TECHNICAL MANUAL

GENERAL SUPPORT MAINTENANCE MANUAL

POWER AMPLIFIER
AM-6545A/GRC-193A
(NSN 5820-01-186-3699)

HEADQUARTERS, DEPARTMENT OF THE ARMY
15 JANUARY 1986

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5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

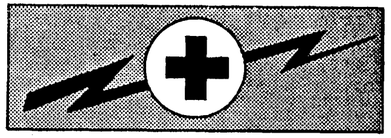
2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING



HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.

Warning: Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM 21-11.

SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Unless specifically directed in this manual, do not replace components or make adjustments inside the equipment with any power supply turned on. Under certain conditions, dangerous potentials may exist in the power supplies when the power control is in the off position. To avoid casualties, always remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

FIRST AID

Each person engaged in electrical operations will be trained in first aid, particularly in the technique of mouth to mouth resuscitation and closed chest heart massage (FM 21-11).

The following warnings appear in this volume, and are repeated here for emphasis.

WARNING

A 3-wire (line, neutral, and safety ground) AC line power connections is required when operating the equipment. If a 3-wire safety grounded AC power receptacle is not available, a separate ground wire must be installed from the chassis ground to an earth ground. Without an adequate ground, the equipment chassis and frame will float to a dangerously high potential.

WARNING

Lethal voltage is used in the operational checkout of this unit. Death on contact may result if personnel fail to observe the following safety precautions. Remove watches and rings and exercise extreme caution when working inside the equipment throughout the remainder of this procedure.

WARNING

Prior to performing the following functions all electrical power is to be removed from the system. External power disconnected and a “MAINTENANCE IN PROGRESS” tag attached or power switches will be locked out to prevent inadvertent energizing of the system.

WARNING

Lifting heavy equipment incorrectly can cause serious injury. Do not try to lift more than 35 pounds by yourself. Get a helper. Bend legs while lifting. Don’t support heavy weight with your back.

Technical Manual

No. 11-5820-921-40-2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 January 1986

GENERAL SUPPORT MAINTENANCE MANUAL

POWER AMPLIFIER AM-6545A/GRC-193A
(NSN 5820-01-186-3699)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, NJ 07703-5007. A reply will be furnished to you.

TABLE OF CONTENTS

NOTE

Maintenance Kit OA-9163/GRC-193A

is available as a Test Bed

CONTENTS

NOTES

1. This document contains the data necessary to facilitate maintenance and servicing of Power Amplifier AM-6545/GRC-193, a component of Radio Set AN/GRC-193 and the vehicle mounted Radio Set AN/MRC-138. Technical characteristics, assembly and component location and identification and servicing diagrams including operational sequence, flow, test point measurement data, and functional circuit blocks are contained herein.

2. There are two alignment procedures applicable to Power Amplifier AM-6545/GRC-193 at this level of maintenance: The high voltage overvoltage threshold adjustment on DC control PWB assembly 1A2 and the DC overvoltage adjustment on system control PWB assembly 1A3. These alignment procedures are located on the figure associated with the assembly upon which the procedure is performed.

3. Only conventional tools and equipment are required to perform the alignment procedures specified in note 2, above.

4. Power Amplifier AM-6545/GRC-193 contains no fuse, but there are two circuit breakers for the +26.5 VDC. The 3 amp circuit breaker, shown on figure 5 and located on the front panel, is for the +26.5 VDC DIRECT to Antenna Coupler CU-2064/GRC-193 and is labeled ANT CPLR CB. The 50 amp circuit breaker, shown on figure 5 and located on the front panel, is for the +26.5 VDC DIRECT to the Power Amplifier and is labeled PA CB.

5. The following warnings and cautions apply in the event circumstances warrant them to protect personnel and the equipment:

WARNING

DANGER HIGH VOLTAGE

Dangerously high voltages (+1600 Vdc) are present on the plates of power amplifier tubes 1A1V1 and 1A1V2 (Y-621B), tank circuit module 1A8, plate assembly 1A9, and high voltage module 1Al3. Do not touch any part of these components when the equipment is energized.

WARNING

Make sure the power is off before performing any cleaning inspection or maintenance.

WARNING

Power amplifier tubes 1A14V1 and 1Al4V2 (Y-621B) contain BeO (Beryllium Oxide Ceramics). The dust or fumes from BeO are highly toxic and breathing them can result in serious personal injury or death. Normal use of electron tubes containing BeO is safe. However, never alter, disassemble, grind, lap, fire, chemically clean, or perform any other operation on any ceramic parts of the power tubes which could possibly generate dust of fumes.

6. Lubrication instructions applicable to the gear assemblies of tank circuit module assembly 1A8 are in figure 2.

7. The parts location information given in this manual is essentially for the quick-look ready use of maintenance personnel. The callouts and markings on these illustrations do not necessarily reflect the actual markings on the equipment. The actual equipment markings may be harder to read due to manufacturing processes such as soldering and coating.

8. The test point values and conditions given on sheet 5 of figure 3 are those encountered during Radio Sets AN/GRC-193 and AN/MRC-138 operation. If equivalent power amplifier inputs are used, allowances must be made, as necessary, for the indications observed.

TECHNICAL CHARACTERISTICS

DIMENSIONS: HEIGHT LENGTH WIDTH	 8.0 inches (20.3 cm) 16.4 inches (41.7 cm) 11.4 inches (28.9 cm)
WEIGHT	54 lbs. (24.5 kg)
FREQUENCY RANGE	2.0 to 29.9999 MHz in 0.1 kHz increments
TYPE OF AMPLIFIER	High frequency power amplifier
RF POWER OUTPUT	400 watt PEP or average
RF INPUT	Less than 100 milliwatts for rated output. (2 watts PEP maximum)
TUNING	Automatic - less than 6 seconds
DUTY CYCLE	Continuous transmit at 400 watts average power output
INPUT AND OUTPUT IMPEDANCE	50 ohms with VSWR <1.3:1
PRIMARY POWER REQUIREMENTS	+22 to +30 Vdc, +26.5 Vdc (nominal, 45 amps maximum)
OPERATIONAL MODES	USB, LSB, CW, SSB secure voice, SSB FSK
SPURIOUS SUPPRESSION : INTERMODULATION PRODUCTS HARMONIC ATTENUATION SPURIOUS RADIATION HUM AND NOISE	 Third order intermodulation products suppressed more than 30 dB below either of two equal tones producing 400 watts PEP ± 1 dB 35 dB below rated output 60 dB below rated output 40 dB below rated output

FREQUENCY CONTROL (TUNING)	Six digital inputs from receiver/transmitter
WARMUP TIME	60 seconds ±10 seconds
COOLING	Convection and forced air (fan on case exterior)
OPERATING TEMPERATURE	-40°C (-40°F) to +55°C (+13 1°F)
OPERATIONAL ALTITUDE	Up to 10,000 ft
IMMERSION OPERATION	3 feet in both fresh and salt water for 4 hours
SHOCK	20 g’s, 11 msec
VIBRATION	2.5 g’s or 1.5 inch double amplitude, 5-55 Hz

SECTION 0

GENERAL

0-1. SCOPE. This manual covers Power Amplifier AM-6545A/GRC-193A. This manual provides instructions for general support maintenance. Throughout this manual AM-6545/GRC-193 should be AM-6545/GRC-193A.

0-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS. Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

0-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update.

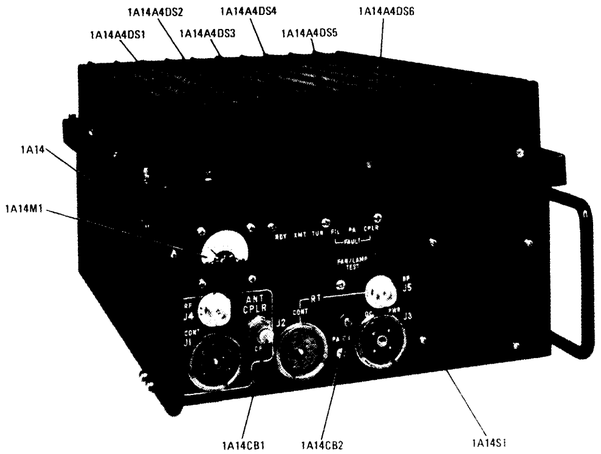
b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.74A/AFR-400-54/MCO 4430.3F.

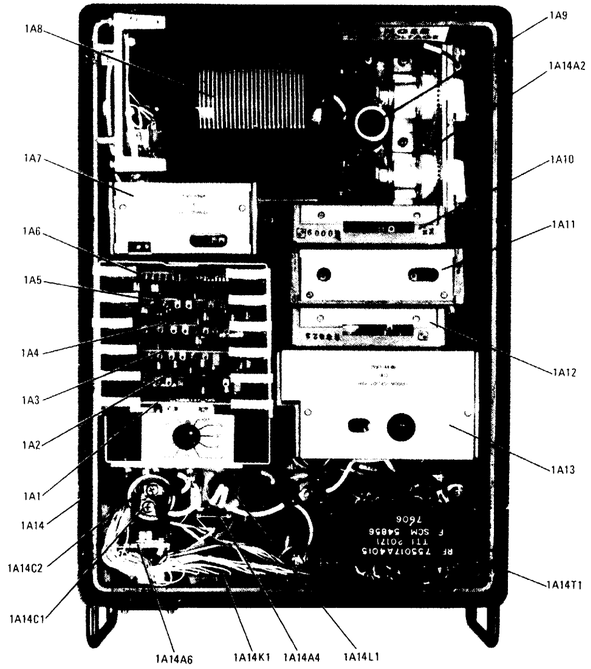
c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33 C/AFR 75-18/MCO P4610.19/DLAR 4500.15.

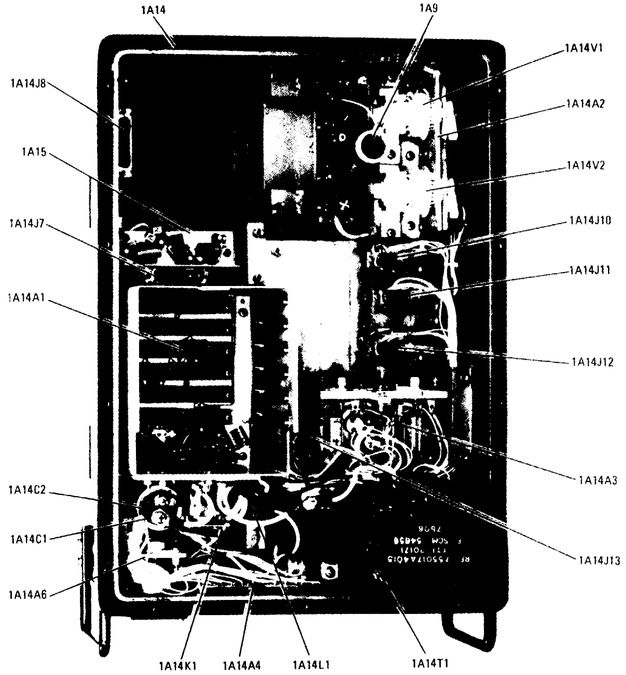
0-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your Power Amplifier AM-6545A/GRC-193A needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

0-5. ADMINISTRATIVE STORAGE. Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in TM 740-90-1.

0-6. DESTRUCTION OF ARMY ELECTRONICS MATERIEL. Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.



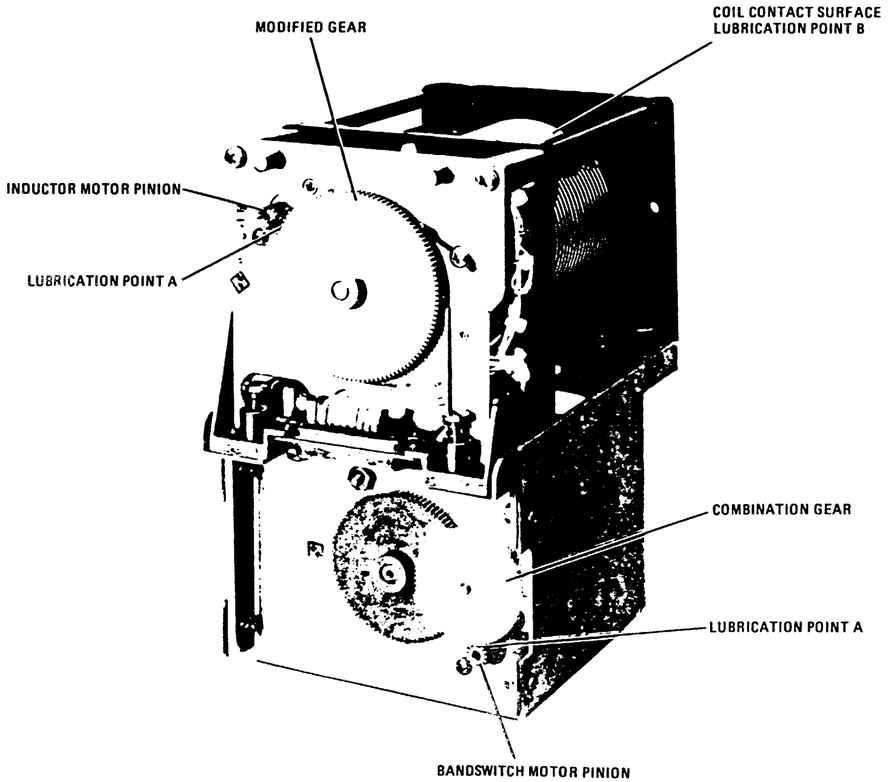




LEGEND

1A1	Meter Board PWB Assy	lA12	Static Power Inverter Assy	1A14CB1	ANT CPLR Circuit Breaker	1A14J11	RF Driver Module Connector
1A2	DC Control PWB Assy	1A13	High Voltage Module Assy	1A14CB2	PA Circuit Breaker	1A14J12	Static PWR Inverter Connector
1A3	System Control PWB Assy	1A14	Case Assy	1A14A4DS1	Ready Indicator (RDY)	1A14J13	HV Module Connector
1A4	Tune Control PWB Assy	1A14A1	Interconnection PCB Assy	1A14A4DS2	Transmit Indicator (XMT)	1A14K1	Power On Relay
1A5	Servo Amplifier PWB Assy	1A14A2	Tube Socket Assy	1A14A4DS3	Tune Indicator (TUN)	1A14L1	Inductor
1A6	Band Control PWB Assy	1A14A3	DC-DC Converter Assy	1A14A4DS4	Filament Fault Indicator (FIL)	1A14M1	Meter
1A7	ALC Module Assy	1A14A4	Indicator Assy	1A14A4DS5	PA Fault Indicator (PA)	1A14S1	Fan/Lamp Test Switch
1A8	Tank Circuit Module Assy	1A14A5	Junction Block PWB Assy (Hidden)	1A14A4DS6	Coupler Fault Indicator (CPLR)	1A14T1	Transformer
1A9	Plate Assy	1A14A6	Regulator Assy	1A14J7	ALC Module Connector	1A14V1	Power Amplifier Tube
1A10	Tune Detector Module Assy	1A14C1	Capacitor	1A14J8	Tank Circuit Module Connector	1A14V2	Power Amplifier Tube
1A11	RF Driver Module Assy	lA14C2	Capacitor	1A14J10	Tune Detector Module Connector	1A15	Harmonic Filter Assy

Figure 1. Assembly/Component Identification



TANK CIRCUIT MODULE ASSEMBLY 1A8

Figure 2. Lubrication Instructions

NOTES

Lubrication of the Gears and Coil contact surfaces is required only during overhaul of the respective units and should not be performed at any other time.

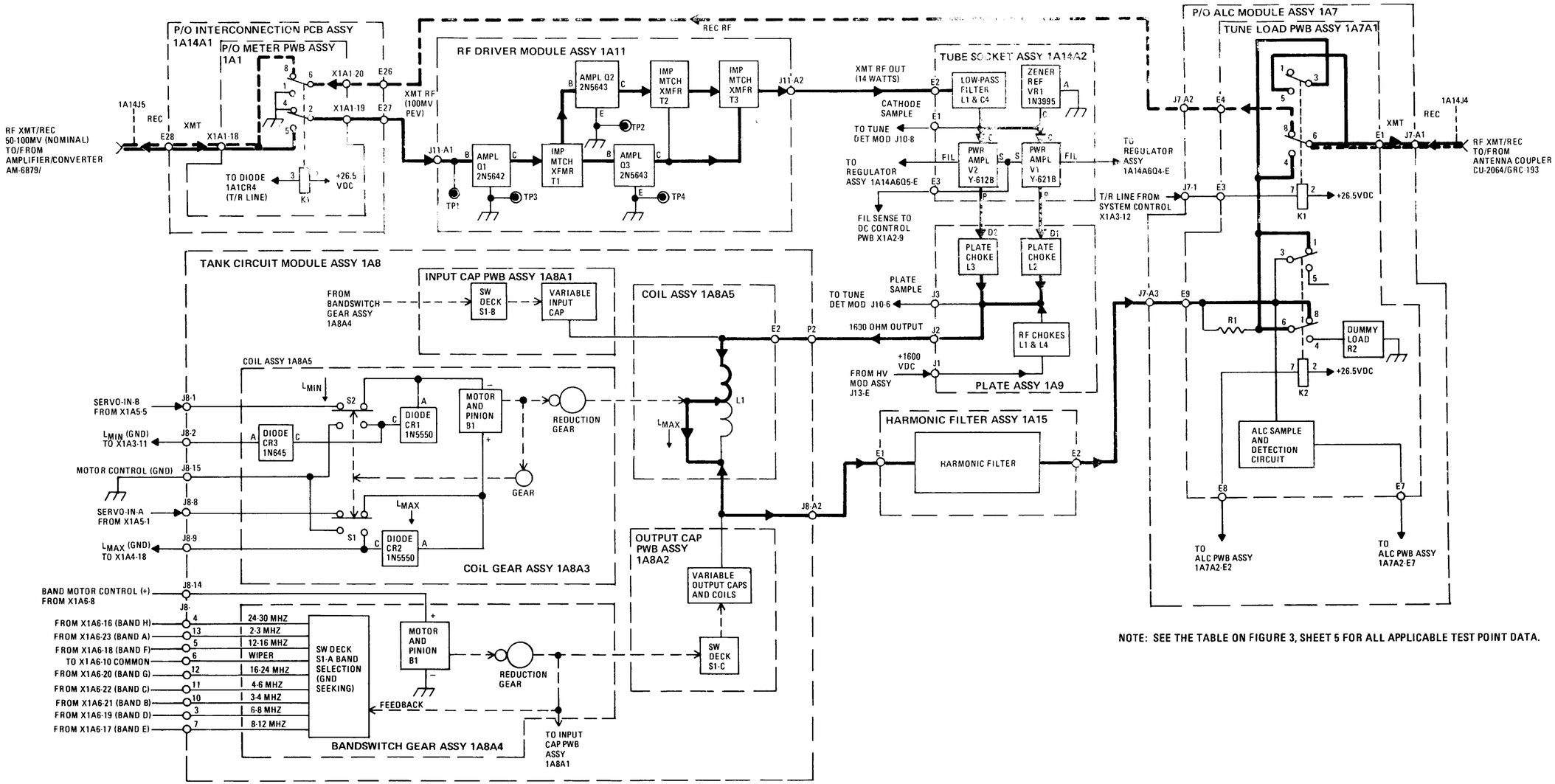
PROCEDURES

A. GEAR LUBRICATION

- Apply a small amount of Lubriplate grease, RF SPECIFICATION NO. 755017A8241 to the Lubrication points specified in the illustration to the left.
- Remove any excess grease using a lint-free cloth dampened with MEK (Methylethylkeytone) MIL-M-81351.

B. COIL CONTACT SURFACE LUBRICATION

- Mix one part Lubriplate grease, RF SPECIFICATION NO. 755017A8241 and eight parts of Methylethylkeytone (MEK) MIL-M-81351 in a suitable container.
- Using an appropriate device, spray the mixture on all coil contact surfaces.
- Remove any excess lubricant, using a lint-free cloth dampened with Methylethylkeytone (MEK) MIL-M-81351.



NOTE: SEE THE TABLE ON FIGURE 3, SHEET 5 FOR ALL APPLICABLE TEST POINT DATA.

Figure 3. Servicing Diagram (Sheet 1 of 5)

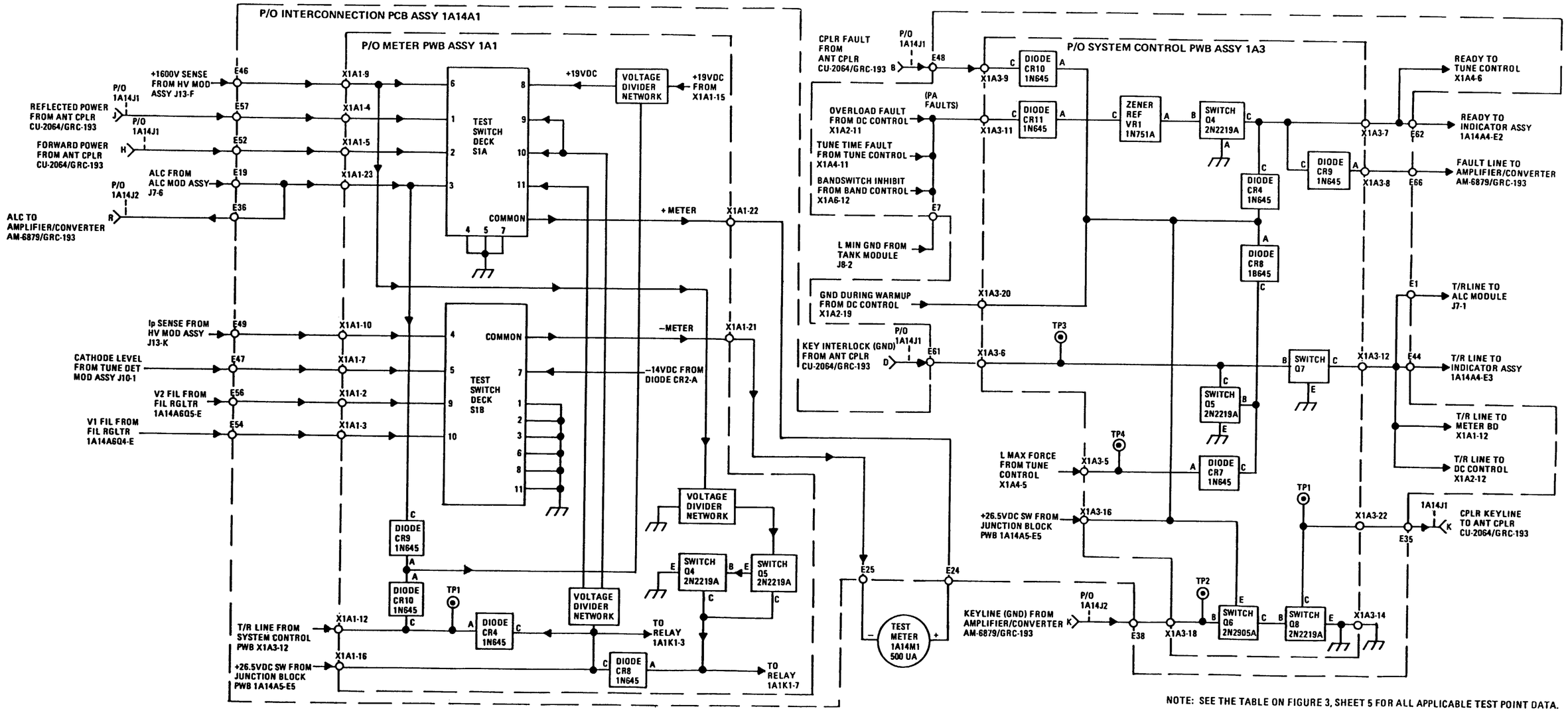
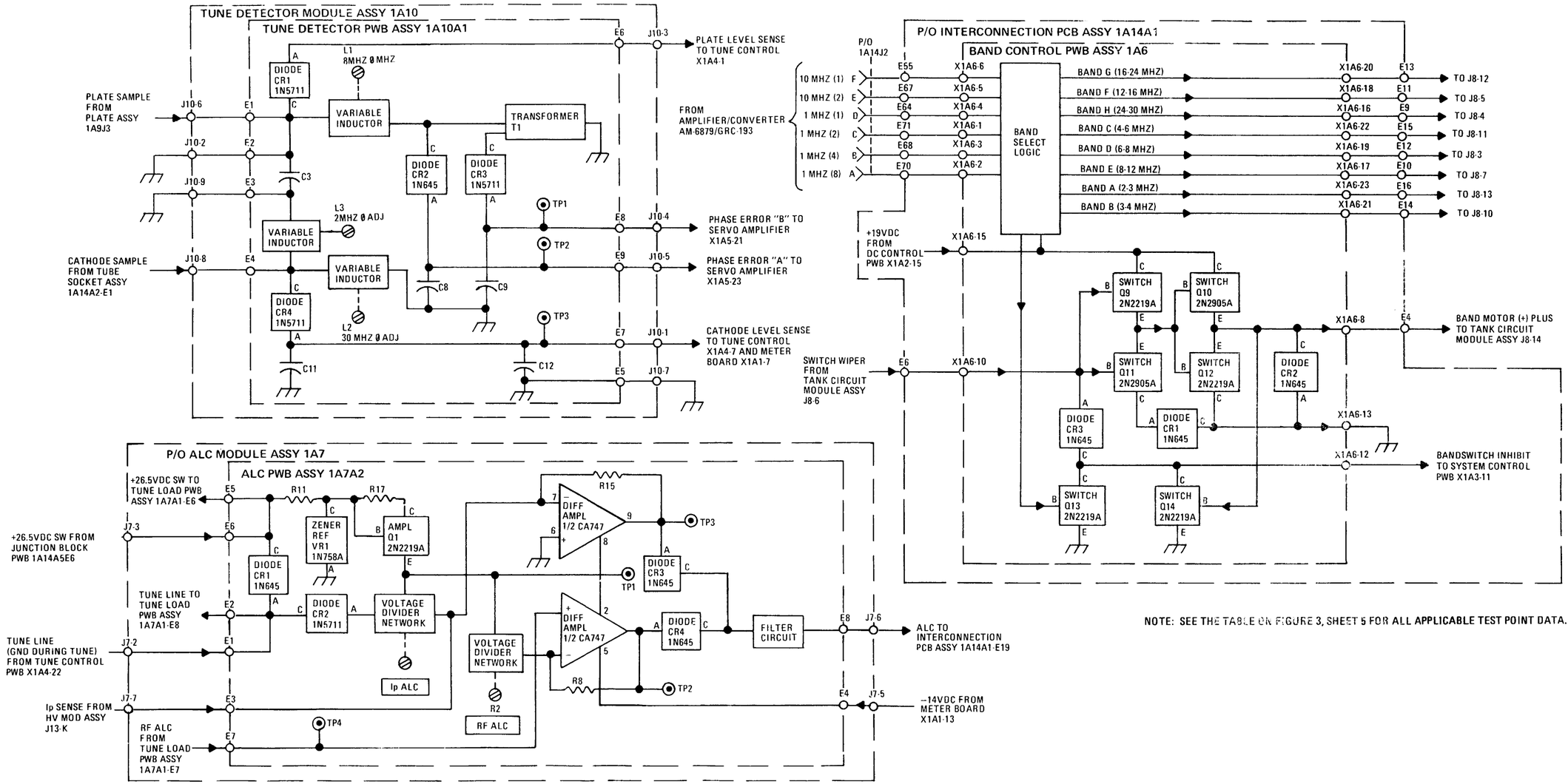
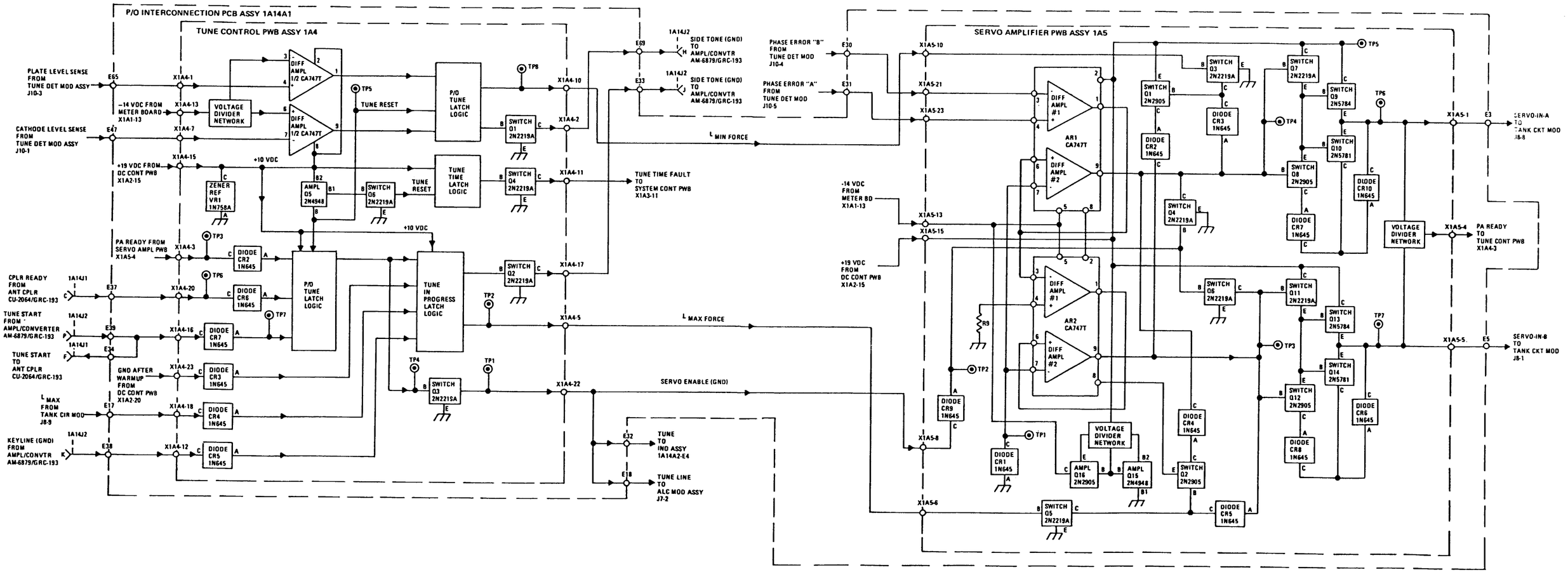


Figure 3. Servicing Diagram (Sheet 2 of 5)



NOTE: SEE THE TABLE ON FIGURE 3, SHEET 5 FOR ALL APPLICABLE TEST POINT DATA.

Figure 3. Servicing Diagram (Sheet 3 of 5)



NOTE: SEE THE TABLE ON FIGURE 3, SHEET 5 FOR ALL APPLICABLE TEST POINT DATA.

Figure 3. Servicing Diagram (Sheet 4 of 5)

POWER AMPLIFIER AM-6545/GRC-193 TEST POINT/INDICATOR/OPERATION CORRELATION

Assembly Name	Test Point or Indicator Ref. Desig.	Test Point or Indicator Name	Illustration Location Reference	Receive Mode Indication	Transmit Mode Indication	Tune Mode Indication		Notes
						L_{MAX}	L_{MIN}	
Meter Board PWB Assy	1A1TP1	T/R Line		+26.5 Vdc	+0.1 Vdc	+26.5 Vdc	+0.1 Vdc	
DC Control PWB Assy	1A2TP1	Gnd After Warmup		+0.1 Vdc	+0.1 Vdc	+0.1 Vdc	+0.1 Vdc	+10V all modes during warmup
	1A2TP2	Fil Fault		-12 Vdc	-12.5 Vdc	-11 Vdc	-12 Vdc	+10V if filament fault
	1A2TP3	HF ON		0	+1.4 Vdc	0	+1.4 Vdc	
	1A2TP4	Fil Sense Threshold		+0.56 Vdc	+0.56 Vdc	+0.56 Vdc	+0.56 Vdc	
System Control PWB Assy	1A3R3	Over Voltage Adjustment						
	1A3TP1	Cplr Keyline		+0.02 Vdc	+0.02 Vdc	+0.02 Vdc	+0.02 Vdc	+4.7 Vdc ±0.5 Vdc if connected to coupler
	1A3TP2	RT Keyline		+26 Vdc	+1.4 Vdc	+26 Vdc	+1.4 Vdc	
	1A3TP3	Key Interlock		0	+3.8 Vdc	0	+3.8 Vdc	
	1A3TP4	L_{MAX} Force		0	0	+9.8 Vdc	0	
	1A3TP5	PA ON		+5 Vdc	+5 Vdc	+5 Vdc	+5 Vdc	
	1A3TP6	Over Temp	Figure 3-3 Detail “C”	+1.45 Vdc	+1.45 Vdc	+1.45 Vdc	+1.45 Vdc	
Tune Control PWB Assy	1A4TP1	Tune		+26.5 Vdc	+25.5 Vdc	+0.18 Vdc	+0.18 Vdc	
	1A4TP2	L_{MAX} Force		o	o	+9. 2 Vdc	0	
	1A4TP3	PA Ready		+0. 15 Vdc	+0. 15 Vdc	+5.8 Vdc	+5.2 Vdc	
	1A4TP4	Tune Enable		0	0	+9 Vdc	+9 Vdc	
	1A4TP5	Tune Time Latch		0	0	0	+9 Vdc	
	1A4TP6	Cplr Ready		0	0	0	0	
	1A4TP7	Tune Start		+10 Vdc	+10 Vdc	+9.5 Vdc	+9 Vdc	+0.6V when tune button pressed
	1A4TP8	L_{MIN} Force		0	0	0	+9 to 0	AR1 & AR2 pin 7
Servo Amplifier PWB Assy	1A5TP1	Servo Bias		+12 Vdc	+12 Vdc	+12 Vdc	+12 Vdc	Sawtooth 6 msec long
	1A5TP2	Servo Enable		+6.1 Vdc	+6.3 Vdc	+0.81 Vdc	+0.81 Vdc	
	1A5TP3	Output “B” Enable		-1.14 Vdc	-1.20 Vdc	-1.14 Vdc	+18 Vdc	Input to 1A5Q11 & Q12 bases (L_{MIN})
	1A5TP4	Output “A” Enable		-1.1 Vdc	+0.1 Vdc	+18.5 Vdc	-1.2 Vdc	Input to 1A5Q7 & Q8 bases (L_{MAX})
	1A5TP5	+19 Vdc		+19.5 Vdc	+19.5 Vdc	+19.5 Vdc	+19.5 Vdc	1A5P1-15
	1A5TP6	Output “A”		0	0	+26 Vdc	+0.3 Vdc	L_{MAX} drive
	1A5TP7	Output “B”		0	0	+0.2 Vdc	+18 Vdc	L_{MIN} drive

Assembly Name	Test Point or Indicator Ref. Desig.	Test Point or Indicator Name	Illustration Location Reference	Receive Mode Indication	Transmit Mode Indication	Tune Mode Indication		Notes
						L_{MAX}	L_{MIN}	
ALC Module Assy	1A7A2TP1	Regulated 9.3V		+8.7 Vdc	+8.7 Vdc	+8.7 Vdc	+8.7 Vdc	
	1A7A2TP2	1A7A2AR1 Pin 1		-11.5 Vdc	+1.6 Vdc	-11 Vdc	-11.5 Vdc	RF ALC
	1A7A2TP3	1A7A2AR1 Pin 9		-11.5 Vdc	+1.5 Vdc	-11 Vdc	+2.0 Vdc	I_p ALC
	1A7A2TP4	Det. RF Level		0	+6.7 Vdc	0	0 to +5 Vdc	
Tune Detector Module Assy	1A10A1TP1	Error Output B		0	-2.6 Vdc	0	-1.4 Vdc	
	1A10A1TP2	Error Output A		0	-2.4 Vdc	0	-1.4 Vdc	
	1A10A1TP3	Cathode Level		0	-3.5 Vdc	0	-2.2 Vdc	
	1A10A1TP4	Plate Level		0	-5 Vdc	0	-3.5 Vdc	
RF Driver Module Assy	1A11A1TP1	RF IN from RT		0 Vac	2.5 Vac PP	0 Vac	1.5 Vac PP	0 Vdc
	1A11A1TP2	Second Stage Output	Figure 3-3 Detail “B”	+0.1 Vdc	+0.5 Vdc	+0. 1 Vdc	-0.33 Vds	
	1A11A1TP3	First Stage Output		+0.75 Vdc	+0.75 Vdc	+0.75 Vdc	-0.75 Vdc	
	1A11A1TP4	Second Stage Output		+0. 1 Vdc	+0.42 Vdc	+0.1 Vdc	+0.27 Vdc	
Static Power Inverter Assy	1A12A1TP1	Inverter Oscillator		0.02 Vac	0.02 Vac	0.02 Vac	0.02 Vac	0 Vdc 0 to 1.5 Vac
	1A12A1TP2	Inverter Output		15 Vac	15 Vac	15 Vac	15 Vac	
	1A12A1TP3	Inverter Output		15 Vac	15 Vac	15 Vac	15 Vac	
High Voltage Module Assy	1A13A1TP1	1A13A1T1 Primary		0 Vac	4 Vac	0 Vac	3.4 Vac	
	1A13A1TP2	I_P SENSE		0	–2.9 Vdc	0	-2 Vdc	

Figure 3. Servicing Diagram (Sheet 5 of 5)

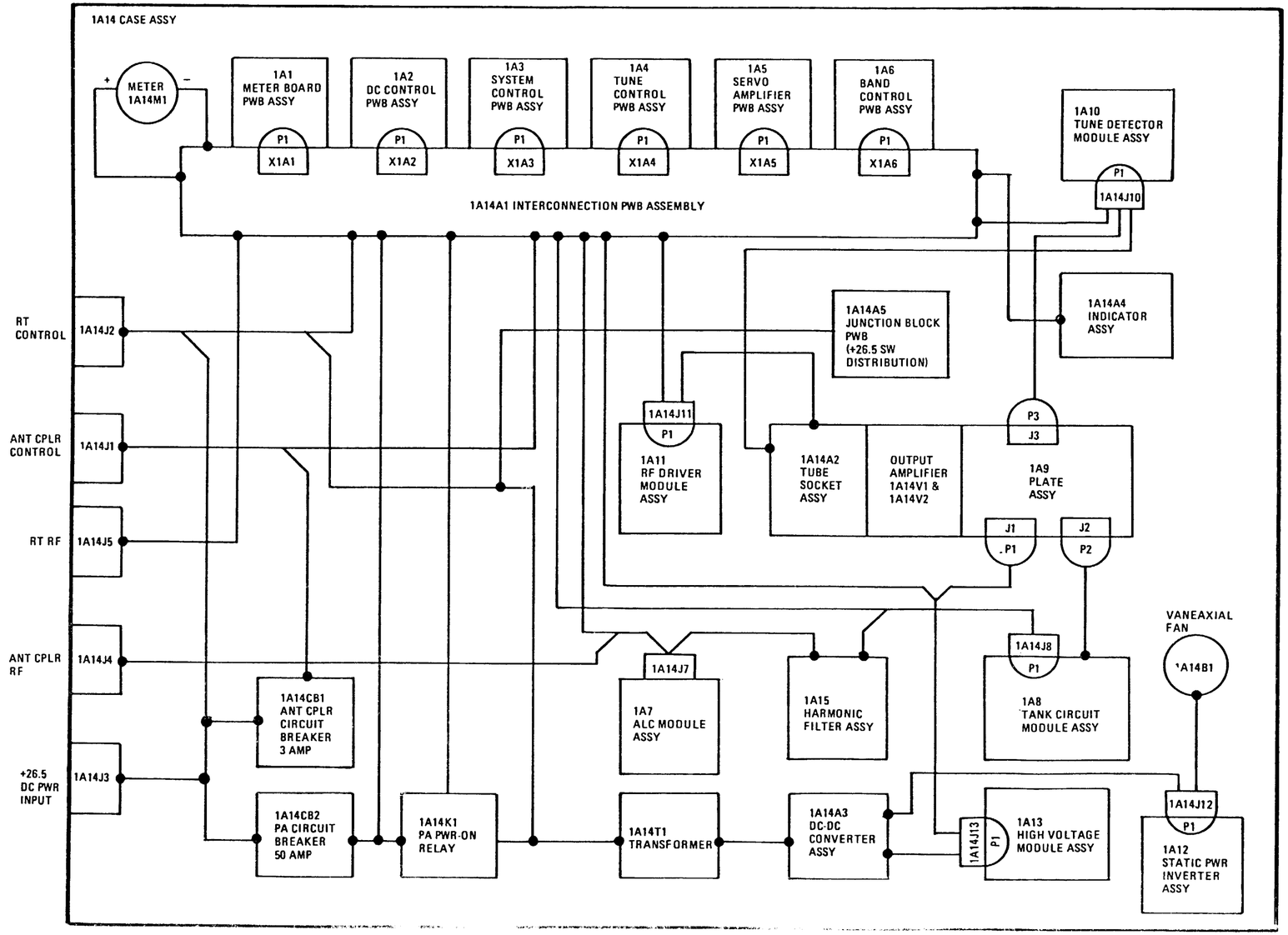


Figure 4. Unit Cabling and Connector Diagram

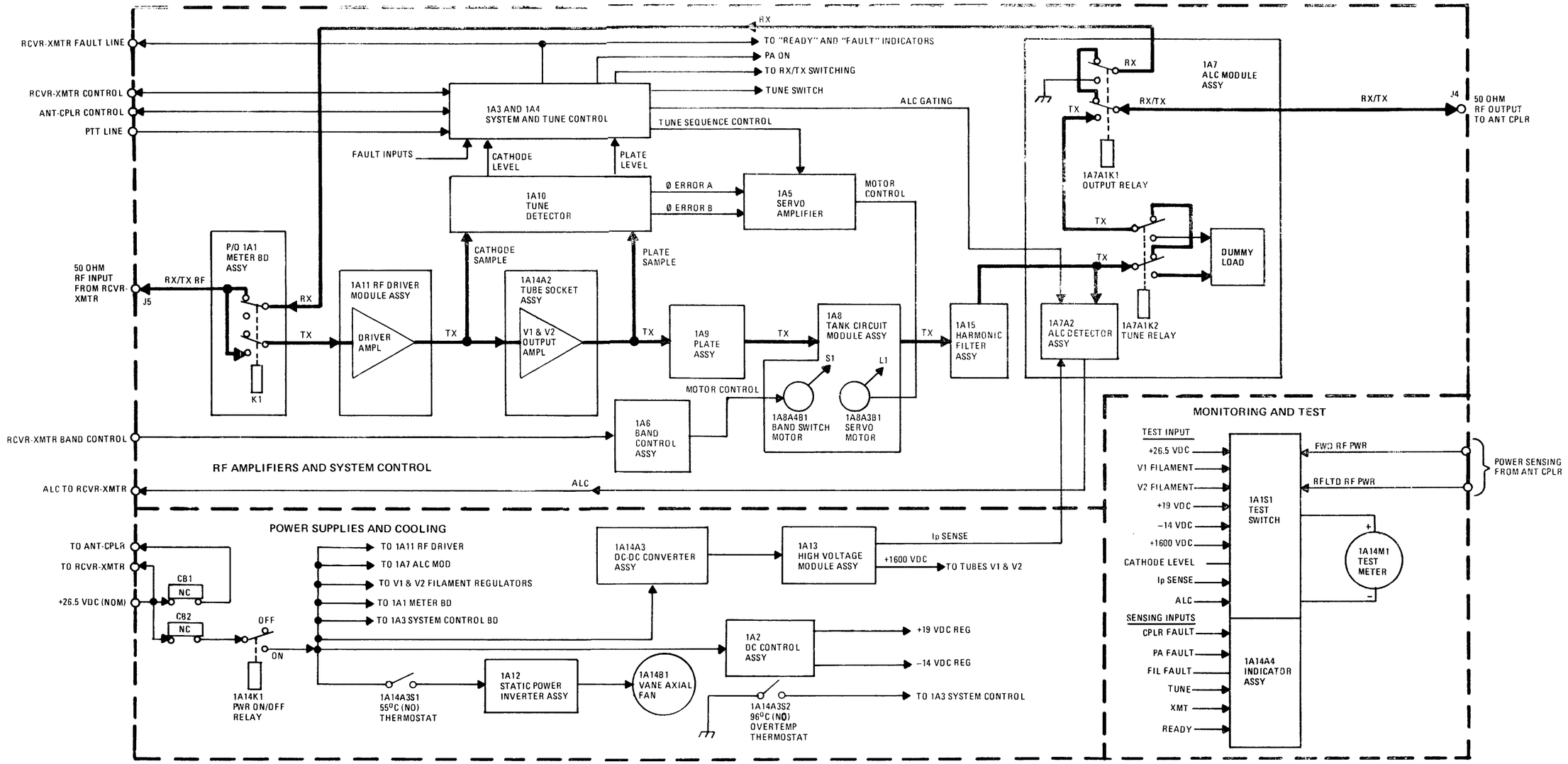


Figure 5. Overall Functional Interconnection Diagram

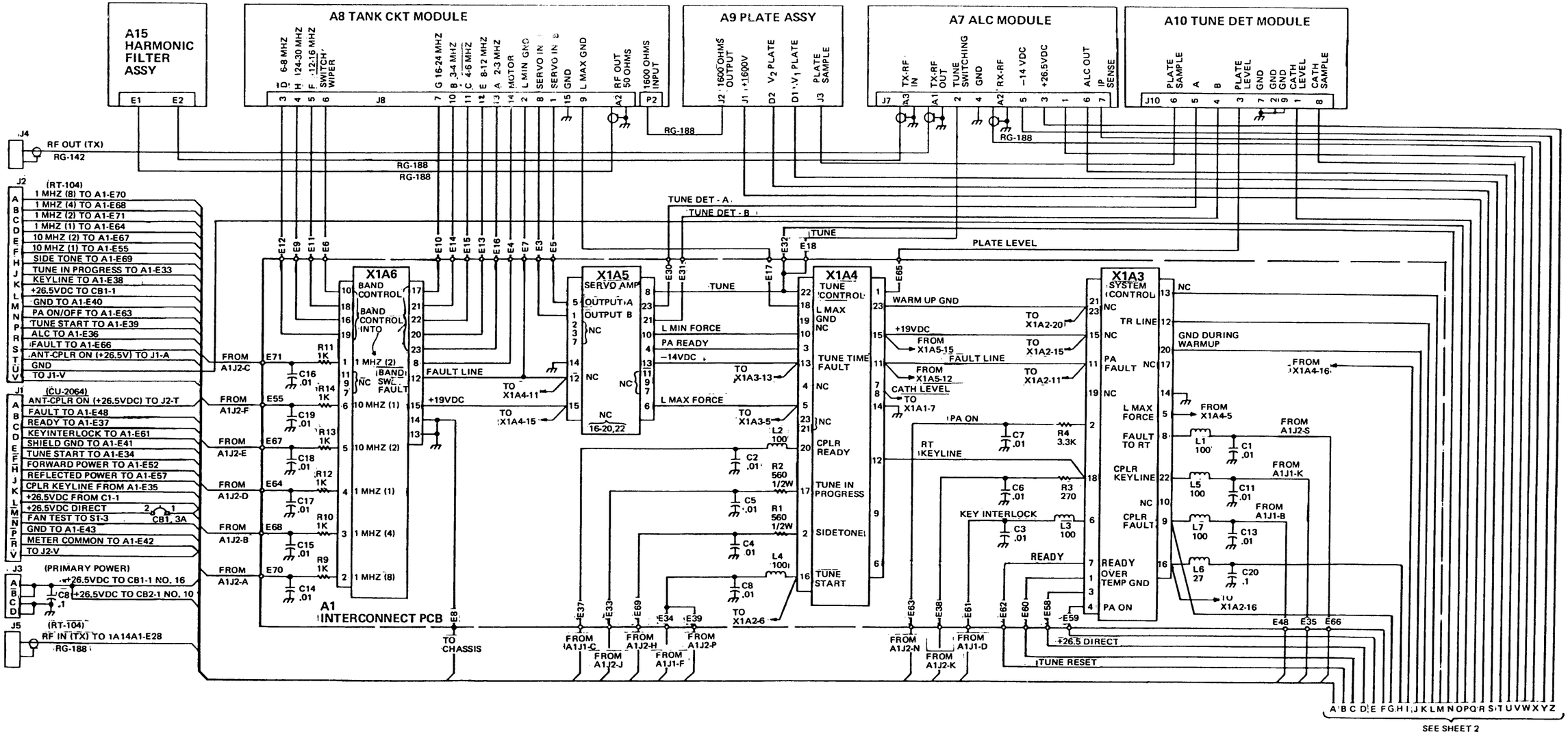


Figure 6. Case Assembly 1A14 Interconnection Diagram (Sheet 1 of 2)

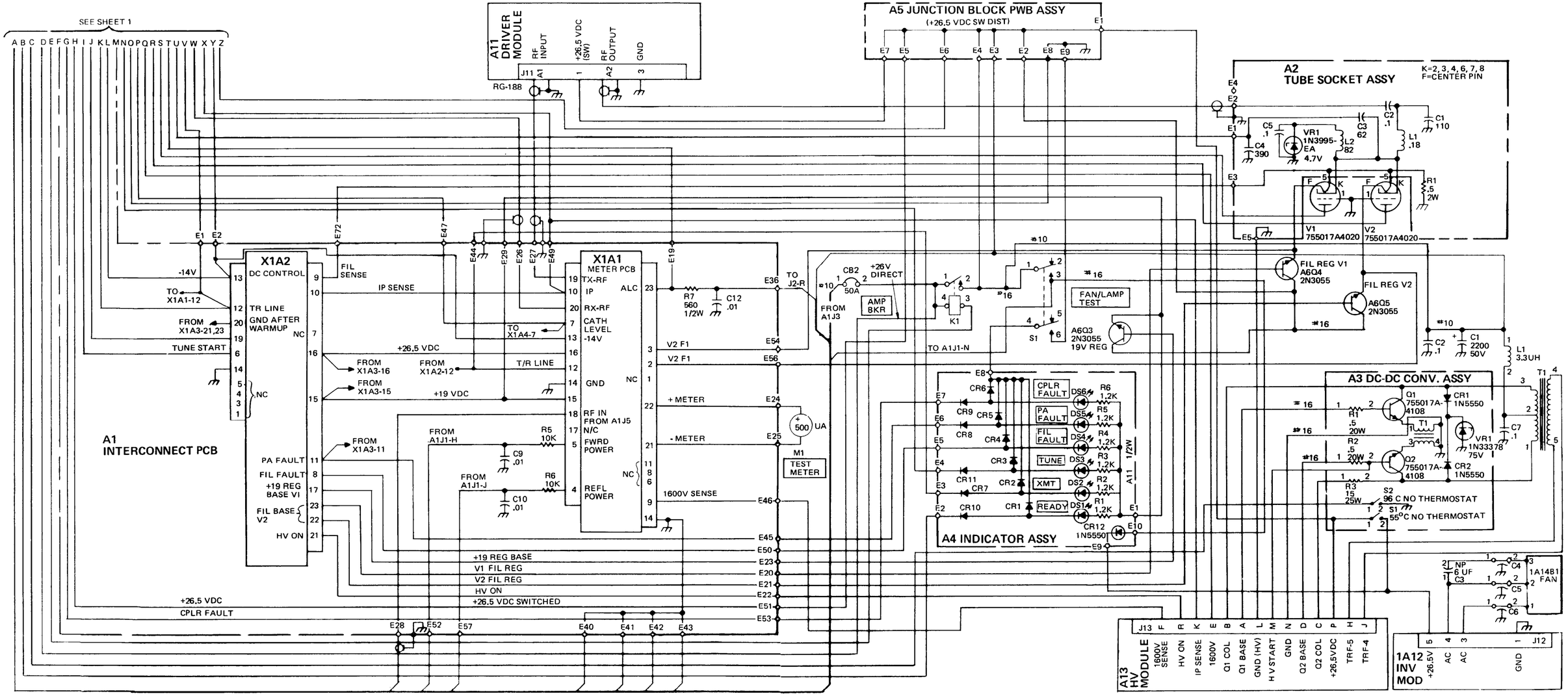
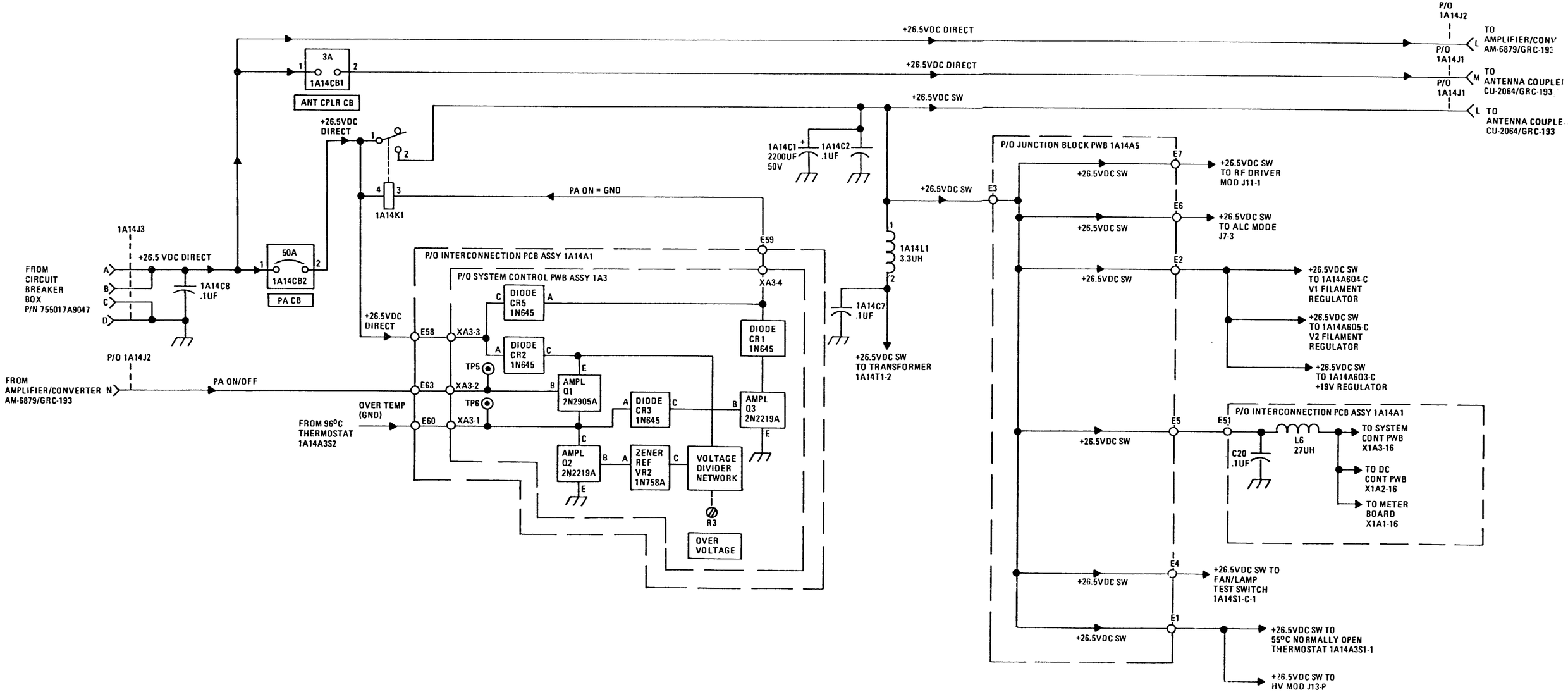
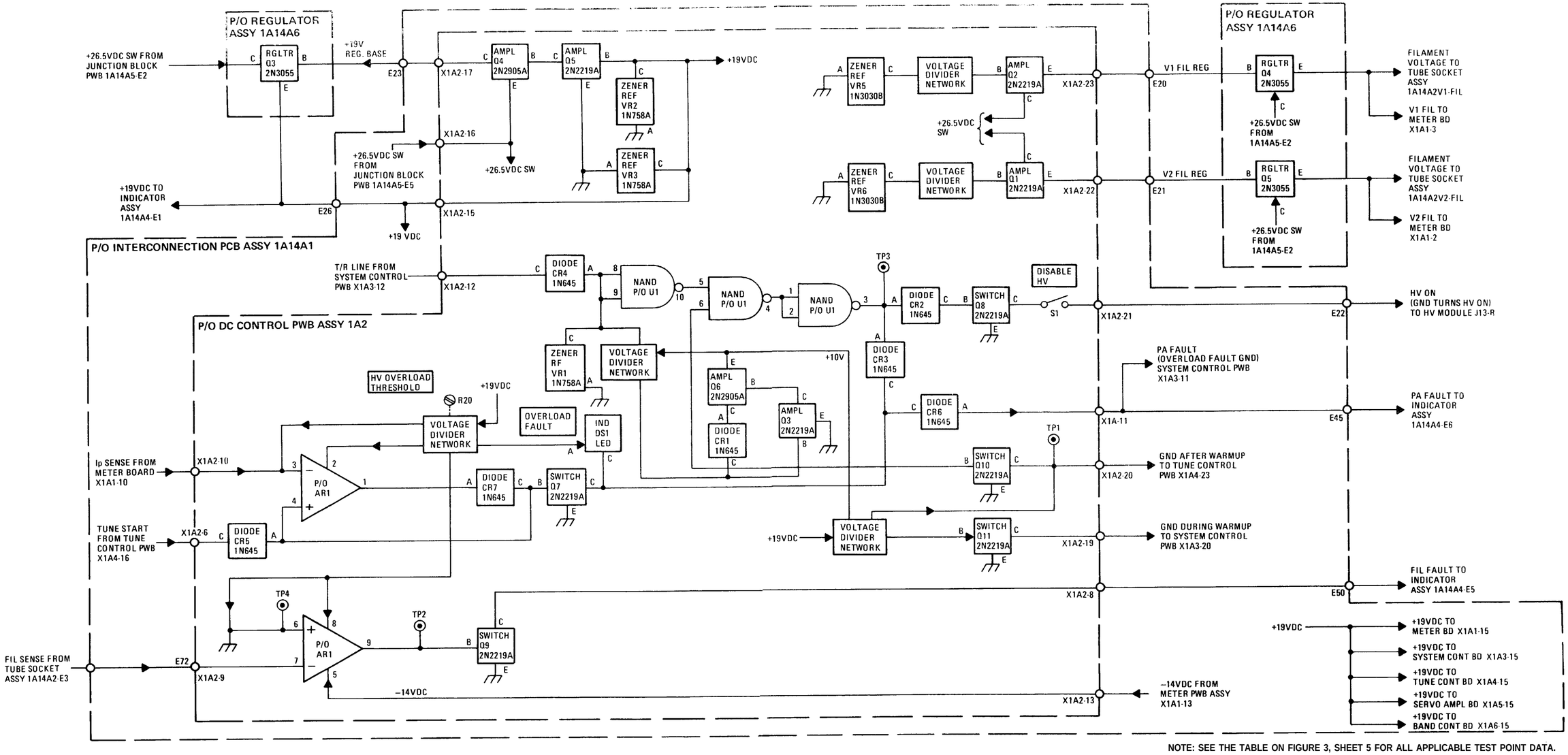


Figure 6. Case Assembly 1A14 Interconnection Diagram (Sheet 2 of 2)



NOTE: SEE THE TABLE ON FIGURE 3, SHEET 5 FOR ALL APPLICABLE TEST POINT DATA.

Figure 7. Power Distribution and DC Control Diagram (Sheet 1 of 3)



NOTE: SEE THE TABLE ON FIGURE 3, SHEET 5 FOR ALL APPLICABLE TEST POINT DATA.

Figure 7. Power Distribution and DC Control Diagram (Sheet 2 of 3)

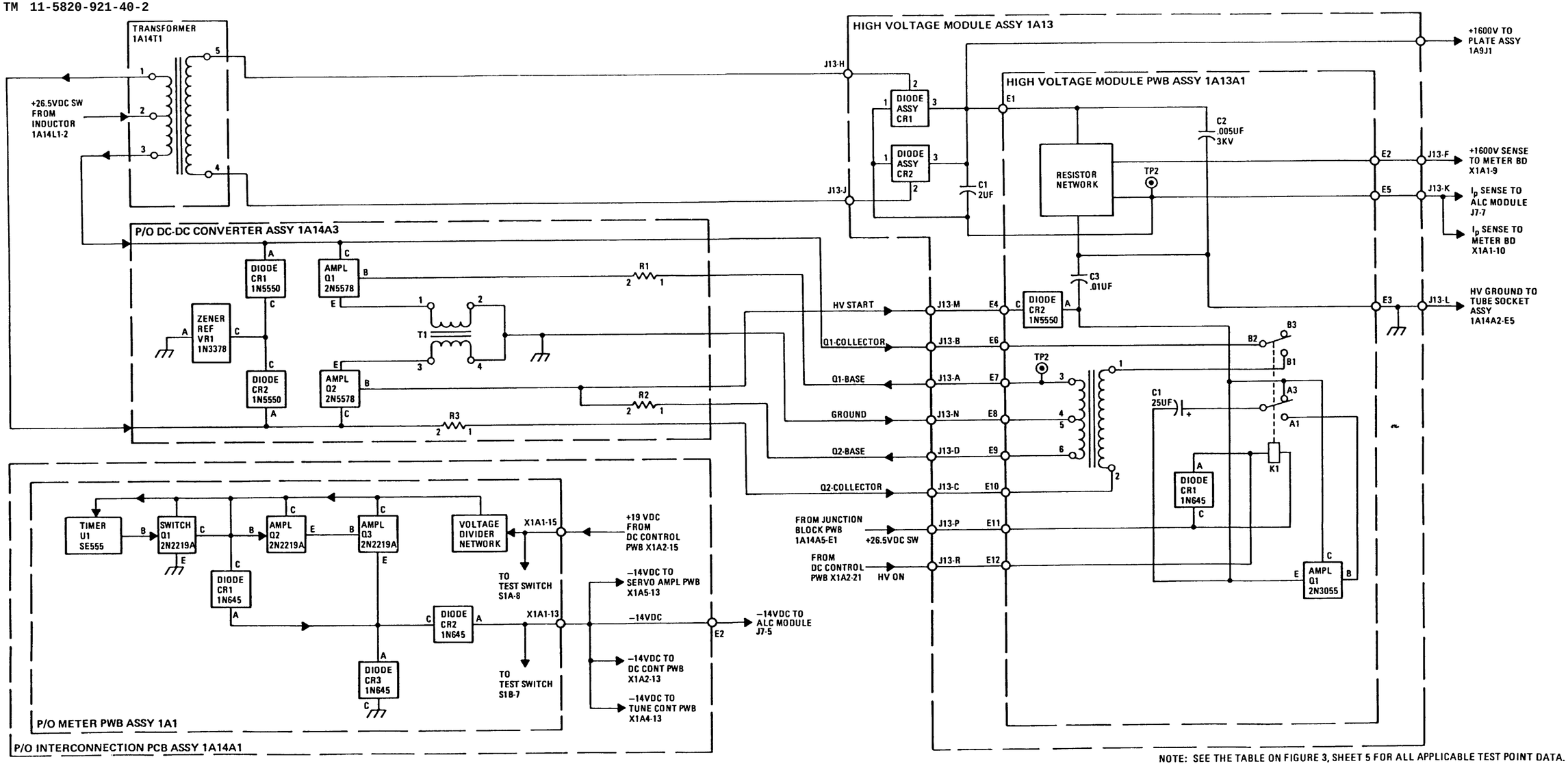


Figure 7. Power Distribution and DC Control Diagram (Sheet 3 of 3)

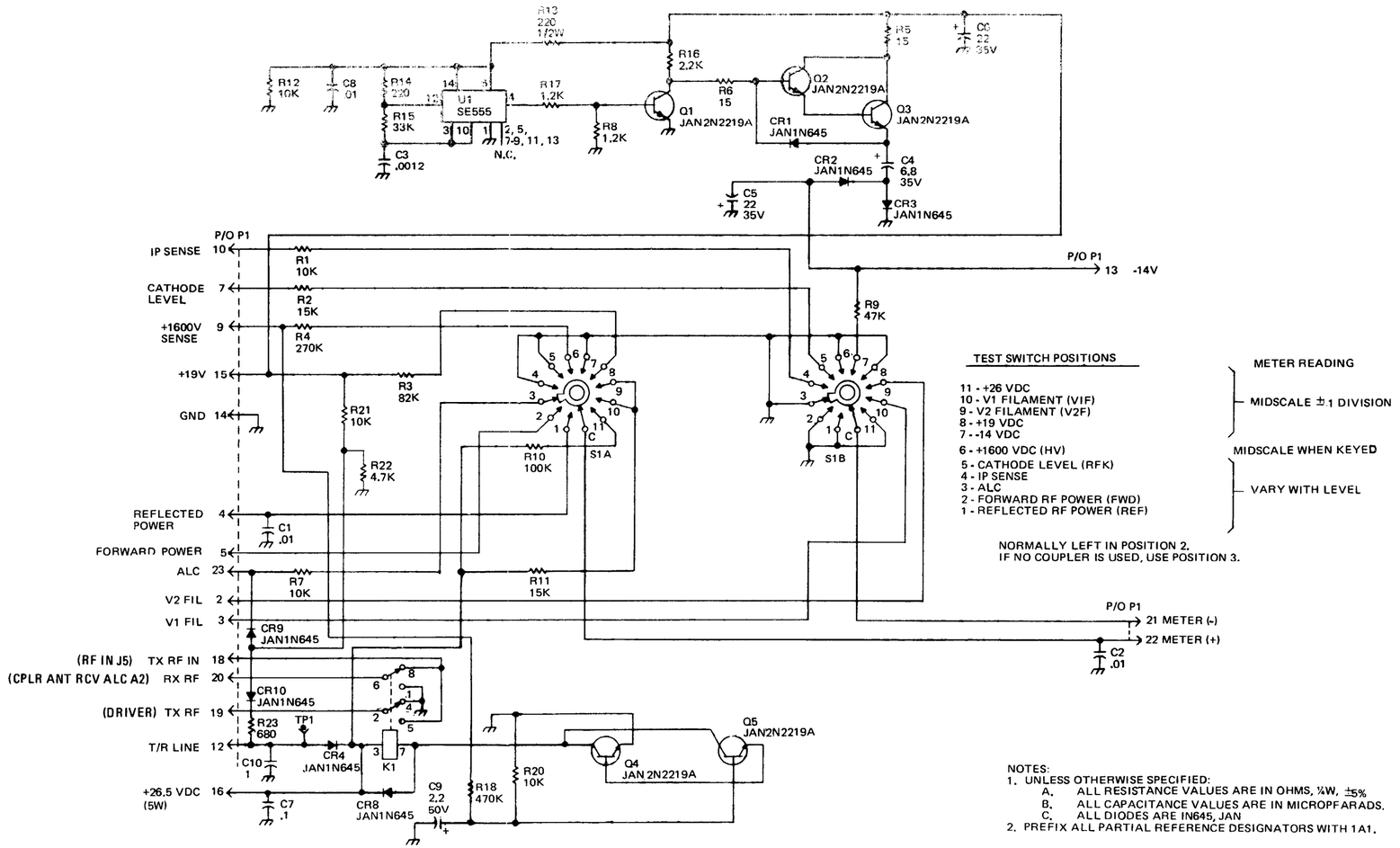
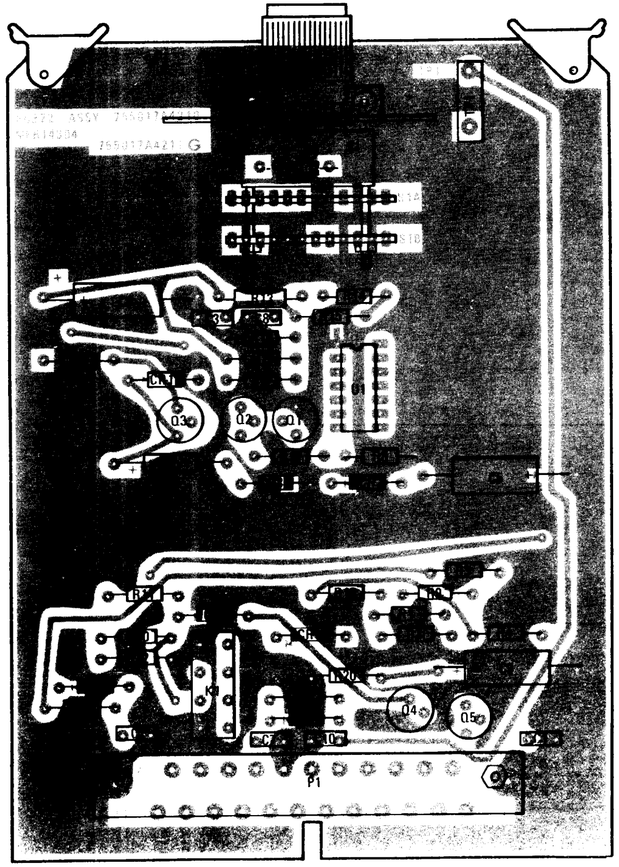


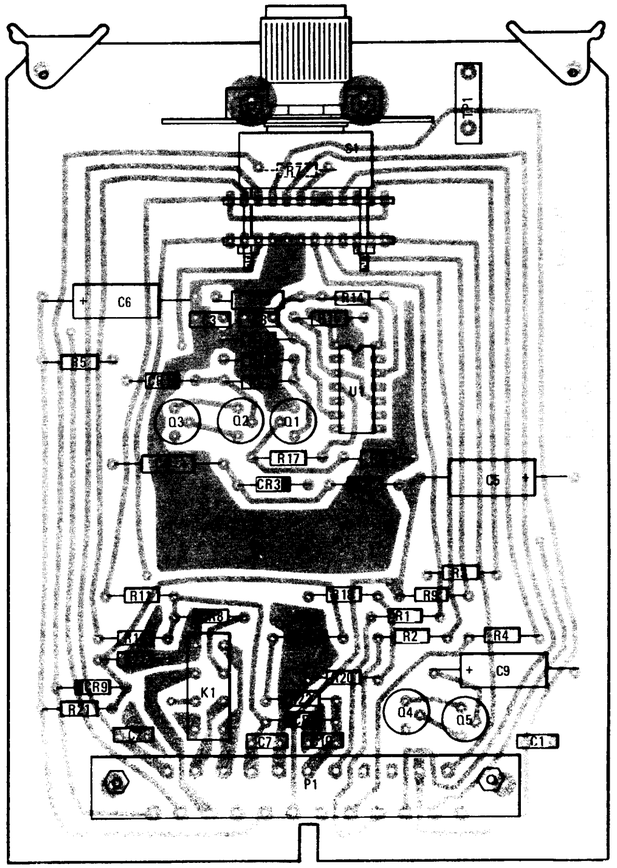
Figure 8. Meter Board PWB Assembly 1A1, PN 755017A4210 (Sheet 1 of 2)



NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A1

COMPONENT SIDE

Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
K	Relay
P	Plug (Connector)
Q	Transistor
R	Resistor
S	Switch
TP	Test Point
U	Integrated Circuit



NOTE: PREFIX ALL PREFERENCE DESIGNATORS WITH 1A1

TRACK SIDE OR RUN SIDE

Figure 8. Meter Board PWB 1A1, PN 755017A4210 (Sheet 2 of 2)

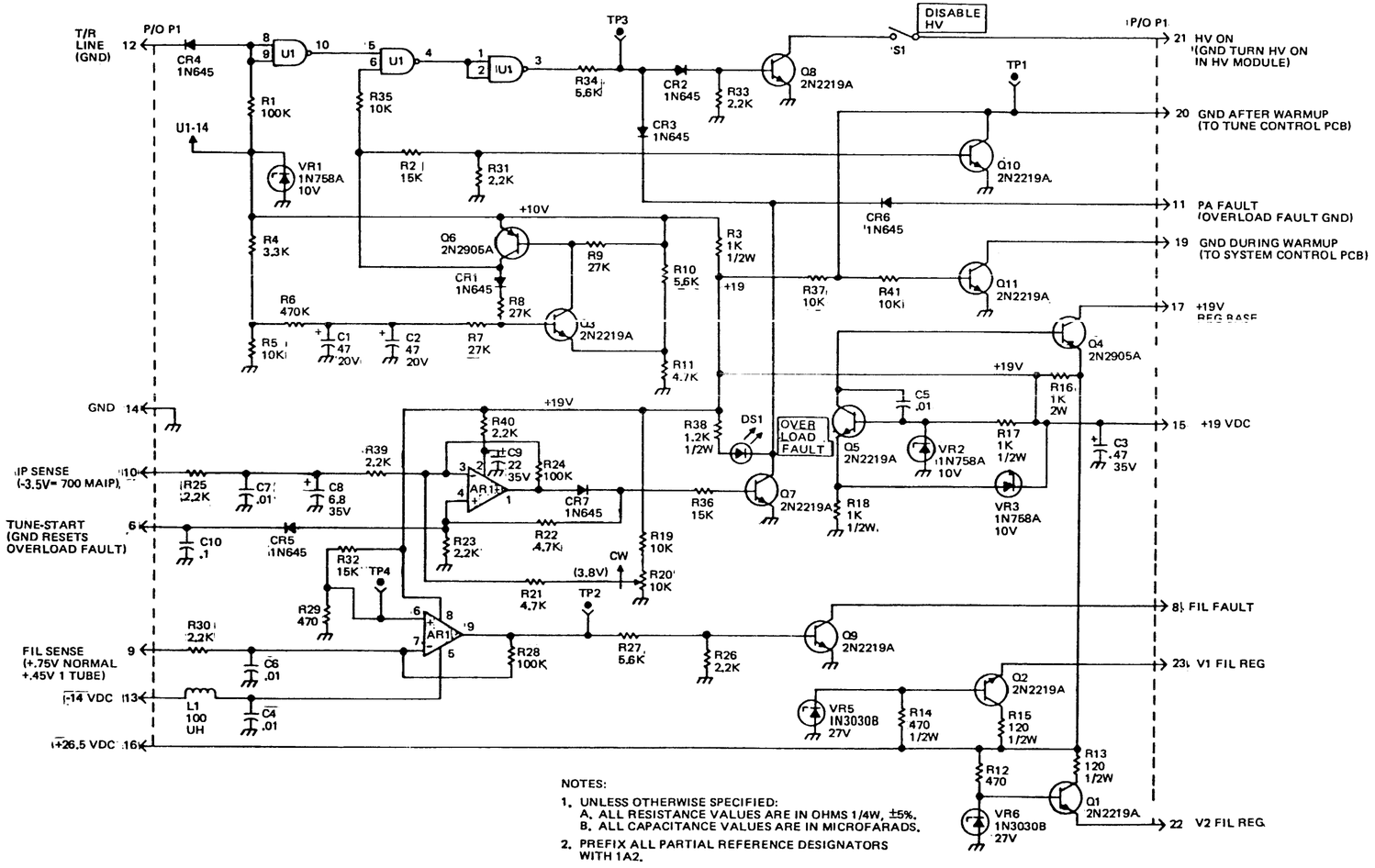
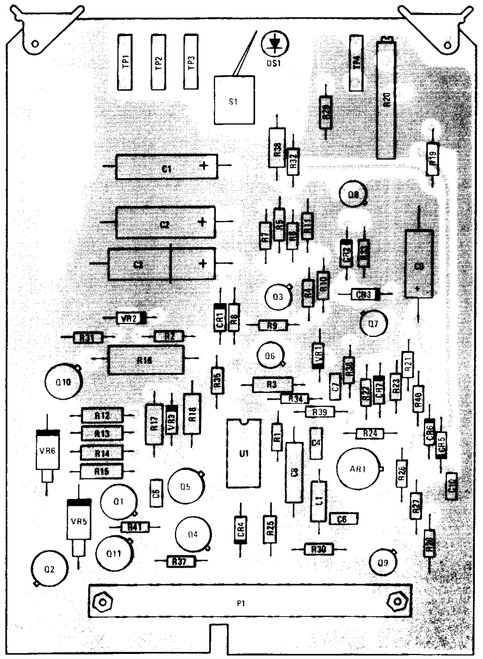
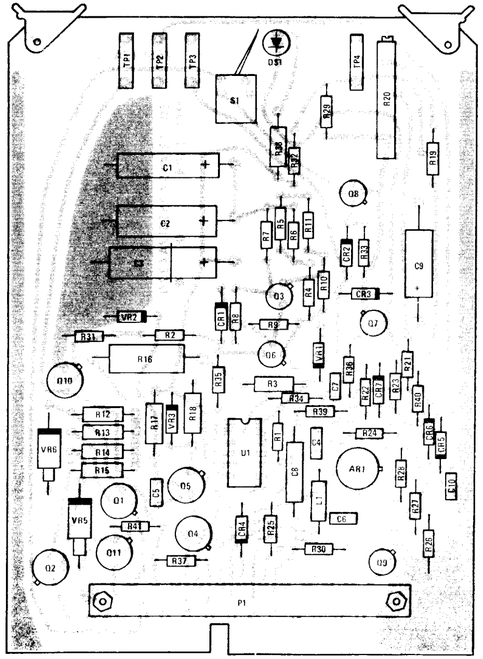


Figure 9. DC Control PWB 1A2, PN 755017A4220 (Sheet 1 of 2)



COMPONENT SIDE



TRACK SIDE OR RUN SIDE

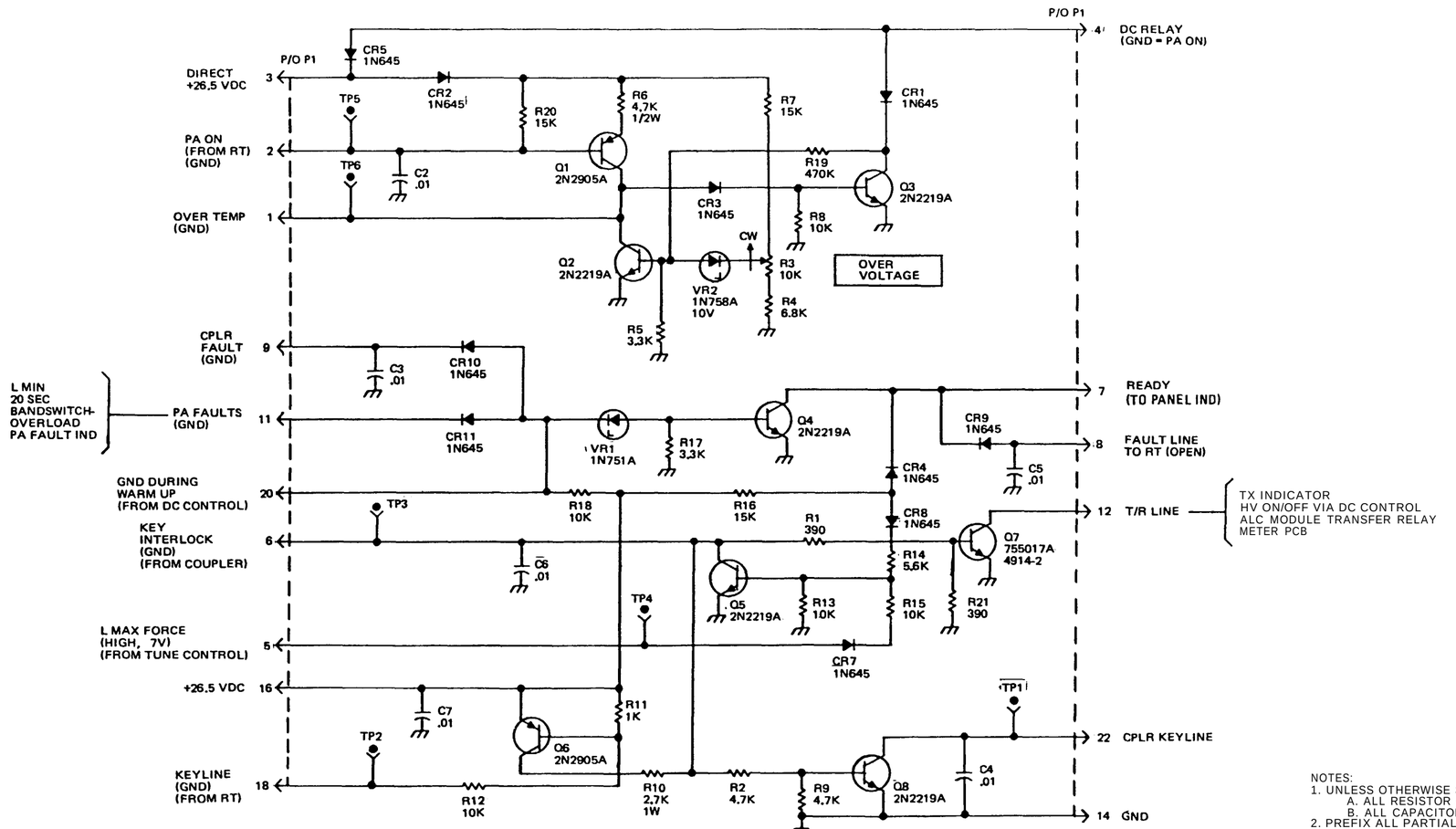
NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A2

Ref. Desig.	Name
AR	Amplifier
C	Capacitor
CR	Diode Semiconductor Device
DS	Lamp
L	Inductor
P	Plug (Connector)
Q	Transistor
R	Resistor
S	Switch
TP	Test Point
U	Integrated Circuit
VR	Voltage Regulator

HIGH VOLTAGE OVERLOAD THRESHOLD ALIGNMENT

STEP NO.	TEST EQUIPMENT	TEST POINT	ADJUSTMENT	REMARKS
1	TOGGLE SWITCH NO. 1			CONNECT A TOGGLE SWITCH BETWEEN GND AND 1A2P1-6
2	POWER SUPPLY NO. 1			CONNECT -3.5V AT 700mA TO 1A2P1-10
3	POWER SUPPLY NO. 2			CONNECT -14VDC TO 1A2P1-13
4	POWER SUPPLY NO. 3			CONNECT +19VDC TO 1A2P1-15
5	TOGGLE SWITCH NO. 2			CONNECT A TOGGLE SWITCH BETWEEN GND AND 1A2P1-12
6	2 EA RESISTORS 1.2K 1 EA LED's PN755017A3011-3 AND PN755017A3001-1			CONNECT LED (+) AND ONE RESISTOR IN SERIES BETWEEN 1A2P1-21 AND +19VDC. CONNECT LED (-3) AND ONE RESISTOR BETWEEN 1A2P1-11 AND +19VDC.
7			1A2R20	HV OVERLOAD THRESHOLD POTENTIOMETER FCW.
8		LED (-1)		CLOSE TOGGLE SWITCH NO. 2 LED (-1) SHOULD ILLUMINATE
9		1A2DS1 LED (-3) LED (-1)	1A2R20	ADJUST 1A2R20 CCW UNTIL OVERLOAD FAULT 1A2DS1 AND LED (-3) ILLUMINATE. LED (-1) SHOULD EXTINGUISH.
10		1A2DS1 LED (-3) LED (-1)		CLOSE TOGGLE SWITCH NO. 1. BOTH 1A2DS1 AND LED (-3) SHOULD EXTINGUISH AND LED (-1) SHOULD ILLUMINATE. DISCONNECT TEST EQUIPMENT.

Figure 9. DC Control PWB 1A2, PN 755017A4220 (Sheet 2 of 2)



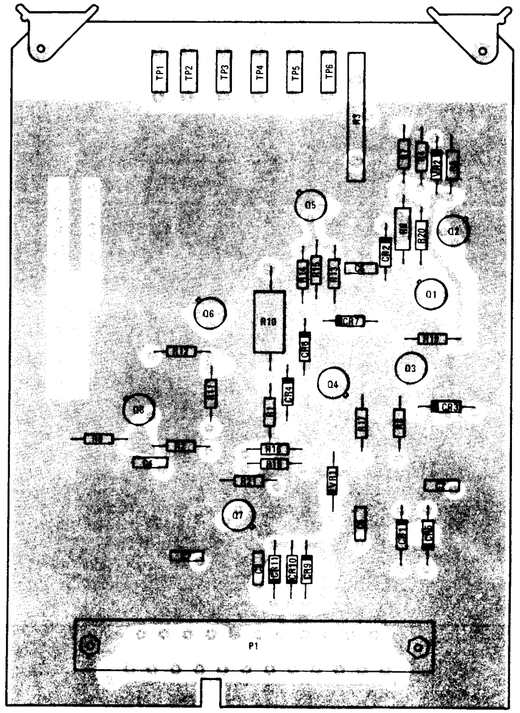
NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTOR ARE IN OHMS, 1/4, ±5%
   B. ALL CAPACITORS ARE IN MICROFARADS
2. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH 1A3.

Figure 10. System Control PWB 1A3, PN 755017A4230 (Sheet 1 of 2)

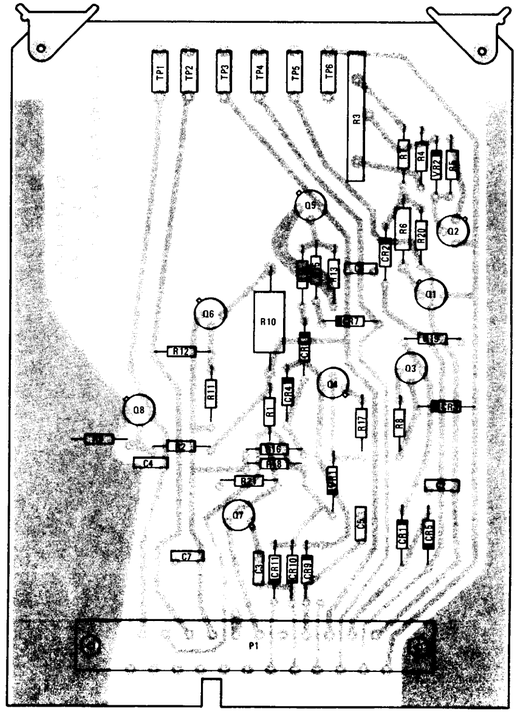
DC OVERVOLTAGE ADJUSTMENT

STEP NO.	TEST EQUIPMENT	TEST POINT	ADJUSTMENT	REMARKS
1	VOM VARIABLE POWER SUPPLY	1A3P1-3		CONNECTAVARIABLE DCPOWERSUPPLY TO 1A3P1-3 AND SET TO +26.5 VDC.
2	TOGGLE SWITCH	1A3P1-2		CONNECT A TOGGLE SWITCH BETWEEN GND AND 1A3P1-2.
3	RESISTOR 1.5K LED P/N 755107A3011-3	1A3P1-4		CONNECT THE RESISTOR AND LED IN SERIES BETWEEN A +26.5 VDC SUPPLY AND 1A3P1-4.
4	TOGGLE SWITCH			CLOSE THE TOGGLE SWITCH ATTACH TO 1A3P1-2
5			1A3R3	ADJUST OVERVOLTAGE POTENTIOMETER FULLY COUNTERCLOCKWISE (FCCW).
6	VARIABLE POWER SUPPLY			ADJUST INPUT TO 1A3P1-3 TO +33 VDC ± 1 VDC
7			1A3R3	ADJUST 1A3R3 CW UNTIL LED AT 1A3P1-4 ILLUMINATES
8	VARIABLE POWER SUPPLY			ADJUST INPUT TO 1A3P1-3 TO +26.5 VDC
9				CONTINUE ADJUST INPUT TO 1A3P1-3 TOWARD +33 VDC
10				THE LED AT 1A3P1-4 SHOULD EXTINGUISH AT ABOUT +32 VDC.
11				DISCONNECT TEST EQUIPMENT

Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
P	Plug (Connector)
Q	Transistor
R	Resistor
TP	Test Point
VR	Voltage Regulator



COMPONENT SIDE



TRACK SIDE OR RUN SIDE

NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A3

Figure 10. System Control PWB 1A3, PN 755017A4230 (Sheet 2 of 2)

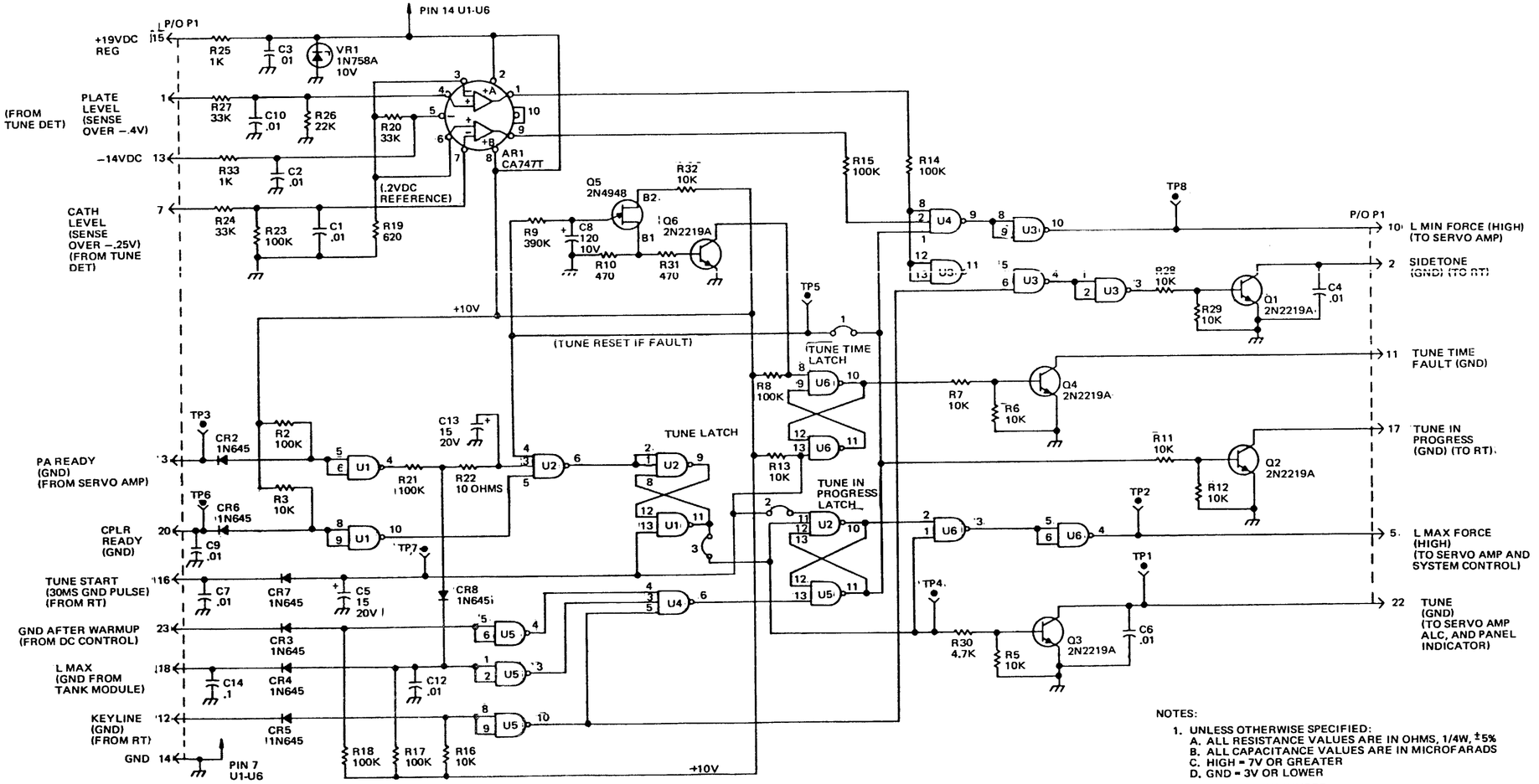
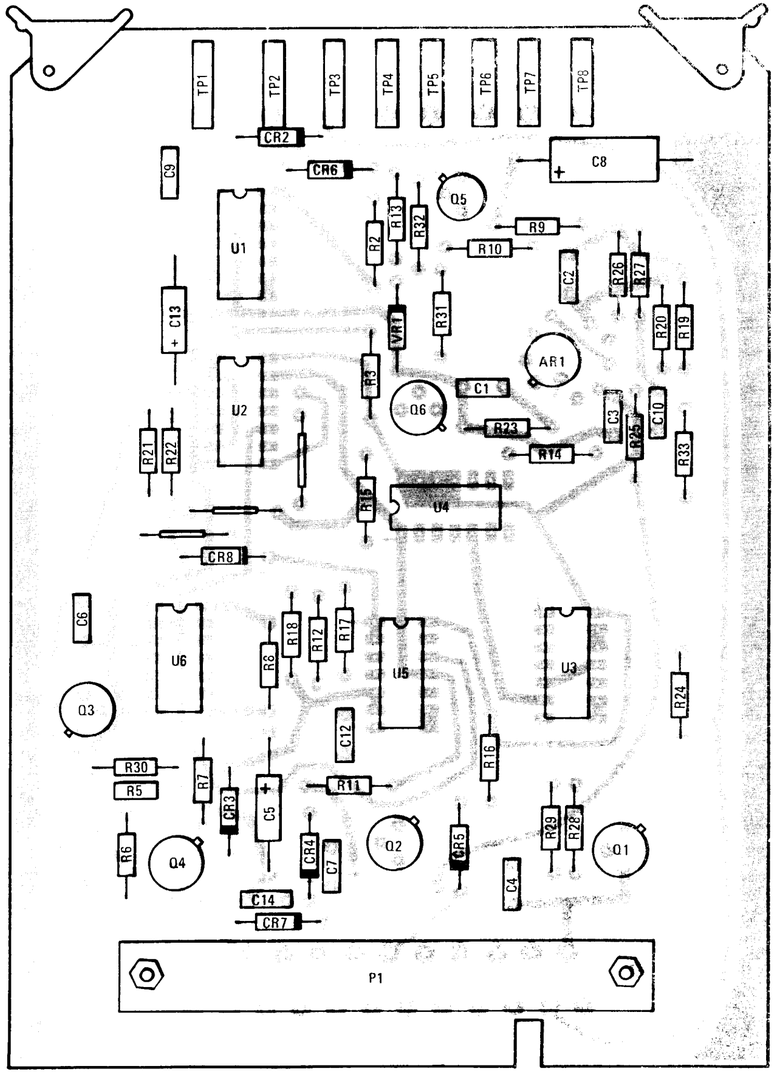


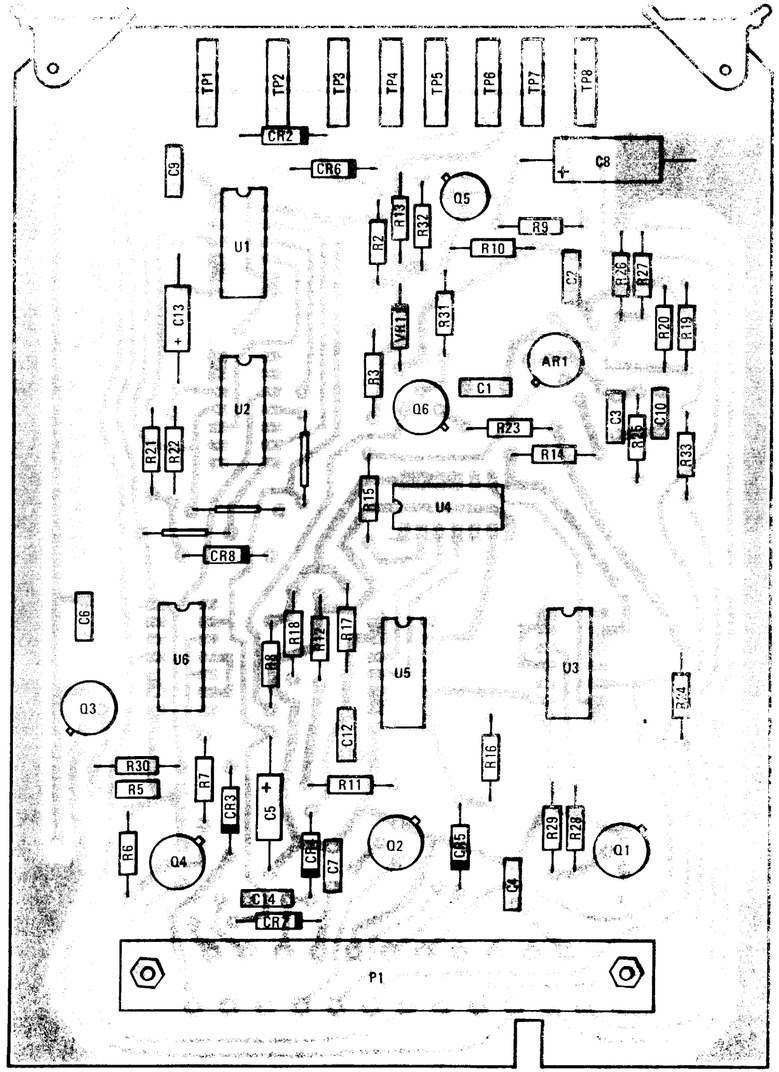
Figure 11. Tune Control PWB 1A4, PN 755017A4240 (Sheet 1 of 2)



NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A4

COMPONENT SIDE

Ref. Desig.	Name
AR	Amplifier
C	Capacitor
CR	Diode Semiconductor Device
P	Plug (Connector)
Q	Transistor
R	Resistor
TP	Test Point
U	Integrated Circuit
VR	Voltage Regulator



NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A4

TRACK SIDE OR RUN SIDE

Figure 11. Tune Control PWB 1A4, PN 755017A4240 (Sheet 2 of 2)

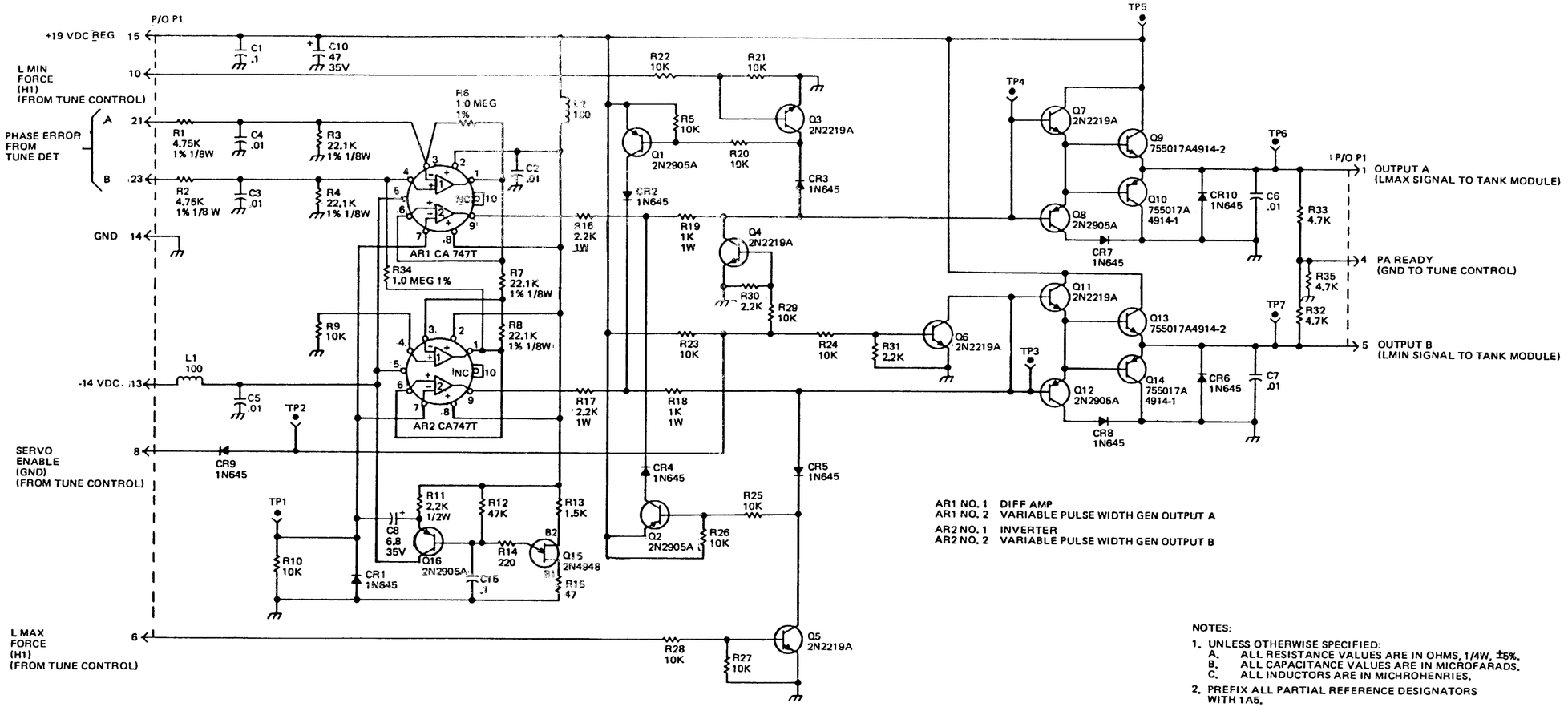
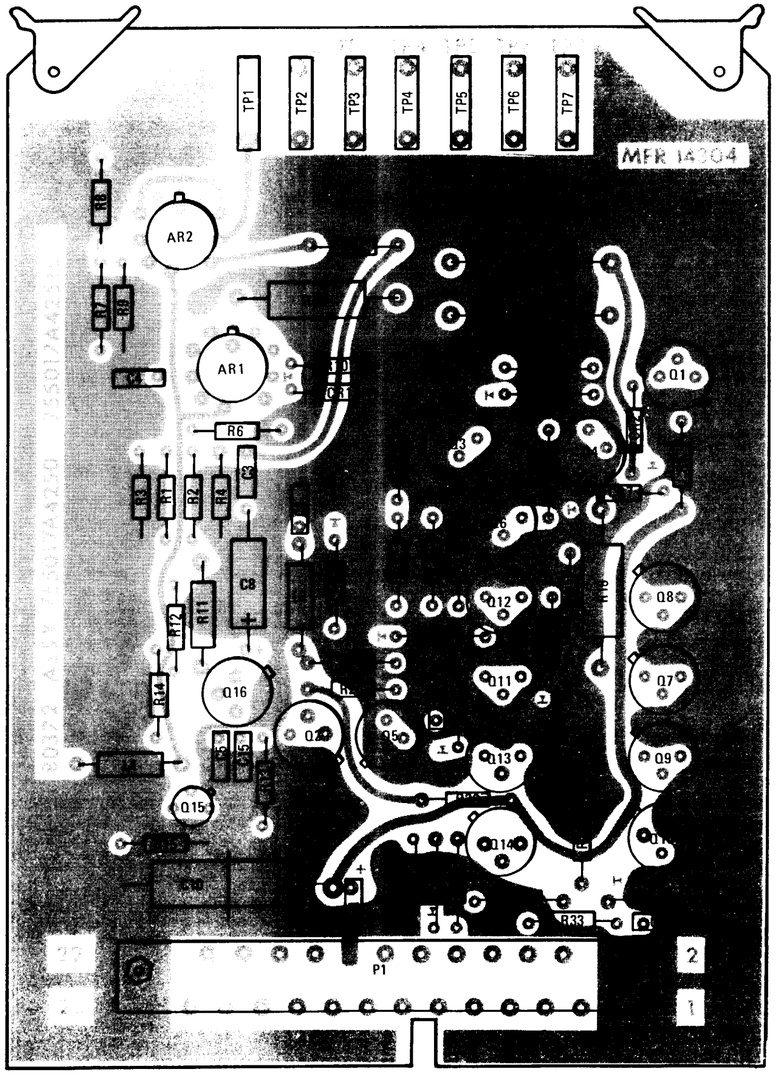
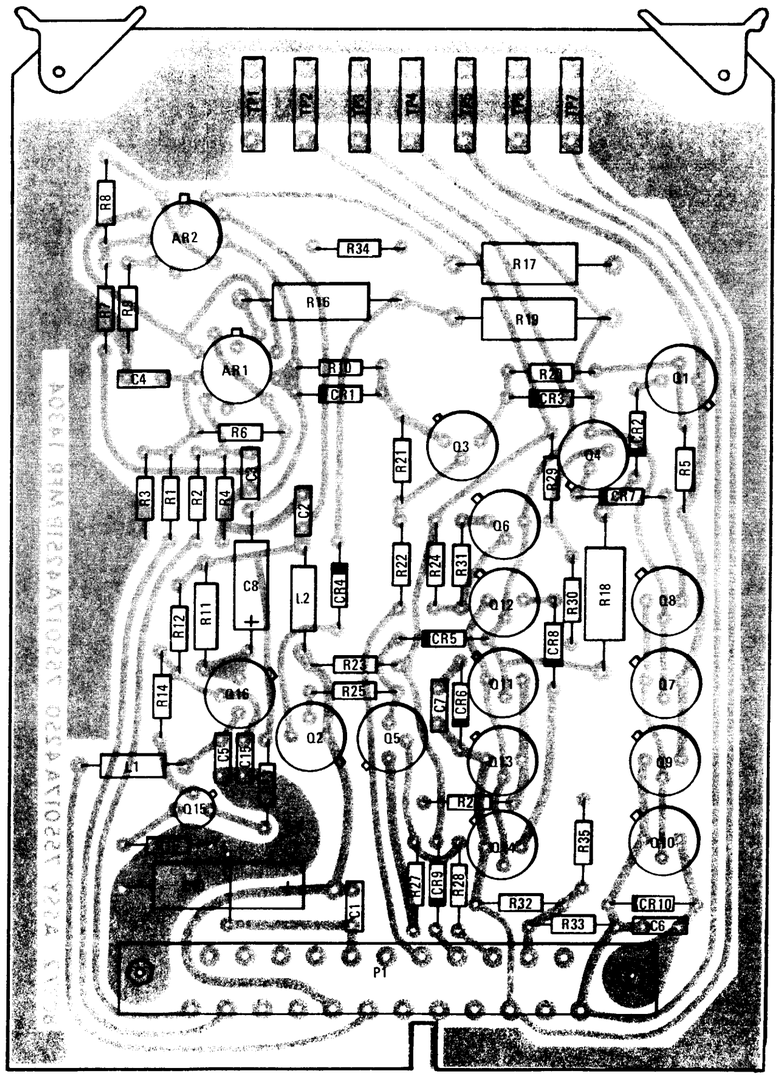


Figure 12. Servo Amplifier PWB 1A5, PN 755017A4250 (Sheet 1 of 2)



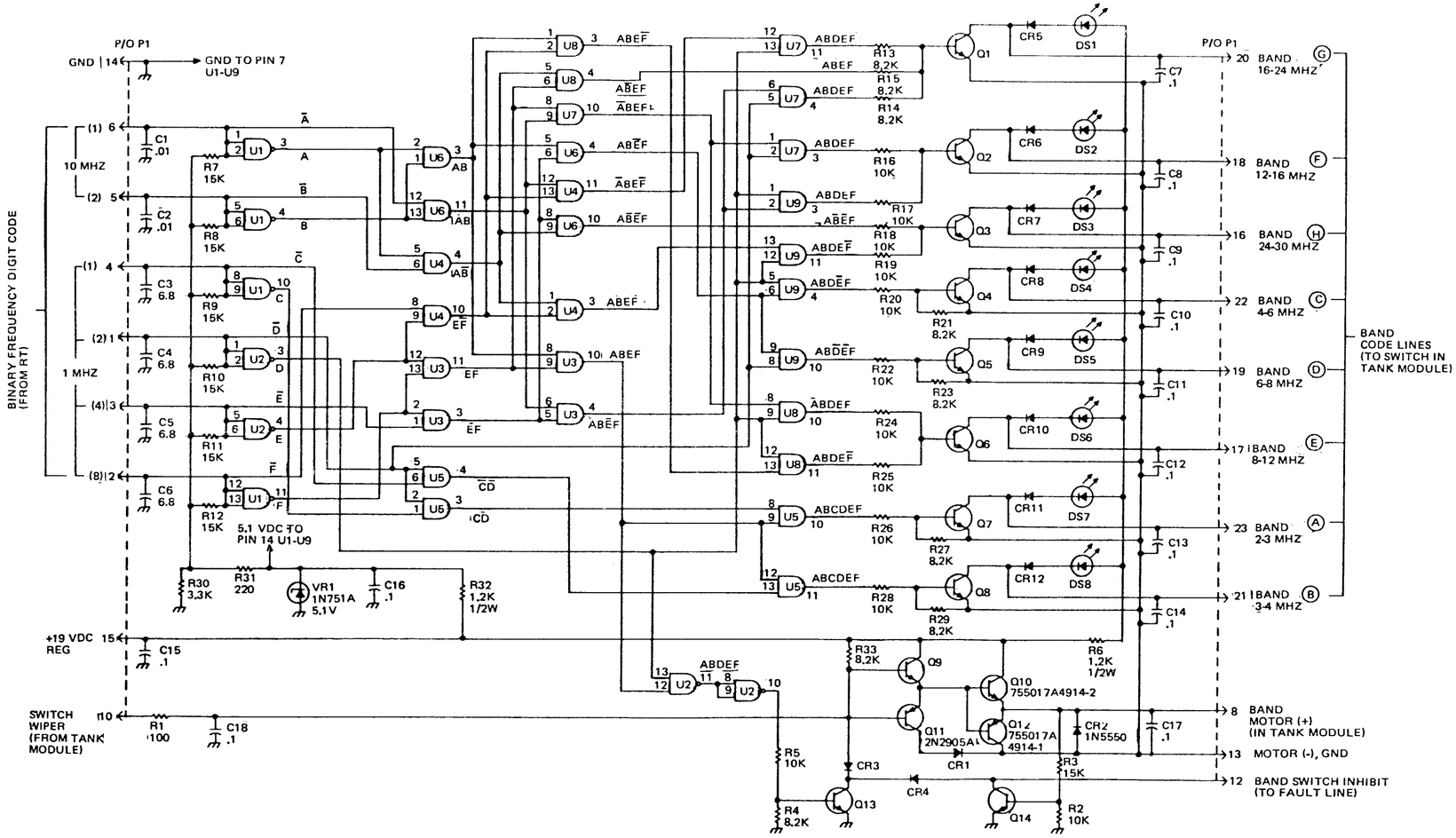
NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A5
COMPONENT SIDE

Ref. Desig.	Name
AR	Amplifier
C	Capacitor
CR	Diode Semiconductor Device
L	Inductor
P	Plug (Connector)
Q	Transistor
R	Resistor
TP	Test Point



NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A5
TRACK SIDE OR RUN SIDE

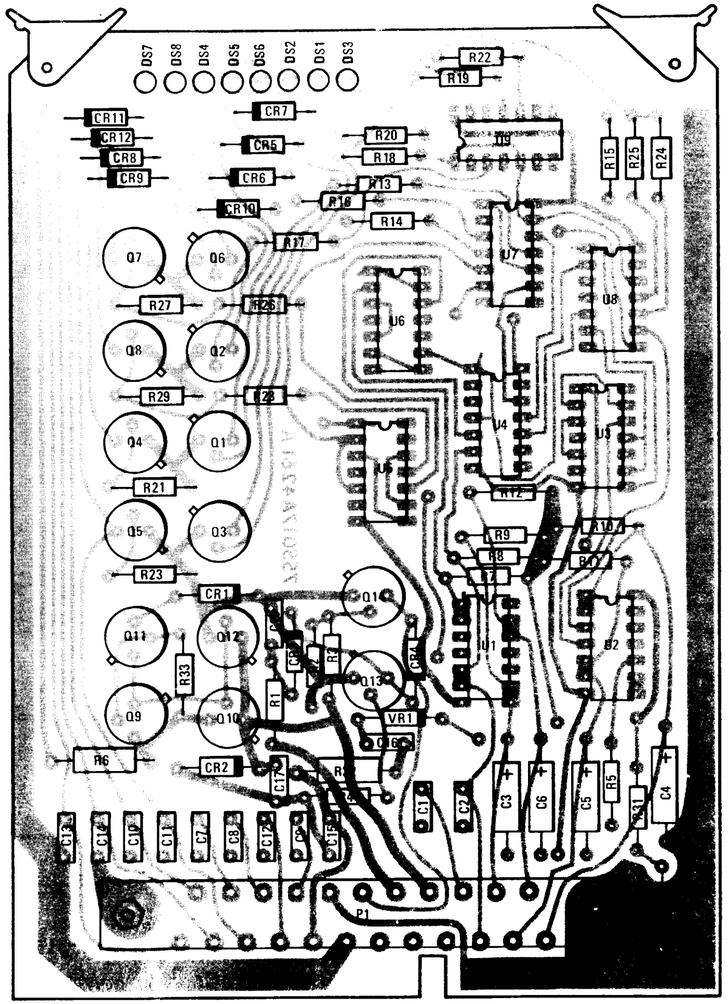
Figure 12. Servo Amplifier PWB 1A5, PN 755017A4250 (Sheet 2 of 2)



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, ±5%.
   B. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
   C. ALL DIODES ARE 1N645.
   D. ALL TRANSISTORS ARE 2N2219A
   E. ALL LED'S ARE 755017A3011-1.
   F. ALL AND GATES ARE 755017A4265-1.
   G. ALL NAND GATES ARE 755017A4245-1.
2. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH A6

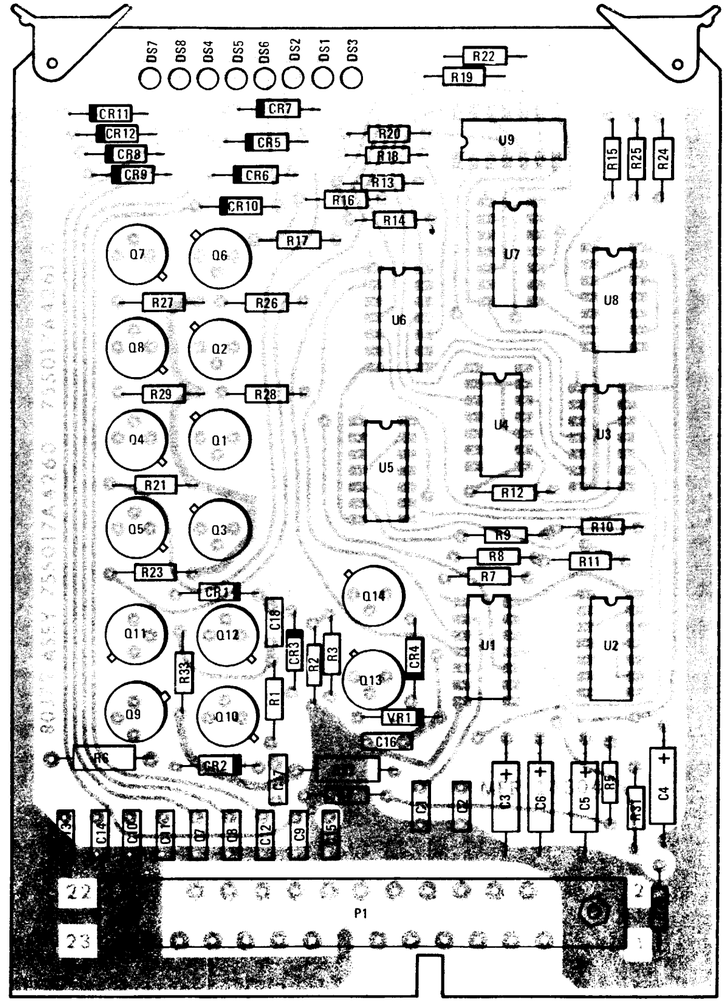
Figure 13. Band Switch PWB A6, PN 755017A1269 (Sheet 1 of 2)



COMPONENT SIDE

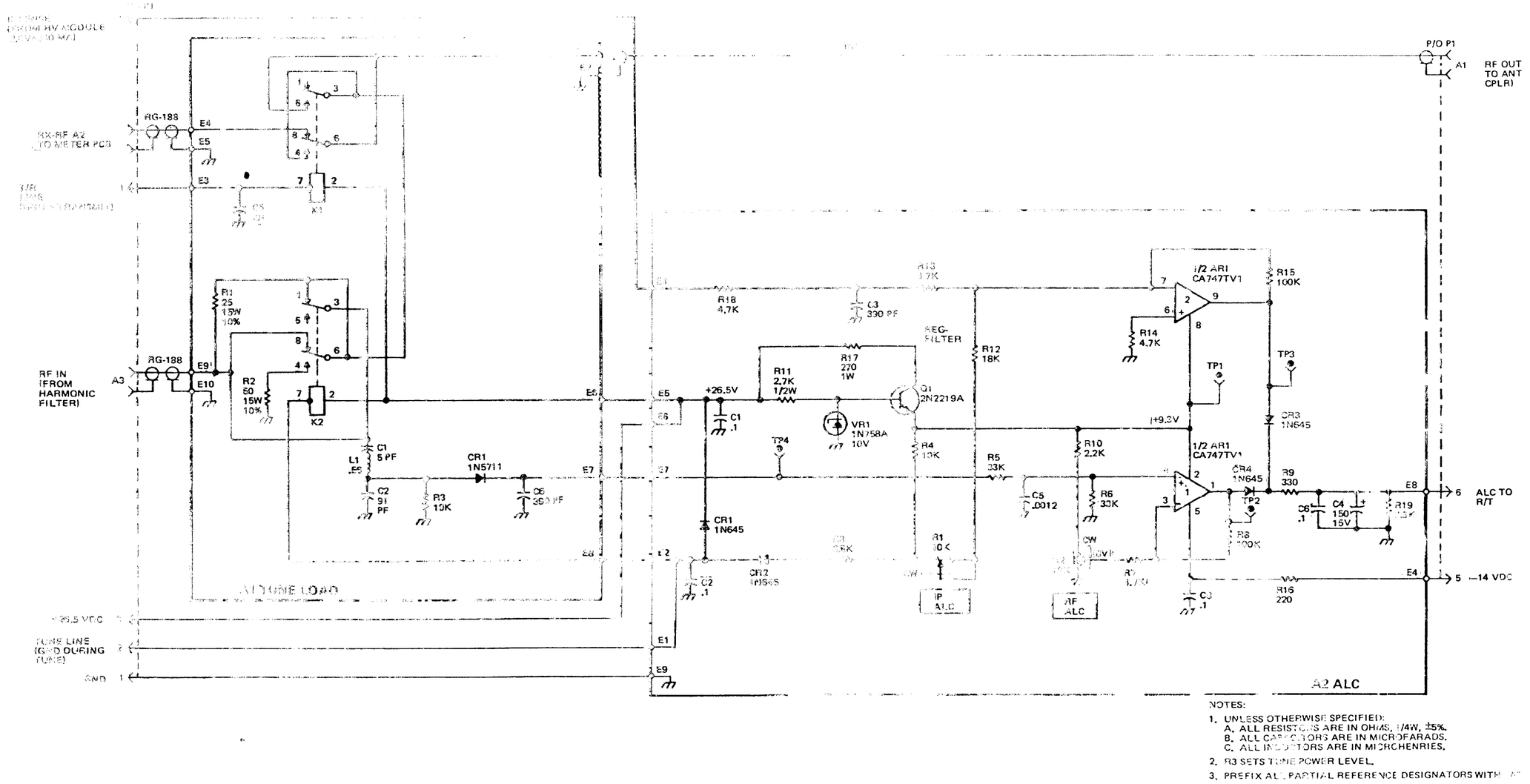
Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
DS	Lamp
P	Plug (Connector)
Q	Transistor
R	Resistor
U	Integrated Circuit
VR	Voltage Regulator

NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A6



TRACK SIDE OR RUN SIDE

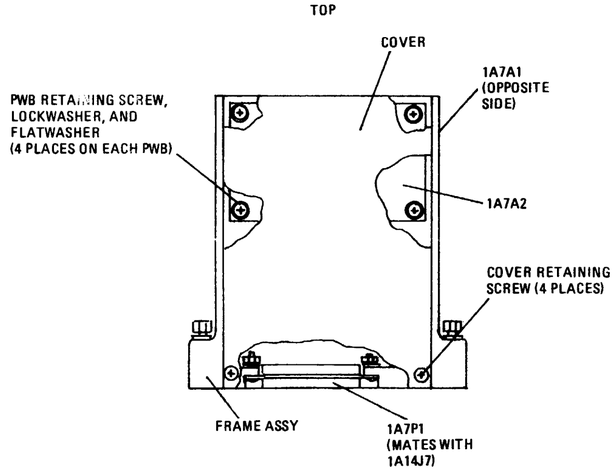
Figure 13. Band Control PWB 1A6, PN 755017A4260 (Sheet 2 of 2)



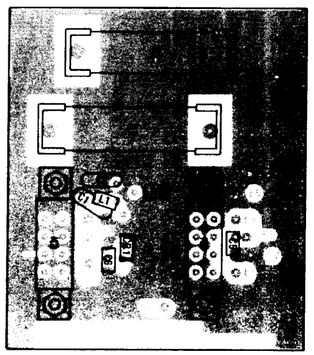
NOTES:

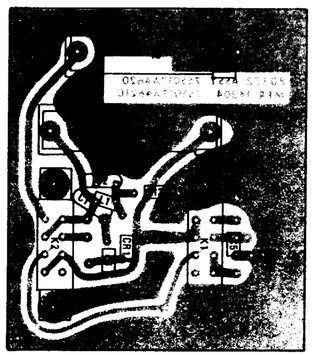
1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTORS ARE IN OHMS, 1/4W, ±5%.
   B. ALL CAPACITORS ARE IN MICROFARADS.
   C. ALL INDUCTORS ARE IN MICROHENRIES.
2. R3 SETS TONE POWER LEVEL.
3. PREFIX A1 TO PARTIAL REFERENCE DESIGNATORS WITH A2

Figure 14. ALC Module Assembly 1A7, PN 755017A4600 (Sheet 1 of 2)



Ref. Desig.	Name
AR	Amplifier
C	Capacitor
CR	Diode Semiconductor Device
K	Relay
L	Inductor
P	Plug (Connector)
Q	Transistor
R	Resistor
TP	Test Point
VR	Voltage Regulator

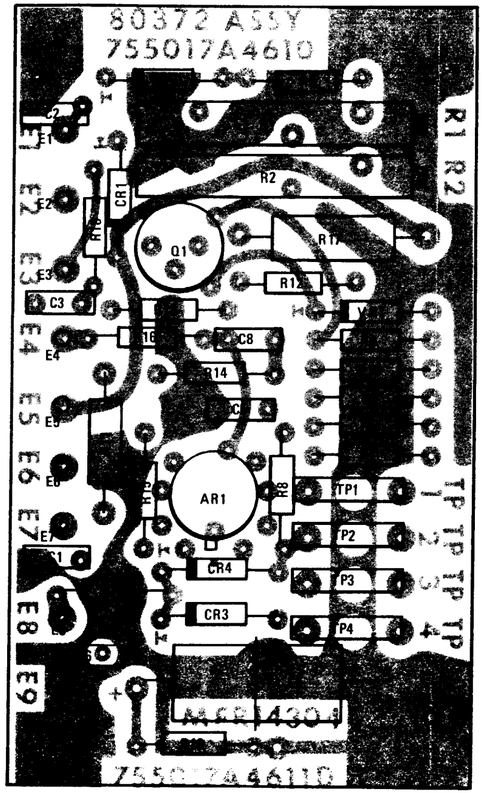


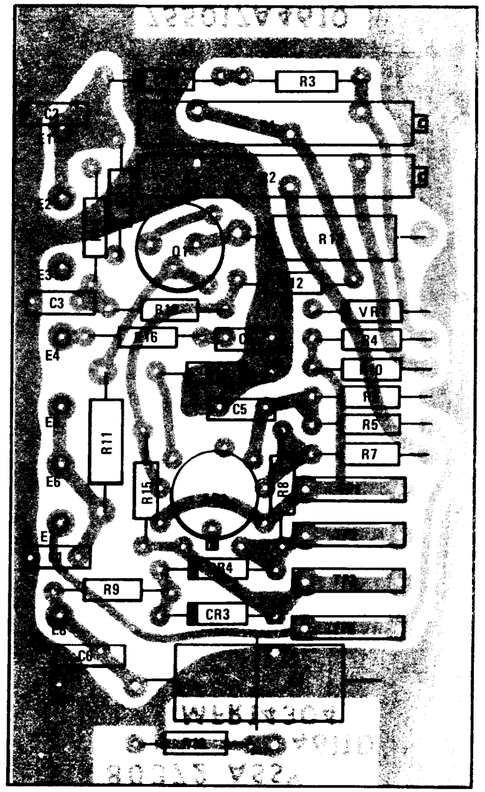


NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A7A1

COMPONENT SIDE TRACK SIDE OR RUN SIDE

TUNE LOAD PWB ASSEMBLY 1A7A1, PN 755017A4620

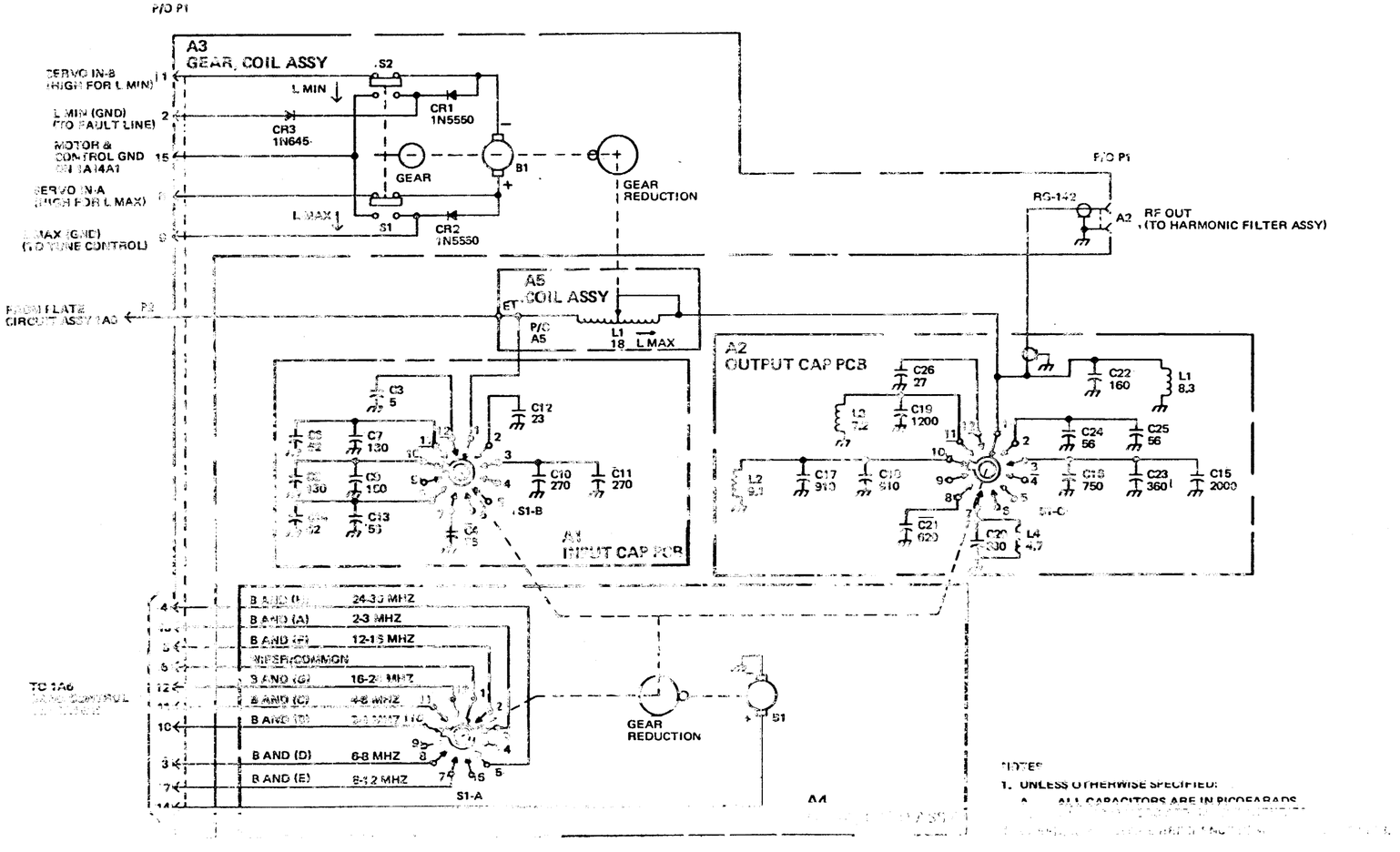


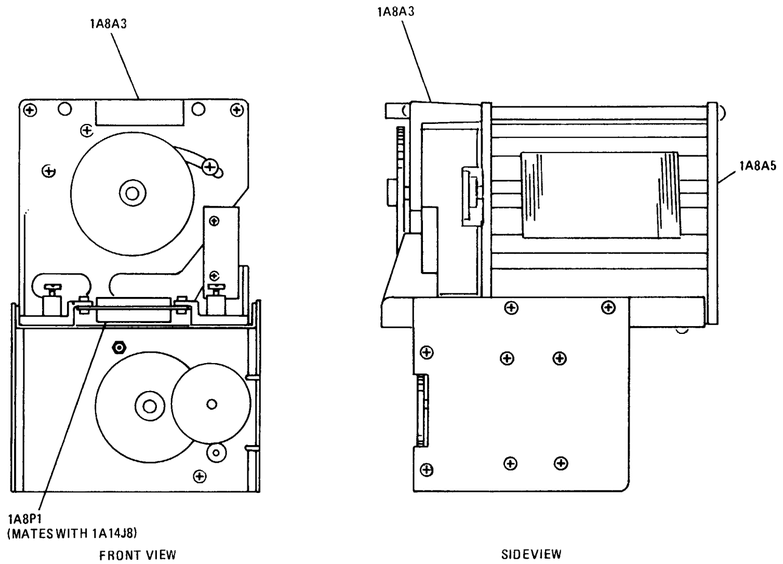


NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A7A2

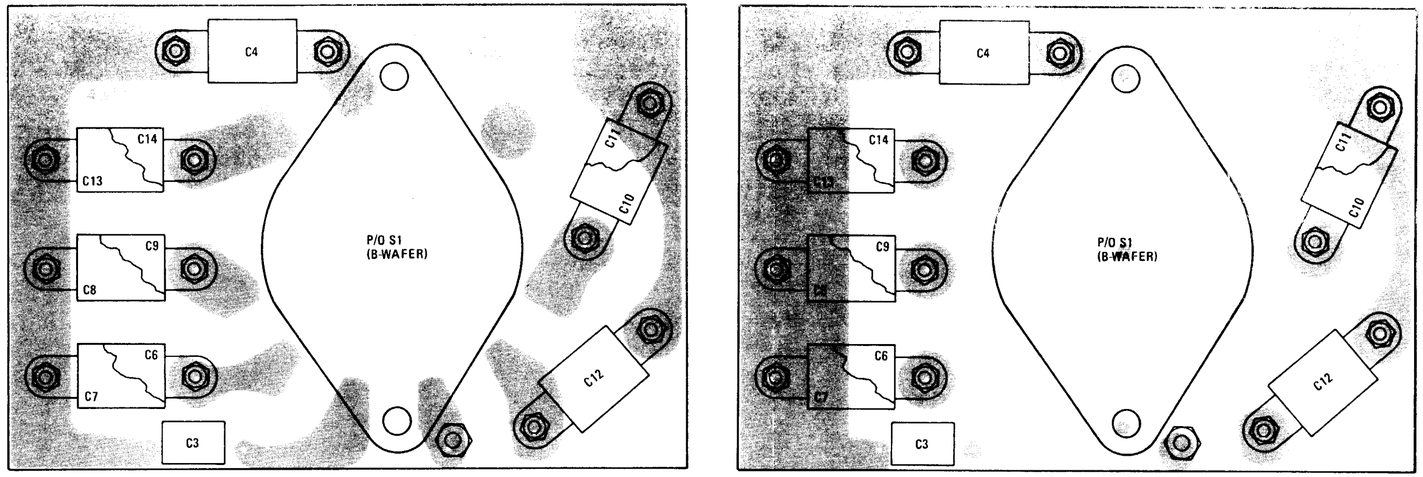
COMPONENT SIDE TRACK SIDE OR RUN SIDE

Figure 14. ALC Module Assembly 1A7, PN 755017A4600 (Sheet 2 of 2)


P/O P1
A3
GEAR COIL ASSY
S2
L MIN
CR1
1N5550
CR3
1N645
GEAR
B1
GEAR
REDUCTION
L MAX
S1
CR2
1N5550
P/O P1
RG-142
A2
RF OUT
(TO HARMONIC FILTER ASSY)
A5
COIL ASSY
P/O
A5
L1
L MAX
A2
OUTPUT CAP PCB
C26
27
C22
160
L1
8.3
C19
1200
C24
56
C25
56
C17
910
C18
750
C23
360
C15
2000
C21
620
L4
4.7
C3
5
C12
23
C7
130
C9
100
C10
270
C11
270
C13
51
S1-B
A4
INPUT CAP PCB
B AND (F)
12-15 MHZ
WIPER COMMON
B AND (C)
4-6 MHZ
B AND (D)
6-8 MHZ
B AND (E)
8-12 MHZ
S1-A
GEAR
REDUCTION
S1
A4
NOTES
1. UNLESS OTHERWISE SPECIFIED:



Ref. Desig.	Name
B	Fan
C	Capacitor
CR	Diode Semiconductor Device
L	Inductor
P	Plug (Connector)
S	Switch



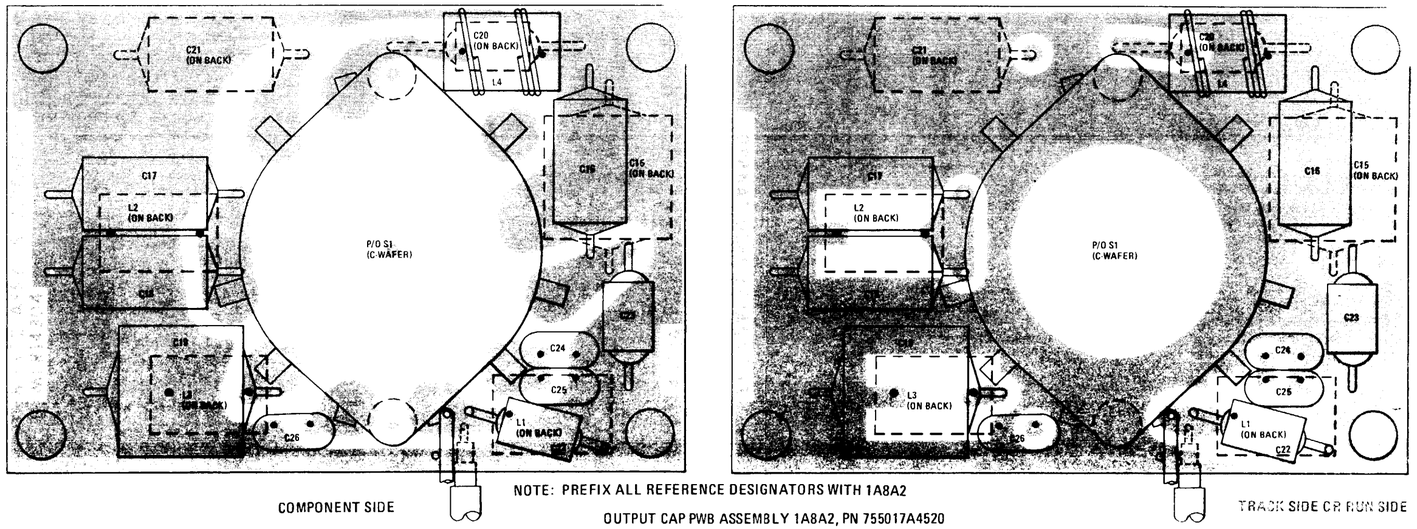
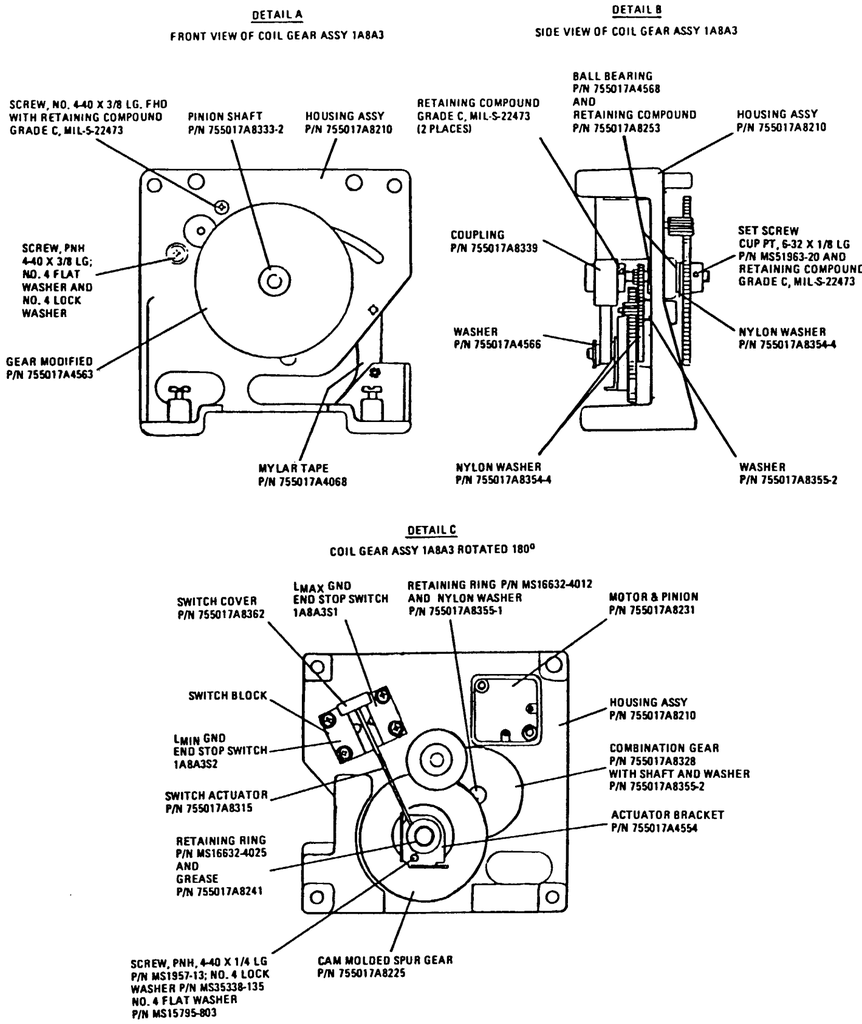
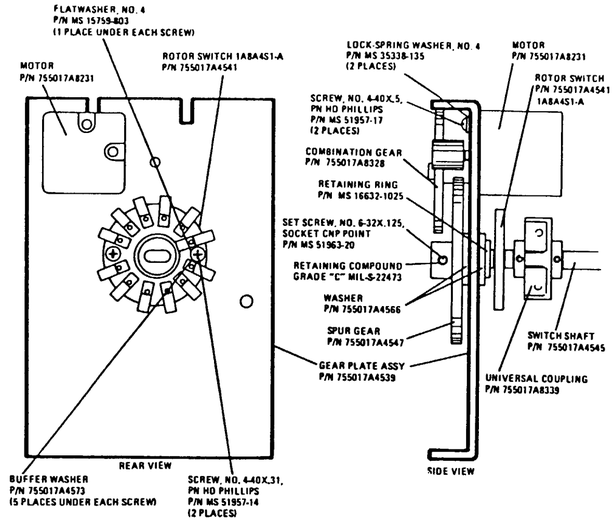


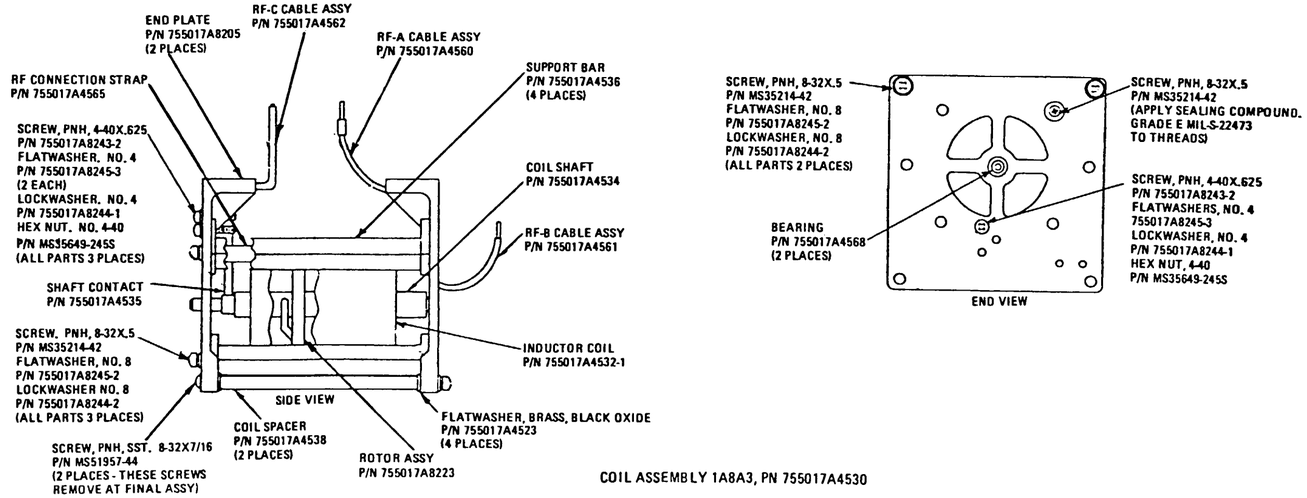
Figure 15. Tank Circuit Module Assembly 1A8, PN 755017A4500 (Sheet 2 of 3)



COIL GEAR ASSEMBLY 1A8A3, PN 755017A4550



BANDSWITCH GEAR ASSEMBLY 1A8A4, PN 755017A4540



COIL ASSEMBLY 1A8A3, PN 755017A4530

Figure 15. Tank Circuit Module Assembly 1A8, PN 755017A4500 (Sheet 3 of 3)

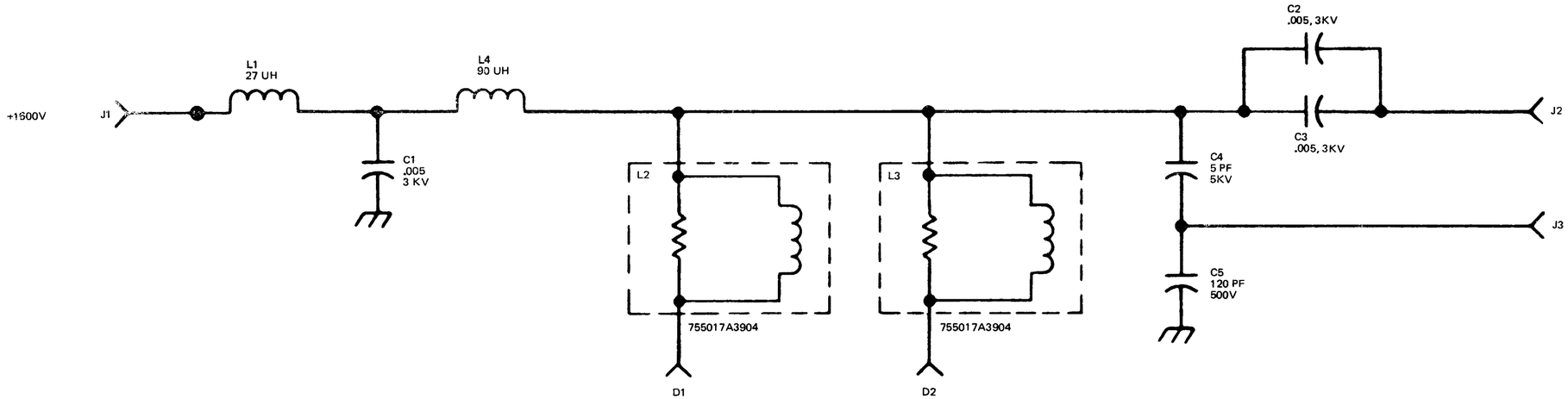
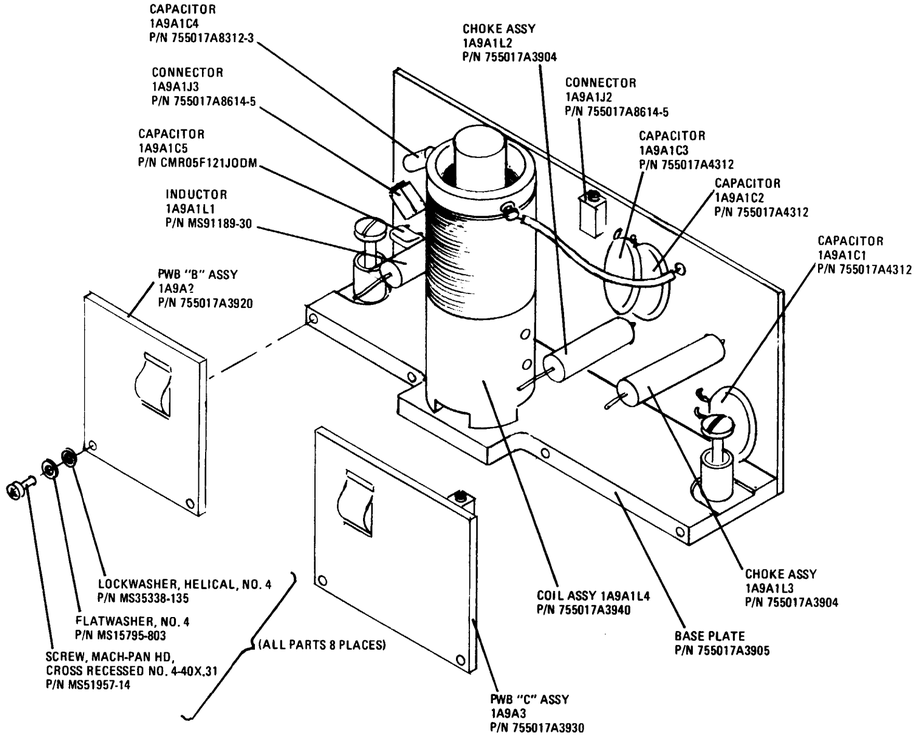
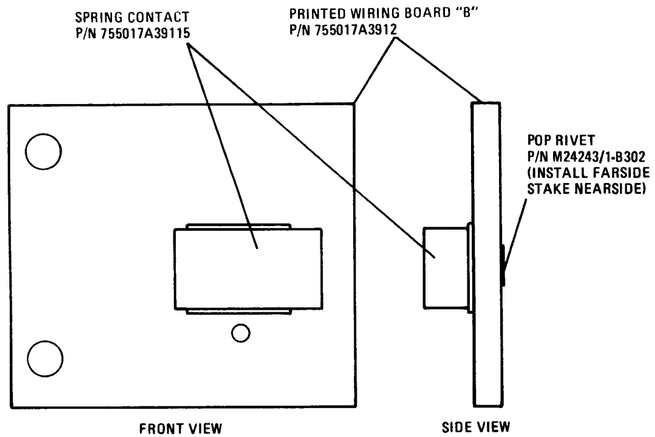


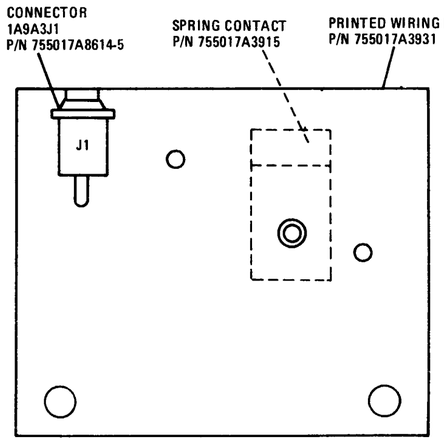
Figure 16. Plate Assembly 1A9, PN 755017A3900 (Sheet 1 of 2)





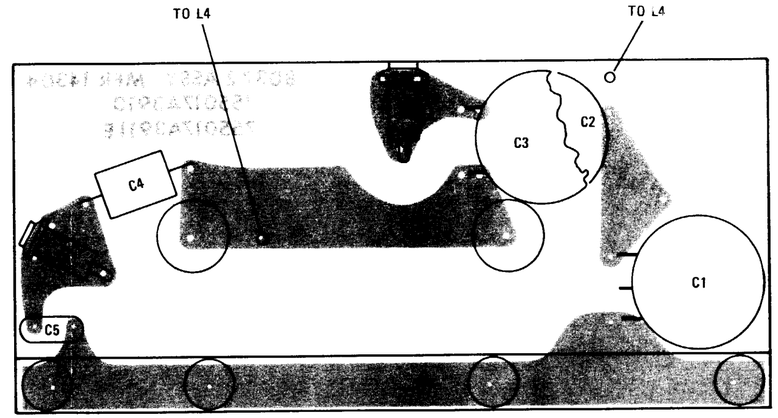
NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A9A2

PWB "B" ASSEMBLY 1A9A2, PN 755017A3920



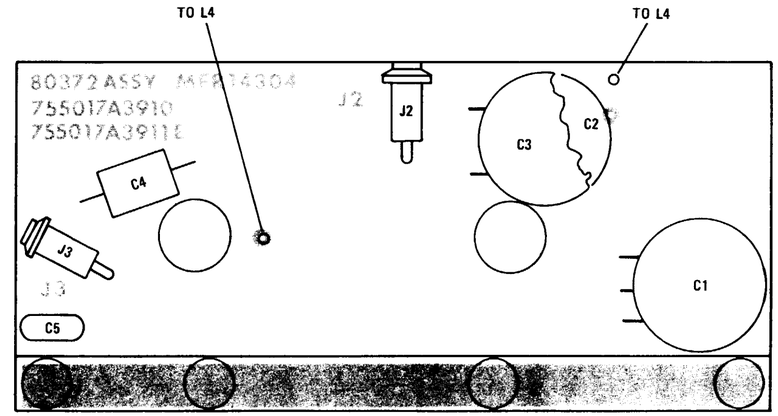
NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A9A3

PWB "C" ASSEMBLY 1A9A3, PN 755017A3930



NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A9A1

TRACK SIDE OR RUN SIDE



Ref. Desig.	Name
C	Capacitor
J	Connector (Jack)
L	Inductor

NOTE: PREFIX ALL REFERENCE DESIGNATORS WITH 1A9A1

PLATE CHOKE "A" PCB ASSEMBLY 1A9A1, PN 755017A3910

Figure 16. Plate Assembly 1A9, PN 755017A3900 (Sheet 2 of 2)

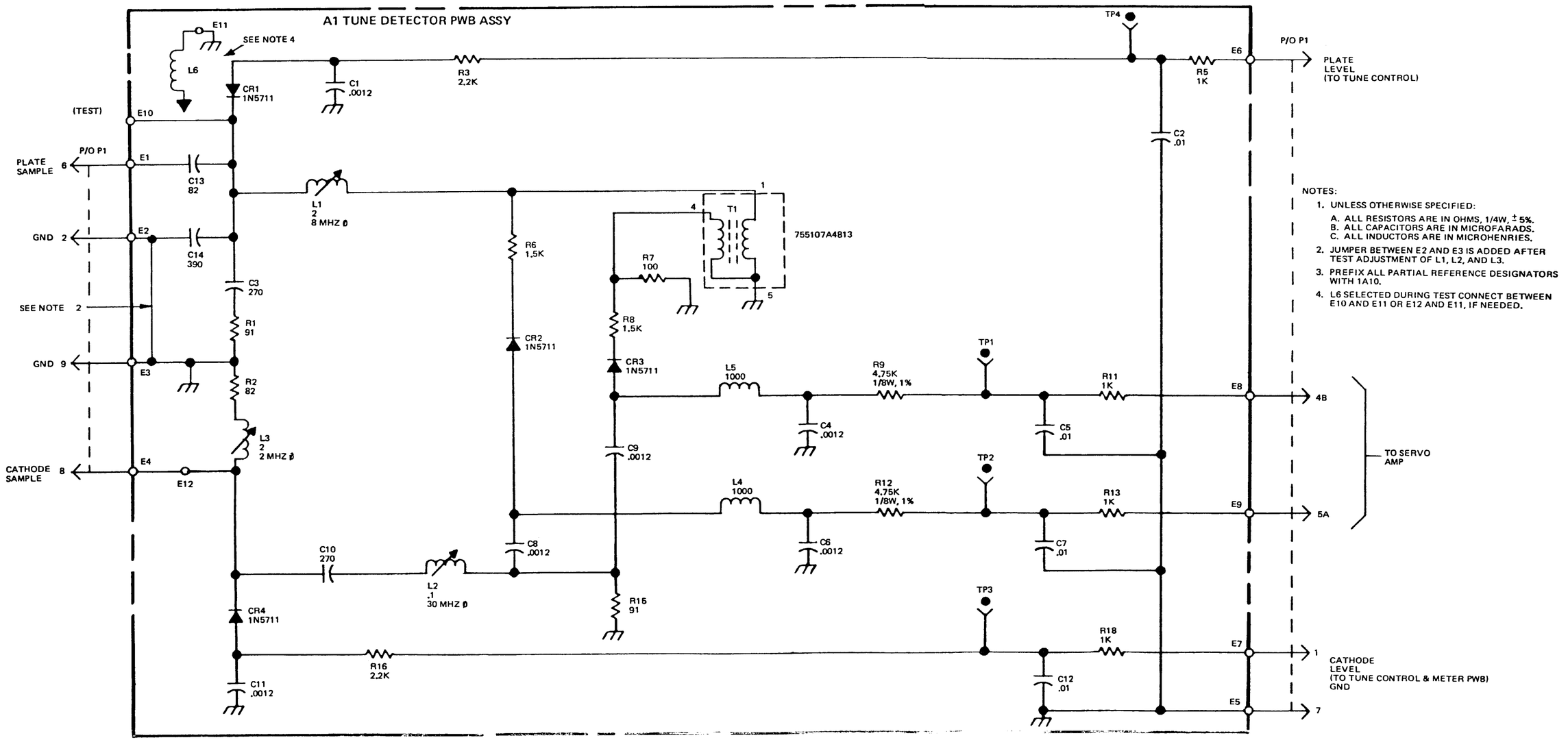
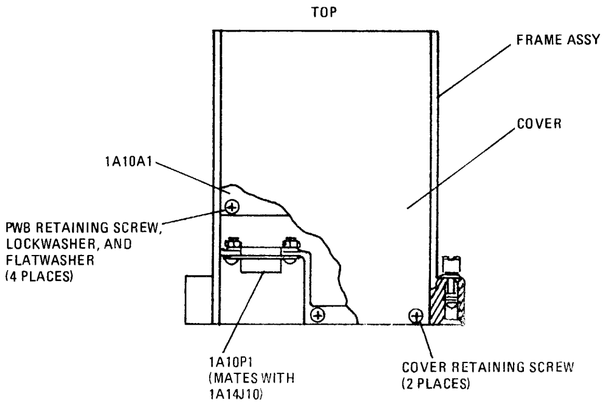
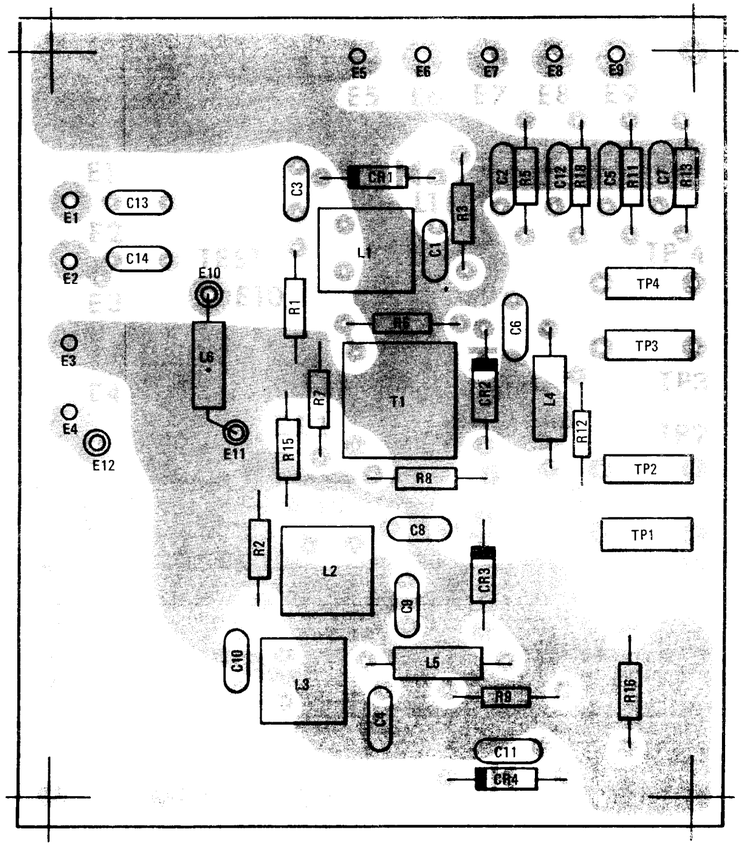


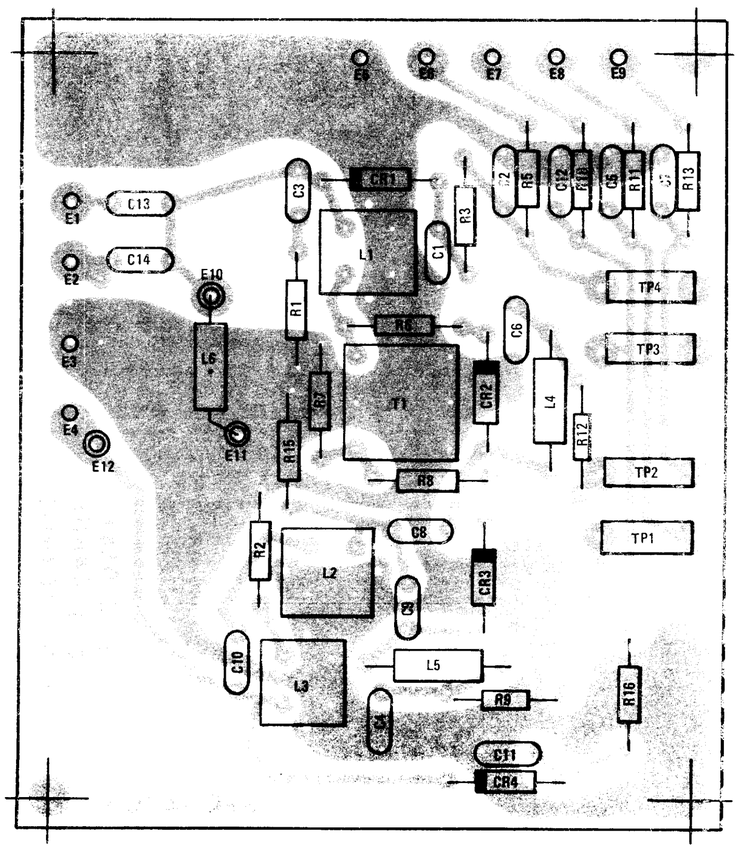
Figure 17. Tune Detector Module Assembly 1A10, PN 755017A4800 (Sheet 1 of 2)



Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
L	Inductor
P	Plug (Connector)
R	Resistor
T	Transformer
TP	Test Point



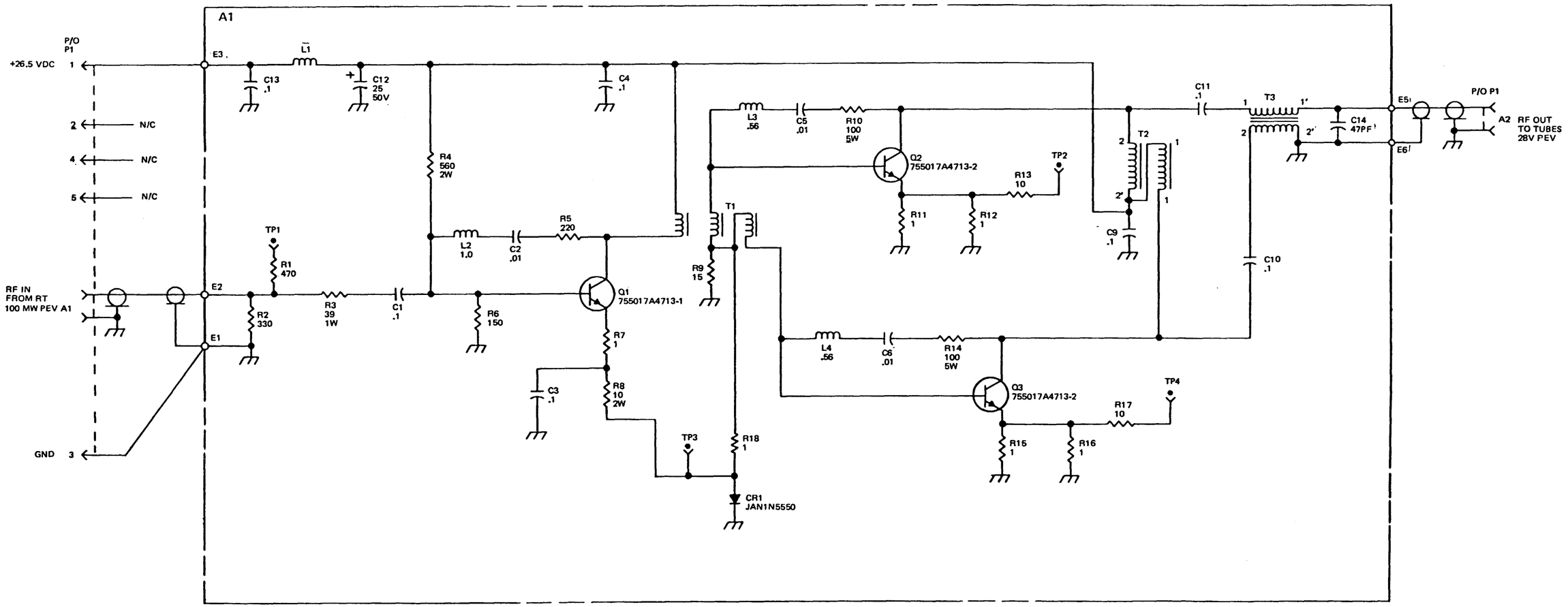
COMPONENT SIDE



TRACK SIDE OR RUN SIDE

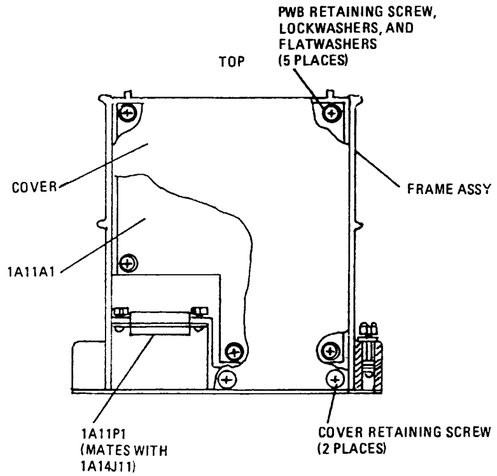
TUNE DETECTOR PWB ASSEMBLY 1A10A1, PN 755017A4810

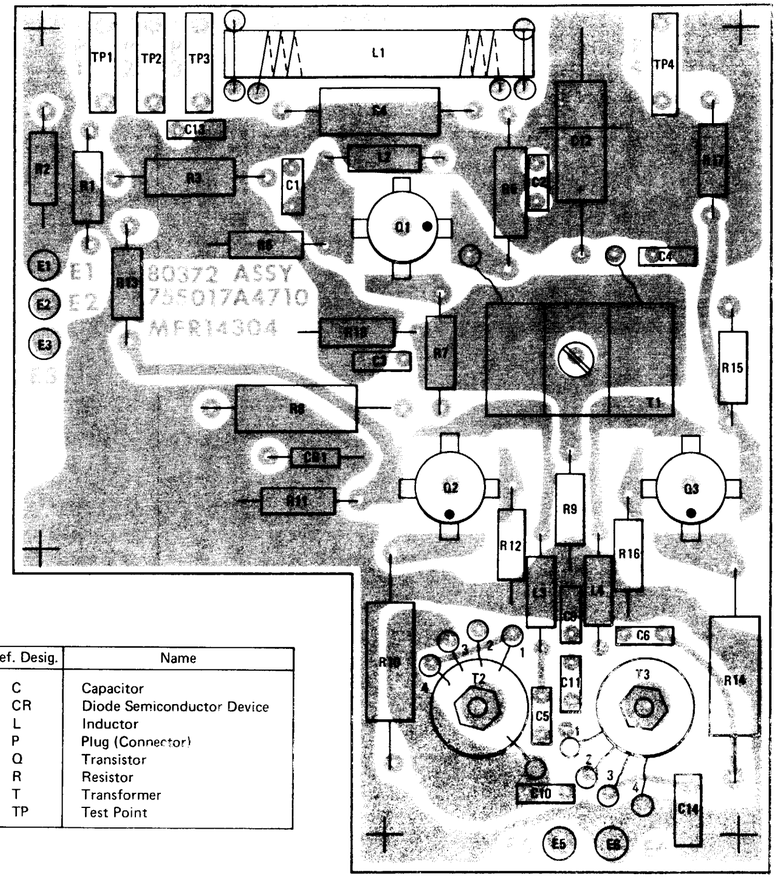
Figure 17. Tune Detector Module Assembly 1A10, PN 755017A4800 (Sheet 2 of 2)



NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   A. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
   B. ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
   C. ALL RESISTANCE VALUES ARE IN OHMS, 1/2W, 5%.
2. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH 1A11.

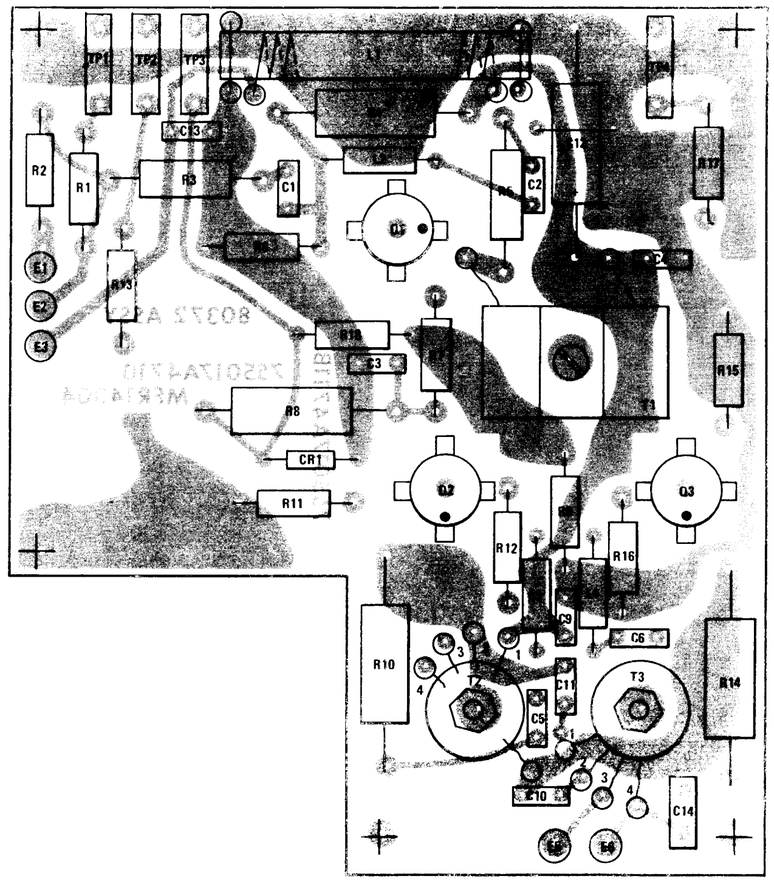
Figure 18. RF Driver Module Assembly 1A11, PN 755017A4700 (Sheet 1 of 2)





Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
L	Inductor
P	Plug (Connector)
Q	Transistor
R	Resistor
T	Transformer
TP	Test Point

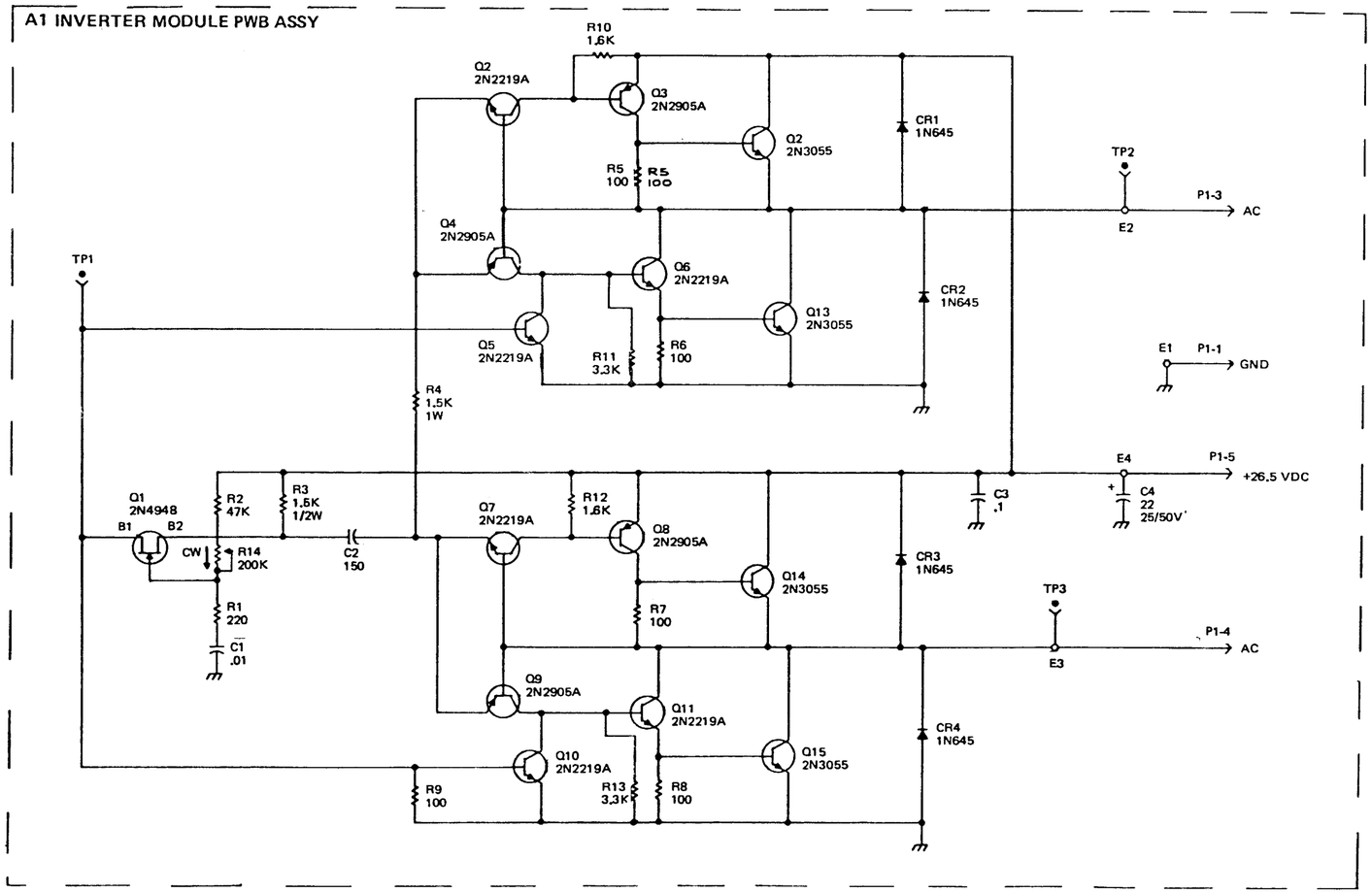
COMPONENT SIDE



TRACK SIDE OR RUN SIDE

RF DRIVER MODULE PWB ASSEMBLY 1A11A1, PN 755017A4710

Figure 18. RF Driver Module Assembly 1A11, PN 755017A4700 (Sheet 2 of 2)

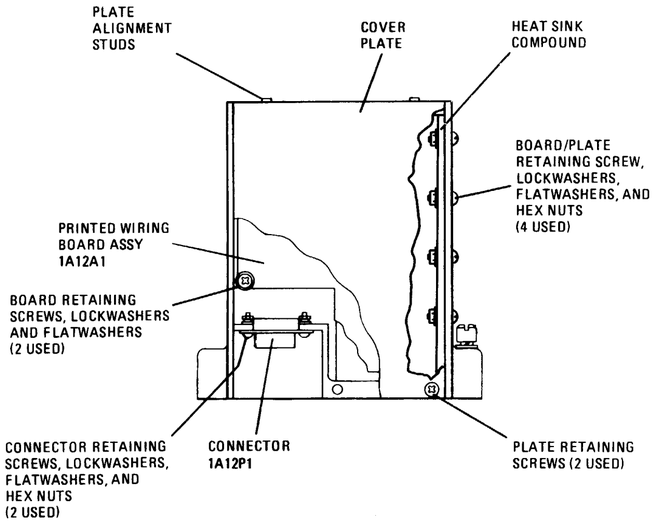


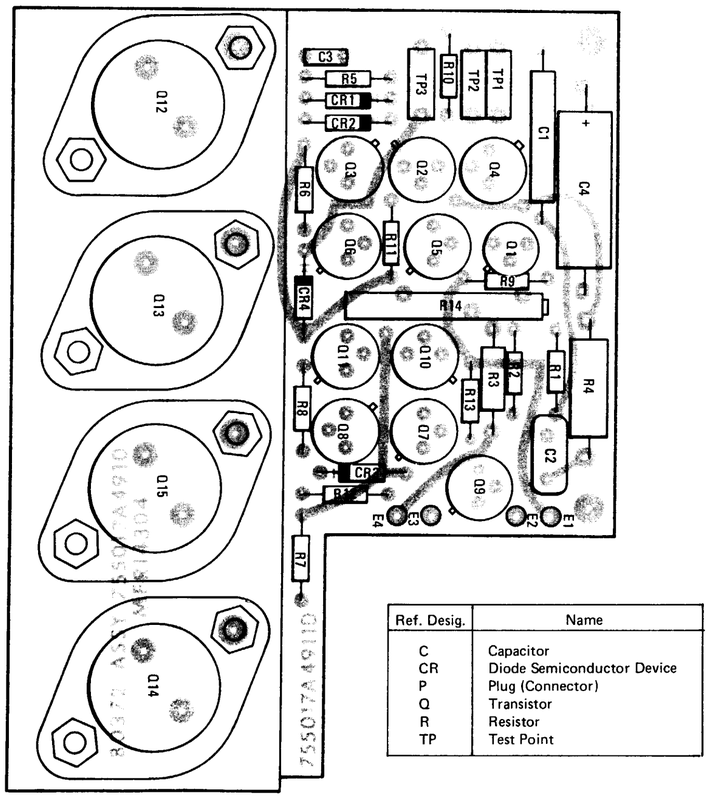
NOTES:

UNLESS OTHERWISE SPECIFIED:

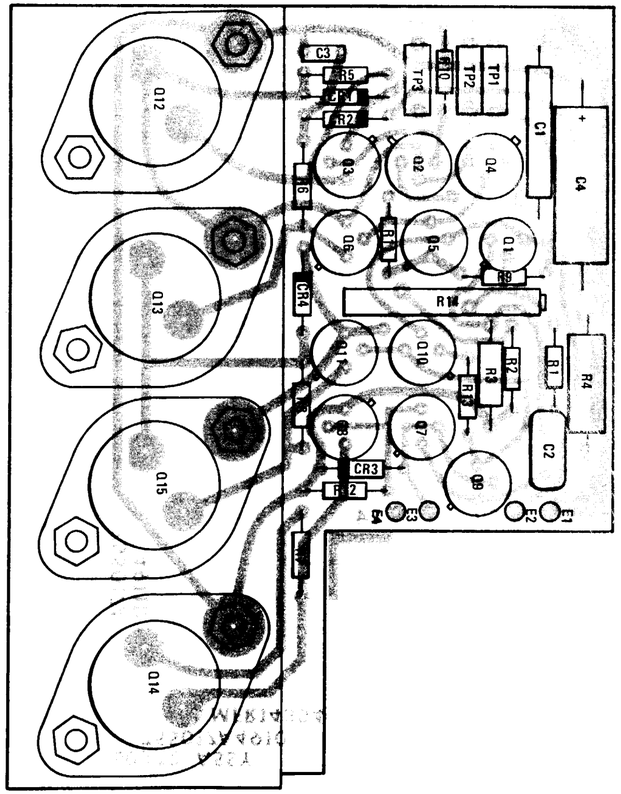
1. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
2. ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 5%.
3. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH 1A12

Figure 19. Static Power Inverter Assembly 1A12, PN 755017A4900 (Sheet 1 of 2)





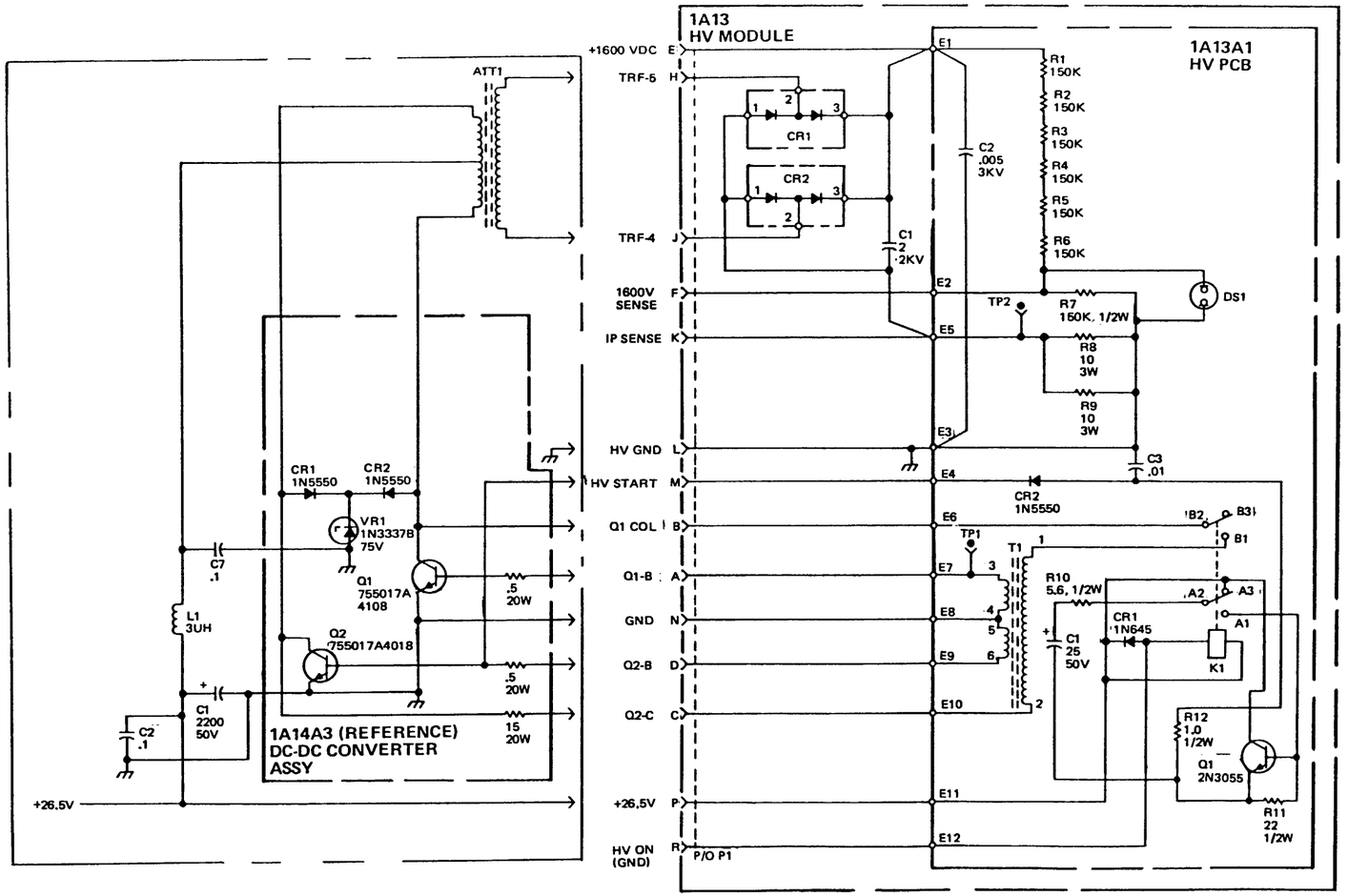
Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
P	Plug (Connector)
Q	Transistor
R	Resistor
TP	Test Point



TRACK SIDE OR RUN SIDE

INVERTER MODULE PWB ASSEMBLY 1A12A1, PN 755017A4910

Figure 19. Static Power Inverter Assembly 1A12, PN 755017A4900 (Sheet 2 of 2)

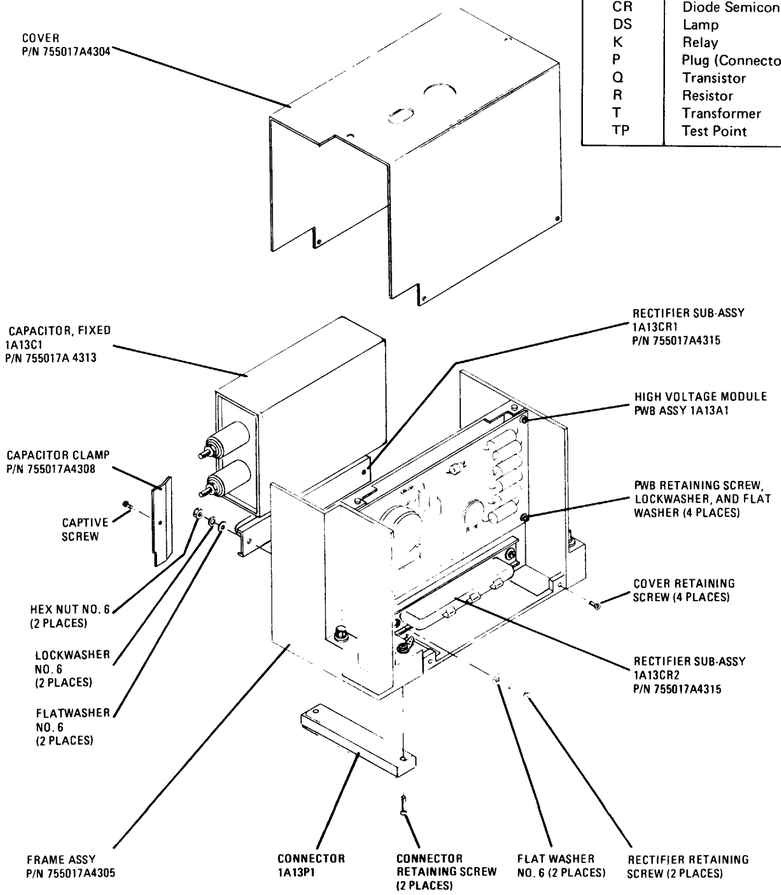


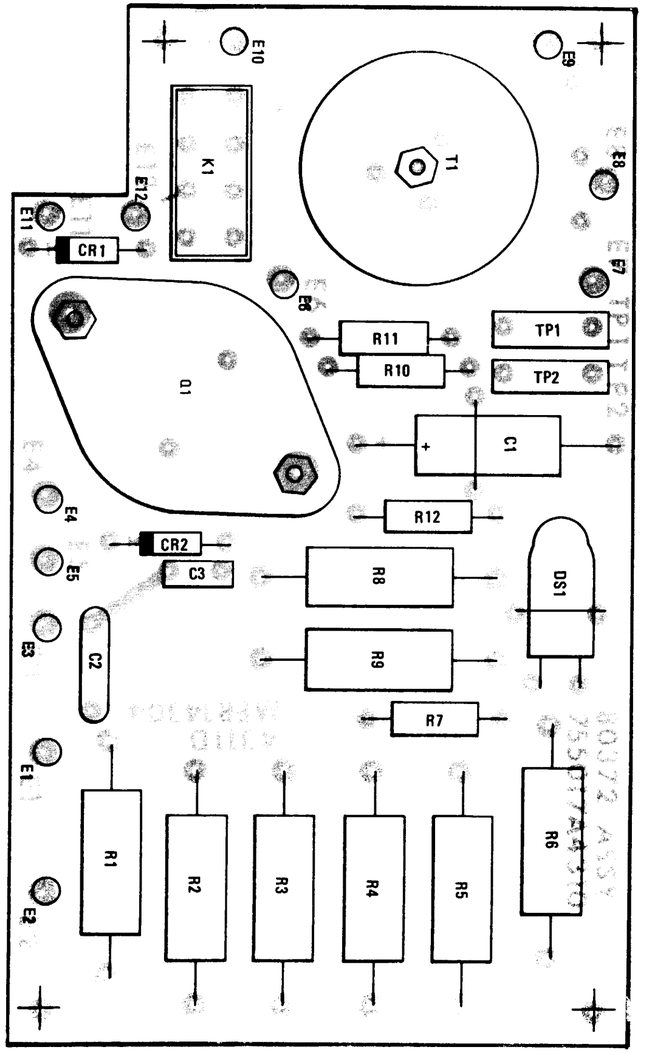
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTORS ARE IN OHMS, 2W, 5%.
   B. ALL CAPACITORS ARE IN MICROFARADS.
2. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH 1A13.

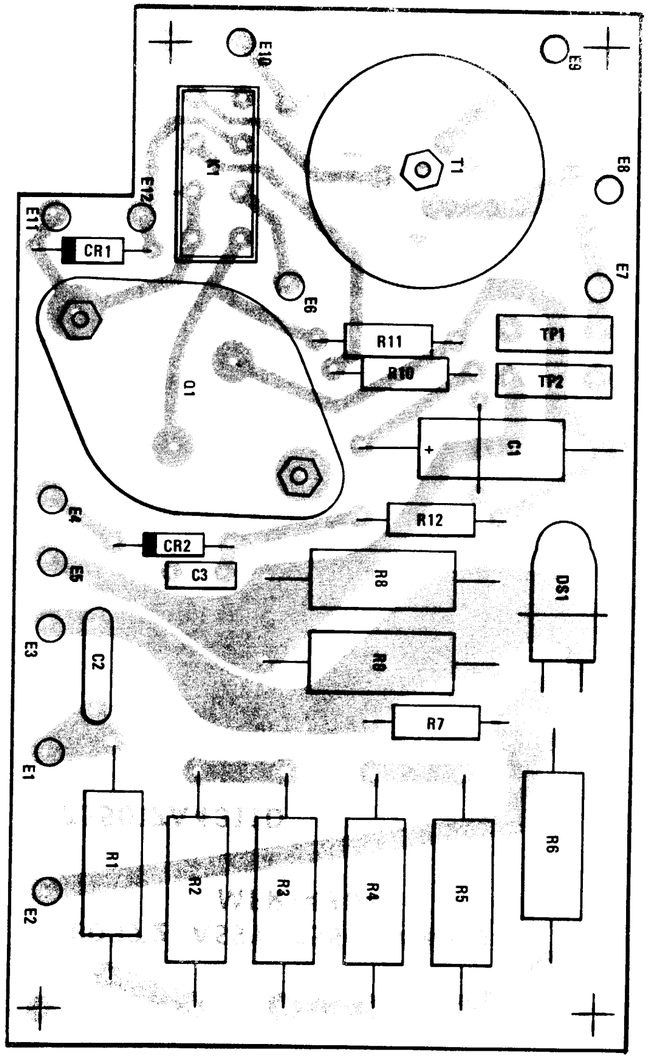
Figure 20. High Voltage Module Assembly 1A13, PN 755017A4300 (Sheet 1 of 2)

Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
DS	Lamp
K	Relay
P	Plug (Connector)
Q	Transistor
R	Resistor
T	Transformer
TP	Test Point





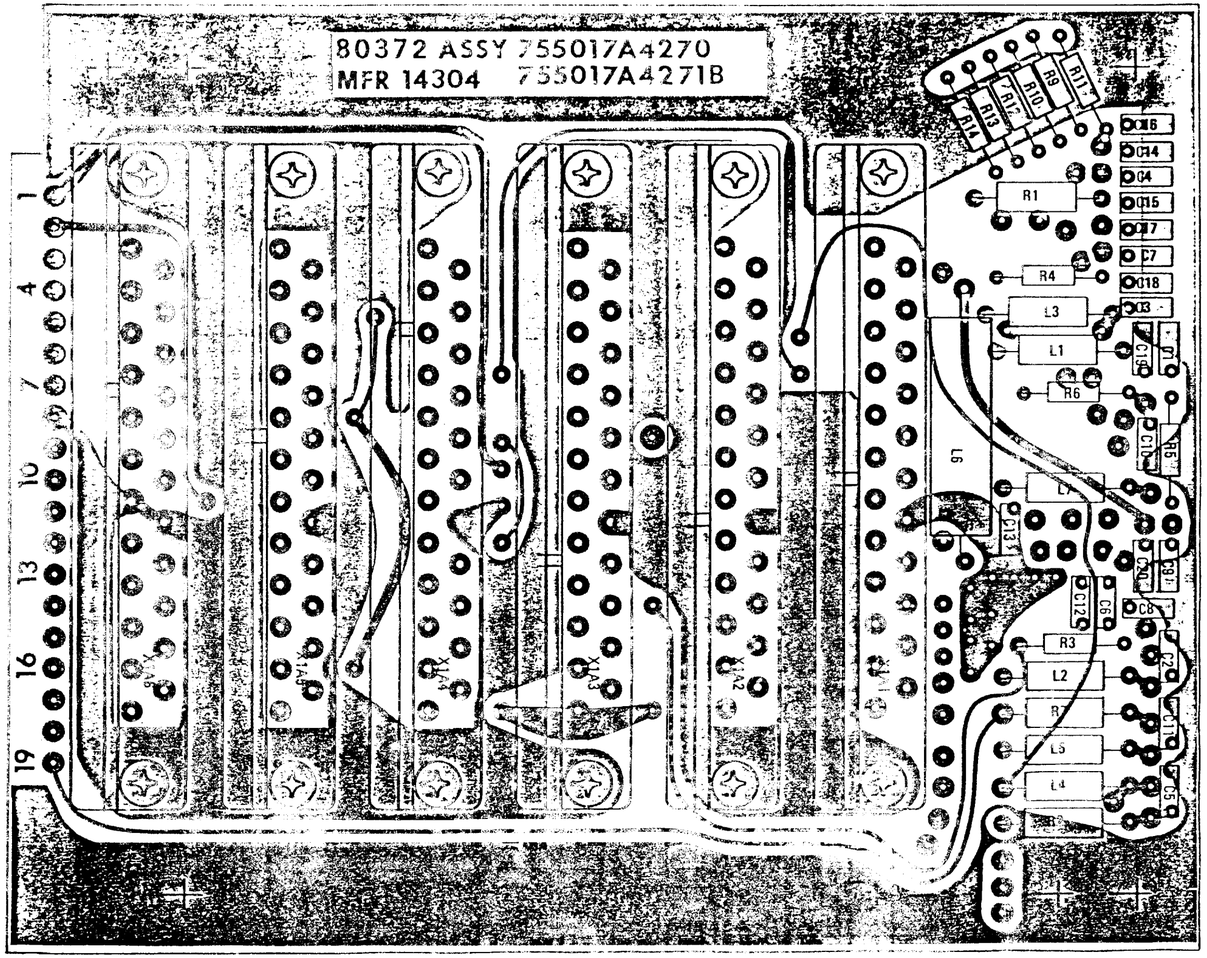
COMPONENT SIDE



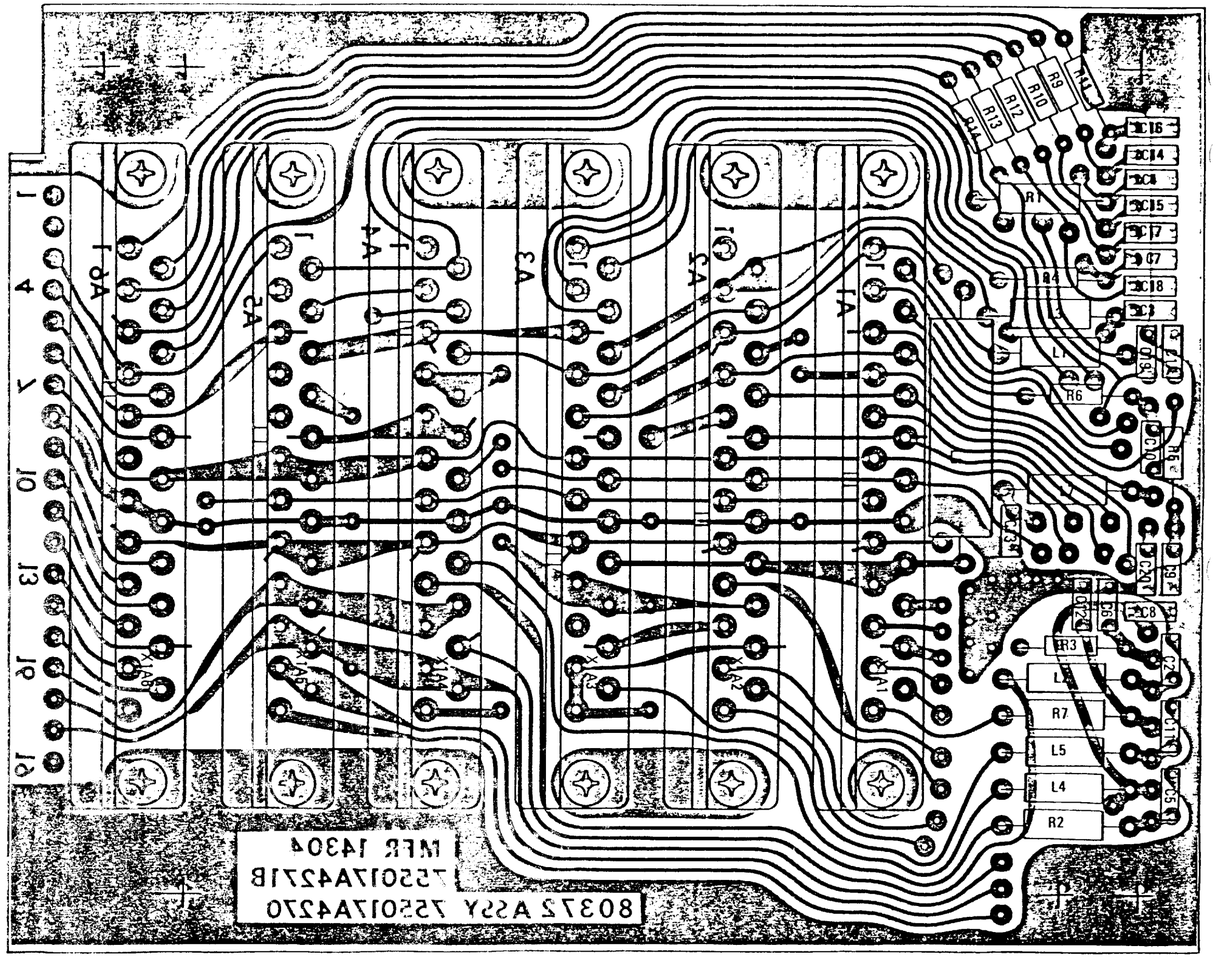
TRACK SIDE OR RUN SIDE

HIGH VOLTAGE MODULE PWB ASSEMBLY 1A13A1, PN 755017A4310

Figure 20. High Voltage Module Assembly 1A13, PN 755017A4300 (Sheet 2 of 2)



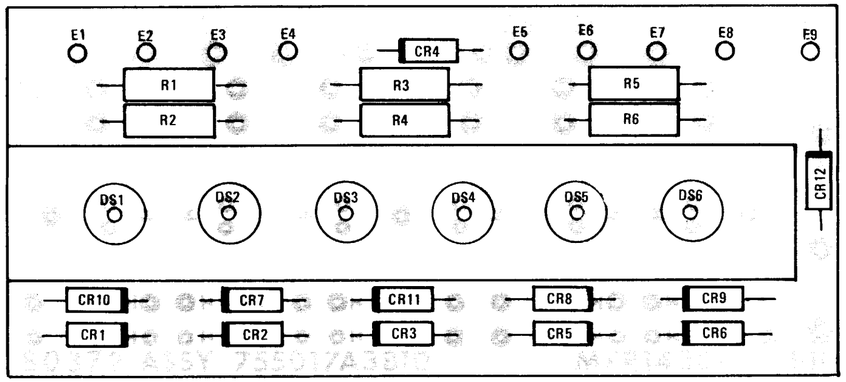
COMPONENT SIDE



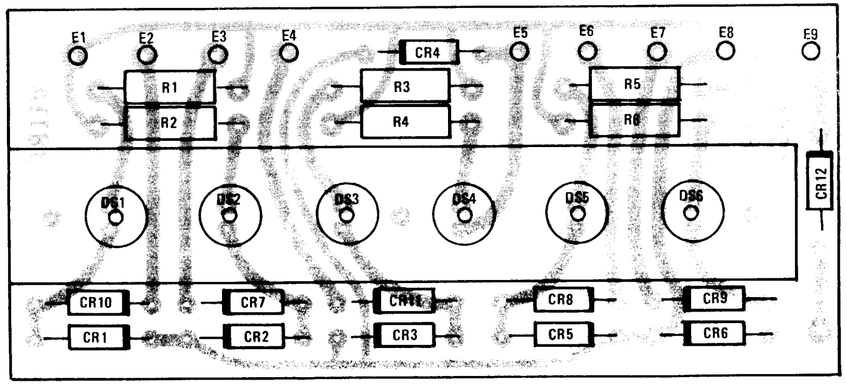
TRACK SIDE OR RUN SIDE

Ref. Desig.	Name
C	Capacitor
L	Inductor
R	Resistor
X	Socket

Figure 21. Interconnection PCB Assembly 1A14A1, PN 755017A4270



COMPONENT SIDE



TRACK SIDE OR RUN SIDE

Figure 22. Indicator Assembly 1A14A4, PN 755017A3800

Ref. Desig.	Name
DS	Lamp
R	Resistor

Ref. Desig.	Name
C	Capacitor
CR	Diode Semiconductor Device
L	Inductor
R	Resistor

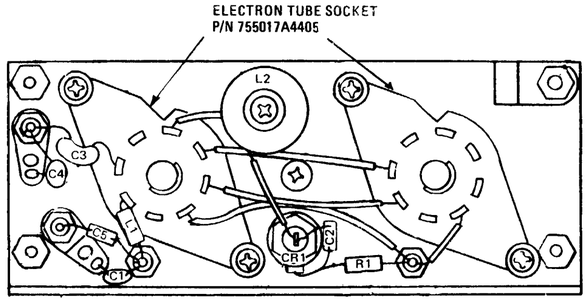


Figure 23. Tube Socket Assembly 1A14A2, PN 755017A4400

Ref. Desig.	Name
CR	Diode Semiconductor Device
Q	Transistor
R	Resistor
S	Switch
VR	Voltage Regulator

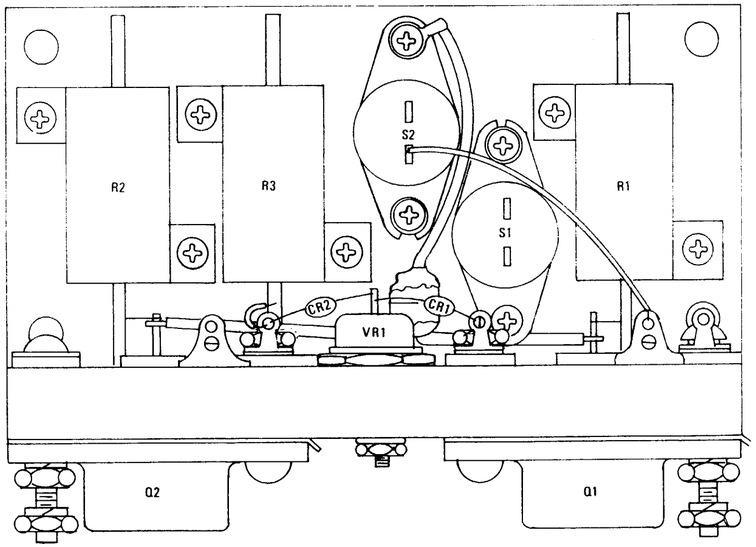


Figure 24. DC-DC Converter Assembly 1A14A3, PN 755017A4100

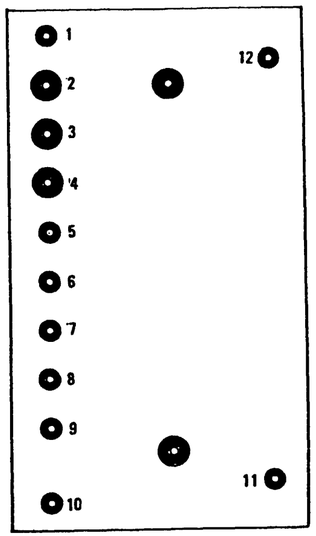


Figure 25. Junction Block PWB Assembly 1A14A5, PN 755017A4041

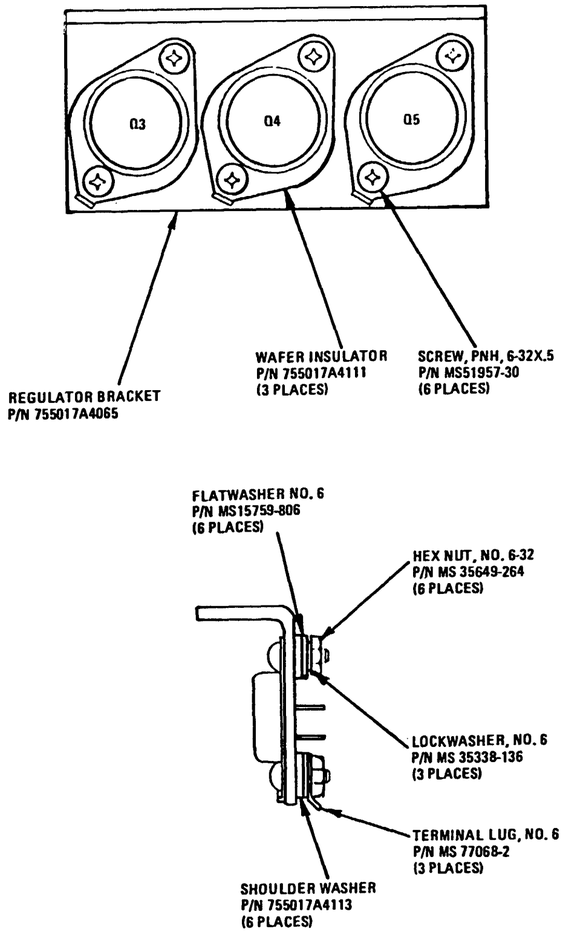


Figure 26. Regulator Assembly 1A14A6, PN 755017A4031

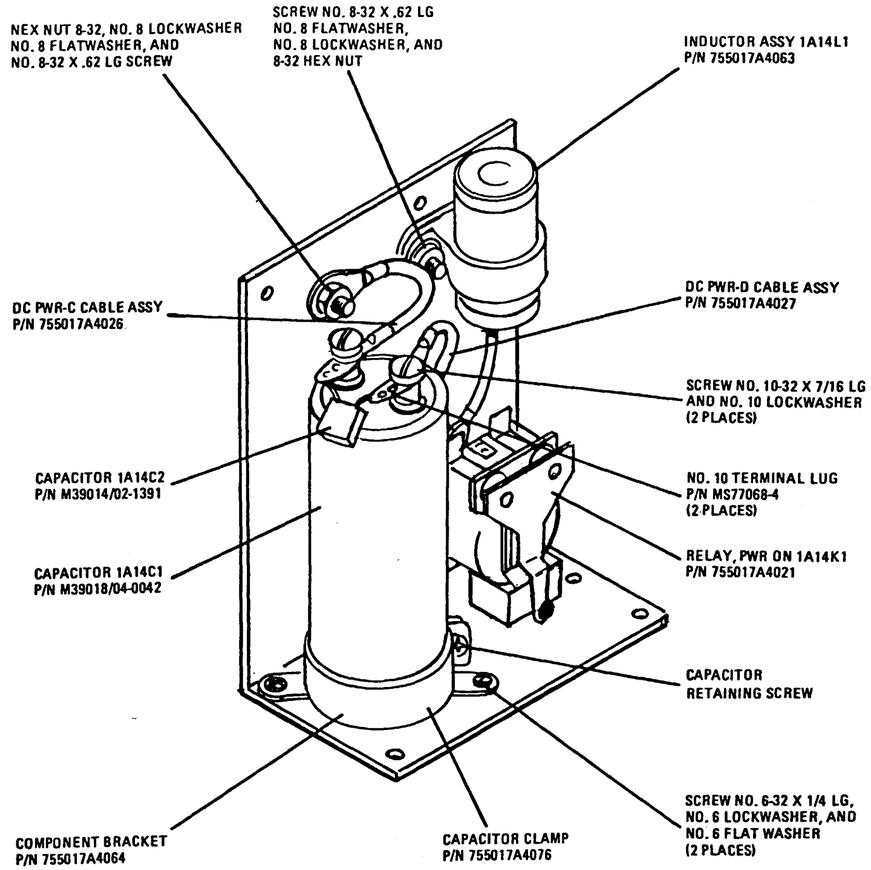
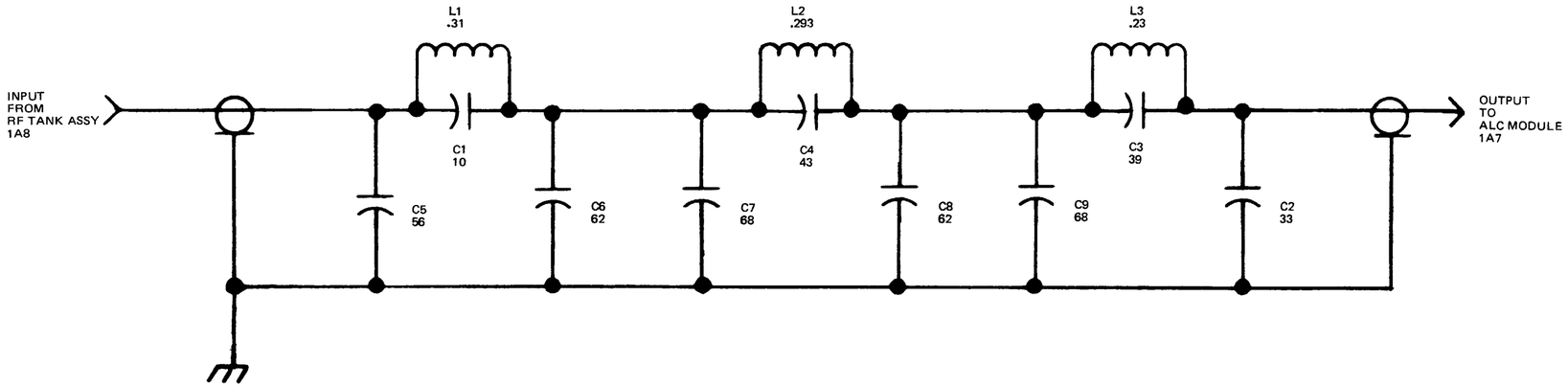
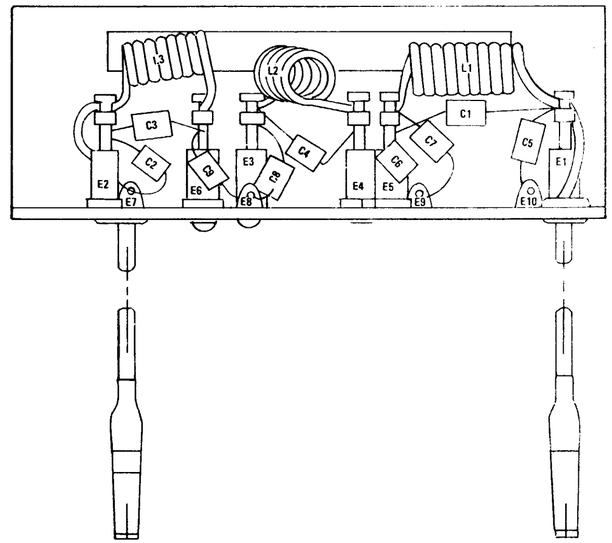


Figure 27. Component Bracket Assembly, PN 755017A4064



NOTES:
1. ALL CAPACITORS ARE IN PICOFARADS.
2. ALL INDUCTORS ARE IN MICROHENRIES.
3. PREFIX ALL PARTIAL REFERENCE DESIGNATORS WITH 1A15.



Ref. Desig.	Name
C	Capacitor
E	Terminal
L	Inductor

Figure 28. Harmonic Filter Assembly 1A15, PN 755017A4070

APPENDIX A

REFERENCES

AR 55-38	Report of Transportation Discrepancies in Shipments
AR 735-11-2	Reporting of Item and Packaging Discrepancies
DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms
DA Pam 738-750	The Army Maintenance Management System (TAMMS)
TM 11-5820-921-40-1	General Support Maintenance Manual, Power Amplifier AM-6545A/GRC-193A
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-2	Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command)

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44		19	
45			

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For item 2, change the NSN to read: 5835-00-134-9186.
Reason: Accuracy.

Identify the cover on the junction box (item no. 5).
Reason: It is a separate item and is not called out on figure 19.

Add the cover of the junction box as an item in the listing for figure 19.
Reason: Same as above

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