

Resonant Cavity - 3D STLs

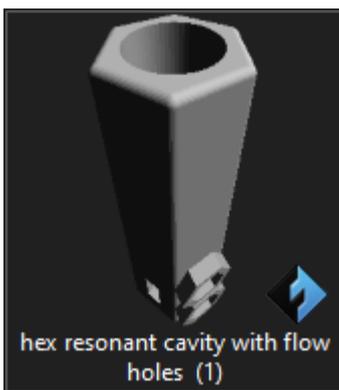
Author does not accept and liabilities/responsibilities for those individuals who chose to build the below cell. This information on this site is for educational purposes only.

Cavity shown on Chris Bake's YouTube channel: [10 Cell Tubular Resonant Cavity](#)

Single cavity with entry/flow holes at bottom. Accepts 3/4" (19.05mm) and 1/2" (12.7mm) stainless steel tubes. Nuts recessed are sized for 10-32" stainless steel nuts, and 10-32" stainless steel (18-8) set screws. Top accepts 1/2" long 10-32 set screws, bottom accepts 5/8" long 10-32 set screws. Holes are sized for 10-32 tap to thread if desired. 3D filament is regular PLA. Should only need 1 spool of filament, as all prints were done at 50% infill.

Supplier Site: [10-32 SS Nuts](#) , [1/2" 10-32 SS set screw](#) , [5/ 10-32 SS set screw](#) , [1/2" OD, 0.065" Wall, 0.375" T-304 SS Tube](#) , [3/4", 0.035" wall, 0.68" ID T-304 SS Tube](#) , [T-304 SS connecting wire](#) , [PLA White 1Kg Spool](#)

hex resonant cavity with flow holes .stl



Base plate that accepts 10 of the single resonant cavities above. The cavities outer body will need to be filed a little to provide press fit into the below plate. Holes on the outer edge are for 6-32" tap if so desired to prevent resonant cavity from coming out if loose fitting happens.

WFC base plate v1 v0.stl



Depending on the vessel diameter used, the base plate may need to be reduced in OD. I accomplished this with a bench grinder and sandpaper. Needle nose pliers are helpful in tightening connections. A 10-32 tap was run through holes that set screws go into. Connect two in series at a time for easier construction/wiring. The OD diameter of the base was intended for the 5.75" ID acrylic tube I used. However, any clear vessel or bucket can be used for testing. Nothing specific for the base being 5.75" OD.

The 3/4" SS tubing needs cut to a length of 3.00"

10 qty total needed (total length of 30.00" minus blade width for 10 cuts, approximately 5/8", need 31" total)

As of 12/01/2022 above supplier has 36" length for \$21.71

The 1/2" SS tubing needs cut to a length of 3.50"

10 qty total needed (total length of 35.00" minus blade width for 10 cuts, approximately 5/8", to 36" total)

As of 12/01/2022 above supplier has 36" length for \$37.34

Many methods for cutting can be used, whichever is available to the builder.

As of 12/01/2022, PLA filament is \$20.00

20 qty, 10-32 SS nuts (\$0.08/ea)= \$1.60

10 qty, 10-32 x 1/2" SS set screws (\$0.17/ea) = \$1.70

10 qty, 10-32 x 5/8" SS set screws (\$0.20/ea) = \$2.00

As of 12/01/2022 above supplier has SS wire for \$7.99

With the itemized list above, the cost to print/assemble this cell is approximately: \$92.34

Revision #13

Created 31 October 2022 16:20:42 by Ethan Crowder

Updated 27 May 2023 02:46:10 by Ethan Crowder