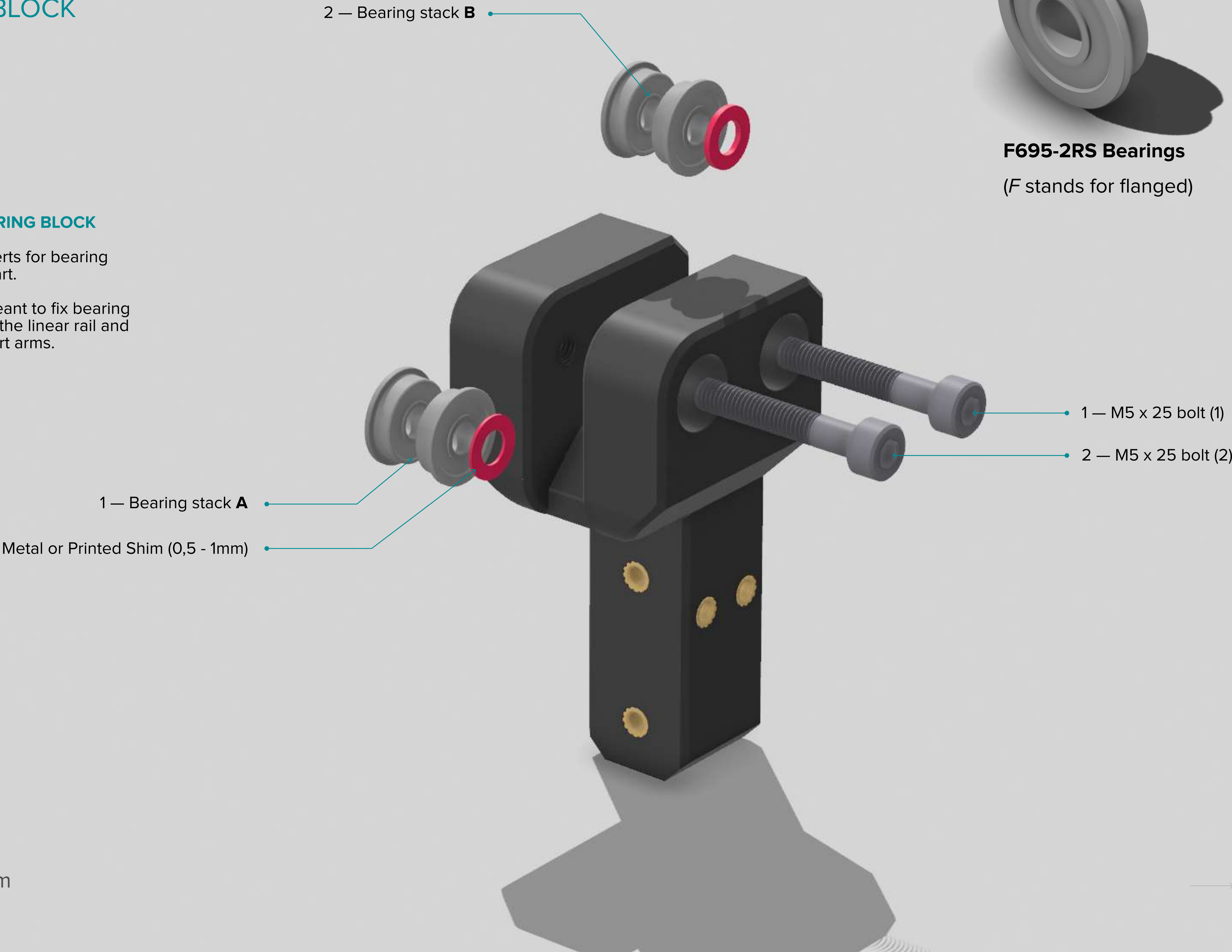
# ASSEMBLY

## BEARING BLOCK

### ASSEMBLE BEARING BLOCK

Add heat-set inserts for bearing assembly (top) part.

Inserts here is meant to fix bearing assembly part to the linear rail and top end of support arms.



# ASSEMBLY

## SPINE

### ASSEMBLE SPINE

Put all bolts into designated inserts.  
**Do not over-tighten!**

Make sure all plastic parts are mounted to the linear rail straight and flush, check if everything is dimensionally accurate.

This on is **optional** QoL improvement - you can add M3 x 12mm bolt instead of M3 x 8 in hand with additional heat-set insert.

**This will prevent bearing block to accidentally slide off.**

1—12 (M3 x 8)

🔥 Prevent bearing block from sliding off at all cost! That can result of loosing bearings. *(Do not ask how we know this.)*

# ASSEMBLY

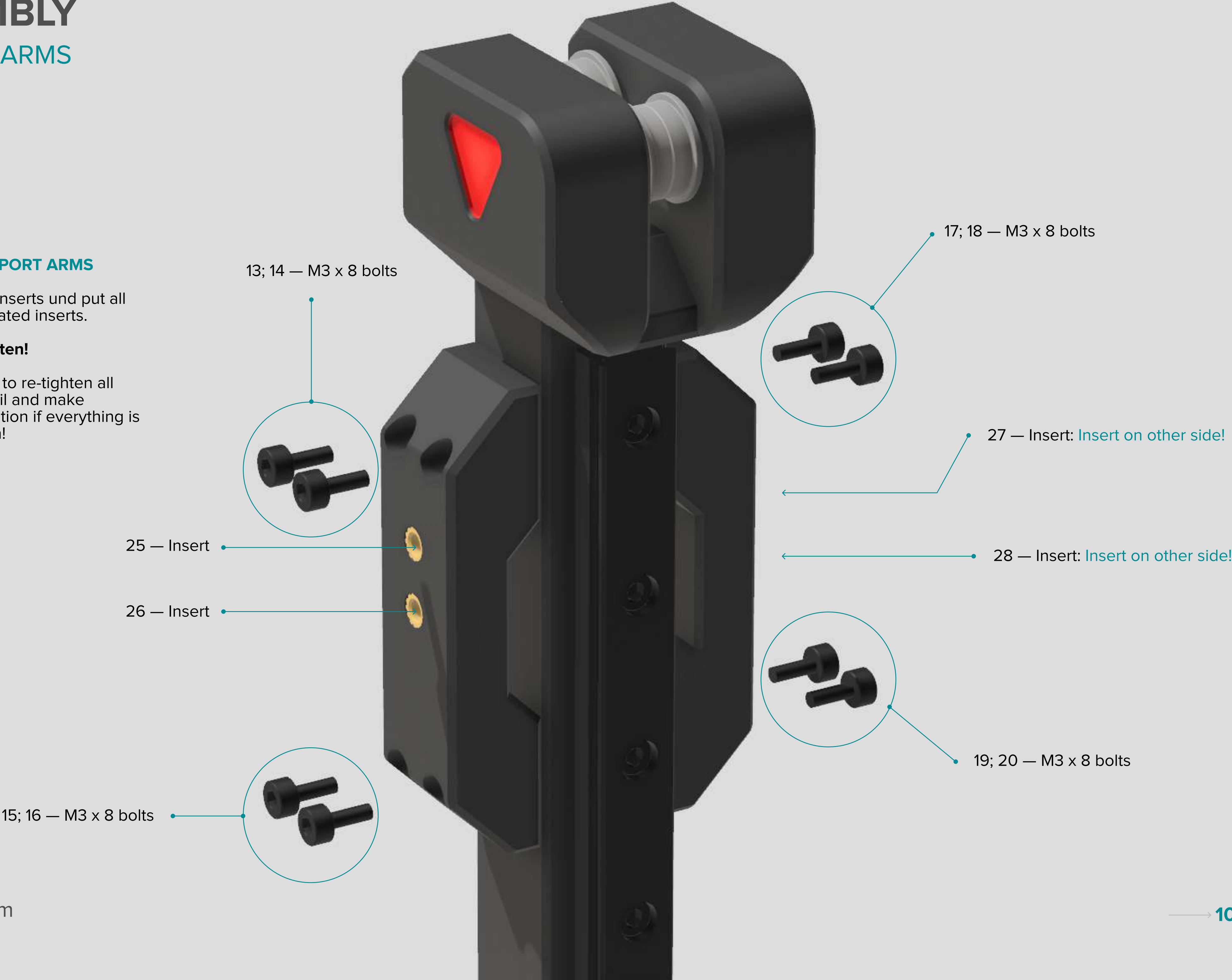
## SUPPORT ARMS

### ASSEMBLE SUPPORT ARMS

Add all heat-set inserts and put all bolts into designated inserts.

**Do not over-tighten!**

Now it's the time to re-tighten all bolts for linear rail and make additional evaluation if everything is straight and flush!





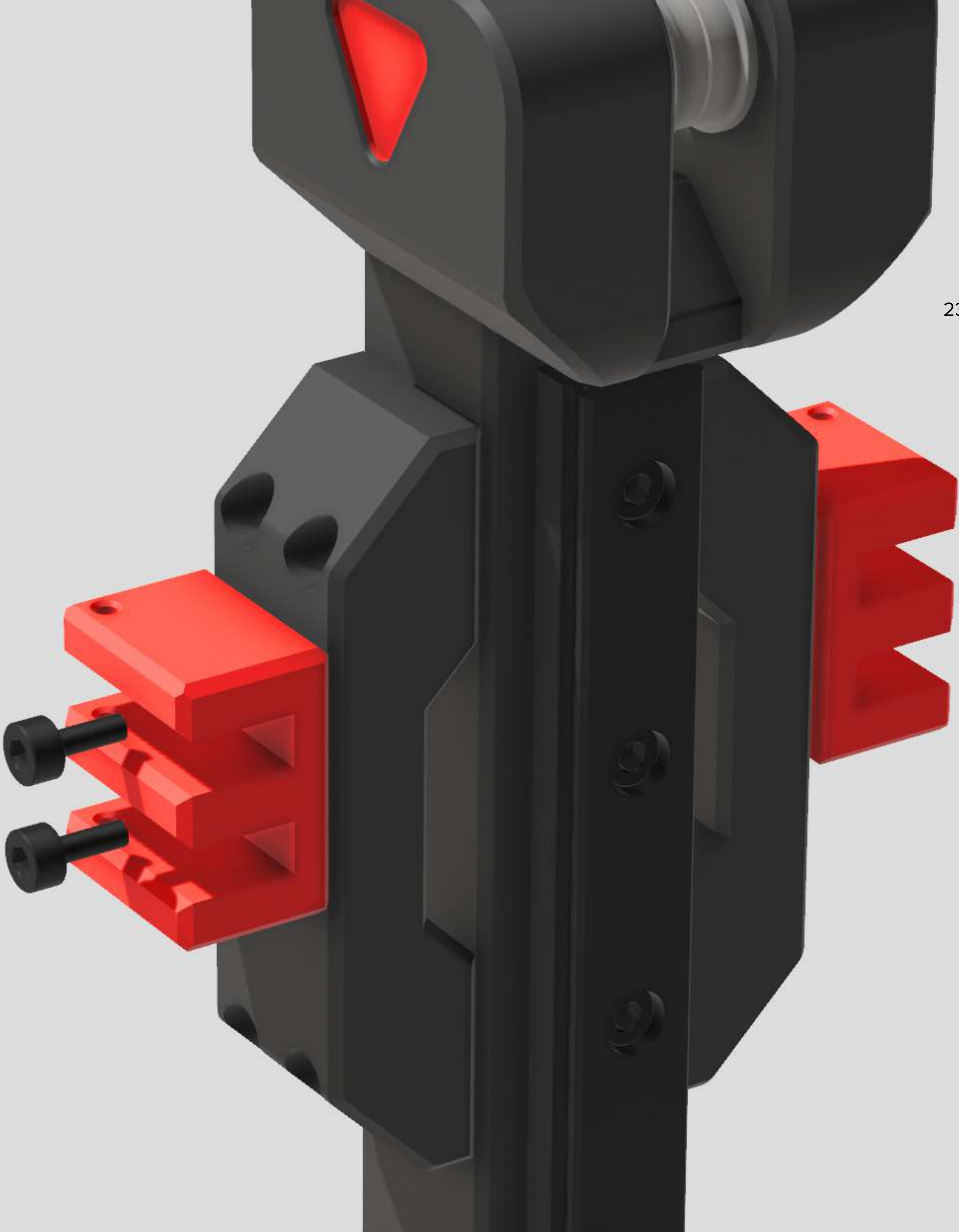
# ASSEMBLY

## STRAIN RELIEFS

### ASSEMBLE STRAIN RELIEFS

Put all bolts into designated inserts.

Strain reliefs are another QoL feature to make soldering iron wire strain out of the way while working.



21; 22 — M3 x 8 bolts

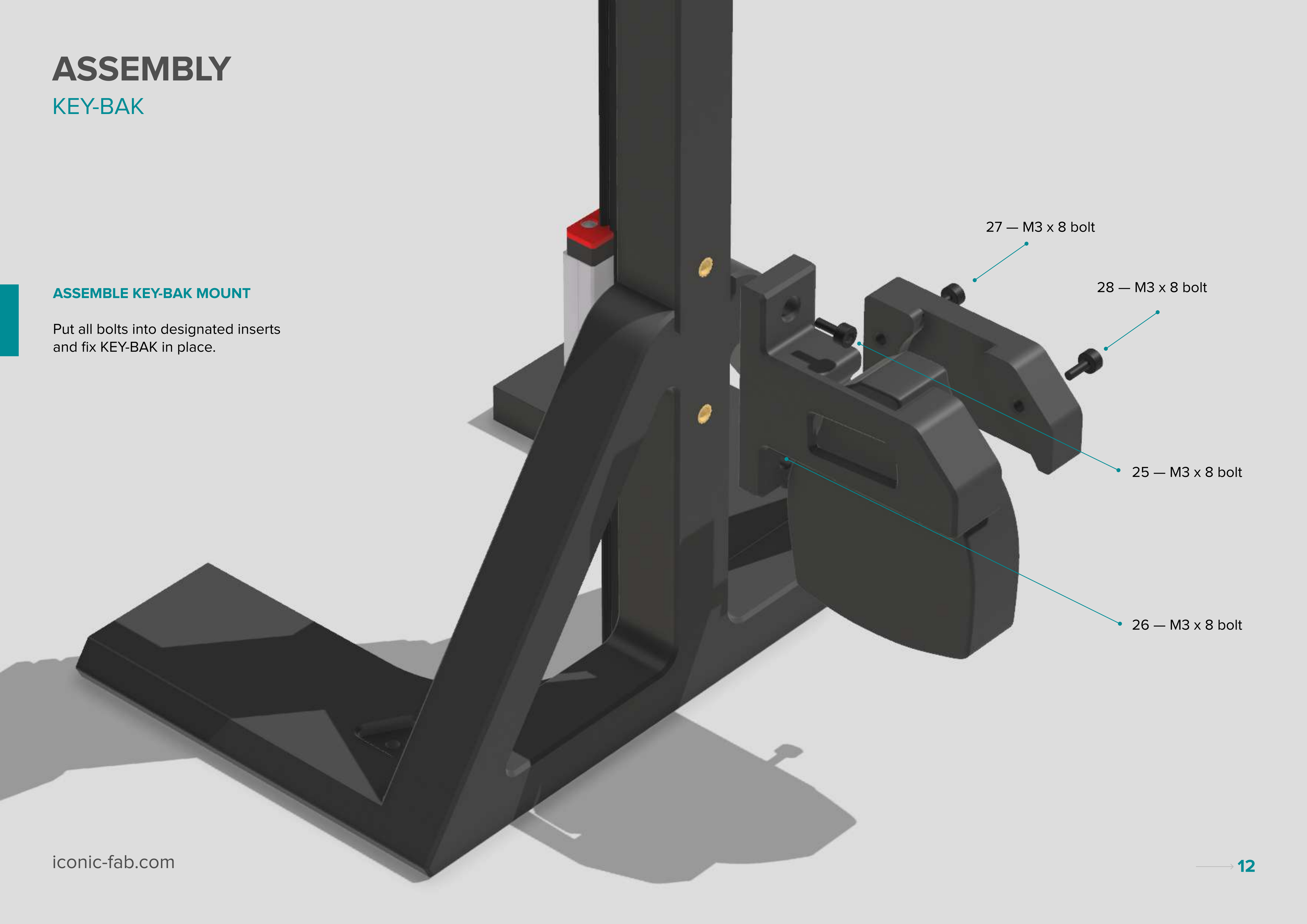
23; 24 — M3 x 8 bolts  
On other side!

# ASSEMBLY

## KEY-BAK

### ASSEMBLE KEY-BAK MOUNT

Put all bolts into designated inserts and fix KEY-BAK in place.





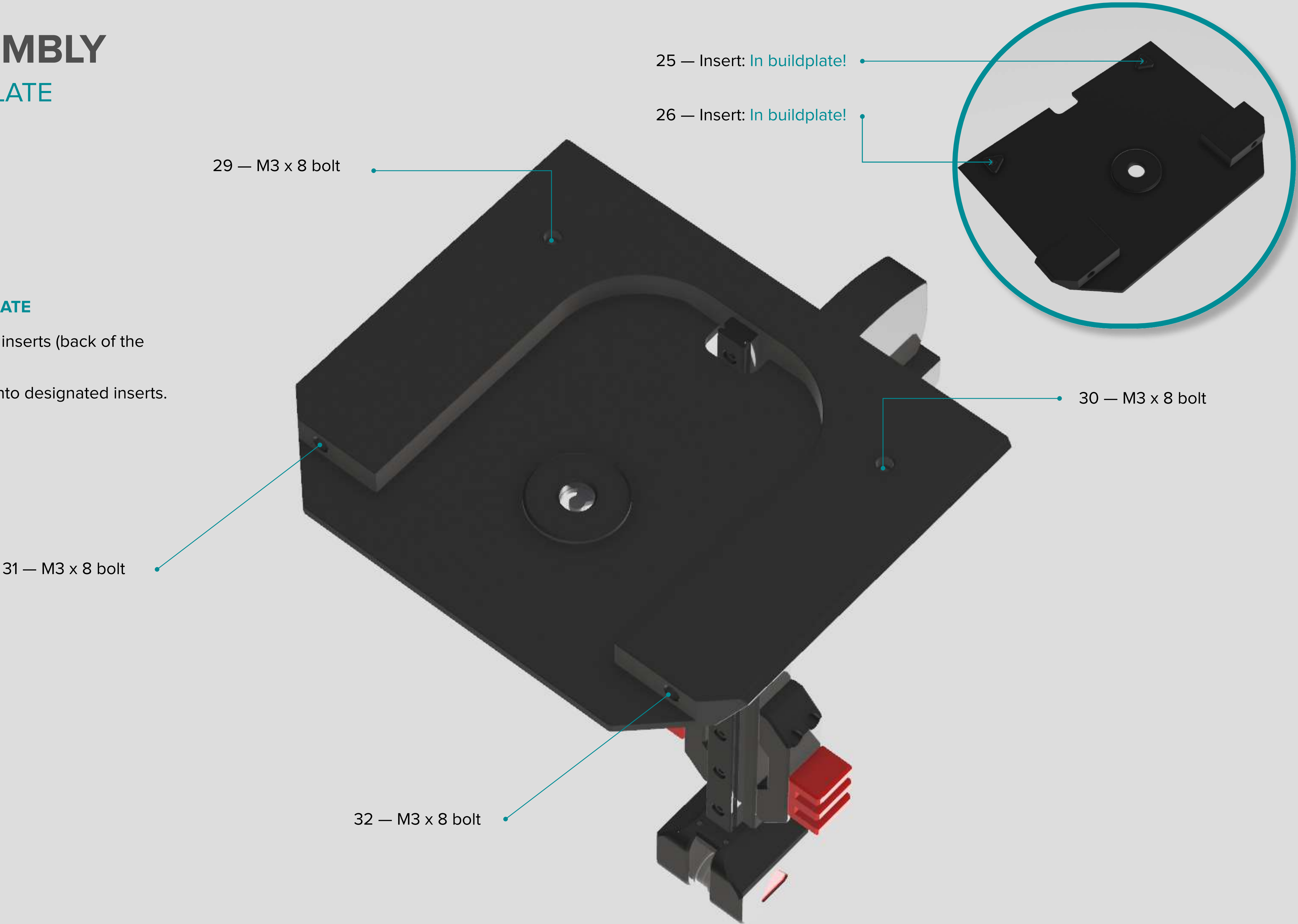
# ASSEMBLY

## BUILDPLATE

### FIX BUILDPLATE

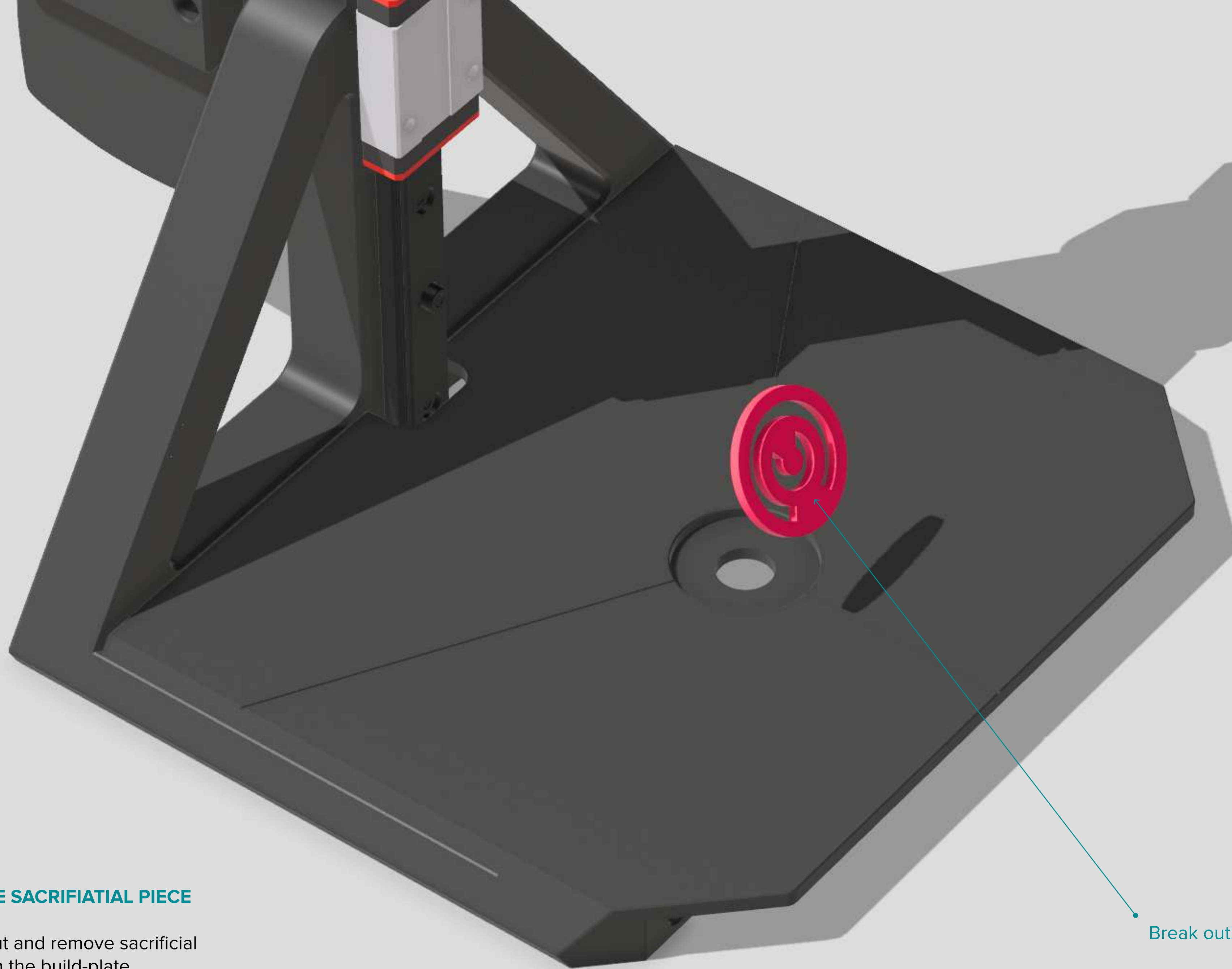
Add heat-set inserts (back of the build-plate).

Put all bolts into designated inserts.



# ASSEMBLY

## BUILDPLATE



### REMOVE SACRIFICIAL PIECE

Break out and remove sacrificial part from the build-plate.

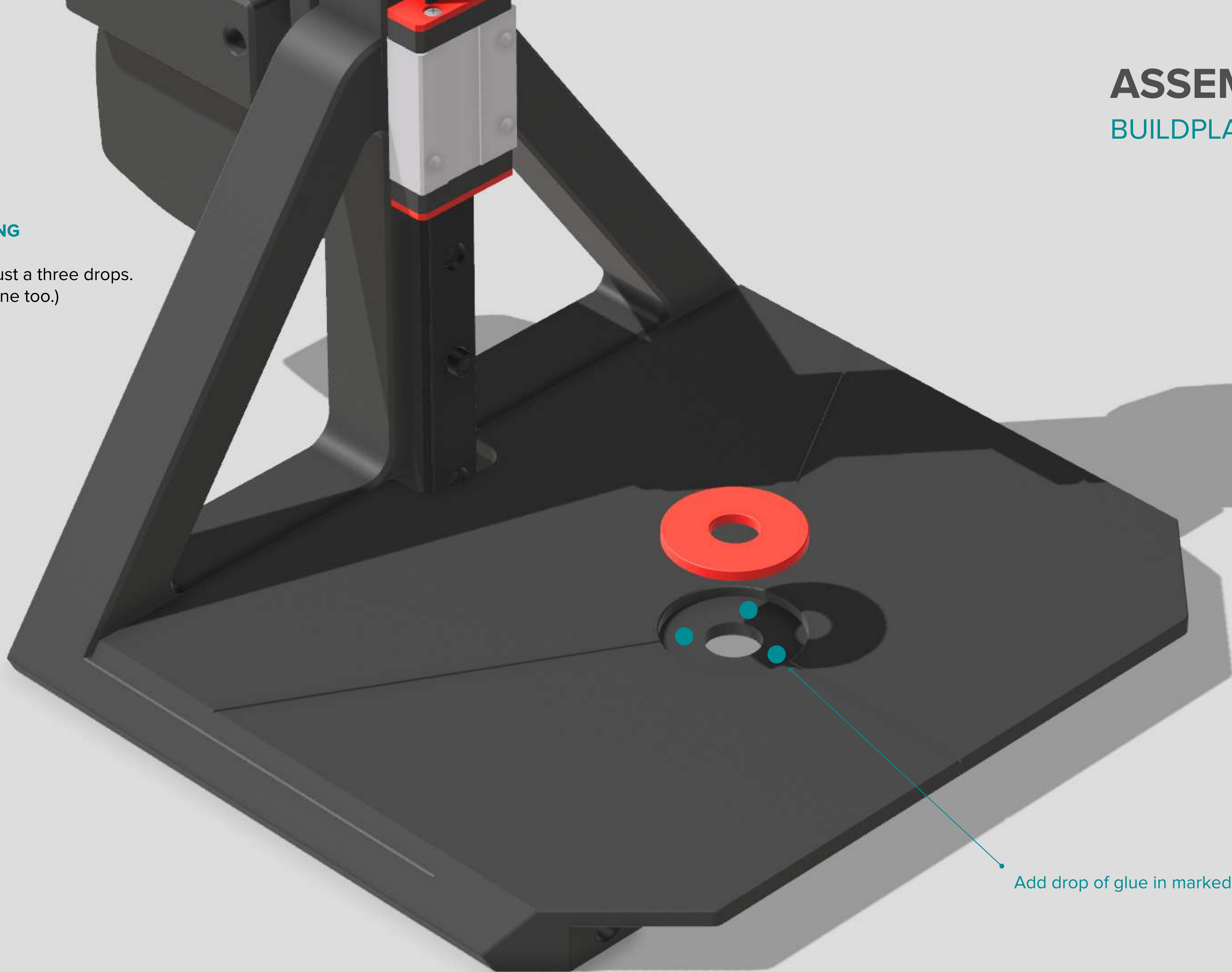
Break out!

# ASSEMBLY

## BUILDPLATE

### GLUE IN BUSHING

Use superglue, just a three drops.  
(RTV silicone is fine too.)

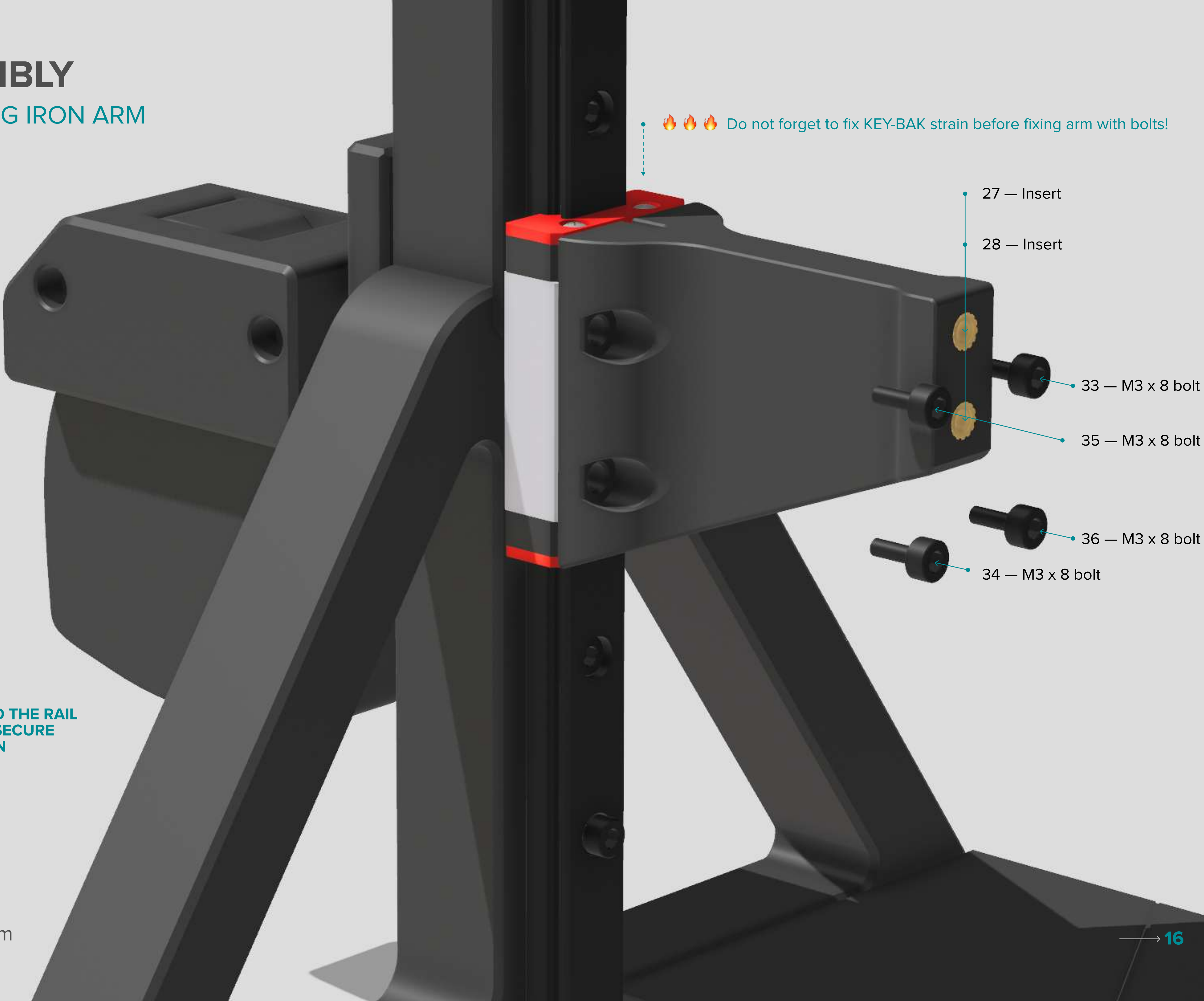


Add drop of glue in marked places.



# ASSEMBLY

## SOLDERING IRON ARM



MOUNT ARM TO THE RAIL  
BEARING AND SECURE  
KEY-BAK STRAIN

# ASSEMBLY

## SOLDERING IRON MOUNT

SELECT APPROPRIATE VERSION  
OF SOLDERING IRON MOUNT  
AND SECURE IT TO THE ARM

37 — M3 x 8 bolt

38 — M3 x 8 bolt

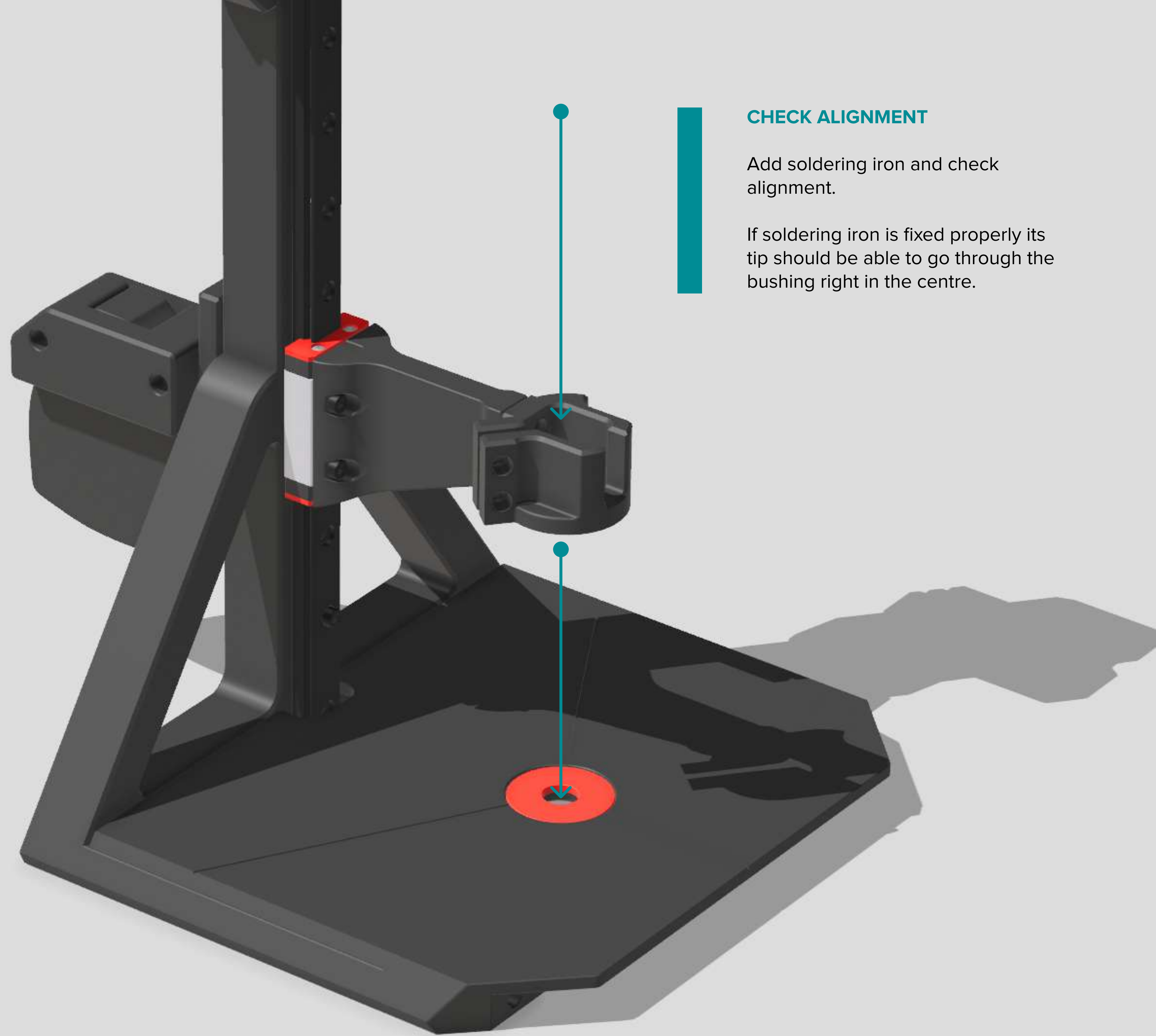
29 — Insert (Fit from the back!)

30 — Insert (Fit from the back!)



# ASSEMBLY

## SOLDERING ARM ALIGNMENT



### CHECK ALIGNMENT

Add soldering iron and check alignment.

If soldering iron is fixed properly its tip should be able to go through the bushing right in the centre.

# ASSEMBLY

## SECURE SOLDERING IRON

SECURE SOLDERING IRON

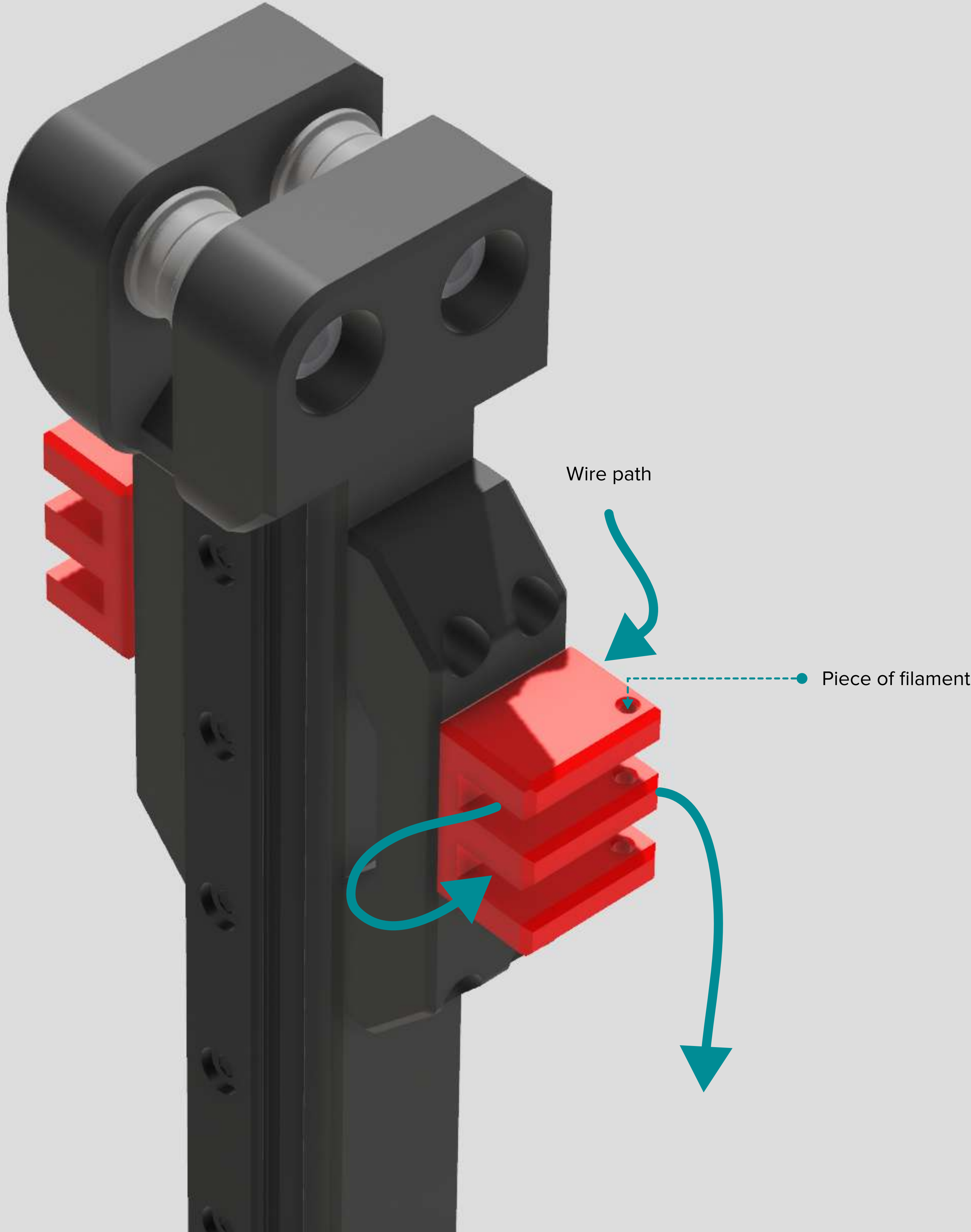
39 — M3 x 8 bolt

40 — M3 x 8 bolt

# ASSEMBLY

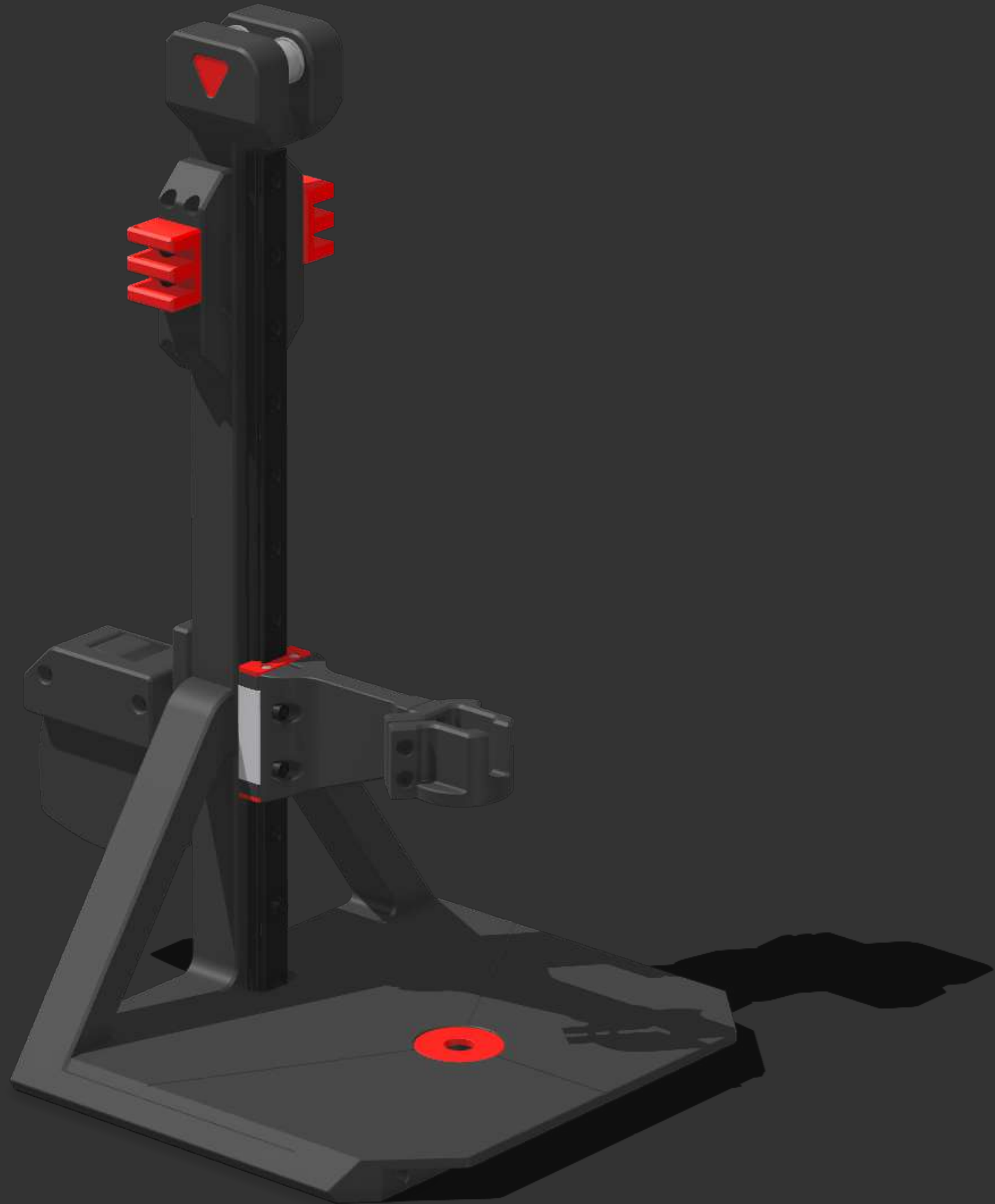
STRAIN RELIEFS

SECURE SOLDERING IRON WIRE



**READY FOR WORK!**

THAT'S IT. PROJECT COMPLETE.





# CREDITS AND ACKNOWLEDGEMENTS

## SPECIAL THANKS

Special thanks to Stefan and Alexander from **CNCKitchen** for backing this project by providing generous set of soldering-iron tips and heat-set inserts for building and testing purposes.

## OTHER OPEN SOURCE PROJECTS

Here is the list of other open source projects used for sourcing multiple CAD parts. Used as-is or modified to fit project purpose and design:

- VORON TAP: <https://github.com/VoronDesign/Voron-Tap> [Models for heat-set inserts and bolts]
- VORON Switchwire: <https://github.com/VoronDesign/Voron-Switchwire> [KEY-BAK mount parts]
- Ender SW: [https://github.com/boubounokefalos/Ender\\_SW](https://github.com/boubounokefalos/Ender_SW) [Support arms]