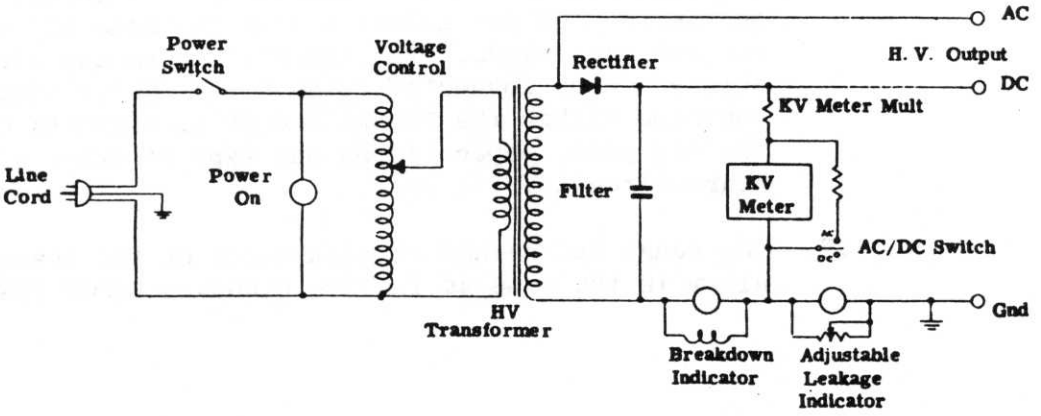
AC/DC HYPOT JUNIOR

DC HYPOT JUNIOR

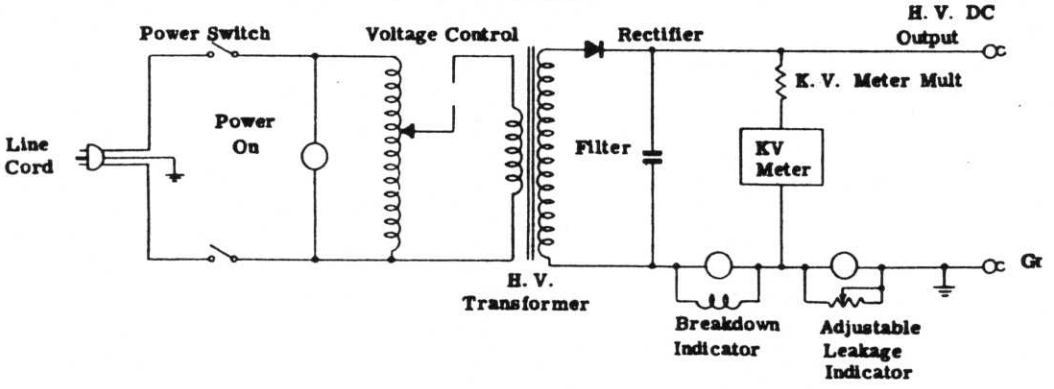
The AC/DC and the DC HYPOT JUNIORS are similar in appearance and general design to the AC Hypot Juniors described on the previous pages, but differ somewhat in circuit details and testing capabilities. The following paragraphs point out these differences.

Simplified schematic diagrams of the AC/DC and the DC models are given below. They differ from that of the AC HYPOT JUNIOR primarily in the addition of a rectifier and filter capacitor to provide the DC output voltage. Because of the DC output voltage, these units make use of a DC Kilovoltmeter rather than an AC Kilovoltmeter, which permits metering accuracies of ± 2% of full scale (as contrasted to the ± 3% of full scale for AC).

AC/DC HYPOT® JUNIOR
SIMPLIFIED SCHEMATIC



DC HYPOT® JUNIOR
SIMPLIFIED SCHEMATIC



When raising the voltage on the DC HYPOT JUNIOR or on the DC section of the AC/DC HYPOT JUNIOR care should be taken not to turn the powerstat control knob too far. Under lightly loaded or no load conditions full voltage as indicated by the kilovoltmeter will be reached well before the voltage control knob has reached full limit of its travel. Under no condition should the control knob be turned so far that the kilovoltmeter pointer is driven far off scale. When testing with a heavy load the voltage will drop and further control knob adjustment may be made as required.

The capacitance of the item under test has a different effect when testing with DC than when testing with AC. When testing with AC the capacitance current supplied by the test set may be a considerable portion of the output current and may in fact limit the use of the JUNIOR HYPOT as explained in the section on Testing Capabilities. With DC testing the capacitance of the item causes an initially high charging current which gradually decays to the steady state leakage current so that the final output of the test set is virtually the true leakage current. The higher the capacitance and the higher the test voltage the higher the initial charging current will be.

Since the leakage indicator is a current sensing device it will frequently light while the high charging current is flowing. Once the item under test has become fully charged the leakage indicator will extinguish if the insulation leakage is lower than the preset value. When testing a large item this high inrush current may be limited by gradually raising the voltage from zero. If the indicator lights, momentarily stop raising the voltage and wait several seconds. If the light goes out it is definite indication that the original lighting was due to the charging current, and raising the voltage may then be continued. If the light stays on, then the leakage current exceeds the indicator current setting. Because the steady state current supplied on the DC test is primarily leakage current, there is theoretically no limit to the size of the apparatus that may be tested with a DC HYPOT JUNIOR if the actual leakage current is less than a couple of milliamperes.

The capacitance of the item under test merely determines the length of time required to reach full voltage. In general it will take about two seconds per microfarad of load capacitance to reach full voltage. Therefore, the larger the item under test the slower the voltage should be raised. With the voltage control at a given setting, the item under test may be considered to be fully charged when the pointer of the voltmeter stops climbing.

Adjustment of leakage indicator is made in the same manner previously described in the section "Leakage Light Adjustment". With the DC or the DC section of an AC/DC HYPOT JUNIOR, it is unnecessary to connect a capacitance across the load resistor since the test item capacitance has no bearing on the leakage light setting. However, because of this factor, the AC/DC unit may be calibrated for a given value either for AC or for DC. If it is calibrated for one and the AC/DC selector switch position is changed, the calibration may also change.

In general the performance and characteristics of the DC section of the AC/DC HYPOT JUNIOR is the same as the DC HYPOT JUNIOR and the performance and characteristics of the AC section are the same as that of the standard AC HYPOT JUNIOR.

The maximum output current at maximum voltage for the DC HYPOT JUNIOR and the DC section of the AC/DC HYPOT JUNIORS is 2.5 milliamperes. A curve showing the output voltage vs. output current for 10% regulation is given below. This curve shows the maximum current that may be drawn at any voltage setting without lowering the output voltage more than 10%.