ADAPTIIV

Raise3D - TPU Printing Guide

Training Documentation for 3D Printing

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Introduction

This document outlines four important procedures meant to facilitate 3D printing when using Thermo-polyurethane (TPU) filament with the Raise3D Pro2Plus printer.

Procedures:

1. Plastic Printer Cover

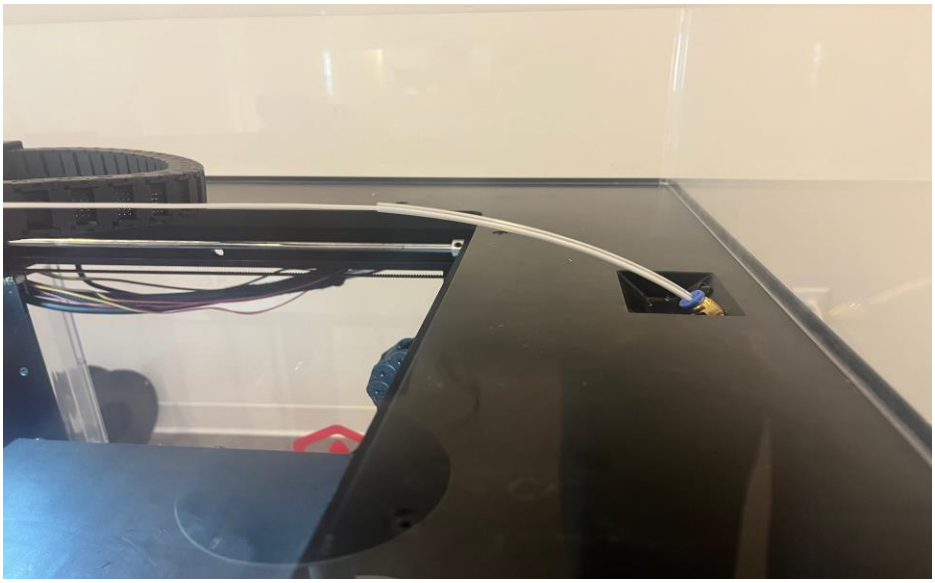
TPU is a highly temperature sensitive material, and because of this, it is necessary to always ensure that, the plastic cover provided when purchasing the Pro2Plus printer, is used during printing.

WARNING!

Note that larger geometries, such as chestwall and groin, may experience a higher degree of warping. Adaptiiv observed that the largest warping deviation value experienced was 4.36 mm in the groin geometry at which point is would be recommended to re-print the model.

2. Shortened Feeding Tube

When printing with TPU, it is common to experience under extrusion due to the friction that the filament undergoes when fed through the guidance (feeding) tubes of the printer. This could lead to print failures and for that reason it is important to prevent it. To minimize friction, one of the two feeding tubes that comes with the printer should be cut and shortened to 5 in (13 cm) of total length. The filament can then be loaded through the coupler of the printer and fed to the designated extruder as per the usual printing procedure.



3. Increased z-offset

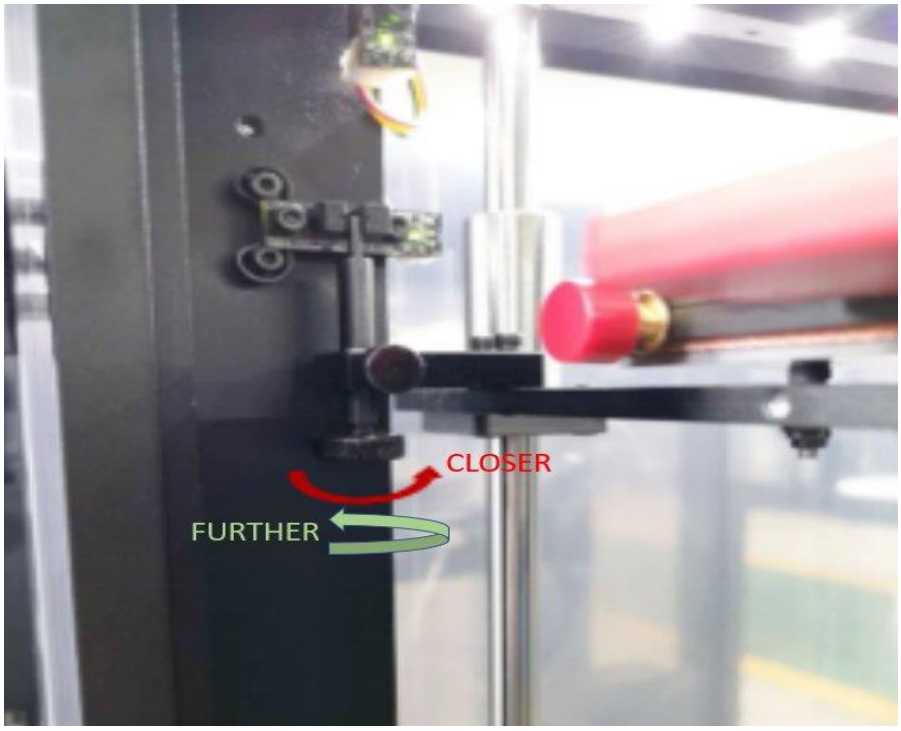
When extruding TPU filament, the nozzle will undergo greater pressure causing stronger material adhesion to the printing surface, in comparison to rigid filaments. This may lead to difficulties when trying to disengage a model from the printer bed, which may cause damage to the build tack sticker.

To avoid this, it is essential that when completing the z-offset calibration procedure on the Pro2Plus printer, the distance between the nozzle and the printer bed is increased:

a. Proceed to calibrate the z-offset as per the general procedure outlined by the printer manufacturer or by following the Raise3D 3D Printing training video found in the E-learning channel of the Adaptiiv Client Portal.

   https://3dbolus.sharepoint.com/sites/ClientPortal2/SitePages/Raise3D-Pro-2-Plus-Training-Video.aspx

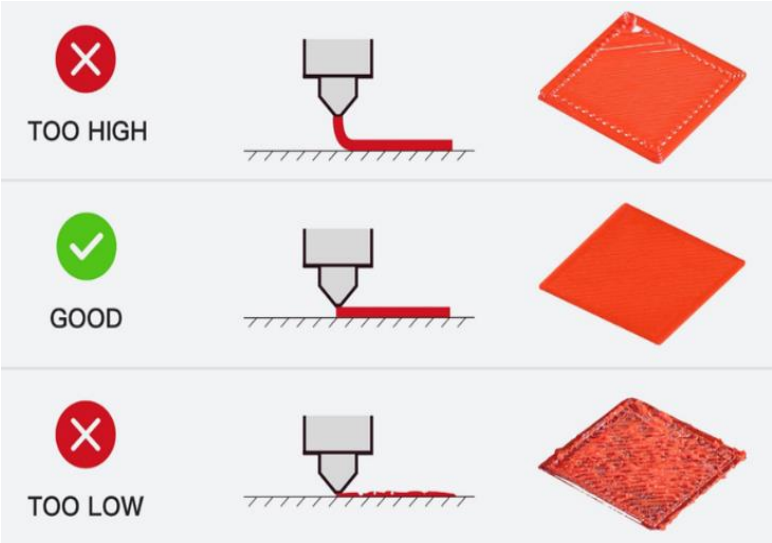
b. Turn the Z limit pin counterclockwise from a bottom down prospective, or as indicated by the orientation of the green arrow shown in the picture below.



c. Repeat the calibration procedure until the distance can be comfortably measured using a 0.25 mm feeler gauge.

d. To confirm that this distance is sufficient, start printing a larger model and observe the outputs of the first printer layers.

e. If the layers present with significant gaps, this means that the distance between the nozzle and the printer bed is too large. It will be necessary at this point to stop the current print, and repeat the procedure to increase the z-offset.

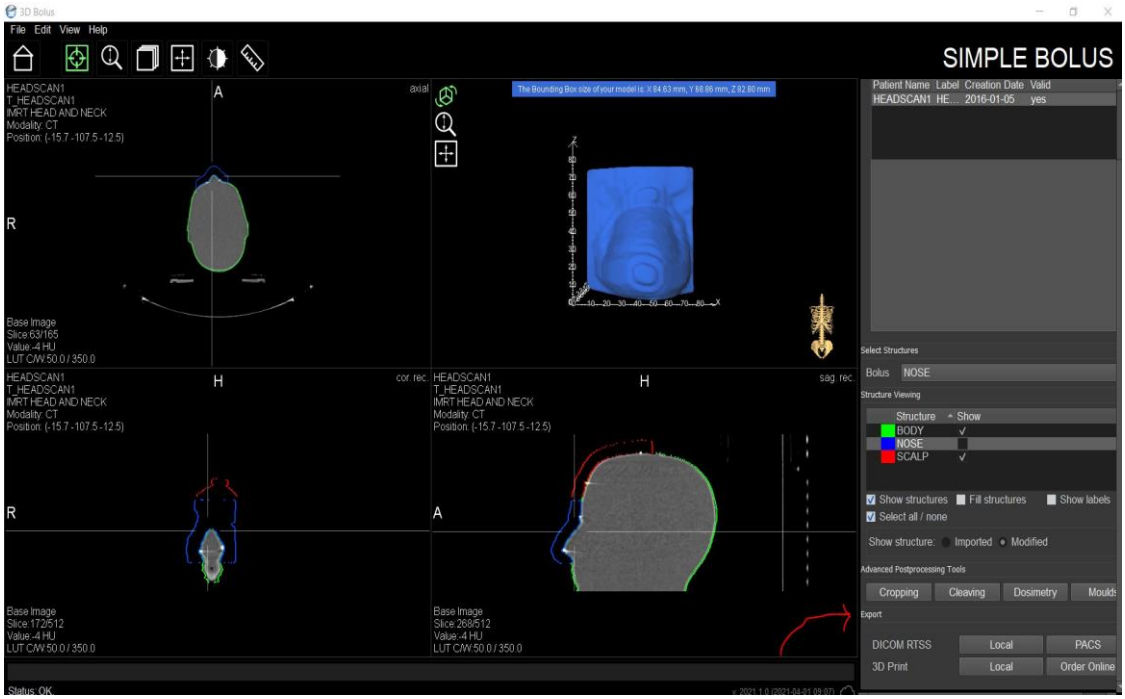


4. Increased Patient Label Size

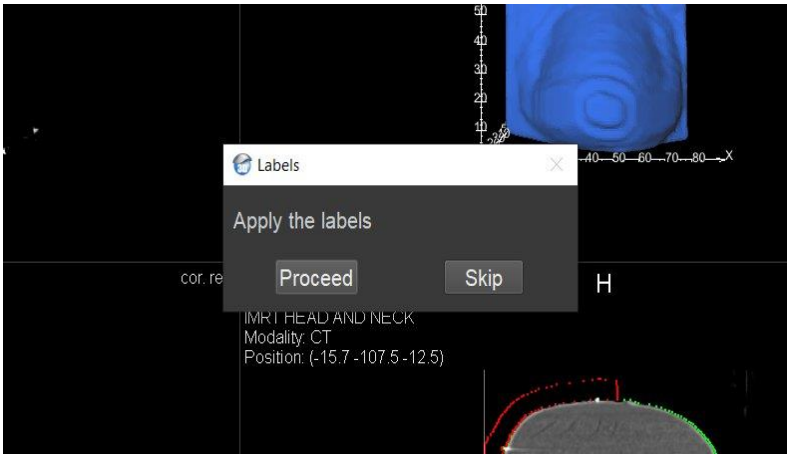
It is advised when printing with TPU that for best legibility and surface quality results, the label size should be increased between 6x0.8 mm and 7x1.4 mm.

To increase the label size in the Adaptiiv 3D Bolus Software:

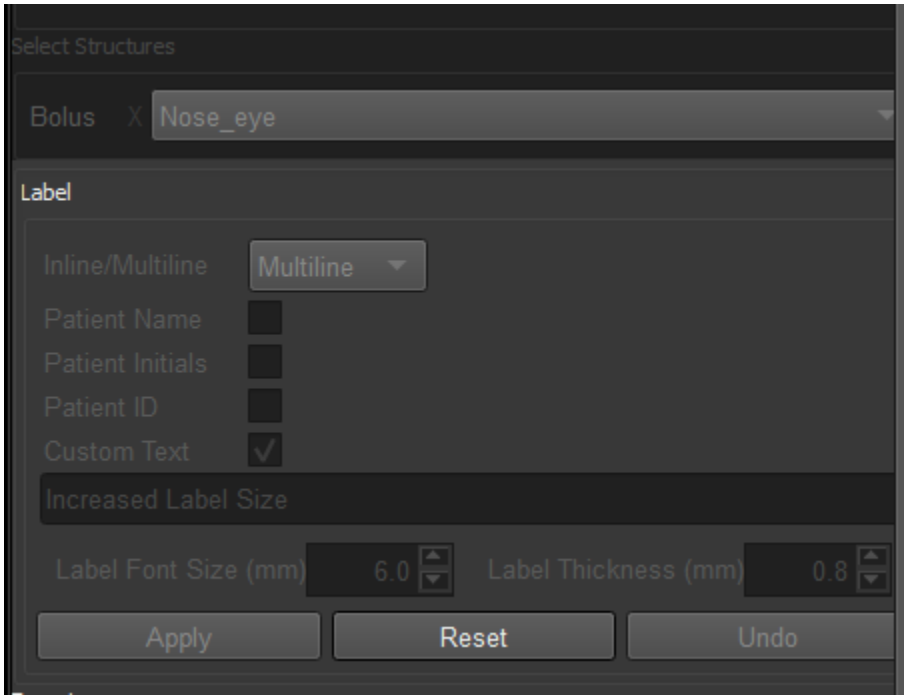
a. Under “Export” select the desired local exporting option



b. Click proceed for the labelling pop-up modal



c. Select the desired label type and increase the label size by modifying the label font size option



d. Proceed to place the label on the model and to export it as per the software user manual