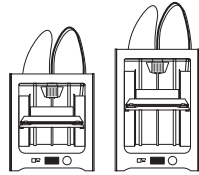


Repair manual



Replacing the print head PCB

Instructions

Caution: Make sure filament is removed, the Ultimaker is turned off and power supply disconnected before you start the replacement.

Tip: All orientations are noted as seen from the front of the printer.

Equipment/supplies needed

Tools

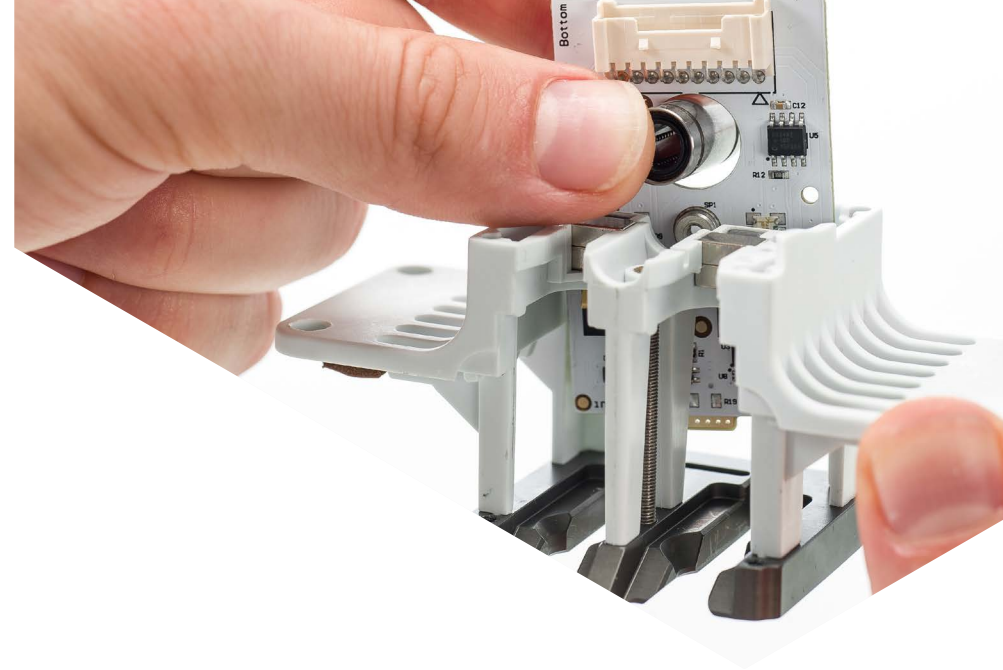
- 2.0 hex screwdriver
- 0.15 Nm torque screwdriver - 2.0 hex
- 0.3 Nm torque screwdriver - 2.0 hex
- Flat-sided screwdriver
- Loctite 248

Parts

- 1x 2012 Print head board

Time

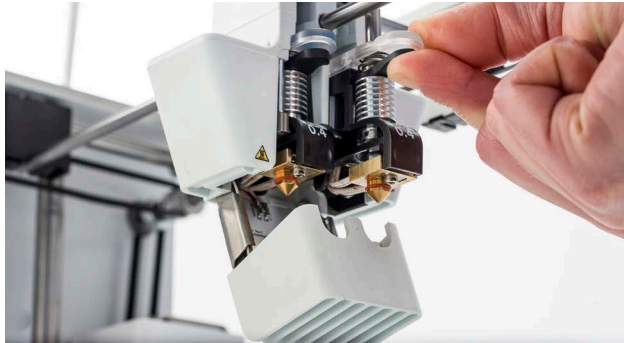
- 25 minutes



Disassembly

1. Remove the print cores

- Remove or retract the filament from print cores 1 and 2.
- Take the print cores from slots 1 and 2.



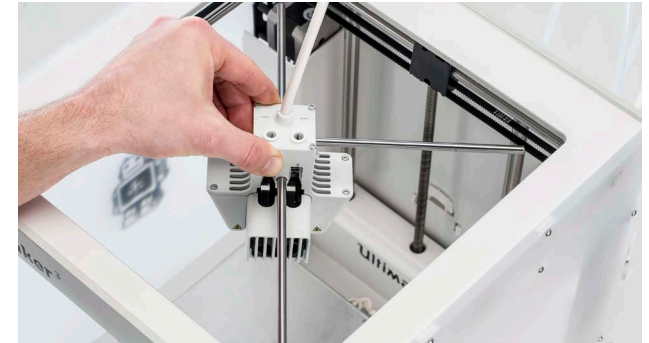
2. Remove the Bowden tubes

- Remove both clamp clips from the print head.
- Push the tube coupling collets down while pulling the Bowden tubes out of the print head.



3. Take the print head out of the printer

- Pull the Y print head shaft forward so it snaps out of the sliding blocks.
- Tilt the left and right sliding blocks so that the X print head shaft also comes loose.
- Rotate the print head 45 degrees so you can lift the print head and shafts out of the printer, then put the print head shafts aside.



4. Loosen the side fan bracket

- Use the 2.0 hex screwdriver to remove the four M2.5x6 screws that hold the side fan bracket.
- Move the side fan bracket down slightly, to create more room.



5. Disconnect the plugs

- Carefully disconnect the four plugs from the print head PCB.
- Place the side and front fan bracket assembly aside.



Disassembly

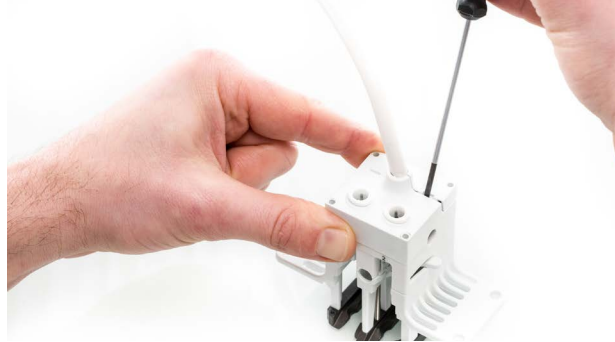
6. Remove the four long bolts

- Use the 2.0 hex screwdriver to remove the four M2.5x75 bolts from the print head.
- Clean the Loctite residue from the threads.



7. Remove the print head cable cover

- Use a flat-sided screwdriver to loosen the print head cable cover.
- Move the bearing housing top upwards.
- Take the X linear bearing out of the bearing housing middle.



8. Disconnect the print head cable

- Use a flat-sided screwdriver to open the clip of the connector.
- Take the print head cable out of the print head.



9. Remove the bearing housing middle

- Hold the print head upside down and apply some pressure to the lift switch.
- Carefully pull the the bottom part of the print head with the PCB out out of the bearing housing middle.
- Place the bearing housing middle and the lift switch parts aside.



10. Remove the print head PCB

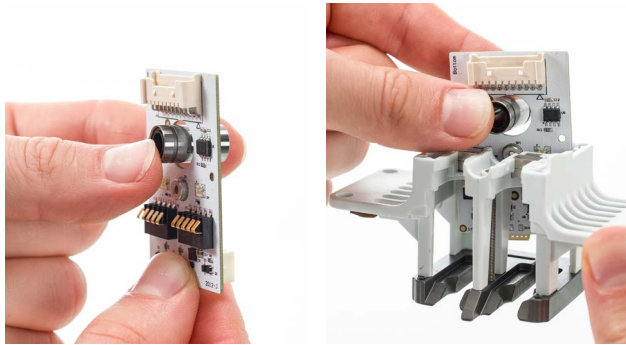
- Use the 2.0 hex screwdriver to remove the M2.5x8 bolt from the back of the print head PCB.
- Hold the Y linear bearing and manoeuvre the print head PCB out of the header bracket.



Reassembly

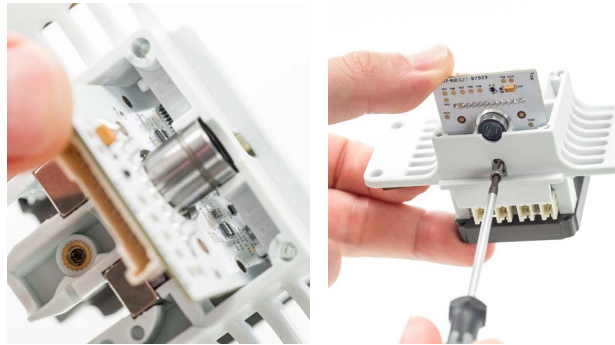
1. Place the print head PCB

- Take the X linear bearing and place it through the hole in the print head PCB.
- Lower the print head PCB with the bearing into the header bracket until the bottom tab fits in the bottom plate.



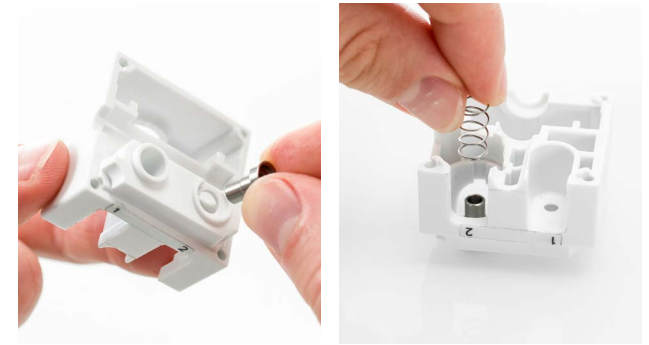
2. Secure the print head PCB

- Align the small pins of the header bracket with the holes in the print head PCB.
- Secure the print head PCB to the header bracket with the M2.5x8 bolt and tighten it to 0.3 Nm, using the torque screwdriver.



3. Prepare the bearing housing middle

- Insert the filament guide into the bearing housing middle, above the '2'.
- Place the bearing housing middle upside down and place the spring over the filament guide.



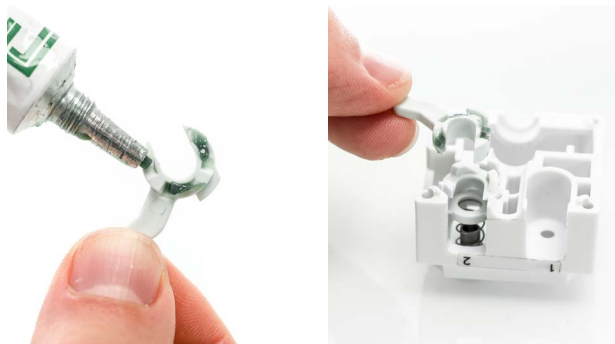
4. Place the lifting ring

- Place the lifting ring (2116) on the spring.
- Make sure the teeth are upwards and the opening is towards the front.



5. Place the lifting switch

- Apply a small amount of Magnalube to both sides of the lifting switch (2117).
- Place the lifting switch on the lifting ring.
- Make sure the switch is towards the back and the opening is towards the front.



6. Place the lifting ring bottom

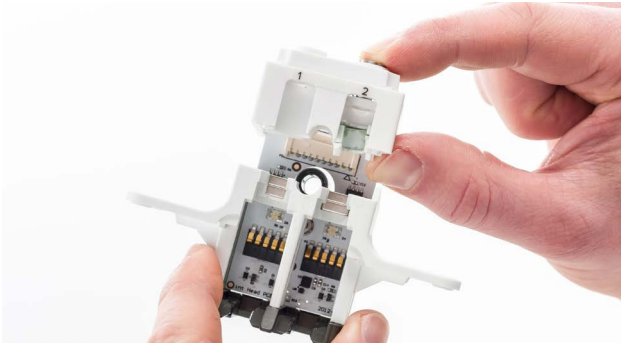
- Place the lifting ring bottom (2138) on the lifting switch.
- Make sure the teeth are facing down and the opening is towards the front.



Reassembly

7. Attach the bearing housing middle

- Hold the bearing housing middle, while applying pressure to the lift switch and filament guide.
- Hold the bottom part of the print head upside down and place it over the bearing housing middle.
- Make sure the parts click together and continue to apply some pressure to keep them together.



8. Place the X linear bearing

- Turn the print head around so it is right side up again.
- Place the X linear bearing in the notch of the bearing housing middle.

Tip: Continue to apply some pressure to the print head parts; they are not yet secured.



9. Secure the bearing housing top

- Place the bearing housing top over the X linear bearing.
- Apply a small amount of Loctite 248 to the first 2 mm of the threads of two of the M2.5x75 bolts.
- Insert the bolts through the holes in the bearing housing top and tighten them to 0.15 Nm, using the torque screwdriver.



10. Connect the print head cable

- Insert the print head cable connector into the print head PCB; make sure it clicks into place.
- Move the bearing housing top down and align it with the bearing housing middle.



Tip: If the cable does not click into place, use the hex screwdriver to push it completely into the connector.

Caution: Overtightening the M2.5x75 bolts can damage the print head. This puts more pressure on the linear bearings, causing excessive wear of these parts. Only use the 0.15 Nm torque screwdriver.

Tip: If the bolts can't be tightened to 0.15 Nm, replace them. There may be Loctite residue in the thread.

Reassembly

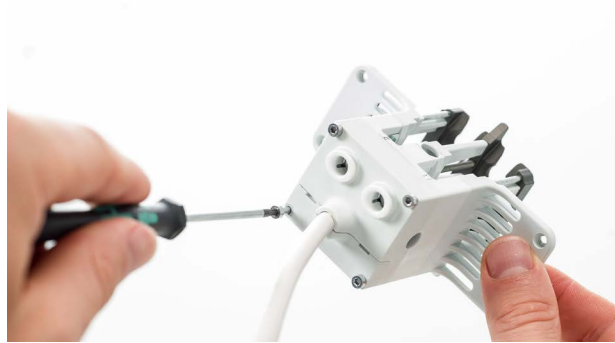
11. Place the cable cover

- Click the cable cover into place.
- Make sure that the print head cable does not stick out of the strain relief.



12. Secure the cable cover

- Apply a small amount of Loctite 248 to the first 2 mm of the threads of two of the M2.5x75 bolts.
- Insert the bolts through the holes in the cable cover and tighten them to 0.15 Nm, using the torque screwdriver.



Caution: Overtightening the M2.5x75 bolts can damage the print head. This puts more pressure on the linear bearings, causing excessive wear of these parts. Only use the 0.15 Nm torque screwdriver.

Tip: If the bolts can't be tightened to 0.15 Nm, replace them. There may be Loctite residue in the thread.

13. Align the print head and fan bracket

- Place the print head into the side fan bracket.
- Make sure the parts are aligned, but don't push them together yet.
- Ensure that the plugs for the radial fans are at the sides and the wires of the axial fan and capacitive sensor are in the recess at the back of the bottom plate.



14. Connect the plugs

- Connect the red-black wires of the right radial fan to the first connector, marked '←'.
- Connect the red-white wires of the capacitive sensor to the second connector, marked 'Sensor'.



- Connect the black-white wires of the axial fan to the third connector, marked '▲'.
- Connect the red-black wires of the left radial fan to the fourth connector, marked '→'.

Tip: Push all excess wire into the side fan bracket. If the wires are sticking out at the back, they can easily be damaged during printing and normal printer operations.

Reassembly

15. Secure the fan bracket

- Push the print head assembly fully into the side fan bracket and align the parts.
- Secure the side fan bracket with eight M2.5x6 screws.
- Tighten them to 0.3 Nm using the torque screwdriver.



16. Insert the print head shafts

- Push the print head shaft X through the bearing. The X shaft is the longer 6 mm axle.
- Push the print head shaft Y through the bearing. The Y shaft is the shorter 6 mm axle.



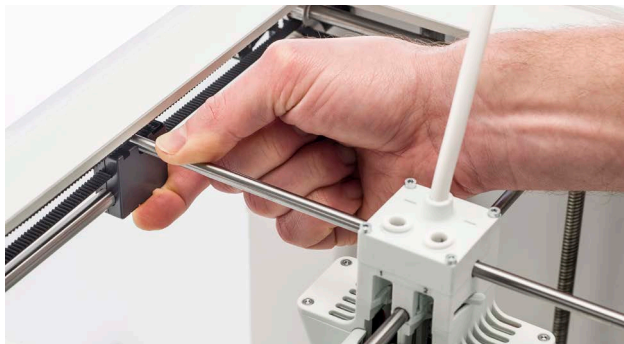
17. Place the print head in the printer

- Put the print head in its original position and align the print head shafts with their sliding blocks.
- Make sure that the ends of the axles are all in between the belts.



18. Secure the print head shaft X

- Tilt the left and right sliding blocks to be able to place the print head shaft X in the notch. Make sure that the end of the shaft is 1 mm from the left panel.
- While supporting the bottom of the sliding block, push down on the end of the shaft until it clicks into place. Do this for both sides.



19. Secure the print head shaft Y

- Tilt the front and back sliding blocks to be able to place the print head shaft Y in the notch. Make sure that the shaft is exactly in the middle.
- Pull the end of the axle upwards until it clicks into place. Do this for both sides.



20. Insert the Bowden tubes

- Place the print head in the front right corner.
- Push the two Bowden tubes into their corresponding tube coupling collets.
- Secure the Bowden tubes in place with the two clamp clips.

