

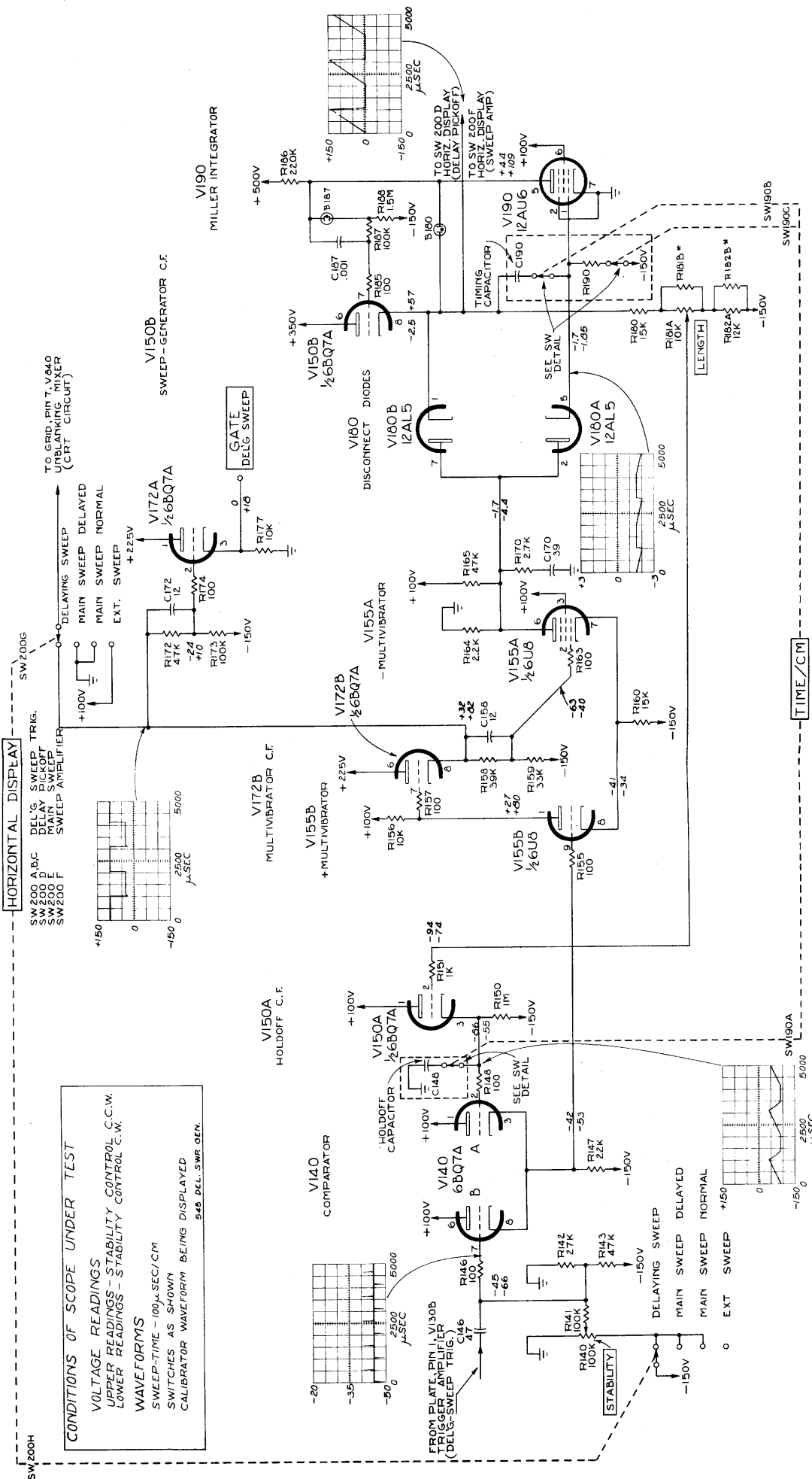
NOTE

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All readings are in volts unless otherwise specified. Where two voltage readings are given, they represent the voltage as read by a voltmeter under two sets of conditions, and, as such, do not indicate the peak-to-peak excursion of voltage at the point.

+

V172A
GATE-OUT C.F.



CONDITIONS OF SCOPE UNDER TEST
 VOLTAGE READINGS
 UPPER READINGS - STABILITY CONTROL C.C.W.
 LOWER READINGS - STABILITY CONTROL C.W.
 WAVEFORMS
 SWEEP-TIME - 100 μ-SEC./CM
 SWITCHES AS SHOWN
 CALIBRATOR WAVEFORM BEING DISPLAYED
 545 DEL. SWP. GEN.

* SEE PARTS LIST

R.O.W.
10-19-56

DELAYING-SWEEP
GENERATOR

C1

TYPE 545 OSCILLOSCOPE

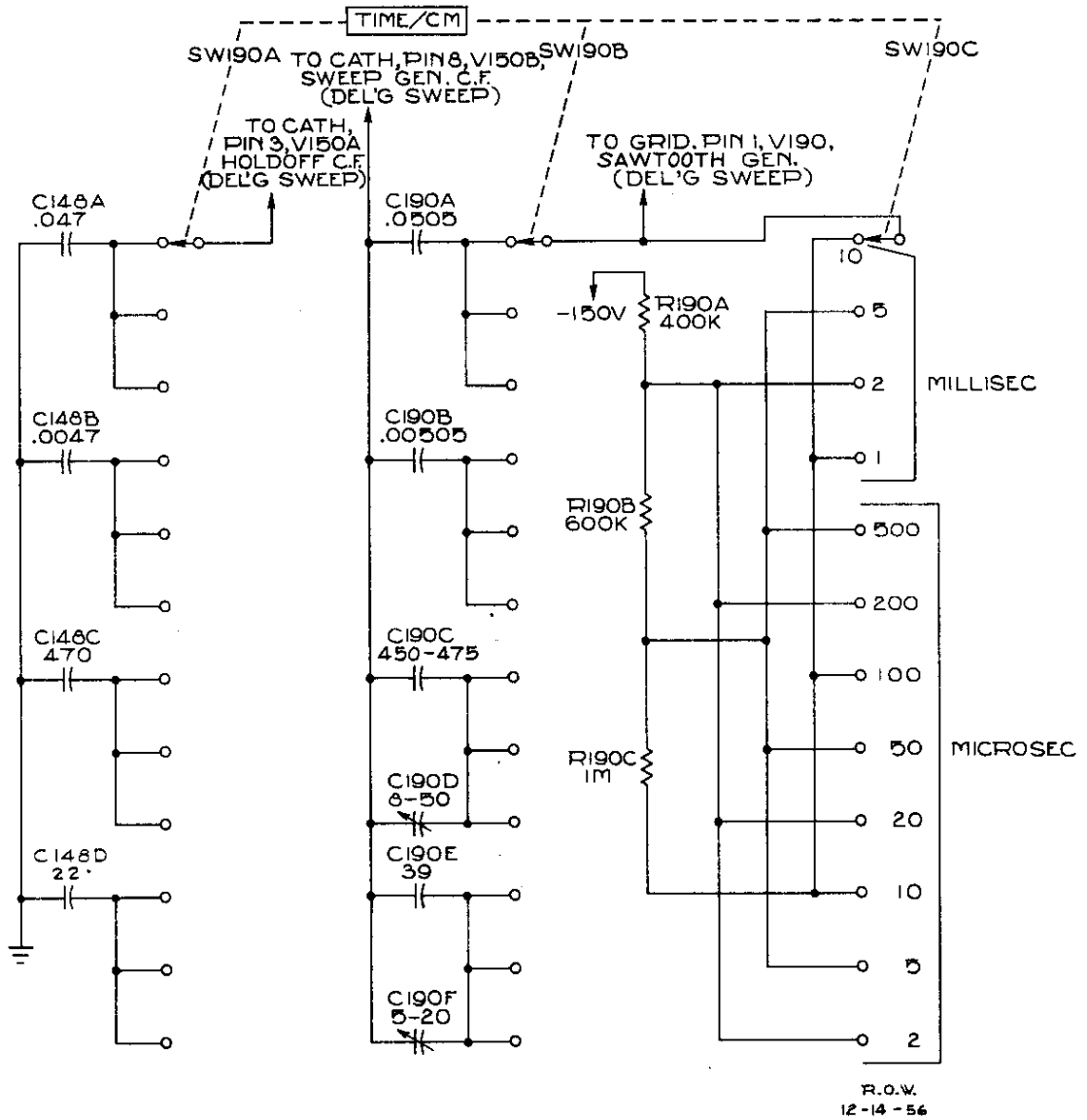
ABBREVIATIONS

Cer.	ceramic	m	milli or 10^{-3}
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10^3 ohms	v	working volts dc
meg	megohm or 10^6 ohms	Var.	variable
μ	micro or 10^{-6}	w	watt
$\mu\mu$	micromicro or 10^{-12}	WW	wire wound

DELAYING-SWEEP TIMING SWITCH

Capacitors							Order Parts by Number
C148A	.047 μ f	PT	Fixed	400 v	20%		285519
C148B	.0047 μ f	PT	Fixed	400 v	20%		285506
C148C	470 $\mu\mu$ f	Cer.	Fixed	500 v	20%		281525
C148D	22 $\mu\mu$ f	Cer.	Fixed	500 v	20%		281510
C190A	.0505 μ f	Special	}	Special timing series manufactured by Tektronix. Order replacements from factory.			291006
C190B	.00505 μ f	Special					
C190C	450-475 $\mu\mu$ f	Special					
C190D	8-50 $\mu\mu$ f	Cer. Var.					
C190E	39 $\mu\mu$ f	Mica	Fixed	500 v	5%		283533
C190F	3-12 $\mu\mu$ f	Cer.	Var.	500 v			281009
Resistors							
R190A	400 k	$\frac{1}{2}$ w	Fixed	Prec.	1%	}	312567
R190B	600 k	$\frac{1}{2}$ w	Fixed	Prec.	1%		312568
R190C	1 meg	$\frac{1}{2}$ w	Fixed	Prec.	1%		312571
Checked within $\frac{1}{4}\%$ of ratio 4/6/10							
Switches							
SW190	3 wafer	12 position	rotary	TIME/CM			not wired wired 260009 262060





TYPE 545 OSCILLOSCOPE

DELAYED - SWEEP
TIMING - SWITCH

B2

ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

DELAY PICKOFF

Capacitors						Order Parts by Number
C197	220 μf	Mica	Fixed	500 v	20%	283536
C209	.01 μf	Cer.	Fixed	500 v	20%	283002
C218	22 μf	Cer.	Fixed	500 v	20%	281510
C228	47 μf	Cer.	Fixed	500 v	20%	281518
C232	.005 μf	Cer.	Fixed	500 v	GMV	283001
C235	22 μf	Cer.	Fixed	500 v	20%	281510
C236	.001 μf	Cer.	Fixed	500 v	GMV	283000

Resistors

R195	100 k	2 w	Var.	Comp.	20%	Delay Start Adj.	311026
R196	470 k	½ w	Fixed	Comp.	10%		302474
R197	6.8 k	½ w	Fixed	Comp.	10%		302682
R198	100 Ω	½ w	Fixed	Comp.	10%		302101
R200	100 k	½ w	Fixed	Comp.	10%		302104
R201	47 k	½ w	Fixed	Comp.	10%		302473
R202	10 k	½ w	Fixed	Comp.	10%		302103
R205	15 k	½ w	Fixed	Comp.	10%		302153
R206	100 Ω	½ w	Fixed	Comp.	10%		302101
R207	10 k	5 w	Fixed	WW	5%		308054
R208	10 k	2 w	Var.	WW	20%	Delay Stop Adj.	311015
R209	30 k	3 w	Var.	helipot	.1%	linearity—DELAY-TIME MULTIPLIER	311022
R216	100 Ω	½ w	Fixed	Comp.	10%		302101
R217	3.9 k	½ w	Fixed	Comp.	10%		302392
R218	95 k	½ w	Fixed	Prec.	1%		309044
R219	150 k	½ w	Fixed	Prec.	1%		309049
R220	100 Ω	½ w	Fixed	Comp.	10%		302101
R223	39 k	2 w	Fixed	Comp.	10%		306393
R224	5.6 k	½ w	Fixed	Comp.	10%		302562
R228	10 k	½ w	Fixed	Comp.	10%		302103
R229	270 k	½ w	Fixed	Comp.	10%		302274
R230	100 Ω	½ w	Fixed	Comp.	10%		302101
R231	1 k	½ w	Fixed	Comp.	10%		302102
R232	47 Ω	½ w	Fixed	Comp.	10%		302470
R235	22 k	½ w	Fixed	Comp.	10%		302223
R236	22 meg	½ w	Fixed	Comp.	10%		302226

Switches

SW200	See parts list, Delaying Sweep Trigger	
SW235	Push button, normally open	RESET, MAIN SWEEP 260017

Vacuum Tubes		
V195	6AU6	Delay Pickoff
V216	6U8	Delay Trigger Shaper
V228A	½ 6U8	Constant Current Tube
V228B	½ 6U8	Delayed Trigger Cathode Follower

154022
154033
154033
154033



NOTE

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All readings are in volts unless otherwise specified. Where two voltage readings are given, they represent the voltage as read by a voltmeter under two sets of conditions, and, as such, do not indicate the peak-to-peak excursion of voltage at the point.

CONDITIONS OF SCOPE UNDER TEST

VOLTAGE READINGS
 UPPER READINGS - STABILITY CONTROL CCW
 LOWER READINGS - STABILITY CONTROL CW
 CM OF DELAY - 2.00

WAVEFORMS
 SWEEP TIME - 100 μSEC/CM
 SWITCHES AS SHOWN
 CM OF DELAY - 3.00

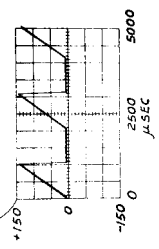
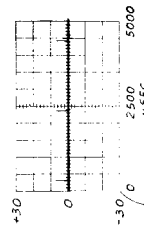
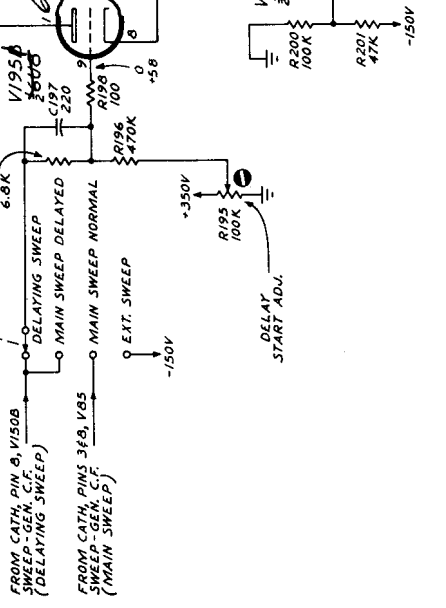
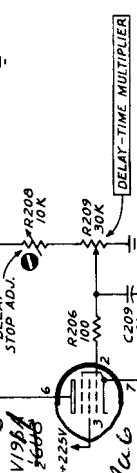
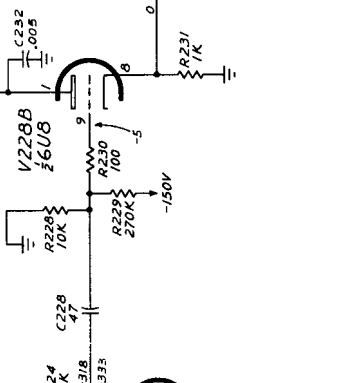
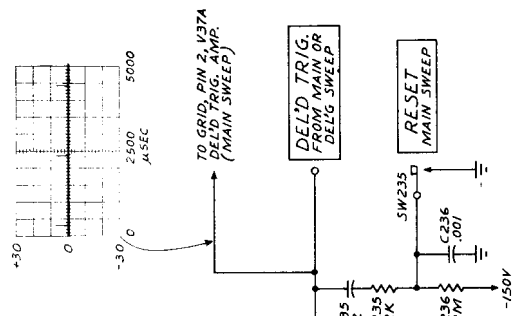
545 DEL. PICK-OFF

V228B
 DELAYED TRIGGER C.F.

V216A
 V216B
 DELAY TRIGGER SHAPER

V195A
 V195B
 DELAY PICKOFF

V228A
 CONSTANT CURRENT TUBE



ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

SWEEP AMPLIFIER

Order Parts
by Number

Bulbs				Order Parts by Number
B287	1/25 w		55-70 v	150009
B292	1/25 w		Ignition voltage 75 v	150014
B293	1/25 w		Ignition voltage 75 v	150014

Capacitors

C240	3-12 μμf	Cer.	Var.	500 v		281007
C241	4.7 μμf	Cer.	Fixed	500 v	±1 μμf	281501
C249	.01 μf	PT	Fixed	400 v	20%	285510
C254	3-12 μμf	Cer.	Var.	500 v		281007
C258	1.5 μμf	Cer.	Fixed	500 v	±½ μμf	281526
C267	9-180 μμf	Mica	Var.	500 v		281023
C273	6.25 μf	EMC	Fixed	300 v	-20%+50%	290000
C278	3-12 μμf	Cer.	Var.	500 v		281009
C282	.047 μf	PT	Fixed	400 v	20%	285519
C284	4.7 μμf	Cer.	Fixed	500 v	±1 μμf	281501
C286	3-12 μμf	Cer.	Var.	500 v		281009

Resistors

R240	1 meg	½ w	Fixed	Prec.	1%	309014
R241	1.23 meg	½ w	Fixed	Prec.	1%	309016
R242	100 Ω	½ w	Fixed	Comp.	10%	302101
R243	100 k	1 w	Fixed	Comp.	10%	304104
R244	2.2 k	½ w	Fixed	Comp.	10%	302222
R246	470 k	½ w	Fixed	Comp.	10%	302474
R247	4.7 meg	½ w	Fixed	Comp.	10%	302475
R248	500 k	½ w	Var.	Comp.	20%	VERNIER, conc. with R250 311048
R249	560 k	½ w	Fixed	Comp.	10%	302564
R250	500 k	½ w	Var.	Comp.	20%	HORIZONTAL POS., conc. with R248 311048
R253	100 Ω	½ w	Fixed	Comp.	10%	302101
R254	111 k	½ w	Fixed	Prec.	1%	309046
R255	100 Ω	½ w	Fixed	Comp.	10%	302101
R256	100 k	1 w	Fixed	Comp.	10%	304104
R259	400 k	1 w	Fixed	Prec.	1%	310094
R260	400 k	1 w	Fixed	Prec.	1%	310094
R261	22 k	½ w	Fixed	Comp.	10%	302223
R262	20 k	2 w	Var.	Comp.	20%	Swp./Mag. Regis. 311018
R265	47 Ω	½ w	Fixed	Comp.	10%	302470
R266	10 k	2 w	Var.	Comp.	20%	Swp. Cal. 311016
R267	2.2 k	1 w	Fixed	Comp.	10%	304222
R268	6 k	5 w	Fixed	WW	5%	308052
R269	2.2 k	1 w	Fixed	Comp.	10%	304222
R270	2 k	2 w	Var.	Comp.	20%	Mag. Gain 311008
R272	47 Ω	½ w	Fixed	Comp.	10%	302470



Resistors (continued)

Order Parts
by Number

R273	100 Ω	$\frac{1}{2}$ w	Fixed	Comp.	10%	302101
R278	6-25 k	Special				310506
R279	47 Ω	$\frac{1}{2}$ w	Fixed	Comp.	10%	302470
R282	390 Ω	$\frac{1}{2}$ w	Fixed	Comp.	10%	302391
R283	47 Ω	$\frac{1}{2}$ w	Fixed	Comp.	10%	302470
R284	2.2 k	$\frac{1}{2}$ w	Fixed	Comp.	10%	302222
R286	6-30 k	Special				310507
R287	100 Ω	$\frac{1}{2}$ w	Fixed	Comp.	10%	302101
R288	39 k	2 w	Fixed	Comp.	10%	306393
R289	39 k	2 w	Fixed	Comp.	10%	306393
R292	470 k	$\frac{1}{2}$ w	Fixed	Comp.	10%	302474
R293	470 k	$\frac{1}{2}$ w	Fixed	Comp.	10%	302474
R294	470 k	$\frac{1}{2}$ w	Fixed	Comp.	10%	302474
R295	470 k	$\frac{1}{2}$ w	Fixed	Comp.	10%	302474

Switches

SW200	See Delaying Sweep Trigger				not wired	wired
SW254*	1 wafer	2 position	rotary	5X MAGNIFIER	260010	262063

Vacuum Tubes

V240A	$\frac{1}{2}$ 6BQ7A	Driver Cathode Follower	}	154028
V240B	$\frac{1}{2}$ 6BQ7A	Input Cathode Follower		
V246B	$\frac{1}{2}$ 6BQ7A	Horizontal Position Cathode Follower		
V265A	$\frac{1}{2}$ 6BQ7A	- Sweep Amplifier	}	157022
V265B	$\frac{1}{2}$ 6BQ7A	- Sweep Cathode Follower		
V272A	$\frac{1}{2}$ 6BQ7A	+ Sweep Amplifier	}	157022
V272B	$\frac{1}{2}$ 6BQ7A	+ Sweep Cathode Follower		
V282	6CL6	Gated CF-Current Booster		154031

*SW254 and SW55 shafts are concentric. Furnished as a unit.



N O T E

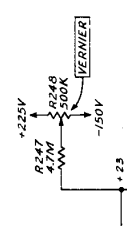
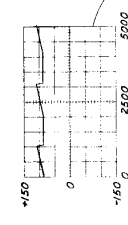
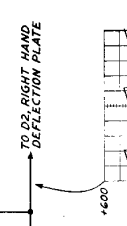
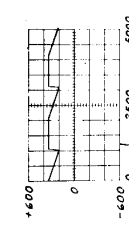
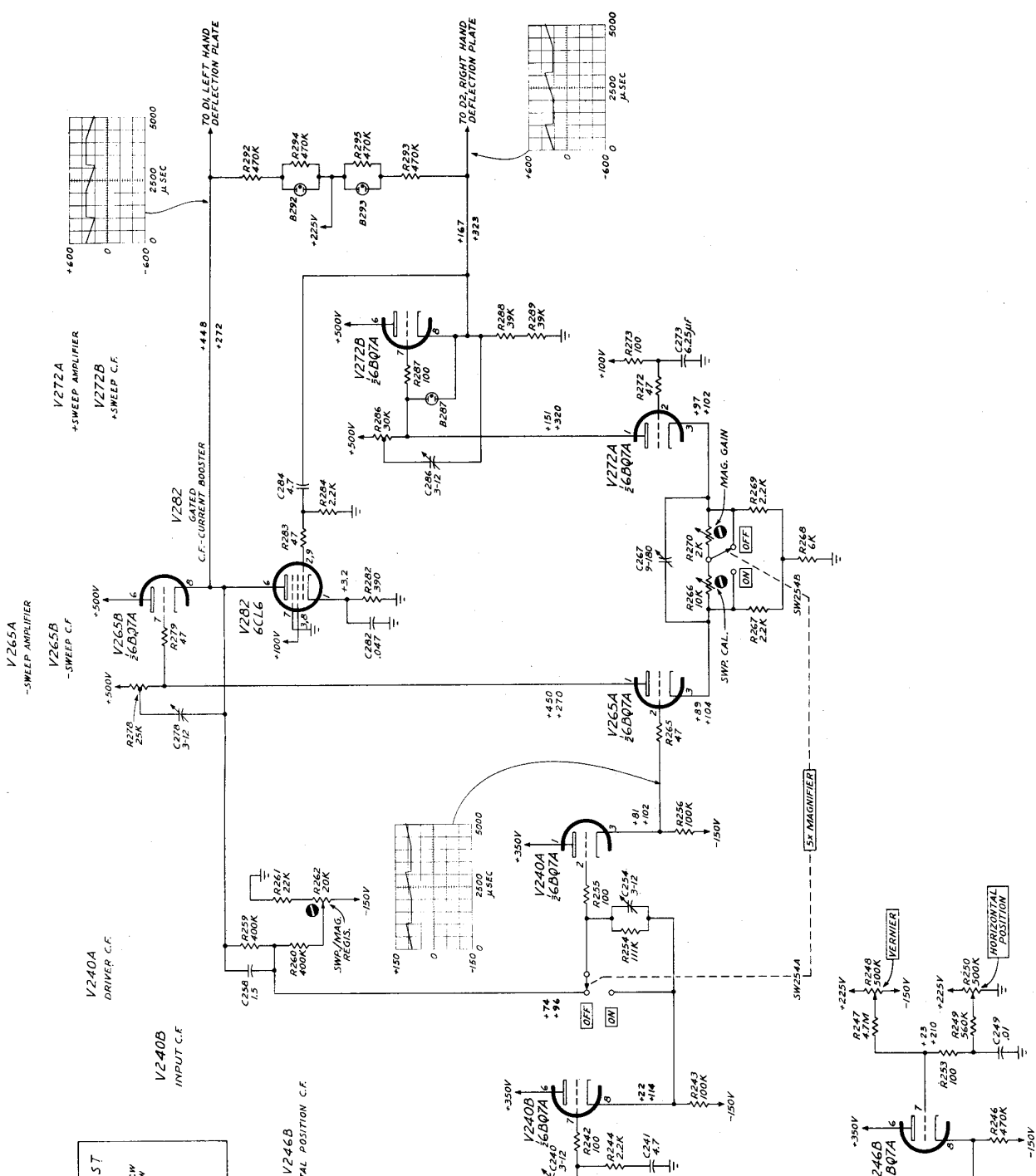
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CONDITIONS OF SCOPE UNDER TEST
VOLTAGE READINGS
 UPPER READINGS - HORIZONTAL POSITIONING CCW
 LOWER READINGS - HORIZONTAL POSITIONING CW
 STABILITY CONTROL CCW
WAVEFORMS
 SWEEP TIME - 100 μSEC/CM
 SWITCHES AS SHOWN
 TRACE CENTERED

HORIZONTAL DISPLAY
 SW200A, B, C DELAY SWEEP TRIGGER SW200F
 SW200D DELAY SWEEP TRIGGER SW200G
 MAIN SWEEP SW200E
 MAIN SWEEP SW200G, H

FROM CATH. PIN 6 V1508
 SWEEP-GENERATOR C.F. (DELAYING SWEEP)
 FROM CATH. PINS 3 & 4 V105
 SWEEP GENERATOR C.F. (MAIN SWEEP)
 FROM CATH. PIN 7 V130A
 EXT. SWEEP C.F. (DELAYING-SWEEP TRIGGER)



ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

VERTICAL AMPLIFIER

		Bulbs			Order Parts by Number	
B1010	55-70 v				150002	
B1014	55-70 v				150002	
Capacitors						
C1010	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1014	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1020	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1035	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1045	2x75 μf	EMC	Fixed	150 v	-20%+50%	290053
C1050	2x75 μf	EMC	Fixed	150 v	-20%+50%	290053
C1051	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1052	.001 μf	Cer.	Fixed	500 v	10%	281536
C1054	.001 μf	Cer.	Fixed	500 v	10%	281536
C1055	.022 μf	PT	Fixed	600 v	20%	285517
C1057	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1060	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1062	150 μμf	Cer.	Fixed	500 v	20%	281524
C1064	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1066	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1070	100 μμf	Cer.	Fixed	350 v	20%	281523
C1072	12 μμf	Poly	Var.	500 v	10%	281506
C1073	1-8 μμf	Poly	Var.	500 v		281003
C1074	4.7 μμf	Cer.	Fixed	500 v	10%	281501
C1075	1-8 μμf	Poly	Var.	500 v		281003
C1076	1-8 μμf	Poly	Var.	500 v		281003
C1077	1-8 μμf	Poly	Var.	500 v		281003
C1078	2.2 μμf	Cer.	Fixed	500 v	± ½ μμf	281500
C1081	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1082	150 μμf	Cer.	Fixed	500 v	20%	281524
C1083	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1084	.7-3 μμf	Tub.	Var.	500 v		281027
C1090	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1091	150 μμf	Cer.	Fixed	500 v	20%	281524
C1092	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1093	.7-3 μμf	Tub.	Var.	500 v		281027
C1100	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1101	150 μμf	Cer.	Fixed	500 v	20%	281524
C1102	.001 μf	Cer.	Fixed	500 v	GMV	283000
C1103	.7-3 μμf	Tub.	Var.	500 v		281027



Capacitors (Continued)

Order Parts
by Number

C1110	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1111	150 μ mf	Cer.	Fixed	500 v	20%	281524
C1112	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1113	.7-3 μ mf	Tub.	Var.	500 v		281027
C1120	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1121	150 μ mf	Cer.	Fixed	500 v	20%	281524
C1122	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1123	.7-3 μ mf	Tub.	Var.	500 v		281027
C1130	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1132	.001 μ f	Cer.	Fixed	500 v	GMV	283000
C1133	.7-3 μ mf	Tub.	Var.	500 v		281027
C1141	.005 μ f	Cer.	Fixed	500 v	GMV	283001
C1150	2x20 μ f	EMC	Fixed	450 v	-20%+50%	290036
C1151	2x20 μ f	EMC	Fixed	450 v	-20%+50%	290037
C1152	.1 μ f	PT	Fixed	400 v	20%	285526
C1153	2x20 μ f	EMC	Fixed	450 v	-20%+50%	290037

Inductors

L1021	.3-.5 μ h	Var.				114037
L1022	2.5 μ h	Fixed				108103
L1041	2.5 μ h	Fixed				108103
L1042	.3-.5 μ h	Var.				114037
L1067	12 μ h	Fixed				108005
L1070	Terminating line					108081
L1071	Terminating line					108081
L1080	Plate line					108096
L1081	Grid line					108080
L1082	Grid line					108080
L1083	Plate line					108096

Resistors

R1010	1 meg	1/2 w	Fixed	Comp.	10%	302105
R1011	100 k	1/2 w	Fixed	Comp.	10%	302104
R1012	470 k	1/2 w	Fixed	Comp.	10%	302474
R1013	100 k	1/2 w	Fixed	Comp.	10%	302104
R1014	1 meg	1/2 w	Fixed	Comp.	10%	302105
R1015	1 k	1/2 w	Fixed	Comp.	10%	302102
R1020	1.2 k	2 w	Fixed	Comp.	10%	306122
R1021	650 Ω Special 500 Ω 1/2 w. fixed prec. 1% 309-0179-00					310513
R1022	100 Ω	1/2 w	Fixed	Comp.	10%	302101
R1023	68 k	1/8 w	Fixed	Comp.	10%	307006
R1025	27 Ω	1/2 w	Fixed	Comp.	10%	302270
R1026	330 Ω	1/2 w	Fixed	Comp.	10%	302331
R1027	200 Ω	2 w	Var.	Comp.	20% Gain Adj.	311004
R1028	330 Ω	1/2 w	Fixed	Comp.	10%	302331
R1030	4 k	5 w	Fixed	WW	5%	308051
R1031	15 k	10 w	Fixed	WW	5%	308024
R1035	10 k	1 w	Fixed	Comp.	10%	304103
R1040	27 Ω	1/2 w	Fixed	Comp.	10%	302270
R1041	100 Ω	1/2 w	Fixed	Comp.	10%	302101
R1042	650 Ω Special 500 Ω 1/2 w. fixed prec 1% 309-0179-00					310513
R1043	68 k	1/8 w	Fixed	Comp.	10%	307006
R1045	47 k	1/2 w	Fixed	Comp.	10%	302473
R1046	100 Ω	1/2 w	Fixed	Comp.	10%	302101
R1047	100 Ω	1/2 w	Fixed	Comp.	10%	302101
R1050	47 k	1/2 w	Fixed	Comp.	10%	302473



Resistors (continued)

Order Parts
by Number

R1051	2.2 k	1 w	Fixed	Comp.	10%	304222
R1052	47 Ω	1/2 w	Fixed	Comp.	10%	302470
R1053	30 k	10 w	Fixed	WW	5%	308027
R1054	47 Ω	1/2 w	Fixed	Comp.	10%	302470
R1055	15 k	2 w	Fixed	Comp.	10%	306153
R1056	1 meg	1/2 w	Fixed	Comp.	10%	302105
R1057	2.7 k	2 w	Fixed	Comp.	10%	306272
R1059	250 k	2 w	Var.	Comp.	20% DC Shift Comp.	311061
R1060	470 k	1/2 w	Fixed	Comp.	10%	302474
R1062	4.5 k	5 w	Fixed	WW	5%	308066
R1064	167 Ω	5 w	Fixed	WW	5%	308045
R1066	470 k	1/2 w	Fixed	Comp.	10%	302474
R1067	2 k	1 w	Fixed	Comp.	5%	303202
R1080	8.2 k	1/2 w	Fixed	Comp.	10%	302822
R1081	470 k	1/2 w	Fixed	Comp.	10%	302474
R1082	4.5 k	5 w	Fixed	WW	5%	308066
R1083	470 k	1/2 w	Fixed	Comp.	10%	302474
R1084	8.2 k	1/2 w	Fixed	Comp.	10%	302822
R1090	470 k	1/2 w	Fixed	Comp.	10%	302474
R1091	4.5 k	5 w	Fixed	WW	5%	308066
R1092	470 k	1/2 w	Fixed	Comp.	10%	302474
R1100	470 k	1/2 w	Fixed	Comp.	10%	302474
R1101	4.5 k	5 w	Fixed	WW	5%	308066
R1102	470 k	1/2 w	Fixed	Comp.	10%	302474
R1110	470 k	1/2 w	Fixed	Comp.	10%	302474
R1111	4.5 k	5 w	Fixed	WW	5%	308066
R1112	470 k	1/2 w	Fixed	Comp.	10%	302474
R1120	470 k	1/2 w	Fixed	Comp.	10%	302474
R1121	4.5 k	5 w	Fixed	WW	5%	308066
R1122	470 k	1/2 w	Fixed	Comp.	10%	302474
R1130	470 k	1/2 w	Fixed	Comp.	10%	302474
R1131	4.5 k	5 w	Fixed	WW	5%	308066
R1132	470 k	1/2 w	Fixed	Comp.	10%	302474
R1140	390 Ω	1 w	Fixed	Comp.	0 to -5%	312529
R1141	12 k	8 w	Fixed	WW	5%	308069
R1142	1.2 k	5 w	Fixed	WW	5%	312529
R1143	390 Ω	1 w	Fixed	Comp.	0 to -5%	308063
R1150	100 Ω	1 w	Fixed	Comp.	10%	304101
R1151	100 Ω	1 w	Fixed	Comp.	10%	304101
R1152	47 Ω	1/2 w	Fixed	Comp.	10%	302470
R1153	47 Ω	1/2 w	Fixed	Comp.	10%	302470
R1154	100 Ω	1 w	Fixed	Comp.	10%	304101

*820.2 2 w fixed Comp 10%**306-0821-00*

Vacuum Tubes

V1025A	1/2 6AW8	Indicator Amplifier	}	157039
V1025B	1/2 6AW8	Input Amplifier		
V1040A	1/2 6AW8	Indicator Amplifier	}	157039
V1040B	1/2 6AW8	Input Amplifier		
V1050A	1/2 6BQ7A	Driver CF	}	154028
V1050B	1/2 6BQ7A	Internal Trigger CF		
V1052A	1/2 6BQ7A	Driver CF		
V1052B	1/2 6BQ7A	Vert. Sig. Out CF		



Vacuum Tubes (Continued)

Order Parts
by Number

V1060	6CB6	Balance Amplifier	157037
V1066	6CB6	Internal Trigger Amplifier	157037
V1080	6CB6	Output Amplifier	157037
V1082	6CB6	Output Amplifier	157037
V1090	6CB6	Output Amplifier	157037
V1092	6CB6	Output Amplifier	157037
V1100	6CB6	Output Amplifier	157037
V1102	6CB6	Output Amplifier	157037
V1110	6CB6	Output Amplifier	157037
V1112	6CB6	Output Amplifier	157037
V1120	6CB6	Output Amplifier	157037
V1122	6CB6	Output Amplifier	157037
V1130	6CB6	Output Amplifier	157037
V1132	6CB6	Output Amplifier	157037

8136s

154-0367-00

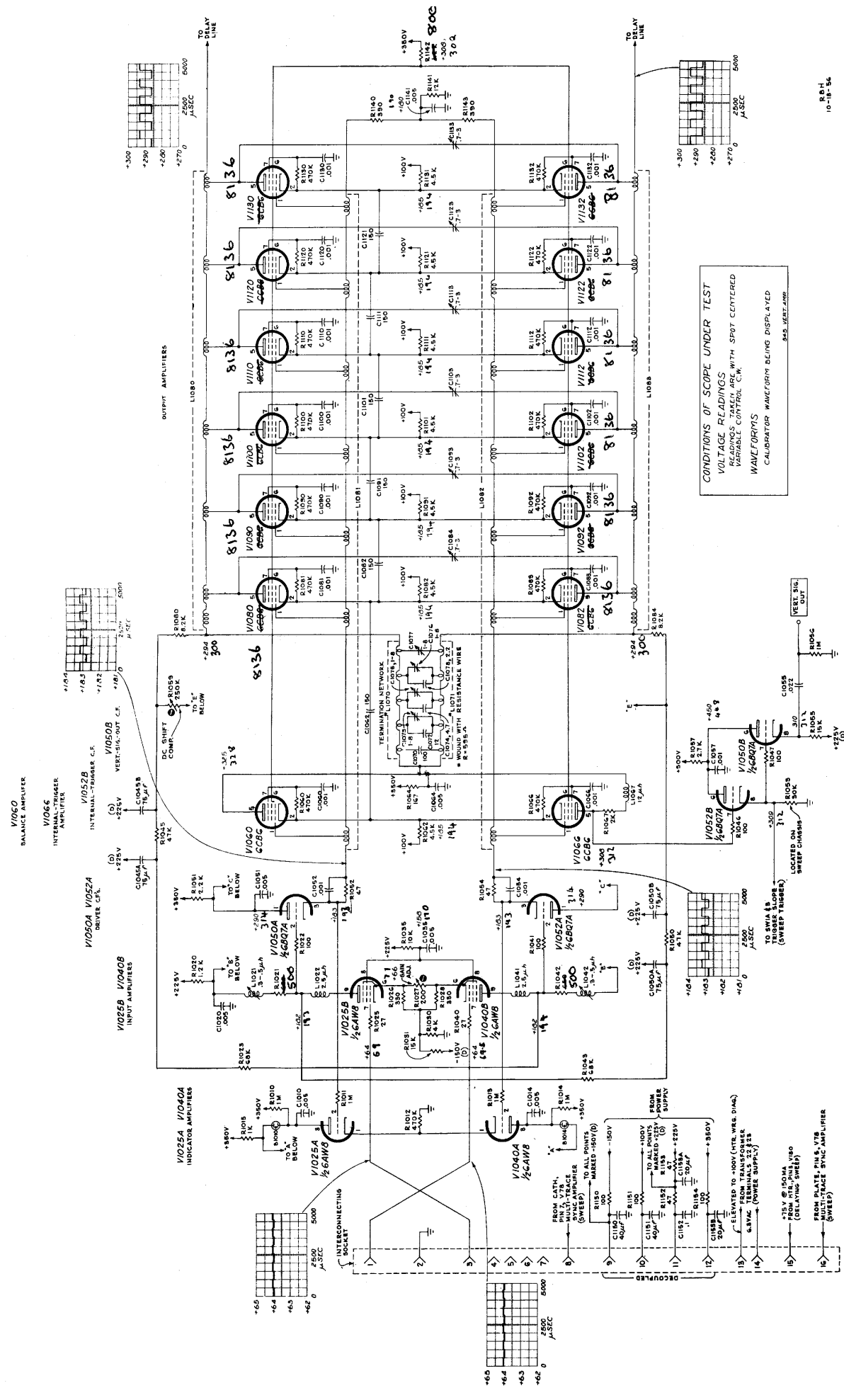
or order set of 14 checked tubes 157-0082-00



NOTE

Unless otherwise specified, all of the voltage readings were taken with a dc vacuum-tube voltmeter having an input resistance of 11 megohms. The waveforms shown were reproduced from actual photographs. There will be considerable variation between instruments because of normal manufacturing tolerances and vacuum-tube characteristics. Therefore, the significance of any discrepancies observed should be determined by referring to the circuit diagram.

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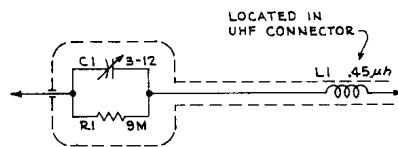
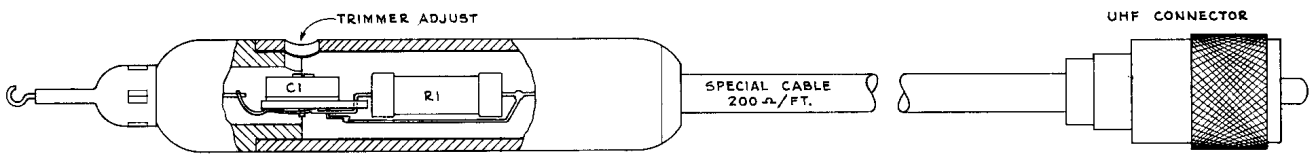
CONDITIONS OF SCOPE UNDER TEST
 VOLTAGE READINGS
 VARIABLE CENTER, CM
 WAVEFORMS
 CALIBRATOR WAVEFORM BEING DISPLAYED
 8-5 VERT. AMP

VERTICAL AMPLIFIER

C1

TYPE 545 OSCILLOSCOPE

8-5 VERT. AMP
 10-10-56



C1 3-12 μ F
 R1 9 meg.
 L1 0.45 μ h

Con. Var.
 1W Fixed
 Fixed

Prec. 1%

PART NO.
 281008
 310106
 108098

RBH
 7-31-56

A

TEKTRONIX TYPE P410 PROBE

ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

DELAY LINE

Capacitors						Order Parts by Number
C1201-1250	.7-3 μμf	Tub.	Var.	500 v		281027
C1260-1275	3.3 μμf	Cer.	Fixed	500 v	± ¼ μμf	281534
C1280	.68 μμf	Cer.	Fixed	500 v	20%	281537
C1282	1 μμf	Cer.	Fixed	500 v	20%	281538

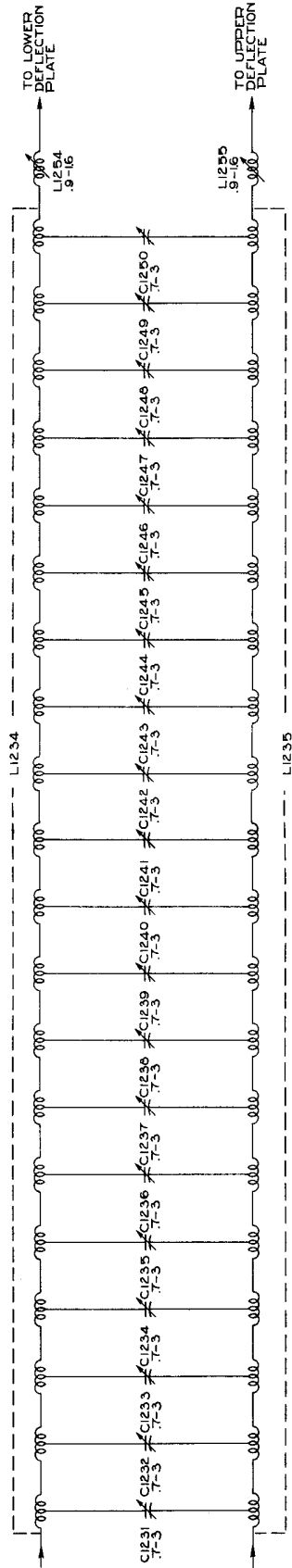
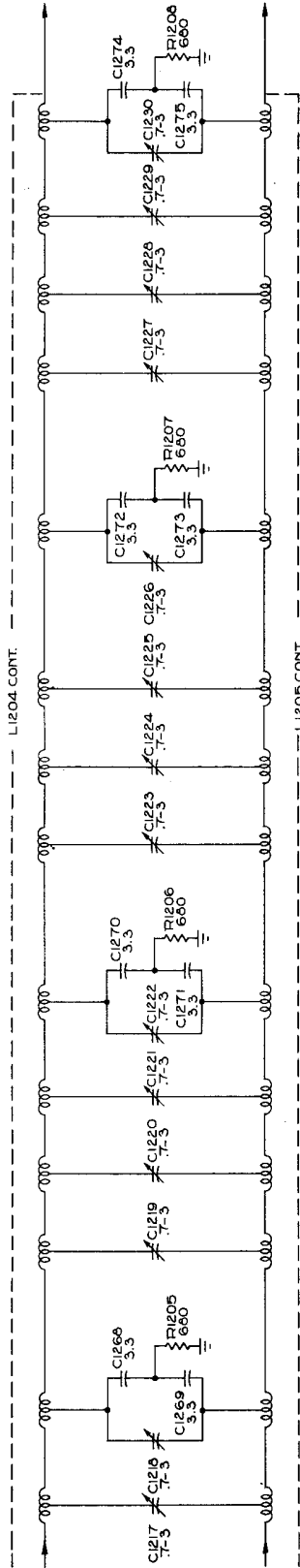
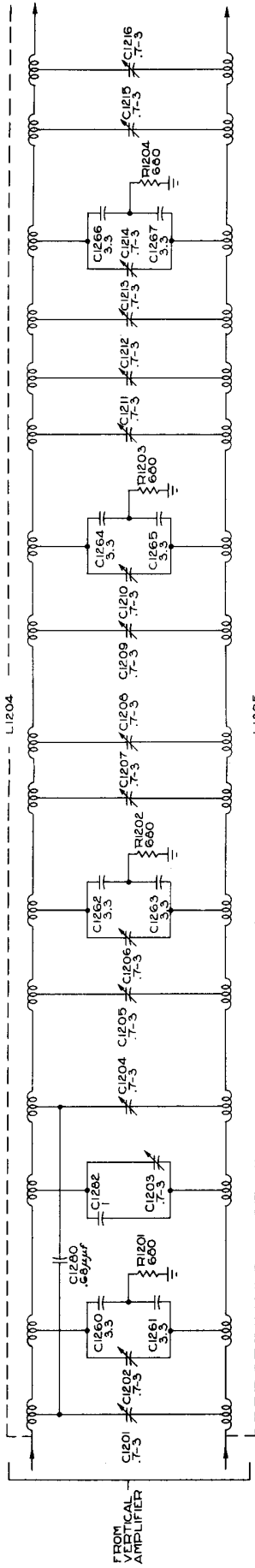
Inductors

L1204	Delay Line					108094
L1205	Delay Line					108094
L1234	Delay Line					108093
L1235	Delay Line					108093
L1254	0.9-1.6 μh		Var.			114038
L1255	0.9-1.6 μh		Var.			114038

Resistors

R1201	680 Ω	½ w	Fixed	Comp.	10%	302681
R1202	680 Ω	½ w	Fixed	Comp.	10%	302681
R1203	680 Ω	½ w	Fixed	Comp.	10%	302681
R1204	680 Ω	½ w	Fixed	Comp.	10%	302681
R1205	680 Ω	½ w	Fixed	Comp.	10%	302681
R1206	680 Ω	½ w	Fixed	Comp.	10%	302681
R1207	680 Ω	½ w	Fixed	Comp.	10%	302681
R1208	680 Ω	½ w	Fixed	Comp.	10%	302681





REV. 2-16-66

DELAY LINE NETWORK

C TYPE 545 OSCILLOSCOPE

ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

CALIBRATOR

Capacitors						Order Parts by Number
C672	330 μμf	Mica	Fixed	500 v	10%	283518
C673	330 μμf	Mica	Fixed	500 v	10%	283518
C682	27 μμf	Cer.	Fixed	500 v	20%	281513
C695	.001 μf	Cer.	Fixed	500 v	GMV	283000

Resistors						
R670	150 k	½ w	Fixed	Comp.	10%	302154
R671	1 k	½ w	Fixed	Comp.	10%	302102
R672	3.3 meg	½ w	Fixed	Comp.	10%	302335
R673	2.7 meg	½ w	Fixed	Comp.	10%	302275
R674	1 k	½ w	Fixed	Comp.	10%	302102
R675	68 k	½ w	Fixed	Comp.	10%	302683
R676	33 k	1 w	Fixed	Comp.	10%	304333
R679	10 k	2 w	Var.	Comp.	20% Cal Adj	311016
R680	100 k	½ w	Fixed	Comp.	10%	302104
R681	1.5 meg	½ w	Fixed	Comp.	10%	302155
R682	100 Ω	½ w	Fixed	Comp.	10%	302101
R683	9.5 k	½ w	Fixed	Prec.	1%	309121
R684	6.375 k	½ w	Fixed	Prec.	1%	309119
R685	2.1 k	½ w	Fixed	Prec.	1%	309117
R686	1.025 k	½ w	Fixed	Prec.	1%	309116
R687	610 Ω	½ w	Fixed	Prec.	1%	309113
R688	200 Ω	½ w	Fixed	Prec.	1%	309073
R689	100 Ω	½ w	Fixed	Prec.	1%	309112
R690	60 Ω	½ w	Fixed	Prec.	1%	30906Z
R691	40 Ω	½ w	Fixed	Prec.	1%	309066
R694	100 k	½ w	Fixed	Prec.	1%	309045
R695	100 Ω	½ w	Fixed	Prec.	1%	309112
R698	.25 Ω		Special			308090
R699	100 Ω	½ w	Fixed	Comp.	10%	302101

Switches

SW670*	1 wafer	3 position	rotary	VOLTS, MILLIVOLTS, OFF	}	not wired	wired
SW680*	2 wafer	7 position	rotary	SQUARE WAVE CALIBRATOR		260013	262065

Vacuum Tubes

V670	6U8	Calibrator	Multivibrator ✓		154033
V246A	½ 6BQ7A	Calibrator	Cathode Follower ✓		154028

* SW670 and SW680 shafts are concentric. Furnished as a unit.



NOTE

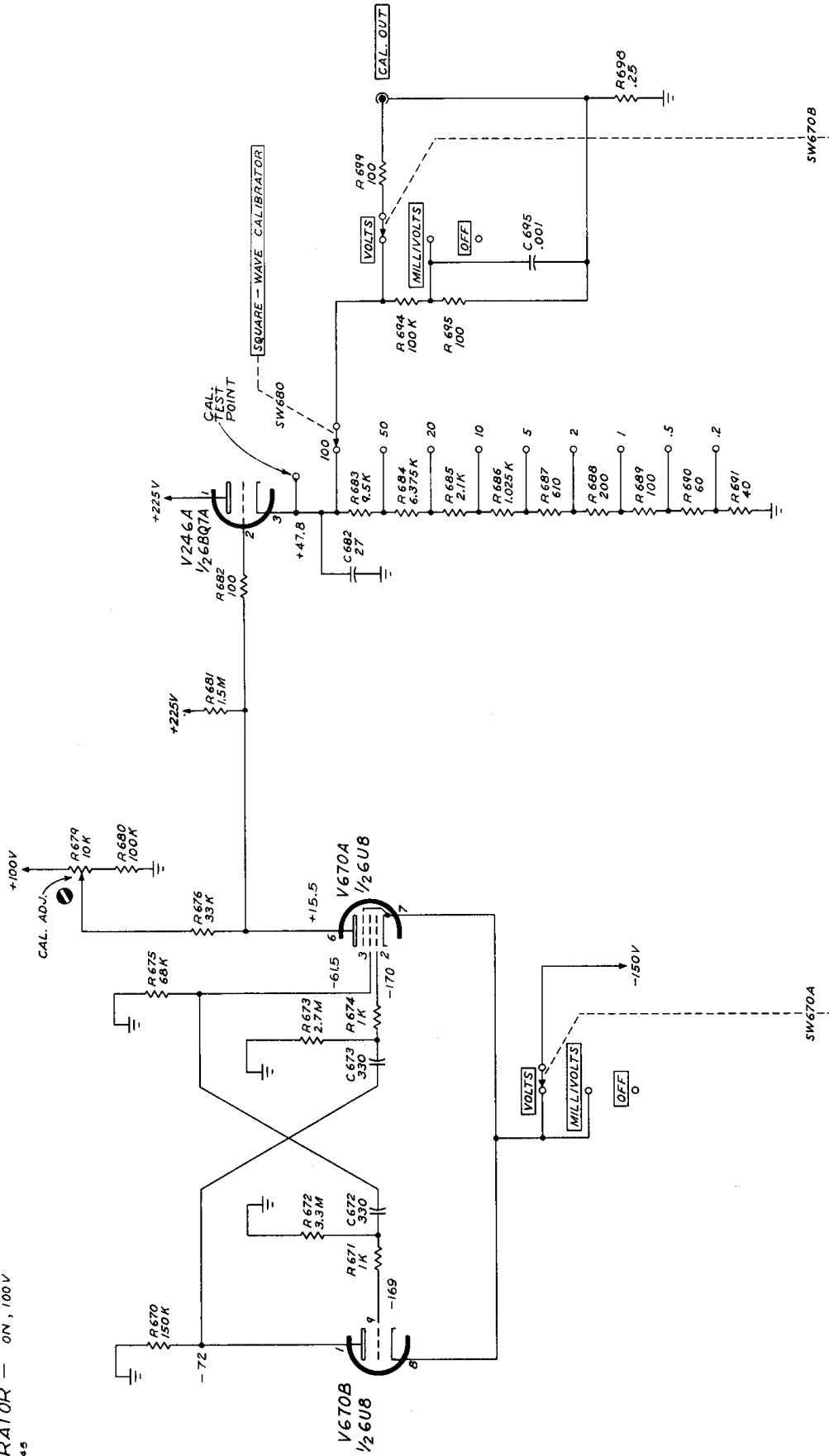
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V670
CALIBRATOR MULTIVIBRATOR

V246A
CALIBRATOR
CATHODE FOLLOWER

CALIBRATOR — 0N, 100V
545



TYPE 545 OSCILLOSCOPE

C2

CALIBRATOR

12-10-56
KF

ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

POWER SUPPLY

		Bulbs	Order Parts by Number
B730	#47		150001
B731	#47		150001
B732	#47		150001

Capacitors

C191	.01 μf	PT	Fixed	400 v	20%	285510
C700	.02 μf	Cer.	Fixed	250 v	GMV	283004
C707	.01 μf	PT	Fixed	400 v	20%	285510
C711	.01 μf	PT	Fixed	400 v	20%	285510
C715	2x40 μf	EMC	Fixed	250 v	-20%+50%	290040
C717	.01 μf	PT	Fixed	400 v	20%	285510
C720	.01 μf	Cer.	Fixed	500 v	GMV	283002
C732	125 μf	EMC	Fixed	350 v	-20%+50%	290044
C740	150 μf	EMC	Fixed	250 v	-20%+50%	290048
C741	150 μf	EMC	Fixed	250 v	-20%+50%	290048
C750	.01 μf	PT	Fixed	400 v	20%	285510
C751	3x10 μf	EMC	Fixed	450 v	-20%+50%	290033
C756	125 μf	EMC	Fixed	450 v	-20%+50%	290045
C763	.01 μf	PT	Fixed	400 v	20%	285510
C770	.01 μf	PT	Fixed	400 v	20%	285510
C780	125 μf	EMC	Fixed	350 v	-20%+50%	290044
C787	.01 μf	PT	Fixed	400 v	20%	285510
C790A,B	2x40 μf	EMC	Fixed	450 v	-20%+50%	290042
C797	.01 μf	PT	Fixed	400 v	20%	285510
C1155	.005 μf	Cer.	Fixed	500 v	GMV	283001
C1161	.005 μf	Cer.	Fixed	500 v	GMV	283001

Fuses

F701	6 amp	3AG	Fast-Blo	for 117 v operation	159013
F701	3 amp	3AG	Fast-Blo	for 234 v operation	159015
F730	No. 33 copper wire, coiled				

Rectifiers

SR732	5-250 ma plates per leg	106012
SR740	5-500 ma plates per leg	106013
SR756	4-500 ma plates per leg	106019
SR780	4-250 ma plates per leg	106014
SR790	5-125 ma plates per leg	106015

Relays

K700	45-sec. Thermal Time-delay	Amperite 6NO45T	148002
K701	Relay 4P2T 6 volt		148004



Resistors

Order Parts
by Number

R700	15 k	1 w	Fixed	Comp.	10%		304153
R701	15 k	1 w	Fixed	Comp.	10%		304153
R703	68 k	½ w	Fixed	Comp.	10%		302683
R704	27 k	½ w	Fixed	Comp.	10%		302273
R706	2.7 meg	½ w	Fixed	Comp.	10%		302275
R707	2.7 meg	½ w	Fixed	Comp.	10%		302275
R708	12 Ω	1 w	Fixed	Comp.	10%		304120
R710	33 k	½ w	Fixed	Comp.	10%		302333
R711	100 k	½ w	Fixed	Comp.	10%		302104
R712	100 k	½ w	Fixed	Comp.	10%		302104
R713	1 k	½ w	Fixed	Comp.	10%		302102
R715	50 k	1 w	Fixed	Comp.	1%		310086
R716	10 k	2 w	Var.	WW	20%	—150 Adj.	311015
R717	100 k	½ w	Fixed	Comp.	10%		302104
R718	68 k	1 w	Fixed	Prec.	1%		310054
R719	470 k	½ w	Fixed	Comp.	10%		302474
R720	10 Ω	½ w	Fixed	Comp.	10%		302100
R724	1 k	25 w	Fixed	WW	5%		308037
R725	10 k	2 w	Fixed	Comp.	10%		306103
R726	1 k	½ w	Fixed	Comp.	10%		302102
R727	1 k	½ w	Fixed	Comp.	10%		302102
R728	150 k	½ w	Fixed	Comp.	10%		302154
R729	1 meg	½ w	Fixed	Comp.	10%		302105
R732	10 Ω	1 w	Fixed	Comp.	10%		304100
R733	10 Ω	1 w	Fixed	Comp.	10%		304100
R735	100 k	½ w	Fixed	Comp.	10%		302104
R736	50 Ω	2 w	Var.	WW	20%	SCALE ILLUM	311055
R740	10 Ω	1 w	Fixed	Comp.	10%		304100
R742	47 k	½ w	Fixed	Comp.	10%		302473
R743	39 k	½ w	Fixed	Comp.	10%		302393
R744	680 k	½ w	Fixed	Comp.	10%		302684
R747	1.5 meg	½ w	Fixed	Comp.	10%		302155
R748	30 k	10 w	Fixed	WW	5%		308027
R749	750 Ω	10 w	Fixed	WW	5%		308016
R750	333 k	1 w	Fixed	Prec.	1%		310056
R751	490 k	1 w	Fixed	Prec.	1%		310057
R756	10 Ω	2 w	Fixed	Comp.	10%		306100
R757	270 k	½ w	Fixed	Comp.	10%		302274
R758	56 k	½ w	Fixed	Comp.	10%		302563
R760	1.5 meg	½ w	Fixed	Comp.	10%		302155
R762	2 k	10 w	Fixed	WW	5%		308017
R763	1.5 meg	½ w	Fixed	Comp.	10%		302155
R764	2.2 meg	½ w	Fixed	Comp.	10%		302225
R765	180 k	½ w	Fixed	Comp.	10%		302184
R766	82 k	1 w	Fixed	Comp.	10%		304823
R767	1 k	½ w	Fixed	Comp.	10%		302102
R770	2.2 meg	½ w	Fixed	Comp.	10%		302225
R771	220 k	1 w	Fixed	Prec.	1%		310055
R772	333 k	1 w	Fixed	Prec.	1%		310056
R777	10 Ω	1 w	Fixed	Comp.	10%		304100
R778	82 k	2 w	Fixed	Comp.	10%		306823
R779	2.2 meg	½ w	Fixed	Comp.	10%		302225
R780	10 Ω	1 w	Fixed	Comp.	10%		304100
R781	1.5 meg	½ w	Fixed	Comp.	10%		302155
R782	390 k	½ w	Fixed	Comp.	10%		302394



Resistors (Continued)

Order Parts
by Number

R783	47 k	½ w	Fixed	Comp.	10%	302473
R784	1.5 meg	½ w	Fixed	Comp.	10%	302155
R785	2 k	20 w	Fixed	WW	5%	308031
R786	2 k	20 w	Fixed	WW	5%	308031
R787	236 k	Special				308083
R788	100 k	Special				308084
R789	1 k	½ w	Fixed	Comp.	10%	302102
R790	10 Ω	½ w	Fixed	Comp.	10%	302100
R791	150 k	½ w	Fixed	Comp.	10%	302154
R792	120 k	½ w	Fixed	Comp.	10%	302124
R793	27 k	½ w	Fixed	Comp.	10%	302273
R794	1 meg	½ w	Fixed	Comp.	10%	302105
R795	3 k	10 w	Fixed	WW	5%	308020
R797	220 k	1 w	Fixed	Prec.	1%	310055
R798	720 k	1 w	Fixed	Prec.	1%	310059
R1155	150 k	½ w	Fixed	Comp.	10%	302154

Switches

SW701	single pole	single throw	toggle	POWER ON	260134
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Thermal Cut-Out

TK701	Thermal Cut-out, Type SE11,	128°F	260070
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Transformers

T700	Plate and Heater Supply	T535PB1	120037
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Vacuum Tubes

V700	6AU6 ✓	-150-v DC Amplifier	154022
V710	5651 ✓	Voltage Reference	154052
V712	12AX7 ✓	-150-v Comparator	154043
V725	12B4 ✓	-150-v Series Regulator	154044
V726	12B4 ✓	-150-v Series Regulator	154044
V727	12B4 ✓	-150-v Series Regulator	154044
V742	6AU6 ✓	+100-v Comparator	154022
V748A	½ 6080/6AS7GA ✓	+225-v Series Regulator	154056
V748B	½ 6080/6AS7GA ✓	+100-v Series Regulator	
V757	6AU6 ✓	+225-v DC Amplifier	154022
V765	12AX7 ✓	+225-v Comparator	154043
V782	6AU6 ✓	+350-v Comparator	154022
V784	6080/6AS7GA ✓	+350-v Series Regulator	154056
V791	6AU6 ✓	+500-v Comparator	154022
V794	12B4 ✓	+500-v Series Regulator	154044



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ABBREVIATIONS

Cer.	ceramic	m	milli or 10 ⁻³
Comp.	composition	Ω	ohm
EMC	electrolytic, metal cased	Poly.	polystyrene
f	farad	Prec.	precision
GMV	guaranteed minimum value	PT	paper tubular
h	henry	Tub.	tubular
k	kilohm or 10 ³ ohms	v	working volts dc
meg	megohm or 10 ⁶ ohms	Var.	variable
μ	micro or 10 ⁻⁶	w	watt
μμ	micromicro or 10 ⁻¹²	WW	wire wound

Order Parts
by Number

Capacitors

C800	.047 μf	PT	Fixed	400 v	20%	285519
C803	.001 μf	PT	Fixed	600 v	20%	285501
C805	.01 μf	PT	Fixed	400 v	20%	285510
C806	.001 μf	PT	Fixed	600 v	20%	285501
C807	2x20 μf	EMC	Fixed	450 v	20%	290037
C814	.0068 μf	PT	Fixed	3000 v	20%	285508
C815	.01 μf	Cer.	Fixed	500 v	GMV	283002
C820	.0068 μf	PT	Fixed	3000 v	20%	285508
C821	.0068 μf	PT	Fixed	5000 v	20%	285509
C822	470 μμf	PT	Fixed	10000 v	20%	285500
C823	470 μμf	PT	Fixed	10000 v	20%	285500
C830	.0068 μf	PT	Fixed	3000 v	20%	285508
C832	.015 μf	PT	Fixed	3000 v	20%	285513
C834	.015 μf	PT	Fixed	3000 v	20%	285513
C841	.005 μf	Cer.	Fixed	500 v	GMV	283001
C855	.015 μf	PT	Fixed	3000 v	20%	285513
C857	.015 μf	PT	Fixed	3000 v	20%	285513

Resistors

R800	1 k	½ w	Fixed	Comp.	10%	302102
R803	56 k	2 w	Fixed	Comp.	10%	306563
R804	100 k	½ w	Fixed	Comp.	10%	302104
R805	1 k	½ w	Fixed	Comp.	10%	302102
R807	390 Ω	2 w	Fixed	Comp.	10%	306391
R810	470 k	½ w	Fixed	Comp.	10%	302474
R811	2 meg	2 w	Var.	Comp.	20% HV Adj	311042
R812	2.2 meg	½ w	Fixed	Comp.	10%	302225
R813	4.7 meg	½ w	Fixed	Comp.	10%	302475
R814	4.7 meg	½ w	Fixed	Comp.	10%	302475
R815	4.7 meg	½ w	Fixed	Comp.	10%	302475
R830	47 k	½ w	Fixed	Comp.	10%	302473
R831	1 meg	½ w	Var.	Comp.	20% INTENSITY	311041
R832	4.7 meg	2 w	Fixed	Comp.	10%	306475
R833	4.7 meg	2 w	Fixed	Comp.	10%	306475
R834	100 k	½ w	Fixed	Comp.	10%	302104
R835	1 meg	½ w	Fixed	Comp.	10%	302105
R837	4.7 meg	½ w	Fixed	Comp.	10%	302475
R838	1 k	½ w	Fixed	Comp.	10%	302102
R839	100 Ω	½ w	Fixed	Comp.	10%	302101
R840	68 k	2 w	Fixed	Comp.	10%	306683
R841	47 Ω	½ w	Fixed	Comp.	10%	302470
R850	2.2 meg	2 w	Fixed	Comp.	10%	306225
R851	2.2 meg	2 w	Fixed	Comp.	10%	306225



Resistors (continued)

Order Parts
by Number

R852	2 meg	½ w	Var.	Comp.	20%	FOCUS	311043
R853	1 meg	2 w	Fixed	Comp.	10%		306105
R855	10 k	½ w	Fixed	Comp.	10%		302103
R856	27 k	½ w	Fixed	Comp.	10%		302273
R857	1 meg	½ w	Fixed	Comp.	10%		302105
R860	50 k	2 w	Var.	Comp.	20%	ASTIGMATISM	311023
R861	100 k	2 w	Var.	Comp.	20%	Geom. Adj.	311026
R863	100 k	½ w	Fixed	Comp.	10%		302104
R864	150 k	½ w	Fixed	Comp.	10%*		302154

Transformers

T801	CRT Supply	T535OA1	120036
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Vacuum Tubes

V803	6AU5	Oscillator ✓	154021
V810A	½ 12AU7	DC Comparator ✓	154041
V810B	½ 12AU7	Shunt Regulator ✓	
V820	5642	-1350-v Rectifier ✓	154051
V821	5642	+8650-v Voltage Tripler ✓	154051
V822	5642	+8650-v Voltage Tripler ✓	154051
V823	5642	+8650-v Voltage Tripler ✓	154051
V824	5642	-1450-v Rectifier ✓	154051
V840	6BQ7A	Unblanking Mixer ✓	154028

* Nominal value, may vary between instruments.

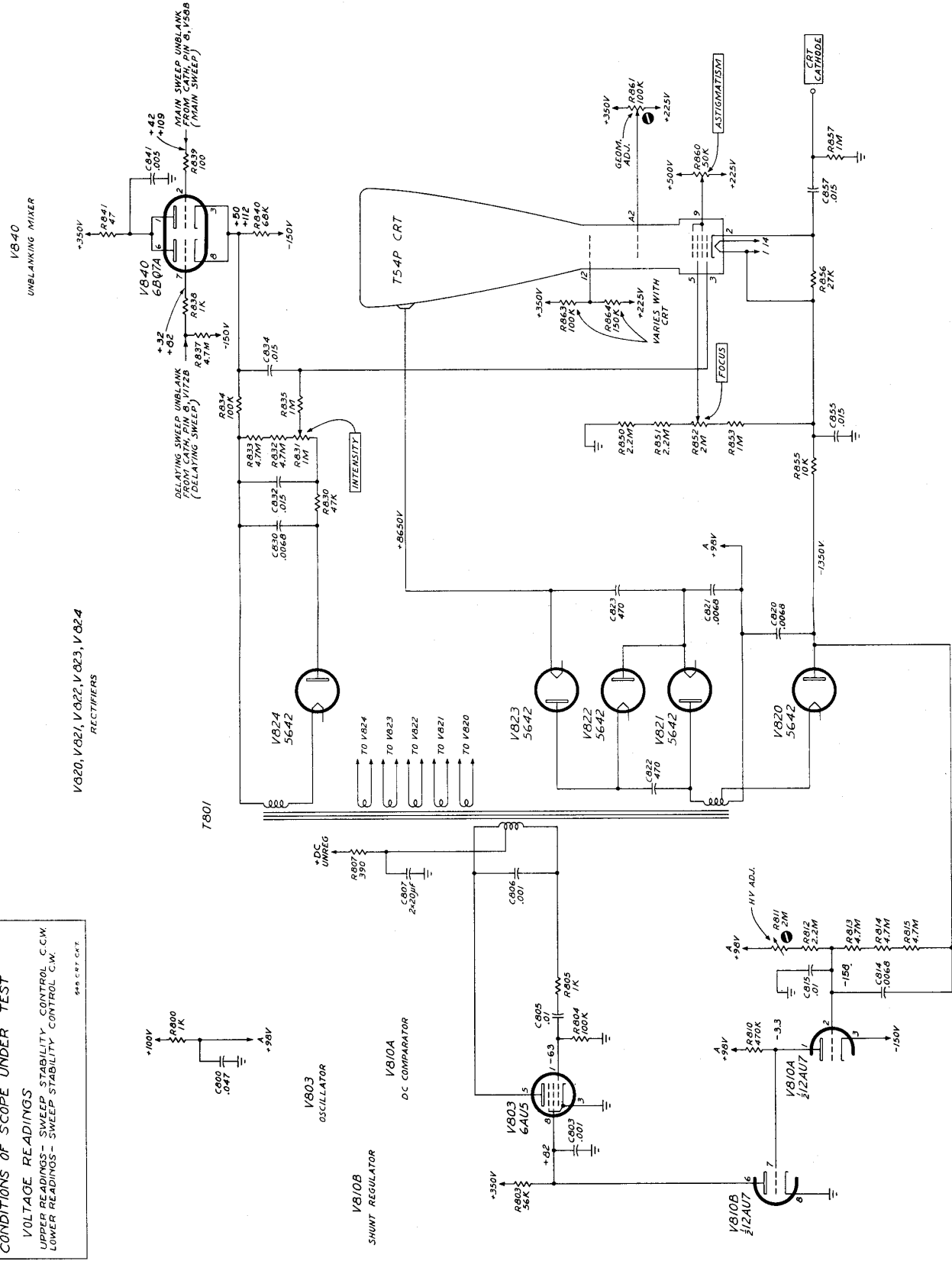


NOTE

Unless otherwise specified, all of the voltage readings were taken with a dc vacuum-tube voltmeter having an input resistance of 11 megohms. The waveforms shown were reproduced from actual photographs. There will be considerable variation between instruments because of normal manufacturing tolerances and vacuum-tube characteristics. Therefore, the significance of any discrepancies observed should be determined by referring to the circuit diagram.

All readings are in volts unless otherwise specified. Where two voltage readings are given, they represent the voltage as read by a voltmeter under two sets of conditions, and, as such, do not indicate the peak-to-peak excursion of voltage at the point.

CONDITIONS OF SCOPE UNDER TEST
 VOLTAGE READINGS
 UPPER READINGS - SWEEP STABILITY CONTROL C.W.
 LOWER READINGS - SWEEP STABILITY CONTROL C.W.



12-5-56

CRT CIRCUIT

C

TYPE 545 OSCILLOSCOPE