



## Tensionner L3VER M1 A

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### Evolutions

| Indice | Date | Description de l'évolution | Auteur |
|--------|------|----------------------------|--------|
|--------|------|----------------------------|--------|

| Rédacteur | Responsable X | Qualité |
|-----------|---------------|---------|
| FBR       | FBR           | FBR     |
|           |               |         |

|     |            |                  |     |
|-----|------------|------------------|-----|
| 0.0 | 07/03/2022 | Création v0.1    | FBR |
| 0.1 | 13/03/2022 | Update v1.0      | FBR |
| 0.2 | 25/03/2022 | Update v1.05     | FBR |
| 0.3 | 27/05/2022 | Update Alpha 1   | FBR |
| /   | 31/05/2022 | Update Alpha 1.1 | FBR |

| Etat   | V0.1               | V1.1             | A1                                    | A1.1  | - |
|--------|--------------------|------------------|---------------------------------------|---|---|
| Statut | Fonctionnel<br>POC | Fonctionnel, POW | Fonctionnel<br>Allègement<br>matériel | Fonctionnel<br>Optimisation<br>de fixations | - |

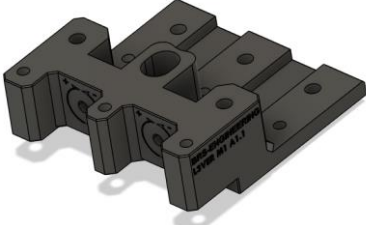
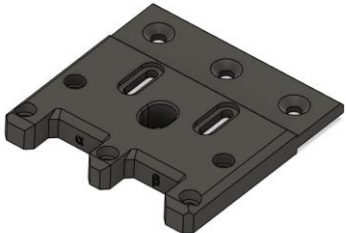
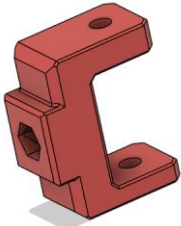


# Manual for L3VER M1 A

Be careful, some pictures are from older revisions, but that change nothing to the process.

## BOM :

### Printed parts list

|   |    |
|---|----|
| <br>Mainbody | X1 |
| <br>Cover   | X1 |
| <br>Lever  | X2 |

### Hardware

|                                    |     |
|------------------------------------|-----|
| Heat inserts Ruthex M4             | X3  |
| Heat inserts Ruthex M5             | X2  |
| Tnut M5                            | X3  |
| Tnut M6                            | X3  |
| F695-rs                            | X12 |
| 695-zz                             | X6  |
| OR standard Vcore Idlers           | x6  |
| Countersunk M6x12                  | X3  |
| Shoulder bolt 5x35mm m4            | X3  |
| Shoulder bolt 5x45mm m4 or M5x55mm | X2  |
| M5x45                              | X3  |
| Countersunk M5x40                  | X2  |
| Hex nut nylstop M5                 | X4  |
| Flanged M4 hex nut                 | X2  |

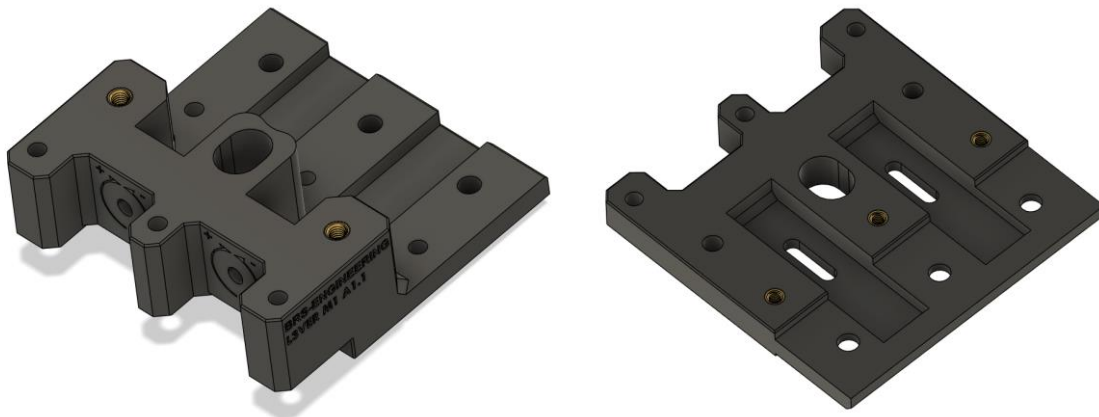


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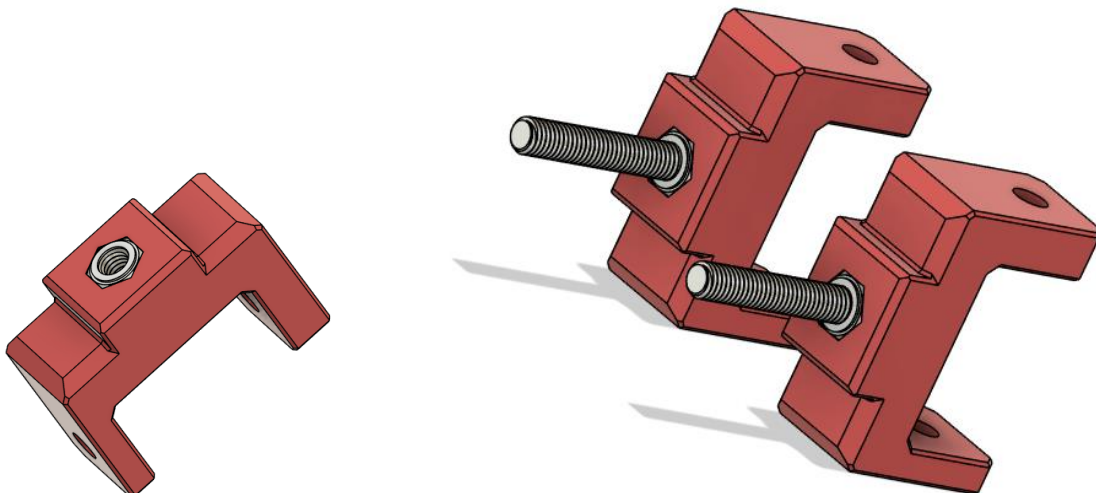
|                       |     |
|-----------------------|-----|
| Washer M5 (optionnel) | X2  |
| Ratrig 5x6mm spacer   | X8  |
| OR printed standoffs  | X4  |
| Micro shim 1mm        | X15 |
| M6x16                 | X3  |

## 1-Part preparation

Before assembly, Install all heat inserts (BRS Order have them already in)



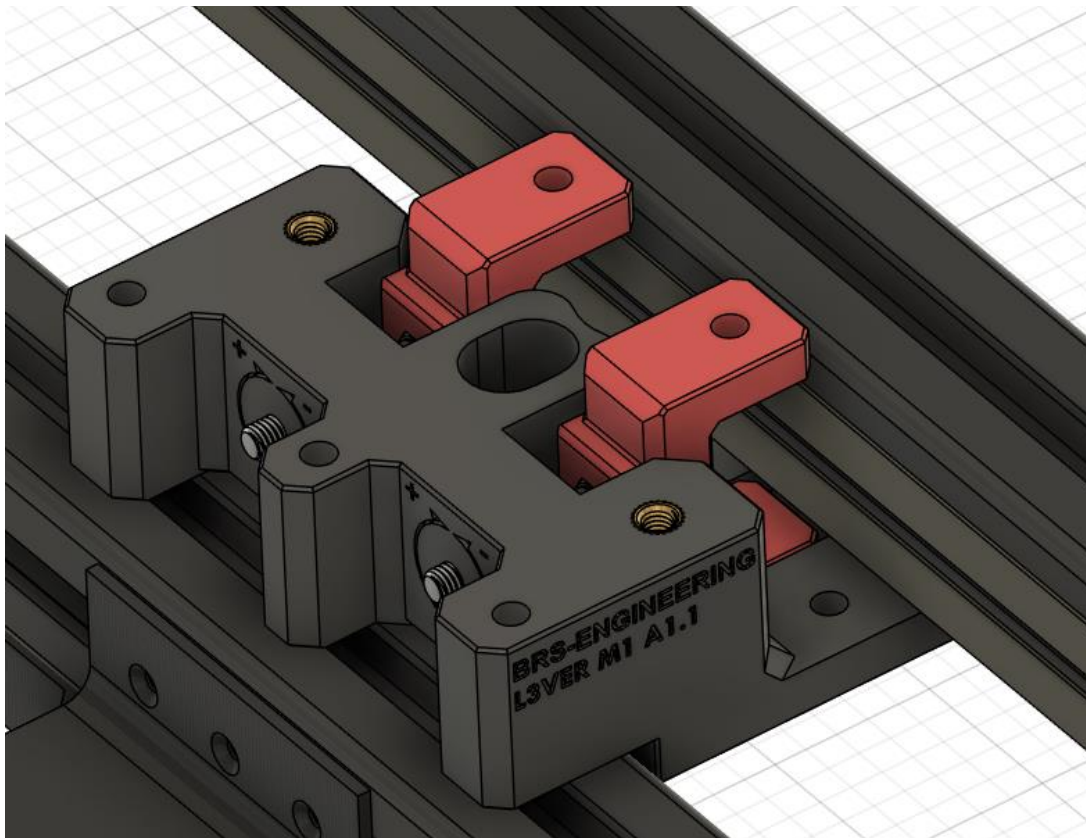
Install the m5 nyloc in the Lever parts. Add a bit of threadlock in. Then screw the Countersunk m5x40 completely. This assembly is definitive. Repeat it for the other one



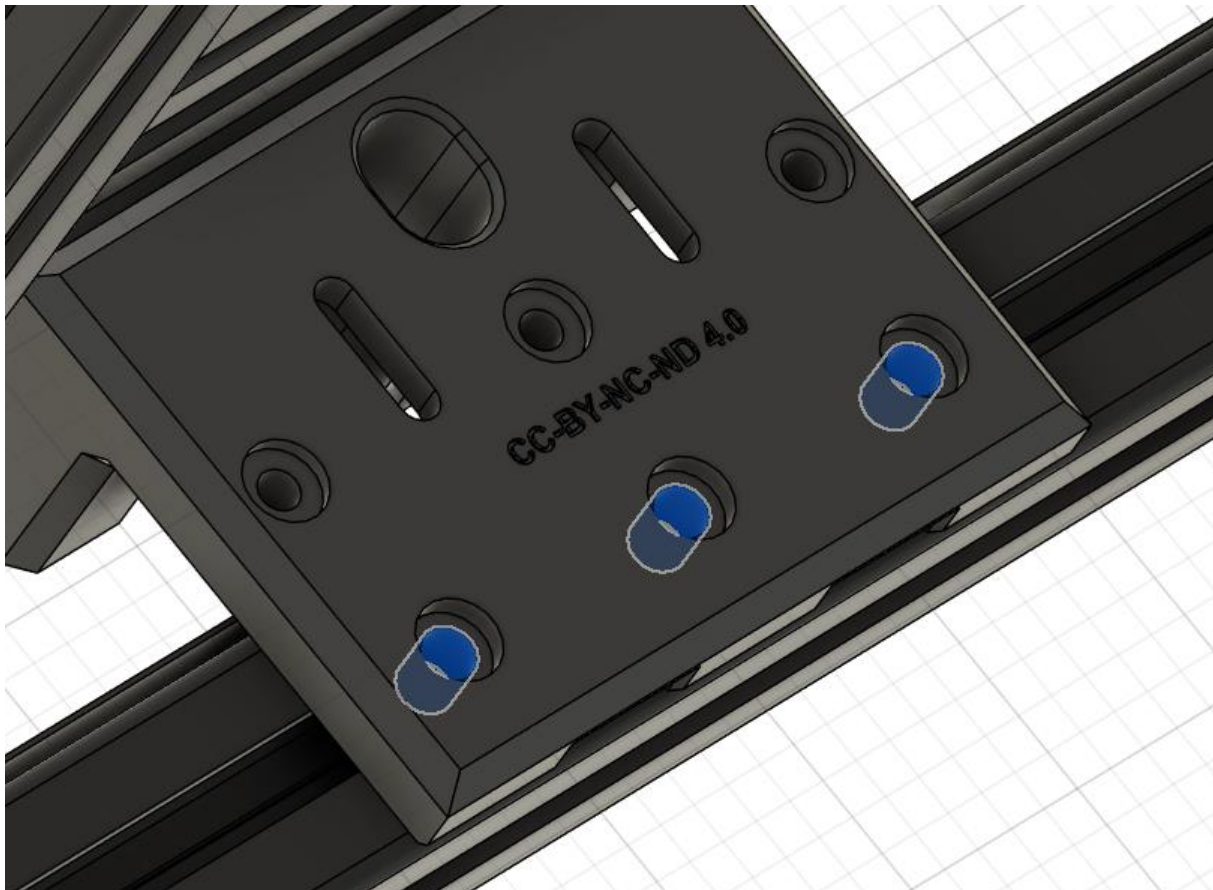
Once done Slide them in the Mainpart, Thicker side on top.

## 2-Mainpart installation

Slide the mainpart like the picture, it can be positioned where you want across the rear extrusion. Secure it with the 3 M6x16 screw in the back



Use the 3 m6 Tnuts



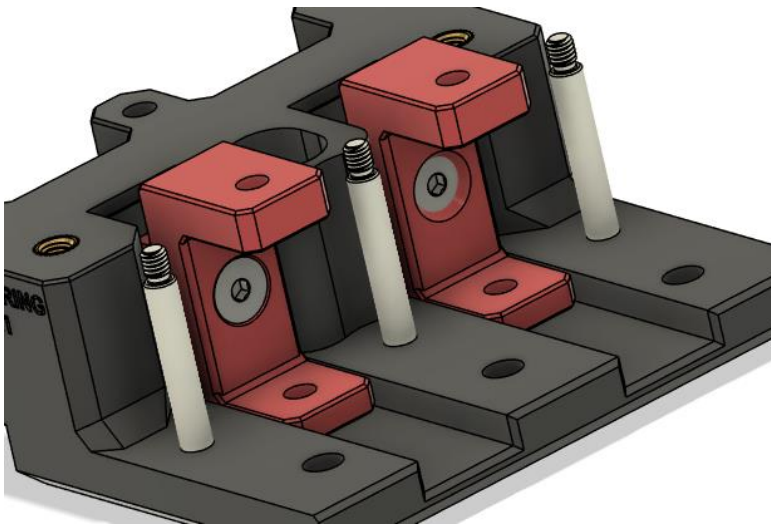


## 3-Internal mechanism

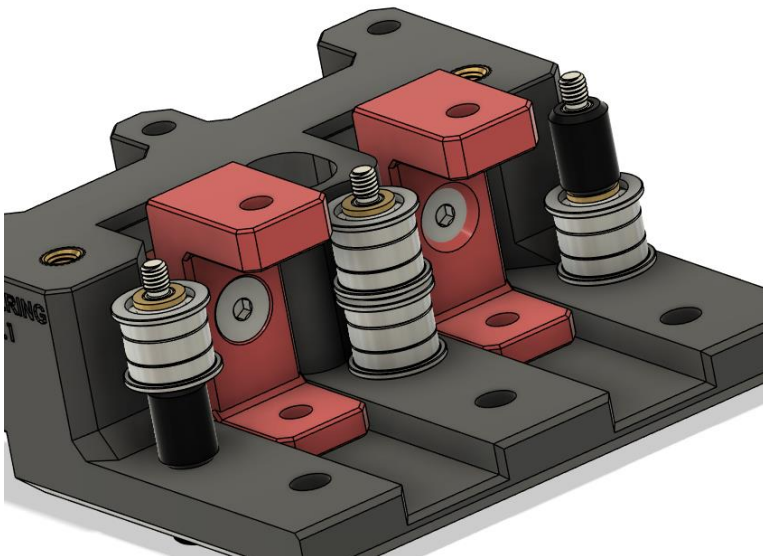
The next steps are a bit tricky ; you need to assemble the Belt/idlers directly in the part  
If you want, just Run the belt from the begining, a bit more simple

First lets check if the slider can be moved.

Then insert the 3 Shoulder bolts 35mm

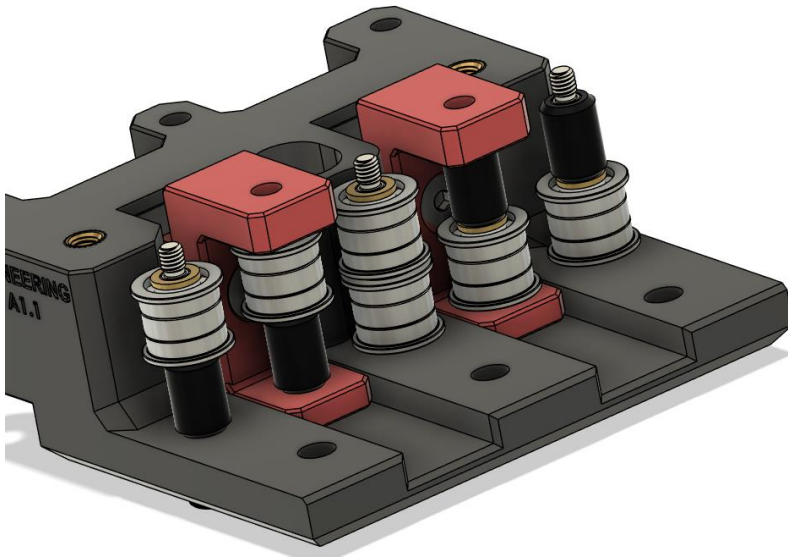


They will hold. Meaning we can put the idlers, shim and spacers



You can begin the Assembly of the IDLERS Or F695 assembly





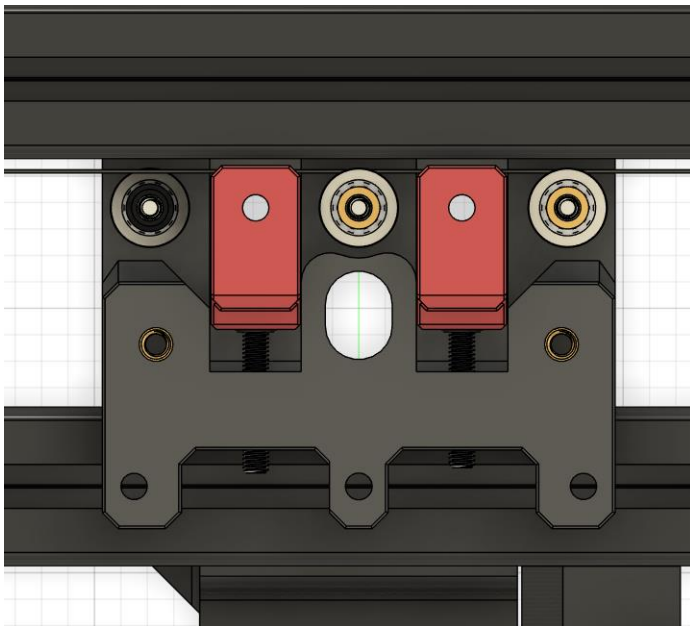
The 2 laterals idlers can be reversed but remember It can reverse the Alpha sign to the right and Beta sign to the Left. No issues but need to be remembered for the future tension

Dont forget the Shim, Here the layout :

**Printed Standoffs : Shim>iders>shim>Spacer**

**2x 5x6mm RR Standoffs : Shim>iders>shim>Spacer1>Spacer2>Shim**

You should get this :



At this point you can secure the 3 front mounting points with the m5x45 and the Tnuts



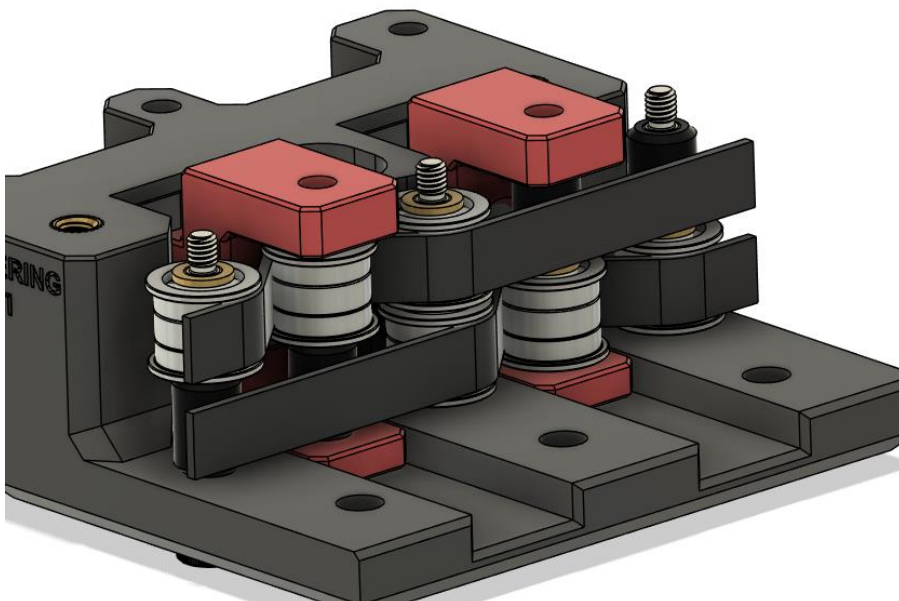
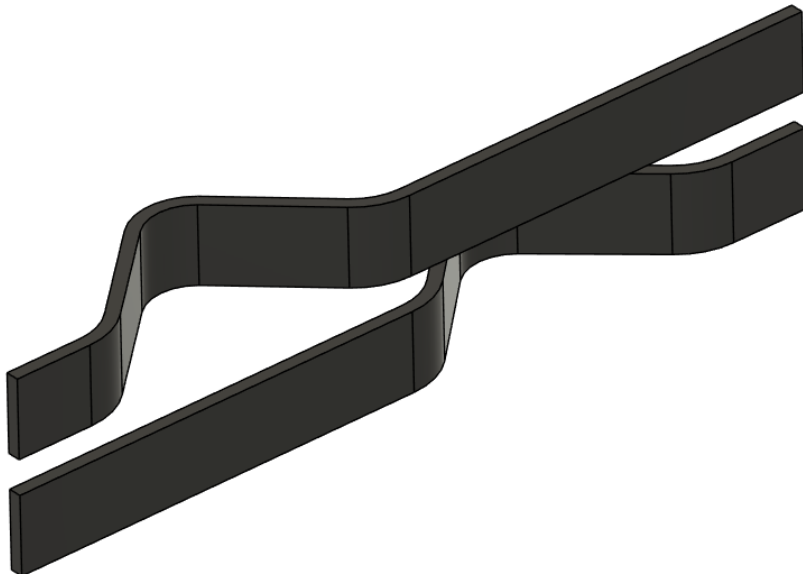
## 4-Belts routing :

Here two techniques :

1/ The belts are still on the machine, you will have to route them from the top and playing a bit the Levers to make them go in. Tricky but works with patience

2/A complete re-routing, a bit longer

The layout of the Belts :





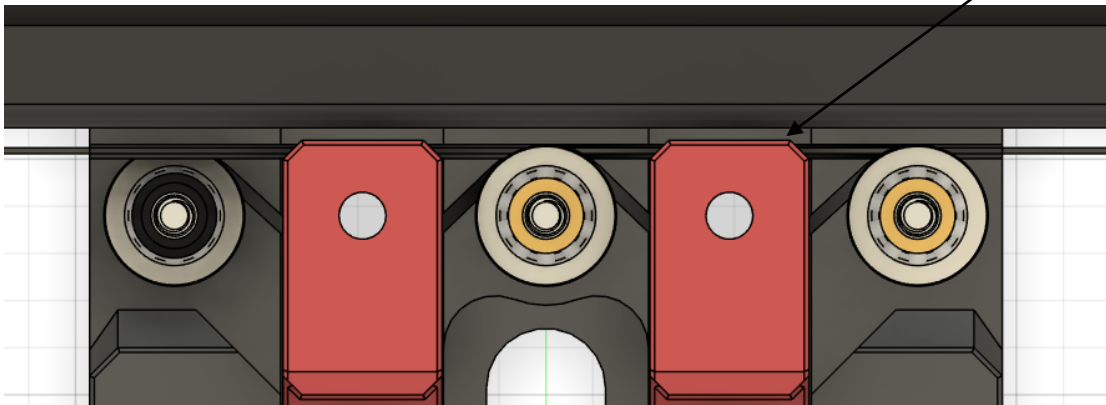
## Manual for L3VER M1 A

Once done finish the routing

Attach the end to your tensioner less Toolhead

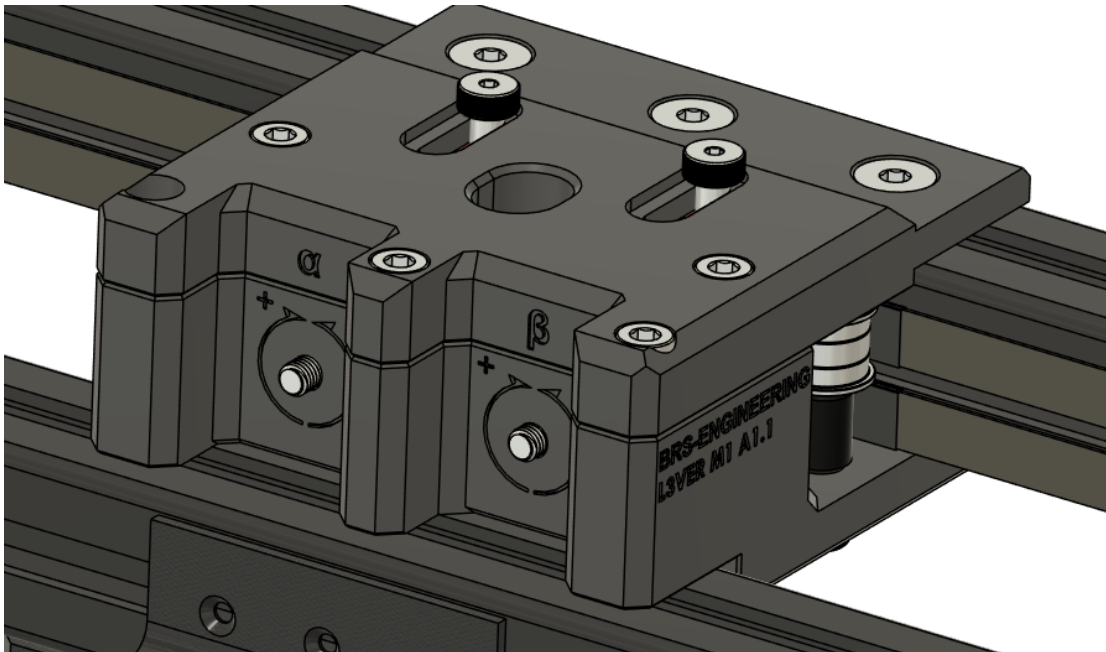
Here the important step :

Make sure the lever is in contact or almost with the rear extrusion



Then put the cover

Secure it by tightening every screws except the 2 flanged m4 at the bottom



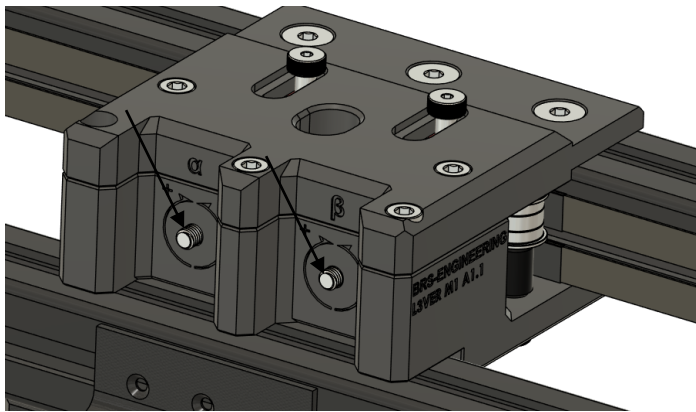
Then apply a pretension to the 2 belts from you tool head attaches

Refer to the instruction of it





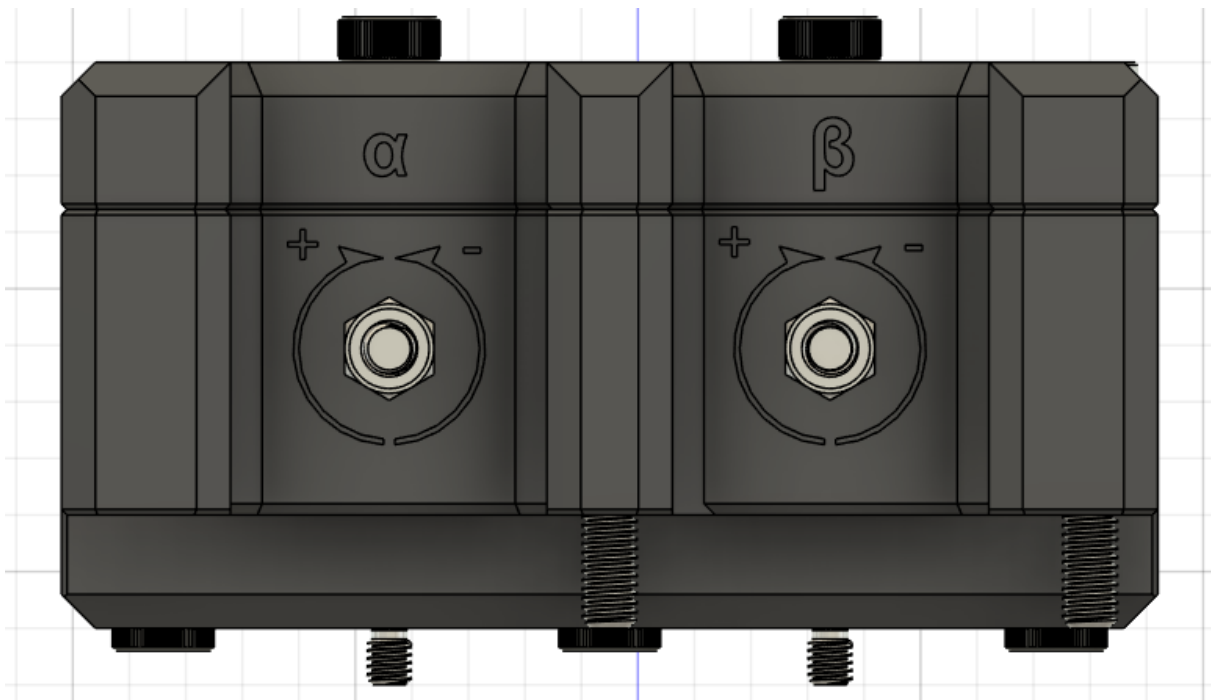
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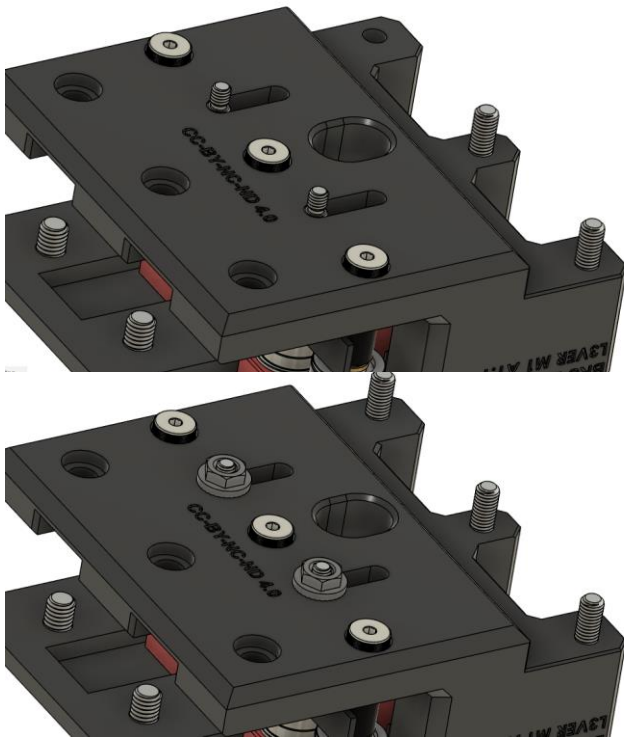


I advise to put 2 m5 washers here, it will prevents the mateial bellow to suffer the friction of the rotation, and add a greater pressure spreading on the part

Then put the 2 Nylstop m5 nut to secure it

It can be Thumbs nut if you prefer, but will be harder to turn





Put the 2 last flanged m4 nuts without tightening it

## 5-Tuning the belt tension

If the idler has been set correctly you should be able to move the toolhead and check everything is working OK. If you saw misalignment, friction or something else, recheck.

Alpha is meant for the Left motor, beta for the Right. You can choose to reverse it, just remember if Alpha tension the upper belt or the bottom belt. Just for personal conveniences.

The tension mecanism is pretty straight forward at this point :

By rotating the Nuts to the right it add tension, to the left it removes tension



As m5 as a pitch of 0.8mm you can achieve a pretty precise tension.

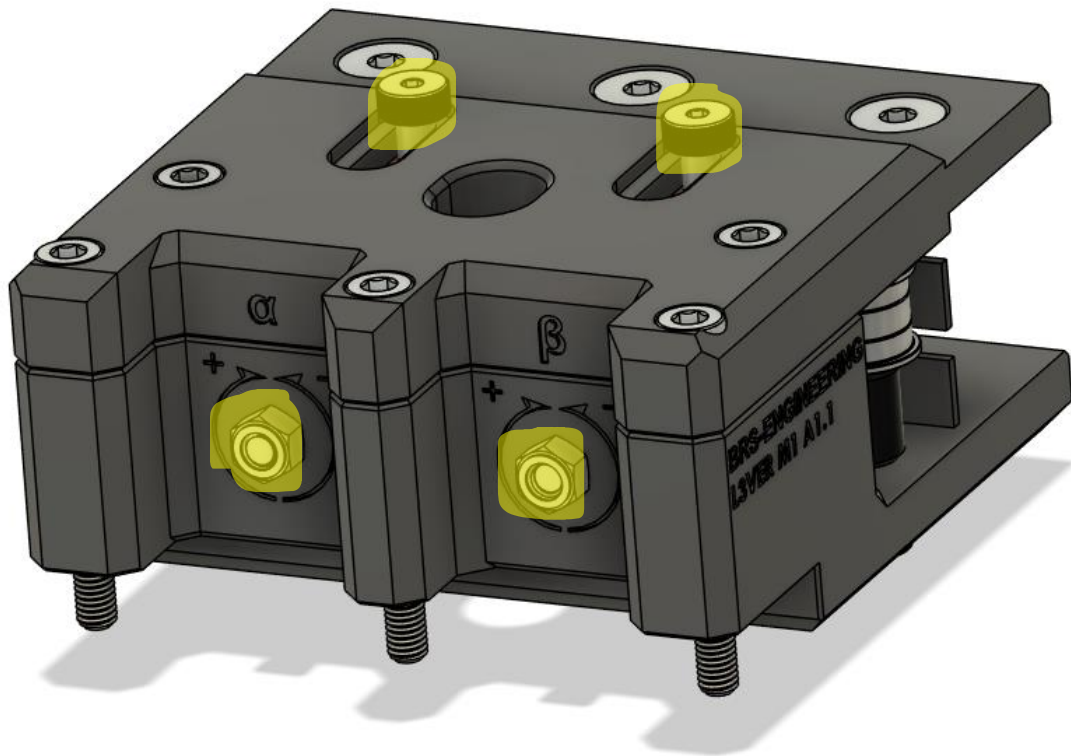


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The Levers have 16mm of maximum course, if pretension is well made you wont need more than few mm (3-7mm)

I give you back the link for the tensioning procedure here

<https://github.com/FlorentBroise/BRS-Printers-Mod/blob/main/manuals/belt.pdf> , of another one if you get a preference.



In order to tension properly, let the 2 Shoulder bolts on the top a bit loose

Then make the adjustment on the 2 main nuts A and B

When you are satisfy with the tension, secure the 2 shoulder bolts by tightening it.

Then the system is fully secured, by the front and by the top

I like to advise to remake the belt tension time to time especially in with a new setup since everything has to take his place.

That'it 😊

Any question or issue can be submitted to Florent Broise on Facebook or at [contact@brs-engineering.com](mailto:contact@brs-engineering.com)



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