APQ-56 SERVICE NOTES
#5
12 MARCH 1957

AN/APQ-56 TIME SHARED SYSTEM

R-F SWITCH PHASING PROCEDURE

1. Before attempting to phase the RF Switch, determine by means of a dry cell battery the direction that the electron beam in the CRT of the oscilloscope is deflected when a positive voltage is applied to the horizontal sweep input, also, the vertical input. Figure 2 gives the various configurations obtainable on the oscilloscope, depending on the positive direction of deflection.

2. With the R-F Switch connected normally into system, crystal mount attached to the right waveguide on the R-F Switch, and test equipment connected as shown in Figure 1; place radar set into Stand-By operation. Assuming the positive deflection is upward and to the right, the oscilloscope display should be similar to Figure 2a. The distance between points "a" and "b" on the curve depends on the angular displacement of the rotating disc with respect to the zero point on the switch signal sine wave. Proper phasing is obtained when the distance between "a" and "b" is approximately 17 percent of the total length of the oscilloscope display and a slight pressure applied to the end of the rotating shaft causes the two points to move closer together. If the two points "a" and "b" move farther apart, phasing is wrong. Loosening the two set screws in the hub of the larger gear allows proper phasing to be obtained by allowing the gear to be rotated to the correct position on the shaft. If the positive deflection is upward and to the right and the oscilloscope presentation is as shown in Figure 2b, the larger gear should be rotated approximately 90 degrees for correct positioning. Several tries may be necessary before proper phasing is obtained.

3. Pressurize switch to 40 PSIG and check for air leaks.

Symptom	Probable Cause and Correction
R/T Unit	
3.10 For all radar sets using Type 400 magnetrons. Magnetron power output low (under 14 watts average).	Magnetron cathode out of center. The following is a recentering method for 400 Magnetrons-- NOTE: This is a last ditch approach to increase power, use only after all other attempts have failed: 1. Place R-F Head up-side-down on a bench and connect up for R-F power measurement. 2. Make the two plates shown in Figure 3. Material to be 1/8" TK stainless steel or brass plate. 3. Position the plates between the maggie case bolt and the potting compound as shown in Figure 4. Install a ¼-20 bolt

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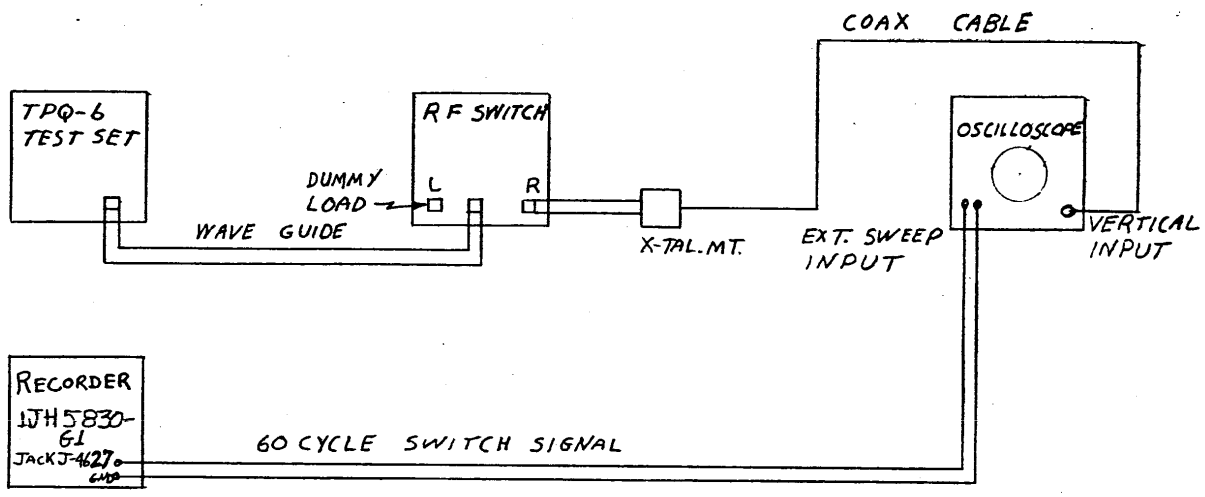

RF SWITCH PHASING
TEST HOOK UP

FIGURE 1

SKETCH SHEET
WESTINGHOUSE FORM 2444 D

SKETCH SHEET
WESTINGHOUSE FORM 2444 B

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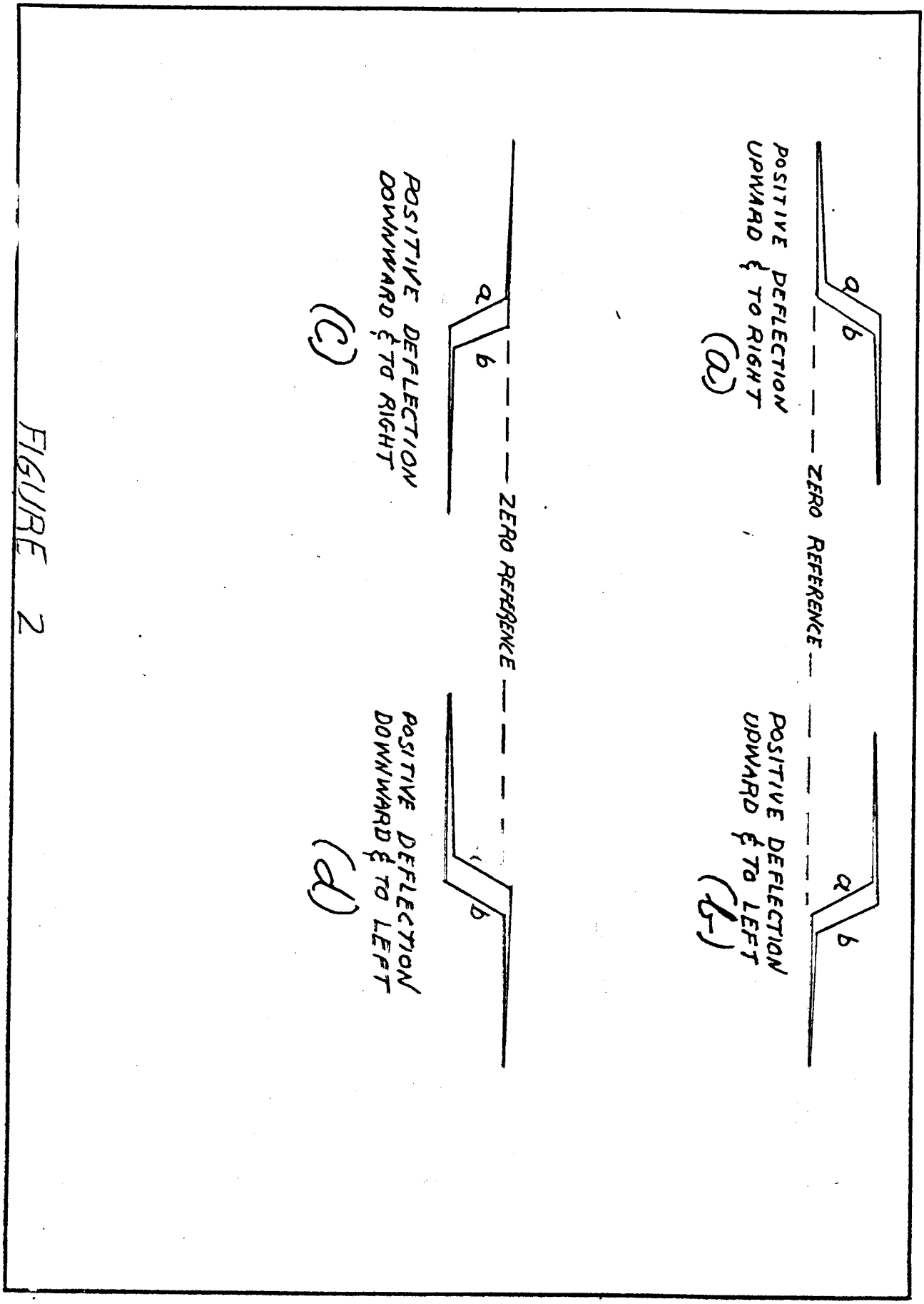

FIGURE 2

(blunt point) through the threaded hole in the rectangular plate and into the countersunk hole in the triangular plate.

4. Position this fixture laterally until the triangular plate makes contact with only the potting compound (triangular area below the center of the magnetron).

5. Place radar set in RUN operation.

6. While closely watching the power output meter, slowly apply pressure to the potting compound by tightening the bolt until the power output is maximized. CAUTION--Use a non-magnetic screwdriver with extreme care when making this adjustment.

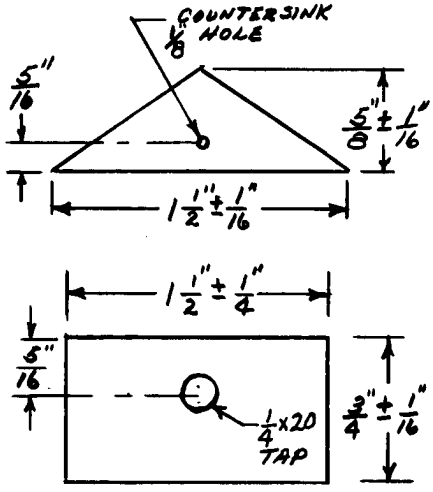

Figure 3

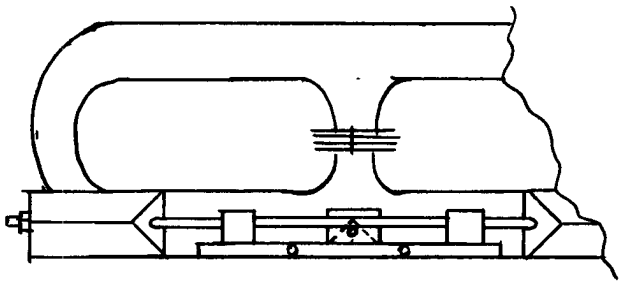

Figure 4