

NAVSEA 0967-LP-619-6010

TECHNICAL MANUAL
OPERATION AND MAINTENANCE
INSTRUCTIONS
FOR
RADIO FREQUENCY AND
CONTROL CIRCUIT PATCH SYSTEM
CHU MODEL CA-1100

MANUFACTURED BY
CHU ASSOCIATES, INC.
LITTLETON, MASS. 01460

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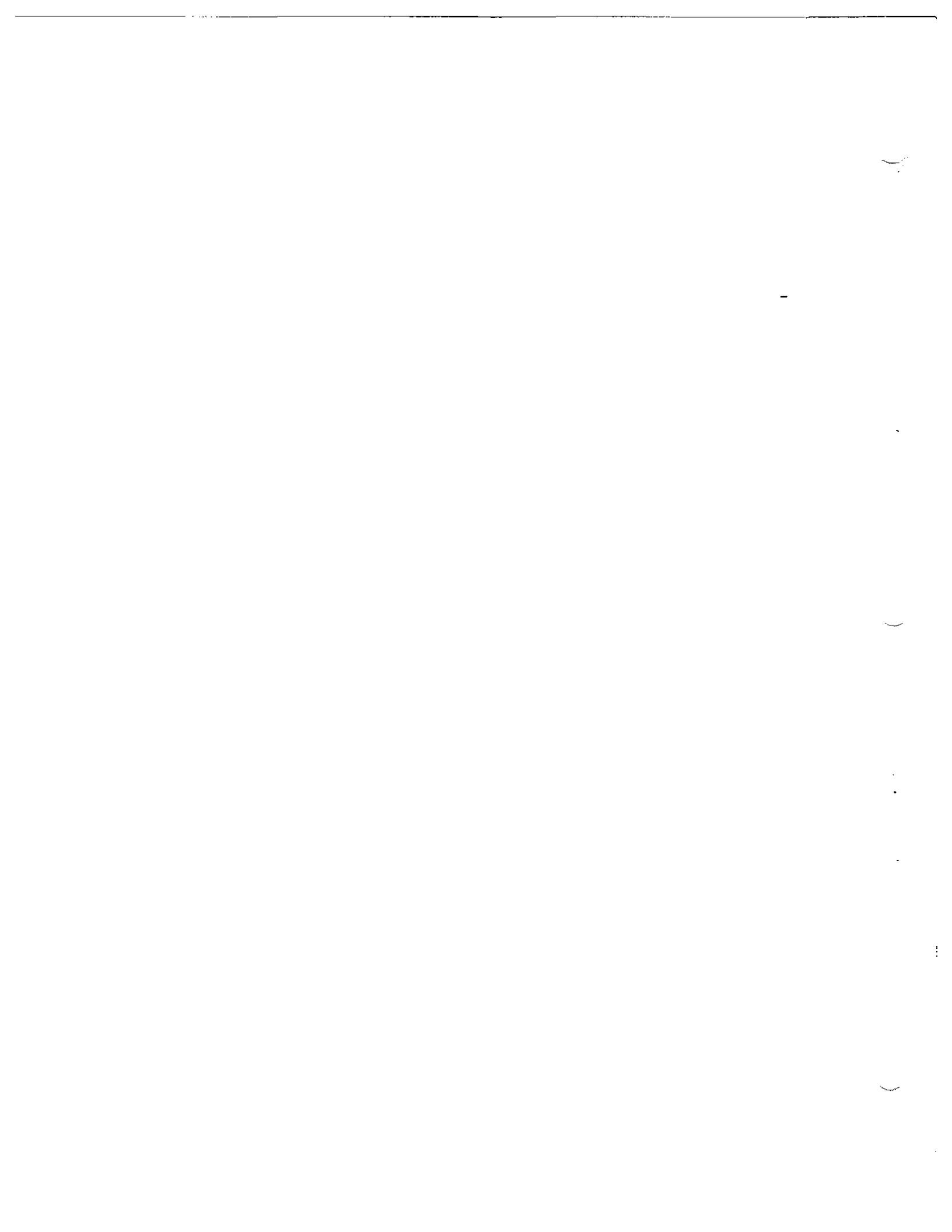
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CHAPTER I

GENERAL INFORMATION

1-1. SCOPE.

1-2. This manual contains general information, installation data, operating instructions, troubleshooting data, maintenance data and a maintenance parts list for CA-1100 Radio Frequency and Control Circuit Patch System hereinafter referred to as Patch Panels.

1-3. GENERAL DESCRIPTION.

1-4. The Patch Panels, Figure 1-1, consists of load and transmitter panel and cable assembly. It provides a flexible, rapid and reliable method of connecting transmitters to couplers, antennas or dummy loads. Control circuit and rf coaxial patch connections are made simultaneously.

1-5. PHYSICAL AND FUNCTIONAL DESCRIPTION.

1-6. The Patch Panel System consists of load and transmitter panel(s) which can be mounted in a standard 19 inch rack or cabinet. The capacity of the system is expanded by increasing the number of transmitter and load panels (figure 1-2) to meet total interconnection requirements.

1-7. Patch cables integral to the transmitter panel have a single plug assembly to connect the load panel receptacles. Any possibility of cross connections between source and load is prevented. The plugs are arranged so that rf contacts are made before control contacts and that control contacts are broken before rf contacts. Control lines can thus be used to prevent transmitter operation in the absence of a

load. Mechanical guides on the plug assembly and a guide pin on the box receptacle prevent contact damage. Latches maintain engagement under shock. Each cable consists of a 50 ohm rf coaxial cable power rated at 2kW average or 5kW peak power for a load VSWR of 1.5:1 or less and a 24 wire control cable with each wire rated for 2 amps at 115 VAC. The standard patch cable length is 68 inches (172.72 CM).

1-8. REFERENCE DATA AND TECHNICAL CHARACTERISTICS.

1-9. Table 1-1 lists the mechanical characteristics of the patch panels.

1-10. EQUIPMENT AND PUBLICATIONS SUPPLIED.

1-11. Table 1-2 lists the equipment and publications supplied.

1-12. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED.

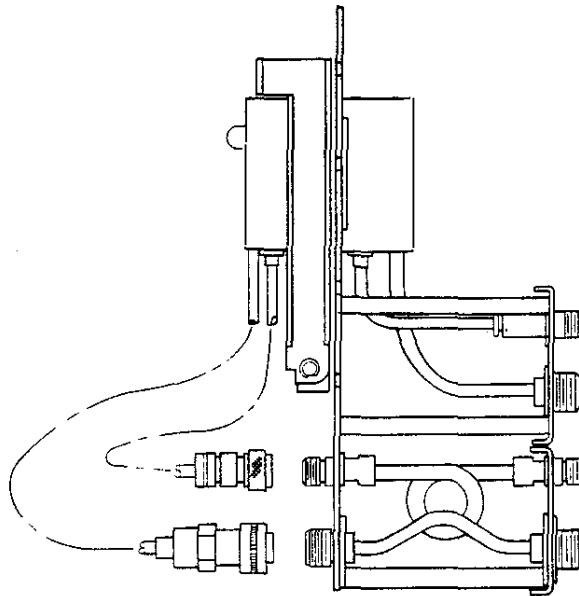
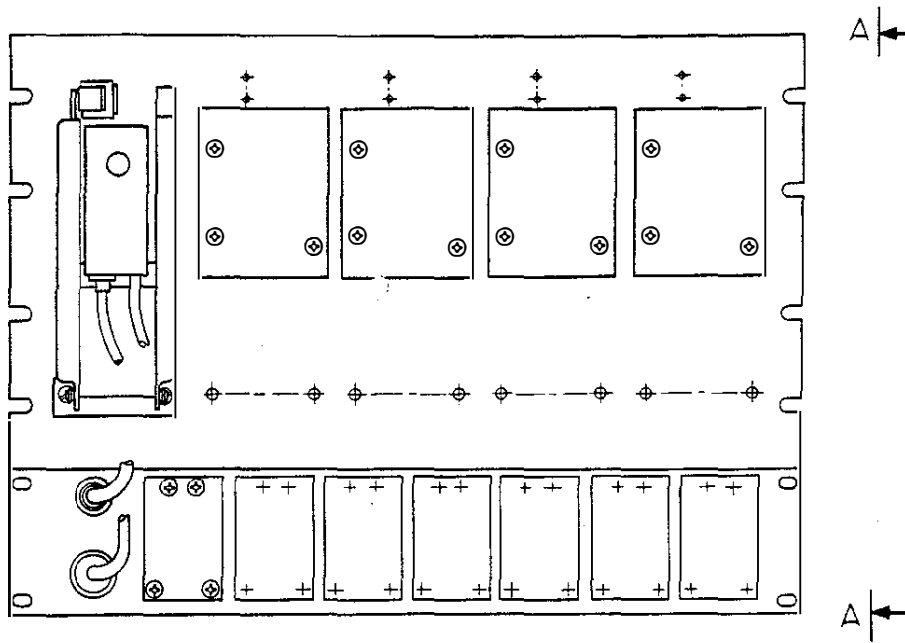
1-13. Table 1-3 lists the equipment and publications required but not supplied with the patch panels.

1-14. FACTORY OR FIELD CHANGES.

1-15. No factory or field changes have been made to the patch panels.

1-16. PREPARATION FOR RESHIPMENT.

1-17. When reshipping patch panels, utilize wooden shipping crates. Disconnect patch cable from latch and panel connectors and wrap ends using bubble wrapping material. Protect panel connectors with bubble wrapping material.



VIEW A-A

Figure 1-1. Patch Panel CA-1100

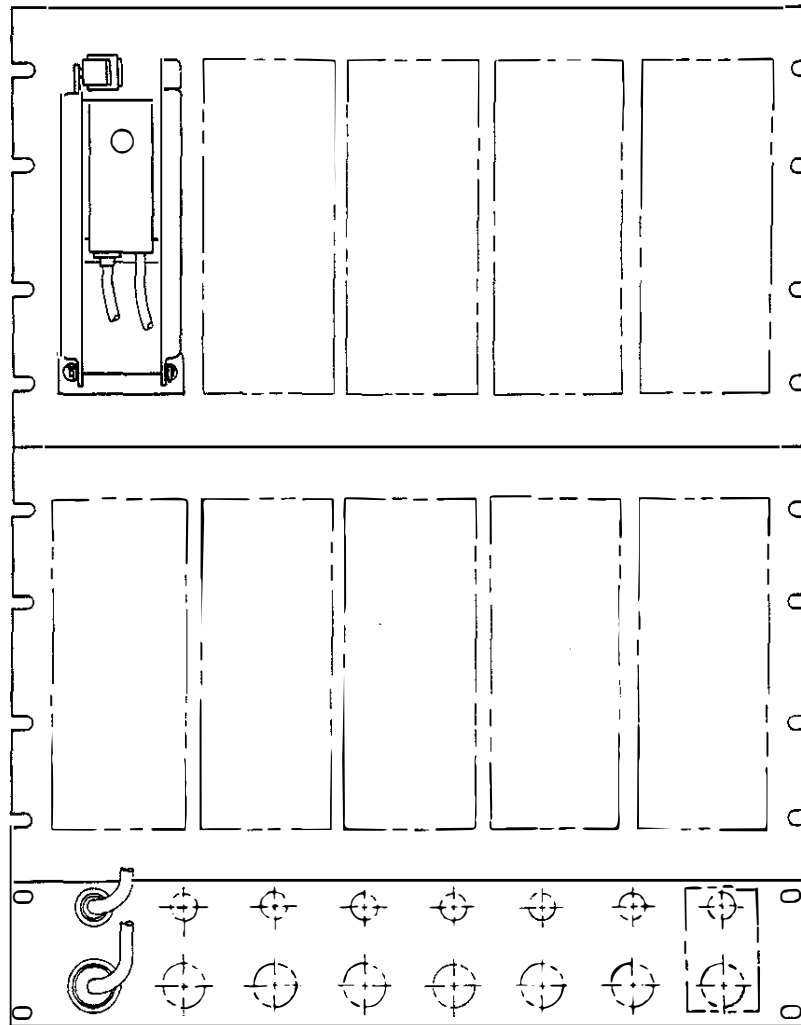


Figure 1-2. CA-1100 Stack Configuration

TABLE 1-1. MECHANICAL CHARACTERISTICS

Load Panel	
Height:	10.47 inches
Width:	19.00 inches
Weight:	12 pounds
Crated:	20 pounds
Transmitter Panel	
Height:	3.47 inches
Width:	19.00 inches
Weight:	10 pounds
Crated:	18 pounds
Patch Cable	
Length:	68.00 inches
Weight:	2.5 pounds
Crated:	7 pounds
Input Connectors	
RF:	Type N Coaxial
Control:	MS 3106A-24-28P
Mounting	Standard 19 inch rack front mounting
Material:	Aluminum panels and stainless steel hardware

TABLE 1-2. EQUIPMENT AND PUBLICATIONS SUPPLIED

Qty. Per Equip.	Nomenclature		Sub-Assembly	Qty.	Height (inches)	Width (inches)	Length (inches)	Weight (pound)
	Name	Designation						
1	Radio Frequency and Control Circuit Patch System	CA-1100	Load Panel	1	10.47	19.00	-	12
			XMTR. Panel	1	3.47	19.00	-	10
			Patch Cable	1	-	-	68.00	2 1/2
	Technical Manual for Radio Frequency and Control Circuit Patch System							

TABLE 1-3. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED

Qty. Per Equip.	Nomenclature		Required Use	Equipment Characteristics
	Name	Designation		
1	Volt-ohm-meter	260-6 PRT	Troubleshooting	Low-level dc resistance and continuity measurements
1	Operator's Manual for Volt-ohm-milliammeter 260 series P6	NAVSHIPS 0967-286-1010		

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CHAPTER II
INSTALLATION

2-1. UNPACKING AND HANDLING.

2-2. The patch panels and associated cabling are shipped in one wooden shipping crate. Each component is identified clearly and the cable and panel connectors are wrapped with bubble material. Table 2-1 lists the components shipped in the crate. Open the crate carefully and remove the components exercising care to avoid damage to the painted surface.

WARNING

Ensure that equipment accepting patch panels is deenergized before performing following procedures.

2-3. INSTALLATION REQUIREMENTS.

2-4. Install load panel (figure 2-1) into rack and secure using eight (8) #10-32 UNF-2A bolts and appropriate washers and lock washers (hardware not supplied with patch panels). Tighten to a maximum torque of 25 inch-pounds.

2-5. Install transmitter panel (figure 2-1) and secure using four (4) #10-32 UNF-2A

bolts and appropriate washers and lock-washers (hardware not supplied with patch panels). Tighten to a maximum torque of 25 inch-pounds.

2-6. Attach plug assembly cable (figure 2-1) plugs at transmitter panel and slide plug assembly cable head into latch assembly on load panel. Ensure plug assembly cable head is fully inserted into latch assembly (rests on stop) and that detent pin secures it in place. Swing latch assembly until plug assembly cable head jacks mate with load panel plugs.

NOTE

Do not force connection. If plug assembly cable head guidepin is not aligned with mating hole and/or jacks and plugs do not align, refer to paragraph 5-12 for corrective maintenance.

2-7. Open latch assembly and maintain in open position.

NOTE

Repeat steps 2-6 and 2-7 as necessary for multiple plug assembly patch panels.

TABLE 2-1. INSTALLATION HARDWARE

Quantity	Name	Chu Assoc., Inc. Part Number
1	Load Panel Assembly	8233
1	Transmitter Panel Assembly	8118
1 (Min.)	Plug Assembly	7592

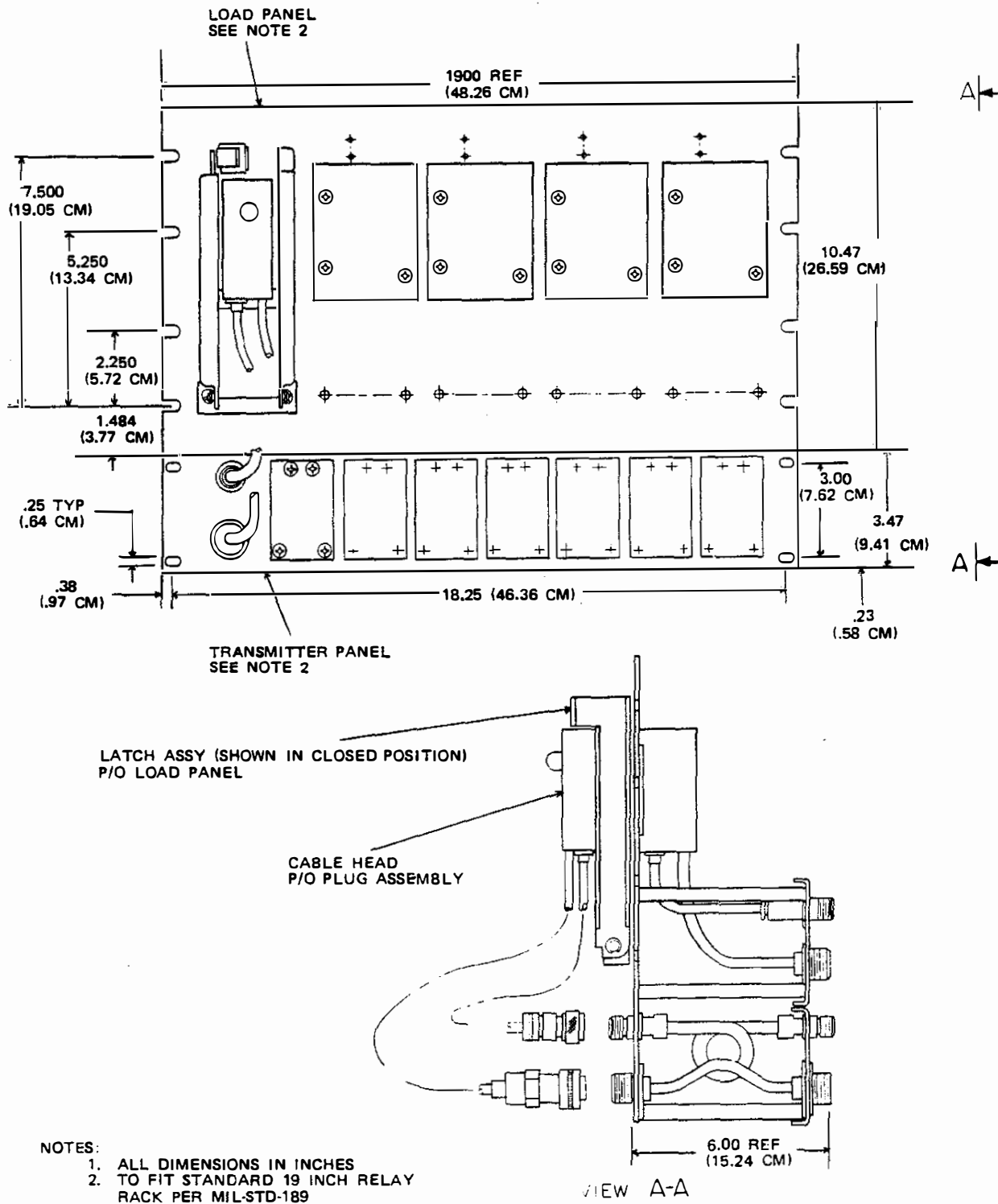


Figure 2-1. Patch Panel Installation

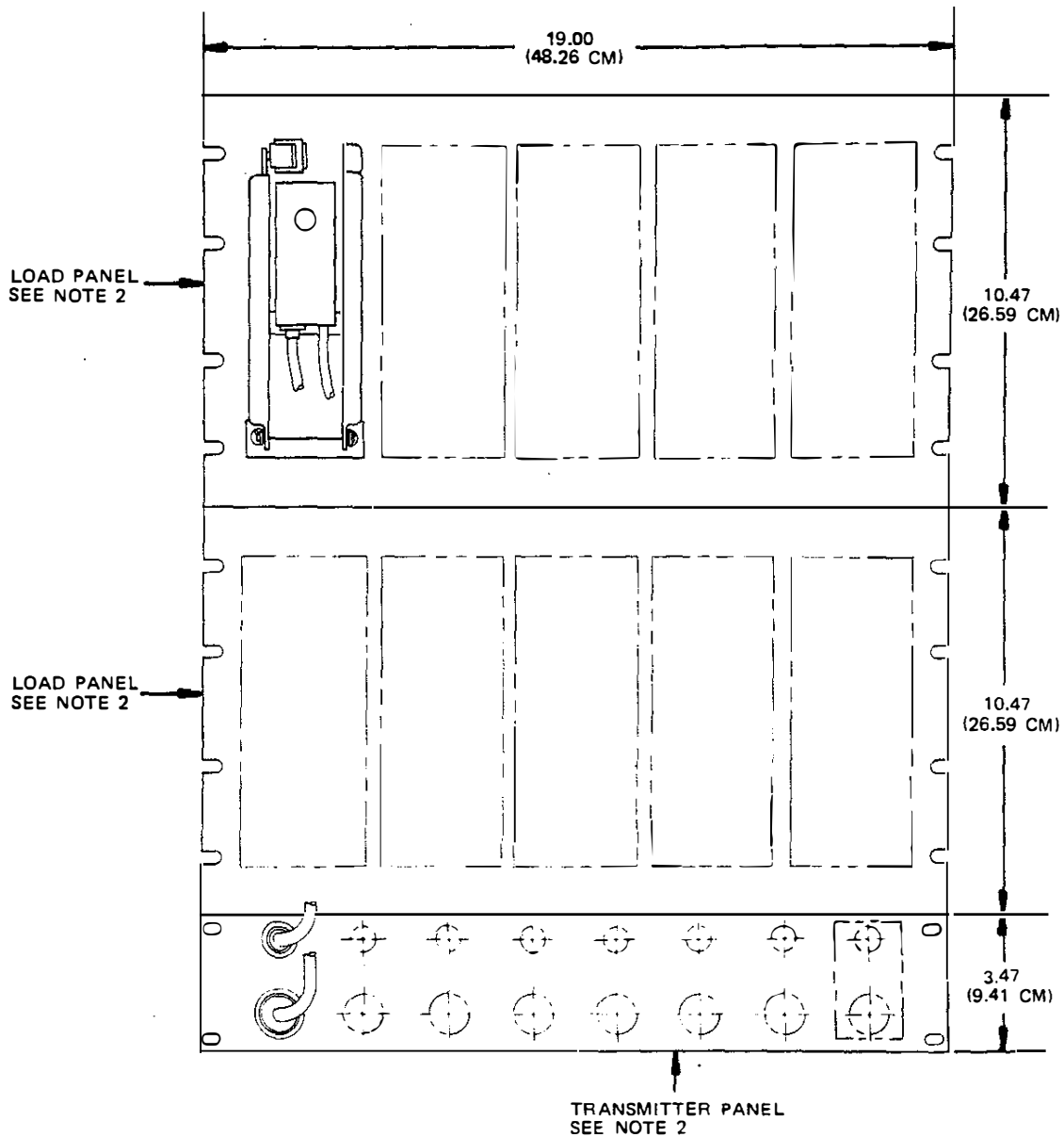
2-8. Figure 2-2 illustrates a method of stacking the patch panels.

2-9. CABLING.

2-10. Two of each cable as specified in Table 2-2 is required to connect the patch

panel to associated ships equipment. These cables and their mating connectors are not supplied with the patch panels.

2-11. Connect ship interface cables (refer to table 2-2) to patch panel load and transmitter rear panel connectors.



- NOTES:
1. ALL DIMENSIONS IN INCHES
 2. TO FIT STANDARD 19 INCH RELAY RACK PER MIL-STD-189

Figure 2-2. Patch Panel Stacked Configuration

TABLE 2-2. CABLE REQUIREMENTS

Name	Type of Cable	Panel Connector
Signal	Coaxial RG-213/U (or equivalent)	Type N M39012/01-0002
Control	25 Conductor 22 AWG	MS 3106A-24-28P

CHAPTER III

OPERATION

3-1. FUNCTIONAL OPERATION.

3-2. The patch panel system consists of a load panel, a transmitter panel and a minimum of one plug assembly. It provides a method of connecting transmitters to couplers, antennas or dummy loads.

3-3. When the latch assembly (includes secured plug assembly) (figure 3-1) is in a closed position, it completes a circuit supplying both rf and control signals.

3-4. To interrupt circuitry, the latch assembly is opened. This is accomplished

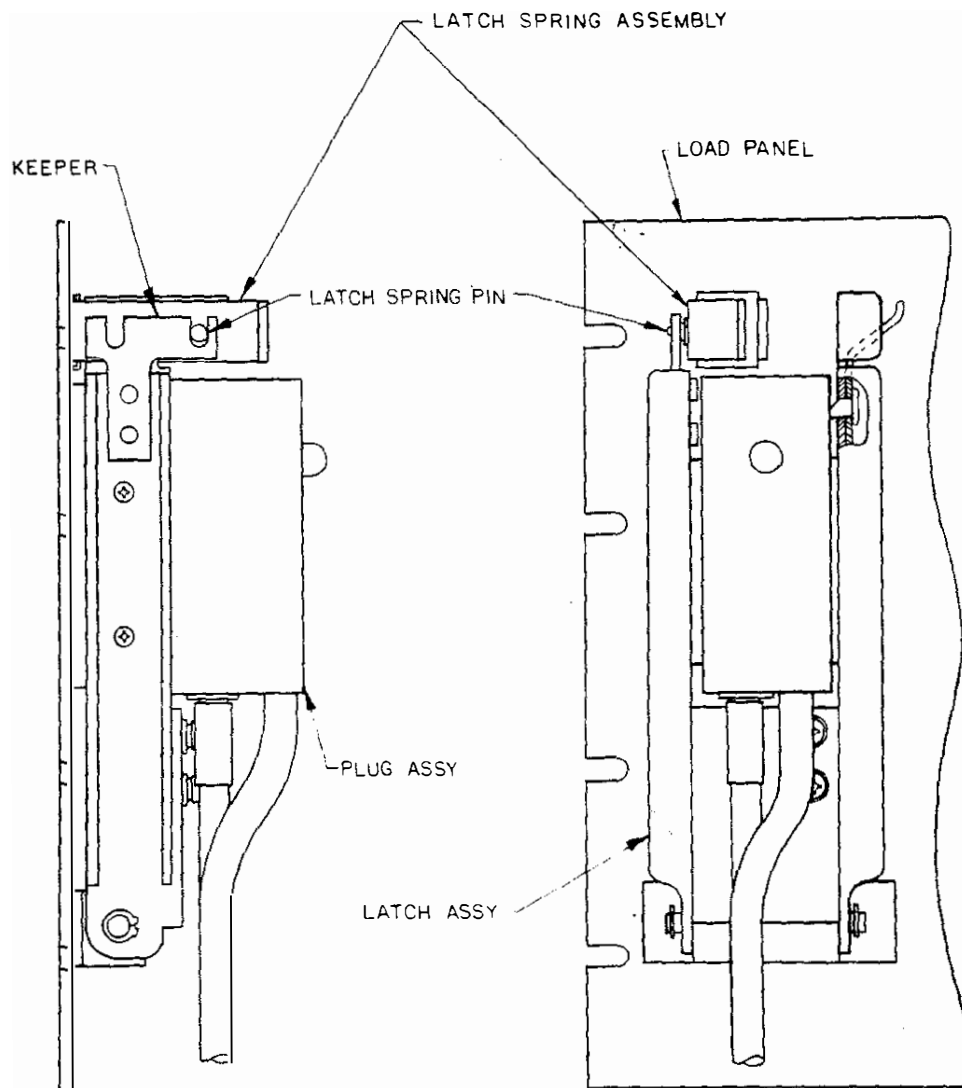


Figure 3-1. Latch Assembly

by disengaging pin of latch spring assembly (figure 3-1) from latch assembly keeper top mating slot and pivoting latch assembly until latch spring pin engages lower slot in keeper. In this position, the circuit is opened and latch assembly secured against further unwanted motion.

3-5. To connect circuitry, reverse operations of paragraph 3-4 ensuring that latch

spring pin engages top mating slot of latch assembly keeper.

NOTE

Minimum pressure is required to complete connection. If misalignment is evident (guide pin not aligned, etc.), refer to maintenance section 5-12 for alignment instructions).

CHAPTER IV

TROUBLESHOOTING

4-1. GENERAL.

4-2. Figure 4-1 is an interconnecting diagram of the patch panel (load panel cables, the transmitter panel cables and the plug assembly cables). All the cables and plugs (except rf cables in load panel & plug assy.) are replaceable and/or repairable. The troubleshooting procedures consists of determining continuity of cables and proper operation of the connectors. If trouble occurs, eliminate associated equipment as a trouble source before initiating procedures described in this chapter. These procedures are for a single plug assembly; repeat of the procedure for each plug assembly suspected of a malfunction is necessary.

4-3. The plug assembly contains a lamp. This lamp indicated when a transmitter/receiver is on line provided voltage is supplied from associated equipment. It is replaceable and may be checked during continuity checks (refer to figure 4-1).

4-4. When mechanical failure of latching mechanism occurs, troubleshooting will determine if replacement of mechanism is necessary or an adjustment is required.

4-5. TEST EQUIPMENT.

4-6. Table 1-3 lists the test equipment required for troubleshooting the antenna.

4-7. OVERALL TROUBLESHOOTING SYMPTOMS.

4-8. If trouble occurs with the patch panels, one or more of the following symptoms will occur in it or its associated equipment.

- a. Loss of signal (or power)

- b. Weak signal

- c. Intermittent signal (or power)

- d. Noisy signal

- e. Misalignment of switch and/or plugs

- f. Bent guide pin

4-9. When electronic trouble occurs and proper operation of the associates equipment has been confirmed, make a thorough visual inspection of the patch panel cables. Examine the cables exterior and plugs for damage. Table 4-1 lists typical troubles and table 4-2 is a troubleshooting chart for the patch panel electrical cables and connectors.

4-10. When mechanical difficulties arise - malfunction of latch assembly, etc. - refer to table 4-3 for typical troubles and table 4-4 for troubleshooting charts.

4-11. TYPICAL TROUBLES.

4-12. Table 4-1 and 4-3 lists the nature of typical troubles which may occur in the patch panel - electronic and mechanical - in the order of their expected frequency.

4-13. TROUBLESHOOTING.

WARNING

The patch panel can operate at up to 2 kilo-watts. Ensure that the associated equipment is de-energized before performing troubleshooting procedures.

4-14. Tables 4-2 and 4-4 provides a troubleshooting chart for electronic and mechanical areas of the patch panel.

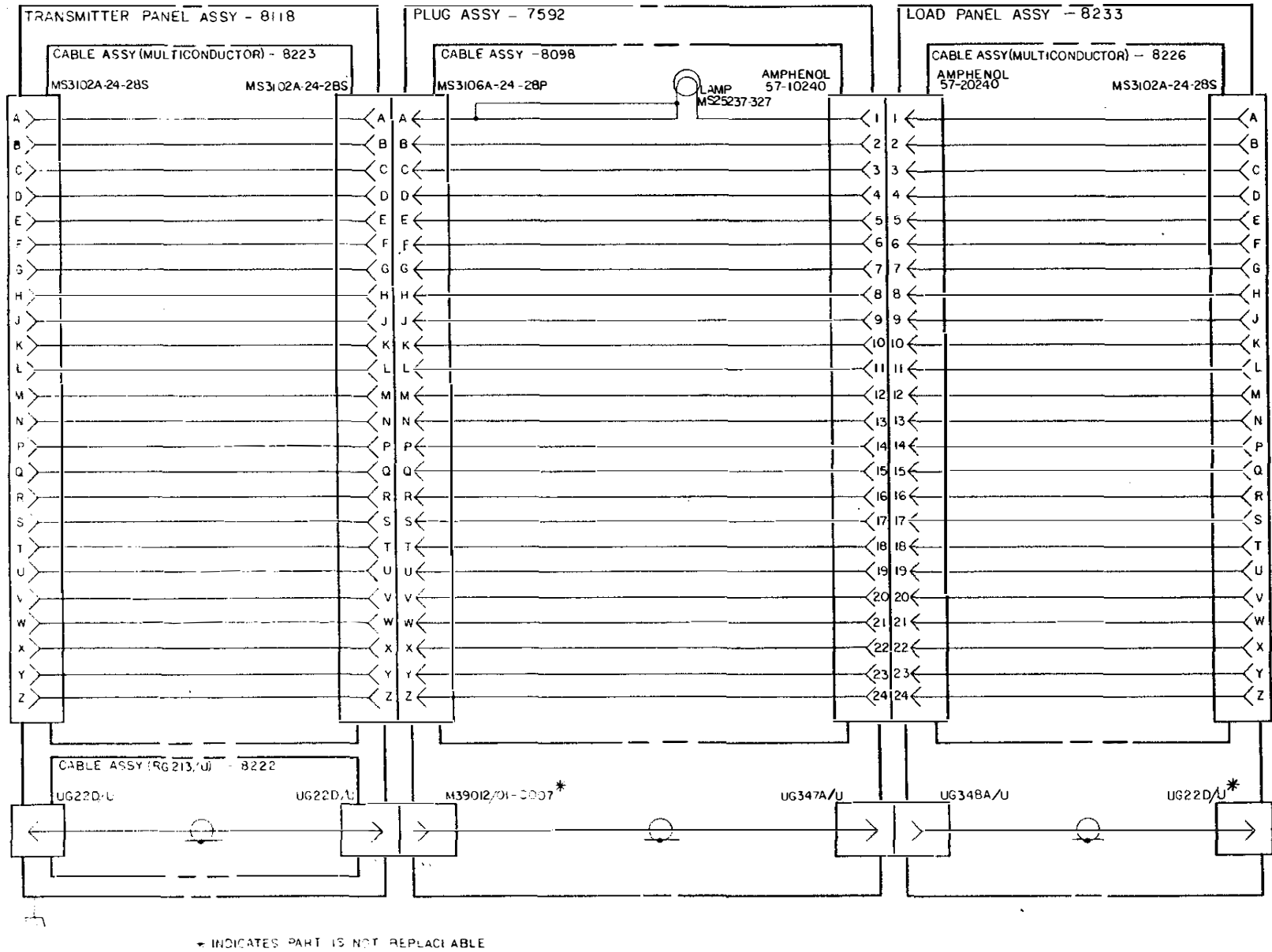


Figure 4-1. Interconnection Diagram

TABLE 4-1. TYPICAL TROUBLES - ELECTRONIC

<u>WARNING</u>		
Shut off power to station prior to performing any replacement function on unit.		
Symptom	Probable Cause	Remedy
VSWR greater than 2.0:1	Defective connector or cable	Isolate and replace defective cable assembly
Low dc input resistance	Defective connector	Isolate and replace defective cable assembly
High dc input resistance (signal cable)	Defective cable	Isolate and replace

TABLE 4-2. TROUBLESHOOTING CHART - ELECTRONIC
REFER TO FIGURE 4-1

Step	Preliminary Action	Normal Indication	Next Step
1	Make a visual inspection for external damage	No Damage	If external damage is found, replace the connector/cable. If external damage is not found, perform step 2.
2	Measure DC input resistance at connector (panel 8118) UG 22D/U	Greater than 100 megohms	If input resistance is greater than 100 megohm, perform step 3. If input resistance is less than 100 megohm, replace UG 22D/U or cable and perform step 3.
3	Perform VSWR test described in paragraph 5-13	2.0:1 or less	If VSWR is 2.0:1 or less, the cable is functioning properly. If VSWR is greater than 2.0:1, internal damage is indicated. Isolate damaged cable assembly and replace.

TABLE 4-2. TROUBLESHOOTING CHART - ELECTRONIC (Cont.)
REFER TO FIGURE 4-1

Step	Preliminary Action	Normal Indication	Next Step
4	Measure DC resistance from centerpin of out-board connector (panel 8118) UG 22D/U to centerpin of connector (panel 8233) UG 22D/U	Less than 1 ohm	If resistance is less than 1 ohm, the cable assemblies are operating properly. If resistance is greater than 1 ohm, isolate and replace malfunctioning cable assembly.
5	Measure DC resistance between pin A (panel 8118) of connector MS3102A-24-28S and pin A (panel 8233) of connector MS3102A-24-28S	100 ohms	If input resistance is approx. 100 ohms, the cable assemblies are operating properly. If resistance is greater than 200 ohms perform step 6.
6	Replace lamp (cable assy 8098) #MS25-237-327	100 ohms	Repeat step 5. If resistance is greater than 200 ohms, isolate damaged cable and replace cable assembly.
7	Measure DC resistance between pin B (panel 8118) of connector MS-3102A-24-28S and pin B (panel 8233) of connector MS-3102A-24-28S	1 ohm	If input resistance is 1 ohm, or less the cable assemblies are operating properly. If resistance is greater than 1 ohm, isolate damaged cable and replace cable assembly.
8	Repeat step 7 for pins C-Z of connectors specified in step 7.	Same as step 7	Same as step 7.
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">If load panel or transmitter panel cable assemblies are to be replaced, panel must be removed from rack.</p>			

TABLE 4-3. TYPICAL TROUBLES - MECHANICAL
REFER TO FIGURE 5-1

Sympton	Probable Cause	Remedy
Latch Assy will not close	Misadjusted stop	Adjust stop/hinge. Refer to procedure 5-12.
	Bent latch arm	Straighten arm. Readjust stop, hinge and connectors/plugs. Replace latch assy.
	Alignment pin binding or bent	Adjust stop and/or hinge. Replace load panel.
	Plug assy connectors damaged or misaligned	Adjust connectors or replace plug assy.
Plug assembly jammed in latch assembly or unable to be installed in latch assembly	Bent latch assembly arm	Straighten arm.
	Detent pin not releasing fully	Replace latch assy.

TABLE 4-4. TROUBLESHOOTING CHART - MECHANICAL
REFER TO FIGURE 5-1

Step	Preliminary Action	Observation	Next Step
1	Make a thorough visual inspection	No damage	If damage is observed, locate similar problem in observation column and initiate repairs indicated. If no damage is observed, perform step 2.
2	Actuate switch through one complete cycle	Latch assembly will not open/close: Bent latch arm Alignment pin not aligned	Straighten arm. If damaged severely, replace latch assembly. Adjust hinge assembly, stop or load panel connector, box receptacle.

TABLE 4-4. TROUBLESHOOTING CHART - MECHANICAL (Cont.)
REFER TO FIGURE 5-1

Step	Preliminary Action	Observation	Next Step
2 (Cont.)		Alignment pin bent or galled Misaligned jacks/plugs Damaged jacks/plugs Bent or broken keeper (will not catch or release) Broken or frozen detent pin	Replace with spare load panel assembly. Adjust hinge assembly, stop or load panel connector, box receptacle. Replace with spare load panel assembly or plug assembly. Replace latch assembly. Replace latch assembly.
3	Insert/remove plug assembly 1 full cycle at latch assembly	Plug assembly will not engage/disengage at latch assembly Bent latch arm Detent pin not releasing. Key galled or damaged	Refer to step 2a above. Replace latch assembly. Replace latch assembly.

CHAPTER V
MAINTENANCE

5-1. PREVENTIVE MAINTENANCE.

WARNING

The patch panel can operate at up to 2 kilowatts. Ensure that the associated equipment is de-energized before performing troubleshooting procedures.

5-2. The preventive maintenance for the patch panels is described in table 5-1.

5-3. CORRECTIVE MAINTENANCE.

5-4. The corrective maintenance for the patch panels consists of removal and replacement of cable assemblies, individual connectors, the plug assembly, the latch assembly and individual panels (load and/or transmitter).

5-5. REMOVAL OF CABLE ASSEMBLY - LOAD PANEL. Refer to Figure 5-1 and proceed as follows:

NOTE

Ensure that equipment is de-energized before performing the following steps.

1. Disconnect all ships cables from back connectors of load panel.
2. Disconnect plug assembly (18) from panel box receptacle by opening latch assembly (17). Remove plug assembly from latch assembly. Close latch assembly.
3. Remove load panel (26) from rack by removing mounting hardware located along the vertical edges of the panel.

NOTE

If cable assembly (12) is to be repaired/replaced initiate steps 4-8. If connector (15) is to be replaced, initiate steps 9-14.

TABLE 5-1. PREVENTIVE MAINTENANCE SCHEDULE

Schedule	Inspection	Maintenance Task
Annually	<p>Visually inspect cables for breaks and loose connections.</p> <p>Check cables for continuity</p> <p>Check VSWR of cables.</p>	<p>Replace cables. Tighten connections.</p> <p>Using a multi-meter, check continuity of cables as described in table 4-2.</p> <p>Perform VSWR test as described in paragraph 5-13.</p>

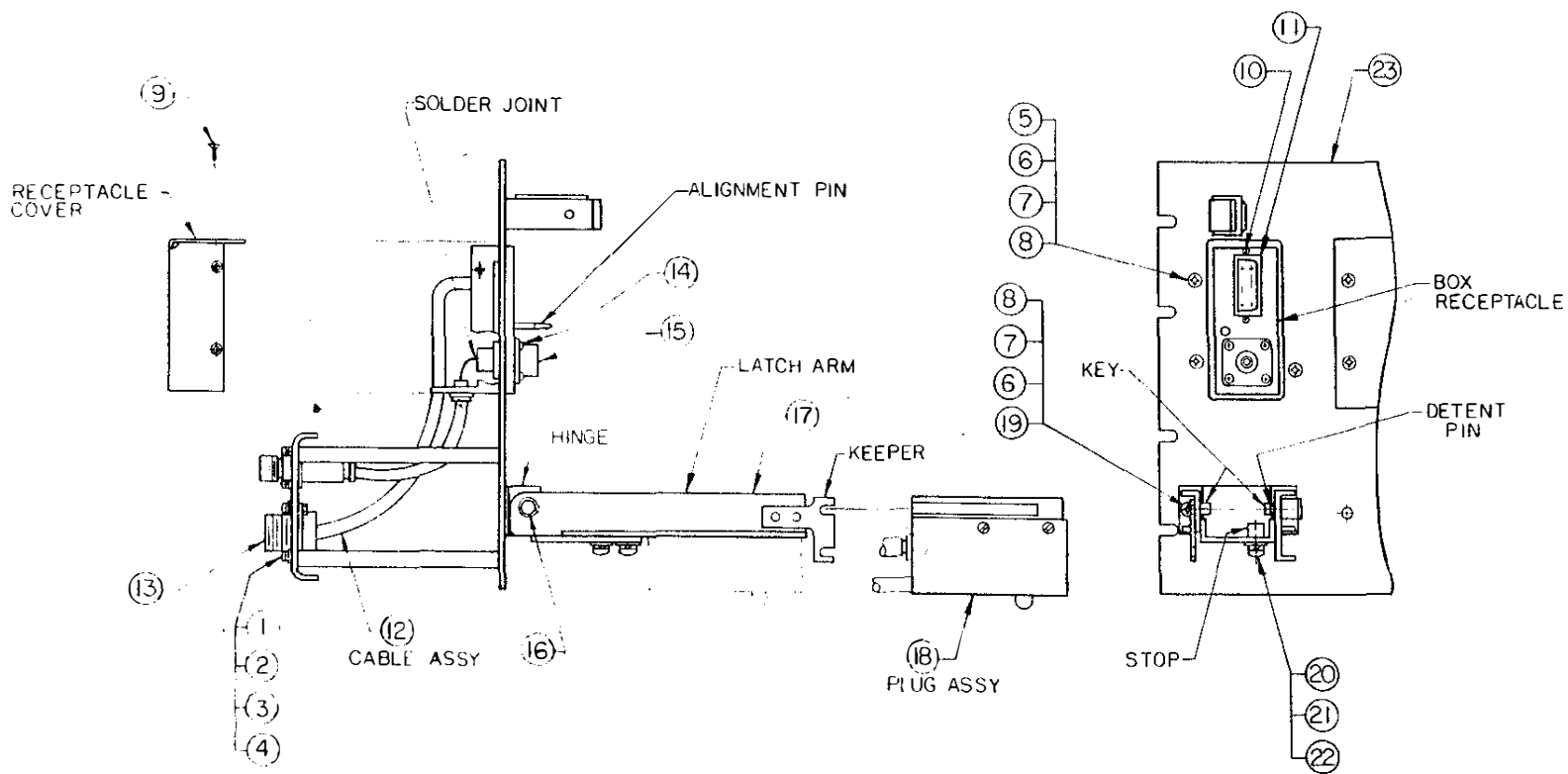


Figure 5-1. Load Panel

4. Remove four screws (1), lockwashers (2), washers (3), and nuts (4) from multi-pin connector on rear panel.

5. Remove three screws (5), lockwashers (6), washers (7) and nuts (8) from panel and remove box receptacles.

6. Remove four screws (9) to remove receptacle cover.

7. Remove two screws (10) and remove plug (11) from receptacle.

NOTE

Cable (12) is now free to effect repair procedure. Repair per standard procedures. Replace per step 8 following.

8. Reinstall by reversing procedures in steps 1-7; except in step 7, install screws (10) using Locktite - Grade C.

9. Remove three screws (5), lockwashers (6), washers (7) and nuts (8) from panel to remove box receptacle.

10. Remove four screws (9) to remove receptacle cover.

11. Remove wire from rear of connector (unsolder).

12. Remove four screws (14) and discard connector (15).

13. Replace connector (15). install four screws (14) and resolder wire to connector.

NOTE

Solder per MIL-STD-440 using resin core solder per QQ-S-571, Comp. SN-60-W-R-P2.

14. Reinstall by reversing procedures in steps 9-13.

15. Realign latch assembly per procedure 5-12.

5-6. REMOVAL OF CABLE ASSEMBLIES - TRANSMITTER PANEL. Refer to figure 5-2 and proceed as follows:

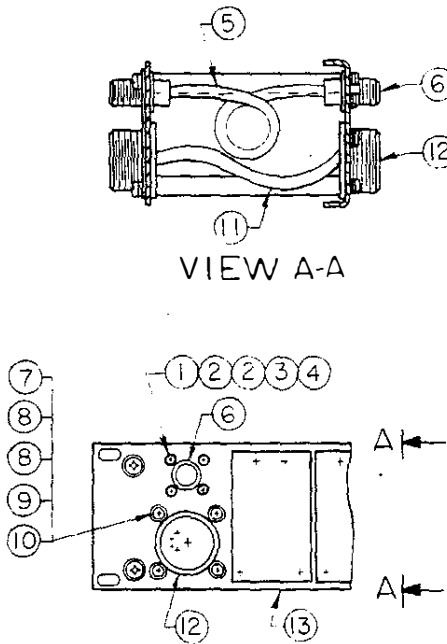


Figure 5-2. Transmitter Panel

NOTE

Ensure that equipment is de-energized before performing the following steps.

1. Disconnect all ships cables from transmitter panel (13) rear panel and disconnect plug assembly from front panel.

2. Remove transmitter panel (13) from rack by removing mounting hardware.

NOTE

If cable assembly (5) is to be repaired/replaced, initiate steps 3 and 4.

If cable assembly (11) is to be repaired/replaced, initiate steps 5 and 6.

3. Remove eight screws (1), lockwashers (3), nuts (4) and sixteen flat washers (2) from front and rear panel to remove cable assembly (5).

NOTE

Cable is free to effect repair procedure. Repair per standard procedure. If replacement of connector is done, use heat shrinkable tubing RNF-100, Type 2, MIL-I-23053/5, color clear, .75 I.D. X 1.5 lg. to secure cable to connector. Replace per step 4 following.

4. To reinstall cable assembly (5), reverse the procedures of steps 1-3.

5. Remove eight screws (7), lockwashers (9), nuts (10) and sixteen flat washers (8) from front and rear panel to remove cable assembly (11).

NOTE

Cable is free to effect repair procedure. Repair per standard procedure. Replace per step 6.

6. To reinstall cable assembly (11), reverse procedures in steps 1, 2 and 5.

5-7. REMOVAL OF LATCH ASSEMBLY. Refer to figure 5-1 and proceed as follows:

NOTE

Ensure that equipment is de-energized before performing following steps.

1. Remove plug assembly (18) from latch assembly (17).

2. Remove retaining ring (16) and slide hinge pin free.

3. To reinstall the latch assembly, reverse steps above.

4. Realign latch assembly per procedure 5-12.

5-8. LAMP SOCKET ASSEMBLY REPLACEMENT - PLUG ASSEMBLY. Refer to figure 5-3 and proceed as follows:

NOTE

Ensure that plug assembly (3) is completely detached from associated equipment.

1. Detach cover by removing four screws (1).

2. Slide sleeving away from socket assembly (2) solder lugs and unsolder both leads.

3. Loosen socket assembly retaining nut and remove socket assembly (2) from bracket.

4. To reinstall, reverse procedure in steps 1-3 except in step 1, apply Locktite - Grade C to four screws (2) before installing.

5-9. LAMP REPLACEMENT. Refer to figure 5-3 and proceed as follows:

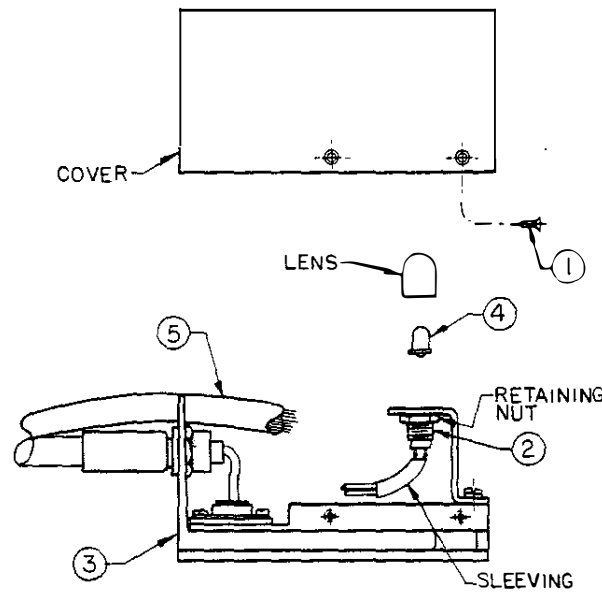


Figure 5-3. Plug Assembly

NOTE

Ensure that the plug assembly is completely detached from associated equipment.

1. Unscrew lens from plug assembly (3).
2. Remove lamp (4) from lens.
3. To reinstall, reverse procedure in steps 1 and 2.

5-10. LOAD PANEL REPLACEMENT.
Proceed as follows:

1. Repeat steps 1-3 of procedure 5-5.
2. To reinstall, reverse procedure in steps 1-3 of procedure 5-5.

5-11. TRANSMITTER PANEL REPLACEMENT. Proceed as follows:

1. Repeat steps 1 and 2 of procedure 5-6.
2. To reinstall, reverse procedure in steps 1 and 2 of procedure 5-6.

5-12. PLUG ASSEMBLY - SWITCH ASSEMBLY ALIGNMENT. Refer to figure 5-1 and proceed as follows:

NOTE

Ensure that equipment is de-energized before performing the following steps.

NOTE

If access to rear of load panel (26) with nut-driver is possible, proceed to step 2. If access is not possible, proceed with step 1.

1. Repeat steps 1-3 of procedure 5-5.
2. Rotate latch assembly (17) to full open position.
3. Loosen the following hardware:
 - a. Hinge, mounting hardware (Items (19), (6), (7) and (8)) (2 places).
 - b. Receptacle, mounting hardware (Items (5), (6), (7) and (8)) (3 places).

c. Stop, mounting hardware (Items (20), (21) and (22)) (2 places).

4. Close latch assembly (17) carefully (with plug assembly (18) secured in latch assembly) until plug assembly and connectors in receptacle mate (latch assembly secured).

5. Tighten items noted in step 3a and 3b.

6. Slide stop until it butts plug assembly (18) and secure items (20), (21) and (22).

7. Actuate latch assembly (17) several times through lock-unlock cycle ensuring smooth mating action, check for rf connector interference.

8. Repeat steps 3-7 until smooth lock-unlock action is obtained.

9. Reinstall unit by reversing procedures in step 1 as necessary.

5-13. VSWR TEST. Figure 5-4 shows the test setup for performing the VSWR test. To perform the VSWR test, proceed as follows:

1. Setup test equipment as shown in figure 5-4. Turn on signal generator and allow 15 minutes for equipment to warm-up.

2. Set sweep signal generator to frequency normal for system and use 1000 Hz modulation.

3. Connect crystal detector to incident signal output of the directional coupler. Adjust signal generator gain for full scale deflection on the standing wave indicator.

4. Connect crystal detector to reflected signal output of directional coupler and read VSWR on the standing wave indicator.

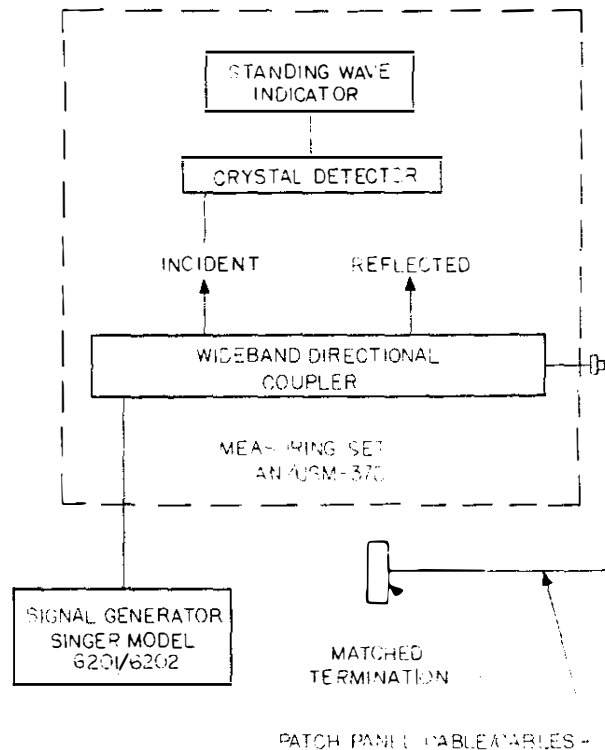


Figure 5-4. VSWR Test Setup

CHAPTER VI

MAINTENANCE PARTS LIST

6-1. INTRODUCTION.

6-2. Maintenance parts for the patch panels are listed in table 6-1. The maintenance parts are listed numerically by illustration, figure and item number.

6-3. Table 6-2 lists the manufacturers of parts used in the patch panels. The table includes the manufacturer's code which is used in table 6-1 to identify the manufacturer. The codes used are taken from the Federal Supply Code for Manufacturers, H4-1.

TABLE 6-1. MAINTENANCE PARTS LIST

Illustration		Part Number	FSCM	Description	Qty.
Fig. No.	Item No.				
1-1		8233	04953	Load Panel Assy	Optional
1-1		8118	04953	Transmitter Panel Assy	Optional
1-1		7592	04953	Plug Assy	Optional
1-2				Same as Figure 1-1	
2-1				Same as Figure 1-1	
2-2				Same as Figure 1-1	
3-1		8233	04953	Load Panel Assy	1
3-1		7592	04953	Plug Assy	1
3-1		8228	04953	Latch Assy	1
4-1		8118	04953	Transmitter Panel Assy	1
4-1		8223	04953	Cable Assy	1
4-1		MS3102A-24-28S		Conn. Recept.	3
4-1		8222	04953	Cable Assy	1
4-1		UG22D/U		Conn. Coaxial	2
4-1		7592	04953	Plug Assy	1

TABLE 6-1. MAINTENANCE PARTS LIST (Cont.)

Illustration		Part Number	FSCM	Description	Qty.
Fig. No.	Item No.				
4-1		8098	04953	Cable Assy	1
4-1		MS3106A-24-28P		Conn. Plug	1
4-1		57-10240	07497	Conn. Recept.	1
4-1		MS25237-327	96906	Lamp	1
4-1		UG347 A/U		Conn. Coaxial	1
4-1		8233	04953	Load Panel Assy	1
4-1		8226	04953	Cable Assy	1
4-1		57-20240	07497	Conn. Recept.	1
4-1		UG-348A/U	81349	Conn. Coaxial	1
5-1	1	MS51957-123		Screw, #6-32 X 9/16 lg.	4
5-1	2	MS15795-806		Flat Washer, #6	4
5-1	3	MS35338-136		Lock Washer, #6	4
5-1	4	MS35649-264		Nut, #6	4
5-1	5	MS51958-63		Screw, #10-32 X 1/2 lg.	3
5-1	6	MS15795-808		Flat Washer, #10	5
5-1	7	MS34338-138		Lock Washer, #10	5
5-1	8	MS35650-304		Nut, #10	5
5-1	9	MS51959-17		Screw, #4-40 X 1/2 lg.	4
5-1	10			Screw, #3-48 X 5/16 lg.	2
5-1	11	57-20240	07497	Conn. Recept.	1
5-1	12	8226	04953	Cable Assy	1
5-1	13	MS3102A-24-28S		Conn. Recept.	1

TABLE 6-1. MAINTENANCE PARTS LIST (Cont.)

Illustration		Part Number	FSCM	Description	Qty.
Fig. No.	Item No.				
5-1	14	MS51957-14		Screw, #4-40 X 5/16 lg.	4
5-1	15	UG-348A/U	81349	Conn. Coaxial	1
5-1	16	MS16624-4031		Retaining Ring	2
5-1	17	8228	04953	Latch Assy	1
5-1	18	7592	04953	Plug Assy	1
5-1	19	MS51960-65		Screw, #10-32 X 1/2 lg.	2
5-1	20	MS51957-45		Screw, #8-32 X 1/2 lg.	2
5-1	21	MS15795-807		Flat Washer, #8	2
5-1	22	MS35338-137		Lock Washer, #8	2
5-1	23	8233	04953	Load Panel Assy	1
5-2	1	MS51957-17		Screw, #4-40 X 1/2 lg.	4
5-2	2	MS15795-803		Flat Washer, #4	8
5-2	3	MS35338-135		Lock Washer, #4	4
5-2	4	MS35649-244		Nut, #4	4
5-2	5	8222	04953	Cable Assy	1
5-2	6	UG 22D/U	81349	Conn. Coaxial	2
5-2	7	MS51957-30		Screw, #6-32 X 1/2 lg.	4
5-2	8	MS15795-805		Flat Washer, #6	8
5-2	9	MS35338-136		Lock Washer, #6	4
5-2	10	MS35649-264		Nut, #6	4
5-2	11	8223	04953	Cable Assy	1
5-2	12	MS3102A-24-28S		Conn. Recept.	2

TABLE 6-1. MAINTENANCE PARTS LIST (Cont.)

Illustration		Part Number	FSCM	Description	Qty.
Fig. No.	Item No.				
5-2	13	8118	04953	Transmitter Panel Assy	1
5-3	1	MS51959-13		Screw, #4-40 X 1/4 lg.	4
5-3	2	MS25256-6	96906	Socket Assy.	1
5-3	3	7592	04953	Plug Assy	1
5-3	4	MS25237-327	96906	Lamp	1
5-3	5	8098	04953	Cable Assy	1

TABLE 6-2. LIST OF MANUFACTURERS

Mfr. Code	Name	Address
04953	Chu Associates, Inc.	Littleton, Mass.
07497	Amphenol Corp.	Chicago, Ill.
81349	Military Specifications	Washington, D. C.
96906	Military Standards	Washington, D. C.