



TECHNICAL NEWS BULLETIN

SUBJECT: SERVICE SUGGESTIONS ON THE LWT TESTER



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FEBRUARY 1982



"*To err is human, to forgive divine*" is a saying that has come down to us through the ages. But transistors are not human and being totally devoid of any divinity whatsoever do not forgive an electronic technician who treats the laws of physics with contempt. Especially the technician that connects the test leads of a Raymer LWT Speaker/Line Tester across an amplifier output.

If the technician, forgetting himself momentarily, does connect the test leads across an amplifier output instead of a speaker line, and the LWT ceases to function correctly, listed below are a few guide lines for field service and the re-calibration of the tester. Please refer to the schematic diagram on the reverse side of this page.

Whenever the test leads are accidentally connected to a "hot" circuit, Q-3 will usually fail. Test indications of this failure may vary from false readings to no reading at all. A defective Q-3 may be replaced with a type 2N5172 or equivalent transistor such as the Raymer part #TR-692. If not available, a general purpose NPN silicon transistor with a beta of at least 100 may be used as a substitute. To maintain accuracy it is recommended that both Q-3 and Q-4 be changed as a matching pair, taking care to observe the transistor lead configuration. (The center lead on the 2N5172 is the collector.)

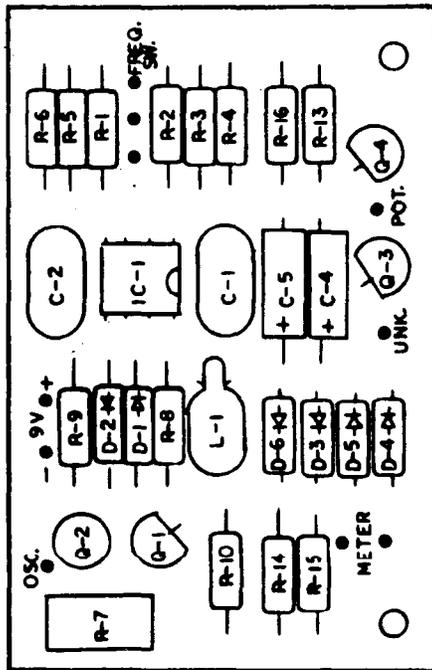
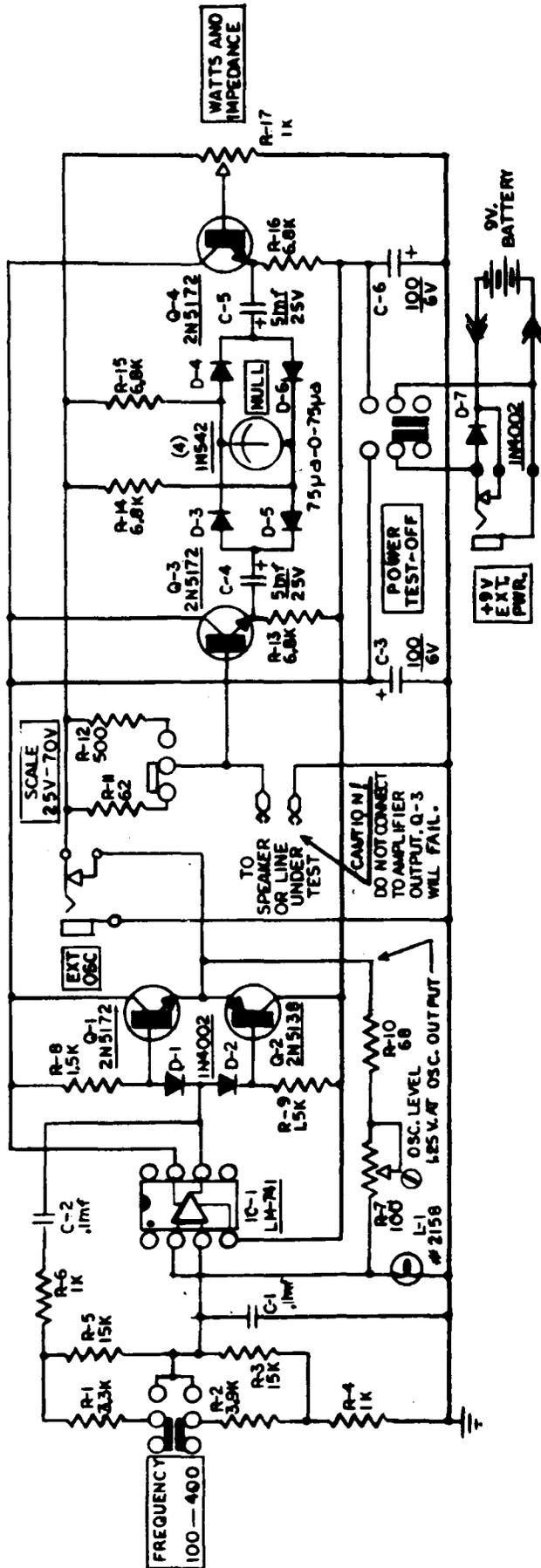
To check the calibration accuracy of the LWT, several impedance measurements should be made with the unit using known resistors instead of a speaker line. Example: 5 ohms, 50 ohms, and 500 ohms. Observe the readings and make corrections as follows.

- (1) If the dial pointer is several degrees to the left or right of the correct readings, loosen the set screw and align the dial pointer or the optimum average reading.
- (2) If the readings are accurate on one scale but not the other, the range resistor for that scale is out of tolerance. These resistors are located on the 25/70 volt scale switch. R-11 is 62 ohms and determines the accuracy of the 25 volt scale. R-12 is 500 ohms (510 ohms padded with 15K) and determines the accuracy of the 70 volt scale.
- (3) If readings are accurate at one end of the scale but not the other, very probably Q-3 and Q-4 may not be matched or one of the diodes D-3 through D-6 may be damaged.
- (4) Where readings are erratic, clean the potentiometer with contact cleaner.

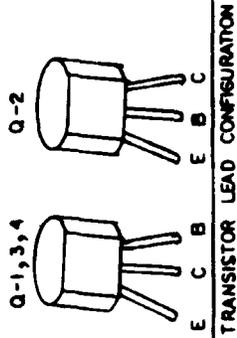
PLEASE NOTE: The Trimpot on the board is NOT a calibration adjustment, rather an adjustment for the oscillator level to assure a pure sine wave. It is adjusted for 1.25 volts at the external oscillator jack.

MODEL LWT REPLACEMENT PARTS LIST

Case	—	P-239	*LM-741 — IC-248
Meter	—	M-241	*2N5172 — TR-692
Knob	—	K-242	*2N5138 — TR-746
Cursor	—	P-243	*Suggest purchase through
Front Panel	—	M-1278	electronic distributor.
Balance Potentiometer	—	P-231	



PC BOARD COMPONENT LOCATION



TRANSISTOR LEAD CONFIGURATION

TRUTONE ELECTRONICS INC.
NO. HOLLYWOOD CA.

RAYMER MODEL LWT
SPEAKER/LINE TEST SET

ENGINEER: KOGGE

DATE: 10/27/75

FREQUENCY
100 — 400

SCALE
2.5V-70V

WATTS AND
IMPEDANCE

CAUTION!
DO NOT CONNECT
TO AMPLIFIER
OUTPUT, Q-3
WILL FAIL.

POWER
TEST-OFF

9V
BATTERY

+9V
EXT.
PWR.

UNK.
POT.

METER

OSC.

OFF EQ.
SH.

TO SPEAKER
OR LINE
UNDER
TEST

DO NOT CONNECT
TO AMPLIFIER
OUTPUT, Q-3
WILL FAIL.

+C-3
100
6V

+C-6
100
6V

75µF-0-75V

(4)
1N542

2N5172

2N5172

2N5172

1M-7M1

15K

3.3K

1K

Q-2

Q-1, 3, 4

Q-2

Q-1

Q-4

Q-3

Q-2

Q-1

Q-1

R-16

R-13

R-4

R-3

R-2

R-6

R-5

R-1

R-2

R-3

R-16

R-13

R-4

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