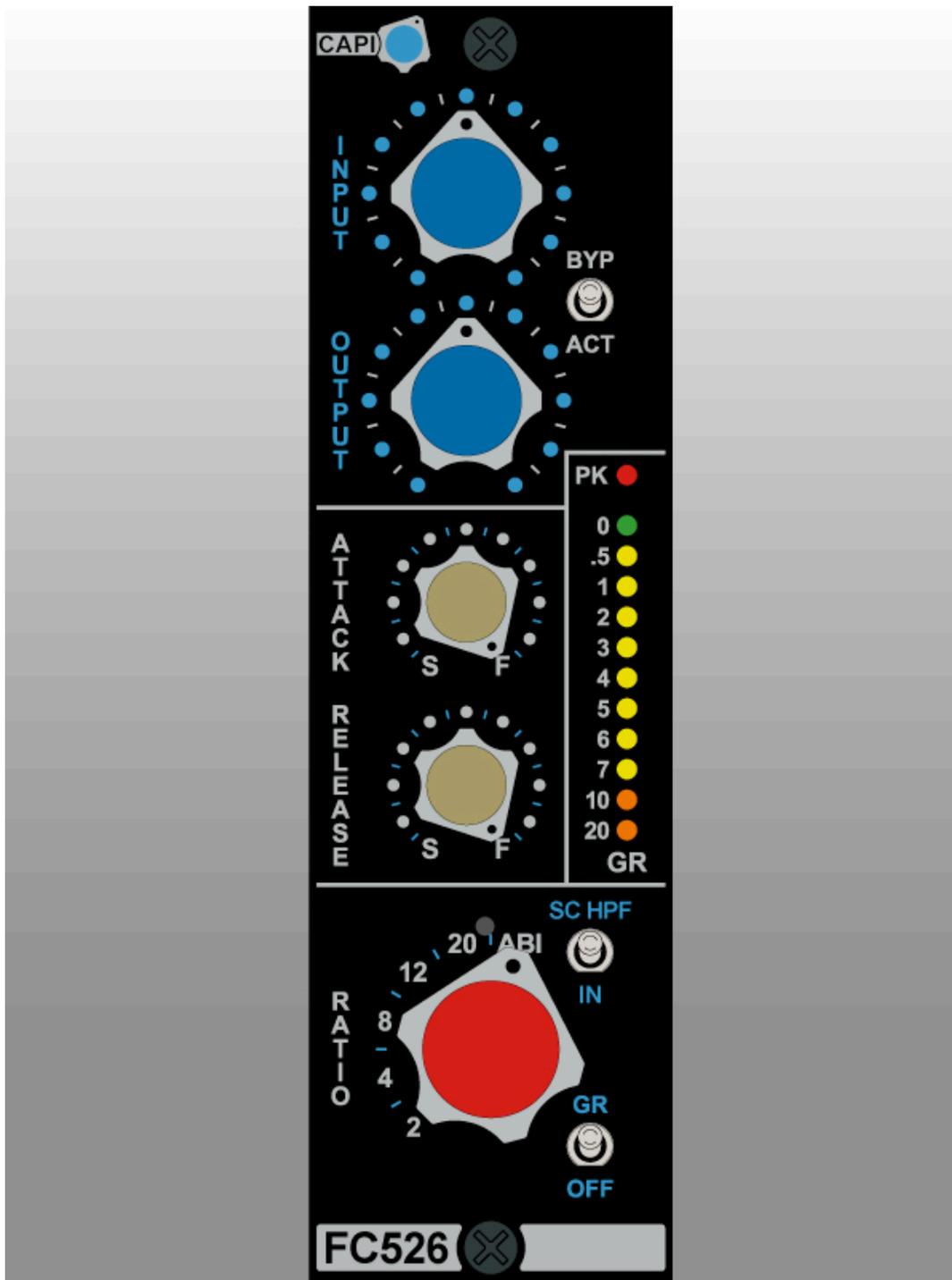


CAPI FC526 Rev A Assembly Aid



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****Time to begin, starting with the Main PCB****

1. Locate the pink bag containing the diodes and relays. Install all of the axial components making sure to properly identify all of the components. Leave the relays, IC opamps and transistors until later on.
2. Locate the bag with the loose resistors. There is only one part for each resistance value in this bag. For a short time, the (5) 51k's will be in this bag and loose. As soon as my loose stock is gone, this part will be on tape in the other bag. Install all of these resistors. Set the 4 Bourns trimmers off to the side for now.
3. You will have a larger 1/2W 10R left over. Install this resistor between the two pads that are near the gold fingers adjacent to finger JP2-5 and JP2-13. This will link the top and bottom ground planes incase your rack does not make this connection. FYI, a 1608 console will require this resistor.
4. Locate the bag with the resistors on tape. This bag contains the resistors that require two or more pieces per value. Being on tape will make identifying the parts easier. The first value to look for is the (6) 10k precision resistors. Measure with your DMM to identify these and MAKE SURE the last color band is purple, which indicates the 0.1% tolerance. Mixing up the 1% and 0.1% parts will compromise the common mode rejection of the receiver amplifier. Install the rest of these resistors.
5. Locate the capacitor bag. Install all of the small ceramic caps.
6. Install the balance of the parts from the diode bag including the relays, IC opamps, transistors and the 10V precision voltage reference.
7. Locate the pink bags containing the selected FET's. Each bag will be clearly marked so you know where each FET goes. Record the serial number and bias voltage from each label onto the respective silk screen boxes in the lower right of the main PCB.
8. Install the remainder of the capacitors. Save a cutoff lead from the 470 μ F axial cap for the next step.
9. Bend the saved cutoff lead over a small screwdriver to form a "U". Insert it into the 2 holes labeled GND near the top left of the PCB. The idea is to create an anchor point for a DMM probe so keep it elevated off of the PCB a 1/8" or so.
10. Install the 4 Bourns trimmers. Make sure to align RV1 so it's flat as well as nice and parallel to the front edge of the PCB.
11. Locate the bag labeled Knobs ~ Switches ~ Hardware. Install the 18 gold opamp sockets. I install these from the bottom of the PCB but you can install from the top if you choose. Just keep it consistent throughout all of the sockets.
12. Locate and install the 8-pin Molex header, also found in the Knobs bag. **DO NOT** install the cable yet!
13. Locate the small bag of hardware. Open the bag and sort the like parts. Secure the EA2623-1 output transformer to the PCB following the drawing and hardware notes found in the FC526 Hardware BOM.
14. Trim, tin and solder the transformer's leads to the PCB. Keep the leads as short as possible so they don't interfere with the A4 opamp. Cutting them too short is also not recommended. ;-)
15. Locate and install the Grayhill rotary switch making sure the base of the switch is nice and flat to the PCB. After soldering all of the pins, check with a lighted magnifier to make sure adjacent pads are not bridged with sloppy solder work. Remove and save the nut from the shaft. Discard the lockwasher. We do not use it.
16. Locate and install the 5M pot for RV3. Make sure the pot is tight and perpendicular to the PCB. Make sure the shaft looks to be aligned squarely and not all cockeyed.
17. Follow the same procedure while installing the 25k pot for RV4.
18. Next install a 10k log pot for RV5 and yep, you guessed it...the last 10k log pot for RV6.



****Securing the Main PCB to the L-bracket****

1. Refer to the 2nd picture in the FC526 Hardware BOM. Slip a lockwasher onto the threaded stud of a 7/8" Male/Female standoff. Insert this stud thru the top of the mounting hole in the PCB near F1 and F2. Secure to the PCB from the bottom with a small pattern hex nut. **DO NOT** over tighten or you will snap off the threaded stud!! The standoff is just aluminum so it's not a super hard material. Tighten just enough to flatten the lockwasher. That's all that is needed.
2. Install the four 4-40 x 3/16" undercut screws thru the L-bracket and into the four 1/4" long standoffs. Make sure to let the screws find their way into being fully seated. I do this by tightening the standoffs with my fingers. They can then be fully tightened by using a 3/16" socket on the standoff. No screwdriver is needed this way.
3. Make sure the nuts are removed from the Grayhill switch and all of the Bourns pots. Carefully insert the main PCB assembly into the L-bracket. Make sure all of the pots are aligned in the center of their respective holes. Adjust them as necessary. Align the PCB so it is tight to the rear front of the L-bracket and centered top to bottom. It should be flush with both edges. With a lockwasher on each one, install the rear 4-40 x 3/16" pan head screws thru the holes in the PCB that are adjacent to the gold fingers.
4. Slip one lockwasher onto each of the studs of the two remaining 7/8" Male/Female standoffs. Thread these standoffs thru the two front PCB mounting holes into the 1/4" standoffs that are secured to the L-bracket. **DO NOT** over tighten these or you will snap off the threaded stud!!
5. Set this assembly to the side for now.

****Meter PCB****

1. All of the components for the Meter PCB are in one pink bag. Install all of the resistors first.
2. Install all of the capacitors.
3. Install the three LM339N quad comparators.
4. Install the transistor and the 2V5 precision voltage reference.
5. Install the 8-pin Molex header. **DO NOT** install the cable yet!
6. Install the three C&K mini toggle switches found in the Knobs ~ Switches ~ Hardware bag. Make sure these switches are flat and parallel to the PCB in both directions. Sloppy crooked switches will cause alignment issues later.

****Semi-Final Assembly****

1. Locate and slip the faceplate into position over the shafts. Snug the nuts on using only your fingers at this time. Make sure to not mix up the Grayhill nut as it is not interchangeable with the Bourns nuts.
2. Make sure all three of the mini toggles are flipped towards to the top edge of the Meter PCB.
3. Insert the Meter PCB assembly into position thru the L-bracket holes and onto the 7/8" standoffs.
4. While holding the Meter PCB tight to the back of the L-bracket, install the three 4-40 x 3/16" pan head screws. **DO NOT** use lockwashers at this time.
5. Align the faceplate so that it is parallel the edge of the L-bracket. Fully tighten the nuts for the Bourns pots and the Grayhill switch using a socket with the console tape trick that we have used for all of our builds.



****LED Install****

1. The next most important step is to get familiar with the supplied LED's. LED's have a polarity. The longer lead is the anode or positive lead. The shorter lead is the cathode or negative lead. If an LED is not installed following the correct polarity, it will not illuminate. In the case of the FC526 gain reduction meter, the LED's are in a series string so one incorrectly installed LED at the start of this string and the LED's following it will not illuminate causing much frustration. Take a minute to study the supplied LED's. With the LED flat, if you look at the metal inside, you will see that the smaller internal side is the anode and the larger internal side is the cathode. While viewing the edge of the LED, you will notice that there is a small "knick" or offset in the internal metal of the anode side that is not present on the cathode side. Make some notes or a little sketch if it will help.
2. Next, observe the edge of the Meter PCB where the LED pads are. You will see that the pads for the anode lead are longer than the pads for the cathode leads. Each LED's leads will straddle the edge of the PCB and they form an alternating pattern between anode and cathode.
3. The LED's will bottom out against the back of the L-bracket and sit near perfectly flush with the front of the faceplate when installed. A little trick to help keep the LED's in place and not moving around is to put a strip of console tape over the holes on the front of the faceplate. I have only used console tape so cannot recommend any other type of tape. It does not leave a residue and will not harm the screen print or paint.
4. Starting with an orange LED, hold the tip of it flush with the front of the faceplate and clip both leads so they come approximately to the center of the shorter pads. This is usually about 1/32" below the small spurs that are on the leads. Grab the body of the LED with your needle nose pliers and angle it into the lowest hole while straddling the leads over the PCB. Make sure to observe polarity! Once in position, make sure the length of the leads is long enough to make proper contact but not too long to stick past the rear of the shorter pads. Once you have determined the proper cut length, cut the remaining LED's.
5. I install all of the LED's before soldering any of them. The console tape will help keep them in place while inserting them all. I continue from the bottom of the PCB heading towards the Peak LED. I straddle the last few gain reduction LED's over the PCB without inserting them into the faceplate until I have all LED's straddling the PCB. There is just enough room to get this done.
6. Make sure all LED's are seated in place and their LED's are somewhat centered in their respective pads.
7. With a magnifying glass, view inside the edge of the LED's looking for the small anode "knick" and make sure that they alternate so that the polarity of each one is correct.
8. Solder all of the LED's to the exposed pads on the exposed "bottom" side of the Meter PCB.
9. Remove the console tape from the faceplate.
10. Remove the three mounting screws and gently remove the Meter PCB from the assembly.
11. Lay the Meter PCB down and solder the leads on the "top" side of the Meter PCB. You may need to slightly/gently bend a few of the leads so they are not hanging off of the edge of their pads.
12. Locate the 8-conductor Picoflex cable. Install the cable onto the Meter PCB's header. The cable is polarized so it will only go on one way. The red conductor will be nearest the bottom edge of the PCB. Make sure you have it aligned right before jamming it on incorrectly and busting the header to pieces!
13. Install the other end of the Picoflex cable to the header on the main PCB.



14. Slip the Meter PCB into its final home position. Remember, all of the toggles should be flipped towards the top of the module. This time put a lockwasher onto each of the three 4-40 x 3/16" pan head screws. Secure them fully.

****Finishing Touches****

1. Install the red insert into the 3-50 pointer knob. Install this knob onto the Grayhill switch shaft. I find it easiest to turn the switch two clicks up with a needle nose pliers (8:1) and then align the pointer to the "8". Check full rotation and make sure it's equally aligned. This knob's setscrews require a 1/16" hex key.
2. Install the tan inserts into the 1-37 plain knobs. Install these knobs onto the Release and Attack pots, in that order. Fully seated, the bottom of the knobs will be about 1/32" above the shaft nuts. Before fully seating the setscrews, check that the indication lines are equally aligned with full rotation. These knobs require a 0.05" hex key.
3. Install the blue inserts into the 3-37 pointer knobs. Install these knobs onto the Output and Input pots, in that order. Fully seated, the bottom of the knobs will be about 1/32" above the shaft nuts. Before fully seating the setscrews, check that the indication lines are equally aligned with full rotation. These knobs require a 0.05" hex key.

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

1. With your DMM set to read resistance, clip your black probe to the GND lug. Now touch your red probe to the "+V" DOA socket for each of the three discrete opamps. The resistance should be not less than 500 Ω . Repeat for the "-V" sockets. Again, the resistance should be not less than 500 Ω . Basically we are looking for direct shorts. Those are no good.

****Initial Power Up****

1. 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

2. Apply power to the FC526 module. No opamps should be installed at this time.
3. Set your DMM to DCV, clip your black probe to the GND lug. For each of the three discrete opamps, check both the "+V" and "-V" socket with your red probe to verify approximately 16 volts.
4. Measure DCV at TP9 to confirm between -9.98V and -10.02V. **This is a critical measurement!**
5. Disconnect the module from the Extension Jig.

****Please proceed to the FC526 Calibration Guide!****

