

EGT 396

Project II: Repair Piece

Brandon Haltey

Repairing the windshield wiper switch in a '96 Honda Civic.

The issue: Arm falls down, no longer centering itself, causing wipers to run constantly

Research: What does the switch look like, and how to remove it?

http://www.google.com/search?hl=en&safe=off&rlz=1C1DVCJ_enUS393US466&q=96+civic+wiper+switch&gs_upl=&bav=on.2,or.r_gc.r_pw.,cf.osb&biw=1304&bih=707&ix=sea&ion=1&um=1&ie=UTF-8&tbm=isch&source=og&sa=N&tab=wi&ei=NbE6T8ukM6fe2AWU7NmWCg

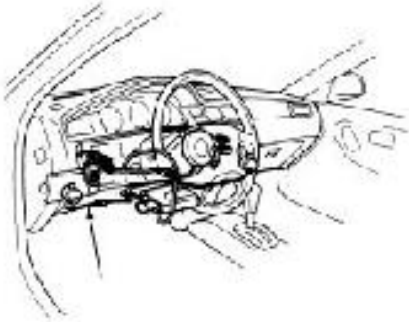


Wipers/Washers

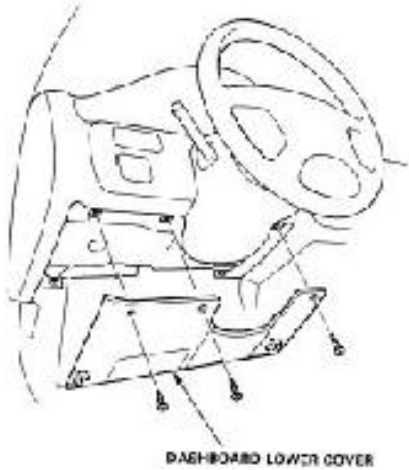
Front/Rear Wiper/Washer Switch Replacement

CAUTION

- All SRS electrical wiring harnesses are covered with yellow outer insulation.
- Before disconnecting the SRS wire harness, install the short connector on the airbag (see page 23-270).
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.



1. Remove the dashboard lower cover.

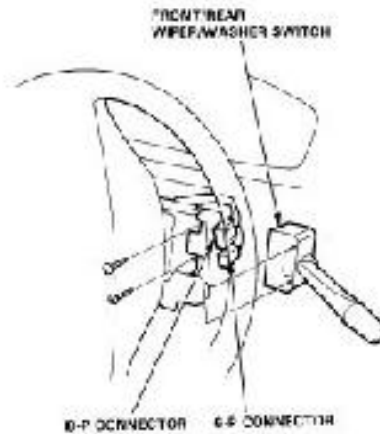


DASHBOARD LOWER COVER

2. Remove the steering column covers.



3. Disconnect the 3-P and 6-P connectors, then remove the wiper/washer switch.



FRONT/REAR WIPER/WASHER SWITCH
3-P CONNECTOR 6-P CONNECTOR

Problem located: The front face of the switch box has a bevelled portion that causes a spring loaded rod to center the switch. This portion has broken into three pieces. The arm can now “free float” inside switch box.



Figure 1: Windshield wiper switch as it sits in steering column. (Broken bits at the bottom)

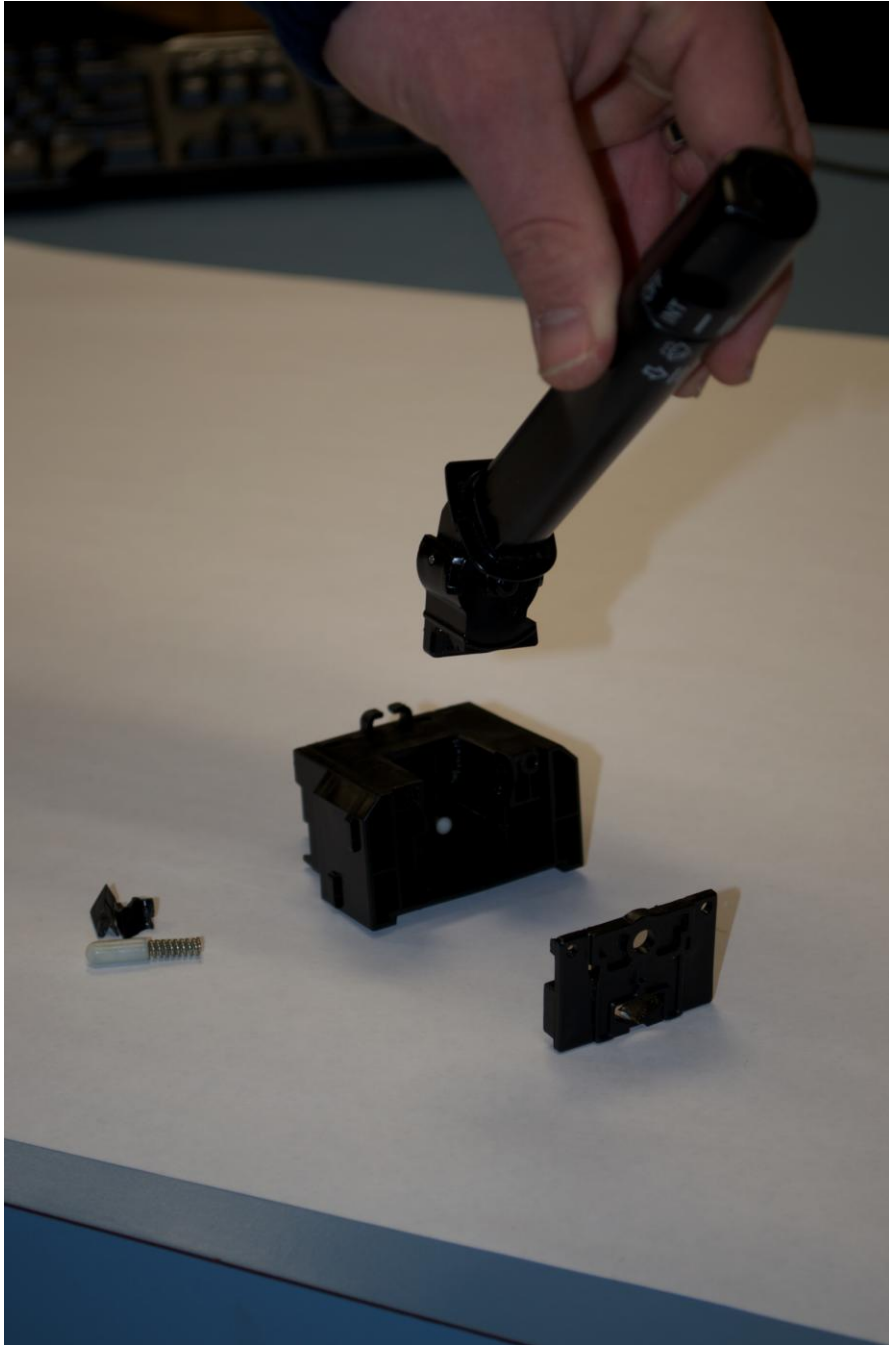


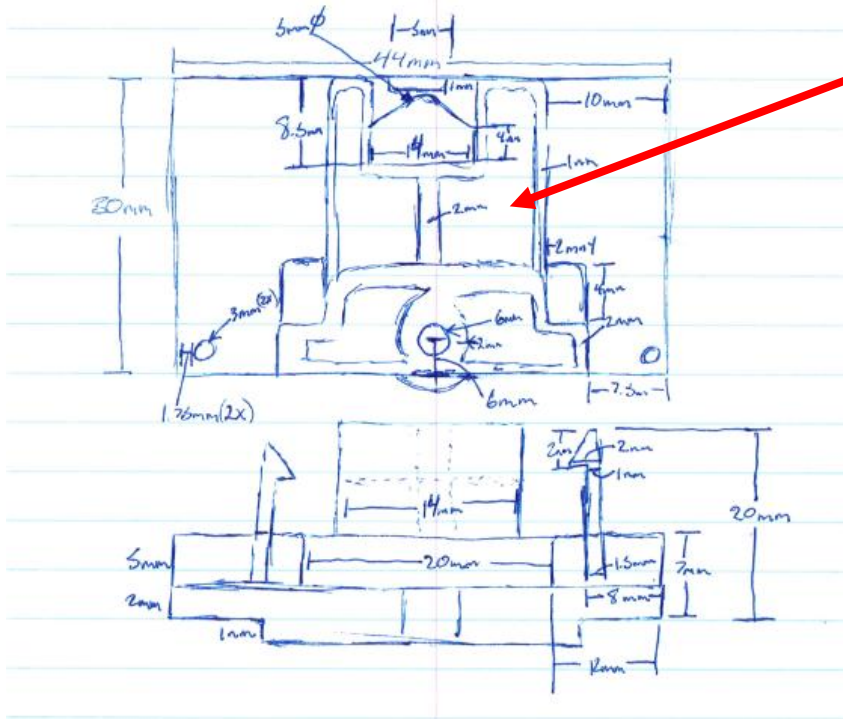
Figure 2: Switch assembly "Exploded View". Broken Pieces and spring rod off to the side.

Analysis: Try to find possible areas to “beef up” the front face of the bracket in order to prevent breaking in the future.



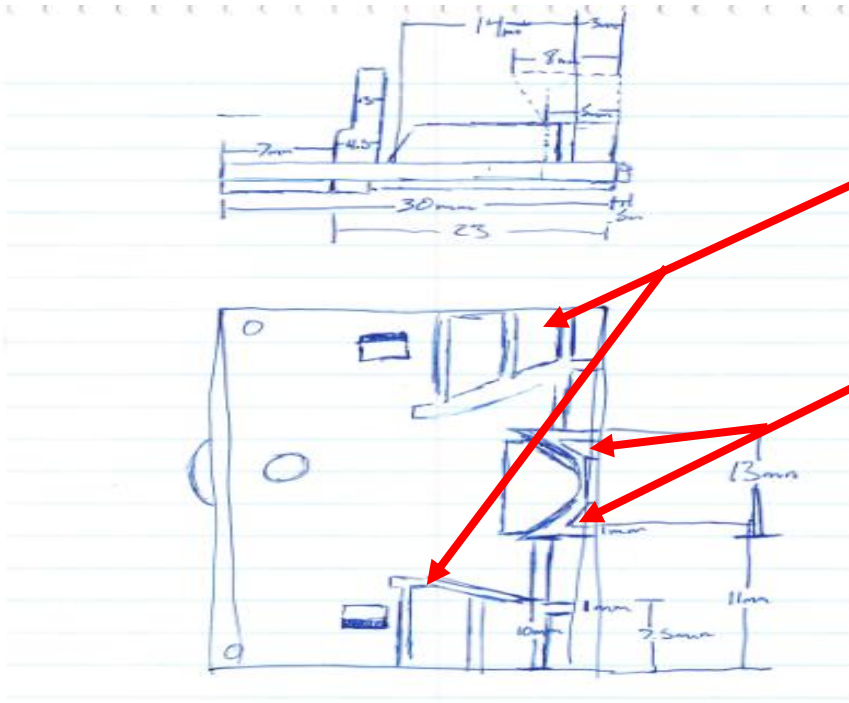
This area is less than .5mm thick at the thinnest point

Replacement Windshield Wiper Switch Bkt



Front face can be filled in to add some rigidity without effecting fit

Figure 3.1: Initial measurements



Side stops can be filled in

Crevices to be filled in for more rigidity against spring loaded rod

Figure 3.2: Measurements continued

Design: Modeling in Inventor

Note: Most of the modeling is pretty straight forward. Simple sketches, extrudes, and cuts is all that is needed. The Major obstacle is the creation of the beveled area that the spring loaded rod sits and rides against for self centering. For this to be made one must perform a “Loft” feature. This fairly simple once figured out. (steps below)

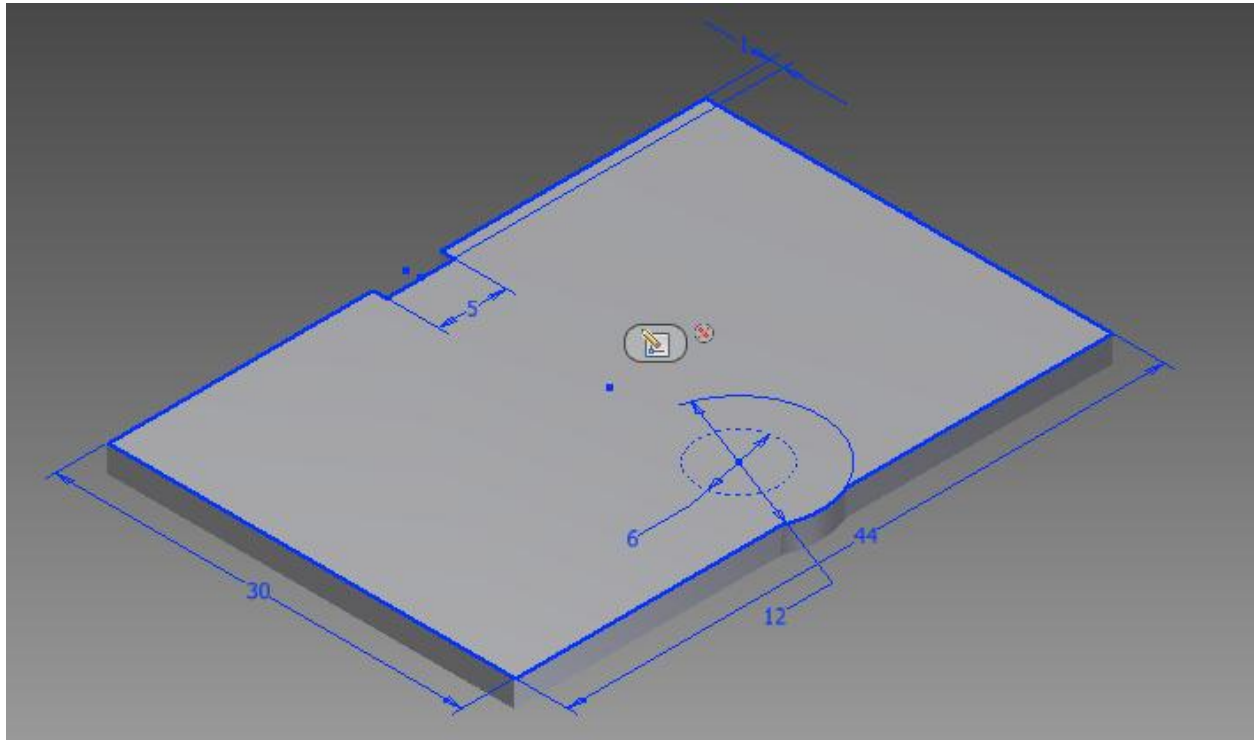


Figure 4: Initial Extrude

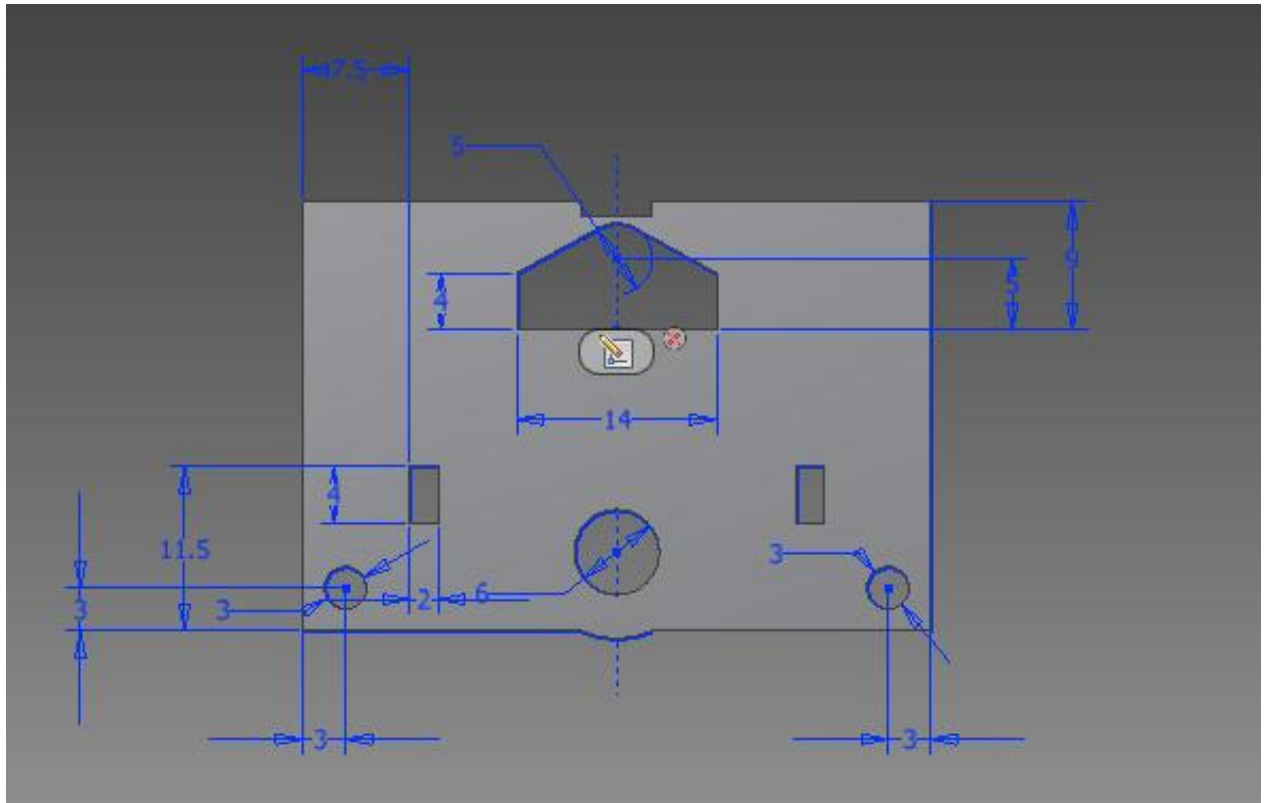


Figure 5: All holes cut out

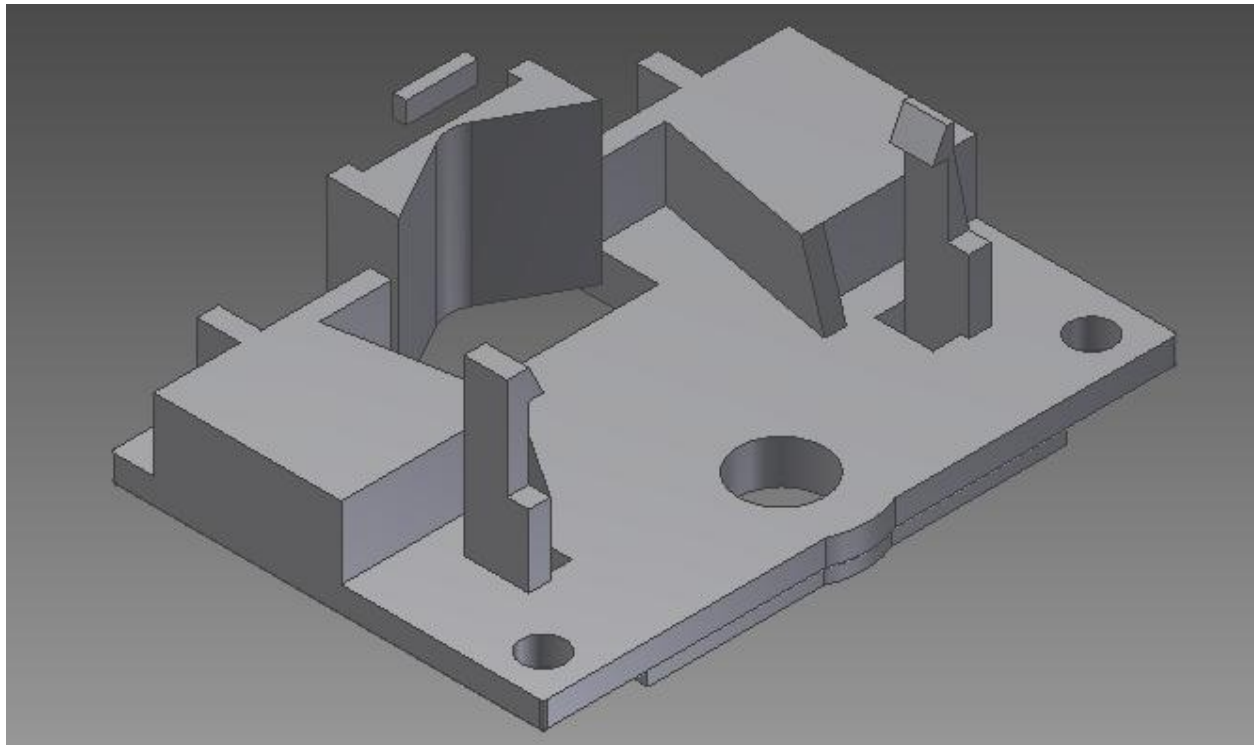


Figure 6: Retainer piece with all but one extrude

Loft feature:

Step1: Using a horizontal working plane, created an offset work plane at the desired distance.

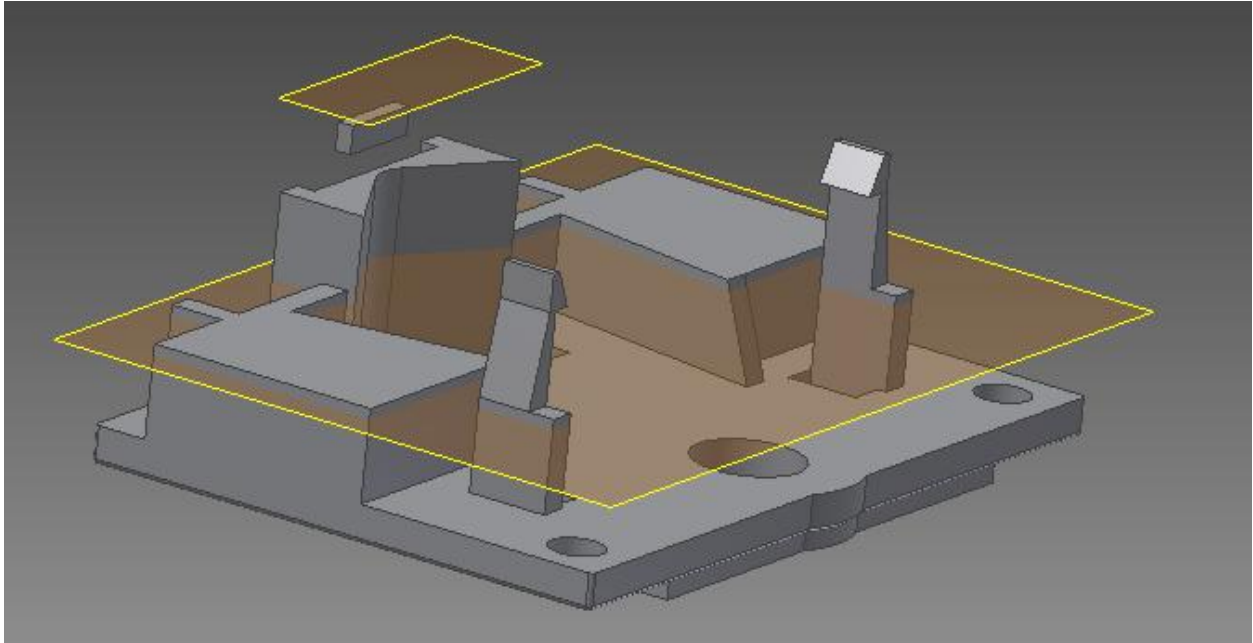
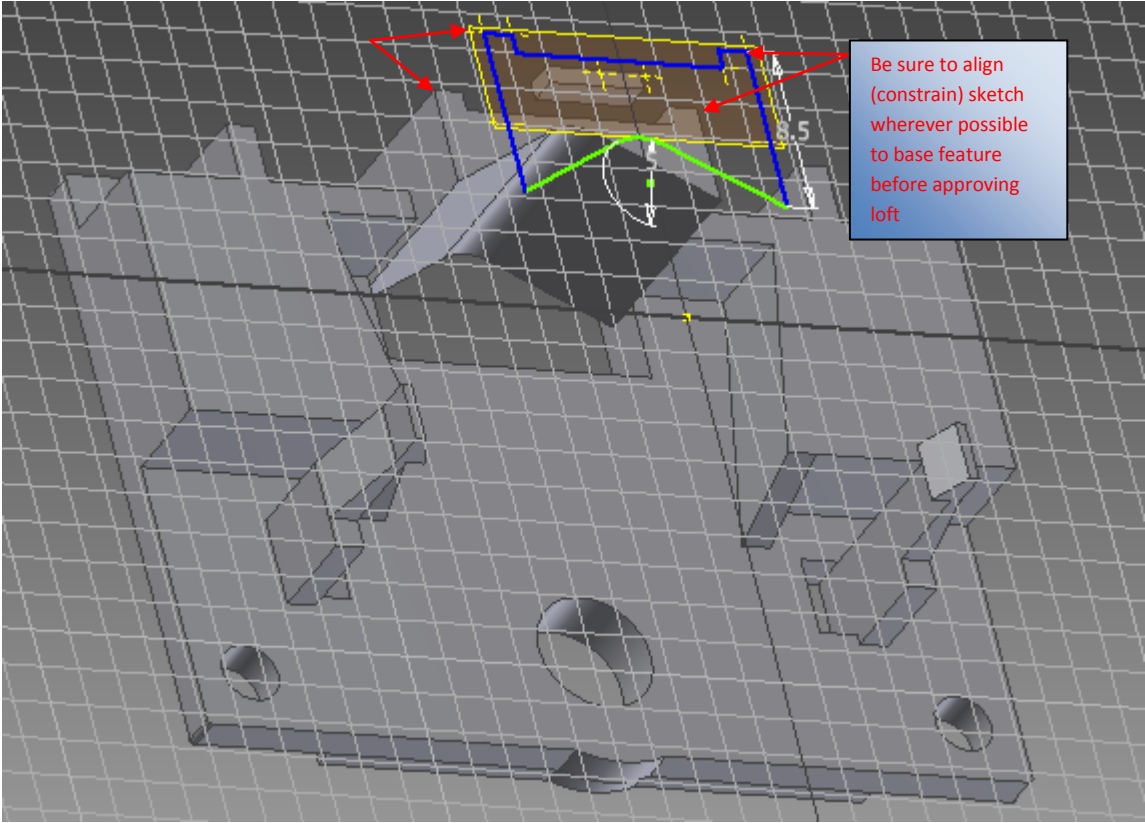


Figure 7: Work planes created for loft feature

Step 2: Create a sketch on the offset work plane of the desired shape making sure to align the sketch where necessary to the base feature



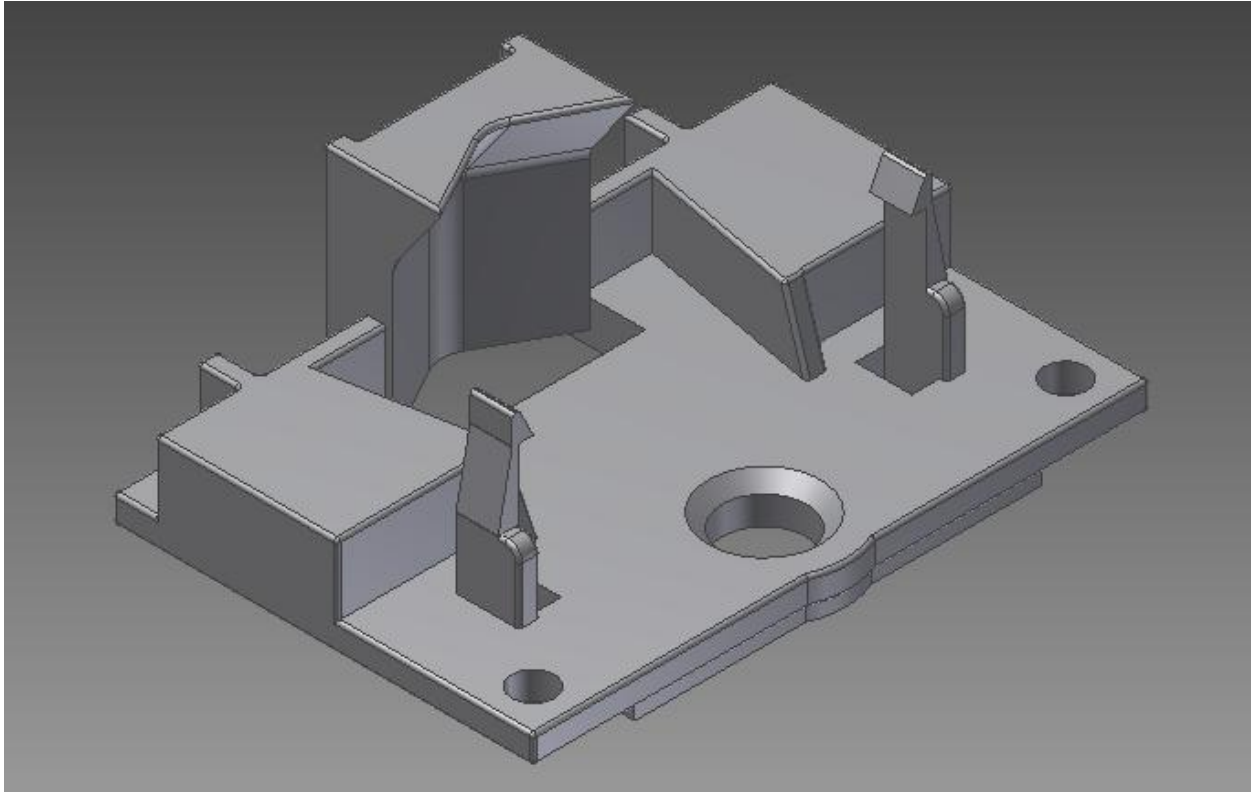


Figure 8: Completed model

Completed 1st Print:

The first print was not quite as precise as expected. A few of the problem areas were the retaining clips (too thin and brittle to perform desired function), and the back of the beveled area (printer did not fill in completely). Also, using initial settings, some of the notches were not as defined as they should be. Aside from that, the measurements look to be spot on and, with a more comparable material, the replacement piece should be able to perform the desired function.

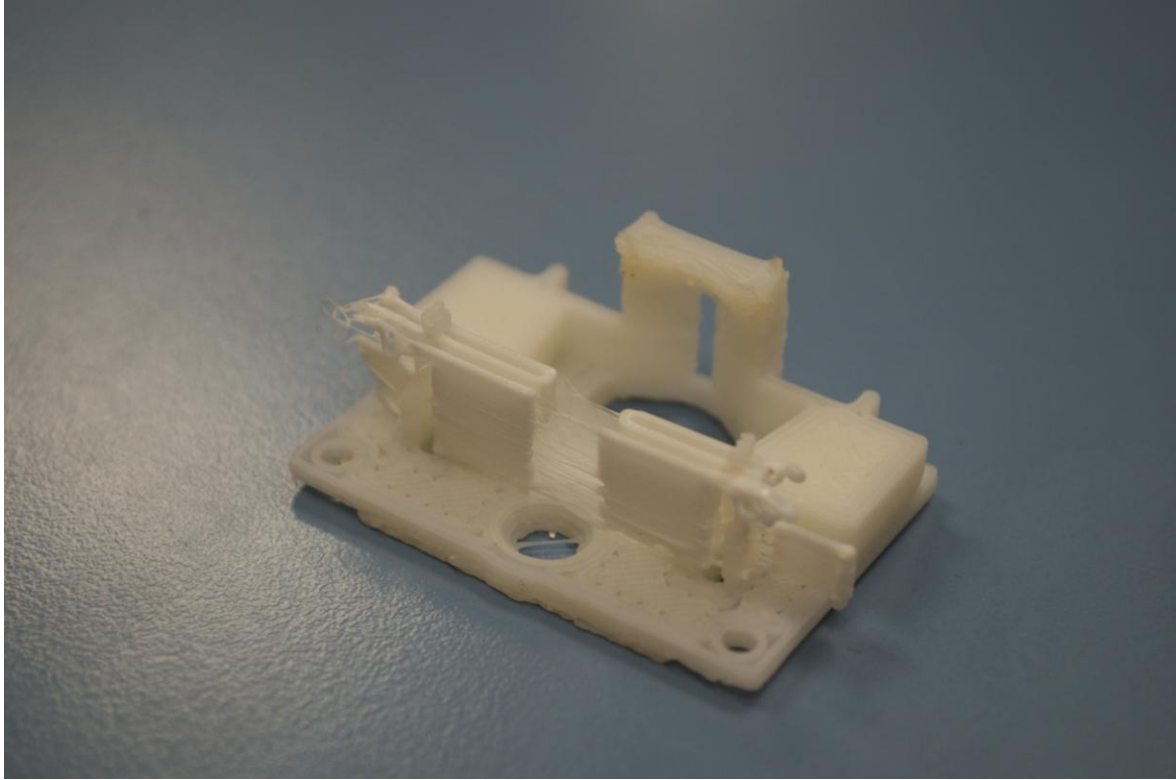


Figure 9: Printed model

