

105/107

CALIBRATION PROCEDURE

SQUARE WAVE GENERATOR

(067-509)

1. EQUIPMENT REQUIRED:

- 1 Test Scope - 540 Series - with Type 1A1 plug-in.
- 1 Sampling system - 661 with 4S1/5T1A or 561 with 3S76/3T77
- 1 X10 Probe P6008
- 1 50Ω Termination, 011-049
- 1 10 nsec Cable, 017-501
- 1 GR, BNC, Male Adapter
- 1 GR, X10, 50Ω "T" Attenuator
- 1 630 Triplet Meter, 20,000Ω/v dc or 262 Simpson Meter, 20,000Ω/v dc
- 1 Variable Line Voltage Source with Meter

2. PRELIMINARY INSPECTION:

a. General

Check for unsoldered joints, rosin joints, lead dress, and long ends. Check controls for smooth mechanical operation and proper indexing.

3. PRESETS:

a. External controls

| | |
|---------------------------|----------------------|
| Frequency Multiplier | Midrange |
| Standard Output Amplitude | cw but not fast rise |
| Range | 10 kc |
| Symmetry | Midrange |
| Power On | Off |

b. Internal adjustments

Midrange

c. Leave controls and adjustments, for any step, as they were in the preceding step, unless noted otherwise.

4. RESISTANCE CHECKS:

| <u>Supply</u> | <u>Check Point</u> | <u>Approx Resistance</u> |
|---------------|--|--------------------------|
| A | + end of C302 and ground | 130 k- |
| A + 150 | Emitter of Q6 and ground | 130 k |
| A + 150 | Emitter of Q6 and + end of C302 | 50 k |
| A - 150 | Negative end of C400 & gnd | 120 k |
| A - 150 | Negative end of C400 & end of C302 | 3-5 k |
| -12.6 | Cathode end of D604 & gnd | 2.5 k |

5. POWER SUPPLIES:

a. Turn on.

1) "A" Supply

Adjust R315 for ¹²⁰ volts out while observing square wave out with a scope. (R314 Amplitude control set for maximum.)
Ripple: ² volts at maximum output. *For scope*

2) A + 150

Check for +150 volts. Common lead to the "A" supply positive lead to emitter of Q6. +150 should read $+150 \pm 5\%$.
Ripple: ² volts at maximum output.

3) A - 150

Check for -150 volts common lead to the "A" supply positive lead to the negative end of C400. -150 should read $-150 \pm 5\%$.
Ripple: ² volts at maximum output.

4) -12.6

Check for -12.6. Common lead to chassis ground. Positive lead to the cathode of D604. -12.6 should read $-12.6 \pm 5\%$.
Ripple: Approximately .01 volts.

b. All supplies checked for regulation from 105 to 125 line voltage.

9K CABLE INTO TEST SCOPE 50 OH TERM

6. MULTI SCREEN ADJUSTMENTS:

- Screen adjust R102. *adj knob*
- Set frequency to cw end. *10*
- Connect probe to standard output.
- Set frequency multiplier to 1 kc.
- Set sweep speed to 10 μ sec.
- Adjust screen adjust for 1 cycle/10 div.

7. OUTPUT FREQUENCY:

- a. Set Frequency to ccw end.
- b. Connect probe to standard output.
- c. Set Freq Multiplier at 10 kc.
- d. Set sweep speed for 10 μ sec.
- e. Adjust Freq Cal R108 for 1 cycle/10 divisions.
- f. Check other frequency ranges and Freq Variable. $\pm 20\%$ on frequency.
- g. Remove probe.

8. TEST CONDITIONS:

- a. Output terminated in 50Ω . *105 10 nsec / CM*
- b. Output to be observed by a sampling system. *X10 ATTEN*

9. MEASUREMENTS: *USE X10 ATTEN INTO 3576*

- a. Amplitude Range approximately .2 to 12 volts
- b. Risetime
 - at .2 volts 5 nsec or less; preshoot approximately 50 mVolts
 - at 12 volts 10 nsec or less; preshoot approximately 100 mVolts
- c. Faltime *Adj 1 120*
 - at .2 volts approximately 10 nsec; negative overshoot approximately 40 mVolts
 - at 12 volts approximately 20 nsec; negative overshoot approximately 200 mVolts

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8.ATS?
10. Trigger output is observed by connecting a probe to the ENC jack. Should be +2 volts and -3 volts differentiated.

11. FASTRISE OUTPUT: *Remove X10 ATTEN*

- a. Output terminated in 50Ω and being observed by a sampling system.
- b. Amplitude range: 70 mVolts to 500 mVolts.
- c. Risetime: 1 nsec or less at any amplitude setting.
- d. Adjust the Variable Capacitors for minimum amplitude of ringing (approx 1 kmc) and risetime at 500 mVolts of 1 nSec or less. Peak to peak ringing should not exceed $\pm 2\%$.