Manual for PMB v1.2

Evolutions

Rédacteur	Responsable X	Qualité
FBR	FBR	FBR

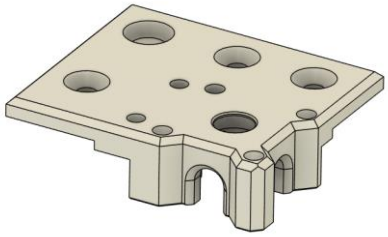
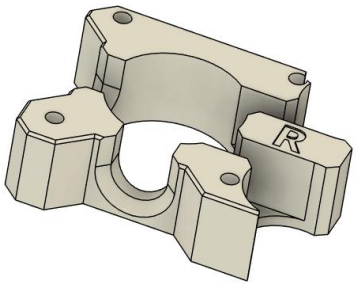
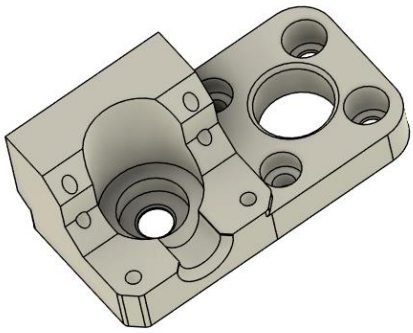
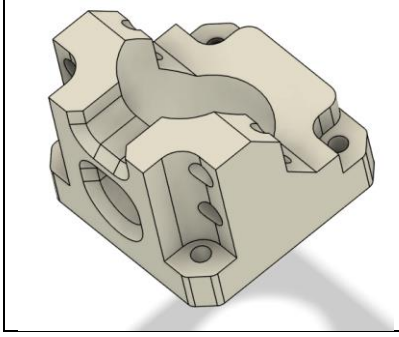
Indice	Date	Description de l'évolution	Auteur
1.0	12/05/2022	Création	FBR
1.2	15/05/2022	Larger Coupler capacity	FBR
2.0	18/05/2022	L3VER M2 tensionning integration	FBR

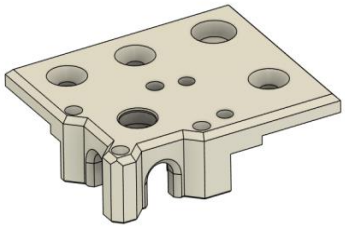
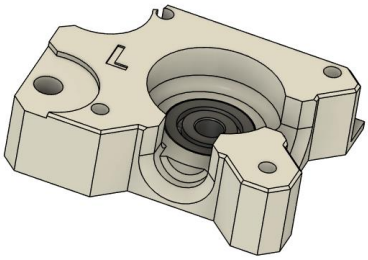
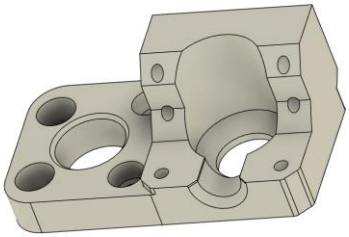
Etat	Beta 0.9	Alpha 1.0	1.2	2.0
Statut	Fonctionnel POC OK	Fonctionnel, POW OK	Fonctionnel Allègement	En cours

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

BOM :

Printed parts list :

Top Plate R 	X1
Middle plate R 	X1
Lower Block R 	X1
NEMA Block 	X2

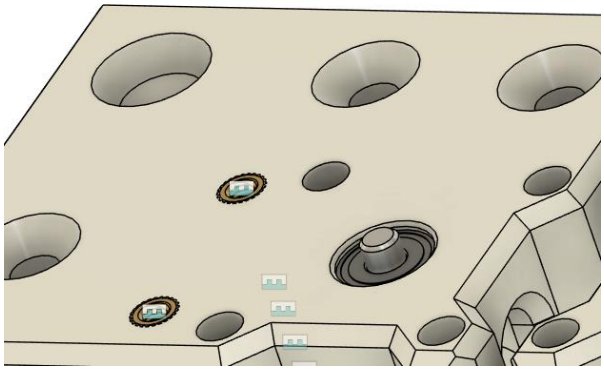
Top Plate L 	X1
Middle plate L 	X1
Lower Block L 	X1

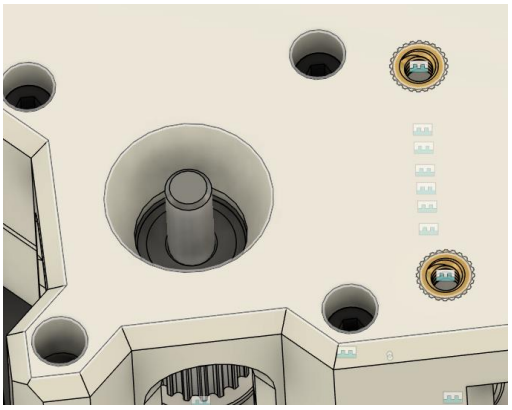
Hardware :

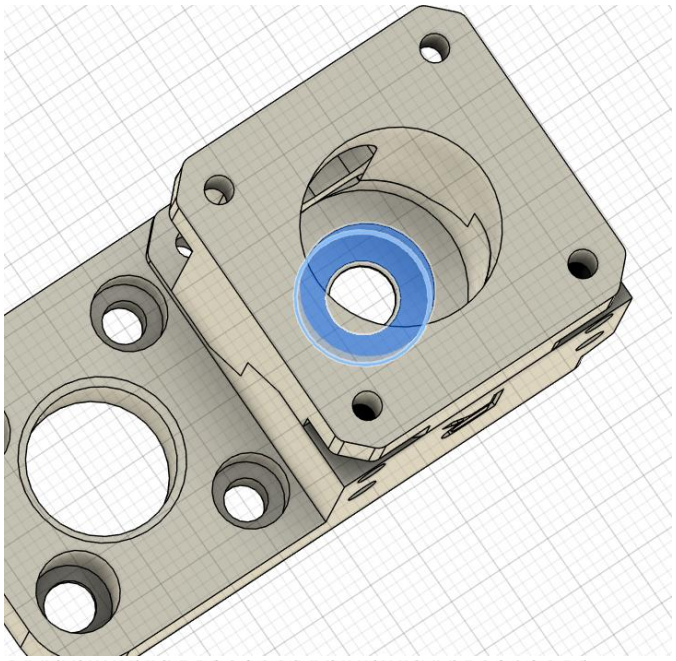
M3x30	X8
M6x12	X4
Shoulder bolt D5-M4x35	X4
M3x12	X4
M3x6	X4
Coupler 5-5mm (disc) 26x30 MAX	X2
NEMA17 damper (Optionnal)	X2
F695-2RS	X12
695zz	X6
Heat inserts M4	X4
Inserts brass m4 Ruthex	X4
Inserts brass m3 Ruthex	X16
Washer M3	X8
M3x45	X8
Contersunk M6x16	X6
55-60mm 5mm Shaft	X2
hammer/T nut M6	X6

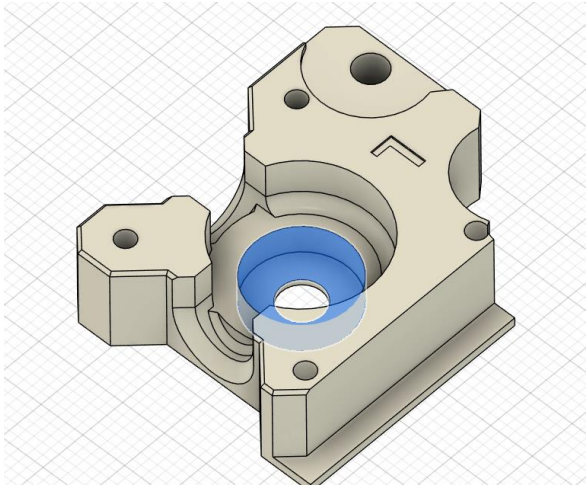
1-Prepare parts

Before assembly, check the passage of the bearings in the blocks, pre-insert them, pressfit the 4 bearings. A slight rubbing can improve pressfit.

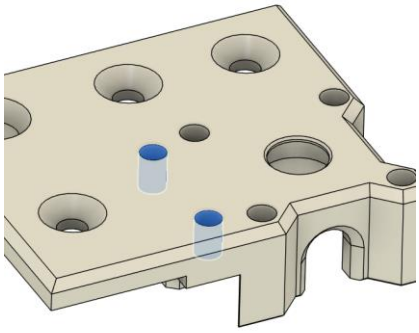
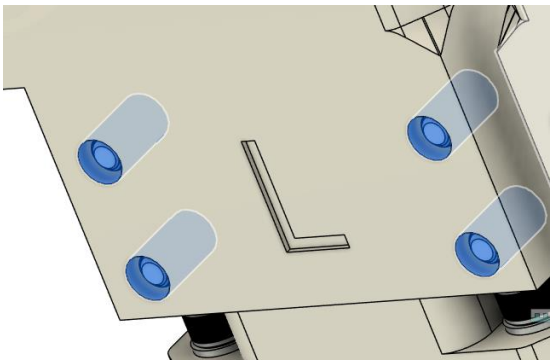
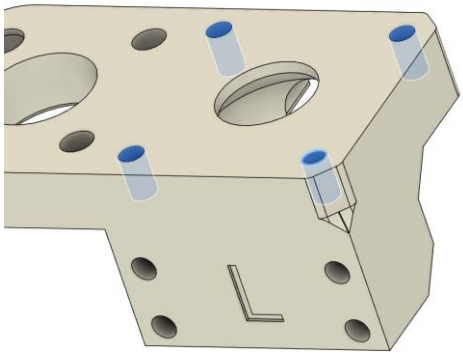








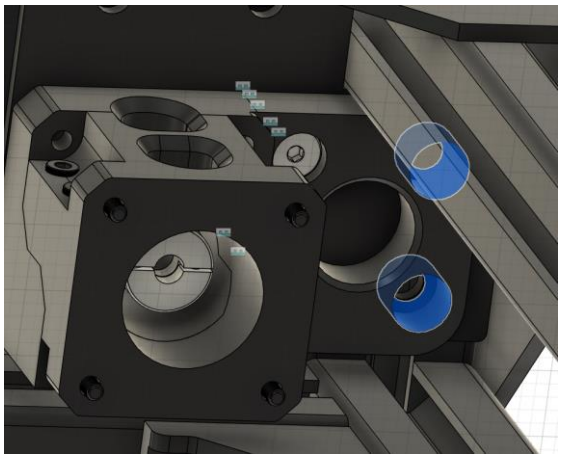
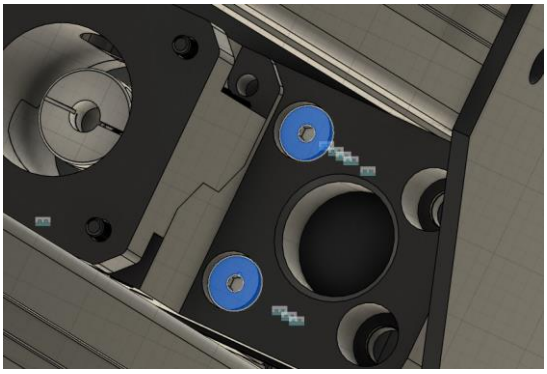
If you havn't put the insert yet, do it (Only for self-printed parts)

2x m4 for each top plate, insert it from THE TOP, others are m3

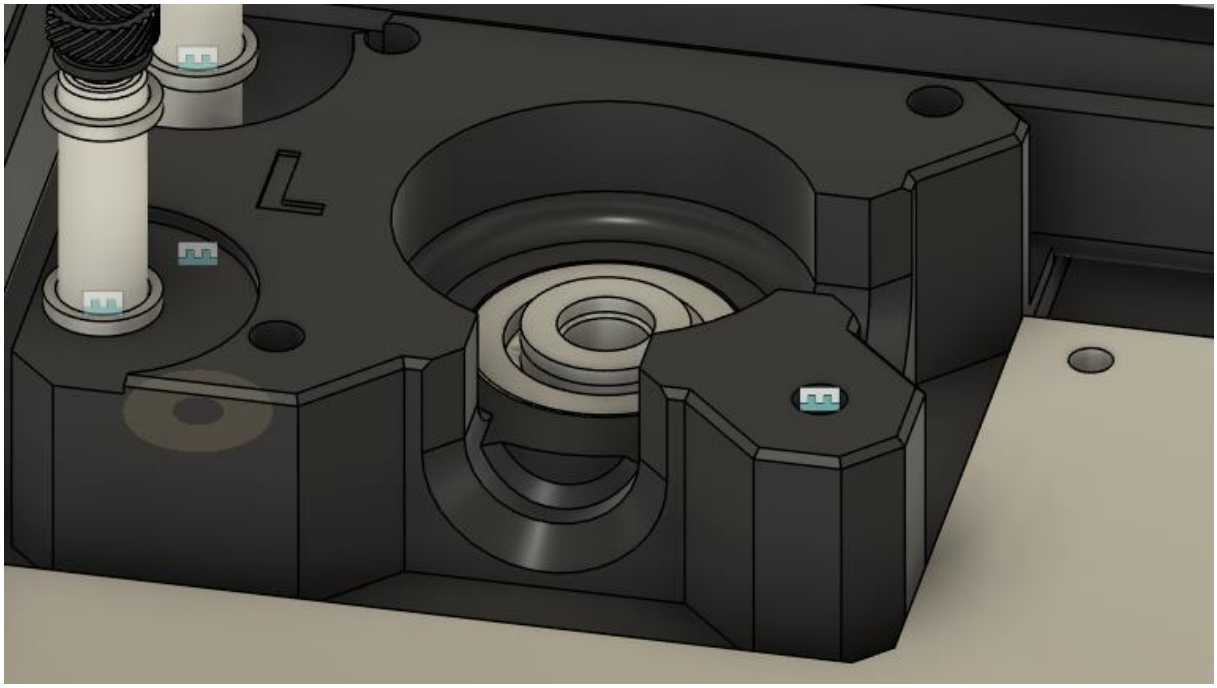
2-Motor Bracket R+L

Install the Motor bracket the same way than the original parts, only the part is bigger

You can preinstall the 4x Shoulder bolts, they will pressfit, for ease of the pulley later instalation

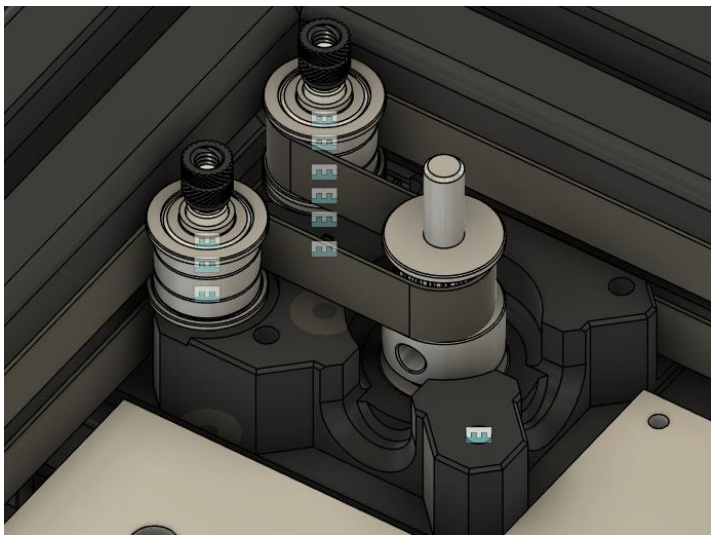
Install the Middle plate, on both side, same instructions than the stock VC3 version



3-Pulleys and Belt routing

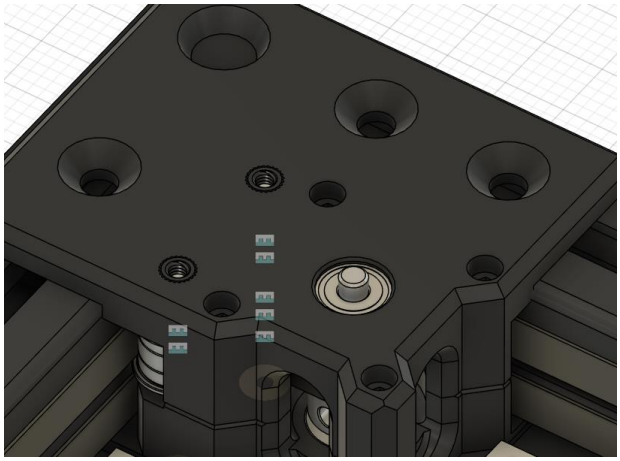
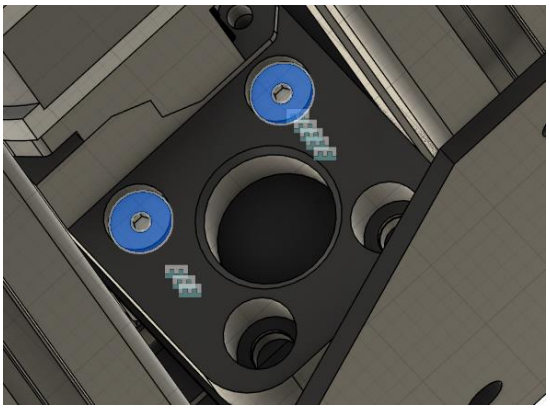
Technically the assembly here matches the stock manual of RatRig, You can either use GT2 Pulley, Or the more reliable option with MR125 / F695 bearings solution

!!!!!!! DONT FORGET THE 1MM SHIMS !!!!!!!!!



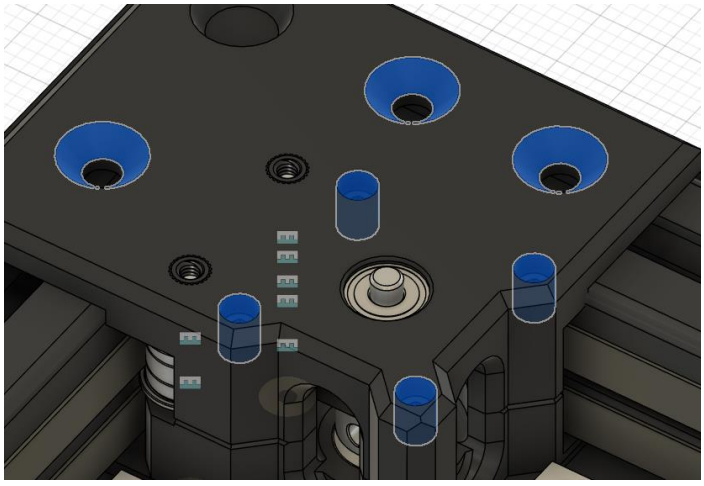
Don't apply pre-tension on the belt now, keep it loose

Install the GT2 tooth pulley on the 5mm shaft and pre install it inside the system

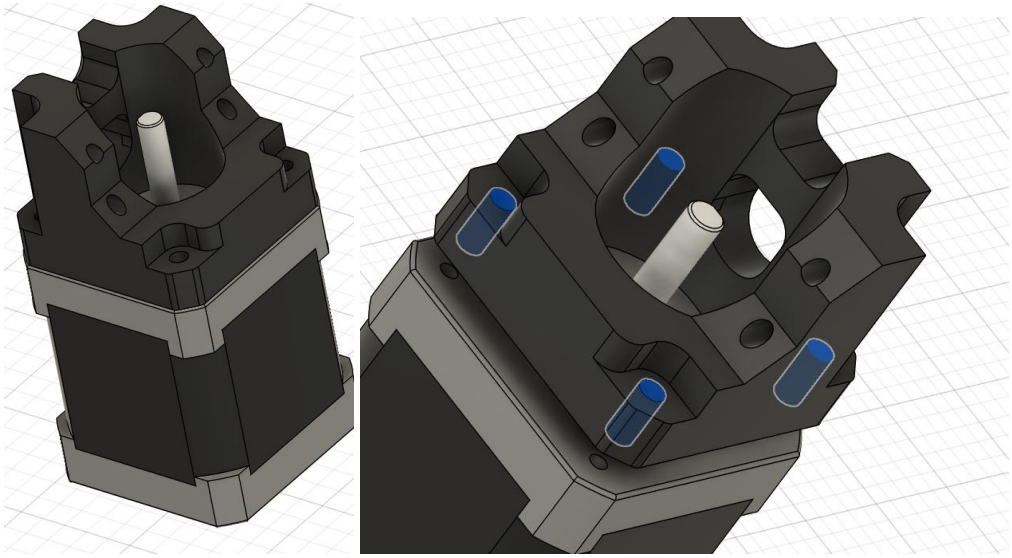



The you will need to put the cover, the Shoulder bolt has to bite the m4 inserts

You can now screw gentle the 2 shoulder bolts half a turn by half a turn by alterning it. (from bellow to secure the system). Finish it with the 3 Countersunk screws of the top plate and the original 4x m3 screws which will grab the 4x inserts in the lower part instead of the NEMA.

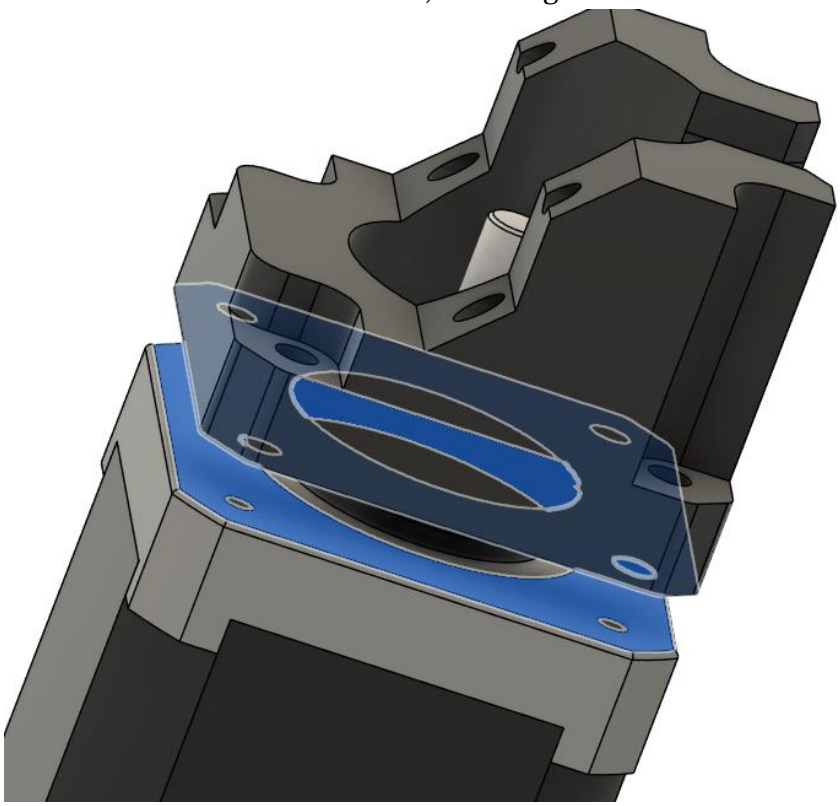


4-Modular NEMA Parts :



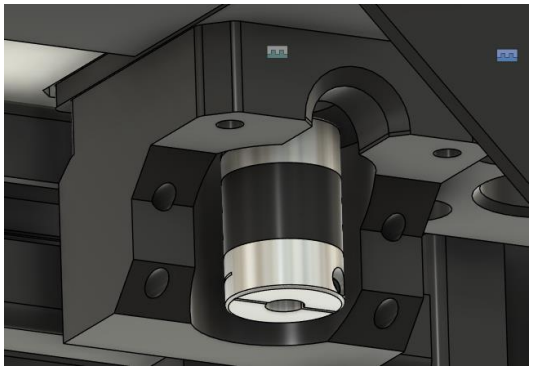
Put 4x m3x12 screws to secure the motor on his mount system

Installing a decoupler is highly recommended : It will drastically reduce the overall noise of the motor and will behave better, featuring Anti-Resonance and Torque Ripple Smoothing.



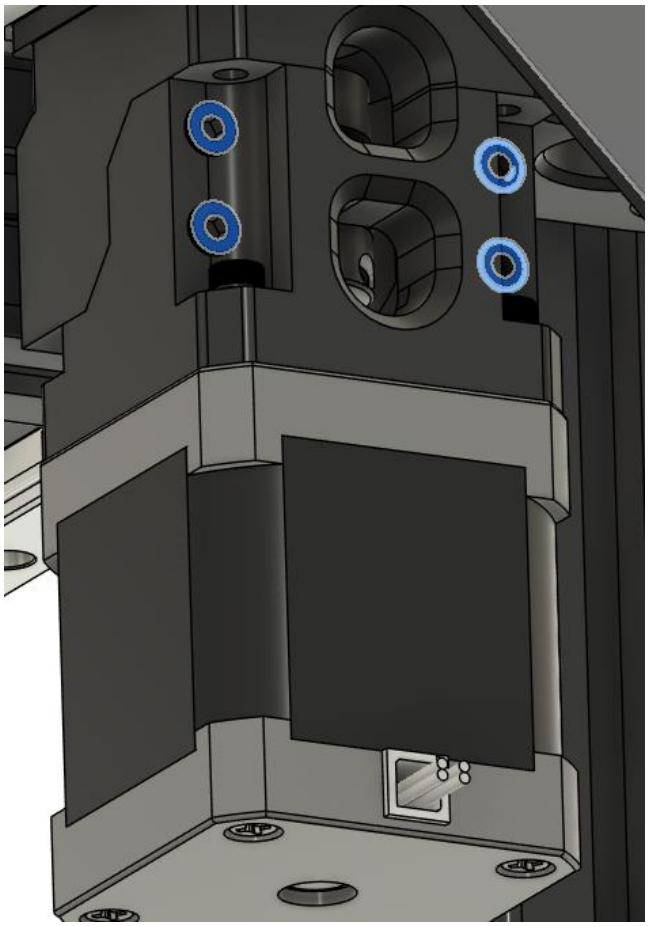
Once done push the 5mm shaft to be hold correctly by the 2 bearings

You can install the coupler (Disk, rubber, or flexible NOT SPIDER versions)



THIS STEP IS IMPORTANT : At this point you can pre-tention the belts. Then move the toolhead at 45° then 135° to indiviually check if we have a good shafts alignements. If you feel a repetitive pattern of resistance, recheck the alignement in the blocks until the movment is smooth.

You can now install the modualt NEMA



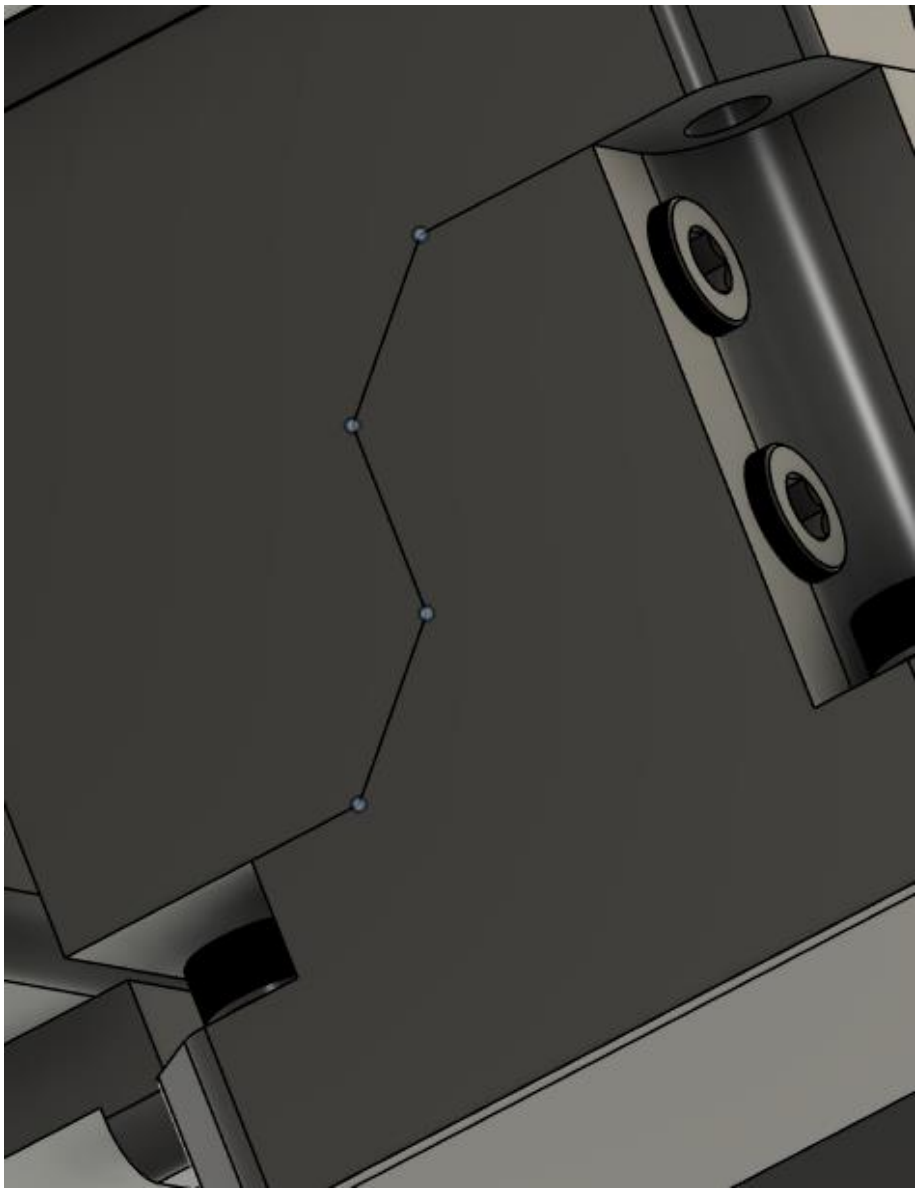
Use the m3x30 to secure it

THIS STEP IS IMPORTANT : Move the toolhead at 45° then 135° to indiviually check if we have a good shafts/motor alignements. If you feel a repetitive pattern of resistance, recheck the alignement in the blocks until the movment is smooth.

If you are dubitative about the junction of the two elements, you can use a round grinde to make those angle more round.

Depending of the quality of the printer used to produce the part it may be an issue if you are not very good with dimensionnal accuracy.

BRS-Engineering parts you ordered are precheck to match alignements, no issues will occur with them.



5-Final checks :

1- Check the tightening of all screws, nema etc

2- Check the alignments, in particular the Shafts

3- Hard point checks

4- Check the motor wiring, order on the steppers !!!! If not done; system breakage possible

5- Check the motor functions in Klipper with "STEPPER_BUZZ STEPPER = stepper_z"

6- Double check everything before switching on!

7- It is a good idea to recheck the screws tightening after one week.

8- Input shaper will move after few days, time to the system to settle and adapt. Dont' forget to remake one timt to time to be perfectly tuned

7-Disclaimer :

The system is designed to operate on a correctly assembled Vcore 3. Even a slight mounting error can make it impossible to upgrade.

If the parts to be printed are made by the customer, check the dimensions after the print, they need to be respected : a bad dimension will block (+ -0.08mm) the assembly.

The kit is installed in the simplest way without destructive modifications of the machine

This kit is an optional upgrade, intended for an informed public and with advanced experience, its assembly and / or its function and / or its quality of execution are the responsibility of the customer and are not guaranteed in public view. of parameters by BRS-E. BRS-Engineering accepts no responsibility in the event of bad sourcing (bad quality and / or bad dimensions self-prints), bad assembly by the customer, or bad assembly of the based Vcore.

The kit has proven its POC and POW in quality controls at BRS-E as well as at a test customer, As is, the design works with all expected expectations

By purchasing the kit, or by having it done by BRS-Engineering, you accept the CGU as well as the previous disclaimer

8-License :

9-End

If you are satisfied with the design and function of this upgrade, and if you are going for the dematerialized solution without going through my printing services, consider a small symbolic donation on my website to allow me to continue the R&D, which is particularly time-consuming and not cost effective.

PayPal

Scannez. Payez. C'est réglé.

Thanks to you and your support