DU MONT MODEL 175-A

FREQUENCY RESPONSE
Vertical Amplifier 5 cps to 100,000 cps, ±10%
Horizontal Amplifier 5 cps to 100,000 cps, ±10%
Sweep Circuit 15 cps to 30,000 cps

DEFLECTION FACTORS (Maximum)
Vertical Amplifier 0.030 rms volts/inch
Vertical-Deflection Plates 24.5 rms volts/inch
Horizontal Amplifier 0.033 rms volts/inch
Horizontal-Deflection Plates 27.0 rms volts/inch

LINE RATING 115/230 volts, 40-60 cps

TUBE COMPLEMENT

Type	*Function*
6SJ7 (V1)	Vertical Amplifier
6K6G (V2, V3)	Vertical Output Amplifiers
6SJ7 (V4)	Horizontal Amplifier
6K6G (V5, V6)	Horizontal Output Amplifiers
Du Mont 2B4 (V7)	Sawtooth Sweep Oscillator
6J5G (V8)	Sweep Amplifier
6J7G (V9)	Z-Axis Amplifier
80 (V10)	Rectifier, Negative Supply
2X2 (V11)	Rectifier, High-Voltage
5Z3 (V12)	Rectifier, Low-Voltage
5LP (V13)	Cathode-Ray Tube
6H6 (V14)	Single Sweep Control
6F8G (V15)	Voltage Regulator

Vertical Input

The schematic circuit diagram of Model 175-A is shown in Fig. 22-8. There is a 5-pole 4-position switch in the vertical section of the oscilloscope. Two of the positions apply the input signal dlirectly to the plates of the cathode-ray tube, and in the other two positions, the input signal passes through the vertical amplifiers. In both the direct or amplifier sections of this switch there is an *L* or *H* position. The *L* positions provide a high input impedance of one megohm and are primarily for low-frequency signal inputs. The *H* positions provide a low input impedance of 100,000 ohms and are primarily used for high-frequency inputs. In either case the signal input is capacitance coupled to the amplifiers or directly to the cathode-ray-tube plates through a 0.5-μf capacitor.

Sweep Circuit

A special diode circuit is incorporated in the sweep network to provide single sweep control of the sawtooth oscillations. One-half of a 6H6 duo-diode tube is used for this purpose. The plate of the diode is connected to the grid circuit of the 2B4 tube and the cathode of the diode grounded through a 50,000-ohm potentiometer and a 20,000-ohm resistor. The cathode of the diode is connected directly to the variable arm of the potentiometer. In the normal operation of the sweep circuit, the cathode of the diode is positive with respect to its plate so that the diode will be nonconducting and thus will not have any effect on the circuit. The normal plate voltage on the 2B4 tube is 32 volts, which means that this same voltage appears on the plate of the diode. The cathode voltage on the diode varies from a low of +18 volts to a high of +60 volts as determined by the setting of the potentiometer. This means that the diode will conduct only when the cathode is +32 volts or less. The diode will, therefore, start conducting just below the breakdown potential of the discharge tube. This action prevents the charging capacitor in the sweep circuit from ever attaining a potential high enough for sawtooth oscillations to take place.

When a positive synchronizing signal is applied to the grid of the discharge tube, the breakdown potential is reduced, the diode does not conduct, the capacitor discharges through the discharge tube and then recharges again to the value limited by the voltage on the plate of the diode. This produces a single linear sweep of the beam across the cathode-ray-tube screen because the diode starts conducting again when the capacitor recharges to its full value. Continued oscillations of the sweep are prevented because the diode is always conducting. When another synchronizing signal is applied to the grid of the discharge tube, the breakdown potential of the tube will again be lowered so that another single linear sweep occurs.

Grid Modulation of Intensity

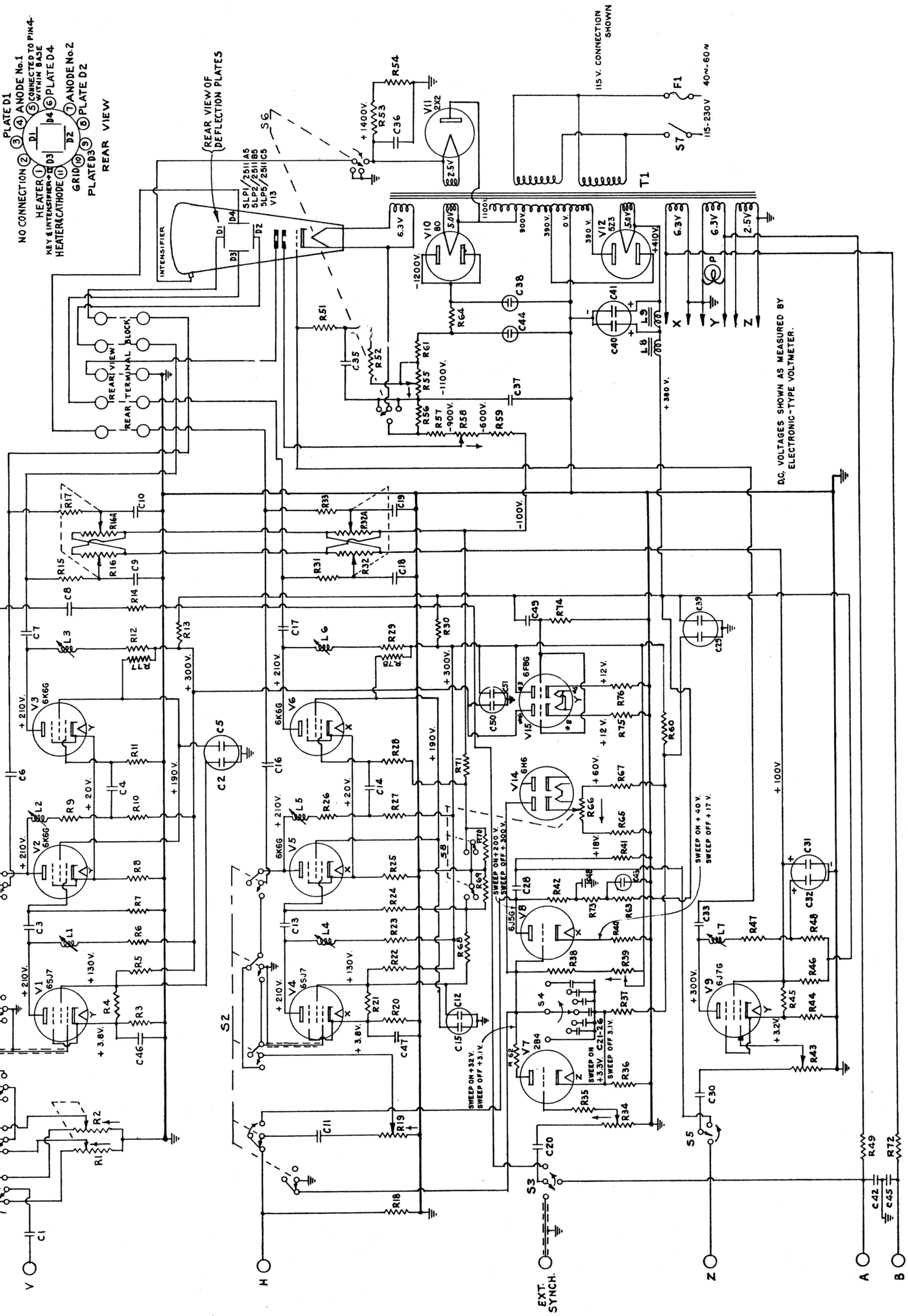
This oscilloscope has special provision for grid modulation of intensity. In order to accomplish this, a 6J7G amplifier, called the Z-axis amplifier, is employed to amplify any input signal applied to the Z-axis terminals of the unit.

Blanking

The Z-axis amplifier is also used for blanking the beam of the cathode-ray tube during the retrace time of the sweep signal. This is accomplished by connecting the plate circuit of the sweep amplifier to the grid circuit of the Z-axis amplifier through a high-pass filter network differentiating circuit, which basically consists of a 50-$\mu\mu f$ capacitor and a 50,000-ohm resistor. When the sawtooth wave passes through this filter network, the signal applied to the grid of the Z-axis amplifier is in the form of a pulse. The width of the pulse is approximately the same as the time duration of the sawtooth retrace and is considered as a direct function of the retrace time. Since differentiation always intensifies rapid amplitude changes, it is apparent that the pulse input to the Z-axis amplifier is primarily due to the retrace of the sawtooth wave. This pulse is then amplified and applied to the grid circuit in such a manner that it will bias the grid to the point of cutoff and hence blank out the return trace of the spot on the screen.

PARTS LIST FOR DU MONT MODEL 175

R1	1 meg. section	R26	12 K 10 watt	R52	50 K ½ watt	R77	50 K ½ watt	C23	0.01 μf. 400 W.V.
R2	100 K section	R27	850 ohms ½ watt	R53	10 meg. ½ watt	R78	50 K ½ watt	C24	0.0025 μf. 500 W.V.
R3	500 ohms ½ watt	R28	2 meg. ½ watt	R54	10 meg. ½ watt			C25	500 μμf. 500 W.V.
R4	50 K 1 watt	R29	13.5 K 10 watt	R55	100 K pot.	C1	0.5 μf. 600 W.V.	C26	100 μμf. 500 W.V.
R5	50 K 1 watt	R30	2.5 K 10 watt	R56	100 K ½ watt	C2	4 μf. 475 W.V.	C28	50 μμf. 500 W.V.
R6	25 K ½ watt	R31	1 meg. ½ watt	R57	100 K ½ watt	C3	0.5 μf. 600 W.V.	C29	8 μf. 450 W.V.
R7	2 meg. ½ watt	R32, R32A	1.5 meg.	R58	500 K pot.	C4	0.5 μf. 600 W.V.	C30	0.05 μf. 400 W.V.
R8	1250 ohms ½ watt	R33	1 meg. ½ watt	R59	750 K 1 watt	C5	4 μf. 475 W.V.	C31	4 μf. 475 W.V.
R9	12 K 10 watt	R34	25 K pot.	R60	10 K ½ watt	C6	0.25 μf. 400 W.V.	C32	4 μf. 475 W.V.
R10	850 ohms ½ watt	R35	100 K ½ watt	R61	50 K ½ watt	C7	0.25 μf. 400 W.V.	C33	0.5 μf. 1600 W.V.
R11	2 meg. ½ watt	R36	1250 ohms ½ watt	R62	150 ohms ½ watt	C8	0.05 μf. 400 W.V.	C35	0.5 μf. 600 W.V.
R12	13.5 K 10 watt	R37	100 K 3 watt	R63	75 K ½ watt	C9	0.05 μf. 400 W.V.	C36	0.05 μf. 1600 W.V.
R13	2.5 K 10 watt	R38	750 K 1 watt	R64	50 K ½ watt	C10	0.05 μf. 400 W.V.	C37	0.1 μf. 1600 W.V.
R14	200 K ½ watt	R39	4 meg. pot. ±10%	R65	20 K ½ watt	C11	0.5 μf. 600 W.V.	C38	0.5 μf. 1500 W.V.
R15	1 meg. ½ watt	R40	25 K ½ watt	R66	50 K pot.	C12	.4 μf. 475 W.V.	C39	8 μf. 450 W.V.
R16, R16A	1.5 meg.	R41	50 K ½ watt	R67	250 K ½ watt	C13	0.5 μf. 600 W.V.	C40	8 μf. 450 W.V.
R17	1 meg. ½ watt	R42	20 K ½ watt	R68	1 meg. ½ watt	C14	0.5 μf. 600 W.V.	C41	8 μf. 450 W.V.
R18	5 meg. ½ watt	R43	1 meg. pot.	R69	150 K ½ watt	C15	4 μf. 475 W.V.	C42	0.05 μf. 400 W.V.
R19	1 meg. pot.	R44	300 ohms ½ watt	R70	35 K ½ watt	C16	0.25 μf. 400 W.V.	C43	16 μf. 450 W.V.
R20	500 ohms ½ watt	R45	15 K 3 watt	R71	1 meg. ½ watt	C17	0.25 μf. 400 W.V.	C44	0.5 μf. 1500 W.V.
R21	50 K 1 watt	R46	30 K 10 watt	R72	10 K ½ watt	C18	0.05 μf. 400 W.V.	C45	0.05 μf. 400 W.V.
R22	50 K 1 watt	R47	25 K ½ watt	R73	25 K ½ watt	C19	0.05 μf. 400 W.V.	C46	0.003 μf. 500 W.V.
R23	25 K ½ watt	R48	10 K ½ watt	R74	5 meg. ½ watt	C20	0.25 μf. 400 W.V.	C47	0.003 μf. 500 W.V.
R24	2 meg. ½ watt	R49	10 K ½ watt	R75	2 K ½ watt	C21	0.25 μf. 400 W.V.	C48	2 or 3 or 4 μf. 450 W.V.
R25	1250 ohms ½ watt	R51	50 K ½ watt	R76	2 K ½ watt	C22	0.05 μf. 400 W.V.	C49	0.25 μf. 400 W.V.
								C50	4 μf. 475 W.V.
								C51	4 μf. 475 W.V.



Courtesy Du Mont Labs.

Fig. 22-8.—Schematic of Du Mont Model 175-A.