b. The parts comprising Z702 are covered in paragraph 12. The functions of the remaining parts are listed below.

Part	Function
R218	Grid resistor.
R219 and C323	Cathode bias network.
R220 and C325	Plate decoupling network.
L246 and C339	B+ decoupling network.

12. Variable Frequency Oscillator V701 (fig. 5)

The variable frequency oscillator is a Hartley-type oscillator that produces the necessary injection signal for the third mixer stage. The frequency range is from 2.455 to 3.455 kc. Tuning unit Z701 is completely enclosed in a hermetically sealed can that contains a heating unit to maintain the temperature at 75° C. The temperature is controlled by thermostat switch S701 (fig. 66). Certain changes were made to vfo's stamped MOD 1. Aside from some value changes, the differences are in the output circuits. These differences are apparent in figure 5.

a. The oscillator tank circuit is made up of C701 and the series combinationofL701 and L702. Capacitors C702 and C703 are temperature-compensating capacitors to maintain frequency stability with changes in temperature.

(1) Feedback is provided by induction from the portion of L702 between the tap and ground. Plate current flows through this portion.

(2) The screen grid functions as the anode of the oscillator; it is held at rf ground potential by C705. Grid leak bias is developed by coupling capacitor C704 and grid resistor R701. Screen grid voltage is dropped by R702.

(3) The output of the stage appears across the secondary of T701, which is in series with the cathode of third mixer V205.

(4) In the unmodified model (A, fig. 5), the primary of T701 is untuned. The components in the secondary circuit provide for proper bandpass characteristics. In MOD 1 versions, (B, fig. 5), the primary is tuned and the secondary circuit is simplified.

b. As the receiver is tuned from the lowest to the highest frequency in any particular band, a powdered-iron slug within L702 moves to change the frequency of the vfo over its range. The slug covers its range in exactly ten turns of a lead screw that is turned by the KILOCYCLES CHANGE control. Coil L701 is an end-point adjustment to obtain a 1-mc range for ten turns of the lead screw and to permit the vfo to track with the other tuned circuits in the receiver.

c. In A, figure 5, R703, C706, and C707 decouple the oscillator from the power supply. This function is performed by L703andC706 in B, figure

13. Crystal Filter (fig. 6)

The crystal filter is part of the bandwidth control system that provides varying degrees of selectivity. A narrow bandpass of 0.1 and a narrow 1-kc bandpass are provided by Z501. A 455-kc crystal is used in this circuit.

a. The circuit consists of one-half of the secondary of L241 (between terminals 3 and4), crystal Y501, resistors R502, and R561, and capacitor C502. Inductance L and capacitance C form a tuned circuit that is resonant at the crystal frequency. A variable capacitor is connected between one end of the crystal holder for Y501 and the other half of secondary L241 (terminals 2 and 3). This capacitor supplies an out-of-phase voltage to the control grid of V501 to neutralize the capacitance of the crystal holder.

b. When BANDWIDTH switch S501 is in the .1 and 1 KC positions, the 455-kc signal is applied to Z501; on the remaining four positions of the control marked 2, 4, 8, and 16 KC, the signal is applied directly to the control grid of V501 through C503. With the switch in the last four positions, C503 provides an rf short-circuit for Y501. In the first two positions, C503 serves as a low-impedance connection at the intermediate frequency to R561.

c. Win S5O1 in the .1 KC position, the crystal is loaded by R502 and C502; R561 is hunted across R502 through C503. With S501 in the 1 KC position, the circuits loaded by R502 and C502; R561 is removed from the circuit.

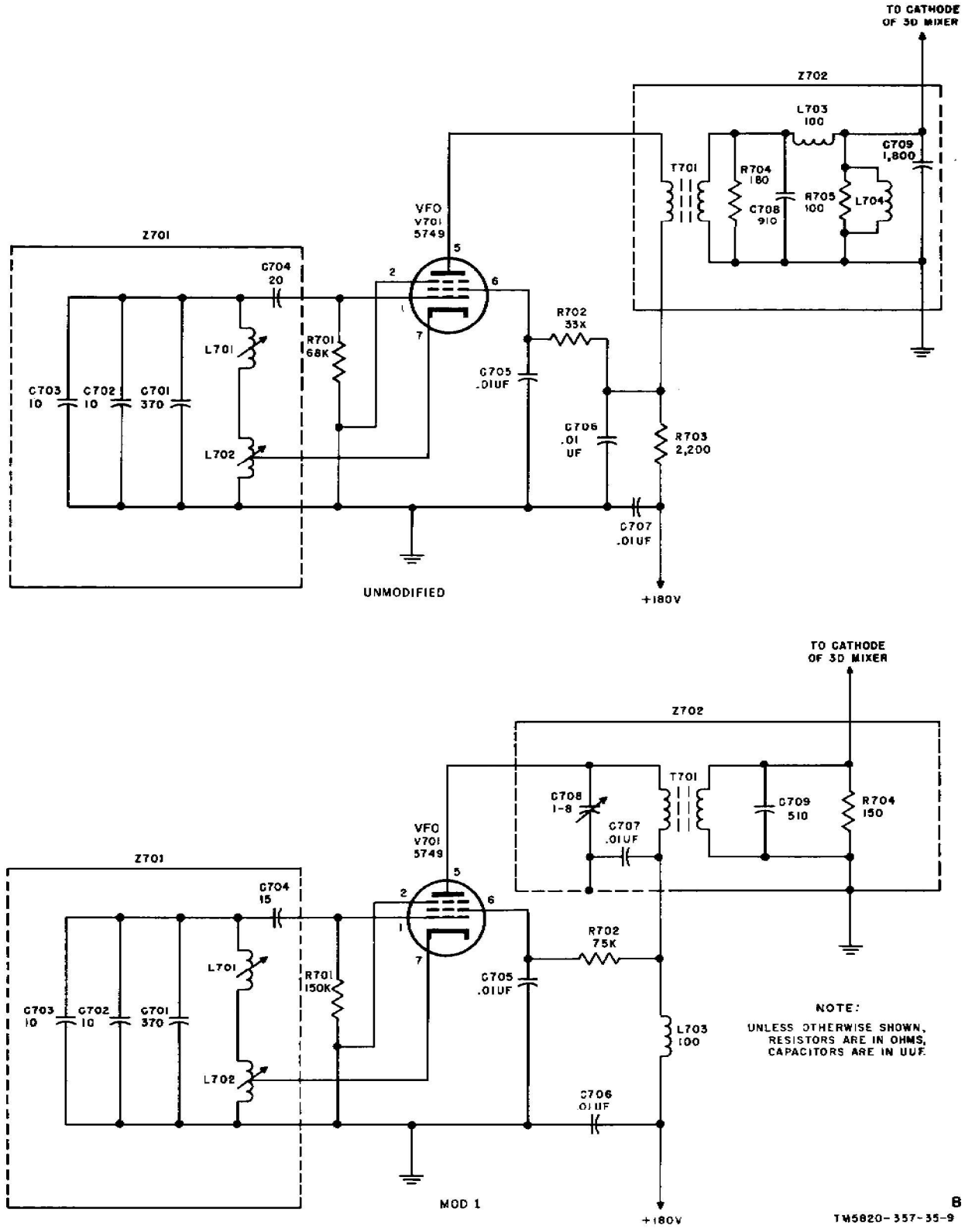

Figure 5. Variable frequency oscillator, simplifies schematic diagram.