

HEWLETT-PACKARD  
Service Manual  
Book 2

8642A/B

SECTION 8 (continued)

Module Level Service

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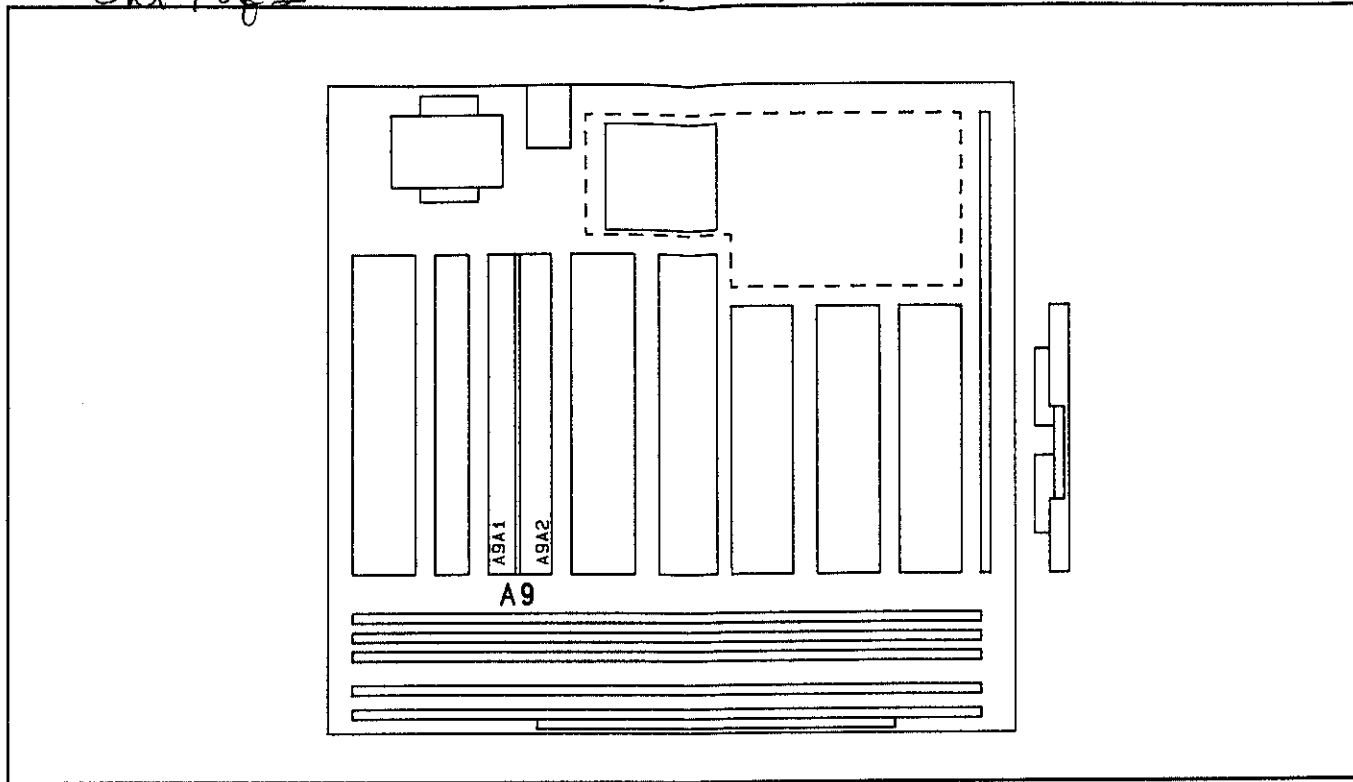
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A9 IF Loop Module

FIG. 8M-100  
Sht 1 of 2

Assembly Locator



Simplified Block Diagram

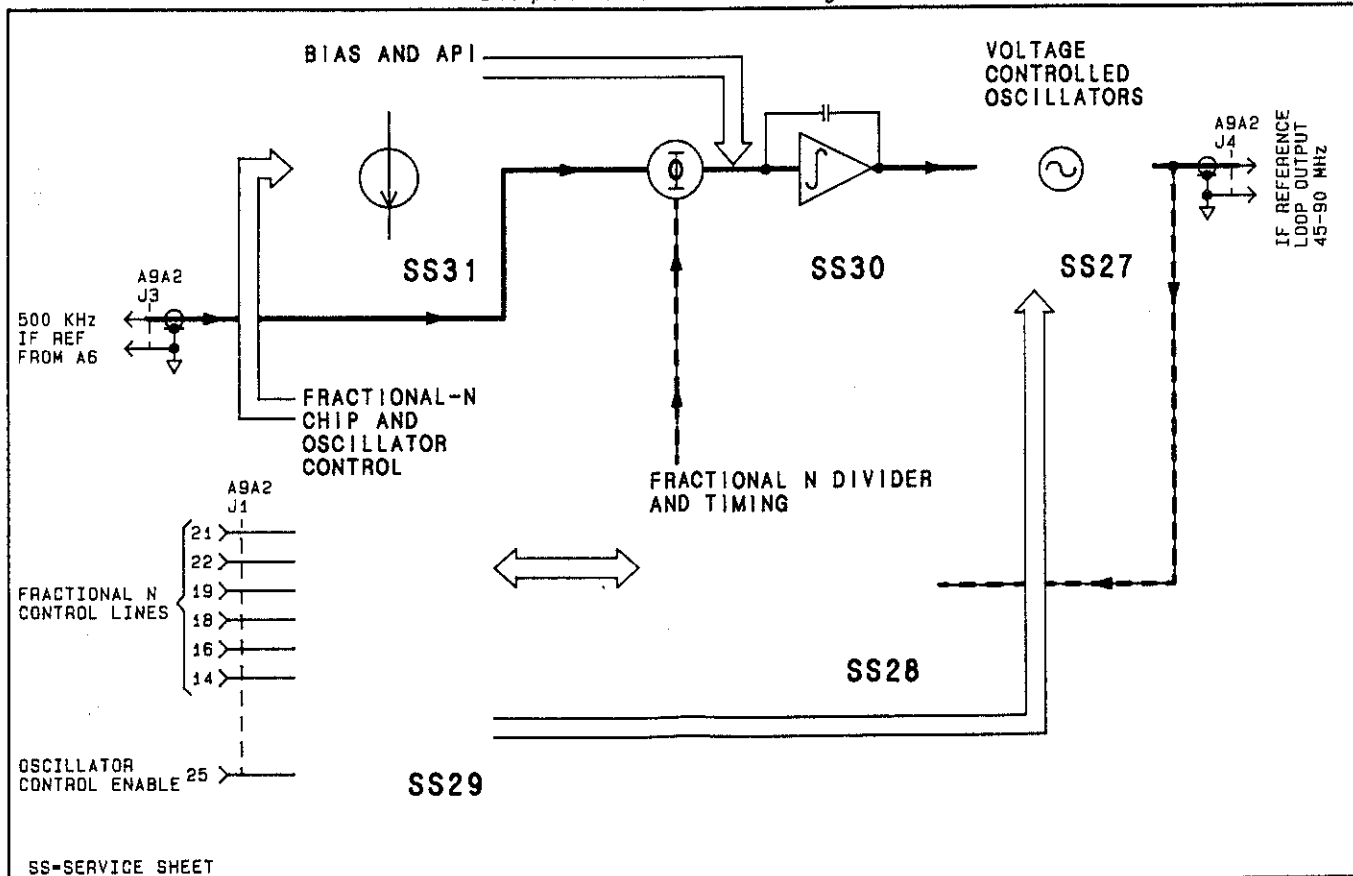


Figure 8M-100 BD10 General Information.

FIG 8M-100

Module Test Point/Adjustment Locations

SWT 2 of 2

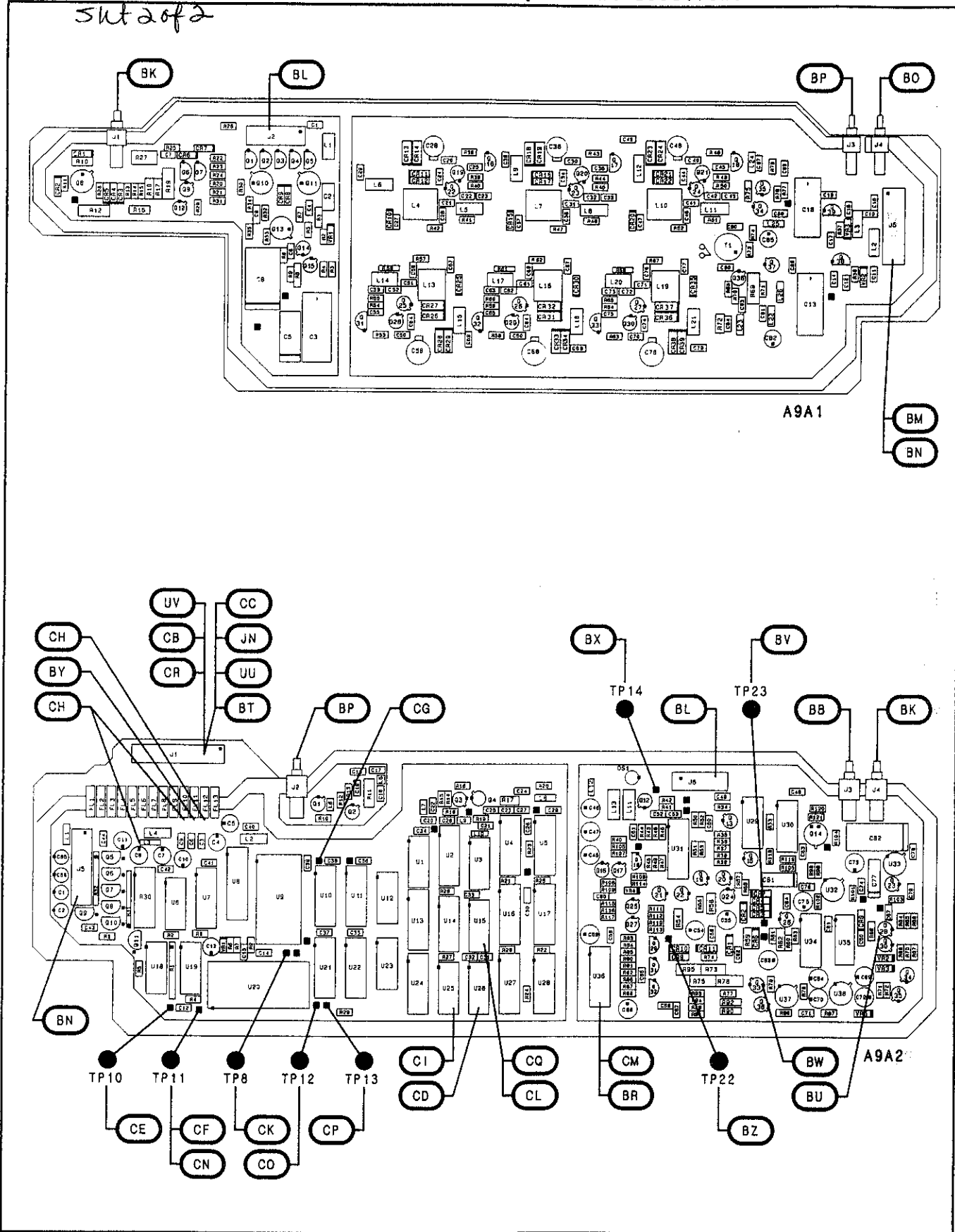
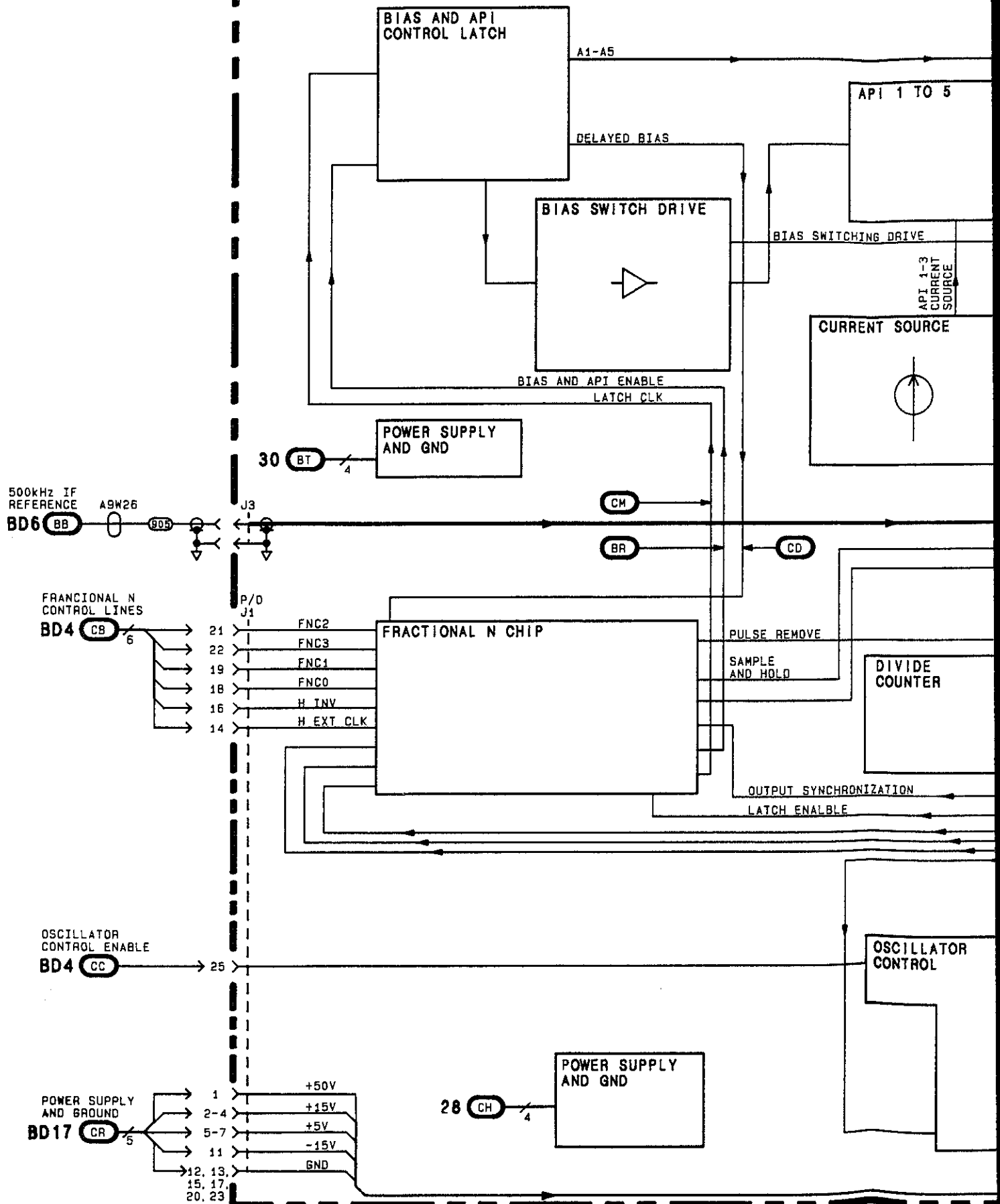


FIG. 8M-101  
 Sht 1 of 5

A9A2 FRACTIONAL-N ASSEMBLY (08642-60105)



SERIAL PREFIX: 2427A

FIG. 8M-101  
Sht 2 of 5

SS31 SS29 P/O 08642-60003

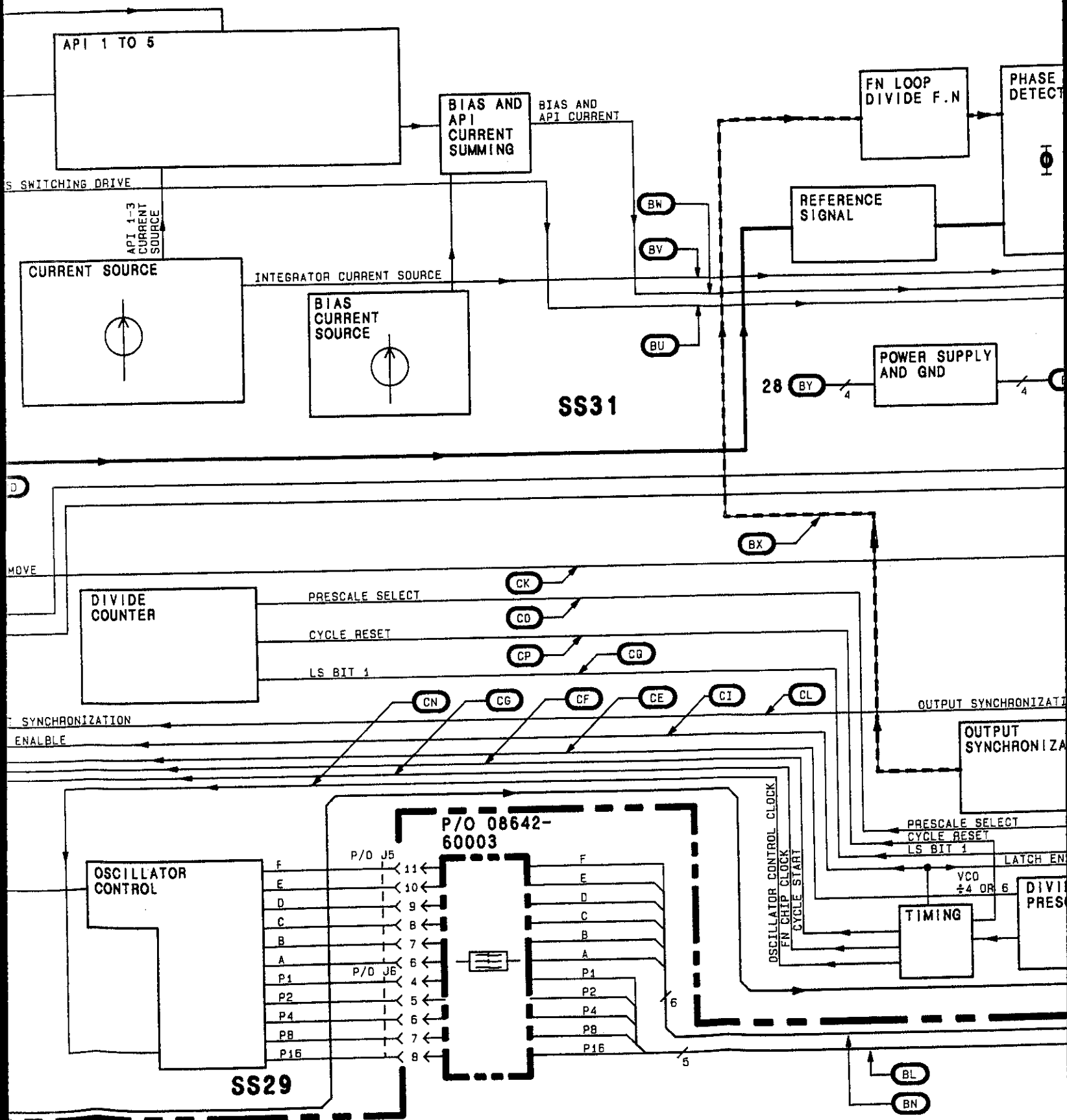


FIG. 8M-101, Sht 3 of 5

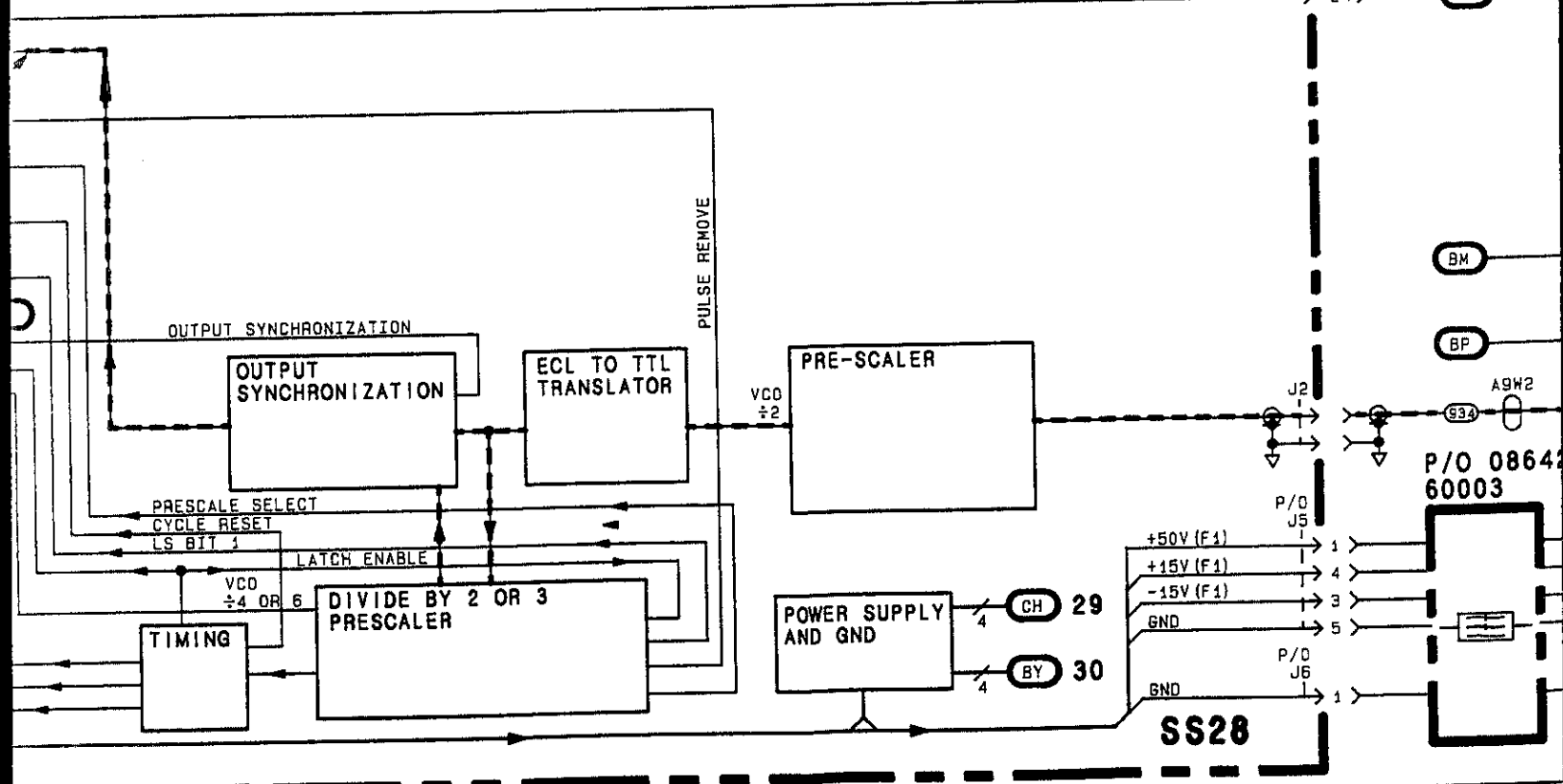
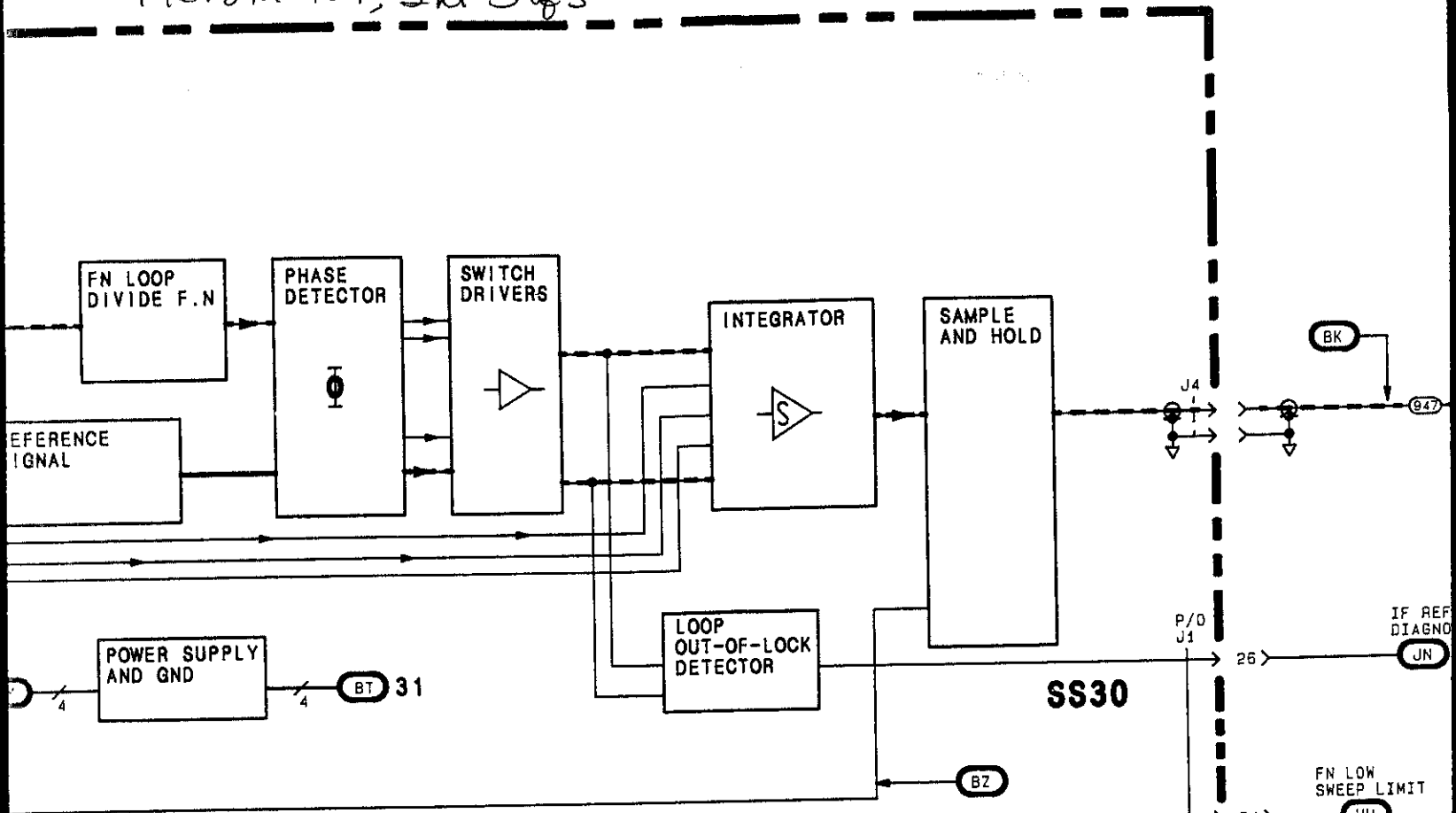




FIG. 8M-101  
Sht 4 of 5

A9A1 IF VCO ASSEMBLY (08642-60104)

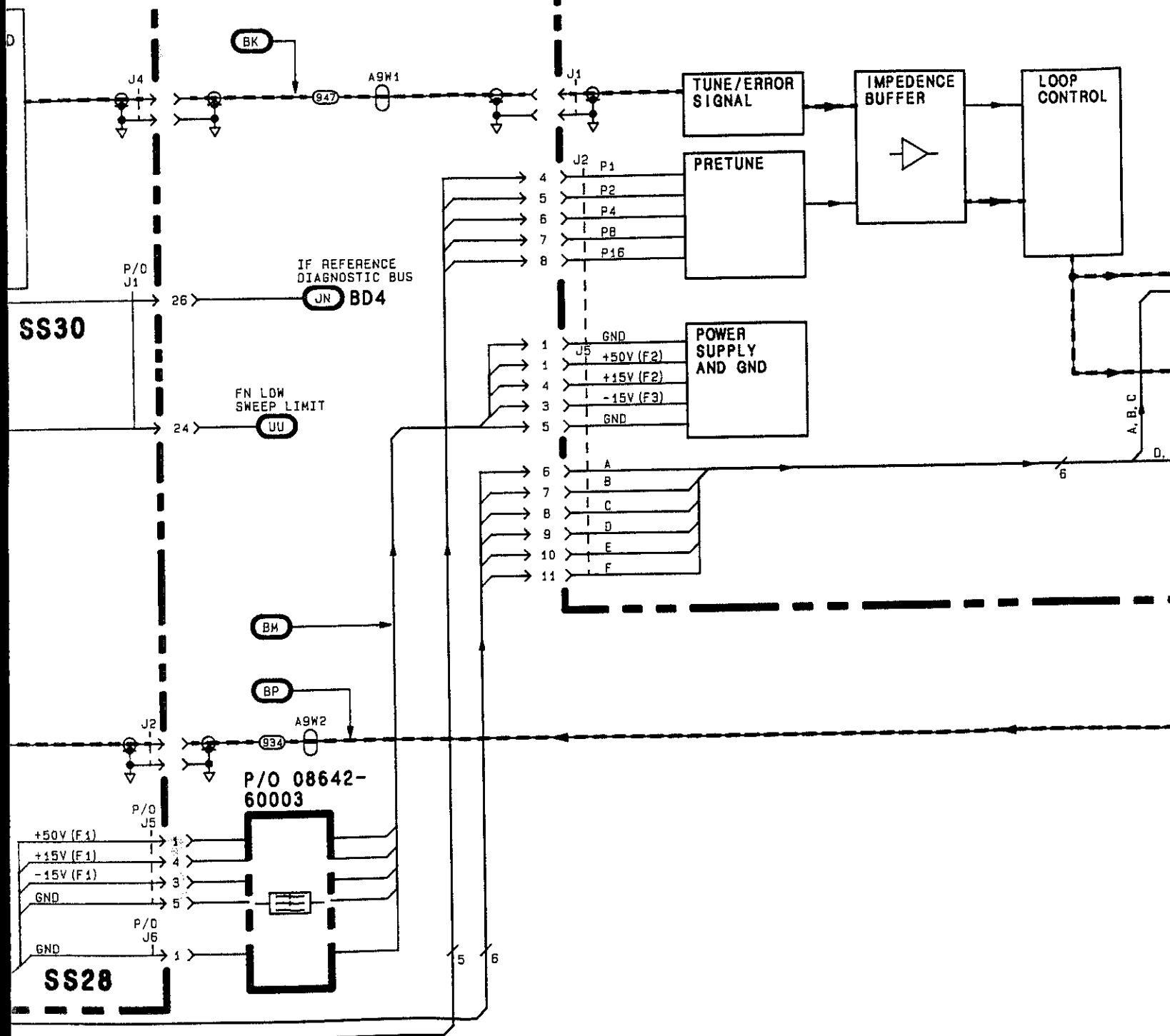
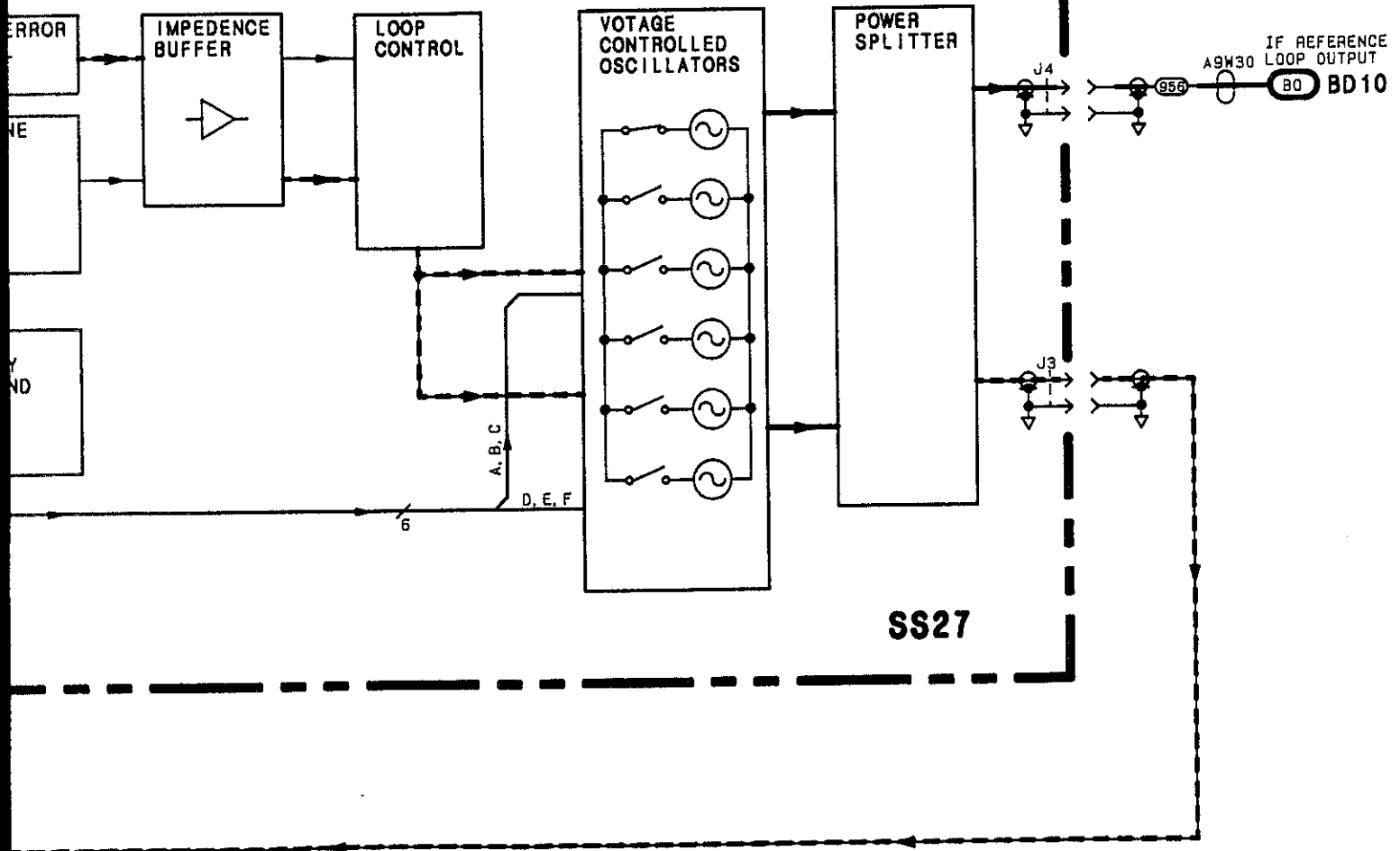


FIG. 8M-101  
Sht 5 of 5

SEMBLY (08642-60104)



**BD10**  
Figure 8M-101  
8M-101

FIG. 8M-102  
 Sht 1 of 5

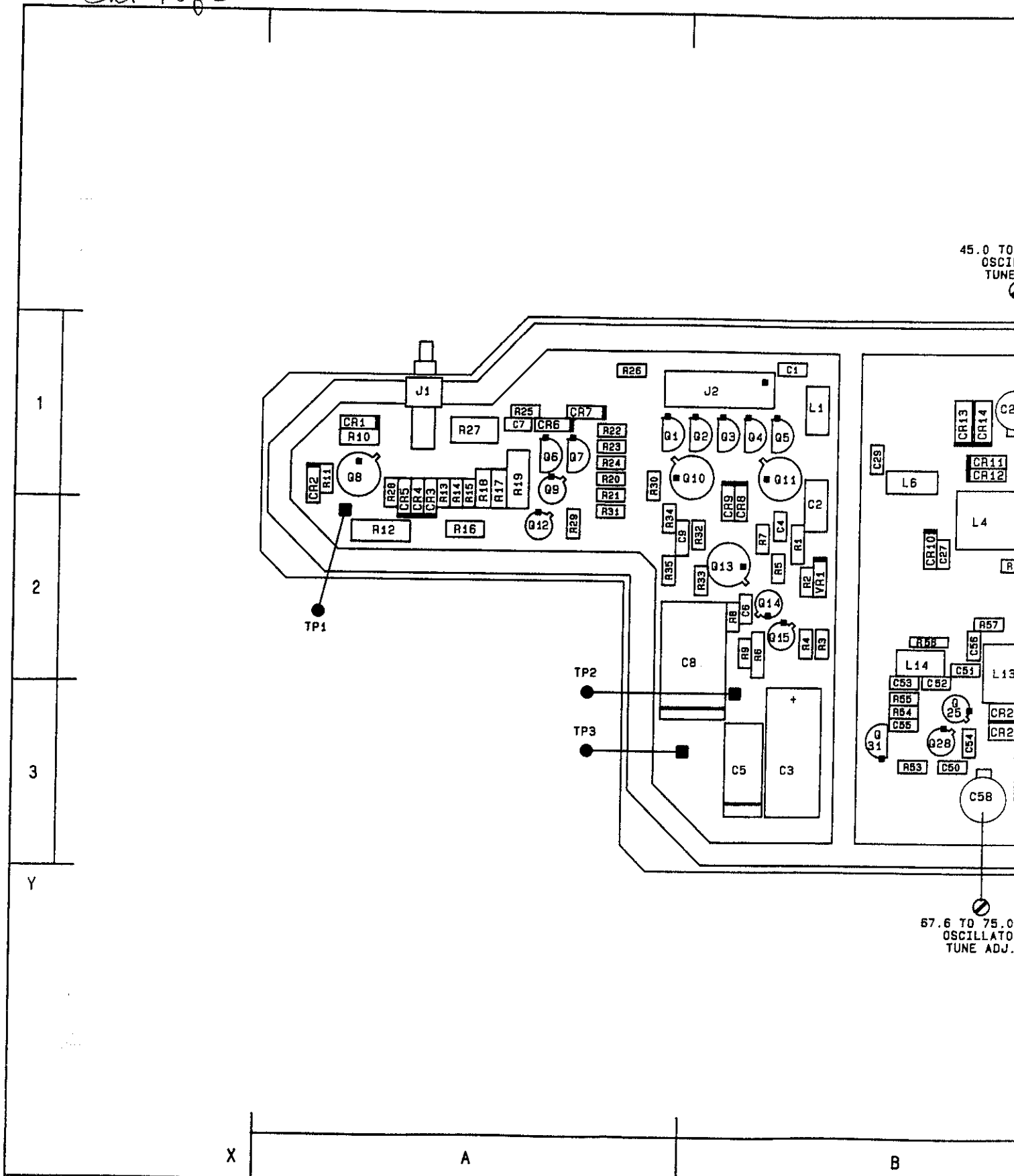


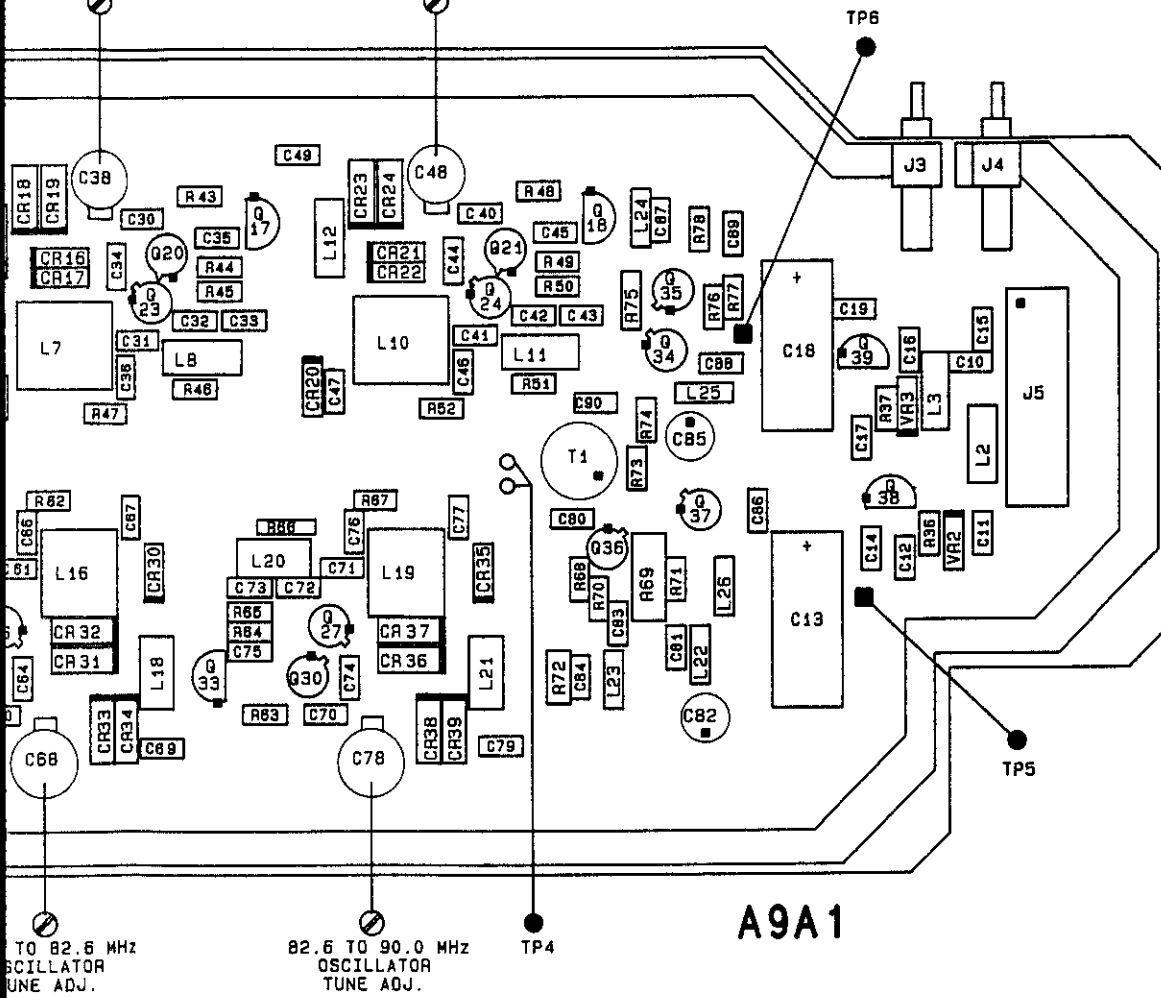
Figure 8M-102. SERVICE SHEET 27 INFORMATION



FIG. 8M-102  
Sht 3 of 5

52.6 TO 60.0 MHz  
OSCILLATOR  
TUNE ADJ.

60.0 TO 67.6 MHz  
OSCILLATOR  
TUNE ADJ.



A9A1

C

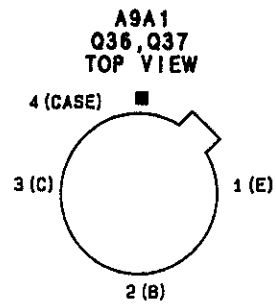
D

for



**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

**CHANGES****All Serial Prefixes**

On the component locator:

- C85 - Delete C85.

In component coordinates:

- C85 - Delete C85.

On the schematic:

- C9 - In **LOOP CONTROL**, change C9 to 0.047 $\mu$ .
- C28, C38, C48 - In **VOLTAGE CONTROLLED OSCILLATORS**, change C28, C38, and C48 (all labeled "OSCILLATOR TUNE ADJUST") ranges to span 1.7 to 7.4p.
- C85 - In **POWER SPLITTER**, delete C85. In the same location, change +15V(F2) to +15V(F3).
- C30, C31, C32 - In **VOLTAGE CONTROLLED OSCILLATORS**, under the "52.6-60.0 MHz bracket, change C30 and C31 to 6.8p. In the same location, change C32 to 10p.

**2615A and above**

On the schematic:

- C70 - In **VOLTAGE CONTROLLED OSCILLATORS**, under the "82.6 - 90.0 MHz bracket, change C70 from 2.7p to 2.2 pF.
- C71 - In **VOLTAGE CONTROLLED OSCILLATORS**, under the "82.6 - 90.0 MHz bracket, change C71 from 2.7p to 3.3 pF.
- R78 - In the lower portion of **POWER SPLITTER**, connect the base of Q35 to ground and delete R78.



FIG. 8M-103 A9A1 IF VCO ASSEMBLY (08642-60104)

Sheet 1 of 5

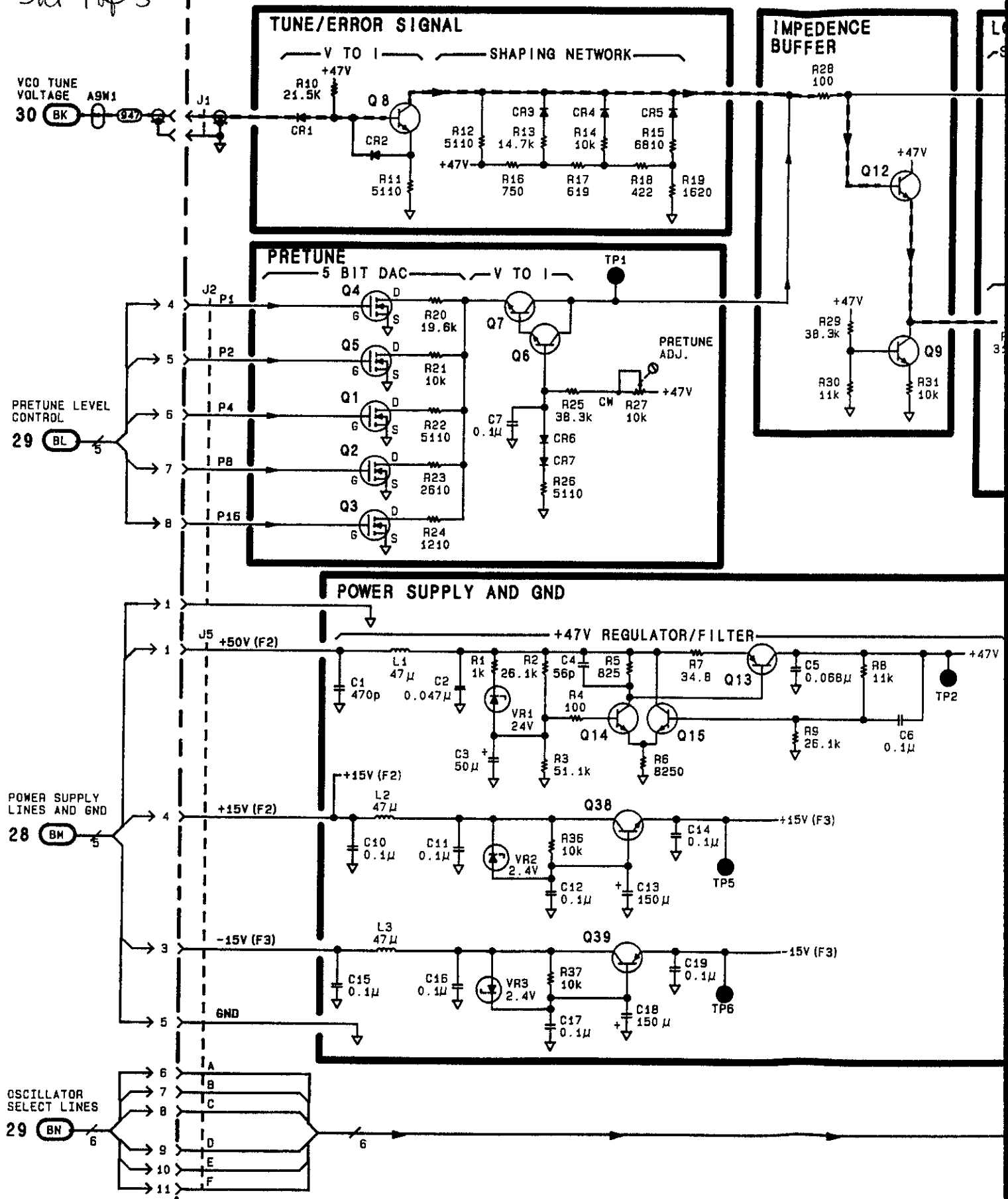


FIG. 8M-103  
Sht 2 of 5

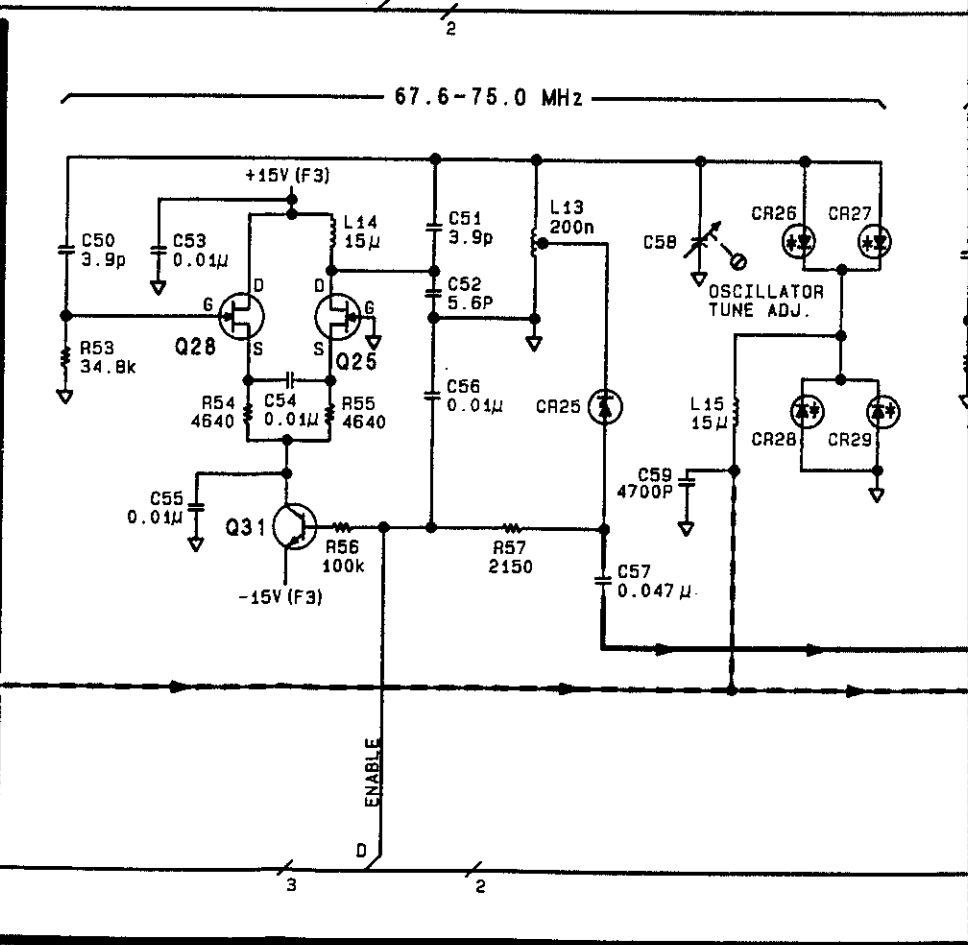
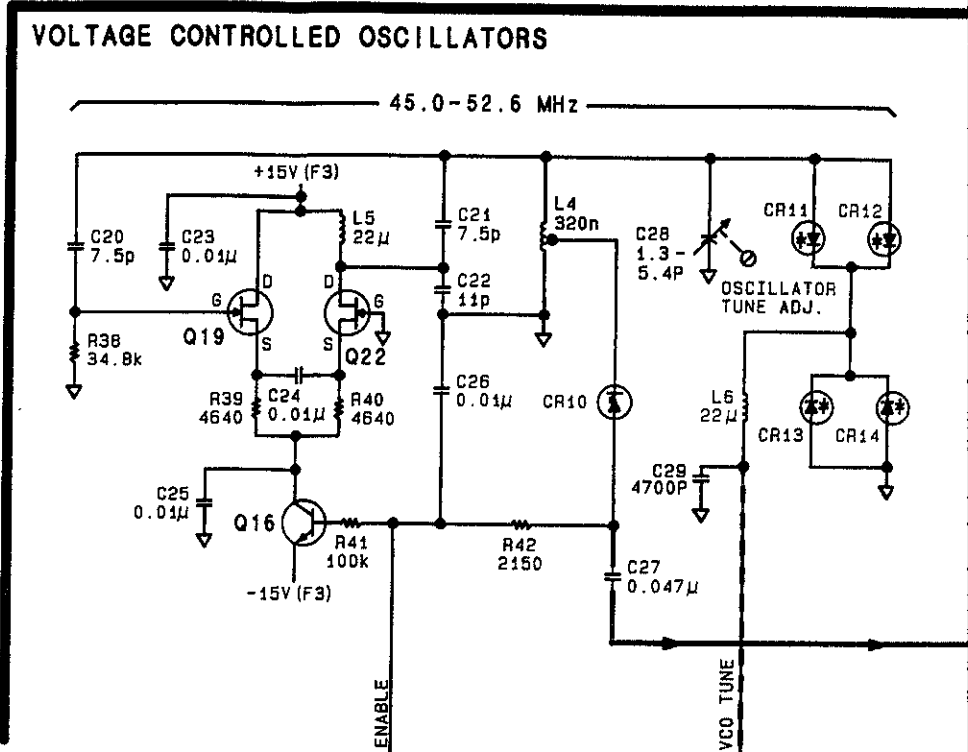
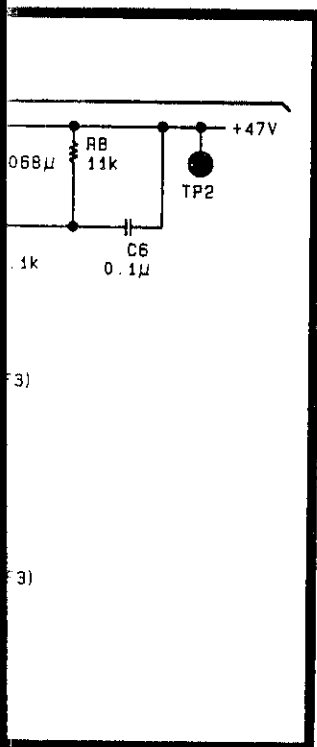
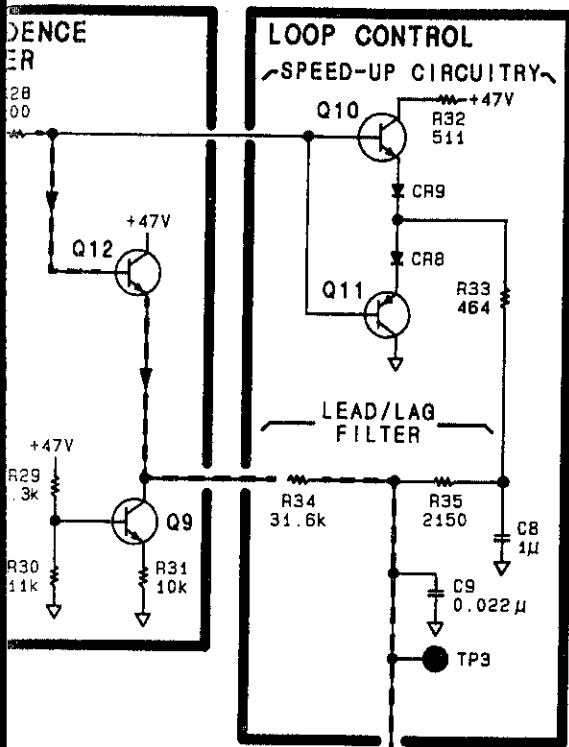
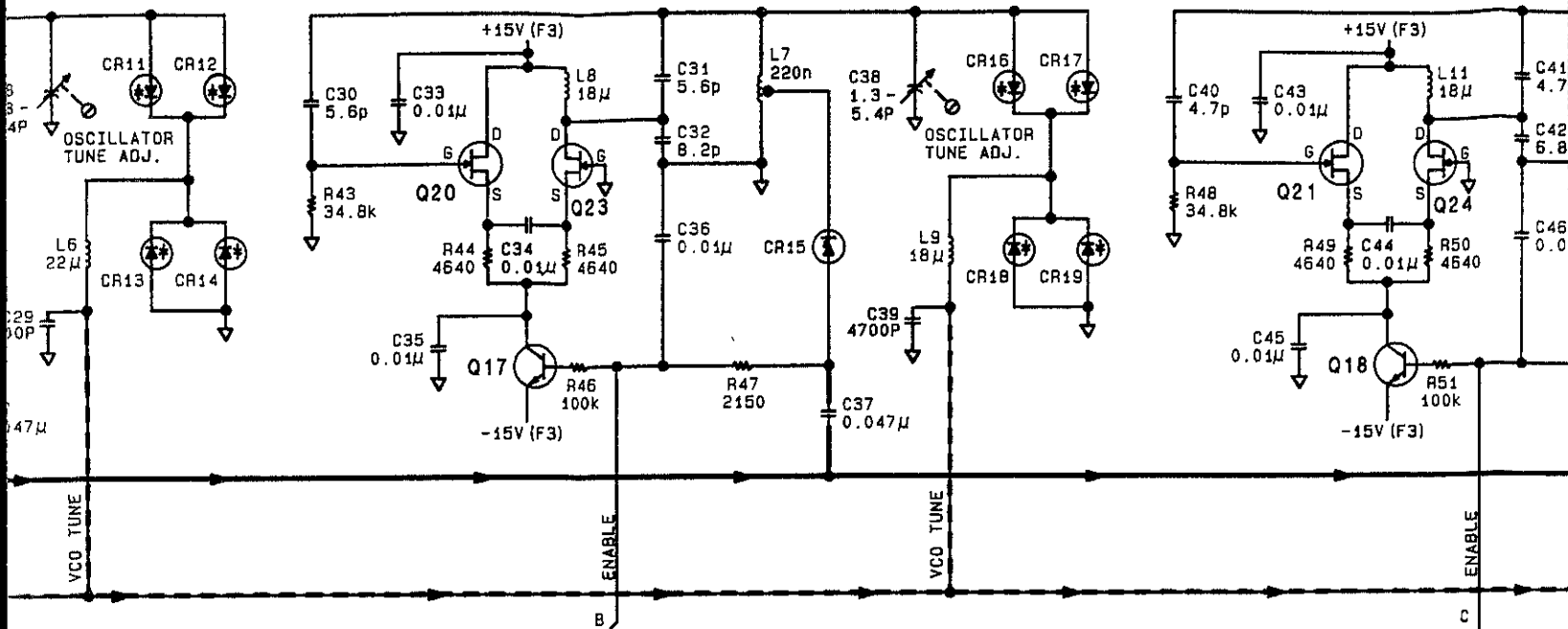


FIG. 8M-1D3  
 Sht 3 of 5

52.6-60.0 MHz

60.0-6



75.0-82.6 MHz

82.6-9

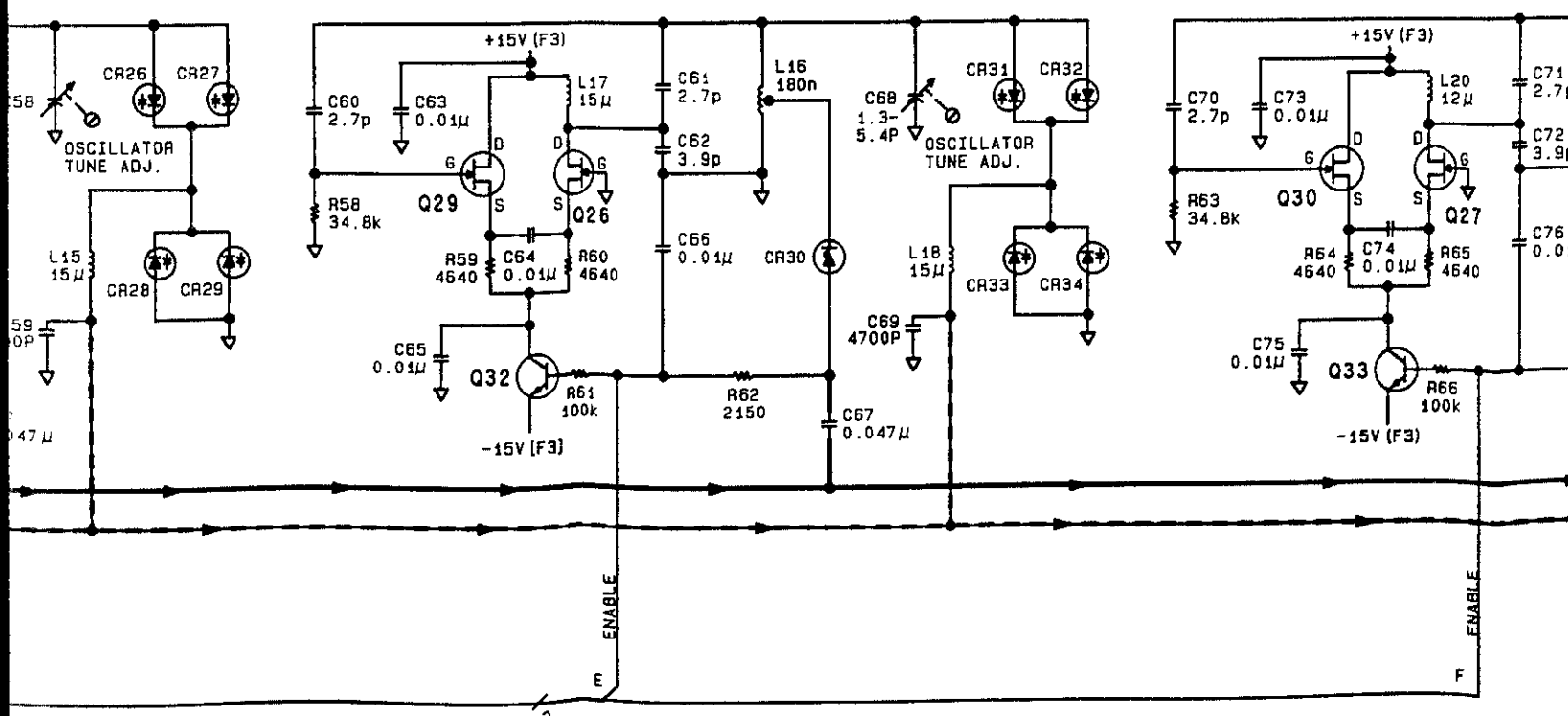
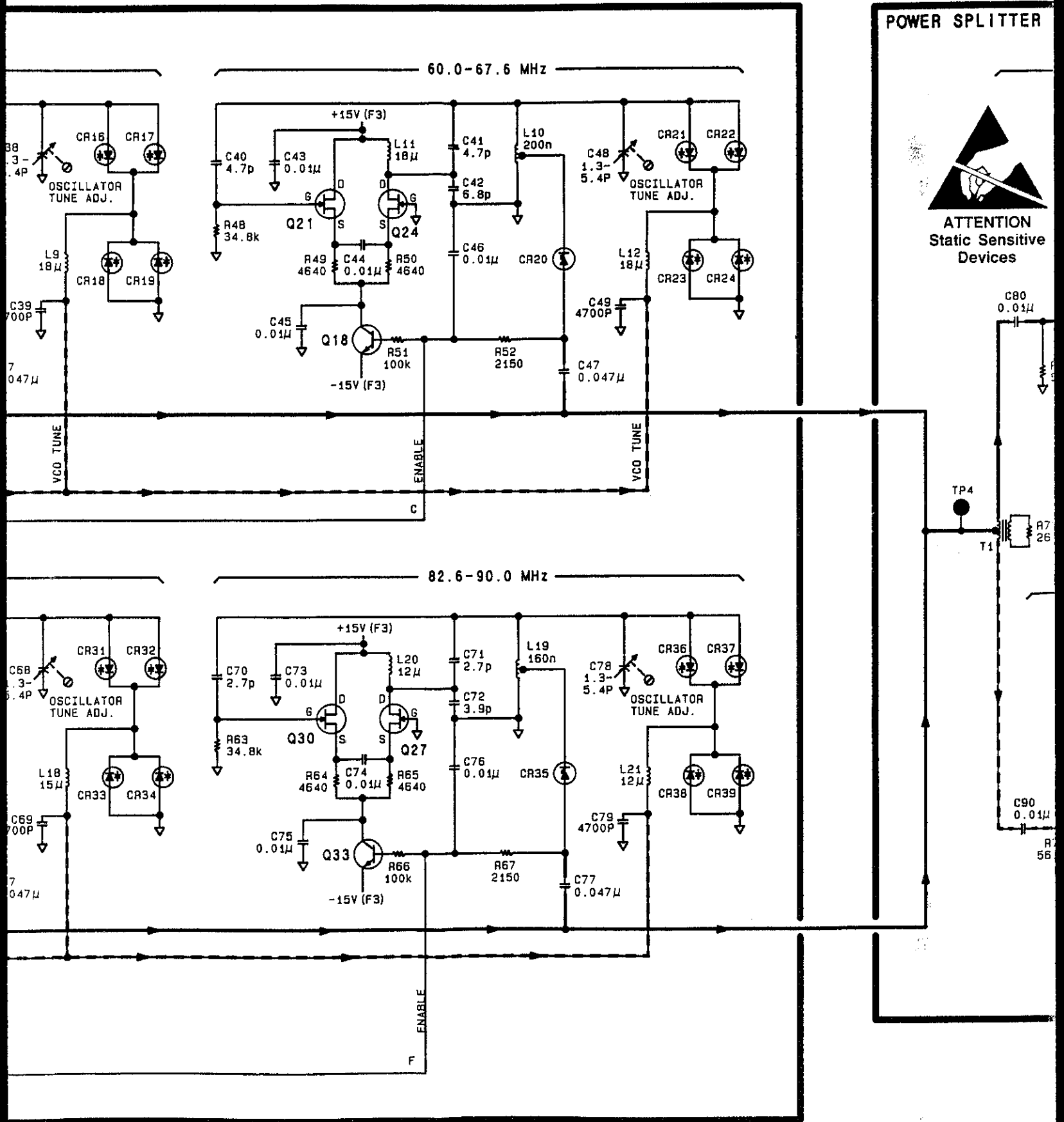


FIG. 8M-103  
 Sht 4 of 5

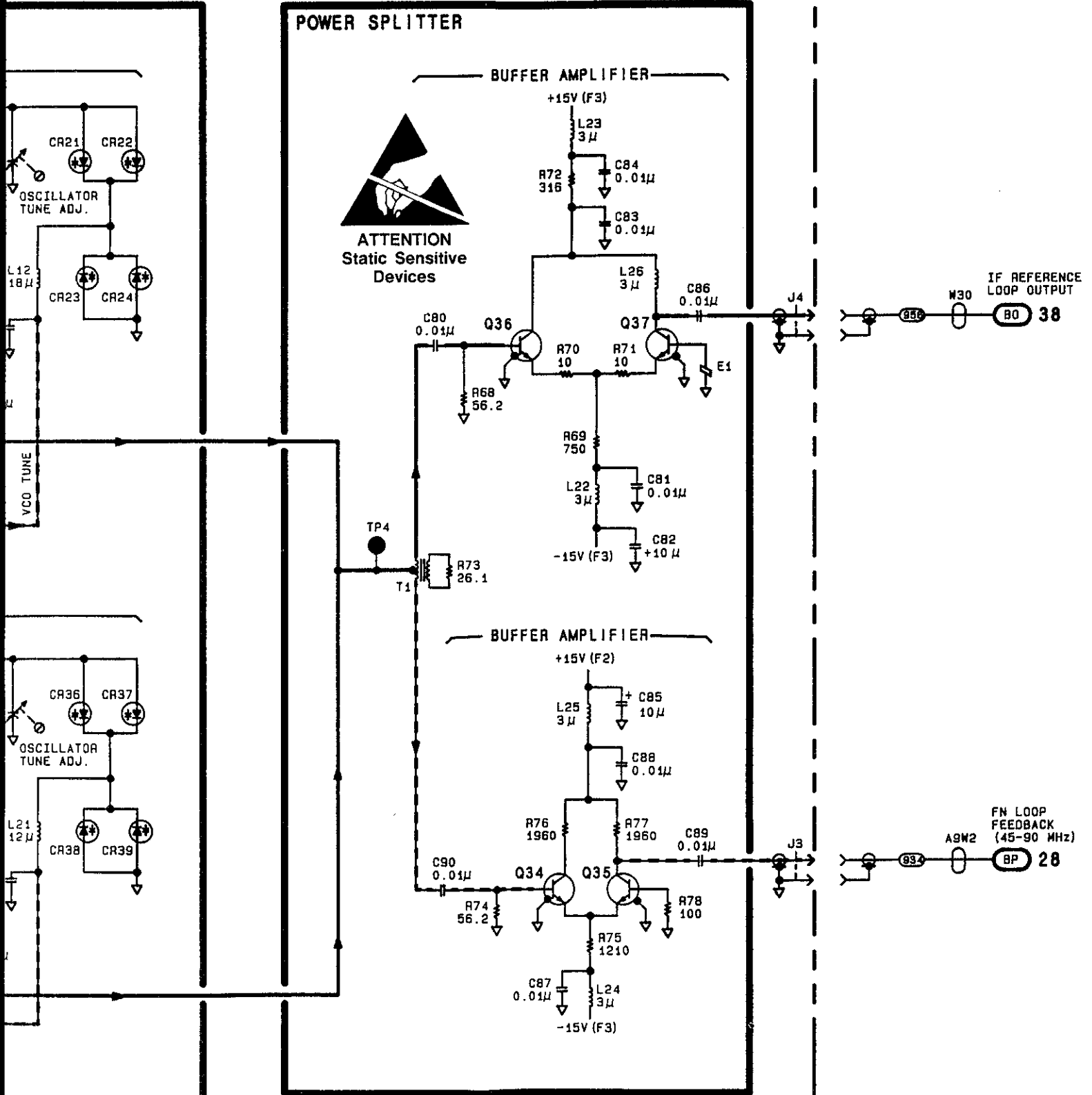


POWER SPLITTER



ATTENTION  
 Static Sensitive  
 Devices

FIG. 8M-103  
 3M 5 of 5



SS27

Figure 8M-103  
 8M-103

FIG. 8M-104  
Sht 1 of 5

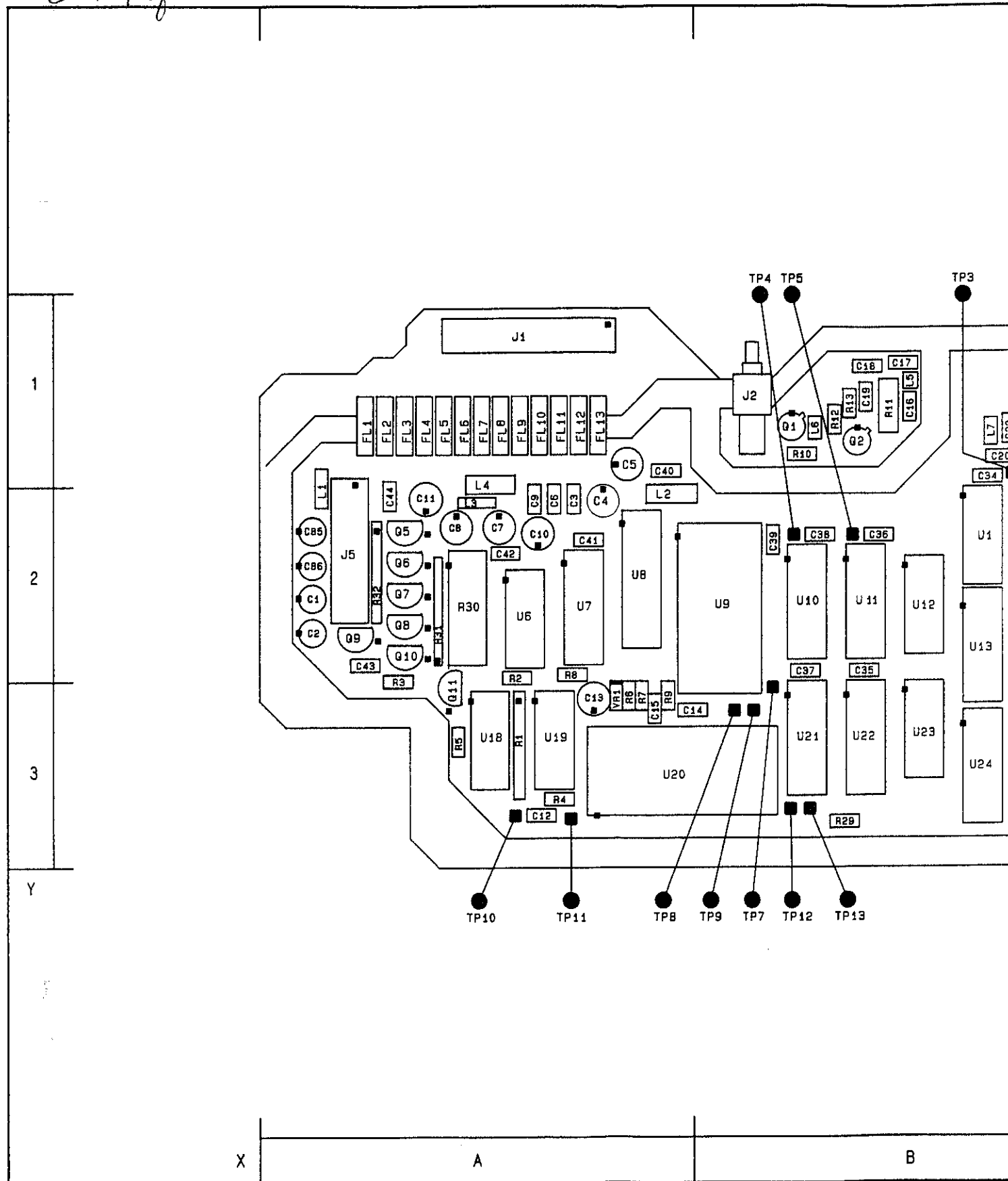
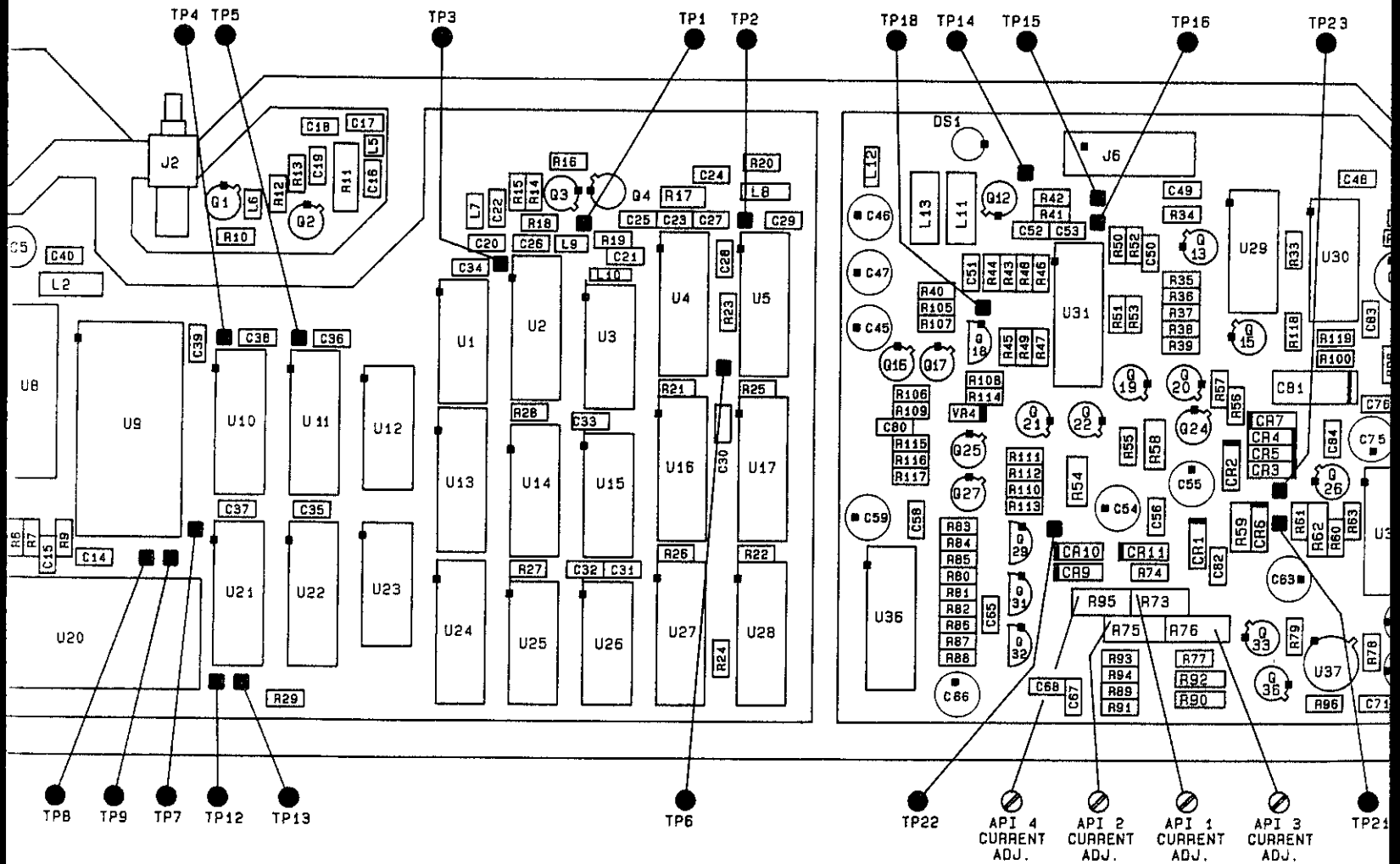


Figure 8M-104. SERVICE SHEET 28 INFORMATION

FIG. 8M-104  
 SMT 2 of 5

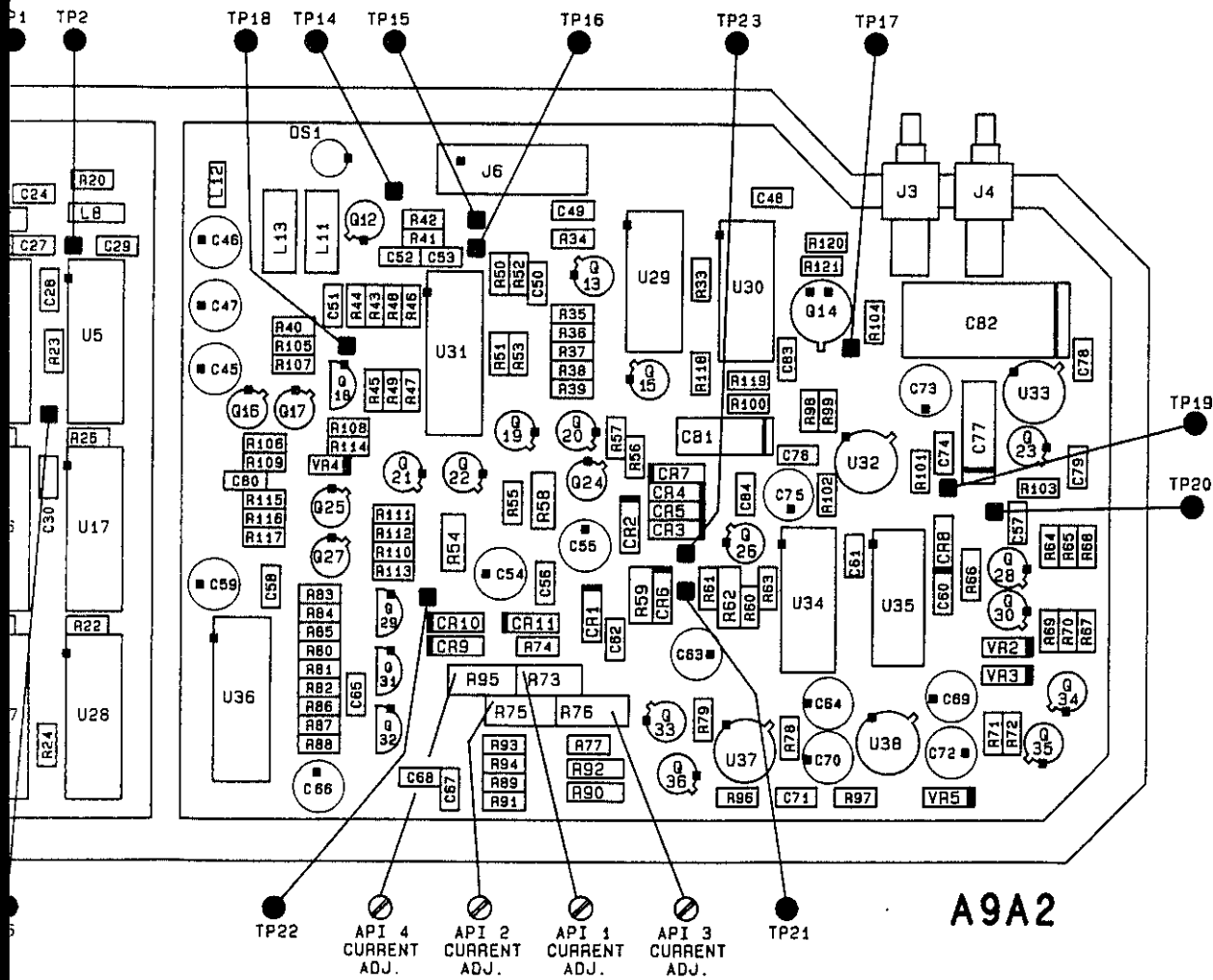


B

C

Component Locator

FIG. 8M-104  
 Sht 3 of 5



A9A2

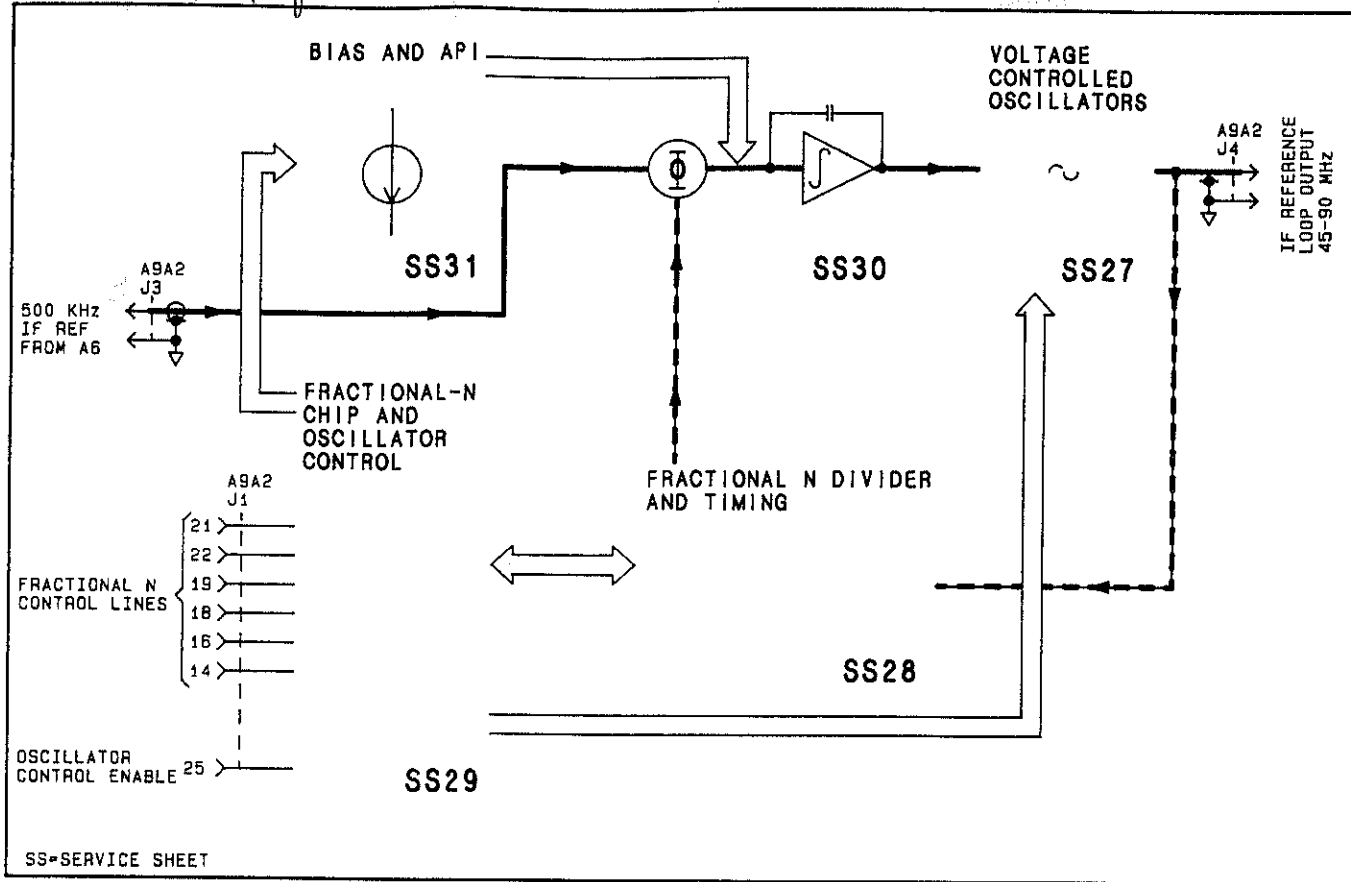
C

D

ator



FIG. 8M-104  
Sht 4 of 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	A, 2	J1	A, 1	TP1	B, 1												
C2	A, 2	J2	B, 1	TP2	C, 1												
C3	A, 2	J5	A, 2	TP3	B, 1												
C4	A, 2	J6	C, 1	TP4	B, 2												
C5	A, 1			TP6	C, 2												
C6	A, 2	L1	A, 2	TP8	B, 3												
C7	A, 2	L2	A, 2	TP10	A, 3												
C8	A, 2	L3	A, 2	TP11	A, 3												
C9	A, 2	L4	A, 1														
C10	A, 2	L5	B, 1	U2	B, 2												
C11	A, 2	L6	B, 1	U3	B, 2												
C16	B, 1	L7	B, 1	U4	C, 2												
C17	B, 1	L8	C, 1	U5	C, 2												
C18	B, 1	L9	B, 1	U15	B, 2												
C19	B, 1	L10	B, 1	U16	C, 2												
C20	B, 1			U17	C, 2												
C21	B, 1	Q1	B, 1	U26	B, 3												
C22	B, 1	Q2	B, 1	U27	C, 3												
C23	C, 1	Q3	B, 1	U28	C, 3												
C24	C, 1	Q4	B, 1														
C25	B, 1																
C26	B, 1	R10	B, 1														
C27	C, 1	R11	B, 1														
C28	C, 1	R12	B, 1														
C29	C, 1	R13	B, 1														
C30	C, 2	R14	B, 1														
C85	A, 2	R15	B, 1														
C86	A, 2	R16	B, 1														
FL10	A, 1	R17	C, 1														
FL11	A, 1	R18	B, 1														
FL12	A, 1	R19	B, 1														
FL13	A, 1	R20	C, 1														
		R21	C, 2														
		R22	C, 3														
		R23	C, 2														
		R24	C, 3														
		R25	C, 2														

SEE REVERSE SIDE

A9A1 IF VCO ASSEMBLY **SS27**

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A9 FL1, A9 FL2 are low pass feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.
3. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

Schematic General Information

FIG. 8M-205  
Sht 1 of 5

P/O A9A2 FRACTIONAL-N ASSEMBLY (08642-60105)

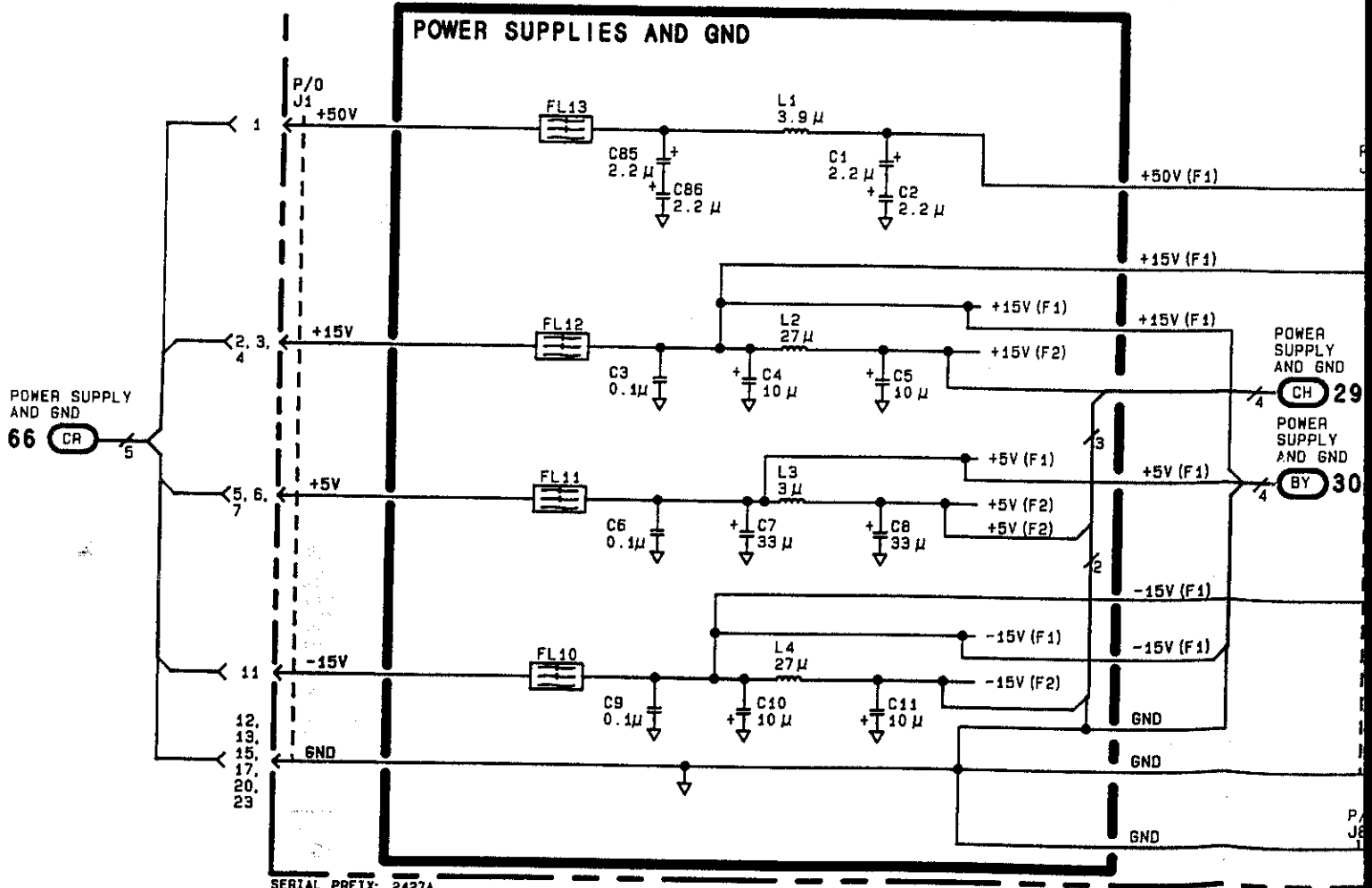
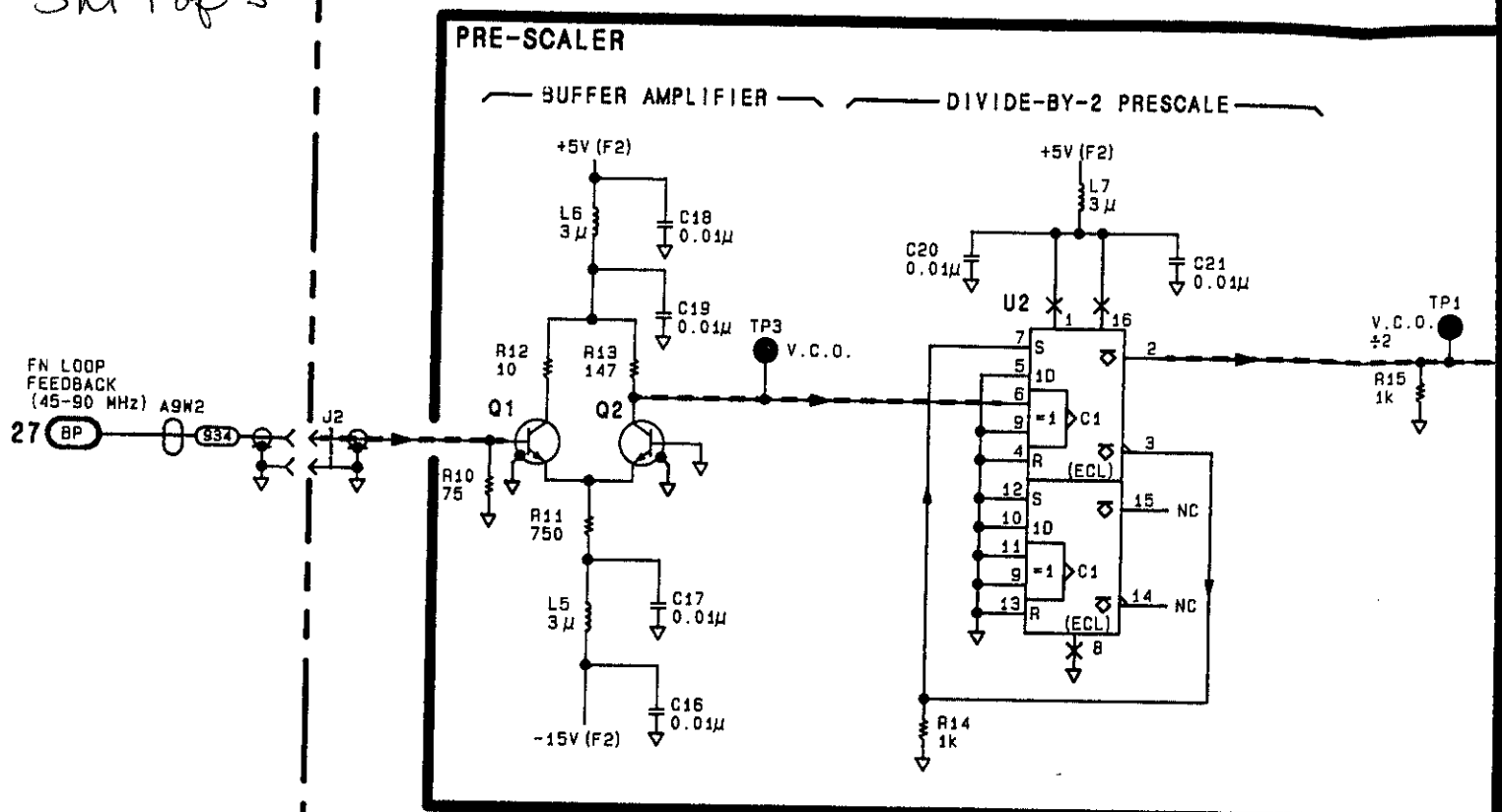


FIG. 8M-105  
 SMT 2 of 5

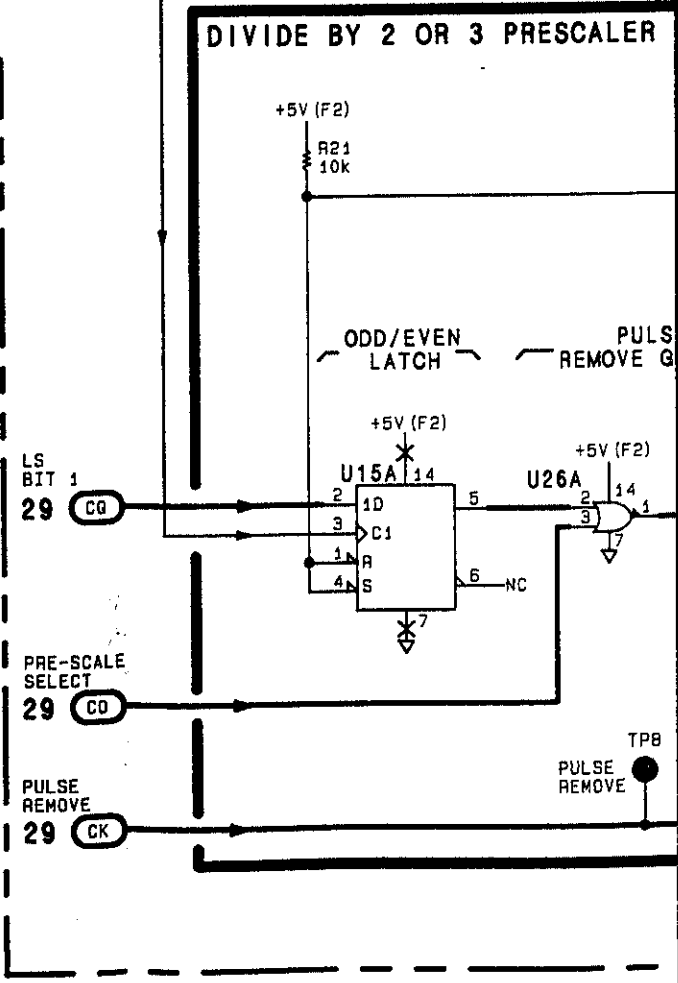
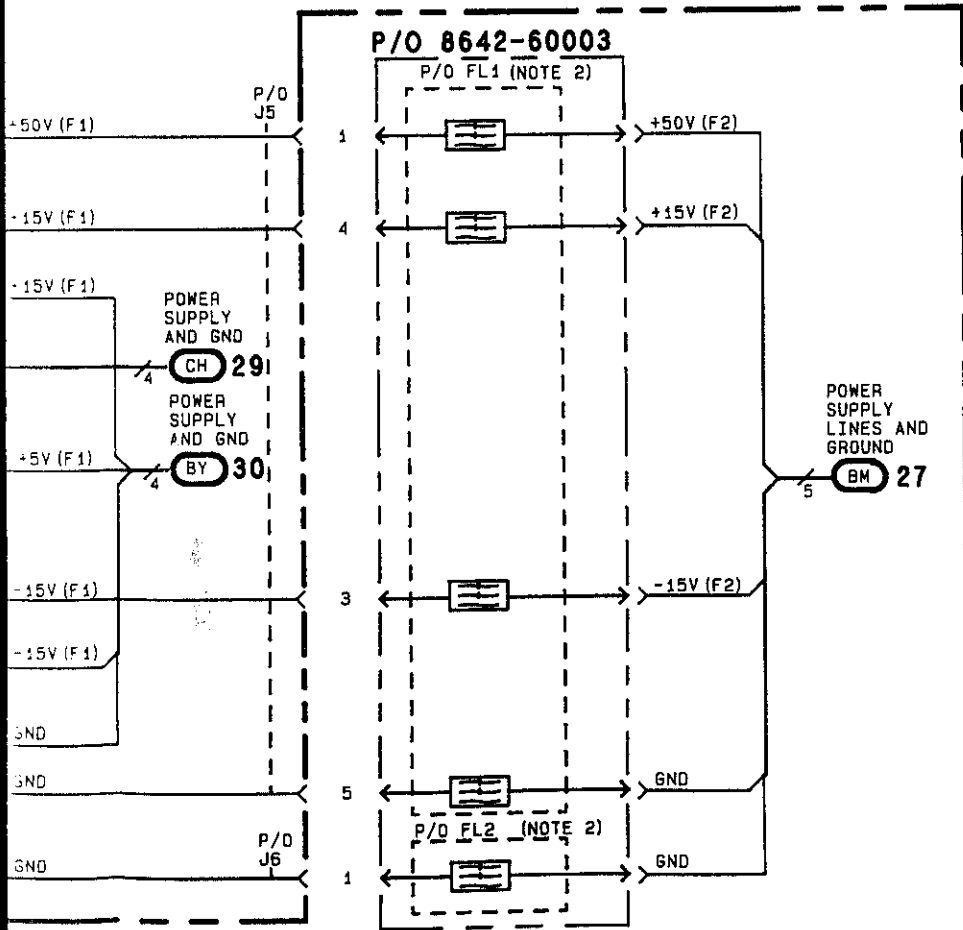
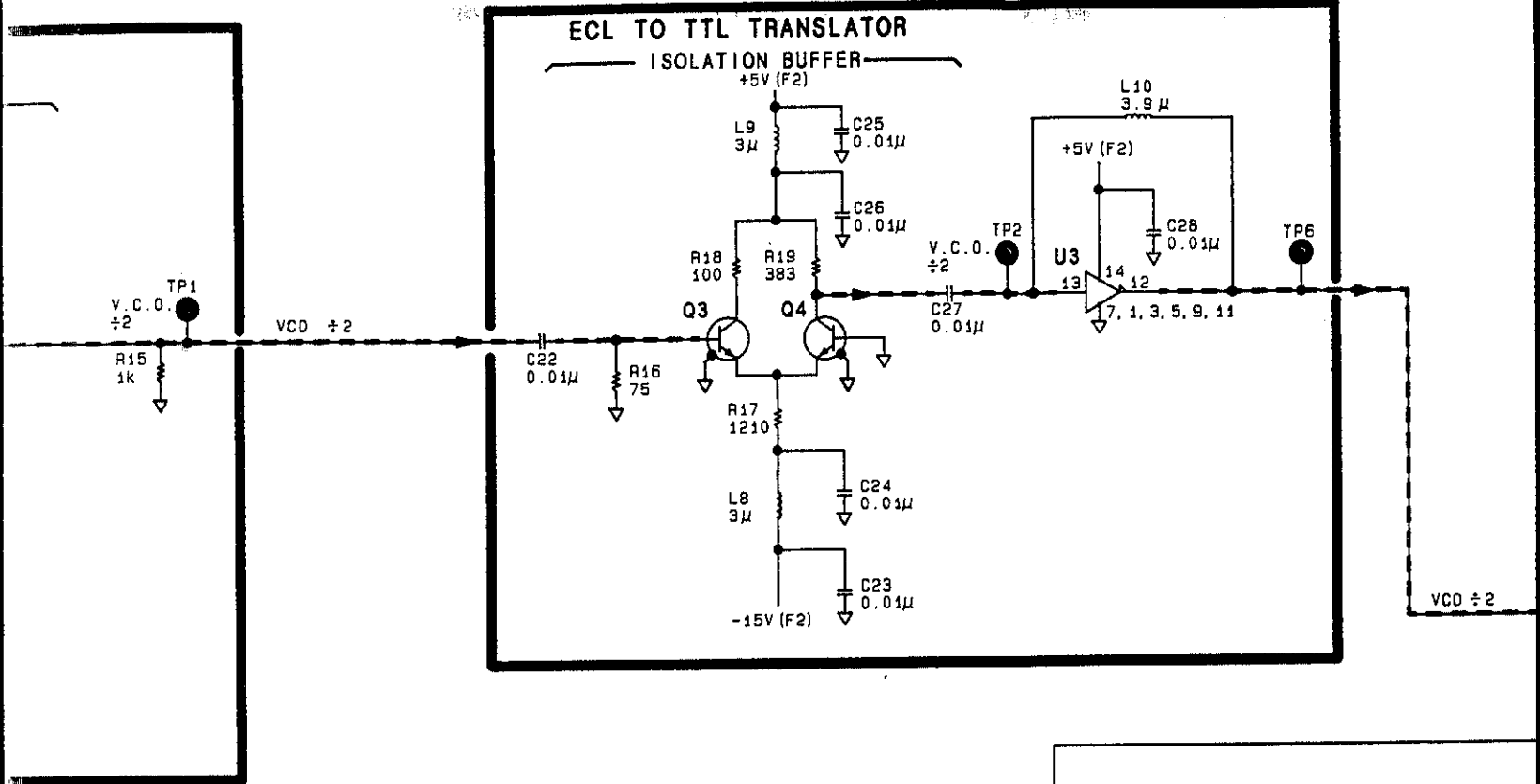


FIG. 8M-105  
SMT 3 of 5

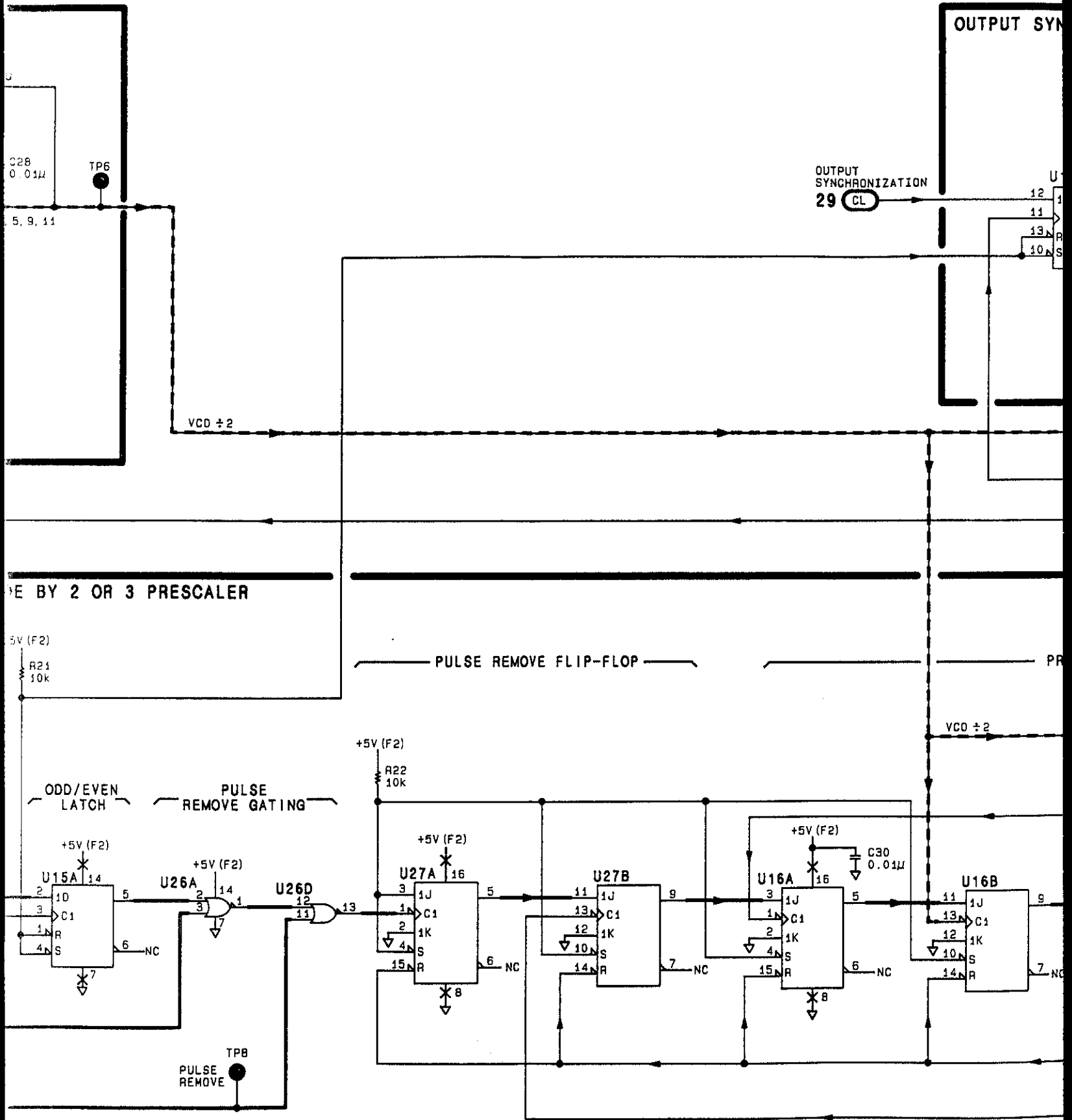
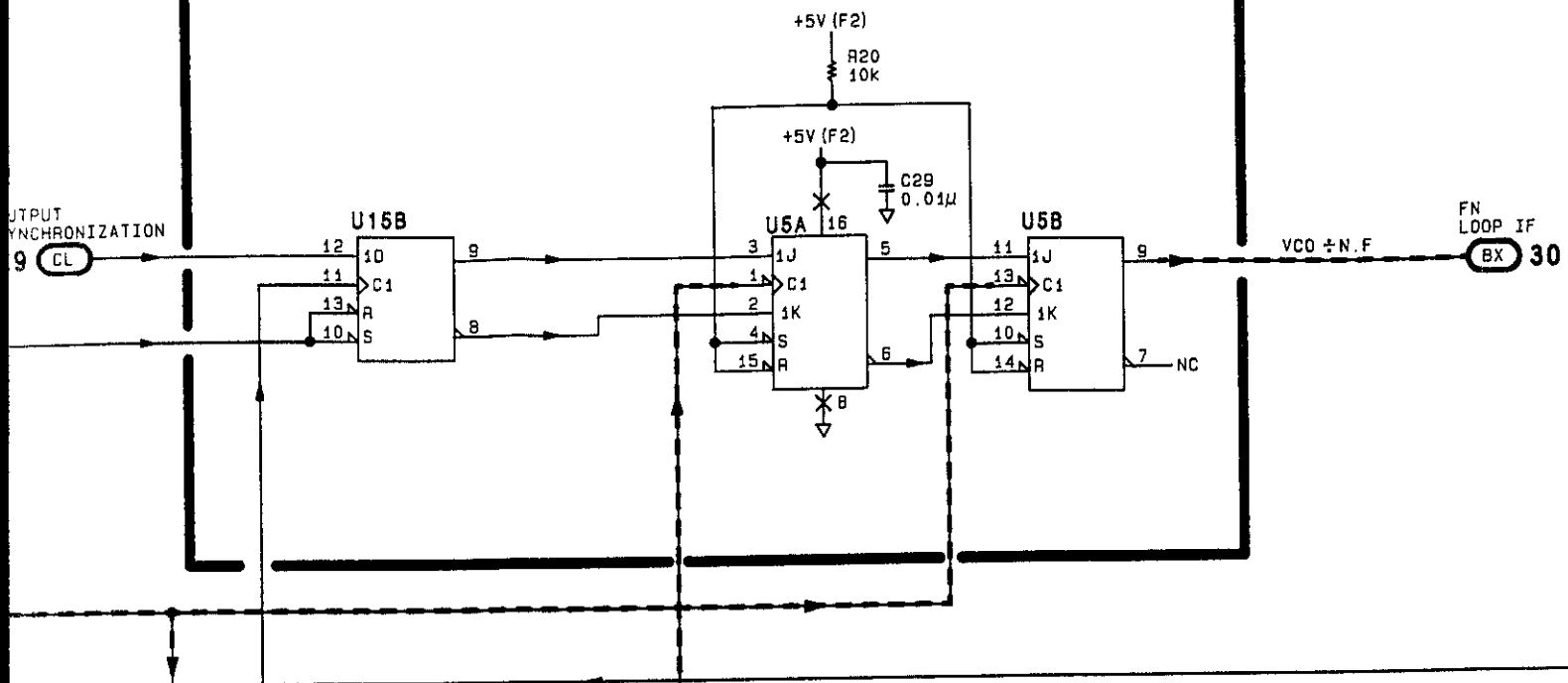
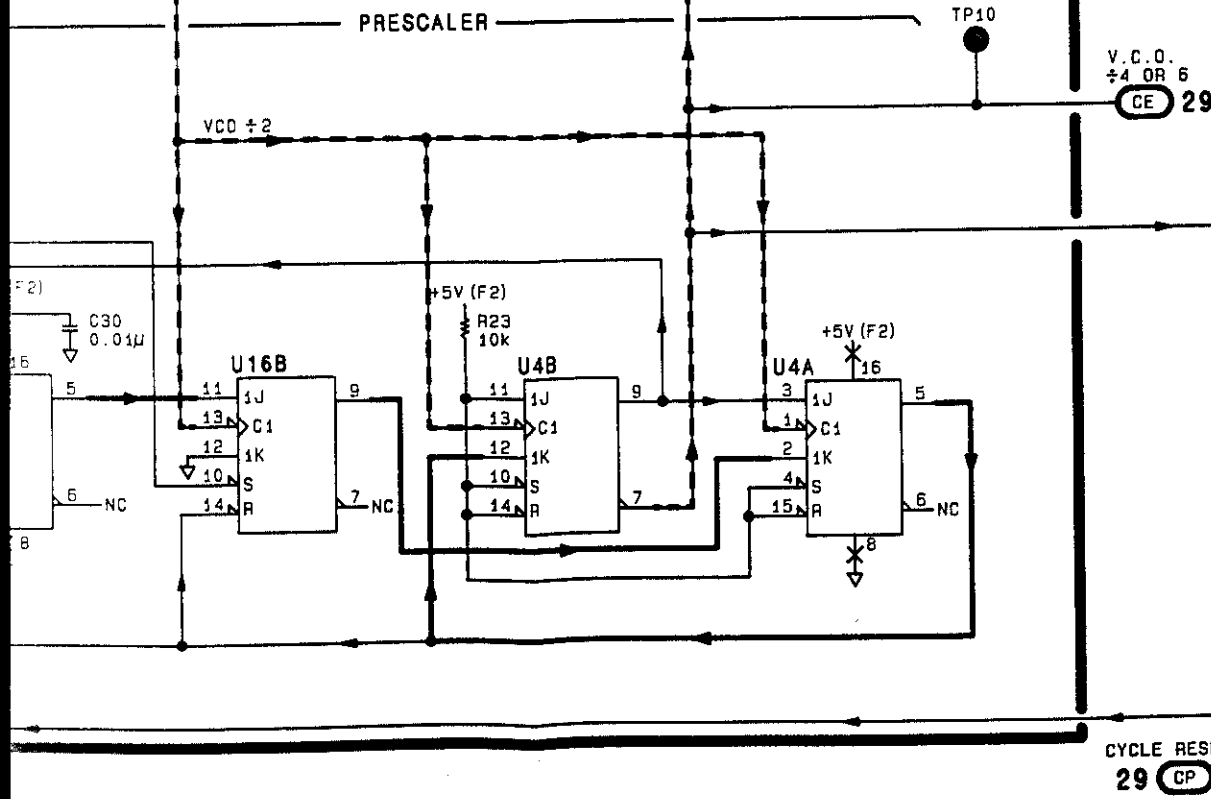


FIG. 8M-105  
Sht 4 of 5

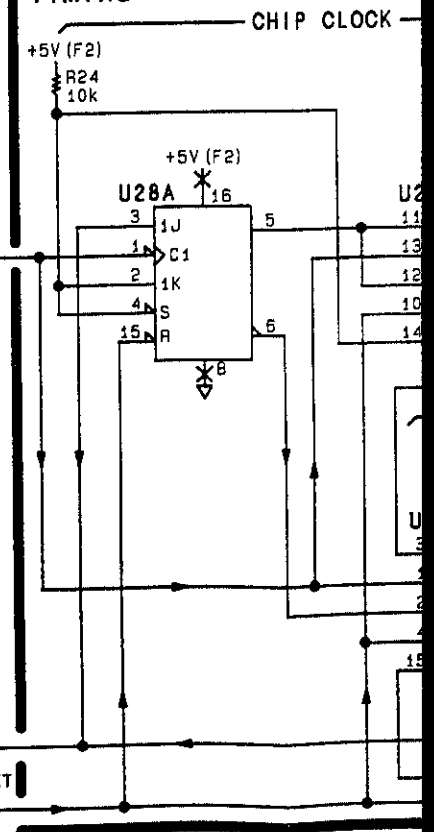
OUTPUT SYNCHRONIZATION



PRESCALER

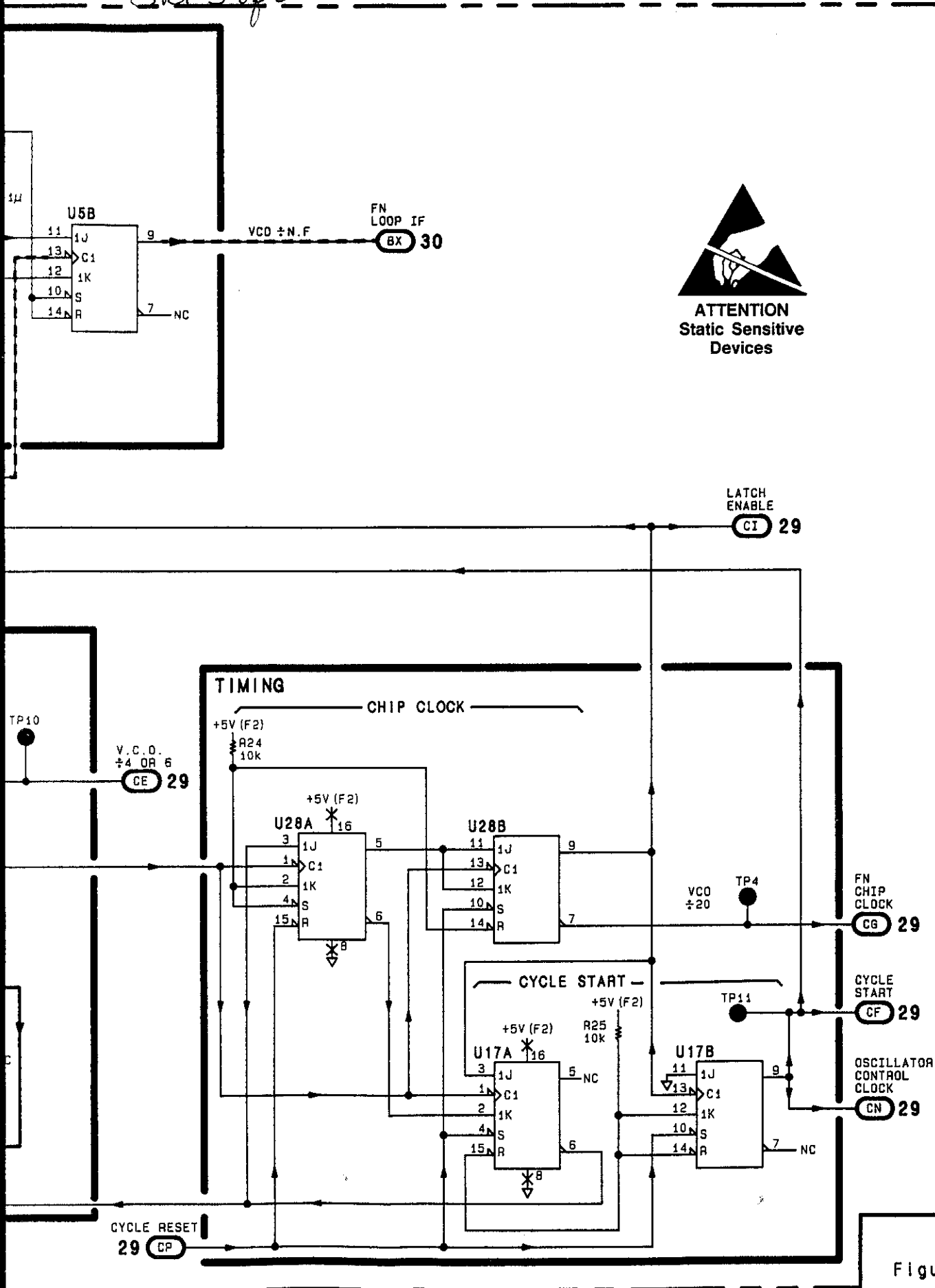


TIMING



CYCLE RESET  
29 (CP)

FIG. 8M-105  
 Sht 5 of 5



SS28  
 Figure 8M-105  
 8M-105

FIG. 8M-106  
Sht 1 of 5

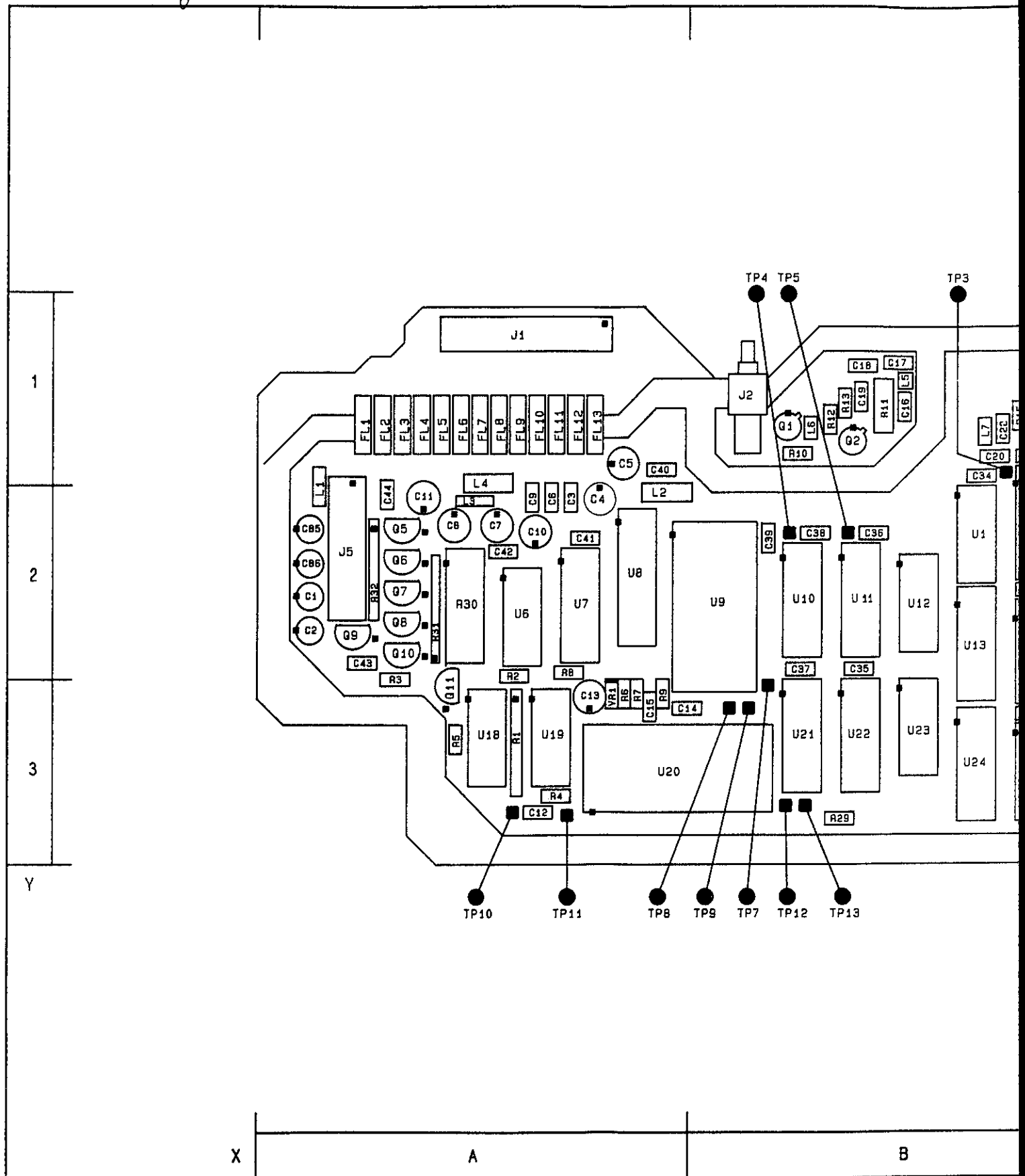
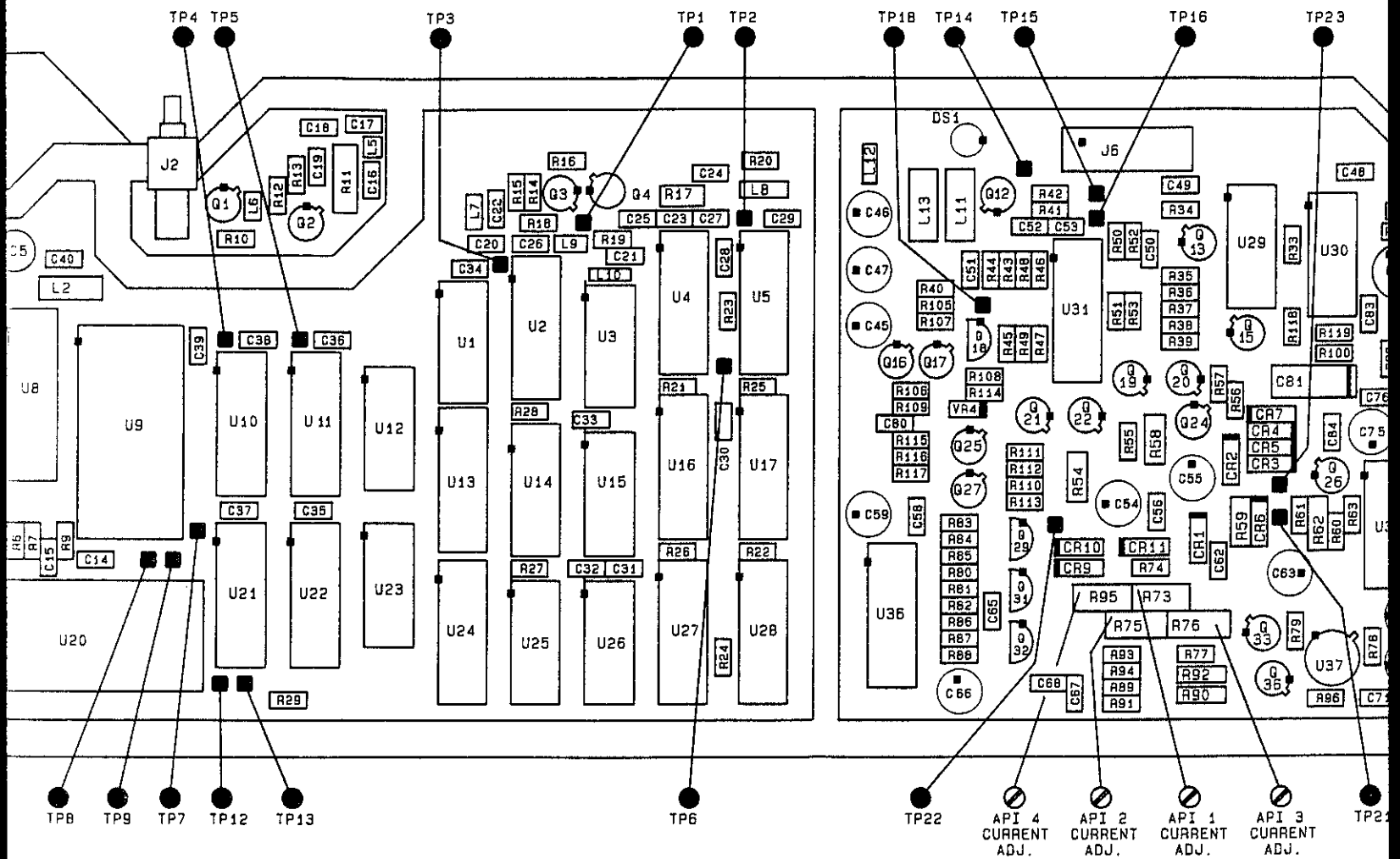


Figure 8M-106. SERVICE SHEET 29 INFORMATION

C



FIG. 8M-106  
 Sht 2 of 5

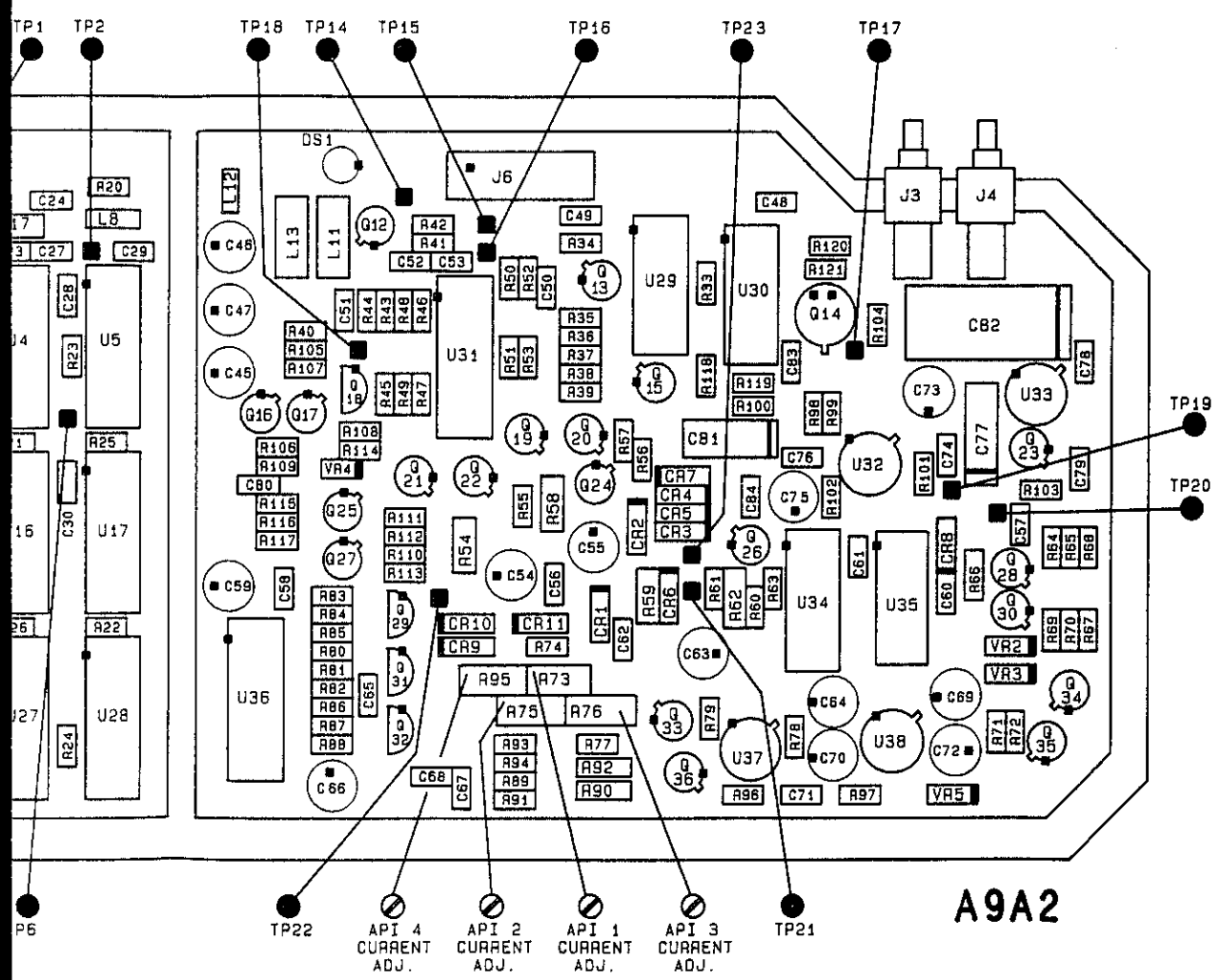


B

C

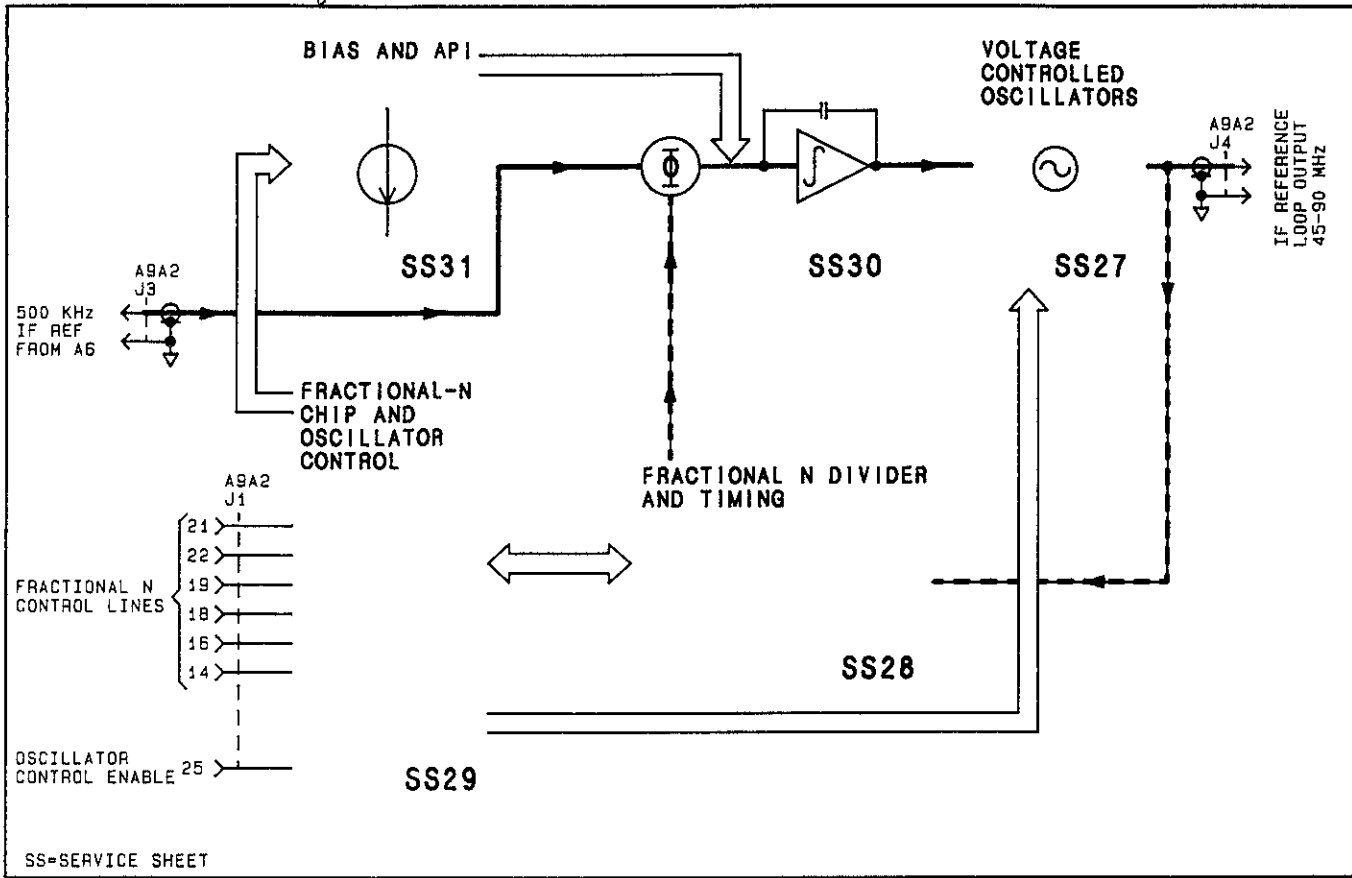
Component Locator

FIG. 8M-106  
 Sht 3 of 5



icator

FIG. 8M-106  
Sht 4 of 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C12	A, 3	Q5	A, 2	U1	B, 2														
C13	A, 3	Q6	A, 2	U6	A, 2														
C14	A, 3	Q7	A, 2	U7	A, 2														
C15	A, 3	Q8	A, 2	U8	A, 2														
C31	B, 3	Q9	A, 2	U9	B, 2														
C32	B, 3	Q10	A, 2	U10	B, 2														
C33	B, 2	Q11	A, 3	U11	B, 2														
C34	B, 1			U12	B, 2														
C35	B, 2	R1	A, 3	U13	B, 2														
C36	B, 2	R2	A, 2	U14	B, 2														
C37	B, 2	R3	A, 2	U18	A, 3														
C38	B, 2	R4	A, 3	U19	A, 3														
C39	B, 2	R5	A, 3	U20	A, 3														
C40	A, 1	R6	A, 3	U21	B, 3														
C41	A, 2	R7	A, 3	U22	B, 3														
C42	A, 2	R8	A, 2	U23	B, 3														
C43	A, 2	R9	A, 3	U24	B, 3														
C44	A, 2	R26	C, 3	U25	B, 3														
		R27	B, 3	U26	B, 3														
FL2	A, 1	R28	B, 2																
FL3	A, 1	R29	B, 3	VR1	A, 3														
FL4	A, 1	R30	A, 2																
FL5	A, 1	R31	A, 2																
FL6	A, 1	R32	A, 2																
FL7	A, 1																		
FL8	A, 1	TP5	B, 2																
FL9	A, 1	TP7	B, 3																
		TP9	B, 3																
J1	A, 1	TP12	B, 3																
J5	A, 2	TP13	B, 3																
J6	C, 1																		

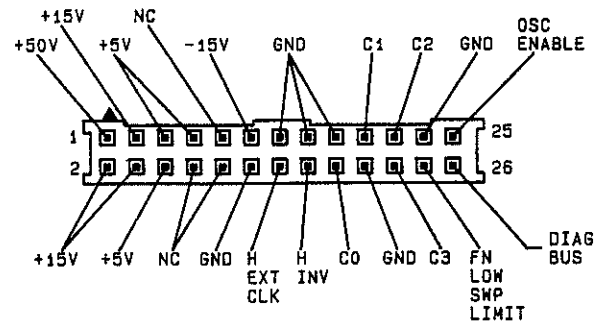
SEE REVERSE SIDE

P/O A9A2 FRACTIONAL-N ASSEMBLY

**SS28**

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A9 FL4-FL9 must have solder connection from notched portion of shielding to outer body of feedthroughs.
3. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
4. A9 FL1, A9 FL2 are low pass feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.

**CABLE PLUG  
TO A9A2 J1**

Schematic General Information

FIG. 8M-107  
SHT. 1 OF 5

P/O A9A2 FRACTIONAL-N ASSEMBLY (08642-60105)

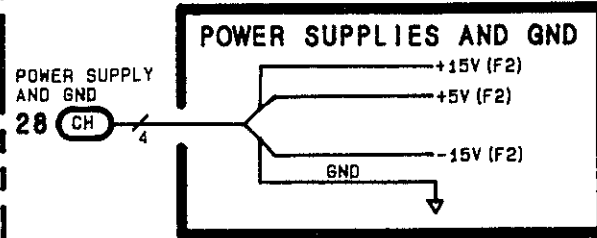
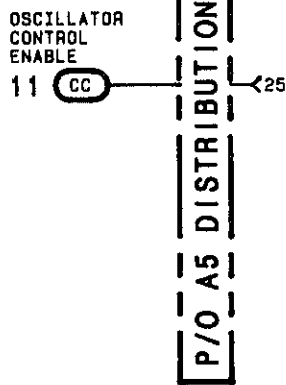
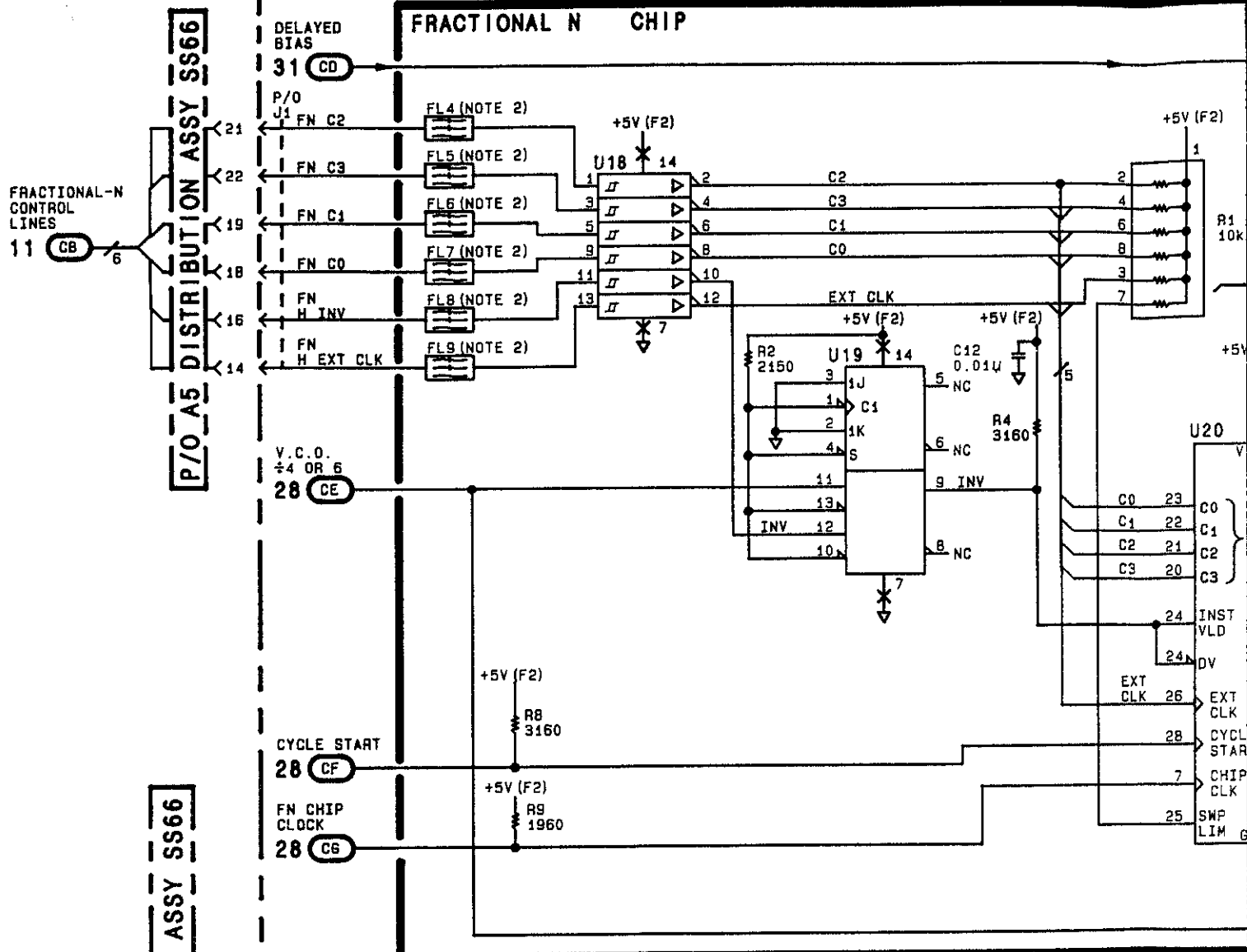
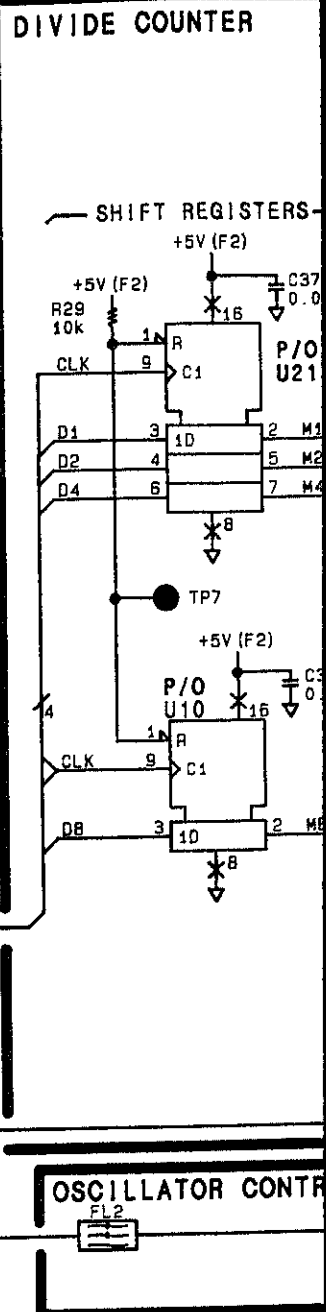
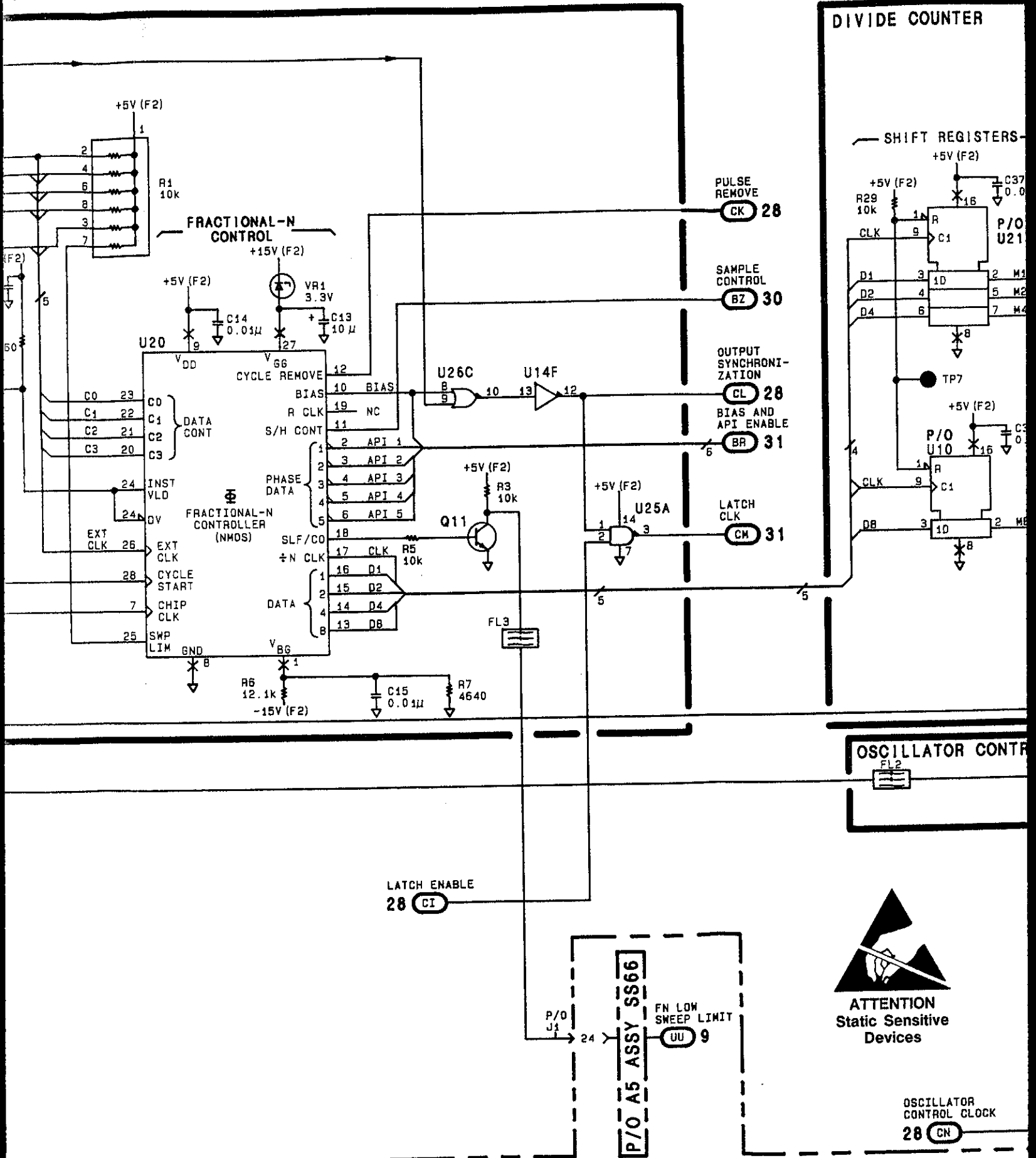


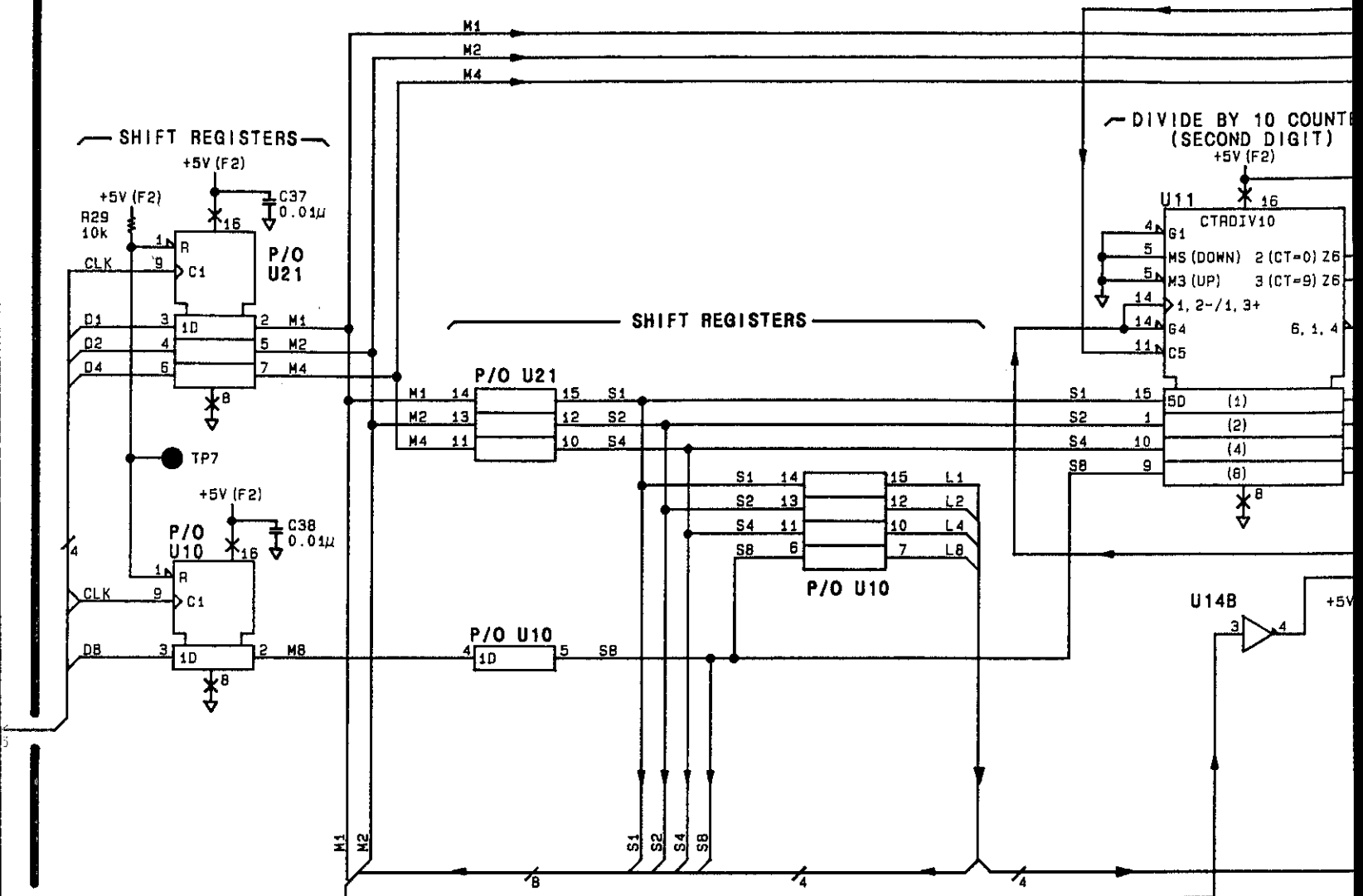
FIG. 8M-107  
 SH. 2 OF 5



OSCILLATOR  
 CONTROL CLOCK  
 28 (CN)

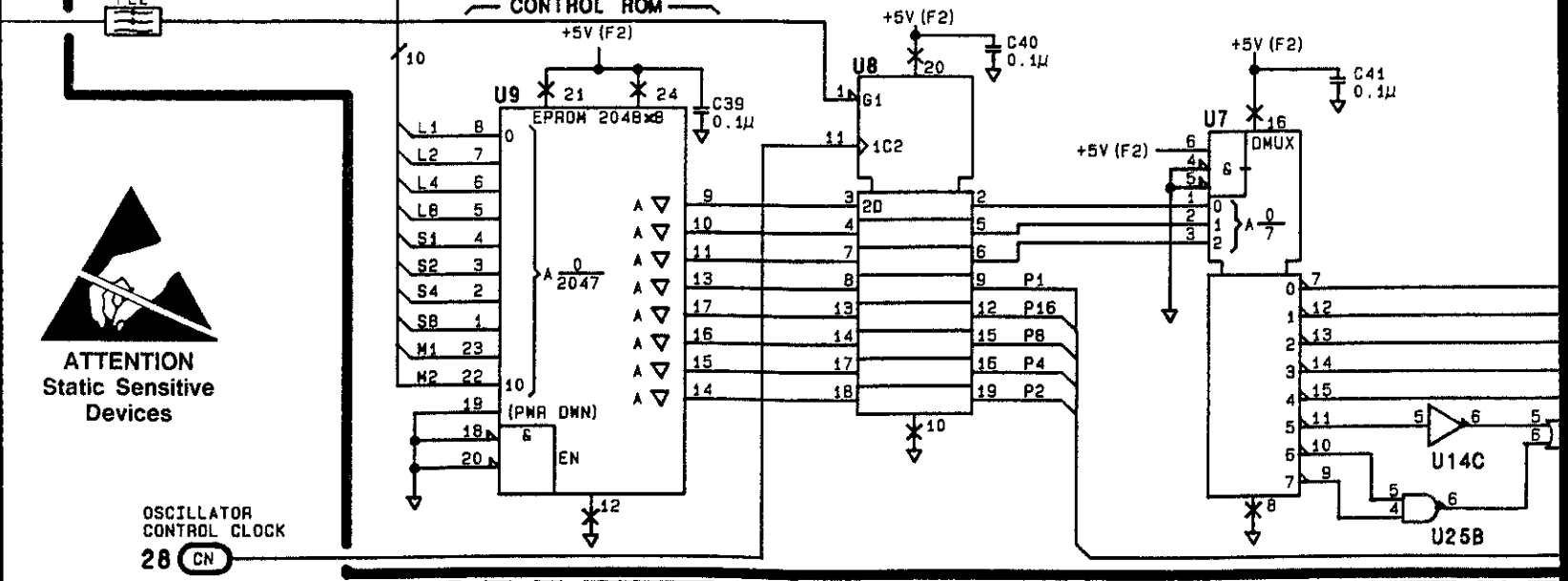
FIG. 8M-107  
 SHEET 3 OF 5

**DIVIDE COUNTER**



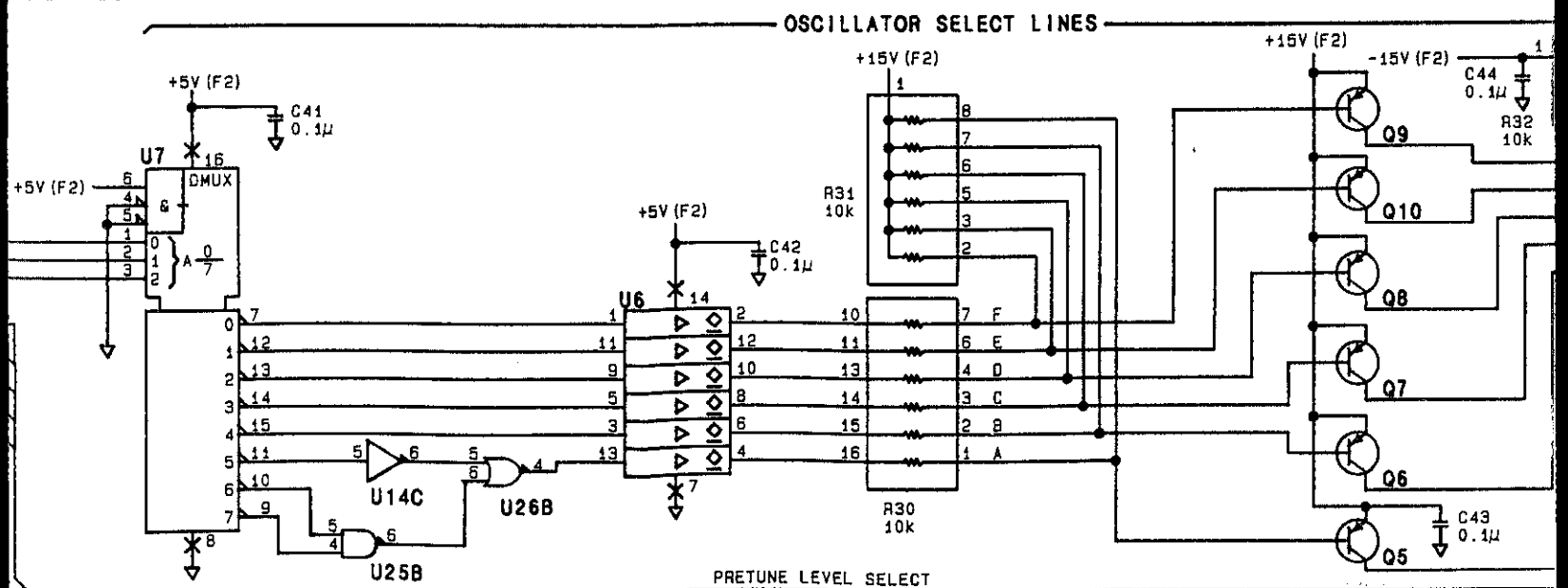
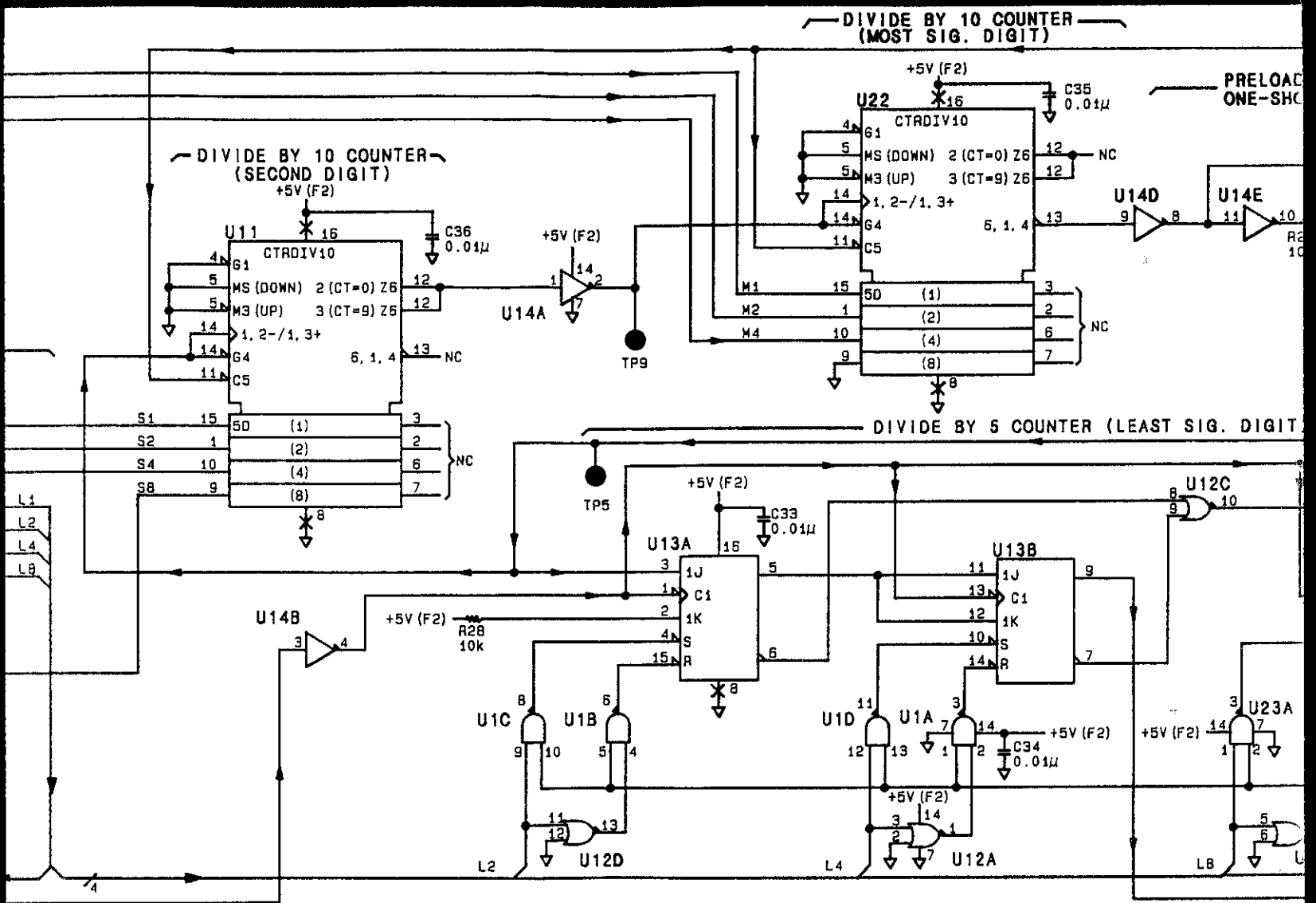
**OSCILLATOR CONTROL**

**CONTROL ROM**



OSCILLATOR  
 CONTROL CLOCK  
 28 (GN)

FIG. 8M-107  
 SH. 4 OF 5

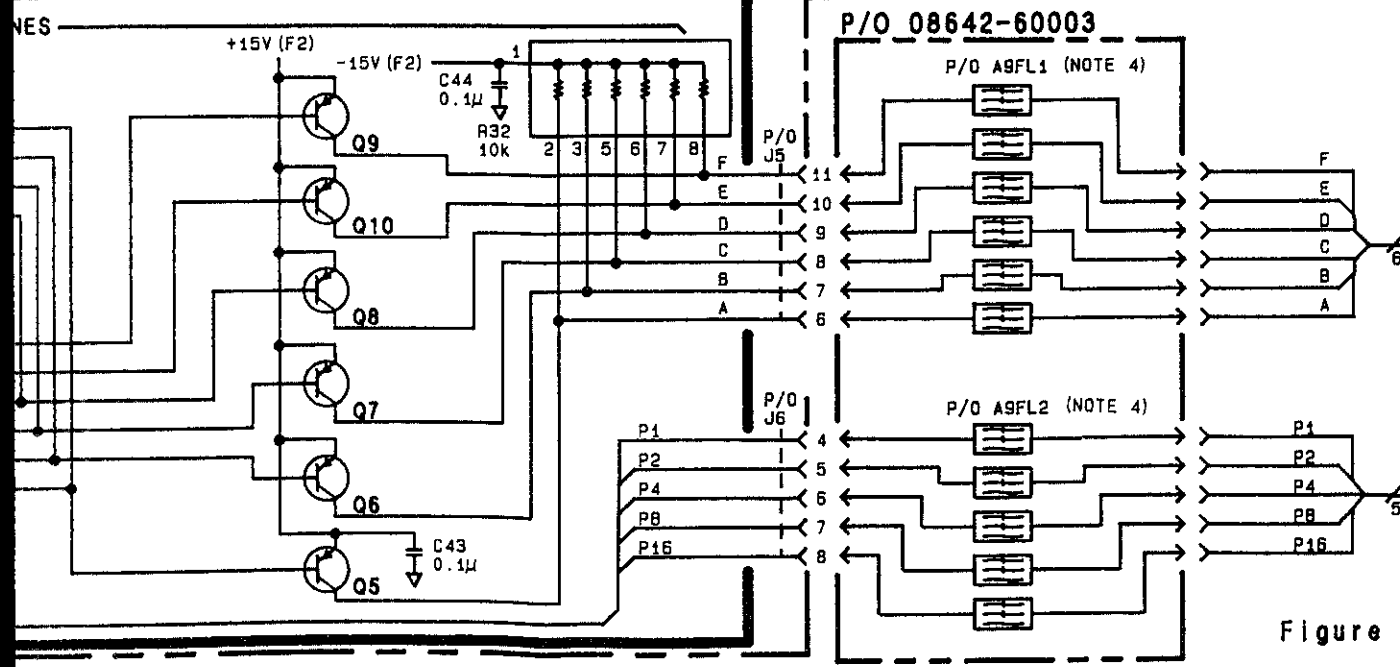
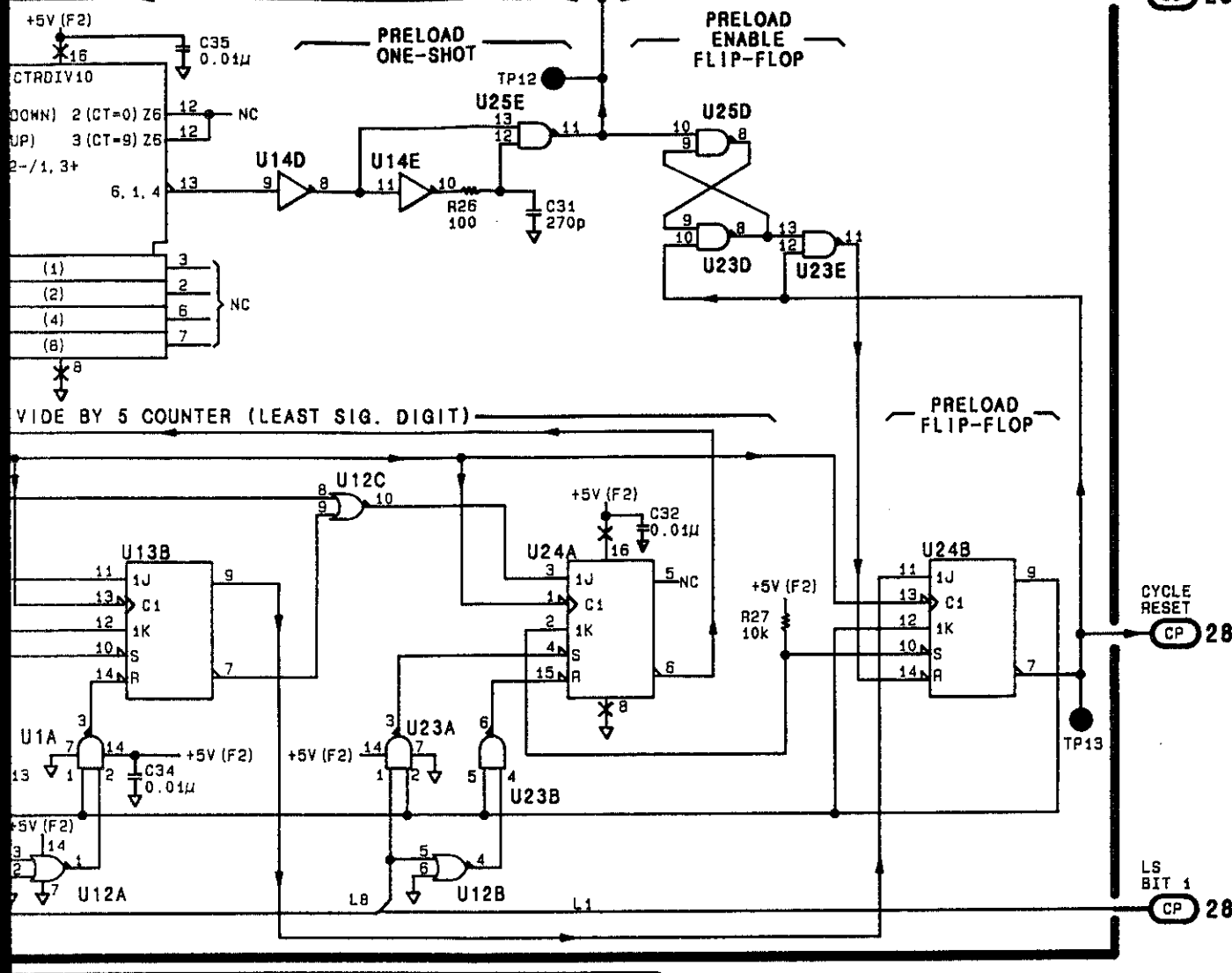




DE BY 10 COUNTER  
 ST SIG. DIGIT)

PRESCALE  
 SELECT

CO 28



SS29  
 Figure 8M-107  
 8M-107

FIG. 8M-108  
 SHT. 1 OF 5

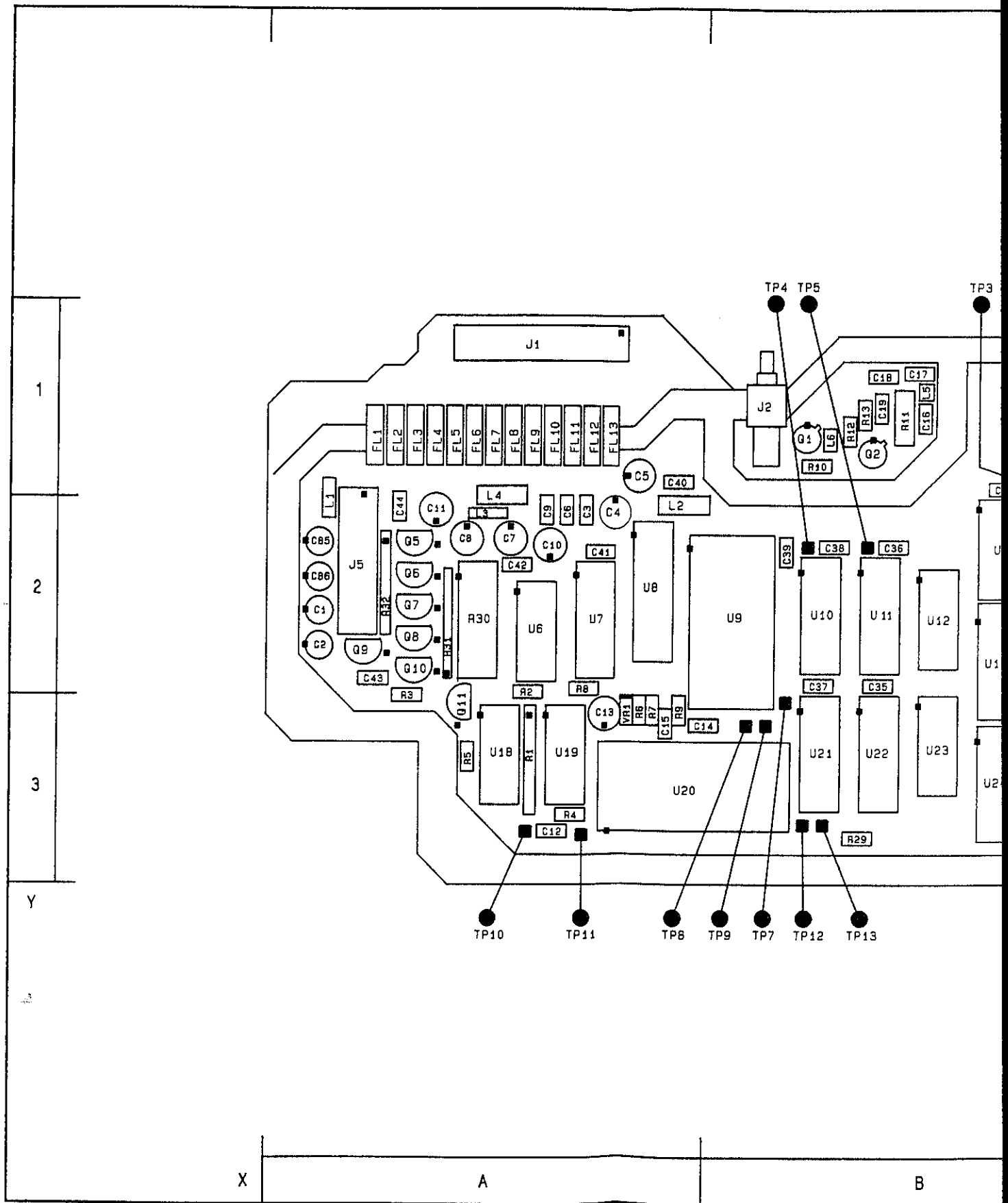
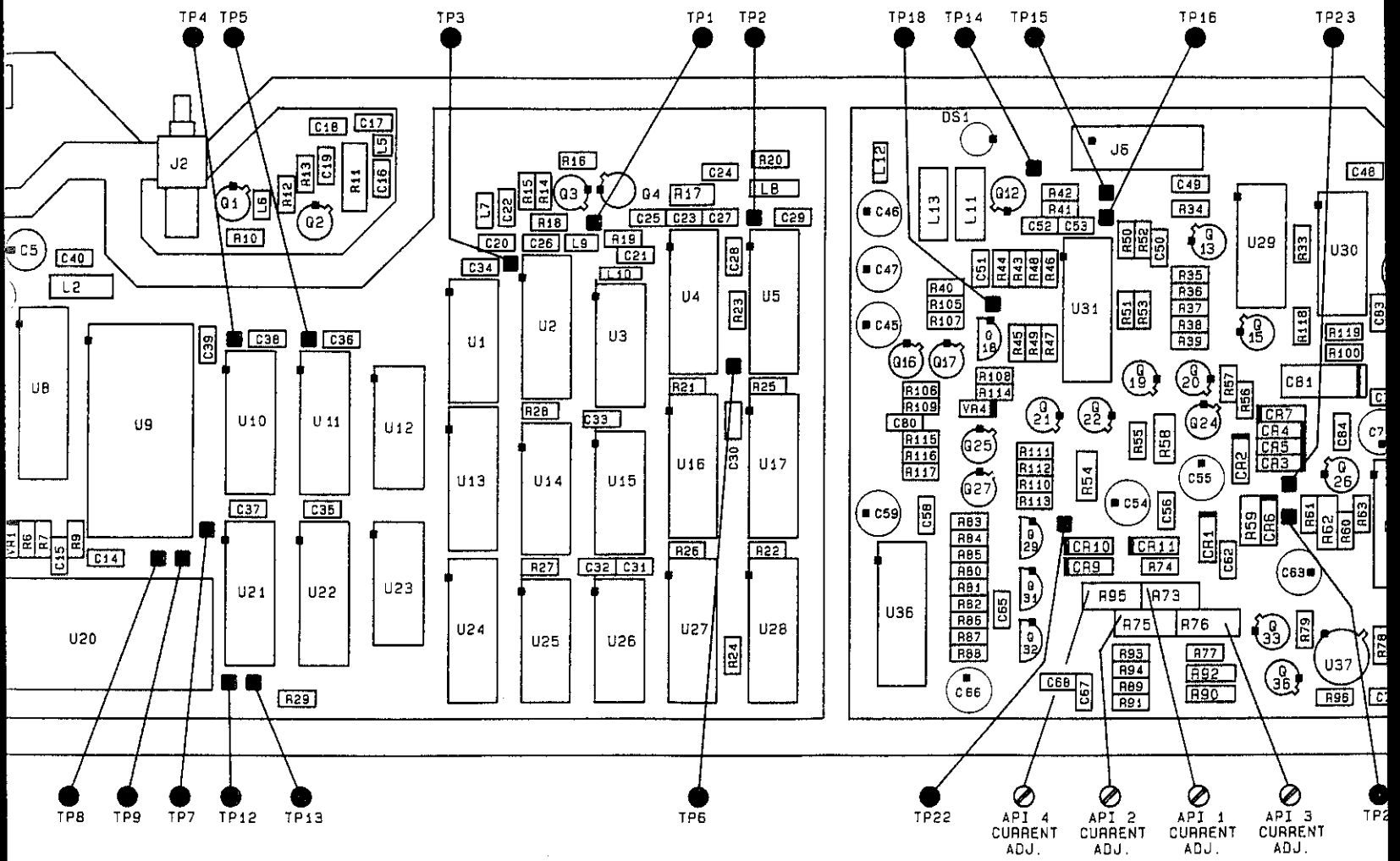


Figure 8M-108. SERVICE SHEET 30 INFORMATION

FIG. 8M-108  
 SH. 2 OF 5

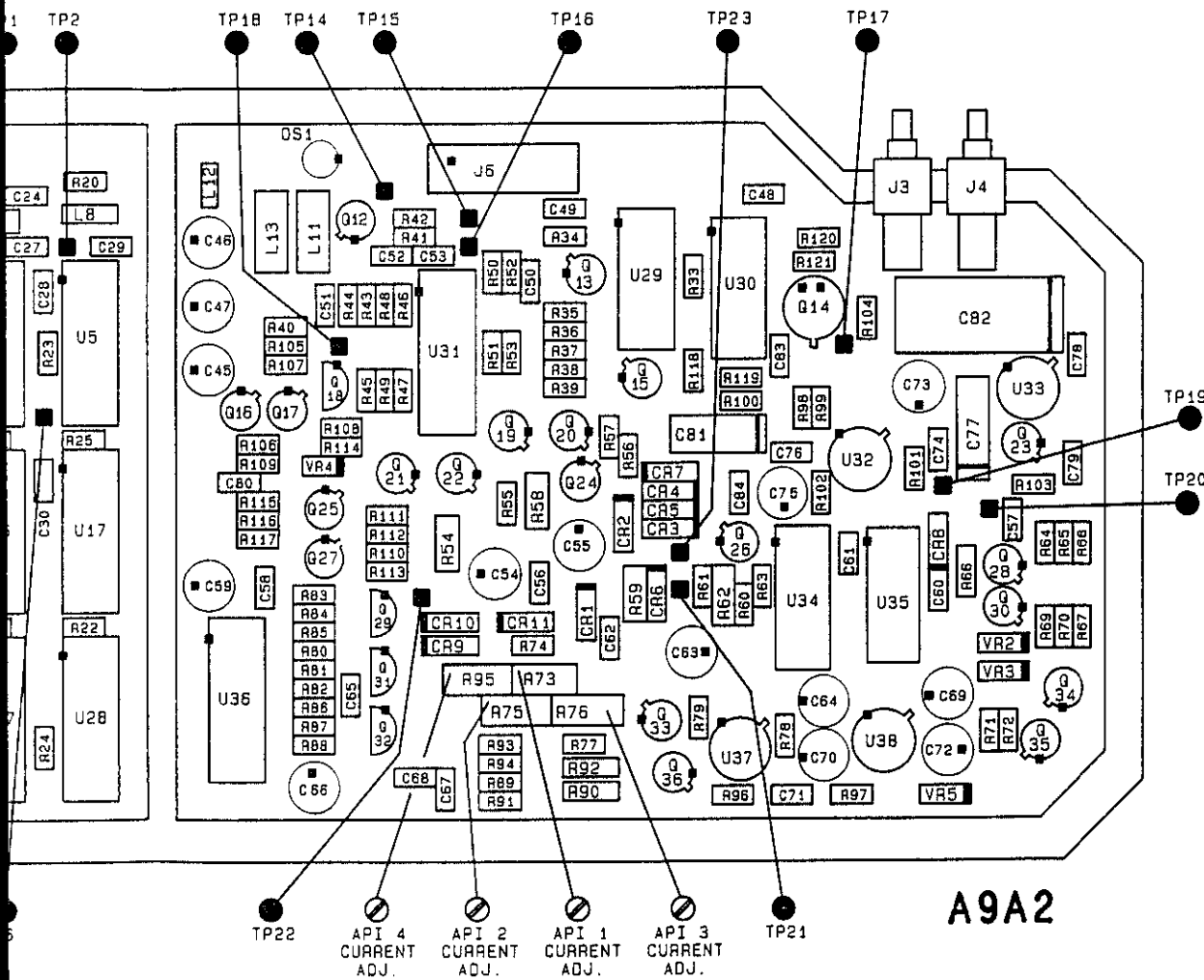


B

C

Component Locator

FIG. 8M-10B  
SHT. 3 OF 5



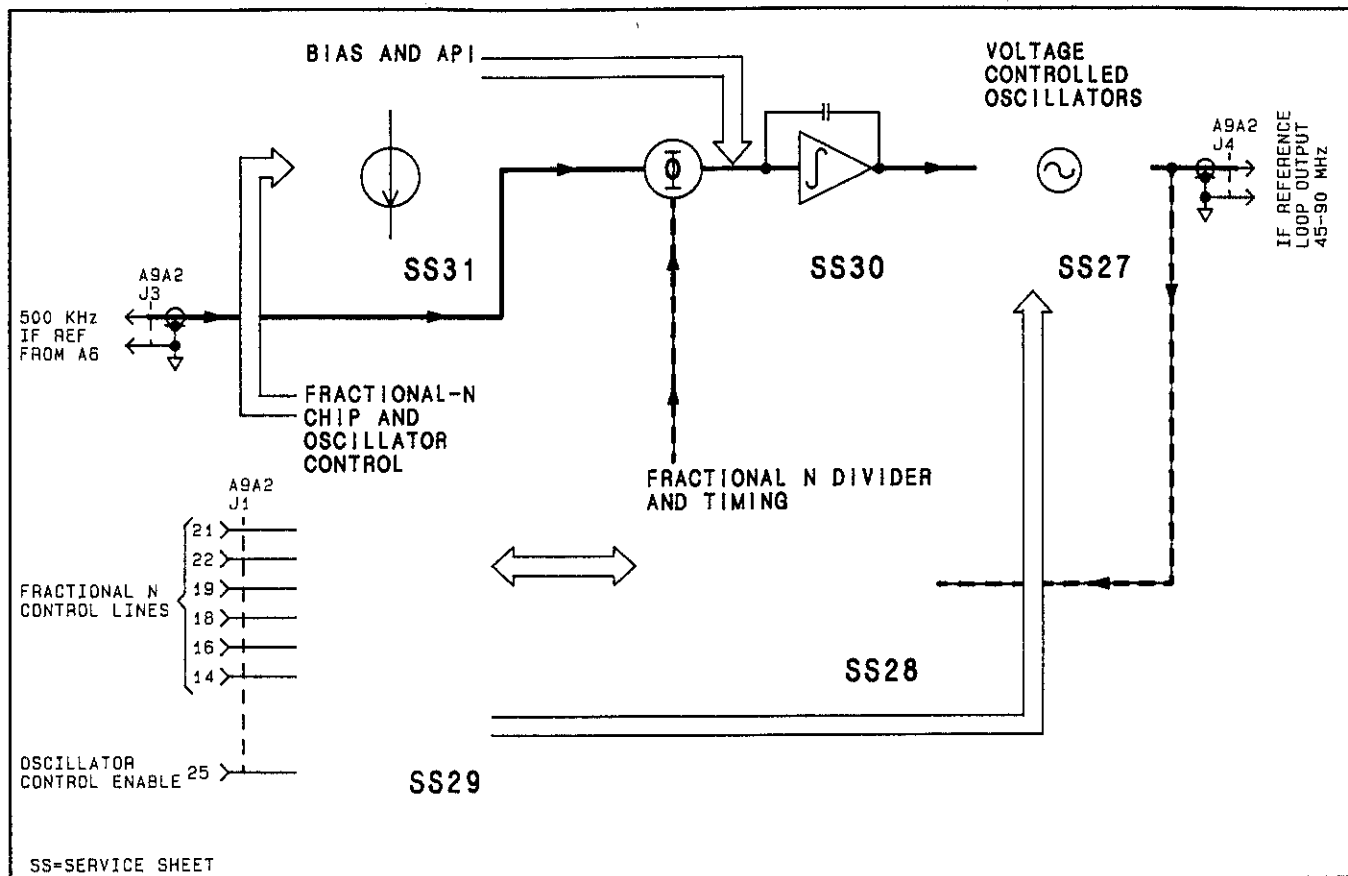
A9A2

C

D

ator

FIG. 8M-108  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C45	C, 2	DS1	C, 1	R33	D, 1	R108	C, 2												
C46	C, 1			R34	C, 1	R109	C, 2												
C47	C, 1	FL1	A, 1	R35	C, 1	R110	C, 2												
C48	D, 1			R36	C, 2	R111	C, 2												
C49	C, 1	J3	D, 1	R37	C, 2	R112	C, 2												
C50	C, 1	J4	D, 1	R38	C, 2	R113	C, 2												
C51	C, 1			R39	C, 2	R114	C, 2												
C52	C, 1	L11	C, 1	R40	C, 2	R115	C, 2												
C53	C, 1	L12	C, 1	R41	C, 1	R116	C, 2												
C54	C, 2	L13	C, 1	R42	C, 1	R117	C, 2												
C55	D, 2			R43	C, 1	R118	D, 2												
C56	C, 2	Q12	C, 1	R44	C, 1	R119	D, 2												
C73	D, 2	Q13	D, 1	R45	C, 2	R120	D, 1												
C74	D, 2	Q14	D, 1	R46	C, 1	R121	D, 1												
C75	D, 2	Q15	D, 2	R47	C, 2			TP14	C, 1										
C76	D, 2	Q16	C, 2	R48	C, 1			TP15	C, 1										
C77	D, 2	Q17	C, 2	R49	C, 2			TP16	C, 1										
C78	D, 2	Q18	C, 2	R50	C, 1			TP17	D, 2										
C79	D, 2	Q19	C, 2	R51	C, 2			TP18	C, 2										
C80	C, 2	Q20	C, 2	R52	C, 1			TP19	D, 2										
C81	D, 2	Q21	C, 2	R53	C, 2			TP20	D, 2										
C82	D, 2	Q22	C, 2	R54	C, 2			TP21	D, 2										
C83	D, 2	Q23	D, 2	R55	C, 2			TP22	C, 2										
C84	D, 2	Q24	D, 2	R56	D, 2			TP23	D, 2										
		Q25	C, 2	R57	D, 2														
		Q27	C, 2	R58	C, 2														
CR1	D, 3			R59	D, 3	U29	D, 1												
CR2	D, 2			R98	D, 2	U30	D, 1												
CR3	D, 2			R99	D, 2	U31	C, 2												
CR4	D, 2			R100	D, 2	U32	D, 2												
CR5	D, 2			R101	D, 2	U33	D, 2												
CR6	D, 2			R102	D, 2														
CR7	D, 2			R103	D, 2	VR4	C, 2												
CR8	D, 2			R104	D, 1														
				R105	C, 2														
				R106	C, 2														
				R107	C, 2														

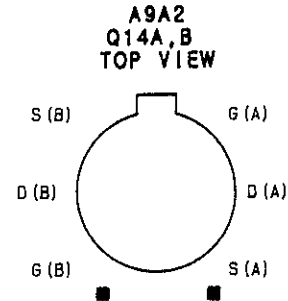
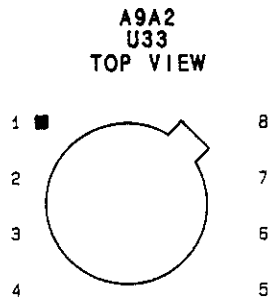
P/O FRACTIONAL-N  
A9A2 ASSEMBLY

**SS29**

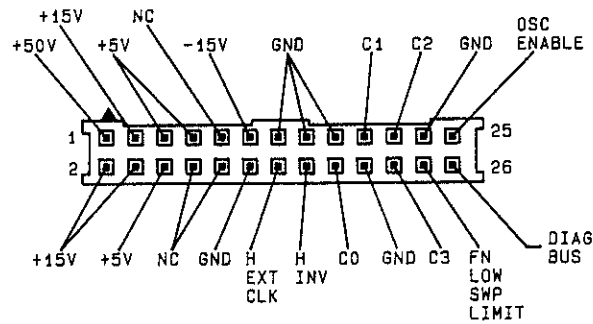
SEE REVERSE SIDE

Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph B-3.



CABLE PLUG  
 TO A9A2 J1



Schematic General Information

FIG 8M-109  
 SH. 1 OF 5

P/O A9A2 FRACTIONAL-N ASSEMBLY (08642-60105)

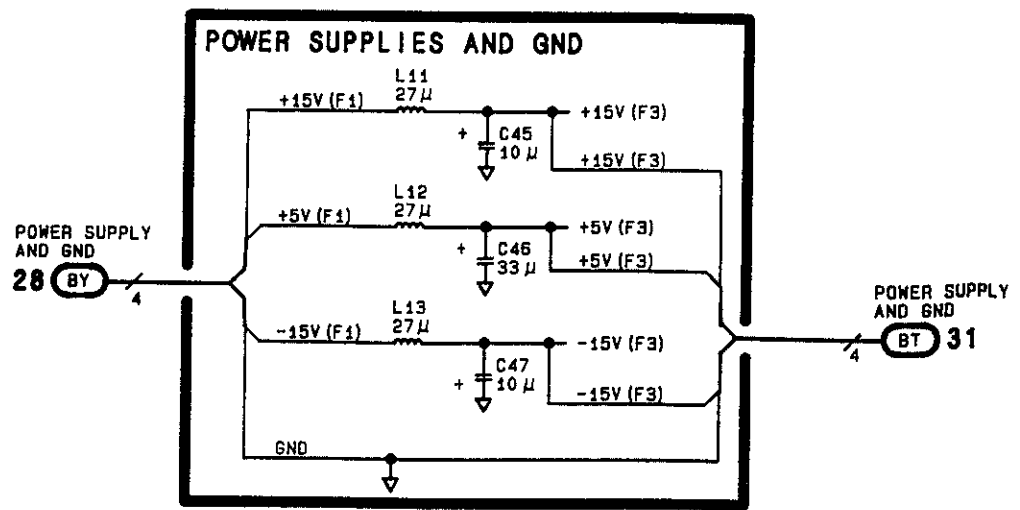
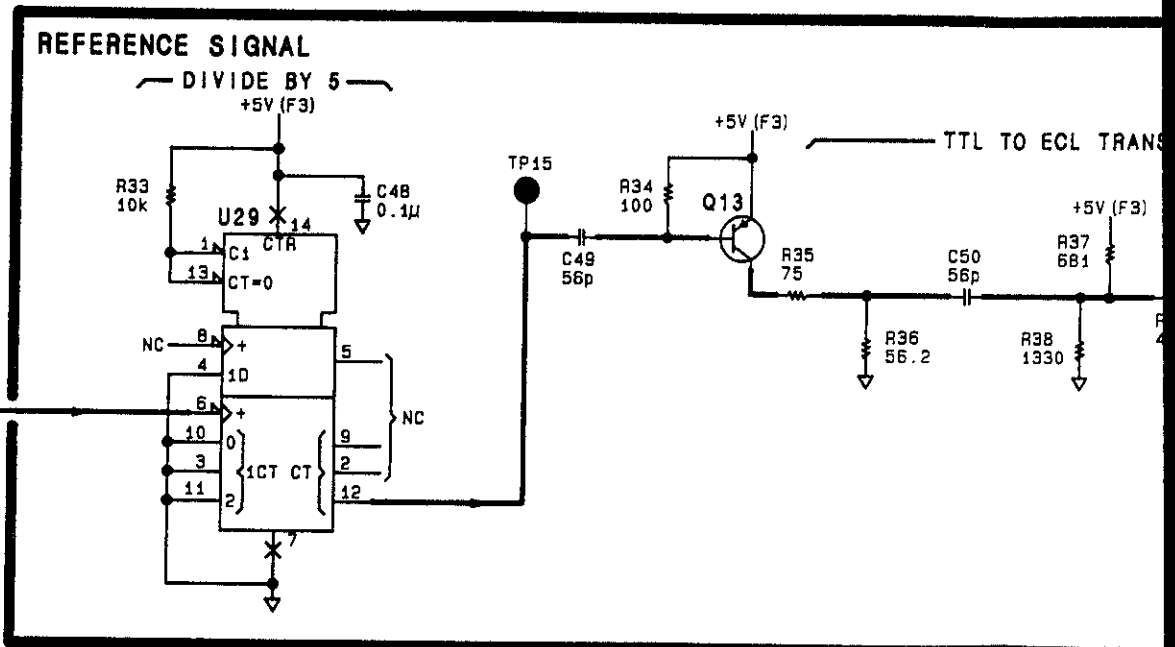
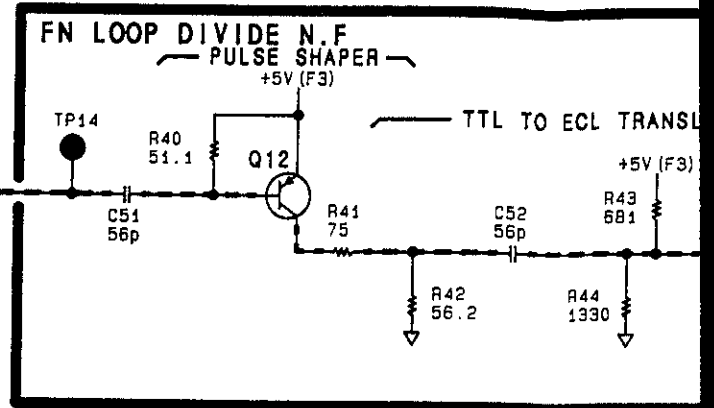
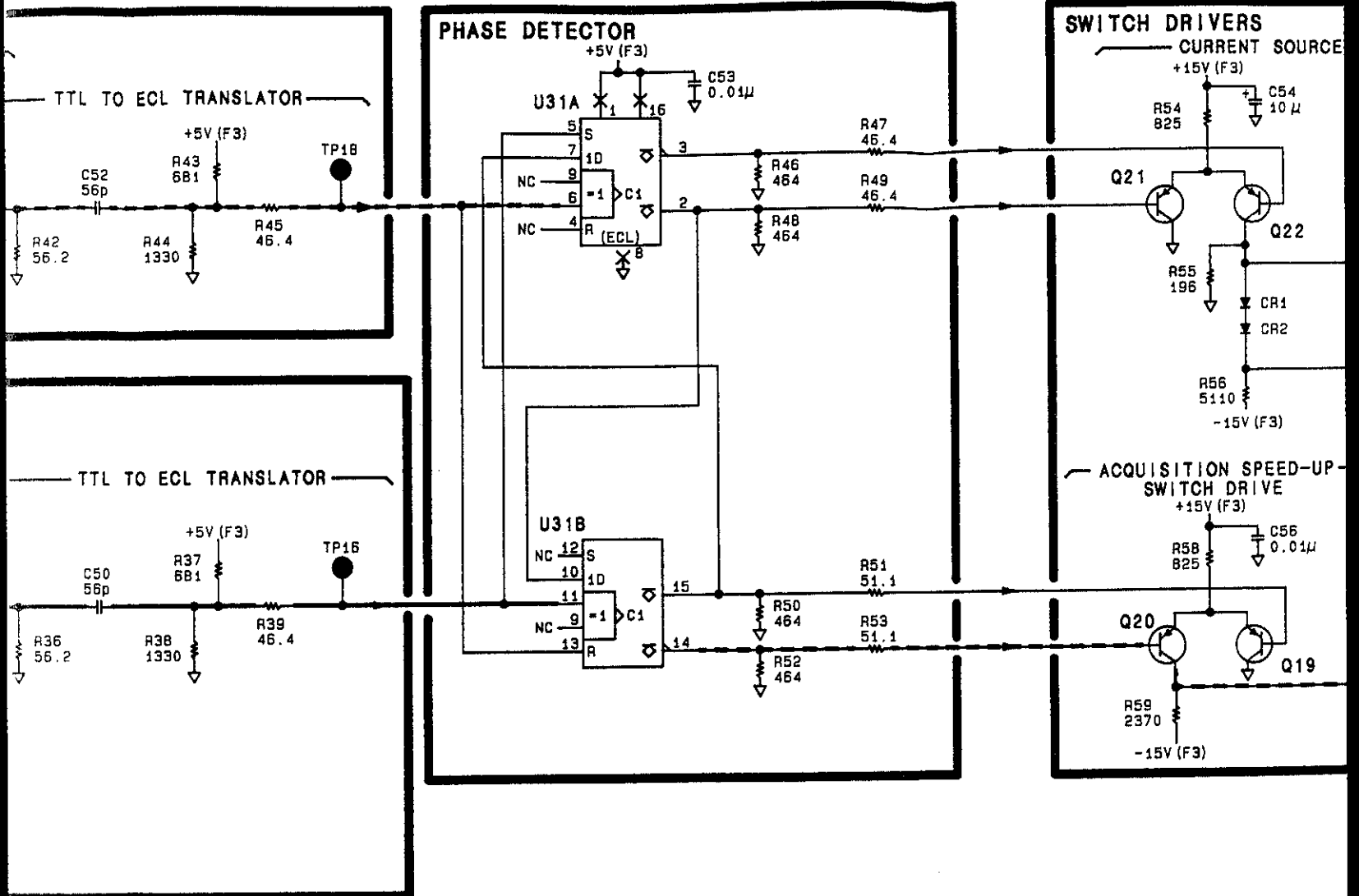


FIG. 8M-109  
 SHT. 2 OF 5



POWER SUPPLY  
 AND GND

BT 31



FIG. 8M-109  
 SH. 3 OF 5

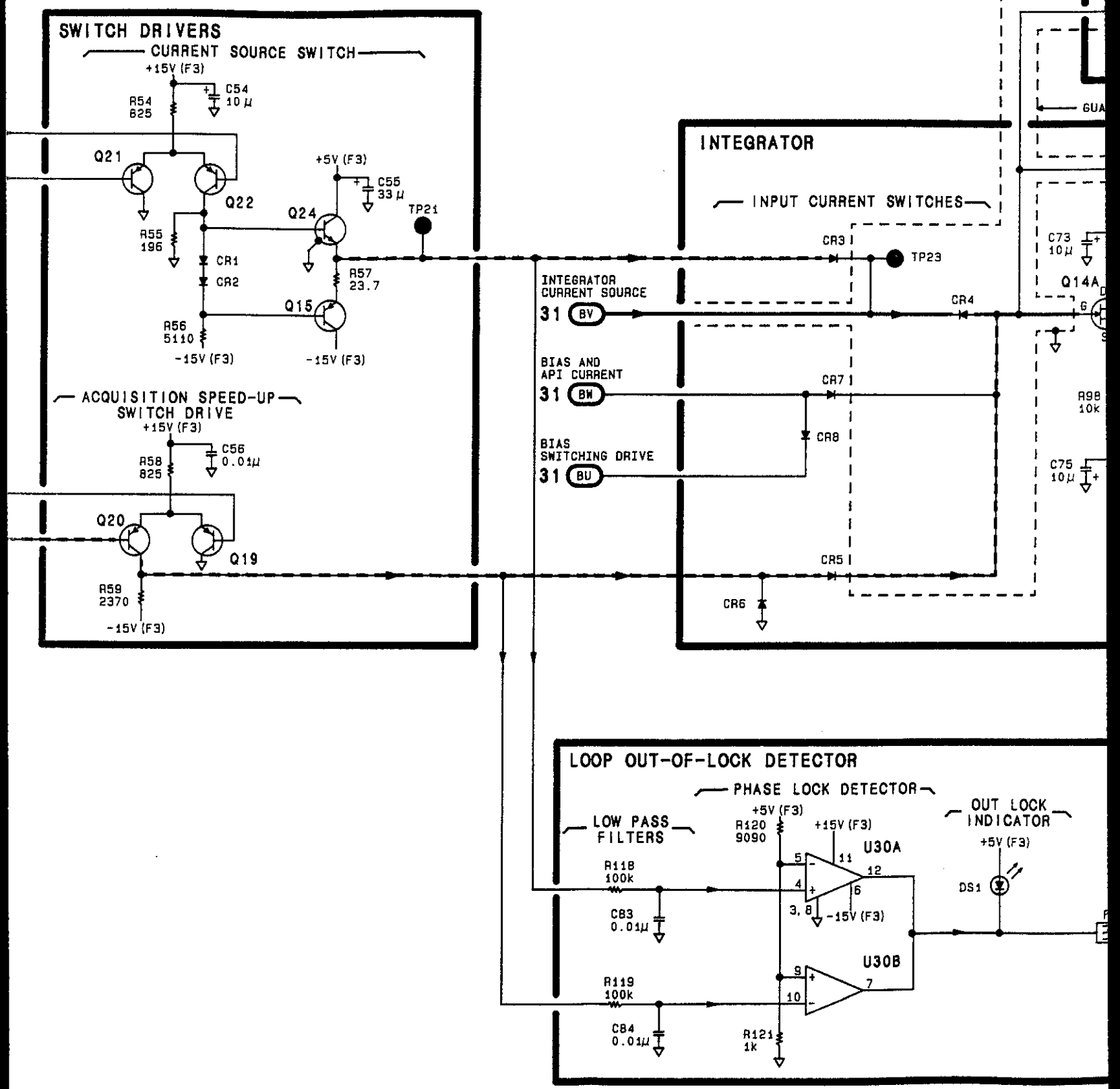
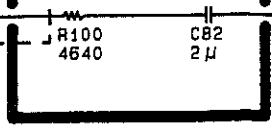


FIG. 8M-109  
 SH. 4 OF 5

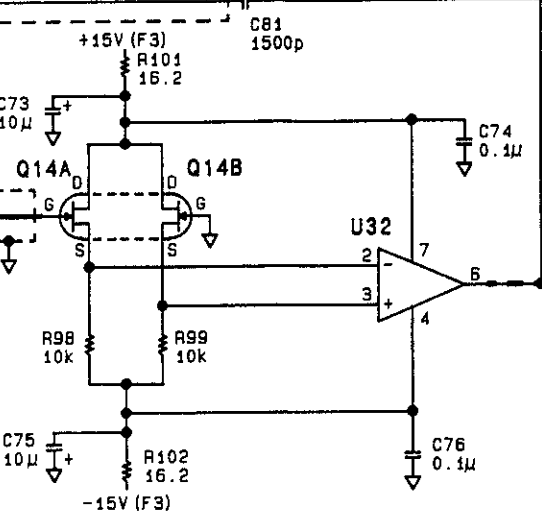
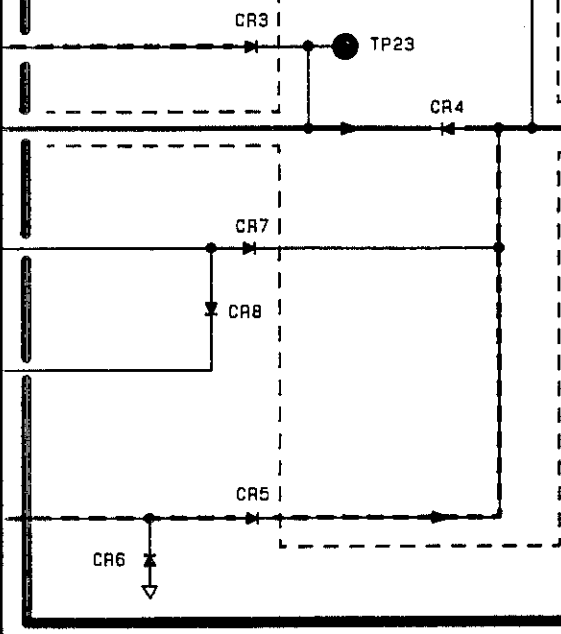
**LOOP PHASE COMPENSATION**



GUARD TRACE

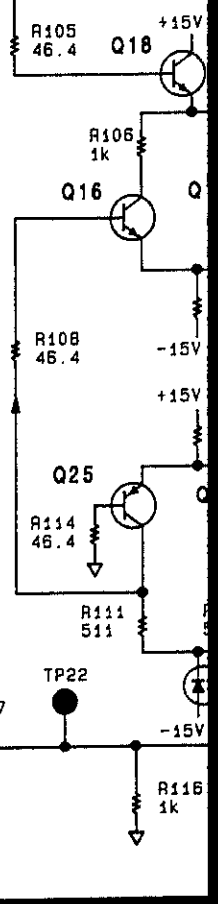
**INTEGRATOR**

INPUT CURRENT SWITCHES



**SAMPLE AND HOLD**

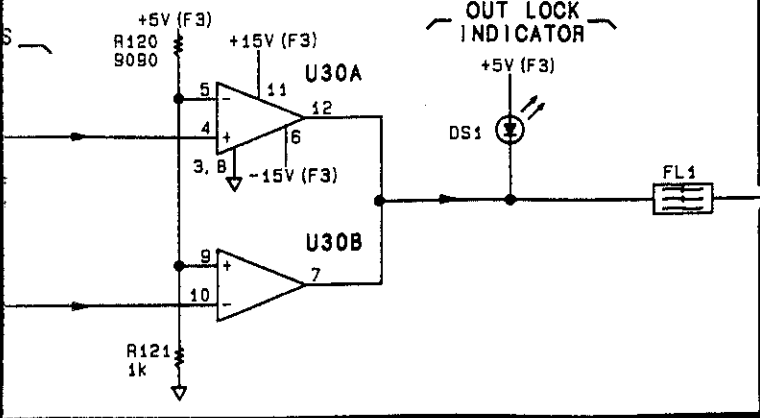
SWITCH DR



**OUT-OF-LOCK DETECTOR**

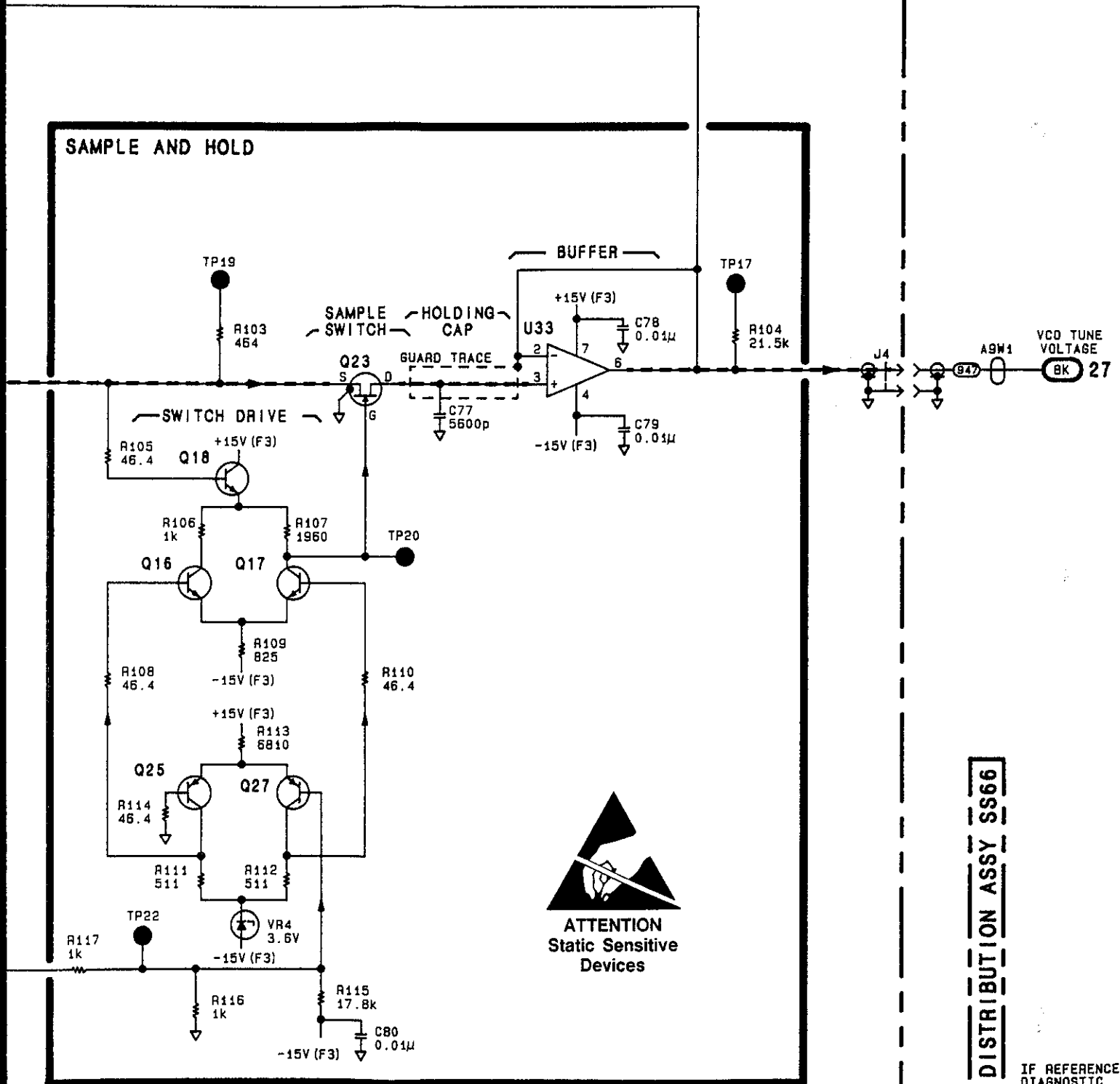
PHASE LOCK DETECTOR

OUT LOCK INDICATOR



SAMPLE CONTROL  
 29 (BZ)

FIG. 8M-109  
 SH. 5 OF 5



P/O A5 DISTRIBUTION ASSY SS66

**SS30**  
 Figure 8M-109  
 8M-109

FIG. 8M-110  
 SH. 1 OF 5

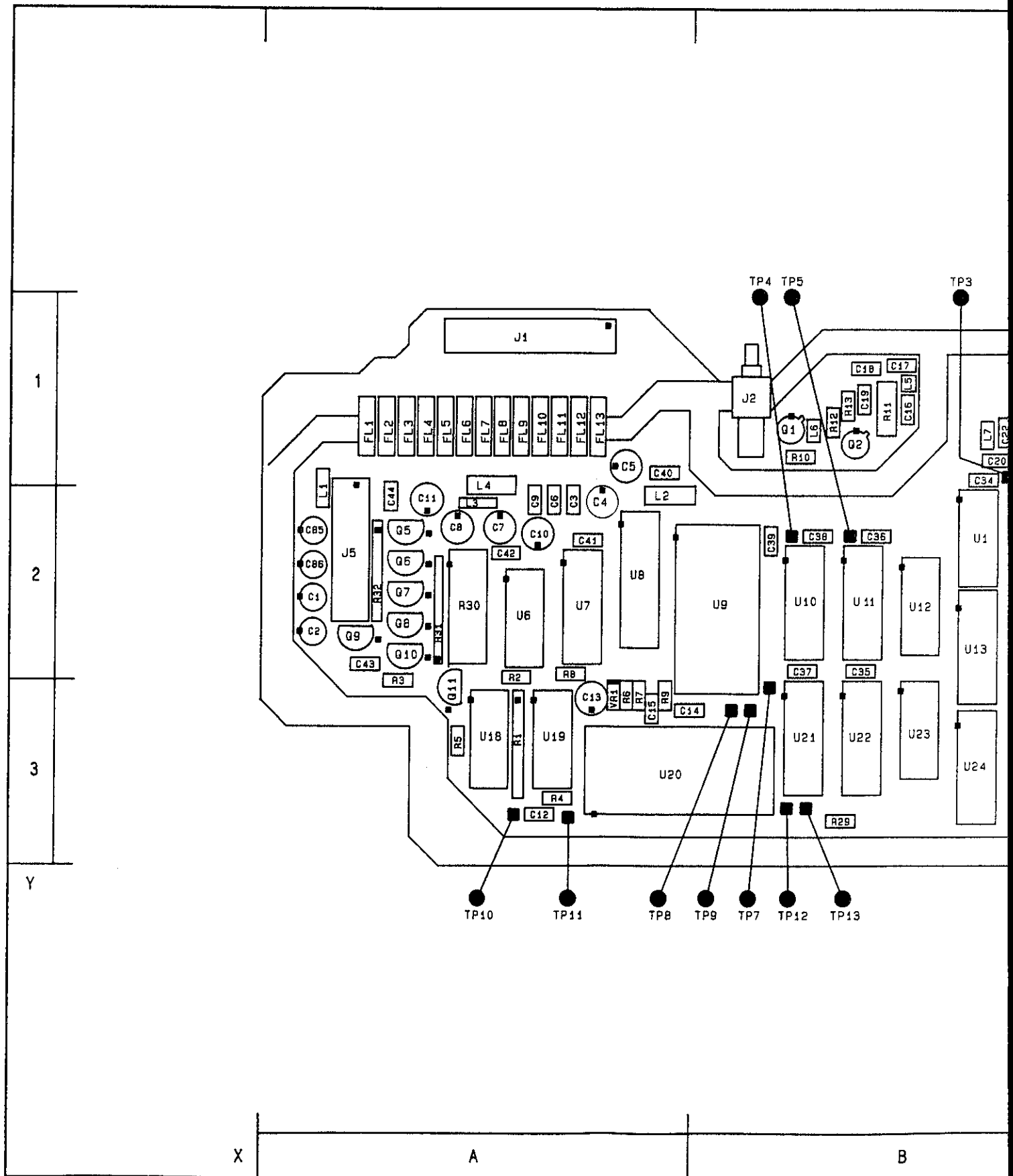
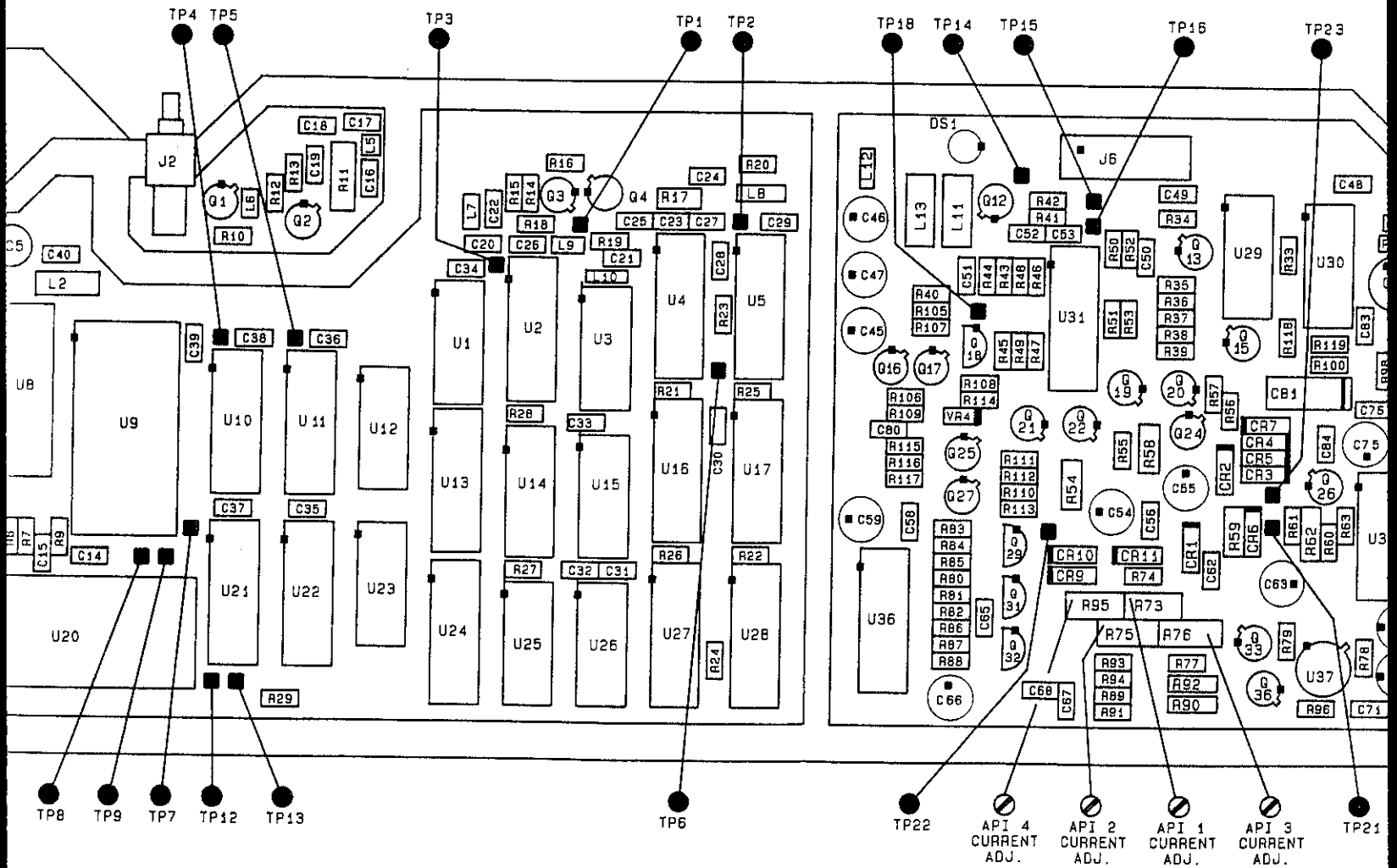


Figure 8M-110. SERVICE SHEET 31 INFORMATION

FIG. 8M-110  
 SH. 2 OF 5

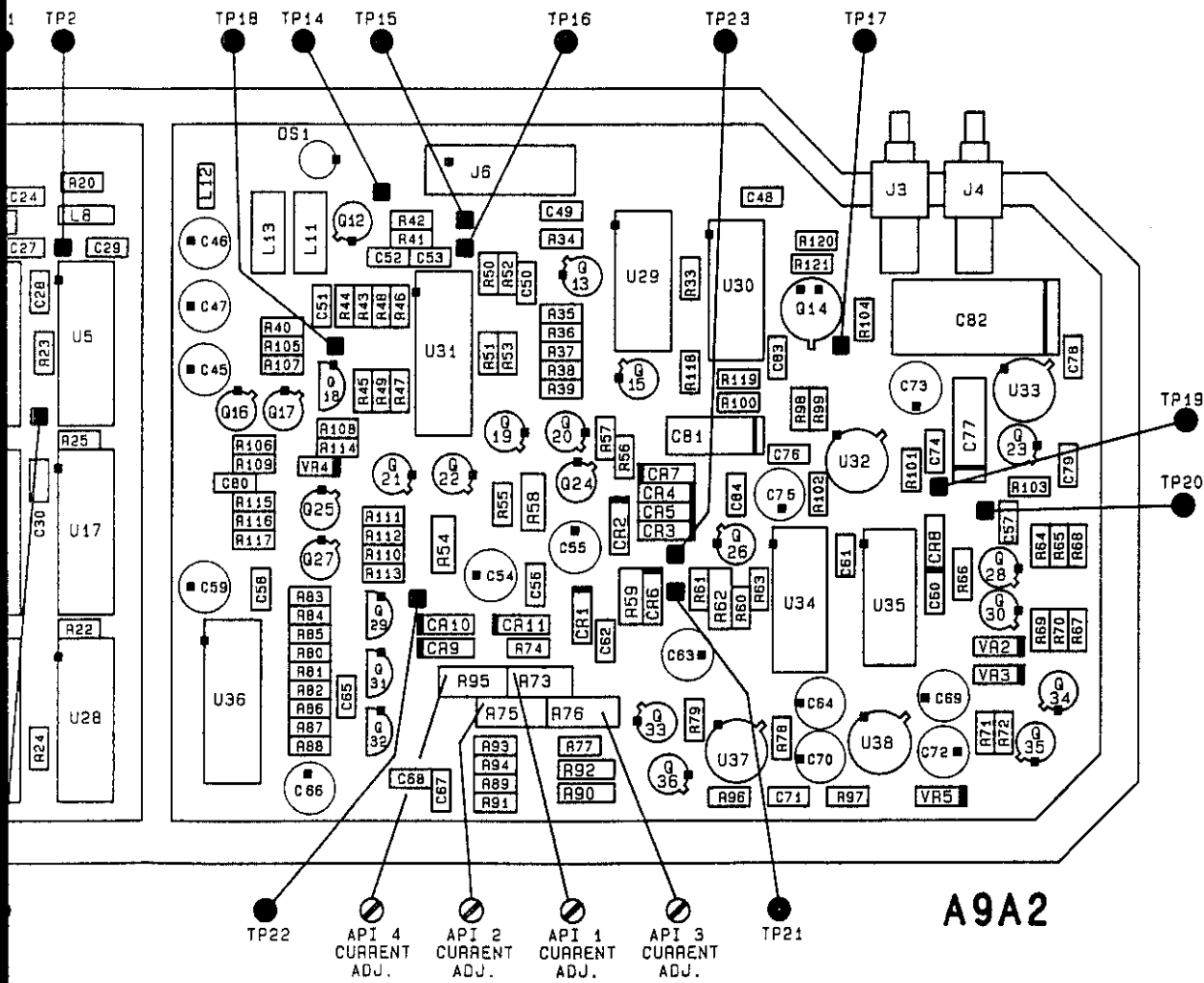


B

C

Component Locator

FIG. 8M-110  
 SH. 3 OF 5



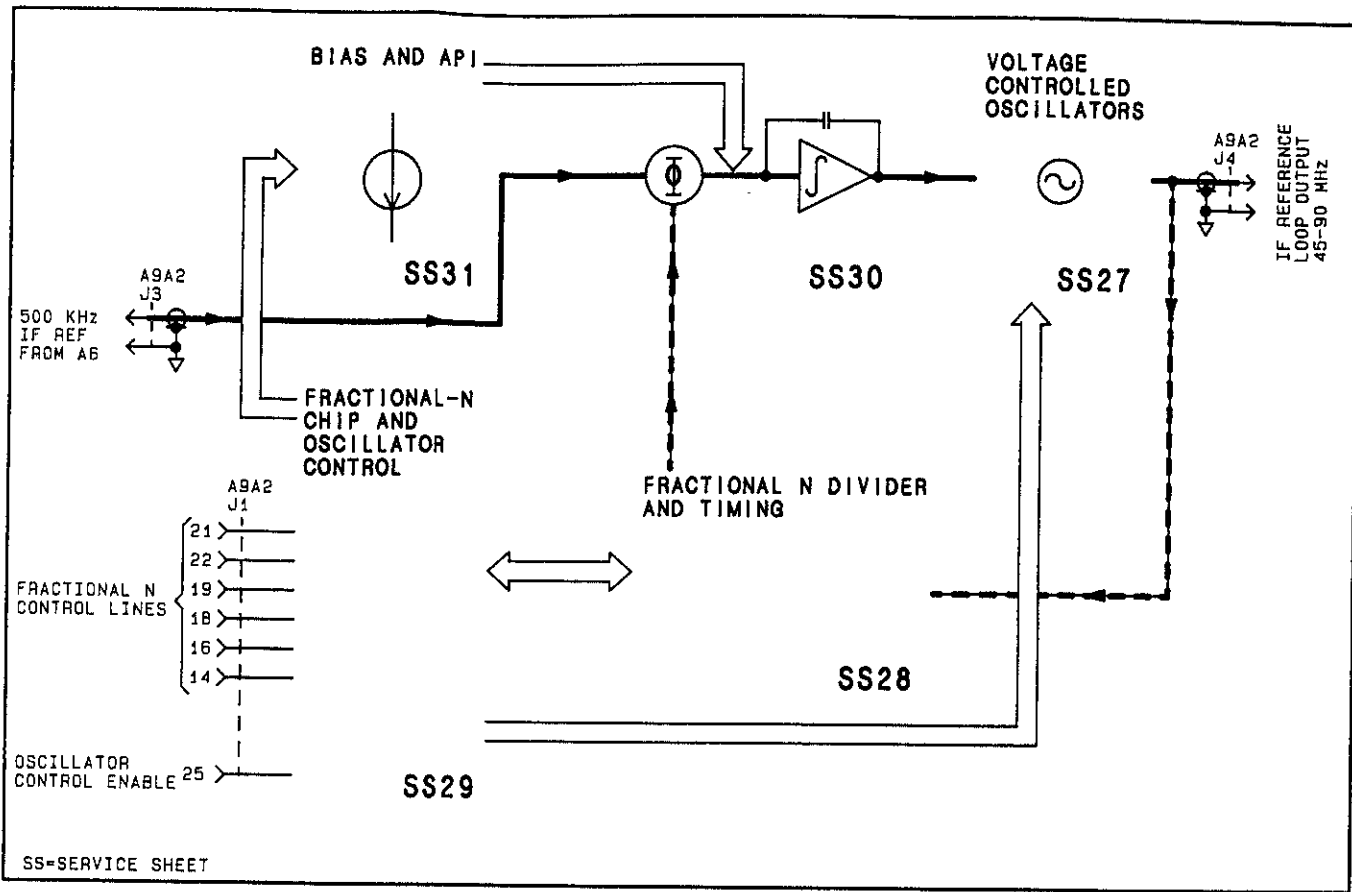
**A9A2**

C

D

ator

FIG. 8M-110  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C57	D, 2	R60	D, 3	R97	D, 3												
C58	C, 2	R61	D, 2	U34	D, 3												
C59	C, 2	R62	D, 3	U35	D, 3												
C60	D, 3	R63	D, 2	U36	C, 3												
C61	D, 2	R64	D, 2	U37	D, 3												
C62	D, 3	R65	D, 2	U38	D, 3												
C63	D, 3	R66	D, 2	VR2	D, 3												
C64	D, 3	R67	D, 2	VR3	D, 3												
C65	C, 3	R68	D, 2	VR5	D, 3												
C66	C, 3	R69	D, 3														
C67	C, 3	R70	D, 3														
C68	C, 3	R71	D, 3														
C69	D, 3	R72	D, 3														
C70	D, 3	R73	C, 3														
C71	D, 3	R74	C, 3														
C72	D, 3	R75	C, 3														
		R76	D, 3														
CR9	C, 3	R77	D, 3														
CR10	C, 3	R78	D, 3														
CR11	C, 3	R79	D, 3														
		R80	C, 3														
Q26	D, 2	R81	C, 3														
Q28	D, 2	R82	C, 3														
Q29	C, 3	R83	C, 2														
Q30	D, 3	R84	C, 3														
Q31	C, 3	R85	C, 3														
Q32	C, 3	R86	C, 3														
Q33	D, 3	R87	C, 3														
Q34	D, 3	R88	C, 3														
Q35	D, 3	R89	C, 3														
Q36	D, 3	R90	D, 3														
		R91	C, 3														
		R92	C, 3														
		R93	C, 3														
		R94	C, 3														
		R95	C, 3														
		R96	D, 3														

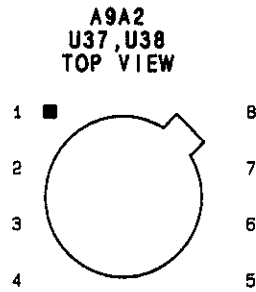
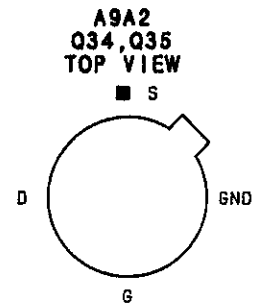
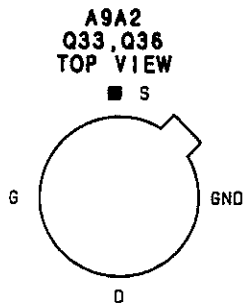
P/O FRACTIONAL-N  
A9A2 ASSEMBLY

**SS30**

SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information



FIG. 8M-111, SHEET 1 OF 5

P/O A9A2 FRACTIONAL-N ASSEMBLY (08642-60105)

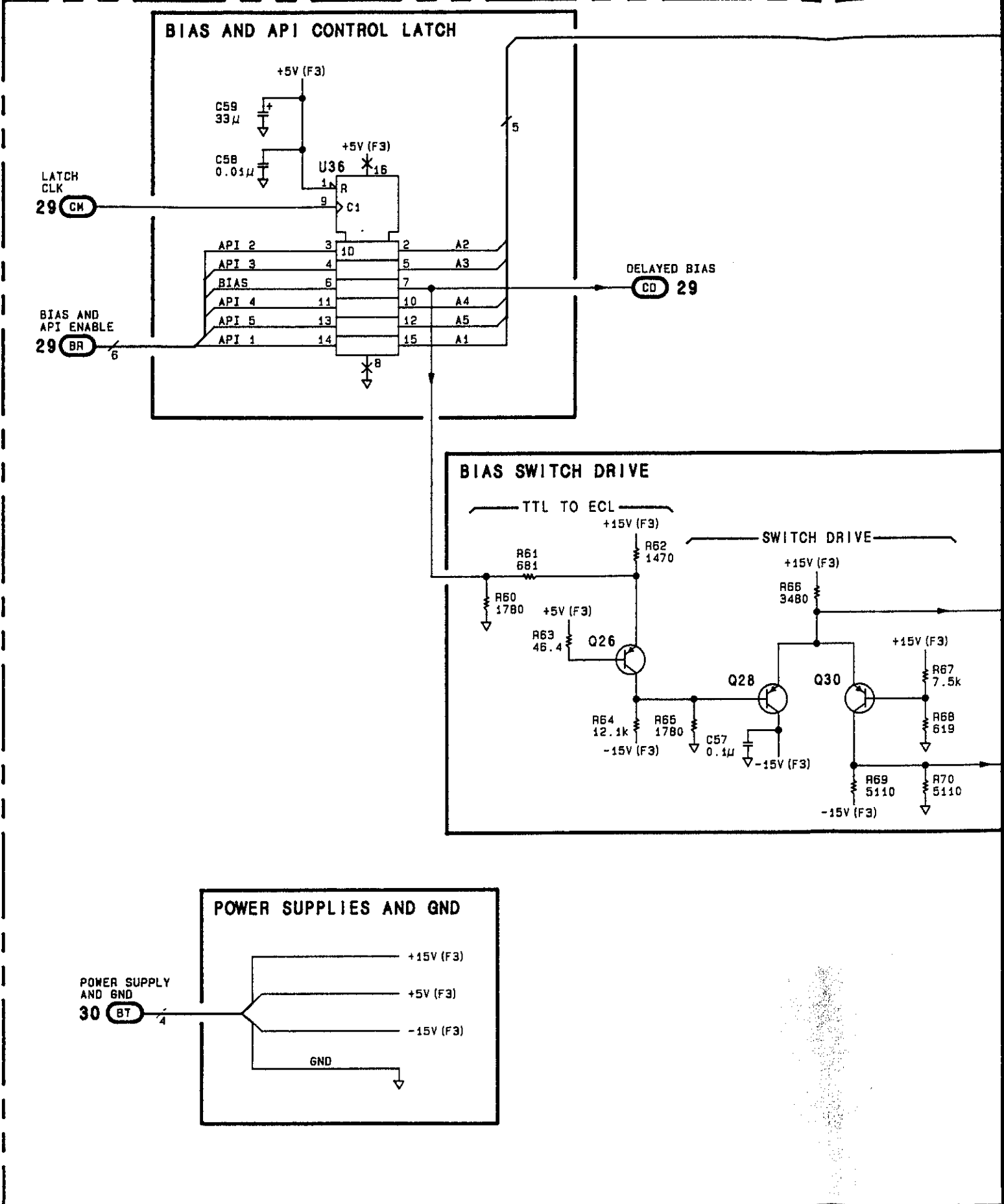


FIG. 8M-III, SH. 2 OF 5

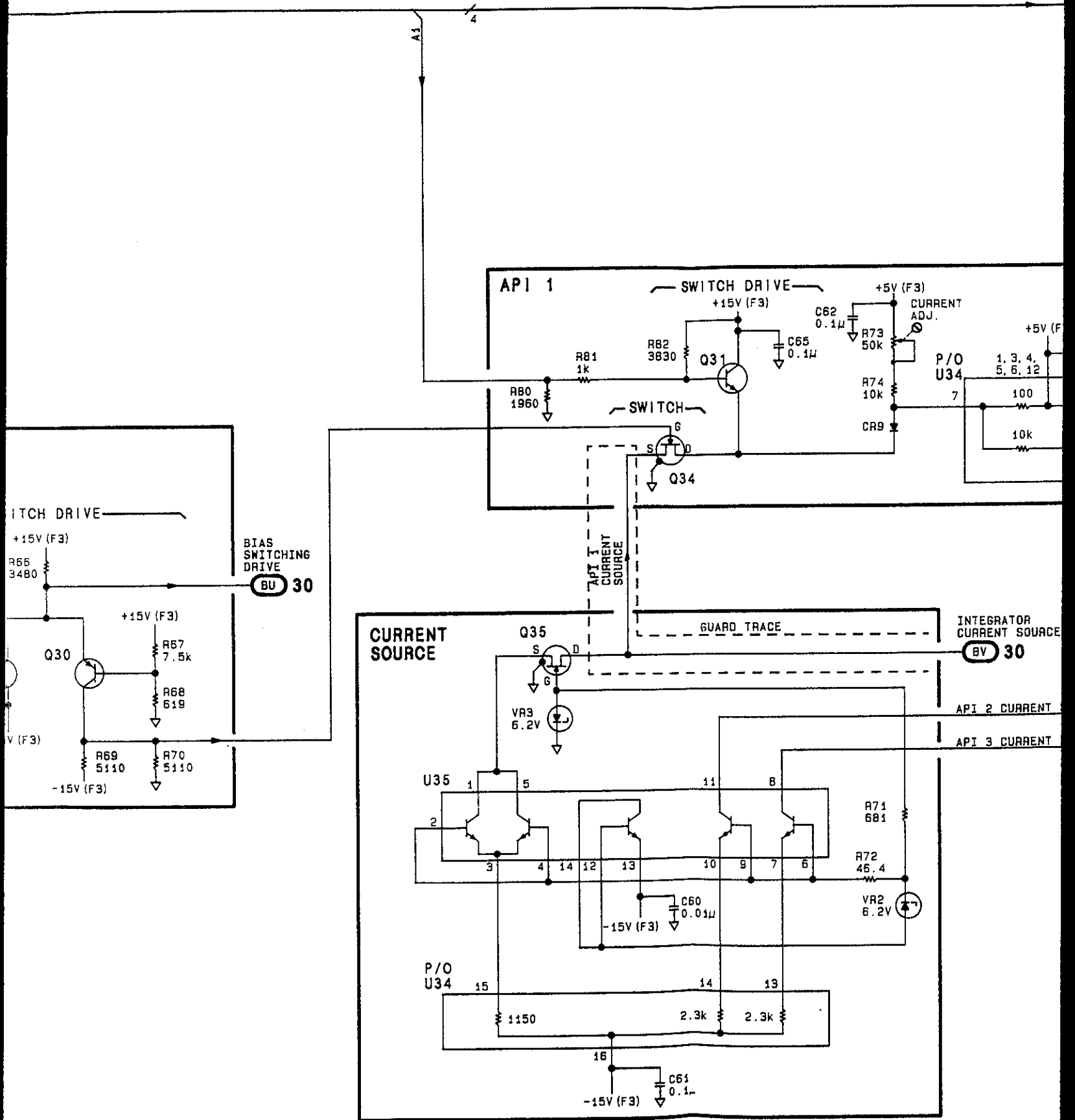


FIG. 8M-111, SHEET 3 OF 5

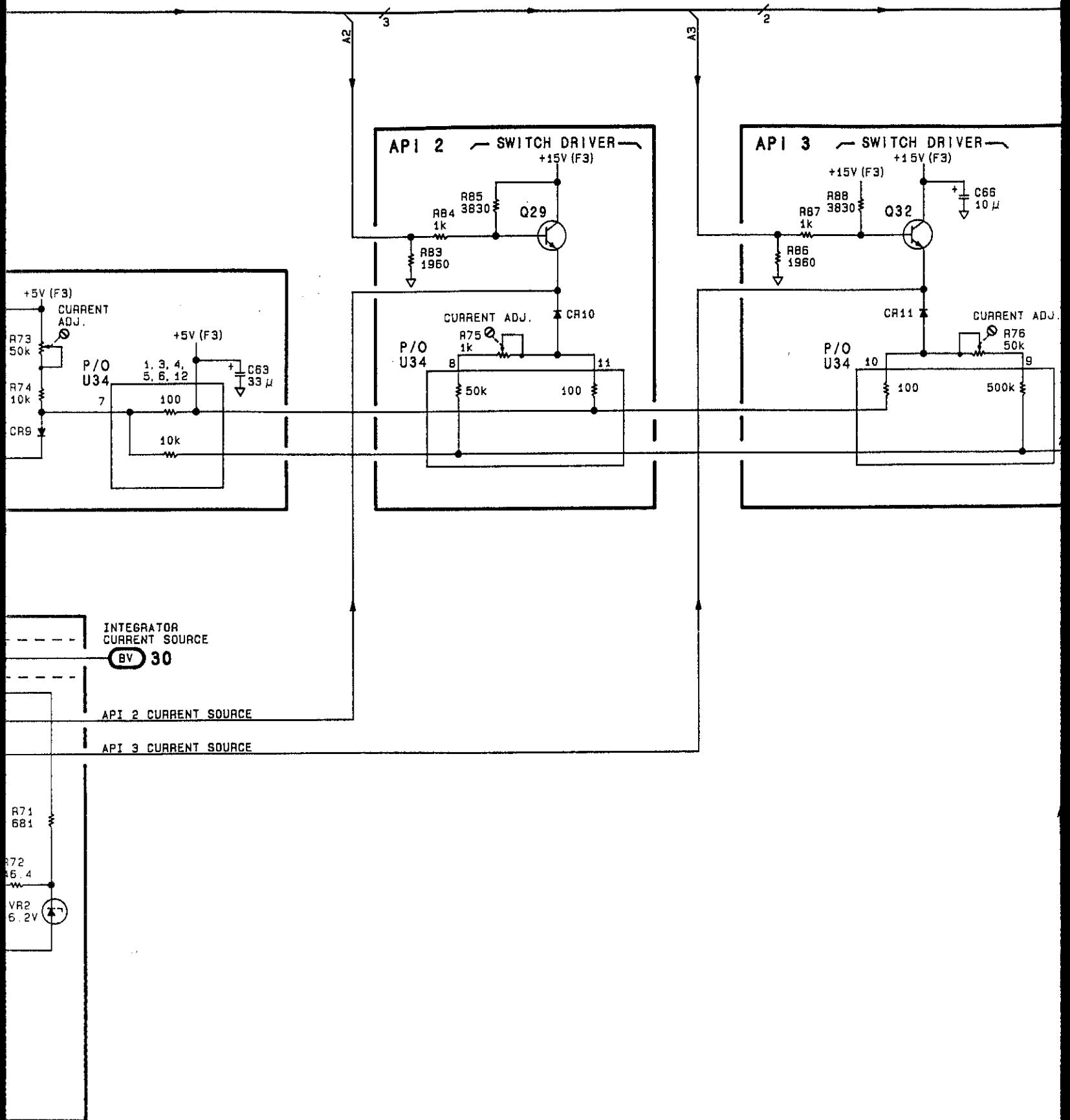


FIG. 8M-111, SHEET 4 OF 5

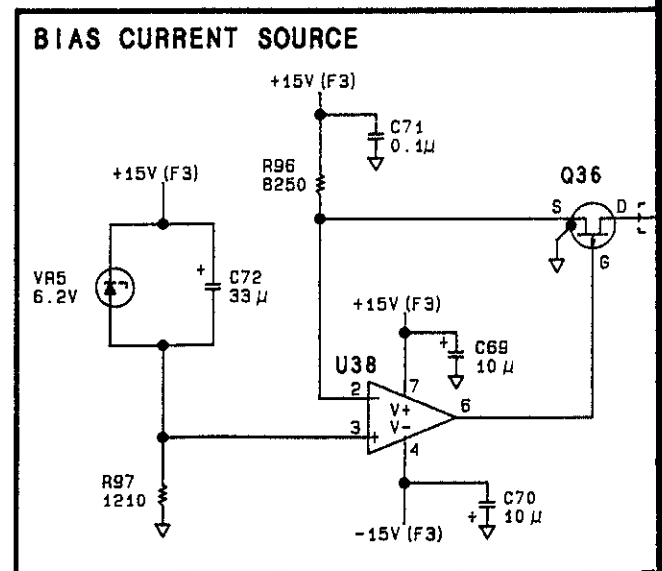
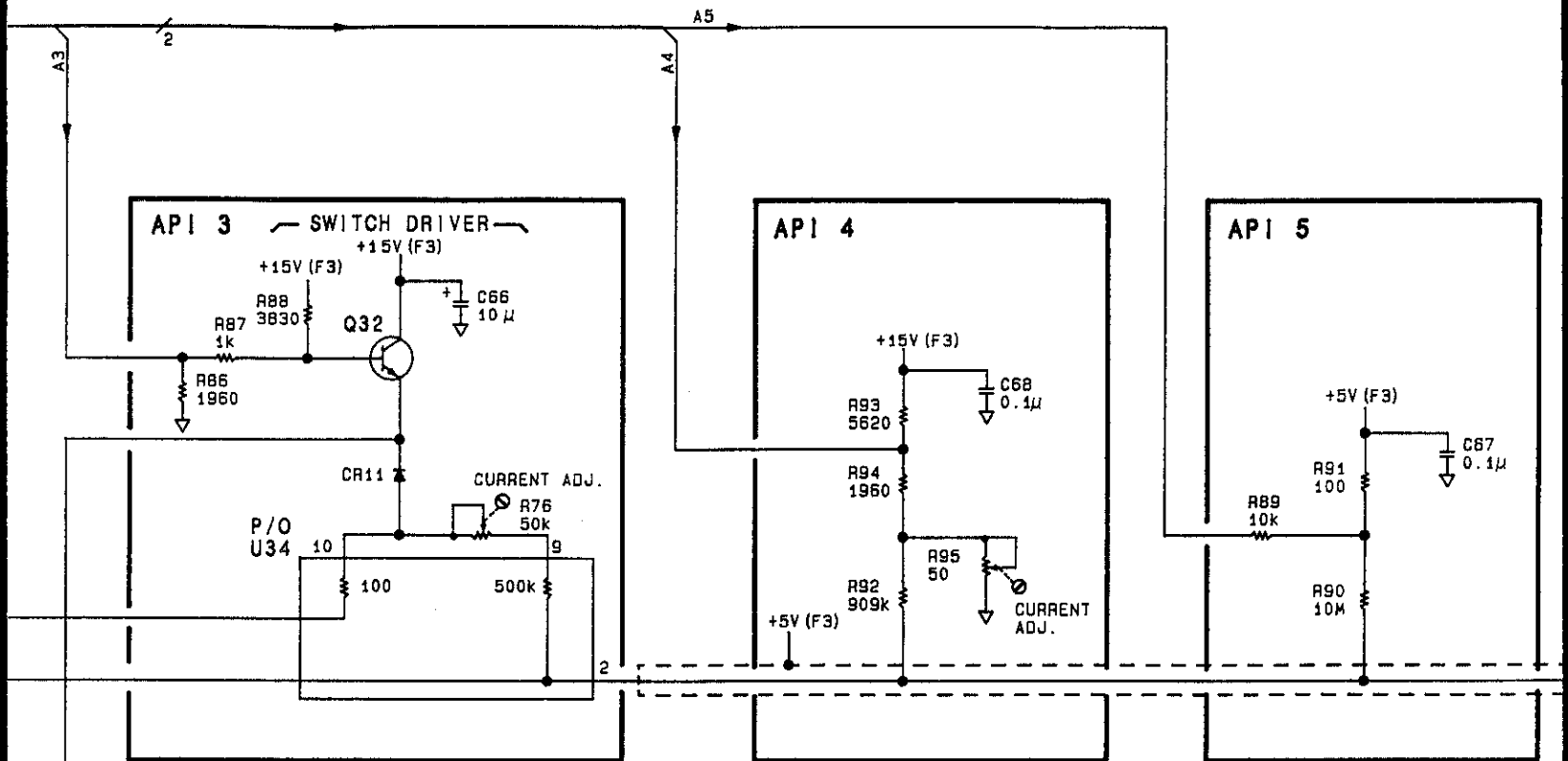
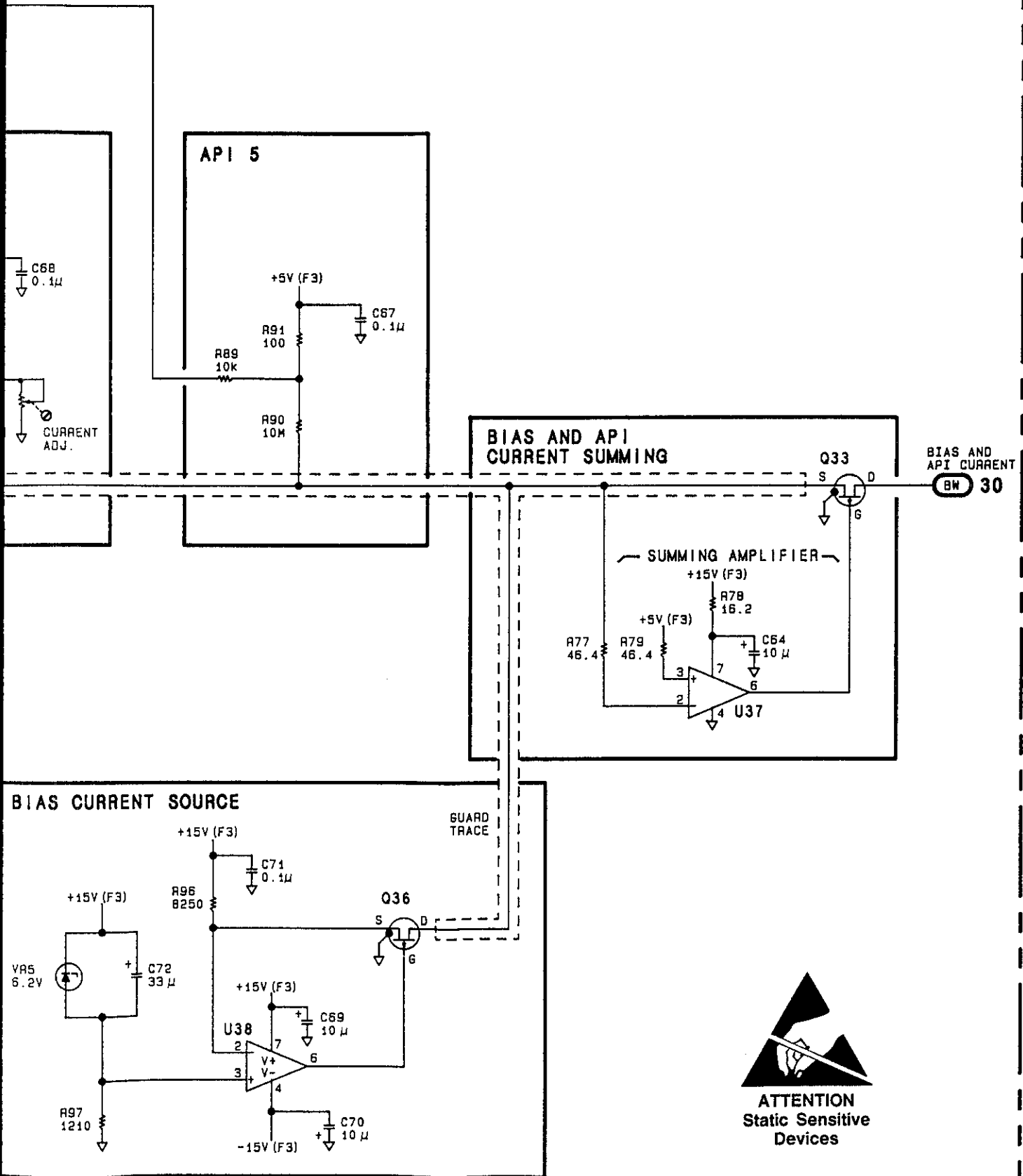


FIG. 8M-111, SHEET 5 OF 5

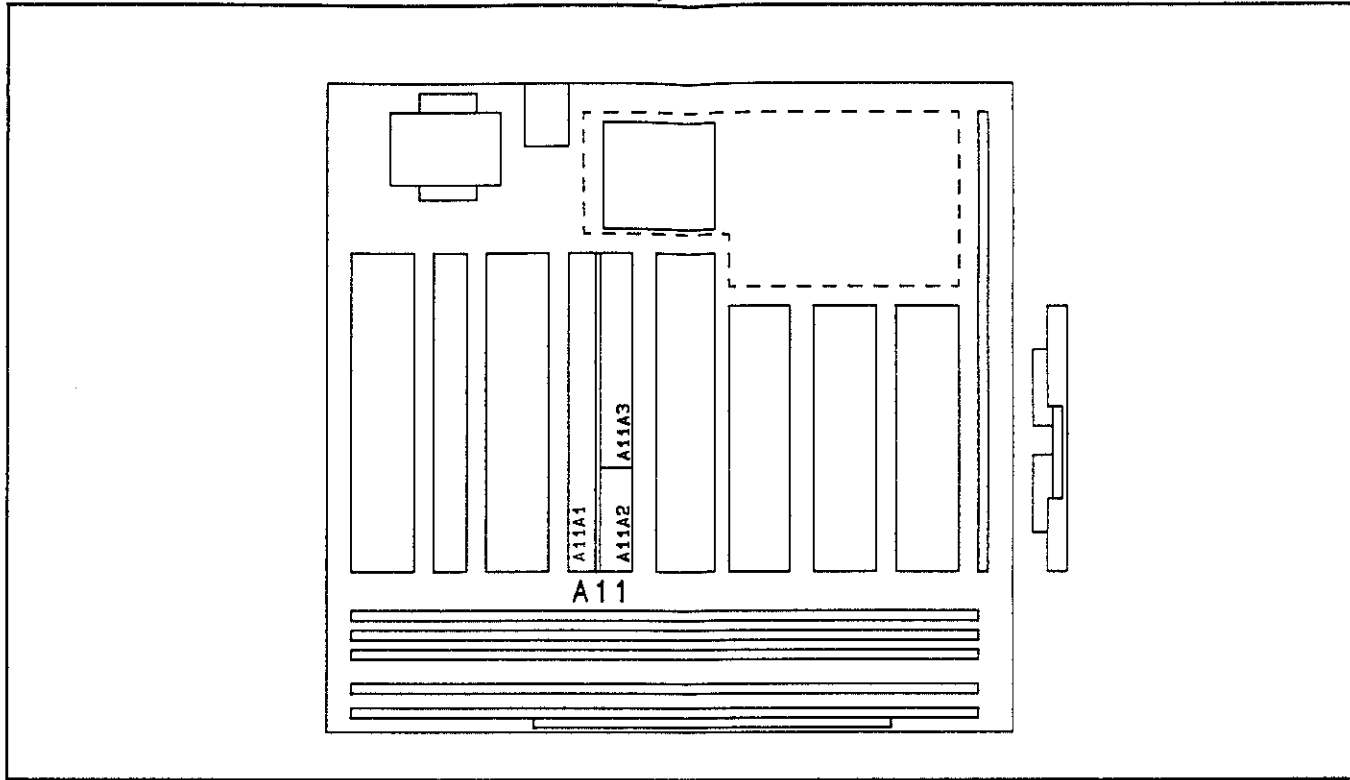


SS31  
Figure 8M-111  
8M-111

All Reference Loop Module

FIG. 8N-100  
SHT. 1 OF 2

Assembly Locator



Simplified Block Diagram

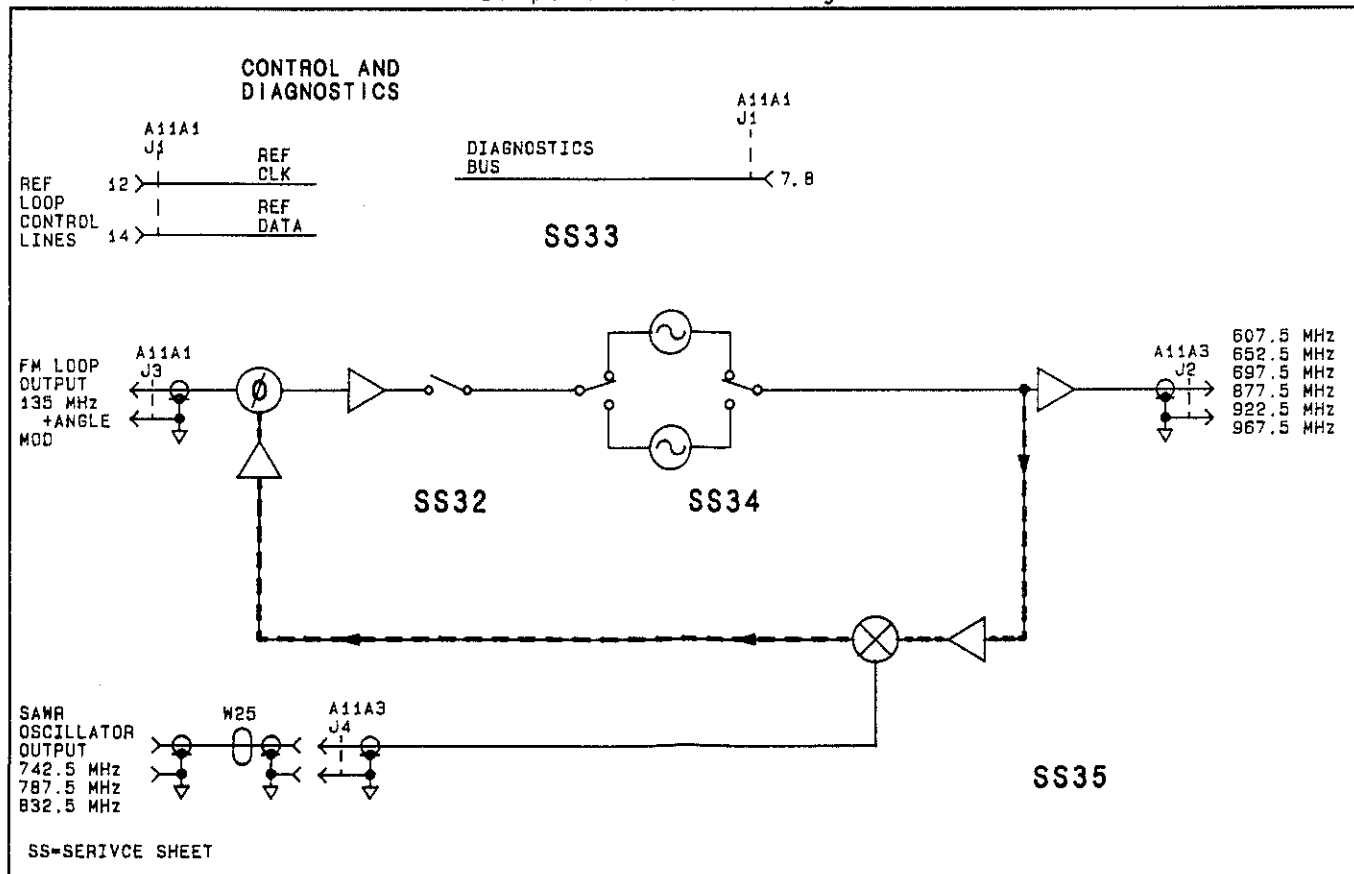


Figure 8N-100 BD11 General Information.

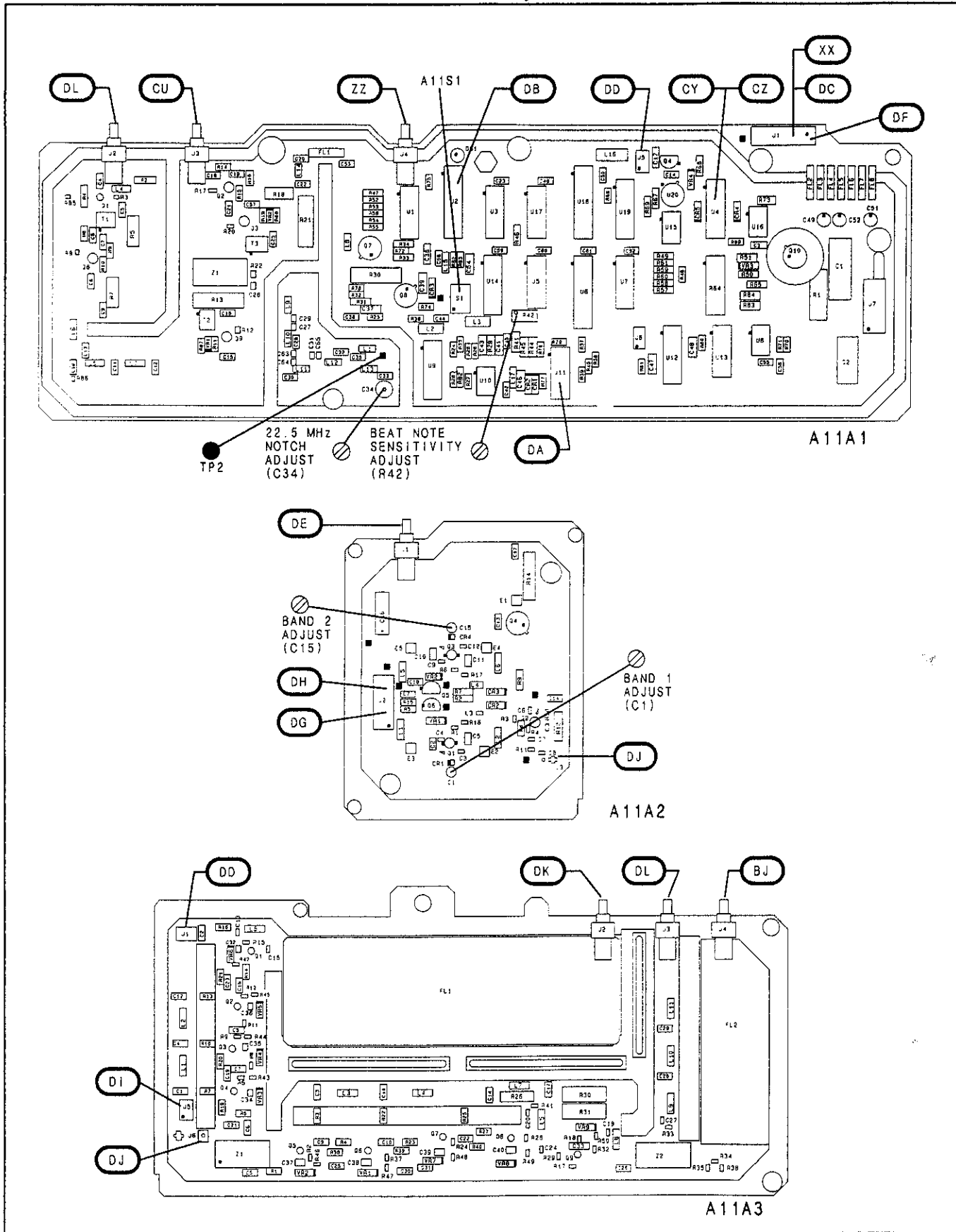




FIG. 8N-101  
SHT. 1 OF 5

**A11A1 REFERENCE LOOP PHASE DETECTOR AND INTEGRATOR (08642-601)**

REF LOOP CONTROL LINES  
BD4 (DC)

P/O J1  
12 REF CLK  
14 REF DATA

SERIAL DATA INTERFACE

U2-6, 9

U10-5, 6

U6-5

U6-2

U6-19

POWER SUPPLY AND GND  
+50V (F1)  
+15V (F1)  
+5V (F1)  
+5V (F2)  
-15V (F1)  
GND

32 (CX) 6

FM LOOP OUTPUT  
BD8 (CU)  
(0dBm TO 5dBm  
135 MHz)

PHASE DETECTOR LO PORT DRIVER

PHASE DETECTOR

REF LOOP FILTER

A11W1 REF LOOP IF  
925  
(-9dBm TO -12dBm  
135 MHz)

REFERENCE LOOP IF AMPLIFIER

2ND IF LOW-PASS FILTER

PHASE DETECTOR RF PORT DRIVER

POWER SUPPLY AND GROUND  
67 (TY) 6

POWER SUPPLY AND GND  
+50V  
+15V  
+5V  
-15V  
-5V

33 (CX) 6

1 MH PASS

SERIAL PREFIX: 2427A

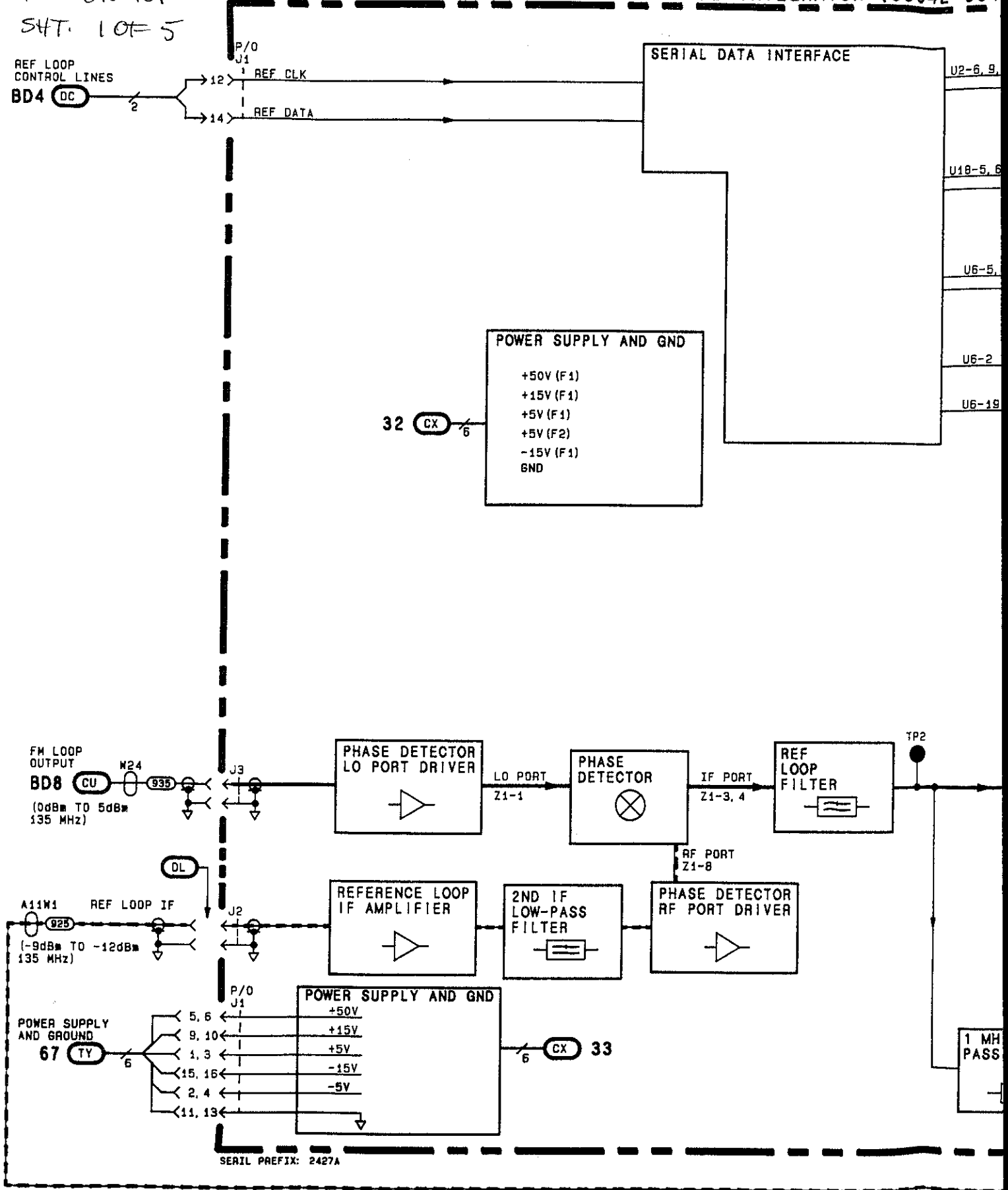


FIG. 8N-101  
SHT. 2 OF 5

TOR (08642-60106)

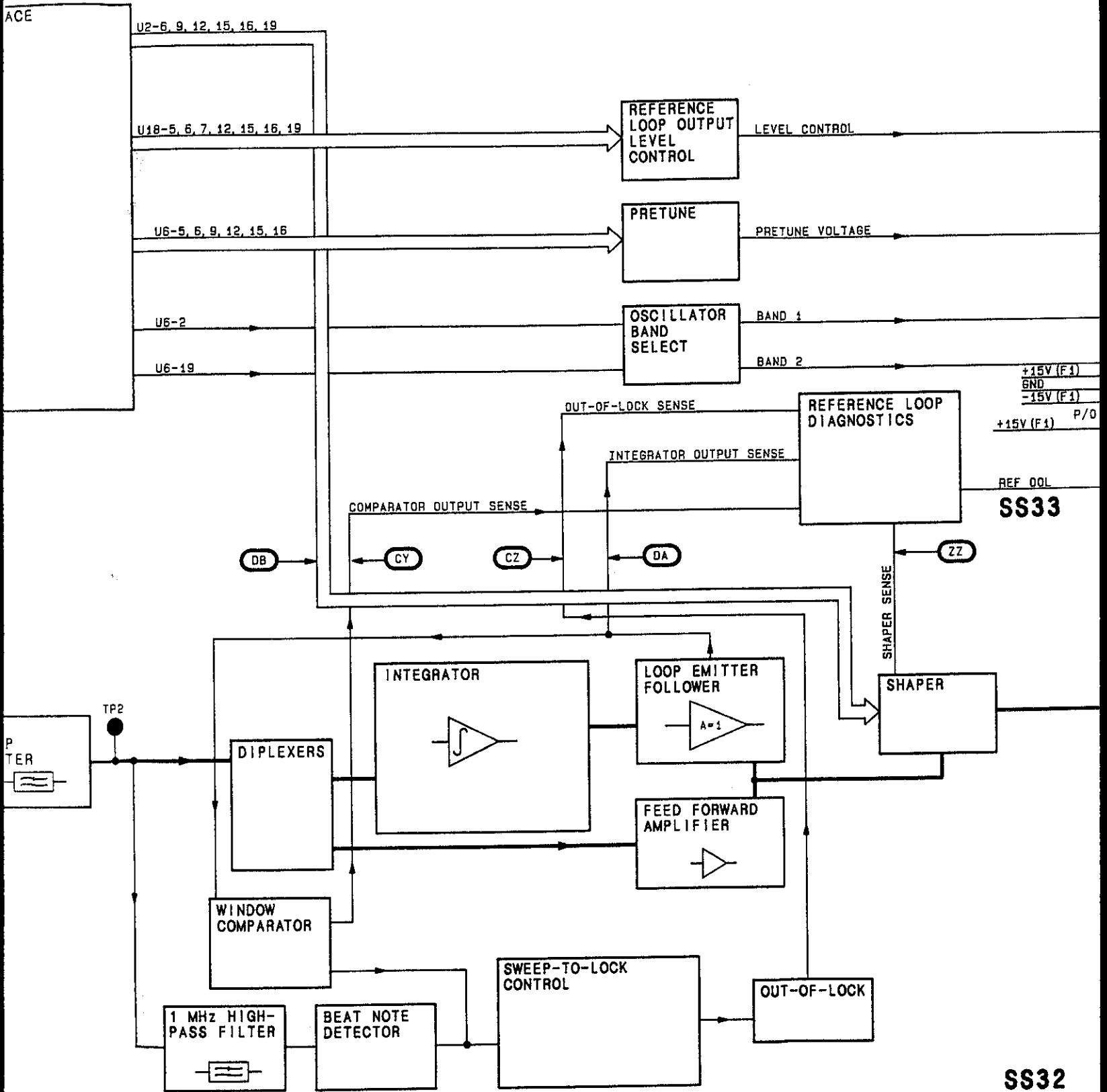


FIG 8W-101  
 SH. 3 OF 5

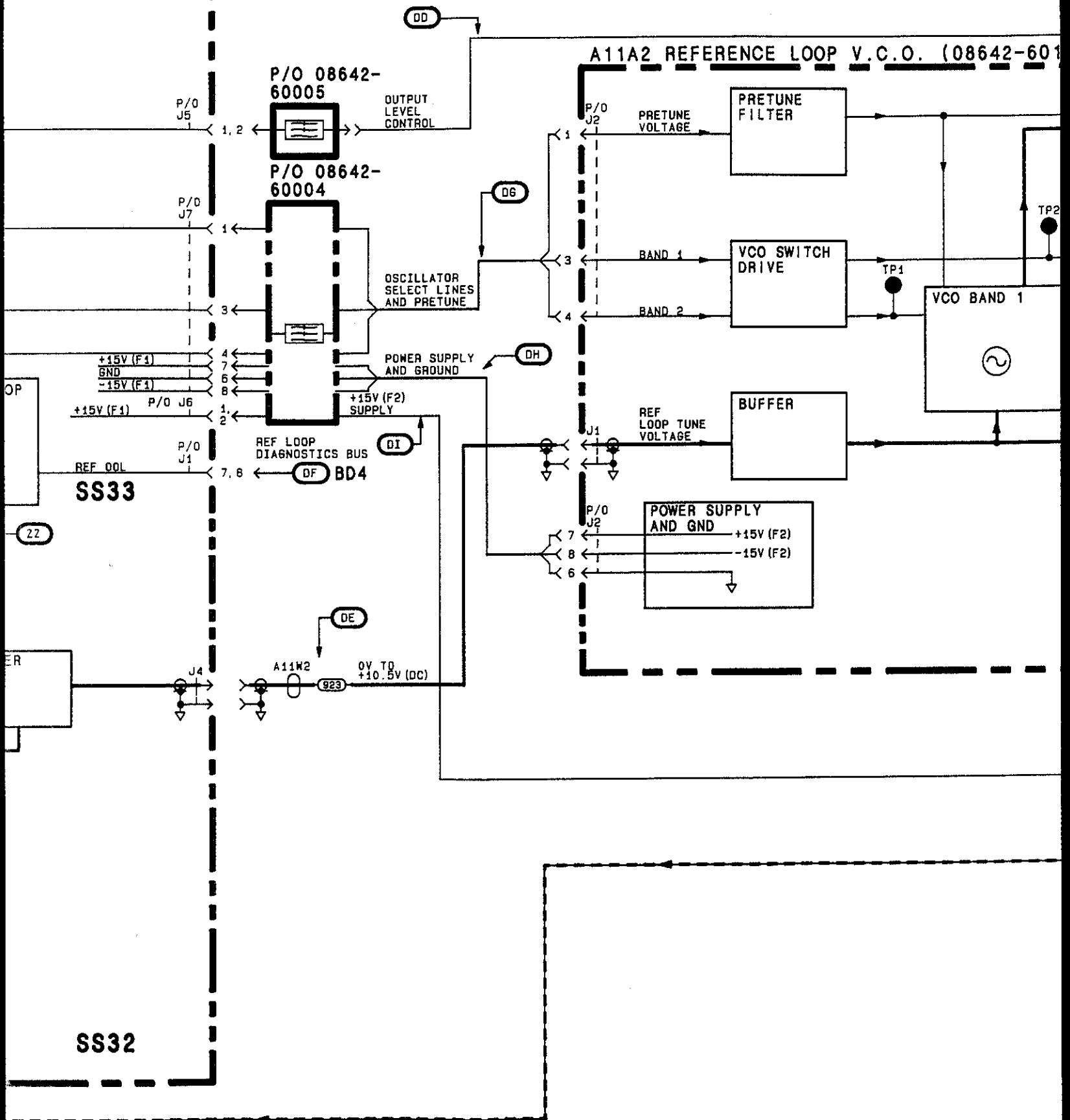
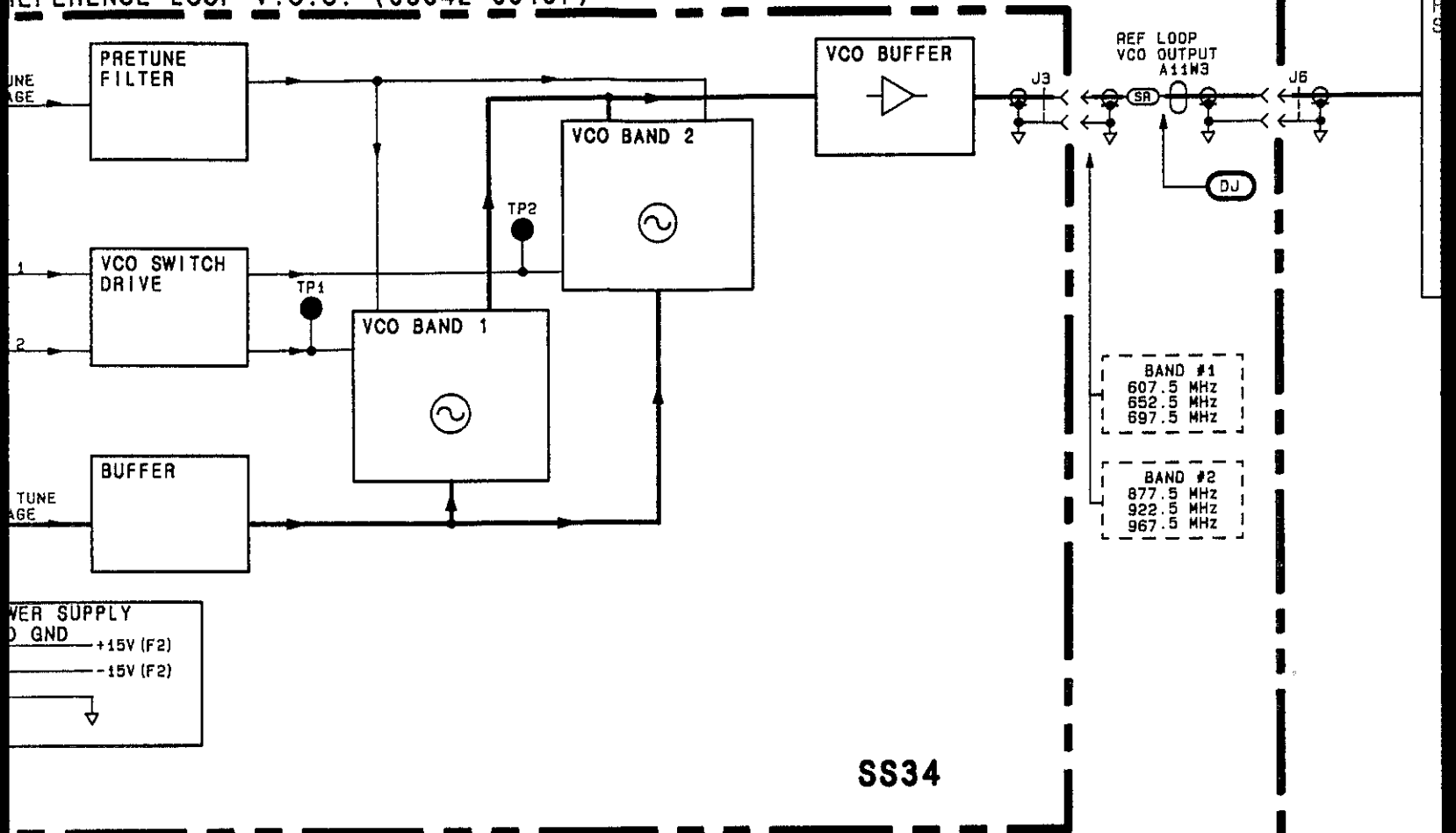


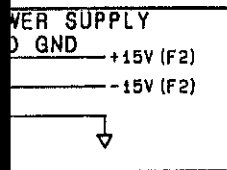
FIG. 8N-101  
 SH. 4 OF 5

A11A3 REF  
 SPLITTER A

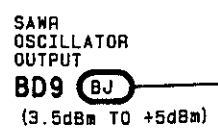
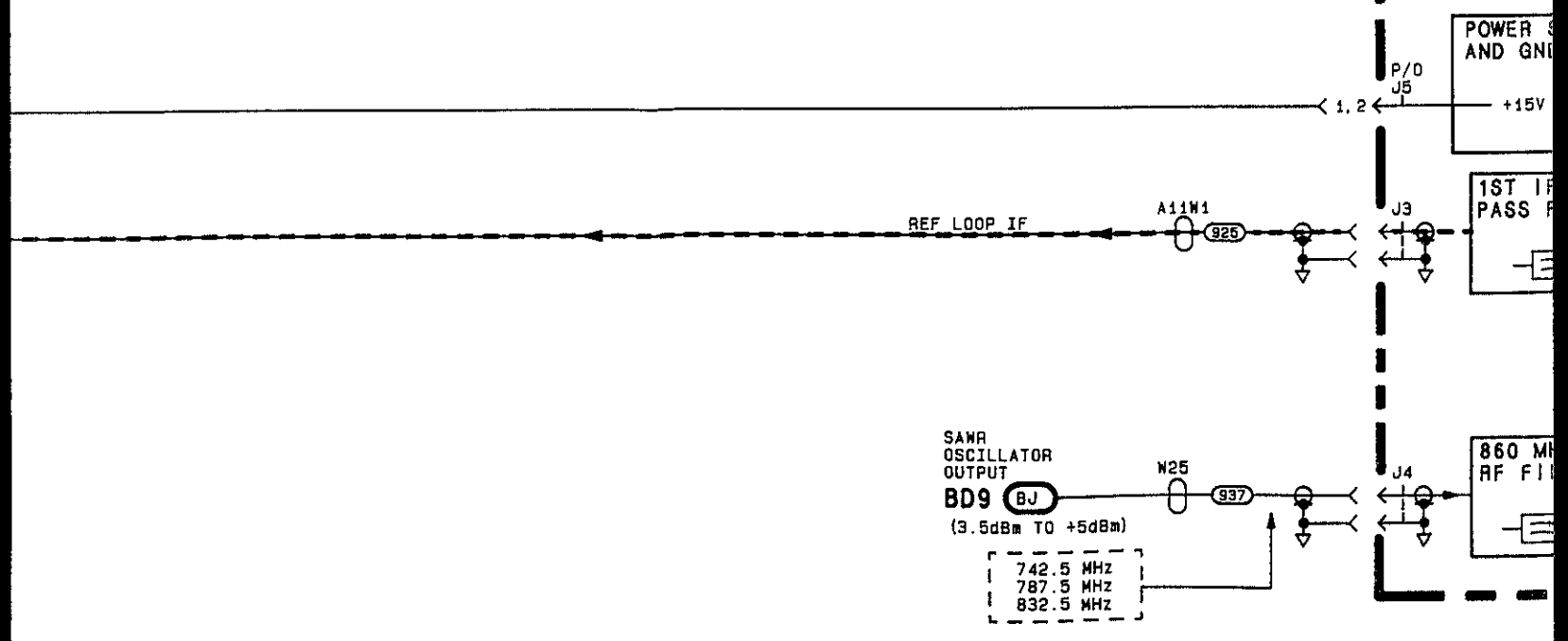
REFERENCE LOOP V.C.O. (08642-60107)



- BAND #1
  - 607.5 MHz
  - 652.5 MHz
  - 697.5 MHz
- BAND #2
  - 877.5 MHz
  - 922.5 MHz
  - 967.5 MHz



SS34



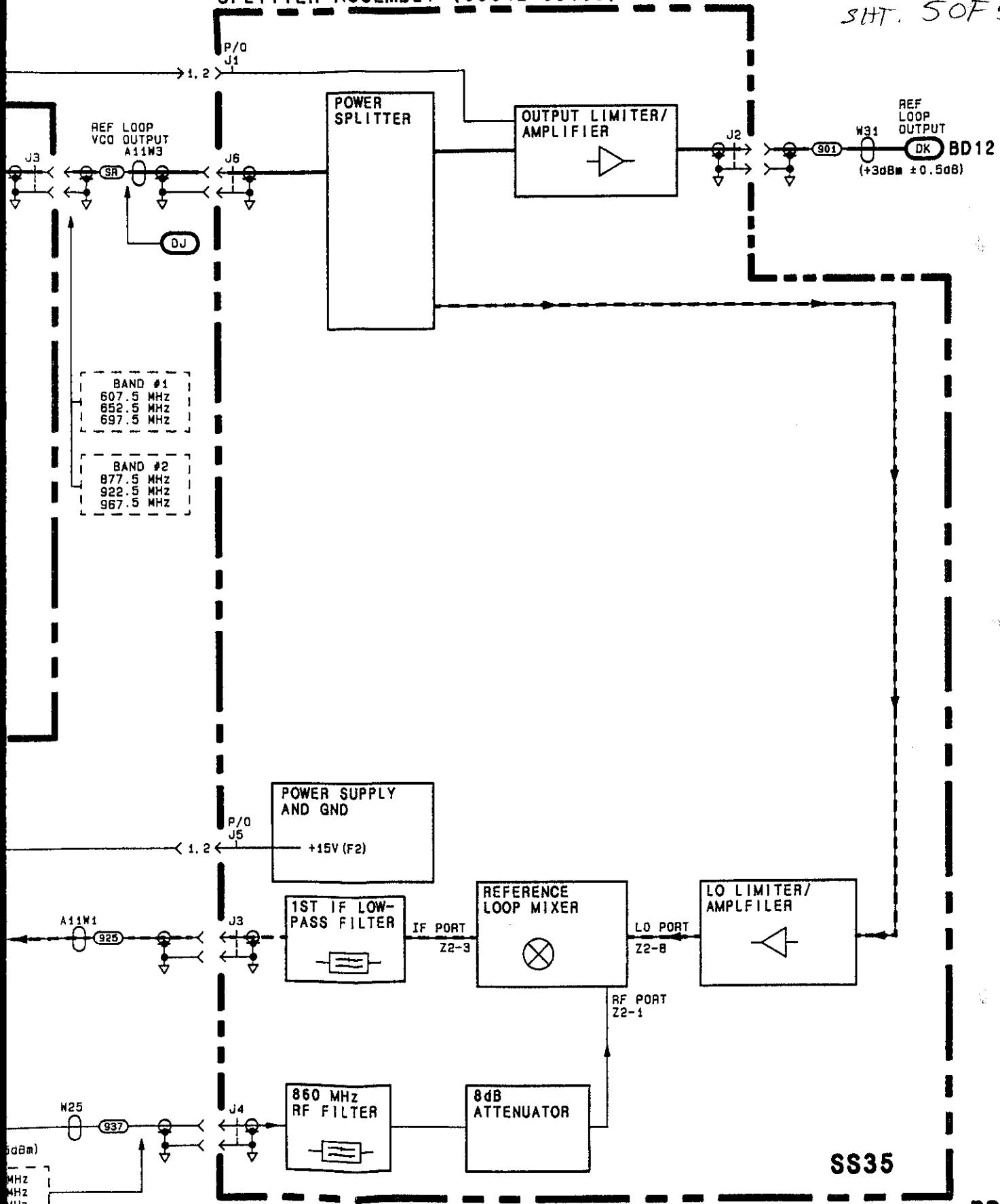
POWER SUPPLY AND GND

1ST IF PASS FILTER

860 MHz RF FILTER

A11A3 REFERENCE LOOP POWER  
SPLITTER ASSEMBLY (08642-60108)

FIG. 8N-101  
SHT. 50F5



BD11  
Figure 8N-101  
8N-101

FIG. 8N-102  
SHT. 1 OF 5

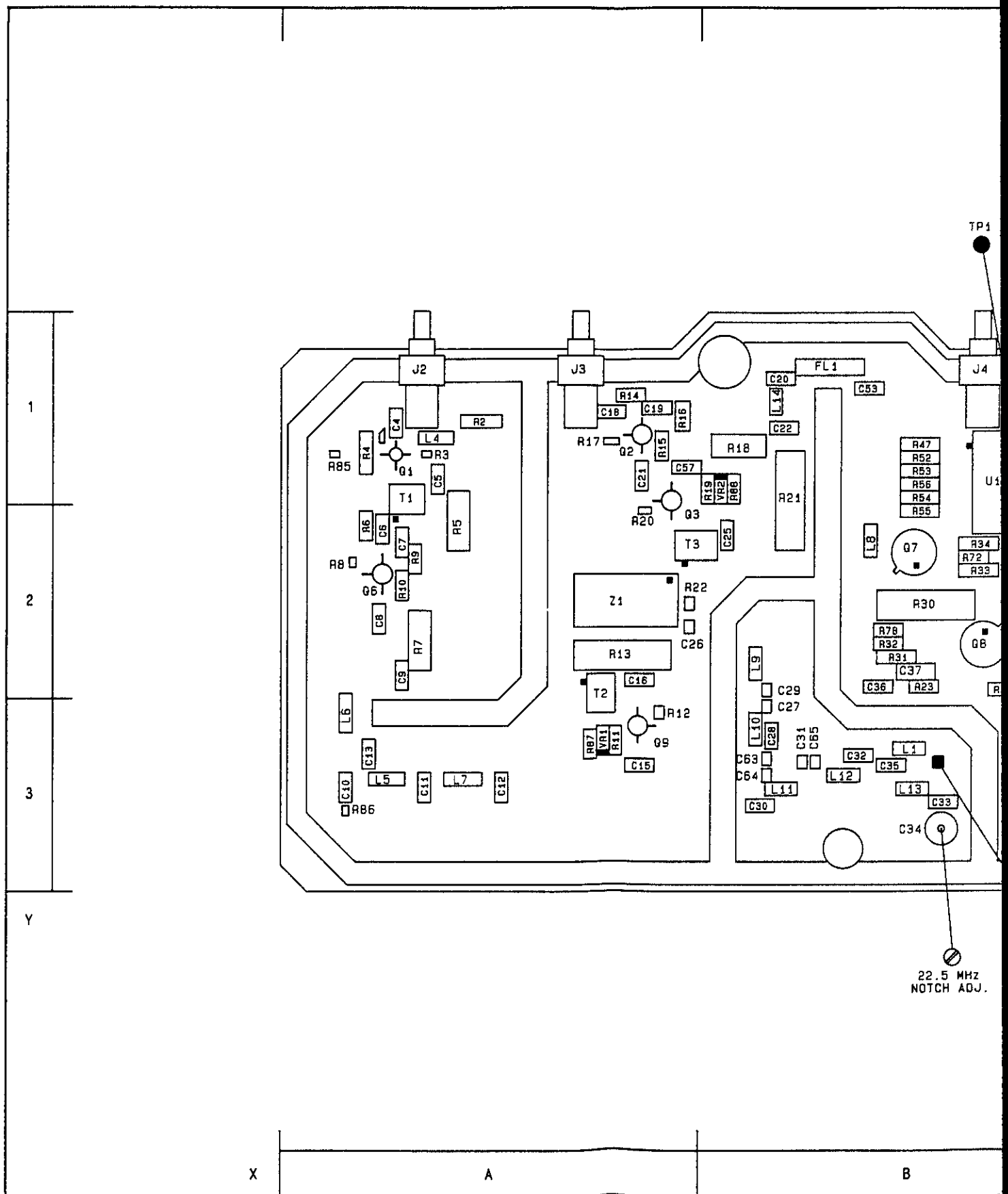
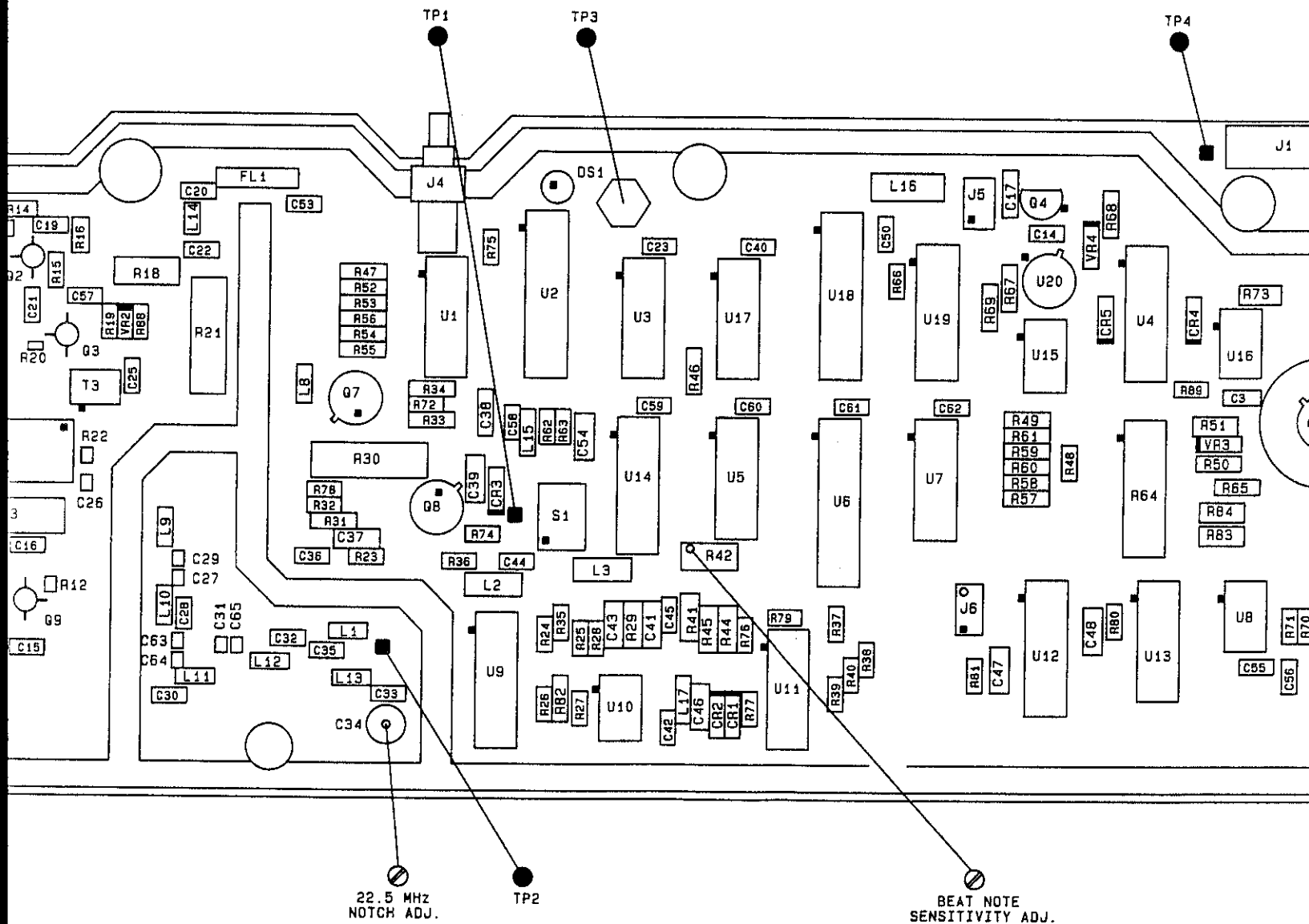


Figure 8N-102. SERVICE SHEET 32 INFORMATION

FIG. 8N-102  
 SH. 2 OF 5



B

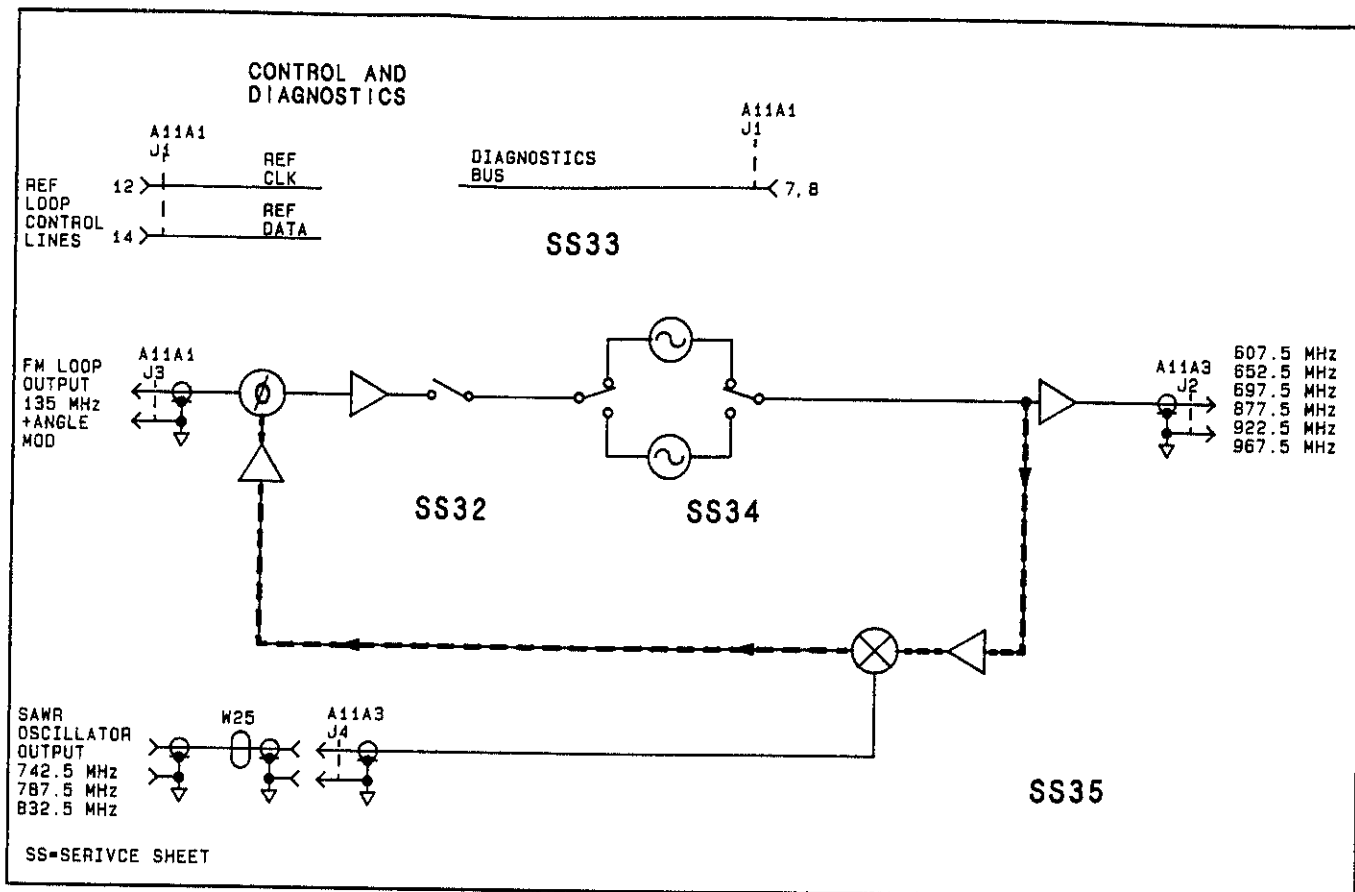
C

Component Locator





FIG. 8N-102  
SHT. 4 OF 5



Reference Block Diagram  
Component Coordinates

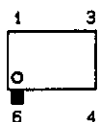
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
1	D, 2	C45	C, 3	L1	B, 3	R2	A, 1	R39	C, 3	S1	B, 2						
C4	A, 1	C46	C, 3	L2	B, 3	R3	A, 1	R40	C, 3	T1	A, 1						
C5	A, 1	C47	C, 3	L3	B, 3	R4	A, 1	R41	C, 3	T2	A, 2						
C6	A, 2	C48	D, 3	L4	A, 1	R5	A, 2	R42	C, 2	T3	A, 2						
C7	A, 2	C49	D, 1	L5	A, 3	R6	A, 2	R44	C, 3	TP4	B, 2						
C8	A, 2	C51	D, 1	L6	A, 3	R7	A, 2	R45	C, 3	TP2	B, 3						
C9	A, 2	C52	D, 1	L7	A, 3	R8	A, 2	R46	C, 2	TP3	C, 1						
C10	A, 3	C53	B, 1	L8	B, 2	R9	A, 2	R47	B, 1	U1	B, 1						
C11	A, 3	C54	B, 2	L9	B, 2	R10	A, 2	R52	B, 1	U8	D, 3						
C12	A, 3	C55	D, 3	L10	B, 3	R11	A, 3	R53	B, 1	U9	B, 3						
C13	A, 3	C56	D, 3	L11	B, 3	R12	A, 3	R54	B, 1	U10	C, 3						
C15	A, 3	C57	A, 1	L12	B, 3	R13	A, 2	R55	B, 2	U11	C, 3						
C16	A, 2	C58	B, 2	L13	B, 3	R14	A, 1	R56	B, 1	U12	C, 3						
C18	A, 1	C63	B, 3	L14	B, 1	R15	A, 1	R57	B, 2	U13	D, 3						
C19	A, 1	C64	B, 3	L15	B, 2	R16	A, 1	R63	B, 2	VR1	A, 3						
C20	B, 1	C65	B, 3	L17	C, 3	R17	A, 1	R70	D, 3	VR2	B, 1						
C21	A, 1			Q1	A, 1	R18	B, 1	R71	D, 3	Z1	A, 2						
C22	B, 1	CR1	C, 3	Q2	A, 1	R19	B, 1	R72	B, 2								
C25	B, 2	CR2	C, 3	Q3	A, 2	R20	A, 2	R74	B, 2								
C26	A, 2	CR3	B, 2	Q6	A, 2	R21	B, 1	R76	C, 3								
C27	B, 3			Q7	B, 2	R22	A, 2	R77	C, 3								
C28	B, 3	DS1	B, 1	Q8	B, 2	R23	B, 2	R78	B, 2								
C29	B, 2			Q9	A, 3	R24	B, 3	R79	C, 3								
C30	B, 3	FL1	B, 1			R25	B, 3	R80	D, 3								
C31	B, 3	FL4	D, 1			R26	B, 3	R81	C, 3								
C32	B, 3	FL6	D, 1			R27	B, 3	R82	B, 3								
C33	B, 3	FL7	D, 1			R28	B, 3	R85	A, 1								
C34	B, 3	FL8	D, 1			R29	C, 3	R86	A, 3								
C35	B, 3					R30	B, 2	R87	A, 3								
C36	B, 2	J1	D, 1			R31	B, 2	R88	B, 1								
C37	B, 2	J2	A, 1			R32	B, 2										
C38	B, 2	J3	A, 1			R33	B, 2										
C39	B, 2					R34	B, 2										
C41	C, 3					R35	B, 3										
C42	C, 3					R36	B, 2										
C43	C, 3					R37	C, 3										
C44	B, 2					R38	C, 3										

SEE REVERSE SIDE **A11 MODULE BD 11**

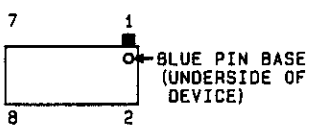
Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. Feedthrough filter outer body must be soldered to the shielding in the area where shielding is notched.
3. Test point requires high impedance (>500 Ω) probe. See Bench Service Kit (HP part number 11802A).
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

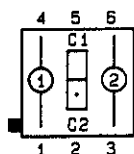
A11A1  
T1, T2, T3  
TOP VIEW



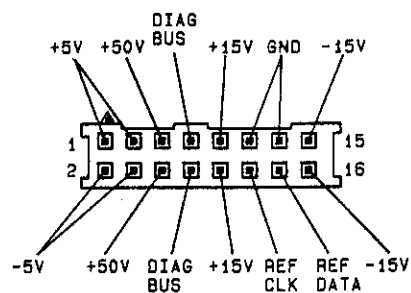
A11A1  
Z1  
TOP VIEW



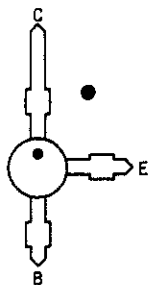
A11A1  
S1  
TOP VIEW



CABLE PLUG  
TO A11A1 J1

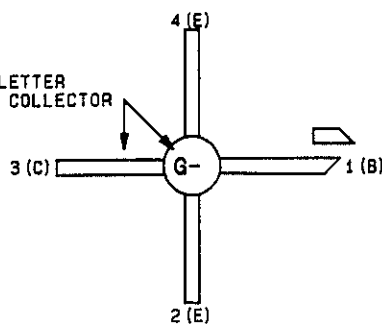


A11A1  
Q2, Q3, Q6, Q9



A11A1  
Q1

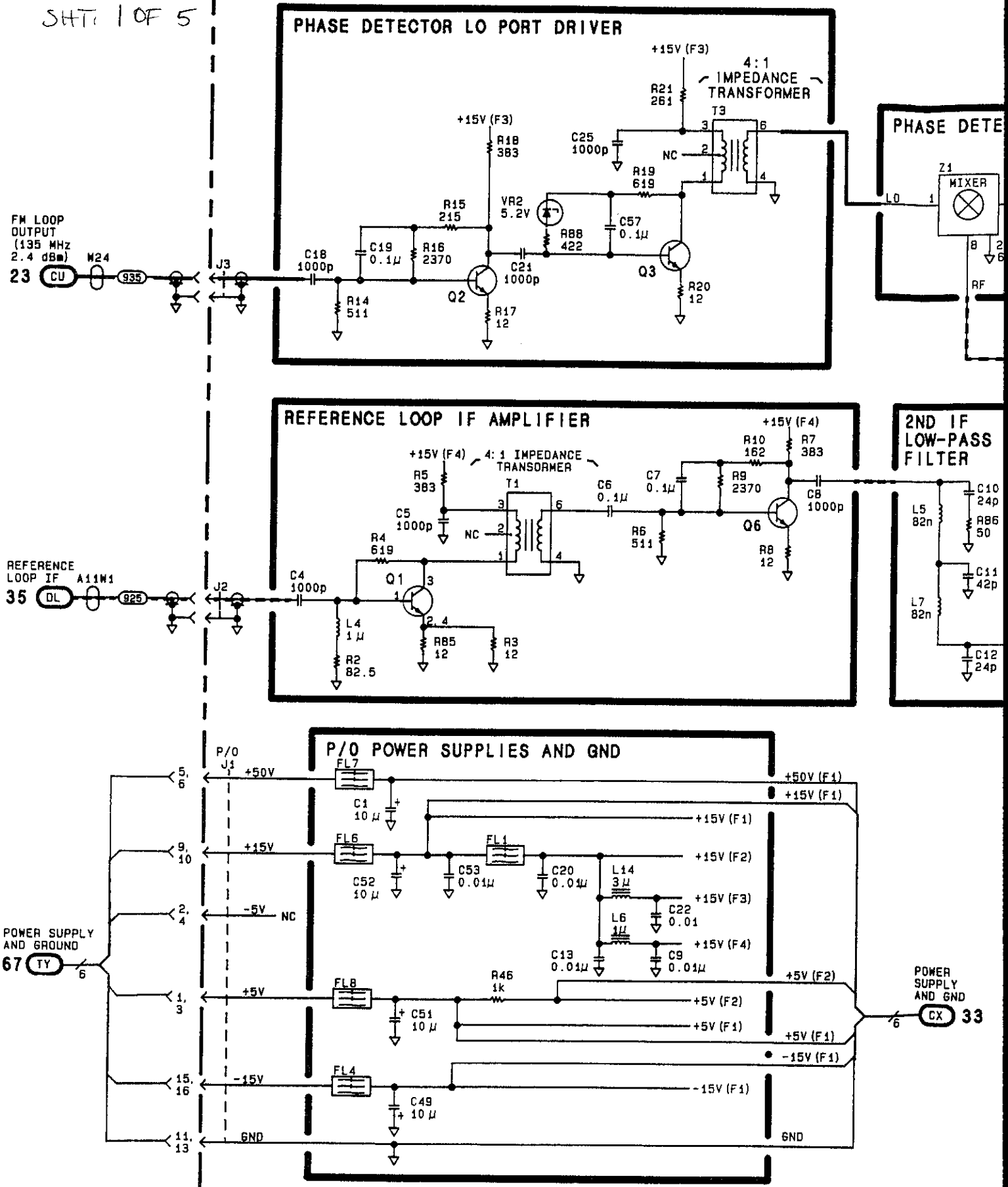
UPPER CASE LETTER  
ADJACENT TO COLLECTOR



Schematic General Information

FIG. 8N-103  
 SH: 1 OF 5

P/O A11A1 REFERENCE LOOP PHASE DETECTOR AND INTEGRATOR (08642-



SERIAL PREFIX: 2427A

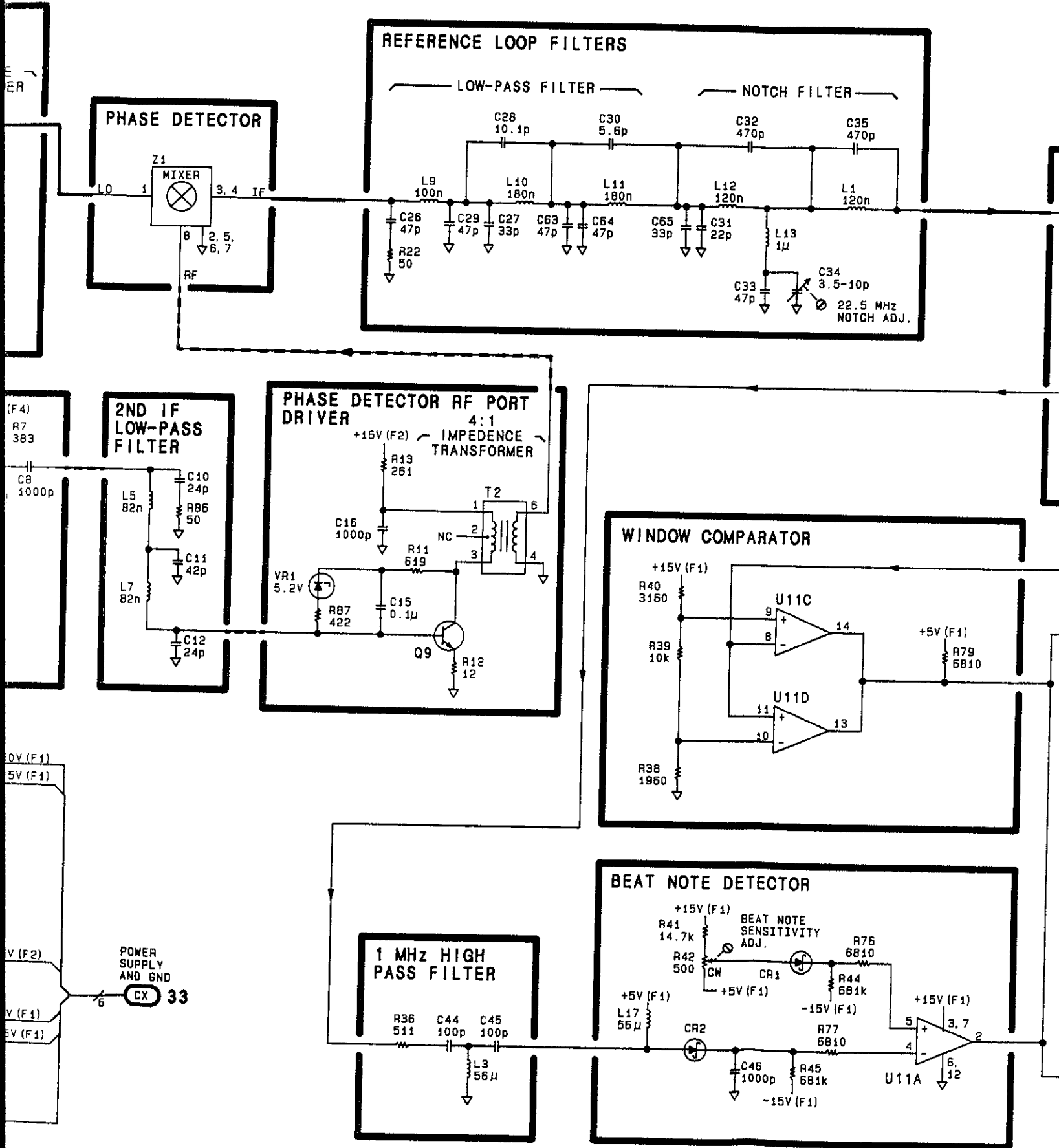


FIG. 8N-103  
 SHT. 3 OF 5

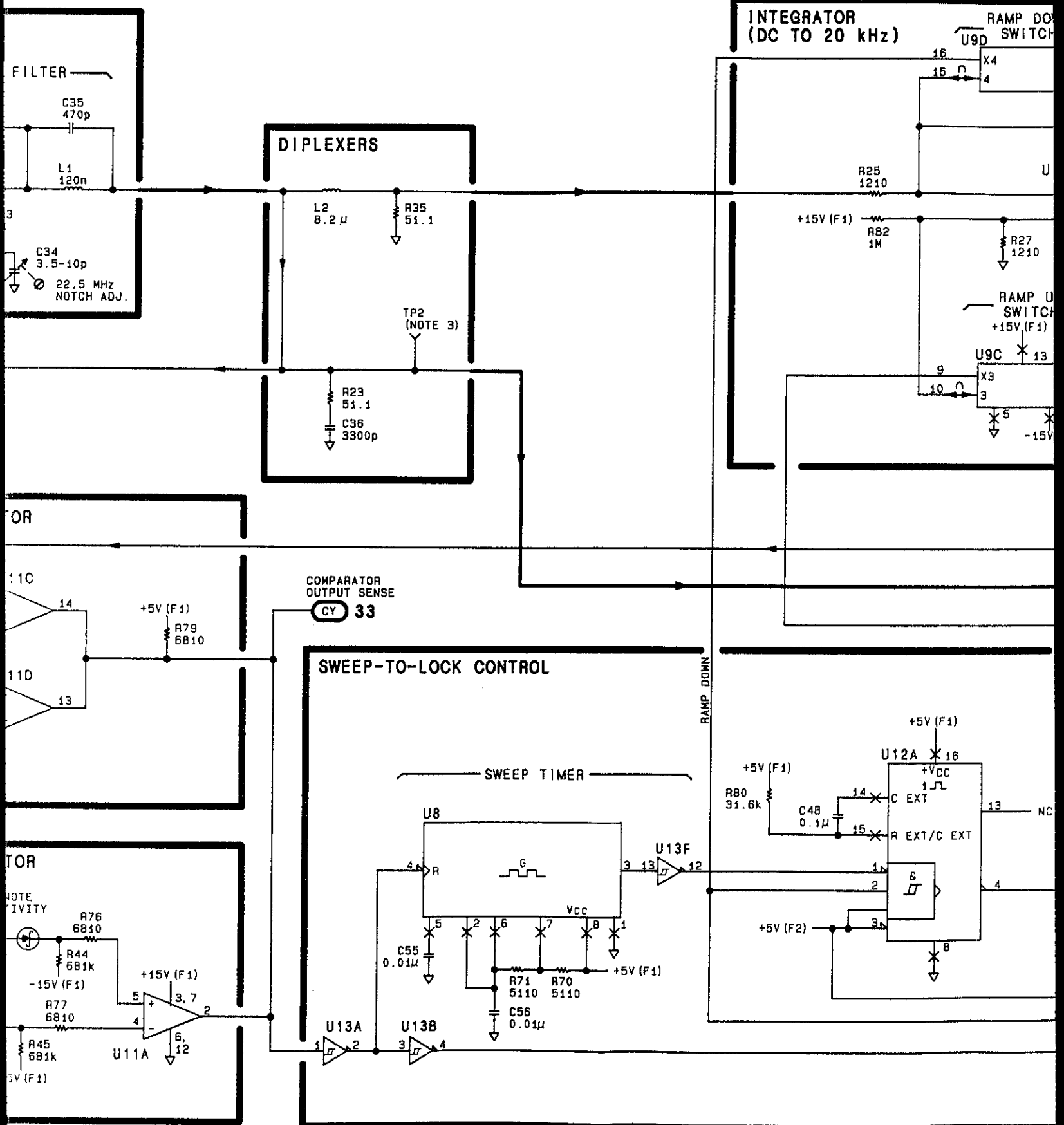
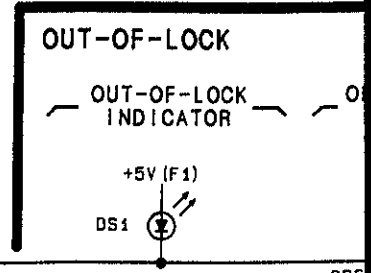
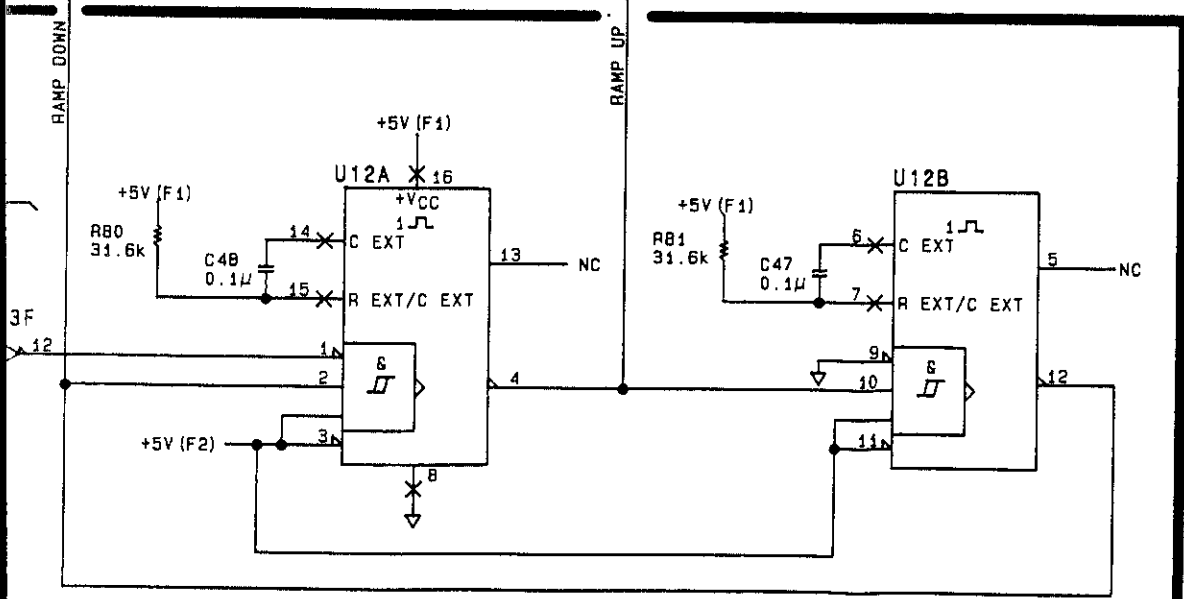
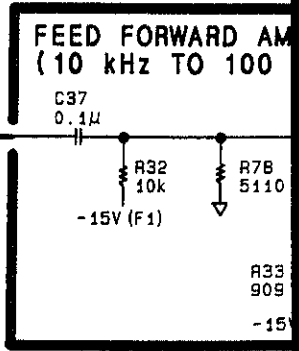
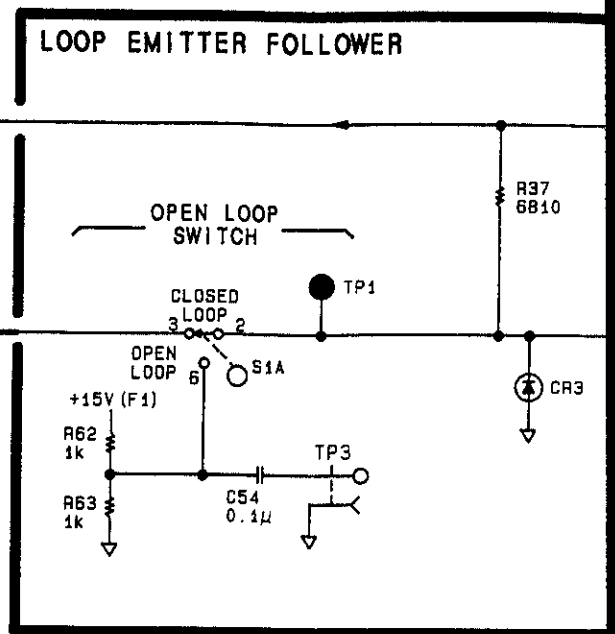
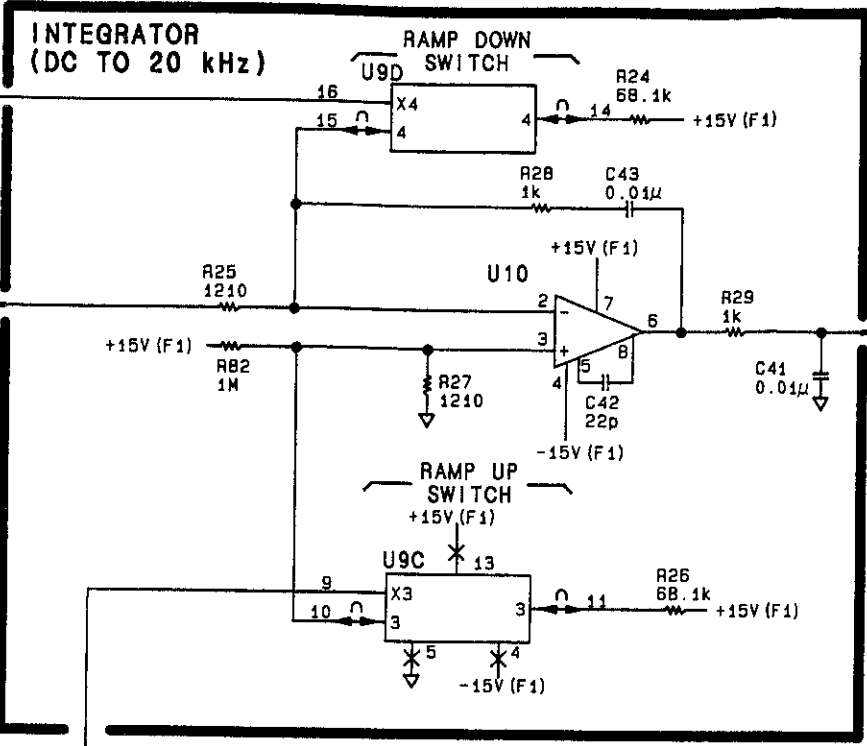
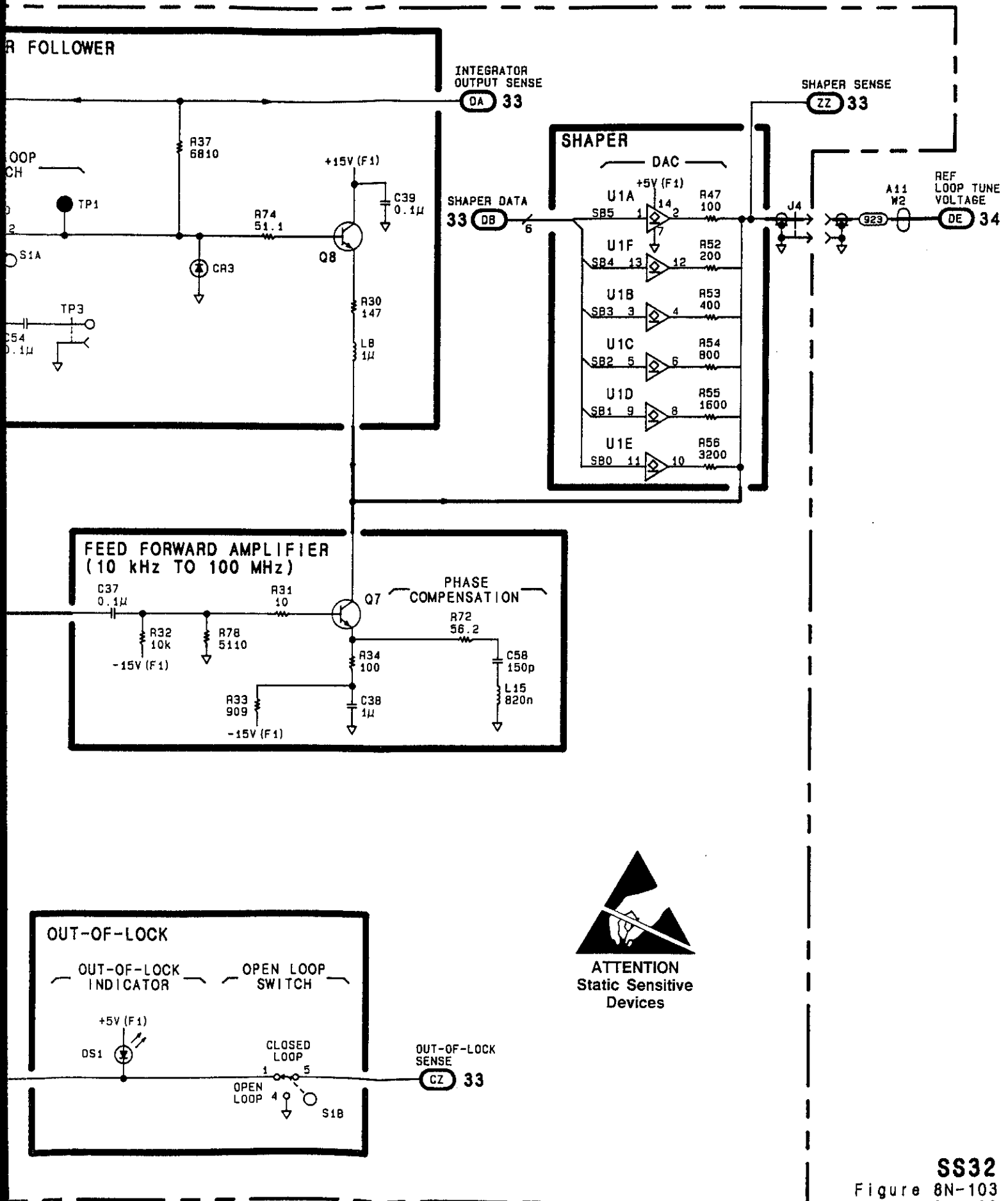


FIG. 8N-103  
SHT. 4 OF 5



OPE  
LOD



SS32  
Figure 8N-103  
8N-103

FIG. 8N-104  
SHT. 1 OF 5

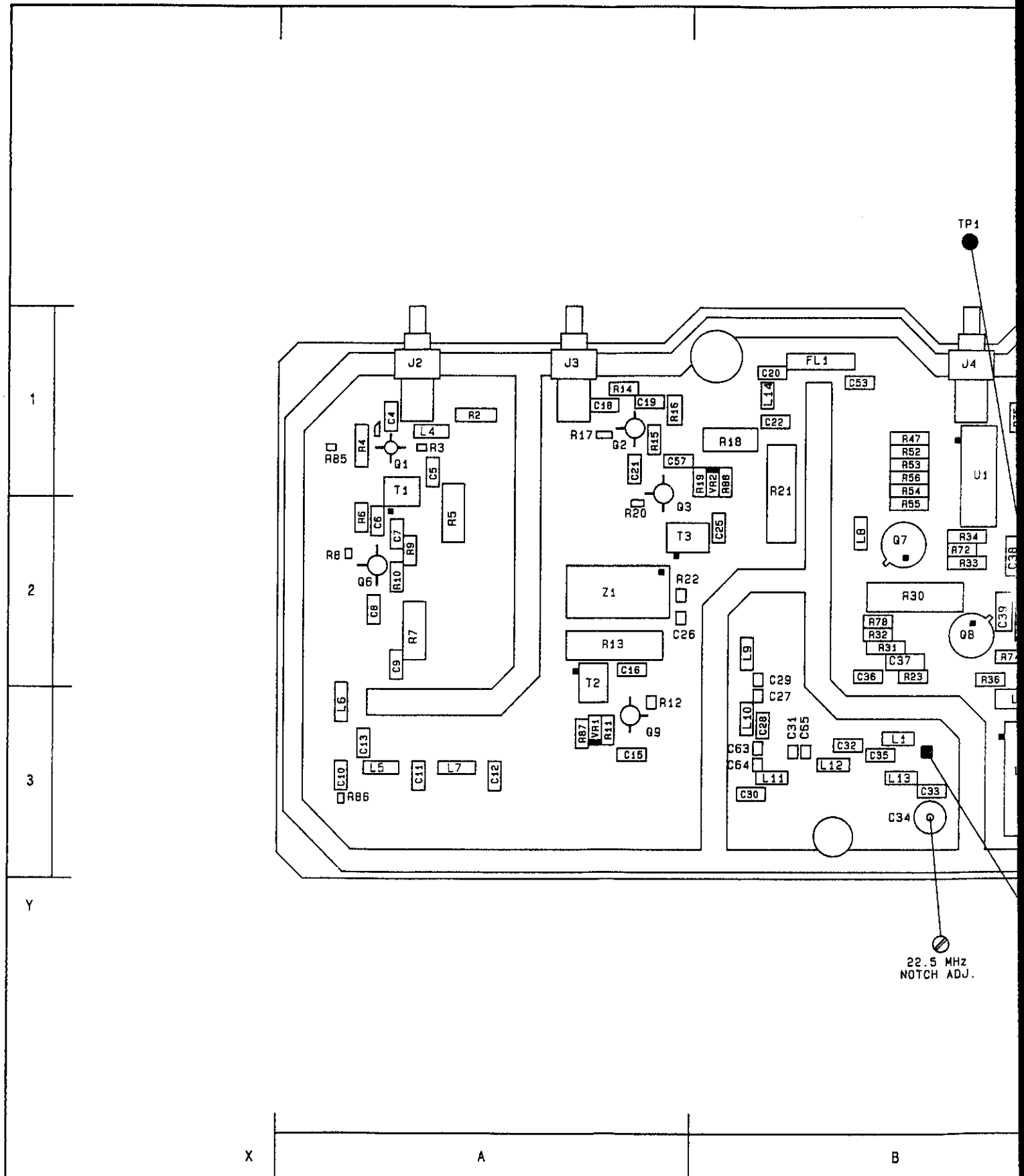
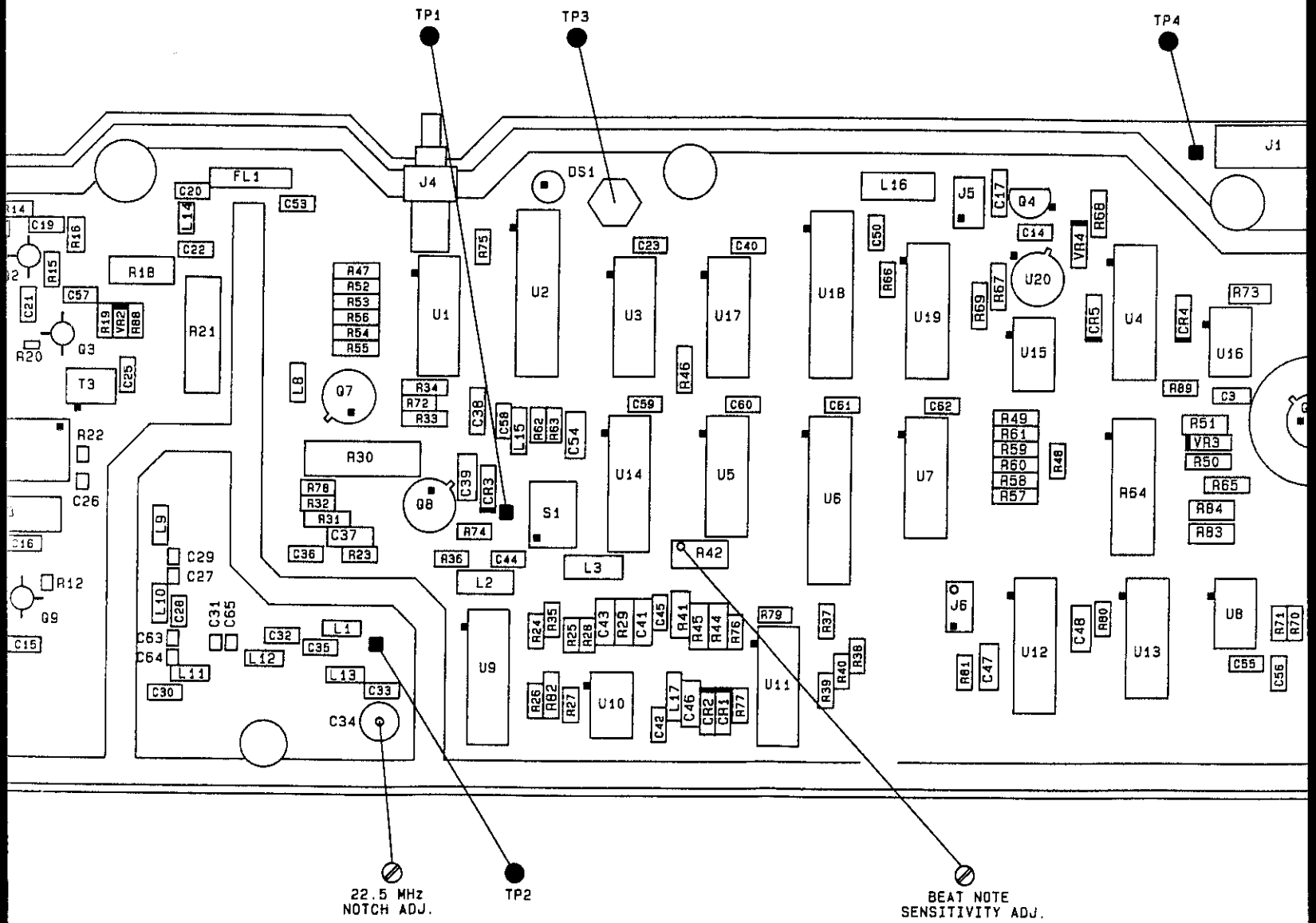


Figure 8N-104. SERVICE SHEET 33 INFORMATION

C



FIG. 8N-104  
 SHT. 2 OF 5

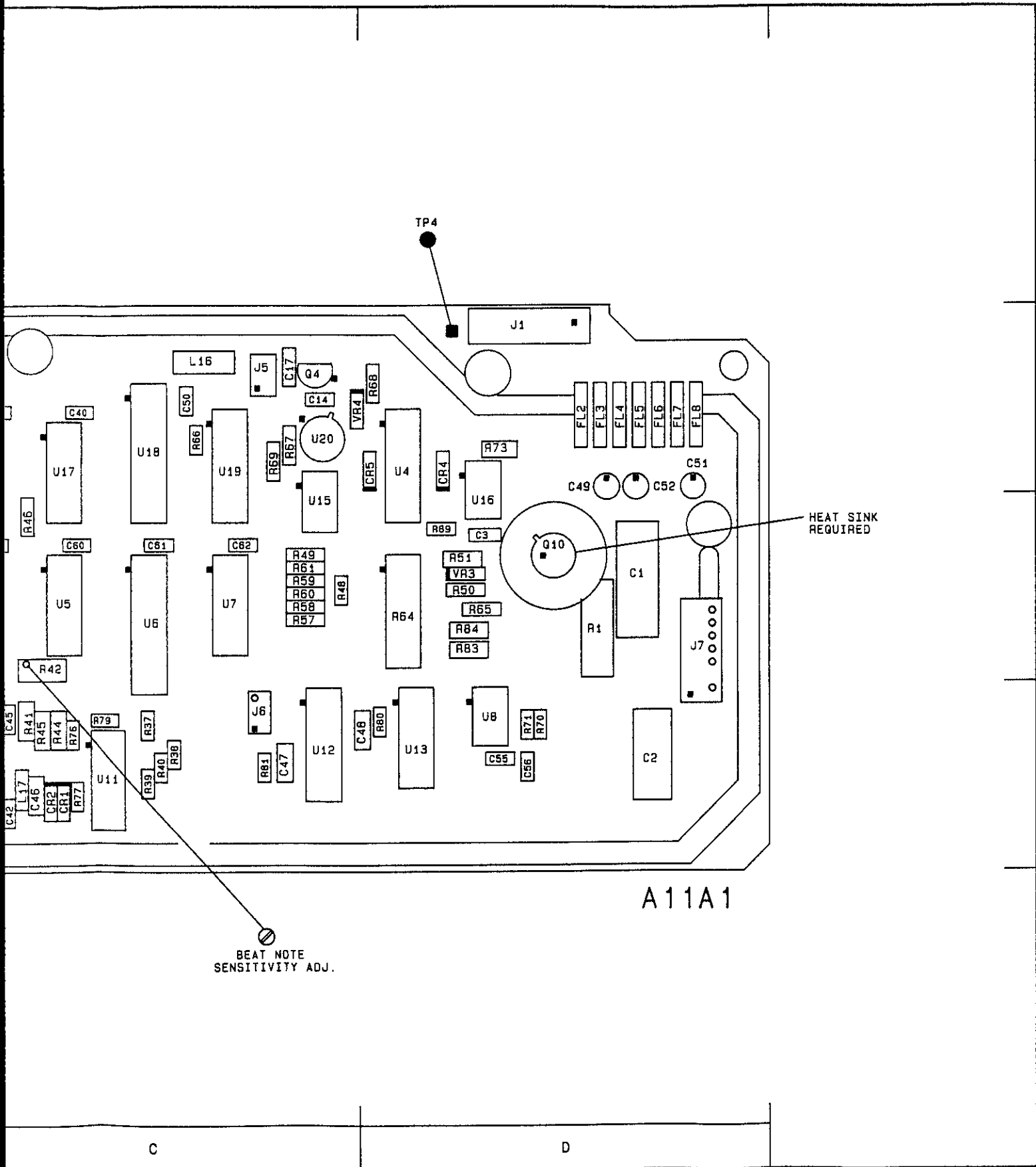


B

C

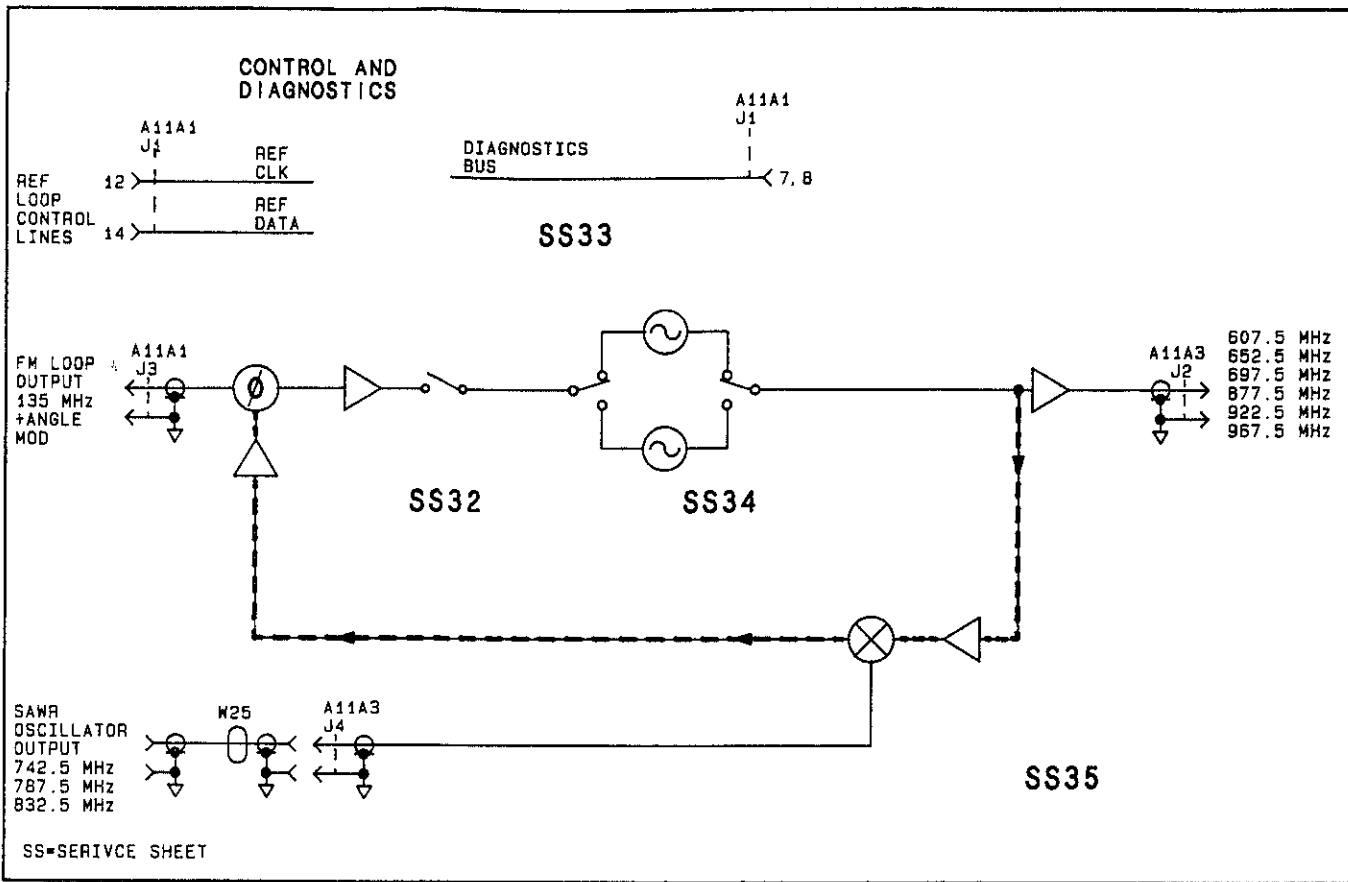
Component Locator

FIG. 8N-104  
SHT. 3 OF 5



ator

FIG. SN-104  
SHT, 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C2	D, 3	R1	D, 2	U2	B, 1												
C3	D, 2	R48	C, 2	U3	C, 1												
C14	C, 1	R49	C, 2	U4	D, 1												
C17	C, 1	R50	D, 2	U5	C, 2												
C23	C, 1	R51	D, 2	U6	C, 2												
C40	C, 1	R57	C, 2	U7	C, 2												
C50	C, 1	R58	C, 2	U13	D, 3												
C59	C, 2	R59	C, 2	U14	C, 2												
C60	C, 2	R60	C, 2	U15	C, 2												
C61	C, 2	R61	C, 2	U16	D, 2												
C62	C, 2	R64	D, 2	U17	C, 1												
CR4	D, 1	R65	D, 2	U18	C, 1												
CR5	D, 1	R66	C, 1	U19	C, 1												
FL2	D, 1	R67	C, 1	U20	C, 1												
FL3	D, 1	R68	D, 1	VR3	D, 2												
FL5	D, 1	R69	C, 1	VR4	C, 1												
J1	D, 1	R73	D, 1														
J4	B, 1	R75	B, 1														
J5	C, 1	R83	D, 2														
J6	C, 3	R84	D, 2														
J7	D, 2	R89	D, 2														
L16	C, 1	TP4	D, 1														
Q4	C, 1																
Q10	D, 2																

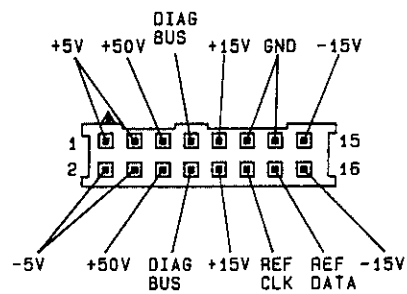
P/O A11A1 REFERENCE LOOP  
PHASE DETECTOR  
AND INTEGRATOR

**SS32**

SEE REVERSE SIDE

## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. Feedthrough filter outer body must be soldered to the shielding in the area where shielding is notched.
3. A11 FL1 is an array of feed through filters passing through the center of the module to make connections between two (2) printed circuit boards.
4. A11 FL2, A11 FL3 are low pass feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.
5. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

CABLE PLUG  
TO A11A1 J1

Schematic General Information

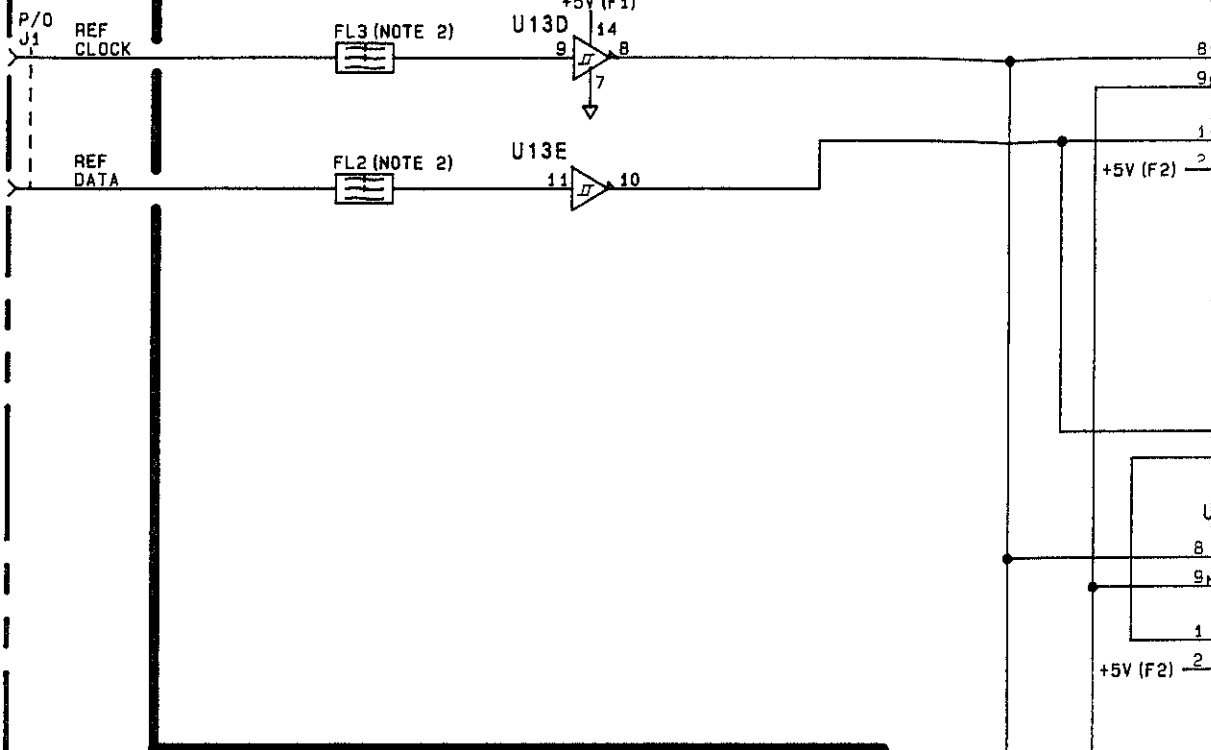
P/O A11A1 REFERENCE LOOP PHASE DETECTOR AND INTEGRATOR (08642-

FIG. 8N-105  
SHEET 1 OF 5

REF LOOP  
CONTROL LINES  
11 DC

P/O A5 DISTRIBUTION ASSY SS67

SERIAL DATA INTERFACE



POWER SUPPLY AND GND

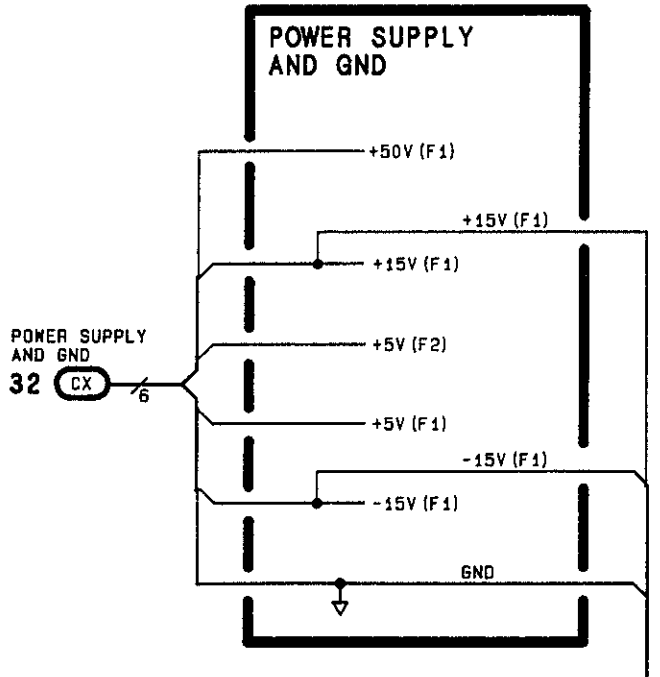




FIG. 8N-105, STT. 3 OF 5

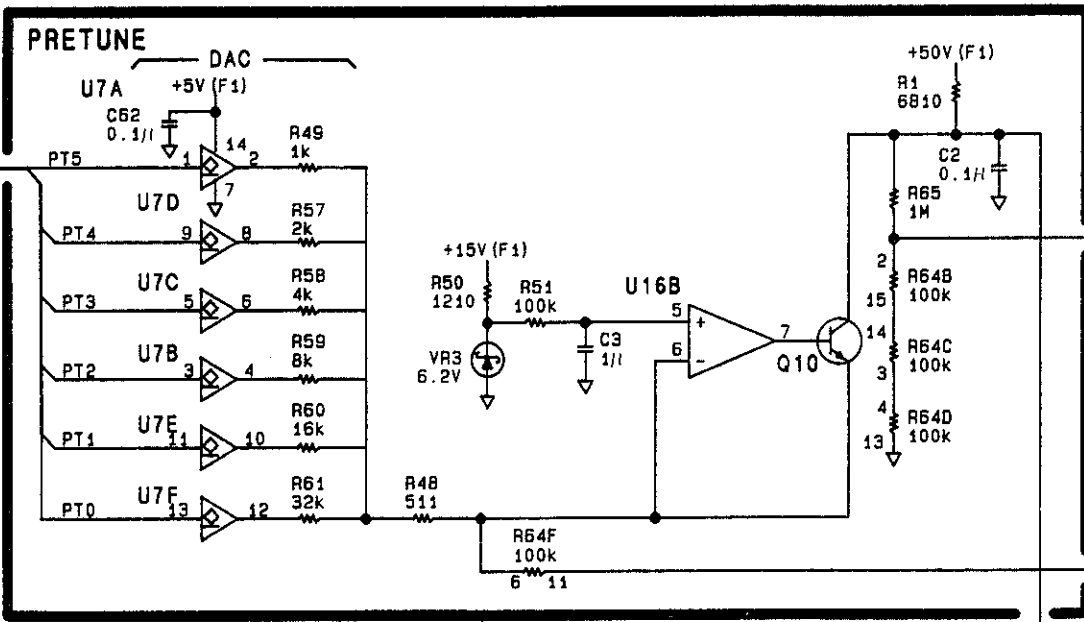
REFERENCE LEVEL  
OUTPUT LEVEL  
CONTROL

- DAC0
- DAC1
- DAC2
- DAC3
- DAC4
- DAC5
- DAC6

+5

R66  
10k  
-15

SHAPER DATA  
DB 32

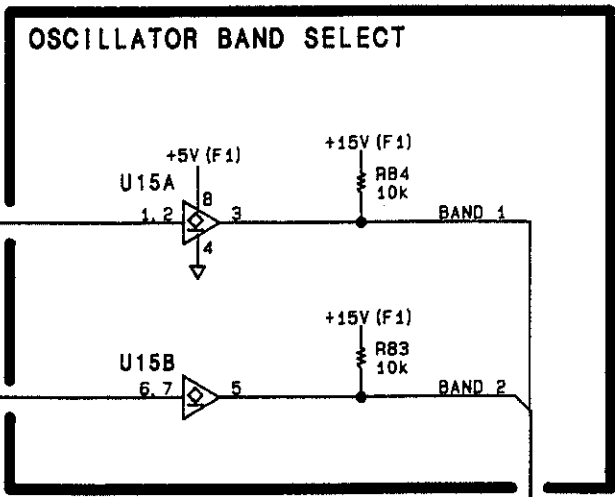


OUT-OF-LEVEL  
SENSE  
32 CZ

SHAPER SENSE  
32 ZZ

INTEGRATOR  
OUTPUT SENSE  
32 DA

COMPARATOR  
OUTPUT SENSE  
32 CY



3

2

3

2

FIG. 8N-105, SHT. 4 OF 5

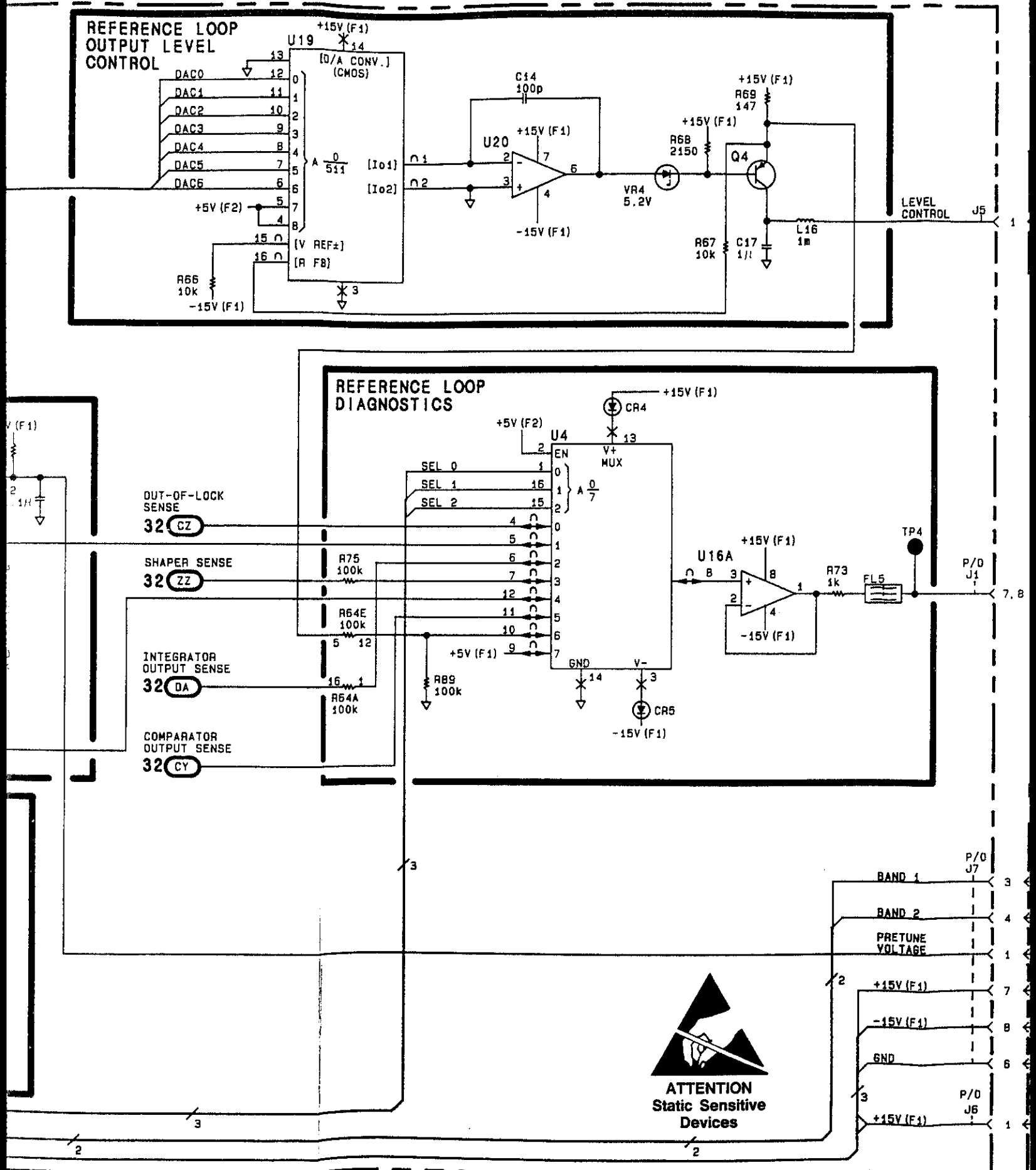
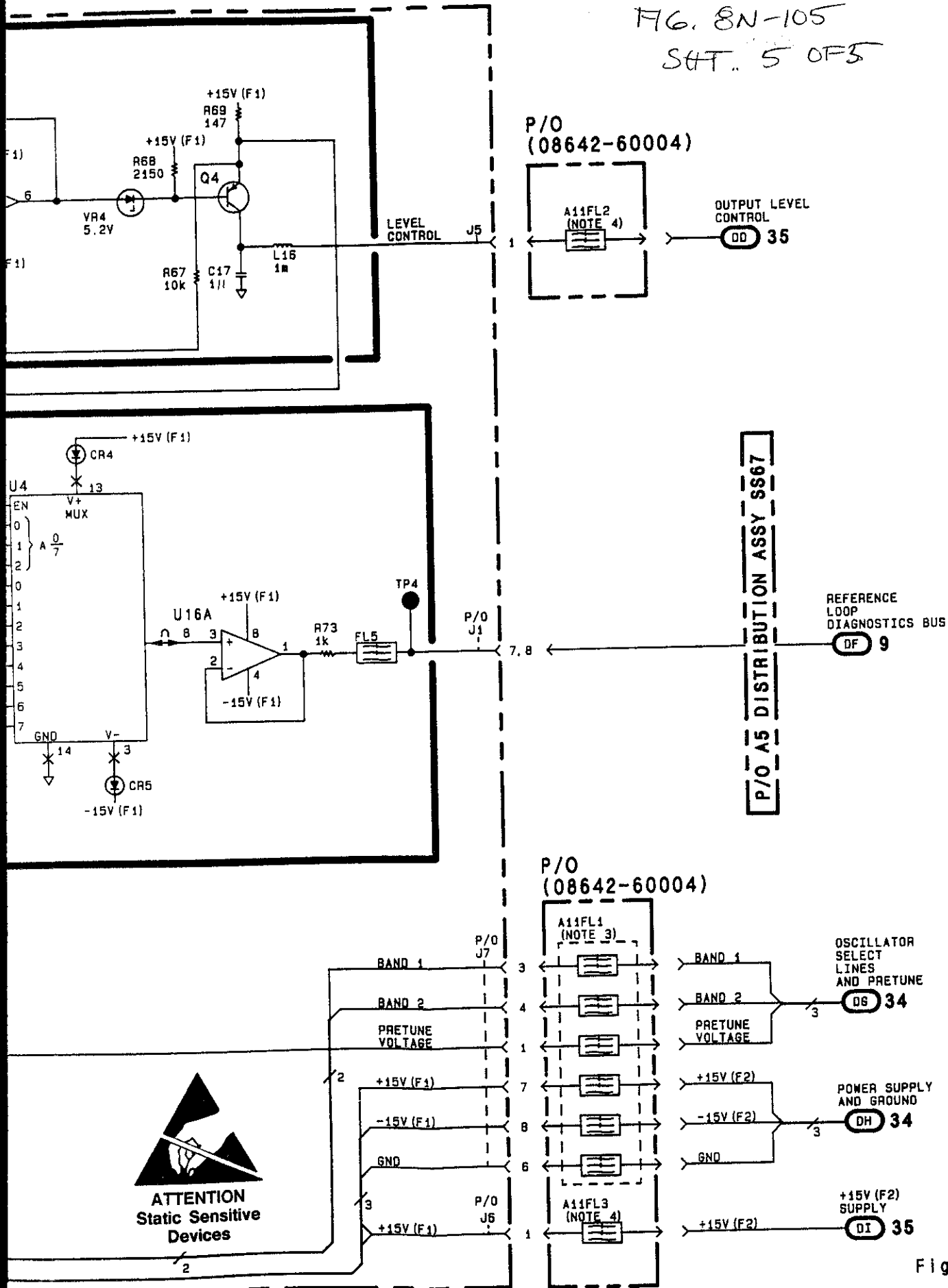




FIG. 8N-105  
 SHT. 5 OF 5



SS33  
 Figure 8N-105  
 8N-105

FIG. 8N-106  
 SH. 1 OF 4

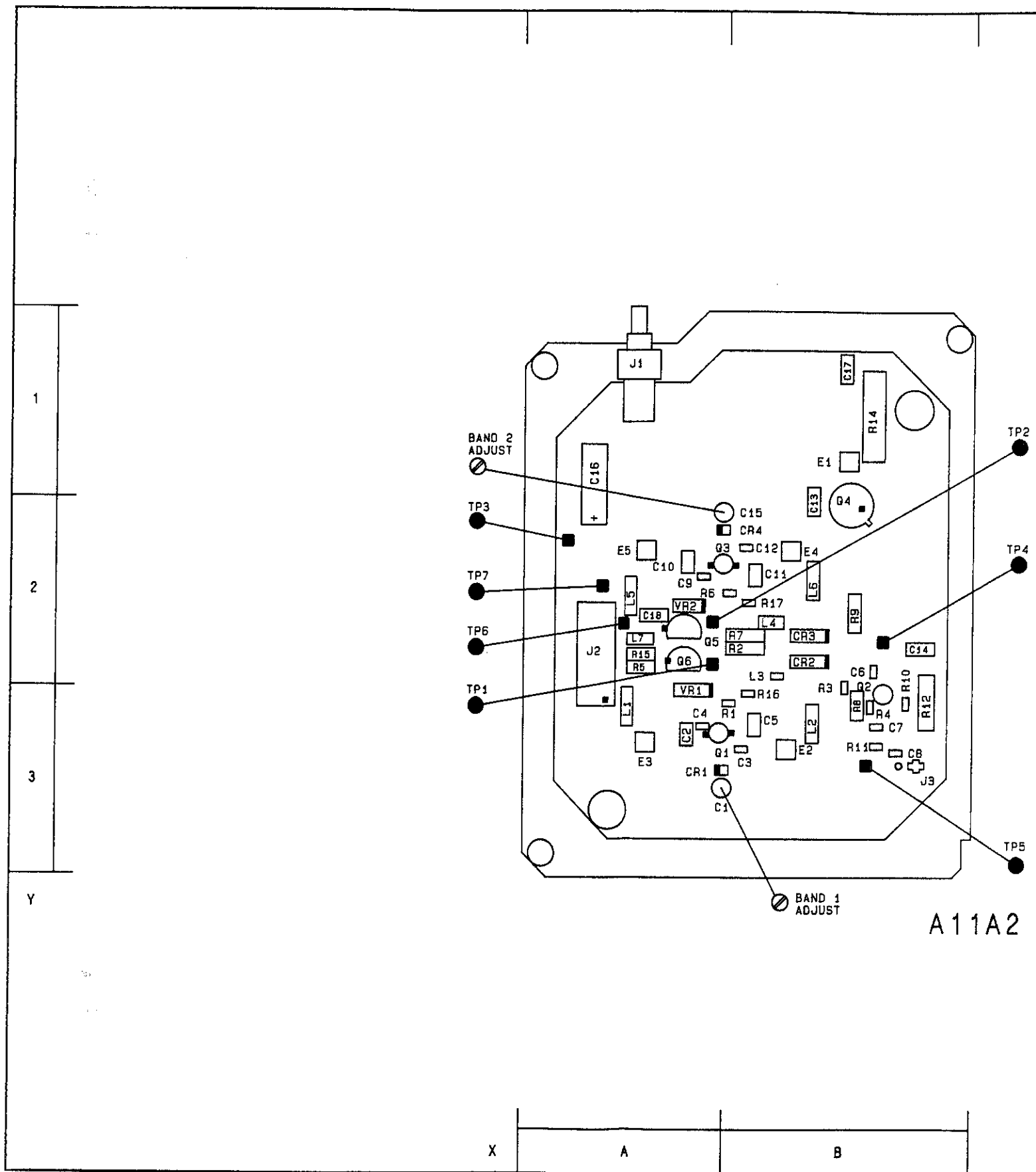
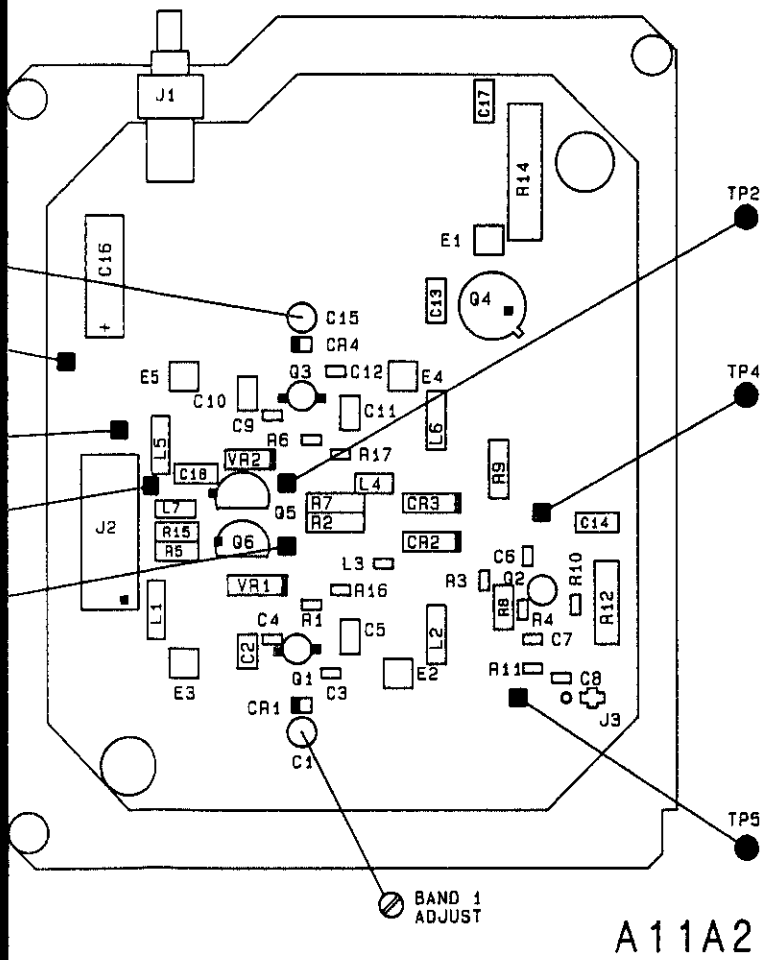


Figure 8N-106. SERVICE SHEET 34 INFORMATION

Component Locator

FIG. 8N-106  
SHT. 2 OF 4



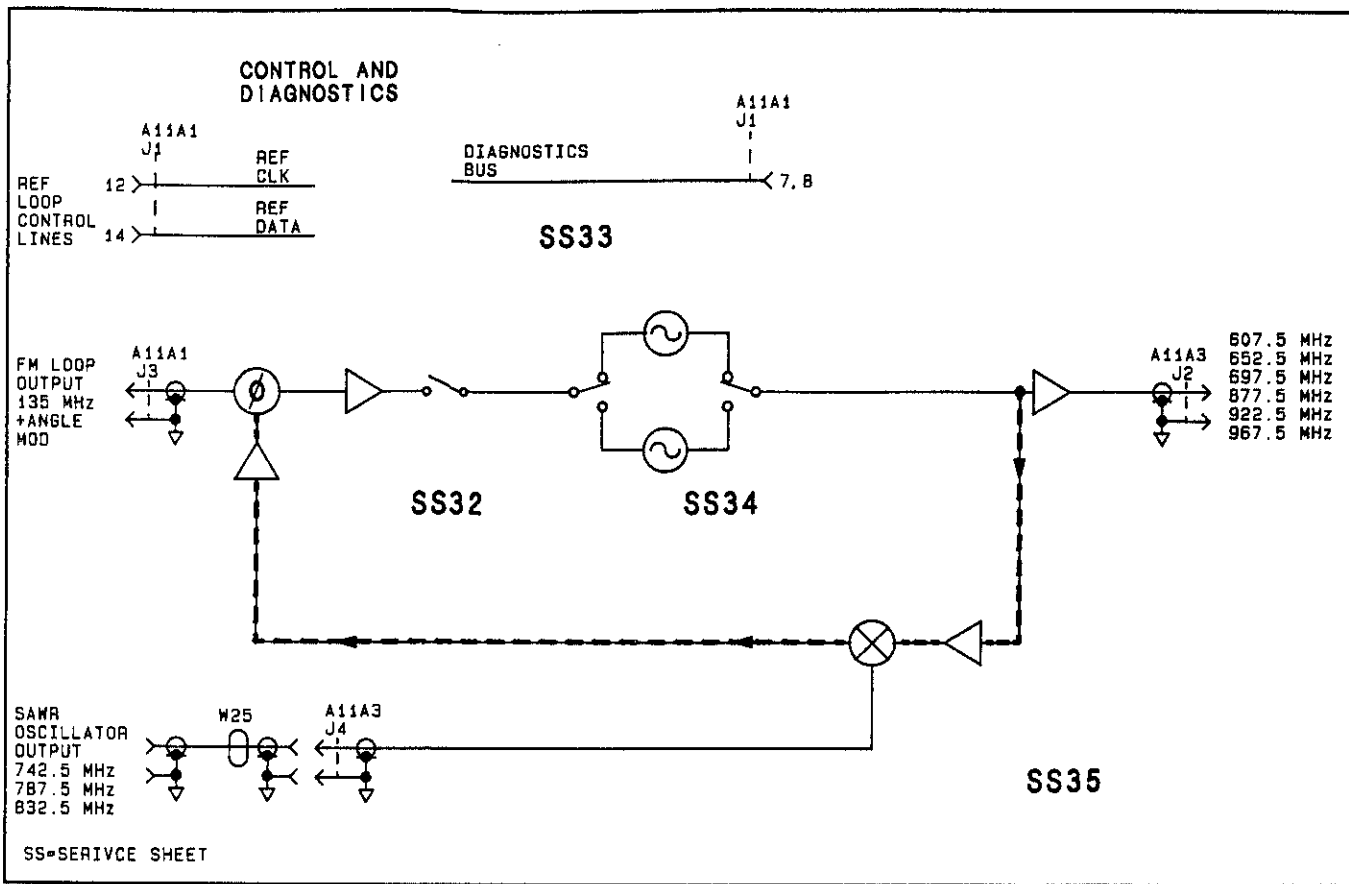
A11A2

A

B

Component Locator

FIG. 8N-106  
SHT. 3 OF 4



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	A, 3	J1	A, 1	R1	B, 3														
C2	A, 3	J2	A, 2	R2	B, 2														
C3	B, 3	J3	B, 3	R3	B, 2														
C4	A, 3			R4	B, 3														
C5	B, 3	L1	A, 3	R5	A, 2														
C6	B, 2	L2	B, 3	R6	B, 2														
C7	B, 3	L3	B, 2	R7	B, 2														
C8	B, 3	L4	B, 2	R8	B, 3														
C9	A, 2	L5	A, 2	R9	B, 2														
C10	A, 2	L6	B, 2	R10	B, 3														
C11	B, 2	L7	A, 2	R11	B, 3														
C12	B, 2			R12	B, 3														
C13	B, 2	Q1	A, 3	R14	B, 1														
C14	B, 2	Q2	B, 2	R15	A, 2														
C15	B, 2	Q3	A, 2	R16	B, 3														
C16	A, 1	Q4	B, 2	R17	B, 2														
C17	B, 1	Q5	A, 2																
C18	A, 2	Q6	A, 2	TP1	A, 2														
CR1	A, 3			TP2	A, 2														
CR2	B, 2			TP3	A, 2														
CR3	B, 2			TP4	B, 2														
CR4	B, 2			TP5	B, 3														
E1	B, 1			TP6	A, 2														
E2	B, 3			TP7	A, 2														
E3	A, 3			VR1	A, 3														
E4	B, 2			VR2	A, 2														
E5	A, 2																		

P/O A11A1

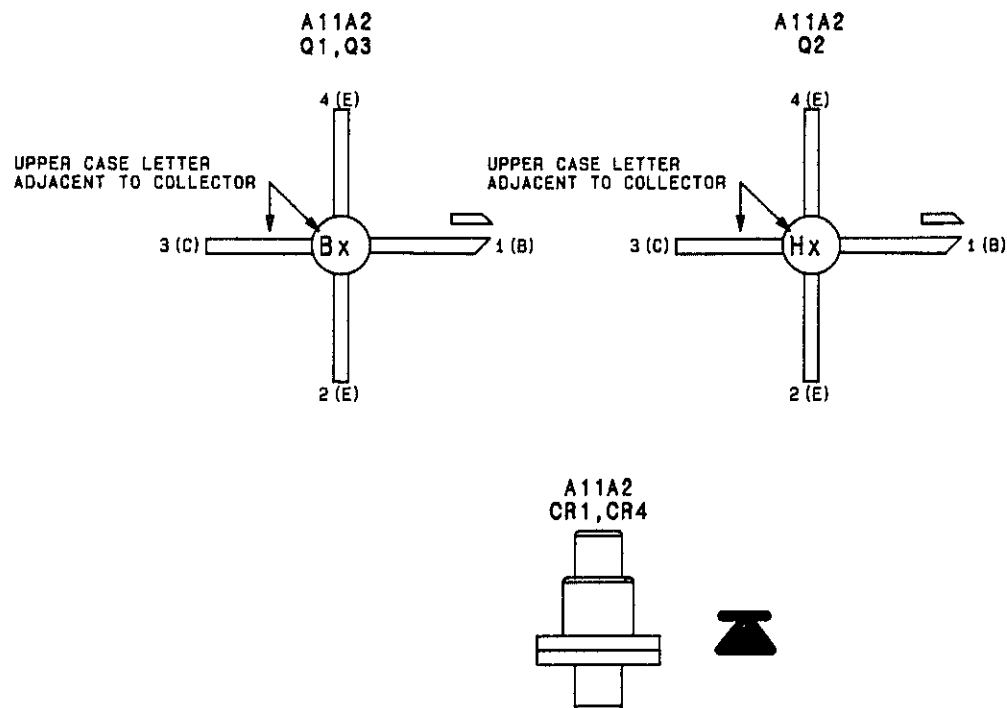
REFERENCE  
PHASE DETECTOR  
AND INTEGRATOR

**SS33**

SEE REVERSE SIDE

## Notes:

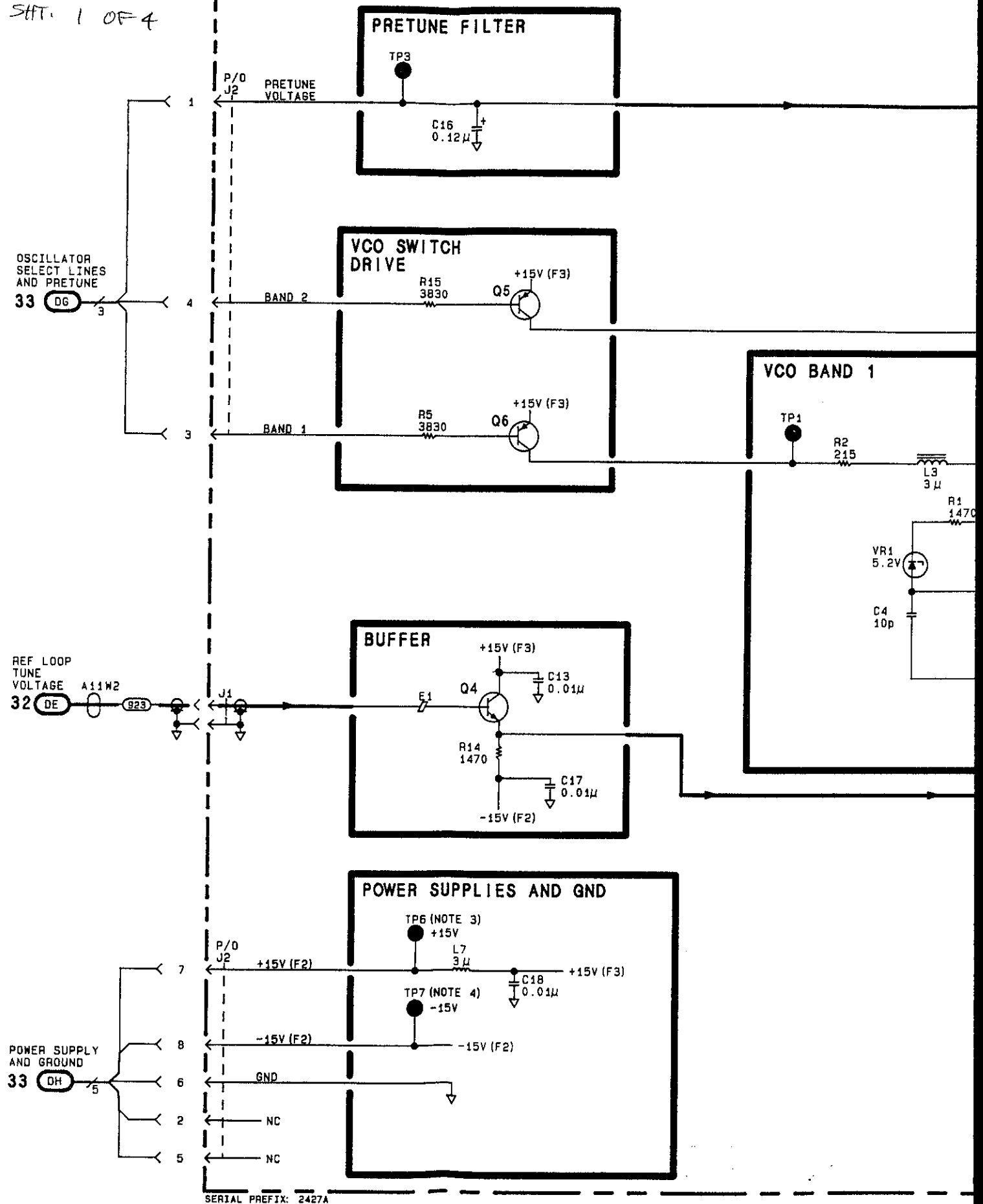
1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A11A2 J3 consists of a clip and a single connector.
3. TP6 is labeled +15V on the printed circuit board.
4. TP7 is labeled -15V on the printed circuit board.
5. W100-W105 are printed circuit trace inductors.
6. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

FIG. 8N-107  
 SHT. 1 OF 4

A11A2 REFERENCE LOOP V.C.O. ASSEMBLY (08642-60107)



SERIAL PREFIX: 2427A

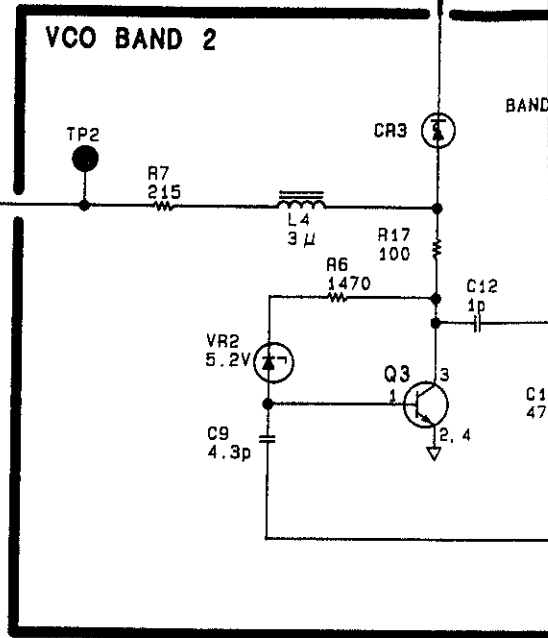
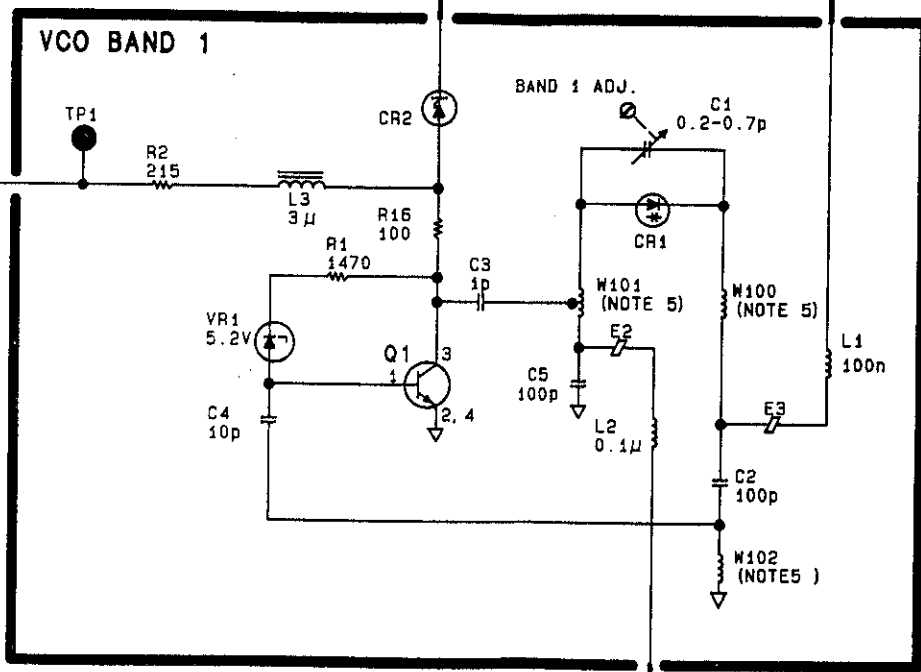


FIG. 8N-107, SAT. 3 OF 4

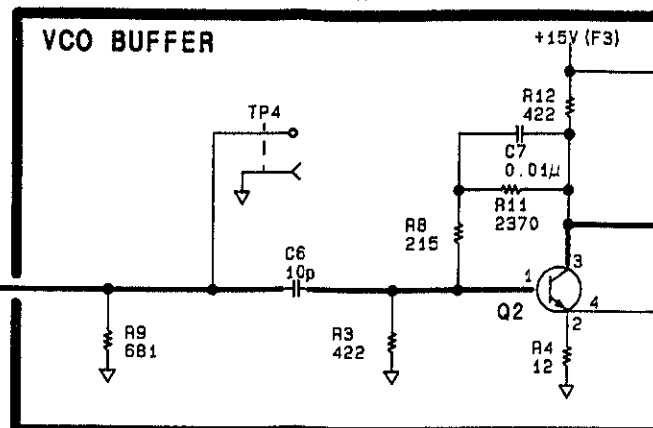
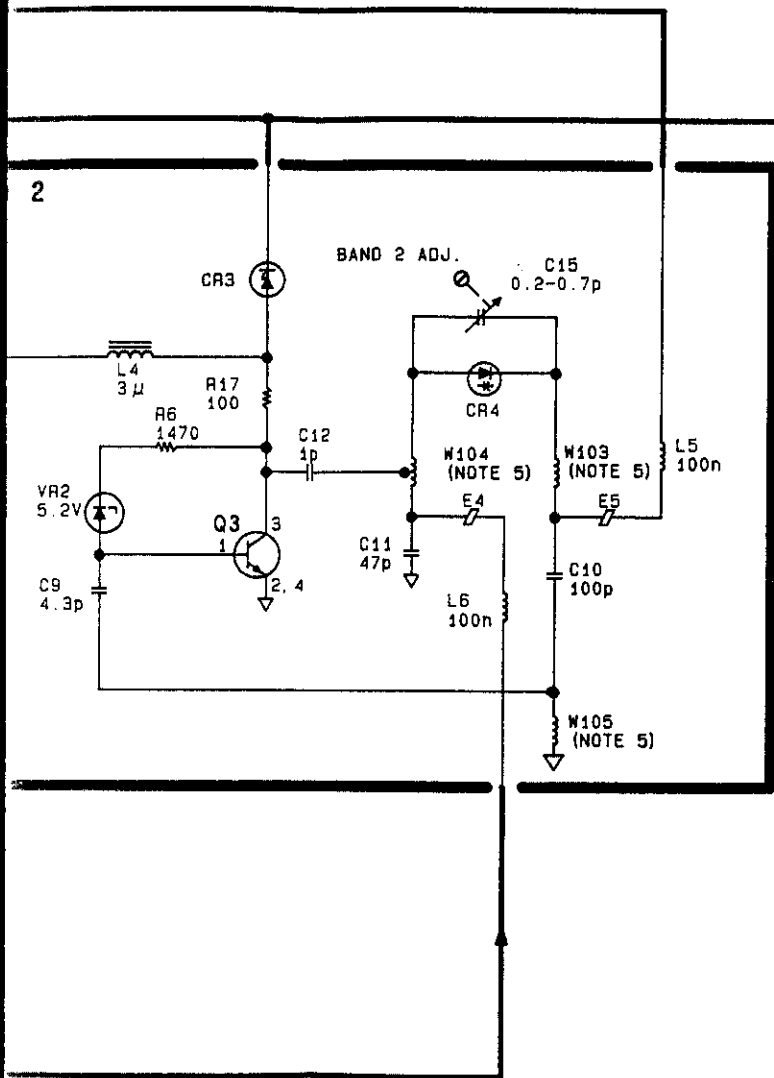
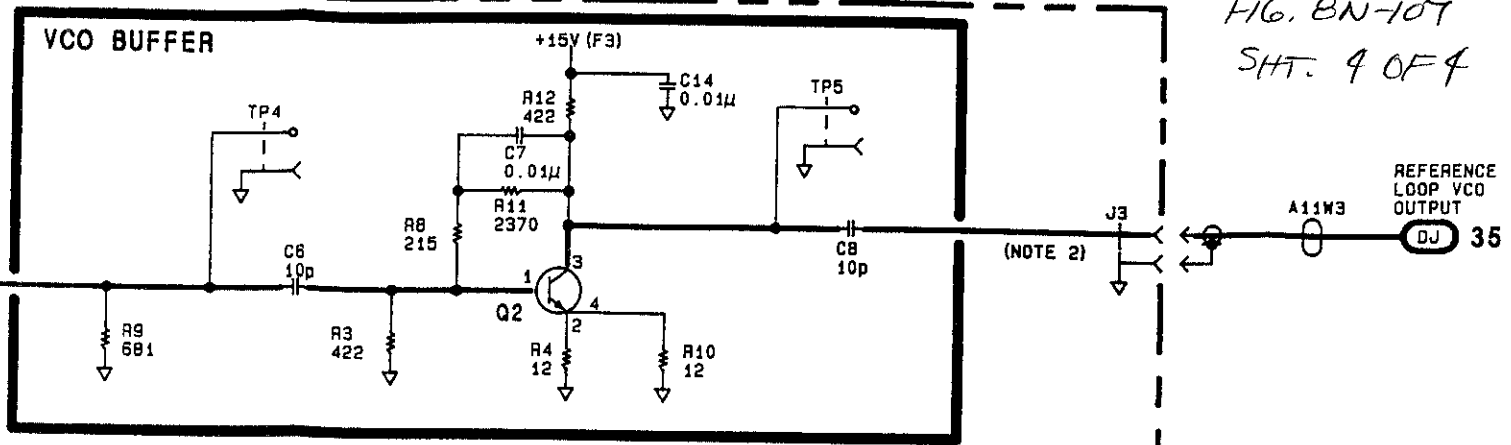




FIG. 8N-107  
SHT. 4 OF 4



ATTENTION  
Static Sensitive  
Devices

SS34  
Figure 8N-107  
8N-107

FIG. 8N-108  
SHT. 1 OF 5

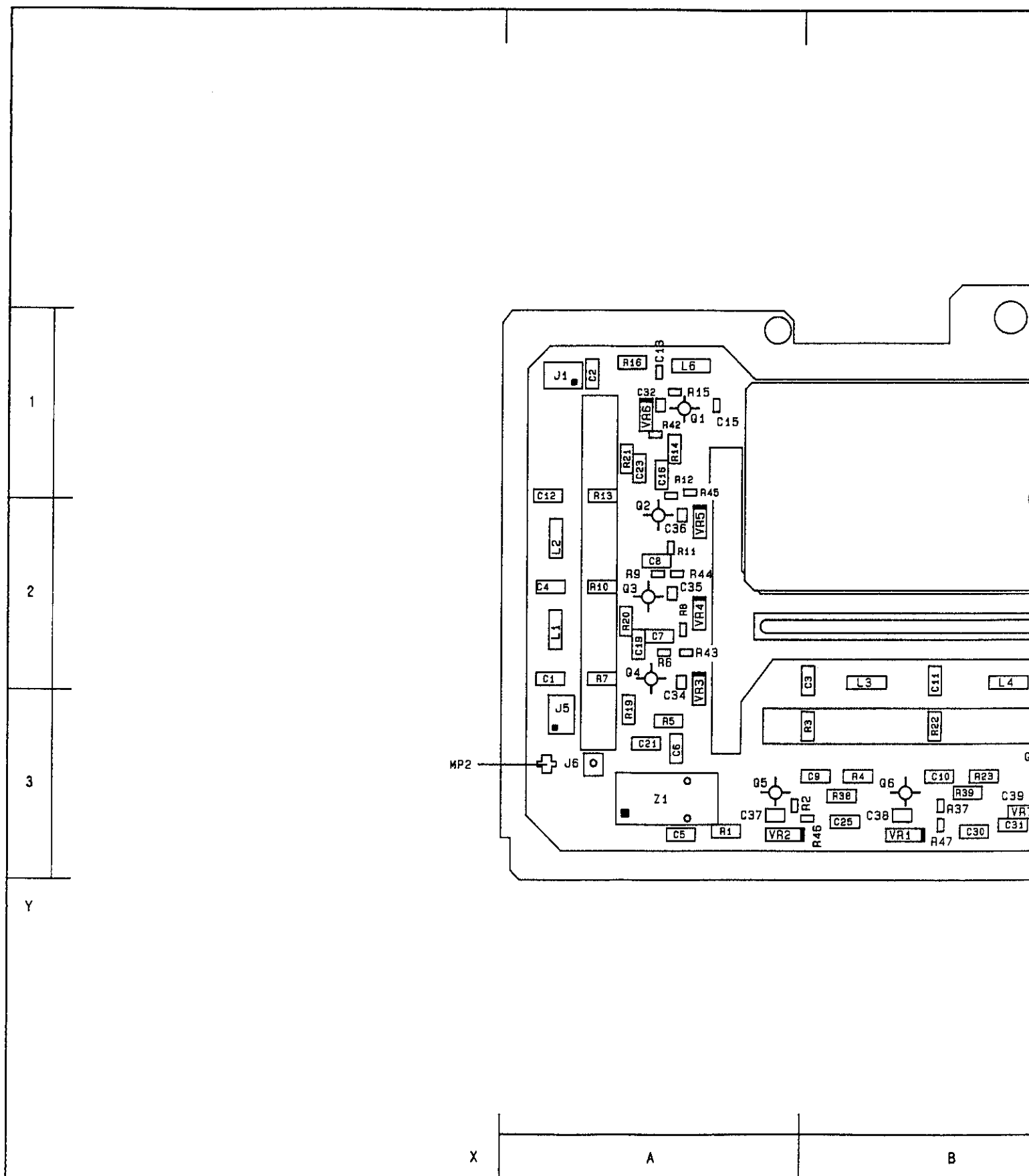
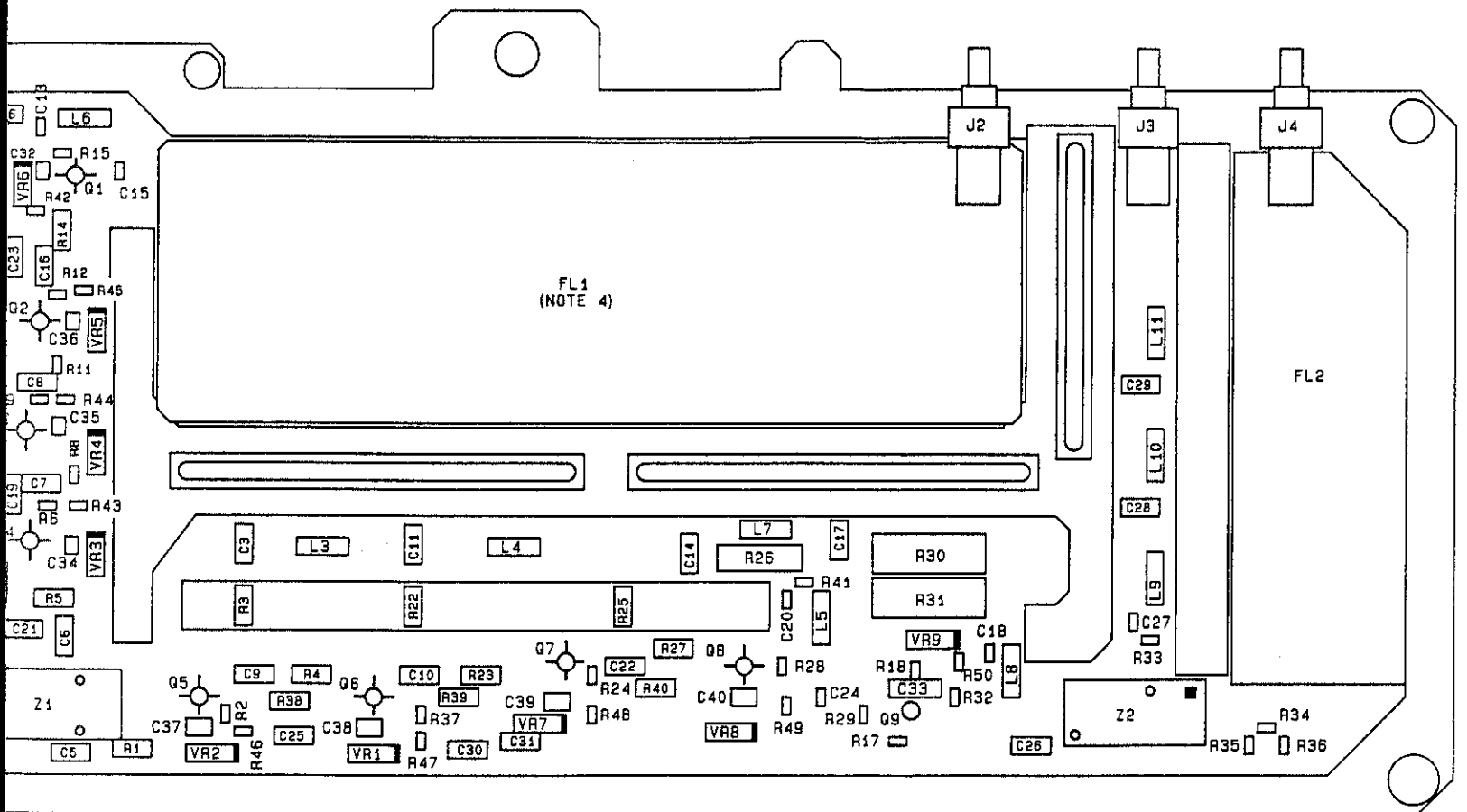


Figure 8N-108. SERVICE SHEET 35 INFORMATION

Con

FIG. 8N-108  
 SHT. 2 OF 5



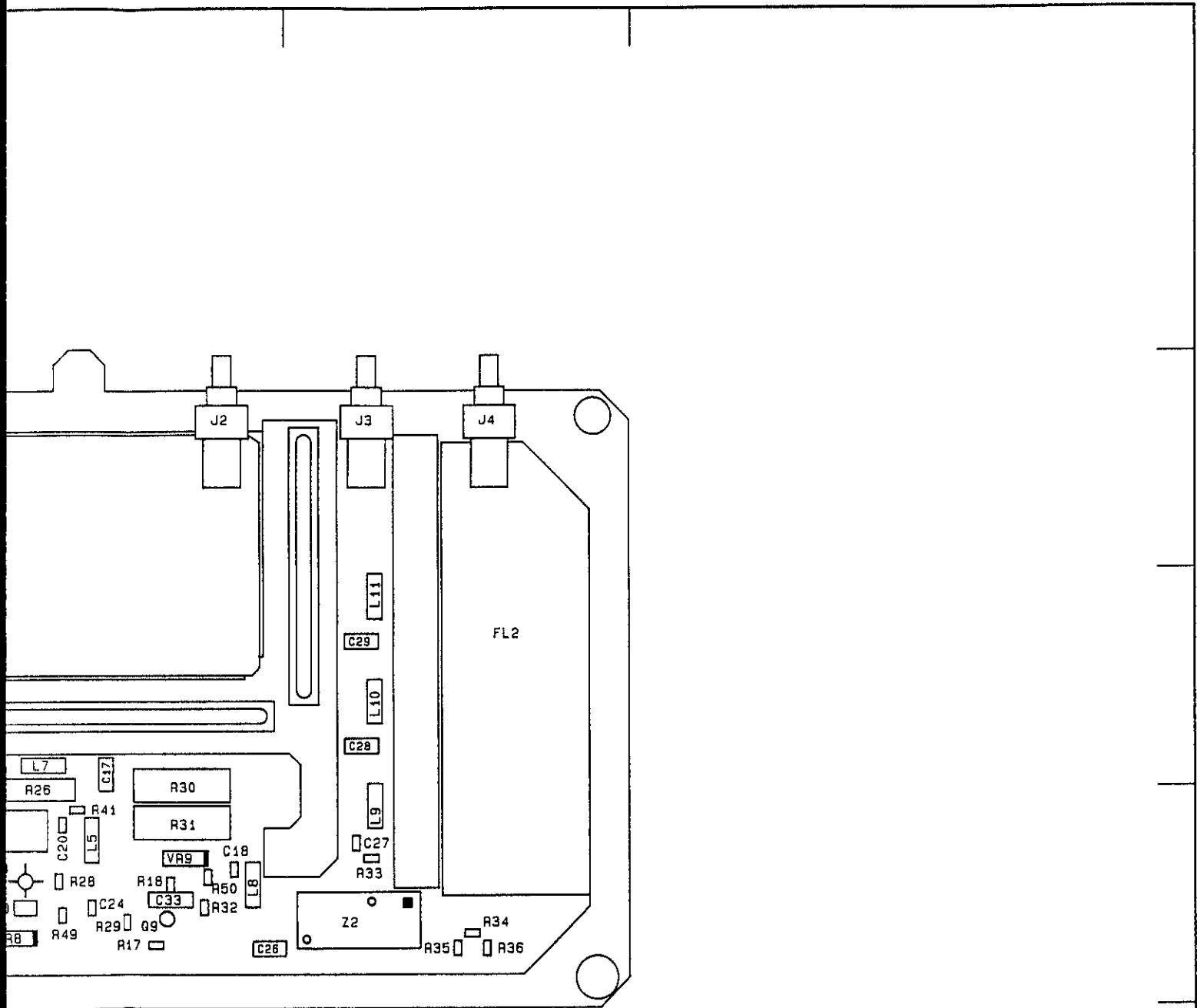
A11A3

A	B	C	D
---	---	---	---

Component Locator

FIG. 8N-108

SHT. 3 OF 5



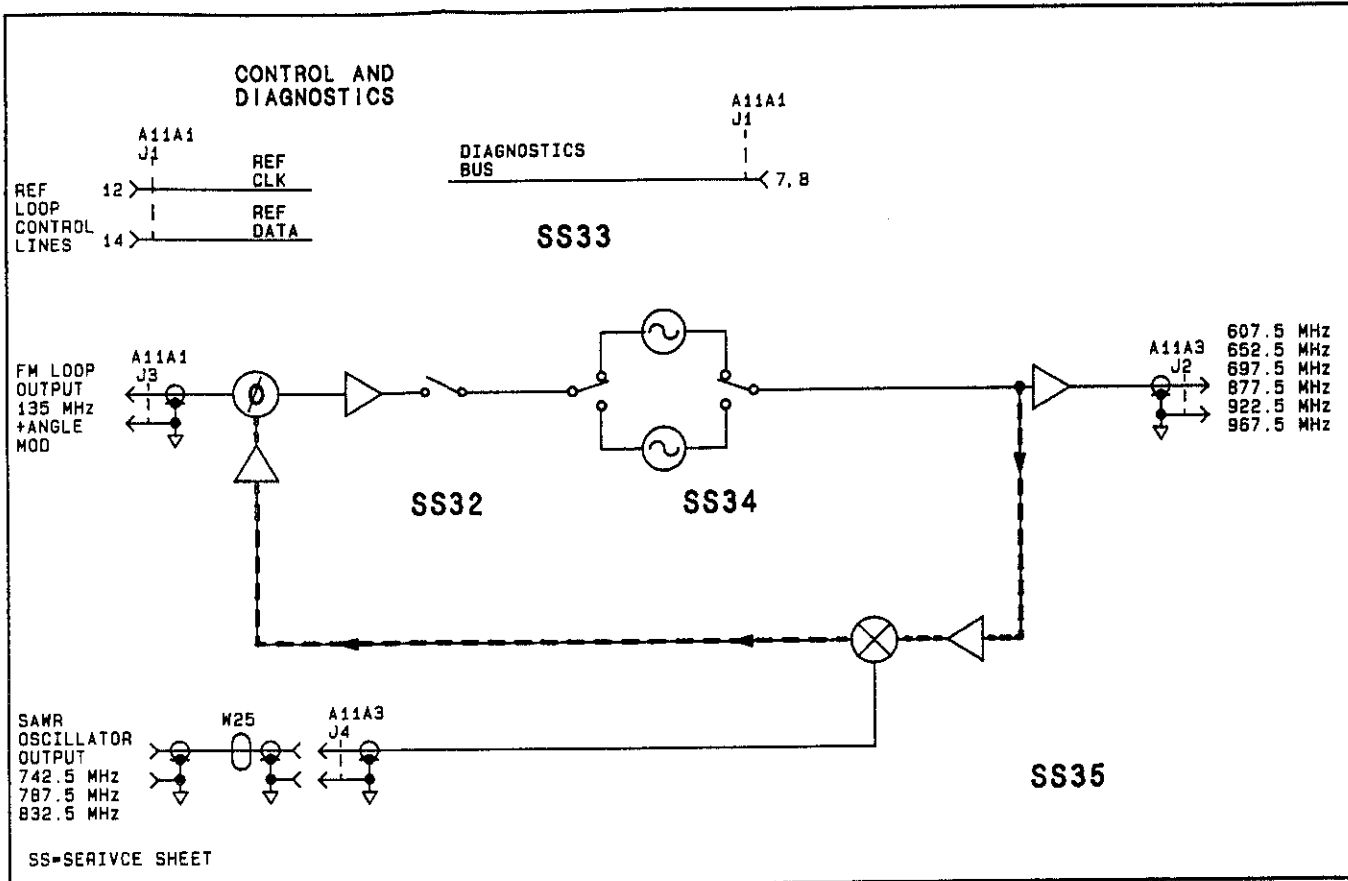
A11A3

C

D

ator

FIG. EN-108  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	A, 2	C3B	B, 3	R1	A, 3	R38	B, 3										
C2	A, 1	C39	B, 3	R2	A, 3	R39	B, 3										
C3	B, 2	C40	C, 3	R3	B, 3	R40	C, 3										
C4	A, 2			R4	B, 3	R41	C, 3										
C5	A, 3	FL1	B, 1	R5	A, 3	R42	A, 1										
C6	A, 3	FL2	D, 2	R6	A, 2	R43	A, 2										
C7	A, 2			R7	A, 2	R44	A, 2										
C8	A, 2	J1	A, 1	R8	A, 2	R45	A, 1										
C9	B, 3	J2	C, 1	R10	A, 2	R46	B, 3										
C10	B, 3	J3	D, 1	R10	A, 2	R47	B, 3										
C11	B, 2	J4	D, 1	R11	A, 2	R48	B, 3										
C12	A, 1	J5	A, 3	R12	A, 1	R49	C, 3										
C13	A, 1	J6	A, 3	R13	A, 1	R50	C, 3										
C14	C, 3			R14	A, 1												
C15	A, 1	L1	A, 2	R15	A, 1	VR1	B, 3										
C16	A, 1	L2	A, 2	R16	A, 1	VR2	A, 3										
C17	C, 2	L3	B, 2	R17	C, 3	VR3	A, 3										
C18	C, 3	L4	B, 2	R18	C, 3	VR4	A, 2										
C19	A, 3	L5	C, 3	R19	A, 3	VR5	A, 2										
C20	C, 3	L6	A, 1	R20	A, 2	VR6	A, 1										
C21	A, 3	L7	C, 2	R21	A, 1	VR7	B, 3										
C22	B, 3	L8	C, 3	R22	B, 3	VR8	C, 3										
C23	A, 1	L9	D, 3	R23	B, 3	VR9	C, 3										
C24	C, 3	L10	D, 2	R24	B, 3												
C25	B, 3	L11	D, 2	R25	B, 3	Z1	A, 3										
C26	C, 3			R26	C, 3	Z2	D, 3										
C27	D, 3	MP2	A, 3	R27	C, 3												
C28	D, 2			R28	C, 3												
C29	D, 2	Q1	A, 1	R29	C, 3												
C30	B, 3	Q2	A, 2	R30	C, 3												
C31	B, 3	Q3	A, 2	R31	C, 3												
C32	A, 1	Q4	A, 2	R32	C, 3												
C33	C, 3	Q5	A, 3	R33	D, 3												
C34	A, 2	Q6	B, 3	R34	D, 3												
C35	A, 2	Q7	B, 3	R35	D, 3												
C36	A, 2	Q8	C, 3	R36	D, 3												
C37	A, 3	Q9	C, 3	R37	B, 3												

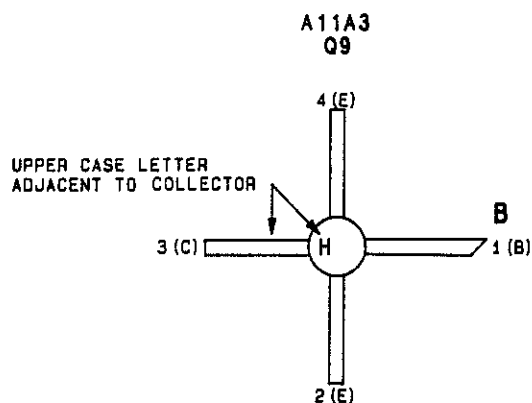
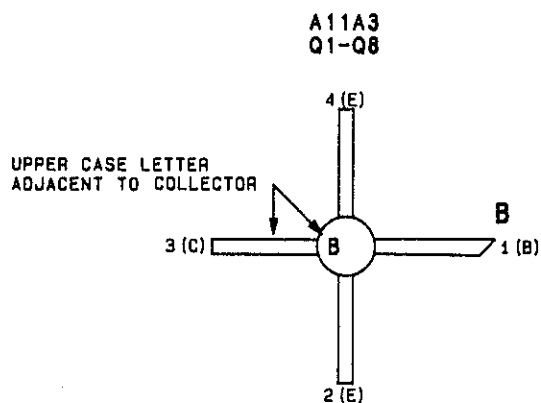
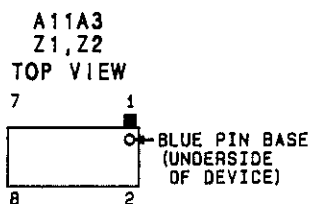
A11A2 REFERENCE LOOP  
V.C.O. ASSEMBLY

**SS34**

SEE REVERSE SIDE

## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. L12-L18 are printed circuit trace inductors.
3. A11A3 J6 consists of a clip and single connector.
4. FL1 has polyiron shielding bordering the filter image (PC trace). It must be positioned so that none of the image area is covered by the polyiron. If the polyiron moves, recalibration may be necessary.
5. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

## CHANGES

**2529A and above**

In Schematic General Information:

- Revise Note 4 to include FL2.

On the schematic:

- In **860 MHz RF FILTER**, add "NOTE 4" next to FL2.

**2535A and above**

On the schematic:

- A11A3 L8 - In **LO LIMITER/AMPLIFIER** change the value of L8 to 36n Henries.

A11A3 REFERENCE LOOP POWER SPLITTER ASSEMBLY (08642-60108)

OUTPUT LEVEL CONTROL  
33 (DD)

FIG. 8N-109  
SHT. 1 OF 4

REFERENCE LOOP VCO OUTPUT  
34 (DJ)

SANR OSCILLATOR OUTPUT  
26 (BJ)

+15V (F2) SUPPLY  
33 (DI)

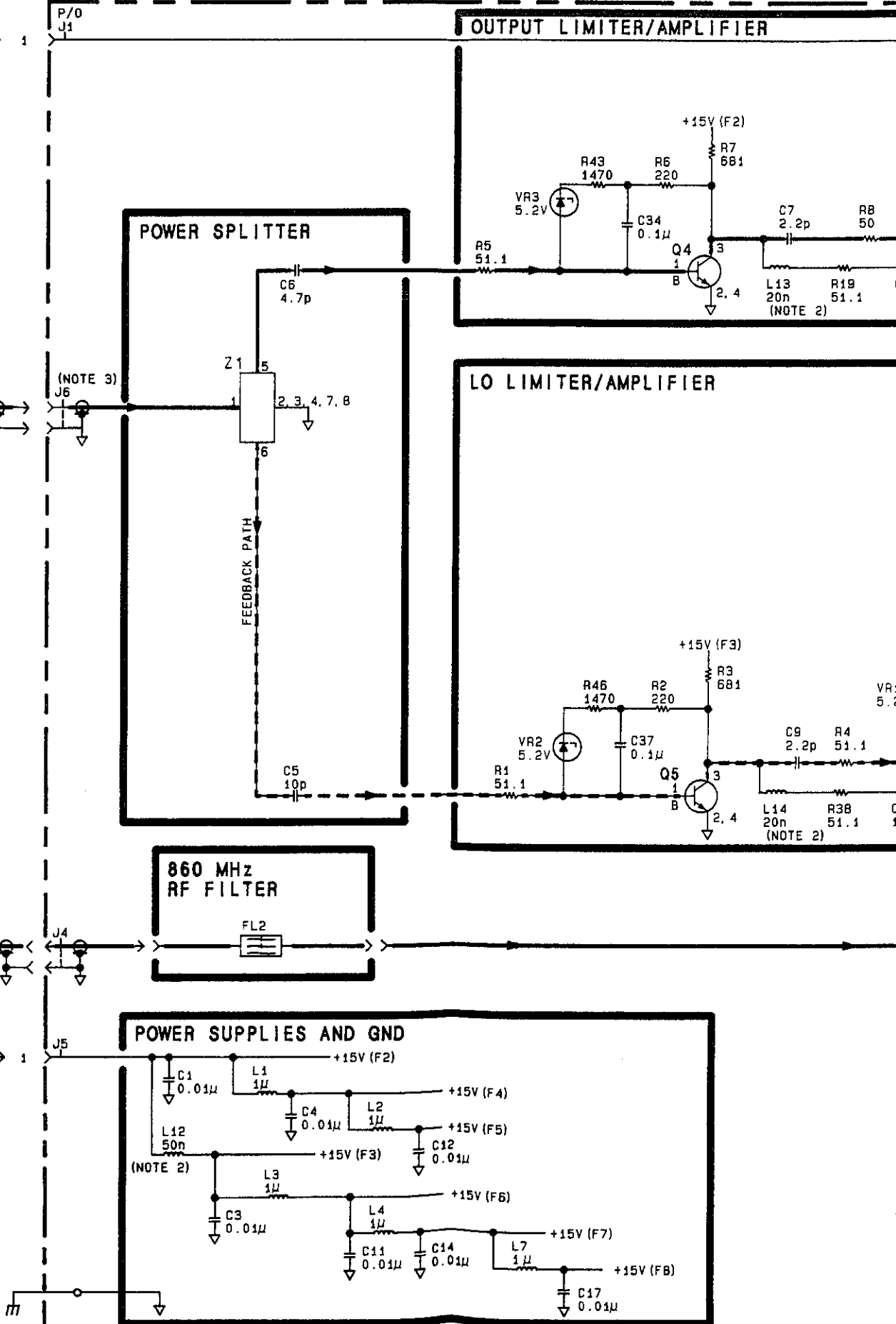
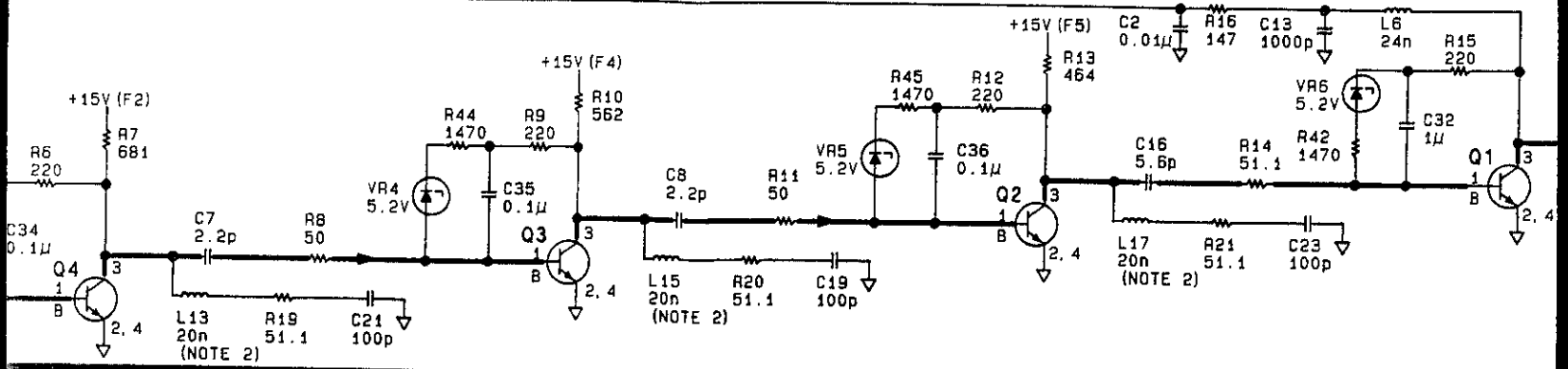




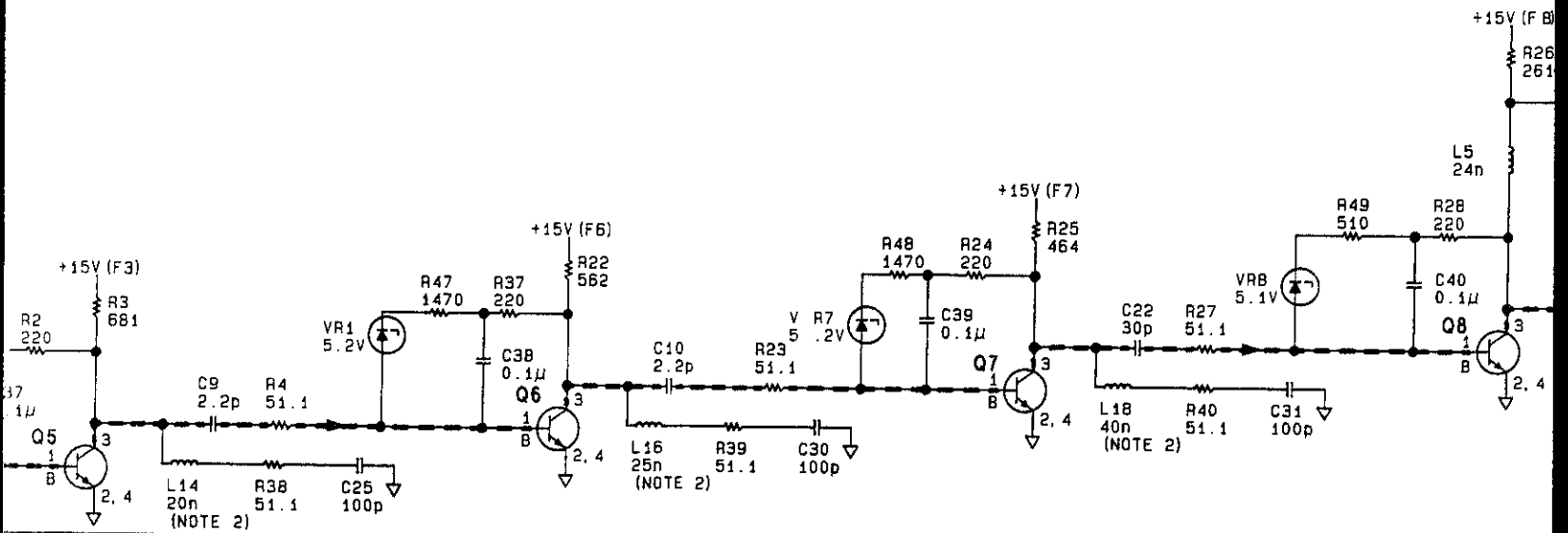
FIG. 8N-109  
 SHT. 2 OF 4

Y (08642-60108)

AMPLIFIER



AMPLIFIER



(FB)

FIG. 80-109  
 SH. 3 OF 4

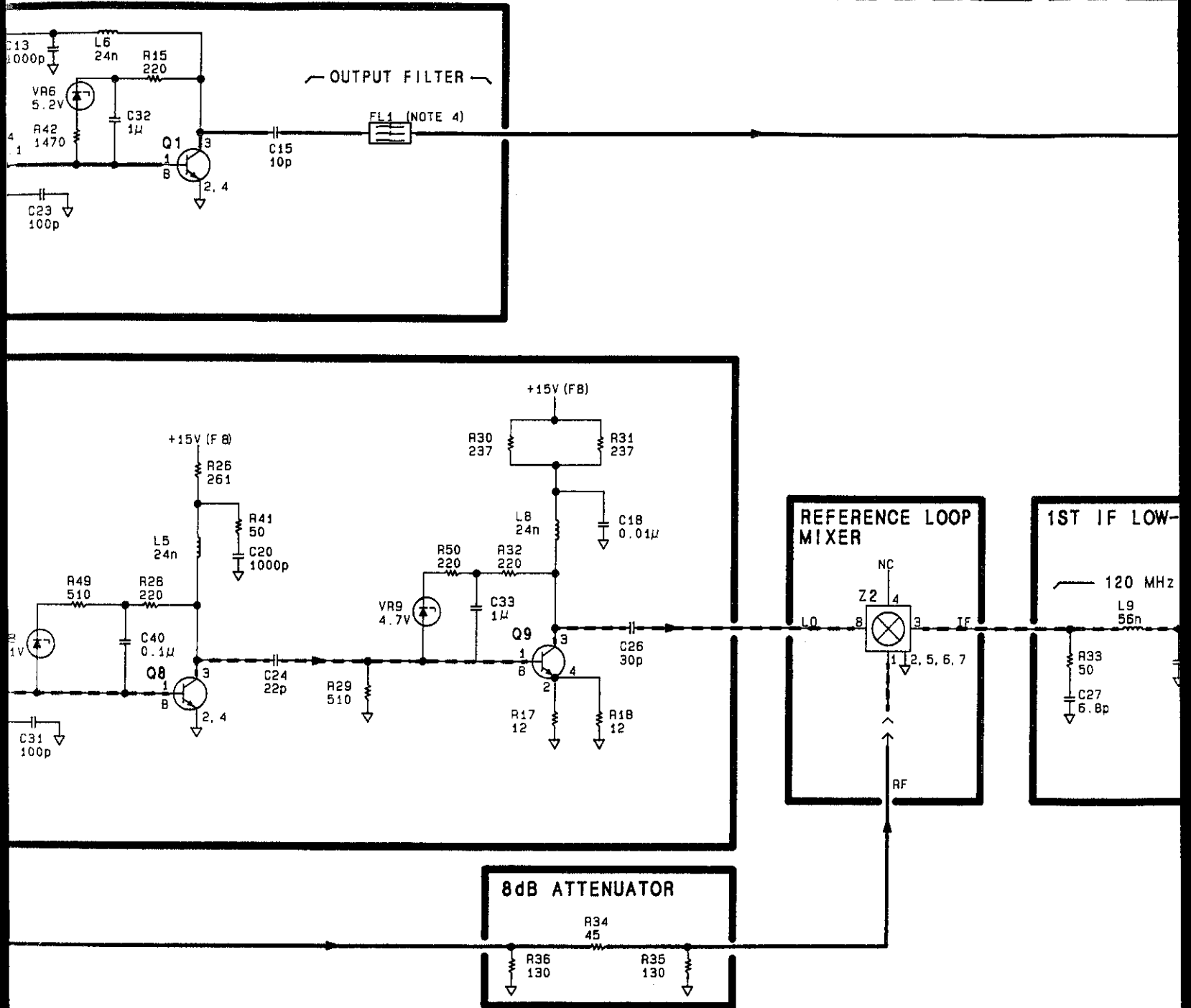
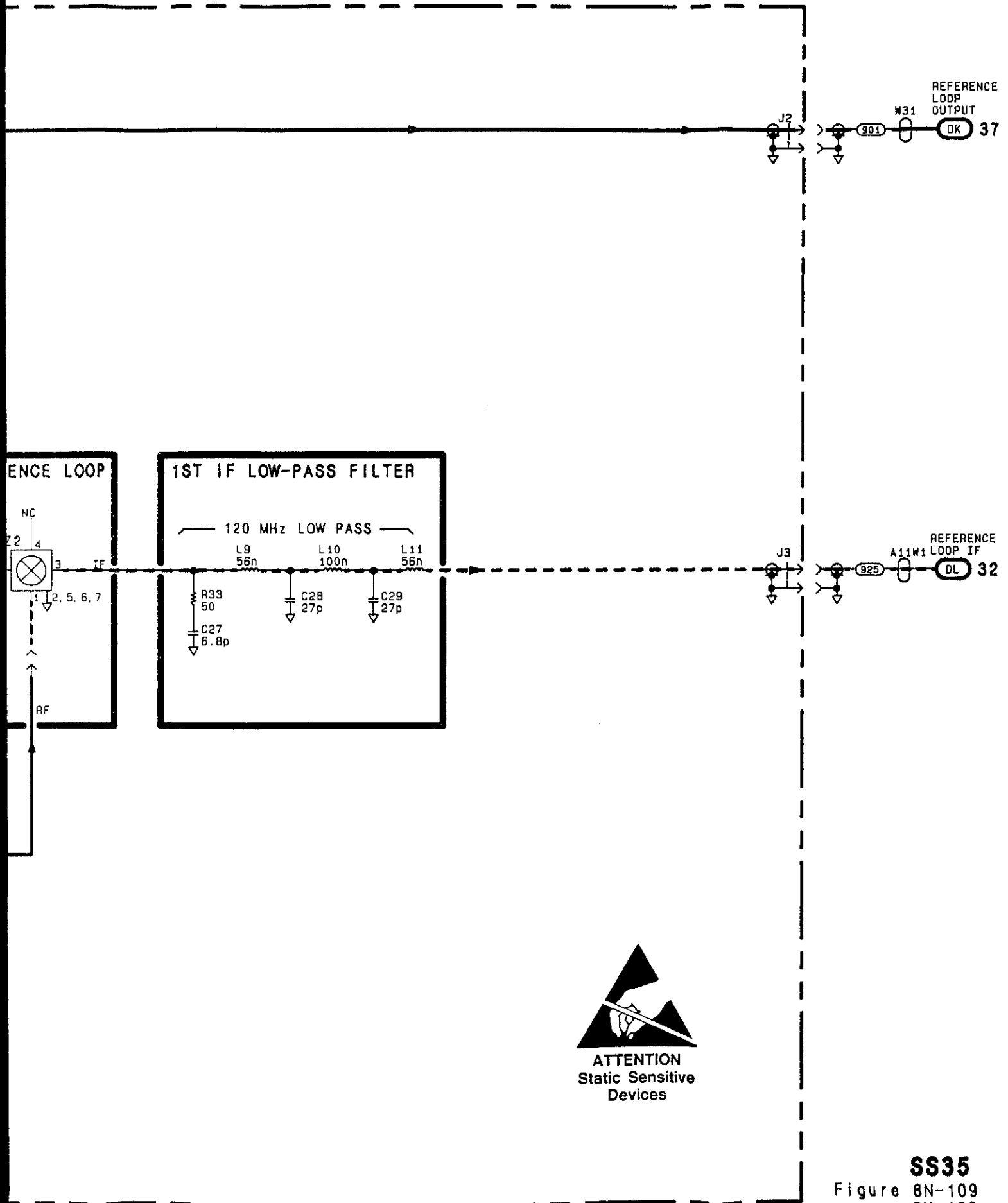


FIG. 8N-109, SH. 4 OF 4

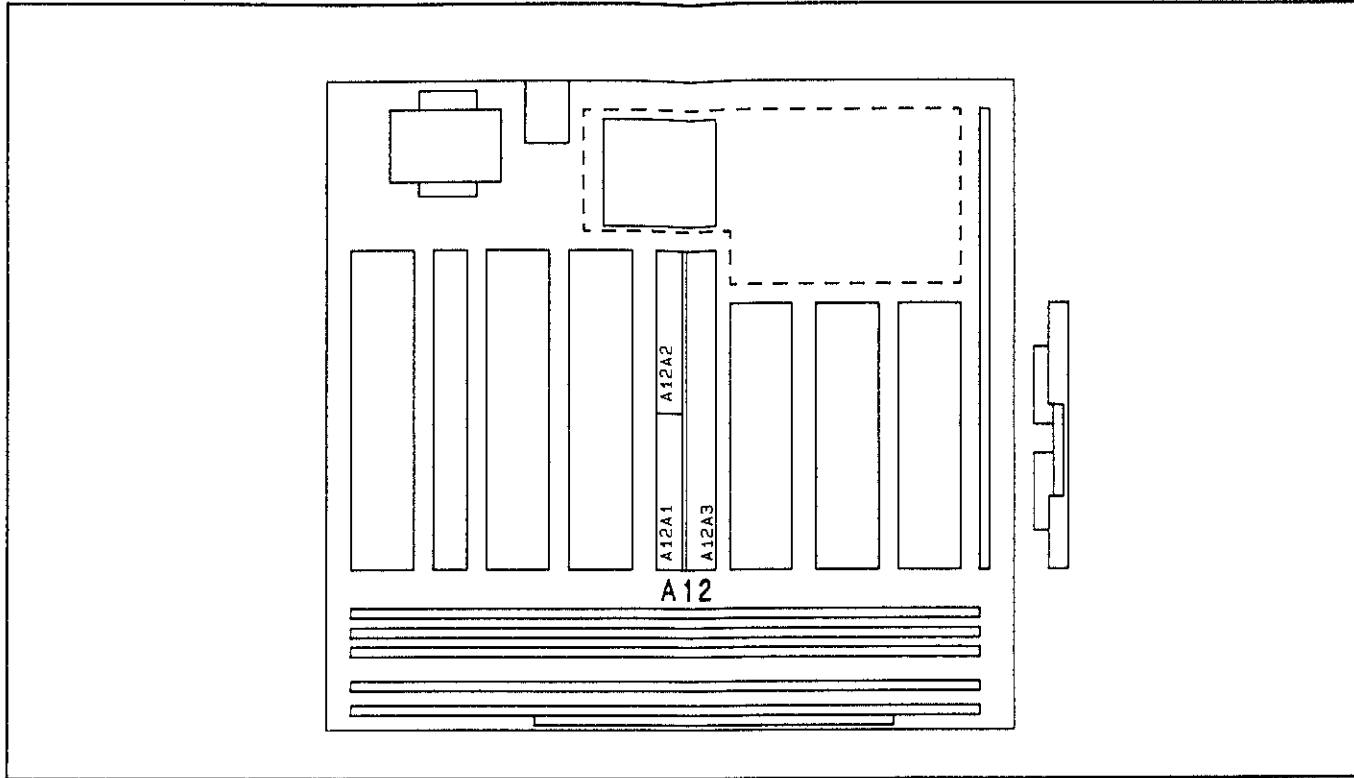


**SS35**  
Figure 8N-109  
8N-109

A12 Sum Loop/Divider Module

FIG. 80-100  
SHT. 1 OF 2

Assembly Locator



Simplified Block Diagram

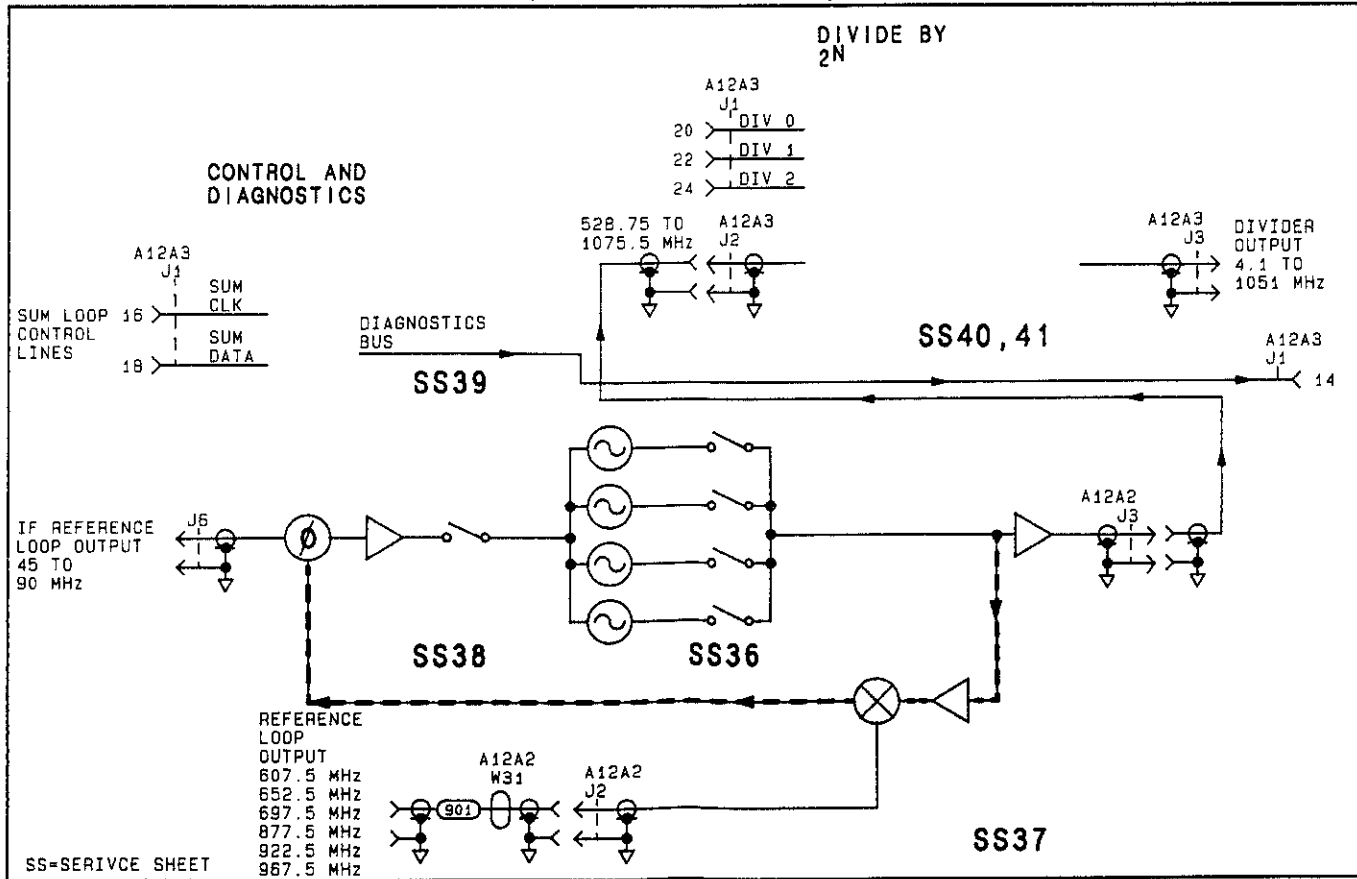


Figure 80-100 BD12,13 General Information.

Module Test Point/Adjustment Locations

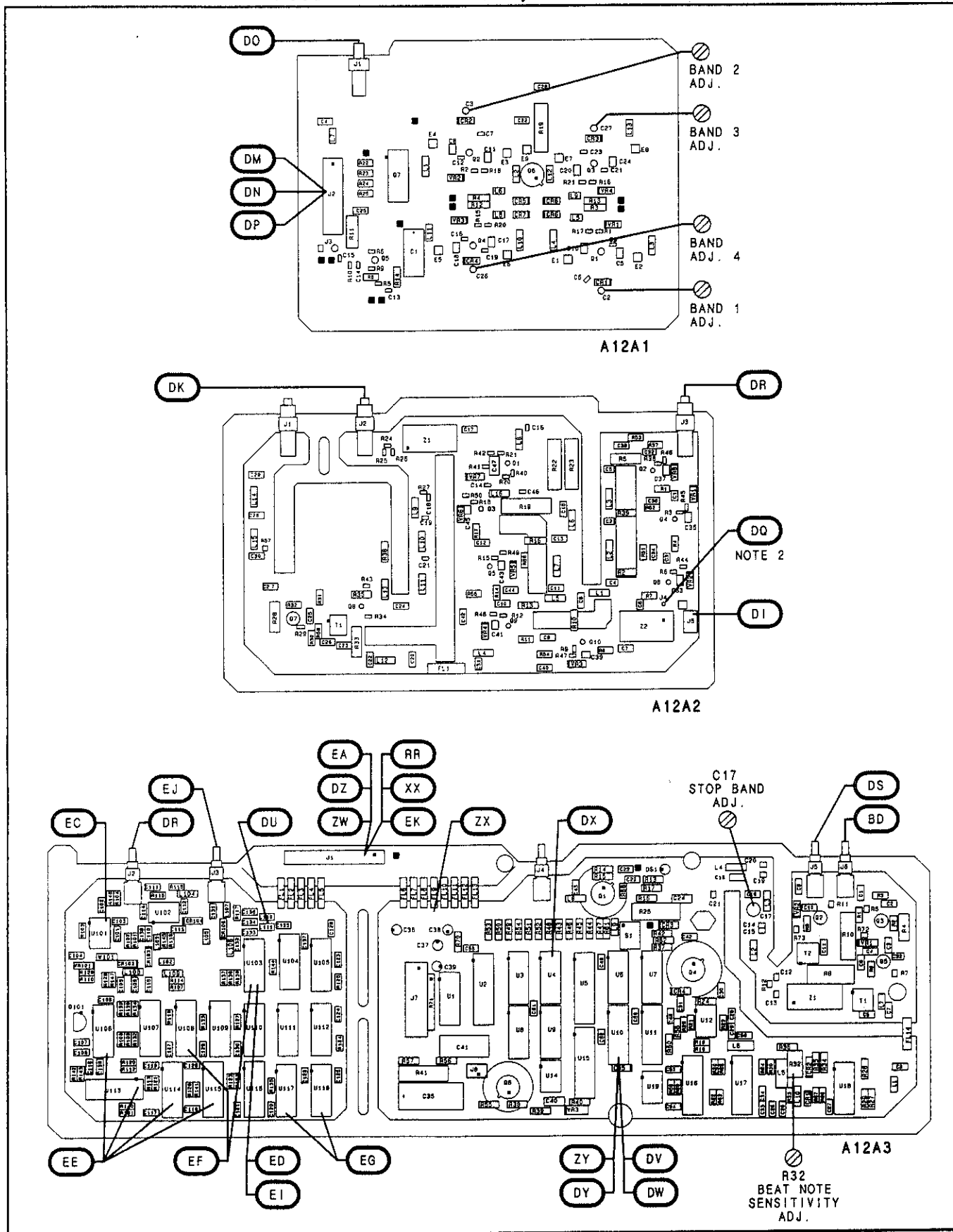
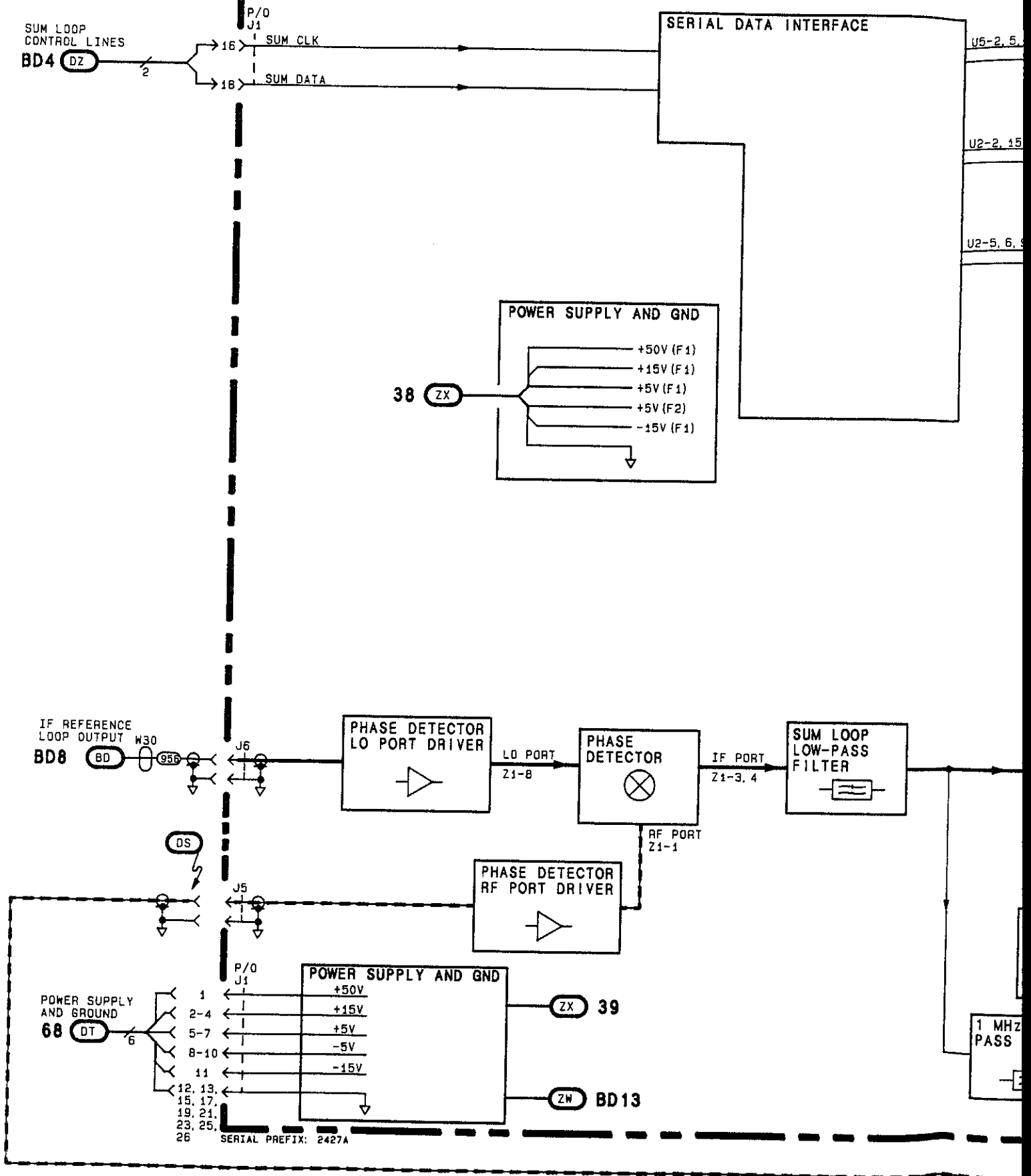


FIG. 80-101  
 SH. 1 OF 5

**P/O A12A3 SUM LOOP DETECTOR/DIVIDER ASSEMBLY (08642-60111)**



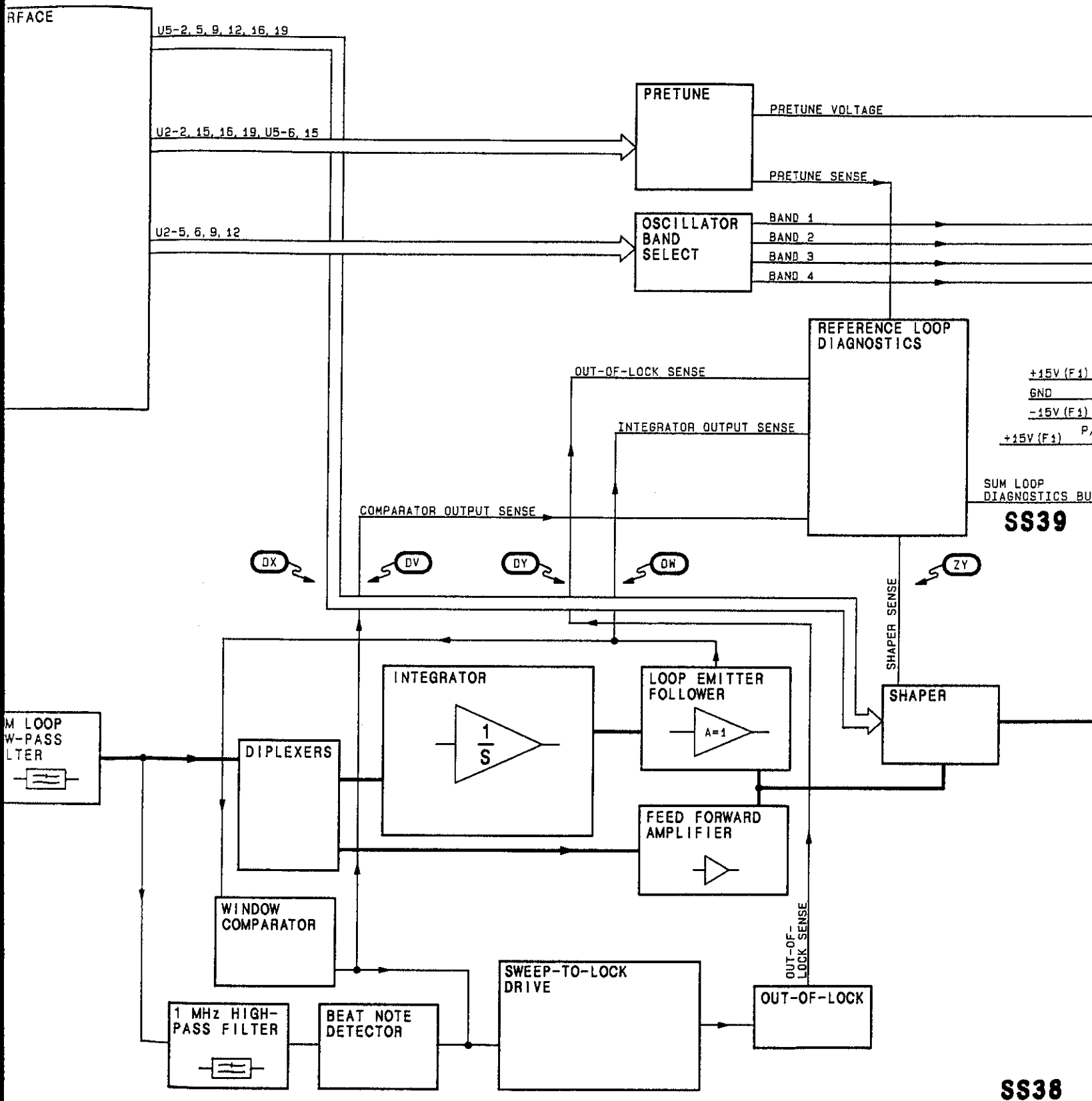




FIG. 80-101  
 SHIT 3 OF 5

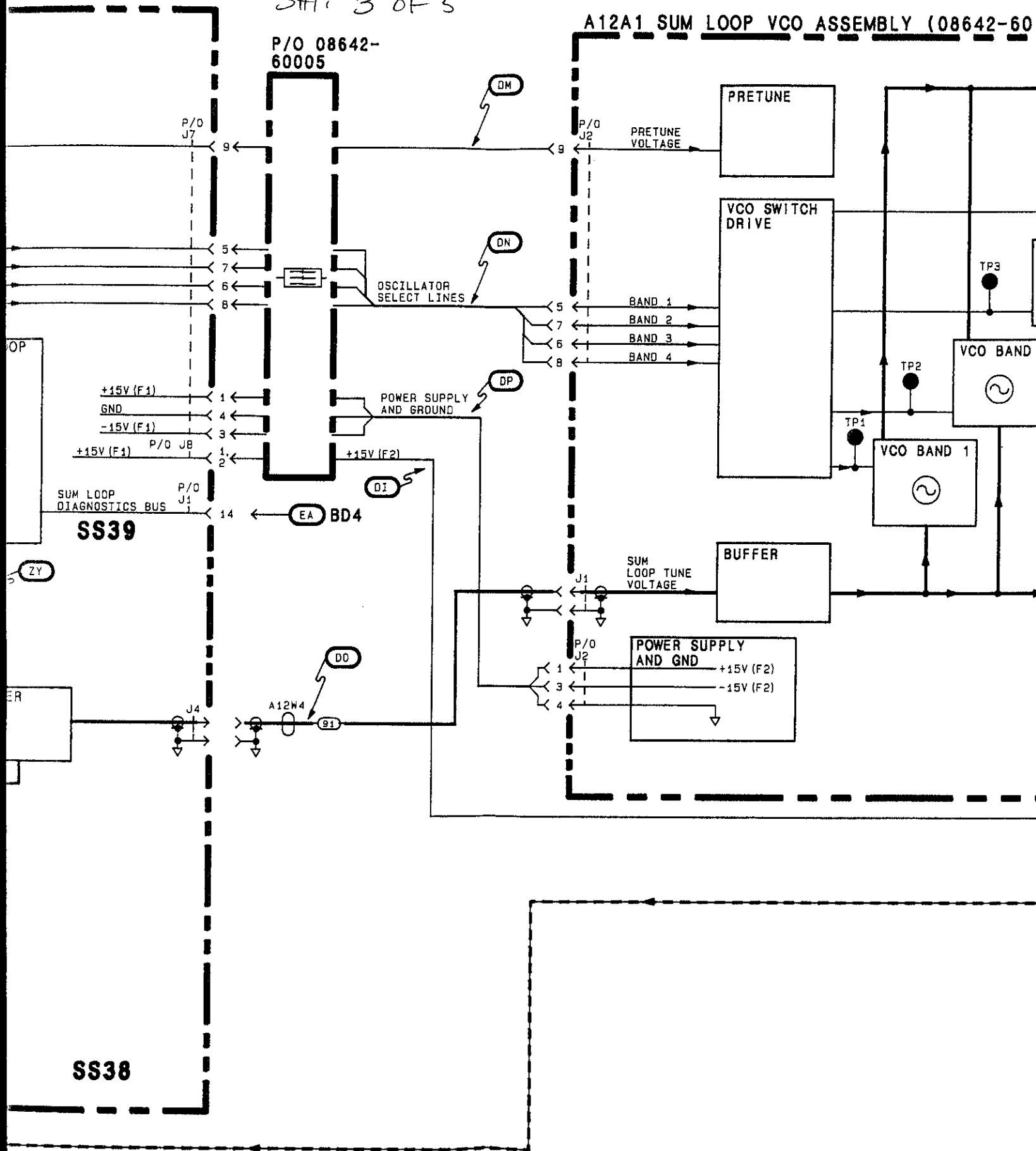
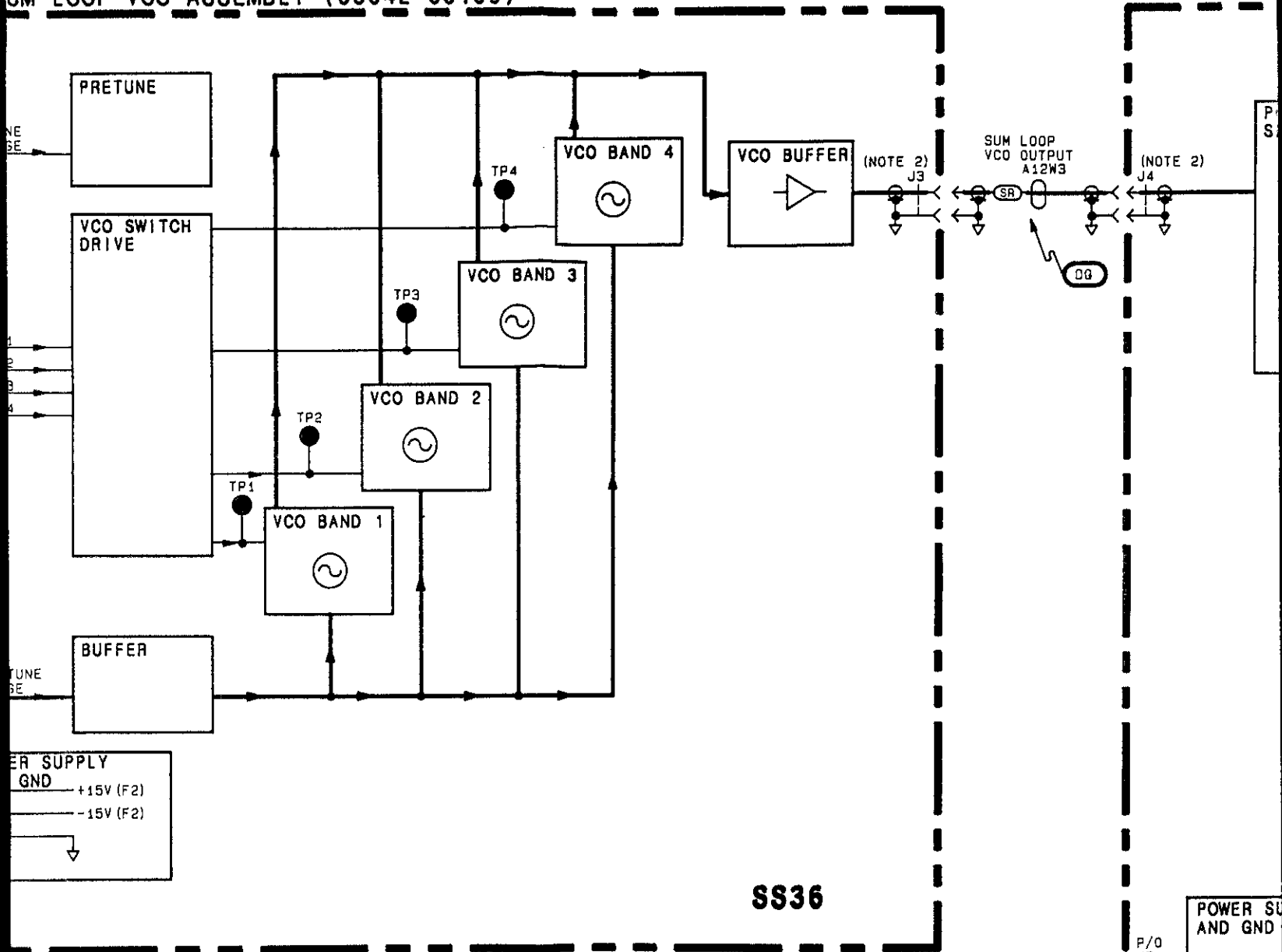
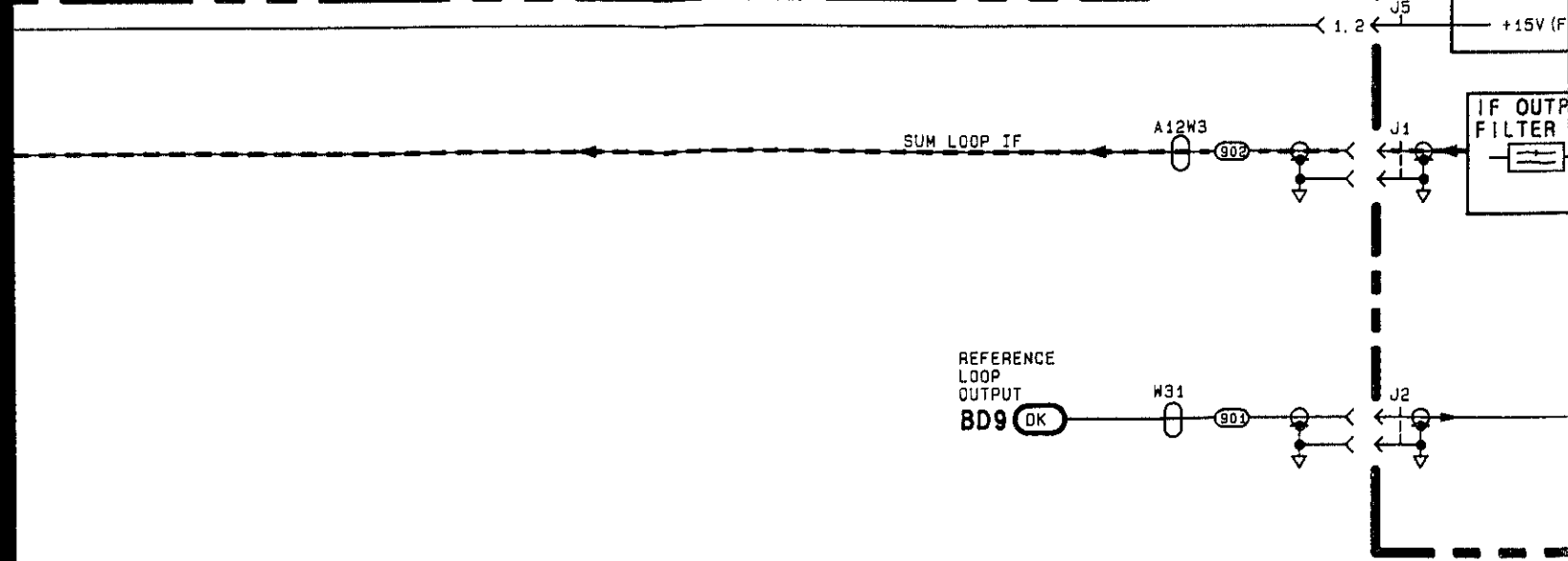


FIG. 80-101, SHEET 4 OF 5

UM LOOP VCO ASSEMBLY (08642-60109)



SS36



REFERENCE LOOP OUTPUT  
BD9 OK

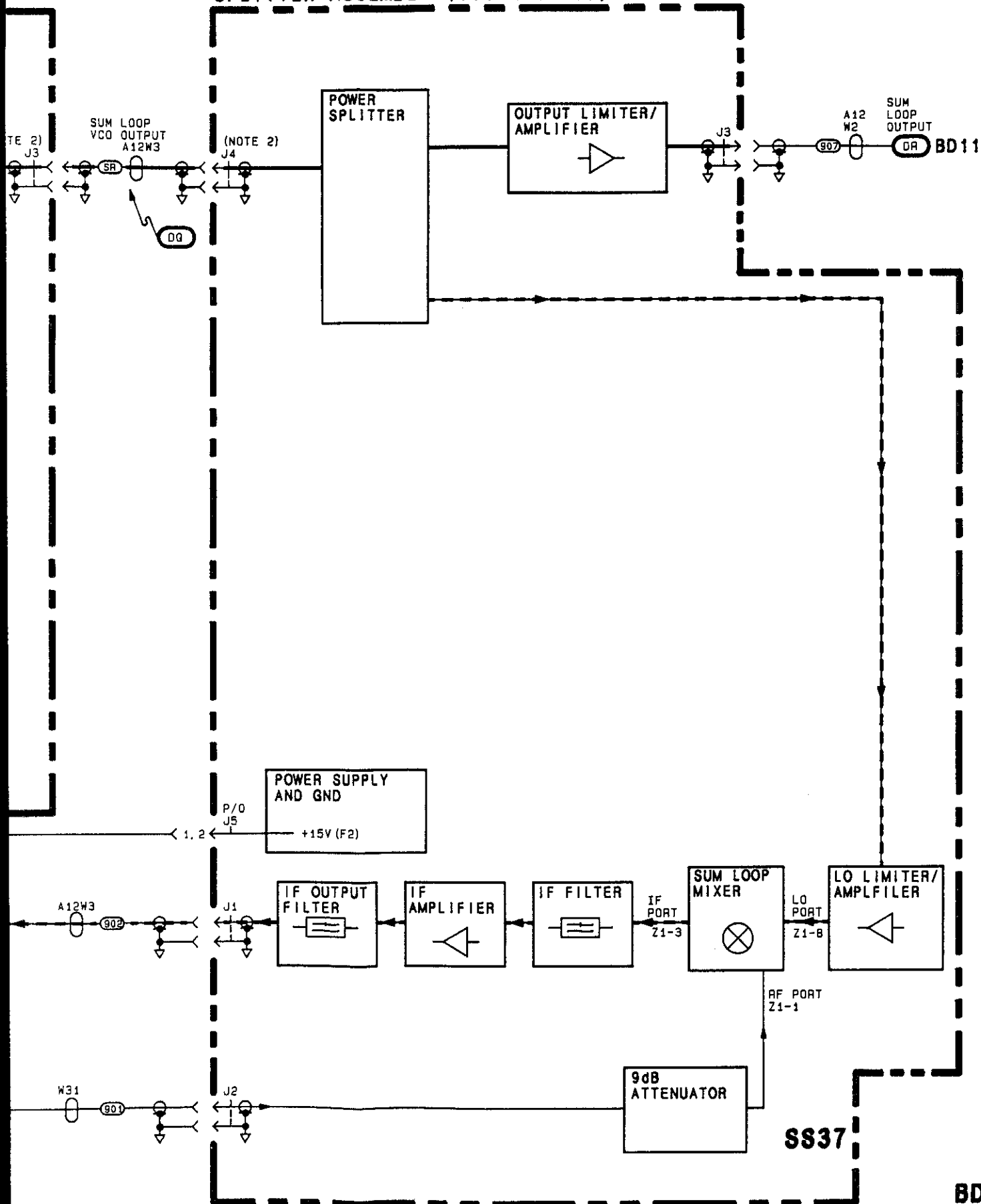
A12A2 SUM SPLITTER A

POWER SUPPLY AND GND

IF OUTPUT FILTER

FIG. 80-101  
 SH. 5 OF 5

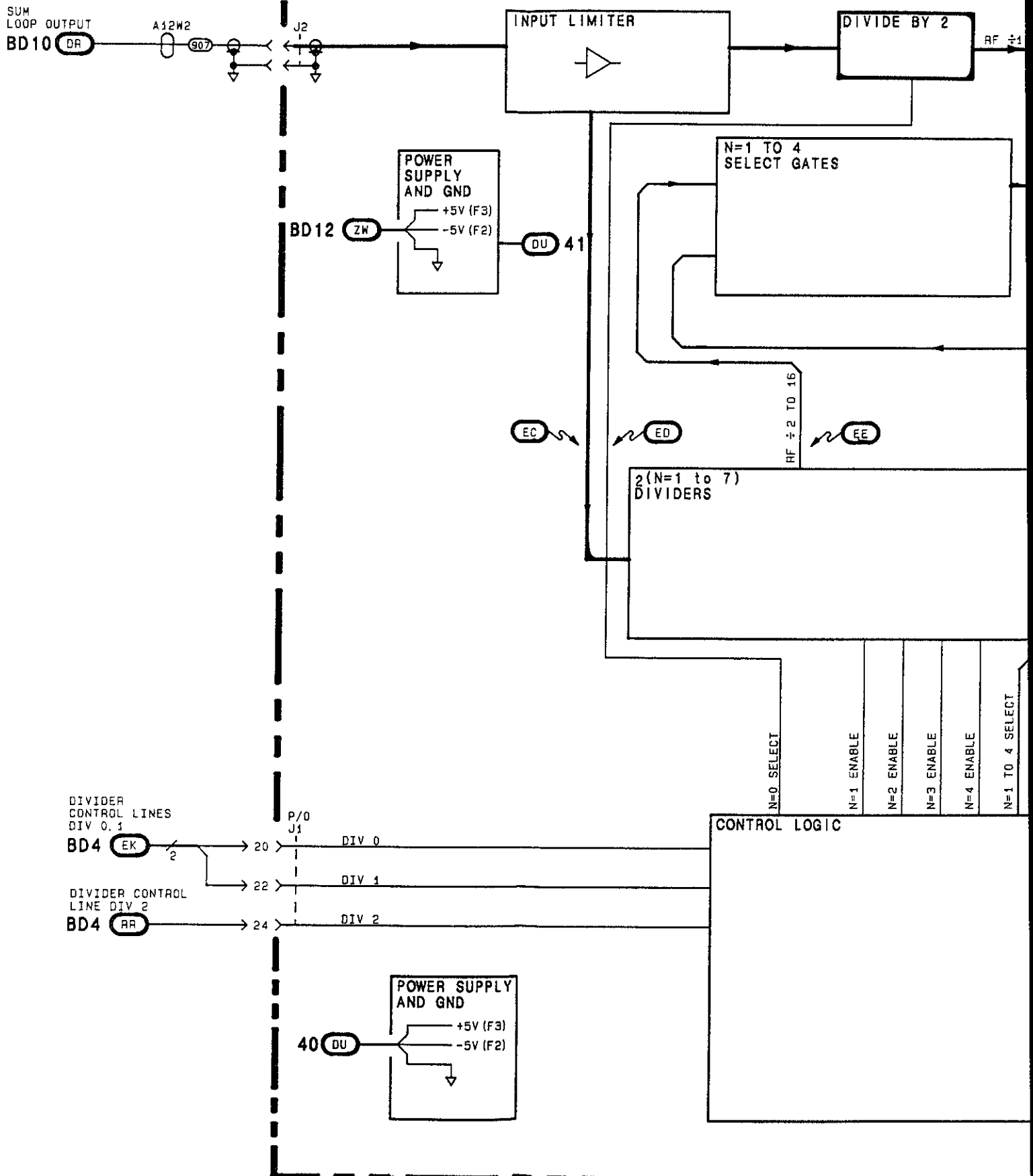
A12A2 SUM MIXER/  
 SPLITTER ASSEMBLY (08642-60110)



BD12  
 Figure 80-101  
 80-101

FIG 80-103  
 SH. 1 OF 2

P/O A12A3 SUM PHASE DETECTOR/DIVIDER ASSEMBLY (08642-6011)



60111)

FIG. 80-103  
SHT. 2 OF 2

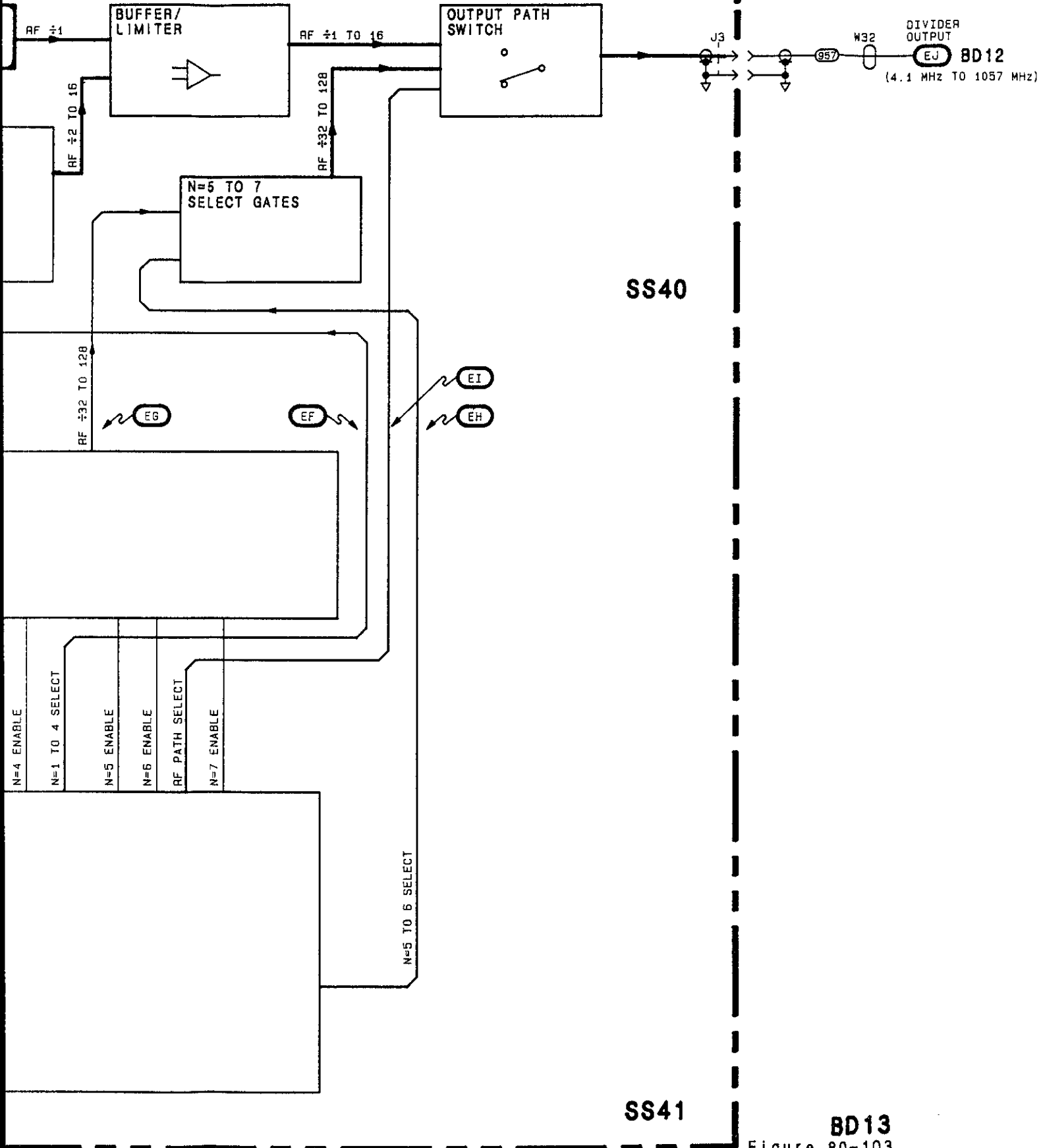


Figure 80-103  
80-103

BD13

FIG. 80-104  
SHT. 1 OF 4

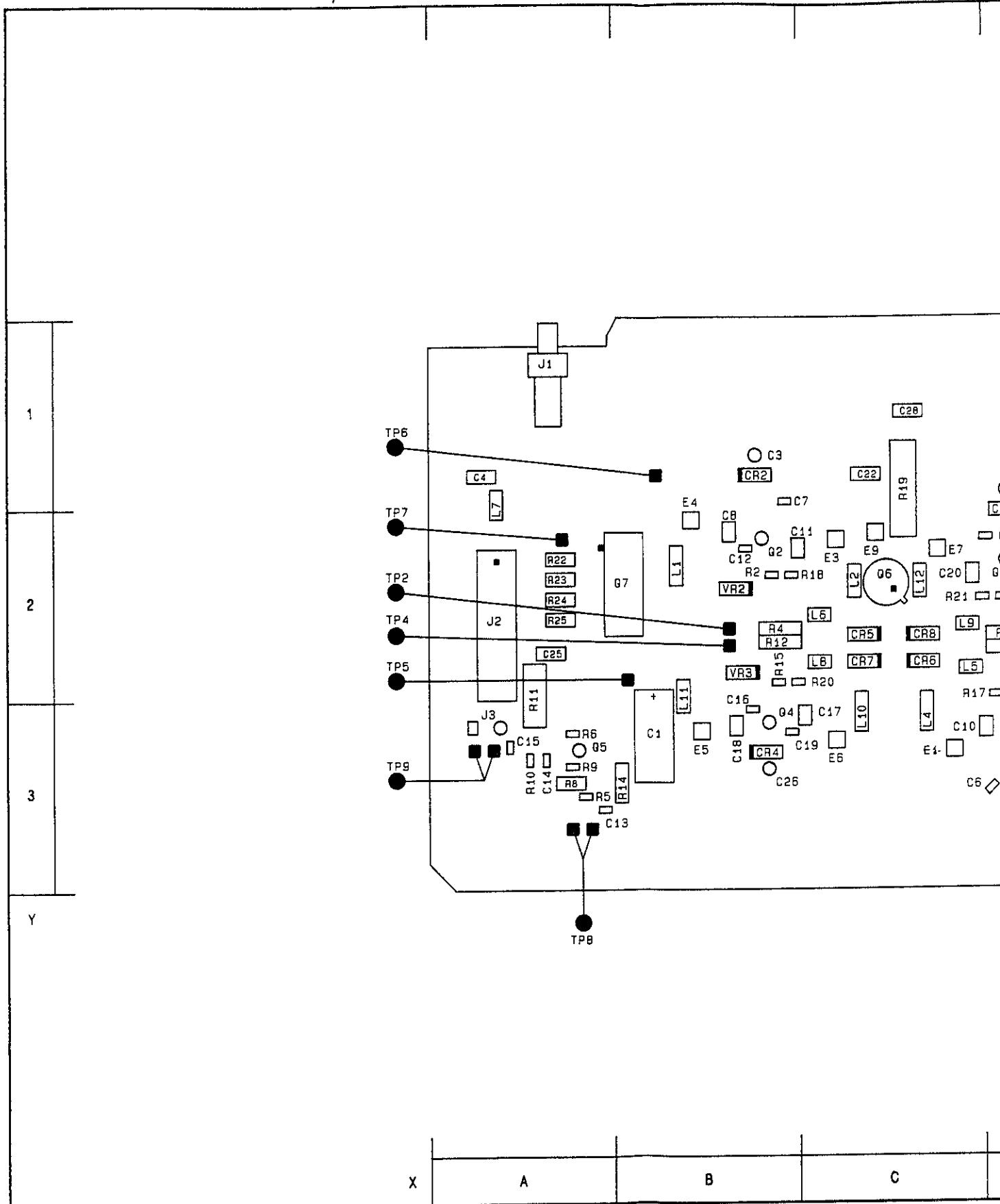
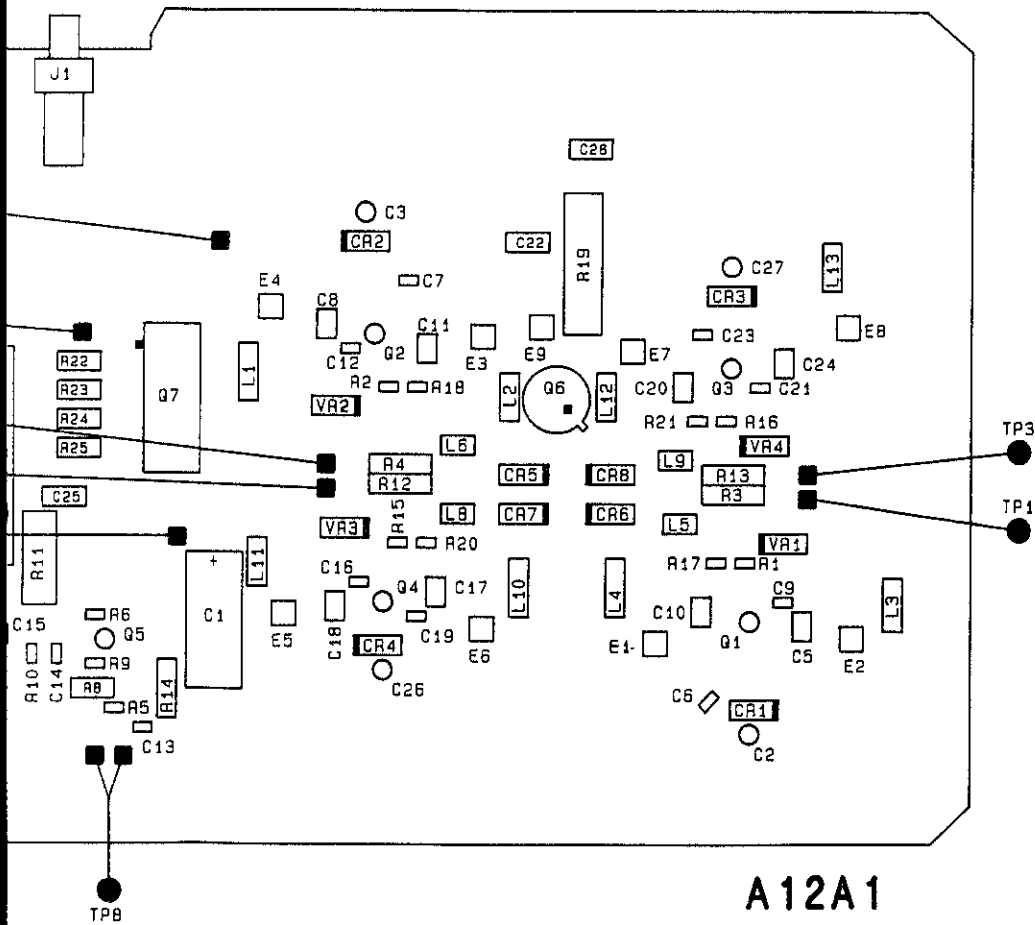


Figure 80-104. SERVICE SHEET 36 INFORMATION

Component Locator

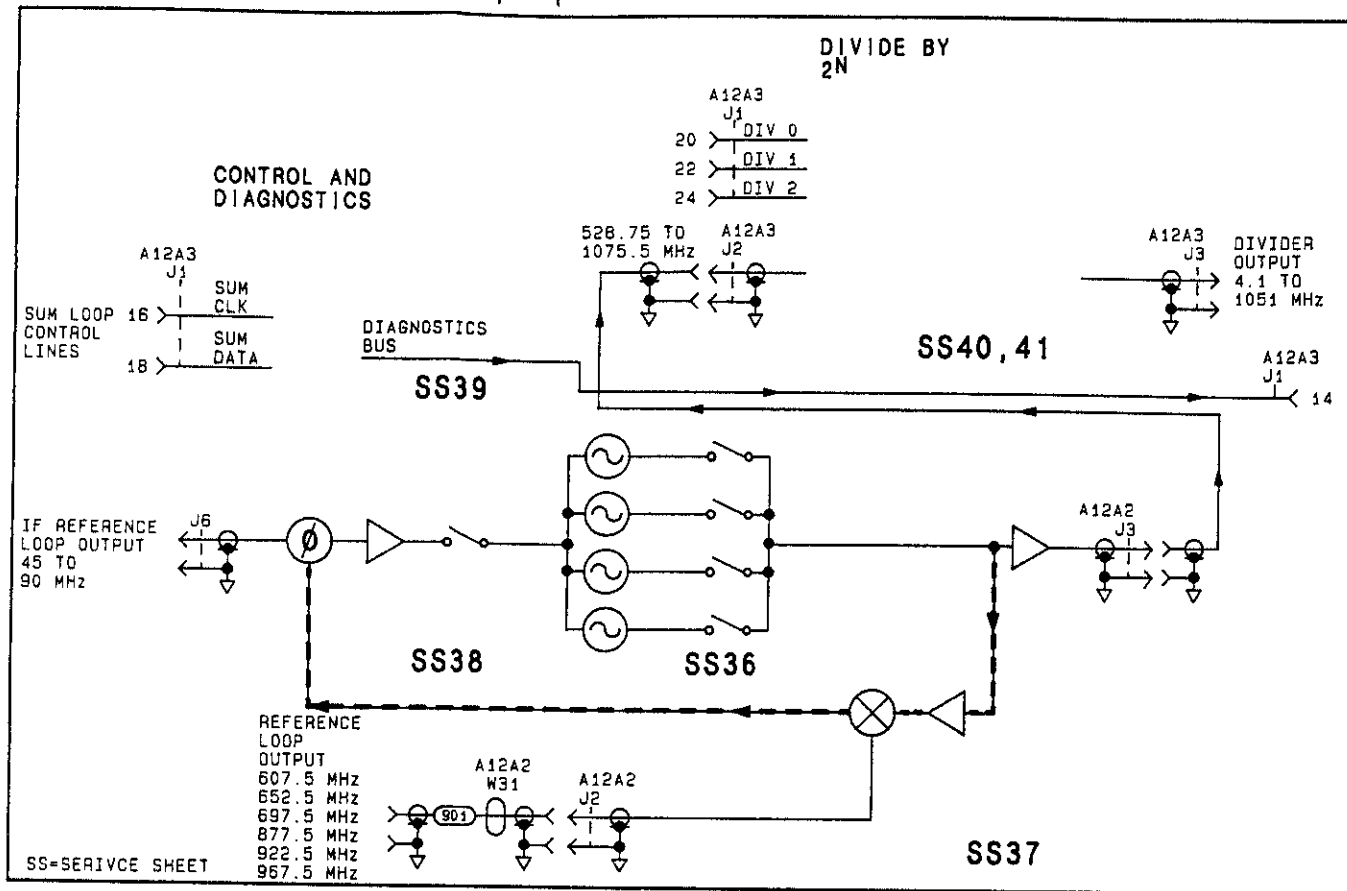
FIG. 80-104  
 SH. 2 OF 4



A	B	C	D
---	---	---	---

Component Locator

FIG. 80-104  
SHT. 3 OF 4



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	B, 3	E1	C, 3	R1	D, 2	VR1	D, 2										
C2	D, 3	E2	D, 3	R2	B, 2	VR2	B, 2										
C3	B, 1	E3	C, 2	R3	D, 2	VR3	B, 2										
C4	A, 1	E4	B, 2	R4	B, 2	VR4	D, 2										
C5	D, 3	E5	B, 3	R5	A, 3												
C6	D, 3	E6	C, 3	R6	A, 3												
C7	D, 1	E7	C, 2	R7	A, 3												
C8	B, 2	E8	D, 2	R8	A, 3												
C9	D, 3	E9	C, 2	R9	A, 3												
C10	C, 3			R10	A, 3												
C11	B, 2	J1	A, 1	R11	A, 2												
C12	B, 2	J2	A, 2	R12	B, 2												
C13	A, 3	J3	A, 3	R13	D, 2												
C14	A, 3			R14	B, 3												
C15	A, 3			R15	B, 2												
C16	B, 3	L1	B, 2	R16	D, 2												
C17	C, 3	L2	C, 2	R17	D, 2												
C18	B, 3	L3	D, 3	R18	B, 2												
C19	B, 3	L4	C, 3	R19	C, 1												
C20	C, 2	L5	C, 2	R20	C, 2												
C21	D, 2	L6	C, 2	R21	C, 2												
C22	C, 1	L7	A, 1	R22	A, 2												
C23	D, 2	L8	C, 2	R23	A, 2												
C24	D, 2	L9	C, 2	R24	A, 2												
C25	A, 2	L10	C, 3	R25	A, 2												
C26	B, 3	L11	B, 3														
C27	D, 1	L12	C, 2														
C28	C, 1	L13	D, 1	TP1	D, 2												
CR1	D, 3	Q1	D, 3	TP2	B, 2												
CR2	B, 1	Q2	B, 2	TP3	D, 2												
CR3	D, 2	Q3	D, 2	TP4	B, 2												
CR4	B, 3	Q4	B, 3	TP5	B, 2												
CR5	C, 2	Q5	A, 3	TP6	B, 1												
CR6	C, 2	Q6	C, 2	TP7	A, 2												
CR7	C, 2	Q7	B, 2	TP8	A, 3												
CR8	C, 2			TP9	A, 3												

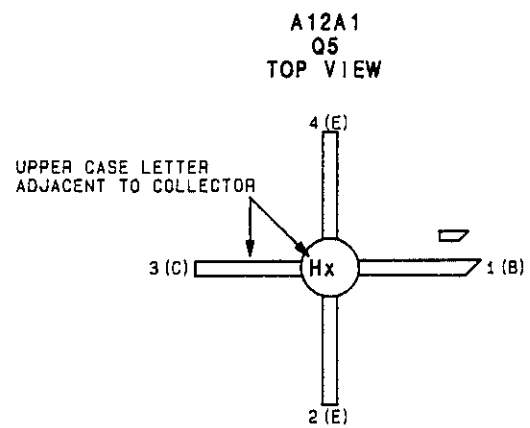
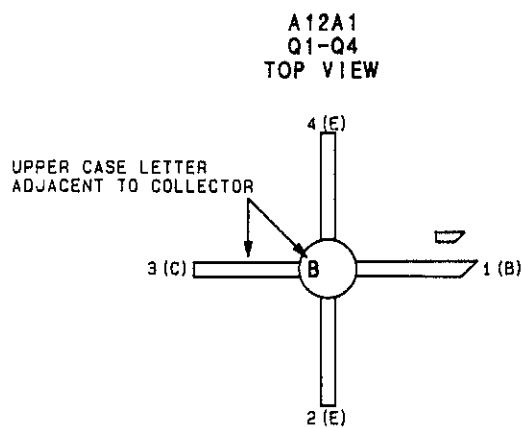
A12 MODULE **BD13**

SEE REVERSE SIDE



## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A12A1 J3 consists of a clip and a single connector.
3. W100-W111 are printed circuit trace inductors.
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

FIG. 80-105  
 SH. 1 OF 5

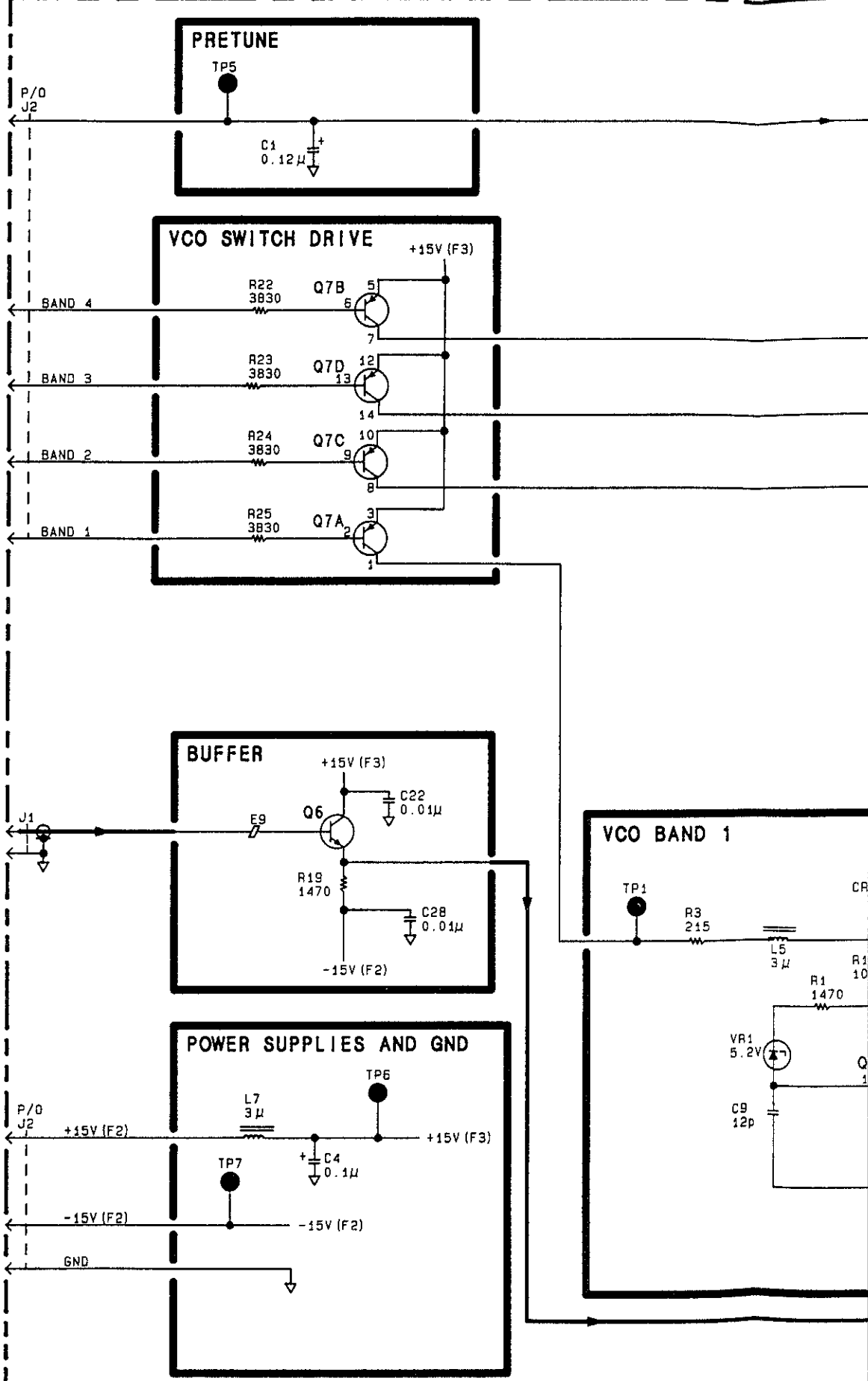
A12A1 SUM LOOP VCO ASSEMBLY (08642-60109)

PRETUNE  
 VOLTAGE  
 39 DM

OSCILLATOR  
 SELECT LINE  
 39 DN

SUM LOOP  
 TUNE  
 VOLTAGE  
 39 DO

POWER SUPPLY  
 AND GROUND  
 39 DP



SERIAL PREFIX: 2427A



FIG. 80-105, SHT. 3 OF 5

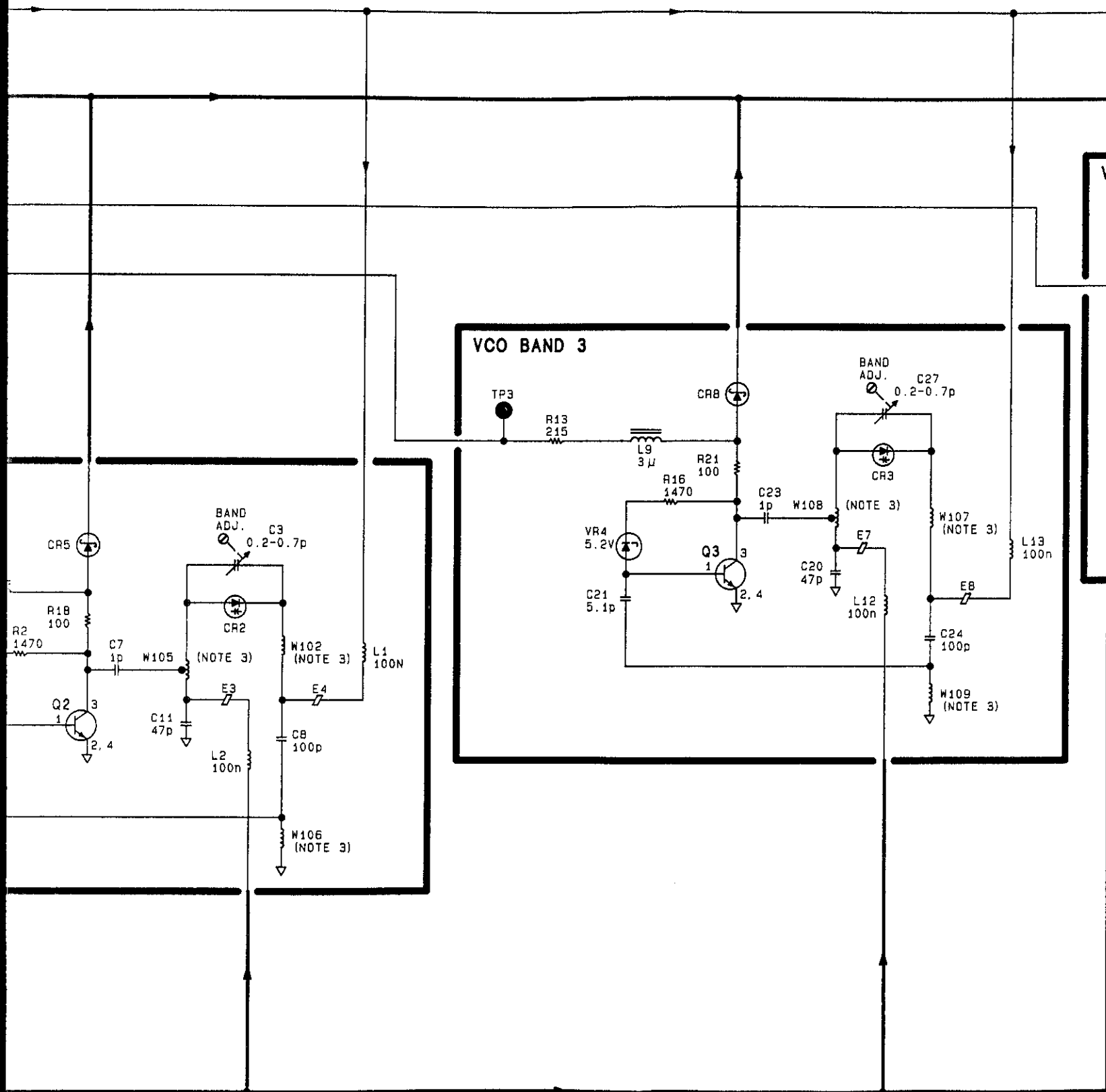


FIG. 80-105, SHEET 4 OF 5

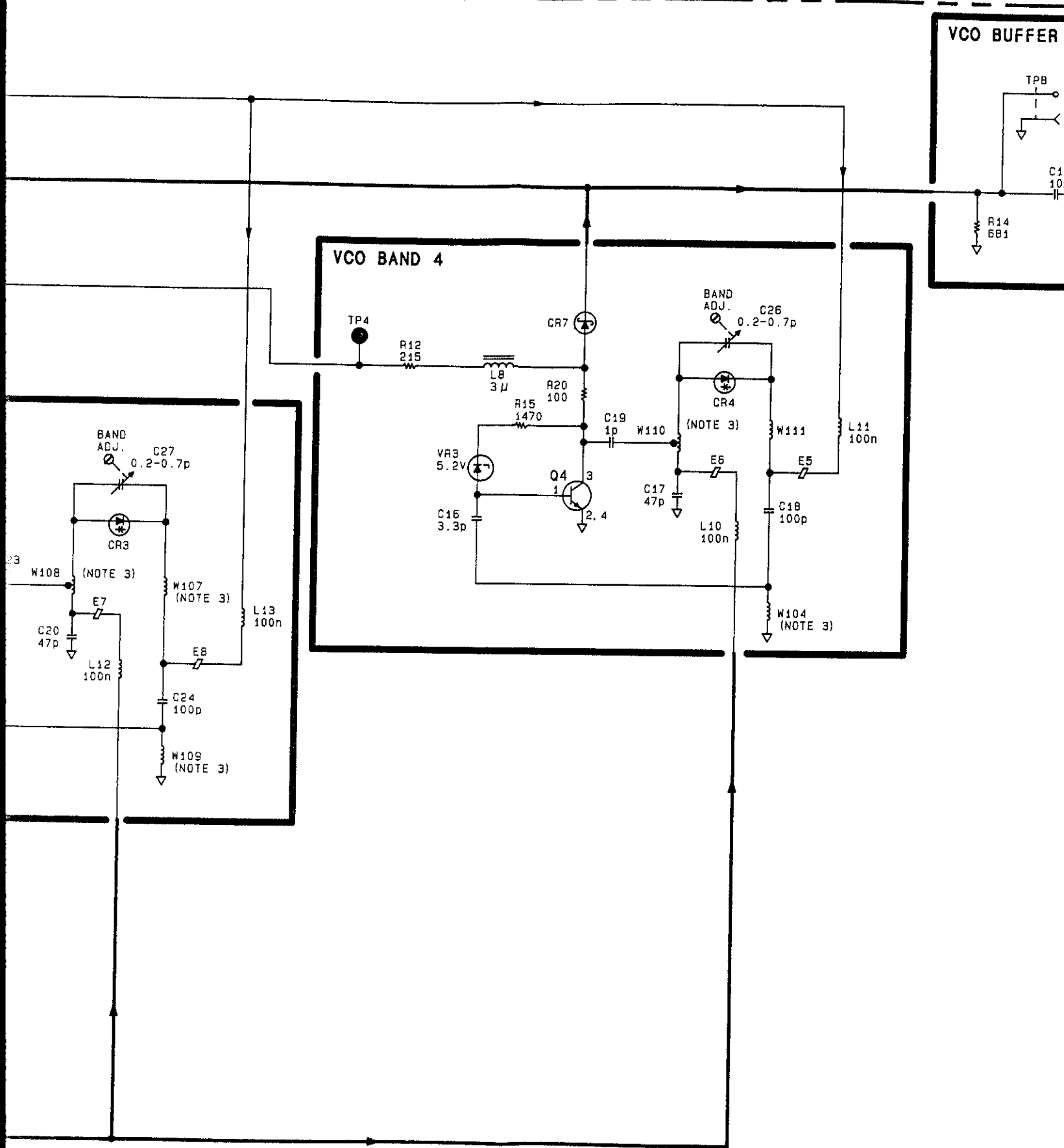
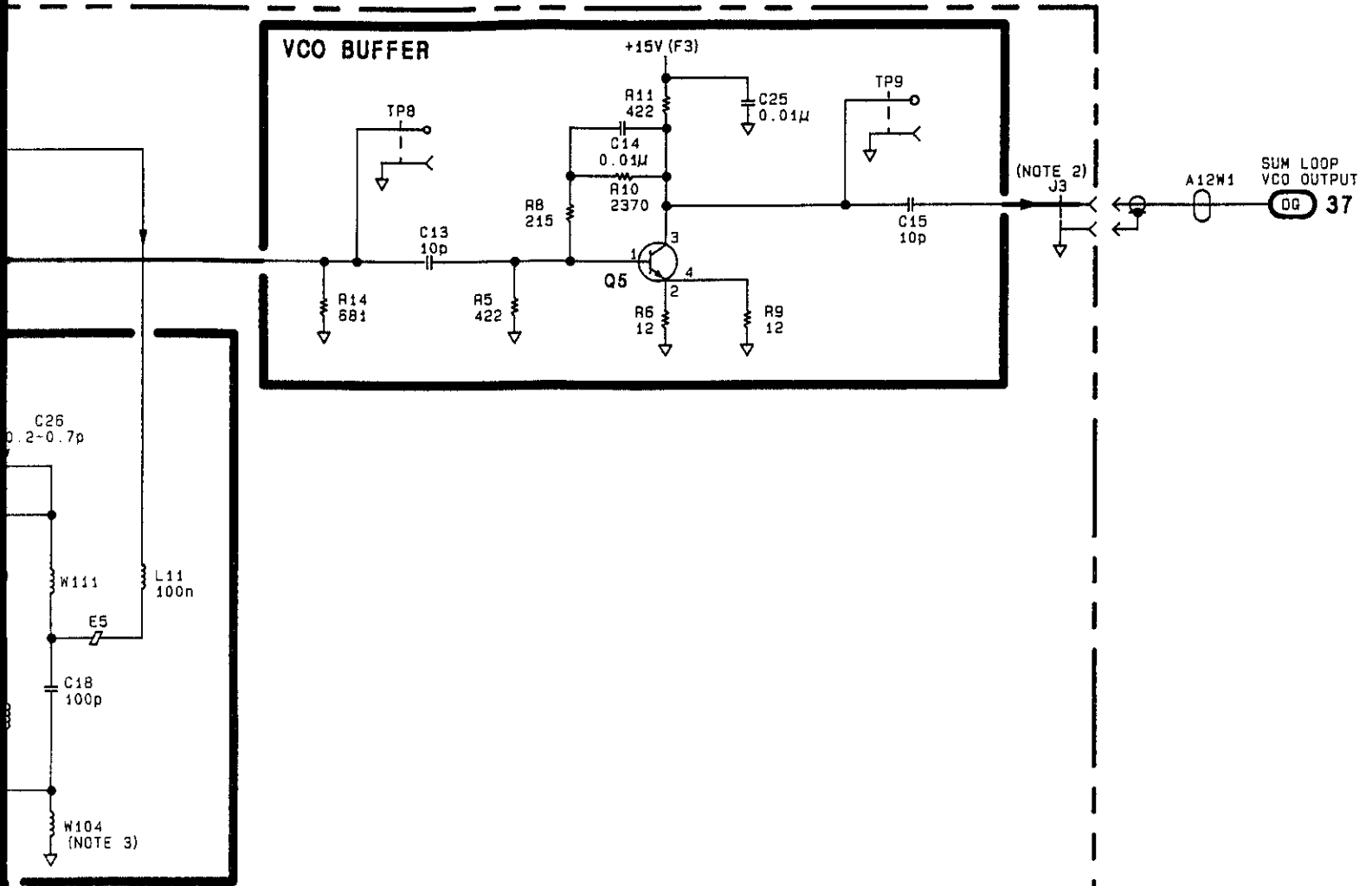


FIG. 80-105, SH. 5 OF 5



SS36  
Figure 80-105  
80-105

FIG. 80-106  
SHT. 1 OF 4

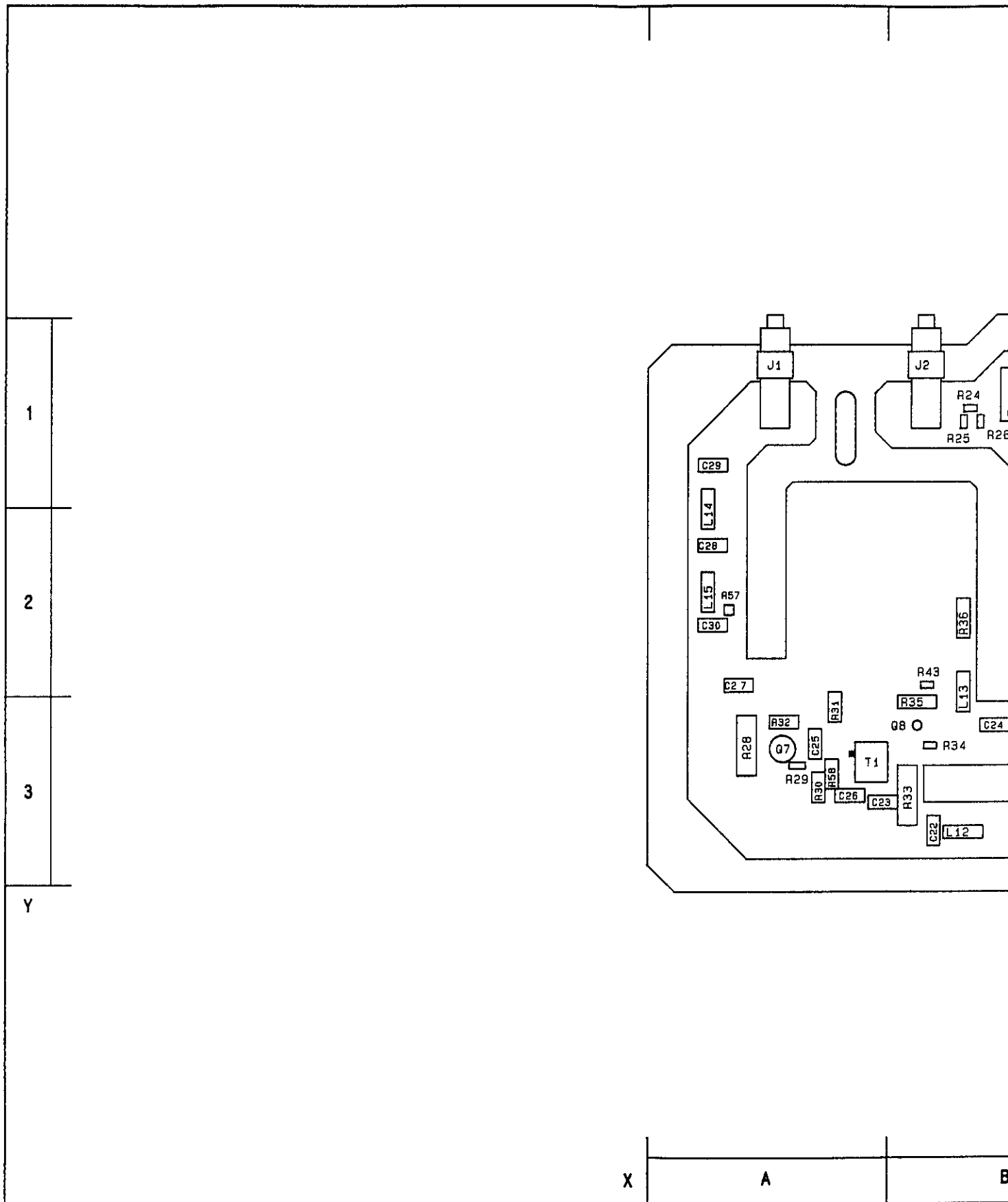
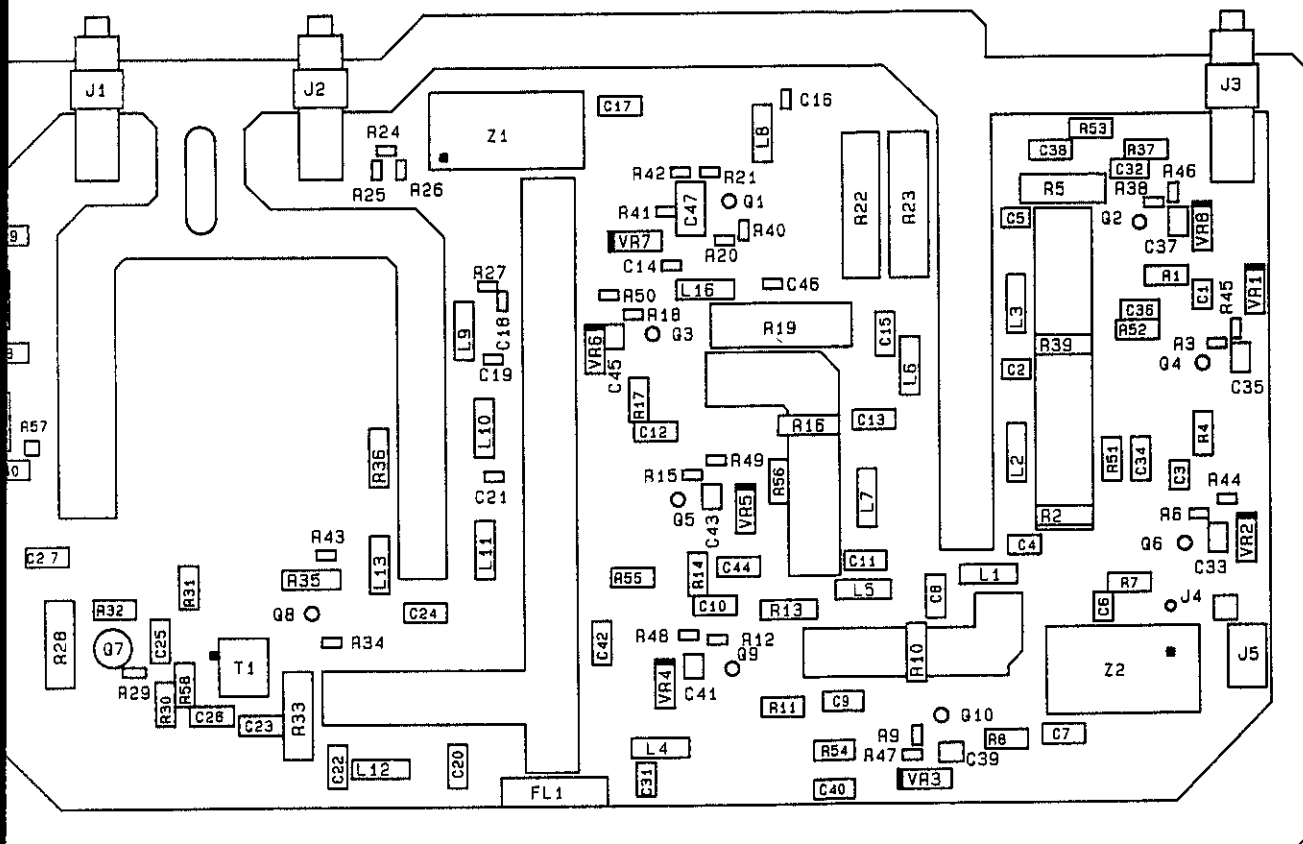


Figure 80-106. SERVICE SHEET 37 INFORMATION

FIG. 80-106  
SHT. 2 OF 4



A12A2

A

B

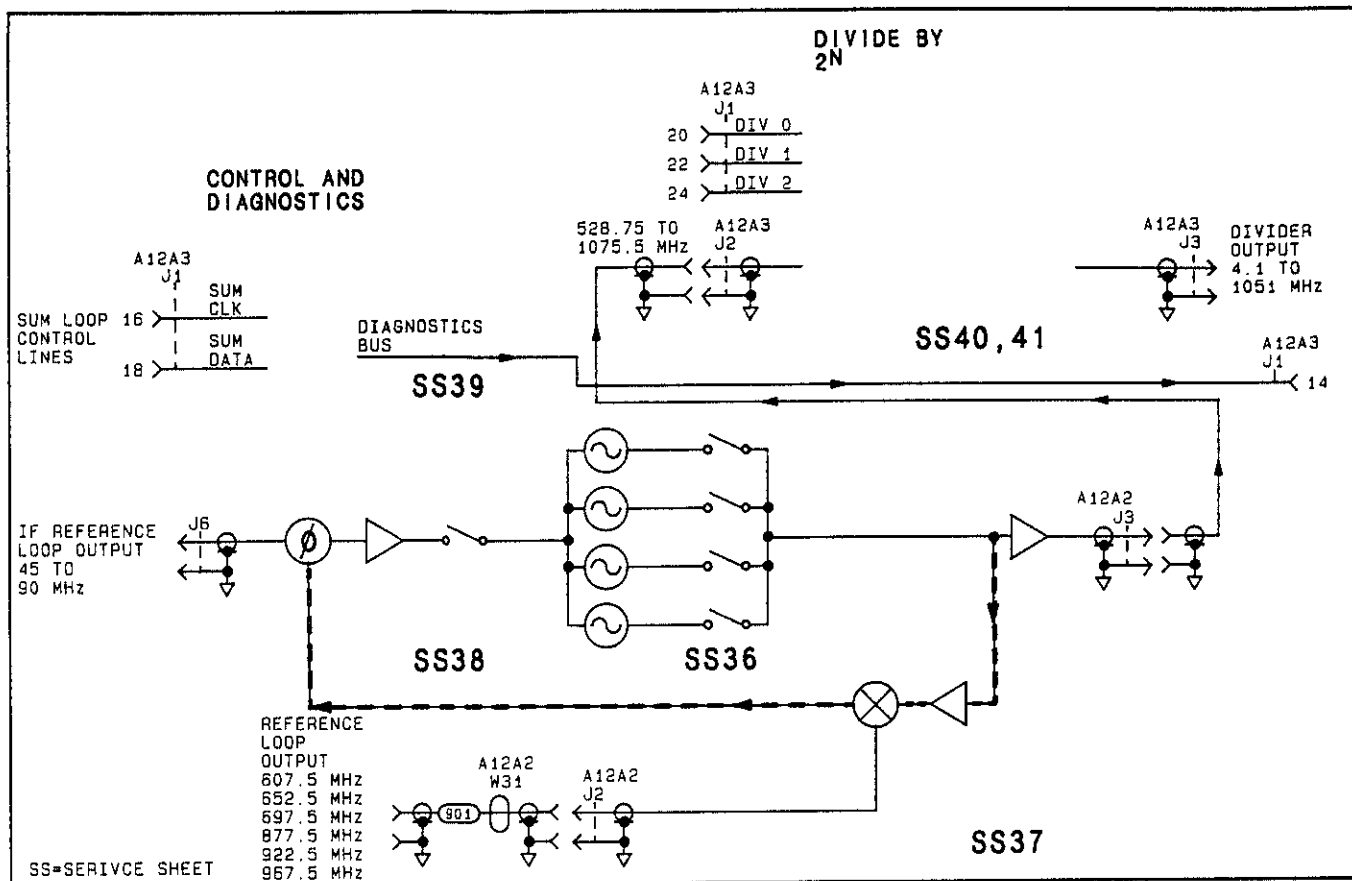
C

D

Component Locator



FIG. 80-106  
 SH. 3 OF 4



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	D, 2	C38	D, 1	Q1	C, 1	R27	B, 1	VR1	D, 2												
C2	D, 2	C39	C, 3	Q2	D, 1	R28	A, 3	VR2	D, 2												
C3	D, 2	C40	C, 3	Q3	C, 2	R29	A, 3	VR3	C, 3												
C4	D, 2	C41	C, 3	Q4	D, 2	R30	A, 3	VR4	C, 3												
C5	D, 1	C42	B, 3	Q5	C, 2	R31	A, 3	VR5	C, 2												
C6	D, 3	C43	C, 2	Q6	D, 2	R32	A, 3	VR6	B, 2												
C7	D, 3	C44	C, 2	Q7	A, 3	R33	B, 3	VR7	C, 1												
C8	C, 3	C45	B, 2	Q8	B, 3	R34	B, 3	VR8	D, 1												
C9	C, 3	C46	C, 1	Q9	C, 3	R35	B, 2														
C10	C, 3	C47	C, 1	Q10	C, 3	R36	B, 2	Z1	B, 1												
C11	C, 2					R37	D, 1	Z2	D, 3												
C12	C, 2	FL1	B, 3	R1	D, 1	R38	D, 1														
C13	C, 2			R2	D, 2	R39	D, 2														
C14	C, 1	J1	A, 1	R3	D, 2	R40	C, 1														
C15	C, 2	J2	B, 1	R4	D, 2	R41	C, 1														
C16	C, 1	J3	D, 1	R5	D, 1	R42	C, 1														
C17	C, 1	J4	D, 3	R6	D, 2	R43	B, 2														
C18	B, 2	J5	D, 3	R7	D, 3	R44	D, 2														
C19	B, 2			R8	D, 3	R45	D, 2														
C20	B, 3	L1	D, 2	R9	C, 3	R46	D, 1														
C21	B, 2	L2	D, 2	R10	C, 3	R47	C, 3														
C22	B, 3	L3	D, 1	R11	C, 3	R48	C, 3														
C23	A, 3	L4	C, 3	R12	C, 3	R49	C, 2														
C24	B, 3	L5	C, 3	R13	C, 3	R50	B, 1														
C25	A, 3	L6	C, 2	R14	C, 2	R51	D, 2														
C26	A, 3	L7	C, 2	R15	C, 2	R52	D, 2														
C27	A, 2	L8	C, 1	R16	C, 2	R53	D, 1														
C28	A, 2	L9	B, 2	R17	C, 2	R54	C, 3														
C29	A, 1	L10	B, 2	R18	C, 2	R55	C, 3														
C30	A, 2	L11	B, 2	R19	C, 2	R56	C, 2														
C31	C, 3	L12	B, 3	R20	C, 1	R57	A, 2														
C32	D, 1	L13	B, 2	R21	C, 1	R58	A, 3														
C33	D, 2	L14	A, 2	R22	C, 1																
C34	D, 2	L15	A, 2	R23	C, 1	T1	A, 3														
C35	D, 2	L16	C, 1	R24	B, 1																
C36	D, 2			R25	B, 1																
C37	D, 1			R26	B, 1																

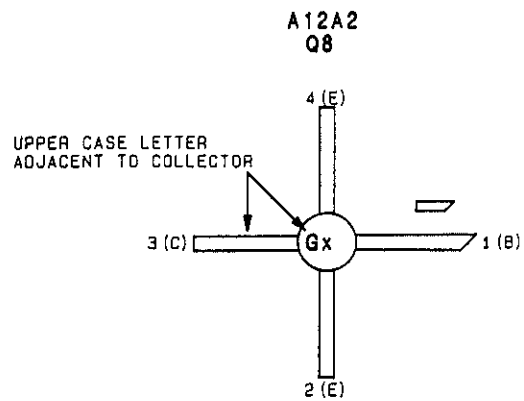
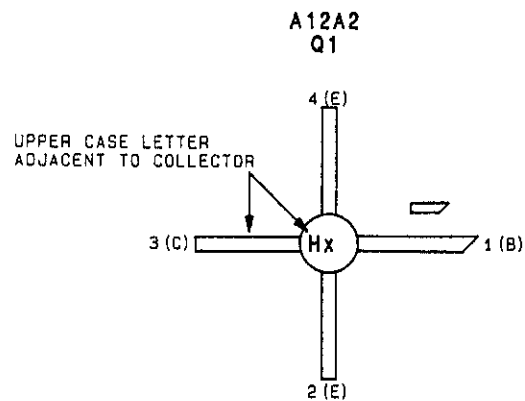
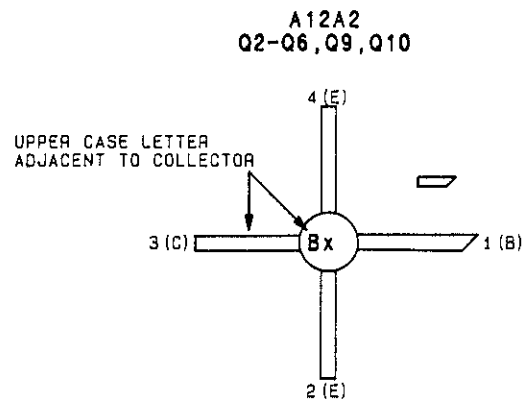
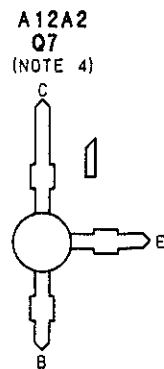
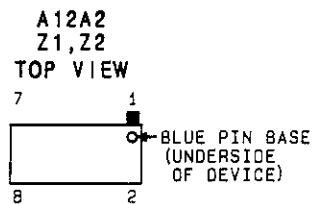
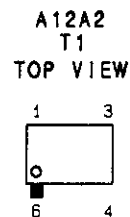
A12A1 SUM LOOP  
 V.C.O.  
 ASSEMBLY

**SS36**

SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A12A2 J4 consists of a clip and a single connector.
3. L17-L22 are printed circuit trace inductors.
4. Q7 is mounted with printed side of device toward solder side of board.
5. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

## CHANGES

### 2613A and above

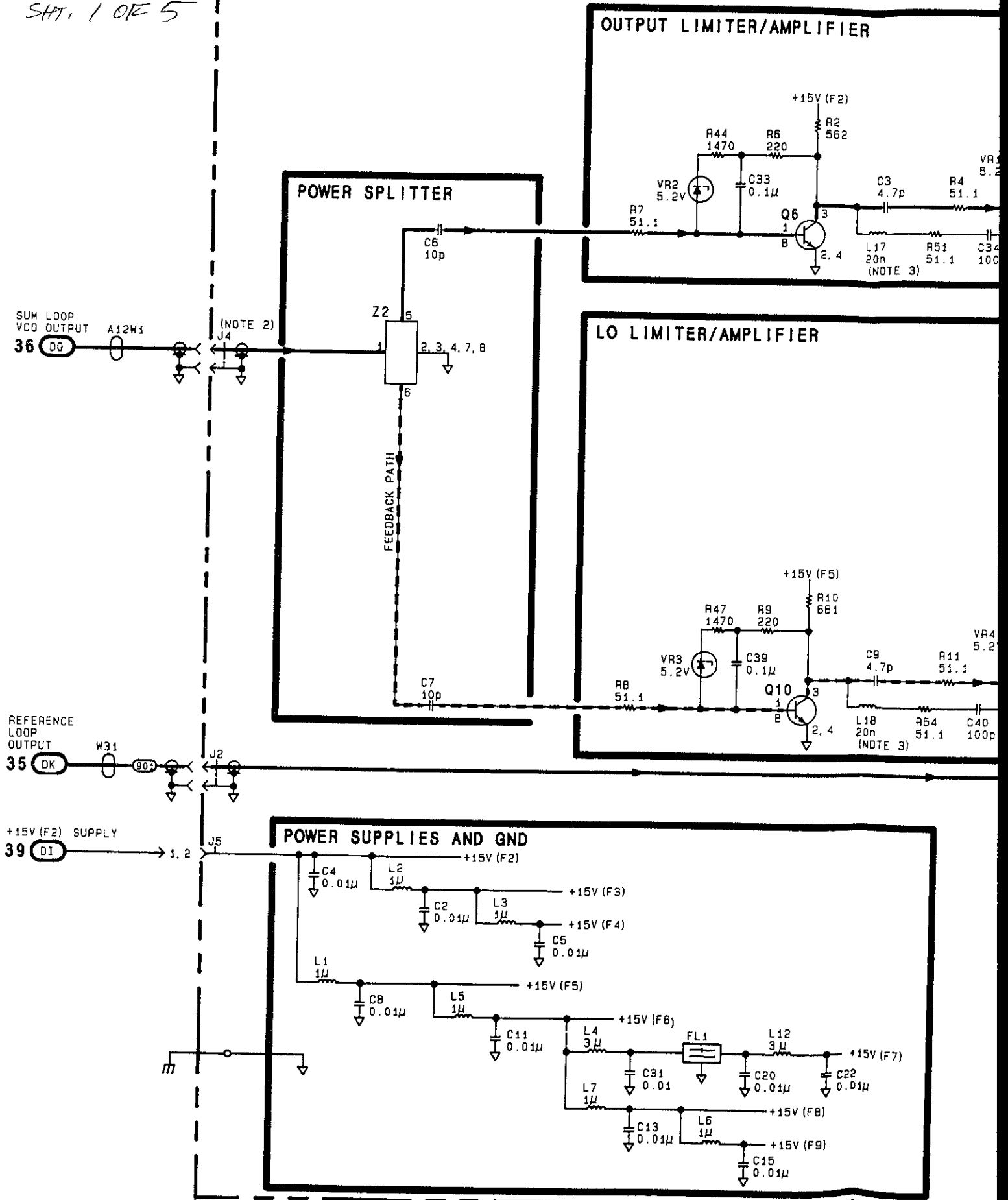
On the schematic:

- In the upper left portion of the schematic change the A12 part number to 08642-60210.

FIG. 80-107

SHT. 1 OF 5

# A12A2 SUM LOOP POWER SPLITTER ASSEMBLY (08642-60110)



SERIAL PREFIX: 2427A

FIG. 80-107  
 SHT. 2 OF 5

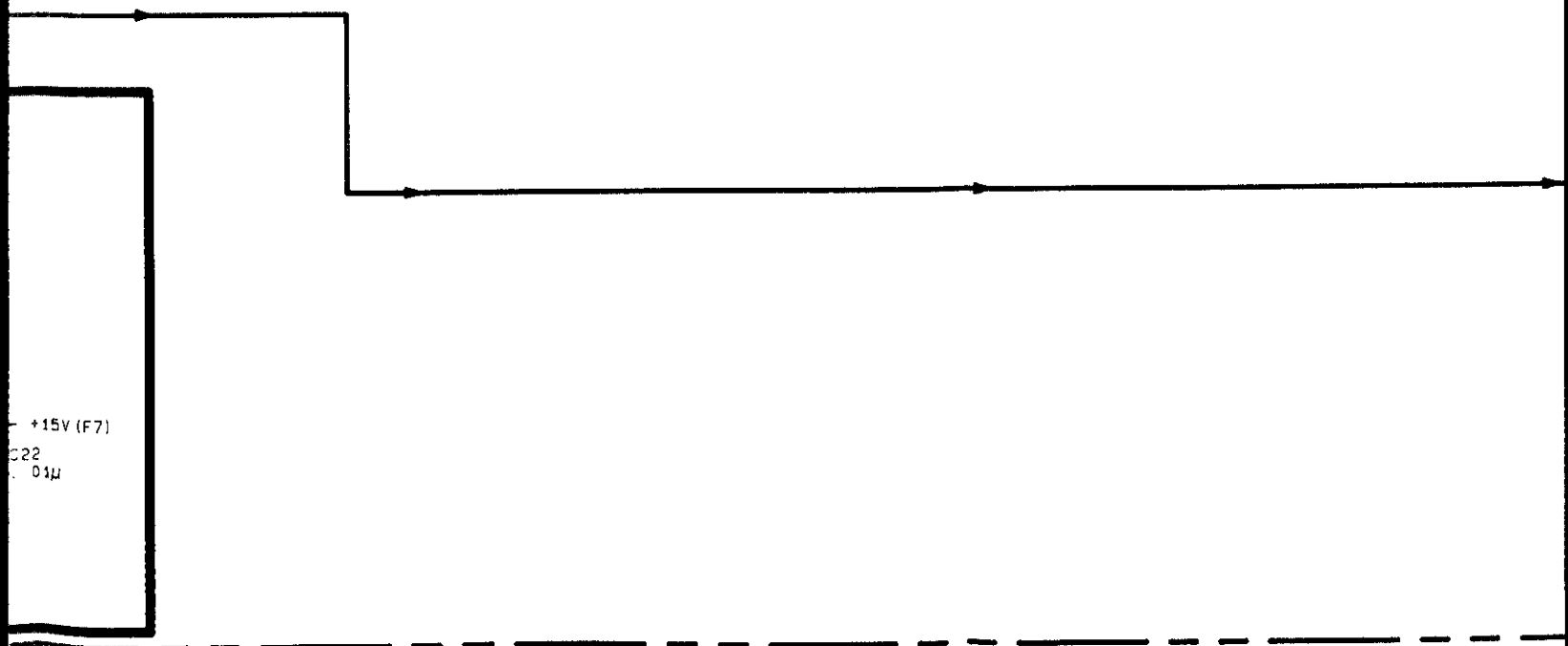
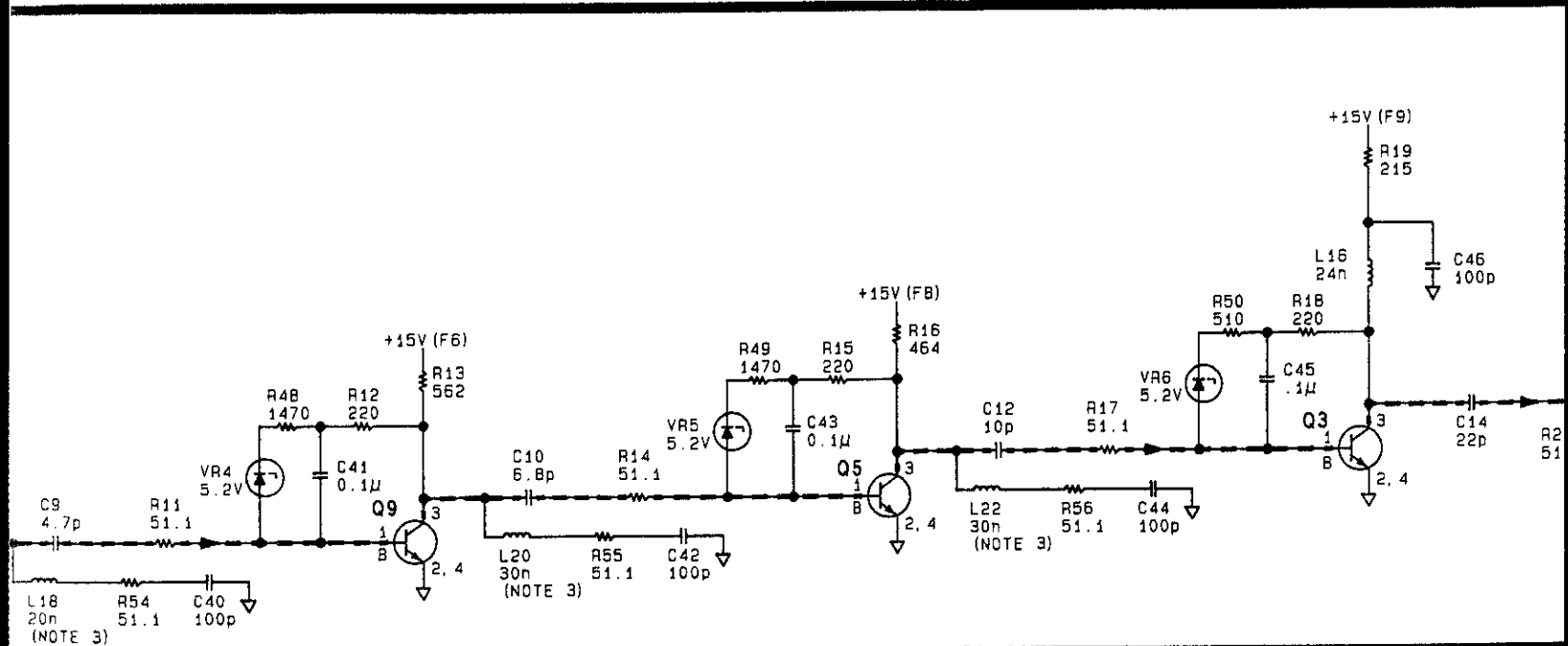
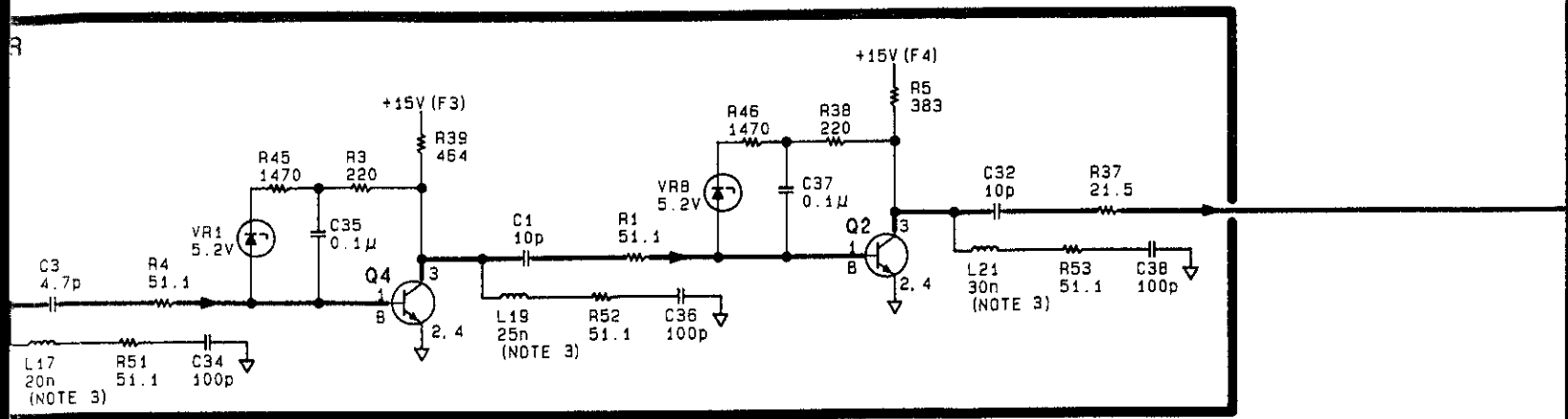


FIG. 80-107, SH. 3 OF 5

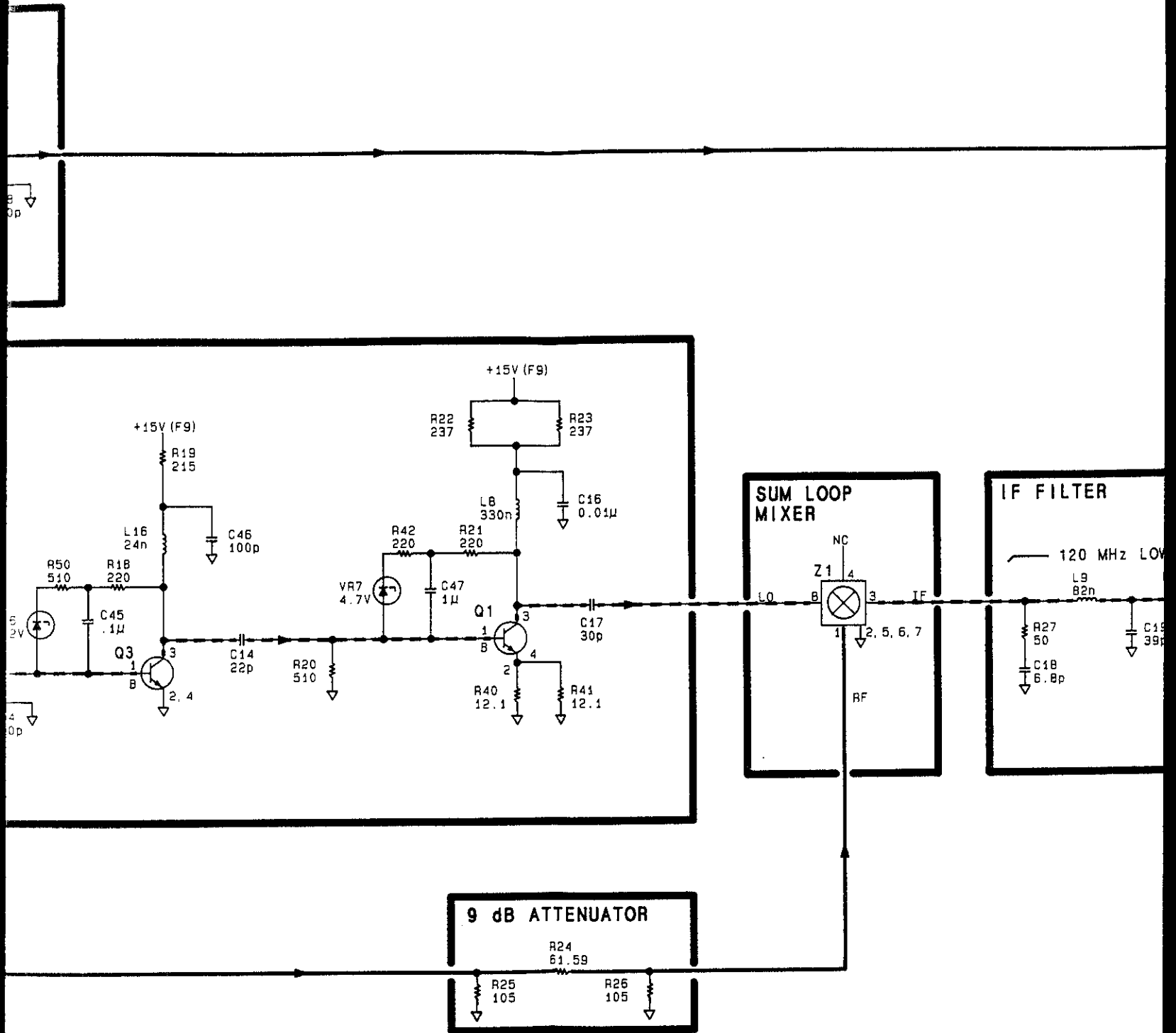


FIG. 80-107, SHEET 4 OF 5

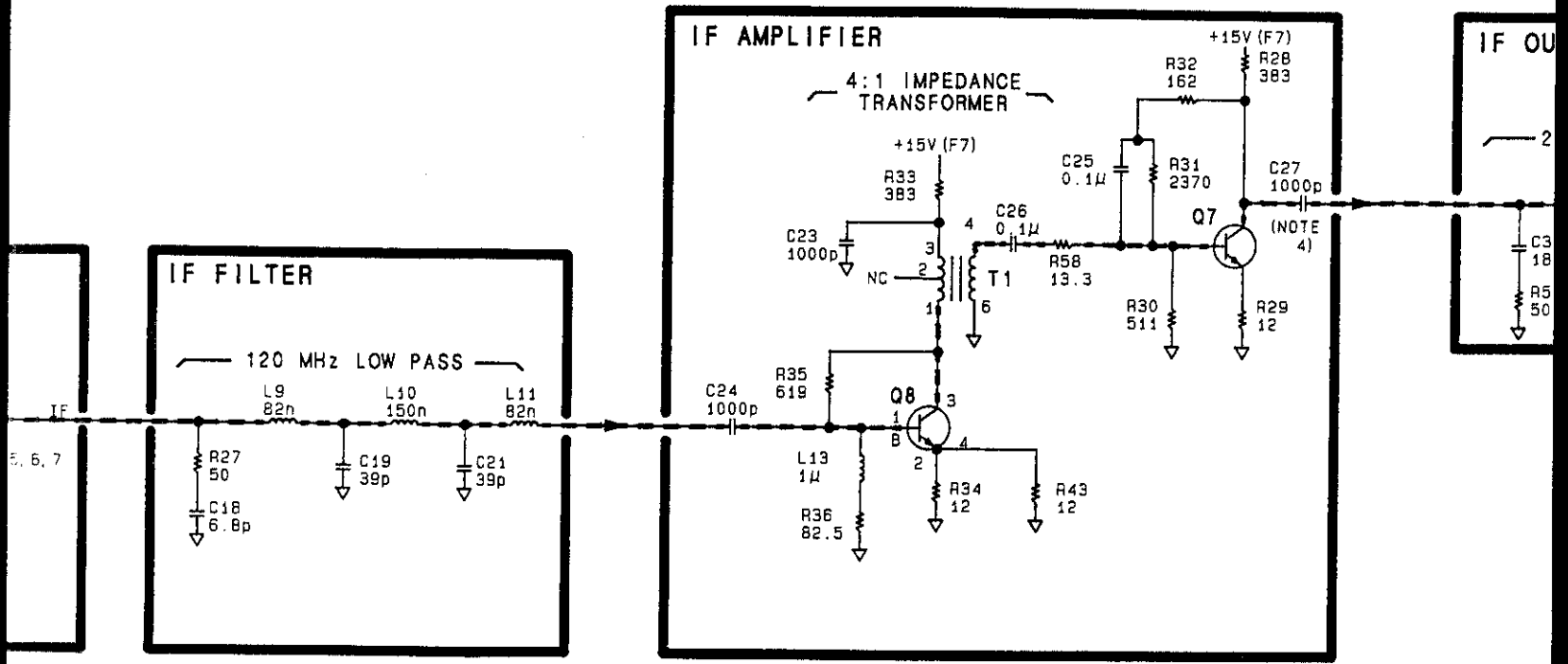


FIG. 80-107, SH. 5 OF 5

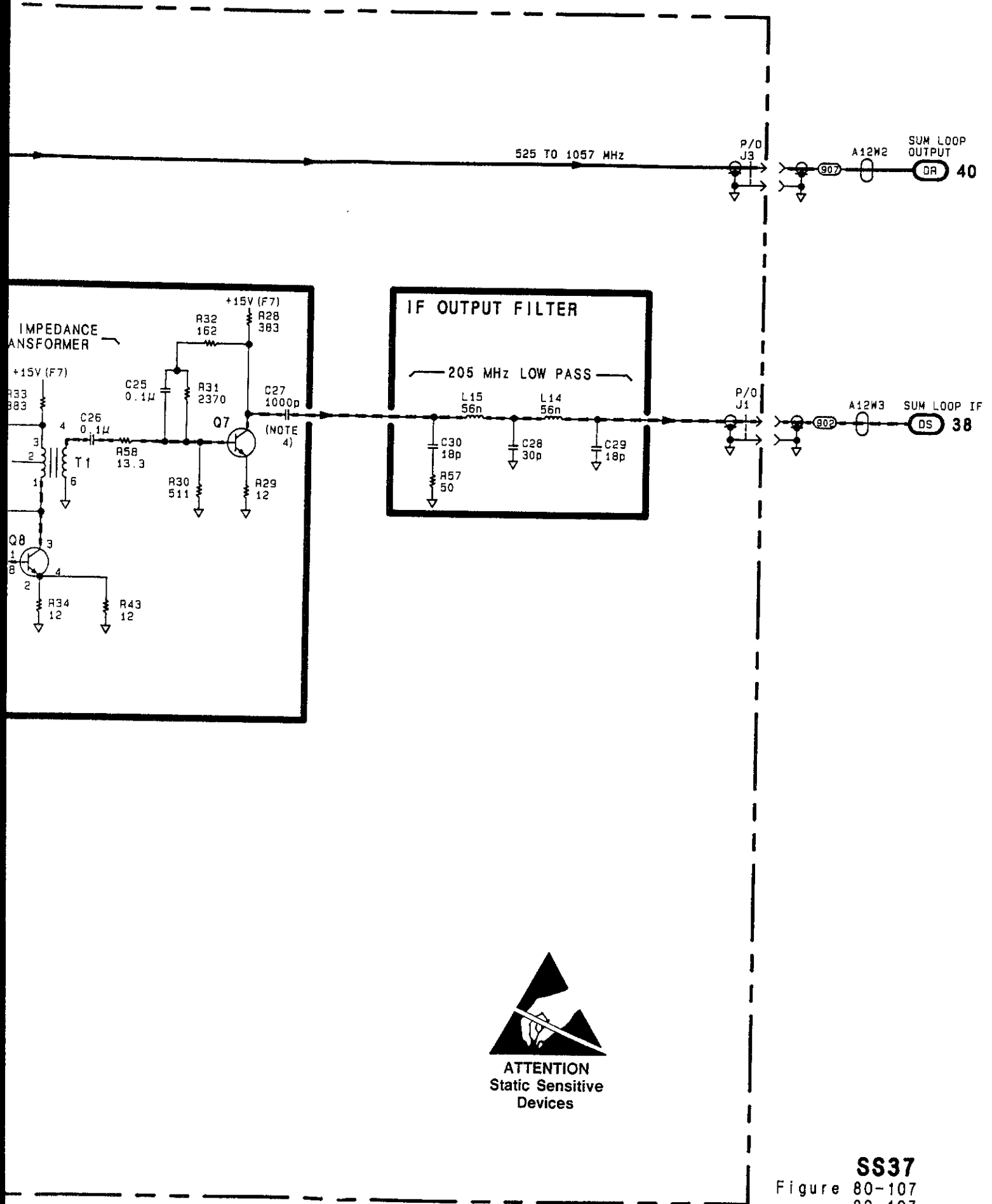


Figure **SS37**  
80-107  
80-107



FIG. 80-108  
 SH. 1 OF 5

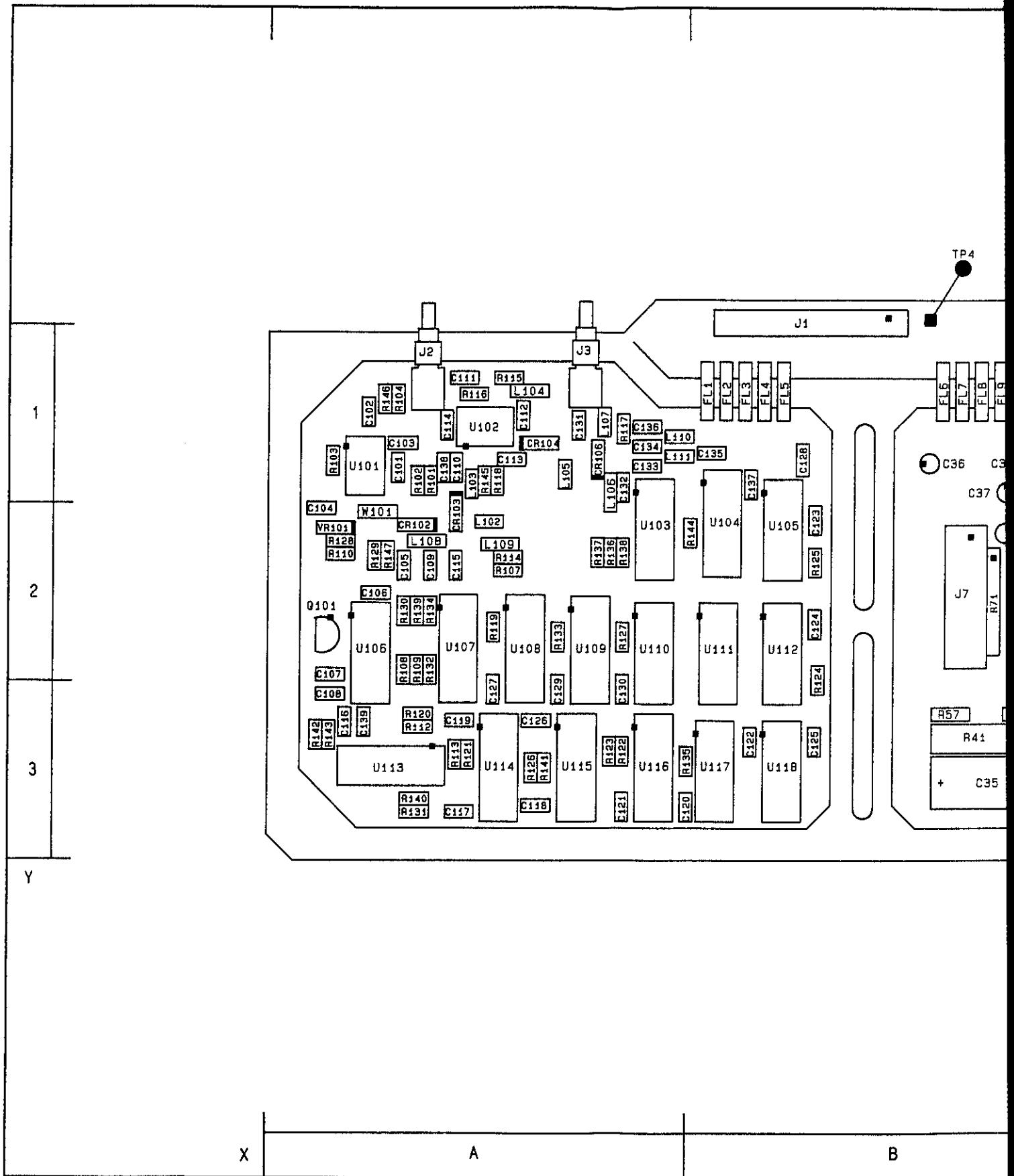
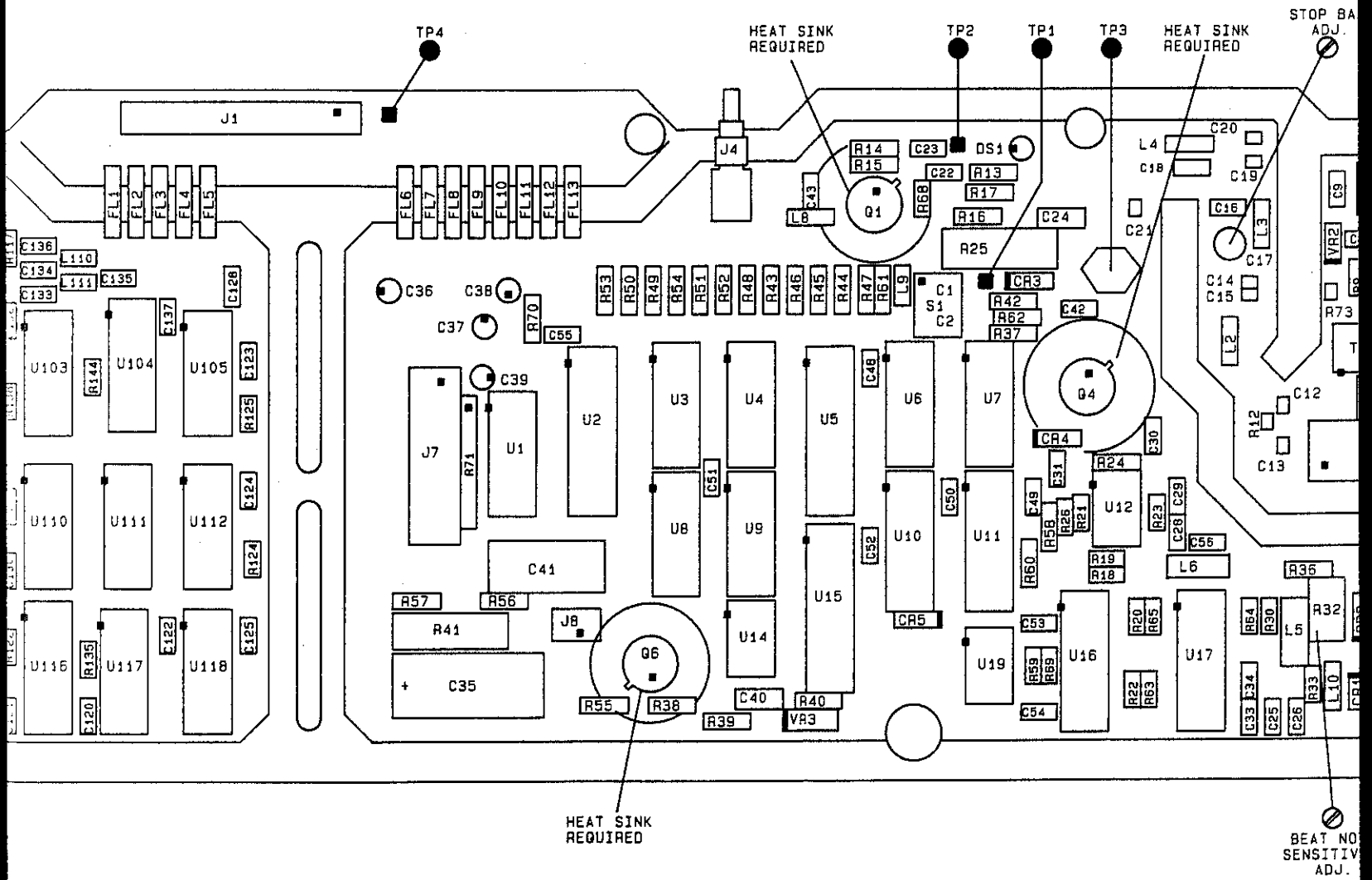


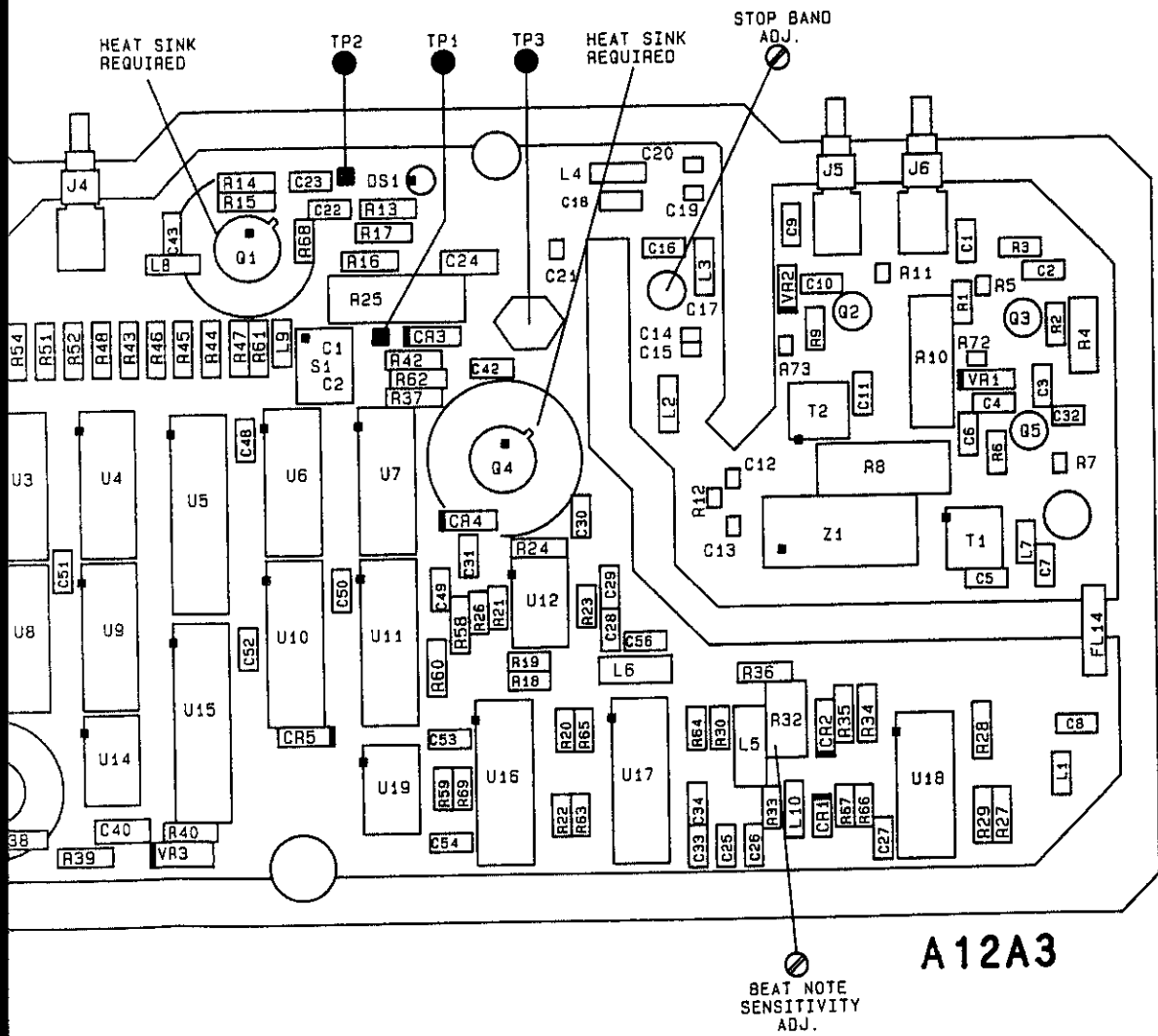
Figure 80-108. SERVICE SHEET 38 INFORMATION

FIG. 80-108  
SHT. 2 OF 5



Component Locator

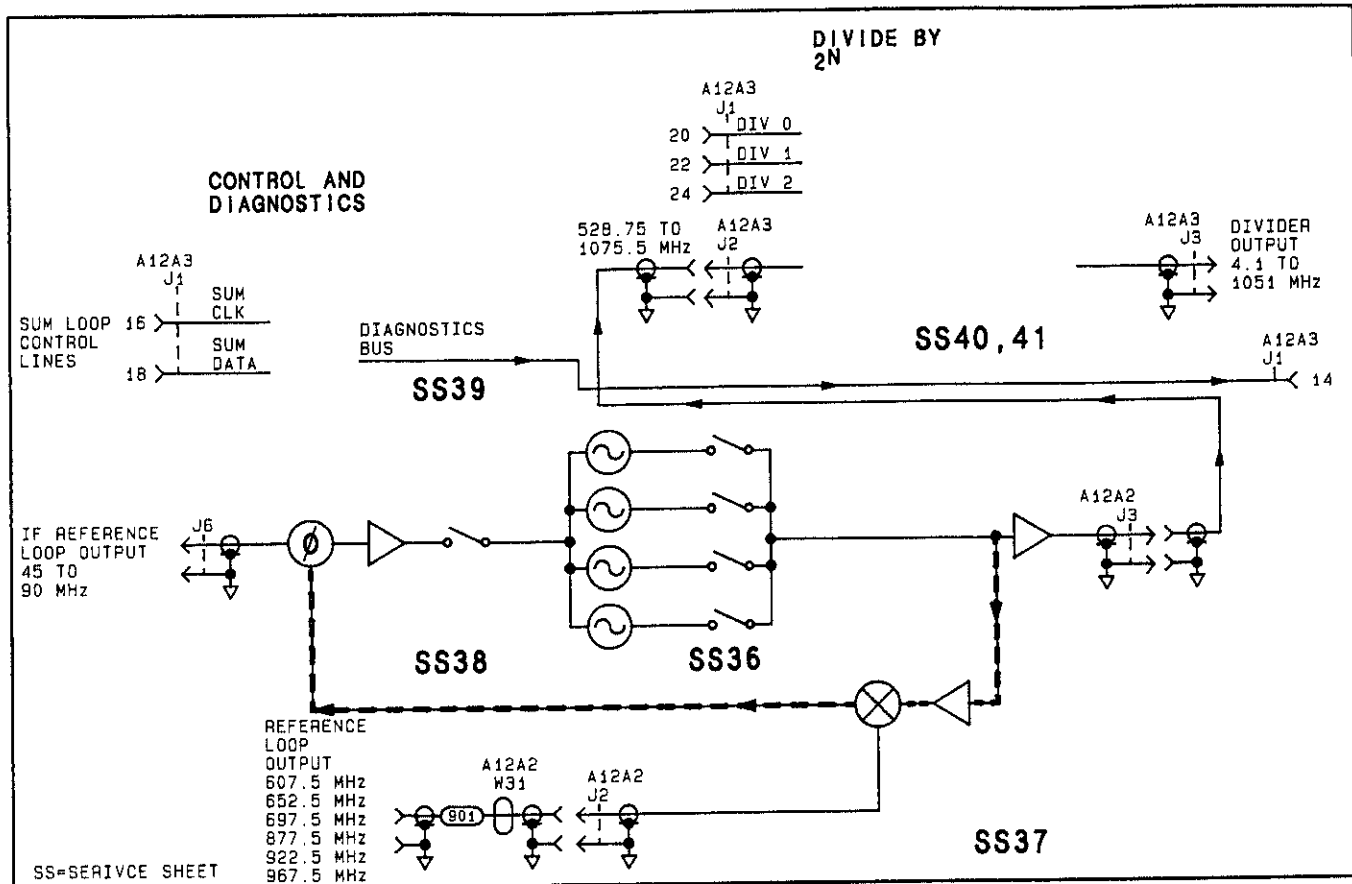
FIG. 80-108  
 SH. 3 OF 5



C

D

FIG. 80-108  
SHEET 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	D, 1	C38	B, 1	Q1	C, 1	R33	D, 3	U4	C, 2								
C2	D, 1	C39	B, 2	Q2	D, 1	R34	D, 3	U7	C, 2								
C3	D, 1	C42	C, 1	Q3	D, 1	R35	D, 3	U12	C, 2								
C4	D, 2	C43	C, 1	Q4	C, 2	R36	D, 3	U16	C, 3								
C5	D, 2	C53	C, 3	Q5	D, 2	R37	C, 2	U17	B, 3								
C6	D, 2	C54	C, 3	R1	D, 1	R42	C, 1	U18	D, 3								
C7	D, 2	C55	B, 1	R2	D, 1	R43	C, 1	U19	C, 3								
C8	D, 3	C56	D, 2	R3	D, 1	R44	C, 1										
C9	D, 1			R4	D, 1	R45	C, 1	VR1	D, 1								
C10	D, 1	CR1	D, 3	R5	D, 1	R46	C, 1	VR2	D, 1								
C11	D, 2	CR2	D, 3	R6	D, 2	R47	C, 1										
C12	D, 2	CR3	C, 1	R7	D, 2	R48	C, 1	Z1	D, 2								
C13	D, 2			R8	D, 2	R49	C, 1										
C14	D, 1	DS1	C, 1	R9	D, 1	R50	C, 3										
C15	D, 1			R10	D, 1	R62	C, 1										
C16	D, 1	FL6	B, 1	R11	D, 1	R63	D, 3										
C17	D, 1	FL7	B, 1	R12	D, 2	R64	D, 3										
C18	D, 1	FL8	B, 1	R13	C, 1	R65	D, 3										
C19	D, 1	FL9	B, 1	R14	C, 1	R66	D, 3										
C20	D, 1	FL10	B, 1	R15	C, 1	R67	D, 3										
C21	D, 1	FL14	D, 2	R16	C, 1	R68	C, 1										
C22	C, 1			R17	C, 1	R69	C, 3										
C23	C, 1	J1	B, 1	R18	C, 3	R72	D, 1										
C24	C, 1	J5	D, 1	R19	C, 3	R73	D, 1										
C25	D, 3	J6	D, 1	R20	D, 3	S1	C, 1										
C26	D, 3			R21	C, 2	T1	D, 2										
C27	D, 3	L1	D, 3	R22	D, 3	T2	D, 2										
C28	D, 2	L2	D, 2	R23	D, 2	TP1	C, 1										
C29	D, 2	L3	D, 1	R24	C, 2	TP2	C, 1										
C30	D, 2	L4	D, 1	R25	C, 1	TP3	C, 1										
C31	C, 2	L5	D, 3	R26	C, 2												
C32	D, 2	L6	D, 3	R27	D, 3												
C33	D, 3	L7	D, 2	R28	D, 3												
C34	D, 3	L8	C, 1	R29	D, 3												
C35	B, 3	L9	C, 1	R30	D, 3												
C36	B, 1	L10	D, 3	R32	D, 3												
C37	B, 1																

**A12A2** SUM LOOP POWER SPLITTER ASSEMBLY **SS37**  
 SEE REVERSE SIDE

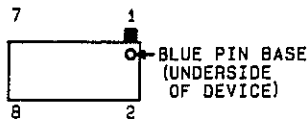
**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. Q2, Q3, Q5 are mounted with printed side of device toward solder side of board.
3. Test point requires high impedance (500  $\Omega$ ) probe. See Bench Service Kit (HP part number 11802A).
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

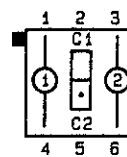
**A12A3  
 T1, T2  
 TOP VIEW**



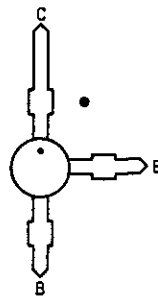
**A12A3  
 Z1  
 TOP VIEW**



**A12A3  
 S1  
 TOP VIEW**



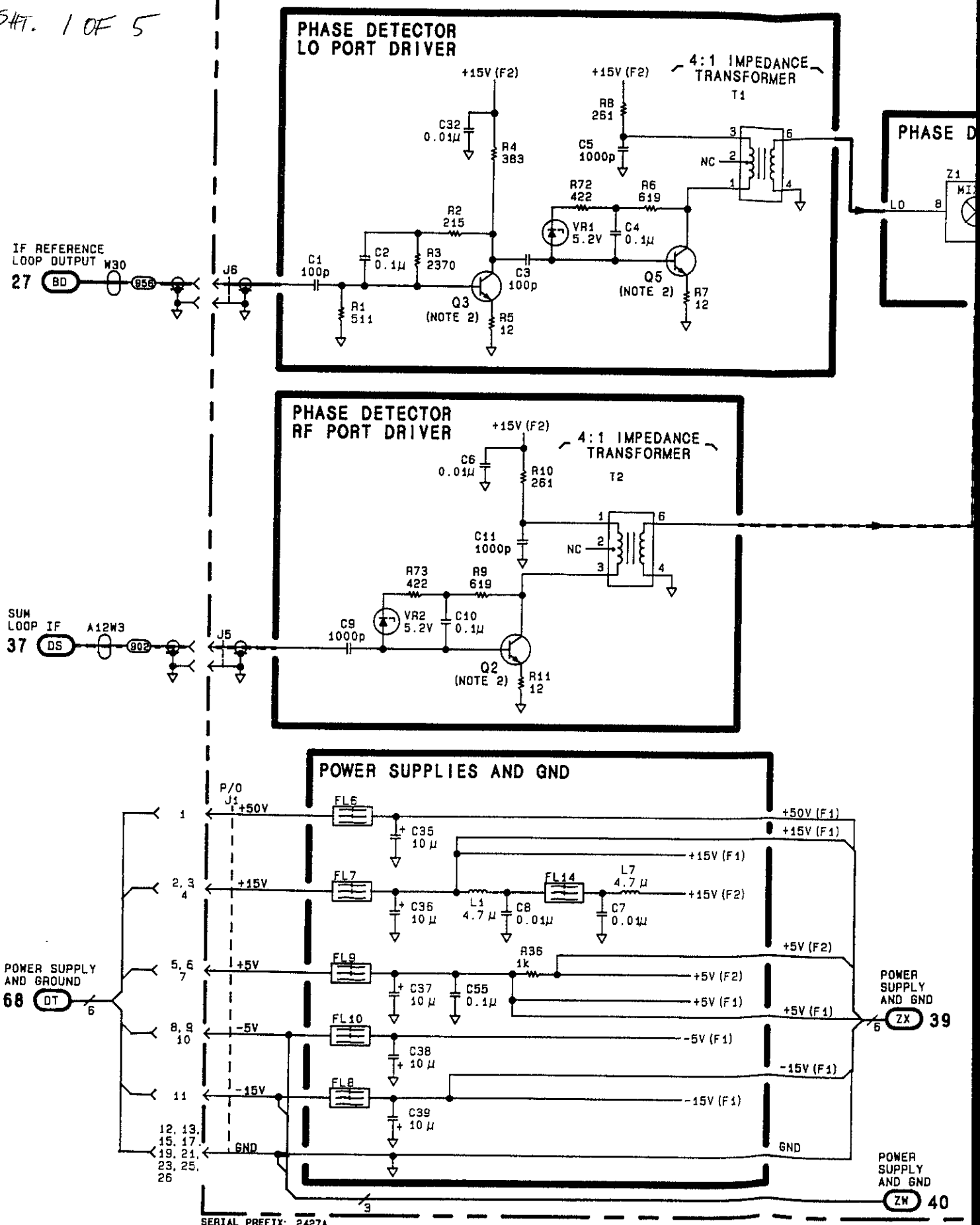
**A12A3  
 Q2, Q3, Q5**



Schematic General Information

FIG. 80-109  
 SH. 1 OF 5

P/O A12A3 SUM LOOP DETECTOR/DIVIDER ASSEMBLY (08642-60111)



SERIAL PREFIX: 2427A

(08642-60111)

FIG. 80-109  
SHT. 2 OF 5

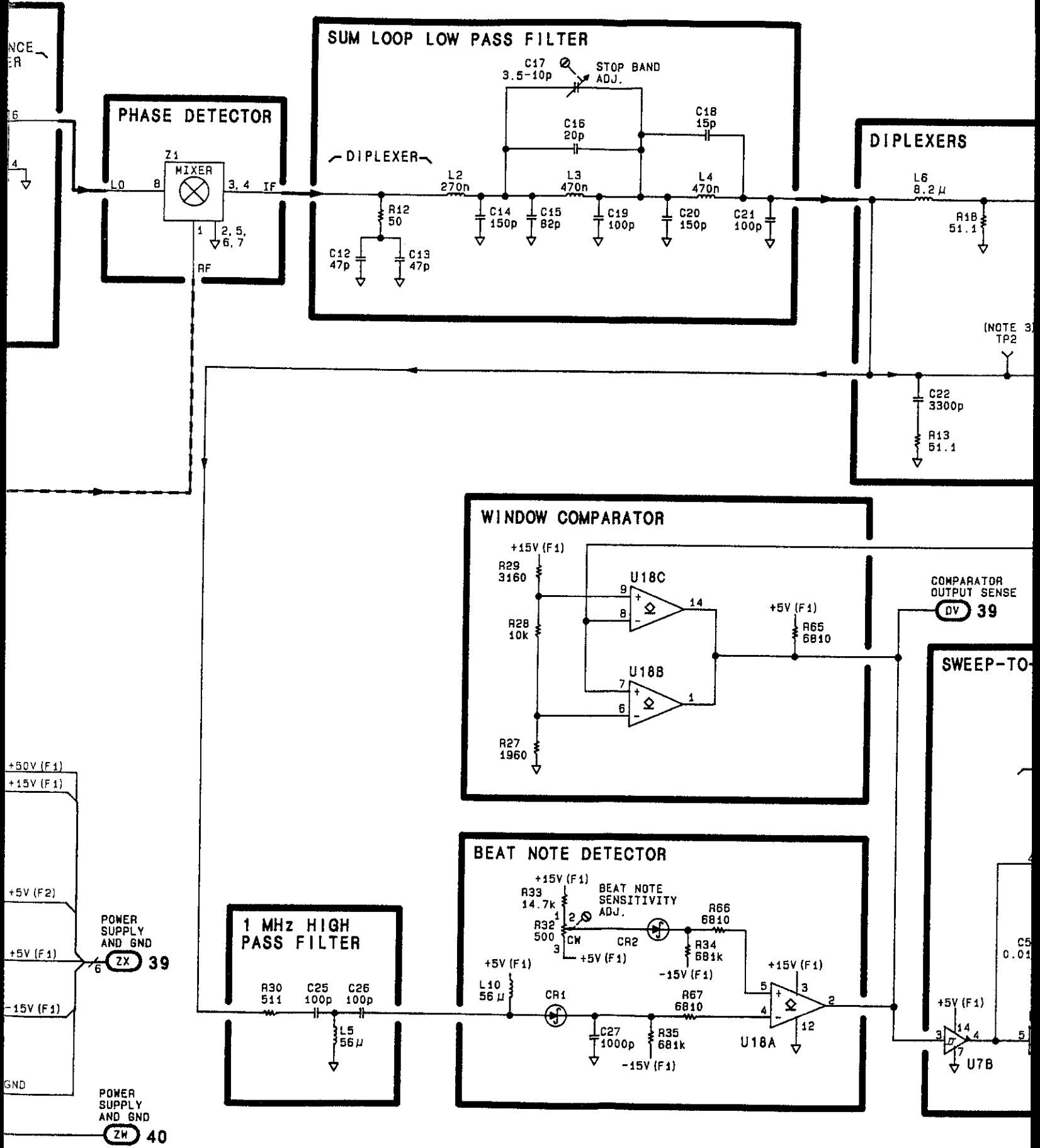


FIG. 80-109  
SHT. 3 OF 5

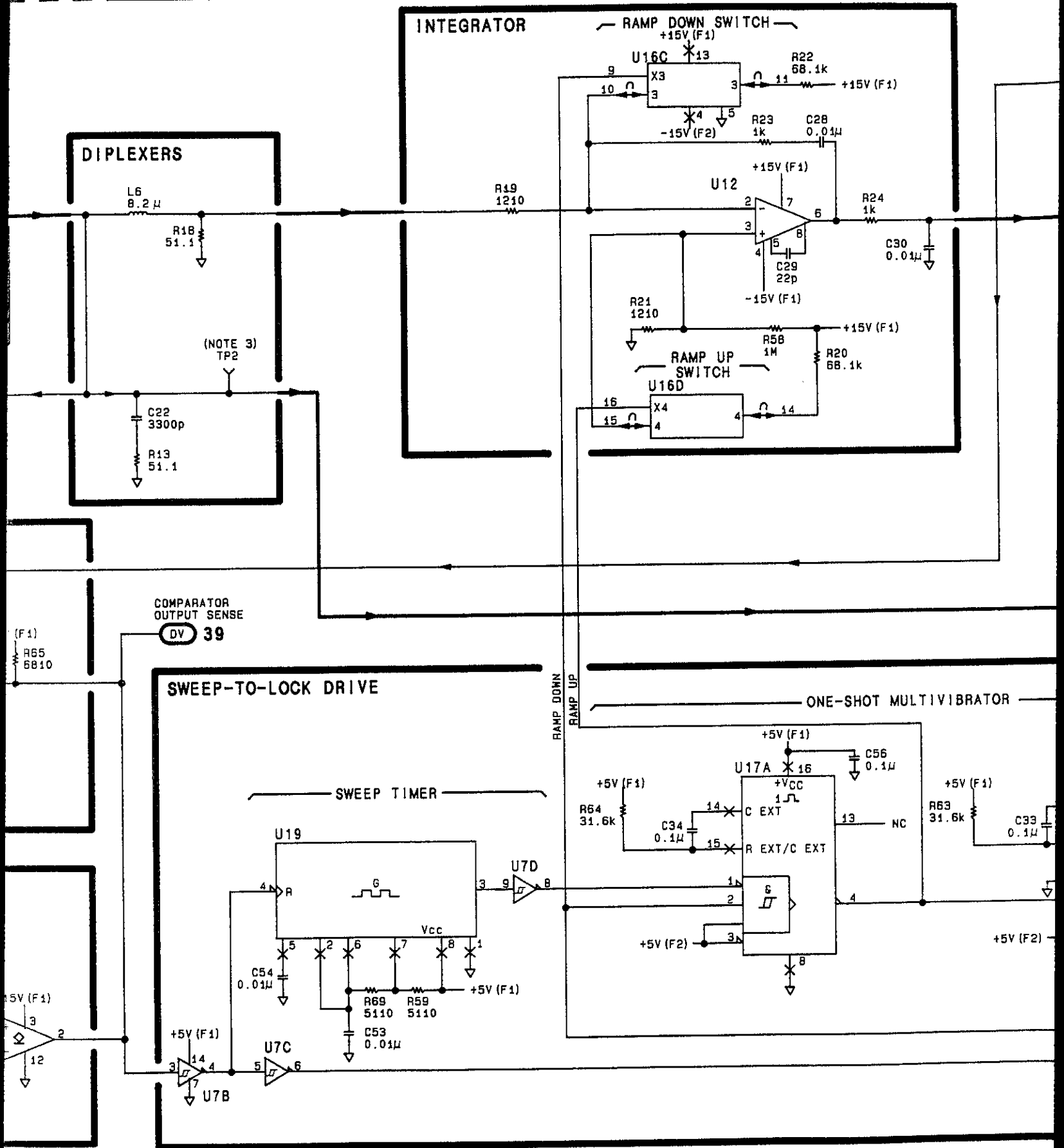




FIG. 80-109, SHIT 4 OF 5

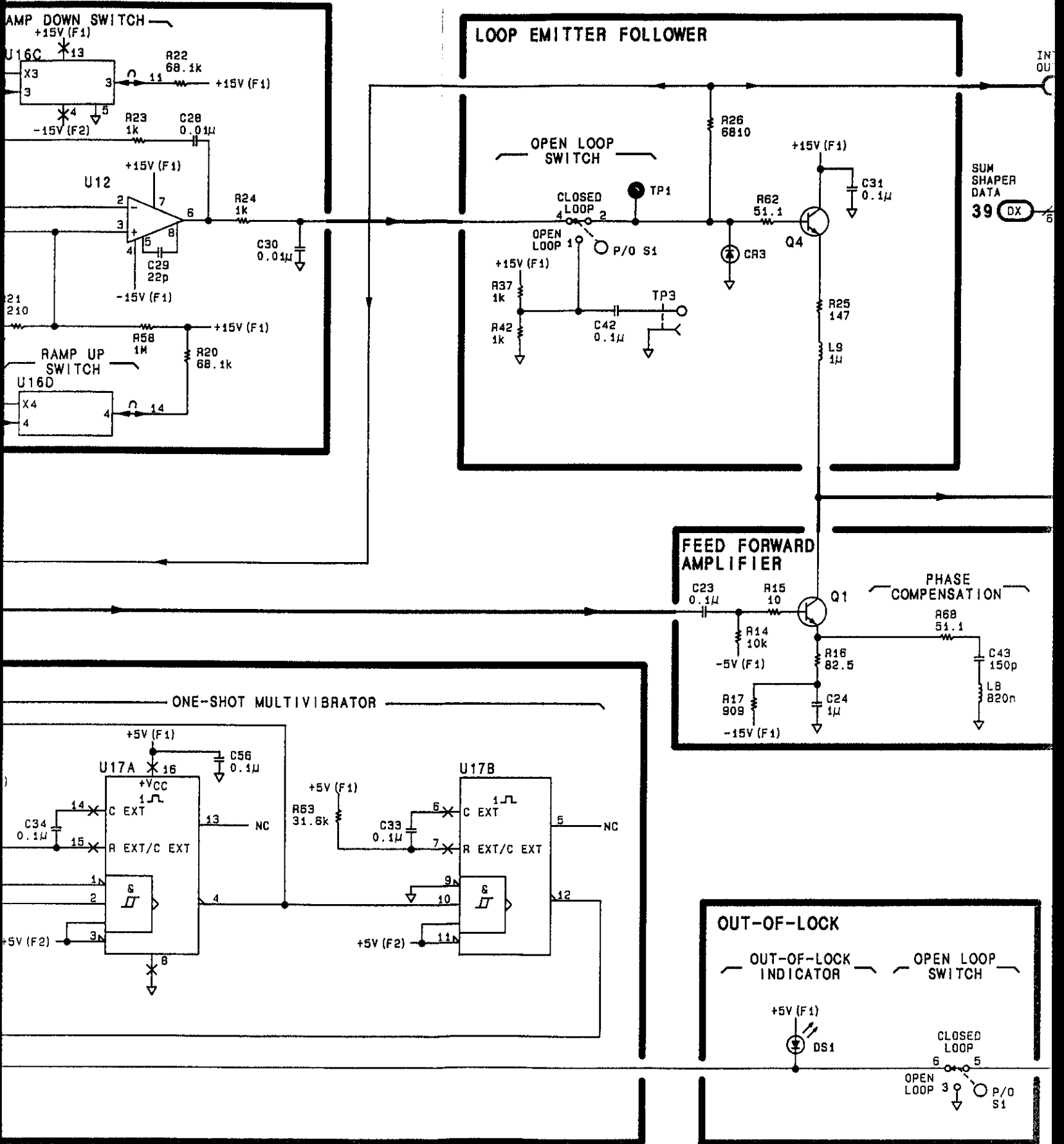
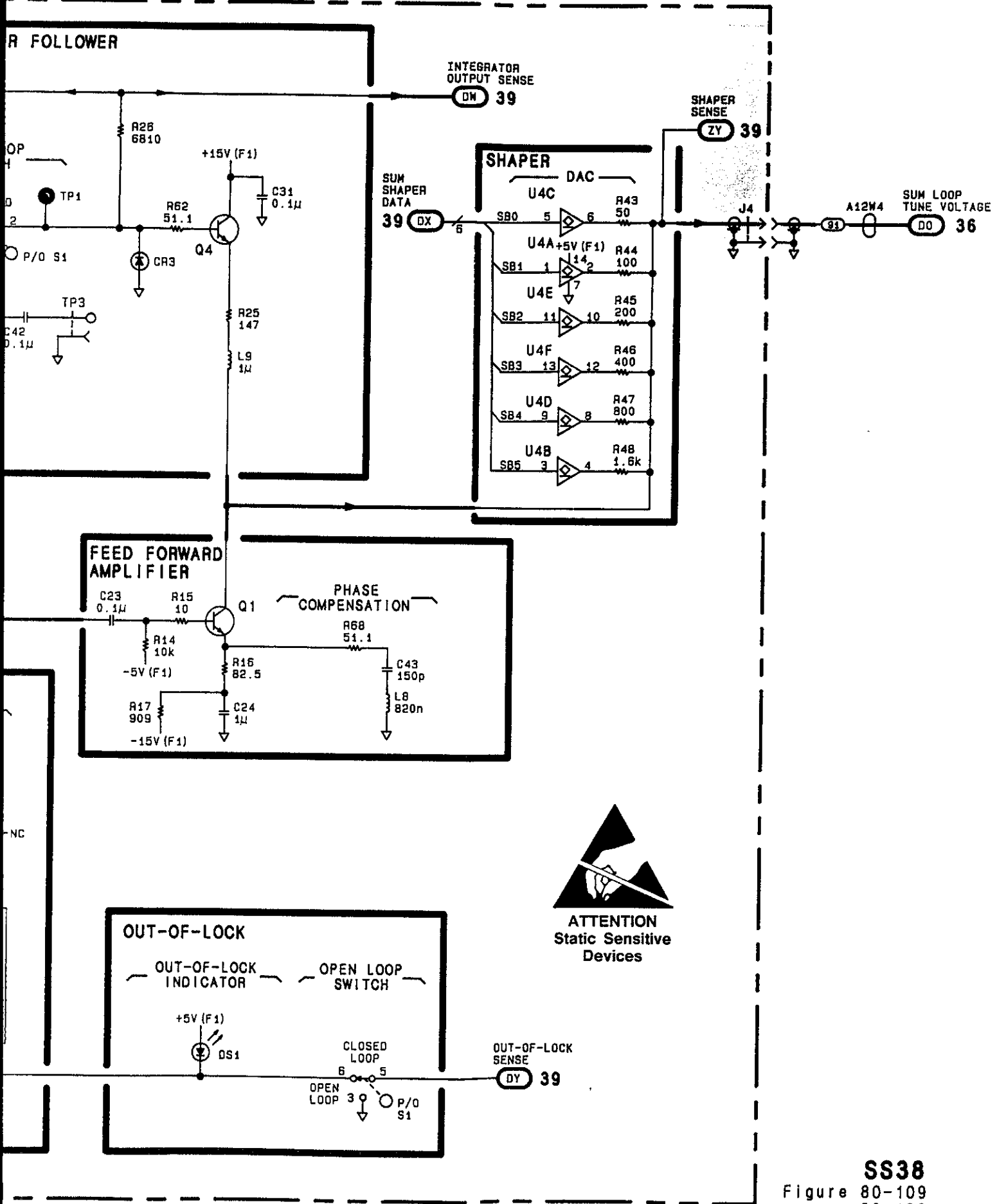


FIG. 80-109, SHEET 5 OF 5



SS38  
Figure 80-109  
80-109

FIG. 80-110  
 SH. 1 OF 5

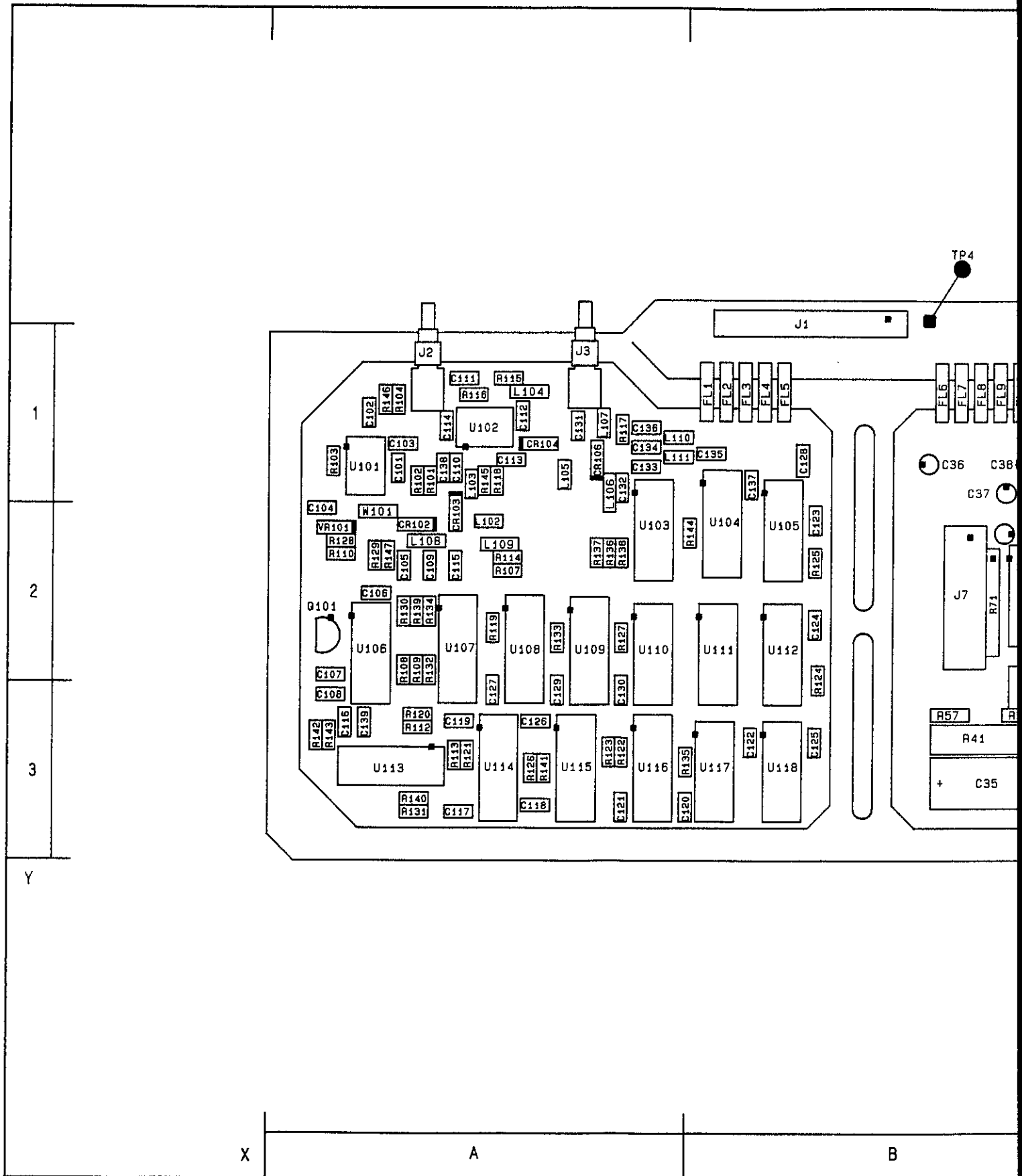
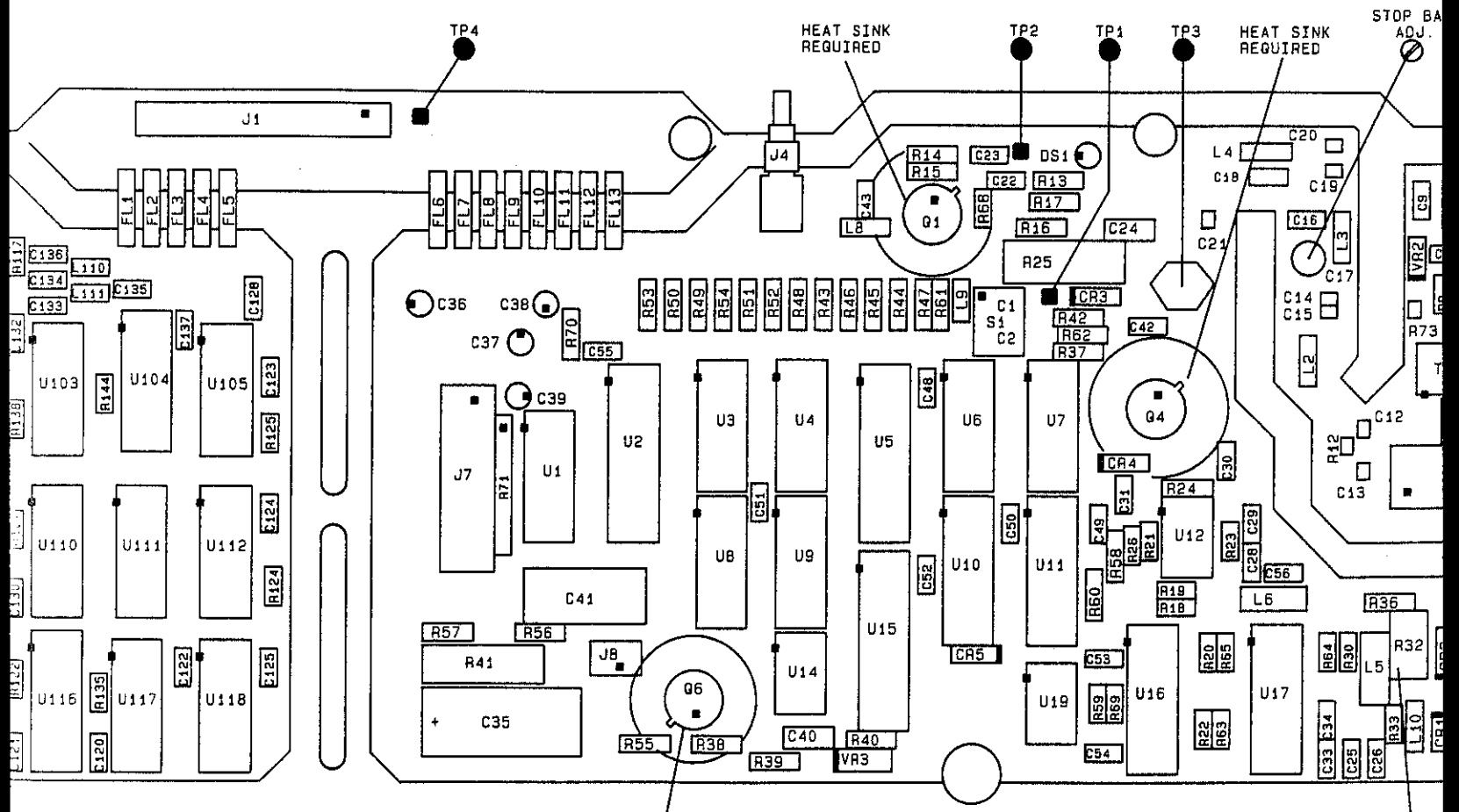


Figure 80-110. SERVICE SHEET 39 INFORMATION

Com

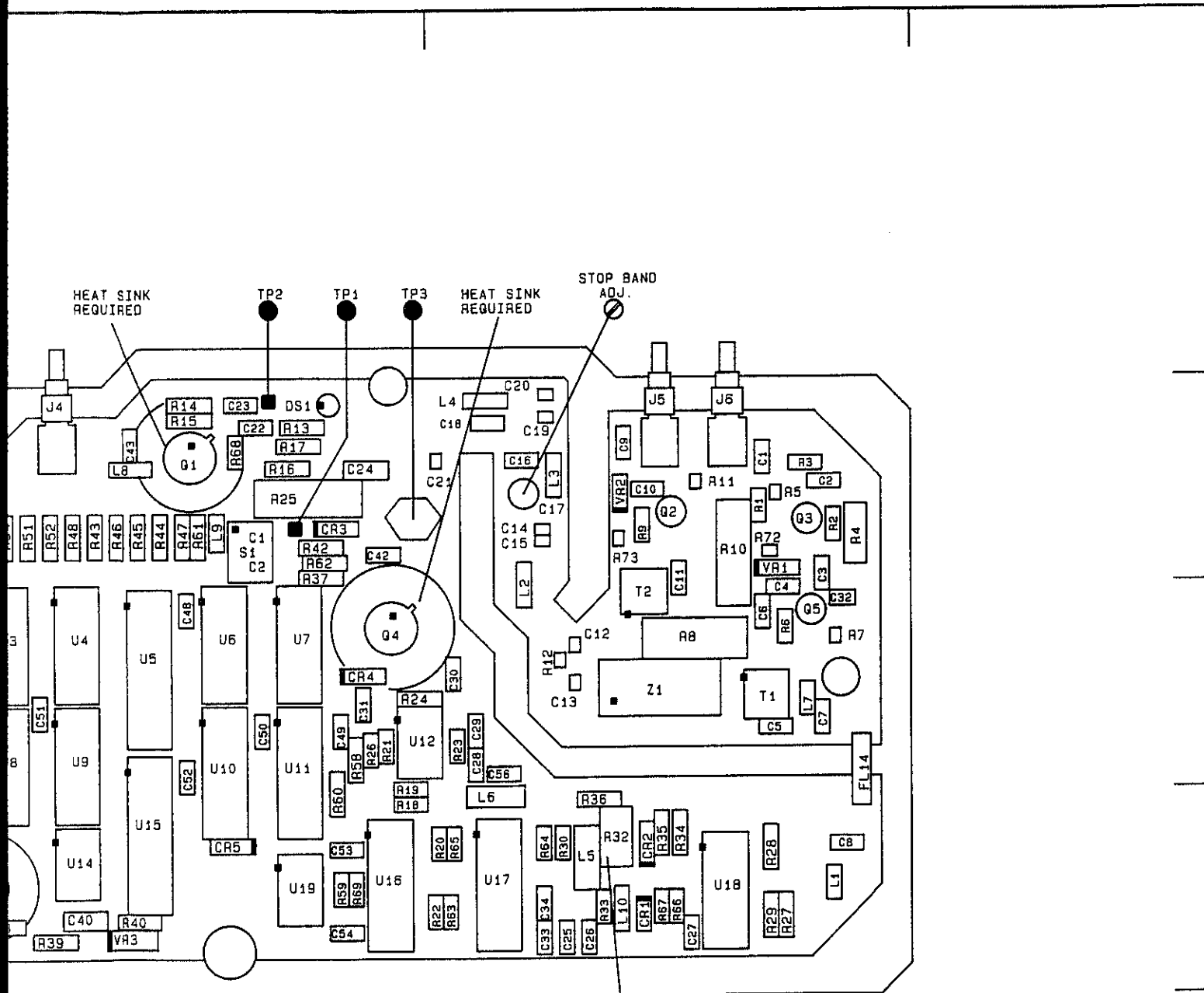


B

C

Component Locator

FIG. 80-110  
SHT. 3 OF 5



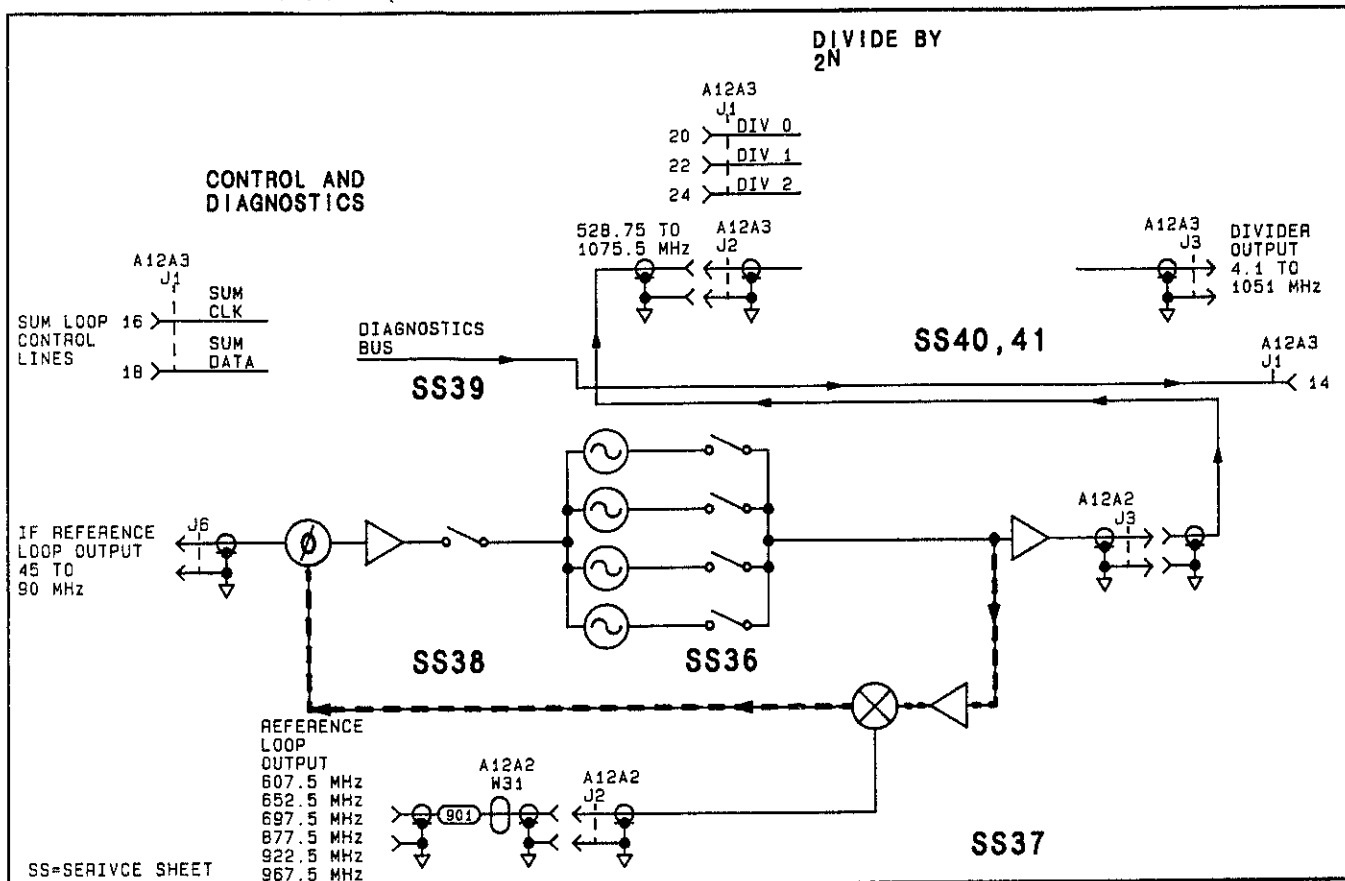
A12A3

BEAT NOTE  
SENSITIVITY  
ADJ.

C

D

FIG. 80-110  
SHT. 4 OF 5



Reference Block Diagram  
Component Coordinates

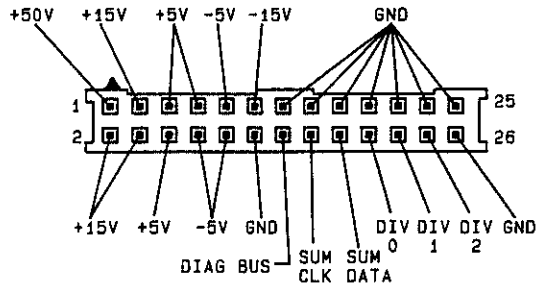
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
0	C, 3	R38	C, 3																
C41	B, 3	R39	C, 3																
C48	C, 2	R40	C, 3																
C49	C, 2	R41	B, 3																
C50	C, 2	R49	C, 1																
C51	C, 2	R50	C, 1																
C52	C, 2	R51	C, 1																
		R52	C, 1																
CR4	C, 2	R53	B, 1																
CR5	C, 3	R54	C, 1																
		R55	B, 3																
FL11	B, 1	R56	B, 3																
FL12	B, 1	R57	B, 3																
FL13	B, 1	R60	C, 3																
J1	B, 1	R61	C, 1																
J4	C, 1	R70	B, 1																
J7	B, 2	R71	B, 2																
J8	B, 3	TP4	B, 1																
06	C, 3	U1	B, 2																
		U2	B, 2																
		U3	C, 2																
		U5	C, 2																
		U6	C, 2																
		U7	C, 2																
		U8	C, 2																
		U9	C, 2																
		U10	C, 2																
		U11	C, 2																
		U14	C, 3																
		U15	C, 3																
		VR3	C, 3																

P/O A12A3 SUM LOOP DETECTOR/DIVIDER ASSEMBLY **SS38**  
SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. Feedthrough filter outer body must be soldered to the shielding in the area where shielding is notched.
3. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

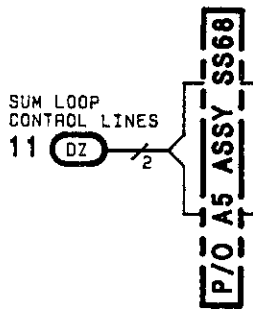
**CABLE PLUG  
TO A12A3 J1**



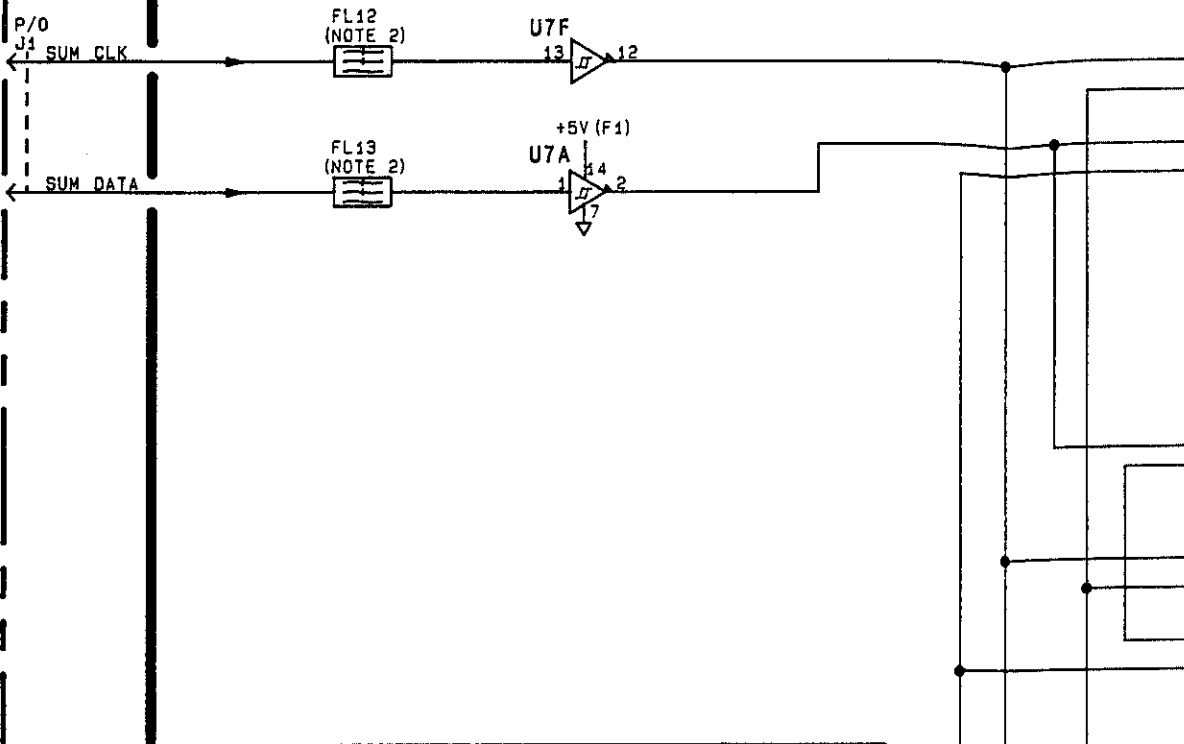
Schematic General Information

FIG. 80-111  
SHT. 1 OF 5

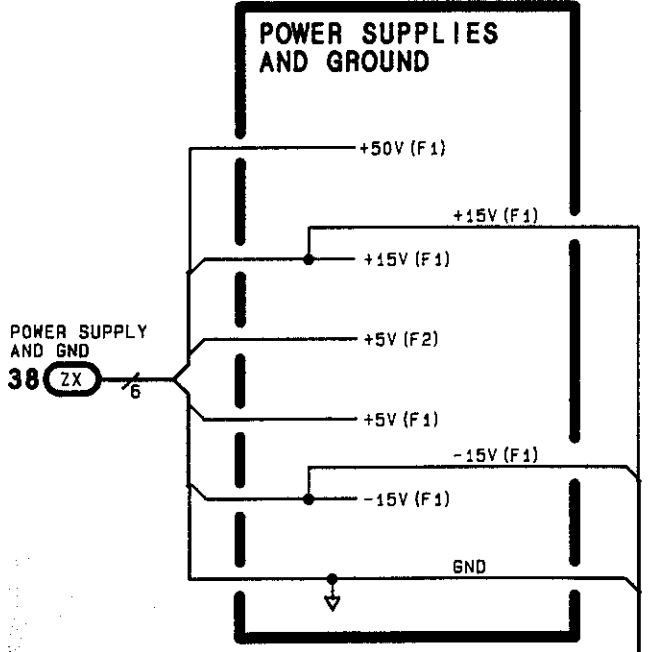
P/O A12A3 SUM LOOP PHASE DETECTOR/DIVIDER ASSEMBLY (08642-601)



SERIAL DATA INTERFACE



POWER SUPPLIES AND GROUND





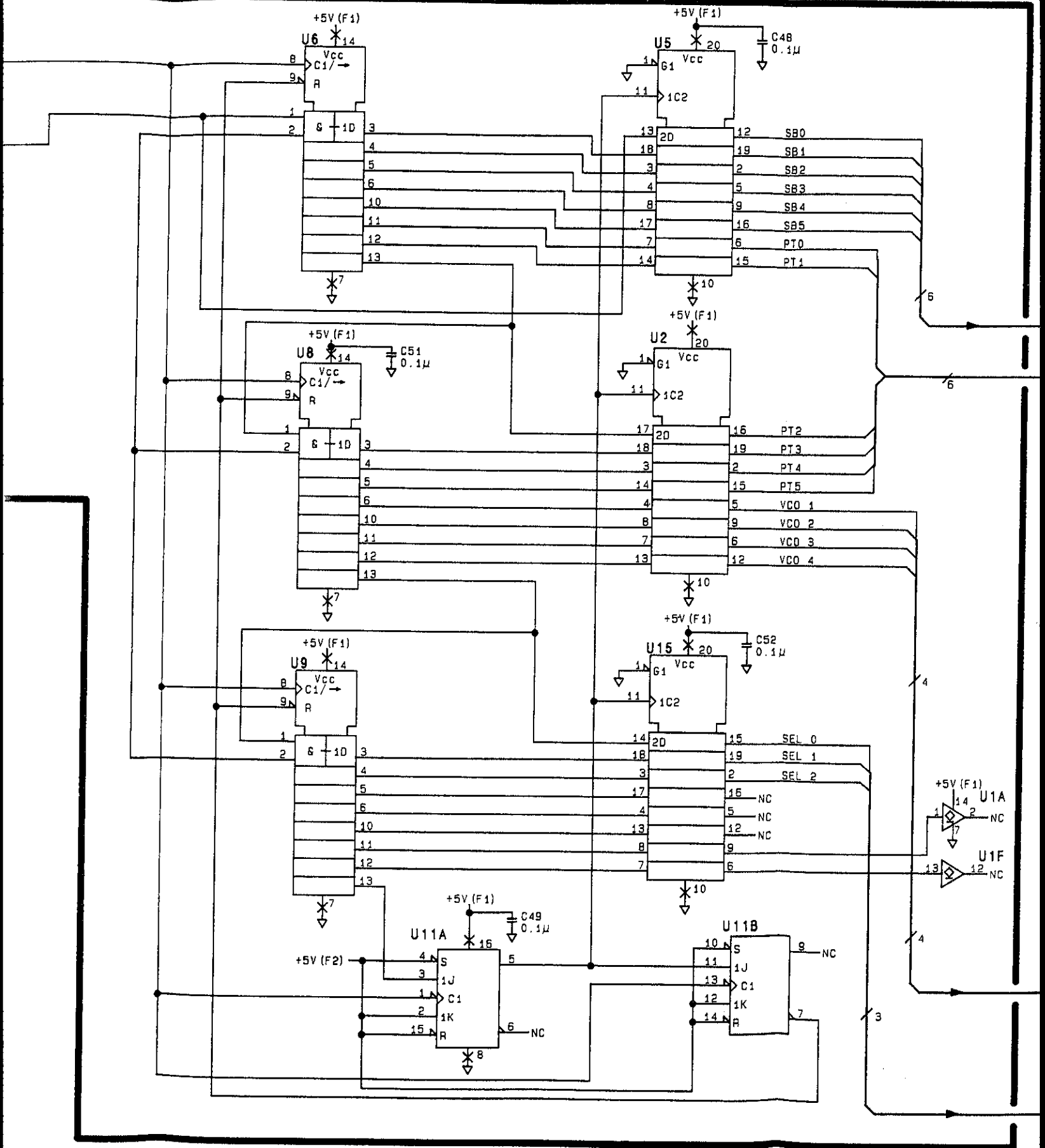


FIG. 80-111, SHEET 3 OF 5

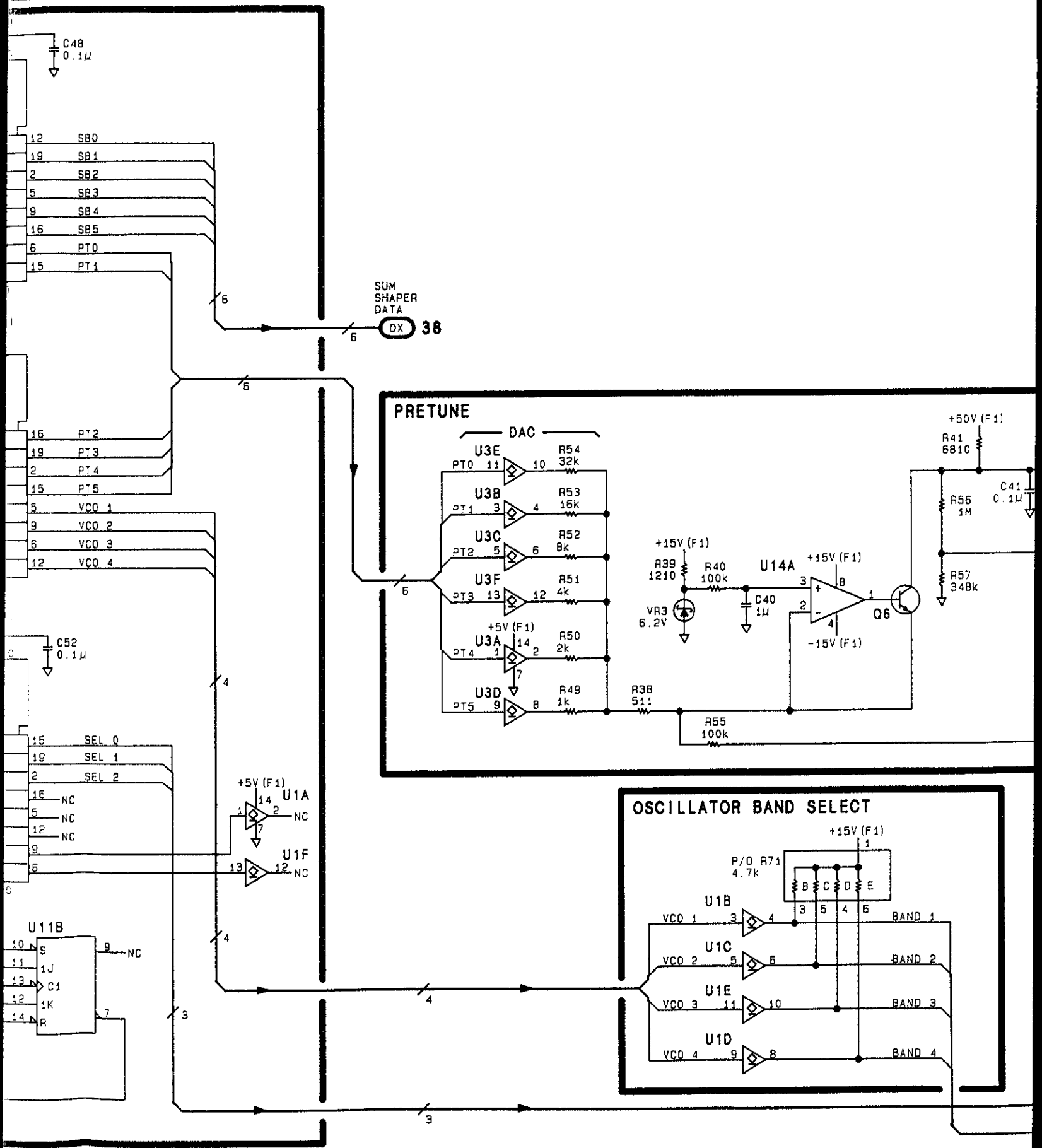
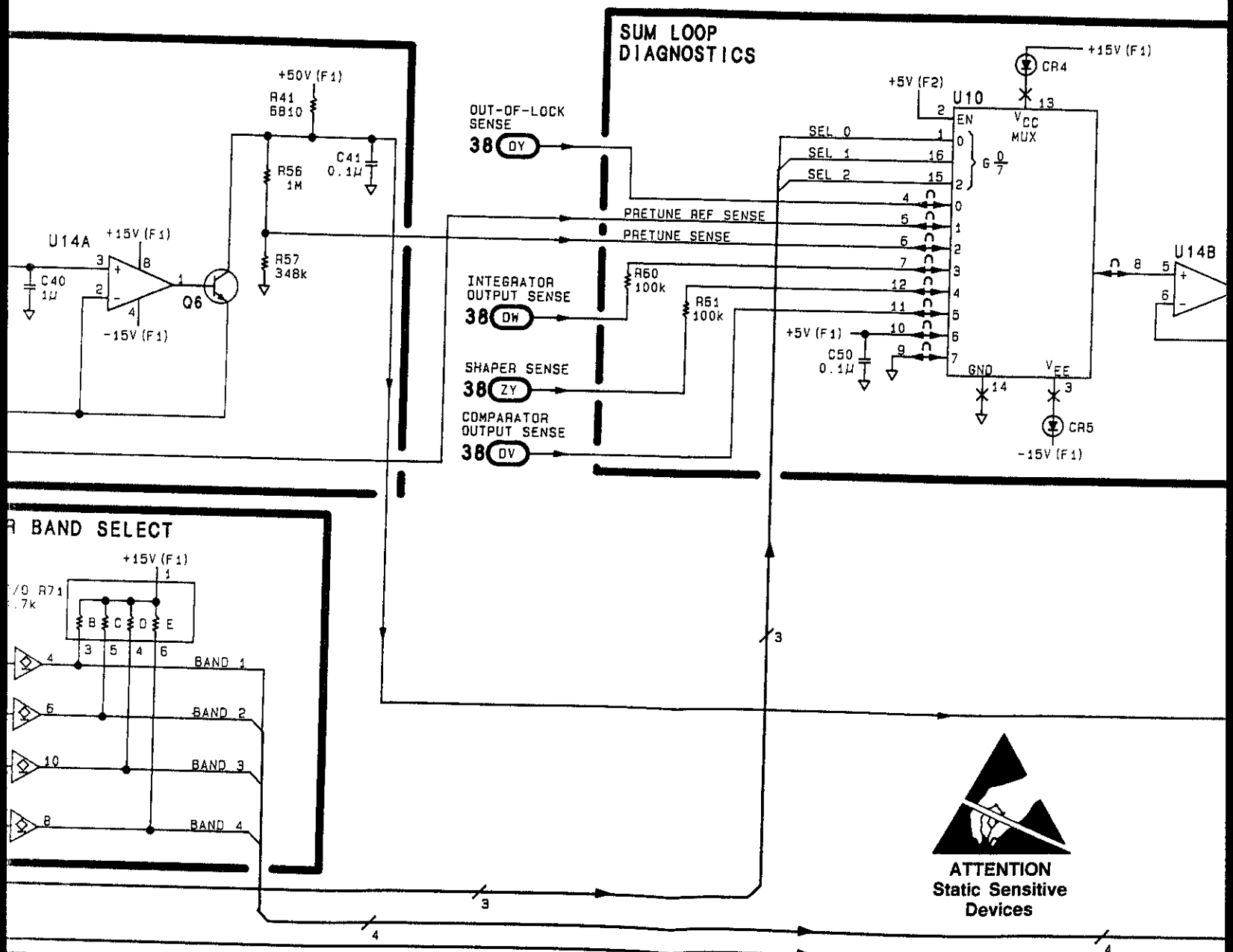
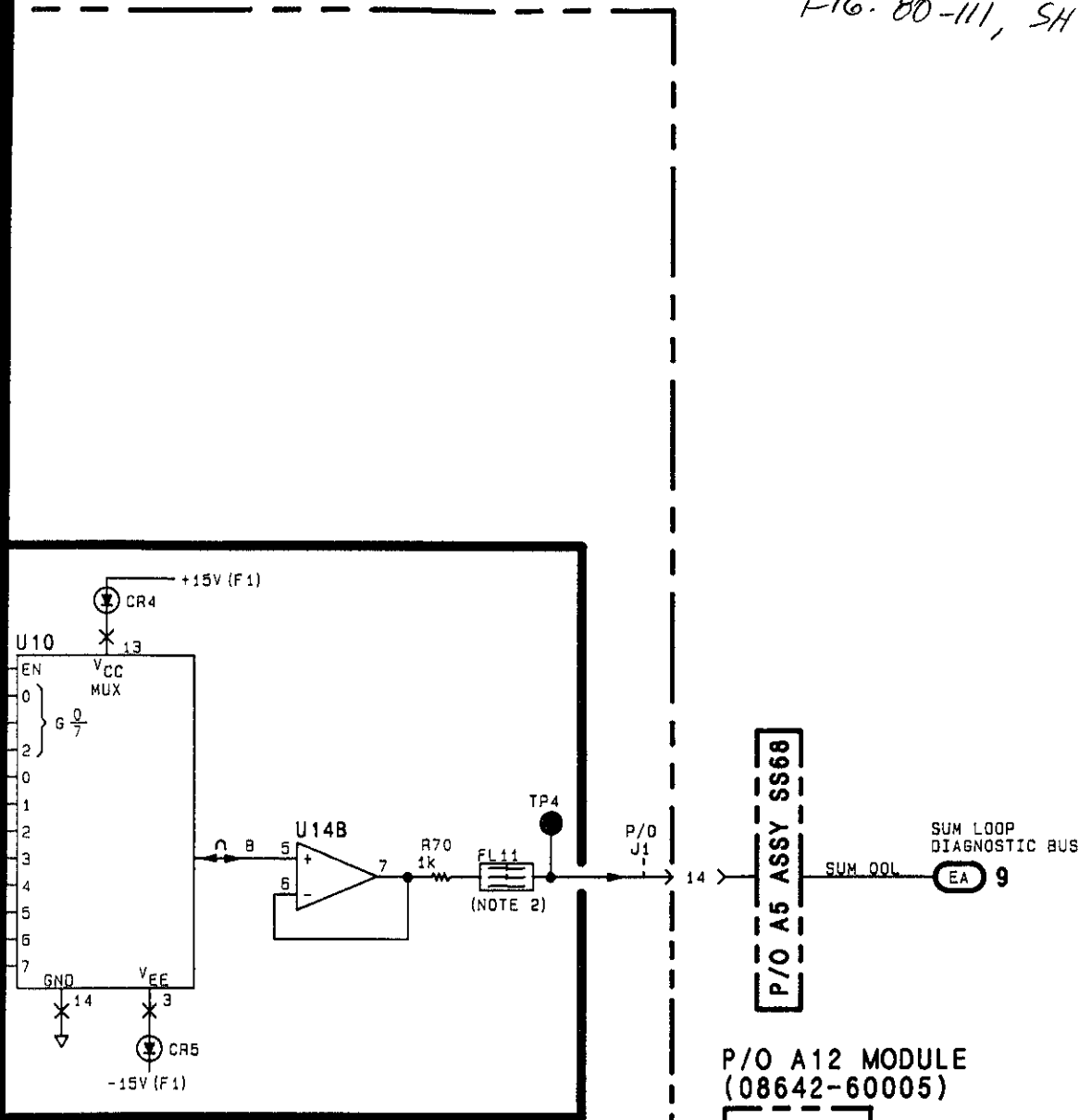


FIG. 80-111, S4T. 4 OF 5

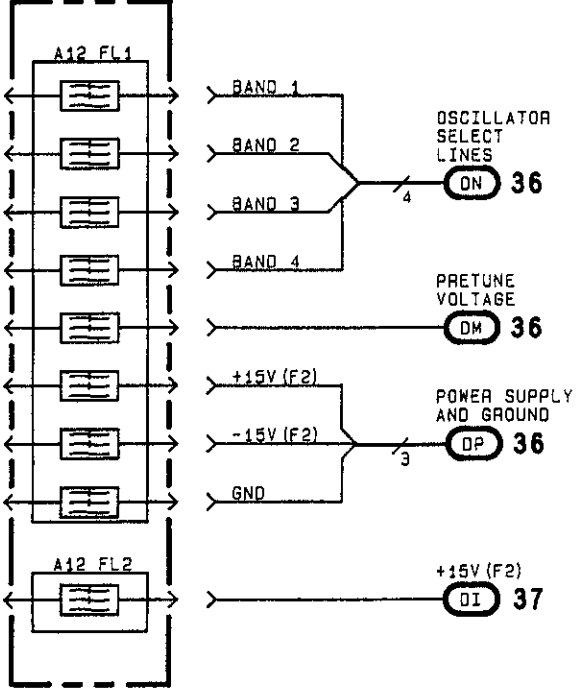




P/O A5 ASSY SS68

SUM LOOP DIAGNOSTIC BUS  
SUM 00L EA 9

P/O A12 MODULE  
(08642-60005)



SS39

Figure 80-111  
80-111

FIG. 80-112  
 SHT. 1 OF 5

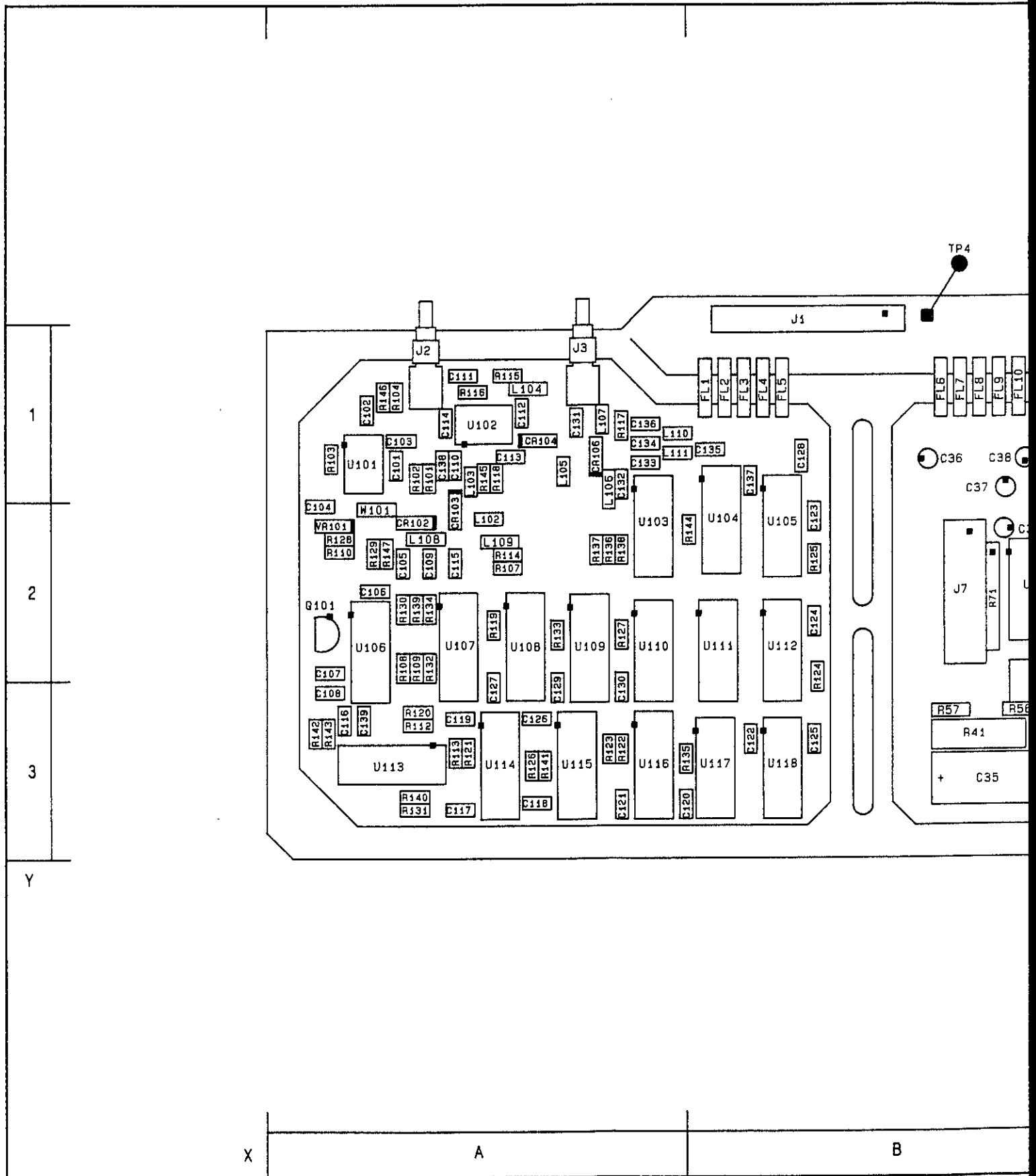
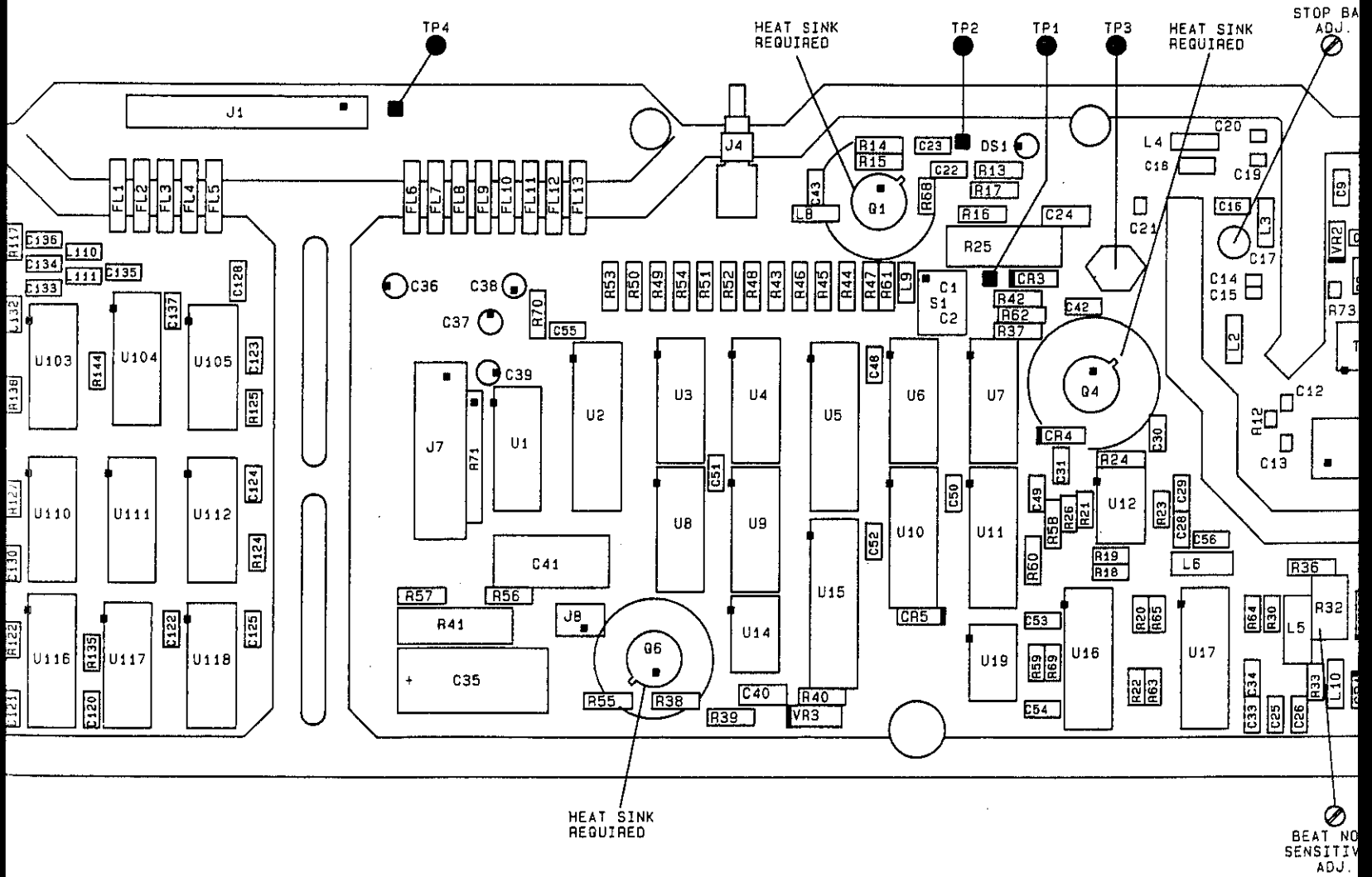


Figure 80-112. SERVICE SHEET 40 INFORMATION

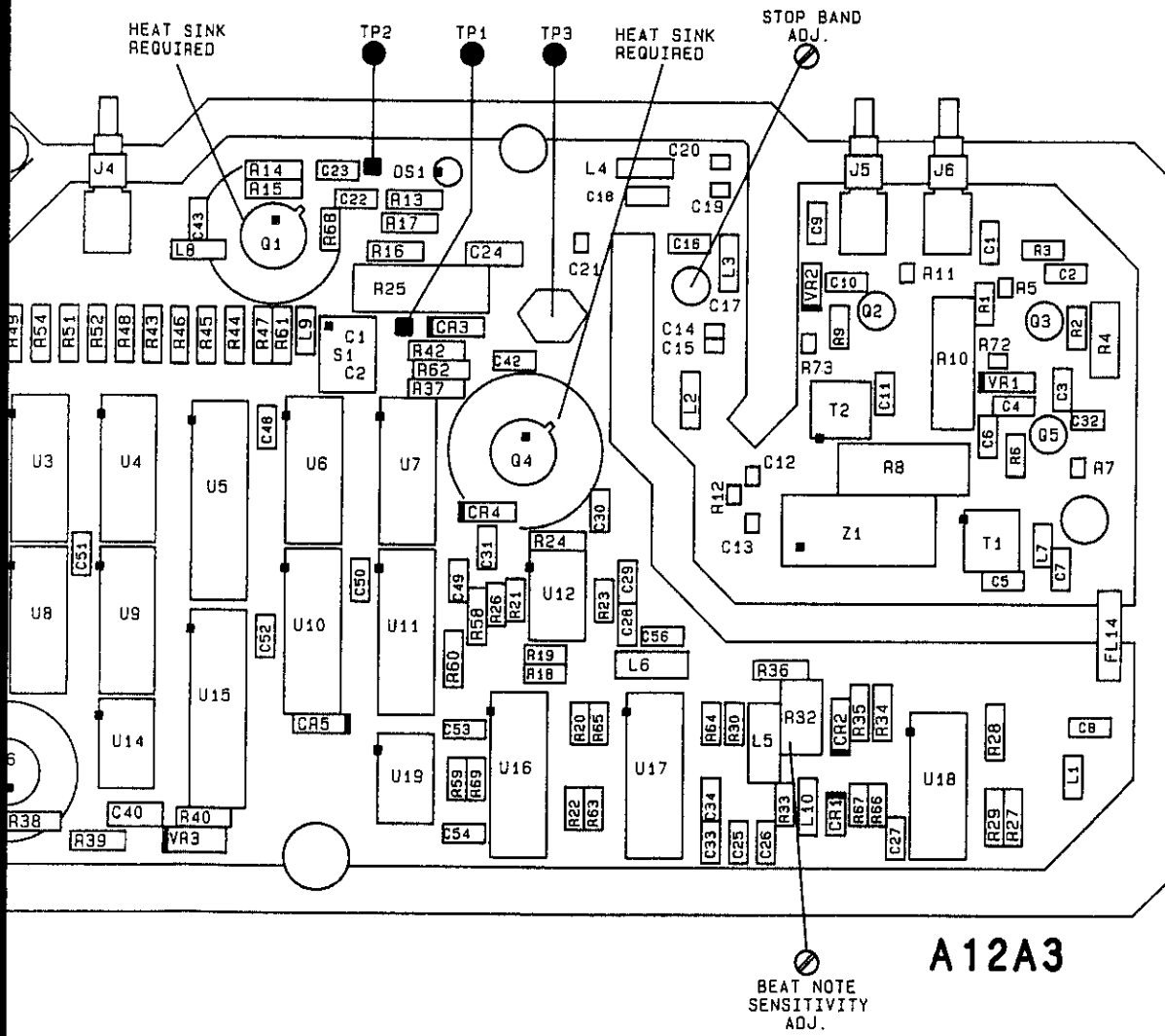
Comp

FIG. 80-112  
 SHEET 2 OF 5



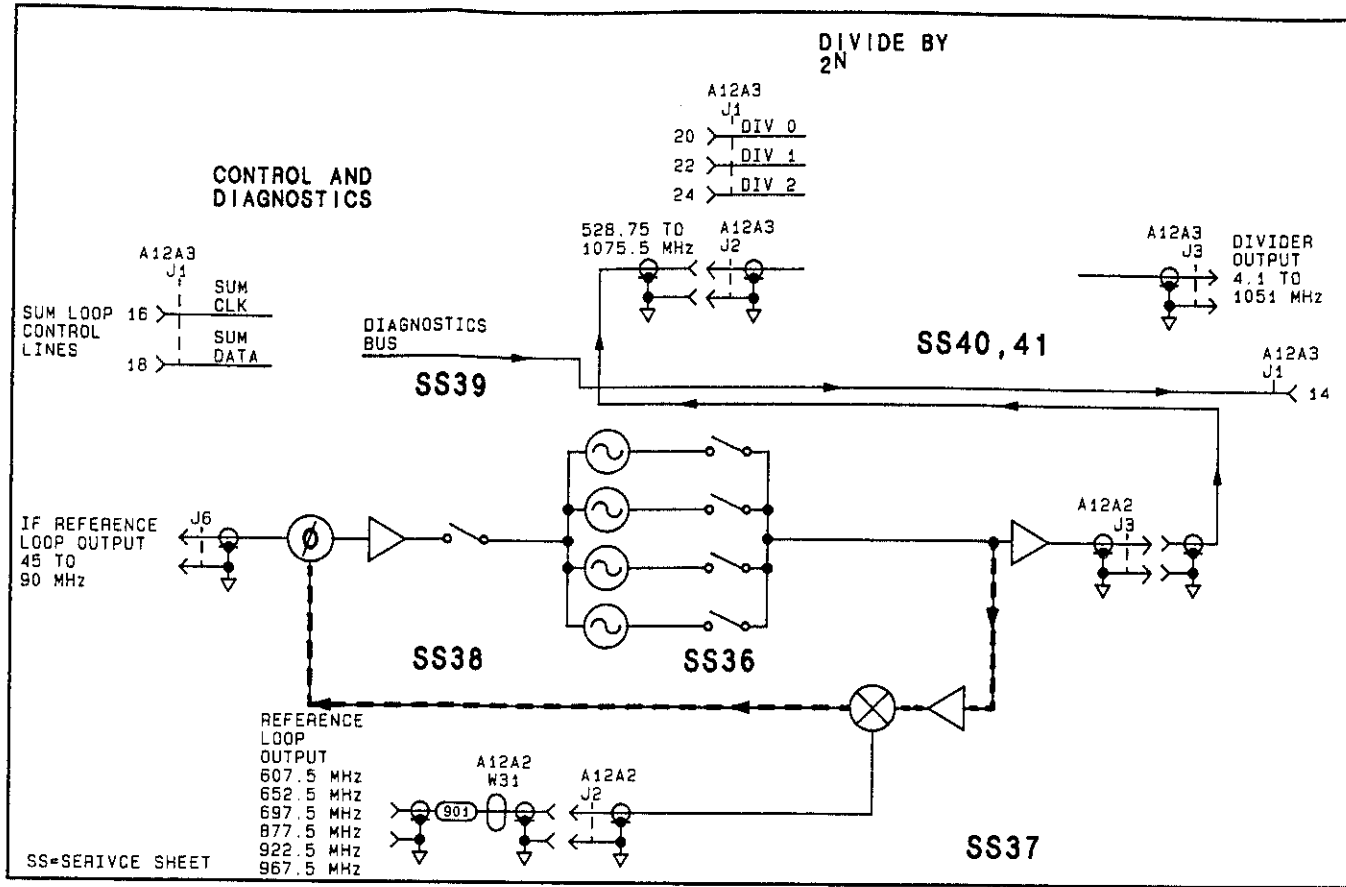
Component Locator

FIG. 80-112  
SHt. 3 OF 5



ator

FIG. 80-112  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

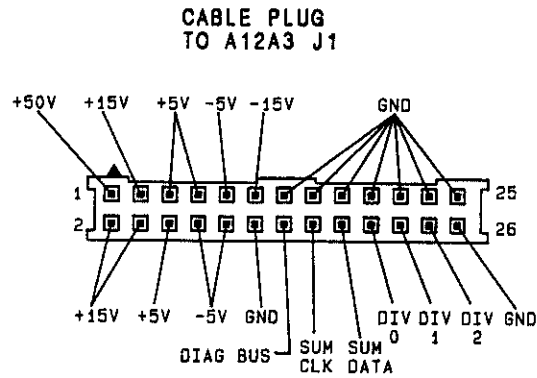
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C101	A, 1	L102	A, 2														
C102	A, 1	L103	A, 1														
C103	A, 1	L104	A, 1														
C104	A, 2	L105	A, 1														
C105	A, 2	L106	A, 1														
C110	A, 1	L107	A, 1														
C111	A, 1	L108	A, 2														
C112	A, 1	L110	A, 1														
C113	A, 1	L111	A, 1														
C114	A, 1																
C115	A, 2	R101	A, 1														
C119	A, 3	R102	A, 1														
C123	B, 2	R103	A, 1														
C124	B, 2	R104	A, 1														
C131	A, 1	R107	A, 2														
C132	A, 1	R115	A, 1														
C133	A, 1	R116	A, 1														
C134	A, 1	R117	A, 1														
C135	B, 1	R118	A, 1														
C136	A, 1	R119	A, 2														
C138	A, 1	R124	B, 2														
		R125	B, 2														
CR102	A, 2	R129	A, 2														
CR103	A, 2	R132	A, 2														
CR104	A, 1	R133	A, 2														
CR106	A, 1	R134	A, 2														
		R145	A, 1														
FL1	B, 1	R146	A, 1														
FL2	B, 1	R147	A, 2														
J1	B, 1	U101	A, 1														
J2	A, 1	U102	A, 1														
J3	A, 1	U107	A, 2														
		U112	B, 2														
		W101	A, 2														

P/O A12A3 SUM LOOP PHASE DETECTOR/DIVIDER ASSEMBLY **SS39**  
SEE REVERSE SIDE



Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

## CHANGES

### All Serial Prefixes

On the schematic:

- In the lower right portion of the foldout, change the figure and page numbers for SS40 to 80-113.

### 2530A and above

On the Component Locator:

- R164, R165, R166, C145, C146, C147 - Replace the appropriate portion of the component locator with the partial on 80-112.2

In Component Coordinates:

- Replace the Component Coordinates table with the one shown on page 80-112.2

On the schematic:

- R103, R118, R146, R147, L112 - In **INPUT LIMITER**, change the value of R103 to 100 ohms. Change the value of R146 and R147 to 261 ohms. In **BUFFER/LIMITER**, change the value of R118 to 100 ohms. Change W101 symbol to an inductor. Label it L112, and assign it a value of 18n.
- R164, R165, R166, C145, C146, C147 - Replace the appropriate portion of SS40 with the schematic partial on 80-112.3

### 2543A and above

On the Component Locator:

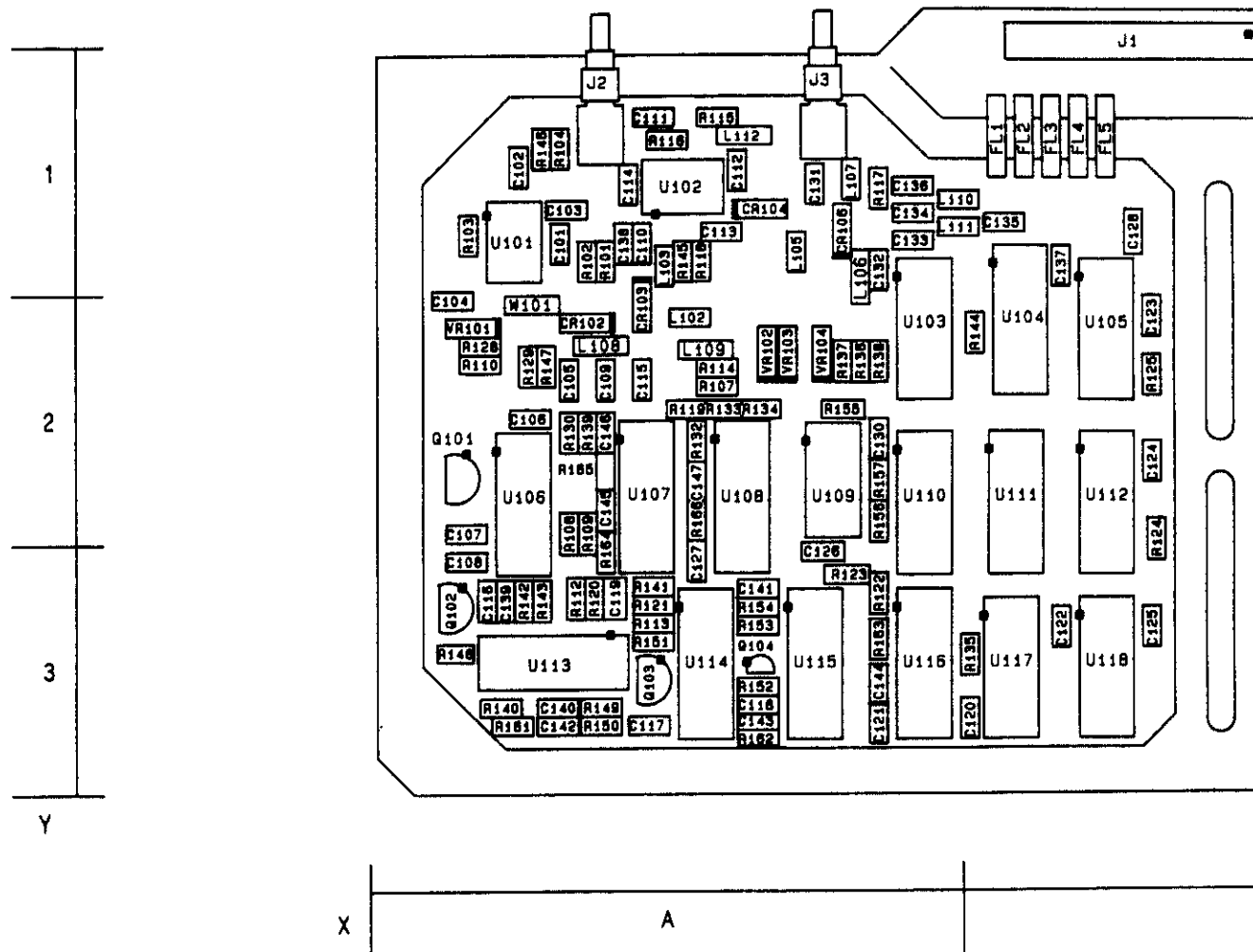
- Replace the partial Component Locator shown on page 80-112.2 with the partial on 80-112.3

In Component Coordinates:

- Replace the Component Coordinates table on 80-112.2 with the table on 80-112.3

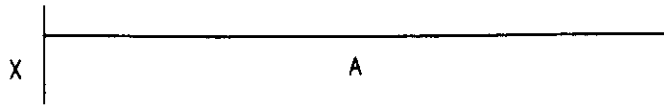
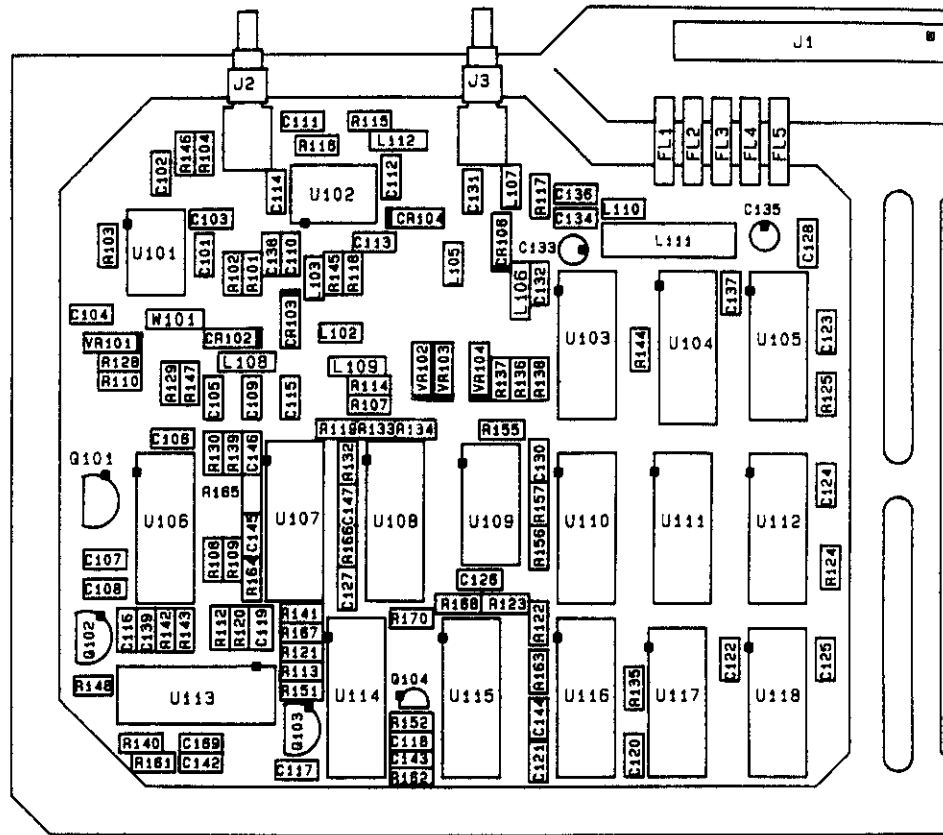
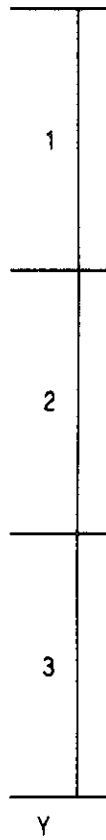
On the schematic:

- C133, C135, L111, R103, R147, L102, R118 - Replace the appropriate portion of SS40 with the schematic partial on 80-112.5. In **2N=0 DIVIDE**, change the value of L102 to 15u Farads. In **BUFFER/LIMITER**, change the value of R118 to 121 ohms. Note selection procedure for R147 in the table below.



COMP	X, Y	COMP	X, Y	COMP	X, Y
C101	A, 1	L102	A, 2	U101	A, 1
C102	A, 1	L103	A, 1	U102	A, 1
C103	A, 1	L104	A, 1	U107	A, 2
C104	A, 2	L105	A, 1	U112	B, 2
C105	A, 2	L106	A, 1		
C110	A, 1	L107	A, 1		
C111	A, 1	L108	A, 2		
C112	A, 1	L110	A, 1		
C113	A, 1	L111	A, 1		
C114	A, 1	L112	A, 1		
C115	A, 2				
C119	A, 3	R101	A, 1		
C123	B, 2	R102	A, 1		
C124	B, 2	R103	A, 1		
C131	A, 1	R104	A, 1		
C132	A, 1	R107	A, 2		
C133	A, 1	R115	A, 1		
C134	A, 1	R116	A, 1		
C135	B, 1	R117	A, 1		
C136	A, 1	R118	A, 1		
C138	A, 1	R119	A, 2		
C145	A, 2	R124	B, 2		
C146	A, 2	R125	B, 2		
C147	A, 2	R129	A, 2		
		R132	A, 2		
CR102	A, 2	R133	A, 2		
CR103	A, 2	R134	A, 2		
CR104	A, 1	R145	A, 1		
CR106	A, 1	R146	A, 1		
		R147	A, 2		
FL1	B, 1	R164	A, 3		
FL2	B, 1	R165	A, 2		
J1	B, 1	R166	A, 2		
J2	A, 1				
J3	A, 1				

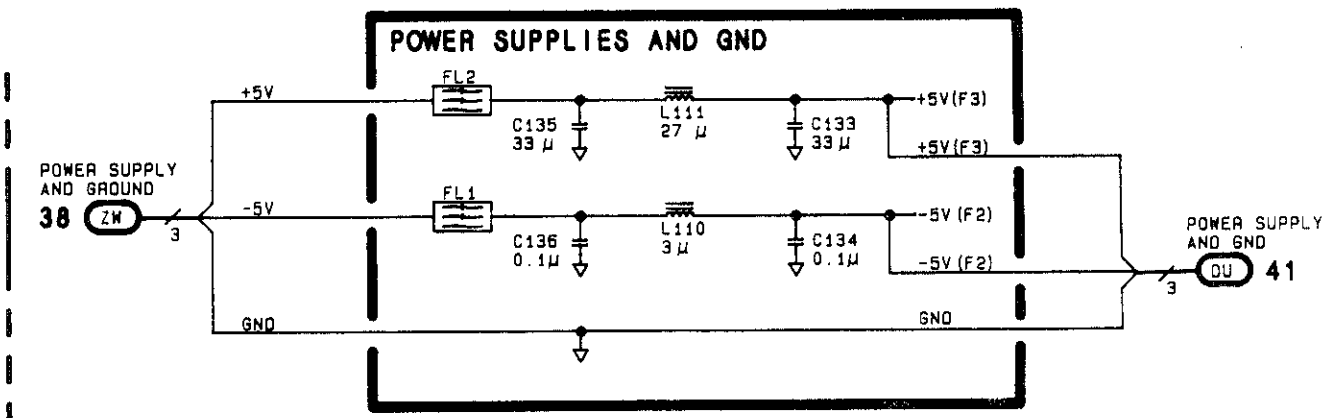
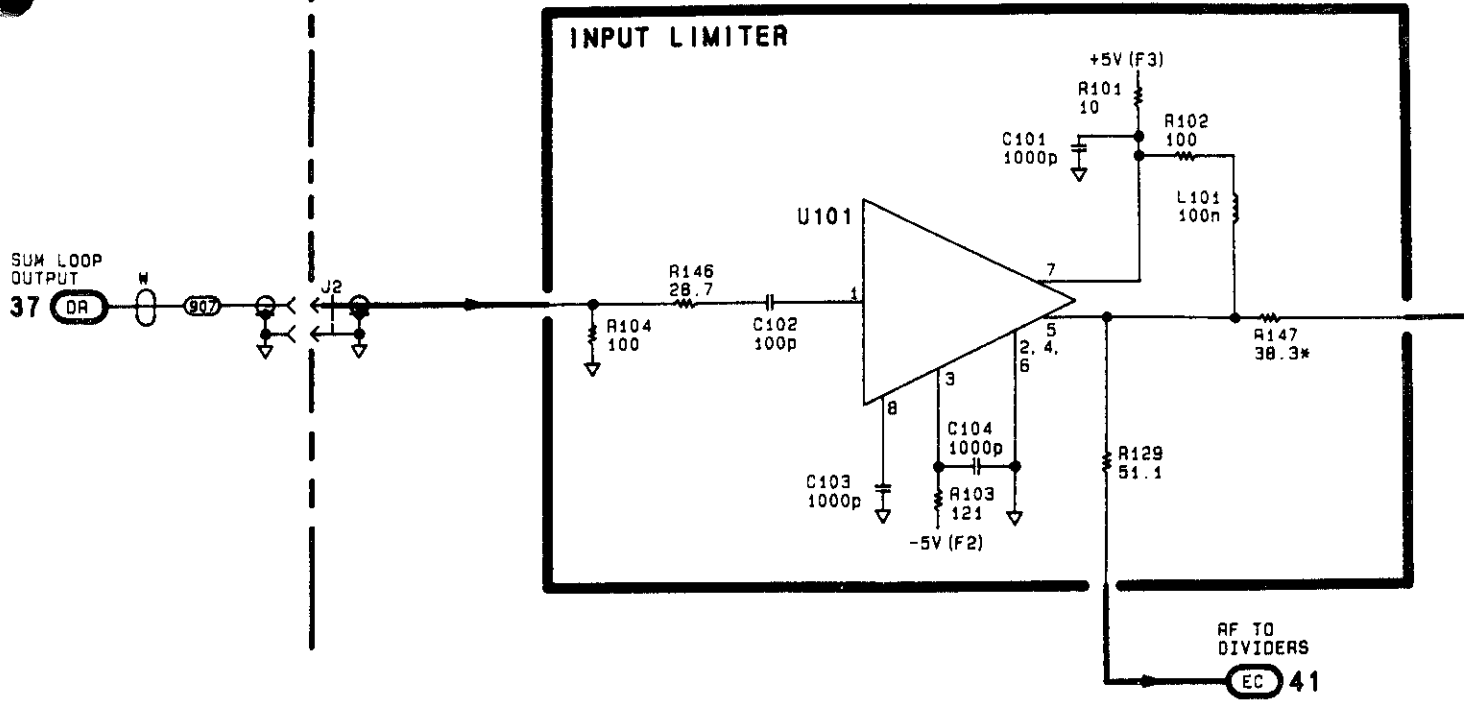
CHANGES TO FIGURE 80-112 (2530A to 2542A)



COMP	X, Y	COMP	X, Y	COMP	X, Y
C101	A, 1	L102	A, 2	U101	A, 1
C102	A, 1	L103	A, 1	U102	A, 1
C103	A, 1	L104	A, 1	U107	A, 2
C104	A, 2	L105	A, 1	U112	B, 2
C105	A, 2	L106	A, 1		
C110	A, 1	L107	A, 1		
C111	A, 1	L108	A, 2		
C112	A, 1	L110	A, 1		
C113	A, 1	L111	A, 1		
C114	A, 1	L112	A, 1		
C115	A, 2				
C119	A, 3	R101	A, 1		
C123	B, 2	R102	A, 1		
C124	B, 2	R103	A, 1		
C131	A, 1	R104	A, 1		
C132	A, 1	R107	A, 2		
C133	A, 1	R115	A, 1		
C134	A, 1	R116	A, 1		
C135	B, 1	R117	A, 1		
C136	A, 1	R118	A, 1		
C138	A, 1	R119	A, 2		
C145	A, 2	R124	B, 2		
C146	A, 2	R125	B, 2		
C147	A, 2	R129	A, 2		
		R132	A, 2		
CR102	A, 2	R133	A, 2		
CR103	A, 2	R134	A, 2		
CR104	A, 1	R145	A, 1		
CR106	A, 1	R146	A, 1		
		R147	A, 2		
FL1	B, 1	R164	A, 3		
FL2	B, 1	R165	A, 2		
		R166	A, 2		
J1	B, 1				
J2	A, 1				
J3	A, 1				

CHANGES TO FIGURE 80-112 (2543A and above)

P/O A12A3 SUM PHASE DETECTOR/DIVIDER ASSEMBLY (08642-60311)



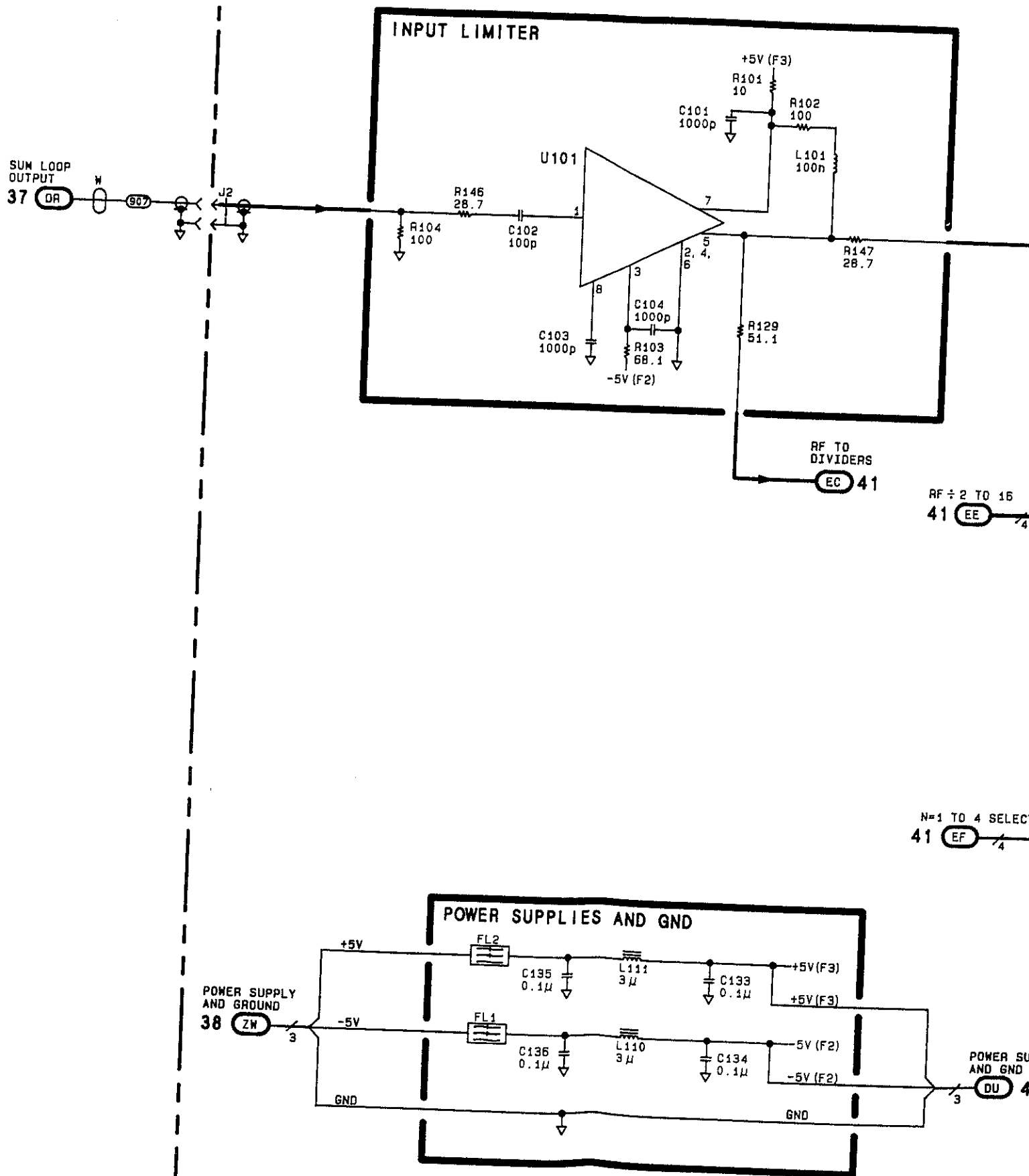
SERIAL PREFIX: 2543A

CHANGES TO FIGURE 80-113 (2543A and above)

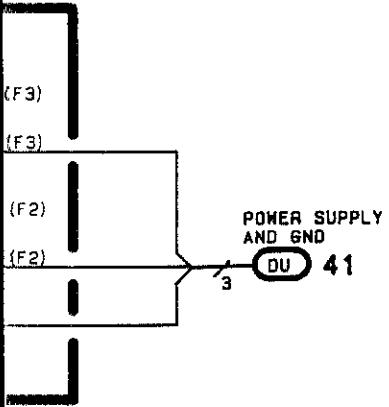
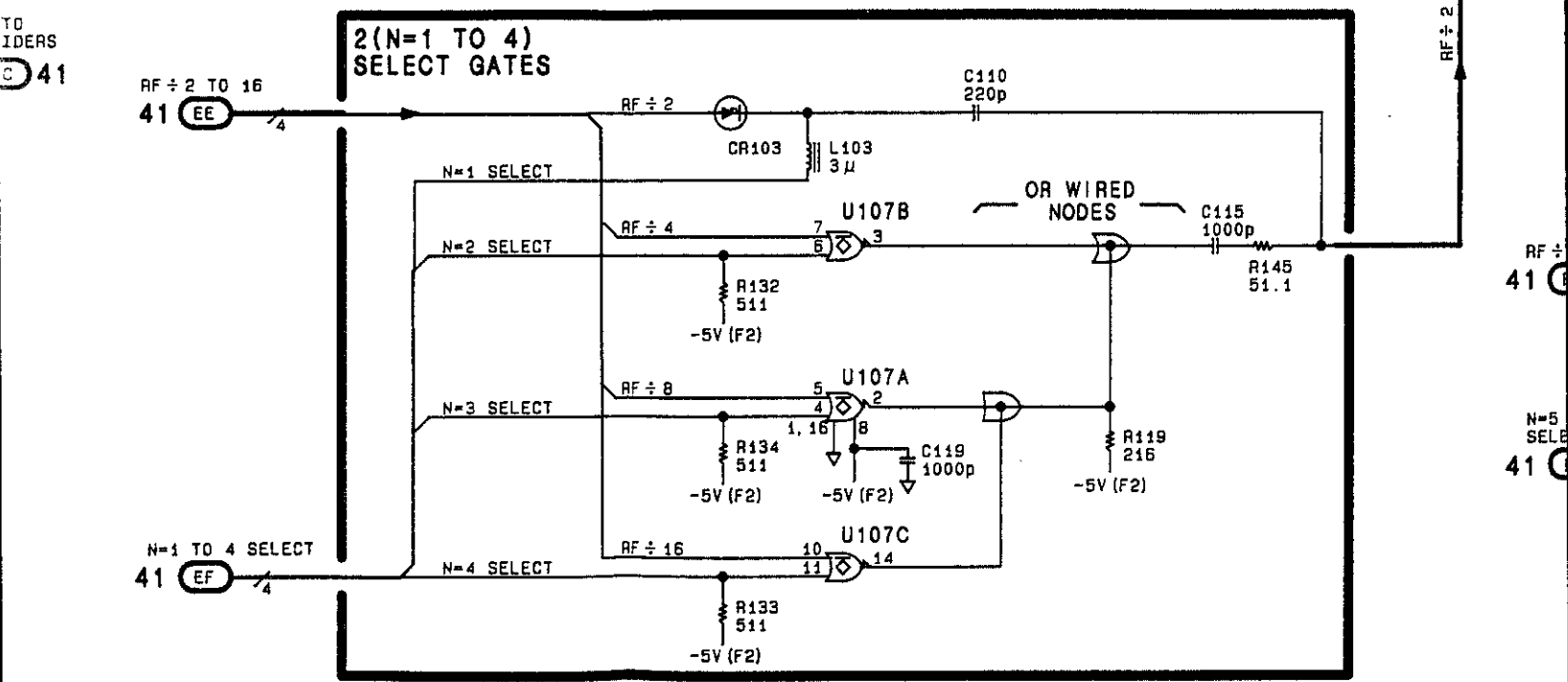
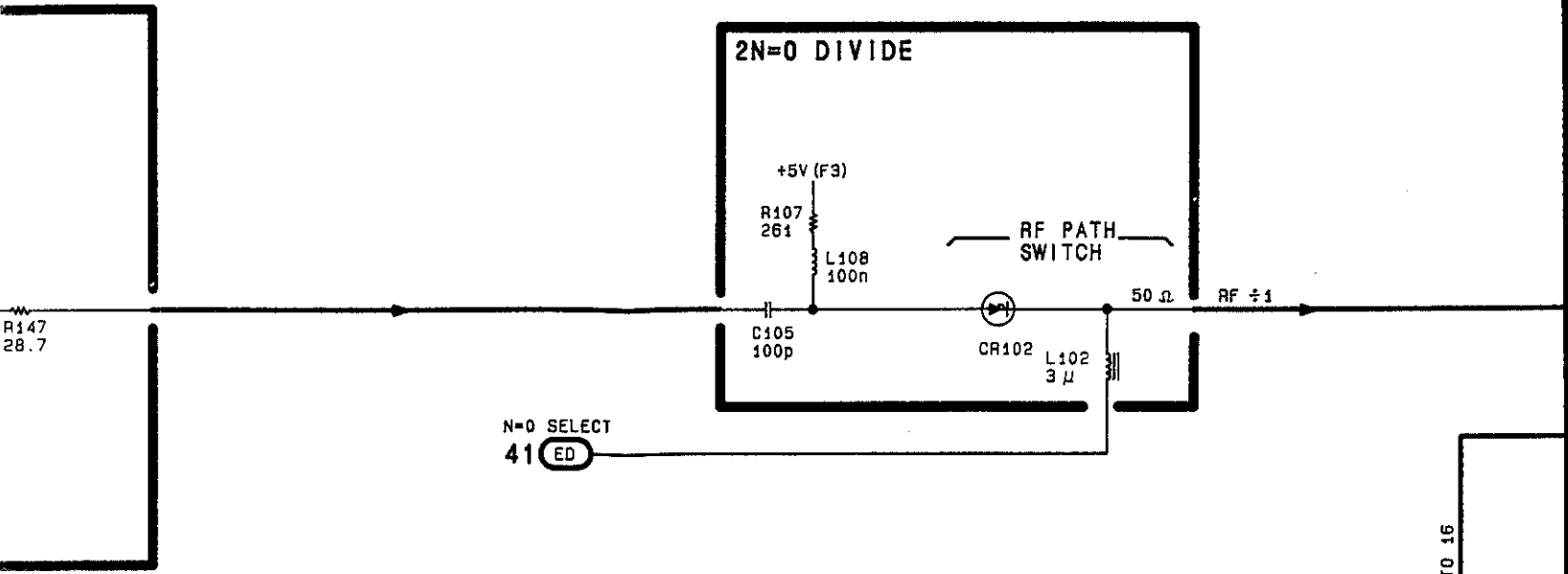
SS 40  
FIG. 80-114

SHT. 1 OF 4

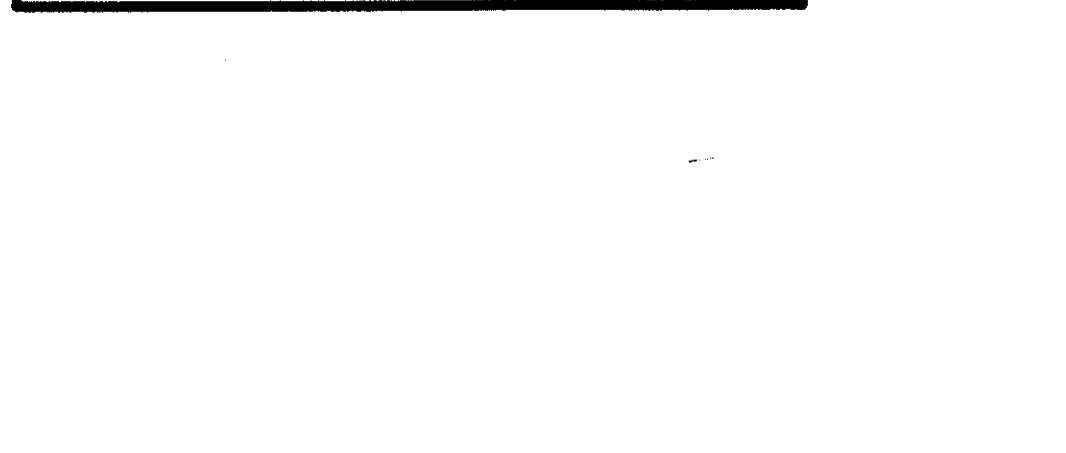
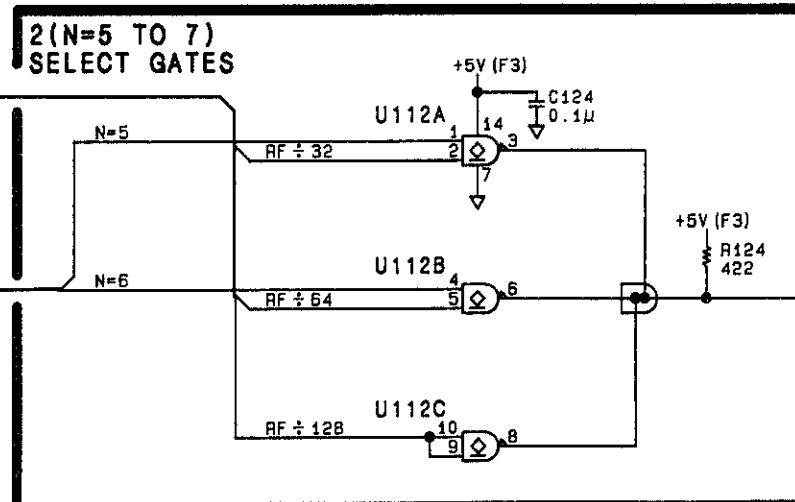
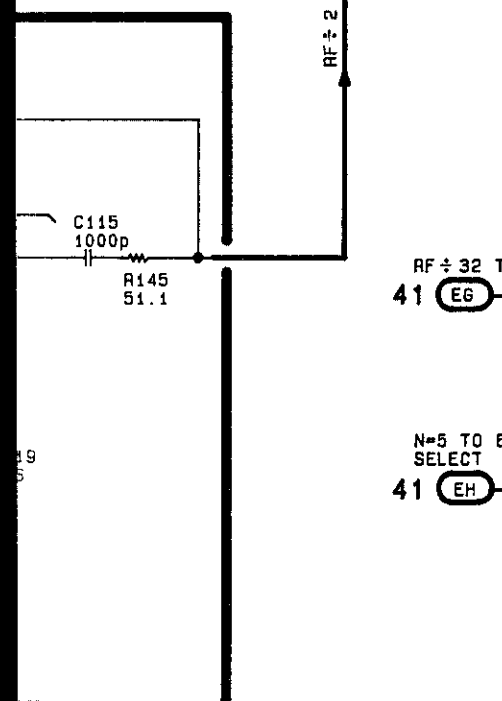
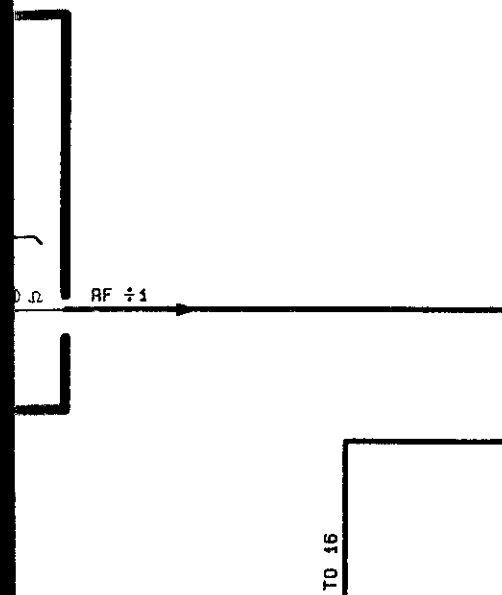
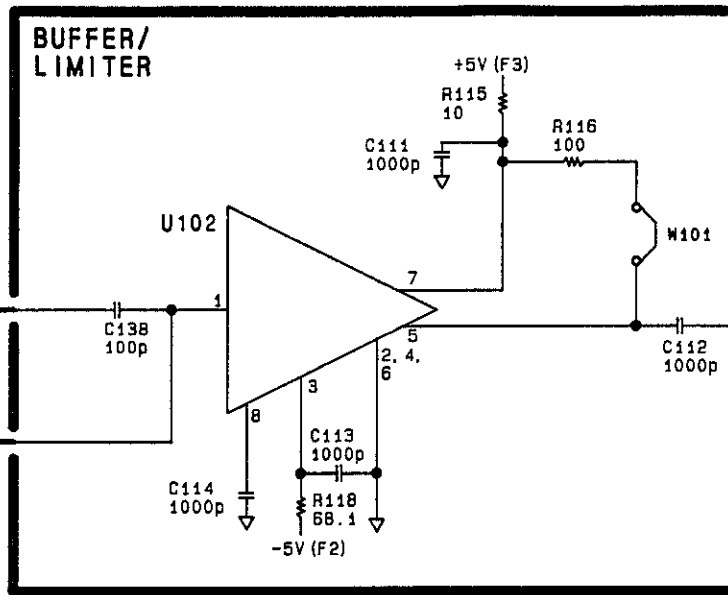
P/O A12A3 SUM PHASE DETECTOR/DIVIDER ASSEMBLY (08642-60111)



SERIAL PREFIX: 2427A

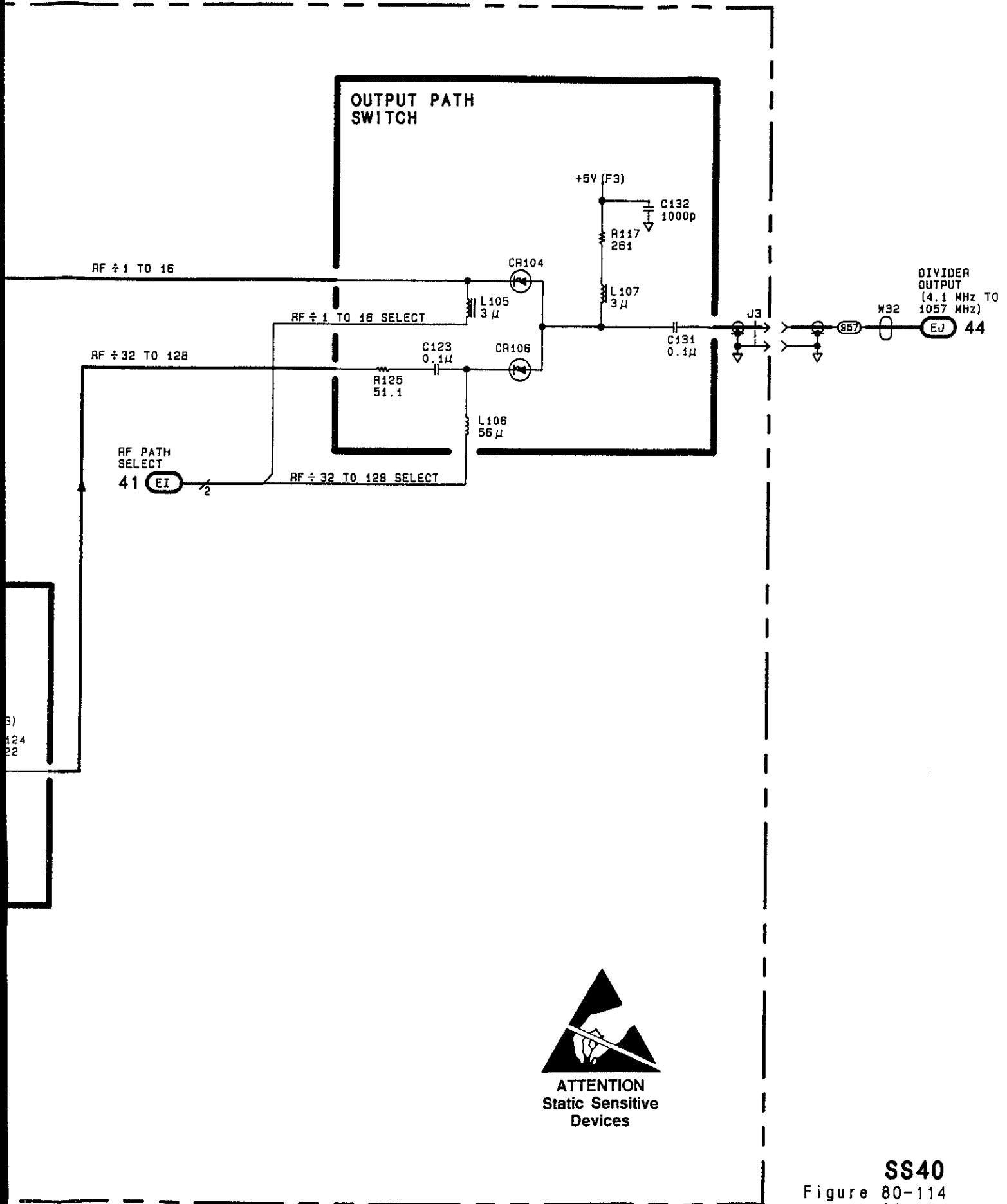


RF ÷ 41  
 N=5 SELE 41





SS40, FIG. 80-114, SHEET 4 OF 4



3)  
124  
22



SS40  
Figure 80-114  
80-114

SS 41  
 FIG. 80-114, SH77 1 OF 5

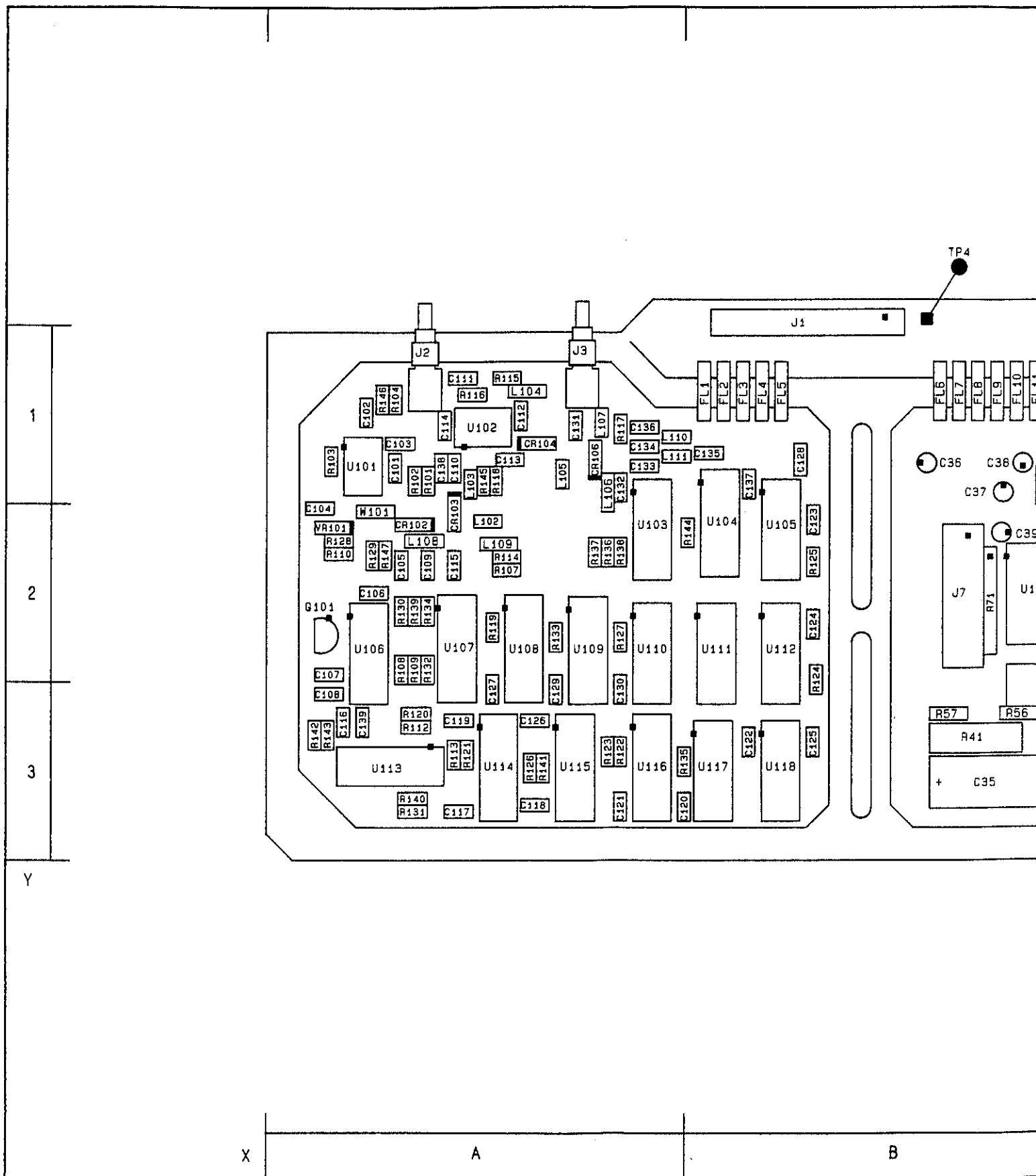
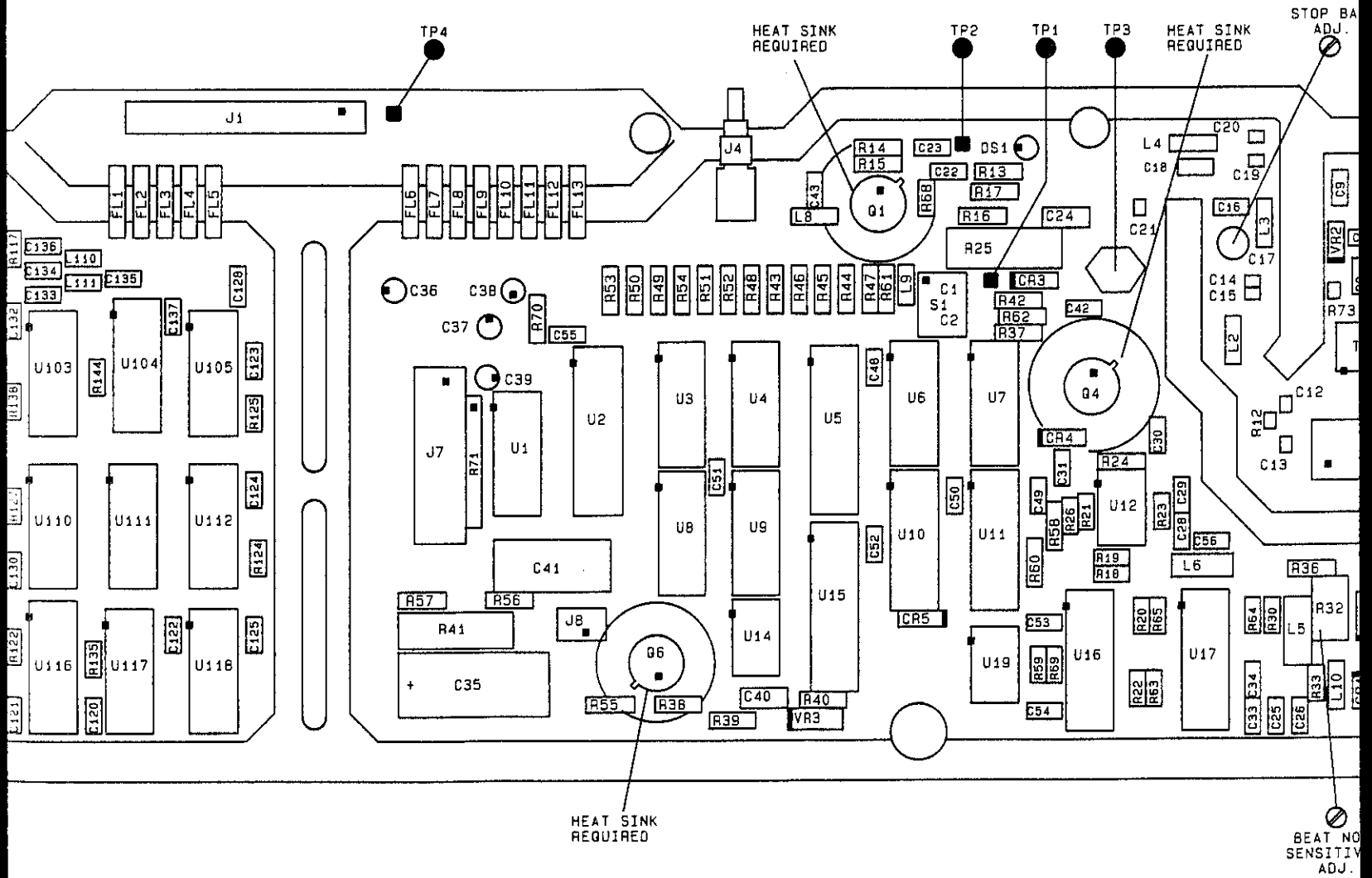


Figure 80-114. SERVICE SHEET 41 INFORMATION

Compo

SS41  
FIG. 80-114, SH. 2 OF 5

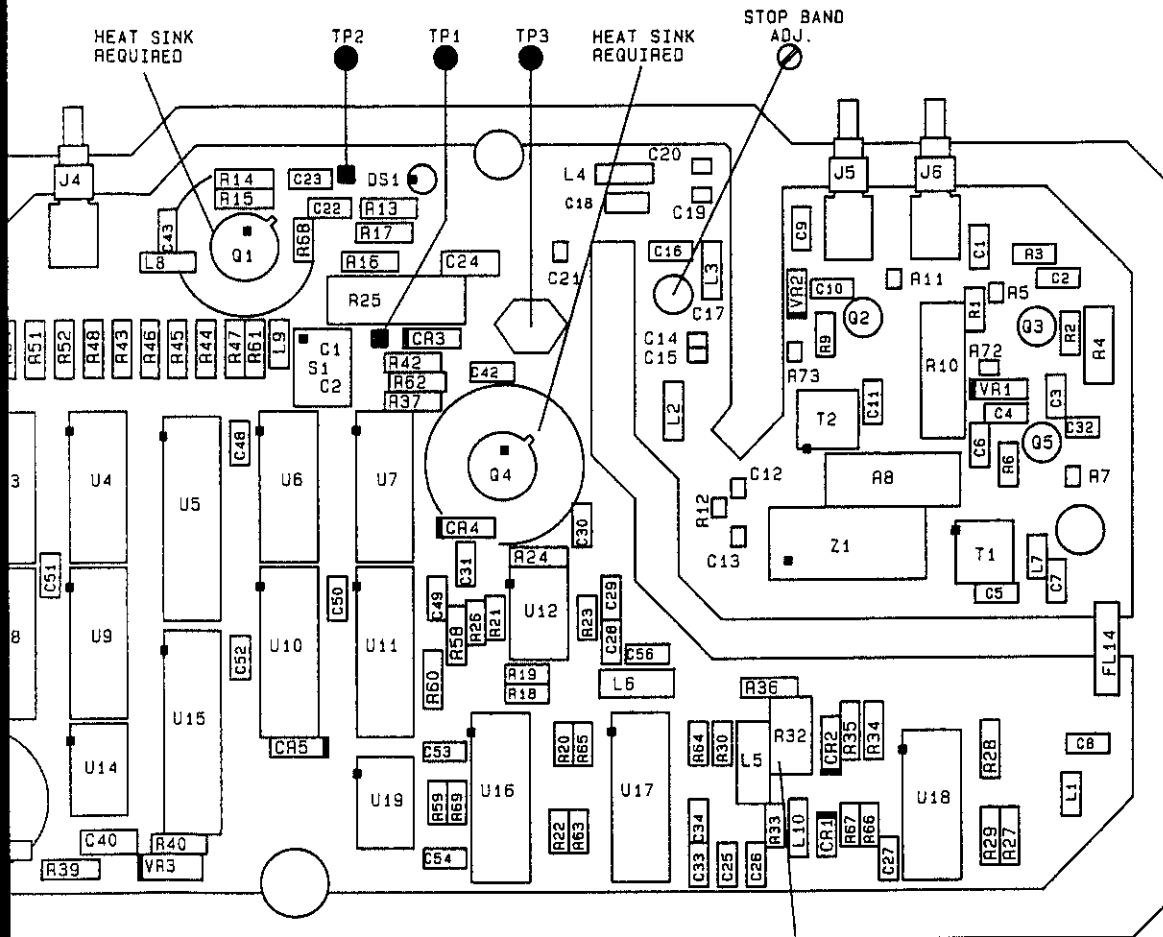


B

C

Component Locator

SS41  
FIG. 80-114, SHEET 3 OF 5



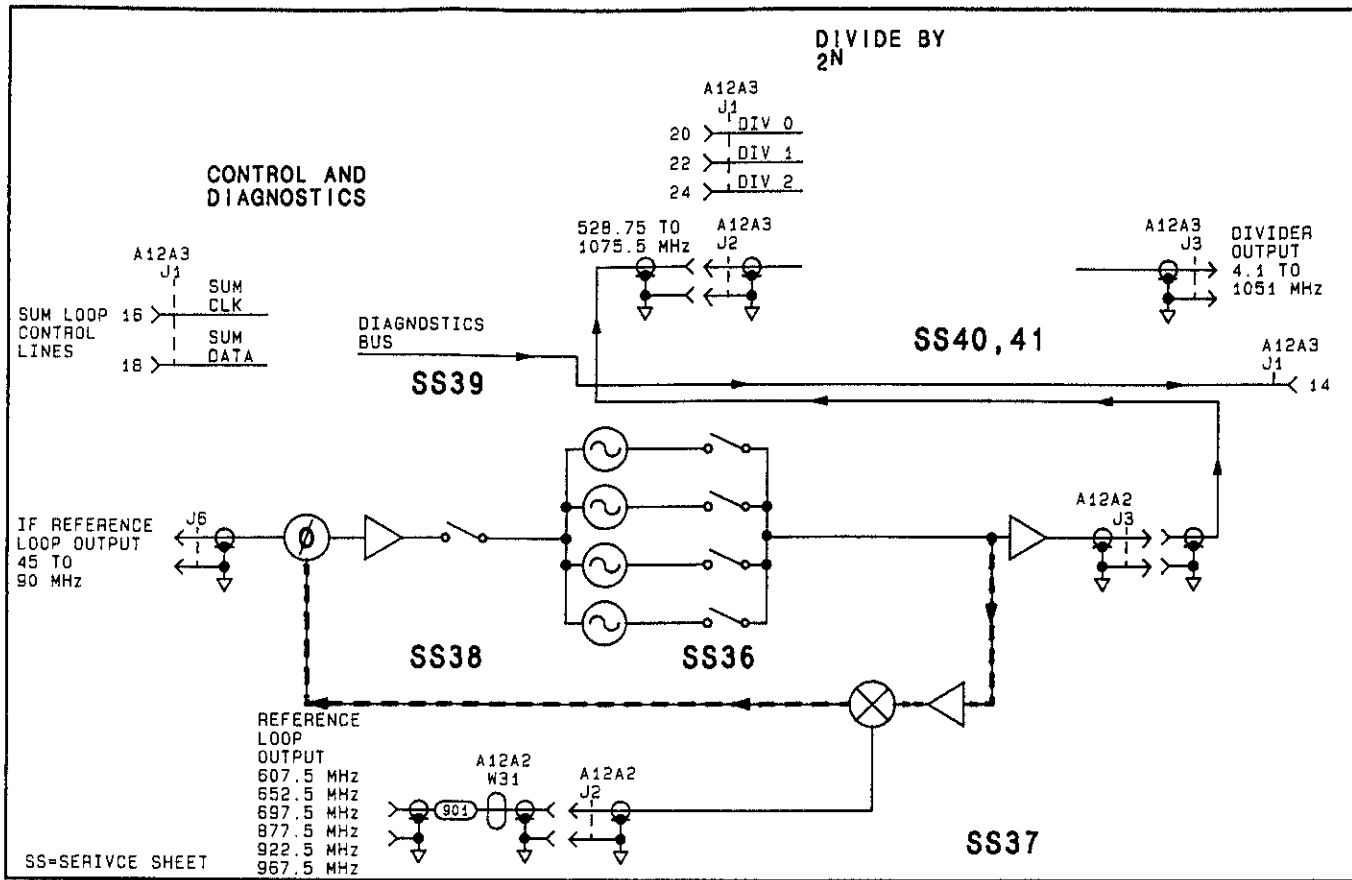
A12A3

BEAT NOTE  
SENSITIVITY  
ADJ.

C

D

SS41  
FIG. 80-114, SH. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C106	A, 2	R108	A, 2	U103	A, 2												
C107	A, 2	R109	A, 2	U104	B, 2												
C108	A, 3	R110	A, 2	U105	B, 2												
C109	A, 2	R112	A, 3	U106	A, 2												
C116	A, 3	R113	A, 3	U108	A, 2												
C117	A, 3	R114	A, 2	U109	A, 2												
C118	A, 3	R120	A, 3	U110	A, 2												
C120	A, 3	R121	A, 3	U111	B, 2												
C121	A, 3	R122	A, 3	U113	A, 3												
C122	B, 3	R123	A, 3	U114	A, 3												
C125	B, 3	R126	A, 3	U115	A, 3												
C126	A, 3	R127	A, 2	U116	A, 3												
C127	A, 3	R128	A, 2	U117	B, 3												
C128	B, 1	R130	A, 2	U118	B, 3												
C129	A, 3	R131	A, 3														
C130	A, 3	R135	A, 3	VR101	A, 2												
C137	B, 1	R136	A, 2														
C139	A, 3	R137	A, 2														
		R138	A, 2														
FL3	B, 1	R139	A, 2														
FL4	B, 1	R140	A, 3														
FL5	B, 1	R141	A, 3														
J1	B, 1	R142	A, 3														
L109	A, 2	R143	A, 3														
G101	A, 2	R144	A, 2														

P/O A12A3 SUM LOOP PHASE DETECTOR/DIVIDER ASSEMBLY **SS40**  
SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

Schematic General Information

## CHANGES

### 2427A to 2527A

On the schematic:

- R131 - In  $2^{N=2}$  **DIVIDE**, change R131 value to 261 ohms.
- U113, U114, U115 - In  $2^{N=2}$  **DIVIDE**, extend pin 12 of U113 to connect with the node of R131 and U113 pin 9. Remove connection to pin 9 and label it NC. In  $2^{N=3}$  **DIVIDE**, extend pin 12 of U114 to connect with the node of R126 and U114 pin 9. Remove connection to pin 9 and label it NC. In  $2^{N=4}$  **DIVIDE**, extend pin 12 of U115 to connect with the node of R127 and U115 pin 9. Remove connection to pin 9 and label it NC.

### 2530A and above

On the Component Locator:

- C129, C140-147, Q102-104, R108-R110, R126-R128, R131-R134, R138, R140-R143, R148-R166, VR102-VR104 - Replace appropriate portion of the component locator with the partial on 8O-114.3

In Component Coordinates:

- Replace Component Coordinates table with the one shown on page 8O-114.3

On the schematic:

- C129, C140-C147, Q102-Q104, R108-R110, R126-R128, R131-R134, R138, R140-R143, R148-R166, VR102-VR104 - Replace SS41 with the foldout on page 8O-114.5

### 2543A and above

On the Component Locator:

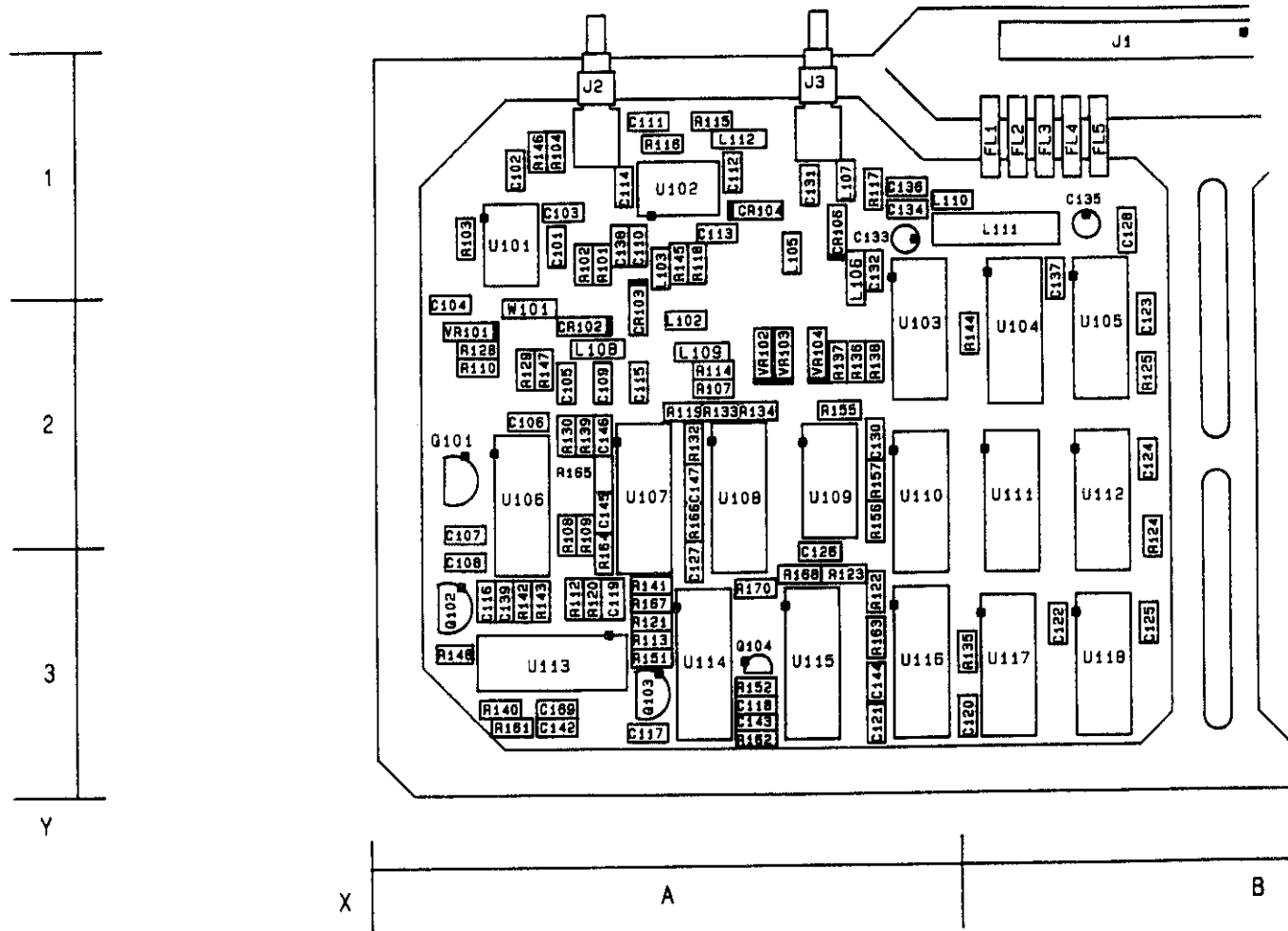
- R167, R168, R169, R170 - Replace the appropriate portion of the component locator with the partial on 8O-114.2

In Component Coordinates:

- Replace the Component Coordinates table with the one shown on page 8O-114.2

On the schematic:

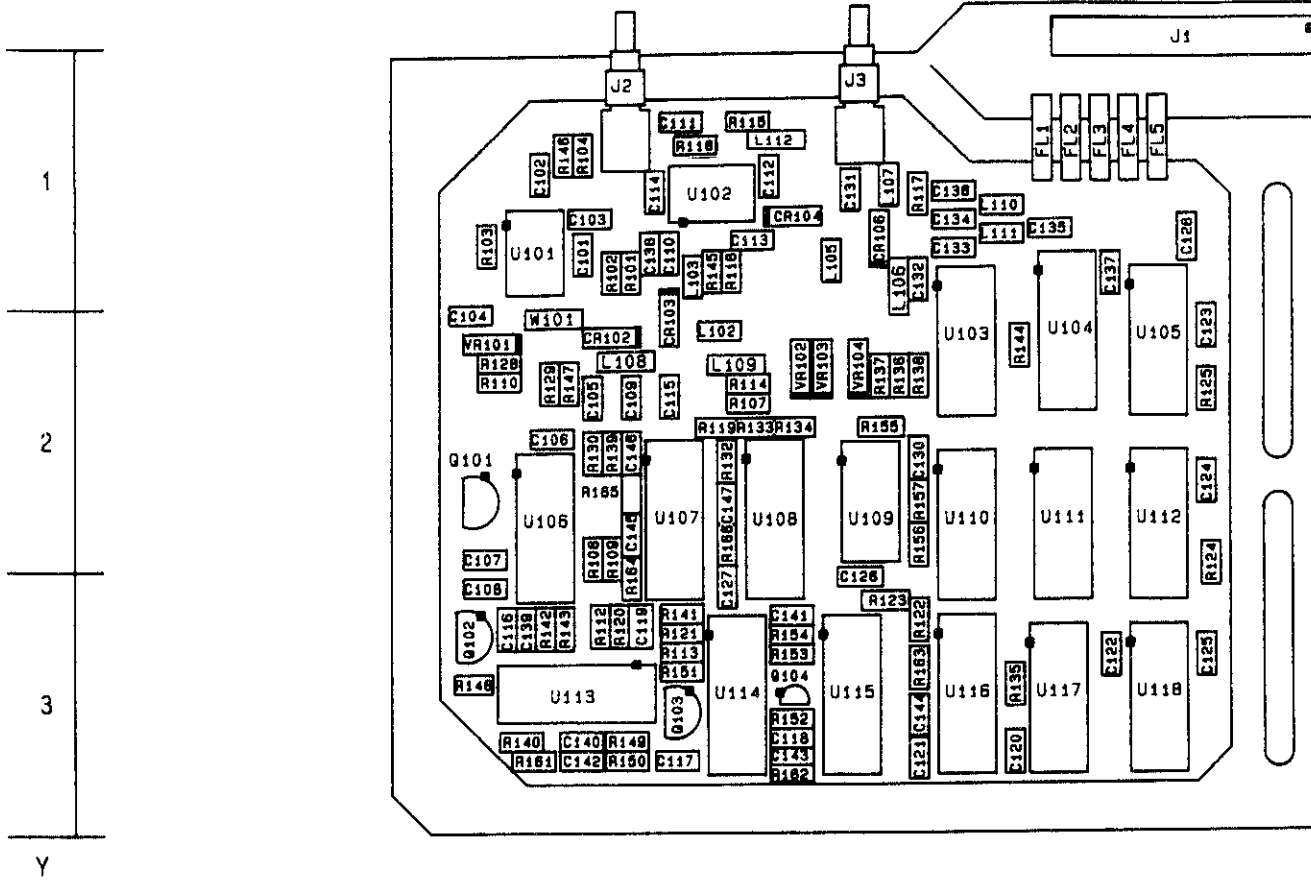
- C140, C141, R167, R168, R169, R170 - Replace the appropriate portion of Figure 8O-114.5 (page 8O-114.5), with the schematic partial on page 8O-114.4. Change the assembly part number from 08642-60211, to 08642-60311.



COMP	X, Y	COMP	X, Y	COMP	X, Y
C106	A, 2	R108	A, 2	U103	A, 2
C107	A, 2	R109	A, 2	U104	B, 2
C108	A, 3	R110	A, 2	U105	B, 2
C109	A, 2	R112	A, 3	U106	A, 2
C116	A, 3	R113	A, 3	U108	A, 2
C117	A, 3	R114	A, 2	U109	A, 2
C118	A, 3	R120	A, 3	U110	A, 2
C120	A, 3	R121	A, 3	U111	B, 2
C121	A, 3	R122	A, 3	U113	A, 3
C122	B, 3	R123	A, 3	U114	A, 3
C125	B, 3	R130	A, 2	U115	A, 3
C126	A, 3	R135	A, 3	U116	A, 3
C127	A, 3	R136	A, 2	U117	B, 3
C128	B, 1	R137	A, 2	U118	B, 3
C130	A, 3	R138	A, 2		
C137	B, 1	R139	A, 2	VR101	A, 2
C139	A, 3	R140	A, 3	VR102	A, 2
C142	A, 3	R141	A, 3	VR103	A, 2
C143	A, 3	R142	A, 3	VR104	A, 2
C144	A, 3	R143	A, 3		
		R144	A, 2		
FL3	B, 1	R148	A, 3		
FL4	B, 1	R151	A, 3		
FL5	B, 1	R152	A, 3		
J1	B, 1	R155	A, 2		
		R156	A, 2		
L109	A, 2	R157	A, 2		
Q101	A, 2	R161	A, 3		
Q102	A, 3	R162	A, 3		
Q103	A, 3	R163	A, 3		
Q104	A, 3	R167	A, 3		
		R168	A, 3		
		R169	A, 3		
		R170	A, 3		

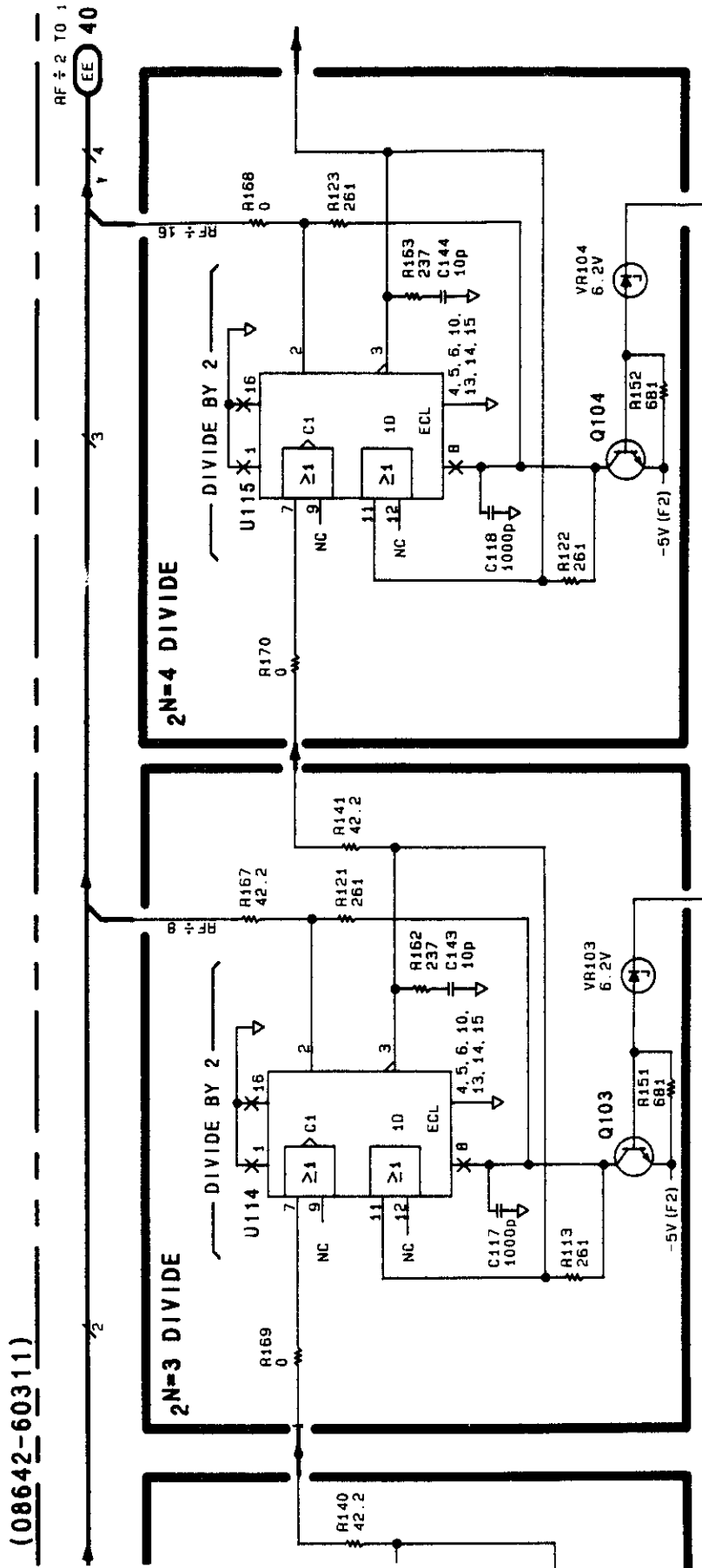
CHANGES TO FIGURE 80-114 (2543A and above)





COMP	X, Y	COMP	X, Y	COMP	X, Y
C105	A, 2	R108	A, 2	U103	A, 2
C107	A, 2	R109	A, 2	U104	B, 2
C108	A, 3	R110	A, 2	U105	B, 2
C109	A, 2	R112	A, 3	U106	A, 2
C116	A, 3	R113	A, 3	U108	A, 2
C117	A, 3	R114	A, 2	U109	A, 2
C118	A, 3	R120	A, 3	U110	A, 2
C120	A, 3	R121	A, 3	U111	B, 2
C121	A, 3	R122	A, 3	U113	A, 3
C122	B, 3	R123	A, 3	U114	A, 3
C125	B, 3	R130	A, 2	U115	A, 3
C126	A, 3	R135	A, 3	U116	A, 3
C127	A, 3	R136	A, 2	U117	B, 3
C128	B, 1	R137	A, 2	U118	B, 3
C130	A, 3	R138	A, 2		
C137	B, 1	R139	A, 2	VR101	A, 2
C139	A, 3	R140	A, 3	VR102	A, 2
C140	A, 3	R141	A, 3	VR103	A, 2
C141	A, 3	R142	A, 3	VR104	A, 2
C142	A, 3	R143	A, 3		
C143	A, 3	R144	A, 2		
C144	A, 3	R148	A, 3		
		R149	A, 3		
FL3	B, 1	R150	A, 3		
FL4	B, 1	R151	A, 3		
FL5	B, 1	R152	A, 3		
J1	B, 1	R153	A, 3		
		R154	A, 3		
L109	A, 2	R155	A, 2		
Q101	A, 2	R156	A, 2		
Q102	A, 3	R157	A, 2		
Q103	A, 3	R161	A, 3		
Q104	A, 3	R162	A, 3		
		R163	A, 3		

CHANGES TO FIGURE 80-114 (2530A to 2542A)



CHANGES TO FIGURE 80-114.5 (2543A and above)

FIG. 80-114.5  
 =HT. 1 OF 5

P/O A12A3 SUM PHASE DETECTOR/DIVIDER ASSEMBLY (08642-60211)

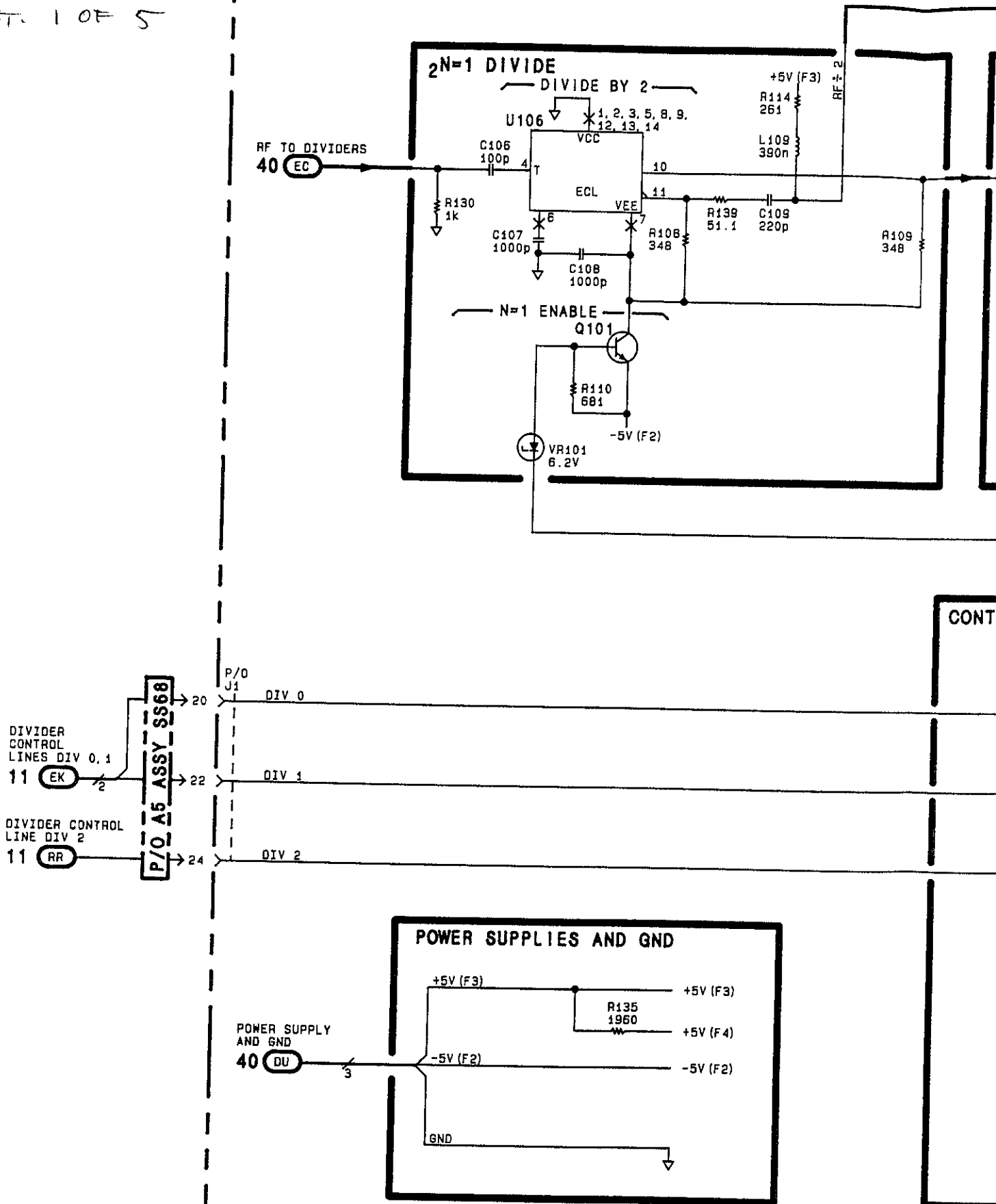


FIG. 80-114.5, SHT. 2 OF 5

Y (08642-60211)

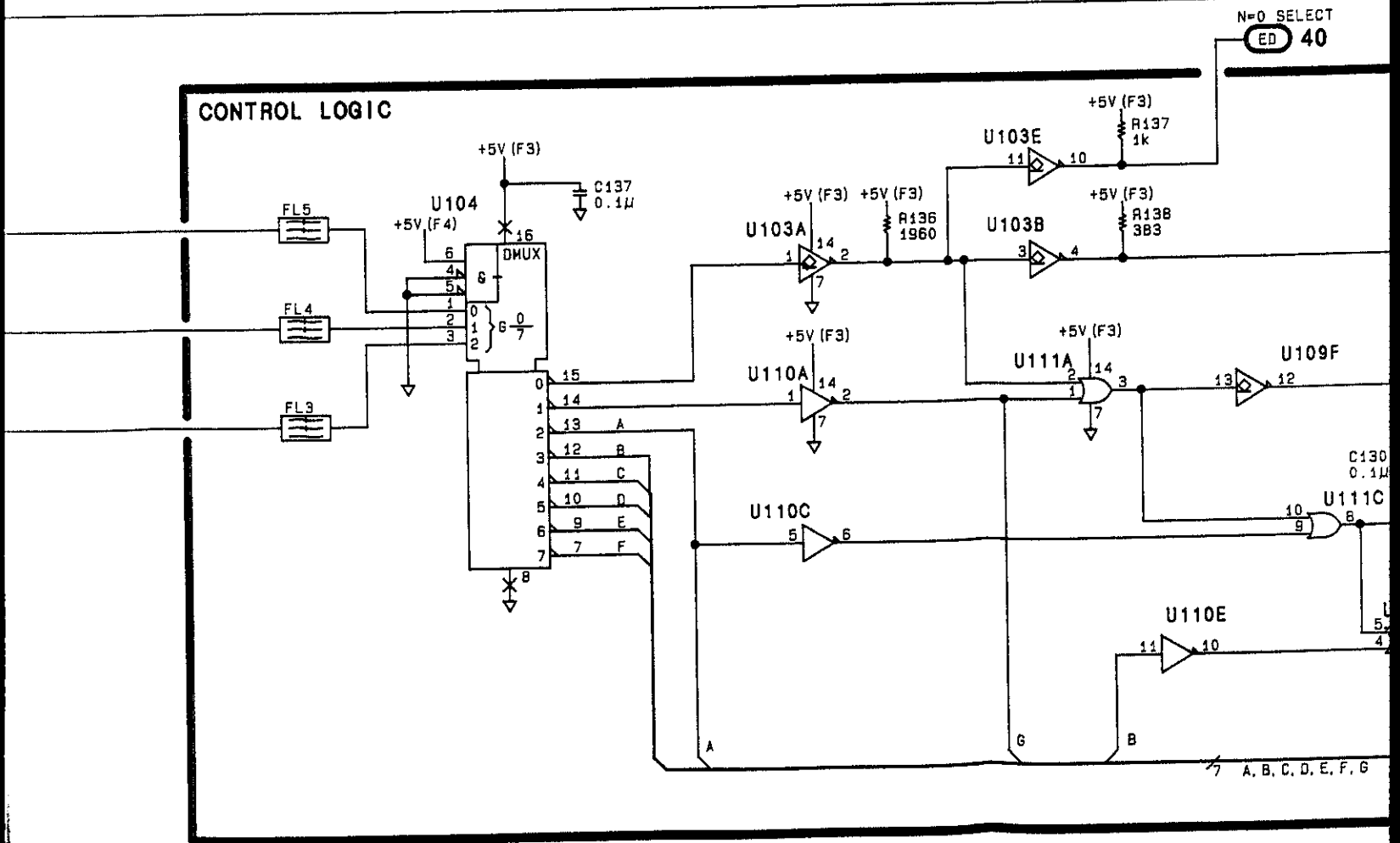
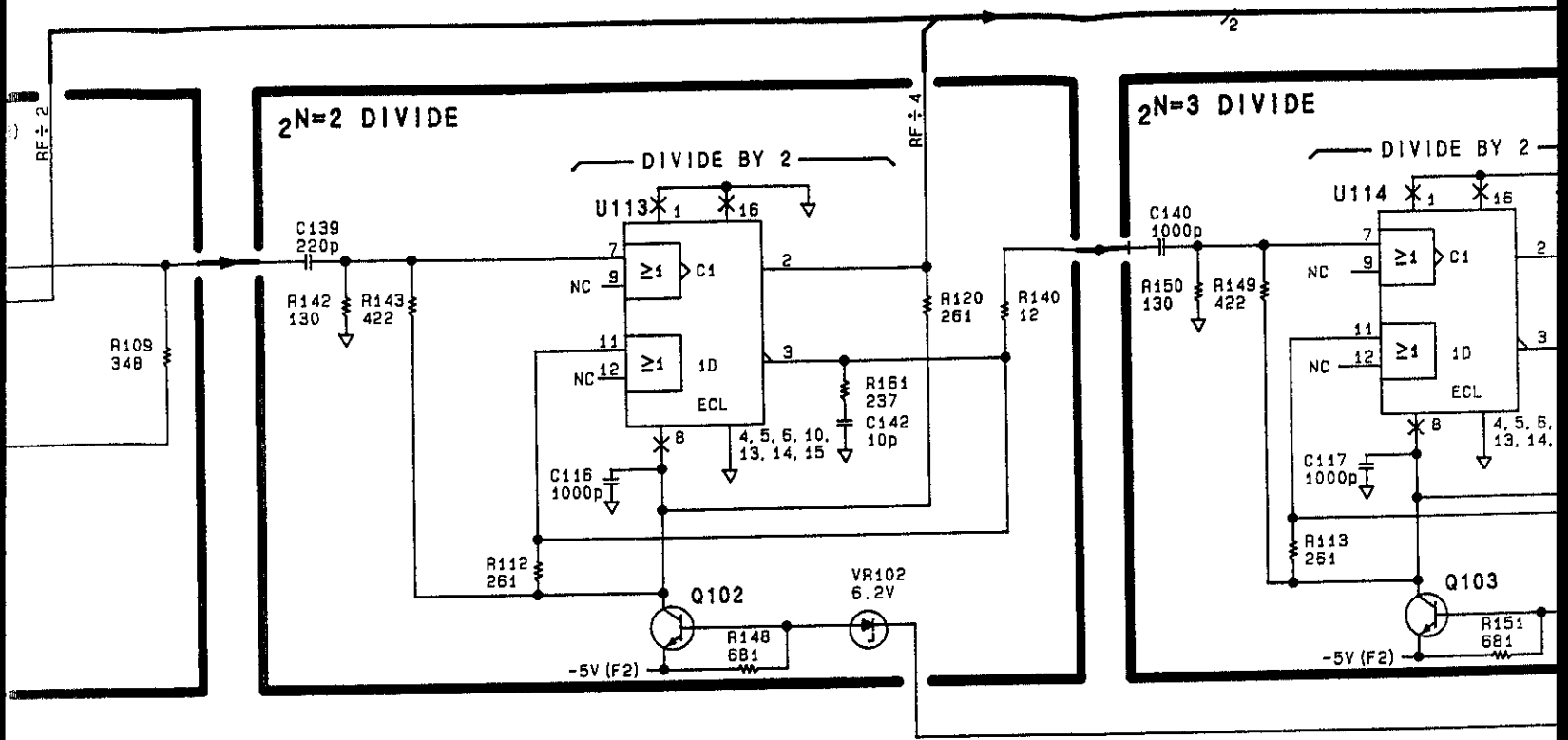


FIG. 80-114.5, SHEET 3 OF 5

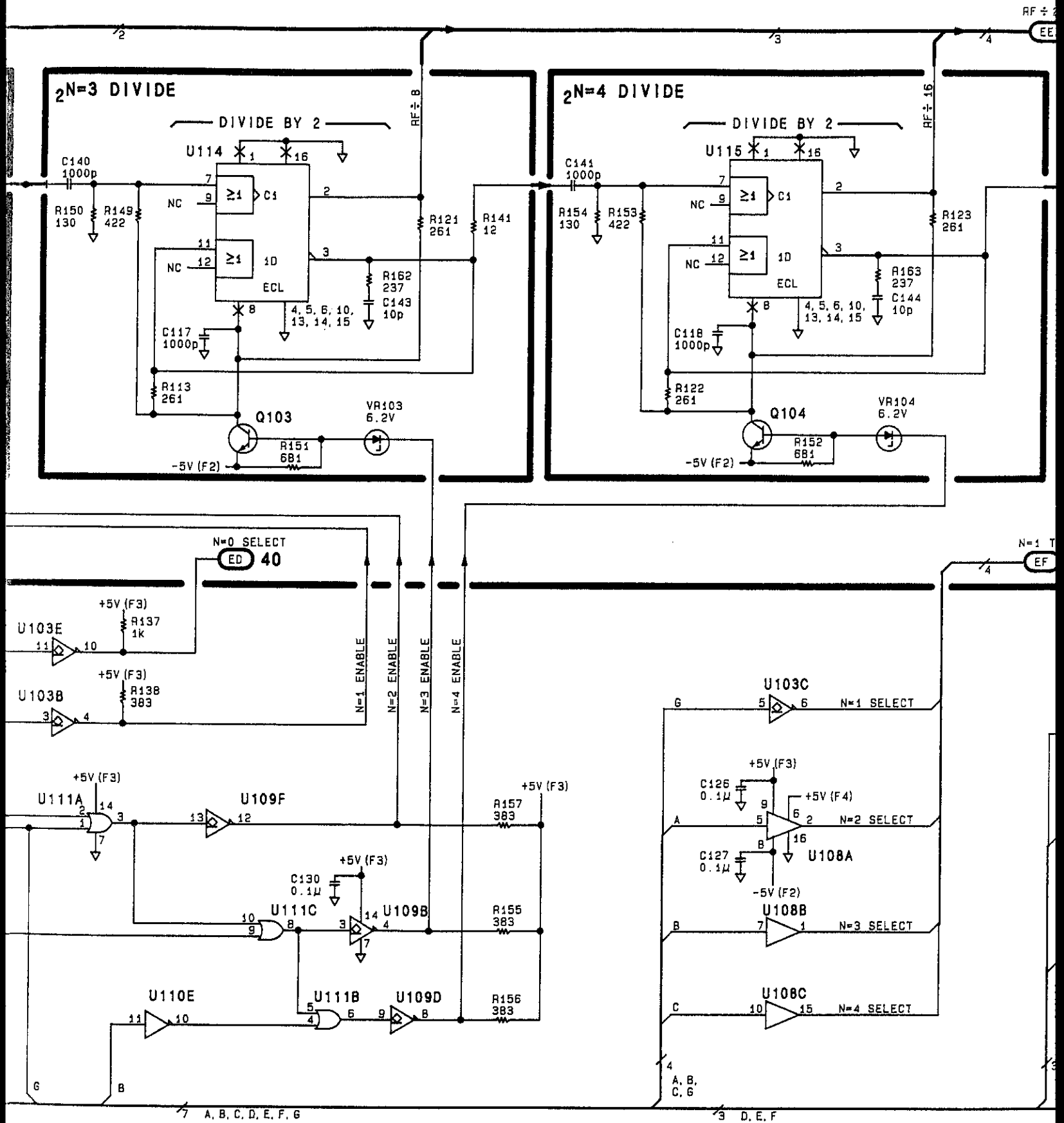


FIG. 80-114.5, SHT. 4 OF 5

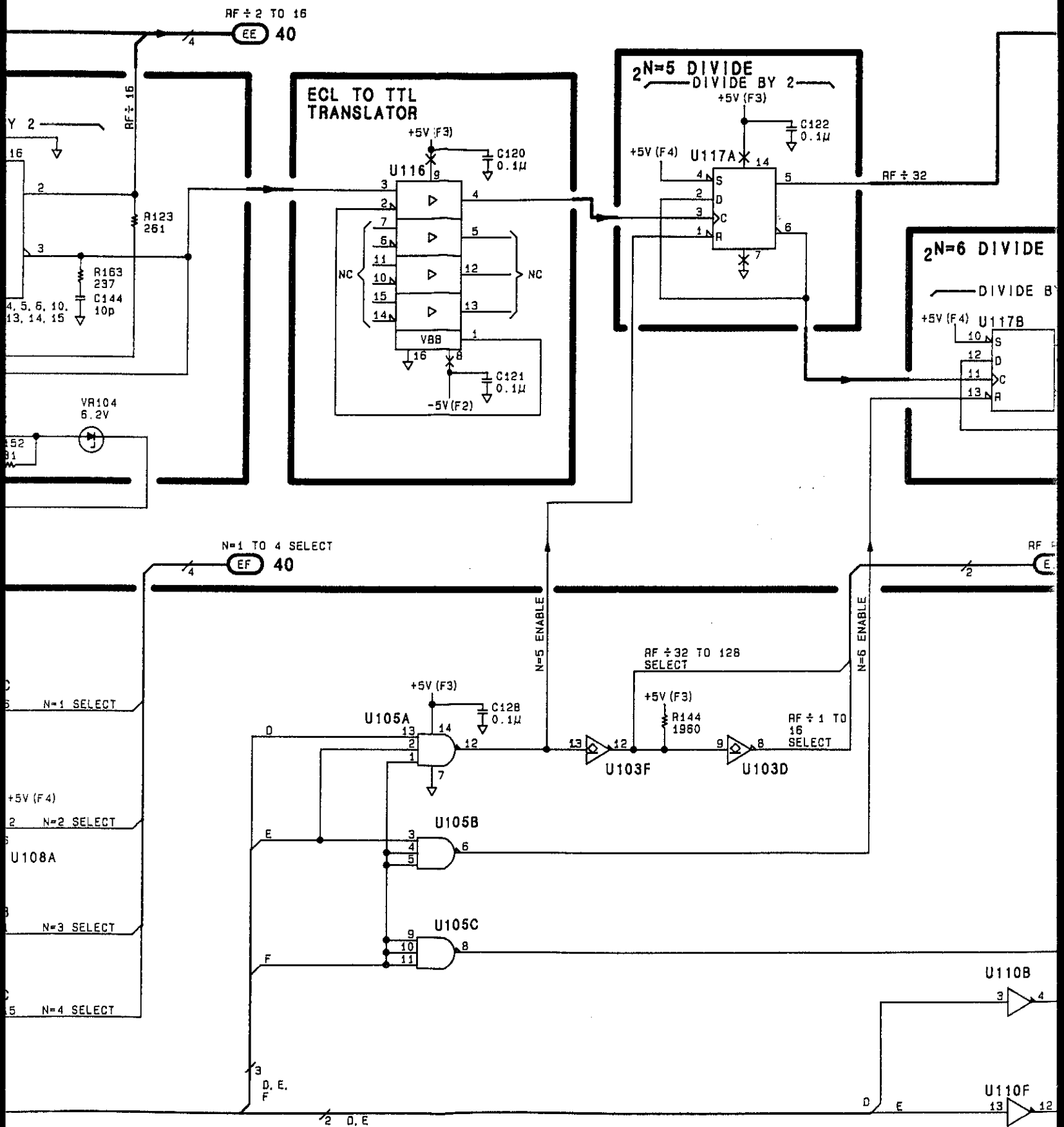
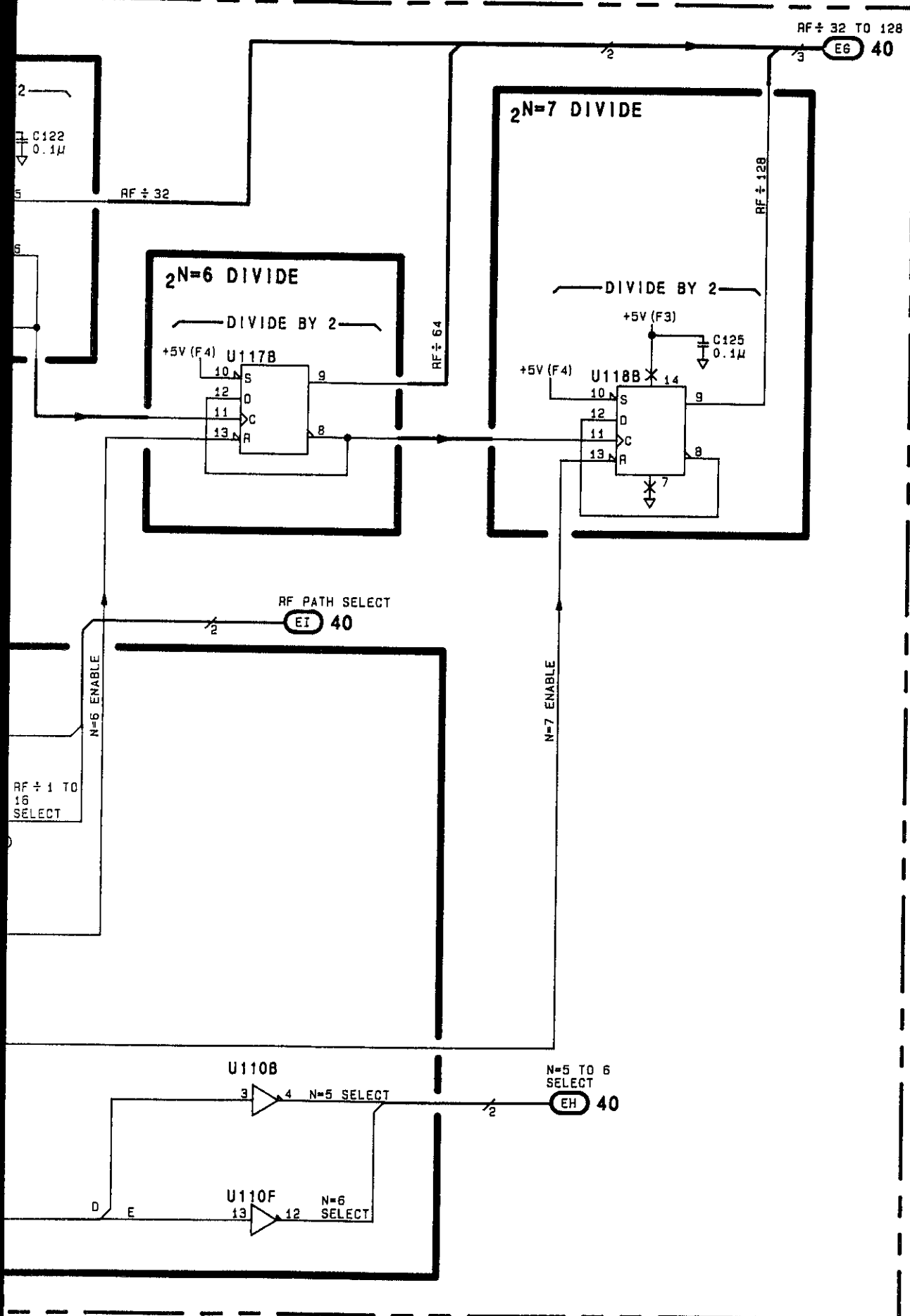


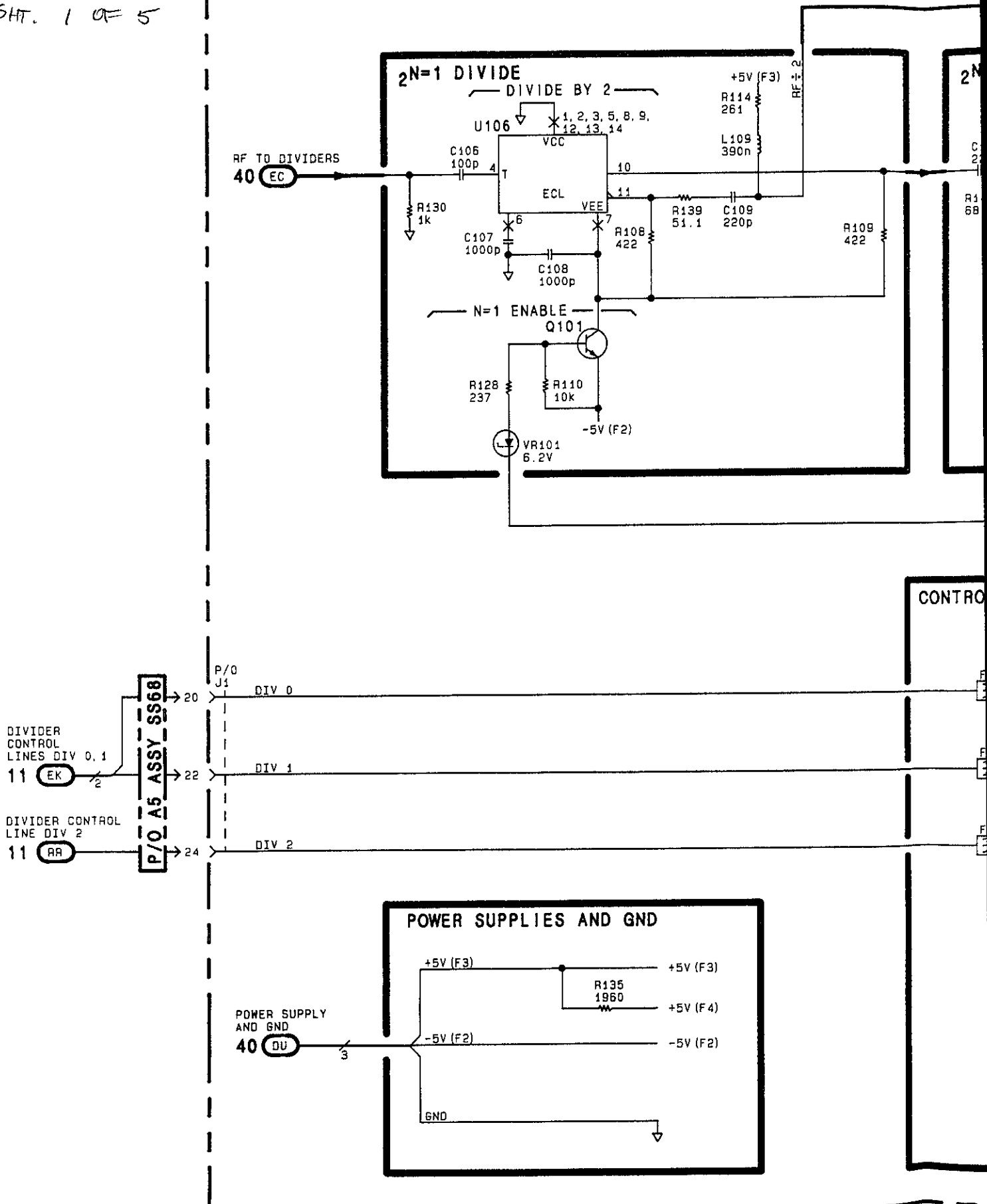
FIG. 80-114.5, SHEET 5 OF 5



SS41  
Figure 80-114.5  
80-114.5

FIG. 80-115  
 SH. 1 OF 5

P/O A12A3 SUM PHASE DETECTOR/DIVIDER ASSEMBLY (08642-60111)





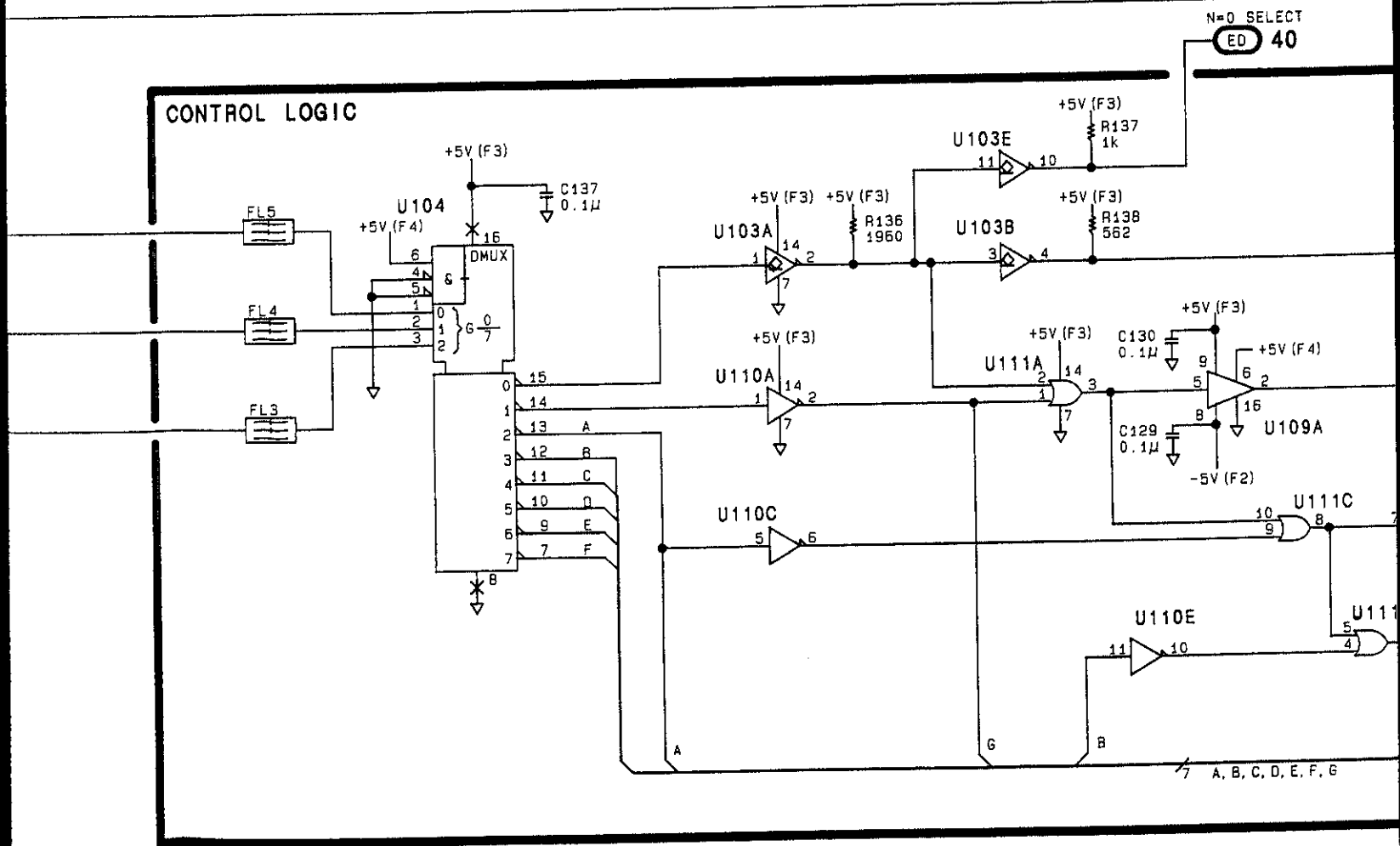
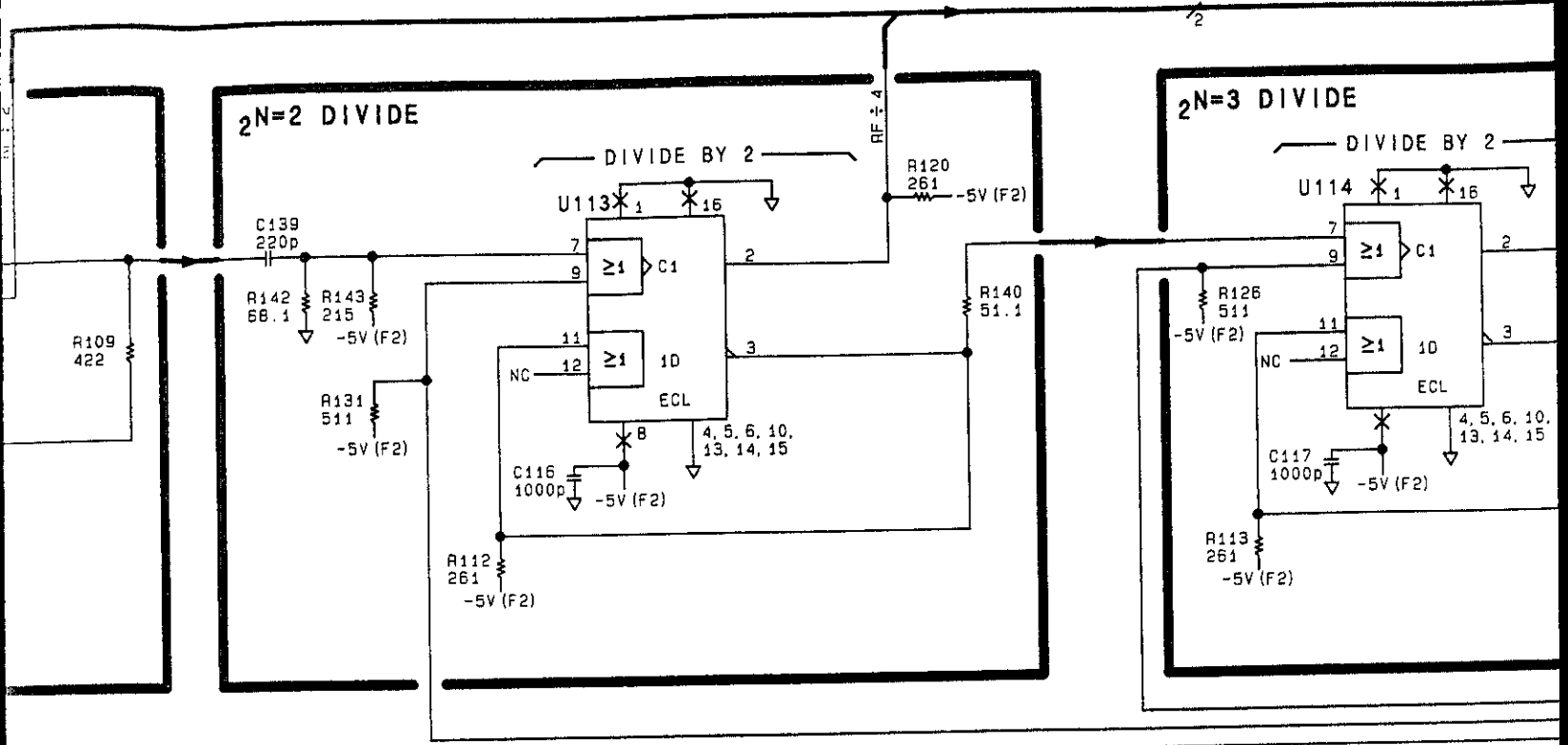


FIG. 80-115, SHEET 3 OF 5

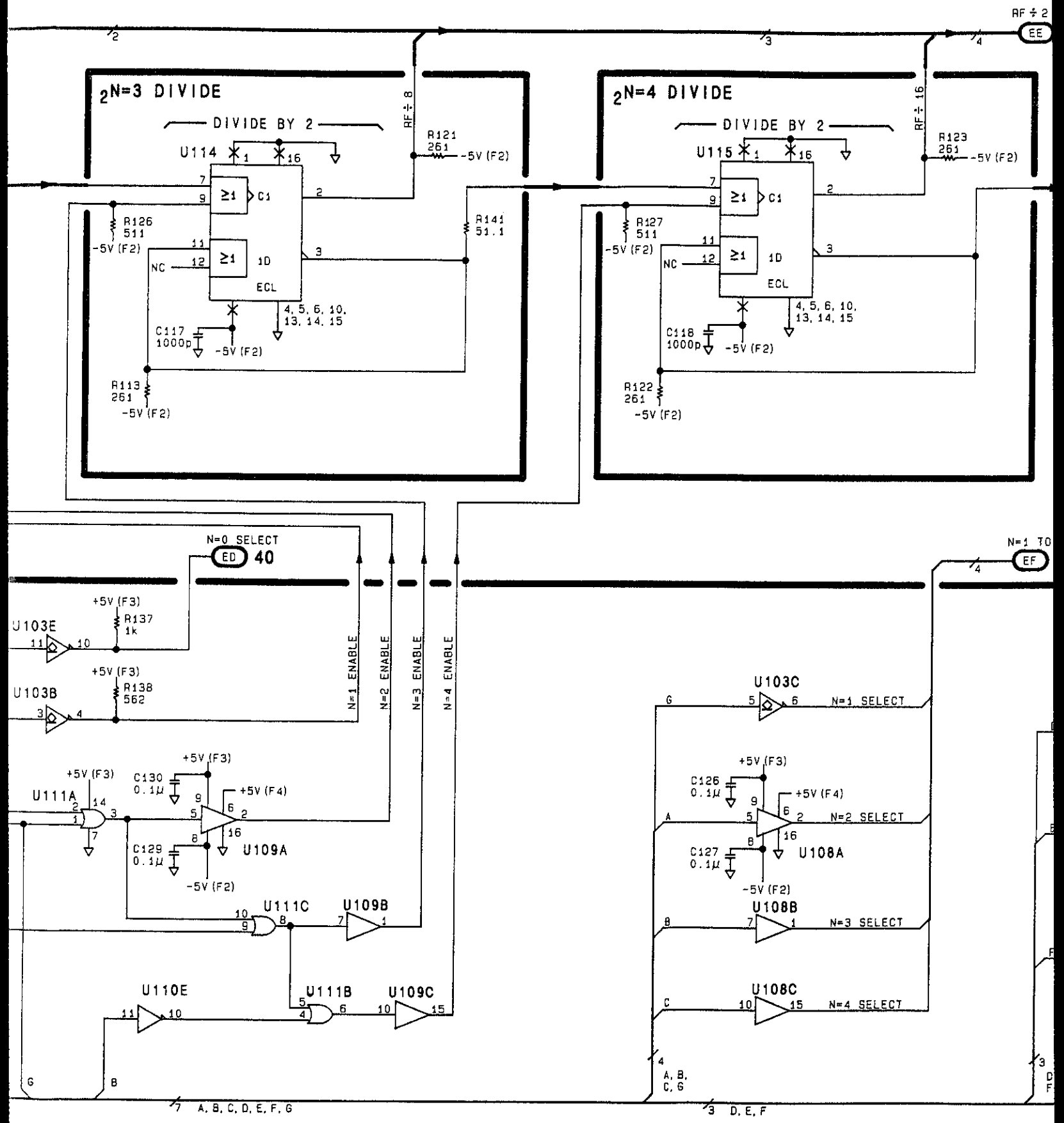


FIG. 80-115, SH. 4 OF 5

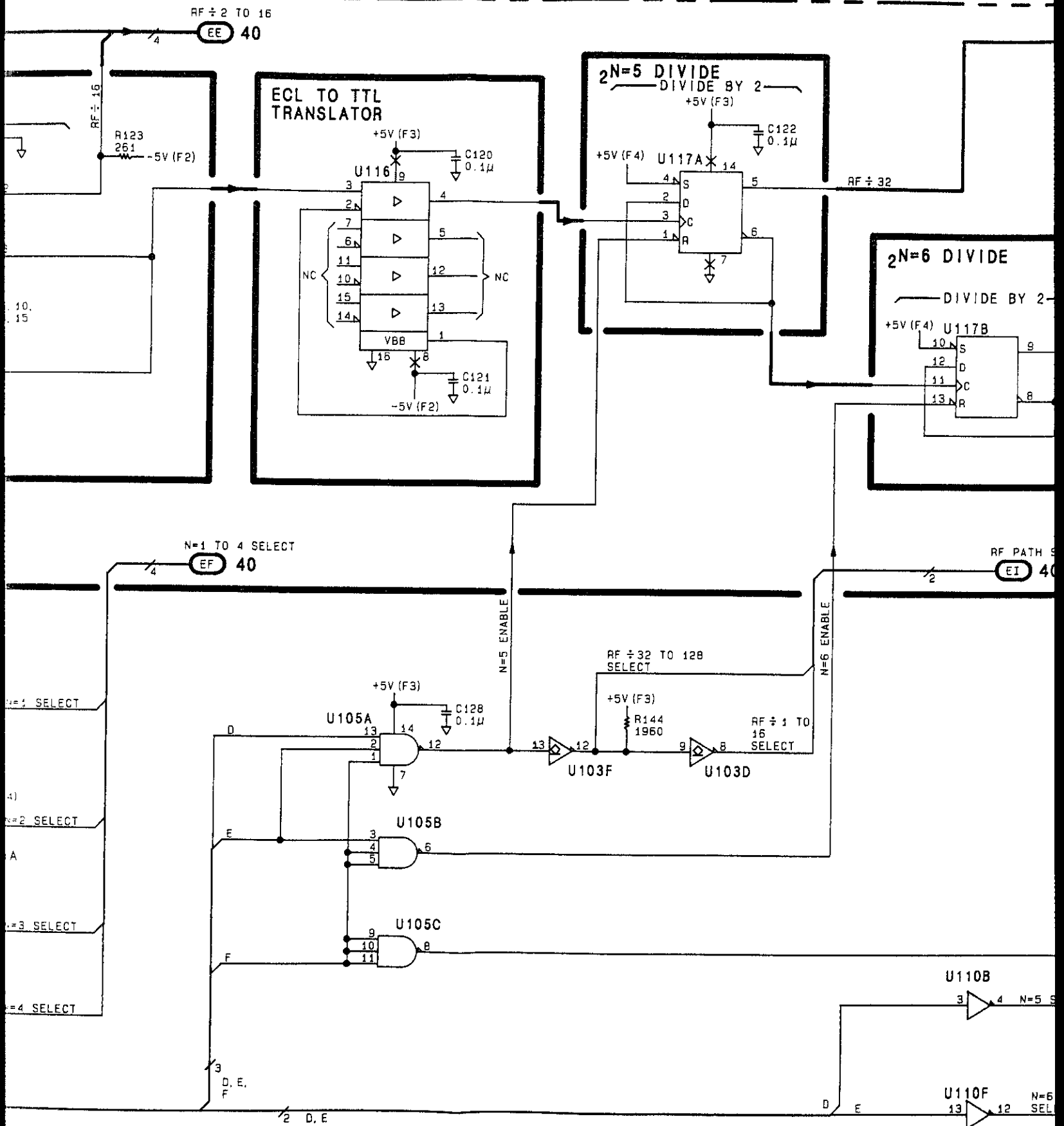


FIG. 80-115, SH. 5 OF 5

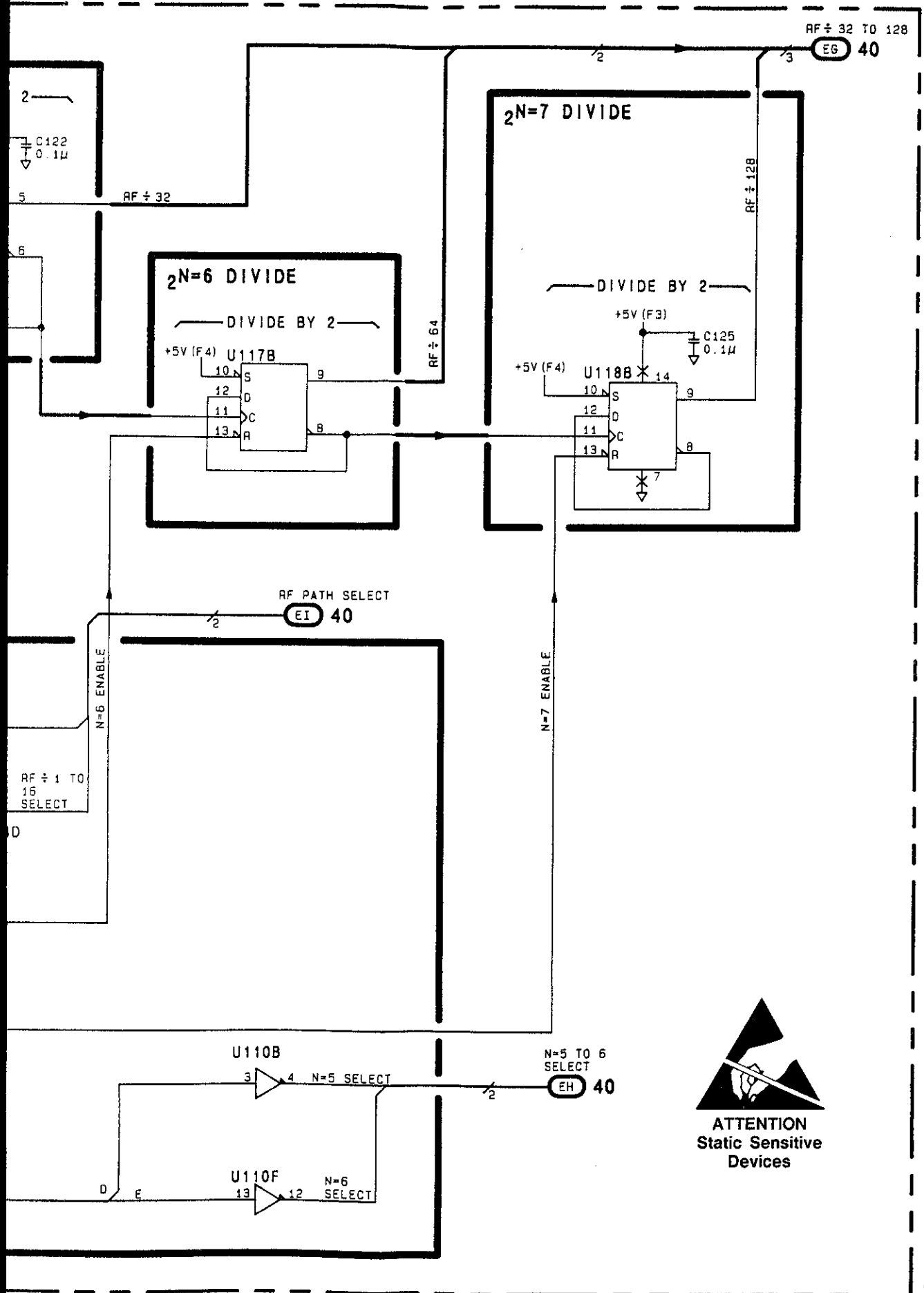


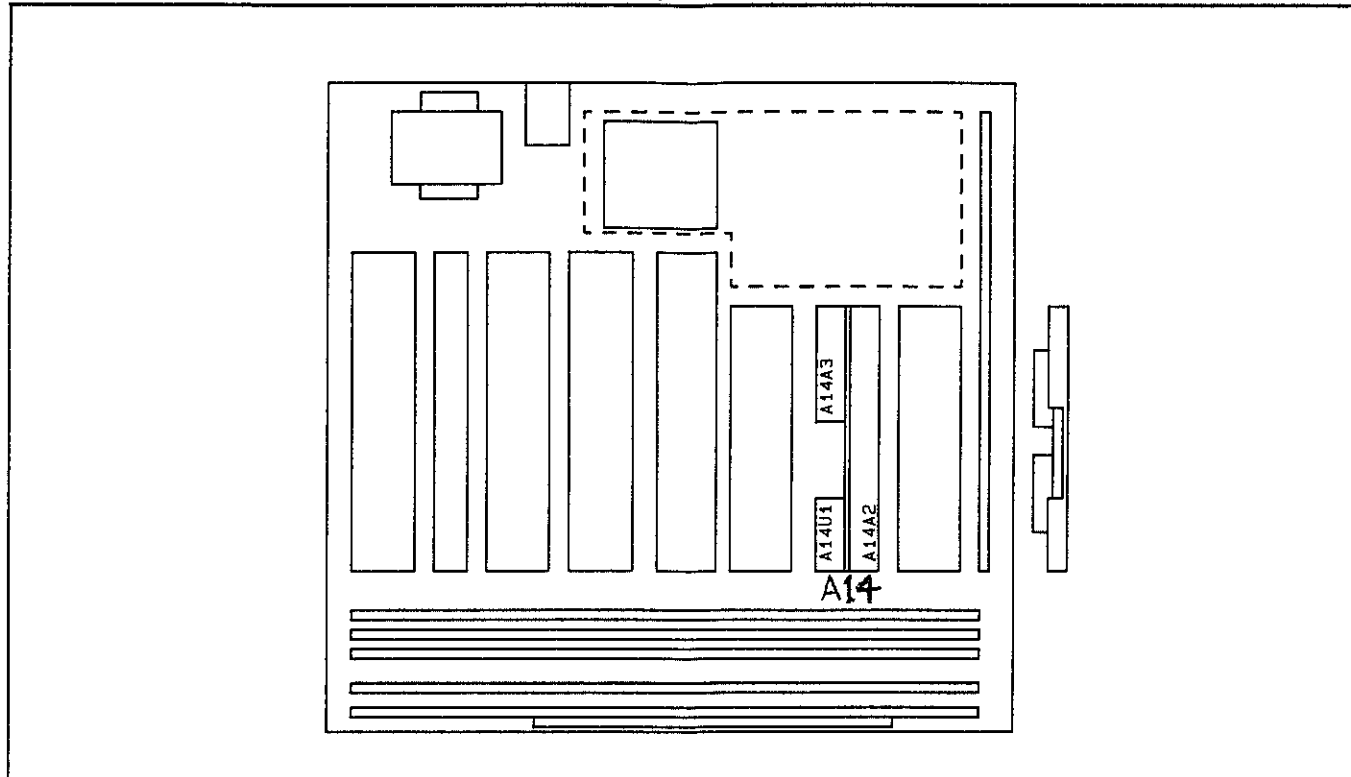
Figure **SS41**  
80-115  
80-115

A13 Output Filters / ALC Module

FIG. 8P-100

SHT. 1 OF 2

Assembly Locator



Simplified Block Diagram

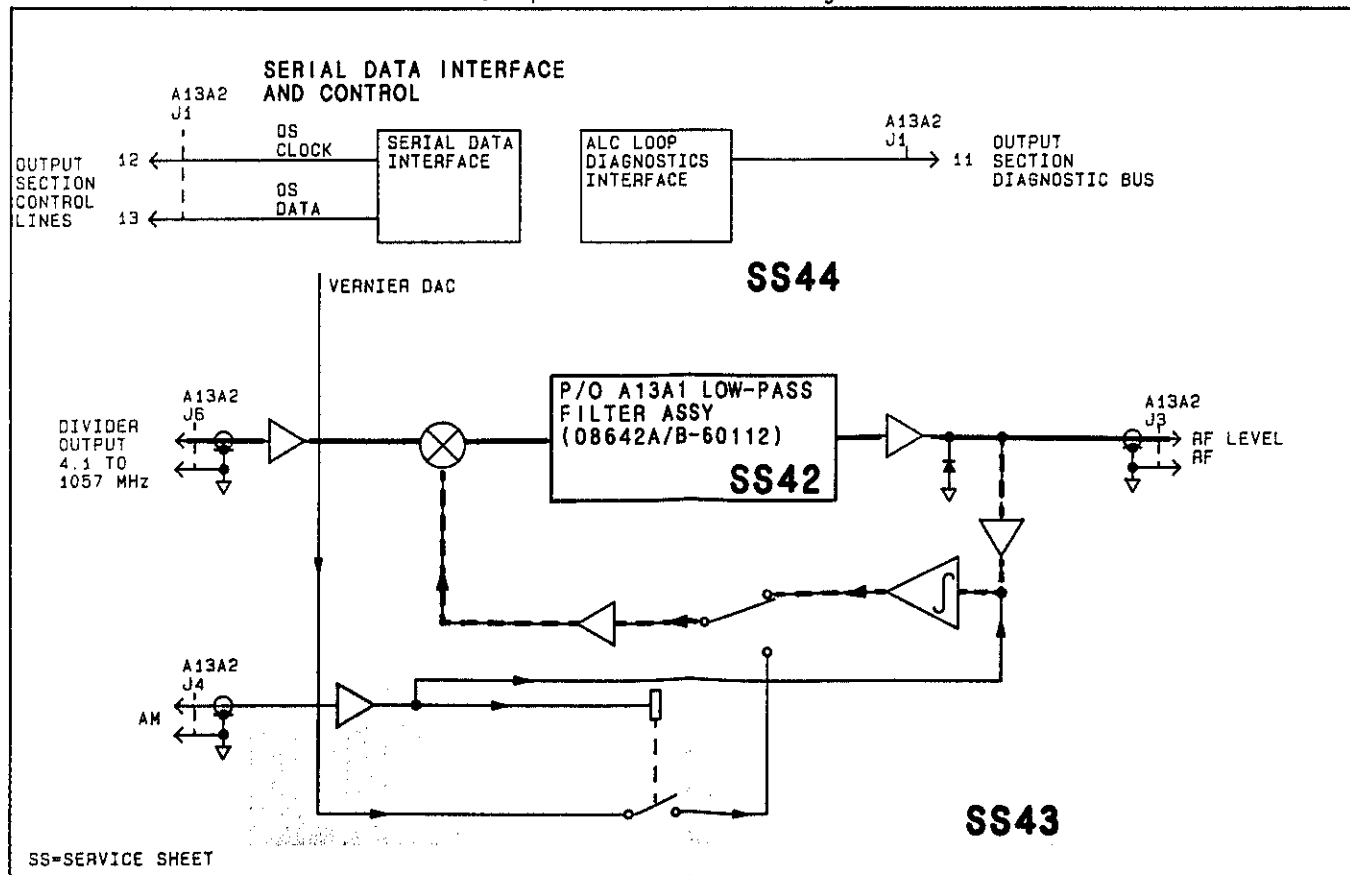


Figure 8P-100 BD14 General Information.

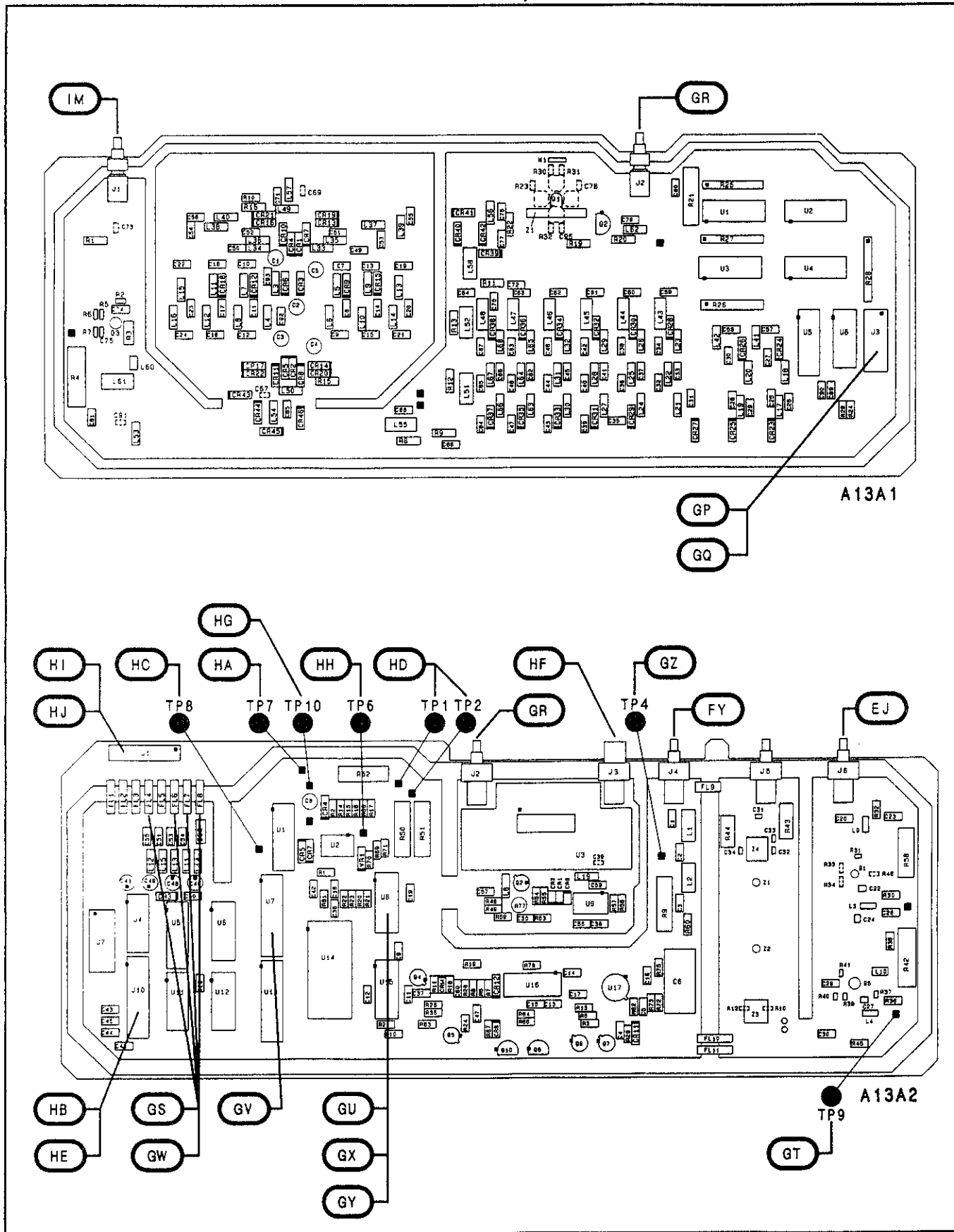
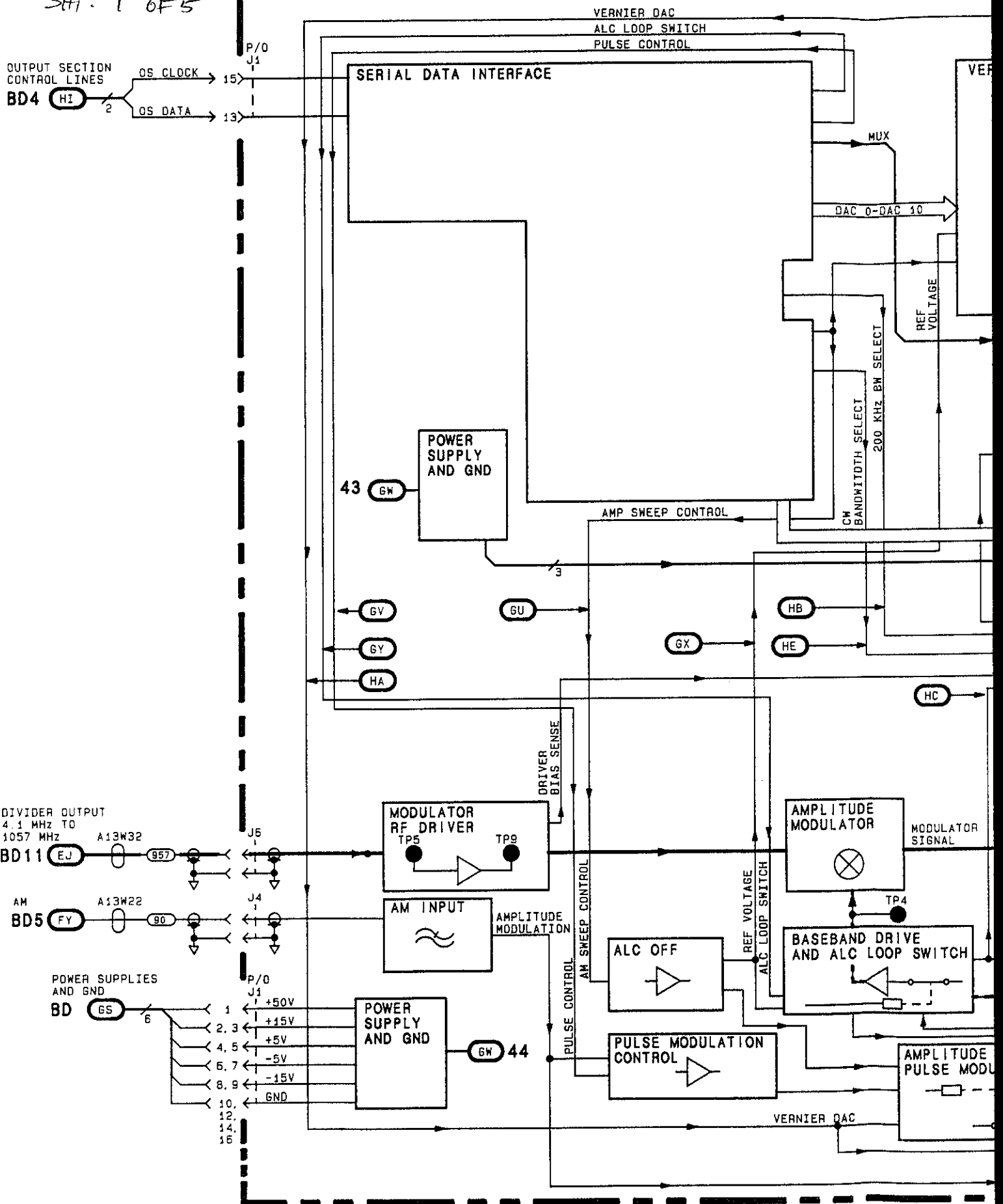


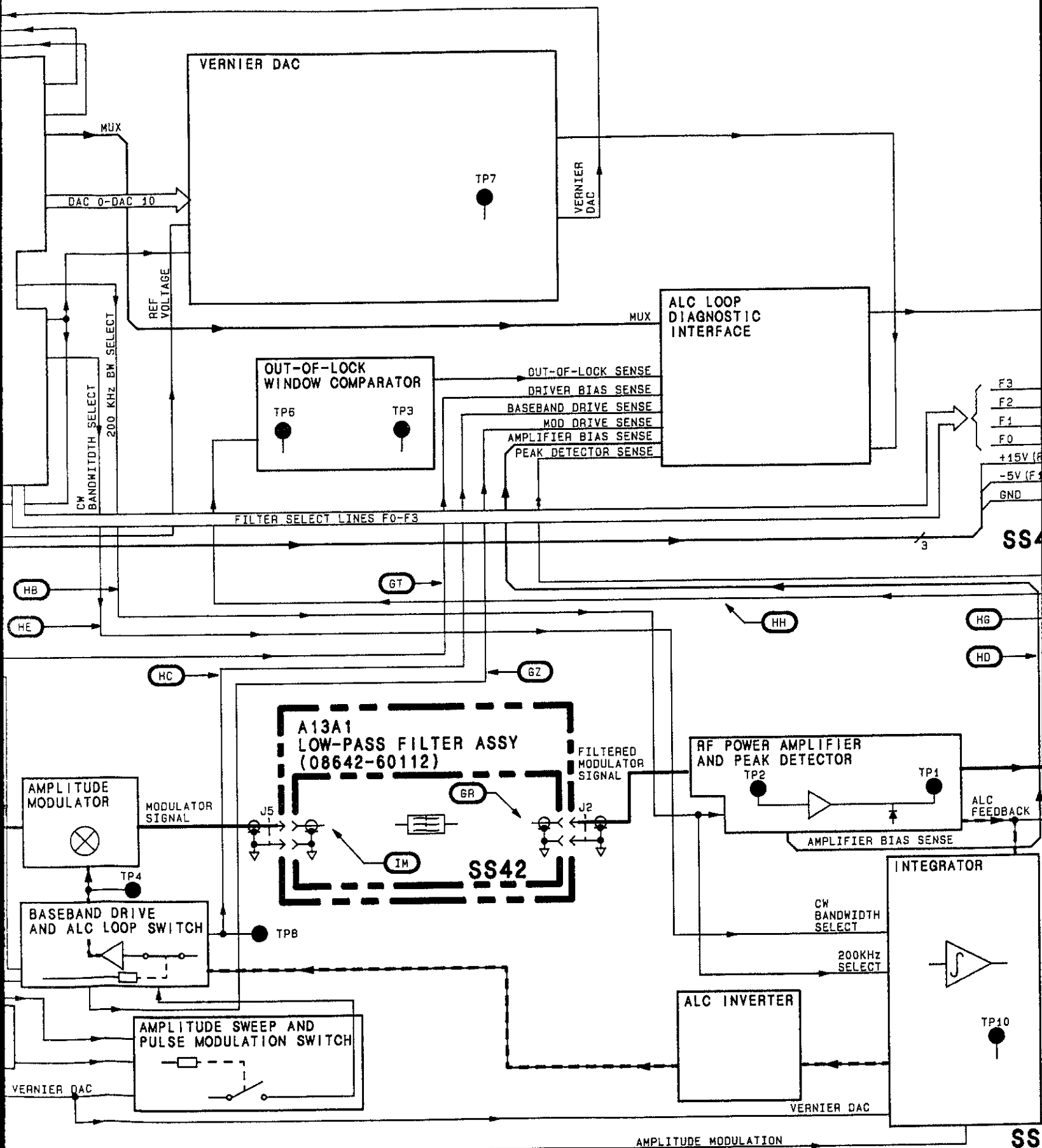
FIG. 8P-101

SHT. 1 OF 5

A13A2 ALC/POWER AMPLIFIER ASSEMBLY (08642-60113)







SS4

SS

FIG. 8P-101, SHEET 3 OF 5

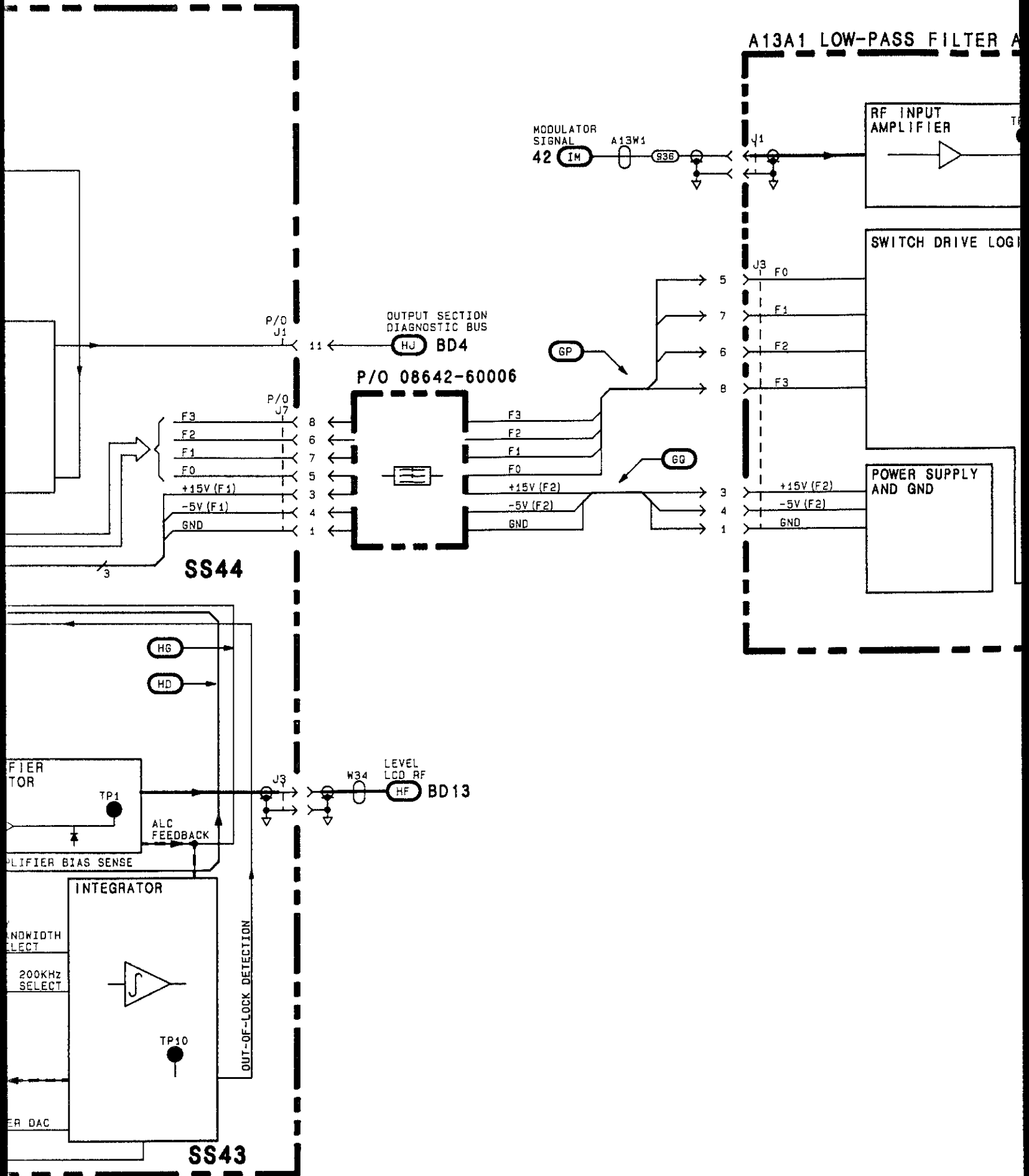


FIG. 8P-101, STA. 4 OF 5

A13A1 LOW-PASS FILTER ASSEMBLY (08642-60112)

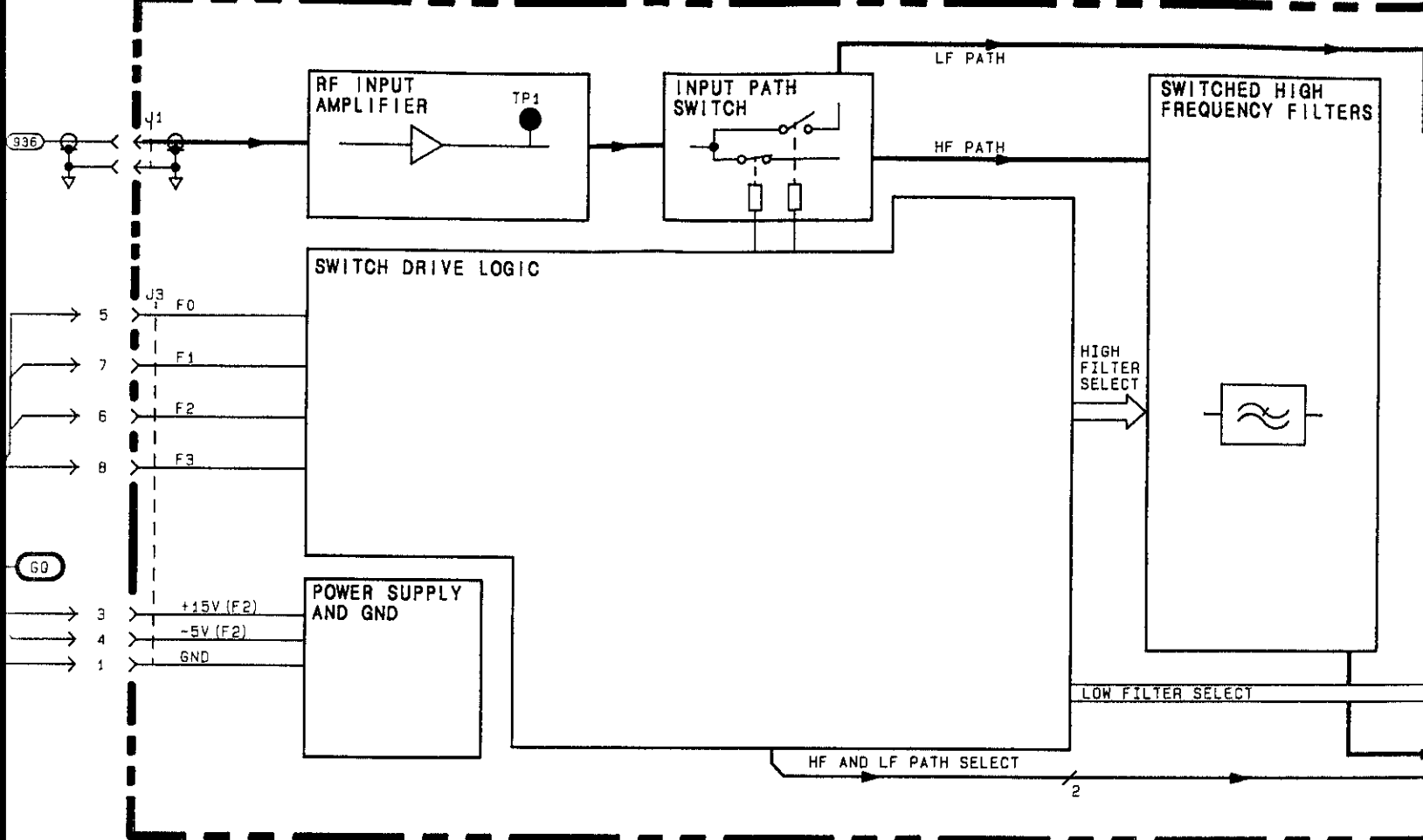
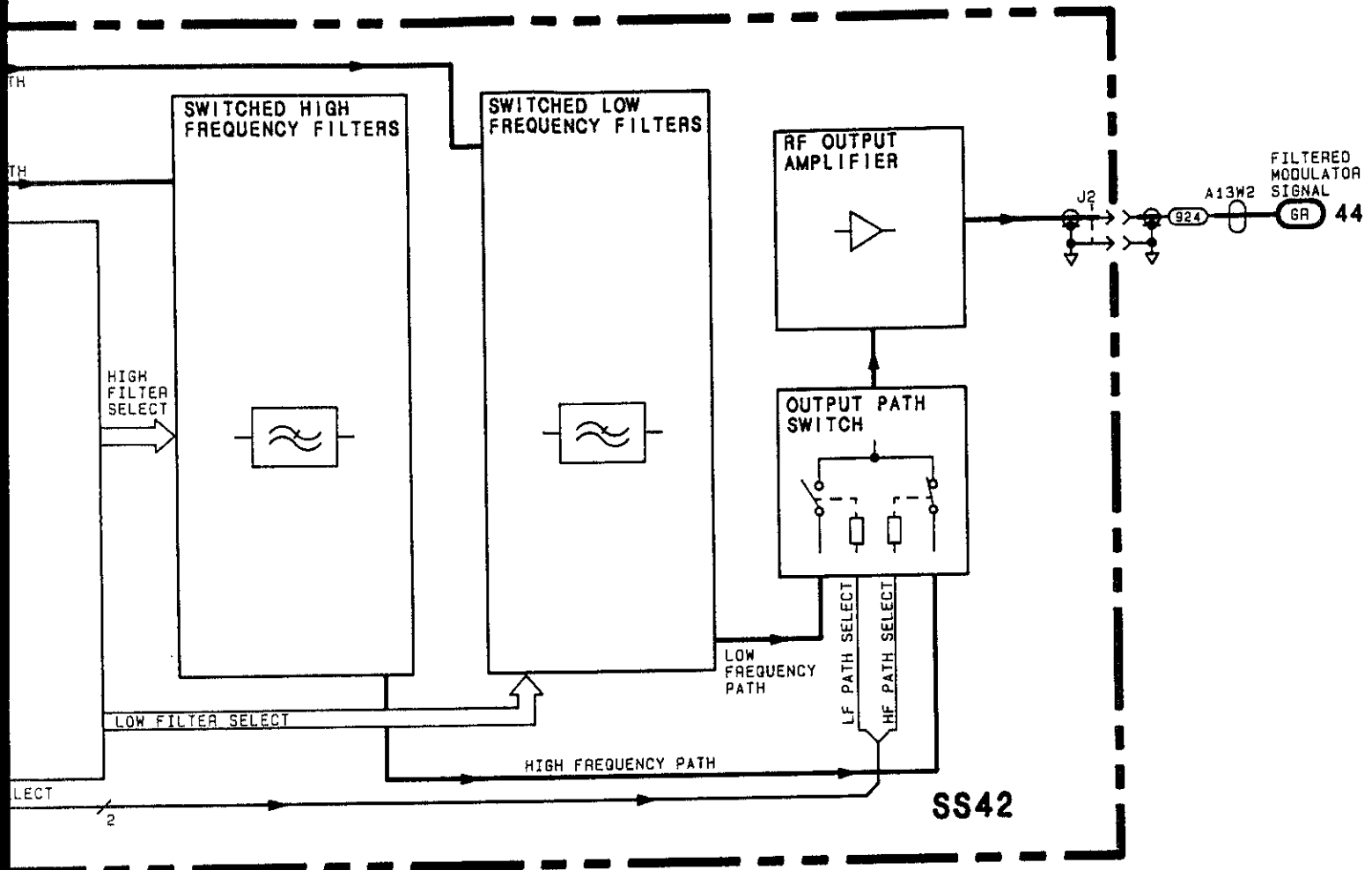


FIG. 8P-101  
SHT. 5 OF 5



BD14  
Figure 8P-101  
8P-101

FIG. 8P-102  
 SH: 1 OF 5

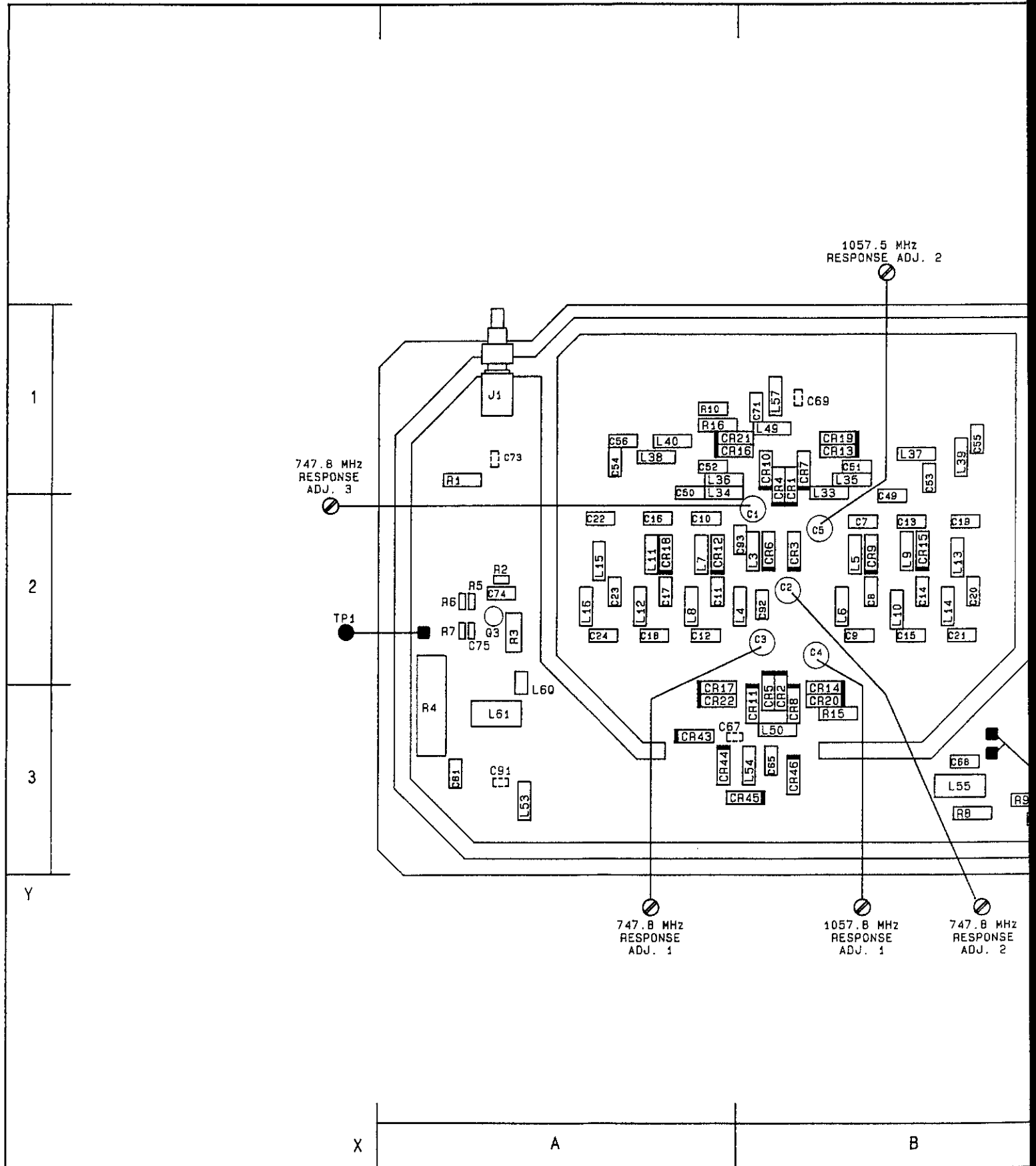
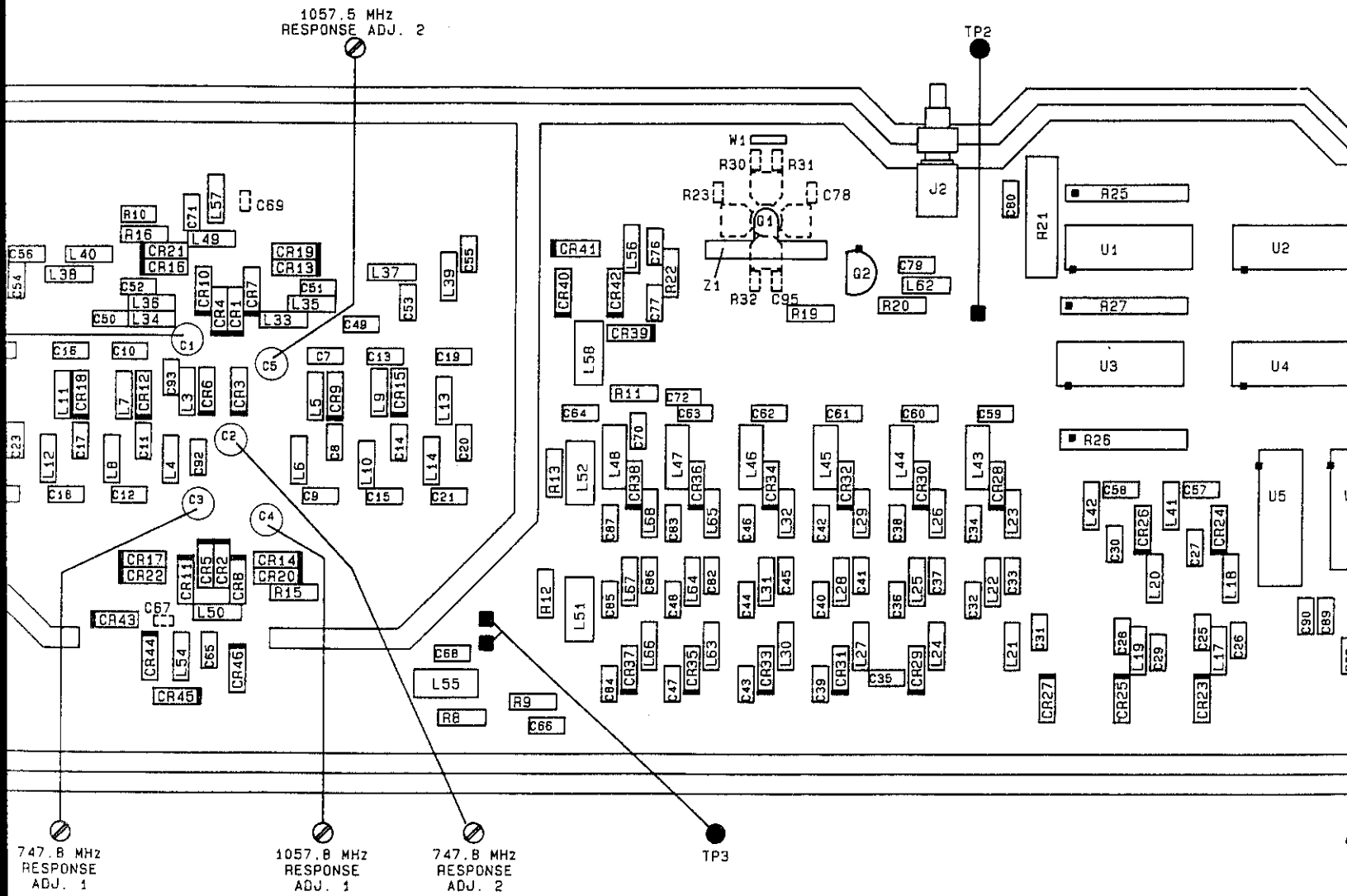


Figure 8P-102. SERVICE SHEET 42 INFORMATION

Compo

FIG. 8P-102  
SHT. 2 OF 5



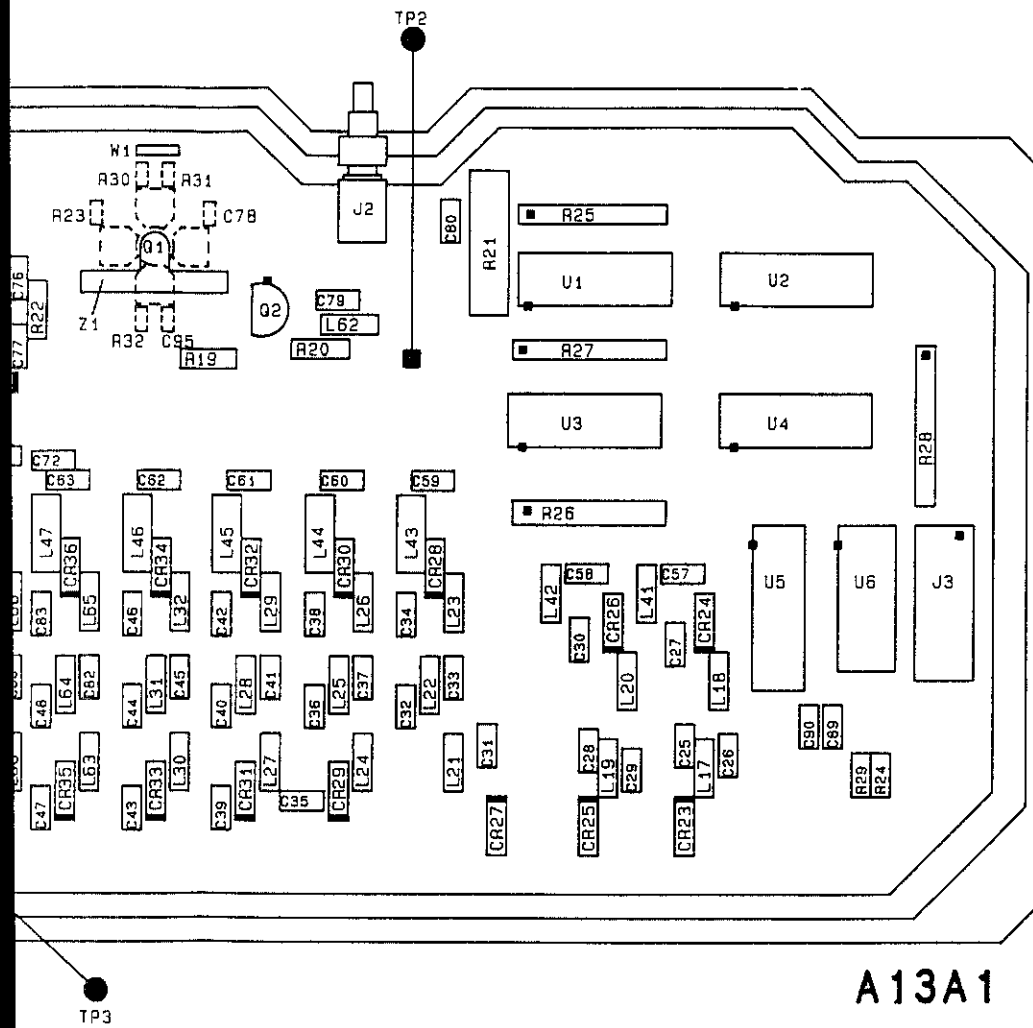
B

C

D

Component Locator

FIG. 8P-102  
SHT. 3 OF 5



C

D

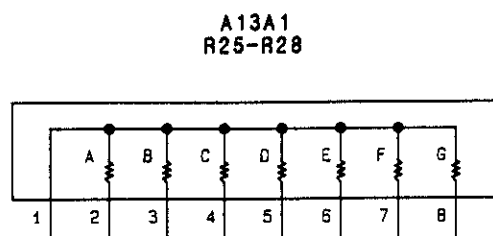
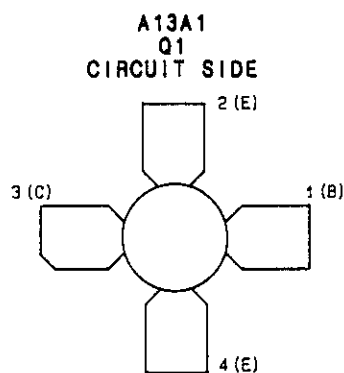
ator





## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. L69 is a printed circuit trace inductor.
4. Z1 is acting as a ground strap, connecting the stud of Q1 to ground.



Schematic General Information

**CHANGES****All Serial Prefixes****On the Component Locator:**

- CR51, CR52 - Immediately above C19, add CR51. Immediately above C22, add CR52.

**In Component Coordinates:**

- CR51, CR52 - Add CR51 B,2. Add CR52 A,2.

**On the schematic:**

- To the left of **RF INPUT AMPLIFIER**, change "44" to "43" next to the bullet "IM".
- To the right of **RF OUTPUT AMPLIFIER**, change "44" to "43" next to the bullet "GR".
- CR51, CR52 - In **SWITCHED HIGH FREQUENCY FILTERS**, in the 132.2 MHz filter, add CR51 (same symbol as CR19) from the cathode of CR19 to ground. Orient CR51 with its cathode to ground. Directly below, in the 93.5 MHz filter, add CR52 from the cathode of CR21 to ground in the same orientation and same symbol as CR51.
- C29, C38 - In **SWITCHED LOW FREQUENCY FILTERS**, in the 46.7 MHz filter, change the value of C29 to 160p. In the 23.4 MHz filter, change C38 to C42 and assign it a value of 220p.
- C27, C35 - In **SWITCHED LOW FREQUENCY FILTERS**, in the 66.1 MHz filter, change the value of C27 to 68p Farads. In the 23.4 MHz filter change the value of C35 to 150p Farads.
- HF 5 - In **SWITCHED HIGH FREQUENCY FILTERS**, change HF 5 frequency from 246.4 to 264.4 MHz.
- To the left of **SWITCH DRIVE LOGIC**, change the service sheet number for **FILTER SELECT LINES**, "GP" from 43 to 44.
- In **SWITCHED LOW FREQUENCY FILTERS**, in the 16.5 MHz filter, change the reference designator for C38 to C42.

**CHANGES****2511A to 2550A**

On the Component Locator:

- Note changes on 8P-102.6

On the schematic:

- In the upper left portion of the schematic, change A13A1 part number to 08642-60212.
- R3, R5, R6, R7, C75 - In **RF INPUT AMPLIFIER**, change R3 value to 178. Change R5, R6, and R7 values to 42.2 ohms. Change C75 value to 3.3p.
- C26, C85, C86 - In the **SWITCHED LOW FREQUENCY FILTERS**, change C26 value to 120p. (C26 is in the 66.1 MHz filter). Change C85 and C86 values to 1100p. (C85 and C86 are in the 5.85MHz filter).
- Replace the appropriate portion of the schematic with the partial on 8P-102.5.
- Note: The 08642-60212 board ground comes from the 08642-60213 board by the outer conductor of the coax cables and the castings.

**2512A to 2550A**

On the schematic partial:

- C97 - On change page 8P-102.5, in **OUTPUT PATH SWITCH** add C97, 1p, from the anode of CR41 to ground. Change the caption below the schematic partial to read "CHANGES TO FIGURE 8P-103 (2512A to 2550A)"
- To the right of **RF OUTPUT AMPLIFIER**, change "44" to "43" next to the bullet labeled "GR".

On the schematic:

- C74 - In **RF INPUT AMPLIFIER**, change the value of C74 to 1000p.

## CHANGES

**2529A to 2550A**

On the Component Locator:

- Note changes on page 8P-102.7

In Component Coordinates:

- C100, C101, R39 - Add C100, C101, and R39. Assign grid locations of C,1 for all three.

On the schematic partial:

- C100, C101, R39 - On change page 8P-102.5, in **RF OUTPUT AMPLIFIER**, add a resistor R39 in series with the cathode of CR50 and ground. Assign it a value of 220 ohms. In parallel with R39, add a capacitor, C100. Assign it a value of 220p Farads. Also in parallel with R39, add another capacitor, C101. Assign it a value of 220p Farads. Change the caption below the schematic partial to read "CHANGES TO 8P-103 (2529A to 2550A).

**2534A to 2550A**

On the schematic partial:

- C96, L70, R34, R35 - On change page 8P-102.5, remove the series path between U5 pin 11 and the anode of CR49. This path includes all parts listed above and amplifier U5G becomes unused. Change the caption below the schematic partial to read "CHANGES TO 8P-102.3 (2534A to 2550A).

**2535A to 2550A**

On the schematic:

- C25-C28, C30 - In **SWITCHED LOW FREQUENCY FILTERS**, in the 66.1 MHz filter, change the values of the following components to these new values:

C25 - 47p  
C26 - 100p  
C27 - 47p

In the 46.7 MHz filter, change the values of the following components to these new values:

C28 - 82p  
C30 - 82p  
C29 - 160p

**CHANGES****2551A and above****On the Component Locator:**

- Note new Component Locator on page 8P-102.10

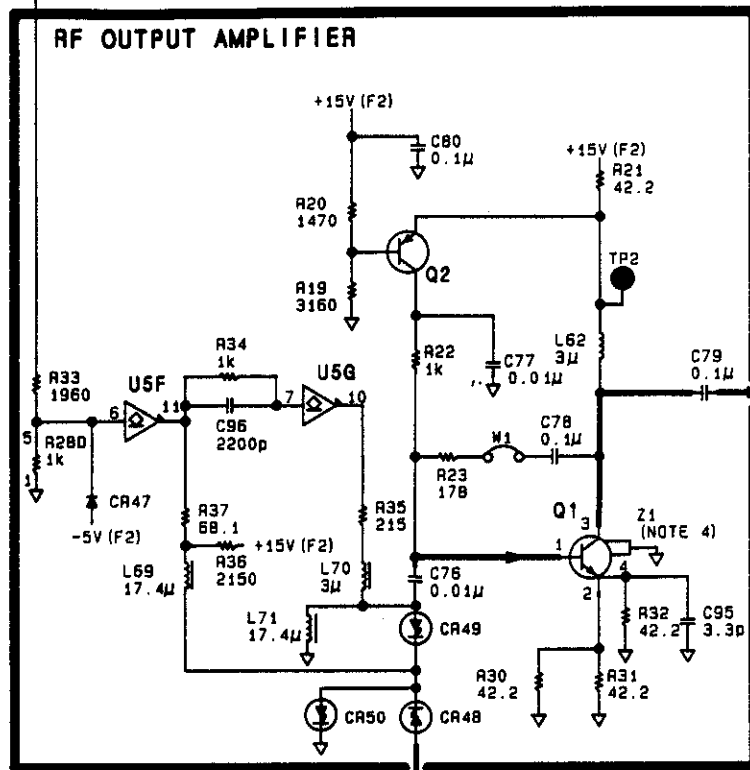
**In Component Coordinates:**

- Note new Component Coordinates table on page 8P-102.10

**On the schematic:**

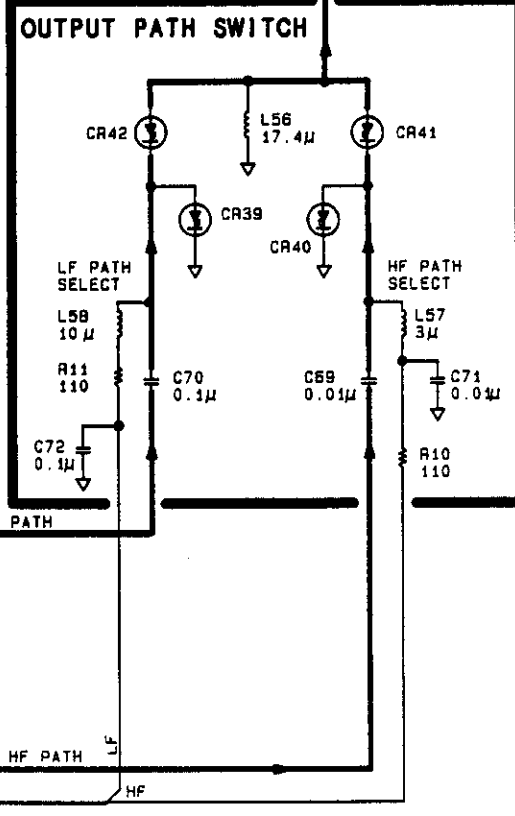
- C96, C97, C98, C99, R34, R35, R38, L70 - Note new SS42 on page 8P-102.11

PULSE MOD  
43 (PM) → 1

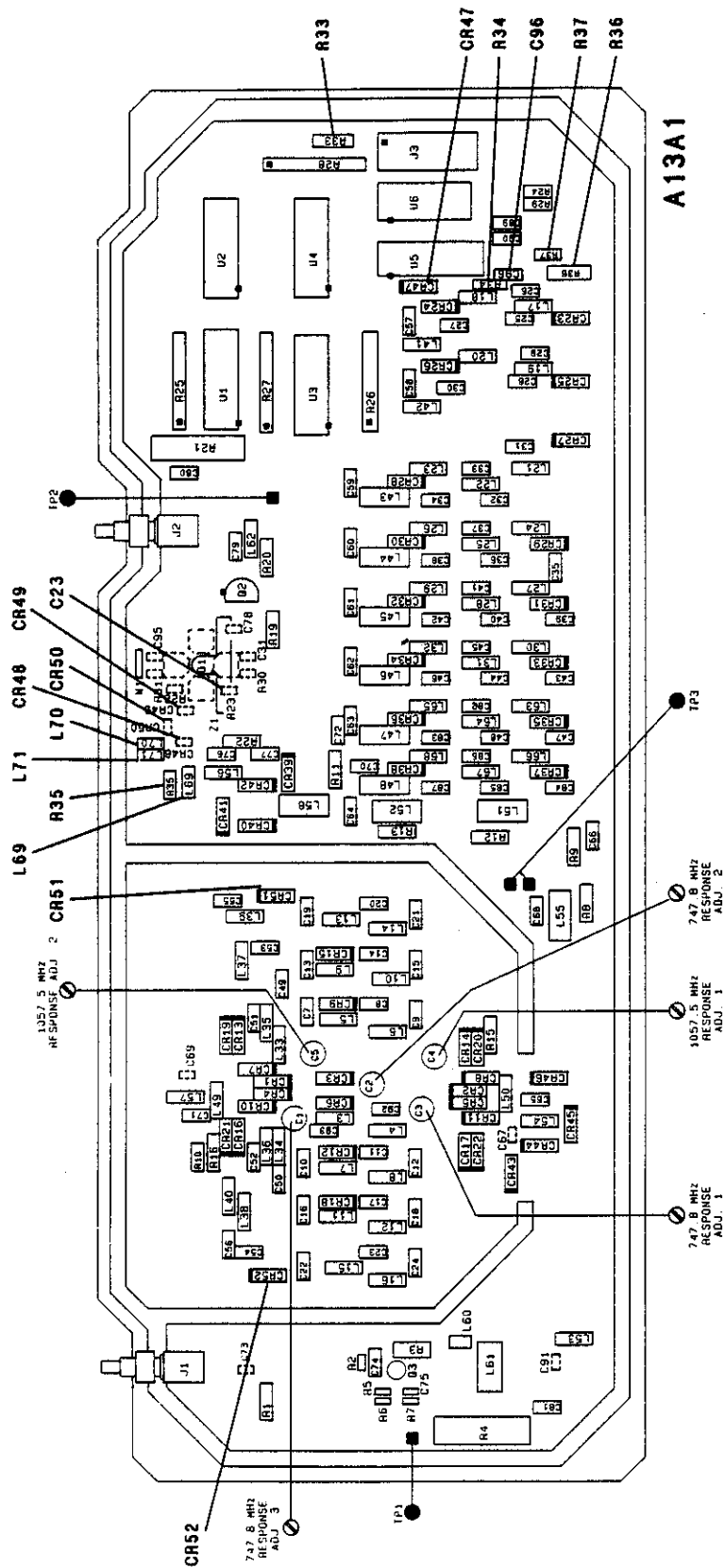


**WARNING**

Q1 INCORPORATES BERYLLIUM OXIDE. THE DUST OF WHICH IS TOXIC. THIS DEVICE IS ENTIRELY SAFE, PROVIDED THAT THE BeO DISC IS NOT DAMAGED. SEE GENERAL SERVICE INFORMATION.



CHANGES TO FIGURE 8P-103 (2511A to 2550A)



CHANGES TO FIGURE 8P-102 (2511A to 2550A)

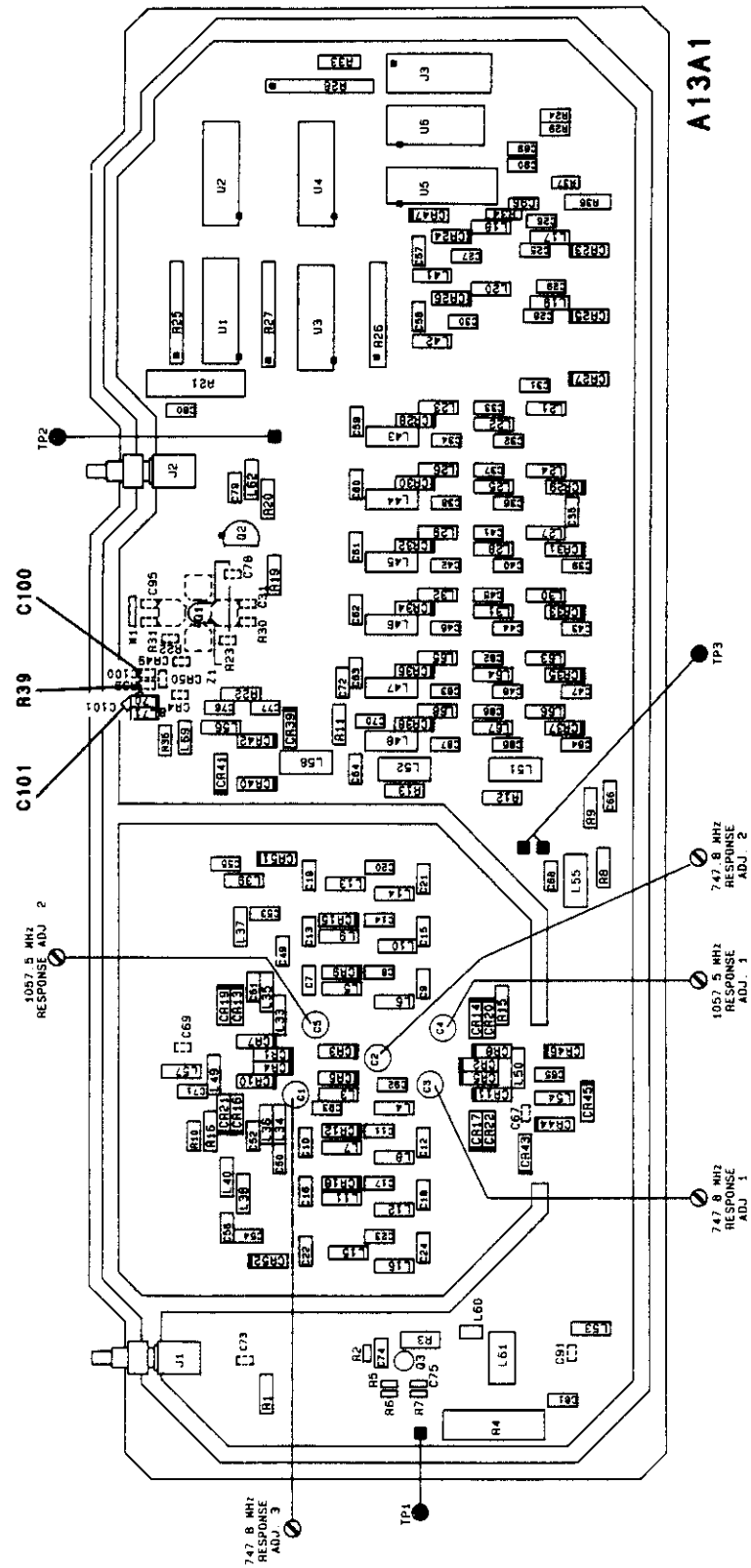




FIG. 8P-102  
 SH. 1 OF 5

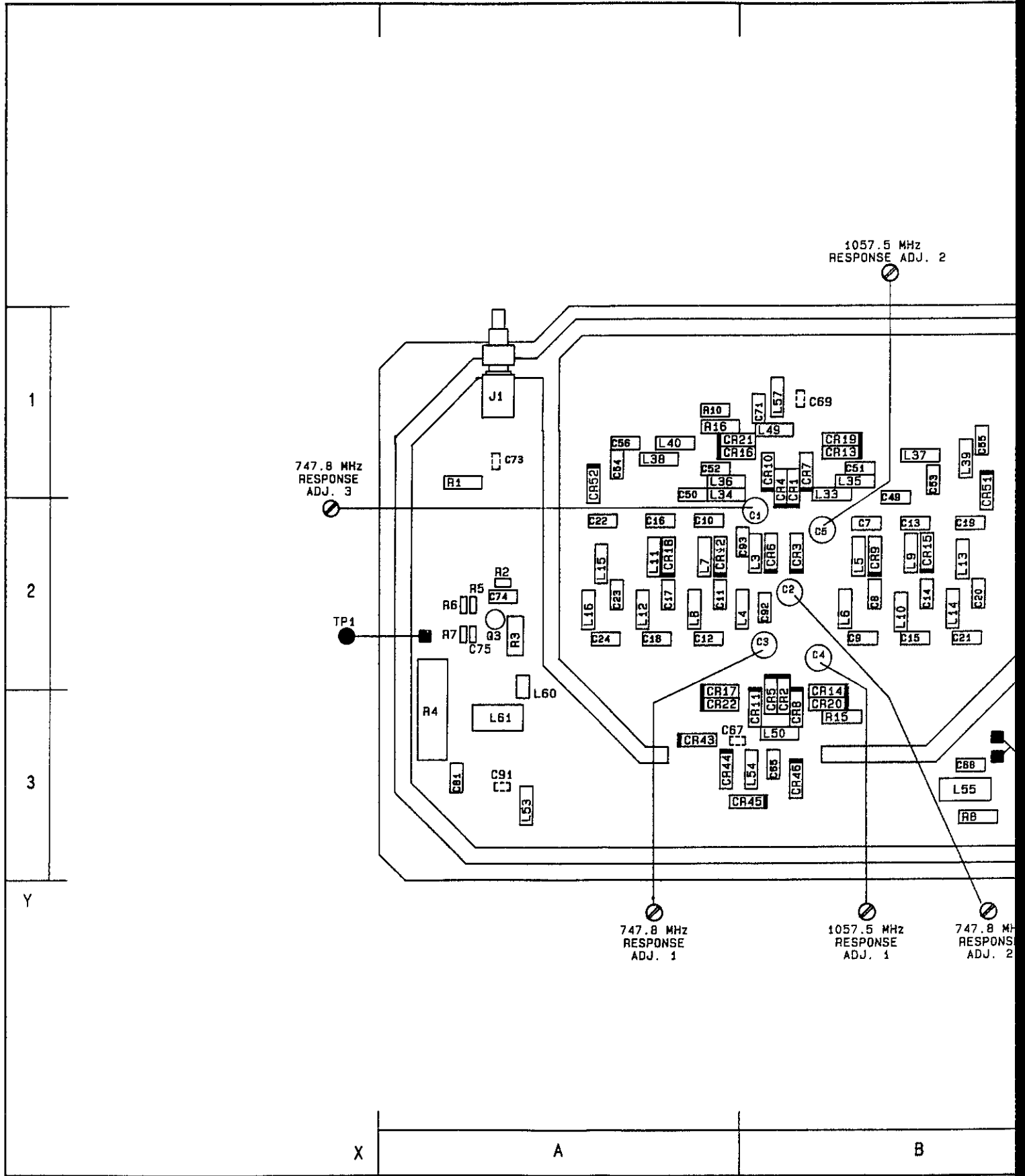
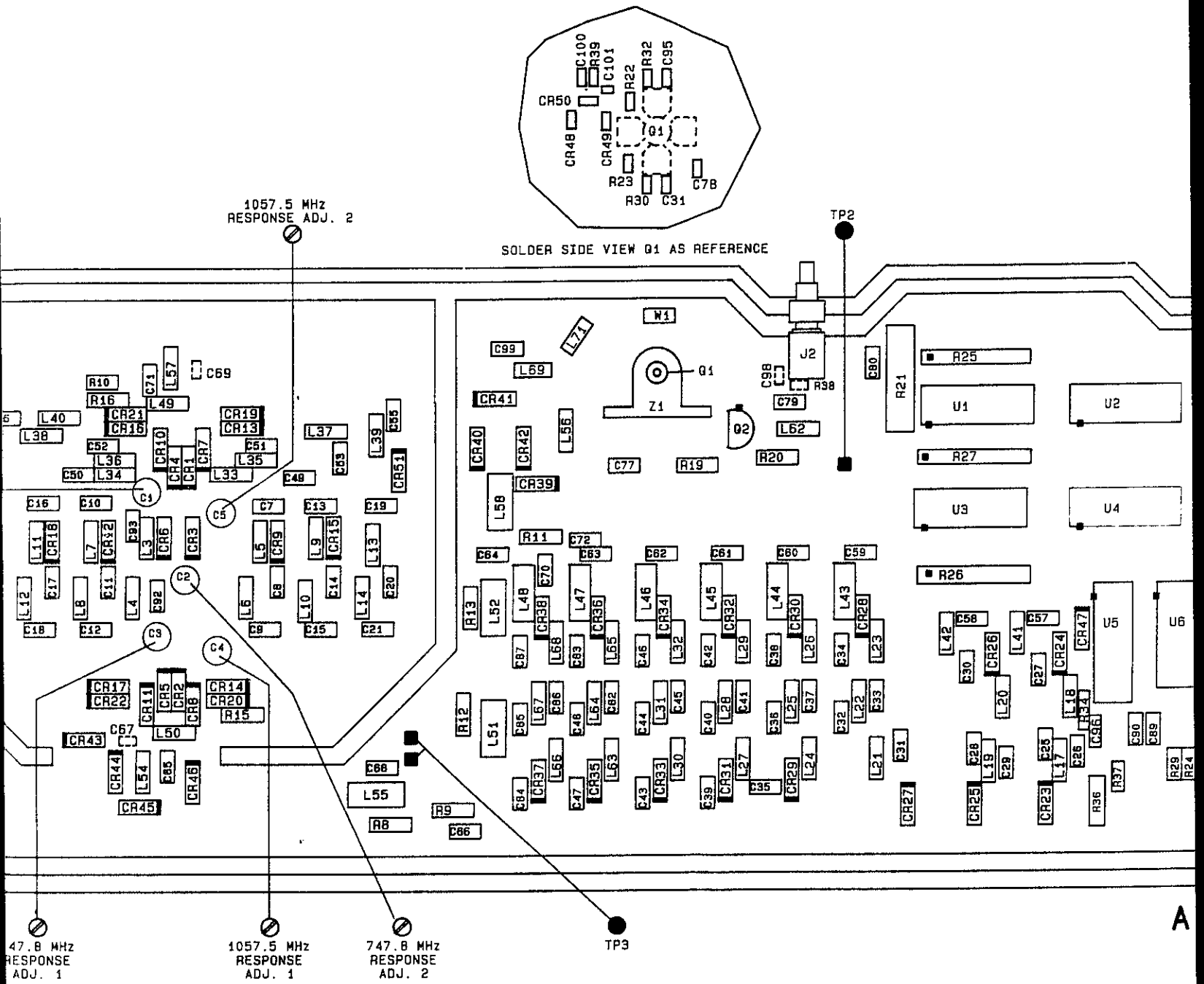


Figure 8P-102. SERVICE SHEET 42 INFORMATION

Com

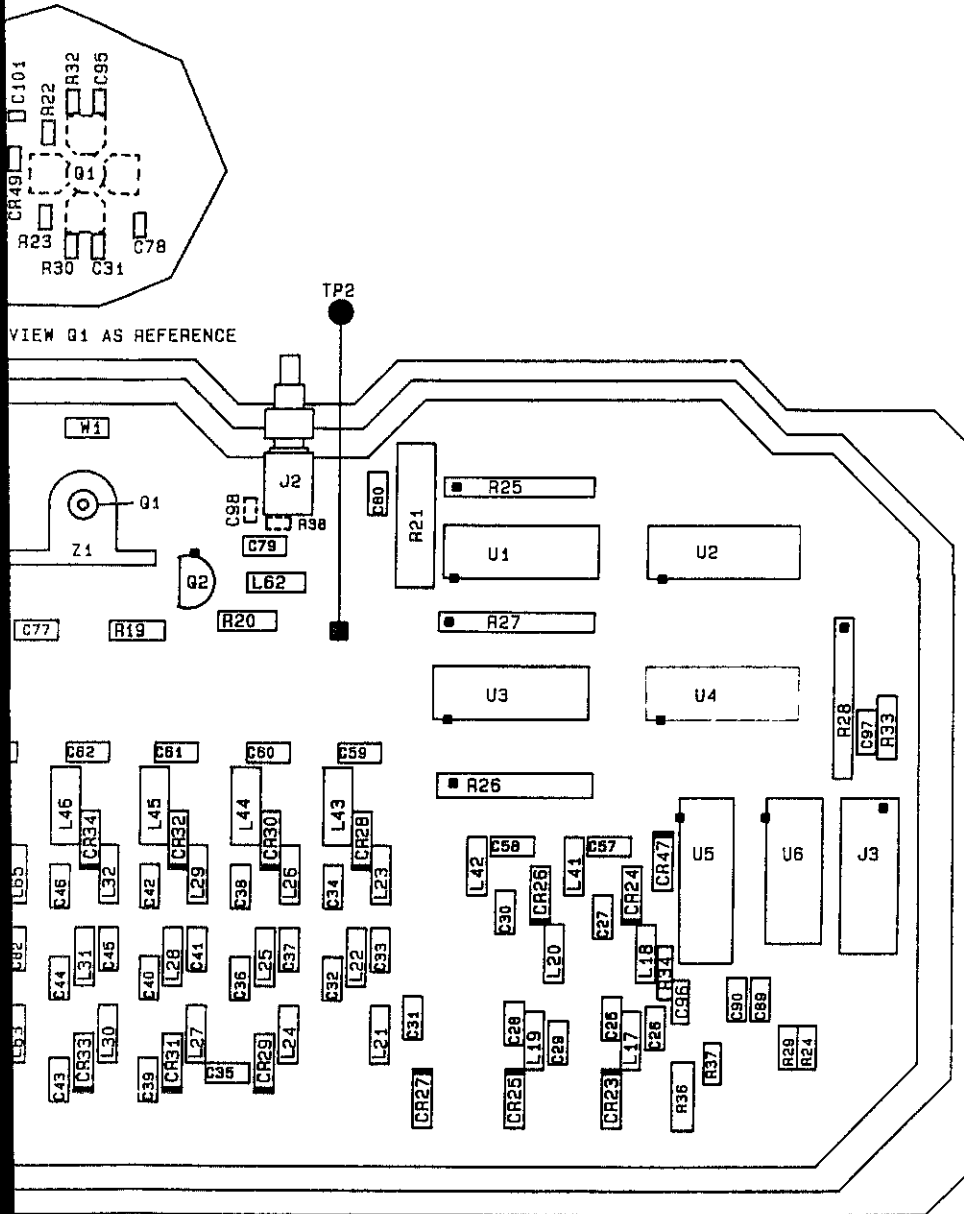
FIG. 8P-102  
 SH. 2 OF 5



B C D

Component Locator

FIG. 8A-102  
SHT. 3 OF 5

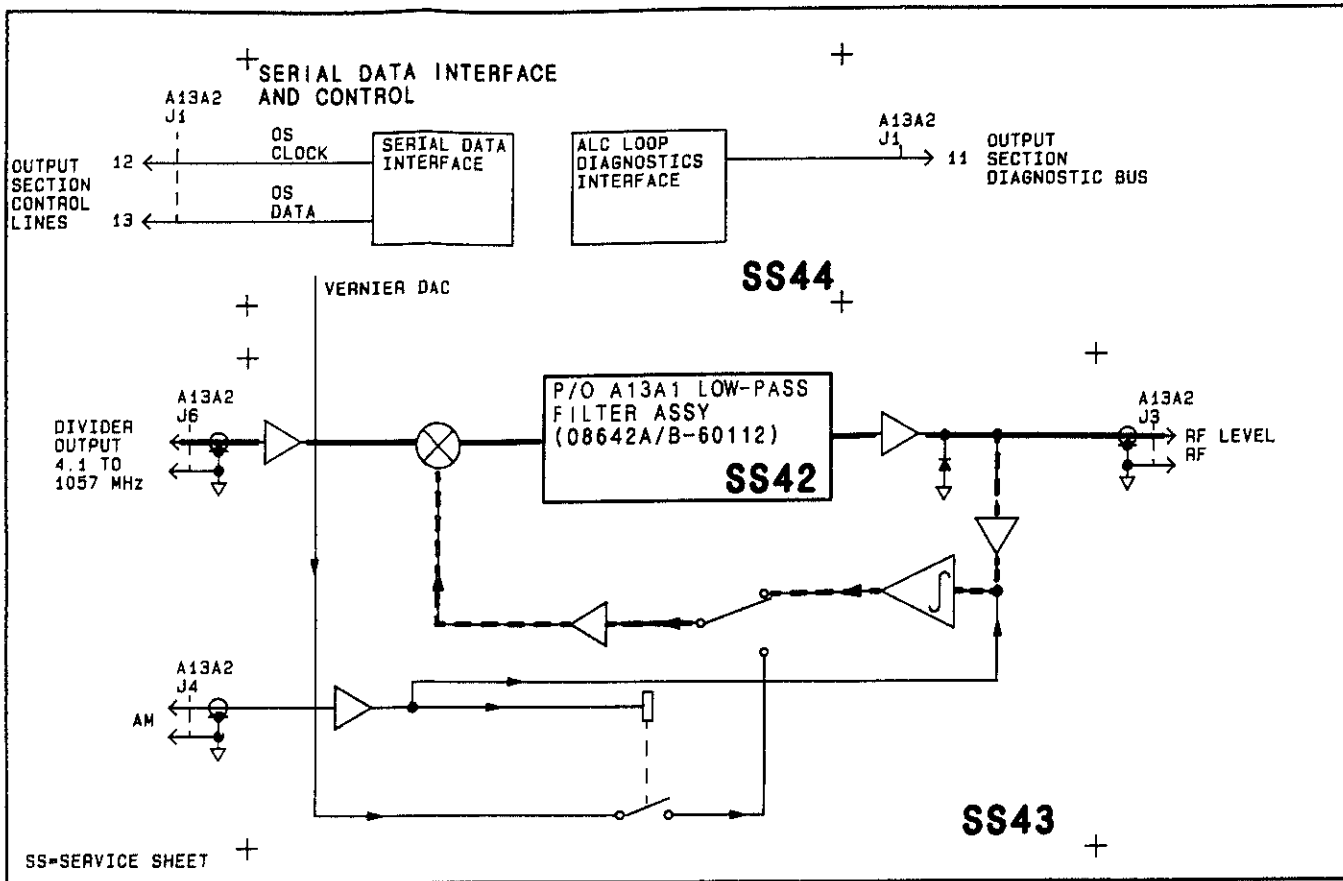


A13A1

C

D

FIG. BP-102  
 SH. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	B, 2	C39	C, 3	C76	C, 1	CR14	B, 3	CR51	B, 2	L33	B, 1	Q1	C, 1	R39	C, 1		
C2	B, 2	C40	C, 3	C77	C, 1	CR15	B, 2	CR52	A, 2	L34	A, 1	Q2	C, 1				
C3	B, 2	C41	C, 3	C78	C, 1	CR16	A, 1			L35	B, 1	Q3	A, 2	TP1	A, 2		
C4	B, 2	C42	C, 2	C79	C, 1	CR17	A, 3	J1	A, 1	L36	A, 1			TP2	C, 1		
C5	B, 2	C43	C, 3	C80	C, 1	CR18	A, 2	J2	C, 1	L37	B, 1	R1	A, 1				
C6	B, 2	C44	C, 3	C81	A, 3	CR19	B, 1	J3	D, 2	L38	A, 1	R2	A, 2				
C7	B, 2	C45	C, 3	C82	C, 3	CR20	B, 3			L39	B, 1	R3	A, 2	U1	D, 1		
C8	B, 2	C46	C, 2	C83	C, 2	CR21	A, 1	L3	B, 2	L40	A, 1	R4	A, 3	U2	D, 1		
C9	B, 2	C47	C, 3	C84	B, 3	CR22	A, 3	L4	B, 2	L41	D, 2	R5	A, 2	U3	D, 2		
C10	A, 2	C48	C, 3	C85	B, 3	CR23	D, 3	L5	B, 2	L42	D, 2	R6	A, 2	U4	D, 2		
C11	A, 2	C49	B, 1	C86	C, 3	CR24	D, 2	L6	B, 2	L43	C, 2	R7	A, 2	U5	D, 2		
C12	A, 2	C50	A, 1	C87	B, 2	CR25	D, 3	L7	A, 2	L44	C, 2	R8	B, 3	U6	D, 2		
C13	B, 2	C51	B, 1	C88	D, 3	CR26	D, 2	L8	A, 2	L45	C, 2	R9	B, 3				
C14	B, 2	C52	A, 1	C89	D, 3	CR27	C, 3	L9	B, 2	L46	C, 2	R10	A, 1	W1	C, 1		
C15	B, 2	C53	B, 1	C90	D, 3	CR28	C, 2	L10	B, 2	L47	C, 2	R11	C, 2				
C16	A, 2	C54	A, 1	C91	A, 3	CR29	C, 3	L11	A, 2	L48	B, 2	R12	B, 3	Z1	C, 1		
C17	A, 2	C55	B, 1	C92	B, 2	CR30	C, 2	L12	A, 2	L49	B, 1	R13	B, 2				
C18	A, 2	C56	A, 1	C93	B, 2	CR31	C, 3	L13	B, 2	L50	B, 3	R14	B, 3				
C19	B, 2	C57	D, 2	C94	C, 1	CR32	C, 2	L14	B, 2	L51	B, 3	R15	A, 1				
C20	B, 2	C58	D, 2	C95	C, 1	CR33	C, 3	L15	A, 2	L52	B, 2	R16	A, 1				
C21	B, 2	C59	C, 2	C96	D, 2	CR34	C, 2	L16	A, 2	L53	A, 3	R17	C, 1				
C22	A, 2	C60	C, 2	C97	C, 1	CR35	C, 2	L17	D, 3	L54	B, 3	R18	C, 1				
C23	A, 2	C61	C, 2	C98	C, 1	CR36	C, 3	L18	D, 3	L55	B, 3	R19	C, 1				
C24	A, 2	C62	C, 2	C99	C, 1	CR37	C, 3	L19	D, 3	L56	C, 1	R20	C, 1				
C25	D, 3	C63	C, 2	C100	C, 1	CR38	C, 2	L20	D, 3	L57	B, 1	R21	C, 1				
C26	D, 3	C64	B, 2	C101	C, 1	CR39	C, 1	L21	C, 3	L58	B, 2	R22	C, 1				
C27	D, 2	C65	B, 3	CR1	B, 1	CR40	B, 1	L22	C, 3	L59	A, 3	R23	C, 1				
C28	D, 3	C66	B, 3	CR2	B, 3	CR41	B, 1	L23	C, 2	L60	A, 3	R24	D, 3				
C29	D, 3	C67	A, 3	CR3	B, 2	CR42	B, 1	L24	C, 3	L61	A, 3	R25	D, 1				
C30	D, 2	C68	B, 3	CR4	B, 1	CR43	A, 3	L25	C, 3	L62	C, 1	R26	D, 2				
C31	C, 3	C69	B, 1	CR5	B, 3	CR44	A, 3	L26	C, 2	L63	C, 3	R27	D, 1				
C32	C, 3	C70	C, 2	CR6	B, 2	CR45	B, 3	L27	C, 3	L64	C, 3	R28	D, 2				
C33	C, 3	C71	B, 1	CR7	B, 1	CR46	B, 3	L28	C, 3	L65	C, 2	R29	D, 3				
C34	C, 2	C72	C, 2	CR8	B, 3	CR47	D, 2	L29	C, 2	L66	C, 3	R30	C, 1				
C35	C, 3	C73	A, 1	CR9	B, 2	CR48	D, 3	L30	C, 3	L67	C, 3	R31	C, 1				
C36	C, 3	C74	A, 2	CR10	B, 1	CR49	D, 3	L31	C, 3	L68	C, 2	R32	C, 1				
C37	C, 3	C75	A, 2	CR11	B, 3	CR50	C, 1	L32	C, 2	L69	C, 1	R33	D, 2				
C38	C, 2			CR12	A, 2					L71	C, 1	R34	D, 3				
				CR13	B, 1							R35	C, 1				

A13 MODULE **BD 14**

SEE REVERSE SIDE

F  
R  
8P

## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. L69 is a printed circuit trace inductor.
4. Z1 is acting as a ground strap, connecting the stud of Q1 to ground.

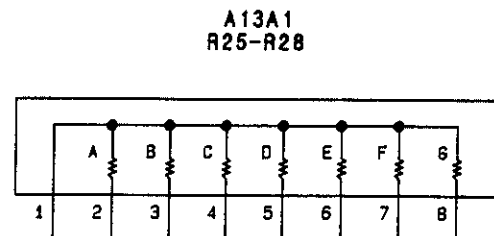
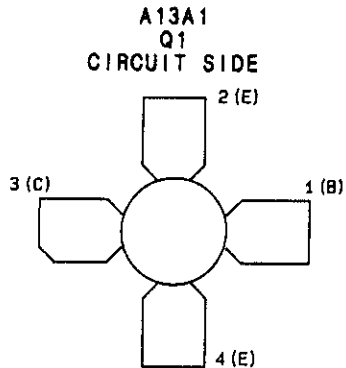


FIG. 8P-102  
 S#T. 1 OF 5

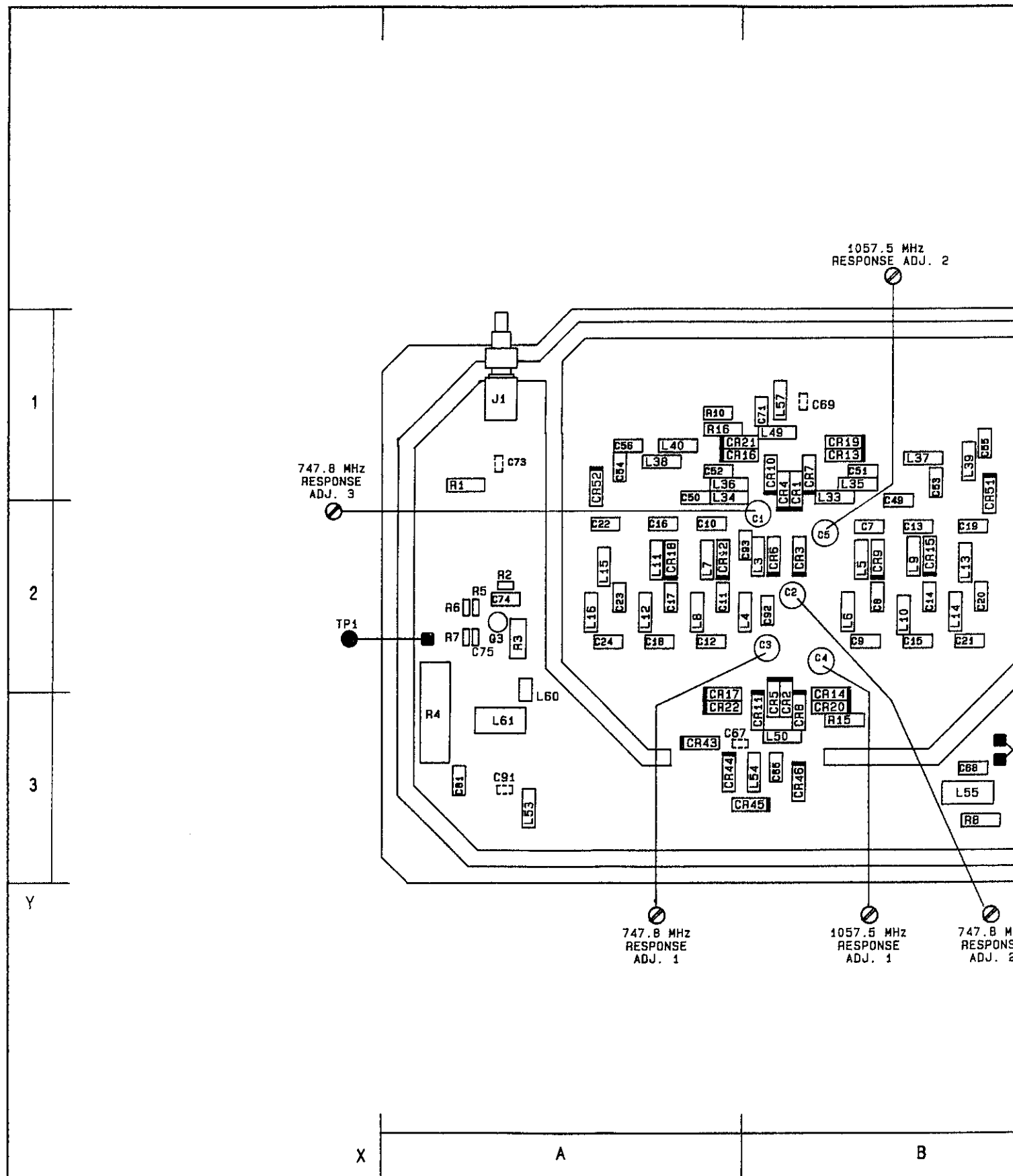
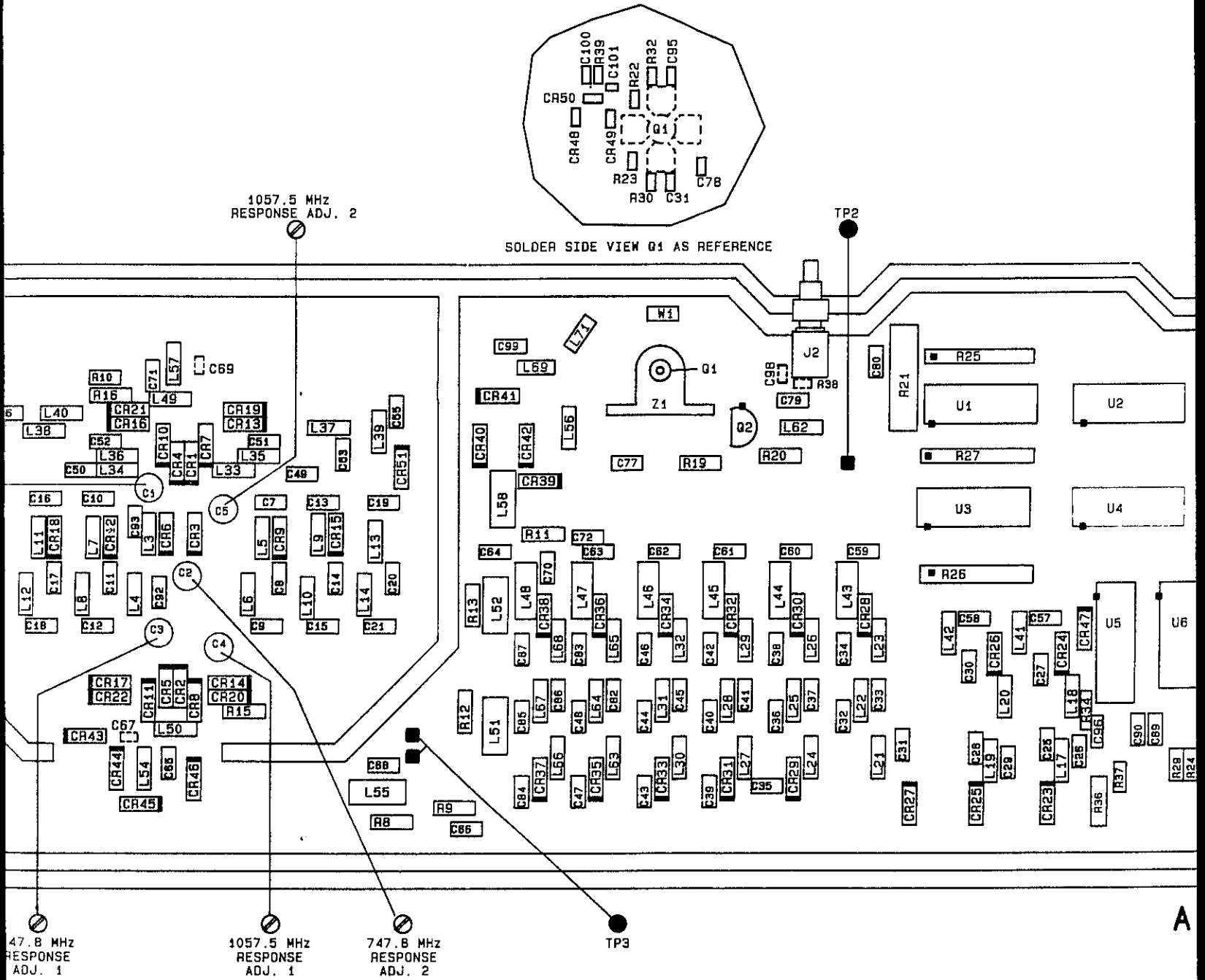


Figure 8P-102. SERVICE SHEET 42 INFORMATION

Com

FIG. 8P-102  
 SH. 2 OF 5



B

C

D

Component Locator







## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. L69 is a printed circuit trace inductor.
4. Z1 is acting as a ground strap, connecting the stud of Q1 to ground.

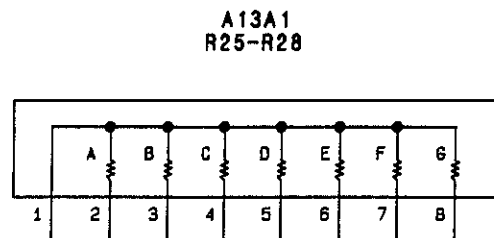
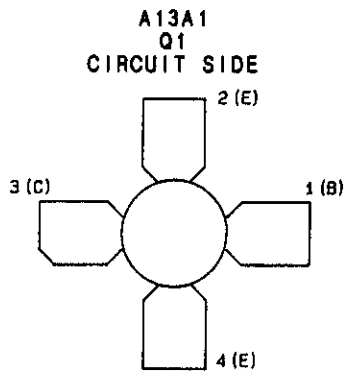
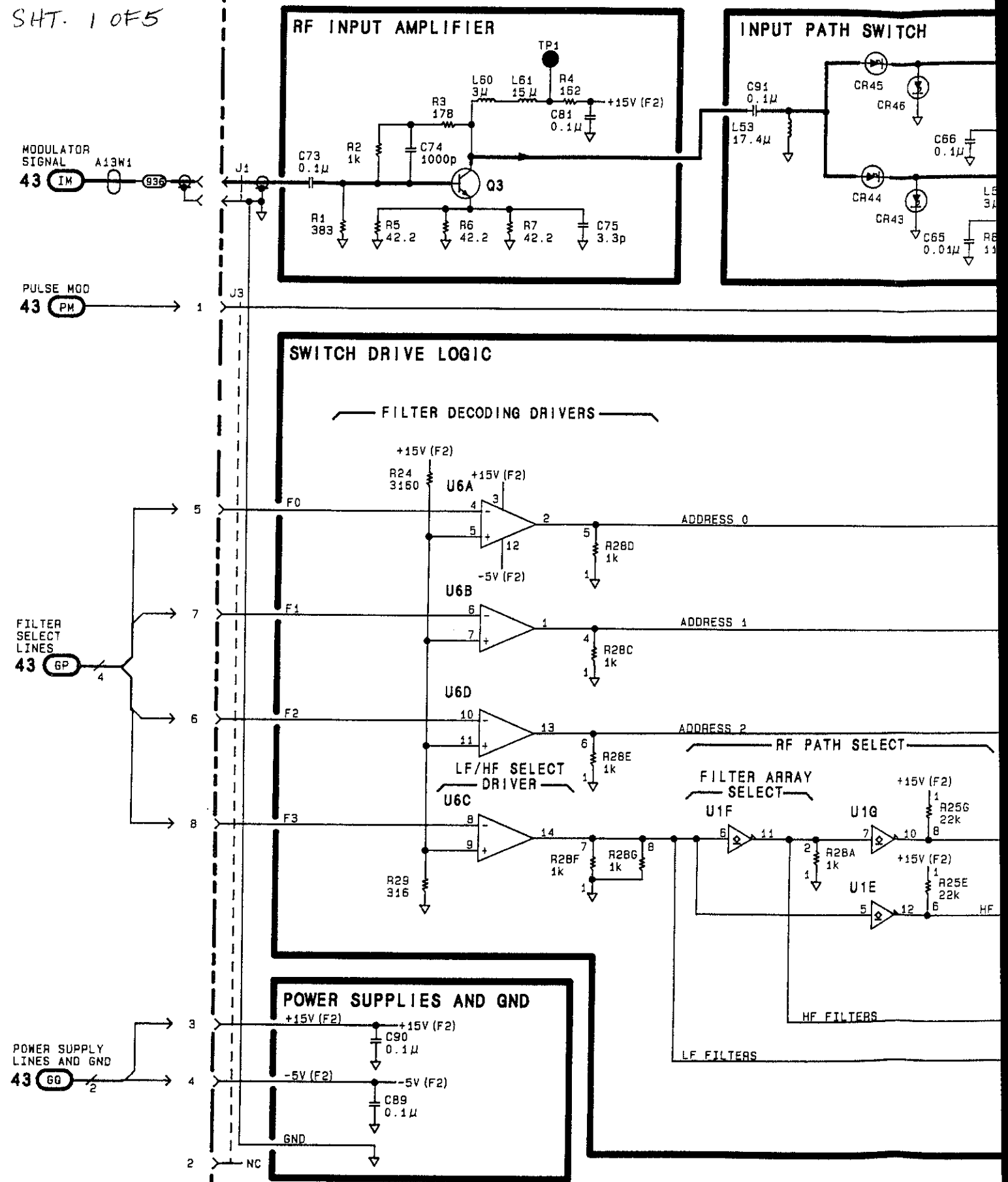


FIG 8P-102  
SHT. 1 OF 5

A13A1 LOW PASS FILTER ASSEMBLY (08642-60312)



SERIAL PREFIX: 2551A

FIG. BP-10Z  
SHT. 2 OF 5

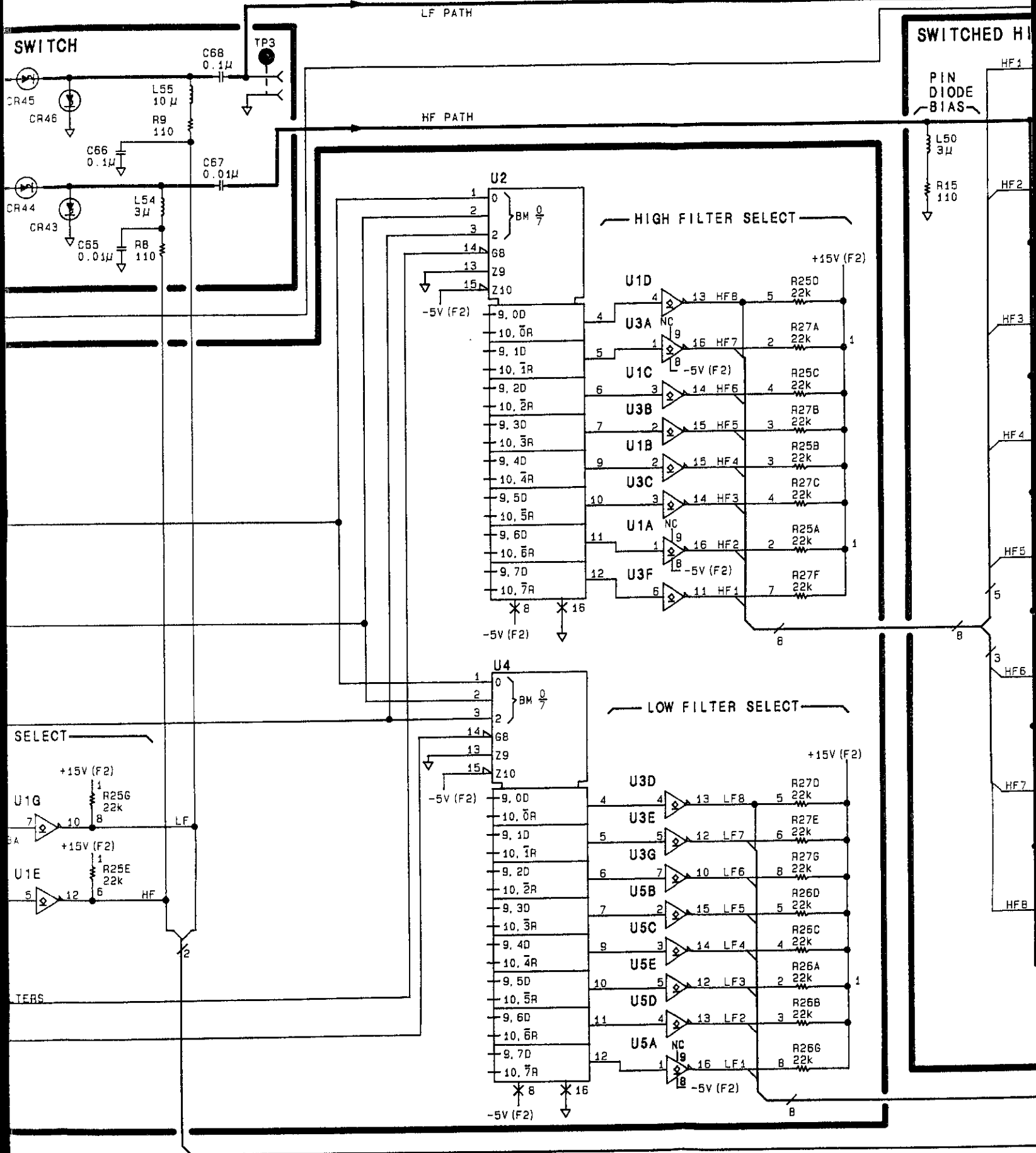


FIG. 8P-102, SHEET 3 OF 5

SWITCHED HIGH FREQUENCY FILTERS

LOW-PASS FILTERS

SWITCHED LOW FREQU

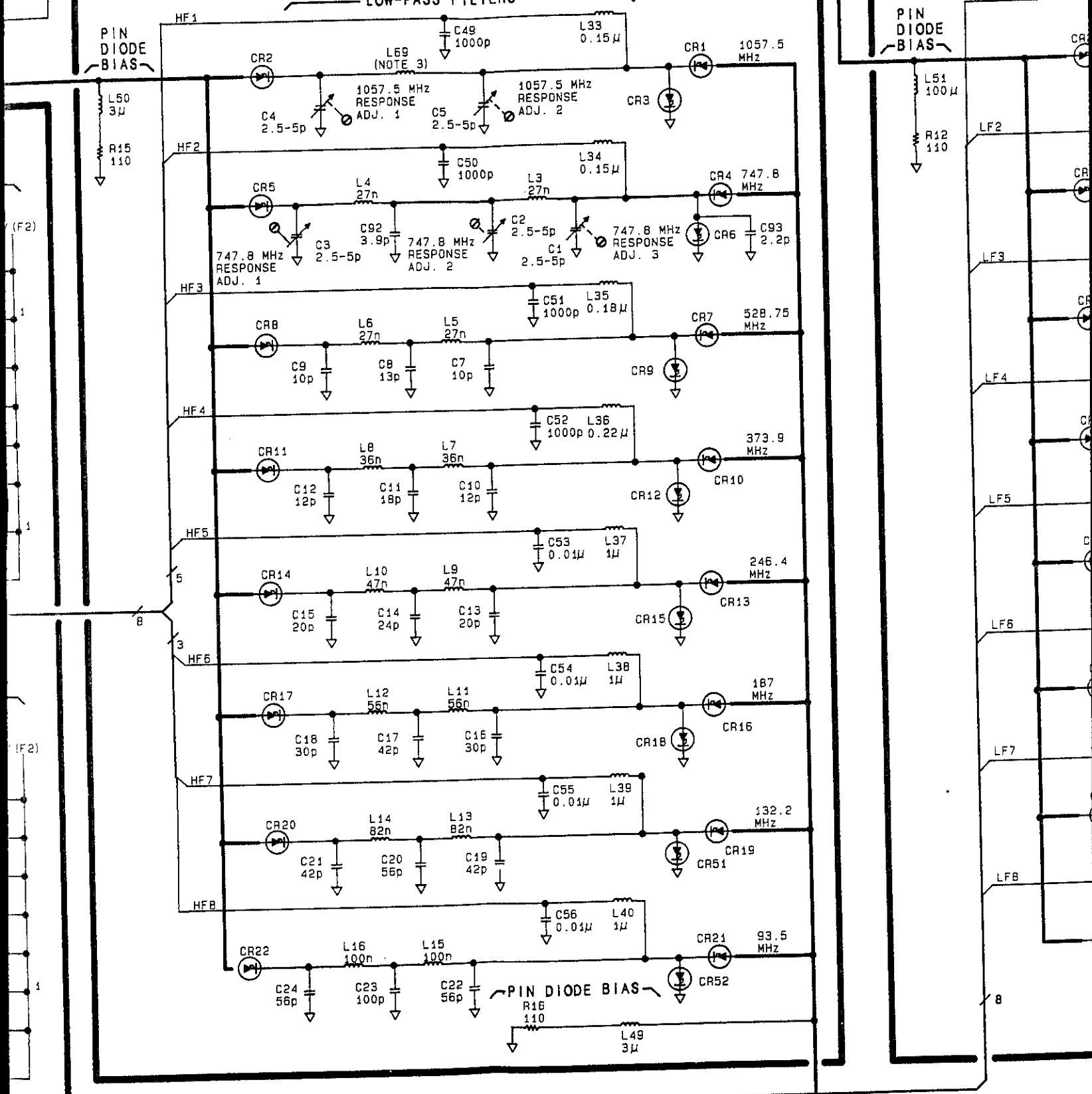
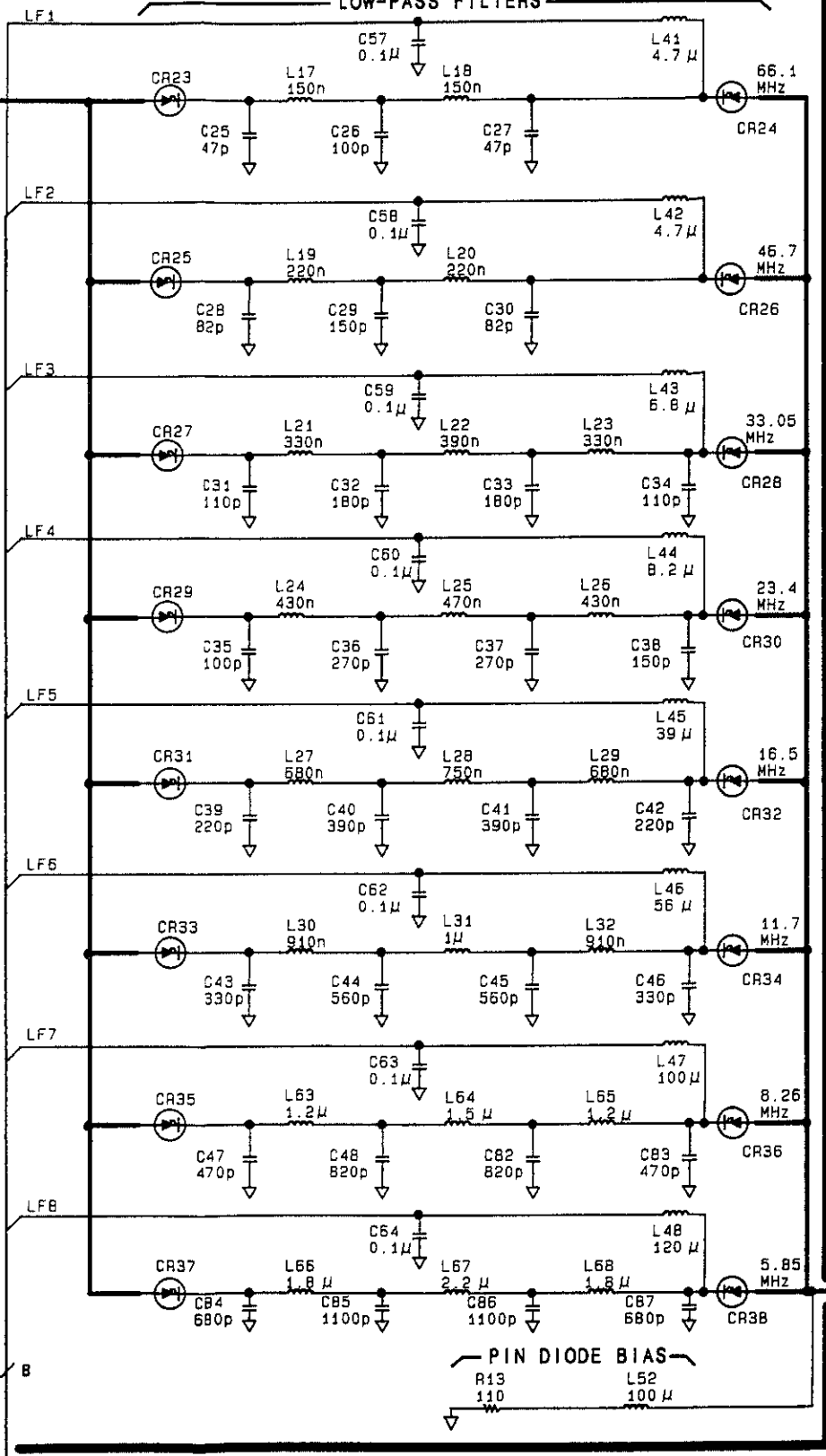


FIG. 8P-102, SMT. 4 OF 5

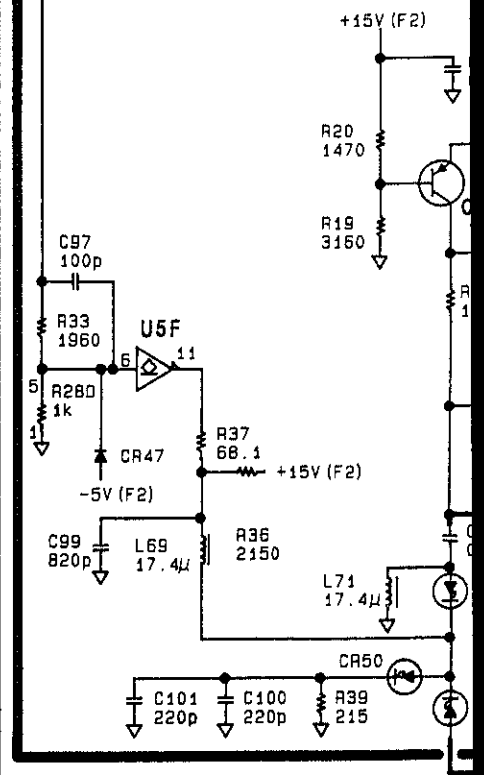
SWITCHED LOW FREQUENCY FILTERS

LOW-PASS FILTERS

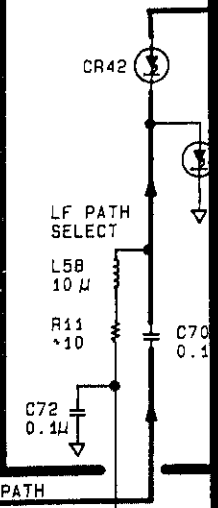
PIN DIODE BIAS  
L51 100  $\mu$   
R12 110



RF OUTPUT AMPLIFIER

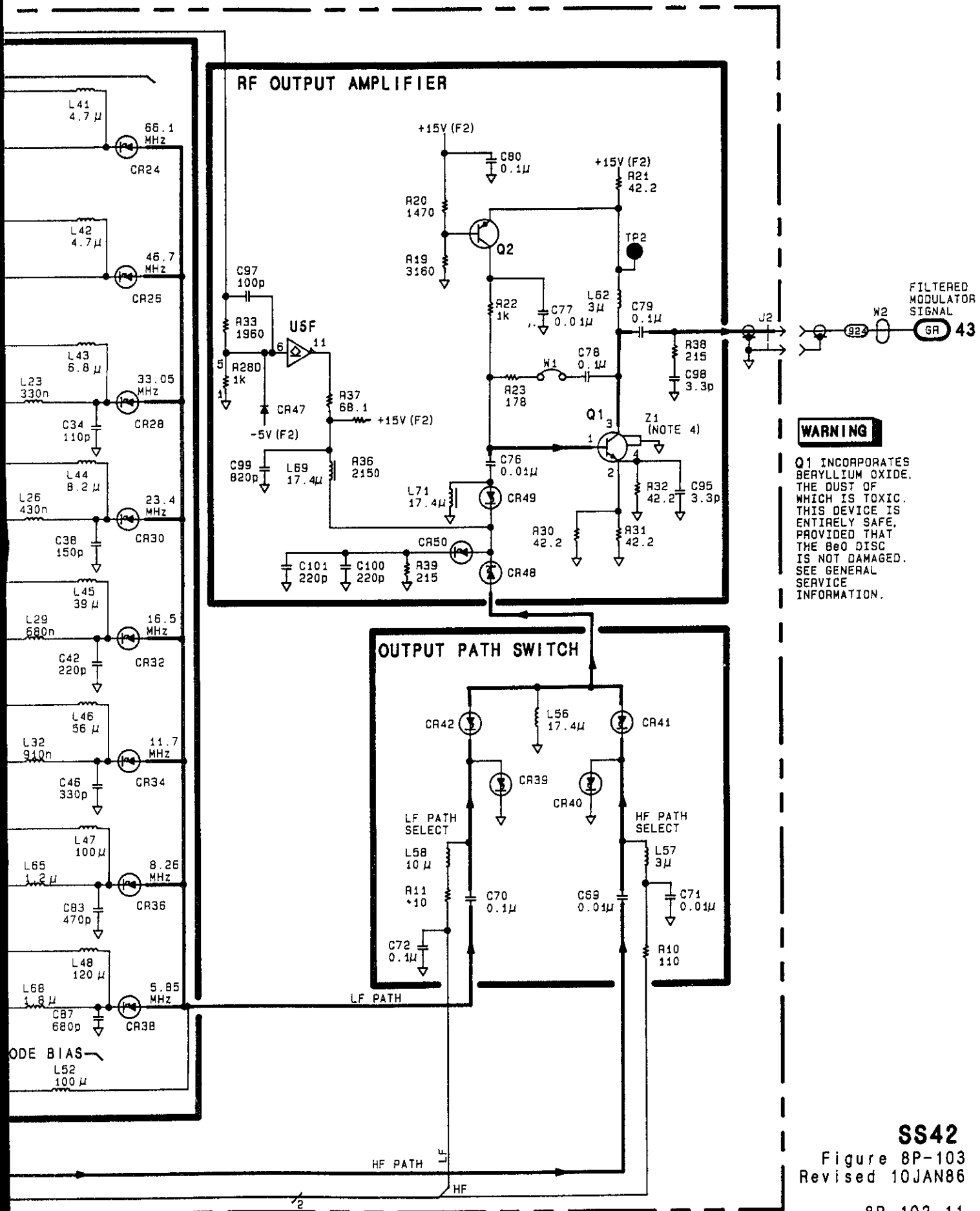


OUTPUT PATH



HF PATH

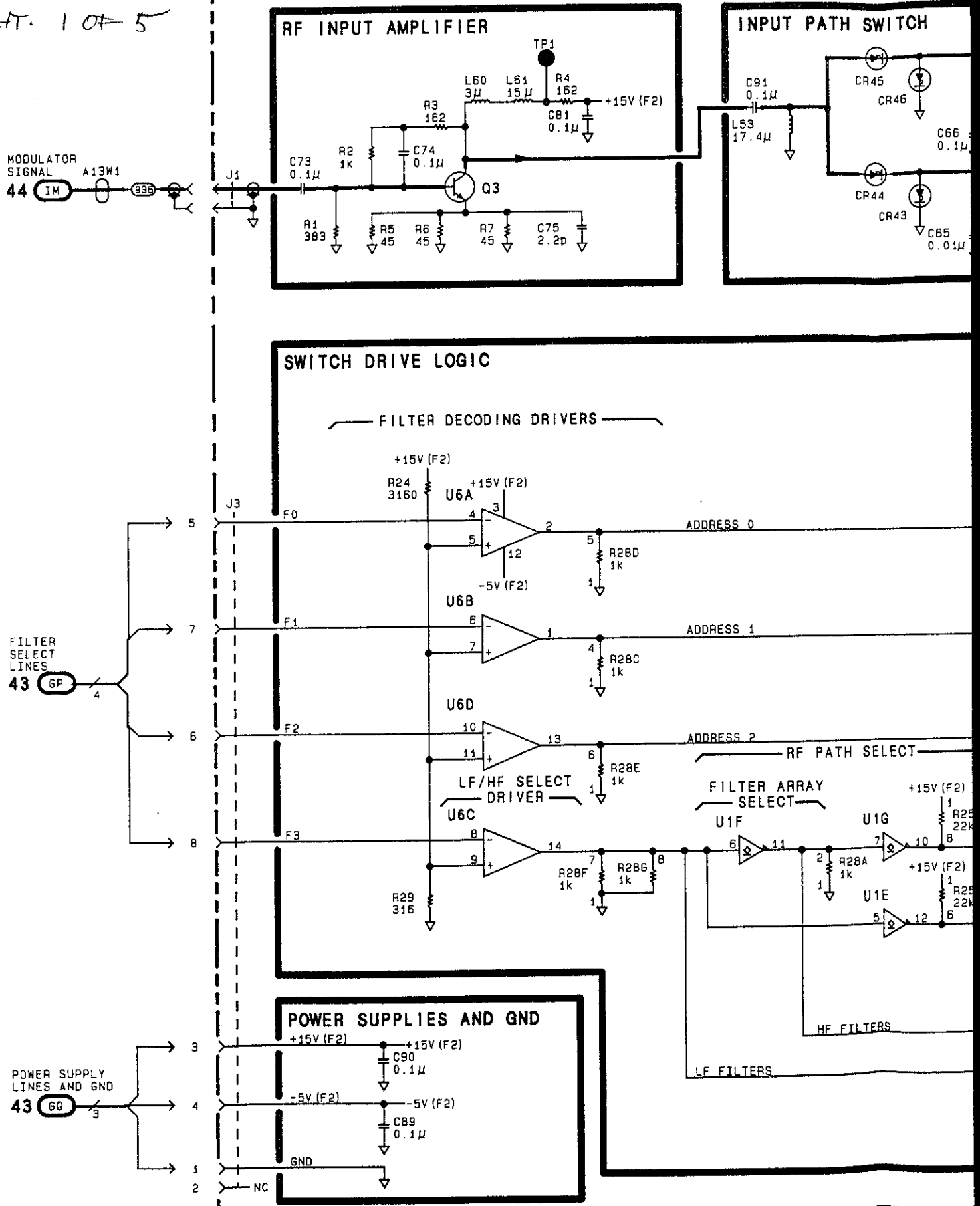
FIG. 8P-102, SHT. 5 OF 5



SS42  
 Figure 8P-103  
 Revised 10JAN86  
 8P-102.11

FIG. 8P-103  
 SHT. 1 OF 5

A13A1 LOW PASS FILTER ASSEMBLY (08642-60112)



SERIAL PREFIX: 2427A



FIG. 8P-103, SH. 2 OF 5

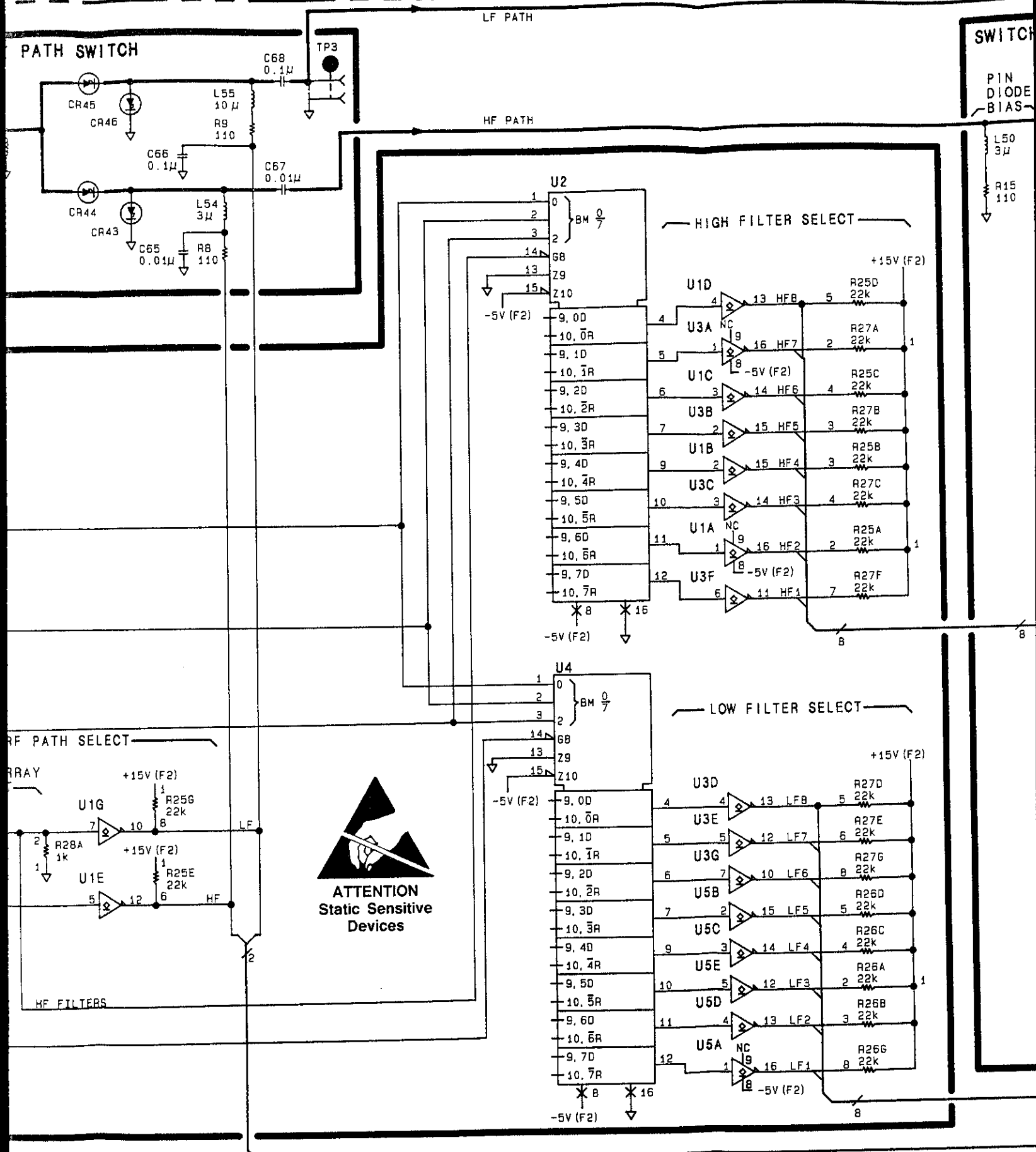


FIG. 8P-103, SHT. 3 OF 5

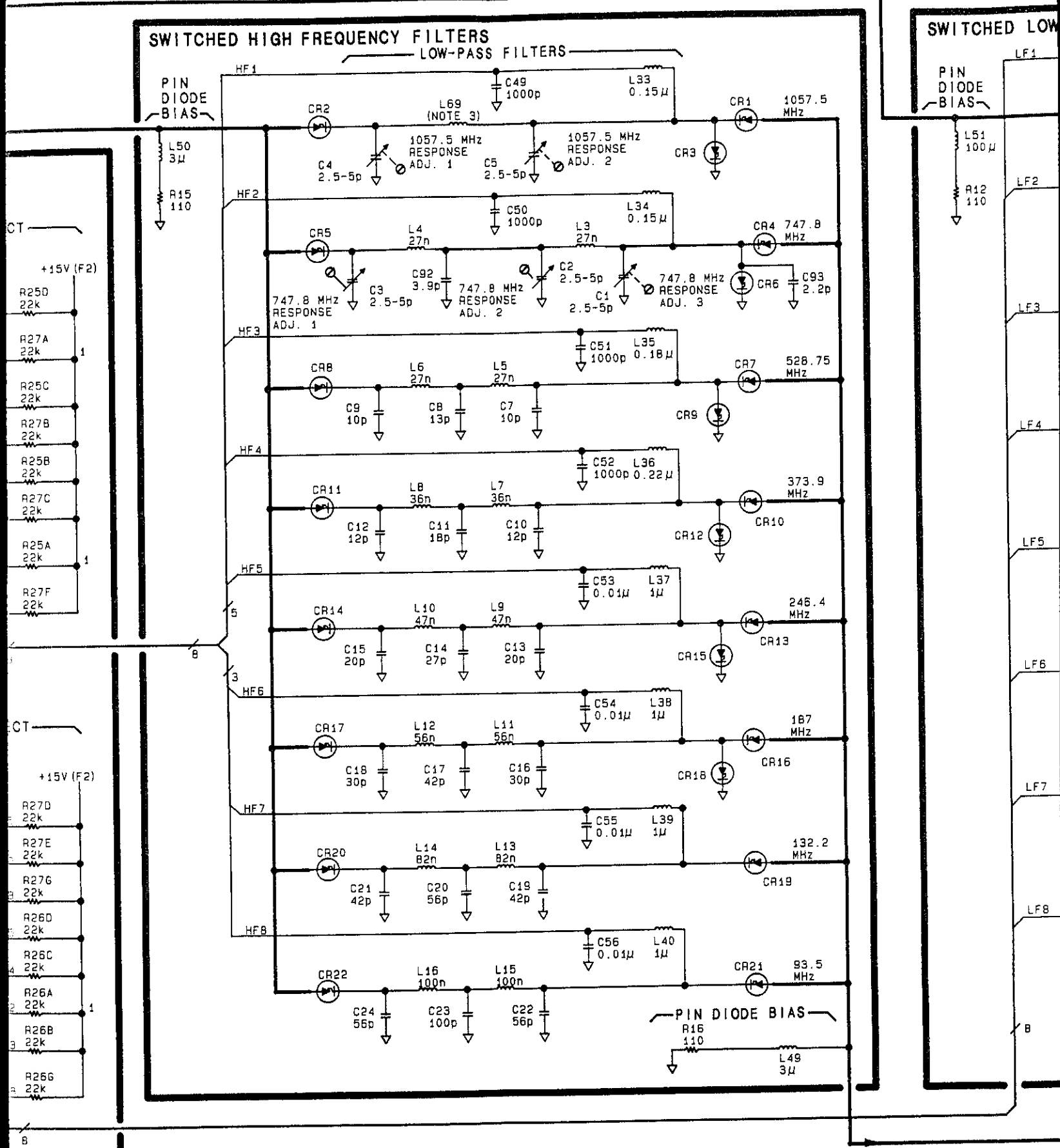
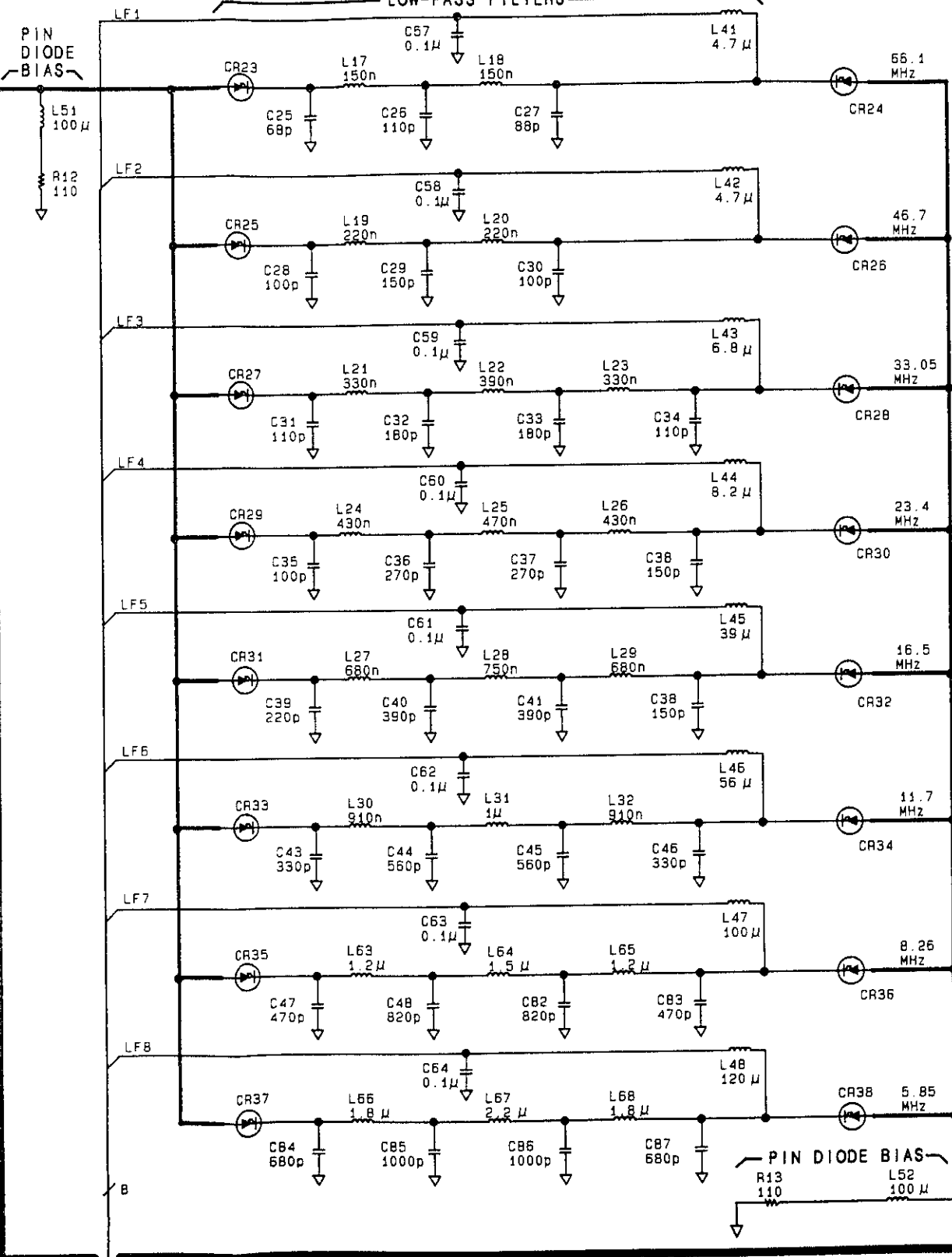


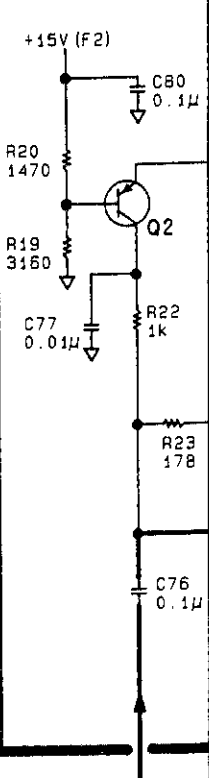
FIG. 8P-103, SHE. 4 OF 5

SWITCHED LOW FREQUENCY FILTERS

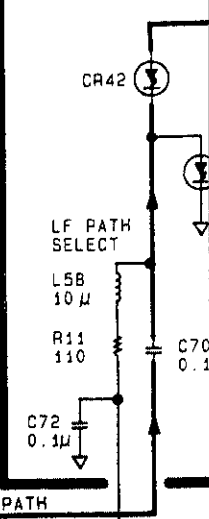
LOW-PASS FILTERS



RF OUTPUT A

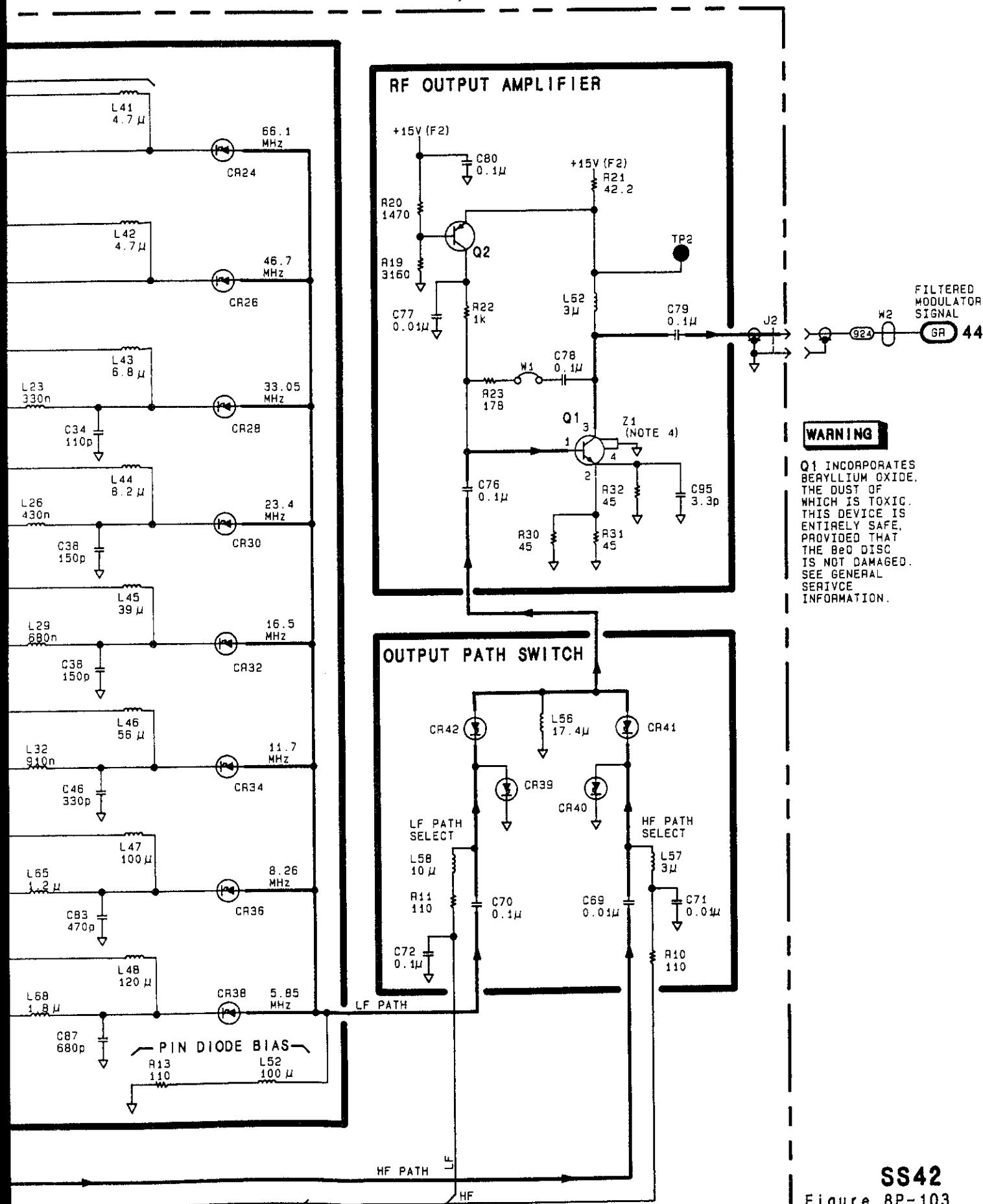


OUTPUT PATH



HF PATH

FIG. 8P-103, SHEET 5 OF 5



**WARNING**

Q1 INCORPORATES BERYLLIUM OXIDE. THE DUST OF WHICH IS TOXIC. THIS DEVICE IS ENTIRELY SAFE, PROVIDED THAT THE BeO DISC IS NOT DAMAGED. SEE GENERAL SERVICE INFORMATION.

SS42

Figure 8P-103  
8P-103

FIG. 8P-104  
 SHEET 1 OF 5

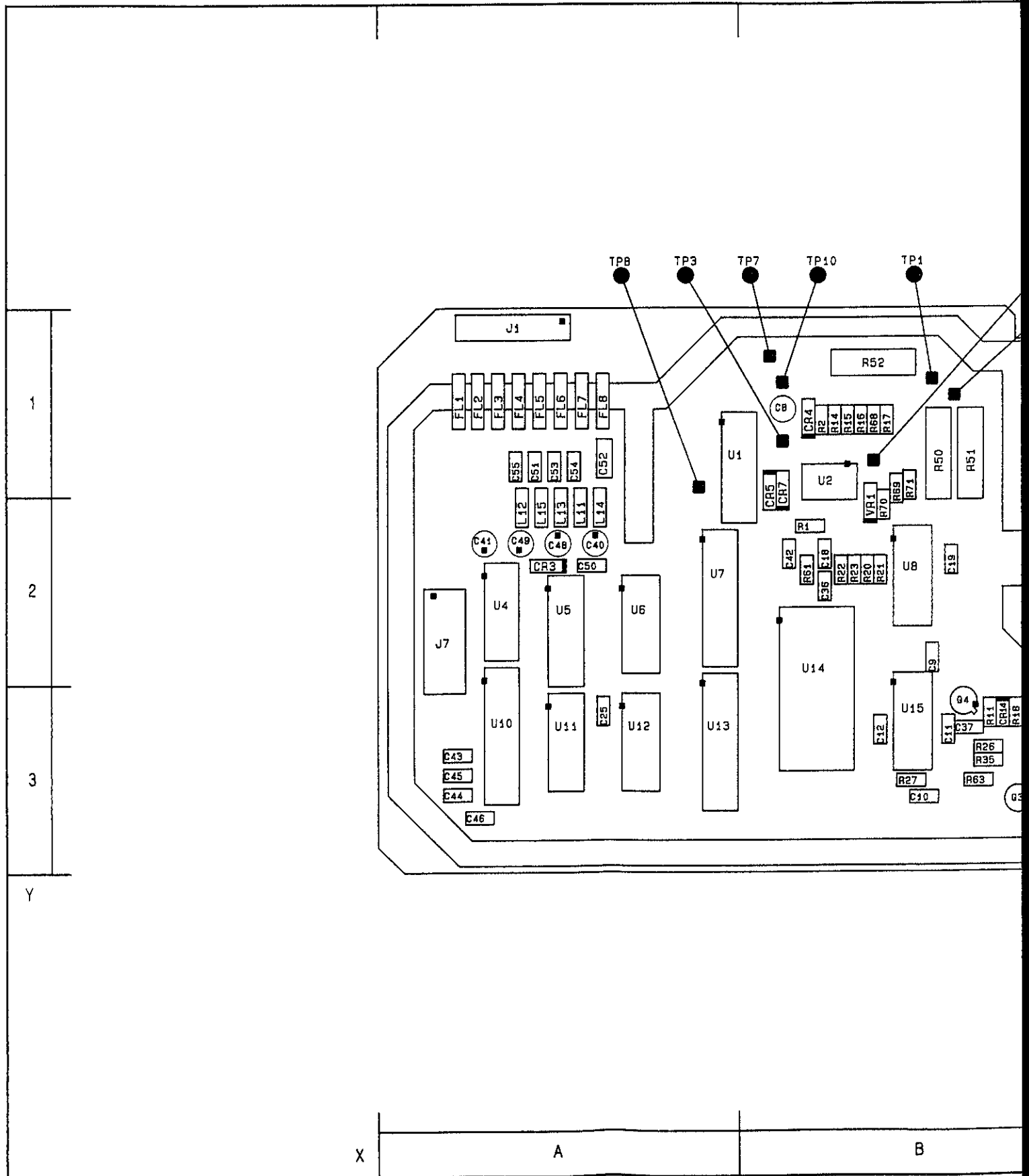
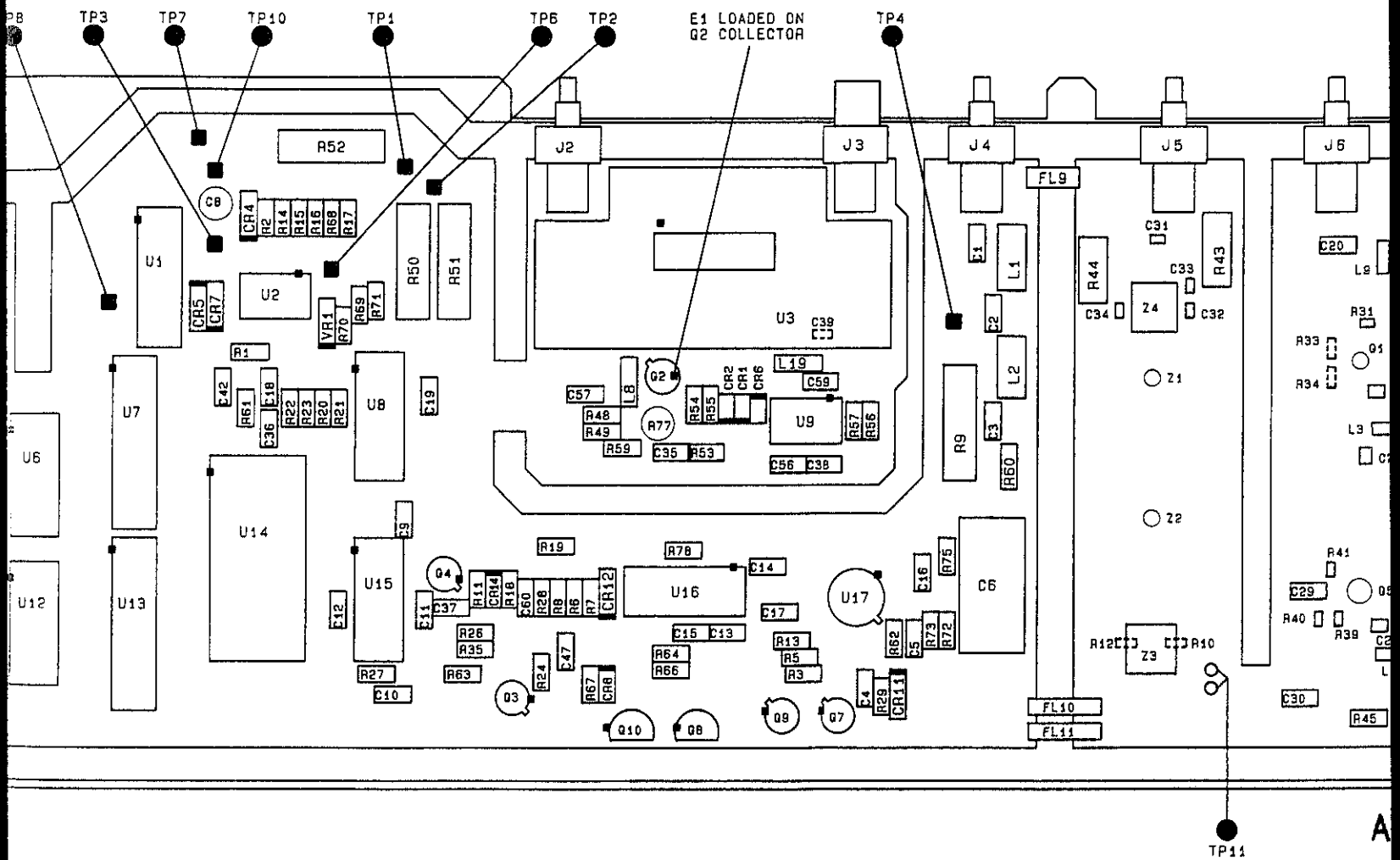


Figure 8P-104. SERVICE SHEET 43 INFORMATION

Com

FIG. 8P-104  
 SH. 2 OF 5



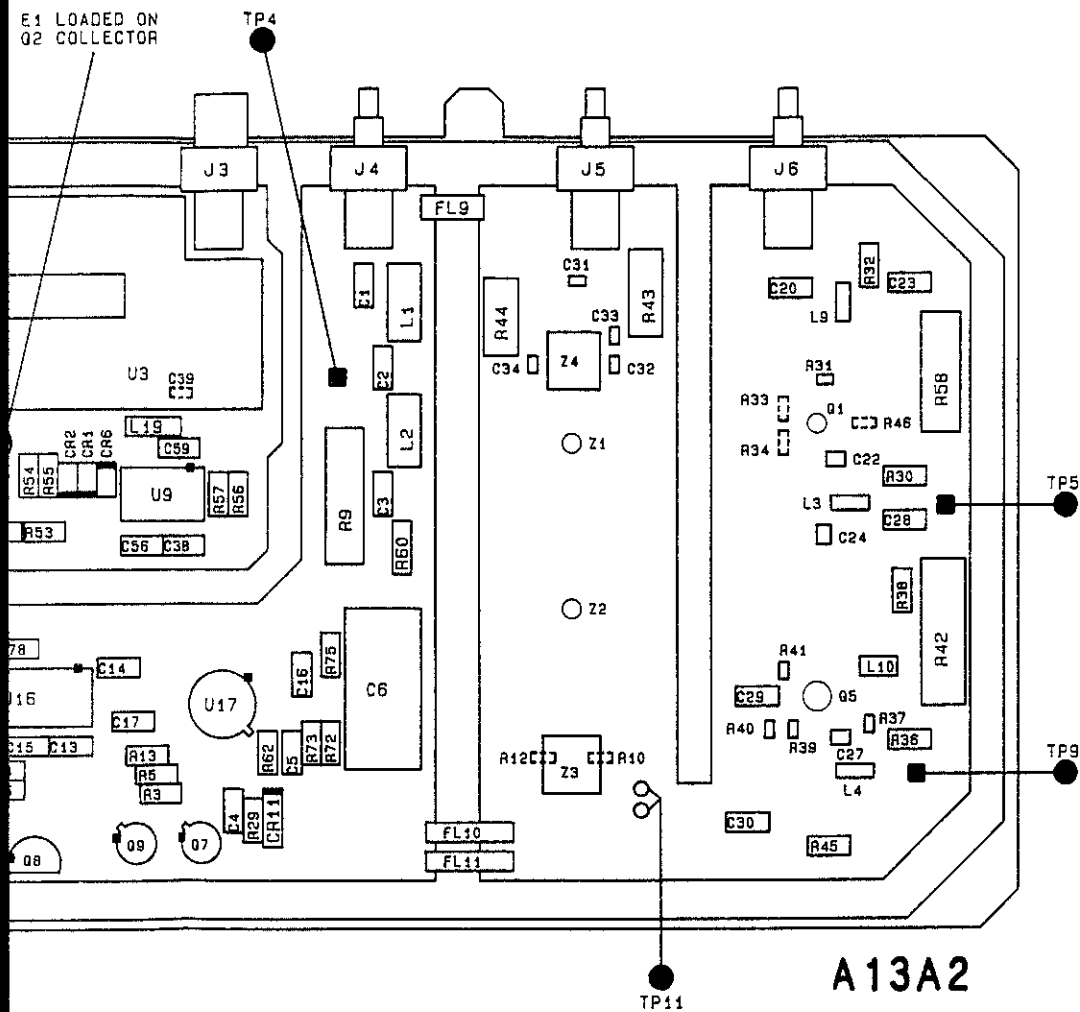
B

C

D

Component Locator

FIG. 8P-104  
SH. 3 OF 5



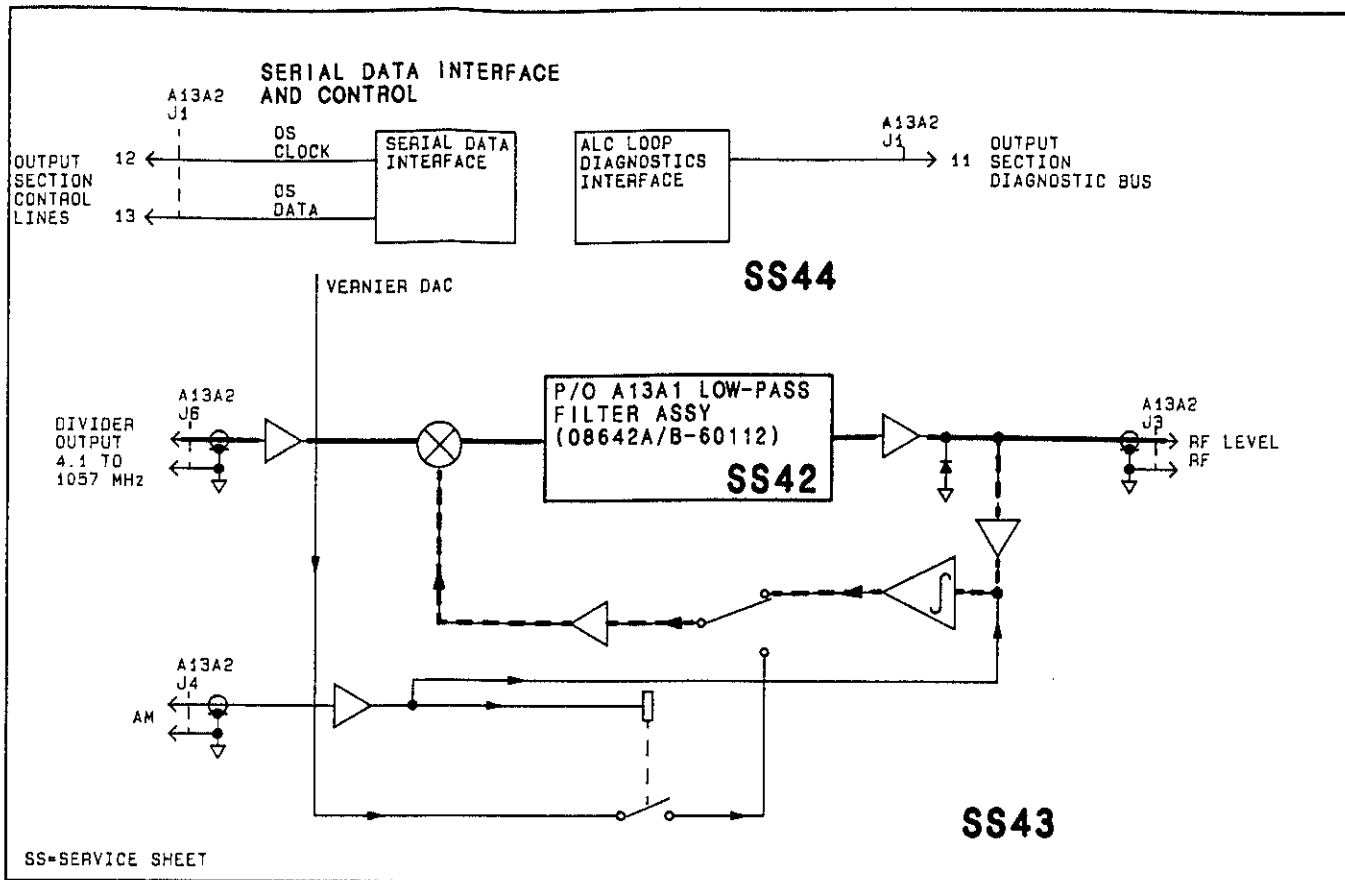
A13A2

C

D

tor

FIG. 8P-104  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	C. 1	C53	A. 1	L1	C. 1	R20	B. 2	R62	C. 3										
C2	C. 1	C54	A. 1	L2	C. 2	R21	B. 2	R63	B. 3										
C3	C. 2	C55	A. 1	L3	D. 2	R22	B. 2	R64	C. 3										
C4	C. 3	C56	C. 2	L4	D. 3	R23	B. 2	R66	C. 3										
C5	C. 3	C57	B. 2	L8	C. 2	R24	B. 3	R67	B. 3										
C6	C. 3	C59	C. 2	L9	D. 1	R28	B. 3	R69	B. 1										
C11	B. 3	C60	B. 3	L10	D. 3	R29	C. 3	R70	B. 2										
C12	B. 3			L11	A. 2	R30	D. 2	R71	B. 1										
C13	C. 3	CR1	C. 2	L12	A. 2	R31	D. 2	R72	C. 3										
C14	C. 3	CR2	C. 2	L13	A. 2	R32	D. 1	R73	C. 3										
C15	C. 3	CR3	A. 2	L14	A. 2	R33	D. 2	R75	C. 3										
C16	C. 3	CR6	C. 2	L15	A. 2	R34	D. 2	R77	C. 2										
C17	C. 3	CR8	B. 3	L19	C. 2	R36	D. 3	R78	C. 2										
C20	D. 1	CR11	C. 3			R37	D. 3												
C22	D. 2	CR12	B. 3	Q1	D. 2	R38	D. 2	TP1	B. 1										
C23	D. 1	CR14	B. 3	Q2	C. 2	R39	D. 3	TP2	B. 1										
C24	D. 2			Q3	B. 3	R40	D. 3	TP4	C. 1										
C27	D. 3	E1	C. 2	Q4	B. 3	R41	D. 3	TP5	D. 2										
C28	D. 2			Q5	D. 3	R42	D. 2	TP8	A. 1										
C29	D. 3	FL4	A. 1	Q7	C. 3	R43	D. 1	TP9	D. 3										
C30	D. 3	FL5	A. 1	Q8	C. 3	R44	D. 1	TP10	B. 1										
C31	D. 1	FL6	A. 1	Q9	C. 3	R45	D. 3	TP11	D. 3										
C32	D. 1	FL7	A. 1	Q10	C. 3	R46	D. 2												
C33	D. 1	FL8	A. 1			R48	B. 2	U3	C. 1										
C34	D. 1	FL9	C. 1	R1	B. 2	R49	B. 2	U8	B. 2										
C35	C. 2	FL10	C. 3	R3	C. 3	R50	B. 1	U9	C. 2										
C36	B. 2	FL11	C. 3	R5	C. 3	R51	B. 1	U15	B. 3										
C38	C. 2			R6	B. 3	R52	B. 1	U16	C. 3										
C39	C. 2	J1	A. 1	R7	B. 3	R53	C. 2	U17	C. 3										
C40	A. 2	J2	B. 1	R8	B. 3	R54	C. 2												
C41	A. 2	J3	C. 1	R9	C. 2	R55	C. 2	VR1	B. 2										
C47	B. 3	J4	C. 1	R10	D. 3	R56	C. 2												
C48	A. 2	J5	D. 1	R11	B. 3	R57	C. 2	Z1	D. 2										
C49	A. 2	J6	D. 1	R12	D. 3	R58	D. 2	Z2	D. 2										
C50	A. 2			R13	C. 3	R59	B. 2	Z3	D. 3										
C51	A. 1			R18	B. 3	R60	C. 2	Z4	D. 1										
C52	A. 1			R19	B. 2	R61	B. 2												

A13A1 LOW-PASS FILTER ASSEMBLY

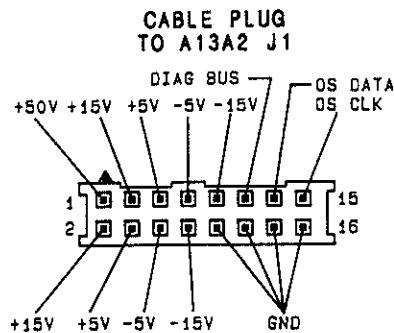
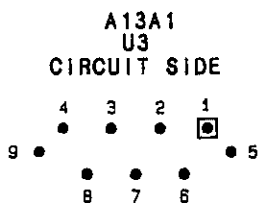
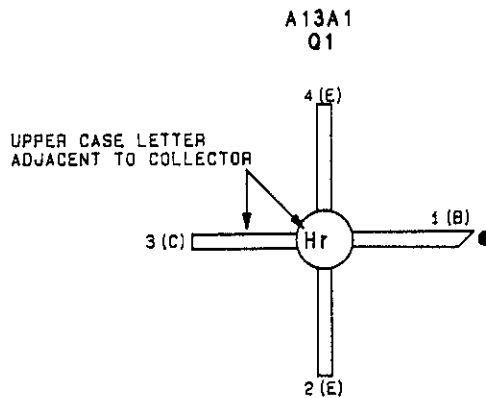
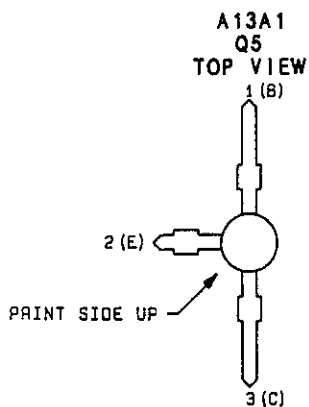
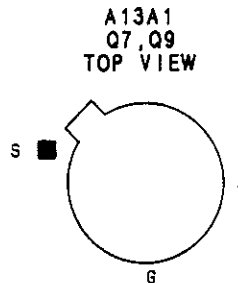
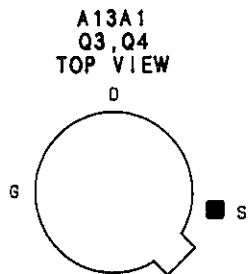
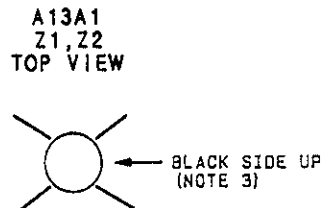
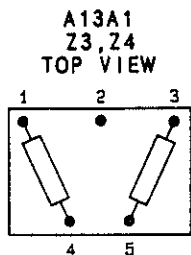
SS42

SEE REVERSE SIDE



Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. FL9 outer body must be soldered to pad in notched area of shielding.
3. Z1, Z2 are diode rings as shown on schematic. Pin numbering is not shown because devices can be oriented any way and still operate properly.
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

## CHANGES

## 2511A and above

## On the Component Locator:

- R61 - Remove R61.

## In Component Coordinates:

- R61 - Remove R61.

## On the schematic:

- In the upper right portion of the schematic, change A13A2 part number to 08642-60213.
- Replace appropriate portion of the schematic with the partial on 8P-104.3.
- To the left of ALC OFF, change bullet GU from "AMP SWEEP CONTROL" to "ALC OFF SELECT".

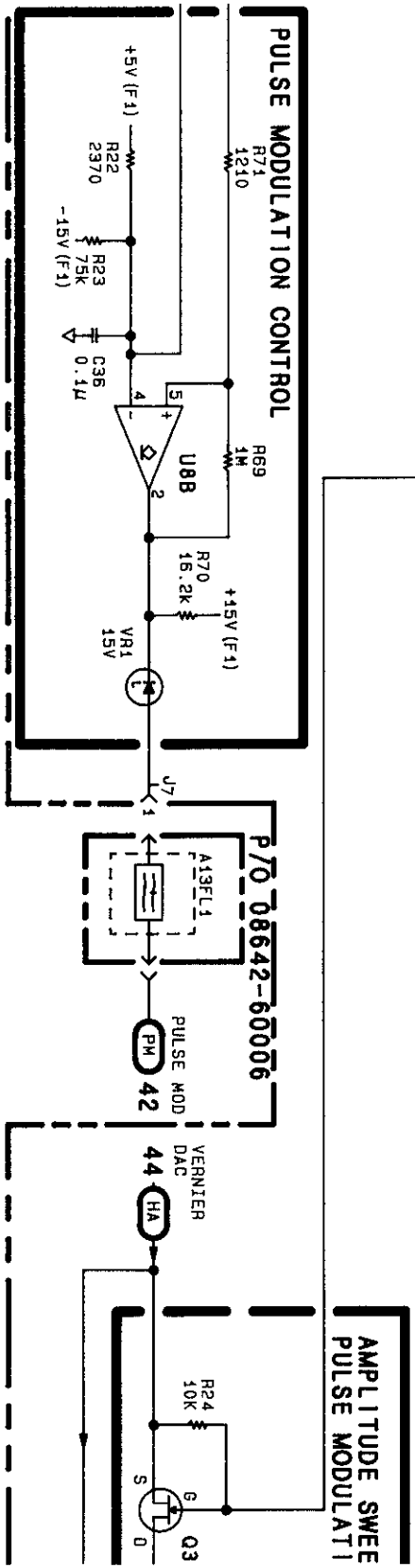


FIG. 8P-105  
 SHT. 1 OF 5

P/O A13A2 ALC/POWER AMPLIFIER ASSEMBLY (08642-60113)

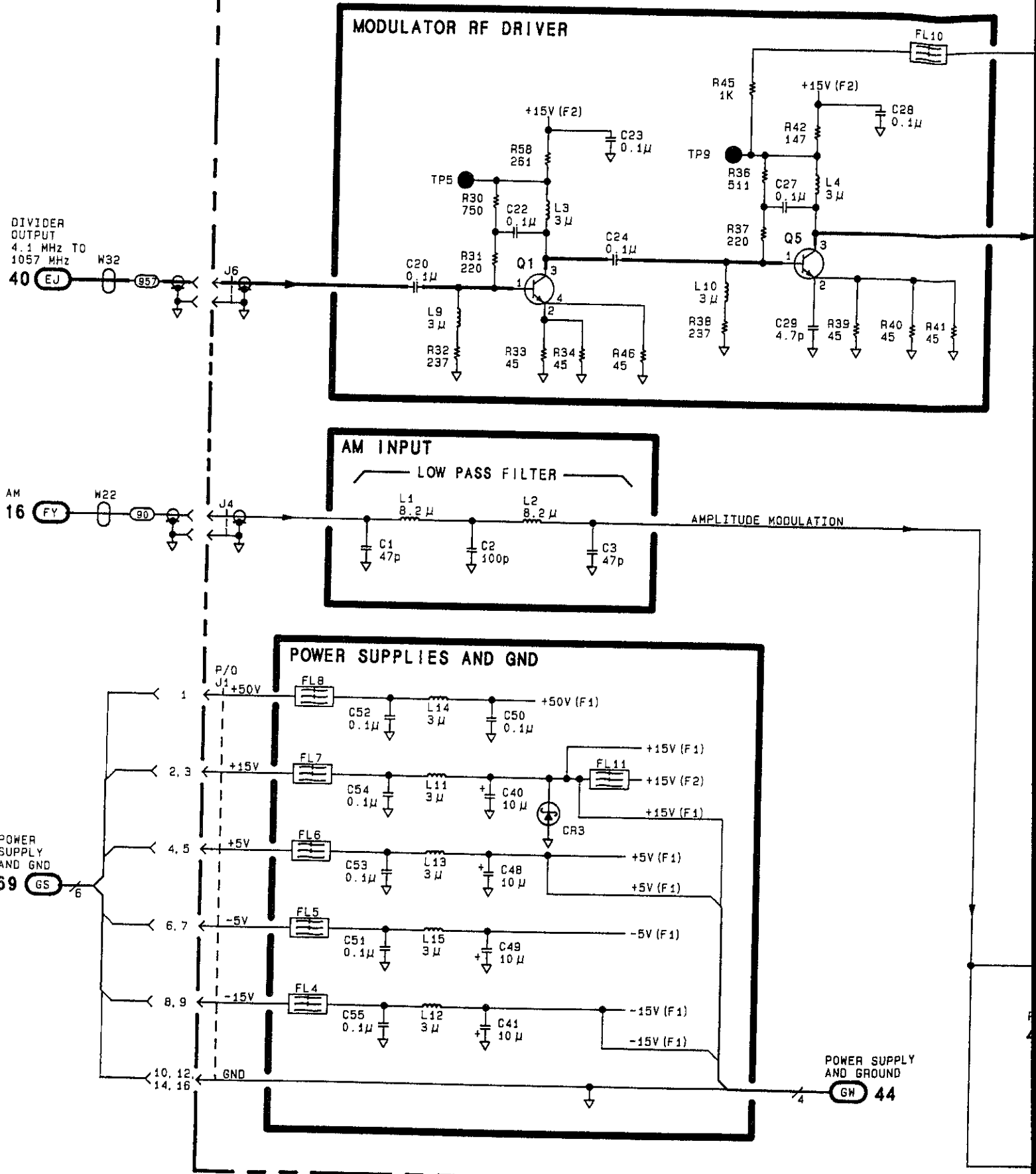


FIG. 8P-105, SHEET 2 OF 5

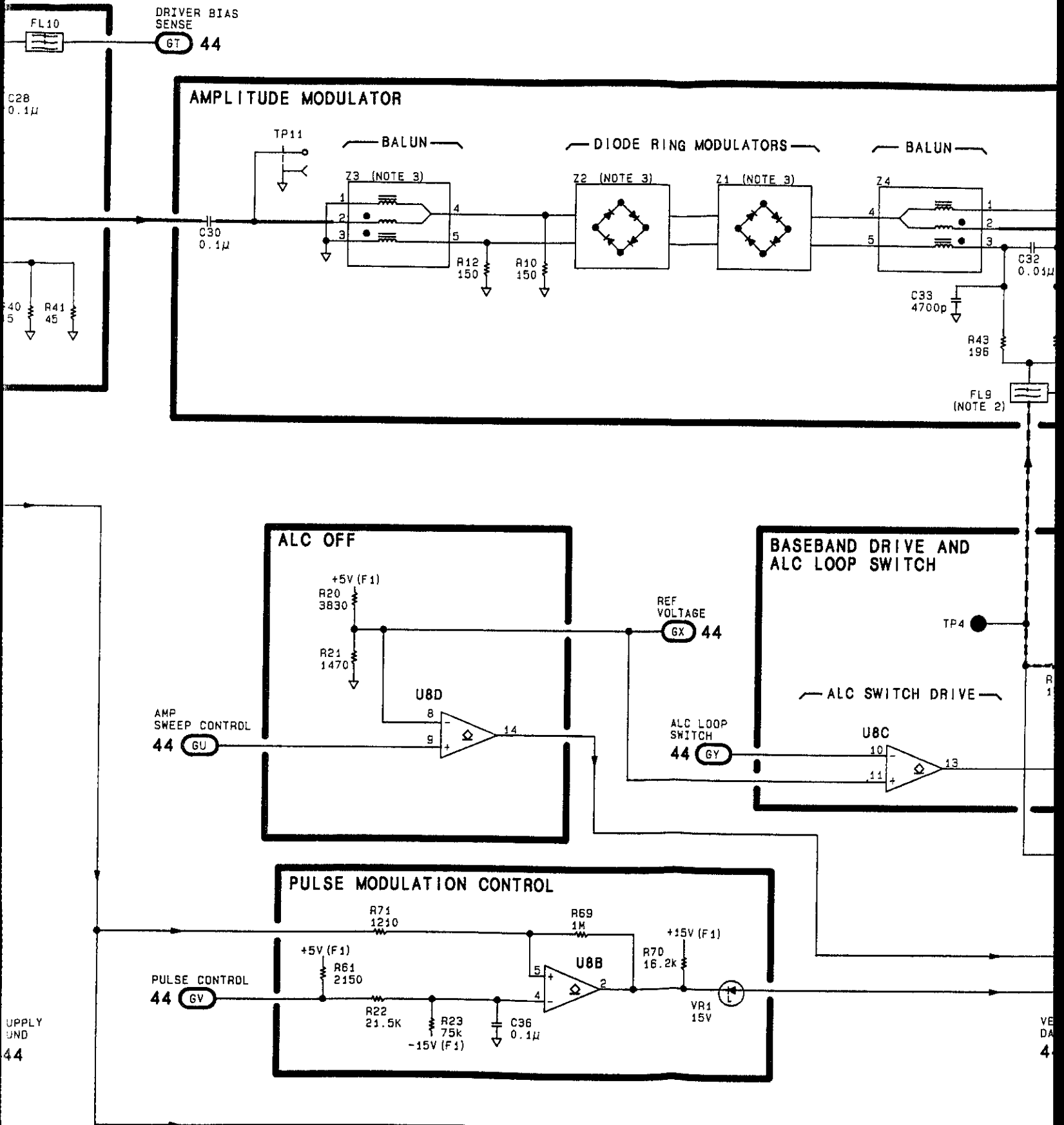


FIG. BP-105, SHT, 3 OF 5

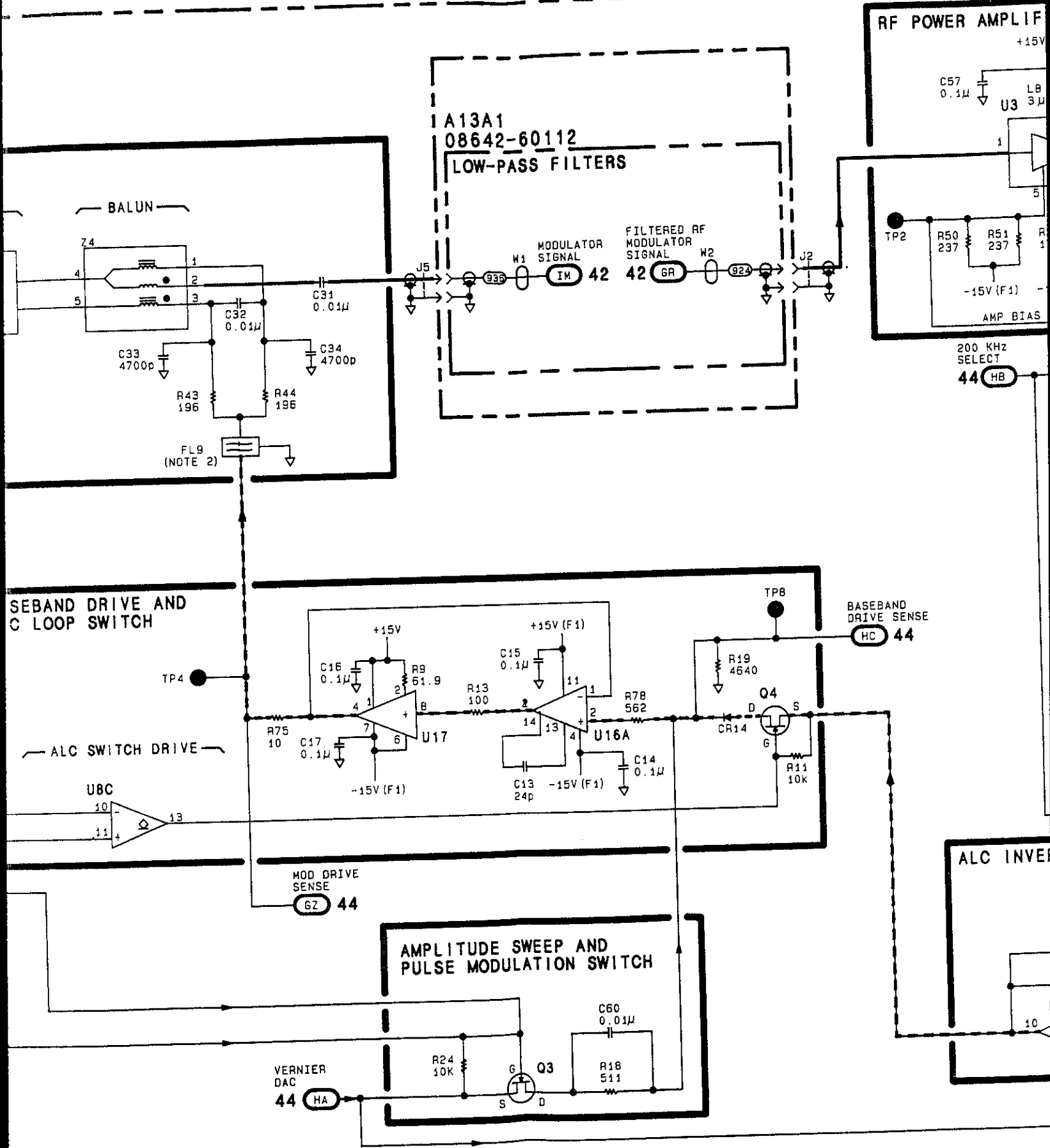
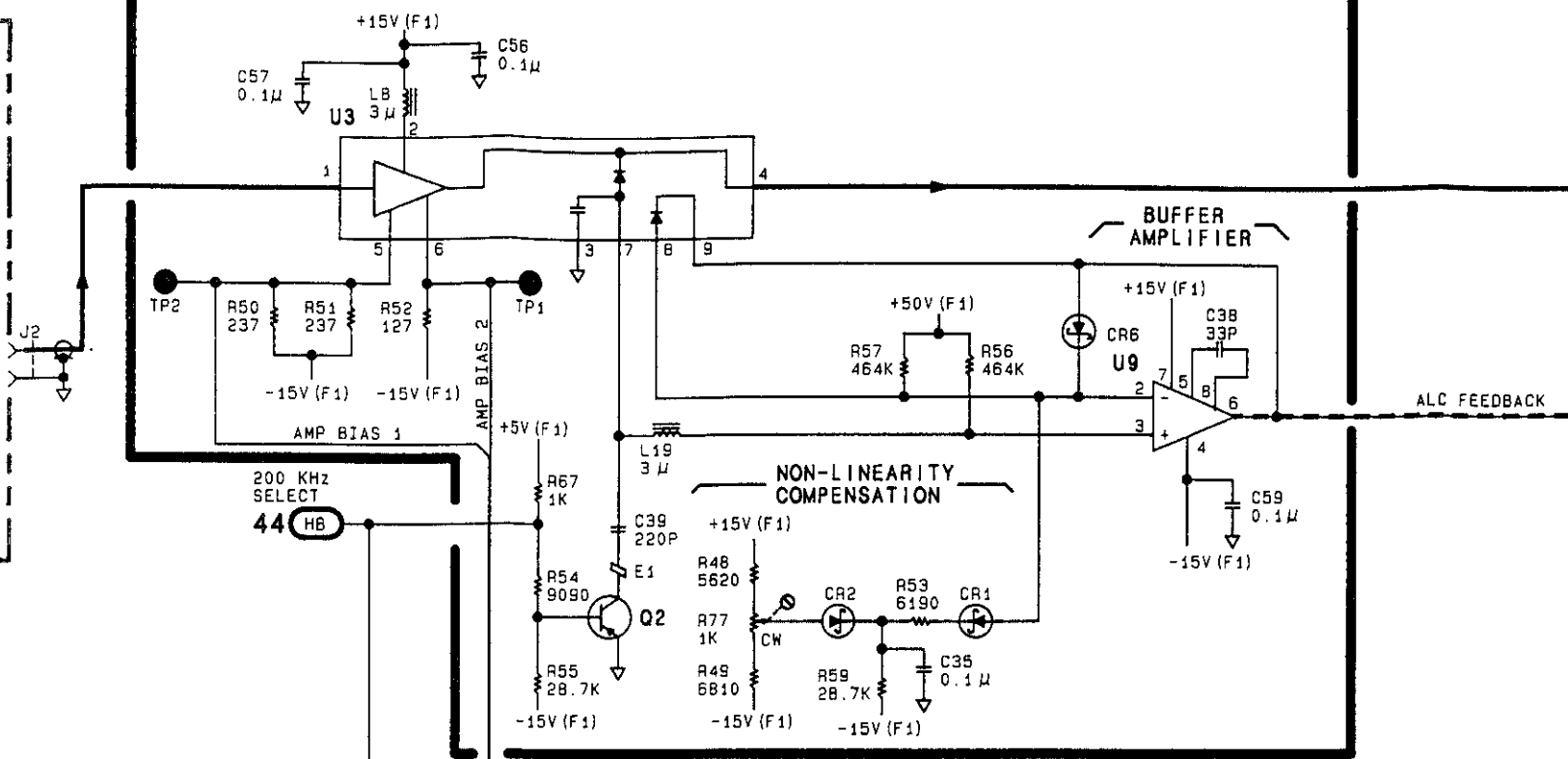
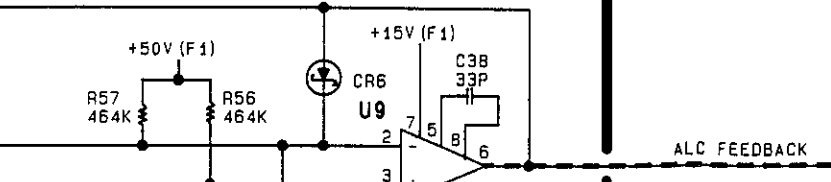


FIG. 8P-105, SH. 4 OF 5

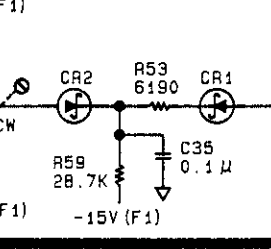
RF POWER AMPLIFIER AND PEAK DETECTOR



BUFFER AMPLIFIER



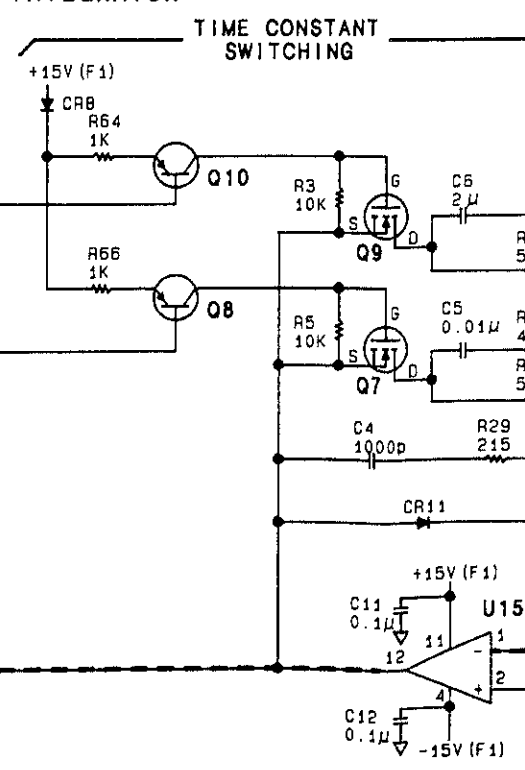
NON-LINEARITY COMPENSATION



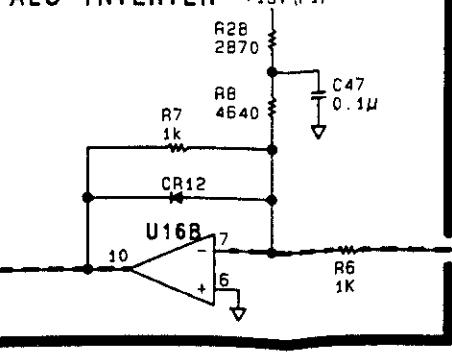
AMPLIFIER BIAS SENSE



INTEGRATOR



ALC INVERTER



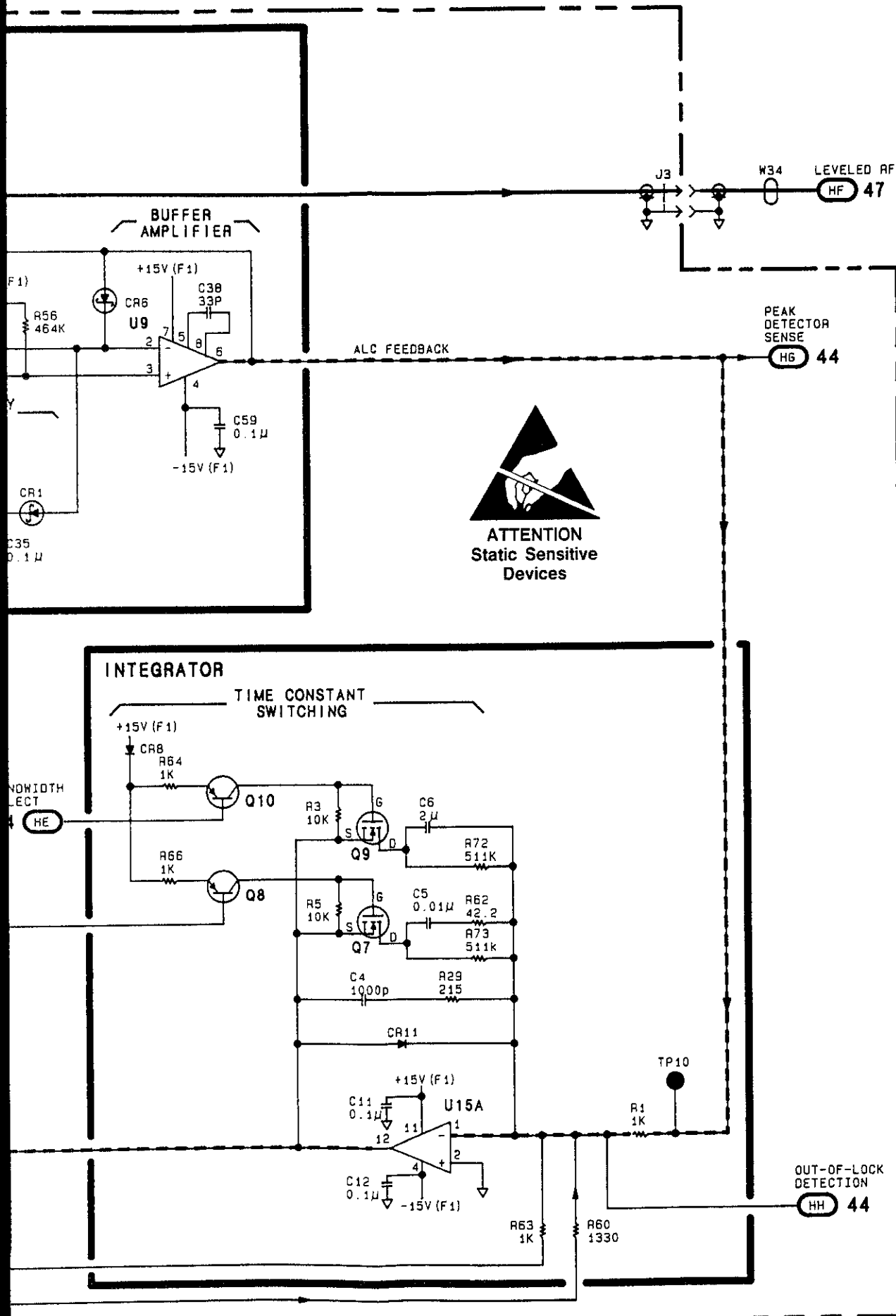
BASEBAND DRIVE SENSE



200 KHz SELECT  
44 HB

CW BANDWIDTH SELECT  
44 HE

FIG. 8P-105, SMT. 5 OF 5



SS43  
Figure 8P-105  
8P-105



FIG. 8P-106  
 SH. 1 OF 5

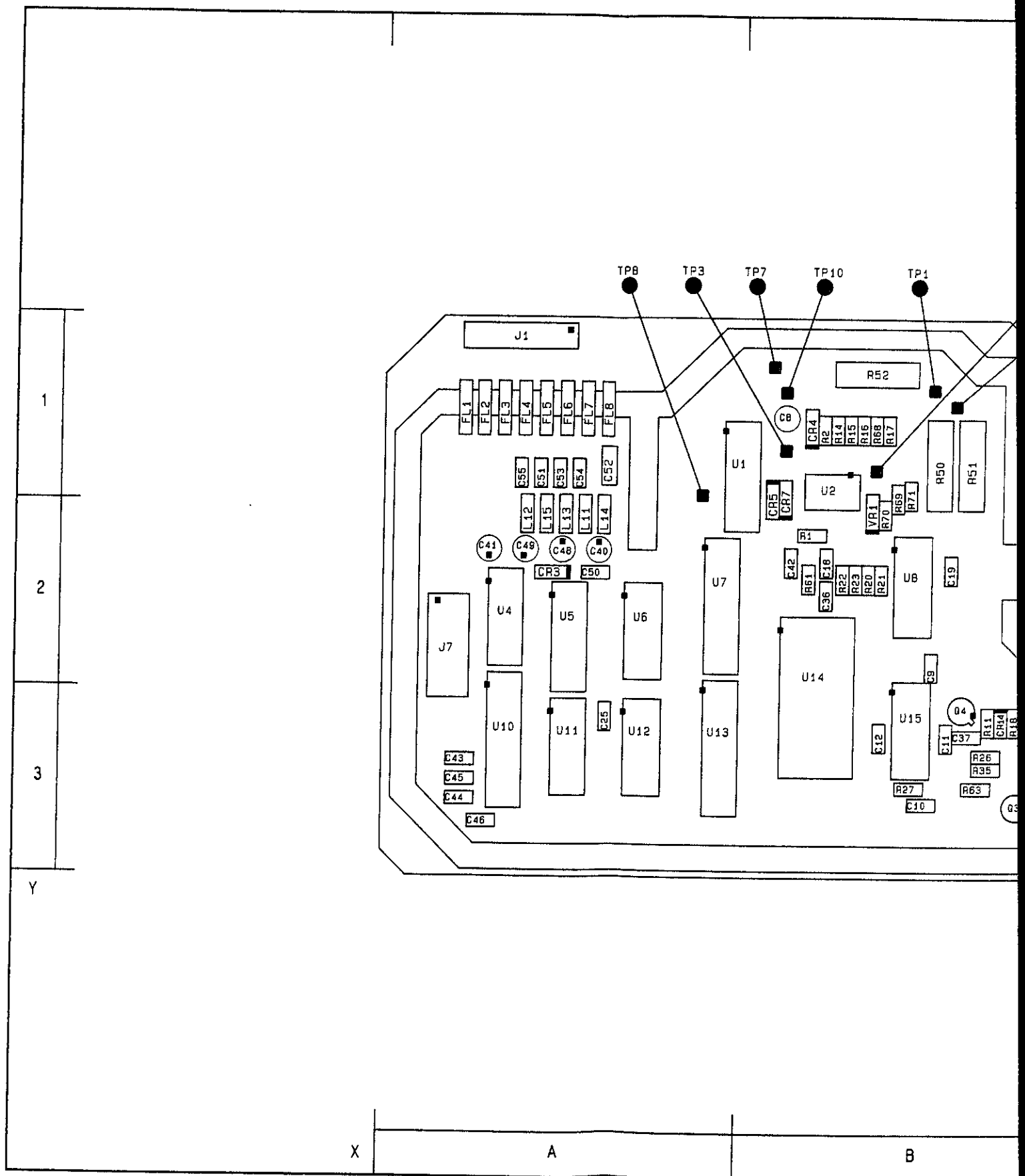
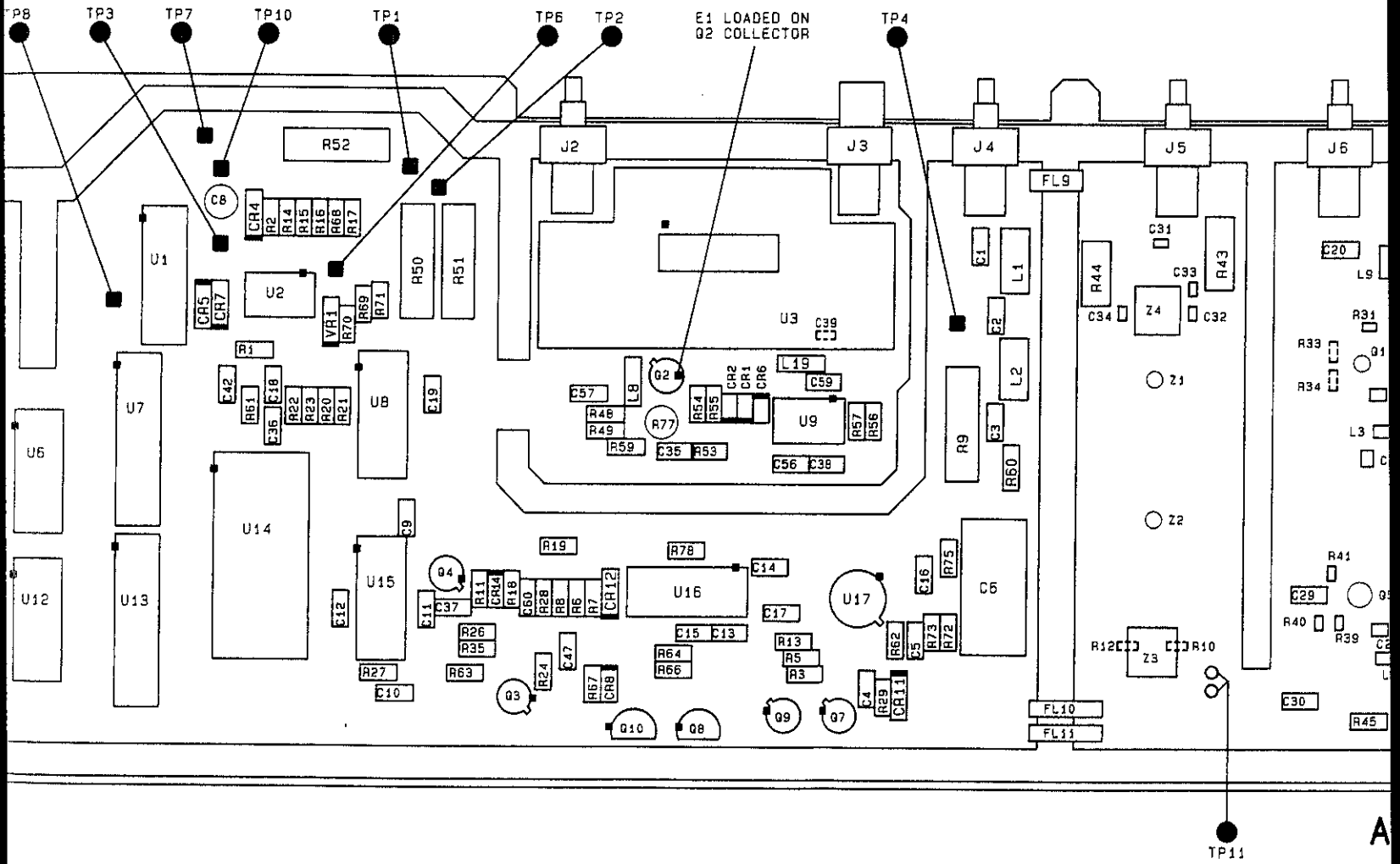


Figure 8P-106. SERVICE SHEET 44 INFORMATION

Comp

FIG. 8P-106  
 SH. 2 OF 5



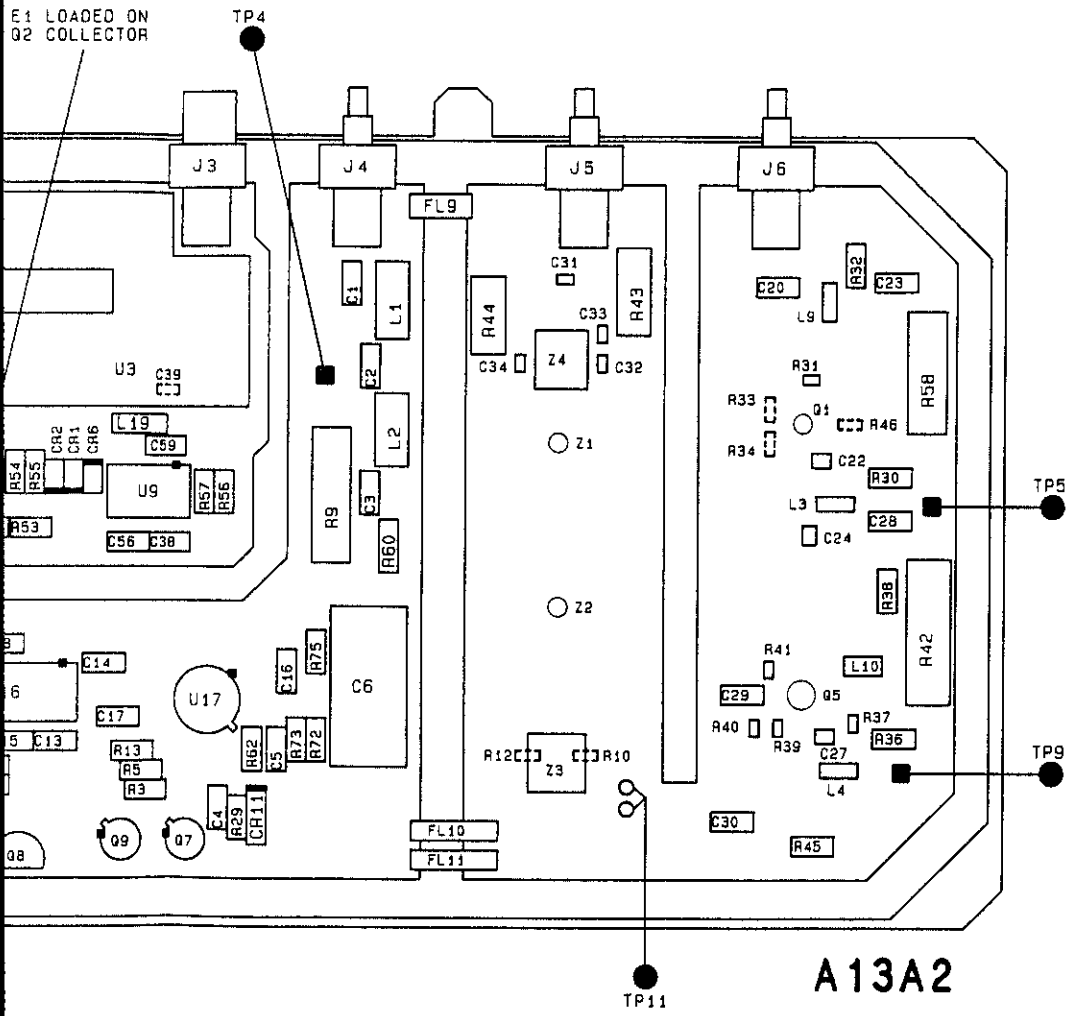
B

C

D

Component Locator

FIG. 8P-106  
STR. 3 OF 5

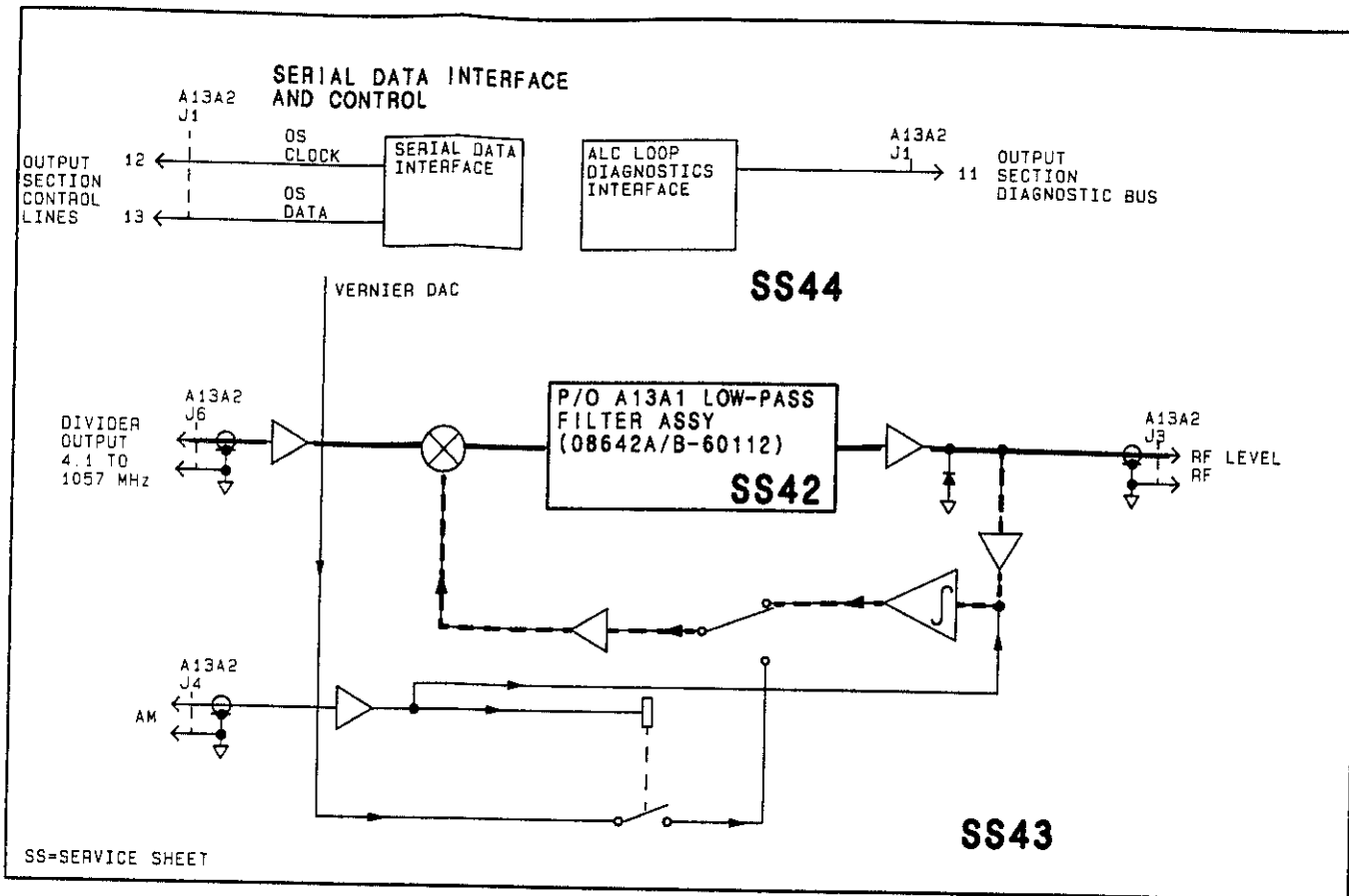


A13A2

C

D

FIG. 8P-106  
SHT. 4 OF 5



Reference Block Diagram

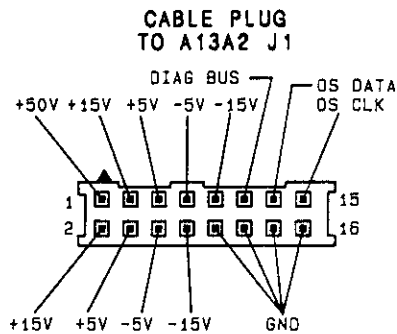
Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
CB	B, 1	U1	A, 1												
C9	B, 2	U2	B, 1												
C10	B, 3	U4	A, 2												
C18	B, 2	U5	A, 2												
C19	B, 2	U6	A, 2												
C25	A, 3	U7	A, 2												
C37	B, 3	U8	B, 2												
C42	B, 2	U10	A, 3												
C43	A, 3	U11	A, 3												
C44	A, 3	U12	A, 3												
C45	A, 3	U13	A, 3												
C46	A, 3	U14	B, 2												
		U15	B, 3												
CR4	B, 1														
CR5	B, 1														
CR7	B, 1														
FL1	A, 1														
FL2	A, 1														
FL3	A, 1														
J1	A, 1														
J7	A, 2														
R2	B, 1														
R14	B, 1														
R15	B, 1														
R16	B, 1														
R17	B, 1														
R26	B, 3														
R27	B, 3														
R35	B, 3														
R68	B, 1														
TP3	B, 1														
TP6	B, 1														
TP7	B, 1														

P/O A13A2 ALC/POWER AMPLIFIER ASSEMBLY **SS43**  
SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. FL1, FL2, FL3 outer bodies must be soldered to pads in notched area of shielding.
3. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph B-3.
4. A13FL1 is an array of feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.



Schematic General Information

## CHANGES

### All Serial Prefixes

On the schematic:

- To the left of **OUT-OF-LOCK WINDOW COMPARATOR**, add "43" next to the bullet "HH" and delete "A13A2".
- J7 - On the right side of the schematic, under P/O J7, change the following pin numbers:
  - 3 to 8
  - 4 to 6
  - 1 to 7
  - 8 to 5
  - 6 to 3
  - 7 to 4
  - 5 to 1

### 2511A and above

On the schematic:

- In the upper left portion of the schematic, change A13A2 part number to 08642-60213.
- Replace the appropriate portion of the schematic with the partial on 8P-106.3.
- J7, A13FL1 - On the right side of the schematic, delete the line labeled GND, J7 pin 1, and the feed through filter connected to J7 pin 1. Be sure J7 pin numbering changes were made first! (See All Serial Prefixes).
- To the right of **SERIAL DATA INTERFACE**, change bullet GU from "AMP SWEEP CONTROL" to "ALC OFF SELECT".

ALC LOOP SWITCH  
6T 43

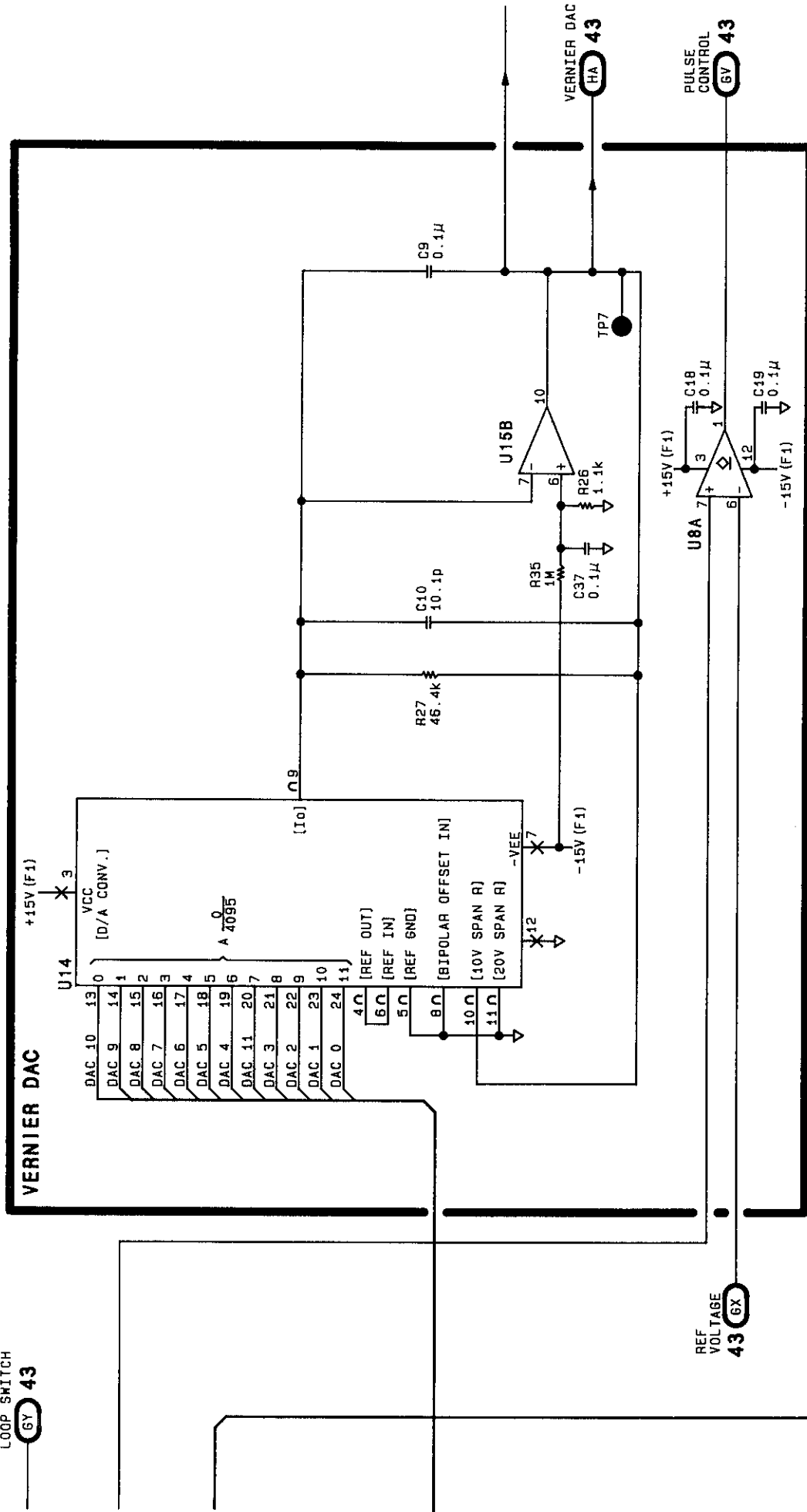


FIG. 8P-107  
SHT. 1 OF 5

# P/O A13A2 ALC/POWER AMPLIFIER ASSEMBLY (08642-60113)

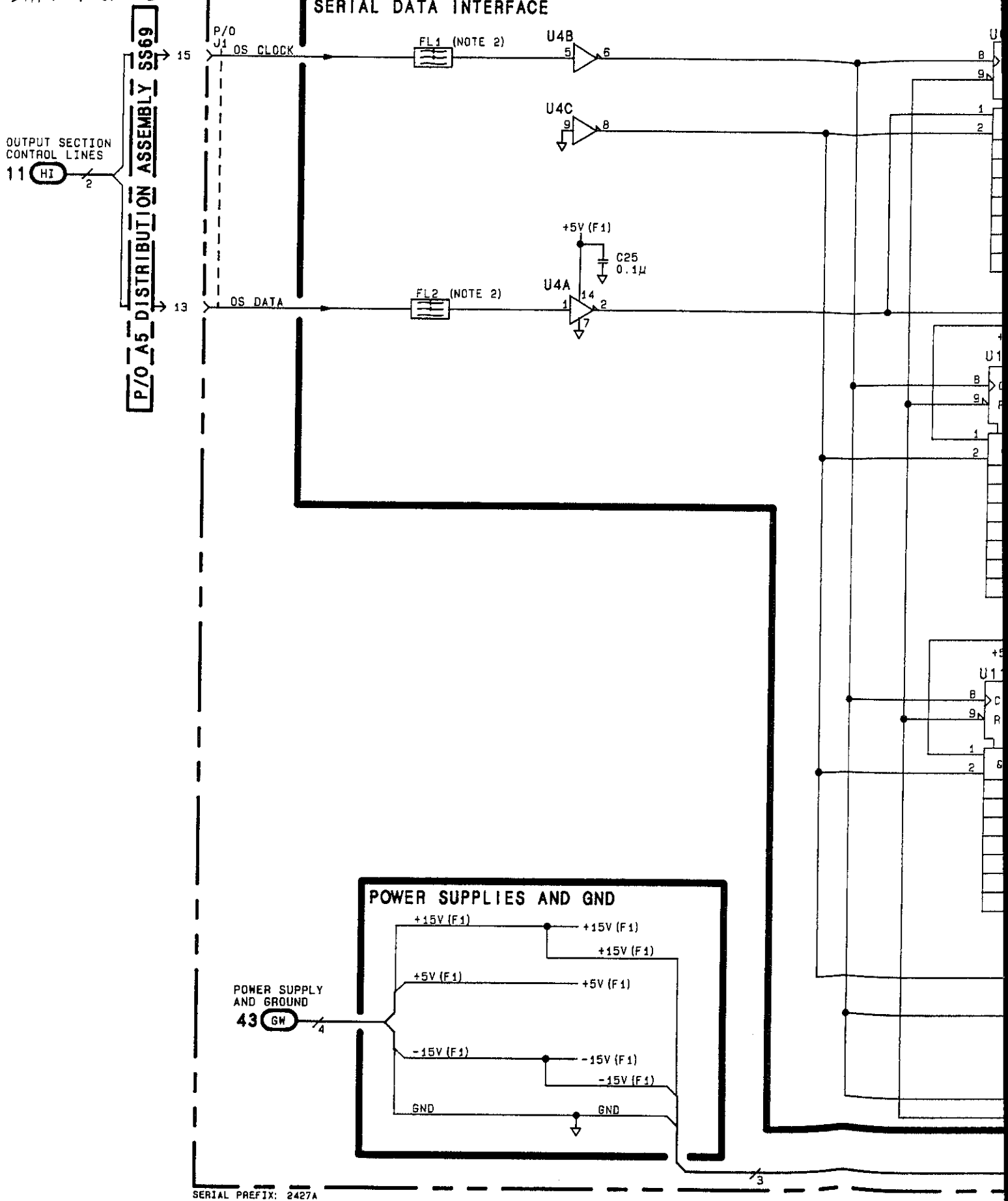




FIG. 8P-107  
SHT. 2 OF 5

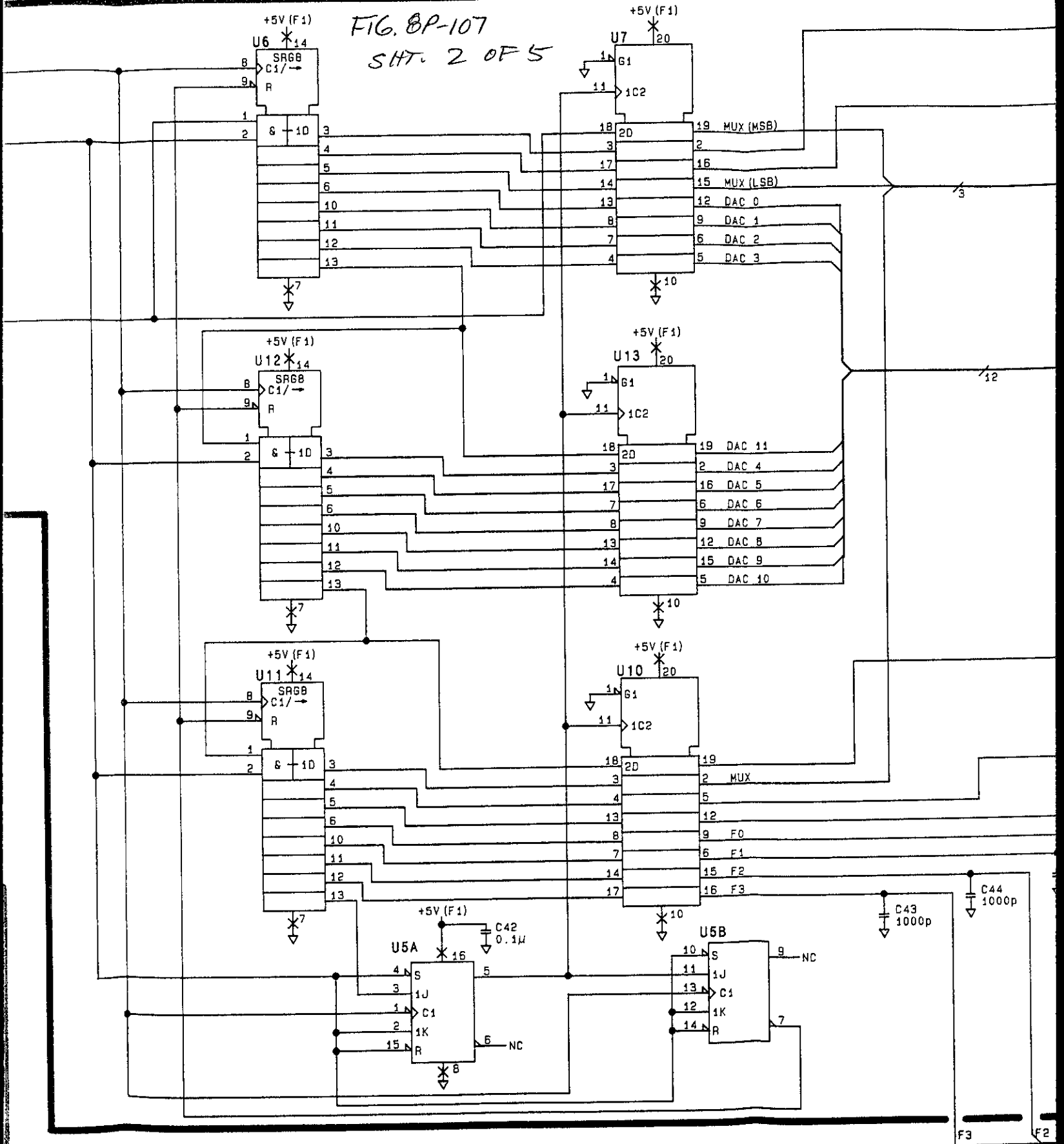


FIG. 8P-107, SAT. 3 OF 5

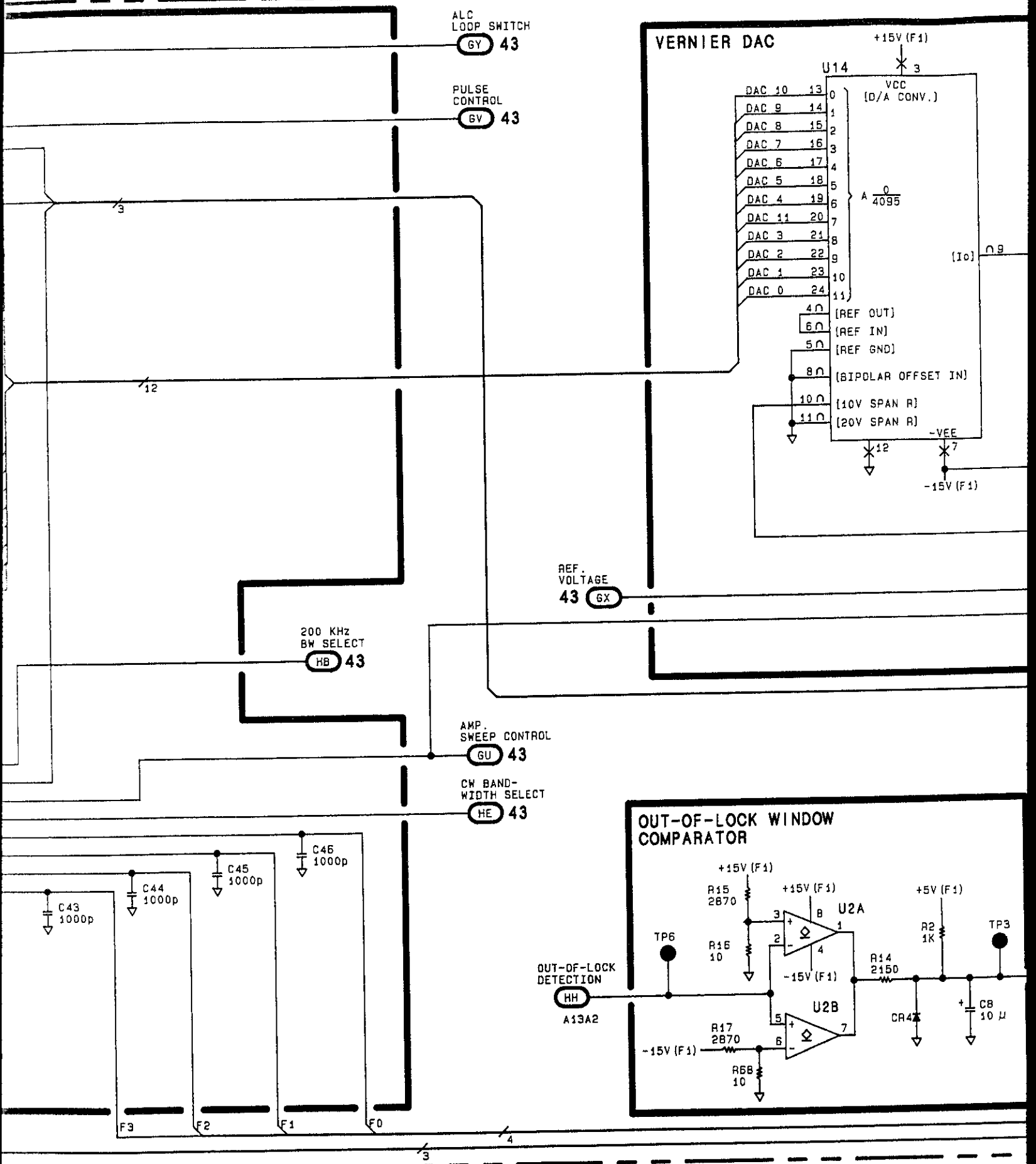
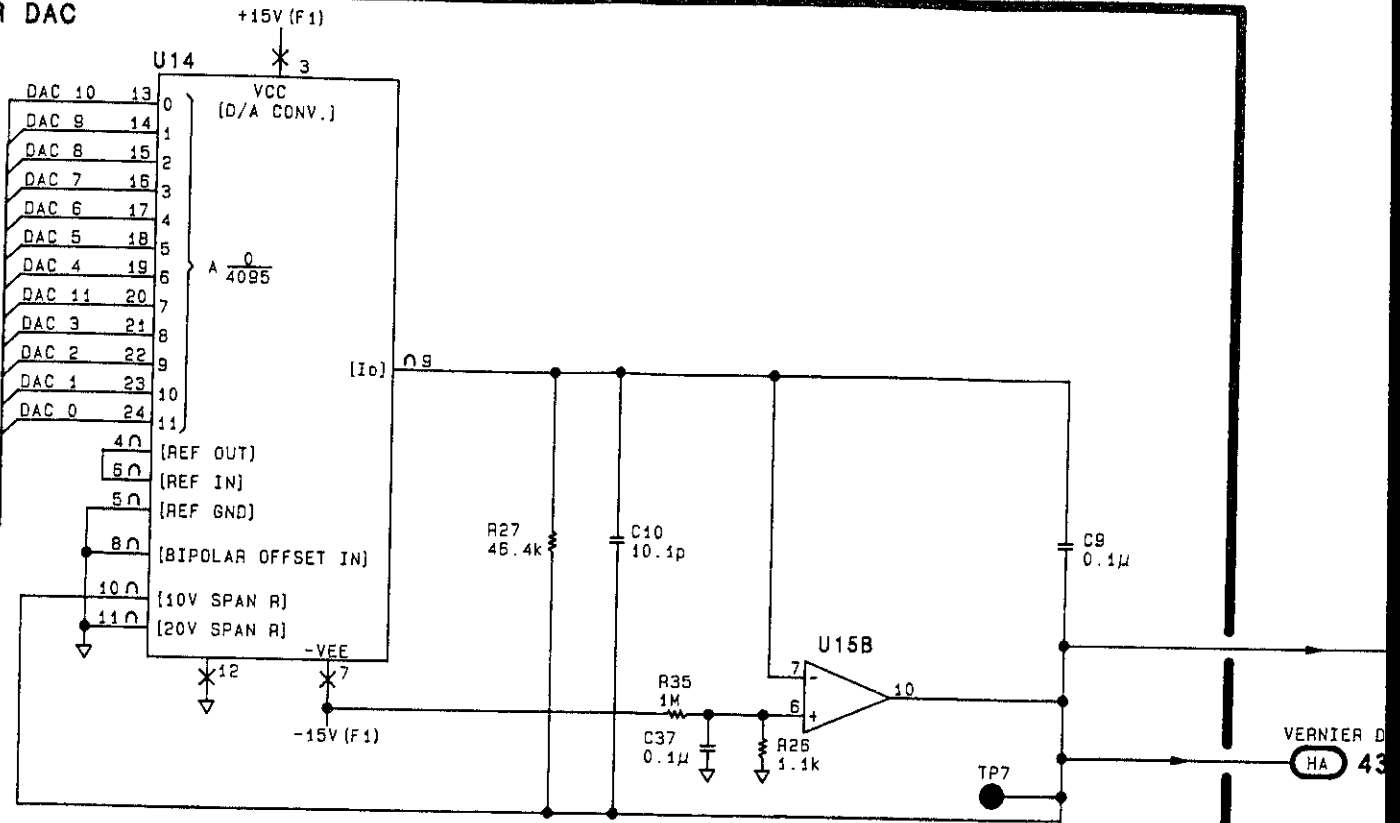


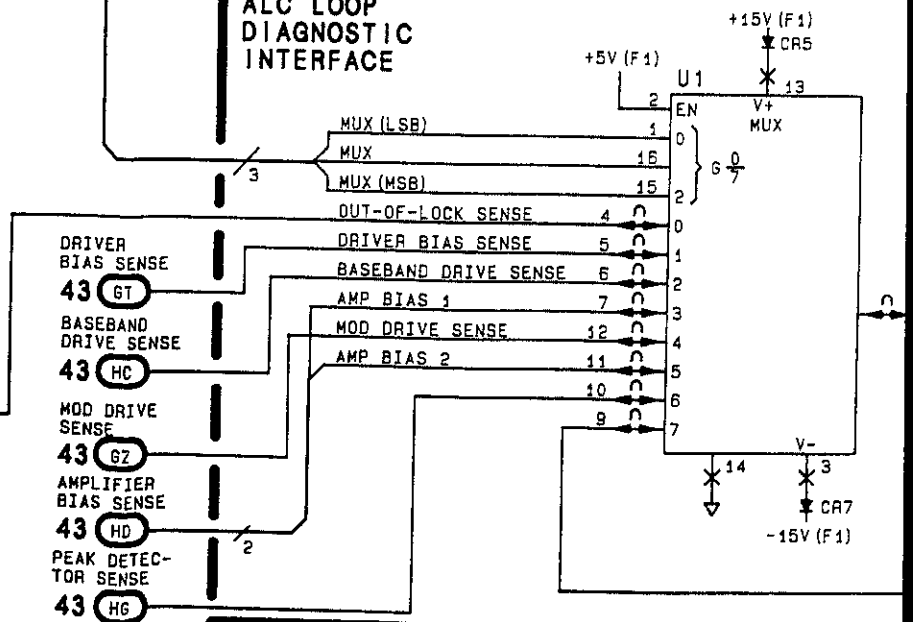
FIG. 8P-107, SH. 4 OF 5

VERNIER DAC



GE  
BX

ALC LOOP  
DIAGNOSTIC  
INTERFACE



OUT-OF-LOCK WINDOW  
COMPARATOR

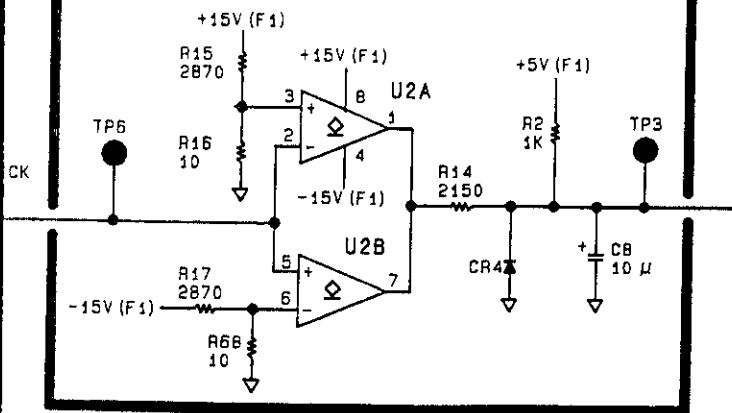
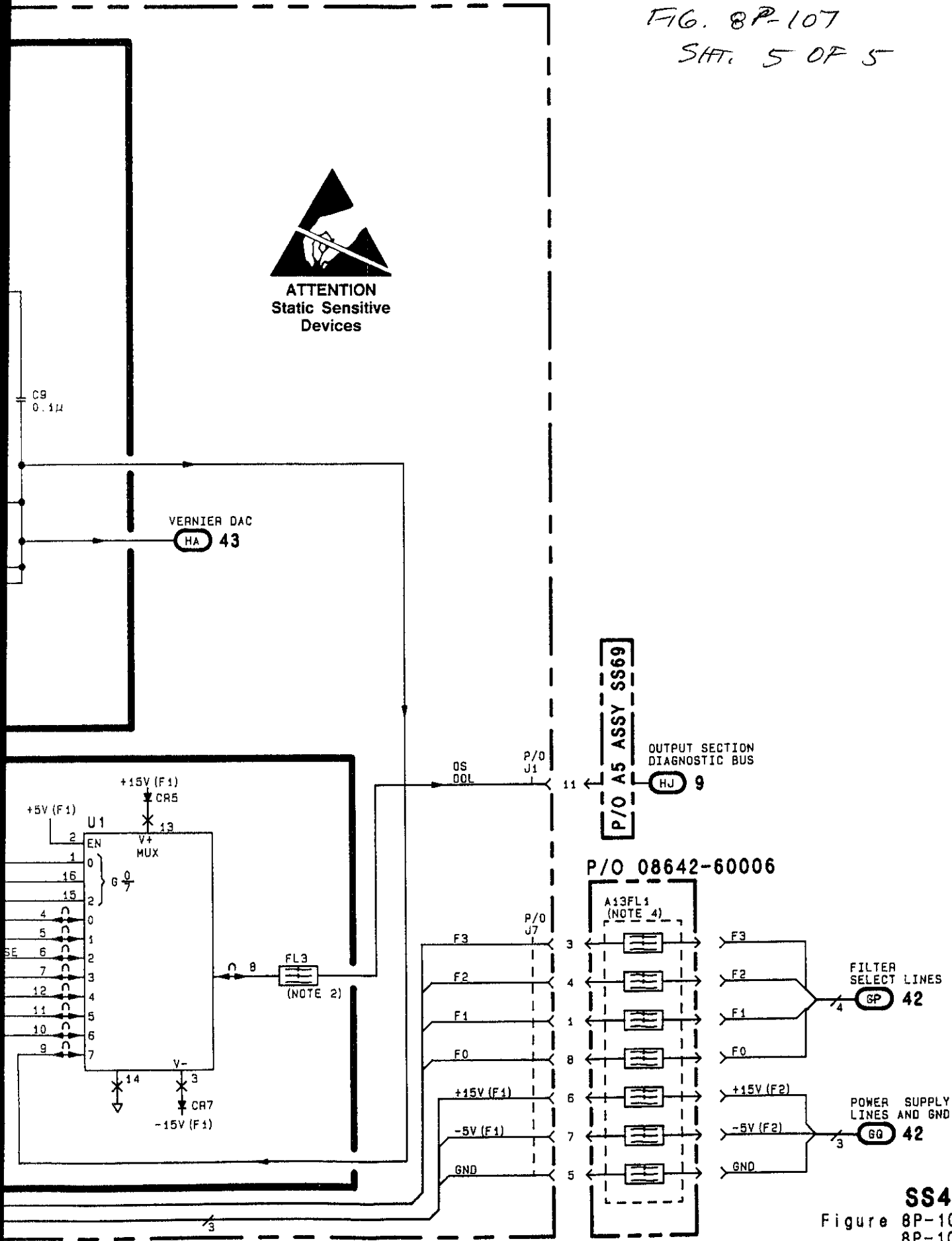


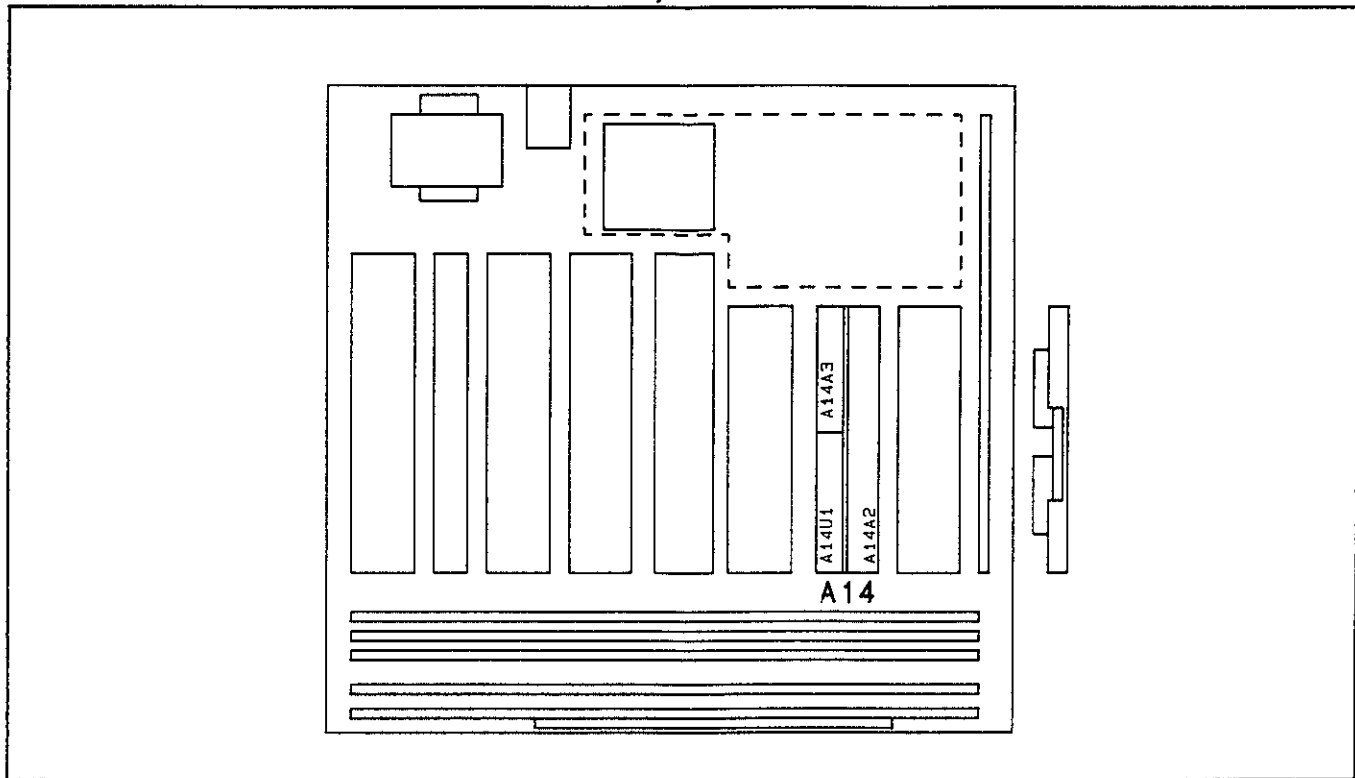
FIG. 8P-107  
 SHE. 5 OF 5



SS44  
 Figure 8P-107  
 8P-107

A14 Heterodyne Module

FIG. 8Q-100, SH-1 OF 2  
 Assembly Locator



Simplified Block Diagram

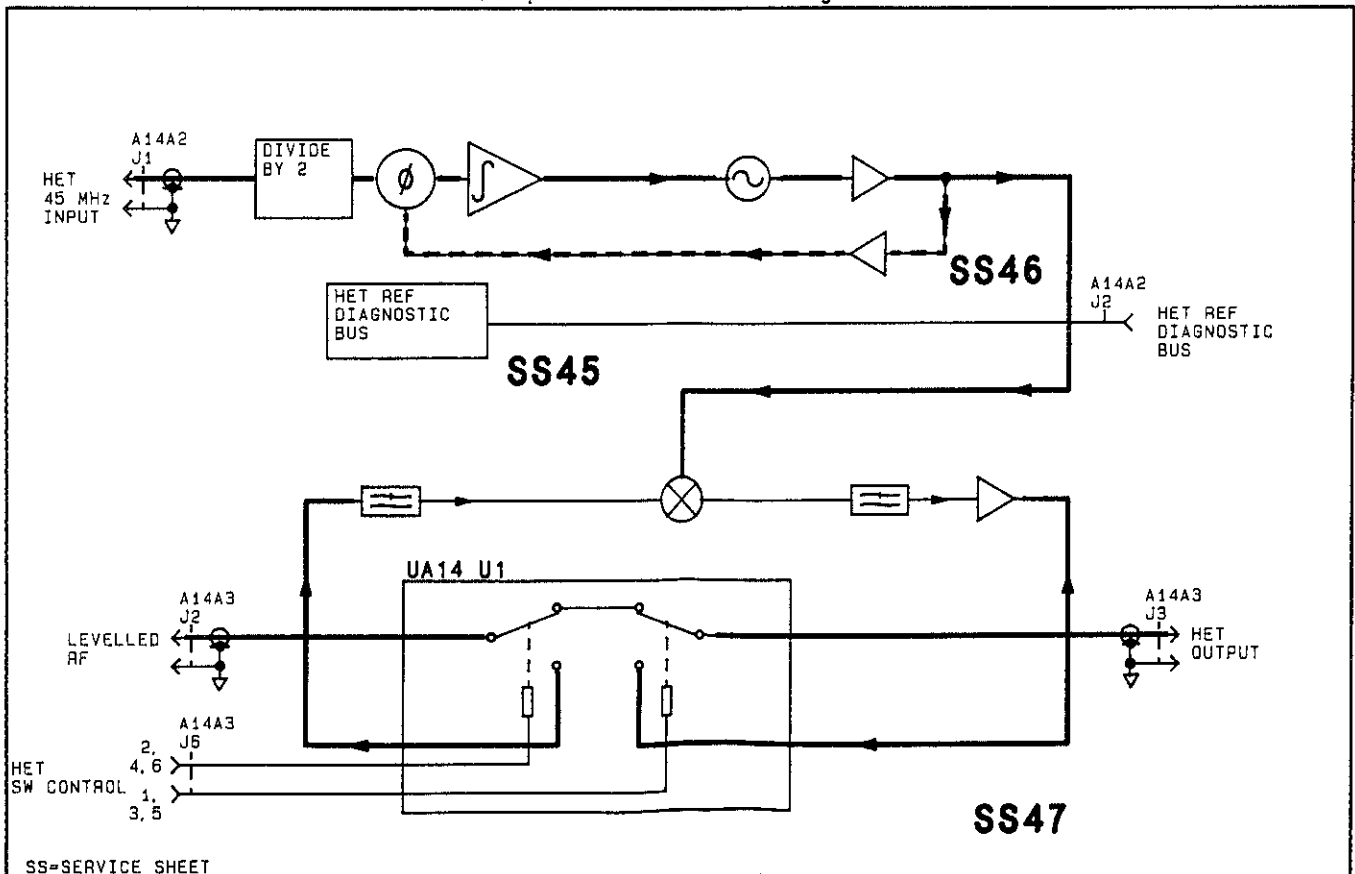
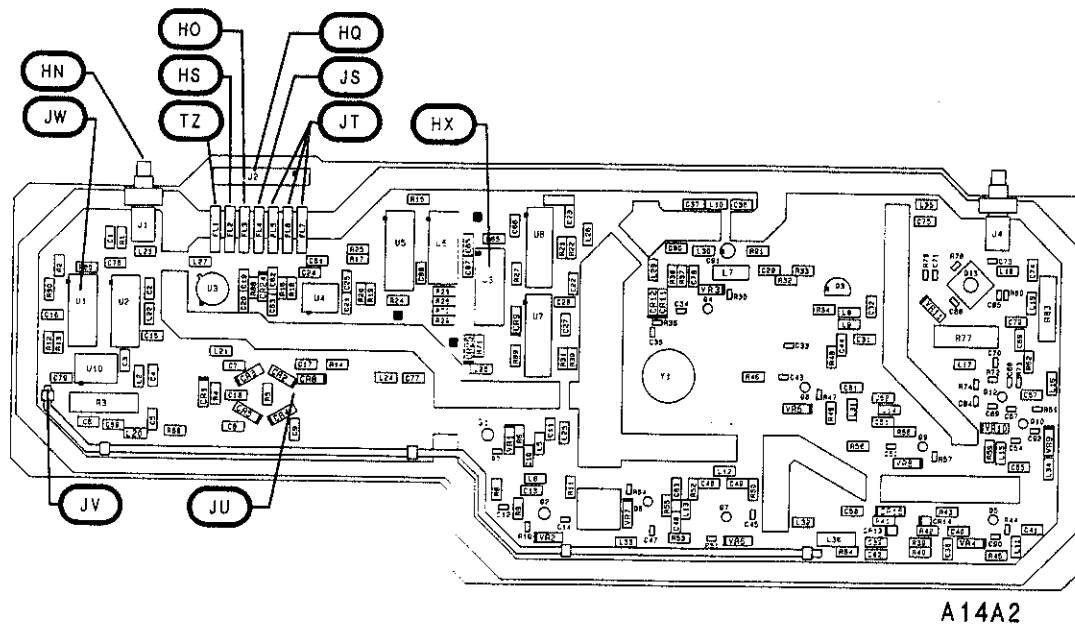
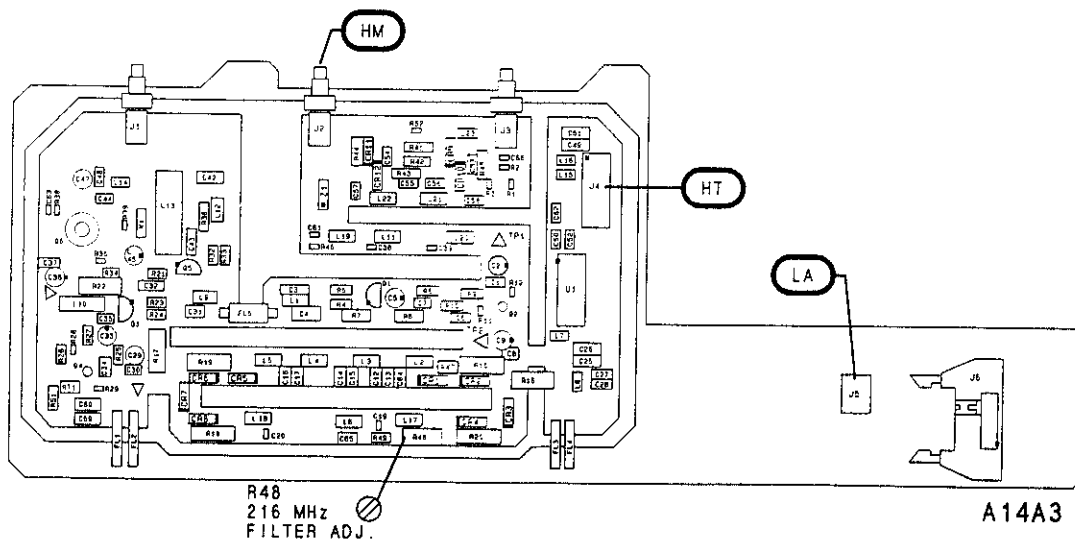


Figure 8Q-100 BD15 General Information.

Module Test Point/Adjustment Locations



A14A2



A14A3

## CHANGES

**2509A and above**

On the block diagram:

- A14A2 - In the upper left portion of the block diagram, change the A14A2 assembly number to 08642-60215.

**2526A and above**

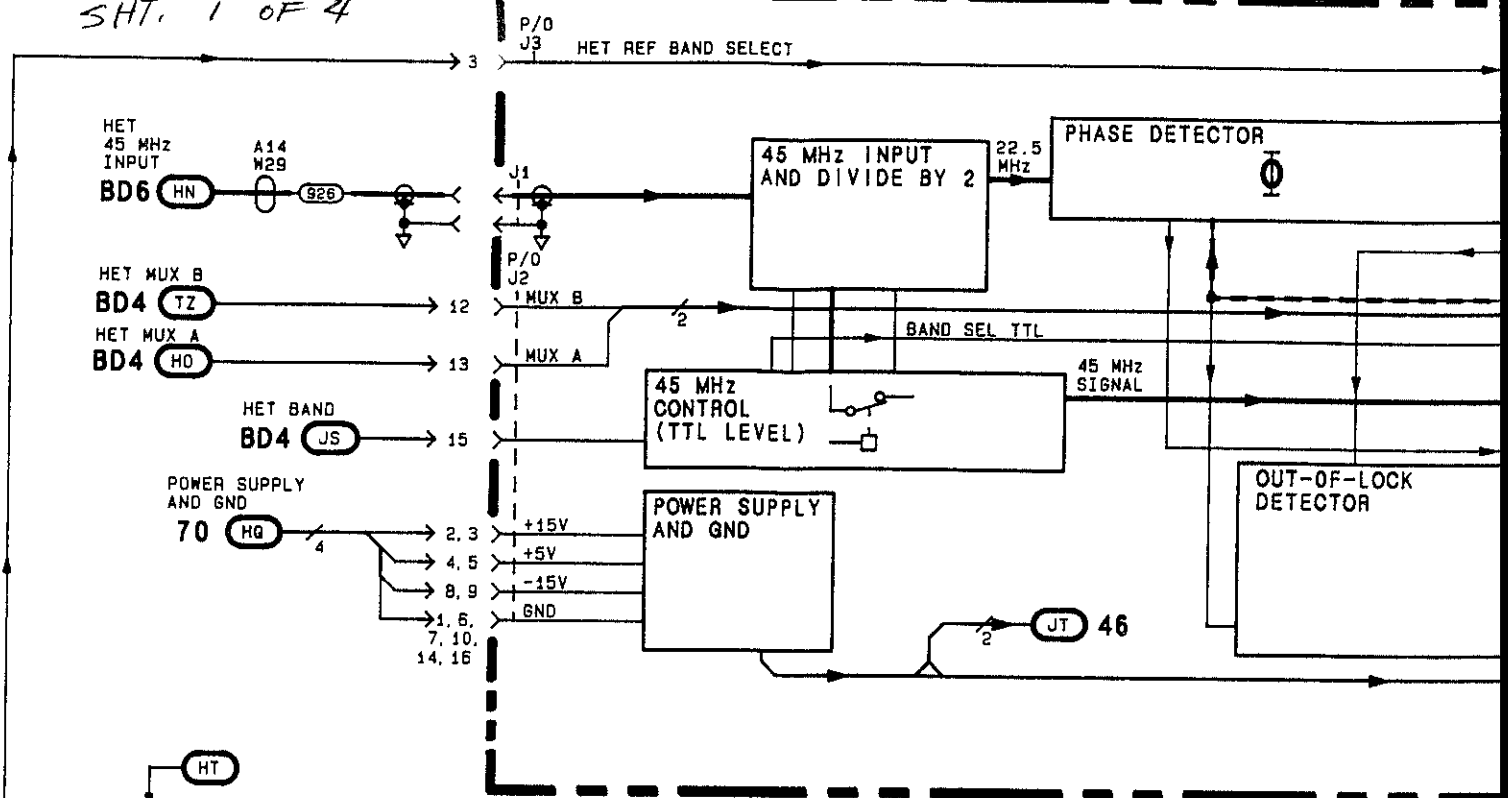
On the block diagram:

- A14A2 - In the upper left portion of the block diagram, change the A14A2 assembly number to 08642-60315.

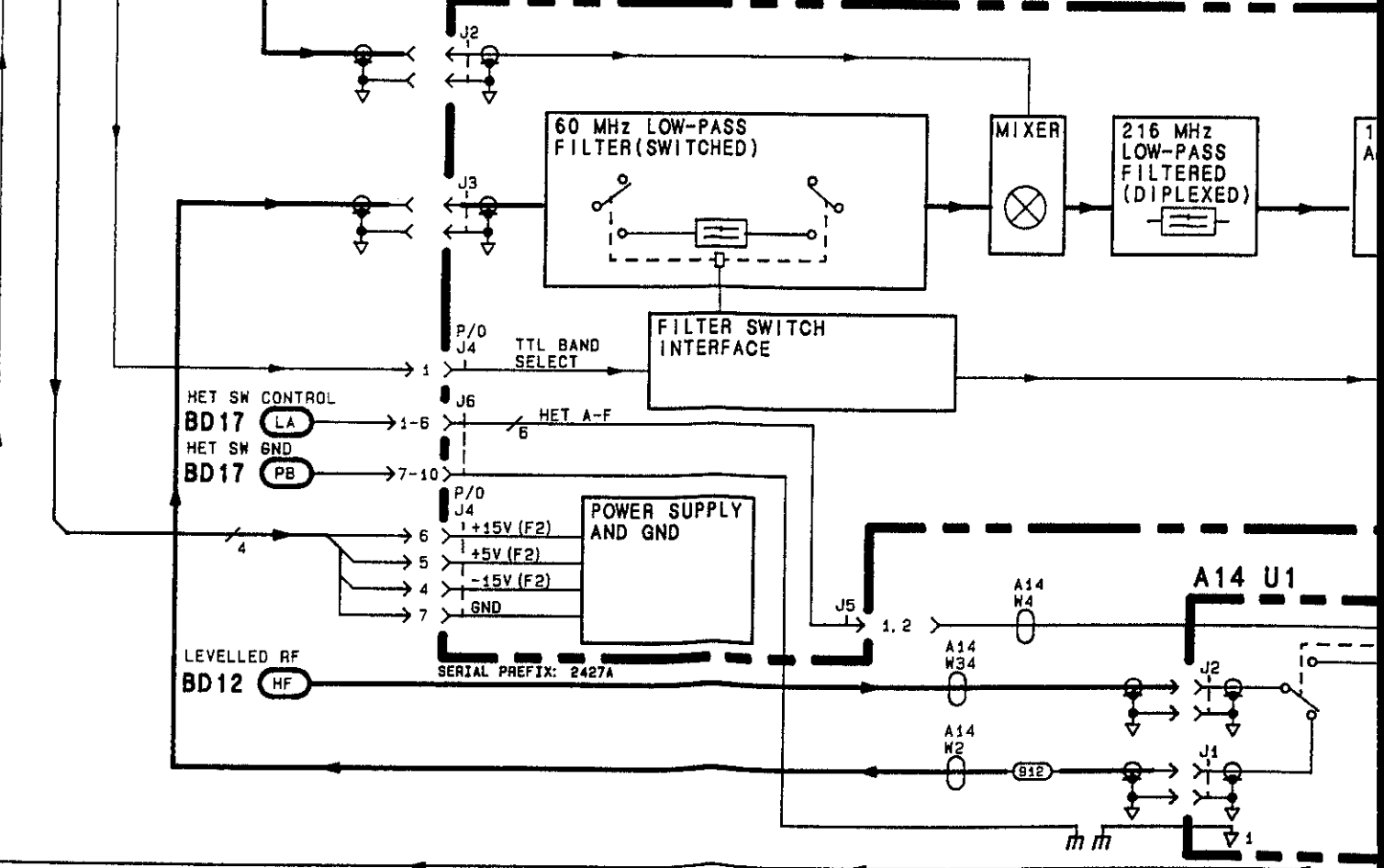


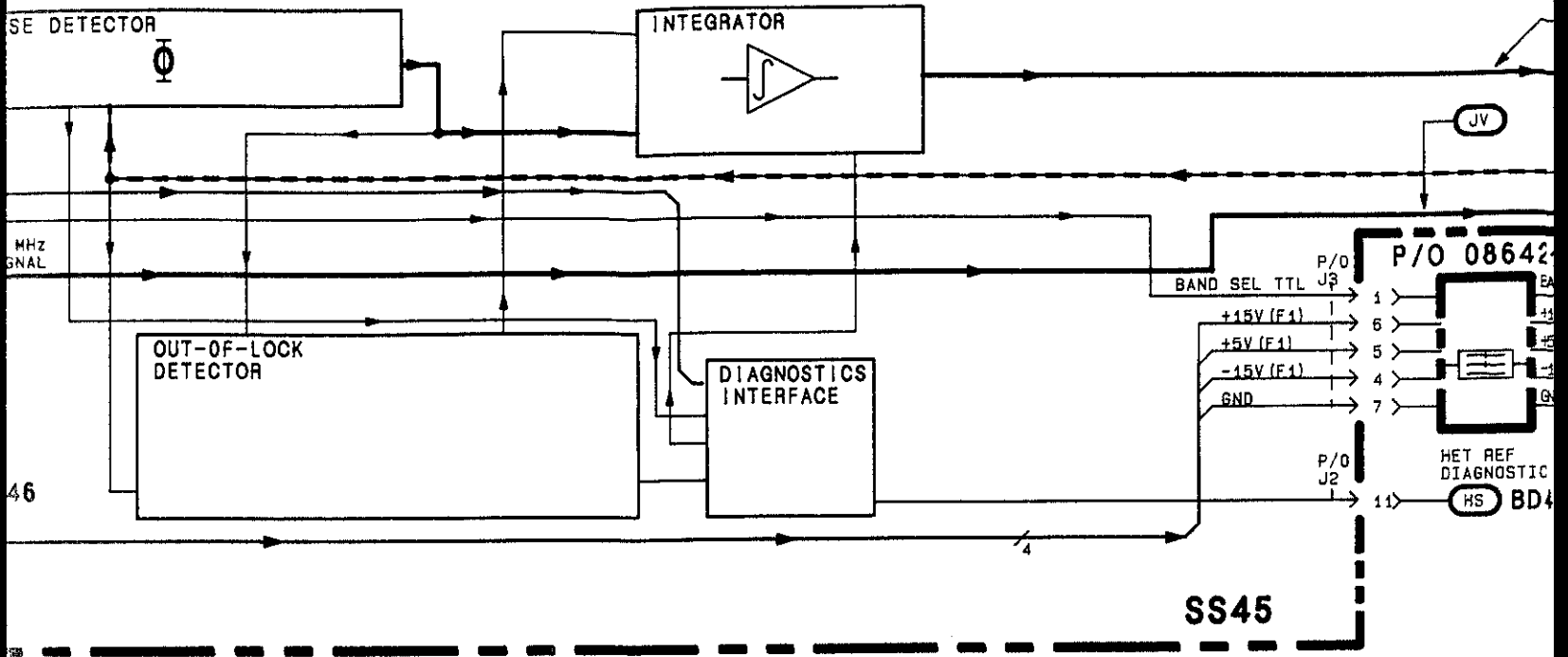
FIG. 8Q-101  
SHT. 1 OF 4

**A14A2 HETERODYNE LOCAL OSCILLATOR ASSEMBLY (08642-60)**



**A14A3 HETERODYNE ASSEMBLY (08642-60116)**





2-60116)

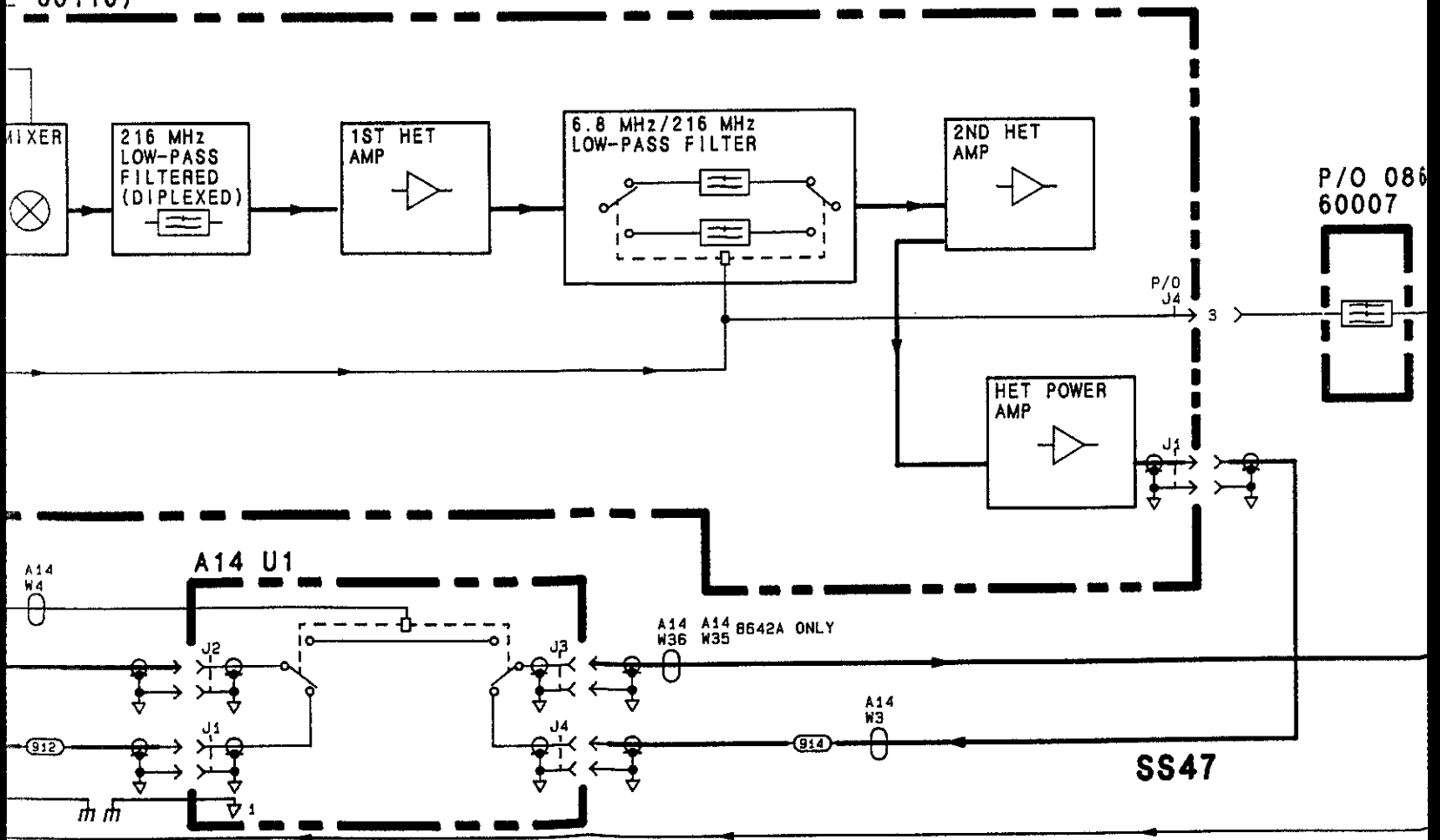


FIG. 8Q-101, SHY. 3 OF 4

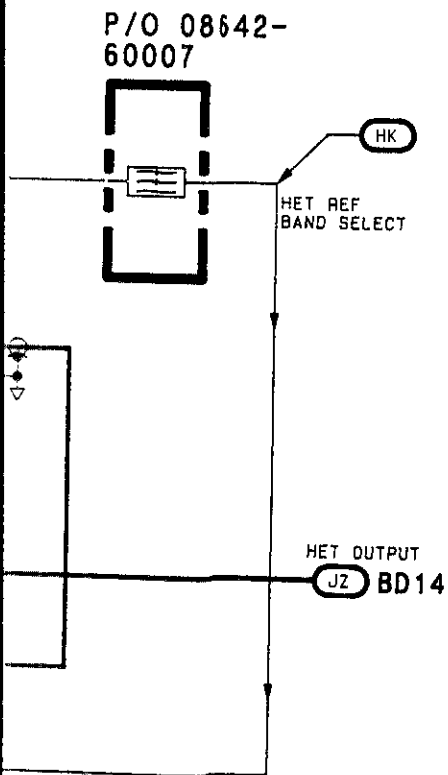
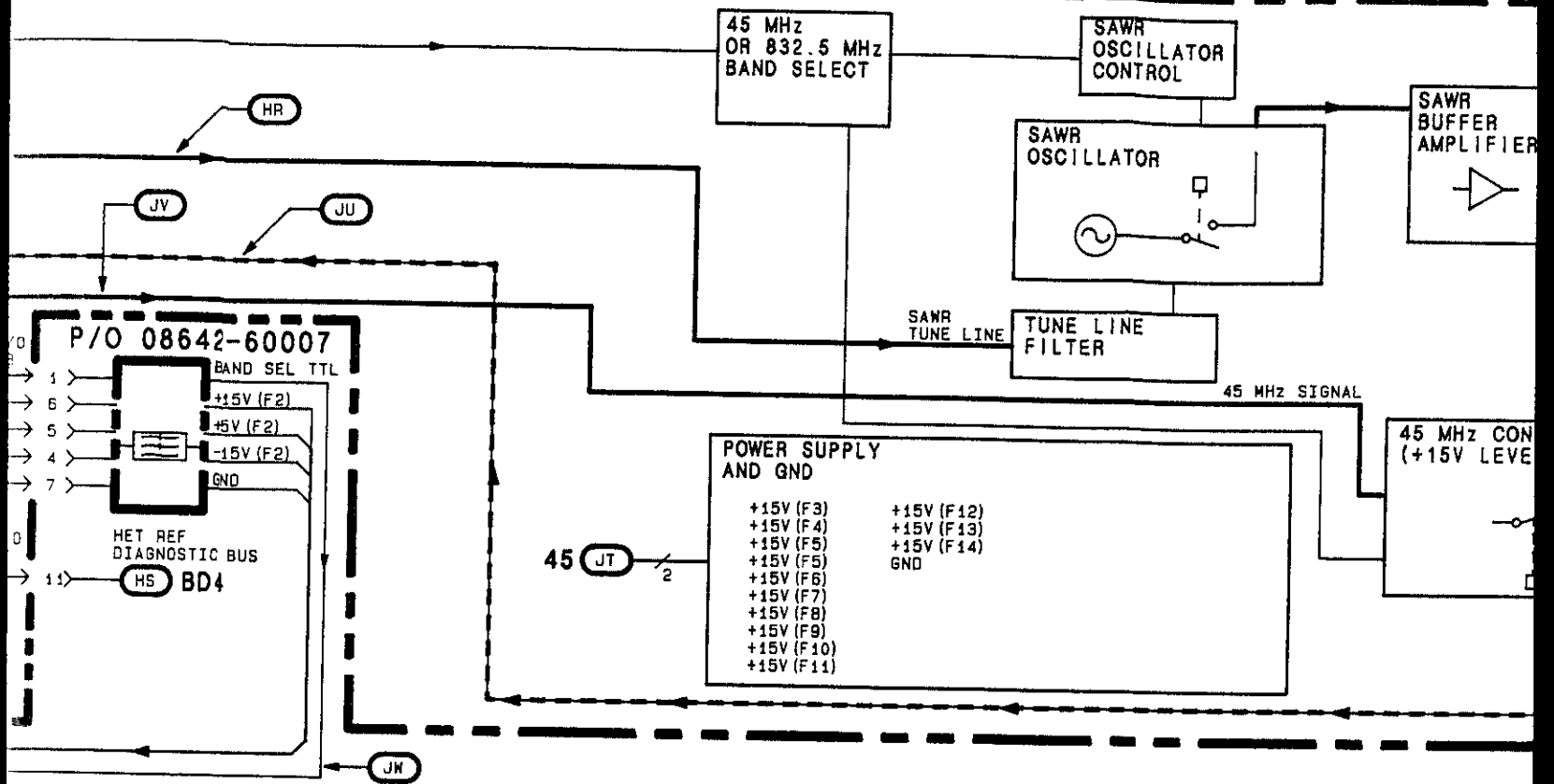
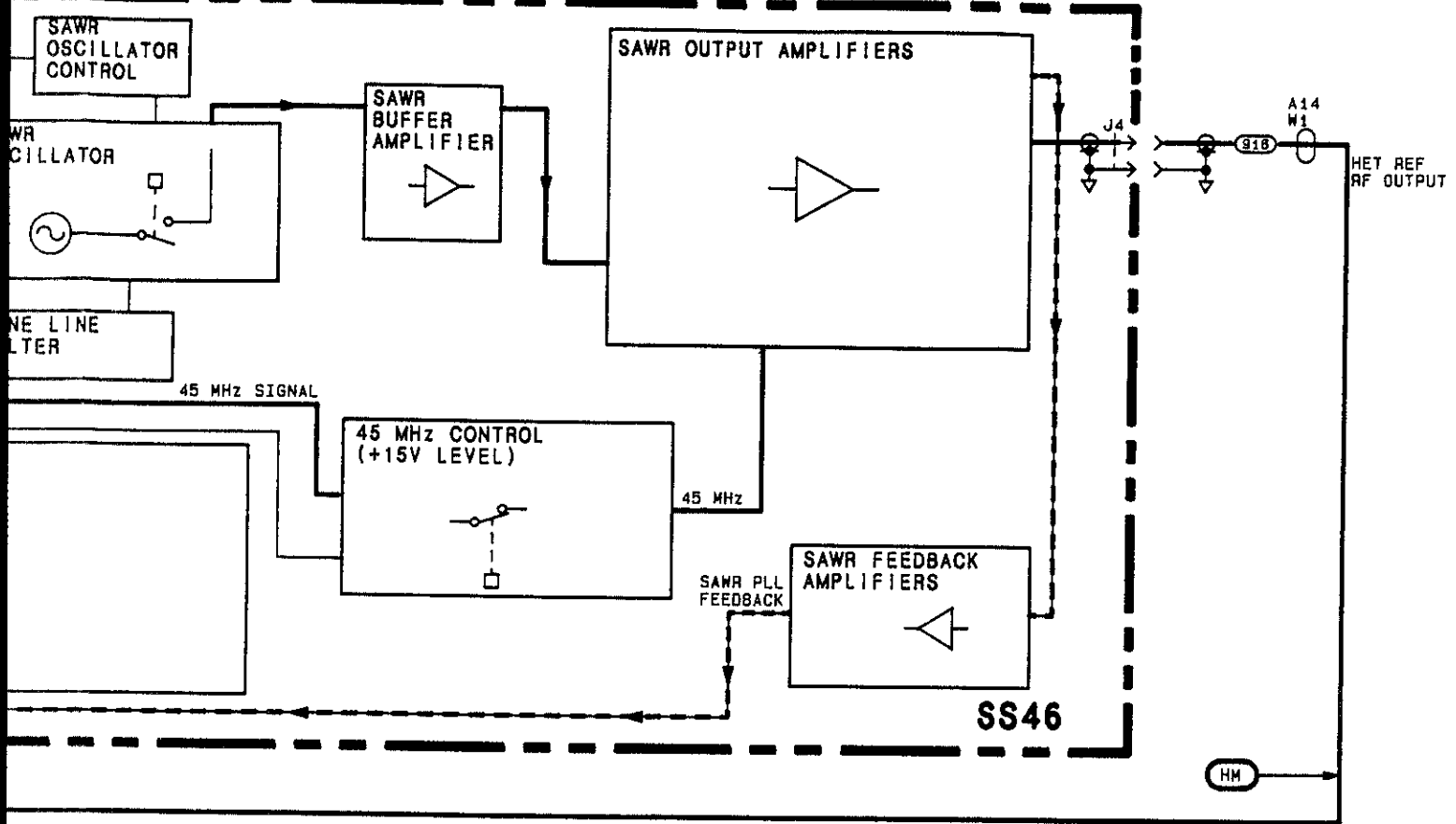


FIG. 8Q-101, SHEET 4 OF 4



BD15  
Figure 8Q-101  
8Q-101

FIG. 8Q-102  
 SHT. 1 OF 5

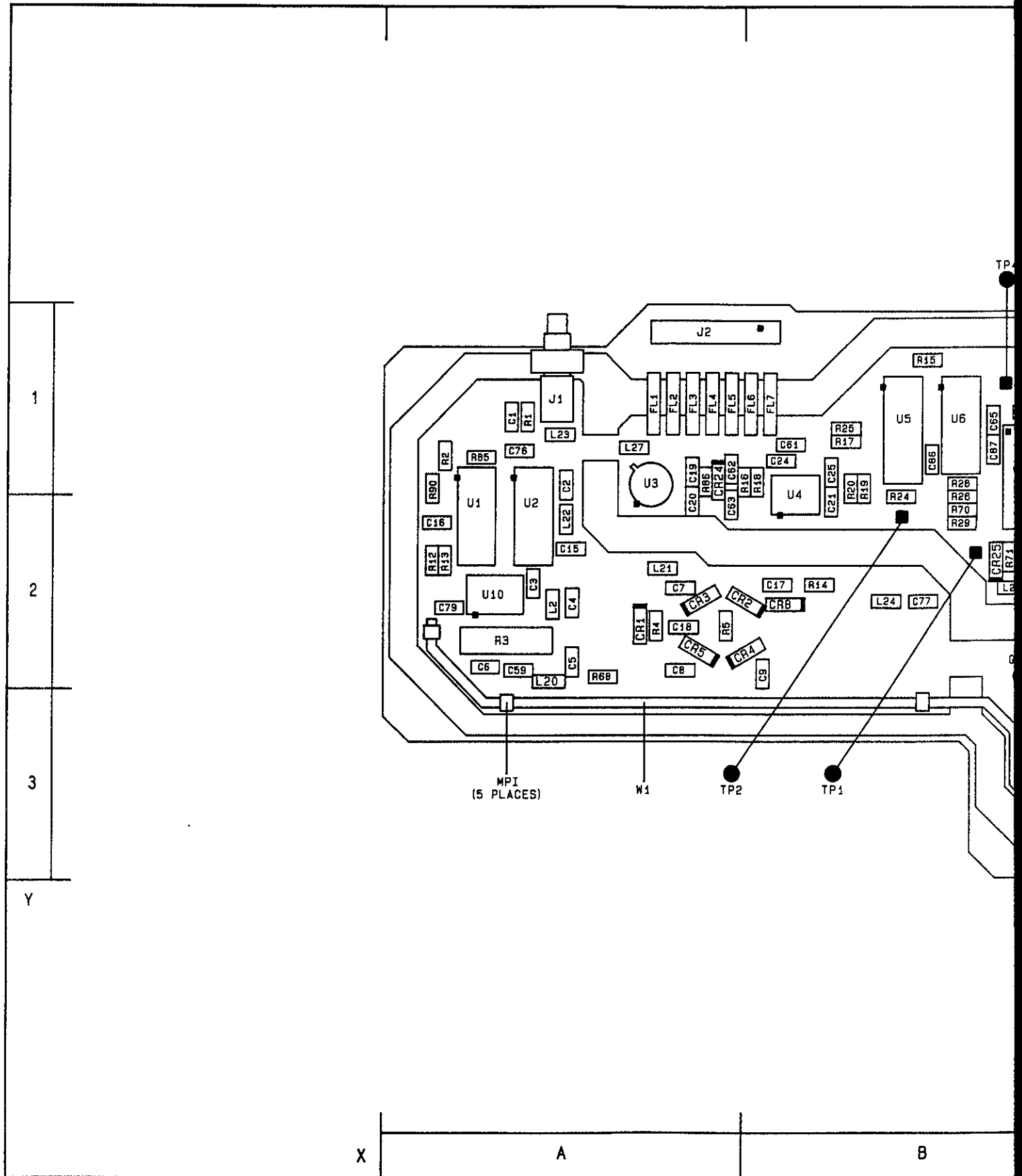
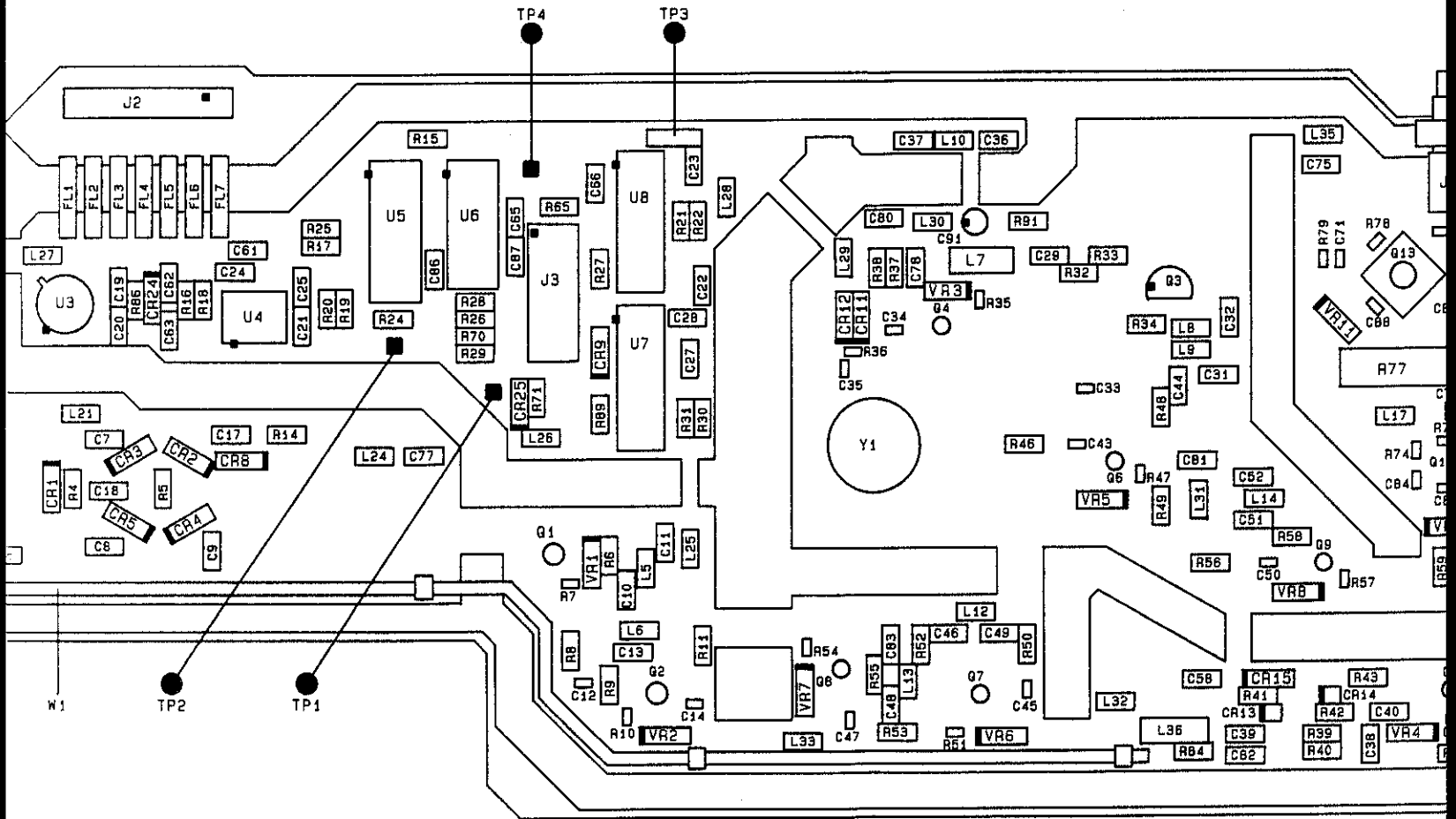


Figure 8Q-102. SERVICE SHEET 45 INFORMATION

Con

FIG. 8Q-102  
SHT. 2 OF 5



A14A2

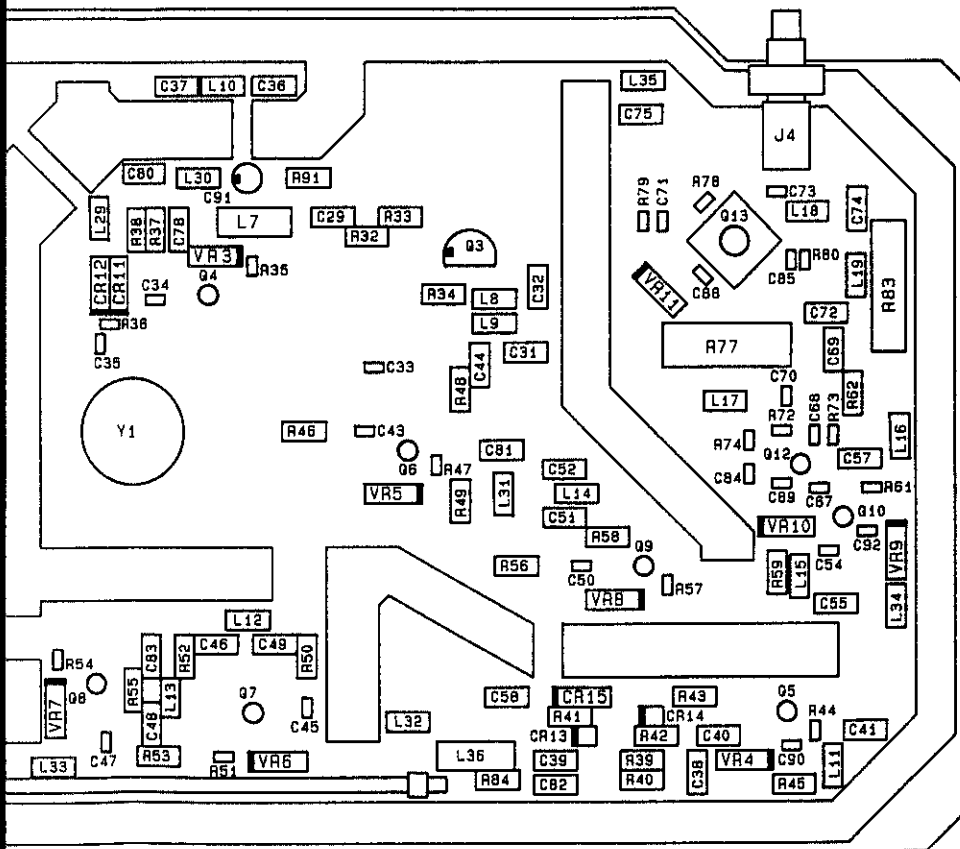
B

C

D

Component Locator

FIG. 80-102  
SHEET 3 OF 5

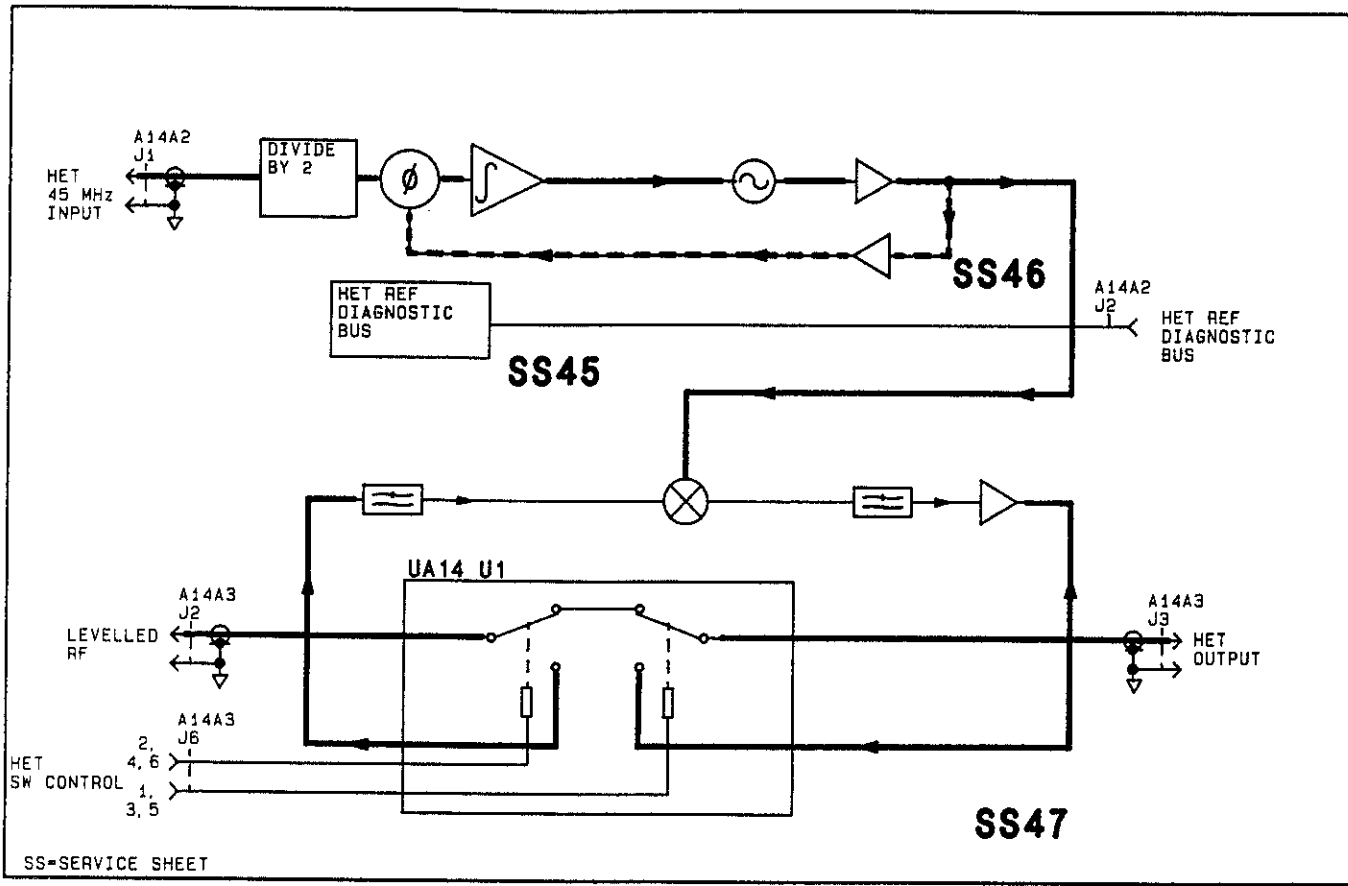


A14A2

C

D

FIG. 8Q-102  
SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	A, 1	CR1	A, 2	R5	A, 2	U1	A, 2										
C2	A, 1	CR2	A, 2	R12	A, 2	U2	A, 2										
C3	A, 2	CR3	A, 2	R13	A, 2	U3	A, 1										
C4	A, 2	CR4	A, 2	R14	B, 2	U4	B, 2										
C5	A, 2	CR5	A, 2	R15	B, 1	U5	B, 1										
C6	A, 2	CR8	B, 2	R16	B, 1	U6	B, 1										
C7	A, 2	CR9	B, 2	R17	B, 1	U7	B, 2										
C8	A, 2	CR24	A, 1	R18	B, 1	U8	B, 1										
C15	A, 2	CR25	B, 2	R19	B, 1	U10	A, 2										
C16	A, 2			R20	B, 1												
C17	B, 2	FL1	A, 1	R21	C, 1	W1	A, 3										
C18	A, 2	FL2	A, 1	R22	C, 1												
C19	A, 1	FL3	A, 1	R24	B, 1												
C20	A, 2	FL4	A, 1	R25	B, 1												
C21	B, 2	FL5	A, 1	R26	B, 1												
C22	C, 1	FL6	B, 1	R27	B, 1												
C23	C, 1	FL7	B, 1	R28	B, 1												
C24	B, 1			R29	B, 2												
C25	B, 1	J1	A, 1	R30	C, 2												
C27	C, 2	J2	A, 1	R31	C, 2												
C28	C, 1	J3	B, 1	R65	B, 1												
C59	A, 2			R68	A, 2												
C61	B, 1	L2	A, 2	R70	B, 2												
C62	A, 1	L20	A, 2	R71	B, 2												
C63	A, 2	L21	A, 2	R85	A, 1												
C66	B, 1	L22	A, 2	R86	A, 1												
C76	A, 1	L23	A, 1	R89	B, 2												
C77	B, 2	L24	B, 2	R90	A, 1												
C79	A, 2	L26	B, 2														
C86	B, 1	L27	A, 1	TP1	B, 2												
CB7	B, 1	MP1	C, 3	TP2	B, 2												
		R1	A, 1	TP3	C, 1												
		R2	A, 1	TP4	B, 1												
		R3	A, 2														
		R4	A, 2														

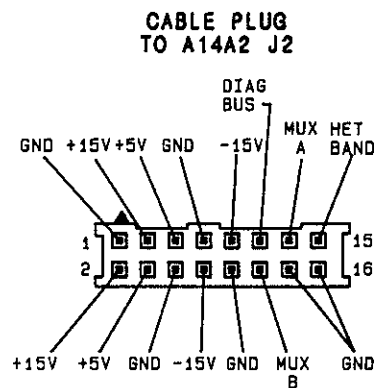
A14 MODULE **BD 15**

SEE REVERSE SIDE



**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph B-3.
3. A14FL1 is an array of feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.
4. W3, W4 are printed circuit trace inductors.
5. W1 is a blue post jumper. In one position it connects points A and B for normal operation. When moved to the other position, it connects points B and C to ground the SAWR tune line.



Schematic General Information

**CHANGES****All Serial Prefixes**

On the schematic:

- U6 - In **OUT-OF-LOCK DETECTOR**, change U6D pin 4 to the inverting input and pin 5 to the non-inverting input.

**2514A and above**

On the Component Locator:

- R92 - Add R92 between C15 and L21.

In Component Coordinates:

- R92 - Add R92, A,2.

On the schematic:

- R92 - In **PHASE DETECTOR**, add a resistor from U3 pin 3 to ground. Designate it R92 and assign a value of 1M ohms.

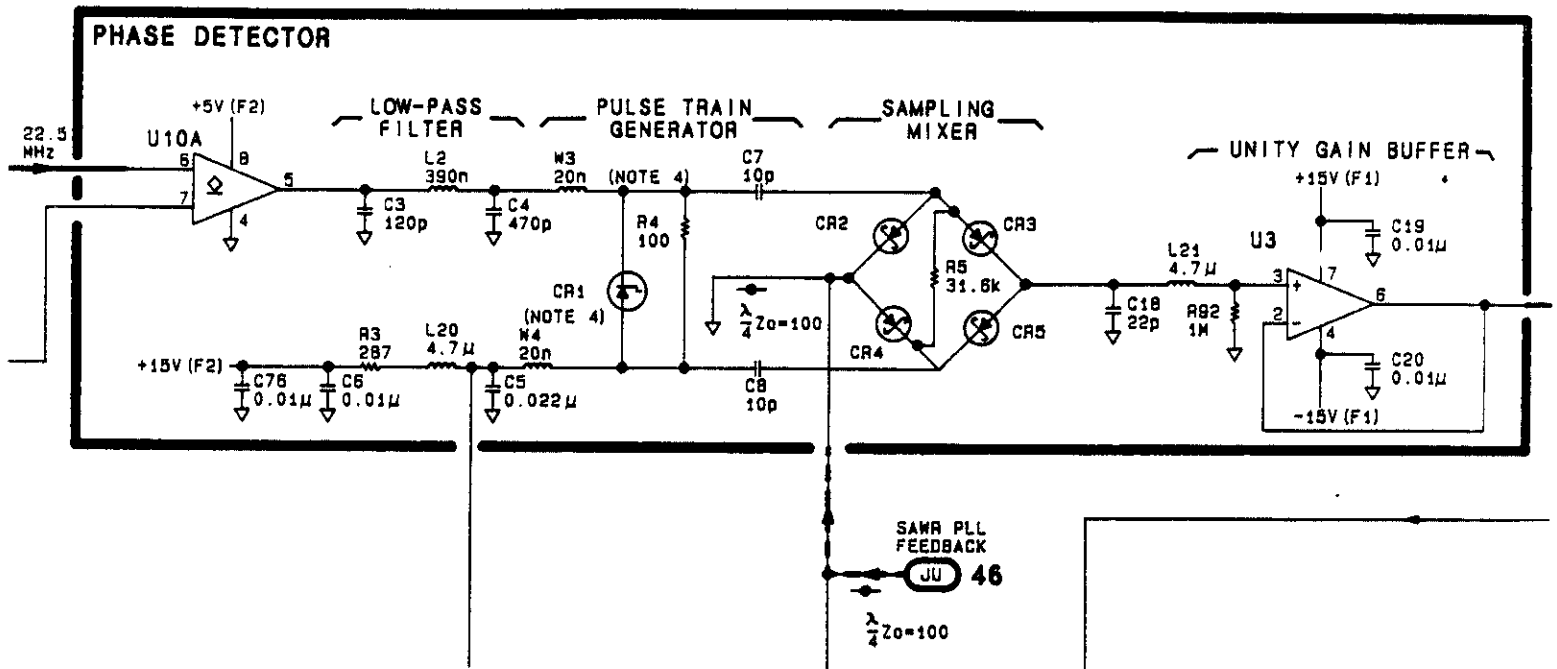
**2526A and above**

On the Component Locator:

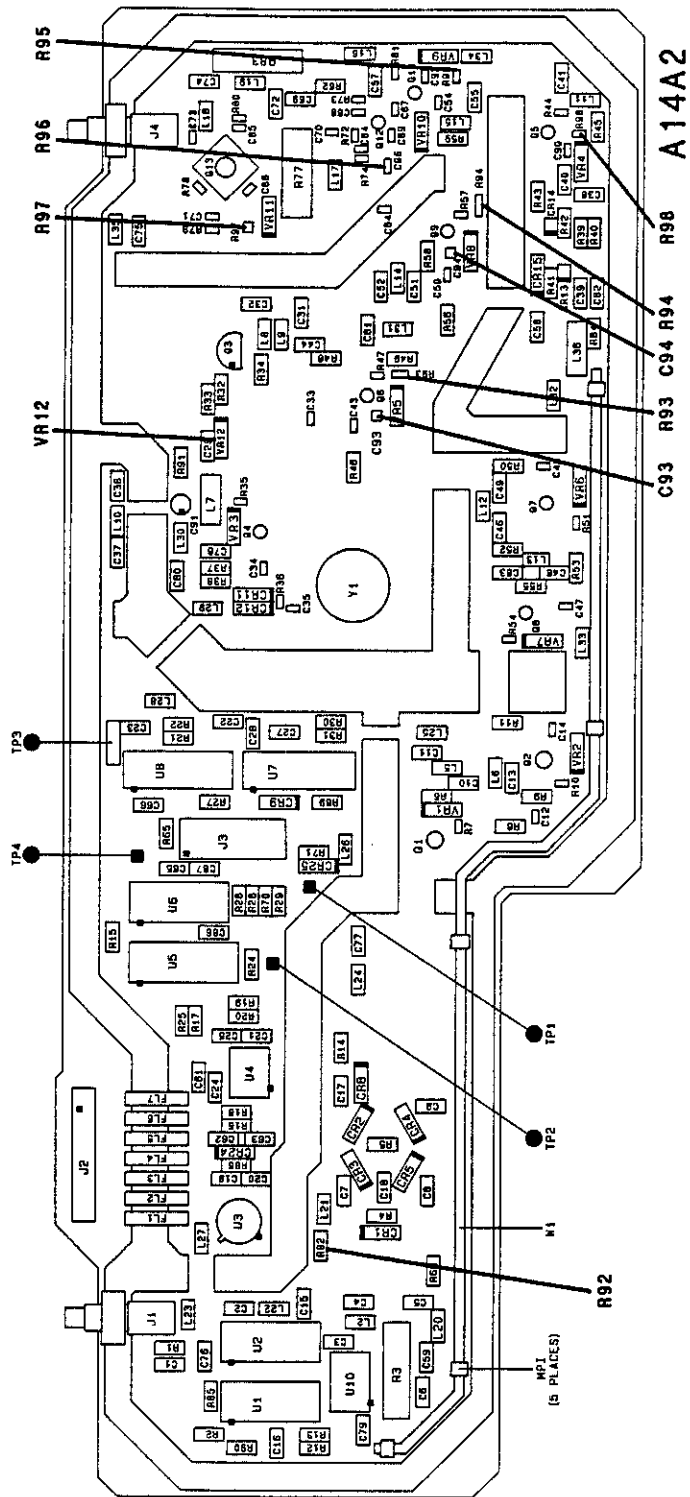
- Note changes shown on 8Q-102.3

On the schematic:

- In the upper left portion of the schematic, change the A14A2 part number to 08642-60315.
- R3 - Replace the appropriate portion of the schematic with the partial on page 8Q-102.2



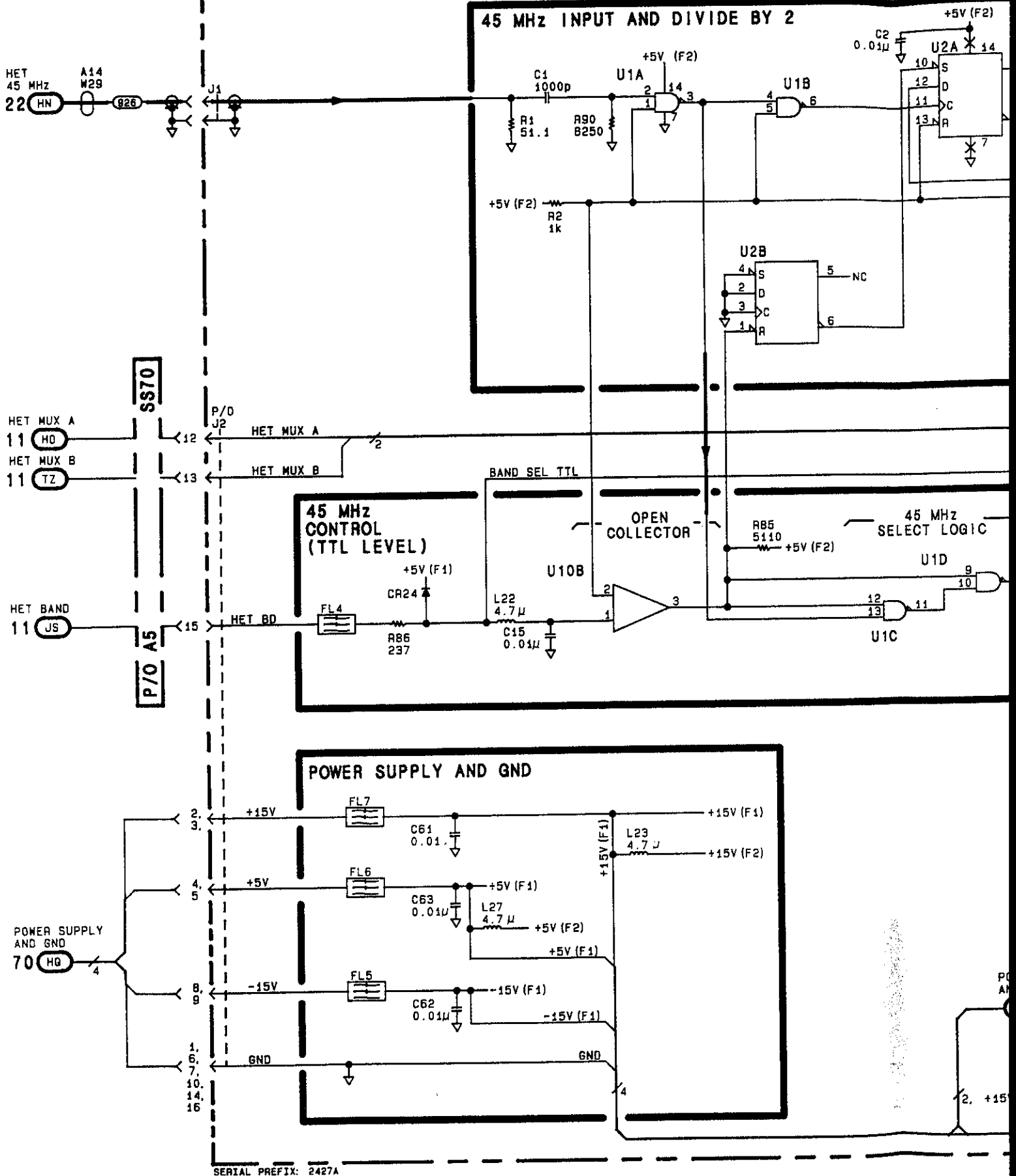
P/O FIGURE 8Q-103 (2526A and above)



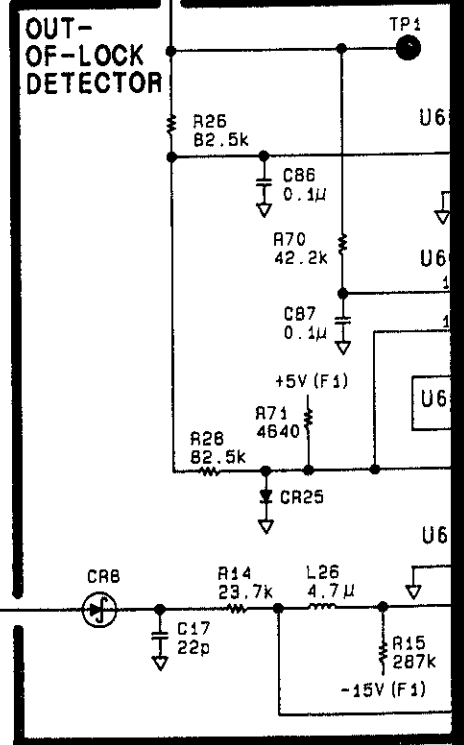
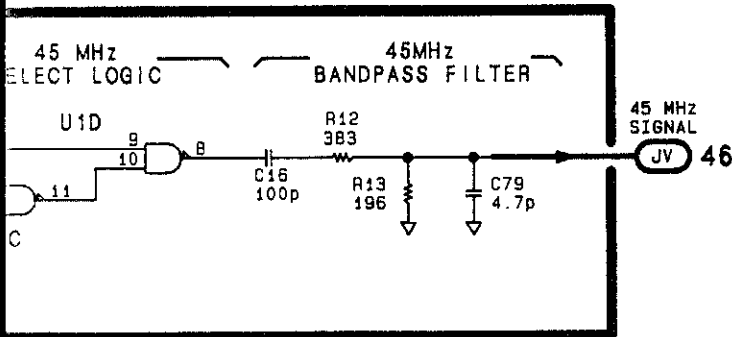
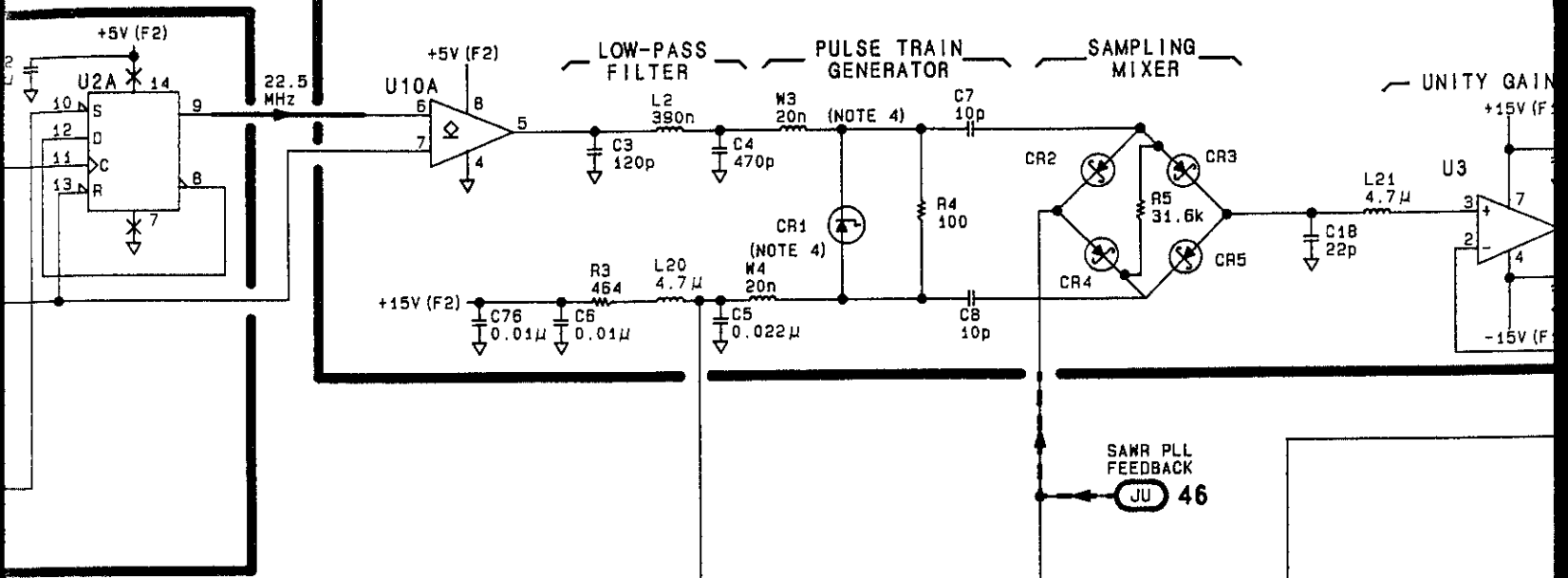
CHANGES TO FIGURE 8Q-102 (2526A and above)

FIG. 8Q-103  
SHT. 1 OF 5

P/O A14A2 HETERODYNE LOCAL OSCILLATOR ASSEMBLY (08642-60115)



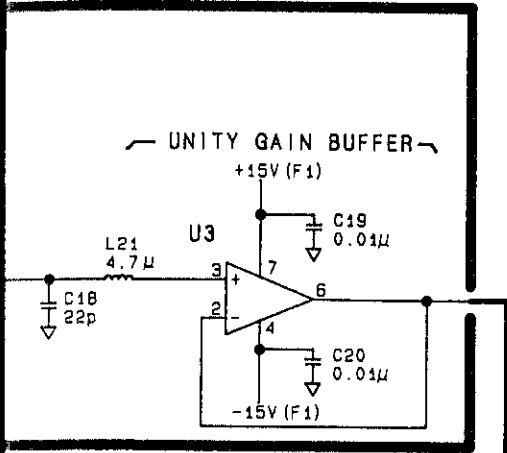
PHASE DETECTOR



POWER SUPPLY AND GROUND

JT 46

2. +15V (F1), GND



2. HET MUX A, B

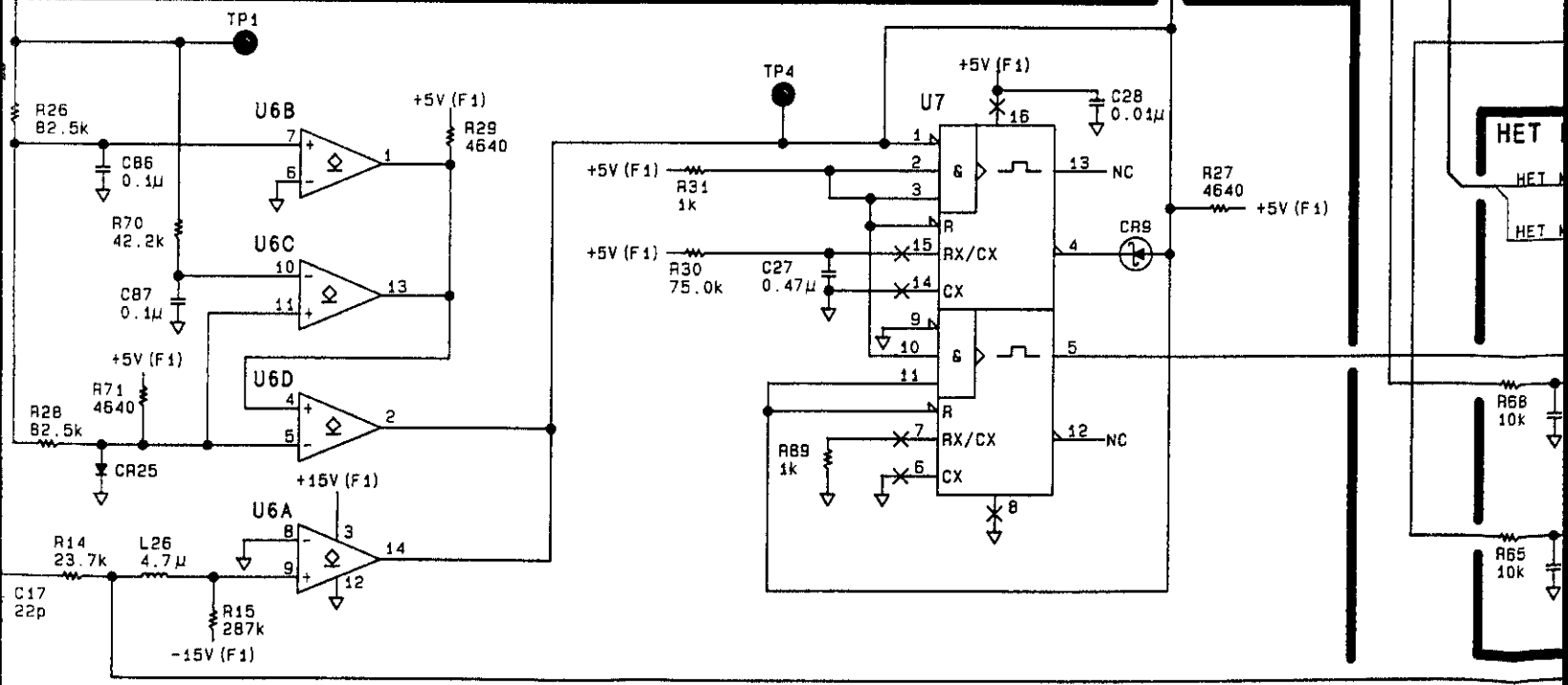


FIG. 88-103, SH. 4 OF 5

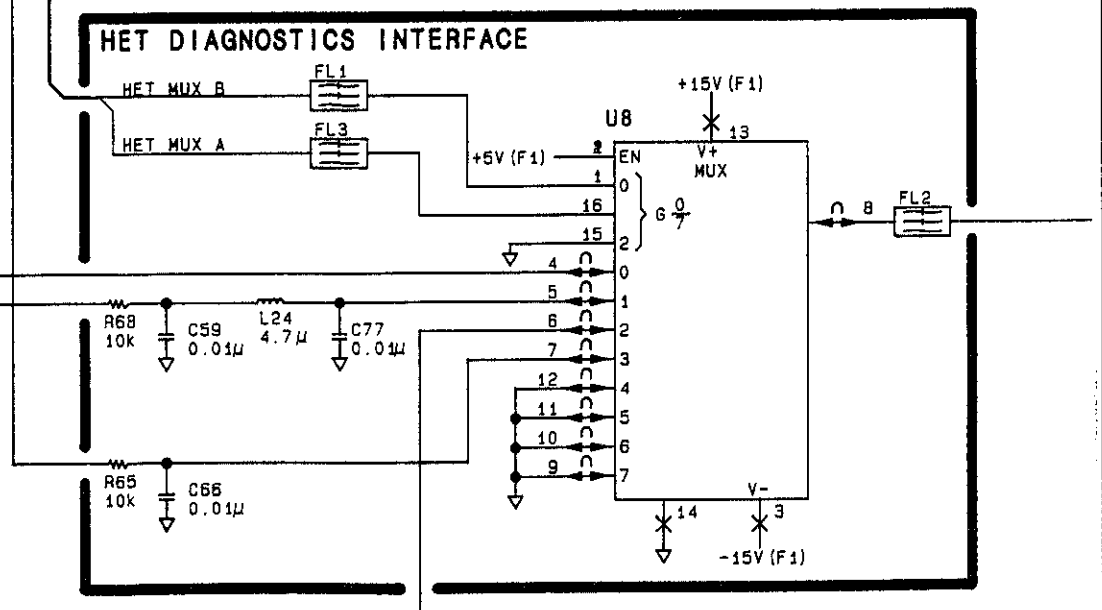
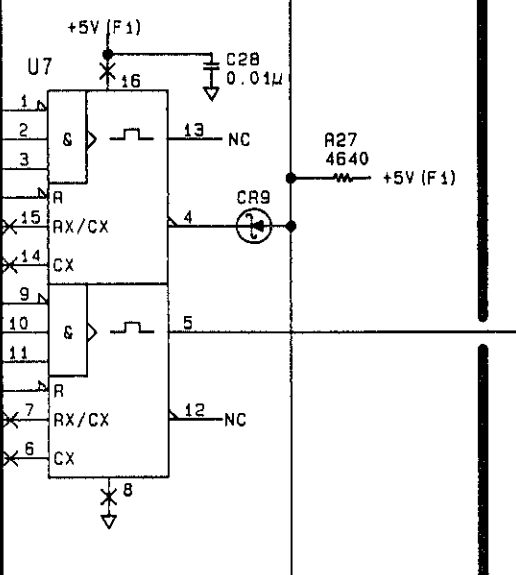
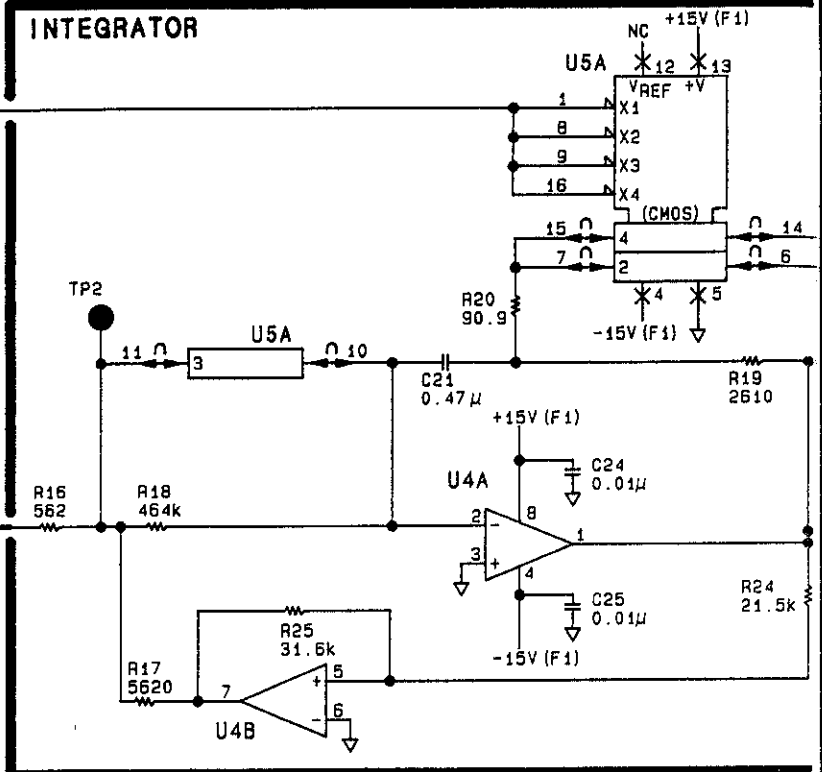
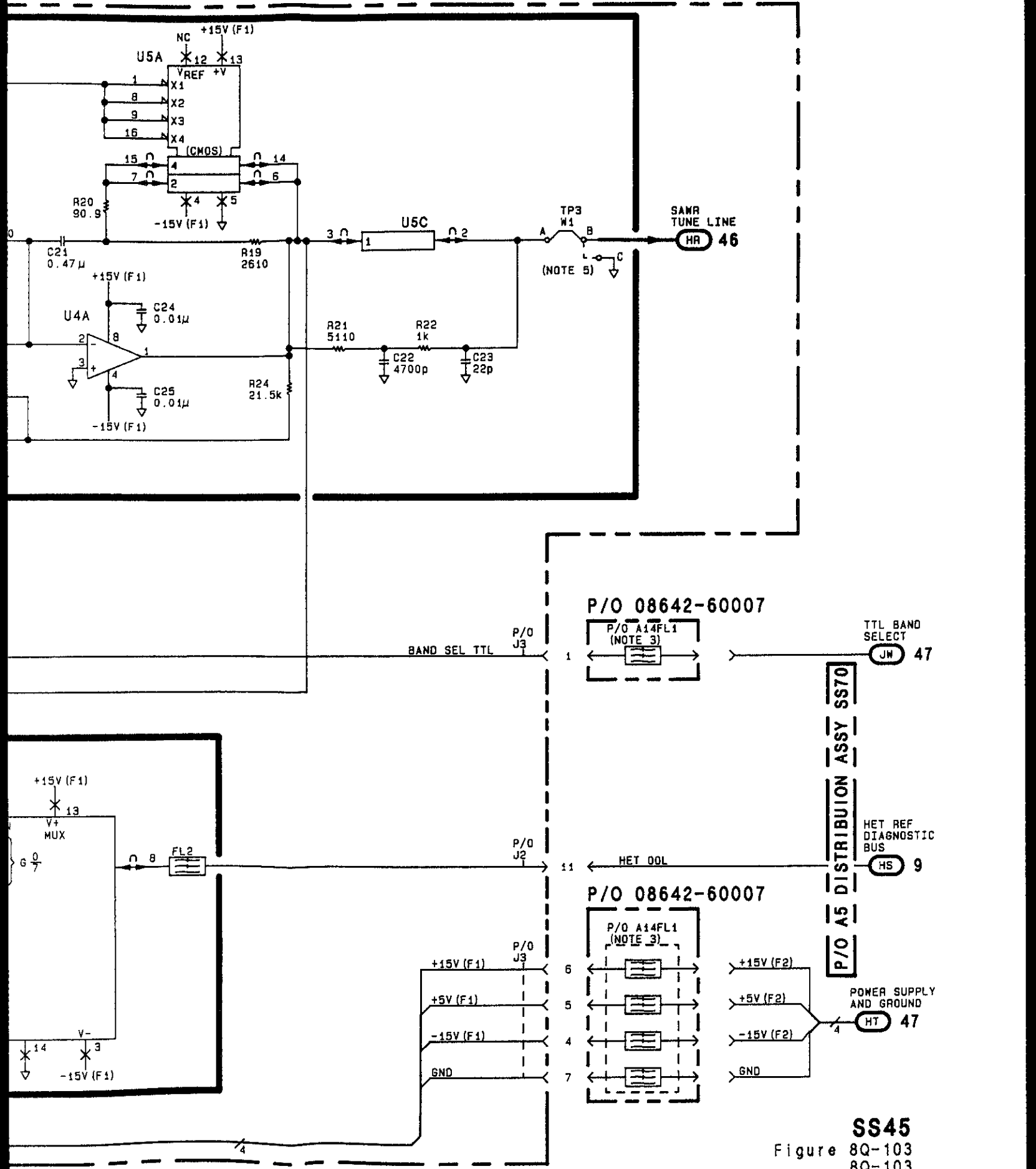




FIG. 8Q-103, SH. 5 OF 5



SS45  
Figure 8Q-103  
8Q-103

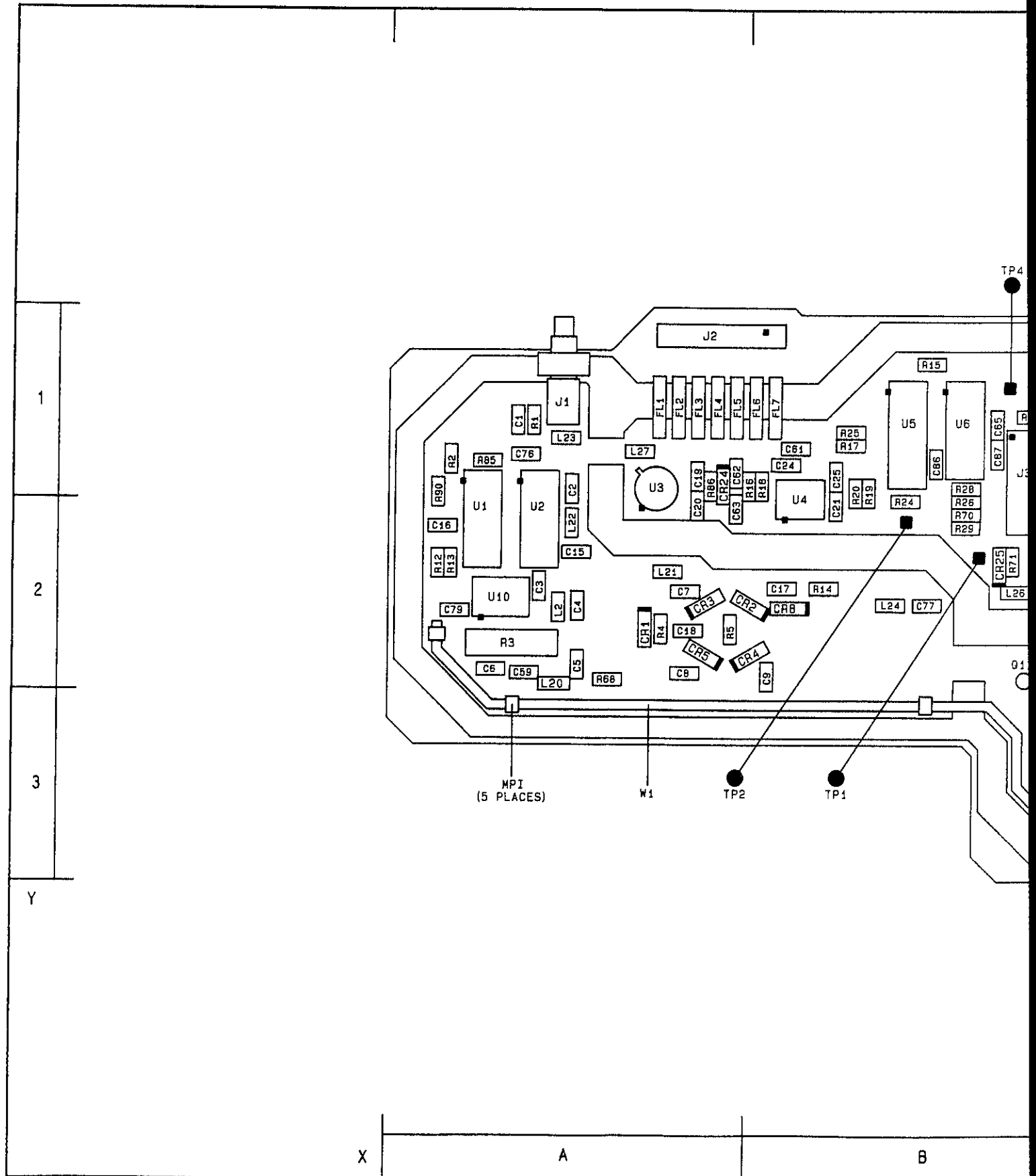
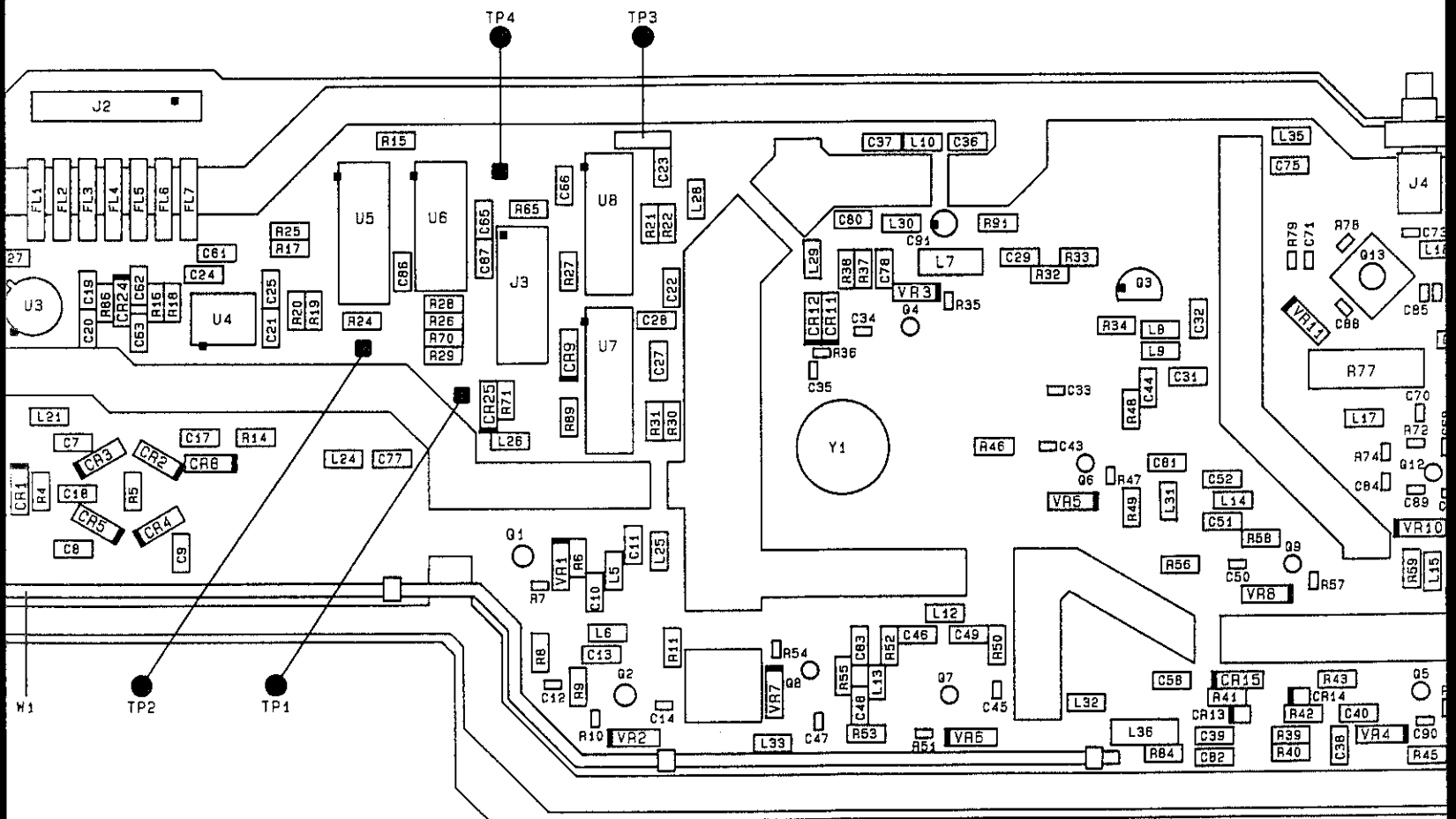


Figure 8Q-104. SERVICE SHEET 46 INFORMATION

Comp

FIG. 8Q-104, SH. 2 OF 5



A14A2

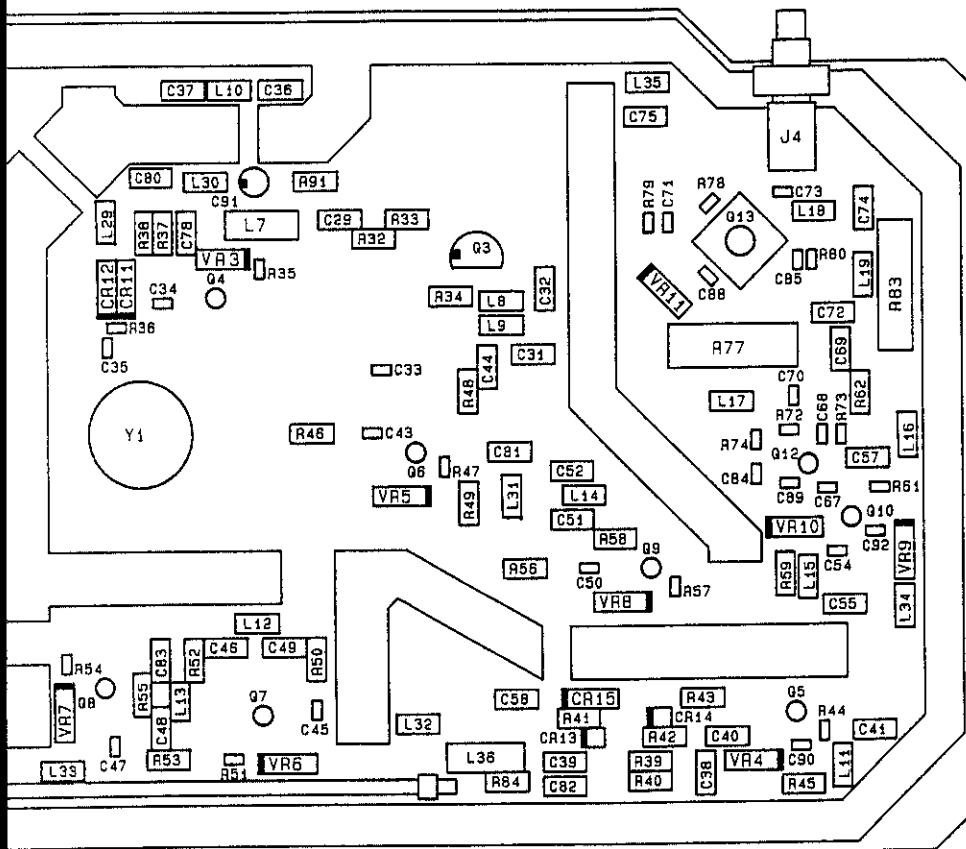
B

C

D

Component Locator

FIG. 80-104, SHEET 3 OF 5

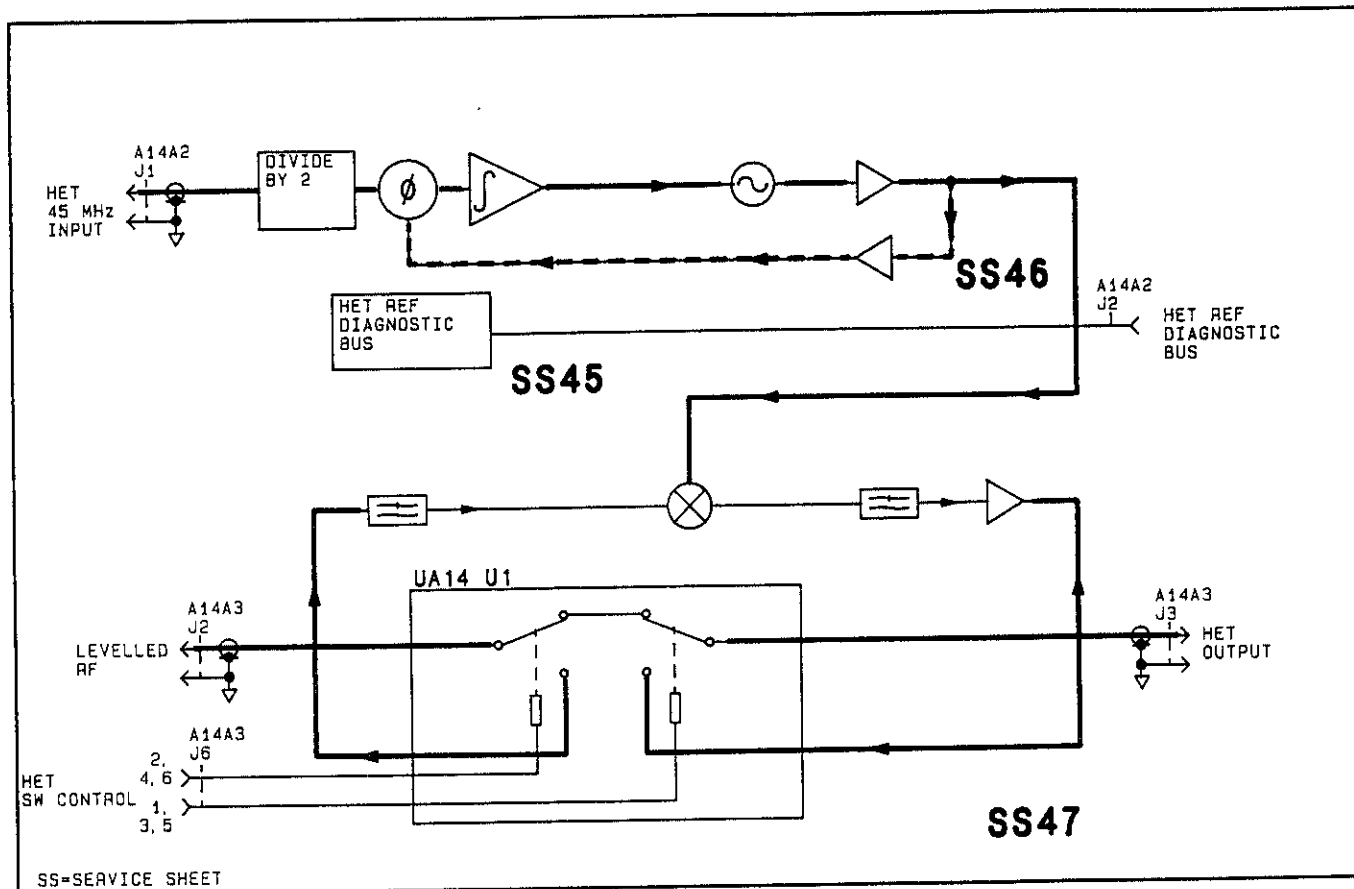


A14A2

C

D

FIG. 8Q-104, SHT. 4 OF 5



Reference Block Diagram

Component Coordinates

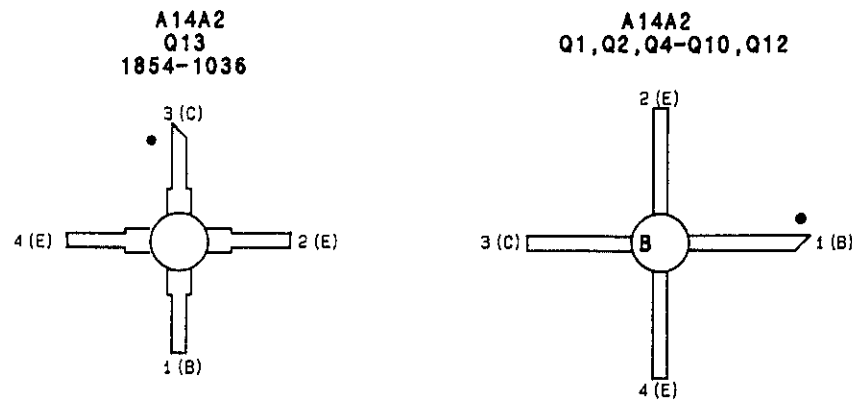
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C9	B, 2	C71	D, 1	L15	D, 2	R32	C, 1	R83	D, 1								
C10	B, 3	C72	D, 2	L16	D, 2	R33	C, 1	R84	D, 3								
C11	C, 2	C73	D, 1	L17	D, 2	R34	D, 2	R91	C, 1								
C12	B, 3	C74	D, 1	L18	D, 1	R35	C, 1										
C13	B, 3	C75	D, 1	L19	D, 1	R36	C, 2	VR1	B, 2								
C14	C, 3	C78	C, 1	L25	C, 2	R37	C, 1	VR2	B, 3								
C29	C, 1	C80	C, 1	L28	C, 1	R38	C, 1	VR3	C, 1								
C31	D, 2	C81	D, 2	L29	C, 1	R39	D, 3	VR4	D, 3								
C32	D, 1	C82	D, 3	L30	C, 1	R40	D, 3	VR5	C, 2								
C33	C, 2	C83	C, 3	L31	D, 2	R41	D, 3	VR6	C, 3								
C34	C, 2	C84	D, 2	L32	C, 3	R42	D, 3	VR7	C, 3								
C35	C, 2	C85	D, 1	L33	C, 3	R43	D, 3	VR8	D, 3								
C36	C, 1	C88	D, 1	L34	D, 3	R44	D, 3	VR9	D, 2								
C37	C, 1	C89	D, 2	L35	D, 1	R45	D, 3	VR10	D, 2								
C38	D, 3	C90	D, 3	L36	D, 3	R46	C, 2	VR11	D, 1								
C39	D, 3	C91	C, 1			R47	D, 2										
C40	D, 3	C92	D, 2	MP1	C, 3	R48	D, 2	Y1	C, 2								
C41	D, 3					R49	D, 2										
C43	C, 2	CR11	C, 1	Q1	B, 2	R50	C, 3										
C44	D, 2	CR12	C, 1	Q2	B, 3	R51	C, 3										
C45	C, 3	CR13	D, 3	Q3	D, 1	R52	C, 3										
C46	C, 3	CR14	D, 3	Q4	C, 2	R53	C, 3										
C47	C, 3	CR15	D, 3	Q5	D, 3	R54	C, 3										
C48	C, 3			Q6	C, 2	R55	C, 3										
C49	C, 3	J3	B, 1	Q7	C, 3	R56	D, 2										
C50	D, 2	J4	D, 1	Q8	C, 3	R57	D, 3										
C51	D, 2			Q9	D, 2	R58	D, 2										
C52	D, 2	L5	B, 2	Q10	D, 2	R59	D, 2										
C54	D, 2	L6	B, 3	Q12	D, 2	R61	D, 2										
C55	D, 3	L7	C, 1	Q13	D, 1	R62	D, 2										
C57	D, 2	L8	D, 2			R72	D, 2										
C58	D, 3	L9	D, 2	R6	B, 2	R73	D, 2										
C65	B, 1	L10	C, 1	R7	B, 3	R74	D, 2										
C67	D, 2	L11	D, 3	R8	B, 3	R77	D, 2										
C68	D, 2	L12	C, 3	R9	B, 3	R78	D, 1										
C69	D, 2	L13	C, 3	R10	B, 3	R79	D, 1										
C70	D, 2	L14	D, 2	R11	C, 3	R80	D, 1										

P/O HETERODYNE LOCAL  
A14A2 OSCILLATOR ASSEMBLY  
SEE REVERSE SIDE

**SS45**

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. W4 and W5 are printed circuit trace inductors.
4. W2 is semi rigid coax cable.



Schematic General Information

## CHANGES

**All Serial Prefixes**

On the schematic:

- C43, R46 - In SAWR BUFFER AMPLIFIER, move C43 to the right of R46.

**2427A to 2507A**

On the schematic:

- C93 - In SAWR OSCILLATOR, change C93 to 3.9p.

**2509A and above**

On the schematic:

- C93, W3 - In SAWR OSCILLATOR, remove C93 and W3.
- In the top left portion of the schematic, change the assembly number to 08642-60215. In the bottom left portion of the schematic, change the serial prefix to 2509A.

**2526A and above**

On the Component Locator:

- C93, C94, R93, R94, R95, R96, R97, R98 - Note changes to Component Locator shown on page 8Q-104.3

In Component Coordinates:

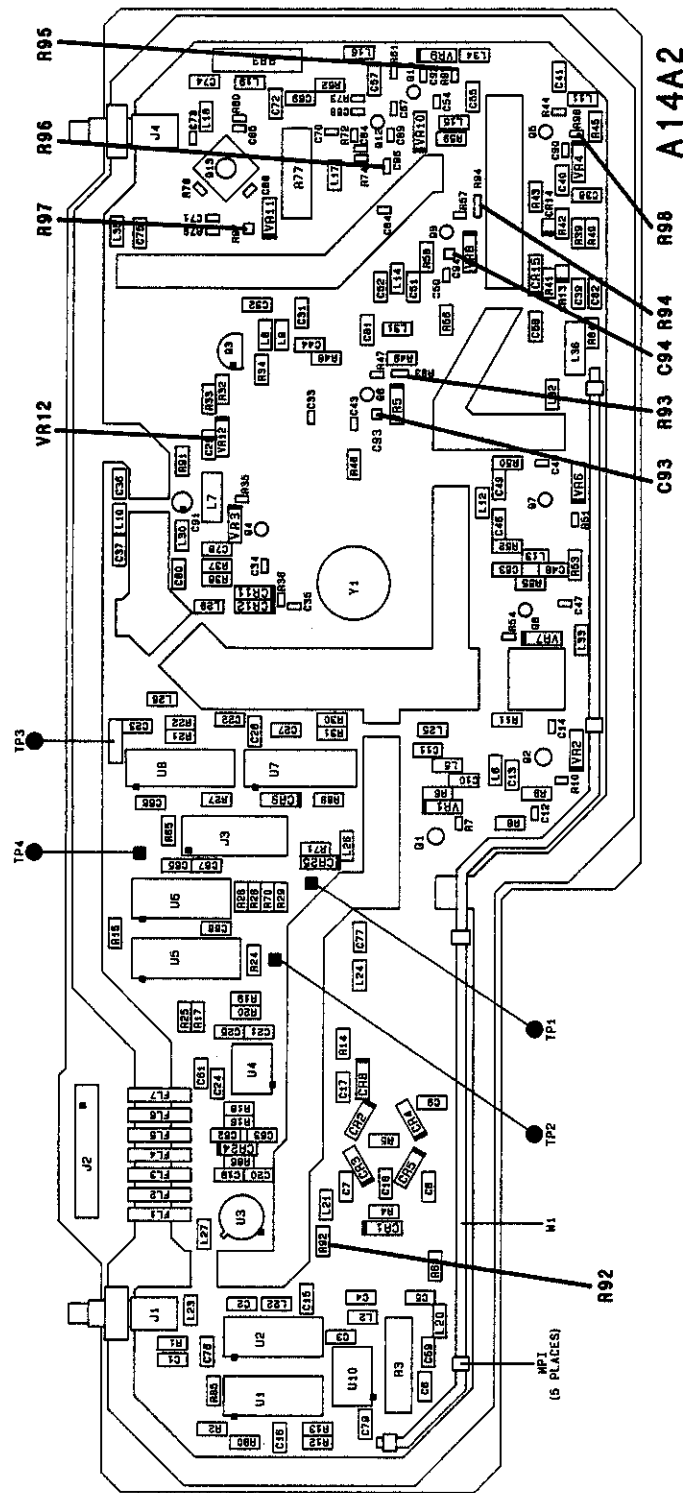
- C93, C94, R93, R94, R95, R96, R97 - Add the following components and coordinates to the Component Coordinates table:  
C93 C,2  
C94 D,3  
R93 C,2  
R95 D,3  
R96 D,2  
R97 C,1

On the schematic:

- C89, C90, C93, C94, R32, R93, R94, R95, R96, R97, R98 - Replace SS46 with the foldout on page 8Q-104.5

On the foldout (page 8Q-104.5):

- L16 - In SAWR OUTPUT AMPLIFIERS, under BUFFER AMPS, replace L16 with a circuit trace. On the circuit board this is a wire jumper.
- R44 - In 45 MHz CONTROL (+15V LEVEL), under 45 MHz AMPLIFIER, change the value of R44 from 1470 to 215 ohms.



CHANGES TO FIGURE 8Q-104 (2J26A and above)



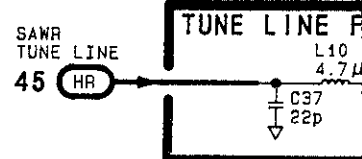
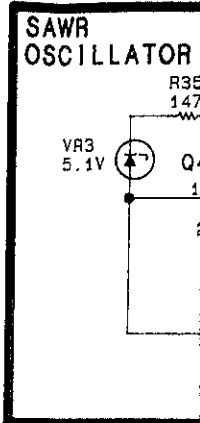
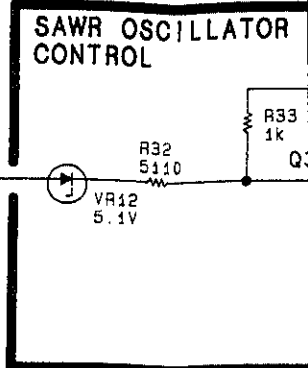
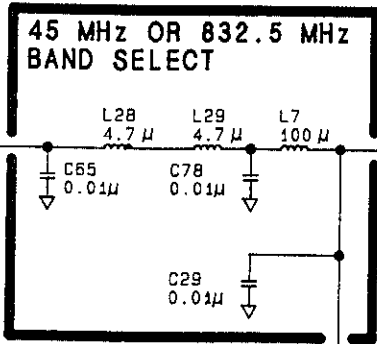
P/O A14A2 HETERODYNE LOCAL OSCILLATOR ASSEMBLY (08642-60315)

FIG. 8Q-104.5

SHT. 1 OF 5

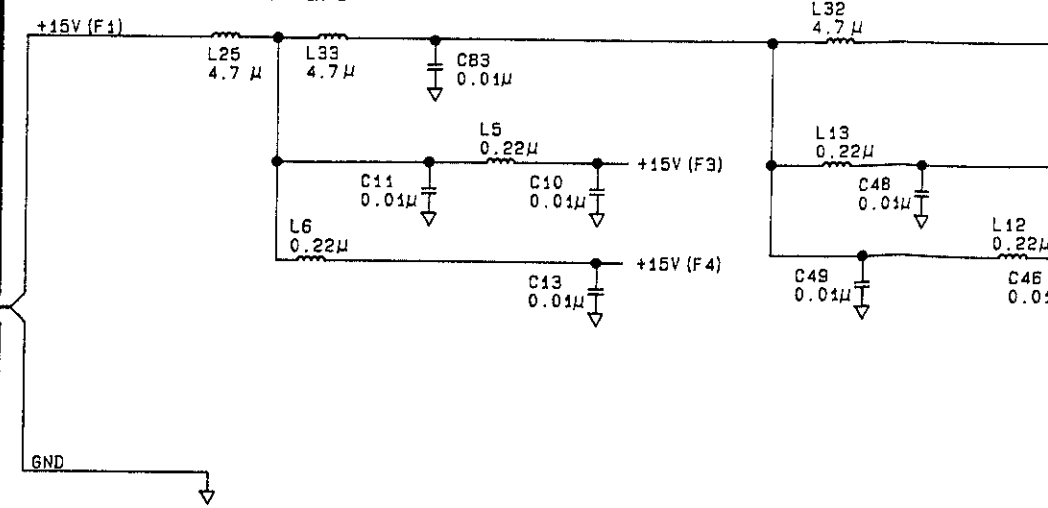
HET REF  
BAND SELECT  
47 (HK)

P/O  
J3

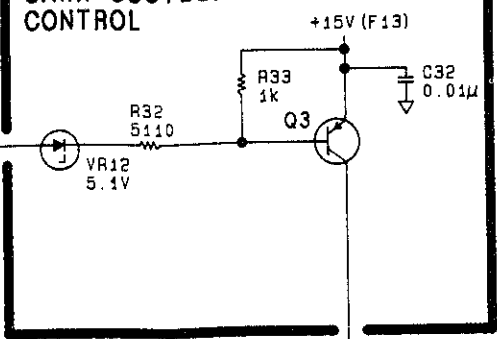


**POWER SUPPLY AND GND**

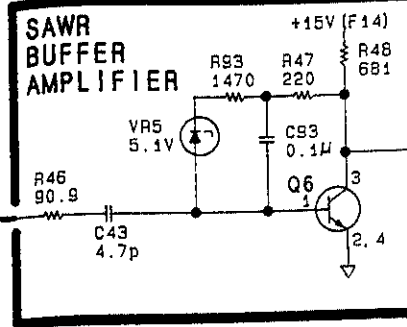
POWER SUPPLY  
AND GROUND  
45 (JT)



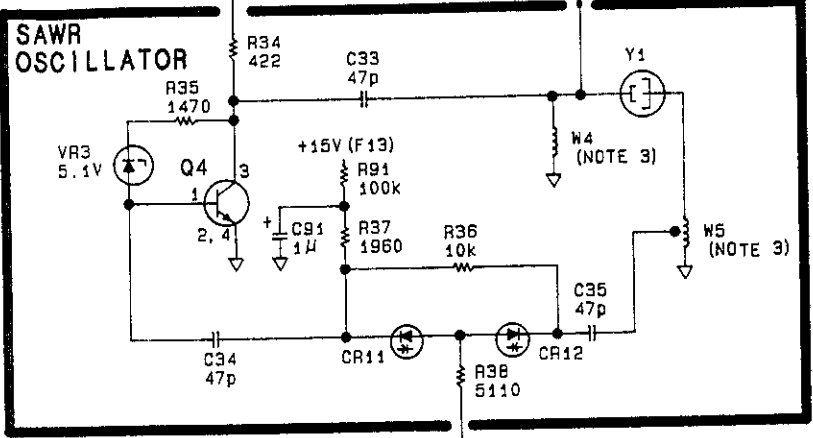
**SAWR OSCILLATOR CONTROL**



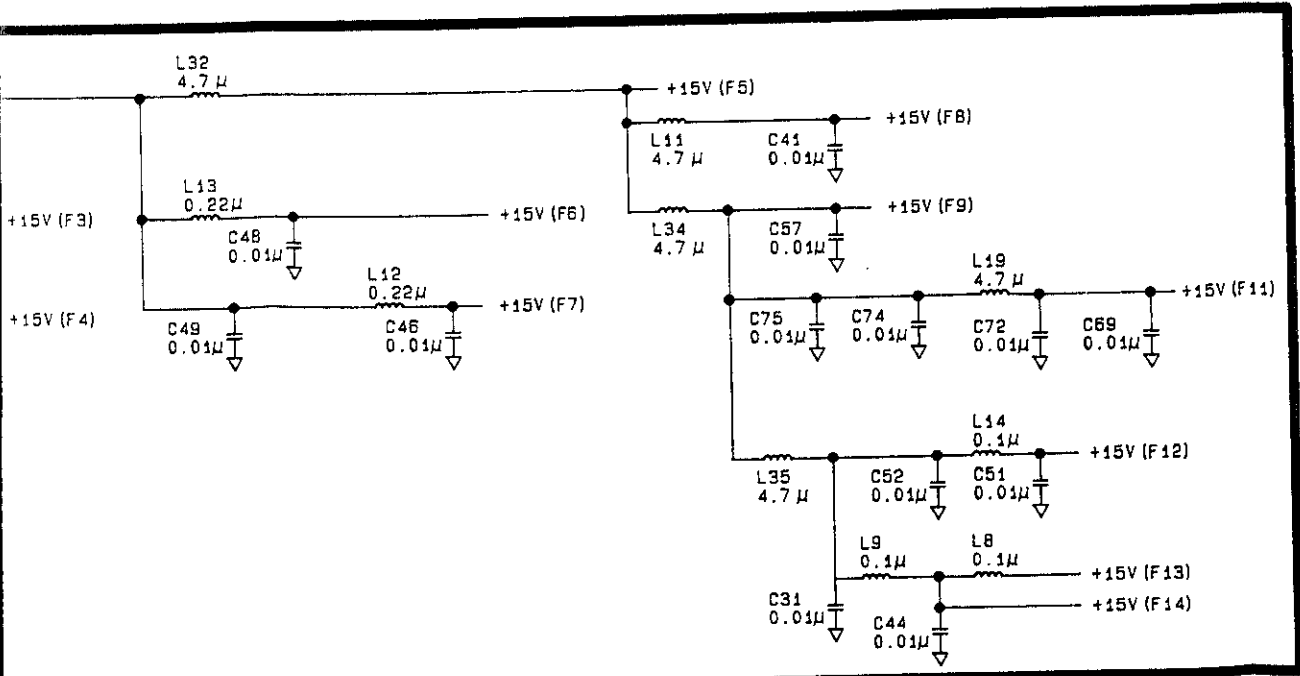
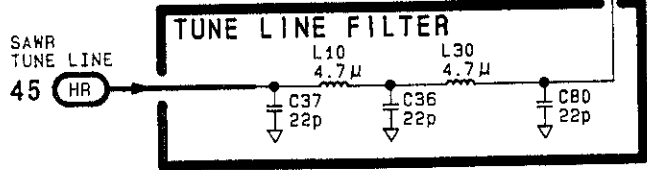
**SAWR BUFFER AMPLIFIER**



**SAWR OSCILLATOR**



**TUNE LINE FILTER**



45 MHZ SIGNAL  
45 (JV)

FIG. 8Q-104.5, SHEET 3 OF 5

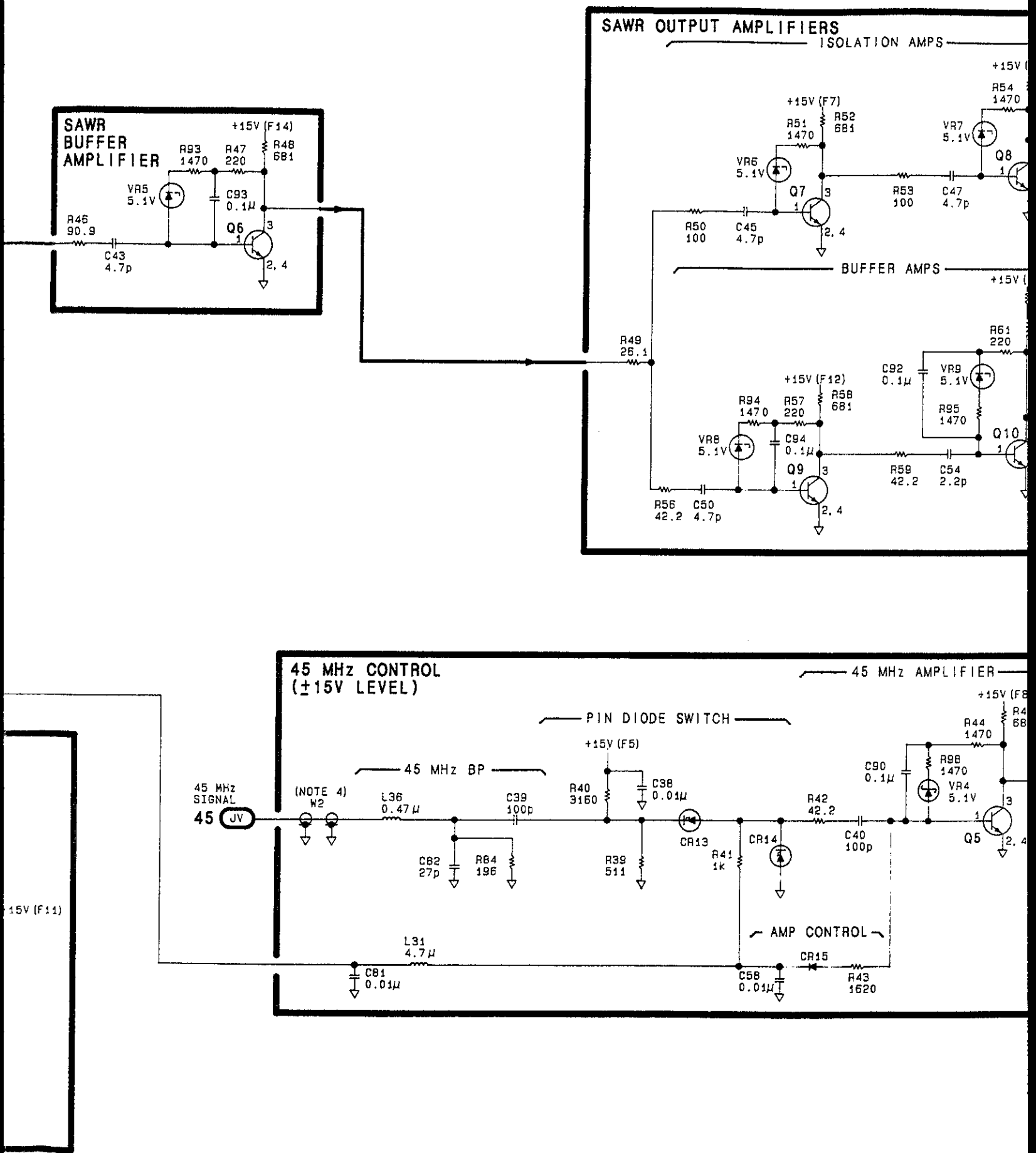
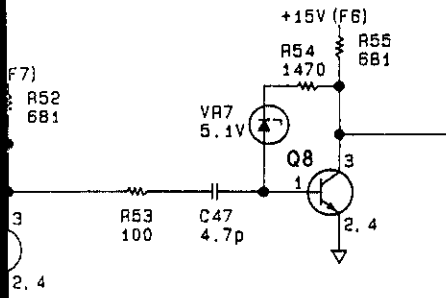


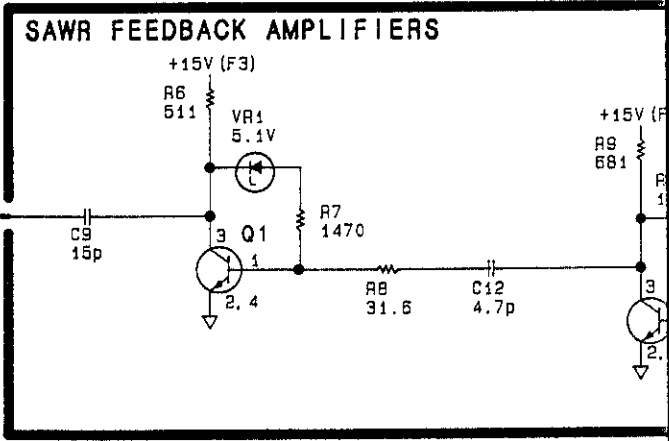
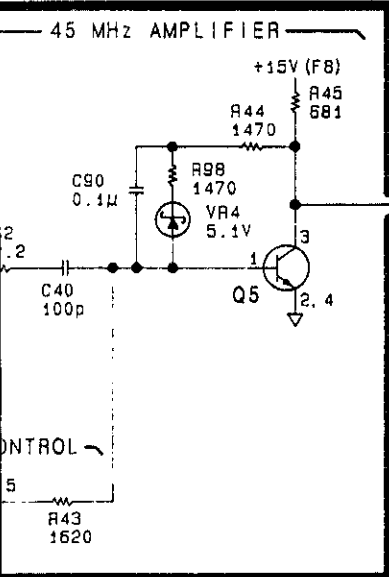
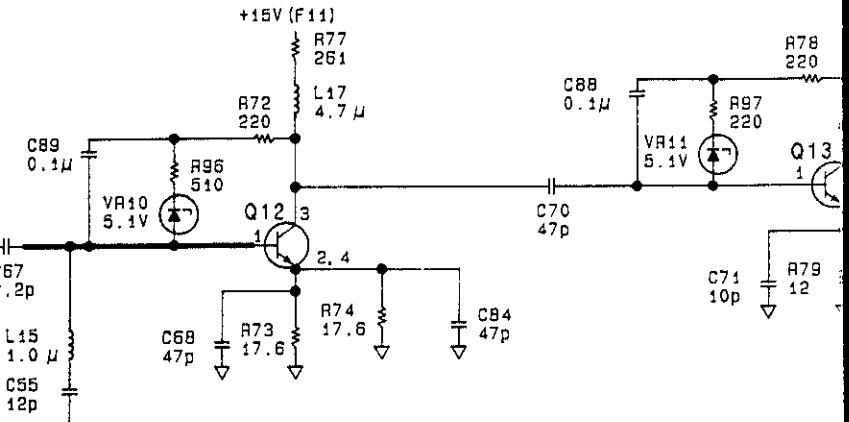
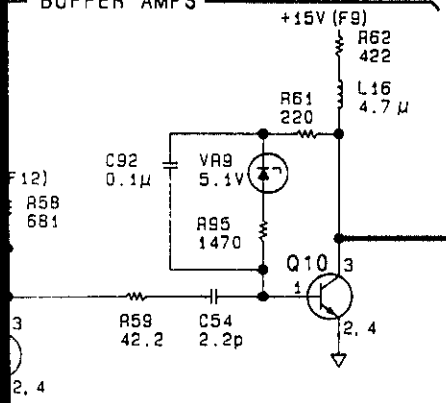
FIG. 8Q-104.5, SHT. 4 OF 5

RESOLUTION AMPS



HET REFERENCE POWER AMPLIFIERS

BUFFER AMPS

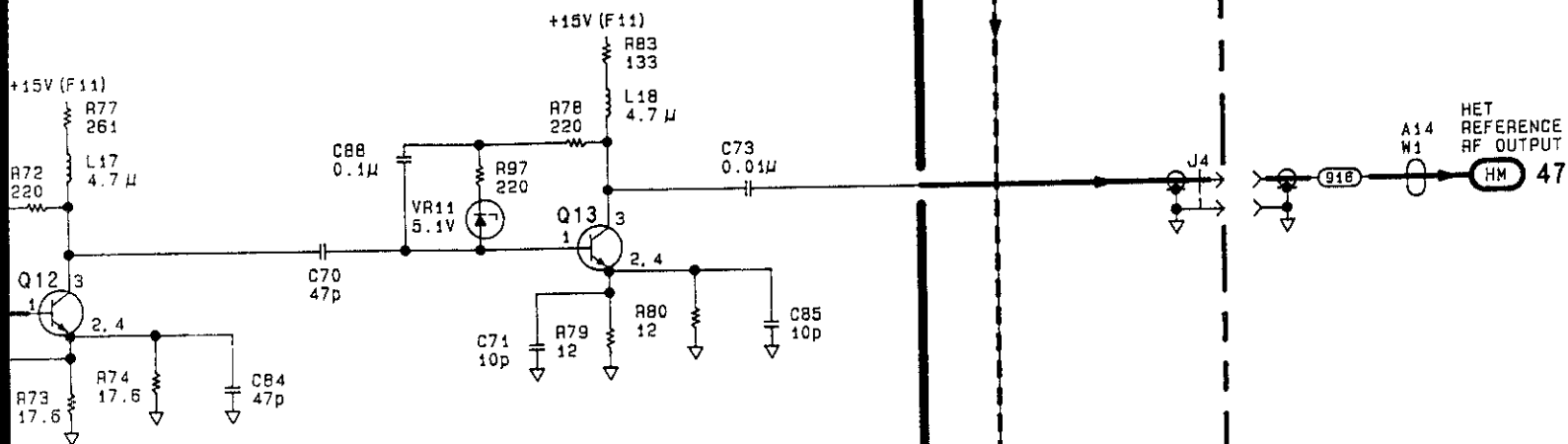


SAWR PLL FEEDBACK  
45 JU

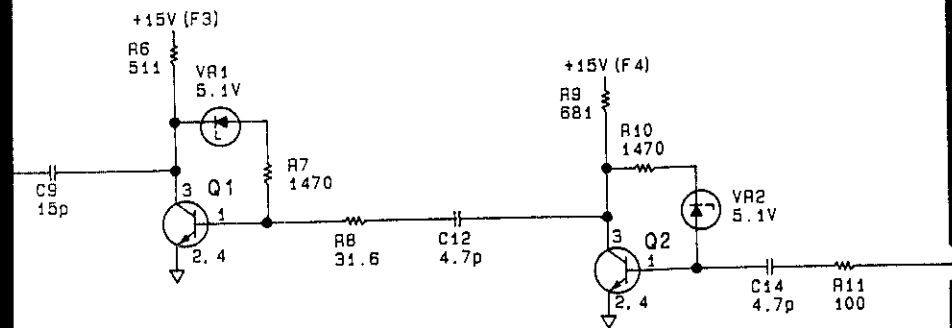
45 MHz

FIG. 8Q-104.5, SH. 5 OF 5

HET REFERENCE POWER AMPLIFIERS



AWR FEEDBACK AMPLIFIERS



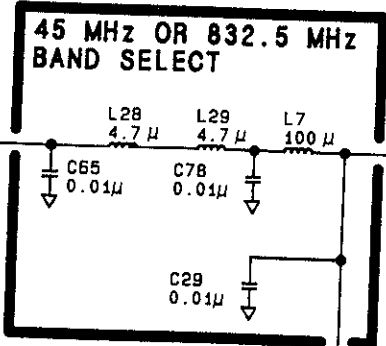
SS46

Figure 8Q-104.5  
8Q-104.5

FIG. 8Q-105  
 SH. 1 OF 5

P/O A14A2 HETERODYNE LOCAL OSCILLATOR ASSEMBLY (08642-60115)

HET REF  
 BAND SELECT  
 47 (HK)



**SAWR OSC  
 CONTROL**

R32  
 19.5k

**SAWR  
 OSCILLAT**

VR3  
 5.1V

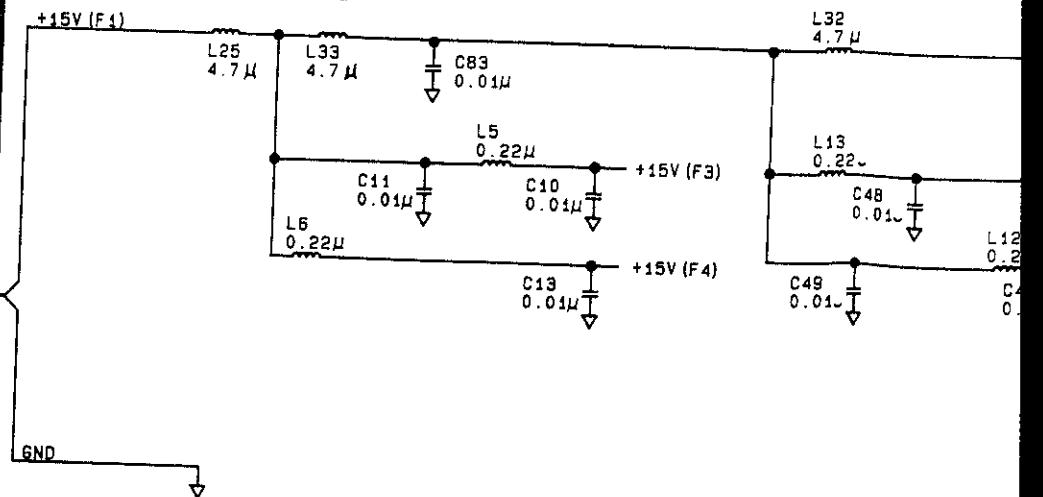
SAWR  
 TUNE LINE  
 45 (HR)

**TUNE LINE**

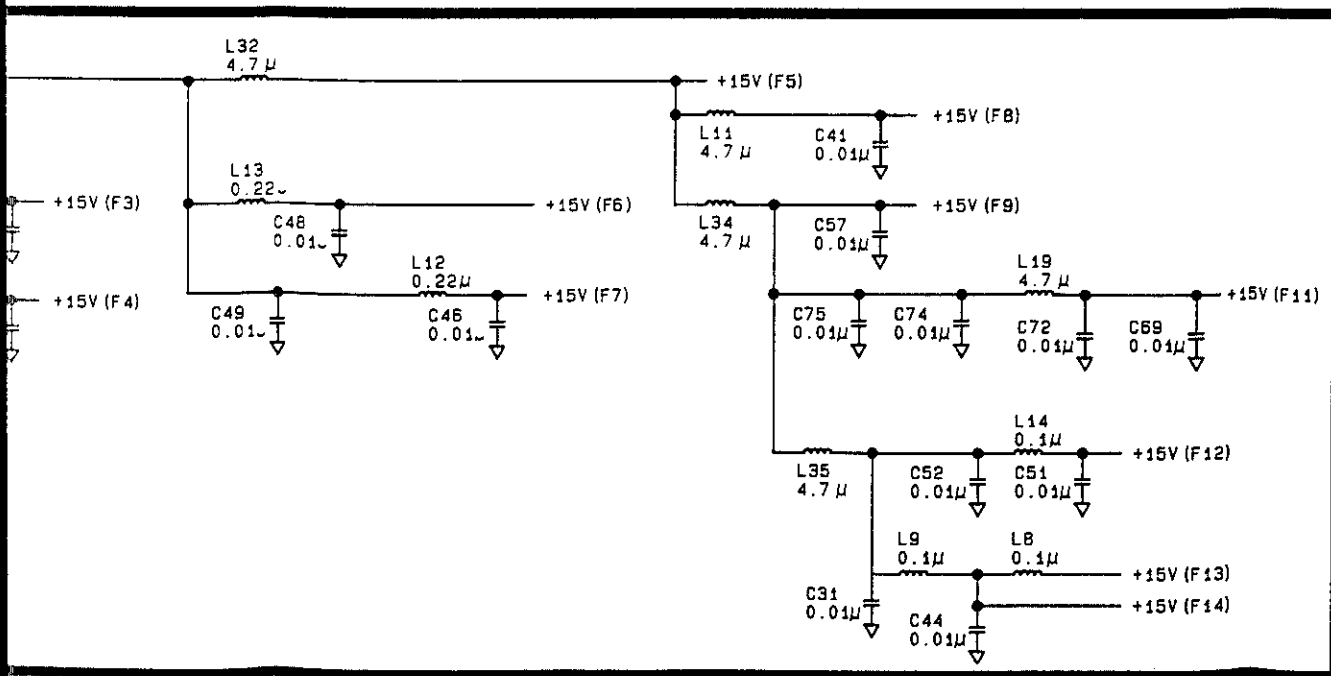
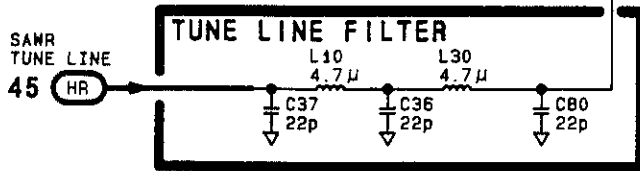
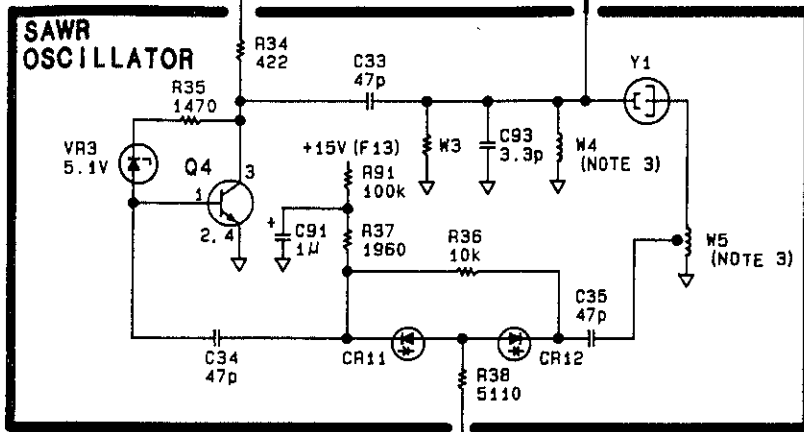
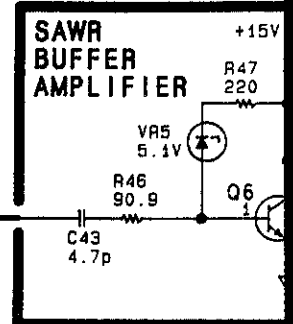
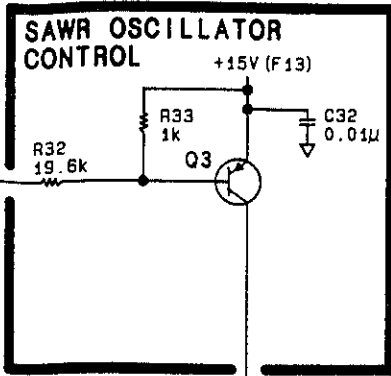
C37  
 22p

**POWER SUPPLY AND GND**

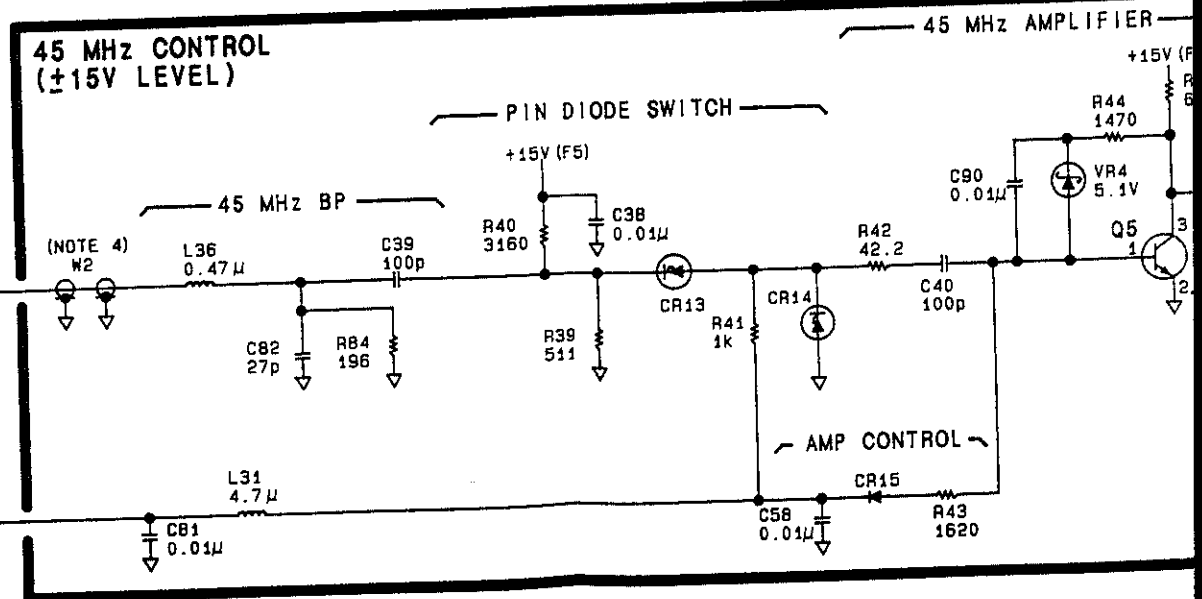
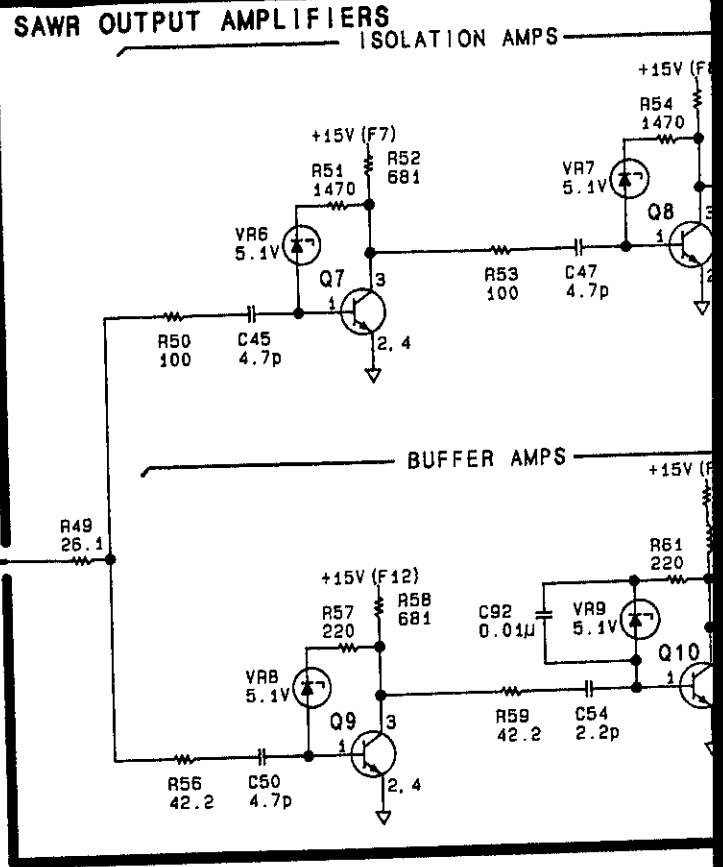
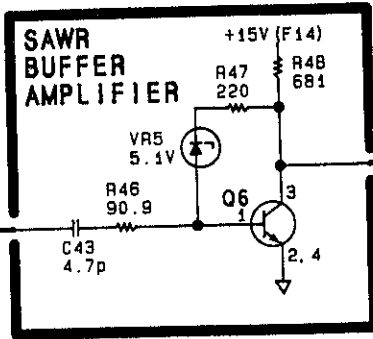
POWER SUPPLY  
 AND GROUND  
 45 (JT)



SERIAL PREFIX: 2427A



45 MHz SIGNAL  
45 (JV)



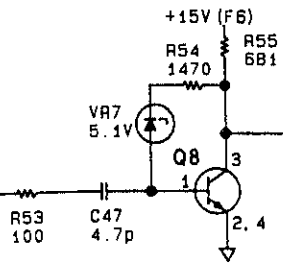
+15V (F11)

12)  
13)  
14)



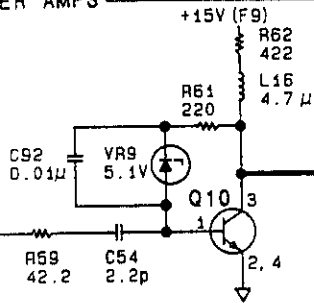
FIG. 8Q-105, SH. 4 OF 5

ION AMPS

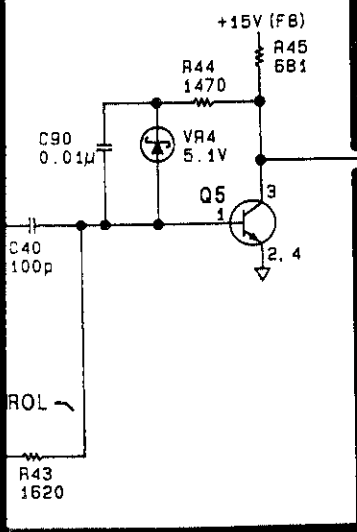


HET REFERENCE POWER AMPLIFIERS

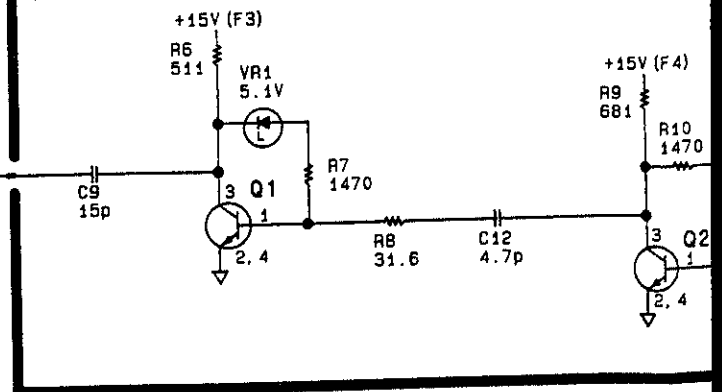
UFFER AMPS



45 MHz AMPLIFIER



SAWR FEEDBACK AMPLIFIERS

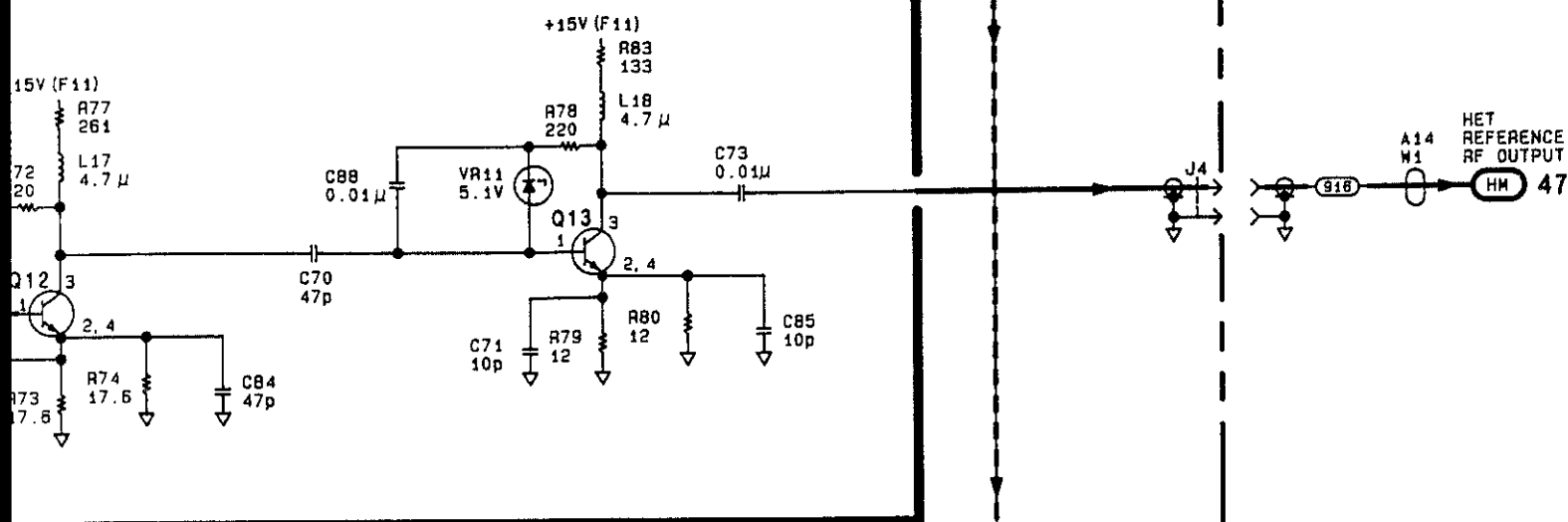


SAWR PLL  
FEEDBACK  
45 JU

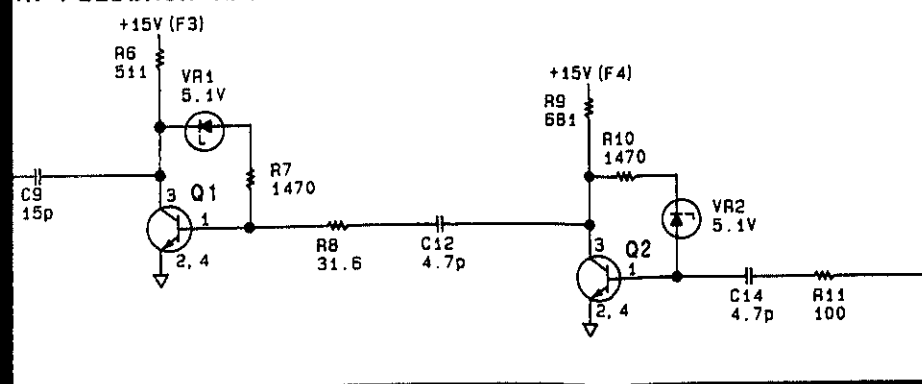


FIG. 8Q-105, SHEET 5 OF 5

HET REFERENCE POWER AMPLIFIERS



VR FEEDBACK AMPLIFIERS



SS46  
Figure 8Q-105  
8Q-105

FIG. 8Q-106  
 SH. 1 OF 5

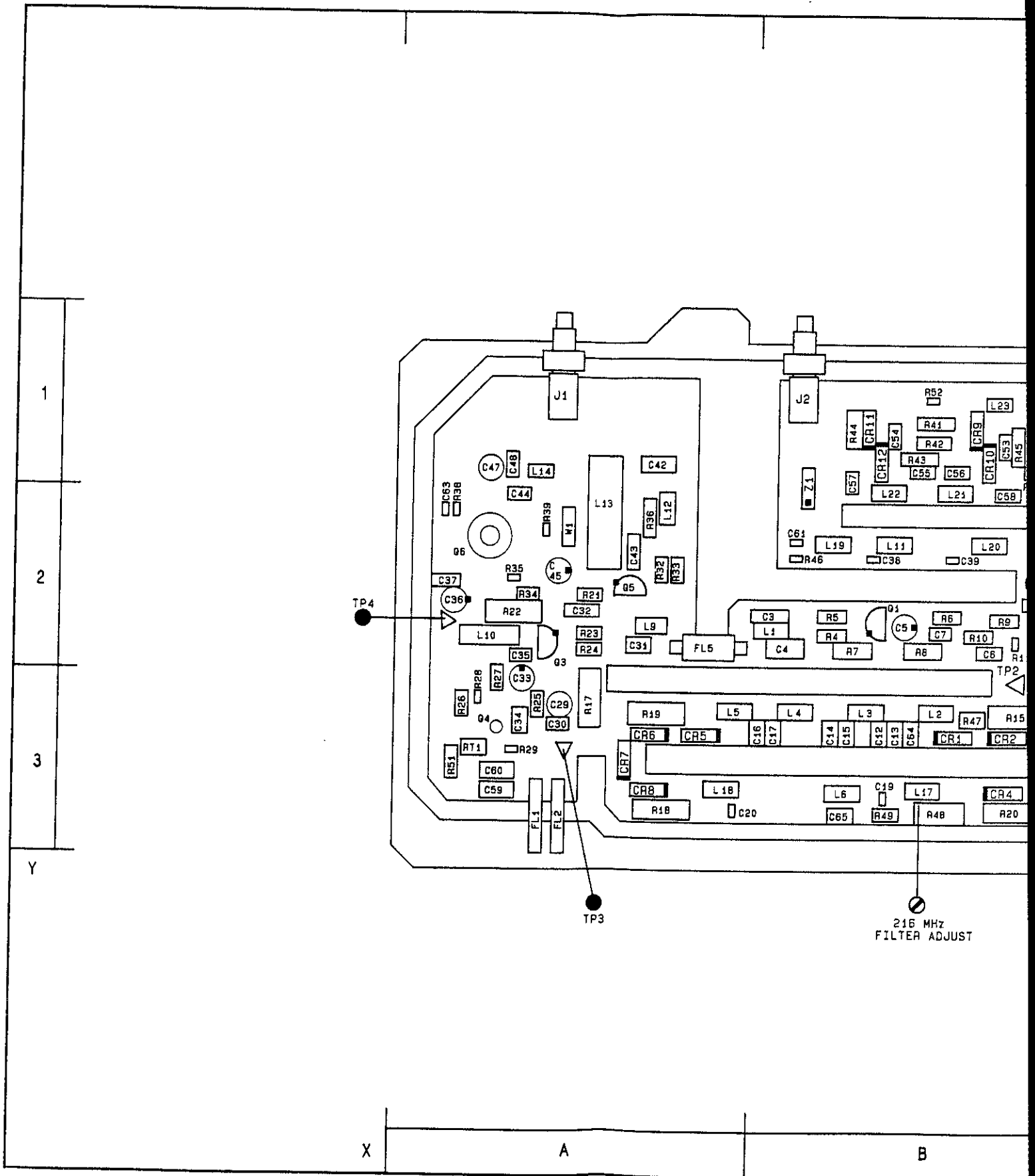
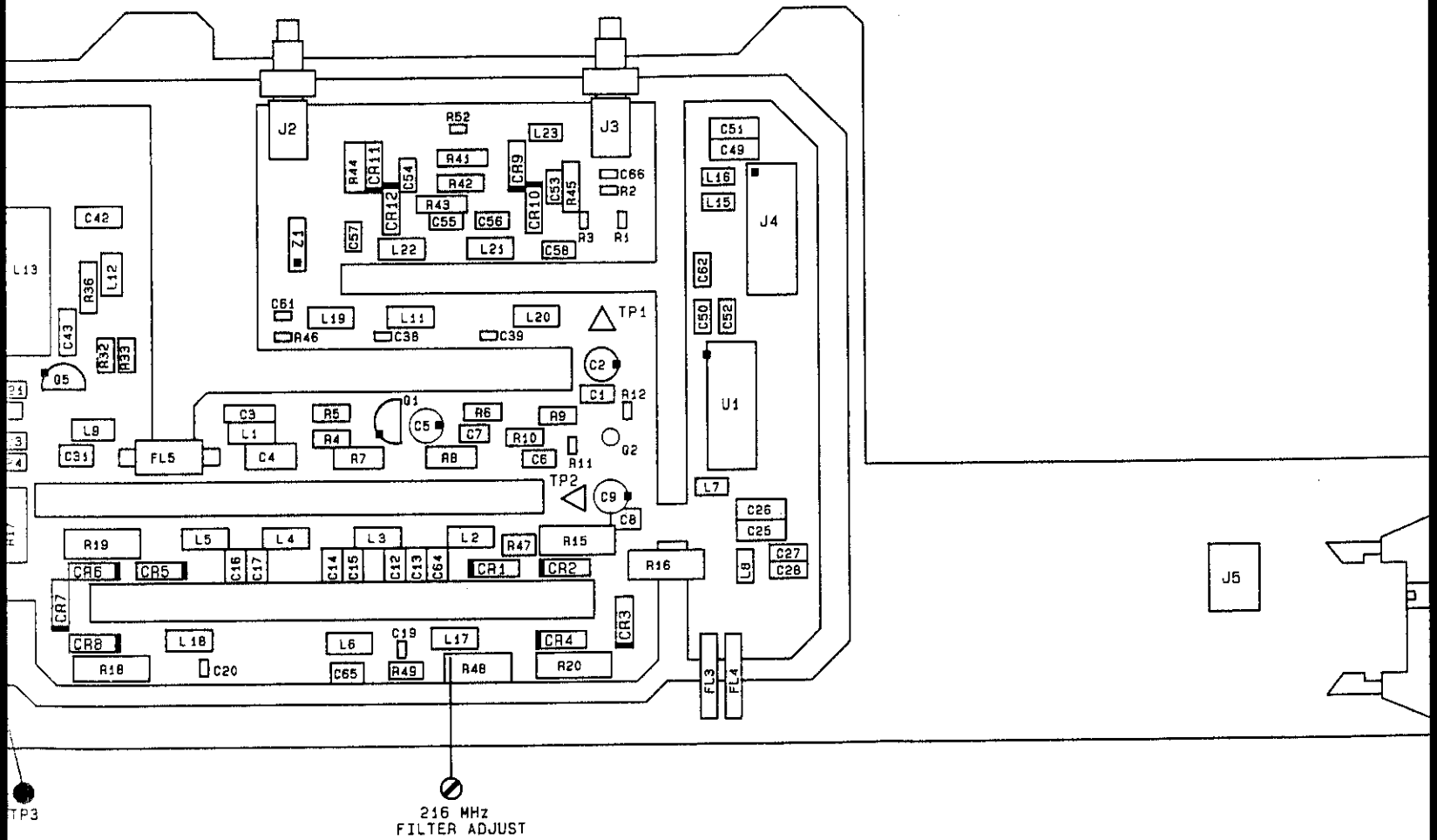


Figure 8Q-106. SERVICE SHEET 47 INFORMATION

Compo

FIG. 8Q-106  
SHT. 2 OF 5



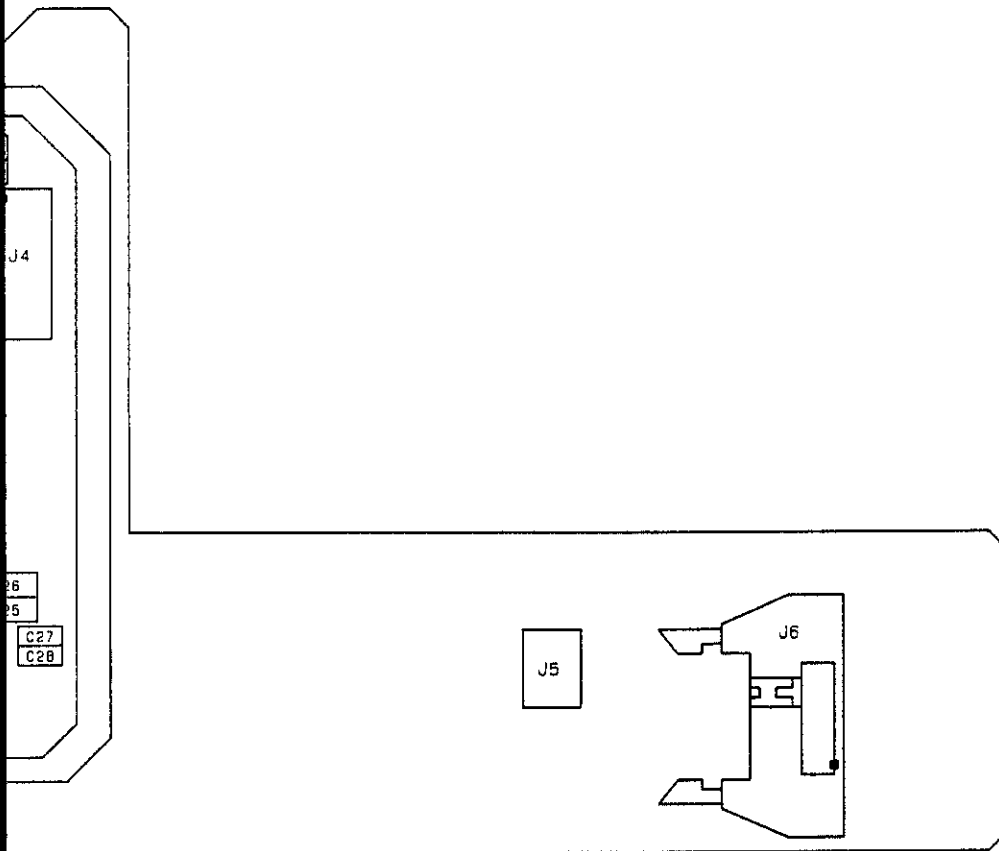
B

C

D

Component Locator

FIG. 88-106  
SHT. 3 OF 5



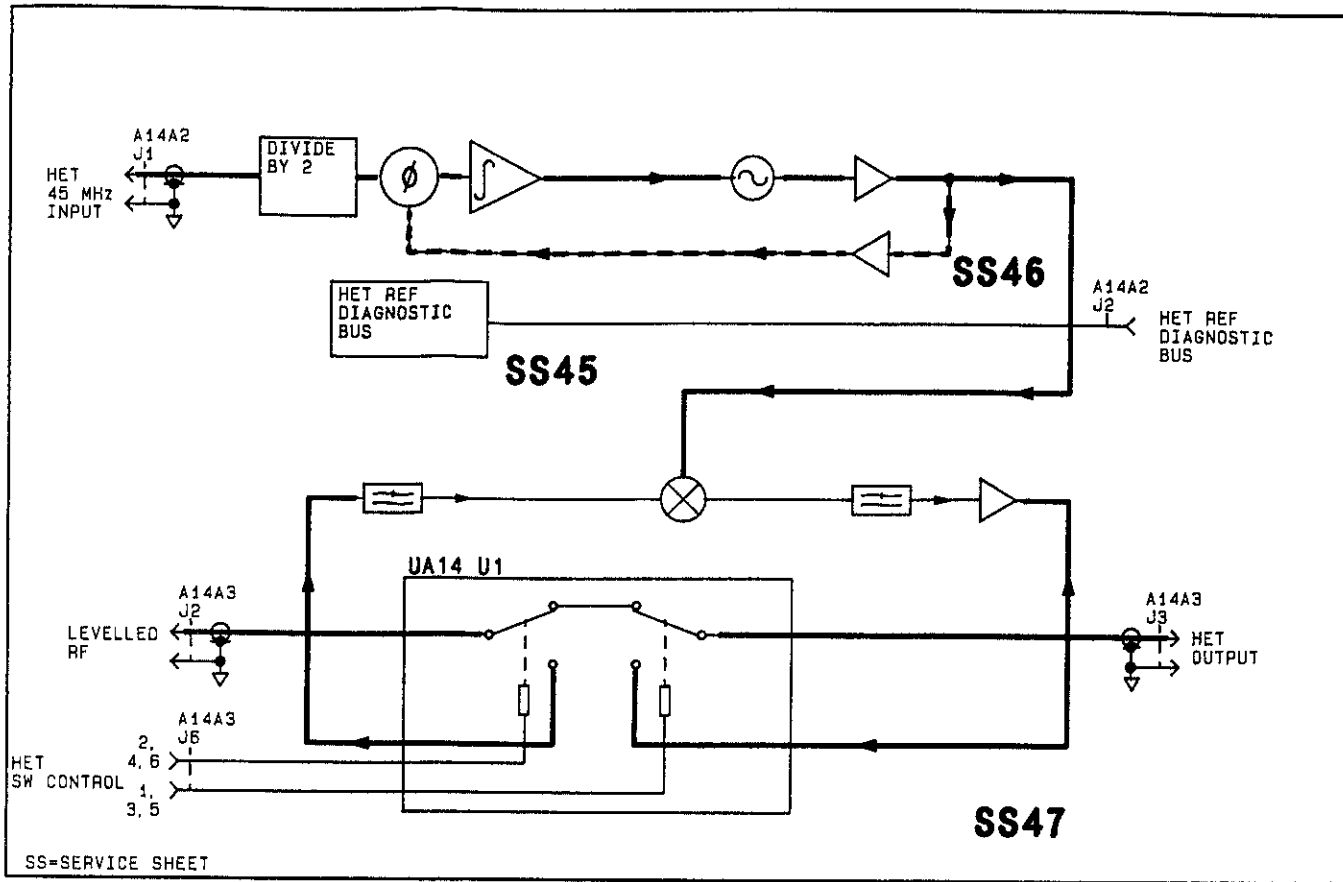
A14A3

C

D

or

FIG 8Q-106  
SHT. 4 OF 5



SS=SERVICE SHEET

Reference Block Diagram

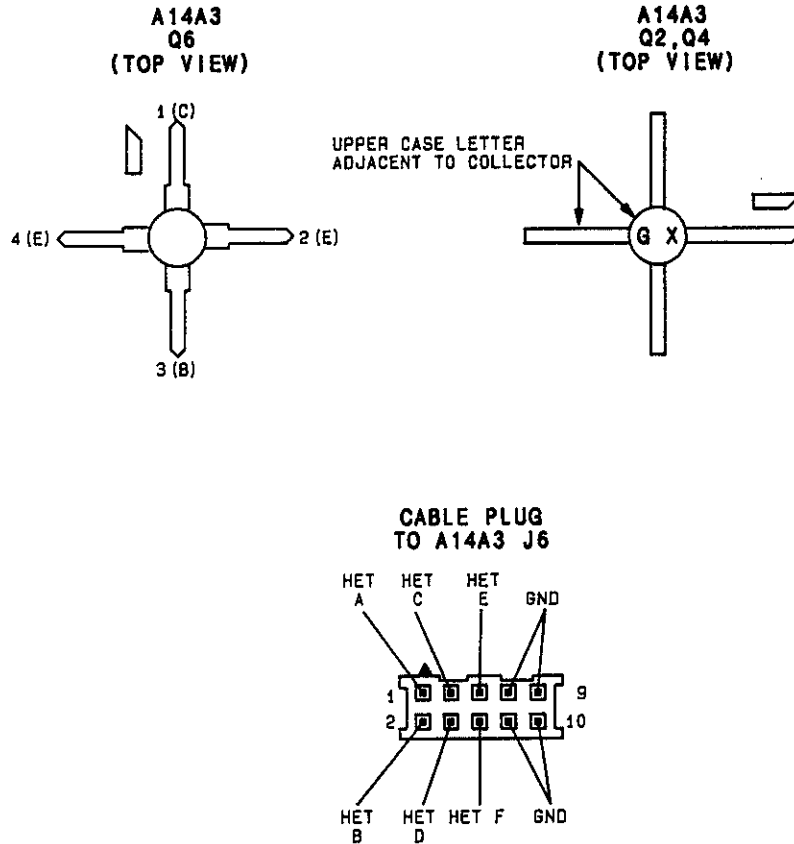
Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	B, 2	C48	A, 1	FL1	A, 3	Q1	B, 2	R36	A, 2						
C2	B, 2	C49	C, 1	FL2	A, 3	Q3	A, 2	R38	A, 2						
C3	B, 2	C50	C, 2	FL3	C, 3	Q4	A, 3	R39	A, 2						
C4	B, 2	C51	C, 1	FL4	C, 3	Q5	A, 2	R41	B, 1						
C5	B, 2	C52	C, 2	FL5	A, 2	Q6	A, 2	R42	B, 1						
C6	B, 2	C53	B, 1	J1	A, 1	R1	B, 1	R43	B, 1						
C7	B, 2	C54	B, 1	J2	B, 1	R2	B, 1	R44	B, 1						
C8	B, 3	C55	B, 1	J3	B, 1	R3	B, 1	R45	B, 1						
C9	B, 2	C56	B, 1	J4	C, 1	R4	B, 2	R46	B, 2						
C12	B, 3	C57	B, 1	J5	D, 3	R5	B, 2	R47	B, 3						
C13	B, 3	C58	B, 1	J6	D, 3	R6	B, 2	R48	B, 3						
C14	B, 3	C59	A, 3	L1	B, 2	R7	B, 2	R49	B, 3						
C15	B, 3	C60	A, 3	L2	B, 3	R8	B, 2	R51	A, 3						
C16	B, 3	C61	B, 2	L3	B, 3	R9	B, 2	R52	B, 1						
C17	B, 3	C62	C, 2	L4	B, 3	R10	B, 2	RT1	A, 3						
C19	B, 3	C63	A, 2	L5	A, 3	R11	B, 2	TP1	B, 2						
C20	A, 3	C64	B, 3	L6	B, 3	R12	B, 2	TP2	B, 2						
C25	C, 3	C65	B, 3	L7	C, 2	R13	B, 3	TP3	A, 2						
C26	C, 3	C66	B, 1	L8	C, 3	R14	A, 3	TP4	A, 3						
C27	C, 3	CR1	B, 3	L9	A, 2	R15	B, 3	U1	C, 2						
C28	C, 3	CR2	B, 3	L10	A, 2	R16	B, 3	W1	A, 2						
C29	A, 3	CR3	B, 3	L11	B, 2	R17	A, 3	Z1	B, 1						
C30	A, 3	CR4	B, 3	L12	A, 2	R18	A, 3								
C31	A, 2	CR5	A, 3	L13	A, 2	R19	A, 3								
C32	A, 2	CR6	A, 3	L14	A, 1	R20	B, 3								
C33	A, 3	CR7	A, 3	L15	C, 1	R21	A, 2								
C34	A, 3	CR8	A, 3	L16	C, 1	R22	A, 2								
C35	A, 2	CR9	B, 1	L17	B, 3	R23	A, 2								
C36	A, 2	CR10	B, 1	L18	A, 3	R24	A, 2								
C37	A, 2	CR11	B, 1	L19	B, 2	R25	A, 3								
C38	B, 2	CR12	B, 1	L20	B, 2	R26	A, 3								
C39	B, 2			L21	B, 1	R27	A, 3								
C42	A, 1			L22	B, 1	R28	A, 3								
C43	A, 2			L23	B, 1	R29	A, 3								
C44	A, 2					R32	A, 2								
C45	A, 2					R33	A, 2								
C47	A, 1					R34	A, 2								
						R35	A, 2								

P/O HETERODYNE LOCAL OSCILLATOR ASSEMBLY **SS46**  
SEE REVERSE SIDE

Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. A14FL1 is an array of feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.
4. Hot switch circuit common (↓ on A14U1) is connected to J6 pins 7-10 through chassis parts. These lines are a ground for the hot switch (A14U1) coming from the A17 module.



Schematic General Information

## CHANGES

### All Serial Prefixes

#### On the Component Locator:

- A14A3R53 - Immediately to the left of J1, add R53.

#### In Component Coordinates:

- A14A3R53 - Add R53 (A,1)

#### In Schematic General Information:

- A14A3Q6 - Switch "(C)" and "(B)".
- A14A3Q2, Q4 - Beginning at the symbol for the angled lead, number the leads clockwise 1, 2, 3, 4.

#### On the schematic:

- A14A3R52 - In **60 MHz LOW PASS FILTER (SWITCHED)**, change the value of R52 to 26.1
- A14A3R53 - In **HET POWER AMP**, immediately to the right of the parallel combination of C47 and C48, add a resistor to ground. Assign it R53, 10K ohms.
- W34, W35, W36 - A14 U1 cables with reference designators A14W34, A14W35, and A14W36 should have the A14 deleted. On the lower right portion of the schematic, change "HET OUTPUT" service sheet numbers to 50 (8642B), and 48 (8642A).
- A14A3R52 - Add an asterisk (\*) to R52 located in the upper right portion of **60MHz LOW PASS FILTER (SWITCHED)** to indicate a factory selected component.

### 2531A and above

#### On the schematic:

- R47, R48, R49, R52 - In **60MHz LOW-PASS FILTER (SWITCHED)**, change the value of R52 to 14.7 ohms. In **6.8 MHz/216 MHz LOW-PASS FILTER**, change the following components to their corresponding values:  
R47, 196 ohms  
R48, 500 ohms  
R49, 75 ohms



FIG. 8Q-107, SHEET 1 OF 5

### A14A3 HETERODYNE ASSEMBLY (08642-60116)

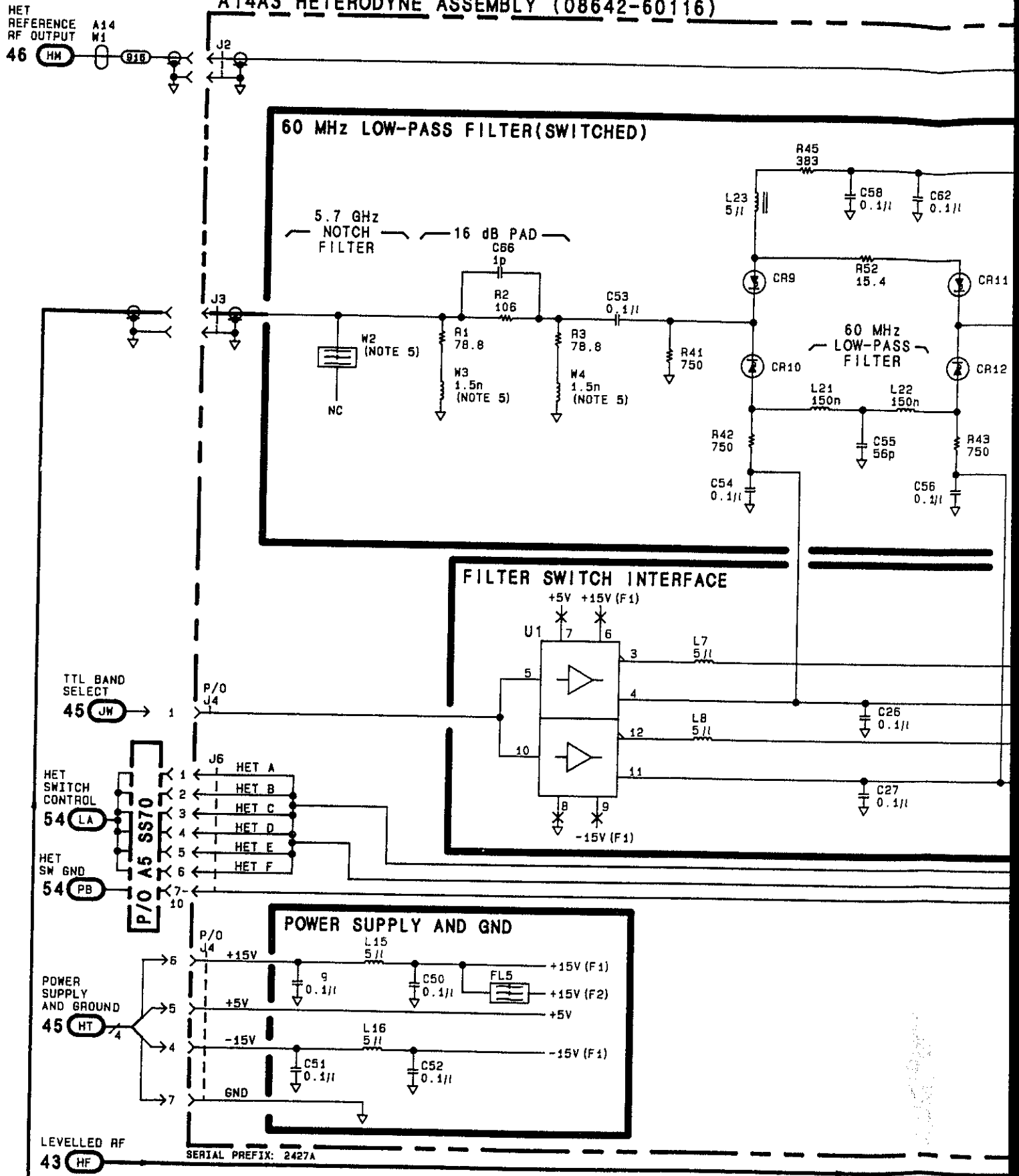


FIG. 8Q-107, SHT. 2 OF 5

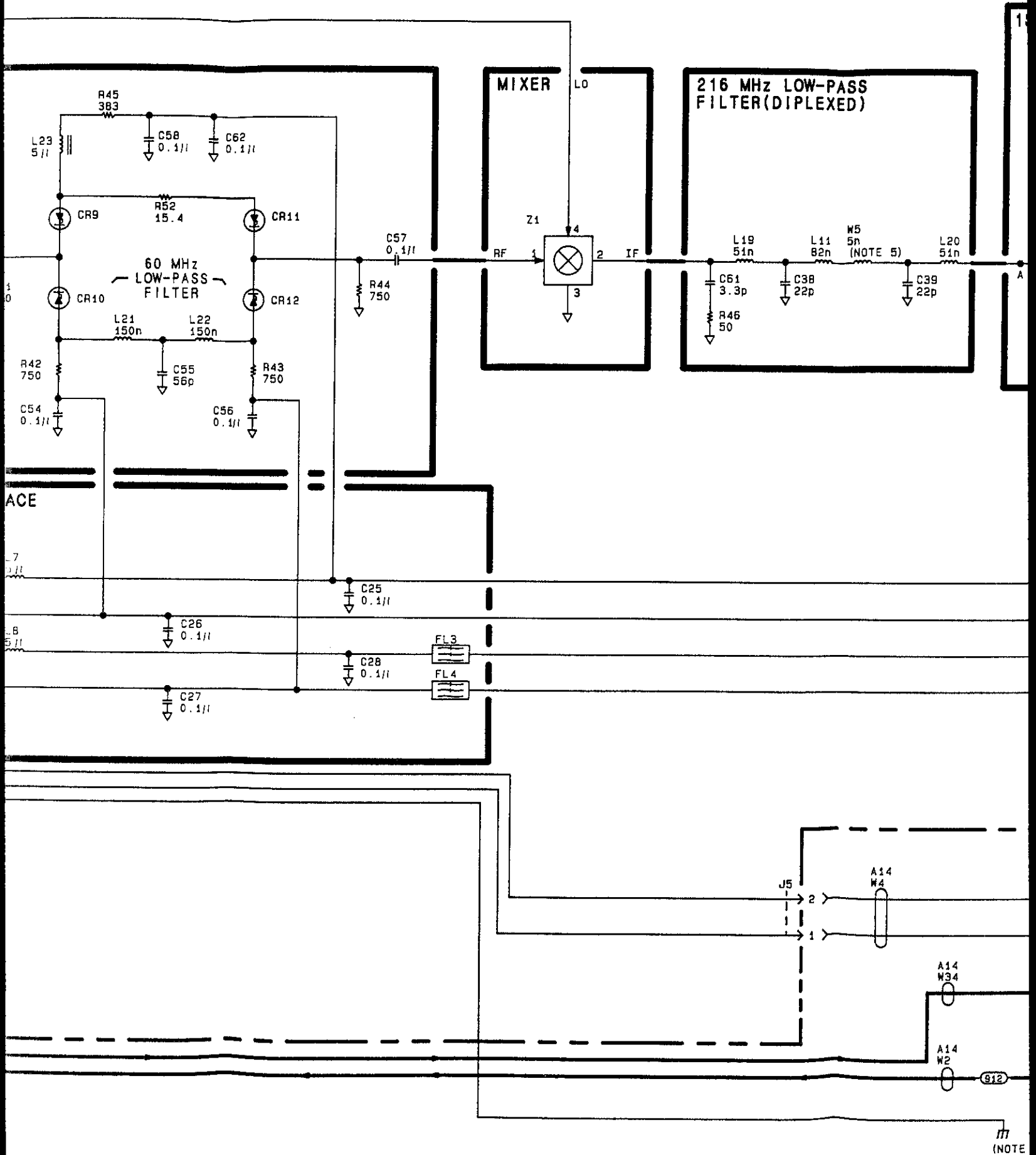
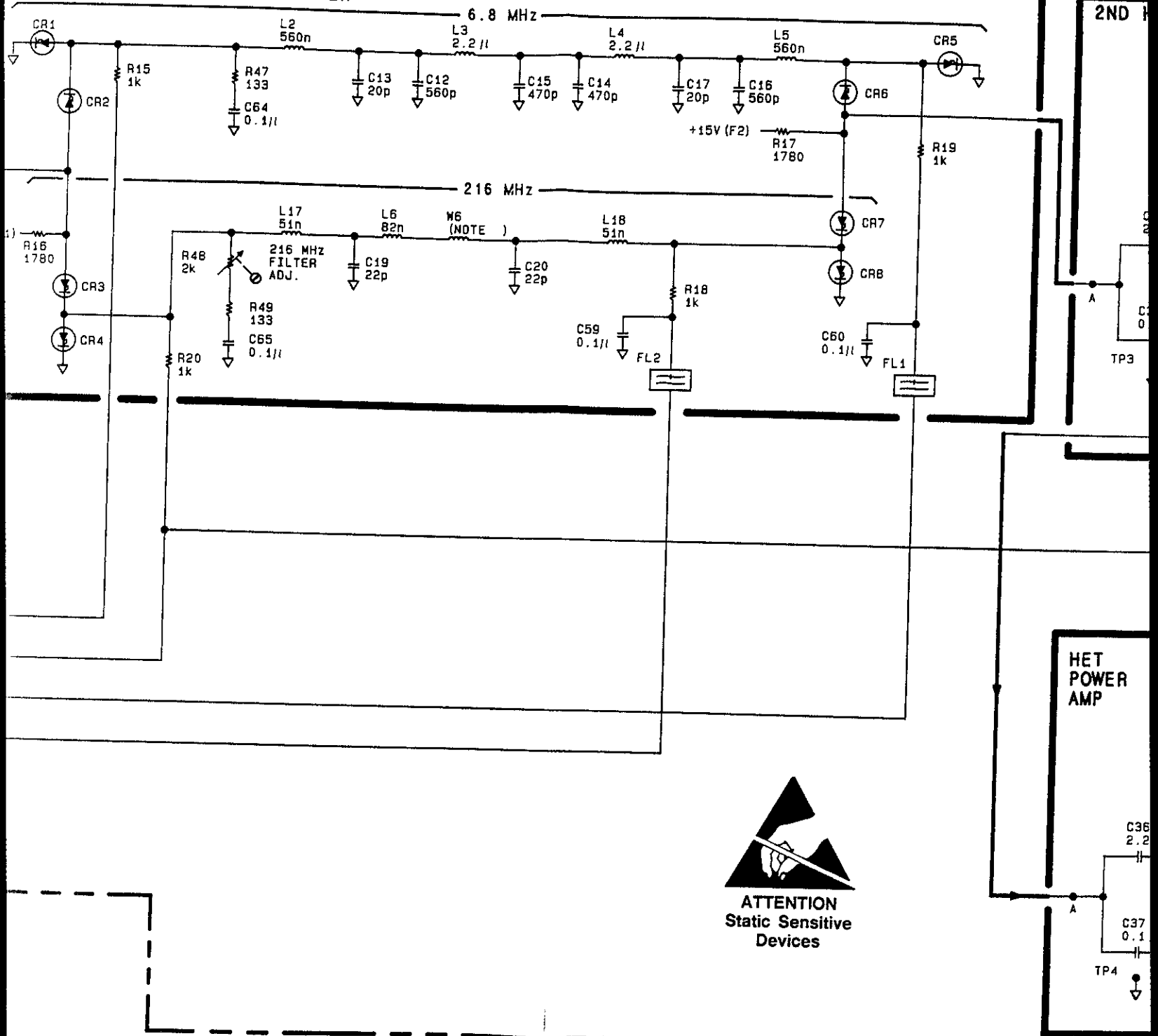




FIG. BQ-107, SHY, 4 OF 5

MHz/216 MHz LOW-PASS FILTER





A16 Attenuator Module (8642A)

## CHANGES

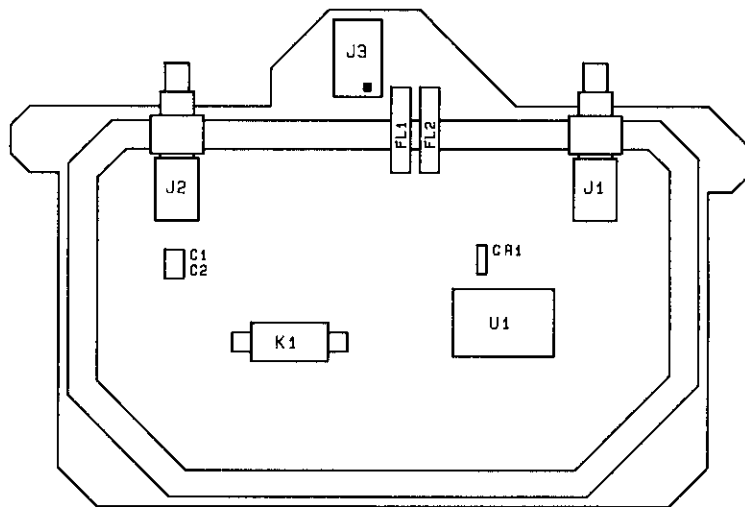
### All Serial Prefixes

On the component locator:

- Delete the entire component locator and replace with the component locator on page 8R-100.3.

On the schematic:

- Mark the schematic "For Option 003 Only".

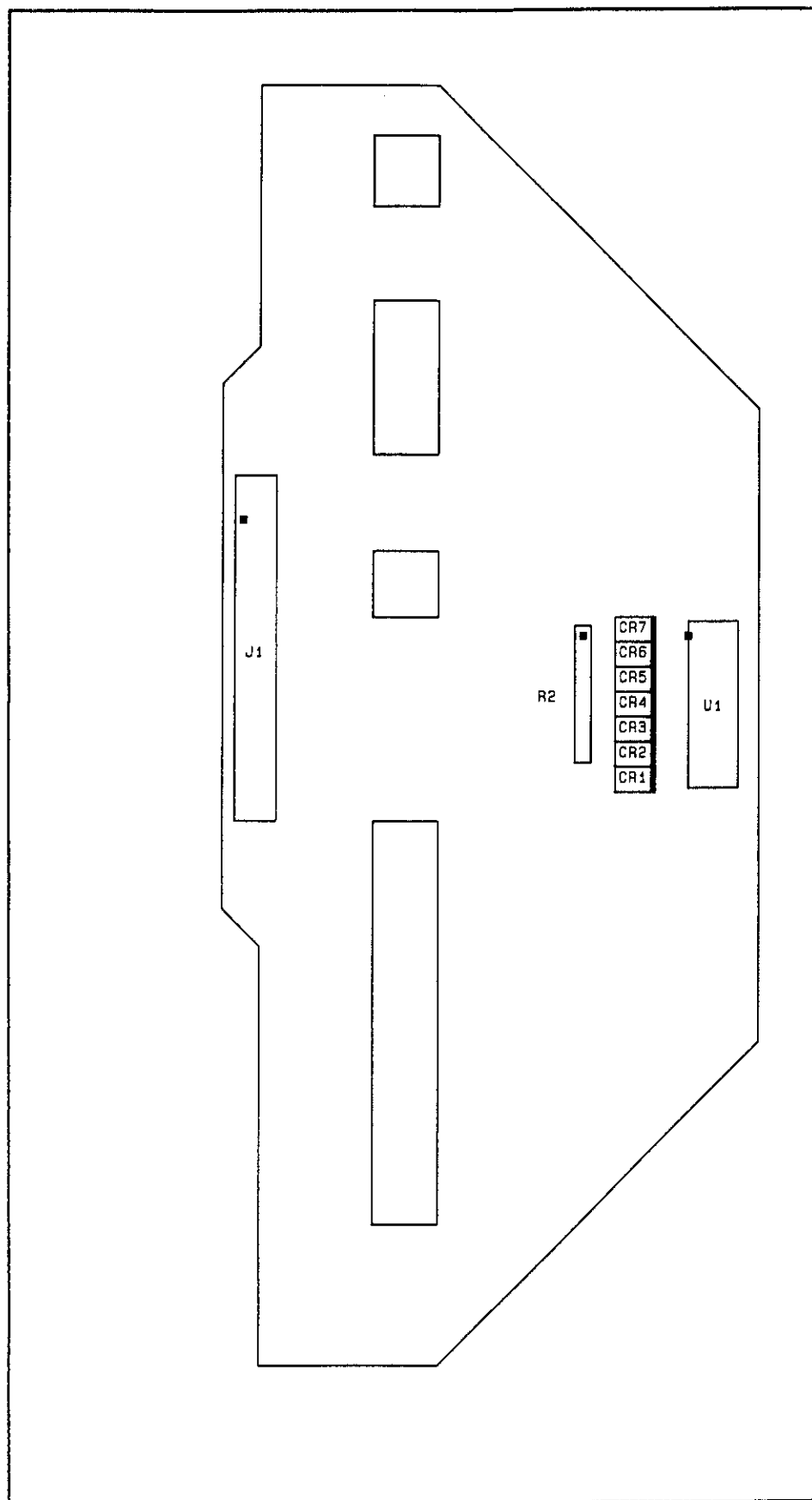


**A16A2**

*A16A2 COMPONENT LOCATOR (P/O Errata)*



FIG. 8R-101  
SHT. 1 OF 5

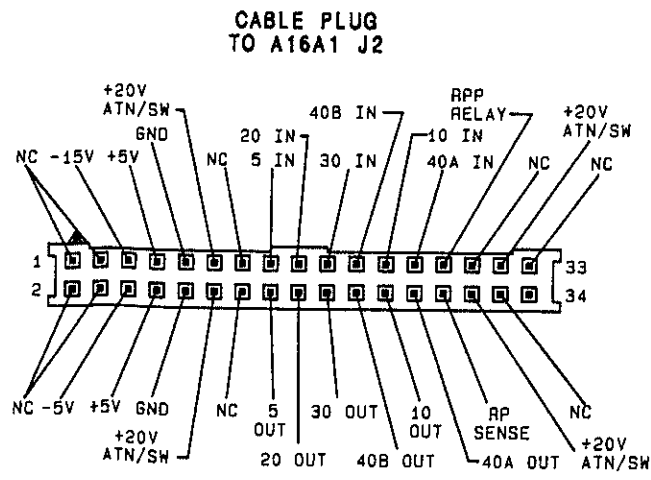
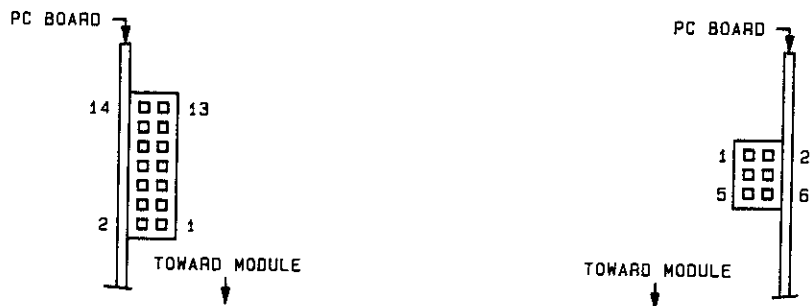
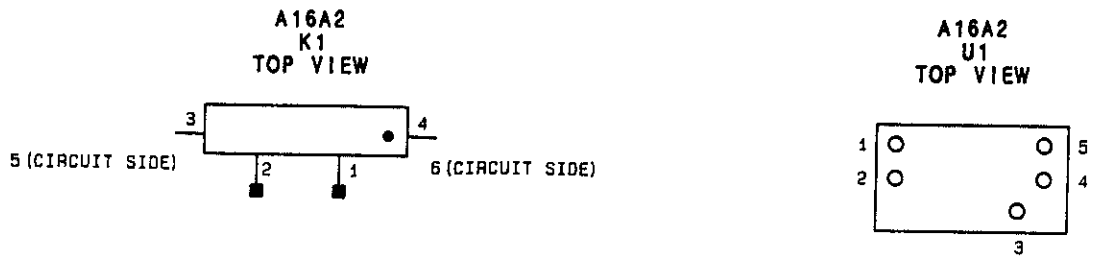


Component Locator

FIG. 82-101  
 SH- 2 OF 5

Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. A16A1 W1 consists of two wires and connector soldered to two pads A16A1. (J3 pins 1, 2)



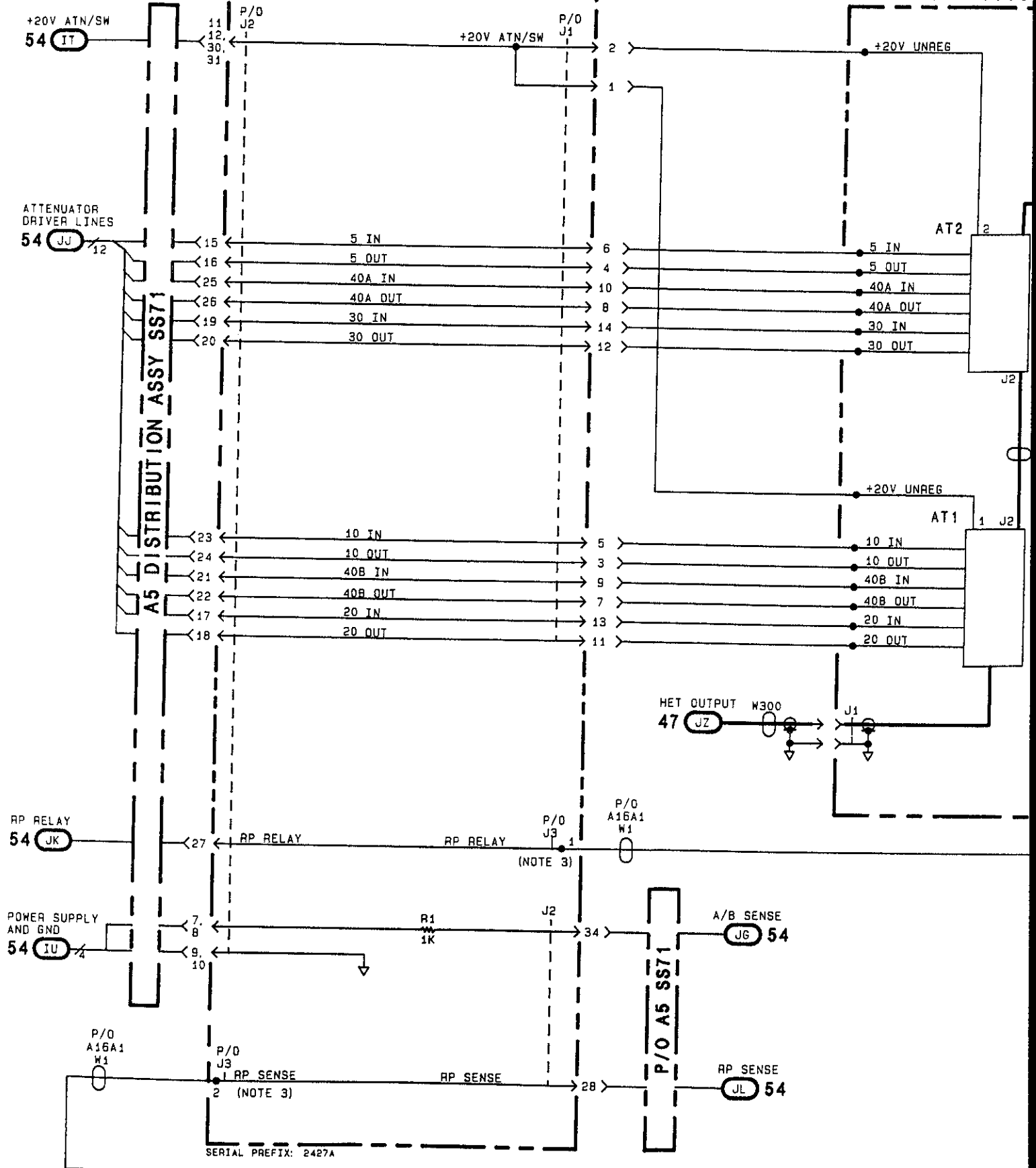
Schematic General Information

FIG. 8R-101

SHT. 3 OF 5

A16A1 ATTENUATOR INTERCONNECT ASSEMBLY (08642-60145)

A16AT1, A16AT2  
P/O 08642-6095

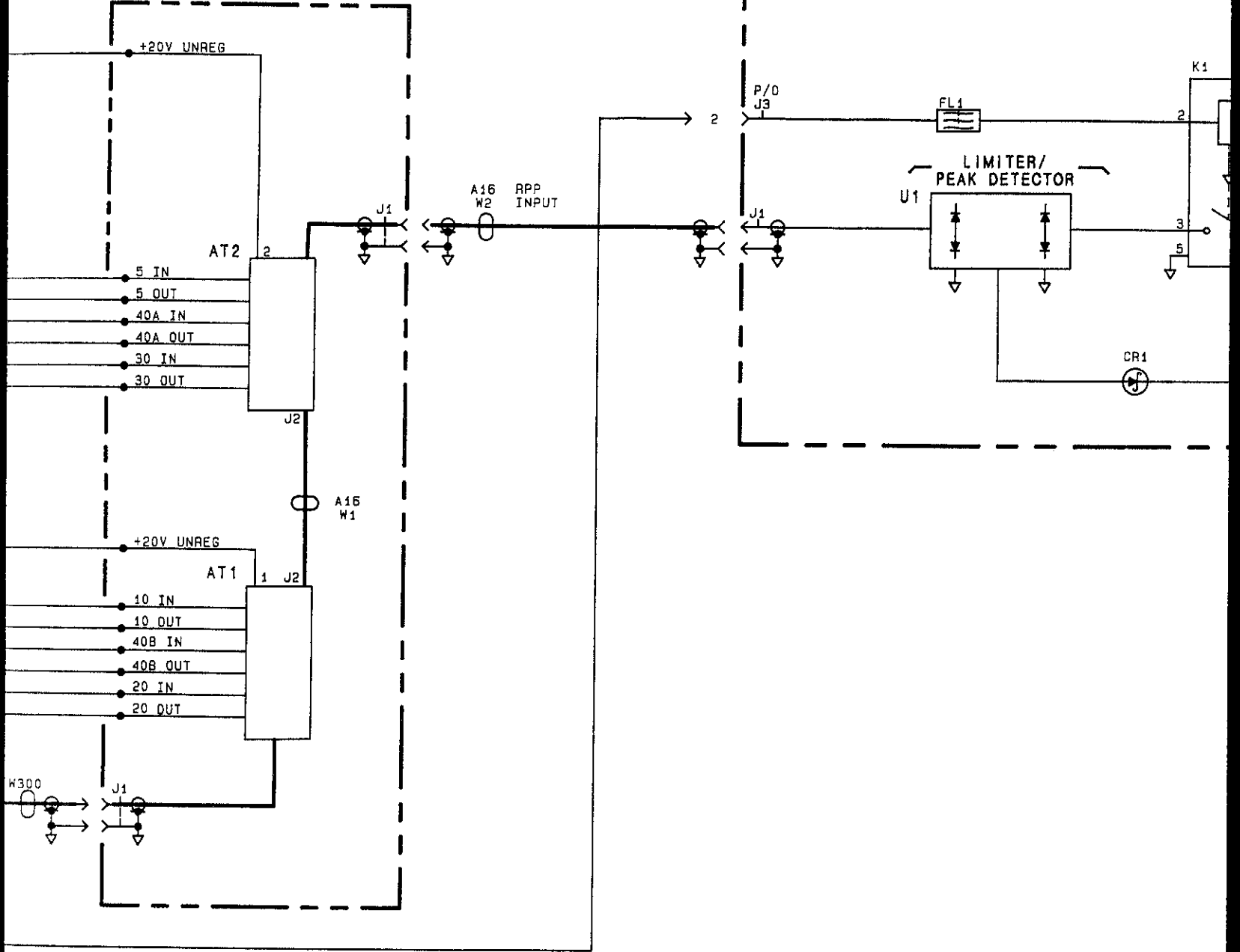


3642-60145)

FIG. 8E-101  
SHT. 4 OF 5

A16A2 REVERSE POWER PROTECTION ASS

A16AT1, A16AT2  
P/O 08642-60955

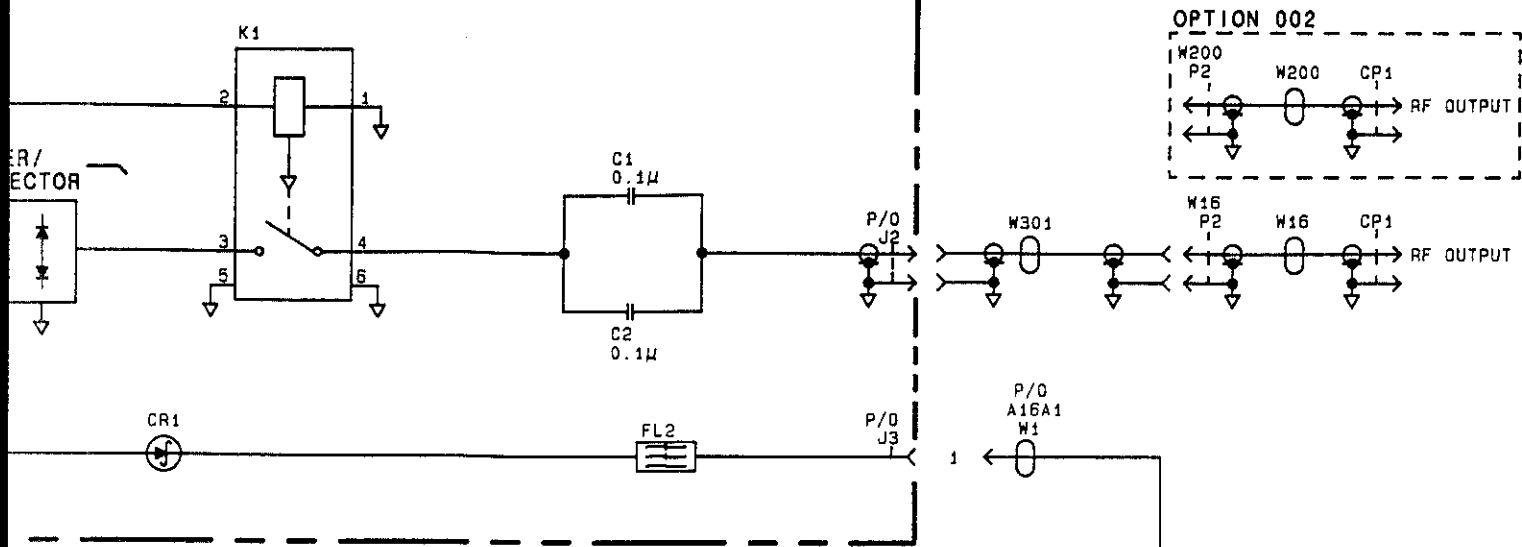


SENSE  
54

SENSE  
54

PROTECTION ASSEMBLY (08642-60119)

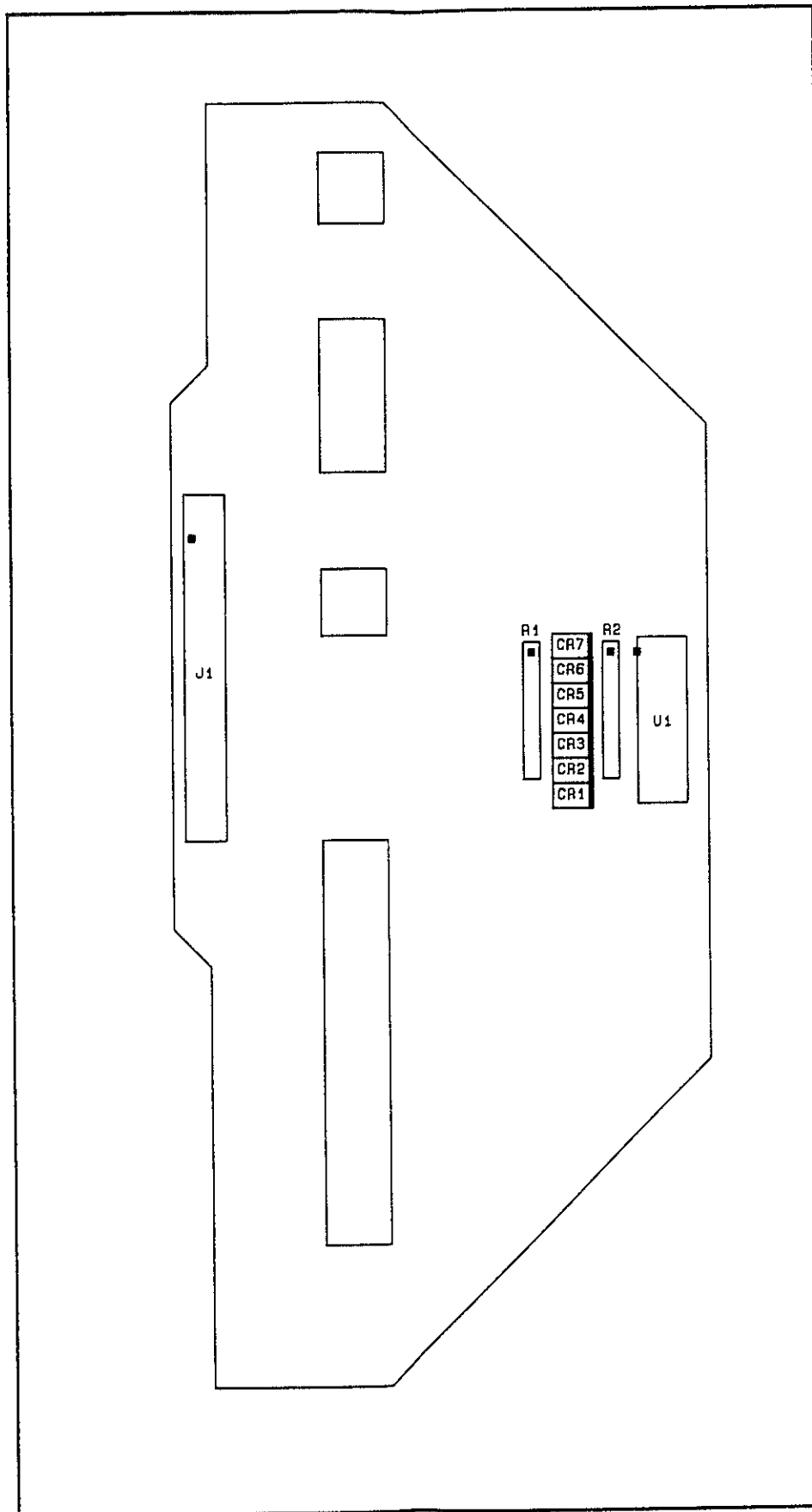
FIG. 8R-101  
SHT. 5 OF 5



**ATTENTION**  
Static Sensitive  
Devices

**SS48**

Figure 8R-101  
8R-101



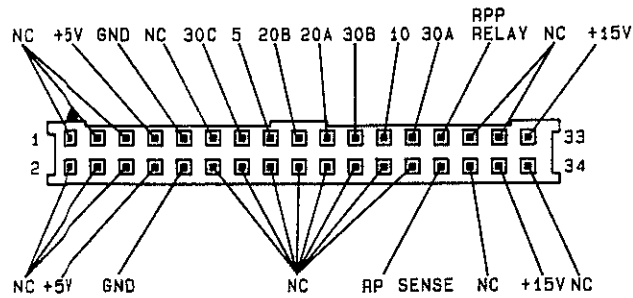
Component Locator

FIG. 8R-103, SH. 2 OF 5

Notes:

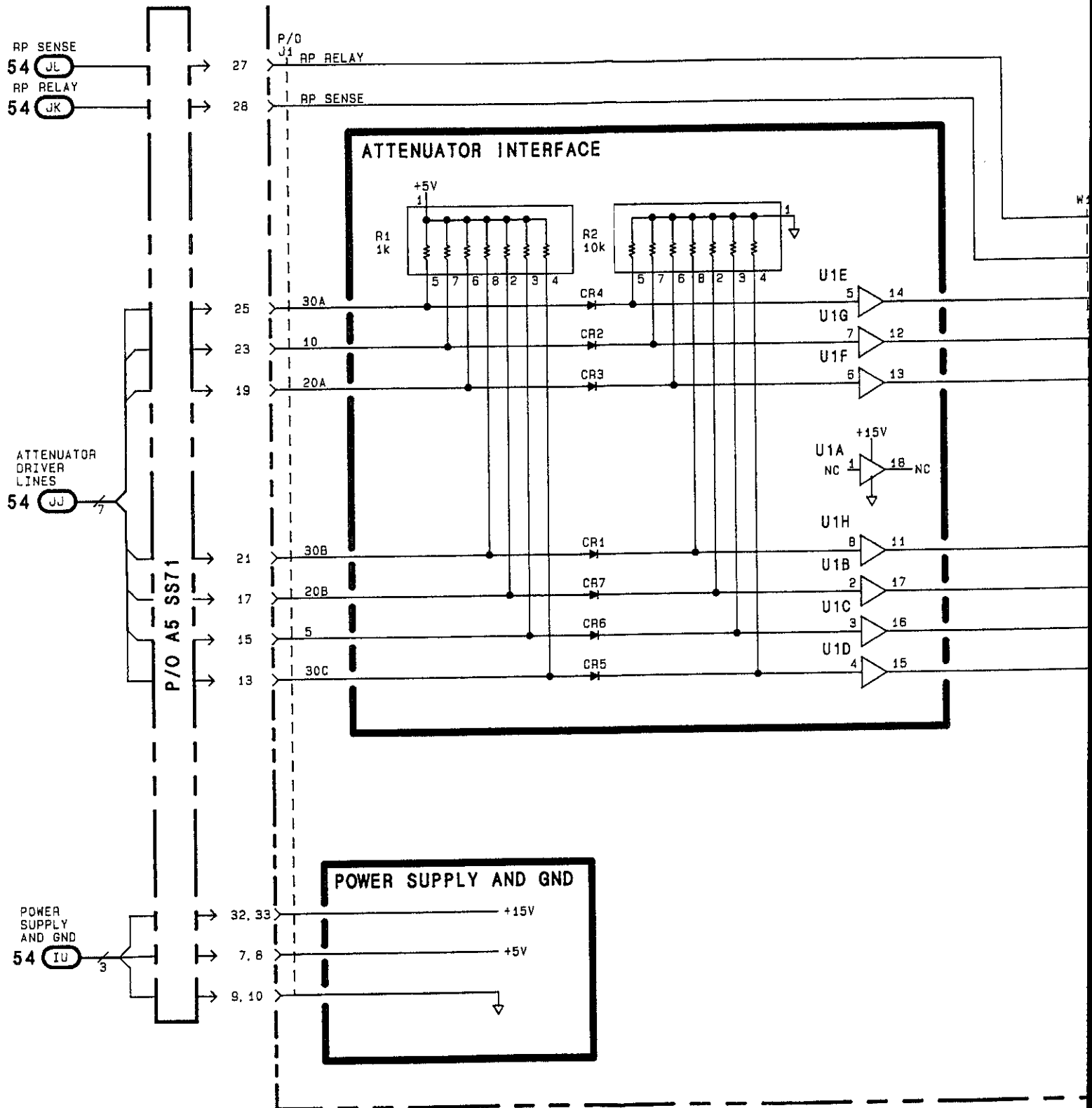
1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.

CABLE PLUG  
TO A16A1 J1



Schematic General Information

A16A1 ATTENUATOR INTERCONNECT ASSEMBLY (08642-60117)



SERIAL PREFIX: 2427A



FIG. BR-103, SHEET 4 OF 5

ECT ASSEMBLY (08642-60117)

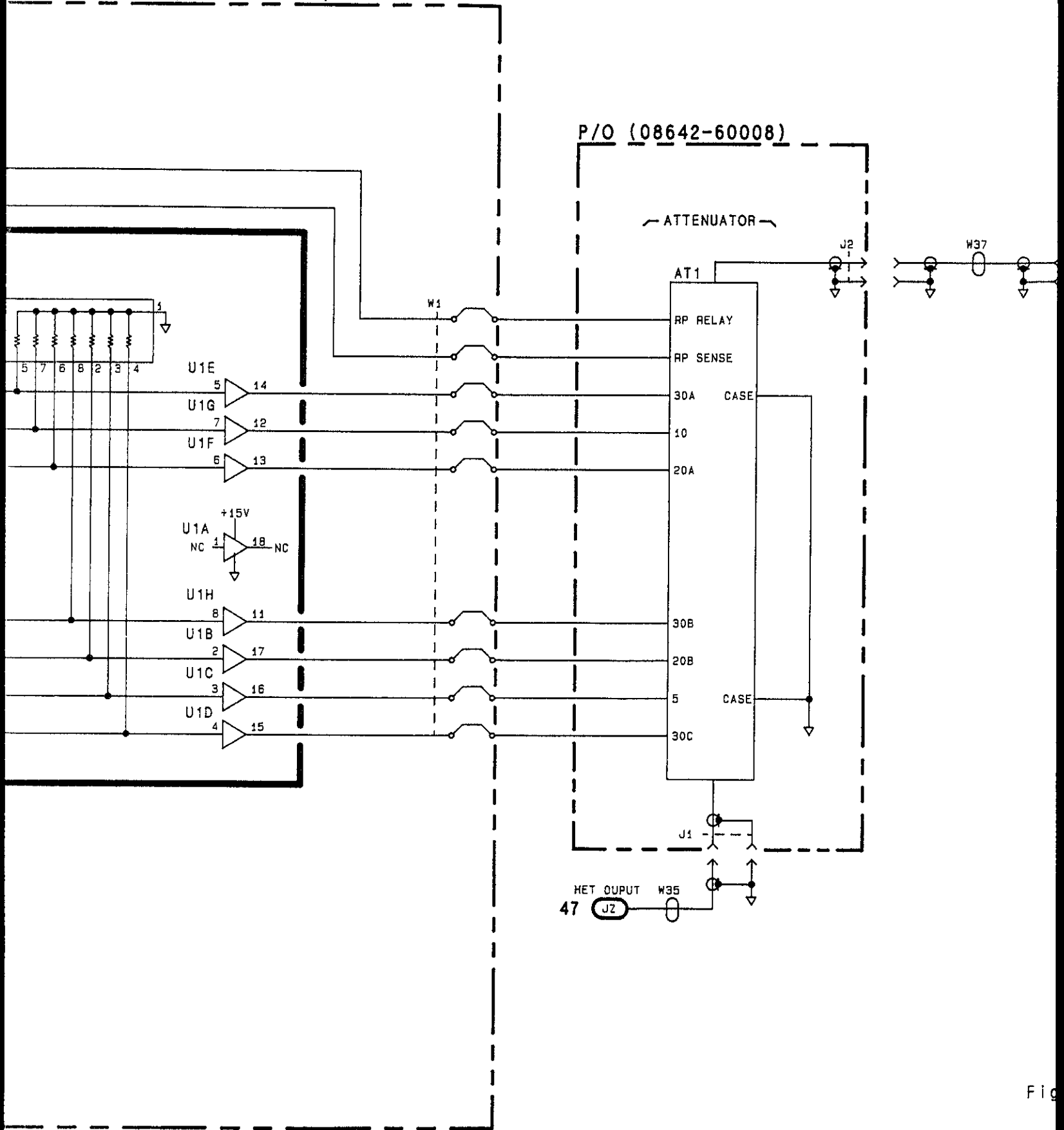
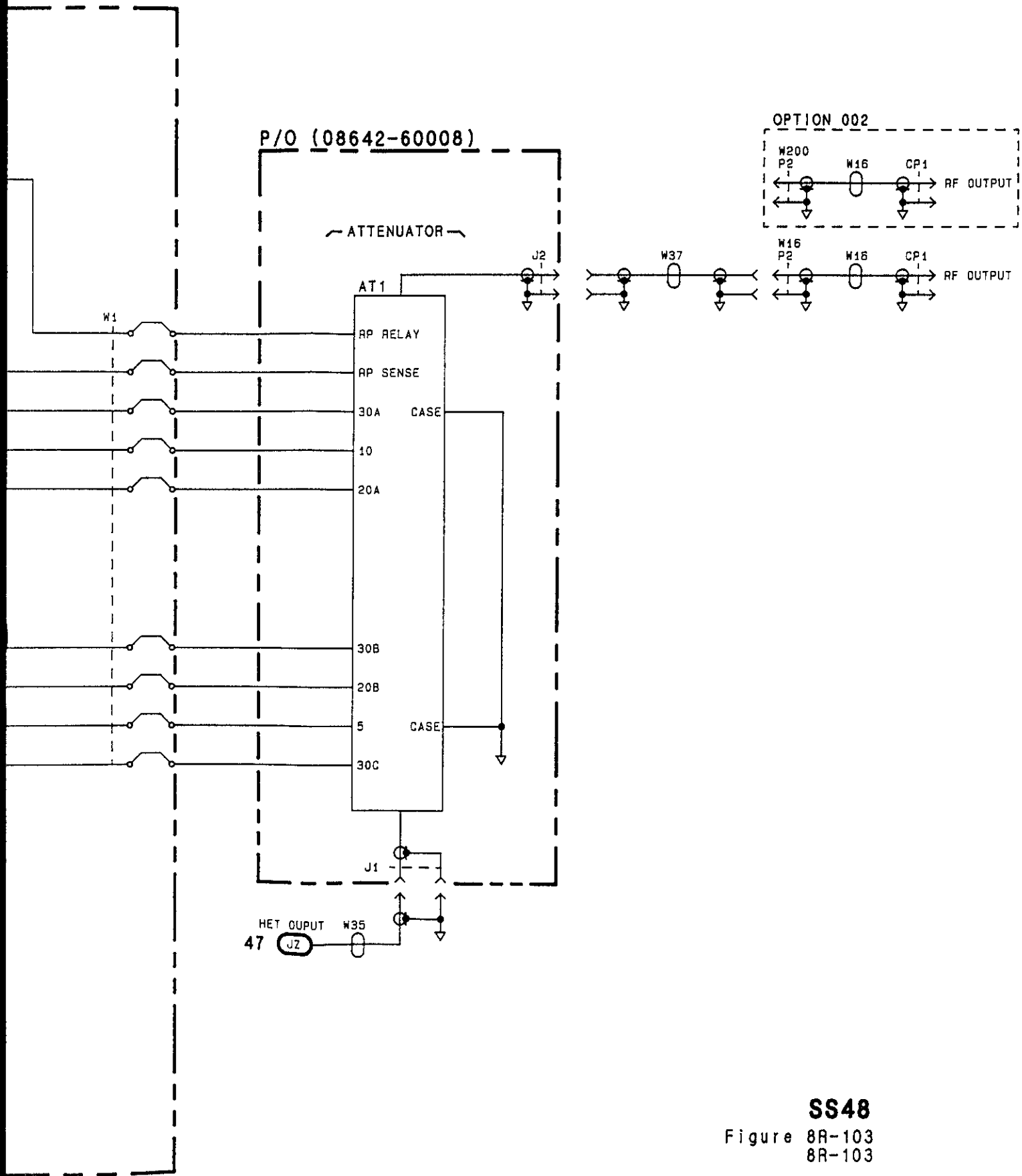


FIG. 8R-103, SHT. 5 OF 5

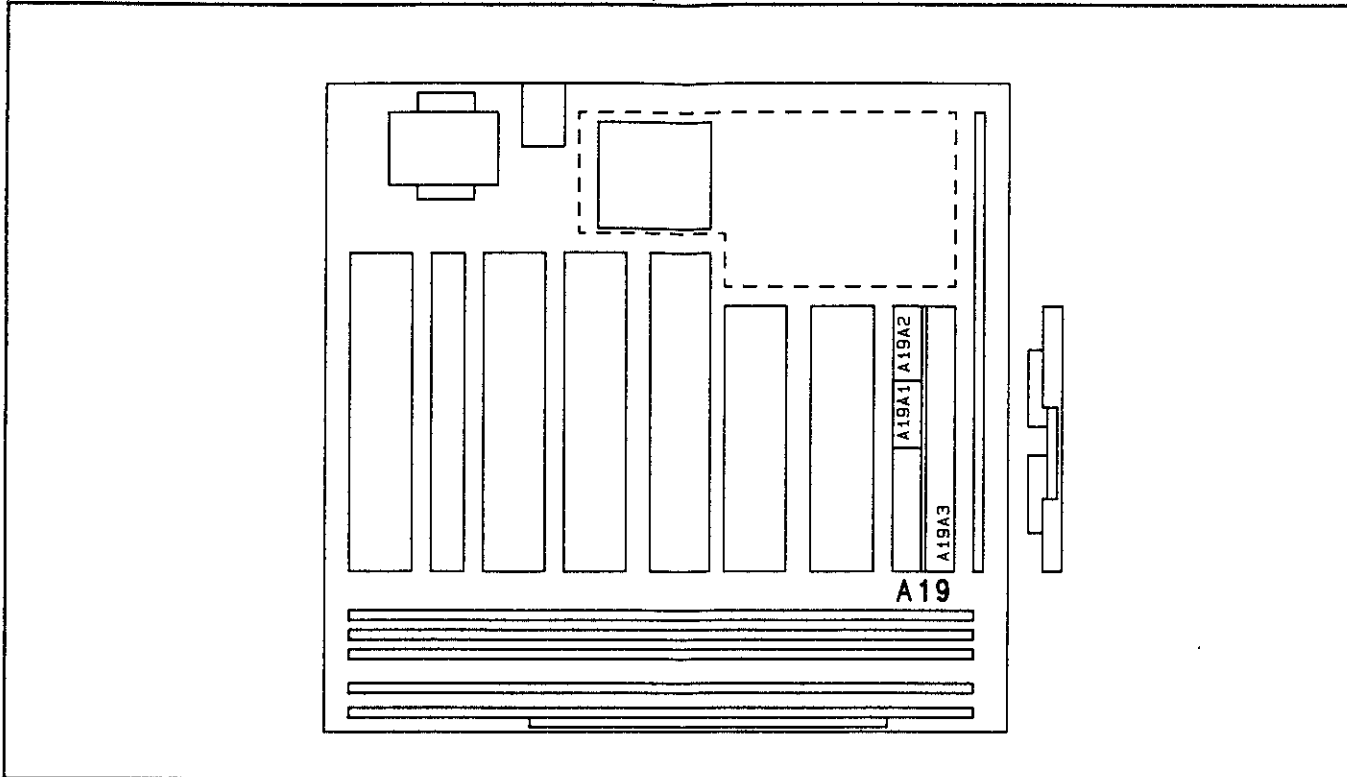


SS48  
Figure 8R-103  
8R-103

A19 Doubler/Attenuator Module (8642B)

FIG. 8S-100  
SHT. 1 OF 2

Assembly Locator



Simplified Block Diagram

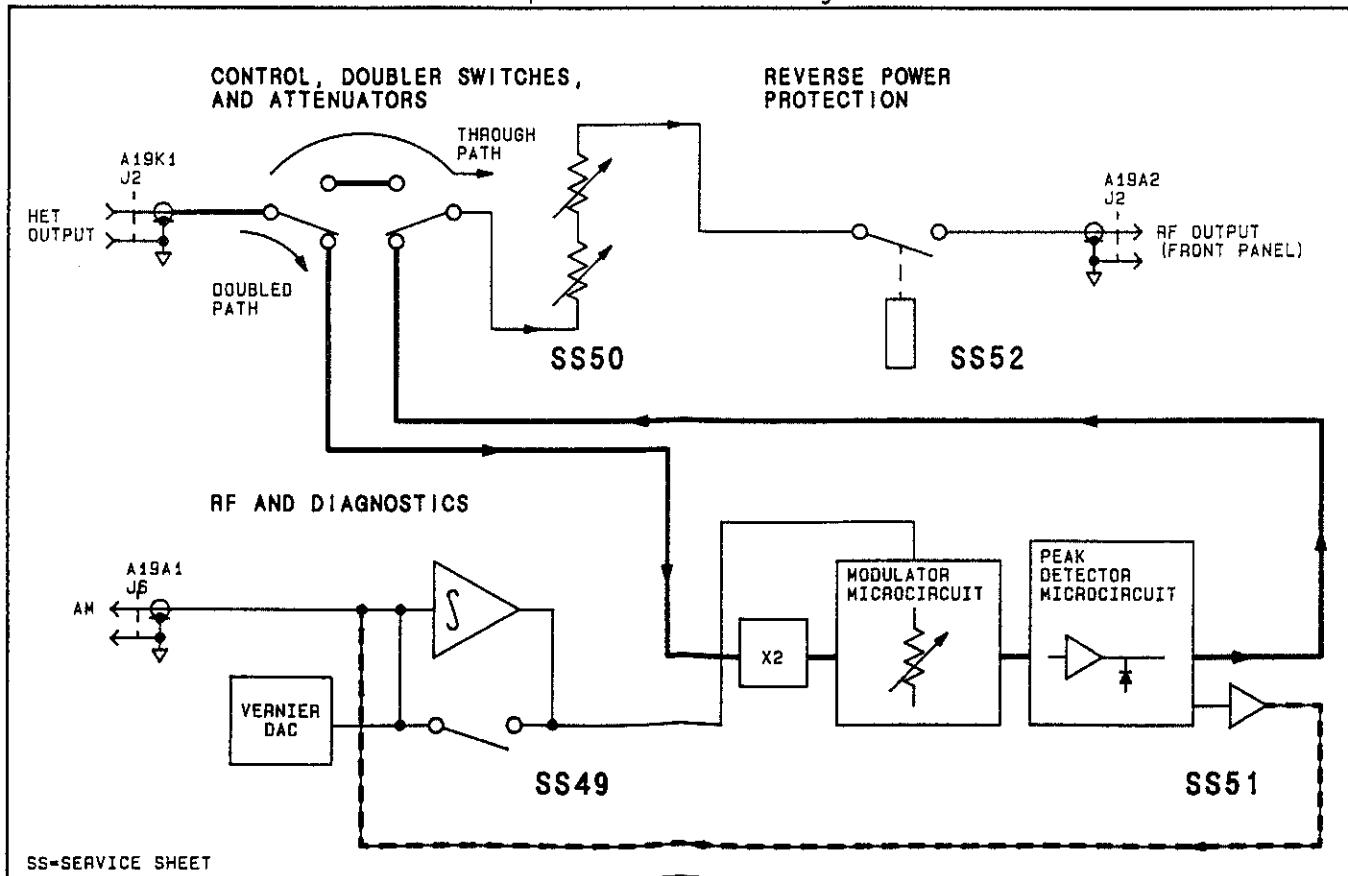
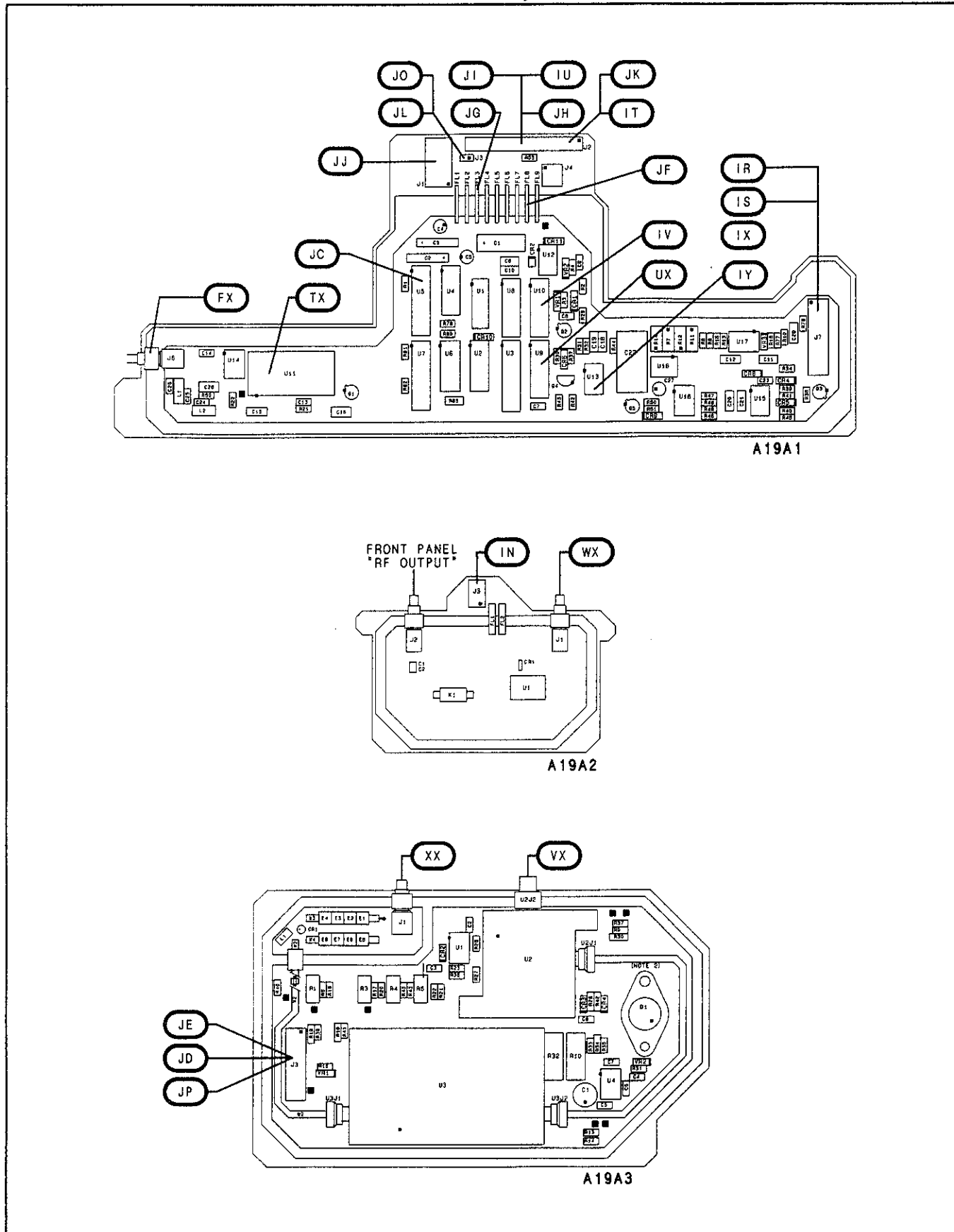


Figure 8S-100 BD16 General Information.

Module Test Point/Adjustment Locations



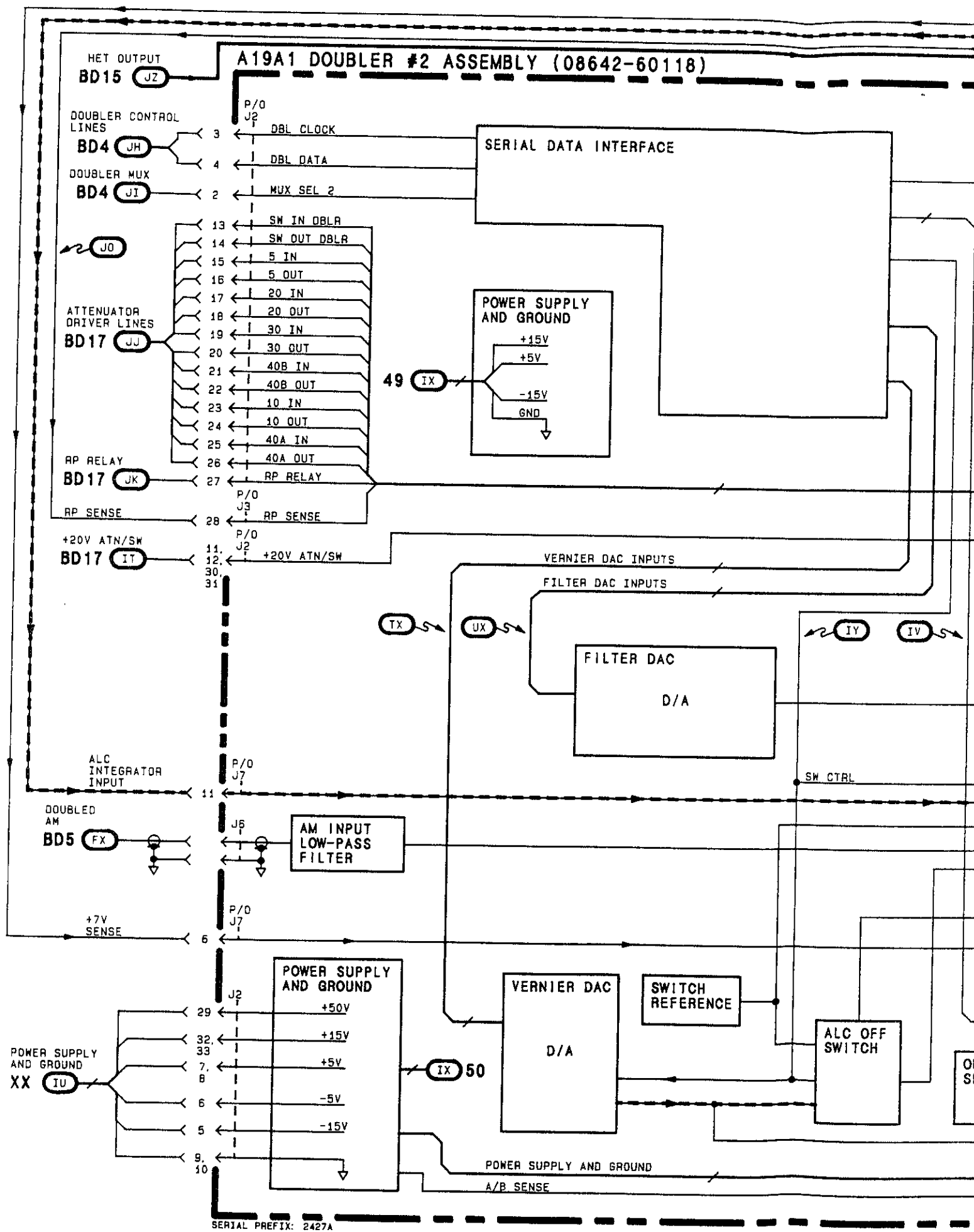
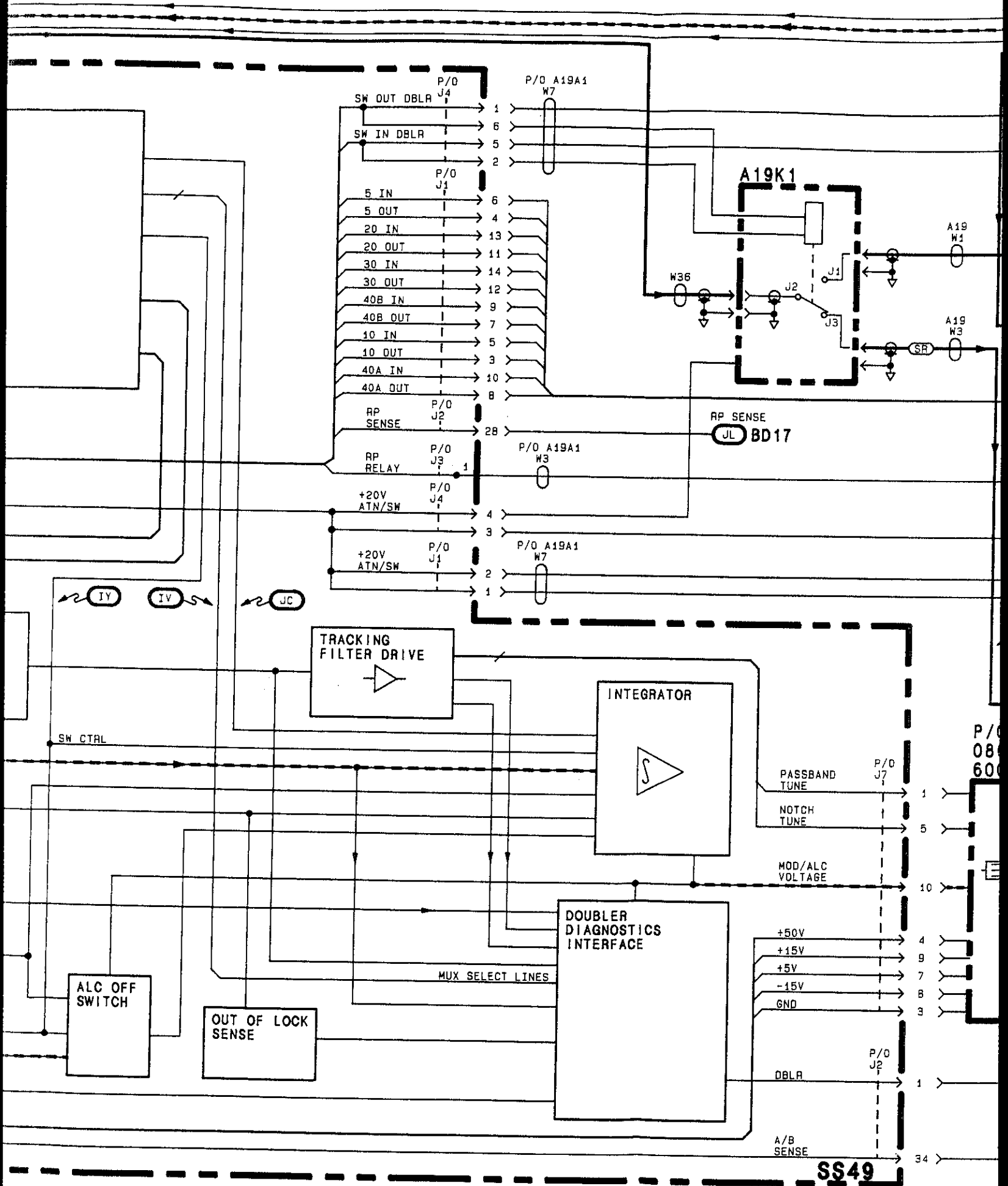


FIG. 85-101, SHT. 2 OF 5



SS49

FIG. 85-101, SHT. 3 OF 5

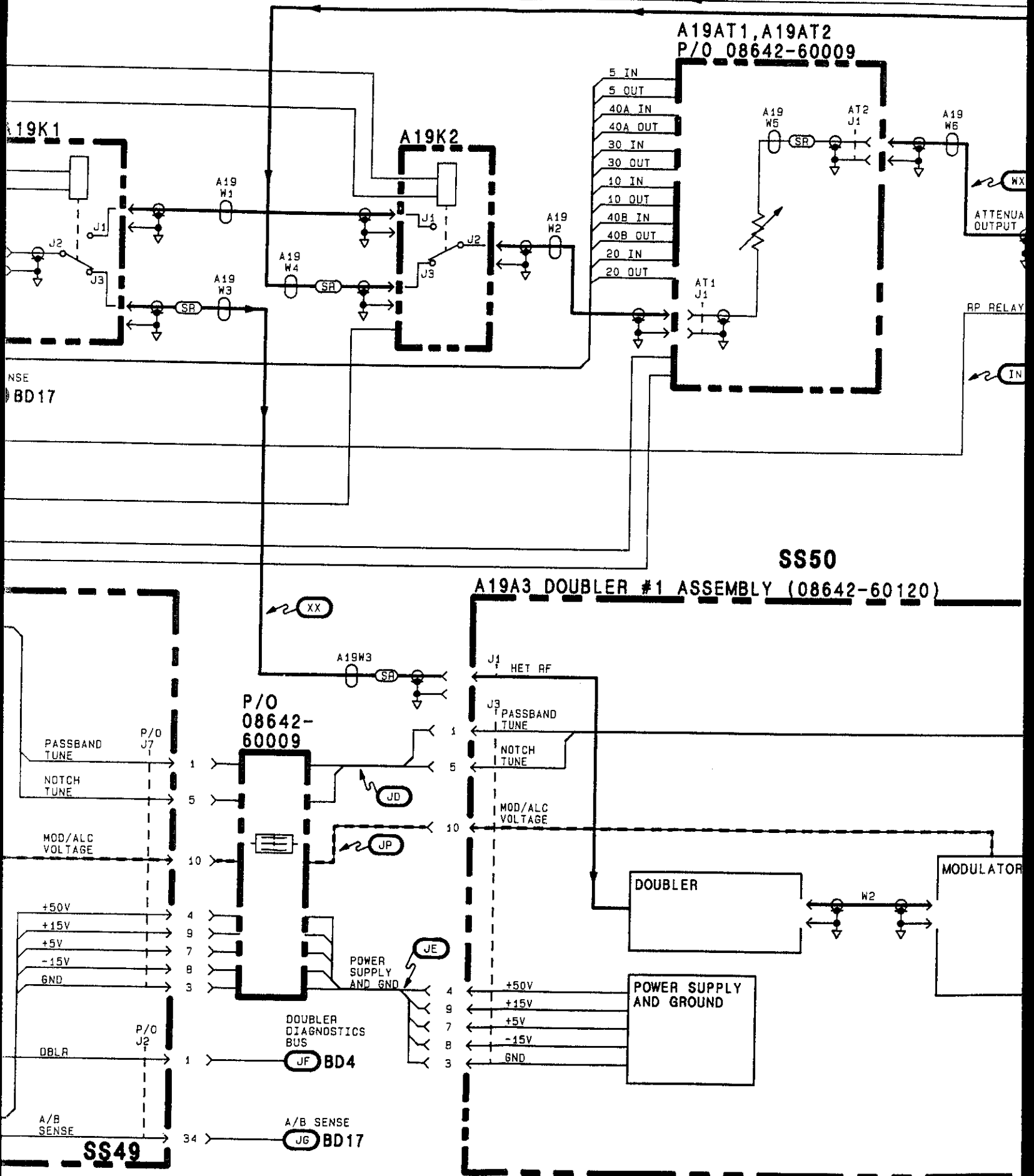
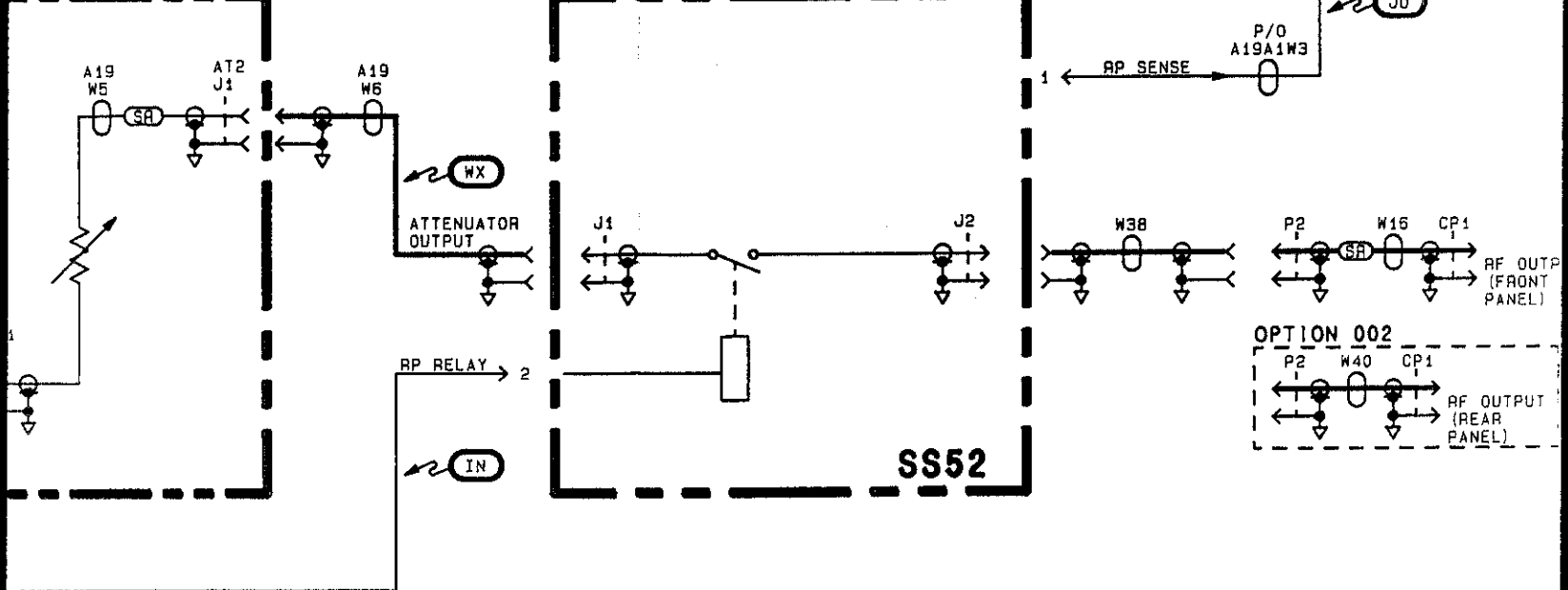




FIG. 85-101, SHT. 4 OF 5

AT1, A19AT2  
08642-60009

A19A2 REVERSE POWER PROTECTION  
ASSEMBLY (08642-60119)



SS50

SEMBLY (08642-60120)

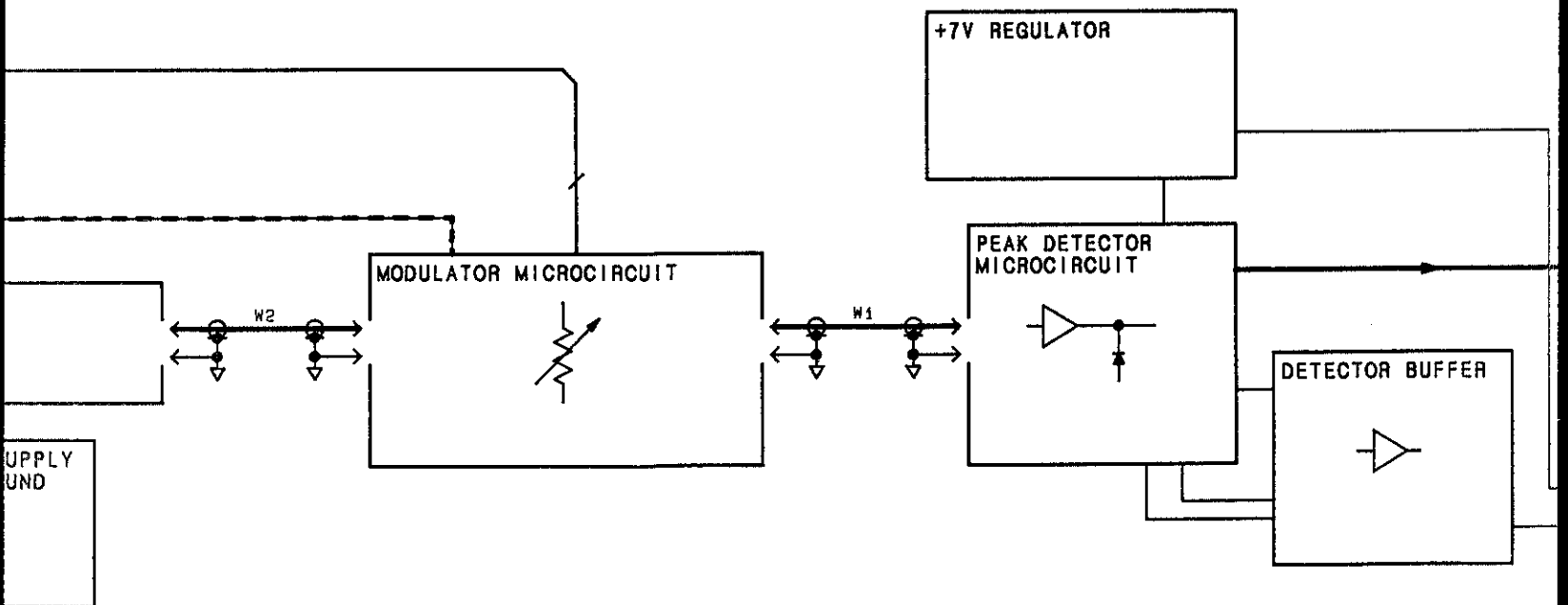
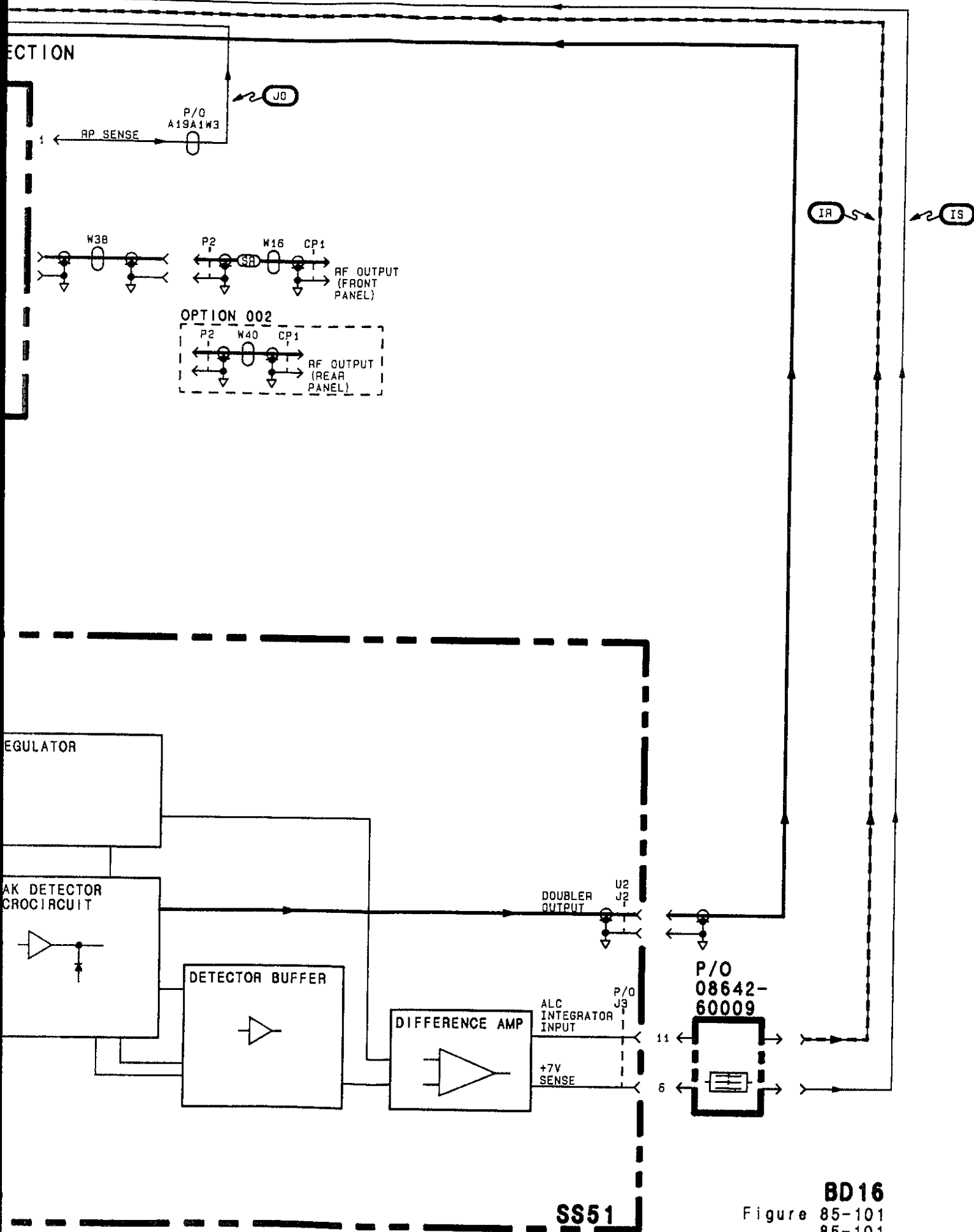


FIG. 85-101, SHIT. 5 OF 5



BD 16

Figure 85-101  
85-101

FIG. 8S-102  
SHT. 1 OF 5

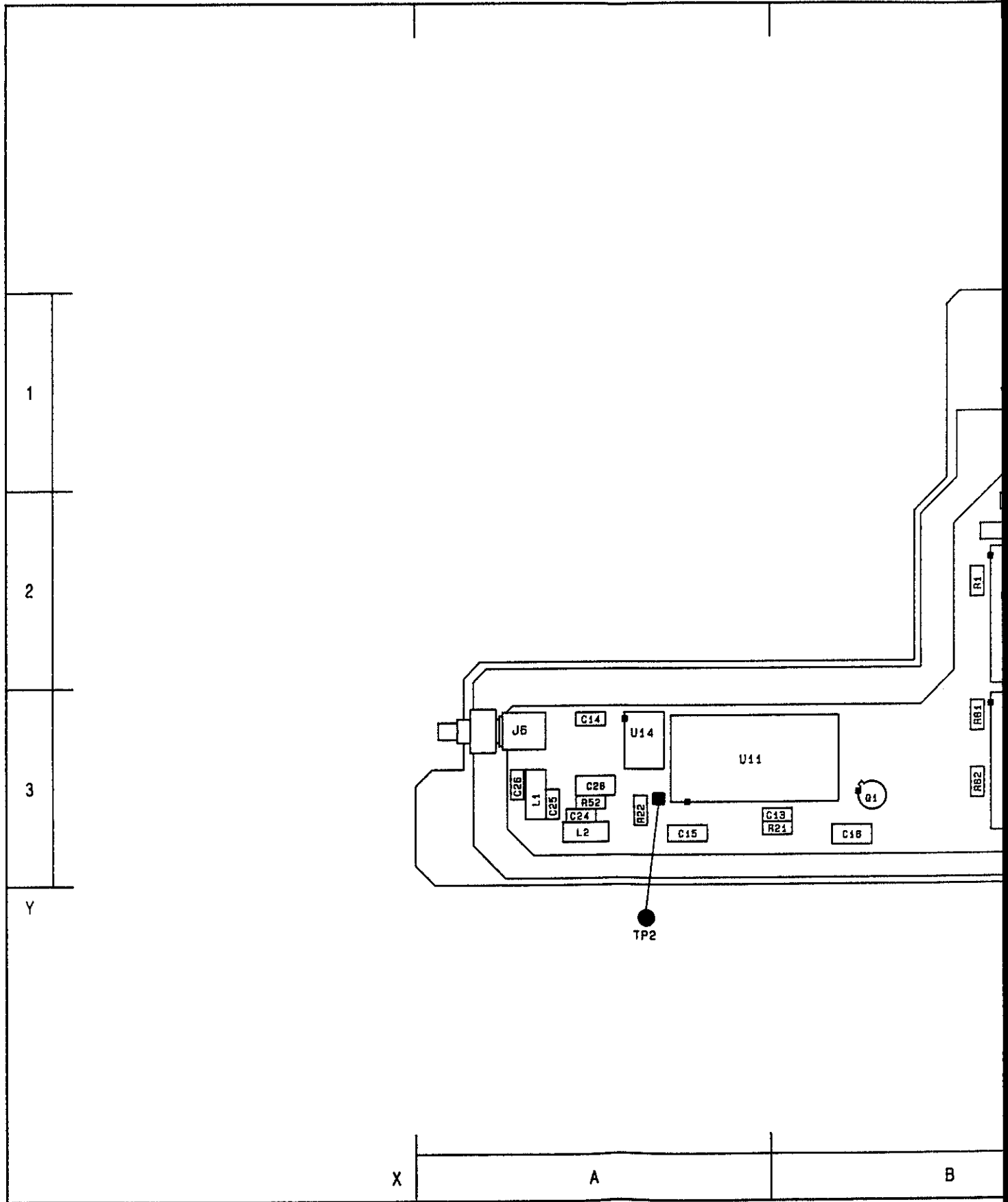
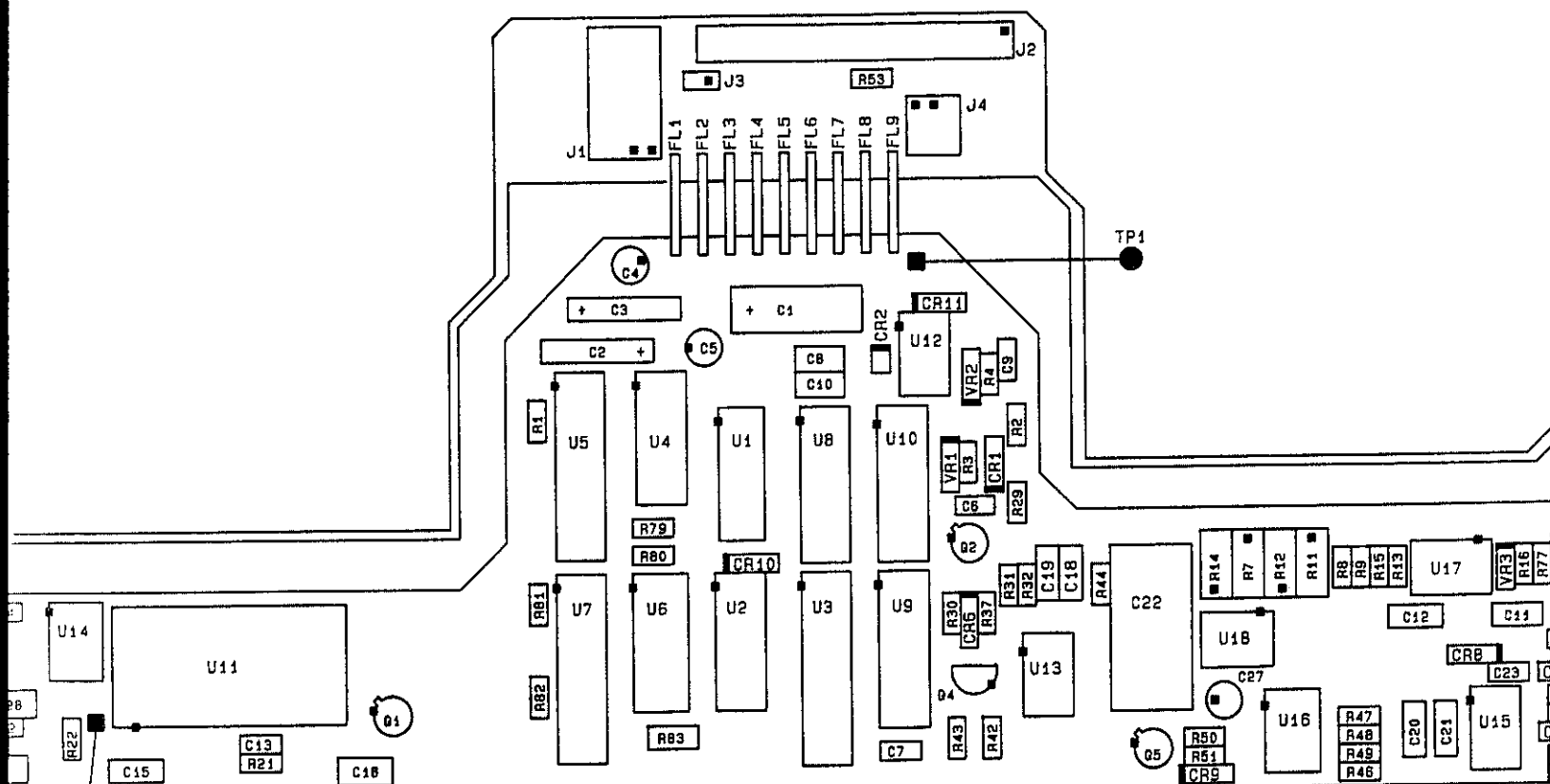


Figure 8S-102. SERVICE SHEET 49 INFORMATION

FIG. BS-105  
SHEET 2 OF 5



A19

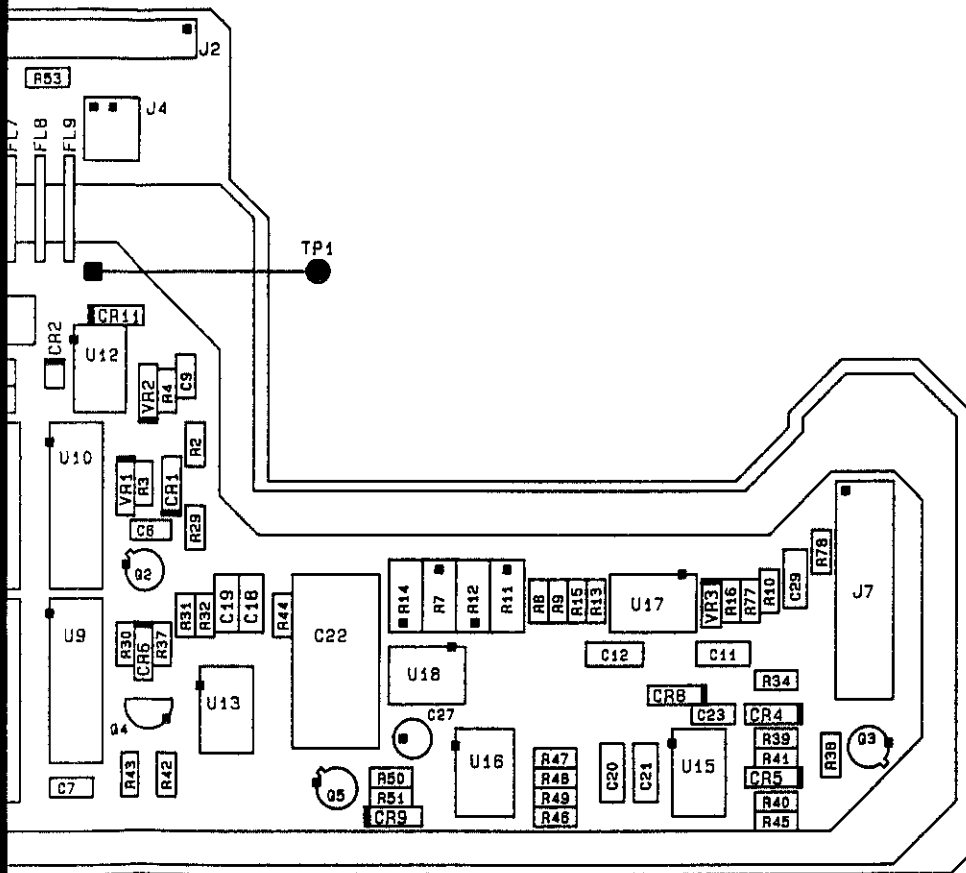
B

C

D

Component Locator

FIG. 8S-105  
SHEET 3 OF 5

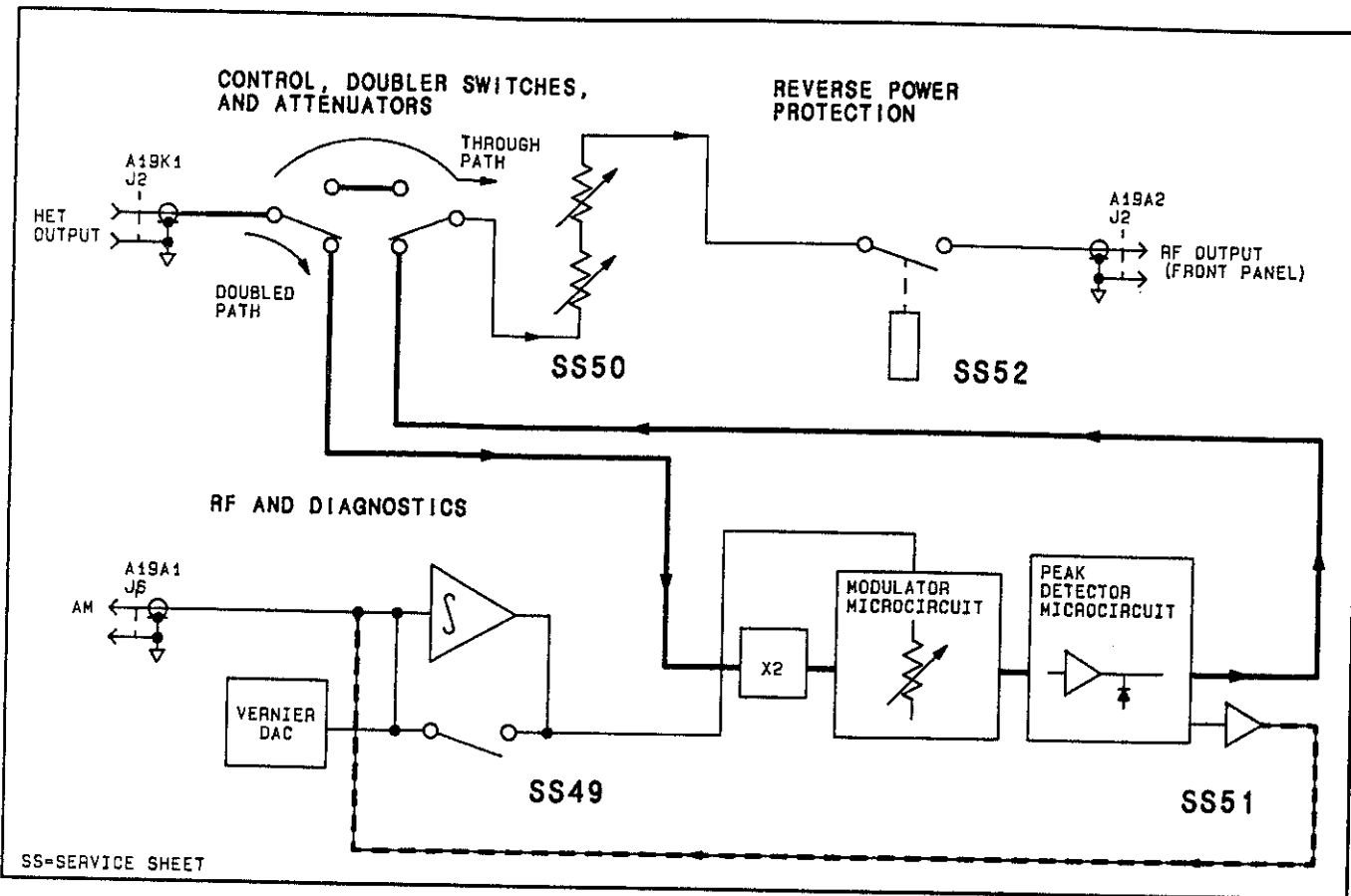


A19A1

C

D

FIG. 8S-105  
 SH# 4 OF 5



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	C, 2	CR1	C, 2	R11	D, 3	TP1	C, 1										
C2	B, 2	CR2	C, 2	R12	D, 3	TP2	A, 3										
C3	B, 2	CR4	D, 3	R13	D, 3												
C4	B, 1	CR5	D, 3	R14	C, 3	U9	C, 3										
C5	B, 2	CR6	C, 3	R15	D, 3	U10	C, 2										
C6	C, 2	CR8	D, 3	R16	D, 3	U11	A, 3										
C7	C, 3	CR9	C, 3	R21	B, 3	U12	C, 2										
C8	C, 2	CR10	C, 2	R22	A, 3	U13	C, 3										
C9	C, 2	CR11	C, 2	R29	C, 2	U14	A, 3										
C10	C, 2			R30	C, 3	U15	D, 3										
C11	D, 3	FL1	B, 1	R31	C, 3	U16	D, 3										
C12	D, 3	FL2	B, 1	R32	C, 3	U17	D, 3										
C13	B, 3	FL3	B, 1	R34	D, 3	U18	C, 3										
C14	A, 3	FL4	C, 1	R37	C, 3												
C15	A, 3	FL5	C, 1	R38	D, 3	VR1	C, 2										
C16	B, 3	FL8	C, 1	R39	D, 3	VR2	C, 2										
C18	C, 3			R40	D, 3	VR3	D, 3										
C19	C, 3	J2	C, 1	R41	D, 3												
C20	D, 3	J6	A, 3	R42	C, 3												
C21	D, 3	J7	D, 3	R43	C, 3												
C22	C, 3			R44	C, 3												
C23	D, 3	L1	A, 3	R45	D, 3												
C24	A, 3	L2	A, 3	R46	D, 3												
C25	A, 3			R47	D, 3												
C26	A, 3	Q1	B, 3	R48	D, 3												
C27	C, 3	Q2	C, 2	R49	D, 3												
C28	A, 3	Q3	D, 3	R50	C, 3												
C29	D, 2	Q4	C, 3	R51	C, 3												
		Q5	C, 3	R52	A, 3												
				R53	C, 1												
		R2	C, 2	R77	D, 3												
		R3	C, 2	R78	D, 2												
		R4	C, 2	R79	B, 2												
		R7	D, 3	R80	B, 2												
		R8	D, 3	R81	B, 3												
		R9	D, 3	R82	B, 3												
		R10	D, 3	R83	B, 3												

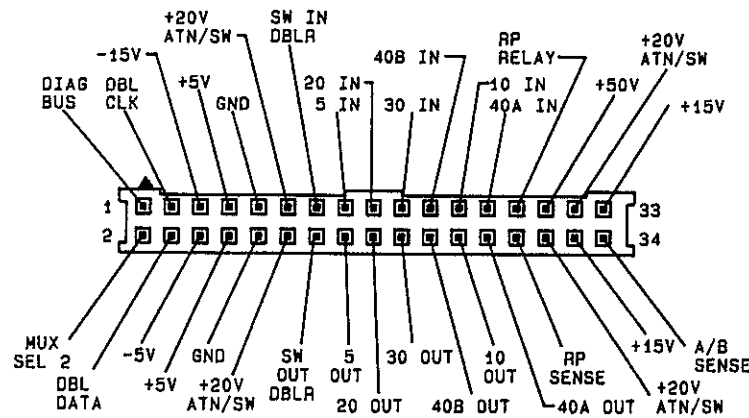
A19A1 MODULE **BD 16**

SEE REVERSE SIDE

**Notes:**

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
3. A19 FL1 is an array of feedthrough filters passing through the center of the module to make connections between two (2) printed circuit boards.

**CABLE PLUG  
TO A19A1 J2**



Schematic General Information

**CHANGES****All Serial Prefixes**

On the schematic:

- R45 - In INTEGRATOR, change R45 value to 990 ohms.

**2517A and above**

On the Component Locator:

- C6, R43 - Replace U18 with the following two component moves: Move C6 to the immediate right of C22. Move R43 to the right of C22, underneath C6.

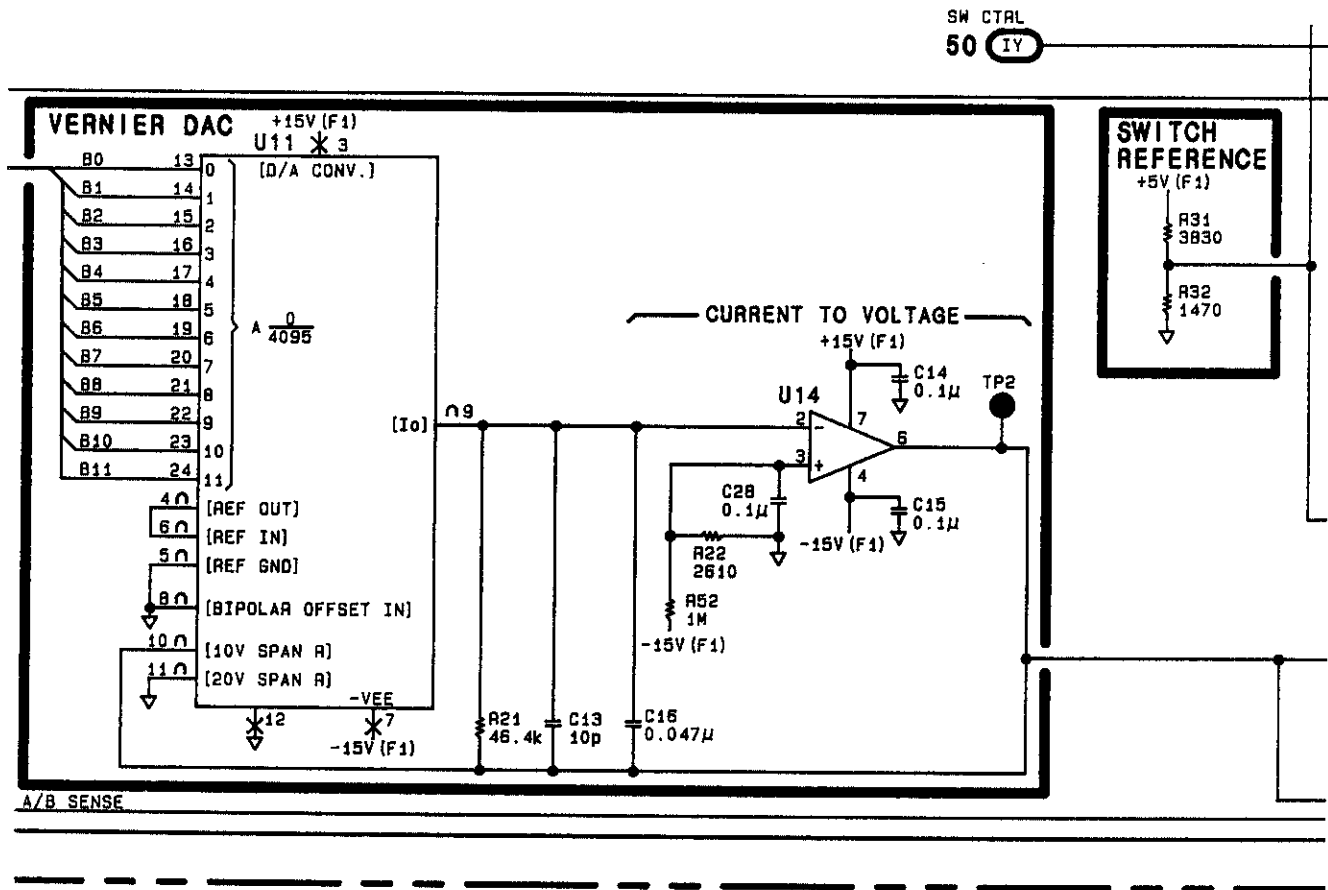
In Component Coordinates:

- C6 - Change C6 coordinates to C,3.

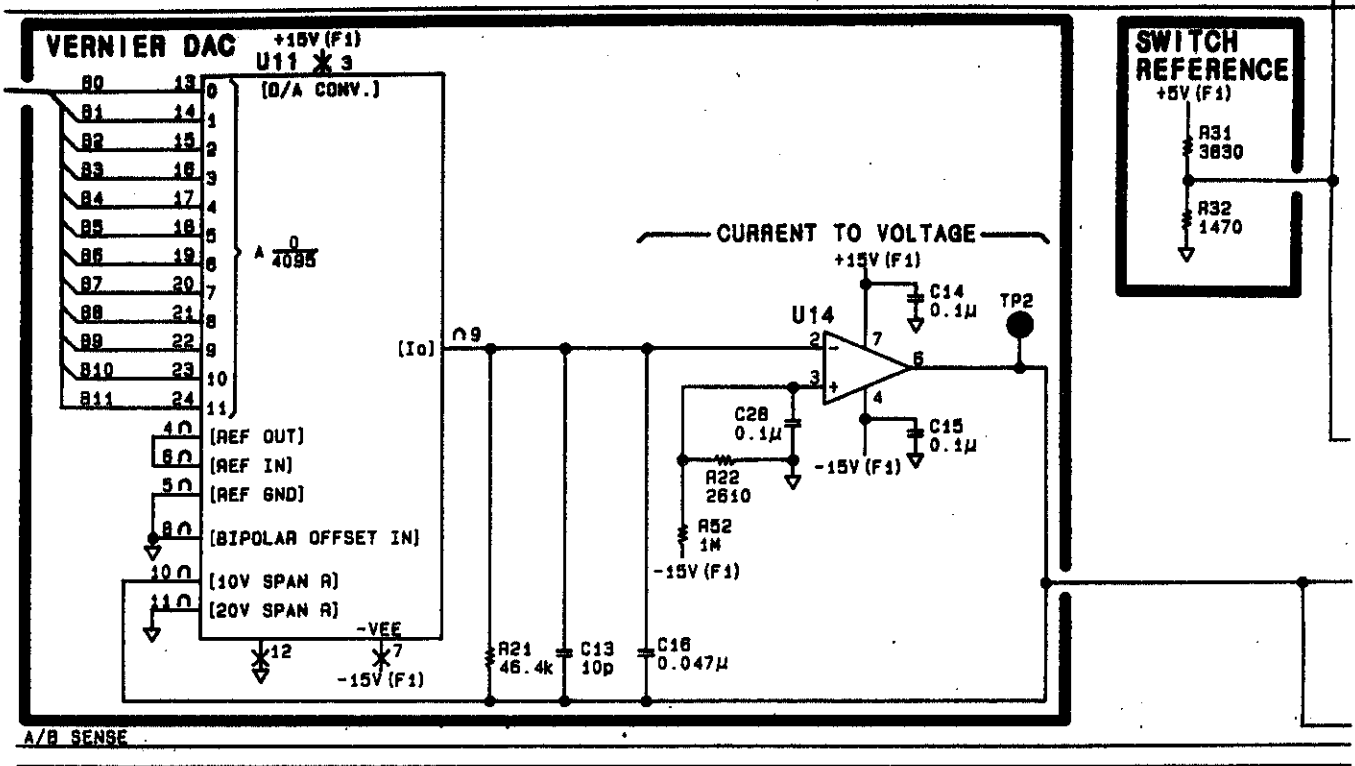
On the schematic:

- A19A1 - In the upper left portion of the schematic, change the A19A1 part number to 08642-60218.
- A19A1 R30, Q1, U18, C16 - Replace the appropriate portion of SS49 with the schematic partial on page 8S-102.2 (P/O FIGURE 8S-103 (2517A and above).





P/O FIGURE 8S-103 (2517A and above)

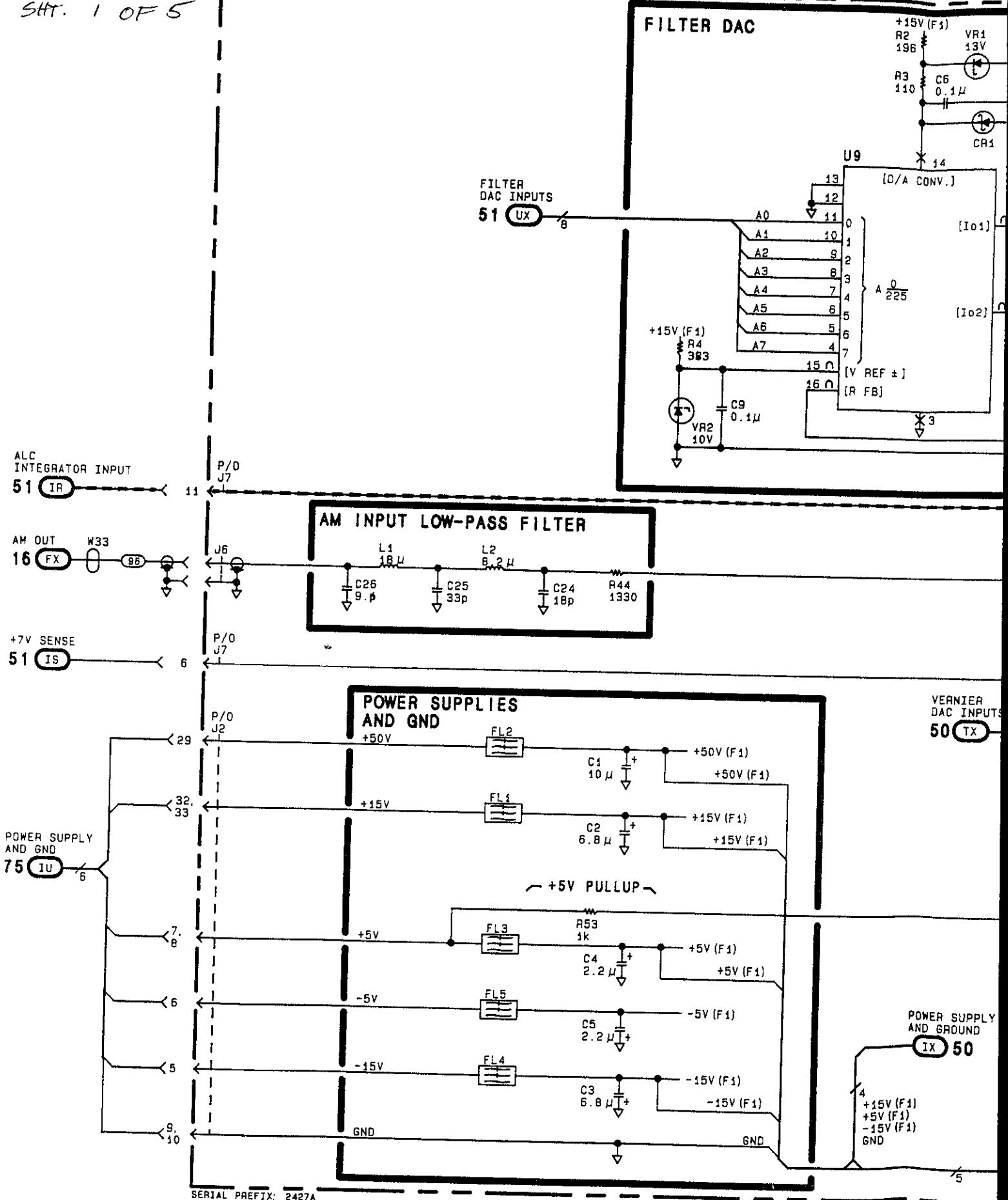


P/O FIGURE 8S-103 (2517A and above)

FIG. 85403

SHT. 1 OF 5

P/O A19A1 DOUBLER #2 ASSEMBLY (08642-60118)



SERIAL PREFIX: 2427A

FIG. 85-103, SHEET 2 OF 5

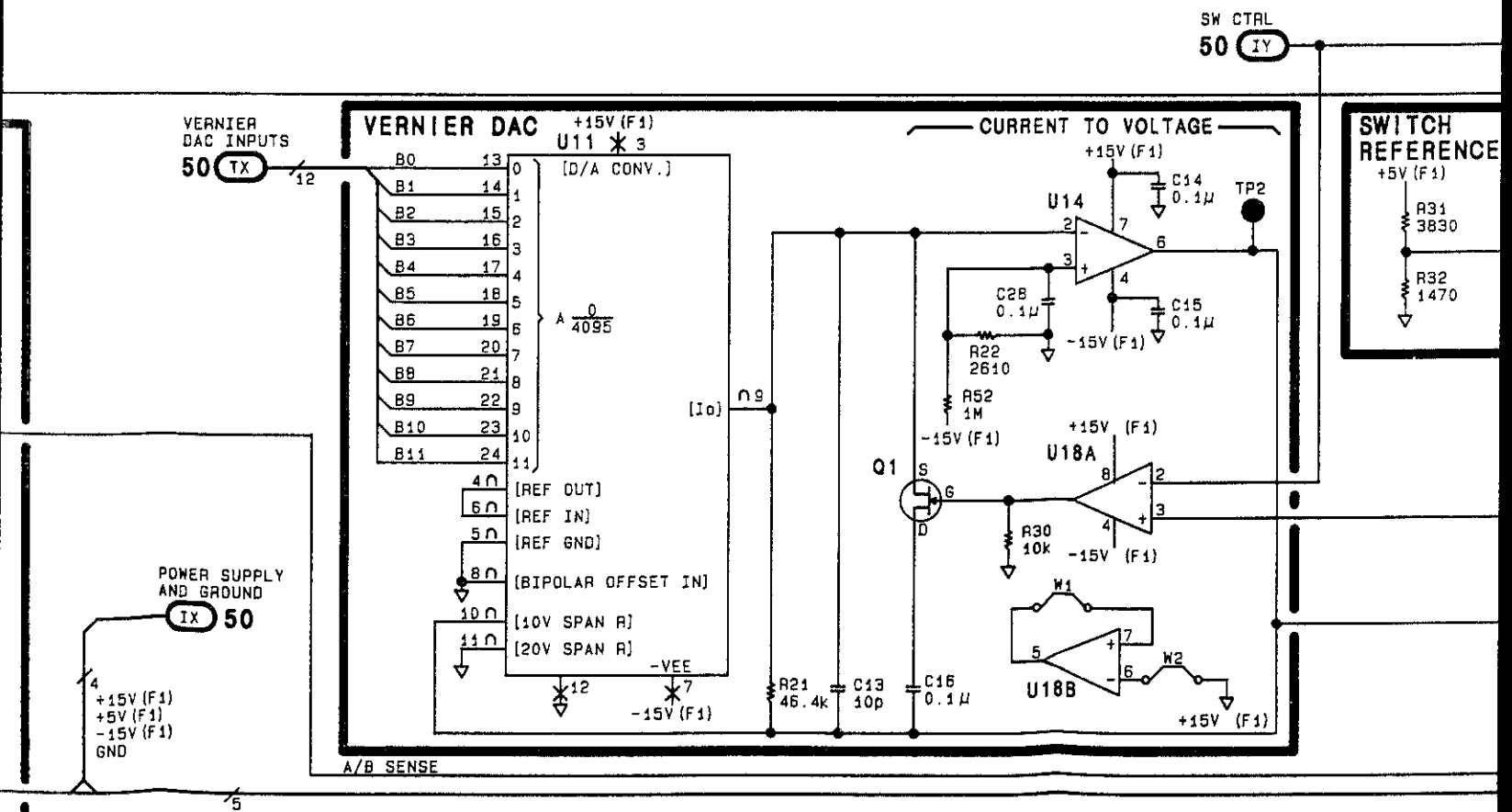
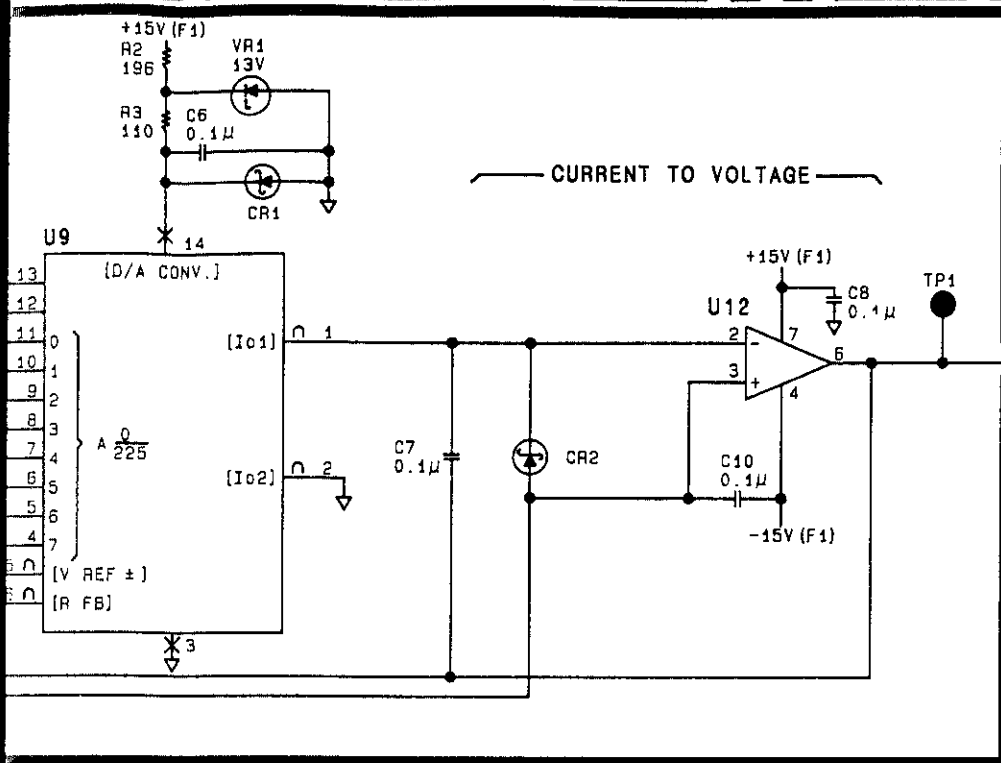


FIG. 85-103, SH. 3 OF 5

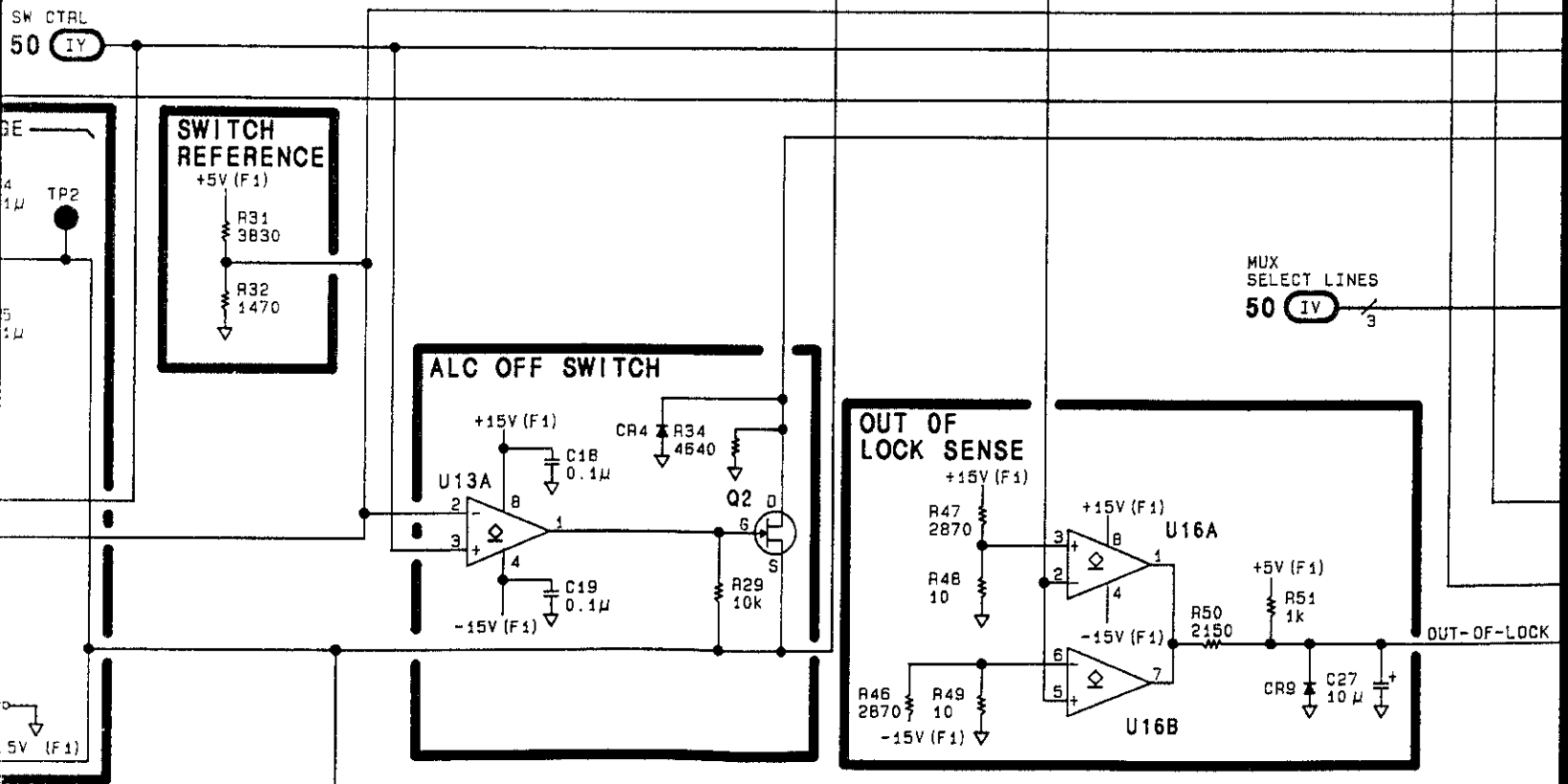
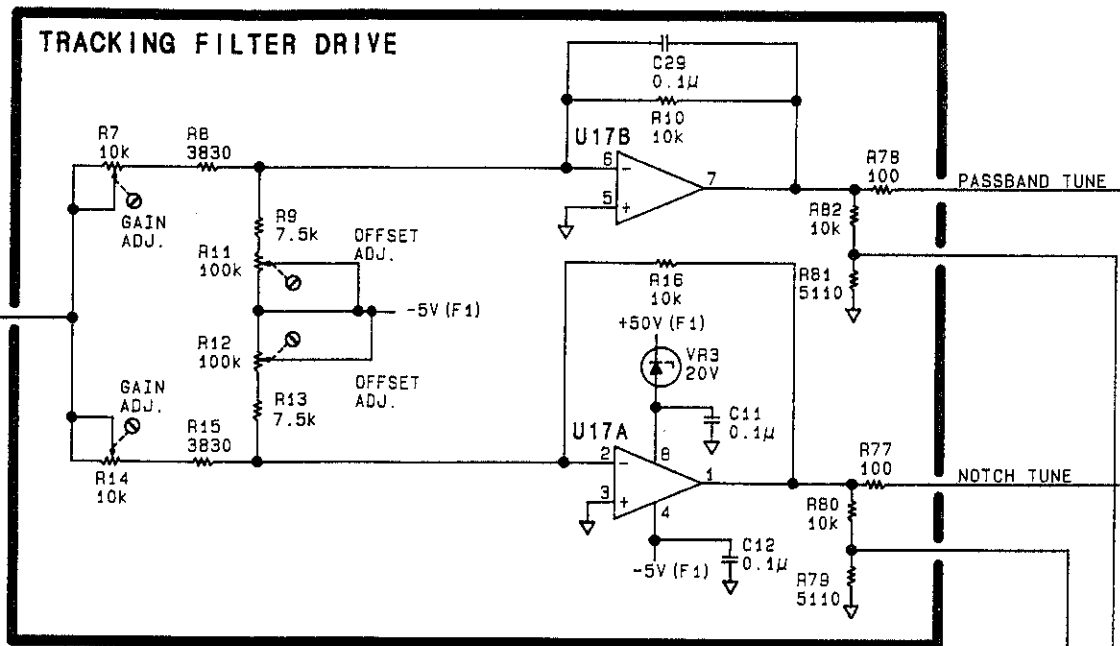


FIG. 85-103, SH, 4 OF 5

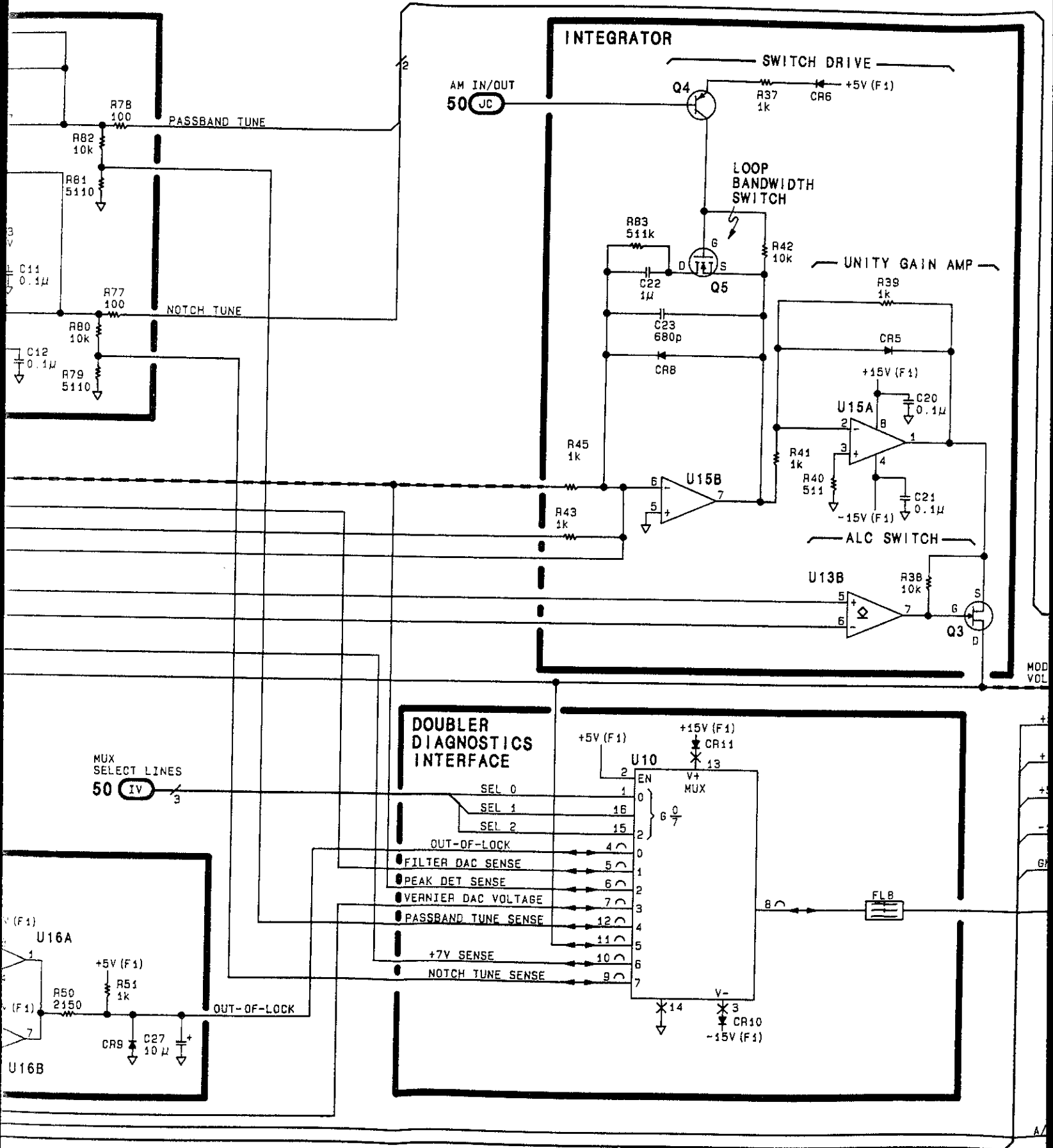
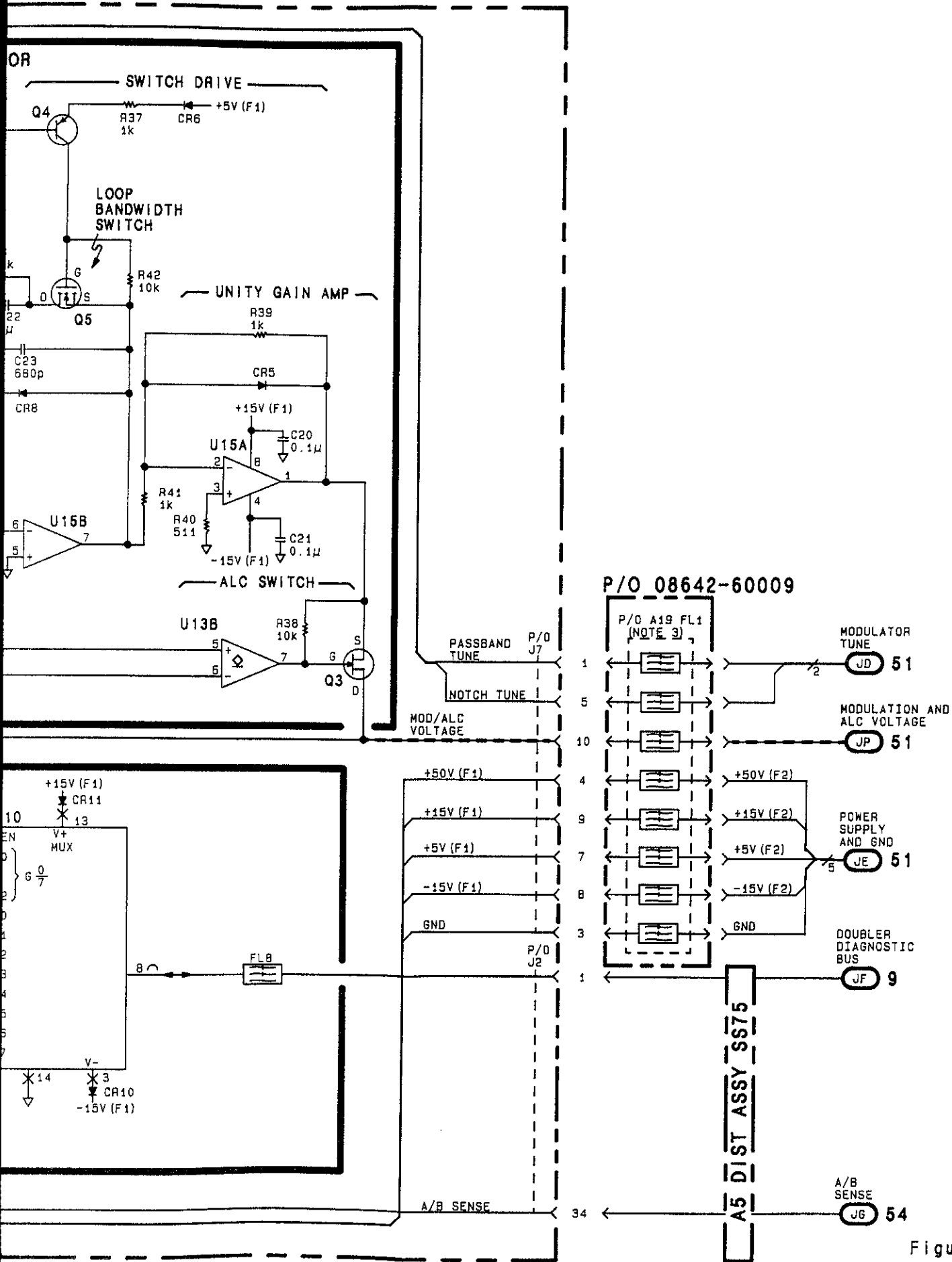


FIG. 85-103, SH. 5 OF 5



SS49

Figure 85-103  
85-103

FIG. 8S-104  
SHT. 1 OF 5

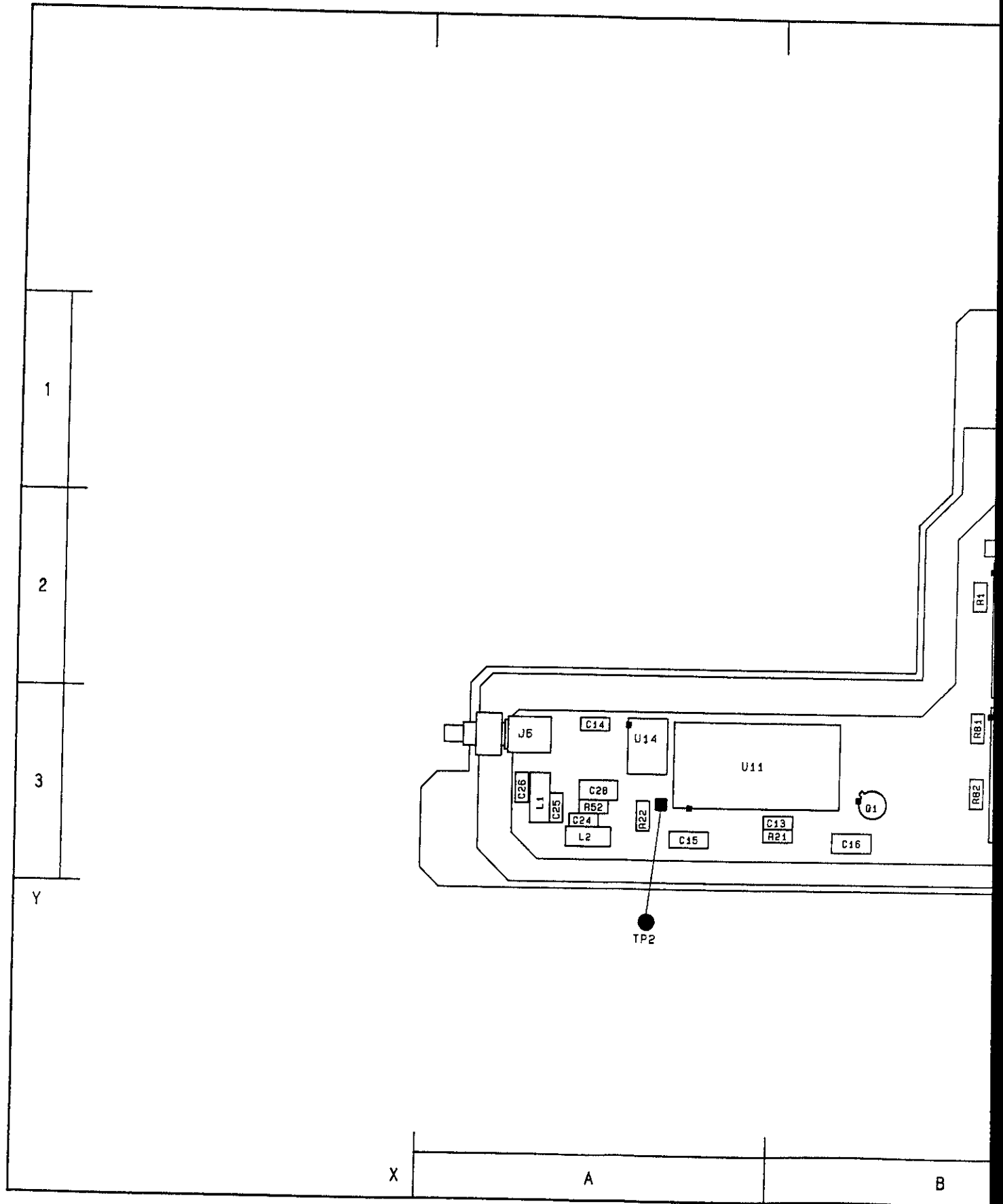
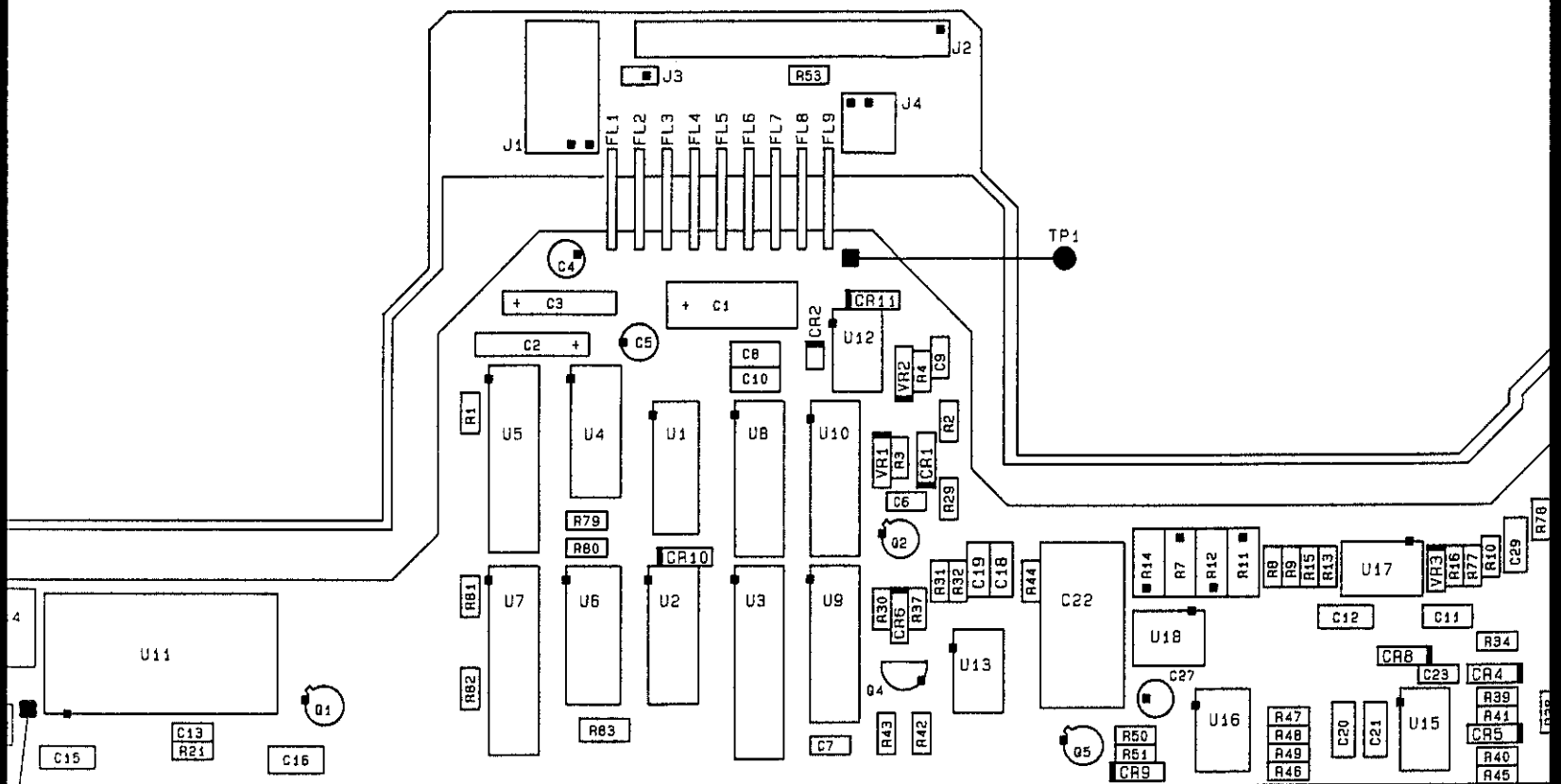


Figure 8S-104. SERVICE SHEET 50 INFORMATION



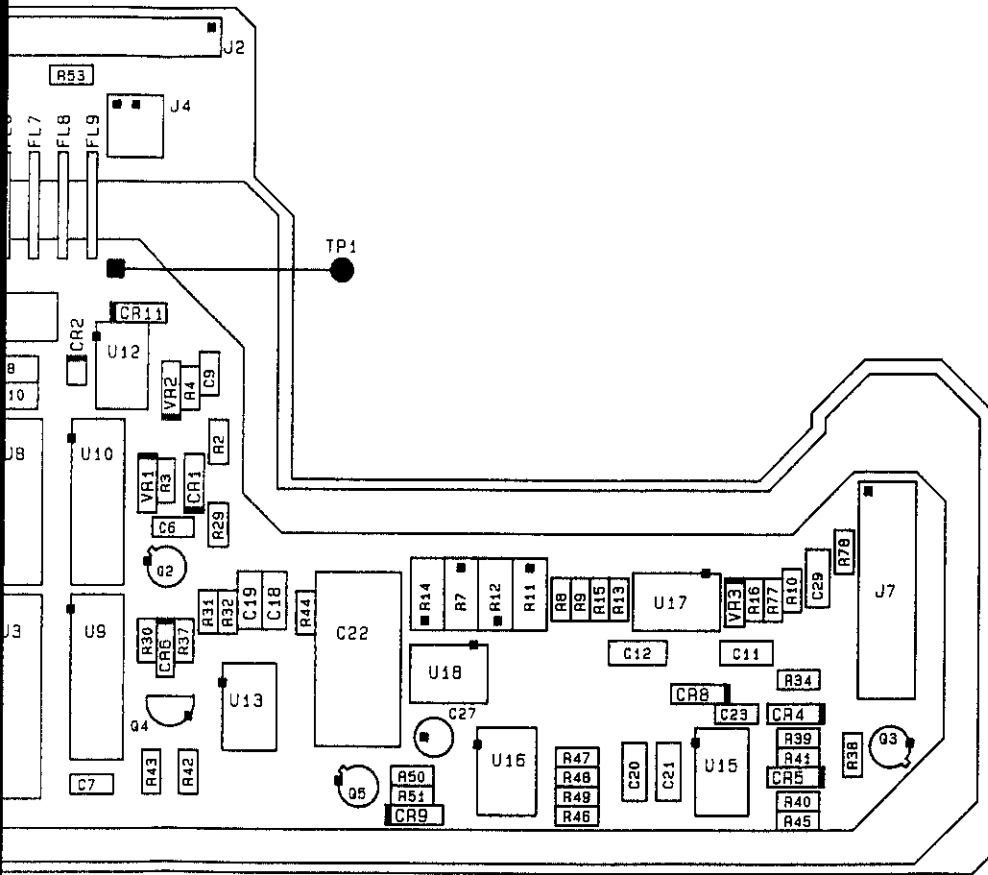
FIG. 8S-104  
 SHT. 2 OF 5



A19A1

Component Locator

FIG. 8S-104  
SHT. 3 OF 5

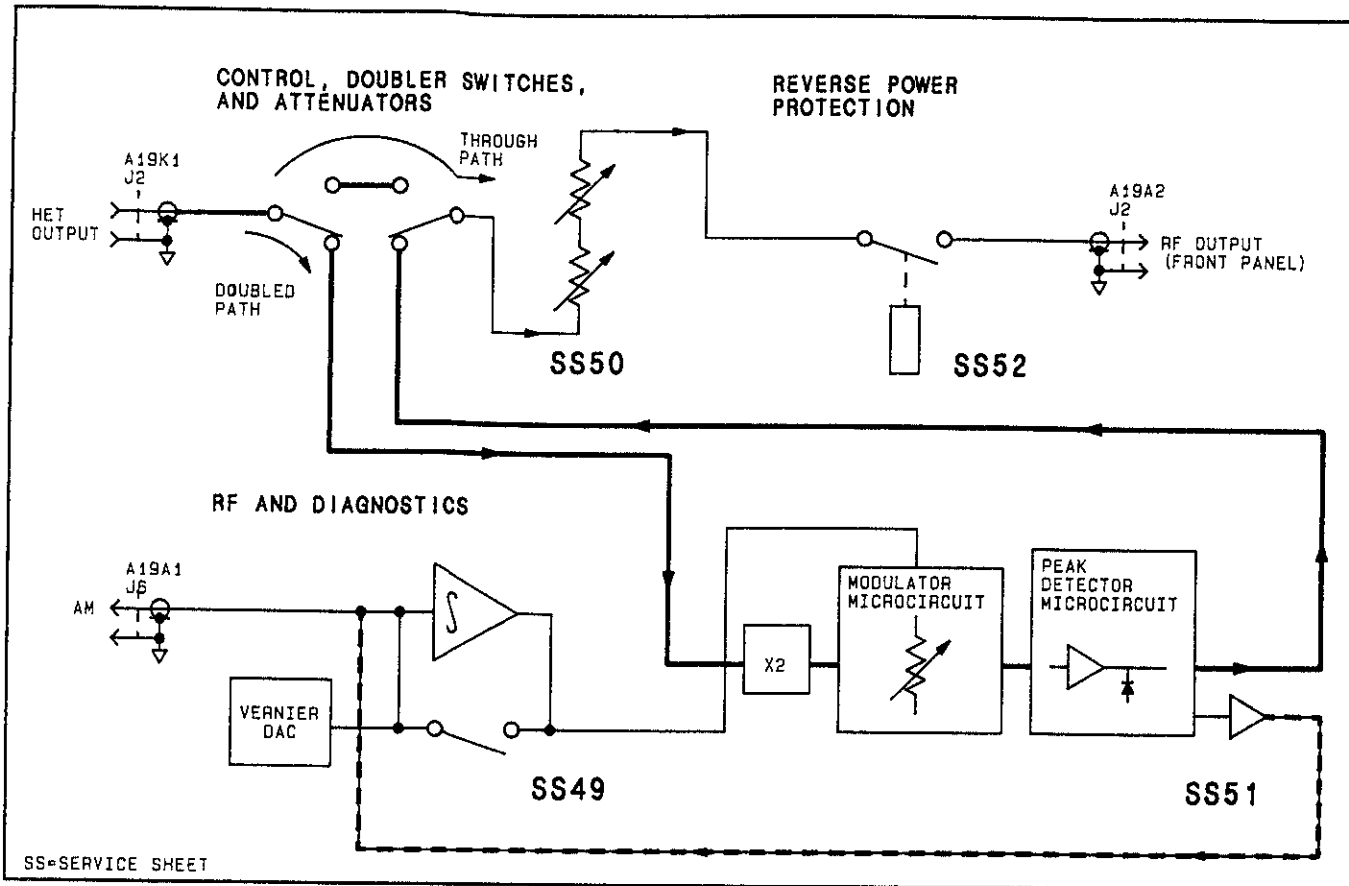


A19A1

C

D

FIG. BS-104-  
SHT. 4 OF 5



Reference Block Diagram  
Component Coordinates

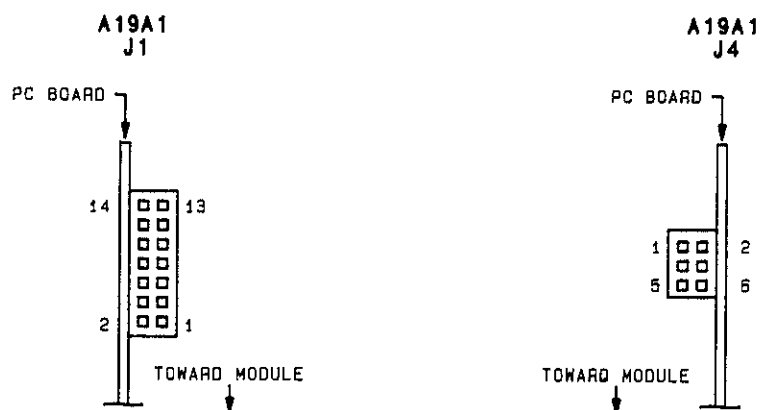
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
FL6	C, 1																
FL7	C, 1																
FL9	C, 1																
J1	B, 1																
J2	C, 1																
J3	B, 1																
J4	C, 1																
R1	B, 2																
U1	B, 2																
U2	B, 3																
U3	C, 3																
U4	B, 2																
U5	B, 2																
U6	B, 3																
U7	B, 3																
U8	C, 2																

P/O DOUBLER #2  
A19A1 ASSEMBLY **SS49**

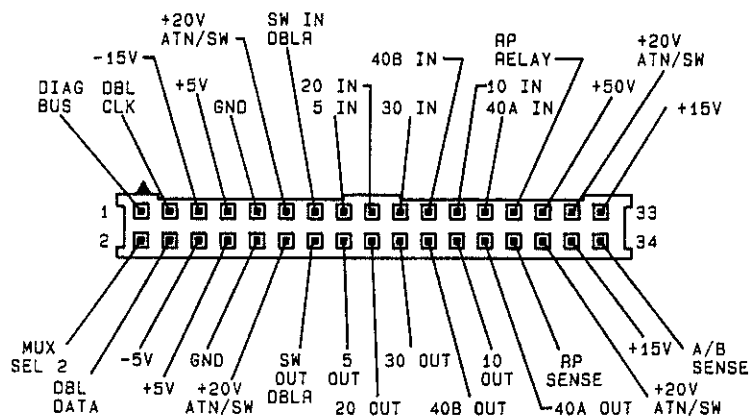
SEE REVERSE SIDE

Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. A19A1 W9 consists of two wires and a connector soldered to two pads on A19A1. (J3 pins 1,2)
3. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph B-3.



CABLE PLUG TO A19A1 J2



Schematic General Information

FIG- 8S-106  
 SH. 1 OF 4

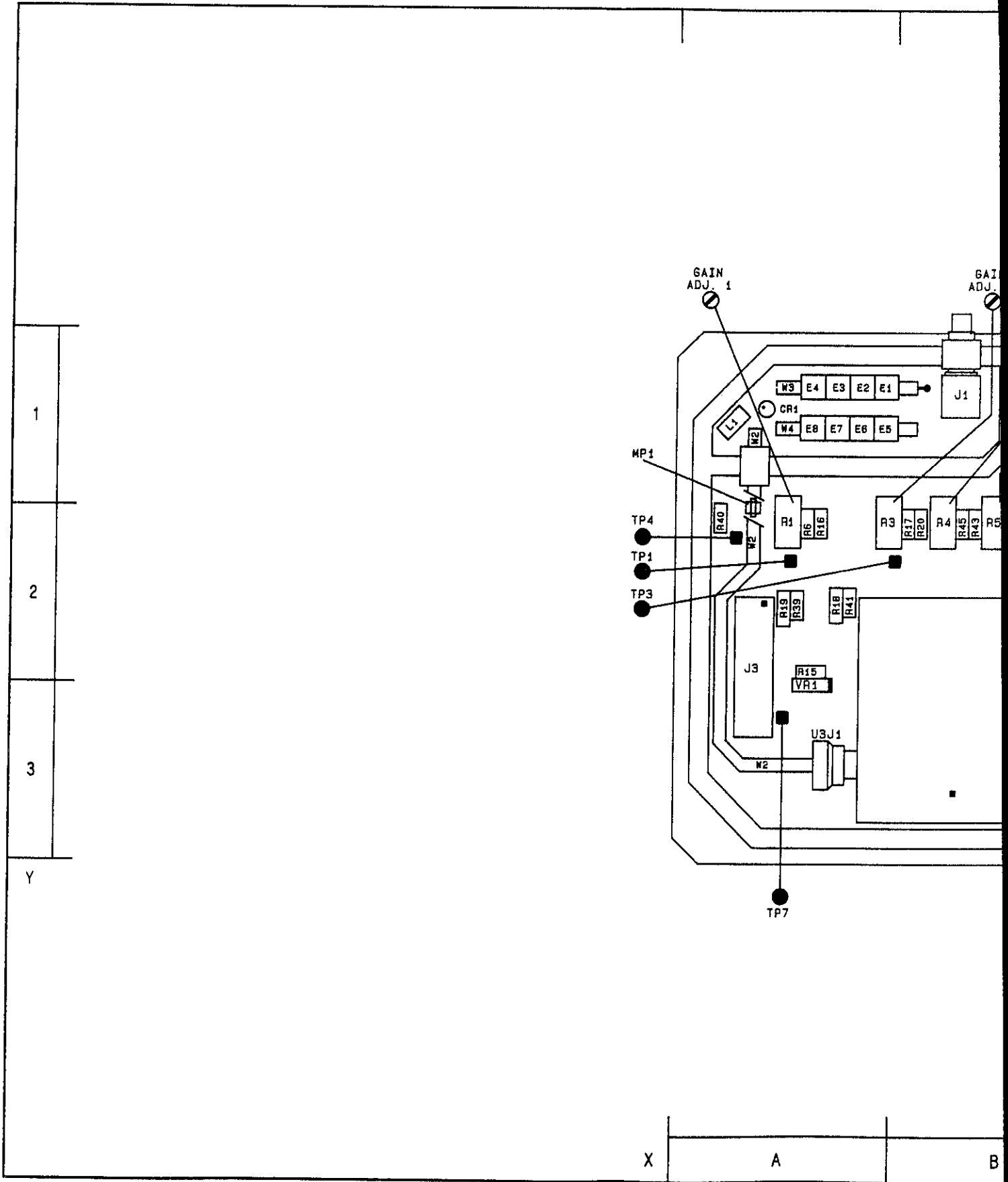
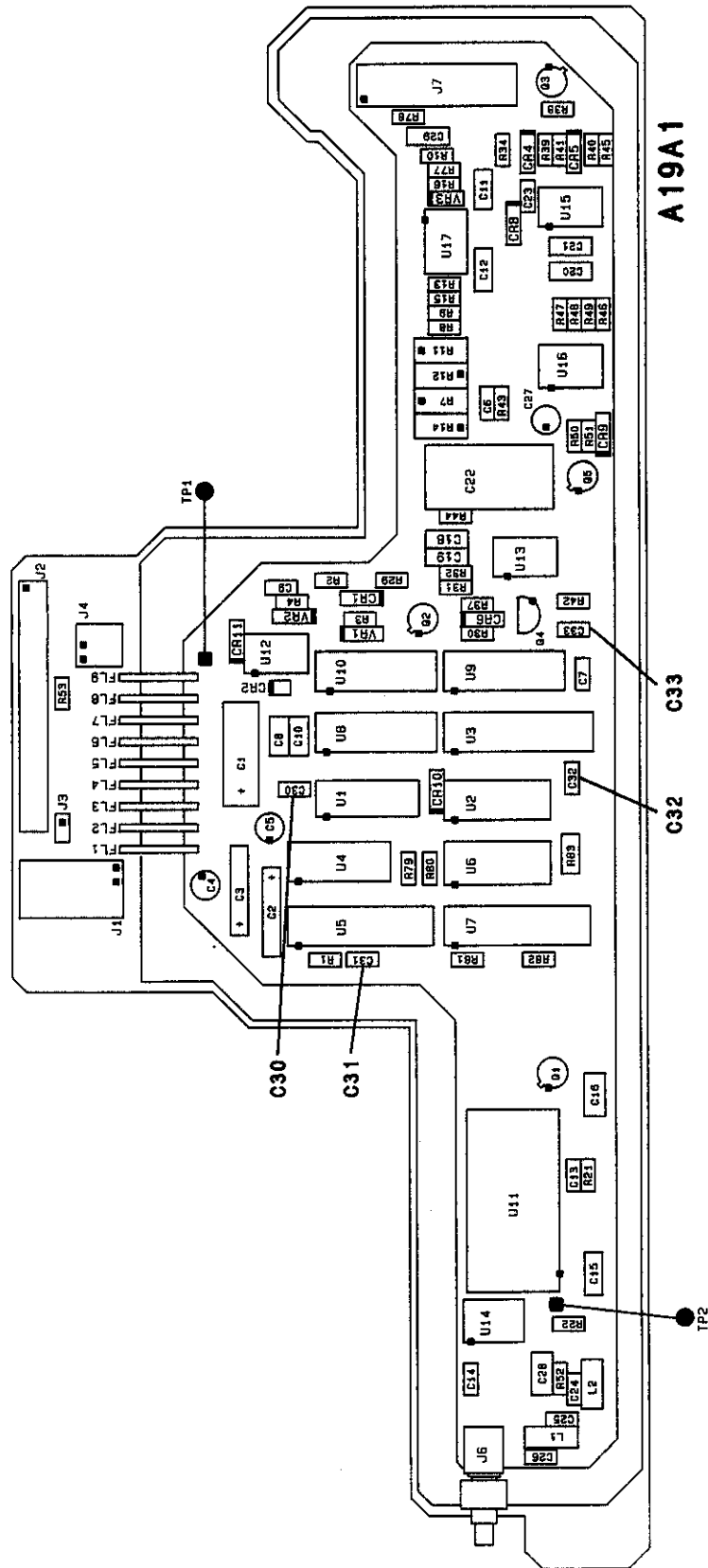
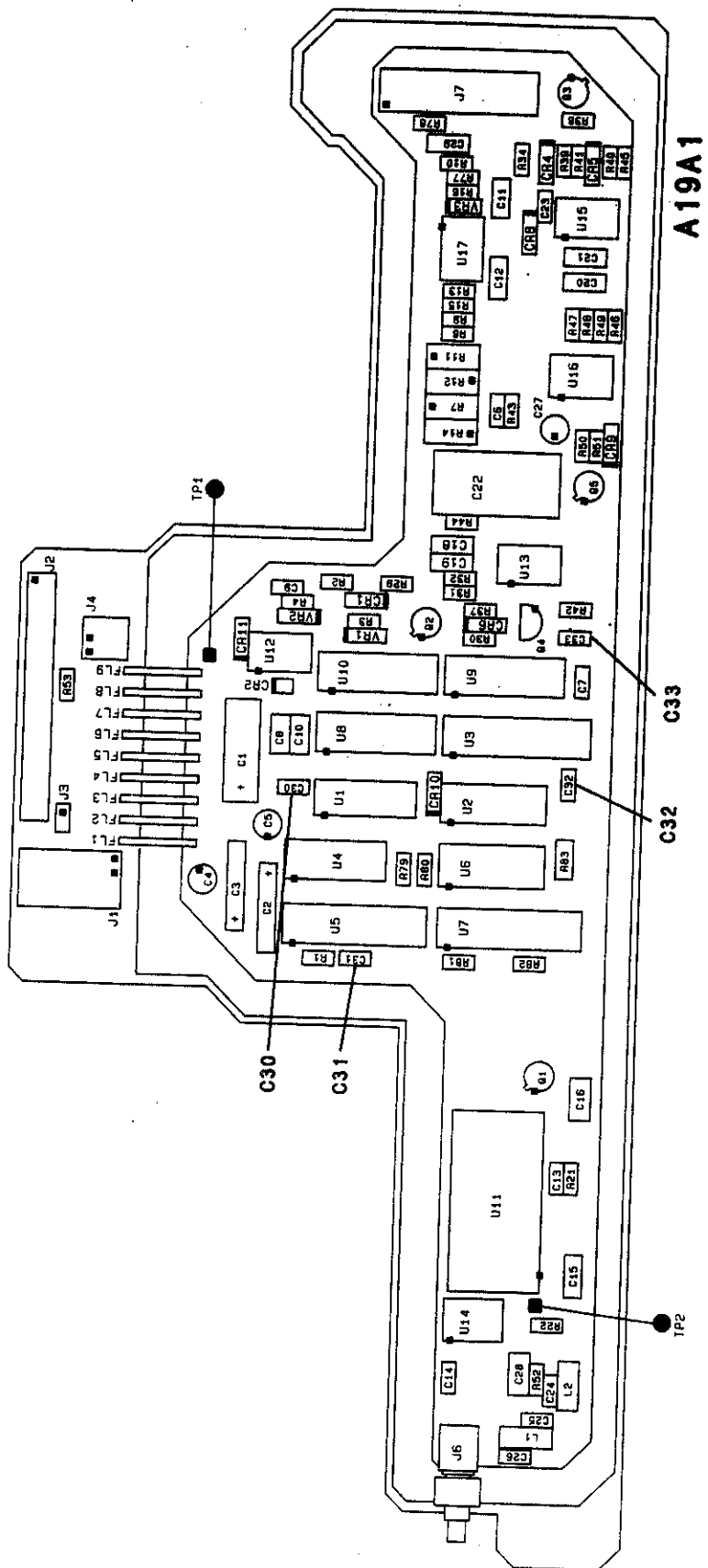


Figure 8S-106. SERVICE SHEET 51 INFORMATION



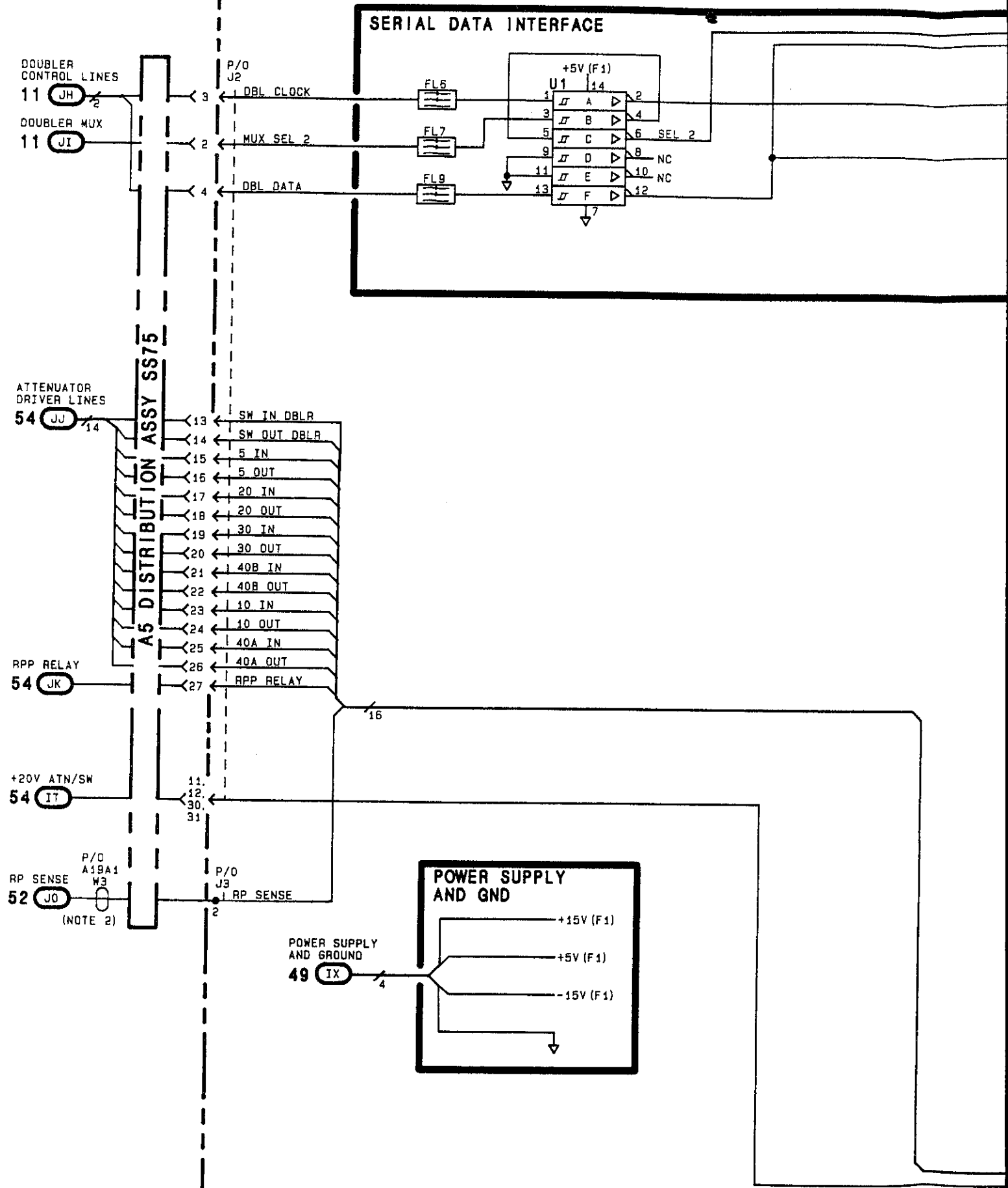
P/O FIGURE 8S-102 (2517A and above)



P/O FIGURE 8S-102 (2517A and above)

FIG. 85-105  
 SH. 1 OF 5

P/O A19A1 DOUBLER #2 ASSEMBLY (08642-60118)





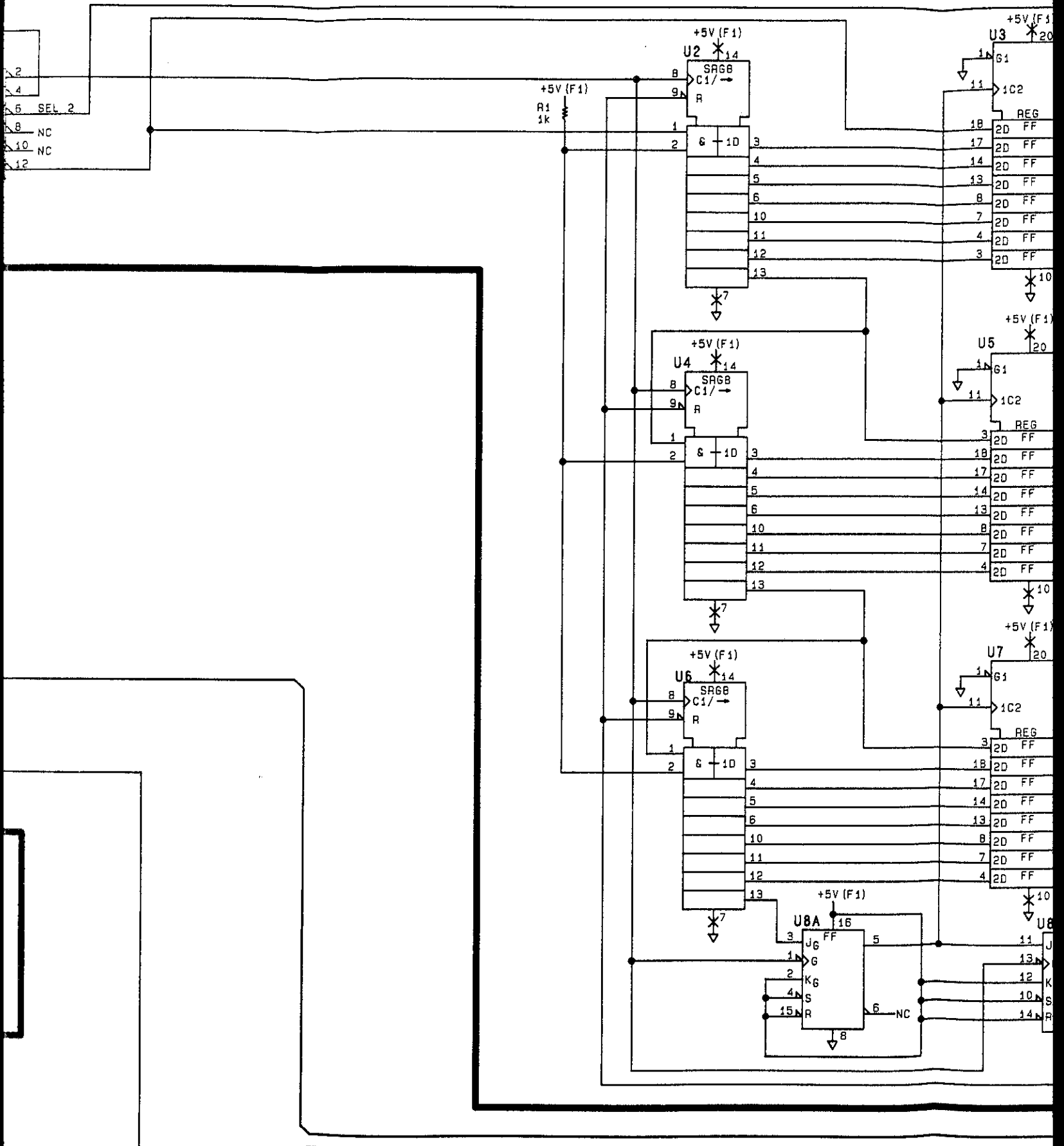


FIG. 85-105, SH. 3 OF 5

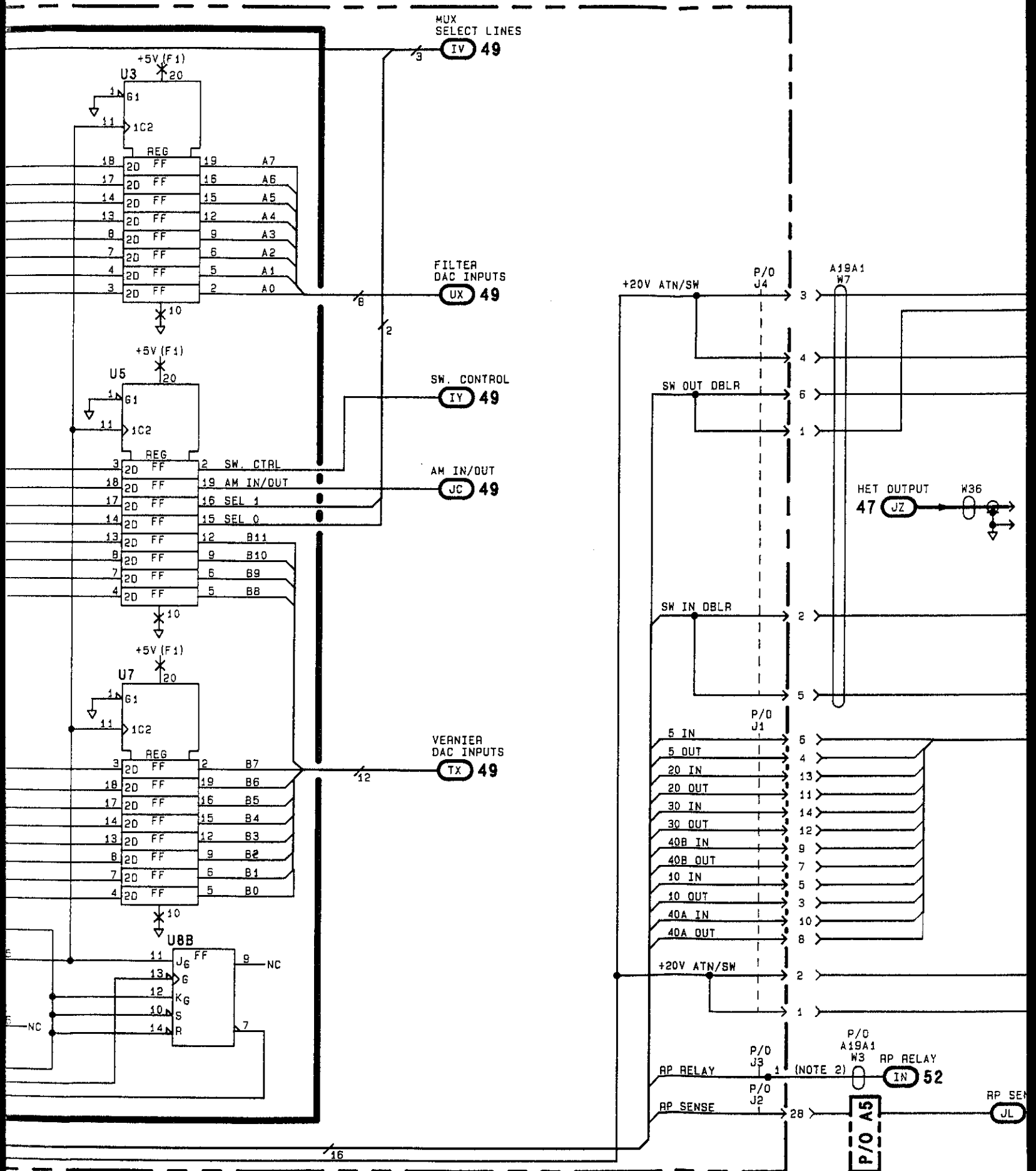
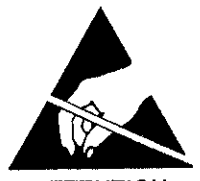
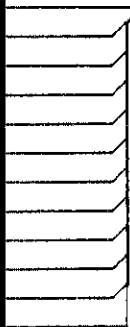
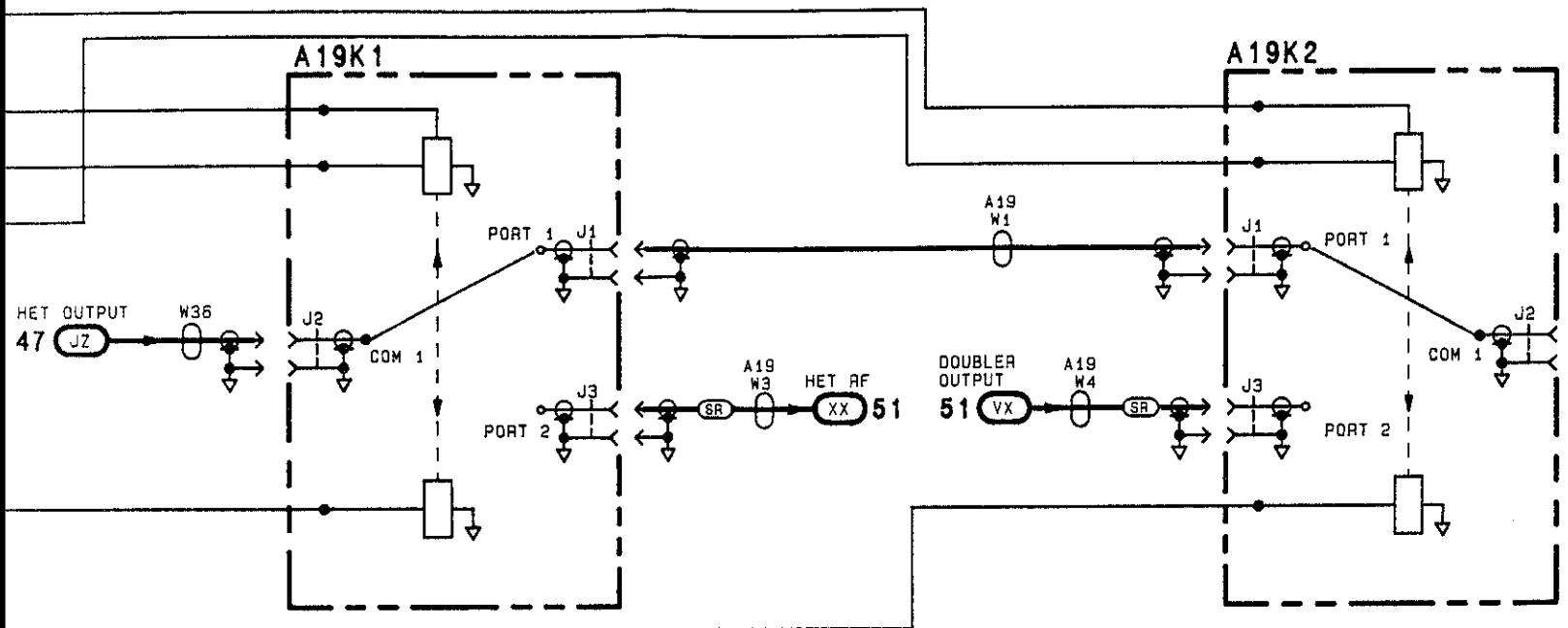


FIG. 82-105  
 SH. 4 OF 5

A1



**ATTENTION**  
 Static Sensitive  
 Devices

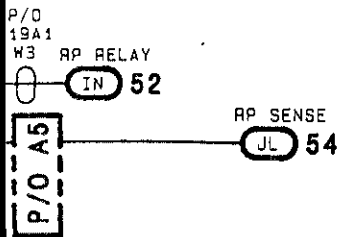
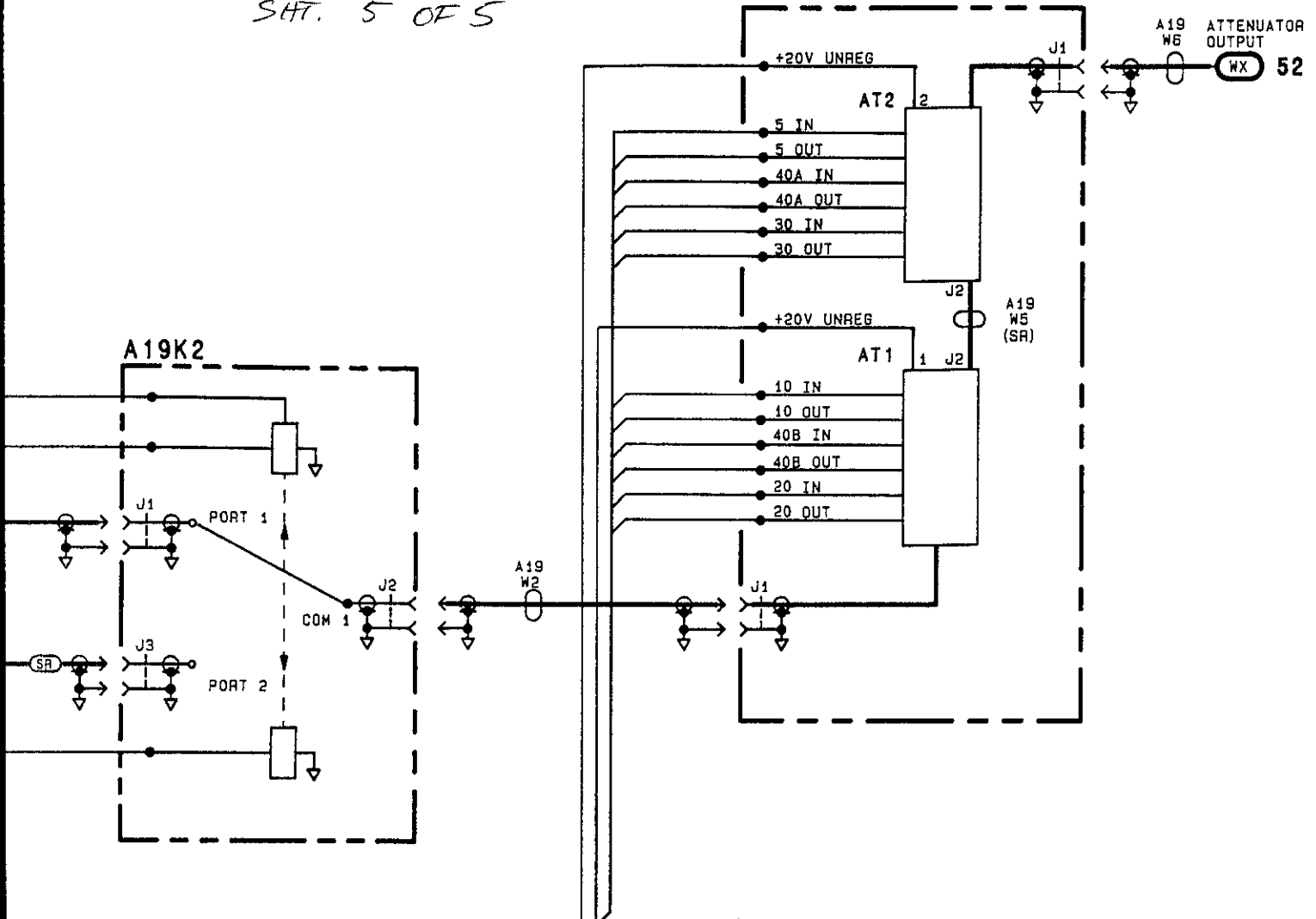


FIG. 85-105  
 SHE. 5 OF 5

A19AT1, A19AT2  
 P/O 08642-60009



SS50  
 Figure 85-105  
 85-105

FIG- 8S-106  
 SH. 1 OF 4

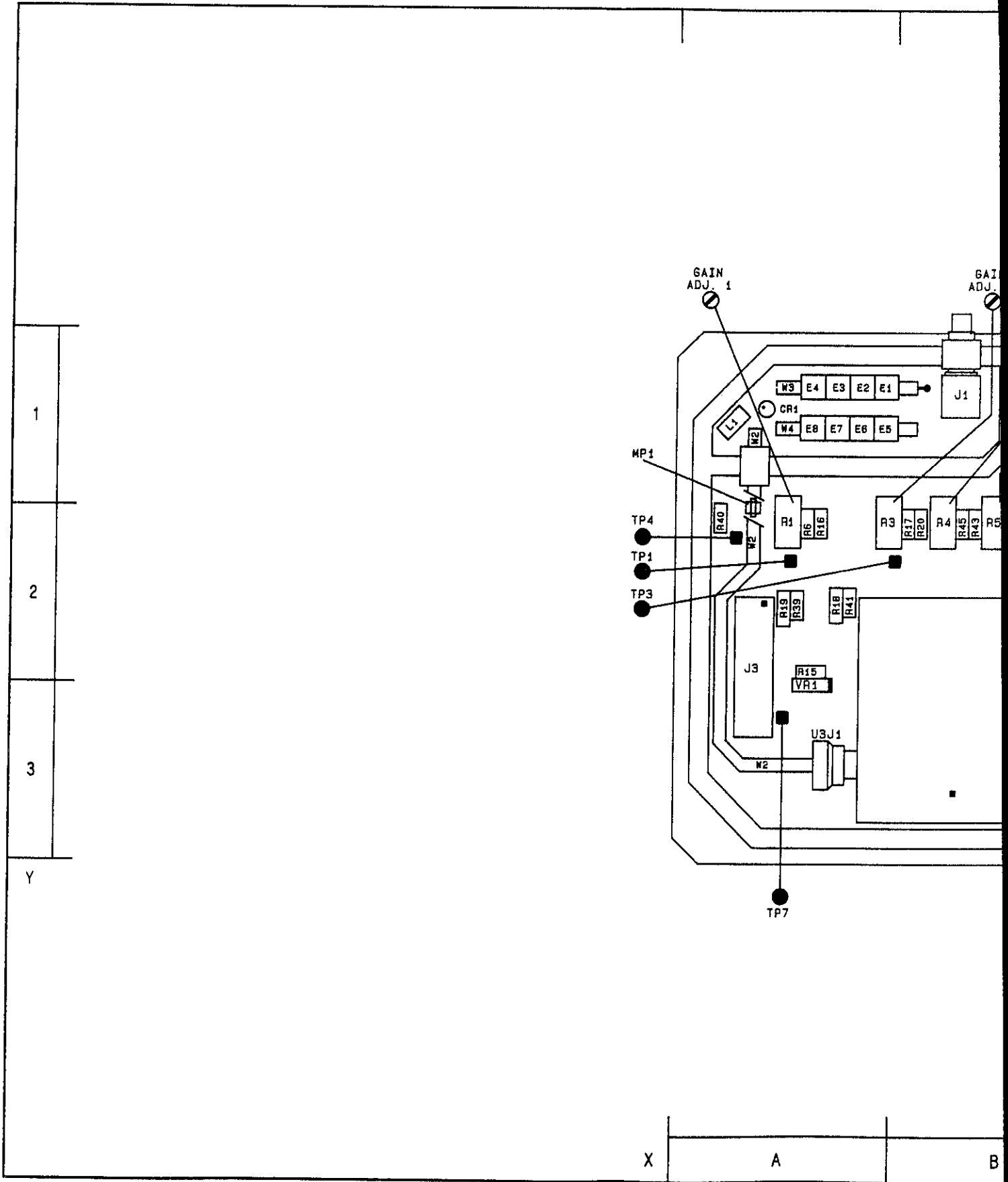
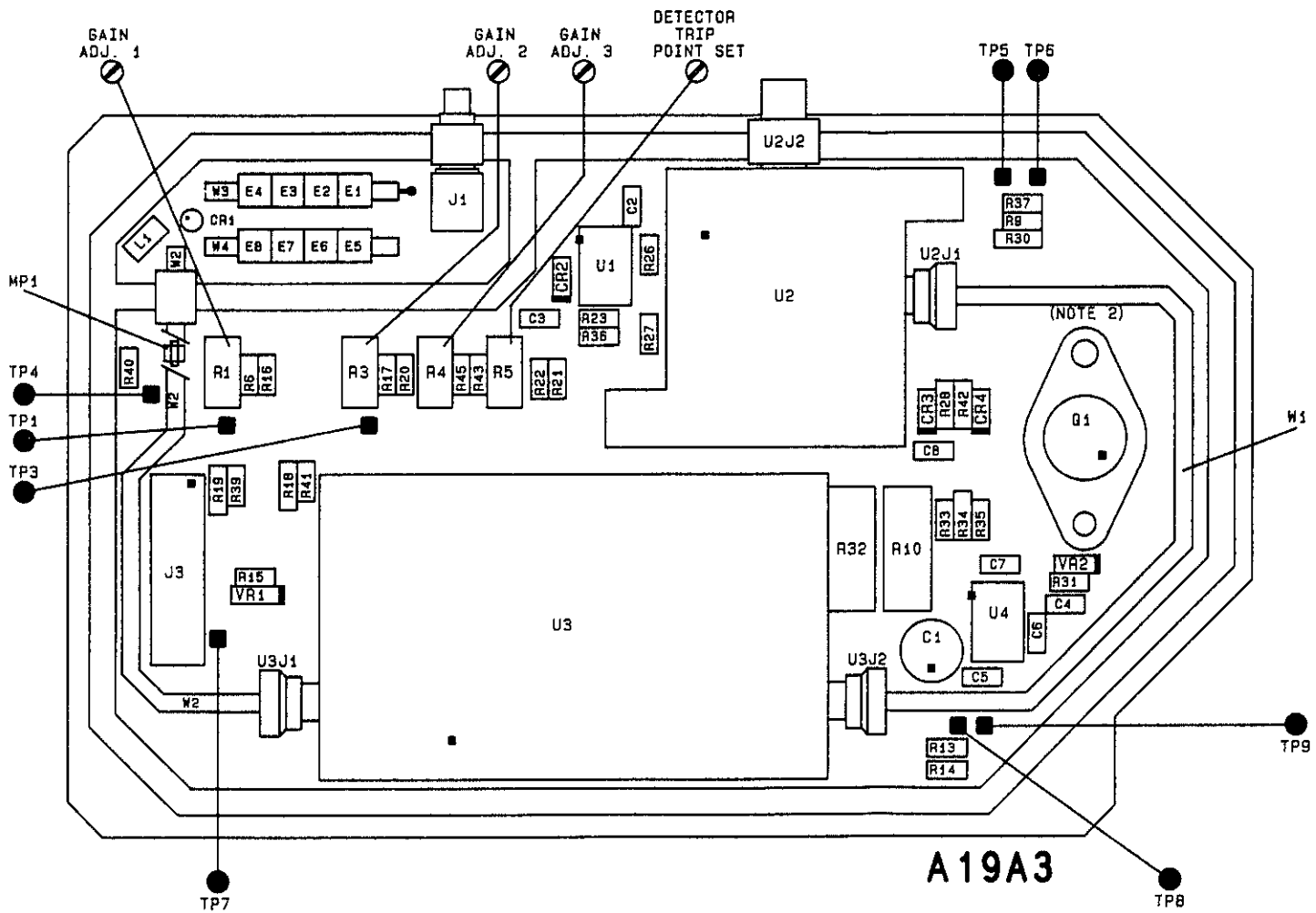


Figure 8S-106. SERVICE SHEET 51 INFORMATION

Co

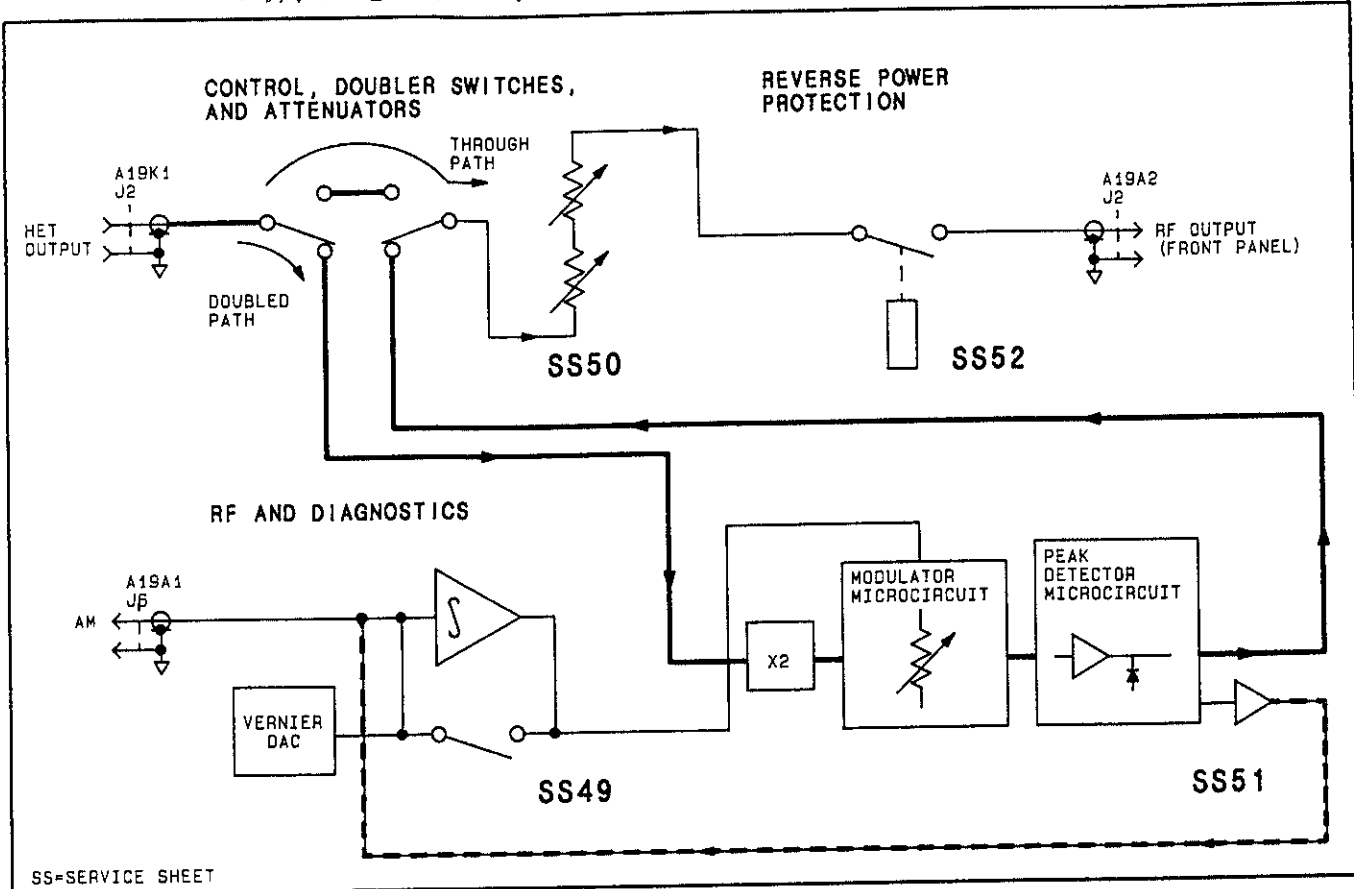
FIG. 8S-106  
SHT. 2 OF 4



X	A	B	C	D
---	---	---	---	---

Component Locator

FIG. BS-106  
SHT. 3 OF 4



Reference Block Diagram

Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	C, 3	R6	A, 2	TP7	A, 3												
C2	B, 1	R9	D, 1	TP8	D, 3												
C3	B, 1	R10	C, 2	TP9	D, 3												
C4	D, 3	R13	C, 3	U1	B, 1												
C5	D, 3	R14	C, 3	U2	C, 1												
C6	D, 3	R15	A, 2	U3	B, 3												
C7	D, 2	R16	A, 2	U4	D, 3												
C8	C, 2	R17	B, 2	VR1	A, 2												
		R18	A, 2	VR2	D, 2												
CR1	A, 1	R19	A, 2	W1	D, 2												
CR2	B, 1	R20	B, 2	W2	A, 2												
CR3	C, 2	R21	B, 2	W3	A, 1												
CR4	D, 2	R22	B, 2	W4	A, 1												
E1	A, 1	R23	B, 1														
E2	A, 1	R26	B, 1														
E3	A, 1	R27	B, 1														
E4	A, 1	R28	C, 2														
E5	A, 1	R30	D, 1														
E6	A, 1	R31	D, 2														
E7	A, 1	R32	C, 2														
E8	A, 1	R33	C, 2														
J1	B, 1	R34	D, 2														
J3	A, 2	R35	D, 2														
L1	A, 1	R36	B, 1														
MP1	A, 1	R37	D, 1														
Q1	D, 2	R39	A, 2														
R1	A, 2	R40	A, 2														
R2	A, 2	R41	A, 2														
R4	B, 2	R42	D, 2														
R5	B, 2	R43	B, 2														
		R45	B, 2														
		TP1	A, 2														
		TP3	A, 2														
		TP4	A, 2														
		TP5	D, 1														
		TP6	D, 1														

P/O DOUBLER #2  
A19A1 ASSEMBLY

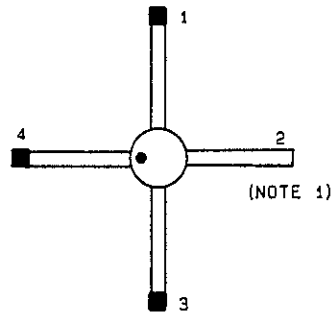
**SS50**

SEE REVERSE SIDE

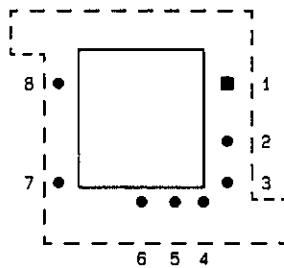
Notes:

1. Do not touch CR1 with soldering iron. Heat pad only.
2. Q1 mounts to heatsink.
3. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.
5. A19 FL1 is an array of feed through filters passing through the center of the module to make connections between two (2) printed circuit boards.

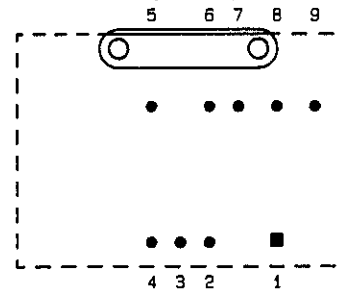
A19A3  
CR1  
TOP VIEW



A19A3  
U2  
CIRCUIT SIDE  
TOP VIEW



A19A3  
U3  
CIRCUIT SIDE  
TOP VIEW



Schematic General Information



## CHANGES

### All Serial Prefixes

#### On the Component Locator:

- R46 - Add R46 immediately below R5.
- L2 - Add L2 immediately below J1.

#### In Component Coordinates:

- R46 - Add R46, B,2.
- L2 - Add L2, B,1.

#### On the schematic:

- In the upper left portion of the schematic, change the A19A3 assembly number to 08642-60220.
- R46 - In **DIFFERENCE AMP**, add R46 between pin 7 of U1 and pin 11 of J3. Assign a value of 10 ohms.

A19A3 DOUBLER #1 ASSEMBLY (08642-60120)

FIG 85-107  
SHT. 1 OF 5

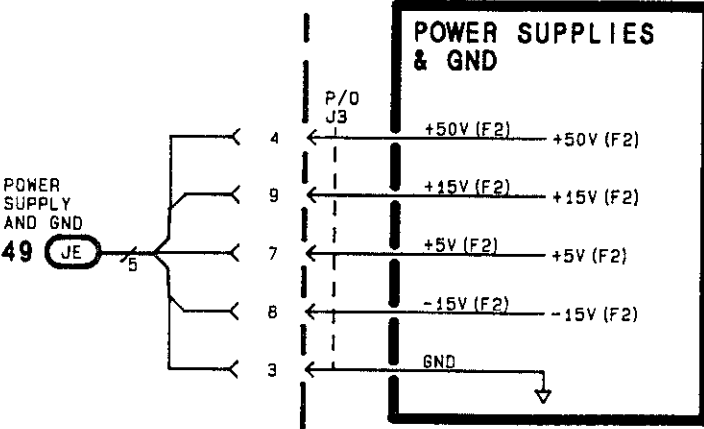
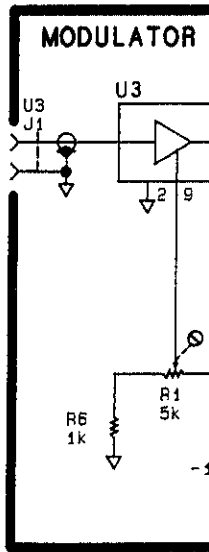
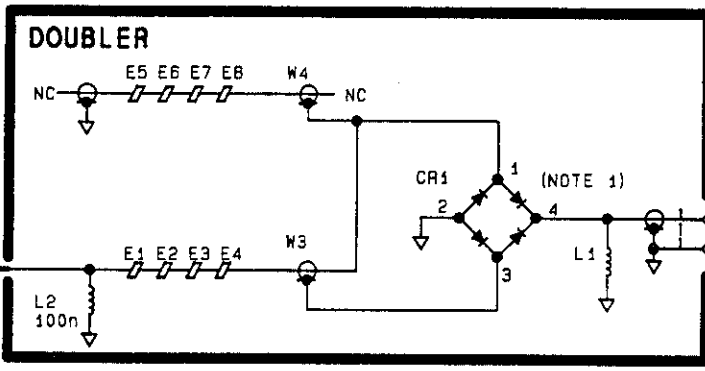
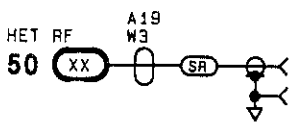
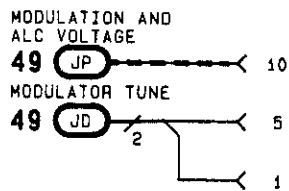


FIG. 85-107, SHT. 2 OF 5

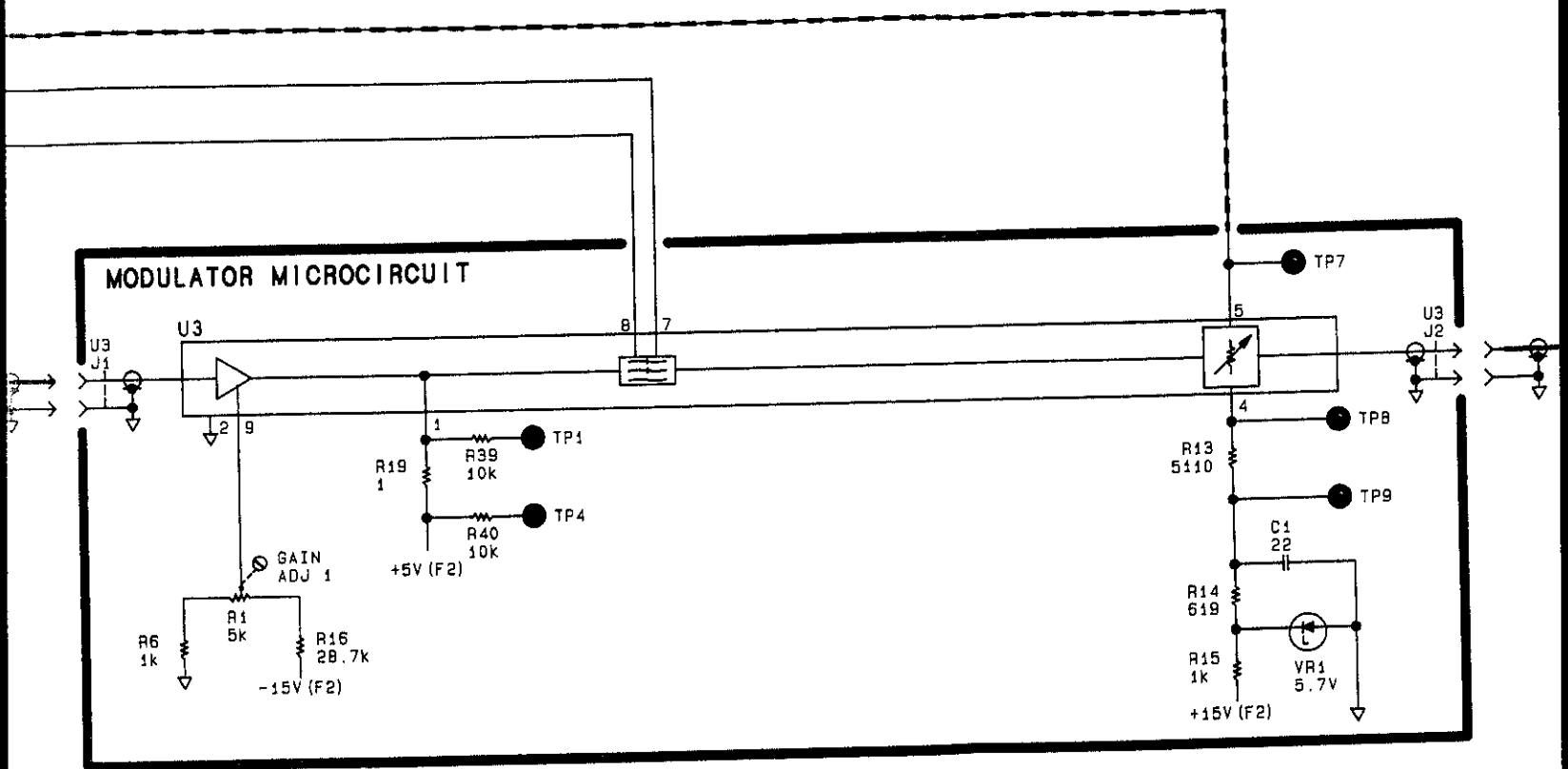


FIG. 85-107, SHT, 3 OF 5

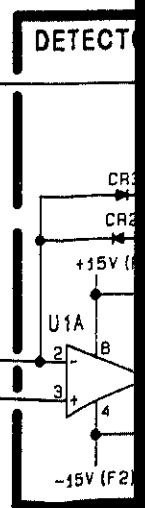
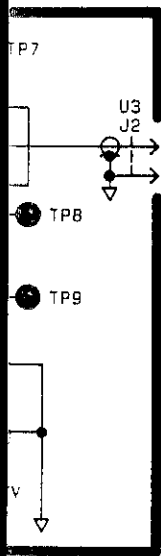
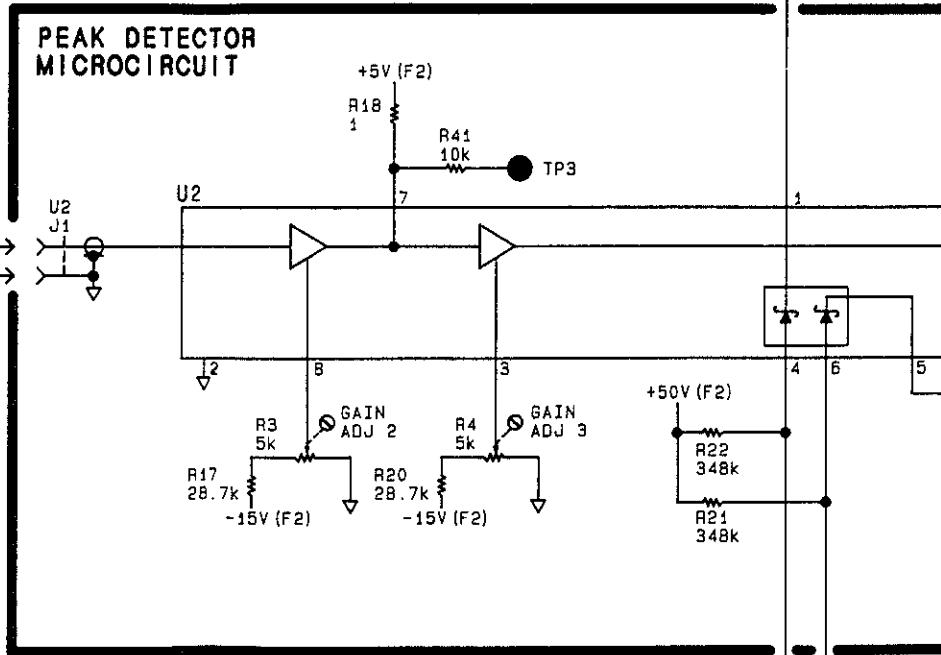
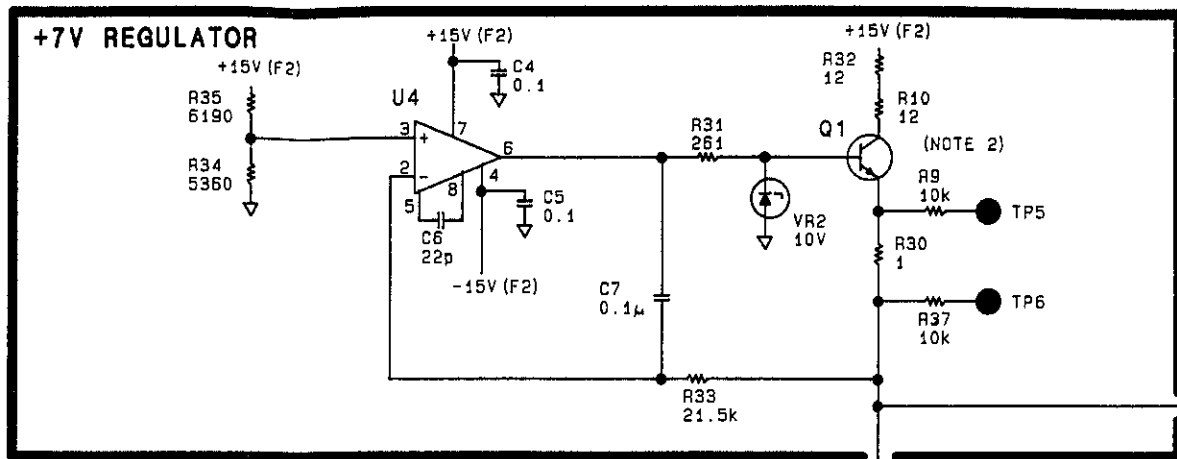
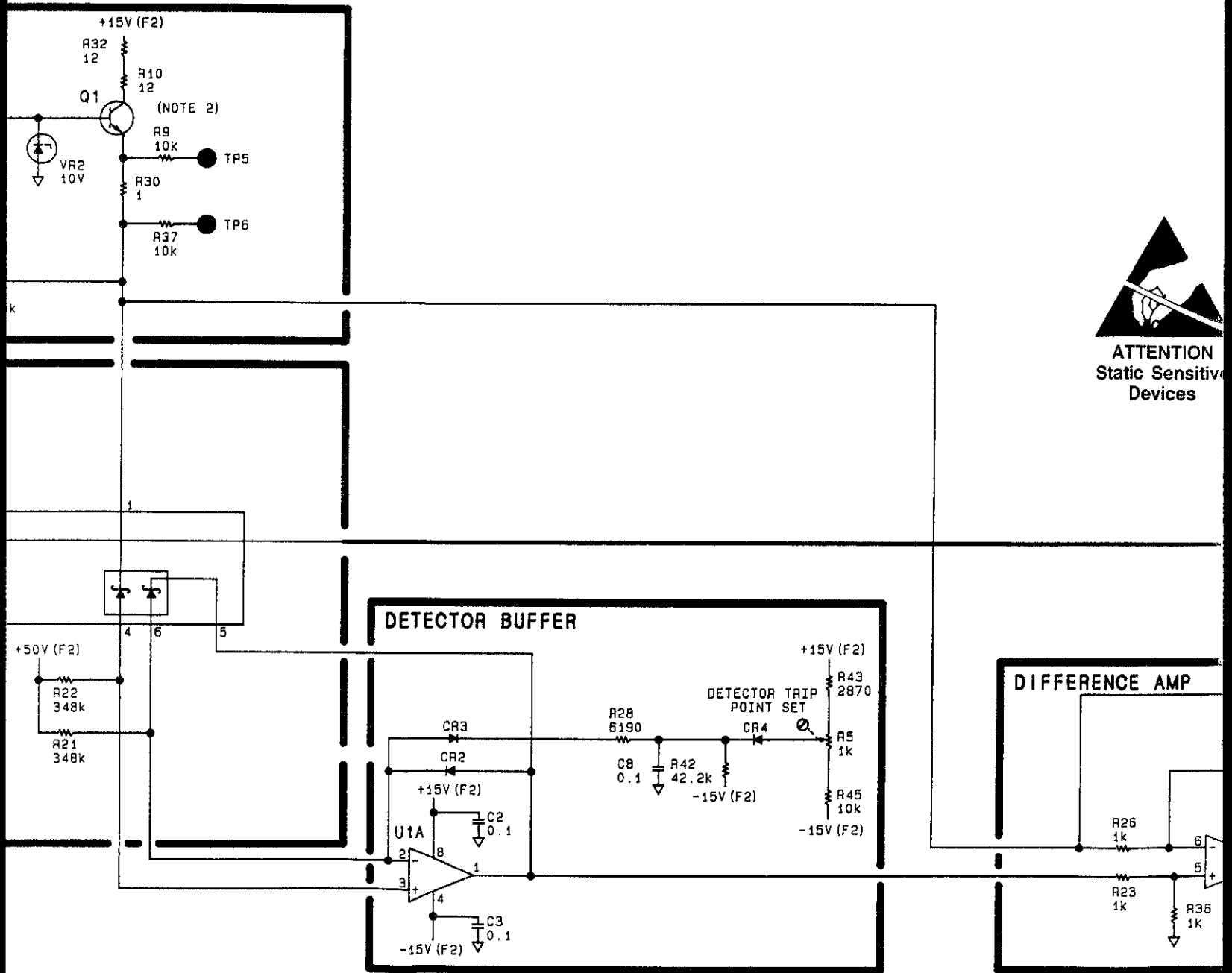


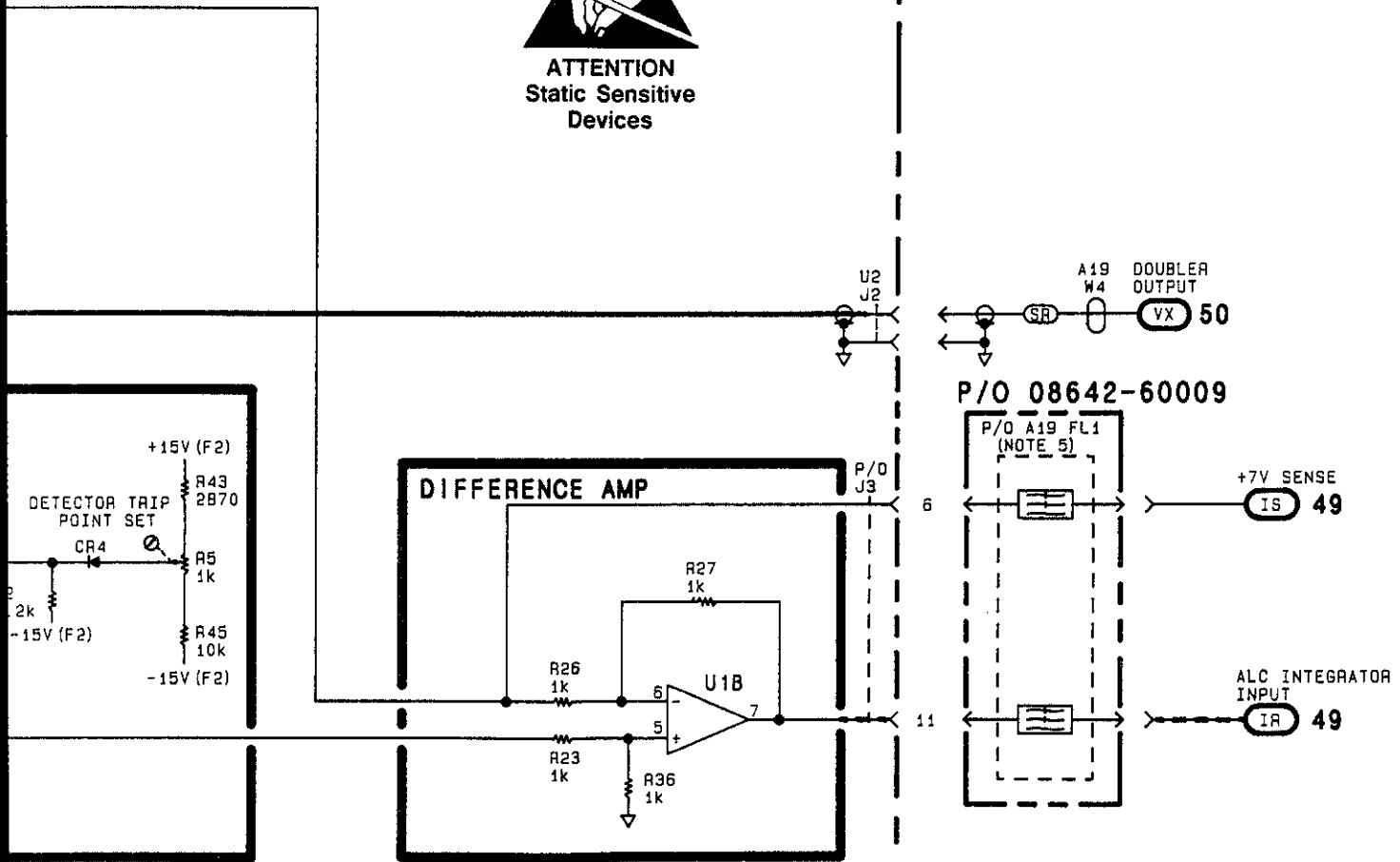
FIG. 85-107, SH. 4 OF 5



  
ATTENTION  
Static Sensitive  
Devices



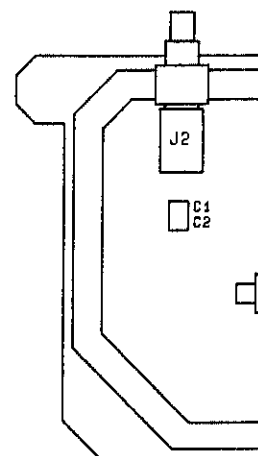
**ATTENTION**  
Static Sensitive  
Devices



**SS51**  
Figure 85-107  
85-107

FIG. 8S-108  
SHT. 1 OF 4

1
2
3
Y

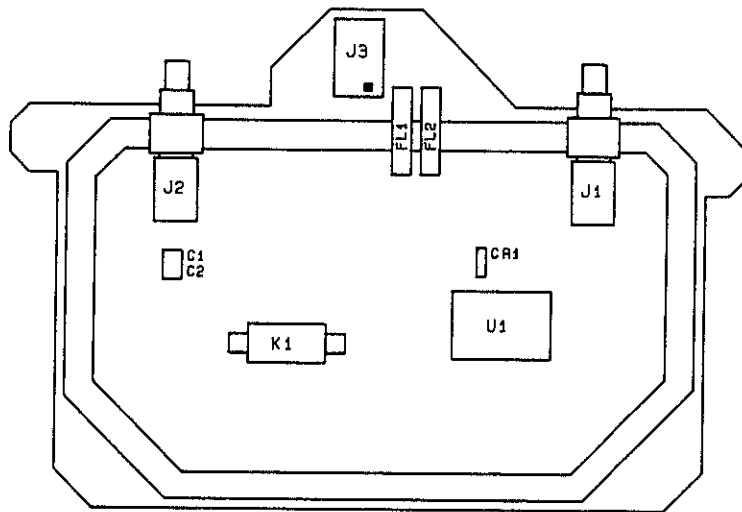


X	A	
---	---	--

Figure 8S-108. SERVICE SHEET 52 INFORMATION

Com

FIG. 8S-10B, SH. 2 OF 4



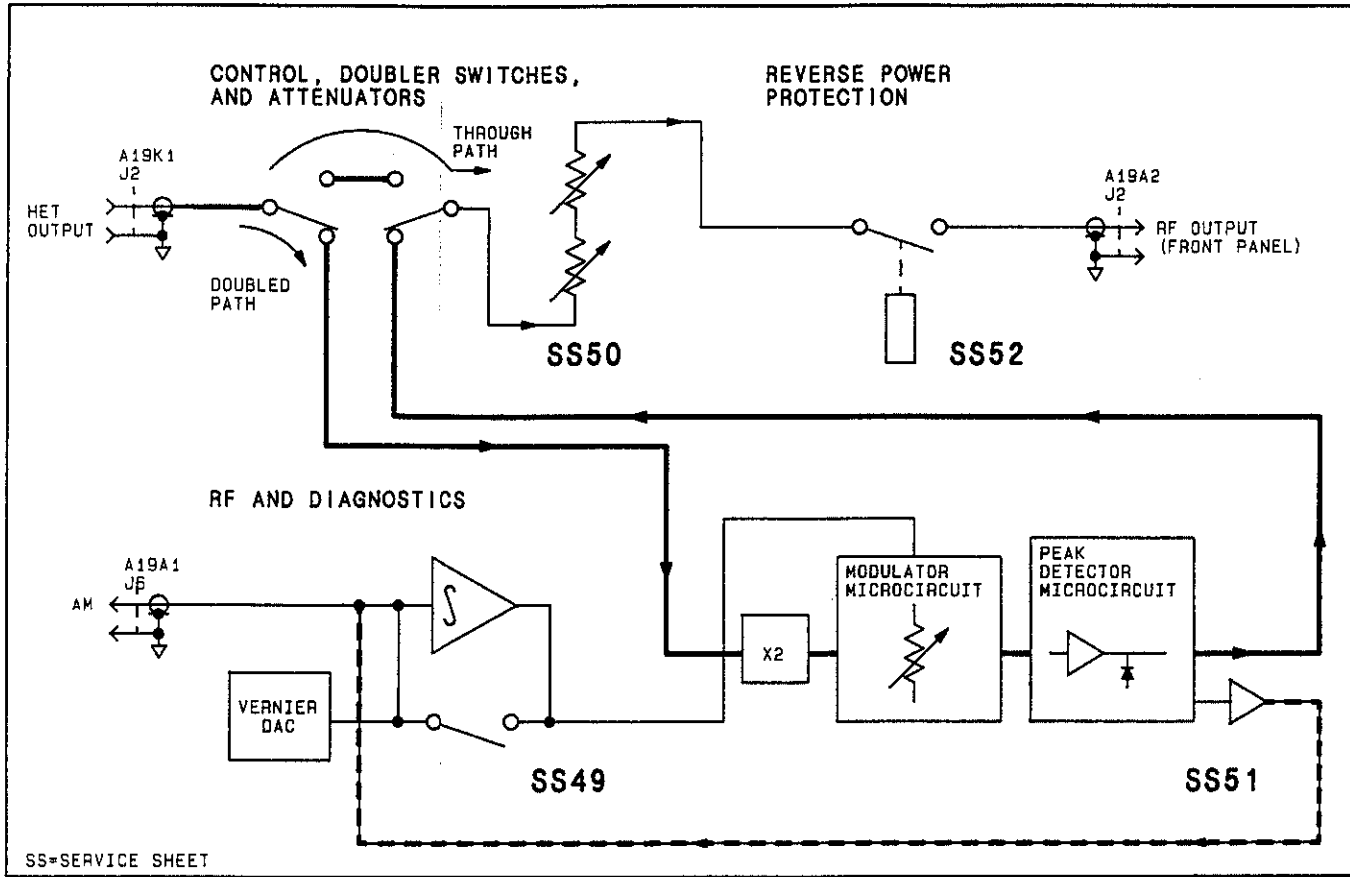
A19A2



Component Locator



FIG. BS-108, SHTI 3 OF 4



Reference Block Diagram

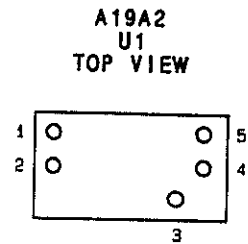
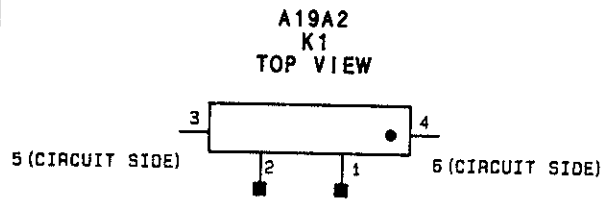
Component Coordinates

COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y

P/O DOUBLER #1  
 A19A3 ASSEMBLY **SS51**  
 SEE REVERSE SIDE

## Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

**CHANGES****All Serial Prefixes**

On the Component Locator:

- Above K1, add "NOTE 3."

In Schematic General Information:

- Add "NOTE 3"; Small gold disc(s) are tunable stubs, positioned on the circuit board for optimum SWR characteristics. There may be more than 1 tunable stub, and the positioning may vary on the RF path from J1 to C1.

On the schematic:

- Add Z1, a tunable stub, from the circuit main signal path (U1 Pin 5) to ground. Add "NOTE 3" to the nearest available space.
- C2 - In REVERSE POWER PROTECTION ASSEMBLY, remove C2.

FIG. 85-109

SHT. 1 OF 2

**A19A2 REVERSE POWER PROTECTION ASSEMBLY (08642-60119)**

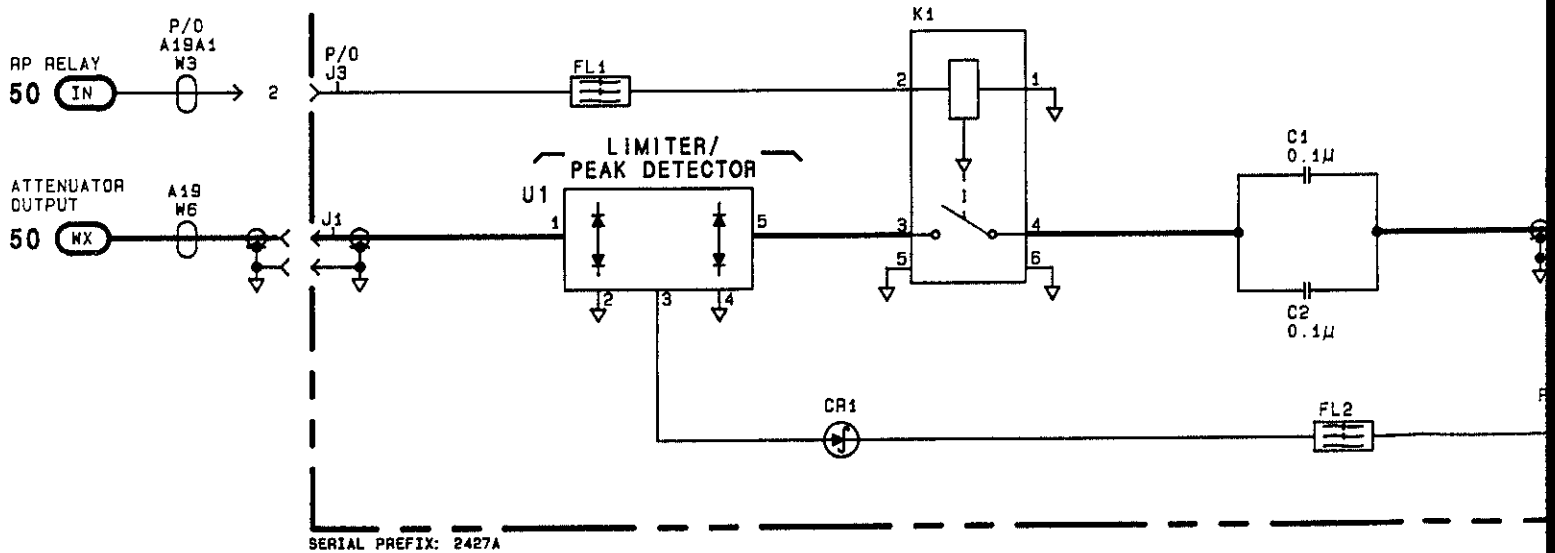
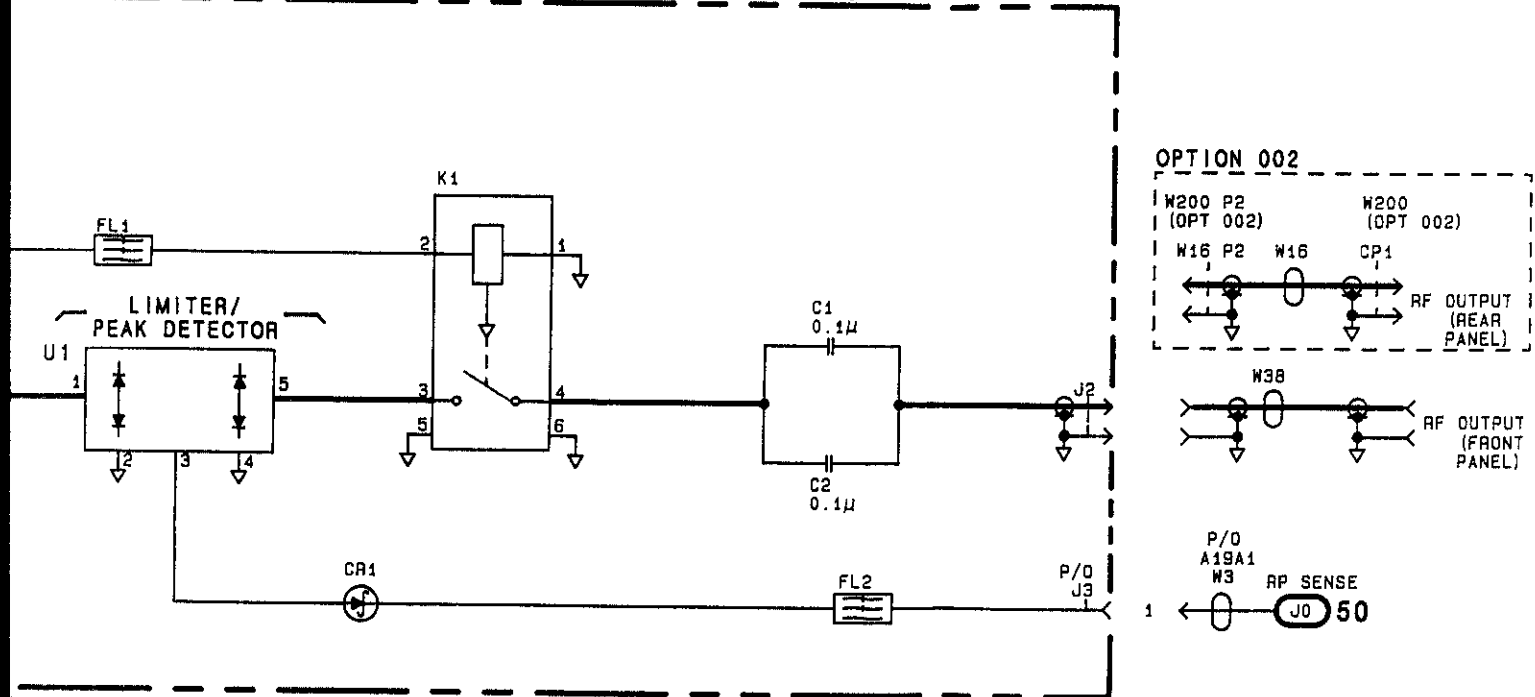


FIG. 85-109

SHT. 2 OF 2

REVERSE POWER PROTECTION ASSEMBLY (08642-60119)

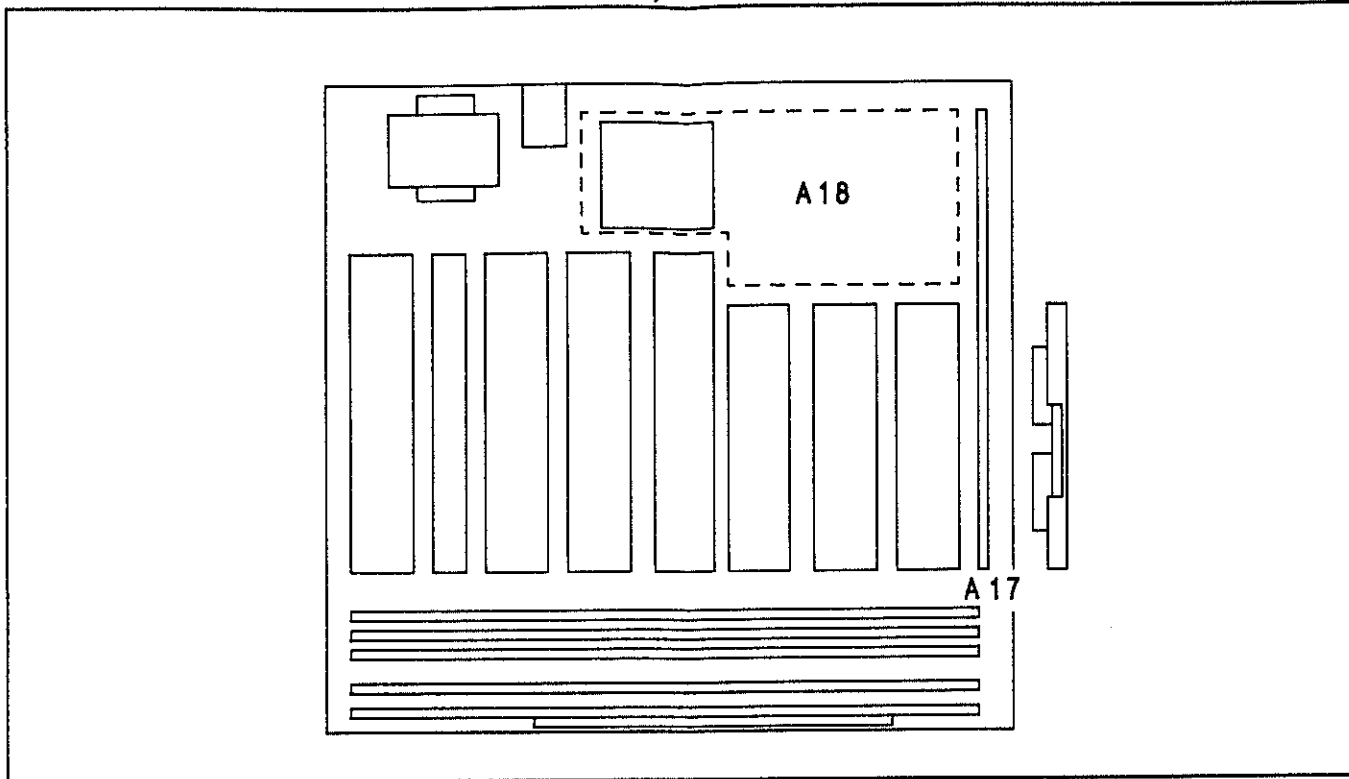


**SS52**  
Figure 85-109  
85-109

A17 Power Supply/  
A18, A10 Atten. Drivers

A8 10 MHz High  
Stability Timebase

Assembly Locator



Simplified Block Diagram

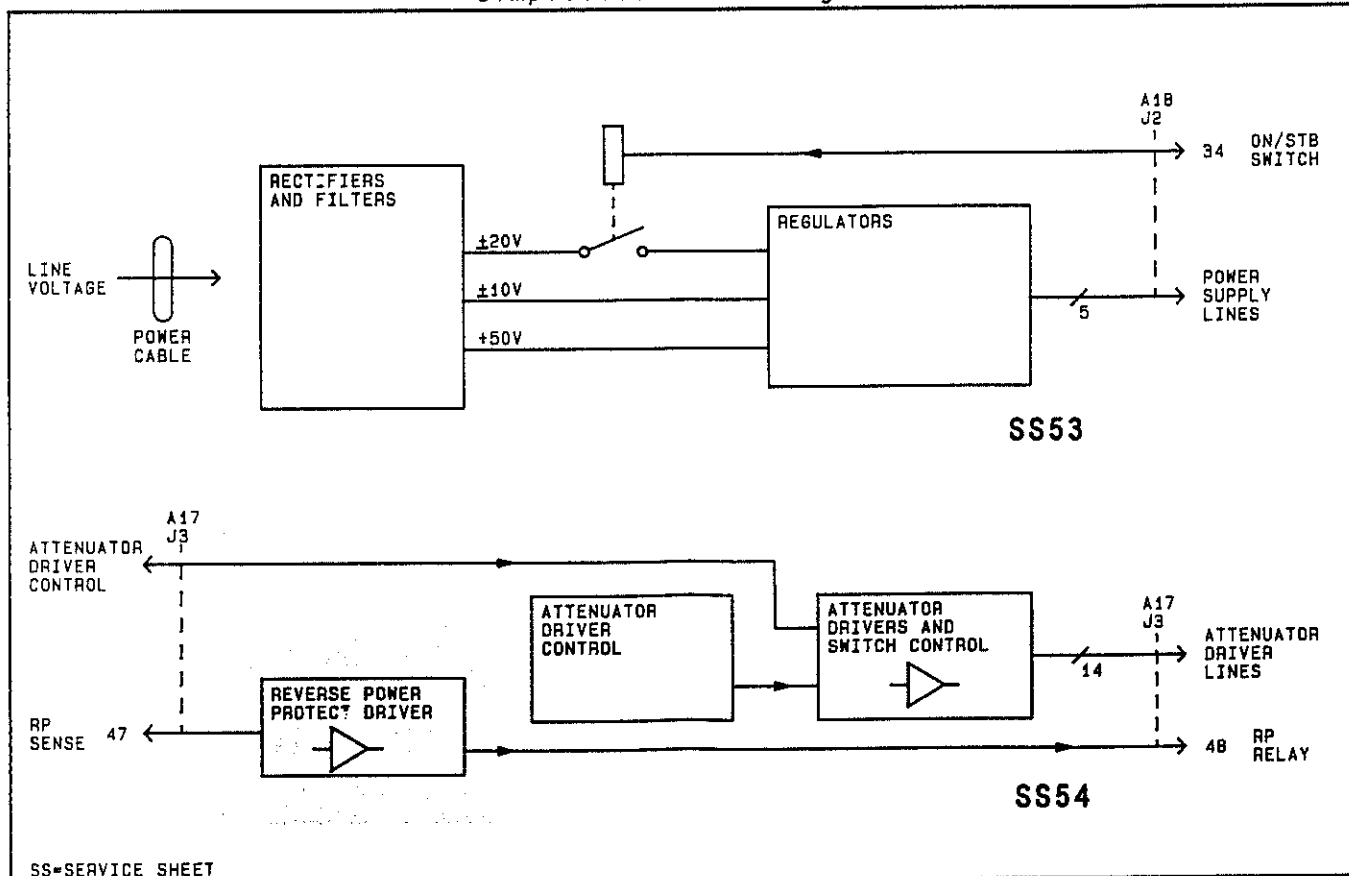


Figure 8T-100 BD17 General Information.

Module Test Point/Adjustment Locations

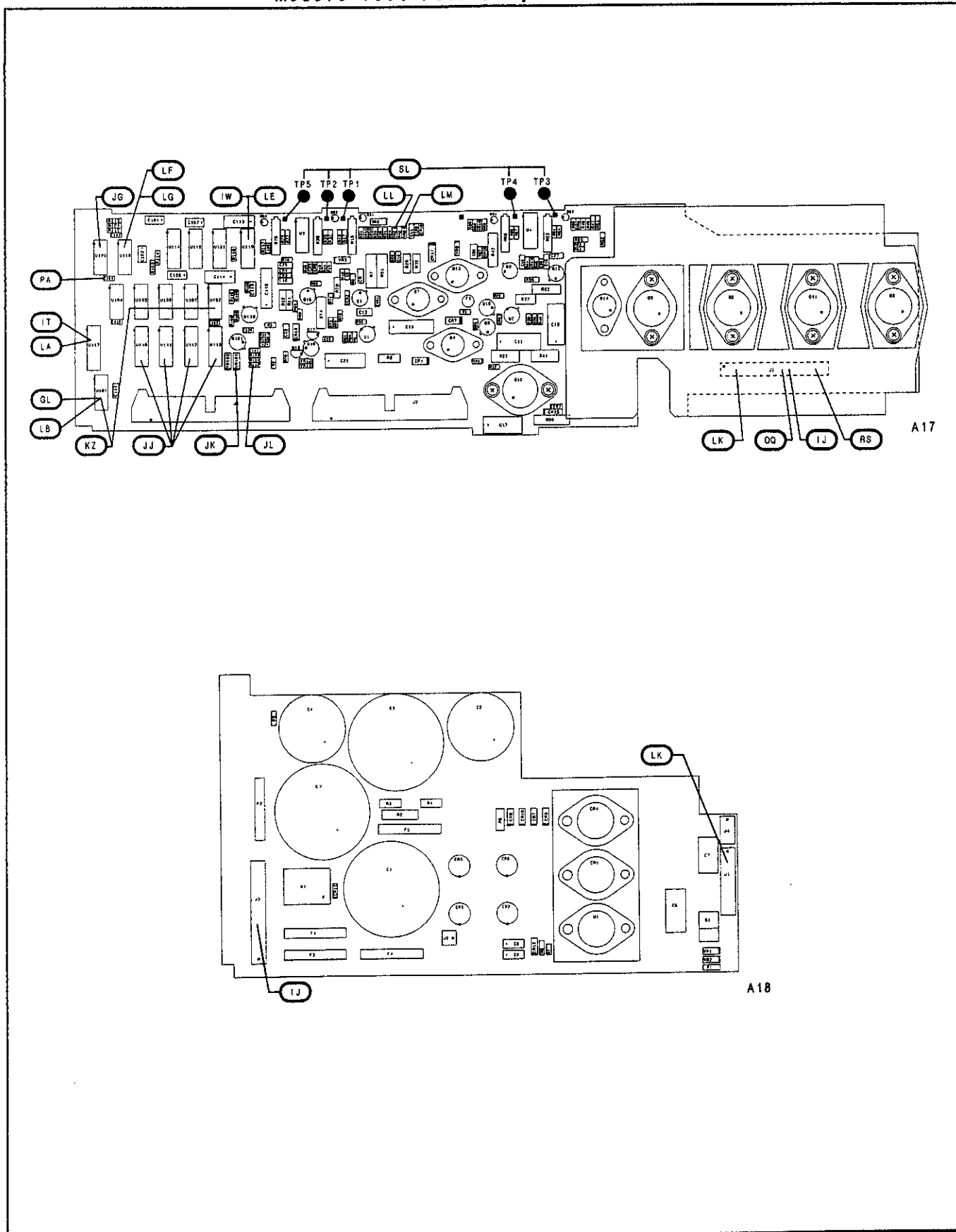


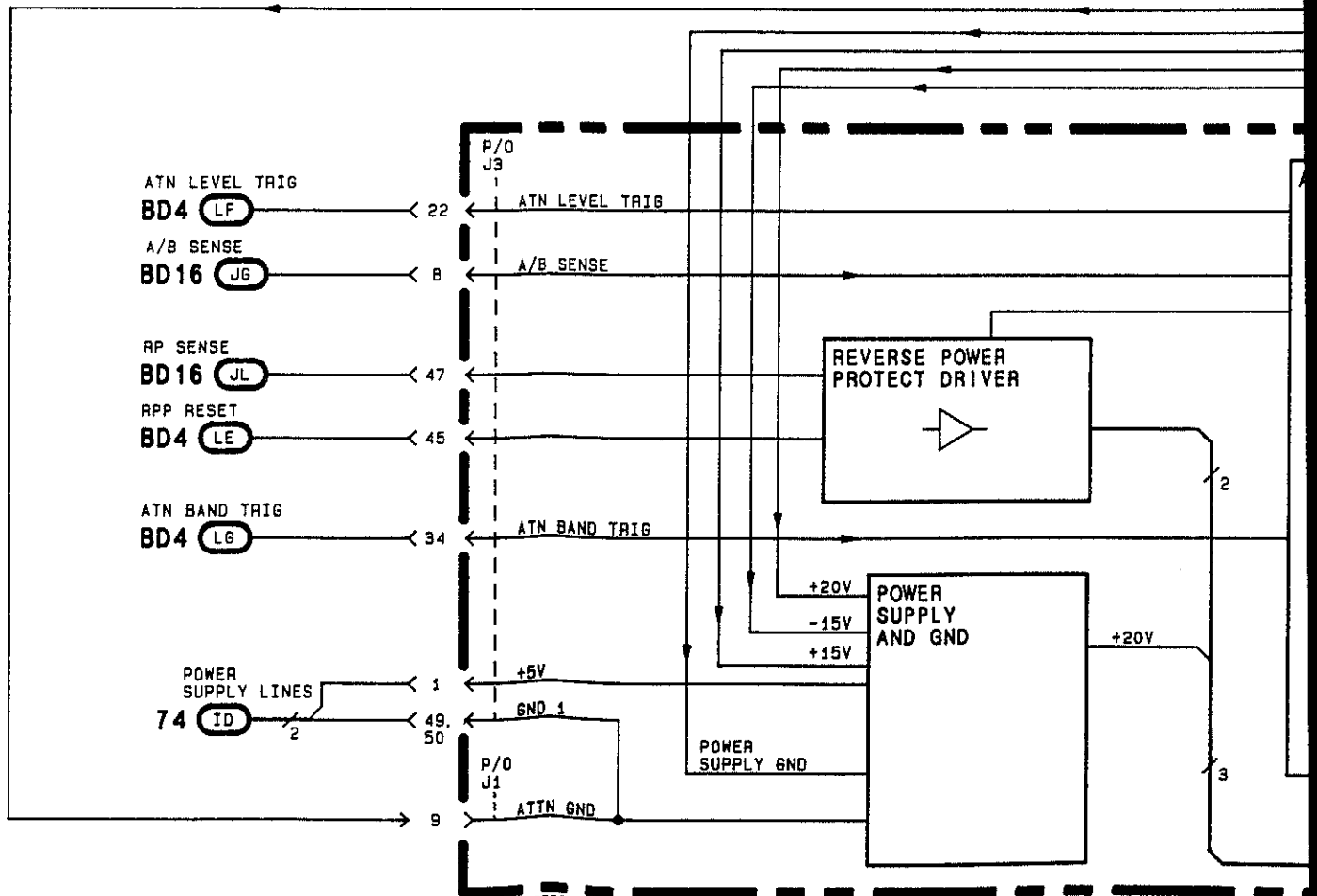
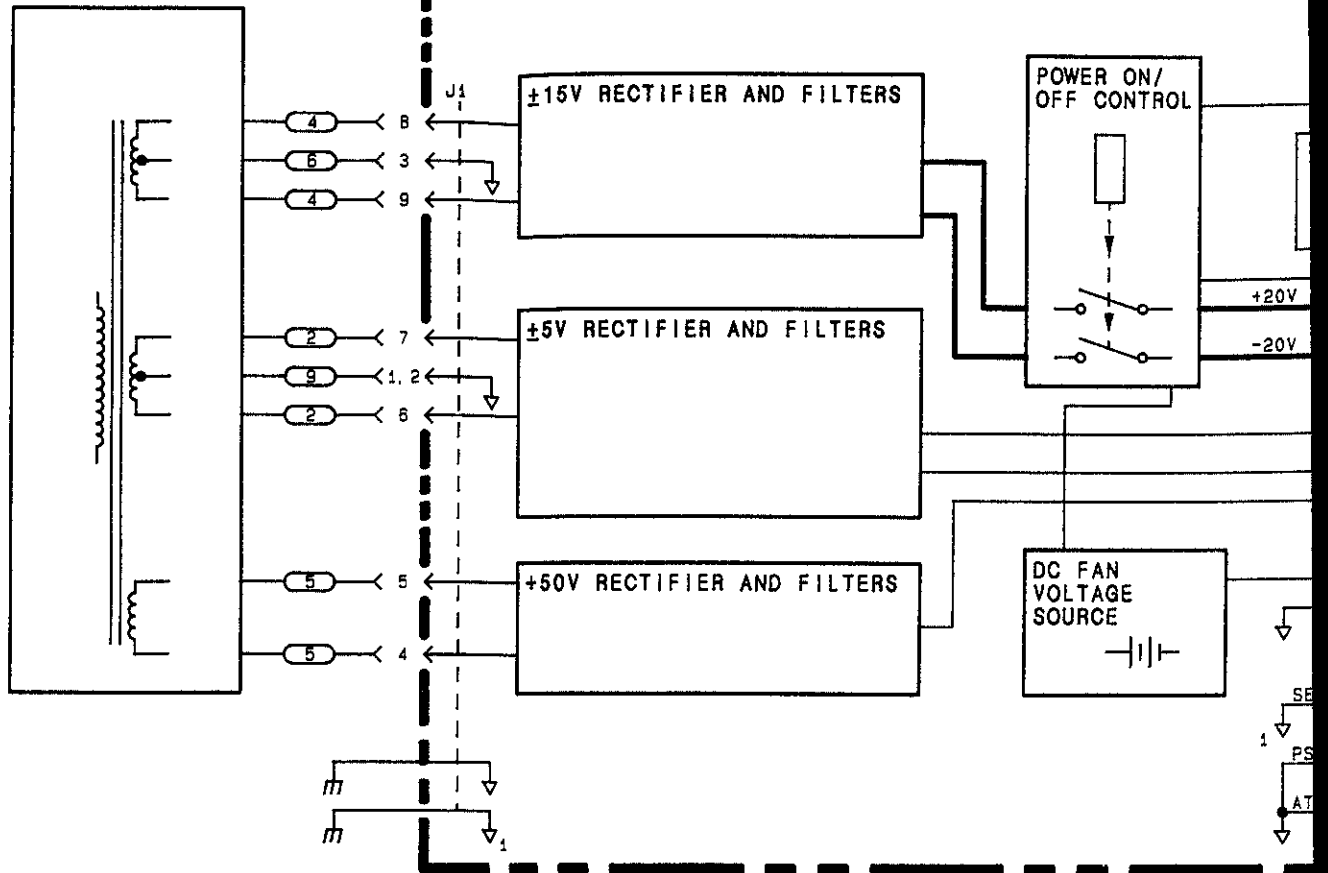
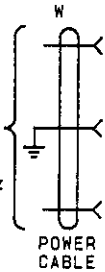


FIG. 8T-101  
 SH. 1 OF 4

**A10 LINE POWER MODULE**

**A18 POWER SUPPLY RECTIFIER/FILTER MODULE (0864)**

LINE VOLTAGE  
 100, 120, 220, 240 VAC  
 +5% - 10%  
 48Hz - 66Hz



SERIAL PREFIX: 2427A

FIG. 8T-101, SHT. 2 OF 4  
 R/FILTER MODULE (08642-60128)

A8 10MHz  
 REFERENCE  
 (OPT 001)

A17 POWER SUPPLY

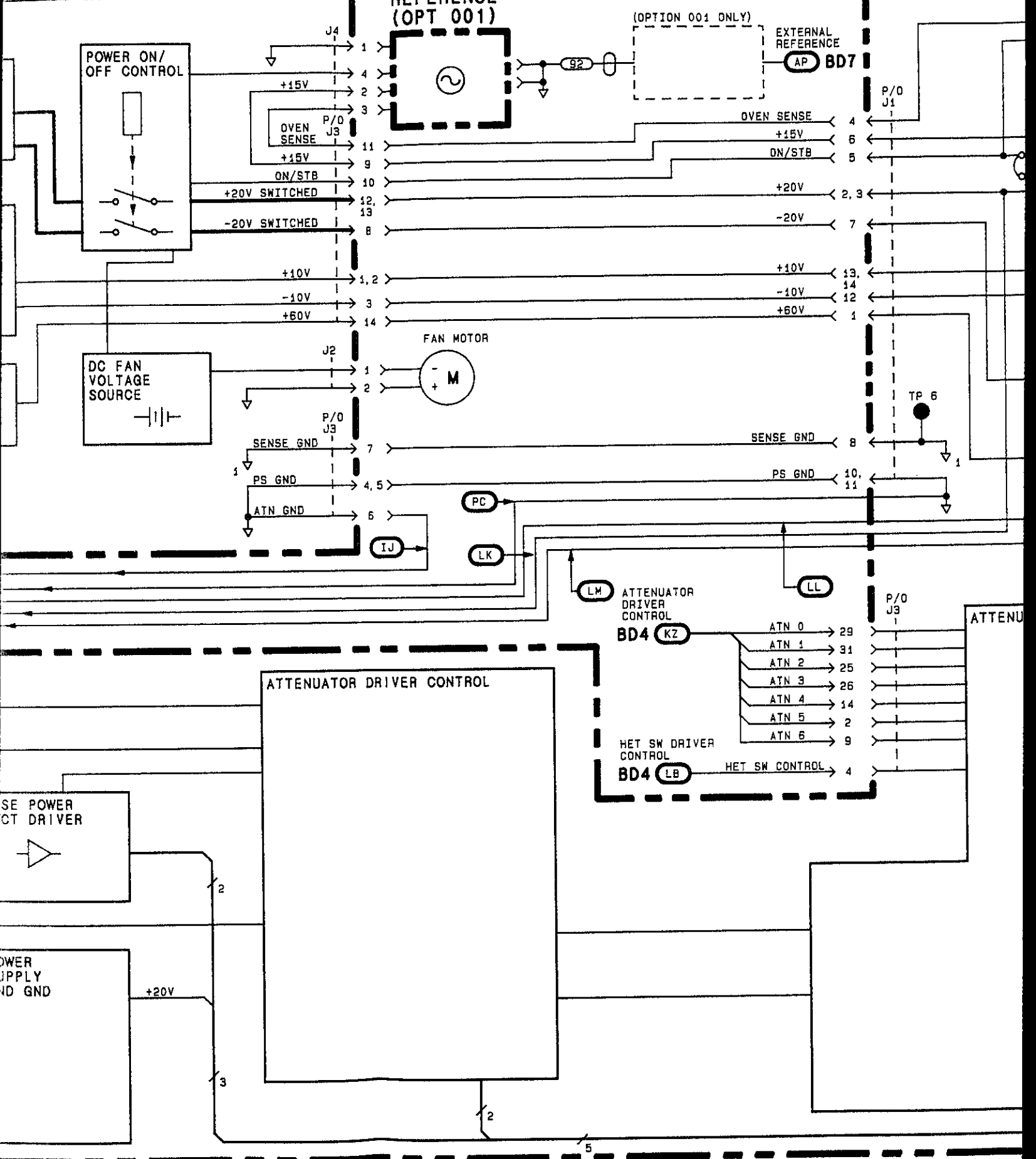
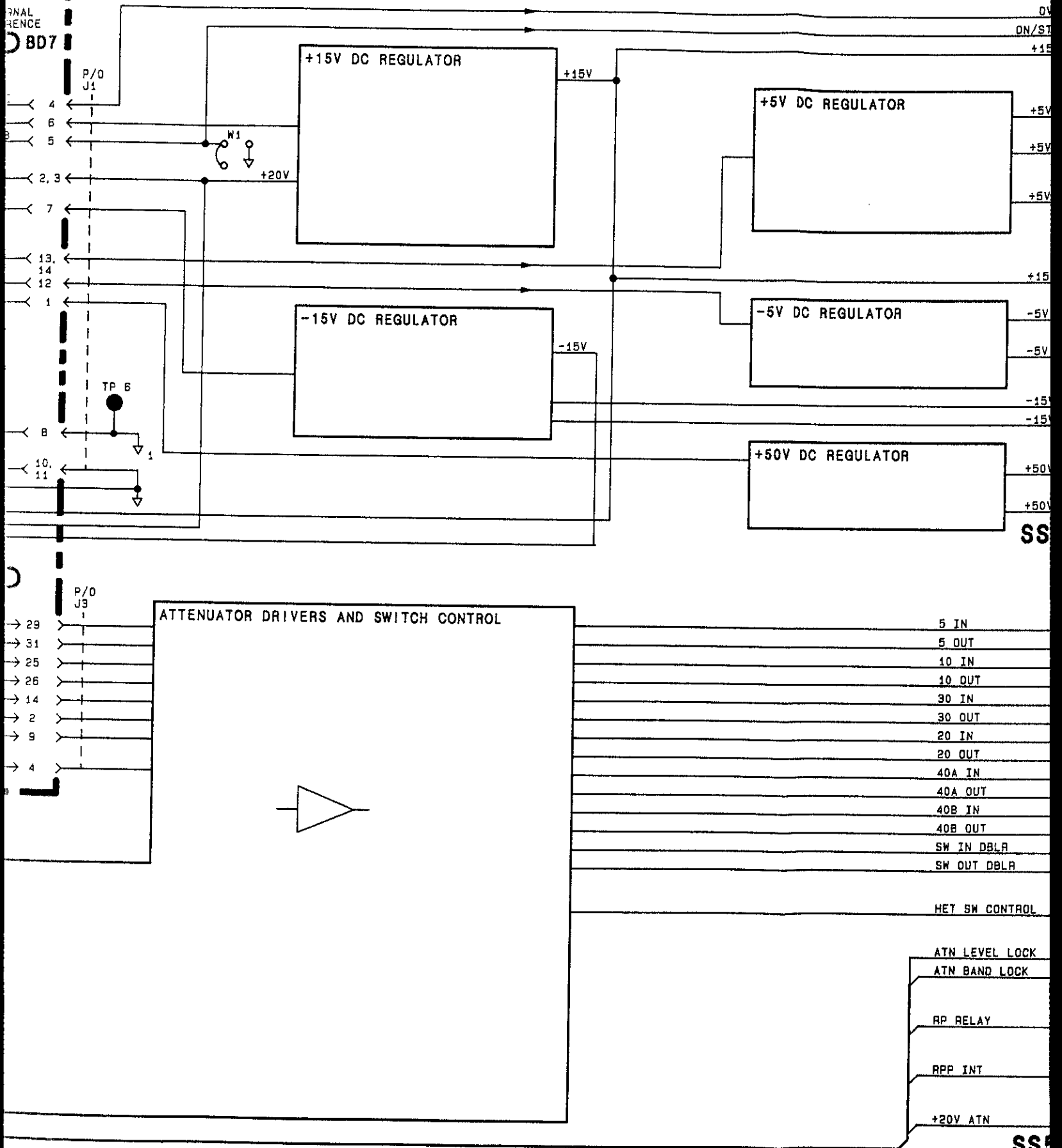
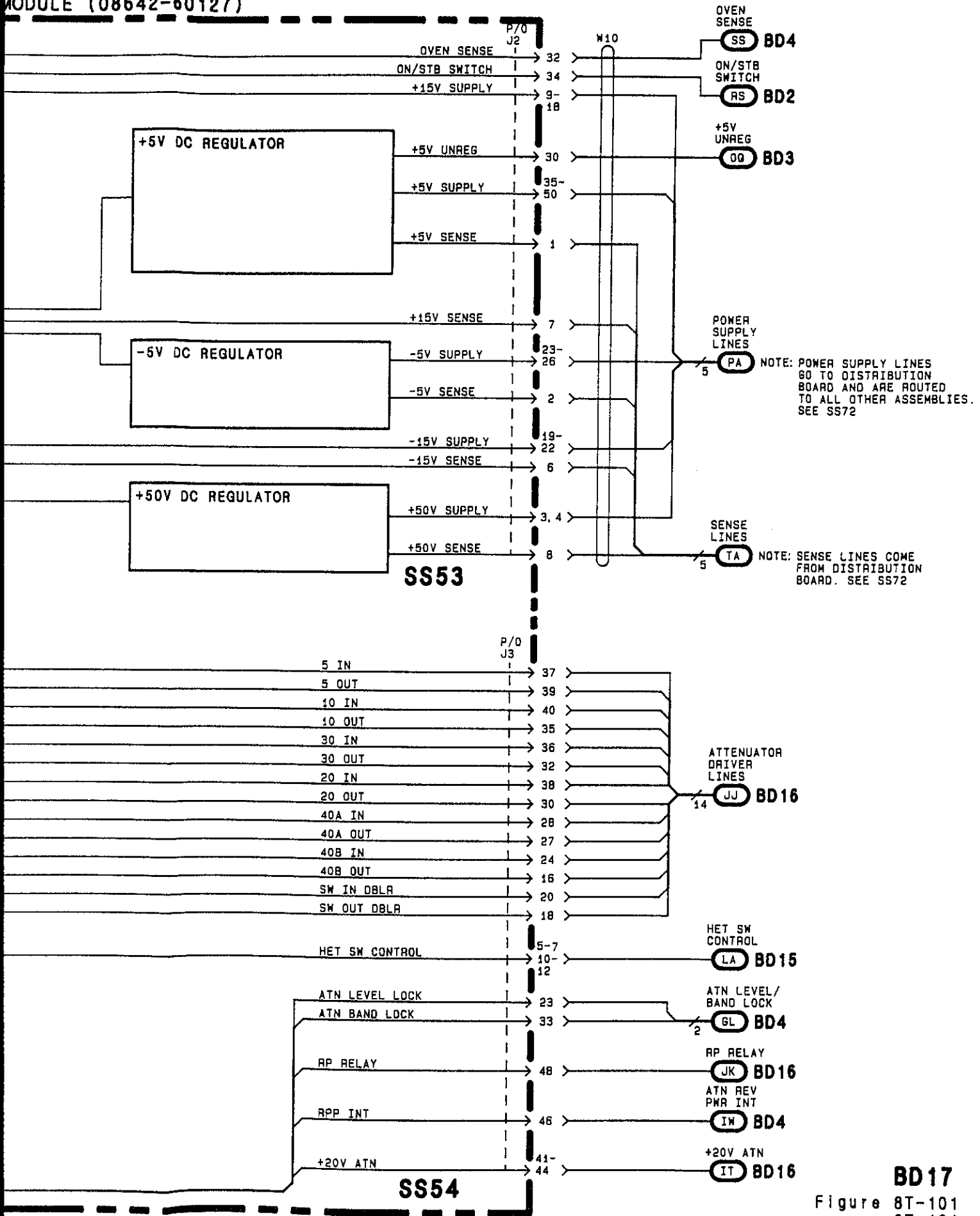


FIG. BT-101, SHEET 3 OF 4  
**A17 POWER SUPPLY REGULATOR/ATTENUATOR DRIVER MODULE (08642-60127)**



MODULE (08642-60127)



BD17

Figure 8T-101  
8T-101

FIG. 8T-102  
SHT. 1 OF 5

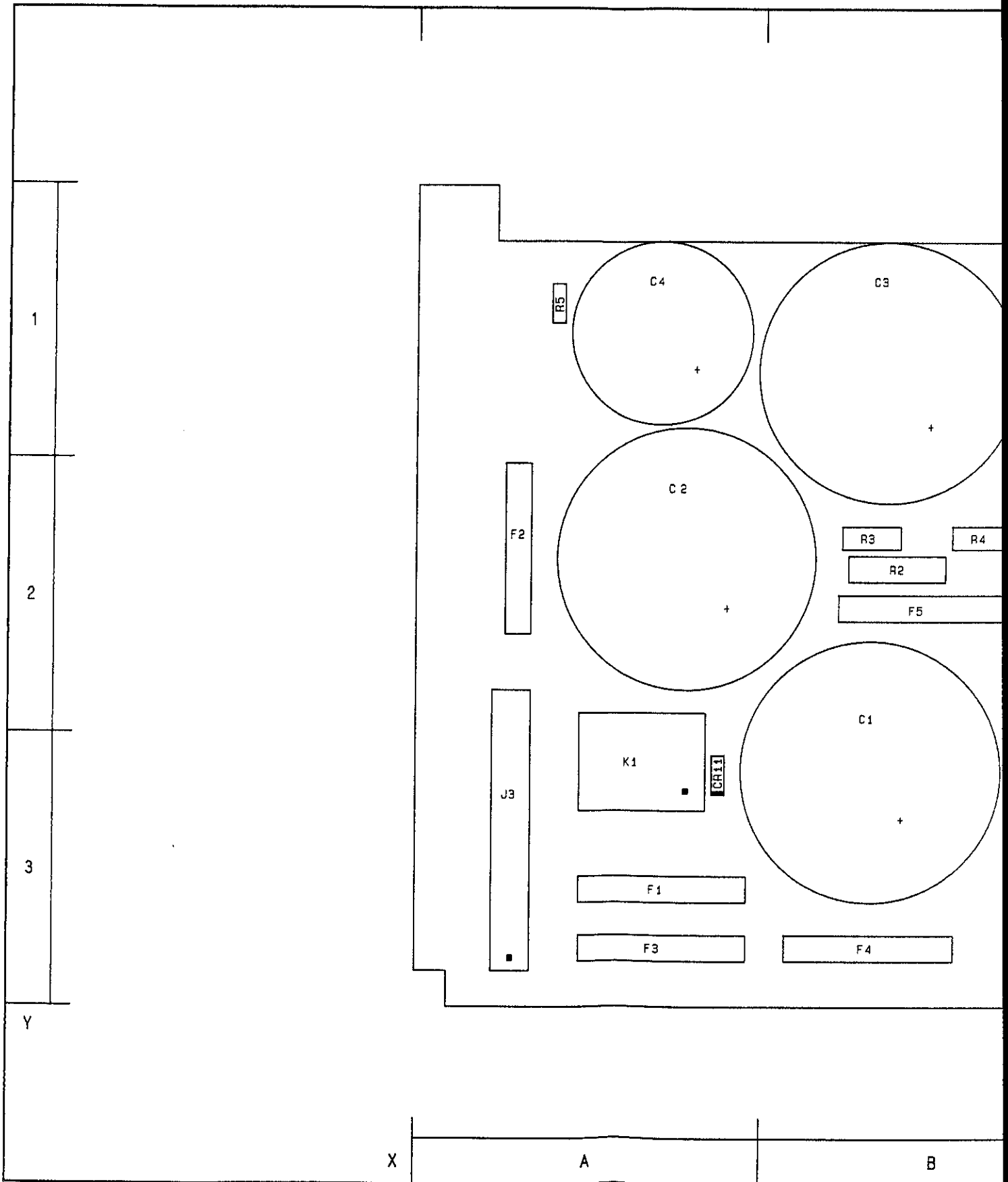
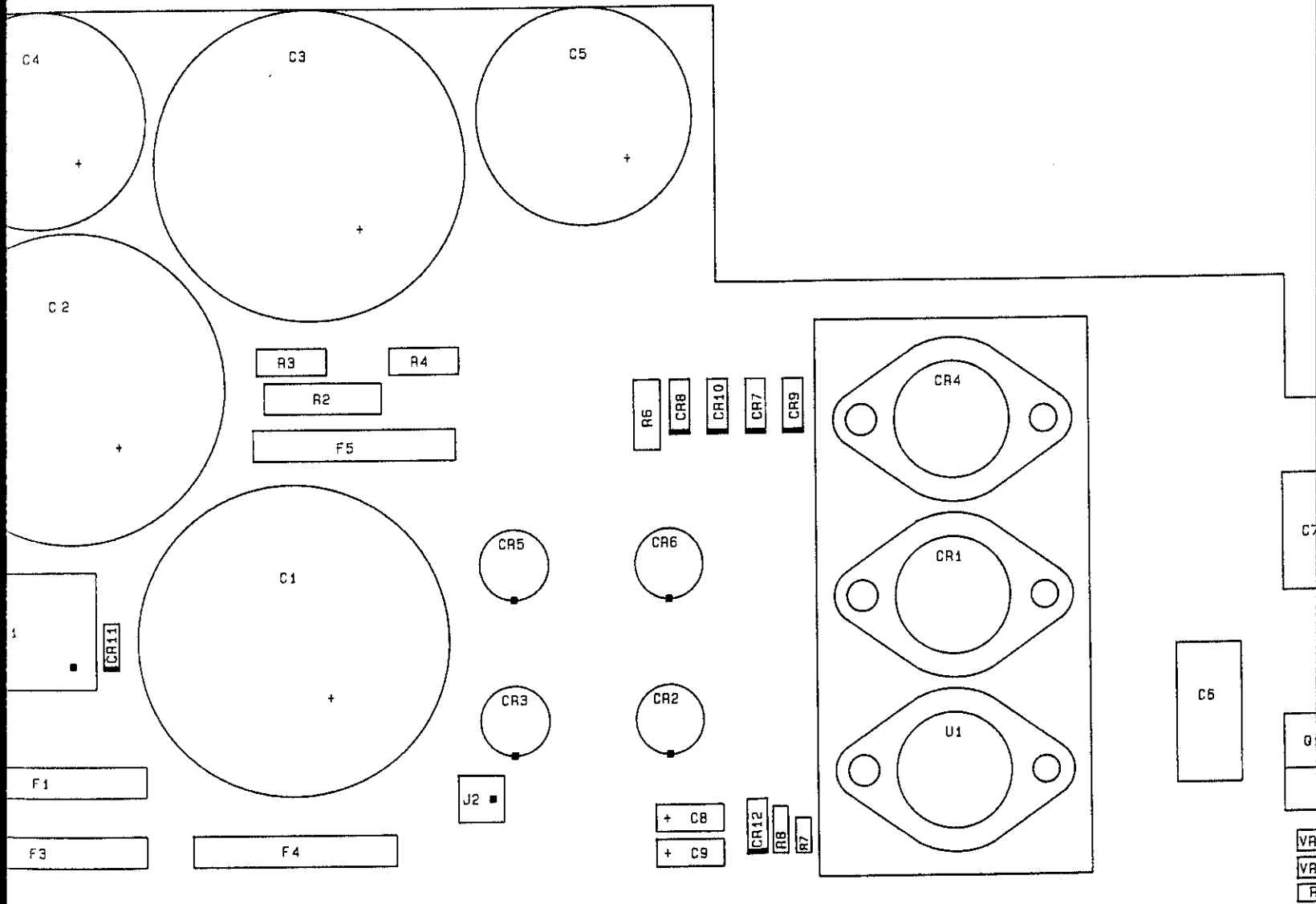


Figure 8T-102. SERVICE SHEET 53 INFORMATION

Co

FIG. 8T-102  
Sheet 2 of 5



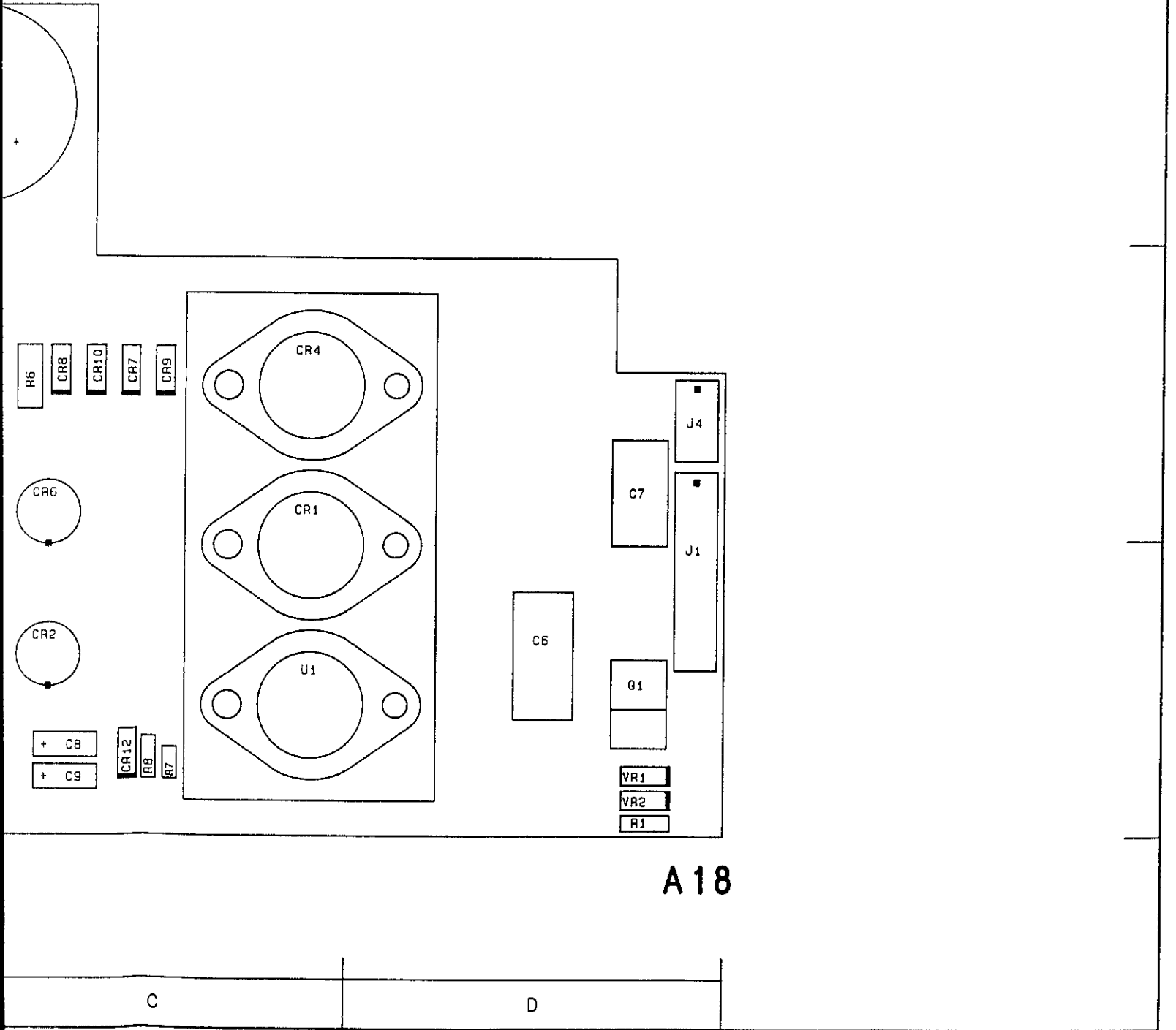
B

C

D

Component Locator

FIG. BT-102  
SHT. 3 OF 5



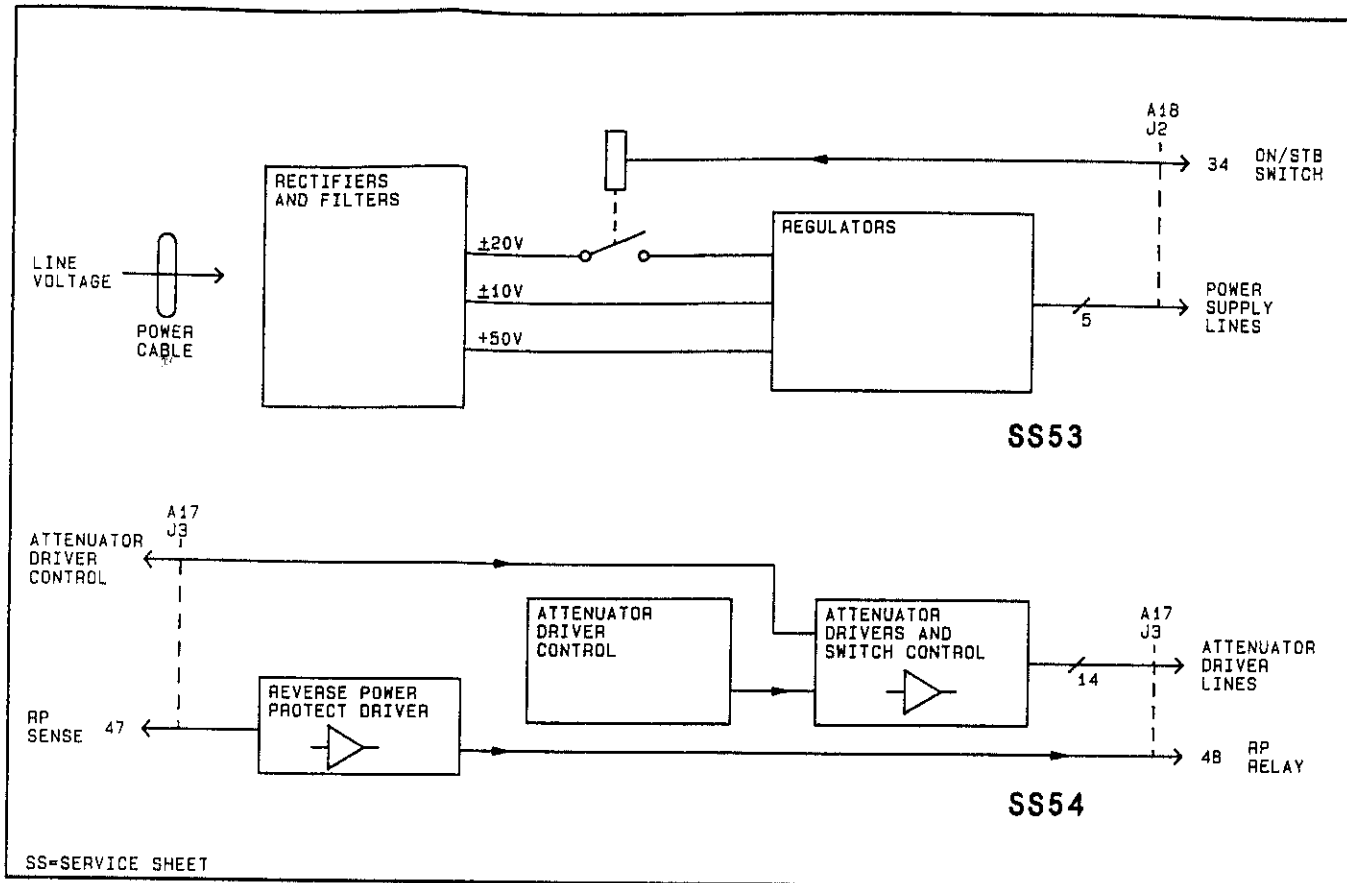
A18

C

D

ator

FIG. 8T-102  
 SH. 4 OF 5



Reference Block Diagram

Component Coordinates

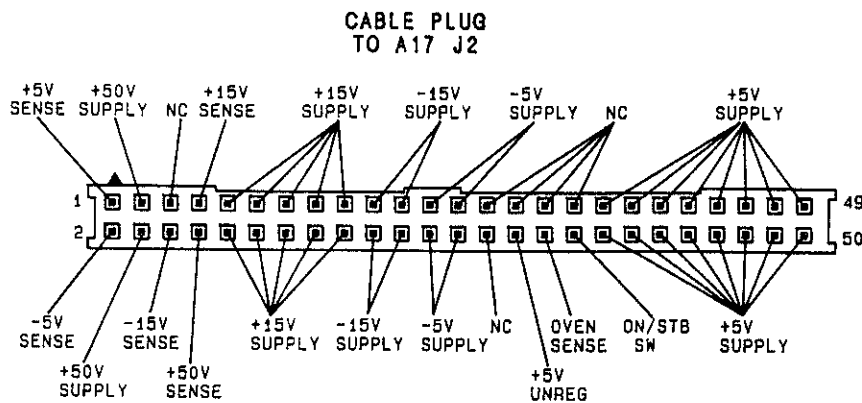
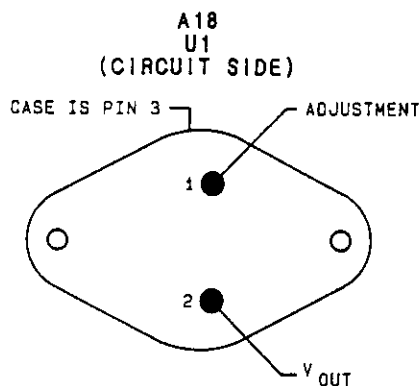
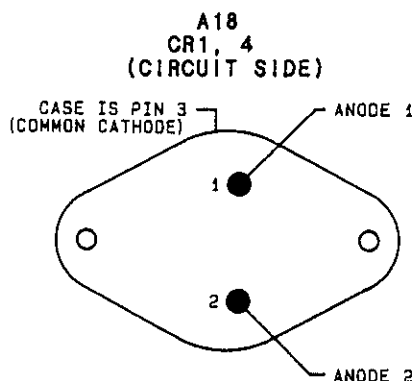
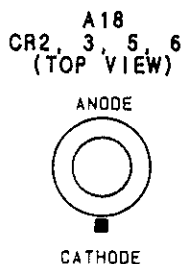
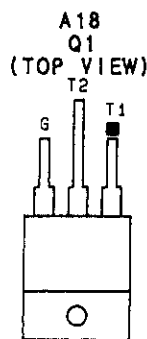
COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y	COMP	X, Y
C1	B, 2	R1	D, 3														
C2	A, 2	R2	B, 2														
C3	B, 1	R3	B, 2														
C4	A, 1	R4	B, 2														
C5	C, 1	R5	A, 1														
C6	D, 3	R6	C, 2														
C7	D, 2	R7	C, 3														
C8	C, 3	R8	C, 3														
C9	C, 3	U1	C, 3														
CR1	C, 2	VR1	D, 3														
CR2	C, 3	VR2	D, 3														
CR3	B, 3																
CR4	C, 2																
CR5	B, 2																
CR6	C, 2																
CR7	C, 2																
CR8	C, 2																
CR9	C, 2																
CR10	C, 2																
CR11	A, 3																
CR12	C, 3																
F1	A, 3																
F2	A, 2																
F3	A, 3																
F4	B, 3																
F5	B, 2																
J1	D, 3																
J2	B, 3																
J3	A, 3																
J4	D, 2																
K1	A, 3																
Q:	D, 3																

SEE REVERSE SIDE **A17, A18 MODULE** **BD 17**



Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2.  $\nabla$ 1 is a sense ground. It is a printed circuit trace, independent of ground plane, originating from a chassis screw on A18.
3. Do not apply power at test points.
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



Schematic General Information

## CHANGES

2533A and above

On the schematic:

- A17R84 - In +50V DC REGULATOR, add a resistor from the collector to the emitter of Q15. Designate it R84 and assign a value of 1K ohms. Note that the component locator for A17 is on page 8T-104, and that R84 is mounted to the back of the board directly under Q14.

FIG. 8T-103

SHT. 1 OF 5

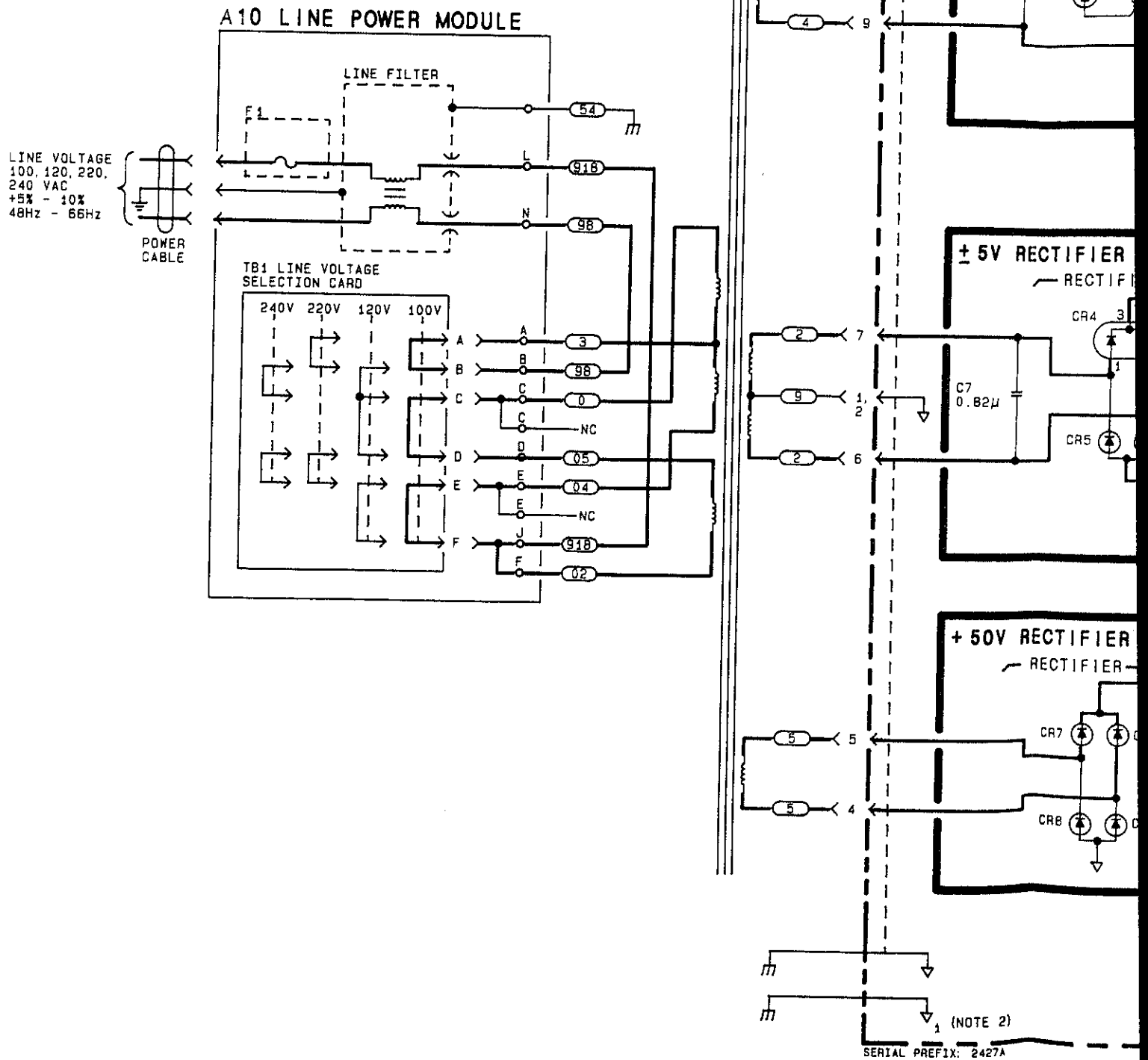
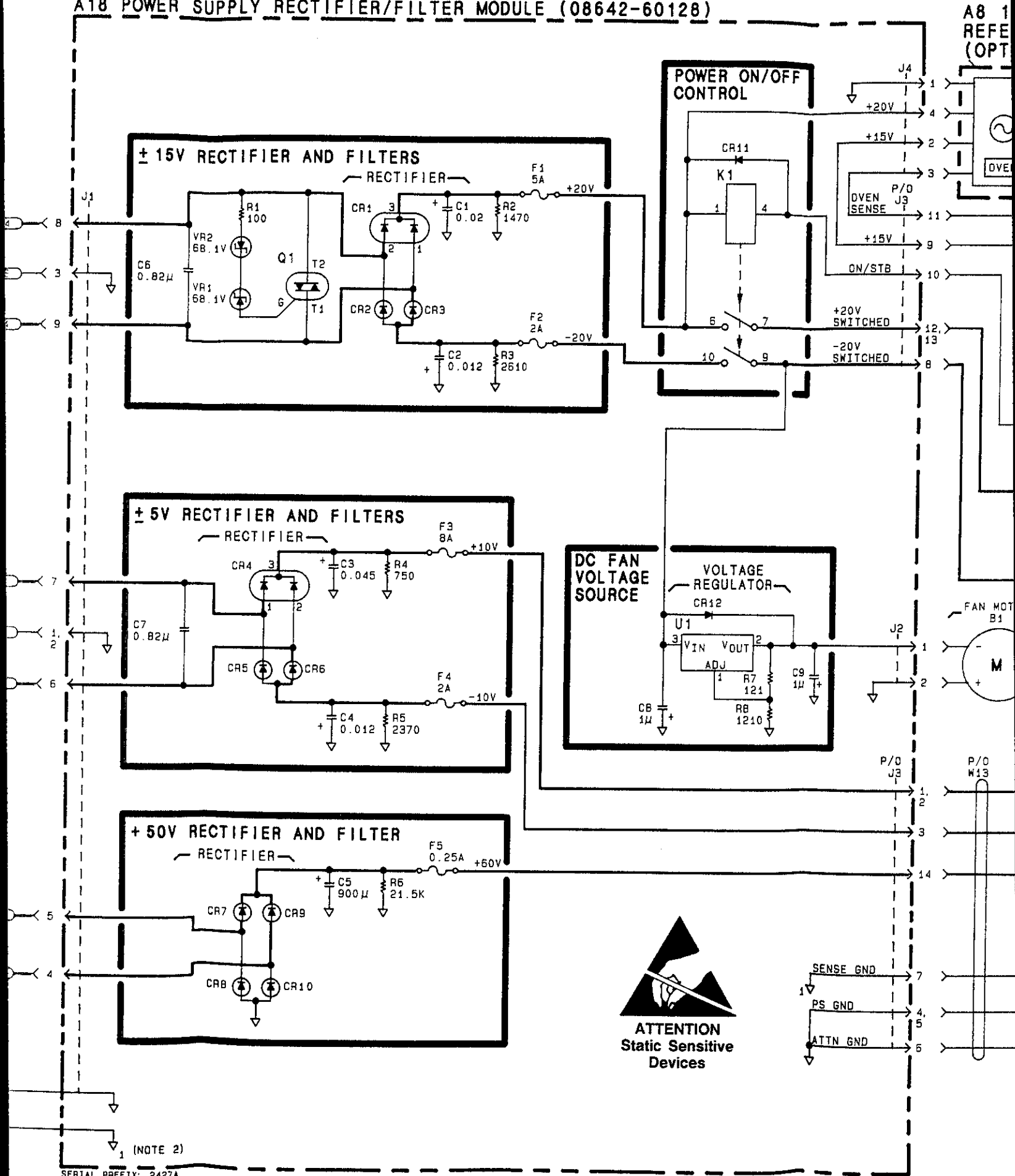


FIG. 8T-103, SH. 2 OF 5

A18 POWER SUPPLY RECTIFIER/FILTER MODULE (08642-60128)



**ATTENTION**  
Static Sensitive  
Devices

SENSE GND → 7  
PS GND → 4, 5  
ATTN GND → 6

A8 1  
REFE  
(OPT

DVE

FAN MOT  
B1  
M

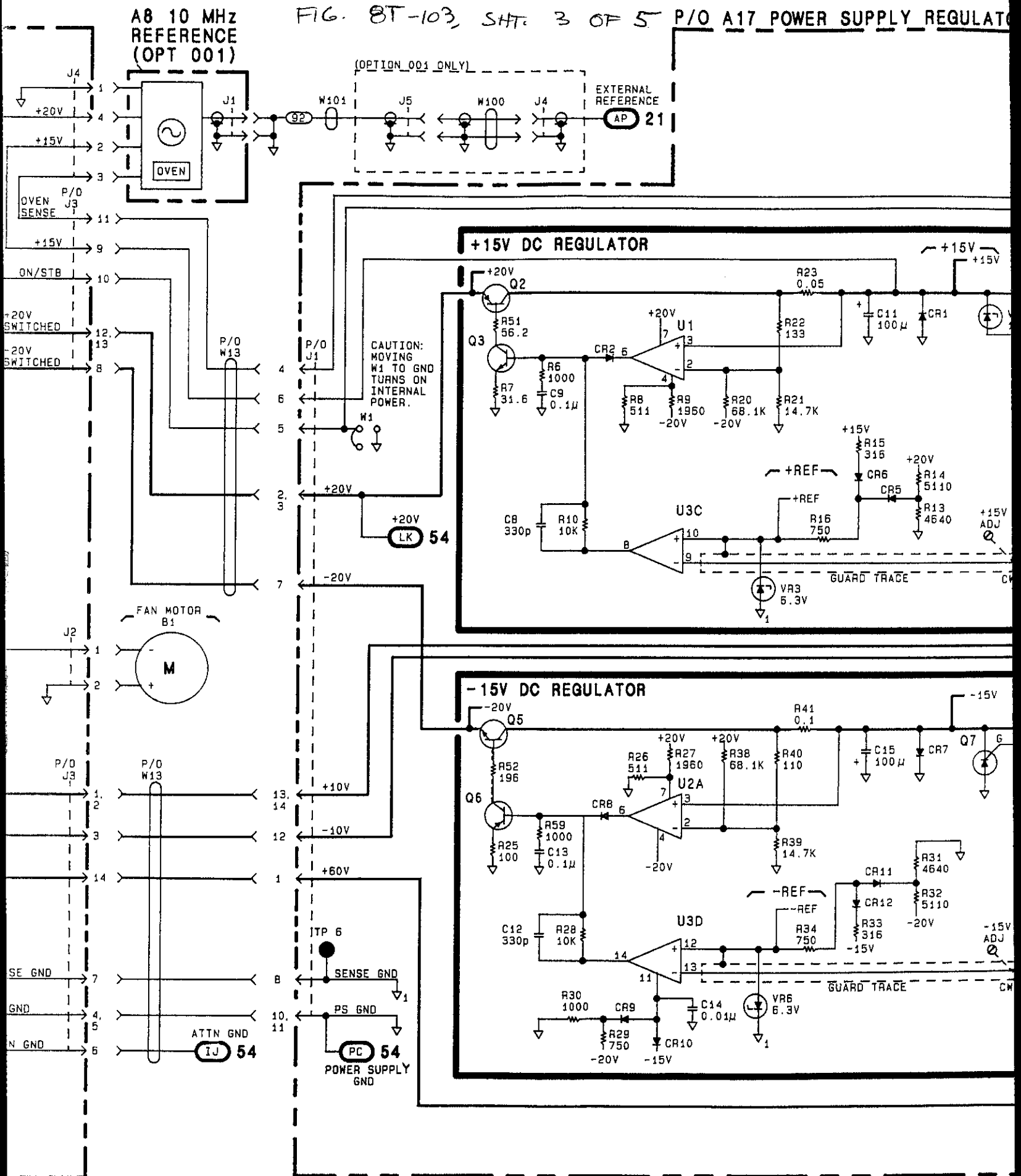
P/O  
J3

P/O  
W13

(NOTE 2)

SERIAL PREFIX: 2427A

FIG. 8T-103, SH. 3 OF 5 P/O A17 POWER SUPPLY REGULATORS



SERIAL PREFIX: 2427A

FIG. 8T-103 SHT. 4 OF 5  
 P/O A17 POWER SUPPLY REGULATOR/ATTENUATOR DRIVER MODULE (08642-60127)

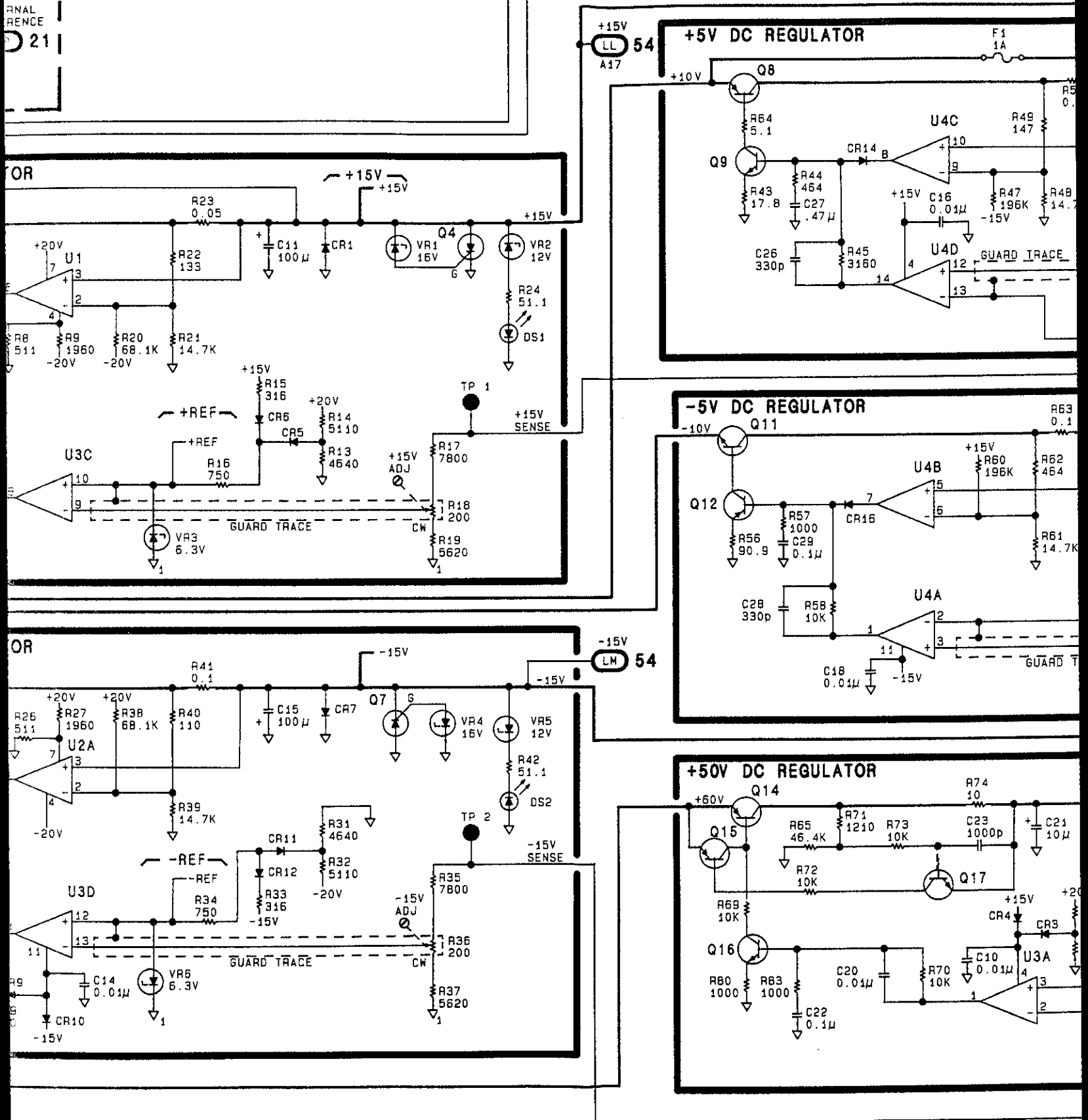
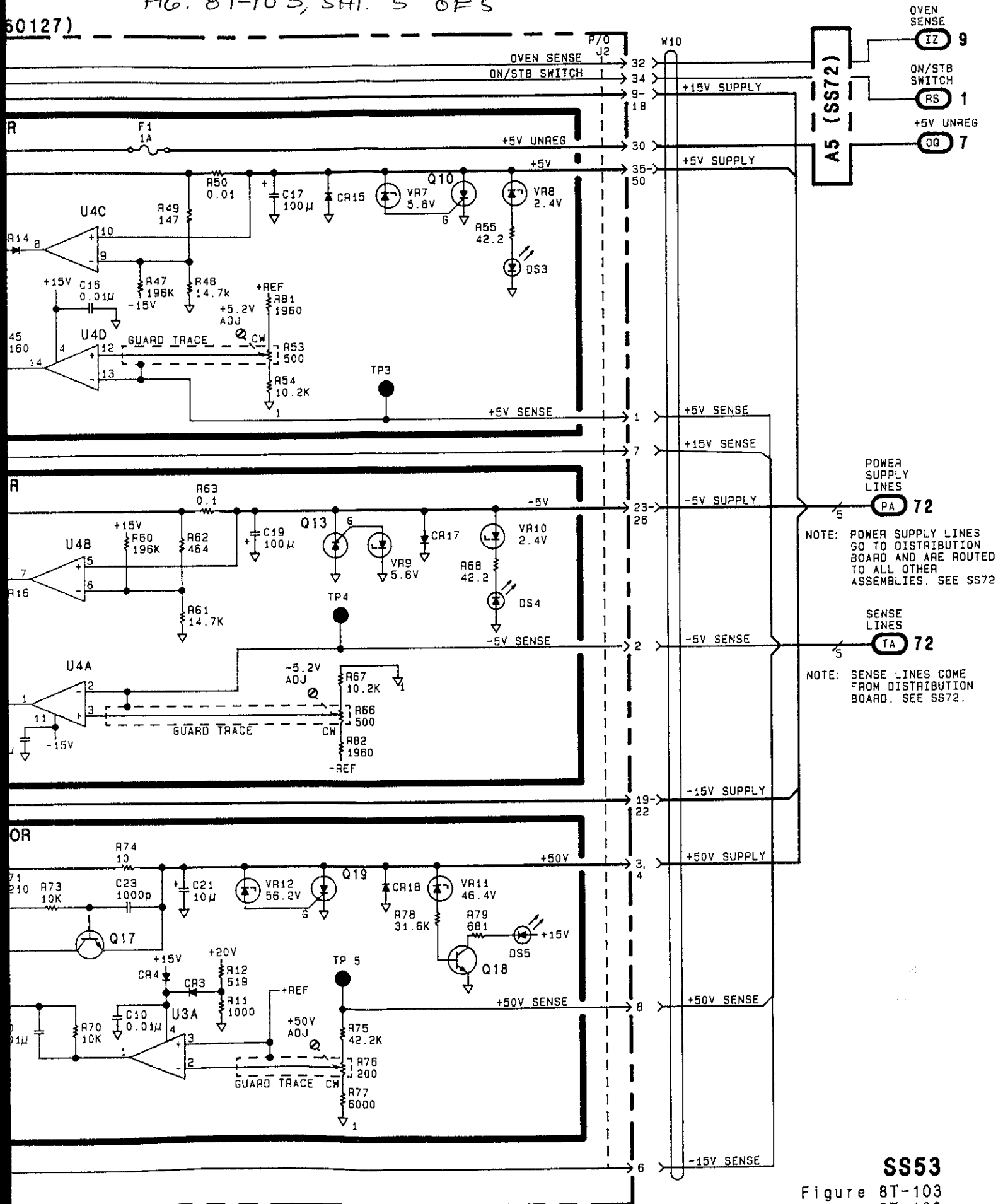


FIG. 8T-103, SH. 5 OF 5

60127)



SS53

Figure 8T-103  
8T-103

FIG. 8T-104  
 SH. 1 OF 5

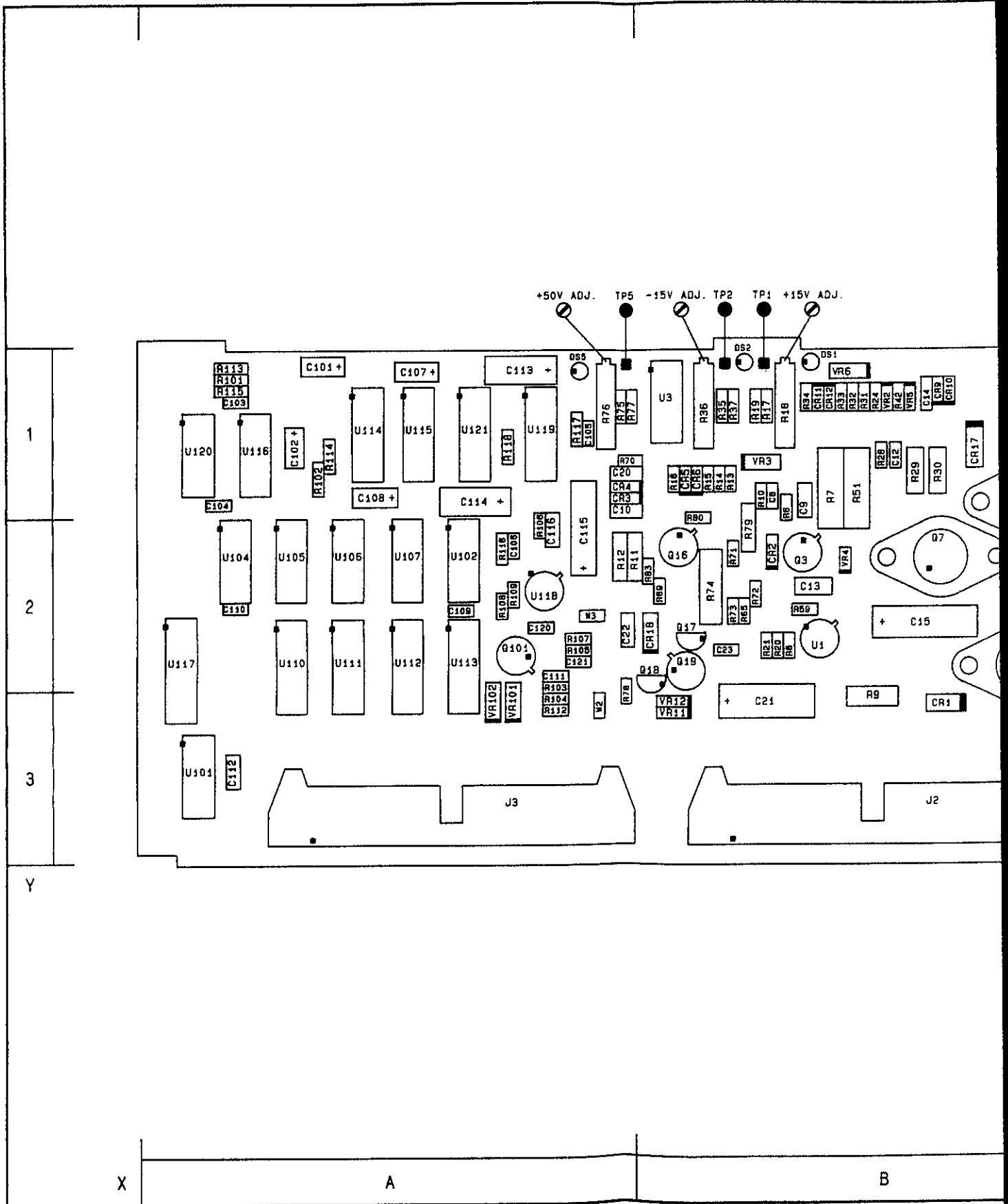
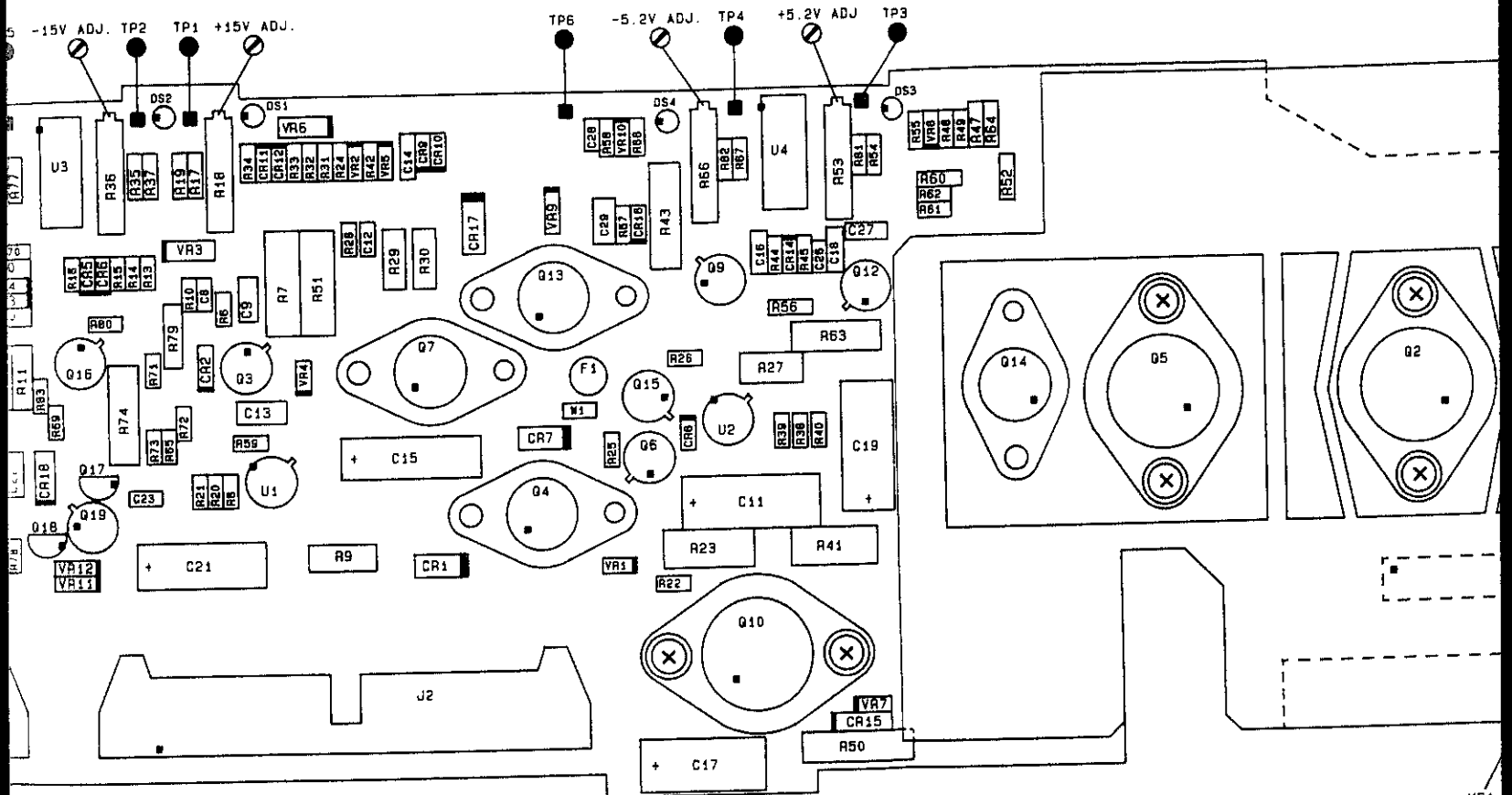


Figure 8T-104. SERVICE SHEET 54 INFORMATION



FIG. 8T-104  
SHT. 2 OF 5

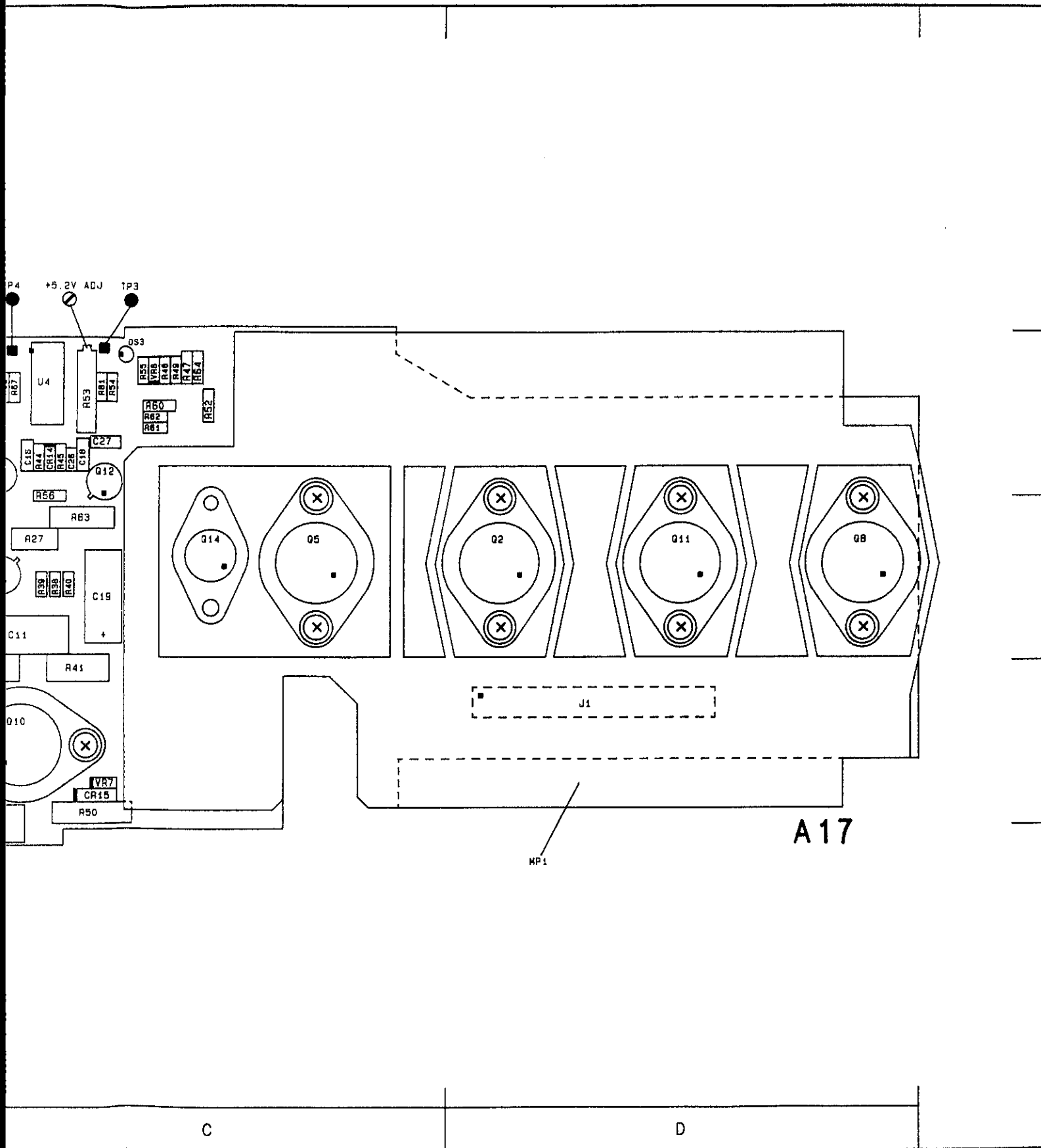


B

C

Component Locator

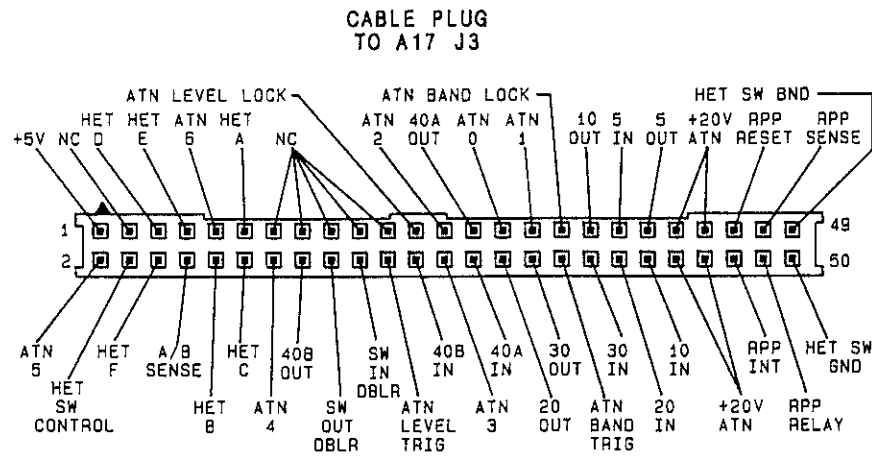
FIG. 8T-104  
SHT. 3 OF 5





Notes:

1. Each module in the HP 8642 has a nine digit module identification code. The first four digits comprise the module configuration code. When servicing a module, note any changes that apply specifically to its module configuration code.
2. Do not apply power at test points.
3. W2, W3 are post type jumpers. To open line pull top connector away.
4. All circuit boards are manufactured using a hot air leveled process. These boards require extra care when replacing components. Refer to General Service Information, paragraph 8-3.



## CHANGES

## 2509A and above

On the schematic:

- R113, R114, R116 - In ATTENUATOR DRIVER CONTROL, change R113 to 56.2K, R114 to 82.5K, and R116 to 56.2K.

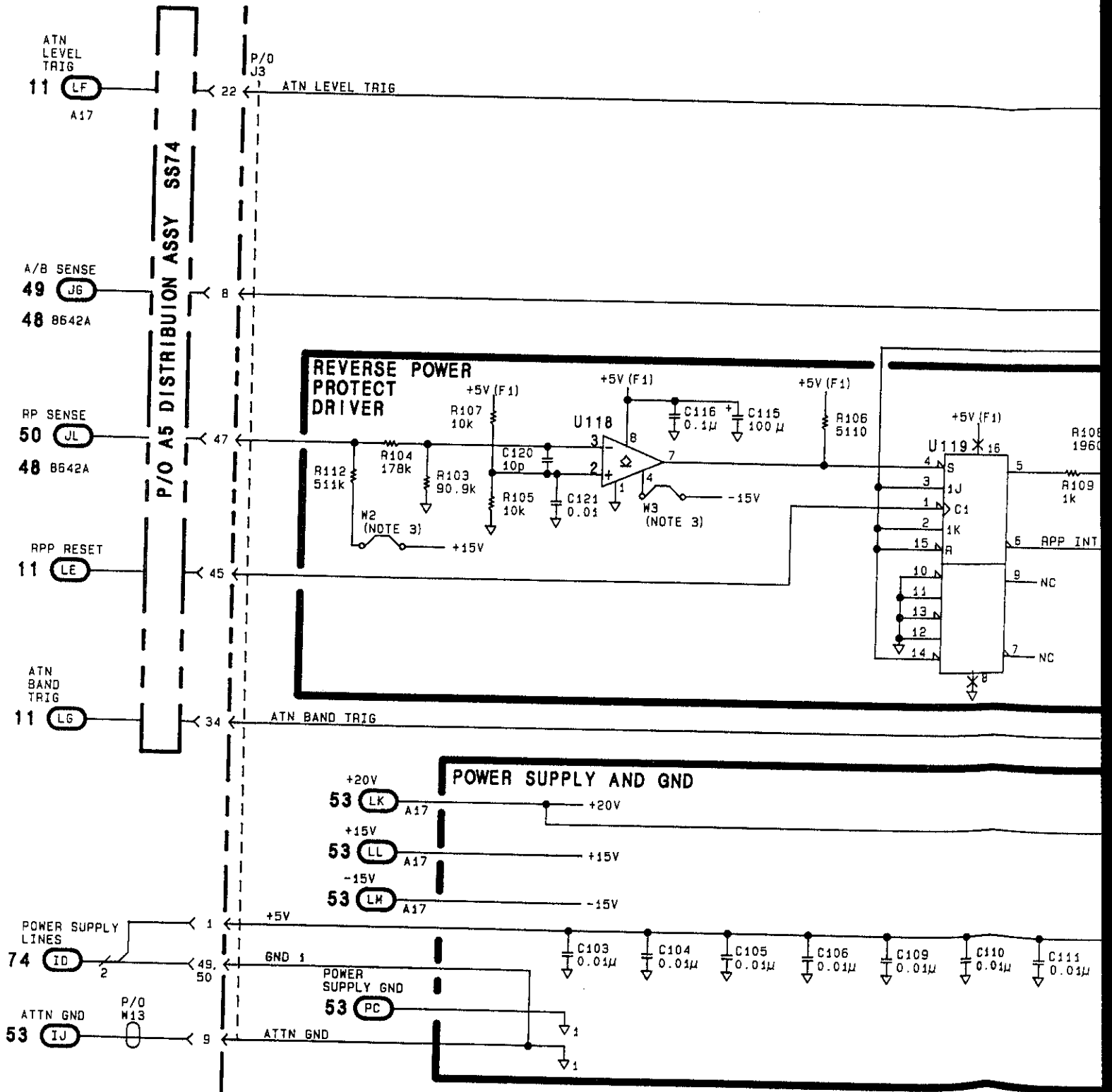
## 2533A and above

On the Component Locator:

- A17R84 - Add R84 to the center of Q14 and indicate that it is attached to the back of the board.

P/O A17 POWER SUPPLY REGULATOR/ATTENUATOR DRIVER ASSEMBLY (086)

FIG 8T-105  
 SH. 1 OF 5



SERIAL PREFIX: 2427A

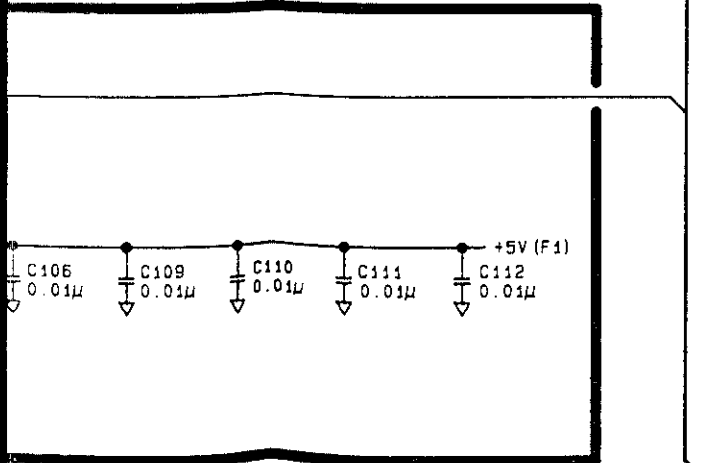
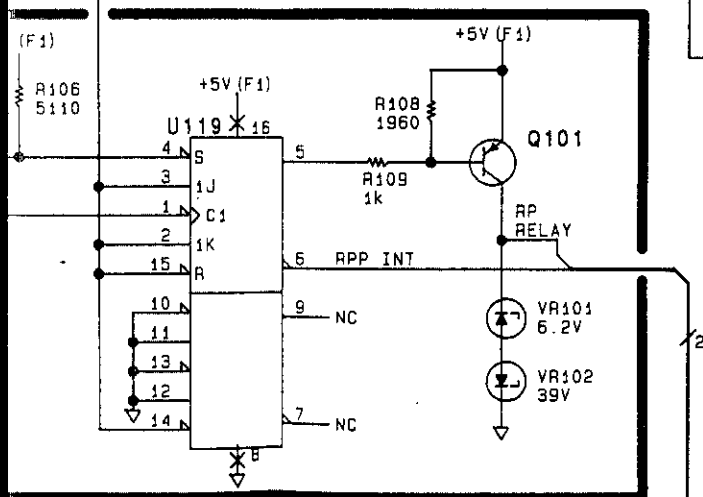
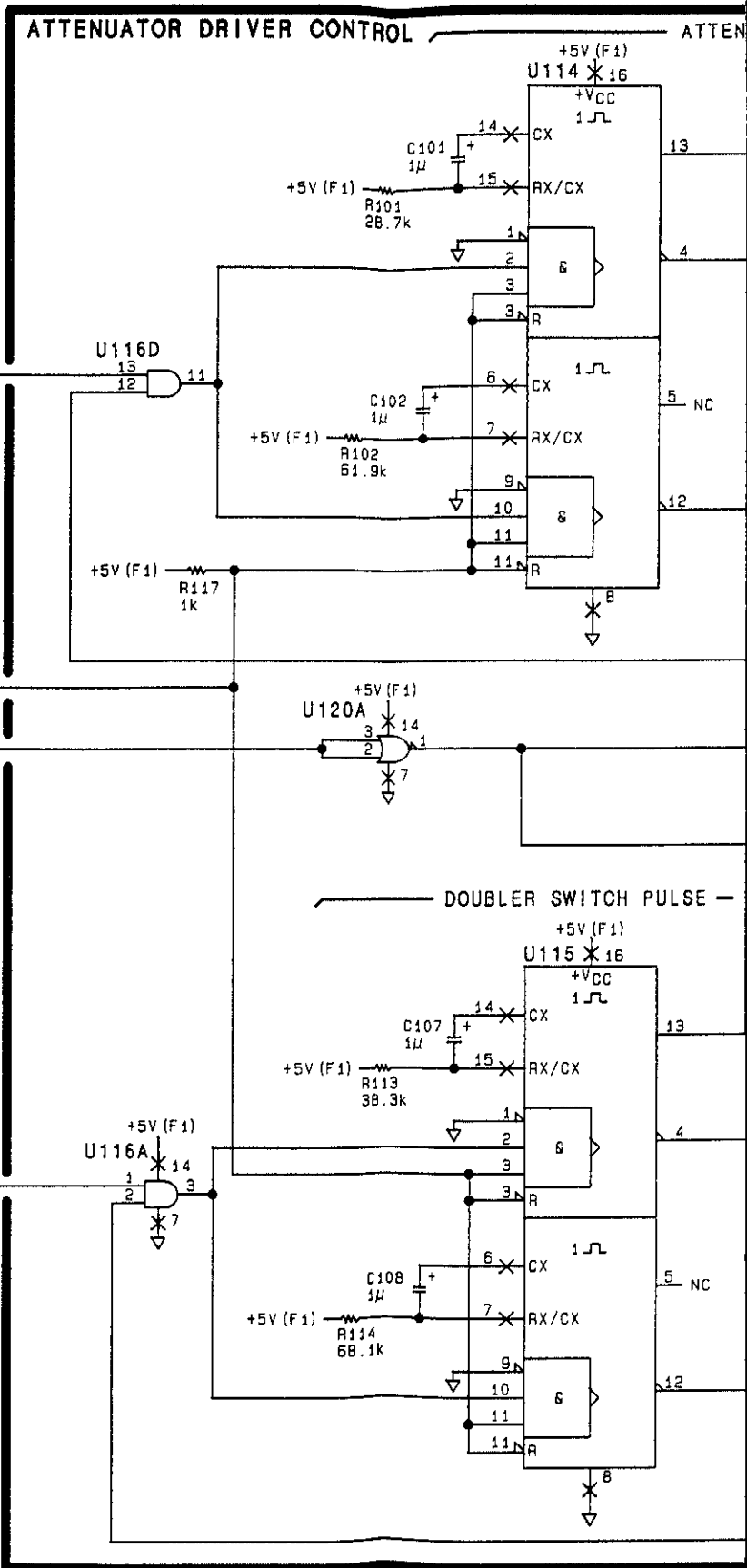


FIG. 8T-105, SHT, 3 OF 5

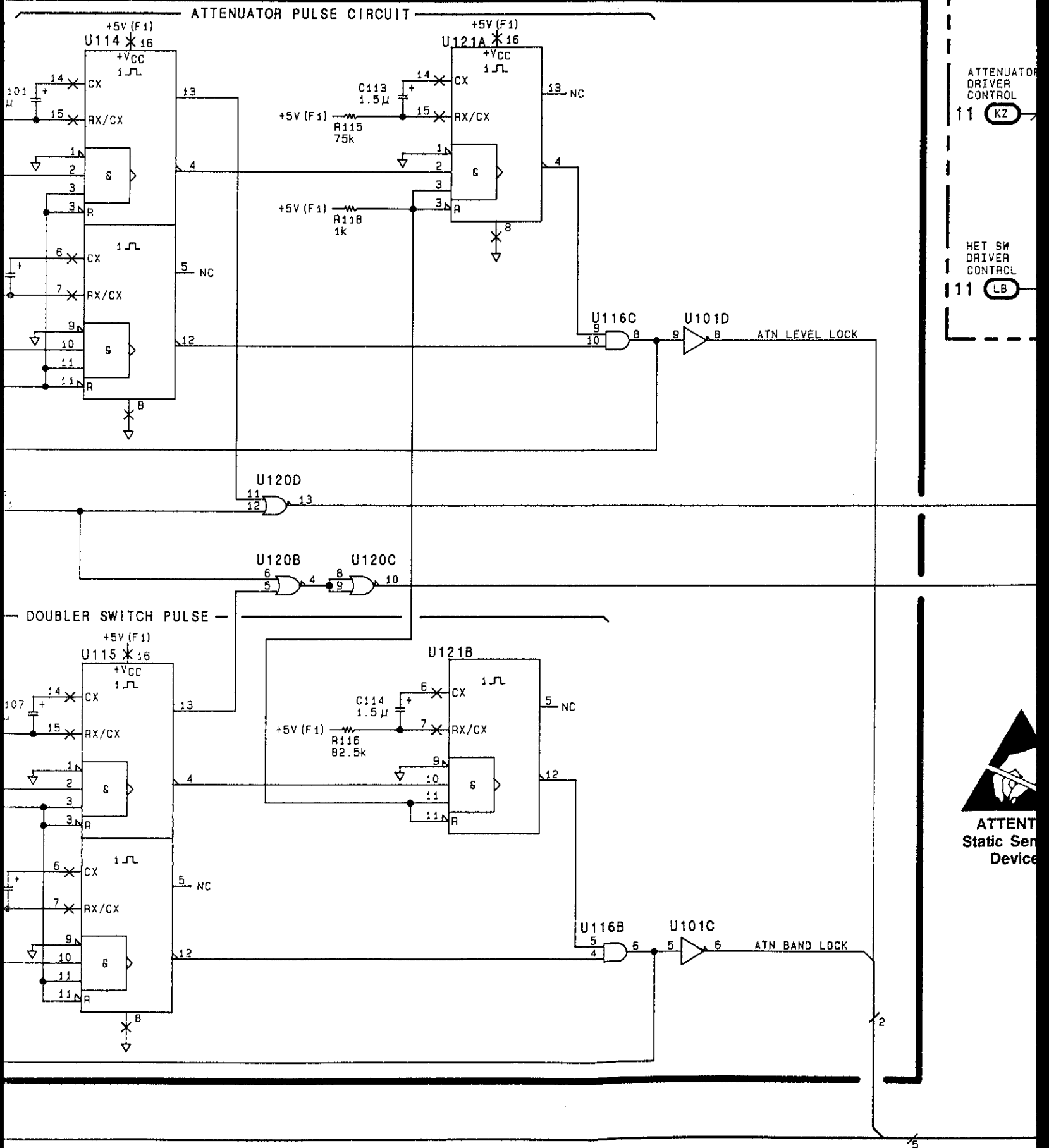
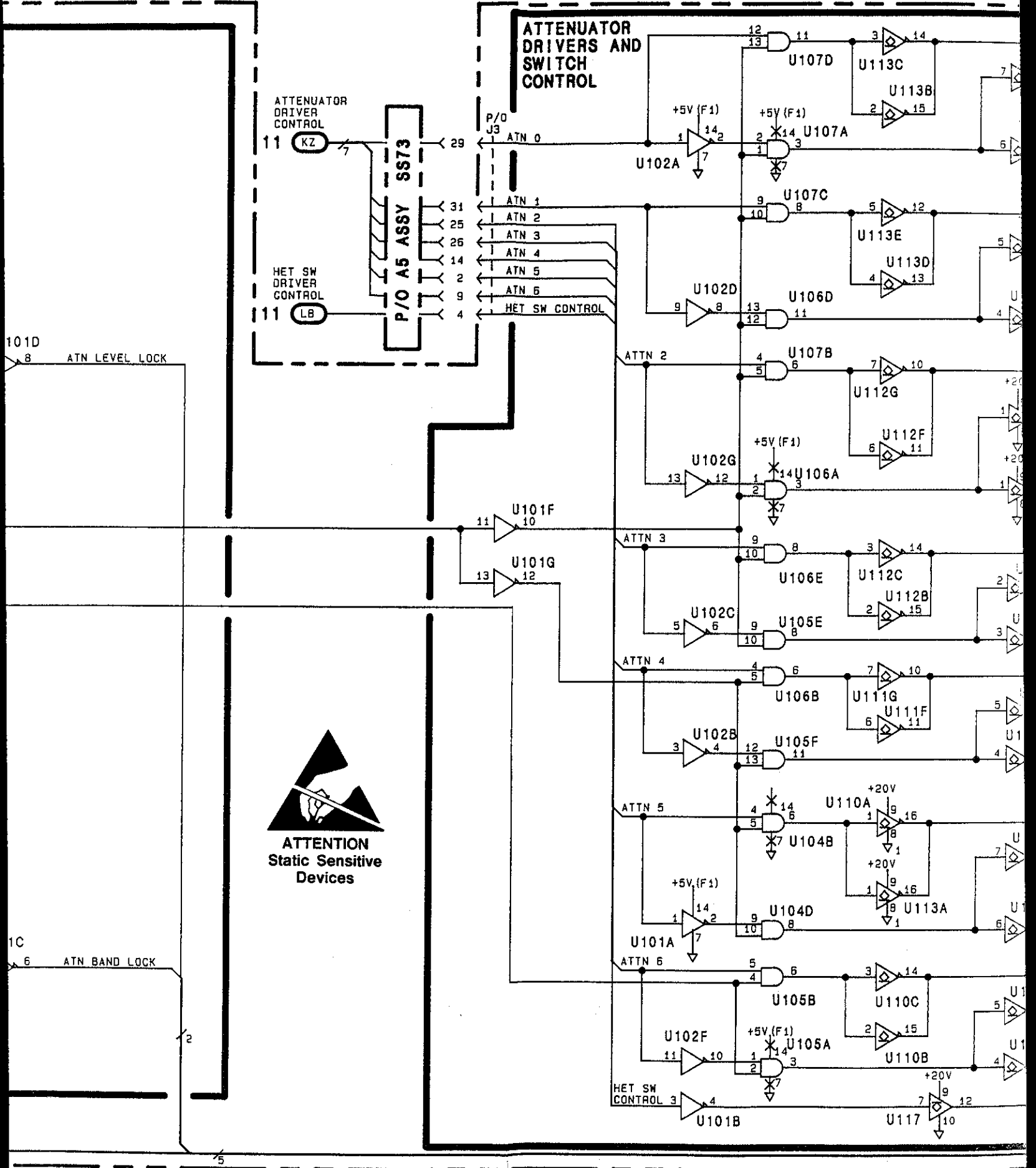


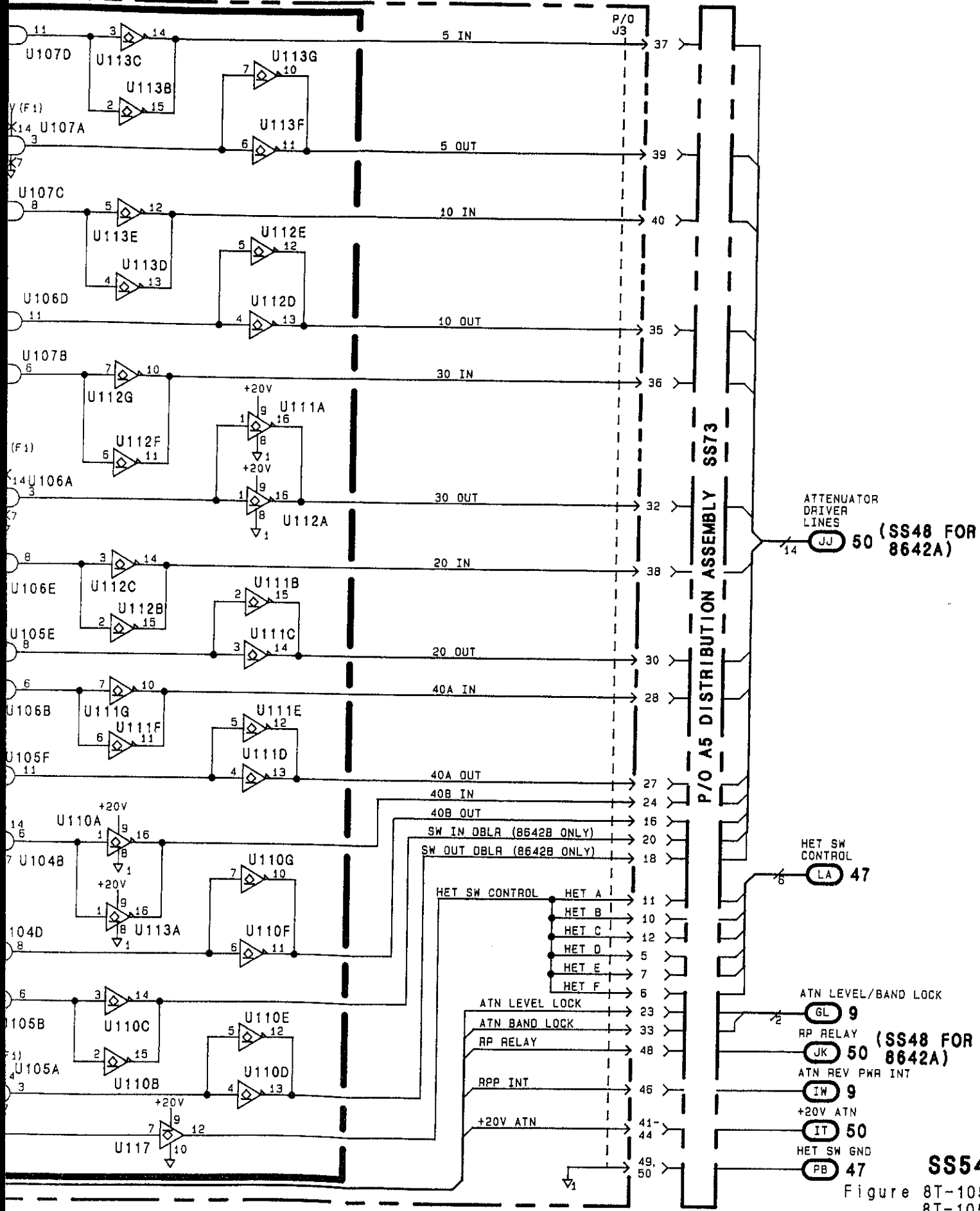


FIG. 8T-105, SH. 4 OF 5



**ATTENTION**  
 Static Sensitive  
 Devices

FIG. 8T-105, SAT. 5 OF 5



SS54  
Figure 8T-105  
8T-105

A5 Distribution Assembly

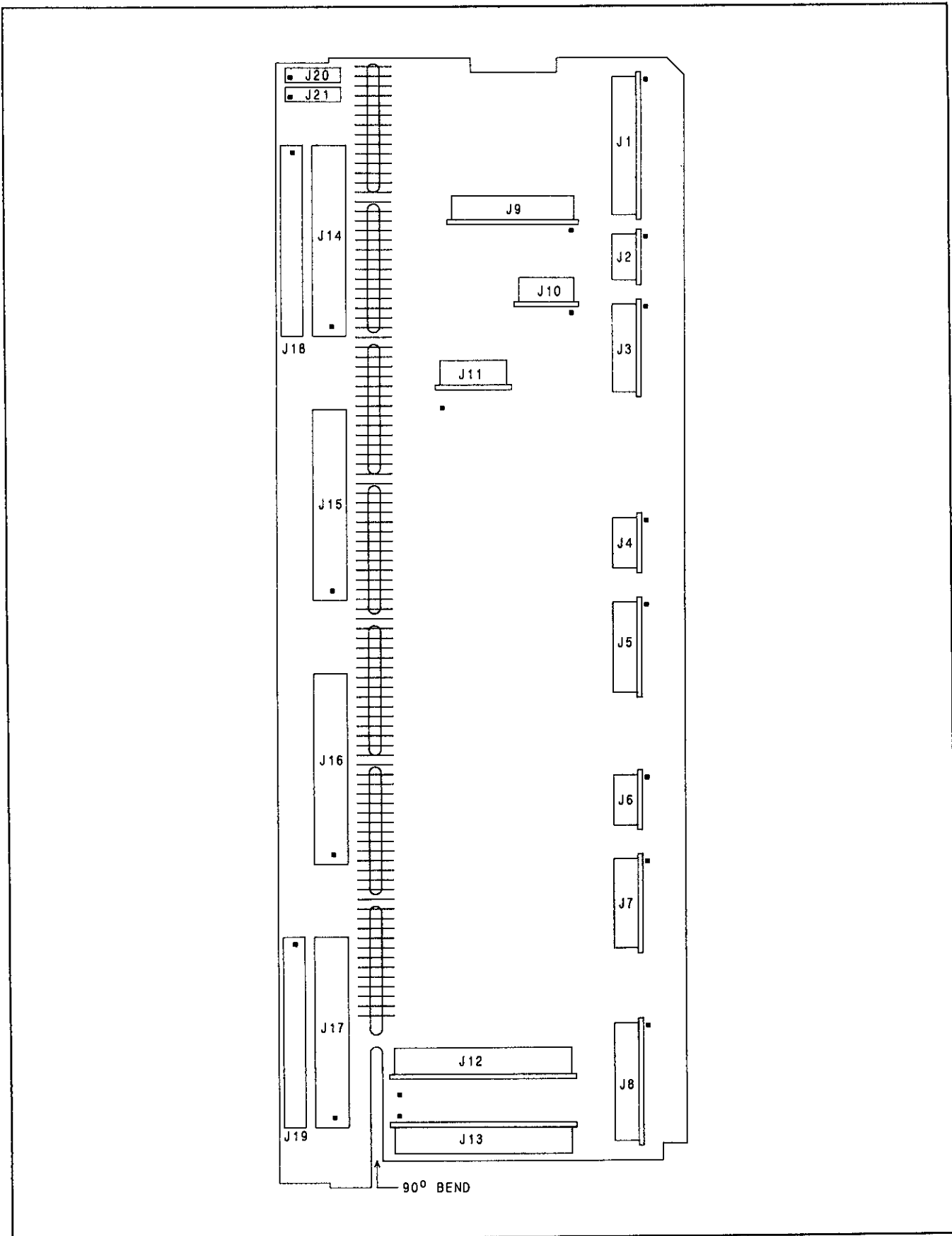
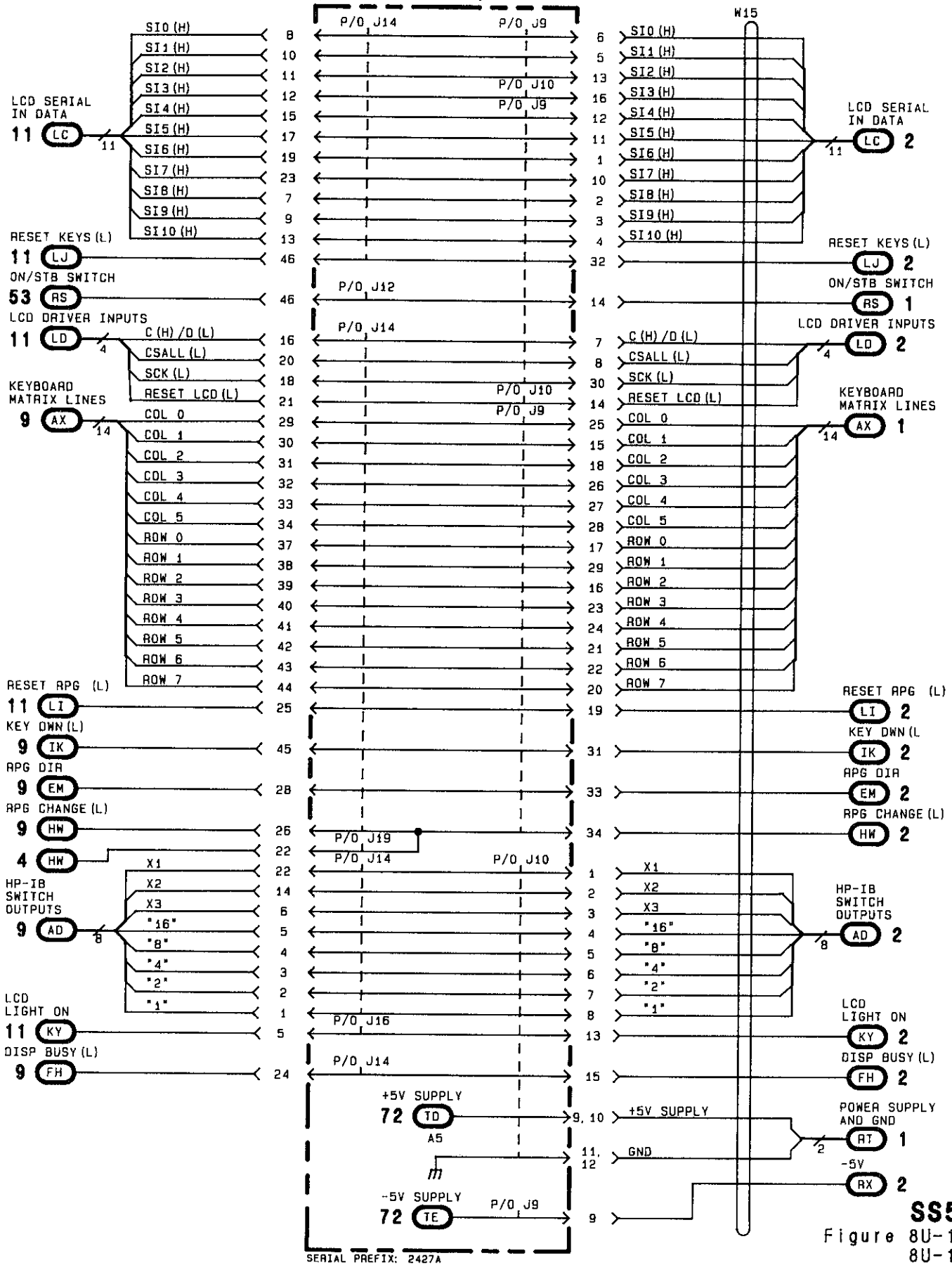


Figure 8U-100 Component Locator

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**

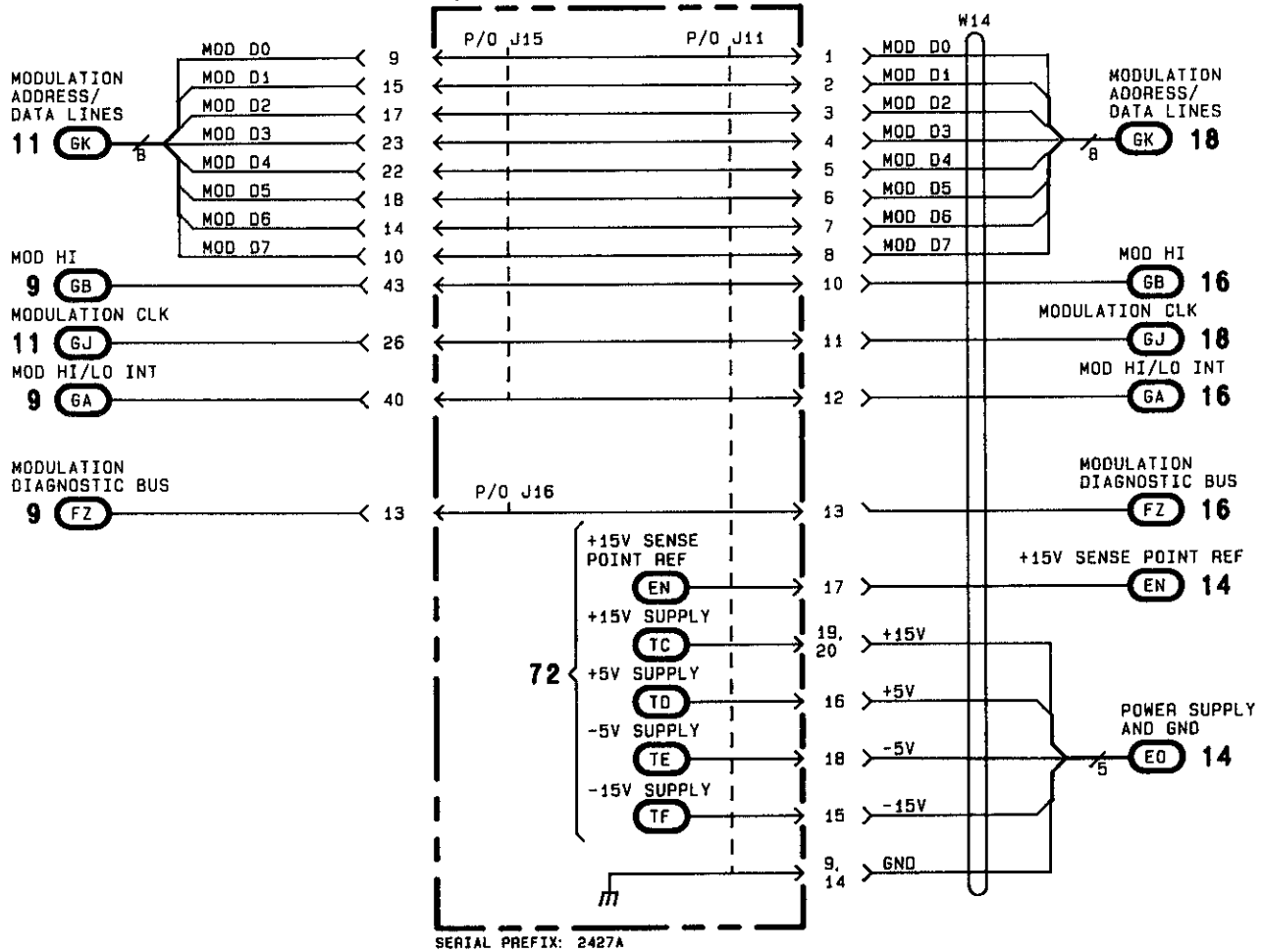


TO A1A1 J1

**SS55**  
Figure 8U-101  
8U-101

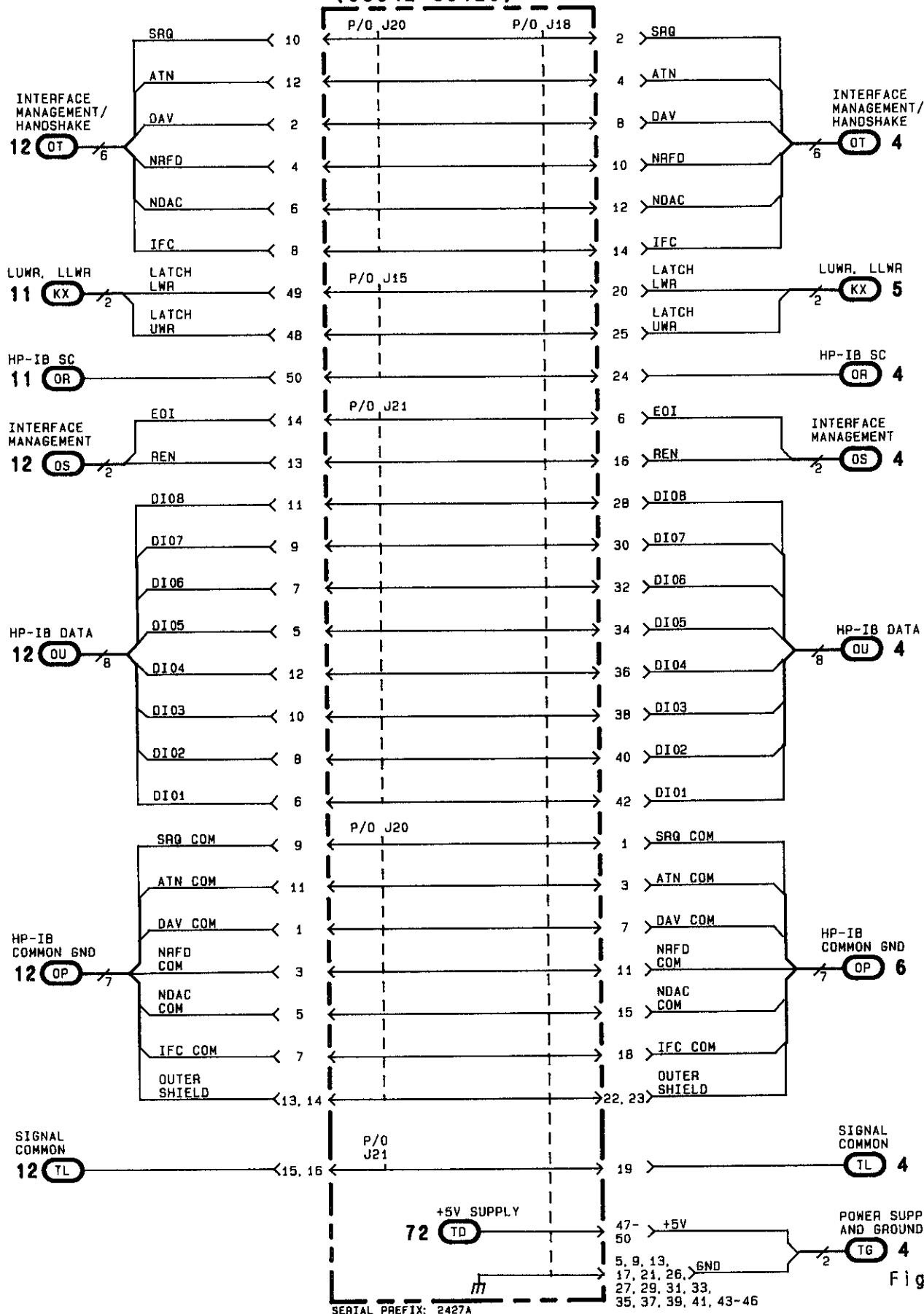
SERIAL PREFIX: 2427A

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



**SS56**  
Figure 8U-103  
8U-103

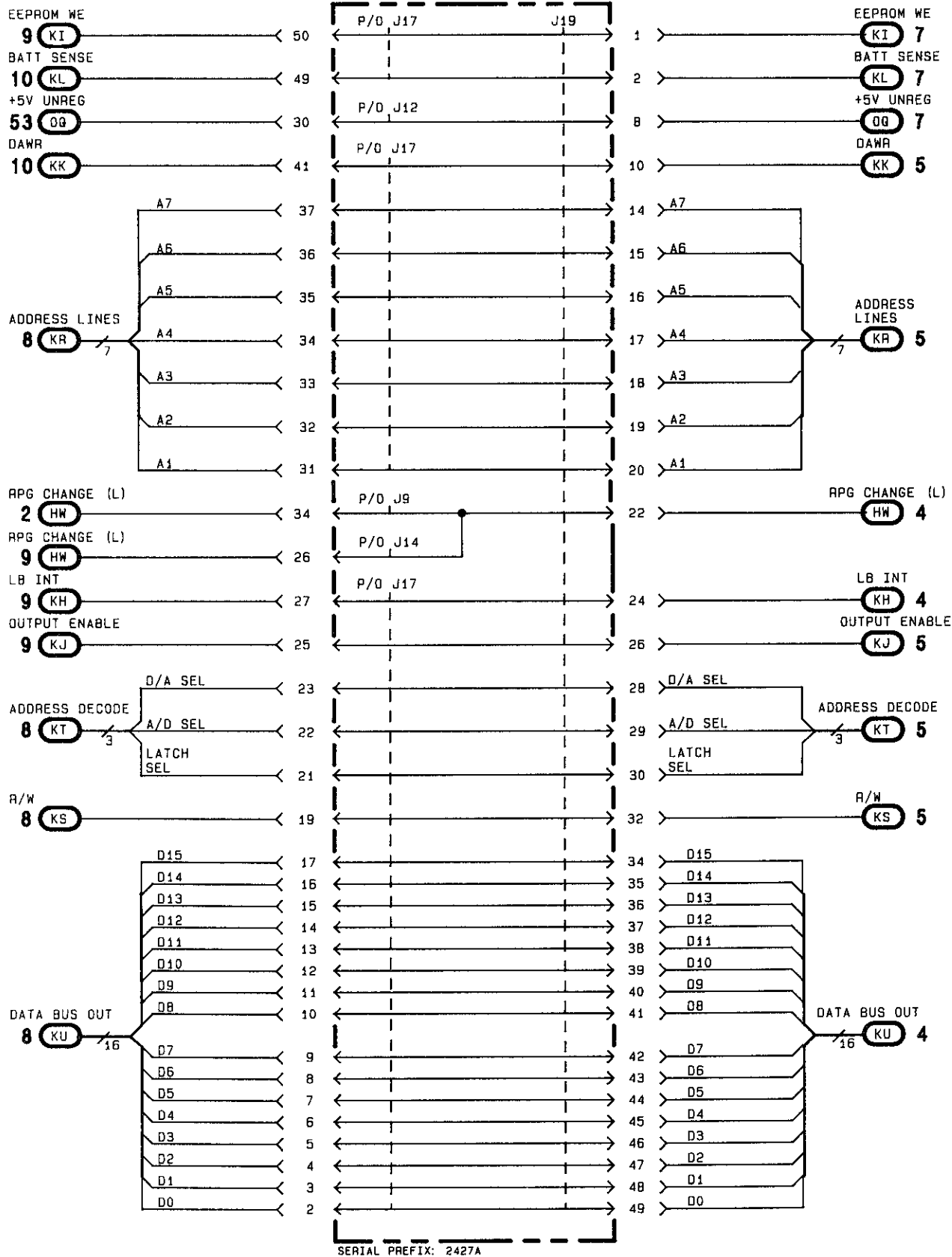
**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



P/O A3 P5

**SS57**  
Figure 8U-105  
8U-105

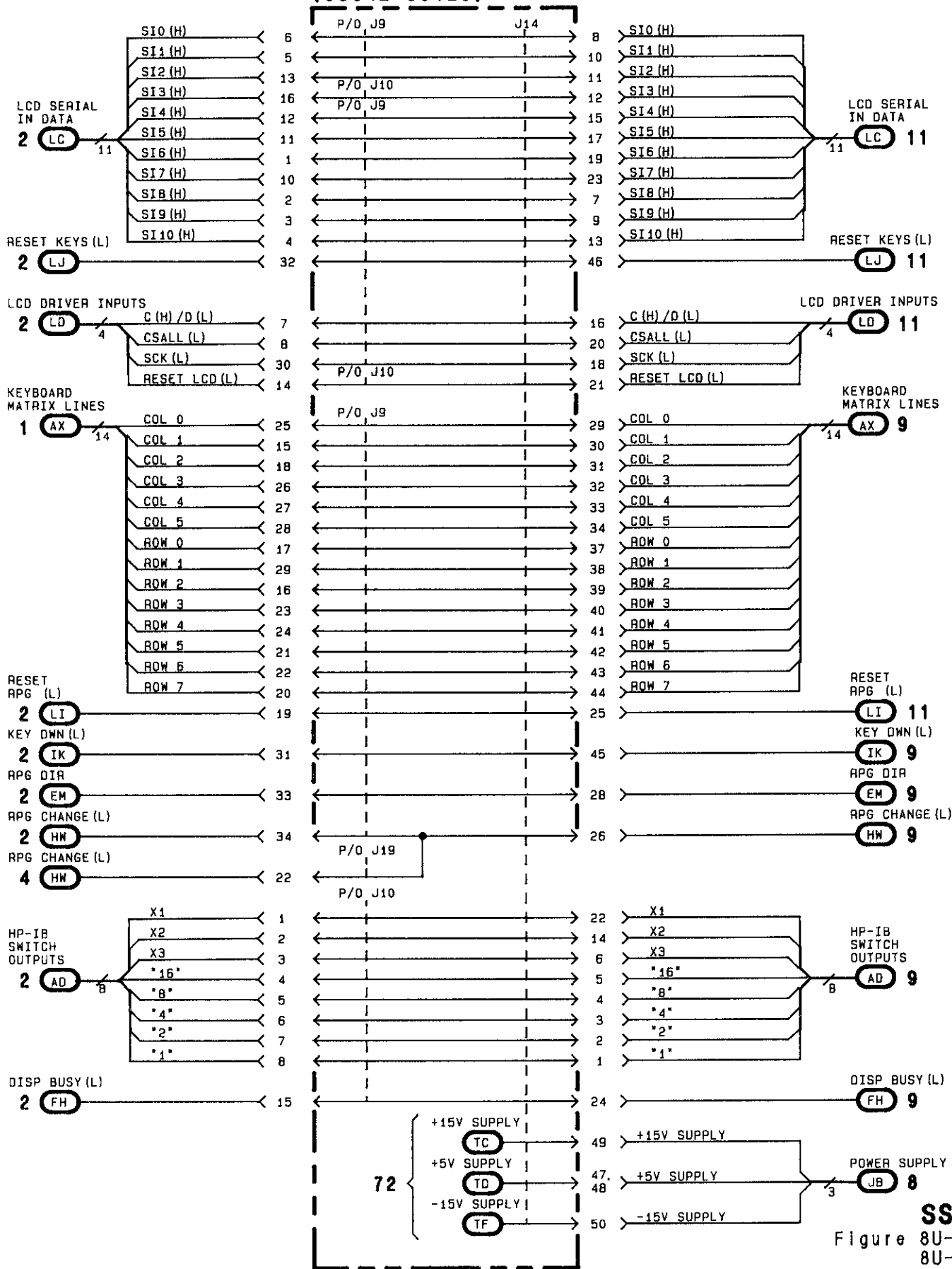
P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)



A3 P8



**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**

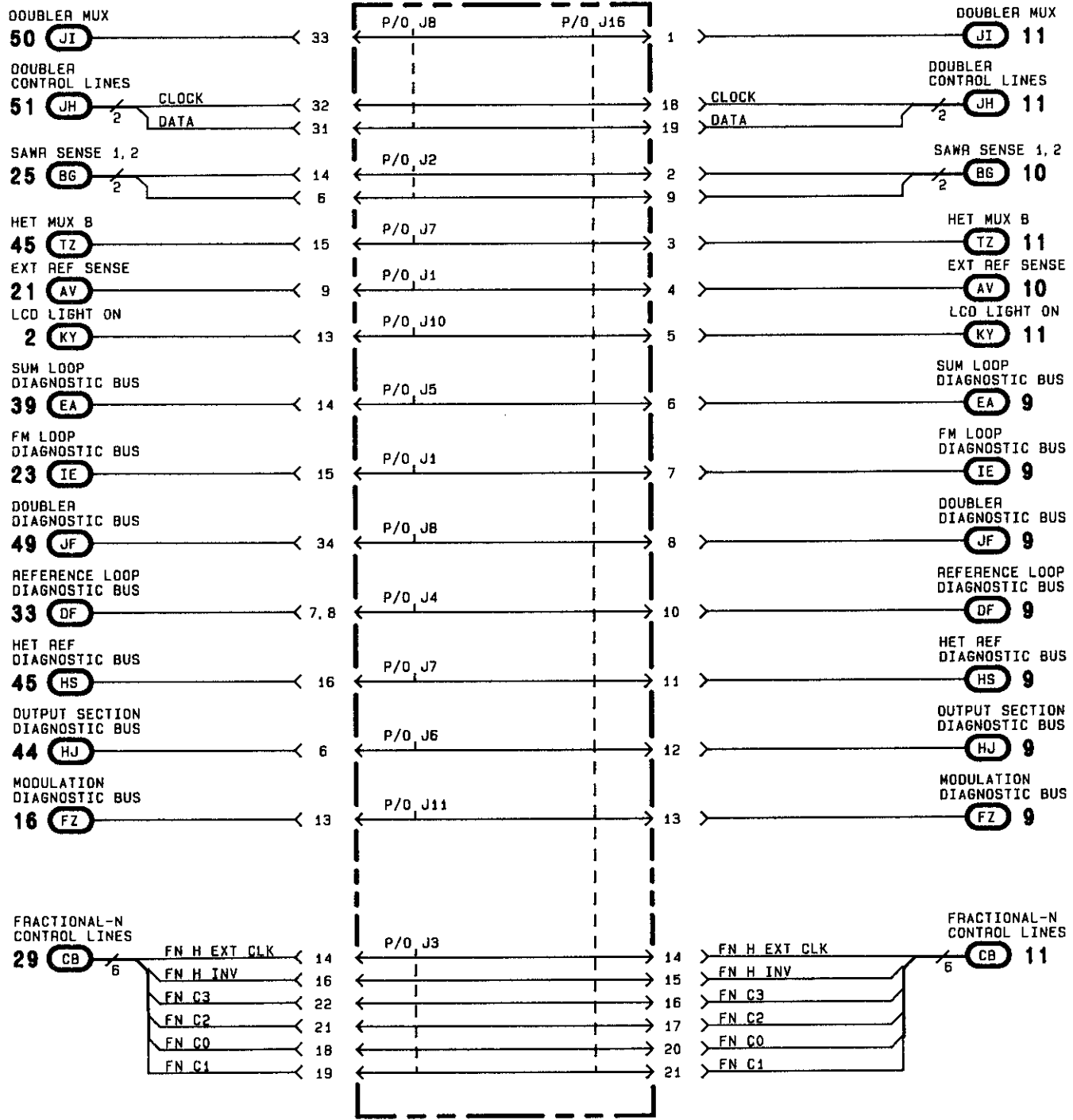


SERIAL PREFIX: 2427A

**SS59**  
Figure 8U-109  
8U-109



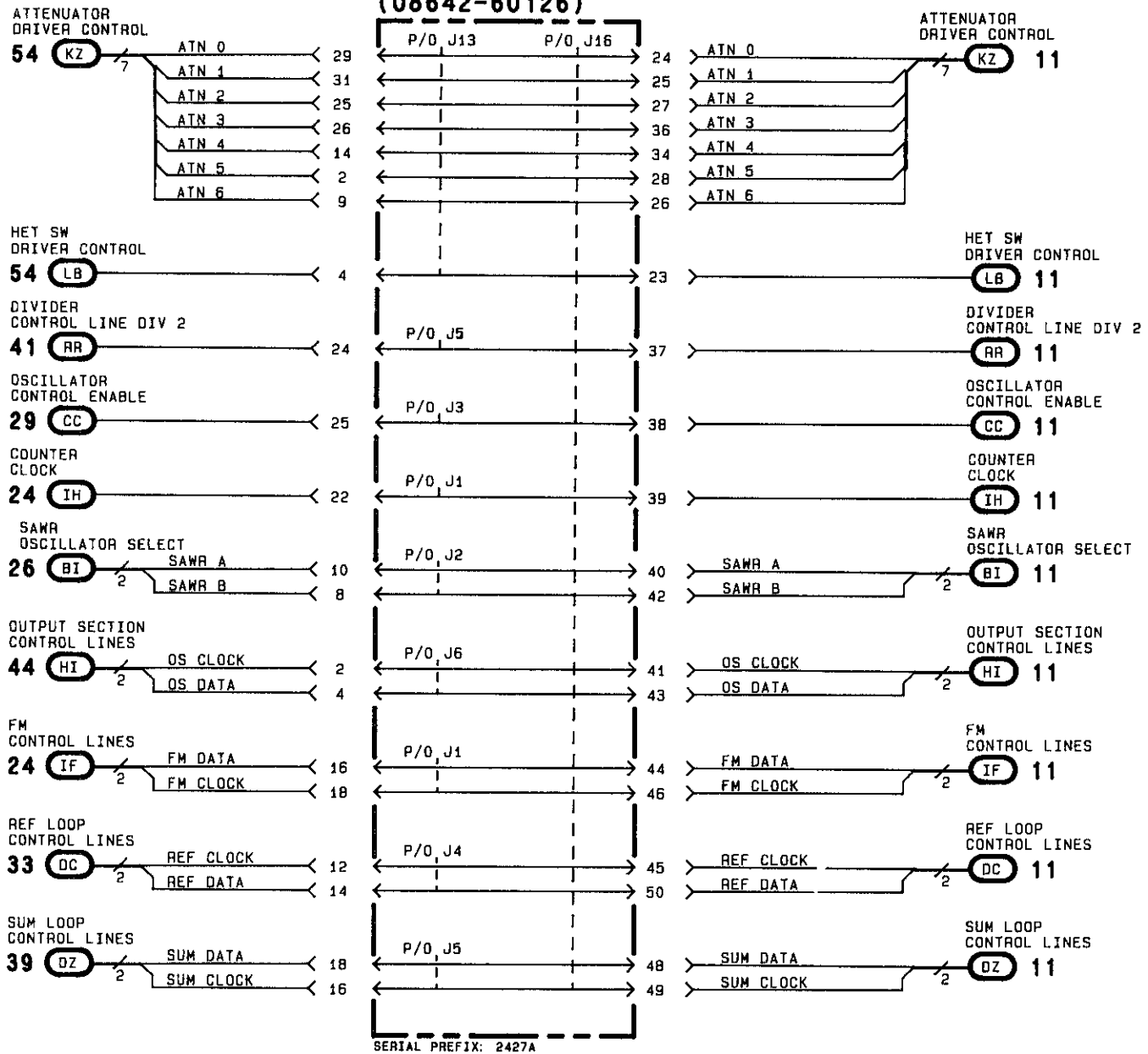
**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



A4 P2 (1 OF 2)

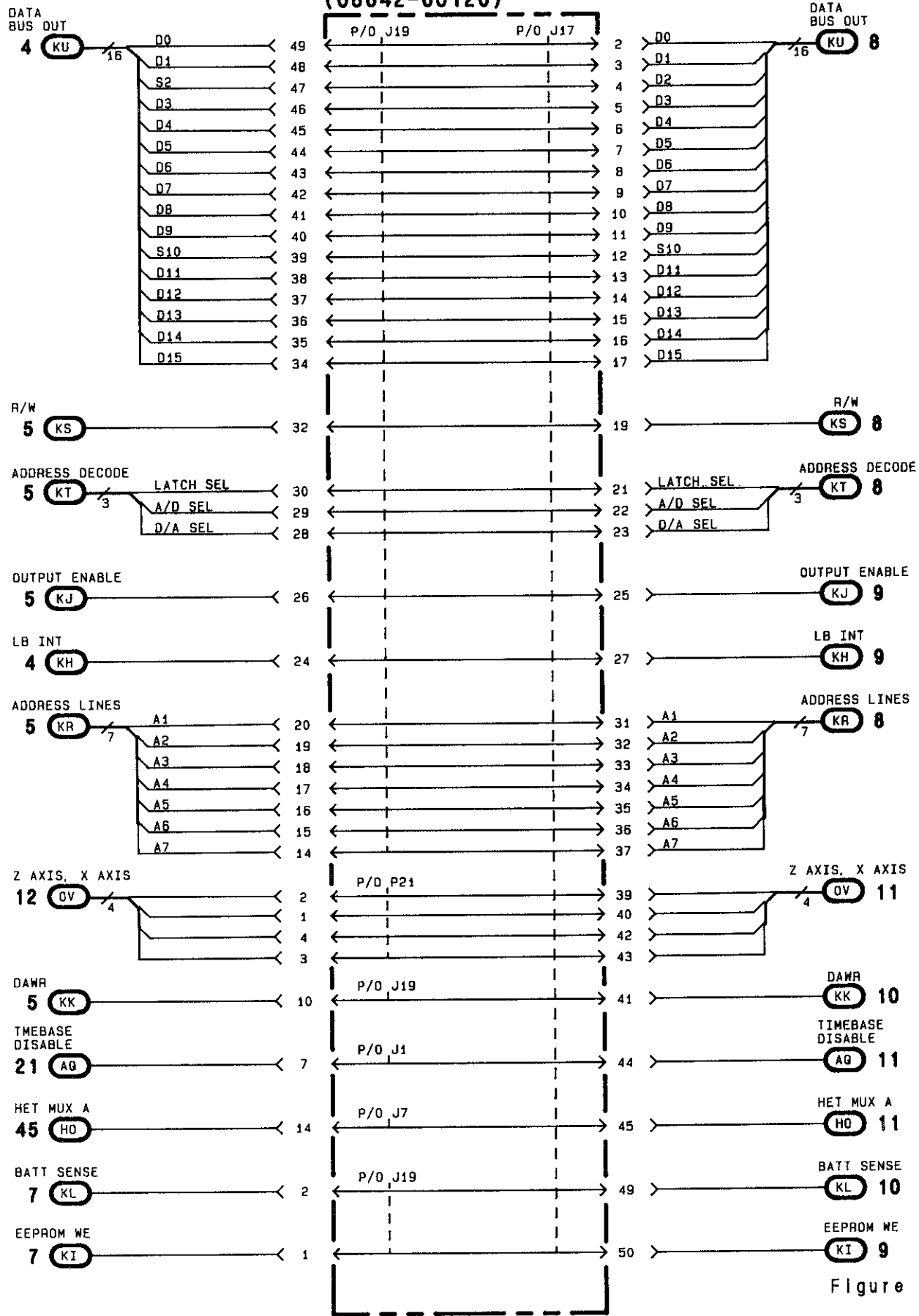
**SS61**  
Figure 8U-113  
8U-113

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



A4 P2 (2 OF 2)

P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)

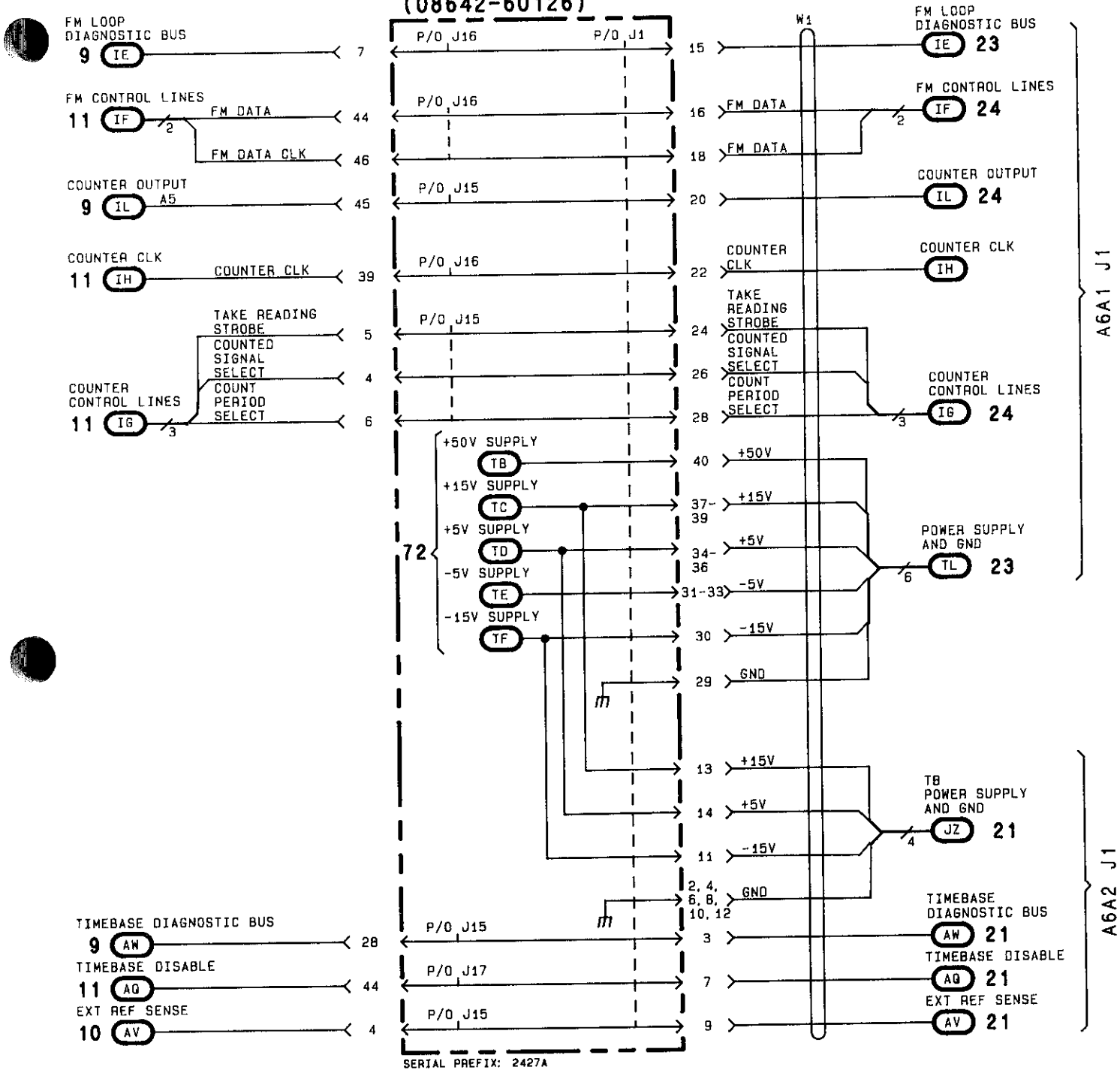


A4 (P1)

SS63  
8U-117  
8U-117

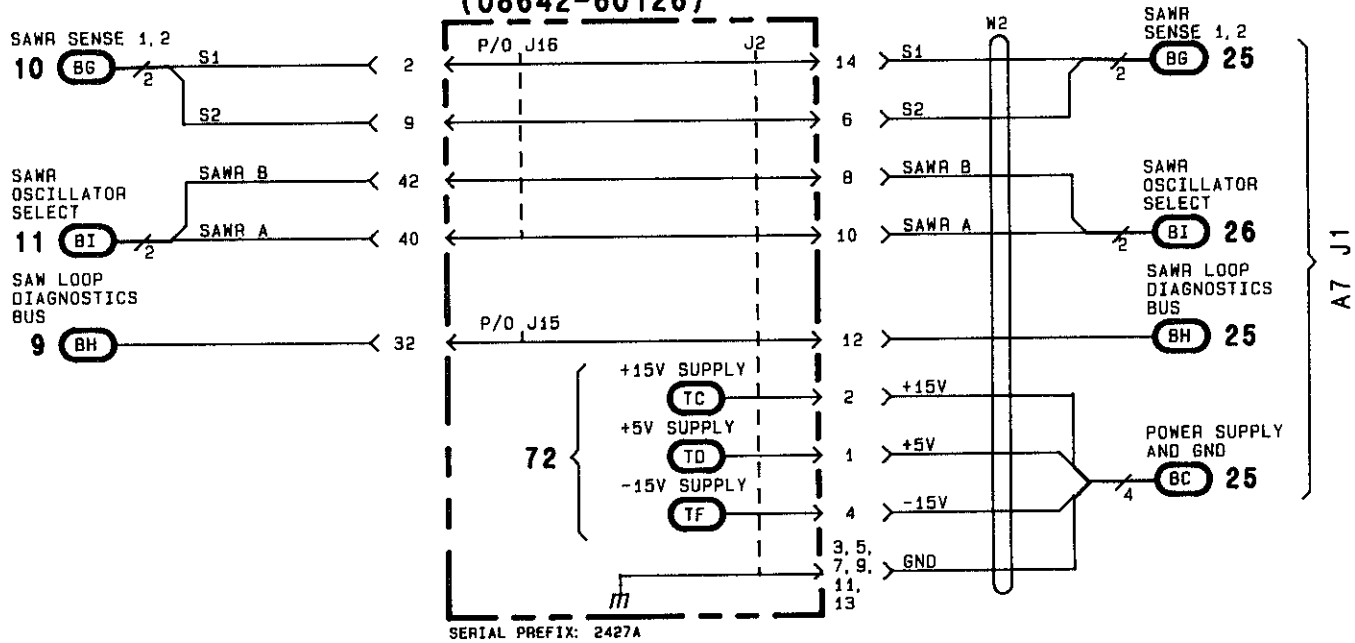
Figure

# P/O A5 POWER SUPPLY/DIGITAL DISTRIBUTION ASSEMBLY (08642-60126)



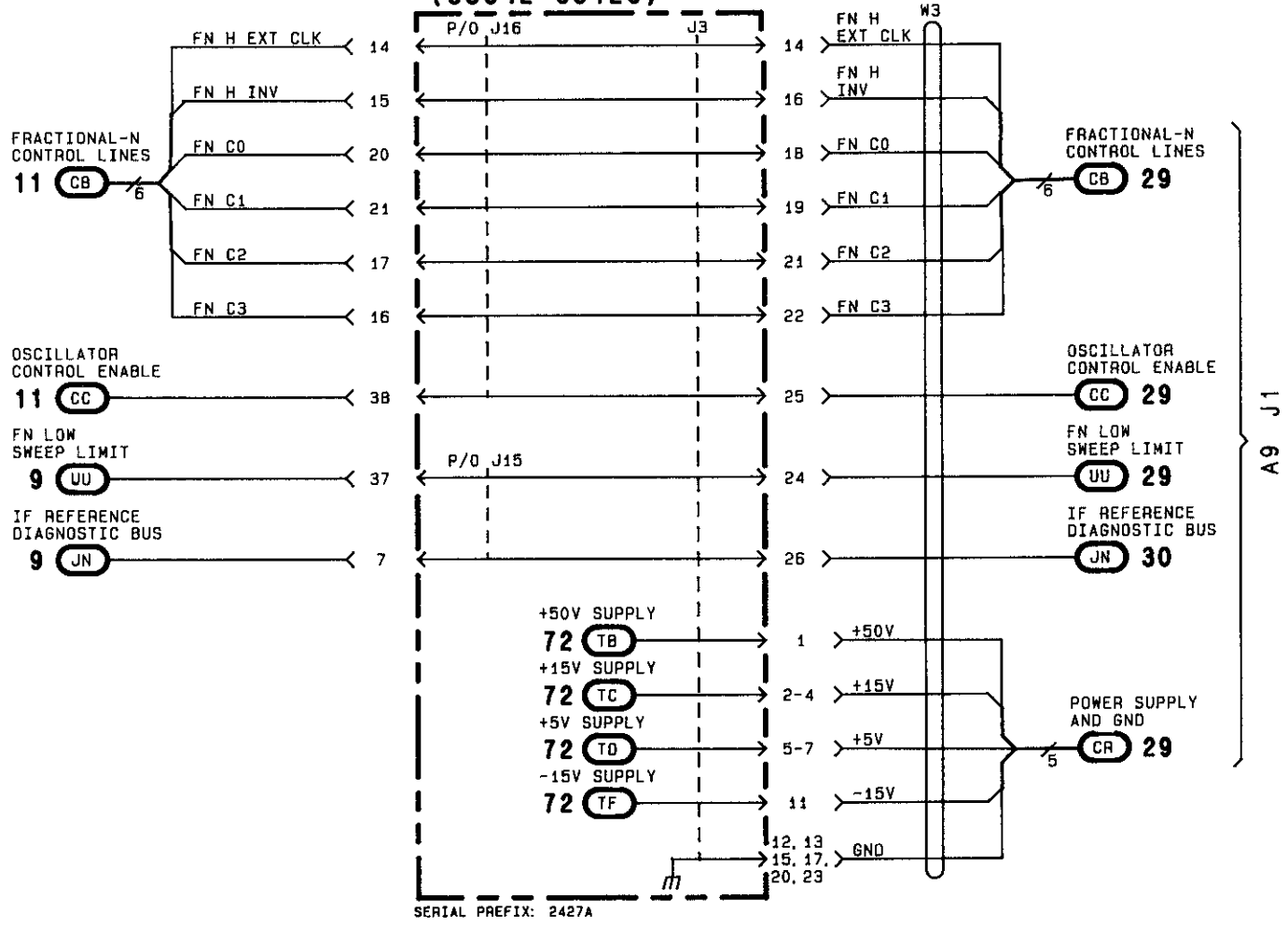
**SS64**  
Figure 8U-119  
8U-119

P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)



SS65  
Figure 8U-121  
8U-121

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



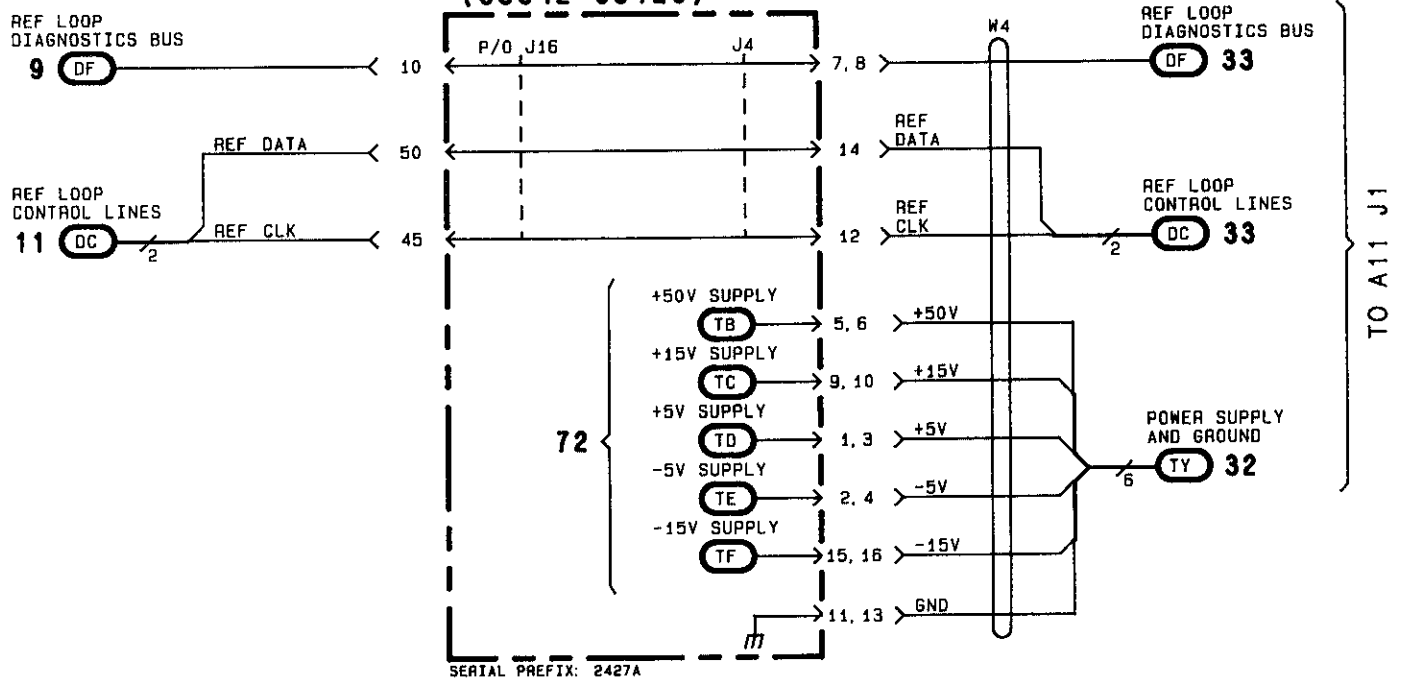
SERIAL PREFIX: 2427A

A9 J1

**SS66**  
Figure 8U-123  
8U-123

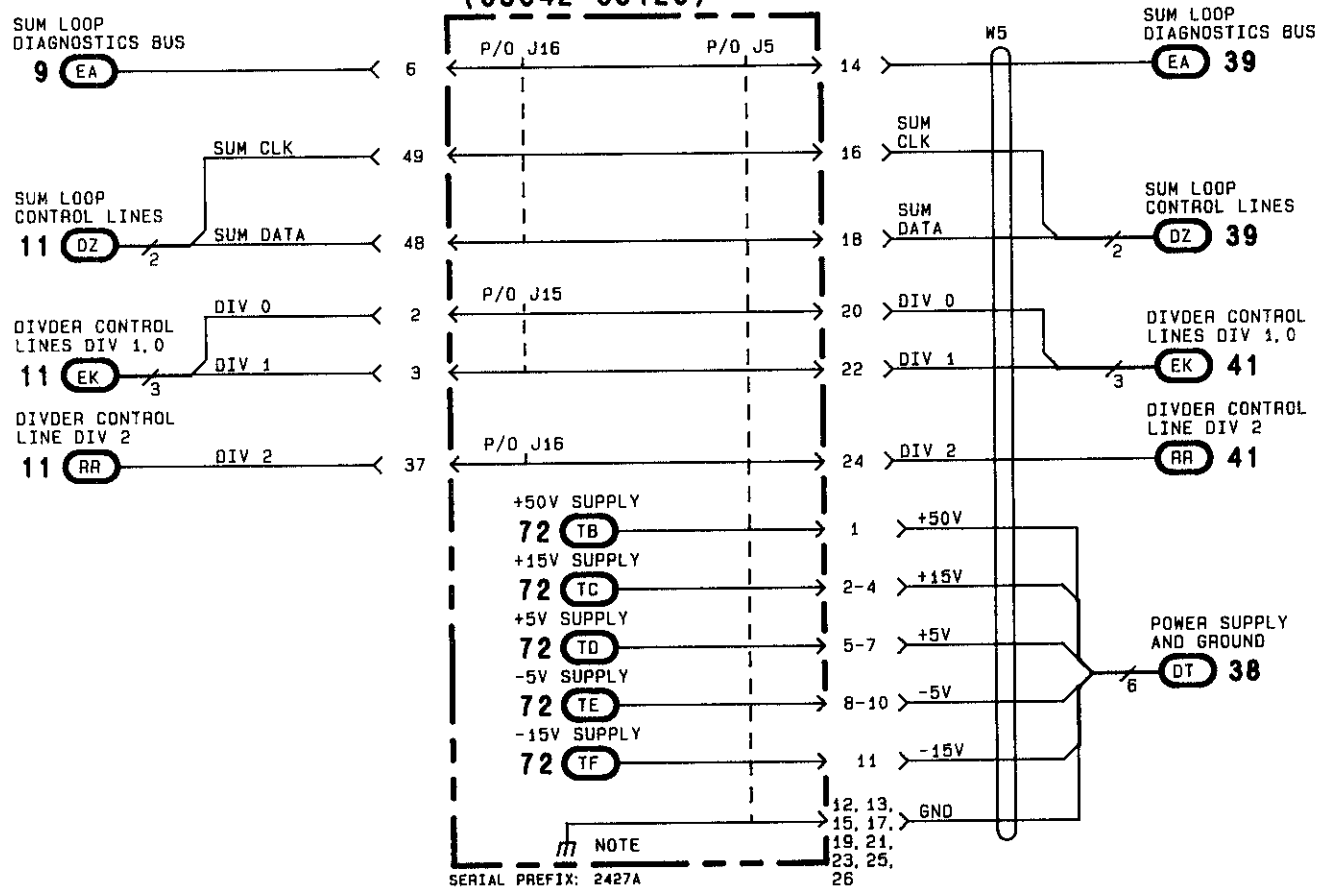


P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)



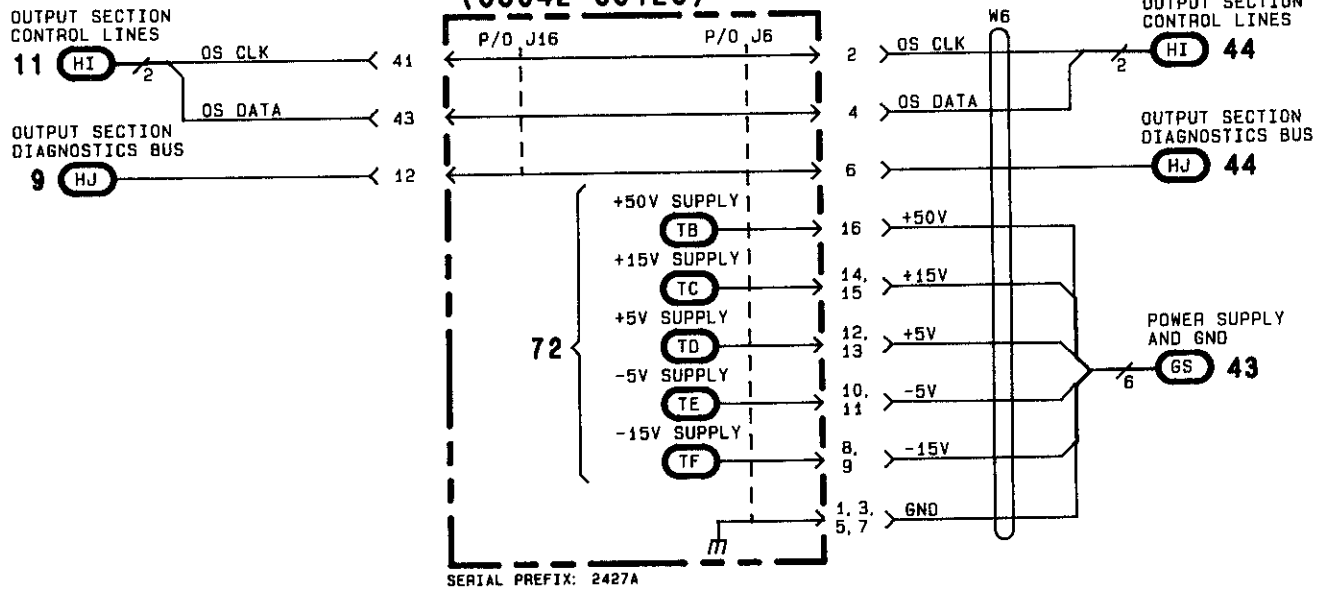
**SS67**  
Figure 8U-125  
8U-125

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



**SS68**  
Figure 8U-127  
8U-127

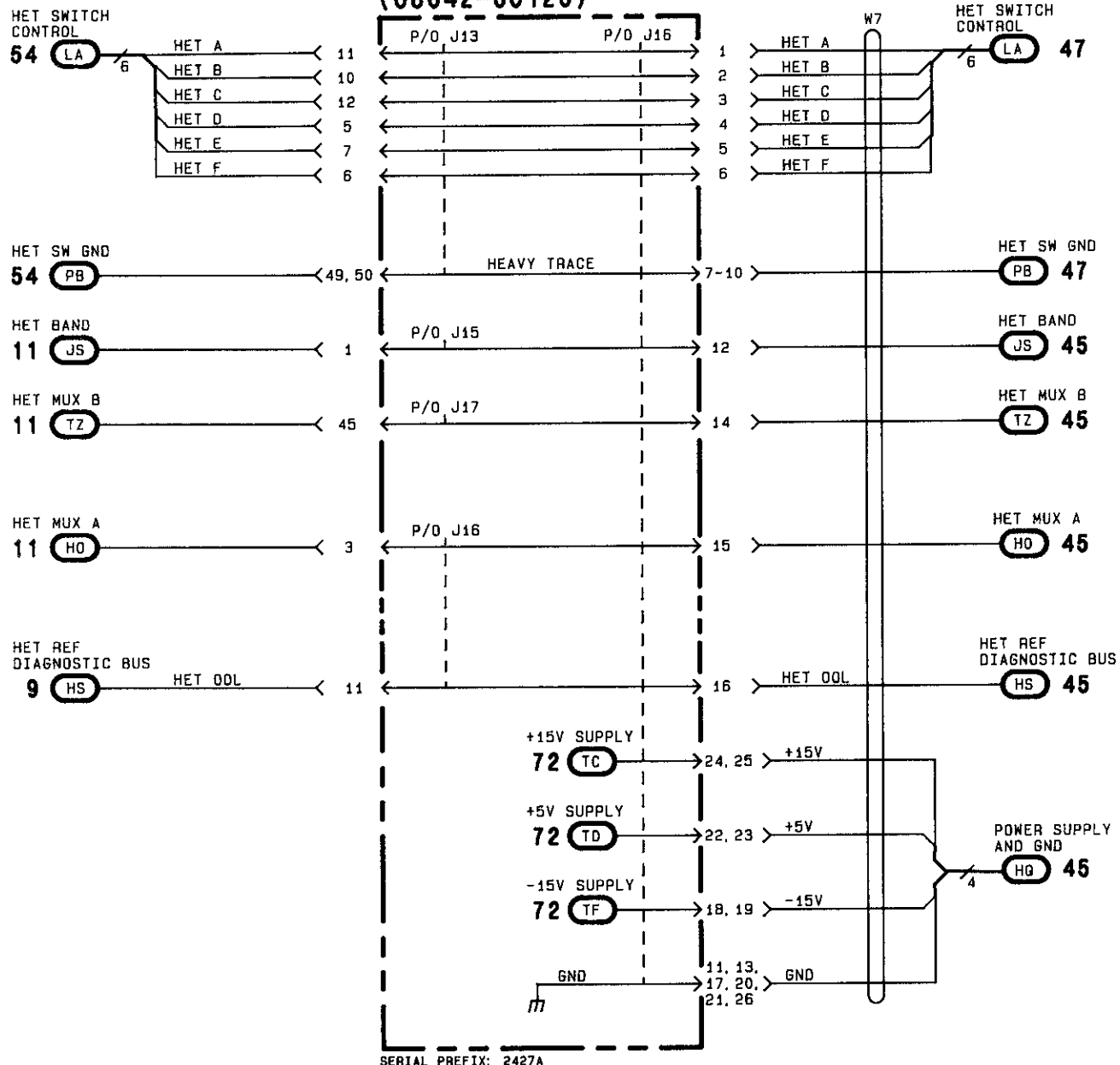
P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)



A13A2 J1

**SS69**  
Figure 8U-129  
8U-129

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



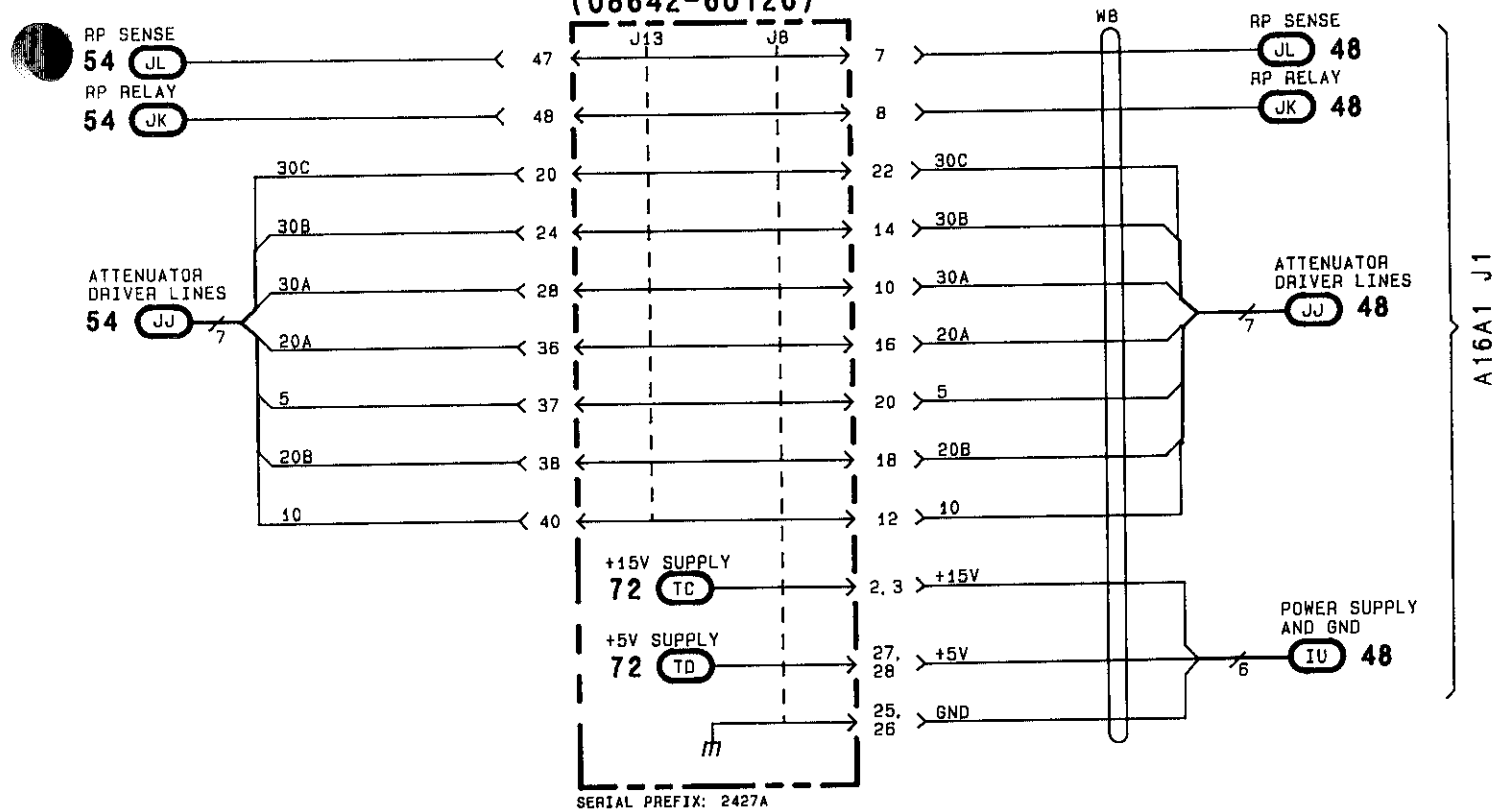
A14A3 J6

A14A2 J2

**SS70**

Figure 8U-131  
8U-131

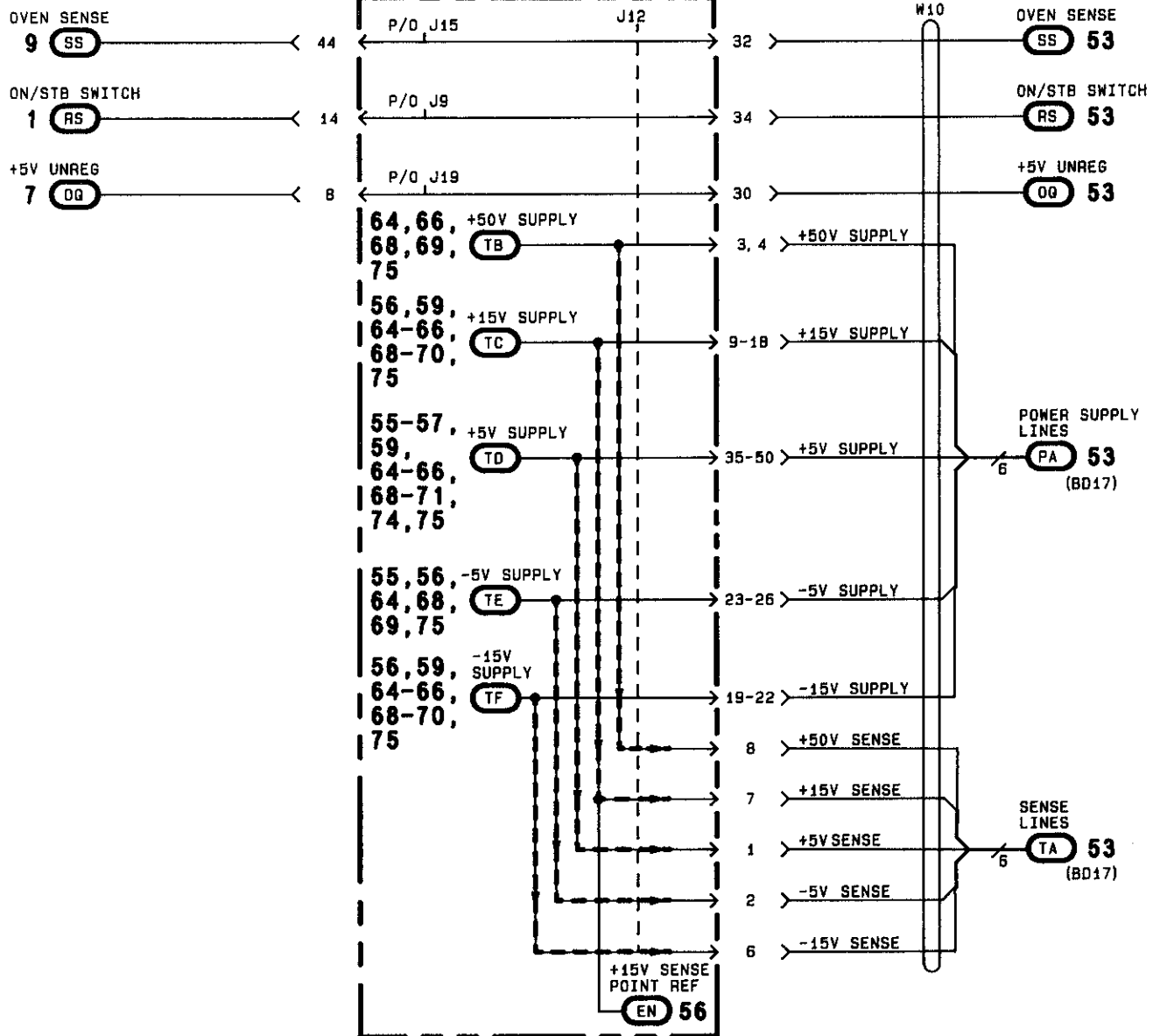
P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)



**SS71**  
Figure 8U-133  
8U-133.1

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**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



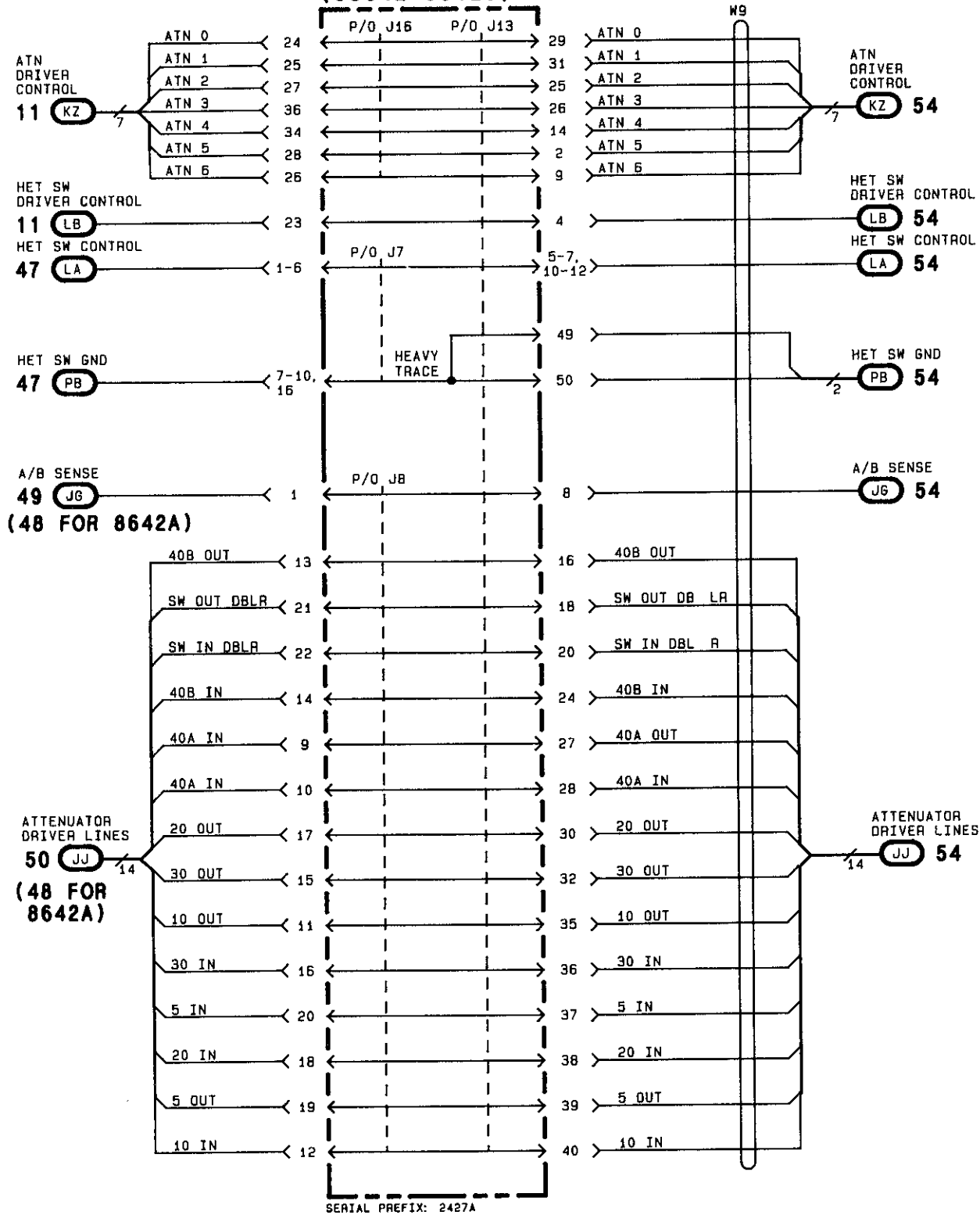
SERIAL PREFIX: 2427A

TO A17 J2

**SS72**

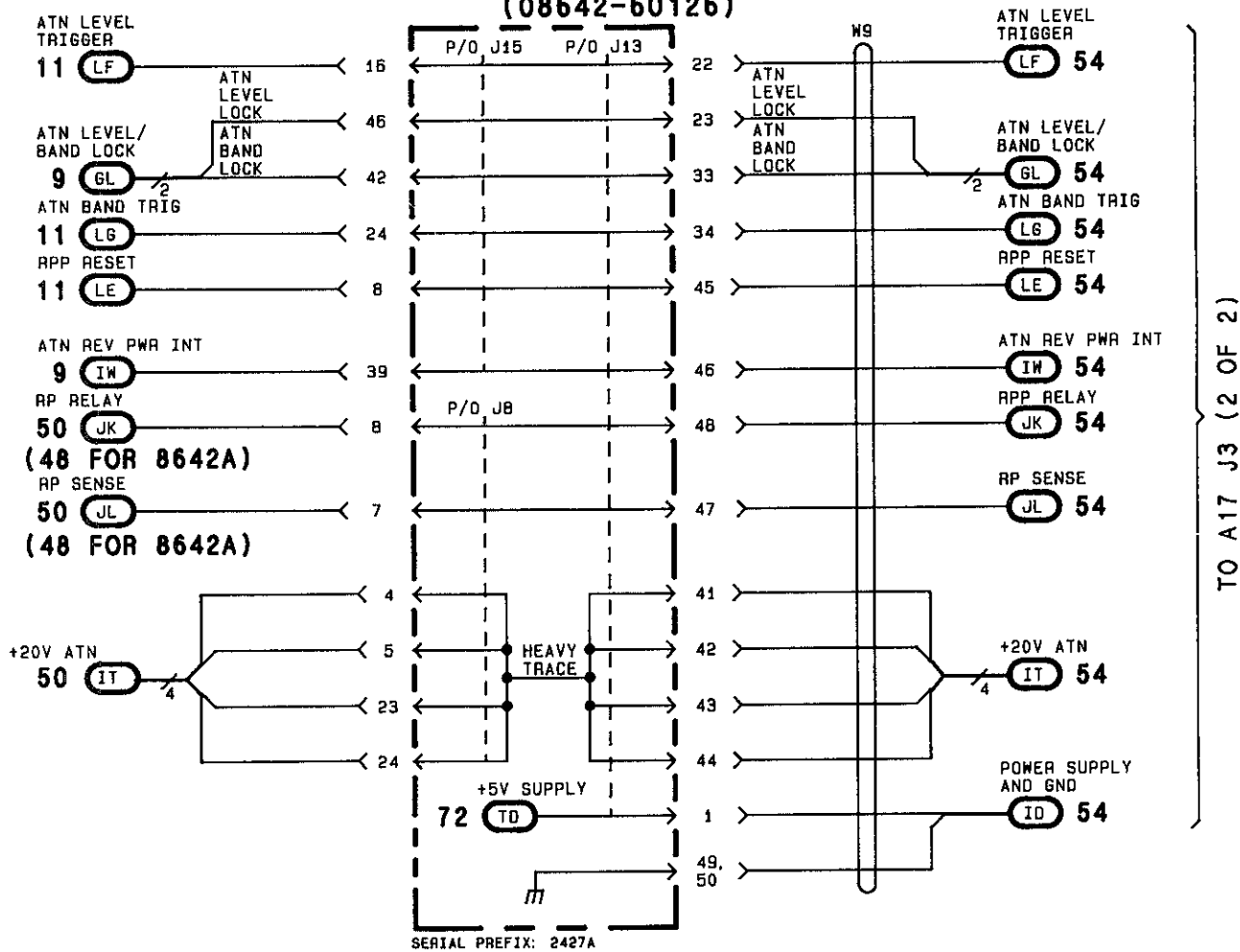
Figure 8U-135  
8U-135

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



TO A17 J3 (1 OF 2)

**P/O A5 POWER SUPPLY/DIGITAL  
DISTRIBUTION ASSEMBLY  
(08642-60126)**



**SS74**  
Figure 8U-139  
8U-139



