BFI

ASSEMBLY MANUAL

Everyone could use a little extra Beef

VERSION 2024.02.26

STL FILE KEY

The STL naming convention used for BFI/BZI is the same as that used for VORON printers:

PRIMARY COLOR

Example
z_drive_main_a_x2.stl
These files will have nothing at the start of the filename.

ACCENT COLOR

Example
[a]_z_motor_mount_a_x2.stl
These files will have ''[a]'' to the front to mention that they are intended to be printed with an accent color.

QUANTITY REQUIRED

Example
[a]_z_motor_mount_a_x2.stl
If a file ends with ''_x#'', that is telling you the quantity of that part required to build this system..

PRINT GUIDELINES

The recommended print settings are also those used for VORON printers:

FDM MATERIAL
BFI was designed for ABS. Use other plastics at your own discretion.

LAYER HEIGHT
Recommended : 0.2mm

EXTRUSION WIDTH
Recommended : Forced 0.4mm

INFILL PERCENTAGE
Recommended : 40%

INFILL TYPE
Grid, Gyroid, Honeycomb, Triangle, Cubic, Adaptive Cubic.

WALL COUNT
Recommended : 4

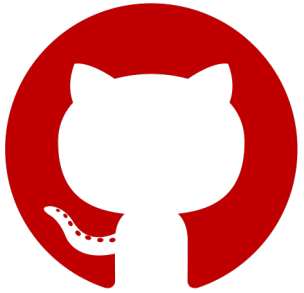
SOLID TOP/BOTTOM LAYERS
Recommended : 5

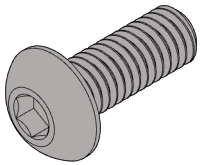
SUPPORTS REQUIRED
Nah.

HOW TO GET HELP

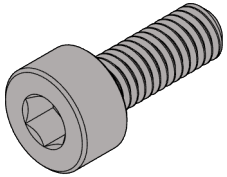
DISCO? OH ...DISCORD
If you need assistance with your BFI assembly, you can head over the Voron Discord server and post your questions (typically in the **#voronuser_mods** channel).

GIT GUD
If you want to keep up with the latest updates (or if you come up with a cool usermod) for BFI, the GitHub page is the only source for the latest files.



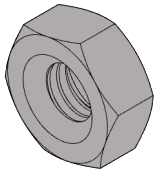


BUTTON HEAD CAP SCREW (BHCS)
Metric fastener with a domed shaped head and hex drive.
ISO 7380-1



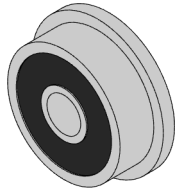
SOCKET HEAD CAP SCREW (SHCS)
Metric fastener with a cylindrical head and hex drive. The most common fastener used on the Voron.

ISO 4762 / DIN 912

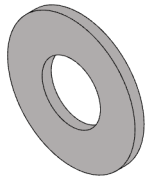


HEX NUT
Hex nuts couple with bolts to create tight, secure joints. M5 will be the size used in this guide.

ISO 4032 / DIN 934

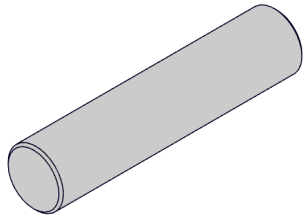


F695 BEARING
A ball bearing with a flange used in various gantry locations.

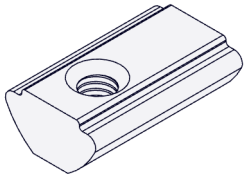


M5 SHIMS
Not to be confused with stamped washers. These are used in all M5 call-out locations in this manual.

5x7x1 DIN 988



5MM PIN
Steel shaft, 5mm in diameter



DROP-IN 2020 T-NUT
Nut that can be inserted into the slot of a 2020 aluminum profile. Used in both M3 and M5 variants throughout this guide. Often also called “roll-in T-nut”.

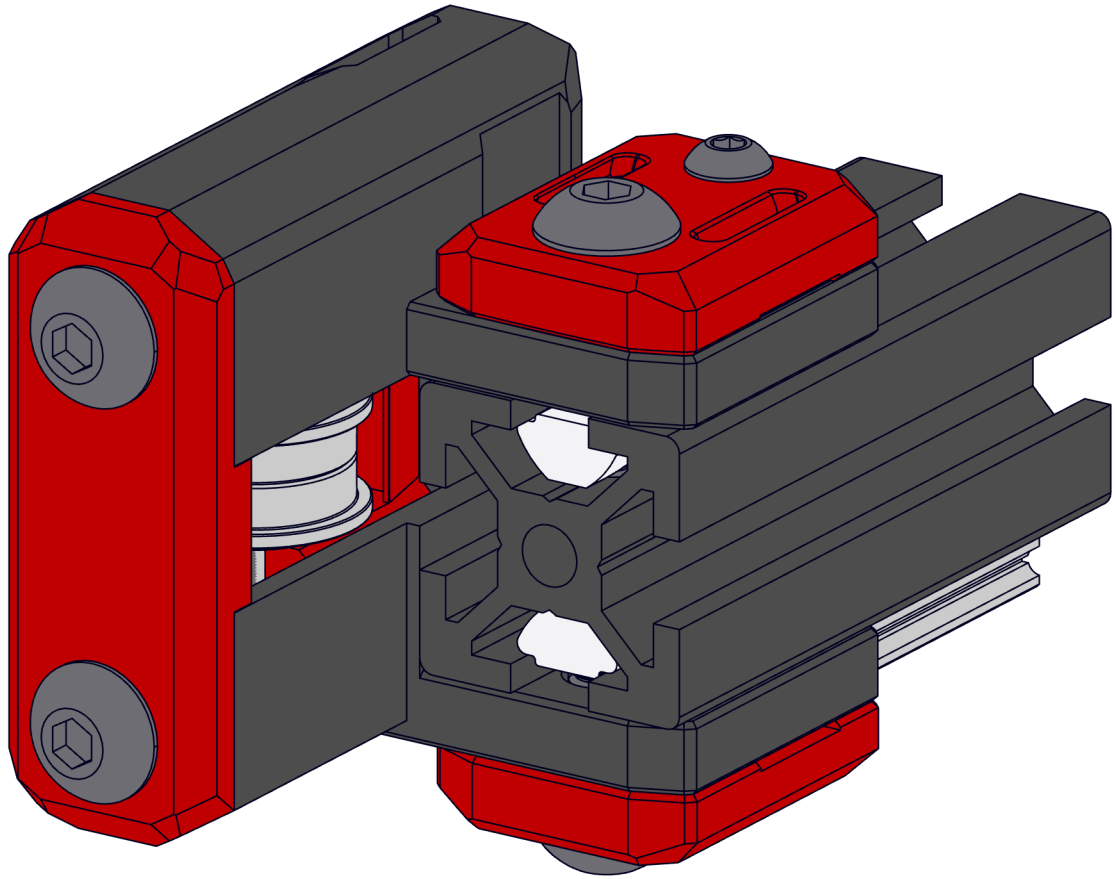
Hardware Used

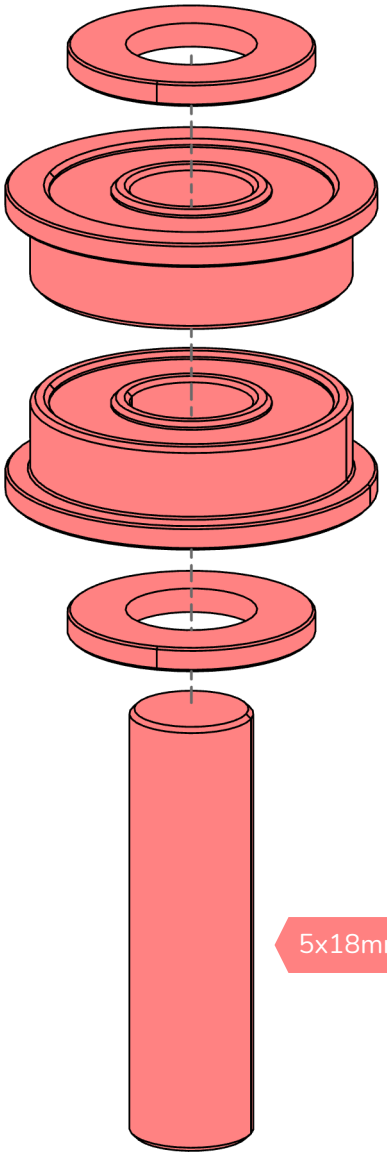
Look for the **RED** call outs to mention the various hardware used

TRIDENT
This logo denotes information that is specific to Voron Trident.

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

BFI





5x18mm pin

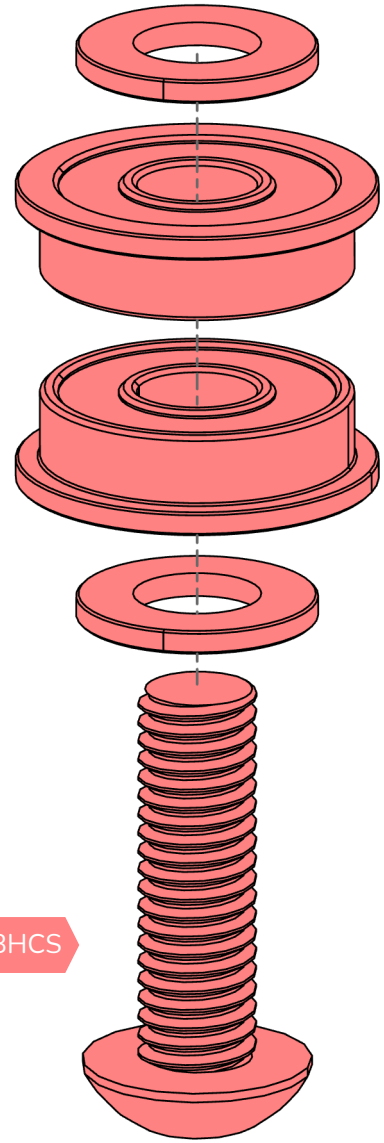
M5 1mm shim

F695 Bearings

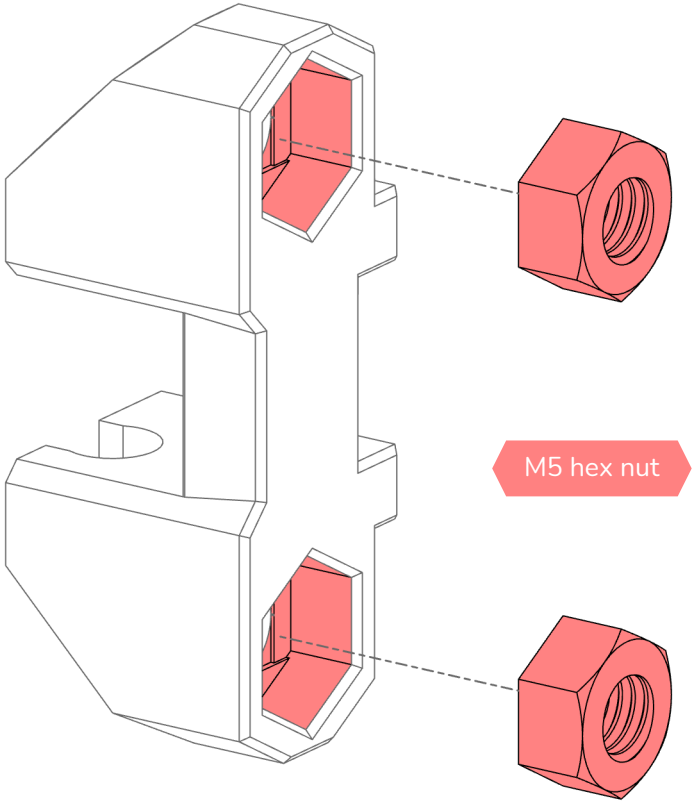
M5 1mm shim

TIME TO FIND YOUR BEARINGS!

Just like stock Voron idlers, BFI uses a bearing stack made up of 2 M5 shims and 2 F695 bearings. But BFI can use either a **5x18mm** pin or an M5x16 BHCS for the bearing stack to ride on.

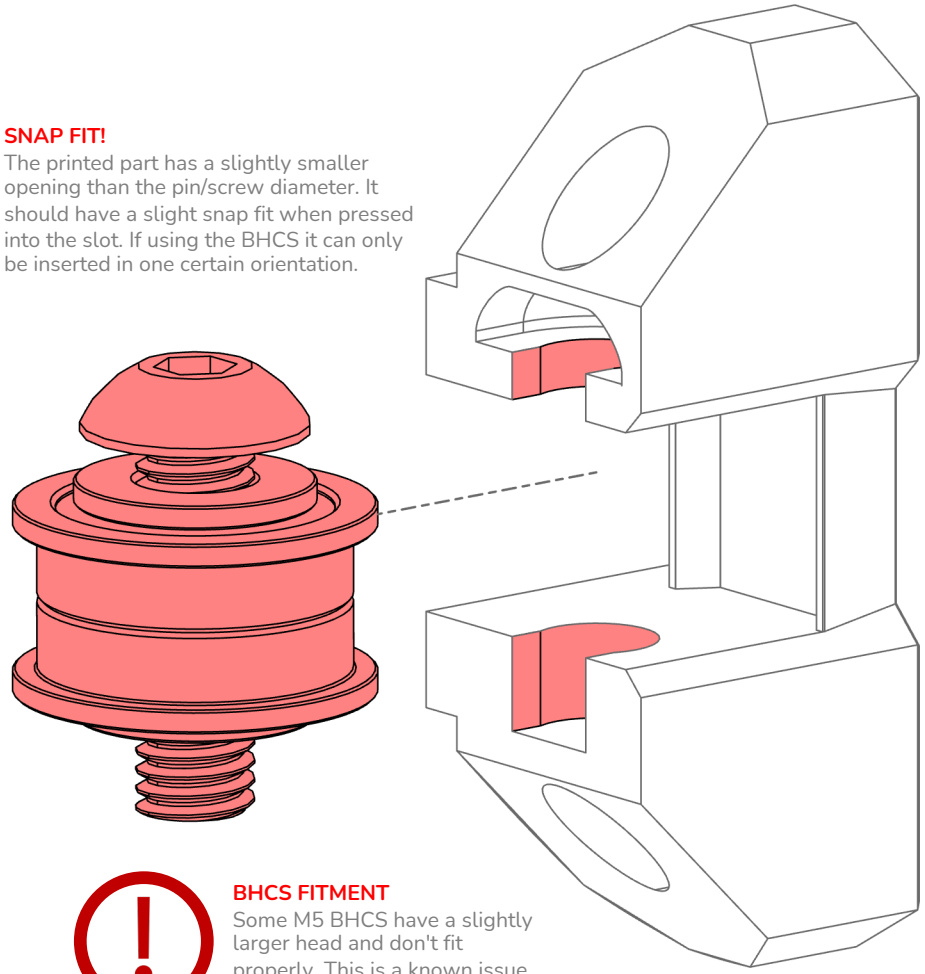


M5x16 BHCS

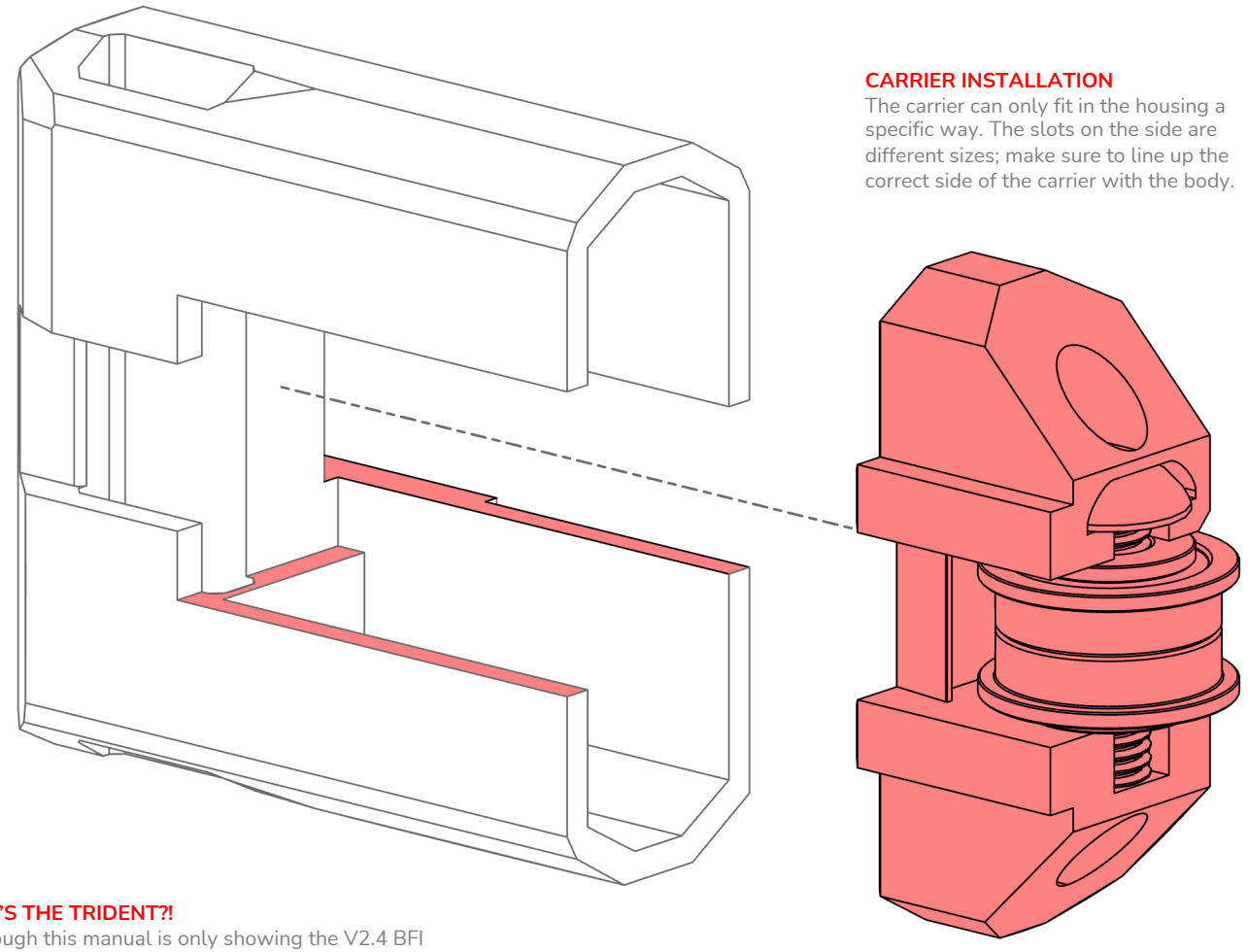


HOLD ONTO YOUR NUTS!
M5 hex nuts get pressed into these recesses in the back of the main body. Belt tension should prevent them from falling out once installed.

SNAP FIT!
The printed part has a slightly smaller opening than the pin/screw diameter. It should have a slight snap fit when pressed into the slot. If using the BHCS it can only be inserted in one certain orientation.



BHCS FITMENT
Some M5 BHCS have a slightly larger head and don't fit properly. This is a known issue and should be fixed in a future version of BFI.



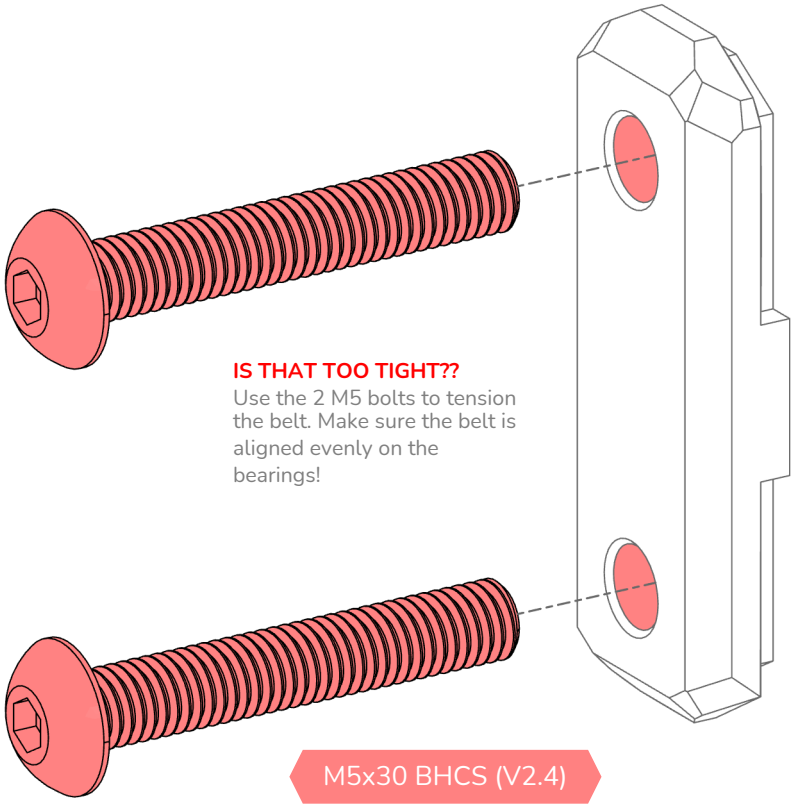
CARRIER INSTALLATION

The carrier can only fit in the housing a specific way. The slots on the side are different sizes; make sure to line up the correct side of the carrier with the body.

WHERE'S THE TRIDENT?!

Even though this manual is only showing the V2.4 BFI installation, the assembly process and installation process is nearly identical, except for the Z belts on the V2.4

BFI

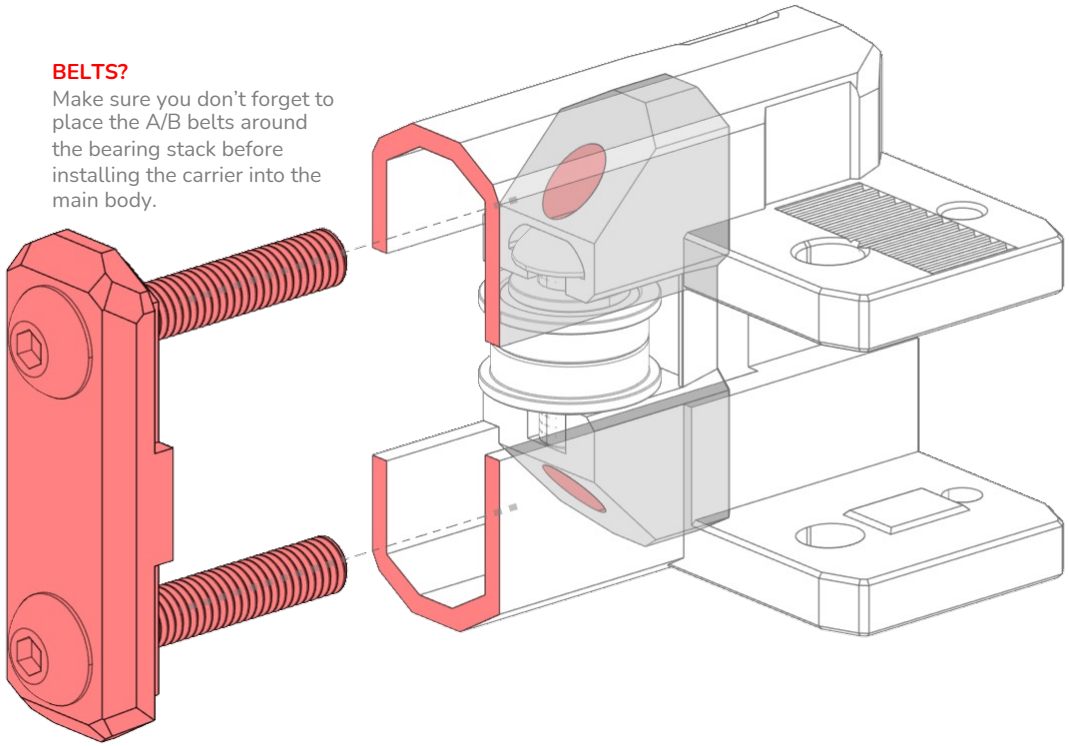


IS THAT TOO TIGHT??
Use the 2 M5 bolts to tension the belt. Make sure the belt is aligned evenly on the bearings!

M5x30 BHCS (V2.4)

M5x40 SHCS (Trident)

BELTS?
Make sure you don't forget to place the A/B belts around the bearing stack before installing the carrier into the main body.

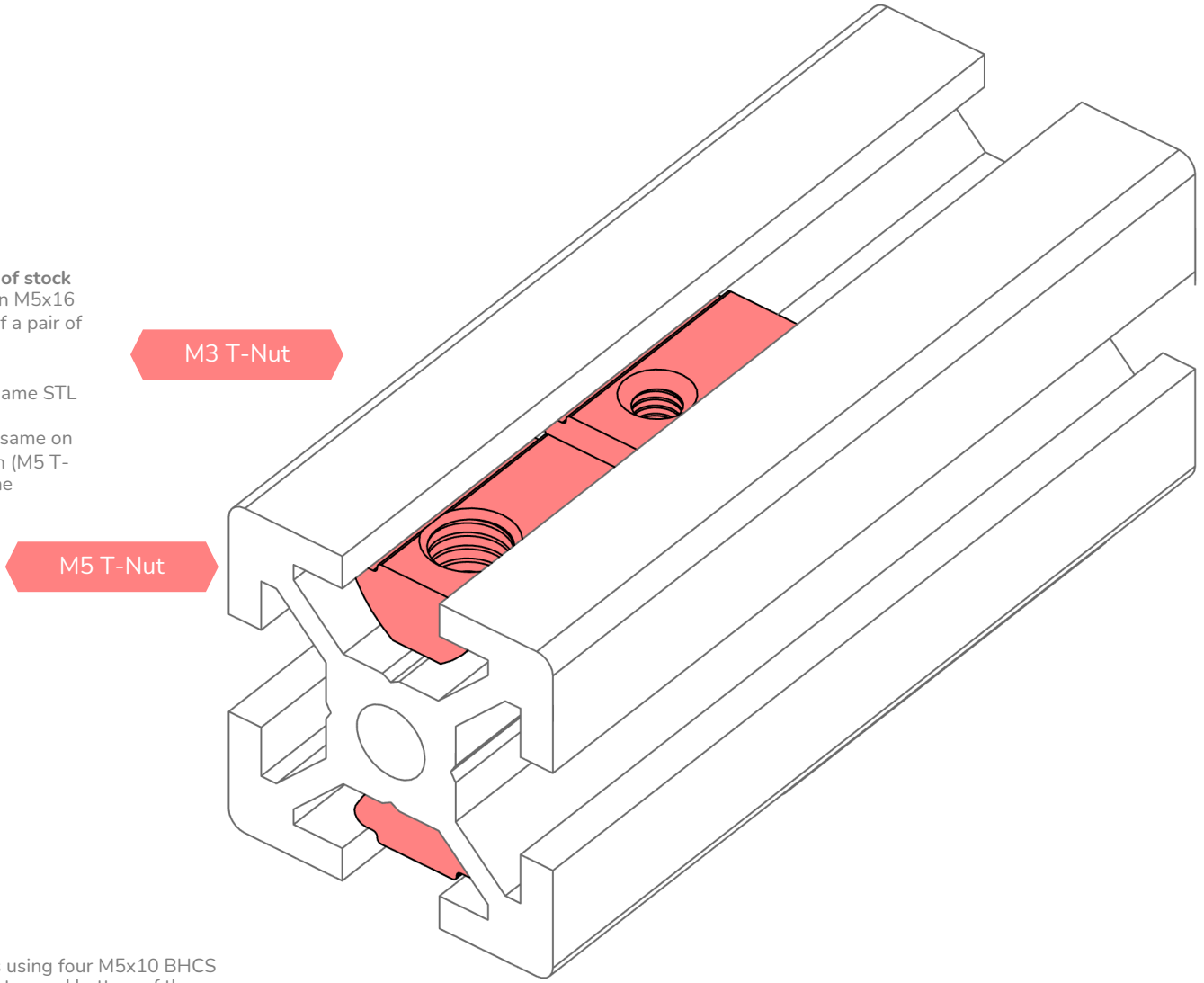


BFI

V2.4 T-NUTS

BFI differs from the mounting of stock front idlers on V2.4 by using an M5x16 and an M3x16 on top instead of a pair of M5x16s.

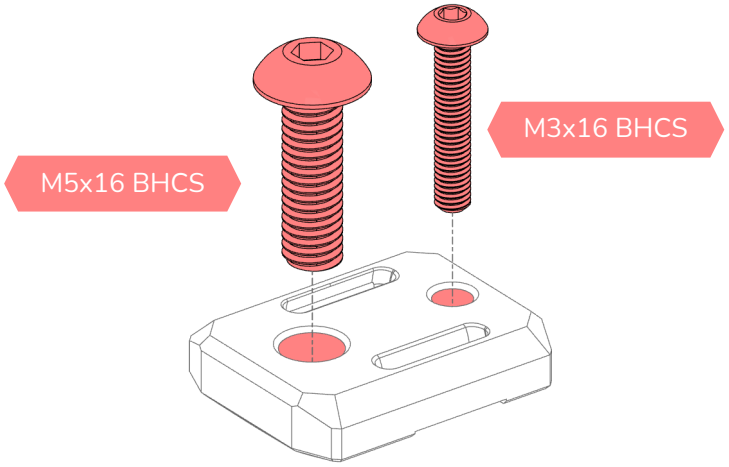
This is to allow the use of the same STL for both A and B housings. The placement of the T-Nuts is the same on top and bottom of the extrusion (M5 T-nut closer to the open end of the extrusion).



TRIDENT INSTALL

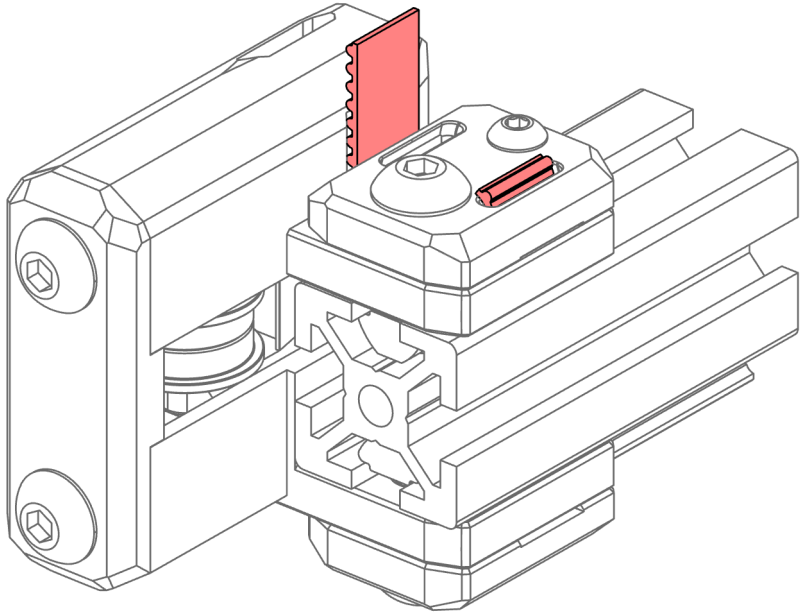
Trident's version of BFI mounts using four M5x10 BHCS into a pair of M5 T-Nuts on the top and bottom of the extrusion instead of an M5 and an M3, just like the stock Trident front idlers.

Z BELTS?
The top Z belt clamps are held down with an M5x16 BHCS and an M3x16 BHCS. The same part is used on the bottom for stock Z joints on a V2.4. **If you are using non-stock Z joints** (i.e. GE5C, Rockem Sockem, Rigid, etc.)**, it is recommended to use the bottom Z belt clamps that were included with the specific Z joint you are using.**



CROOKED Z BELTS??
Double check where you have installed your Z belts. The belt should be up against the body of the idler before it goes under the clamp; the belt should only go through the "mouth" on the outer edge of the printer

BELTS?
Make sure you don't forget to place the A/B belts around the pulley before installing the carrier into the main body.



WHAT ABOUT TRIDENT?
BFI for Trident uses two M5x10 BHCS on top, two more on bottom (on each side) but obviously Trident has no Z belt clamps to worry about. Unlike V2.4, there is no mounting hardware change from stock front idlers for Trident.

BFI

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