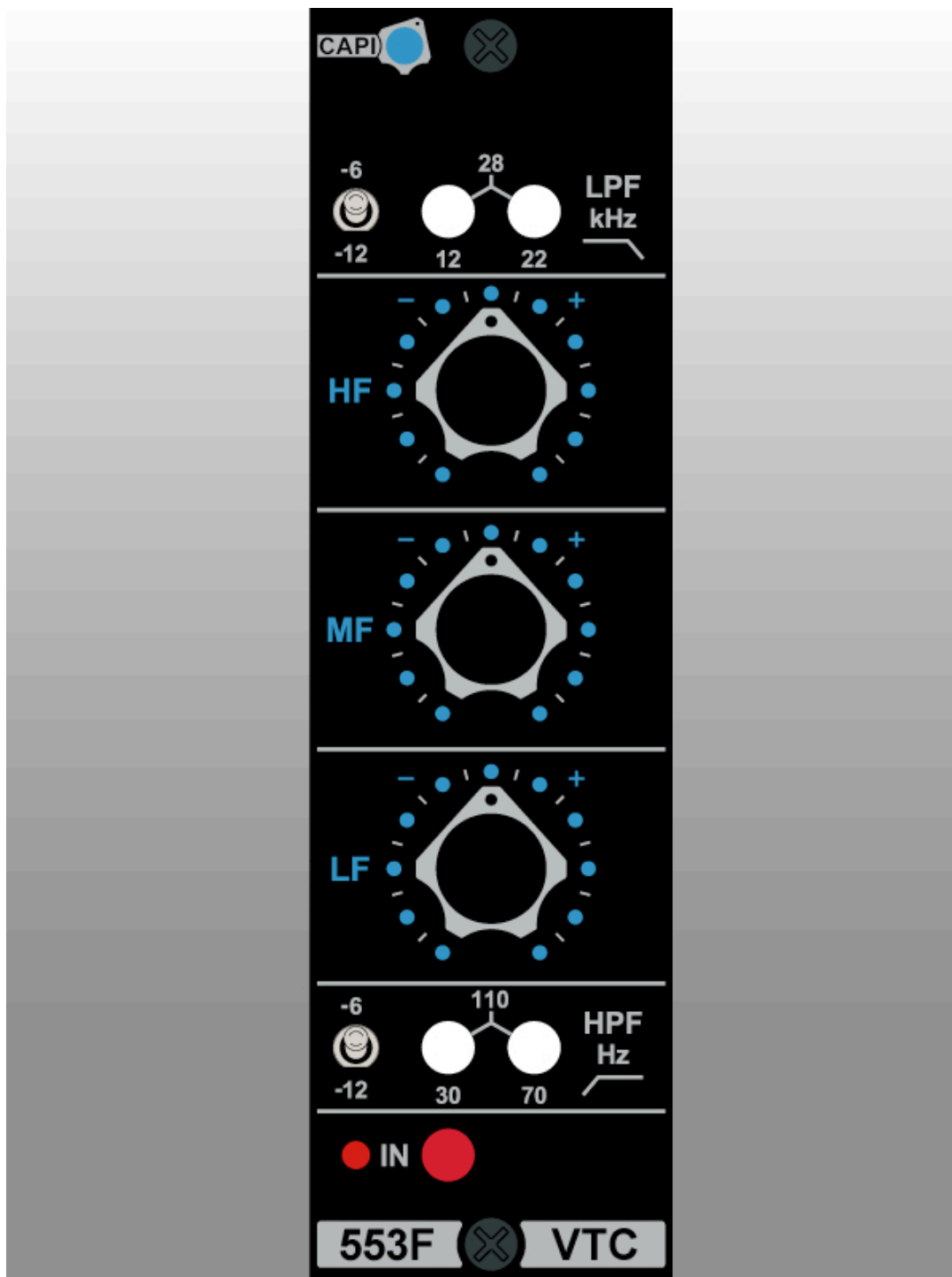


CAPI 553F Assembly Aid



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****Time to begin, starting with the Discrete Followers****

1. Fully populate and assemble both discrete follower boards following the BOM provided in the file “DF.3-Discrete-Follower-PCB-BOM.pdf”.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_1.jpg

****Complete the Sub-LPF PCB****

1. Fully populate and assemble the Sub-LPF board following the BOM provided in the file “553-Sub-LPF-PCB-BOM.pdf”. It is easiest to start with the pushbutton switches.
2. Install the pushbutton switch caps.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_2.jpg

****Complete the Sub-HPF PCB****

1. Fully populate and assemble the Sub-HPF board following the BOM provided in the file “553-Sub-HPF-PCB-BOM.pdf”. It is easiest to start with the pushbutton switches.
2. Install the pushbutton switch caps.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_3.jpg

****Moving on to the main PCB****

1. Follow the BOM provided in the file “553F-VAR-Main-PCB-BOM.pdf”. Start by installing the 1N4004 protection diodes.
2. Install all resistors including RV1. Be sure to identify and properly place the 20K 0.1% precision resistors. R11 and R22 are not required or supplied.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_0.jpg
3. Install all capacitors. Following are the part numbers printed on the bodies of the small package capacitors.
C4 is 27pF, loose, blue body, label = “27J”
C8 is 82pF, loose, blue body, label = “82J”
C13 & C14 are 150pF, loose, blue body, label = “151J”
C17 & C18 are .1uF, tape, tan body, label = “BC 104”
C12 is .039uF, loose, yellow body, label = “.039J 100 N”
C16 is .033uF, loose, yellow body, label = “.033J 100 N”
4. Install the twelve opamp sockets from the bottom of the PCB.

Here’s where we are so far.

http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_4.jpg

5. Install the mini toggles SW2 and SW3 from the bottom of the PCB. It’s **very important** to trim all of the pins after soldering so they do not interfere with the filter PCB’s during final assembly.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_5.jpg



6. Install the pushbutton switch SW1. Install the red pushbutton switch cap on SW1.
7. Install both DF.3 discrete followers. Make sure they are perpendicular to the PCB. Trim the 3M pins when you are done soldering.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_6.jpg
7. Install the toroidal inductors using the supplied plastic cable ties. Make them nice and snug but do not crank on them with all your might. Keep the bodies of the cable ties as close as possible to the bottom of the PCB.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_7.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_8.jpg
8. Install the EA2503 output transformer. Make sure to view the hardware details shown in the file “5_Classic-553F-Hardware-BOM.pdf”.

Final Assembly

1. Tightly secure two of the Keystone #616 brackets to the steel frame using the supplied 1/8” undercut flat head screws. Install these fully tight and make sure the brackets are aligned perpendicular to the edge of the steel frame.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_9.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_10.jpg
2. Install snug but do not fully tighten the remaining Keystone #616 brackets to the lower rear of each filter PCB. Insert the filter PCB’s into their respective locations on the main PCB and snugly install the screws and lockwashers. **DO NOT** fully tighten any of these screws yet and **DO NOT** solder any of the 3M header pins to the main PCB at this time. These must remain loose for upcoming final adjustments.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_11.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_12.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_13.jpg
3. Insert the three Bourns potentiometers into their positions. **DO NOT** solder any of their pins at this time. They must remain loose for upcoming final adjustments.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_14.jpg
4. Start inserting the PCB assembly into the steel frame. You must carefully spread the rear of the frame slightly to clear the 2503 and other components.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_15.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_16.jpg
5. Gently guide and maneuver all of the switches and pot shafts until the PCB assembly arrives in its final position.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_17.jpg



6. While pushing the PCB assembly tight to the front of the steel frame, hold the rear of the steel frame tight to the PCB and install the 1/4" screws with lockwashers. Fully tighten these two screws.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_18.jpg
7. Slide the faceplate into its final position. Make sure the three Bourns pots have their shafts and mounting surfaces fully into the steel frame. They must be seated properly. Snug the three panel nuts against the faceplate. The Bourns lockwashers can be discarded, since they are not used.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_19.jpg
8. Make sure the pots are nice and square then **almost** fully tighten the three panel nuts.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_20.jpg
9. Double check to make sure the faceplate is positioned evenly over the steel frame. The small reveal should be parallel and even on both sides as shown in these two pics.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_21.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_22.jpg
10. Loosely install the remaining hardware for both filter PCB's to their respective Keystone brackets that were previously secured to the steel frame. The screw heads must be toward the inside of the module and facing each other. **DO NOT** fully tighten yet.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_23.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_24.jpg
11. While making sure the filter switch caps are centered and properly aligned in the faceplate, tighten all three of the mounting points for each of the filter PCB's. There is an access hole in the top of the steel frame for the LPF PCB. Use the closest vent slot for the HPF PCB.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_25.jpg
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_26.jpg
12. Solder the filter boards' 3M pins to the main PCB and trim the leads.
13. When installing the LED, the shorter lead will go closest to the steel frame and bottom of the module. Start by bending the leads 90° downward just behind the small spurs. Next bend the leads parallel to their original position approximately offset by a 1/8", as shown here.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_27.jpg
14. Trim the leads as required. Make sure to hold the body of the LED tight to the faceplate when soldering to the pads.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_28.jpg
15. Solder all of the pins for the three Bourns pots. Trim the leads as required.
16. Install the gray inserts into the blue aluminum knobs.
17. Before installing the control knobs, make sure the Bourns pots are in their center detented positions. It is easiest to start with the HF knob, then MF and finally LF.



****Pre-Flight Measurements****

1. With your DMM set to read resistance, probe between either of the “+V” DOA sockets and to a “C” DOA socket. The resistance should be greater than 100k Ω . Repeat for the “-V” sockets to “C”. Again, the resistance should be greater than 100k Ω .
2. Probe between the A1 “O” socket and “C”. The resistance should be greater than 100k Ω . Repeat for A2 expecting a reading of around 55 Ω .

****Final Adjustments****

1. Prepare the opamp sockets for DOA installation as detailed in the following link.
http://capi-gear.com/catalog/DOA_Install.php
2. Install known working discrete opamps in positions A1 and A2. A1 is the balanced receiver opamp.
3. The module needs to be flat in front of you on a bench or table and under power. A 500/51x Extension Jig will be the easiest solution.

If you don't have an Extension Jig already, here is a link to the subcategory at the store.

http://capi-gear.com/catalog/index.php?cPath=22_117_185

4. With the EQ switch and the CMRR switch of the Extension Jig out or disengaged, inject a 1kHz sine wave to make sure the module is passing audio. The level will not exactly be unity but should be within 0.5dB or better.
5. For the CMRR adjustment of RV1, refer to the directions on the Extension Jig. Your output monitoring connections should be made as shown in the following pic. The positive clip is on the positive end of C2.
http://capi-gear.com/catalog/images/553F-build/553F_assy_aid_29.jpg
6. Adjust the trimmer CW to read the lowest level signal possible. You will reach a point in the rotation where the level will start to increase.
7. Apply a small dab of nail polish to lock the adjustment screw of RV1 into place.
8. Install the steel cover by starting all six screws before fully tightening any of them. Like with the LC53A, sometimes the tabs on the frame need a little adjusting before all of the screws will line up.

****Congrats, You Are Done! Happy Equalizing!!!****

