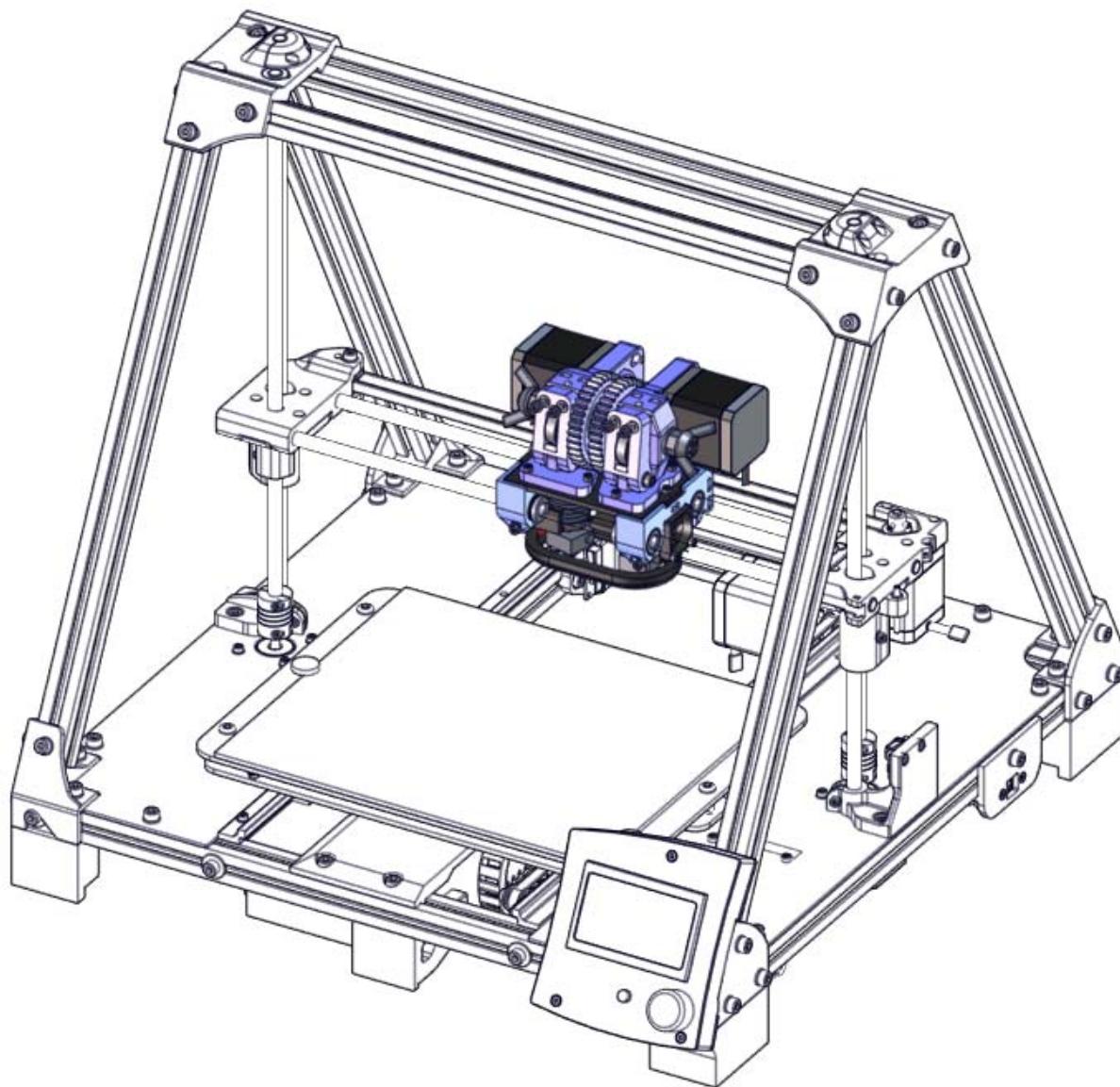


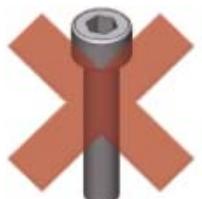


# DUAL EXTRUDER

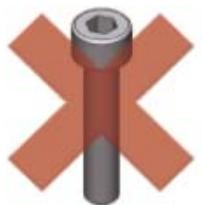
## Assembly Guide



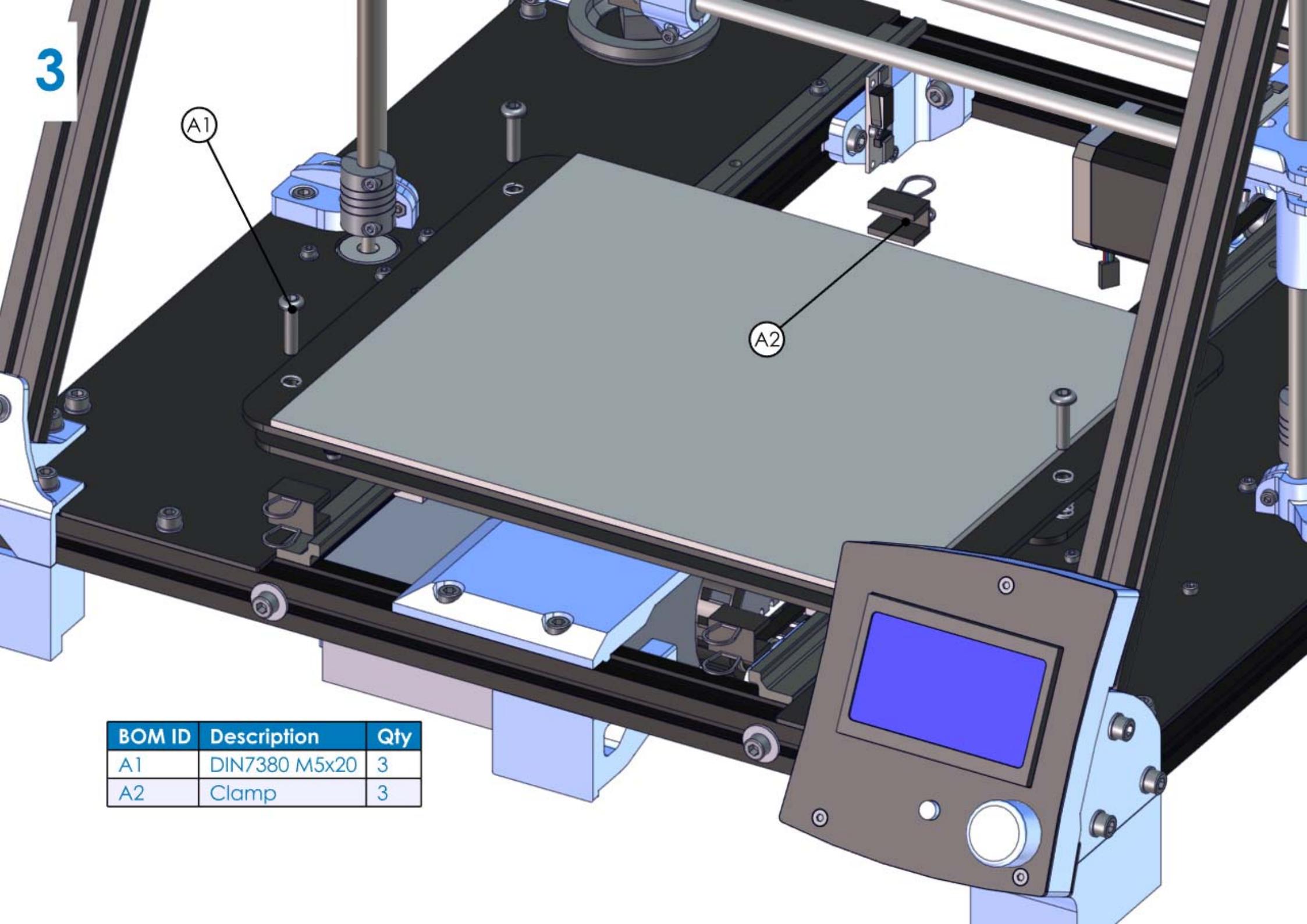
1



2



3

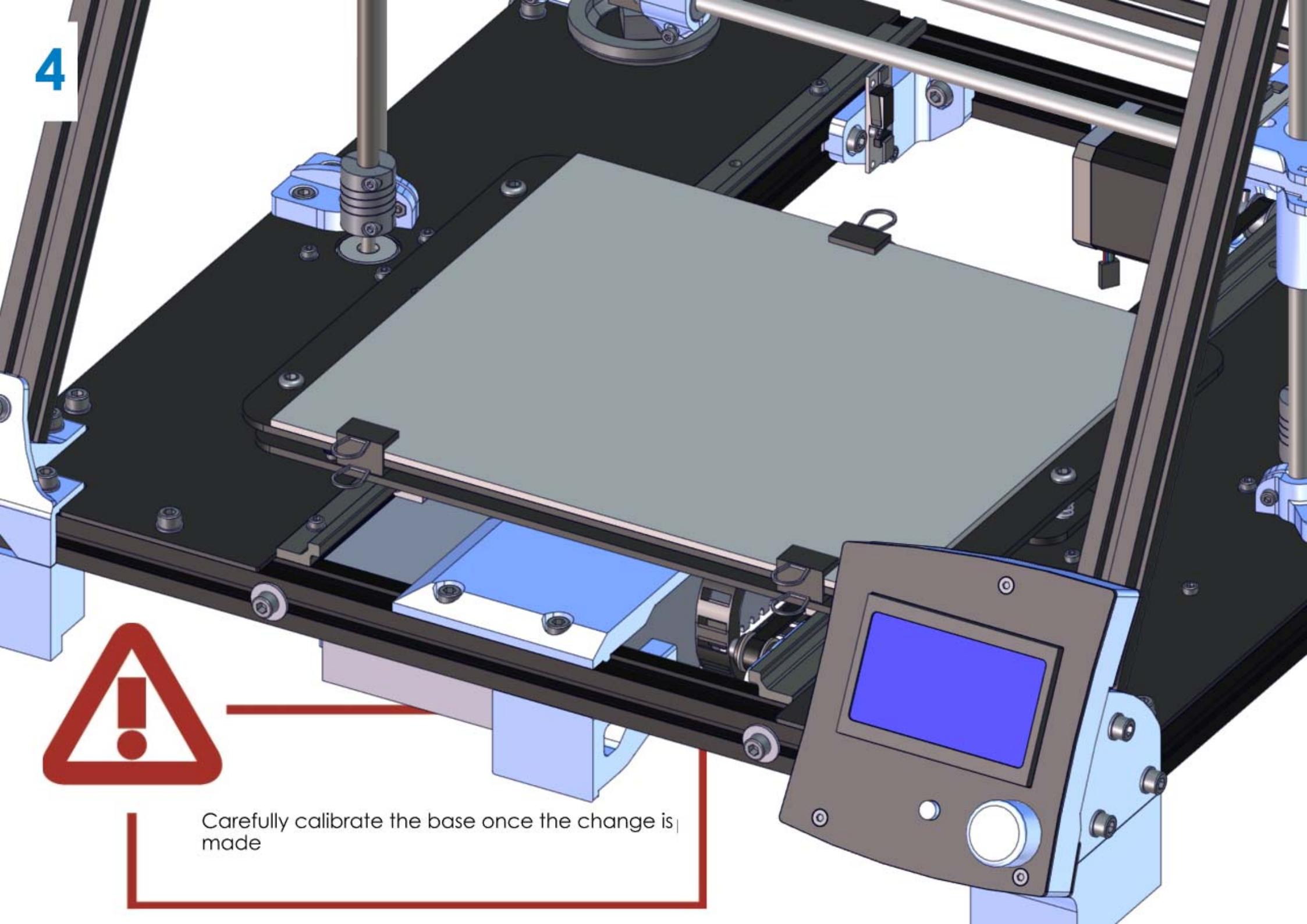


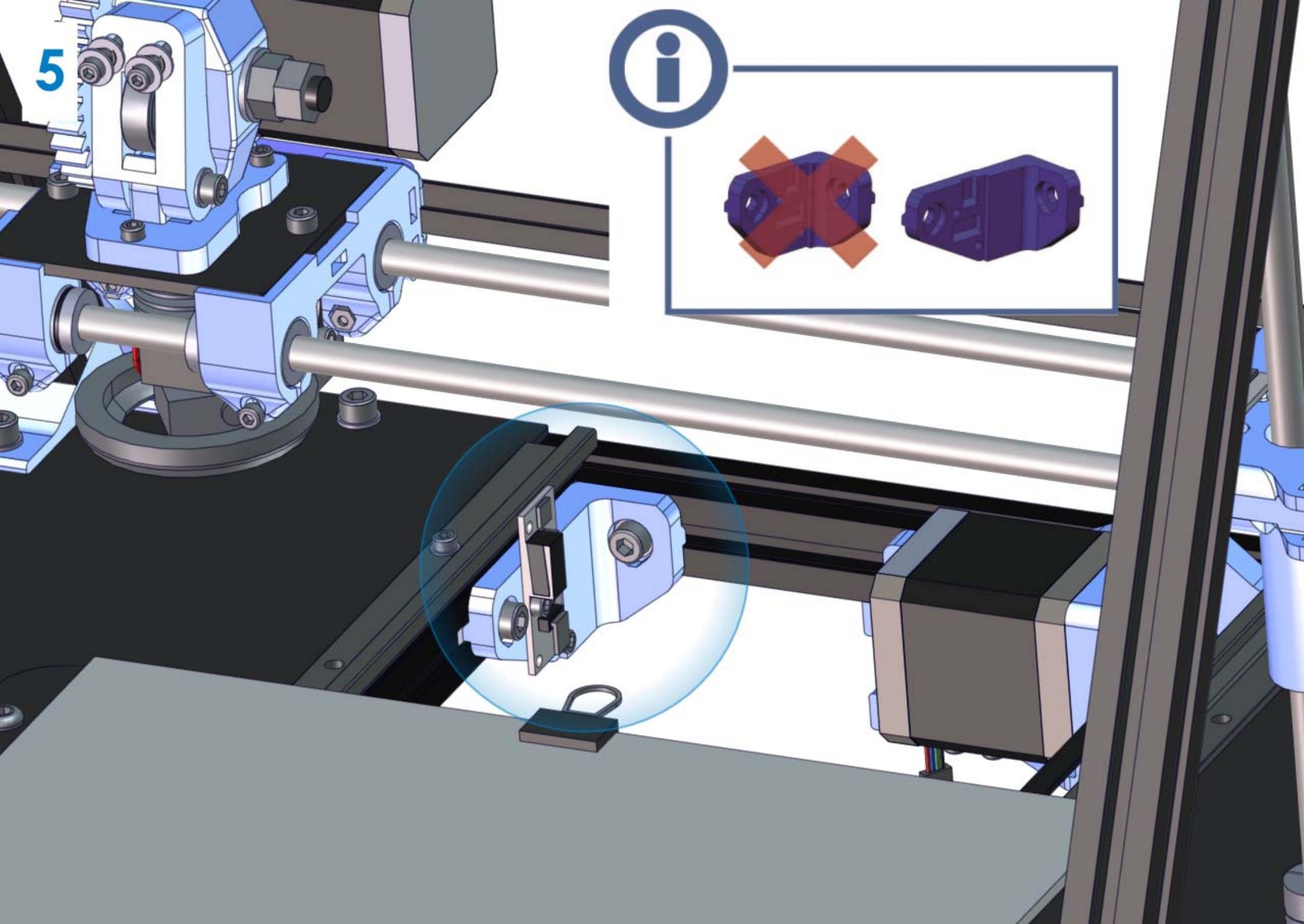
| BOM ID | Description   | Qty |
|--------|---------------|-----|
| A1     | DIN7380 M5x20 | 3   |
| A2     | Clamp         | 3   |

4



Carefully calibrate the base once the change is made



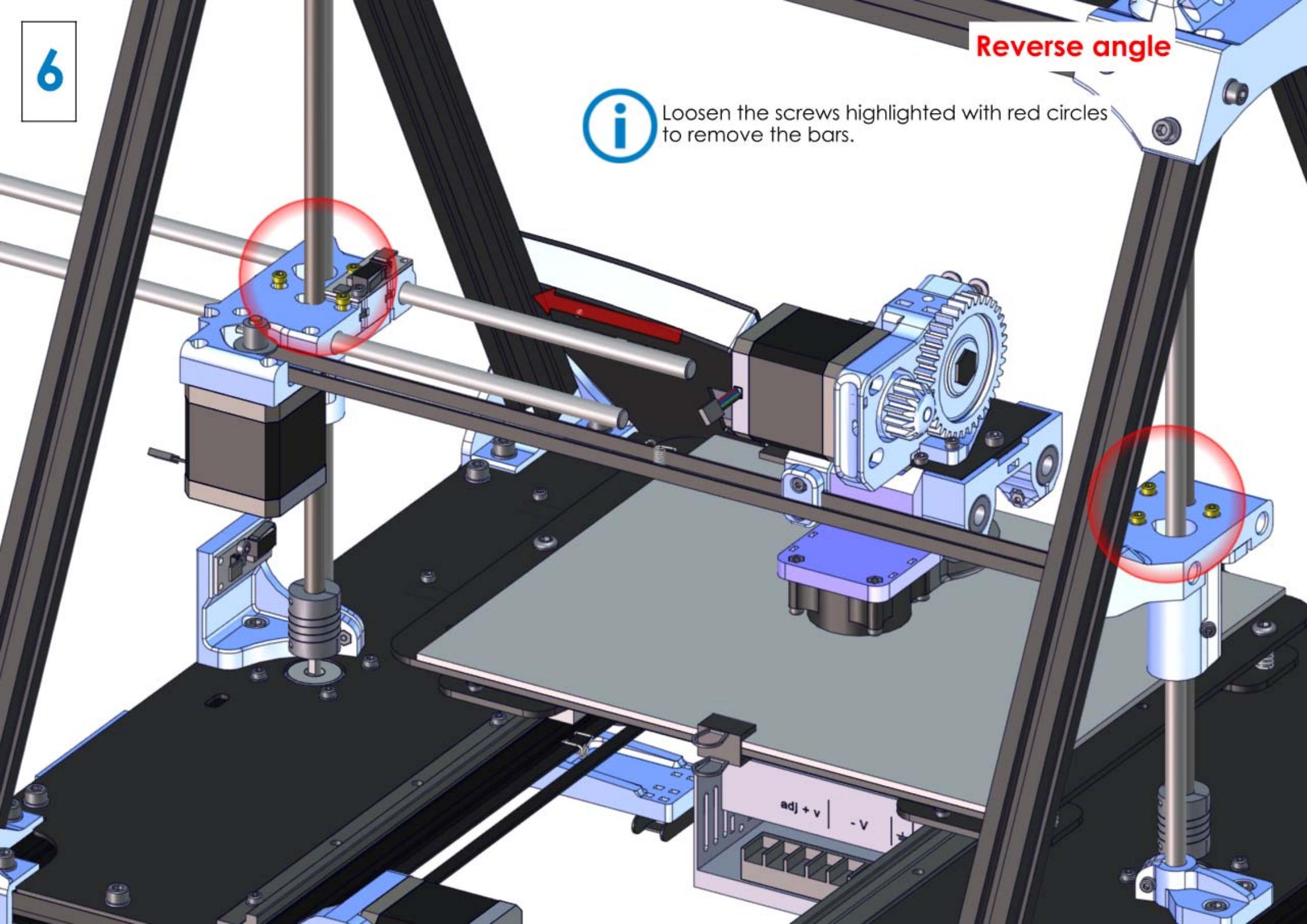


5

6

**Reverse angle**

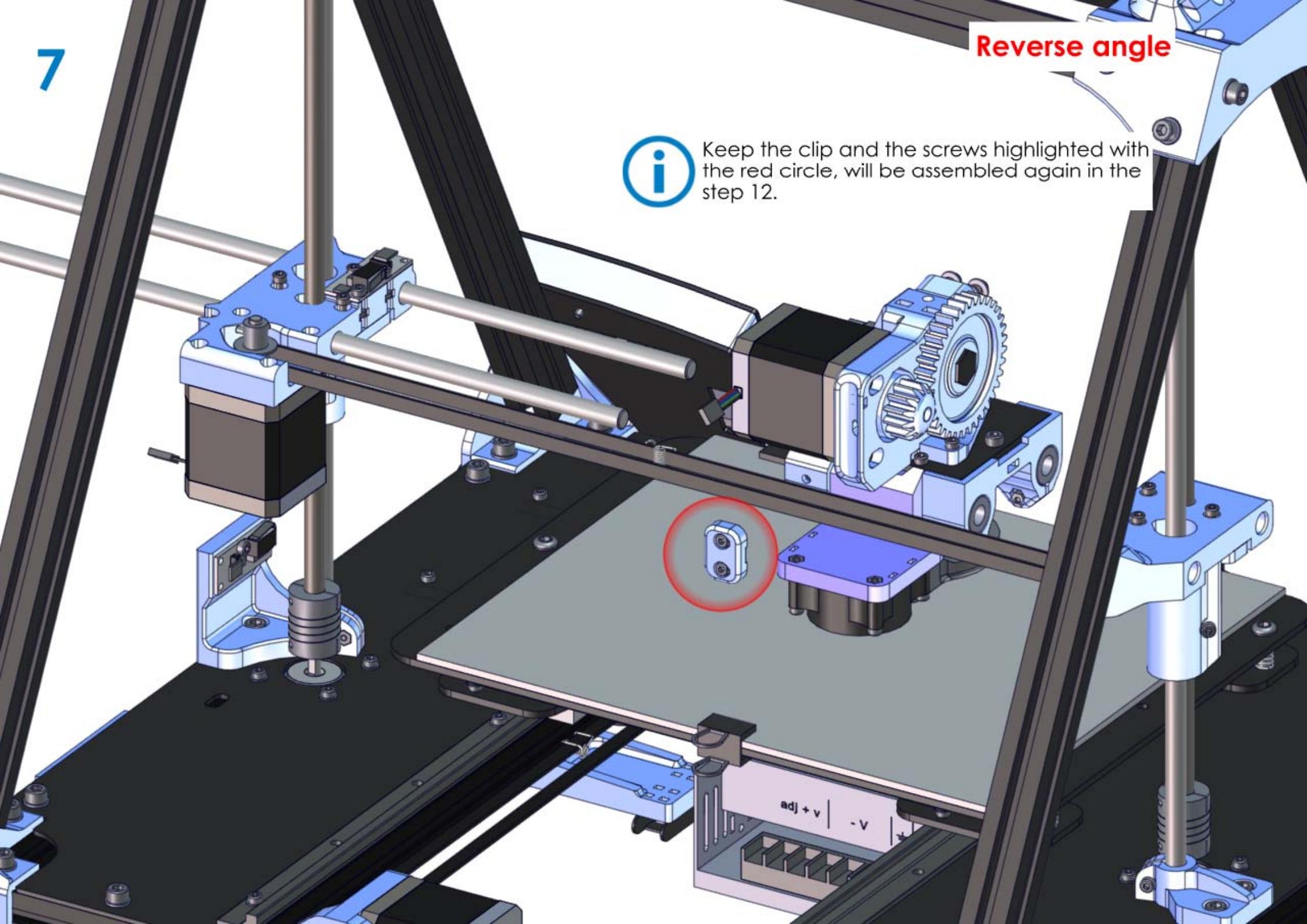
Loosen the screws highlighted with red circles to remove the bars.



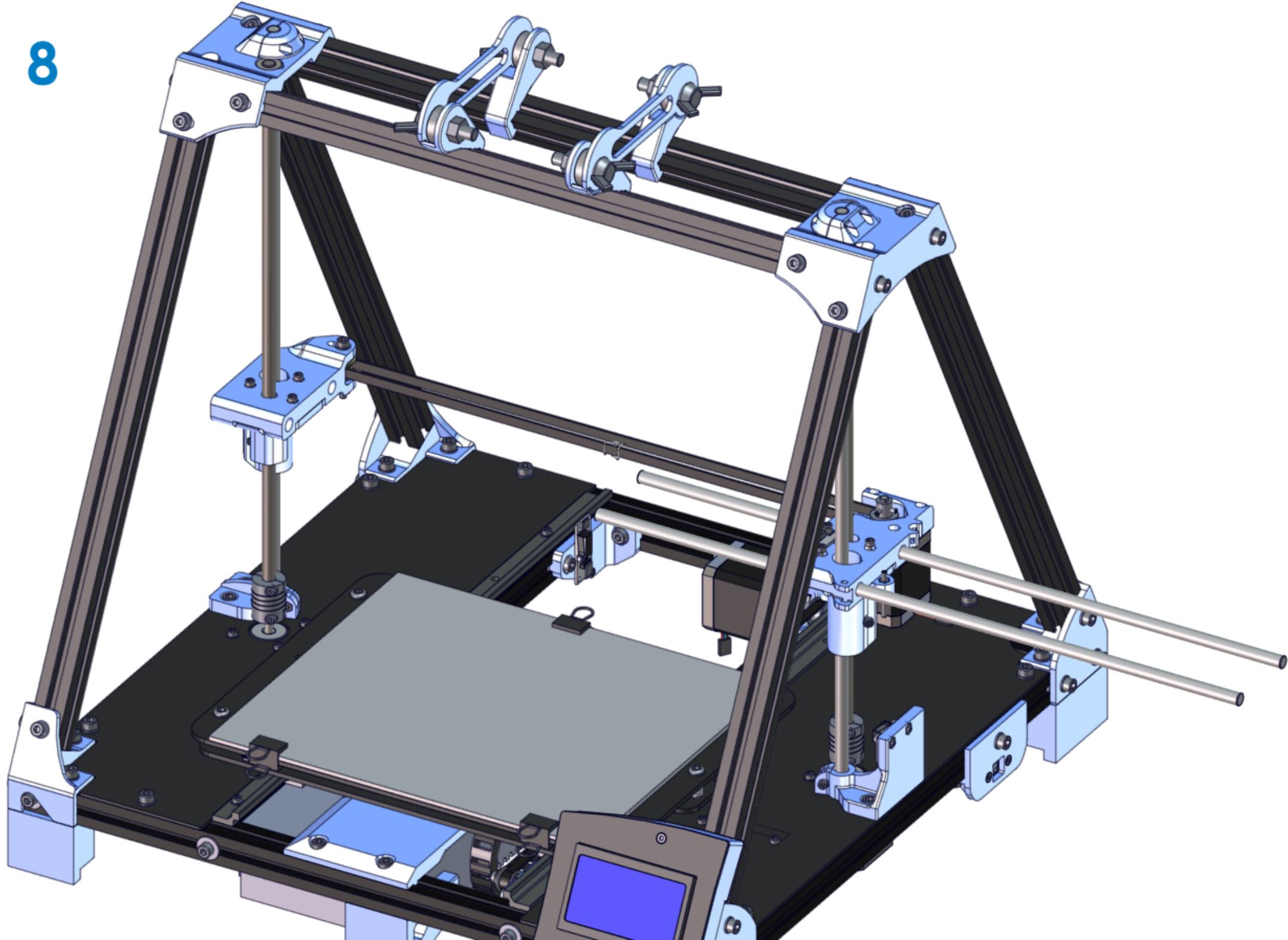
7

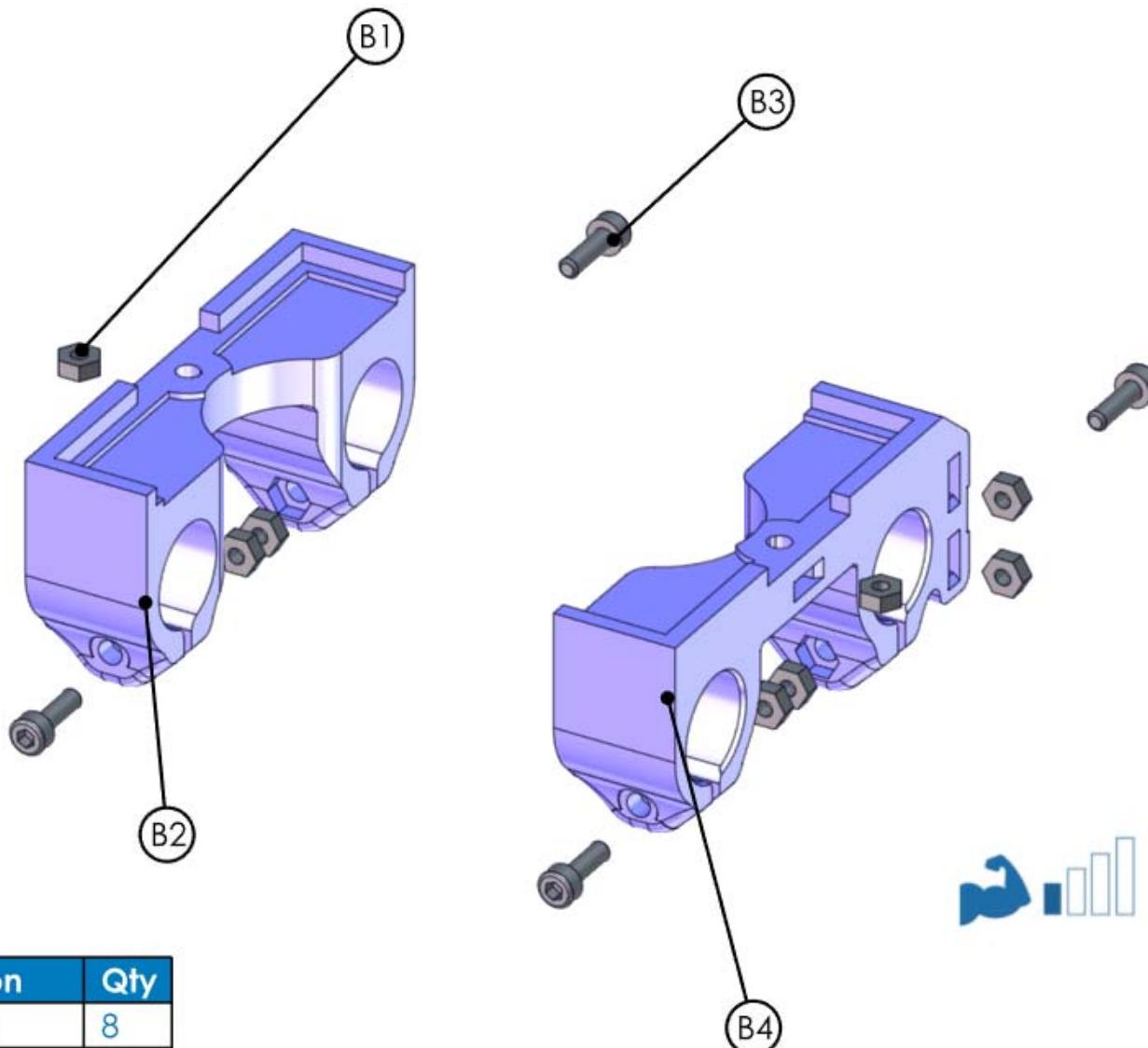
**Reverse angle**

Keep the clip and the screws highlighted with the red circle, will be assembled again in the step 12.



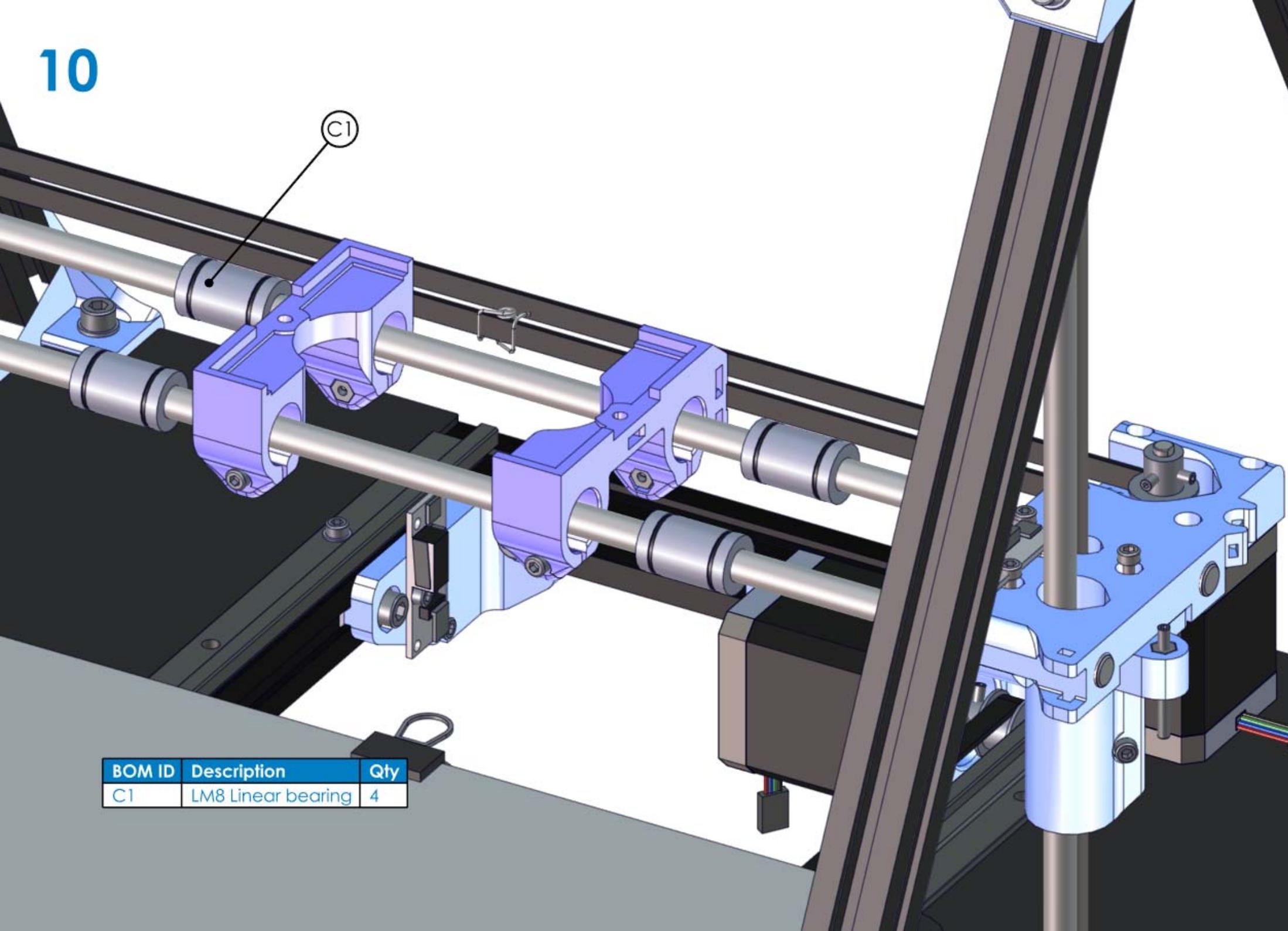
8





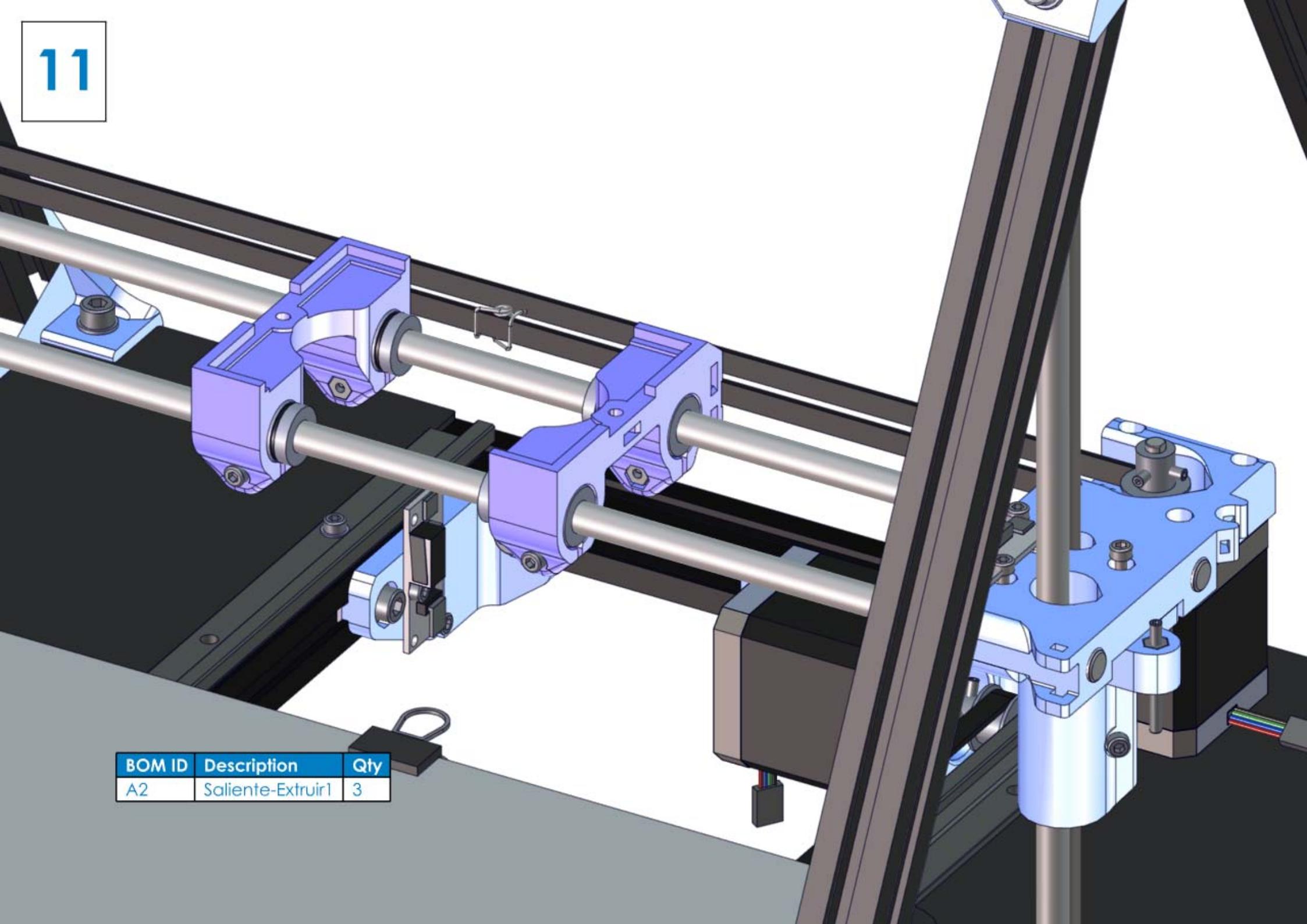
| BOM ID | Description    | Qty |
|--------|----------------|-----|
| B1     | DIN934 M       | 8   |
| B2     | Left carriage  | 1   |
| B3     | DIN912 M3x12   | 4   |
| B4     | Right carriage | 1   |

10



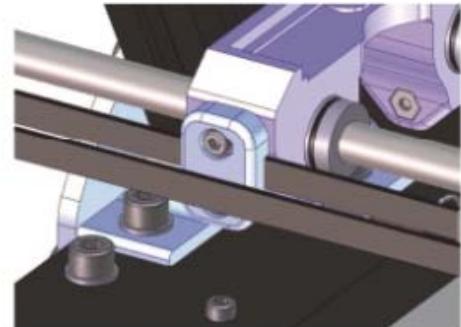
| BOM ID | Description        | Qty |
|--------|--------------------|-----|
| C1     | LM8 Linear bearing | 4   |

11



| BOM ID | Description       | Qty |
|--------|-------------------|-----|
| A2     | Saliente-Extruir1 | 3   |

12



The yellow icon indicates that the part is the same as it was previously assembled.

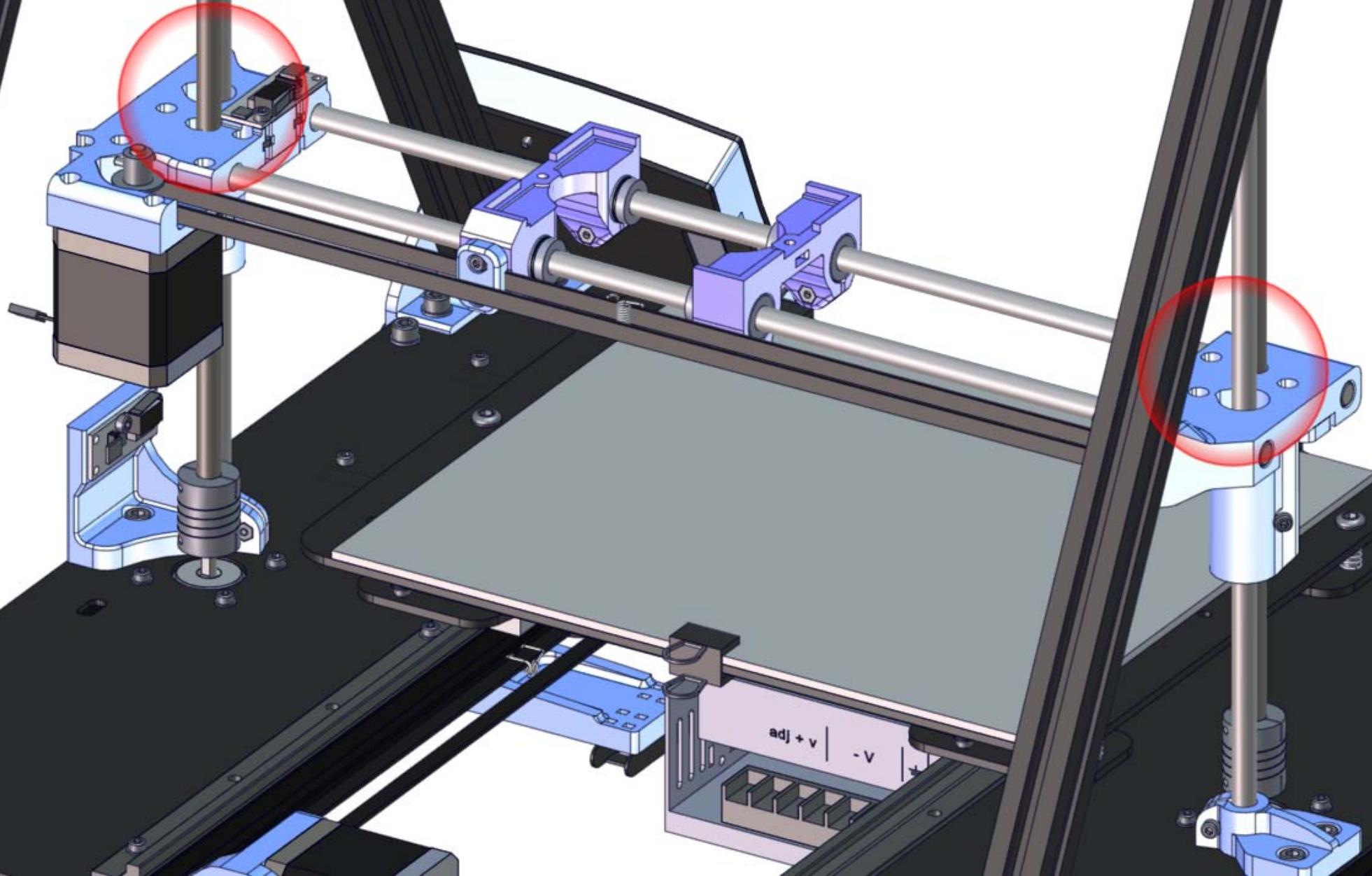
D1

D2

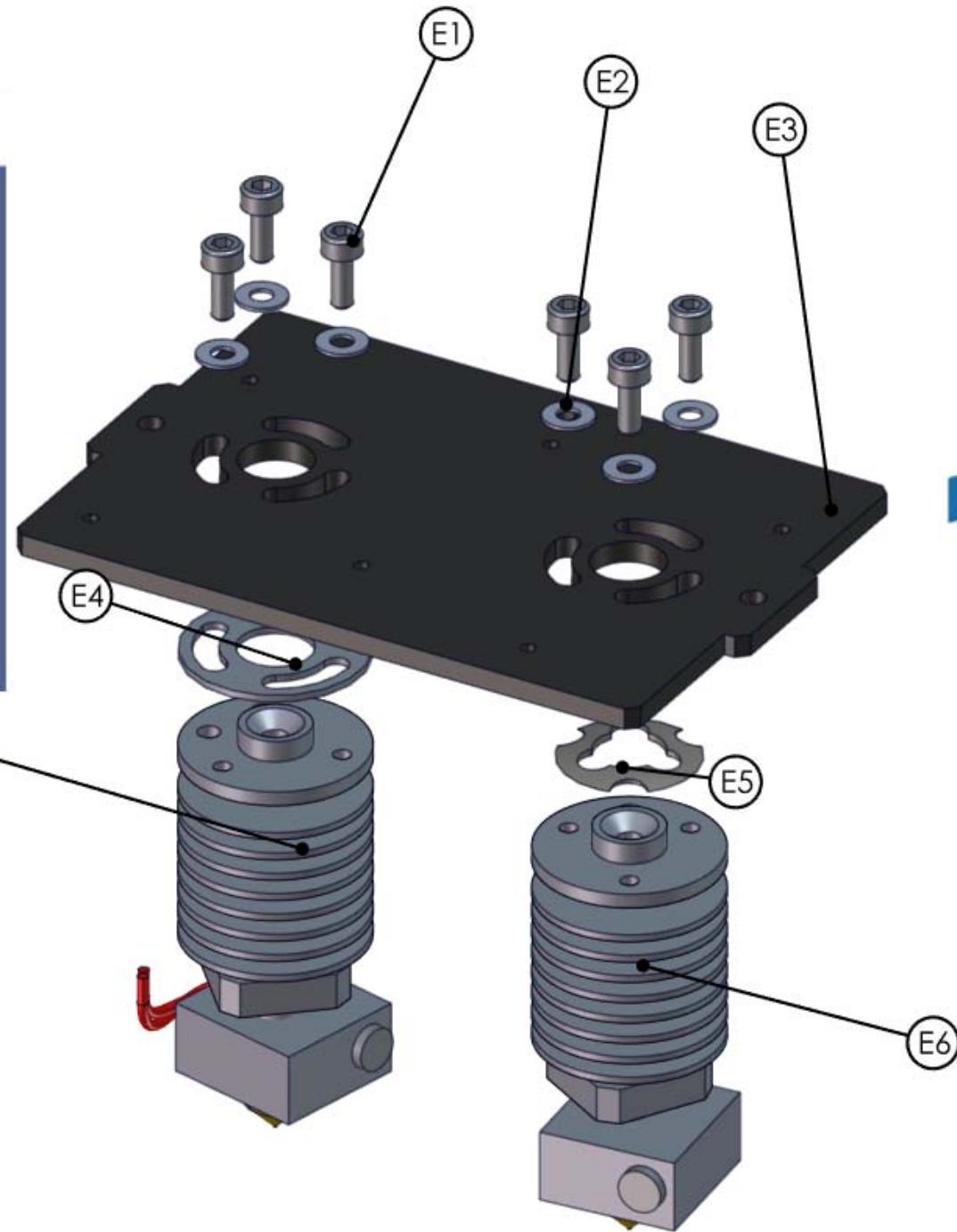
| BOM ID | Description  | Qty |
|--------|--------------|-----|
| D1     | DIN912 M3x10 | 2   |
| D2     | Belt clamp   | 1   |

13

Reverse Angle

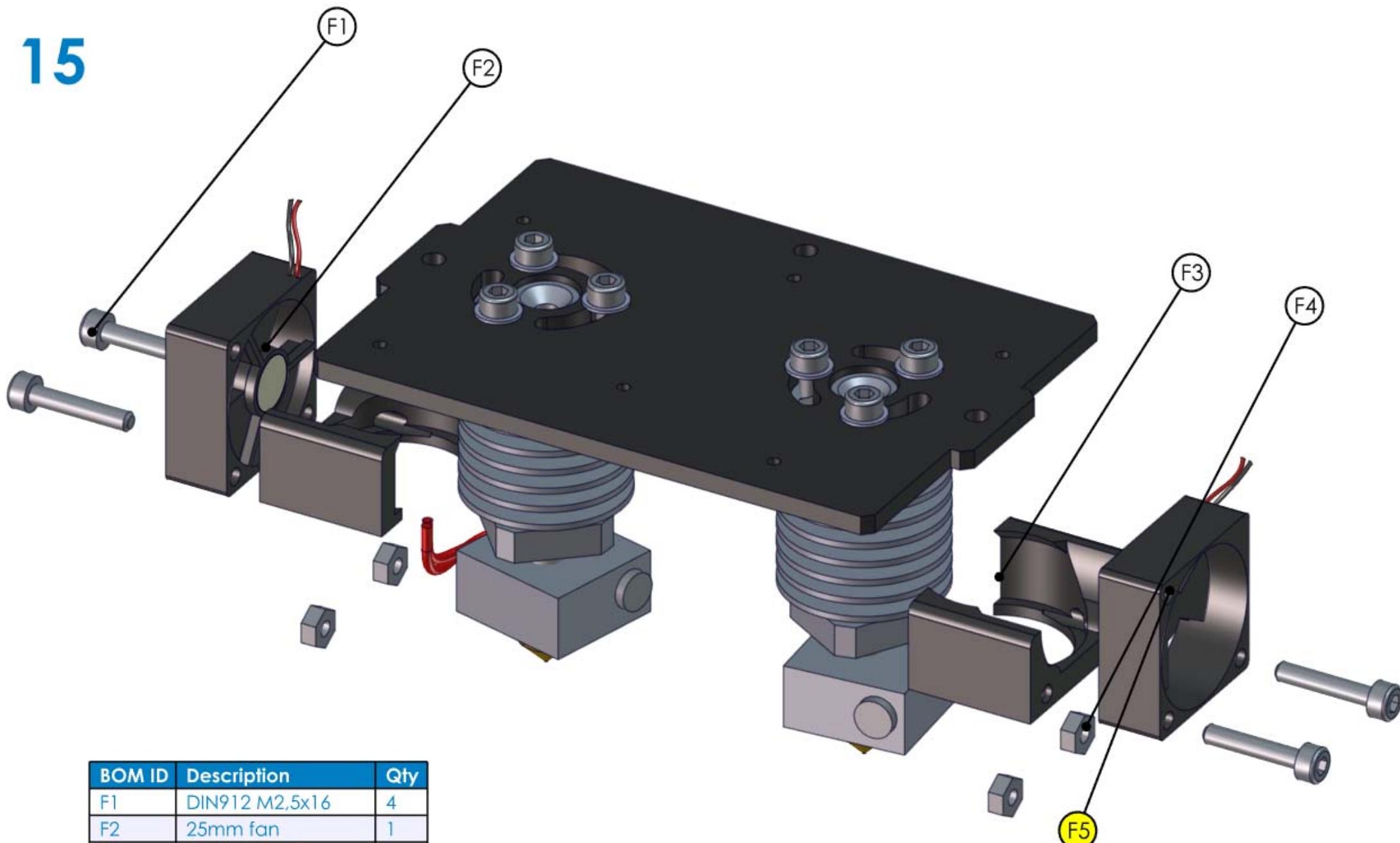


14



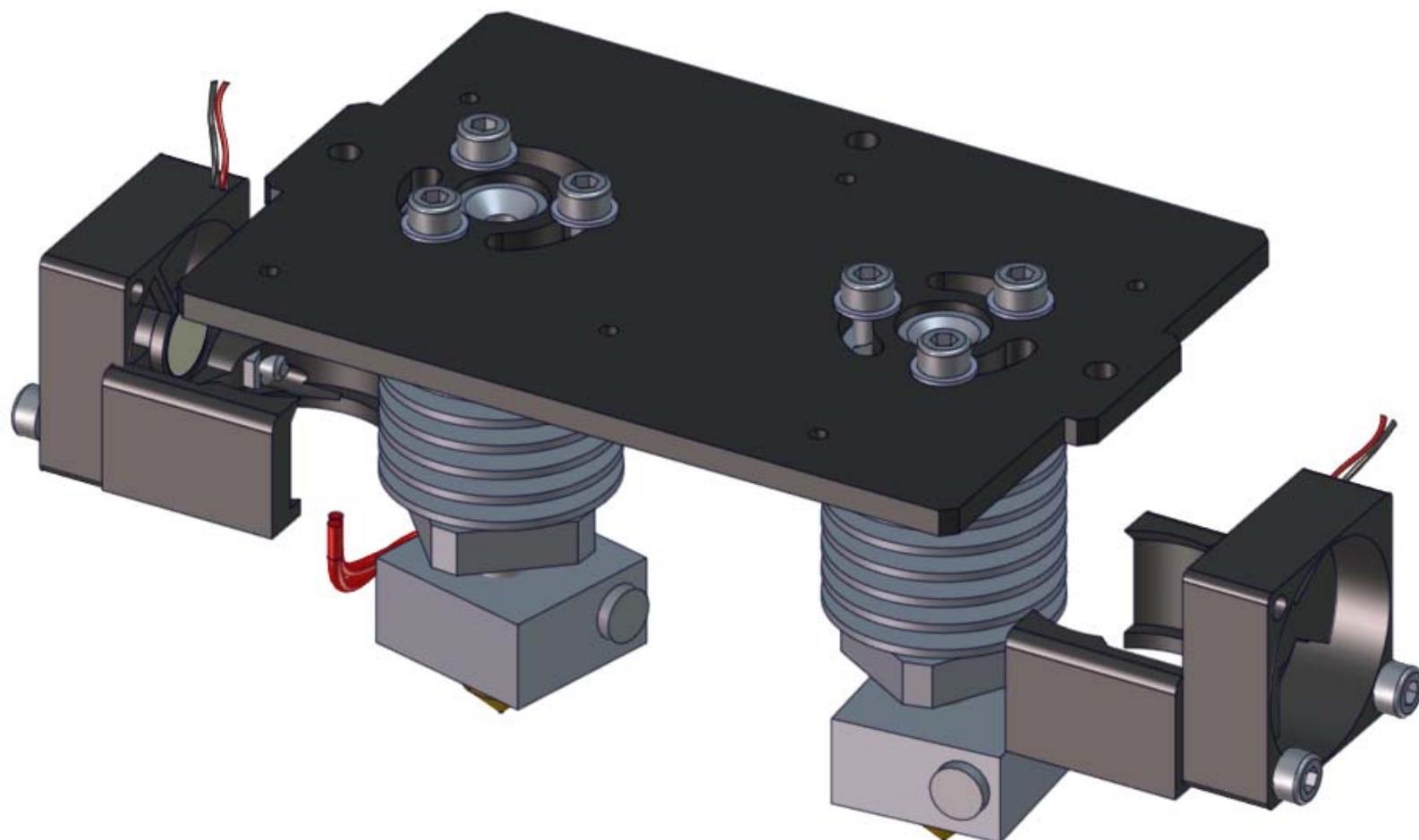
| BOM ID | Description    | Qty |
|--------|----------------|-----|
| E1     | DIN912 M3x8    | 6   |
| E2     | DIN125 M3      | 6   |
| E3     | Carriage Sheet | 1   |
| E4     | Spacer         | 1   |
| E5     | BC0750022S     | 1   |
| E6     | BCNozzle       | 1   |
| E7     | BCNozzle       | 1   |

15

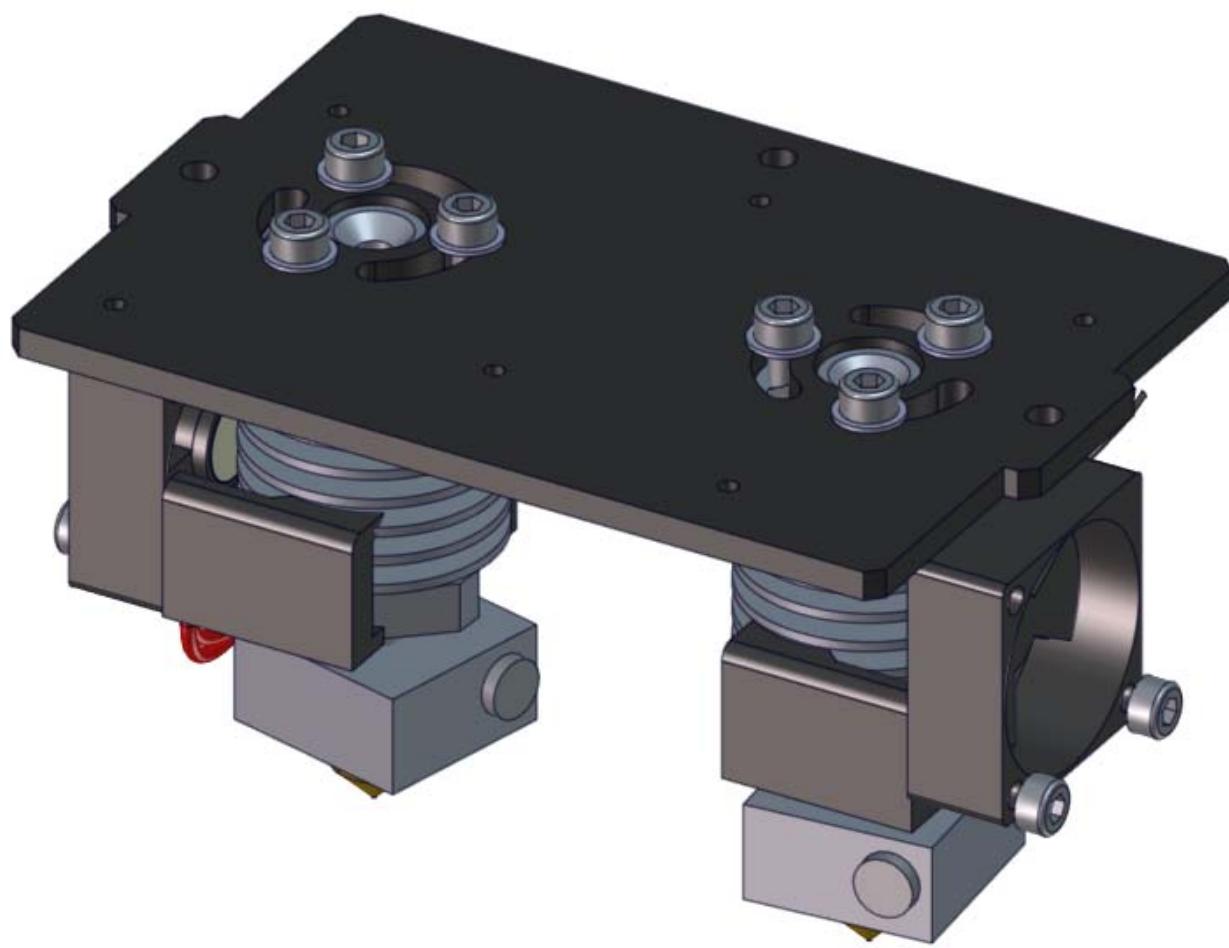


| BOM ID | Description        | Qty |
|--------|--------------------|-----|
| F1     | DIN912 M2,5x16     | 4   |
| F2     | 25mm fan           | 1   |
| F3     | Cooler Fan Support | 2   |
| F4     | DIN934 M2,5        | 4   |
| F5     | 25mm fan           | 1   |

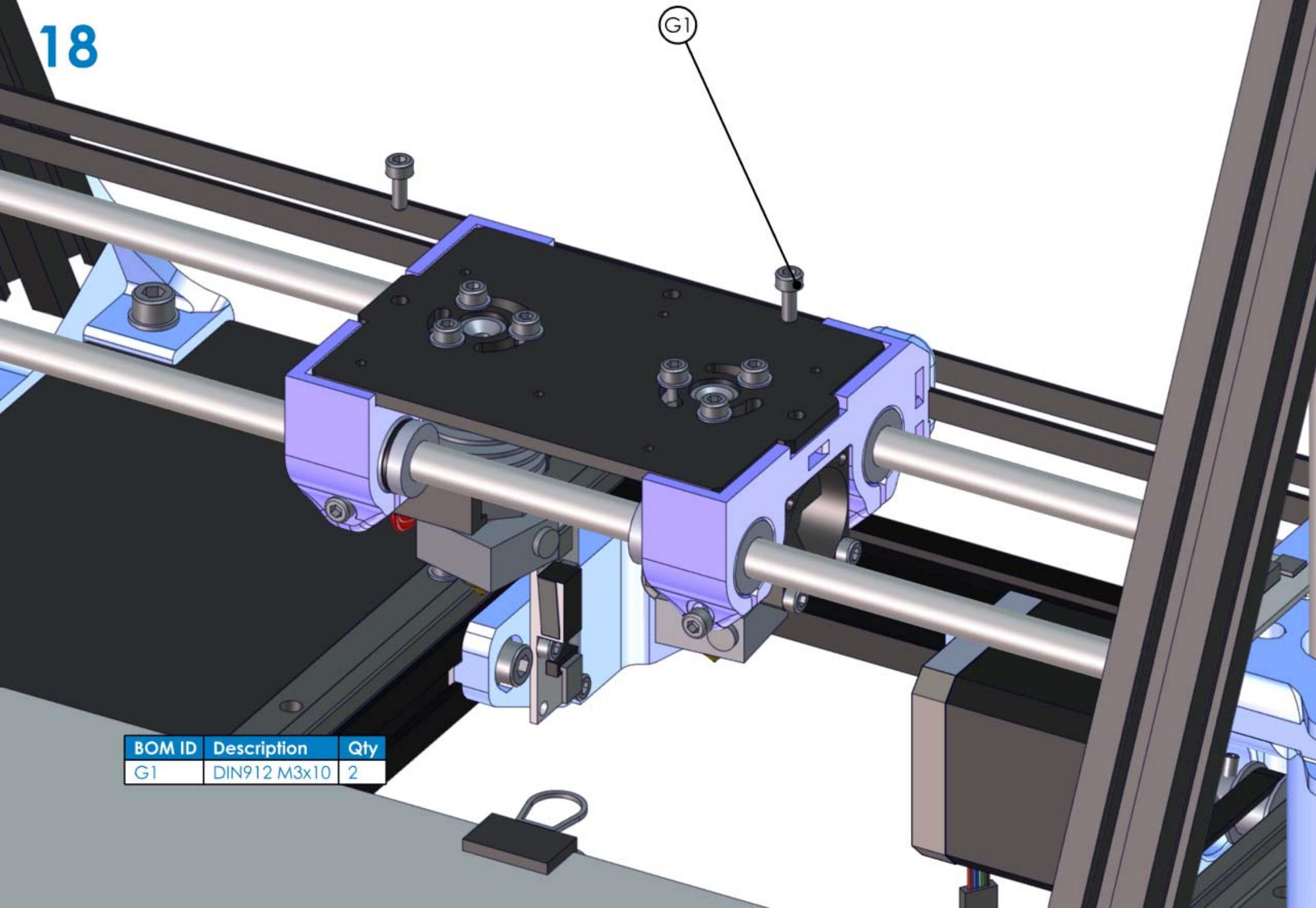
16



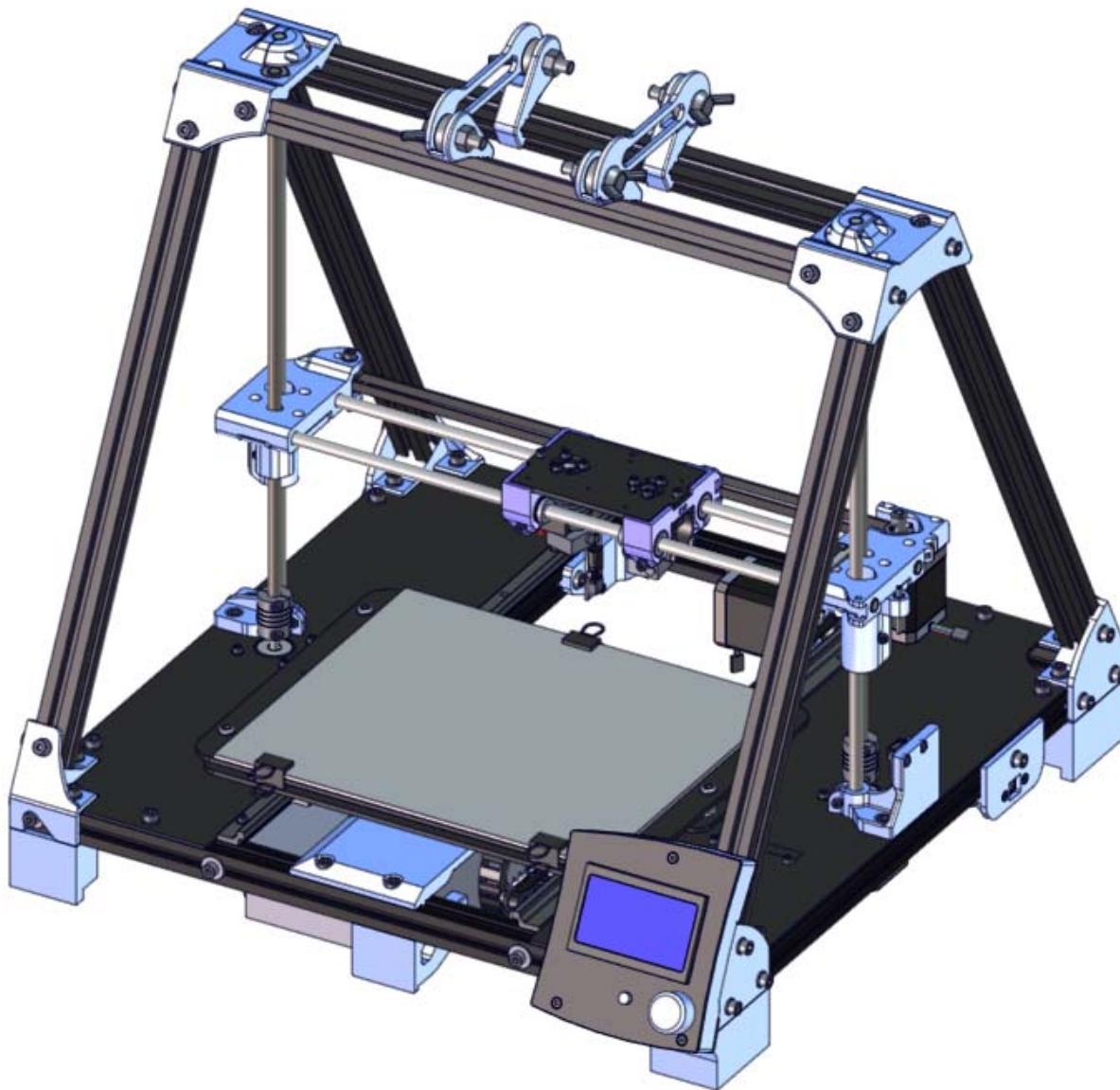
17



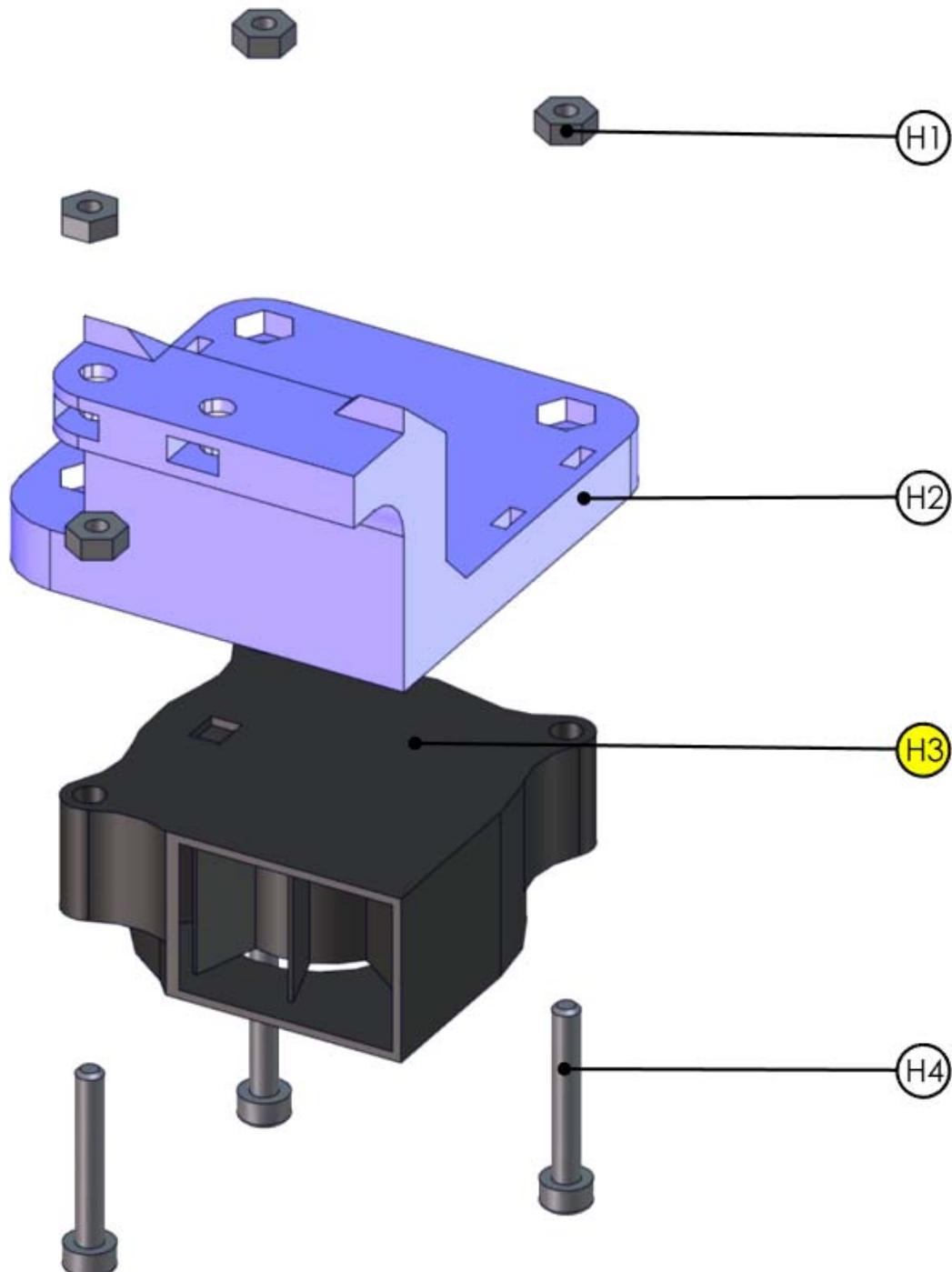
18



19

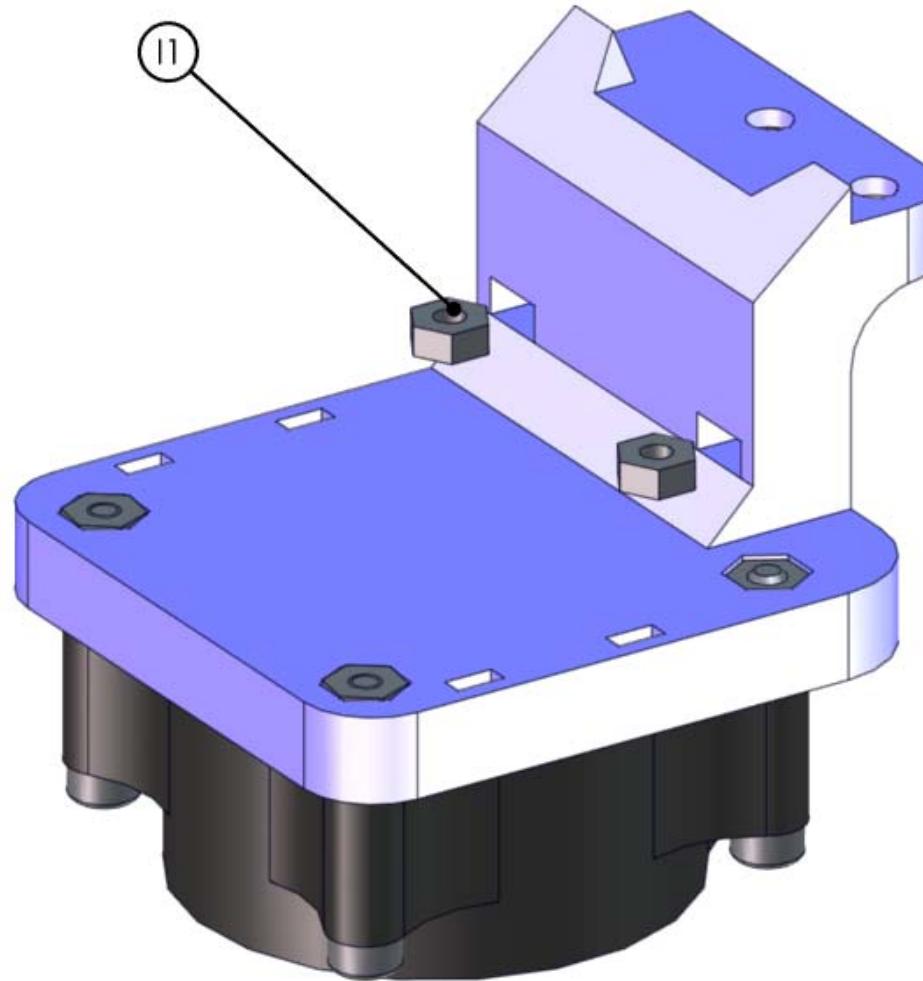


20



| BOM ID | Description          | Qty |
|--------|----------------------|-----|
| H1     | DIN934 M3            | 4   |
| H2     | Layer fan support    | 1   |
| H3     | Blower Fan 4020S 12V | 1   |
| H4     | DIN912 M3x2          | 3   |

21



| BOM ID | Description | Qty |
|--------|-------------|-----|
| I1     | DIN934 M3   | 2   |

22

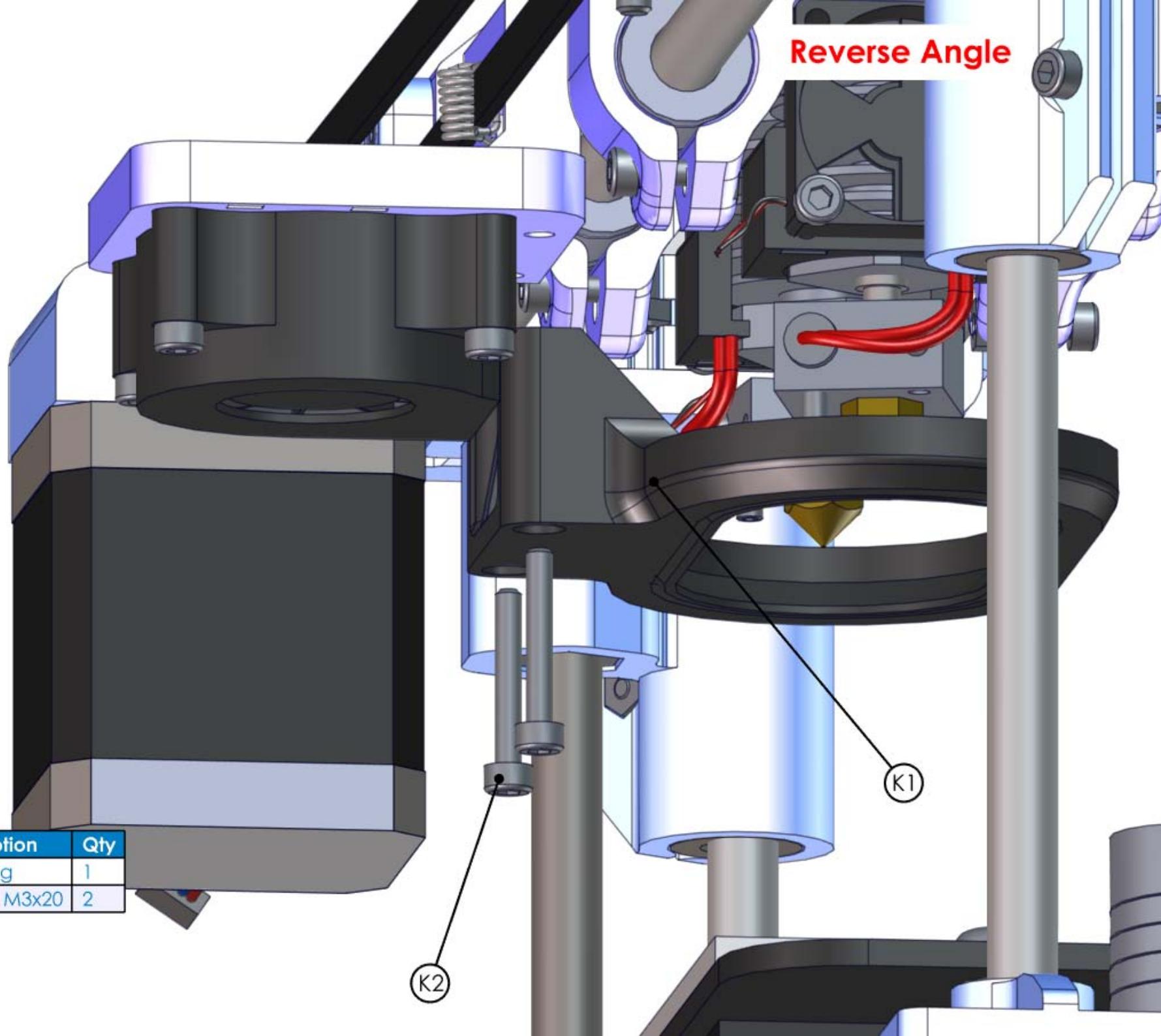
Reverse Angle

J1

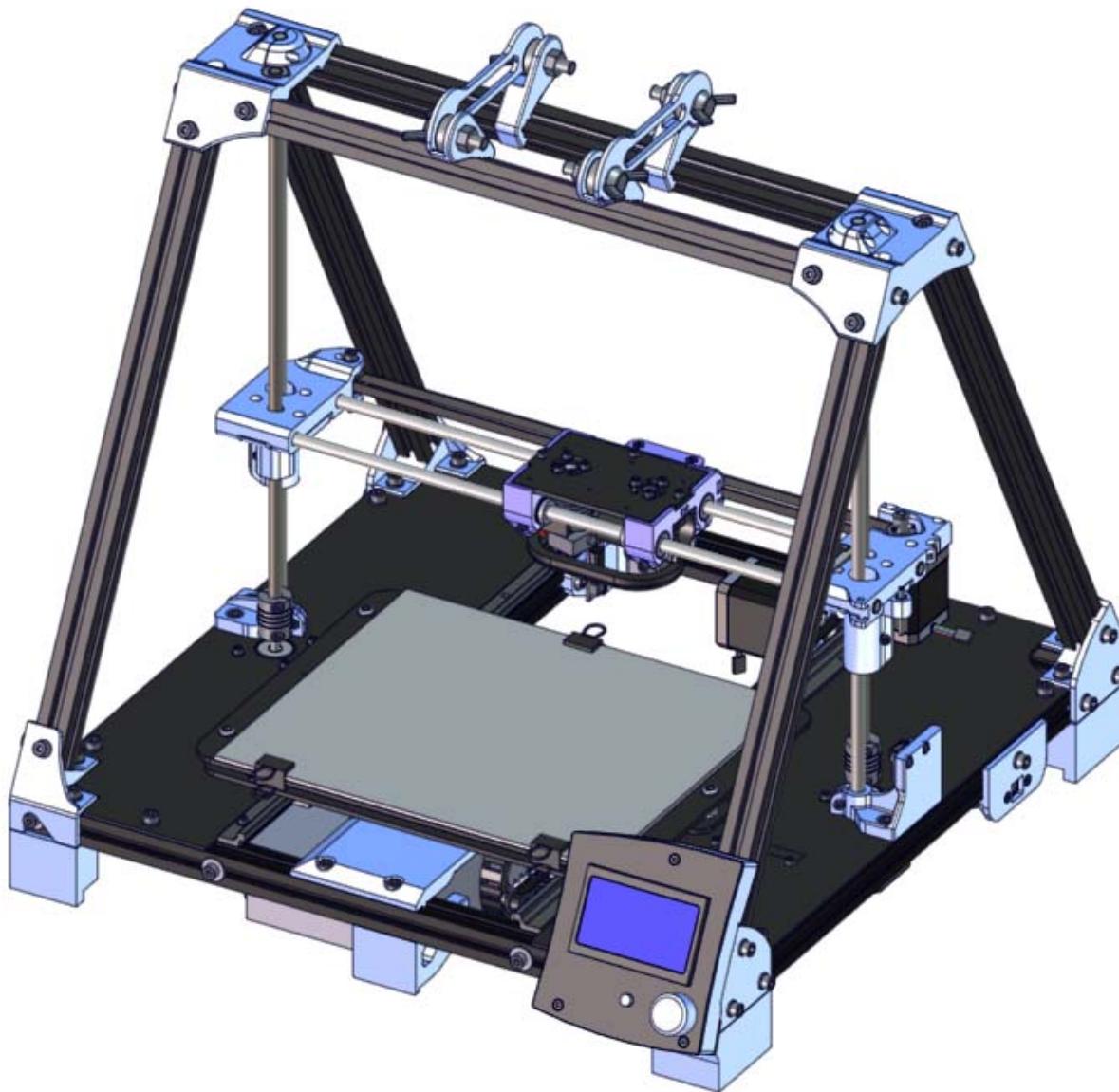
| BOM ID | Description  | Qty |
|--------|--------------|-----|
| J1     | DIN912 M3x10 | 1   |

23

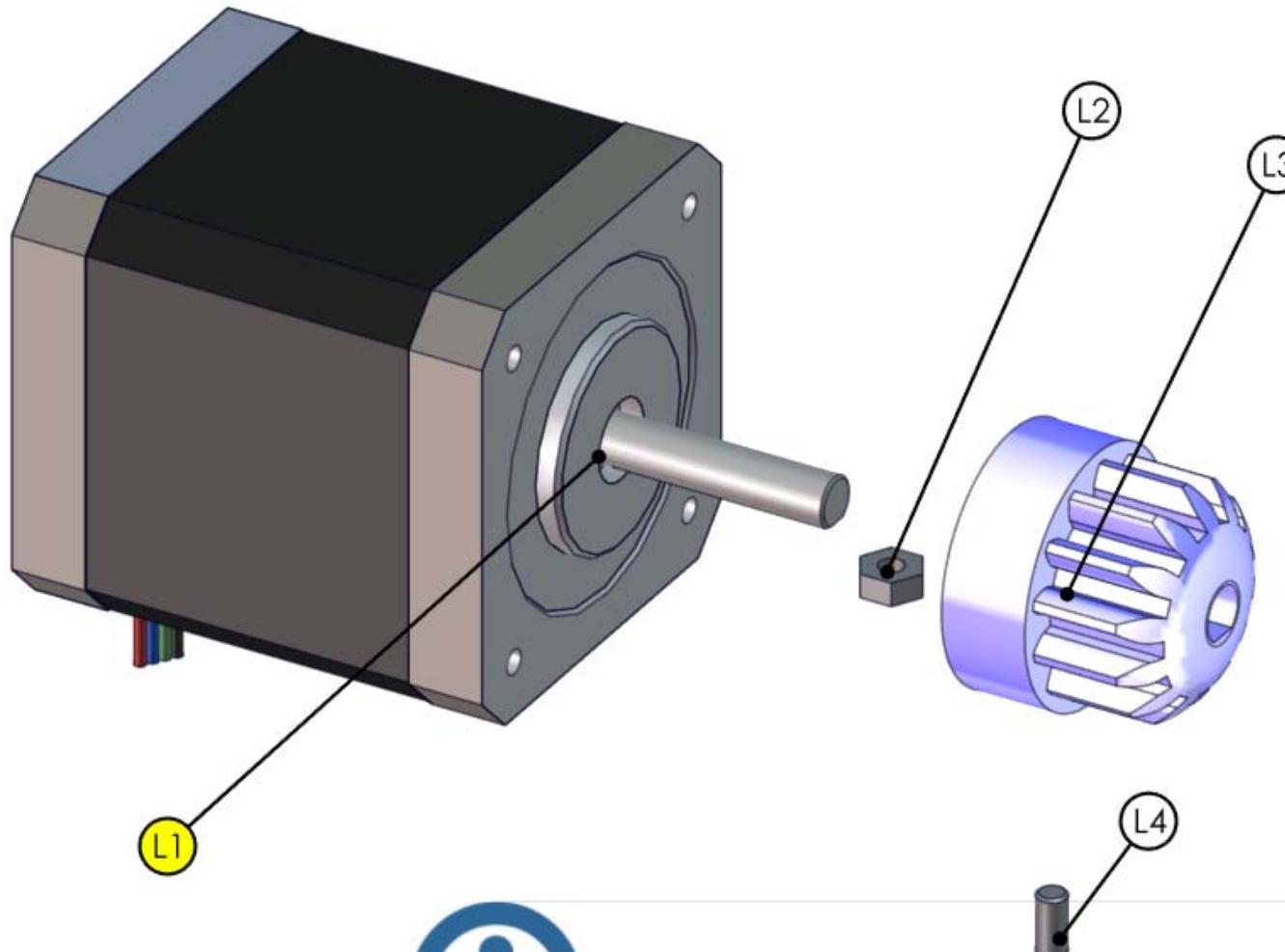
Reverse Angle



24

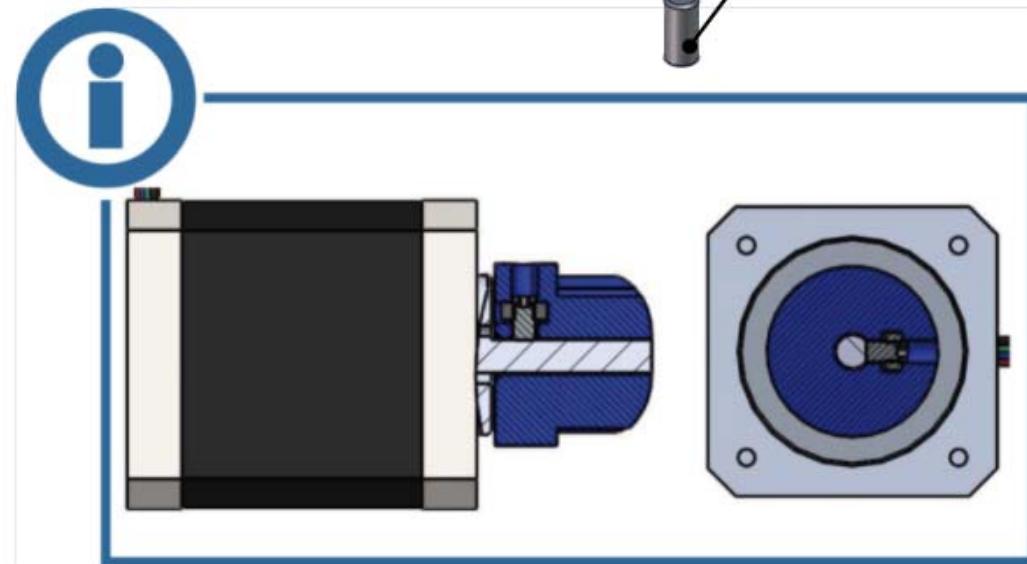


25

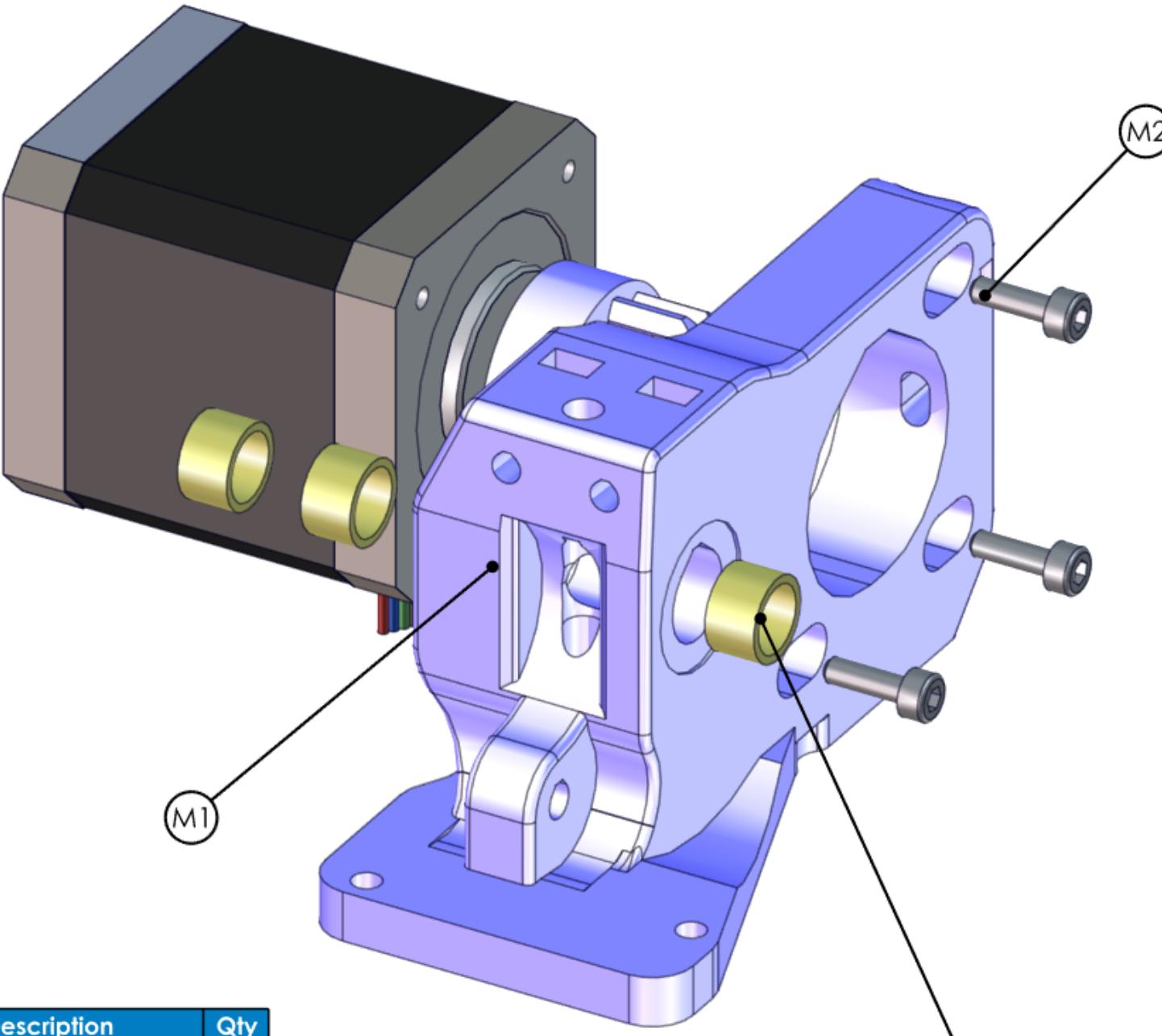


x2

| BOM ID | Description | Qty |
|--------|-------------|-----|
| L1     | Motor       | 1   |
| L2     | DIN934 M3   | 1   |
| L3     | Small gear  | 1   |
| L4     | DIN913 M3x6 | 1   |



26

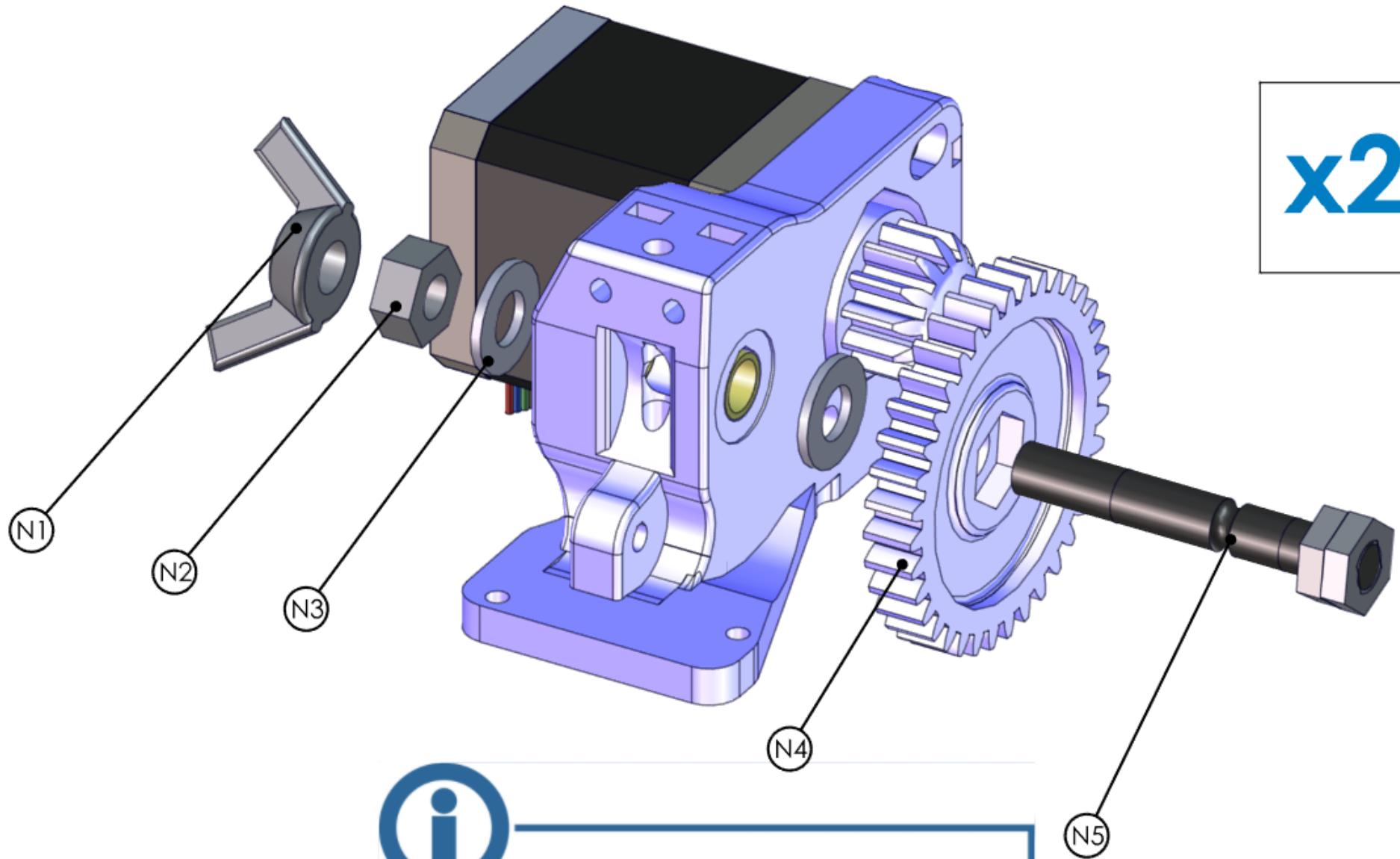


x2

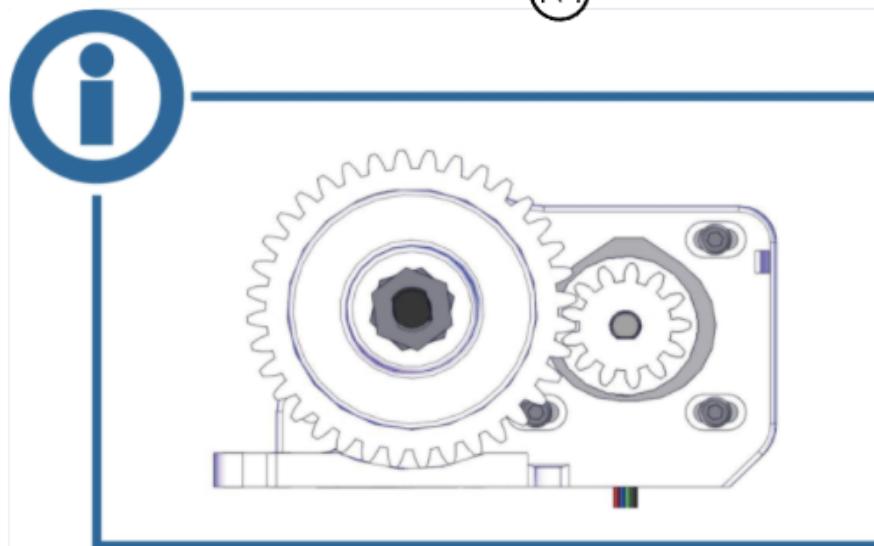
| BOM ID | Description        | Qty |
|--------|--------------------|-----|
| M1     | Extruder Body Left | 1   |
| M2     | DIN912 M3x10       | 3   |
| M3     | Bushing            | 3   |

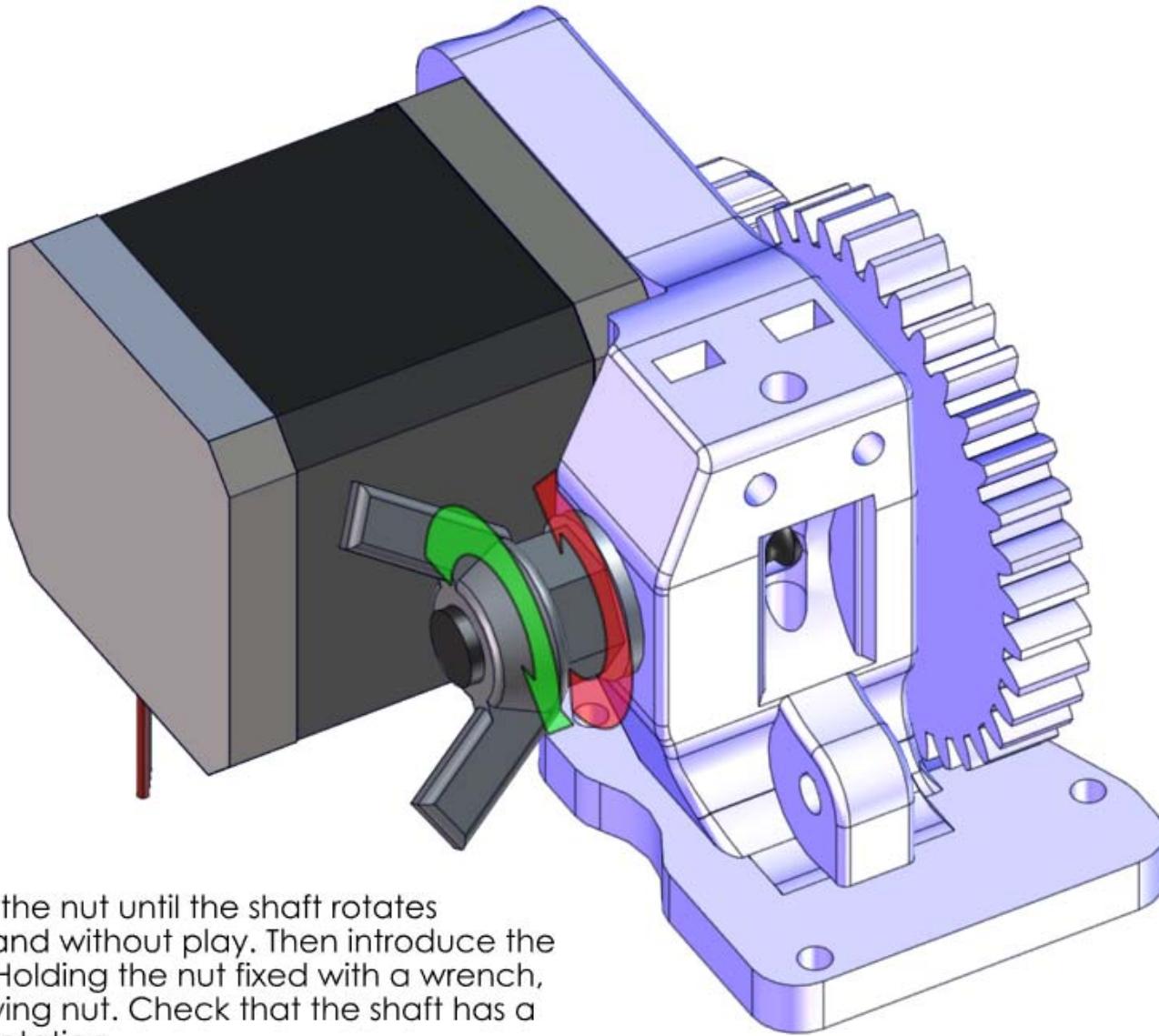
27

x2



| BOM ID | Description               | Qty |
|--------|---------------------------|-----|
| N1     | DIN934 M8 Butterfly screw | 1   |
| N2     | DIN934 M8                 | 1   |
| N3     | DIN125 M8                 | 2   |
| N4     | Large gear                | 1   |
| N5     | Hobbed Bolt               | 1   |

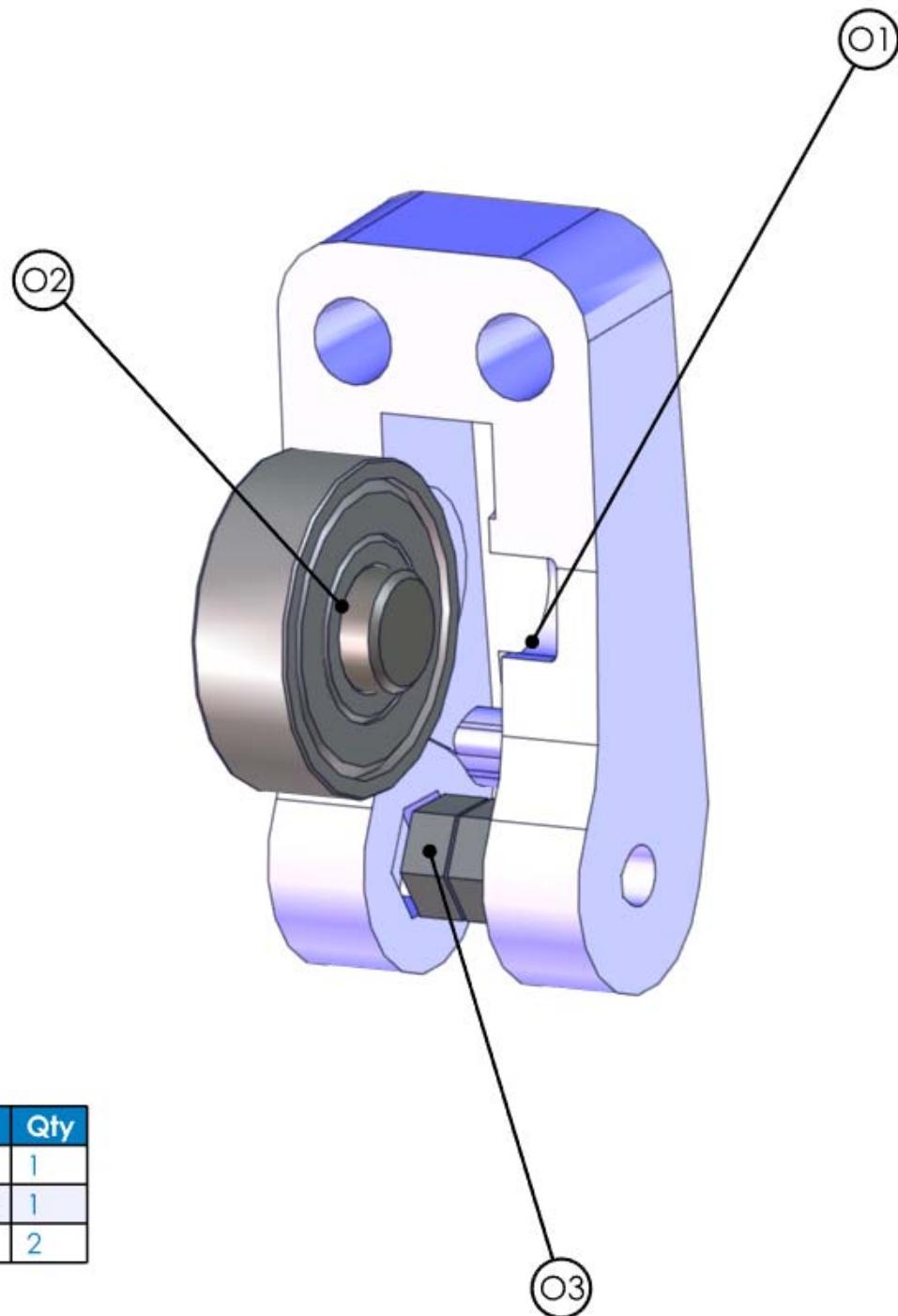




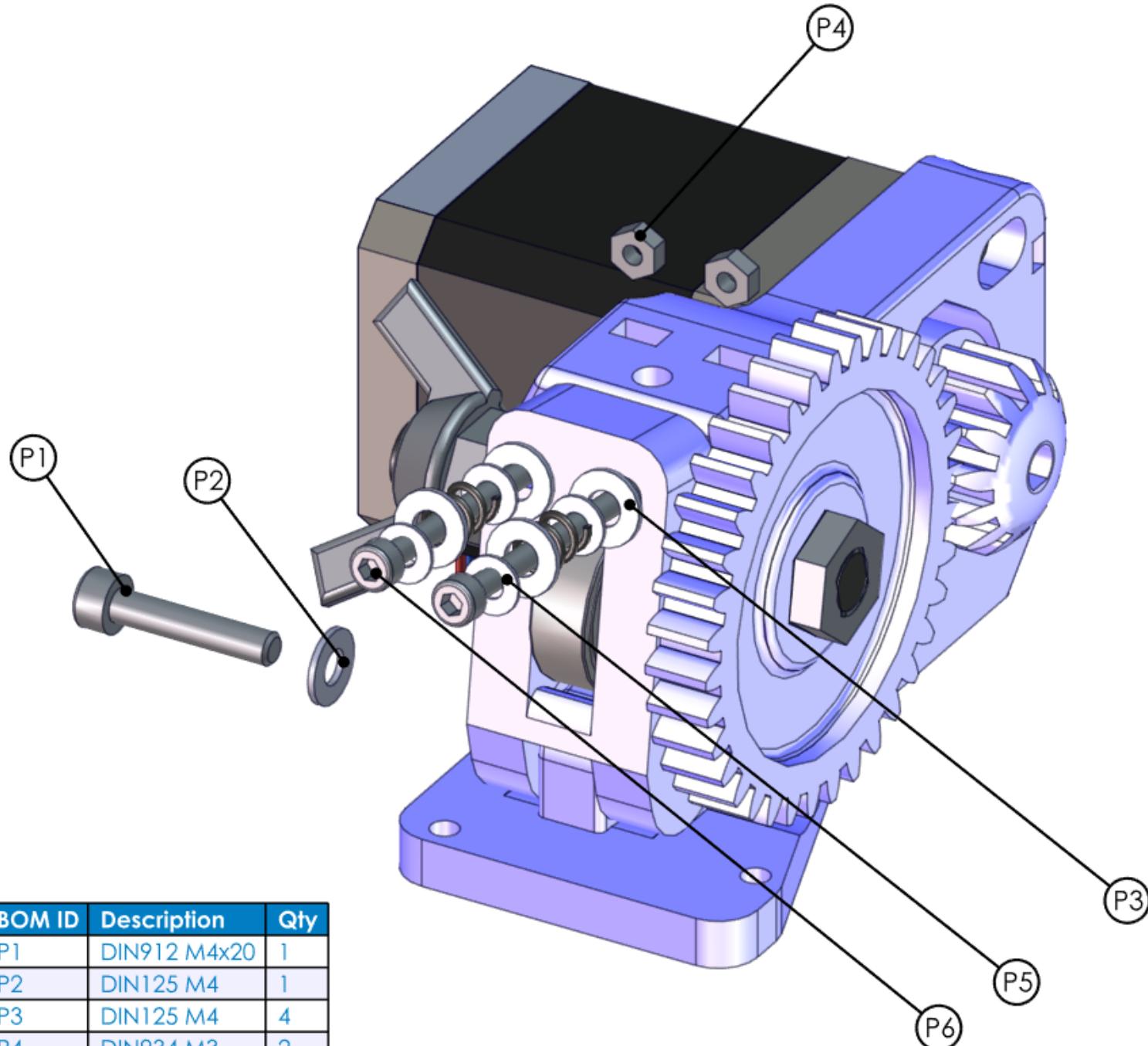
Introduce the nut until the shaft rotates smoothly and without play. Then introduce the wing nut. Holding the nut fixed with a wrench, tight the wing nut. Check that the shaft has a smoothly rotation.

29

x2

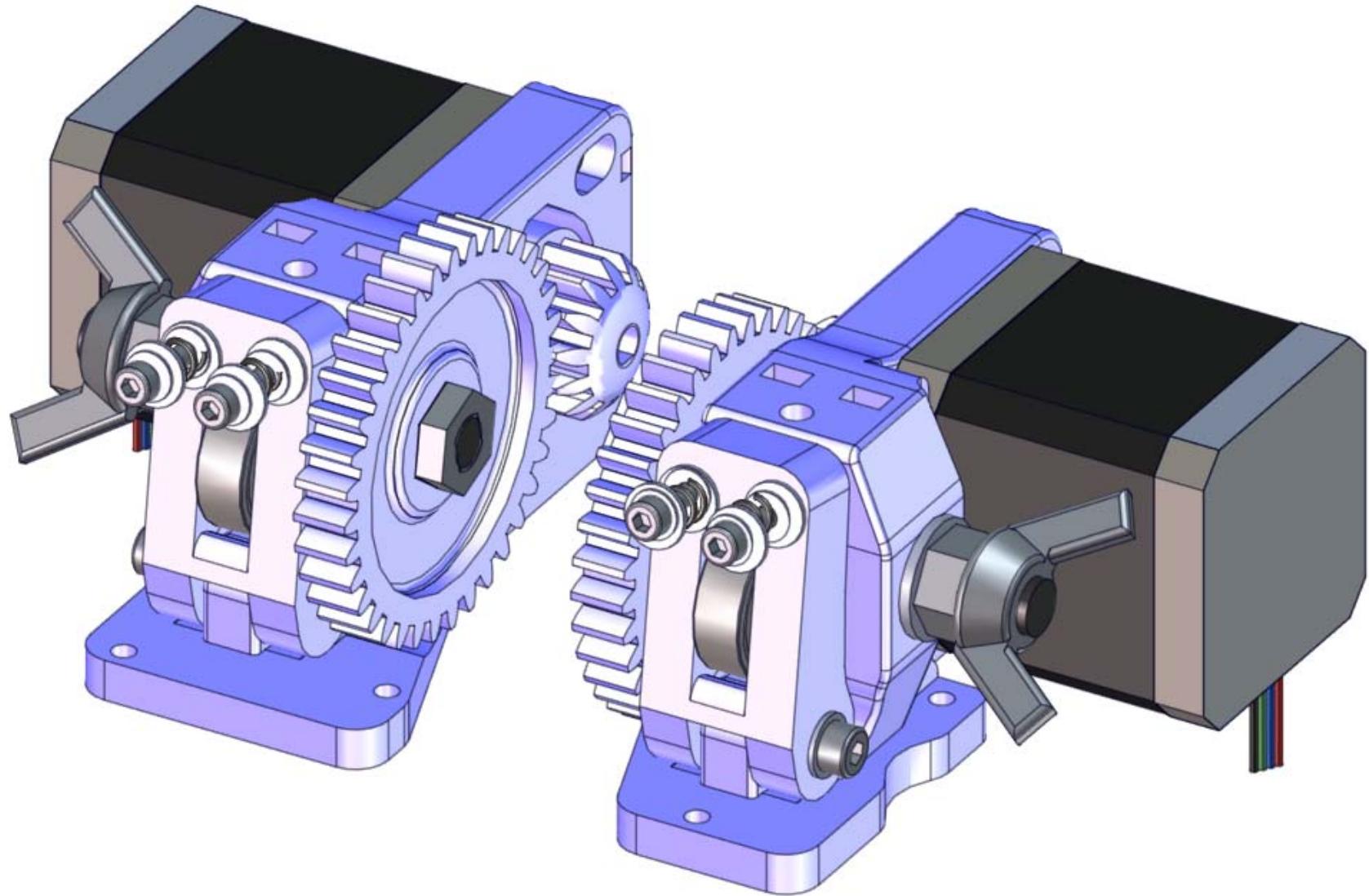


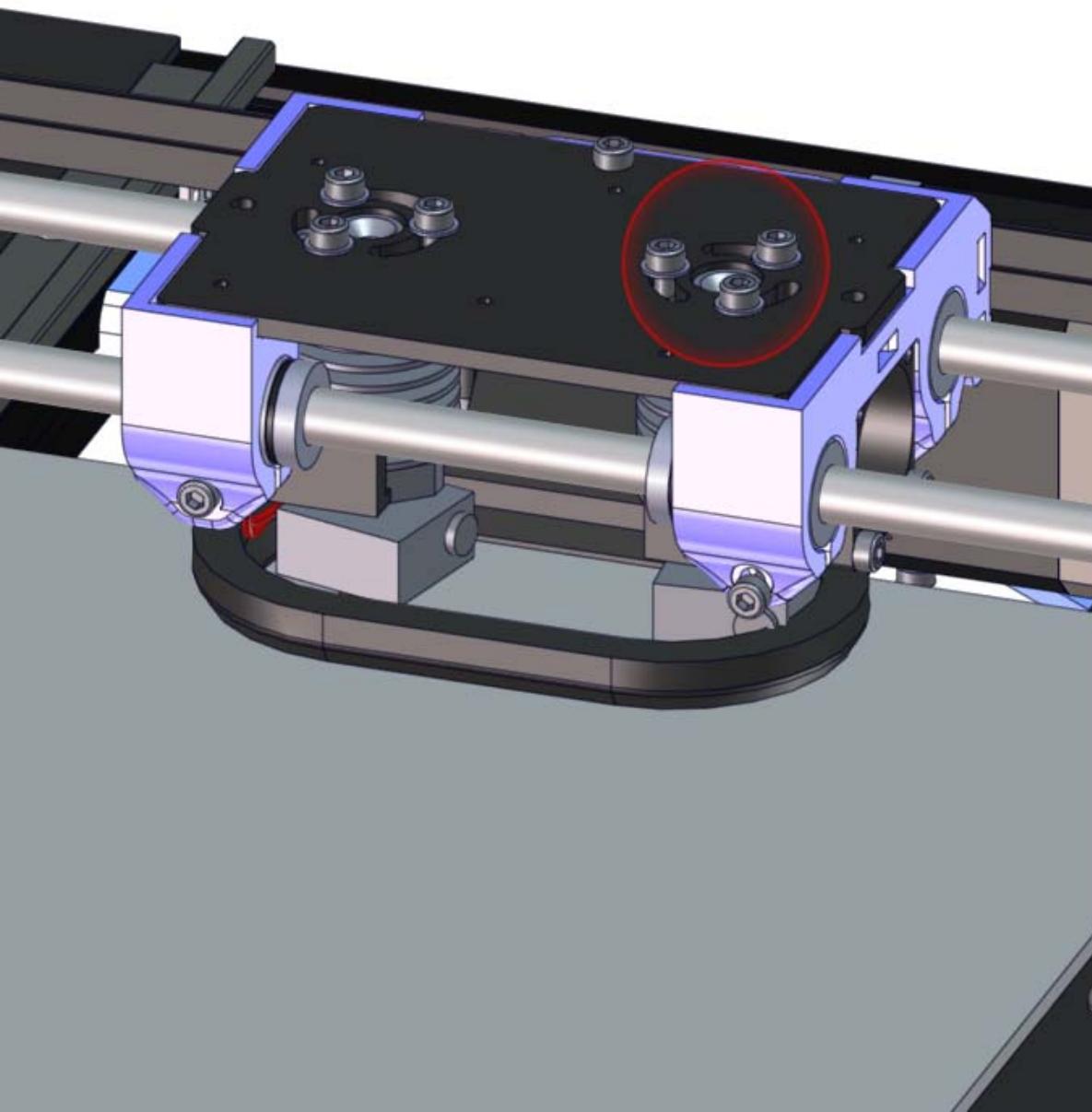
| BOM ID | Description          | Qty |
|--------|----------------------|-----|
| O1     | Extruder idler       | 1   |
| O2     | 608ZZ Radial bearing | 1   |
| O3     | DIN934 M4            | 2   |



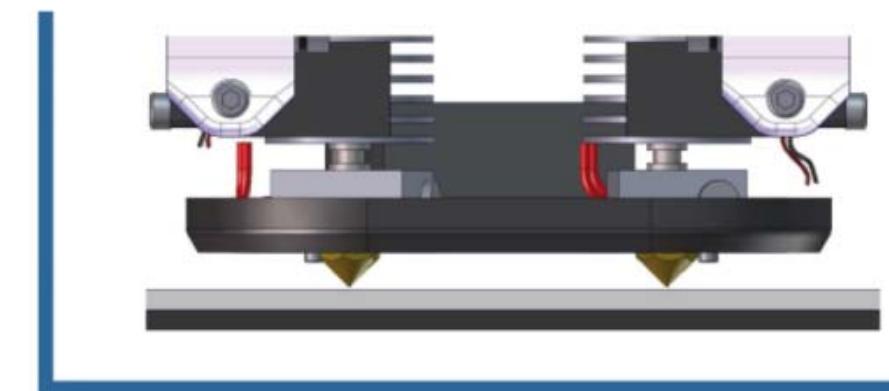
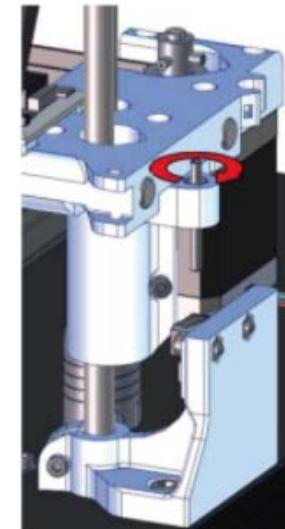
| BOM ID | Description  | Qty |
|--------|--------------|-----|
| P1     | DIN912 M4x20 | 1   |
| P2     | DIN125 M4    | 1   |
| P3     | DIN125 M4    | 4   |
| P4     | DIN934 M3    | 2   |
| P5     | DIN125 M3    | 4   |
| P6     | DIN912 M3x40 | 2   |

31

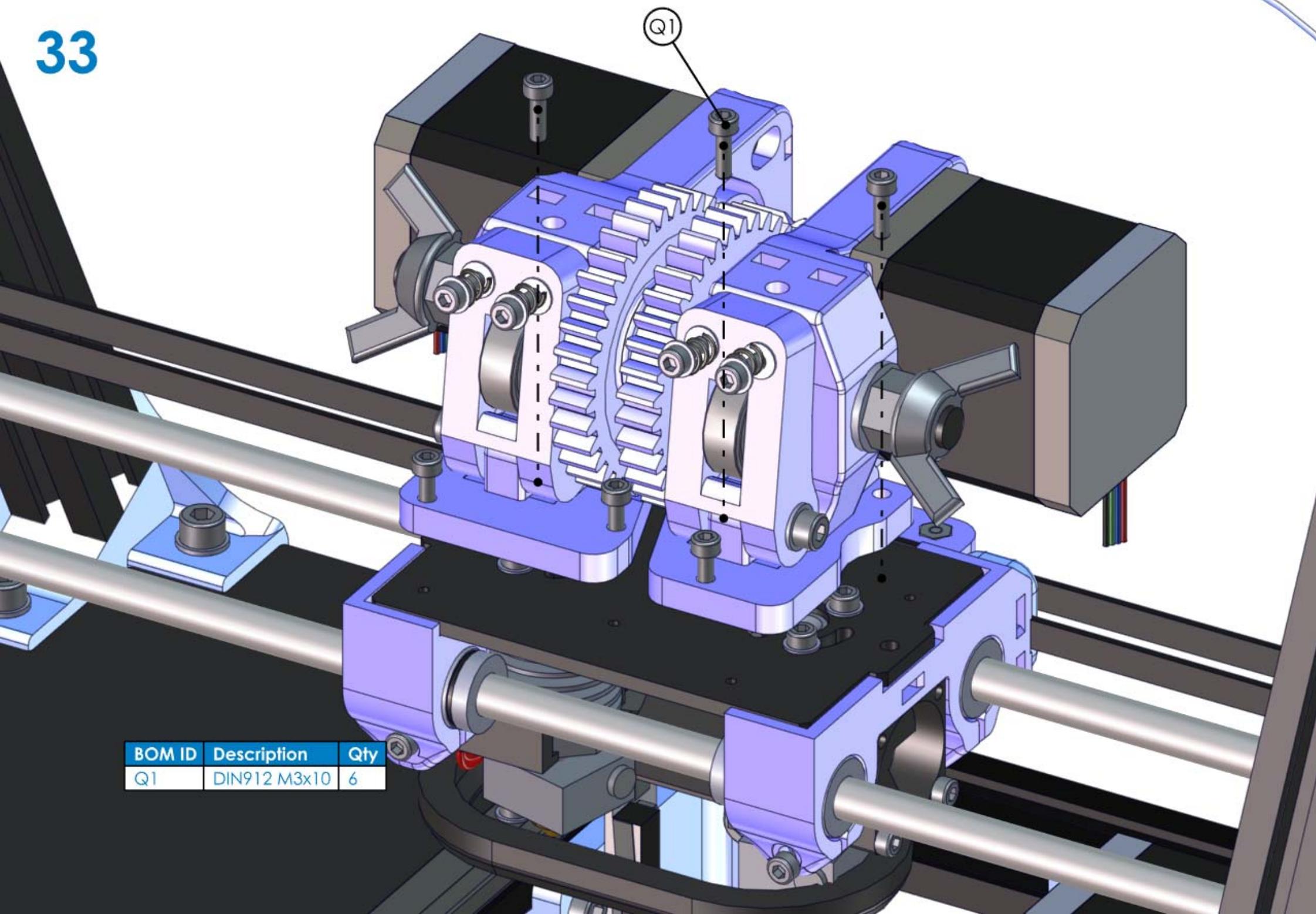




- 1) Be sure that the BCN3D+ is turned off.
- 2) Connect any of the two BCNozzle.
- 3) Give 2 full clockwise turns to the screw that drives the Z axis endstop.
- 4) Turn on the machine and make Auto Home (Menu -> Prepare -> Auto Home)
- 5) Refine the machine calibration taking as a reference the left nozzle.
- 6) Tighten or loosen the three screws holding the right BCNozzle with Carriage sheet (highlighted with the red circle) until you have the same distance between the glass and both nozzles.
- 7) Using a paper folded by the half, check that the distance between the glass and both nozzles is the same in different point of the base.
- 8) Disconnect the BCNozzle and turn off your BCN3D+

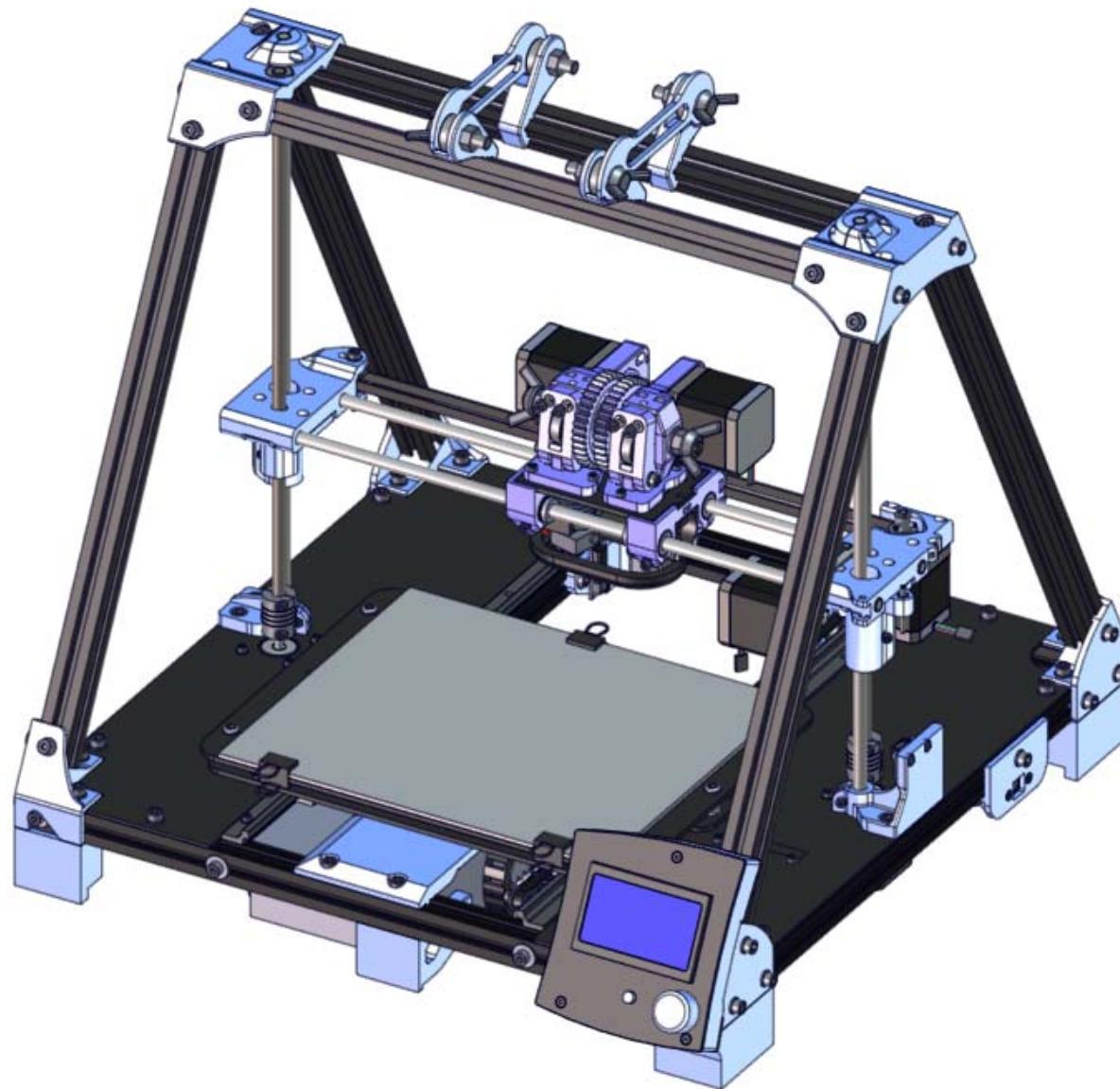


33



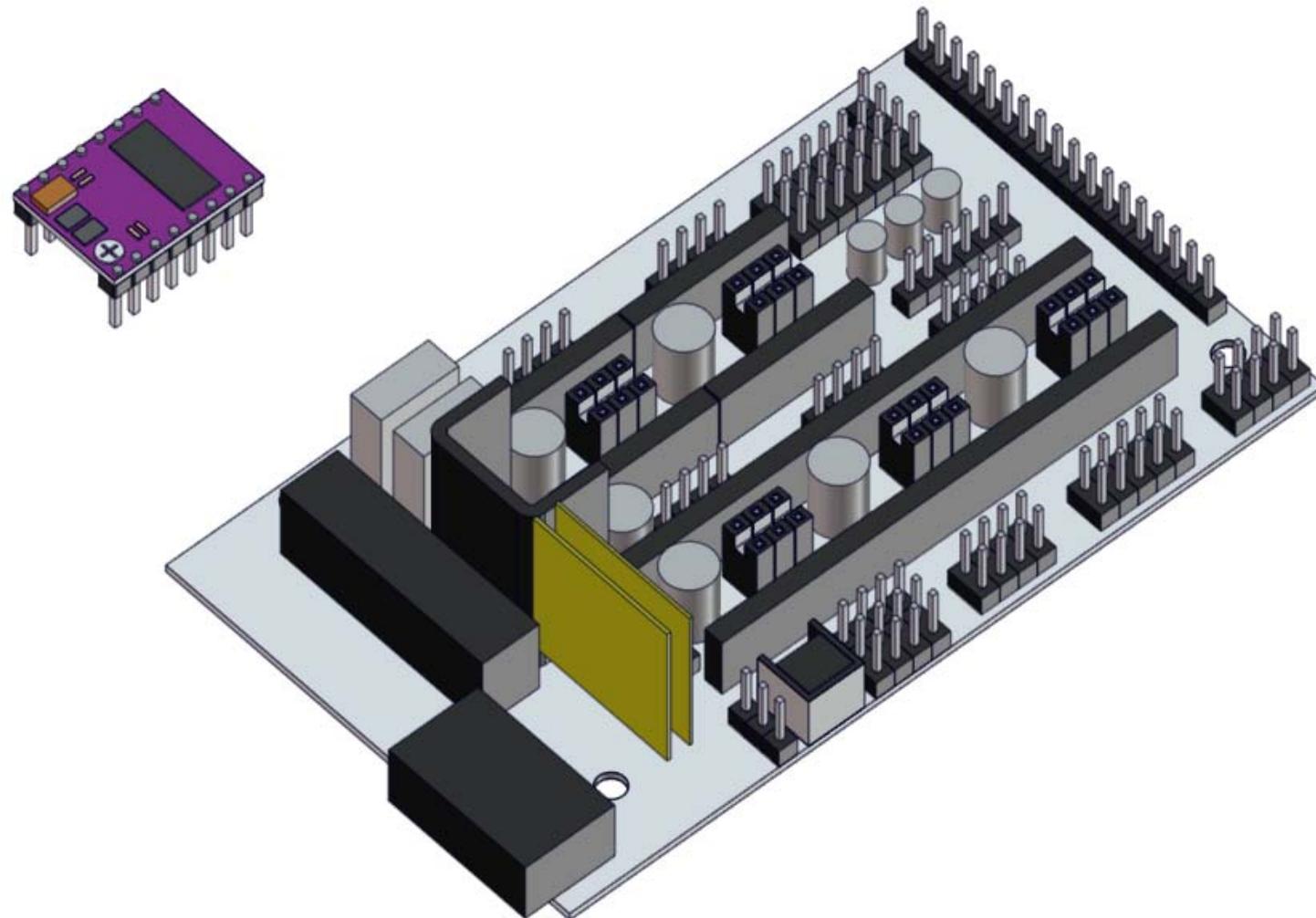
| BOM ID | Description  | Qty |
|--------|--------------|-----|
| Q1     | DIN912 M3x10 | 6   |

34



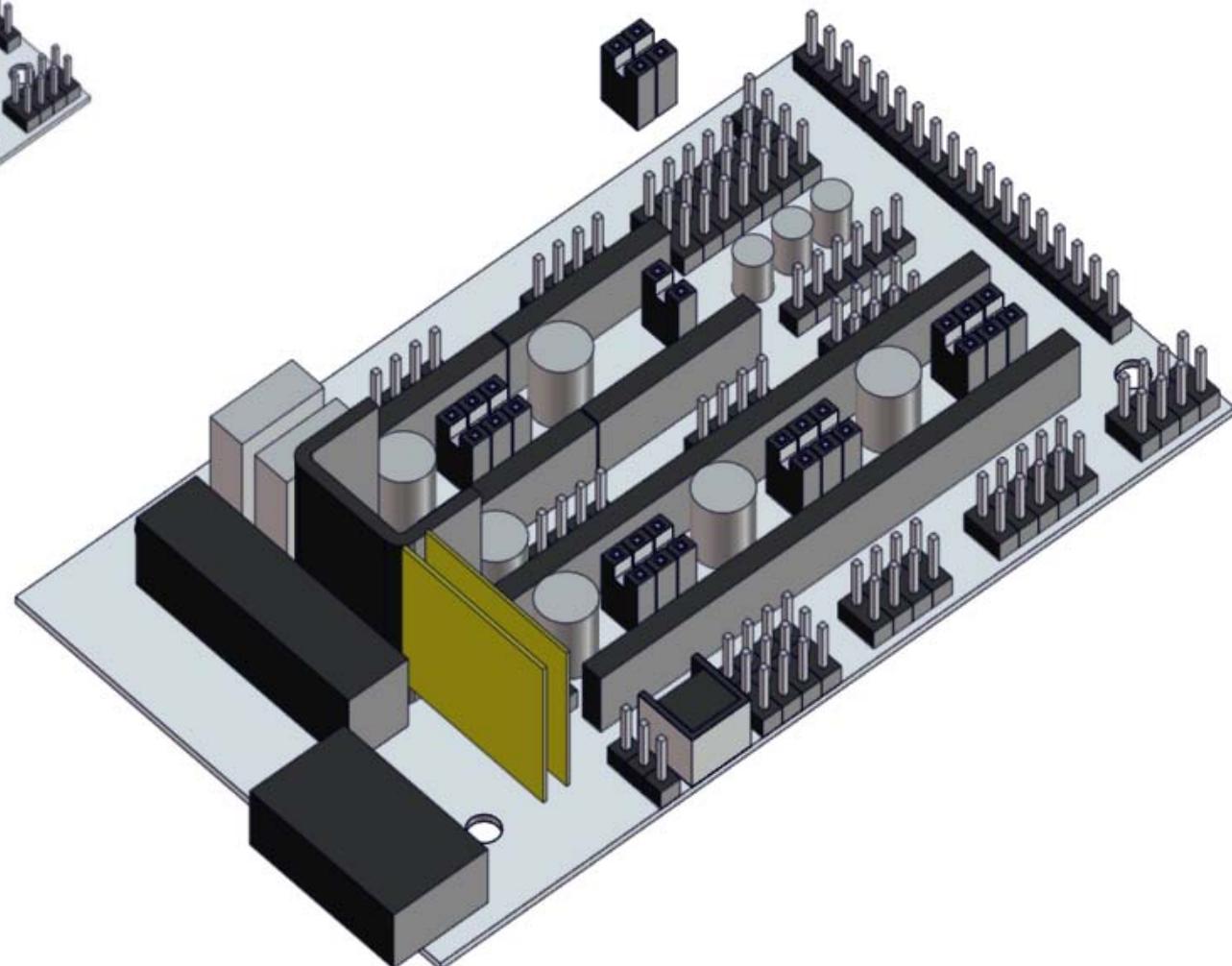
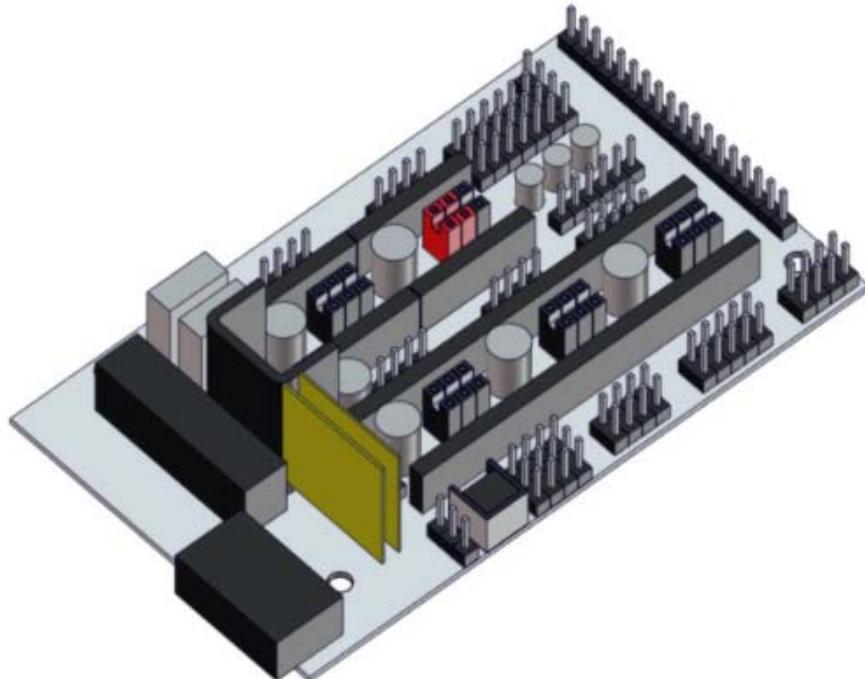


It may coexist on your machine, without any problem, two types of driver pololus, the white and the purple ones.



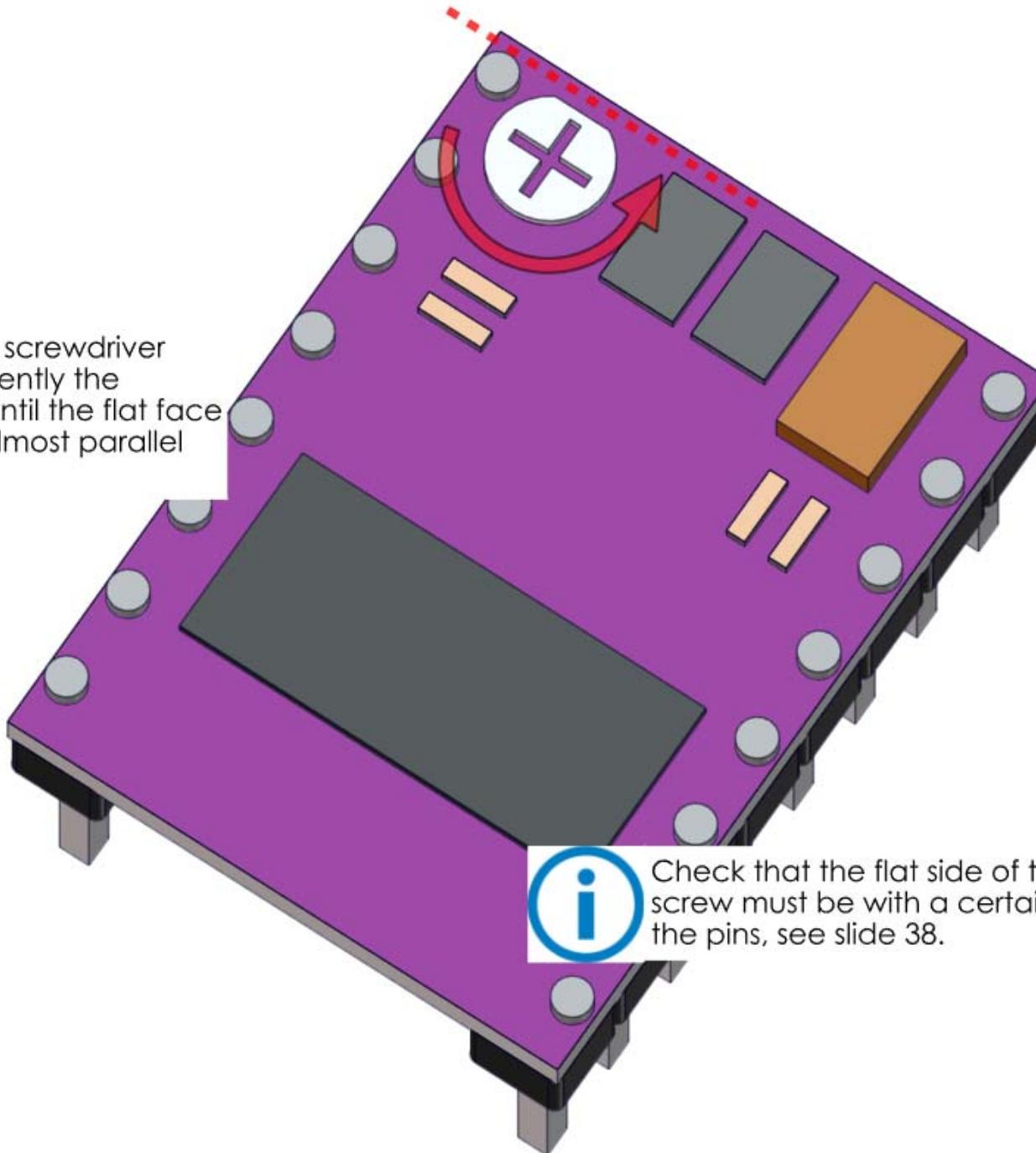


In order to adapt the board Ramps to purple Pololus, two jumpers must be disconnected (rectangular connectors), as shown in red in Fig.



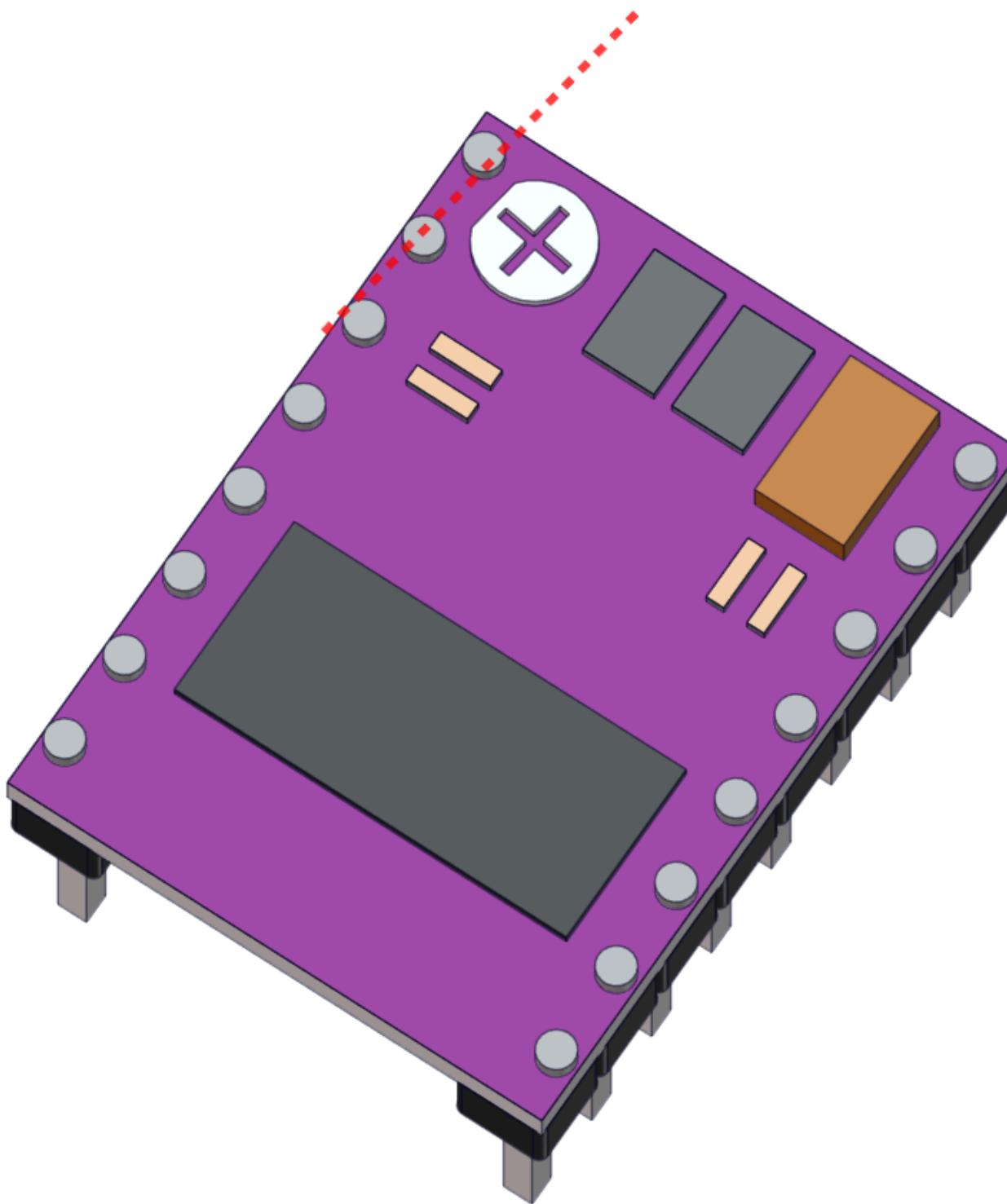


Using the Phillips screwdriver provided, turn gently the potentiometer until the flat face of the screw is almost parallel to closer pins.

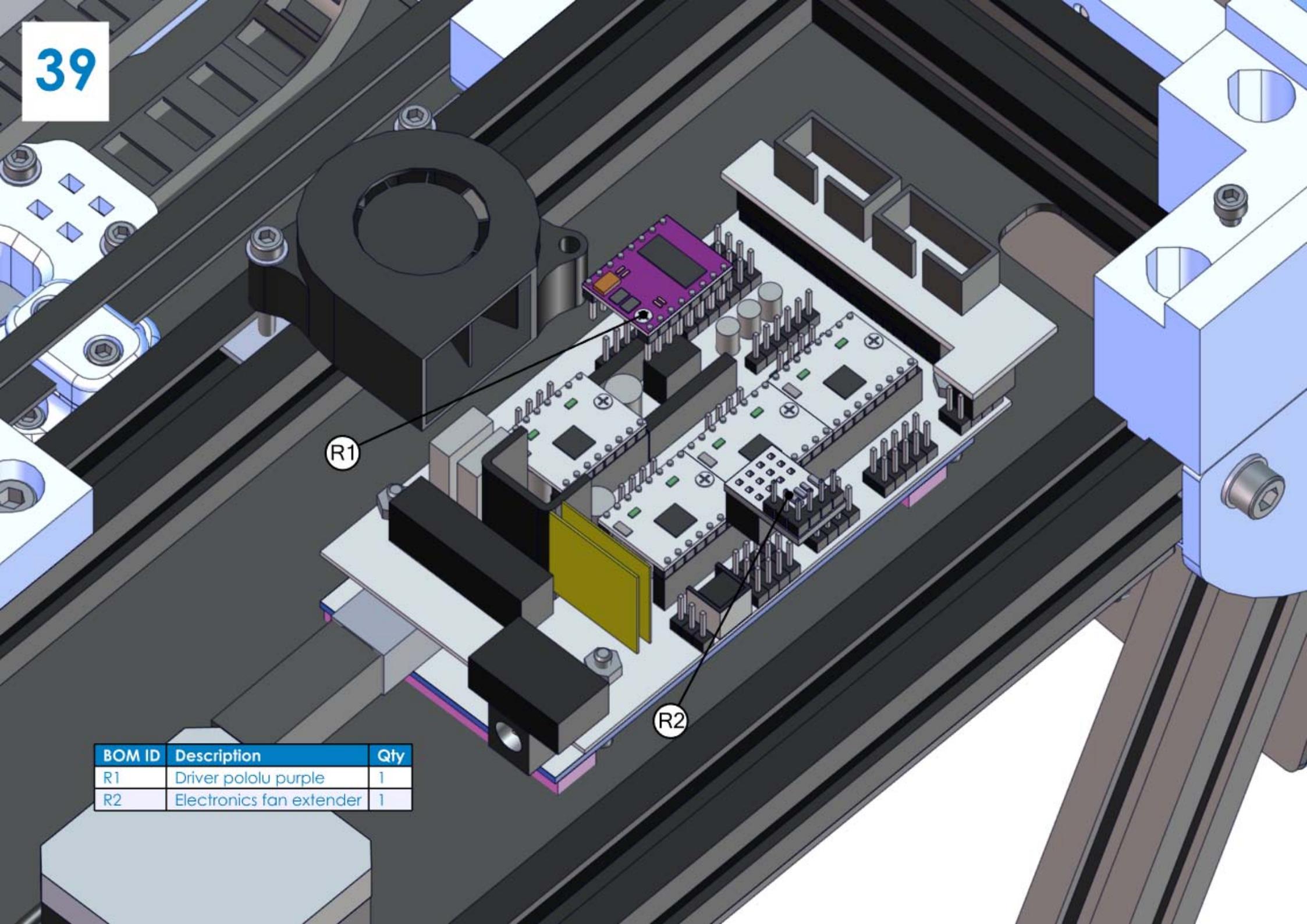


Check that the flat side of the potentiometer screw must be with a certain inclination from the pins, see slide 38.

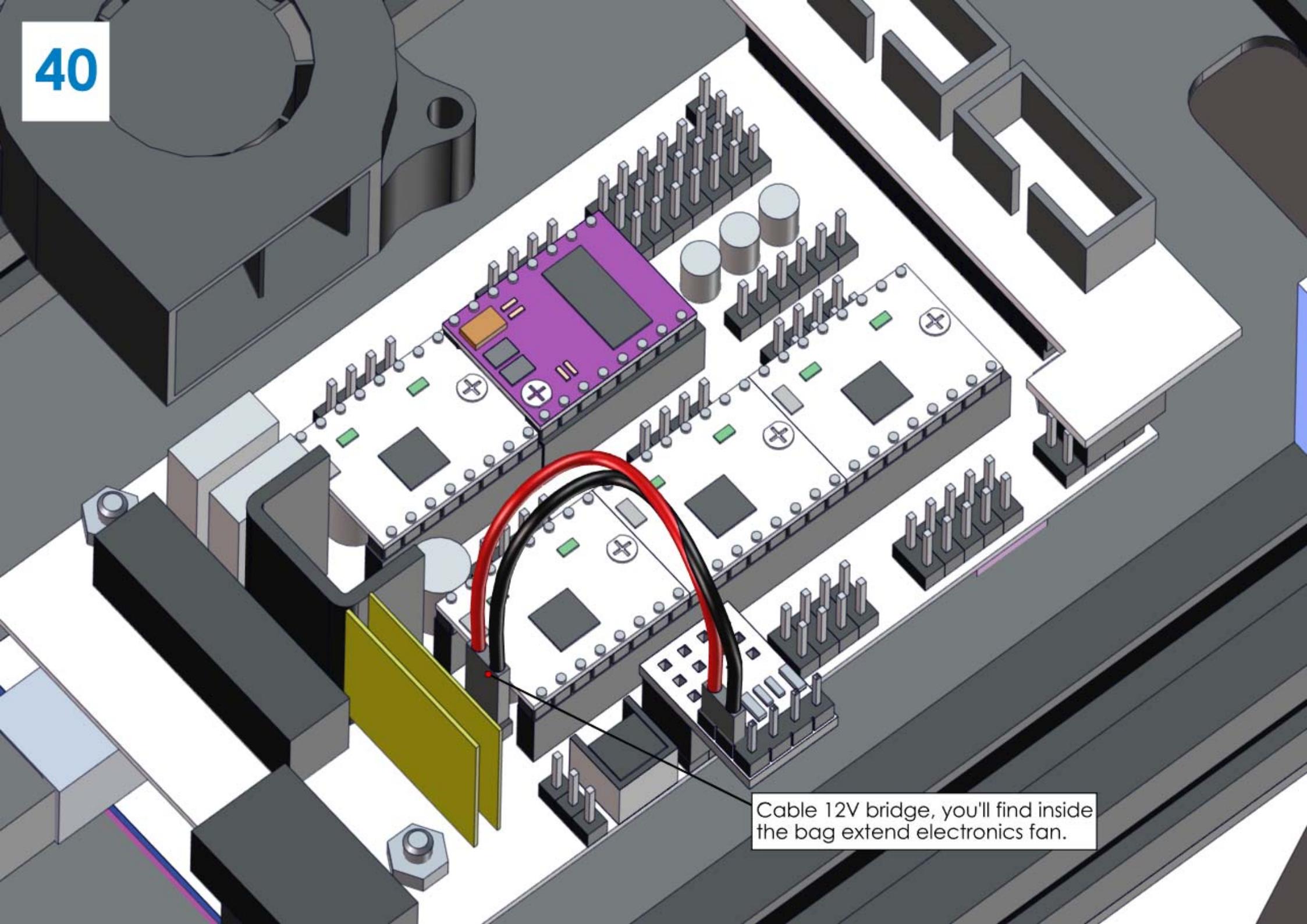
38



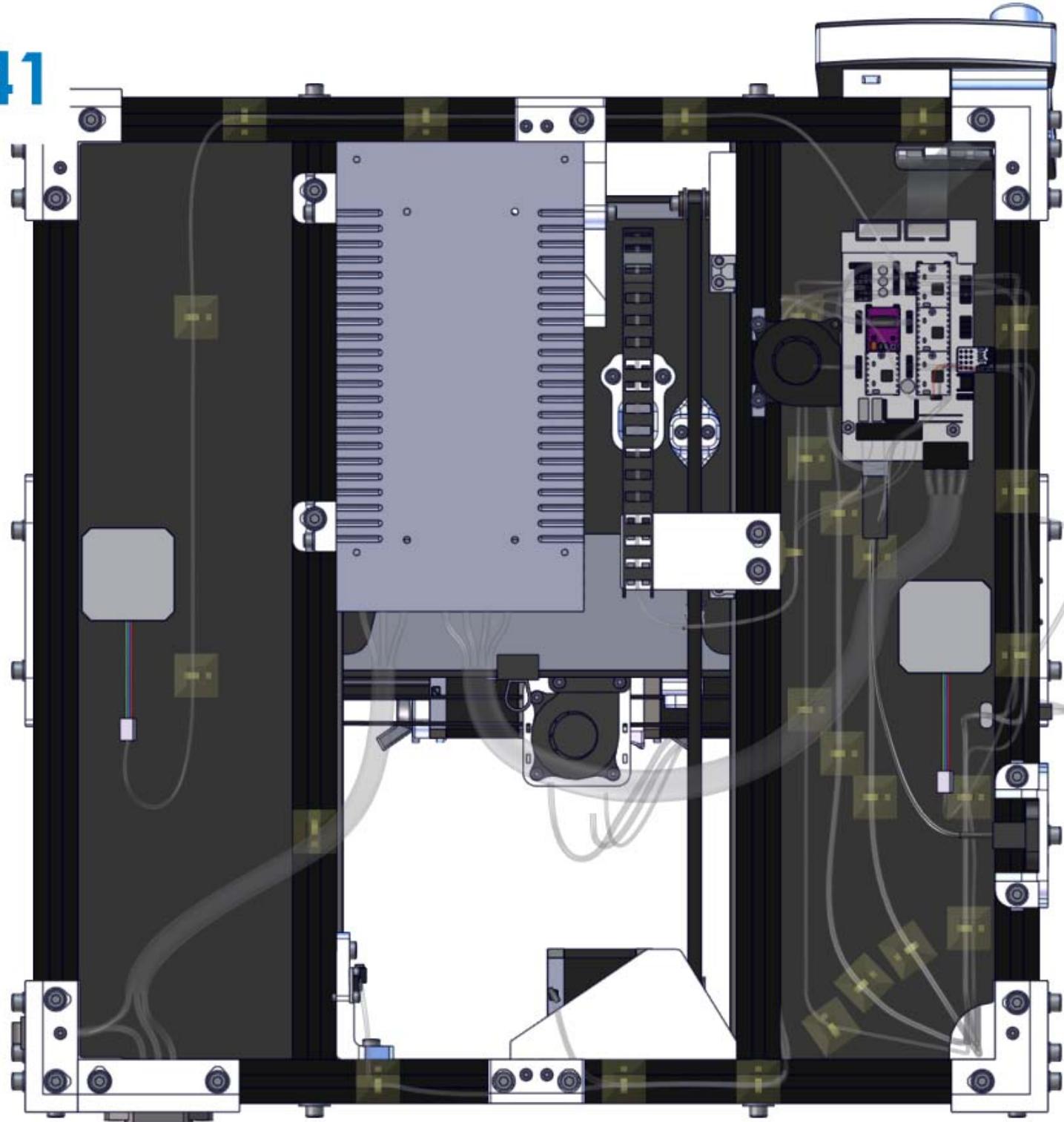
39



| BOM ID | Description              | Qty |
|--------|--------------------------|-----|
| R1     | Driver pololu purple     | 1   |
| R2     | Electronics fan extender | 1   |



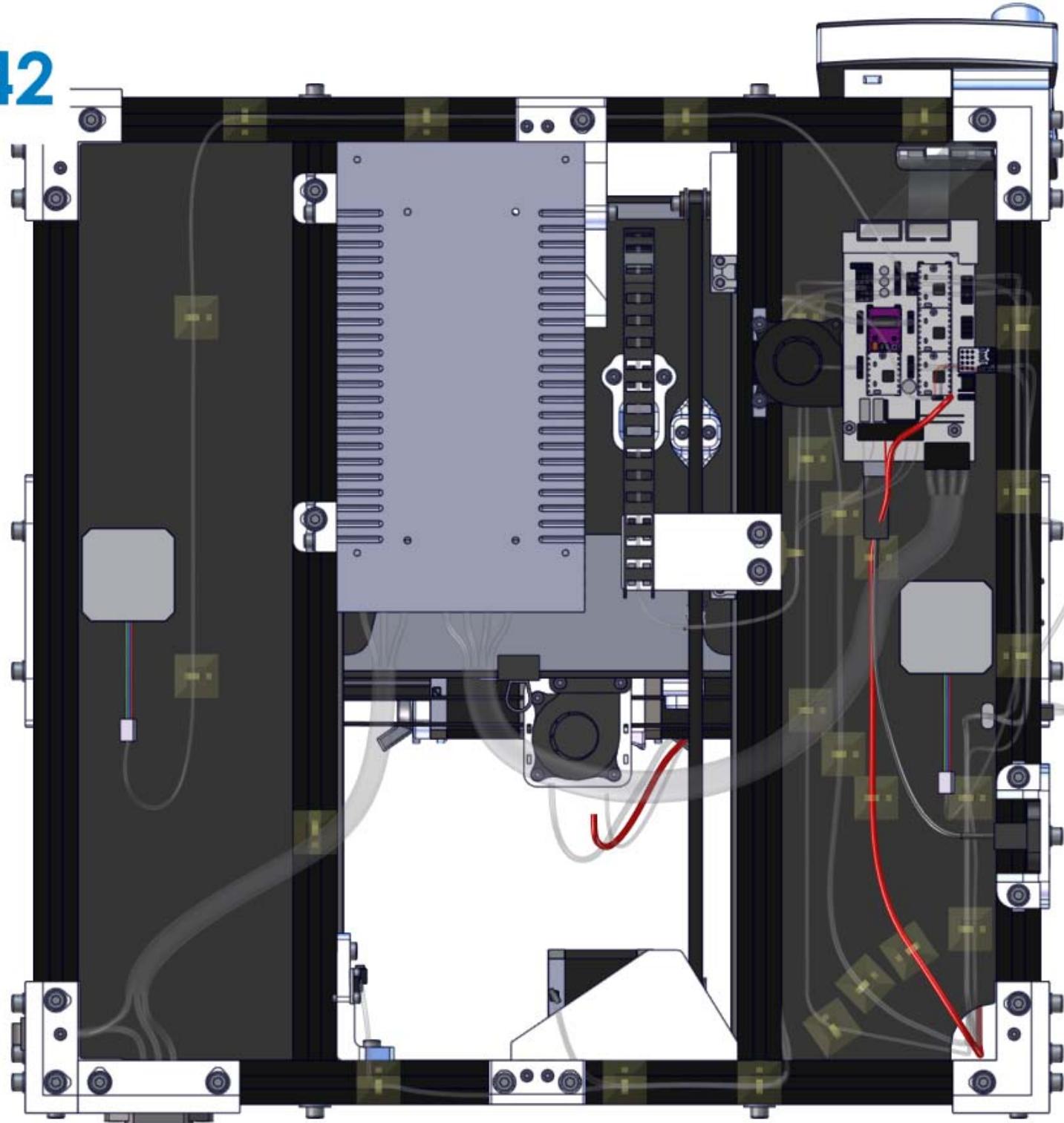
41



## WIRING

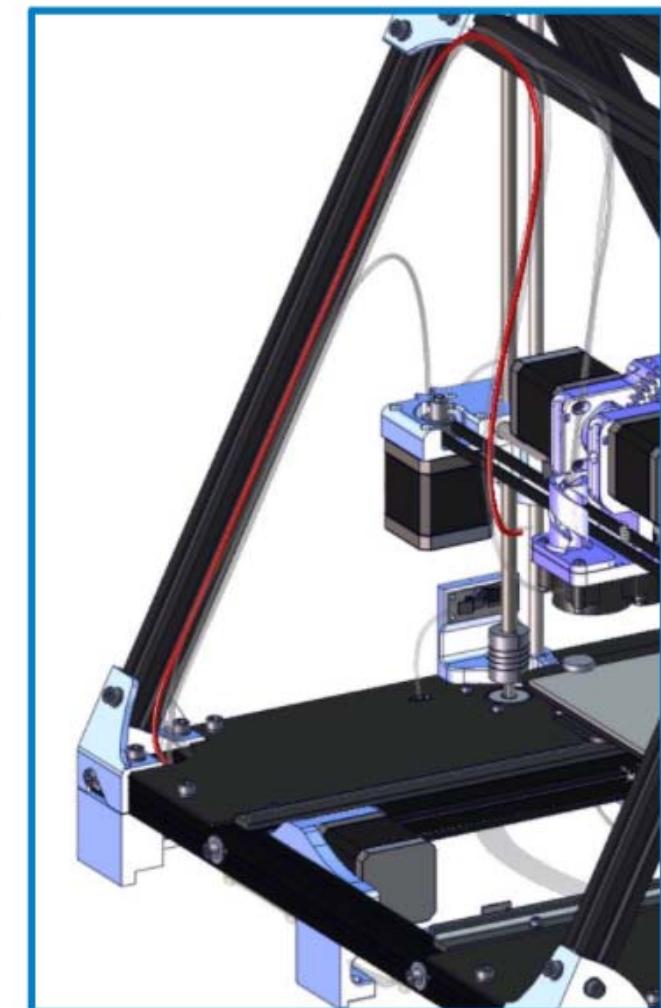
Current state

42

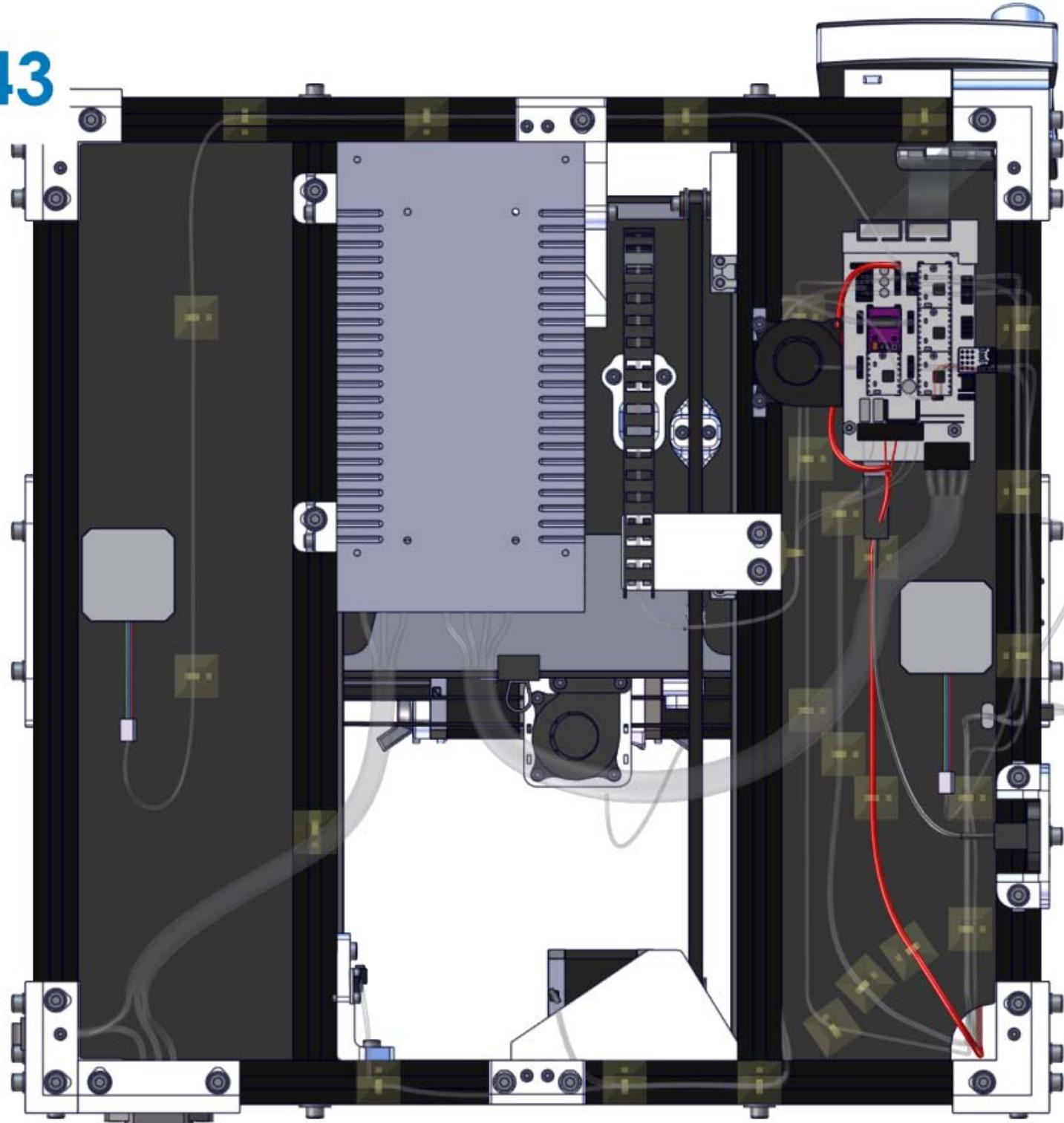


## WIRING

1. Remove the cables of the Cooler Fan and Layer Fan.

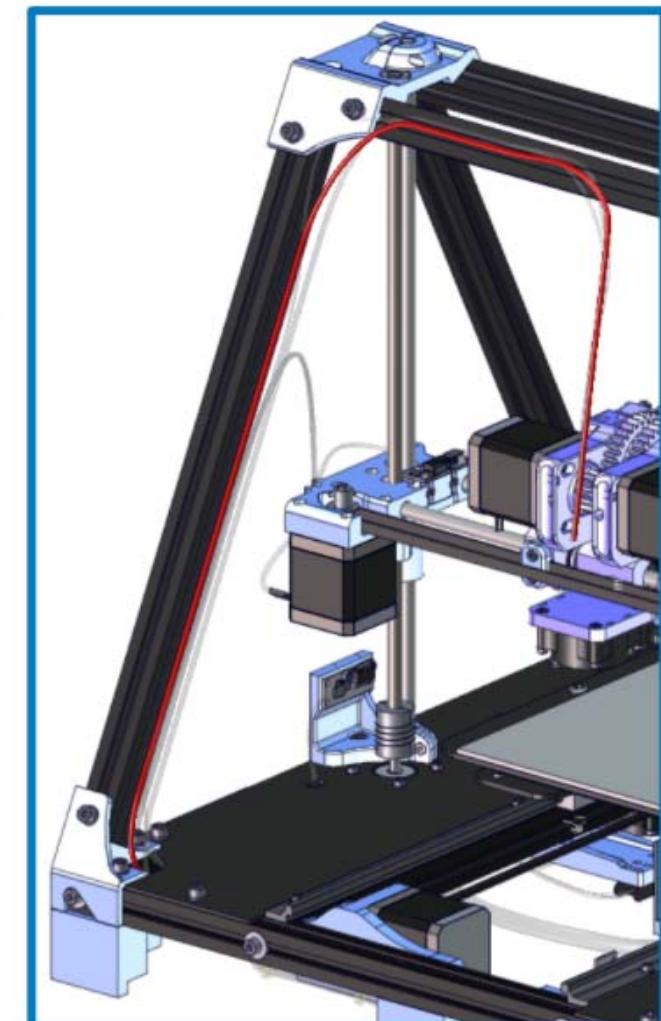


43



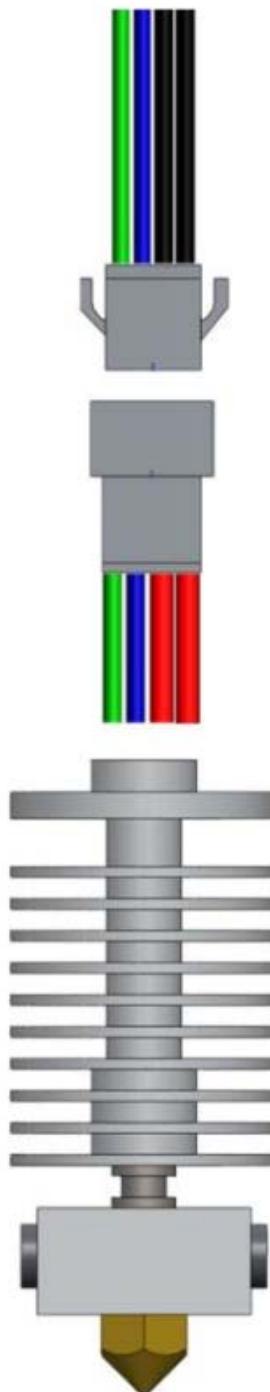
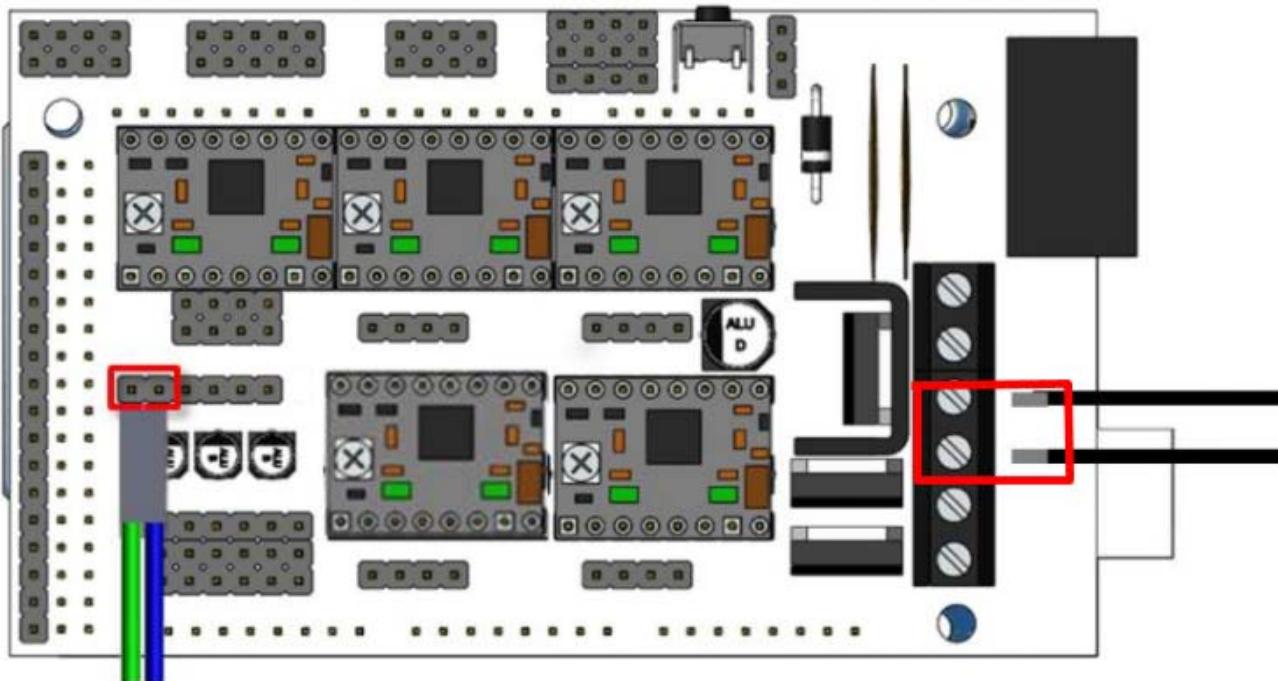
## WIRING

2. Add the Hot End Extender

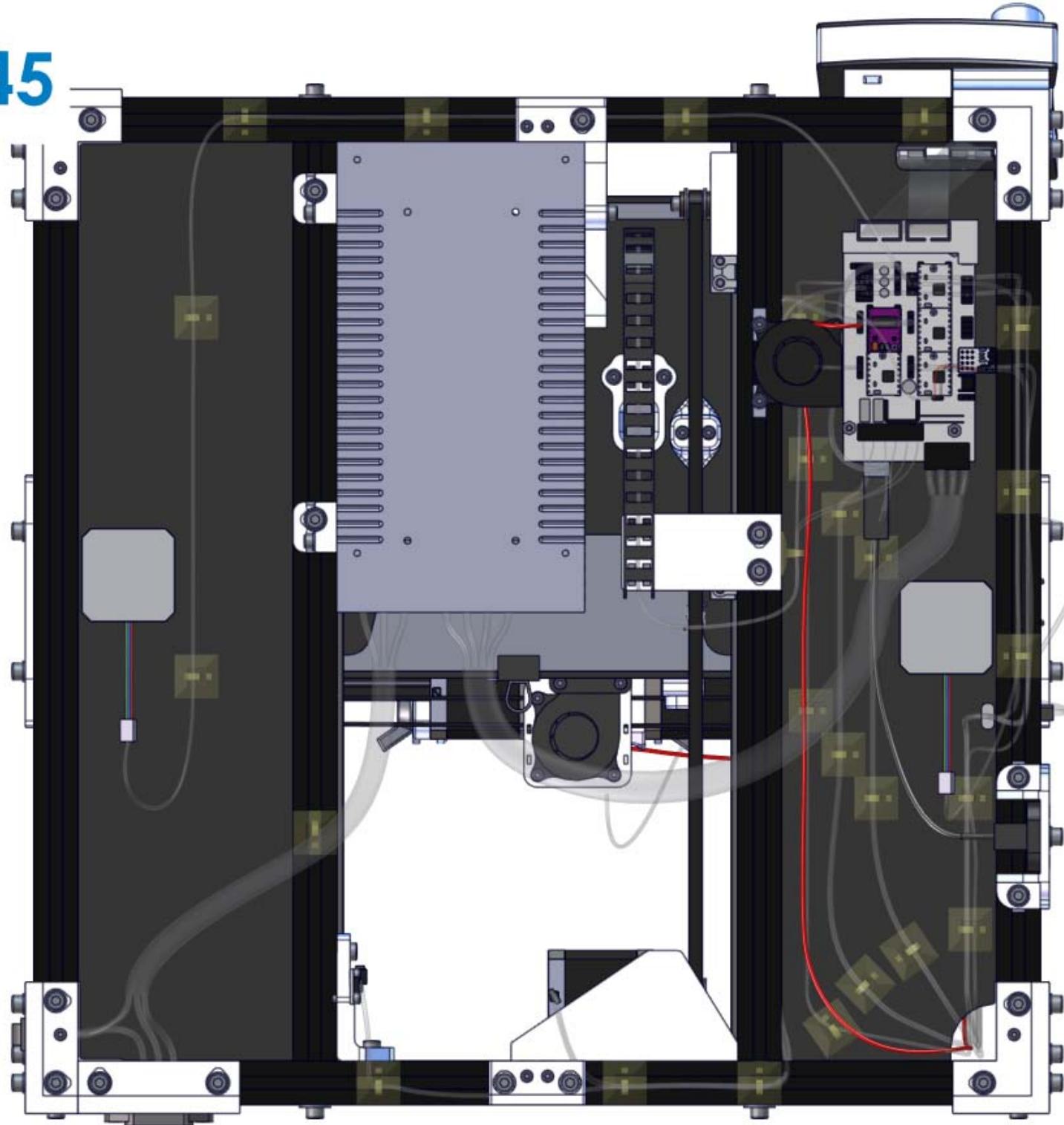


# WIRING

2. Add the Hot End Extender

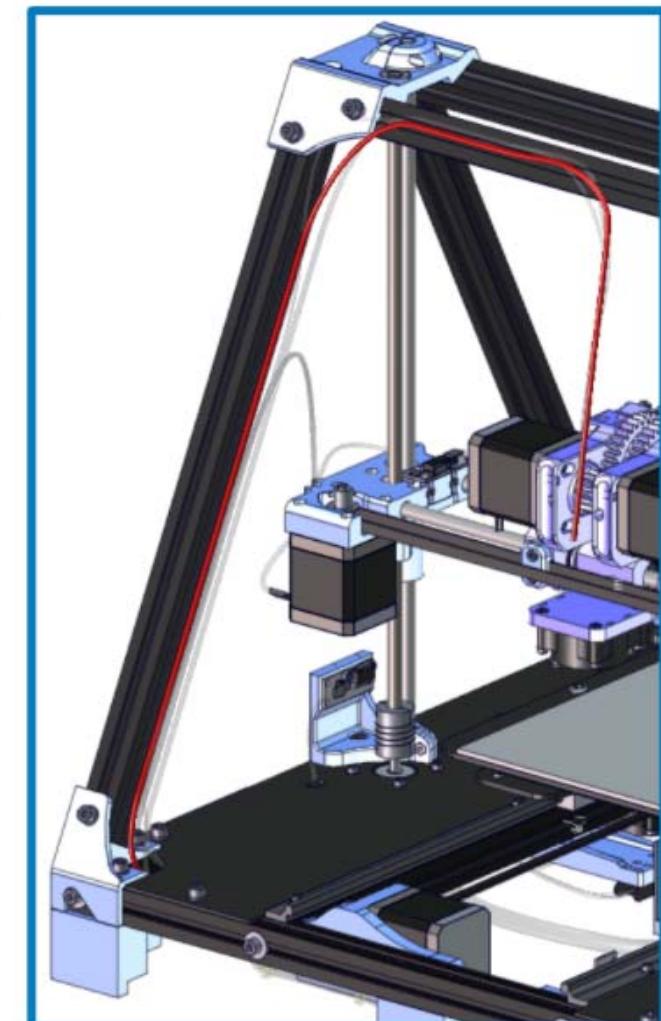


45



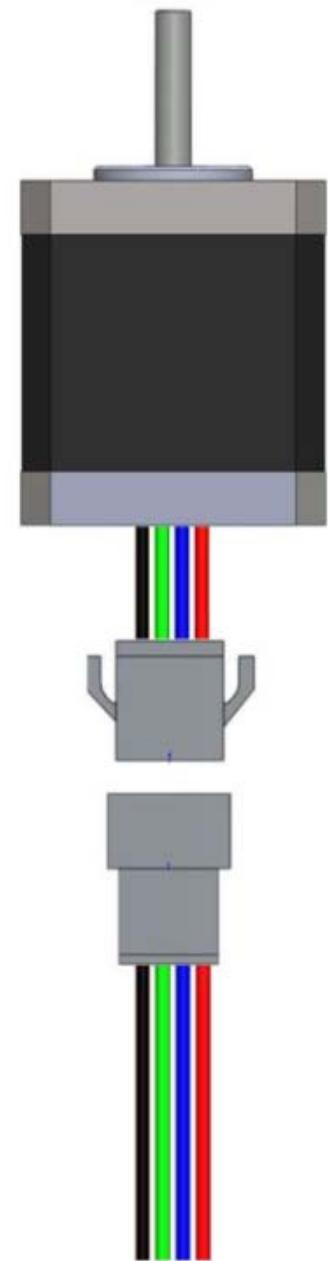
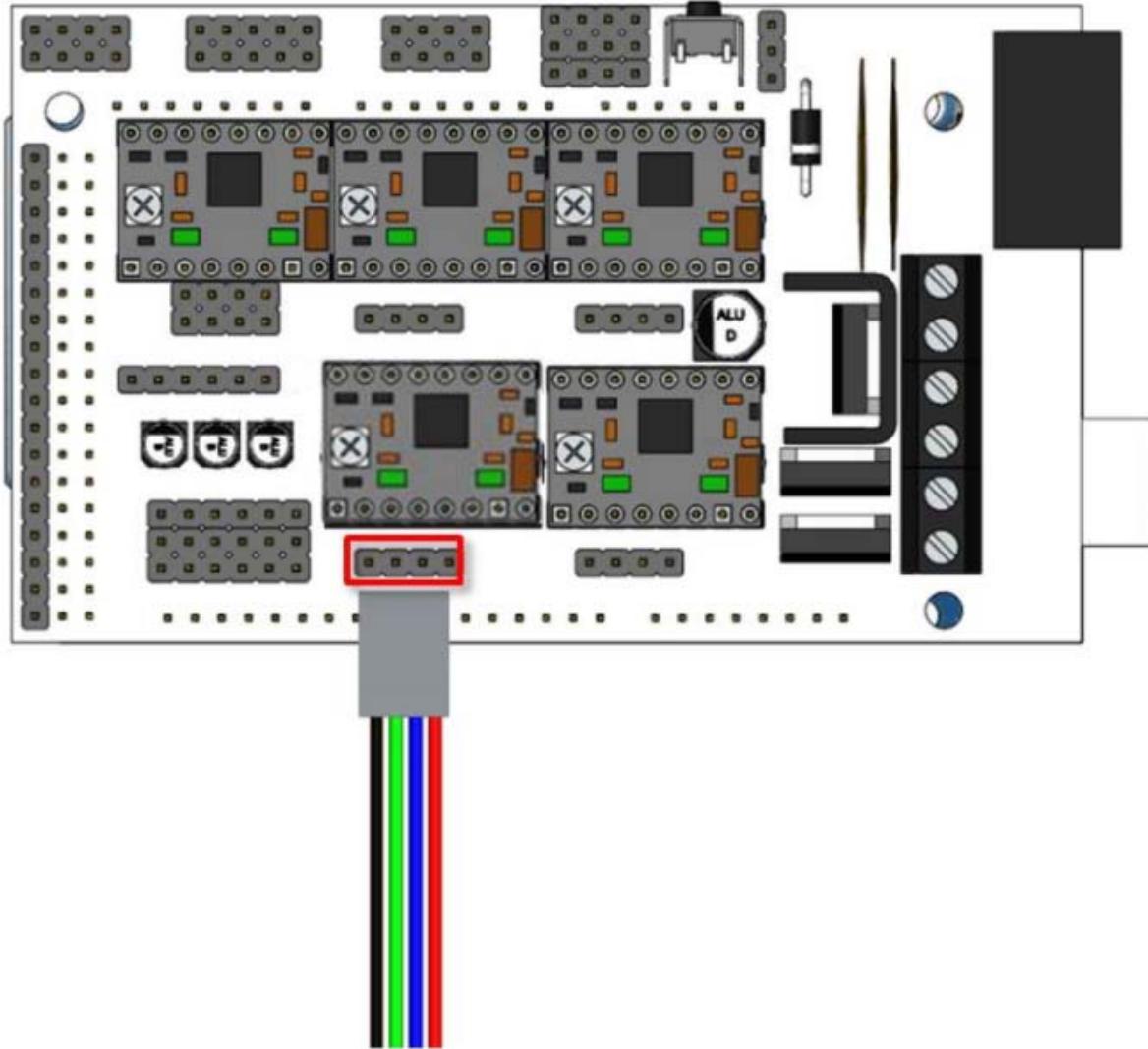
## WIRING

3. Add the Extruder Stepper Extender

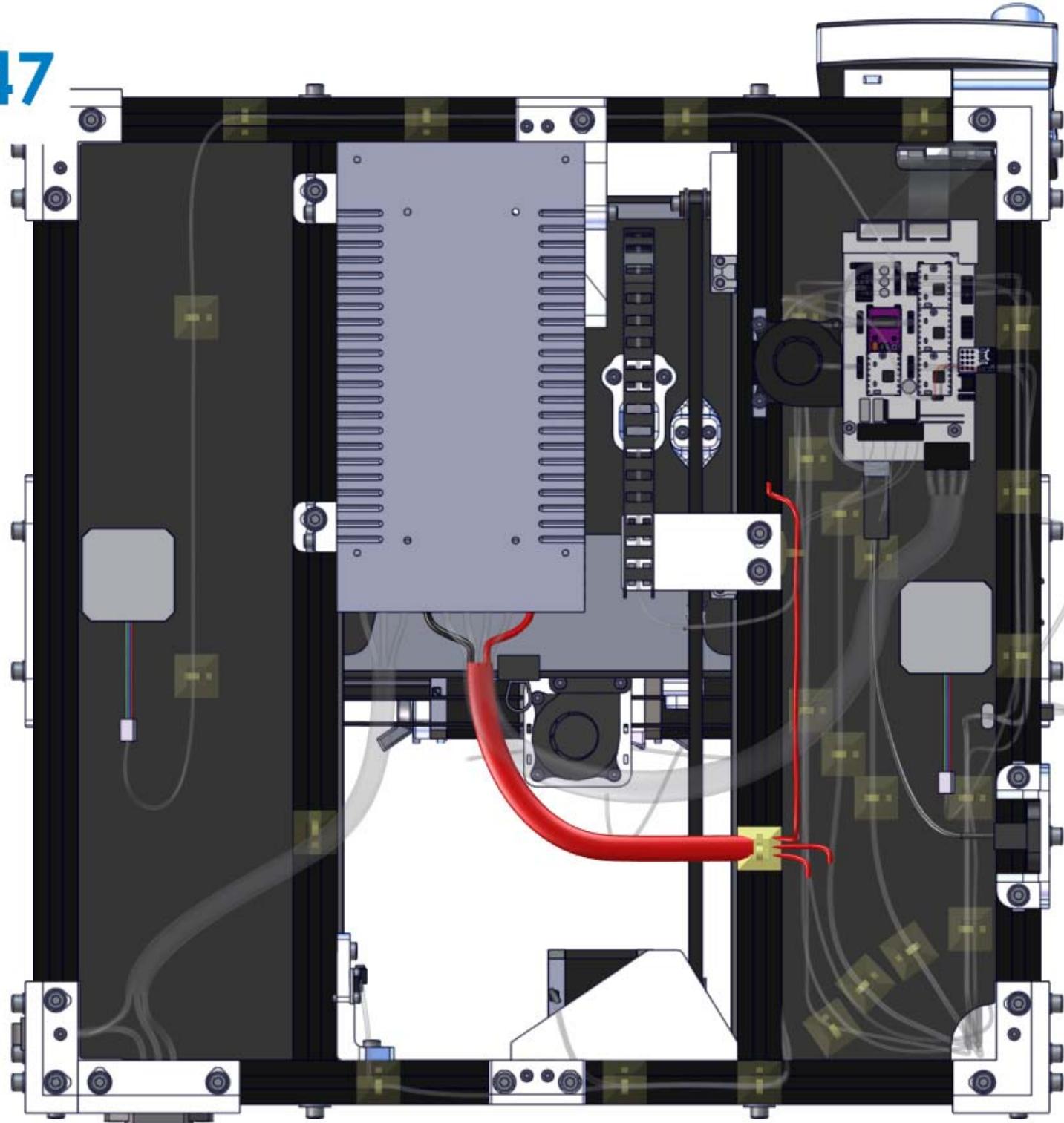


## WIRING

3. Add the Extruder Stepper Extender



47

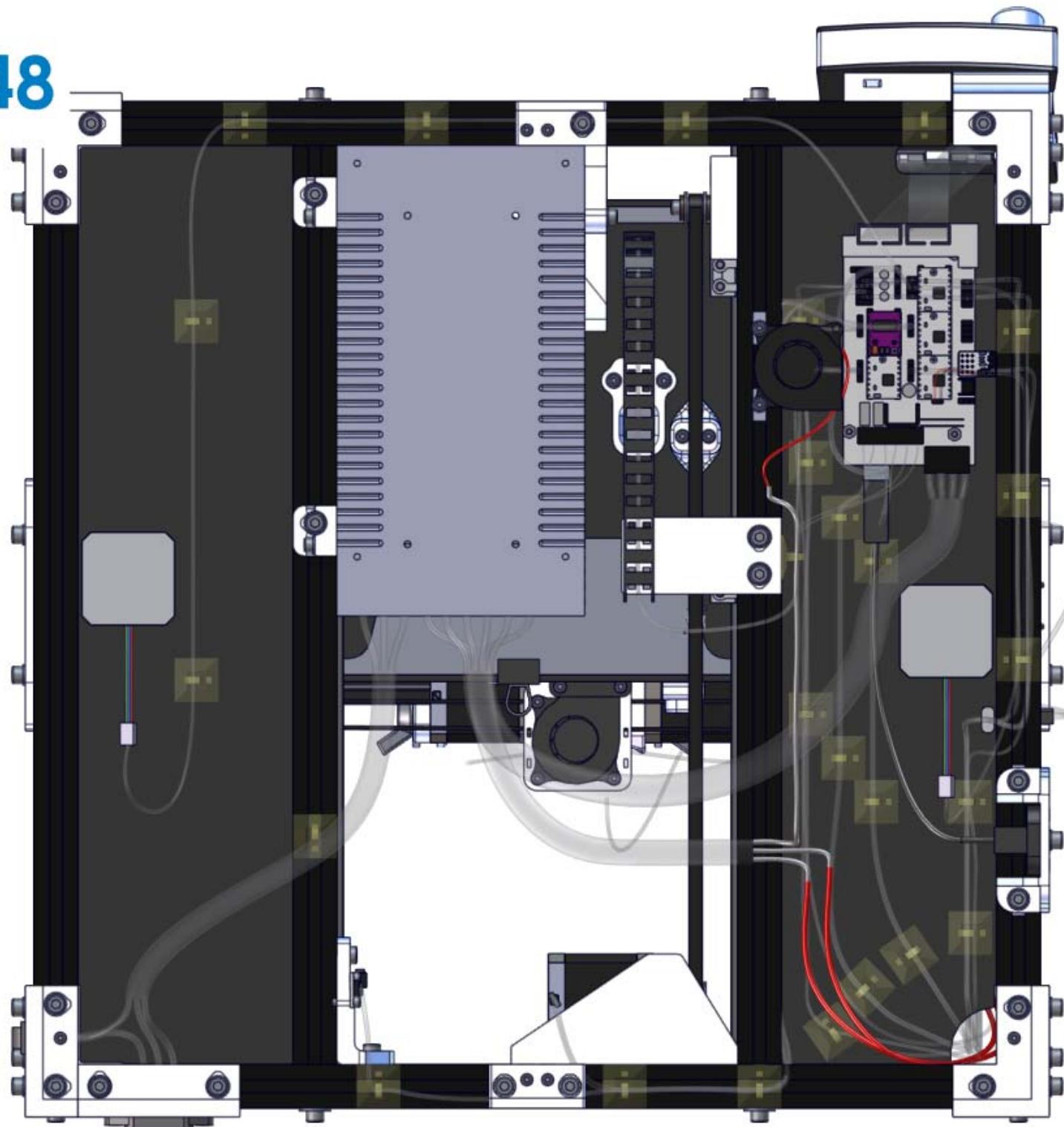


## WIRING

4. Add the 12V cable

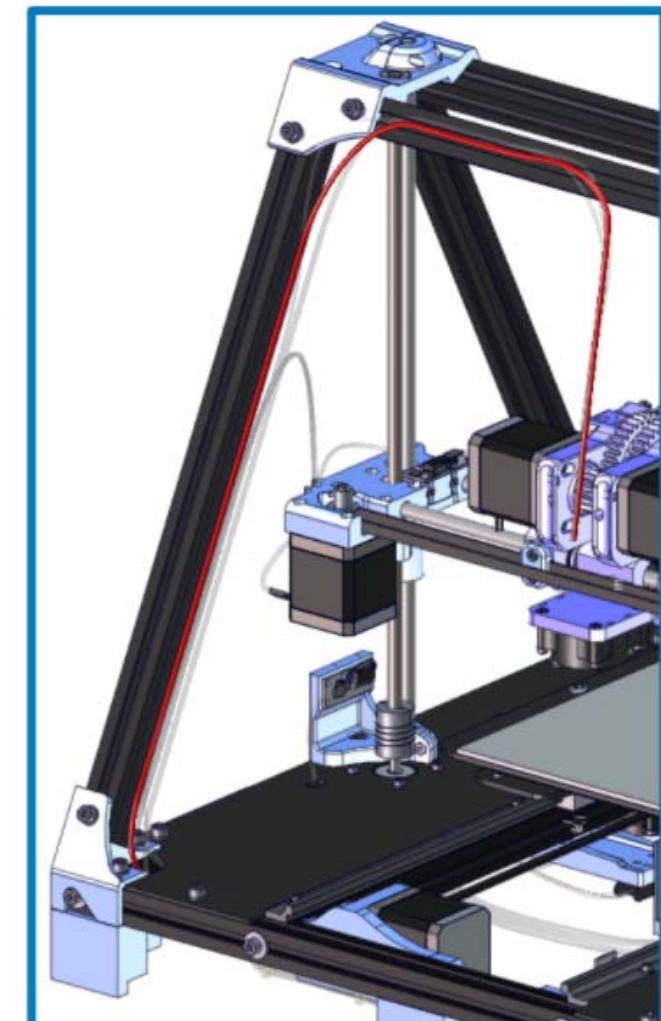


48



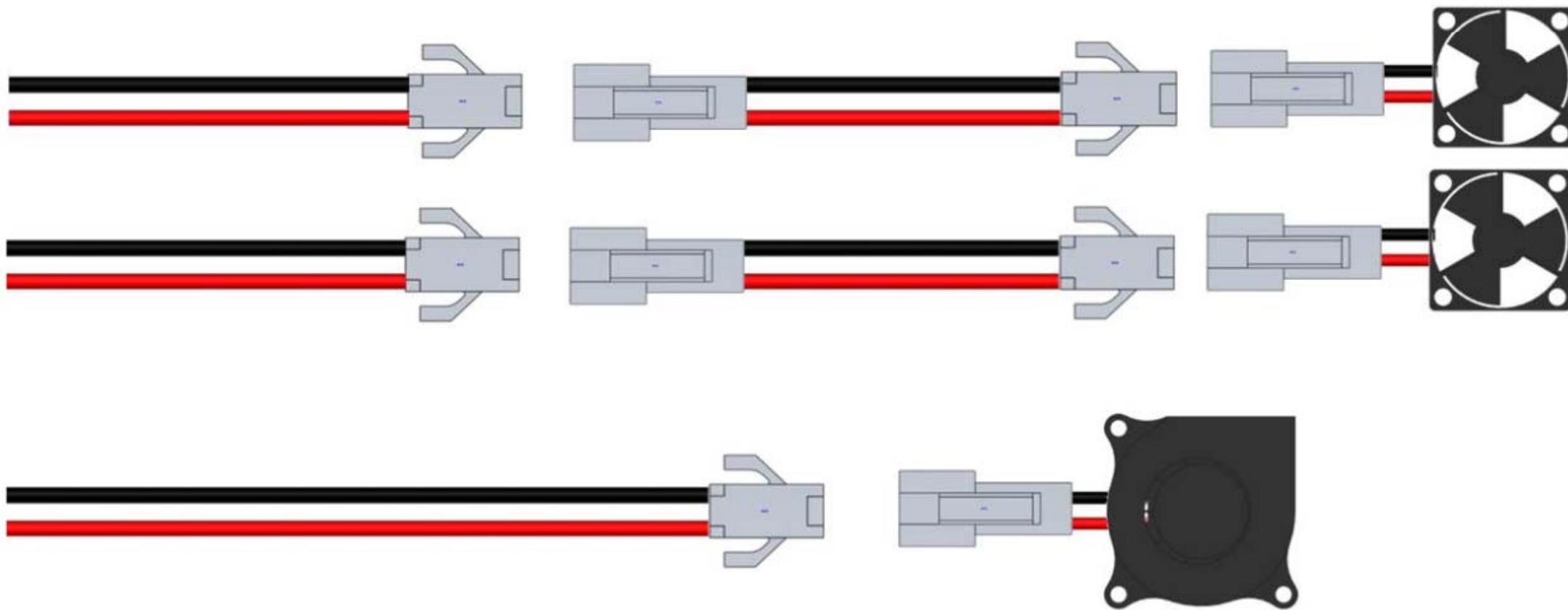
## WIRING

5. Add the Cooler Fan Extender

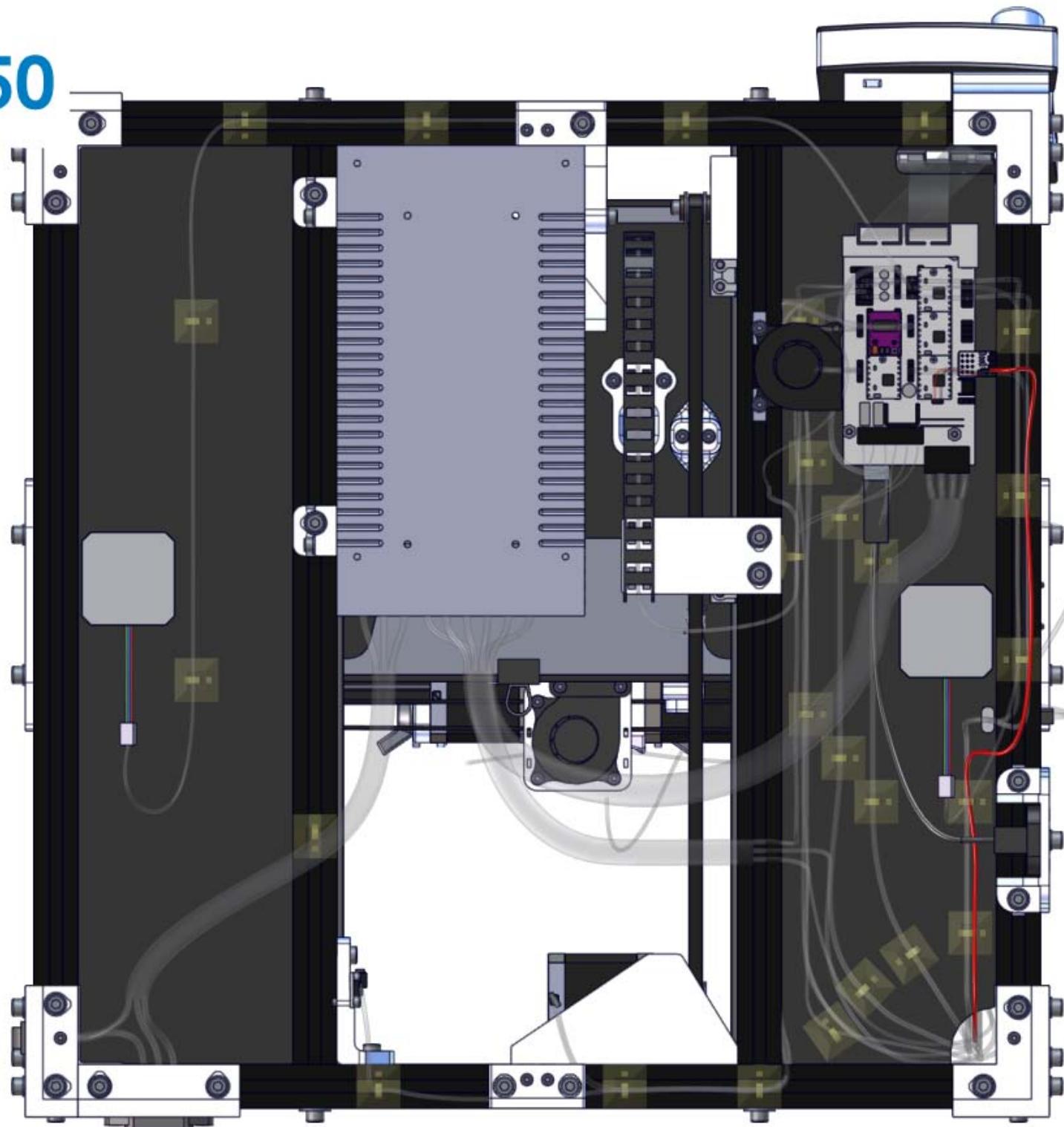


**WIRING**

5. Add the Cooler Fan Extender

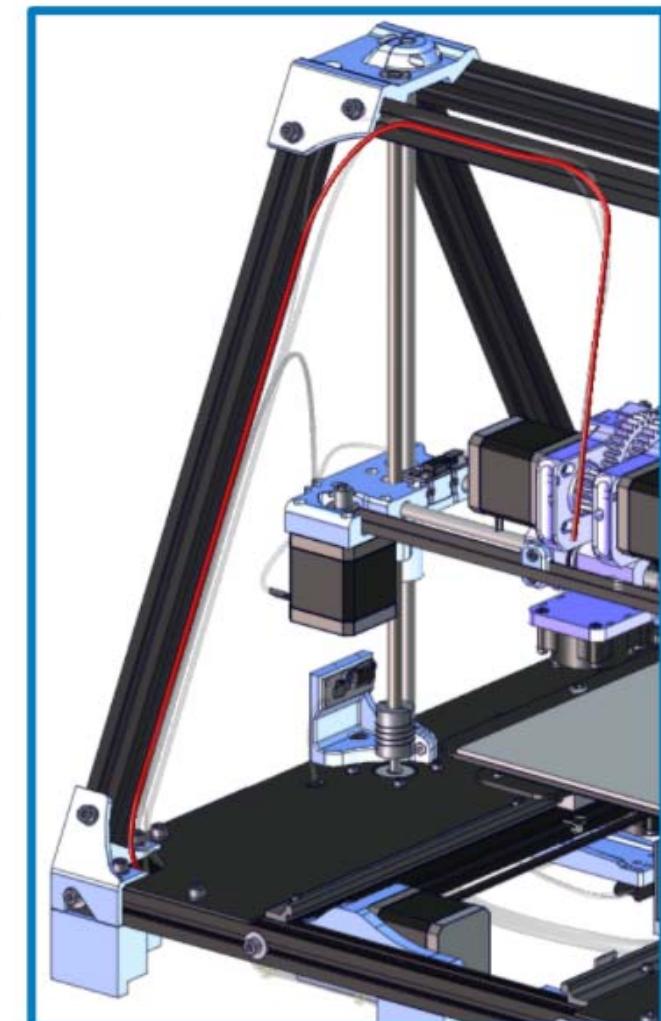


50



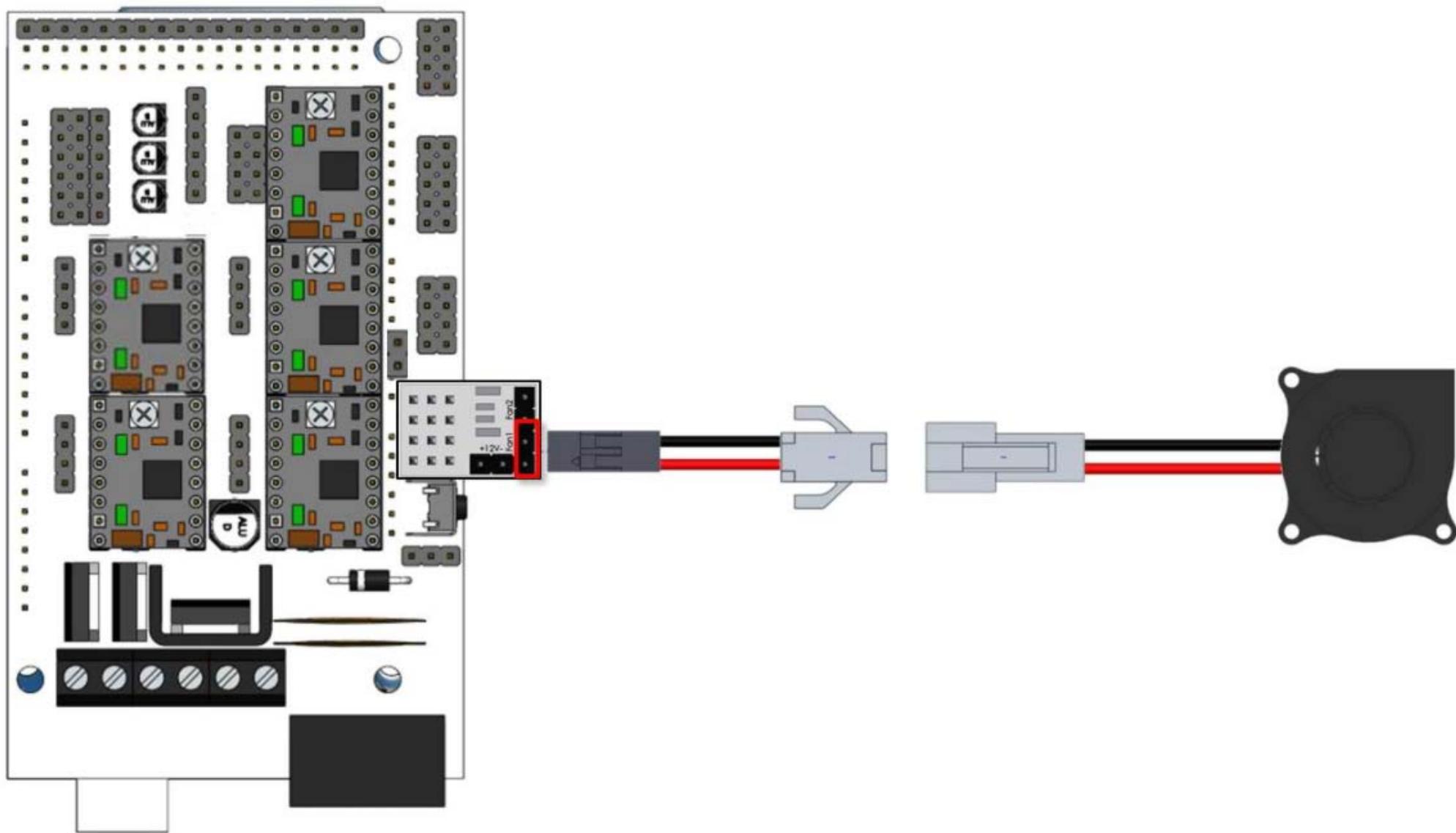
## WIRING

6. Add the Layer Fan Extender

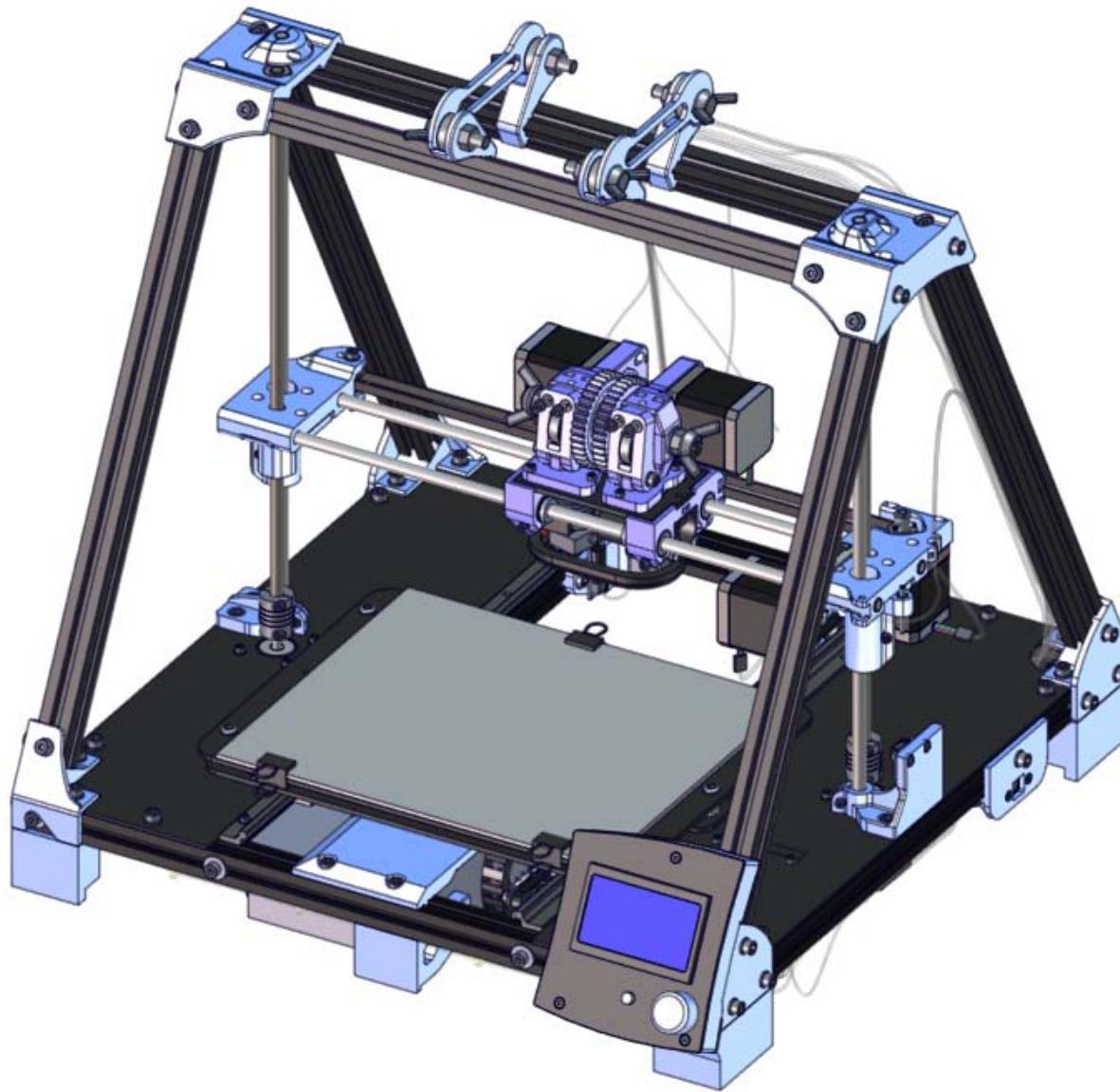


# WIRING

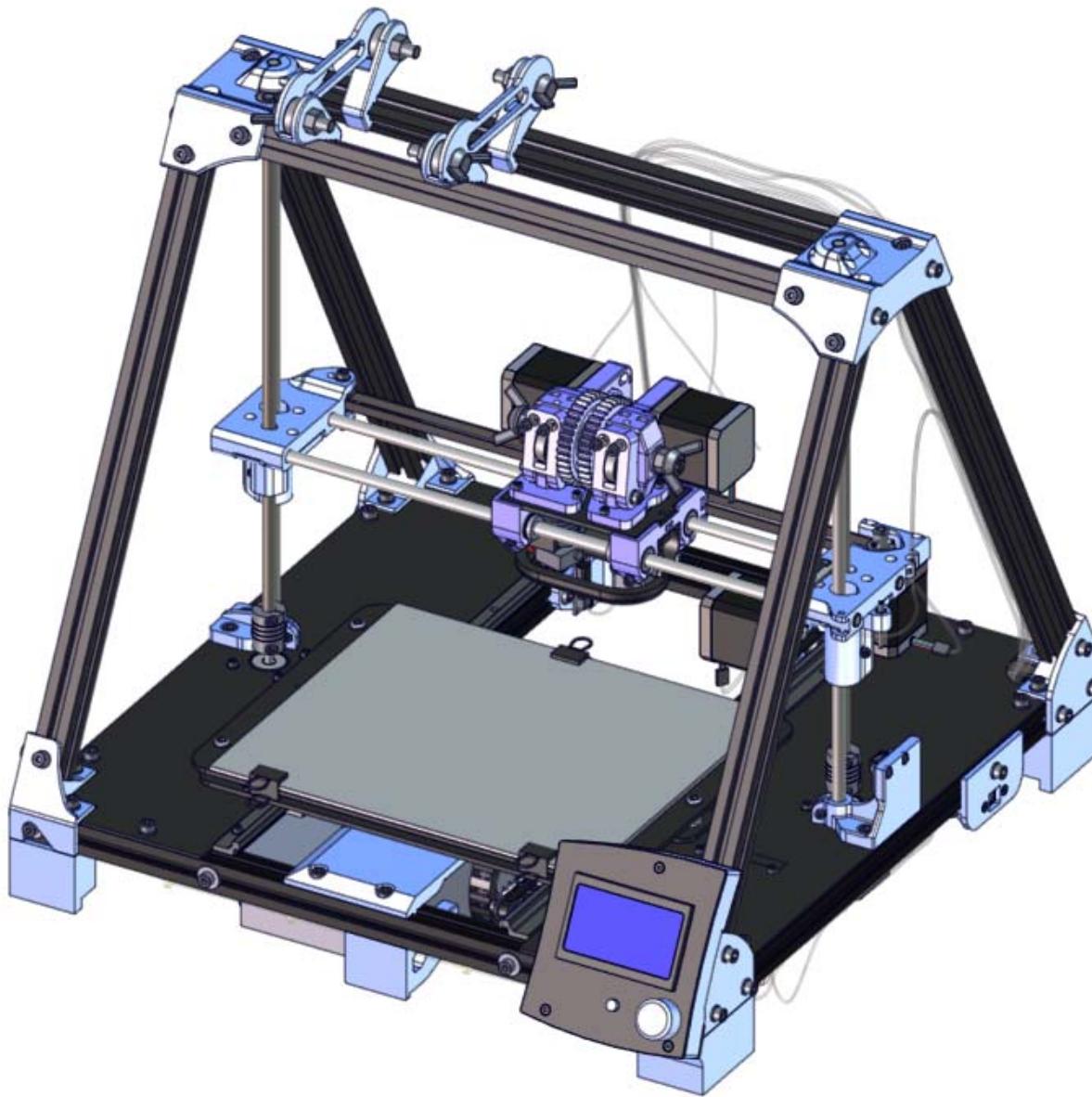
6. Add the Layer Fan Extender



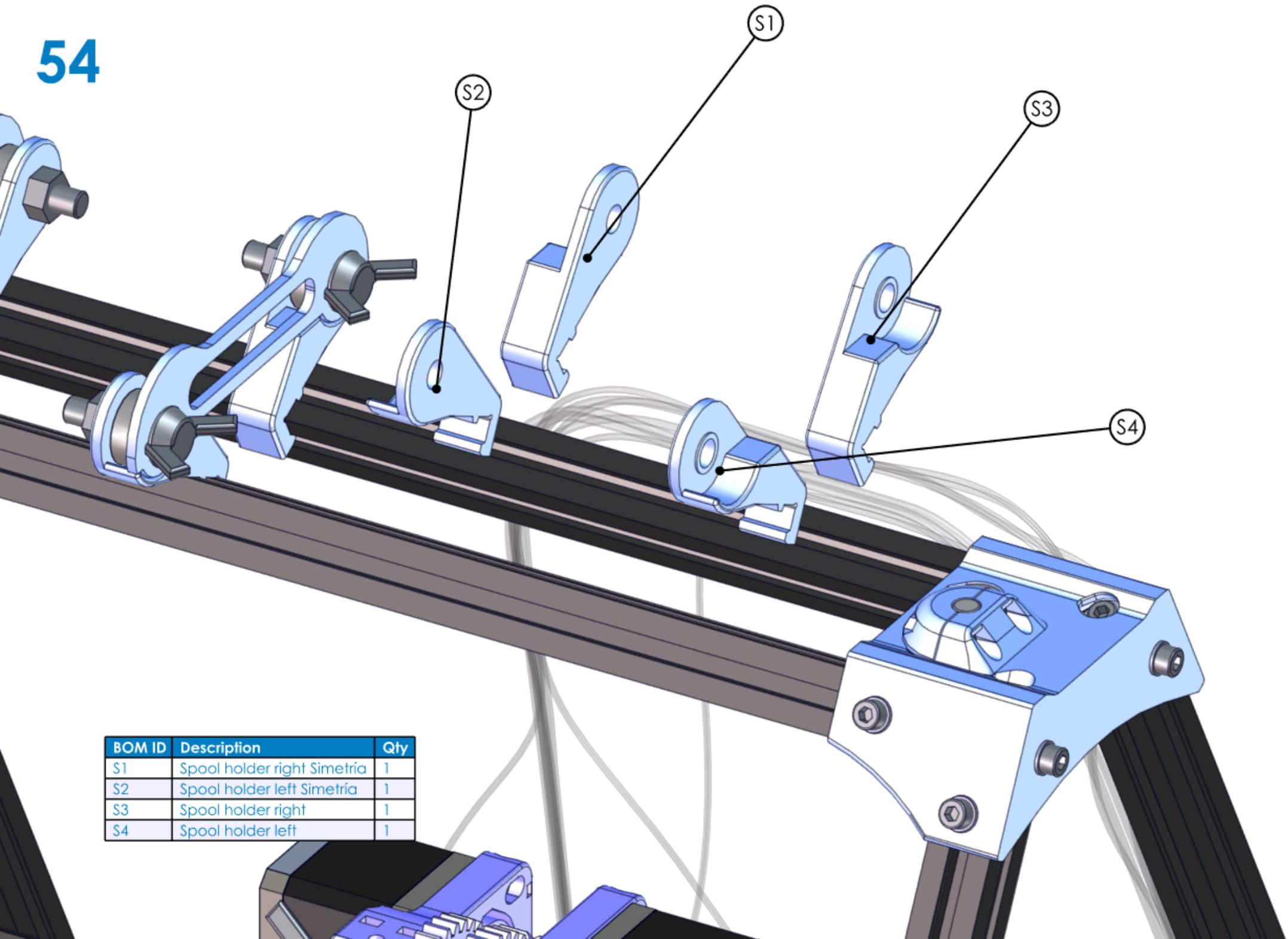
52



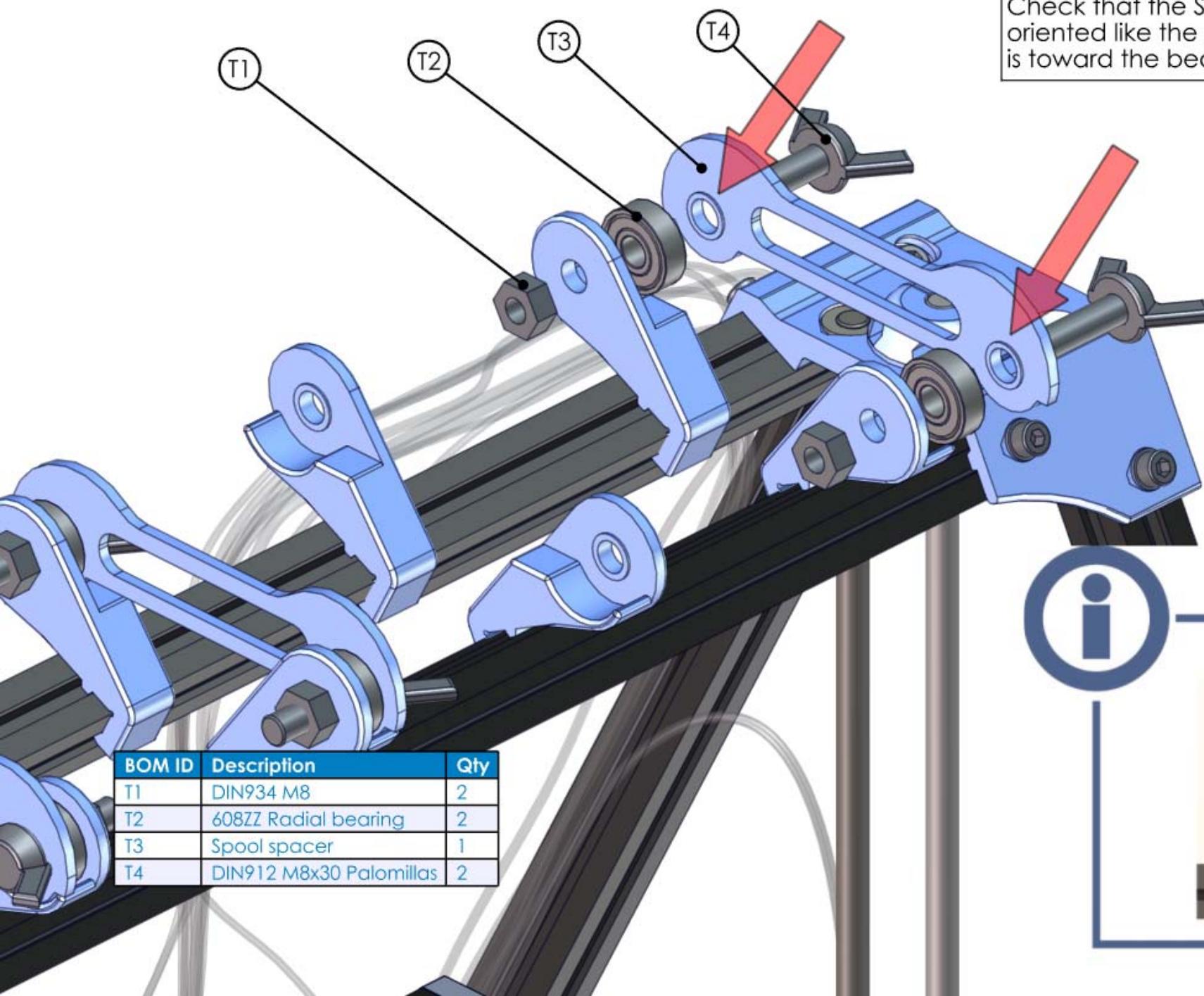
53



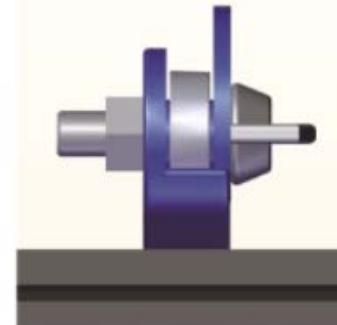
54



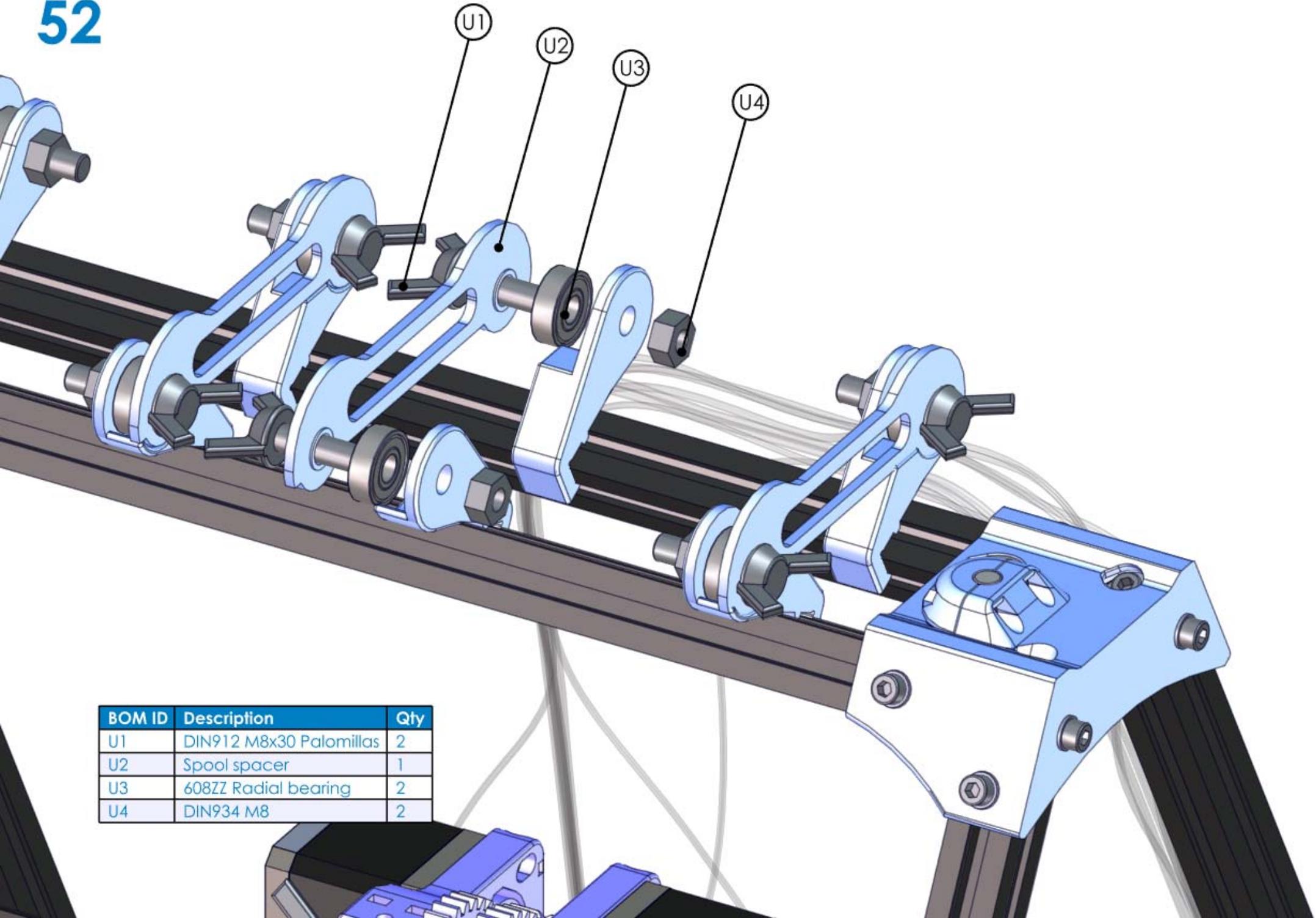
| BOM ID | Description                 | Qty |
|--------|-----------------------------|-----|
| S1     | Spool holder right Simetria | 1   |
| S2     | Spool holder left Simetria  | 1   |
| S3     | Spool holder right          | 1   |
| S4     | Spool holder left           | 1   |



Check that the Spool Spacer is oriented like the spacer ring is toward the bearing, see Fig.

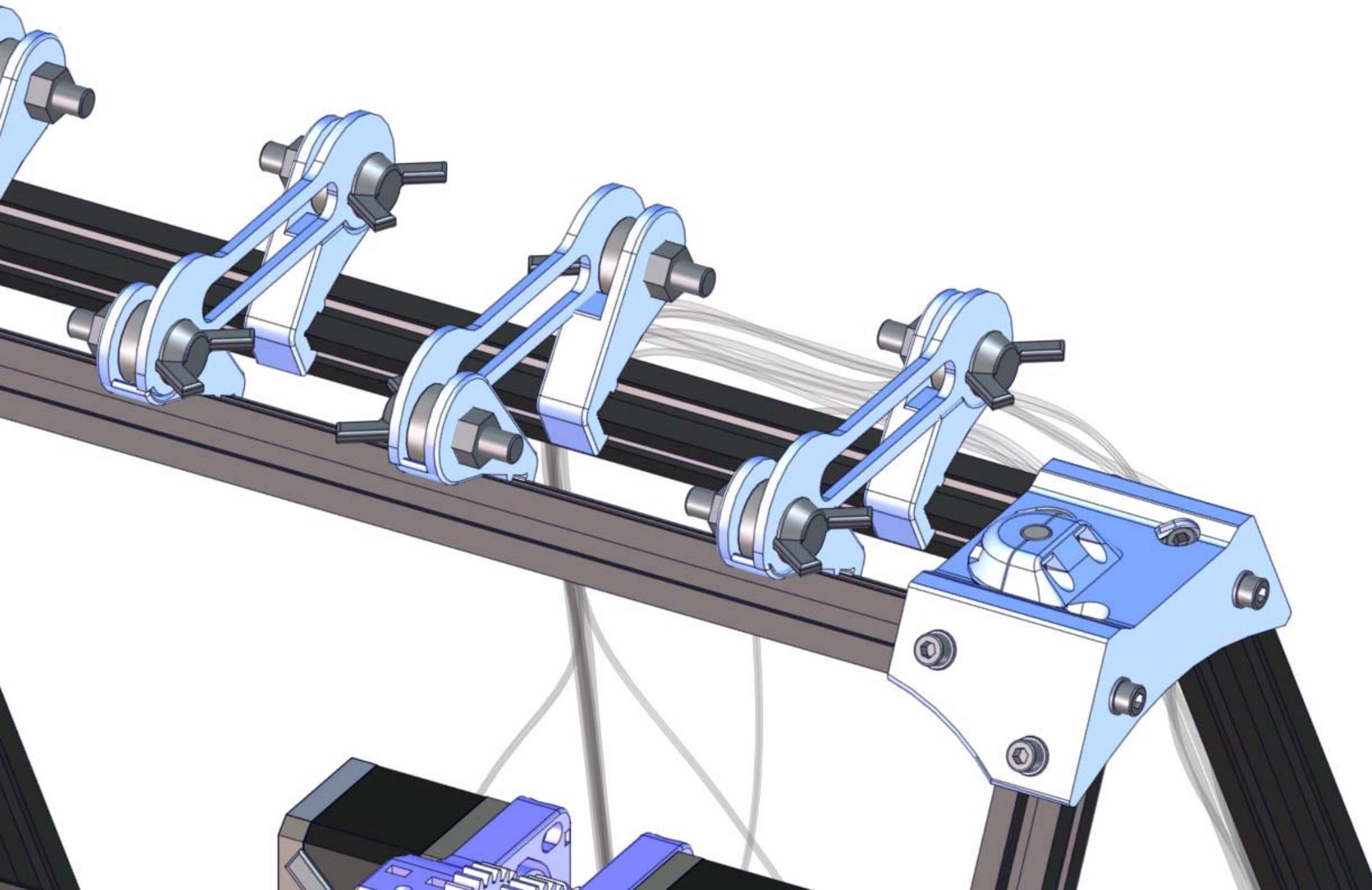


| BOM ID | Description             | Qty |
|--------|-------------------------|-----|
| T1     | DIN934 M8               | 2   |
| T2     | 608ZZ Radial bearing    | 2   |
| T3     | Spool spacer            | 1   |
| T4     | DIN912 M8x30 Palomillas | 2   |

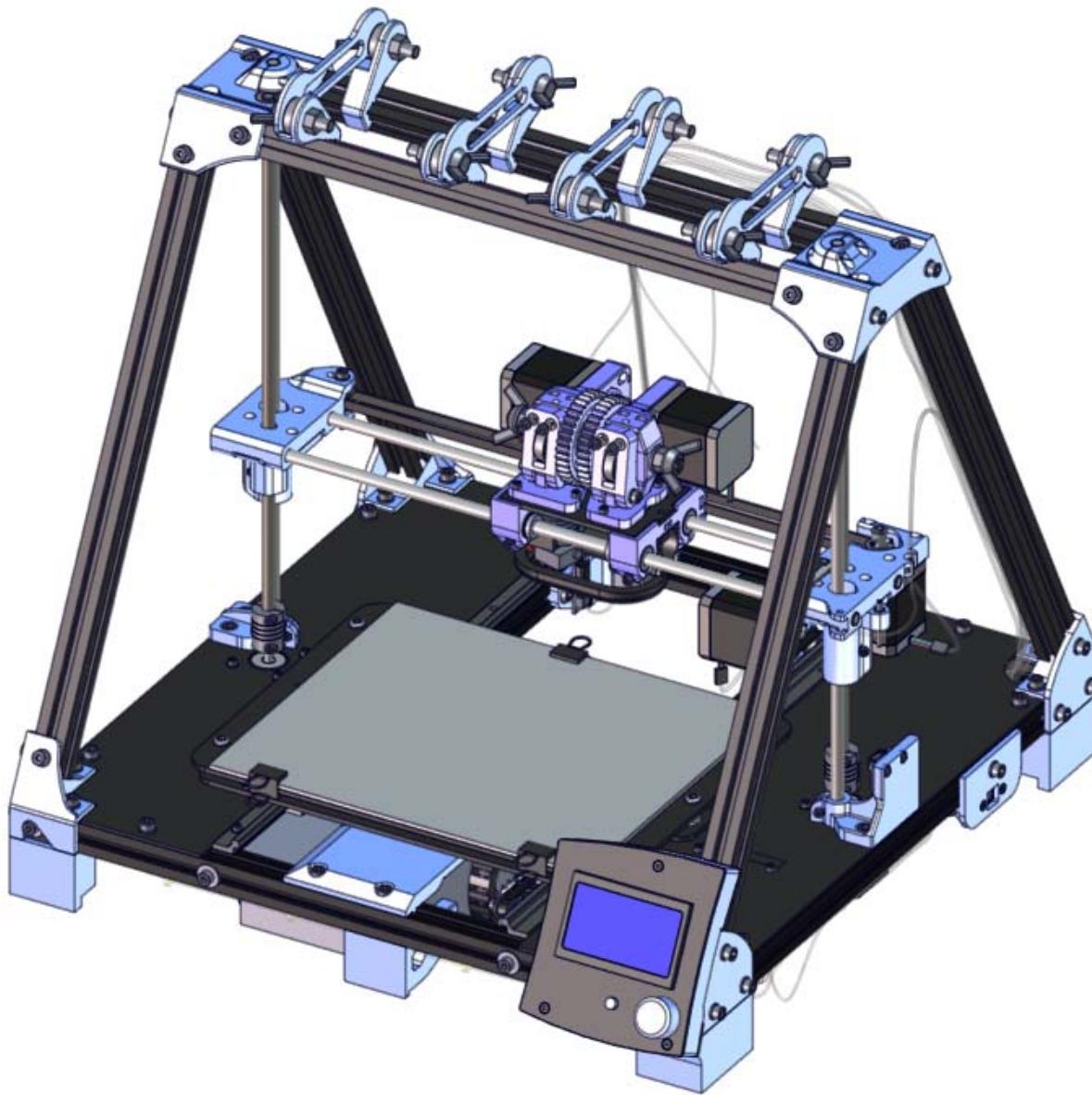


| BOM ID | Description             | Qty |
|--------|-------------------------|-----|
| U1     | DIN912 M8x30 Palomillas | 2   |
| U2     | Spool spacer            | 1   |
| U3     | 608ZZ Radial bearing    | 2   |
| U4     | DIN934 M8               | 2   |

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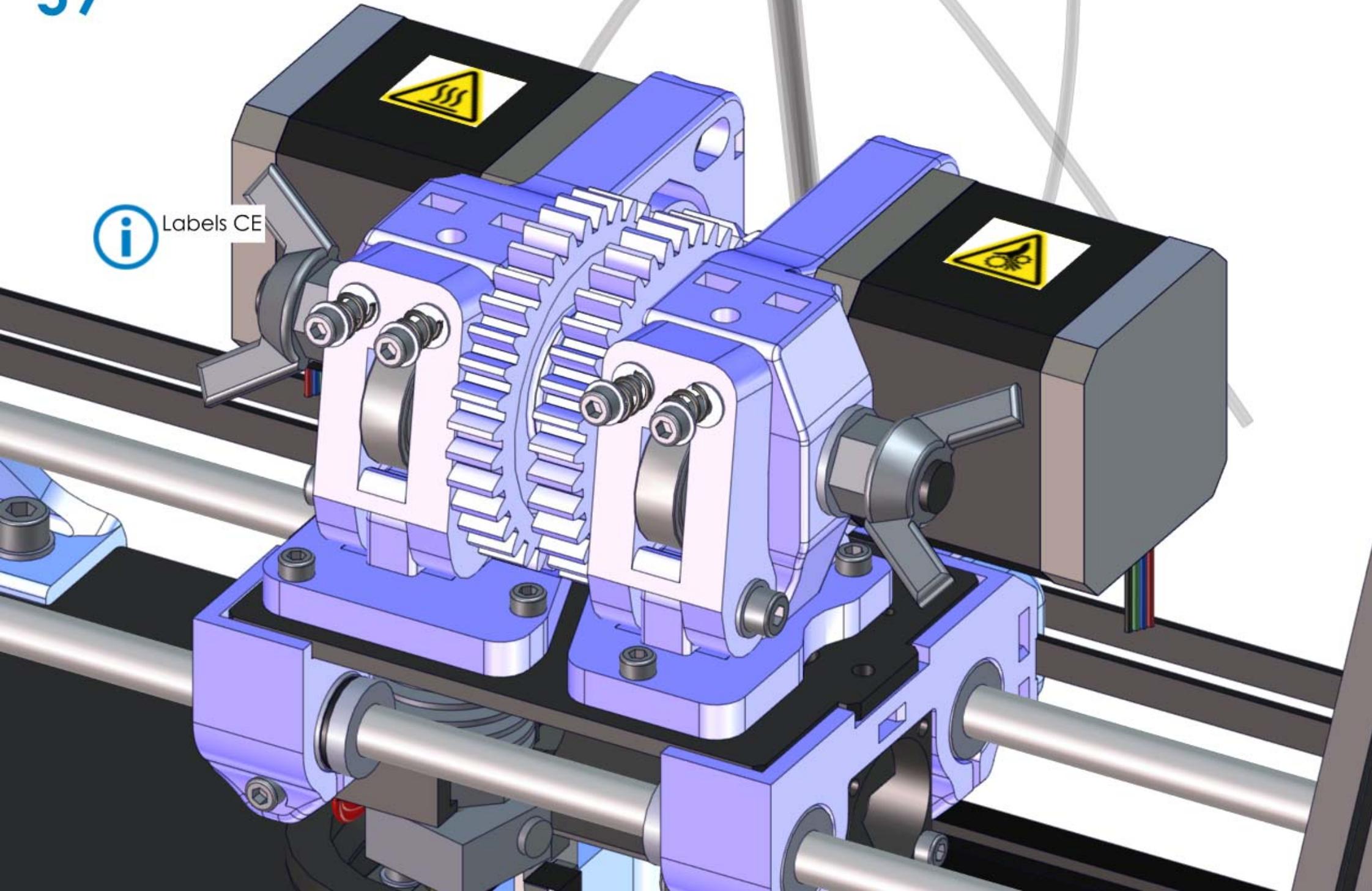


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Labels CE





This section describes the steps to modify the firmware of the printer for the Dual extruder upgrade.

The first step is to download the Arduino IDE on a computer. This is the program that will allow us to interact with the Arduino card BCN3D+.

1. Download the software Arduino from our web [www.reprapbcn.com](http://www.reprapbcn.com) download section (is mandatory to download our version of arduino) and download the Dual extruder firmware.
2. Once downloaded, connect the BCN3D + to computer via usb cable. So the connection is established with the Arduino.

The first time a board is connected to a computer is needed to install the drivers. If your computer does not install the drivers automatically when you connect the plate, followed the steps in:  
<http://arduino.cc/en/guide/windows#toc3>

3. Open the Arduino application
4. From the menu File> Open, select Dual extruder firmware version downloaded above.

The file to be opened is the one with the extension \* .ino, and is in a folder with the same name, mixed with all firmware files.

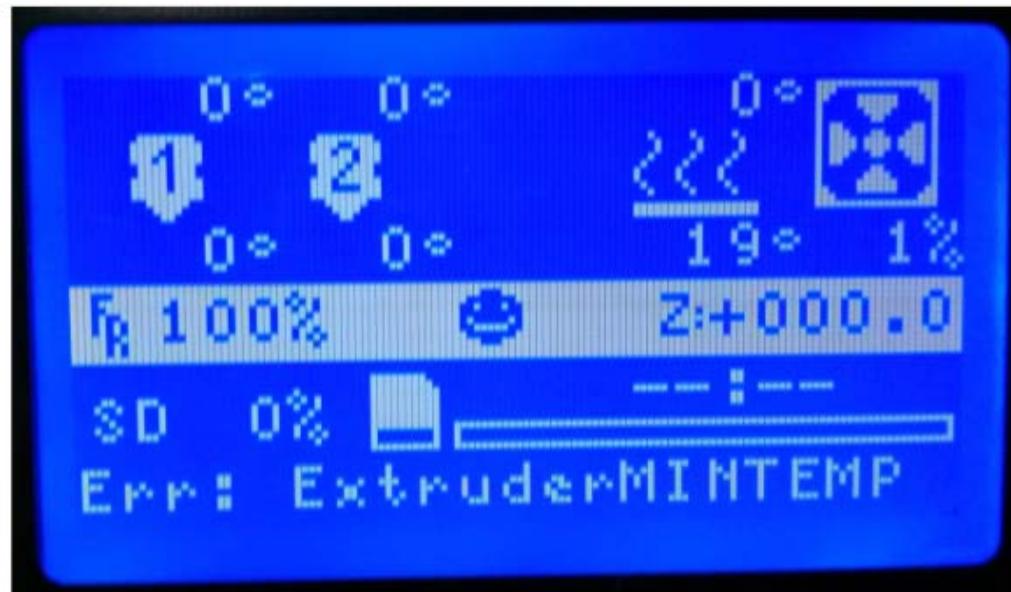
5. Select the model of Arduino board from Tools> Card> Arduino Mega 2560 & Tools> Serial Port> COM X
  - The card that operates the BCN3D + is an Arduino Mega 2560.
  - Refers to the port where we connector plate connected to the computer (COM port). We can check in the (Windows) operating system from Start> Computer> Right click> Properties> Device Manager> Ports COM and LPT.

## 2



Once the firmware is loaded , the following information appears on the BCN3D+ screen.

Since no BCNozzle is connected it will appear the error message Err: ExtruderMINTEMP

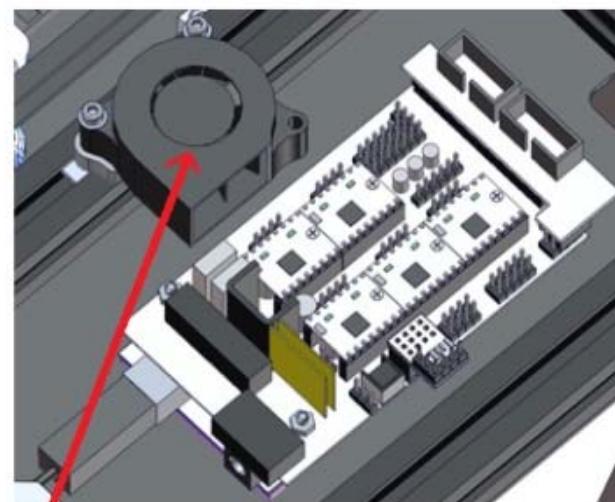
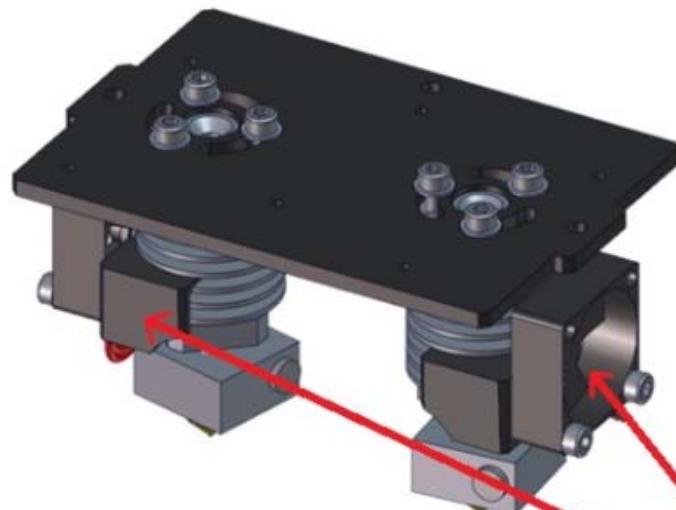


# 3



Disconnect the USB cable and turn on the BCN3D + using the side switch.  
Check that the connections are correct:

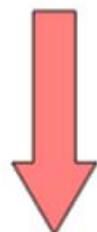
- Fans heatsinks of BCNozzle and electronic fan should turn on when connecting the machine



## 4



- Connect the BCNozzle left. The screen should display the temperature of the environment on the left indicator. If the temperature is show on the right indicator, connect the BCNozzle in the other side.

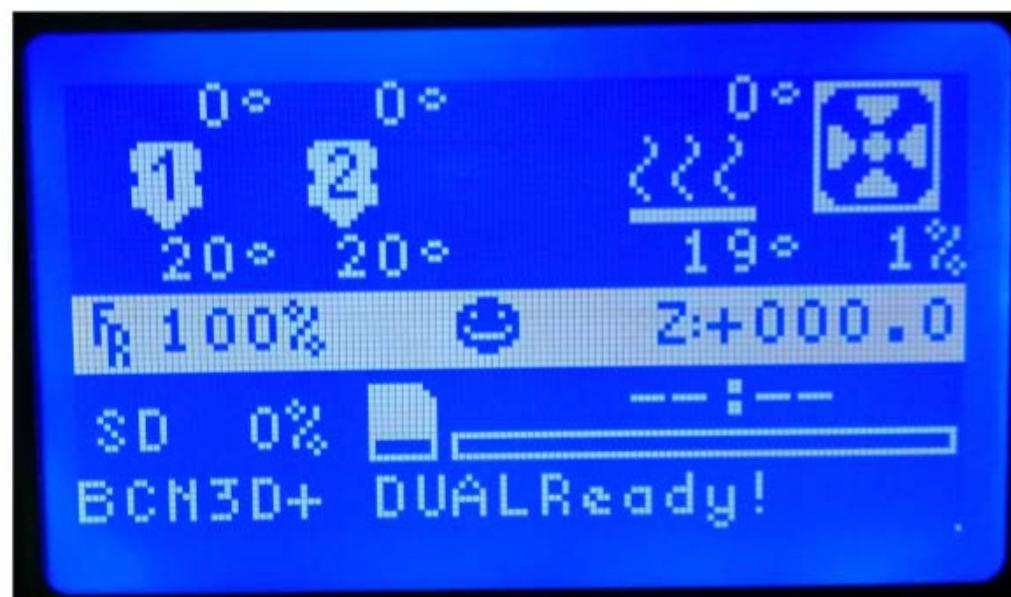
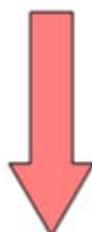


# 5



- Connect the BCNozzle right. The screen should display the environment temperature in the right indicator. Turn off the BCN3D + using the side switch and turn it on.

Err: ExtruderMINTEMP be gone.



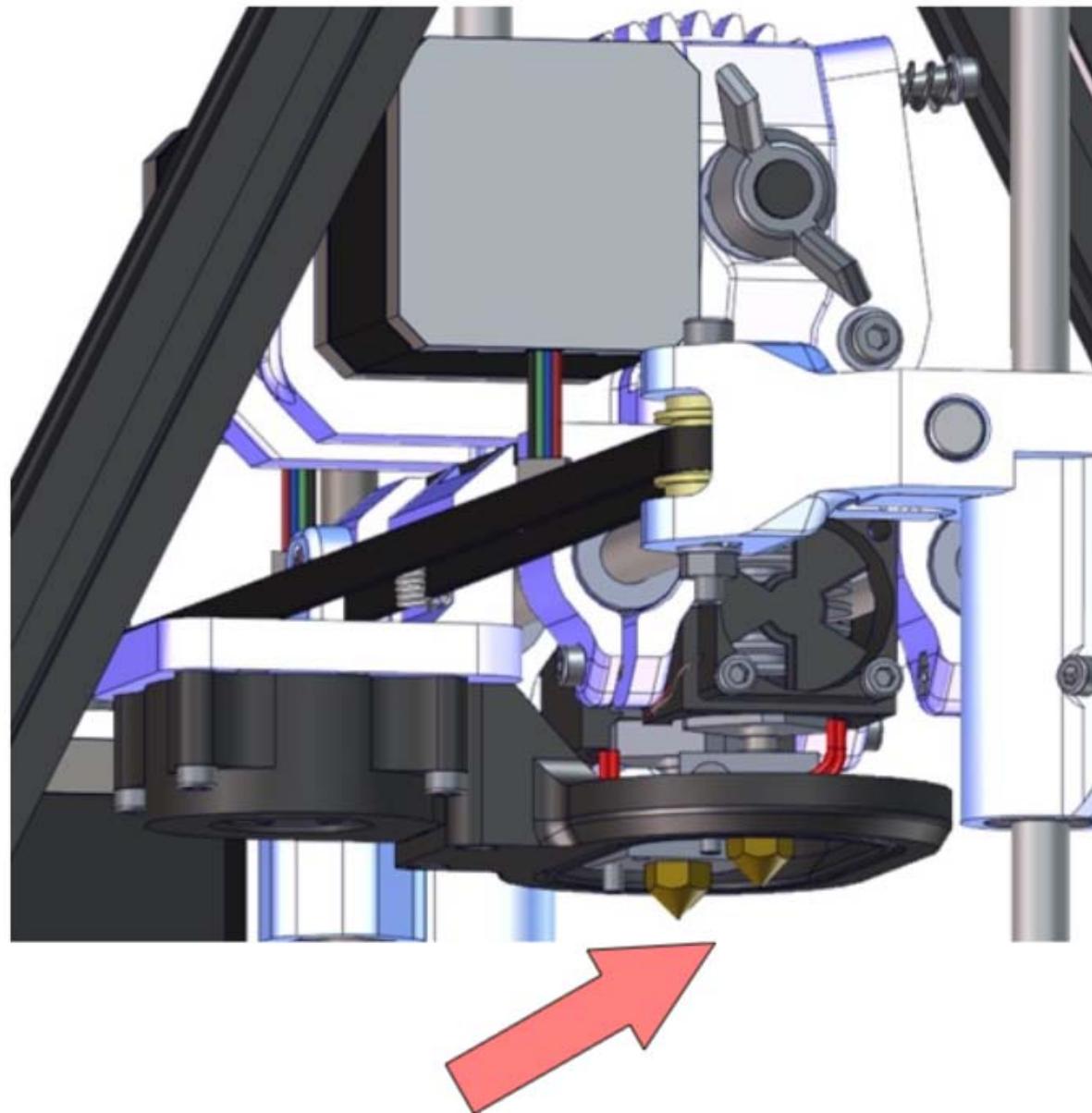
## 6



- Turn on the fan layer:

Menu> Control> Temperature> Fan Speed> 255

The fan should turn on. Verify that the Layer Fan Ring is blowing.



7



- Preheat BCNozzles

Menu> Prepare> Preheat> Preheat All> Preheat PLA

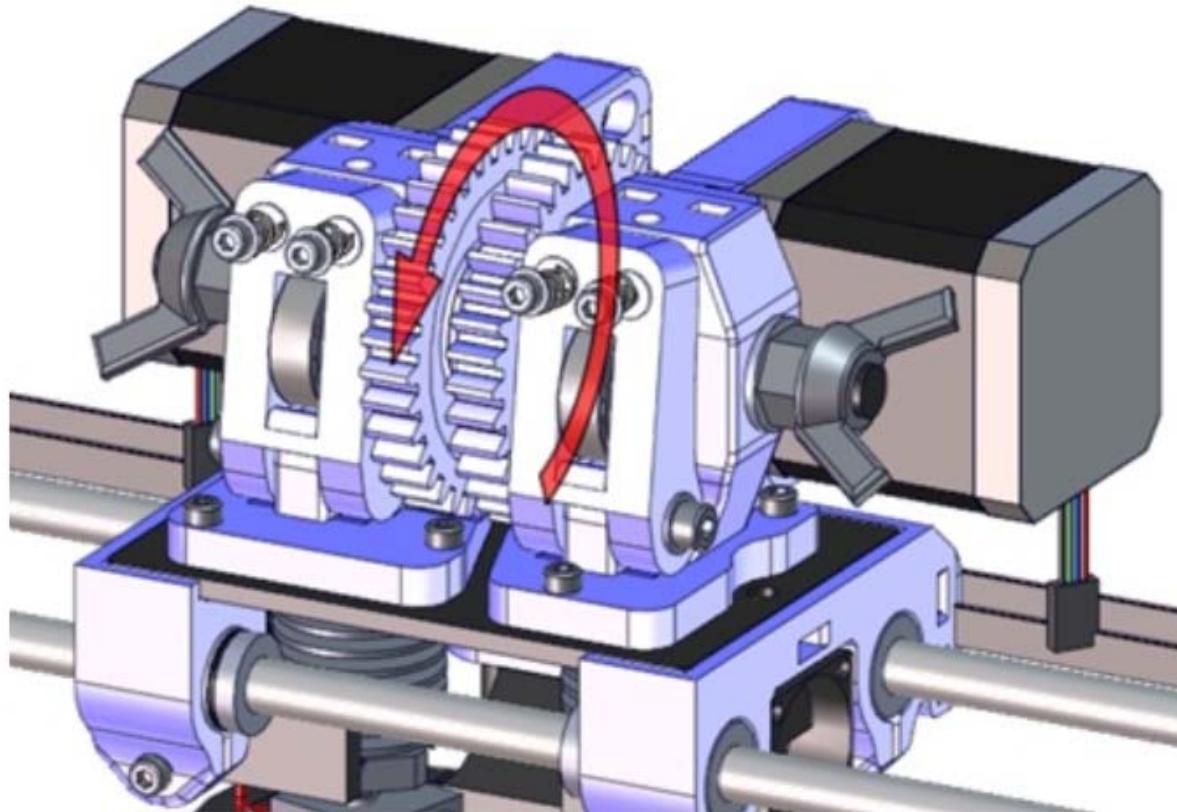
In a few minutes the BCNozzle will reach 215°C





- Once the temperatures  $220^{\circ}\text{C}$  is reached, check the movement of the motors:  
Menu> Prepare> Move Axis> 1mm Move> Move E1 (left engine)  
Menu> Prepare> Move Axis> 1mm Move> Move E2 (right engine)

Turning the control button LCD clockwise, the rotation of both motors should be as follows:

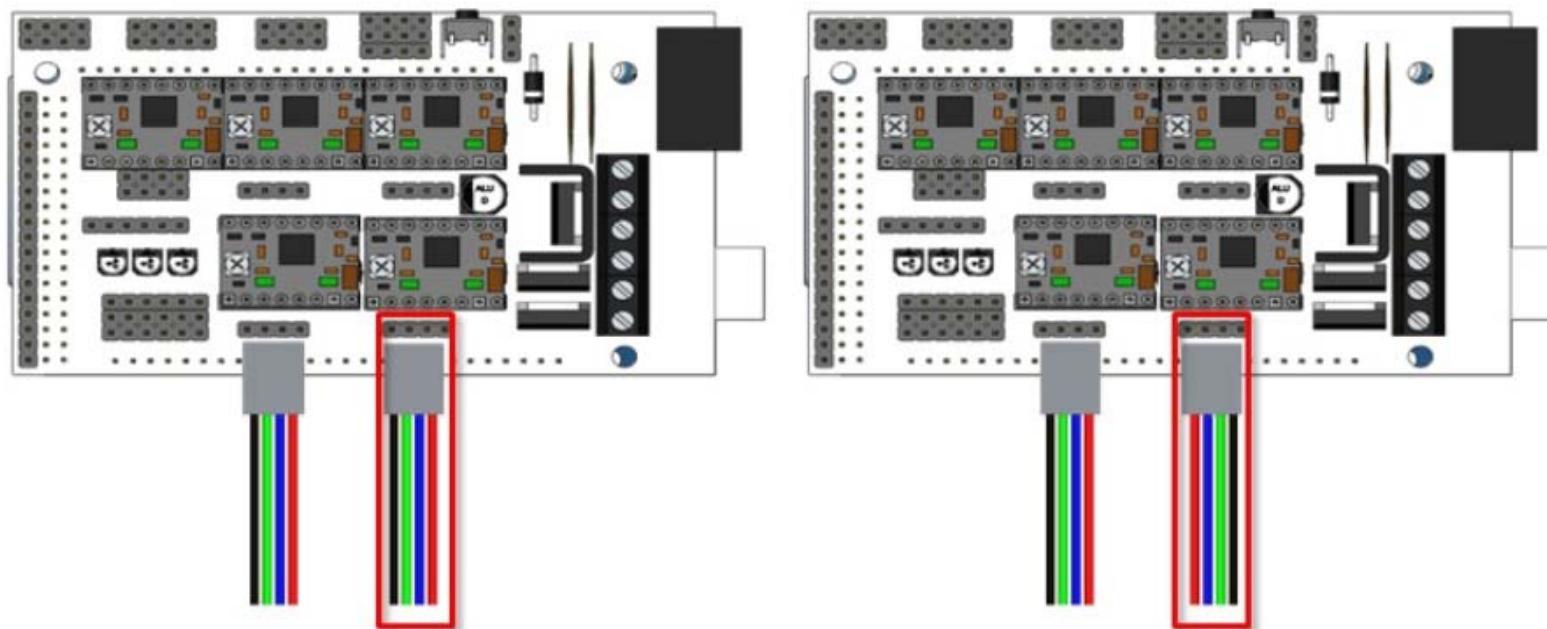




If any device is not working as expected, check the connections  
Manual assembly 6. Wiring number, from the slide 11.

Watch the color code and placement of the connections on the electronic board RAMPS.

If any of the motors do not rotate in the direction shown, reverse the plug on the RAMPS,  
as described in the following image:



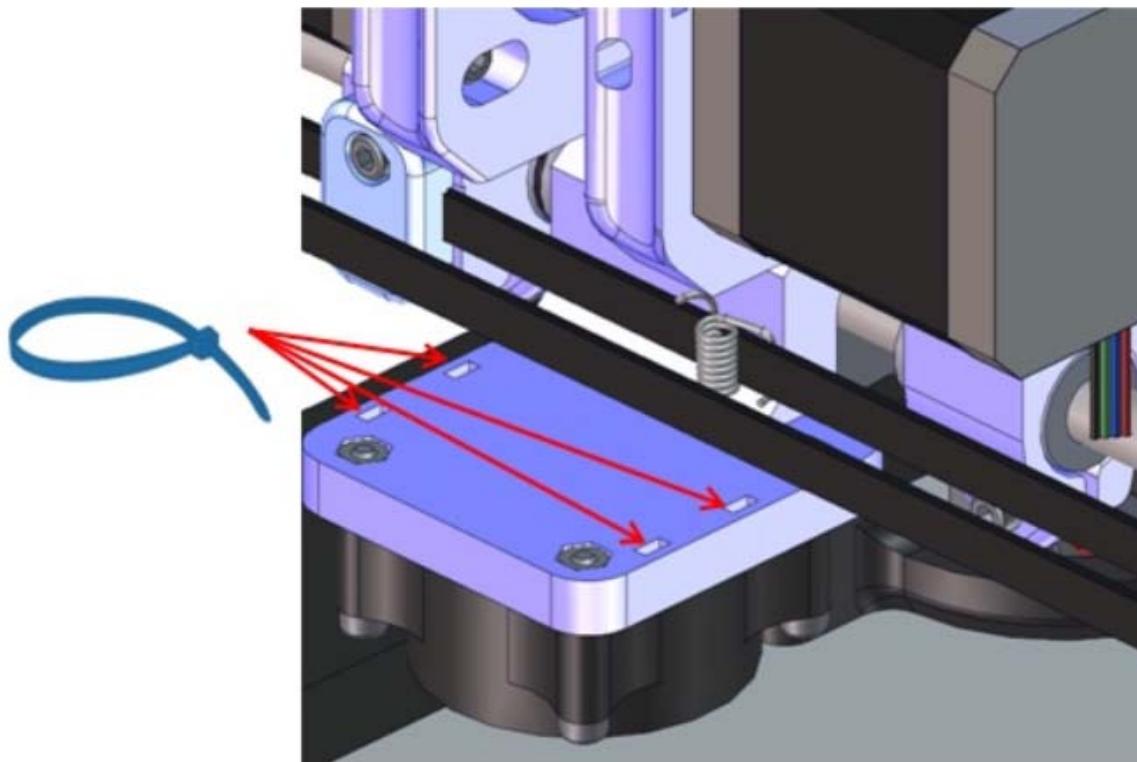
# 10



Turn off BCN3D + through the side switch.

After checking all connections, proceed to organize the wiring:

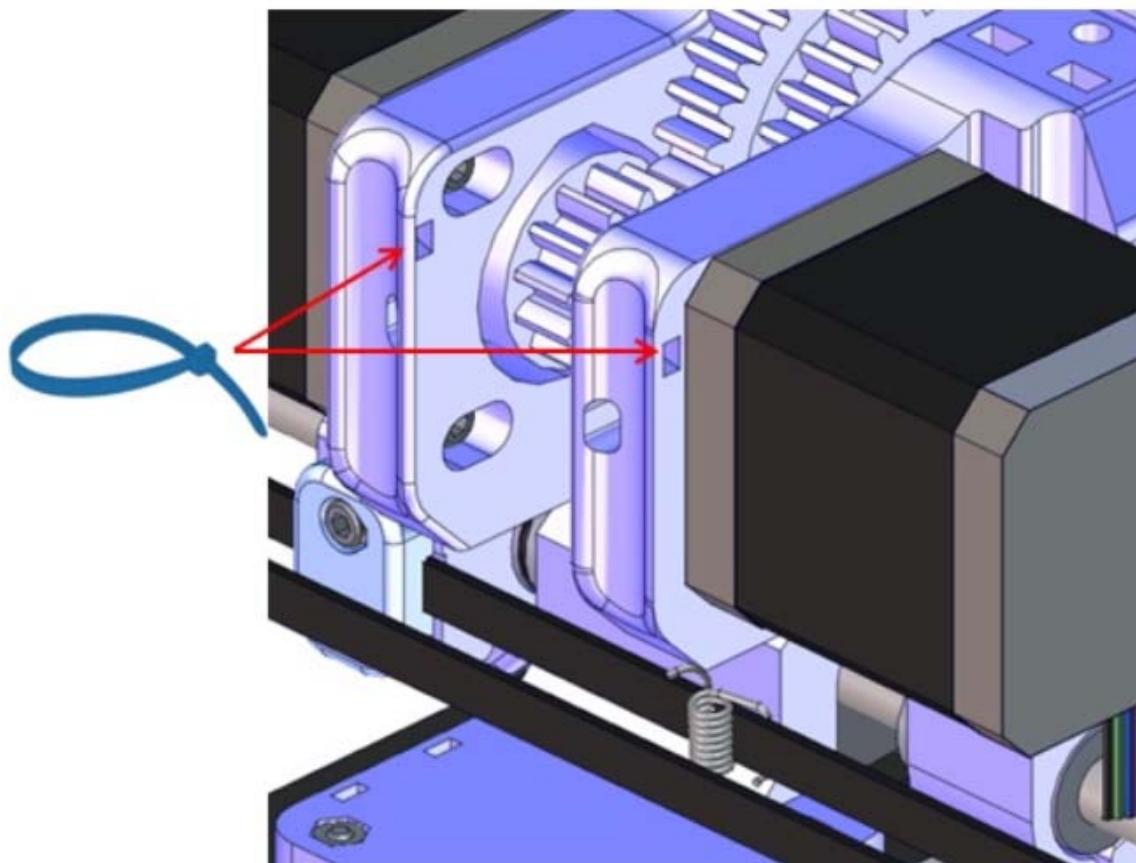
- Guide the connector of the BCNozzle cables and fans cable by side of the Layer Fan Support and holding them with flanges, as shown in the picture:



# 11



- At the end of the extruders, split into two groups extensions as they go to the extruder right or left.
- Hold the extensions by flanges, as shown in the image. Ensure that connectors are below the flange.



# 12



- Use the cable organizer spiral to collect all the cables. Run them along the highlighted route in the image, fixing the flanges to the lateral profile

