

plate. The power output from the oscillator is taken from a separately-tuned tank circuit in the actual plate circuit of the tube. The 6DQ6A is an excellent tube for our purpose because it requires very little voltage, reducing the danger of fracturing the crystal.

For operation on 80 meters, an 80-meter crystal is needed. On 40, either 80- or 40-meter crystals can be used, although slightly more output will be obtained by using 40-meter crystals. To operate on 15 meters, a 40-meter crystal is used. A 10.5-Mc. crystal was tried in the circuit for 15-meter operation and although it worked O.K. there was no apparent advantage over a 40-meter crystal.

The tank circuit is in the form of a pi network. The plate tank capacitor is the variable C_6 , and

the tank inductance is L_2L_3 . C_8 is a two-section variable, approximately 365 $\mu\text{f.}$ per section, with the stators connected together to give a total capacitance of about 730 $\mu\text{f.}$ This range of capacitance is adequate for loading into 50 or 75 ohms on 7 and 21 Mc. When operating on 3.5 Mc., an additional 1000 $\mu\text{f.}$ (C_7) is added to the circuit to furnish the needed range of capacitance. L_1 and R_2 are essential in suppressing v.h.f. parasitic oscillation.

Keying Monitor

The keying-monitor circuit is similar to the unit described in an earlier article.¹ A neon bulb (type NE-2) audio-frequency oscillator is connected to the cathode of the 6DQ6A at the key

¹ McCoy, "A \$1.69 Keying Monitor," *QST*, Sept., 1957.

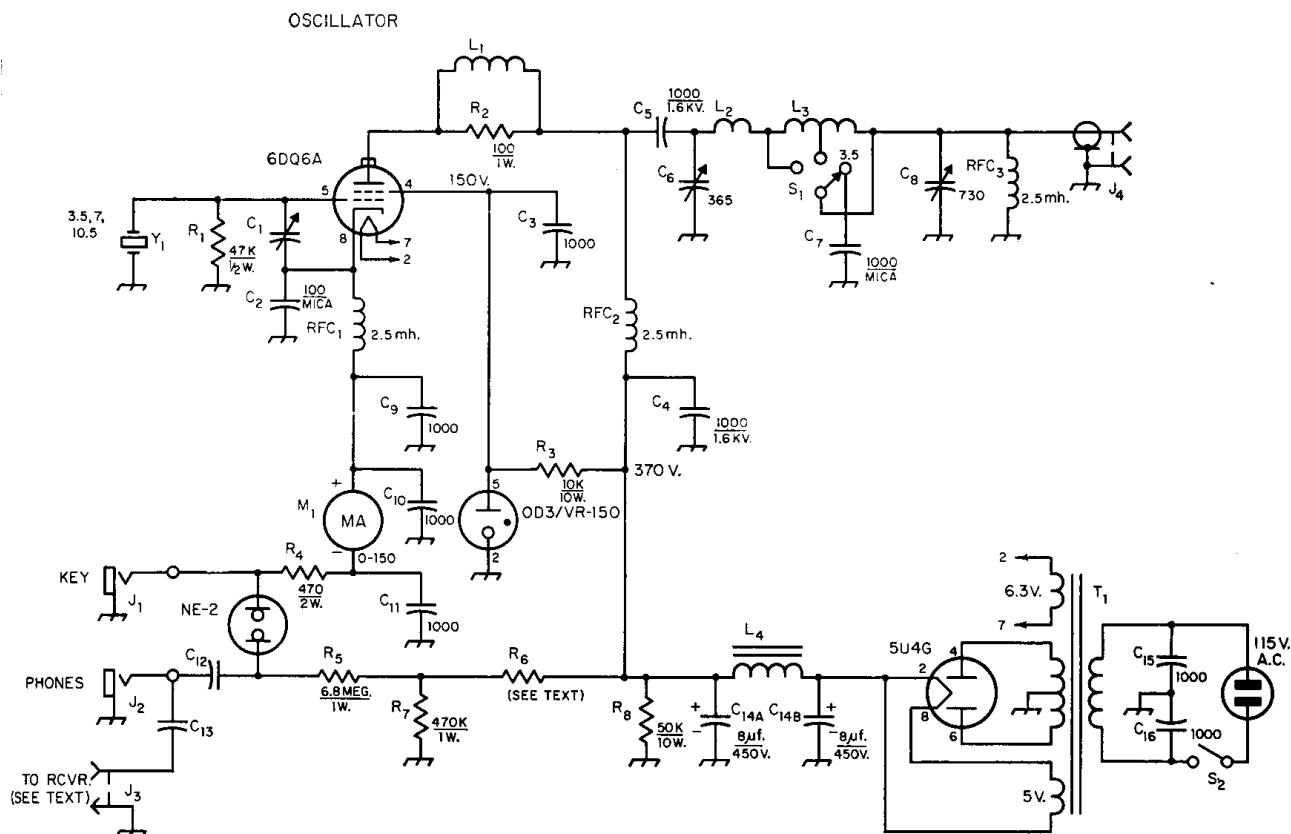


Fig. 1—Circuit diagram of the three-band transmitter. Capacitances are in $\mu\text{f.}$ Unless designated otherwise resistances are in ohms ($K = 1000$).

- C_1 —3–30- $\mu\text{f.}$ trimmer.
- C_2 —100- $\mu\text{f.}$ mica.
- $C_3, C_9, C_{10}, C_{11}, C_{15}, C_{16}$ —0.001- $\mu\text{f.}$ disk ceramic.
- C_4, C_5 —0.001- $\mu\text{f.}$ 1600-volt disk ceramic.
- C_6 —365- $\mu\text{f.}$ variable capacitor, single section, broadcast-replacement type.
- C_7 —0.001- $\mu\text{f.}$ 600-volt mica.
- C_8 —365- $\mu\text{f.}$ variable capacitor, dual section, broadcast-replacement type.
- C_{12} —500- $\mu\text{f.}$ mica or ceramic.
- C_{13} —0.01- $\mu\text{f.}$ disk ceramic.
- C_{14} —8/8- $\mu\text{f.}$ 450-volt dual electrolytic capacitor.
- J_1, J_2 —Open-circuit phone jack.
- J_3 —Phono jack, RCA type.
- J_4 —Coaxial chassis connector, SO-239.
- L_1 —10 turns No. 18 wire spaced on a 100-ohm 1-watt resistor.

- L_2 —6 turns No. 16 wire, 8 turns per inch, 1 1/4 inches diam. (B & W 3018).
- L_3 —23 turns No. 16 wire, 8 turns per inch, 1 1/4 inches diam. (B & W 3018). The 7-Mc. tap is 18 turns from the junction of L_2 and L_3 .
- L_4 —8-h. 150-ma. filter choke (Thordarson 20C54).
- M_1 —O—150 ma. (Shurite Model).
- R_1 — R_8 —As specified.
- RFC_1, RFC_2, RFC_3 —2.5-mh. r.f. choke (National R-50).
- S_1 —Single-pole 3-position switch (Centralab 1461).
- S_2 —Single-pole single-throw toggle switch.
- T_1 —Power transformer: 360–0–360 volts, 120 ma.; 6.3 volts, 3.5 amp.; 5 volts, 3 amp. (Stancor PM-8410).
- Y_1 —Crystal (see text).