

Gaps in the print Under extrusion

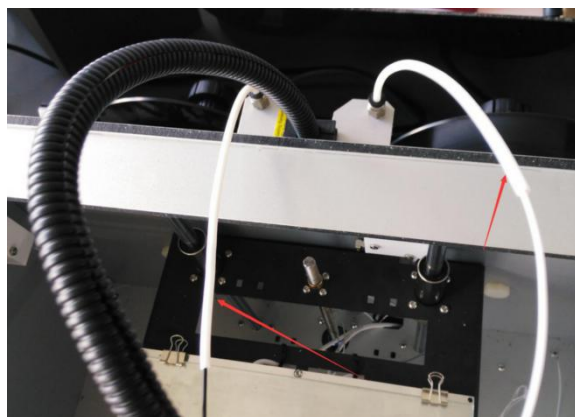
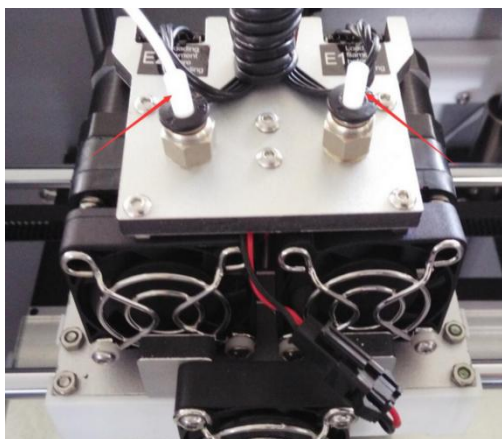
Warning: Please be careful for human electrostatic especially in winter when touching the motherboard or extruders or laser. The easiest way to solve this problem is that we can touch the metal part nearby by hand first before touching the motherboard or extruders or laser. So the electrostatic usually will be gone before touching the motherboard or extruders or laser.



There are many causes. Please check the link here:

<http://support.3dverkstan.se/article/23-a-visual-ultimaker-troubleshooting-guide#underextrusion>

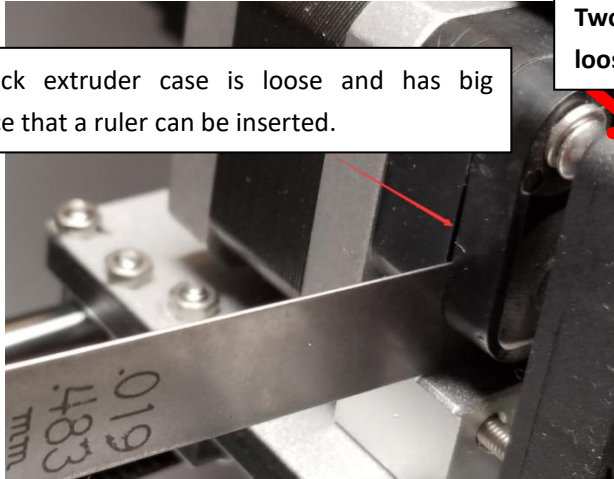
We can also add the PTFE tube on the extruder coupler as the photo below. This will let extruder be easier to pull the filament from the back of the printer. The PTFE tube can be cut from the filament guide tube if it has the similar size.



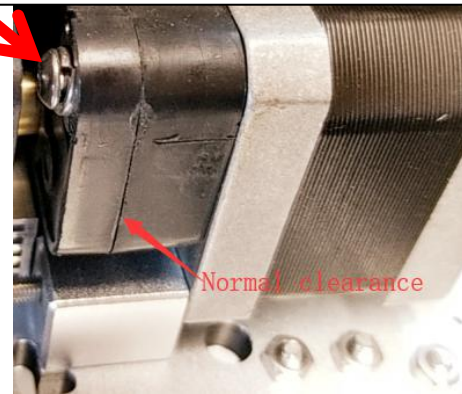
If the problem still not solved, please check the words below:

The black plastic extruder case or two screws for the extruder case may be tight or too loose. Usually it will be loose after long time transportation from China.

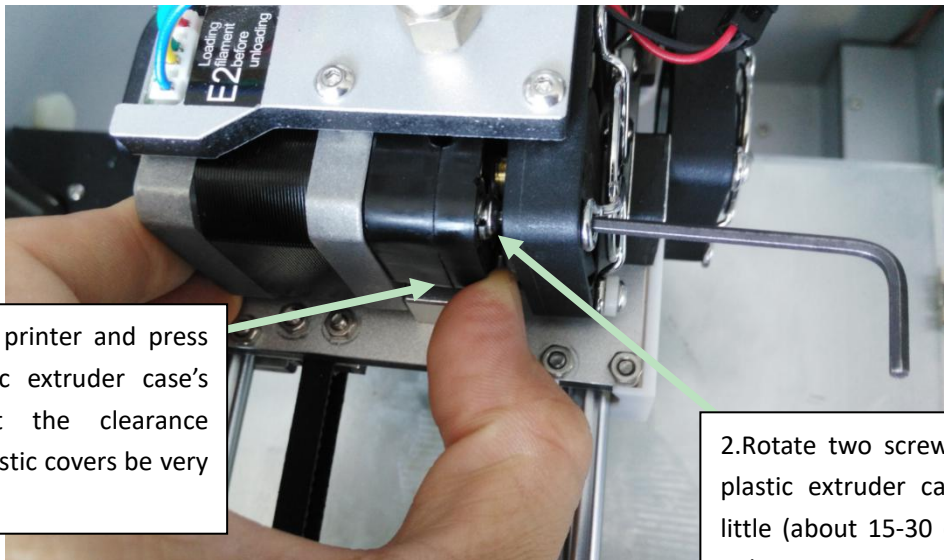
The black extruder case is loose and has big clearance that a ruler can be inserted.



Two screws for the extruder case may be too loose or tight. This will cause under extrusion.

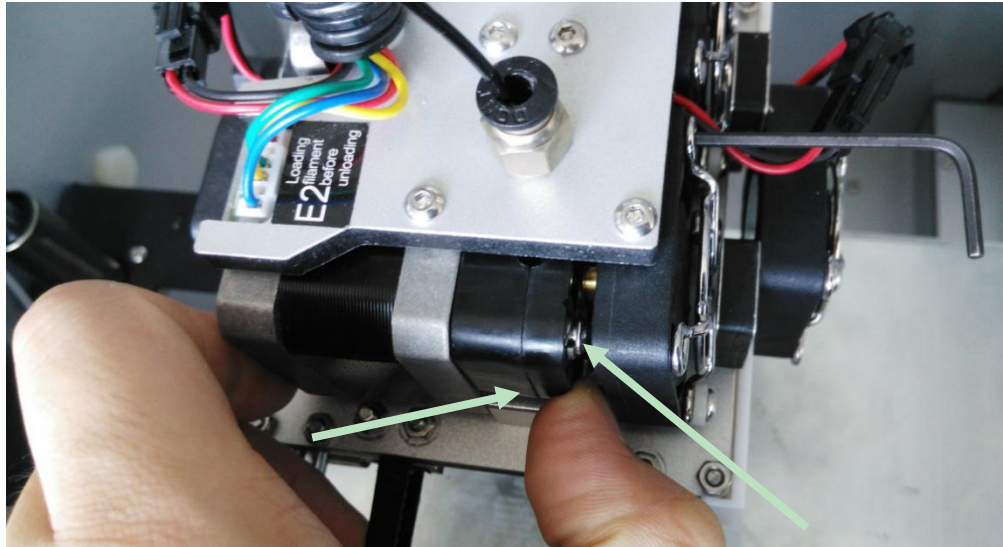


Please power off the printer and press the black plastic extruder case's bottom to let the clearance between two plastic covers be very small. Then rotate two screws on the black plastic extruder case clockwise a little (about 15-30 degrees). If too tight, rotate two screws counter clockwise. Let the screw cap just a little contact the gasket on the black plastic case as the photo below. (too tight or too loose will let the extruder can't extrude.) If not power off the printer first, the fan will be broken when you use this way.)



1. Power off the printer and press the black plastic extruder case's bottom to let the clearance between two plastic covers be very small

2. Rotate two screws on the black plastic extruder case clockwise a little (about 15-30 degrees). If too tight, rotate two screws counter clockwise.

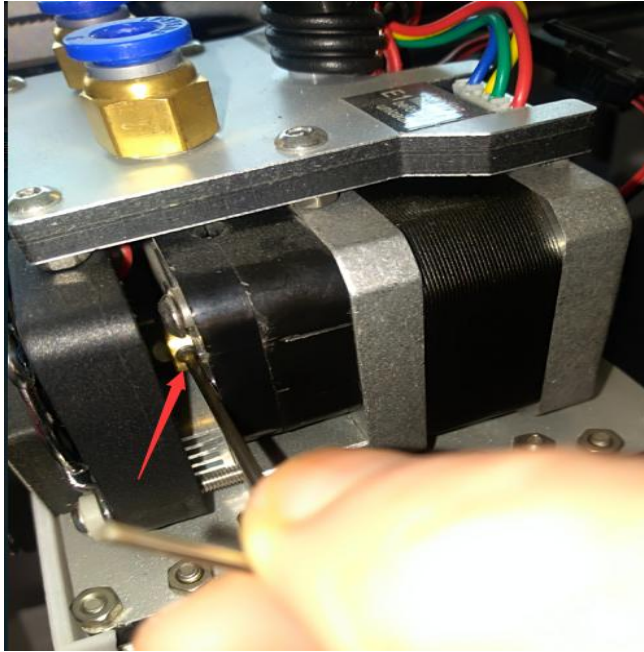


If it is hard for you to get the correct tension for two bolts, please check this link:

<https://drive.google.com/file/d/0B76TjeOksIHITzJ5RWZiT2ZaQ00/view?usp=sharing&resourcekey=0-JUhrp2fA7iifRcAZuHn7qg>

When you press the filament on the back of the extruder motor, the filament can still be extruded properly , and this tension is usually ok.

If the problem is still not solved, maybe there are much filament pieces around the gear covers the gear teeth or the gear is worn out. Please clean the gear or move the the extruder gear on the motor shaft direction to have another part of the good teeth. The extruder gear may also get loose or the set screws on the gear may contact the black plastic case during spinning. First we can try to tighten the set screws without disassembling the extruder. Please unload the filament first (When you unload the filament, please kindly load the filament first and then unload it. This will reduce the risk of extruder clog), then check if you can see the set screw on the gear from the view as the picture:



Then we can tighten the set screw by smaller allen wrench (please kindly turn off the printer first before tightening). **The set screw position should be very near to the black plastic cover but not contact the black plastic cover, and allen wrench contacts the black plastic cover.(Some printer's gear has only one set screw, some has two set screws. If there are two set screws, please tighten two set screws)**

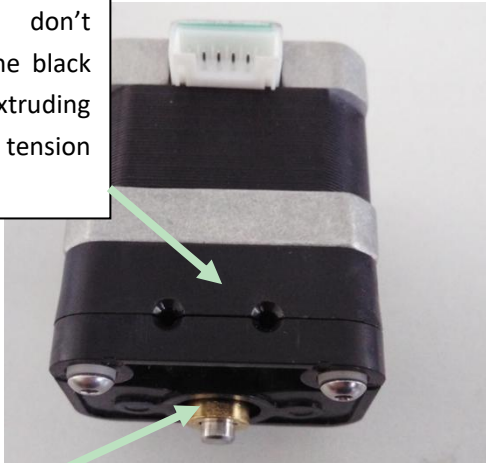
If you can't see the set screw from this view, please kindly preheat the extruder to 180c and then go to Extrusion on touch screen. Please see the picture:



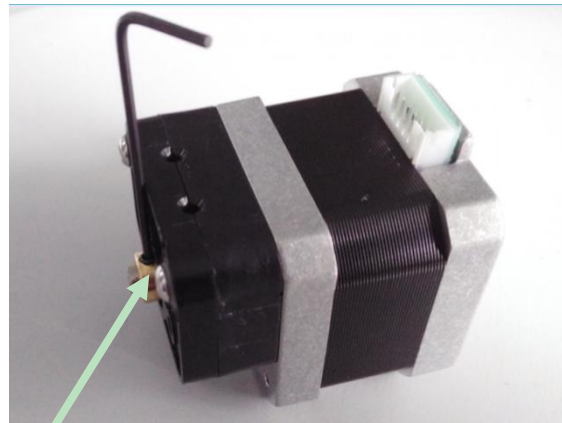
We can press “In” or “Out” to spin the gear and when we can see the set screw, please turn off the printer and tighten the set screw by smaller allen wrench.

If you can't get through the above way to tighten the gear, then we can disassemble the extruder. Please kindly check the disassembly video link below:
https://drive.google.com/file/d/0B148jWiv_vJebE10Nm5DTIZNUDA/view?usp=sharing&resourcekey=0-eUFQm_Yq_iOTrDQ0sZbJCA
Then check the photo below and tighten it:

Please don't disassemble the black plastic extruding system, or its tension will be not ok.



Pull the loose gear a little out



Use the allen wrench to tighten this set screw. The set screw position should be very near to the black plastic cover, and allen wrench contacts the black plastic cover.



The set screw should face the motor axle cross section.

If your print *always* comes out well at first, then the extruder can't extrude enough filament, the cause may be extruder motor has the problem. If the extruder motor is the cause, you will hear the extruder gear clicking noise when it is under extrusion, and when you stop the printing and restart the printer, it will be hard to push the filament down after heating the extruder as the extruder gear is hard to be turned. However, if the extruder's hot end is clogged or the filament is tangled on the spool, the same thing happened. How to check whether it is clogged or the motor has the problem ? The point is that if the extruder motor has the problem, your next print maybe start ok at first, then you will find the under extrusion again. If the extruder is clogged, usually your next print will have the problem at first if this problem still not solved. If the cause is tangled filament, you will find this on the spool when

this problem happens.

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Usually the motor will not have the problem. But when we our printing speed is too fast or too low, printing temperature is too low, layer height is too thick, the motor works in an overloaded condition, and its life will be shortened. The motor hates heat too. When the motor works in the hot enviroment, its life will be shortened too.