

**HICKOK 539B/C**  
**VARIAC OPERATION**  
**By William Eccher**

Tube testers had to operate over a wide range of line voltages and loads. This was accomplished by using transformers with lower voltage primaries. By placing a rheostat in series between the line voltage and the primary of the transformer it could be set on the meter to an established value. Of course this resistance in the rheostat could cause a sag with the load of the tube being tested. Various methods were used to compensate for this, but it had an overall effect on the accuracy of the tester.

To improve the accuracy Hickok implemented three meters in its 539A tube tester. One for AC line, one for Grid Bias and the Main Meter. The AC meter allowed the operator to adjust the incoming line voltage to compensate for the load of the tube being tested. A few years after the 539A was introduced it was replaced in the mid 50's with the 539B and in the early 60's the 539C both of which incorporated additional features. It's not uncommon for modern day line voltages to exceed 120VAC. The 539B/C models have transformers with 100VAC primaries and a rheostat is used to drop the voltage. By having the AC Meter to monitor the voltage it eliminated the sag issue. However when testing power tubes the voltage to the transformers would surge when the load was removed. It also results in wear to the rheostat.

By using an external variac we can eliminate the voltage surges and wear to the internal power rheostat. Simply set the power rheostat to maximum and lower the line voltage with the variac. The variac being an adjustable transformer eliminates most of the voltage drop even for power tubes. Now the variac is used during tests to maintain 100VAC (RED LINE) on the AC meter. Any variac can be used as the load is modest at less than 1 Amp. This is an effective way to protect your tester

**NOTE:** Do not plug the tester into a wall out with the Power rheostat set at maximum, since this could damage a transformer.