

HICKOK 539B/C TUBE TESTERS
FILTER CAPACITOR C4 REPLACEMENT
By William Eccher

It has been common practice to replace the two electrolytic capacitors C1 and C4 when servicing these tube testers along with the other capacitors. The following outlines a negative result that can occur when replacing C4.

I received a 539C for service where the main complaint was that 6550 and KT88 tubes tested low. This tester had been serviced and all the capacitors had been changed. I found that by running the bias high and backing it down the Gm would increase as expected; however when the plate current had increased to around 90mA the Gm peaked and fell off as bias was decreased. Needless to say I spent a lot of time and frustration before determining the culprit was C4 the Main Meter filter. The capacitor tested at 97uF with low ESR, which would be considered normal in this circuit.

It was common in years past for electrolytic capacitors to be over 150% of rated capacitance. Capacitors were large then compared to the equivalent new ones now, but with capacitance running high they worked just fine. Today new capacitors are testing very close or even a little below rated capacitance and this is fine in most circuits.

I had been using Sprague capacitors from a purchase made years ago and consequently never experienced the problem before. To make sure it wasn't an isolated case of a bad capacitor I found the problem occurred in other testers with different capacitors.

My recommendation is to replace C4 with a 220uF 10 or 15 volt electrolytic capacitor. It will work fine and even slows the meter movement down a little giving the operator a little extra time if he makes a mistake that will peg the meter.

I think in some cases the blame has been incorrectly placed on the power transformer not being able to handle the current load and that was my initial thought as well.