Fender Capacitor Kit Installation Guidelines

Warning: Tube amplifiers contain high voltage which is stored in the filter capacitors even after the amplifier has been turned off. Always unplug the amplifier from commercial power, and discharge all filter capacitors before working on the amplifier circuitry. If you are unsure about this procedure, we strongly recommend that you leave your amplifier in the care of a professional service person.

Size: Due to improvements in technology, many new capacitors are 50%-75% smaller than original capacitors.

Value: Capacitor values have changed slightly over the years due to changing manufacturing standards. In many cases, 20uF and 25uF have been replaced with 22uF. In the premium kits, 70uF has been replaced with 80uF. 5uF has been replaced with 4.7uF. 8uF has been replaced with 10uF. In the premium kits, 25uF and 50uF bias filter capacitors have been replaced with 100uF/100V.

Polarity: Electrolytic capacitors are polarized. The old capacitors will be marked with + indicators at the positive end, and – indicators at the negative end. Ruby Gold capacitors have an arrow on the side that points to the negative end. It is extremely important that the new capacitors be installed in the same orientation. We strongly recommend marking the polarity orientation inside the amplifier as the very first step after safely discharging the old capacitors. You can do this with a silver "Sharpie" marker, small pieces of masking tape, or labels. You can also take photos of the old capacitors in place in case there are any questions about placement after they are removed. Note that in some amplifiers, not all capacitors are oriented in the same direction inside the capacitor housing ("dog house") For example, in amps with two 70uF/350V (replaced with 80uF/450V in the premium kits), these capacitors are installed in opposite directions from each other! With bias capacitors, the + lead is always connected to ground, and the – lead is connected to the circuitry. Do not guess about polarity; mark each capacitor before removal so there are no potential mistakes.

Procedure: Remove only one capacitor at a time! Do not remove all of the capacitors in the beginning! This is important for many reasons, including polarity, value placement, etc. Cut off the leads of the old capacitor very close to the eyelet, then use solder wick or a solder sucker to clear the eyelet hole in the fiberboard. Leave any residual lead that remains under the fiberboard soldered to the eyelet. Cut the leads of the new capacitor so that you have ample length (about ½" extra) to insert the lead into the hole. Do not consider cutting off the old lead with extra length and then twisting the new capacitor lead with the old capacitor lead – this is considered terrible technique and reduces the resale value of the amplifier, as well as its reliability. Neatness counts, and it impacts reliability, safety, and resale value.

Mounting: Because of the smaller size of today's capacitors, it is necessary to provide some stability when installing them. A bead of silicone caulk (RTV) or hot glue under each large capacitor to secure them to the turret board is highly recommended. If the capacitors are mounted using only their leads, vibration will eventually crack the leads and dislodge the capacitor. It is not necessary to put silicone or hot glue under the small capacitors – just the larger ones inside the "dog house".

Resistors: In addition to the capacitors, some kits contain balancing and dropping resistors. These resistors are installed in the capacitor housing under the chassis along with the main filter capacitors. Match up the color code with the existing resistors, and always remove then replace the resistors one at a time, in order to prevent possible placement errors. When comparing color code, disregard the gold stripe (specifying 5% tolerance) on the new resistors. The old resistors might have a silver stripe (10%) or no stripe at all (20%) in the last position. A few kits have extra resistors due to changes in production of certain amps. Some of these resistors will not be needed. Replace like-for-like in your particular amplifier.

Special note for later Fender Silverface amps: After 1970, one of the cathode bypass capacitors in the vibrato circuit was changed from 25uF to 5uF (replaced with a 4.7uF capacitor). Be especially careful to locate this capacitor, and also to note the 4.7uF capacitor in the replacement kit. It's a good idea to replace this capacitor first when working in the cathode bypass capacitor section, so that you are sure you get it in the correct location. For reference, this cap goes across a 100K ohm resistor, and one end is connected to pin 8 of the vibrato tube (5th 12AX7 in models which have 6 preamp tubes). Also, in some Fender silverface models, a couple of the cathode bypass capacitors are not mounted directly on the main fiberboard but are instead grounded to one of the rear jacks.

Special note for early Fender Blackface amps: Some early Fender blackface amps used dual 25uF capacitors in the preamp section. These capacitors had three legs; a common ground with two + terminals. These dual capacitors are replaced today with two single 22uF or 25uF capacitors, which Fender also switched to later in production. The two negative leads of the two replacement capacitors go to the same ground eyelet as the single negative lead of the old dual capacitor, and the two + leads go to the respective eyelets as the old dual capacitor.

Questions? If you have any questions whatsoever about the installation process, please contact us through our website before you proceed with the installation.

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