Standoff Repair Project Zoomie

Zoomie is a 2002 50cc Piaggio Typhoon Motor Scooter. Standoffs provide self tapping screws a mounting point for plastic parts on the motorbike, and many have been broken over the 18 year operational life. This repair part is designed to be glued over the remaining piece after it has been trimmed to a suitable height. It is not yet tested, but the intention is to use a high quality acrylic super glue.

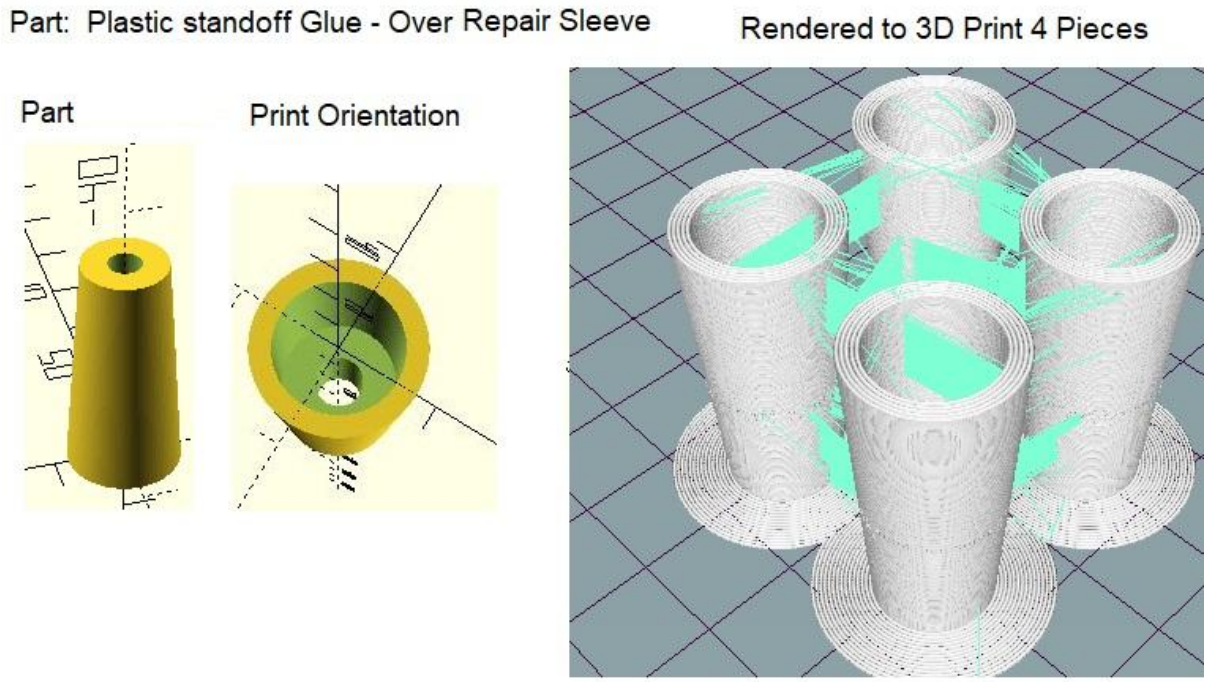

Figure 1: OPENscad rendering and 3D print control of the part.

Table 1: Dimensions of the part (mm)

Thick = 2;	// Wall thickness and outer slant determinate
r1 = 8;	// Base Radius
r2 = r1 - Thick;	// Top Radius
z1 = 32;	// Height of Piece
z2 = z1/3*2;	// hollow out bottom to fit over broken standoff
Fa= 0.3;	// Ensure Penetration Fine Adjustment
Hr = 2.6;	// Centre Hole Radius

Sketch to render the part in OPENscad

```
/* Stand Off Repair.scad Version 1.0
// Designed by Wile1one   17 Sept 2020
// Copyright (c) All Rights reserved
// This is a component assembly two truncated cones..
   with a central hole to accept a screw. it is glued over the broken
   piece

// Thanks to  OPENscad.org https://www.openscad.org/downloads.html
*/

// Put all the variables for the project first
// Dimensions in mm
Thick = 2;              // Wall thickness and outer slant determinate
r1 = 8;                 // Base Radius
r2 = r1 - Thick;        // Top Radius
z1 = 32;                // Height of Piece
z2 = z1/3*2;            // hollow out bottom to fit over broken standoff
Fa= 0.3;                // Ensure Penetration Fine Adjustment
Hr = 2.6;               // Centre Hole Radius

// Sanity Checks   you can add more if you like
if (Thick < 1 ) {
   echo("Standoff is too thin ");
}

rotate(a=180, v=[0,1,0]){       // rotates the build for the print orientation
   BuildIt();                   // Builds the project
   }

module BuildIt(){
   difference(){                // This causes the cutouts to be subtracted from the solid shape.
      Outer();                  //  Builds a tapered solid cylinder
      CutOut();                 //  Cuts the voids into the cylinder
   }
}

module Outer(){
   cylinder(  z1,    r1,    r2, $fn=100);
}
module CutOut(){
   union(){
      translate([0,0,-Thick])
      cylinder(  z1+ Thick*3,  Hr,  Hr-Fa,  $fn=60);  // Tapered Screw Hole
      translate([0,0,-Thick])
      cylinder(  z2,    r1-Thick,    r2-Fa, $fn=100);     // lower void to fit over broken bit
   }
}
```