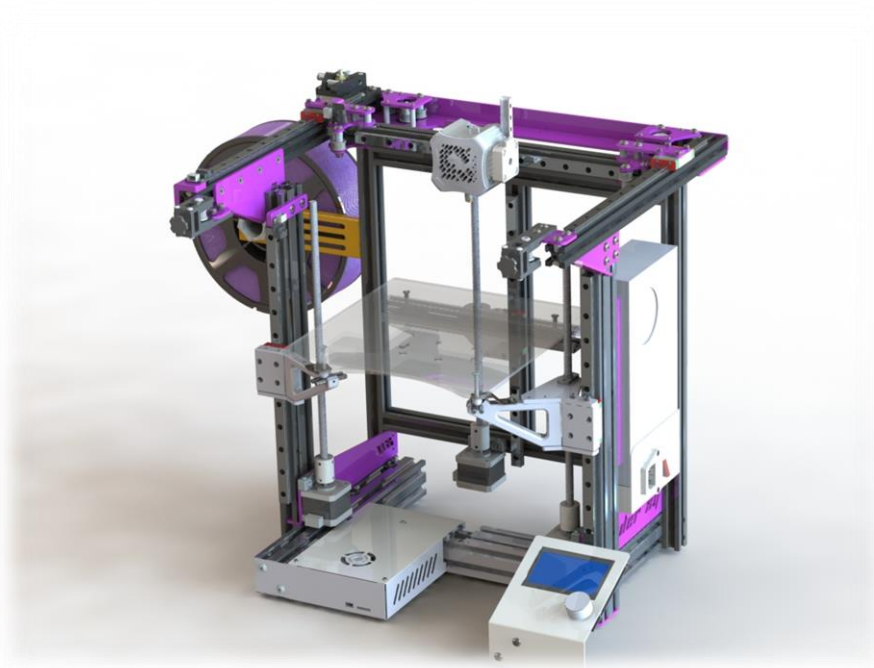


# ENDERXY KINEMATIC Z AXIS UPGRADE

(CoreXY conversion kit for the Ender 3 Series 3d printer)

# ASSEMBLY MANUAL



**STEP BY STEP INSTRUCTION MANUAL**

**BY ADITIVA 3D**

**V1.0**



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## Chapter 1 Intro

### Step 1.1 What is included in this kit?

Thank you on purchasing the **EnderXY Kinematic Z Upgrade Kit**, designed to give more stability and overall performance for your Z axis assembly. With this kit, you will experience enhanced speed, accuracy, and overall print quality, thanks to the inclusion of high-quality CNC metal parts, linear rail, and extra stepper motor.

#### **Compatibility:**

The **EnderXY Kinematic Z Upgrade Kit** has been specifically designed for EnderXY 3d printer.

#### **Contents:**

The **EnderXY Kinematic Z Upgrade Kit** includes all the required metal parts and additional hardware necessary to complete the assembly. We have taken care to ensure that all the components are of the highest quality to guarantee durability and optimal performance. However, please note that there is a 3D printed part essential to finishing the assembly. To assist you, we have provided the corresponding STL file for this part that need to be printed.

#### **Step-by-Step Instructions:**

This manual serves as a comprehensive, easy-to-follow guide, providing you with step-by-step instructions for the entire assembly process. Each step is clearly explained and accompanied by detailed illustrations. By following these instructions closely, you will be able to complete the upgrade efficiently and effectively.

**Thank you for choosing the EnderXY Kinematic Z Upgrade Kit. Let's get started with the assembly and unlock the true potential of your 3D printer!**

## Step 1.2 Required tools

In order to fully install this kit, you will need the next tools:

- ✓ Set of Allen keys
- ✓ Adjustable wrench or wrench kit
- ✓ Measuring tape
- ✓ Vernier caliper
- ✓ Square ruler

## Step 1.3 Additional printable parts

There is a printable part for finish this build, since they will be provided as STL digital format, they are subject to upgrades and few more will be added in the future, please check for regular updates.

- ✓ Z back spacer (Z\_back\_spacer.STL)

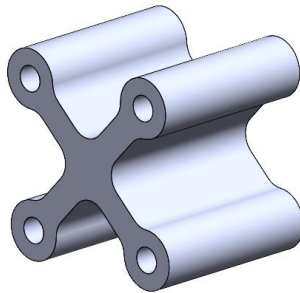


Figure 1 Z back spacer

## Chapter 2 Disassembling ENDERXY BED

In order to get ready to install this kit, you have to disassembly various segments of your ENDERXY 3d printer, this part will guide you through entire process of preparation and getting ready to install new parts.

\*Please be aware some original parts will be discarded and won't be installed.

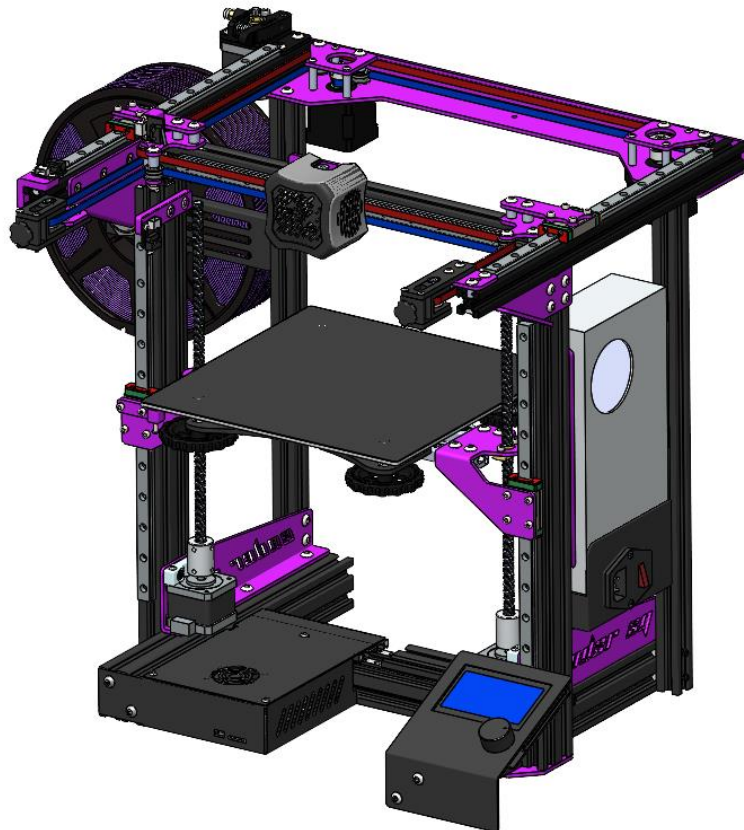


Figure 2. Assembled EnderXY with stock BED/Z system

## Step 2.1 Removing original Z axis system

- ✓ Disconnect Z nuts (Left / right), remove M3 screw holding them, using an allen key.

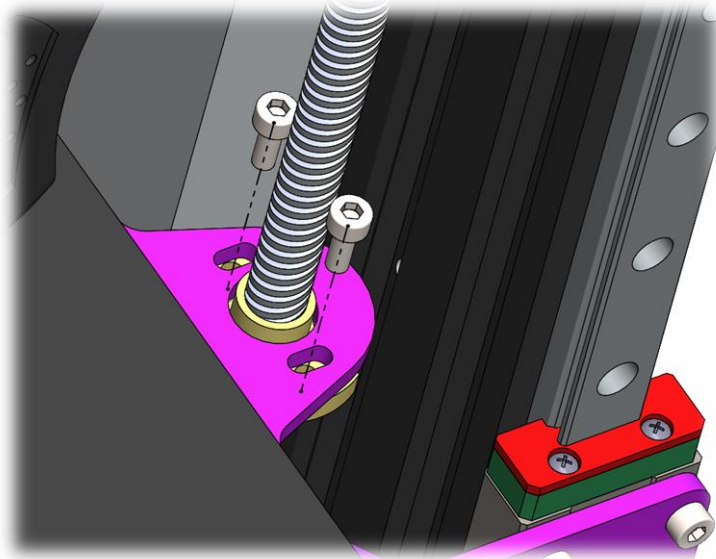


Figure 3. Remove M3 screws holding Z brass nuts

- ✓ Also remove Z endstop (including plate)
- ✓ Remove M3 screws (4 on each side) to release bed brackets assembly.

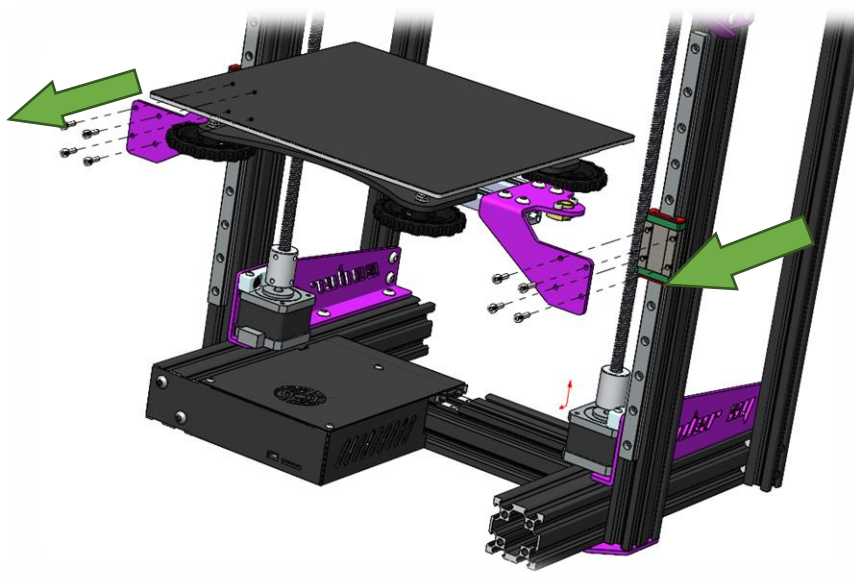


Figure 4 Removing Z axis moving system

- ✓ Items to discard: Bed plastic nuts, bed brackets, 2010 extrusions (from bed).
- ✓ Items to save for later use: Heatbed, bed plate, Z brass nuts (2 units)

## Chapter 3 Preparing frame

### Step 3.1 Building Back Z Frame

- ✓ Next items from the KIT and Original parts will be used:

ITEM	ITEM DESCRIPTION	Quantity	Type
1	EnderXY assembly	1	Assembly
2	2020 Aluminum Extrusion L=330	2	Kit
3	2020 Aluminum Extrusion L=280	1	Kit
4	2020 Corner bracket	6	Kit
5	M5x8 Screw	12	Kit
6	M5 Spring nut	12	Kit
7	MGN12 Rail L=300mm w/ MGNH12 slider	1	Kit
8	M3x8 Screw	5	Kit
9	M3 Spring nut	5	Kit
10	Nema 17 stepper	1	Kit
11	Stepper bracket mount	1	Kit
12	T8 leadscrew	1	Kit
13	5 to 8 mm coupler	1	Kit

- ✓ Install supplied extra 2020 extrusions to the back of the frame, as shown in the next picture, use 2020 Corner brackets and M5x8 Screws to secure them. It's important to use a square ruler to make a correct assembly.

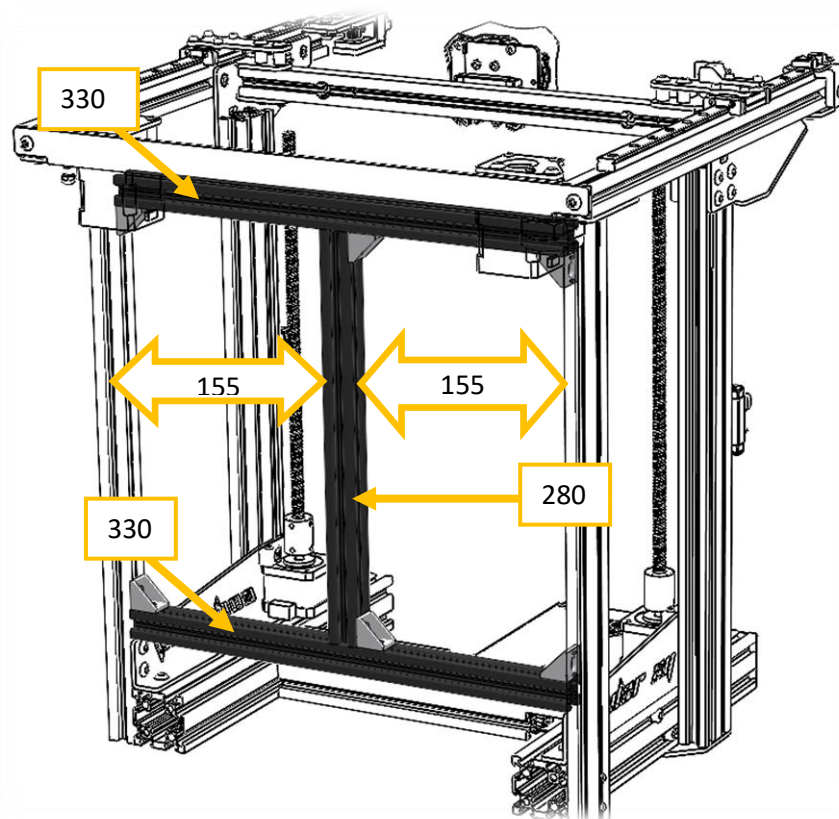


Figure 5 Back frame + 2020 corners



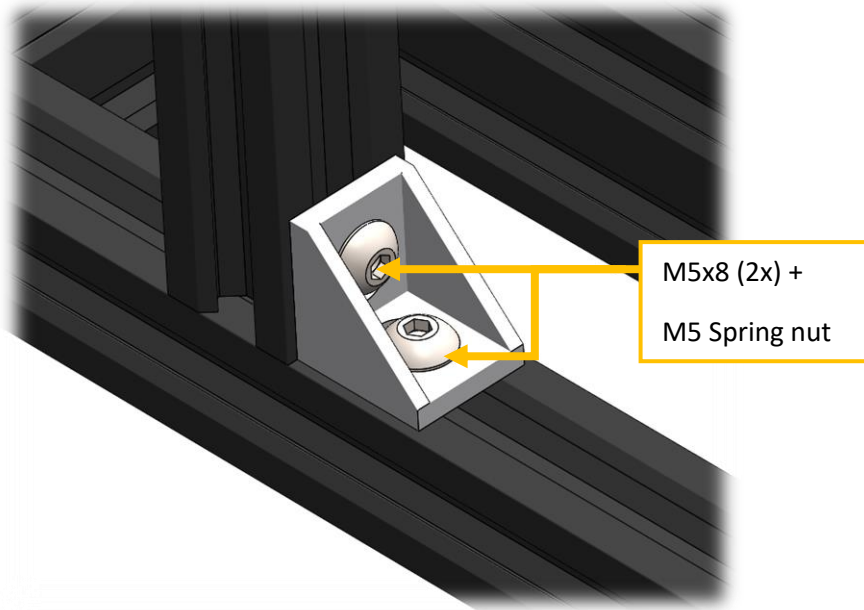


Figure 6 Joint detail with Screws and spring nuts

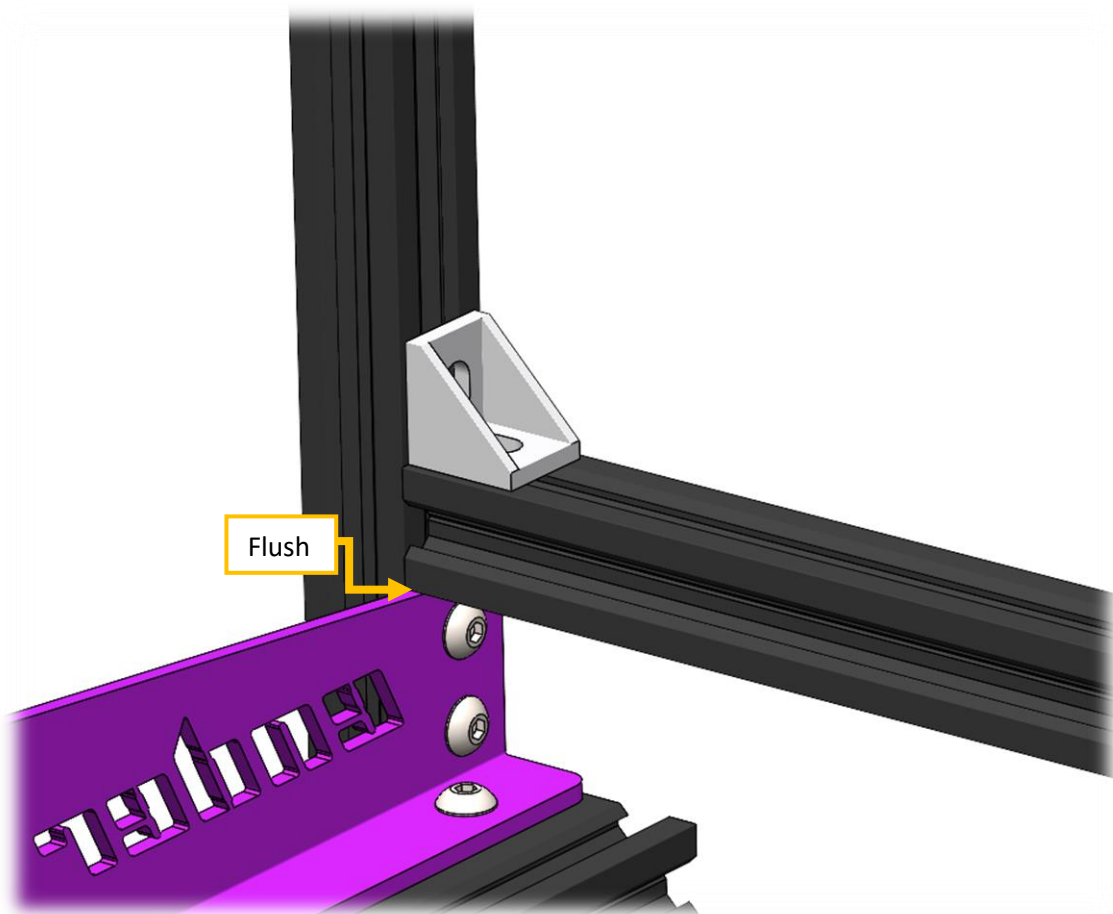


Figure 7 Aluminum extrusion must be in touch with bottom bracket.



- ✓ Now install the MGN12 rail, using M3x8 screws and M3 spring nuts, the rail must be flush with the bottom horizontal extrusion as shown:

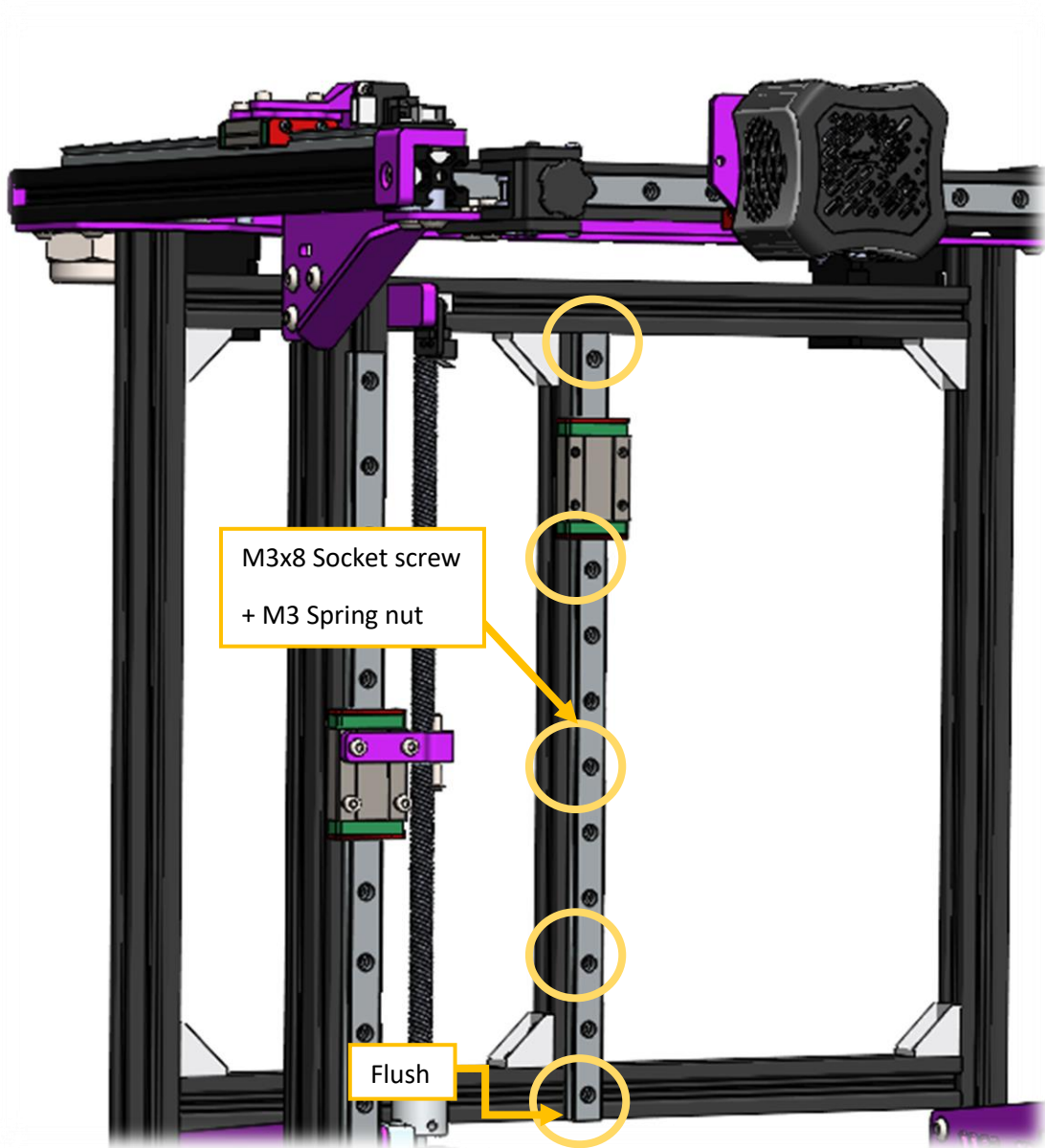


Figure 8 Fix rail with M3x8 Screws + M3 Spring nuts were indicated with circles

- ✓ It's time to install the 3<sup>rd</sup> Motor from the kit, using it's supplied bracket, inner distance between frame and the left side of the bracket should be 109mm, then install the T8 leadscrew with the supplied coupler, it's recommended to use a square ruler to align the leadscrew with the horizontal bottom extrusion at the back :

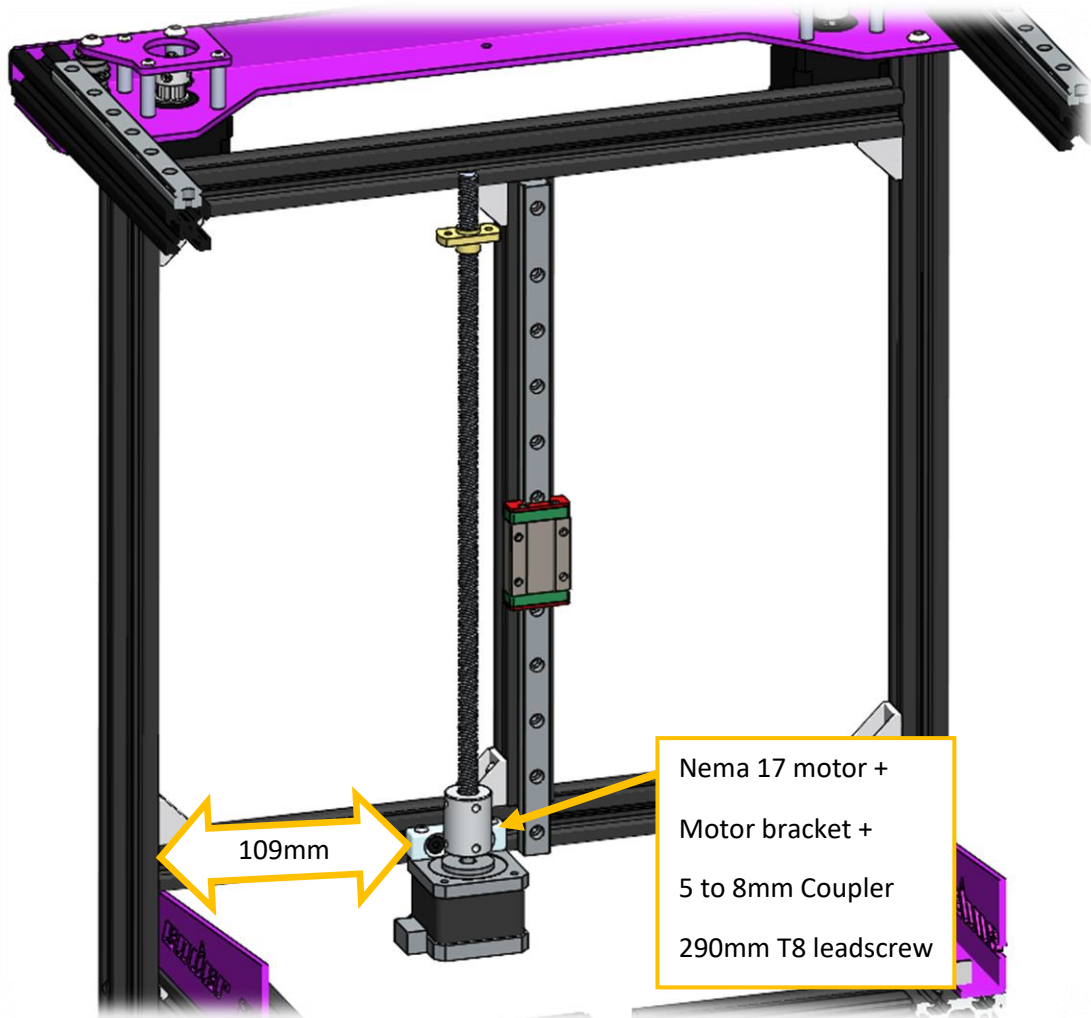


Figure 9 3<sup>rd</sup>Z motor mounting detail

### Step 3.2 Preparing and installing bracket parts

- ✓ Next items from the KIT will be used:

ITEM	ITEM DESCRIPTION	Quantity	Type
1	TRI A BRACKET	2	Kit
2	TRI B BRACKET	2	Kit
3	TRI C BRACKET	1	Kit
4	TRI D BRACKET	2	Kit
5	TRI E BRACKET	2	Kit
6	TRI F BRACKET	1	Kit
7	M4x12 mm Screw	10	Kit
8	Ø5x35 Pin	6	Kit

9	M3x4 Set screw	6	Kit
10	M3x35 Screw	4	Kit

- ✓ Use the components shown, repeat process for the left side (mirrored), use the supplied M3x4 set screws to fix the 5mm PINS as shown, DO NOT OVERTIGHT THEM:

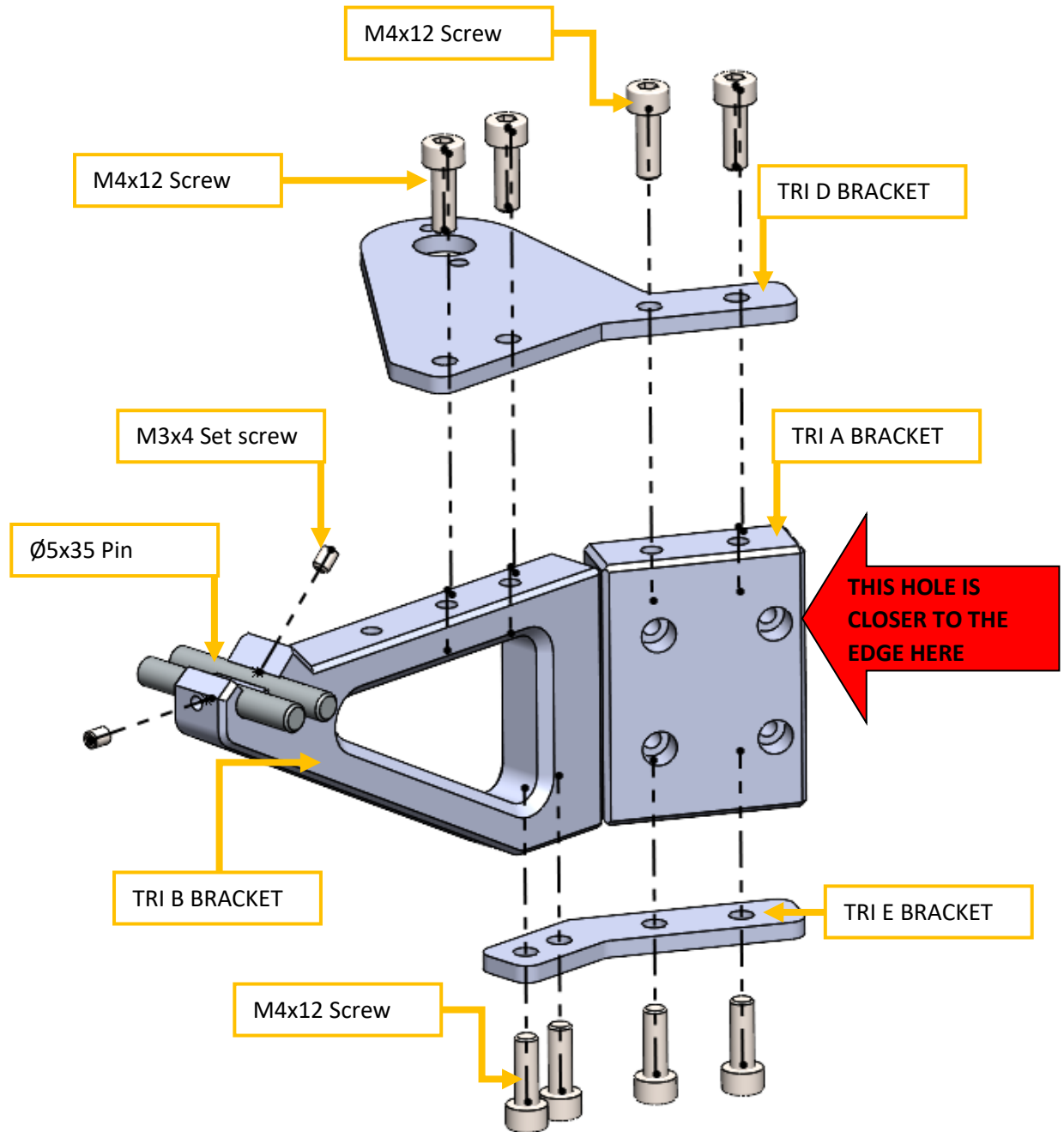


Figure 10 Preparing front bracket, right side in picture, and repeat process for left side

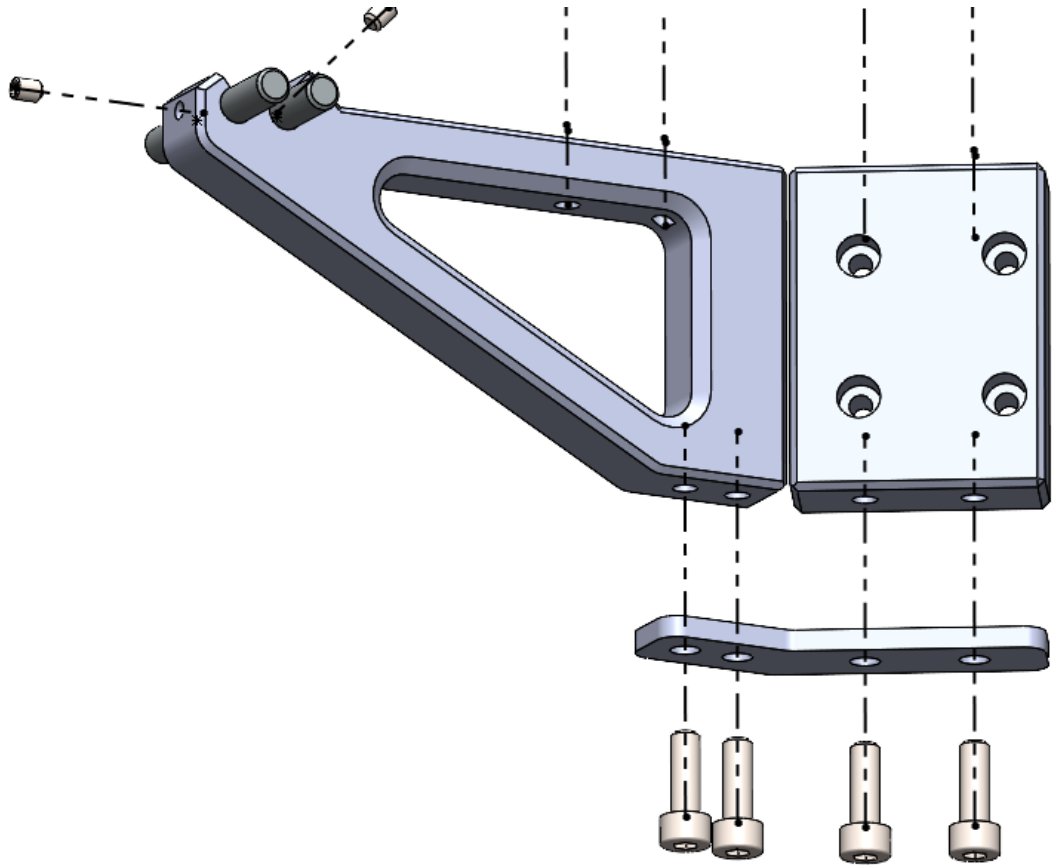


Figure 11 Mounting detail (bottom view)

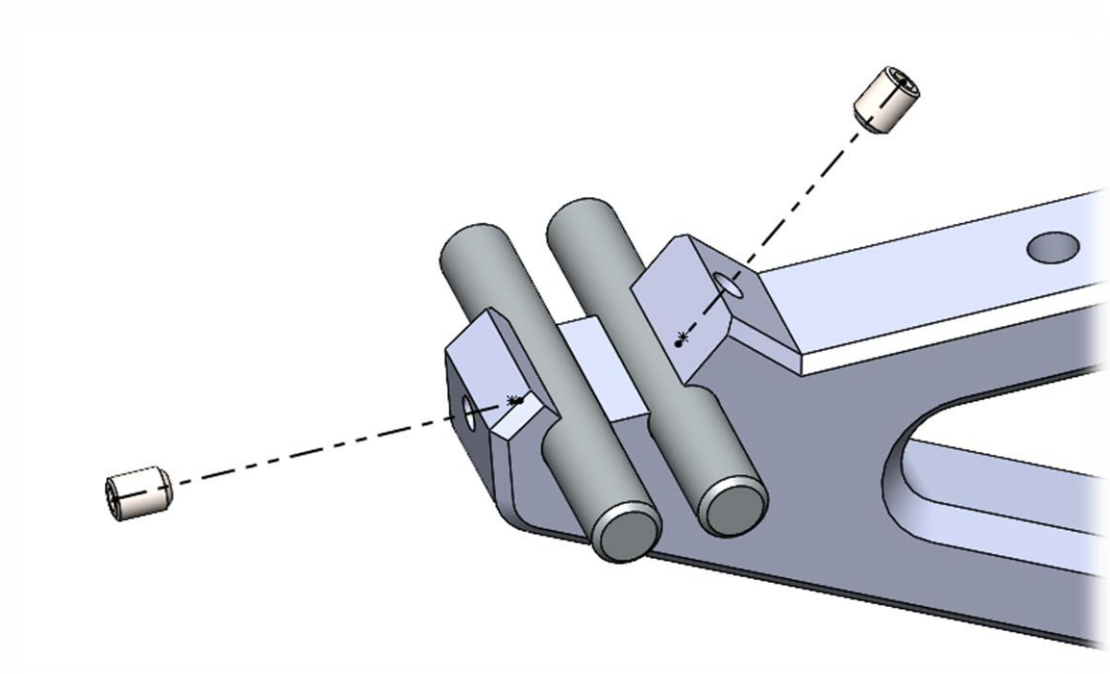


Figure 12 Mounting detail of PINS (tip of bracket)

- ✓ Mount Right and Left front brackets assembly, using M3x10 Screws the Slider.

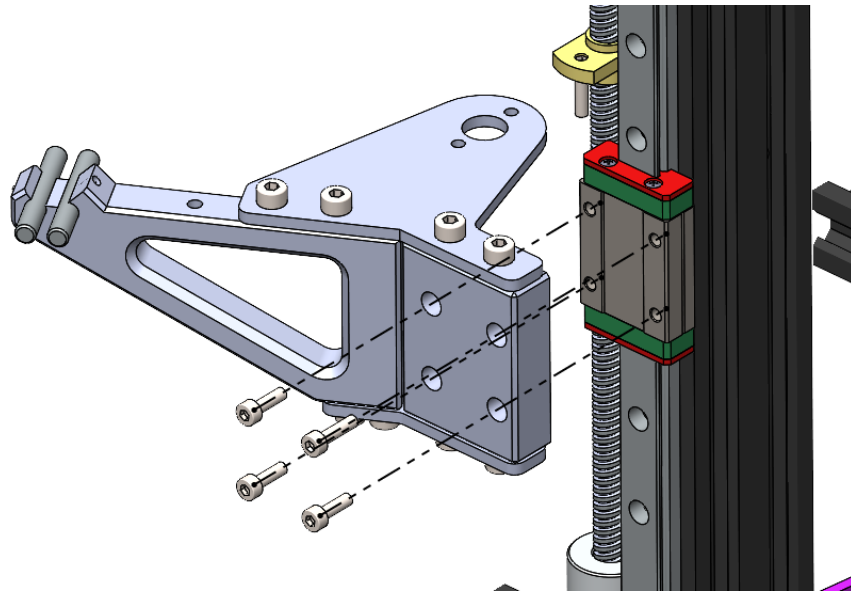


Figure 13 mounting detail (right side)

✓ Mount back bracket assembly, as shown:

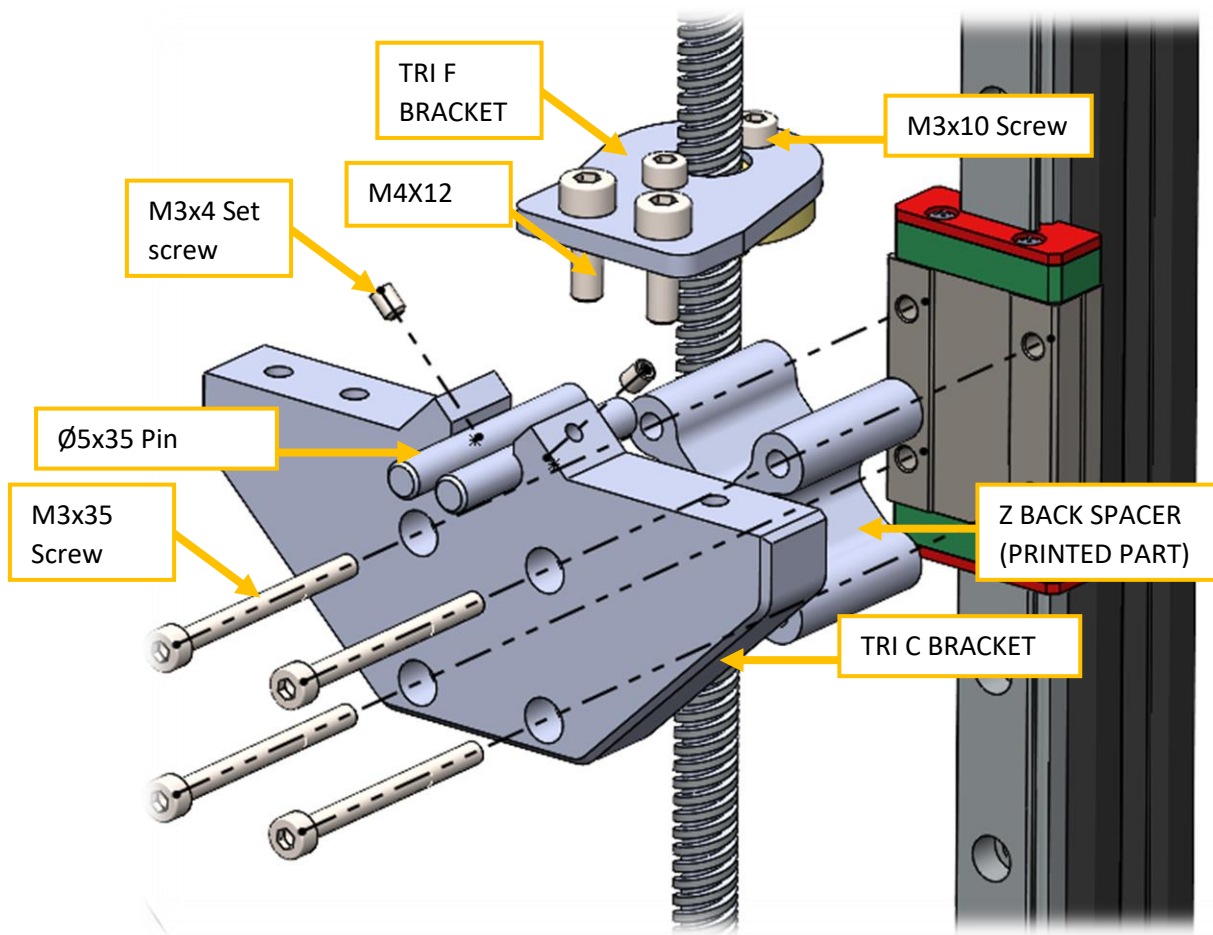


Figure 14 Detail of back bracket mounting

### Step 3.3 Preparing Heat bed

- ✓ Next items from the KIT will be used:

ITEM	ITEM DESCRIPTION	Quantity	Type
1	Heatbed	1	Original part
2	Bed plate	1	Original part
4	M4x20mm Flat bolt Screw	4	Kit
5	10mm Stainless Steel BALL M4 thread	3	Kit
6	TRI H SPRING	3	Kit
7	M4x8, L=8 Aluminum Spacer	4	Kit
8	TRI G BRACKET	1	Kit

- ✓ Follow the next scheme to assemble the balls into the heatbed, front holes (L&R), *use a soft cloth and pliers to hold the balls while adjusting the flat bolt:*

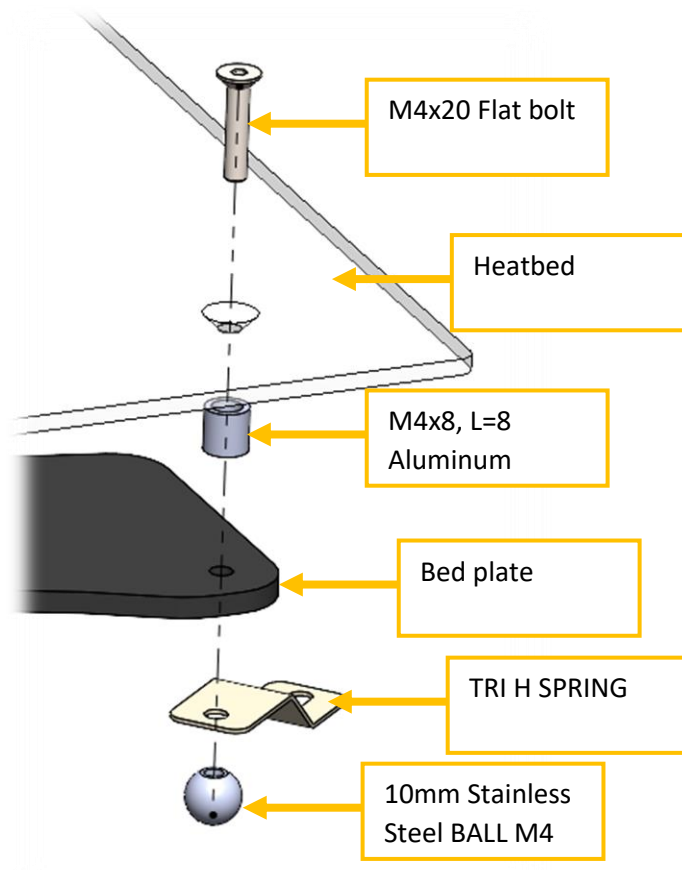


Figure 15 Detail of front holes of heatbed assembly, repeat on the left side

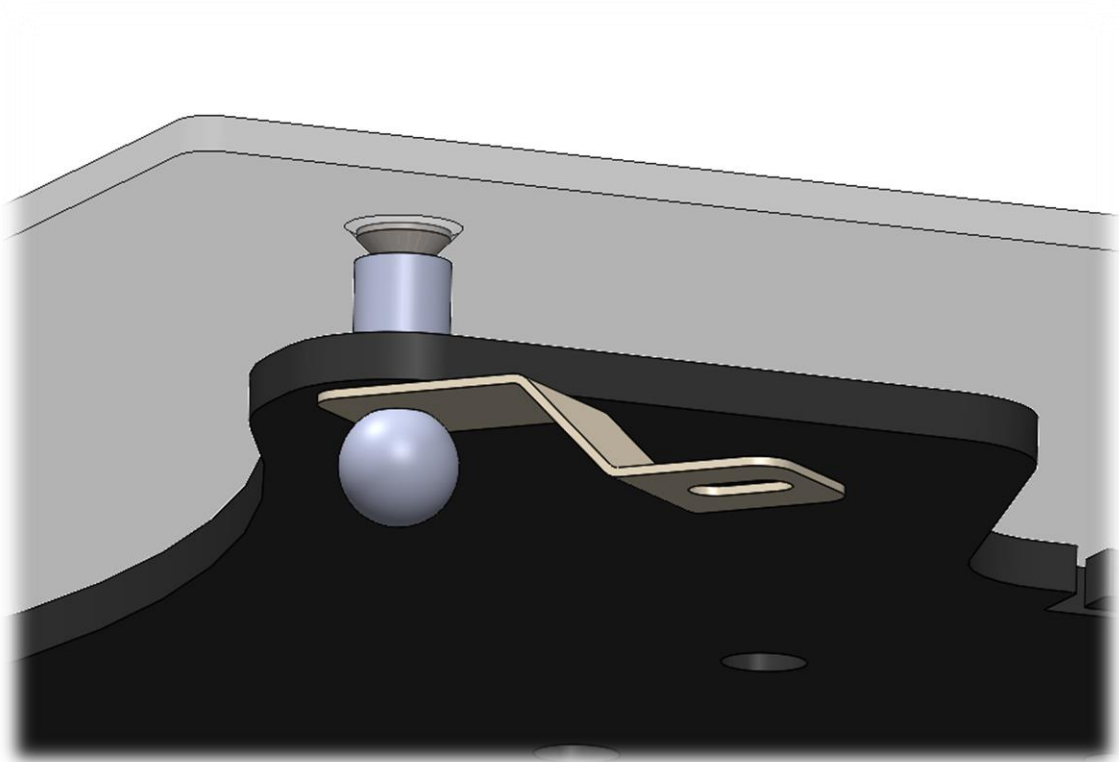


Figure 16 Detail ball assembly (front)

- ✓ Follow the next scheme to assemble the balls into the heatbed, back holes (L&R), *use a soft cloth and pliers to hold the ball while adjusting the flat bolt:*



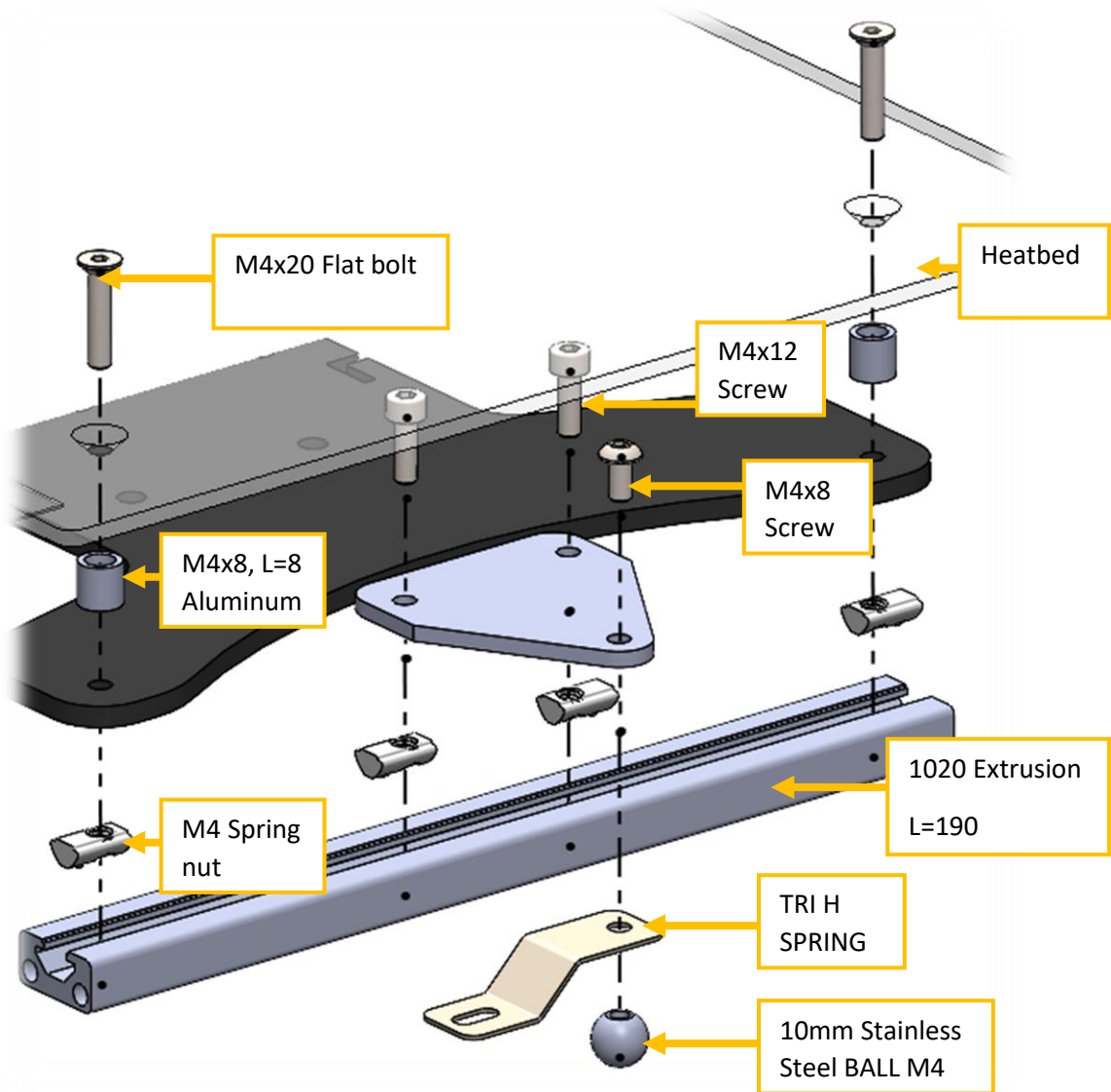


Figure 17 Detail of ball assembly (back)

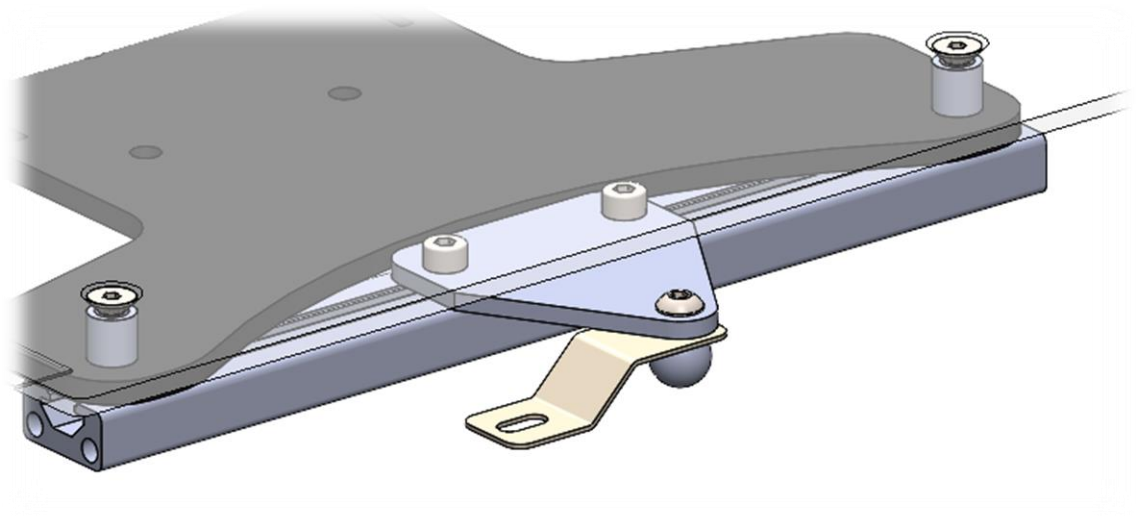


Figure 18 Detail of ball assembly (back)

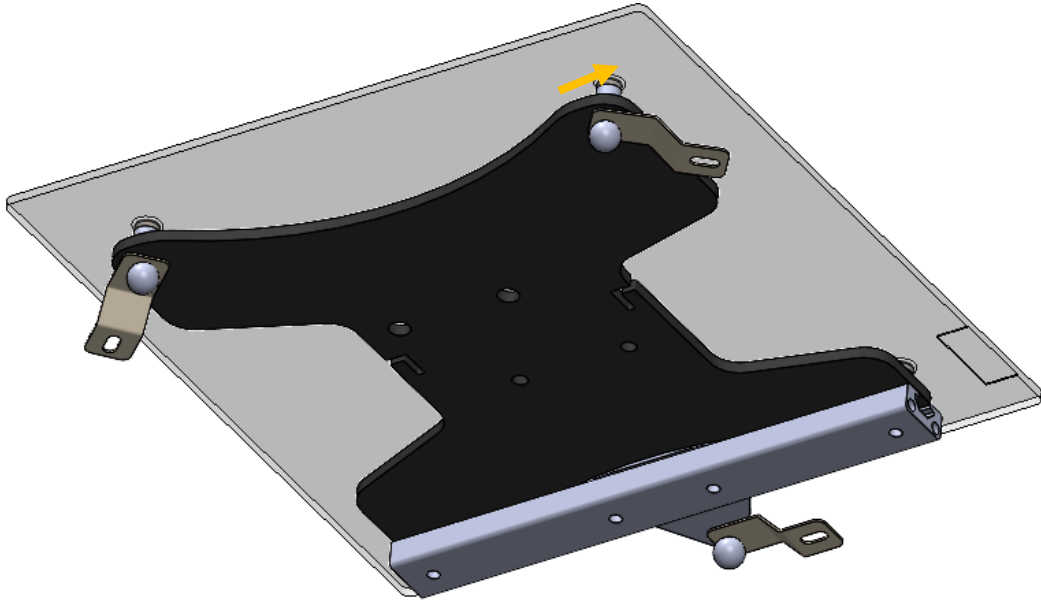


Figure 19 Underside view of bed assembly with balls

## Chapter 4 Mounting New Bed with balls over brackets

### Step 4.1 Preparing Heatbed

- ✓ Next items from the KIT will be used:

ITEM	ITEM DESCRIPTION	Quantity	Type
1	Heat bed + balls assembly	1	-
2	M4x8 Screws	3	Kit

- ✓ Place the bed assembly into the printer, placing the Stainless steel balls over the pins on each bracket, the bed is hold by gravity, and also secured with the TRI H Springs, don't adjust the screws too tight, just enough to keep it in place, allowing for some free movement:

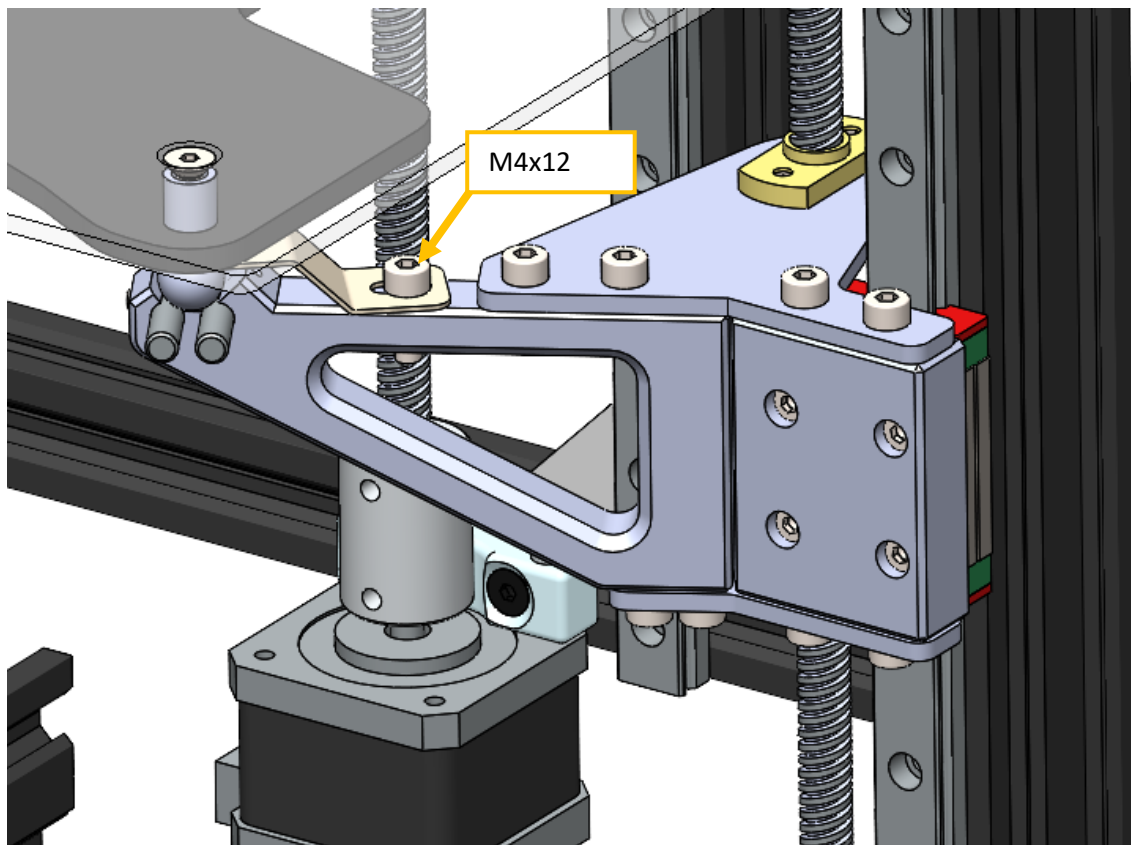


Figure 20 Mounting detail for the heatbed

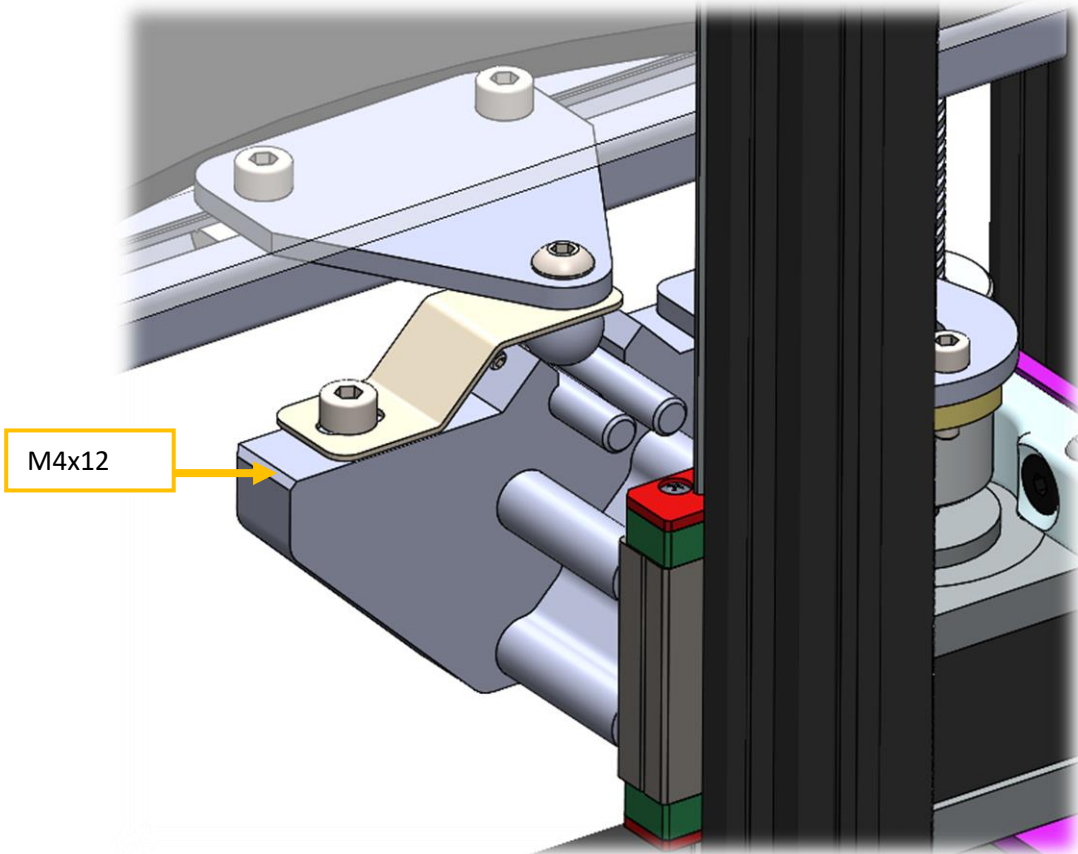


Figure 21 Back view for back bracket

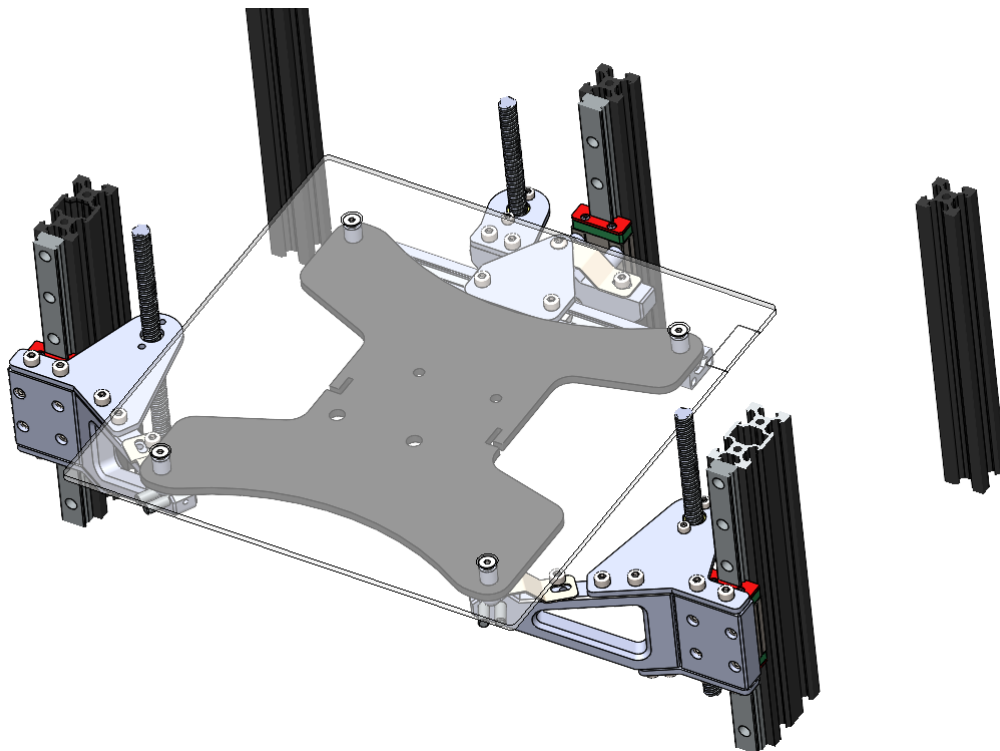


Figure 22 Full section view for Kinematic Bed Assembly