

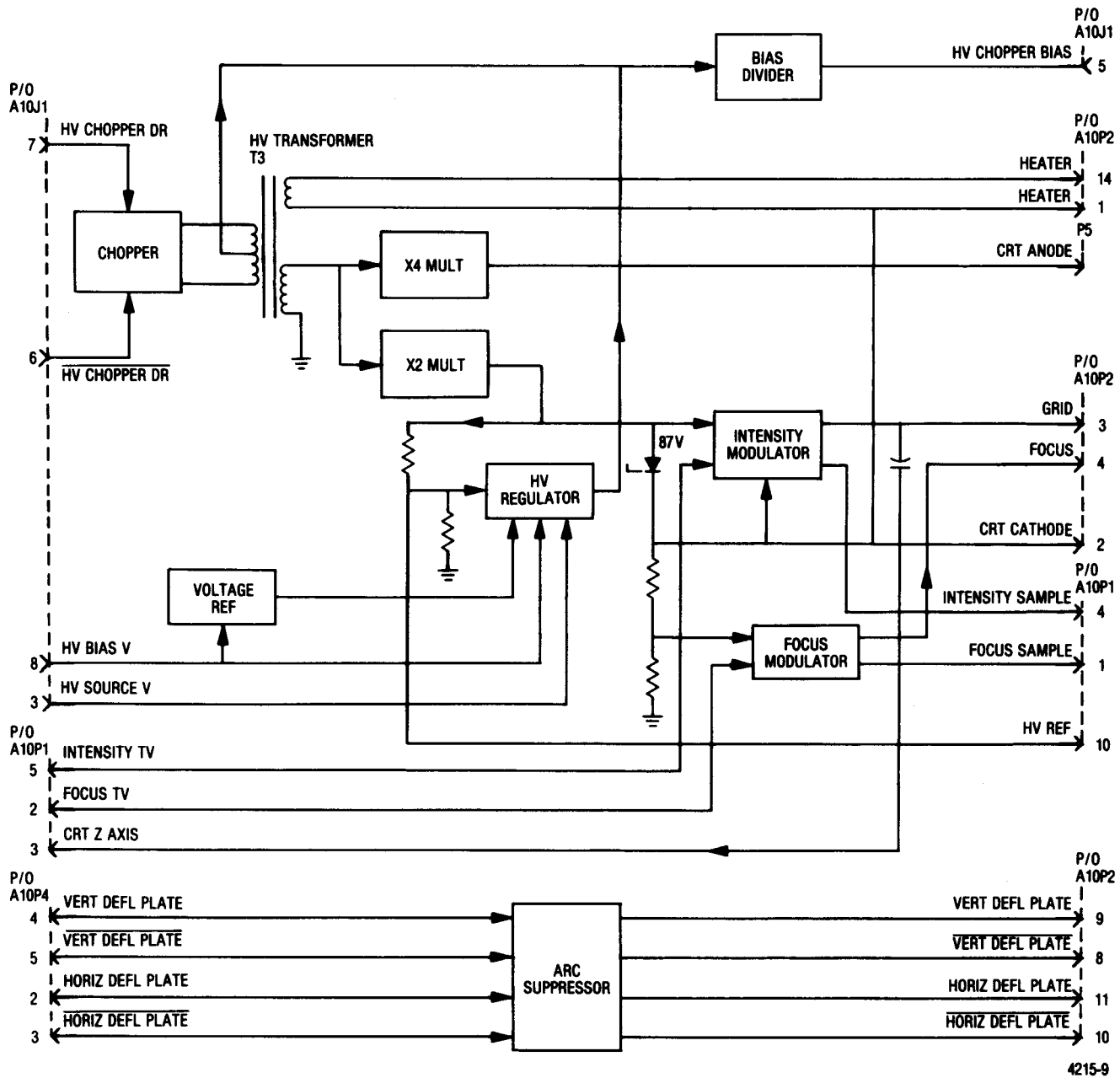
SECTION 16

HIGH VOLTAGE POWER SUPPLY (A10)

16-1. GENERAL. CRT bias and drive voltages are provided by the high voltage power supply. The power supply converts a nominal 15 VDC input to output voltages of +4kV and a -2kV. In addition, control circuits for the CRT focus and intensity grids are contained in this power supply. The high voltage power supply block and schematic diagrams are shown in figures 16-1 and 16-2, respectively.

16-2. HIGH VOLTAGE SUPPLY. An 8 VDC at the center tap of the high voltage transformer is switched, through the transformer primary winding by the chopper, at a 20 kHz rate. The chopper drive signals originate in the low voltage power supply. One transformer secondary winding provides a 6.3 VAC CRT heater voltage. The other transformer secondary winding provides a 1 kV to a X4 multiplier and a X2 multiplier. The output of the X4 multiplier, a nominal +4 kV is the CRT anode voltage. A nominal -2 kV output of the X2 multiplier is applied to the intensity and focus modulators. The -2 kV is regulated by comparing a sample of the -2 kV to a 6.3V reference signal. The resultant signal controls the level of the DC input at the center tap of the high voltage transformer. A bias divider, on the transformer center tap, provides the HV CHOPPER BIAS signal to the low voltage power supply.

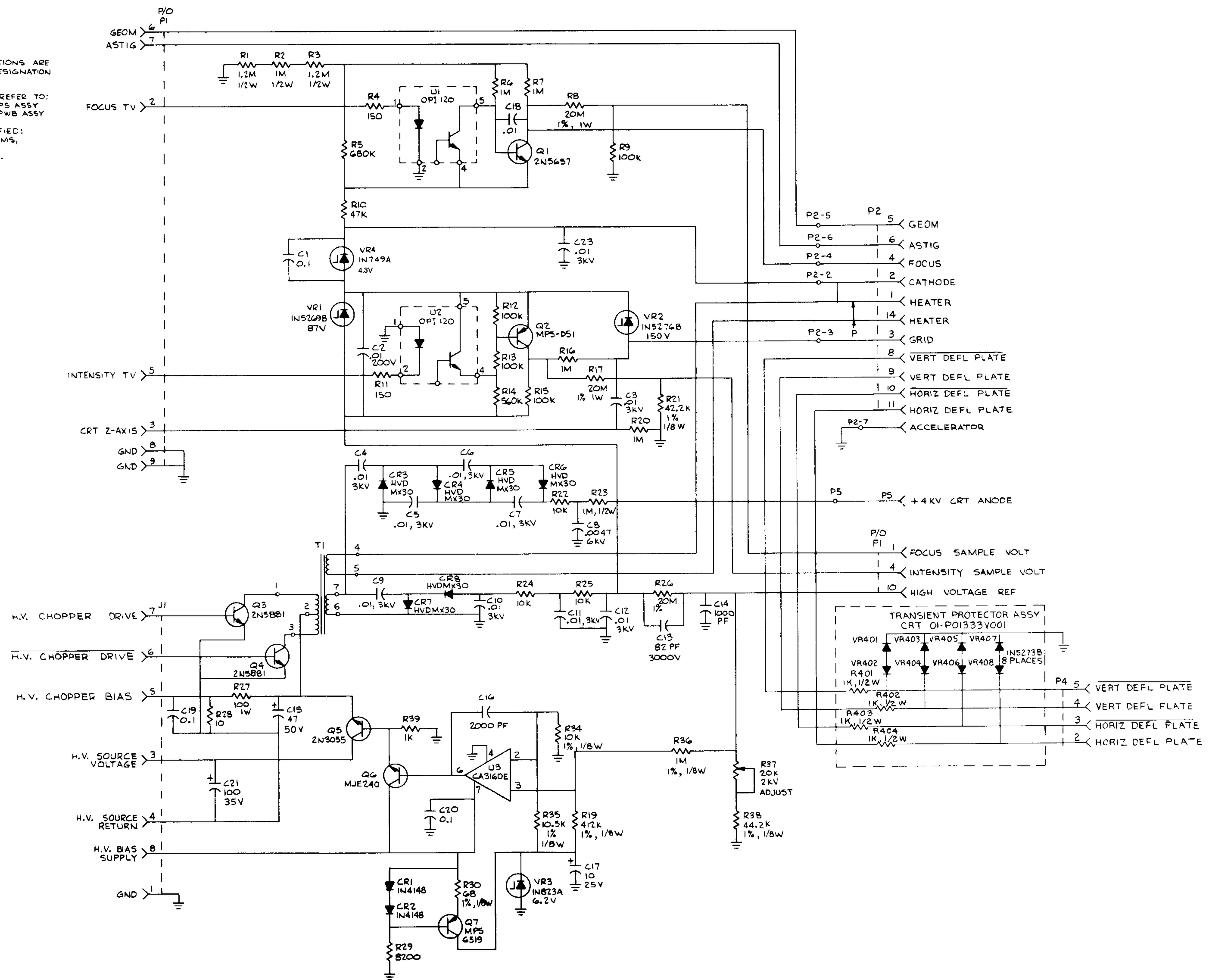
16-3. INTENSITY AND FOCUS CONTROL. An 87V zener diode and a resistive divider circuit provide the intensity and focus voltages. Each modulator provides variable output voltages, within their bias range, under the control of the low voltage INTENSITY TV and FOCUS TV input signals. The grid and focus voltages are stabilized by using DC control loops. The INTENSITY SAMPLE signal and the HV REF signal are compared, on the scope amplifier module, to an input control signal. The result of this comparison is the INTENSITY TV signal. In a similar manner, the FOCUS SAMPLE signal is compared, on the scope amplifier module, to the input control signal. This results in the FOCUS TV signal.



4215-9

Figure 16-1. High Voltage Power Supply A10 Block Diagram

- NOTES:
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH 1A10
 2. FOR REFERENCE DRAWINGS REFER TO:
 Q1-P07896V001 HIGH VOLTAGE PS ASSY
 Q1-P07878V001 HIGH VOLTAGE PWB ASSY
 3. UNLESS OTHERWISE SPECIFIED:
 ALL RESISTORS ARE IN OHMS,
 ±5 PCT, 1/4 WATT.
 ALL CAPACITORS ARE IN UF.
 ALL VOLTAGES ARE DC.



REF DESIGNATIONS	
HIGHEST USED	NOT USED
C23	C22
CR8	
Q7	R18, R21-R33
R30	
T1	
VR4	

Figure 16-2. High Voltage Power Supply
A10 Schematic Diagram

Find No.	Qty. Req.	Part No.	Nomenclature	Part Value
A10	1	RTP-1006A	HIGH VOLT PWR SUPPLY	
001	1	RTP-4015A	HIGH VOLTAGE PWB A	
002	1	15-P07859V001	HOUSING,H V PWR SU	
003	2	821-S-2	SCREW,CAPTIVE	4-40
004	10	MS35206-215	SCREW,PH	.1120-40X.375
005	10	04-7607	WASHER,FLAT	.125
006	10	04-114583	WASHER,LOCK	.112
007	6	2634-18031-N140	WASHER,SHOULDER	
008	3	M38527/8-03P	INSULATOR,PLATE,FI	TO3
010	AR	F01A070	WIRE,HIGH VOLTAGE	
011	AR		WIRE	#24 WHT
012	AR	SN63WRMAP3	SOLDER	
013	AR	11-14167A01	INK	BLACK
014	1	01-80304A60	TRANSIENT PROTECTO	
015	1	MS35489-6	GROMMET	
016	1	14-80370A47	INSULATOR	
017	1	3016-A-2-A-9	SPACER	
018	AR	MS3367-4-9	STRAP,TIEDOWN	
019	AR	M23053/5-103-C	INSULATION SLEEVIN	.093 CLR
020	1	33-14232A09	PLATE,IDENT HI-V	
021	AR	495-04	ADHESIVE,FAST CURE	
022	AR		TAPE,THERMOSET	2.5 X 1W #56
P 002	1	09-80331A82	CONNECTOR,CRT	
Q 003	1	48-80396A25	TRANSISTOR	
Q 004	1	48-80396A25	TRANSISTOR	
Q 005	1	48-869302	TRANSISTOR	

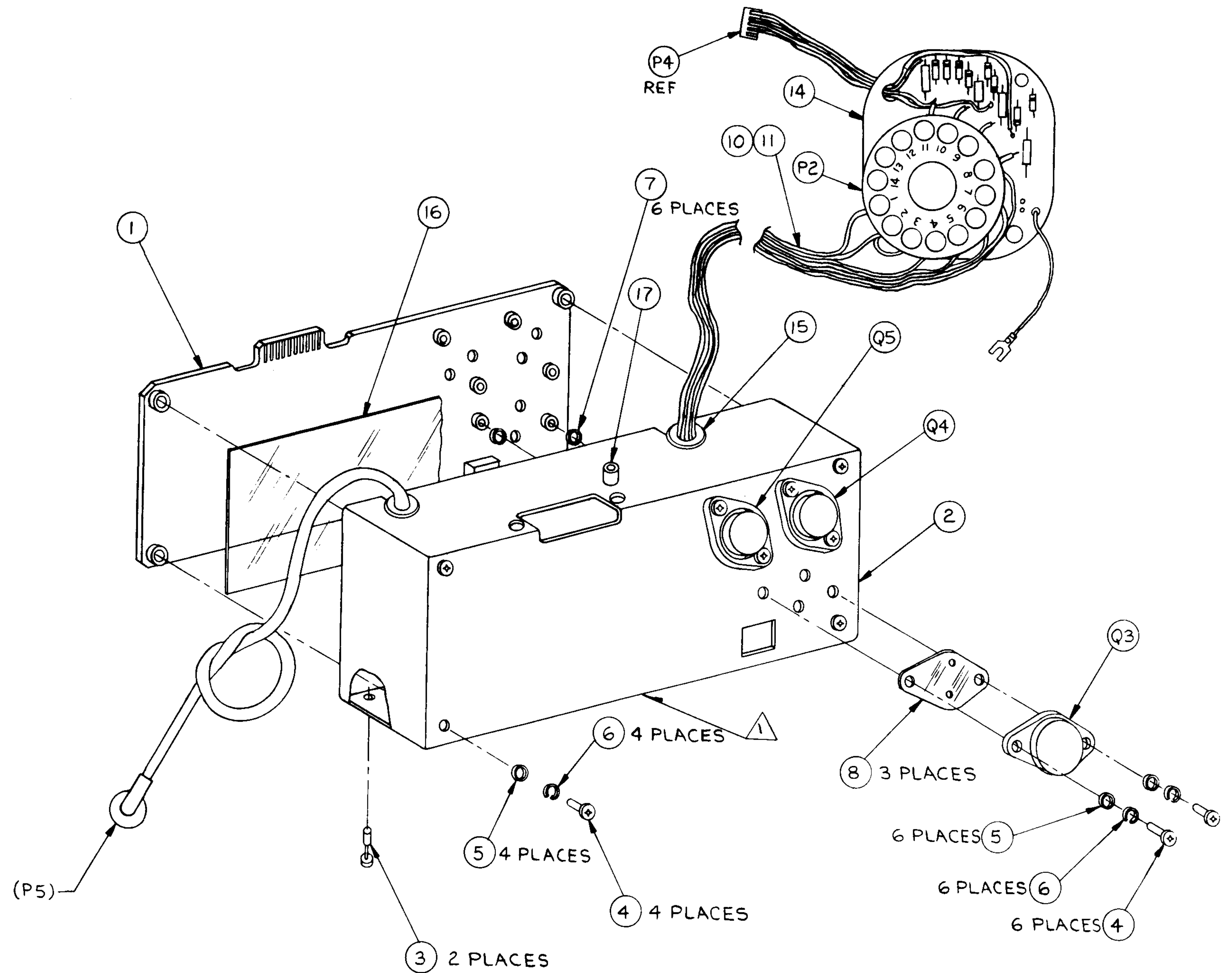
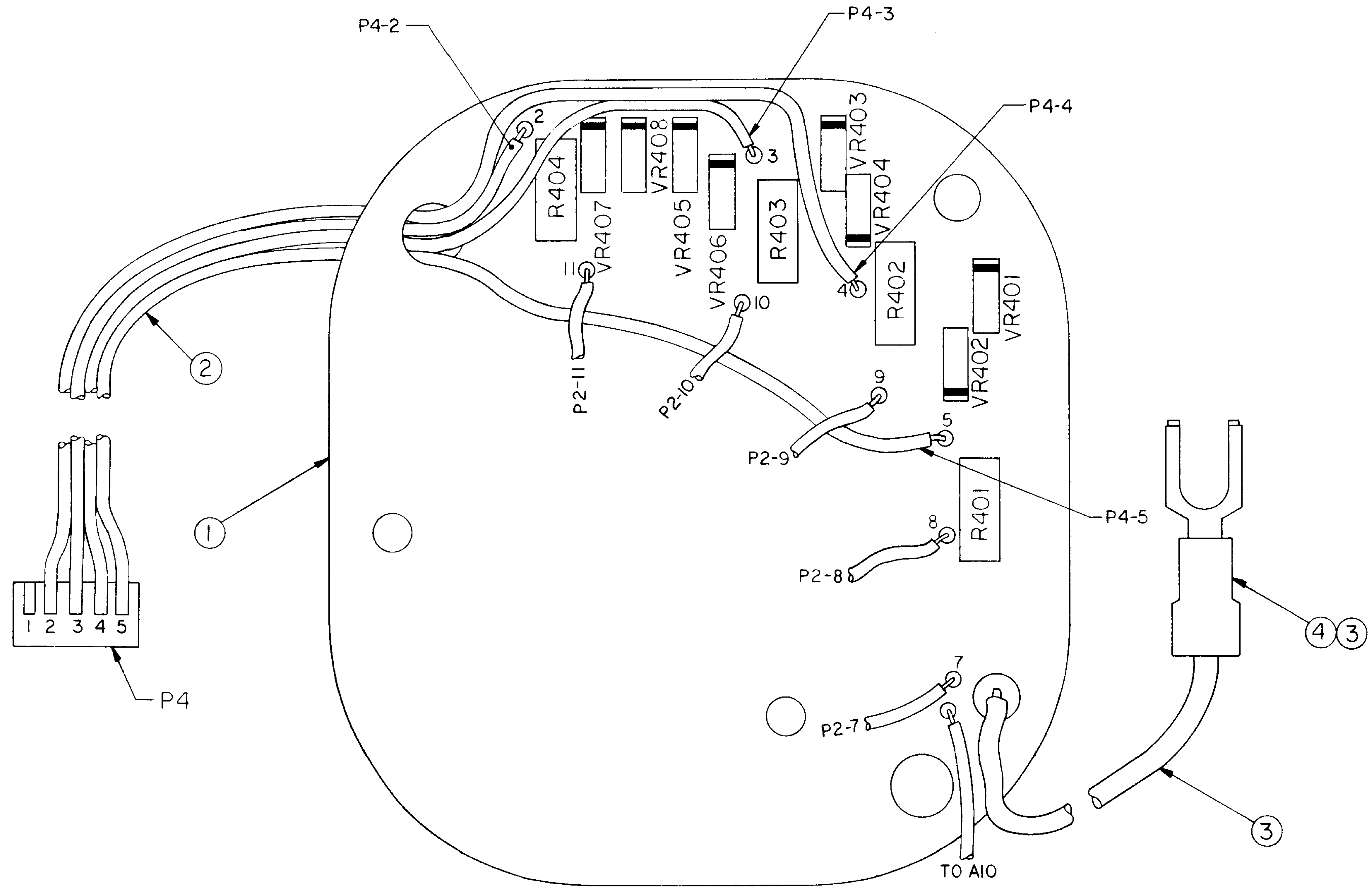


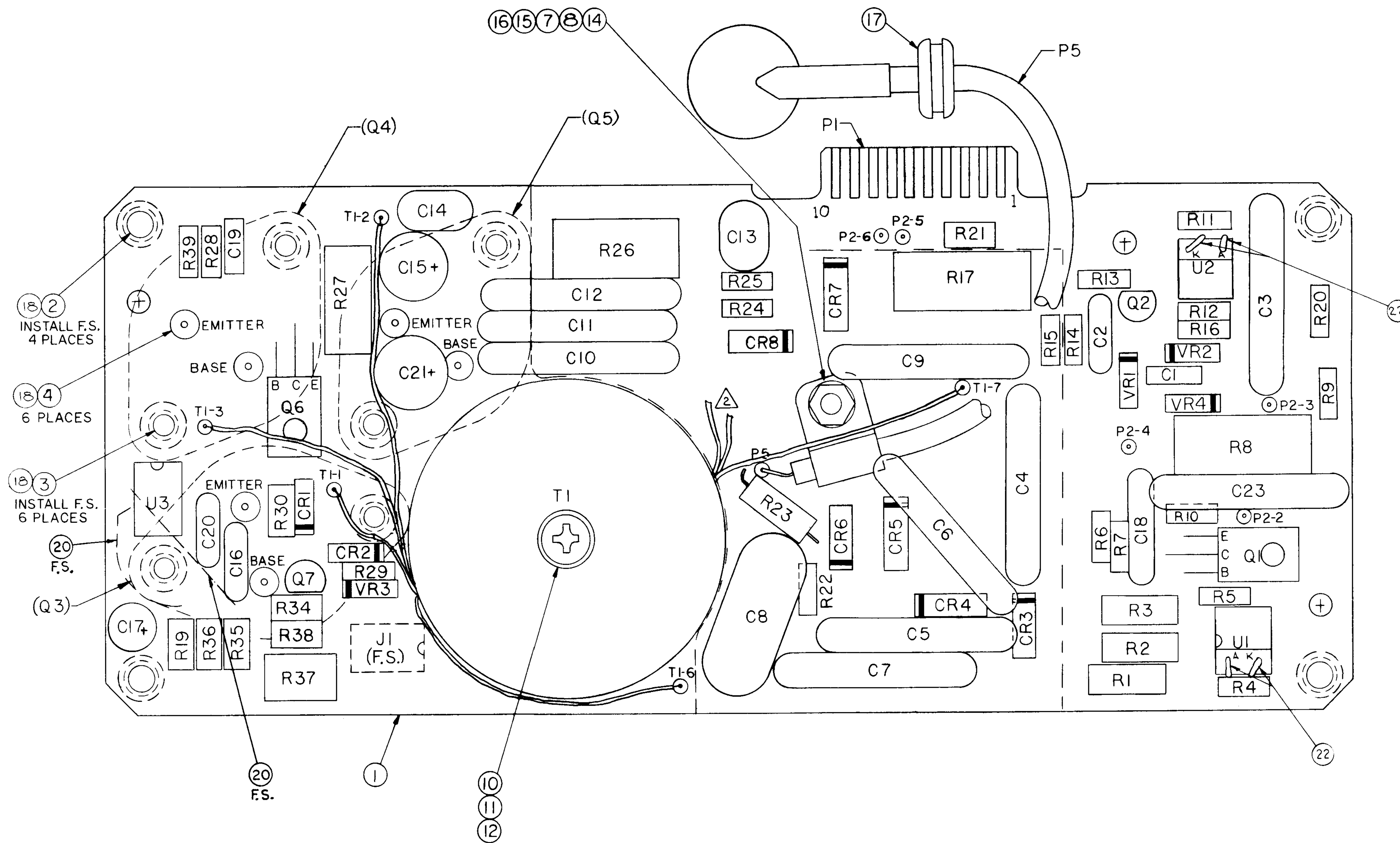
Figure 16-3. High Voltage Power Supply
A10 (RTP-1006A) Parts Location
Diagram

Find No.	Qty. Req.	Part No.	Nomenclature	Part Value
001	1	84-P01332V001	PRINTED WIRING BOA	TRANSIENT PROTECTO
002	AR		WIRE	#22 WHT
003	AR		WIRE	#16 WHT
004	1	601SL	TERMINAL,LUG	
005	AR	SN63WRP3	SOLDER	
006	AR	MS3367-4-9	STRAP,TIEDOWN	
P 004	1	640440-5	CONNECTOR,5 PIN	5 PIN
R 401	1	06-125A49	RESISTOR	1000-5-1/2
R 402	1	06-125A49	RESISTOR	1000-5-1/2
R 403	1	06-125A49	RESISTOR	1000-5-1/2
R 404	1	06-125A49	RESISTOR	1000-5-1/2
VR401	1	48-80368A95	DIODE,ZENER	120V
VR402	1	48-80368A95	DIODE,ZENER	120V
VR403	1	48-80368A95	DIODE,ZENER	120V
VR404	1	48-80368A95	DIODE,ZENER	120V
VR405	1	48-80368A95	DIODE,ZENER	120V
VR406	1	48-80368A95	DIODE,ZENER	120V
VR407	1	48-80368A95	DIODE,ZENER	120V
VR408	1	48-80368A95	DIODE,ZENER	120V



1-80304A60

Figure 16-4. Communications System Analyzer
Transient Protector Assembly Parts
Location Diagram



RTP-4015A

Figure 16-5. High Voltage Power Supply A10
 PWB Parts Location Diagram
 (Sheet 1 of 2)

Find No.	Qty. Req.	Part No.	Nomenclature	Part Value	Find No.	Qty. Req.	Part No.	Nomenclature	Part Value
		RTP-4015A	HIGH VOLT PWR SUP						
001	1	84-P07879V001	PRINTED WIRING BOA		Q 007	1	48-80368A92	TRANSISTOR	MPS6519 SCREENED
002	4	B1534-B-1/8-5	SPACER,SWAGE	.125LG	R 001	1	6S125B24	RESISTOR	1.2M-5-1/2
003	6	B1534-B-3/32-5	SPACER,SWAGE	.093LG	R 002	1	6S125B22	RESISTOR	1M-5-1/2
004	6	640206-1	JACK,PRINTED CIRCU		R 003	1	6S125B24	RESISTOR	1.2M-5-1/2
007	1	MS35206-217	SCREW,PH	.1120-40X.500	R 004	1	6S124A29	RESISTOR	150-5-1/4
008	1	02-7019	NUT	.1120-40	R 005	1	6S124B18	RESISTOR	680K-5-1/4
010	1	MS35206-329	SCREW	.1380-32X1.375	R 006	1	6S124B22	RESISTOR	1M-5-1/4
011	1	MS27183-5	WASHER,FL	.156	R 007	1	6S124B22	RESISTOR	1M-5-1/4
012	1	KF2-632	NUT,CLINCH	6-32	R 008	1	6-80331A37	RESISTOR	20M-1-1
014	1	42-15031A60	CLAMP,LOOP NYLON		R 009	1	6S124A97	RESISTOR	100K-5-1/4
015	1	04-7607	WASHER,FLAT	.125	R 010	1	6S124A89	RESISTOR	47K-5-1/4
016	1	04-114583	WASHER,LOCK	.112	R 011	1	6S124A29	RESISTOR	150-5-1/4
017	1	MS35489-4	GROMMET,RUBBER		R 012	1	6S124A97	RESISTOR	100K-5-1/4
018	AR	SN63WRP3	SOLDER		R 013	1	6S124A97	RESISTOR	100K-5-1/4
019	AR	11-14167A01	INK	BLACK	R 014	1	6S124B16	RESISTOR	560K-5-1/4
020	AR		WIRE,SOLID	#26 WHT	R 015	1	6S124A97	RESISTOR	100K-5-1/4
021	AR	RTV3140	COATING,SILICONE		R 016	1	6S124B22	RESISTOR	1M-5-1/4
022	AR		INSULATION SLEEVIN	#24 WHT	R 017	1	6-80331A37	RESISTOR	20M-1-1
C 001	1	21-80369A82	CAPACITOR	.1UF-20-100	R 019	1	06-10621E48	RESISTOR	412K-1-1/8
C 002	1	21-80396A52	CAPACITOR	.01UF-20+80-200	R 020	1	6S124B22	RESISTOR	1M-5-1/4
C 003	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 021	1	06-10621D52	RESISTOR	42.2K-1-1/8
C 004	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 022	1	6S124A73	RESISTOR	10K-5-1/4
C 005	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 023	1	6S125B22	RESISTOR	1M-5-1/2
C 006	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 024	1	6S124A73	RESISTOR	10K-5-1/4
C 007	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 025	1	6S124A73	RESISTOR	10K-5-1/4
C 008	1	21-80369A80	CAPACITOR	.0047-6000	R 026	1	6-80331A37	RESISTOR	20M-1-1
C 009	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 027	1	6S126A25	RESISTOR	100-5-1
C 010	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 028	1	6S124A01	RESISTOR	10-5-1/4
C 011	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 029	1	6S124A71	RESISTOR	8.2K-5-1/4
C 012	1	21D83596E19	CAPACITOR	.01UF+80-20-3KV	R 030	1	06-10621A81	RESISTOR	68.1-1-1/8
C 013	1	21-80370A30	CAPACITOR	82PF-3KV	R 034	1	06-10621C91	RESISTOR	10K-1-1/8
C 014	1	21-80396A51	CAPACITOR	1000PF-10-100	R 035	1	06-10621C93	RESISTOR	10.5K-1-1/8
C 015	1	23-80369A79	CAPACITOR	47UF-50V	R 036	1	06-10621E85	RESISTOR	1M-1-1/8
C 016	1	21D82428B36	CAPACITOR	2000PF-10-200	R 037	1	18D83452F33	RESISTOR,VARIABLE	20K
C 017	1	23-80396A40	CAPACITOR	10UF-25V	R 038	1	06-10621D54	RESISTOR	44.2K-1-1/8
C 018	1	21D82428B19	CAPACITOR	.01UF-20-500	R 039	1	6S124A49	RESISTOR	1K-5-1/4
C 019	1	21-80369A82	CAPACITOR	.1UF-20-100	T 001	1	25-80369A13	TRANSFORMER	
C 020	1	21-80369A82	CAPACITOR	.1UF-20-100	U 001	1	51-P07938V002	INTEGRATED CIRCUIT	OPI120 SCREENED
C 021	1	23-80369A73	CAPACITOR	100UF-35V	U 002	1	51-P07938V002	INTEGRATED CIRCUIT	OPI120 SCREENED
C 023	1	21D83596E19	CAPACITOR	.01MF-3KV	U 003	1	51-80345A02	INTEGRATED CIRCUIT	CA3160E SCREENED
CR001	1	48-84463K02	DIODE		VR001	1	48-80345A86	DIODE,ZENER	87V-5-.5
CR002	1	48-84463K02	DIODE		VR002	1	48-80345A87	DIODE,ZENER	150V-5-.5
CR003	1	48-80345A63	DIODE		VR003	1	48-80368A98	DIODE,ZENER	6.2V-5-.4
CR004	1	48-80345A63	DIODE		VR004	1	48-83461E13	DIODE,ZENER	
CR005	1	48-80345A63	DIODE						
CR006	1	48-80345A63	DIODE						
CR007	1	48-80345A63	DIODE						
CR008	1	48-80345A63	DIODE						
J 001	1	09-80331A95	SOCKET,SOLDER DIP	8 PIN					
P 005	1	01-80350A53	LEAD ASSEMBLY,HV						
Q 001	1	48-80341A45	TRANSISTOR						
Q 002	1	48-80341A46	TRANSISTOR	MPS-D51 SCREENED					
Q 006	1	48-80368A87	TRANSISTOR						

RTP-4015 A
Figure 16-5. High Voltage Power Supply
A10 PWB Parts Location
Diagram (Sheet 2 of 2)