

## TYPE 127 PREAMPLIFIER POWER SUPPLY

### F A C T O R Y   C A L I B R A T I O N   P R O C E D U R E

#### RECOMMENDED EQUIPMENT

Oscilloscope, Tektronix 540 series "G" plug-in.  
190A Constant Output Signal Generator.  
105 Square Wave Generator.  
1 TU2 Test Load Unit, 1 "C" plug-in, 1 "K" or "L" plug-in.  
2 170  $\Omega$  cables and terminators.

#### PRELIMINARY CHECK

Check for unsoldered joints, rosin joints, poor wire dress. Check the resistance to ground of the transformer primaries and each of the power supplies. Fuse 5 amp slo blo.

#### 1. SET -150 ADJ. AND CHECK REGULATION AND VOLTAGE OF SUPPLIES

Insert a "C" unit and a TU2 test load plug-in into the 127. Connect the power to the 127 and check for approximately 20 to 40 seconds of delay on the delay relay operation. Set the -150 adjust to  $-150 \pm 1\%$ . Check the other supplies. The -150 will normally swing about -140 to -160. The +100 must be within 2%, generally it runs close to 98 volts. The +225 must be within 2% and the +350 within 3%. With the "C" plug-in in place, switch the TU2 in the other side to high load and check all supplies for regulation and ripple at 105 line volts. The ripple should not run over 20 millivolts on any supply. The normal ripple amplitude is: -150, 5 mv; +100, 10 mv; +225, 10 mv; and +350, 15 mv. Now remove the "C" plug-in and switch the TU2 to low load and check for regulation of all supplies at 125 line volts. If the regulation is bad here, check the under current relay. At least one plug in must be in the 127 or the power supplies will not regulate.

#### 2. SET DC OUTPUT LEVEL

Install an "L" plug-in in one channel. Short pins 1 and 3 on the output connection plug together. Switch the "G" plug-in in the scope to AC coupled and center the trace on the scope. After the DC level has been set, do not use the vertical position control on the "G" unit. Much operator trouble may result if the positioning of the "G" unit is changed. Connect the two 170  $\Omega$  terminators and cables to the output of the channel with the "L" unit in it. The 170  $\Omega$  terminators must be on the scope end of the cables. Connect output "A" to the "A" input of the "G" unit and output "B" to the "B" input. The cables may be used connected to either the front or the back of the 127 with no difference except at high frequencies. Switch the "G" input selector to "A" DC and adjust the DC LEVEL for "A" of that channel to center the trace on the scope. Now switch the "G" to "B" DC and set "B" channel DC LEVEL to center the trace. In A-B DC the trace should be very nearly centered. The output ripple on either channel should not exceed 5 mv with the plug-in INPUT grounded.

#### 3. ADJUST CALIBRATOR

Turn the red CALIBRATOR knob to OFF. Connect an accurate Voltmeter to the CAL. VOLT. CHECK. The meter should have a sensitivity of 20,000  $\Omega$ /volt. Adjust R879, CAL. ADJ. so that the meter reads 100 volts. Connect output to an accurately

### 3. ADJUST CALIBRATOR (cont.)

calibrated scope input. Switch the red knob to VOLTS. The meter should now read between 45 and 55 volts. Check from .2 volts to 100 volts for proper voltage output.  $\pm 2\%$  Now switch from volts to millivolts and with the black knob set at 100, check for proper output.

### 4. SET LOW FREQUENCY COMPENSATION

Apply CALIBRATOR to input of plug-in. DC level of the channel must be set. Switch to "A" DC on the "G" plug-in. Now adjust C421 if the plug-in is in the left channel, C521 if it is in the right channel, for proper square wave response. Switch the "G" input to "B" DC and adjust C431 for the left channel and C531 if in the right.

### 5. SET GAIN OF CHANNEL

Set both channels of the "G" unit in the scope to 0.05V/CM and the "L" unit to 0.1V/CM. Switch the "G" to A-B and apply 0.2V to the "L" input. Adjust the channel GAIN ADJ. for 4 cm of deflection. Switch the "G" to "A" and set the "L" at 0.05V/CM and check for 4 cm. Switch the "G" to "B" and check for 4 cm. The difference in gain between the two channels must not exceed 5%. If it does, check the two 170  $\Omega$  TERMINATING RESISTORS as these may be off tolerance.

### 6. SET HIGH FREQUENCY COMPENSATION

Set the "G" to .05V/cm. Switch the "G" to A input. Set the "L" to .05V/cm and apply enough output from the 105 for about 2.5 cm of deflection at 400 kc. Adjust the two coils near V404 for the left channel and the two coils near V504 for the right hand channel. The optimum position will generally be with the slug in the untapped coil centered in the inductance and the slug in the tapped coil adjusted so that the leading corner of the square wave is just slightly above the level of the average of the square wave top. The leading corner will be followed by a 2-3% droop which makes the leading corner look like it is spiked too much but this is normal. Switch the "G" to B input and adjust the two coils near V414 left channel, or V514, right channel, for optimum waveform. The two channels will look approximately the same.

### 7. CHECK HIGH FREQUENCY RESPONSE

Switch the "G" to A-B and apply 50 kc from the 190. Adjust the output for 4 cm of deflection with both "G" attenuators at .05 and the "L" set at .05V/cm. Now switch the 190 to 15 mc. The output must be 2.8 cm or more.

### 8. CHECK ALTERNATE SWEEP OPERATION

Place a CA or a TU2 plug-in in the channel and connect the gate out of the scope to the TRIG SIGNAL INPUT jack on the rear of the 127 for that channel. Check for dual trace switching with the CA set for ALTERNATE or the TU2 set for DUAL TRACE.

### 9. ADJUST SECOND CHANNEL

The adjustment of the second channel will be the same as the first and will involve steps #2, 4, 5, 6, 7, and 8.