

ENCYCLOPEDIA ON CATHODE-RAY OSCILLOSCOPES AND THEIR USES

RCA MODEL WO-60C

FREQUENCY RESPONSE

Vertical Amplifier 2 cps to 100 kc, $\pm 20\%$
Horizontal Amplifier 2 cps to 100 kc, $\pm 20\%$
Sweep Circuit 3 cps to 30 kc

DEFLECTION FACTORS

Vertical Amplifier 0.02 rms volts/inch
Vertical-Deflection Plates 12 rms volts/inch
Horizontal Amplifier 0.024 rms volts/inch
Horizontal-Deflection Plates 15 rms volts/inch

LINE RATING 105-125 volts, 50-60 cps

The schematic circuit diagram of this conventional general-purpose instrument is shown in Fig. 22-50.

RCA MODEL WO-79A

FREQUENCY RESPONSE

Vertical Amplifier 10 cps to 5 Mc, flat within $\pm 20\%$
Horizontal Amplifier 10 cps to 500 kc, flat within 10%
Sweep Circuit 20 cps to 250 kc, sawtooth 1 cps to 50 kc, triggered sweep

DEFLECTION FACTORS

Vertical Amplifier peak to peak, 0.75 volts/inch
Vertical-Deflection Plates peak to peak, 68 volts/inch
Horizontal Amplifier peak to peak, 2 volts/inch
Horizontal-Deflection Plates peak to peak, 89 volts/inch

LINE RATING 105-125 volts, 50-60 cps

The schematic circuit diagram of Model WO-79A, including tube complement and functions, is shown in Fig. 22-51. The vertical input is fed through a three-step attenuator, providing 0, 10 to 1, and 100 to 1 reduction, to the grid of the first amplifier *V1*, a 6AC7, which operates as a single-ended stage. Output taken from the cathode is fed through a time-delay network and voltage-dividing potentiometer to the grid of the second vertical amplifier. The time-delay network delays the vertical-deflection voltage two-tenths of one microsecond so that when the signal under observation is used to trigger the TIME OSC., the sweep will normally start before the signal reaches the deflection plates of the cathode-ray tube. The time delay thus facilitates observation of signals having steep wavefronts.

The instrument provides sawtooth as well as triggered sweep operation. An intensifying amplifier permits increasing the brilliance of the trace, when used for triggered sweep operation. An astigmatism control is provided consisting of a 100,000-ohm potentiometer *R93*, connected in the centering and focusing circuit. This control permits adjustment of deflection-plate potential with respect to the second anode of the cathode-ray tube for uniform definition over the entire surface of the screen.

RCA MODEL 151, 151A, 151-2

FREQUENCY RESPONSE

Vertical Amplifier 20 cps to 15,000 cps
Horizontal Amplifier 20 cps to 15,000 cps
Sweep Circuit 30 cps to 10,000 cps

DEFLECTION FACTORS (151, 151A)

Vertical Amplifier peak to peak, 5 volts/inch
Vertical-Deflection Plates peak to peak, 250 volts/inch
Horizontal Amplifier peak to peak, 5 volts/inch
Horizontal-Deflection Plates peak to peak, 250 volts/inch

DEFLECTION FACTORS (151-2)

Vertical Amplifier 0.5 rms volts/inch
Vertical-Deflection Plates 30 rms volts/inch
Horizontal Amplifier 0.5 rms volts/inch
Horizontal-Deflection Plates 30 rms volts/inch

LINE RATING 110-120 volts, 50-60 cps

TUBE COMPLEMENT

Type	Function
6C6	Vertical Amplifier
6C6	Horizontal Amplifier
885	Gaseous-Sweep Oscillator
913 (902)	Cathode-Ray Tube (1 inch)
80	Full-Wave Rectifier

The schematic circuit diagram of Model 151, 151A is shown in Fig. 22-52A and the difference between these models and Model 151-2 is shown in Fig. 22-52B.

There is one unique feature of this otherwise conventional circuit that causes unusual voltage distributions. Since the shell of the cathode-ray tube is connected to the second anode, which must be at a positive potential from the cathode, and since the shell must be grounded for safety, the positive side of the power supply must also be grounded. This is common practice in cathode-ray oscilloscopes, but in this case the power supply is common to the cathode-ray tube and the amplifier tubes. The cathode, grid, suppressor, and screen grids of the amplifiers are all at high potential to ground and the plate is nearly at ground potential.

While the voltage distribution is unusual, the method of operating the amplifier tubes has not been affected. The grids are maintained about two volts negative from the cathode, the suppressor is connected to the cathode, the screen grid is about 35 volts positive with respect to the cathode, and the plate is still more positive in each case.

RCA MODEL 155-A

FREQUENCY RESPONSE

Vertical Amplifier to 12 kc, within 1 db
Horizontal Amplifier to 12 kc, within 1 db
Sweep Circuit 15 cps to 16 kc

DEFLECTION FACTORS

Vertical Amplifier 0.8 rms volts/inch
Vertical-Deflection Plates 30 rms volts/inch
Horizontal Amplifier 0.8 rms volts/inch
Horizontal-Deflection Plates 30 rms volts/inch

LINE RATING 110-120 volts, 50-60 cps

The schematic circuit diagram of Model 155-A is shown in Fig. 22-53.

RCA MODEL 155-C

FREQUENCY RESPONSE

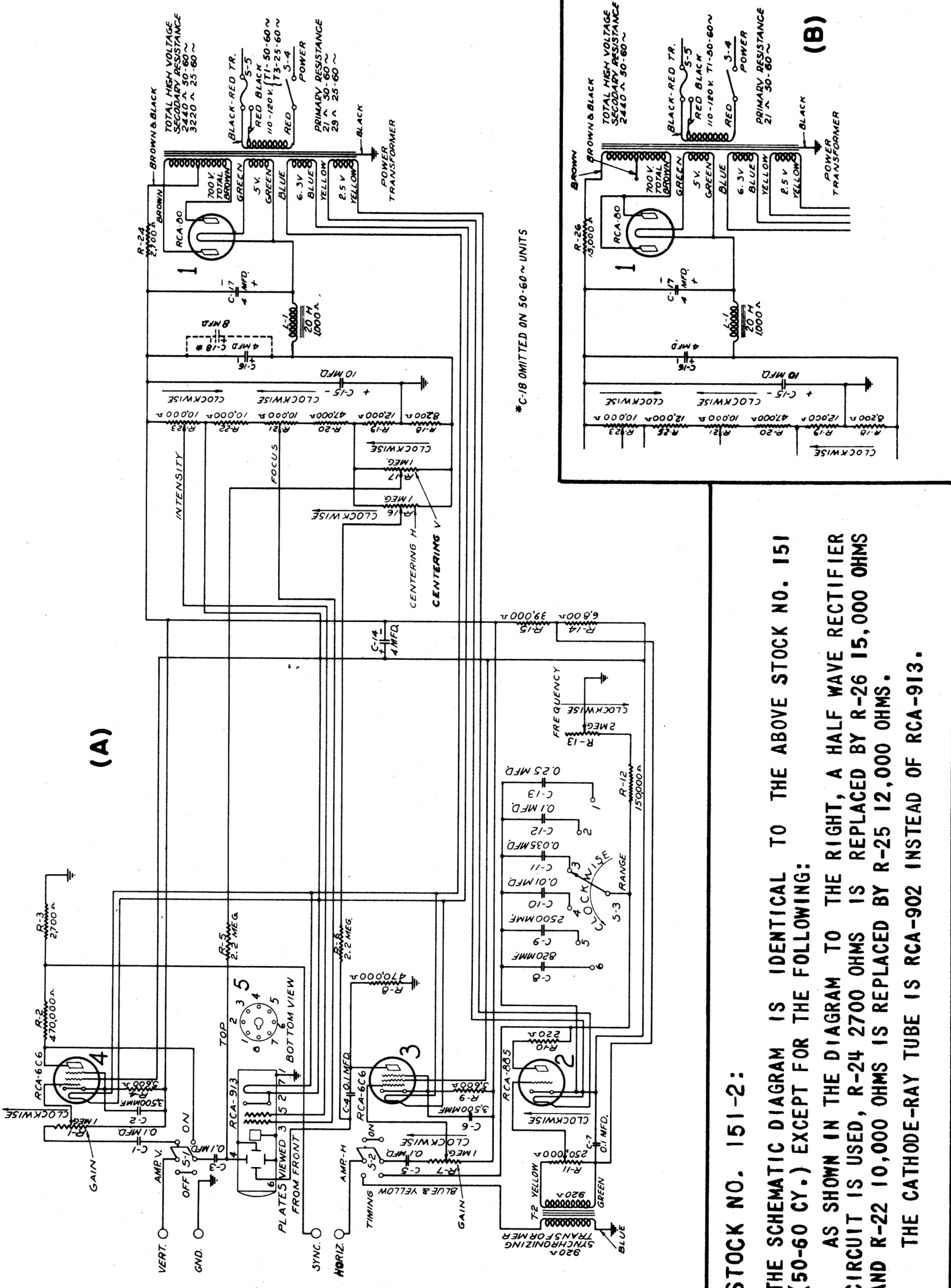
Vertical Amplifier 7 cps to 40 kc, $\pm 10\%$
Horizontal Amplifier 7 cps to 40 kc, $\pm 10\%$
Sweep Circuit 10 cps to 60 kc

DEFLECTION FACTORS

Vertical Amplifier 1 rms volts/inch
Vertical-Deflection Plates 27 rms volts/inch
Horizontal Amplifier 1 rms volts/inch
Horizontal-Deflection Plates 27 rms volts/inch

LINE RATING 110-120 volts, 50-60 cps

Model 155C uses a conventional circuit, as is apparent from Fig. 22-54. The 6C8G (*V3*) is a high-vacuum timing-axis oscillator tube used in a Potter oscillator circuit.



STOCK NO. 151-2:

THE SCHEMATIC DIAGRAM IS IDENTICAL TO THE ABOVE STOCK NO. 151 (50-60 CY.) EXCEPT FOR THE FOLLOWING:

AS SHOWN IN THE DIAGRAM TO THE RIGHT, A HALF WAVE RECTIFIER CIRCUIT IS USED, R-24 2700 OHMS IS REPLACED BY R-26 15,000 OHMS AND R-22 10,000 OHMS IS REPLACED BY R-25 12,000 OHMS.

THE CATHODE-RAY TUBE IS RCA-902 INSTEAD OF RCA-913.

Fig. 22-52.—(A) Schematic of RCA Model 151, 151-A, (B) Model 151-2.