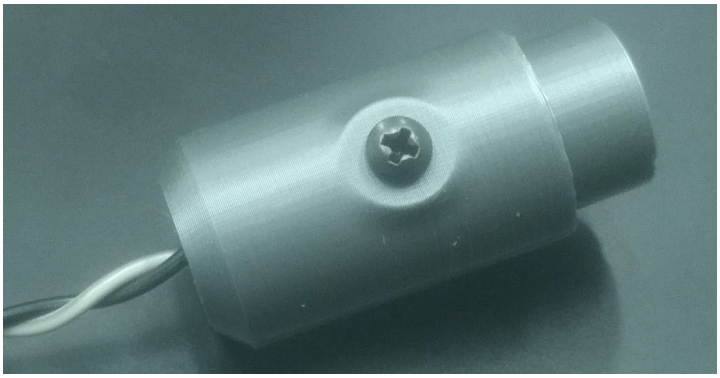
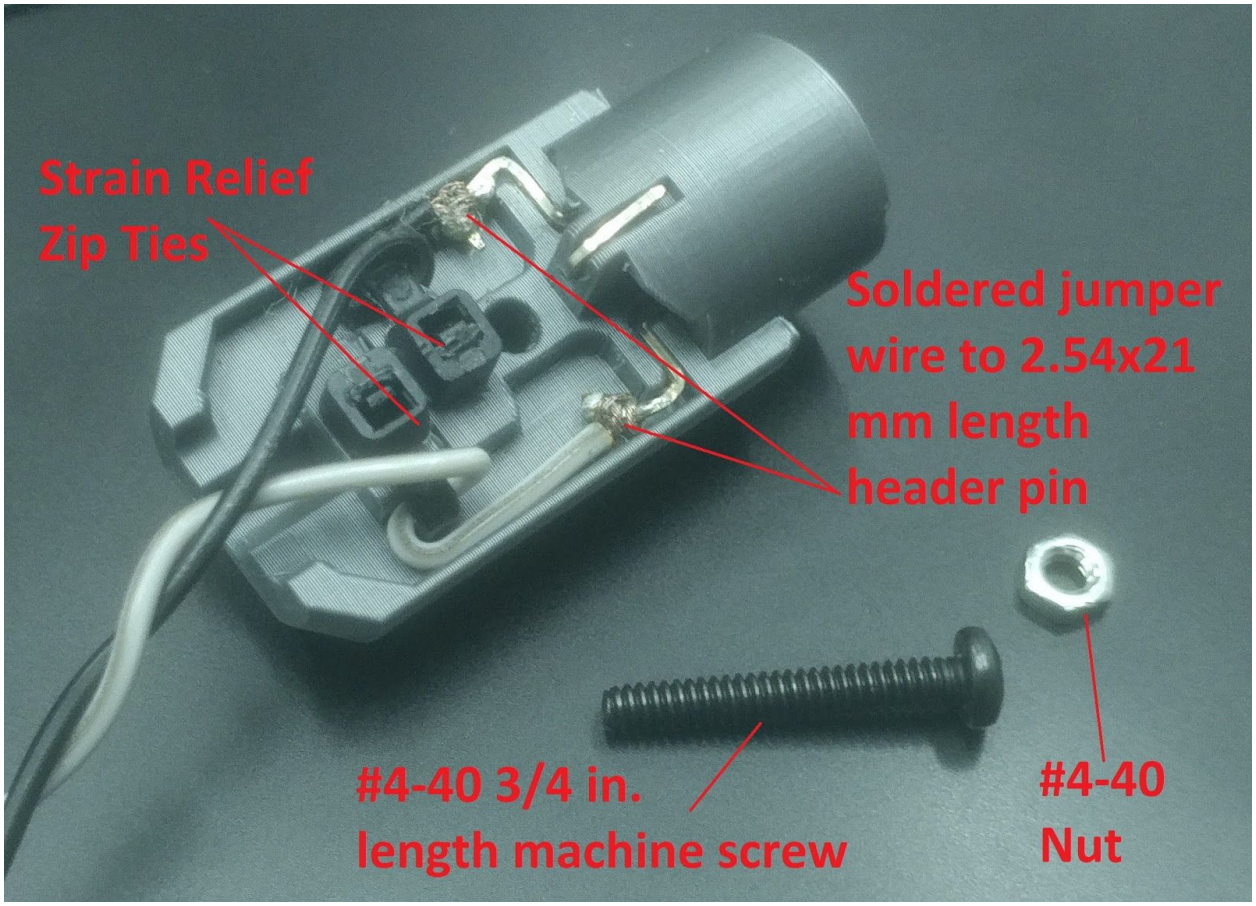
Piezo Transducer Connectors (“HW-3H Connector V1”)

10/21/2019

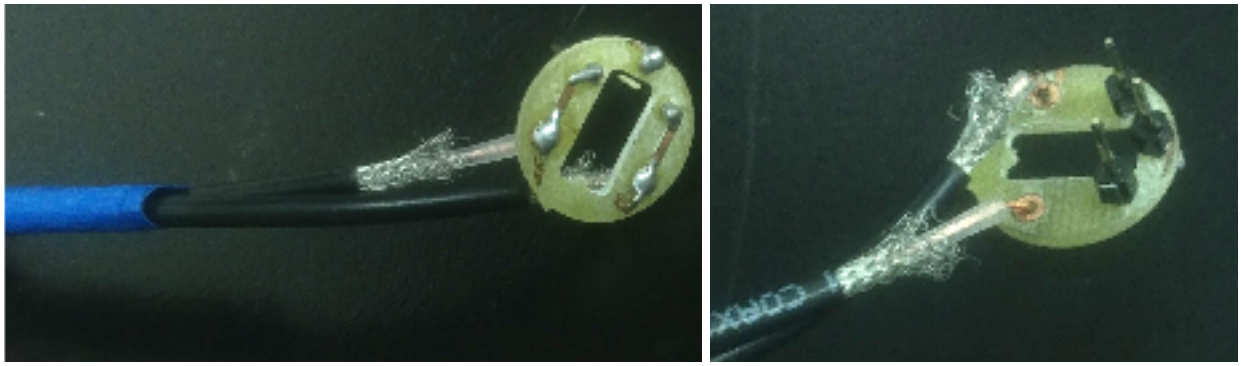
Description, BOM, and instructions starting on page 3




Strain Relief
Zip Ties
Soldered jumper wire to 2.54x21 mm length header pin
#4-40 3/4 in. length machine screw
#4-40 Nut

Description

These new connectors were made to replace the older FR4 based PCB connectors (pictured below) that were used to connect the amplifier to the dental piezo transducers in VAP printers. This new connector fits the HW-3H style transducers, so we'll call it "HW-3H Connector V1".



Older Connectors that are being replaced

Why they're better/warranted: The new connectors remove the need to make a circuit board, are easily printed with any FDM printer, and provide electrical insulation and strain relief to protect the internal solder joints.

Location of .stl files, .step files (of CAD assembly), and documentation:

- G-Drive: https://drive.google.com/drive/folders/15H1O96xO8ULEb6fq_hOTUqP1I79TF7HA
- Github: https://github.com/Purdue-AM/CerberusVAP

BOM:

1 x #4-40 Nut (thickness < 1.75 mm)
1 x #4-40 ¾ inch length machine screw
2 x Small Ziptie (0.1 inch tie width)
2-3 x 2.54 mm header pin (21 mm length)
1 x HW-3H_Conn_MainBody.stl (file available on G-Drive and Github)
1 x HW-3H_Conn_TopCover.stl (file available on G-Drive and Github)

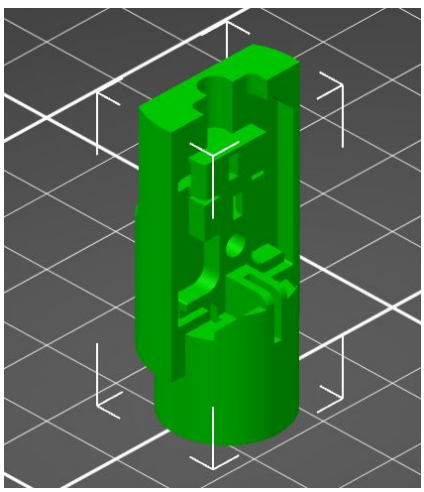
Direct Link to CAD Assembly (Fusion 360): https://a360.co/2o5cSLr
Password: CHAF208

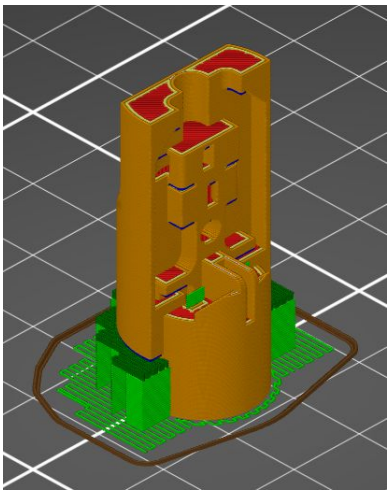
Instructions

Suggested Printing Parameter (made the parts look good**):**

Orientations

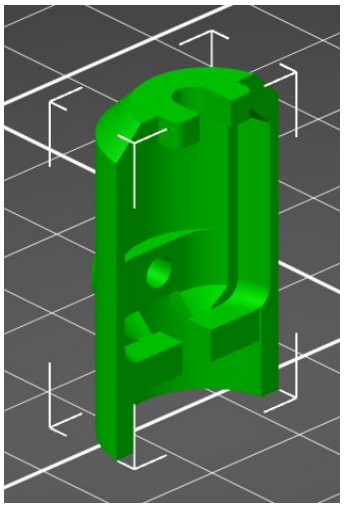
HW-3H_Conn_MainBody.stl

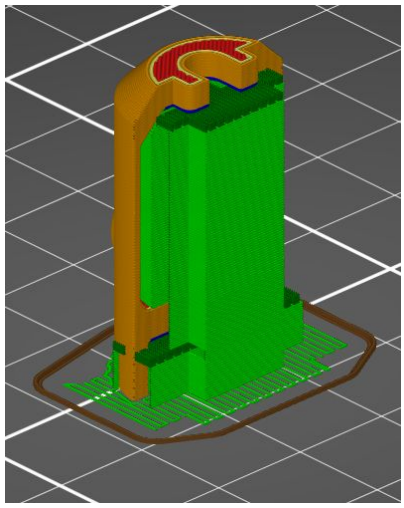




Print Preview

HW-3H_Conn_TopCover.stl





Print Preview

(this orientation isn't the fastest or most filament efficient, but does look the best)

Suggested print settings for both parts (in your slicer of choice):

- Resolution <= 0.15 mm layer height
- Support = support on build plate only
- Infill >= 20%
- Shell or perimeter thickness >= 2 layers

Soldering/assembly

- Outer two pins: take two 21 mm length 2.54 mm header pins and bend them (using small pliers) into the shape shown in the left and center image. Wrap the end of your wire where shown and solder in place before inserting them into the main body's channels.
- (**optional**) Center Pin: insert another 21 mm length 2.54 mm header pin into the central channel, adjust depth to line it up with the outer pins, and bend upward and around while in the channel to make the shape shown in the right image.Glue in place or leave free; no soldering required.
- Insert zip ties into the channels and secure wires for strain relief, as shown in the last image on page 2.
- Last Step: Fasten it together (#4-40 nut slides into the slot on/near the flat of the connector).