

SECTION IV

SCHEMATICS

4.1 GENERAL

Schematic diagrams are included for Receiver-Transmitter Group OR-5007/URC, Handset H-5017/PRC-515, Handset-Microphone H-5016/PRC-515, Electrical Power Cable Assembly CX-5229/PRC-515, and Direct Current Generator G-5002/PRC-515. The schematic diagram titles and figure numbers are:

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4-2	Mixer A1A2, Schematic Diagram
4-3	Broadband Amplifier A1A3, Schematic Diagram
4-4	Power Supply A1A4, Schematic Diagram
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4-6	Logic/Tx A1A5A2, Schematic Diagram
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FIGURE	TITLE
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4-28	Direct Current Generator G-5002/PRC-515, Schematic Diagram

VARIABLE DIVIDER
A1A6A2A2PI FUNCTIONS

GROUND

XMT INHIBIT

1 MHz

10 MHz

100 kHz

+5.2 V DC

VARIABLE DIVIDER
A1A6A2A1PI FUNCTIONS

5 MHz

+25.2 V DC (SW AND FLTR)

RCP STRETCH

RCV-AM

1 OR 2 kHz

+5.2 V DC

+13 V DC

100 Hz

USB/LSB (1=USB)

1 kHz

10 kHz

GROUND

AMPL COUPLER
A3J1 FUNCTIONS

CONTROL
A2P1 FUNCTIONS

10 kHz

1 kHz

USB/LSB
(1=USB)

100 Hz

100 kHz

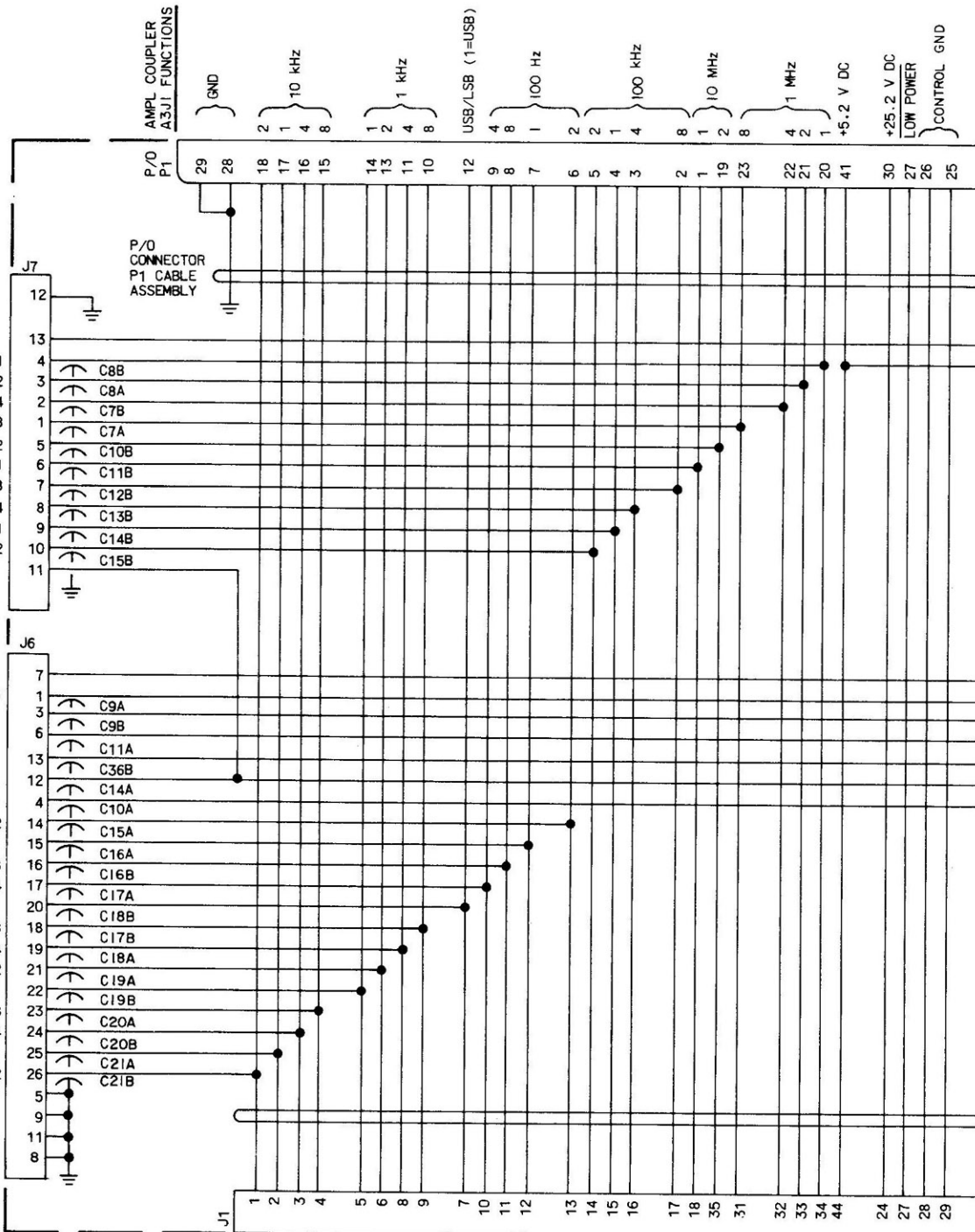
10 MHz

1 MHz

+5.2 V DC

+25.2 V DC
LOW POWER

CONTROL GND



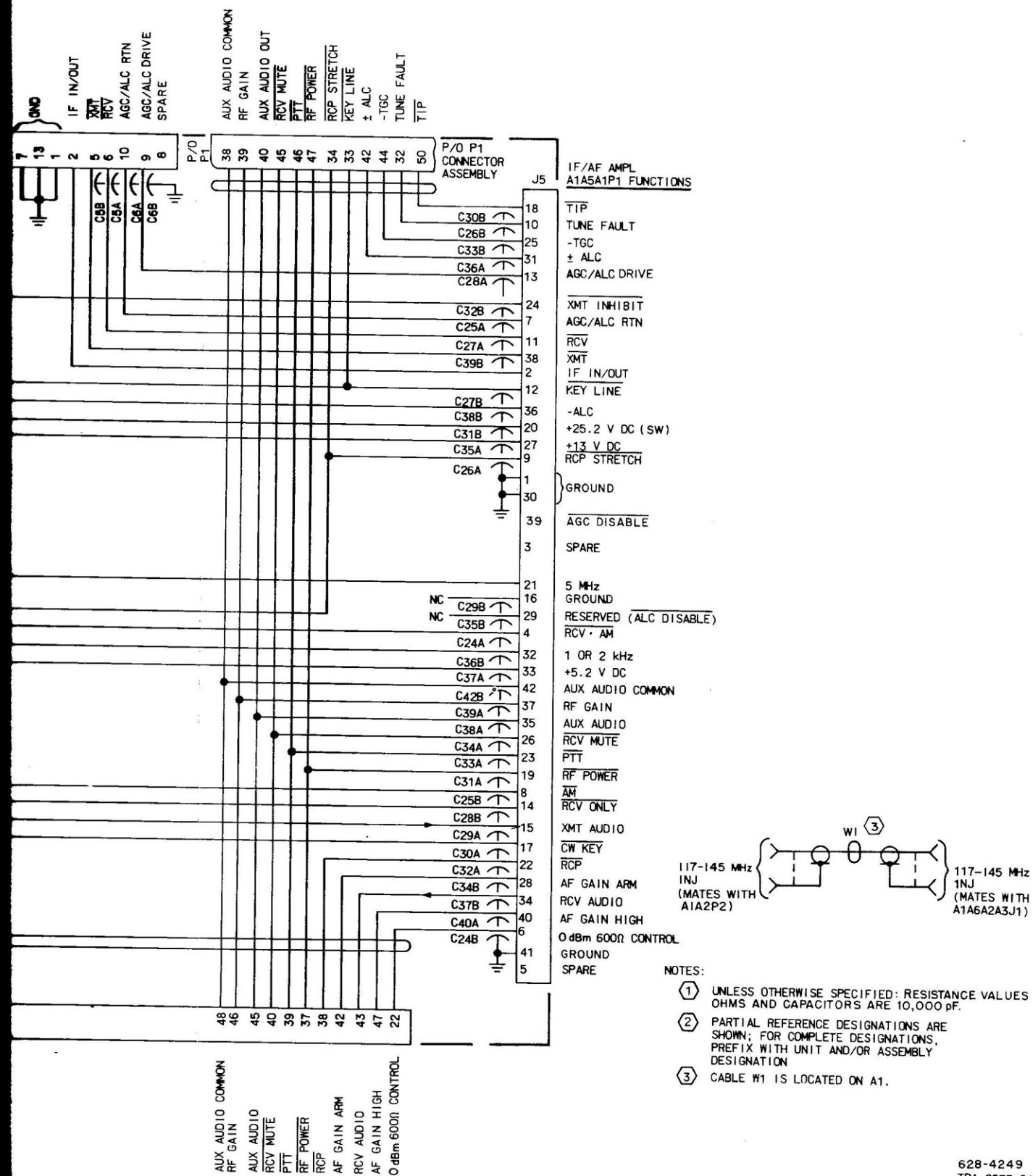
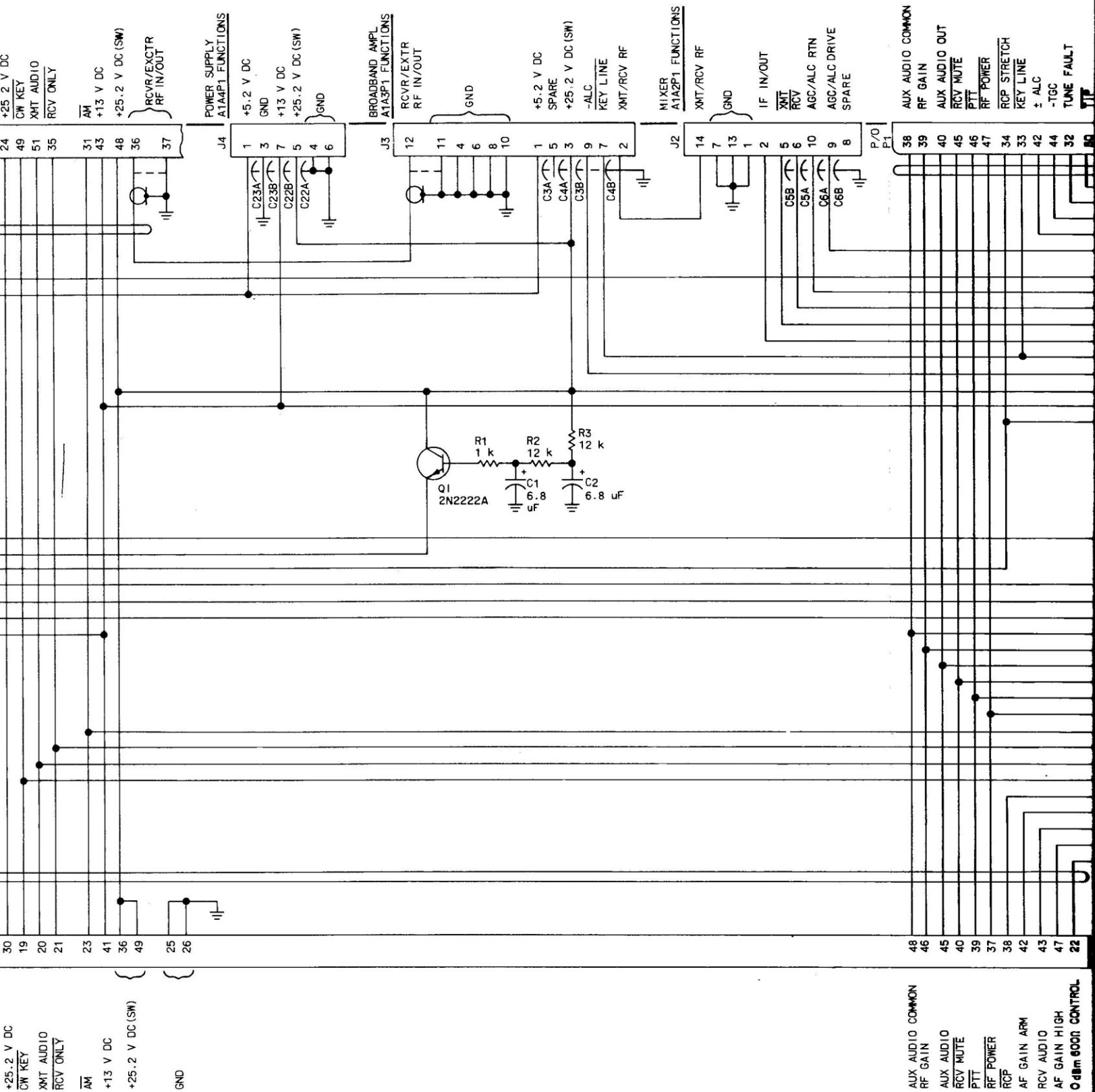
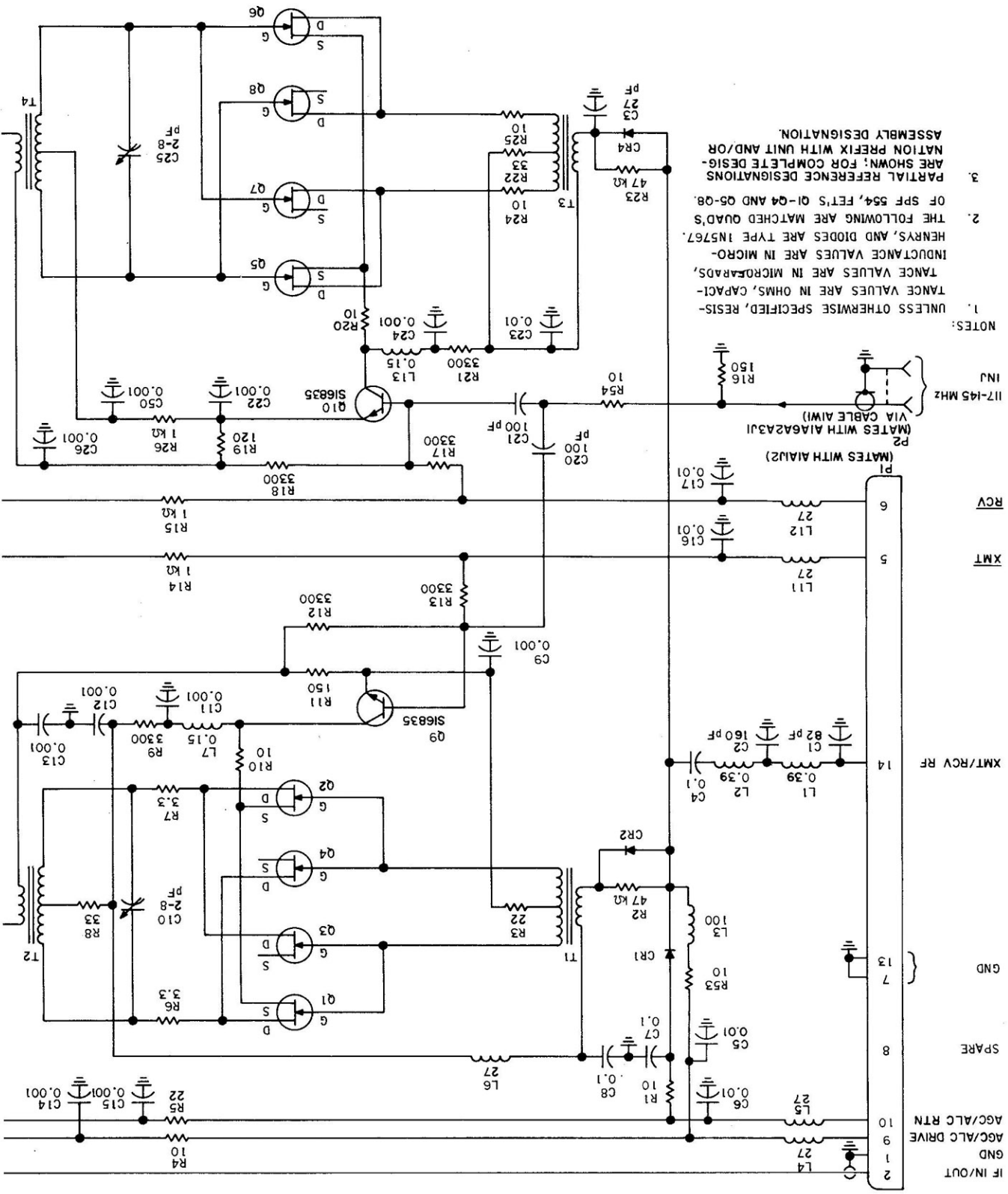


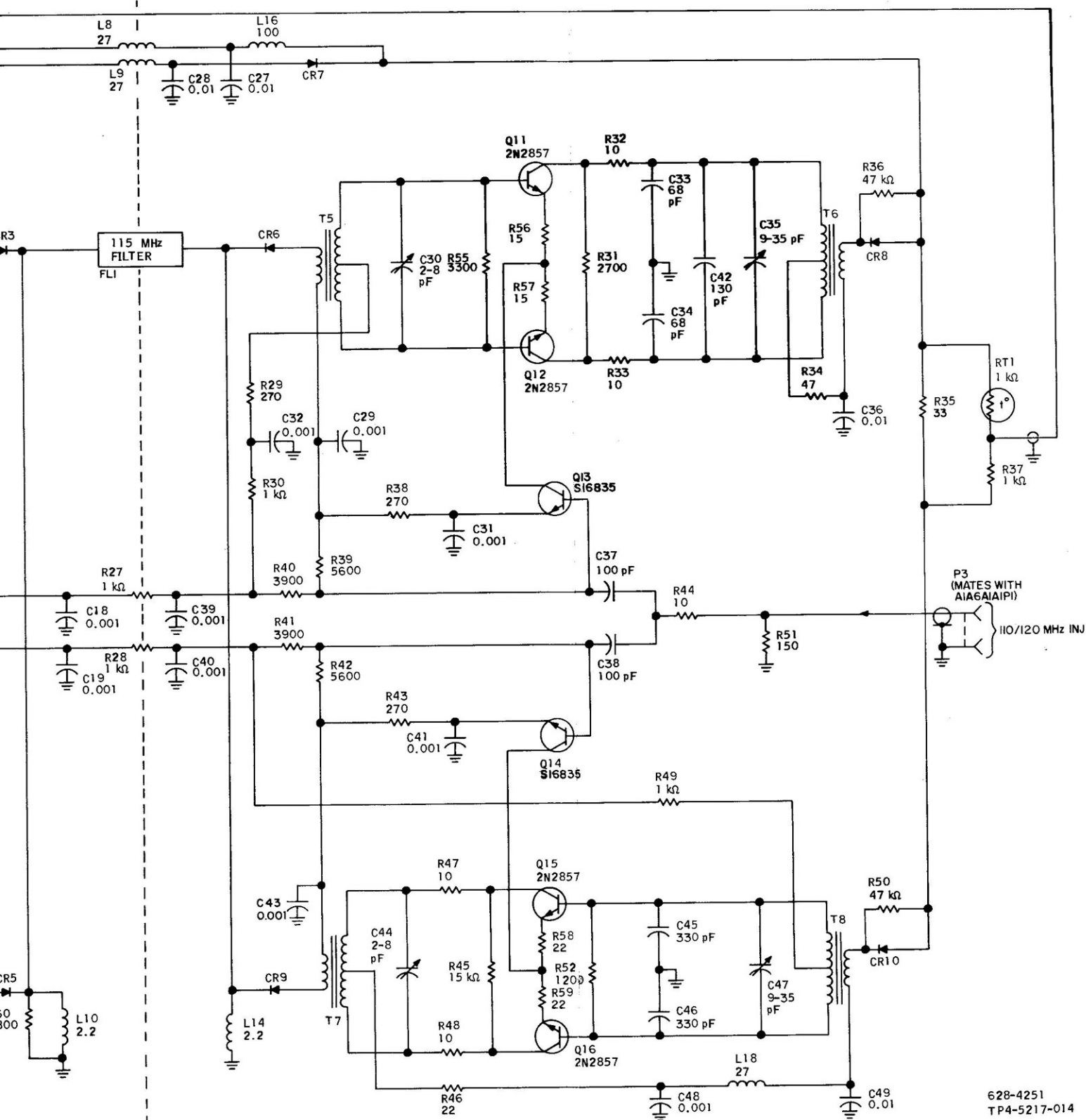
Figure 4-1. Chassis A1A1,
Schematic Diagram



30 +25.2 V DC
19 CW KEY
20 XMT AUDIO
21 RCV ONLY
23 AM
41 +13 V DC
36 +25.2 V DC (SW)
49
25 GND
26

48 AUX AUDIO COMMON
46 RF GAIN
45 AUX AUDIO
40 RCV MUTE
39 PTT
37 RF POWER
38 RCP
42 AF GAIN ARM
43 RCV AUDIO
47 AF GAIN HIGH
22 600Ω CONTROL

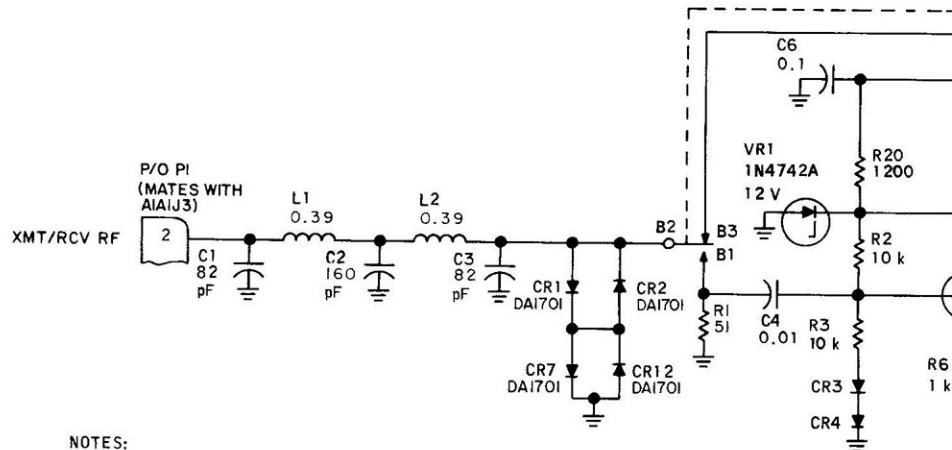




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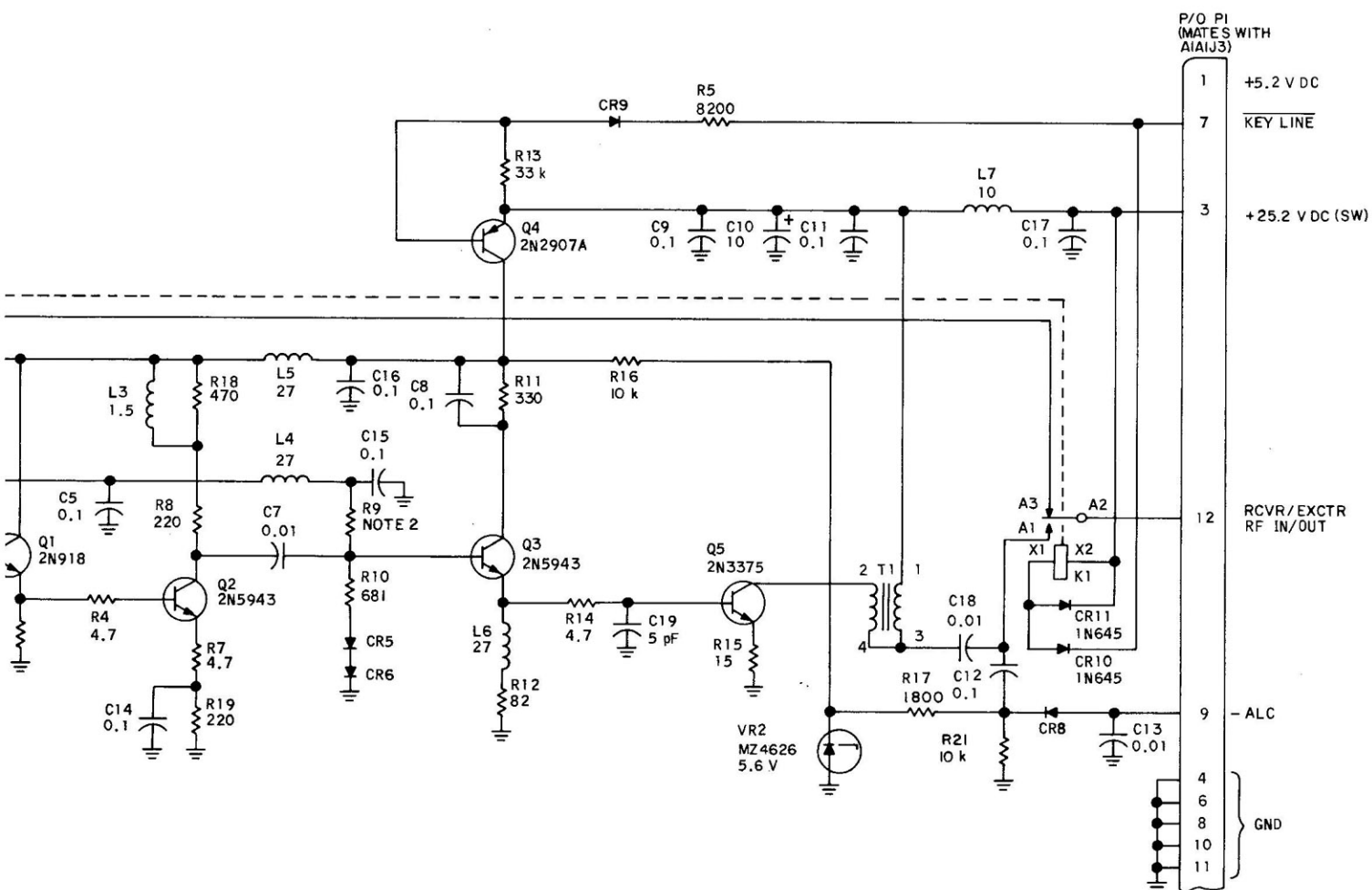
Figure 4-2. Mixer A1A2,
Schematic Diagram

4-5/4-6 (Blank)



NOTES:

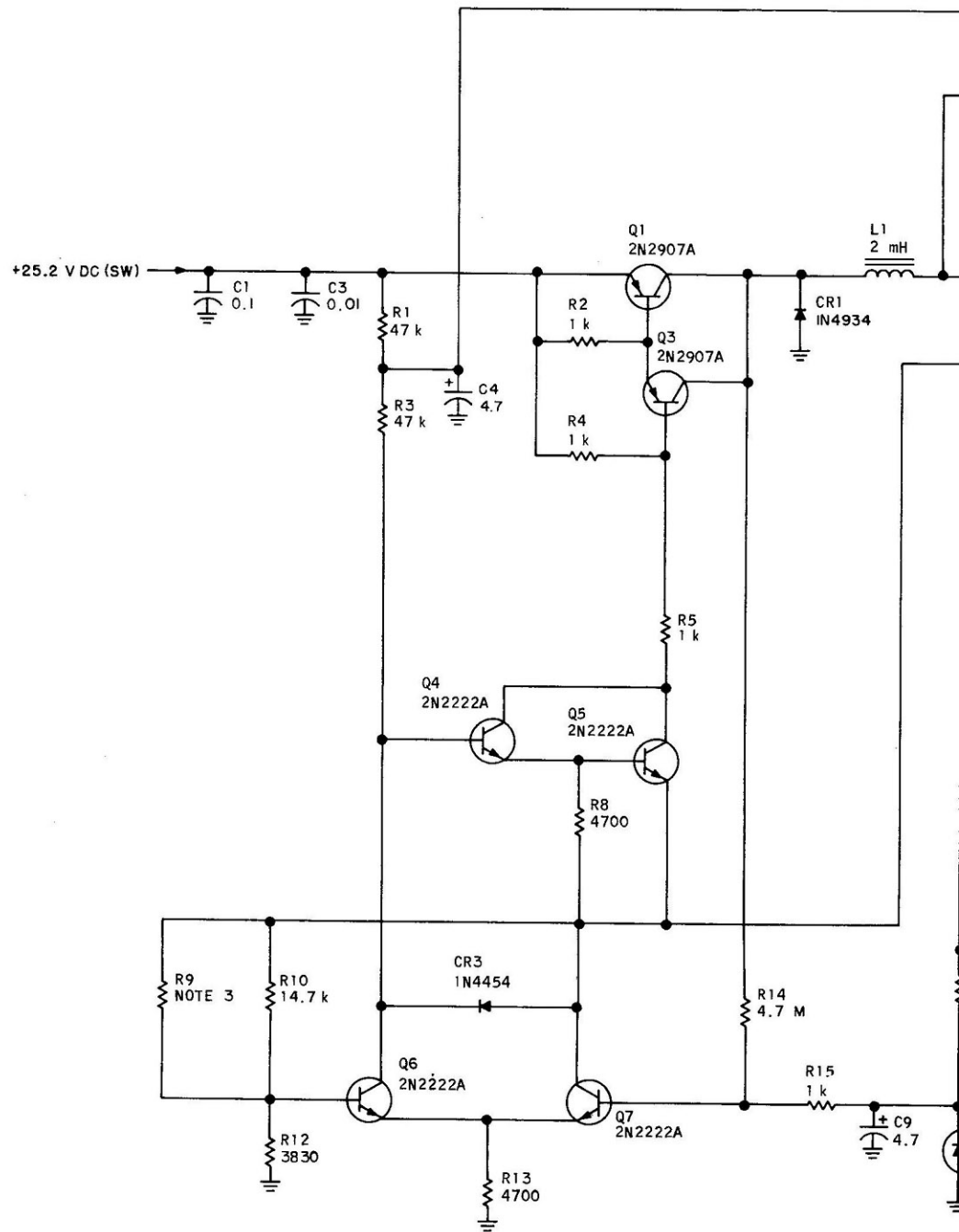
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, INDUCTANCE VALUES ARE IN MICROHENRYS, AND DIODES ARE TYPE 1N4454.
2. FINAL VALUE OF R9 SELECTED IN TEST, NOMINAL VALUE 3320.

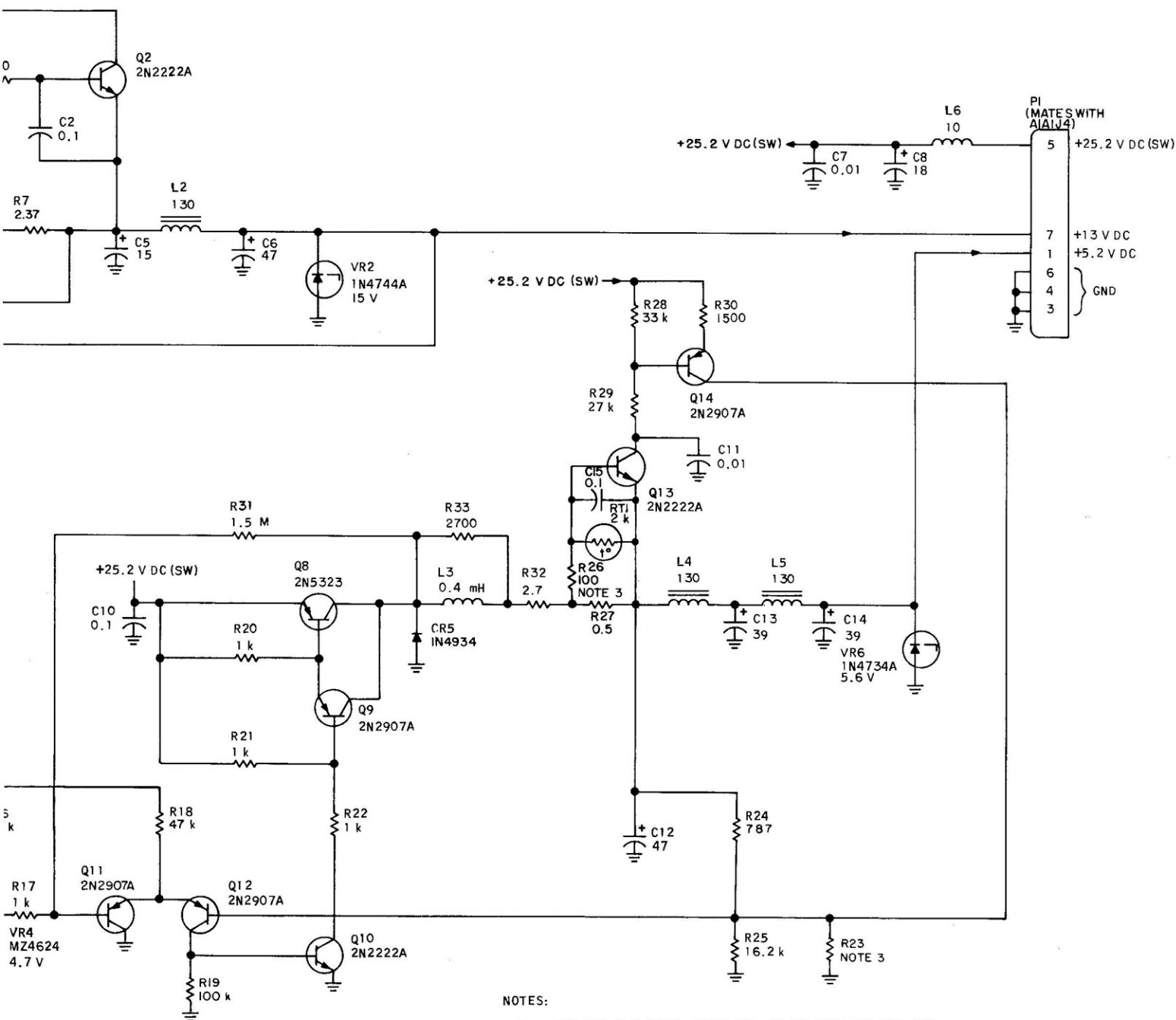


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Figure 4-3. Broadband Amplifier A1A3,
Schematic Diagram

4-7/4-8 (Blank)





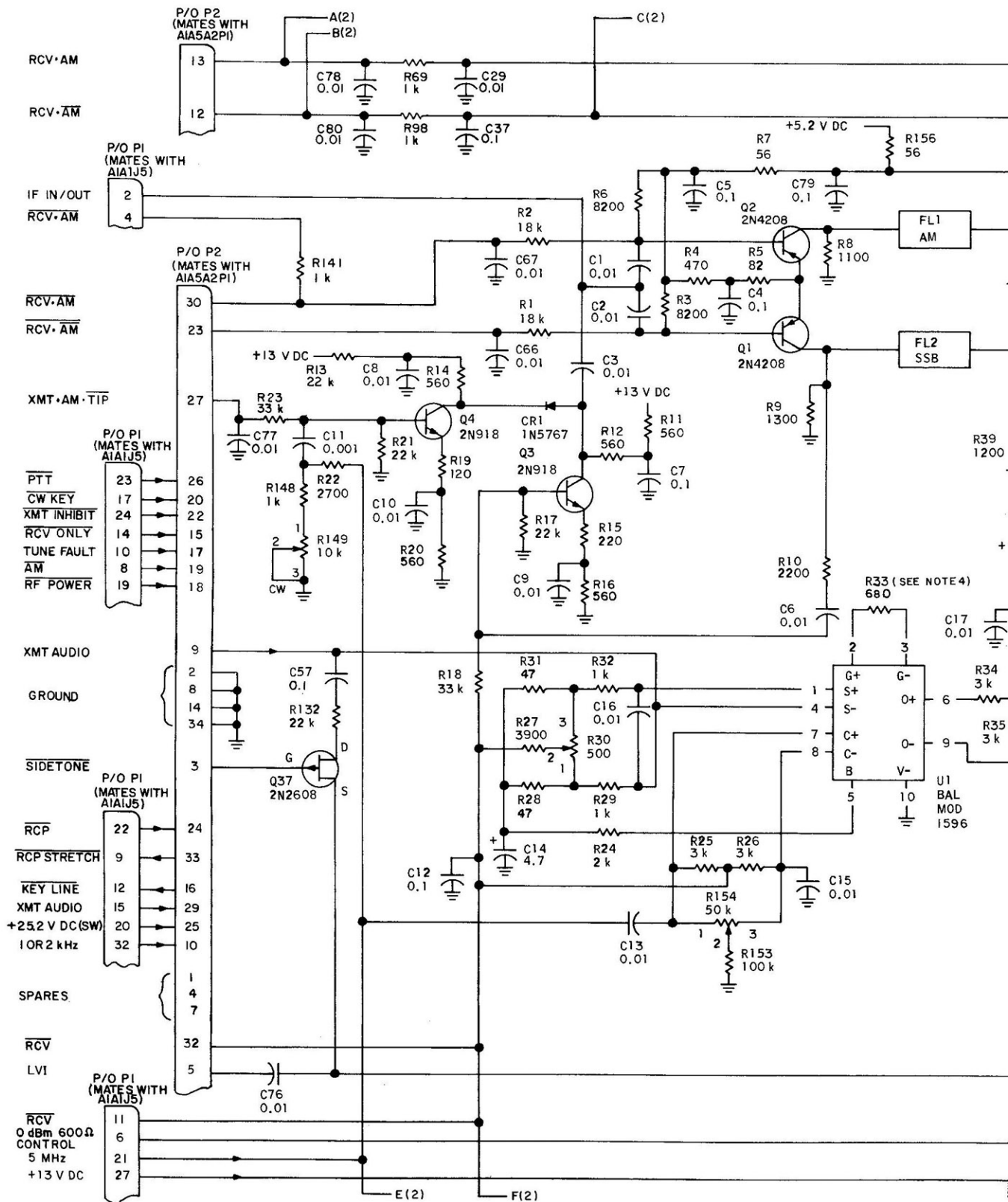
NOTES:

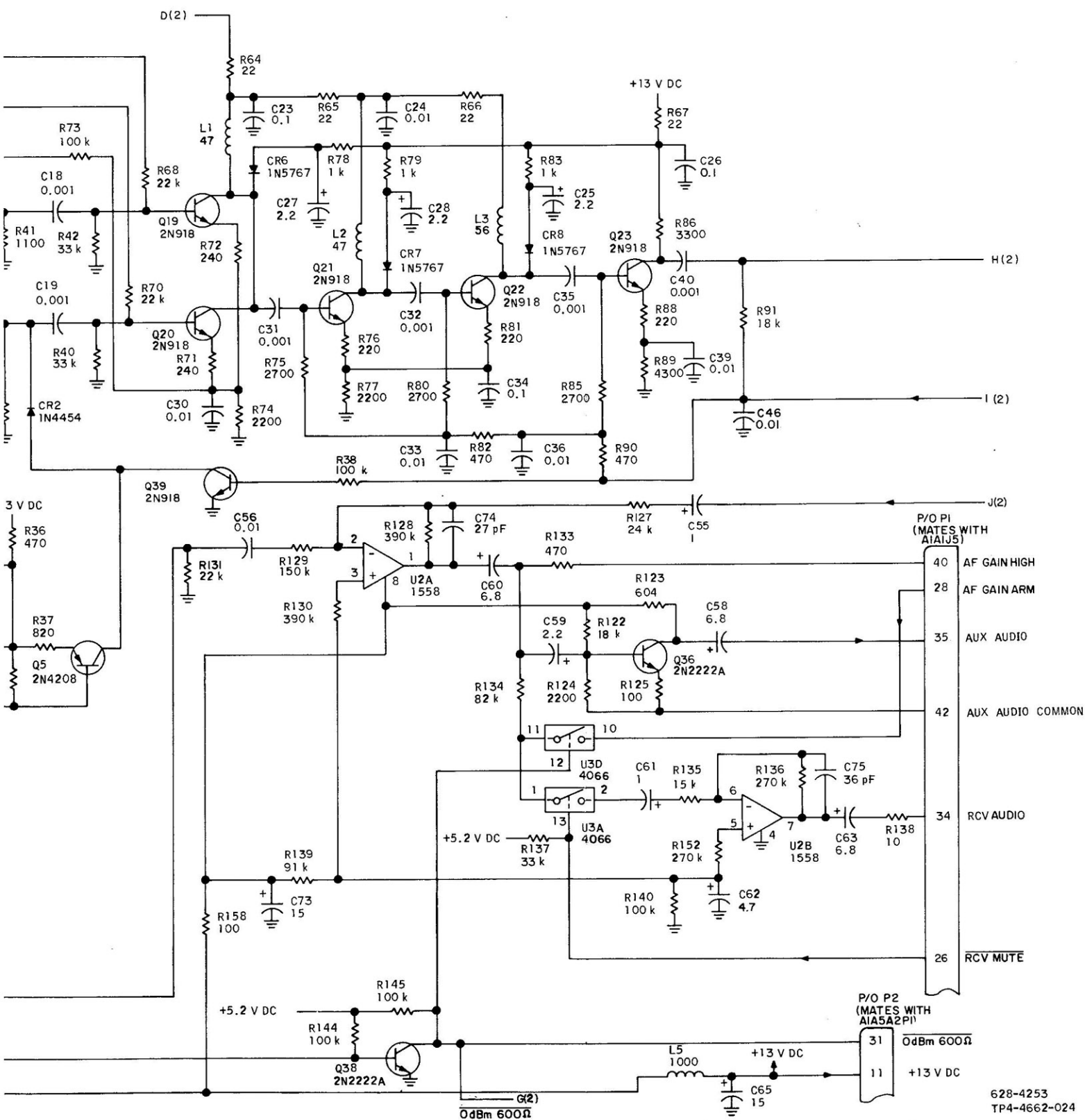
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND INDUCTANCE VALUES ARE IN MICROHENRYS.
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX UNIT AND/OR ASSEMBLY DESIGNATION.
3. VALUES ARE SELECTED IN TEST.

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Figure 4-4. Power Supply A1A4,
Schematic Diagram

4-9/4-10 (Blank)

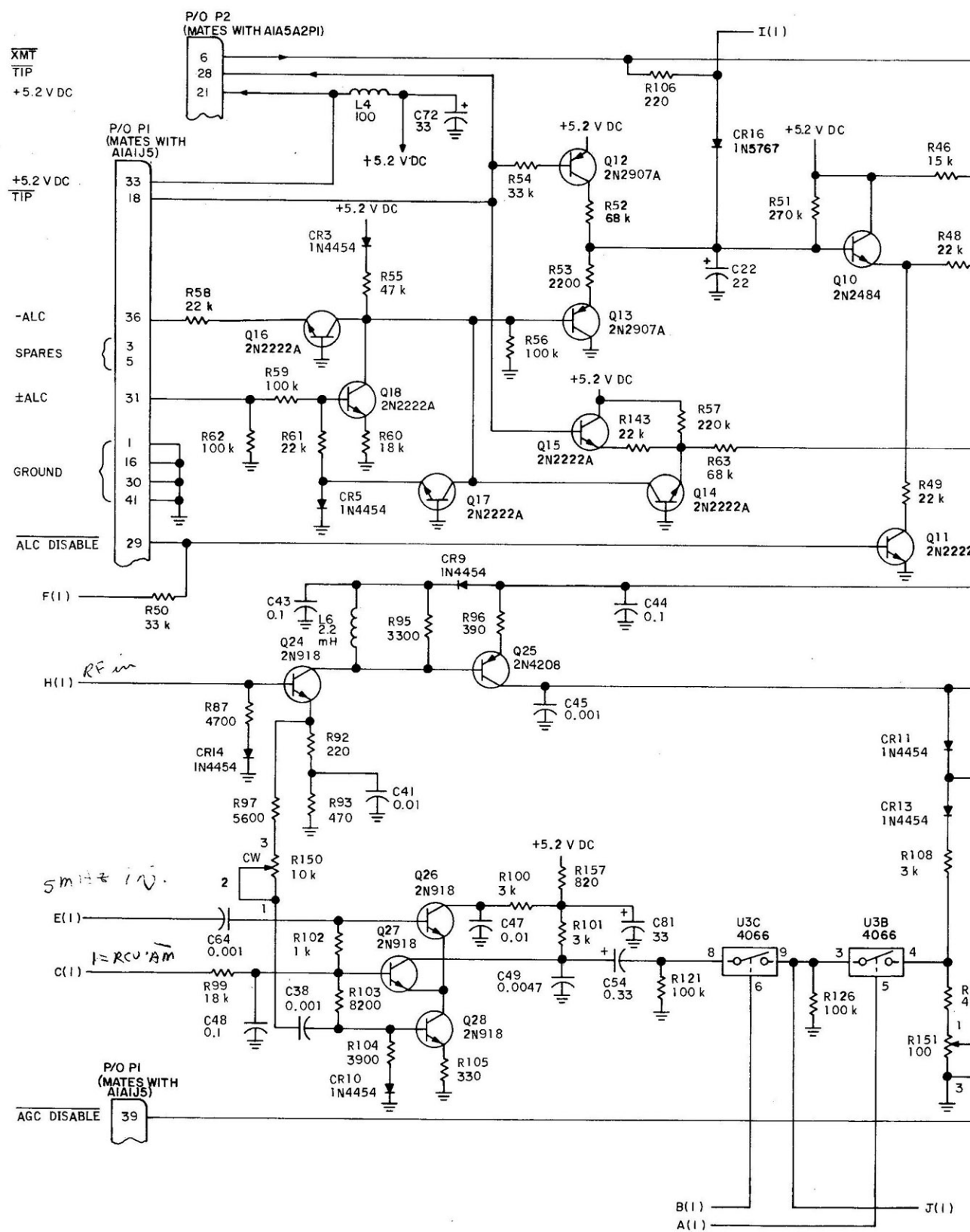


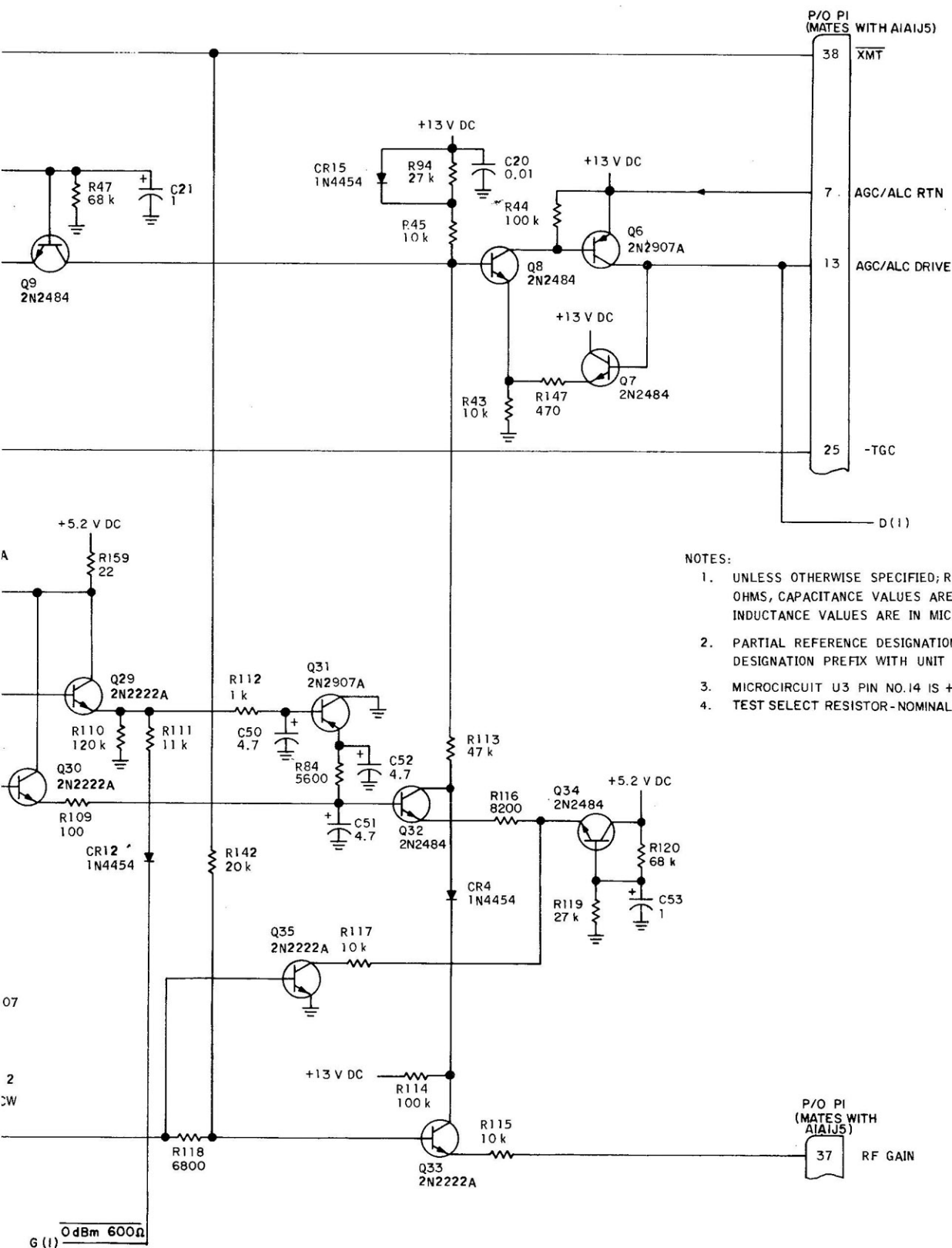


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Figure 4-5. If/Af A1A5A1, Schematic Diagram (Sheet 1 of 2)

4-11/4-12 (Blank)





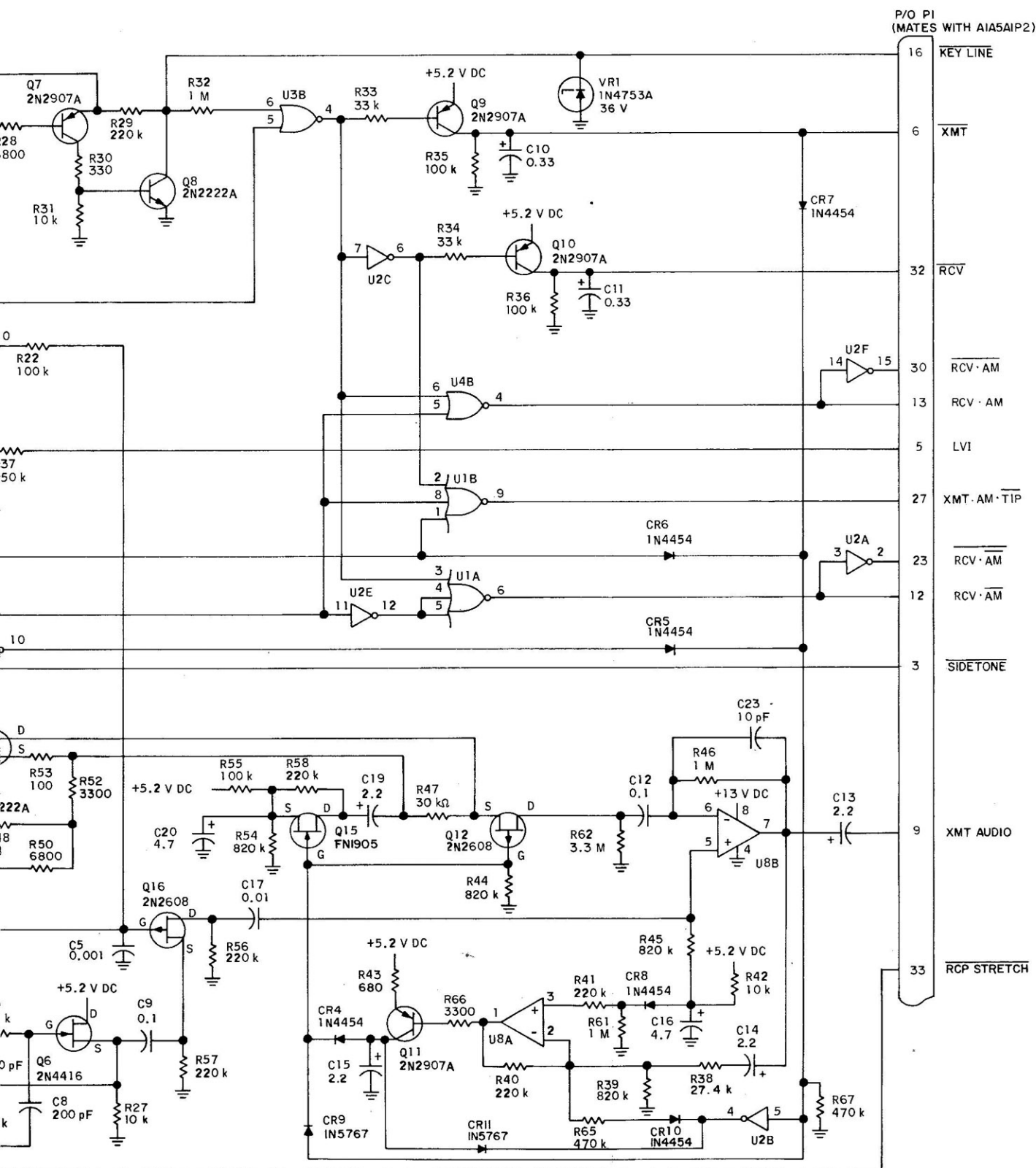
NOTES:

1. UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND INDUCTANCE VALUES ARE IN MICROHENRYS.
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
3. MICROCIRCUIT U3 PIN NO.14 IS +5.2 V DC AND PIN NO.7 IS GROUND.
4. TEST SELECT RESISTOR-NOMINAL VALUE 620 OHMS.

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Figure 4-5. If/Af A1A5A1, Schematic Diagram (Sheet 2)

4-13/4-14 (Blank)



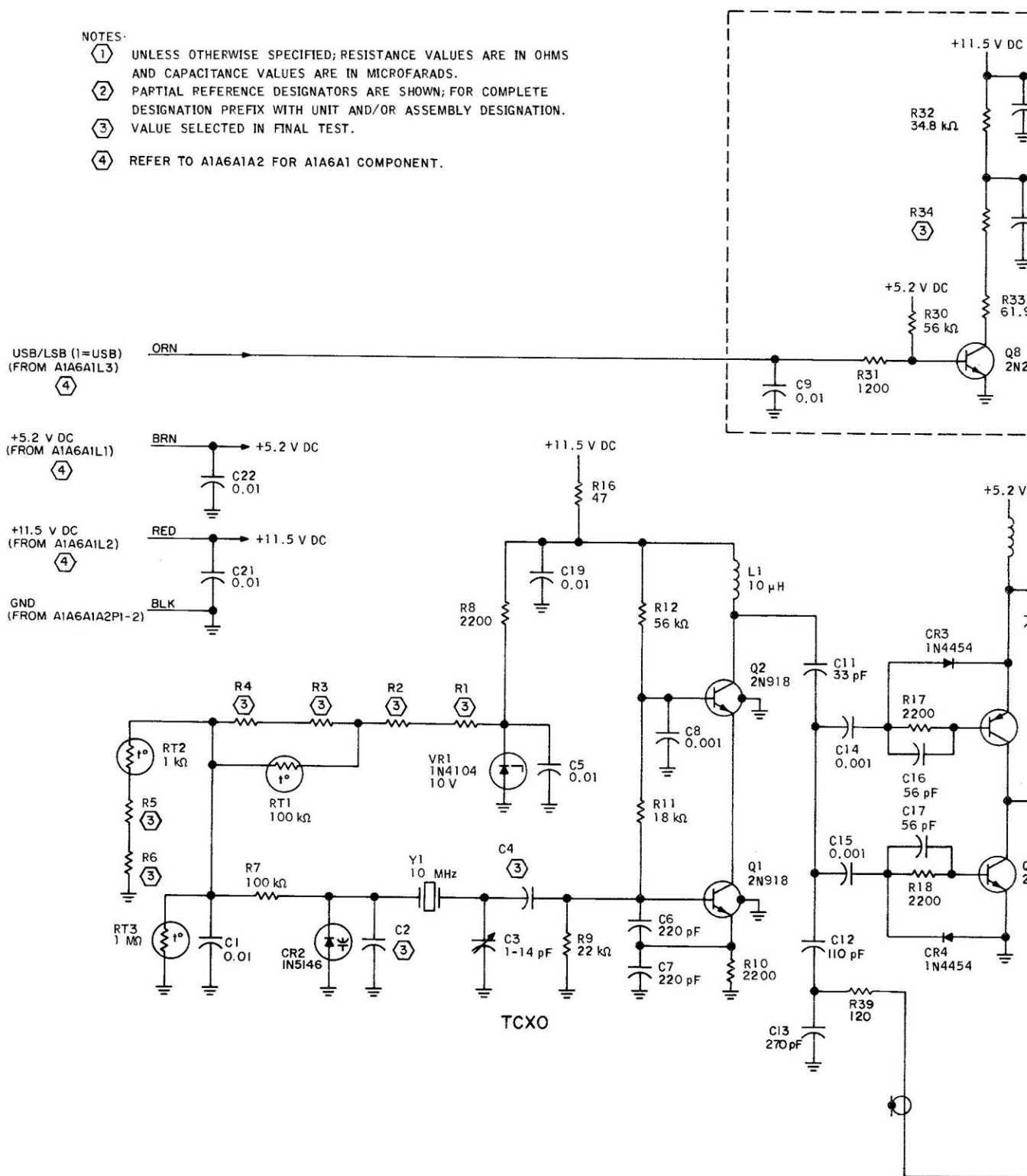
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Figure 4-6. Logic/Tx A1A5A2,
Schematic Diagram

4-15/4-16 (Blank)

NOTES:

- ① UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS.
- ② PARTIAL REFERENCE DESIGNATORS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ③ VALUE SELECTED IN FINAL TEST.
- ④ REFER TO A1A6A1A2 FOR A1A6A1 COMPONENT.



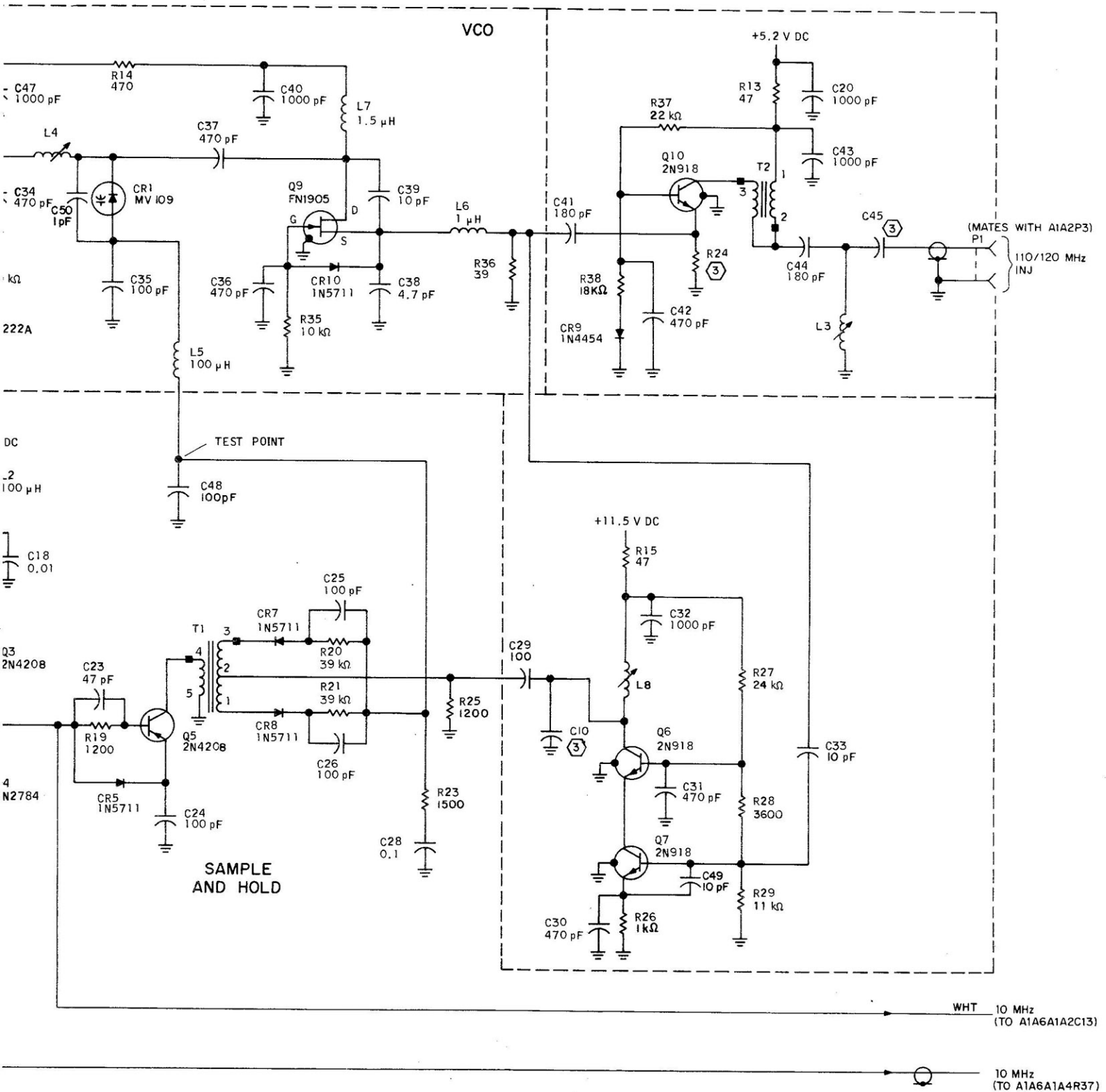
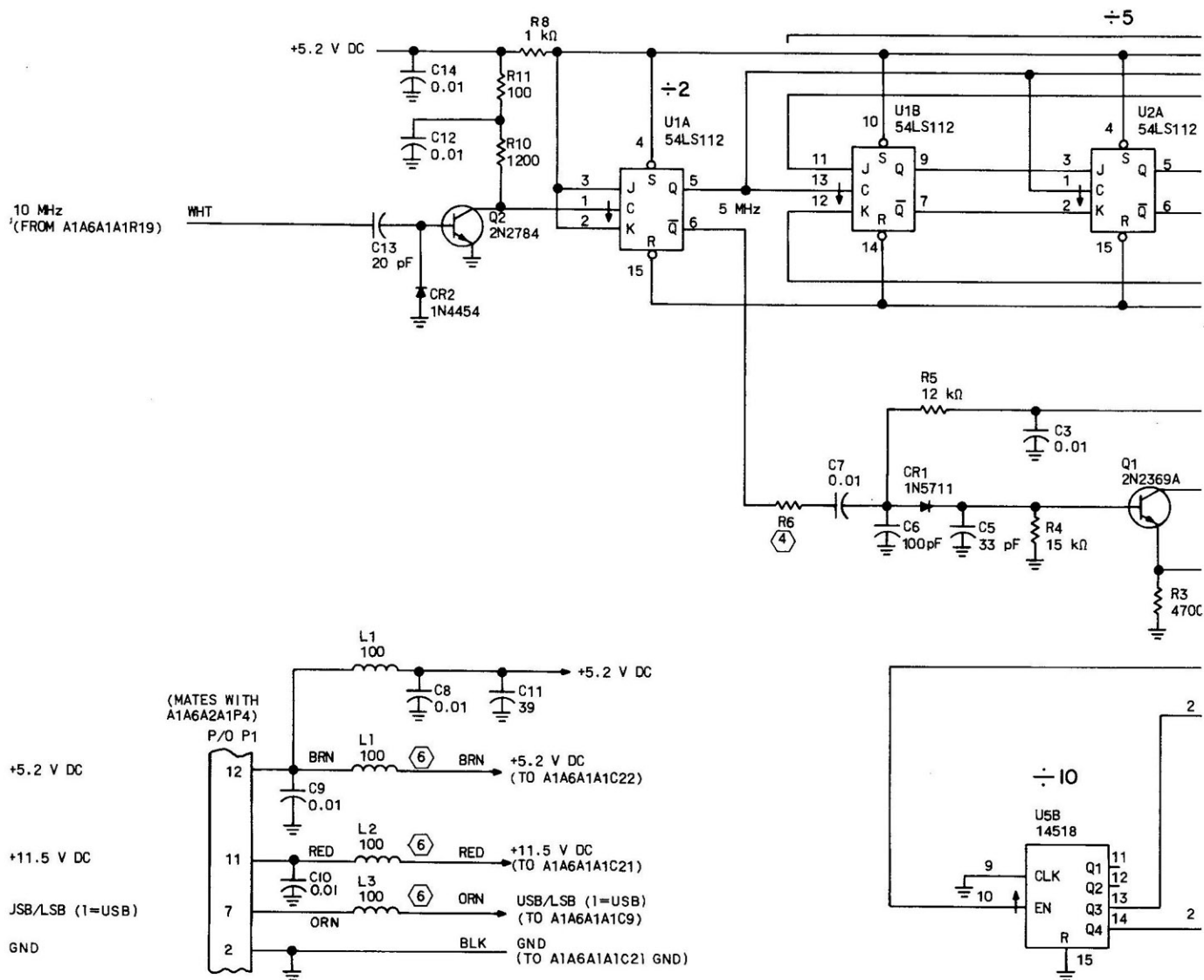


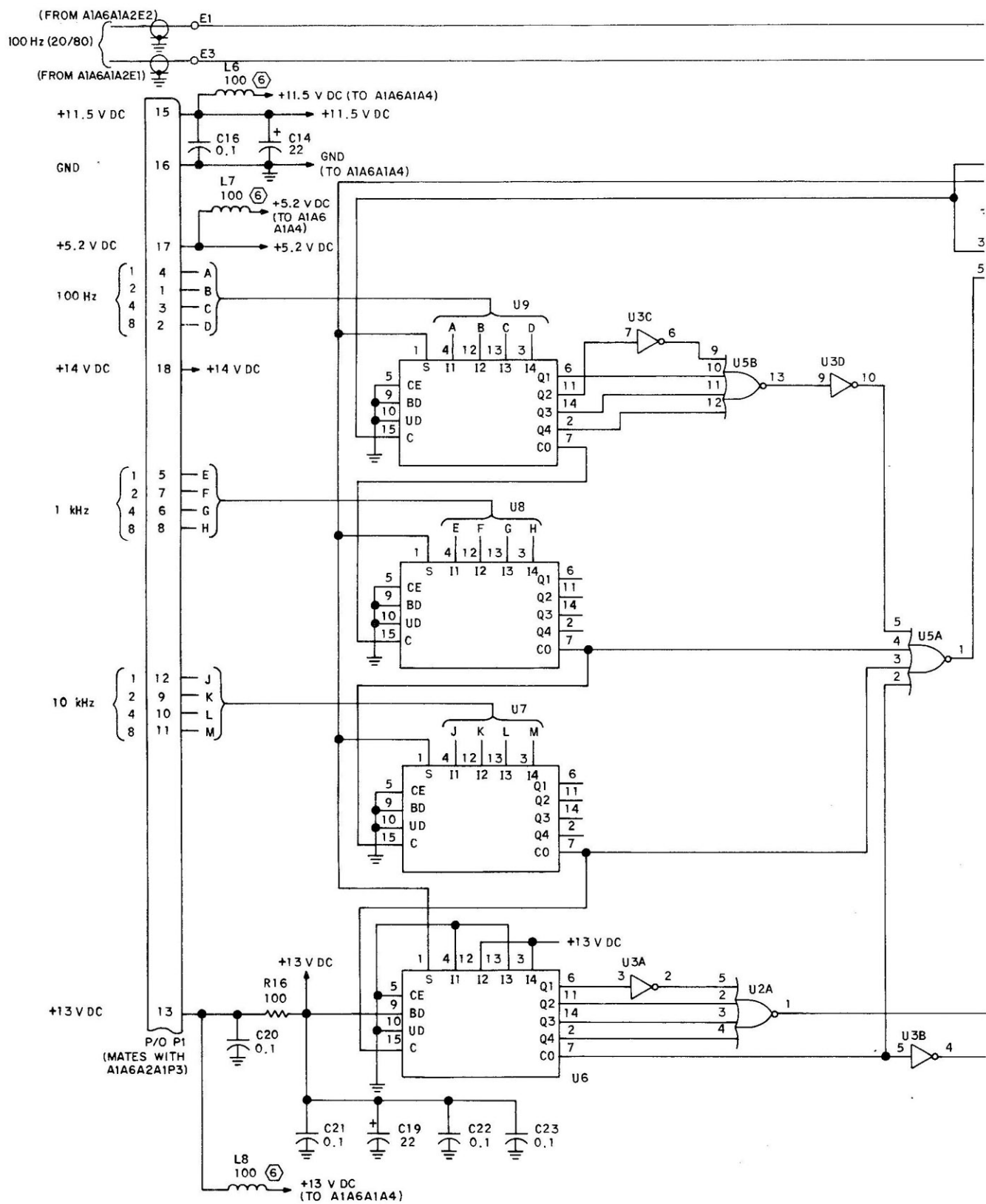
Figure 4-7. Frequency Standard A1A6A1A1, Schematic Diagram

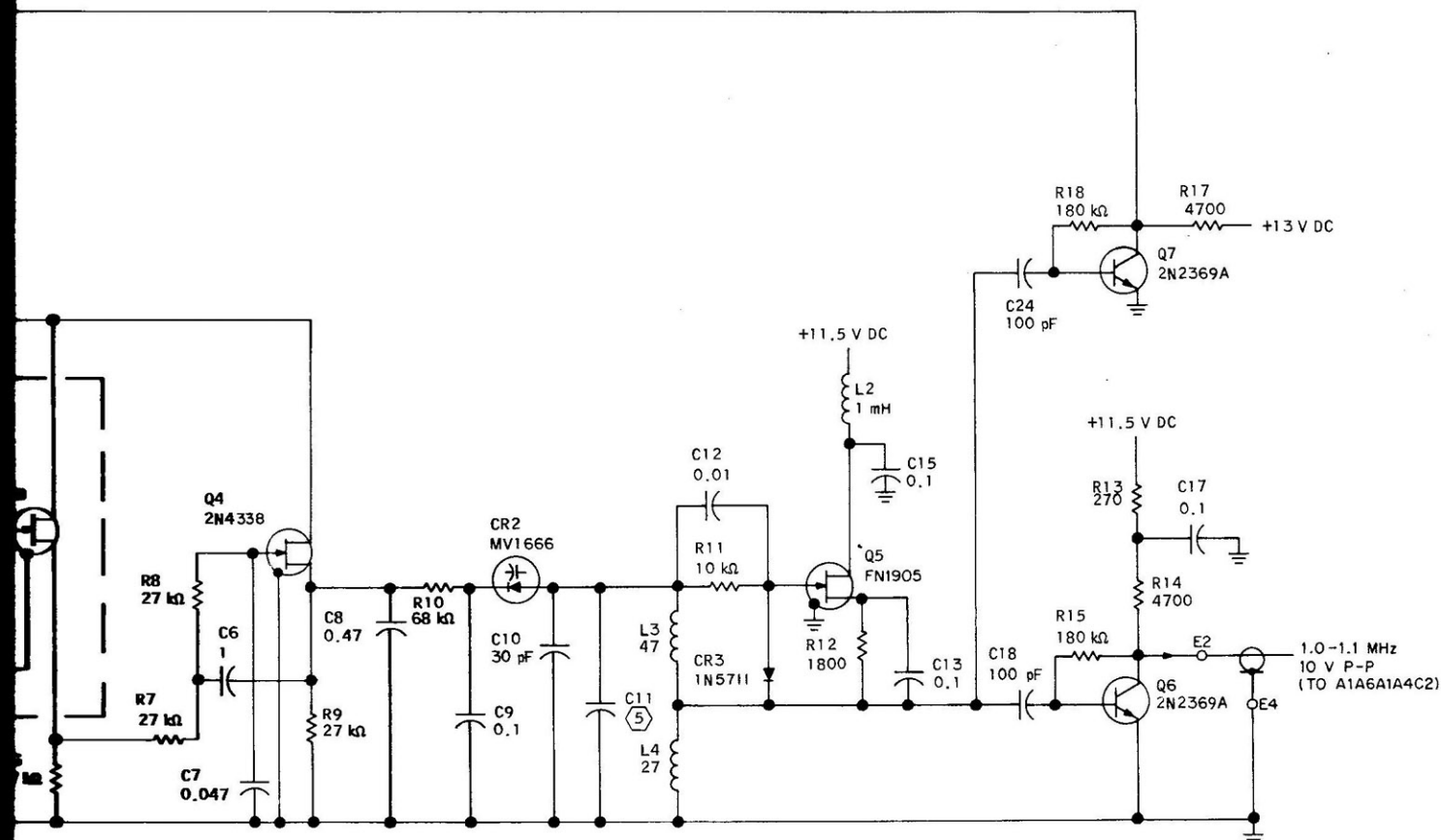
4-17/4-18 (Blank)



NOTES:

- ① UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS AND INDUCTANCE VALUES ARE IN MICROHENRYS
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ③ MICROCIRCUIT POWER AND GROUND INFORMATION:
 U1, U2 -- PIN 14 IS +5.2 V DC PIN 7 IS GROUND
 U3 -- PIN 16 IS +5 V DC PIN 8 IS GROUND
 U4 -- PIN 14 CONNECTS TO +5.2 V DC THRU R12 PIN 7 IS GROUND
 U5 -- PIN 16 CONNECTS TO +5.2 V DC THRU R12 PIN 8 IS GROUND
- ④ FINAL VALUE IS SELECTED IN TEST.
- ⑤ 1 OR 2 kHz STRAPPING OPTION:
 -001: 1 kHz, C1 = 0.1 μF
 -002: 2 kHz, C1 = 0.047 μF
- ⑥ LOCATED ON A1A6A1.





UNLESS OTHERWISE SPECIFIED ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN MICROFARADS, AND ALL INDUCTANCE VALUES ARE IN MICROHENRYS.

PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.

UNLESS CONNECTION TO POWER AND GROUND ARE SHOWN PIN 14 IS +13V AND PIN 7 IS GROUND EXCEPT

TYPE	POWER		GROUND
	PIN	VOLT	
4029	16	+13	8
4049	1	+13	8
4066			7

MICROCIRCUIT TYPES

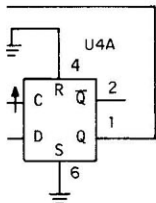
TENS	UNITS									
	0	1	2	3	4	5	6	7	8	9
0		4066	4002	4049	4013	4002	4029	4029	4029	4029

VALUE SELECTED IN TEST.

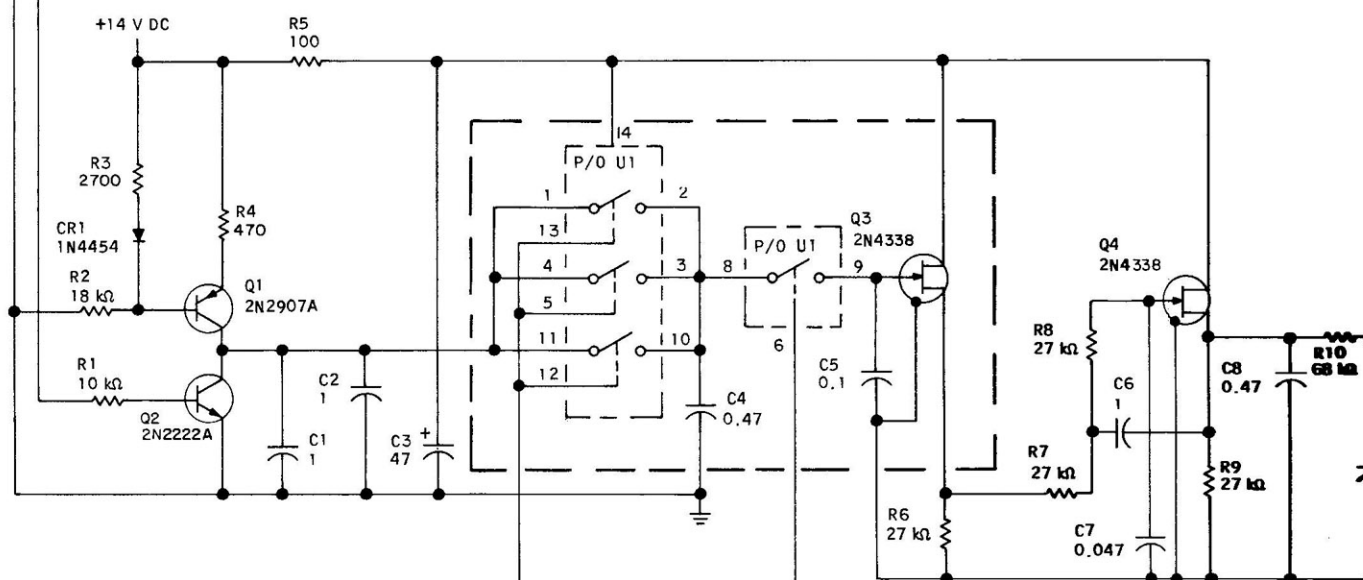
LOCATED ON A1A6A1.

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Figure 4-9. Lf Phase-Lock Loop
A1A6A1A3 Schematic Diagram



PHASE
DETECTOR



NOTES:

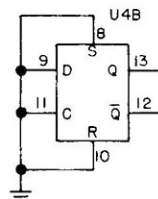
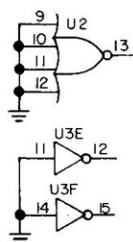
- ① UNLESS OTHERWISE SPECIFIED ALL RESISTANCE VALUES ARE IN OHMS AND ALL INDUCTANCE VALUES ARE IN MICROROHMS
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPONENTS
- ③ UNLESS CONNECTION TO POWER AND GROUND ARE SHOWN

TYPE	POWER		GROUND
	PIN	VOLT	
4029	16	+13	8
4049	1	+13	8
4066			7

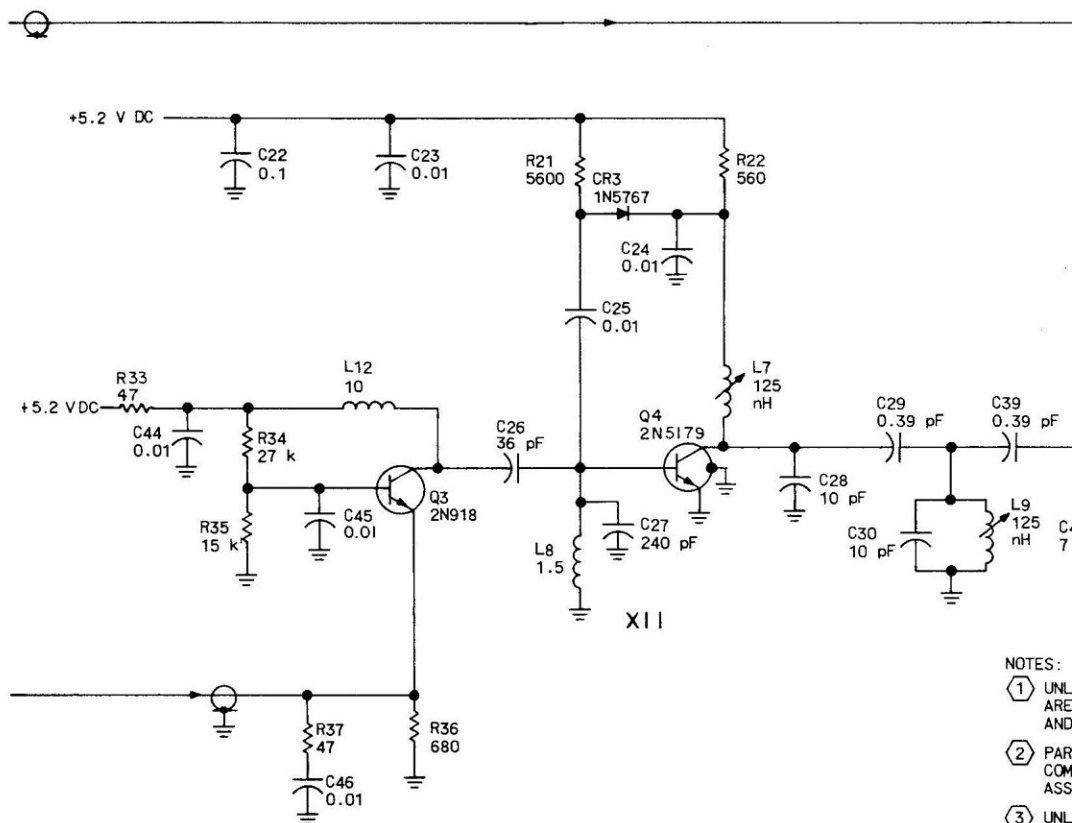
④ MICROCIRCUIT TYPES

TENS	UNITS					
	0	1	2	3	4	5
0		4066	4002	4049	4013	4029

- ⑤ VALUE SELECTED IN TEST.
- ⑥ LOCATED ON A1A6A1.



1.0-1.1 MHz 10 V P-P
(FROM A1A6A1A3E2)



10 MHz
(FROM A1A6A1A1R39)

+5.2 V DC
(FROM A1A6A1L7)

(5)

+13 V DC
(FROM A1A6A1L8)

(5)

+11.5 V DC
(FROM A1A6A1L6)

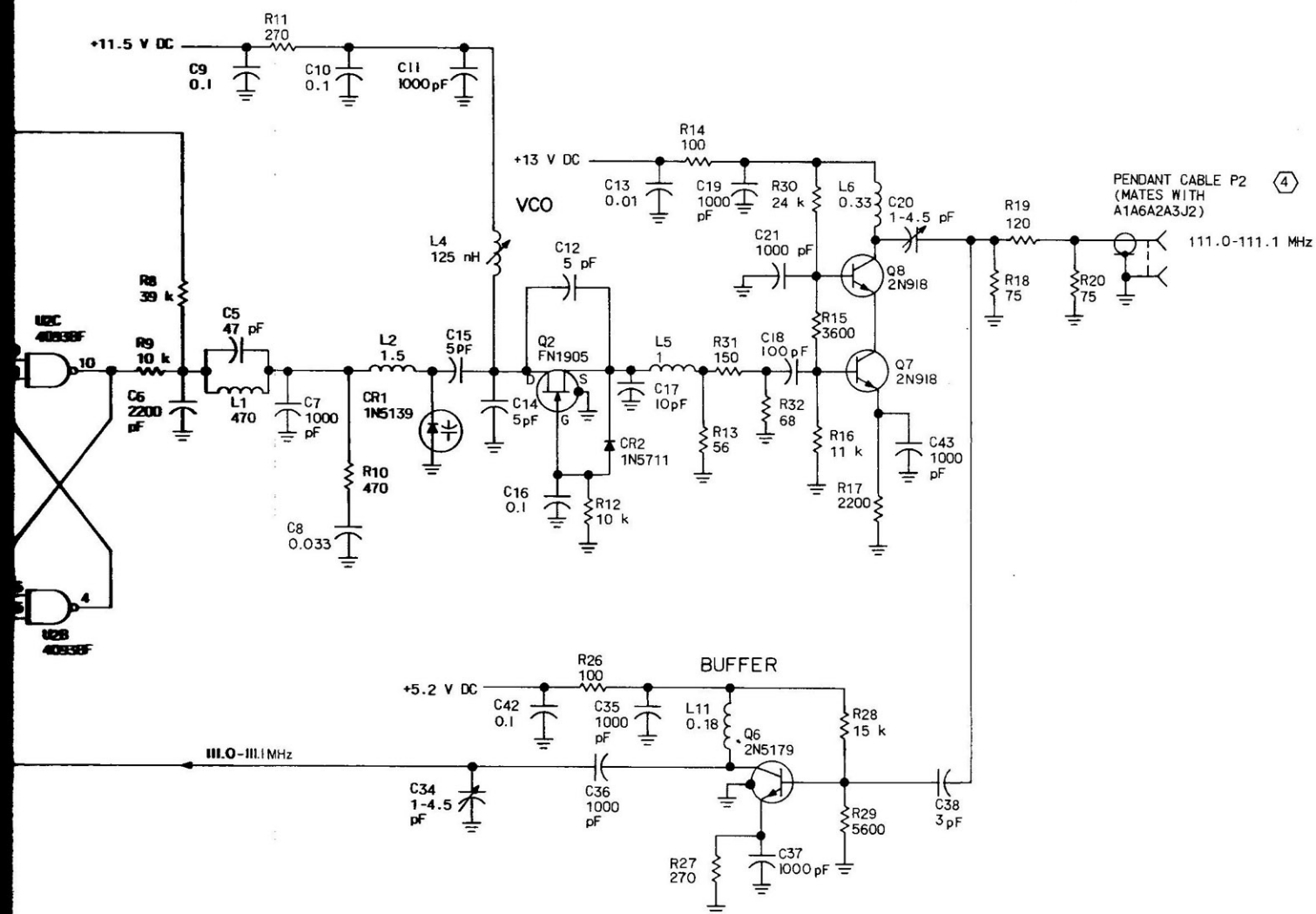
(5)

GND
(FROM A1A6A1A3P1-16)

BLK

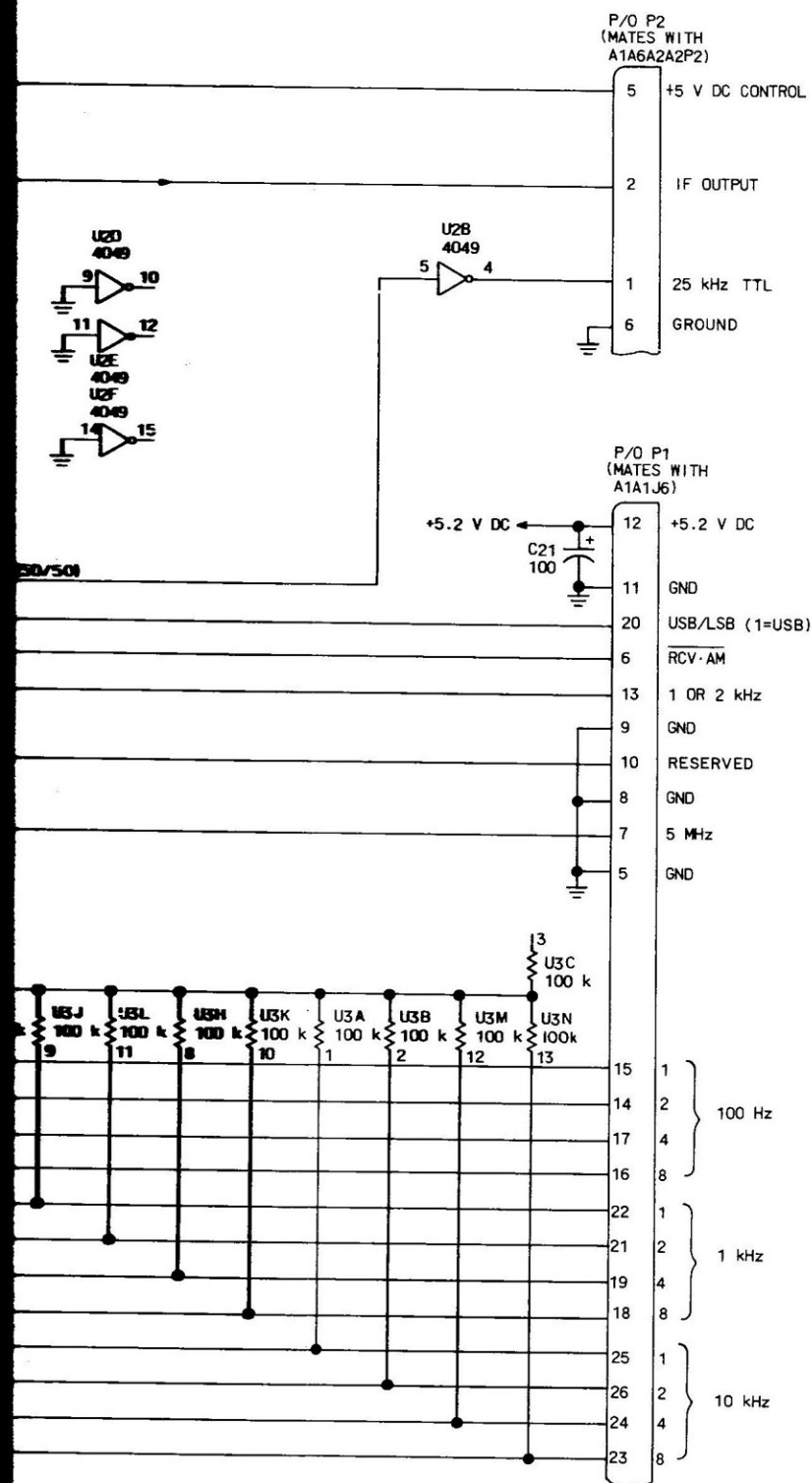
NOTES:

- (1) UNL ARE AND
- (2) PAR COM ASS
- (3) UNL SHO AND
- (4) LOC
- (5) REF



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TPA-0074-015

Figure 4-10. Frequency Converter
A1A6A1A4, Schematic Diagram



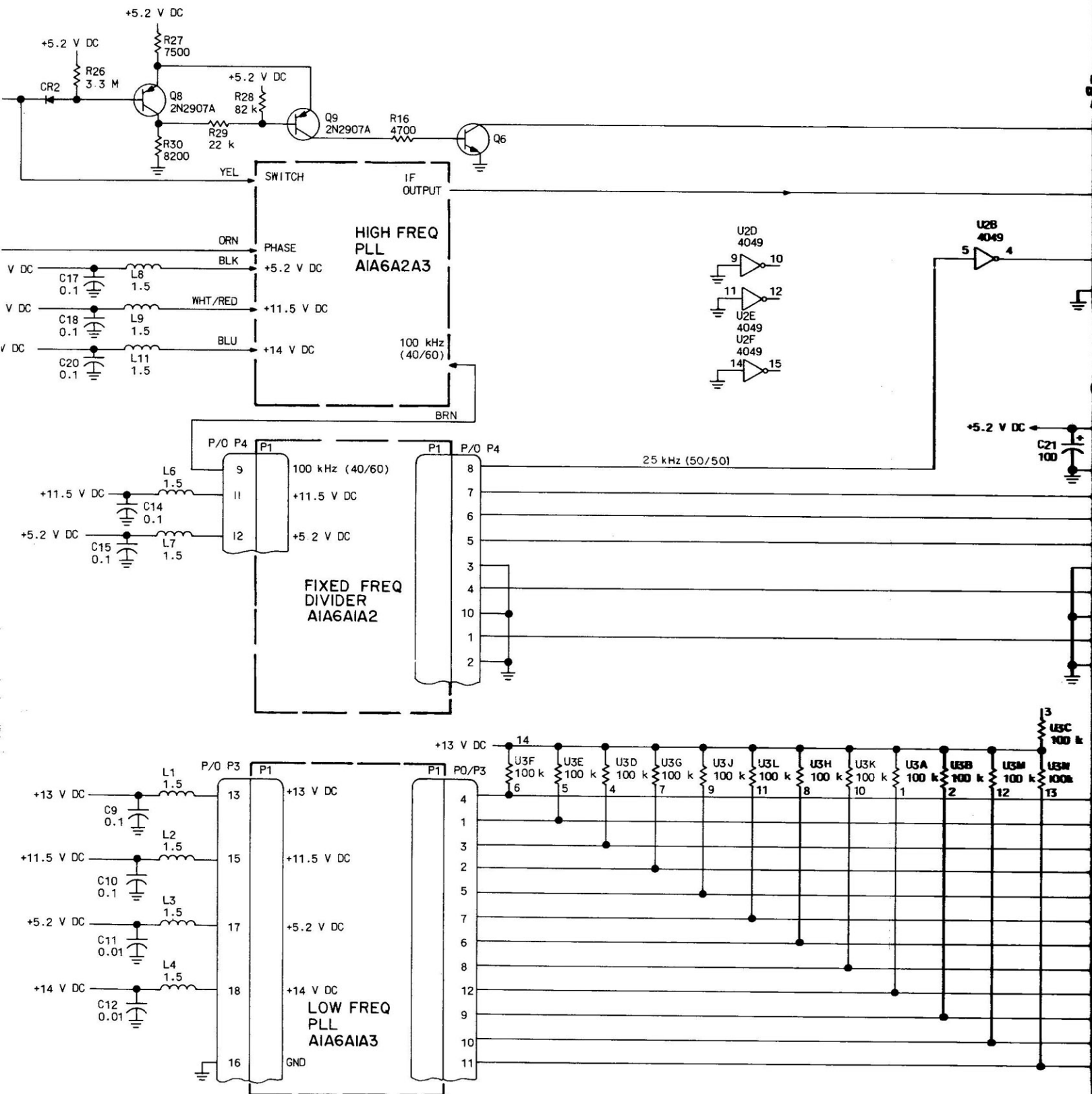
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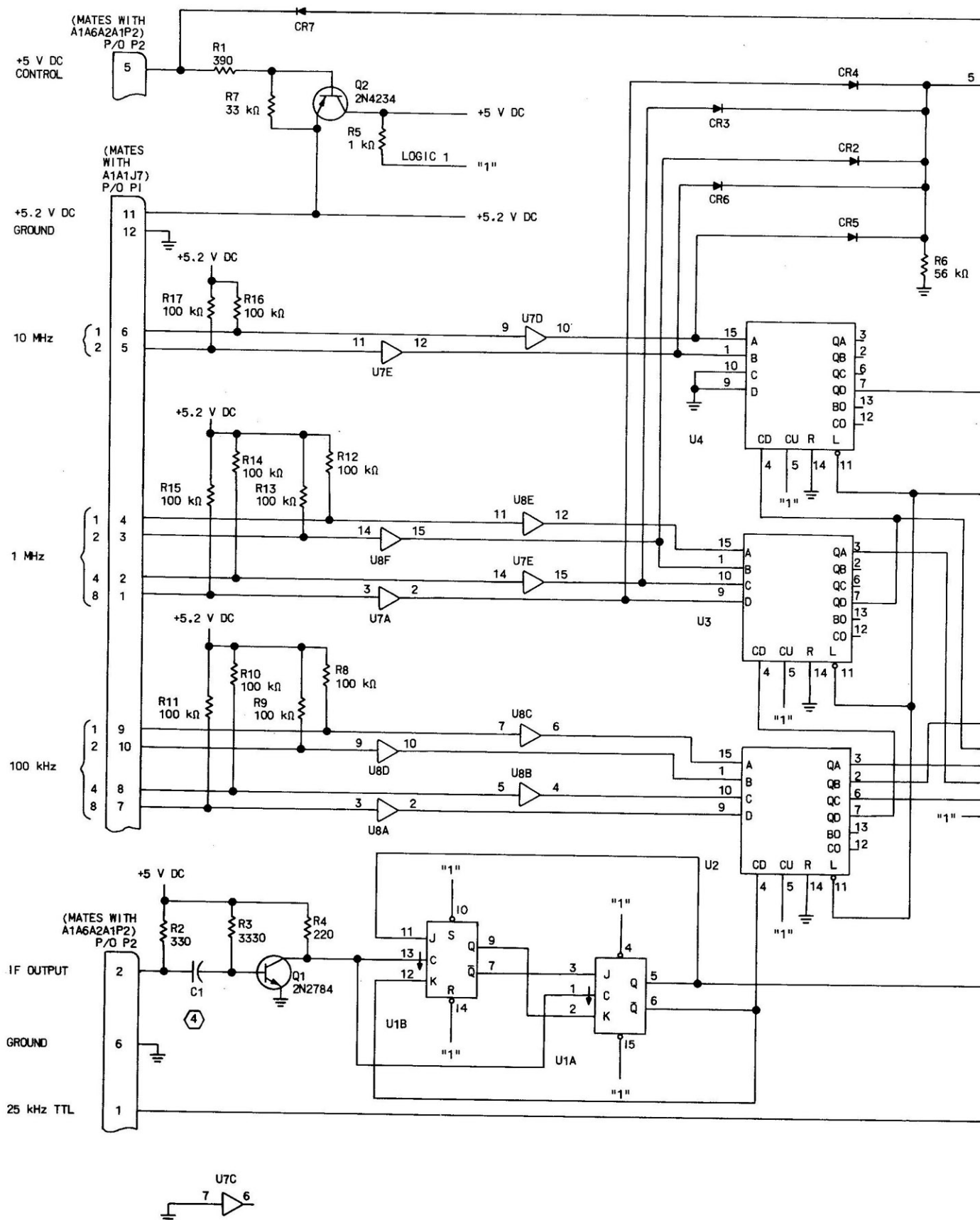
- ① UNLESS OTHERWISE SPECIFIED RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICRO-FARADE, AND INDUCTANCE VALUES ARE IN MICRO-HENRYS.
- ② UNLESS OTHERWISE NOTED, DIODES ARE TYPE 1N4454 AND TRANSISTORS ARE TYPE 2N2222A.
- ③ UNLESS CONNECTION TO POWER AND GROUND ARE SHOWN; MICROCIRCUIT PIN NO. 1 IS +5.2 V DC AND PIN NO. 8 IS GROUND, EXCEPT 1558 WHERE MICROCIRCUIT PIN NO. 8 IS +13 V DC AND PIN NO. 4 IS GROUND.
- ④ PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ⑤ VALUE SELECTED DURING FINAL TEST.

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Figure 4-11. Voltage Regulator
A1A6A2A1 Schematic Diagram

4-25/4-26 (Blank)





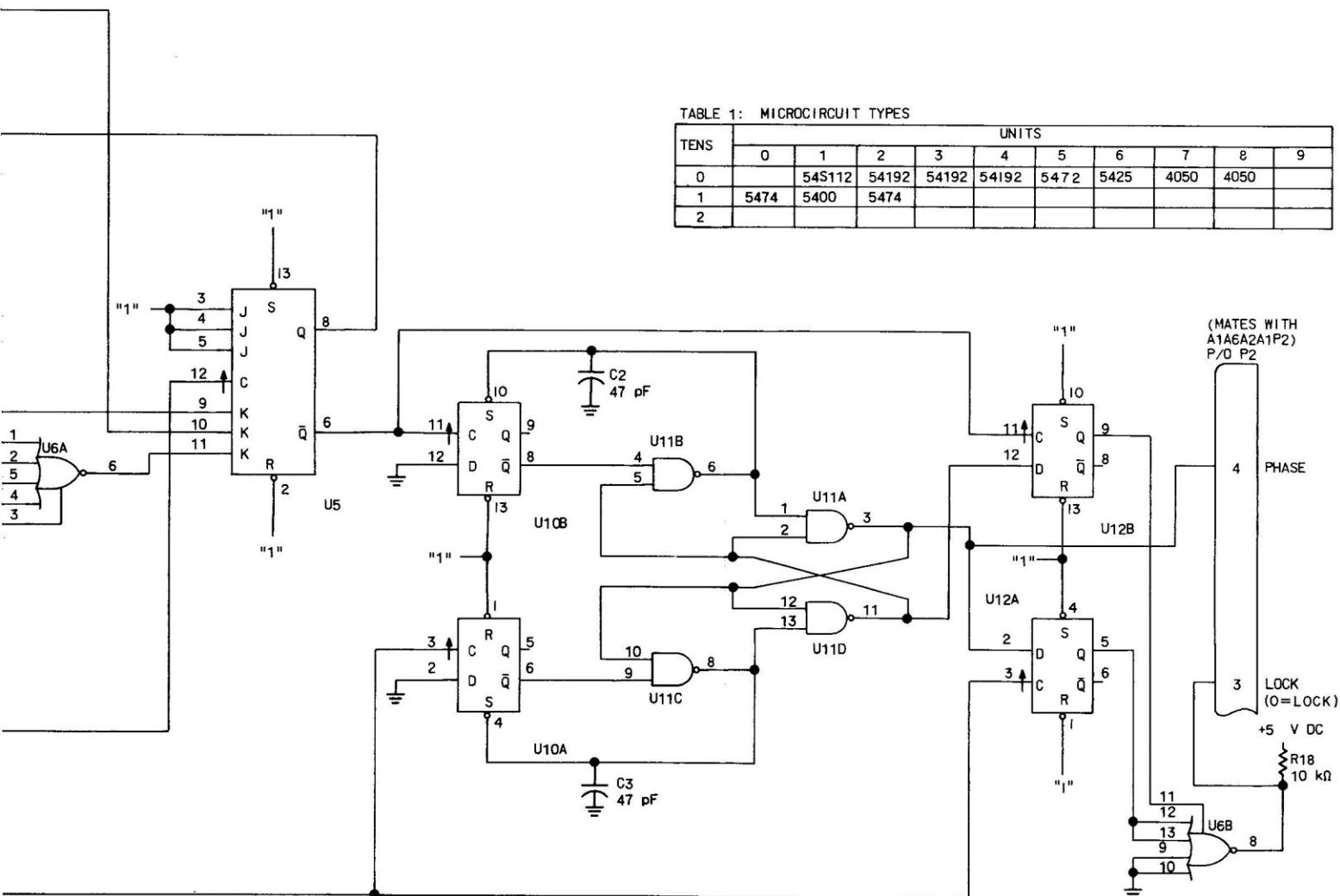


NOTES:

- ① UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND DIODES ARE TYPE 1N4454
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ③ UNLESS CONNECTIONS TO POWER AND GROUND ARE SHOWN; MICROCIRCUIT PIN NO. 14 IS +5 V DC AND PIN NO. 7 IS GROUND. EXCEPT: U1,U2,U3,U4, PIN NO. 16 IS +5 V DC AND PIN NO. 8 IS GROUND. U7,U8, PIN NO. 1 IS +5.2 V DC AND PIN NO. 8 IS GROUND
- ④ C1 VALUE IS 1000 pF ON 601-3875-001 AND 51 pF ON 601-3875-002.

TABLE 1: MICROCIRCUIT TYPES

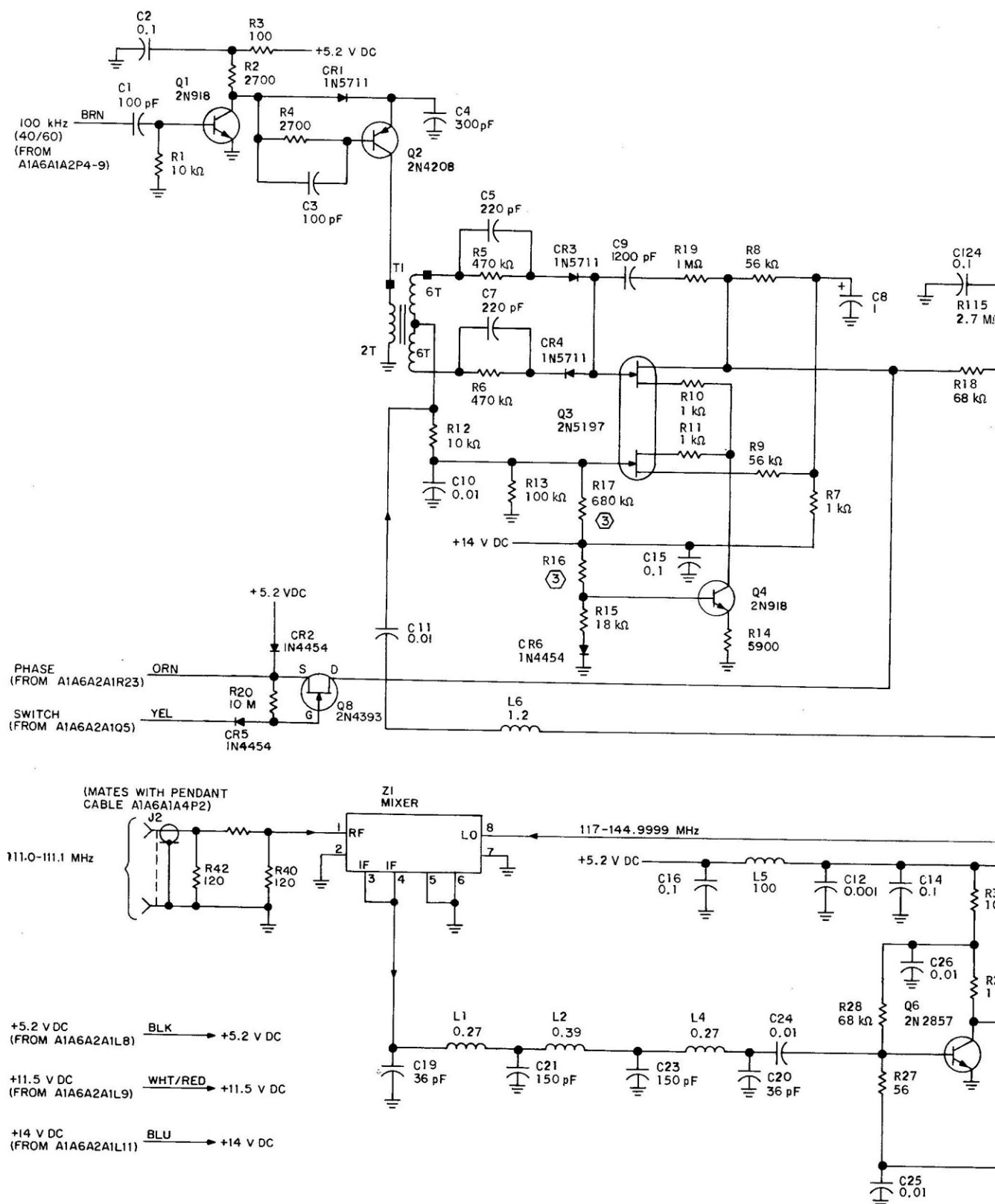
TENS	UNITS									
	0	1	2	3	4	5	6	7	8	9
0		54S112	54192	54192	54192	5472	5425	4050	4050	
1	5474	5400	5474							
2										



635-0143

Figure 4-12. Variable Frequency Divider
A1A6A2A2, Schematic Diagram

4-27/4-28 (Blank)



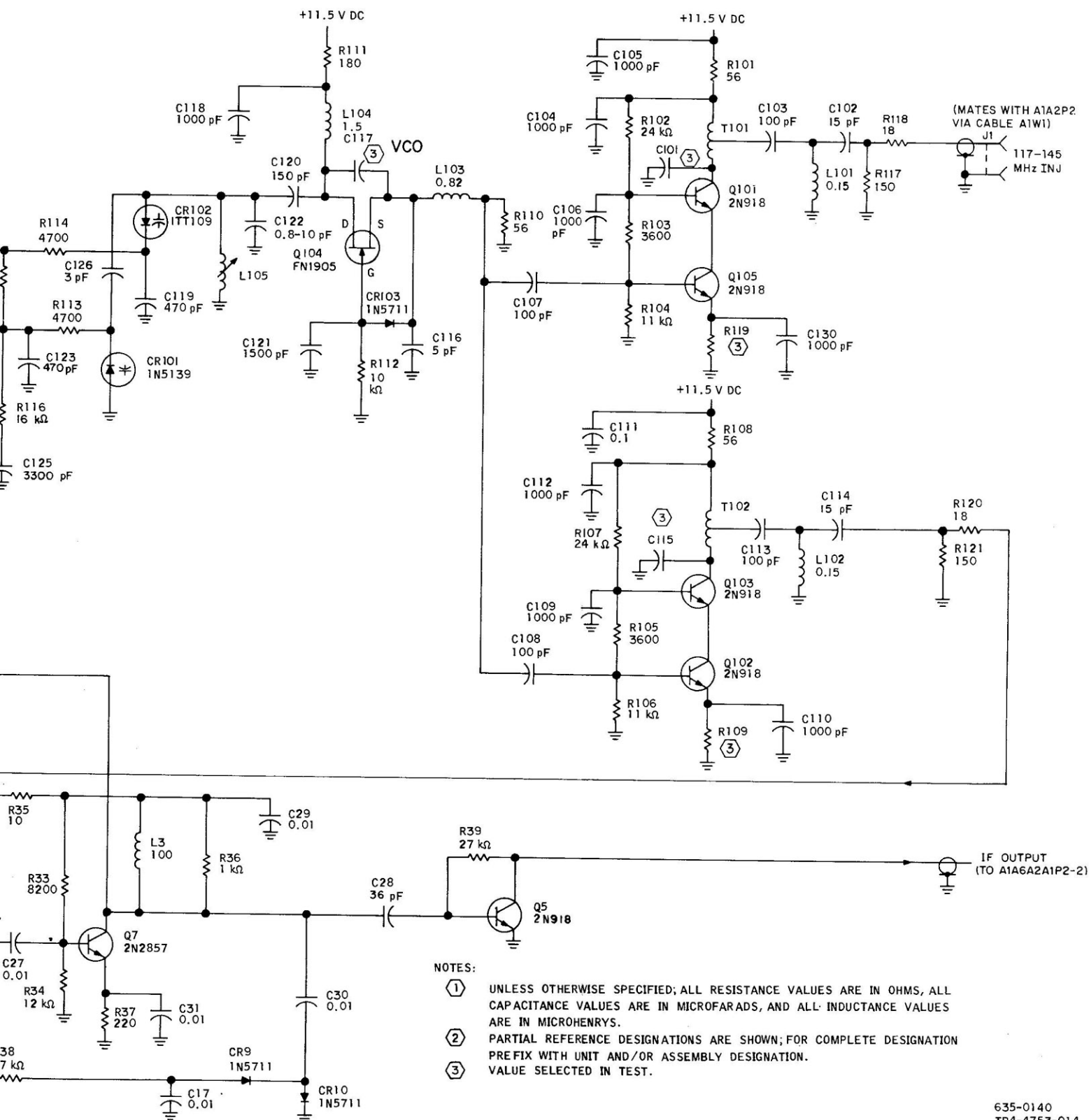
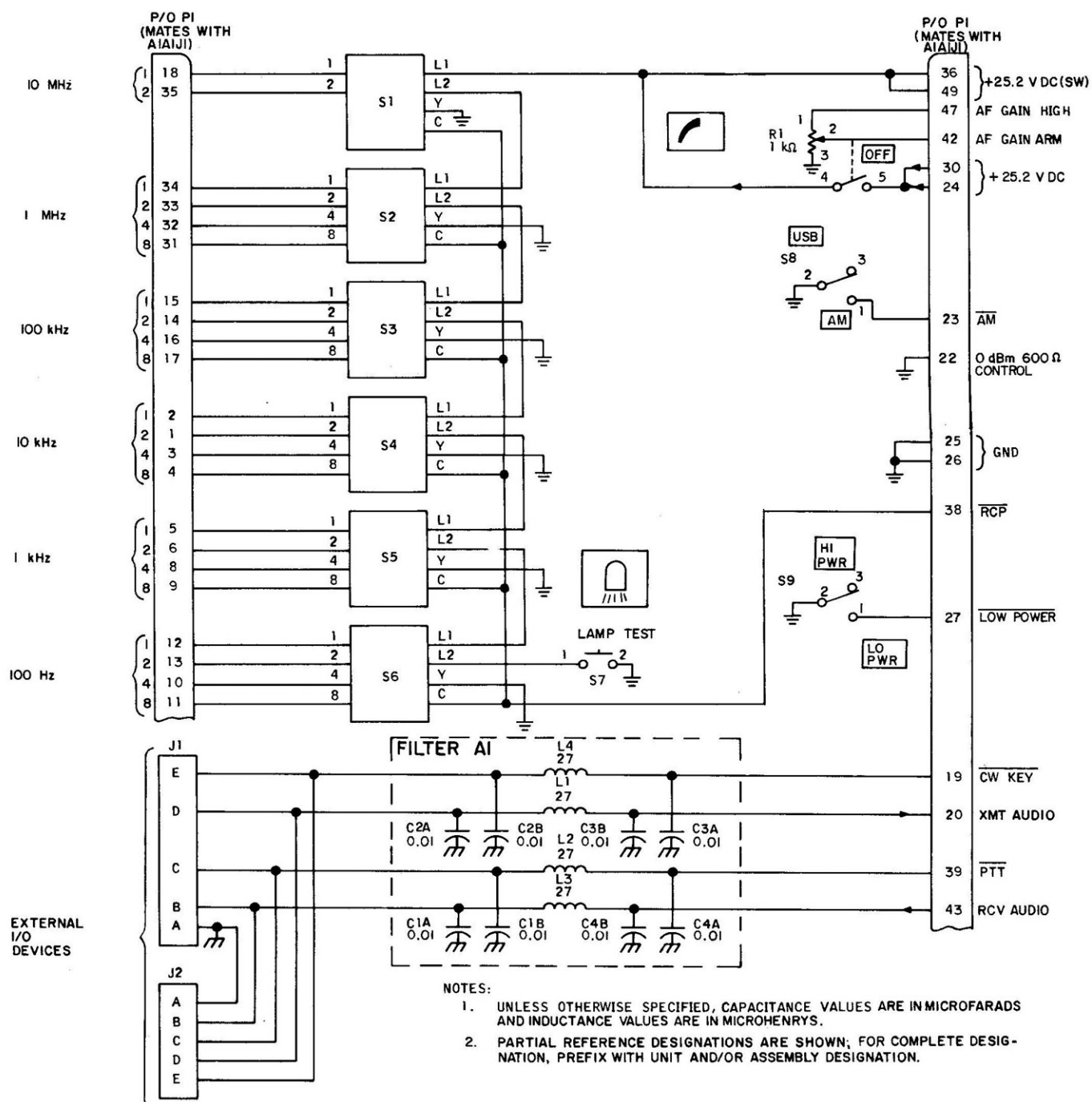


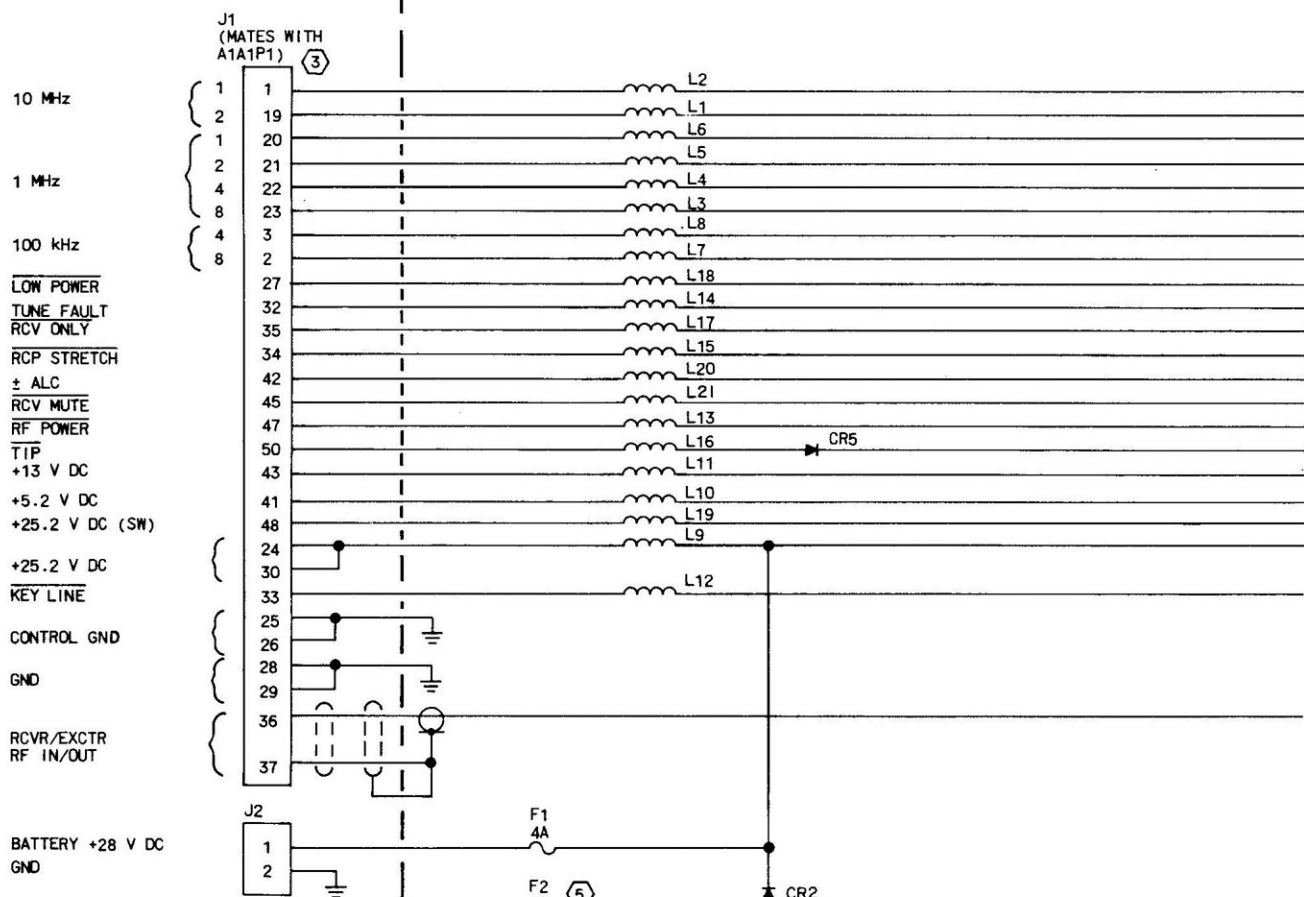
Figure 4-13. Hf Phase-Lock Loop A1A6A2A3, Schematic Diagram



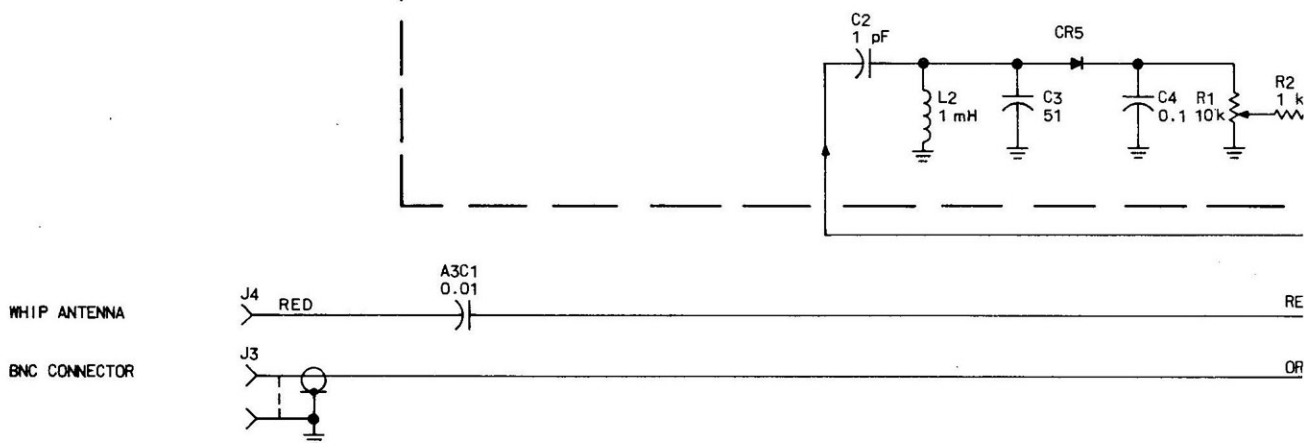
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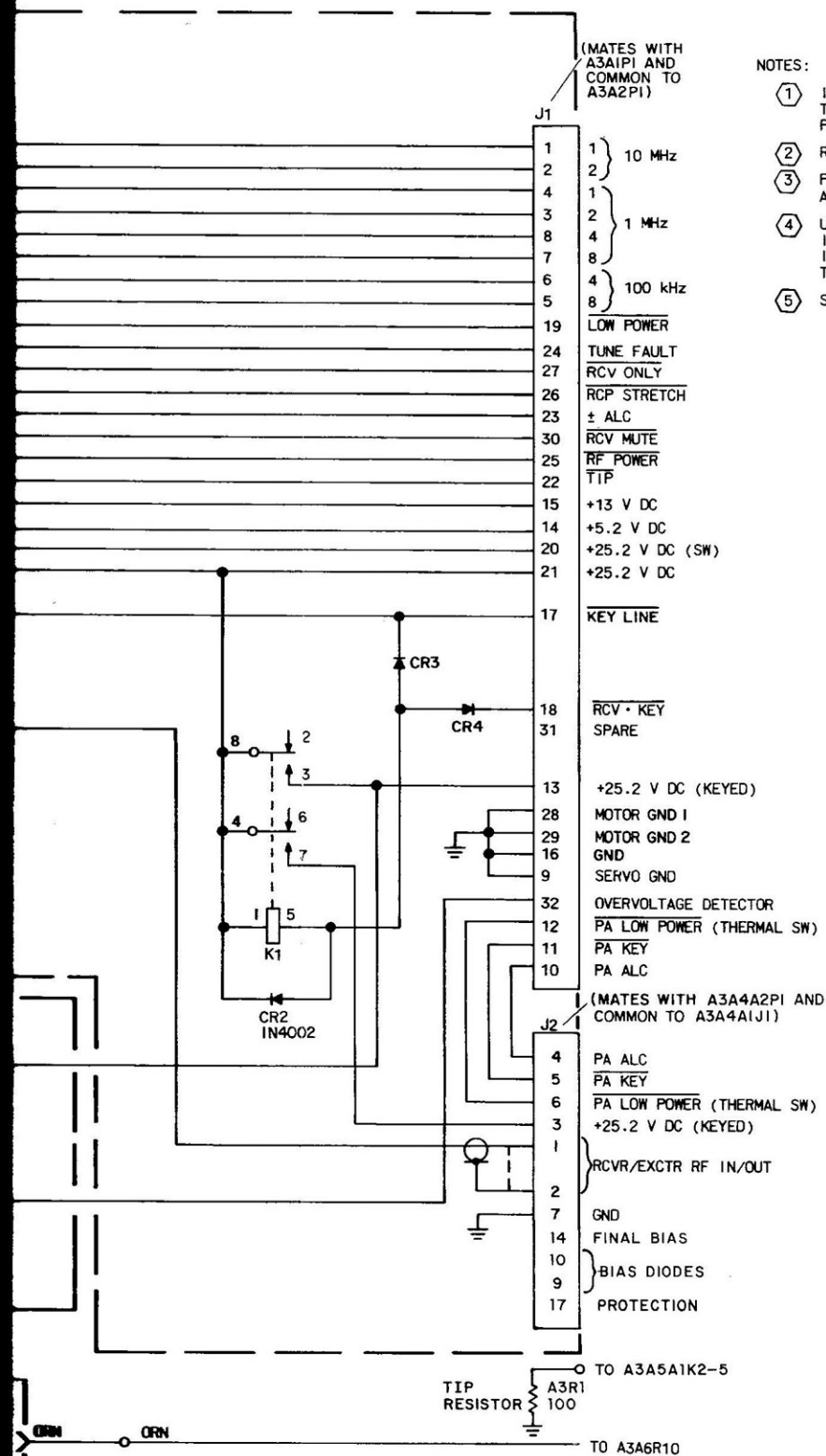
Figure 4-14. Receiver-Transmitter Control
A2, C-5310/URC, Schematic Diagram

FILTER BOARD A3A1



OVERVOLTAGE DETECTOR A3A2



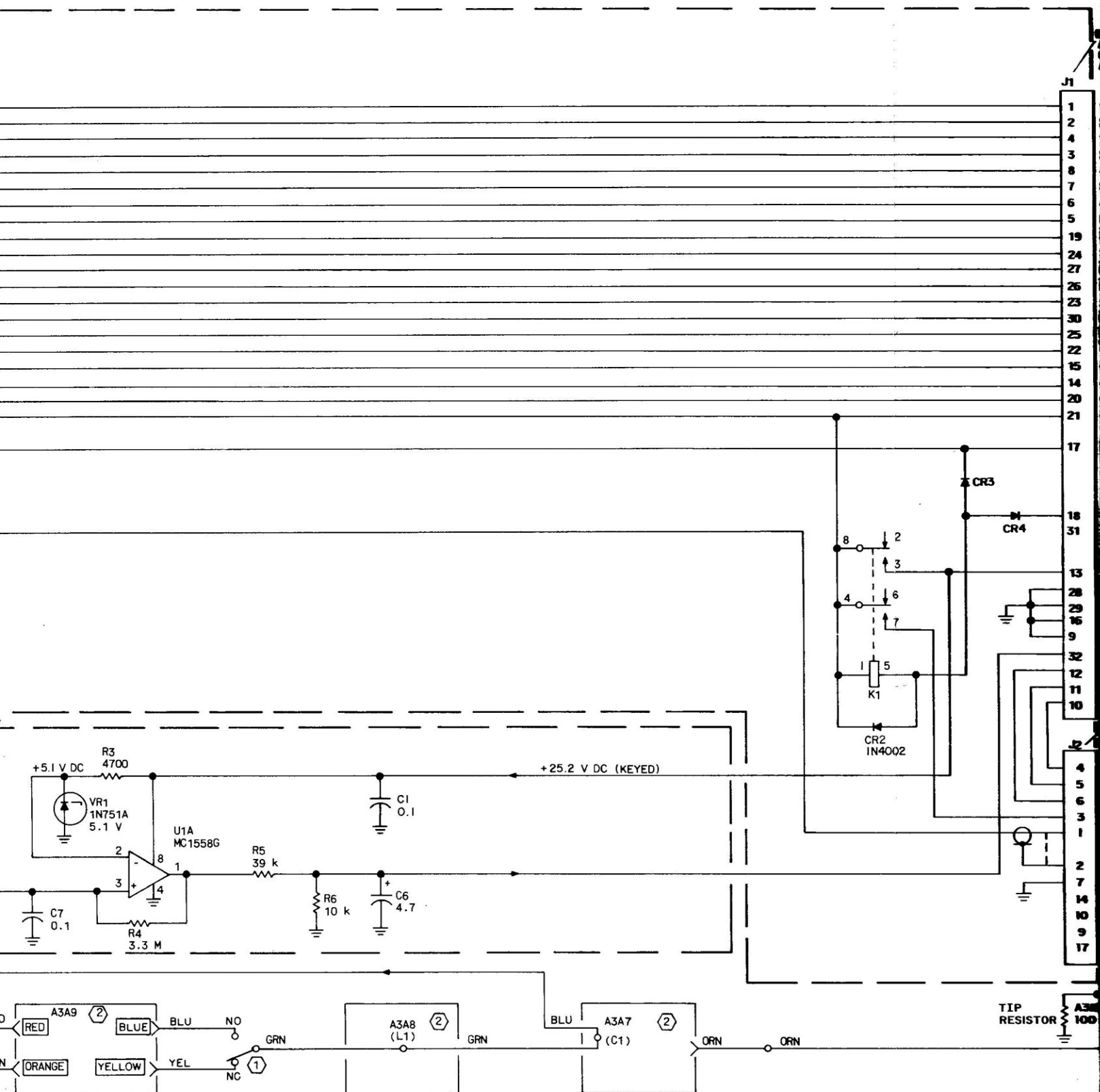


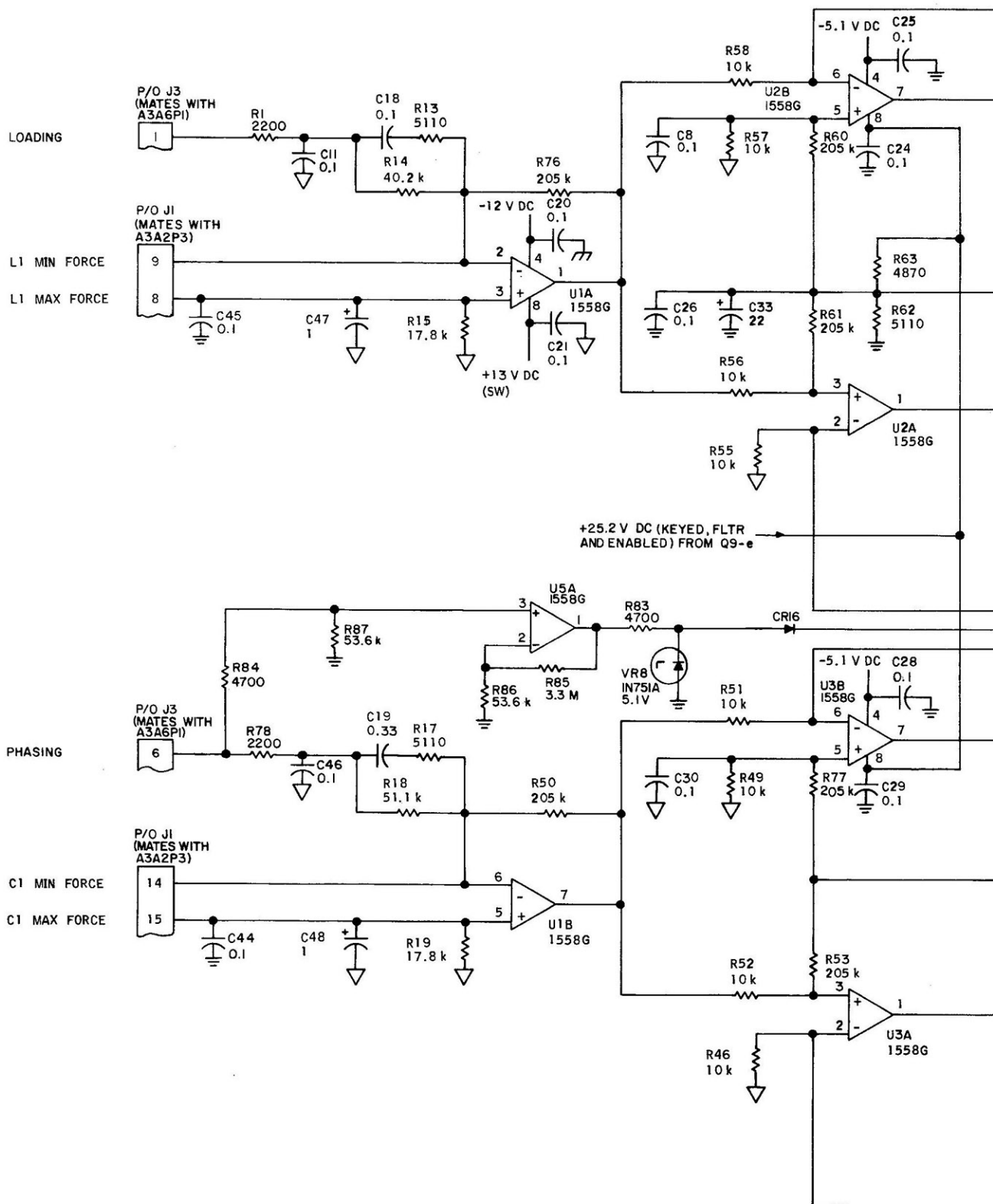
NOTES:

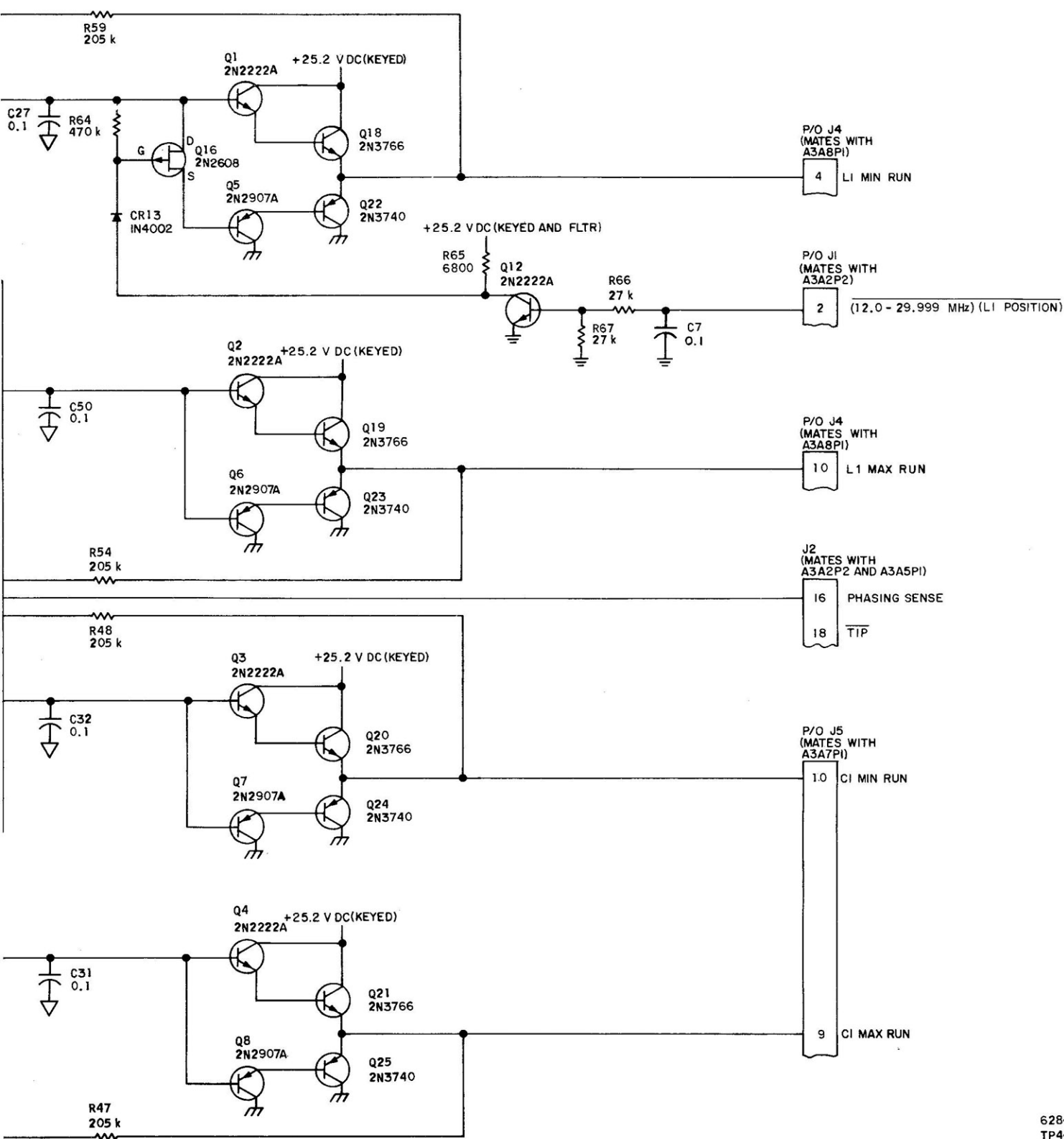
- ① INSERTION OF THE WHIP ANTENNA MECHANICALLY CHANGES THE CIRCUIT FROM NORMALLY CLOSED TO NORMALLY OPEN POSITION.
- ② REFER TO SCHEMATIC OF THIS ASSEMBLY.
- ③ PINS 4 THRU 18, 31, 38, 39, 40, 44, 46, 49 AND 51 ON A3J1 ARE SPARES.
- ④ UNLESS OTHERWISE SPECIFIED RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND INDUCTANCE VALUES ARE 100 μ H, AND DIODES ARE TYPE 1N4454.
- ⑤ SPARE FUSE

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Figure 4-15. Amplifier-Coupler A3,
AM-5280/URC, Schematic Diagram
4-33/4-34 (Blank)







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Figure 4-16. Servo Amplifier A3A1,
Schematic Diagram (Sheet 1 of 2)

4-35/4-36 (Blank)



NOTE:

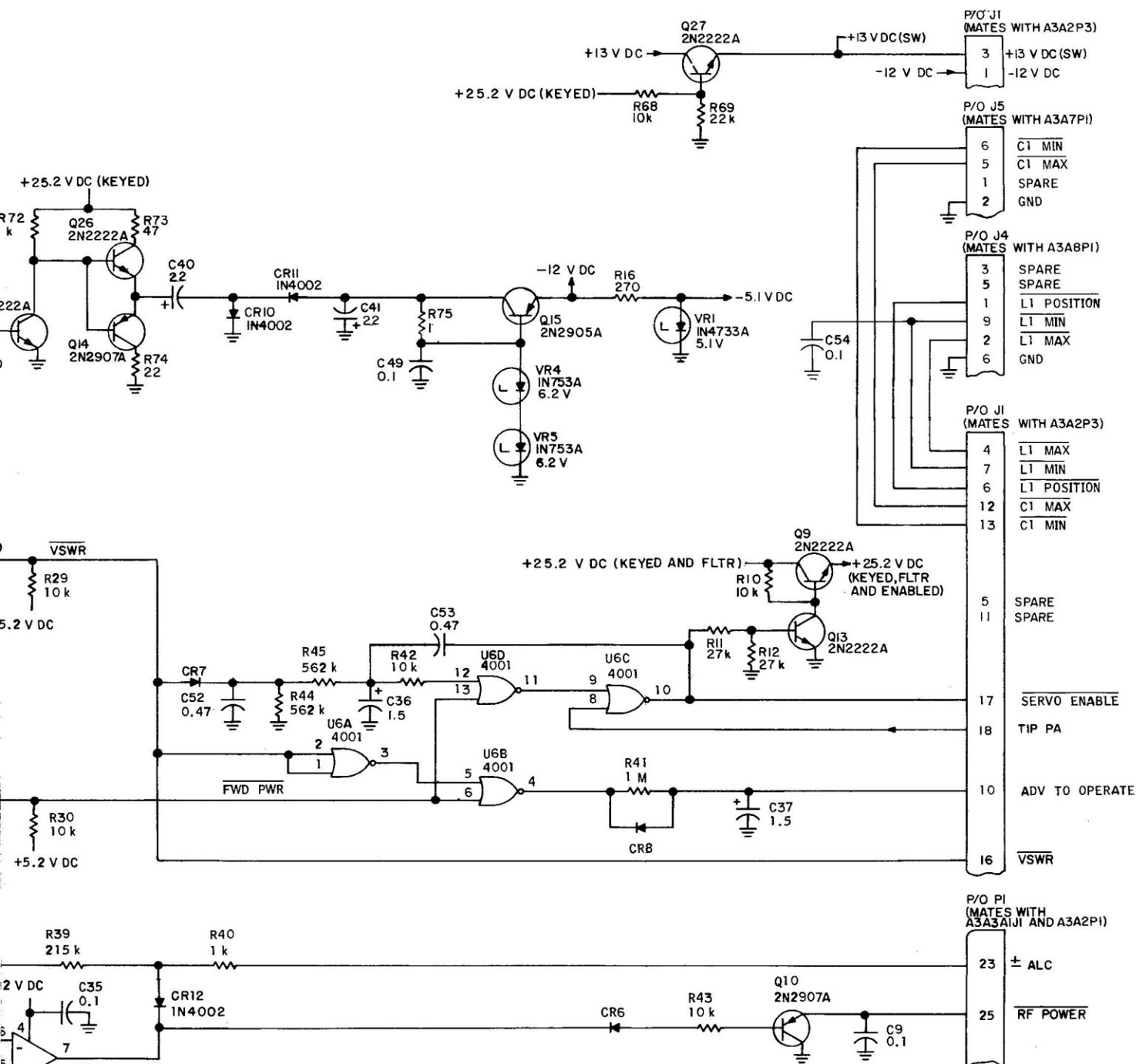
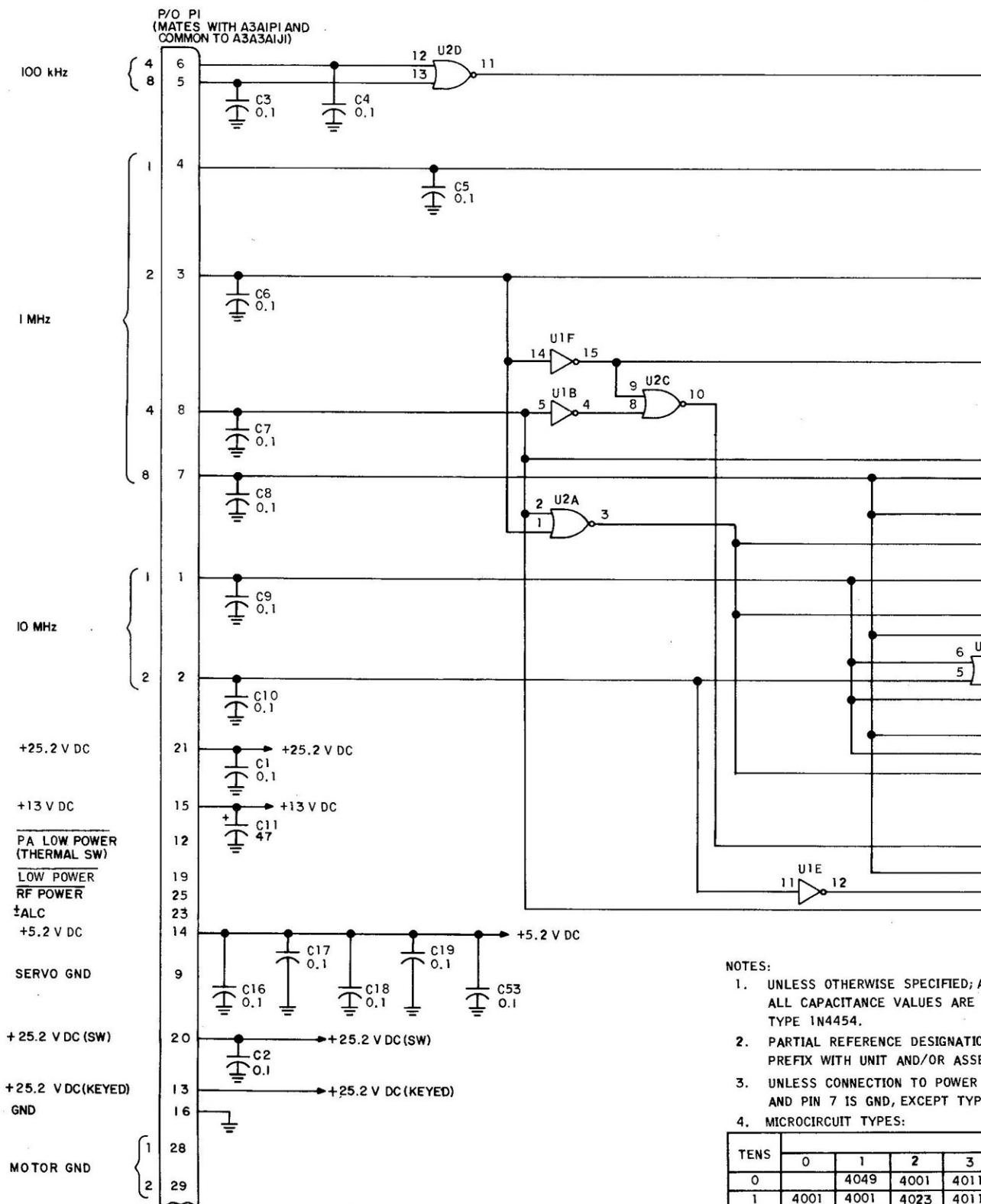
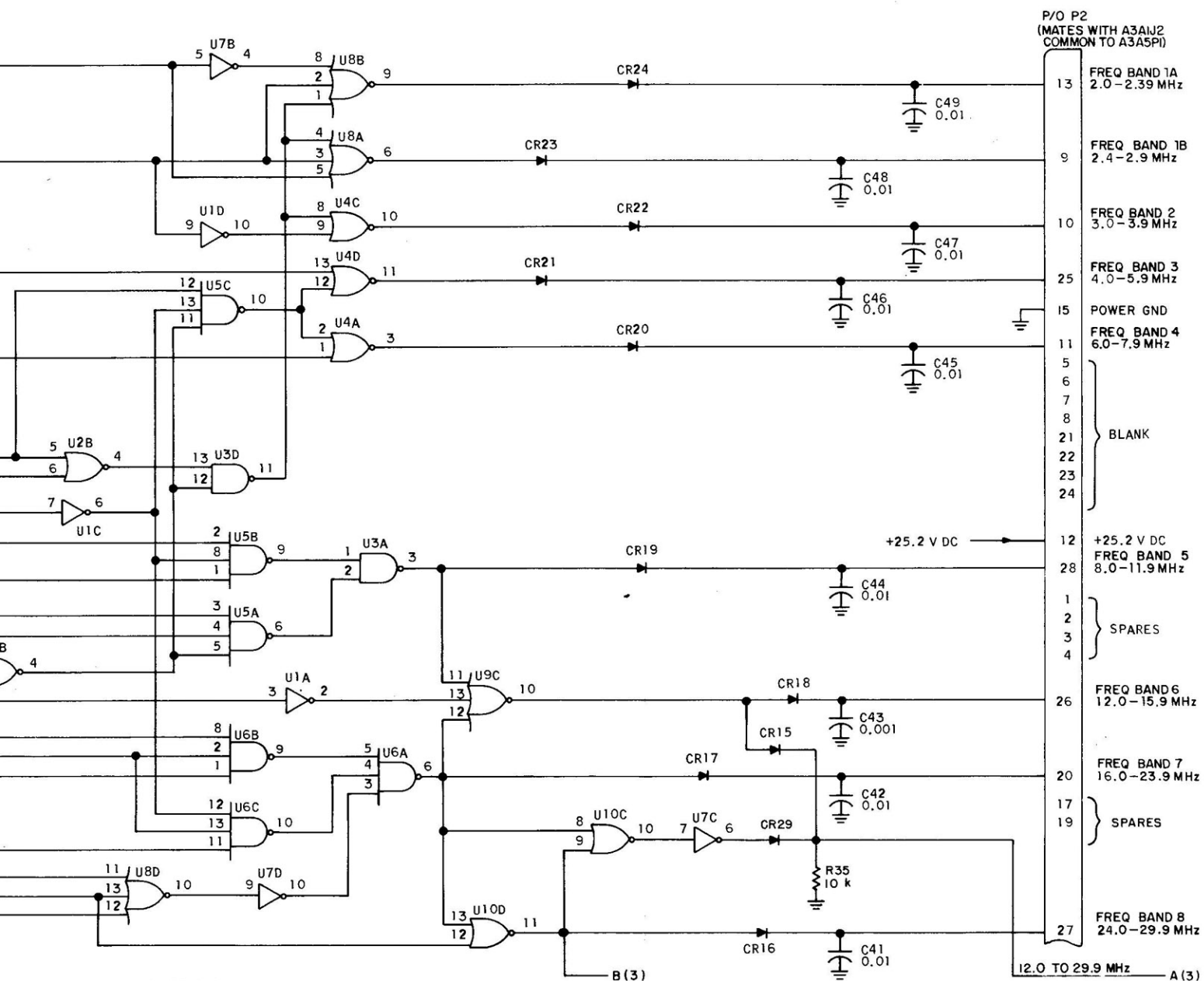


Figure 4-16. Servo Amplifier A3A1, Schematic Diagram (Sheet 2)

4-37/4-38 (Blank)





ALL RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS, AND ALL DIODES ARE

4001 SERIES ARE SHOWN; FOR COMPLETE DESIGNATION
SEE THE COMPONENT ASSEMBLY DESIGNATION.

POWER AND GROUND ARE SHOWN PIN 14 IS +5 V DC
AND GROUND WHERE PIN 1 IS +5 V DC AND PIN 8 IS GND.

UNITS					
4	5	6	7	8	9
4001	4023	4023	4049	4025	4025
4011	4049	4023	4011	4023	4011

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Figure 4-17. Control Logic A3A2,
Schematic Diagram (Sheet 1 of 3)

4-39/4-40 (Blank)

KEY LINE
TIP

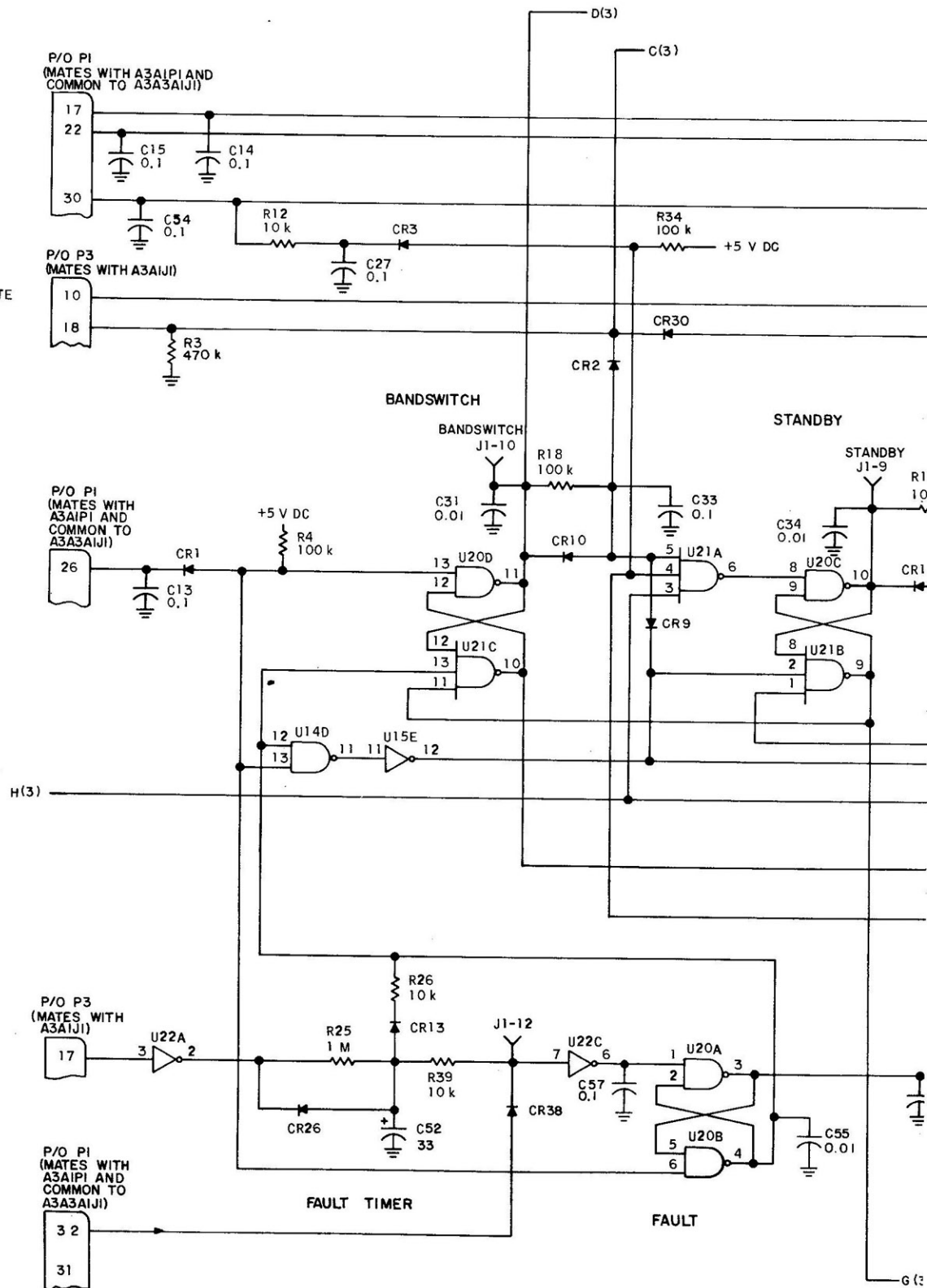
RCV MUTE

ADV TO OPERATE
TIP PA

RCP STRETCH

SERVO ENABLE

OVERVOLTAGE
DETECTOR
SPARE



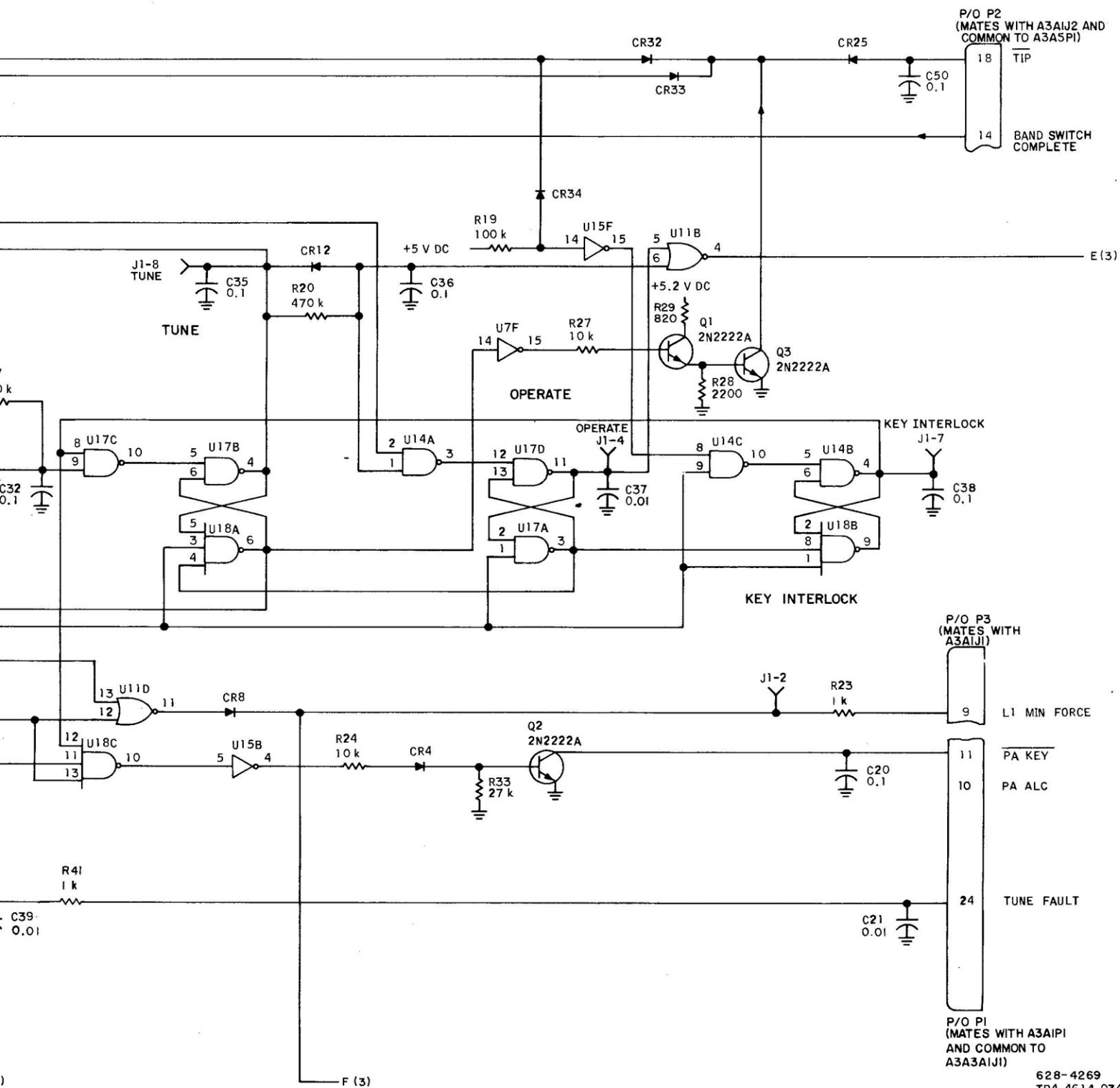
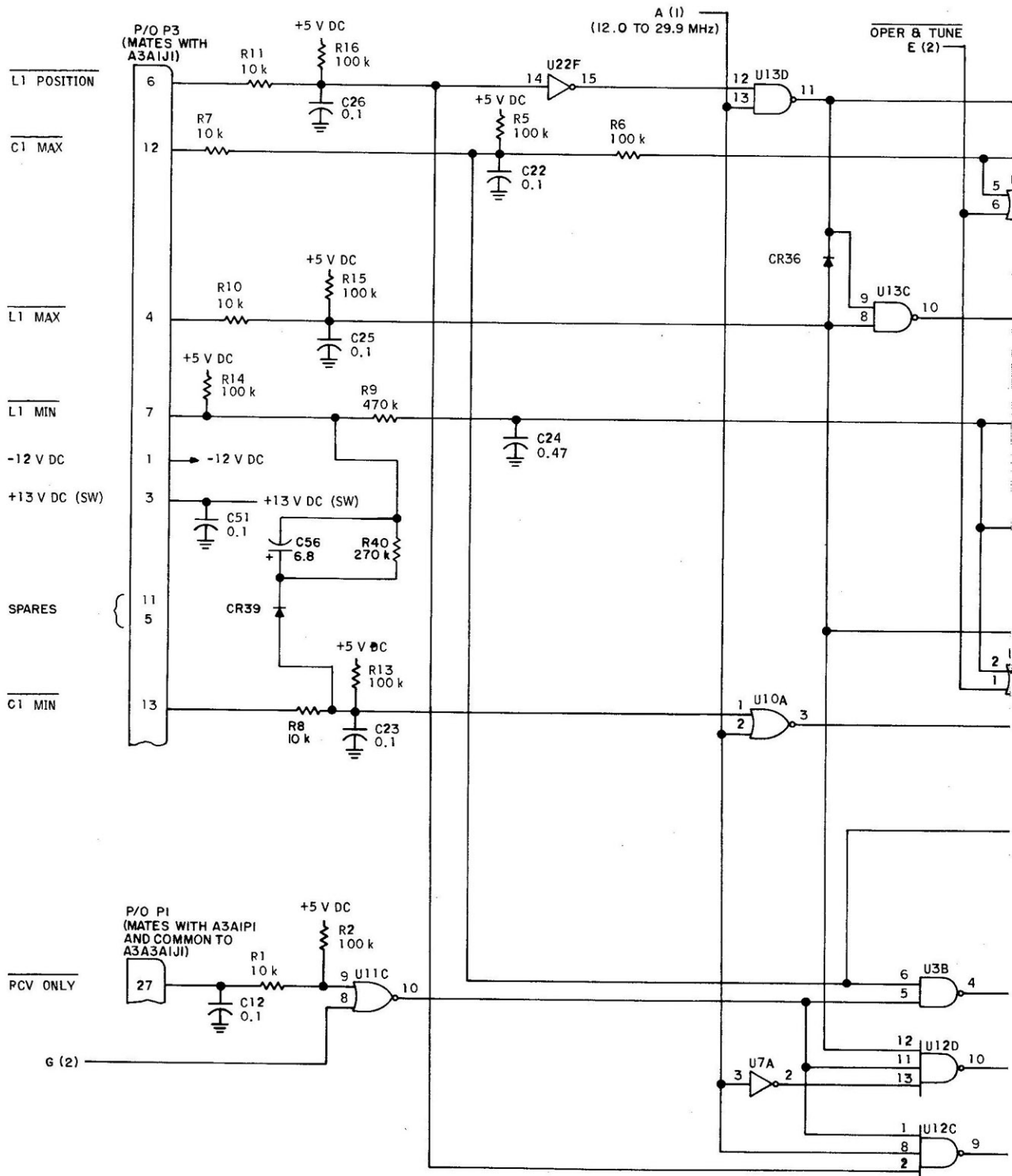
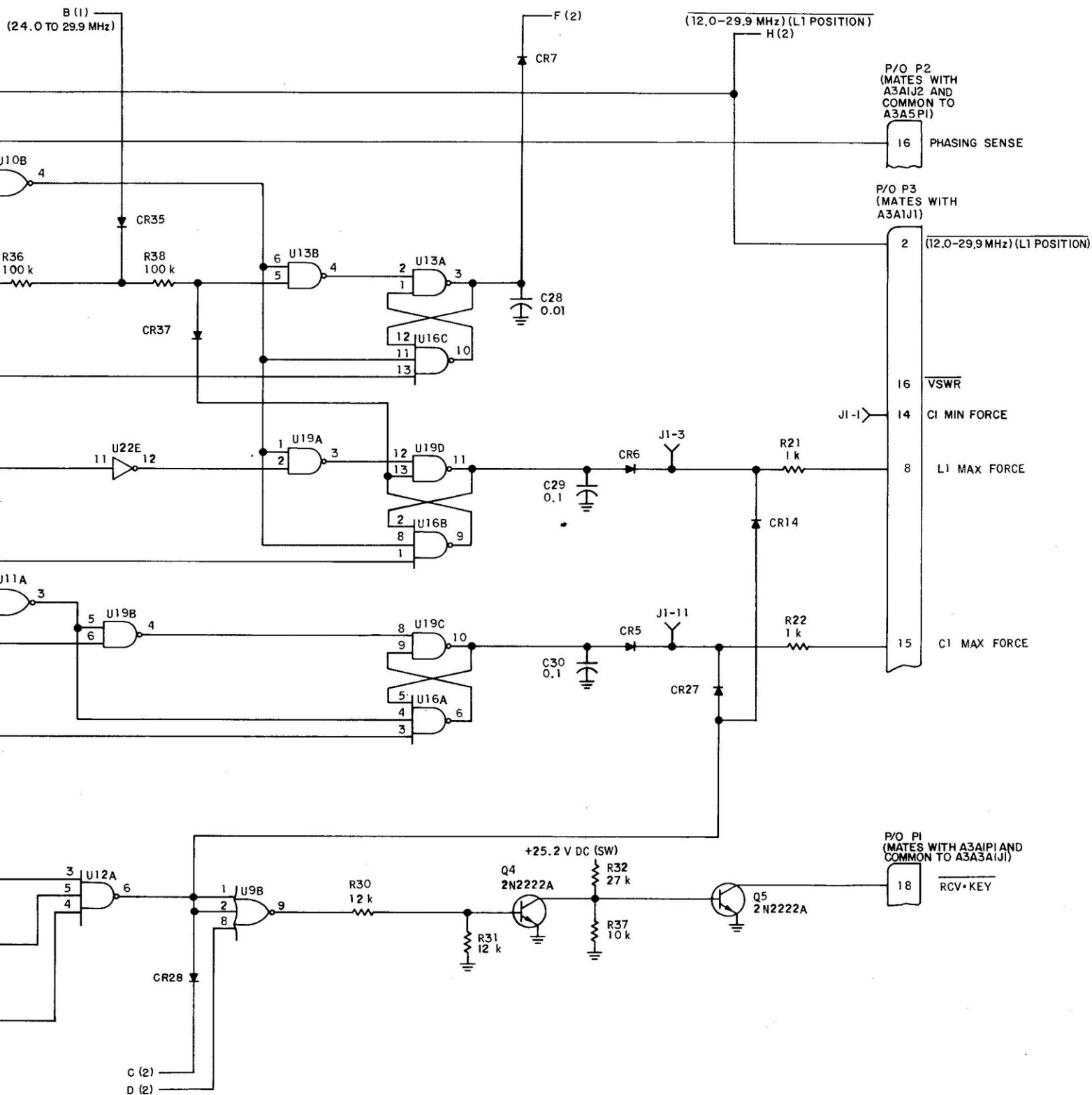


Figure 4-17. Control Logic A3A2,
Schematic Diagram (Sheet 2)

4-41/4-42 (Blank)





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TP4-4614-034

Figure 4-17. Control Logic A3A2
Schematic Diagram (Sheet 3)

4-43/4-44 (Blank)

FINAL BIAS

BIAS DIODES

BIAS DIODES

PROTECTION

RCV RF

RCVR/EXCTR
RF IN/OUT

PA ALC

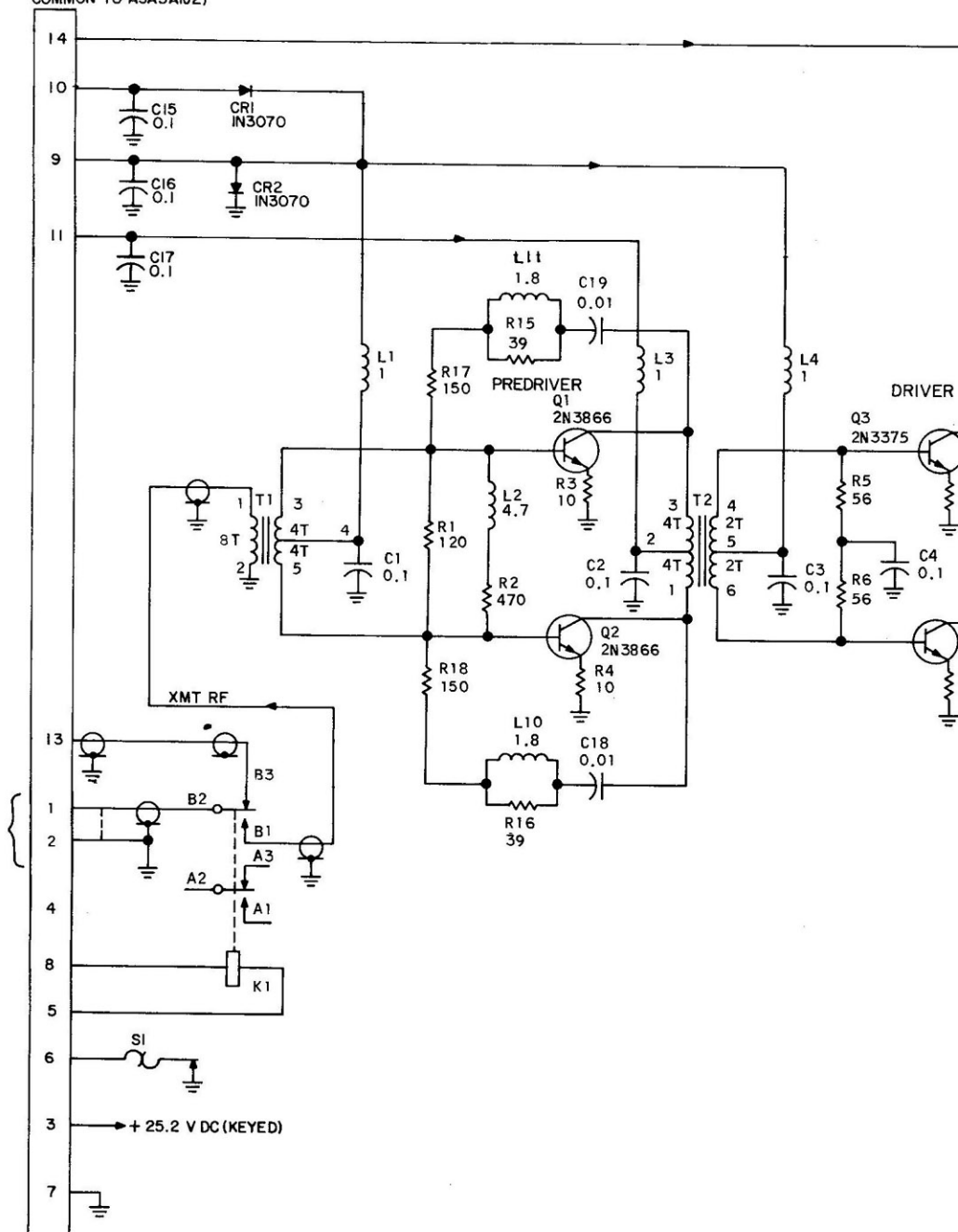
+25.2 V DC (KEYED)
AND DELAYED
PA KEY

PA LOW POWER
(THERMAL SW)

+25.2 V DC (KEYED)

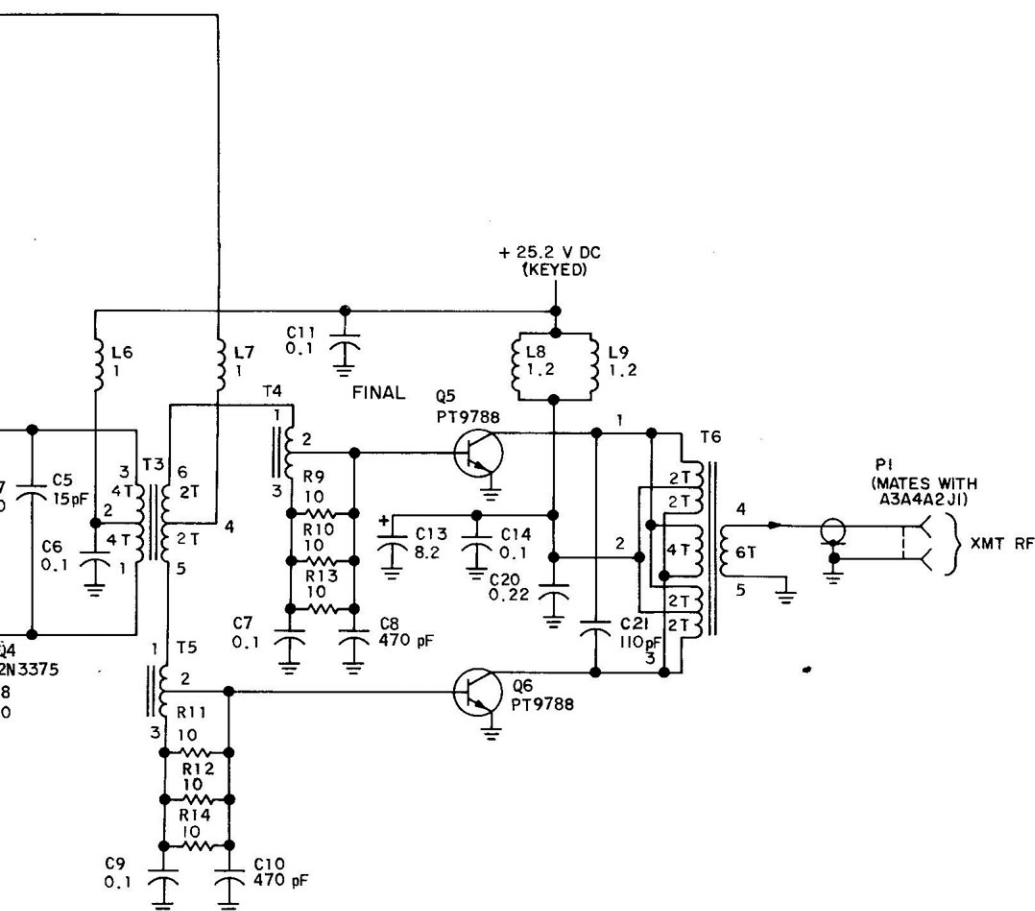
GND

J1
(MATES WITH A3A4A2P1 AND
COMMON TO A3A3AIJ2)



HIGHEST REFERENCE DESIGNATION			
R17	C16	CR4	L12
Q6	T6	K1	S1

REFERENCE DESIGNATION NOT USED			
R13, R14	CR3		
R15, R16			



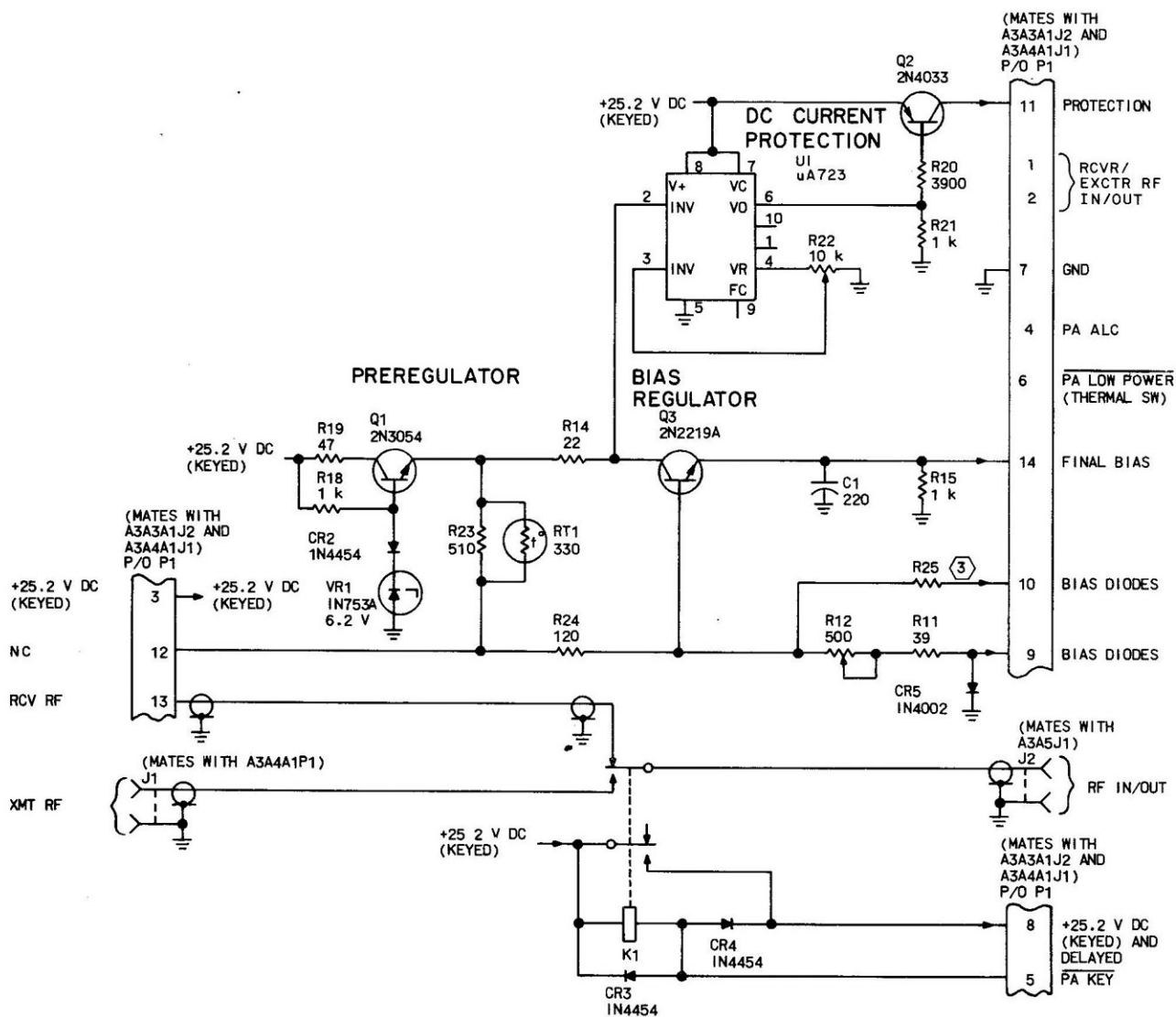
NOTES:

- ① UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND INDUCTANCE VALUES ARE IN MICROHENRYS.
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.

628-4271
TP4-5311-014

Figure 4-18. RF Subassembly A3A4A1,
Schematic Diagram

4-45/4-46 (Blank)

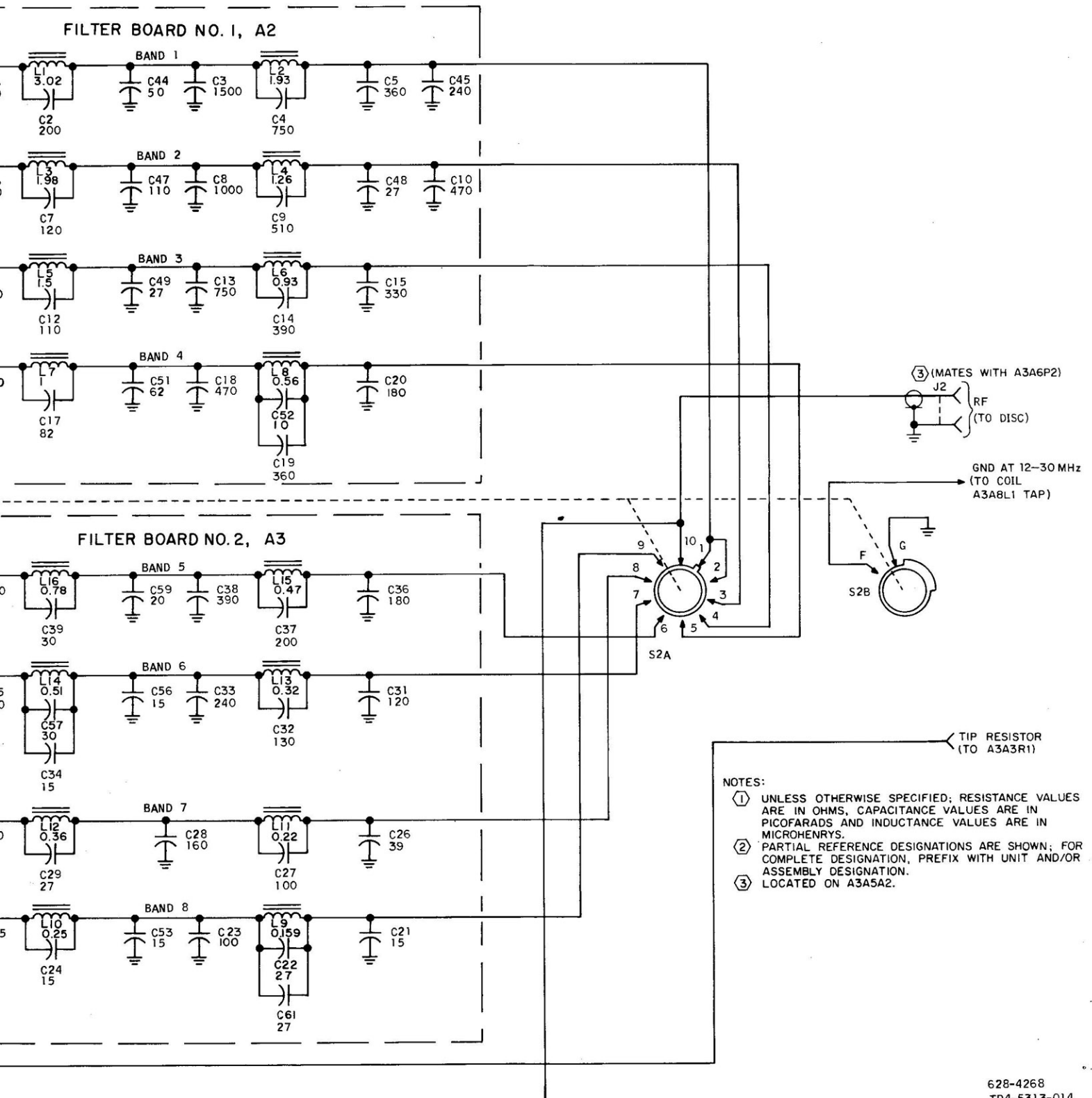


NOTES:

- ① UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS.
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ③ R25 IS A TEST SELECT, MAY BE 0, 3.3 OR 4.7 OHMS.

628-4272
TP4-5312-014

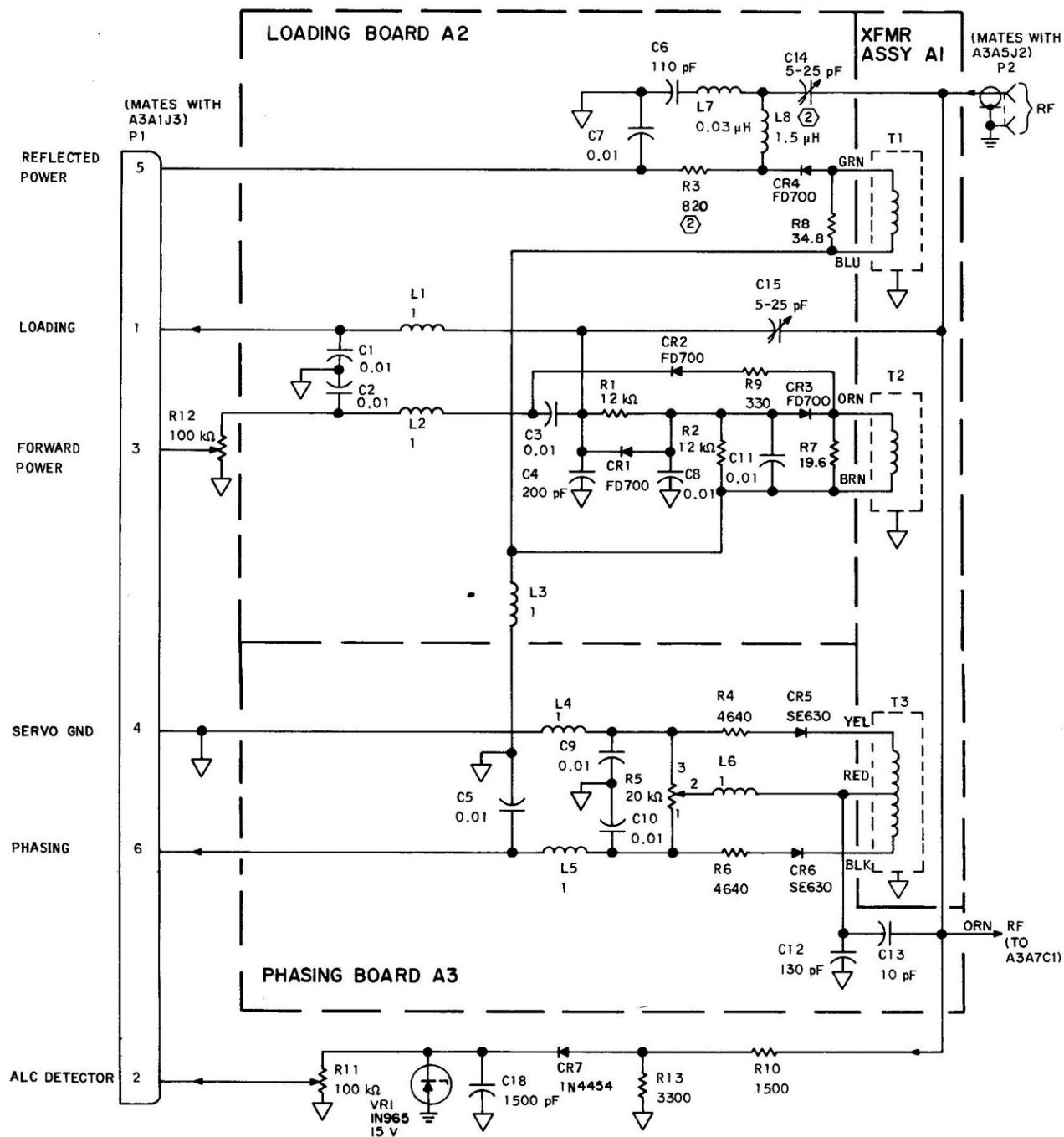
Figure 4-19. Bias/Control A3A4A2,
Schematic Diagram



628-4268
TP4-5313-014

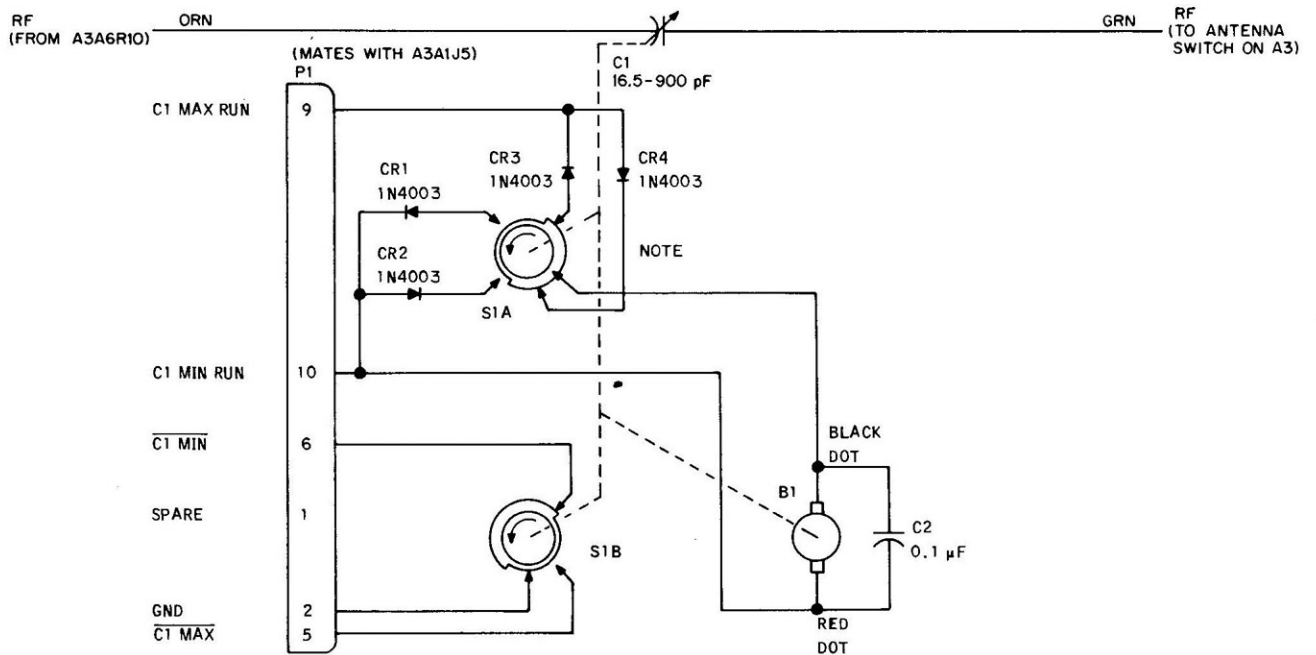
Figure 4-20. Bandswitch A3A5,
Schematic Diagram

4-49/4-50 (Blank)



628-4265
TP4-4616-014

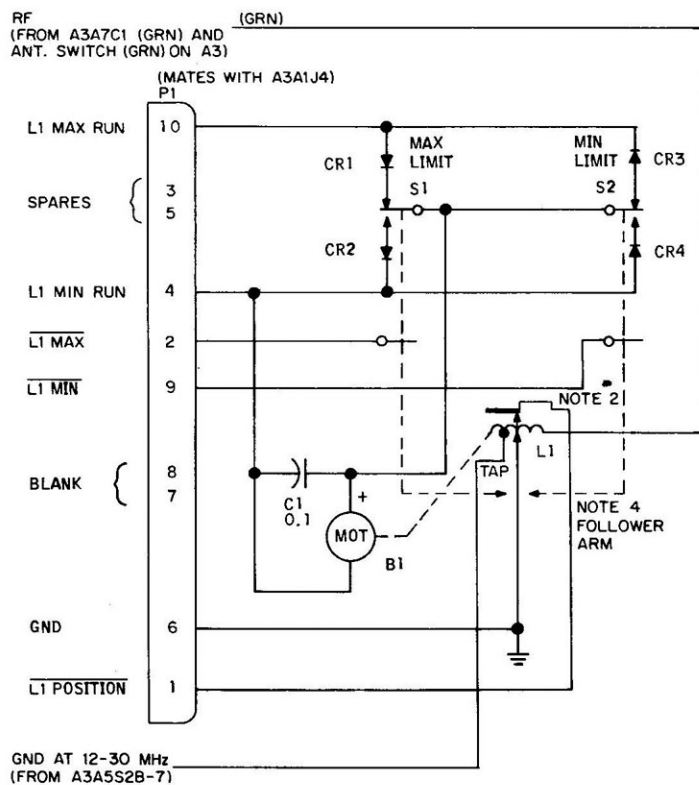
Figure 4-21. Discriminator A3A6,
Schematic Diagram



NOTE:
S1A CONTACT GOING TO CR3 IS OPEN AT MINIMUM. S1A CONTACT GOING TO CR4 IS OPEN AT MAXIMUM. ARROW IN SWITCH INDICATES DIRECTION TO MAXIMUM.

626-4266
TP4-4617-013

Figure 4-22. Tuning Capacitor A3A7,
Schematic Diagram

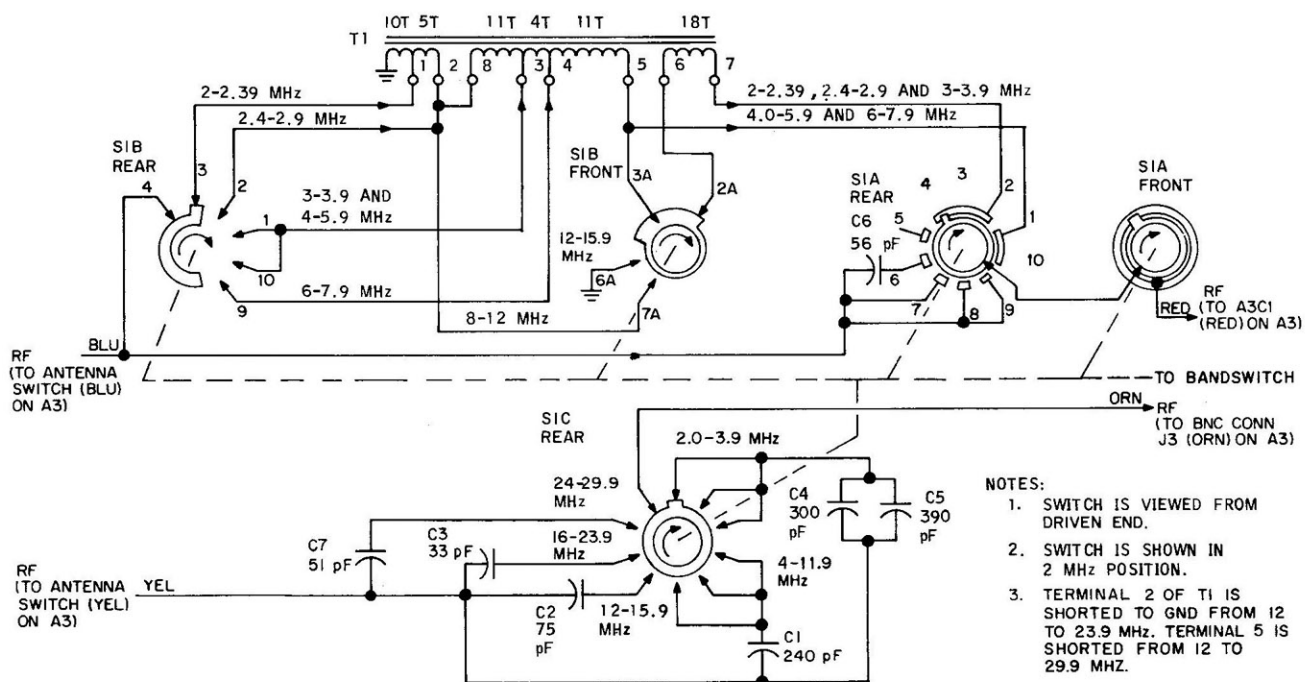


NOTES:

1. UNLESS OTHERWISE NOTED, DIODES ARE IN4003.
2. THE FOLLOWER ARM MAKES CONTACT AND GROUNDS THE POSITIONING CONTACT OVER PART OF THE COIL L1.
3. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND INDUCTANCE VALUES ARE IN MICROHENRYS.
4. FOLLOWER ARM ACTUATES S1 AND S2 AND PLACES A GROUND ON ACTUATOR (PIN 2 OR 9).

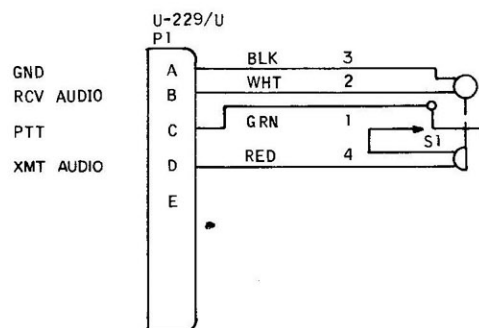
628-4267
TP4-4682-014

Figure 4-23. Tuning Coil A3A8, Schematic Diagram



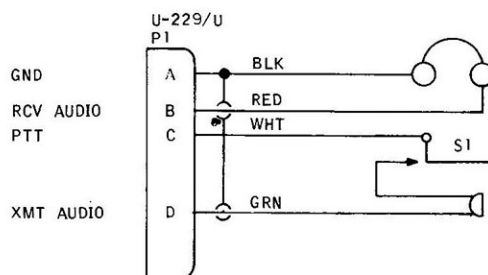
628-4264
TP4-4618-013

Figure 4-24. Autotransformer A3A9,
Schematic Diagram



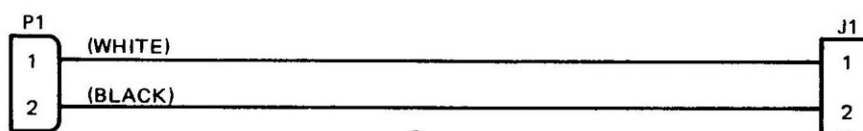
TP4-9386-012

Figure 4-25. Handset H-5017/PRC-515,
Schematic Diagram



TP4-9388-012

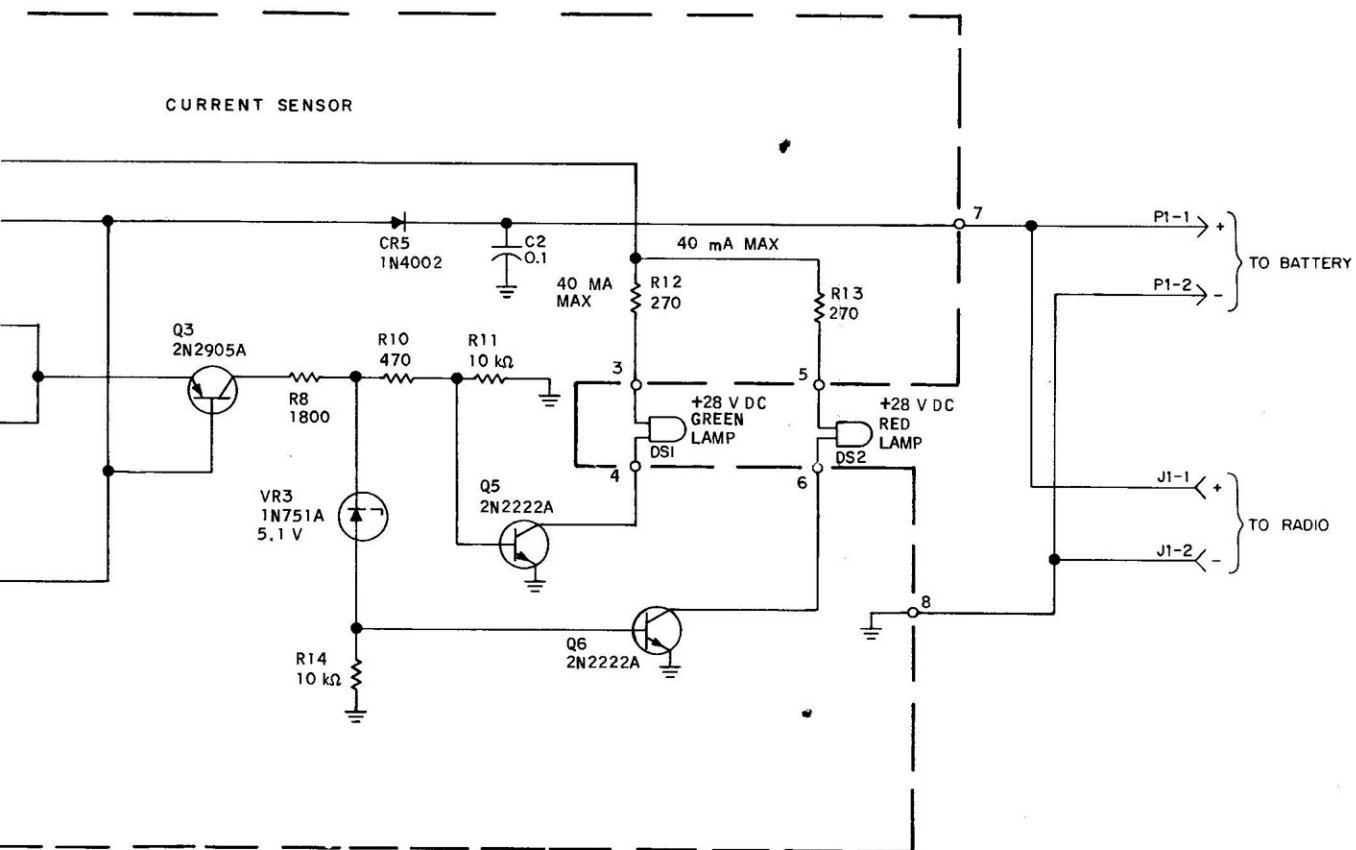
Figure 4-26. Headset-Microphone H-5016/
PRC-515, Schematic Diagram



NOTE: WIRE SIZE: 18 AWG.

TP5-0139-011

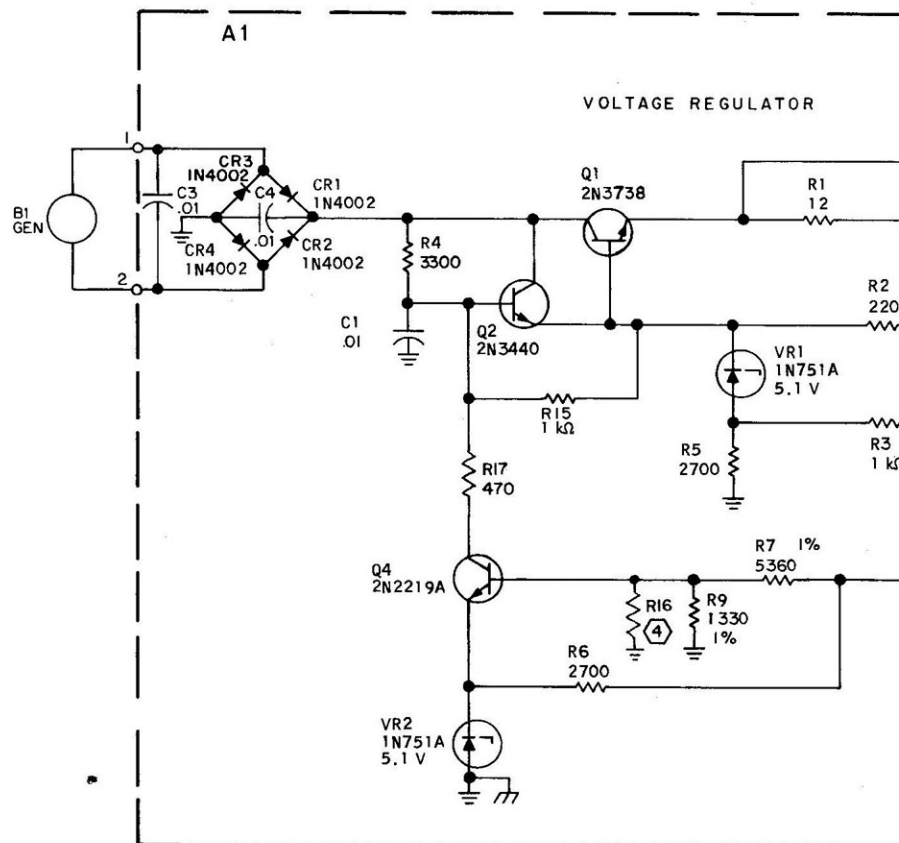
Figure 4-27. Electrical Power Cable
Assembly CX-5229/PRC-515,
Schematic Diagram



628-4273
TP4-4564-014

Figure 4-28. Direct Current Generator
G-5002/PRC-515, Schematic
Diagram

4-65/4-66 (Blank)



NOTES:

- ① UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, AND CAPACITANCE VALUES ARE IN MICROFARADS.
- ② PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
- ③ LAMPS ARE TYPE NO. 387.
- ④ VALUE SELECTED IN FINAL TEST.

CUSTOMER SERVICE INFORMATION

EQUIPMENT/MANUAL REGISTRATION

MANUAL TITLE _____

MANUAL PART NO _____

USER'S NAME _____

ADDRESS _____

ZIP: _____

EQUIPMENT TYPE NO	EQUIPMENT PART NO	SERIAL NO
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

YOU MUST COMPLETE AND RETURN THIS FORM TO RECEIVE ADDITIONAL MATERIALS.

Please indicate desired services.

- ☐ Manual Revisions
- ☐ Service Bulletins/Service Information Letters
- ☐ Instruction Books (Indicate Type)

QTY

(TITLE)	(PART NO)	(QTY)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Rockwell-Collins has endeavored to furnish you with an accurate, up-to-date manual. We welcome your comments concerning this manual. Please use the following space to report any errors, discrepancies, or omissions as well as any general comments you wish to make.

REMARKS:

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TECHNICAL PUBLICATIONS 120-120

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