

R-390A plug-in multi-section electrolytic capacitor kit

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As a consequence of the Cost Reduction Program B+ voltages of the R-390A/URR are filtered using multi-section electrolytic capacitors. In most R-390A receivers these are over 50 years old and often show considerable loss of capacitance and suffer from severe electric leakage resulting in hum and high dielectric losses followed by increased current and heat generation. BTW, the older plain R-390 that uses metalized paper filter capacitors does not suffer from the above syndrome.

Numerous attempts have been made to address this critical issue and fix the problem. It has been proven that replacement by NOS electrolytic capacitors is no alternative because these show the same aging effects as capacitors that were in operation. In addition suitable NOS capacitors are barely available.

Serious restorers will consider 2 adequate recapping approaches. I have refilled lots of old R-390A electrolytic capacitor cans with brand new capacitors. This is a cumbersome and time consuming task that when performed well will result in electrically new and cosmetically acceptable capacitors.



Fig. 1 Refilled multi-section electrolytic capacitor after 14 years of flawless operation in its 'new life'

The alternative method is to not reuse old parts but build completely new multi-section electrolytic capacitors from scratch.



Fig. 2 Capacitor kit consisting of new C603 & C606

The two multi-section electrolytic capacitors of the R-390A are located on the audio sub-chassis. Because both are octal base plug-in types they can be replaced very easily. C603 has 3 capacitor sections (3 x 33 μ F at 300 VDC). C606 has 2 sections (2 x 45 μ F at 300 VDC). Especially the operating voltage of C606 seems to be a bit underrated.

Whereas the capacitances of the capacitor kit are the same as the original values the operating voltage was increased from 300 VDC to 400 VDC. Temperature is rated at 105°C. Because the mechanical dimensions of the aluminum housing are identical to the original (e.g. 1-3/8" OD) the original clamps that securely held the capacitors in their octal sockets fit nicely. The hard anodized aluminum housings of the new capacitors are more scratch resistant than the original blank aluminum cans.



Fig. 3 Stewart-Warner audio module recapped with new electrolytic capacitors C603 & C606

Recapping the audio sub-chassis with high quality electrolytic capacitors is a good prerequisite for your R-390A to operate for another 50 years. Don't forget also to replace the infamous tubular electrolytic capacitor C609 (8 μ F/30 VDC) located underneath the chassis with a hermetically sealed military-grade one.

For the totally uninformed R-390A expert, the green writing in figure 3 refers to the squelch facility well recherché and beautifully described by my friend Johannes (see [Y2K-R-rA manual](#)).

Attention: Be careful when inserting but especially when retracting the capacitor from the octal socket not to brake off the keyway of the base.