

ENCYCLOPEDIA ON CATHODE-RAY OSCILLOSCOPES AND THEIR USES

HICKOK MODEL RFO-5

FREQUENCY RESPONSE

Sweep Circuit (linear) 10 cps to 25 kc
F-M Sweep Width 10-30 kc, and 100-900 kc

DEFLECTION FACTORS

Vertical Amplifier (Standard) 0.2 rms volts/inch
Vertical Amplifier Video 4 rms volts/inch
Horizontal Amplifier 0.3 rms volts/inch
Horizontal-Deflection Plates 43.4 volts/inch
Vertical Plates 56.4 volts/inch

LINE RATING 105-130 volts, 50-60 cps

The schematic circuit diagram for Model RFO-5, including tube complement and tube functions, is shown in Fig. 22-31. This instrument is a combined oscilloscope and sweep generator.

The vertical-input system is quite interesting. The excitation for the 6J7 (*V103*) grid is obtained through *S102*, *R114*, and *C109* from *H102*. *R114* is the vertical-gain control. The vertical-input terminal circuit *H102* may also be switched from the *V103* stage to the *V107* video amplifier stage. Demodulator *V106* is switched into the circuit automatically and consists of a simple diode rectifier. With the switch *S102* set to video, the horizontal plates of the cathode-ray tube are fed signal voltage through *C108* from *V106*. The arm of *R114* then connects to *R117* and the *V106* grid circuit.

A rather unusual and novel feature is the incorporation of a jack, *J101*, for signal tracing. An earphone, audio-amplifier input, or a signal tracer can be plugged into *J101*. If a head-phone set is used, it should be preferably a high-impedance type, as should any device connected into the *J101* circuit.

The R.F. OSC. MIXER section comprises the remainder of the circuit. The 6K8 section, pins 8-5-6, *V107*, forms a triode oscillator of the Hartley type. The plate connects to one terminal of the 1,000 kc oscillator coil, but may be shifted to the 23-Mc coil *L101* by varying the switch setting in the oscillator coil circuit. Because of the internal direct connection of the triode grid to the 6K8-pentode 1st grid, there is a modulation of the electron stream in the left-hand portion of the 6K8 as the frequency of the triode oscillator takes place. This electron stream may also be modulated by a signal voltage appearing across *R138*, of 7,500 ohms, derived from the EXT. OSC. INPUT terminal *H107*. The output of the oscillator is electron-coupled to the *H105* output terminal through the left-hand section of the 6K8, pin terminal 3, *C122* and *R131*.

V110 is a reactance modulator, permitting frequency modulation of the 6K8 oscillator, which is required in the alignment of modern f-m and television sets and which is a very valuable feature. A signal voltage derived from *H108*, the EXT. F.M. terminal, is applied to *R147* and *R148*. A portion of this signal voltage is picked off by *R147* and applied to the grid circuit of *V110* through *R146* and *R144*. Capacitor *C137* is a compensating element in the network, designed to give linear response as the setting of *R147* is changed, during operation of the equipment. *C134* is an adjustment for getting proper f-m action. The plate-cathode circuit and input impedance of *V110* combine to form, in effect, a variable inductance shunt across the lower portion of *L02*, since the reactance of *C136* is very low. This inductive shunt reactance, when varied at a definite rate, changes the inductance of the tuned circuit, and, therefore, the operating frequency, thus providing the desired frequency modulation of the oscillator signal.

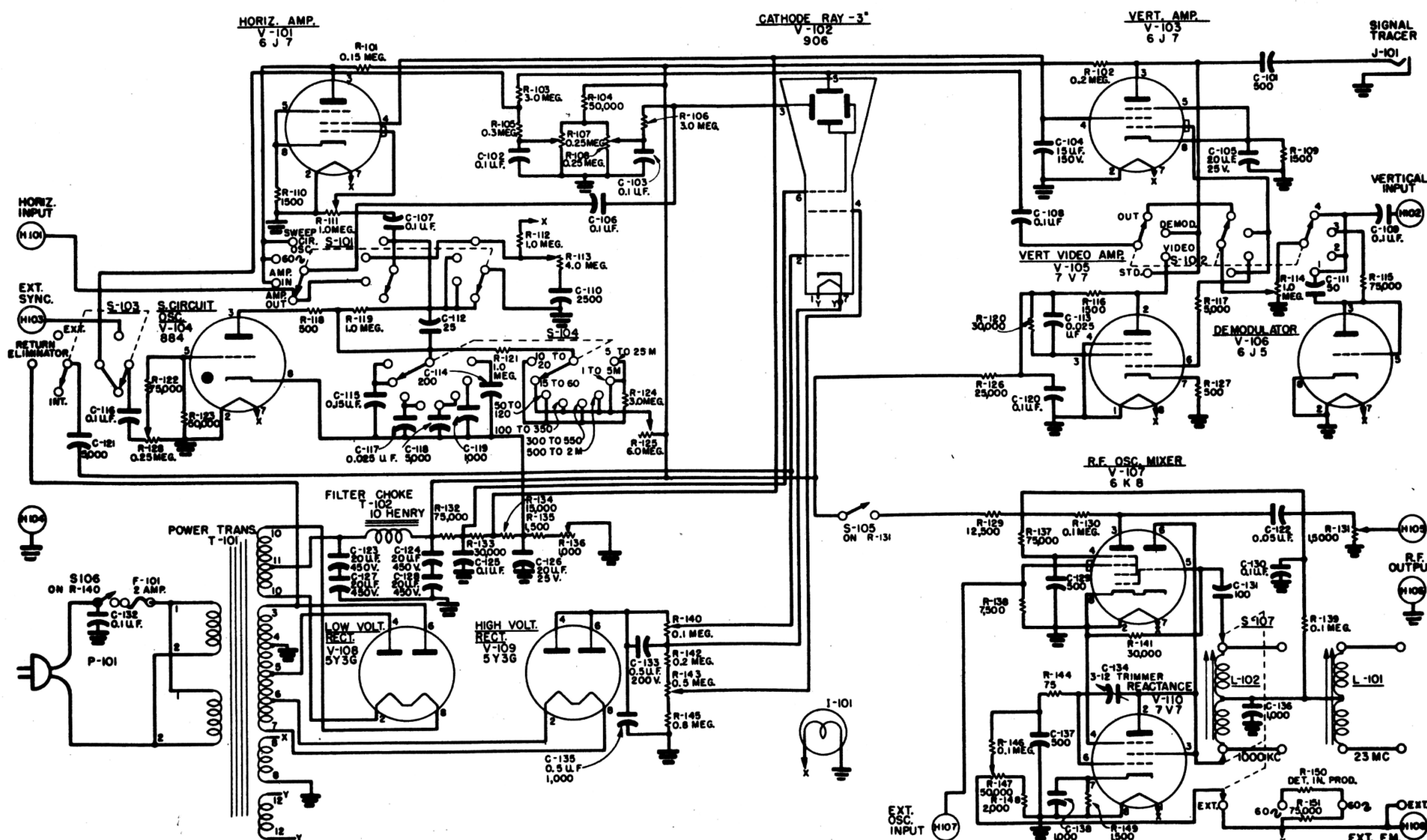


Fig. 22-31.—Schematic of Hickok Model RFO-5.

Courtesy Hickok Elec. Inst. Co.