

Loss of Extrusion

Diagnosing Loss of Extrusion

Occasionally, the printer's head may experience loss of extrusion. This will be evident by observing one of the following:

- Seeing the head moving with no material coming out of either liquefier tip
- The height of the model and support materials are not equal
- Sagging structures due to lack of support materials



WARNING

The head area is very hot!! Use gloves when working in this area of printer!

Diagnose loss of extrusion:

1. Press **cancel** and remove any parts from the printer.
2. Insert a new modeling base
3. From **Idle**, enter **Maintenance**
 - A. Using the keypad, press **Machine**.
 - B. Press **Head**. The head will come to rest in the center of the chamber and the Z Platform will change position.
4. The display will read:
Model Drive Motor Stopped
5. Determine if there is a model material extrusion problem by pressing **Forward** (command will be available after Head reaches operating temperature). Watch the model tip (right tip) for several seconds, looking for extrusion (material purge).

NOTE

If it was previously at a cool temperature, the tip may not immediately extrude material. After the tip reaches operating temperature you may need to wait up to 30 seconds before extrusion will begin.

6. Press **Stop** to stop the extrusion.
7. If material steadily flowed from the model tip, the model tip is not experiencing loss of extrusion.
8. Test the support material tip by choosing: **Select Drive** - the display will read:
Support Drive Motor Stopped
9. Determine if there is a support material extrusion problem by pressing **Forward**. Watch the support tip (left tip) for several seconds, looking for extrusion (material purge).
10. Press **Stop** to stop the extrusion.
11. If material steadily flowed from the support tip, the support tip is not experiencing loss of extrusion.
12. Return the printer to the Maintenance state - Push **Done**, then answer **Yes** when the printer displays **Is Material Loaded?**
13. If material did not extrude from both tips follow the procedure in the following section, ["Recovering From Loss of Extrusion"](#).

Recovering From Loss of Extrusion

NOTE

It is recommended that you read and understand this entire procedure before performing any of the work.

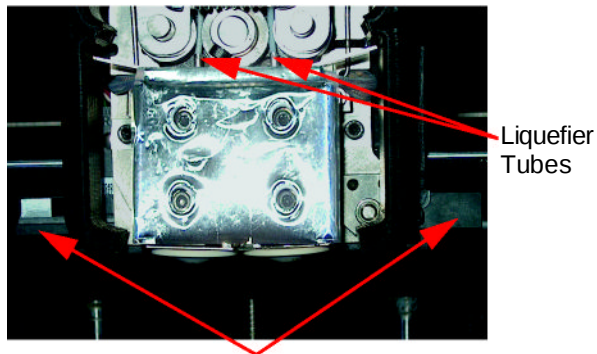
1. Enter **Head Maintenance** mode.
 - From **Idle**, press **Maintenance** > then **Next** > then **Head Maintenance**.

WARNING



The head area is very hot!! Use leather gloves when working in this area of printer!

2. Remove plastic head cover.
 - Remove plastic head cover by squeezing raised pads on sides of cover.
3. Place the tip toggle bar in neutral position (bar will extend equally from both sides of head - [Figure 27](#)). This can be done manually - push on the extended bar end.



Toggle Bar extends equally from both sides of head.

Figure 27: Tip Toggle Bar in Neutral Position



CAUTION

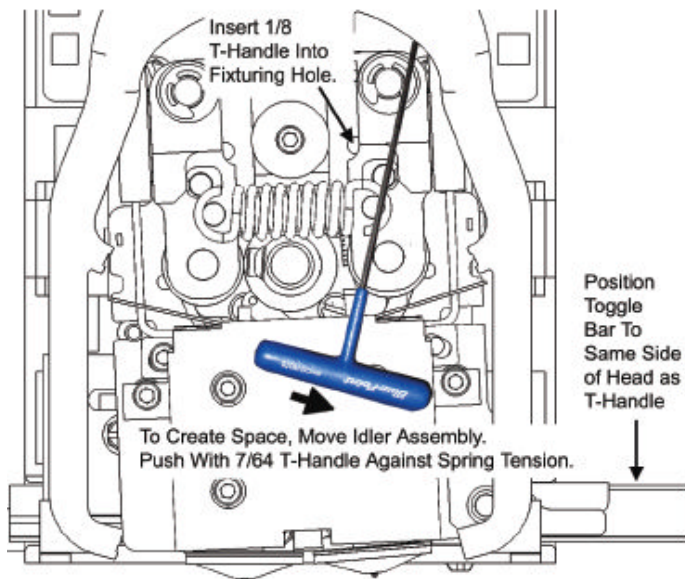
The end of the extrusion tip where the material enters is called the Liquefier Tube. Liquefier Tubes are fragile. Use care when working in this area so as to avoid damage to the tubes.

4. Remove excess material found around the head area.

NOTE

Filament feed to the tip can sometimes jam causing a build-up of material under the head cover.

- A. Clean out as much of the material as possible using needle nose pliers, a probe, or equivalent tool.
- B. To facilitate access to areas that may need to be cleaned, move the material idler wheels out of the way (there is one idler wheel for support material and one for model material - [Figure 28](#) illustrates the model side):



*Figure 28: Create Access Space for Cleaning - Model Tip Side
Repeat for Support Tip Side*

NOTE

Move only one idler wheel assembly at a time. Finish cleaning around the moved wheel and restore it to its normal position before moving the other idler wheel. Having both wheels out of position simultaneously could stretch the spring.

- (1). Using a 7/64 T-handled hex driver (from Start-Up Kit) to leverage against the lower idler wheel shaft, push the idler assembly away from the filament drive gear by pushing against the spring tension.

NOTE

When moving the idler wheel assembly, you can obtain maximum clearance for cleaning if you also move the Tip Toggle Bar so that it is extended to the same side of the head assembly as the one on which you are working. It is not necessary to keep Toggle Bar in a neutral position.

- (2). Insert 1/8 T-handled hex driver (from Start-Up Kit) into the fixturing hole.
- (3). Ease pressure on the 7/64 T-handle driver to carefully return the leveraged idler wheel back toward its original position - until the idler assembly is resting against the 1/8 T-handled hex driver.
- (4). Remove the 7/64 T-handled driver used to leverage the idler assembly.
- (5). Clean the area that is now accessible. Remove the 1/8 T-handle hex driver when complete.

CAUTION



Liquefier Tubes are fragile. When removing excess material from the top of the liquefier be careful not to damage the tube.

5. Remove excess material from the top of the liquefier.
 - Use needle nose pliers to carefully grip and remove excess material from the top of the liquefier.