

# A Test Unit For The

# T-23/ARC-5

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**F**OR the past several years, articles have been written about the T-23/ARC-5 v.h.f. transmitter and present articles attest to the popularity of this fine transmitter on the two and six meter bands.

At the present time, nothing has been said or nothing is known of the test unit that was originally designed to tune up the T-23/ARC-5 transmitter. The author is the fortunate possessor of the test unit and it is the purpose of this article to describe it and show that it can be duplicated very easily.

The test unit is known as the U.S. Army Signal Corps Test Unit I-155-A and was built by Western-Electric. It consists of an 0-1 ma meter with a function switch and appropriate resistors to bring the meter in the proper range for the circuit being tested. A tuning stick is included in a compartment with a sliding cover on one end of the case. The case measures 7" long, 4" wide, and 2" deep.

On the bottom of the unit will be found a set of readings for the BC-950-A transmitter and they are as follows:

Switch Position	Function	Operating Range
1	Osc. Grid Current	4-70
2	1st. H-G Grid Current	25-90
3	2nd. H-G Grid Current	25-90
4	R-F Amp. Grid Current	20-80
5	R-F Amp. Cath. Current	40-55
6	Heater Voltage	54
7	Plate Voltage	53-55

Nothing is known of the BC-950-A transmitter and since the test unit was designed to be used with the T-23/ARC-5 also, it is assumed that the same readings can also be used. The author tuned for maximum in positions 1, 2, 3, and 4. Position 5 was used to tune the final, tuning for a dip in reading with the R.F. AMP. TUNING on the transmitter and for increase in readings with the ANTENNA COUPLING. Later a set of readings will be given as used with a transmitter in this locality.

Figure 1 shows the schematic of the test unit. The color coding of the cable is shown. However,

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in a homebrew unit the color coding need not be followed. The connections to the female plug PL-152 are shown with the outside of the plug facing the viewer.

Figure 2 gives the location of the test unit in each position of the test switch. Switch position 1 finds the meter located in the grid circuit of the 1625 oscillator and shunted across  $R_{302}$ .

In switch position 2 the meter is in the grid circuit of the 1625, the first harmonic generator, shunted across  $R_{305}$ . In position 3 the meter is in the grid circuit of the 832 second harmonic generator, shunted across  $R_{310}$ . For position 4 the meter is now in the grid circuit of the 832 final amplifier, shunted across  $R_{314}$ . However, in position 5 the polarity of the meter is reversed and is now in the cathode of the 832 final amplifier. It is shunted across  $R_{315}$  and  $C_{321}$ .

For switch position 6 the meter is reading filament voltage. The T-23/ARC-5 used here has the negative side of the filament voltage grounded. If, in some installations, the positive side is grounded, the meter will not read. Reversing the leads within the test unit for position 6 should correct the problem. Position 7 the meter reads the plate voltage.

This takes care of the Test Unit I-155-A and a study of the diagrams will show that the unit



U. S. Army Signal Corps Test Unit I-155-A with tuning stick.

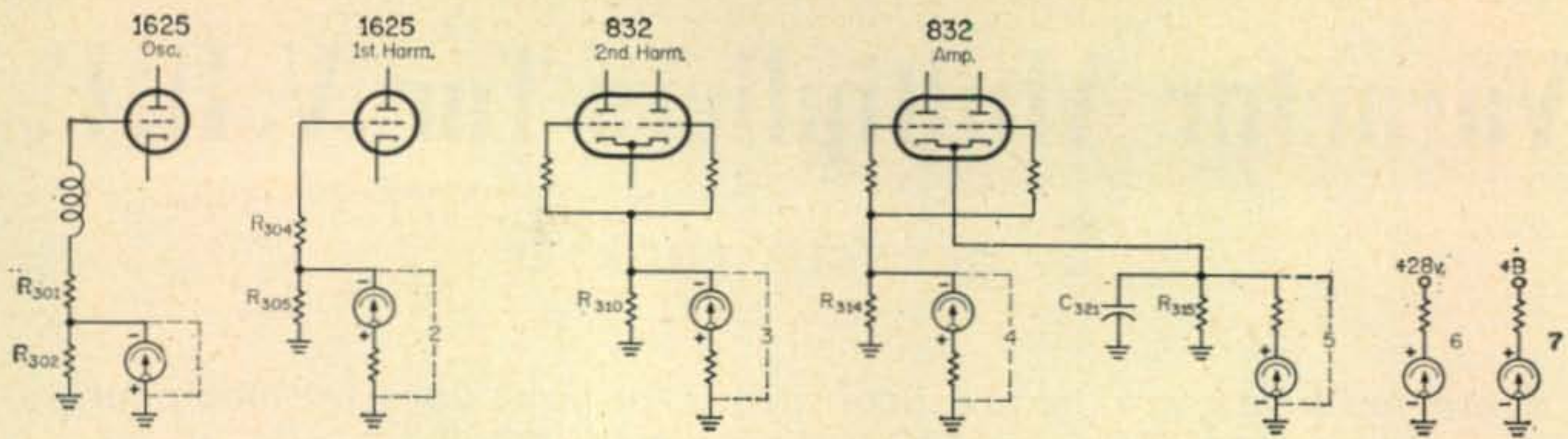
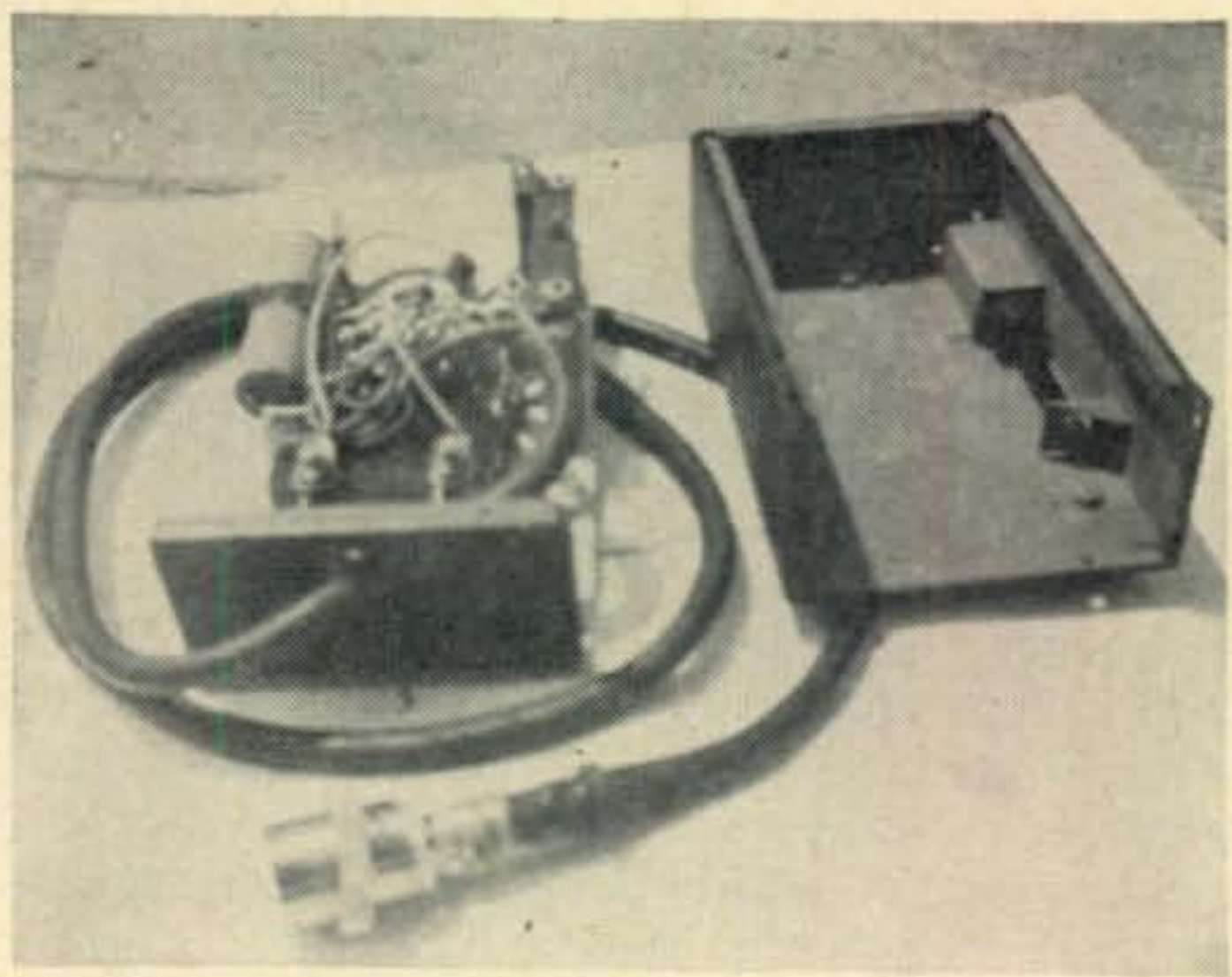


Fig. 2—Test points on the T-23/ARC-5. Numbers correspond to test switch positions.

is quite simple. For those who plan to build a homebrew unit; it is felt that precision resistors are not needed although, if available, should be used. The main thing to remember is that the readings are relative and will vary according to the transmitter and activity of the crystal used. Tune the grid circuits for maximum readings and use the cathode current position (5) for tuning and loading the final.

The following set of readings are those that were found on the T-23/ARC-5 transmitter tuned to 145.3 mc. at the QTH of KN9WEL.

Sw. Pos.	Rdg.	Sw. Pos.	Rdg.
1	15	5	59
2	56	6	46
3	47	7	40
4	16		



The inside of the test unit.

- Plate voltage on the 1st. 1625 .....400V
- Plate voltage on the 2nd. 1625 .....400V
- Plate voltage on the 1st. 832 .....390V
- Plate voltage on the Final 832 .....410V



Test unit in conjunction with the T-23/ARC-5.

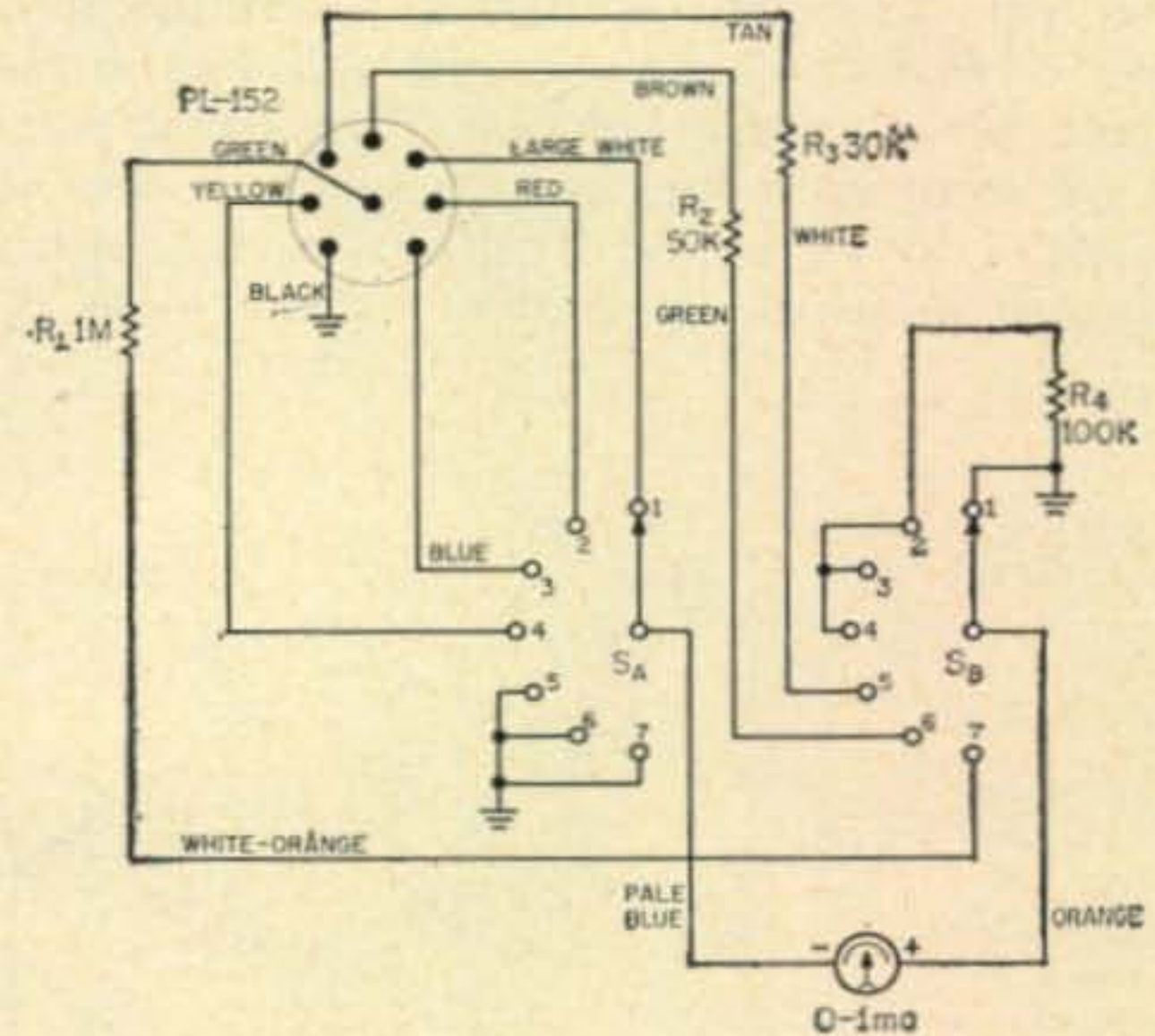


Fig. 1—Circuit of the test unit showing connections to PL-152 plug. The 1 meg resistor consists of four 250K 1/2 watt units. All other resistors are 1 watt 1%. The meter has an internal resistance of 150 ohms and is equivalent to a Weston 301.

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