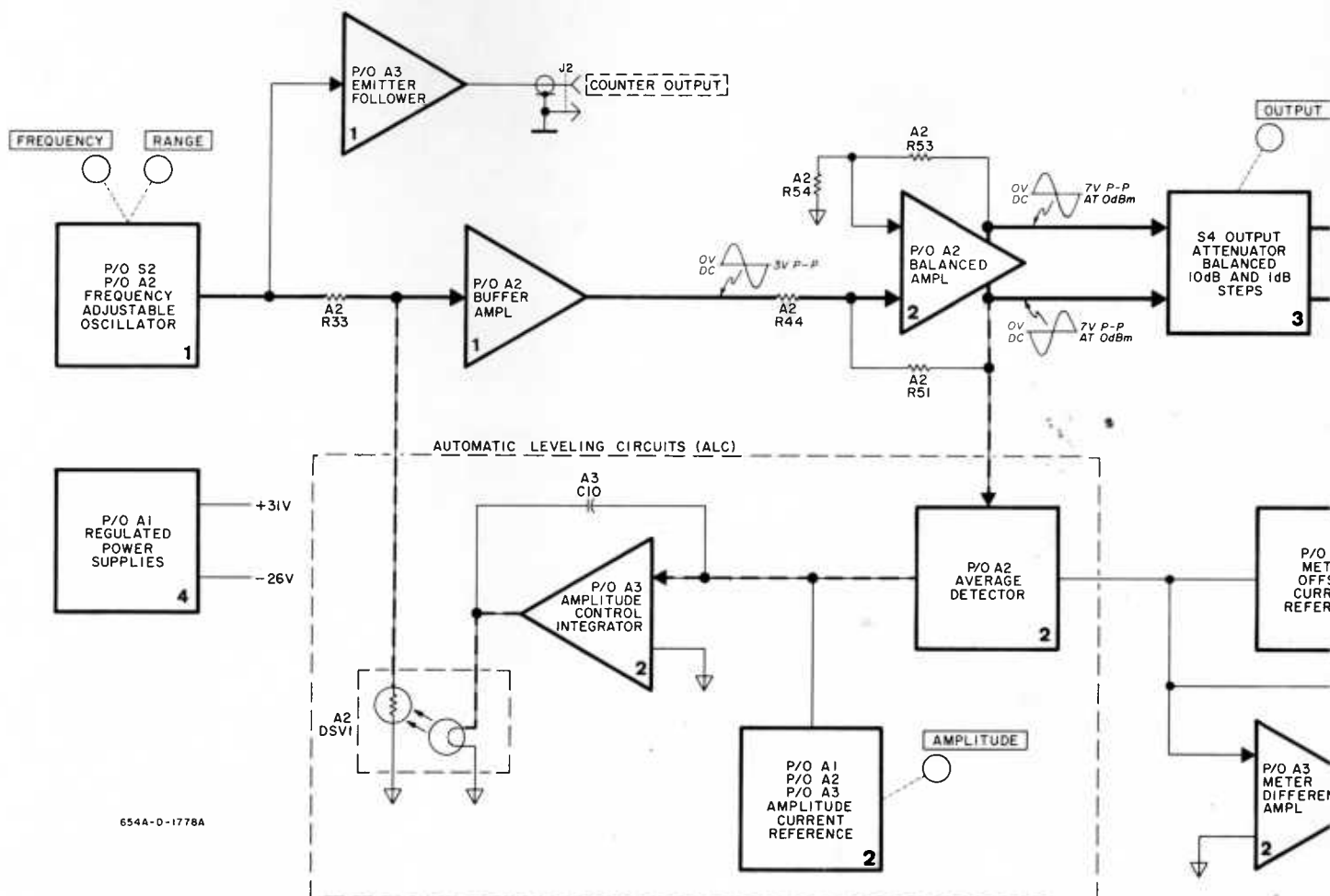
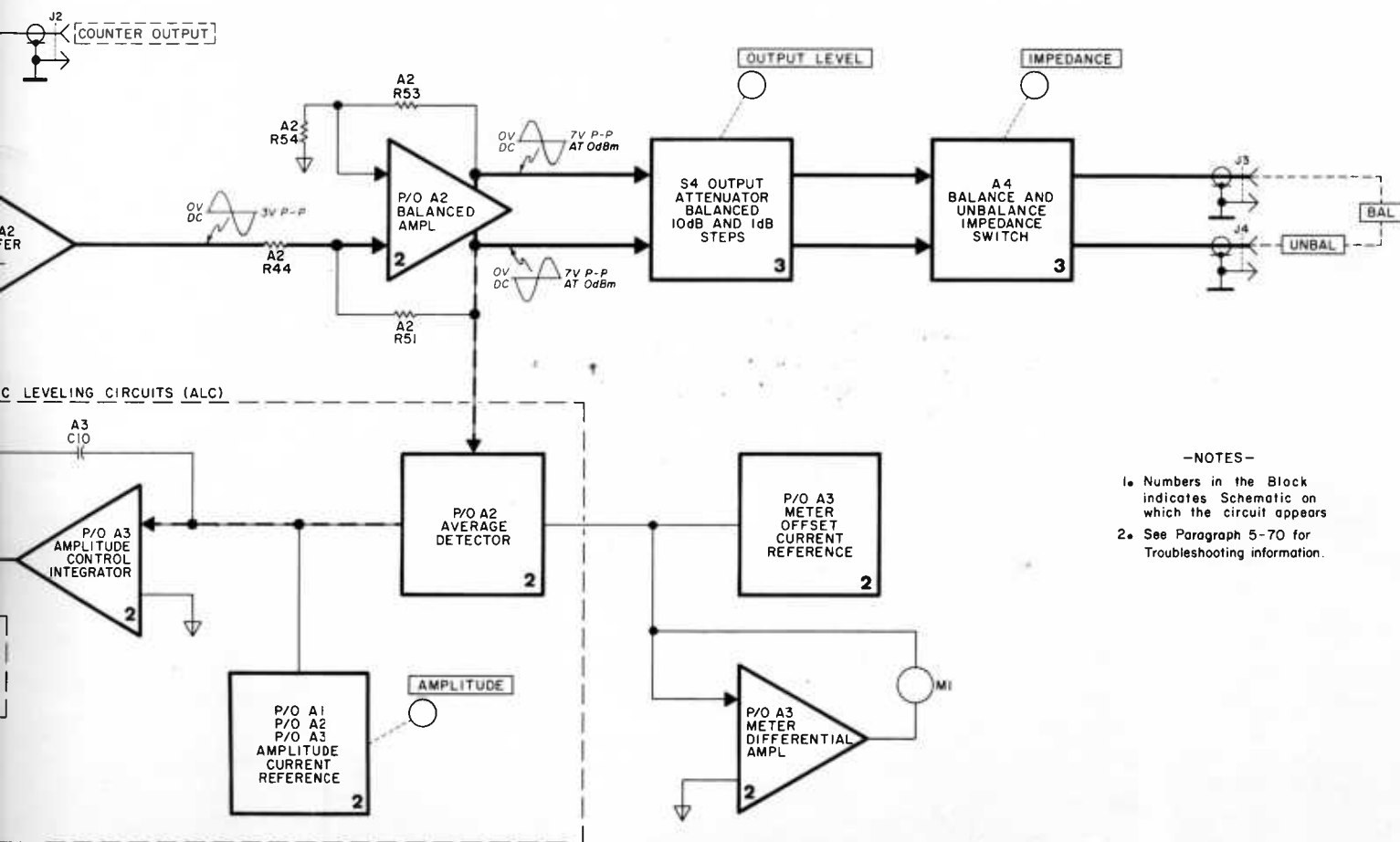




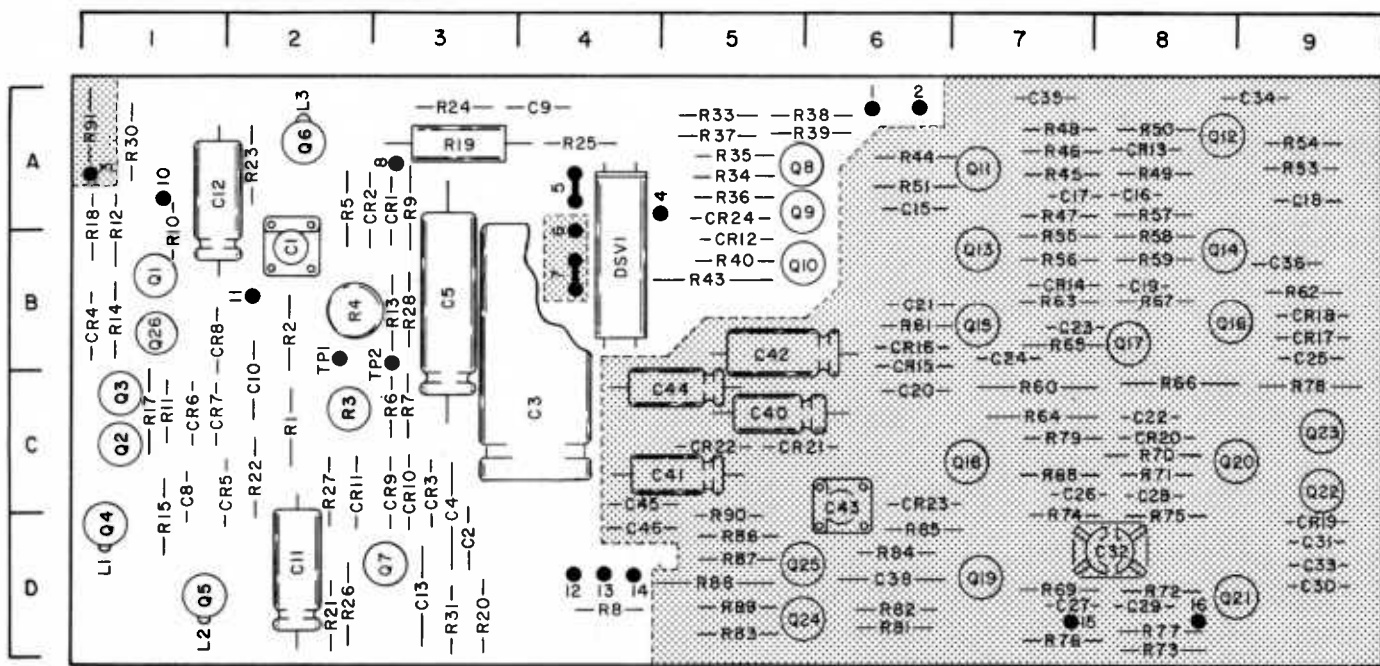
654A-D-1778A



-NOTES-

1. Numbers in the Block indicates Schematic on which the circuit appears
2. See Paragraph 5-70 for Troubleshooting information.

Figure 7-1. Block Diagram.



654A-B-1820A

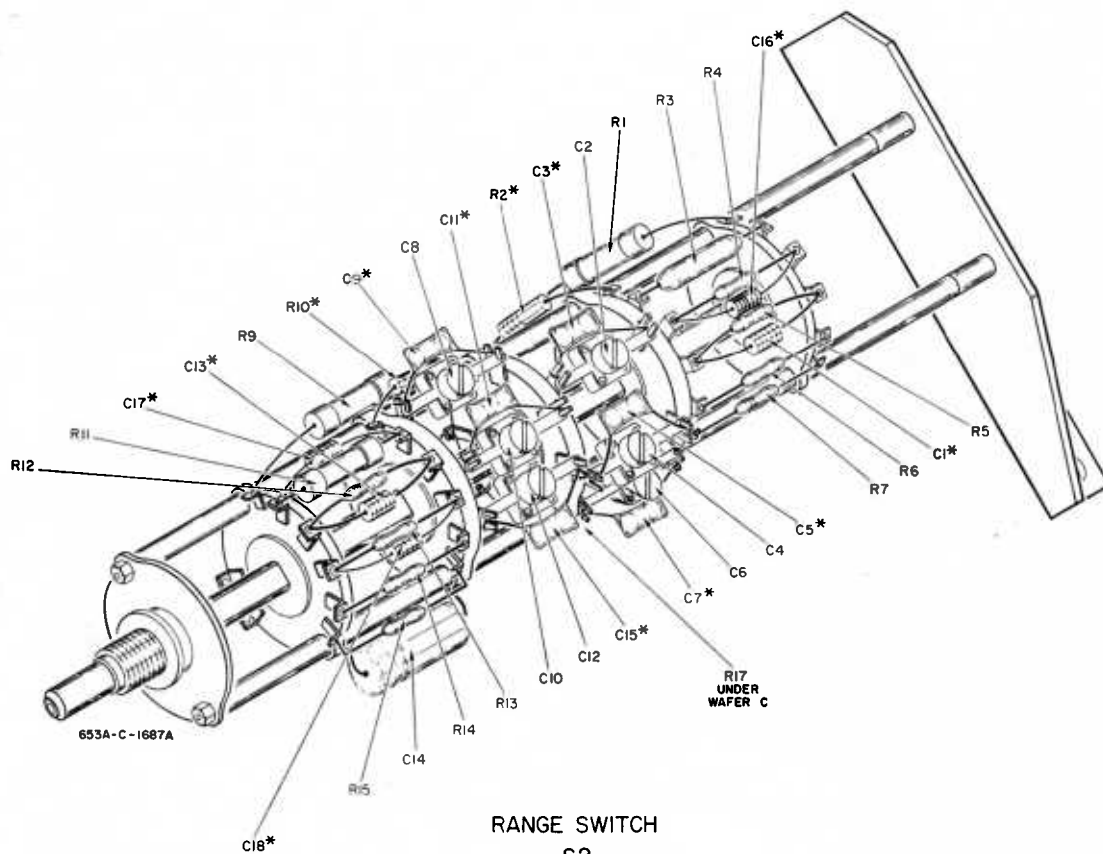
SHADED AREA SHOWN ON
SCHEMATIC NO. 2

A2

hp Part No. 00654-66502
Rev. AA2 ASSEMBLY
COMPONENT LOCATIONS

	Q	C	CR		C		R	C		R		R		R
11	A7			26	C7	41		C5	56	B7	71	C8	86	D5
12	A8			27	D7	42		B5	57	A8	72	D8	87	D5
13	B7		A8	28	C8	43		C6	58	B8	73	D8	88	D5
14	B8		B7	29	D8	44	A6	C5	59	B8	74	D7	89	D5
15	B7	A6	B6	30	D9	45	A7	C4	60	C7	75	D8	90	D5
16	B8	A8	B6	31	D9	46	A7	D4	61	B6	76	D7	91	A1
17	B8	A7	B9	32	D8	47	A7		62	B9	77	D8		
18	C7	A9	B9	33	D9	48	A7		63	B7	78	C9		
19	D7	B8	D9	34	A8	49	A8		64	C7	79	C7		
20	C8	C6	C8	35	A7	50	A8		65	B7	80	...		
21	D8	B6	C5	36	B9	51	A6		66	C8	81	D6		
22	C9	C8	C5	37	---	52	...		67	B8	82	D6		
23	C9	B7	C6	38	D6	53	A9		68	C7	83	D5		
24	D5	B7		39	---	54	A9		69	D7	84	D6		
25	D5	B9		40	C5	55	B7		70	C8	85	D6		

P/O Figure 7-2. Oscillator and Buffer Amplifier

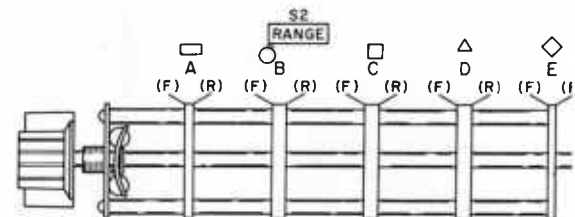
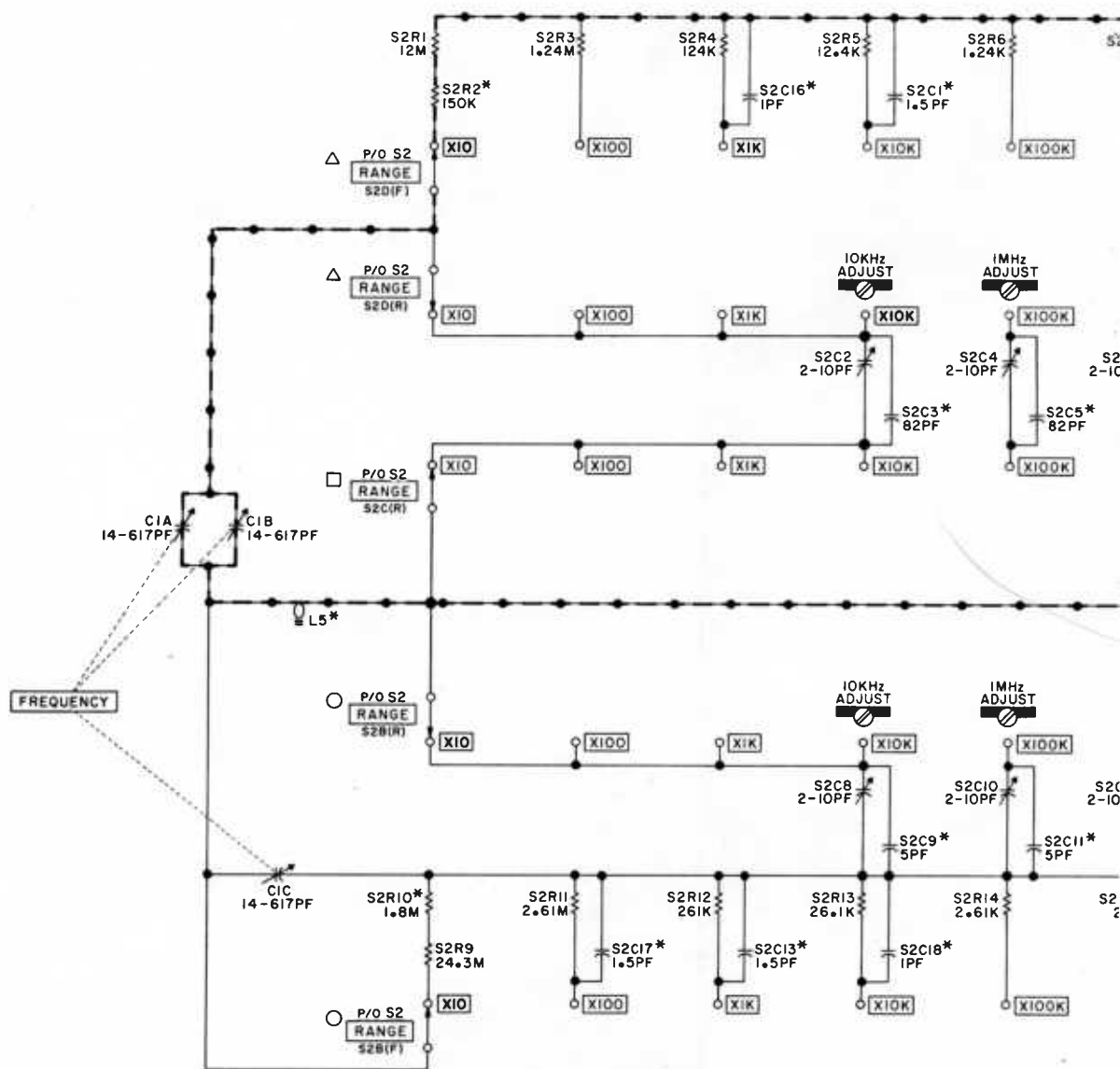


A2 SCHEMATIC
COMPONENT LOCATIONS

	R	Q	C	CR	L	DSV		R	Q	CR		R
1	B13	E14	D13	J14	B17	C22	16	---			31	E20
2	D13	C16	J15	H14	C18		17	D16			32	---
3	D13	E16	J16	J14	F18		18	F16			33	C22
4	J13	C17	J15	F16			19	F17			34	B25
5	J14	D18	J16	C17			20	B20			35	C24
6	H14	E18	---	C15			21	B18			36	C24
7	H15	E20	---	D17			22	D18			37	D24
8	J16	C23	B17	E17			23	E18			38	C23
9	F13	C25	H15	F19			24	F18		C26	39	D24
10	E14	C26	E18	F19			25	F14			40	B26
11	D15		E19	E20			26	F19	D15		41	---
12	F15		E20	B26			27	E19			42	---
13	H14		B19				28	F18			43	D26
14	E15		---				29	---			44	
15	B16						30	E19			45	

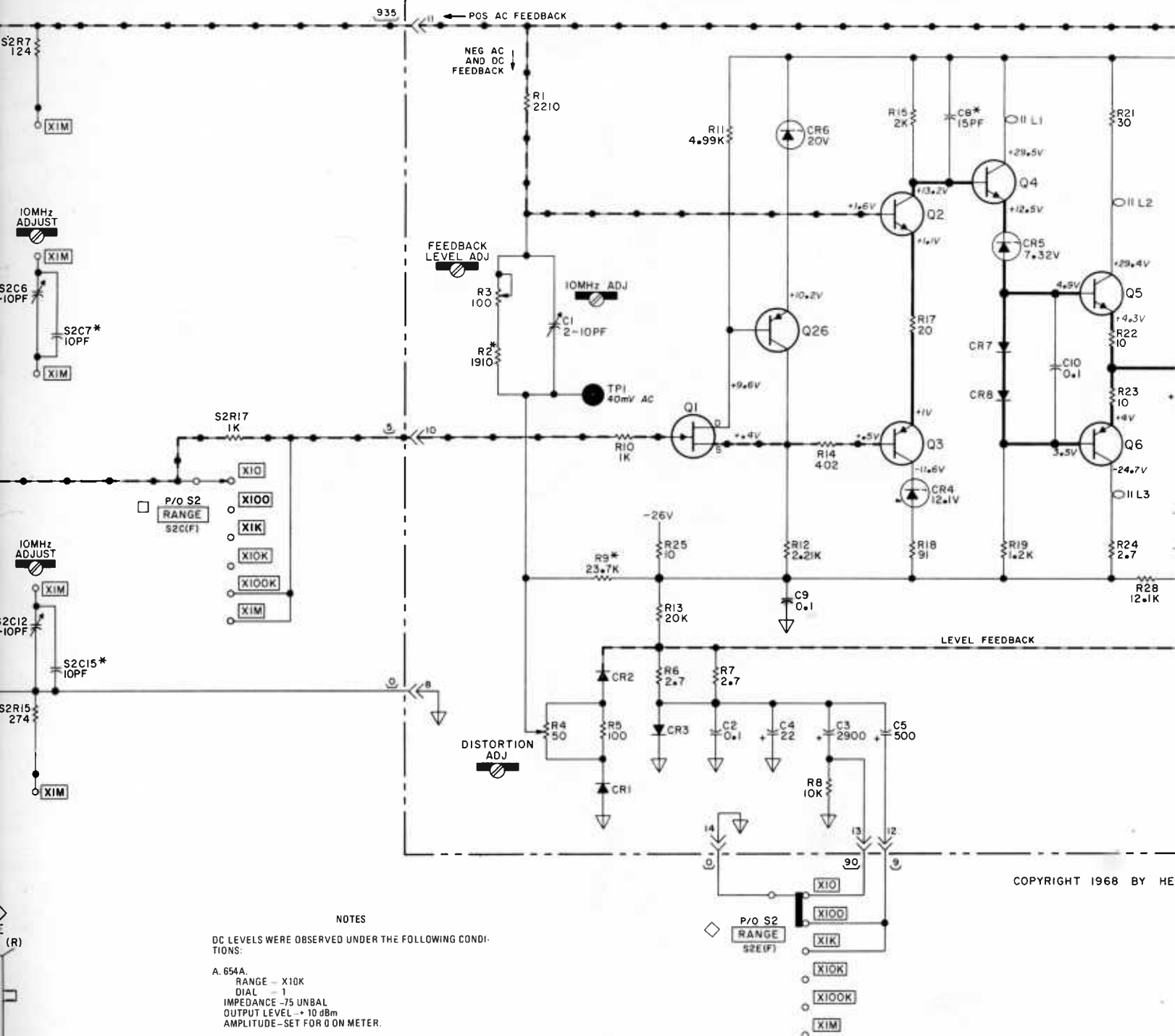
1 2 3 4 5 6 7 8

A
B
C
D
E
F
H
J
K

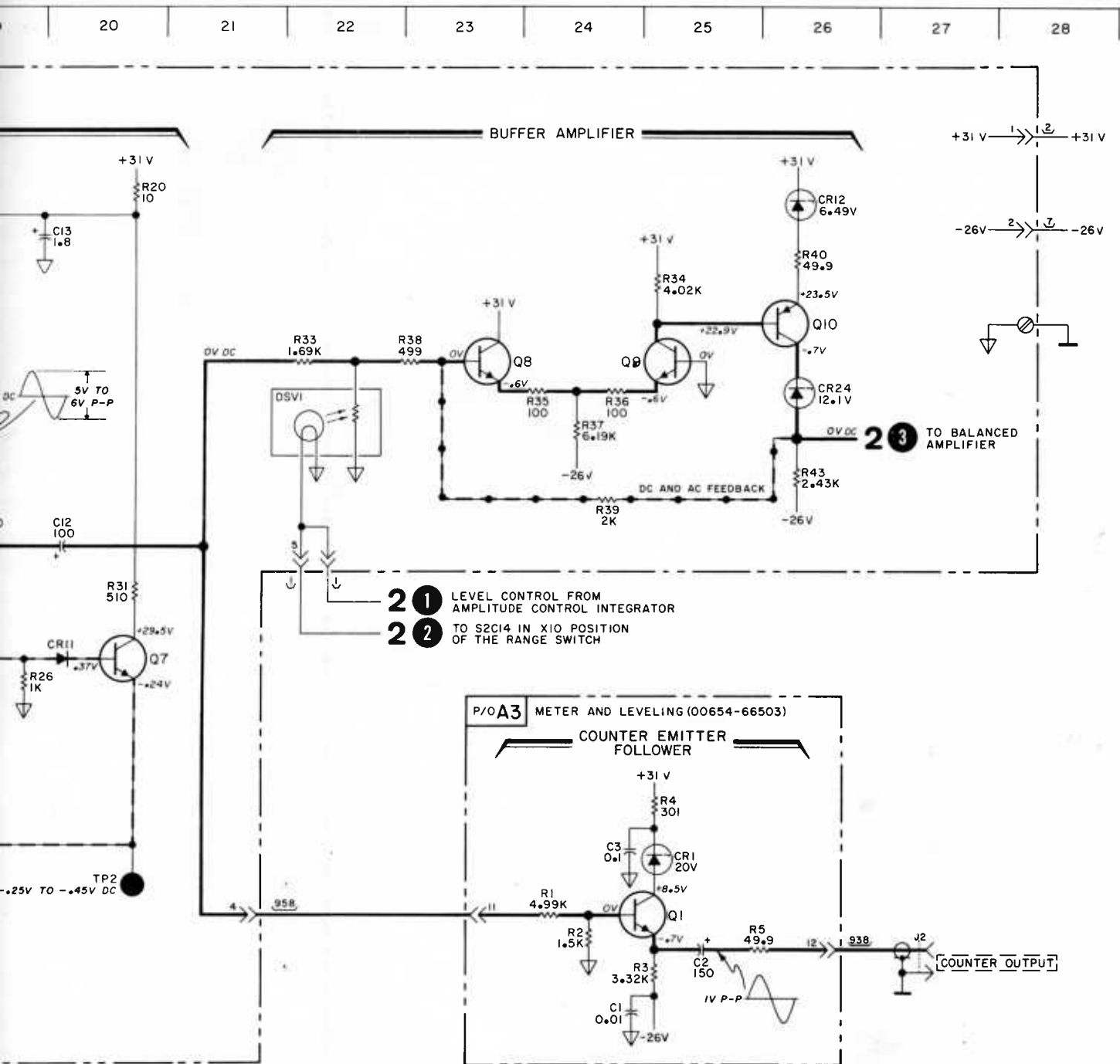


P/O A2 OSCILLATOR AND OUTPUT (00654-66502)

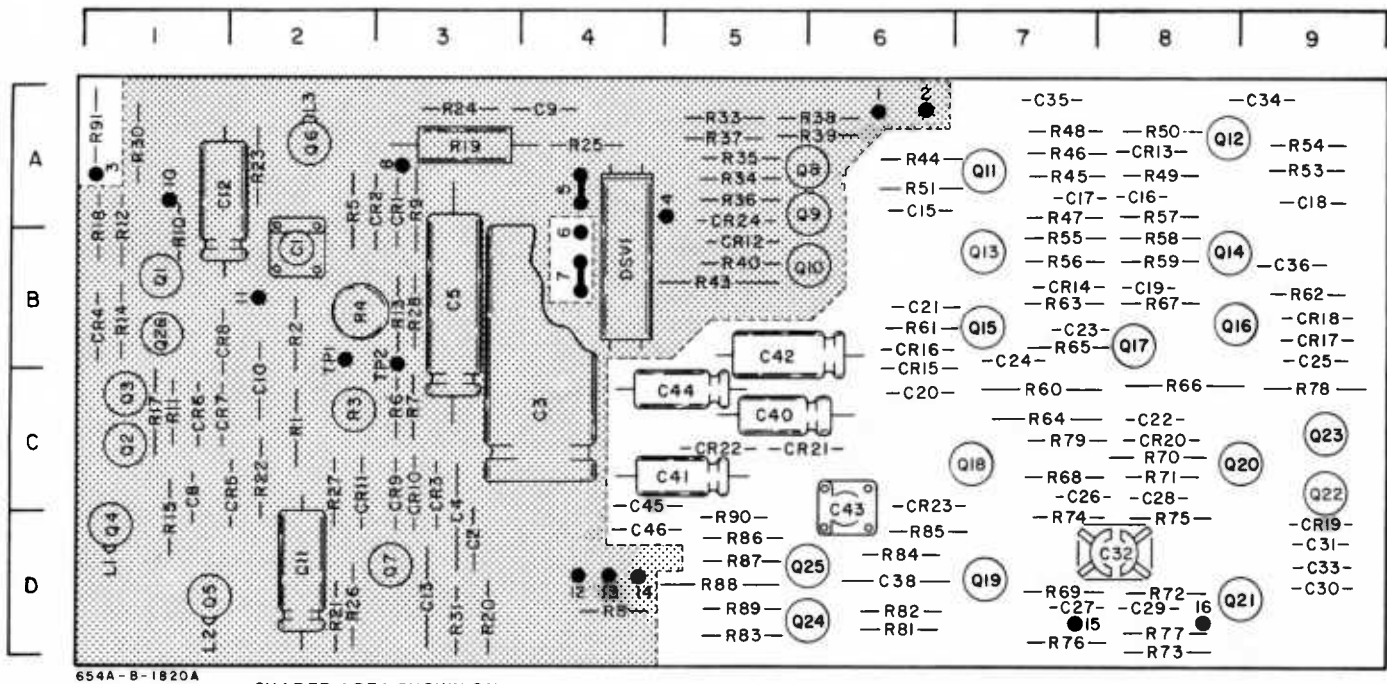
FREQUENCY ADJUSTABLE OSCILLATOR



COPYRIGHT 1968 BY HE



P/O Figure 7-2. Oscillator and Buffer Amplifier
S2, A2, A3.



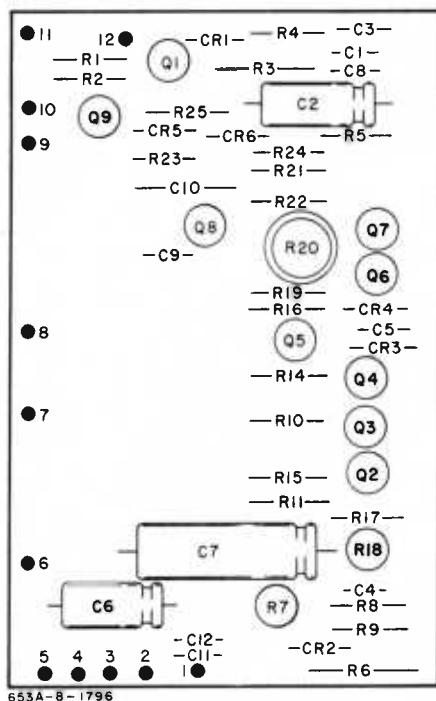
SHADED AREA SHOWN ON
SCHEMATIC NO. 1

A2
hp Part No. 00654-66502
Rev. A

**A2 ASSEMBLY
COMPONENT LOCATIONS**

	R	Q	C	CR	L	DSV		R	Q	CR		R
1	C2	B1	B2	A3	D1	B4	16	---			31	D3
2	B2	C1	D3	A3	D1		17	C1			32	---
3	C2	C1	C4	C3	A2		18	B1			33	A5
4	B2	D1	C3	B1			19	A3			34	A5
5	A2	D1	B3	C2			20	D3			35	A5
6	C3	A2	---	C1			21	D2			36	A5
7	C3	D3	---	C2			22	C2			37	A5
8	D4	A5	C1	B2			23	A2			38	A6
9	A3	A5	A4	C3			24	A3		A5	39	A6
10	B1	B5	C2	C3			25	A4			40	B5
11	C1		D2	C2			26	D2	B1		41	---
12	B1		A2	B5			27	C2			42	---
13	B3		D3				28	B3			43	B5
14	B1		---				29	---				
15	D1						30	A1				

P/O Figure 7-3. Balanced Amplifier, Meter and Leveling



A3

hp Part No. 00654-66503

NOTES

DC LEVELS WERE OBSERVED UNDER THE FOLLOWING CONDI-
TIONS:

A. 654A.
RANGE — X10K
DIAL — 1
IMPEDANCE — 75 UNBAL
OUTPUT LEVEL — + 10 dBm
AMPLITUDE — SET FOR 0 ON METER.

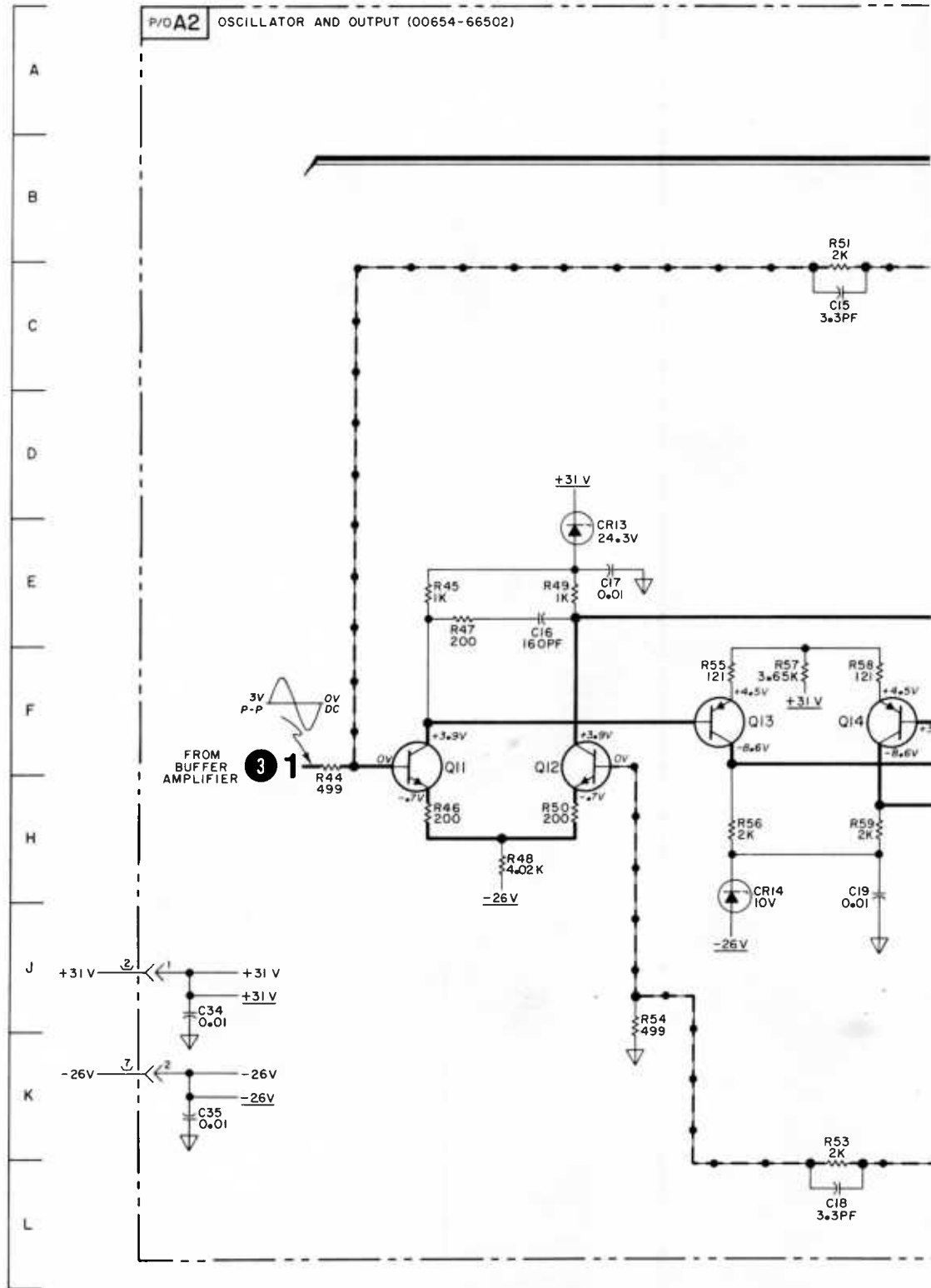
B. ALL VOLTAGES +/-10%.

C. VOLTAGES WERE TAKEN WITH AN -HP- MODEL 3440A DIGITAL VOLTMETER HAVING A 3443A PLUG-IN. HOWEVER, ANY DC VOLTMETER WITH APPROXIMATELY 10 MEGOHMS INPUT IMPEDANCE WILL YIELD ABOUT THE SAME RESULTS.

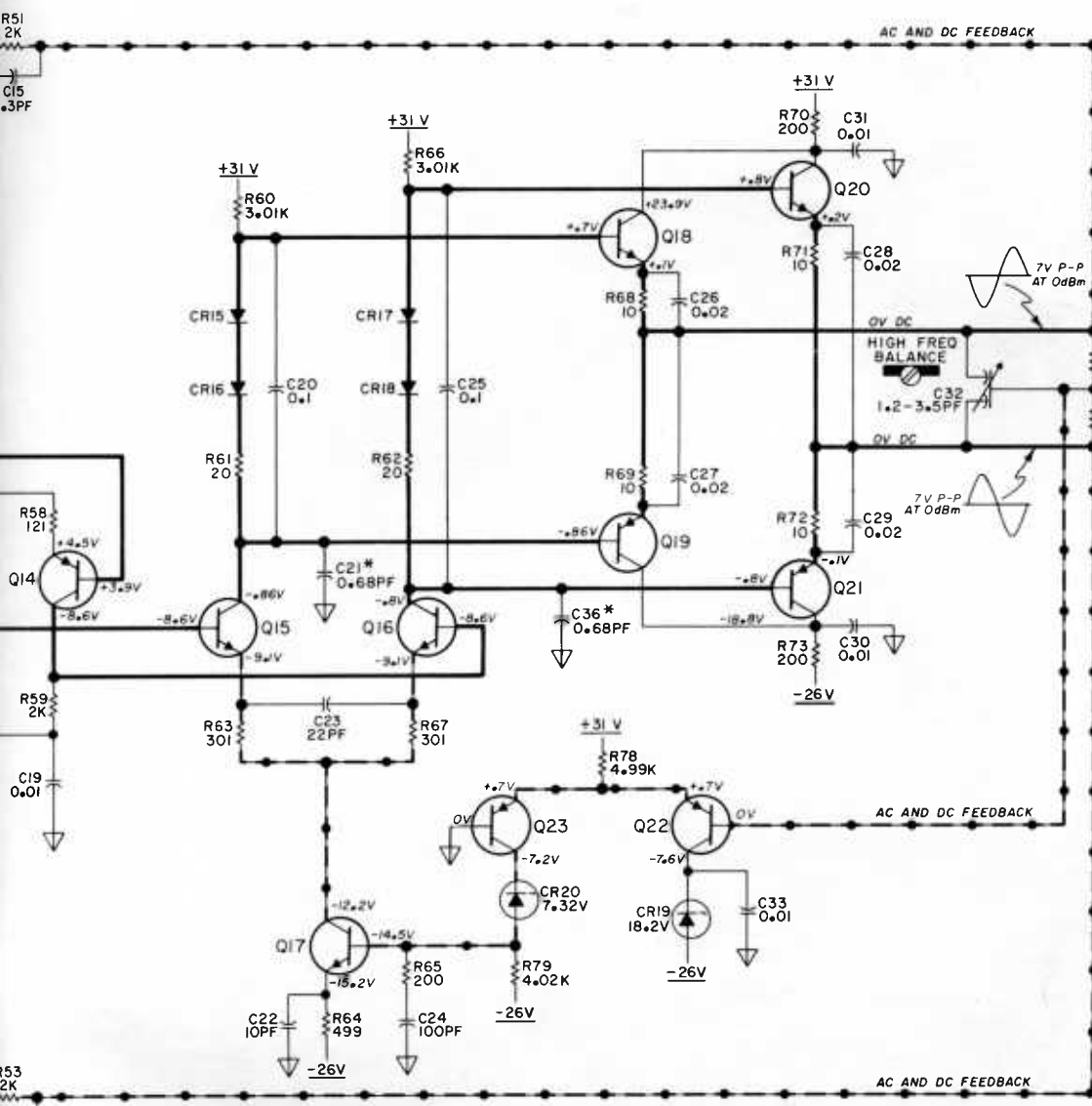
A2 SCHEMATIC COMPONENT LOCATIONS

	Q	C	CR		C		R	C		R		R		R
11	F3			26	D10	41		B17	56	H5	71	D11	86	A15
12	F4			27	E10	42		B16	57	F6	72	F11	87	B15
13	F5		E4	28	D12	43		C14	58	F6	73	H11	88	C15
14	F6		H5	29	F12	44	F2	C17	59	H6	74	E13	89	C16
15	F7	C6	D7	30	F12	45	E3	A15	60	D7	75	E13	90	A15
16	F9	E4	E7	31	C12	46	H3	C15	61	E7	76	D14	91	L14
17	K8	E4	D9	32	E12	47	E3		62	E9	77	E14		
18	D10	L6	E9	33	J11	48	H3		63	H7	78	H10		
19	F10	H6	J10	34	J1	49	E4		64	K8	79	K9		
20	C11	E8	J9	35	K1	50	H4		65	K9	80	---		
21	F11	F8	B17	36	F10	51	C6		66	C9	81	C13		
22	J10	K8	C17	37	---	52	---		67	H9	82	C14		
23	J9	H8	B14	38	C16	53	L6		68	D10	83	C15		
24	C15	K9		39	---	54	J4		69	E10	84	B14		
25	B15	E9		40	B16	55	F5		70	C11	85	B15		

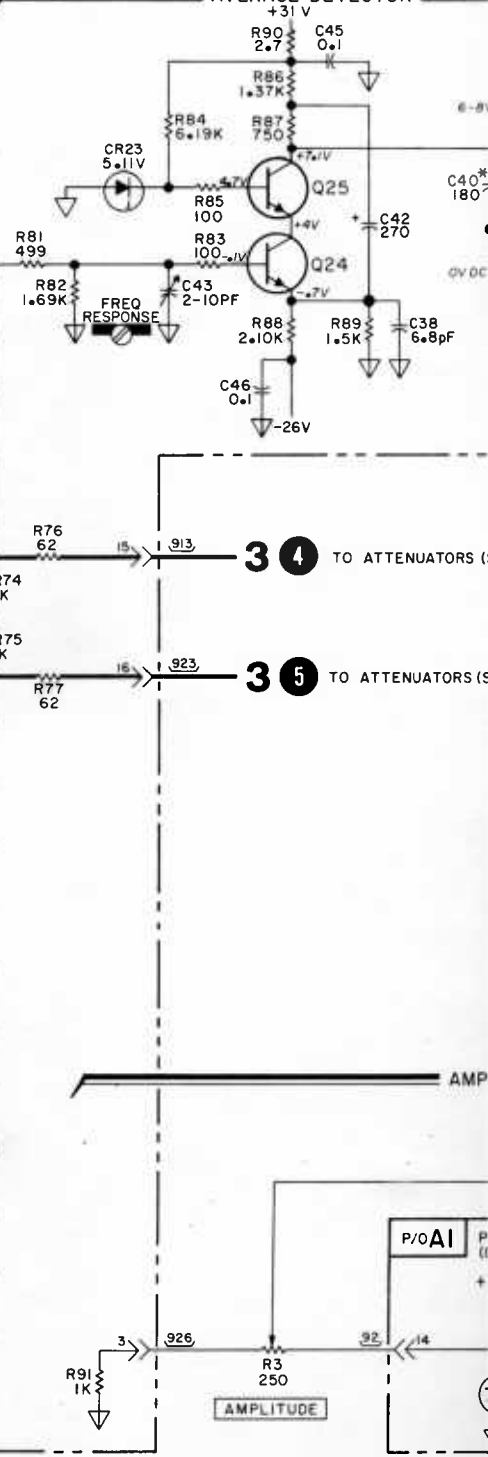
P/O A2 OSCILLATOR AND OUTPUT (00654-66502)



BALANCED AMPLIFIER



AVERAGE DETECTOR

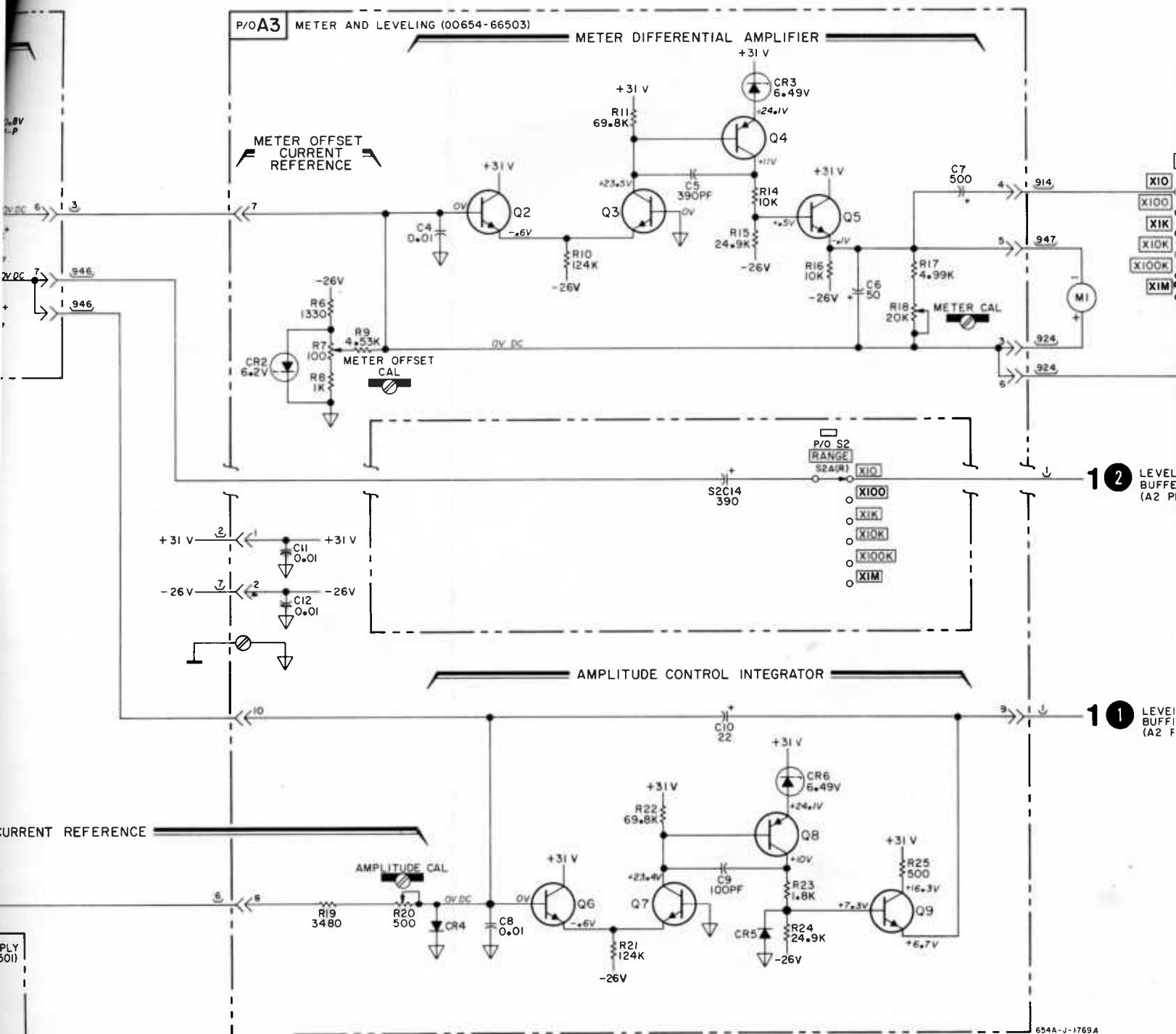


3 4 TO ATTENUATORS (

3 5 TO ATTENUATORS (

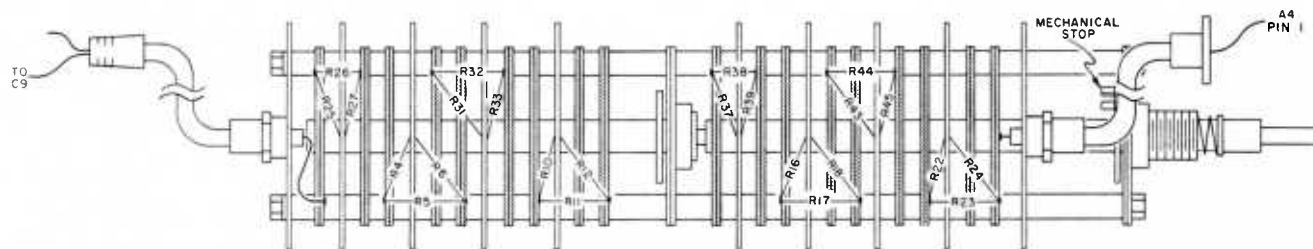
AMP



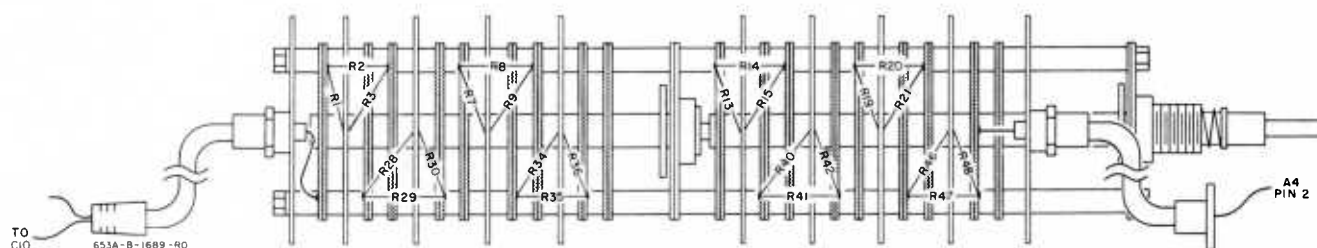


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P/O Figure 7-3. Balanced Amplifier, Meter at A1, A2, A3.

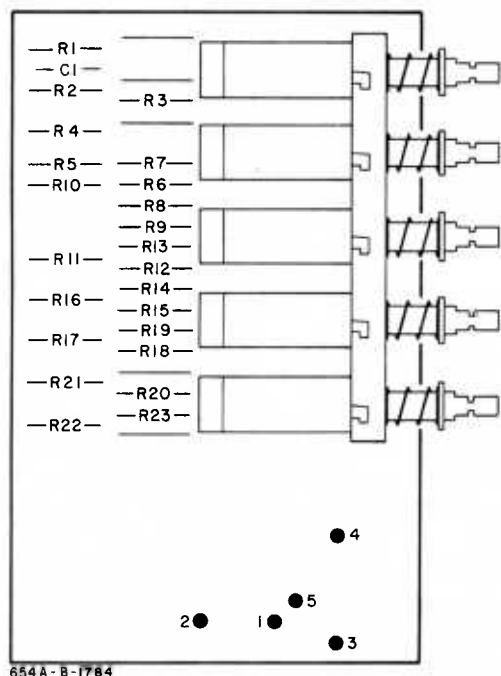


V U T S R P N M L K J H F E D C B A



ATTENUATOR S4

hp Part No. 00654-63401



A4

hp Part No. 00654-66504

NOTES

DC LEVELS WERE OBSERVED UNDER THE FOLLOWING CONDITIONS:

A. 654A.

RANGE - X10K

DIAL - 1

IMPEDANCE -75 UNBAL

OUTPUT LEVEL -+ 10 dBm

AMPLITUDE-SET FOR 0 ON METER.

B. ALL VOLTAGES +/-10%.

C. VOLTAGES WERE TAKEN WITH AN -HP- MODEL 3440A DIGITAL VOLTMETER HAVING A 3443A PLUG-IN. HOWEVER, ANY DC VOLTMETER WITH APPROXIMATELY 10 MEGOHMS INPUT IMPEDANCE WILL YIELD ABOUT THE SAME RESULTS.

FROM THE
BALANCED
AMPLIFIER

4 2

913

C9
4000

S4 ATTENUATORS

1dB STEPS

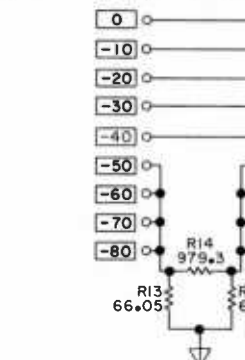
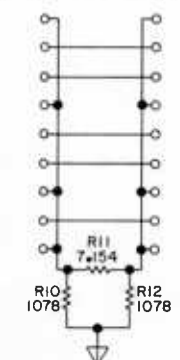
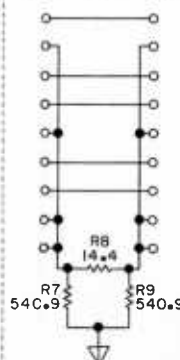
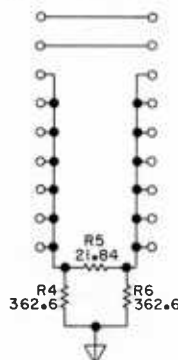
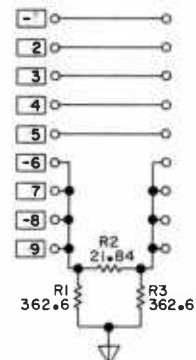
3dB PAD

3dB PAD

2dB PAD

1dB PAD

30dB PAD



- 0
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80

FROM THE
BALANCED
AMPLIFIER

5 2

923

C10
4000

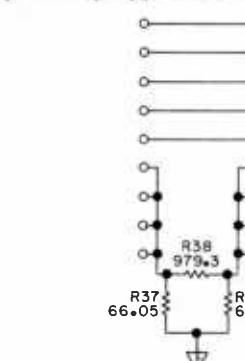
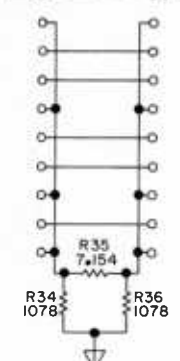
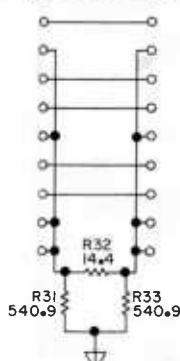
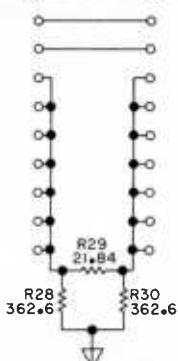
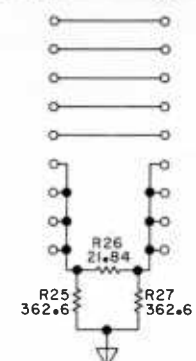
3dB PAD

3dB PAD

2dB PAD

1dB PAD

30dB PAD



654A-J-1774A

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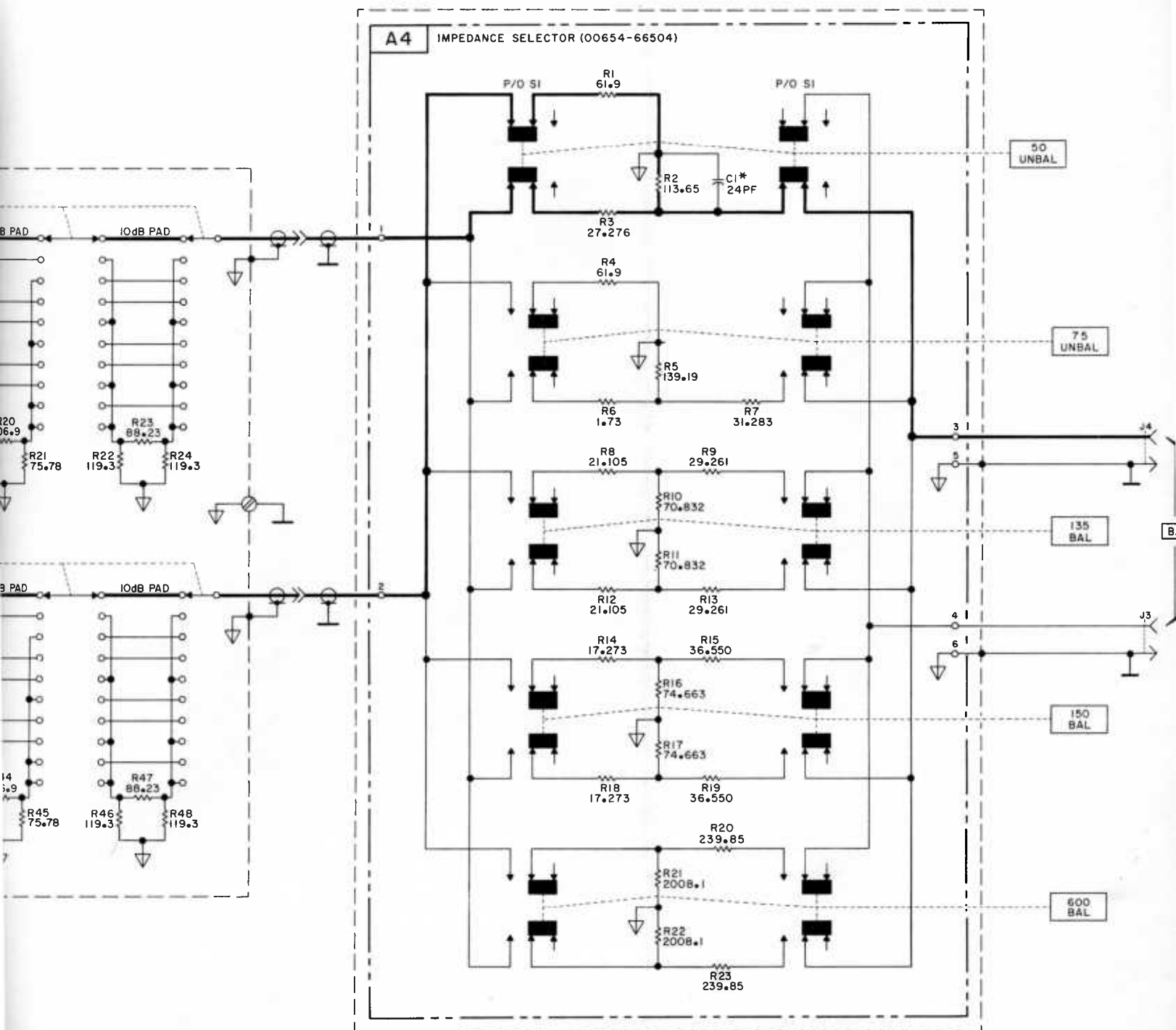
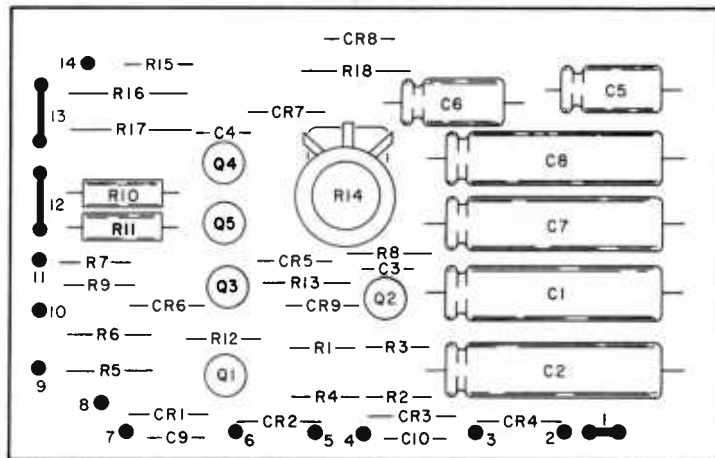


Figure 7-4. Attenuators and Impedance Selector
S4, A4.



AI
hp Part No. 00654-66501

NOTES

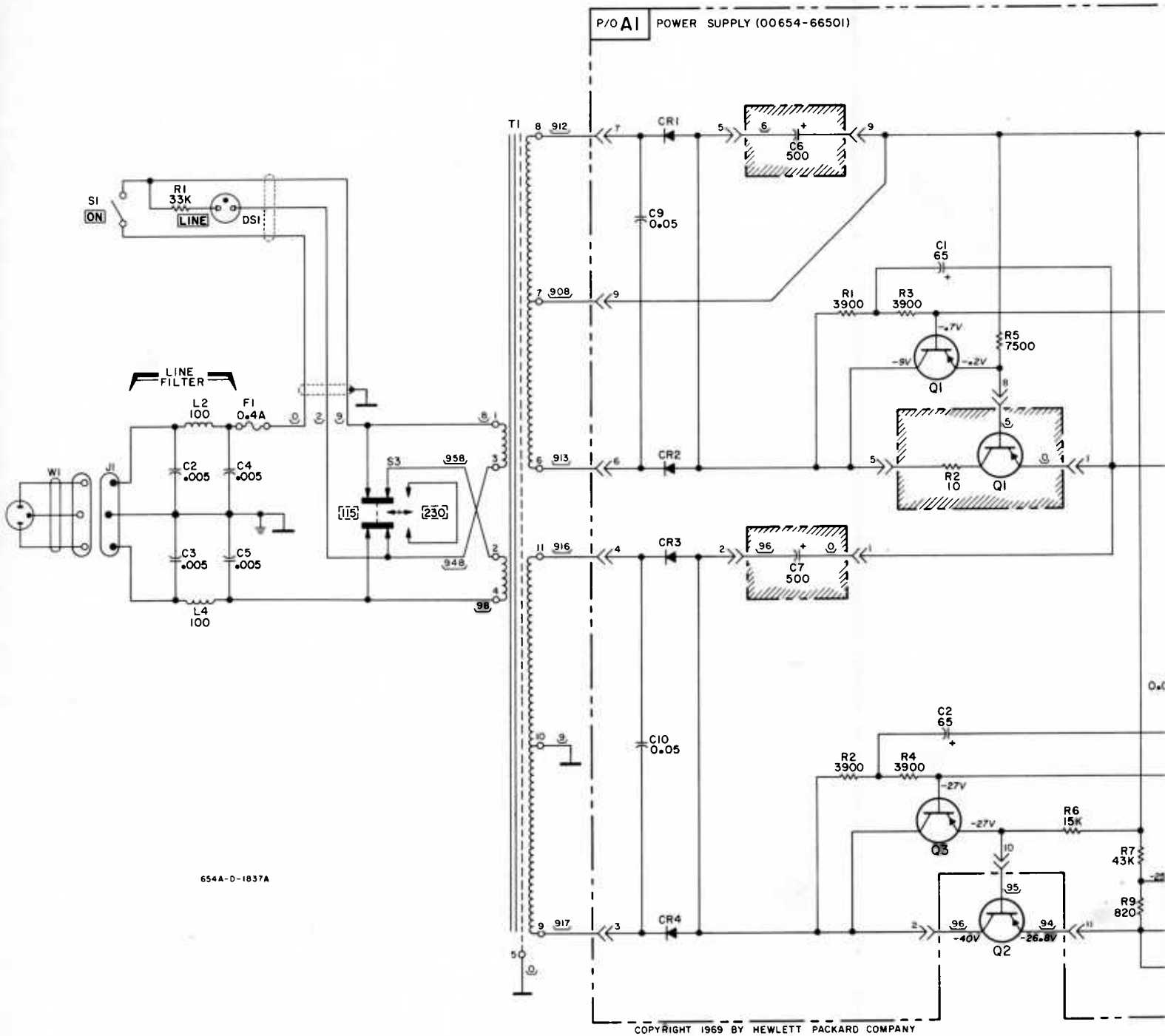
DC LEVELS WERE OBSERVED UNDER THE FOLLOWING CONDITIONS:

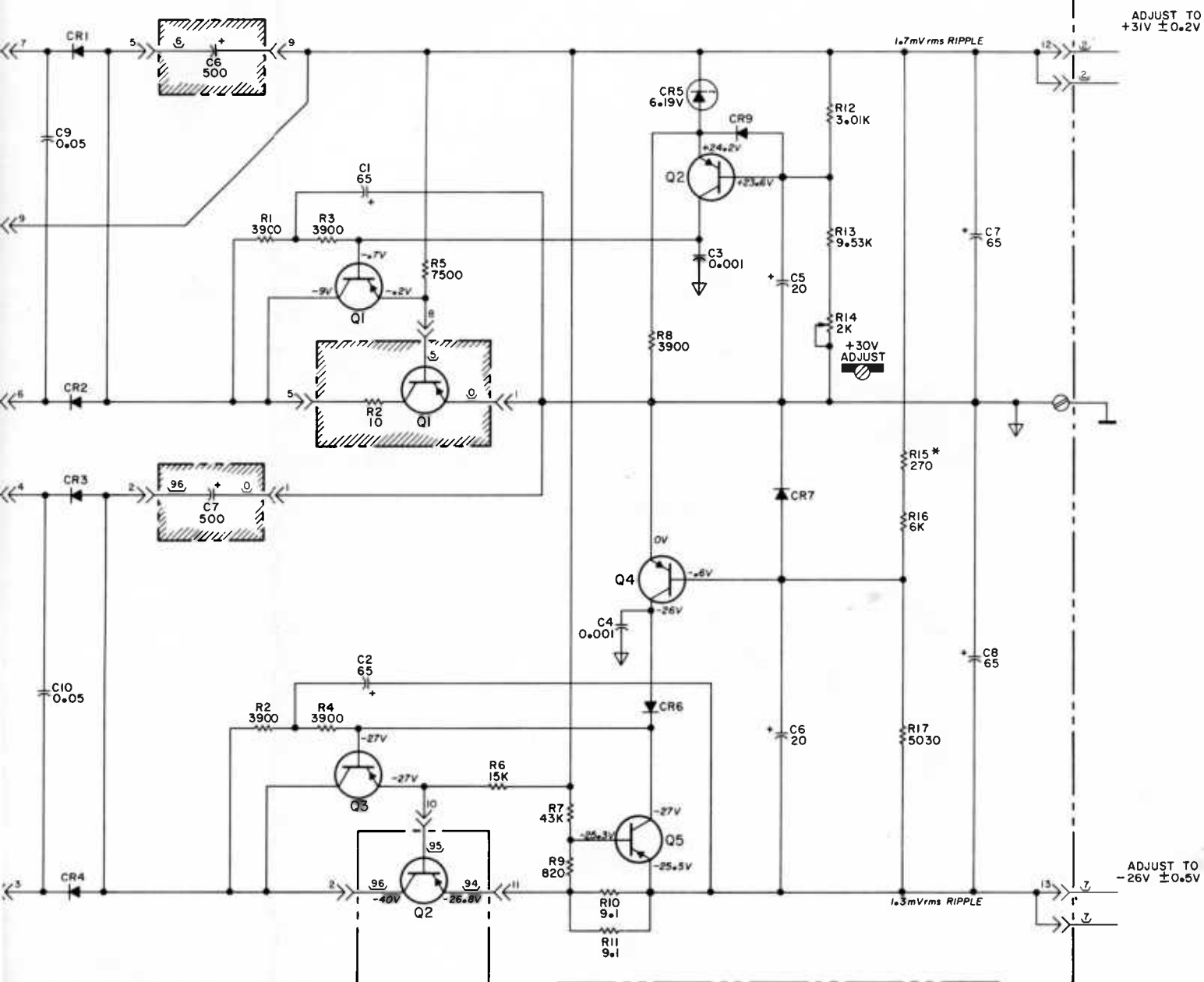
A. 654A.

RANGE - X10K
DIAL - 1
IMPEDANCE - 75 UNBAL
OUTPUT LEVEL - + 10 dBm
AMPLITUDE - SET FOR 0 ON METER.

B. ALL VOLTAGES +/- 10%.

C. VOLTAGES WERE TAKEN WITH AN HP MODEL 3440A DIGITAL VOLTMETER HAVING A 3443A PLUG-IN. HOWEVER, ANY DC VOLTMETER WITH APPROXIMATELY 10 MEGOHMS INPUT IMPEDANCE WILL YIELD ABOUT THE SAME RESULTS.





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