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VAPOR COOLING
FIELD CHANGE
for
TRANSMITTING SET, RADIO
AN/FRT-40C
(VAPOR COOLING)



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y. OTTAWA, ONTARIO

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ELECTRONIC FIELD CHANGE BULLETIN
BUREAU OF SHIPS, NAVY DEPARTMENT
WASHINGTON, D. C.

AN/FRT-40C

REPLACES FORCED AIR COOLING WITH

VAPOR COOLING TO PROVIDE'

MORE EFFICIENT AND

QUIETER OPERATION

(FSN)

TYPE (1) CLASS (A)

OPERATIONAL CHANGE (X)

ESTIMATED MANHOURS - 130

NON-OPERATIONAL CHANGE ()

Prepared By

THE TECHNICAL MATERIEL CORP.

700 FENIMORE ROAD

MAMARONECK, NEW YORK

CONTRACT NUMBER NObsr 91114

AUTHORIZATION NOTICE: Forces afloat or station personnel shall accomplish this field change at the earliest opportunity on ship- or shore- installed 'equipment affected' without reference to the Bureau of Ships.

EQUIPMENT AFFECTED: TRANSMITTING SET, RADIO, AN/FRT-40C, (GPT-40KEA4): all serial numbers.

PURPOSE: To improve the cooling mode of the driver and final power output tubes in AN/FRT-40C (GPT-40KEA4) transmitter by replacing forced air cooling with vapor cooling.

PREVIOUS FIELD CHANGES: None

EFFECT ON NOMENCLATURE: AN/FRT-40C is changed to AN/FRT-40() (GPT-40KU)

UNCLASSIFIED

Page 1 of 50

UNCLASSIFIED

IDENTIFICATION OF ACCOMPLISHMENT: Equipment Nameplate Identification will indicate AN/FRT-40()

Supplied with the field change kit:

Item	Ref. Desig.	Quantity	TMC Part Number	Description
1		1	A5426	Pump Contactor Box Assembly
2		1	AD103-9	Filter Air Conditioner
3	I706	1	BI100-51	Lamp, Indicator
4	B801, B7103	2	BL103	Fan, Centrifugal
5	B7104	1	BL123	Fan, Axial
6		1 LB.	BS100	Solder, Tin Alloy
7		1	CA1206	Cable, Special Purpose
8		1	CA1207	Cable, Special Purpose
9		1	CA1208	Cable, Special Purpose
10		1	CA1209	Cable, Special Purpose
11		1	CA1210	Cable, Special Purpose
12		1	CA1211	Cable, Special Purpose
13		1	CA1212	Cable, Special Purpose
14		1	CA1213	Cable, Special Purpose
15		1	CA1214	Cable, Special Purpose
16		1	CA1215	Wiring Harness, Branched
17		1	CA1217	Wiring Harness, Branched
18		1	CA1218	Wiring Harness, Branched
19		1	CA409-161-3.00	Lead, Electrical
20		1	CA409-168-3.00	Lead, Electrical
21		1	CA409-175-3.00	Lead, Electrical
22		1 Roll	CD101-1MW	Cord, Nylon Lacing
23	C7336 thru C7342	7	CM35F1Ø3FØ3	Capacitor Fixed, Mica
24	C816, C7127 C7335	3	CP41B1FF4Ø5K	Capacitor, Fixed, Paper
25		2	CU102-1	Clamp, Loop
26		5	CU102-2	Clamp, Loop
27		5	CU102-4	Clamp, Loop
28		2	CU129-10	Clamp, Hose
29		1	D512529	Assembly Vapor Down Cooling System
30		1	EY102-21	Grommet, Rubber
31	F700, F701	2	FU1Ø2-2	Fuse, Cartridge 2A
32		1 3/4 OZ.	GL1Ø1-2	Adhesive

UNCLASSIFIED

Page 2 of 50

UNCLASSIFIED

Supplied with the field change kit: (cont)

Item	Ref. Desig.	Quantity	TMC Part Number	Description
33		1	HVRB-1	Solid State Power Supply
34		1	HVRC-1	Solid State Power Supply
35		1	LD2039/PX968	Insulator, Terminal Strip
36		1	LD2040/MS1499	10K Relay Panel
37		1	LD2041/MS3678	10K Main Control Panel
38		1	LD2042/MS1947	40K Main Control Panel
39		1	LD2043/MS1948	40K PS Main Control Panel
40		1	LD2044/MS1979	40K Relay Panel
41		1	LD2045/MS4852	Bracket, PA Filter Connector
42		1	LS2047/MS4864	Bracket, Main Blower
43		1	LD2048/MS1611	Bracket, Blower Capacitor
44	V900	1	ML-LPT11	Tube, PA
45	V7301	1	ML7480	Tube, PA
46		10	MS154-1	Plate, Straddle, Terminal Board
47		2	MS202-4-5.00	Lead, Electrical Strap
48		2	MS3057-6	Clamp, Cable
49	J801, J7305	2	MS3102A14S-2S	Connector Receptacle, Female 4/C
50	J7106	1	MS3102A14S-2P	Connector, Receptacle, ML 4/C
51	P801, P7305	2	MS3106A14S-2P	Connector, PL, ML 4/C
52		2	MS3420-6A	Bushing, Rubber
53		1	MS1632	Flange, Blower
54		4	MS1638	Flange Plate, Blower
55		1	MS2518	Chassis, Blower
56		1	MS4853	Plate, Fan Mounting
57		1	MS4854	Bracket, Hose Mounting
58		1	MS4855	Plate, Cover, Main Blower
59		1	MS4856	Bracket, Main Blower
60		1	MS4857	Bracket, Terminal Board Mounting
61		1	MS4858	Bracket, Air Duct
62		1	MS4859	Bracket, PS Filter Fan Interlock Switch
63		1	MS4860	Bracket Hose Mounting
64		1	MS4861	Strap, Connector
65		2	MS4862	Plate Side
66		1	MS4863	Strap, Tube
67		20"	MWC22(7)UO	Wire, Electrical, Insulator Black
68		1	PM1297	Bracket, Mounting
69		1	PM1298	Bracket, Mounting
70		1	PO168-3	Adapter, Switch Actuator
71		20"	PX-100-1-106	Insulation, Sleeving Size 10
72		3"	PX100-1-148	Insulation, Sleeving Size 7
73		40"	PX100-1-234	Insulation, Sleeving Size 3

UNCLASSIFIED

Supplied with the field change kit: (cont)

Item	Ref. Desig.	Quantity	TMC Part Number	Description
74		2	PX336-3	Insulator, Terminal Board
75		1	PX336-5	Insulator, Terminal Board
76		1	PX336-8	Insulator, Terminal Board
77		1	PX336-14	Insulator, Terminal Board
78		2	PX544-3	Insulator, Terminal Board
79		1	PX544-5	Insulator, Terminal Board
80		6"	PX830-16-1	Insulator, Sleeving Shrink
81		7"	PX830-12-1	Insulator, Sleeving Shrink
82		1	PX969	Air Duct, Cone
83		1	PX970	Duct, PA
84		1	PX974	Cover, Terminal Board
85	R713	1	RC32GF224J	Resistor, Fixed, Composition
86		2	RY127	Gasket, Fan
87		1	RY140-1-48	Rubber Channel
88		1	RY160	Hose, Flexible 16"
89		12	SH105-1	Mount, Resilient
90	S7107	1	SW252	Switch, Air Flow
91		1	TAl11-2-8-72.00G	Tape, Urethane
92		2	TE149-120	Terminal Lug--No. 4
93		7	TE149-144	Terminal Lug--No. 6
94		4	TE2520BN4.50OR16	Post, Electrical-Mechanical
95	E921, E1011	2	TM102-3	Terminal Board, Barrier
96	E7103	1	TM102-5	Terminal Board, Barrier
97	E7336	1	TM102-8	Terminal Board, Barrier
98	E7104	1	TM102-14	Terminal Board, Barrier
99		1	TP131-2-1/2	Stamp
100		1	TP131-2-3/4	Stamp
101		1	TP131-2-5/6	Stamp
102		1	TP131-2-7/8	Stamp
103		1	TP131-2-B801	Stamp
104		1	TP131-1-B7104	Stamp
105		1	TP131-1-C7335	Stamp
106		1	TP131-1-C7336	Stamp
107		1	TP131-1-C7337	Stamp
108		1	TP131-1-C7338	Stamp
109		1	TP131-1-C7339	Stamp
110		1	TP131-1-C7340	Stamp
111		1	TP131-1-C7341	Stamp
112		1	TP131-1-C7342	Stamp
113		1	TP131-2-E921	Stamp
114		1	TP131-1-E1011	Stamp
115		1	TP131-1-E7104	Stamp

UNCLASSIFIED

Page 4 of 50

UNCLASSIFIED

Supplied with the field change kit: (cont)

Item	Ref. Desig.	Quantity	TMC Part Number	Description
116		1	TP131-1-E7336	Stamp
117		1	TP131-2-R713	Stamp
118		1	TP131-2-S919	Stamp
119		1	TP131-1-S7105	Stamp
120		1	TP131-1-S7107	Stamp
121		1	TP131-1-S7108	Stamp
122	X1706	1	TS106-2	Light, Indicator, Clear
123		8"	WL100-4	Wire, Electrical, Buss.
124		8	SCBPO44OBN5	Screw, Machine
125		4	SCBPO44OBN6	Screw, Machine
126		4	SCBPO44OBN10	Screw, Machine
127		6	SCBPO44OBN12	Screw, Machine
128		4	SCBPO44OBN14	Screw, Machine
129		4	SCBPO44OBN16	Screw, Machine
130		10	SCBPO632BN4	Screw, Machine
131		4	SCBPO632BN5	Screw, Machine
132		62	SCBPO632BN6	Screw, Machine
133		4	SCBPO632BN20	Screw, Machine
134		4	SCBPO832BN6	Screw, Machine
135		4	SCBPO832BN10	Screw, Machine
136		10	SCBPO832BN12	Screw, Machine
137		12	SCBPO832BN14	Screw, Machine
138		8	SCBP252OBN8	Screw, Machine
139		2	SCFP044OBN7	Screw, Machine, Flathead
140		4	SCFP044OBN16	Screw, Machine, Flathead
141		12	SCFP0832BN12	Screw, Machine, Flathead
142		1	SFB0832SN6	Screw, Tap, Thread Cut
143		3	SCHH252OBN8	Screw, Machine Hex Head
144		12	SCHH252OBN10	Screw, Machine Hex Head
145		2	SCHH252OBN12	Screw, Machine Hex Head
146		16	FWO4HBN	Washer, Flat
147		3	FWO6HBN	Washer, Flat
148		35	FWO8HBN	Washer, Flat
149		4	FW100-19	Washer, Flat
150		46	LWEO4MRN	Washer, Lock, External
151		76	LWEO6MRN	Washer, Lock, External
152		42	LWEO8MRN	Washer, Lock, External
153		4	LWE10MRN	Washer, Lock, External
154		25	LWS25MRN	Washer, Lock, Split
155		46	NTH044OBN6	Nut, Plain, Hex
156		11	NTH0632BN8	Nut, Plain, Hex
157		25	NTH0832BN10	Nut, Plain, Hex
158		4	NTH1032BN12	Nut, Plain, Hex
159		17	NTH252OBN14	Nut, Plain, Hex

UNCLASSIFIED

Supplied with the field change kit: (cont)

Item	Ref. Desig.	Quantity	TMC Part Number	Description
160		1	NT108-6	Nut, Sh., Spring
161		1	DRILL-#20	Drill, Bit, #20
162		1	DRILL-#29	Drill, Bit, #29
163		1	DRILL-#36	Drill, Bit, #36
164		1	DRILL-1/8	Drill, Bit, 1/8
165		1	DRILL-9/64	Drill, Bit, 9/64
166		1	DRILL-11/64	Drill, Bit, 11/64
167		1	DRILL-13/64	Drill, Bit, 13/64
168		1	DRILL-15/64	Drill, Bit, 15/64
169		1	DRILL-1/4	Drill, Bit, 1/4
170		1	DRILL-5/16	Drill, Bit, 5/16
171		1	DRILL-3/8	Drill, Bit, 3/8
172		1	TP113R0-1/2	Punch, Chassis, 1/2
173		1	TP113R0-5/8	Punch, Chassis, 5/8
174		1	TP113R0-3/4	Punch, Chassis, 3/4
175		1	TP113R1-1/8	Punch, Chassis, 1-1/8
176		1	TP113R2-1/4	Punch, Chassis, 2-1/4
177		1	TAP-0632	Tap, 0632, UNC
178		1	TAP-1032	Tap, 1032, UNC
179		1	COUNTERSINK-82°	Countersink 82°, 1/4" Shank
180		1	NP362-46	Nameplate, Modification Kit

NOTE

Item numbers 181 through 205 comprise the Vapor Down Cooling System Assembly, item 29, TMC Part Number D512529.

181		1	F28901	Jacket, 50KW
182		2	F512512	Hose Adapter
183		1	F512513	Tubing, Silicone Rubber, 201/4" X 16"
184		1	F512514	Tubing, Silicone Rubber, 1" X 36"
185		1	F512515	Tubing, Silicone Rubber, 2-1/4" X 24"
186		1	F512516	Tubing, Silicone Rubber, 7/8" X 37"
187		1	F512518	Tubing, Silicone Rubber, 3" X 20"
188		1	F512521	Fitting, Pressure Equalizing
189		1	F512522	Tubing, Silicone Rubber, 1" X 18"
190		1	F512524	Tubing, Silicone Rubber, 1-1/2" X 11"
191		1	F512525	Tubing, Silicone Rubber, 5/8" X 13"
192		1	F512526	Tubing, Silicone Rubber, 1" X 18"
193		1	F512527	Tubing, Silicone Rubber, 3/4" X 17"
194		1	F512528	Tubing, Silicone Rubber, 1/2" X 41"
195		1	F512544	Water Overflow Trap
196		1	P27882	Anti-Electrolytic Target

UNCLASSIFIED

Supplied with the field change kit: (cont)

Item	Ref. Desig.	Quantity	TMC Part Number	Description
197		1	P512517	Reservoir and Circulating Unit
198		6	P512519	Hose Clamp, 2-5/16" - 3-1/2"
199		1	P512523	Water Level Control
200		14	P512530	Hose Clamp 9/10" - 1-1/2"
201		2	P512533	Hose Clamp, 1-5/16" - 2-1/4"
202		1	P512552	Anti-Electrolytic Target
203		1	P512556	Motor and Pump
204		X	--	Tape, Teflon, .015 X 7/8"
205		X	--	Dope, Tape
206		2		Field Change Bulletin, Radio Transmitting Set AN/FRT-4OC (GPT-4OKEA4)
207		2		Correction matter for technical manuals

TOOLS AND TEST EQUIPMENT:

Required by installing activity

Screwdrivers, flat blade, assorted sizes
 Screwdrivers, Phillips head blade, assorted sizes
 Soldering iron, 100 W
 Drill, electric, 3/8" chuck
 Pliers, diagonal, 6-inch
 Pliers, longnose, 6-inch
 Multimeter, Simpson 260 or equivalent
 Scale (ruler)
 Wire Stripper
 Center punch and hammer
 Technical Manual for Radio Trans-
 mitting Set AN/FRT-4OC
 (GPT-4OKEA4)

PROCEDURE: The modification procedure is described in the following order, and should be performed in this sequence: Removal of components, paragraph 1; Modification of Metalwork, paragraph 2; and Installation of New Components, paragraphs 3 through 19.

1. REMOVAL OF COMPONENTS.

a. PRELIMINARY PROCEDURE.

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WARNING

TURN OFF THE MAIN BREAKER FEEDING THE SYSTEM. OTHERWISE HAZARDOUS VOLTAGES WILL BE PRESENT IN THE TRANSMITTER.

- (1) Turn all power switches to OFF or STANDBY.

WARNING

USE THE GROUNDING ROD TO SHORT OUT ALL HIGH VOLTAGE POINTS AFTER STEPS (2) AND (3).

(2) In the 40KU PA frame, remove the rear shields from the PA and blower compartments.

(3) In the 10-KW main frame, remove the rear shield from the PA compartment.

(4) At the front of the transmitter, remove enough of the units from the top of the auxiliary frame to allow access to the high voltage light mounting screws.

(5) In the 10-KW main frame, remove the high voltage rectifier drawer, the relay panel, and the IPA drawer.

(6) In the 40-KW PA frame, remove the bias supply drawer, relay panel, window panel, and control panel shield.

NOTE

DO NOT DISCARD THE HARDWARE REMOVED IN THE FOLLOWING REMOVAL PROCEDURE. THE HARDWARE WILL BE REQUIRED FOR REPLACEMENT OF THESE COMPONENTS.

b. AUXILIARY FRAME COMPONENTS.

- (1) Remove the light leads from terminal board E3003.
- (2) Remove the nuts from the mounting screws and remove the high voltage light from the top cover.
- (3) Remove the top covers from the 10K and 40K frames.

c. 40-KW PA FRAME, PA COMPARTMENT COMPONENTS.

- (1) Remove the metal and fiberglass shields from the PA tube compartment.

UNCLASSIFIED

(2) Remove the fiberglass air duct attached to the fiberglass tube compartments.

(3) Disconnect the strap from capacitor C7326 to the air duct tube base. Remove C7326. See figure 3-7, Volume III of Technical Manual.

(4) Remove the filament and grid straps from the tube. Remove both halves of the grid screen.

(5) Disconnect the strap from tune capacitor C7330 by removing the two 2520 screws in the PA tube compartment. See figure 3-2, Volume III.

(6) Remove the PA tube and the air duct tube base.

(7) Remove the fiberglass tube compartment box. It may be necessary to remove the strap to the bandswitch. Discard all fiberglass parts removed.

d. 40-KW PA FRAME, BLOWER COMPARTMENT COMPONENTS.

(1) Disconnect the wires from blower air switch S7101 and remove the cable from the clamp. See figure 3-8, Volume III.

(2) Remove the terminal cover plate on blower motor B7102 and disconnect the wires.

(3) Remove the clamp and rubber hose from the air duct flange.

(4) Remove the clamp and the rubber boot from the tube base duct.

(5) Remove the four 2520 bolts securing the blower to the shock mounts and remove the blower.

(6) Remove the two blower shock mounts on the side opposite the contactor box. Save the shock mounts and the grounding strap.

(7) On the contactor box, disconnect P7103 from J7101. Remove the four screws that secure the contactor and remove the box.

e. 10-KW MAIN FRAME, PA COMPARTMENT COMPONENTS.

(1) Remove the cover plate of the tube base.

(2) Remove V900 (4CX5000 tube). See figure 3-2, Volume II of Technical Manual.

(3) Remove the plate strap for V900 by removing the 2520 bolts on the standoff.

(4) Remove the four ceramic standoffs that mount capacitors C909 and C929 to the tube base duct. Do not discard the standoffs or the capacitors.

UNCLASSIFIED

(5) Remove the base duct from the baseplate by removing the 6-32 screws.

(6) Remove the fiberglass air duct attached to the top shield above the tube.

(7) In the tube base compartment, remove the twelve 6-32 screws securing the blower boot plate.

f. 10-KW MAIN FRAME, BLOWER COMPARTMENT.

(1) Disconnect and tag the wires from the air switch.

(2) Remove the terminal cover plate on the blower motor B800 and disconnect the leads.

(3) Remove the four 2520 screws securing the blower motor and remove the blower.

(4) Remove the blower mount standoffs.

(5) Remove L800. Care should be taken not to break the ceramic insulation around the terminals.

2. METAL WORK MODIFICATION.

a. 40-KW PA FRAME, PA COMPARTMENT. (SEE FIGURE 1.)

(1) Remove the mesh from the MS2004 shield by removing the rivets. As an alternate method, cut around the edge of the shield.

(2) Drill a 5/16 inch hole in the MS2480 PA bandswitch plate in location A shown in figure 2. Note that the PA bandswitch is mounted on MS2005.

(3) Drill and punch the following holes on the MS2005 shield. Refer to figure 3, sheets 1, 2, and 3 show the modification required.

(a) In the detail A section of the shield, drill and punch out a 2-1/4 inch hole at location A, and a 1-1/2 inch hole at location B. Drill two 5/16 inch holes at location A.

(b) In the detail B section of the shield, remove the hardware from the hole indicated. Locate a center 5-1/2 inches from the hole drilled in the MS2480 PA bandwidth plate (step (2) above) and drill a 5/16 inch hole at location A.

(c) In the detail C section of the shield, drill and punch a 3/4 inch hole at location A. Drill four 9/64 inch holes at location B. Drill four holes at location C using a Number 36 drill bit. Tap these holes for 6-32 screws.

UNCLASSIFIED

(4) Drill and punch the following holes on the MS2038 wraparound shield. Refer to figure 4. Sheets 1 and 2 show the modification required.

(a) In the detail A section of the wraparound, drill four $9/64$ inch holes at locations A. Drill two $11/64$ inch holes at locations B. On the inside of the chassis, in the location shown on sheet 1, figure 4, add lettering "E7336", using the stamp (item 116) supplied with the kit.

(b) In the detail B section of the wraparound, drill a $1/2$ inch hole at location A.

(c) In the detail C section of the wraparound, drill three $1/4$ inch holes at locations A. Cut away the metal between the two in-line holes closest to the lip of the wraparound (the shaded area in the figure). File the cutout smooth. Mount the NT108-6 spring nut (item 160) in the cutout.

b. 40-KW PA FRAME, BLOWER COMPARTMENT. (SEE FIGURE 1.)

(1) Modify the MS1994, PA frame, Blower Mounting plate by drilling eight $.161$ inch holes at locations A shown on figure 5. Use a number 20 drill bit.

(2) Tap each hole for 10-32 screws.

c. 10-KW MAIN FRAME, PA COMPARTMENT. (SEE FIGURE 1.)

(1) On the MS1548 shield, at the top, cut out the shaded section indicated on figure 6.

(2) Drill and punch the following holes in the MS1547 chassis PA deck. Refer to figure 7. Sheets 1, 2, and 3 show the modification required.

(a) In the detail A section, on the left edge of the MS1547 lip, drill four $1/8$ inch holes at location A. Countersink the holes (82 degrees) to $.230$ inch. Stamp "E921" at the right of the four holes as shown in the figure using the stamp supplied with the kit (item 113).

(b) In the detail B section of MS1547 lip, drill four $13/64$ inch holes at location A. Drill a $1/2$ inch hole at location B.

(c) In the detail C section of MS1547 lip, drill and punch a $2-1/4$ inch hole at location A.

(3) Drill a $15/64$ inch hole on the right side of the MS1592 shield as located in figure 8, location A. Drill through into the 40-KW PA frame. Note that dimensions are taken from the MS1547 chassis, PA deck.

UNCLASSIFIED

d. 10-KW MAIN FRAME, BLOWER COMPARTMENT. (SEE FIGURE 1.)

(1) On the MS1500 Blower Mounting deck, drill four 5/16 inch holes at locations A of figure 9.

(2) On the right side of the MS1830 shield, drill and punch out a 2-1/4 inch hole at location A of figure 10.

e. 10-KW MAIN FRAME, POWER SUPPLY COMPARTMENT. (SEE FIGURE 1.)

(1) On the MS3679 shield plate, drill four 9/64 inch holes at locations A of figure 11.

(2) Stamp "E1011" at the right of the holes as shown in the figure. Use stamp (item 114) supplied with in kit.

f. OTHER (LOOSE) METAL WORK.

(1) On the MS1997 top cover, 40-KW section, modify the metal work as follows (refer to figure 12):

(a) In the upper left corner of the top cover, measure off and cut out the area of metal shaded on detail A of figure 12.

(b) Drill seven 13/64 inch holes at locations A on the cover.

(c) Remove welded angle in shaded portion of the figure.

(2) On the MS1699 top cover, 10-KW section, modify the metal work as follows (refer to figure 13):

(a) In the lower rear corner of the top cover, measure off and cut out the area of metal shaded on detail A of figure 13.

(b) Drill two 13/64 inch holes at locations A on the cover.

(3) On the MS2045 PA tube plate, at the rear, cut out the shaded portion of the plate shown on figure 14. Bend over the edges of the exposed mesh to prevent its shredding.

(4) On the MS1518 relay panel, sub mounting chassis, locate and remove F702. Punch out the mounting hole to 1-1/8 inch diameter.

(5) On the BL103 blower at the top of the 40-KW cabinet, modify as follows (refer to figure 15):

(a) Drill and punch one 5/8 inch hole at location A of figure 15.

(b) Drill one 11/64 inch hole at location B of figure 15.

UNCLASSIFIED

3. INSTALLATION OF NEW TERMINAL BOARDS E1011, E921, E7336, AND E7104.

(1) TERMINAL BOARD E1011. - Mount new terminal board E1011, item 95 (PN TM102-3), terminal board insulator, item 74 (PN PX336-3), and two terminal board straddle plates, item 46 (PN MS154-1) on the MS3679 shield plate (figure 1) using four 7/8 inch machine screws, item 128 (PN SCBPO44OBN14), four lockwashers, item 150 (PN LWEO4MRN), and four hexagonal nuts, item 155 (PN NTHO44OBN6). Mount the terminal board to the shield plate between the 10-KW PA frame and the auxiliary frame with the threaded portion of the screw extending over the terminal board to permit a cover plate to be secured.

(2) TERMINAL BOARD E921. - Mount the new terminal board E921, item 95 (PN TM102-3), a terminal board insulator, item 74 (PNPX336-3), and two terminal board straddle plates, item 46 (PN MS154-1) on the MS1547 chassis, PA deck (figure 7) using four, 1-inch flat head screws, item 140 (PN SCFFO44OBN16), four lockwashers item 150 (PN LWEO4MRN), and hexagonal nuts, item 155 (PN NTHO44OBN6). Mount the terminal board to the inside of the lip of the PA deck.

(3) TERMINAL BOARD E7336. - Mount the new terminal board E7336, item 97 (PN TM102-8), a terminal board insulator, item 76 (PN PX336-8), and two terminal board straddle plates, item 46 (PN MS154-1) on the MS2038 PA tube wraparound (figure 4) using four 5/8 inch machine screws, item 126 (PN SCBPO44OBN10), four hexagonal nuts, item 155 (PN NTHO44OBN6), four lockwashers, item 150 (PN LWEO4MRN), and two no. 4 solder lugs, item 92 (PN TEL49-120). Mount the terminal board on the inside of the 40-KW PA tube wraparound in the same manner as E7306.

(4) TERMINAL BOARD E7104. - Mount the new terminal board E7104, item 97 (PN TM102-14), a terminal board insulator, item 77 (PN PX336-14), insulating board, item (PN LD713/P535) to the underside of the 40-KW PA deck using four 3/4 inch machine screws, item 127 (PN SCBPO44OBN12), four hexagonal nuts, item 155 (PN NTHO44OBN6), four lockwashers, item 150 (PN LWEO4MRN), and two straddle plates, item 46 (PN MS154-1). Mount the terminal board to the underside of the 40-KW PA deck in a position such that terminal 1 is toward the center of the frame.

4. INSTALLATION OF NEW CABLES.

a. CABLE ASSEMBLY CA1209. - Install as follows:

(1) Insert the 3/8 inch grommet, item 30 (PNEY102-21) into the 1/2 inch hole to the right of terminal board E921 on the MS1547 chassis.

(2) Feed one end of cable CA1209, item through the bottom of the grommet and connect to E921, terminals 1 and 3 as marked on the cable.

(3) Lace cable CA1209 along the existing cable toward the right rear corner and along the cable to the interlock switch. Lace toward the front of the transmitter to the second grommet hole in the blower deck. This is the same hole that the cable to J1000 occupies.

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(4) Connect the free end of CA1209 to terminal board E1011 (on MS3679 shield plate). Observe the terminal markings on the cable.

b. CABLE ASSEMBLY AT J1000. - Proceed as follows:

(1) Remove J1000 from the shield and cut back some of the sleeving on the cable.

(2) Remove the two yellow wires from pin K. Place a 1-1/2 inch piece of shrink tubing, item 80 (PN PX830-16-1) and place it over the end of the two yellow wires.

(3) Splice the yellow wires to the stripped end of the 3 inch white/gray jumper on the CA409-175-3.00 lead, item 21. Move the tubing over the splice and shrink.

(4) Solder the end of the 3 inch white/black jumper on the CA409-168-3.00 lead, item 20, to pink. Replace the sleeving on the cable and reconnect J1000 to the shield.

(5) Connect the white/gray lead to terminal 1 of E1011, and the white/black lead to terminal 3. Place a 1/8 inch terminal board insulator, item 78 (PN PX544-3) over E1011. Use two each item 146 (PN FWO4HBN), two lockwashers, item 150 (PN LWEO4MRN) and hexagonal nuts, item 155 (PN NTHO44OBN6).

c. CABLE ASSEMBLY CA1208. - Install as follows:

(1) Disconnect P900 from the interconnect filter box between the 10-KW and 40-KW portions of the transmitter.

(2) Open the plug and push back the bushing and cable sleeving.

(3) Cut three 1/2 inch pieces of insulating sleeving item 71 (PN PX100-1-106) and slip them over the three gray wires marked B, L, N on cable CA1208, item 9. Solder these to pins B, L, N of P900. Slip the tubing over the pins and close the plug.

(4) Lace CA1208 along the main harness to the control panel. Lace along the control panel up to the breakout for the MAIN BREAKER CB1000.

(5) On the main breaker, disconnect the three no. 16 GRAY wires on the LOAD side. Cut the lugs off and trim the leads. Cut three 1-1/2 inch pieces of shrink sleeving, item 81 (PN PX830-12-1) and place over the gray leads. Splice and solder the wires to the three free wires of CA1208.

(6) Cover the splices with the tubing and shrink. Finish lacing this portion to keep the wires from being loose.

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d. CABLE ASSEMBLY CA1206. - Install as follows:

(1) Remove the interconnect filter box from the 40-KW frame and remove the cover from the box.

(2) Cut six 1/2" pieces of insulating sleeving, item 71 (PN PX100-1-106) and slip over the wires of CA1206, item 7. Solder these leads to pins B, L, and N of J7102 and J7103 as marked on the cable. Slip the tubing over the pins.

(3) Replace the cover and the box in the transmitter.

e. CABLE ASSEMBLY CA1217. - Install as follows:

(1) Solder eight inches of no. 16 Buss Wire (PN WL100-4) to the lugs used to mount terminal board E7336 on the MS2038 wraparound shield, in the same way E7306 is mounted.

(2) Mount seven 10,000 mfd mica capacitors, item 23 (PN CM35F103F03) to terminals 1 thru 7 using solder lugs, item 93 (PN TE149-144). Bend the buss wire up to prevent shorting J7302.

(3) At the front of the control panel on the 40-KW PA Frame, locate the breakout from the main harness going up in the left side channel.

(4) On cable assembly CA1217, item 17, locate the breakout junction to E7336 and place the junction over the breakout of the main cable. (This breakout is 84 inches long and consists of seven wires labeled 1 thru 7.) Lace the E7336 leads along the main cable up the left side channel and then back to the PA Tube wraparound. At the point where the main harness enters the wraparound, route CA1217 on the outside of the 1/2 inch hole that was added. Feed the seven wires through the hole and secure the grommet in the hole. Connect the leads to E7336 as marked.

(5) At the control panel, lace the 3-wire lead (marked 1, 2 and 3) and dress toward the rear of the transmitter along the main cable to a point opposite E7104. Connect these wires to the terminals as marked.

(6) Mount a 4 mfd capacitor, item 24 (PN CP41B1FF405K) in the hole added next to C7327, and marked C7335. Lace the remaining breakout of CA1217 along the main harness behind the control panel.

(7) Solder the red and white/red leads to the capacitor. Continue lacing cable CA1217 along the main harness to the extreme right of the control panel and as far to the rear as the breakout to P7103.

(8) Open P7103 and solder the leads to pin X and Y as marked on the cable, using insulating sleeving, item 71 (PN PX1000-1-106).

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f. CABLE ASSEMBLY CA1218. - Install as follows:

(1) Locate the P7103 breakout on the main harness in the 40-KW PA Frame. On cable CA1218, item 18, locate the P7103 breakout. (This contains 9 wires and is 39 inches long.) Lace these two breakouts together.

(2) Lace CA1218 to the P7103 breakout and solder the leads into P7103 as marked. Use 1/2 inch lengths of insulated sleeving, item 71 (PN PX1000-1-106) for the small pins and insulated sleeving, item 72 (PN PX100-1-148) for the large pins. Close connector P7103.

(3) Lace the P7111 breakout on CA1218 toward the rear of the transmitter and along the cable to a point opposite the breakout for E7302.

(4) Lace CA1218 along the main harness toward the front of the transmitter to the breakout for P7107.

(5) Lace the P7107 breakout of CA1218 (two wires marked h and j) and lace along the cable to P7107. Open P7107 and connect the leads to P7107, pins h and j. Use 1/2" lengths of insulated sleeving, item 71 (PN PX100-1-106) to cover the pins. Do not close P7107. Continue lacing CA1218 along the main harness toward the front of the transmitter, along the rear of the control panel to the left and then back toward the rear. At a point opposite E7104 connect the two leads to terminals 10 and 11 of E7104. Continue lacing the cable to P7104.

(6) Open P7104 and connect the leads to pins B, L, N as marked using insulated sleeving, item 71 (PN PX100-1-106) to cover the pins. Close P7104.

g. CABLE ASSEMBLY CA1207. - Install as follows:

(1) Position switch mounting bracket, item 62 (PN MS4859) so that the 1/8" switch mounting holes are at the left and the bend faces front. Mount airflow switch S7107, item 90 (PN SW252) Micro-switch, with the terminals up using two 3/4 inch screws, item 128 (PN SCBP0440BN12) two flat washers, item 146 (PN FWO4HBN) two lockwashers, item 150 (PN LWEO4MRN) and nuts, item 155 (PN NTHO44OBN6).

(2) Mount air vane actuator, item 70 (PN PO168-3) to the switch so the blade will be blown down.

(3) Solder the end of cable CA1207 to the switch contacts as marked. Use a 3/16" clamp, item 26 (PN CU102-2) and secure the cable to the 11/64" hole in the switch mounting bracket with a 3/8 inch screw, item 132 (PN SCBP0632BN6), flat washer, item 146 (PN FWO6HBN), lockwasher, item 151 (PN LWEO6MRN) and hexagonal nut, item 156 (PN NTHO632BN8).

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(4) Mount the bracket and switch assembly to the 40-KW PA Tube wrap-around using a 3/8 inch screw, item 132 (PN SCBPO632BN6) and lockwasher, item 151 (PN LWEO6MRN) to the hole added at the upper right side of the wraparound.

(5) Lace CA1207 along the cable in the wraparound and connect to terminals 3, 4, 5 of terminal board E7336.

h. CABLE ASSEMBLY CA1214. - Install as follows:

(1) Step insulated sleeving, item 71 (PN FX100-1-106) over the leads of cable CA1214 item 15.

(2) Solder leads to the connector J7305 item 49 (PN MS3120A14S-2S) as marked on leads.

(3) Feed the loose end of cable CA1214 through the hole for J7305 on PA filter connector bracket, item 41 (PN LD2045/MS4852). Secure the connector to the bracket using four 5/16 inch screws, item 124 (PN SCBPO44OBN5), four lockwashers, item 150 (PN LWEO4MRN) and hexagonal nuts, item 155 (PN NTHO44OBN6).

(4) Secure the bracket to the inside of the 40-KW PA tube compartment next to terminal board E7336 using two 5/16 inch screws, item 131 (PN SCBPO632BN5) and lockwashers, item 151 (PN LWEO6MRN).

(5) Connect the other end of cable CA1214 to terminals 1, 2, 6, 7 of E7336 as marked.

i. CABLE ASSEMBLY CA1211. - Install as follows:

(1) On P7107, remove the ORANGE wire at pin f.

(2) Solder the lead marked f on CA1211 item 12 to f on P7107. Use 1/2 inch length of insulation sleeving item 71 (PN FX100-1-106) to cover the pin.

(3) Cut a 1-1/2 inch length of insulation shrink tubing item 80 (PN FX830-16-1) and slip over the lead removed from P7107. Splice and solder this lead to the lead marked F on CA1211. Cover the splice with the shrink tubing and heat. Close P7107.

(4) Lace the cable along the main cable behind the control panel to a point opposite E7104.

(5) Connect the end of cable CA1211 to terminals 4 and 6 of E7104 as marked.

j. CABLE ASSEMBLY CA1212. - Install as follows:

(1) On the 40-KW PA frame interlock switch, remove the two white/green wires from position 1.

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(2) Determine which lead is connected to the OPERATE light, using a meter, and slip a piece of shrink tubing, item 80 (PN FX830-16-1) over this lead. Splice and solder to the lead marked L of cable CA1212. Cover the splice with shrink tubing and heat.

(3) On CA1212, connect the other lead marked l and the remaining white/green lead and solder them to position 1 of the interlock switch.

(4) Lace cable CA1212 along the main harness behind the control panel to a point opposite E7104.

(5) Connect the cable to terminals 10 and 11 of E7104.

k. CABLE ASSEMBLY CA1213. - Install as follows:

(1) In the 40-KW PA frame disconnect the white/red, yellow and white/brown wires from the relay panel interlock switch, S7103.

(2) Connect the leads of CA1213 marked C, NC, NO to the appropriate terminals of the switch.

(3) Disconnect the original relay panel interlock wiring as far as the main harness and run cable CA1213 in its place. Lace the two cables to the main harness behind the control panel to a point opposite E7104.

(4) Connect cable CA1213 to terminals 4, 5, 6 of E7104 as marked.

(5) Reconnect the original cable as follows: white/red to terminal 7, yellow to terminal 8, and white/brown to terminal 9.

l. CABLE ASSEMBLY CA1210. - Install as follows:

(1) Mount centrifugal fans B7103 and B801, item 4 to the blower bracket, item 42 (PN LD2047/MS4864) using for each, 6 shock mounts, item 89 (PN SH105-1), 7/8 inch screws, item 137 (PN SCBPO832BN14), flatwashers item 148 (PN FWO8HBN) and lockwashers, item 152 (PN LWEO8MRN). Mount the fan on the inside of the bend in the bracket with the air duct in the notch.

(2) Mount a 4 mfd. capacitor, item 24 (PN CP41B1FF405K) in the 3/4" hole marked C7127.

(3) Mount the J7106, item 50 (PN MS3102A14S-2P) with four 3/8 inch screws, item 128 (PN SCBPO44OBN6), four lockwashers, item 150 (PN LWEO4MRN) and four hex nuts, item 155 (PN NTHO44OBN6). Mount both the capacitor and jack on the outside of the bend.

(4) Solder two 8 inch pieces of black #22 wire, item 22 (PN MWC22(7)UO) to capacitor C7127. Slip a 6 inch piece of insulating sleeving size 3, item 73 (PN FX100-1-234) over the blower leads.

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(5) Solder the blower and capacitor leads to J7106 as follows using 1/2 inch pieces of insulated slewing, item 72 (PN PX100-1-148) to cover the pins.

Pin A - Green, yellow

Pin B - Red

Pin C - Blue, Capacitor Lead

Pin D - Brown, violet, Capacitor

(6) Mount the blower and bracket assembly on the 40-KW PA frame blower compartment to the underside of MS2005, PA Deck shield using two 5/16 inch holes added to the deck and the bandswitch plate. Mount with two 3/4 inch hex head 1/4 20 bolts, item 145 (PN SCHH2520BN12), two lockwashers, item 154 (PN LWS25MRN) and nuts item 159 (PN NTH2520BN14). Be sure the air duct faces the rear of the transmitter.

(7) Remove the air switch from the 40-KW main blower that was removed. Solder the leads of cable CA1210 to the air switch as marked on the cable. Mount the switch to B7103 using the same hardware.

(8) Route cable CA1210 up and to the left of the main harness (as viewed from the rear of the transmitter). Lace to the main harness and route the cable to the front, around the rear of the control panel to a point opposite E7104.

(9) Connect the cable to terminals 7, 8, 9 of E7104 as marked. Connect the white/brown jumper on electrical lead, item 19 (PN CA409-161-3.00) between terminals 5 and 2 of E7104. Mount PX974, Cover.

(10) Mount terminal board cover item 74 (PN PX974) with two 5/16 inch screws, item 131, (PN SCBPO632BN5), two flat washers, item 147 (PN FW06HBN) and lockwashers, item 151 (PN LWEO6MRN) to cover E7104.

5. INSTALLATION OF BLOWER B801.

(1) Cut a 17 inch piece of insulation slewing, item 73 (PN PX100-1-234) and slip it over the leads of B801 installed in paragraph 4 (12) above. Place a rubber cable bushing, item 52 (PN MS3420-64) and a cable clamp, item 48 (PN MS3057-6) over the slewing.

(2) Place 1/2 inch lengths of insulated slewing, item 71 (PN PX100-1-106) over the leads and solder to connector P801, item 51 (PN MS3106A145-2P) as follows and close the plug:

Pin A - Green, blue

Pin B - Red

Pin C - Yellow

Pin D - Brown, violet

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(3) Mount four 4-1/2 inch standoffs item 94 (PN TE2520BN4.50OR16) using 5/8 inch bolts, item 144 (PN SCHH2520BN10) and four lockwashers, item 152 (PN LWS25MRN) and LWS25MRN lockwashers outside of the bend on the blower bracket.

(4) Mount blower mounting flange, item 53 (PN MS1632) to blower cover plate, item 58 (PN MS4855) using twelve 3/8 inch screws item 132 (PN SCBP0632BN6) and lockwashers item 151 (PN LWEO6MRN).

(5) Mount the cover plate to the blower using a fan gasket item 86 (PN RY127) and four 1/2 inch screws, item 138 (PN SCBP2520BN8), lockwashers item 154 (PN LWS25MRN) and hex nuts item 159 (PN NTH2520BN14).

(6) Remove the rubber air flue and the blower flange (MS1632) that was left on by removing the 12 screws securing the air flue to the blower. Mount this flue to the new blower B801 assembly using four flange plates item 54 (PN MS1638) twelve 3/8 inch screws item 132 (PN SCBP0632BN6) and lockwashers item 151 (PN LWEO6MRN).

(7) Place the blower assembly in the blower compartment and mount to the blower deck (figure 1) with four 5/8 inch bolts item 144 (PN SCHH2520BN10) and lockwashers item 154 (PN LWS25MRN). Secure the upper blower mounting flange to the PA tube compartment using twelve 3/8 inch screws, item 132 (PN SCBP0632BN6) and lockwashers item 151 (PN LWEO6MRN).

(8) Reconnect the air switch cable that was removed.

6. INSTALLATION OF CAPACITOR C816 AND CONNECTOR J801.

(1) Mount 4 mfd. capacitor C816, item 24 (PN CP41B1FF405K) on the outside of LD2048/MS1611 blower capacitor bracket item 43 (PN LD2048/MS1611). Mount connector J801 item 49 (PN MS3102A14S-2S) using four 5/16 inch screws item 124 (PN SCBP0440BN5), four lockwashers item 150 (PN LWEO4MRN) and hex nuts item 155 (PN NTH0440BN6).

(2) Strip the leads of the cable that were disconnected from the blower motor. Solder the two White/black leads together and place a piece of shrink tubing item 81 (PN PX830-12-1) over the splice and heat. Tie this lead back.

(3) Using 1/2 inch pieces of shrink tubing item 71 (PN PX-100-1-106) solder the leads as follows:

Pin A - Two yellow

Pin B - Gray

Pin C - 2 inch piece BLACK #22 WIRE item 67 (PN MWC22(7)UO)

Pin D - 2 inch piece BLACK #22 WIRE item 67 (PN MWC22(7)UO)

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Solder the other end of the two black leads to capacitor C816. Mount the bracket to the underside of the RF Deck in the four holes that were added. Place the bracket so that the capacitor is facing away from B801. Use four each SCBP0832BN6, 3/8 inch screws item 134 (PN SCBP0832BN6) lockwashers item 152 (PN LWEO8MRN) and hex nuts item 157 (PN NTH0832BN10) nuts. Remount L800 that was removed earlier.

7. INSTALLATION OF 10-KW PA TUBE BASE AIR DUCT.

(1) Mount the C909 and C929 mounting standoffs to the tube base air duct cone, item 82 (PN FX969) using the original hardware. Mount the air duct to the base plate with the same hardware.

(2) Remount capacitors C909 and C929 with the original straps and hardware, except for the straps going to the tube straps. Replace these with two electrical lead straps, item 47 (PN MS202-4-5.00).

(3) Mount a tube strap, item 66 (PN MS4863) to the standoff with the original hardware. Use the original hardware for the clamp on the strap.

8. INSTALLATION OF PUMP CONTACTOR BOX ASSEMBLY.

(1) Remove the cover plate on the blower contactor assembly.

(2) Disconnect the wires going to the relay, capacitors and terminal strip. Remove the back cover.

(3) Remove the terminal strip and capacitors from the back cover. Mount the cover and relay to the pump contactor box assembly, item 1 (PN A5426) with seven 3/8 inch screws item 132 (PN SCBP0632BN6) and seven lockwashers, item 151 (PN LWEO6MRN).

(4) Connect the cable to the relay as marked on the cable.

(5) Replace the front cover plate with seven 3/8 inch screws, item 132 (PN SCBP0632BN6) and seven lockwashers, item 151 (PN LWEO6MRN). Mount the pump contactor box in the transmitter using the original hardware.

9. INSTALLATION OF 40-KW COIL AIR DUCT.

(1) Mount the PA air duct item 83 (PN FX970) to the RF deck using the original hardware with the air hose flange under the deck.

(2) Mount the air duct bracket, item 4858 (PN MS4858) to the PA tube wraparound, using two 3/8 inch screws item 132 (PN SCBP0632BN6), two lockwashers, item 151 (PN LWEO6MRN) and two hex nuts, item 156 (PN NTH0632BN8).

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(3) On PA coil fan B7103, bracket item 63 (PN MS4860) and fan gasket, item 86 (PN RY127) using four 1/2 inch screws, item 138, four lockwashers item 154 (PN LWS25MRN) and four hex nuts item 159 (PN NTH2520BN14).

10. INSTALLATION OF 40-KW TOP COVER.

(1) Cut a 17 inch piece of insulation sleeving item 73 (PN FX100-1-234) and slip it over the leads of axial fan B7104 (item 5). Slip the rubber cable bushing item 52 (PN MS3420-6A) and cable clamp item 48 (PN MS3057-6) over the sleeving.

(2) Using 1/2 inch lengths of insulation sleeving item 71 (PN FX100-1-106) to cover the pins, solder the leads to connector P7305 item 51 (PN MS3106A145-2P) as follows. Then close the connector.

Pin A - Green, blue

Pin B - Yellow

Pin C - Red

Pin D - Violet, brown

(3) Knock out the twelve captive nuts on the MS2518 blower chassis. Mount fan B7104 to the blower chassis with eight 3/8 inch screws, item 132 (PN SCBP0632BN6), eight lockwashers item 151 (PN LWEO6MRN) and eight hex nuts item 156 (PN NTH0632BN8).

(4) Mount the fan chassis to fan mounting plate, item 56 (PN MS4853) using twelve 3/4-inch flathead screws, item 136 (PN SCFPO832BN12), eight flat washers item 148 (PN FWO8HBN), eight lockwashers item 152 (PN LWEO8MRN), and eight hex nuts item 157 (PN NTH0832BN10). When mounting the chassis, locate the filter opening away from the 20 1/2-inch hole.

(5) Mount hose adapter, item 182 (PN F512512) to the plate using two 5/8-inch bolts, item 144 (PN SCHH2520BN10), two lockwashers, item 154 (PN LWS25MRN) and two hex nuts item 159 (PN NTH2520BN14). Place adhesive tape, item (PN TAl11) along the bottom edges of the fan mounting plate.

(6) Mount the fan mounting plate assembly to the top cover using the mounting bracket, item 68 (PN FM1297) and ten 3/4 inch screws item 136 (PN SCBP0832BN12), ten lockwashers, item 152 (PN LWEO8MRN) and seven hex nuts, item 157 (PN NTH0832BN10).

(7) Remount the 40-KW top cover using the original hardware. Mount the air filter, item 2 (PN AD103-9) in the bracket.

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11. INSTALLATION OF 10-KW TOP COVER.

(1) Mount pressure equalizing fitting, item 188 (PN F512521) to hose mounting bracket, item 57 (PN MS4854) using three 1/2-inch bolts, item 143 (PN SCHH252OBN8), three lockwashers, item 154 (PN LWS25MRN), and three hex nuts, item 159 (PN NTH252OBN14).

(2) Mount the two side plates item 65 (PN MS4862) using ten 1/4 inch screws, item 130 (PN SCBPO632BN4), and ten lockwashers, item 151 (PN LWEO6MRN). Note that this mounting is temporary to allow for alignment of components during mounting. Remove the side plates after the bracket is mounted to the top to allow access for clamping the hose.

(3) Install mounting bracket, item 69 (PN PML298) with four 5/8-inch screws, item 135 (PN SCBPO832BN10), four lockwashers, item 152 (PN LWEO8MRN) and two hex nuts, item 157 (PN NTH0832BN10).

(4) Remount the 10-KW top cover using the original hardware.

12. INSTALLATION OF HOSE ADAPTER.

(1) In the 40-KW PA compartment, mount a hose adapter, item 182 (PN F512512) in the hole provided near the base of the tube using two 5/8-inch bolts, item 144 (PN SCHH252OBN10), two lockwashers, item 154 (PN LWS25MRN) and two hex nuts, item 159 (PN NTH252OBN14).

13. INSTALLATION OF WATER RESERVOIR AND CIRCULATING UNIT.

(1) Remount the two shock mounts and the ground strap that were removed during removal of B7102 (paragraph 1 d) in the new holes provided in the 40-KW PA frame.

(2) Mount the terminal strip insulator, item 35 (PN LD2039/PX968) to the terminal board bracket, item 60 (PN MS4857) using two 7/16-inch flathead screws, item 139 (PN SCFPO44OBN7) four lockwashers, item 150 (PN LWEO4MRN), and four hex nuts item 155 (PN NTH044OBN6).

(3) Mount terminal strip E7103, item 96 (PN TM102-5) and insulator item 79 (PN PX336-5) to the terminal strip insulator (PN LD 2039) using two straddle plates, item 46 (PN MS154-1) and four, 1-inch screws, item 129 (PN SCBPO44OBN16) four flatwashers, item 147 (PN FW04HBN) lockwashers, item 150 (PN LWEO4MRN) and hex nuts, item 155 (PN NTH044OBN6). Mount the flatwashers and the screw through the terminal strip insulator (LD2039) into the terminal strip so that the threaded portion extends over the strip.

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(4) Remove the center sheet metal screw in the top row of the rear face. Use the side with the sight glass as the front reference to identify the correct screws. Mark a point 1-inch this hole in the direction opposite the pump, and in line with the center of the hole. Drill a hole at this spot using a No. 29 drill bit. Mount the terminal block assembly in these two holes with the terminal board over the unit using the original screw removed and an additional 3/8-inch self tapping screw, item 142 (PN SCFBO832SN6).

(5) On cable assembly CA1215, identify the junction of the breakouts to pressure switch S7108 (white/black and white/green leads) and the pump motor B7105 (white and gray leads). Remove the top corner screw at the same side as the pump motor. Using this screw and an additional flatwasher, item 148 (PN FWO8HBN) and 3/16-inch clamp, item 26 (PN CU102-2) mount the cable at the above junction. Clamp the switch breakout along the top of the reservoir to the switch using two 1/8-inch clamps, item 25 (PN CU102-1) and two flatwashers, item 148 (PN FWO8HBN). Clamp the motor breakout down the side of the reservoir to the motor using three 3/16-inch clamps, item 26 (PN CU102-2) and three flatwashers item 148 (PN FWO8HBN). Connect the switch and the motor.

(6) Clamp the cable (CA1215) along the top rear past E7103 to the other corner of the cabinet and then down to the pump contactor box. Use five 5/16-inch clamps item 27 (PN CU102-4) and five lockwashers, item 148 (PN FWO8HBN). Leave enough slack at the plug to allow free connection to the pump contactor box. Connect the cable to E7103 as marked. Connect the leads from the water level switch to terminals 4 and 5 of E7103. Mount insulator, item 79 (PN PX544-5) over E7103 and secure using four flatwashers item 146 (PN FWO4HBN), four lockwashers, item 150 (PN LWEO4MRN) and hex nuts, item 155 (PN NTHO44OBN6).

(7) Mount the reservoir, item 197 (PN P512517) with the sight glass facing the rear of the transmitter to the shock mounts in the 40-KW blower compartment using the original hardware. Be sure to secure the ground strap.

14. INSTALLATION OF HOSES.

NOTE

WHENEVER HOSES ARE CLAMPED IN THE FOLLOWING PROCEDURES WRAP HOSE WITH ONE TURN OF TEFLON TAPE AND CLAMP OVER THE TAPE.

a. 40-KW HOSES. - Proceed as follows:

(1) Clamp a 3-inch by 1/16-inch by 20-inch hose, item 187 (PN F512518) to the vapor exhaust opening of 40-KW PA tube jacket item 181 (PN F28901) using a 2-5/16-inch to 3-1/2-inch clamp, item 198 (PN P512519).

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(2) Mount the anti-electrolytic target item 196 (PN P27882) to the intake hole of the tube jacket. Clamp a 3/4-inch by 1/16-inch by 17-inch hose, item 193 (PN F512517) to the anti-electrolytic target using a 9/16-inch to 1/2-inch clamp, item 200 (PN 512530). Mount the jacket in the transmitter by slipping the loose ends of the hose through the glass support and lining up the jacket so that the intake hose is above the flow adjusting valve.

(3) Clamp the 3-1/2-inch hose the opening of the reservoir using a clamp, item 198 (PN 512519). Mount the 3/4-inch hose to the flow regulating valve using clamp, item 200 (PN F512530).

(4) Clamp the 1-inch by 1/16-inch by 18-inch flexible hose to the top of the reservoir with a clamp item 200 (PN P512530). Clamp the other end to the hose adapter, item 182 (PN P512512) mounted near the base of the 40-KW PA tube. Use a clamp item 200 (PN F512530).

(5) Clamp the 2-1/4-inch by 1/16-inch by 24-inch flexible hose item 185 (PN F512515) to the top of the reservoir with a clamp item 198 (PN P512519). Clamp the other end to the hose adapter with another clamp, item 198 (PN 512519).

(6) Install the front tube plate MS2045-2 that was removed. This is the section of grid screen which is toward the front of the transmitter, and is the unmodified half.

(7) Connect a 1-inch by 1/16-inch by 36-inch hose item 184 (PN F512514) and a 2-1/4-inch by 1/16-inch by 36-inch hose item 183 (PN F512513) using two each clamps items 198 and 200 (PN P512519 and P512530).

(8) Remove the tube strap from the old PA tube (type ML-6697) and place it around the water jacket. Secure it to capacitor C7330 as it was originally. Replace capacitor C7326 into its clamp at the base of the tube, secure connector strap item 64 (PN MS4861) and connect to the tube strap. Secure the tube strap.

(9) Install the new PA tube, V7301, item 45 (PN ML-7480) into the water jacket. Check to see that it is seated properly so that leaks around the "O" ring may be prevented.

(10) Replace the MS2045-1 rear tube plate with the cut out section around the hoses. Secure the filament and grid rings around the tube. Check that fan B7104 is properly connected and replace the cover on the tube wrap-around. Replace the shield on the PA Compartment.

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b. 10-KW HOSES. - Proceed as follows:

(1) Layout and measure the rubber channel, item 87 around the 2-1/4-inch holes in the right side shield of the PA deck and the 5-inch cutout in the top shield of the 10-KW frame. Cut the flat edges of the channel so that it will fit into the corners of the cutout and fill the circumference of the holes. Spread a layer of adhesive, item 32 (PN GL101-2) around the edges of the cutouts and in the channel of the rubber. When the adhesive becomes tacky, secure the rubber channel to the cutouts.

(2) Mount the water level control, item 199 (PN P512523) through the right side shield in the PA compartment into the 40-KW compartment with four 1-1/4-inch screws, item 133 (PN SCBP1032BN20), four flatwashers, item 149 (PN FW100-19) four lockwashers, item 153 (PN LWEL0MRN), and nuts, item 158 (PN NTH1032BN12).

(3) Mount the new PA tube, V900, item 44 (PN ML-LPT11) into the socket with the water intake facing the water level tank. Secure the tube strap. Check the water level line to see that it lines up with the water level line on the PA tube. Adjust the tank height if necessary.

(4) Mount the 1-5/8-inch by 1/16-inch by 11-inch hose between the tube and the pressure equalizing fitting with two 1-5/16-inch to 2-1/4-inch clamps, item 201 (PN P512533). Remount the side plates of the bracket.

(5) Connect the 1-inch by 1/16-inch by 18-inch hose, item 189 (PN F512522) from the pressure equalizing fitting to the top of the water level tank with two 9/16-inch by 1-1/2-inch clamps, item 200 (PN P512530). Attach the union onto PA tube V900 with an "O" ring and tighten.

(6) Connect the 5/8-inch by 1/16-inch by 13-inch hose between V900 and the water level tank with two 9/16-inch to 1-1/2-inch clamps, item 200 (PN P512530). Connect the 7/8-inch by 1/16-inch by 37-inch hose, item 186 (PN P512516) to the bottom of the water level tank. Extend it through the 2-1/4-inch hole in the side shield and connect it to the water overflow trap on the reservoir. This connection is at the front of the reservoir with a pipe at the top. The pipe is at a 45 degree angle. Secure with two clamps, item 200 (PN P512530).

(7) Connect the 1/2-inch by 1/16-inch by 41-inch hose, item 194 (PN F512528) to the bottom of the water level tank. Route this hose the same as the 7/8-inch hose and connect it to the water flow adjusting valve on the reservoir using two clamps, item 200 (PN P512530). Recheck all hose connections.

(8) Connect the water level switch wires to E921, terminals 1 and 3. Mount an insulated terminal board, item 78 (PN PX544-3) X with four flatwashers, item 146 (PN FWO4HBN), four lockwashers, item 150 (PN LWEO4MRN) and hex nuts, item 155 (PN NTH044OBN6).

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(9) Secure the 16-inch flexible hose, item 88 to B7103, the 40-KW main blower and the air hose flange feeding the air duct for the 40-KW coil using two 2-inch clamps, item 28 (PN CUL29-10)

15. INSTALLATION OF 40-KW RELAY PANELS.

a. 40-KW RELAY PANEL. - Proceed as follows:

(1) Disconnect the relay wiring from E7601 through E7606 feed thru terminals. Mark all leads.

(2) Remove the relay mounting plate by removing the four screws mounting the plate to the shock mount. Disconnect all lights and timers. Mark all leads, and remove these components from the panel.

(3) Remove potentiometers, switches and the fuseholder mounting bracket from the panel without removing the wiring. Remove the wire wound resistors from the panel. Remove the bracket holding J7601 and J7602.

(4) Unsolder the leads from the terminal strips and mark the leads. Remove all remaining items from the panel.

(5) Install all items removed from the 40-KW relay panel on the new 40-KW Relay Front Panel, item 40 (PN LD2044/MS1979) in exactly the same location it was on the old panel.

(6) Install the new panel in the transmitter.

b. 10-KW RELAY PANEL. - Proceed as follows:

(1) Remove all components and cables from the 10-KW relay panel as was done for the 40-KW relay. Be sure to mark all leads.

(2) On the fuseholder bracket, remove XF702 and punch the hole out to 1-1/8-inch.

(3) On the new 10-KW Relay Front Panel, item 26 (PN LD2040/MS1499) mount a light socket, X1706, item 122 (PN TS106-2) in the WATER ON hole.

(4) Remount all components removed from the old panel and rewire as the original panel was. Rewire the new X1706 socket as follows: Connect two gray and one white/gray wires that were connected to XF702 and to one side of the light socket. Connect 200K resistor R713, item 85 (PN RC32GF224J) between the other terminal of X1706 and the yellow wire on XF701. Install indicator lamp I706, item 3 (PN BIL00-51).

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16. INSTALLATION OF CONTROL PANELS.

a. 10-KW PANEL. - Proceed as follows:

(1) Remove the 10-KW control panel from the transmitter.

(2) Remove the knobs from the controls and disconnect the controls from the panel. Be sure to mark leads that are unsoldered.

(3) Remount the controls on the new 10-KW Main Control Panel, item 37 (PN LD2041/MS3678).

(4) Remount the control panel on the transmitter.

b. 40-KW MAIN CONTROL PANEL. - Proceed as follows:

(1) Remove the 40-KW control panel from the transmitter.

(2) Remove the knobs from the controls and disconnect the controls from the panel. Be sure to mark all leads.

(3) Remount the controls on the new 40-KW Main Control Panel, item 38 (PN LD2042/MS1947) and remount the control panel.

c. 40-KW P.S. CONTROL PANEL.

(1) Remove the 40-KW P.S. control panel from the transmitter.

(2) Remove all controls from the panel. Mark all leads.

(3) Remount controls on the new 40-KW P.S. Control Panel, item 39 (PN LD2043/MS1948), and remount in the transmitter.

17. FINAL ASSEMBLY.

Reinsert all units into the transmitter replacing the high voltage drawers removed with a new 40-KW high voltage drawer, item 33 (PN HVRB-1) and 10-KW high voltage drawer, item 34 (PN HVRC-1). Verify that all plugs are connected properly and that all shields and covers that were removed have been replaced.

18. METHOD OF STAMPING EQUIPMENT.

Using a paint brush or roller, put a thin coat of black paint on a piece of cardboard, glass or sheet metal. Transfer paint from this smooth surface onto the rubber stamps provided in this modification kit. Stamp metal parts of transmitter as previously described.

19. ENERGIZATION OF EQUIPMENT.

Connect a-c power source to transmitter. Start and tune transmitter as described in the appropriate operator's manual as modified by corrections to Publications and Charts.

UNCLASSIFIED

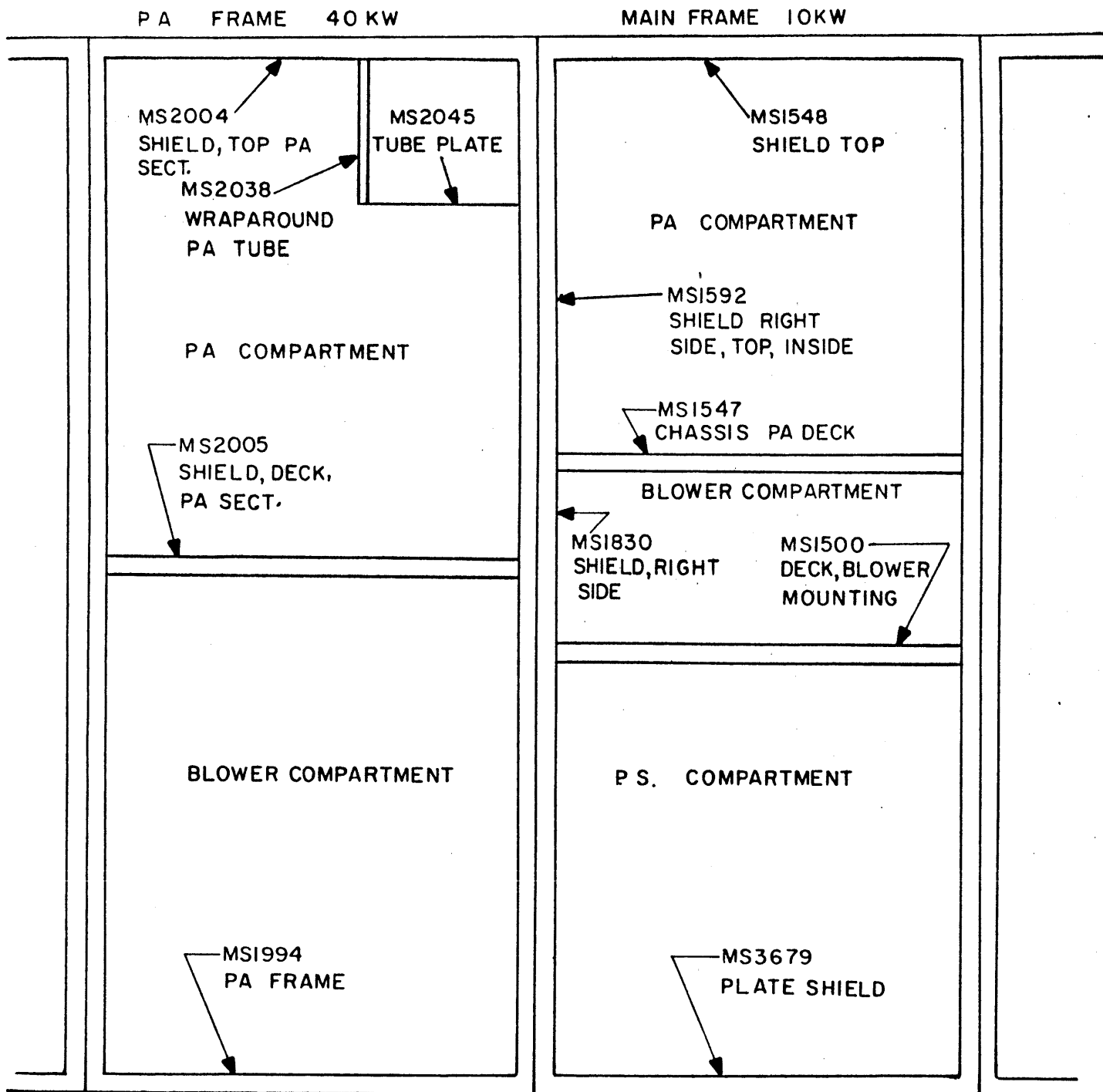


Figure 1. Location of Components Requiring Metalwork Modification (Rear View of Frames)

UNCLASSIFIED

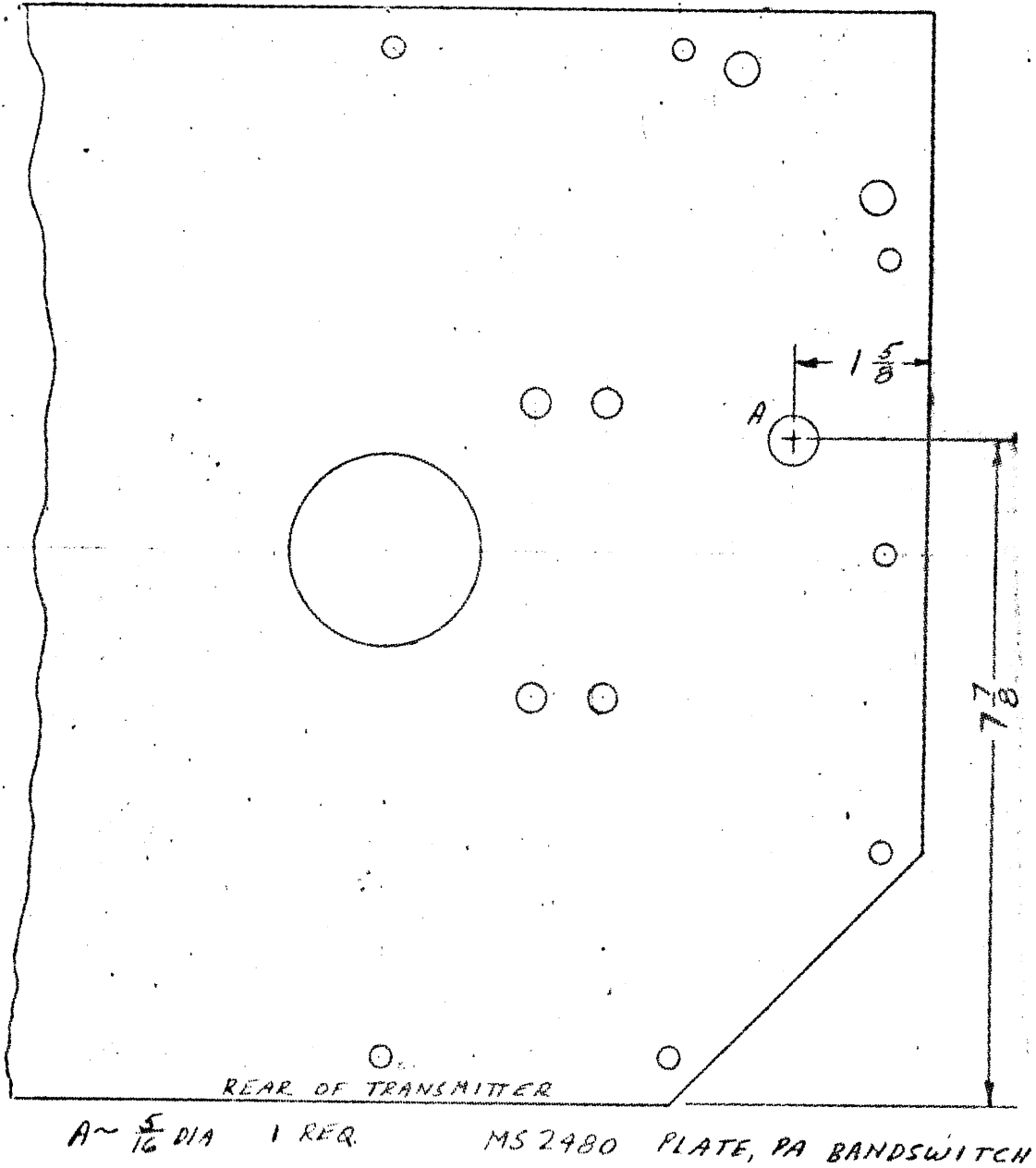


Figure 2. Modification of MS2480 Plate

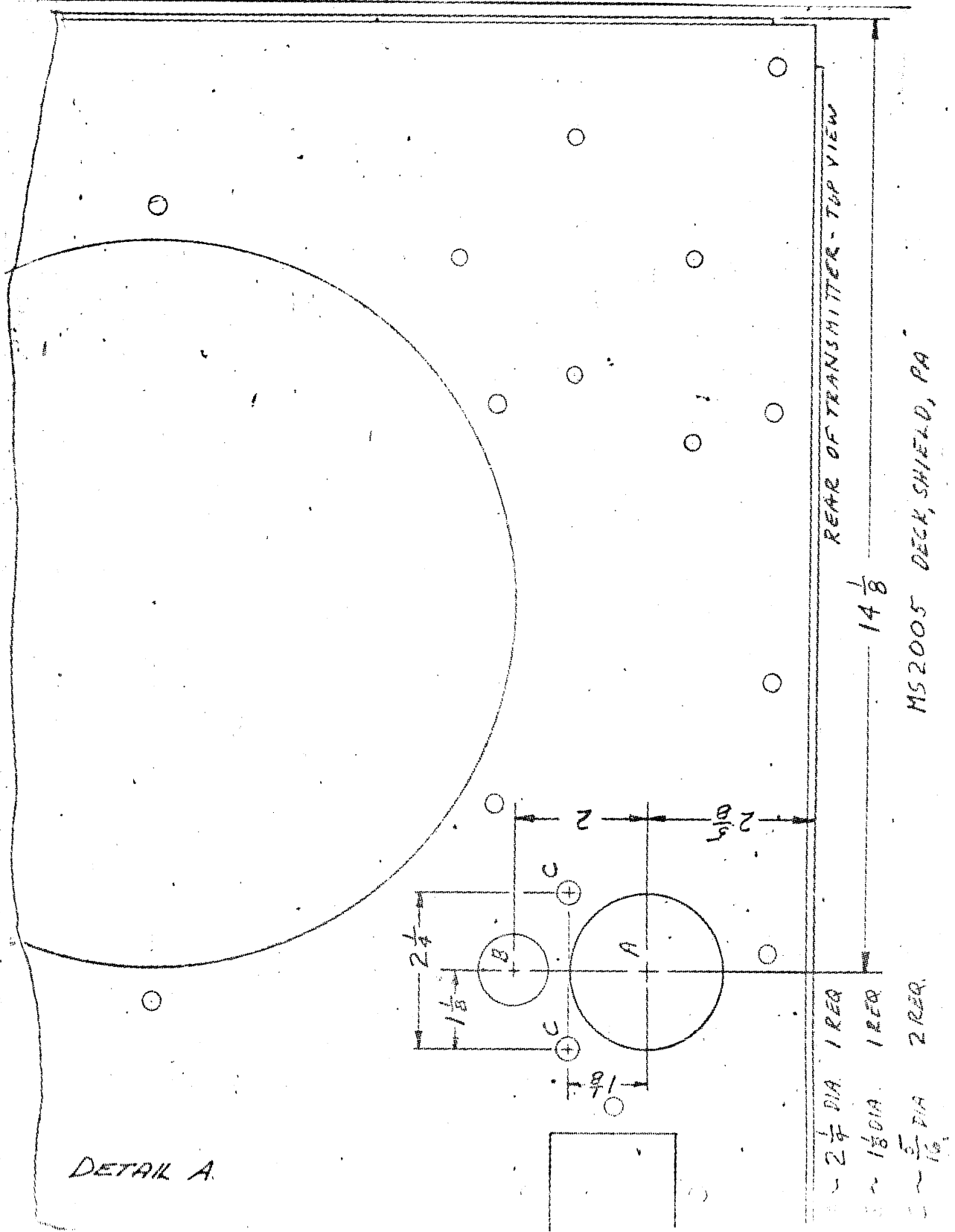
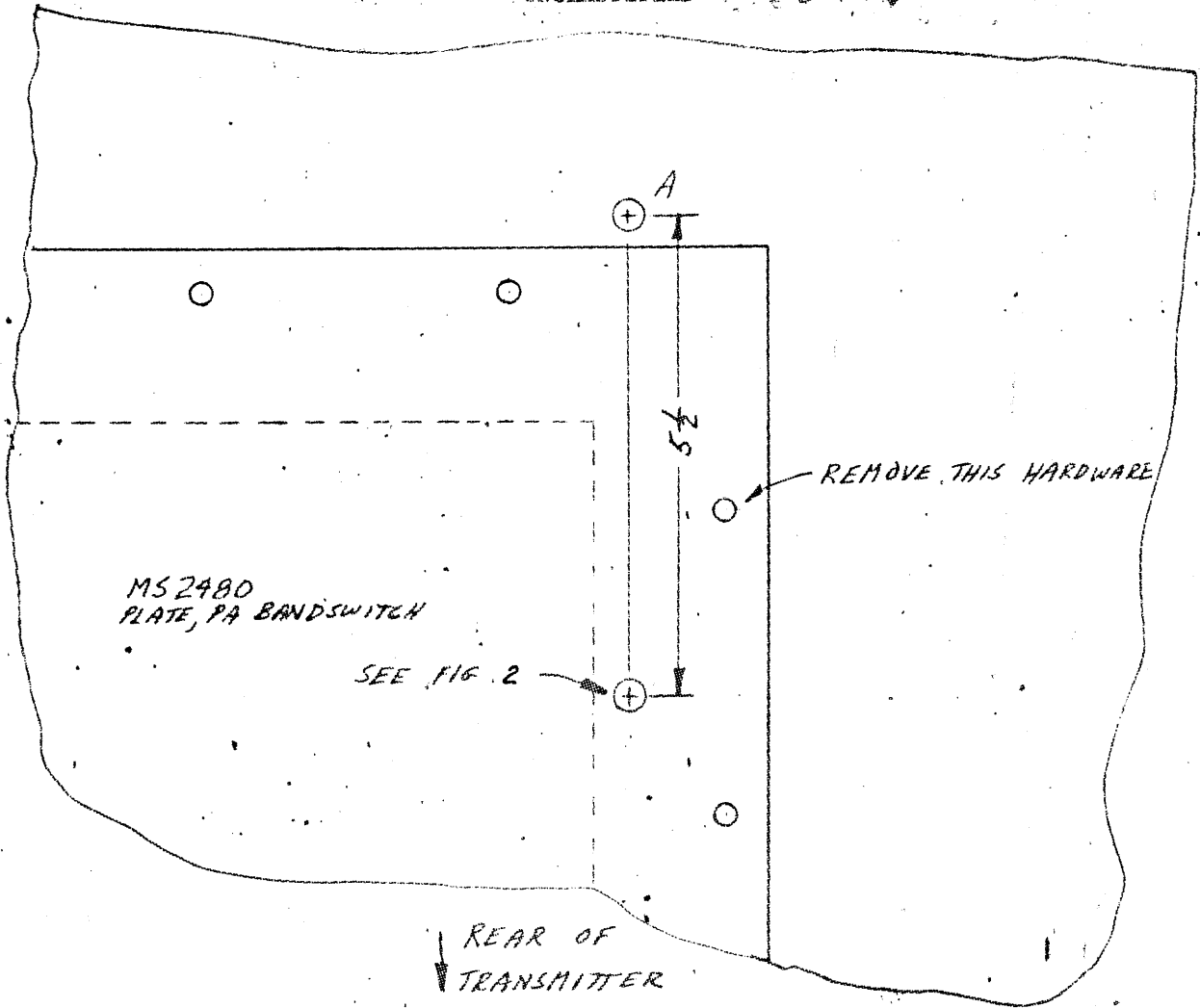


Figure 3. Modification of MS2005 Shield (Sheet 1)



MS2480
PLATE, PA BANDSWITCH

SEE FIG. 2

REMOVE THIS HARDWARE

REAR OF
TRANSMITTER

MS2005 DECK, SHIELD, PA.
TOP VIEW SHOWN

$A \sim \frac{5}{16}$ DIA 1-REQ.

DETAIL B

Figure 3. Modification of MS2005 Shield (Sheet 2)

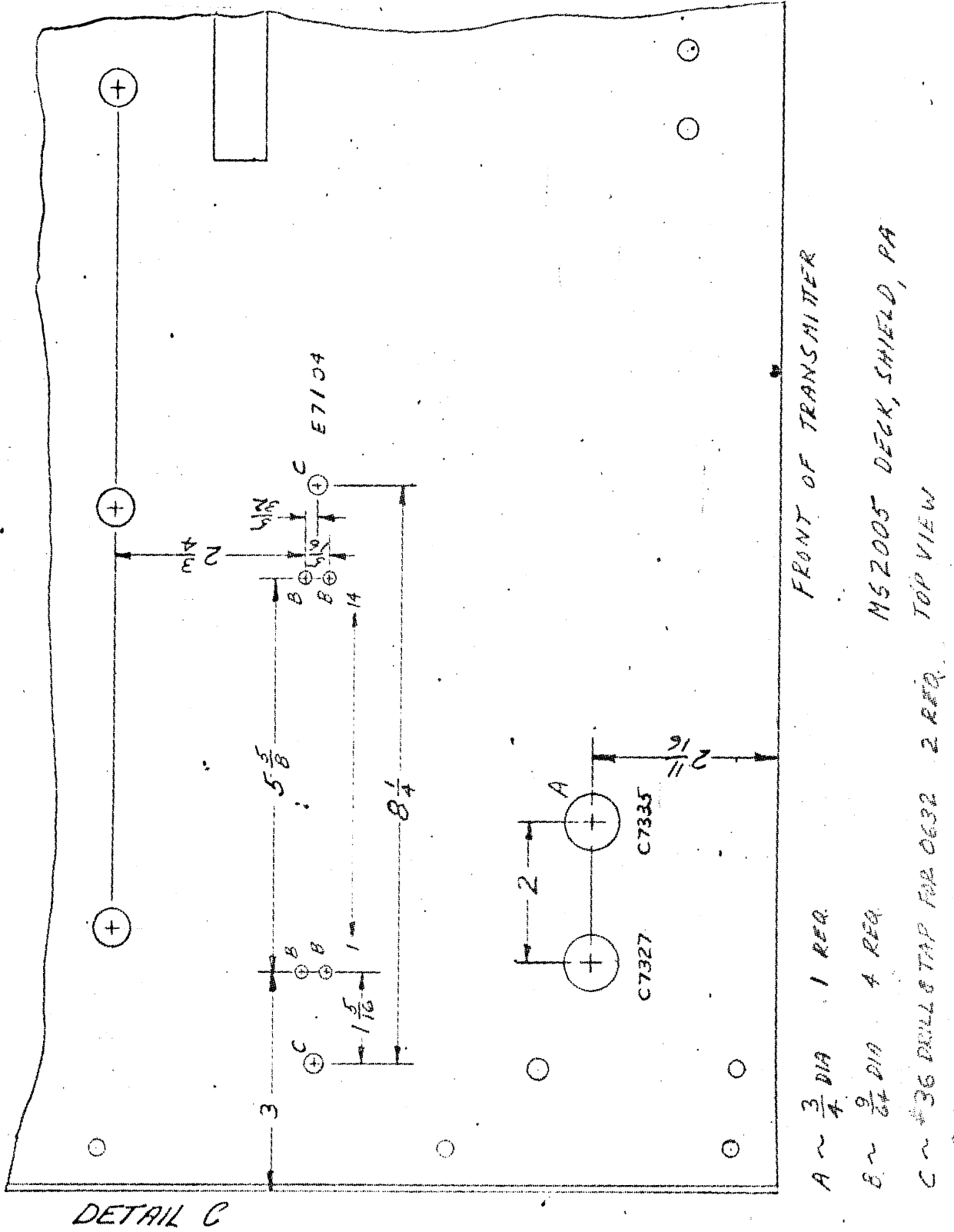
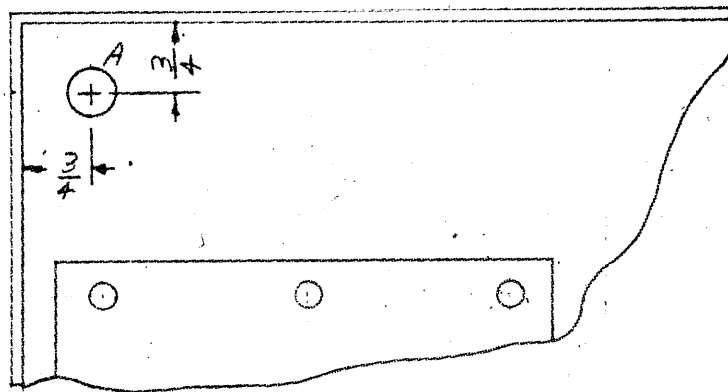


Figure 3. Modification of MS2005 Shield (Sheet 3)

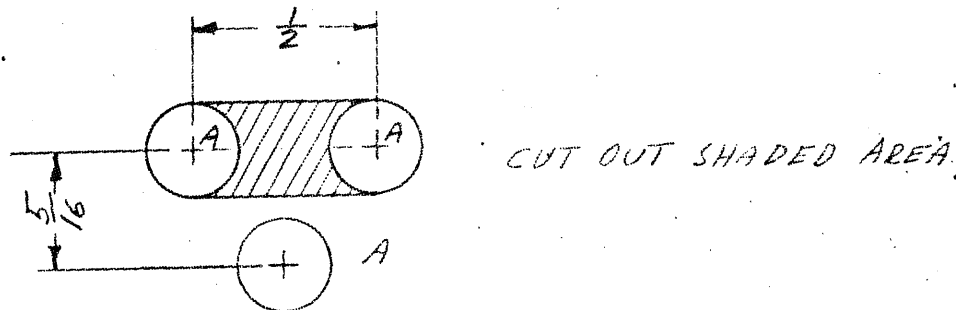
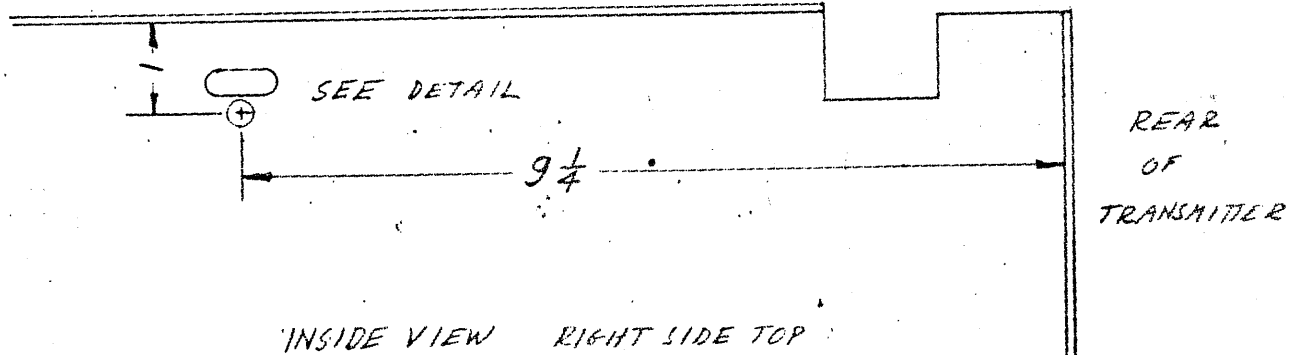


A ~ $\frac{1}{2}$ DIA. 1 REQ.

MS2038 WRAPAROUND, PA TUBE.
INSIDE VIEW SHOWN FROM REAR.

DETAIL B

Figure 4. Modification of Wraparound Shield MS2038 (Sheet 2)



A \approx $\frac{1}{7}$ " DIA

MS 2038, SHIELD, TUBE

- NOTE: 1. LOCATING DIMENSIONS ARE INSIDE DIMENSIONS.
2. MOUNT ONE NT108-6, SPRING NUT - ITEM 160.
IN CUTOUT.

DETAIL C

Figure 4. Modification of Wraparound Shield MS2038 (Sheet 3)

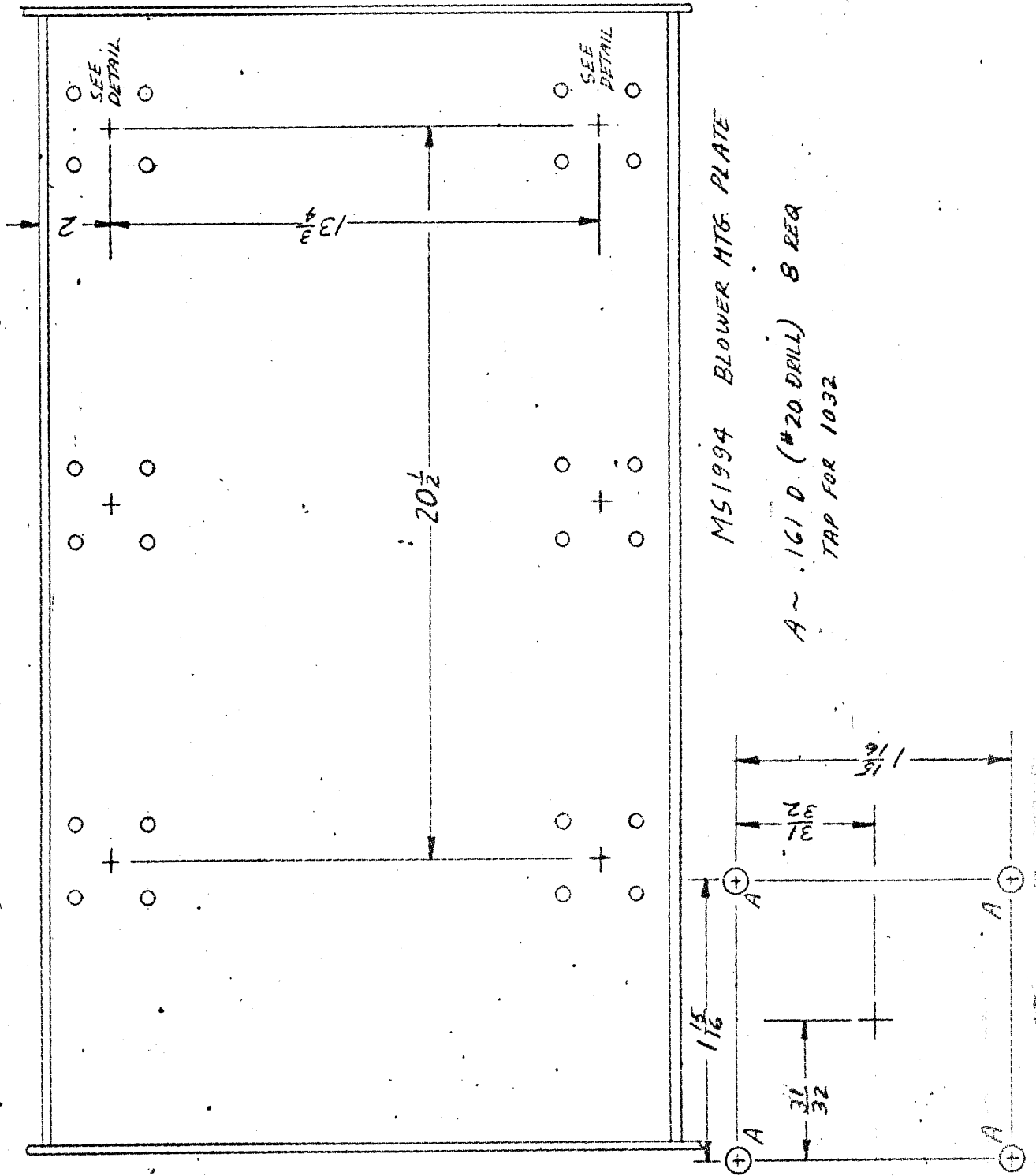
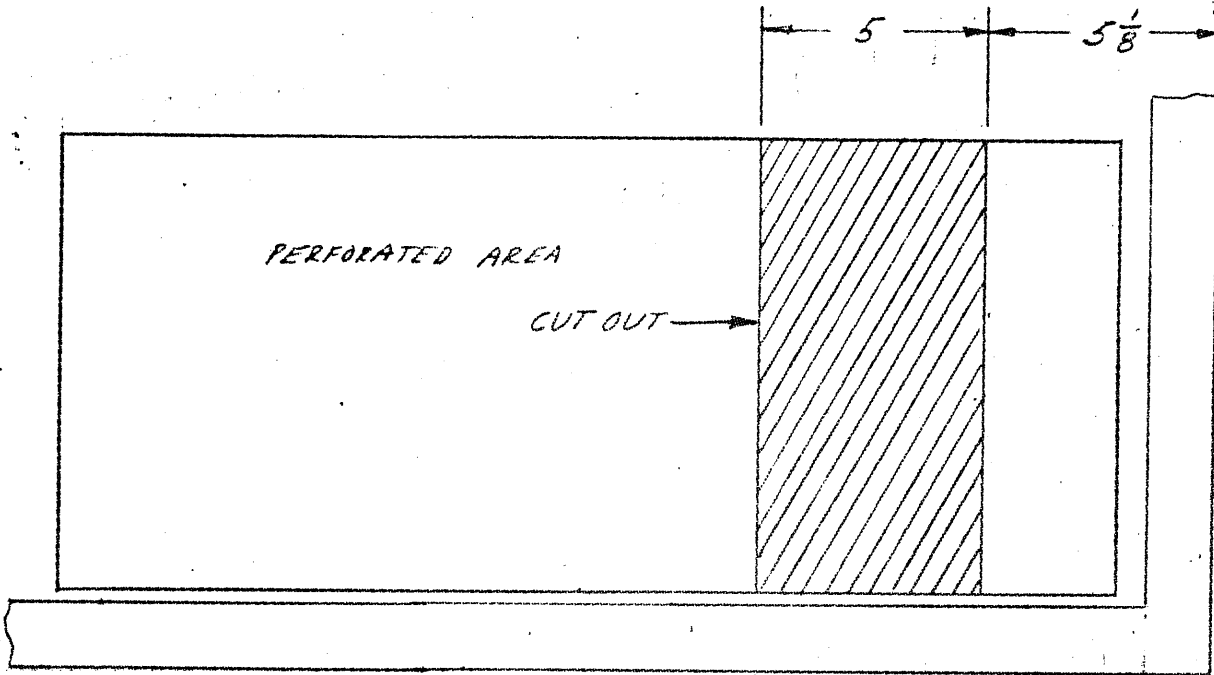


Figure 5. Modification of Blower Mounting Plate MS1994

UNCLASSIFIED



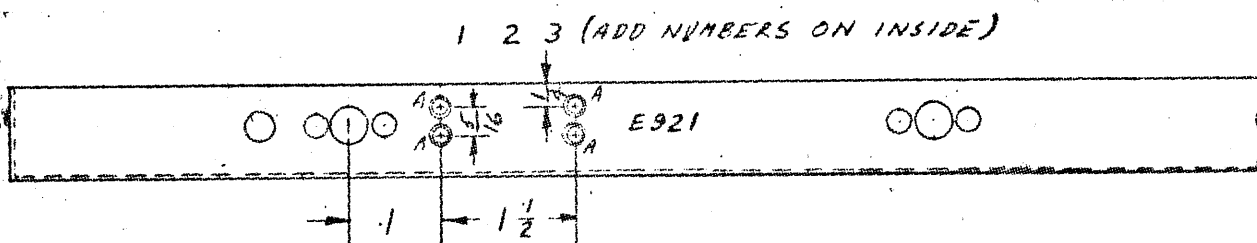
10K FRAME
REAR OF TRANSMITTER
TOP VIEW

MS1548 SHIELD, TOP, MAIN FRAME

Figure 6. Modification of Main Frame Top Shield MS1548

UNCLASSIFIED

UNCLASSIFIED



A ~ $\frac{1}{8}$ DIA C'SK 82° TO .230R MS1547 CHASSIS, PA DECK
4 REQ.

REAR VIEW OF TRANSMITTER, LEFT EDGE
OF LIP

ADD LETTERING E921
WITH STAMP ITEM 113

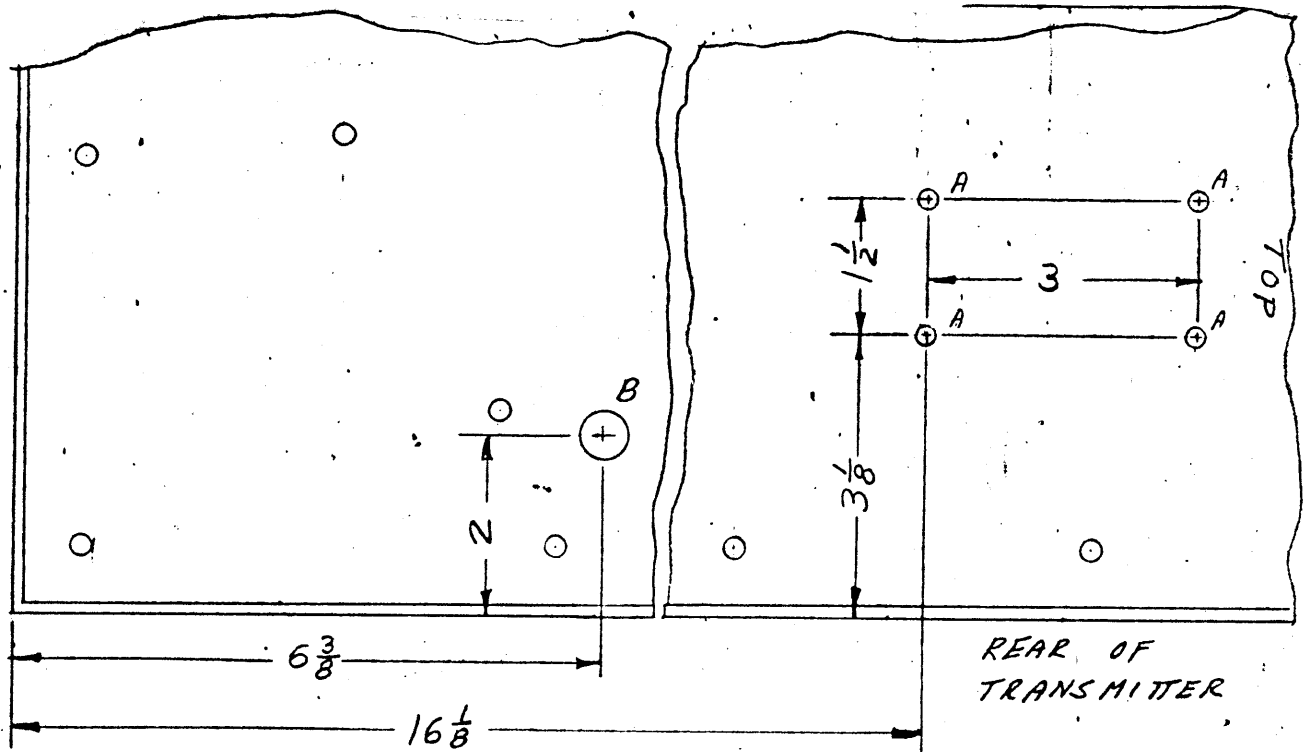
DETAIL A

Figure 7. Modification of PA Deck Chassis MS1547 (Sheet 1)

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Page 39 of 50

UNCLASSIFIED



MS1547 CHASSIS, PA DECK
TOP VIEW SHOWN.

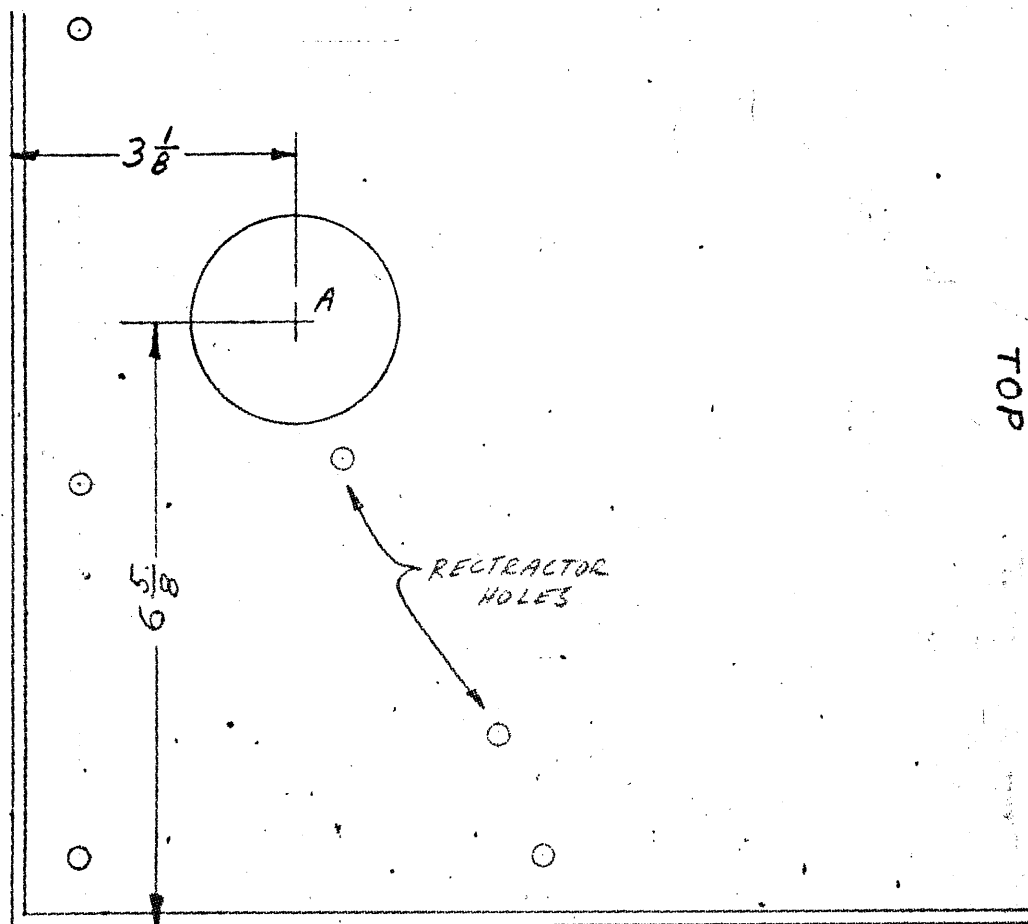
A ~ $\frac{13}{64}$ DIA. 4 REQ.

B ~ $\frac{1}{2}$ DIA. 1 REQ.

DETAIL B

Figure 7. Modification of PA Deck Chassis MS1547 (Sheet 2)

UNCLASSIFIED

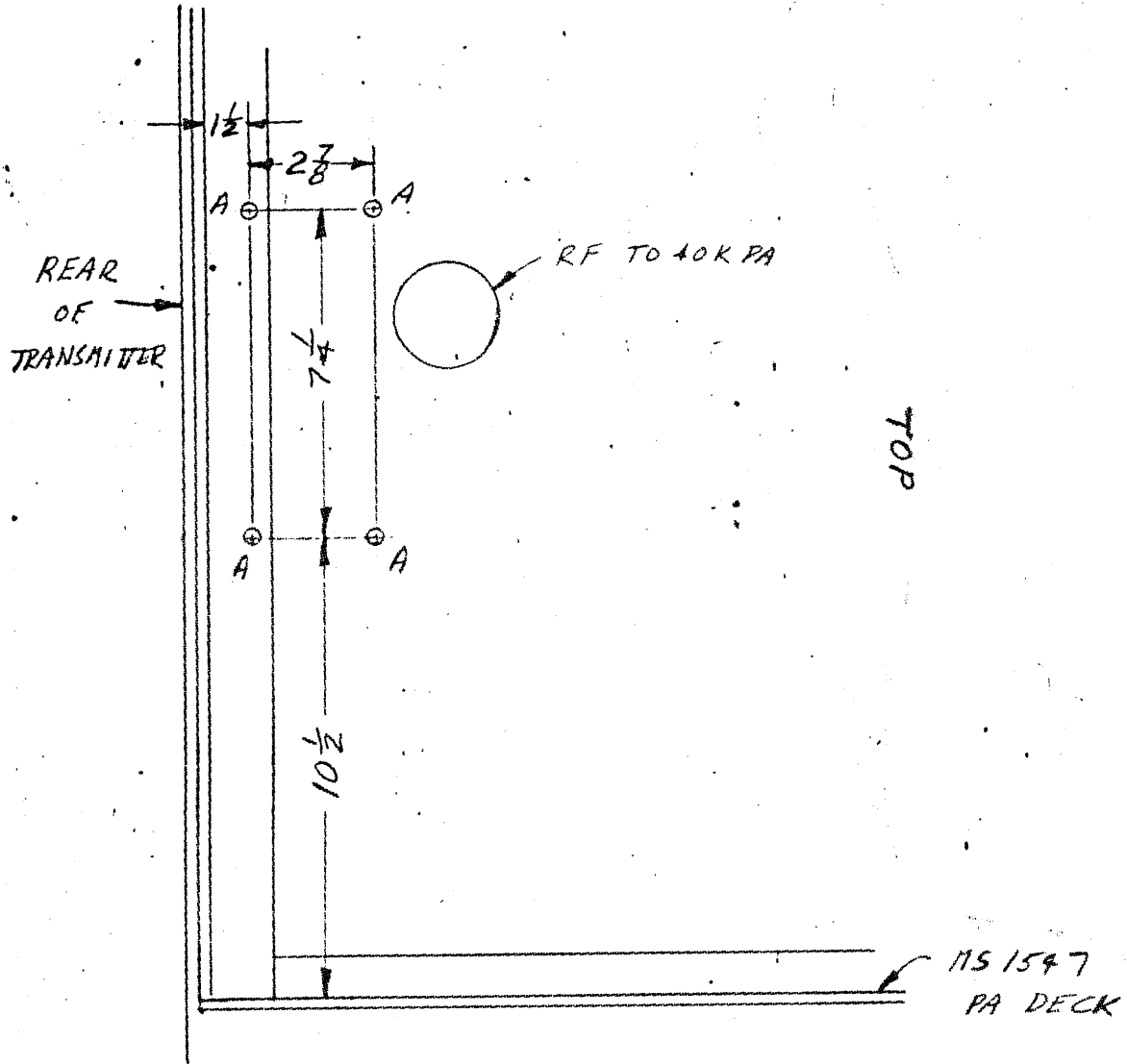


A ~ 2 1/4 DIA. 1 REQ

MS1547 CHASSIS, PA DECK
TOP VIEW LEFT REAR CORNER

DETAIL C

Figure 7. Modification of PA Deck Chassis MS1547 (Sheet 3)

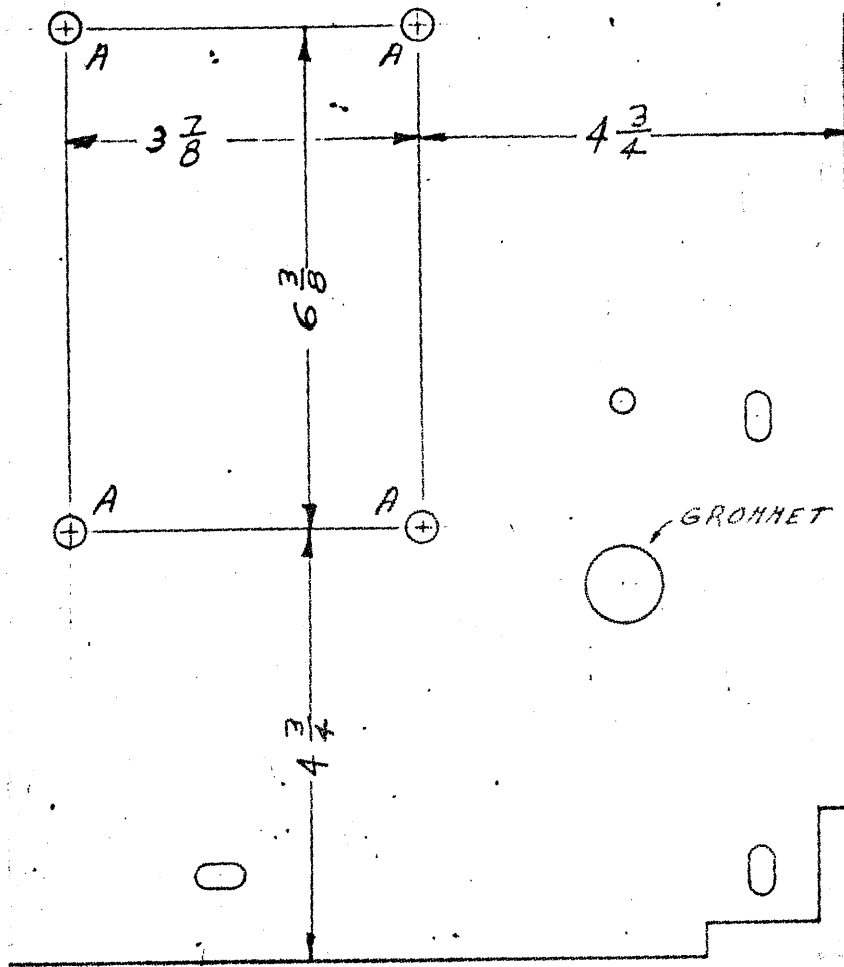


A ~ $\frac{15}{64}$ DIA 4 REQ.

NOTE: DIMENSIONS ARE GIVEN AS INSIDE DIMENSIONS. DRILL THROUGH INTO 40 K PA FRAME.

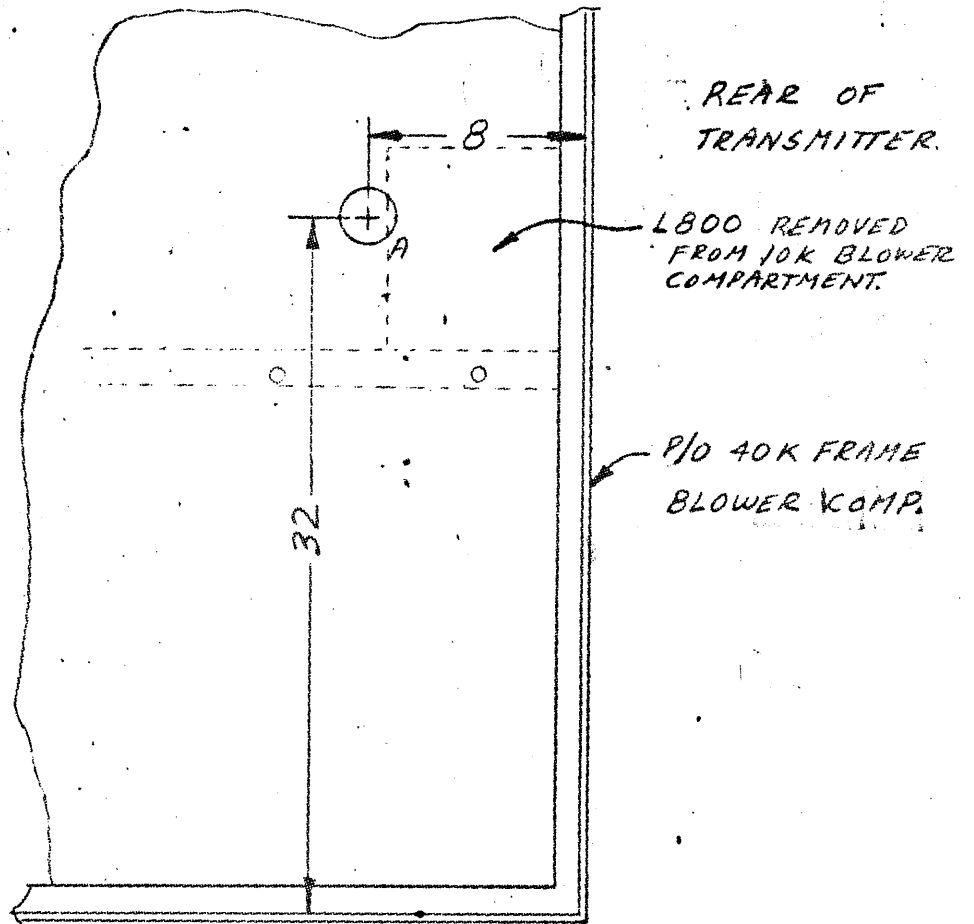
MS 1592 SHIELD, RIGHT SIDE

Figure 8. Modification of MS1592 Shield



$A \sim \frac{5}{16}$ DIA 4 RER MS1500 DECK, BLOWER MOUNTING

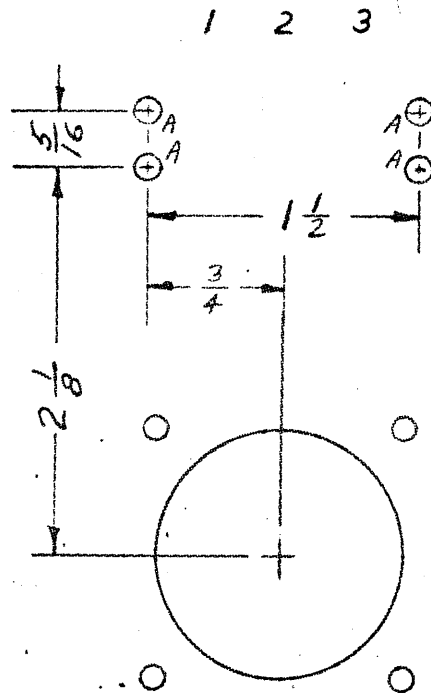
Figure 9. Modification of Blower Mounting Deck MS1500



MS1830 SHIELD, RIGHT SIDE 10K
VIEWED FROM 40K BLOWER COMPARTMENT.

A ~ 2 1/4 DIA. 1 REQ.

Figure 10. Modification of Shield MS1830



J1000

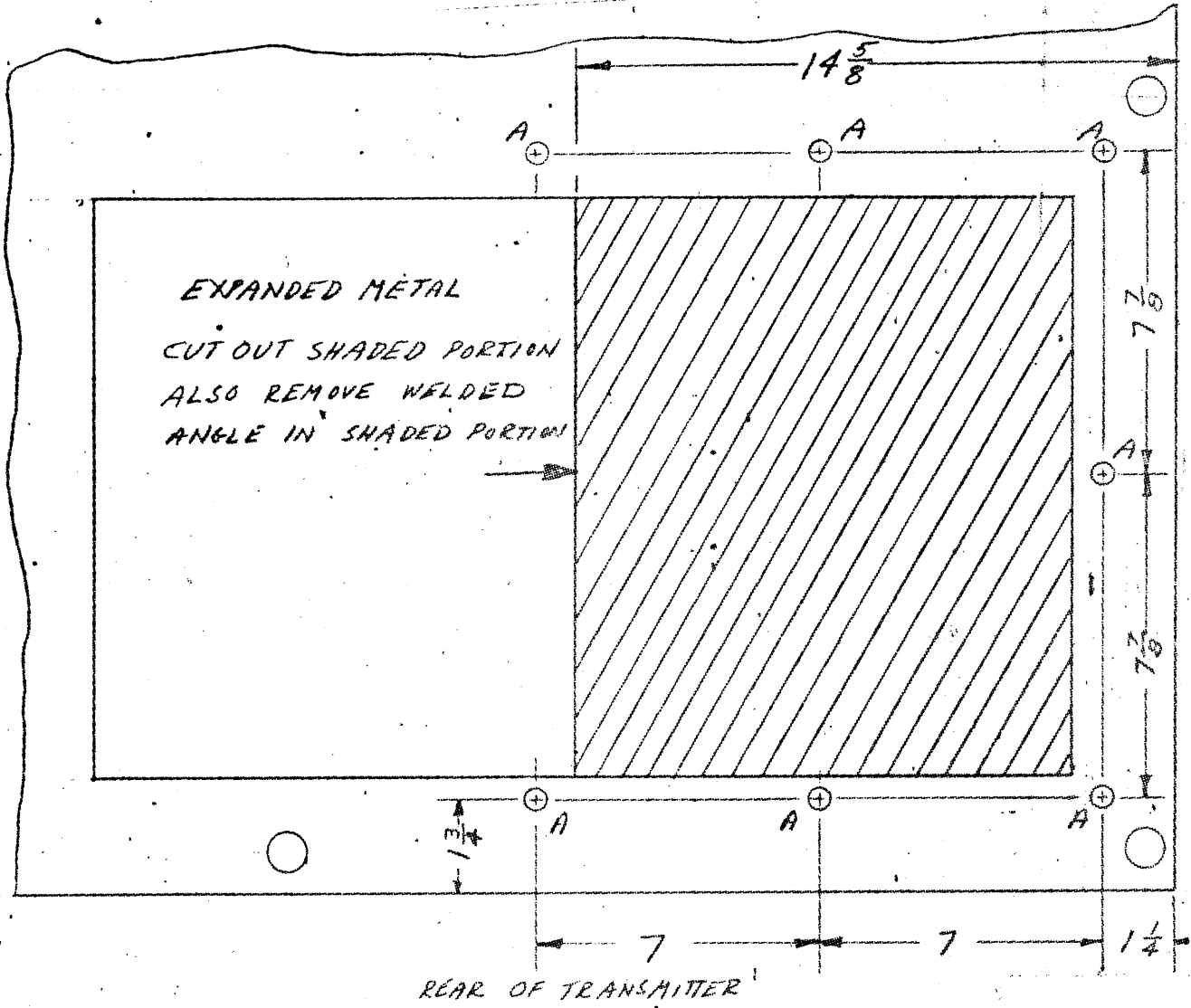
A ~ $\frac{9}{64}$ DIA. 4 REQ.

ADD LETTERING E1011

WITH STAMP (Item 114)

MS3679 PLATE, SHIELD

Figure 11. Modification of Shield Plate MS3679

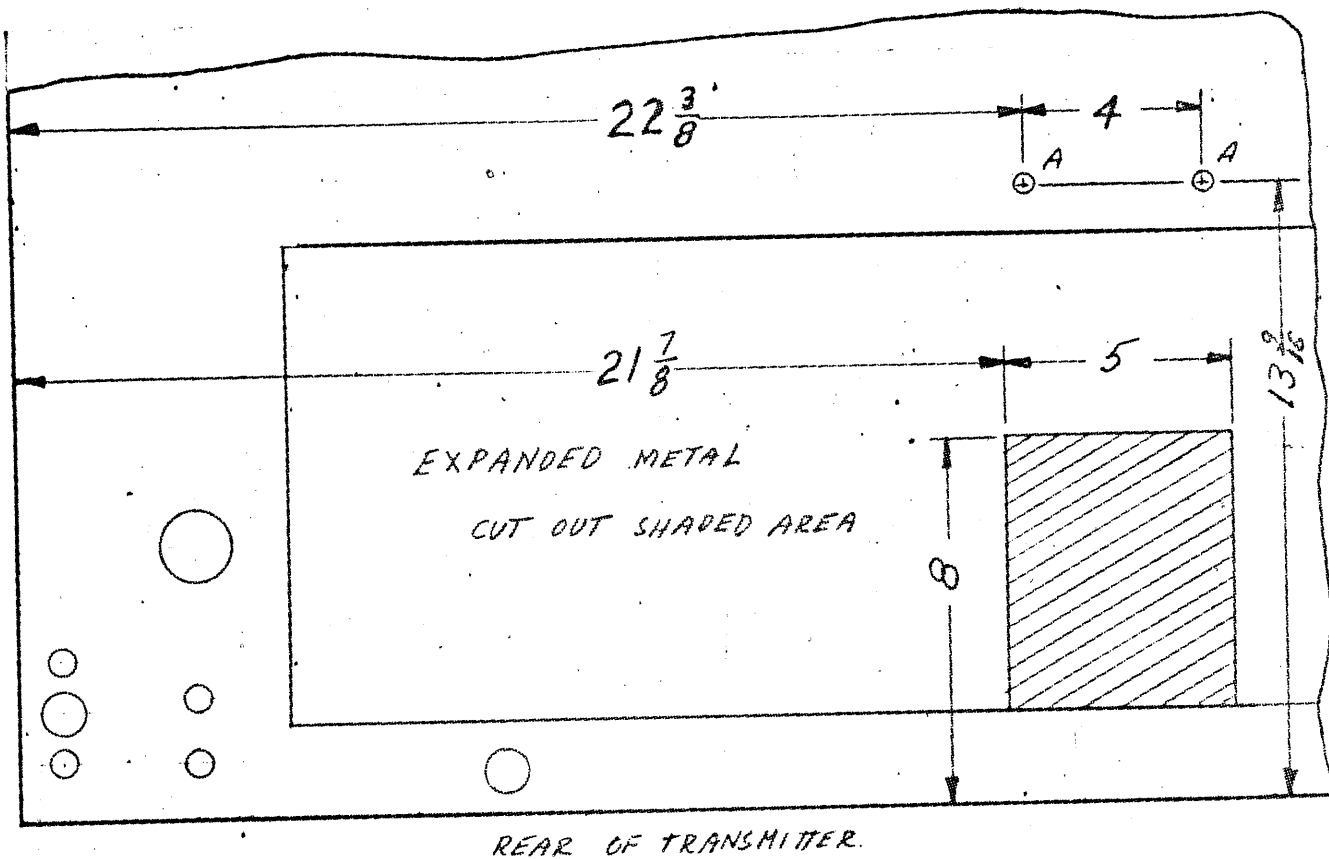


A ~ $\frac{13}{64}$ DIA. 7 REQ.

MS 1997. COVER, TOP, 40K
TOP

Figure 12. Modification of Top Cover MS1997, 40-KW Section

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A ~ $\frac{13}{64}$ DIA. 2 REQ.

MS1699 COVER, TOP, 10K

TOP

Figure 13. Modification of Top Cover MS1699, 10-KW Section

UNCLASSIFIED

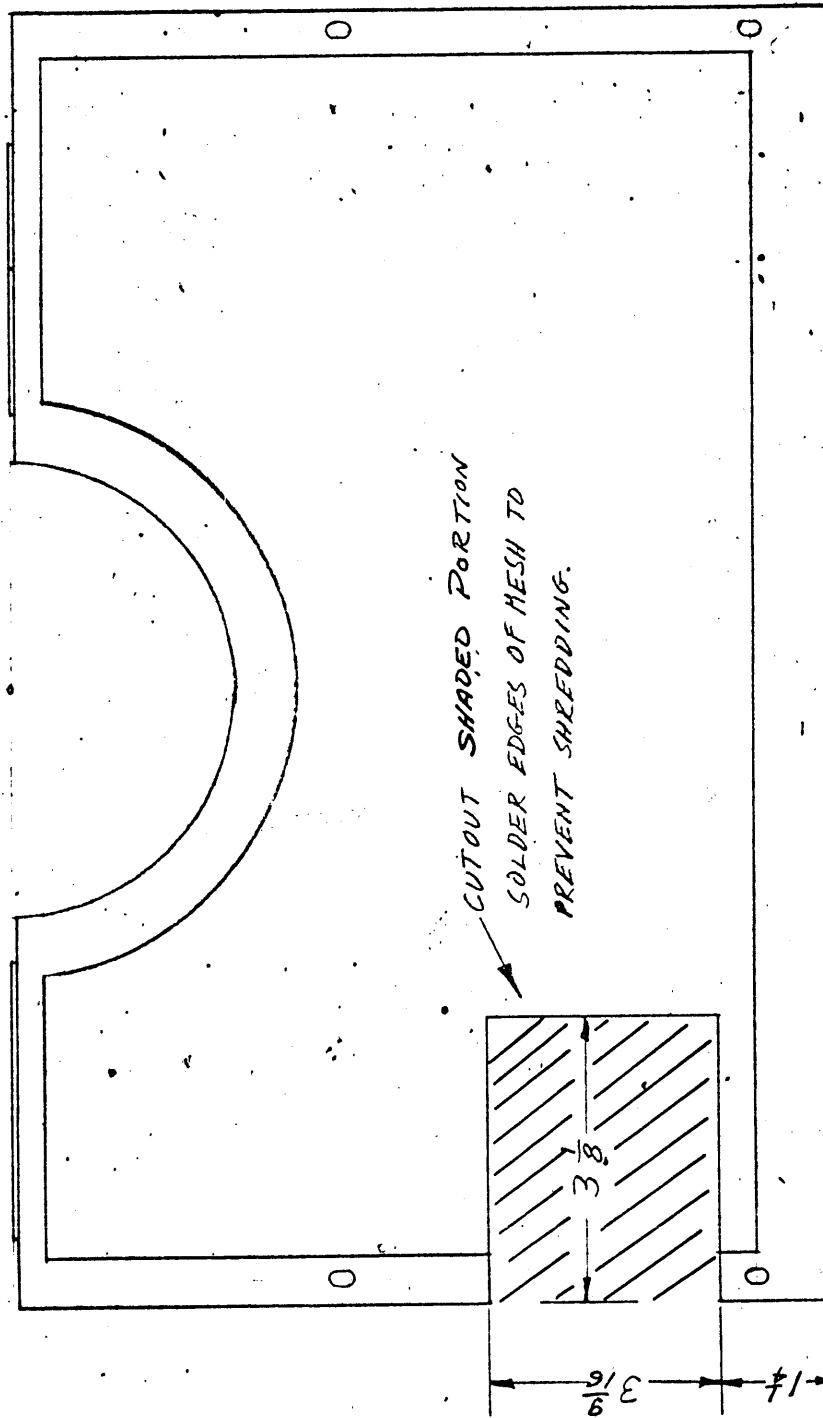
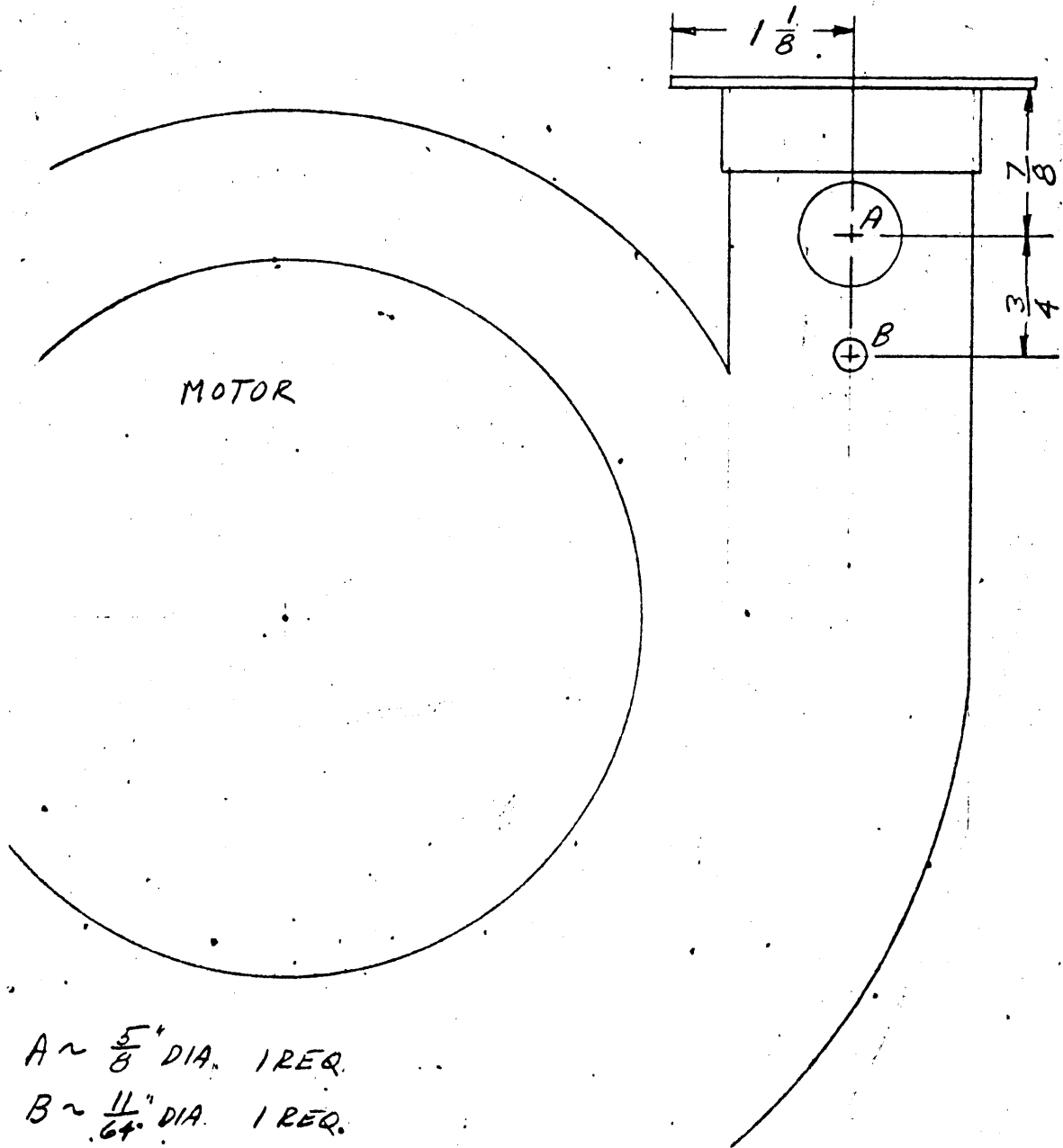


Figure 14. Modification of PA Tube Plate MS2045



MOTOR

A ~ $\frac{5}{8}$ " DIA. 1 REQ.

B ~ $\frac{1}{4}$ " DIA. 1 REQ.

BL103 MODIFICATION

Figure 15. Modification of BL103

(UNCLASSIFIED)

ROUTINE INSTRUCTIONS

1. Corrections to publications and charts. The applicable equipment technical manuals shall be corrected in accordance with the following instructions.

(a) Maintenance Support Activities shall make the corrections immediately but shall keep the superseded data in the book for support of equipments that have not been modified. Holders of equipment shall not make these corrections or replacements until after the field change has been accomplished.

(b) Correct the following technical manuals in accordance with the temporary corrections specified:

Operator's Manual (IN-0320) for Synthesized GPT-4OK Transmitter - temporary correction T-1.

Maintenance Manual (IN-316) for Radio Transmitting Set Model GPT-1OK - temporary correction T-1.

Maintenance Manual (IN-0319) for GPT-4OK Transmitter - temporary correction T-1.

(c) This field change does not affect any other publications, plans or charts.

2. Record of Accomplishment. Personnel making this field change shall record the completion date of the change on the Electronic Equipment History Card, NAVSHIPS 536, and on the Record of Field Changes Card, NAVSHIPS 537.

3. Disposition of Replaced Material. Parts removed when performing this field change shall be turned into the nearest supply activity for processing in accordance with current Bureau of Ships instructions.

4. Disposition of Field Change Bulletin. Maintenance Support Activities shall maintain a library copy of this field change bulletin. Holders of equipment shall not destroy this field change bulletin until the field change has been accomplished, the equipment tested, and the applicable manuals, drawings, charts, and identification plates have been corrected or replaced.

(UNCLASSIFIED)

TEMPORARY CORRECTION TO TECHNICAL MANUALS FOR
RADIO TRANSMITTING SET AN/FRT-40C

This temporary correction revises the AN/FRT-40C Operator's Manual, and the Maintenance Manuals for 10-KW Transmitter (Volume II) and 40-KW Transmitter (Volume III) to reflect equipment modification as a result of the Vapor Cooling Field change. The purpose of this field change is the drastic in the noise level and the relative ease with which the heat from the transmitter can be removed from the transmitter to the outside of the building. A secondary purpose is the reduction of ambient temperatures around one or a multiple number of transmitters and a possible increased tube life expectancy.

When this change is included in the manual, the manual shall cover the equipment as though the Vapor Cooling field change has been accomplished. This correction does not supersede any other corrections or changes.

Maintenance Support Activities shall make this correction in the technical manual immediately but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment accompanied by technical manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen and ink corrections. Insert these temporary corrections in the Operator's Manual immediately after the front cover.

Modification of the AN/FRT-40C transmitter to incorporate Vapor Cooling necessitates changes and/or additions to the appropriate instructions manuals as indicated in paragraphs 1, 2, and 3 below.

1. OPERATORS MANUAL. Amend the Operators Manual for synthesized GPT-40K Transmitter (IN 0320) as follows:

a. In figure 1-1, show a blank panel for the solid state power supplies in the 10-KW and 40-KW rocks.

b. Page 1-2, paragraph 1-2, Block Diagram Analysis. Change the last sentence on page 1-2 to read: "Important cooling air ducts and the water cooling components are also interlocked."

c. Add paragraph 1-3, Vapor Cooling Block Diagram Analysis and an associated Vapor Cooling System Functional Diagram as follows:

1-3. VAPOR COOLING SYSTEM ANALYSIS. (See figure 1-3).

a. GENERAL. Synthesized Transmitter GPT-40KU vapor cooling system utilizes heat necessary for vaporization of water for cooling purposes to achieve higher anode dissipation capability. In this system, the driver

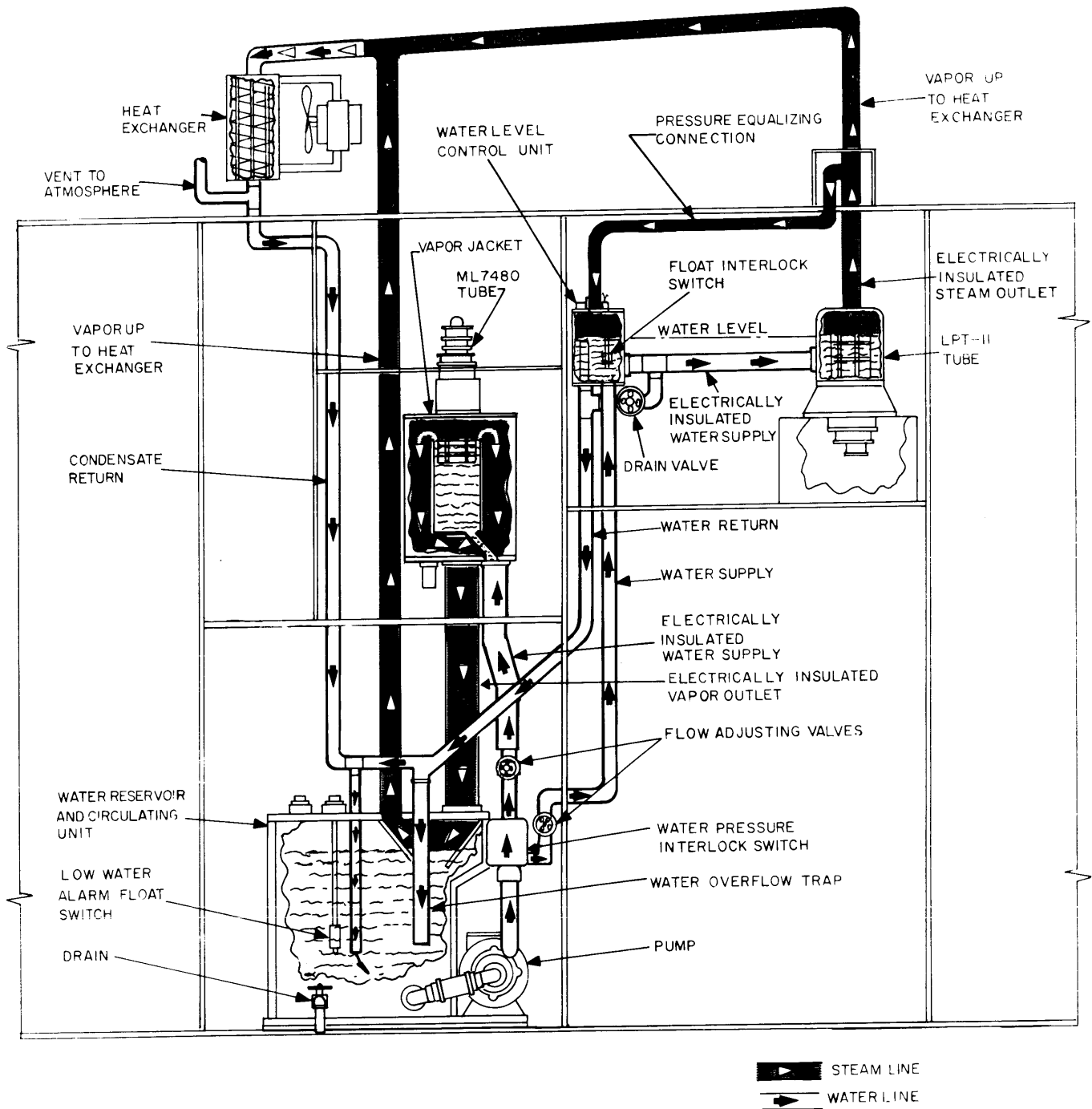


Figure 1-3. Vapor Cooling System Functional Diagram

and final power amplifier tubes, with specially designed anodes are immersed in a jacket partially filled with distilled water. The water, which has a temperature of about 95°C, is heated and converted to steam at 100°C, thus absorbing 540 calories heat from the anodes per gram of water evaporated. As a result of this conversion, a 1600 fold volume increase creates a strong turbulence around the heavily ribbed anodes. This assures nucleate boiling and prevents the formation of vapor films that impede the heat transfer to the water and cause overheating and destruction of the tubes.

b. WATER RESERVOIR AND CIRCULATING UNIT. The water reservoir and circulating unit is located in the lower section of the final power amplifier compartment. The reservoir stores 12 gallons of distilled water in a heat insulated container. The reservoir is equipped with a low water sensor and a water sight glass that allows visual inspection of water level. The circulation unit consists of a centrifugal water pump that provides the necessary water pressure required to maintain the water level in the driver and final amplifier boilers.

c. WATER PRESSURE SWITCH. The water pressure switch is located above the water pump in the final power amplifier compartment. The purpose of the water pressure switch is to prevent the filaments of the driver and final amplifier tubes from being turned on without the air and water cooling units functioning.

d. FLOW ADJUSTING VALVES. The flow adjusting valves regulate the volume of water that is supplied to both; the water level control unit and driver amplifier; and the final power amplifier.

e. WATER LEVEL CONTROL UNIT. The water level control unit is located in the driver amplifier compartment. The water level is maintained by the pressure generated by the water pump. Excess water is returned to the water reservoir via the water return line. The water level in the water level control unit is also maintained in the ML-LPT-11 driver amplifier vapor jacket.

f. ML-LPT-11 Vapor Jacket. Heat generated by the driver tube (ML-LPT-11) caused the water in the vapor jacket to boil. The steam, generated by this boiling is exhausted vertically (upward) to the heat exchanger.

g. ML-7480 VAPOR JACKET. Water is supplied to the boiler of the final amplifier tube (ML-7480), directly from the water pump. The steam generated by the final amplifier boiler is exhausted, along with excess water, through the reservoir and up to the heat exchanger.

d. In table 2-2, make the following corrections.

(1) Page 2-6, Numerical Designation 135, delete the "EXTERNAL" Position of the INTERLOCK switch and Circuit or Condition and replace with:

<u>Position</u>	<u>Circuit or Condition Checked</u>
PA WATER	Indicates water level in Water Level Control Unit

(2) Page 2-8, Add Numerical Designation 159 as follows:

<u>Panel Designation</u>	<u>Function</u>
WATER ON	When lit, indicates water is flowing in cooling system.

e. In table 2-3 make the following changes:

(1) Page 2-9, Numerical Designation 221, change the "EXTERNAL" Position of the INTERLOCK switch to read:

<u>Position</u>	<u>Circuit or Condition Checked</u>
PA WATER	Water level in reservoir.

(2) Page 2-9, Numerical Designation 221, change the AIR SW position of the INTERLOCK switch to read:

<u>Position</u>	<u>Circuit or Condition Checked</u>
AIR SW PA TUBE	Main PA filament blower operating.

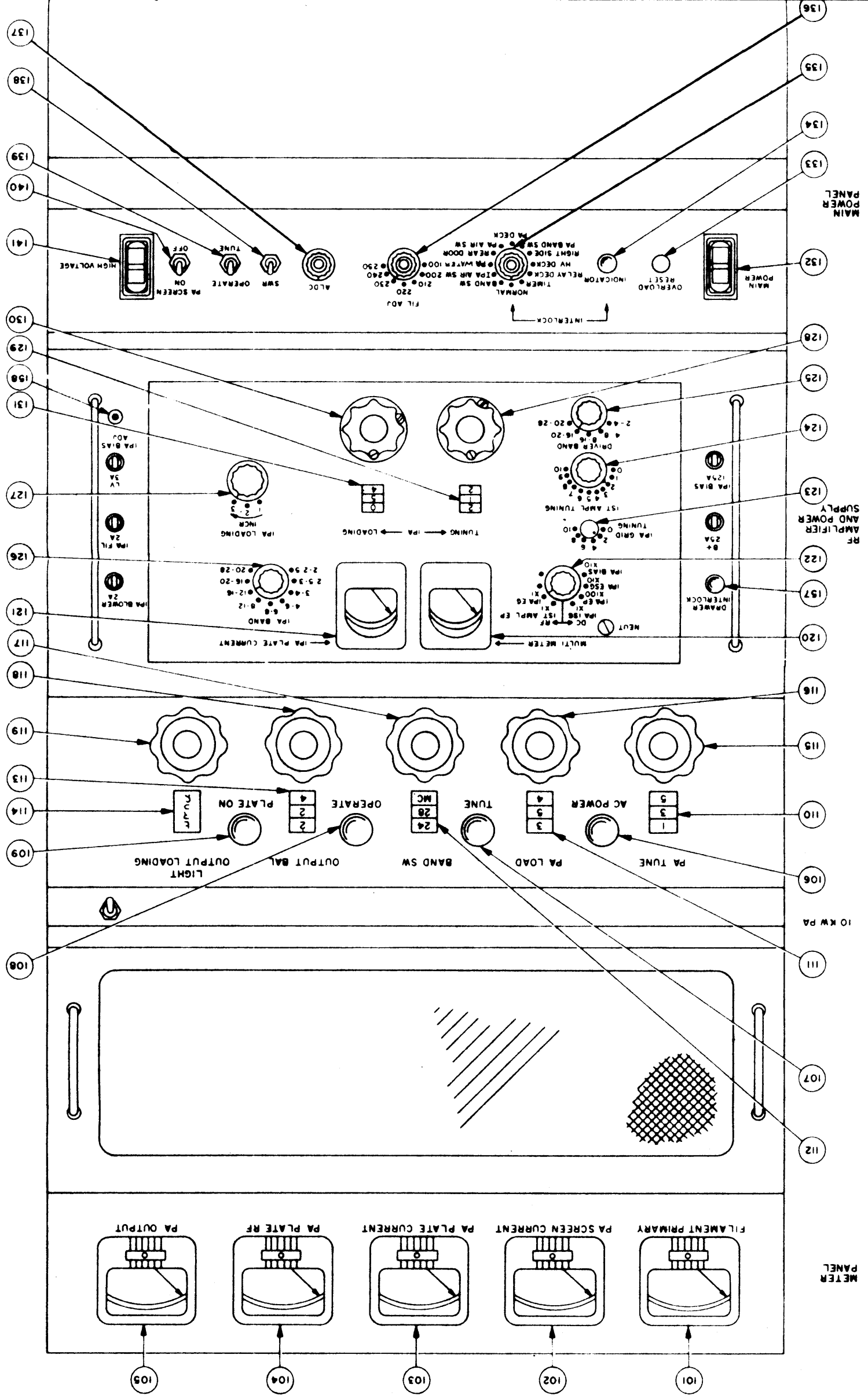
(3) Add the following to Numerical Designation 221:

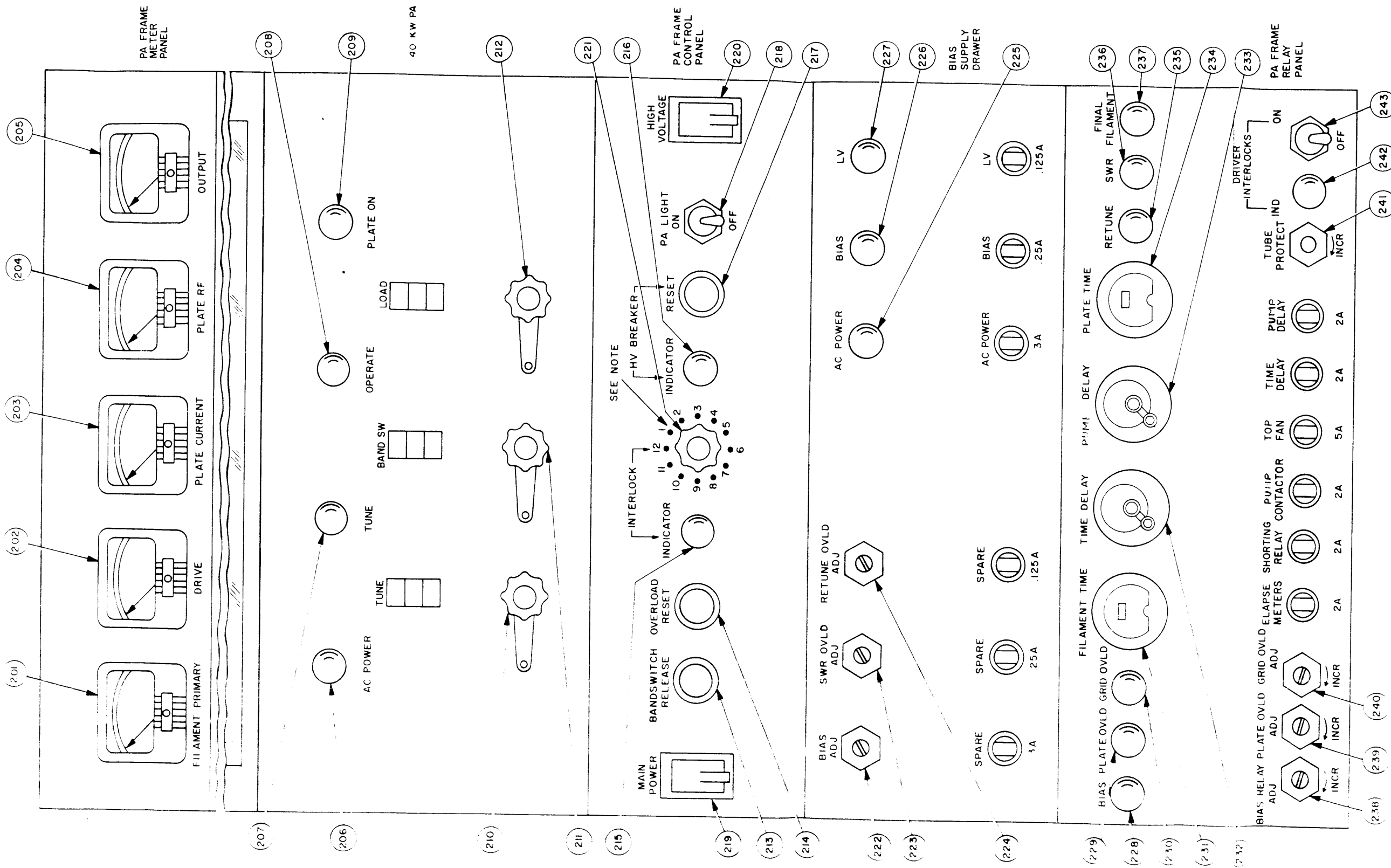
<u>Position</u>	<u>Circuit or Condition Checked</u>
AIR SW PA COIL	Main PA bandswitch cooling.

(4) Page 2-10, Numerical Designation 253, change the word "BLOWER" to read "PUMP" in both the Panel Designation and Function Columns.

f. In table 2-4, Page 2-11/2-12, Numerical Designation 253, delete the word "BLOWER" and insert "PUMP" in the Panel Designation and Functions Columns.

g. Replace Figures 2-2, 2-3, and 2-4 with the attached figures.





NOTE

INTERLOCK SWITCH	
1 PA DECK	7 HV RECT
2 BIAS DRAWER	8 CROWBAR
3 AIR SW PA CONTROL	9 ANT TUNER
4 REAR DOOR (PA FRAME)	10 REAR DOOR (PS FRAME)
5 AIR SW PA TUBE	11 TIMER
6 BAND SW	12 PA TUBE

Figure 2-3. PA Frame. Operating Controls and Indicators

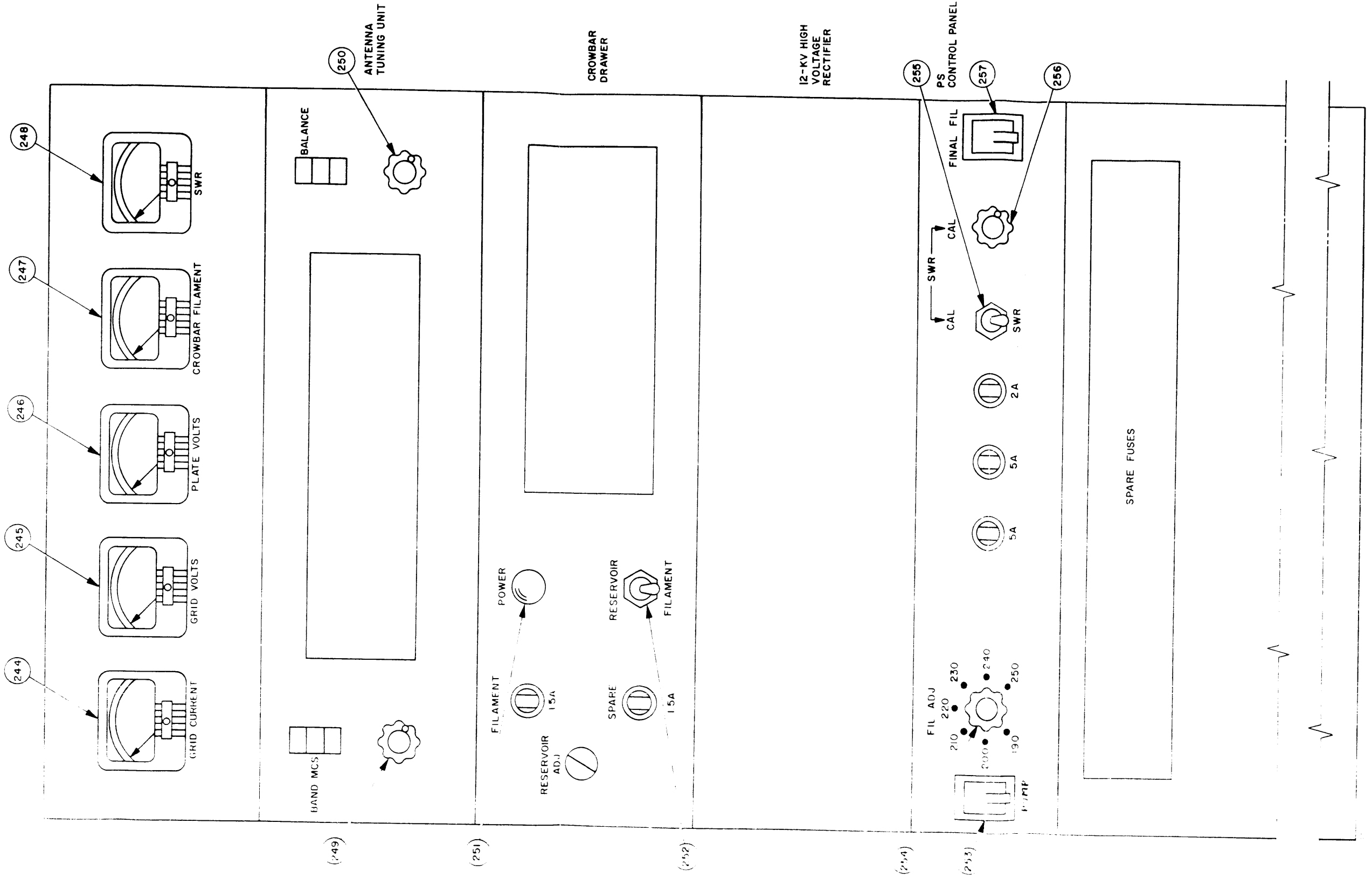


Figure 2-4. PS Frame. Operating Controls and Indicators

h. Page 3-2, Paragraph 3-3 subparagraph c as follows:

c. CLEANING OF VAPOR SYSTEM - Fill reservoir with 12 gallons of regular tap water (preferably hot), circulate through system for rinsing. (No power is to be applied to the tubes.) Rinse for 5 to 10 minutes, then drain entire system. Repeat about three times. Afterward, fill with 12 gallons of distilled water. Start pump running for approximately 2 minutes, turn filament of tubes on, and allow tubes to warm up. Operate the transmitter for about one day, check water resistivity frequently, drain and refill when specific resistance drops below 50K ohms/cm, or negative grid current on output tube reaches a value of about 50 milli-amperes. The negative grid current may be used as a check point indicating necessity for exchange of water in the reservoir. The system may require rinsing and refilling several times before resistivity of the water will remain at a reasonable high level. The resistivity of the water may be checked by using a Solu Bridge Model RD-328 or similar device for measuring the water resistivity. The conductance check can be made either by removal of a sample of water into a glass beaker or the probe can be placed into the reservoir and constant monitoring can be done. A place for this constant monitoring has been provided in the reservoir. The operation of the transmitter can continue until a reading of 50K ohms/cm has been reached, at which time the system should be drained and refilled with fresh water.

i. Page 3-5, change paragraph 3-6a(4) to read as follows:

(4) Set MAIN POWER circuit breakers (132 and 219) and PUMP circuit breaker (253) at on:

(a) Main frame blowers and water circulator pump should start up.

(b) TUNE Lamps (107 and 207); AC power lamps (206 and 225) and WATER ON lamp 159 should light.

(c) PA BIAS lamp (145) and, after a short delay, BIAS and LV lamps (226 and 227 respectively) should light.

(d) Adjust PA BIAS ADJ (151) on main frame relay panel so that PA BIAS meter (2) reads 300 volts.

(e) Set MULTIMETER switch (122) at DC IPA BIAS.

(f) Adjust IPA BIAS ADJ control (158) so that MULTIMETER (120) indicates -100 volts.

(g) Set FINAL FIL circuit breaker (257) at on.

(h) FILAMENT TIME meter (231) should start registering elapsed time.

(i) FILAMENT PRIMARY meters (101 and 201) should read 230 volts ac. If necessary, rotate FIL ADJ. switches (136 and 254 respectively) until desired reading is obtained.

(j) POWER lamp (251) on the crowbar drawer should light and CROWBAR FILAMENT meter (247) should indicate crowbar filament voltage when RESERVOIR-FILAMENT switch (252) is set at FILAMENT.

(k) At the expiration of the 5 minute preset timed delay period, INTERLOCK INDICATOR lamp (134) and DRIVER INTERLOCK IND (242) should light.

NOTE

If INTERLOCK INDICATOR lamp (134) does not light, rotate INTERLOCK switch (135) clockwise from its NORMAL position. At first position that INTERLOCK INDICATOR (134) goes out, note switch designation and check interlock at that location. When open interlock has been closed, return INTERLOCK switch to NORMAL position. When NORMAL position of switch lights INTERLOCK INDICATOR, proceed to next stop.

- j. Page 3-8, delete the note following paragraph 3-6b(7).
- k. Page 3-10. Delete the note at the top of the page.
- l. Page 3-11. Delete the second note from the top in the left hand column.
- m. Page 3-15, paragraph 3-15a, in the listing for PA frame control panel. Change the word BLOWER to "PUMP".
- n. Page 3-16, paragraph 3-15b in the listing for PA frame control panel. Change the word BLOWER to "PUMP".
- o. Page 3-16, Table 3-3 AUXILIARY AND MAIN FRAMES, FUSE LOCATION AND FUNCTION; delete the following:

Table 3-3

LOCATION	PANEL DESIGNATION	TYPE	CIRCUIT PROTECTED	REFERENCE DESIGNATION
Relay Panel	Main Blower	MDL-10	Main blower B800	F700 thru F702

p. Add the following to Table 3-3:

Table 3-3

LOCATION	PANEL DESIGNATION	TYPE	CIRCUIT PROTECTED	REFERENCE DESIGNATION
Relay panel	MAIN BLOWER	MDL-2	Main blower B801	F701
Relay panel	LIGHTS	MDL-2	Lights	F700

q. Page 3-17/3-18, Table 3-4, delete the words "BLOWER" and substitute the words "PUMP" in four places.

r. Add the following to Table 3-4.

Table 3-4. PA and PS Frames, Fuse Locations and Functions

LOCATION	PANEL DESIGNATION	TYPE	CIRCUIT PROTECTED	REFERENCE DESIGNATION
Pump Contact- or Box		MDL-1	Pump Fuse	F7101
Pump Contact- or Box		MDL-1	Pump Fuse	F7102
Pump Contact- or Box	PA Final Coil Fan	MDL-2	PA Final Coil Fan	F7103
Pump Contact- or Box	PA Tube Fan	MDL-1/2	PA Tube Fan	F7104
Pump Contact- or Box	Timer	MDL-1/2	Timer	F7105

2. MAINTENANCE MANUAL, VOLUME II. Amend the Maintenance Manual for Radio Transmitting Set Model GPT-10K (IN316) as follows:

a. In figure 1-1, show a blank panel for the solid state power supply in the 10-KW rack.

b. Page 1-1, table 1-1 change the TMC designation of High Voltage Rectifier AX-103 to "HVRC-1".

c. Page 1-2, paragraph 3 1-3c(5). Change this paragraph to read as follows:

(5) High Voltage Rectifier HVRC. The high voltage rectifier, rack-mounted below the power panel, contains solid state rectifier components and their associated circuitry. Operating as a high voltage rectifier deck associated with the main power supply, this unit generates 7500 volts dc for the plate of 10-KW power amplifier tube. Button connectors at the rear of the unit provide connection for the 3-phase input voltage and the dc output voltage. (These provide a quick disconnection for the high voltage rectifier removal.)

d. Page 1-3, paragraph 1-4 Technical Characteristics. Change the Cooling characteristic to "Vapor cool."

e. Page 1-3, a table 1-2 Electron Tube Complement. Delete V600-V605 and its associated Type and Function and in its place add:

Type	Function
Solid state	High voltage rectifier

Delete Type 4CX5000A and replace with "ML-LPT11"

f. Page 1-3, table 1-4 Fuse Complement. Delete F700-F702 and its associated Type and replace with:

REFERENCE SYMBOL	TYPE
F700	MDL 2
F701	MDL 2

g. Page 1-4, paragraph 2-1, third paragraph on page. Change AX-103 to "HVRC". In the last sentence of the fourth paragraph change to read "Important cooling air ducts and water passages are also interlocked for equipment safety."

h. Figure 2-1. In the High Voltage Rectifier Block, change AX-103 to "HVRC-1."

i. Page 2-12, paragraph 2-5b. In the fifth paragraph change AX-103 to "HVRC."

j. Page 2-18, paragraph 2-10. In the heading, change AX-103 to "HVRC."

k. Page 2-20, paragraph 2-10b. Change the first sentence of the first paragraph to read "The high voltage rectifier uses solid state rectifiers to produce an output of 7500 volts dc." Change the second paragraph to read: "Three-phase ac voltage is supplied to the high voltage rectifier from the secondary of transformer T800. This voltage enters the high voltage rectifier

at terminals E611, E610, and E609 and is applied to rectifiers CR601, CR602, and CR603, which form a three-phase bridge rectifier circuit. (See figure 2-12.)"

- l. Page 2-21, figure 2-12. Replace figure 2-12 with the new figure 2-12.
- m. Page 2-21, paragraph 2-11. In the first paragraph change ten to "Eleven." In the second paragraph: Change ten to "eleven", B800 to "B801", and eight to "nine". In the third paragraph on the sixth line after E3000-10, add: "S909".
- n. Page 2-23, paragraph 2-11. In the fourth paragraph, change the EXTERNAL position of the interlock switch to "PA WATER position." In paragraph 2-12, second paragraph, change the second sentence to read "Single-phase voltage from CB1000 is applied to main blower B807 through a fused line." After REAR FAN fuse F703, add "provided main breaker CB7401 and blower breaker CB8501 are ON."
- o. Page 2-24, paragraph 2-12. Delete the fourth paragraph, starting with "As previously described....." In the fifth paragraph add the following after the first sentence "provided CB7104 and CB8501 are ON." On the last line of the fifth paragraph change 10 to "11".
- p. Figure 2-19. Change the EXTERNAL position of the INTERLOCK switch to: "PA WATER."
- q. Figure 2-20. Replace this figure with a modified AC Power Distribution Simplified Schematic that follows.
- r. Figure 2-21. Change the tube type number for power amplifier V900 to: "ML-LPT-11"
- s. Page 3-3, table 3-2. Change the Normal Indication for step 5 to: "Main frame blower motor B801 operates."
- t. Page 3-6 table 3-3. In the Probable Trouble and Procedure columns for items 8 and 9 change B800 to "B801."
- u. Page 3-8, table 3-3. In the procedures column for Item 26, change the EXTERNAL/INTERLOCK switch position to: "PA WATER."
- v. Page 3-23, paragraph 3-8. In the heading, change AX-103 to "HVRC."
- w. Figure 3-5. Delete this figure.
- x. Figure 3-8. Replace figure 3-8 with a new figure.

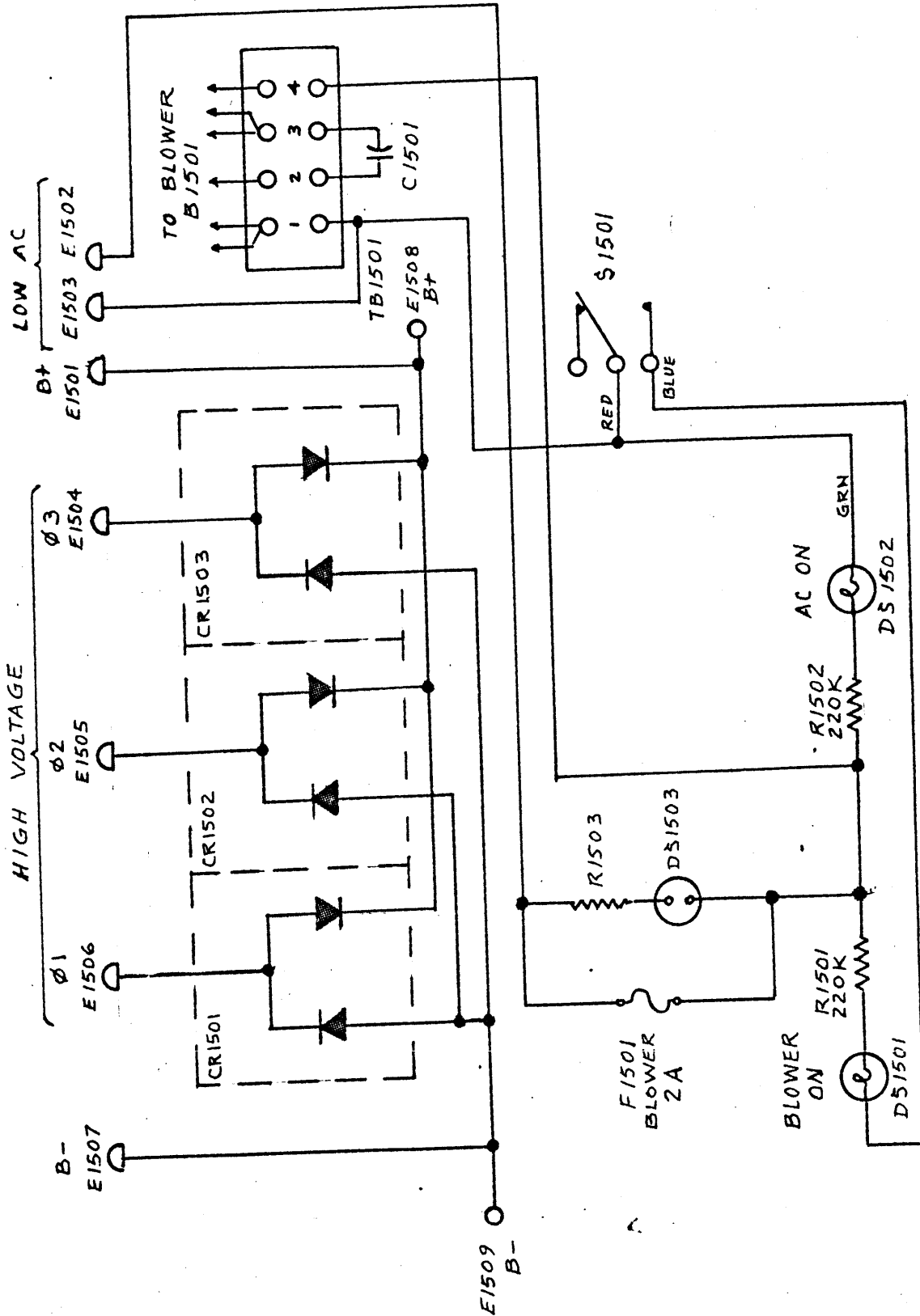


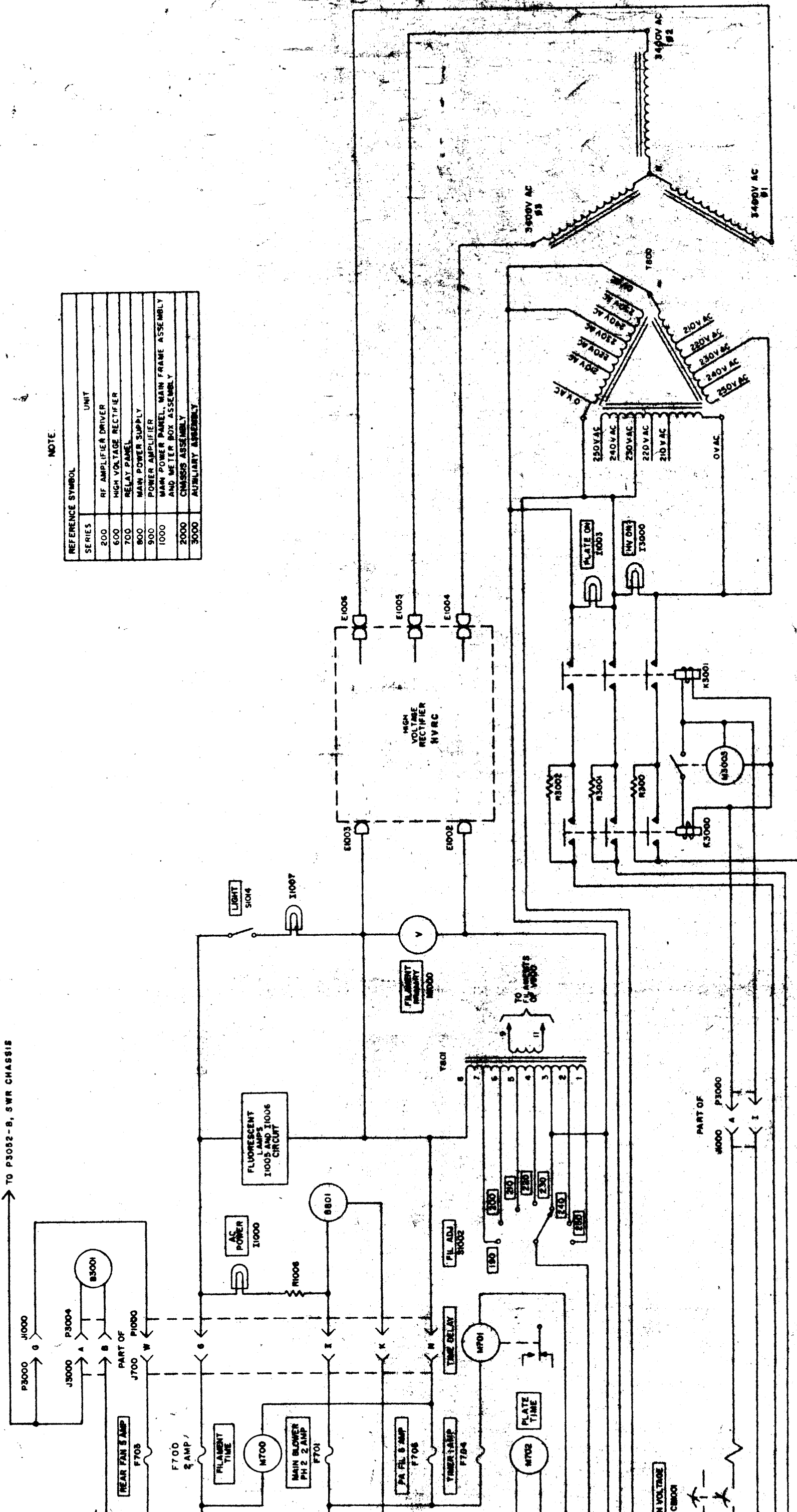
Figure 2-12. Solid State High Voltage Rectifier HVRC-1

CK894

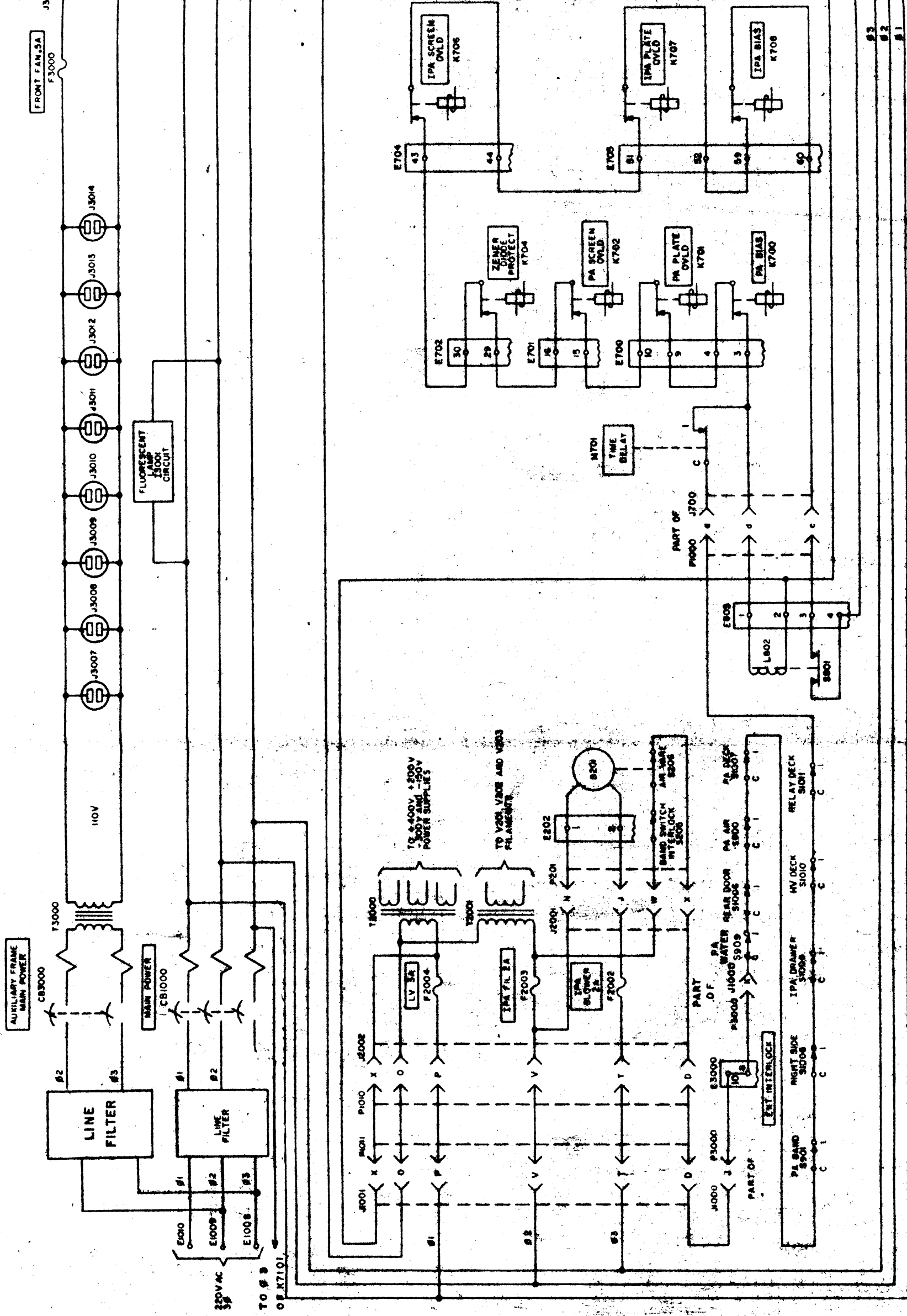
TO P3052-B, SWR CHASSIS

NOTE

REFERENCE SYMBOL	UNIT
SERIES	
200	RF AMPLIFIER DRIVER
600	HIGH VOLTAGE RECTIFIER
700	RELAY PANEL
800	MAIN POWER SUPPLY
900	POWER AMPLIFIER
1000	MAIN POWER PANEL, MAIN FRAME ASSEMBLY AND METER BOX ASSEMBLY
2000	CHASSIS ASSEMBLY
3000	AUXILIARY ASSEMBLY



Power Distribution Schematic



316-21

83
82
81

FRONT FAN, 5A
F3000

FLUORESCENT LAMP POWER CIRCUIT

AUXILIARY FRAME MAIN POWER

LINE FILTER

LINE FILTER

LV 3A F2004

IPA F.L.A. F2003

IPA BLOWER F2002

IPA BLOWER F2003

IPA BLOWER F2002

IPA BLOWER F2003

IPA BLOWER F2002

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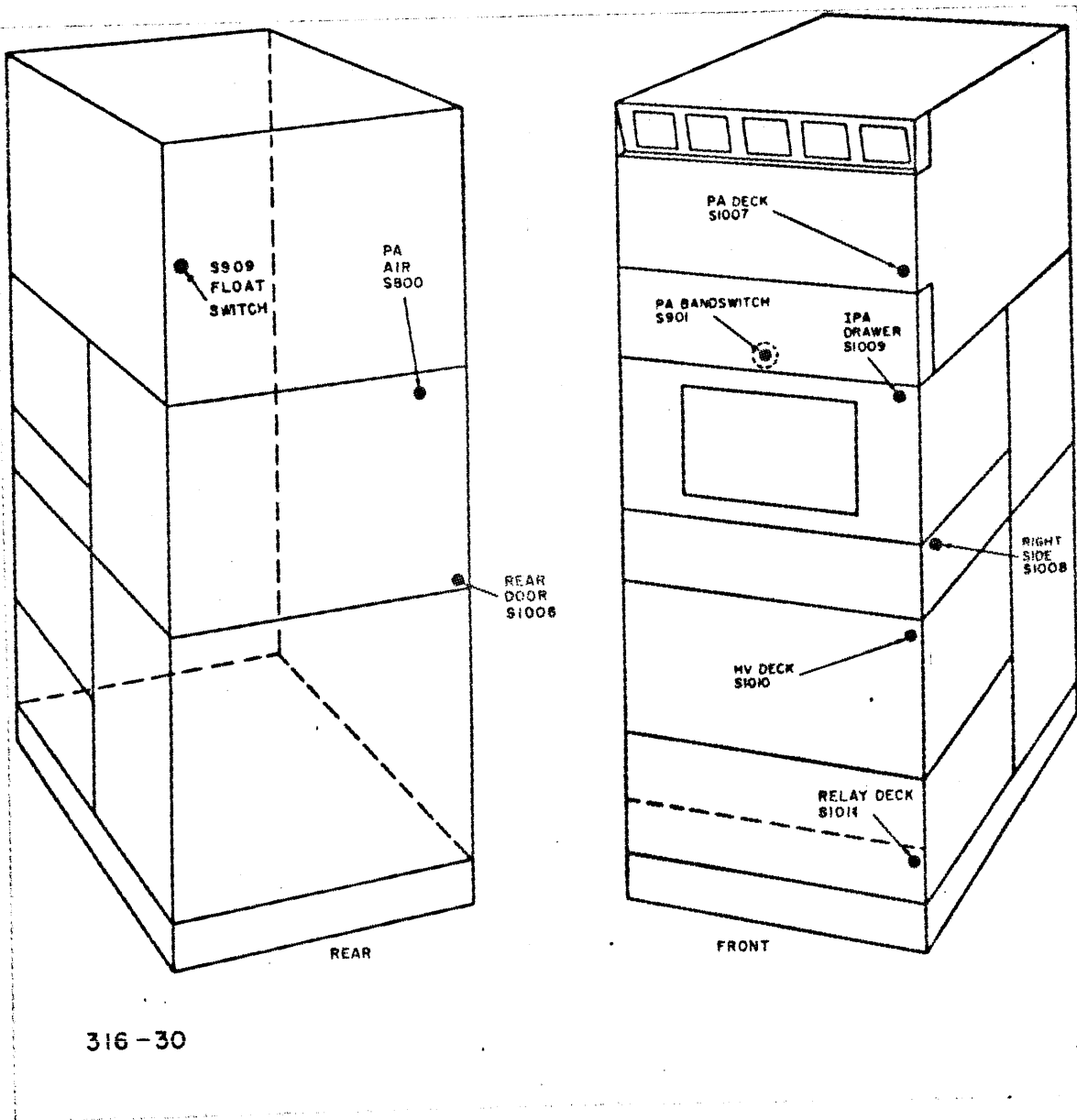


Figure 3-8. Location of Interlock Switches

y. Page 4-6, paragraph 4-7c. Change B800 to "B801".

z. Page 5-16, Parts List. Change the Listing for F700 and F701 thru F703 as follows:

SYM	DESCRIPTION	TMC PART NO.
F700	FUSE CARTRIDGE: time delay; 2 amps	FU102-2
F701 thru F702	Same as F700	

aa. Page 5-18, Parts List. In the SYM column, change X1705 to "X1706." In the SYM column change B800 to "B801". In the TMC Part No. column change BL111 to "BL103."

ab. Parts List. Add following components:

SYM	DESCRIPTION	TMC PART NO.
	Solid State High Voltage Power Supply	HVRC-1
C816	CAPACITOR, FIXED PAPER DIELECTRIC: 4uf±10%; 600 wvdc, hermetically sealed in cylindrical case.	CP41B1FF405K
J801	CONNECTOR, RECEPTACLE, ELECTRICAL: female, 4 contacts	MS3102A14S-2S
P801	CONNECTOR PLUG, ELECTRICAL: male, 4 contacts	MS3106A14S-2P
S909	PA WATER interlock switch; P/O Vapor Down Cooling System-D512529	
V900	ELECTRON TUBE: power amplifier; ceramic tetrode. (Shipped as a loose item)	ML-LPT-77
E1101	TERMINAL BOARD, BARRIER TYPE: 3 terminals	TM102-3

ac. Figure 6-1. Replace figure 6-1, sheet 4 on page 6-7/6-8 with the figure 6-1, sheet 4 attached.

MAIN POWER SUPPLY

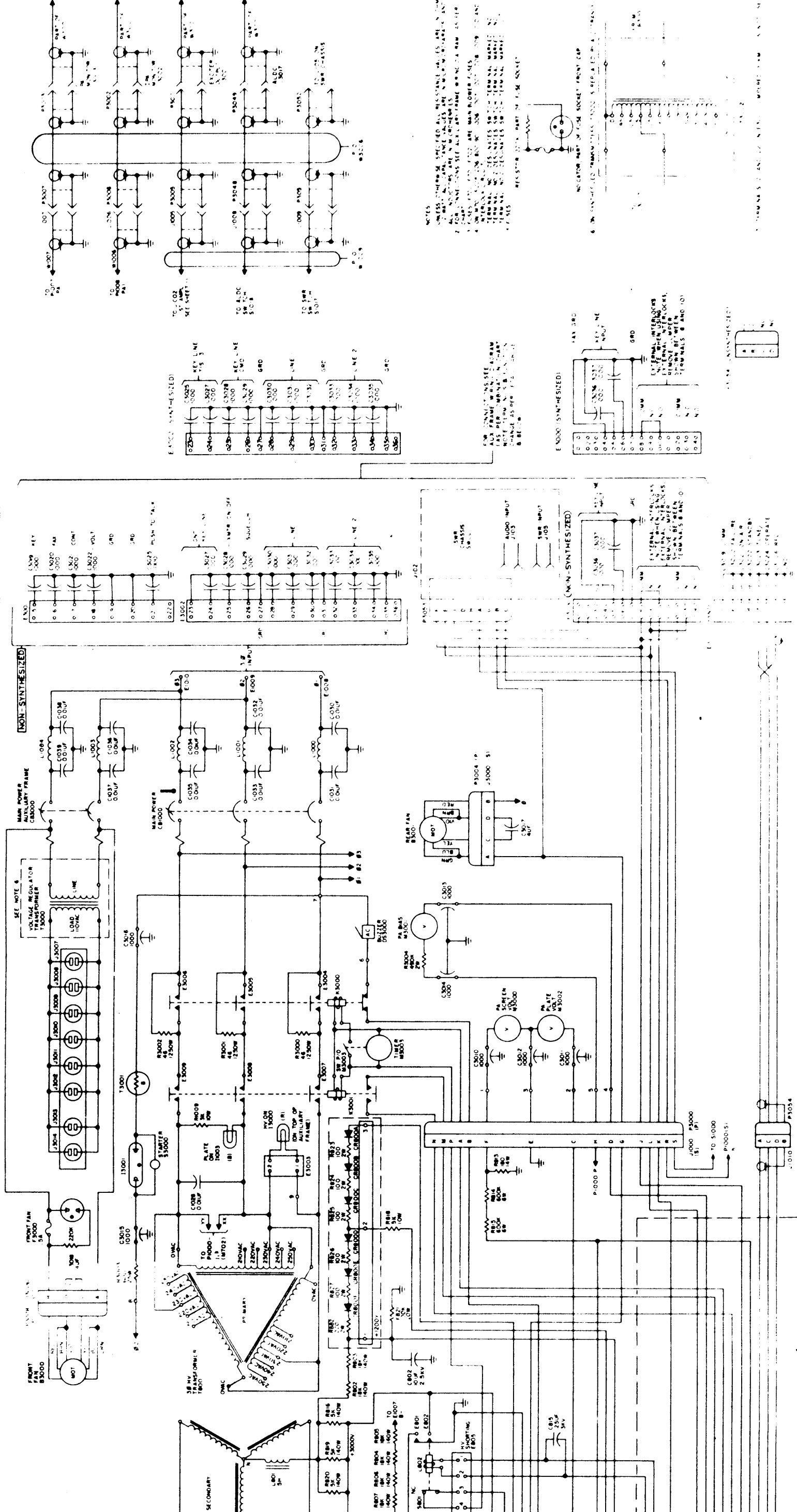


Figure 6-1. GPT-10K Transmitter, Overall Schematic Diagram (Sheet 4 of 4)

3. MAINTENANCE MANUAL, VOLUME III. Amend the Maintenance Manual for GPT-40K transmitter (IN 0319) as follows:

a. Figure 1-1. Modify the main frame and PA frames to show a blank panel instead of the High Voltage Rectifier Drawers.

b. Page 1-1, paragraph 1-3d. Change the fourth sentence to read: "The rear half houses parts associated with the main power supply and a water cooling system for the 10-KW PA and 40-KW PA tubes."

c. Page 1-3, paragraph 1-3e(1). After (standing wave ratio) add the word "meter".

d. Page 1-3, paragraph 1-4. Change the Cooling Characteristic to "10-KW and 40-KW PA vapor-cooled."

e. In table 1-2 change the V7301 Tube Type to "ML-7480." Delete V8401-V8406 and replace with HVRB-1 Solid State High Voltage Rectifier."

f. Page 2-1, paragraph 2-2, fourth paragraph. Change the first sentence to read "The solid state 10-KW high voltage rectifier HVRC-1 functions together with the" Change the sixth paragraph first sentence to read "High voltage for the 40-KW PA is supplied the solid state 40-KW high voltage rectifier HVRB-1."

g. Page 2-2, paragraph 2-4a. In the first sentence change the V7301 tube type to "ML-7480."

h. Page 2-7, paragraph 2-9. Change this paragraph to read: "The solid state 40-KW high voltage rectifier provides the required high voltage for the 40-KW PA. The rectifier input is the three-phase ac output of a delta-wye transformer configuration consisting of T8101, T8102 and T8103. These input connections are made at terminals E8109 and E8418, E8110 and E8119, E8111 and E8420, respectively.

The high voltage output of the three-phase, full-wave rectifier configuration developed at terminals E1501 (B+) and E1507 (B-) is applied to a choke input filter consisting of inductor L8101 and capacitors C8107 and C8108. Connected between the high voltage and B- terminals of the 12-KW high voltage rectifier (and across the filter capacitors) is a voltage divider consisting of resistors R8101 through R8114. High voltage for the 40-KW plate circuit is tapped off between resistors R8111 and R8112. The high voltage level is monitored by PLATE VOLTS meter M8203, connected across resistor R8101.

BLOWER ON and AC On indicators are also located in the solid state power supply to indicate when low level ac power is applied to the supply and to the blower motor. The supply line to the indicators is fused by F1501, a 2 ampere fuse."

i. Page 2-7, paragraph 2-10b. In the first paragraph, change ten to "Eleven" interlock switches, B800 to "B801", and eight to "nine" interlock switches. In the second paragraph, add "S909" in the second sentence.

j. Page 2-8, paragraph 2-10b. In the third paragraph, change the EXTERNAL position of the INTERLOCK switch to "PA WATER" position.

k. Page 2-8, paragraph 2-10c. In the first sentence, change Eleven to "Thirteen" interlock switches. In the second paragraph delete S7101 and add "S7105, S7106, and S7107."

l. Page 2-9, paragraph 2-12. Change BLOWER circuit breaker to "PUMP" circuit breaker.

m. Page 2-10, paragraph 2-12. Change the first paragraph to read: "Single phase voltage is applied to the PA coil blower B7103 by PUMP circuit breaker CB8501 and contacts of relay K7101. Relay 7101 is energized by the phase 1-to-phase 2 voltage. Phase 1 voltage is applied to one end of K7101 from CB8501. Phase 2 voltage is applied to the other end of K7101 from CB8501 through normally closed contacts of PUMP DELAY meter M7603, closed contacts of switch S3 on CB7401, and PUMP CONTACTOR fuse F7605." In the second paragraph change BLOWER to "PUMP" and PA blower B7101 to "PA coil blower B7103."

n. Figure 2-9. Replace figure 2-9 with a corrected figure enclosed.

o. Figure 2-11. Replace figure 2-11 with corrected figure enclosed.

p. Page 3-4, paragraph 3-9. Change this paragraph to read: System troubleshooting (table 3-2 and 3-3) localize troubles in the high voltage circuits of the solid state rectifier. When trouble has been isolated to a specific area, refer to the overall schematic diagram in section 6 and to the parts location diagram, figure 3-6, to locate the defective part.

r. Figure 3-6. Delete this figure.

s. Page 3-13, table 3-2. In step 6, delete reference to filaments of 40-KW high voltage rectifier.

t. Page 3-16, table 3-3. Change B800 to B801.

u. Page 3-18, table 3-3. Delete steps 24 and 25. In step 26, change EXTERNAL INTERLOCK switch position to "PA WATER."

v. Page 3-23, table 3-3. Delete step 69.

w. Page 3-24, table 3-3. Change EXTERNAL INTERLOCK switch position to "PA WATER."

x. Page 3-32, table 3-11. Delete table 3-11.

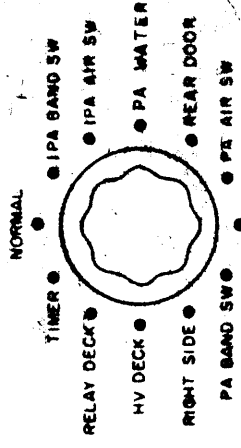
y. Page 4-1, paragraph 4-2b. Change the third sentence to read "Feel blower, pump, and fan motors for overheating and observe rotating parts for wear."

NOTES

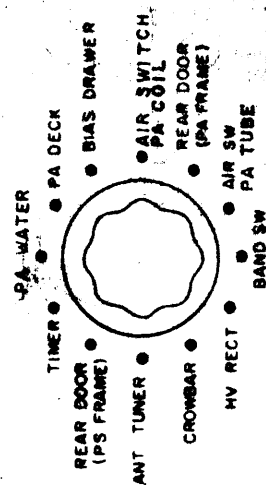
1. UNLESS OTHERWISE INDICATED, RESISTANCES ARE IN OHMS AND CAPACITANCES ARE IN UUF.
2.  INDICATES EQUIPMENT MARKING
- 3.

REFERENCE SYMBOL SERIES	UNIT
200	RF AMPLIFIER DRIVER
700	RELAY PANEL
800	MAIN POWER SUPPLY
900	POWER AMPLIFIER
1000	MAIN FRAME ASSEMBLY
2000	CHASSIS ASSEMBLY
3000	AUXILIARY FRAME
7100	POWER AMPLIFIER FRAME ASSEMBLY
7300	AMPLIFIER SECTION
7400	POWER AMPLIFIER CONTROL PANEL
7600	POWER AMPLIFIER FRAME RELAY PANEL
8000	POWER SUPPLY FRAME ASSEMBLY
8200	ANTENNA TUNER AND METER BOX
8500	POWER SUPPLY CONTROL PANEL

4. INTERLOCK SWITCH S1001 SHOWN IN EXTREME COUNTERCLOCKWISE POSITION AS VIEWED FROM END NEAREST CONTROL KNOB.



5. INTERLOCK SWITCH S7404 SHOWN IN EXTREME COUNTERCLOCKWISE POSITION AS VIEWED FROM END NEAREST CONTROL KNOB.



6. TERMINAL NO.1 DESIGNATES SWITCH TERMINAL MARKED "1".
TERMINAL NO.2 DESIGNATES SWITCH TERMINAL MARKED "2".
TERMINAL NO.3 DESIGNATES SWITCH TERMINAL MARKED "3".

7. ALL INTERLOCK SWITCHES ARE SHOWN IN NORMALLY OPERATED POSITION.

8. ACTUALLY REAR OF SHIELD

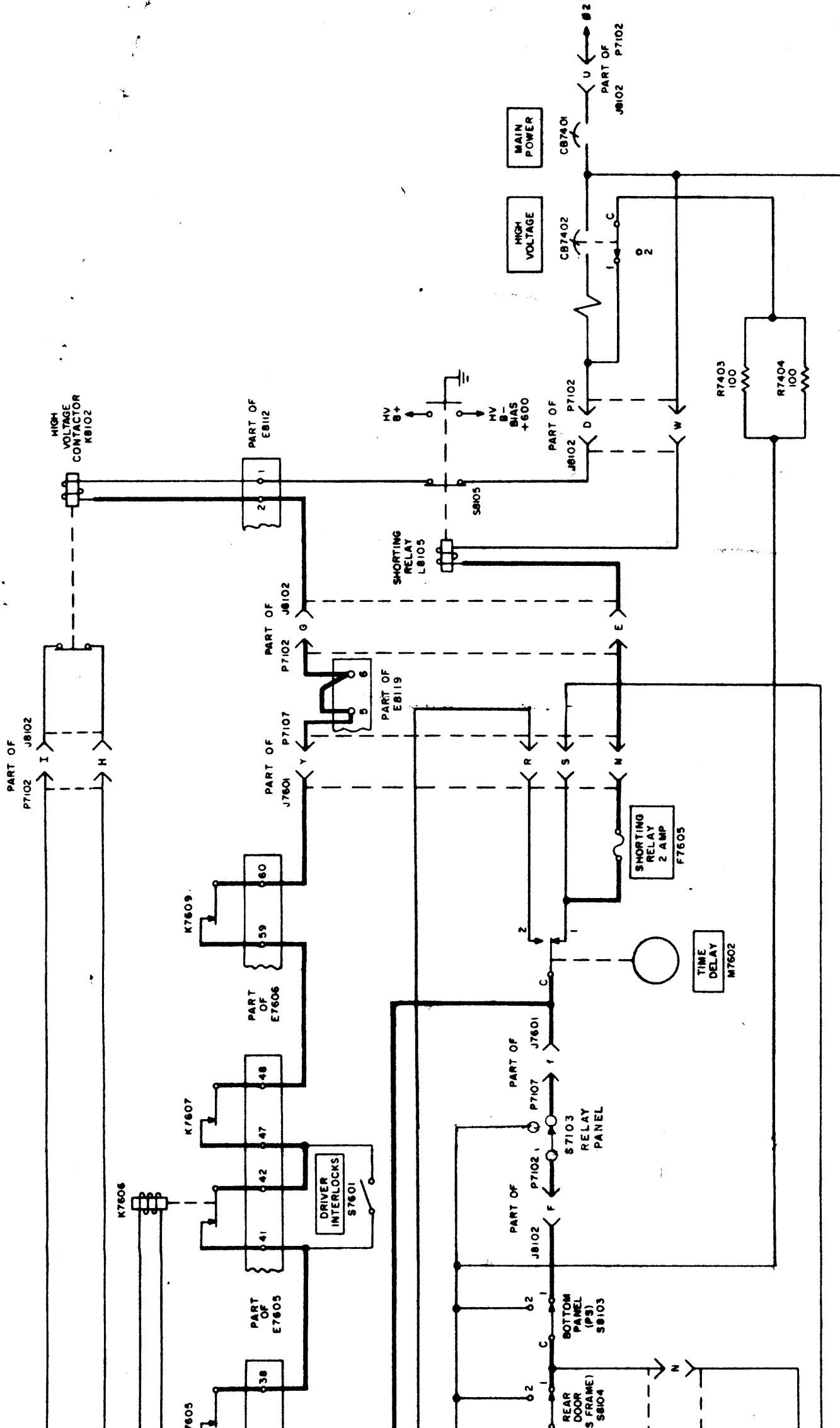
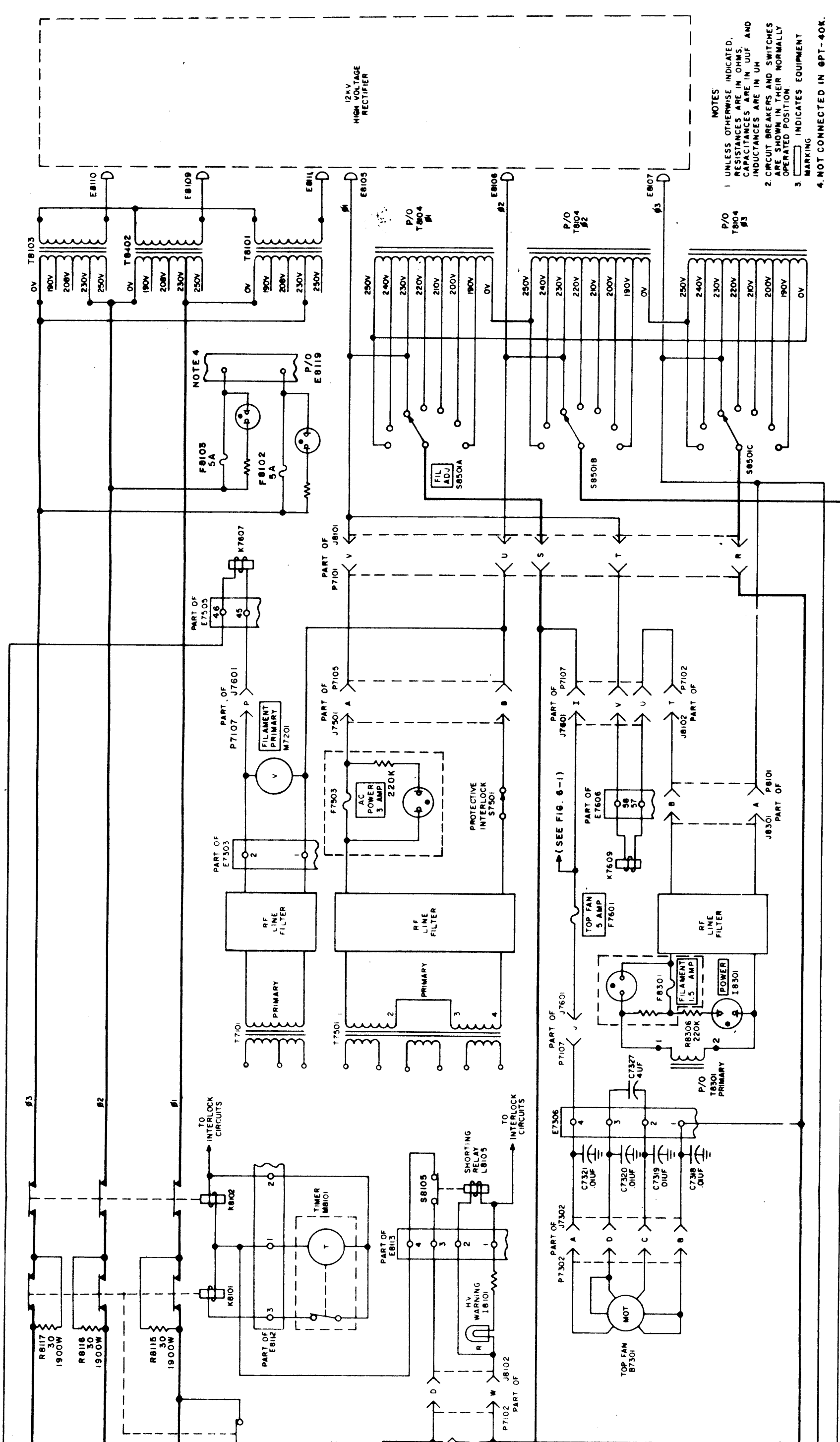


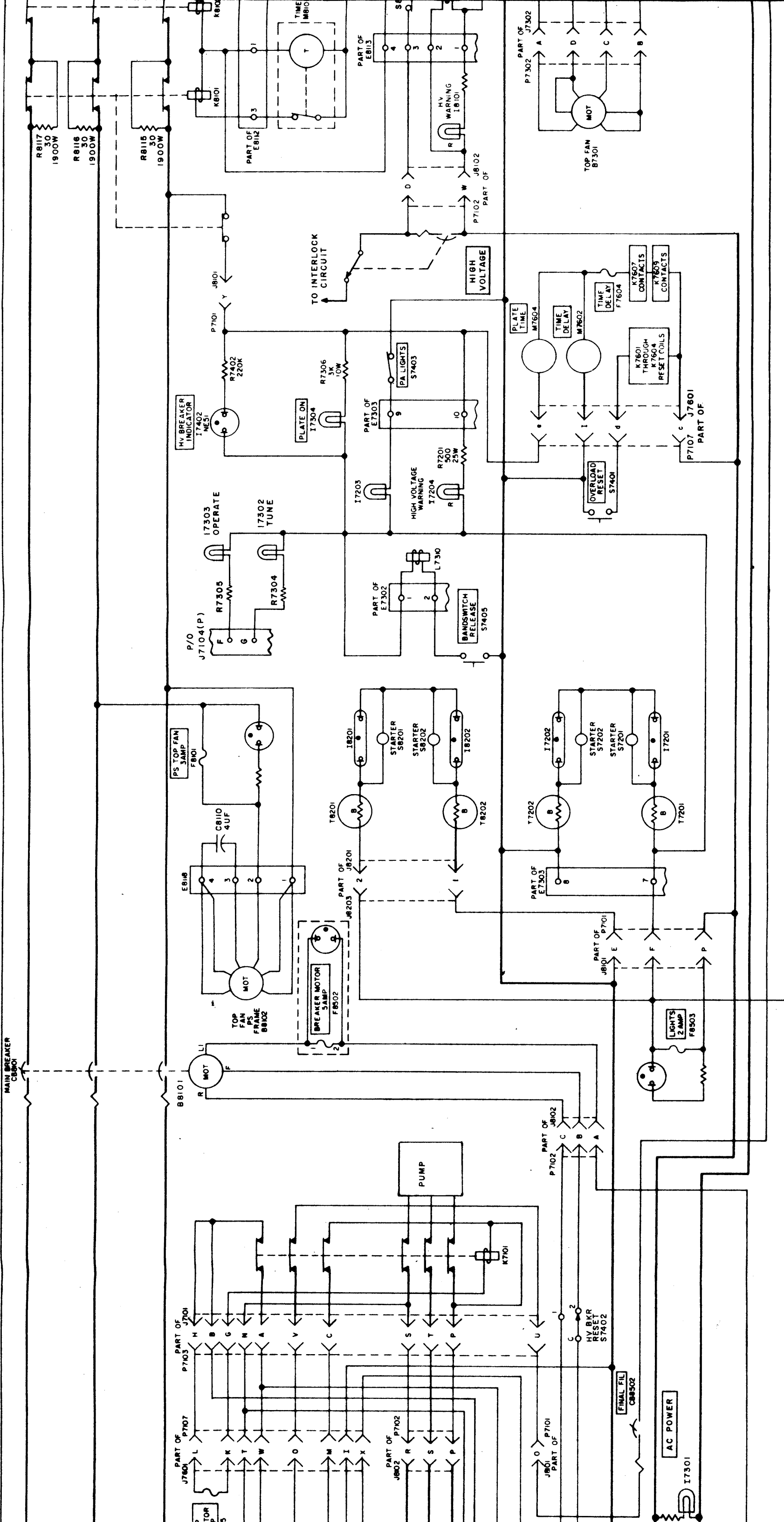
Figure 2-9. Interlock Circuits, Simplified Schematic Diagram

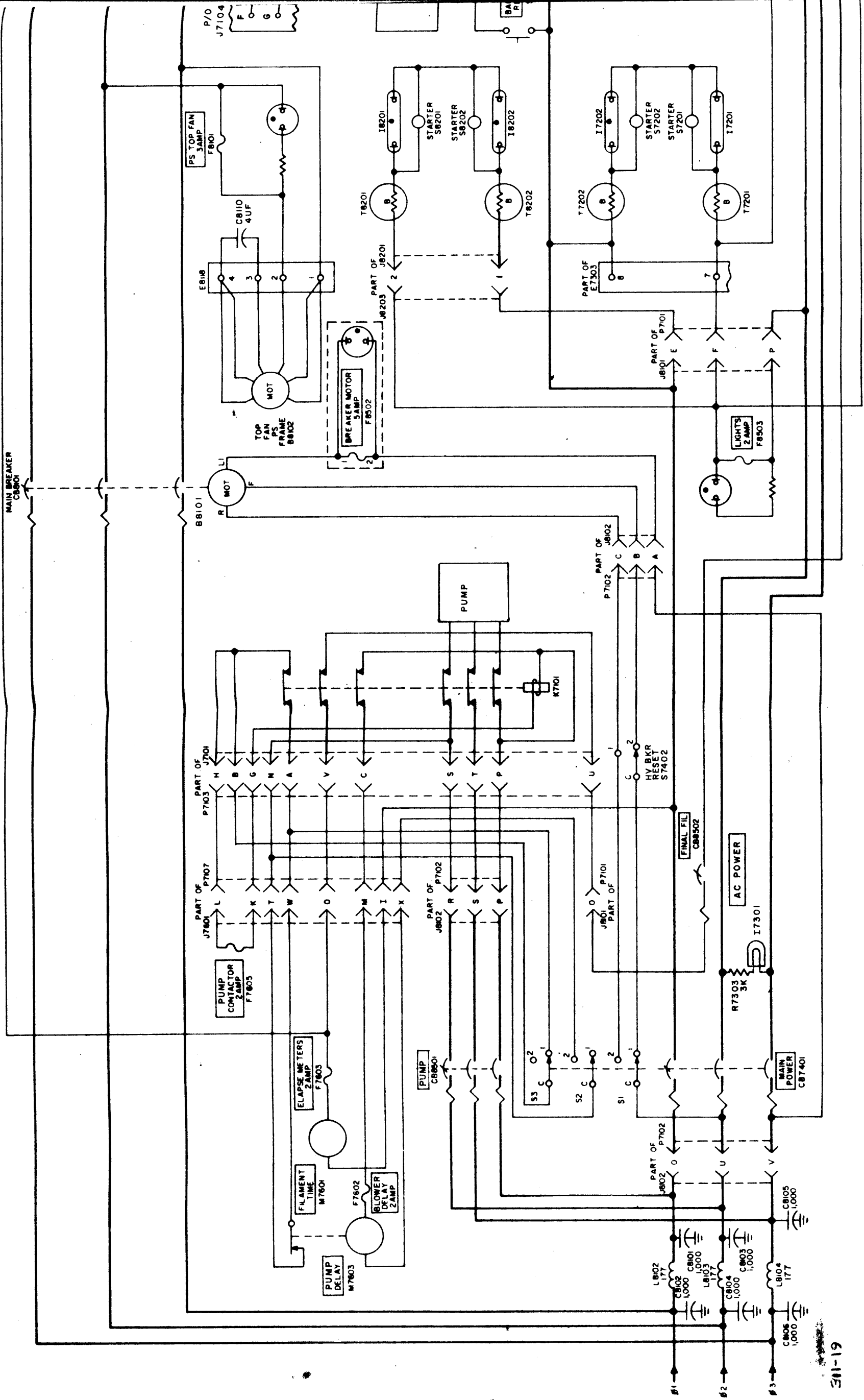


NOTES:
 1 UNLESS OTHERWISE INDICATED, RESISTANCES ARE IN OHMS. CAPACITANCES ARE IN UUF AND INDUCTANCES ARE IN UH
 2 CIRCUIT BREAKERS AND SWITCHES ARE SHOWN IN THEIR NORMALLY OPERATED POSITION
 3 MARKING INDICATES EQUIPMENT
 4 NOT CONNECTED IN 8PT-40K.

Figure 2-11. PA Frame and PS Frame, AC Power Distribution.

(UNCLASSIFIED)





511-19

z. Delete the following components and their associated data in the Parts List:

B7102

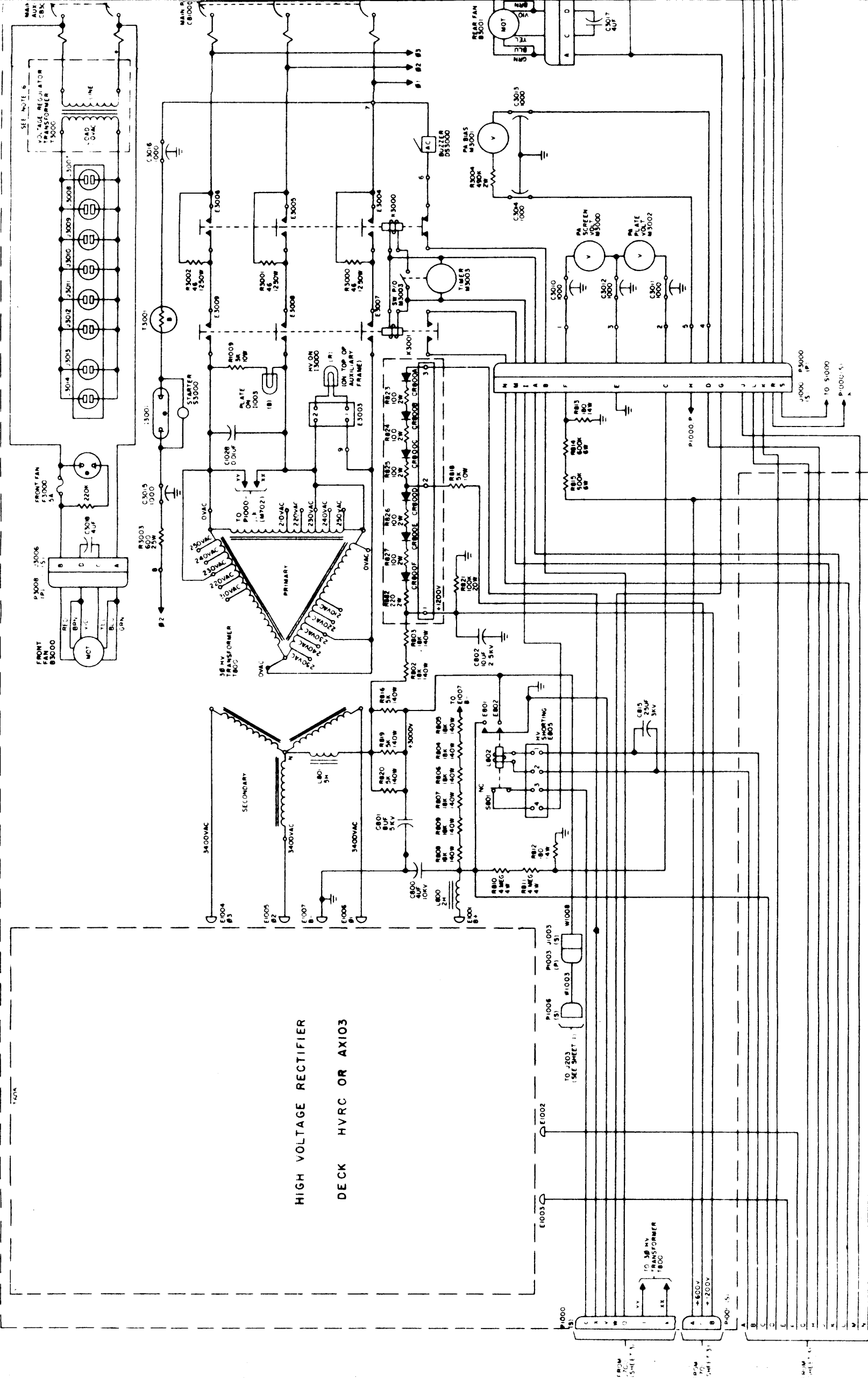
All 8400 series components (High Voltage Rectifier)

aa. Add the following components and their associated data in the Parts List:

SYM	DESCRIPTION	FUNCTION	TMC PART NO.
	POWER SUPPLY: Solid State, input 115 volts, 3 ϕ , 60 cps; out- put 12KVdc	40-KW PA plate supply	HVRB-1
E921	TERMINAL BOARD: barrier type, 3 terminals	Cable CA1209	TM102-3
S909	Part of Vapor Down Cooling system - D512529	PA water interlock	
C7127	CAPACITOR, FIXED, PAPER DIELECTRIC: 4uf; +10%; 600wvdc; hermetically sealed cylindrical metal case.	Starting cap- acitor for B7103	CP41B1FF405K
B7103	BLOWER, AIR: 115/230 V, 50/60 HZ, single phase; power rating 110 watts full load; max CFM 115 $^{\circ}$.		BL103
B7194	FAN AXIAL: 115/230 V, power rating 100 watts full load, max CFM 740.		BL123
B7105	To Be Supplied.		
E7103	TERMINAL BOARD: barrier type, 5 terminals	CA1206	TM102-5
E7104	TERMINAL BOARD: barrier type, 14 terminals	CA1218	TM102-14
J7105	CONNECTOR, PLUG, ELECTRICAL male		MS3106B28-11P
J7106	CONNECTOR, RECEPTACLE, ELECTRICAL; male, 14 contacts		MS3102A14S-2P
P7110	CONNECTOR, PLUG, ELECTIRCAL; female		MS3106B28-11S
P7111	CONNECTOR, PLUG, ELECTIRCAL; female		MS3106A14S-2S
S7105	Part of Vapor Down Cooling System, D512529.	PA water interlock	

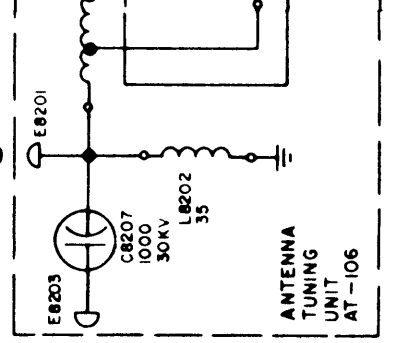
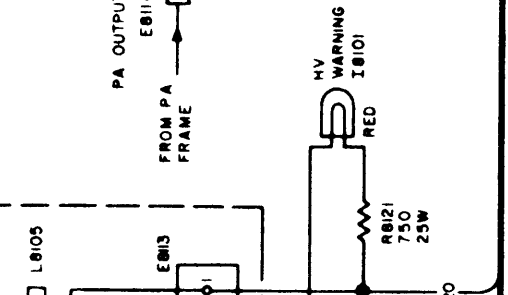
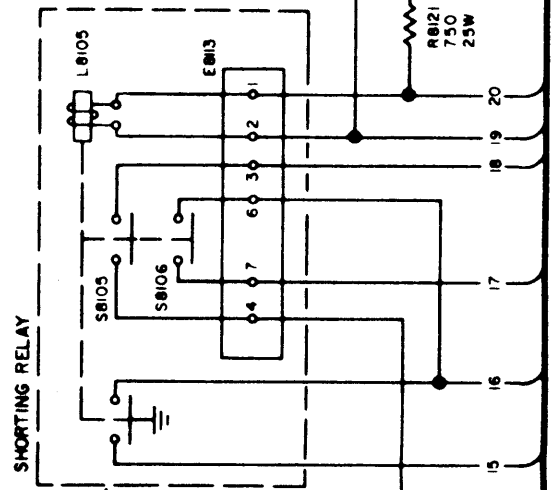
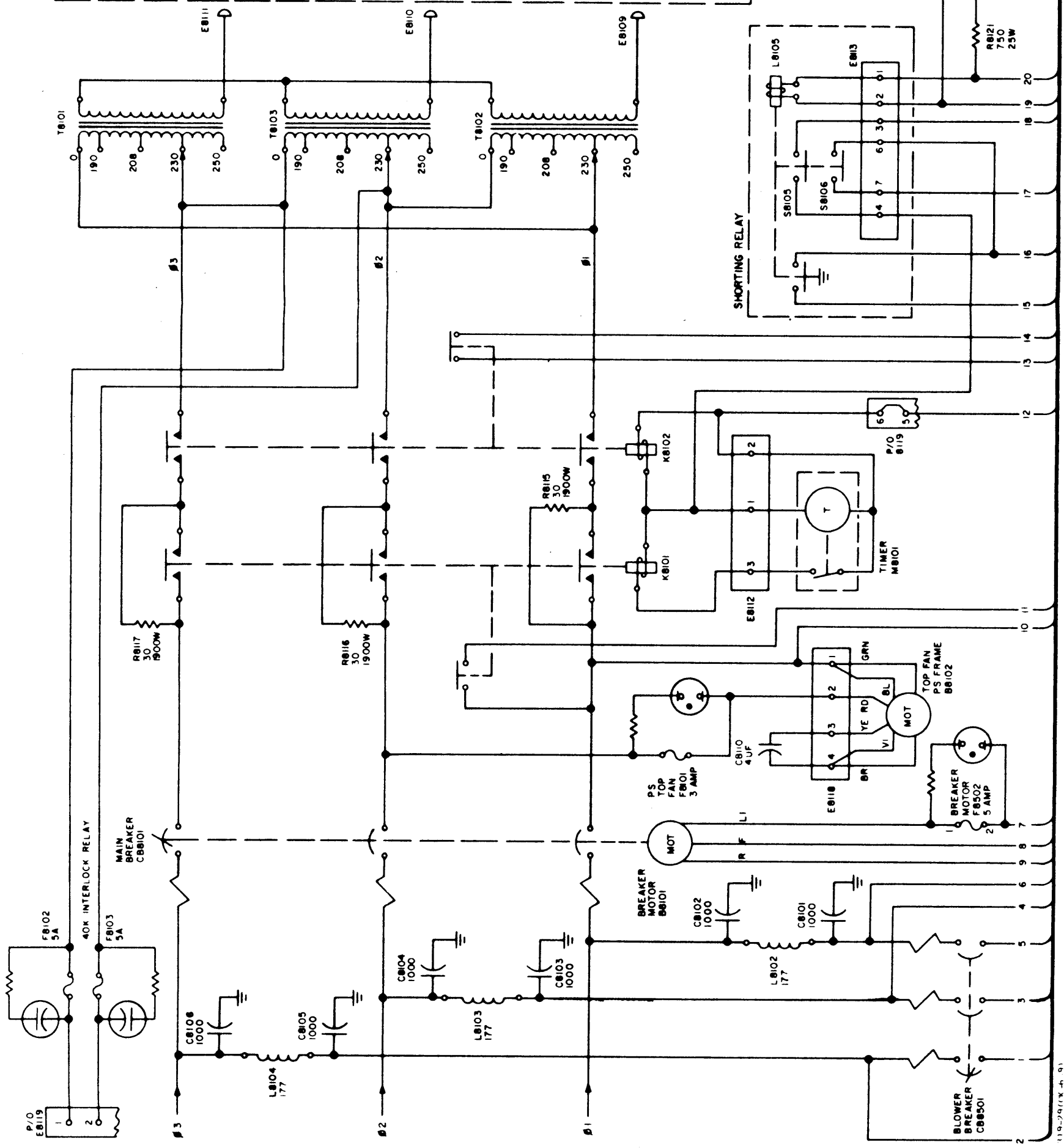
SYM	DESCRIPTION	FUNCTION	TMC PART NO.
S7106	SWITCH, AIRFLOW; O/A dimensions 2-9/16" x 1-17/32".	PA coil inter- lock PA tube interlock	SW243-2
S7107	SWITCH, MICRO, LOW TORQUE; 5-amps at 125 or 250 vac.		SW252
S7108	Part of Vapor Down Cooling System - D512529.	Water Pressure	
E7336	TERMINAL BOARD; barrier type, 8 terminals	CA1217	TM102-8
J7305	CONNECTOR, RECEPTACLE, ELECTRICAL: female, 4 contacts		MS3102A14S-2S
P7305	CONNECTOR, RECEPTACLE, ELECTRICAL: male, 4 contacts		MS3106A14S-2P
V7301	ELECTRON TUBE: triode	Power ampli- fier	ML-7480
C7336 thru C7342	CAPACITOR, FIXED, MICA DIELECTRIC: 0.01 uf, ±1%, 500 wvdc		CM35F103F03
C7335	CAPACITOR, FIXED, PAPER DIELECTRIC: 4 uf ±10%, 600 wvdc		CP41B1FF405K

- ab. Figure 6-1 sheet 4. Replace this figure with corrected figure attached.
- ac. Figure 6-1 sheet 5. Replace this figure with corrected figure attached.
- ad. Figure 6-1 sheet 6. Replace this figure with corrected figure attached.
- ae. Figure 6-1 sheet 7. Replace this figure with corrected figure attached.



HIGH VOLTAGE RECTIFIER
DECK HVRC OR AX103

HIGH VOLTAGE REC
AP-105 OR HVRB



119-2917X-4-91

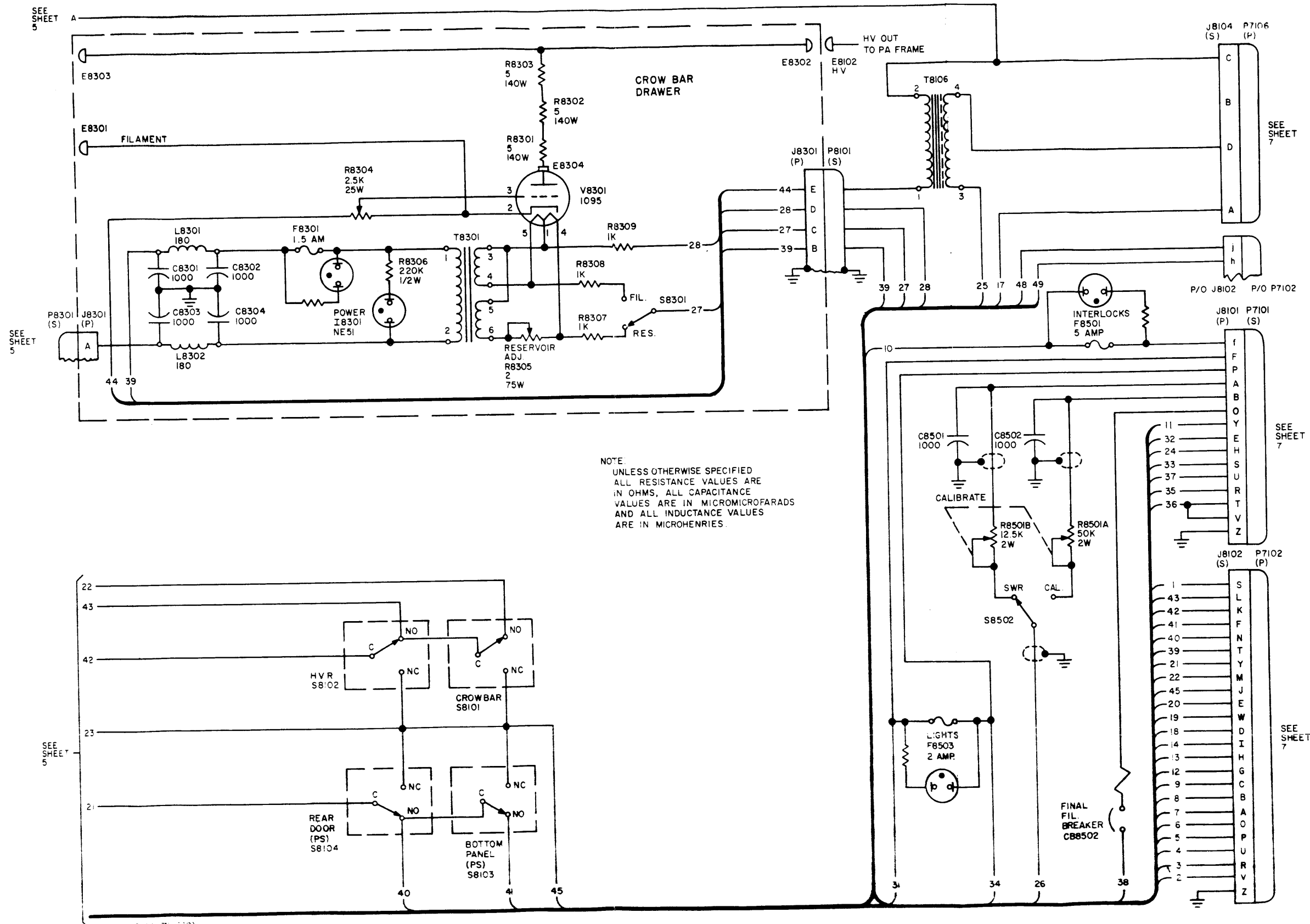


Figure 6-1. GPT-40K Transmitter, Schematic Diagram (Sheet 6 of 9)

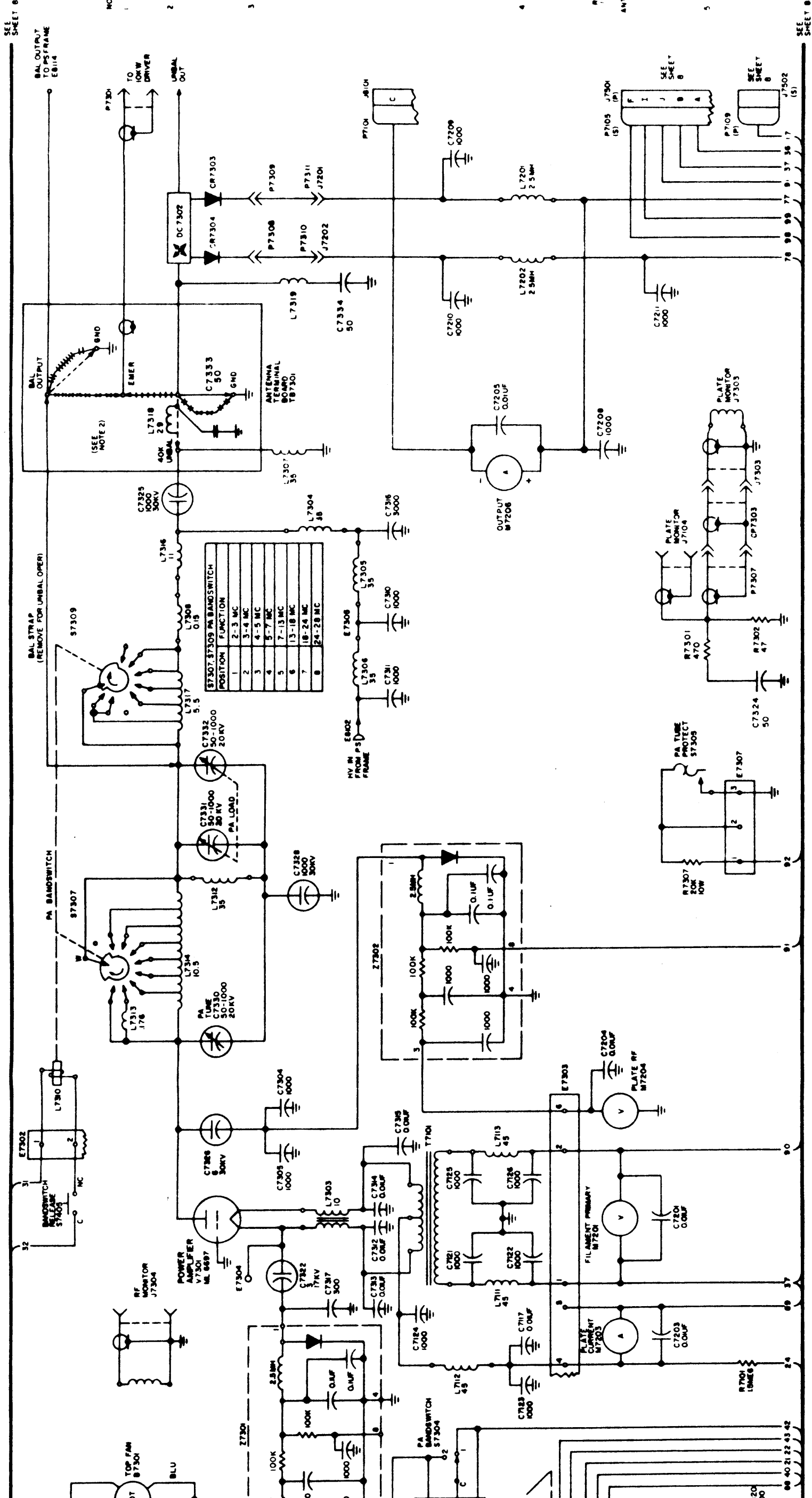
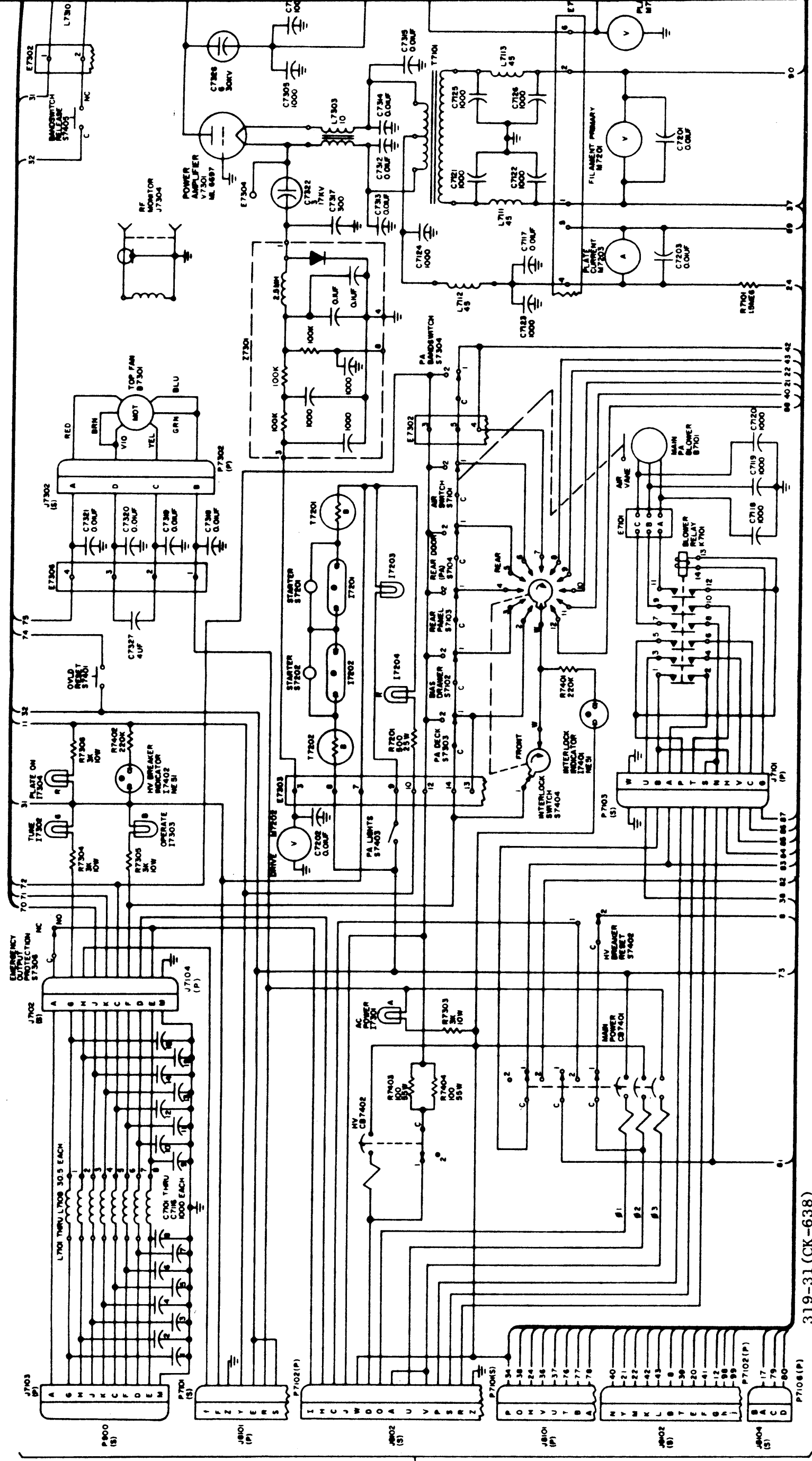


Figure 6-1. GPT-40K Transmitter, Schematic Diagram (Sheet 7 of 9)

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SEE SHEET