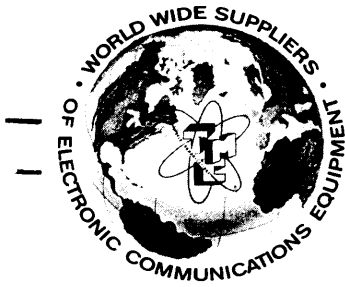






**NOTICE**

THE CONTENTS AND INFORMATION CONTAINED IN THIS INSTRUCTION MANUAL IS PROPRIETARY TO THE TECHNICAL MATERIEL CORPORATION TO BE USED AS A GUIDE TO THE OPERATION AND MAINTENANCE OF THE EQUIPMENT FOR WHICH THE MANUAL IS ISSUED AND MAY NOT BE DUPLICATED EITHER IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER WITHOUT THE WRITTEN CONSENT OF THE TECHNICAL MATERIEL CORPORATION.



# THE TECHNICAL MATERIEL CORPORATION

C O M M U N I C A T I O N S   E N G I N E E R S

700 FENIMORE ROAD

MAMARONECK, N. Y.

## W a r r a n t y

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes,\*fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.
2. That the defect is not the result of damage incurred in shipment from or to the factory.
3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.
4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

Electron tubes\*furnished by TMC, but manufactured by others, bear only the warranty given by such other manufacturers. Electron tube warranty claims should be made directly to the manufacturer of such tubes.

TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by TMC and the foregoing warranty shall constitute the Buyers sole right and remedy. In no event does TMC assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of TMC Products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

\*Electron tubes also include semi-conductor devices.

### *PROCEDURE FOR RETURN OF MATERIAL OR EQUIPMENT*

Should it be necessary to return equipment or material for repair or replacement, whether within warranty or otherwise, a return authorization must be obtained from TMC prior to shipment. The request for return authorization should include the following information:

1. Model Number of Equipment.
2. Serial Number of Equipment.
3. TMC Part Number.
4. Nature of defect or cause of failure.
5. The contract or purchase order under which equipment was delivered.

### *PROCEDURE FOR ORDERING REPLACEMENT PARTS*

When ordering replacement parts, the following information must be included in the order as applicable:

1. Quantity Required.
2. TMC Part Number.
3. Equipment in which used by TMC or Military Model Number.
4. Brief Description of the Item.
5. The *Crystal Frequency* if the order includes crystals.

### *PROCEDURE IN THE EVENT OF DAMAGE INCURRED IN SHIPMENT*

TMC's Warranty specifically excludes damage incurred in shipment to or from the factory. In the event equipment is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved and not with TMC.

All correspondence pertaining to Warranty Claims, return, repair, or replacement and all material or equipment returned for repair or replacement, within Warranty or otherwise, should be addressed as follows:

THE TECHNICAL MATERIEL CORPORATION  
Engineering Services Department  
700 Fenimore Road  
Mamaroneck, New York

Addendum 1 to  
Installation Manual for  
General Purpose Transmitter  
Model GPT-10K

GENERAL PURPOSE TRANSMITTER  
MODEL GPT-10KYB

The model GPT-10KYB includes all units of the GPT-10K except the Sideband Generator model SBG-2A, consisting of: Sideband Exciter model CBE, Frequency Amplifier model CHG, Controlled Master Oscillator model CMO, A-F Controlled Oscillator model CLL, Frequency Divider model CHL, Frequency Standard model CSS, and associated power supplies (CPP-2, CPP-5).

The Installation Manual for the GPT-10K also applies to the model GPT-10KYB when the following information is noted:

1. On Page 5-7/5-8 replace figure 5-6, First Frame Drawers Cable Connection Diagram, with new figure 5-6 supplied with this addendum.
2. Change the first paragraph in 1-1 PURPOSE AND DESCRIPTION, to read as follows:

The model GPT-10K (figure 1-1) is a general purpose transmitter having several modes of operation (CW, AM, MCW, FSK & FAX with external adpters) in a frequency range of 2 to 28 megacycles. The output of the transmitter is 10 kilowatts (kw) peak envelope power (PEP). The GPT-10KYB can be subdivided into two stages: (1) a general purpose exciter; (2) a 10 kw linear power amplifier.

3. Change 1-2 TECHNICAL CHARACTERISTICS as follows:

Modes of operation	CW, AM, MCW
Tuning	Front panel tuning through the entire frequency range
Unwanted sideband rejection	Delete
Stability and accuracy	1 part in $10^6$ per day
Audio response	350-3300 cps, flat within 3db

Audio inputs

1. 600 ohm balanced line,  
-20db for 100% modulation
  2. -50db with high impedance mike  
for 100% modulation
  3. Carbon mike
4. On Table 1-1 Logistics, delete the following items (not applicable to the model GPT-10KYB).  
  
CBE, CHG, CMO, CLL, TIS, KMCU, CPP-2 and CPP-5
  5. On Page 1-11 Table 1-2, EQUIPMENT SUPPLIED, delete direct mention of the contents of crate 6, 7, 8 and 9. Refer to the equipment packing list supplied with equipment for contents of crate 6 thru 9.
  6. On Page 1-13 Table 1-4 ASSOCIATED MANUALS modify Table 1-4 in the following manner:
    - a. Delete all modular units listed under "First Frame", with the exception of, Standing wave control unit and Auxiliary power panel.
    - b. Delete Technical Manual for General Purpose Transmitter, Model GPT-10K, Synthesized, Vol. 1 S.
    - c. Add to First Frame listing, General purpose exciter.
  7. On Page 3-1, Table 3-1. CRATED WEIGHTS AND DIMENSIONS replace with new table provided with this addendum.

TABLE 3-1. CRATED WEIGHTS AND DIMENSIONS

CRATE NO.	GROSS WEIGHT IN LBS.	DIMENSIONS IN INCHES		
		HEIGHT	WITDH	DEPTH
1	188	30-3/4	23-7/8	32
2	234	8	40-1/8	56-3/4
3	768	82-1/8	50-1/4	32-1/4
4	1298	81-3/4	42	51-1/2
5	536	28-3/4	19-3/4	24
6	233	22	30-3/4	40
7	240	22	30-3/4	40
8	643	44-1/4	27-1/2	77-5/8



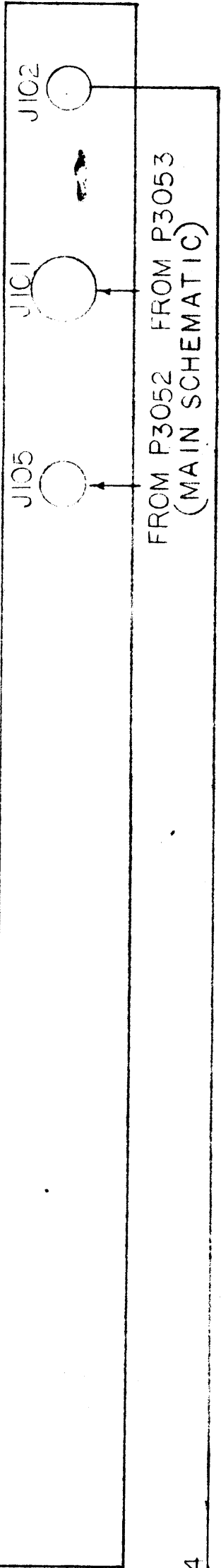
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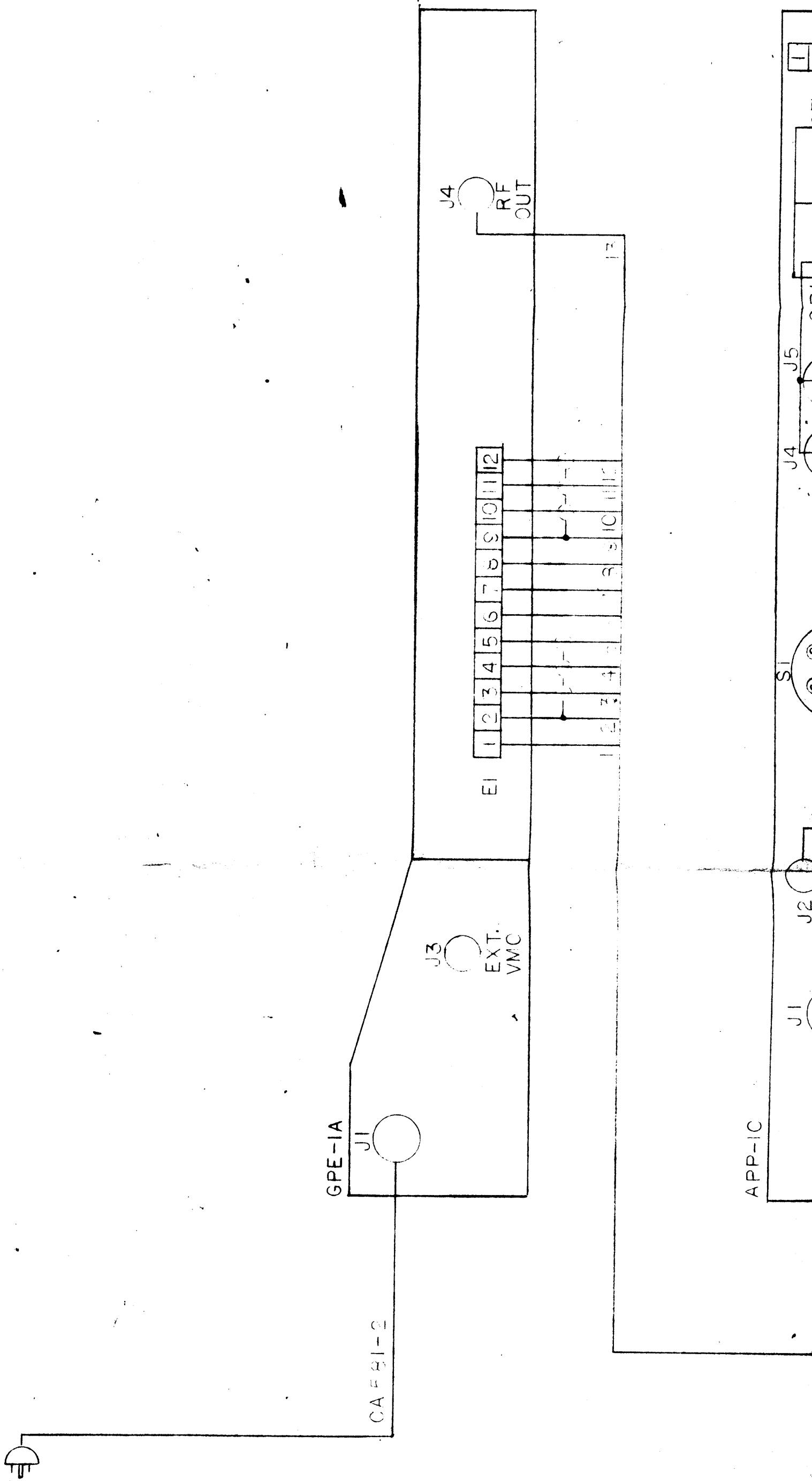
C

B



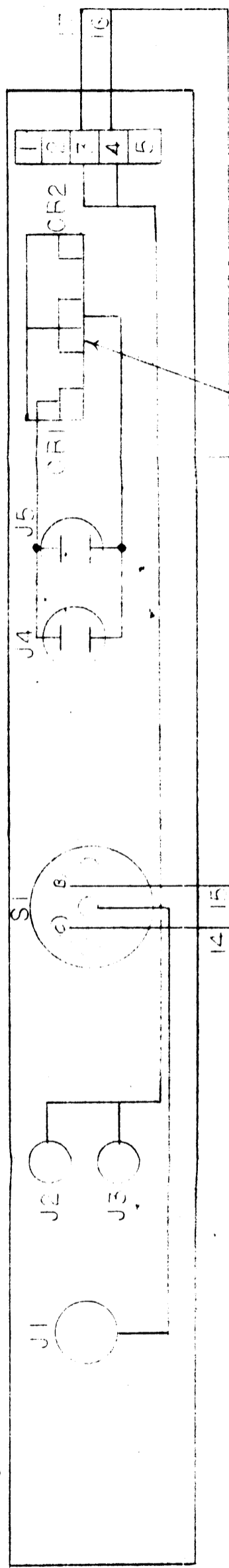
SWCU-1 THIS UNIT MOUNTED IN REAR OF EXCITER FRAME



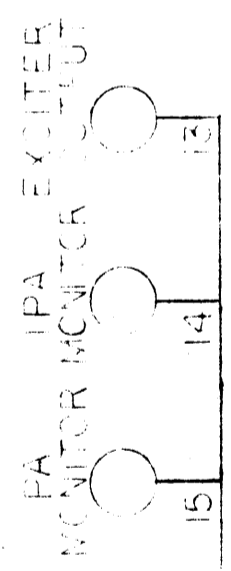
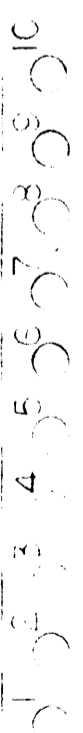


					REVISIONS			
E.M.N.NO	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVE	

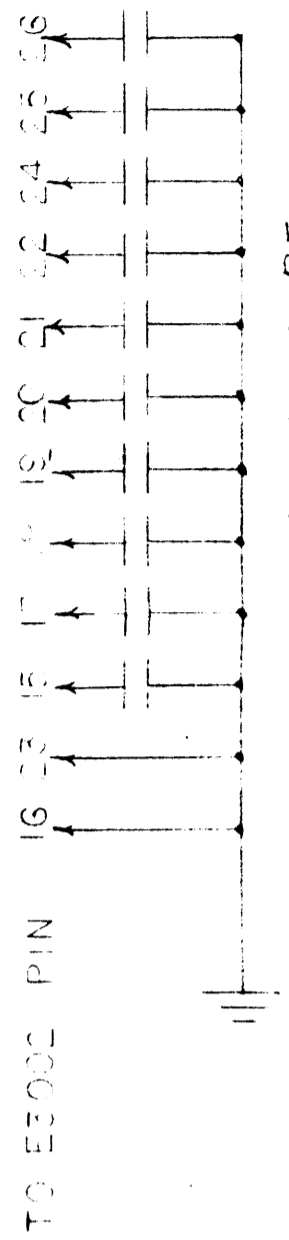
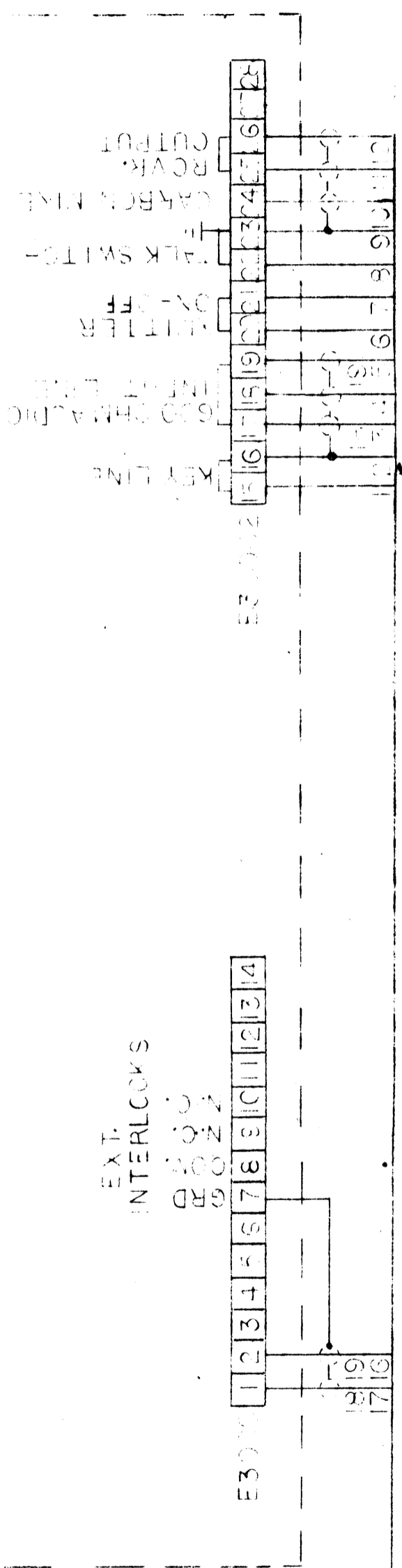
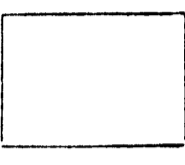
APP-1C



CENTER SHIELD ASSY

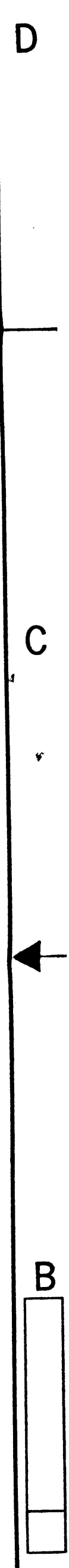
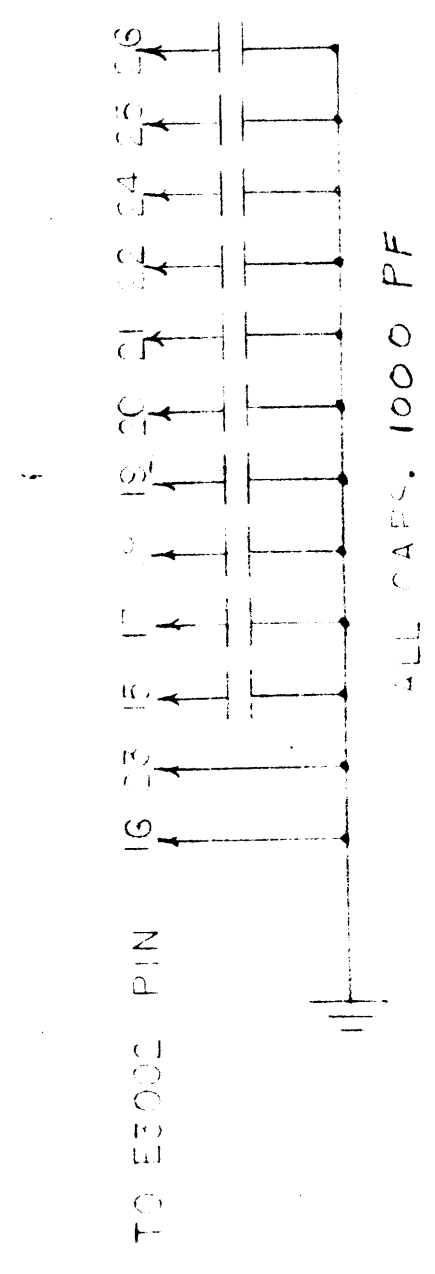
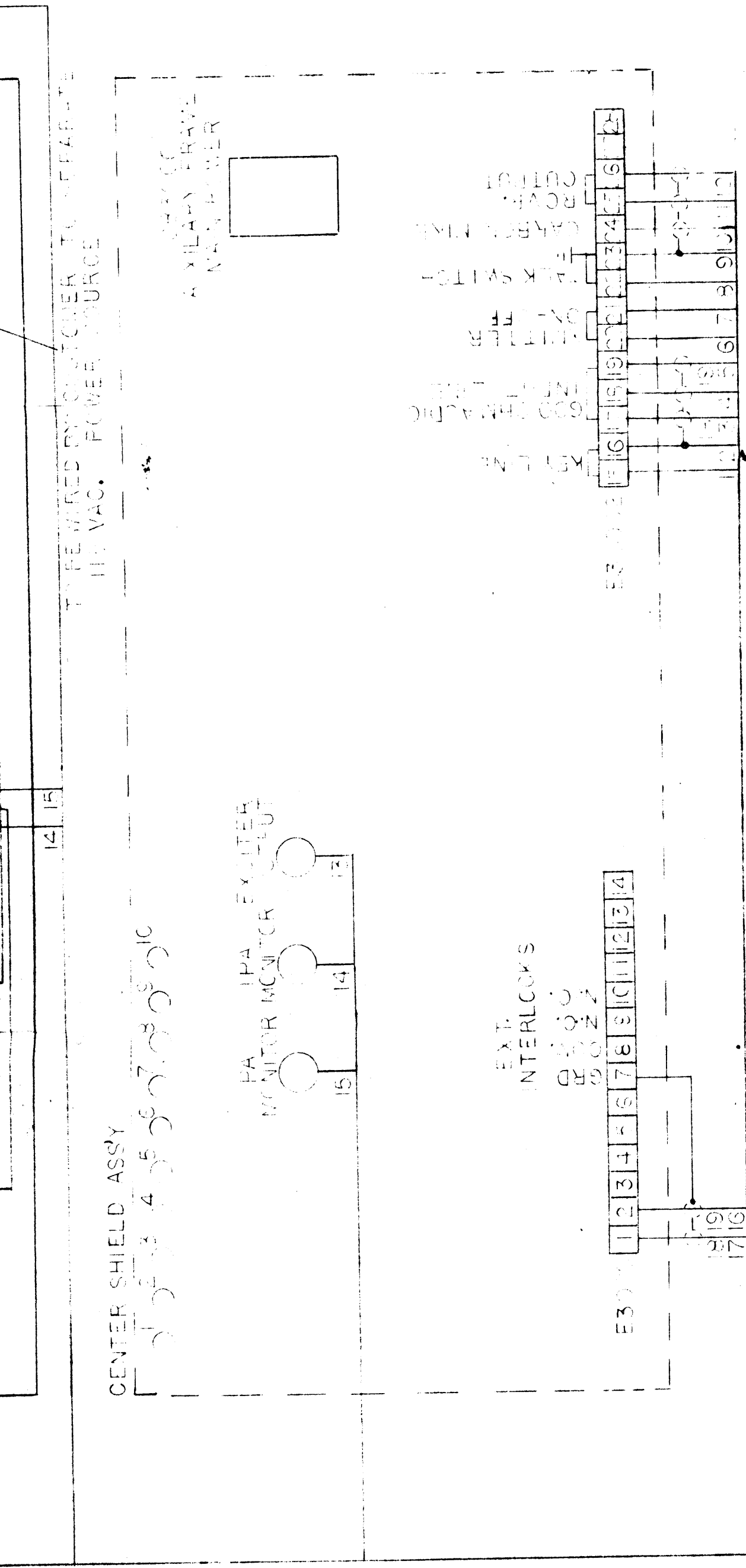


CR1, CR2  
 4 XILAPY BRAVE  
 VACUUM POWER



ALL CAPS. 1000 PF

					REVISIONS			
E.M.N.NO	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED	



B

A

SWCU-1 THIS UNIT MOUNTED IN

CA555-4

AX657

U3007



U3018



U3009



U3010



8

7

6

U3010

U3011

U3012



GPE-1A

J1

CAFBI-2

J3

EXT.  
VMC

APP-1C

J1

J2

J3

GPT - ICK/Y.F

QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	

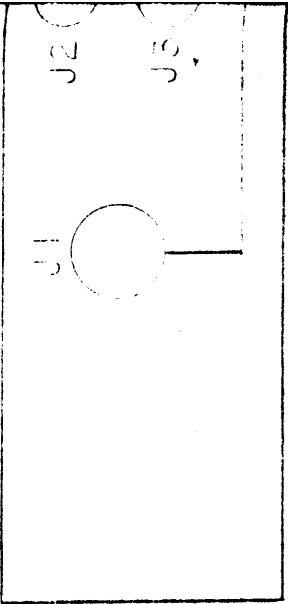
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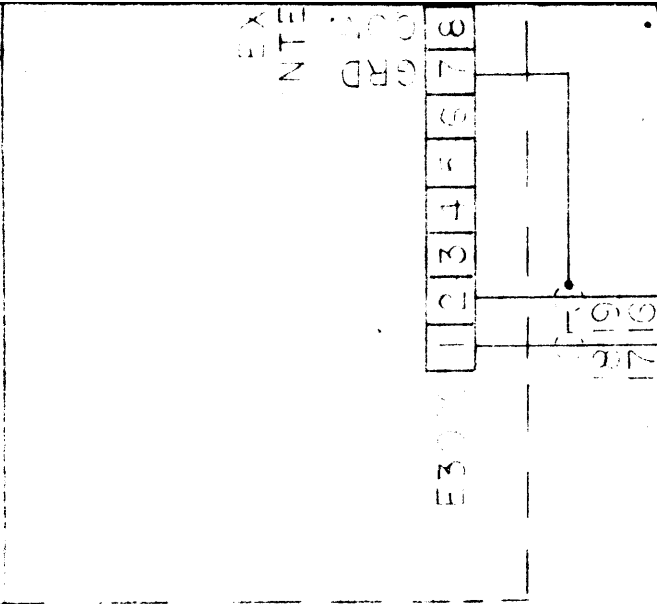
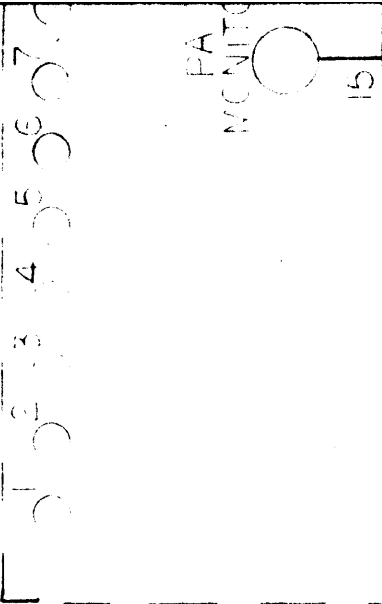


4

APP-1C



CENTER SHIELD ASSY



3014



3014



QTY. REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL	
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES		FINAL APPROVAL <i>[Signature]</i>	DATE 5-11-71	<b>THE TECHNICAL MATERIEL CORP.</b> MAMARONECK, NEW YORK	
TOLERANCES ON		MECH. DES.	DATE		
DECIMALS .X ± .05		ELECT. DES. <i>[Signature]</i>	DATE 2-25-71	WIRING DIAGRAM	
FRACTIONS ± 1/64		CHECKED	DATE		
ANGLES ± 0° -30'		DRAWN <i>[Signature]</i>	DATE 2-25-71		
ASS'Y NO.	MATERIAL	SIZE D	CODE IDENT NO. 82679	DWG NO. CK 1871	ISSUE $\emptyset$
	FINISH	SCALE		SHEET	OF
3		2		1	

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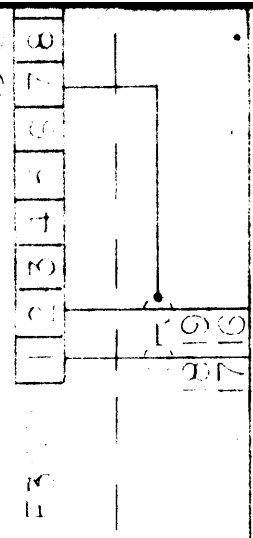
CENTER SHIELD ASSY

1 2 3 4 5 6 7 8

PA MONITOR

15

EX  
INTE  
GR  
GR



33013

33014

QTY. REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL	
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES		FINAL APPROVAL <i>[Signature]</i>	DATE 5-11-71	<b>THE TECHNICAL MATERIEL CORP.</b> MAMARONECK, NEW YORK  <b>WIRING DIAGRAM</b>	
		MECH. DES.	DATE		
TOLERANCES ON		ELECT. DES. <i>[Signature]</i>	DATE 2-25-71		
DECIMALS X ± .05 .XX ± .01 .XXX ± .005	FRACTIONS ± 1/64 ANGLES ± 0° -30'	CHECKED	DATE		
		DRAWN <i>[Signature]</i>	DATE 2-25-71		
MATERIAL		SIZE	CODE IDENT NO.	DWG NO.	ISSUE
FINISH		D	82679	CK 1871	⊙
		SCALE		SHEET	OF

3

2

1

B

A





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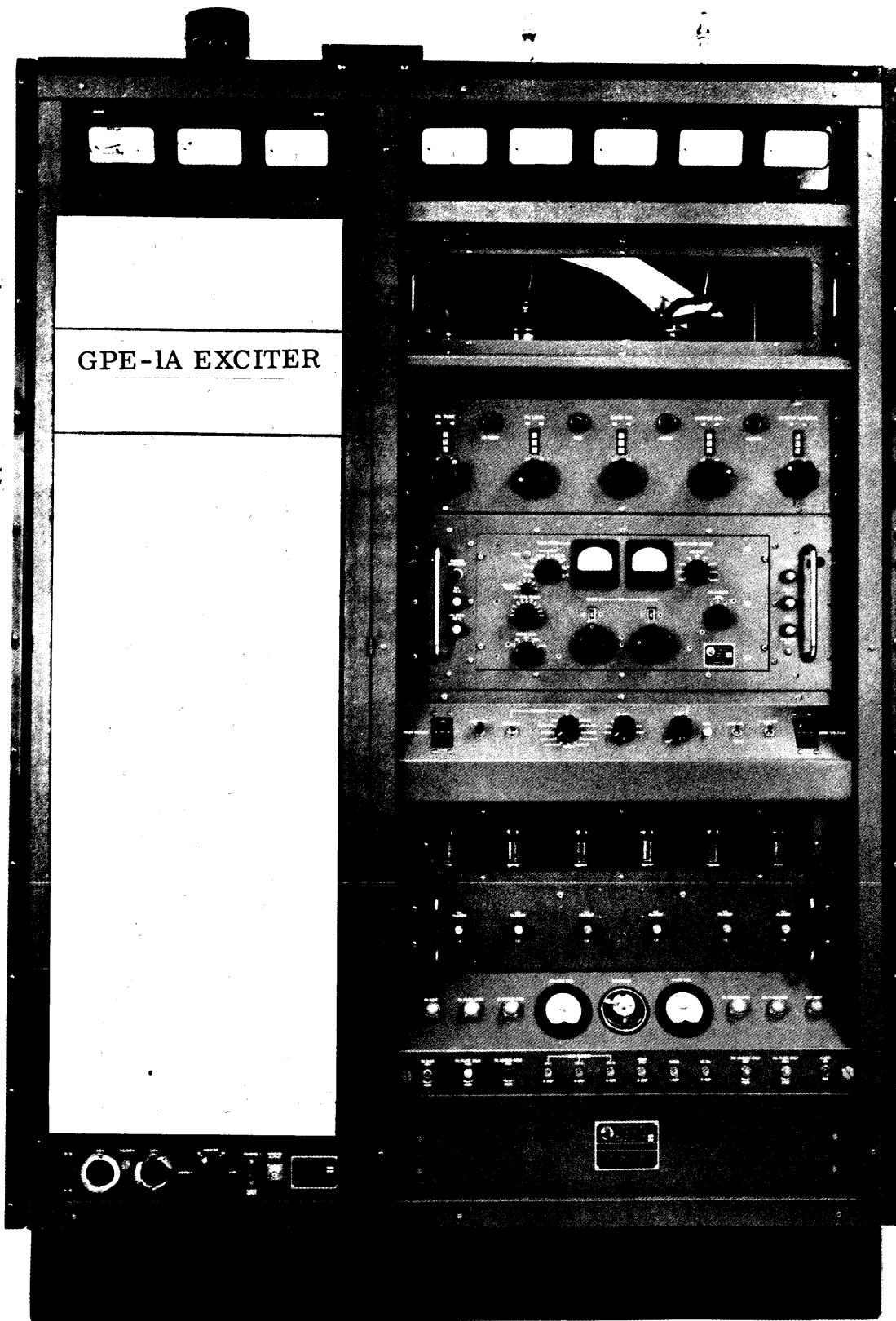
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294-1

FIGURE 1-1. GENERAL PURPOSE TRANSMITTER  
MODEL GPT-10K YB

SECTION 1  
GENERAL INFORMATION

1-1. PURPOSE AND DESCRIPTION.

General Purpose Transmitter, Model GPT-10K (figure 1-1) is a synthesized transmitter having several modes of operation (SSB, ISB, AM, AM equivalent, CW, FSK, and FAX) in a frequency range of 2 to 28 megacycles. The output of the transmitter is 10 kilowatts (kw) peak envelope power (PEP). The GPT-10K can be subdivided into two stages: (1) a synthesized exciter; (2) a 10-kw linear power amplifier.

The two stages of the transmitter are housed in two frame assemblies; each can be conveniently identified, figure 1-2 (from left to right), as the auxiliary frame and the main frame. The auxiliary frame contains the exciter; the main frame contains the 10-kw power amplifier and its associated power supply and control circuits. A more detailed subdivision of the transmitter is made by assigning formal nomenclature and part numbers to assemblies, subassemblies, components, and piece-parts. In addition to formal nomenclature and part numbers, common names are used, and a definite series of symbol numbers is assigned to each assembly. For example, components in the 10-kw high-voltage rectifier are assigned symbol numbers in the 600 series, so that high-voltage rectifier tube V600 is installed in the high-voltage rectifier (symbol series 600), which is then installed in the main frame (symbol series 1000).

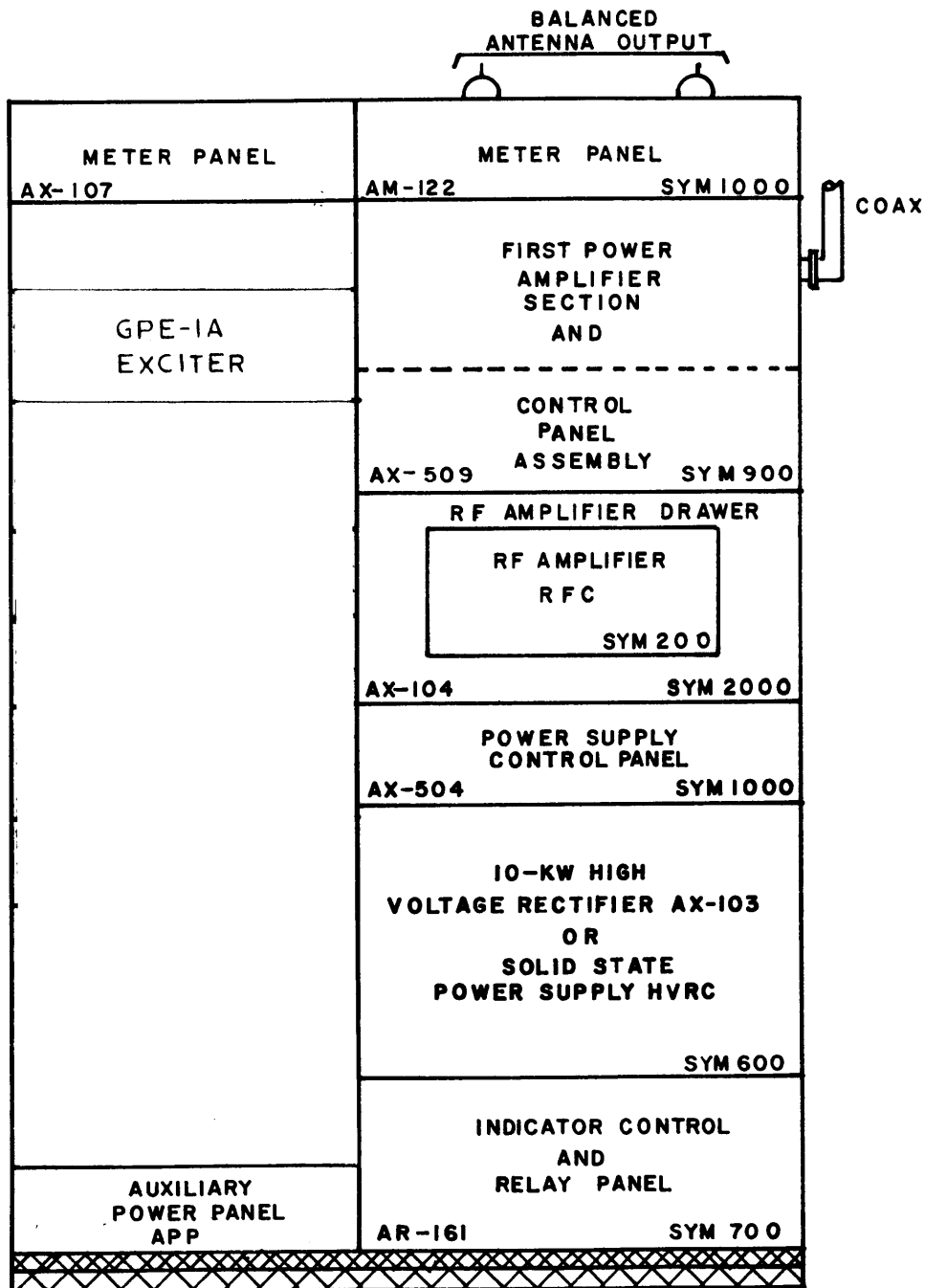
1-2. TECHNICAL CHARACTERISTICS.

Technical characteristics for the GPT-10K transmitter are listed below. Data presented covers functional and environmental characteristics.

Frequency range	2 to 28 megacycles.
Modes of operation	SSB, ISB, AM, AM equivalent, CW, FSK, and FAX.
Output power:	
Normal	10,000 watts peak envelope power (PEP).
Emergency	1,000 watts.
Output Impedance:	Pi-L network matches load with voltage standing wave ratio (VSWR) of 2:1 maximum.
Unbalanced	50 or 70 ohms.
Balanced	600 ohms.
Tuning	Synthesized frequency control with 100 cycles per second (cps) incremental front panel tuning through the entire frequency range.
Stability and accuracy	1 part in $10^8$ per day for ambient temperature change of 15°C (59°F) within the range of 0°C to 50°C (32°F to 122°F).
Unwanted sideband rejection	500 cps single tone 60 db down from full PEP output.
Spurious signals	At least 60 db below full PEP output.

FIRST  
 FRAME AX-239  
 SYMBOL 3000  
 SUBASSEMBLY AX-181

SECOND  
 FRAME AX-186  
 SYMBOL 1000  
 SUBASSEMBLY AX-182

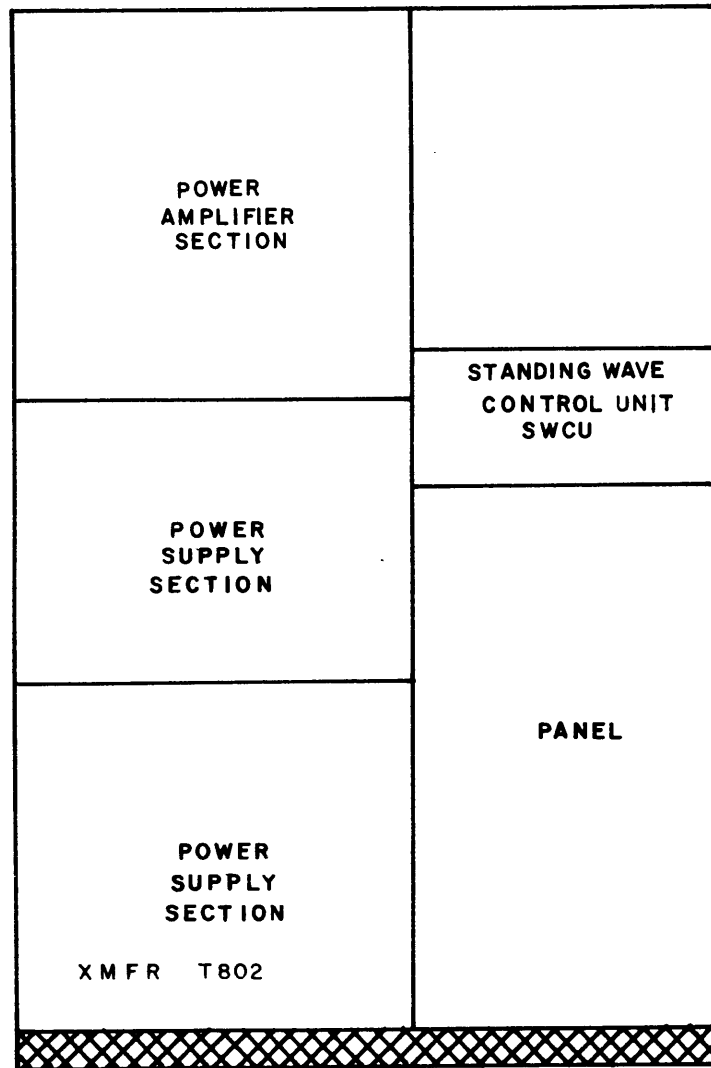


294-29

Figure 1-2. General Component Identification  
 (Sheet 1 of 2)

**SECOND  
FRAME AX-186  
SYMBOL 1000  
SUBASSEMBLY AX-182**

**FIRST  
FRAME AX-239  
SYMBOL 3000  
SUBASSEMBLY AX-181**



294-3

Figure 1-2. General Component Identification  
(Sheet 2 of 2)



Carrier insertion	-55 db to full PEP output.
Audio response	CBE crystal lattice filters flat within +1.5 db, 250 to 7500 cps.
Audio inputs	600 ohms balanced -20 to +10 dbm continuously adjustable to full PEP output. An unbalanced input can also be applied.
Heat dissipation	8 KW (maximum)
Keying:	
FSK	75 bauds (100 wpm) maximum 50v, 100v, 20 ma, 60 ma, all neutral, floating, or either side grounded. 12 to 1,000 cps shift.
CW	140 bauds maximum. Keying voltages same as FSK plus dry contact keying. -5 to +5vdc or 0 to +20vdc for linear shift of 12,000 cycles.
Ambient operating temperature	Between 0 <sup>o</sup> and 50 <sup>o</sup> C (32 <sup>o</sup> and 122 <sup>o</sup> F).
Humidity	Maximum 90%.
Volume of air:	
Intake	2600 CFM (est)
Exhaust	2340 CFM (est)
Intake and exhaust openings:	
Intake	One 13-1/2" x 28"
Exhaust	One 10-1/2" x 21"
Heat loss unducted:	
Standby	5.0 kw (approximately)
Full-power condition	8.0 kw (approximately)
Temperature rise:	
Standby	15 <sup>o</sup> C (59 <sup>o</sup> F)
Full power condition	20 <sup>o</sup> to 25 <sup>o</sup> C (68 <sup>o</sup> to 77 <sup>o</sup> F)
Power requirement	210-250vac, 50-60 cps, three phase, approximately 50 amps/phase. Operation at 390-480vac, 50-60 cps, three phase, approximately 25 amps/phase, is also available.

### 1-3. LOGISTICS.

Table 1-1 presents logistics ( including nomenclature) for the GPT-10K transmitter.

### 1-4. EQUIPMENT SUPPLIED.

Table 1-2 lists all major equipment supplied by crate number, contents, quantity, TMC part numbers, and reference symbol designations. Also a brief function of each item is provided.

### 1-5. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

Table 1-3 lists equipment required to install the 10K transmitter. Although these items are required, they are

not supplied because they should be contained in an equipped maintenance shop.

1-6. ASSOCIATED MANUALS.

Table 1-4 presents a list of associated equipment manuals. This list provides a convenient reference for readily obtaining information on the 10K transmitter.

TABLE 1-1. LOGISTICS

NOMENCLATURE		DIMENSIONS IN INCHES			WEIGHT IN LB
FORMAL	COMMON	HGT	W	D	
General Purpose Transmitter Model GPT-10K	10k transmitter	86	55-3/4	43-1/2	
Cabinet, Electrical Equipment	Auxiliary frame	72	21	38-5/8	385
Sideband Exciter, Model CBE	Sideband exciter	5-1/4	19	12-7/8	17
Frequency Amplifier, Model CHG	Frequency amplifier	10-1/2	19	19-1/4	40
Controlled Master Oscillator, Model CMO	Controlled master oscillator	10-1/2	19	18	45
Audio Frequency Controlled Oscillator, Model CLL	Audio frequency controlled oscillator	5-1/4	19	19	25
Frequency Standard Model, CSS	Rf oscillator	5-1/4	19	14-3/4	30
Tone Intelligence Unit, Model TIS	Tone intelligence unit	5-1/4	19	17-1/8	26
Keyer Monitor Control Unit, Model KMCU	Keyer monitor control unit	5-1/4	19	10-3/8	13.5
Frequency Divider, Model CHL	Frequency divider	5-1/4	19	15	20
Power Supply, Model CPP-2	Power supply	12-1/4	19	16	67
Auxiliary Power Panel, Model APP	Auxiliary power panel	3-1/2	19	4	10
Power Supply, Model CPP-5	Power supply	5-1/4	19	16-1/2	50
Standing Wave Control Unit Model SWCU	Standing wave control	3-1/2	19		15
Cabinet, Electrical Equipment	Main frame	72	32	33-5/8	835*
Rf Amplifier drawer Ax-104, with:	Rf amplifier	11 3/4	28-3/4	20-1/2	100
Rf Amplifier Model RFC	Rfc				

TABLE 1-1. LOGISTICS (cont)

NOMENCLATURE		DIMENSIONS IN INCHES			WEIGHT IN LB
FORMAL	COMMON	HGT	W	D	
High Voltage Rectifier AX-103 or Solid State Power Supply, Model HVRC	HVR	10-3/4	28-3/4	16-3/4	80
	HVRC	10-3/4	28-3/4	16-3/4	30
*Weight as shipped					

TABLE 1-2. EQUIPMENT SUPPLIED

CRATE NO.	CONTENTS	QTY	TMC/ P/N	SYM	FUNCTION
1	Loose Items:				
	1. Bag--Mounting Kit, Grounding Strap:				Ground strap mounting
	Screw, Machine, Hexhead	1	SCHH6211BN24		
	Washer, Lock	4	LWS62MRN		
	Washer, Flat	9	FW62HBN		
	Nut, Hexhead	3	NTH6211BN32		
	2. Bag--Mounting Kit, Frame to 10k Base				First and second frame to base mounting hdwr
	Screw, Machine, Hexhead	10	SCHH3716SS24		
	Washer, Lock	10	LWS37MRN		
	Washer, Flat	10	FW37HBN		
	3. Bag--Line Filterboard Mounting Hardware Kit:				Line filterboard mounting hdwr
	Screw, Machine, Binderhead	4	SCBP1032BN6		
	Screw, Machine, Binderhead	4	SCBP1032BN12		
	Screw, Machine, Binderhead	1	SCBP1032BN9		
	Screw, Machine, Binderhead	1	SCBP1032BN10		
	Washer, Flat	10	FW10MRN		
	Washer, External	10	LWE10MRN		
	Nut, Hexhead	4	NTH1032BN12		
	4. Bag--Assembly Kit, Auxiliary and Main Frame:				Frame to frame mounting hdwr

TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION	
1 (cont)	4. (cont)					
	Screw, Machine Hexhead	10	SCHH3118SN16			
	Washer, Lock	10	LWS1MRN			
	Washer, Flat	10	FW31HBN			
	5. Bag--Mounting, Main Power Transformer:					Transformer T800 to frame mounting hdwr.
	Screw, Machine, Hexhead	4	SCHH5013SS48			
	Washer, Lock	4	LWS50HBN			
	Washer, Flat	4	FW40MRN			
	6. Bag--Equipment Mounting Hardware Kit:					Drawer to frame mounting hdwr.
	Screw, Machine, Binderhead	44	SCBP1032BN8			
	Washer, Fiber	44	WA-101-5			
	7. Bag--Mounting Kit, Door Latch Brackets:					Door latch plates and brackets to frame mounting hdwr.
	Screw, Machine, Binderhead	8	SCBP1032BN10			
	Screw, Flat	8	SCFP1032BN8			
	Washer, Lock External	8	LWE10MRN			
	Washer, Lock	8	LWS10MRN			
	Washer, Flat	8	FW10HBN			
	Washer, Flat	8	FW25HBN			
	Nut, Hexhead	8	NTH1032BN12			
	8. Bag--Mounting, Trim Strip:					Trim strips to frame mounting hdwr.
	Screw, Machine, Binderhead	33	SCBP0832BN6			
	Nut, Speed	12	NT-108-5			
	9. Bag--Mounting Kit, Exterior Covers to Frame:					Side panels to frame mounting hdwr.
	Screw, Machine, Hexhead	20	SCHH3118SS24			
	Washer, Lock	20	LWS31MRN			
	Washer, Flat	20	FW31HBN			

TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION	
1 (cont)	10. Bag--Assembly Kit, Transmitter Top:				Cover top to frame mounting hdwr.	
	Screw, Machine, Hexhead		SCHH2520SS24			
	Washer, Lock		LWS25MRN			
	Washer, Flat		FW25HBN			
	11. Bag--Antenna Coupler Mounting Hardware Kit:				Antenna coupler mounting hdwr.	
	Screw, Machine, Hexhead	2	SCHH2520BN7			
	Screw, Machine, Binderhead	2	SCBP1032BN9			
	Screw, Flathead	2	SCFP1032BN9			
	Washer, Flat	2	FW10MRN			
	Washer, Lock	2	LWS25MRN			
	Washer, External	2	LWE10MRN			
	12. Manuals, Technical	1 set				
	13. Data, Test	1 set				
	14. Tube V900 Warranty	1				Warranty for tube TMC P/N 4CX5000A.
	15. Tube V203	1				Warranty for tube TMC P/N TV-100.
	16. Straps, Grounding					Ground, auxiliary and main frames.
		2	MS-1753-2-18			
	2	MS-1753-2-30				
17. Resistors, Fixed					High wattage power supply bleeder resistors, rear main frame.	
	8	RW-118F-183	R802 thru R809			
	3	RW11-118F- 502	R816, R819, R820			
	2	RW-119G-181	R812, R813			
	2	RW-122-3-604	R814, R815			
	2	RW-122-1-405	R810, R811			

TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION	
1 (cont)	18. Capacitor, Variable with PO-185-1 and MS-1696	1	AM-103	C916	Output balance, main frame	
		1	AM-113	C927	Tuning, main frame	
		1	AM-114	C928	Load, main frame	
	with PO-185-6 and MS-2368	1	AM-114	C928	Load, main frame	
		19. Tube, Electron	1	TV-100	V203	Output tube, main frame
		6	872-A*	V600 thru V605*	H. V. rectifier, main frame	
	19. Tube, Electron	1	4CX5000A	V900	PA tube, main frame	
		20. Lamp Socket Assembly, High Voltage and Lamp	1	AX-124		H. V. indicator, top auxiliary frame
	20. Lamp Socket Assembly, High Voltage and Lamp	1	BI-106-1	1300	Lamp for indicator	
		21. Plugs, Electrical	1	PL-134		Female plug for customer use in connecting to convenience outlet jack, bottom front panel, first frame
	21. Plugs, Electrical	1	PL-149		Universal connector plug for customer use, in connecting to jack J904, top second frame	
		1	PL-157		Connector plugs for customer use in connecting to MONITOR OUTPUT jack, bottom front panel, first frame	
		2	PL-218		Male plug for customer use in making an extension cord in conjunction with plug PL-134	
	22. Balanced Output Bowl	2	A-1403		Threaded metal rods provide balanced output for antenna transmission lines connections	
	23. Door Latch Plates:				Securing doors to first and second frames	
	Bottom Front Rear	2	MS-2122			
	Top Front and Rear	2	MS-1660			
24. Door Latch Brackets				Same as item 24		
Top, Front, and Rear	2	MS-1661				
	2	MS-2123				

\*Tubes V600 through V605 are not supplied when solid-state power supply HVRC is used.

TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION		
1 (cont)	25. Plugs, Button:				DC900	Dress side panels and covers.	
	1/2 inch	8	HB-101-3				
	7/8 inch	32	HB-101-6				
	26. Cable, Emergency Output	1	CA-582-1				Emergency output cable.
	27. Line Filterboard	1	A-3479				Filter a-c input line voltage.
	28. Line Filterboard Bracket, Cover Support	2	MS-3689				Safety brackets for mounting line filterboard cover.
	29. Cover, Line Filterboard	1	LD-1392				Safety cover.
	30. Antenna Coupler	1	A-3426				Unbalanced output antenna coupler.
	31. Cover, Plates:						Dust cover plates for bal- anced and unbalanced output holes in transmitter exterior trim. Supplied as loose item only when transmitter is shipped balanced or un- balanced.
	with hdwr	1	MS-2442				
	with hdwr	1	MS-2338				
	32. Insulator Bowl Assembly	2	AX-159				Porcelain insulator balanced output bowls supplied as a loose item only when trans- mitter is shipped unbalanced.
	33. Strap, Grounding	1	MS-202-19- 13.12				Metal strap used for wiring output terminal board. Supp- lied as a loose item when transmitter is shipped un- balanced.
2	Mounting Base Assembly, with shield and access doors	1			Metal structure that can be bolted to floor and, first and second frames are bolted on.		
3	Auxiliary frame assembly with:	1	AX-239	3000	Metal cabinet that houses electrical equipment.		
	Meter Panel Assembly	1	AX-107		Equipment status indicators, top auxiliary frame.		
	Auxiliary Power Panel	1	Model APP-8		Power distribution panel.		
	Standing Wave Control Unit	1	Model SWCU		Standing wave control unit drawer, auxiliary frame.		
4	Main Frame Assembly, with:	1	AX-186	1000	Metal cabinet that houses electrical equipment power amplifier.		
	Power Amplifier	1	AX-509	900	First power amplifier section and control panel assembly, auxiliary frame.		

TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION
4 (cont)	Main Power Panel	1	AX-504	1000	Power supply control panel, main frame.
	Relay Panel	1	AR-161	700	Indicator control and relay panel, main frame.
5	Power Transformer	1	TF-203	T800	Main power transformer main frame.
6	Drawer Assemblies:				
	1. Power Supply	1	Model CPP-5		Power supply drawer, rear auxiliary frame
	2. Frequency Divider	1	Model CHL		Frequency divider drawer, auxiliary frame.
7	3. Frequency Standard Drawer Assembly	1	Model CSS		R-F oscillator drawer, auxiliary frame.
	Drawer Assemblies:				
	1. A-F Controlled Oscillator	1	Model CLL		A-F oscillator drawer auxiliary frame.
8	2. Tone Intelligence Unit*	1	Model TIS		Tone intelligence drawer, auxiliary frame.
	3. Sideband Exciter, Drawer Assembly	1	Model CBE		Sideband exciter drawer, auxiliary frame.
	Drawer Assemblies:				
9	1. Controlled Master Oscillator	1	Model CMO		Controlled master oscillator drawer, auxiliary frame.
	2. Frequency Amplifier	1	Model CHG		Frequency amplifier drawer, auxiliary frame.
10	Power Supply, Drawer Assembly	1	Model CPP-2		Power supply drawer, auxiliary frame.
11	High-Voltage Rectifier, or Solid State Power Supply	1	AX-103 or HVRC	600	HVR, main frame.
12	RF Amplifier Drawer Assembly with RF Amplifier unit Model RFC	1	AX-104	2000	RF amplifier and control panel, main frame
12	Exterior Covers and Trim strips:				
	1. Main Frame Trim, Front Left Side	1	MS-1634		Exterior doors, covers, and trim strips for the auxiliary and main frames.
	2. Auxiliary Main Frame Trim, Front Top	1	MS-1635		
*In some models, Tone Intelligence Unit TIS is replaced by Keyer-Monitor Control Unit KMCU					



TABLE 1-2. EQUIPMENT SUPPLIED (cont)

CRATE NO.	CONTENTS	QTY	TMC P/N	SYM	FUNCTION
12 (cont)	3. Auxiliary and Main Frame Trim, Front Bottom	1	MS-1636		
	4. Auxiliary Frame Trim, Front Hinged Right Side	1	MS-1637		
	5. Auxiliary Frame Door, Rear	1	MS-1648		
	6. Auxiliary and Main Frame Trim, Rear Center	1	MS-1669		
	7. Auxiliary Frame Trim, Rear Right Side	1	MS-1670		
	8. Main Frame Trim, Rear Left Side	1	MS-1671		
	9. Auxiliary and Main Frame Trim, Rear Top and Bottom	2	MS-1672		
	10. Auxiliary and Main Frame Cover, Top	1	MS-1699		
	11. Auxiliary Frame Trim, Front Hinged Left Side	1	MS-1920		
	12. Main Frame Trim, Front	1	MS-1633		
	13. Main Frame Door, Rear	1	MS-1647		
	14. Main Frame Panel, Right Side	1	MS-2116		
	15. Auxiliary Frame Panel, Left Side	1	MS-2117		
	16. Main Frame Door, Front	1	MS2118		
	17. Auxiliary Frame Door, Front	1	MS-2119		

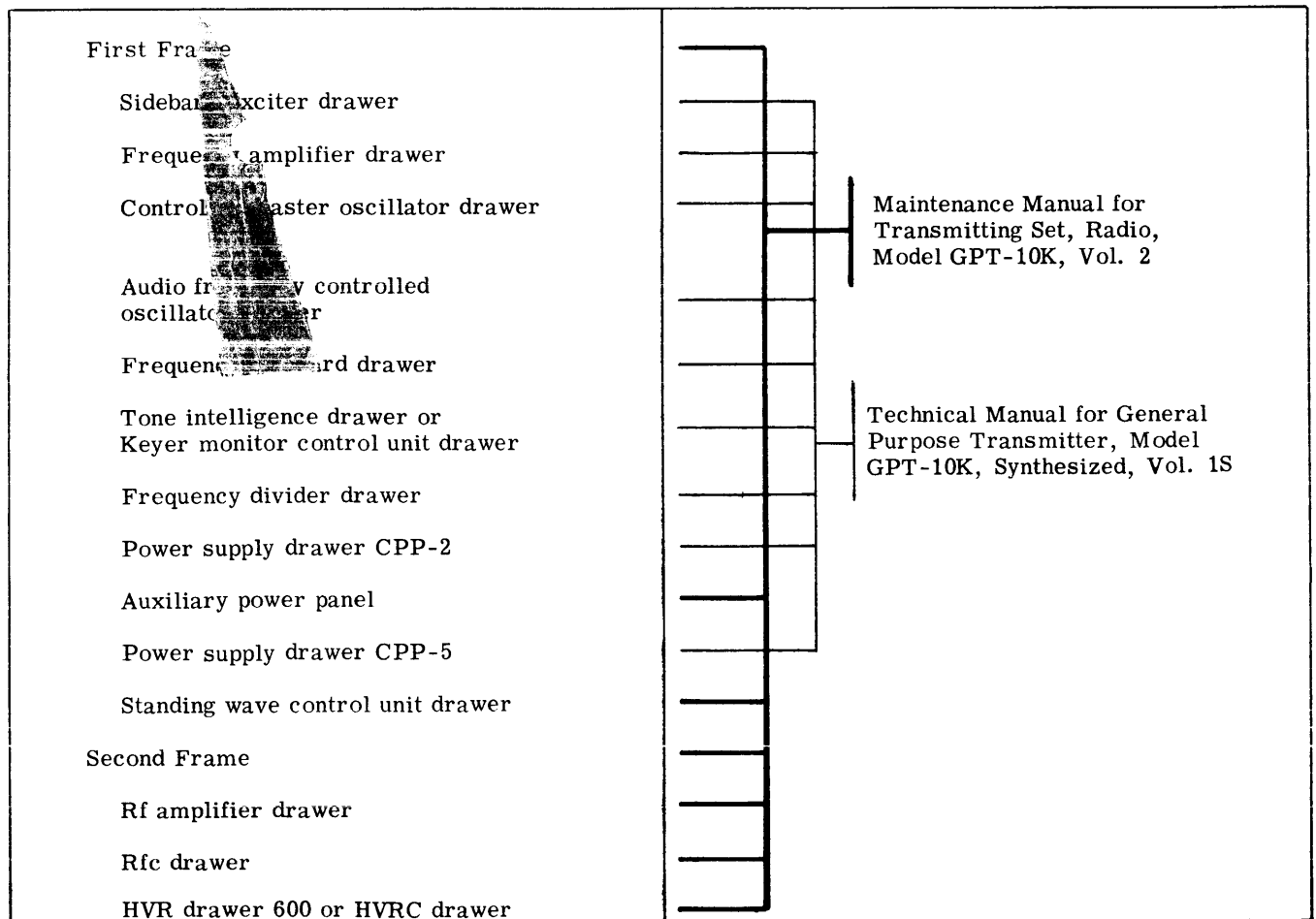
TABLE 1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED

EQUIPMENT	PURPOSE
1. Box Wrenches, assorted sizes	Fastening mounting hardware
2. Open End Wrenches, assorted sizes	Same as item 1
3. Spin Tights, sizes: 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16	Same as item 1

TABLE 1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED (cont)

EQUIPMENT	PURPOSE
4. Socket Wrench Set, socket sizes to 1-1/8	Same as item 1
5. Screwdrivers, Flat Head, assorted sizes	Same as item 1
6. Screwdrivers, Phillips-head assorted	Same as item 1
7. Crowbar	Open packing crates
8. Fork-Lift or equivalent	Moving heavy objects (e.g. packing crates and voltage transformers)
9. Low-Speed Electric Drill and carborundum bit or equivalent	Drilling equipment anchoring holes
10. Case cutter	Open cardboard packing cases
11. Nail puller	Open packing crates
12. Pair of snips	Cutting strap bands

TABLE 1-4. ASSOCIATED MANUALS



SECTION 2  
PRE-INSTALLATION

2-1. INTRODUCTION.

The following paragraphs present pre-installation considerations for installing the GPT-10K transmitter at a land site. Most of these considerations are also applicable for a mobile-van or shipboard installation.

2-2. ENVIRONMENT.

The 10K transmitter operates under a broad range of environmental conditions (refer to paragraph 1-2). These conditions must be taken into consideration when selecting the equipment location.

2-3. LOCATION OF PERIPHERAL EQUIPMENT.

There is no distance limitation governing the location of peripheral equipment (i. e. , facsimile and teletype machines, microphones, keys, test equipment, etc. ), other than providing practical and compatible inter-equipment operation (refer to paragraph 1-2).

Consideration should be given to the routing and length of input signal cables before assembling the transmitter. Signal input cable entry is made through the base assemblies of the equipment during installation. All signal inputs are spade lug connections terminating inside the rear of the first frame; this point can be used as a reference in determining exact input signal cable lengths.

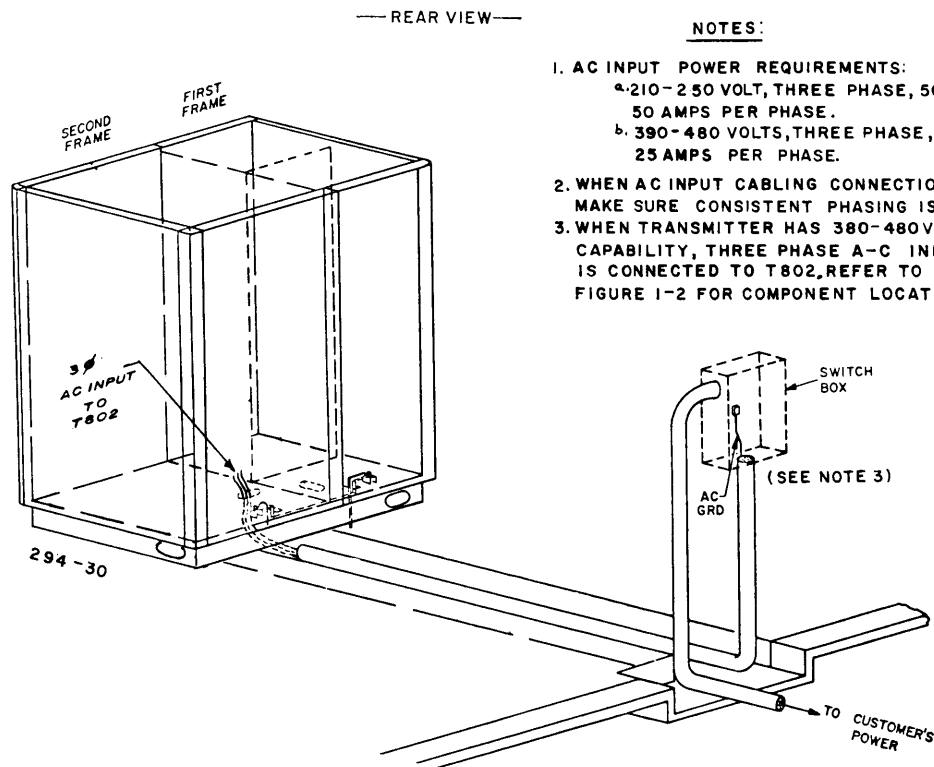
2-4. A-C INPUT POWER REQUIREMENTS.

Three methods of laying out input power cables can be used. Figure 2-1 illustrates the sub-floor-level cable raceway method, which requires provisioning for troughs during construction of the building. If these provisions have not been made, removable access plates, located at the side and rear of the base assembly, permit cable entry at floor-level.

It should be noted that input power under full power output conditions is based on the maximum allowable plate dissipation of the final amplifier rather than on various modes of operation. Primary input power under standby and full power conditions are 6.5 kw and 15.0 kw, respectively. In fulfilling practical and adequate a-c input power requirements, consider the transmitter draws 20 kw. This requirement can be used in providing the appropriate size a-c input power line, switch or breaker boxes, etc. for the transmitter. Under maximum current conditions, the transmitter draws 60 amperes per phase for 210-250 vac input, or approximately 25 amperes per phase for 380-480 vac input.

2-5. STATION GROUND.

The 10K transmitter must be grounded to station ground; accordingly, a 5/8-11 stud has been centered and welded to the base assembly of the transmitter. The exact location of the stud is 11-1/4 inches in from the rear



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Figure 2-1. Typical Input Power Cabling Requirements, Installation Diagram.

corner on the inside of the base assembly, under the first frame. If the station ground has not been established, locate an appropriate station ground cable in this vicinity before starting the installation procedure. Complementary hardware for the stud is provided to connect station ground to the transmitter during installation.

#### 2-6. EQUIPMENT ANCHORING.

Anchoring the transmitter to the floor in a land installation should not be necessary since gross equipment weight is approximately 2,500 lbs. However, in a shipboard or mobile-van installation, the transmitter should be anchored. Anchoring holes are drilled in the base assembly; the base assembly may be used to determine the anchor points.

#### 2-7. ANTENNA TRANSMISSION LINE.

The output impedance or load for the 10K transmitter is 50 or 70 ohms (unbalanced output) or 600 ohms (balanced output). When working into either load, it is not necessary to use a rigid transmission line. A flexible 3-1/8 inch (recommended or 1-5/8 inch minimum) coaxial line for unbalanced operation or a pair of in-

ulated #6 copper wires for balanced operation are required. The length of the transmission line(s) is governed by the physical routing distance between the transmitter and antenna. A 1-5/8 inch standard EIA (Electronics Industry Association) flange connector is used as the unbalanced output jack of the transmitter. Any compatible connector plug may be used on the end of the transmission line.

#### 2-8. HEAT DISSIPATION.

The transmitter cabinets are semi-pressurized and forced-air cooled by self-contained blowers. Approximately 90 percent of the heat generated by the transmitter is dissipated through exhaust air-ducts. The remaining 10 percent (maximum) of the heat is radiated by the surface area of the transmitter. This 10 percent will load the room air conditioner and subsequent effect on room-temperature should be taken into consideration.

#### 2-9. DIMENSIONAL CLEARANCES.

Figure 2-2 illustrates minimum dimensional clearances required for typical 10K transmitter installation. Additional clearance considerations are discussed in following paragraphs.

Physically, the largest single part of the transmitter is an uncrated frame assembly, measuring three feet wide, three and a half feet deep, and six and a half feet high (approximately). These dimensions necessitate entrance door(s) sizes, leading to the intended installation point, which will allow adequate frame passage.

Figure 2-2 also presents air intake and exhaust port dimensions for transmitter top covers and side panels. After planning final transmitter location, these dimensions can be used as a reference point in and for fabricating the desired air duct system. Location and sizes of exterior wall cut-outs for the air-duct system will ultimately be determined by ducting used.

The type of output transmission line (transmitter to antenna) is another clearance consideration. Hole sizes in exterior walls between transmitter and antenna will be governed by the type of output transmission line selected.

It may be practical to outline overall dimensions of the transmitter on the floor with a piece of soft chalk or a plumbline before starting the installation procedures. After using this outline as a guide to position transmitter base assembly in the installation procedure, these lines could be removed.

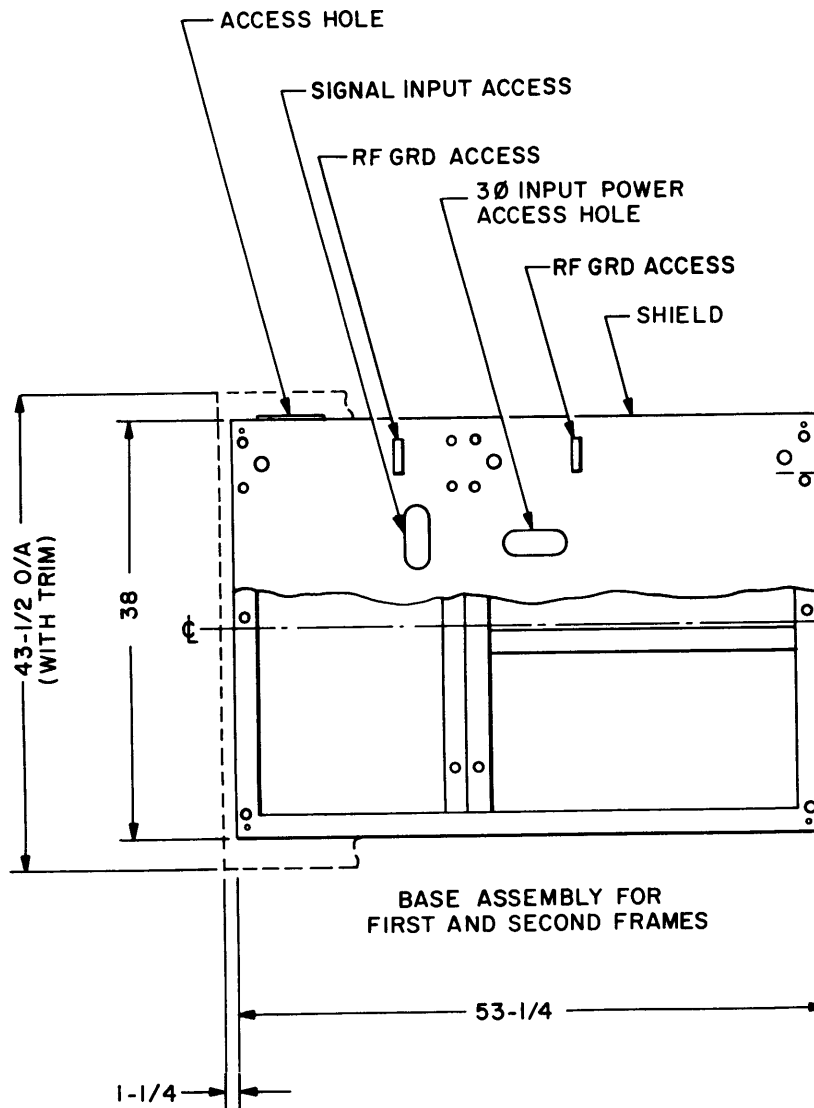
#### 2-10. TRANSMITTER LOCATION.

All of the preceding data should be taken into account when locating the 10K transmitter. In addition, some practical and obvious things to consider would be: accessibility and work space, heat zones, and habitability.

Equipment accessibility and work space should be provided for personnel to facilitate installation, operation, or maintenance of the transmitter. Since installation requires the greater amount of working floor area, it might be used as a criteria for locating the transmitter.

Heat zones (spaces above or adjacent to heating or heat producing apparatus or piping ducts) should be avoided. Adequate ventilation also should be provided to dissipate heat generated by the transmitter.

Habitability features with respect to locating might be: neat peripheral wiring for personnel safety; and passageway clearance for operating and maintenance personnel in the case of co-located equipments.



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Figure 2-2. Dimensional Clearance Requirements, Installation Diagram, (sheet 1 of 2)

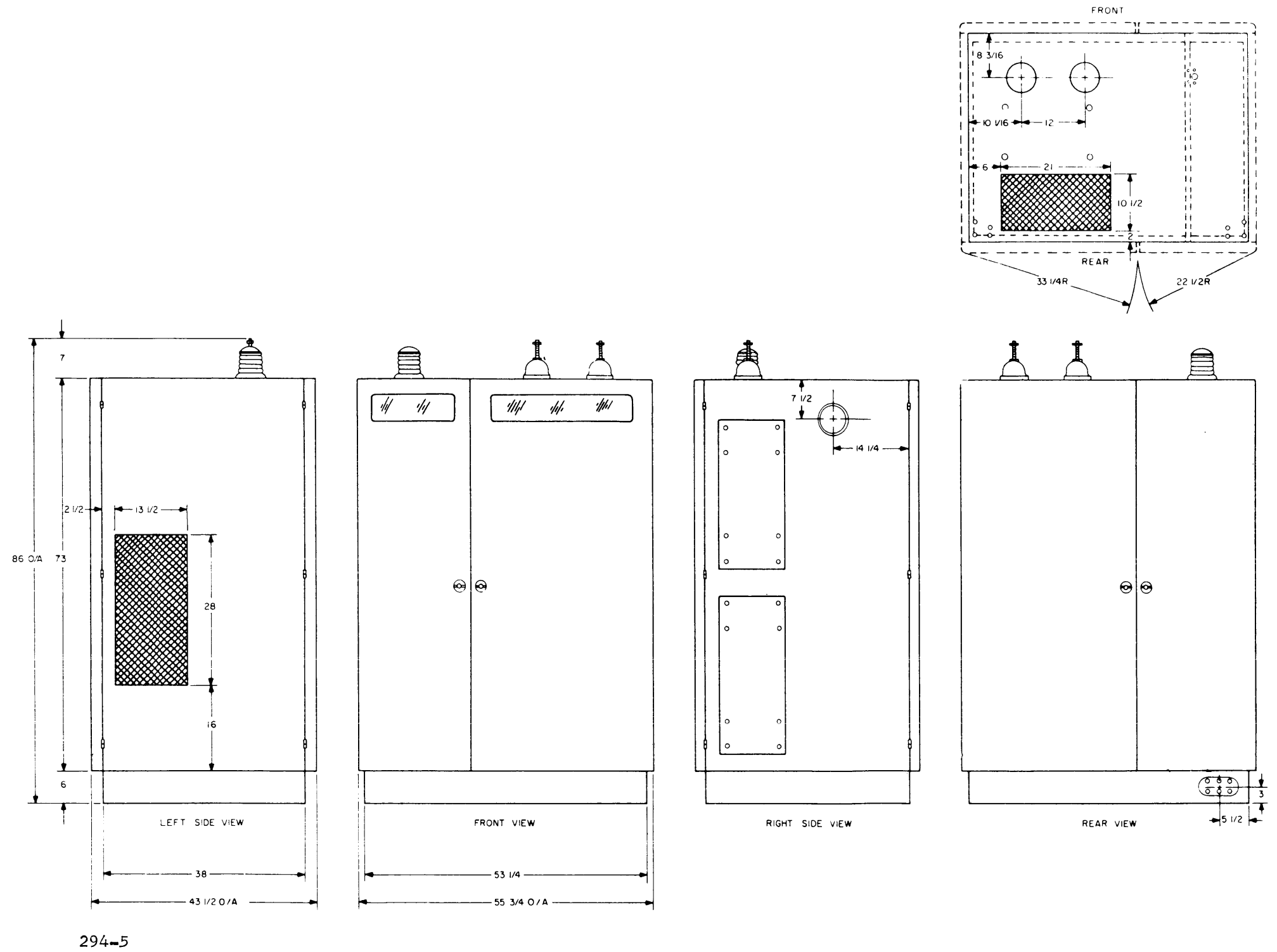


Figure 2-2. Dimensional Clearance Requirements, Installation Diagram, (Sheet 2 of 2)

## SECTION 3

### LOGISTICS

#### 3-1. MATERIAL HANDLING.

Whether the equipment is crated or uncrated, various precautions must be observed in material handling.

#### CAUTION

Crates must never be rolled, crushed, dropped, or struck-- they contain delicate electronic apparatus that can be damaged.

General safety precautions should be adhered to when moving the equipment to prevent injury to personnel or damage to equipment. Weight alone is not an indication that equipment can be moved safely by personnel; size is also an important consideration. A light-weight, large, and bulky item cannot easily be handled by one man. When personnel are involved in handling, a good rule-of-thumb to follow is: 50 pounds for one man, or 100 pounds for two men. These weights are considered a safe limit for carrying. When lifting an item, bend the knees, keep back straight and lift with the legs. Before handling material, refer to tables 1-1 and 3-1 for crated and uncrated weights and dimensions.

#### 3-2. PACKAGING DATA.

The 10K transmitter is packed in 12 crates (not including running spares). Each crate is assigned a number from one to twelve and appears on the crate. Physically locate crate 1 closest to the intended point of installation; locate the other crates according to their numerical sequence, such that crate 12 is placed farthest away from crate 1. Arranging crates in this manner makes unpacking and assembling the transmitter easier.

The transmitter is cleaned, preserved, packaged, and marked in accordance with MIL-P-116, PMD-40, and MIL-STD-129. Figure 3-1 illustrates typical equipment packing methods.

Table 3-1 lists the crated weights and dimensions of the 10K transmitter. Additional reference can be made to table 1-1 for uncrated weights and dimensions.

TABLE 3-1. CRATED WEIGHTS AND DIMENSIONS

CRATE NO.	GROSS WEIGHT IN LBS.	DIMENSIONS IN INCHES		
		HEIGHT	WEIGHT	DEPTH
1	188	30-3/4	23-7/8	32
2	234	8	40-1/8	56-3/4
3	768	82-1/8	50-1/4	32-1/4
4	1298	81-3/4	42	51-1/2
5	536	28-3/4	19-3/4	24
6	212	30-3/4	23-7/8	32
7	202 or 188.5*	30-3/4	23-7/8	32



TABLE 3-1. CRATED WEIGHTS AND DIMENSIONS (CONT)

CRATE NO.	GROSS WEIGHT IN LBS.	DIMENSIONS IN INCHES		
		HEIGHT	WEIGHT	DEPTH
8	214 or 183**	30-3/4	23-7/8	32
9	143	17-1/4	21-5/8	27-1/4
10	233	22	30-3/4	40
11	240	22	30-3/4	40
12	643	44-1/4	27-1/2	77-5/8

\*When transmitter is configured with Keyer Monitor Unit KMCU instead of Tone Intelligence Unit TIS, crate 7 weight is 188.5 lbs. instead of 202 lbs.

\*\*When transmitter is configured with solid-state rectifiers instead of gaseous-tube rectifiers, crate 10 weight is 183 lbs. instead of 233 lbs.

3-3. EQUIPMENT INSPECTION AND DAMAGE.

The 10K transmitter has been assembled, calibrated, and tested at the factory before shipment. Inspect all packages for possible transit damage. While following the procedural installation instructions, carefully unpack each crate as indicated; inspect all packing material for parts that may have been shipped as loose items.

With respect to equipment damage for which the carrier is liable, The Technical Materiel Corporation will assist in describing methods of repair and the furnishing of replacement parts.

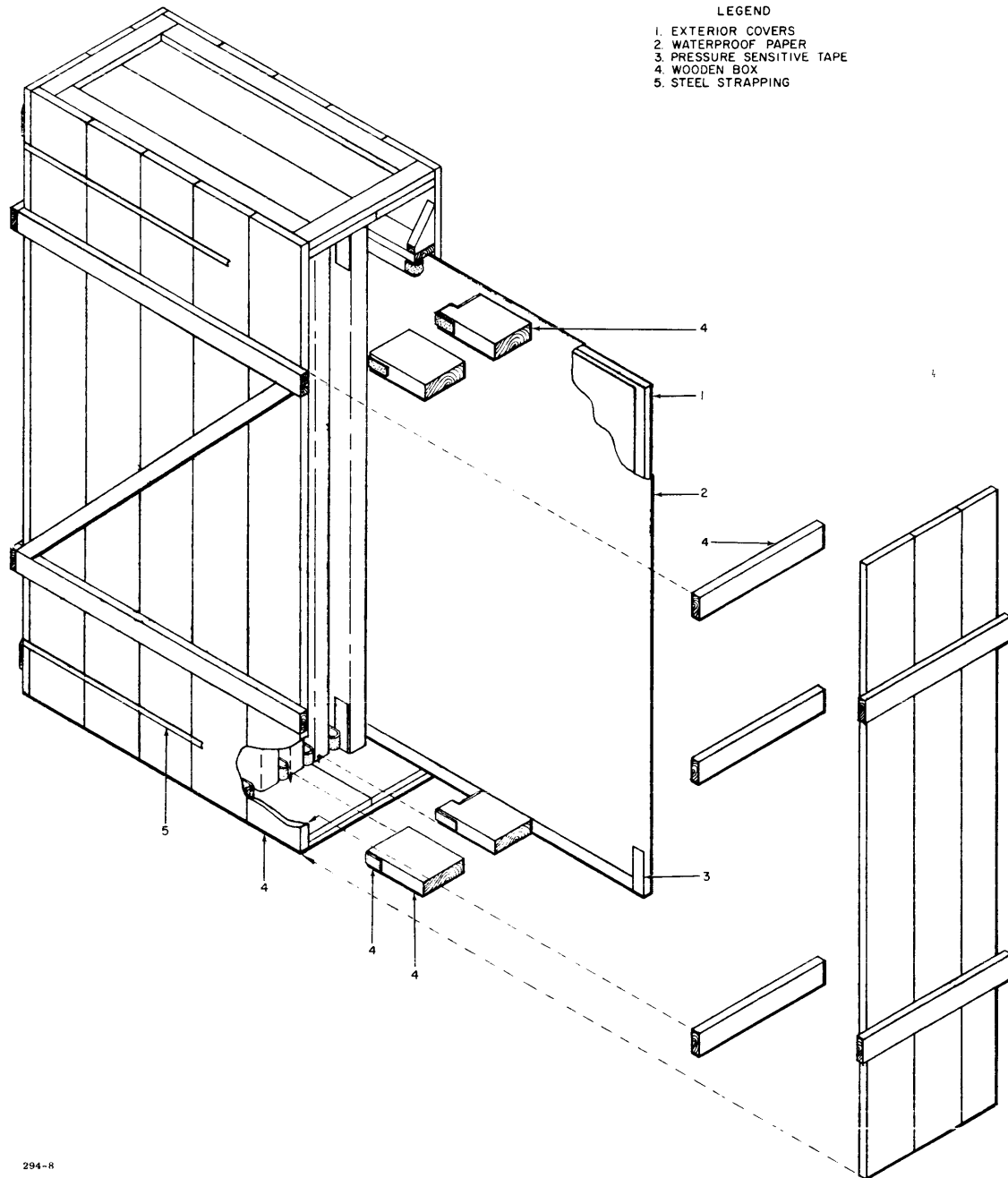
3-4. UNCRATING METHODS.

The following uncrating methods must be adhered to when unpacking the transmitter to prevent equipment damage. Keep in mind the information previously discussed on material handling, packaging data, and equipment inspection.

- a. Remove wire straps or bands from around crates with pair of snips.
- b. Unless otherwise specified, remove nails from three sides of the crates with nail puller. Do not use claw hammer or pinch bar.
- c. Carefully remove sides of crate, then rip off moisture-proof paper. If a knife is used, care should be exercised not to mar equipment.
- d. If equipment is not packed in cardboard carton, it may be removed from crate as prescribed in installation procedure.
- e. If after removing moisture-proof paper a cardboard carton is encountered, carefully open with case cutter.
- f. Where applicable, remove the following:
  - (1) Creased cardboard blocking pieces

- (2) Barrier bags
- (3) Tape
- (4) Molded cushioning
- (5) Cellulose wadding
- (6) Tissue paper

g. An inventory of the equipment should be made at this time. As parts are unpacked, they should be marked off on the packing list or equipment supplied list. If anything is damaged, refer to paragraph 3-3.

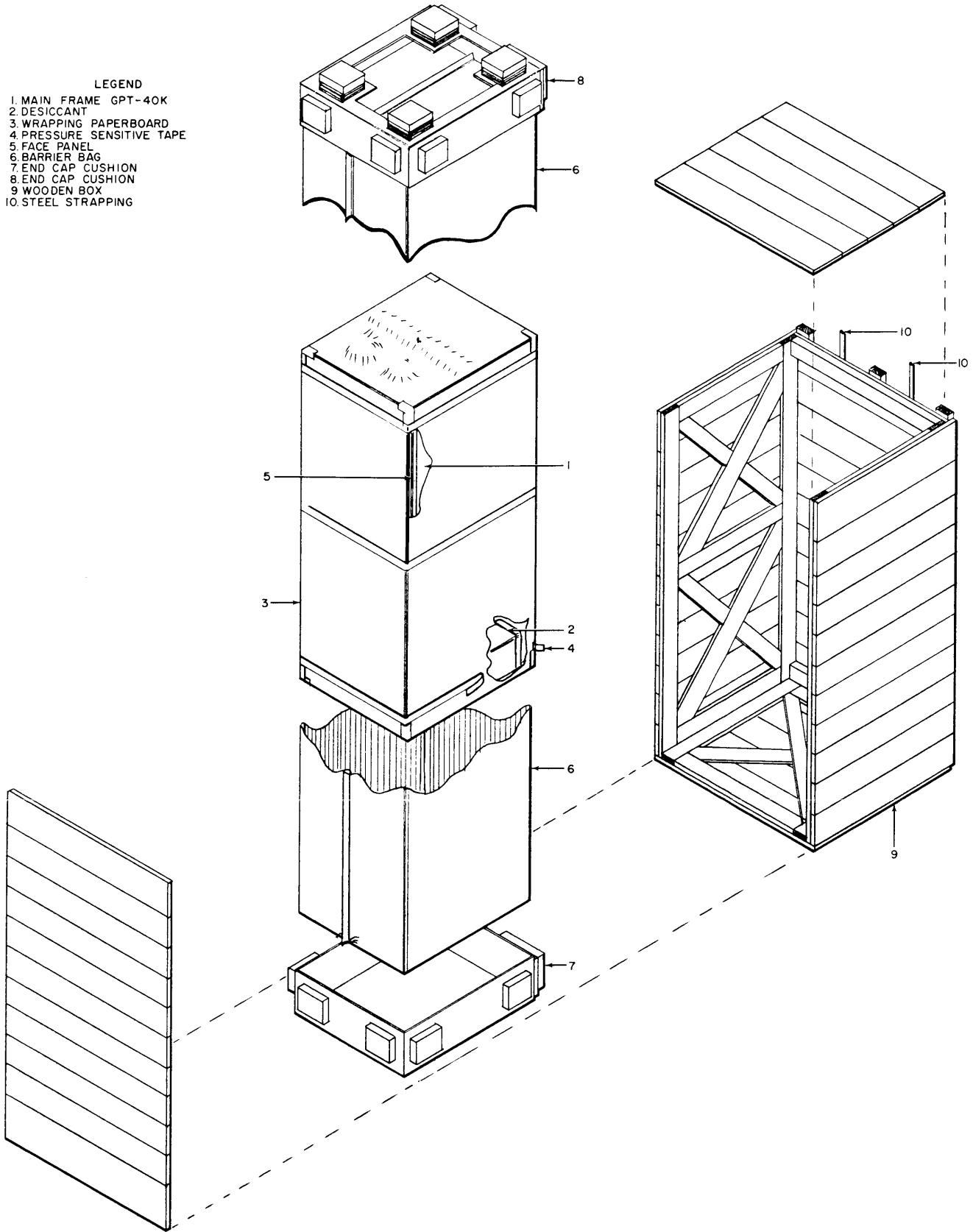


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Figure 3-1. Typical Equipment Packaging (Sheet 1 of 4)

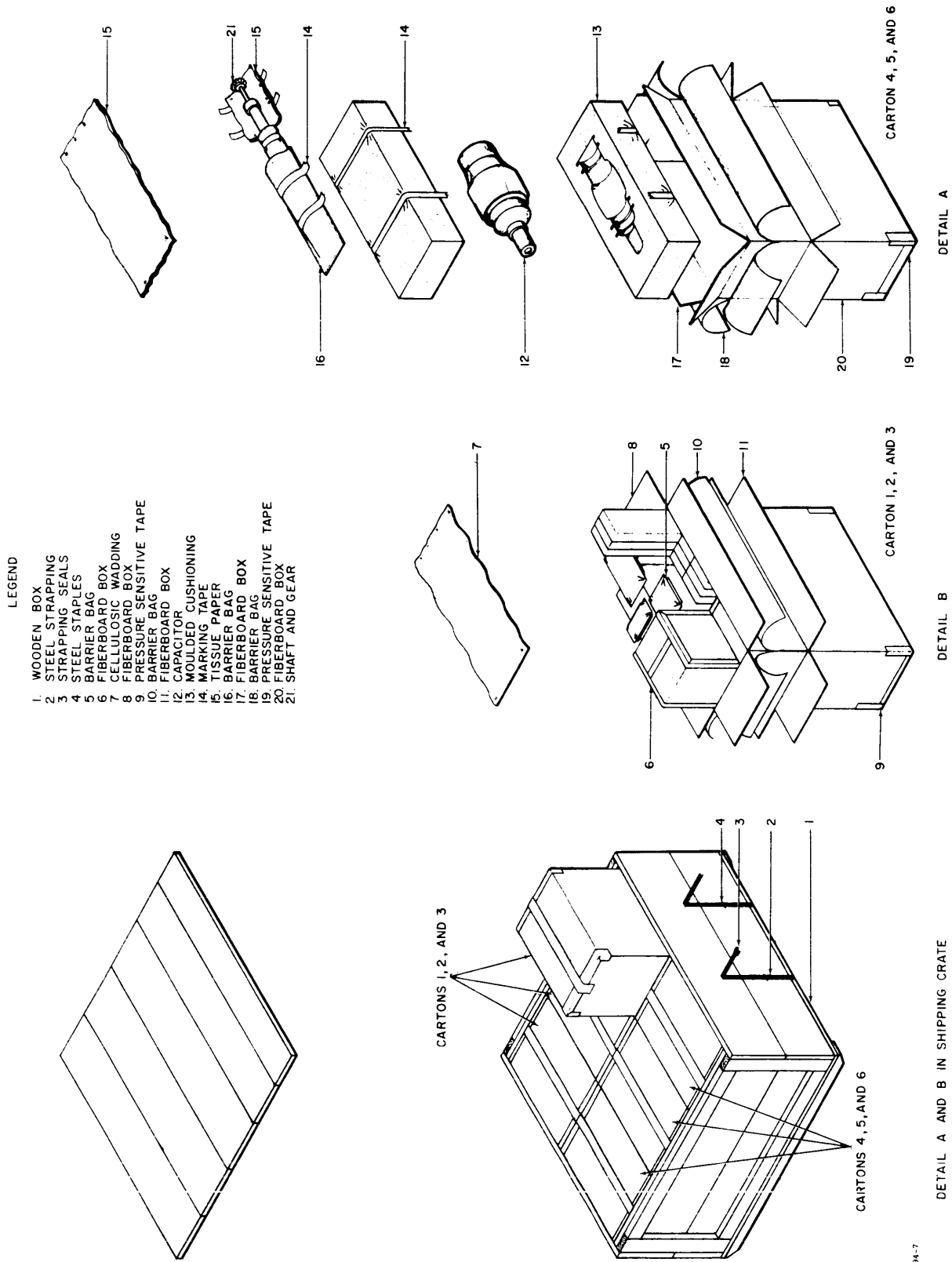
LEGEND

- 1. MAIN FRAME GPT-40K
- 2. DESICCANT
- 3. WRAPPING PAPERBOARD
- 4. PRESSURE SENSITIVE TAPE
- 5. FACE PANEL
- 6. BARRIER BAG
- 7. END CAP CUSHION
- 8. END CAP CUSHION
- 9. WOODEN BOX
- 10. STEEL STRAPPING



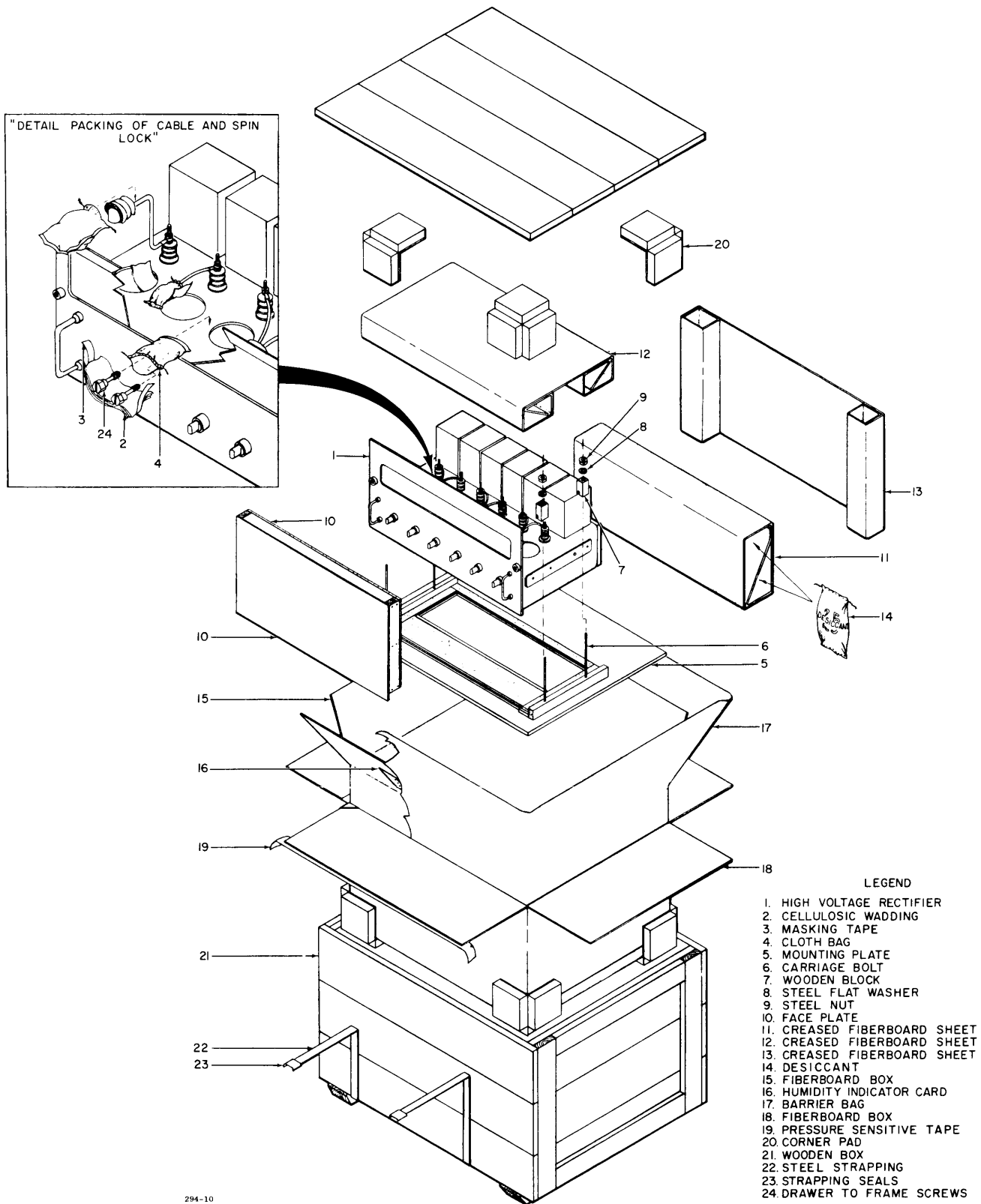
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Figure 3-1. Typical Equipment Packaging (Sheet 2 of 4)



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Figure 3-1. Typical Equipment Packaging (Sheet 3 of 4)



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Figure 3-1. Typical Equipment Packaging (Sheet 4 of 4)

SECTION 4  
INSTALLATION PROCEDURE

4-1. GENERAL INSTRUCTIONS.

A minimum number of assemblies, subassemblies, components and hardware have been disassembled from the 10K transmitter and separately packaged, thus reducing the possibility of equipment damage in transit. The method of disassembly and separate packaging of the transmitter also permits realistic equipment handling.

Carefully read the instructions for each step. After reading, consider the complexity involved in performing the step; it may be advisable to simulate a complex step before actually doing it. Make sure each step has been completed before proceeding to the next.

Cables, wires, and other miscellaneous items that are disconnected during transmitter disassembly are tagged and taped to the equipment. The information on a given tag indicates the designated terminal on a component to which the tagged item must be connected. Make sure all cables and wires have been connected as designated on tags and that all packing material, tags and tape have been removed before sealing-up a frame or section of a frame with an r-f shield, front panel, drawer, or piece of exterior trim (a door, cover, etc.). If any confusion arises regarding cable or wire connections that must be made, refer to the applicable circuit diagram in section 5 of this manual.

Temporary removal and replacement of panels, r-f shields, and component mounting assemblies are specifically called-out in the procedure in order to install various items. Do not anticipate instructions; to insure correct installation, perform each step exactly as it is written.

A list of equipment required to install the transmitter is presented in table 1-3. Non-specialized tools are not supplied with the equipment since these items should be contained in an equipped maintenance shop.

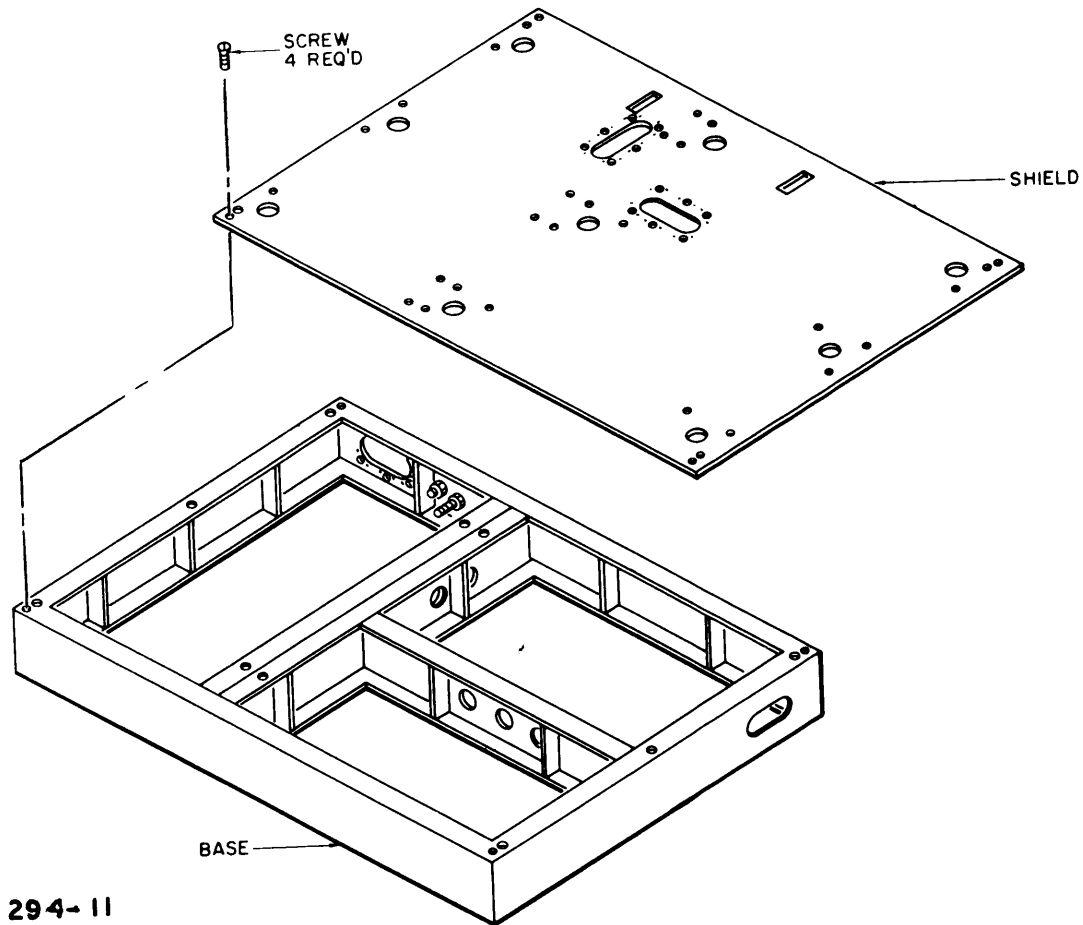
Make sure that installation personnel adhere to previously outlined techniques of uncrating and material handling (see section 3).

STEP 1

- a. Unpack assorted loose items from crate 1.
- b. Check each item contained against equipment supplied list.

STEP 2

- a. Unpack crate 2.
- b. Remove shield from base assembly, figure 4-i, for the first and second frames.  
Shield will be replaced later.



294-11

Figure 4-1. Base Assembly for the First and Second Frames, Installation Diagram

NOTE

Make sure the base assembly is correctly positioned. This can be determined by locating access holes on the long side of base assembly toward the intended rear side of the transmitter.

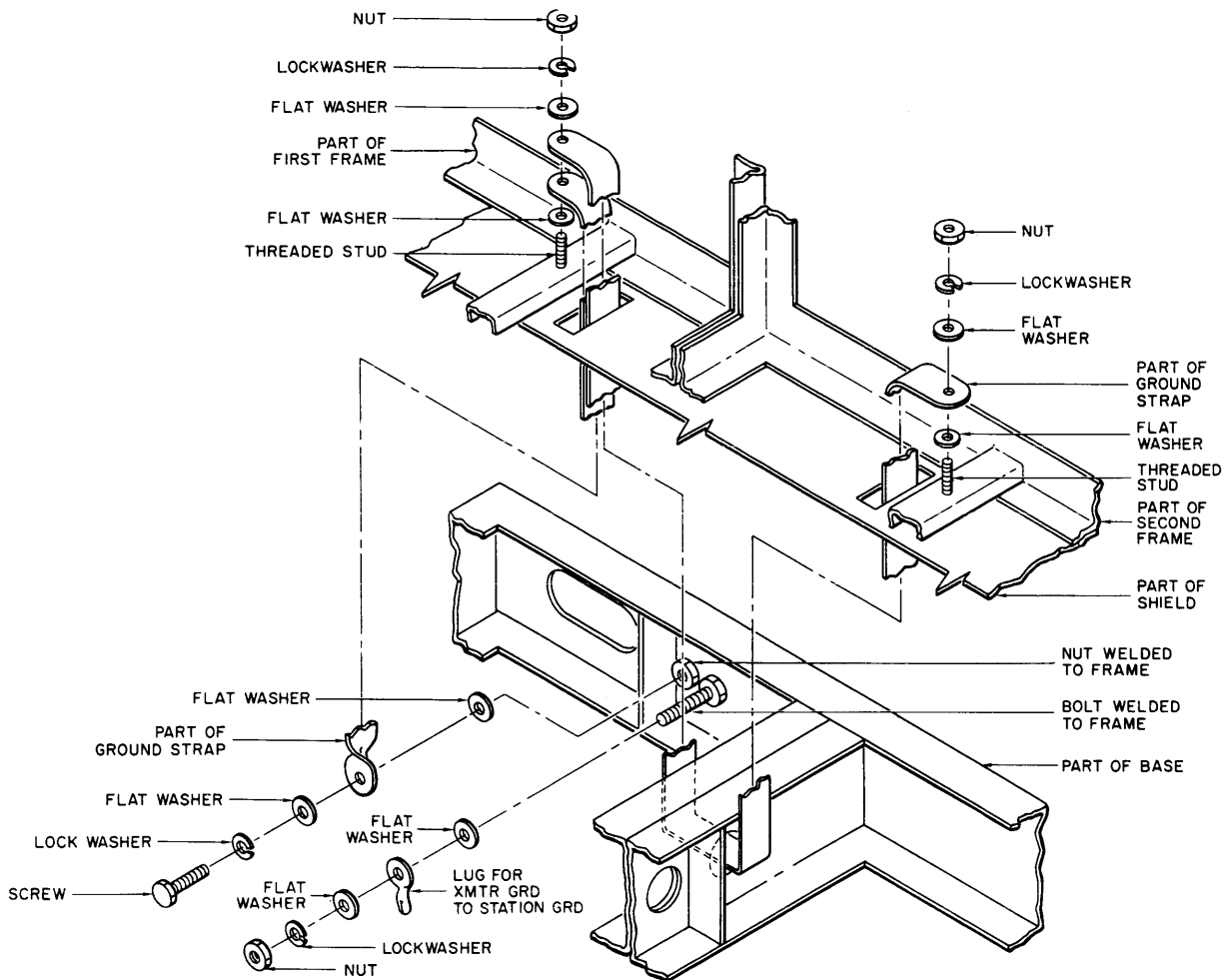
- c. Position base assembly in accordance with pre-installation planning (see figure 2-2).

STEP 3

NOTE

Only part of this step can be performed at this time. The remaining part of the step (physically bending and routing grounding straps up through shield to respective frame studs and then mounting) must be performed as transmitter assemblage progresses.

Using hardware from crate 1 (bag 1), bolt grounding straps (contained in crate 1), as indicated in figure 4-2 to the base assembly.



294-12

Figure 4-2. Ground Straps, Installation Diagram

STEP 4

NOTES

1. DO NOT connect a-c input power cables to the a-c input switch box.
2. When connecting cables or wires, make sure cables are connected as indicated in the applicable cable diagram.

Route a-c input power and input signal cables into base assembly (see figure 2-1).

STEP 5

NOTES

1. Grounding straps connected in step 3 must be bent and routed through small rectangular access holes in shield.
2. A-c input power and input signal cables must be routed through appropriate access holes in shield.



STEP 5 (cont)

- a. Properly position shield (see figure 4-1) on base assembly for first and second frames.
- b. Using hardware previously removed, tightly bolt shield to base assembly.

STEP 6

- a. Unpack crate 3.
- b. Position first frame on base assembly (see figure 4-3).
- c. Ground straps coming through shield will be connected later.

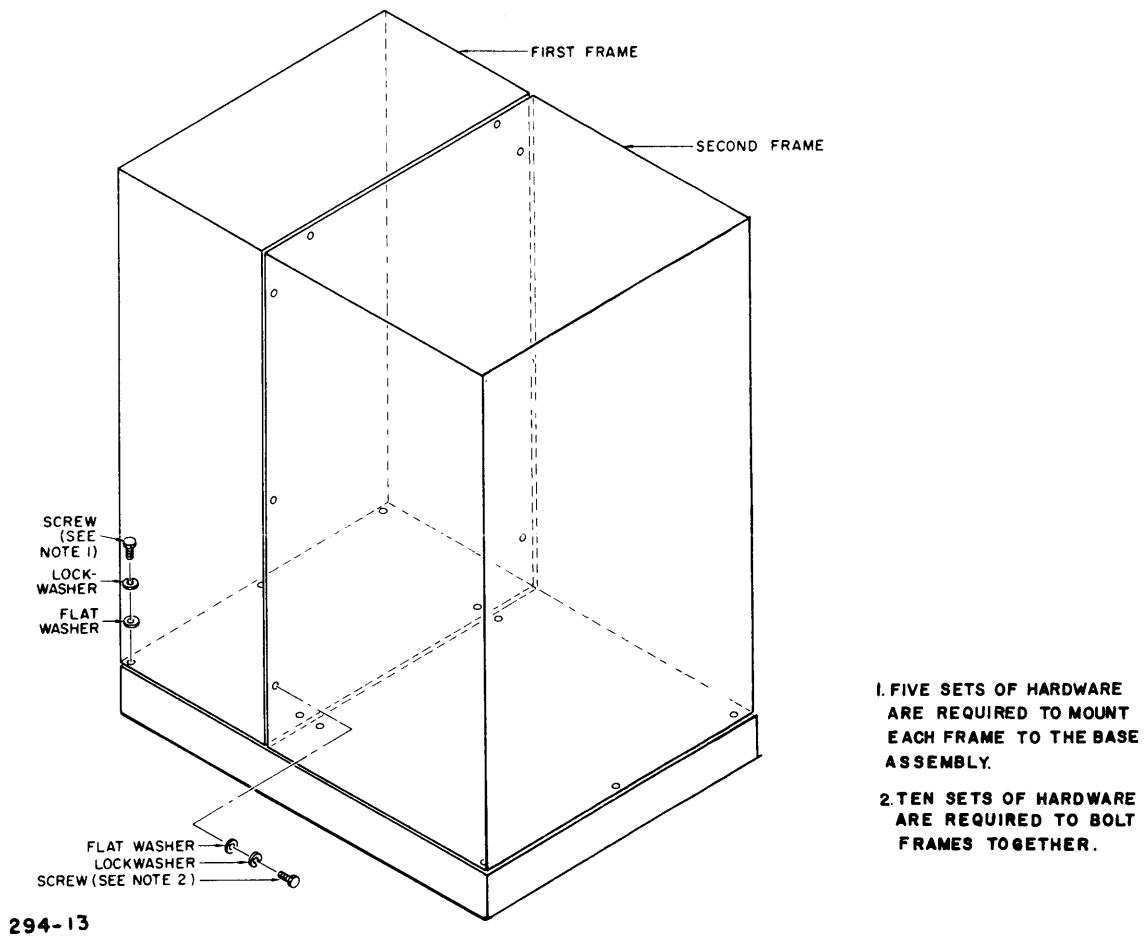


Figure 4-3. First and Second Frames, Installation Diagram

STEP 7

- a. Unpack crate 4.
- b. Position second frame on base assembly (see figure 4-3).
- c. Temporarily remove indicator control and relay panel from bottom front of second frame.

STEP 7 (cont)

To remove panel:

- (1) Unscrew large slotted hex-head screws on front panel.
- (2) Pull panel forward to clear frame.

d. Using hardware from crate 1 bag 2, loosely bolt first and second frames to base assembly (see figure 4-3).

NOTE

The plastic cable clamp around cable (line filterboard to transformer T802, figure 4-4) must be mounted to second frame wall. Hardware is provided in line filterboard mounting hardware kit.

e. Using hardware from crate 1 bag 3, tightly bolt the line-filterboard (contained in crate 1) to the wall (first and second frame wall) inside the bottom rear of the first frame.

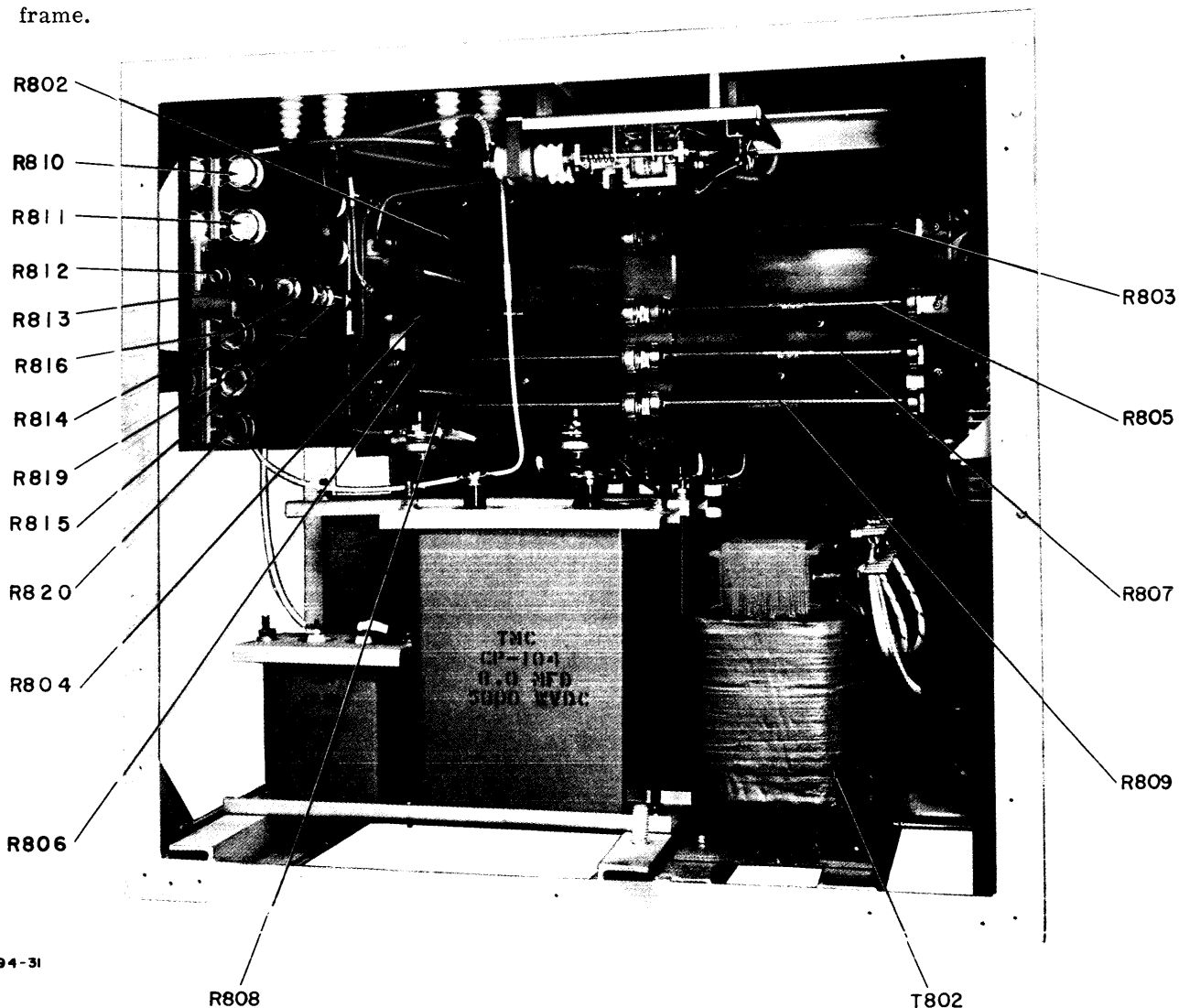


Figure 4-4. Lower Compartment of the Second Frame, Rear View

664, 20-4

294-31

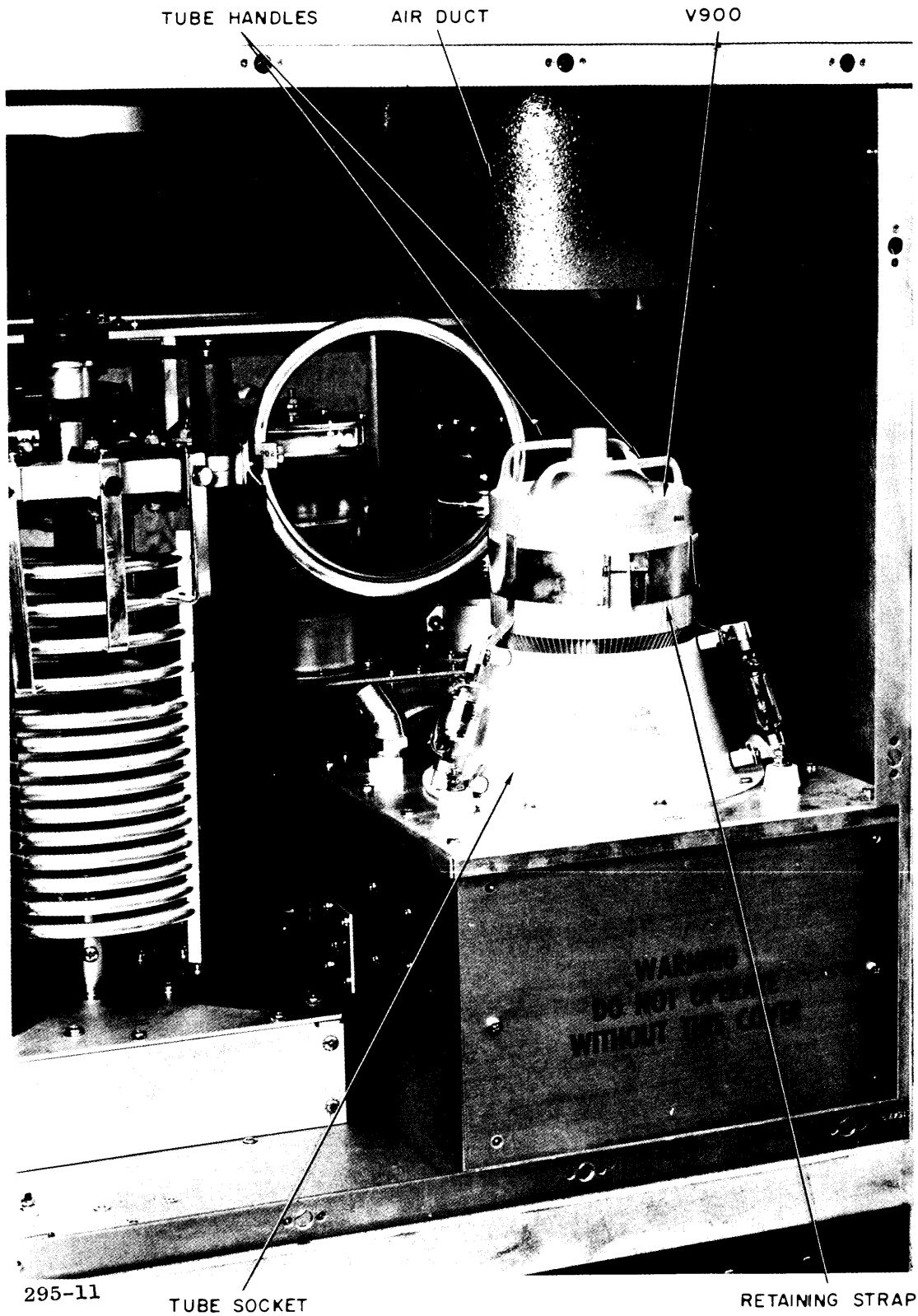


Figure 4-5. Upper Compartment of Second Frame, Rear View

#### STEP 7 (cont)

- f. Using remaining line-filterboard hardware from crate 1, tightly bolt the line-filterboard cover support brackets (contained in crate 1) to the frame wall, one bracket above and below the filterboard.
- g. Position and secure filterboard cover (contained in crate 1) to filterboard brackets.
- h. Route a-c input cable up through access hole in base shield to a-c input terminal board or to transformer T802 in bottom rear compartment of second frame; connect color-coded wires as indicated in schematic diagram (refer to section 5 of this manual).
- i. Mount grounding straps to threaded studs in bottom rear of frames, figure 4-2, using remaining hardware from crate 1, bag 1.
- j. Temporarily remove shield from upper rear of second frame.
- k. Temporarily remove glass window panel from front of second frame.

#### STEP 8

- a. Using hardware from crate 1 bag 4, loosely bolt frames together (see figure 4-3).
- b. After all hardware is loosely bolted, so that frame assemblies mechanically align, tighten all frame-to-base and frame-to-frame hardware.

#### STEP 9

##### NOTE

Make sure each resistor is placed in its designated position.

Mount fixed resistors R802 through R816, R819, and R820 (contained in crate 1) on resistor board (see figure 4-4) in bottom rear section of second frame.

#### STEP 10

- a. Remove hardware from retaining strap (see figure 4-5).
- b. Observe contact fingers inside socket for tube V900; contact fingers should not be bent.
- c. Carefully lift tube V900 (contained in crate 1), handles first, up into air duct in top of frame until base of tube clears socket.
- d. Carefully lower tube straight down into socket until slight resistance is encountered. Make sure tube is centered in socket.
- e. In one motion, while firmly grasping tube handles, rotate tube approximately one quarter of a turn, and push tube firmly down into socket. A slight amount of effort may be required to seat tube. Caution should be observed in seating tube so as not to damage contact fingers in socket. Check tube seating; tube must be all the way down and centered in tube socket.
- f. Replace retaining strap hardware.

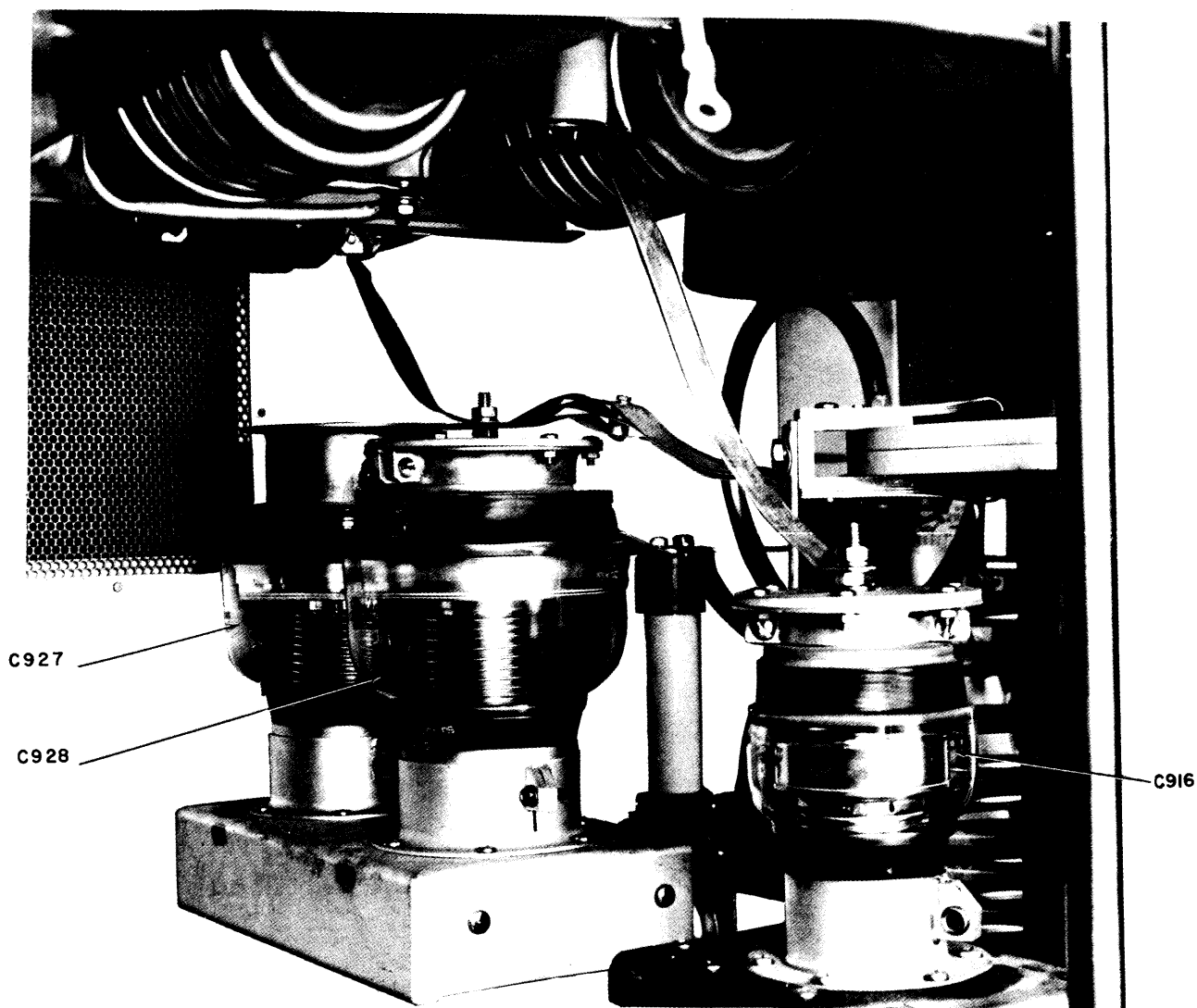
STEP 11

- a. Rotate front-panel PA TUNE, PA LOAD, and OUTPUT BAL controls, on second frame, until corresponding counters indicate "000".
- b. Rotate shafts of variable capacitors C916, C927, and C928 (contained in crate 1) until their plates are fully open (minimum capacitance).

NOTE

Gears on the capacitor shafts must mesh with gears on front-panel tuning shafts.

- c. Install capacitors C928 (PA tune), C927 (PA load), and C916 (output balance), figure 4-6, in their respective flange-clamp mountings. Tighten all retaining hardware.



294-16-2

Figure 4-6. Upper Compartment of the Second Frame, Side View

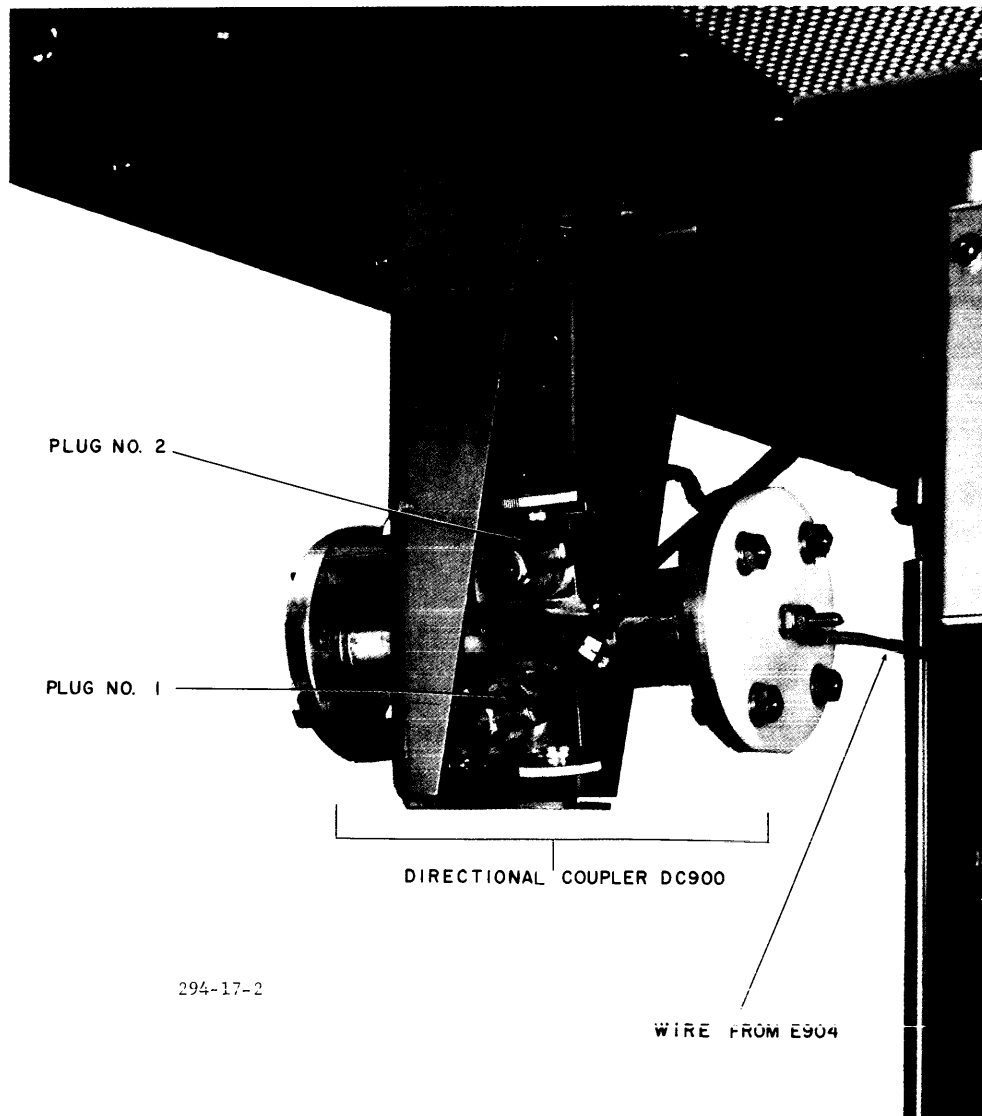
STEP 11 (cont)

d. Make the following electrical connections:

- (1) Flange clamp with metal strap, coming from stand-off in front of V900, to top of capacitor C927.
- (2) Metal straps, coming from band switch and capacitor C911, to top center threaded stud on capacitor C928.
- (3) Metal strap, coming from output load (coil above C916), to top center threaded stud on capacitor C916.

STEP 12

- a. Using hardware from crate 1 bag 11, position and mount antenna coupler, figure 4-7, (contained in crate 1) in the inside (toward the upper rear) of second frame.
- b. Connect cable CA-829 (part of frame wire harness) plug number 1 to jack on bottom rear side of antenna coupler DC900 and plug number 2 to jack on top rear side of DC900.



647.30-2

294-17-2

Figure 4-7. Antenna Coupler, Rear View

STEP 12 (cont)

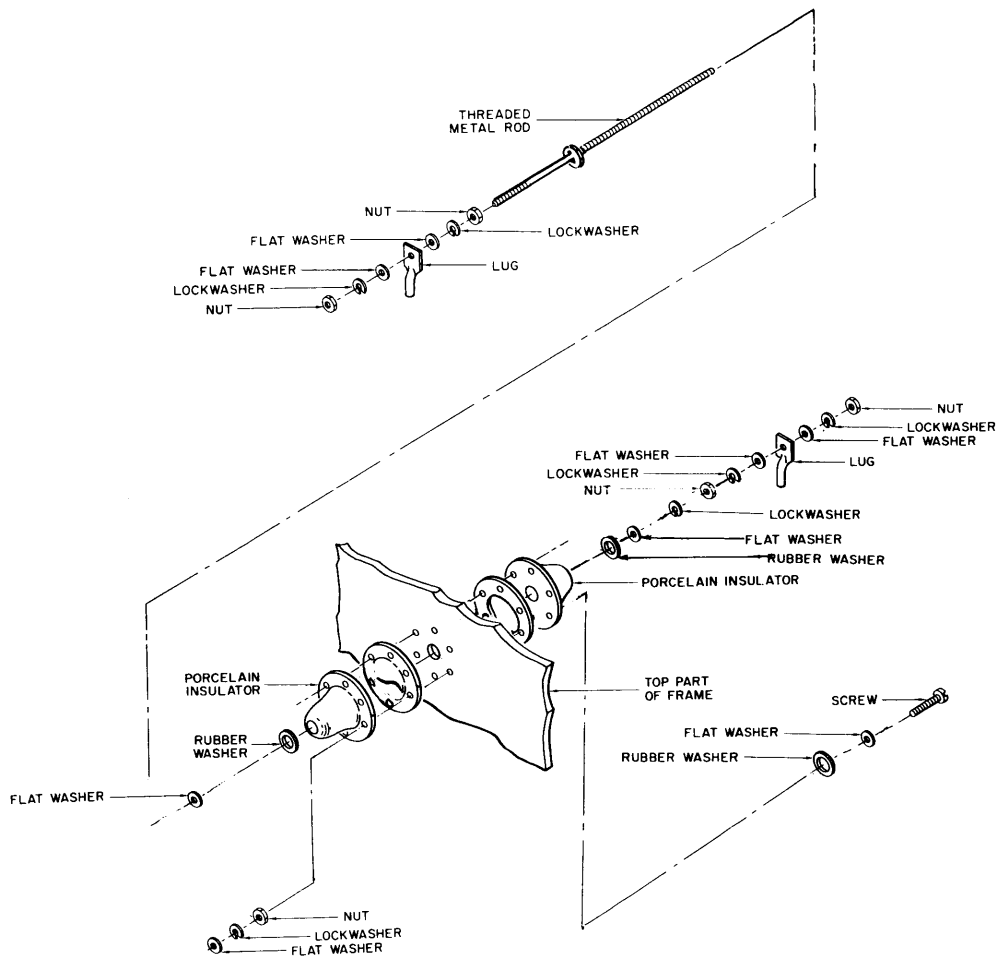
c. Connect wire from E904 to threaded stud in center DC900.

STEP 13

NOTES

1. Hardware on the rods must be temporarily removed to position rod.
2. Rods must be inserted into bowl assemblies from outside of frame.
3. Hardware must be replaced from inside of frame to secure rods in bowl assemblies.

a. Insert threaded bowl rods (contained in crate 2) into porcelain bowl assemblies (see figure 4-8) located on top of the second frame.



294-18

Figure 4-8. Balanced Output Bowl Assemblies, Installation Diagram.

STEP 13 (cont)

b. Wire transmitter for balanced or unbalanced output as follows: refer to cabling diagram located behind meter panel inside second frame (front part of frame).

(1) BALANCED OUTPUT

(a) Wire output connection board (behind meter panel) according to diagram, using strap in crate 1.

(b) Connect two (CA-412) wires, coming from output board to bowl assemblies.

(2) UNBALANCED OUTPUT

(a) Remove balanced output connections on output board.

(b) Make sure wire from E904 is properly connected to DC900 (refer to step 12c).

(c) Wire output board as indicated.

c. Replace rear r-f shield and front glass window panel on second frame.

STEP 14

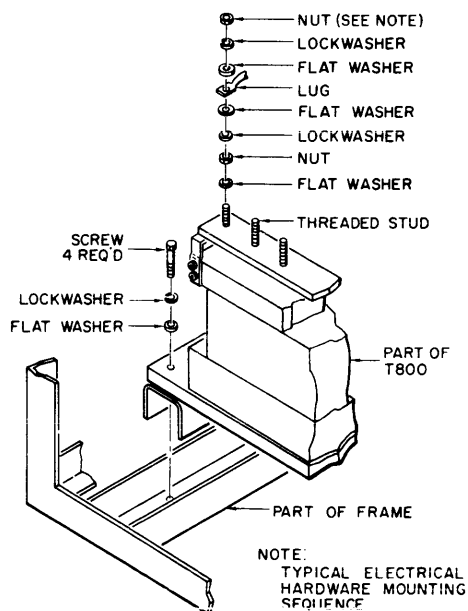
a. Unpack crate 5.

b. Position power transformer T800, figure 4-9, into bottom front of second frame.

c. Using hardware from crate 1 bag 5, tightly bolt T800 to frame.

d. Connect wires and cables to T800 as indicated in schematic diagram (see section 5).

e. Replace indicator control and relay panel. Make sure two cables in frame are appropriately connected to jacks J700 and J701 on back of panel.



294-19

Figure 4-9. Transformer T800, Installation Diagram.



#### STEP 15

- a. Temporarily remove safety cover from filterboard inside bottom front of first frame.
- b. Connect wires from relays K3000 and K3001 to filterboard as indicated in diagram in section 5.
- c. Replace safety cover on filterboard.

#### STEP 16

- a. Unpack crates 6, 7, 8, and 9.

#### NOTES

1. The standing wave control unit, shipped installed in front of first frame, must be removed and installed in the rear of the frame.
  2. Do not install the top three drawers into the front of the first frame. They will be installed after the high-voltage lamp assembly is installed.
- b. As each drawer assembly is unpacked, install it in its designated position (see figure 4-10) in first frame. To install any drawer assembly, proceed as follows:
- (1) Untape or unstrap cable assemblies, cable retractors, and all other components secured to the inside of frame for shipment.
  - (2) Pull out center section of drawer tracks until they lock in an extended position.
  - (3) Position slide mechanisms in tracks and ease modular unit into track until lock buttons engage holes in tracks.
  - (4) Where applicable, pull tilt handles on sides of drawer and position drawer vertically.

#### NOTE

When making cable or wire connections to drawer, secure cables or wires with cable clamps, where applicable.

- (5) Make necessary cable and electrical connections as indicated in diagram in section 5.
- (6) Pull tilt handles on sides of drawer and re-position drawer horizontally.
- (7) Press lock buttons on tracks; slide drawer completely into compartment.
- (8) Using hardware from crate 1 (bag 6), secure front panel of drawer to frame.

#### STEP 17

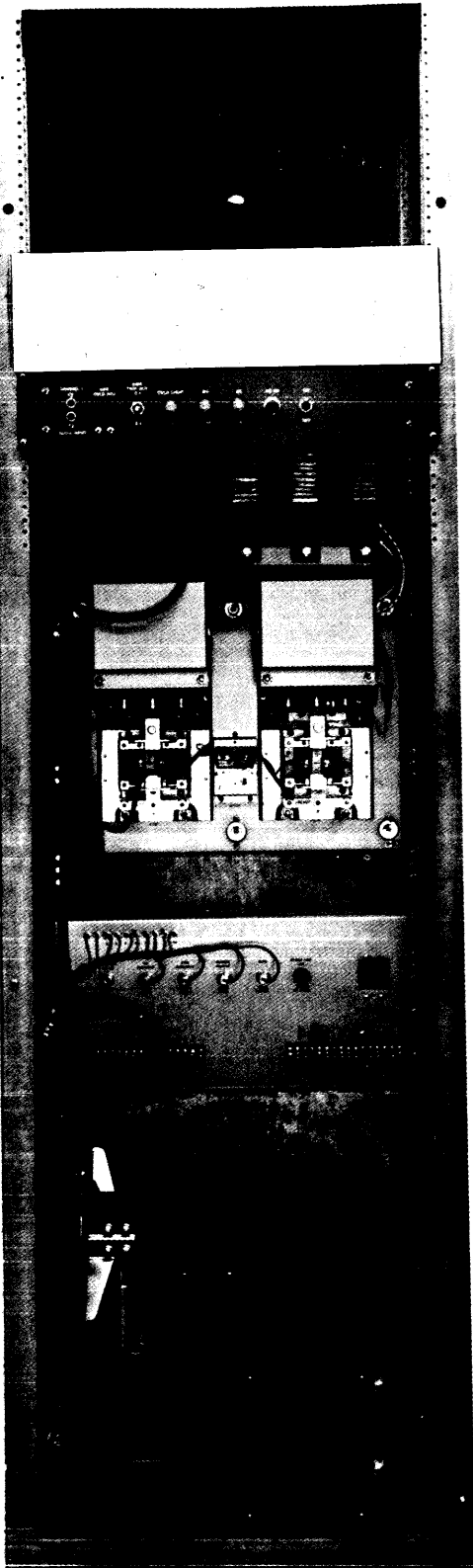
- a. Unpack crate 10.

#### NOTE

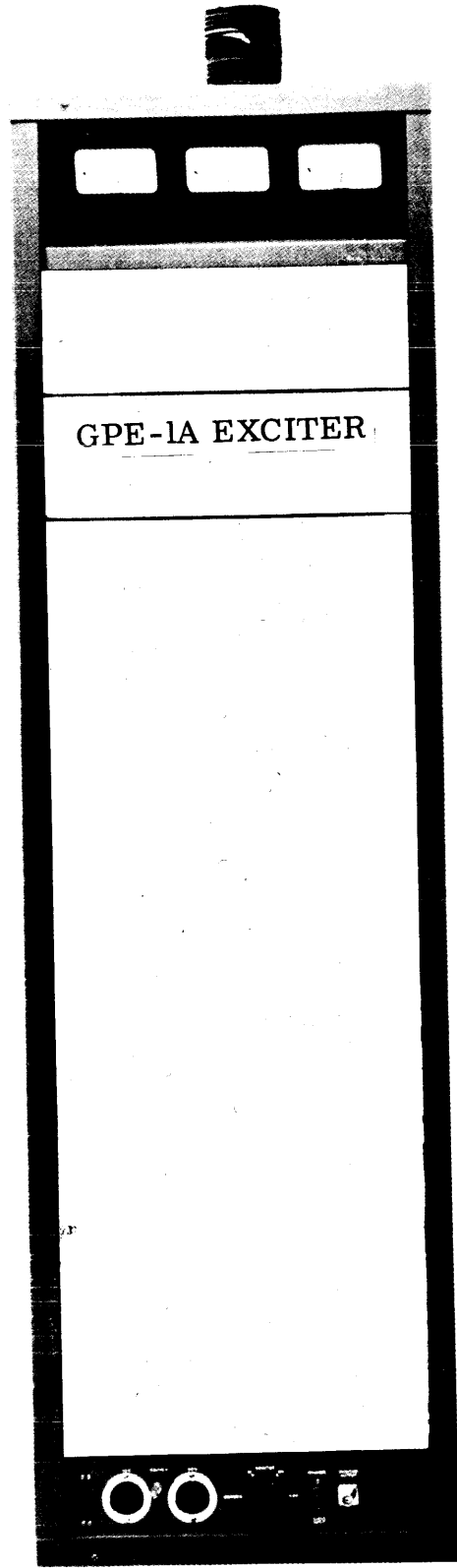
Steps b and c are applicable only when High Voltage Rectifier AX-103 is used.

- b. Insert six high-voltage rectifier tubes V600 through V605 (contained in crate 1), into tube sockets in high-voltage drawer (see figure 4-11).

FRONT (645.13-9)



REAR (645.13-2)



294-20

Figure 4-10. First Frame, Front and Rear View.

STEP 17 (cont)

- c. Attach electrical plate connector caps to tubes.

NOTE

To secure the drawer to the frame, tighten two large slotted hex-head screws in the front panel.

- d. Install drawer into front of second frame.

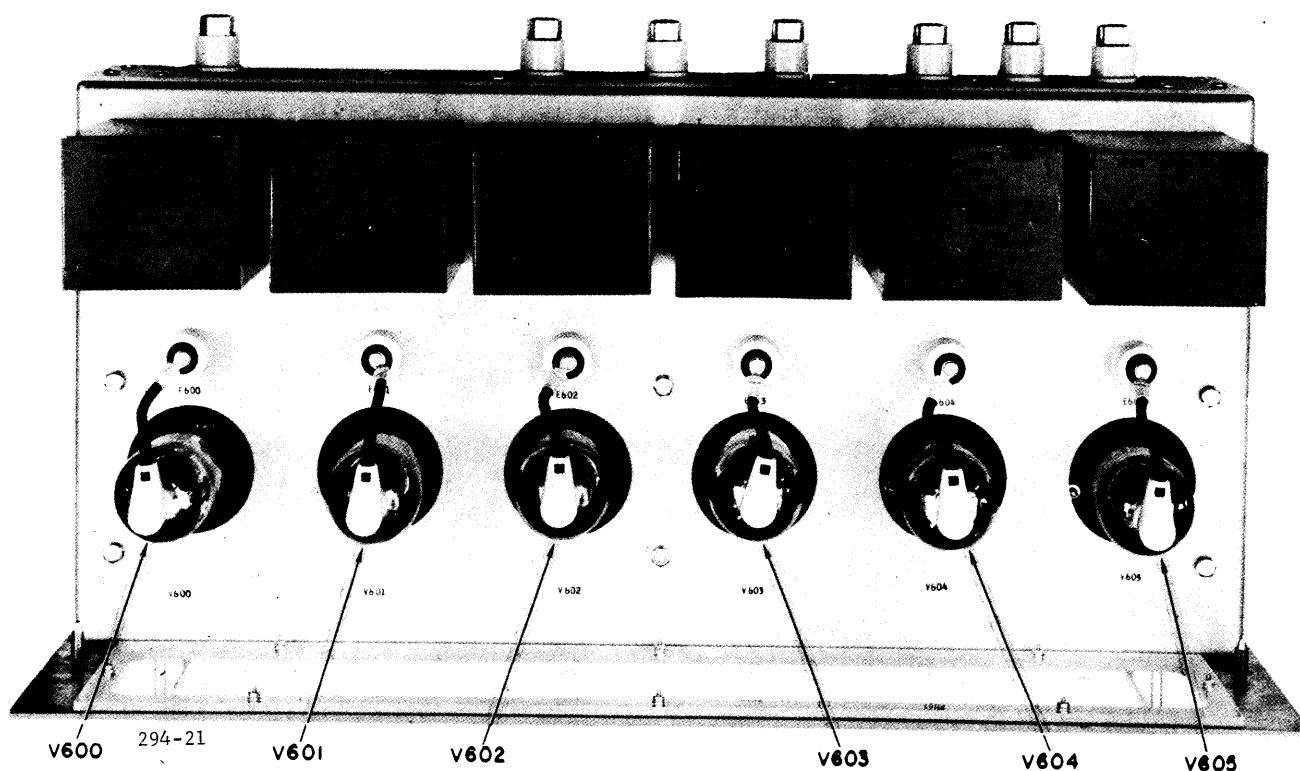


Figure 4-11. High Voltage Rectifier Drawer 600, Top View.

STEP 18

- a. Unpack crate 11.
- b. Temporarily remove screen cover from top of RFC Amplifier drawer.
- c. Loosen screw on retaining strap (see figure 4-12).
- d. Insert tube V203 (contained in crate 1) into tube socket.
- e. Tighten retaining strap screw so that tube V203 is held securely in place.
- f. Replace screen cover on top of drawer.
- g. Install drawer assembly in middle bay of second frame. Make sure cables are connected to rear of drawer (refer to diagram in section 5).

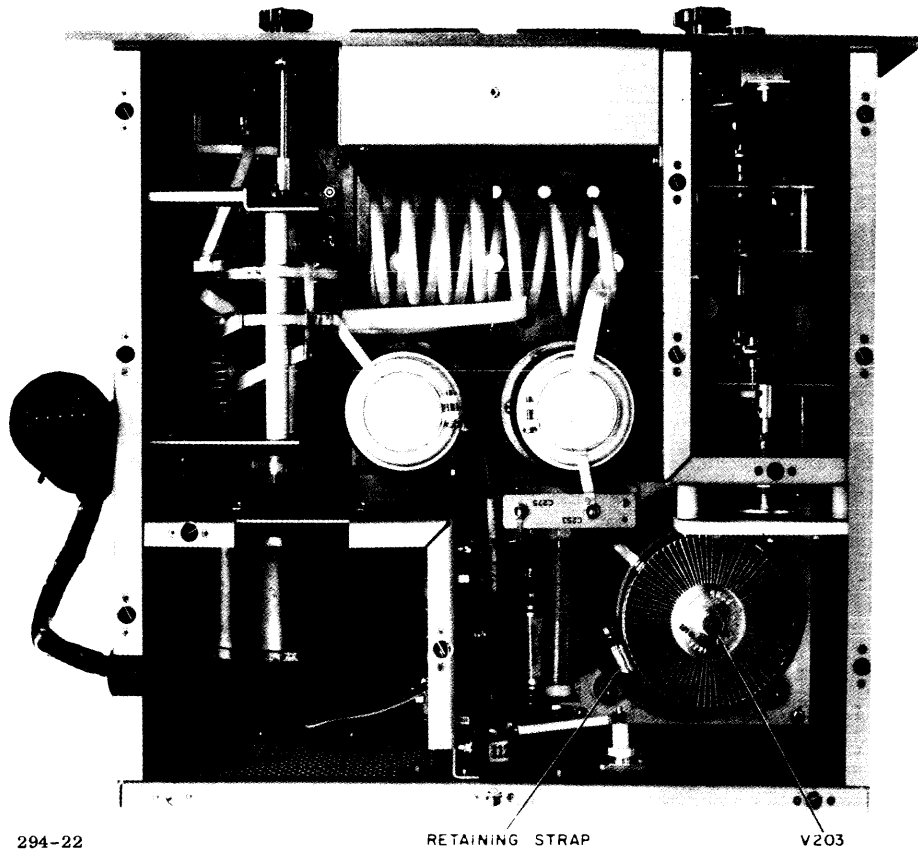


Figure 4-12. RFC Amplifier Drawer, Top View.

STEP 19

- a. Remove top of crate 12.

NOTE

To prevent covers, panels, and doors from being scratched, do not remove items from crate until the item is called for in the procedure.

- b. Check each item contained against the equipment supplied list.

STEP 20

NOTE

If the transmitter is to be operated unbalanced (bowl assemblies not installed) exterior cover plates are provided in crate 1. In this case, mount plate MS-2338 on the top r-f shield over bowl assembly holes; mount plate MS-2442 on cover top.

- a. Position cover top MS-1699 (contained in crate 12) on top of frames (see figure 4-13).

## STEP 20 (cont)

- b. Using hardware from crate 1 (bag 10), tightly bolt cover top to frames.
- c. Insert appropriate size button plugs (contained in crate 1) into cover top, to frame mounting holes.
- d. Temporarily remove two sets of mounting hardware from threaded studs on bottom of high-voltage lamp socket assembly (contained in crate 1).
- e. Position lamp socket assembly on cover top, above first frame (see figures 4-10 and 4-13).

### NOTES

1. The large rubber washer must be placed between socket and cover when mounting lamp.
  2. Connect the two wire leads coming from the bottom of socket and feeding through hole in cover and frame; to terminal board E3003 (mounted inside top of first frame). The white wire to E3003-2; and the white/red wire to E3003-1.
- f. Replace hardware previously removed from lamp-socket assembly, on studs inside frame, in the following sequence: first, a flat washer; second a lock washer; and third, a nut. Tighten hardware so that lamp socket is held securely in place; do not over tighten.
- g. Install remaining three drawers into front of first frame (refer to step 16).

## STEP 21

Using hardware from crate 1 (bag 7), assemble and mount following items (contained in crate 1) as prescribed.

- (1) Assemble door latch plates, figure 4-14, to door latch brackets with two Phillips flat-head screws.
- (2) Using two Phillips binder head screws each, mount resultant door latch assemblies on top, bottom, front and rear, of transmitter (see figure 4-13).

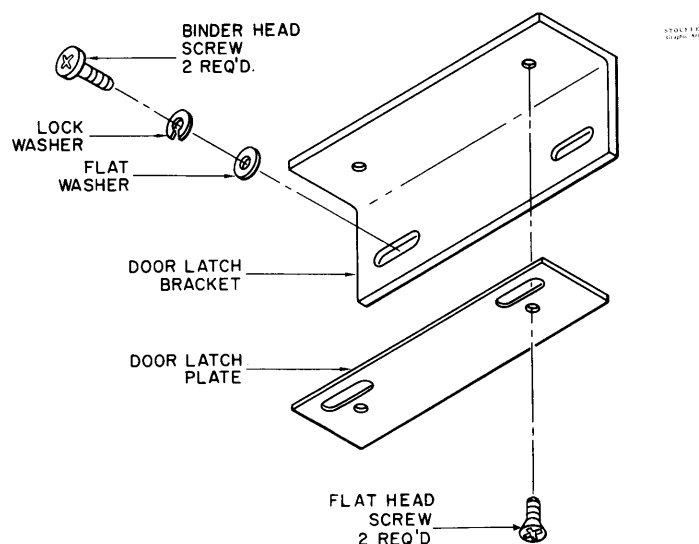


Figure 4-14. Door Latch Plates and Brackets, Installation Diagram.

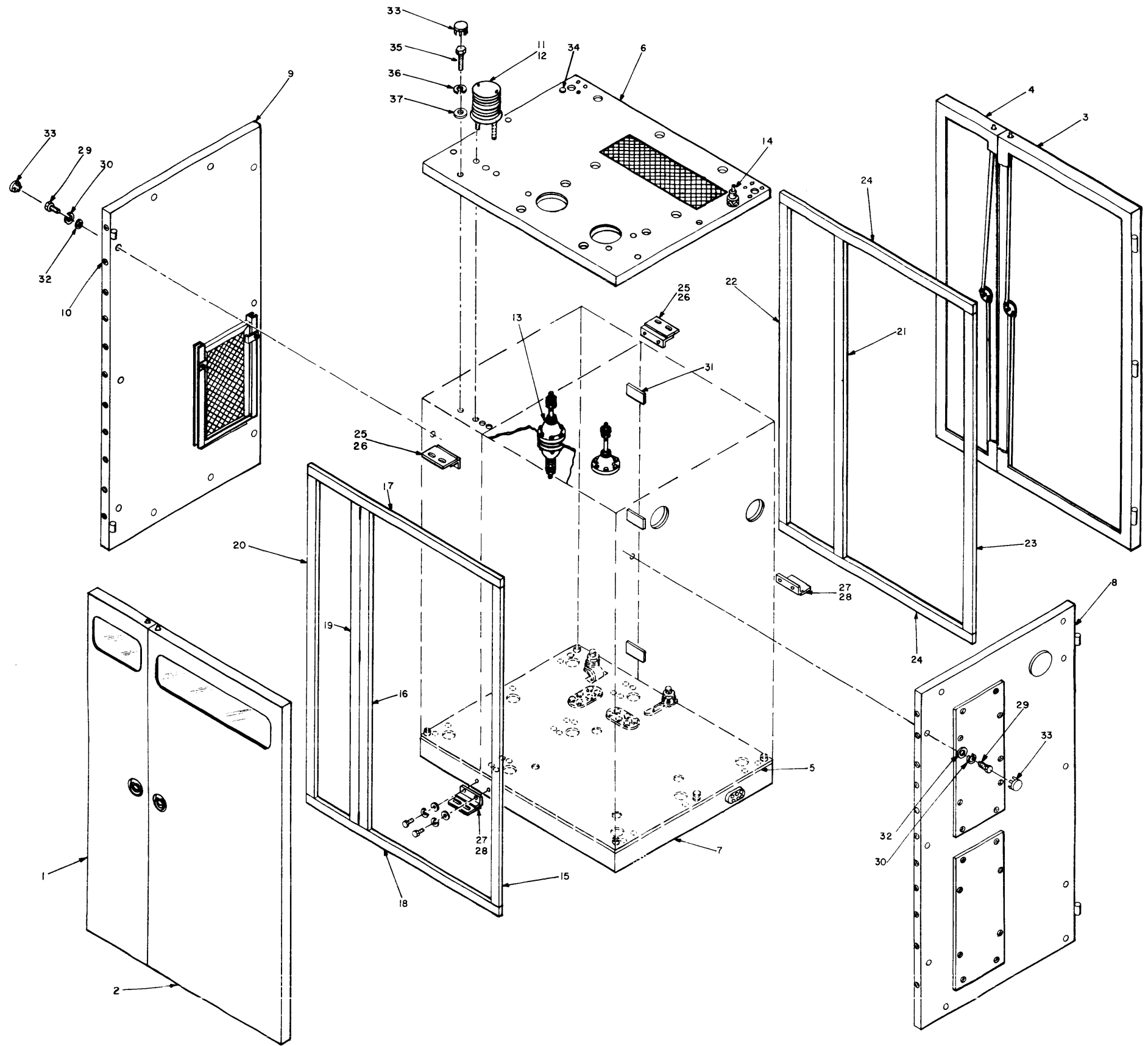


Figure 4-13. Exterior Covers and Trim, Installation Diagram.

## STEP 22

a. Using hardware from crate 1 (bag-trim strip mounting kit), push on the tinnerman type clip-nuts onto small "U" shaped brackets welded to front of the first and second frames.

### NOTE

Refer to figure 2-16.

b. Using remaining hardware from step 22a, mount the following items (contained in crate 12) to respective frames as follows:

- (1) First and second frame front top trim strip MS-1635.
- (2) First and second frame front hinged trim strip MS-1634.
- (3) Second frame right front trim strip MS-1633.
- (4) First and second frame rear top trim strip MS-1672.
- (5) First frame rear right side trim strip MS-1670.
- (6) First and second frame rear trim strip MS-1669.
- (7) Second frame rear left side trim strip MS-1671.

c. Using hardware from crate 1 (bag-exterior covers to frame mounting kit), mount side panels MS-2117 and MS-2116 (contained in crate 12) on the side of the first and second frames, respectively.

d. Insert appropriate size button plugs (contained in crate 1) into side panel to frame holes.

e. Mount first frame hinged front right and left side trim strips MS-1637 and MS-1920 (contained in crate 12).

f. Back-out door mounting screws in sides (front and rear) of both side panels. Then hang the following items (contained in crate 12) on door mounting screws in side panels. Re-tighten screws to hold doors securely.

### NOTE

It may be necessary to adjust top and bottom door latch assemblies, so that doors close properly.

- (1) First frame front door MS-2119.
- (2) Second frame front door MS-2118.
- (3) First frame rear door MS-1648.
- (4) Second frame rear door MS-1647.

g. Using remaining hardware from step 22a, mount the following items (contained in crate 12) to respective frames as follows:

- (1) First and second frame front bottom trim strip MS-1636.

STEP 22 (cont)

(2) First and second frame rear bottom trim strip MS-1672.

STEP 23

Assemble air ducts and appropriately mount, figure 2-2, on the transmitter.

STEP 24

Connect the antenna transmission line(s) to the transmitter. Operating with an unbalanced output, the transmission line is connected to the standard 1-5/8 inch EIA flange connector on side of the second frame. Operating with a balanced output, the transmission lines are connected to the bowl assemblies on top of the second frame.

STEP 25

- a. Inspect the contents of all packing crates that have been opened. Make sure miscellaneous items (technical manuals, test data, tube warranties, extra hardware, emergency output cable, etc.) have been removed before dispensing with packing material and shipping crates.
- b. Any remaining crates are spare parts for the transmitter. These crates may be stored as desired.



SECTION 5  
CIRCUIT DIAGRAMS

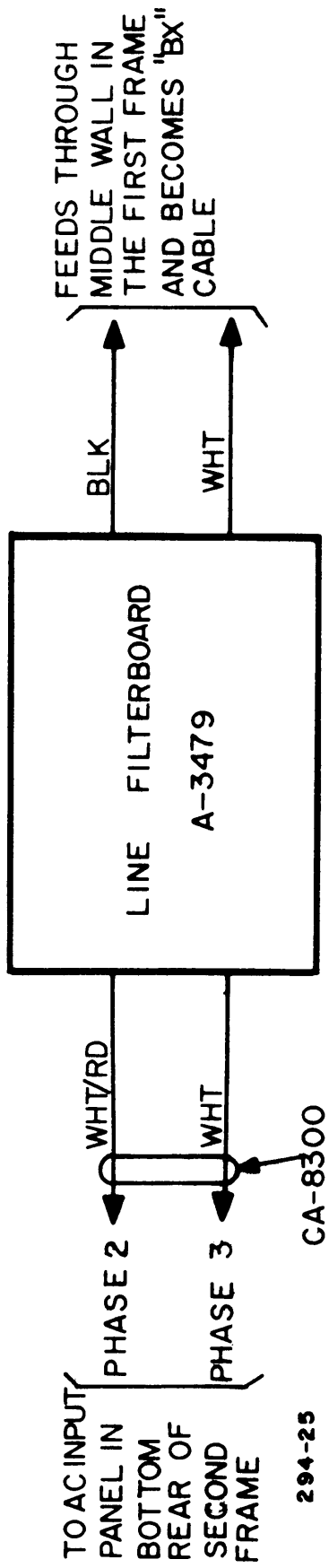


Figure 5-1. Line Filterboard A-3479, Cable Connection Diagram.

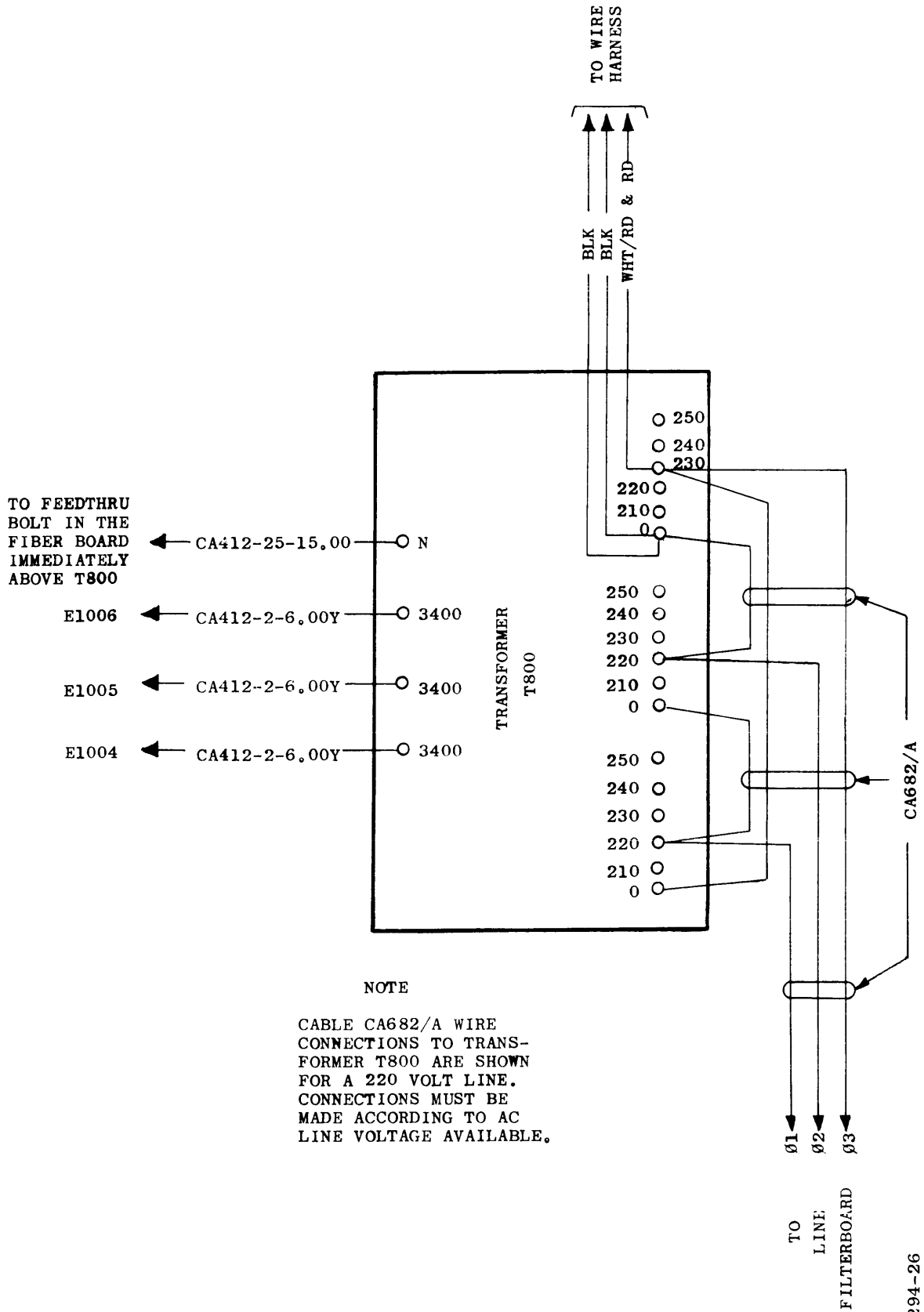
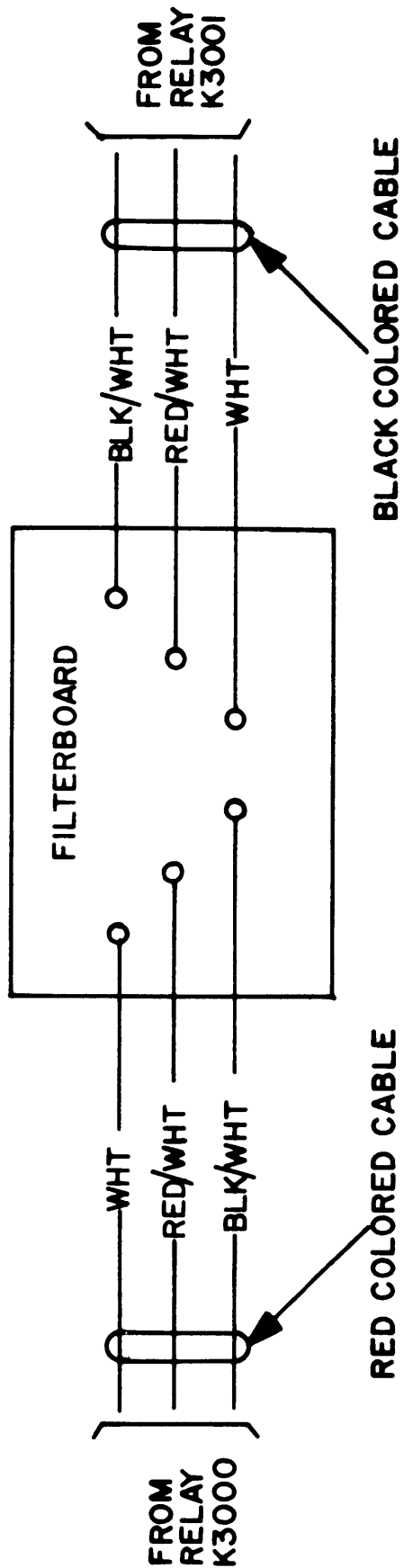
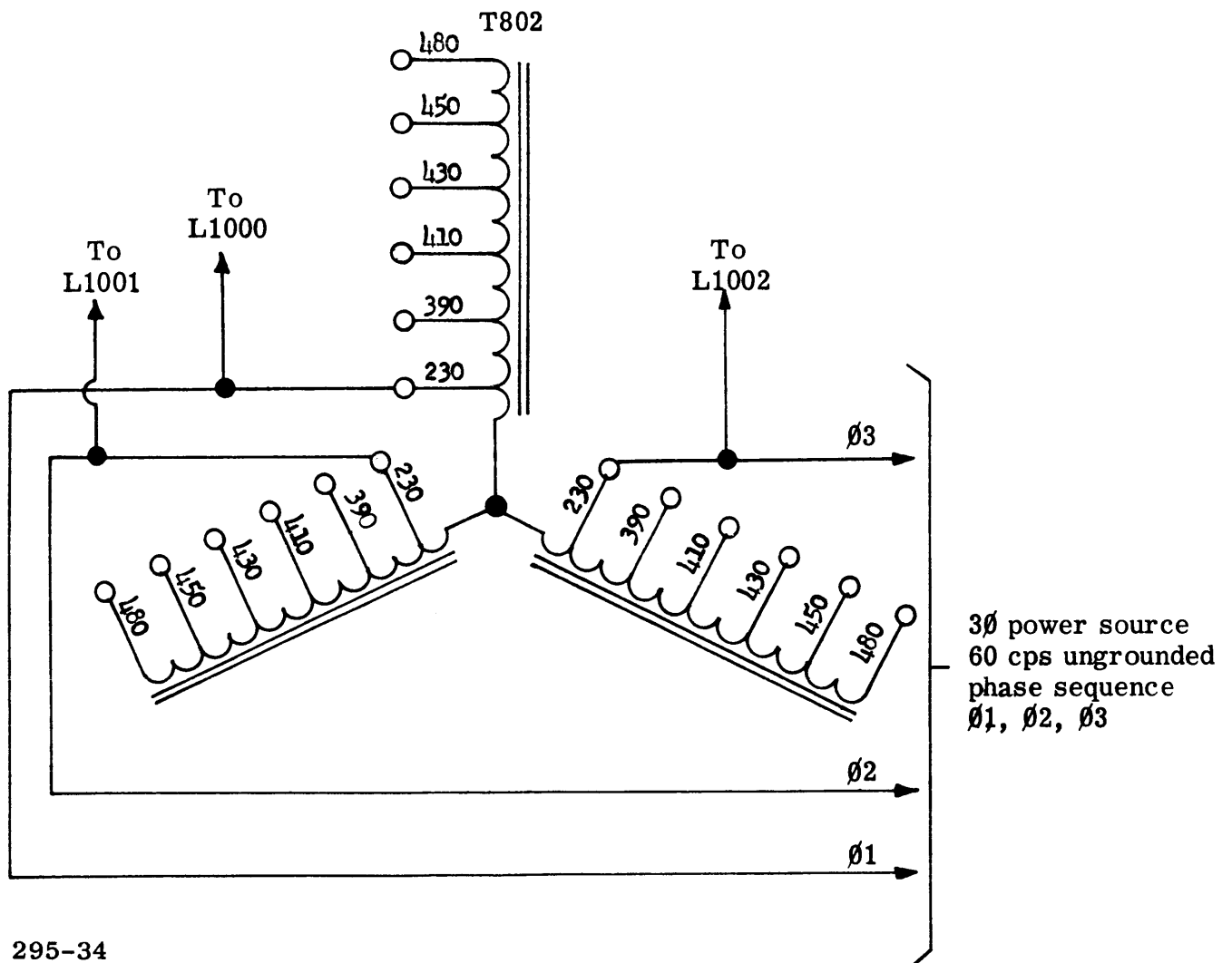


Figure 5-2. Transformer T800, Cable Connection Diagram.



294-27

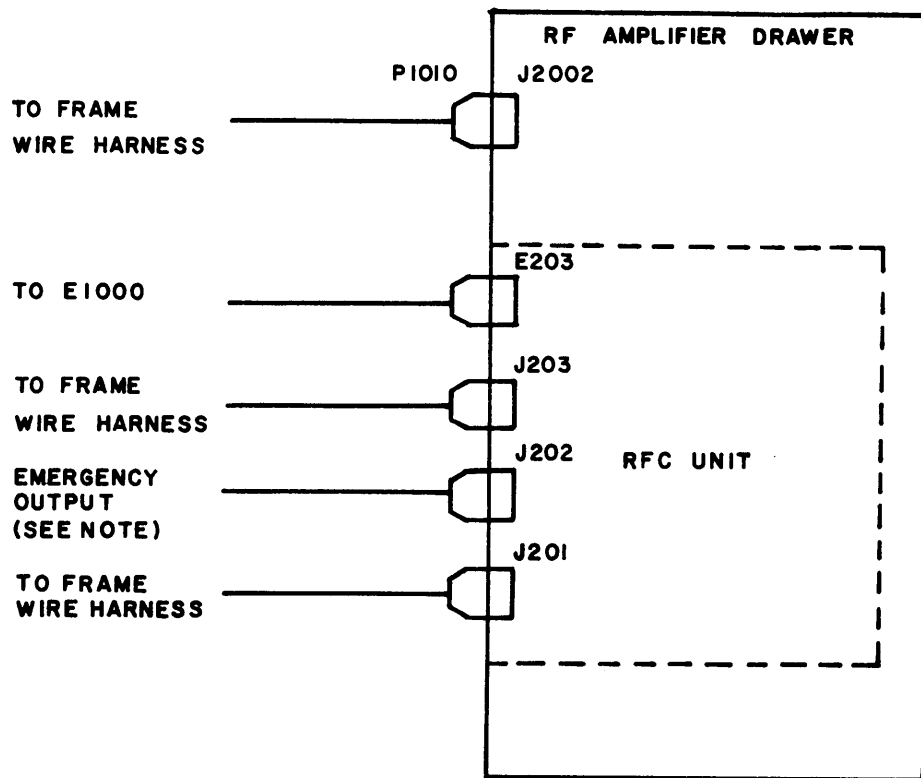
Figure 5-3. Filterboard, Cable Connection Diagram.



NOTES:

1. For 210-240 vac operation, connect as shown.
2. For 390-480 vac operation, connect to appropriate taps.

Figure 5-4. Transformer T802 Wiring Diagram.



**NOTE**

REFER TO CABLE CONNECTION  
 DIAGRAM ON SHELF IN UPPER  
 COMPARTMENT OF THE SECOND  
 FRAME FOR EMERGENCY OUT-  
 PUT CONNECTION TO J202  
 UNDER NORMAL OPERATING  
 CONDITIONS, NO CONNECTION  
 IS MADE TO J202.

294-28

Figure 5-5. Rf Amplifier Drawer, Cable Connection Diagram

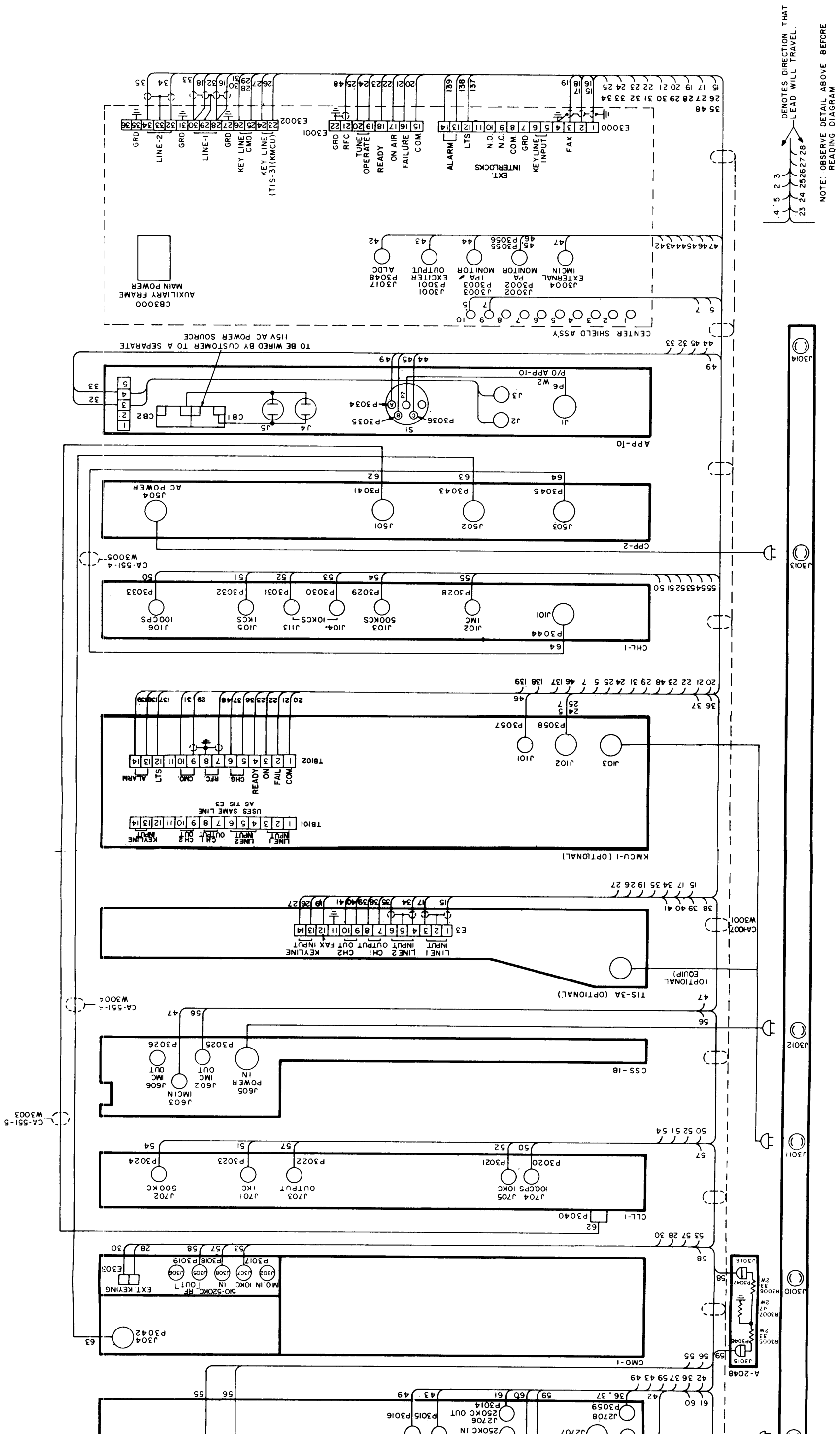
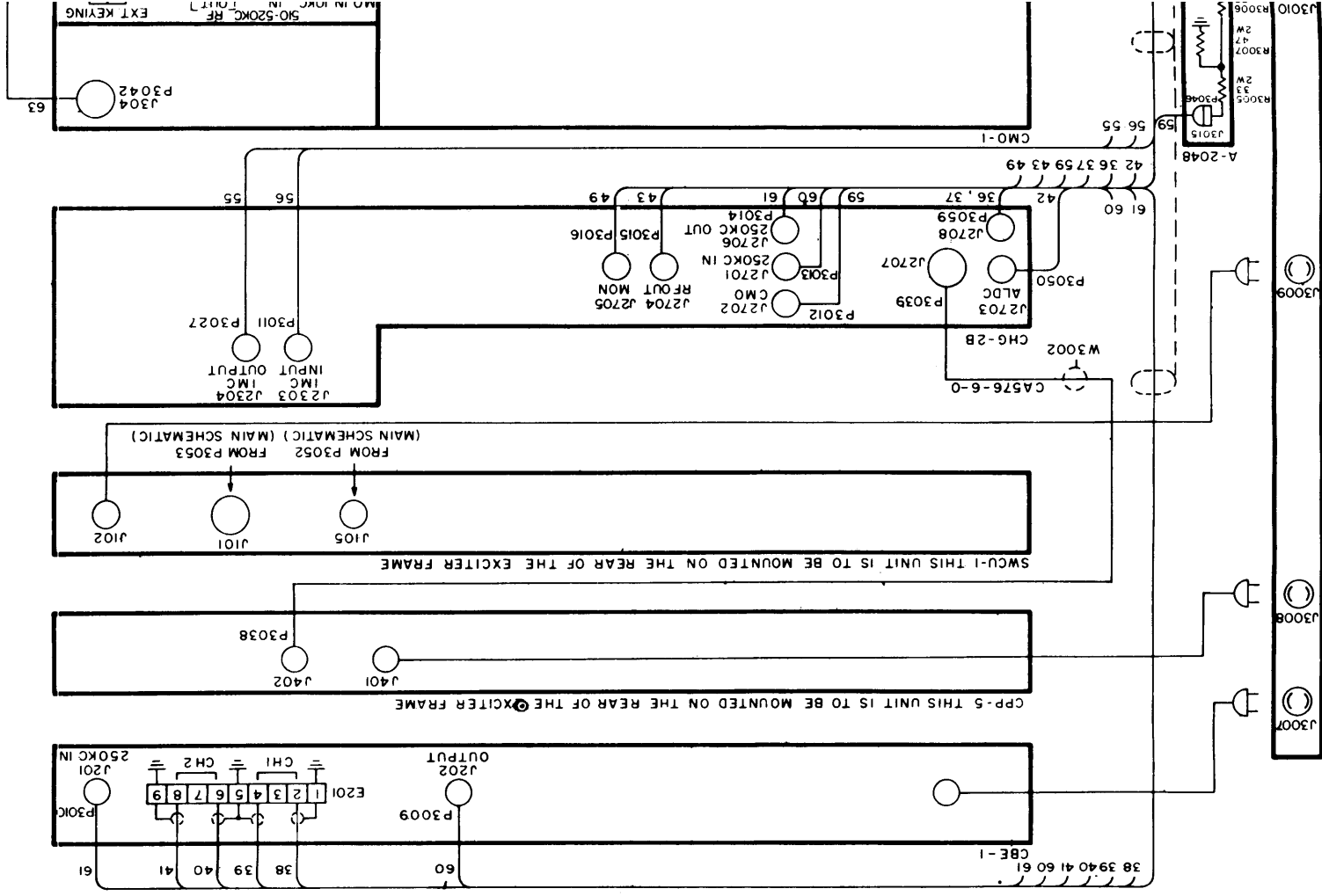


Figure 5-6. First Frame Drawers, Cable Connection Diagram.



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