

A.C. Power Supply for Testing Radios

BY RICHARD GRAY

Some people upon seeing my studio ask me, what is the most important instrument I use in repairing radios? Without hesitation I point to a curious little box with a light bulb sticking out its top. It is my AC power supply. It protects me from my radios and them from me!

Old radios often have faults that are greatly exaggerated by careless handling. The most common of which are faulty filter capacitors. After several years of lying idle, no set should just be plugged in and turned on. The filter capacitors need to be "reformed" (polarized) to work properly. This takes a gentle touch, bringing up the Voltage very slowly. Bring up the voltage too fast and the results can be catastrophic; ruined capacitors burned out rectifier or worse yet, a destroyed power transformer!

The AC power supply has several features to allow the reforming of filter capacitors to be accomplished with minimum risk. The "Variac" (Auto-Transformer) allows the voltage to be slowly increased; the ammeter provides monitoring of the progress; the lamp protects the rectifier and power transformer in the event the filter capacitors fail (they sometimes do). The lamp has a marvelous property that when it is cold it passes almost all the power to the set. However, a threshold is reached where the lamp lights, dissipating most of the power, protecting the set from damage.

Another feature of the AC power supply is line isolation. For those who might not be aware, one side of the line is earthed. Playing with radios without an isolation transformer can be a new form of "Russian Roulette". Since many instruments have their cases grounded, the full line voltage can appear between the radio's chassis and your instrument's chassis. This is especially true in AC/DC sets, but can also happen with transformer sets having faulty line filters or transformers. At best a fault can be spectacular, at worst there will be another 'ESTATE SALE'!

**Excerpted & Augmented from the:
Southern California Antique Radio Society "Gazette"
Volume: 22, Number 4 November 1997**

NOTES:

I found a "Power Regulator" on Ebay that was large enough to contain all the parts for my 1 Amp Unit

The 150 Volt A.C. Voltmeter was already there

I added a 1 Ampere A.C. Current Meter. The Current Meter was affected by the Transformer Magnetic Fields, and required shielding. Sandwiching the Meter between two 16 Gauge, Galvanized, steel sheets was adequate

**The "Safety Ground" Banana Jack is used for a test wire with an Alligator Clip
This should always be attached to the Radio Chassis during testing**

The Two-wire line socket was retained. An adapter was made to accommodate a Three-wire Socket with a Safety Ground (I have never had an occasion to use it!!!)

I use a selection of Incandescent Lamps, from 60 Watts to 150 Watts...

A.C. / D.C. sets require very little Current. Transformer sets more

I also use a Fuse when the Light Bulb Current Limit feature is not required

