

TECHNICAL MANUAL

**OPERATOR'S, UNIT, DIRECT
SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL**

FOR

**SHELTER, NONEXPANDABLE,
INTEGRATED, S787/G
(NSN 5411-01-333-0663) (EIC: N/A)**

**OPERATOR PREVENTIVE
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HEADQUARTERS, DEPARTMENT OF THE ARMY

1 APRIL 2003



5

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

1

DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2

IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3

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

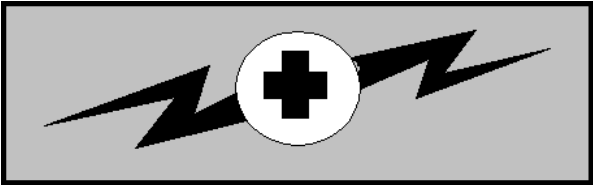
4

SEND FOR HELP AS SOON AS POSSIBLE

5

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

WARNING



HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless another person is nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When technicians are aided by operators, they must be warned about dangerous areas.

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

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

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

WARNING

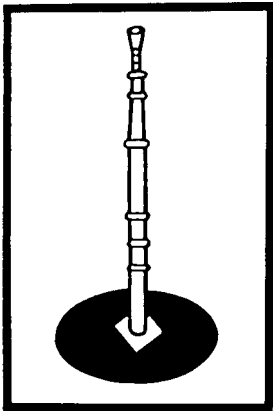
Do not be misled by the term "low-voltage." Potentials as low as 50 V may cause death under adverse conditions.

For artificial respiration, refer to FM 21-11.

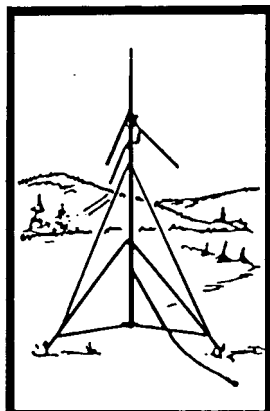
WARNING

While performing the emplacement procedures, comply with all safety precautions to prevent personnel injury or death.

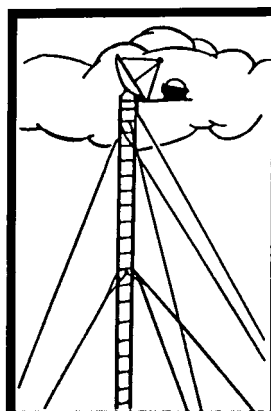
FIXED OPERATION WITH LONG RANGE ANTENNAS WARNING



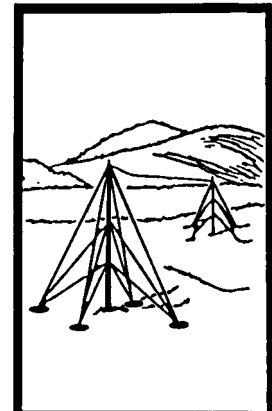
TELESCOPING
ANTENNA MAST



TYPICAL TOWER



EXTENDED RANGE
ANTENNA



DOUBLET ANTENNA

NEVER ERECT THESE LONG RANGE ANTENNAS DIRECTLY UNDER POWER LINES

If you must erect these long range antennas near power lines, power line poles or towers, or buildings with overhead power line connections, never put the antenna closer than two times the antenna height from the power line, pole, tower, or buildings.

NEVER ATTEMPT TO ERECT ANY LONG RANGE ANTENNA WITHOUT A FULL TEAM

Before erecting any long range antenna, inspect all the parts making up the antenna kit. Do not erect the antenna if any parts are missing or damaged.

Do as much of the assembly work as possible on the ground.

When erecting the antenna, allow only team personnel in the assembly area.

Make sure that the area for the anchors is firm. If the ground is marshy or sandy, get specific instructions from your crew chief or supervisor on how to reinforce the anchors.

When selecting locations for anchors, avoid traveled areas and roads. If you cannot avoid these areas, get specific instructions from your supervisor as to what clearance your guy wires and ropes must have over the traveled areas and roads.

Clearly mark all guy wires and ropes with warning flags or signs supplied by your unit. In an emergency, use strips of white cloth as warning streamers.

If you suspect that power lines have made accidental contact with your antenna, stop operating, rope off the antenna area, and notify your superiors.

If the weather in your area can cause ice to form on your long range antenna and its guy wires and ropes, add extra guy wires to support the system. Rope off the area and post signs such as "BEWARE OF FALLING ICE".

Do not try to erect any antenna during an electrical storm.

Keep a sharp eye on your anchors and guys. Check them daily and immediately before and after bad weather.

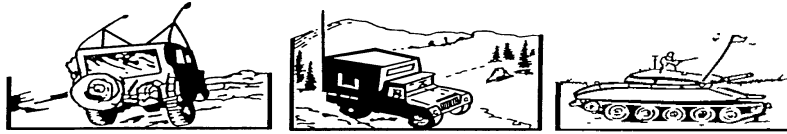


Serious injury or even death can occur if the following are not carefully observed when installing and using the antennas used with your radio sets.



1. Are there any power lines in your area of operation?
2. How high are these power lines?
3. How tall are the poles or towers carrying power lines?

MOBILE OPERATION WITH WHIP ANTENNAS



DO NOT STOP YOUR VEHICLES UNDER POWER LINES

WARNING

If possible, try to maintain mobile communications with your antenna(s) tied down.

Make sure an antenna tip cap is securely taped on the end of each whip antenna.

Do not lean against or touch a whip antenna while the transmitter is on.

During cross-country operation, do not allow anyone to stick an arm, leg, or weapon over the sides of the vehicle. If your antenna accidentally touches a power line and a leg, arm, or weapon contacts a damp bush or the ground, a serious or fatal accident can occur.

If you are not sure whether an antenna on your vehicle can clear a power line, stop before you get close to the power line and either carefully tie down the antenna or remove antenna sections to make sure that you can safely drive under the power line.

Do not climb on top of vehicle or shelter during radio transmissions.

WARNING

Do not turn on radio equipment until properly routed to an antenna. Radio Frequency (RF) leakage from equipment connectors may cause burn hazard for personnel or destruction of radio equipment from feedback if radio is transmitting without proper antenna connections.

WARNING

CARBON MONOXIDE

Carbon monoxide is without color or smell, but it can kill you. Breathing carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Brain damage or death can result from heavy exposure. Carbon monoxide occurs in the exhaust fumes of fuel-burning heaters and internal combustion engines. When there is no air movement, carbon monoxide can become dangerously concentrated. Precautions must be followed to ensure crew safety when the personnel heater, main or auxiliary engine, or any vehicle is operated for any purpose.

- Do not operate personnel heater or engine of vehicle in a closed place unless there is sufficient air movement.
- Do not idle engine for long periods without operating the ventilator blower. If tactical situation permits, open hatches.
- Do not drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
- Be alert at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present, immediately ventilate personnel compartments. If symptoms persist, remove affected crew to fresh air; keep warm. Do not permit physical exercise. If necessary, give artificial respiration.
- Be aware; the field protective masks for chemical biological-radiological (CBR) protection will not protect you from carbon monoxide poisoning.
- For Artificial Respiration, refer to FM 21-11.

ELECTRICAL CURRENT

The shelter contains high electrical currents, to avoid injury:

- Remove all jewelry.
- Use electrically insulated tools.
- Take special precautions when working on or near electrical connections.

WARNING

ELECTRICAL CURRENT (CONT)

- Tag MAIN PWR switches when doing maintenance and ensure power is off.
- Verify the removal of electrical power at the Main Control Panel and Motor Controller before servicing electrical equipment.
- Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.
- Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it. Tag external power source.
- Be careful not to come in contact with high voltage connections or 115 V ac input connections when installing or operating this equipment.
- Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.
- Before connecting primary power cables, connect the grounding cable from the ground lug on the external power panel to earth ground. Do not remove the grounding cable until the signal cables and primary power cables have been disconnected and the onboard generator has been shut down.

ELECTRICAL SHOCK

Low voltage/high current circuits can kill. The following safety steps shall be followed if someone is the victim of electrical shock:

- Do not try to pull or grab the individual.
- If possible, turn off the electrical power.
- If you cannot turn off the electrical power, pull, push, or lift the person to safety using a dry wooden pole or a dry rope or some other insulating material.
- Send for help as soon as possible.

WARNING

LIFTING

Improper lifting can cause personal injury. Use the following precautions when lifting:

- Use proper number of people when called for. When in doubt, use help.
- Be aware of all lifting points and follow procedures.
- Obey lift restrictions and utilize mechanical aids as required.
- Prevent back injury, lift with legs, not back.

COMPRESSED AIR

Compressed air is dangerous and can cause serious bodily harm if protective measures are not taken to prevent a chip or particle (of whatever size) from blowing into the eyes or into open cuts or wounds. Gloves are recommended when using compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 pounds per square inch gage (30 psig) and then only with effective chip guarding and personnel protective equipment (Industrial safety glasses and full face shield). Do not use compressed air to dry parts when trichlorotrifluorethane has been used.

HAZARDOUS MATERIALS

The chemicals (such as solvents, adhesives, sealants, paints, lubricants, etc.) used in maintenance procedures may present fire or chemical hazards if used without proper precautions. Observe manufacturers warning labels and the warnings and cautions contained in this manual. Ensure sufficient ventilation exists, protective clothing and equipment is used, and sources of ignition are removed.

ENTRY AND EGRESS

The shelter's height above the ground when mounted on a vehicle and low door frame present potential hazards during entry and egress. Use extreme care when climbing or descending the ladder to avoid falling. Be alert to the low door frame to avoid hitting your head.

CIRCUIT BREAKERS

If a circuit breaker does not stay in the on position when depressed, do not attempt to close (activate) repeatedly since an overload condition probably exist which could be hazardous to personnel and equipment.

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

LIST OF EFFECTIVE PAGES

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original.....0.....1 April 2003

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 380, CONSISTING OF THE FOLLOWING:

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Cover-2 Blank	0
A – H	0
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1-0 – 1-36	0
2-1 – 2-76	0
3-1 – 3-39	0
3-40 Blank	0
4-1 – 4-172	0
5-1	0
5-2 Blank	0
A-1 – A-2	0
B-1 – B-9	0
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F-1 – F-11	0
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TECHNICAL MANUAL

NO. 10-5411-222-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 April 2003

**OPERATOR'S, UNIT, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE MANUAL
FOR
SHELTER, NONEXPANDABLE,
INTEGRATED, S-787/G
(NSN 5411-01-333-0663) (EIC: N/A)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, NJ 07703-5006. A reply will be furnished to you. The FAX number is 732-532-1413, DSN 992-1413. You may also email your recommendations to AMSEL-LC-LEO-PUBS-CHG@mail1.monmouth.army.mil. We will send you a reply.

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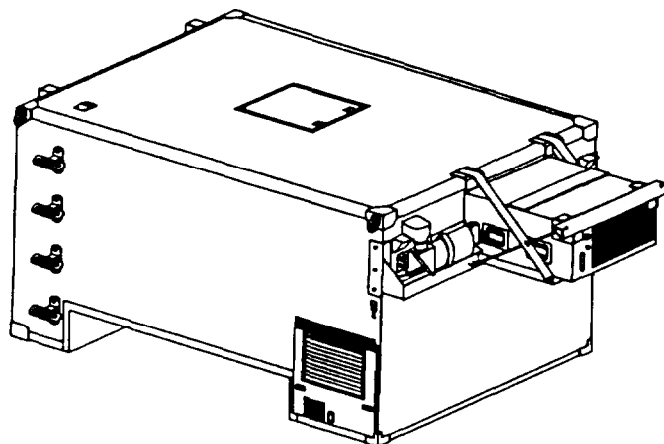
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*This manual supersedes TM 10-5411-222-14, dated 29 July 1994.

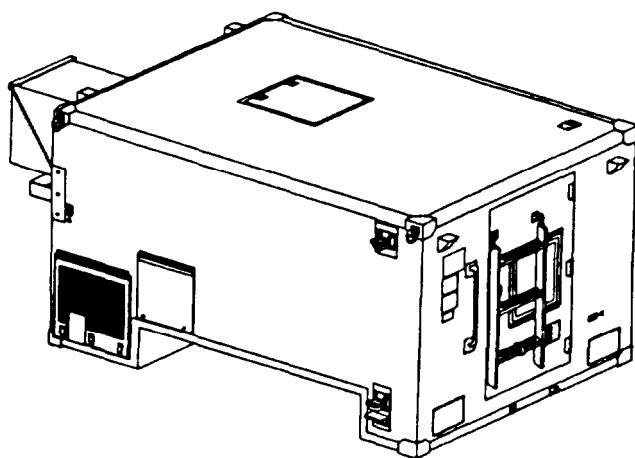
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(CURBSIDE)



(ROADSIDE)

Figure 1-1. Standard, Integrated Command Post System (SICPS)

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

a. Type of Manual. Operator's, Unit, Direct Support (DS), and General Support (GS) maintenance.

b. Equipment Name and Model Number, Shelter, Nonexpandable, Integrated S787/G (V1 Rigid Wall)

c. Purpose of Equipment. The shelter is a lightweight transportable shelter which supports various configurations and installation layouts for tactical command, control, communications, and intelligence (C³I) equipment. The shelter is mounted on a M1097 High Mobility MultiPurpose Wheeled Vehicle (HMMWV) and is capable of both stationary and mobile operation.

1-2. MAINTENANCE FORMS AND PROCEDURES. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management Systems (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE. Refer to TM 750-244-2 for the destruction of th shelter and to prevent enemy use.

1-4. PREPARATION FOR STORAGE AND SHIPMENT. Reference Chapter 3.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your SICPS shelter needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your shelter. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, NJ 07703-5006. We will send you a reply.

1-6. WARRANTY INFORMATION. Details regarding warranty information may be found in TB 10-5411-222-24 (Warranty Technical Bulletin).

1-7. SAFETY CARE AND HANDLING. Many adhesives, cleaning, and bonding agents are used during skin repair procedures of the shelter. The prolonged use of these materials without proper protection can cause skin irritation and the inhalation of the vapors can be toxic if inhaled in quantity. When working on the shelter be familiar with all warnings posted in the front of this manual. Refer to FM 21-1 for first aid information.

1-8. CORROSION PREVENTION AND CONTROL. Corrosion prevention and control (CPC) of Army material is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using Standard Form 368, Product Quality Deficiency Report. Use of keywords such as “corrosion”, “rust”, “deterioration”, or “cracking” will ensure that the information is identified as a CPC problem. Standard form 368 should be submitted to: Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5006.

1-9. NOMENCLATURE CROSS-REFERENCE LIST.

a. Nomenclature Cross-Reference List.

Common Name	Official Nomenclature
SICPS shelter	Shelter, Standardized Integrated Command Post System, Type II
HMMWV or Vehicle	High Mobility Multipurpose Wheeled Vehicle M1097 Utility Truck
Generator or engine	GENSET

b. List of Abbreviations/Acronyms.

AC	Alternating Current
APIU	Adaptive Programmable Interface Unit
APU	Auxiliary Power Unit
CB	Chemical/Biological or Circuit Breaker
CO	Carbon Monoxide
COMMO	Communications
CPC	Corrosion Prevention and Control
DC	Direct Current
DNVT	Digital Non-Secure Voice Terminal
DSVT	Digital Subscriber Voice Telephone
ECU	Environmental Control Unit
EMI	Electromagnetic Interference
EPUU	Enhanced PLARS User Unit
FAX	Facsimile
FOMAU	Fiber Optic Medium Attachment Unit
GENSET	Generator Set
GPFU	Gas Particulate Filtration Unit
HMMWV	High Mobility Multipurpose Wheeled Vehicle
JTIDS	Joint Tactical Information Distribution System
LAN	Local Area Network

b. List of Abbreviations/Acronyms (Continued).

MCPS	Modular Command Post System
MSRT	Mobile Subscriber Radio Terminal
NBC	Nuclear, Biological, and Chemical
PLARS	Position Location and Reporting System
PMCS	Preventive Maintenance Checks and Services
RFI	Radio Frequency
SEP	Signal Entry Panel
SICPS	Standardized Integrated Command Post System
SINCGARS	Single Channel Ground and Airborne System
TCU	Transportable Computer Unit
TIP	Tent Interface Panel
UPS	Uninterruptible Power Supply

c. Glossary.

Delamination	The separation of the inner and outer portion of the shelter core which is filled with an adhesive epoxy and bonded to the aluminum panels.
Sue	The solvent resistant in chemical gloves.

Section II. EQUIPMENT DESCRIPTION AND DATA**1-10. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.**a. Characteristics.

- Transportable via:
 - Air
 - Rail
 - Helicopter (sling)
- Aluminum skin with honey-comb core.

b. Capabilities and Features.

- Mounted on M1097 HMMWV for mobility.
- Provides AC and DC operating power.
- Operates from on-board or external power source.
- Provides radio frequency/electromagnetic interference (RFI/EMI) shielding.
- Provides electromagnetic pulse (EMP) filtering.
- Provides hardware interface for various communication configurations.
- Rapid decompression capabilities.
- Environmentally controlled.
- Provides nuclear, biological, chemical (NBC) filtering.
- Provides carbon monoxide detection.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

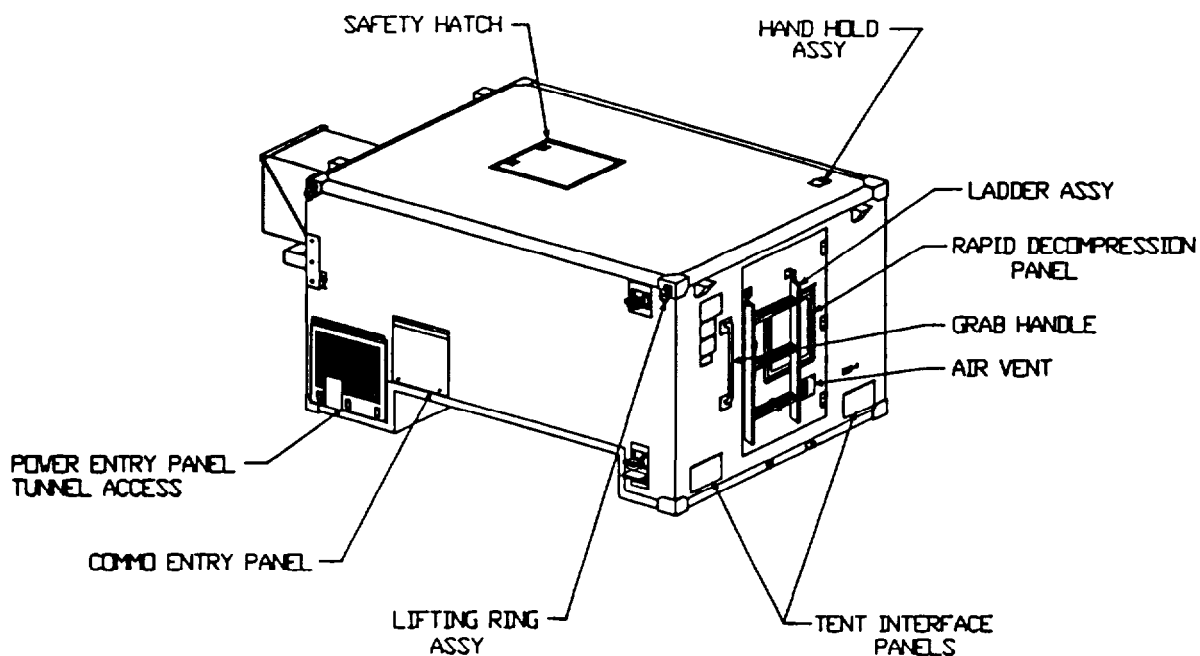


Figure 1-2. SICPS Shelter (Sheet 1 of 3)
(Roadside View)

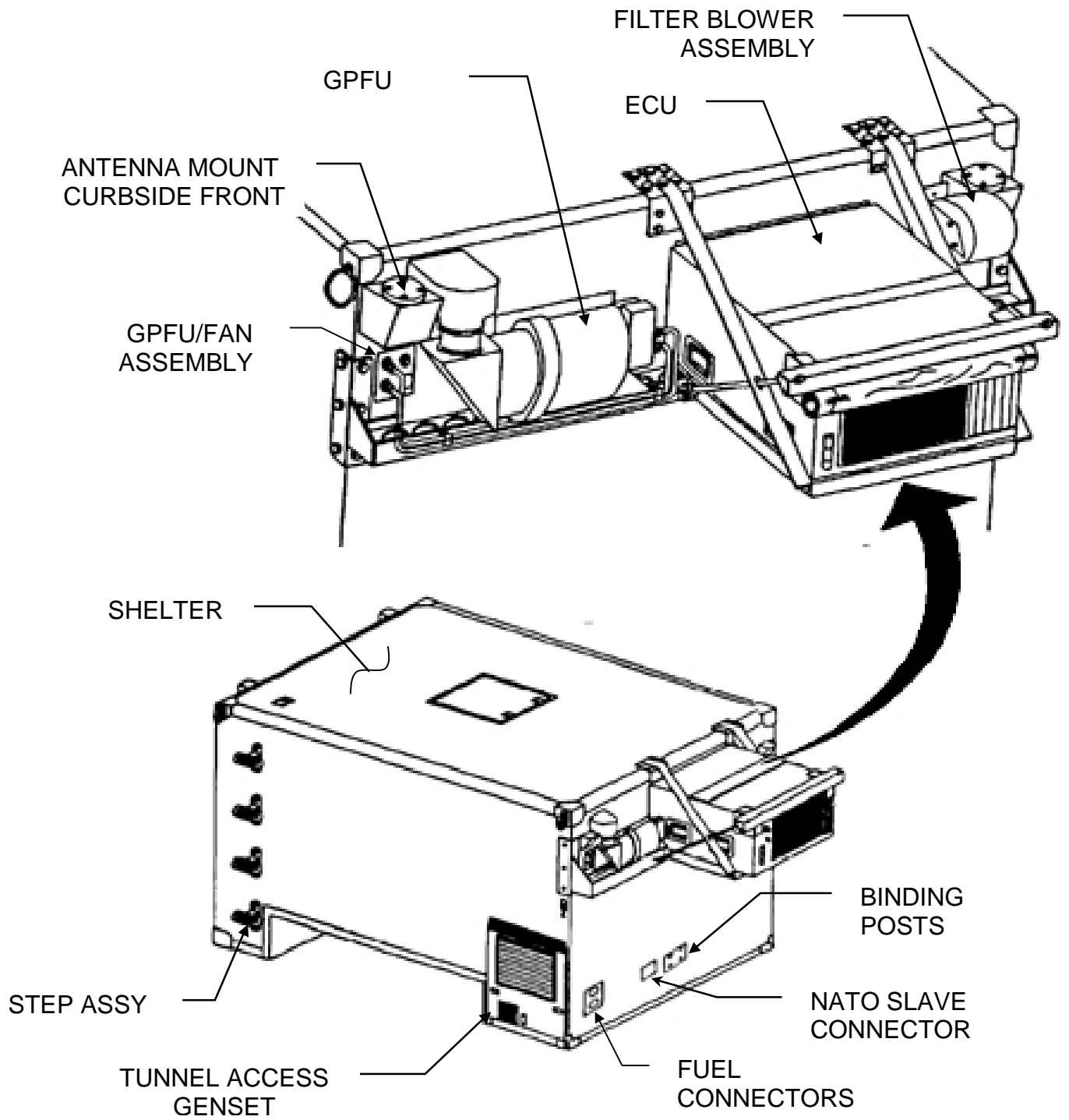


Figure 1-2. SICPS Shelter (Sheet 2 of 3)
(Curbside/Front View)

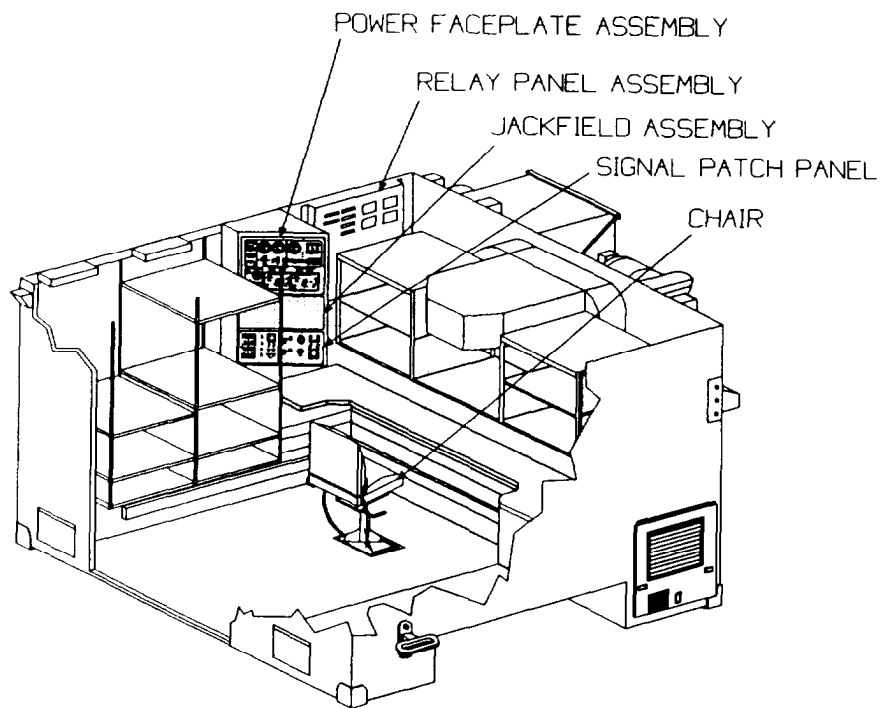


Figure 1-2. SICPS Shelter (Sheet 3 of 3)
(Internal View)

a. Power Distribution. The SICPS shelter utilizes power distribution equipment to provide, control, and monitor the 115 Vac and 28 Vdc operating power. The power distribution equipment consists of the following items:

- Power Entry Box
- Power Faceplate Assembly
- Relay Panel
- Tent Interface Panel (TIP) Power Entry Assembly
- DC Power Supplies
- Raceways

(1) Power Entry Box. The Power Entry Box provides connections and control of the 115 Vac, 50/60 Hz power for the shelter. The Power Entry Box Assembly is located in the generator tunnel at the front (roadside) of the shelter. Two connectors, one for input power and the other for output power, are used to connect external power cables to the shelter. Each power link is protected by a push-to-reset circuit breaker. The onboard generator is also connected to the Power Entry Box. A source select switch is provided for selecting the external or onboard power source. A ground lug is provided for grounding the SICPS-shelter.

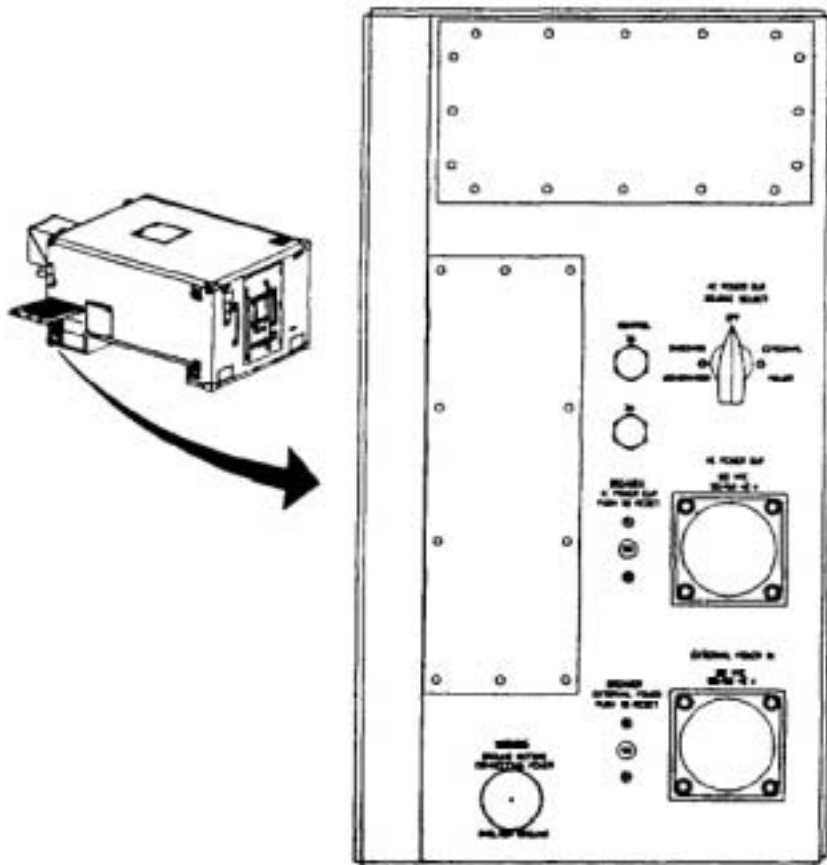


Figure 1-3. Power Entry Box

(2) *Power Monitor Assembly*. The Power Monitor Assembly contains panels for power distribution, signal distribution, environmental control, and monitoring the generator set (GENSET). It is located on the inside roadside wall of the shelter. The assembly consists of the Power Assembly Faceplate, Jackfield Assembly, DC Vent lever, and Signal Patch Panel.

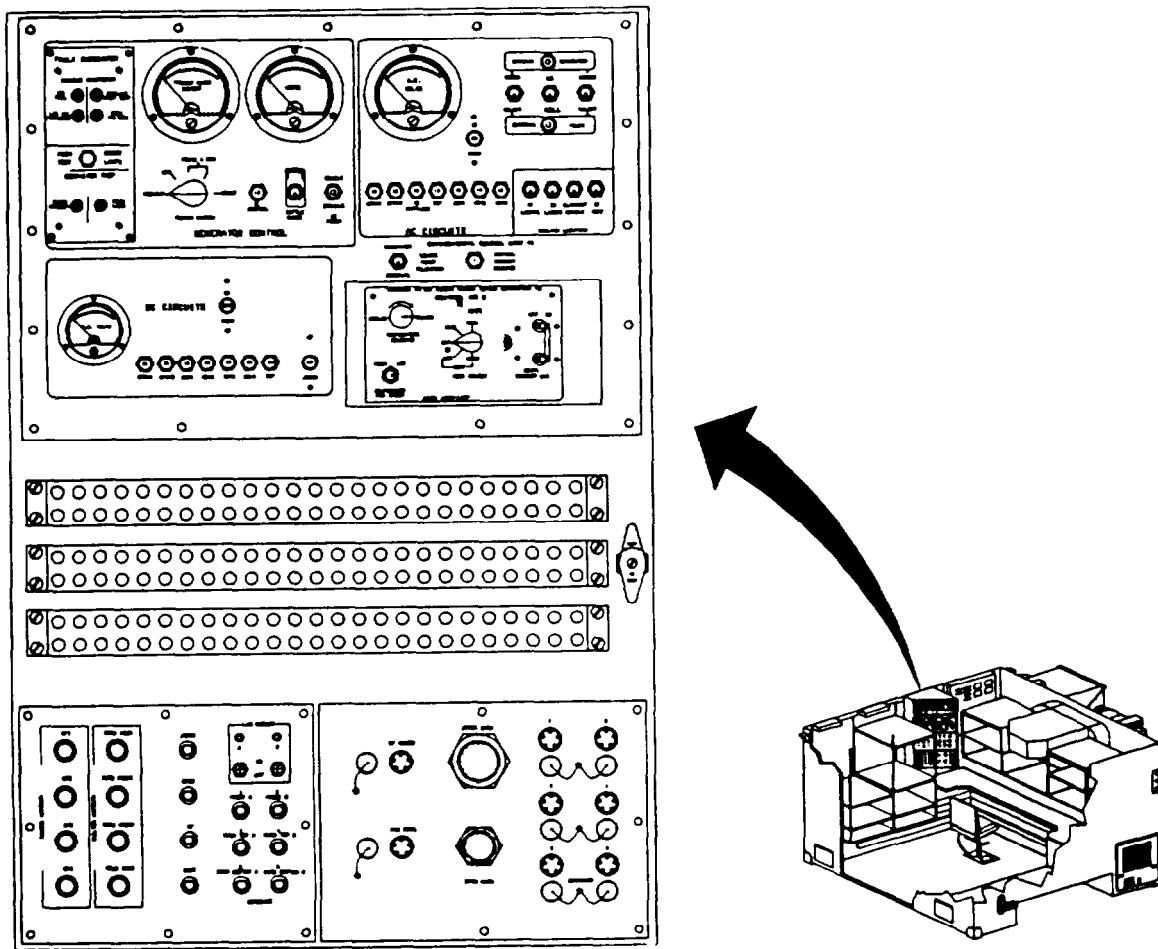


Figure 1-4. Power Monitor Assembly

(3) *Relay Panel Assembly*. The Relay Panel contains the relays for monitoring and controlling the GENSET and the relay for the blackout light system. The Relay Panel also contains two diode isolator assemblies for isolating the DC power supplies from the generator and from each other. The DC power supplies are located just below the Relay Panel. Terminal boards on the Relay Panel are provided for interfacing power and signal line terminations.

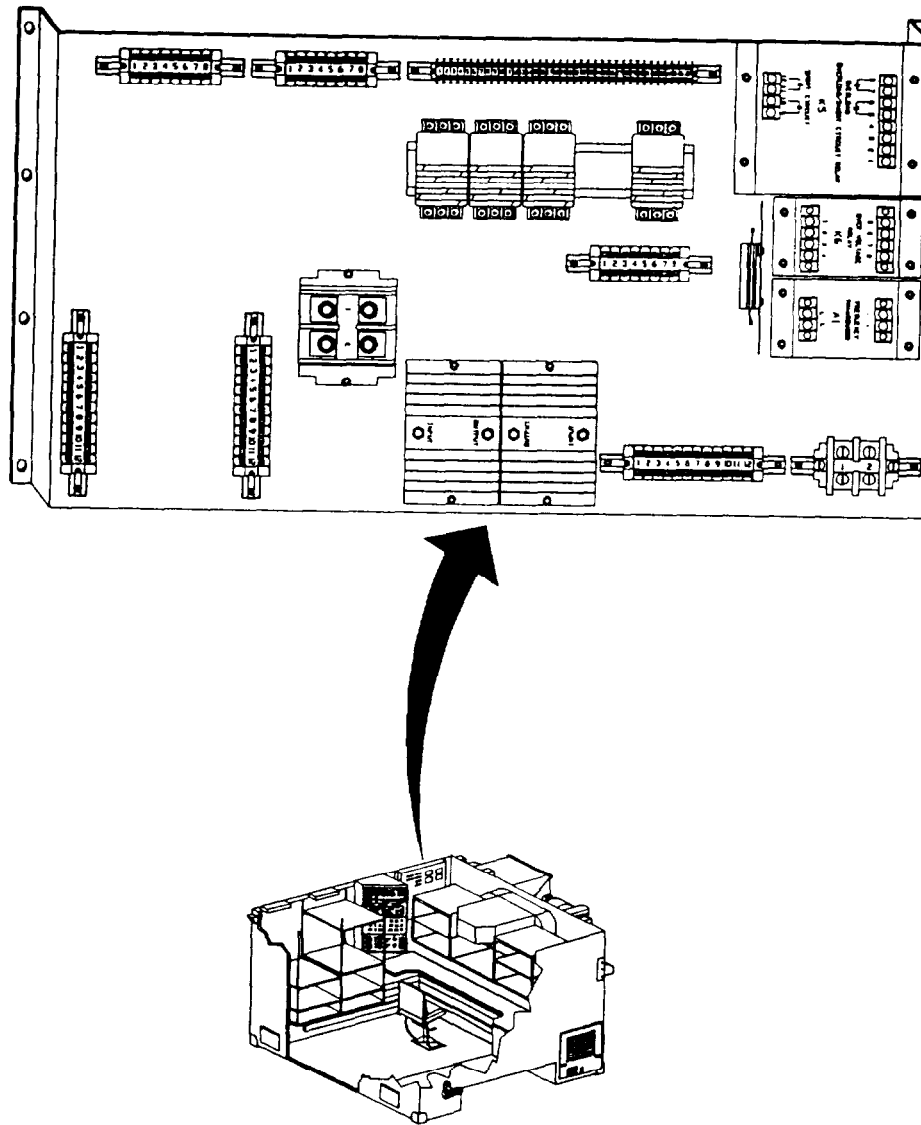


Figure 1-5. Relay Panel Assembly

(4) *Tent Interface Panel (TIP) Power Entry Assembly.* The TIP Power Entry Assembly is used to extend system data, signal, and power to the extension tent. The TIP Power Entry Panel Assembly is located at the lower rear roadside corner of the shelter.

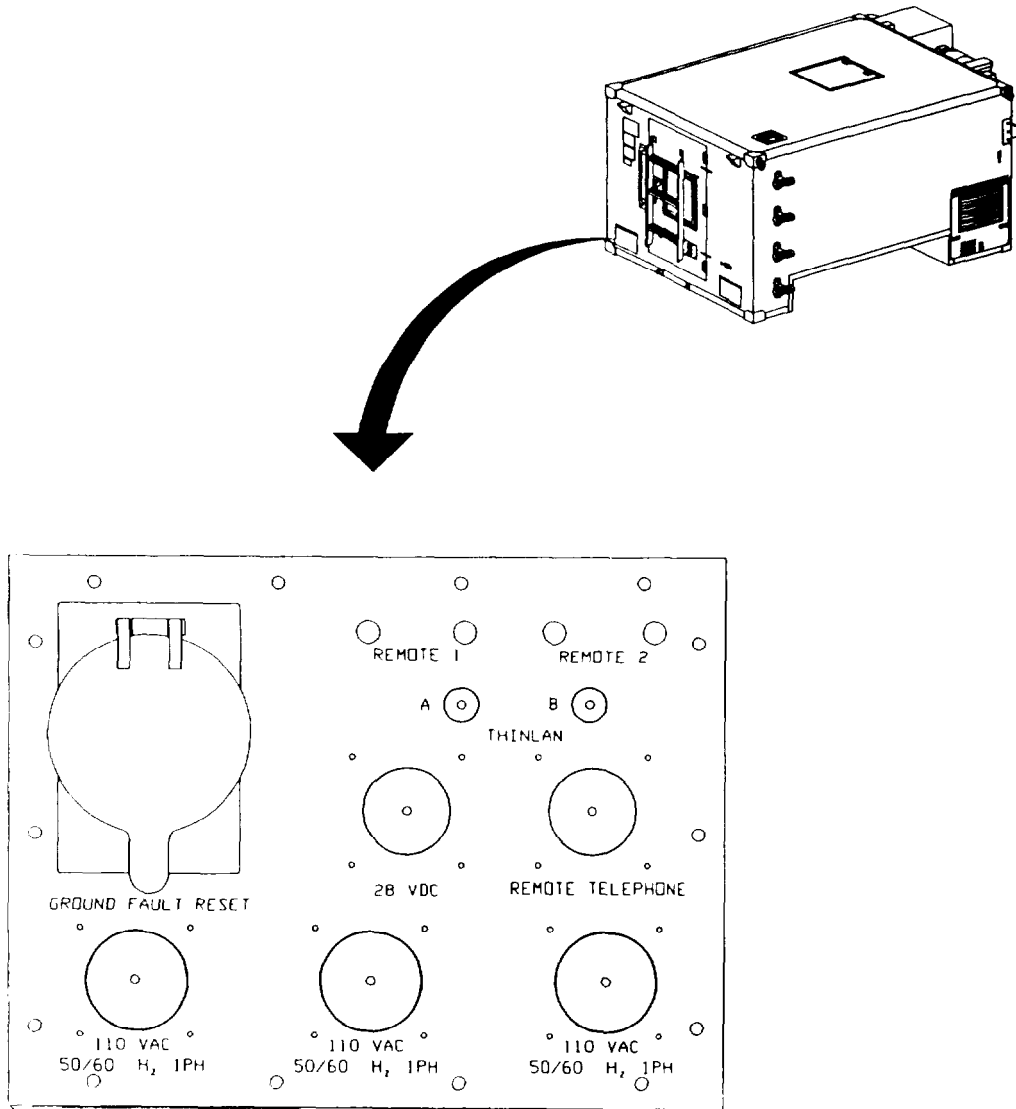


Figure 1-6. Roadside TIP Power Entry Panel Assembly

(5) *DC Power Supplies*. Two DC Power Supplies, located below the Relay Panel, provide 28 Vdc to various components and assemblies within the SICPS shelter.

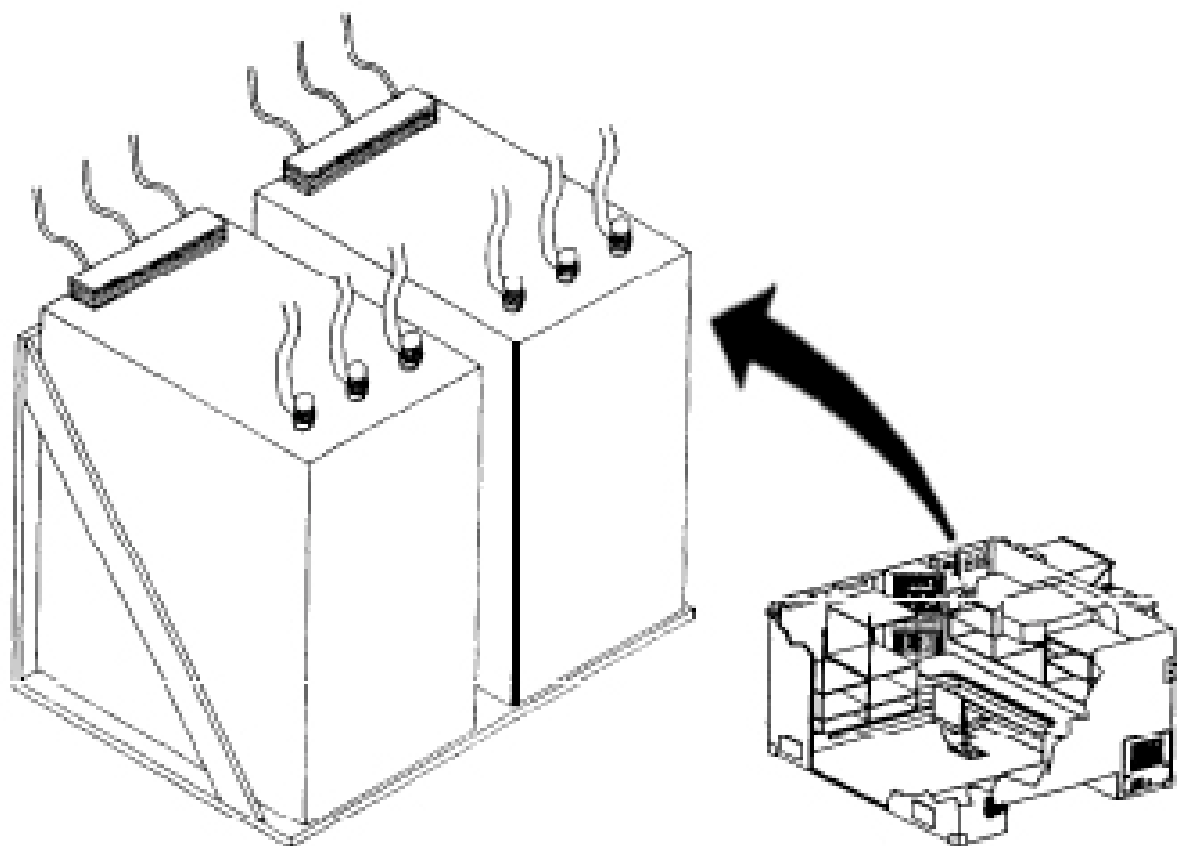
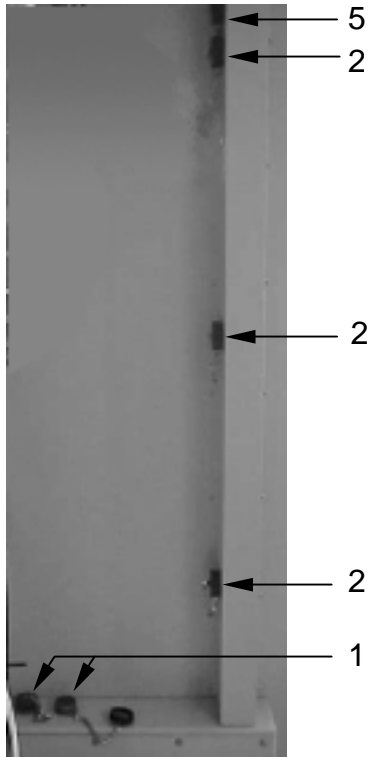
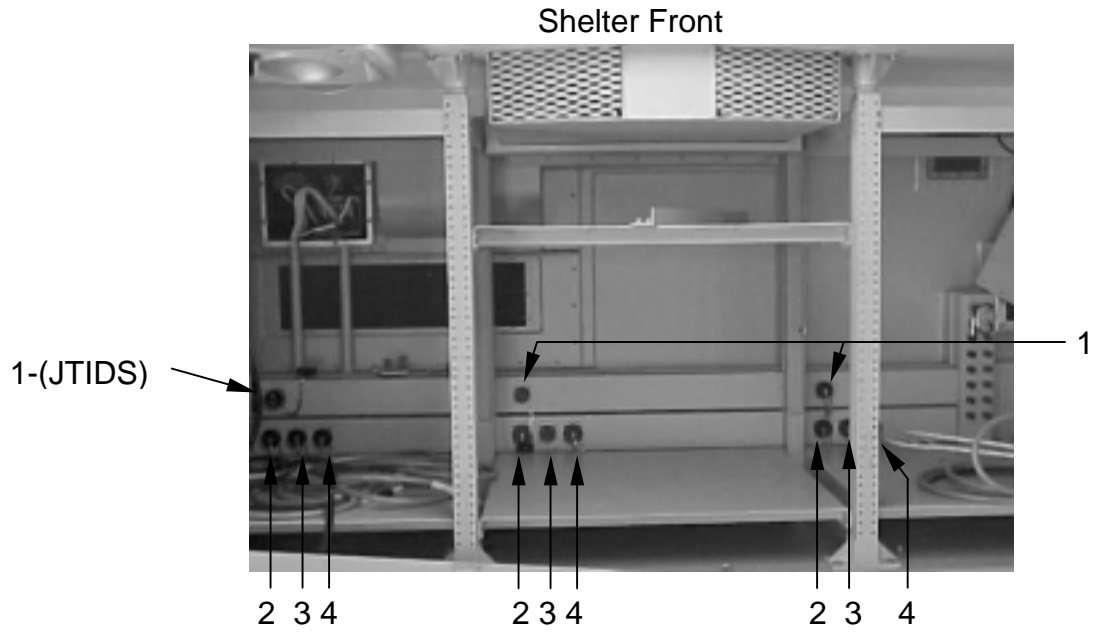
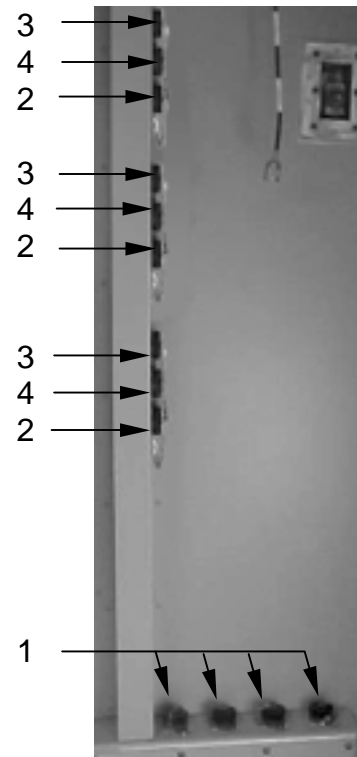


Figure 1-7. DC Power Supplies

(6) *Power Raceways*. The power raceways are located along the front of the shelter and at the rear of the shelter on either side of the door. There are also power outlets below the racks that are not pictured in Figure 1-8. The outlets are labeled as 28 Vdc (1), AC (2), UPS1 (3), UPS2 (4), and CO Monitor (5) and shown.



Curbside



Roadside

Figure 1-8 Power Raceways

b. Signal Distribution. The SICPS shelter contains Signal Distribution equipment for routing internal and external communication lines. The Signal Distribution equipment consists of the following:

- Phone Extension Box
- Tent Interface Panel (TIP) Faceplate Assembly
- Signal Patch Panel
- Communications (Commo) Entry Panel Assembly
- Signal Entry Panel (SEP) Electromagnetic Interference (EMI) Panel
- Jackfield Assembly.
- Signal Raceways

(1) *Phone Extension Box*. The Phone Extension Box is an onboard component stored in the operator's compartment. It provides the extension of twelve telephone signal lines via a 20 foot cable. The electronics for the Phone Extension Box is contained in a water-resistant steel enclosure.

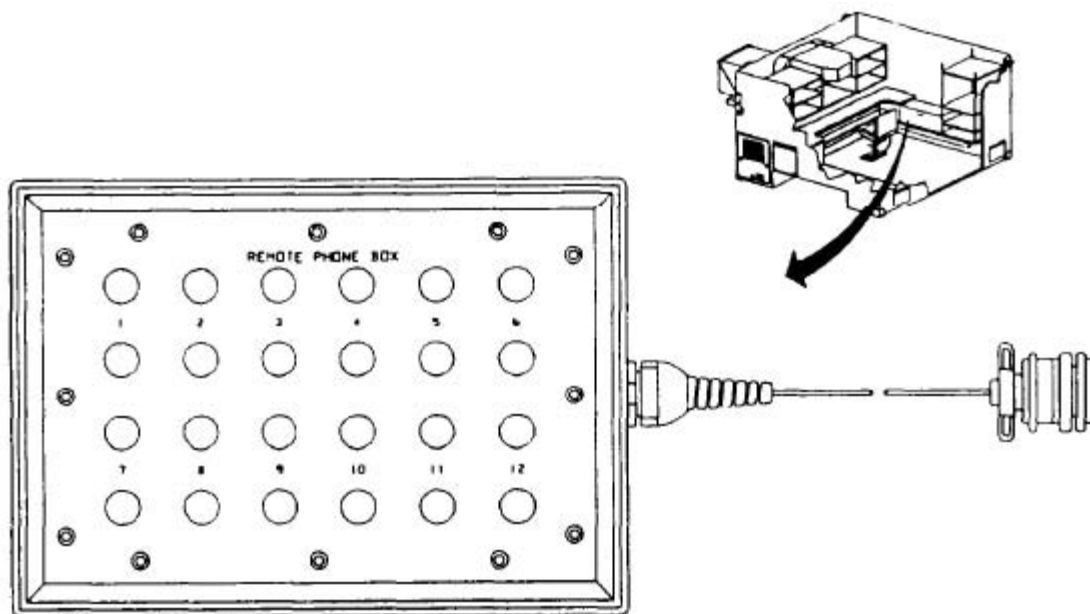


Figure 1-9 Phone Extension Box

(2) *Tent Interface Pane/ (TIP) Faceplate Assembly*. The TIP Faceplate Assembly is located at the lower rear, curbside of the shelter. The TIP Faceplate Assembly contains an RS-232 connector and a GRC-193 interface connector. The signals are protected by radio frequency interference (RFI) filters located internal to the assembly.

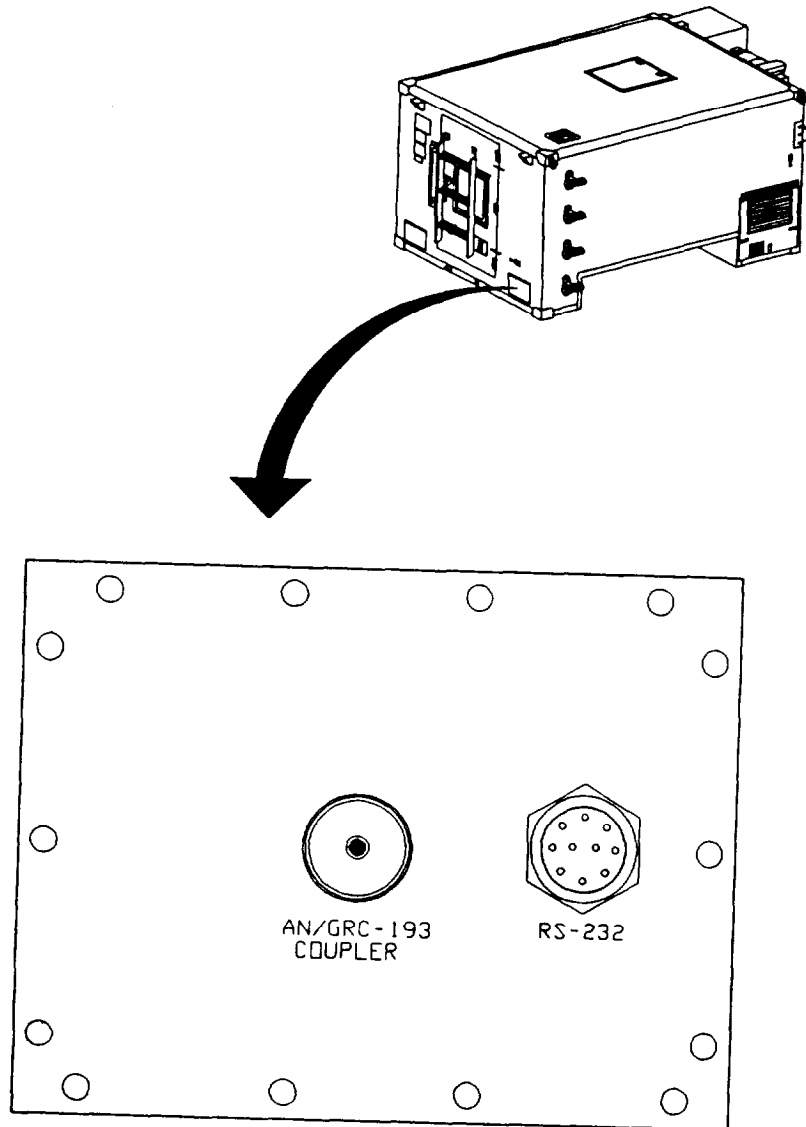


Figure 1-10. TIP Faceplate Assembly

(3) *Signal Patch Panels*. Two Signal Patch Panels are used to establish and direct routing of communications and signal data within the shelter and to also direct it outside of the shelter to designated communications links. Standard patch cords are used to make the appropriate connections on the panel. Labeling of the panel indicates the destinations of the connections that can be made. The Signal Patch Panels are located below the Jackfield Assembly.

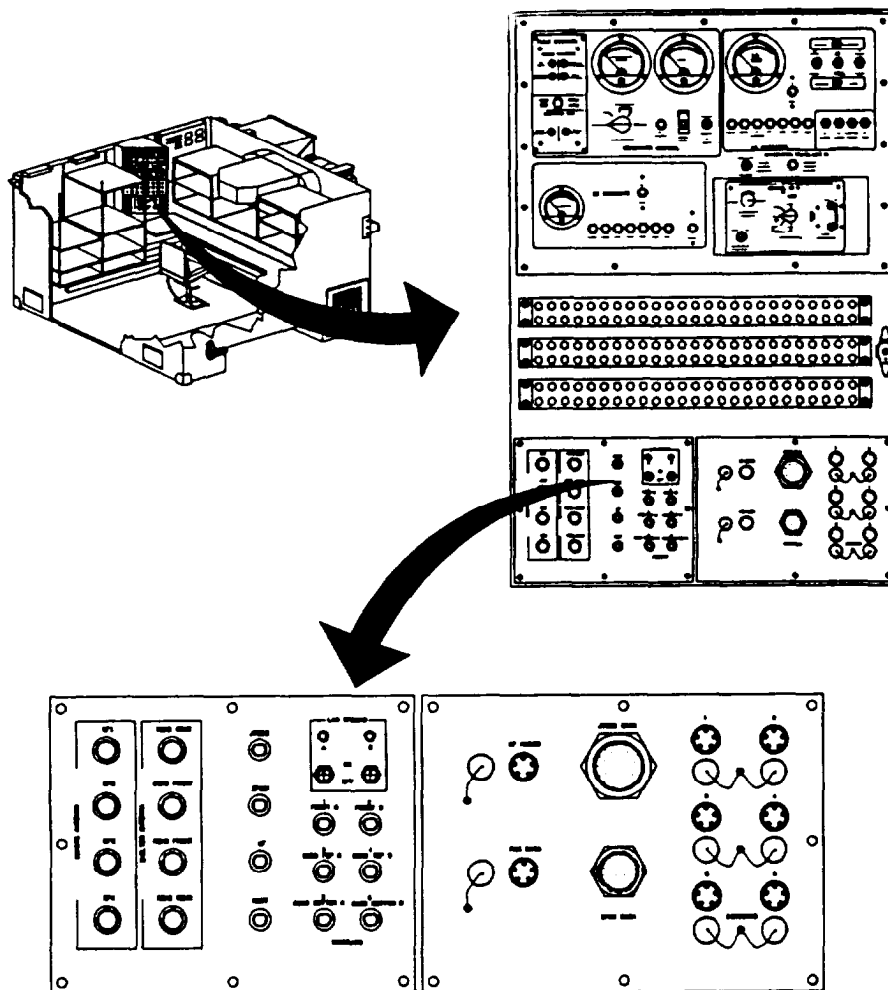


Figure 1-11. Signal Patch Panels

(6) *Jackfield Assembly*. The Jackfield Assembly contains three, 26-pair, standard switchboard type positions which are used to establish and direct routing of communications and signal data within shelter. Standard patch cords are used to make the appropriate connections on the panel. Labeling on the panel indicates the destinations of the connections. The Jackfield Assembly is located in the middle of the Power Faceplate Assembly.

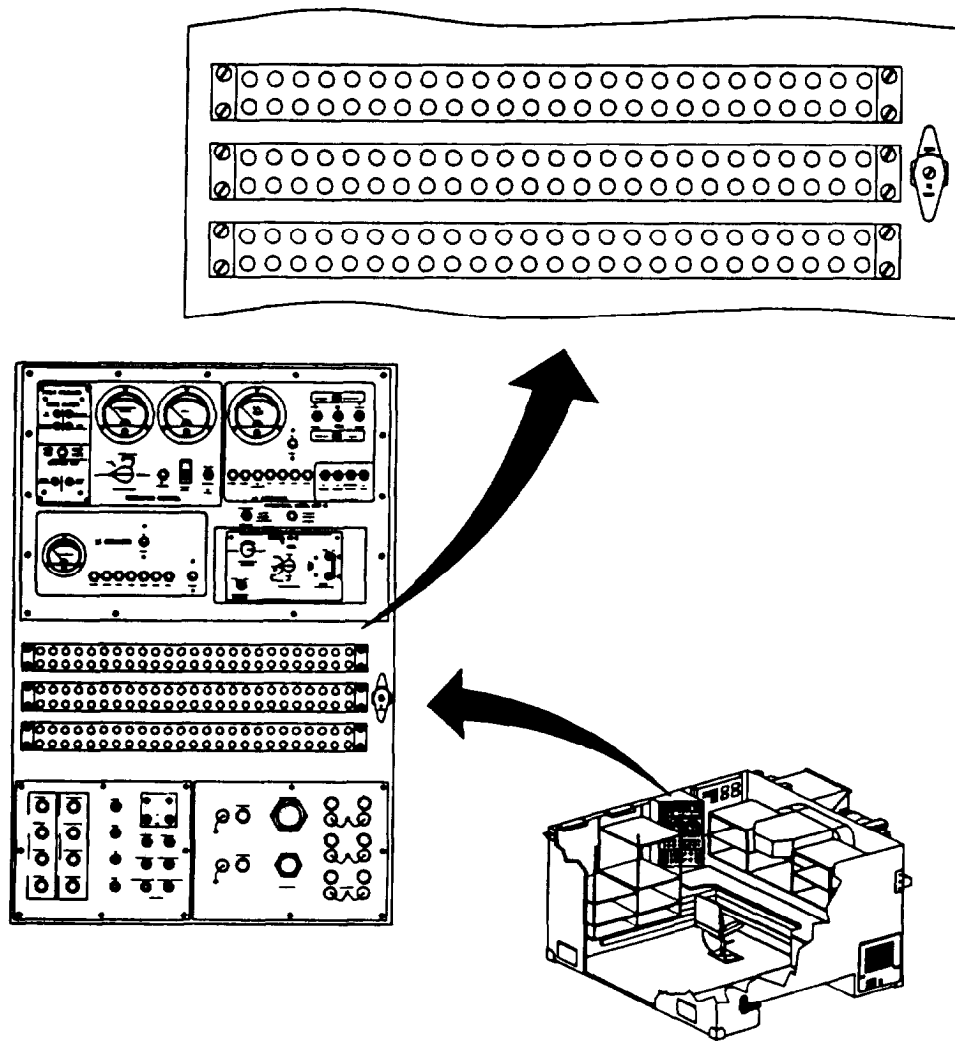


Figure 1-14. Jackfield Assembly

(5) *Signal Entry Panel (SEP) Electromagnetic Interference (EMI) Plate Assembly.*
The SEP EMI Plate Assembly is located behind the Commo Entry Panel Assembly and contains EMI filters for protecting the signals entering/leaving the Commo Entry Panel Assembly.

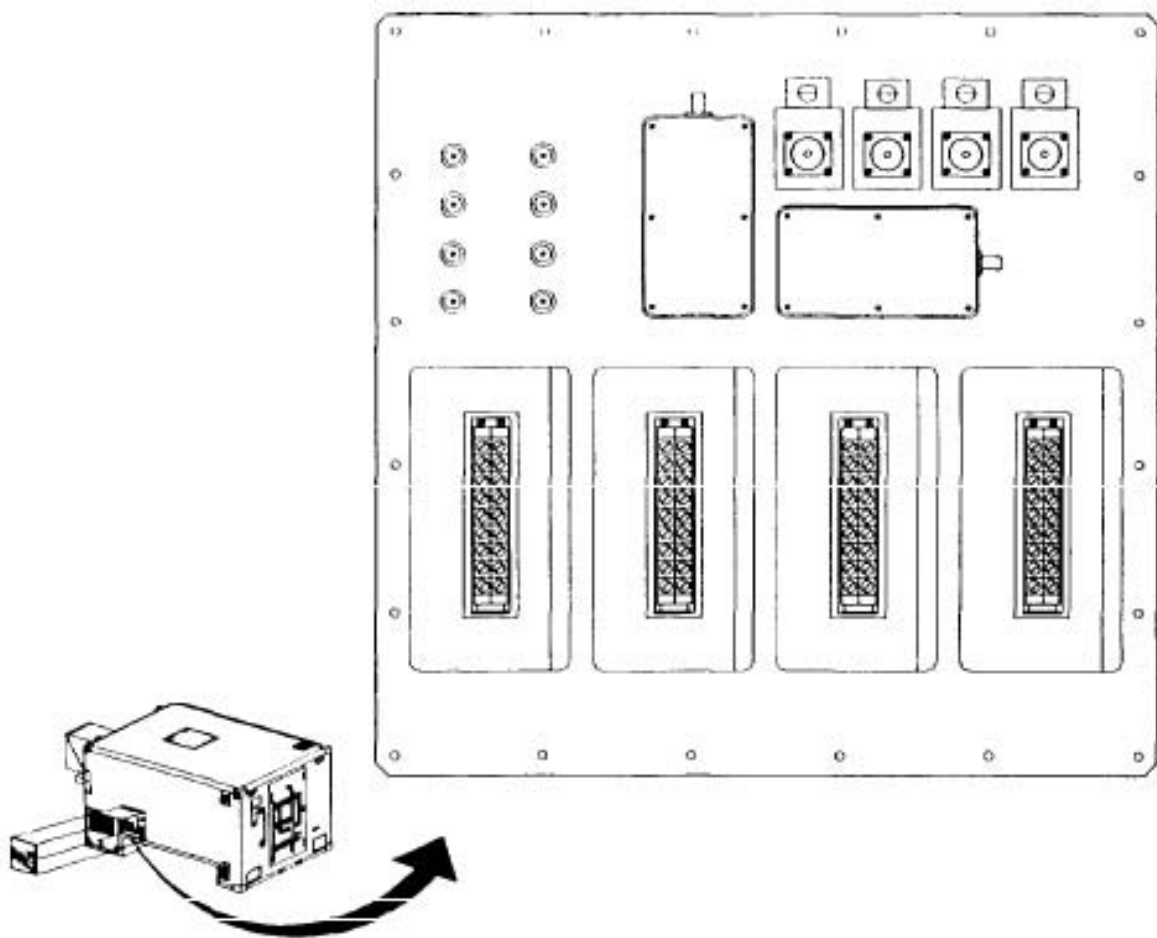


Figure 1-13. SEP EMI Plate Assembly

(6) *Jackfield Assembly*. The Jackfield Assembly contains three, 26-pair, standard switchboard type positions which are used to establish and direct routing of communications and signal data within shelter. Standard patch cords are used to make the appropriate connections on the panel. Labeling on the panel indicates the destinations of the connections. The Jackfield Assembly is located in the middle of the the Power Faceplate Assembly.

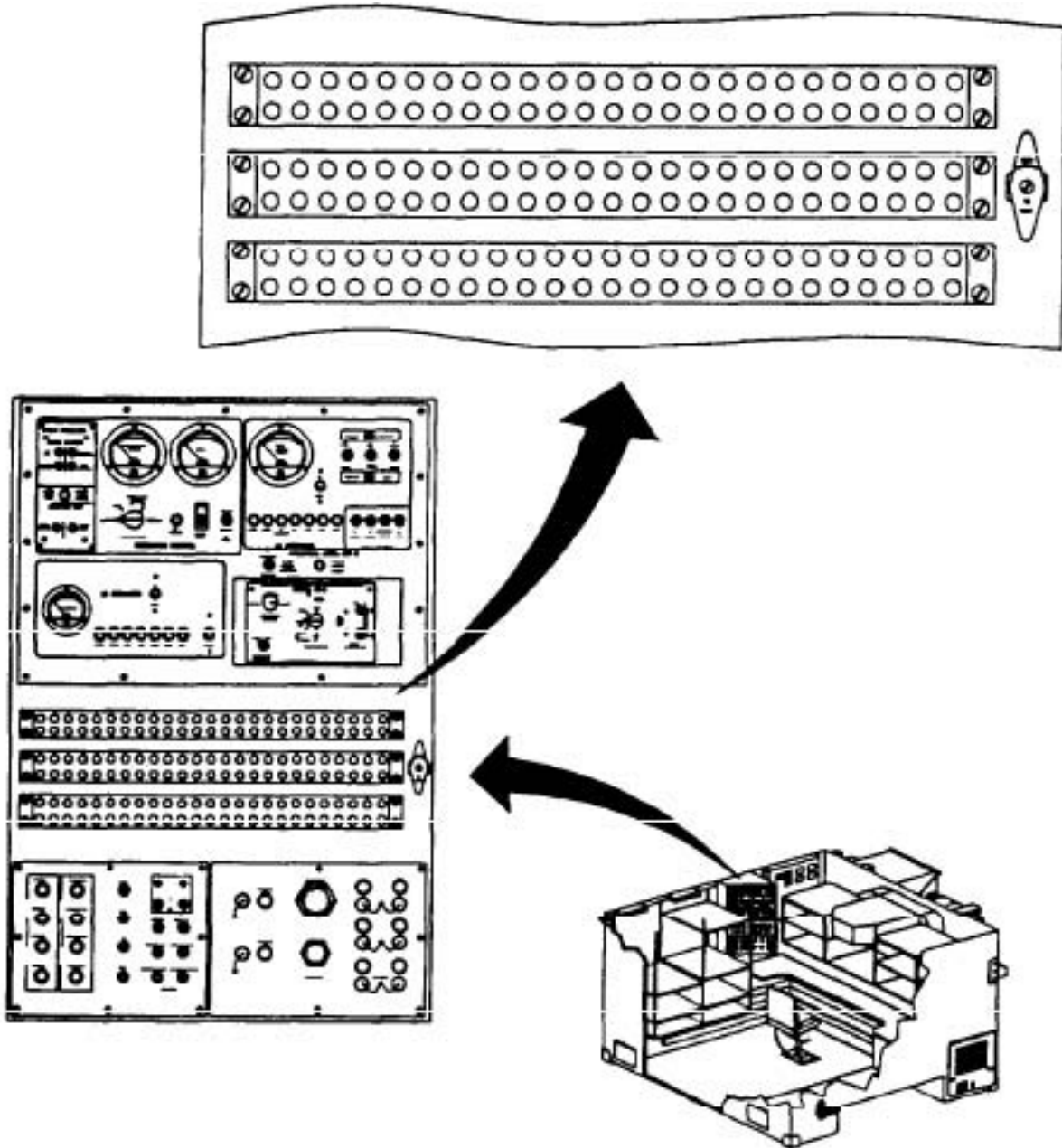


Figure 1-14. Jackfield Assembly

TM 10-5411-222-14

(7) *Signal Raceways*. The signal raceways are located at the front of the shelter and at either side of the shelter, behind the racks. Each LAN receives termination at the TIP and the SEP. The binding posts are terminated at the jackfield assembly.

Raceway Location	LAN	Binding Posts
Front	A & B	1 – 6
Curbside		1 – 10
Roadside	A & B	1 – 8

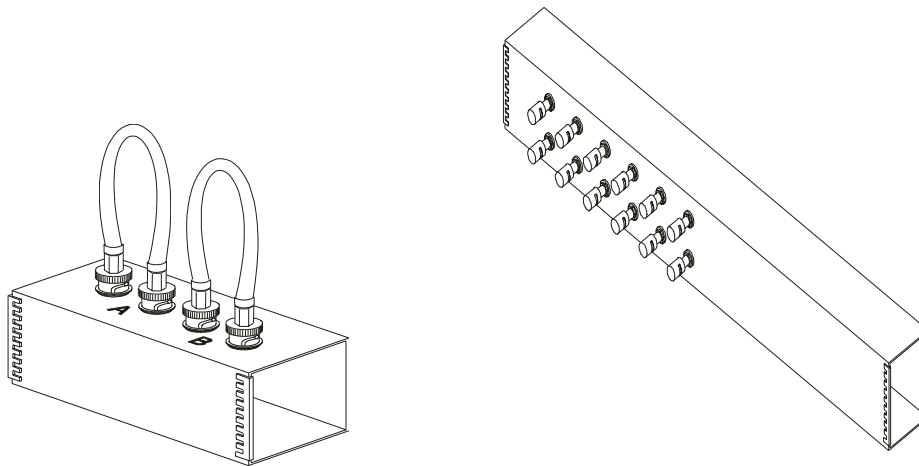


Figure 1-15 Signal Raceways

c. Environmental. The SICPS shelter utilizes the following environmental equipment:

- Gas Particle Filter Unit (GPFU)
- Gas Particulate Filter Unit Control Panel
- Crew Blower Door
- Environmental Control Unit (ECU) Control Panel
- Environmental Control Unit
- Lighting Equipment

(1) *Gas Particulate Filter Unit (GPFU).* The Gas Particulate Filter Unit provides filtered air and over-pressurization inside the shelter to preclude chemical/biological (CB) infiltration. The GPFU is located outside the shelter and consists of a fan and an air filter, which filters any agents out of the incoming air to protect personnel operating within the shelter.

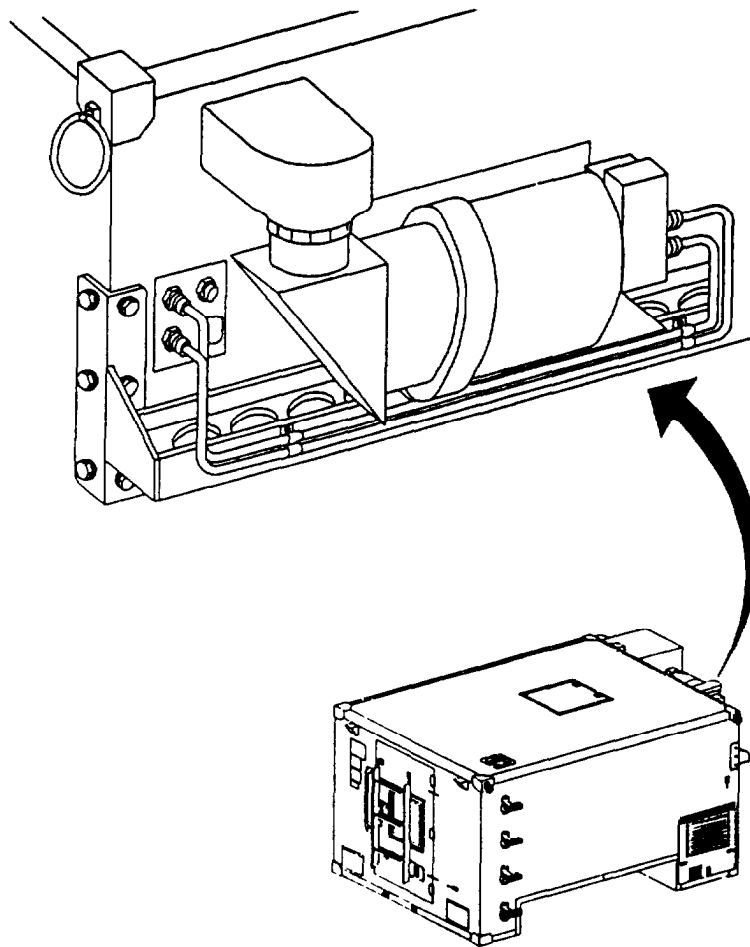


Figure 1-16. GPFU

(2) *Gas Particulate Filter Unit (GPFU) Control Panel.* The GPFU Control Panel is used to turn the Gas Particulate Filter Unit (GPFU) on and off. It is located inside the shelter, on the right top side of the shelter, in front of the right side rack. The panel has a buzzer that sounds if a fault in the GPFU is detected or if over-pressurization within shelter is lost. A warning indicator lights to signify a fault in the system.

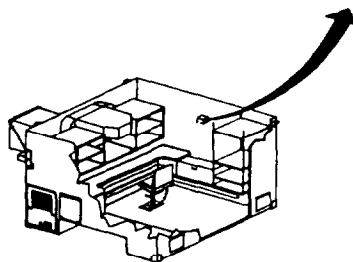
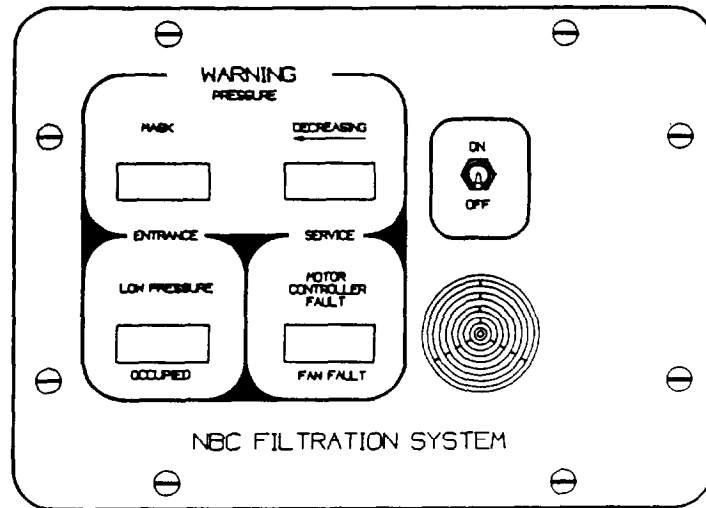


Figure 1-17. GPFU Control Panel

(3) *Filter Blower Assembly and Crew Blower Door.* The Filter Blower Assembly is located on the roadside exterior of the shelter. The on/off switch (1) is located on the SHELTER LIGHTING Panel. EMP protection is provided by the Direct Current (DC) Vent CB in the Circuit Breaker Assembly (2) which is located on the curbside of the shelter. The Crew Blower Door is located inside on the roadside front of the SICPS shelter. Opening and closing of the door is accomplished via a cable which is connected to the DC VENT lever located to the right of the Jackfield Assembly.

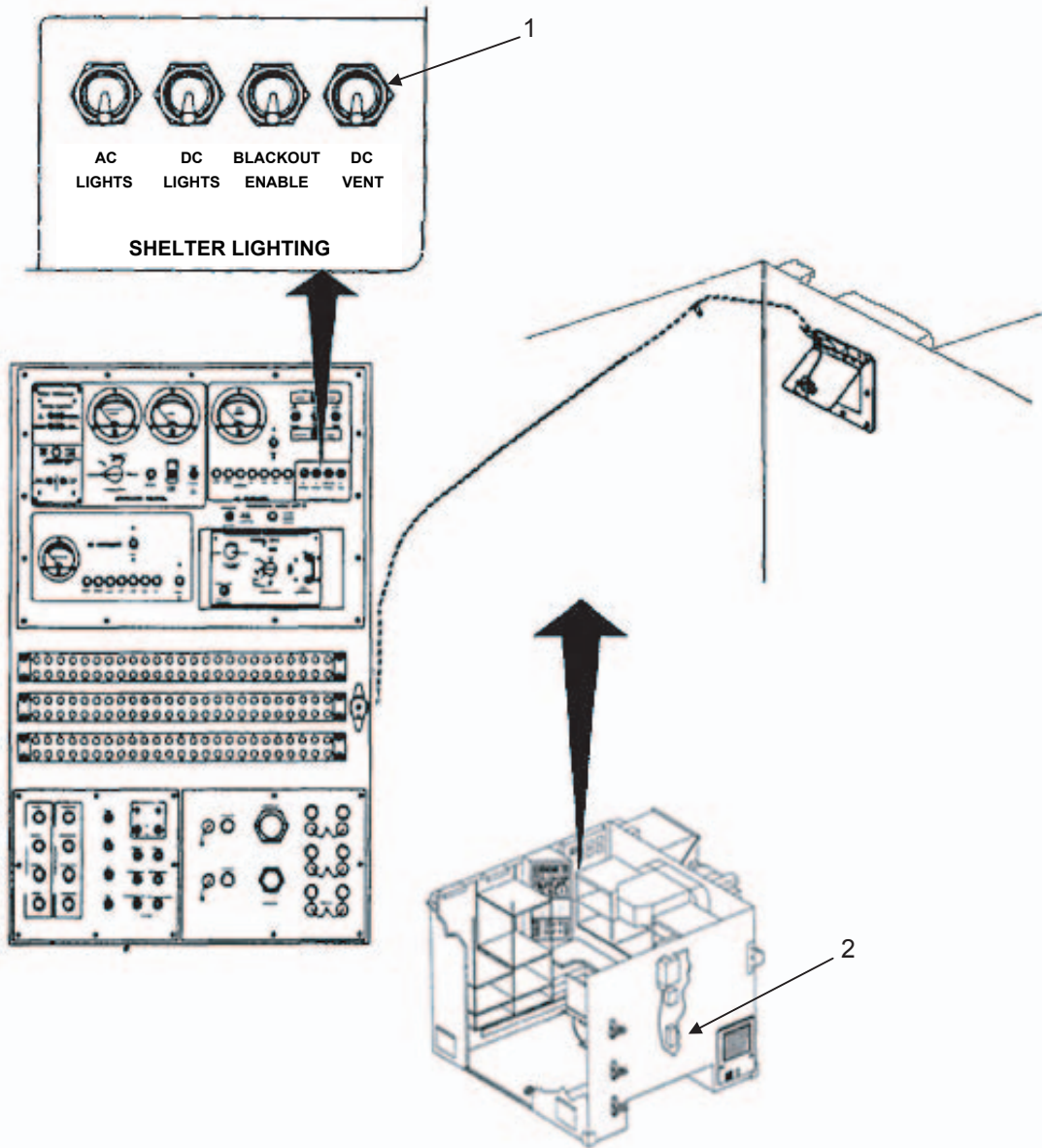


Figure 1-18. Crew Blower Door

(4) *ECU Control Panel.* The ECU Control Panel is used to control environmental conditions (cooling and heating) within the shelter. The ECU Control Panel is located on the right-hand corner of the power Faceplate Assembly.

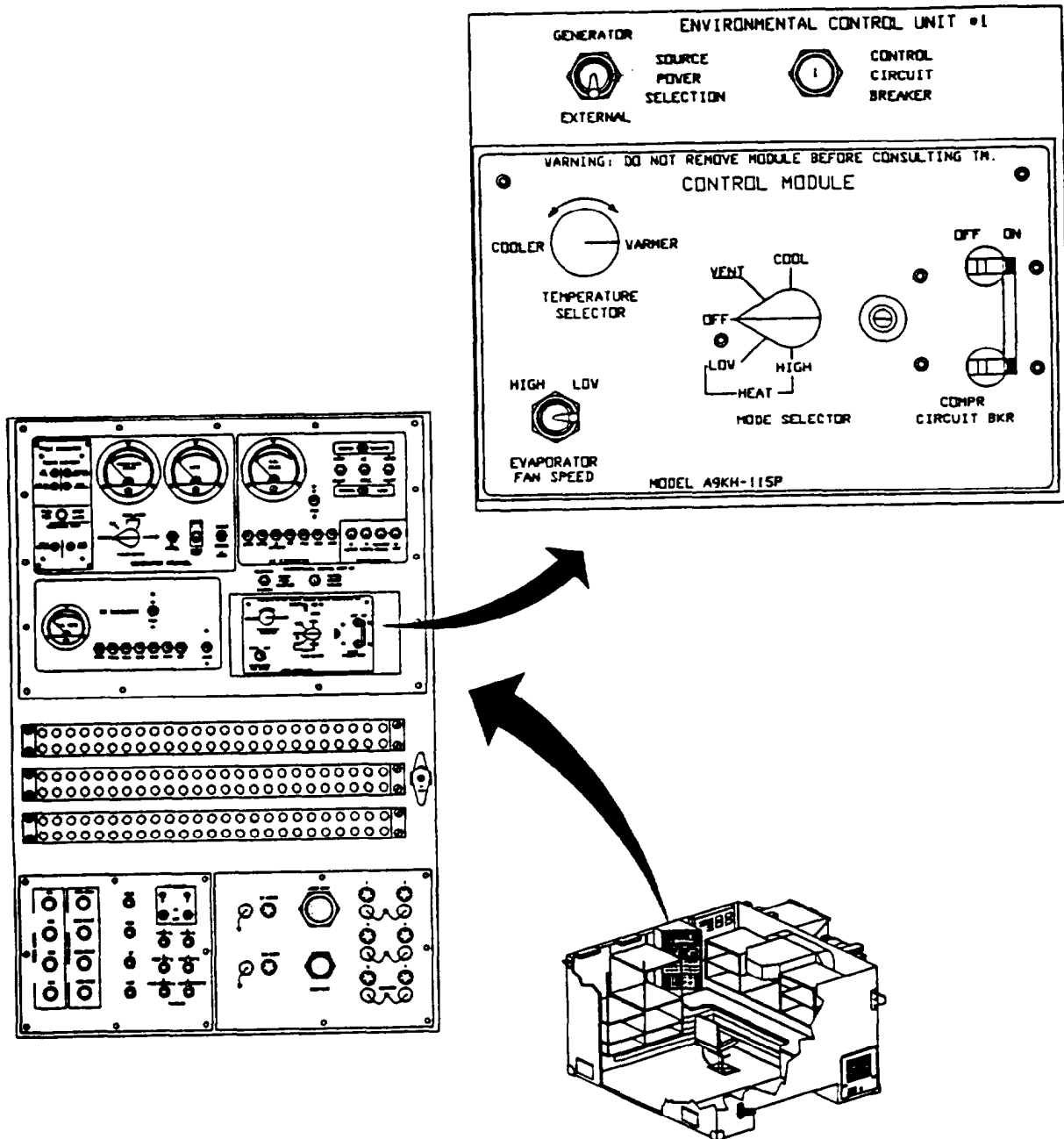


Figure 1-19. ECU Control Panel

(5) *Envireonmental Control Unit (ECU)*. The Environmental Control Unit is a self-contained electrically powered unit (50/60 Hz 115 Vac) that provides 9,000 BTU/Hr for cooling or 7,000 BTU/Hr for heating. The ECU is controlled by the ECU Control Unit located in the shelter at the Power Faceplate Assembly. The ECU cools, warms, or circulates air already in the shelter, it does nor bring in outside air. EMP protection is provided through the ECU CB in the Circuit Braeker Box located on the curbside of the shelter.

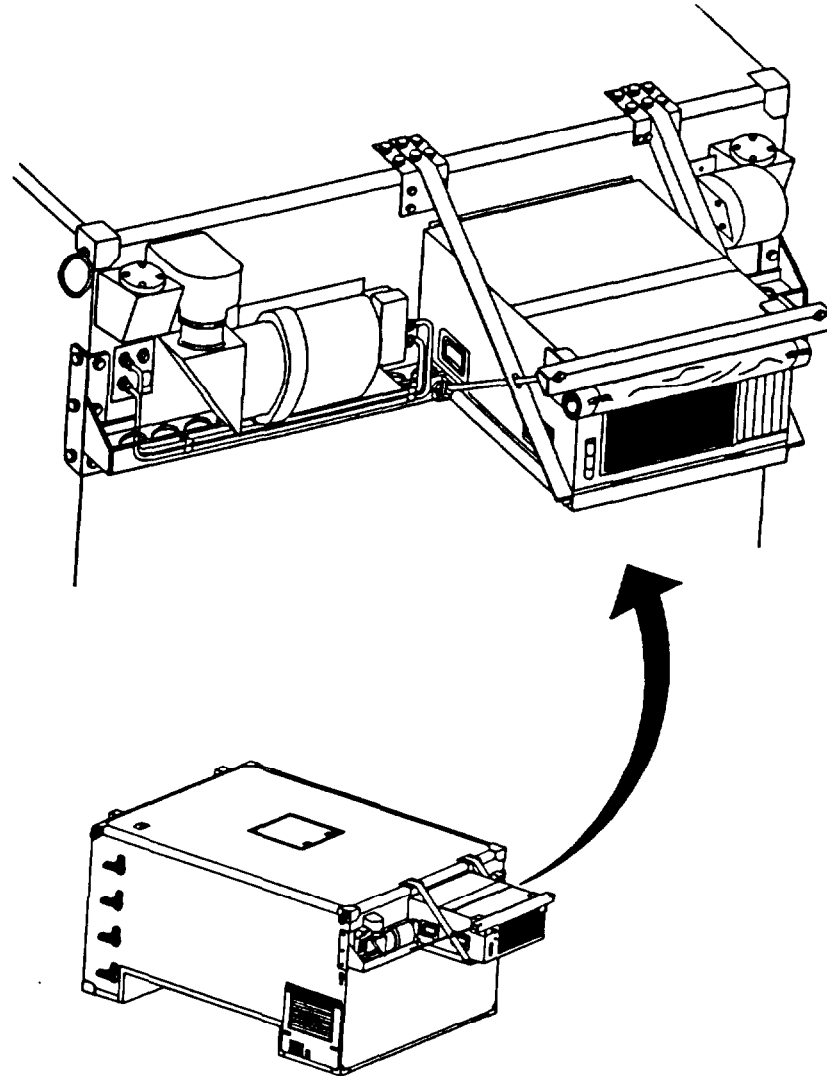


Figure 1-20. ECU

(6) *Lighting Equipment.* The SICPS shelter contains both a DC and AC lighting system, including provisions for blackout lighting. AC and DC lighting is controlled by the SHELTER LIGHTING controls located on the AC CIRCUITS Panel which is located at the top right corner of the Power Faceplate Assembly.

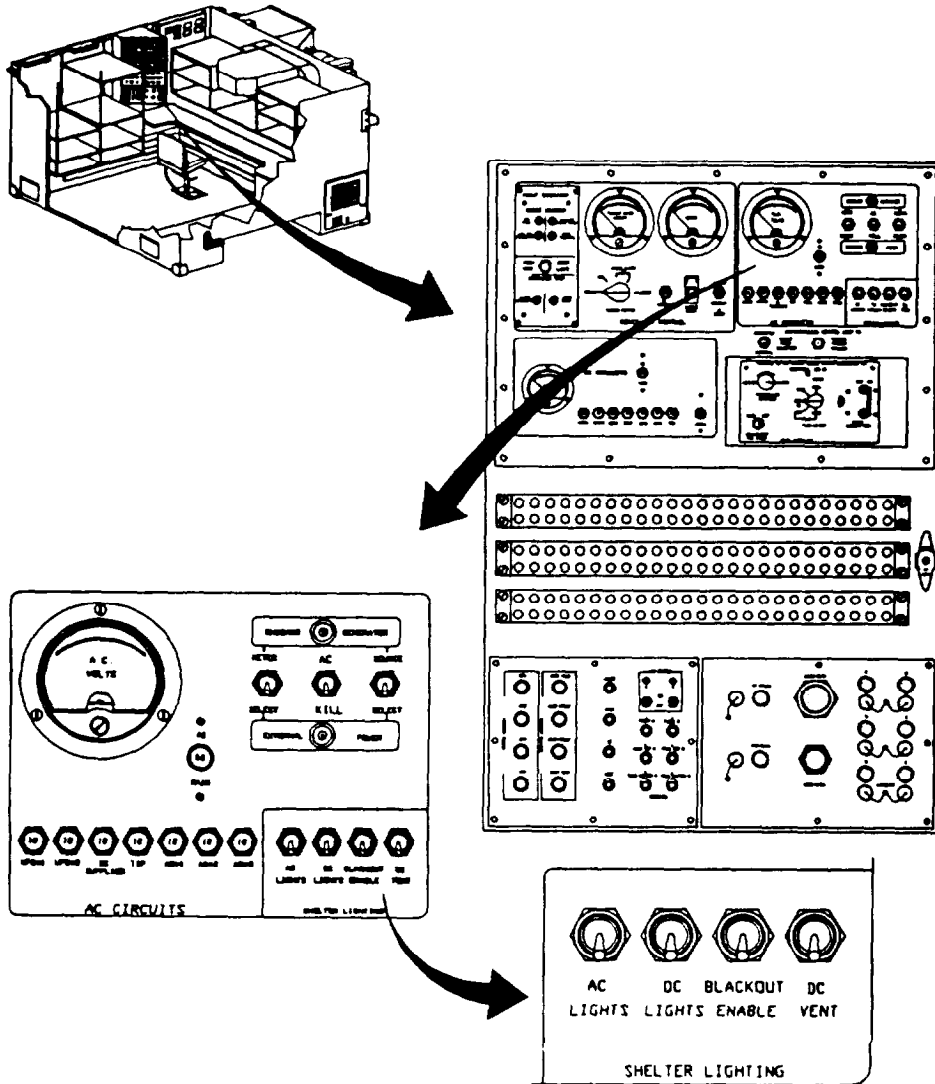


Figure 1-21. AC CIRCUITS Panel

(7) *CO Monitor*. The carbon monoxide (CO) monitor is located on the curbside wall, near the GPFU control panel. There is no ON/OFF switch for the unit. As soon as power is applied to the unit (top outlet, curbside raceway, AC CB #2), it will power on.

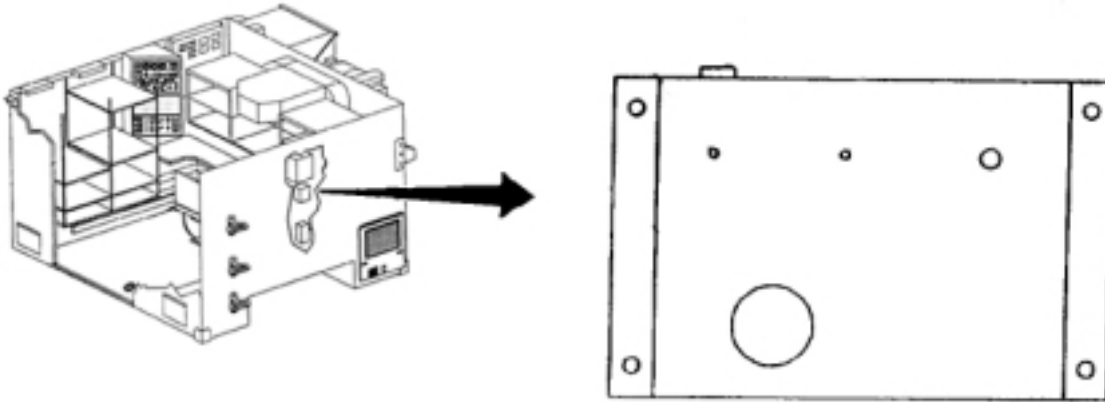


Figure 1-22. CO MONITOR

(8) *Circuit Breaker Assembly*. The circuit breaker assembly is located on the curbside wall, near the UPS. This provides EMP shielding for the ECU, GPFU and DC Vent controls.

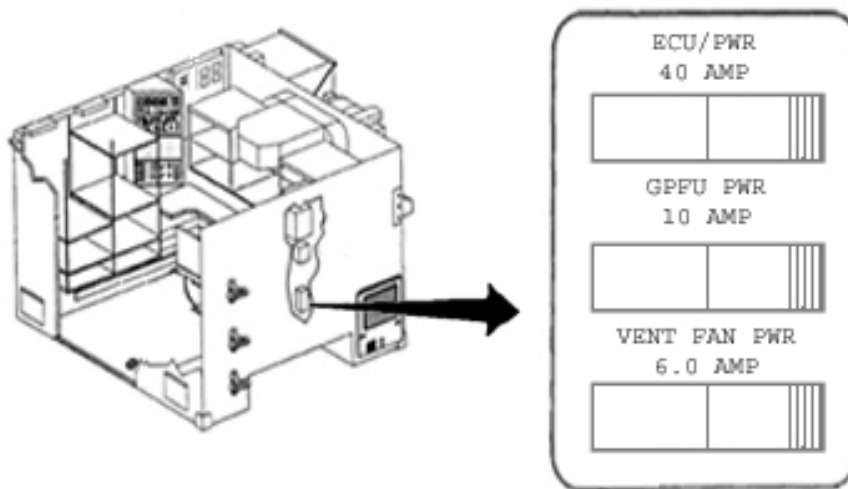


Figure 1-23. Circuit Breaker Assembly

d. GENSET. The generator set (GENSET) is a tactical quiet AC power system located in the tunnel of the SICPS shelter. The GENSET consists of a diesel engine, brushless generator, excitation system, speed governing system, fuel system, exhaust extension, 24 Vdc starting system, control system, and fault indication system. Operation, control, and fault monitoring are accomplished via the Power Monitor Panel. When set for onboard power, the GENSET supplies all of the AC power required to operate the shelter. Under operating conditions, an exhaust pipe extension is connected to the GENSET's exhaust outlet and protrudes through a port in the tunnel door.

(1) *Diesel Engine/Generator*

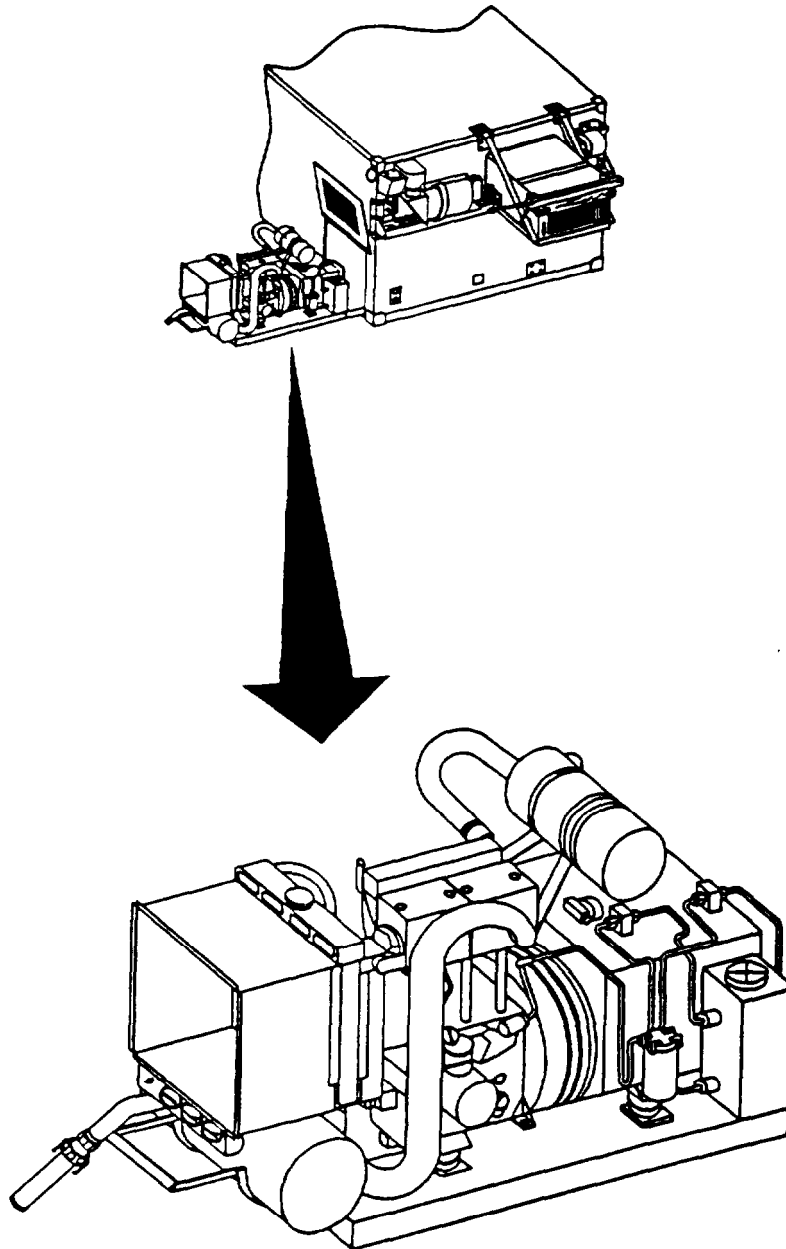


Figure 1-24. Diesel Engine/Generator

(2) *Generator Control Panel*. The Generator Control Panel controls and monitors operation of the onboard GENSET. The panel is located at the top left corner of the Power Faceplate Assembly. A Fault Indicator Panel on the Generator Control Panel displays problems associated with the GENSET.

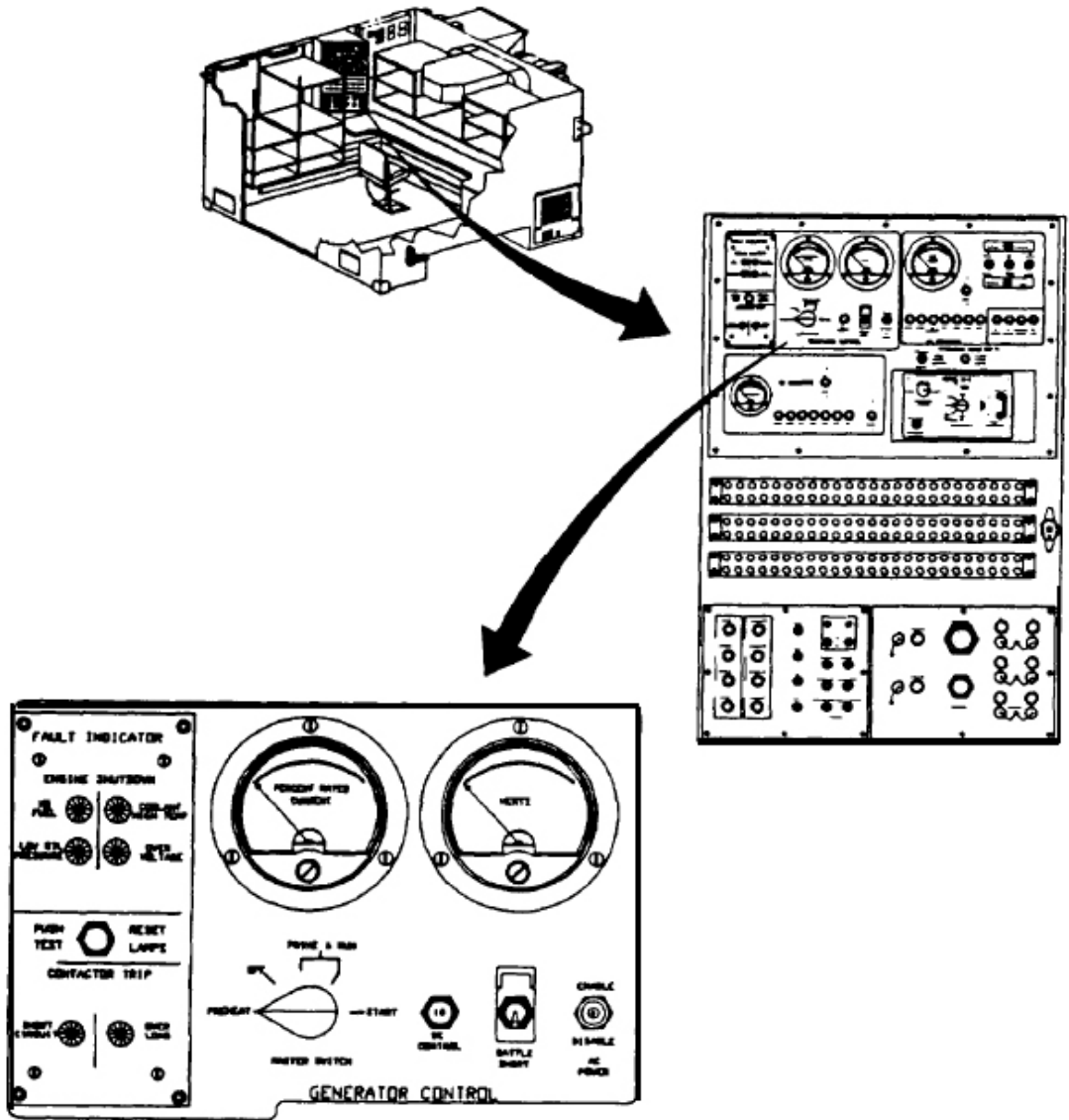


Figure 1-25. Generator Control Panel

e. *Rack Assembly.* The SICPS rack assembly is designed to contain a wide variety of mission equipment. The shelves are adjustable to accommodate the different heights of the equipment.

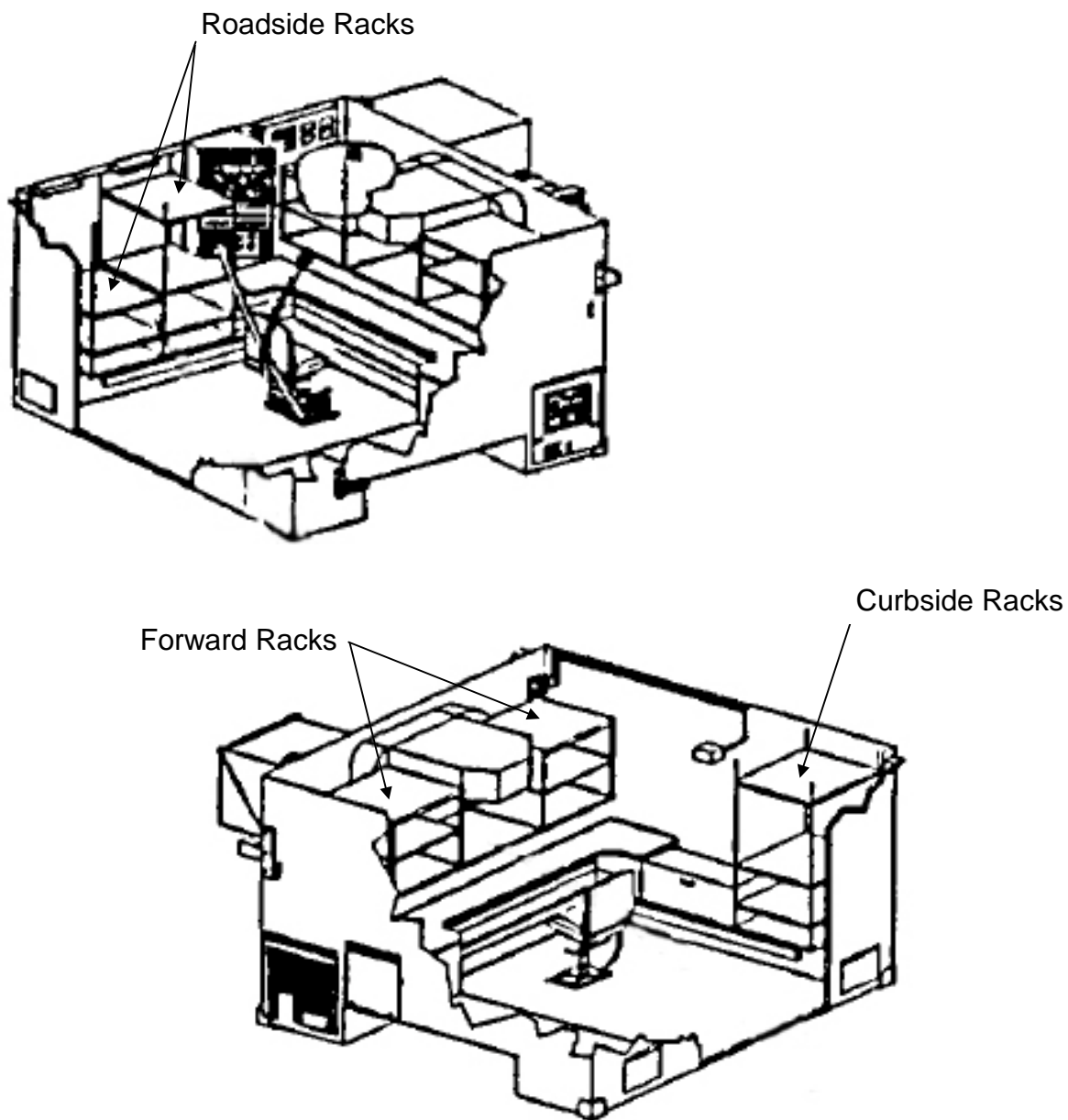


Figure 1-26. Rack Assembly

1-12. EQUIPMENT DATA.

SICPS shelter

Height: 63 in.
Width: 84 in.
Length: 102 in.

Section III. PRINCIPLES OF OPERATION.

1-13. POWER DISTRIBUTION. The following paragraphs provide a block diagram description of the SICPS shelter's power distribution system. Reference figure 1-27 when reading the following paragraphs.

An earth ground lug is located on the Power Entry Box. A grounding strap is used to ground the shelter and vehicle together at the ground lug. A grounding system may be attached to the grounding lug to provide an earth ground. AC operating power for the SICPS shelter may be derived from either an external power input source, via the 50' power cable, or from the onboard GENSET. The GENSET is connected via the NATO Slave cable to the HMMWV's batteries, which are used to start the engine. The GENSET also utilizes the vehicle's fuel supply. The GENSET start and control signals are initiated at the Power Monitor Panel and are sent to the GENSET through the Relay Panel and the Power Entry Box.

The Power Entry Box contains the switch for selecting external or onboard power to export to another shelter. It also contains the circuit breakers and fuses for protecting the input and output power lines from an overload condition. Internal to the Power Entry Box are the relays for applying power to the SICPS shelter and the filter for providing RFI/EMI/EMP protection. 115 Vac and 24 Vdc from the Power Entry Box is applied to the Relay Panel then to the Power Control Module located on the roadside inside wall of the shelter.

The Relay Panel contains relays and terminal blocks. All power and control lines pass through the Relay Panel. The relays control the operation of the GENSET. Should a problem occur with the GENSET, a signal would be sent from the GENSET, through the Power Entry Box, to the appropriate relay(s) on the Relay Panel. Activating the relays would cause the GENSET to shut down and a signal to be sent to the Fault Indicator Panel on the Power Monitor.

115 Vac is applied to two DC Power Supplies. The power supplies, whose outputs are in parallel, rectify the AC inputs into a single 26.4 Vdc output. It is this 26.4 Vdc output from the power supplies which is used to operate the DC components in the shelter and provide a trickle charge through the NATO slave to the vehicle batteries. If a JTIDS is used in the shelter, the power supplies are tuned to 28 Vdc.

Power for the ECU, GPFU, and Filter Blower Assembly enters the Circuit Breaker Assembly, providing RFI/EMI/EMP protection for the circuits for those units. The ECU and GPFU control modules control the operation of each unit. The Filter Blower Assembly on/off switch is located on the Shelter Lighting panel. Outlets for 115 Vac and 24 Vdc are available on the GPFU/Fan Assembly, which is a panel located on the curbside, outside wall of the shelter. When connected, 24 Vdc is applied to the Filter Blower Assembly and 115 Vac is applied to the GPFU and ECU.

The 115 Vac and 24 Vdc is also applied to the roadside and curbside junction boxes. The voltages are also applied to the Tent Interface Panel (TIP), designated outlets, and lights. The AC and DC voltages are also applied to Uninterruptible Power Supplies (UPS#1 and UPS#2) which provide power to 115 Vac outlets for connecting selected equipment.

The Power Monitor Assembly, located inside the shelter, contains all of the operator controls, switches, circuit breakers and meters for operating the SICPS shelter.

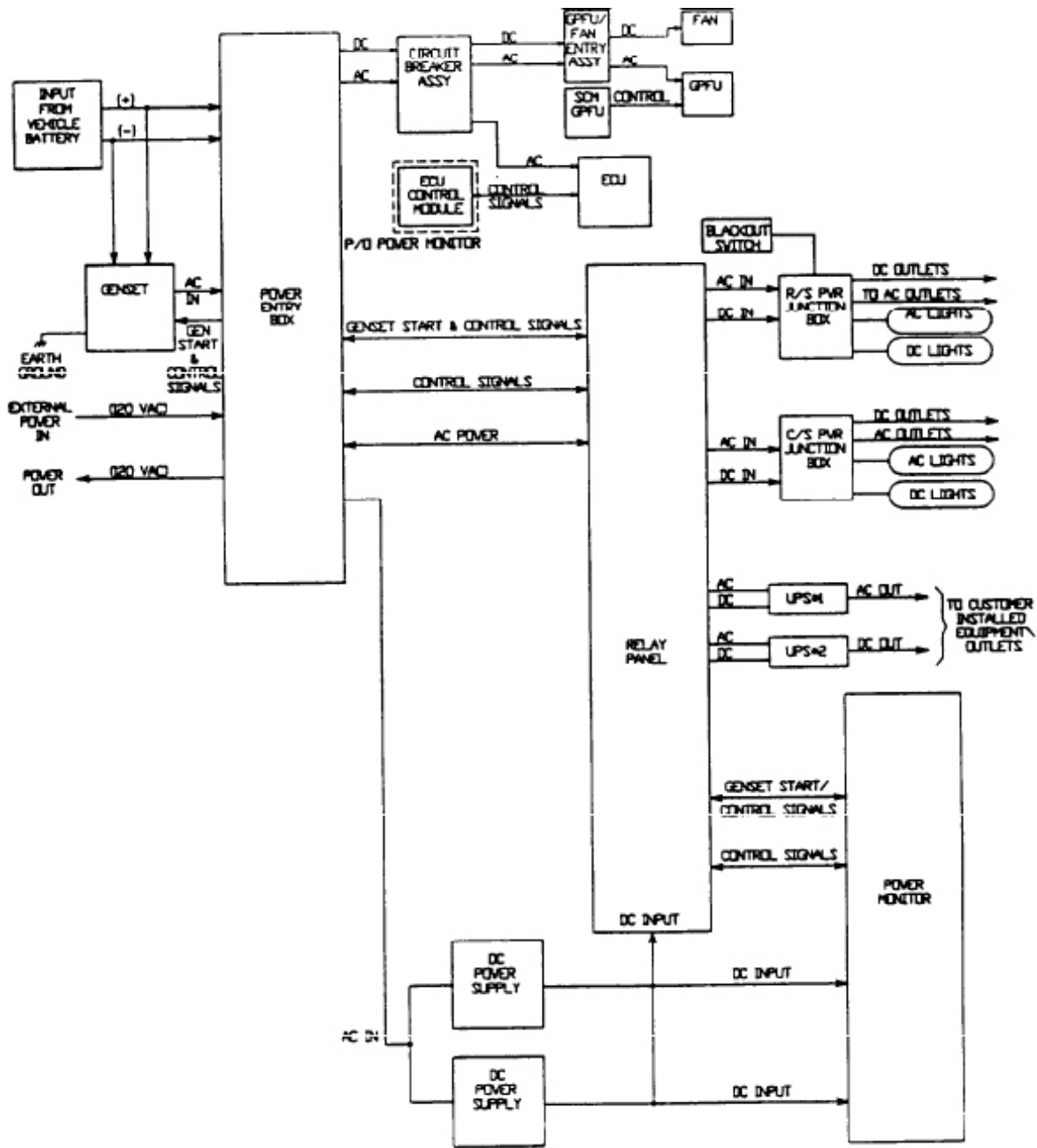


Figure 1-27. Block Diagram

1-14. SIGNAL DISTRIBUTION. Signal cables associated with the SICPS shelter are connected from a specific input point to the patch panels located on the control panel or are connected directly to a piece of equipment. Signal cables are broken down as follows (see figure 1-26):

a. RF Signals. RF signals encompass six Single Channel Ground and Airborne Radio System (SINCGARS), Joint Tactical Information Data System (JTIDS), Enhanced Position Location and Reporting System (EPLARS) User Unit (EPUU), high frequency (HF), and the Mobile Subscriber Radio Telephone (MSRT). An RF patch cable may be used to carry the RF signal between any of the radio connectors listed above and one of the four shelter connectors, or four remote connectors.

(1) *SINCGARS*. RF cables are routed from the Signal Patch Panel to positions at the front and curbside rear of the shelter for connection to SINCGARS radios.

(2) *JTIDS*. An RF cable is routed from the Signal Patch Panel to the front roadside of the shelter for connection to the JTIDS.

(3) *EPUU*. An RF cable is routed from the Signal Patch Panel to the rear curbside of the shelter for connection to the EPUU.

(4) *HF*. An RF cable is routed from the Signal Patch Panel to the rear curbside of the shelter for connection to an HF radio.

(5) *MSRT*. An RF cable is routed from the Signal Patch Panel to the rear curbside of the shelter for connection to the MSRT.

(6) *Shelter antenna connections*. The shelter antenna connectors are located on each corner. The radio frequency (RF) signal from each antenna passes through an electromagnetic pulse filter and is applied to the Signal Patch Panel.

(7) *Remote antenna connections*. The remote antenna connectors are fed through the electromagnetic pulse filters on the EMI panel to the Signal Patch Panel.

b. Audio Signals. The audio signals encompass six SINCGARS, and one HF.

(1) *SINCGARS*. SINCGARS audio cables are routed from the front and curbside rear of the shelter to the Signal Patch Panel.

(2) *HF*. An HF audio cable is routed from the Signal Patch Panel to the rear curbside of the shelter for connection to an HF radio.

c. Data Signals. The data signals encompass one JTIDS, one Facsimile (FAX), and one EPUU.

(1) *JTIDS*. The JTIDS data cable is routed from the Signal Patch Panel to the front roadside of the shelter for connection to the JTIDS.

(2) *FAX*. The FAX data cable is routed from the Signal Patch Panel to the front of the shelter for connection to a fax.

(3) *EPUU*. The EPUU data cable is routed from the Signal Patch Panel to the rear curbside of the shelter for connection to the EPUU.

d. Telecommunications Signals. The telecommunications signals encompass the binding posts, and cable hocks A and B.

(1) *Binding Posts*. Binding posts 1-12 are located on the Remote Phone Box, which connects to the Remote Telephone connector on the roadside TIP. Binding posts 1 and 2 (parallel with pairs 1 and 2 on the Remote Phone Box) are also located on the roadside TIP. These connections are filtered through the Tent Interface Filter Assembly before being applied to the Jackfield Assembly. There are two pair of binding posts at the front of the shelter that are also applied to the jackfield assembly. Inside the shelter there are 10 binding posts on the curbside raceway, 6 binding posts on the front raceway, and 8 on the roadside raceway that are also applied to the Jackfield Assembly.

(2) *Cable hocks A and B*. The cable hocks are connected at the Commo Entry Panel, filtered through the Signal Entry Panel EMI plate, and applied to the Jackfield Assembly.

e. Fiber Optic Signals. The fiber optic signals enter through the Commo Entry Panel and are patched through the Signal Entry Panel EMI plate for use throughout the shelter.

f. Local Area Network (LAN). The Local Area Network is terminated (dust caps are 50 ohm terminators) at the TIP and Commo Entry Panel. The signal passes through FL3 and FL4 in the Tent Interface Filter Assembly. The LAN lines are throughput over the front and roadside raceways to the Signal Entry Panel EMI plate where they are filtered through FL1A and FL1B and terminated at the Commo Entry Panel. When the LAN is extended from one vehicle to another, the terminator for either LAN A or LAN B at either the Commo Entry Panel or the TIP is removed and the cable is connected there. Termination is then completed for the network at the connecting shelter. When connecting shelters, the LAN ground should be applied by turning on the LAN ground at the Signal Patch Panel in only one of the shelters. The ground does not need to be applied if the LAN is in only one shelter.

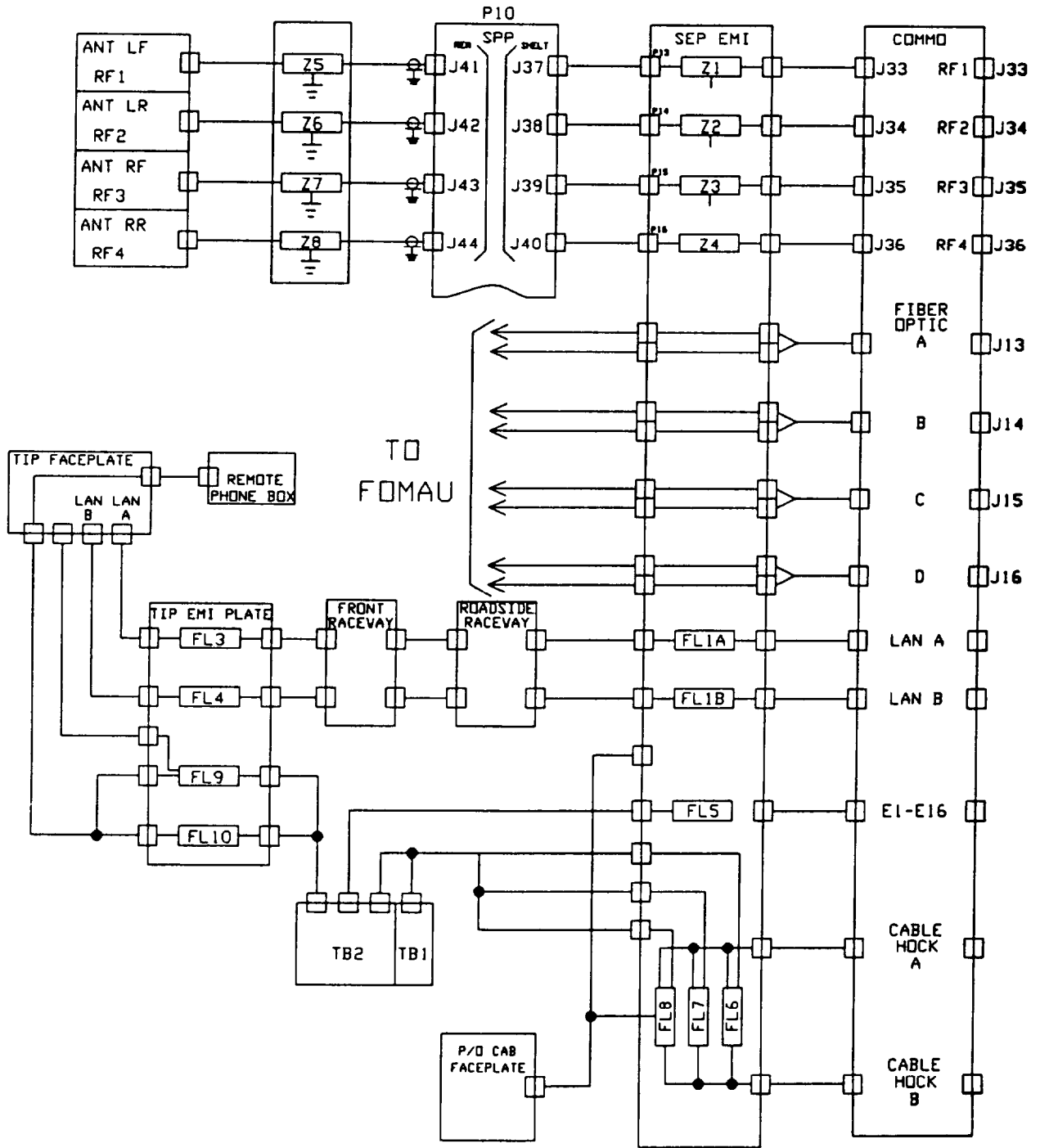


Figure 1-28. Signal Distribution (Sheet 1 of 2)

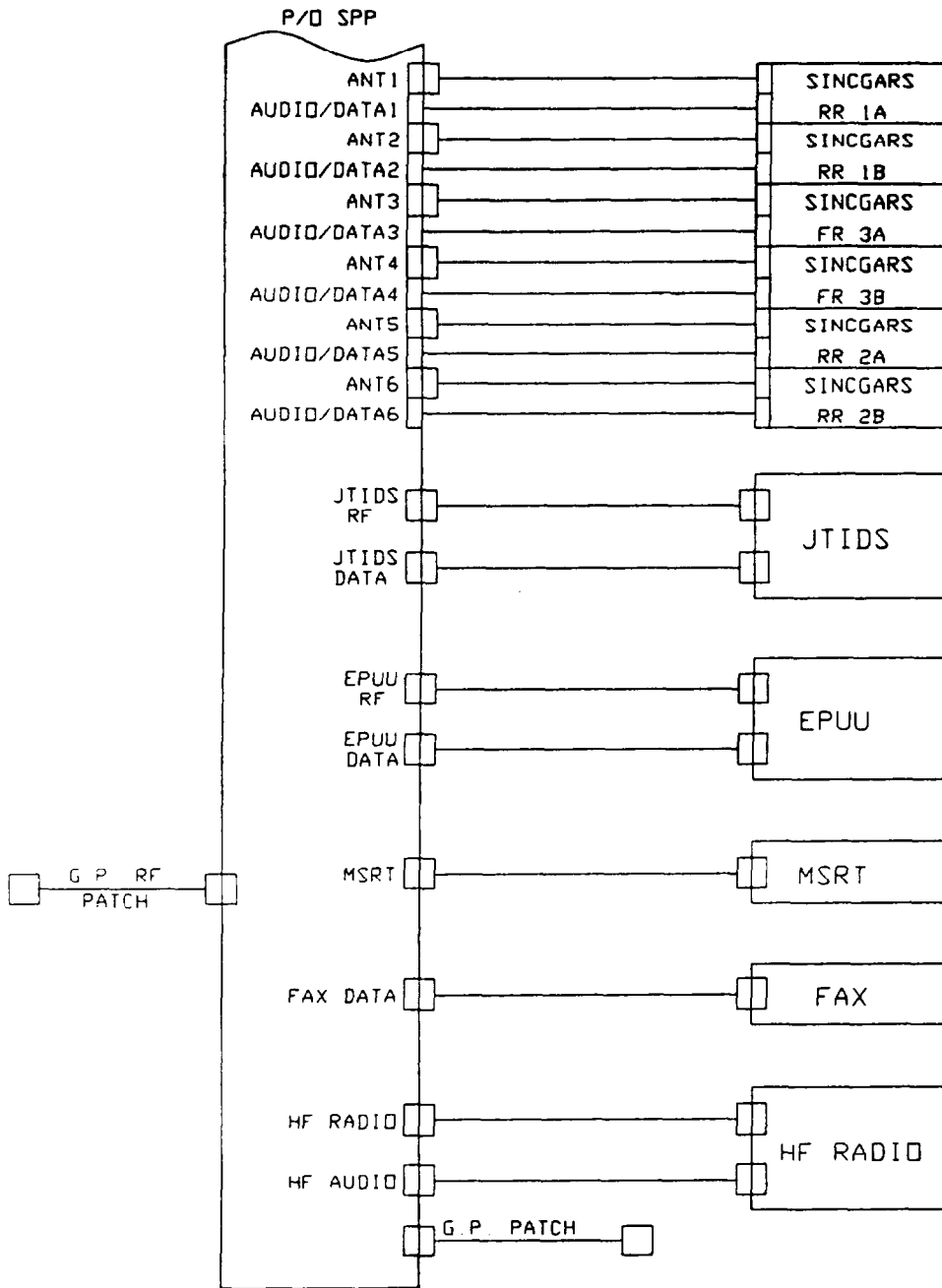


Figure 1-28. Signal Distribution (Sheet 2 of 2)

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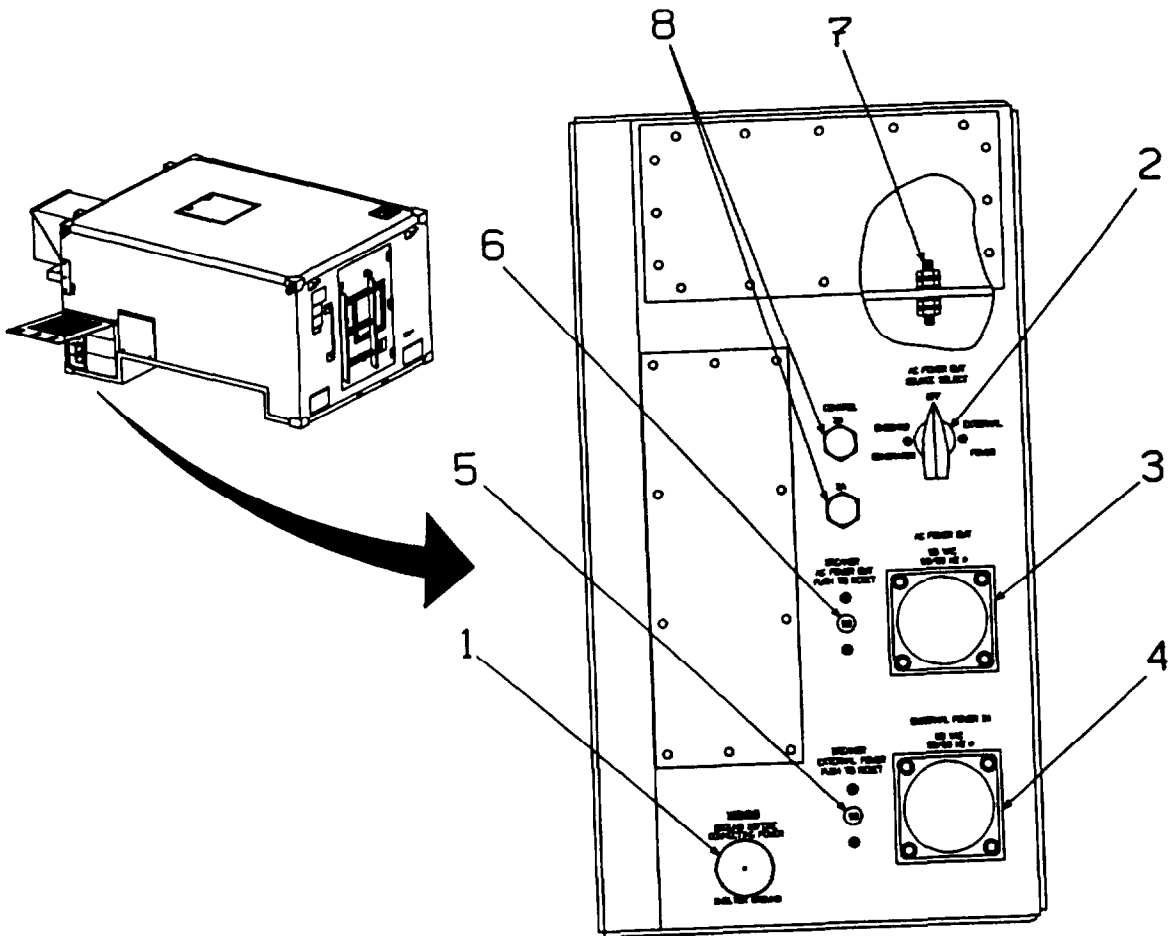
**CHAPTER 2
OPERATING INSTRUCTIONS**

Section 1.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

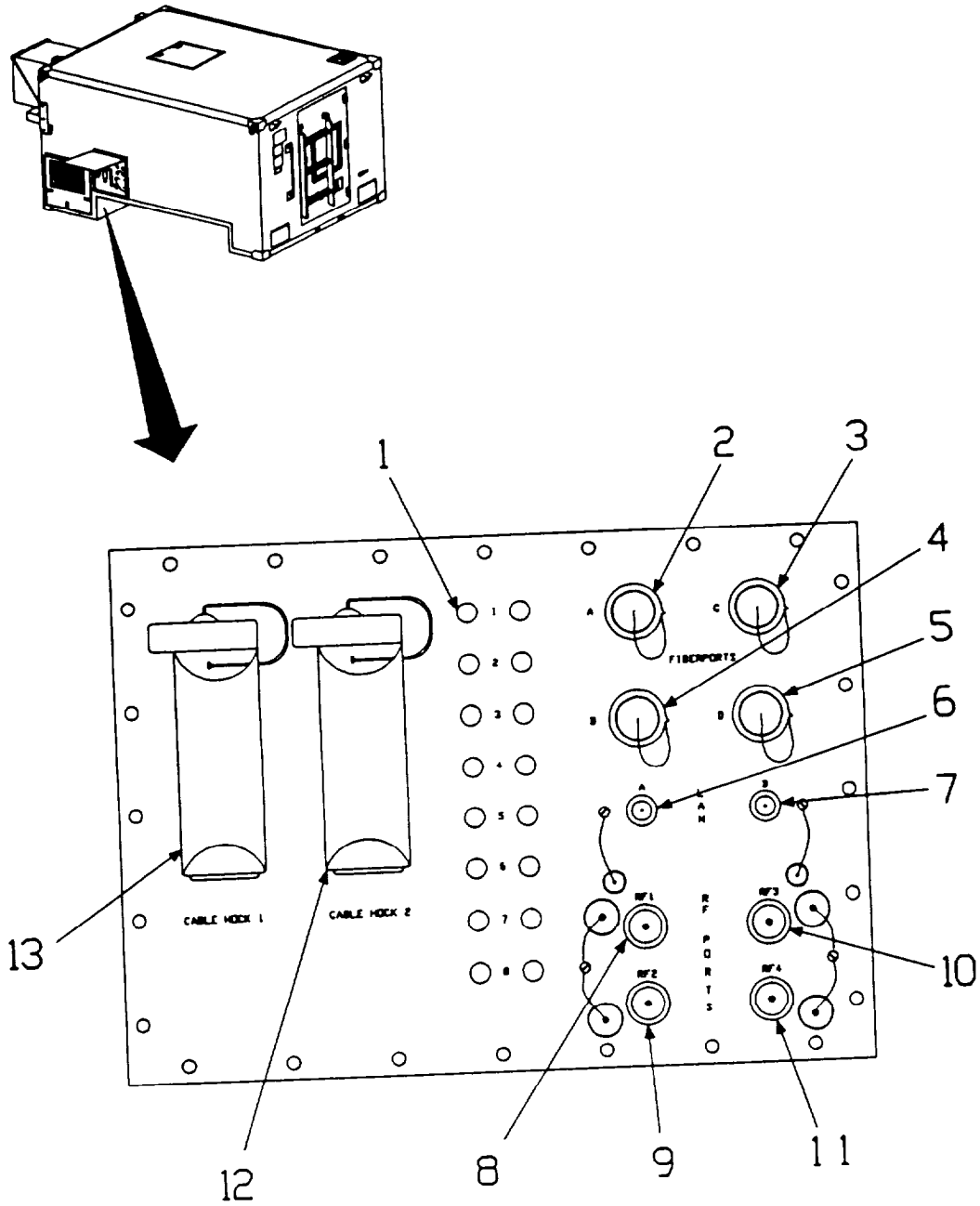
2-1. INTRODUCTION. This section identifies and describes the controls and indicators you, as the operator, will be using in support of the SICPS shelter.

2-2. POWER ENTRY BOX ASSEMBLY.



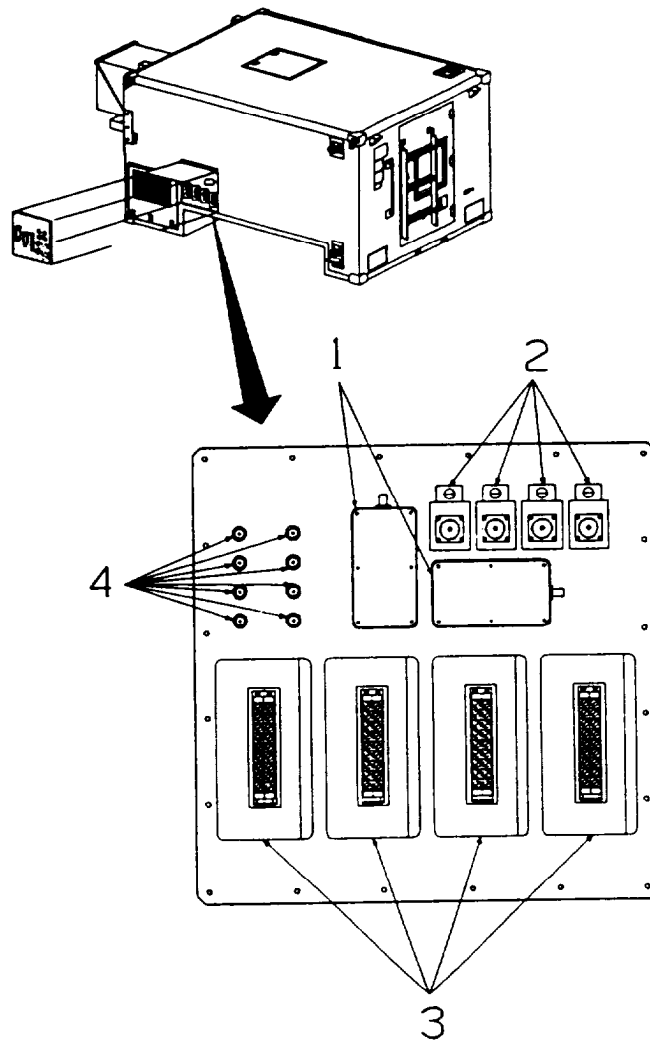
- 1 **SHELTER GROUND** Terminal lug
Terminal ground lug connection for shelter which connects to ground rod.
- 2 **ONBOARD GENERATOR AC POWER OUT SOURCE SELECT** Switch
3-position switch for selecting: onboard generator, external power source or off.
- 3 **AC POWER OUT** Connector
110 VAC 50/60 HZ 10 output connector for ac power.
- 4 **EXTERNAL POWER IN** Connector
110 VAC 50/60 HZ input power connector for an external ac power source.
- 5 **BREAKER EXTERNAL POWER PUSH TO RESET**
90A circuit breaker for the external ac power input circuit.
- 6 **BREAKER AC POWER OUT PUSH TO RESET**
50A circuit breaker for the ac power output circuit.
- 7 **TERMINAL LUG.**
Terminal lug used for grounding the shelter.
- 8 **3A Fuses**
Provides overload protection for the onboard and external power lines.

2-3. COMMO ENTRY PANEL.



- 1 DATA PAIRS Binding posts (red and black)
E-1 thru E-16 data pair line input. Connects to FL5 at the SEP EMI faceplate through W23.
- 2 FIBER PORT A (J3) Connector
Initial entry point for fiber optic communications. Connects to J13 and J14 at the SEP EMI faceplate through W76.
- 3 FIBER PORT C (J4) Connector
Initial entry point for fiber optic communications. Connects to J15 and J16 at the SEP EMI faceplate through W77.
- 4 FIBER PORT B (J5) Connector
Initial entry point for fiber optic communications. Connects to J17 and J18 at the SEP EMI faceplate through W78.
- 5 FIBER PORT D (J6) Connector
Initial entry point for fiber optic communications. Connects to J19 and J20 at the SEP EMI faceplate through W79.
- 6 LAN A (J7) Connector
Initial entry point for local area network operations. Connects to FL1 (A) at the SEP EMI faceplate through W1.
- 7 LAN B (J8) Connector
Initial entry point for local area network operations. Connects to FL2 (B) at the SEP EMI faceplate through W2.
- 8 RF PORT RF1 J9 Connector
Initial entry point for radio frequency communications. Connects to RF1 at the SEP EMI faceplate through W15.
- 9 RF PORT RF2 (J10) Connector
Initial entry point for radio frequency communications. Connects to RF2 at the SEP EMI faceplate through W16.
- 10 RF PORT RF3 (J11) Connector
Initial entry point for radio frequency communications. Connects to RF3 at the SEP EMI faceplate through W17.
- 11 RF PORT RF4 (J12) Connector
Initial entry point for radio frequency communications. Connects to RF4 at the SEP EMI faceplate through W18.
- 12 CABLE HOCK (J2) Connector
Cable Hock 2 data is routed to the SEP EMI Plate.
- 13 CABLE HOCK (J1). Connector
Cable Hock 1 data is routed to the SEP EMI Plate.

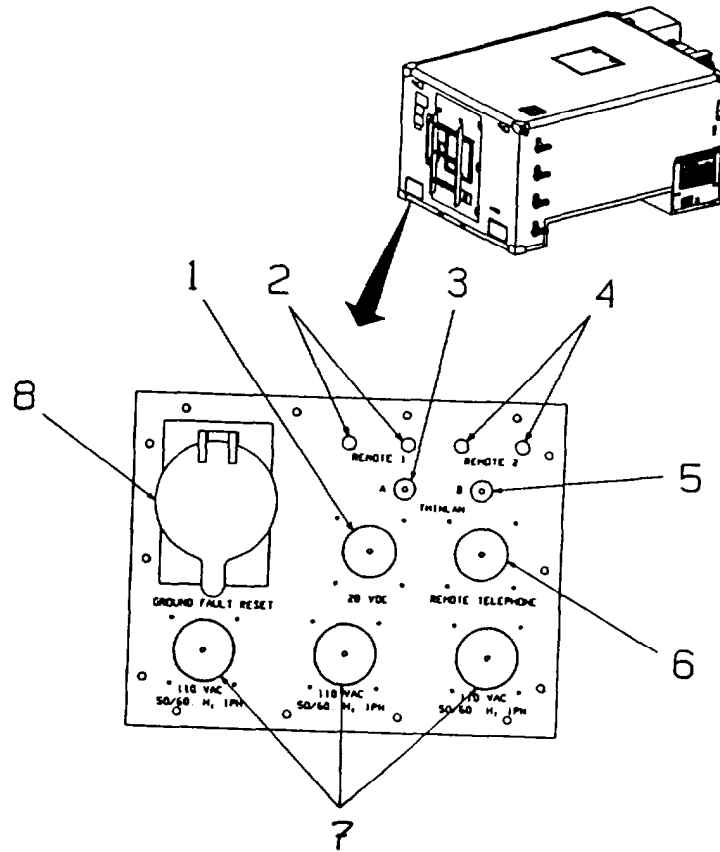
2-4. SEP EMI FACEPLATE ASSEMBLY.



- 1 EMI-EMP Data filter
Used to filter electromagnetic interference and pulses from local area network A and B line input.
- 2 EMP Suppressor
Used to suppress electromagnetic pulses on the RF input lines.
- 3 EMI-EMP Data filter
Used to filter electromagnetic interference and pulses on the data pairs and cable hock A and B line input.
- 4 FIBER OPTIC Connectors
Input connectors J17 thru J24 from front rack for fiber optic cable pass through to COMMO Entry Panel.

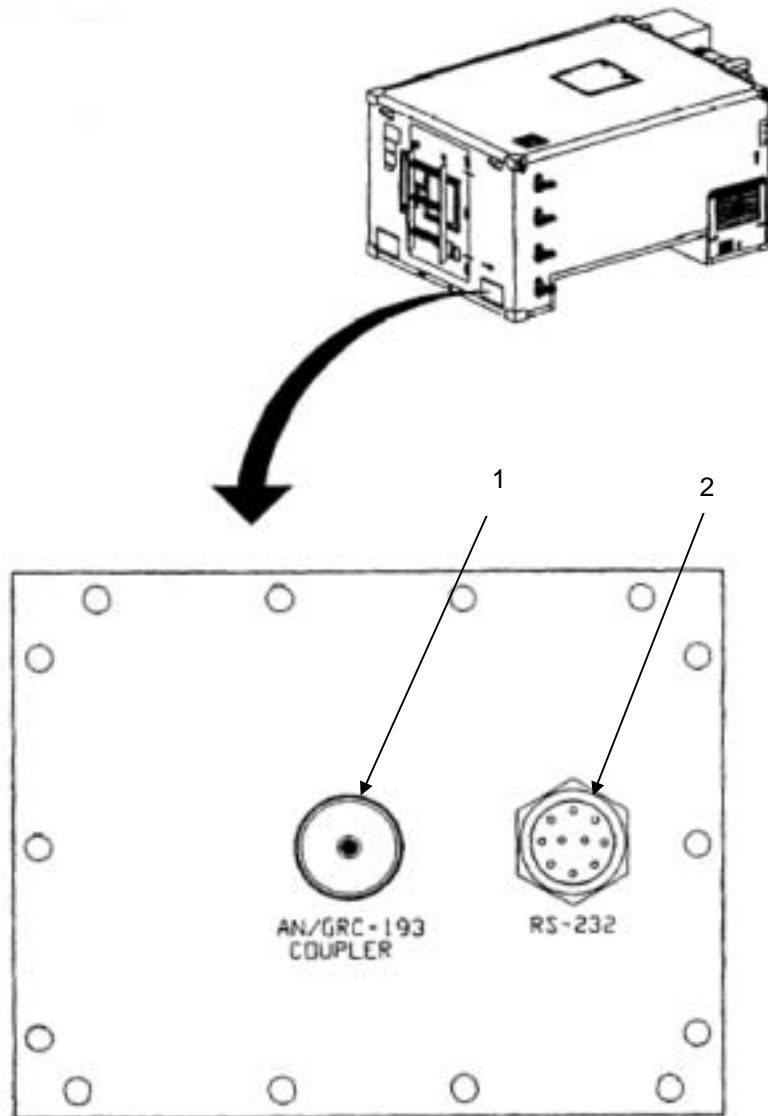
2-5. TENT INTERFACE PANEL (TIP)

a. TIP Power Entry Assembly.



- 1 **28 VDC** Connector
DC power outlet for the tent area.
- 2 **REMOTE 1** Binding posts (red and black)
Binding posts used as a pair red and black for remote hook-up.
- 3 **THINLAN A** Connector
Local area network interface between the shelter and the tent.
- 4 **REMOTE 2** Binding posts (red and black)
Binding posts used as a pair red and black for remote hook-up.
- 5 **THINLAN B** Connector
Local area network interface between the shelter and the tent.
- 6 **REMOTE TELEPHONE** Connector
Input connector for the remote phone box.
- 7 **AC POWER** Connectors
AC power outlets for the tent area,
- 8 **GROUND FAULT RESET**
Reset switch used to enable/disable the ground fault system.

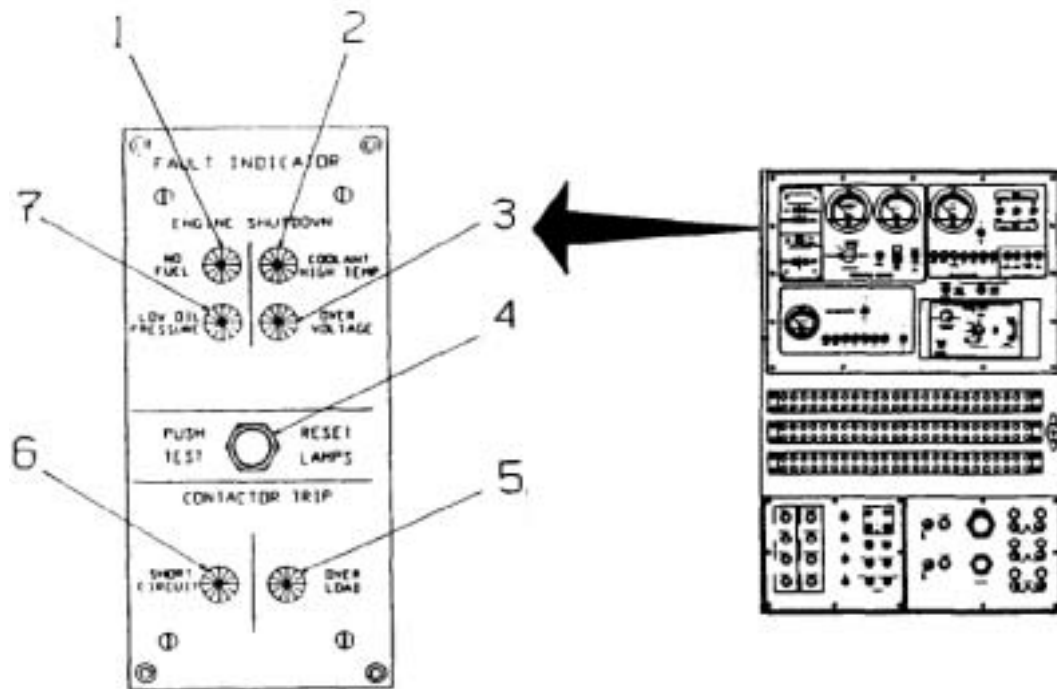
b. TIP Faceplate Assembly.



1. **AN/GRC-193 COUPLER.**
Connection for AN/GRC-193 radio.
2. **RS-232.**
Connection for fax equipment, etc.

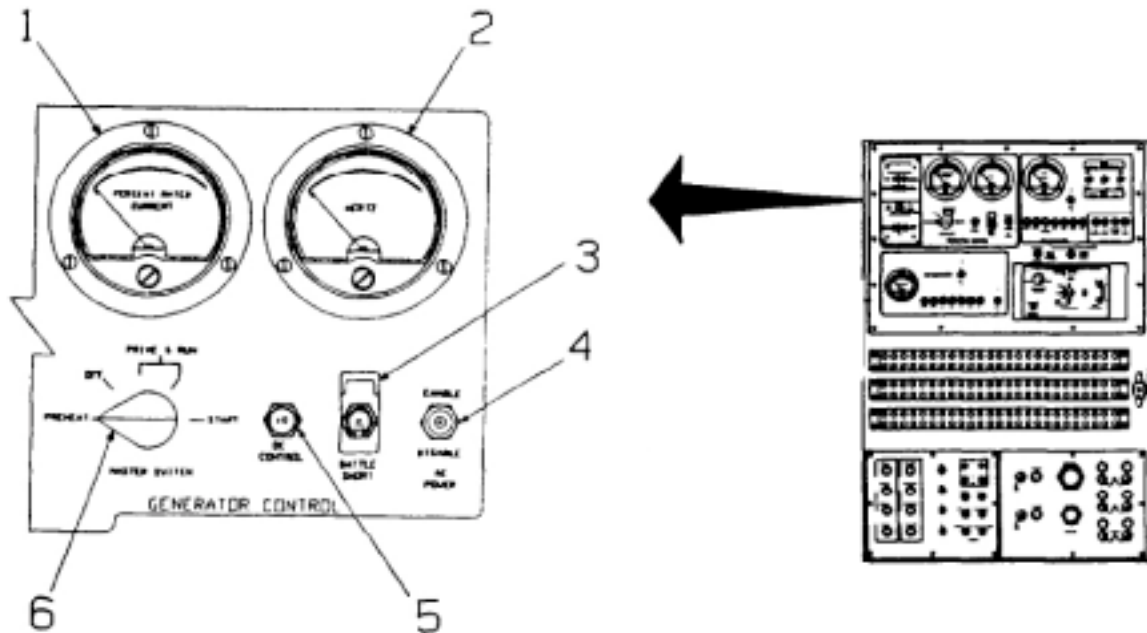
2-6. POWER CONTROL PANELS.

a. FAULT INDICATOR Panel.



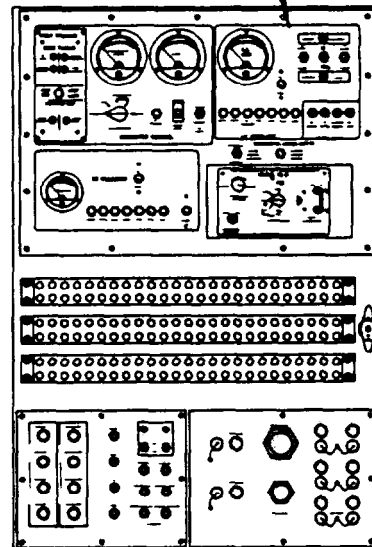
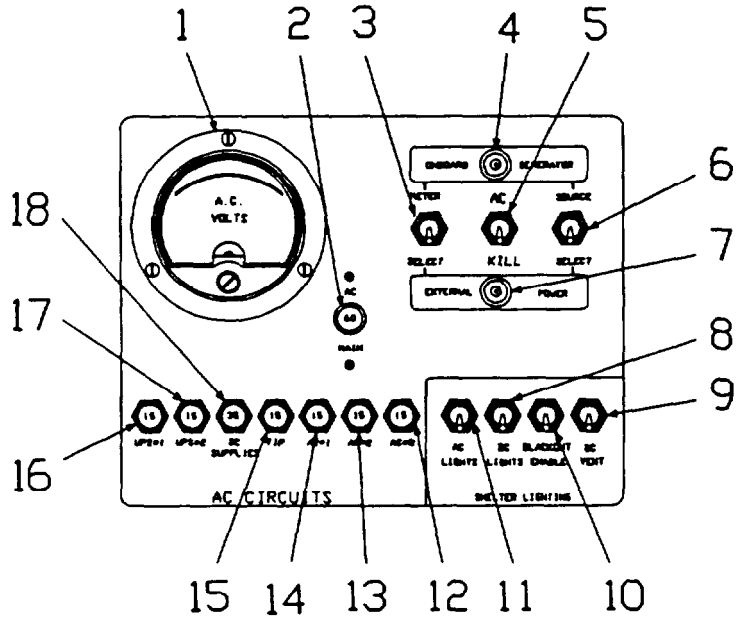
1. **NO FUEL indicator**
Turns on (red) when the generator day tank contains fuel for approximately four more minutes of time at the rated load.
2. **COOLANT HIGH TEMPERATURE indicator.**
Turns on (red) when the temperature of the generator coolant reaches 220°F (+ 217°F, + 223°F)
3. **OVERVOLTAGE indicator**
Turns on (red) when the generator voltage output in a 120-volt generator coil winding rises to and remains at any value greater than 153 (+ 150, + 156) volts for not less than 200 milliseconds.
4. **PUSH TEST/RESET LAMPS PUSH TO TEST**
Provides a reset for any of the given fault indications and can be used to test the lamps for each of the fault indications.
5. **OVER LOAD indicator**
Turns on (red) when the load exceeds 130 percent of the rated current in any phase for 8 (+ 6, + 10) minutes.
6. **SHORT CIRCUIT indicator**
Turns on (red) when the set output in any phase exceeds 425 (-319, +531) volts for both series and parallel connections of the generator windings within 50 milliseconds of the event.
7. **LOW OIL PRESSURE indicator.**
Turns on (red) when the oil pressure drops to between 8 and 10 psi.

b. GENERATOR CONTROL Panel.



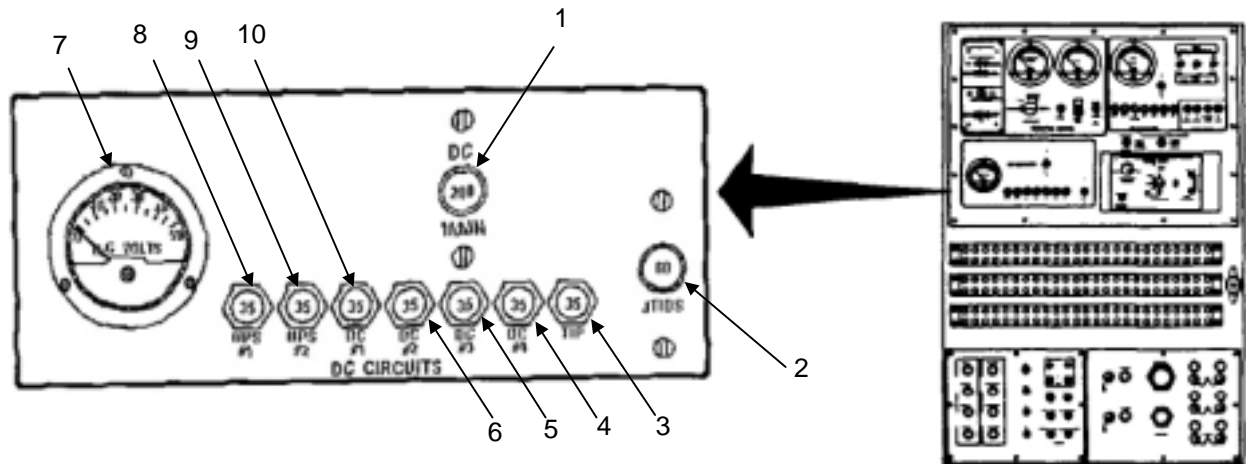
- 1 **PERCENT RATED CURRENT** meter.
Monitors the percentage of rated current from the output of the generator.
- 2 **HERTZ** meter.
Monitors the output frequency of the generator.
- 3 **BATTLE SHORT**
Override switch for electrical power from the generator to the shelter which ignores any fault indication that under normal circumstances would cause the generator to be shutdown.
- 4 **AC POWER ENABLE/DISABLE**
Switch that applies ac power from the generator to the shelter or removes ac power from the shelter.
- 5 **DC CONTROL** 10A circuit breaker
Circuit breaker rated at 10 amps for dc power.
- 6 **MASTER SWITCH.**
Four position switch used for generator start-up and control.

c. AC CIRCUITS Panel.



1. **A.C. VOLTS** meter
Monitors the AC voltage in the shelter.
2. **AC MAIN** Circuit breaker
60A circuit breaker protects circuitry to AC sub-breakers (AC Lights, AC 1-3, TIP, UPS 1 and 2, and DC Supplies).
3. **METER SELECT** Switch
Selects on-board or external power monitoring.
4. **ONBOARD GENERATOR** Indicator
Turns on (green) if the on-board generator power is available.
5. **AC/KILL** Switch
When in the AC position, and an available power source is selected, AC power is applied to the AC MAIN Circuit Breaker. In the KILL position, power to the shelter is off.
6. **SOURCE/SELECT** Switch
Selects either the onboard generator or an external AC power source.
7. **EXTERNAL POWER** Indicator
Turns on (green) when external AC power source is available.
8. **DC LIGHTS** Circuit breaker
Circuit breaker rated at 10 amps for interior DC lights.
9. **DC VENT** Circuit breaker
10A circuit breaker for blower fan.
10. **BLACKOUT ENABLE** Circuit breaker
10A circuit breaker for blackout lights in the shelter.
11. **AC LIGHTS** Circuit breaker
10A circuit breaker for AC lighting in the shelter.
12. **AC#3** Circuit breaker
15A circuit breaker for curbside raceway floor AC outlets.
13. **AC#2** Circuit breaker
15A circuit breaker for CO Monitor, front wall raceway outlets J21, J22, and J23, rear lighting, and front lighting
14. **AC#1** Circuit breaker
15A circuit breaker for roadside raceway floor AC outlets.
15. **TIP** Circuit breaker
15A circuit breaker for TIP AC outlets J2, J3, and J4.
16. **UPS#1** Circuit breaker
15A circuit breaker for Uninterruptible Power Supply #1.
17. **UPS#2** Circuit breaker
15A circuit breaker for Uninterruptible Power Supply #2.
18. **DC SUPPLIES** Circuit breaker
35A circuit breaker for DC power supplies PS1 and PS2.

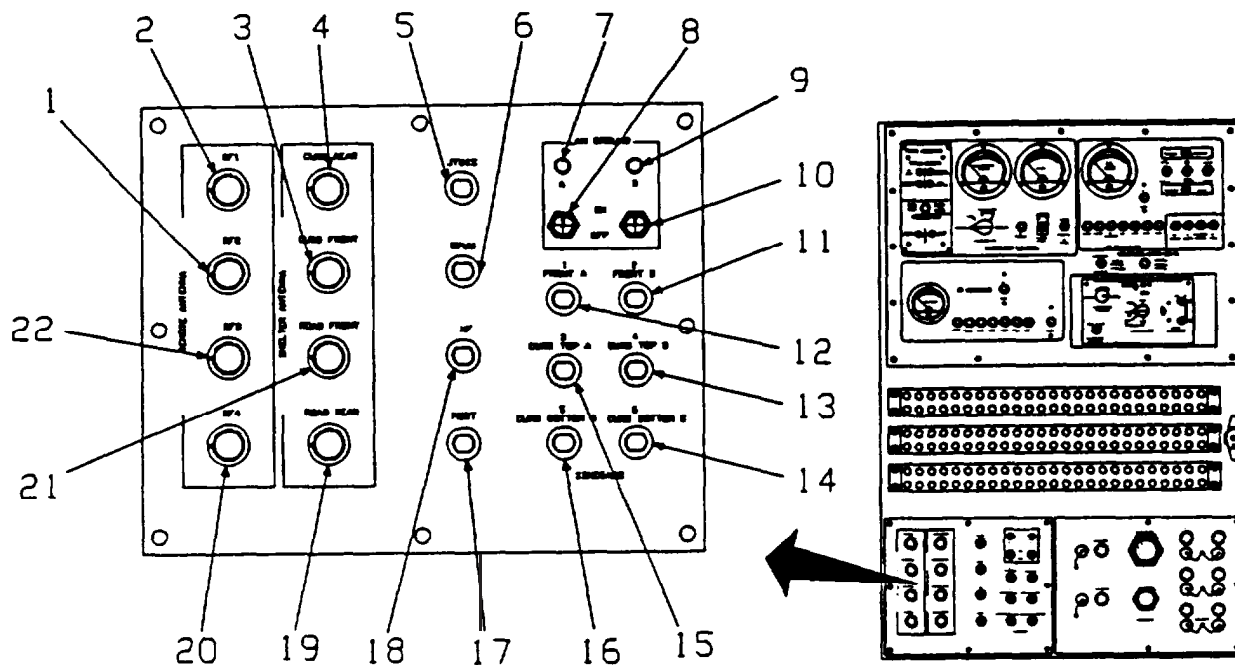
d. DC CIRCUITS Panel



1. **DC MAIN** Circuit breaker
200A circuit breaker for primary DC power to shelter.
2. **JTIDS** Circuit breaker
60A circuit breaker for J26 front wall raceway JTIDS outlet.
3. **TIP** Circuit breaker
35A circuit breaker for the TIP DC outlet J1.
4. **DC#4** Circuit breaker
35A circuit breaker for J27 and J28 floor curbside raceway DC outlets.
5. **DC#3** Circuit breaker
35A circuit breaker for J24 and J25, front wall raceway DC outlets.
6. **DC#2** Circuit breaker
35A circuit breaker for J4 and J5 ceiling roadside raceway DC outlets.
7. **D.C. VOLTS** meter
Monitors the DC voltage in the shelter.
8. **UPS#1** Circuit breaker
35A circuit breaker for Uninterruptible Power Supply #1.
9. **UPS#2** Circuit breaker
35A circuit breaker for Uninterruptible Power Supply #2.
10. **DC#1** Circuit breaker
35A circuit breaker for J2 and J3 ceiling roadside raceway DC outlets.

2-7. SIGNAL PATCH PANELS.

a. SIGNAL PATCH Panel (Left).



- 1 **REMOTE ANTENNA RF2**
Radio frequency output from remote antenna 2 connector located on Commo Entry Panel.
- 2 **REMOTE ANTENNA RF1**
Radio frequency output from remote antenna 1 connector located on Commo Entry Panel.
- 3 **SHELTER ANTENNA CURB FRONT**
Curbside front antenna output.
- 4 **SHELTER ANTENNA CURB REAR**
Curbside rear antenna output.
- 5 **JTIDS**
Joint Tactical Information Data System RF output.
- 6 **EPU**
Enhanced Position Location and Reporting User Unit RF output.
- 7 **LAN GROUND A Indicator**
Turns on (green) when LAN A switch is ON.
- 8 **LAN GROUND ON/OFF Switch**
When connected by LAN to another shelter, use this switch to apply a ground to LAN A.
- 9 **LAN GROUND B INDICATOR**
Turns on (green) when LAN B switch is ON.
- 10 **LAN GROUND ON/OFF Switch**
When connected by LAN to another shelter, use this switch to apply a ground to LAN B.

11. SINGARS 2 FRONT B

Single Channel Ground and Airborne Radio System RF output.

12. SINGARS 1 FRONT A

Single Channel Ground and Airborne Radio System RF output.

13. SINGARS 4 CURB TOP B

Single Channel Ground and Airborne Radio System RF output.

14. SINGARS 6 CURB BOTTOM B

Single Channel Ground and Airborne Radio System RF output.

15. SINGARS 3 CURB TOP A

Single Channel Ground and Airborne Radio System RF output.

16. SINGARS 5 CURB BOTTOM A

Single Channel Ground and Airborne Radio System RF output.

17. MSRT

Mobile cellular telephone output.

18. HF

High frequency radio RF output.

19. SHELTER ANTENNA ROAD REAR

Roadside rear RF antenna output.

20. REMOTE ANTENNA RF4.

Radio frequency output from remote antenna 4 connector located on Commo Entry Panel.

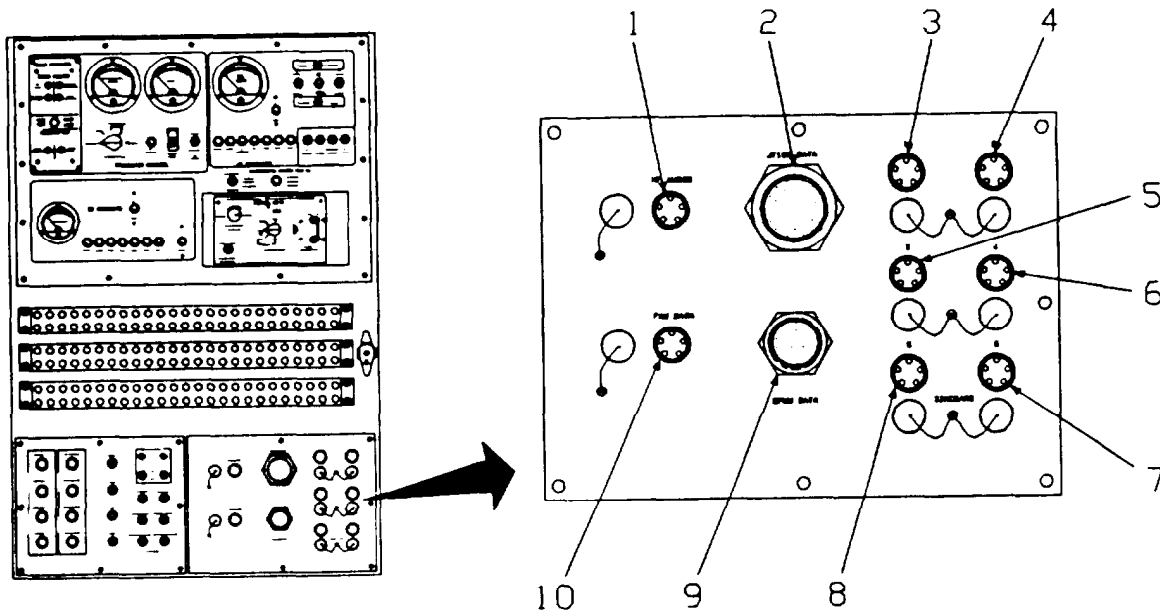
21. SHELTER ANTENNA ROAD FRONT

Roadside front RF antenna output.

22. REMOTE ANTENNA RF3

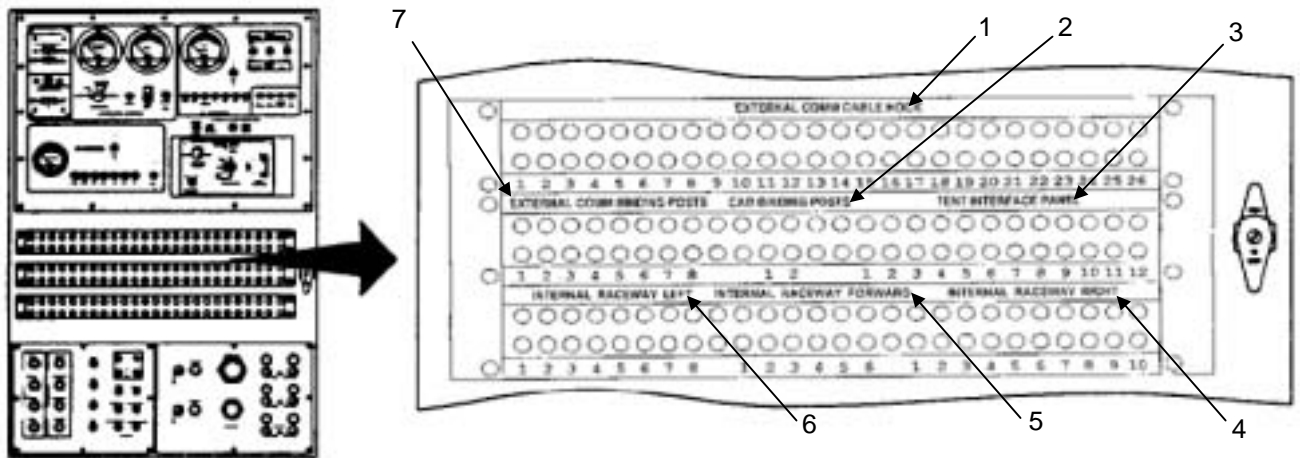
Radio frequency output from remote antenna 3 connector located on Commo Entry Panel.

b. Signal Patch Panel (Right).



- 1 **HF AUDIO**
High frequency radio audio output.
- 2 **JTIDS DATA**
Joint Tactical Information Data Systems data output.
- 3 **SINGARS 1**
Single Channel Ground and Airborne Radio System audio output.
- 4 **SINGARS 2**
Single Channel Ground and Airborne Radio System audio output.
- 5 **SINGARS 3**
Single Channel Ground and Airborne Radio System audio output.
- 6 **SINGARS 4**
Single Channel Ground and Airborne Radio System audio output.
- 7 **SINGARS 6**
Single Channel Ground and Airborne Radio System audio output.
- 8 **SINGARS 5**
Single Channel Ground and Airborne Radio System audio output.
- 9 **EPUU DATA**
Enhanced Position Location and Reporting User Unit data output.
- 10 **FAX DATA**
Facsimile data output.

c. Jackfield Assembly.

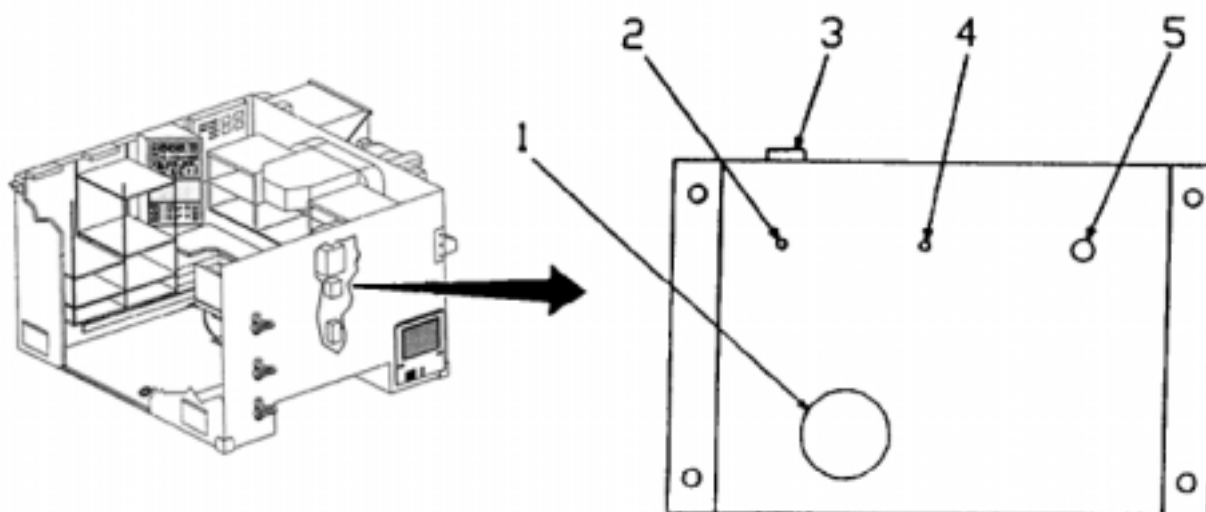


The jackfield assembly is divided into three sets of two parallel jackfield rows.

1. **EXTERNAL COMM CABLE HOCK**
Interfaces with the 26-pair cable hocks at the Commo Entry Panel.
2. **CAB BINDING POSTS**
Interfaces with binding post pairs 1 and 2 located at the front of the shelter.
3. **TENT INTERFACE PANEL**
Interfaces with the Remote Phone Box when connected at the TIP and binding post pairs 1 and 2 at the TIP.
4. **INTERNAL RACEWAY RIGHT**
Interfaces with the 10 binding post pairs located on the curbside raceway.
5. **INTERNAL RACEWAY FORWARD**
Interfaces with the 6 binding post pairs located on the front raceway.
6. **INTERNAL RACEWAY LEFT**
Interfaces with the 8 binding post pairs located on the roadside raceway.
7. **EXTERNAL COMM BINDING POSTS**
Interfaces with the 8 binding post pairs located at the Commo Entry Panel.

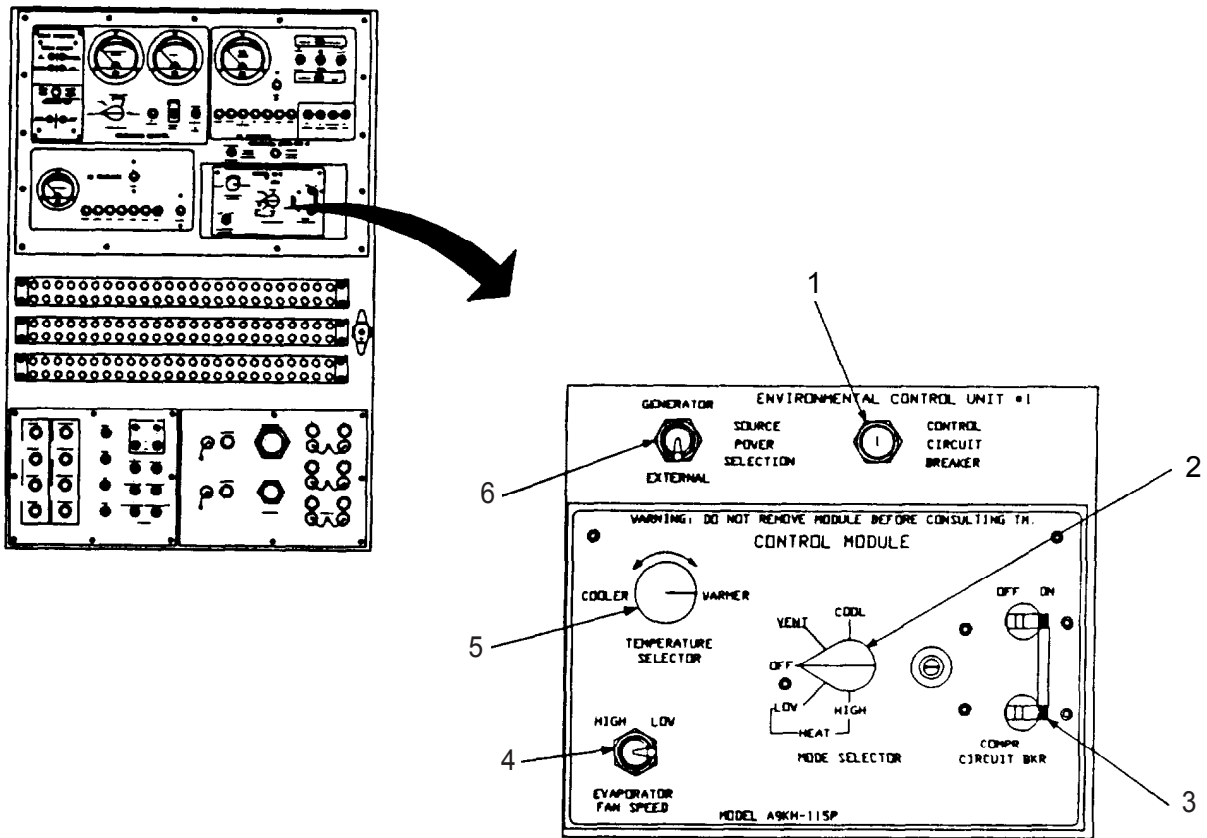
2-8. ENVIRONMENTAL CONTROLS.

a. CO Monitor



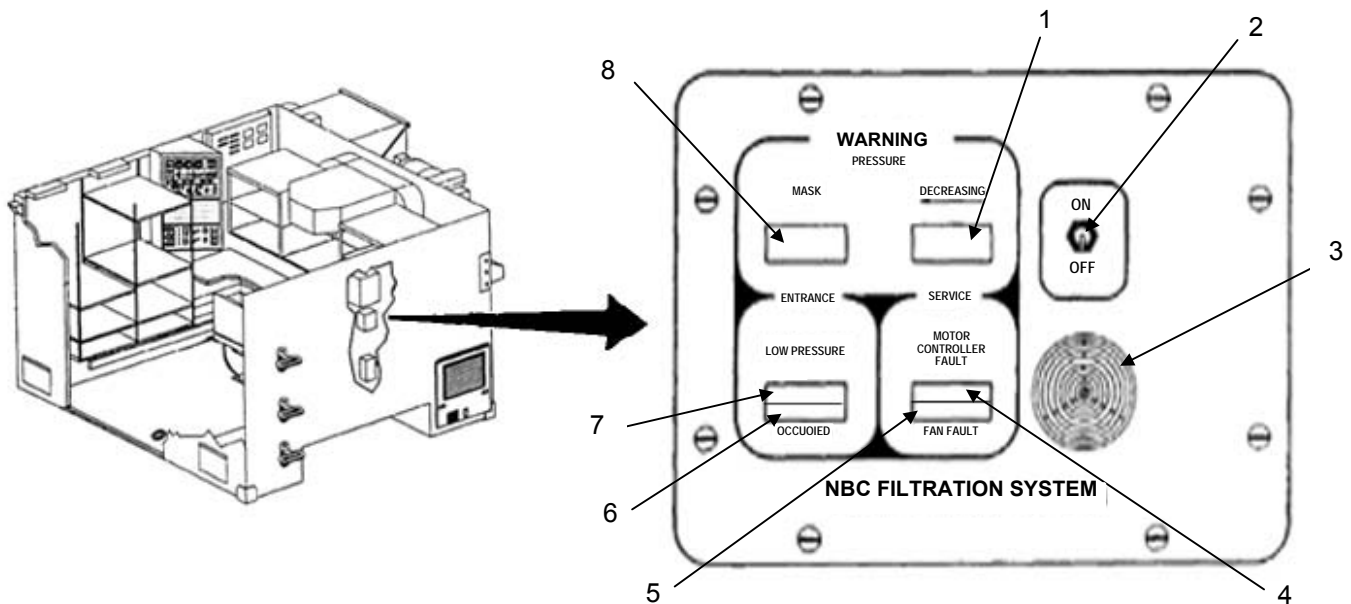
- 1. SENSOR**
Detects hydrocarbon gas or vapor.
- 2. ALARM INDICATOR**
Lights (red) if the sensor detects hydrocarbon gas or vapor.
- 3. CALIBRATION ADJ SCREW**
Used to adjust the sensitivity of the alarm potentiometer.
- 4. PILOT INDICATOR**
Lights (green) during normal operations when power is applied.
- 5. ALARM ANNUNCIATOR**
The alarm activates when hydrocarbon gas or vapor is detected.

b. ECU Control Panel



- 1 **CONTROL** Circuit breaker
1A circuit breaker for the environmental control unit circuits.
- 2 **MODE SELECTOR** Switch
Selectable temperature control switch for heat, air conditioning or vent.
- 3 **COMPRESSOR CIRCUIT BREAKER ON/OFF**
On/off switch for the compressor.
- 4 **EVAPORATOR FAN HIGH/LOW SPEED** Switch
2- position switch for either high or low fan speed.
- 5 **TEMPERATURE SELECTOR CONTROL**
Thermostat adjust for shelter temperature.
- 6 **SOURCE POWER SELECTION GENERATOR/EXTERNAL** Switch
Selects the either the generator or an external power source for the ECU primary input power.

c. GPFU Control Panel



1. DECREASING

This graduated indicator shows decreasing pressure in the shelter.

2. ON/OFF

This toggle switch turns the GPFU On and Off.

3. Alarm Speaker

Provides audible alarms.

4. SERVICE/MOTOR CONTROLLER FAULT

Activated when there is a failure in the motor control. Audible alarm also sounds.

5. SERVICE/FAN FAULT

Activated when there is a failure with the fan. Audible alarm also sounds.

6. ENTRANCE/OCCUPIED

Monitors an entrance chamber not used with the SICPS RWS.

7. ENTRANCE/LOW PRESSURE

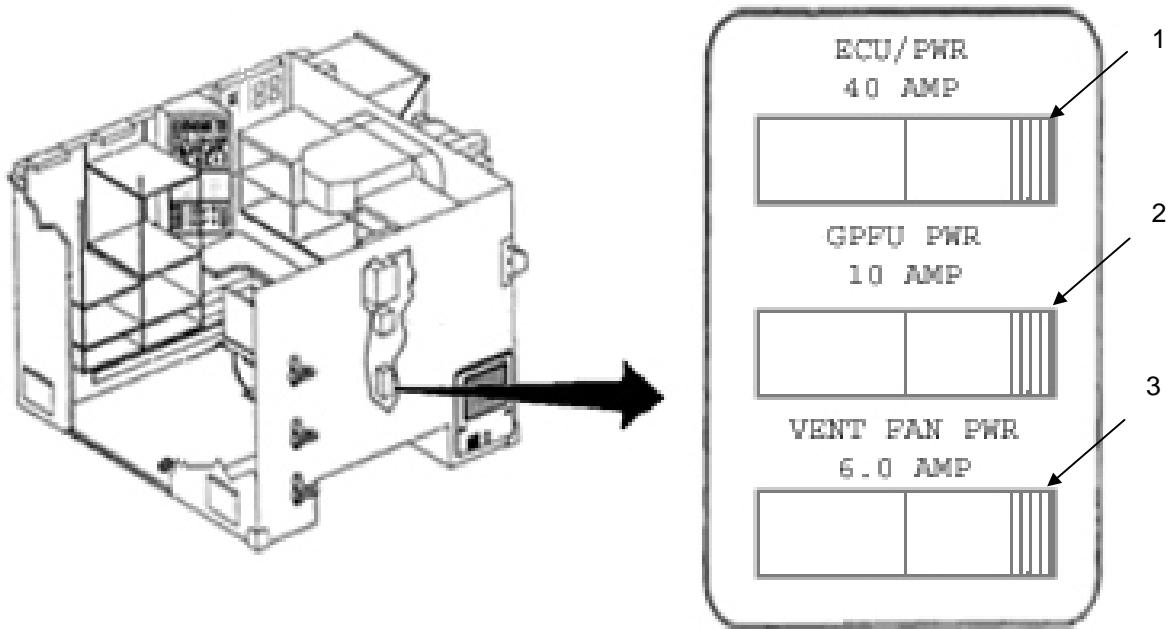
Monitors an entrance chamber not used with the SICPS RWS.

8. MASK

Activated when there is any failure with the GPFU or if an under pressure situation develops in the shelter. Audible alarm also sounds.

d. Circuit Breaker Box.

The Circuit Breaker Box, along with the filters, were added to provide EMI/RFI/EMP protection for the circuits to the environmental units.

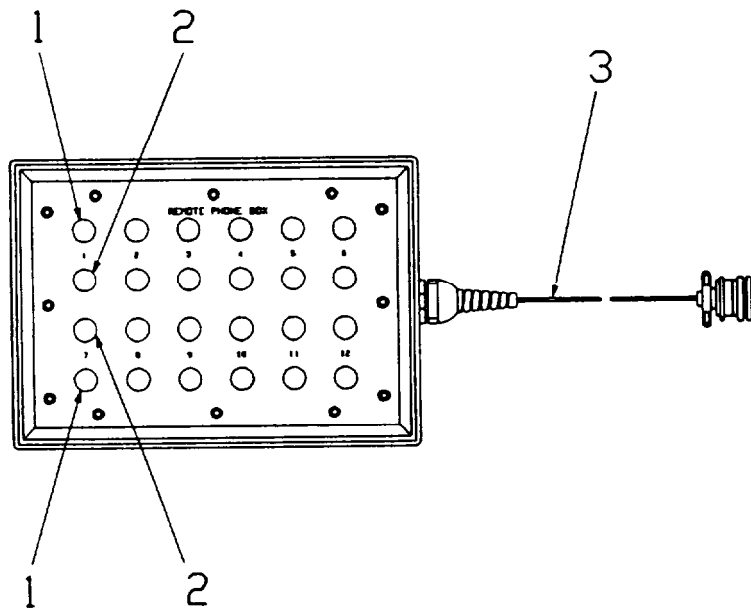


- 1. ECU PWR**
This 40 amp AC circuit breaker protects the ECU circuits.
- 2. GPFU PWR**
This 10 amp AC circuit breaker protects the GPFU circuits.
- 3. VENT FAN PWR**
This 6 amp DC circuit breaker protects the Filter Blower Assembly circuits.

2-9. PHONE EXTENSION BOX.

NOTE

This is an onboard component shipped with the SICPS shelter.



- 1 **BINDING POST**
Twelve (black) phone input connections used in pairs with the red binding post for landline communication links.
- 2 **BINDING POST**
Twelve (red) phone input connections used in pairs with the black binding post for landline communication links.
- 3 **CABLE ASSEMBLY (W35)**
Connects remote phone box assembly to J203 on the roadside TIP Faceplate Assembly.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR MODEL S-787/G, TYPE II SHELTER

2-10. INTRODUCTION. This section provides data necessary to keep the SICPS shelter in operational condition.

2-11. FUEL LEAKAGE. Wetness around fuel filters, seals, gaskets, fittings, or hoses indicates fuel leakage. A stain denotes leakage. If a fitting or hose is loose, try to tighten it. If broken or defective, report it to your supervisor. Use the following as a guide.

- a. Class I. Leakage indicated by wetness or discoloration not great enough to form drops.
- b. Class II. Leakage great enough to form drops, but not enough to cause drops to drip from item being checked/inspected.
- c. Class III. Leakage great enough to form drops that fall from the item being checked/inspected.

CAUTION

Operations is allowed with Class I or II fuel leakage. When Operating with Class I or II leaks, check fluid levels frequently. Class III leaks must be reported immediately to your supervisor. Failure to do this may result in damage to vehicle and/or components.

2-12. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

a. General. Table 2-1 has been provided so you can keep your equipment in good operating condition and ready for its primary mission.

b. Warnings and Cautions. Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. Warnings and cautions appear before applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or prevent your equipment from being damaged.

c. Explanation of Table Entries.

(1) *Item number column.* Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the interval listed.

(2) *Interval column.* This column tells you when you must do the procedure in the procedure column. BEFORE procedures must be done before you operate or use the equipment for its intended mission. DURING procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER procedures must be done immediately after you have operated or used the equipment.

(3) *Location, check/service column.* This column provides the location and the item to be checked or serviced. The item location is underlined.

(4) *Procedure column.* This column gives the procedure you must do to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the interval column.

(5) Not fully mission capable if: column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failures.

d. *Other Table Entries.* Be sure to observe all special information and notes that appear in your table.

NOTE

- If the equipment must be kept in continuous operation, do only the procedures that can be done without disturbing operation. Make complete checks and services when the equipment is shut down.
- When a check and service procedure is required for both weekly and before intervals, it is not necessary to do the procedure twice if the equipment is operated during the weekly period.

e. *Routing Diagram.* To assist you in the performance of PMCS, a routing diagram (figure 2-1) depicting the order by which the checks and services must be accomplished has been provided.

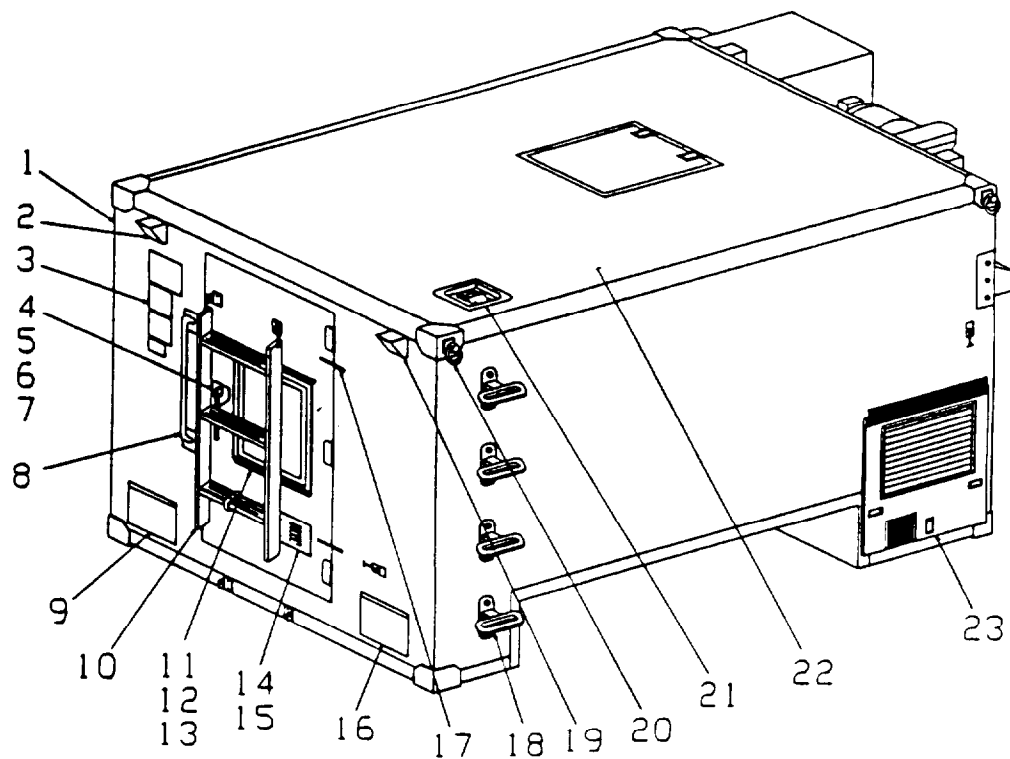


Figure 2-1. Routing Diagram (Sheet 1 of 4)

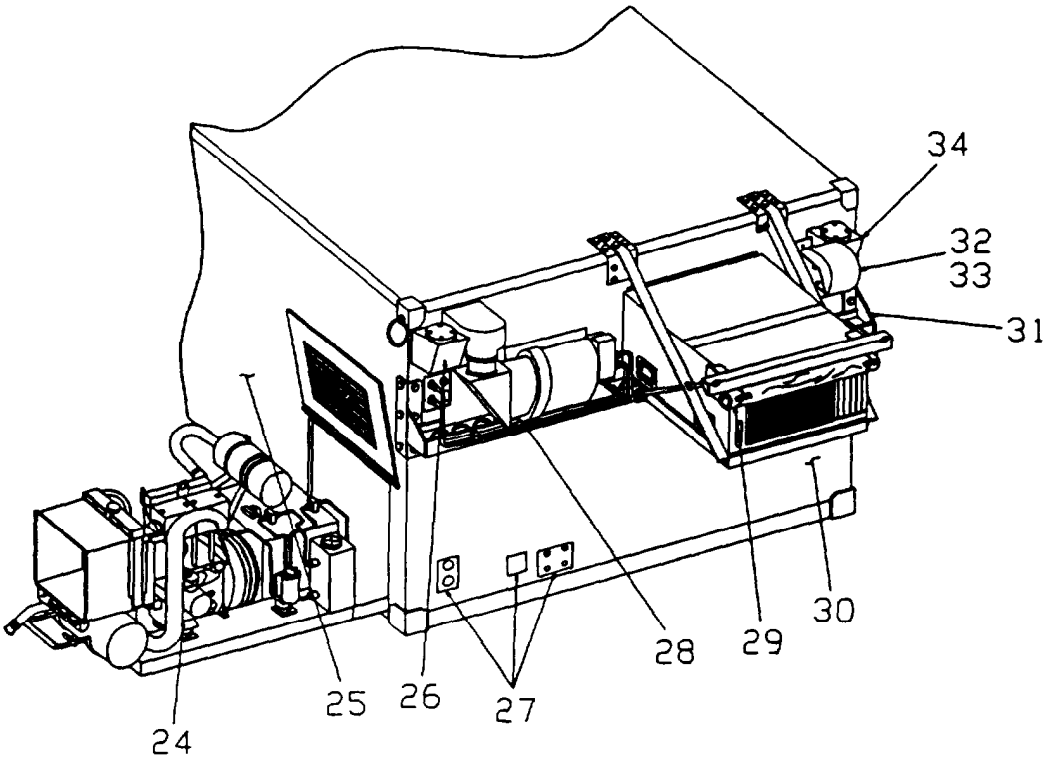


Figure 2-1. Routing Diagram (Sheet 2 of 4)

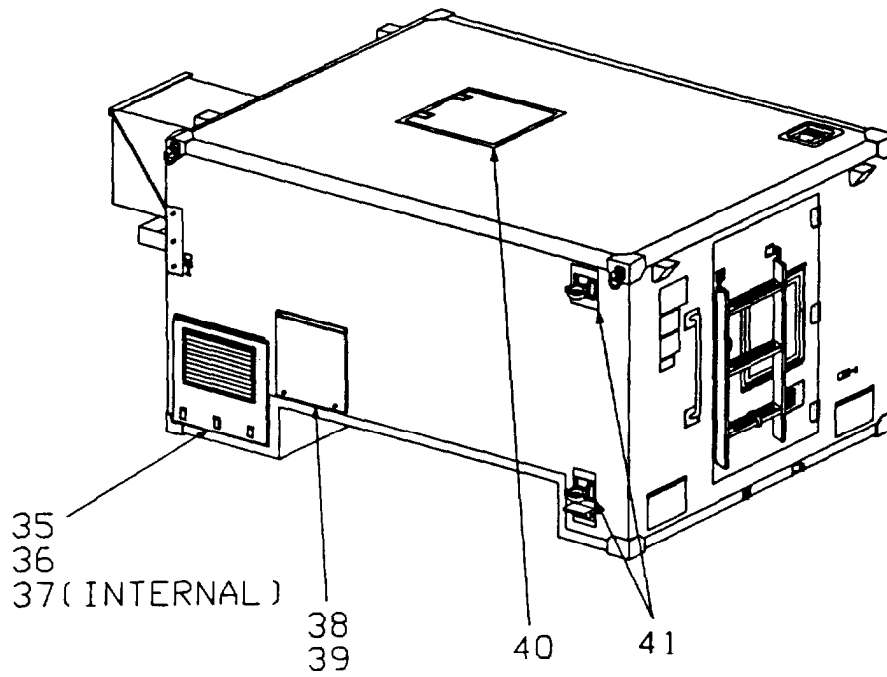
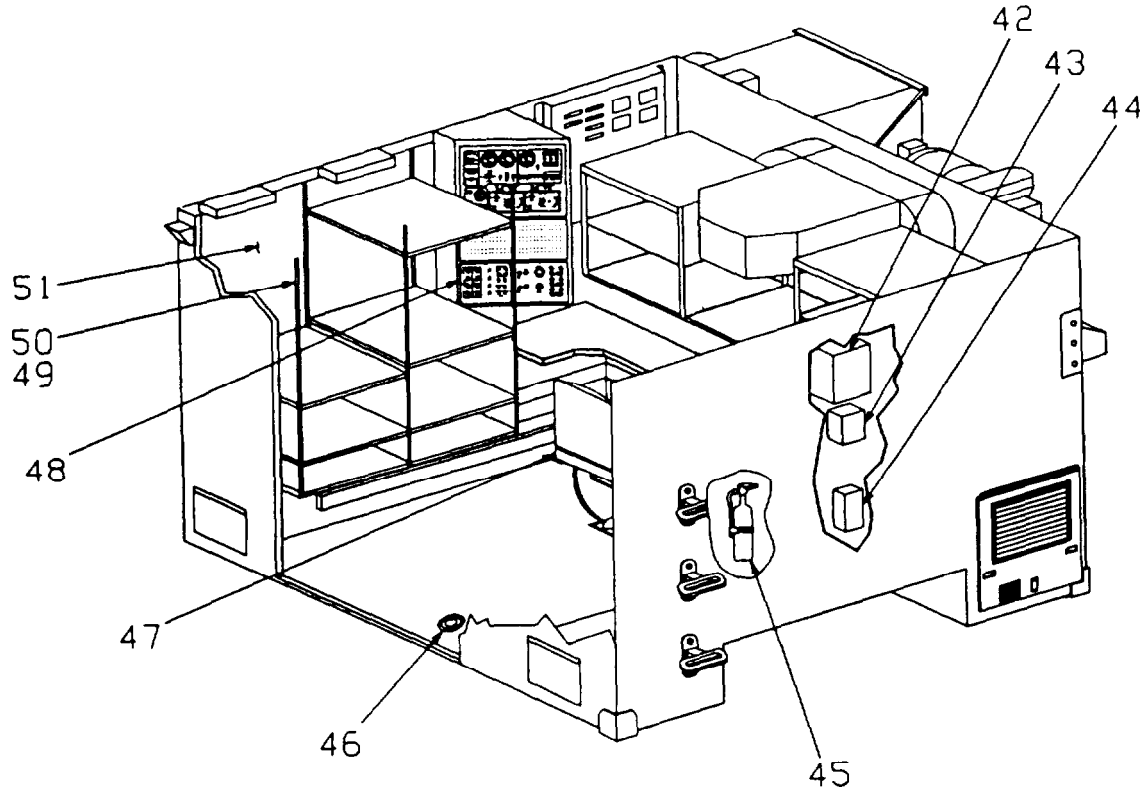


Figure 2-1. Routing Diagram (Sheet 3 of 4)



* Item 50 (Lights) - Not Shown

Figure 2-1. Routing Diagram (Sheet 4 of 4)

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II**

B – BEFORE D – DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
1	B	Shelter (Rear)	Check surface for punctures and scratches.	If punctures are found.
2	B	Antenna Mount (Roadside Rear)	Check for missing parts and damage.	Damaged or unusable.
3	B	Data Plates	Check that data plates are not damaged and are readable.	
4	B	Door Assembly	Make sure door operates smoothly without binding. Check for loose/missing parts.	If door cannot be closed.
5	B	Door Weather Seal	Make sure weather seal on door is not damaged.	If damaged gasket prevents closing of the door.
6	B	Door RFI/EMI Seal	Make sure RFI/EMI seal is not damaged.	If RFI/EMI gasket is damaged.
7	B	Door Handle Assembly	Make sure handle operates smoothly without binding.	If door cannot be secured.
8	B	Shelter Handle	Check to see the handle is securely attached to shelter.	
9	B	TIP Power Entry Assembly	Check connectors and caps for damage. Clean faceplate with damp cloth. Check GFCI for proper operation. Check cover for damage; ensure it may be properly secured.	GFCI not functioning properly, connectors or cover is damaged.

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued**

B – BEFORE D - DURING A - AFTER W - WEEKLY M – MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
10	B	Ladder	Check physical condition of ladder and belt. Clean with water if dirty.	
11	B	Rapid Decompression Assembly	Remove ladder. Loosen twist-lock bolts on panel and make sure weather gasket is not damaged.	
12	B	Rapid Decompression Assembly	Make sure round rubber gasket is on all twist-lock bolts.	
13	B	Rapid Decompression Assembly	Open door and check if rapid decompression assembly RFI filter is damaged.	RFI filter is damaged.
14	B	Air Vent	Open door, ensure door and latches operate smoothly.	Door cannot be closed.
15	B	Air Vent	Check RFI filter for damage.	RFI filter damaged.
16	B	TIP Assembly (Curbside)	Check connectors and caps for damage. Clean faceplate with damp cloth. Check cover for damage; ensure it may be properly secured.	Connectors or cover is damaged.

Table 2-1.
 Operator Preventive Maintenance Checks and Services for SICPS Shelter,
 Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
17	B	Door Assembly Ground Straps	Make sure ground straps are properly connected and not cut or frayed.	If both ground straps are cut.
18	B	Antenna Mount (Curbside, rear)	Check for missing parts and damage.	Unusable.
19	B	Step Assembly	Check for excessive wear and rust and check to see that all steps can be positioned for climbing.	
			<p>WARNING</p> <p>BE CAREFUL BEFORE CLIMBING ON ROOF OF SHELTER. ALWAYS USE HAND SUPPORTS. PERSONAL INJURY CAN RESULT FROM A FALL.</p> <p>NOTE.</p> <p>ITEMS 20-22 ARE ACCOMPLISHED WHILE ON THE TOP (ROOF) OF THE SHELTER.</p>	

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location		Procedure	Not Fully Mission Capable If:
		Item to Check/ Service			
20	B	Lifting and Towing Brackets		Climb up steps to roof of shelter and make sure that lifting and towing brackets do not have rust and that they rotate freely.	
21	B	Support handle		While on the roof of the shelter, inspect support handle for wear and rust. Check that the handle can be positioned for climbing.	
22	B	Shelter (roof)		Check surface for punctures, delamination, dents and scratches.	If punctures or delamination is found.
23	B	GENSET Door		Check door and weather seal for condition and operation.	Door cannot be secured in closed condition.
24	B	GENSET		Make sure heat shield covers are not torn or damaged. Complete PMCS on GENSET per TM 9-6115-641 -10.	If GENSET fails PMCS per TM 9-6115-641-10.
25	B	Shelter (curbside)		Check surface for punctures, delamination, dents, and scratches.	Punctures and delamination are found.

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued**

B – BEFORE D - DURING A - AFTER W - WEEKLY M – MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
26	B	Antenna Mount (Front, Curbside)	Check for missing parts and damage.	Unusable.
27	B	Fuel Ports/ External Outlets	Check fuel entry ports and outlets for damage/missing parts.	Damaged or leaking fuel lines prevent operation (class III leak).
28	B	GPFU	Check connectors, hoses, and clamps for damage.	If damage is a safety hazard or is class III leak.
29	B	ECU	Check front protector cover for damage, loose/missing hardware.	
30	B	Shelter (Front)	Check surface for punctures, delamination, dents, and scratches.	Punctures or delaminations are found.
31	B	ECU Frame	Inspect frame for damage, rust, and missing hardware.	
32	B	Filter Blower Assembly	Remove cover and inspect filters. If dirty, clean with warm soapy water.	Unusable.
33	B	Filter Blower	Check cables for damage/missing parts.	Connectors damaged.
34	B	Antenna Mount (Front, Roadside)	Check for missing parts and damage.	Unusable

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued**

B – BEFORE D - DURING A - AFTER W - WEEKLY M – MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
35	B	Tunnel Access Door	Open door and make sure door can be latched in the open position and weather gasket is not damaged.	Door cannot be secured in closed position
36	B	Tunnel Access Door	Inspect for rust and damage.	Door cannot be secured in closed position.
37	B	Power Entry Box (roadside)	Check connectors for damage, ensure caps are installed. Ensure fuses are good, and that the switch and the CBs are in the OFF position. Inspect ground lug for any damage or missing parts. Clean panel with damp cloth.	Fuses bad, connectors or ground lug damaged or missing parts.
38	B	Commo Panel Cover	Check cover for damage and missing parts.	Cover damaged.
39	B	Commo Panel	Check connectors and caps for damage. Clean faceplate with damp cloth. Check cover for damage; ensure it may be properly secured.	Connectors or cover is damaged.
40	B	Hatch	Unlock safety hatch (inside), ensure it opens and closes smoothly.	Hatch will not secure.
41	B	Antenna Mount (Roadside)	Check for damage and missing parts.	
42	B	GPFU Control Panel	Check connector and hose, for missing parts and damage. Clean faceplate with damp cloth.	If damaged.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
43	B	CO Monitor	Check for damage/missing parts.	If damaged.
44	B	Circuit Breaker Panel	Ensure circuit breakers are off. Check RFI seal.	RFI Seal damaged.
45	B	Fire Extinguisher	Check charge on fire extinguisher. If not charged, notify supervisor.	Fire extinguisher not charged.
46	B	Drain Plug	Make sure drain plug is screwed in.	Drain plug cannot be screwed in.
47	B	Seat	Check seat and straps for damage, loose/missing parts.	Seat damaged.
48	B	Panel Assembly	Check that covers are on unused connectors and that all switches are off.	
49	B	Equipment Racks	Check for missing parts and damage.	Missing hardware or damaged
50	B	Interior Lights	Check for missing parts and damage,	
51	B	Shelter (internal)	Inspect for punctures, delamination, dents, and scratches. Inspect for water intrusion, loose/missing parts.	Punctures, dents, delamination or water intrusion is detected.

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued**

B – BEFORE D - DURING A - AFTER W - WEEKLY M – MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
52	D	Door Assembly	Make sure door operates smoothly without binding. Check for loose/missing parts.	If door cannot be closed.
53	D	Door Handle Assembly	Make sure handle operates smoothly without binding.	If door cannot be secured.
54	D	Air Vent	Open door, ensure door and latches operate smoothly	Door cannot be closed.
55	D	Air Vent	Check RFI filter for damage.	RFI filter damaged.
56	D	GENSET	Complete PMCS on GENSET per TM 9-6115-641-10. Check fuel levels at vehicle fuel gauge.	If GENSET fails PMCS per TM 9-6115-641-10.
57	D	Fuel Ports/External outlets	Check fuel entry port and outlet for damage.	Fuel leaks prevent operation.
58	D	GPFU	Check connectors, hoses, and clamps.	If damaged item is a safety hazard or creates a class III leak.

**Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued**

B – BEFORE D - DURING A - AFTER W - WEEKLY M – MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/Service		
59	D	ECU	Check water protector cover for damage, loose or missing hardware. Check front for debris,.	Filter is dirty.
60	D	Filter Blower Assembly	Remove cover and inspect filters. If dirty, clean with warm, soapy water.	Unusable.
61	D	Tunnel Access Door	Inspect for rust and damage. Make sure weather flap is not damaged.	Door cannot be secured.
62	D	Power Entry Box (roadside)	Open cover and make sure all protective covers for unused connectors are installed. Ensure unused switches are in "OFF" position.	
63	D	Commo Panel	Ensure connections are good. Make sure all protective caps are installed on unused connectors.	

Table 2-1.
 Operator Preventive Maintenance Checks and Services for SICPS Shelter,
 Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
64	D	Fire Extinguisher	Check charge on fire extinguisher. If not charged, notify supervisor.	Fire extinguisher not charged.
65	D	Drain Plug	Make sure drain plug is screwed in.	Drain plug cannot be screwed in.
66	D	Seat	Check operation of seat.	Seat not operating properly.
67	D	Interior Lights.	Check operation.	Not operating correctly.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
68	A	Shelter (Rear)	Check surface for punctures and scratches.	If punctures are found.
69	A	Antenna Mount (Roadside Rear)	Check for missing parts and damage.	Damaged or unusable.
70	A	Data Plates	Check that data plates are not damaged and are readable.	
71	A	Door Assembly	Make sure door operates smoothly without binding. Check for loose/missing parts.	If door cannot be closed.
72	A	Door Weather Seal	Make sure weather seal on door is not damaged.	If damaged gasket prevents closing of the door.
73	A	Door RFI/EMI Seal	Make sure RFI/EMI seal is not damaged.	If RFI/EMI gasket is damaged.
74	A	Door Handle Assembly	Make sure handle operates smoothly without binding..	If door cannot be secured.
75	A	Shelter Handle	Check to see the handle is securely attached to shelter.	
76	A	TIP Power Entry Assembly (Roadside)	Make sure cover is not damaged and that the cover can be secured properly.	Cover is damaged.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location		Procedure	Not Fully Mission Capable If:
		Item to Check/ Service			
77	A	Ladder		Check physical condition of ladder and belt.	
78	A	Rapid Decompression Assembly		Remove ladder. Loosen 10 twist-lock bolts on panel and make sure weather gasket is not damaged.	
79	A	Rapid Decompression Assembly		Make sure round rubber gasket is on all twist-lock bolts.	
80	A	Rapid Decompression Assembly		Open door and check if rapid decompression assembly RFI filter is damaged.	RFI filter is damaged.
81	A	Air Vent		Open door, ensure door and latches operate smoothly	Door cannot be closed.
82	A	Air Vent		Check RFI filter for damage.	RFI filter damaged.
83	A	TIP Assembly (Curbside)		Make sure cover is not damaged and can be secured properly.	Cover damaged

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
84	A	Door Assembly Ground Straps	Make sure ground straps are properly connected and not cut or frayed.	If both ground straps are cut.
85	A	Antenna Mount (Curbside, rear)	Check for missing parts and damage.	Unusable.
86	A	Step Assembly	Check for excessive wear and rust and check to see that all steps can be positioned for climbing. WARNING BE CAREFUL BEFORE CLIMBING ON ROOF OF SHELTER. ALWAYS USE HAND SUPPORTS. PERSONAL INJURY CAN RESULT FROM A FALL. NOTE ITEMS 87-89 ARE ACCOMPLISHED WHILE ON THE TOP (ROOF) OF THE SHELTER.	

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

R - BEFORE D - DURING A - AFTFR W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
87	A	Lifting and Towing Brackets	Climb up steps to roof of shelter and make sure that lifting and towing brackets do not have rust and that they rotate freely.	
88	A	Support handle	While on the roof of the shelter, inspect support handle for wear and rust. Check that the handle can be positioned for climbing.	
89	A	Shelter (roof)	Check surface for punctures, delamination, dents and scratches.	If punctures or delamination is found.
90	A	GENSET Door	Check door and weather seal for condition and operation.	Door cannot be secured in closed condition.
91	A	GENSET	Make sure heat shield covers are not torn or damaged. Complete PMCS on GENSET per TM 9-6115-641 -10.	If GENSET fails PMCS per TM 9-6115-641-10.
92	A	Shelter (curbside)	Check surface for punctures, delamination, dents, and scratches.	Punctures and delamination are found.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
93	A	Antenna Mount (Front, Curbside)	Check for missing parts and damage.	Unusable.
94	A	Fuel Ports/External Outlets	Check fuel entry port and outlets for damage/missing parts	Damaged or leaking fuel lines prevents operation. (class III leak)
95	A	GPFU	Check connectors, hoses, and clamps.	If damage is a safety hazard or is class III leak.
96	A	ECU	Check water protector cover for damage, loose/missing hardware.	
97	A	Shelter (front)	Check surface for punctures, delamination, dents, and scratches.	Punctures or delaminations are found.
98	A	ECU Frame	Inspect frame for damage, rust, and missing hardware	
99	A	Filter Blower Assembly	Remove cover and inspect filters. If dirty, clean with warm soapy water.	Unusable.
100	A	Filter Blower	Check cables for damage/missing parts.	Connectors damaged.
101	A	Antenna Mount (Roadside, front)	Check for missing parts and damage	Unusable
102	A	Tunnel Access Door	Open door and make sure door can be latched in the open position and weather gasket is not damaged.	Door cannot be secured in closed position.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
103	A	Tunnel Access Door	Inspect for rust and damage.	Door cannot be secured in closed position.
104	A	Power Entry Box (roadside)	Make sure all protective covers for connectors are installed and that the switches are in the OFF position.	
105	A	Commo Panel Cover	Check cover for damage and missing parts.	Cover damaged.
106	A	Commo Panel	Make sure all protective caps are installed on connectors.	
107	A	Hatch	Unlock safety hatch (inside), ensure it opens and closes smoothly	
108	A	Antenna Mount (Roadside)	Check for damage and missing parts.	Hatch will not secure.
109	A	GPFU Control Panel	Check connector and hose, for missing parts and damage.	If damaged.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
111	A	CO Monitor	Check for damage/missing parts.	If damaged.
112	A	Circuit Breaker Panel	Ensure circuit breakers are off. Check RFI seal.	RFI Seal damaged.
113	A	Fire Extinguisher	Check charge on fire extinguisher. If not charged, notify supervisor.	Fire extinguisher not charged.
114	A	Drain Plug	Make sure drain plug is screwed in.	Drain plug cannot be screwed in.
115	A	Seat	Check seat and straps for damage, loose/missing parts.	Seat damaged.
116	A	Panel Assembly	Check that covers are on unused connectors and that all switches are off.	
117	A	Equipment Racks	Check for missing parts and damage.	Missing hardware or damaged
118	A	Interior Lights	Check for missing parts or damage.	Inoperative.
119	A	Shelter (internal)	Inspect for punctures, delamination, dents, and scratches. Inspect for water intrusion.	Punctured, dented, delaminated or water intrusion is detected.

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location		Procedure	Not Fully Mission Capable If:
		Item to Check/ Service			
120	W	Door Assembly		Make sure door operates smoothly without binding. Check for loose/missing parts.	If door cannot be closed.
121	W	Door Handle Assembly		Make sure handle operates smoothly without binding.	If door cannot be secured.
122	W	Rapid Decompression Assembly		Open door and check if rapid decompression assembly RFI filter is damaged.	RFI filter is damaged.
123	W	Air Vent		Open door and make sure air vent door opens and closes smoothly without binding and latches work properly.	Door cannot be closed.
124	W	Air Vent		Check RFI filter for damage.	RFI filter damaged.
125	W	GENSET		Make sure heat shield covers are not torn or damaged. Complete PMCS on GENSET per TM 9-6115-641-10.	If GENSET fails PMCS per TM 9-6115-641-10.
126	W	ECU		Check water protector cover for damage, loose/missing parts. Check for loose/missing hardware.	

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
127	W	Filter Blower Assembly	Remove cover and inspect filters. If dirty, clean with warm soapy water..	Filters dirty.
128	W	Tunnel Access Door	Inspect for rust and check weather gasket for damage.	Door cannot be secured in closed position.
129	W	Power Entry Box (roadside)	Open cover and make sure all protective covers for connectors are installed and that the switches are in the off position.	
130	W	Commo Panel	Make sure all protective caps are installed on connectors.	
131	W	Fire Extinguisher	Check charge on fire extinguisher. If not charged, notify supervisor.	Fire extinguisher not charged.
132	W	Seat	Check for missing parts, seat operation and strap condition.	Hardware missing, straps damaged.

Table 2-1.
 Operator Preventive Maintenance Checks and Services for SICPS Shelter,
 Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
133	M	Shelter (Rear)	Check surface for punctures and scratches.	If punctures are found.
134	M	Data Plates	Check that data plates are not damaged and are readable.	
135	M	Door Weather Seal	Make sure weather seal on door is not damaged.	If damaged gasket prevents closing of the door.
136	M	Door RFI/EMI Seal	Make sure RFI/EMI seal is not damaged.	If RFI/EMI gasket is damaged.
137	M	Door Handle Assembly	Make sure handle operates smoothly without binding.	If door cannot be secured.
138	M	Shelter Handle	Check to see that it is securely attached to shelter.	
139	M	TIP Power Entry Assembly (Roadside)	Make sure cover is not damaged and that the cover can be secured properly.	Damaged cover.
140	M	Ladder	Check for safe physical condition.	

Table 2-1.
 Operator Preventive Maintenance Checks and Services for SICPS Shelter,
 Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location		Procedure	Not Fully Mission Capable If:
		Item to Check/ Service			
141	M	Rapid Decompression Assembly		Remove ladder. Loosen 10 twist-lock bolts on panel and make sure weather gasket is not damaged.	
142	M	Rapid Decompression Assembly		Make sure round rubber gasket is on all twist-lock bolts.	
143	M	TIP Assembly (Curbside)		Make sure cover is not damaged and can be secured properly.	Damaged cover.
144	M	Door Assembly Ground Straps		Make sure ground straps are properly connected and not cut or frayed.	If both ground straps are cut.
145	M	Step Assembly		Check for excessive wear and rust and check to see that all steps can be positioned for climbing.	

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
146	M	Lifting and Towing Brackets	<p>WARNING</p> <p>BE CAREFUL BEFORE CLIMBING ON ROOF OF SHELTER. ALWAYS USE HAND SUPPORTS. PERSONAL INJURY CAN RESULT FROM A FALL.</p> <p>NOTE</p> <p>ITEMS 146-148 ARE ACCOMPLISHED WHILE ON THE TOP (ROOF) OF THE SHELTER.</p> <p>Climb up steps to roof of shelter and make sure that lifting and towing brackets do not have rust and that they rotate freely.</p>	
147	M	Support handle	<p>While on the roof of the shelter, inspect support handle for wear and rust. Check that the handle can be positioned for climbing.</p>	

Table 2-1.
Operator Preventive Maintenance Checks and Services for SICPS Shelter,
Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location		Procedure	Not Fully Mission Capable If:
		Item to Check/ Service			
148	M	Shelter (roof)		Check surface for punctures, delamination, dents and scratches.	If punctures or delamination is found.
149	M	GENSET Door		Make sure door can be secured. Check weather gasket and door for damage.	Door cannot be secured in closed position.
150	M	GENSET		Open door and make sure heat shields covers are not torn or damaged. Complete PMCS on GENSET per TM 9-6115-641-10.	If GENSET fails PMCS per TM 9-6115-641-10.
151	M	Shelter (curbside)		Check surface for punctures, delamination, dents, and scratches.	Punctures and delamination are found.
152	M	ECU		Check water protector cover for damage, loose/missing parts.	
153	M	Shelter (front)		Check surface for punctures, delamination, dents, and scratches.	Punctures or delaminations are found.
154	M	Frame		Inspect frame for damage and rust and ensure no parts are missing.	

Table 2-1.
 Operator Preventive Maintenance Checks and Services for SICPS Shelter,
 Model S-787/G, Type II - Continued

B - BEFORE D - DURING A - AFTER W - WEEKLY M - MONTHLY H - HOURS

Item No.	Interval	Location	Procedure	Not Fully Mission Capable If:
		Item to Check/ Service		
155	M	Tunnel Access Door	Open door and make sure door can be latched in open position and weather gasket is not damaged.	Door cannot be secured in the closed position.
156	M	Commo Panel Cover	Check cover for damage and missing parts.	Cover damaged.
157	M	Commo Panel	Make sure all protective caps are installed on connectors.	Cover cannot be secured
158	M	Hatch	From inside shelter, unlock safety hatch and ensure it opens and closes smoothly.	Hatch cannot be closed.
159	M	Fire Extinguisher	Check charge state of fire extinguisher. If not charged, notify supervisor.	Fire extinguisher not charged.
160	M	Shelter (internal)	Inspect for punctures, delamination, dents, and scratches. Inspect for water intrusion.	Punctures, dents, delaminations or water intrusion is detected.

Section III. OPERATION UNDER USUAL CONDITIONS

2-13. ASSEMBLY AND PREPARATION FOR USE.

a. *Unpacking.* The SICPS shelter does not require any special unpacking instructions, refer to the end item technical manual for additional unpacking instructions.

b. *Assembly.* The only assembly required would be to deploy the ladder when operating in a stationary mode. To deploy the ladder, loosen retaining strap securing ladder to the door assembly and lift ladder off of the stowage brackets. Place ladder hooks in the slotted brackets located below the personnel door to provide access into the SICPS shelter.

c. *Installation Instructions.* Tighten the drain plug, which is loosened for shipment.

d. *Site Preparation.* When operating in a stationary position, observe the following requirements to deploy the RWS:

(1) Look for a fairly level spot (no more than 7° slope) if the antenna mast is to be raised in the shelter mounted configuration.

(2) Watch for power lines, tree branches, or other overhead obstructions that could come in contact with a deployed/extended antenna or mast.

(3) The grounding system can be used in rocky soil, but look for areas with few rocks to make deployment easier.

(4) Obtain an area with sufficient room for the Modular Command Post System (MCPS), if used, and other shelters: The MCPS extension tent requires approximately 15 ft. X 11 ft. at the rear of the shelter. The space required by other SICPS, being deployed in a complex with the RWS (i.e. M-1068 SICPS, Soft-Top SICPS, or 5-Ton) must be taken into account when selecting a deployment site.

(5) Convenient routing of signal/data and power cables.

2-14. INITIAL ADJUSTMENTS.

a. *Routine Checks.* Routine checks include the inspection of the wall panels, roof, floor, and door for missing or loose hardware. Check connectors for damage, or loose/missing hardware. Check the door and vents for a secure fill of locks seals and latches. Surface area checks should include inspection for paint damage, corrosion, cracks and punctures.

b. *Adjustments.* The SICPS shelter is ready for use upon receipt and requires no additional adjustments. Refer to the end item technical (TM 11-7010-260-12&P) and auxiliary equipment manuals for initial adjustments. (See appendix A.)

2-15. OPERATING PROCEDURES.

Refer to the equipment manuals for particular instructions on operating and deploying specific components. (See appendix A.)

2-15.1 OPERATION IN A FIXED LOCATION.

a. Grounding.

WARNING

System grounding must be completed prior to making any external signal or power connections. Failure to correctly deploy a grounding system and connect it securely to the grounding lug on the Power Entry Box may result in severe, personal injury, and/or death, and damage to the equipment.

This procedure consists of the following tasks:

- Determine grounding requirements.
- Select a grounding system.
- Check chassis grounding.
- Installing the grounding system.

(1) Determine Grounding Requirements.

The S-787/G can be powered by either an external power source, the on-board Auxiliary Power Unit (APU), or the vehicle charging system. The requirement to deploy an earth ground depends upon the power source and cables connected to the shelter. Table 2-1 below provides general guidelines for deployment of an earth ground.

TABLE 2-1 GROUNDING DEPLOYMENT REQUIREMENTS

TYPE OF DEPLOYMENT	GROUNDING REQUIREMENT
External generator or commercial power source.	Earth ground required.
Antenna mast raised.	Earth ground required.
Vehicle charging system with connections other than fiber optic to another system or systems.	Earth ground required.
Systems located within 8 ft. of each other.	Earth ground required - Bond strap also required between shelters.
Vehicle charging system/on-board generator with no connections to other systems and no mast raised.	Earth ground not required.

(2) Select a Grounding System

TABLE 2-2 GROUNDING SYSTEM SELECTION

TYPE OF SOIL	QUALITY	GROUND CONDUCTOR
Fine hard-packed sand with high moisture content.	Very Good	Surface Wire Grounding System (SWGS) or ground rod.
Clay, loam, or shale.	Good	SWGS or ground rod.
Clay, loam, or shale mixed with gravel or sand; or gravel, sand, or stone.	Poor	SWGS, large buried metal object, water pipe, ground plate, or ground rod.
Loose gravel or sand surface deeper than 6 inches.	Poor	Large buried metal object, water pipe, ground plate, or ground rod.
Permafrost.	Poor	Ground rod, large buried metal object, waterpipe, or SWGS if ground rods cannot be driven.

CAUTION

Under poor conditions, take special steps to establish and maintain an effective ground. The conductivity of soil can be improved by adding salt and water. Pour the mixture, or water is salt is not available, directly over the ground conductor. Add more water daily to maintain soil conductivity. Remember to clean the conductor upon removal if salt is used.

(3) Check Chassis Grounding.

Check the chassis grounding strap and ensure it is securely connected to the grounding lug on the Power Entry Box and the chassis of the vehicle.

(4) Install the Grounding System.

Deploy whatever ground conductor is appropriate for the soil conditions at your site. Secure grounding strap to grounding lug on the Power Entry Box. If deploying bond strap between shelters (see Table 2-1 for requirements), connect bond strap to grounding lug on each shelter.

b. LAN Connections.

WARNING

Make sure the power is turned off on all components prior to attaching them to the LAN. Failure to observe this precaution may result in serious injury to personnel or damage to equipment.

LAN connections to the RWS SICPS use the following procedures:

- ThinLAN Connections Inside the Shelter.
- Terminating the LAN.
- Limits on LAN Operation.
- Extending a LAN Outside the Shelter.

NOTE

LAN A and B are separate, yet identical networks.

(1). ThinLAN Connections Inside the Shelter.

Computers and other components located in the racks can be connected to the LANs by following the steps outlined below.

- a) Remove the short, portable LAN cable from both “LAN A” connectors on the raceway. Stow the cable.
- b) Connect a LAN cable, long enough to reach the computer unit in the rack, to one of the “LAN A” connectors on the raceway.
- c) Attach a BNC “T” connector to the LAN connector on the back of the computer.
- d) Connect the cable from the raceway connector to one side of the BNC “T” connector.
- e) Connect a second LAN cable to the other end of the BNC “T” connector.
- f) Connect the other end of the cable to the second “LAN A” connector on the raceway.

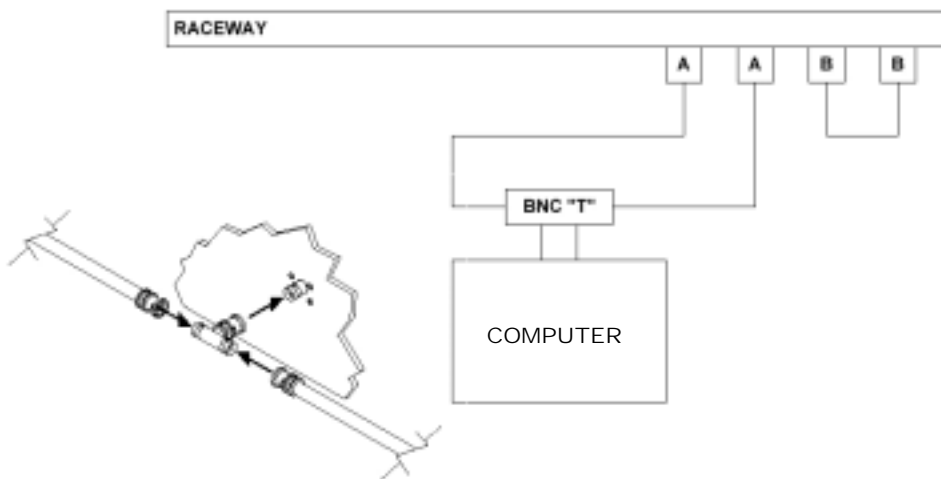


Figure 2-2. LAN Connections

(2). Terminating the LAN.

The BNC dust covers attached to the LAN connectors on the Commo Entry Panel and Tent Interface Panel (TIP) are 50-ohm terminators. They provide the termination required for the LAN to operate, and protect the connectors from dust and moisture.

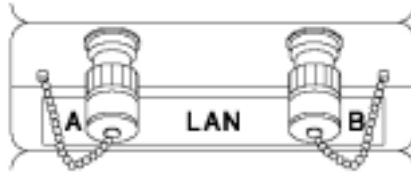


Figure 2-3. Terminating the LAN

(3). Extending a LAN Outside the Shelter.

When planning to extend the LAN to another shelter, keep in mind that the operation of the ThinLAN is limited by cable length and the number of devices connected. The total length of all cables on a ThinLAN system should not be more than 460 meters. Exceeding this limit adds enough resistance to degrade the efficiency of the LAN or cause it to fail. No more than 30 devices should be connected to a LAN. Each device (computer, printer, etc.) connected to the LAN adds resistance to the LAN system. Exceeding the 30-device limit will degrade the efficiency of the LAN or cause it to fail completely. The resistance added to the LAN system by the EMI/RFI/EMP filters in the S-787/G RWS SICPS is equal to 8 devices. This means a RWS SICPS with a computer and a printer attached to the LAN is equal to 10 devices.

The ThinLAN system must be grounded. Single Point LAN Grounding switches are provided for that purpose on the Power Monitor Assembly. When activated, these switches connect the shield on the LAN cables to the grounding system of the shelter in which the switch is activated. This grounds the LAN at a single point and ensures there are no ground loops or voltage flow on the LAN cables. When all the ThinLAN wiring has been connected, activate a ground for each LAN being used in one of the connected shelters using the switches on the Power Monitor Assembly. The indicator light above the switch will illuminate to show the ground is activated. With these things in mind, use the following steps to extend the LAN outside the shelter.

CAUTION

When interconnecting two shelters using the ThinLAN, make sure only one shelter activates the ground switch for LAN A and/or LAN B to avoid interference from ground loops. Failure to observe this precaution may result in serious degradation or total failure of the LAN.

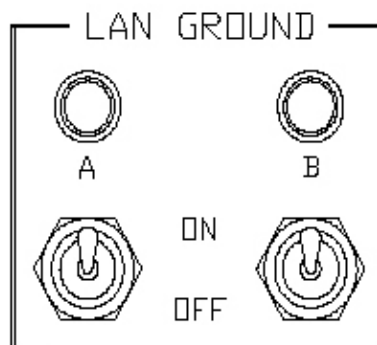


Figure 2-4. Single Point LAN Ground

- a) Remove the 50-ohm terminator cover on the Commo Entry Panel or TIP connector and attach the LAN cable from either remote equipment or another shelter.
- b) Ensure the LAN is terminated at both ends.
- c) Apply a ground to the LAN.

c. Connect Signal Data Cables/Wire.

Procedures for connecting signal data cables/wire are:

- Connect 26-pair Cable.
- Connect Field Wire.
- Connect RF Cable.
- Install Patch Cords on Signal Patch Panel.
- Extend Remote Full Function Crew Station (FFCS).

(1). Connect 26-pair Cable.

- a) Remove the cable hock dust cover(s) on the Commo Entry Panel by turning the receptacle lock ring counter-clockwise and pulling the front cover forward and off.
- b) Remove the protective cover from the 26-pair cable.
- c) Place the cable connector on the receptacle. Be sure the connector is positioned squarely on the receptacle.
- d) Press the connector into the receptacle.
- e) Grasp the locking ring on the 26-pair cable and turn it clockwise until the lower end of the connector is secured.
- f) Turn the Commo Entry Panel receptacle lock ring clockwise until the upper end of the connector is secured.

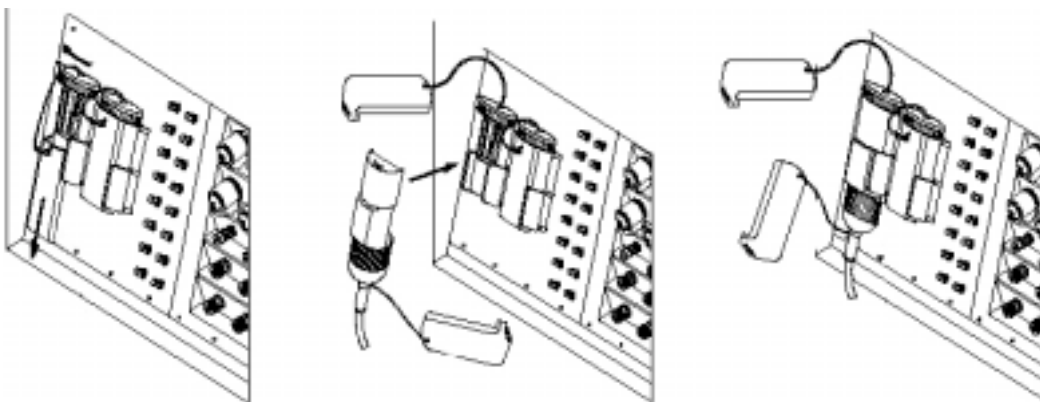


Figure 2-5. 26-Pair Cable Hock Connections

(2). Connect Field Wire.

Connect field wire pairs to one or more of the binding posts on the Commo Entry Panel, (located next to the roadside generator tunnel) as follows:

- a) Strip approx. 3/4" insulation from the end of each field wire to be connected.
- b) Depress the binding post to open the slot.
- c) Insert the stripped portion of the field wire in the open slot.
- d) Release the binding post. Check for a secure lock on the wire.

(3). Connect RF Cable.

- a) Twist caps counterclockwise to remove connector covers on the Commo Entry Panel.
- b) Remove connector covers on the end of the RF cable.
- c) Insert the connector at one end of the RF cable (the connectors at both ends are the same on this cable) into the connector on the Signal Entry Panel and turn the sleeve clockwise until it is finger tight.

(4). Install Patch Cords on Signal Patch Panel.

As an example, a connection at the Signal Patch Panel between curbside data pair 1 and pair 1 of the 26-pair cable hock will be described.

- a) Insert one end of the patch cord into either the top or bottom (they are parallel) jack of CURBSIDE RACEWAY 1.
- b) Insert the other end of the cord into the top or bottom jack of 26-PAIR CABLE HOCK 1.

(5). Install/Extend Remote Full Function Crew Station (FFCS).

- a) Disconnect Shorting Plug (1) by unscrewing from external shelter connector.
- b) Connect P3 (2) of branched cable to external vehicle connector.
- c) Connect P2 (3) of branched cable to connector of remote FFCS (4).
- d) Connect P1 (5) of branched cable to connector of remote FFCS.

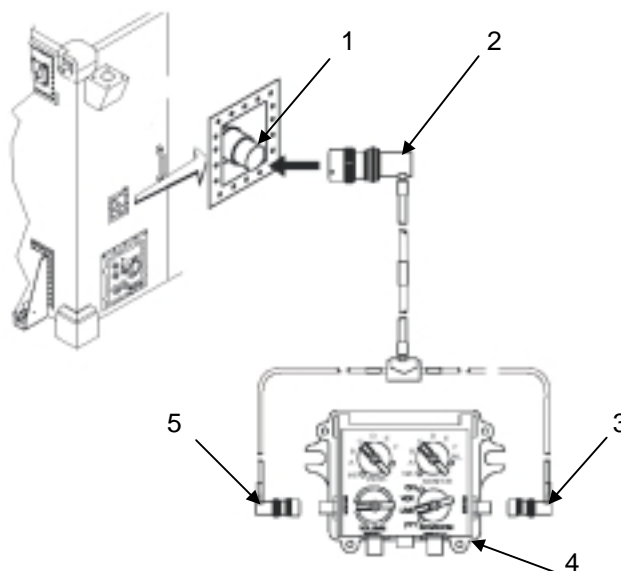


Figure 2-6. Remote FFCS

d. Power Connections.

WARNING

Do not connect or disconnect the external AC power cable from the shelter or the pigtail cable until you verify that the generator or any other power source has been turned off. Accidental contact with 115 Vac can cause severe injury or death.

The power connection procedures include:

- Connecting AC Power
- Connecting DC Power

(1) Connecting AC Power.

WARNING

Only a qualified power specialist should connect the shelter to a commercial power source. Generator power connections should only be performed by licensed generator operators.

a) Ensure a grounding system (chassis and earth ground) is securely attached to the ground stud on the Power Entry Box.

b) Have the licensed generator operator or qualified power specialist connect the pigtail cable to the power source.

c) Connect the primary power cable to the end of the pigtail cable. This will allow the shelter to be located approximately 50 ft. from the power source.

d) Connect the other end of the 50 ft. primary power cable to the "Import Power" connector on the Power Entry Box.

(2) Connecting DC Power.

Ensure the NATO Slave cable is properly attached to the DC Connector Panel on the shelter and the DC connector in the curbside rear footwell of the M-1097.

e. Power Up the Shelter.

The procedures for powering up the S-787/G include:

- Power up using an imported power source.
- Power up using the APU.

(1) Imported Power Source

- a) Check to ensure grounding system (chassis and earth ground) is securely attached to the ground stud (3) on the Power Entry Box.
- b) Check to ensure the power cable is securely connected at the EXTERNAL POWER IN connector (1).
- c) Push in the 90 Amp EXTERNAL POWER BREAKER (2).

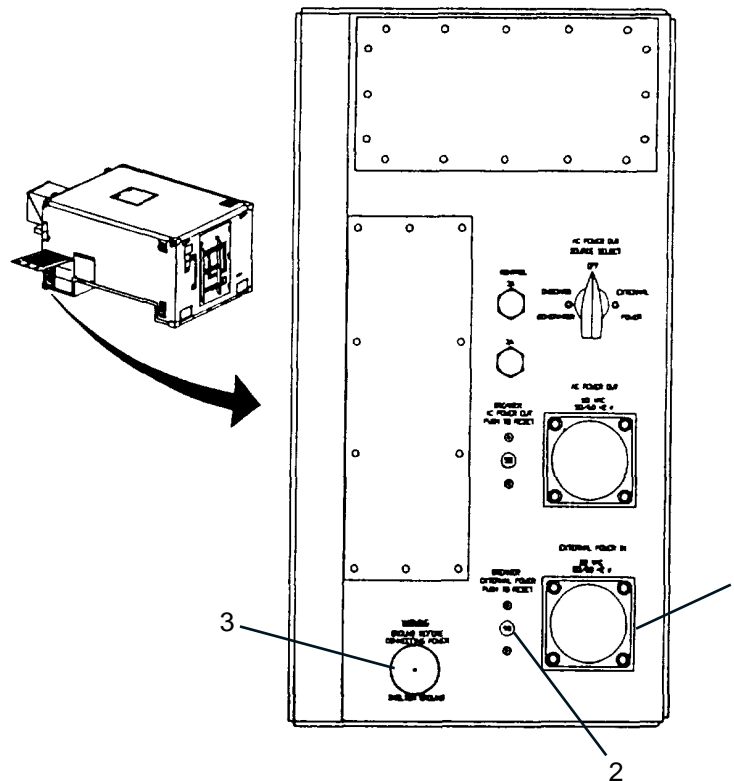


Figure 2-7. Import Power Connection

- d) Move to the Power Monitor Assembly (see Figure 2-8, next page) inside the shelter and push in the 200 Amp DC MAIN circuit breaker (9) on the DC CIRCUITS panel. Push in the other DC CBs according to your SOP (e.g., some units use only one UPS, so UPS 2 would not be pushed in).
- e) Turn on the DC LIGHTS switch (7) at the AC CIRCUITS panel.
- f) The EXTERNAL POWER indicator lamp on the AC CIRCUITS panel should already be illuminated. Flip down the METER SELECT switch (4) on the AC CIRCUITS panel to EXTERNAL POWER. Look at the AC Volts meter on the AC CIRCUITS panel to ensure the voltage is at 115 Vac. Follow troubleshooting procedures if power is not correct.
- g) Set the AC KILL switch (5) to AC.
- h) Push in the 60 Amp AC MAIN circuit breaker (6).
- i) Turn on the AC LIGHTS (8) at the AC CIRCUITS panel.
- j) Push in the other seven breaker/switches on the AC CIRCUITS panel according to your SOP.

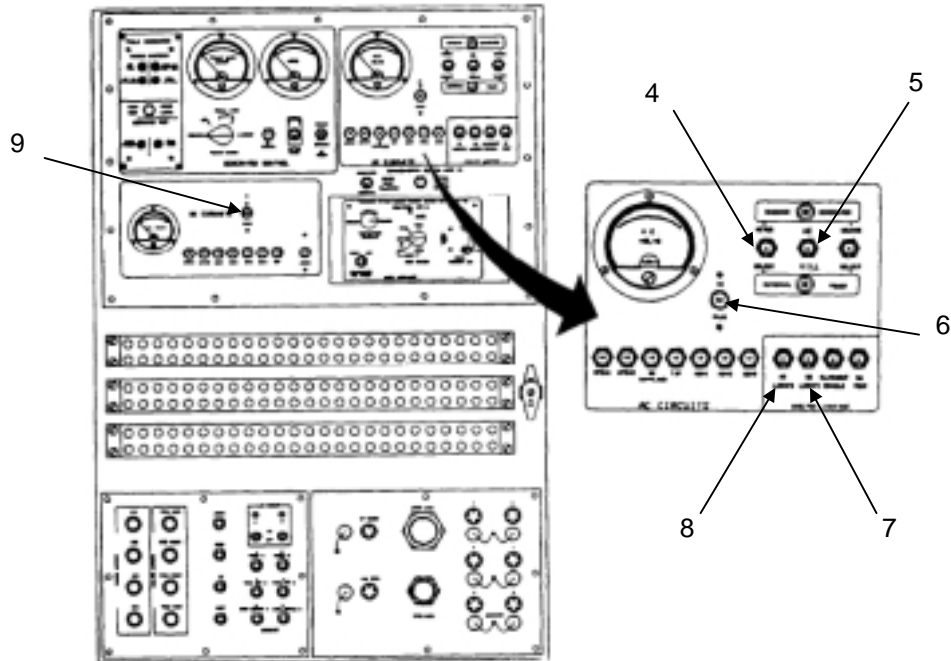


Figure 2-8. AC Circuits Panel

AC import power is now present throughout the shelter. DC power from the power supplies is available at all the DC outlets and is supplying a trickle charge to the vehicle batteries through the NATO slave cable. The UPS 1 and UPS 2 units (if used) can now be turned on and power applied to the mission equipment as specified in your unit SOP.

(2) Auxiliary Power Unit.

- a) Ensure the NATO slave cable is attached at the shelter front (1).
- b) Ensure there is fuel in the vehicle.
- c) Perform required checks and services on the APU (2) as outlined in the PMCS table.
- d) Secure the APU in the tunnel and attach the generator exhaust hose. Route hose away from personnel areas.

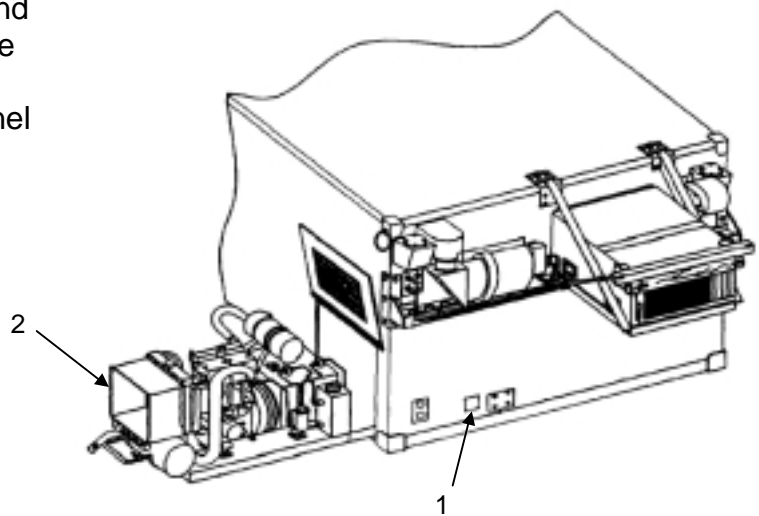


Figure 2-9. Auxiliary Power Unit

e) Check the chassis ground cable and, if earth ground is required, the grounding system for secure connection to the grounding lug (3) on the Power Entry Box.

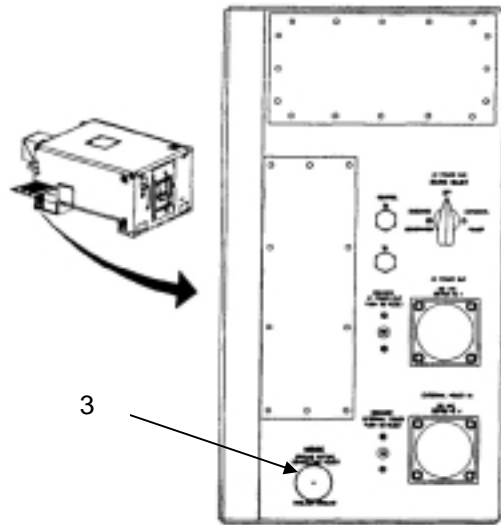


Figure 2-10. Grounding Lug

f) Move to the Power Monitor Assembly inside the shelter and push in the 200 Amp DC MAIN circuit breaker (5) on the DC CIRCUITS panel. Push the other DC CBs in according to your SOP (e.g. some units use only one UPS, so UPS2 would not be pushed in).

g) Turn on the DC LIGHTS switch (4) at the AC CIRCUITS panel.

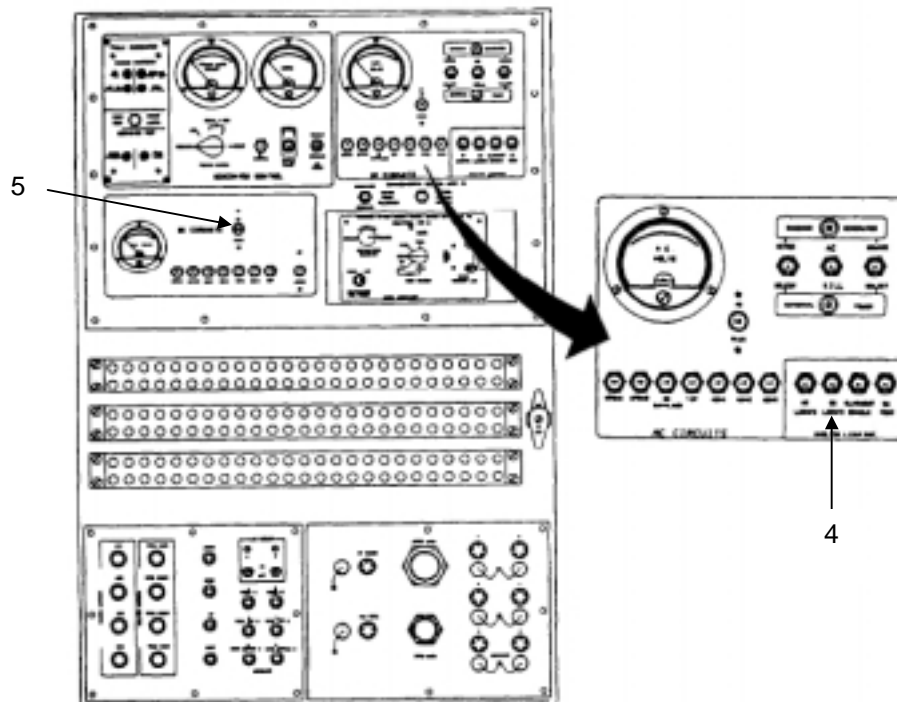


Figure 2-11. DC Main and DC Lights

h) Push in the 10 Amp DC CONTROL breaker (6) on the GENERATOR CONTROL panel.

i) Move the MASTER SWITCH (8) on the GENERATOR CONTROL panel down to the PREHEAT position and hold it there for approximately 10 seconds.

j) Move the switch over to the START position and hold it there until the generator engine starts, then release it.

k) Allow the generator engine to warm up for a few minutes and then move the AC POWER switch (7) on the GENERATOR CONTROL panel to the ENABLE position. The ONBOARD GENERATOR power indicator lamp (9) (Figure 2-13) on the AC CIRCUITS panel should illuminate.

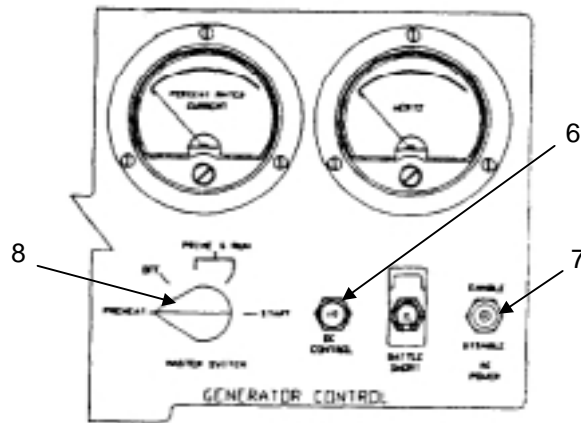


Figure 2-12. Generator Control Panel

l) Set the METER SELECT switch (14) on the AC CIRCUITS Panel to the ON BOARD position.

m) Check the AC VOLTS meter (13) to ensure the voltage is at 115 Vac. If it is not, follow troubleshooting procedures.

n) Set the SOURCE SELECT switch (10) to the ON BOARD position.

o) Set the AC KILL switch (11) to the AC position.

p) Push in the 60 Amp AC MAIN breaker (12) on the AC CIRCUITS panel.

q) Push in the other breakers on the AC CIRCUITS panel according to your SOP.

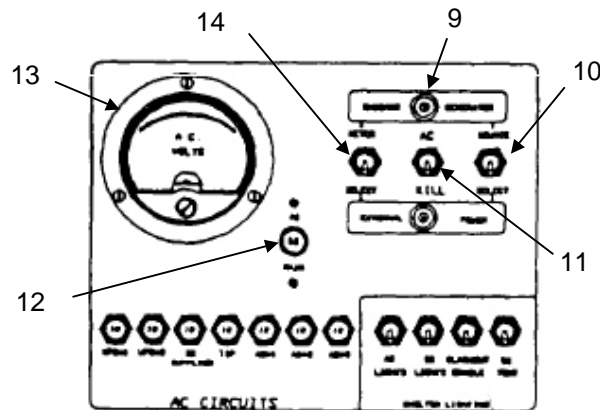


Figure 2-13. AC Circuits Panel

AC power from the on-board APU is now present throughout the shelter and DC power from the power supplies is available at all the DC outlets. The UPS 1 and UPS 2 units can now be turned on and power applied to the mission equipment as specified in your unit SOP.

f. Extending Power to Another Shelter.

Imported power or APU generated power can be extended (daisy-chained) to another shelter or system using the AC Power Out connector on the Power Entry Box. The procedures for extending power to another shelter or system are listed below.

CAUTION

The onboard generator supplies 5kW of power. When extending power to another shelter or system, consider the total load on the power source. Use proper power management procedures. Failure to observe this caution may result in a loss of power to your shelter and others.

(1). Ensure a proper grounding system is deployed for both shelters and a bond strap is deployed between them if the shelters are eight feet or less apart.

(2). Ensure the AC POWER OUT SOURCE SELECT switch on the Power Entry Box is in the OFF (up) position.

(3). Connect the power cable from the other shelter/system to the AC POWER OUT connector on the Power Entry Box, and push in the AC POWER OUT 10 Amp CB.

(4). Connect the other end of the power cable to the Power Entry Box on the other shelter/system.

(5). Move the AC POWER OUT SOURCE SELECT switch to either the ON BOARD GENERATOR position, to select power from your APU, or the EXTERNAL POWER position, to select power your shelter is receiving from an external power source.

AC power is now being provided to the other shelter/system.

g. Environmental Controls Operation.

When the door is closed, always provide a source of fresh air inside the shelter either through the GPFU or the DC Vent. The following items may be utilized depending on the current environmental conditions.

- Environmental Control Unit (ECU)
- Filter Blower Assembly
- CO Monitor

(1) Environmental Control Unit (ECU)

For information beyond what is provided here, refer to TM 5-4120-378-14, Operator, Organizational, Direct Support, and General Support Maintenance Manual for Air Conditioner Horizontal, Compact, 9,000 BTU/HR. The ECU does not bring in fresh air to the shelter, it only re-circulates and conditions the air inside the shelter.

- a) Perform PMCS on ECU.
- b) Ensure the 1 Amp CONTROL CIRCUIT BREAKER (2) is pushed in at the ENVIRONMENTAL CONTROL UNIT #1 panel.
- c) Ensure the ECU circuit breaker at the Circuit Breaker Box located on curbside of shelter is on. Make sure the box is resealed to retain EMI/RFI integrity inside the shelter.
- d) If two power sources are available, the ECU may utilize a power source independent of the power source utilized by the rest of the shelter. Select either Generator or External source power with the SOURCE POWER SELECTION switch (1).
- e) Push the COMPR CIRCUIT BKR (3) to ON.
- f) Move the MODE SELECTOR switch (4) to HEAT, VENT, or COOL as needed.
- g) Select HIGH or LOW EVAPORATOR FAN SPEED (5) as desired.
- h) Move the TEMPERATURE SELECTOR to COOLER or WARMER (6) as needed.

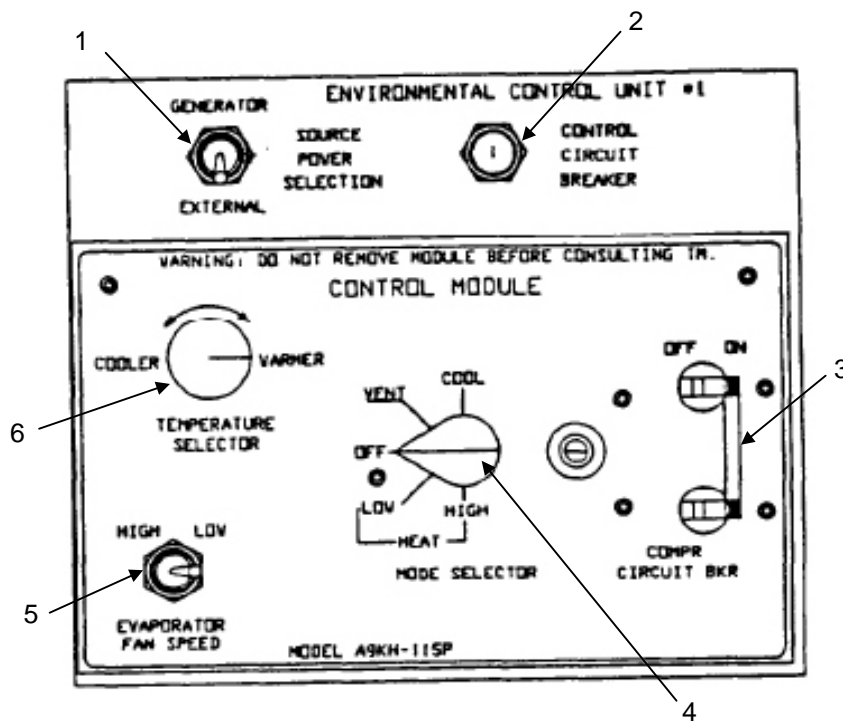


Figure 2-14. ECU Control Panel

(2) Filter Blower Assembly

The Filter Blower Assembly (DC Vent) is utilized in a non-NBC environment. It may not be used with the GPFU. To operate the vent, use the following steps.

- a) Perform PMCS on Filter Blower Assembly.
- b) Open the vent by twisting and pulling out the DC Vent Operating Lever (2). Ensure the DC Vent switch is ON at the AC CIRCUITS panel (1).
- c) Open the Circuit Breaker Box (3) and turn on the breaker for the DC Vent. Close the box and secure it with the retaining screws.

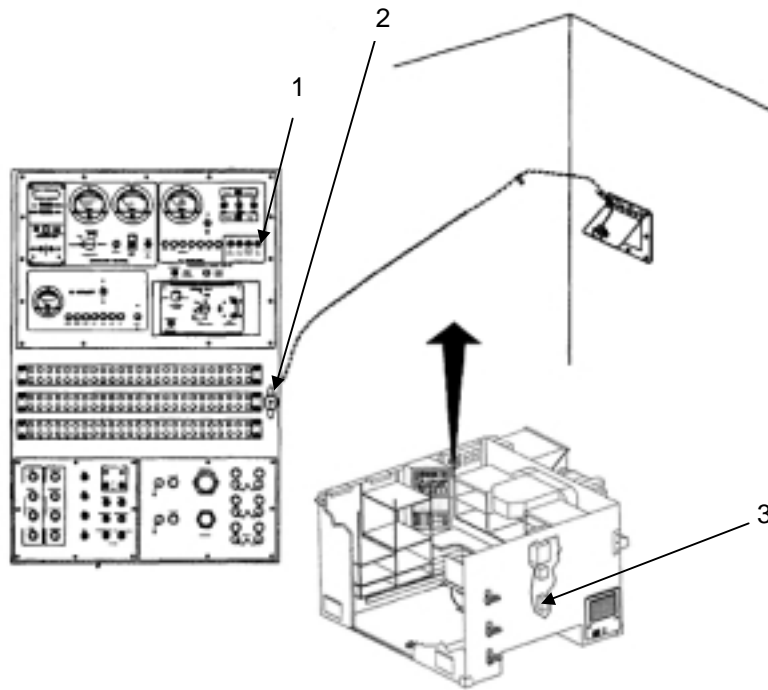


Figure 2-15. DC Vent

(3) CO Monitor

The CO Monitor (1) should be utilized at all times. It is very loud when it initializes. To operate the monitor, simply plug it into the curbside outlet labeled CO Monitor. Ensure AC CB #2 is set (pushed in).

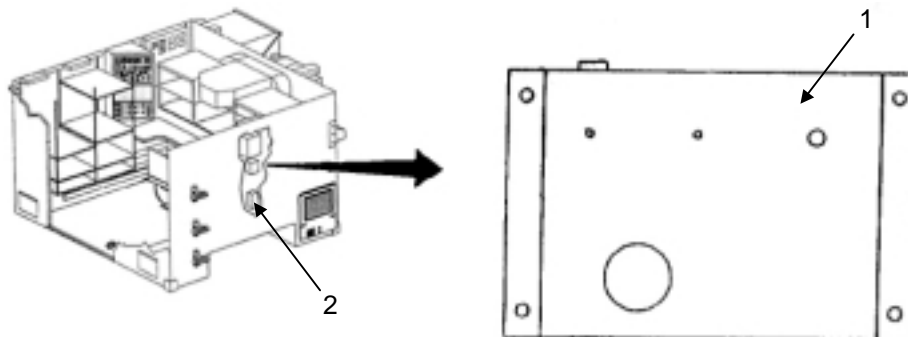


Figure 2-16. CO Monitor

h. Deploy the Modular Command Post System (MCPS).

The MCPS extension tent provides additional workspace to the command post. It can be attached to the rear of the shelter with the shelter boot wall. The tent can be erected by two trained people in approximately 15 minutes. It is stowed in three canvas transport cases, two for canvas and one for frame components. Specific information on the tent and other MCPS components can be found in TM 10-5410-229-13&P.

2.15.2 OPERATION ON THE MOVE

WARNING

During movement, the operator sitting inside the shelter may experience motion sickness. The vehicle's driver must ensure constant voice contact with the operator inside the shelter and be prepared to stop the vehicle if the operator experiences extreme nausea. Failure to heed this warning may result in personal injury.

WARNING

- Only one person may be inside the shelter during movement.
- The operator inside the shelter must be in contact with the driver and/or passenger at all times using the VIS.
- The operator must be seated in the approved seat with the seatbelt securely fastened before the driver moves the vehicle.
- Any action that requires operator movement beyond the limits of the seatbelt will take place after the driver has brought the vehicle to a complete halt.
- The seat must remain locked in the forward-facing position during movement.
- Seat position (up/down forward/back) should not be changed during movement.
- The emergency hatch must remain closed and secured.
- The fire extinguisher must be checked before movement and be within easy reach of the operator during movement.
- All components that will be used during movement should be turned on and setup for operation prior to movement.
- No loose components may be stored/transported inside the shelter during movement.
- All equipment in the shelter should be double checked prior to movement to ensure everything is properly secured in position.

Failure to comply with all the requirements in this warning may result in serious personal injury and/or death.

CAUTION

Monitor fuel levels at all times, especially during operation on the move, as the generator is using the fuel from the vehicle's fuel tank. Failure to observe this caution may result in equipment failure.

Use the following steps to prepare the shelter for operation on the move.

- a. Ensure the NATO slave cable is attached at the front of the shelter.
- b. Perform all required PMCS on the APU, and environmental components to be used.
- c. Secure the APU in the tunnel.
- d. Check the vehicle chassis ground cable for a secure connection to the grounding lug on the Power Entry Box.
- e. Ensure external power supply is powered down, and all external power and signal/data connections are removed. Recover and stow any external cables. Recover any ancillary equipment such as the antenna mast or tent.
- f. Move to the Power Monitor Panel inside the shelter and push in the 200 Amp DC MAIN breaker/switch on the DC CIRCUITS panel.
- g. Push in the 10 Amp DC LIGHTS breaker/switch on the SHELTER LIGHTING panel.
- h. Move the MASTER SWITCH on the GENERATOR CONTROL panel to the PREHEAT position for approximately 10 seconds.
- i. Move the MASTER SWITCH to the START position and hold it there until the generator engine starts. When you release the switch it will stay in the PRIME & RUN position.
- j. Allow the generator engine to warm up for a few minutes and then move the AC POWER switch on the GENERATOR CONTROL panel to the ENABLE position. The ON BOARD power indicator lamp should illuminate.
- k. Set the METER SELECT switch on the AC CIRCUITS panel to the ON BOARD GENERATOR position.
- l. Check the AC VOLTS meter on the GENERATOR CONTROL panel to ensure the voltage is at 115 Vac. If it is not, follow troubleshooting procedures.
- m. Set the SOURCE SELECT switch on the AC CIRCUITS panel to the ON BOARD GENERATOR position.
- n. Set the AC KILL switch on the AC CIRCUITS panel to the AC (up) position. If the CO Monitor is plugged in and AC CB#2 is left on, the monitor will power up at this time.
- o. Power up all mission components according to your SOP that will be required during movement.
- p. Turn on the ECU, DC Vent or GPFU as required by environmental conditions.
- q. Stow all loose components and ensure all racks, shelves, mounts, and components inside the shelter are secure and ready for movement.
- r. Check the Fire Extinguisher to ensure it is charged and accessible to the operator.
- s. Check the VIS to ensure remote operation of the radios and communication between the operator, the driver, and the passenger.
- t. Secure the operator's chair in the forward facing position, make final seat adjustments (up/down/backwards/forward), and check to ensure the operator's seat belt is securely fastened.
- u. Close the shelter door.
- v. Secure the ladder in the transport position.
- w. Use the VIS again to confirm proper communication between driver and operator.

The shelter is now ready for operation on the move.

2-16. PREPARATION FOR MOVEMENT. The SICPS shelter is designed for operation on the move. To prepare for that mode of operation, follow the procedures outlined above. However, to simply move from a stationary site without operating on the move, the following instructions detail the procedures for preparing for a movement. Refer to the end item technical manual for any other requirements necessary for movement.

- a. Refer to the end item technical manual (TM 11-7010-260-12P) or item-specific TMs for shutdown procedures for the mission equipment (radios, computers, UPS, etc.).
- b. Turn off the environmental controls. Ensure the circuit breakers inside the Circuit Breaker Box are off also.
- c. Turn off the AC LIGHTS.
- d. Turn off AC MAIN circuit breaker (this will turn off power to the AC sub-breakers).
- e. Turn off primary power source using step (1) below for an external source or step (2) for the onboard generator.
 - (1) Shut down external power source and disconnect the external power cable from the Power Entry Box Assembly EXTERNAL POWER IN connector.
 - (2) Place AC/KILL switch to KILL position and MASTER SWITCH to OFF position.
- f. Turn off the DC MAIN circuit breaker (this will turn off power to the DC sub-breakers).
- g. Recover and stow all external equipment (tent, antennae, cables, etc.).

WARNING

Extremely hot temperatures exist. Allow exhaust hose to cool before removing.

- h. Remove exhaust hose extension and secure in shelter.
- i. Disconnect the ground wire from the ground lug on the Power Entry Box Assembly. Recover grounding system and stow it according to your SOP.
- j. Disconnect the NATO slave cable at the front of the shelter.
- k. Close the door, lift ladder off of the bracket and place hooks in the slotted stowage bracket on the personnel access door. Secure ladder in place using the retaining strap.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-17. UNUSUAL ENVIRONMENT/WEATHER.

CAUTION

The possibility of static discharge increases significantly in extremely dry or cold climates.

The S-787/G RWS SICPS will operate in unusual environmental and weather conditions. These conditions include:

- Arctic Climates.
- Tropical Climates.
- Desert Climates.
- NBC Environments.

a. Arctic Climates.

Subzero temperatures and climatic conditions associated with cold weather affect the efficient operation of the equipment. Follow the instructions and precautions below for operation under such conditions.

(1) Keep the equipment warm and dry. Do not operate the equipment outside environmental limits.

(2) After the equipment has been exposed to the cold and is moved into a warm environment, moisture will collect on the unit; this may cause a change in operating characteristics. Dry the external surfaces of the equipment. Do not use the equipment until it is thoroughly dry.

b. Tropical Climates.

High relative humidity causes condensation to form on data processing equipment whenever the temperature of the unit is lower than that of surrounding air. To minimize this condition, provide as much ventilation as possible. Dry the external surfaces of the equipment. Do not use the equipment until it is thoroughly dry.

c. Desert Climates.

Sand, dust, or dirt may enter and damage equipment when operating in desert climates. Keep the unit as free from dust as possible. Make frequent preventive maintenance checks. Those components, which do not require lubrication, should be kept free from oil and grease.

d. Nuclear Biological Chemical (NBC) Environments.

The Gas Particulate Filter Unit (GPFU) provides fresh filtered air to the shelter interior in an NBC environment by maintaining an "overpressure" condition inside the shelter. This allows clean air from the shelter to escape and keeps contaminated air out in the event of an air leak. GPFU operation is controlled by the ON/OFF switch located on the GPFU Master Control Module mounted in the curbside of the shelter. To operate the GPFU, use the following steps.

- (1) Close and secure the shelter door and escape hatch.
- (2) Ensure the DC Vent Fan switch (1) is OFF at the AC CIRCUITS panel and close the vent by twisting and pushing in the DC Vent Operating Lever (2). Make sure the vent door is not obstructed by cables and is closed securely.

(3) Open the Circuit Breaker Box (4) and turn on the breaker for the GPFU. Close the box and secure it with the retaining screws.

(4) Move the switch (3) on the GPFU control panel to the ON position.

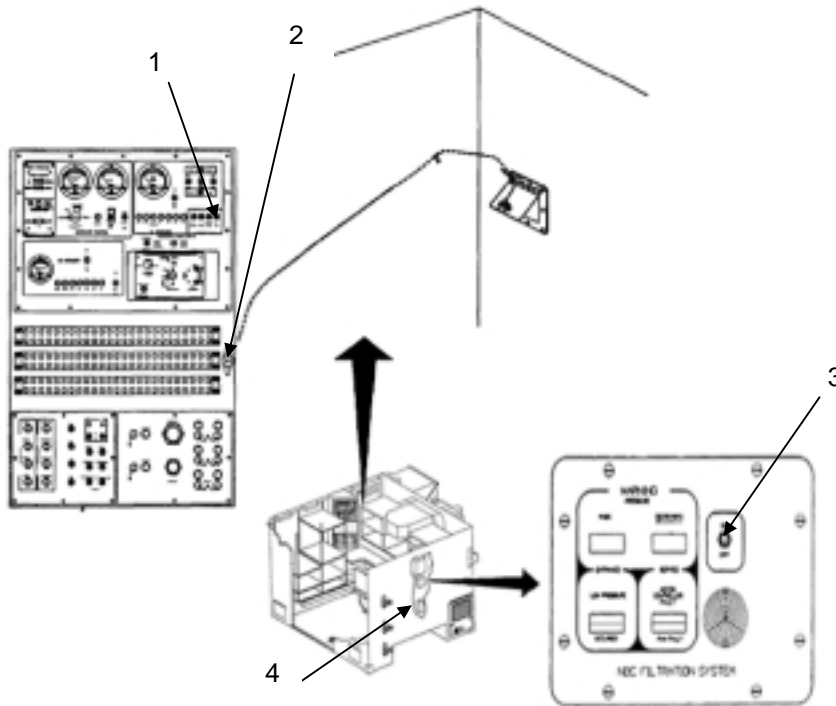


Figure 2-18. GPFU Operation

At this time, the audible alarm on the GPFU will sound and the DECREASING and MASK indicators will illuminate. After a few seconds, the DECREASING indicator will sequence down and both indicators will return to normal. If the unit has not been used recently, the audible alarm may continue to sound for up to one minute before it shuts off. If the alarm continues to sound, check the DC Vent. The sensor from the GPFU attached to the vent door is very sensitive. Twisting and pushing the operating lever should silence the alarm.

2-18. FORDING AND SWIMMING. Refer to TM 9-2320-280-10, Operator's Manual for M-1097 Utility Truck (HMMWV).

2-19. EMERGENCY PROCEDURES.

When import and APU power are unavailable, mission essential components in the S-787/G RWS SICPS can be operated by using power from the M-1097 charging system.

a. Emergency Power Up Procedures.**WARNING**

If shelter is closed, fresh air must be provided to the operator at all times.

CAUTION

The M1097 is equipped with a 200 Amp charging system that can be used to charge the vehicle's batteries. The batteries then provide 24 Vdc to the shelter. The AC lights, GPFU, and ECU cannot be operated in this configuration. To avoid overloading the vehicle charging system and the UPS unit(s), only mission-essential equipment should be operated.

(1). Ensure that the NATO slave connector inside the vehicle crew cab is properly connected to the DC Connector Panel.

CAUTION

Take care not to empty the fuel tank when powering the system with the vehicle.

(2). Start the HMMWV engine. When the engine has stabilized and reached operating temperature, set the hand throttle at a high idle. When equipment is operating in the shelter, the vehicle must be running if it is the only power source.

(3). Ensure that the DC MAIN circuit breaker on the DC Circuits Panel (Shelter Management Panel) is pushed in.

(4). Check the DC voltmeter to ensure 24 Vdc is being supplied.

(5). Turn on the UPS. Ensure the CIRCUIT BREAKER switch is on and amber EXT DC light is lit. AC power from the UPS is now available for operating systems.

b. Emergency Power Down Procedures.

Perform an EMERGENCY Power Down as follows:

(1) Move the AC KILL switch on the AC CIRCUITS Control panel to the *KILL* position.

(2) Pull out the DC MAIN circuit breaker on the DC CIRCUITS Control Panel.

(3) Set the MASTER SWITCH to off on the generator control panel.

(4) Turn the UPS off.

(5) Get out of the shelter.

(6) Disconnect the NATO slave cable from the DC Connector Panel.

(7) Disconnect the AC power connector from the Power Entry Panel.

(8) Contact unit level maintenance.

c. Punctures or damages which allow water intrusion and results in the breakdown of the RFI/EMI integrity shall be patched immediately. In an emergency, any kind of tape or water resistant material may be used to cover a puncture or a large hole. Temporary patches must be replaced with permanent patches as soon as possible.

2-20. NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION.

NOTE

Contaminants are NBC agents that have been formulated to kill or to incapacitate human beings.

a. Contaminants may be absorbed on the shelter by certain materials such as paints and lubricants, on exposed surfaces, and retained in crevices, seams, concaves, and even horizontal surfaces of the shelter. They may also be absorbed by dust, mud, or vegetation which may adhere to the shelter or vehicle's surfaces. They can be transferred to personnel by direct contact, through vaporization and subsequent inhalation, ingestion or infusion.

b. The actual time that the shelter remains contaminated and poses a threat to personnel depends upon the properties of the agent, the duration of exposure of the shelter to the agent, the amount of agent remaining with the shelter after exposure, and environmental conditions.

c. Decontaminants are substances whose purpose is to detoxify, physically remove, seal, or otherwise make harmless a contaminant. Among the most effective decontaminants, particularly for chemical agents, are time and isolation. However, time and isolation require that the shelter be removed from service for an indefinite period. Rather than rely upon natural processes, it is recommended that a decontaminant substance such as water or steam be used to decontaminate the shelter. The attached listing identifies other decontaminants. Under all circumstances, notify your supervisor before decontaminating your shelter.

Table 2-2. Decontaminants for NBC Agents¹

Decontaminant	Remarks
Acetylene tetrachloride	Attacks metals in presence of moisture.
Air/Heat	Evaporates, dissipates agent.
Alcohol	Removes, does not neutralize.
Ammonia	
ASH (Activated Solution of Hypochlorite)	
Baking Soda	
Bleach	Corrosive to metals.
Carbon tetrachloride	Removes, does not neutralize.
Caustic potash	
Caustic potash, alcoholic	
Caustic soda	Corrosive to metal; damages cotton, wool.
Caustic soda, alcoholic	
Charcoal slurry	Absorbs, does not destroy.
Chlormide powder	
Chloramine – B	Used in M258 Personal Decon Kit.
Chloramine - T	
Chloride	

Table 2-2. Decontaminants for NBC Agents¹ (Continued)

Decontaminant	Remarks
Detergent solution	Any liquid detergent and water.
Detrochlorite	Very corrosive to metals.
Dichloramine – T	
Diesel Fuel	Removes, does not neutralize.
Dry - cleaning fluid	Removes, does not neutralize.
DS-2 (Standard Vehicle Decontaminant)	Promotes corrosion of metals, paint, deteriorates most organic removes most acrylic or alkyd material, optical lenses.
Ethylene oxide – fluorinated	
Gunk	Gunk in kerosene, added to water. Removes, does not neutralize.
HTH (high-test bleach)	Highly corrosive to metals.
Naphtha	Removes, does not neutralize.
PCE	Removes, does not neutralize.
Soap solution	Preferably lye soap and water.
Sodium bisulfate solution	
Steam	Hydrolyzes some agents.
Washing soda	
Water	Removes, does not neutralize.

¹ These decontaminants may be used against chemical and/or biological agents, as appropriate. They do not reduce the radiation hazard of nuclear agents. Such agents must be removed and disposed of or shielded until natural decay reduces the hazard level.

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**CHAPTER 3
UNIT MAINTENANCE INSTRUCTIONS**

Section I. LUBRICATION INSTRUCTIONS

3-1. LUBRICATION INSTRUCTIONS. Lubricate door hinges, latches and locking mechanisms, door brace assemblies, roof access steps, and lifting and towing bracket assemblies to prevent rust and corrosion. Lubricate these parts frequently to be sure they are adequately lubricated. Lubricate with solid film lubricant, MIL-L-23398 (Item 18, Appendix E). Reference TM-9-61 15-641-10 and Lubrication Order (LO) 9-6115-641-12 for lubrication of the GENSET.

**Section II. REPAIR PARTS, TOOLS, SPECIAL TOOLS, TEST
MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT
EQUIPMENT**

3-2. TOOLS AND EQUIPMENT. A list of common tools and tool kits may be found in Section III of Appendix B, Maintenance Allocation Chart. For authorized common tools and equipment, refer to the Modified Table of Organizational and Equipment (MTOE) applicable to your unit. No special tools or equipment are required to support the SICPS shelter.

3-3. REPAIR PARTS. Repair parts for unit maintenance are listed and illustrated in TM 10-5411-222-24P, Repair Parts and Special Tools List (RPSTL) Manual.

Section III. SERVICE UPON RECEIPT

3-4. SERVICE UPON RECEIPT OF SHELTER. Inspect shelter for damage incurred during shipment. If the shelter has been damaged, report the damage in accordance with the instructions in the Warranty Technical Bulletin, TB 10-5411-224-24. Tighten the drain plug (figure 3-1) located inside of the shelter.

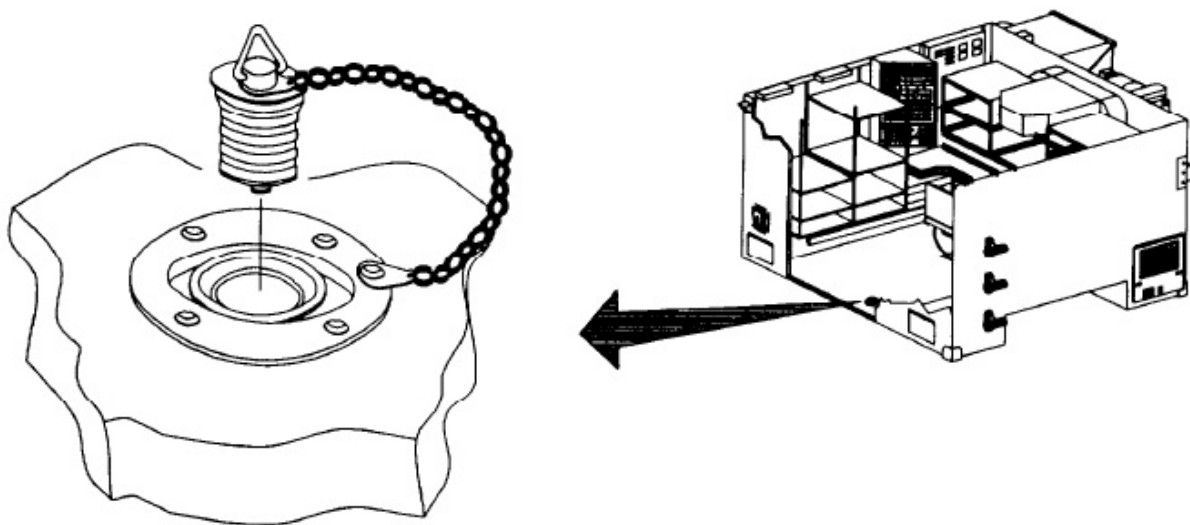


Figure 3-1. Drain Plug

Section IV. MAINTENANCE PROCEDURES

3-5. GENERAL. The SICPS shelter contains sensitive electronic equipment that is not easily removed. Unit level maintenance and repair will primarily involve the removal and replacement of components and assemblies which are easily accessible.

WARNING

When working on the SICPS shelter, do not operate electronic equipment when floors, ceilings, or walls show evidence of water intrusion. Electrical shock can cause personal injury or death.

3-6. AUXILIARY EQUIPMENT.

a. GENSET, Reference TM 9-6115-641 -10, TM 9-6115-641 -24, and TM 9-2815-252-24 for malfunctions and maintenance instructions on the GENSET and Fault Indicator Panel.

NOTE

The Fault Indicator Panel located on the Power Monitor Faceplate protects the GENSET against potential hazardous faults and provides a visual indication of faults associated with the engine (e.g., low oil, engine hot, overvoltage). Activation of any of the faults identified on the Fault Indicator Panel will cause the ac interrupter relay (K3) on the Relay Panel to deenergize, the generator to shutdown, and a fault indicator lamp to light. To reset the fault, push the PUSH TEST & RESET LAMPS switch on the Fault Indicator Panel and move the master switch to OFF. The fault must be corrected before any attempt is made to restart the GENSET.

b. GPFU, Reference TM 3-4240-325-20&P, TM 3-4240-302-30&P-8, and TM 3-4240-302-30&P-7 for malfunctions and maintenance instructions on the GPFU, GPFU Control Panel, and GPFU centrifugal fan.

c. ECU, Reference TM 5-4120-378-14 for malfunctions and maintenance instructions on the ECU and its control panel.

3-7. REPAIR PROCEDURES. General repair procedures apply for the removal of components and assemblies associated with the SICPS shelter. No attempt has been made to identify removal and replacement procedures for all components and assemblies.

3-8. TOUCH-UP PAINTING. When required to prevent rust and corrosion, touch-up painting of small areas (damaged or chipped paint) is authorized at the unit level and should be accomplished in accordance with TM 43-0139. Under all circumstances, safety instructions for the use of CARC paint shall apply. If large areas of painting are required, notify your supervisor.

3-9. DOOR ASSEMBLY.

This task covers: a. Replace b. Adjust

INITIAL SETUPTools:

General Mechanics Tool Kit (Item 1 Appendix B)

Materials/Parts:

Door Assembly

Cotter Pin (Item 3, Appendix E)

Lockwashers (Item 9, Appendix E)

Lockwashers (Item 14, Appendix E)

Shim (Item 20, Appendix E)

Shim (Item 21, Appendix E)

Shim (Item 22, Appendix E)

Shim (Item 23, Appendix E)

Shim (Item 24, Appendix E)

Shim (Item 25, Appendix E)

Personnel Required: 2

REPLACE

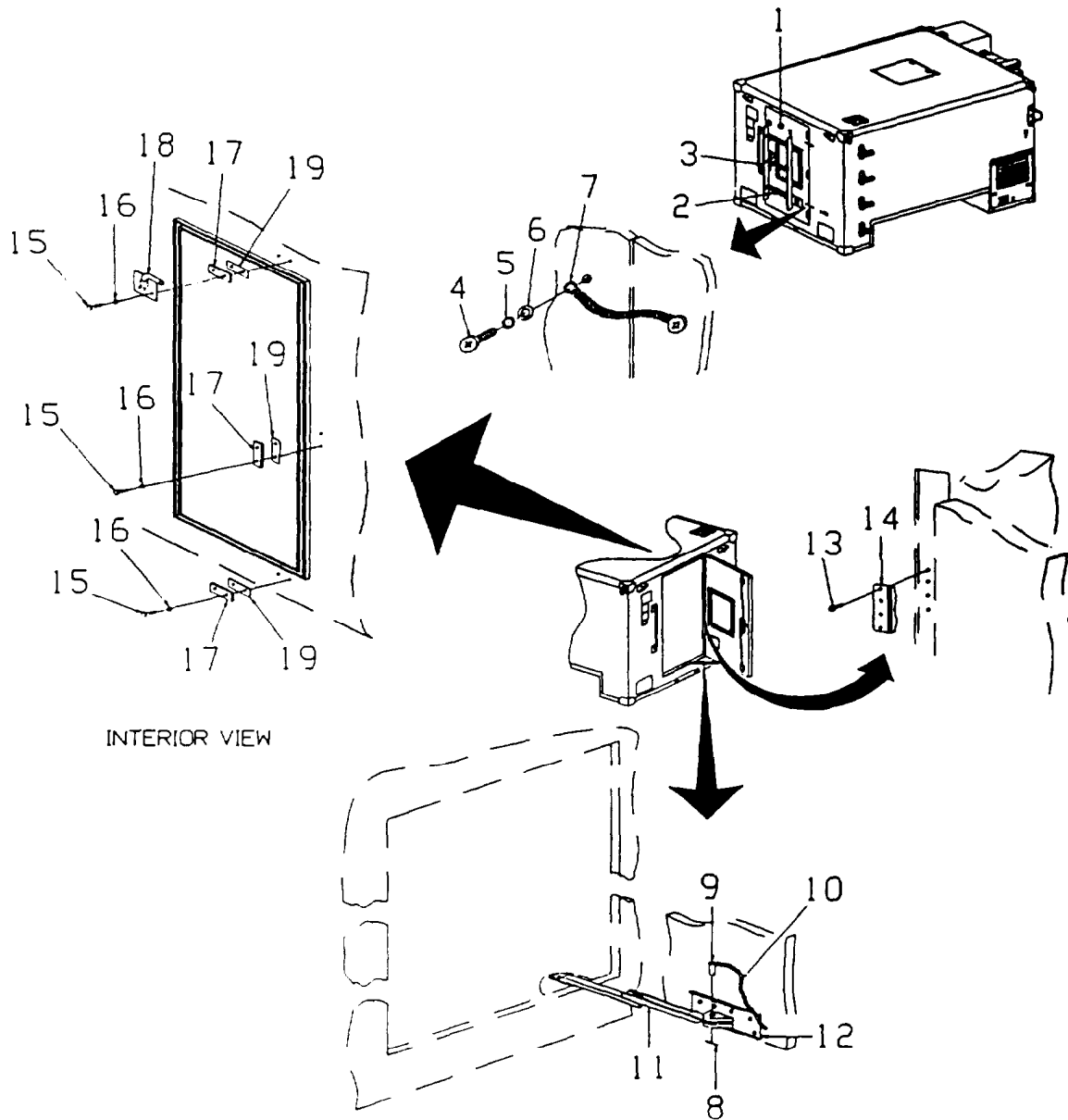
1. At the shelter door (1), loosen strap (2) securing ladder (3), and remove ladder (3).
2. Remove screw (4), lockwasher (5), and flat washer (6) securing ground jumpers (7) to door (1).
3. Open shelter door (1).
4. Remove cotter pin (8) and pin (9) from chain and pin assembly (10) and slide door brace (11) from door bracket (12).

WARNING

Door assembly weighs in excess of 50 pounds. Use two people to support door during removal or serious injury may result.

5. Remove screws (13) securing hinges (14) to shelter and remove door (1).

3-9. DOOR ASSEMBLY - Continued.



3-9. DOOR ASSEMBLY - Continued.

WARNING

Door assembly weighs in excess of 50 pounds. Use two people to support door during installation or serious injury may result.

6. Locate door (1) on shelter positioning hinges (14) over the holes and secure to shelter using screws (13).
7. Secure ground jumpers (7) in place using flat washer (6), lockwasher (5) and screw (4).
8. Position ladder (3) and secure to door (1) using strap (2).
9. Slide door brace (11) into door bracket slot (12), align holes, and install pin (9) of chain and pin assembly (10).
10. Secure chain and pin assembly (10) in place using cotter pin (8).
11. Test the door assembly for proper closure pressure as follows:
 - a. Place a single piece of paper 0.005 inches thick by 2 1/2 inches wide (e.g., a dollar bill) between the door silicone weather gasket and its bearing surface.
 - b. Close and latch the door and withdraw the paper. Do this at the top, middle, and bottom sections of the door. If there is resistance to the withdrawal at each of the test points, sufficient seal pressure exists and no adjustments are necessary. If no resistance is noted, use the following adjustment procedure to increase gasket compression.

ADJUSTMENT

1. Open the door and remove bolts (15) and lockwashers (16) securing striker plate (17) requiring adjustment.
2. Insert shim(s) (19) between striker plate (17) and shelter panel.
3. Locate striker plate (17) with shim(s) (19) between shelter and blackout switch (18) and secure with bolts (15) and lock washers (16).
4. Retest door assembly per step 11 above and repeat adjustment procedure as necessary.

3-10. ROLLER LATCH ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Paint Brush (Item 2, Appendix B)

Materials/Parts:

Lockwashers (Item 10, Appendix E)

REPLACE

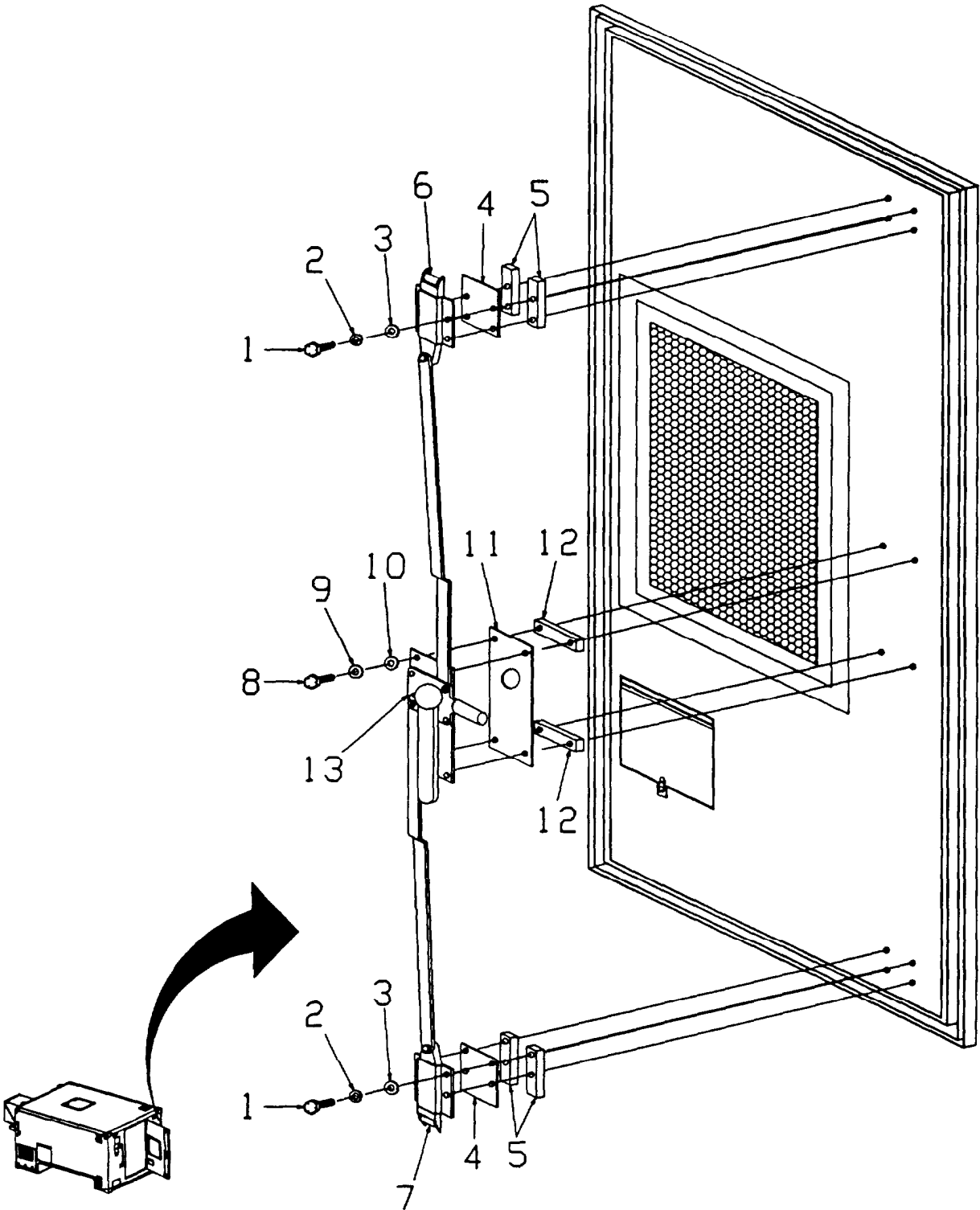
1. Remove bolts (1), lockwashers (2), flat washers (3), roller latch door shim (4), and roller latch spacers (5) from upper (6) and lower (7) roller locks.
2. Remove bolts (8), lockwasher (9), flat washers (10), shim (11), and spacers (12) from handle (13).
3. Remove handle (13) and upper/lower roller locks (6 and 7) from door .
4. Locate handle (13) and upper/lower roller locks (6 and 7) on door assembly.

NOTE

Do not tighten bolts until all shims are installed.

5. Secure handle (13) to door assembly using flat washers (10), lockwashers (9), screws (8), shim (11), and spacers (12).
6. Secure upper (6) and lower (7) roller locks to door assembly using bolts (1), lockwashers (2), flat washers (3), shim (4), and spacers (5).
7. Tighten bolts to 25 (\pm 2) ft/lb of torque.
8. Test and adjust door assembly for proper closure pressure per 3-9, step 11.

3-10. ROLLER LATCH ASSEMBLY - Continued.



3-11 DOOR HANDLE ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Door Handle

Lockwasher (Item 16, Appendix E)

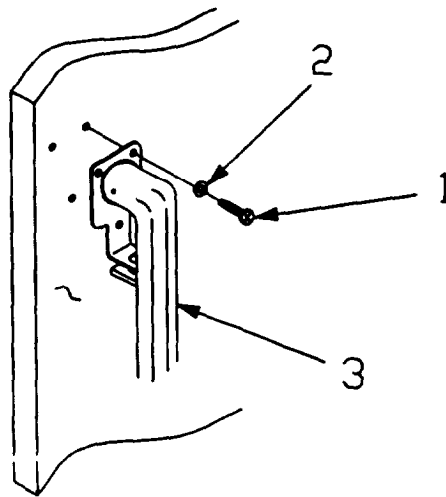
Sealer (Item 19, Appendix E)

Isoprophyl Alcohol (Item 33, Appendix E)

Rags

REPLACE

1. Remove bolts (1), and lockwashers (2) securing Door Handle Assembly (3) to shelter.
2. Remove Door Handle Assembly (3).
3. Remove sealant on Door Handle Assembly (3) and shelter using rags and isoprophyl alcohol.
4. Apply sealer to handle.
5. Locate Door Handle Assembly (3) and secure with bolts (1) and lockwashers (2).



3-12. AIR VENT FRAME RFI FILTER.

This task covers: a. Replace

INITIAL SETUP

Tools;
General Mechanics Tool Kit (Item 1, Appendix B)

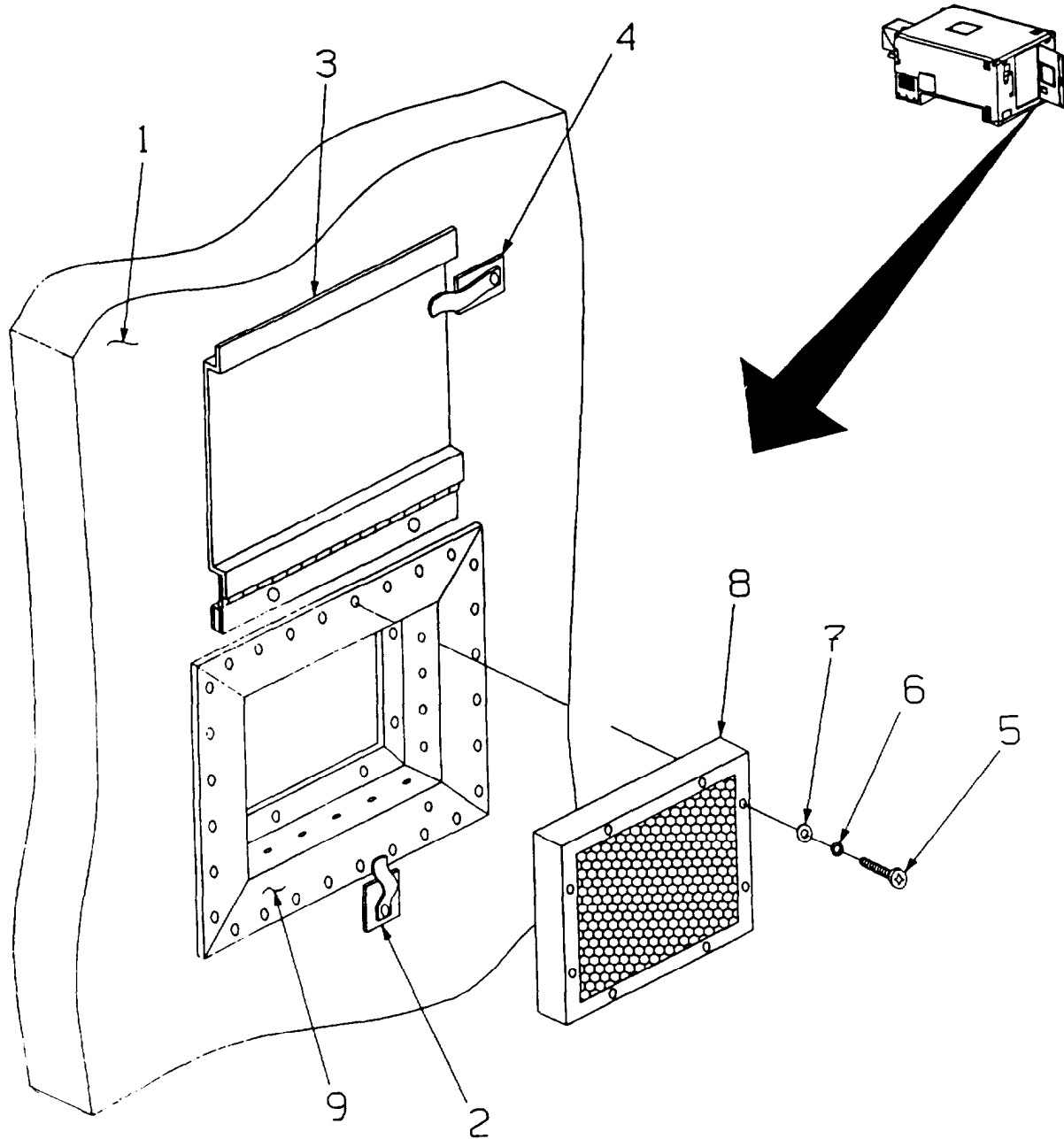
Materials/Parts:

RFI Filter
Lockwasher (Item 14, Appendix E)

REPLACE

1. Open shelter door (1).
2. Release bottom latch (2), lift cover (3), and lock in place with latch (4).
3. Remove the eight screws (5), lockwashers (6) and flat washers (7) securing RFI filter (8) to door panel (9).
4. Remove filter (8).
5. Install RFI filter (8) and secure to door panel (9) using flat washers (7), lockwashers (6) and screws (5).
6. Release latch (4), lower cover (3), and secure with bottom latch (2).

3-12. AIR VENT FRAME RFI FILTER - Continued.



3-13. DOOR WEATHER SEAL.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Caulking Gun (Item 8, Appendix B)

Materials/Parts:

Gasket (Appendix F, Figure F-1, -1)

Adhesive (Item 2, Appendix E)

Isopropyl Alcohol (Item 33, Appendix E)

Rags (Item 7, Appendix E)

REPLACE

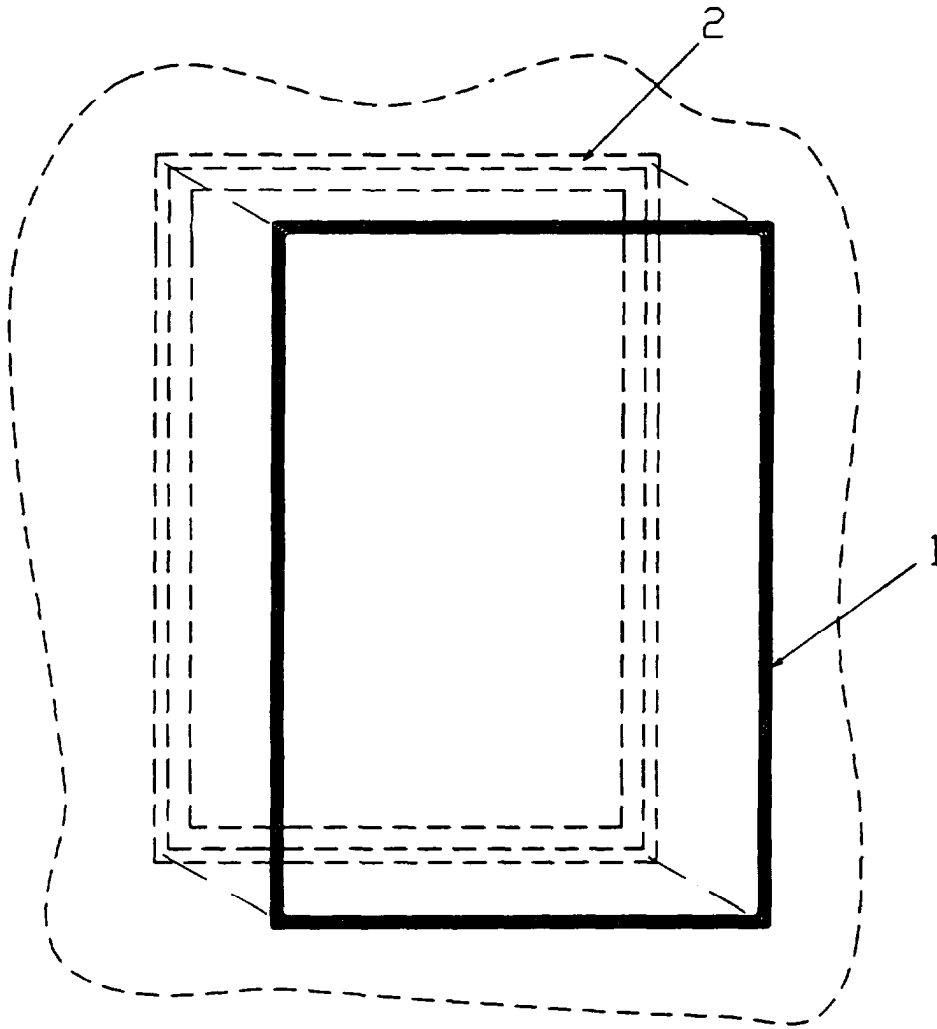
1. Open door and remove weather gasket (1) from track (2) around door.

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flames. Keep containers closed when not in use. Use only in well-ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin.

2. Clean remaining adhesive and dirt from track (2) using rags and alcohol.
3. Cut length of gasket (1) to fit around top, bottom and sides of door tracks (2). Cut ends of gasket at a 45° miter.
4. Apply a bead of adhesive in track (2) and carefully press gasket section (1) in place.
5. Fill corners with adhesive and where ends meet.

3-13. DOOR WEATHER SEAL - Continued.



3-14. DOOR BRACE ASSEMBLY.

This task covers: a. Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Cotter pin (Item 5, Appendix E)

Cotter pin (Item 6, Appendix E)

Lockwasher (Item 13, Appendix E)

Lockwasher (Item 15, Appendix E)

REPAIR**Disassemble**

1. Remove cotter pin (1) and pin (2) from door stop bracket (3).
2. Slide door brace (4) away from door stop bracket (3).
3. Remove screw (5) and lockwasher (6) securing chain and pin assembly (7) to the door (8).
4. Remove screws (9), lockwashers (10) and flat washers (11) securing the door stop bracket (3) to the door (8).
6. Remove cotter pin (12), nut (13), washer (14), and bolt (15) from angle door stop (16).
7. Remove bolts (17) securing angle door stop (16) to shelter (18).
8. Remove cotter pin (19), castle nut (20), washers (21) and bolt (22) securing upper and lower braces together.

Assemble

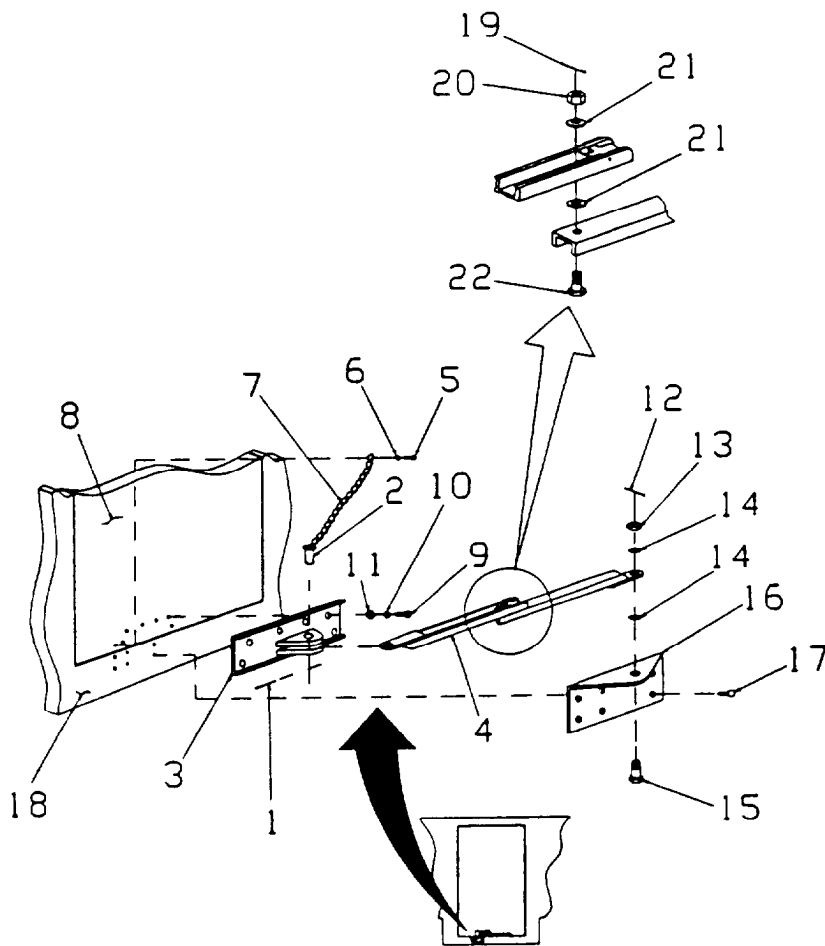
1. Install bolt (22), washer (21), castle nut (20,) and cotter pin (19) to secure upper and lower braces together.
2. Locate angle door stop (16) and secure with bolts (17)

3-14. DOOR BRACE ASSEMBLY.

Assemble (Continued)

3. Slide brace (4) into angle door stop (16) and secure with bolt (15), flat washer (11), castle nut (13), and cotter pin (12). Locate door stop bracket (3) on door (8) and secure using screws (9), lockwashers (10), and flat washers (11).

4. Secure chain and pin assembly (7) to shelter using screw (5) and lockwasher (6).



3-15. REAR LADDER.

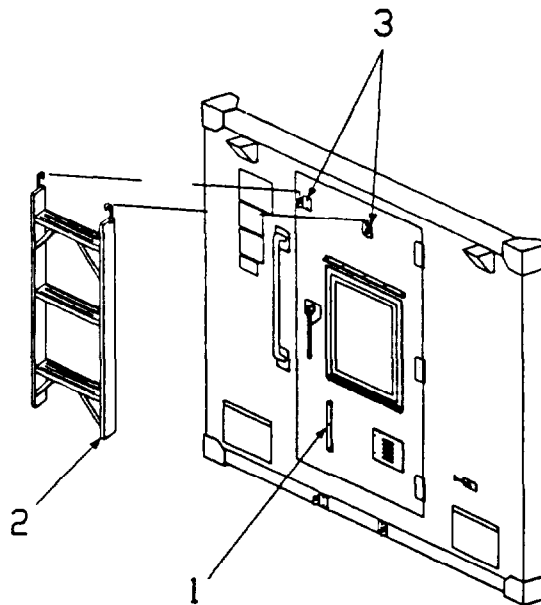
This task covers: a. Replace

INITIAL SETUPMaterials/Parts:

Ladder

REPLACE

1. Loosen retaining strap (1) securing ladder (2) to door.
2. Lift ladder off of brackets (3).
3. Place ladder (2) in brackets (3), and secure with strap (1).



3-16. HATCH.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Hatch

Rags (Item 7, Appendix E)

Sealer (Item 19, Appendix E)

Isopropyl Alcohol (Item 33, Appendix E)

REPLACE

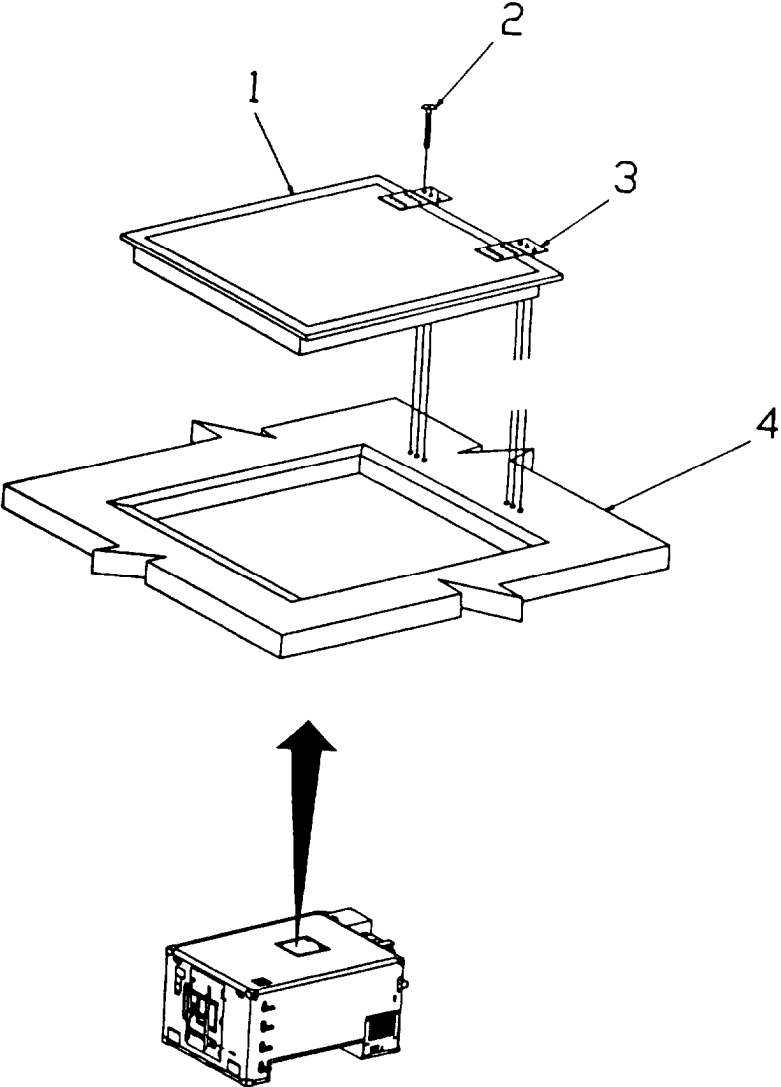
1. From inside of shelter, release hatch (1) but do not open.

WARNING

Use caution when climbing and descending ladder steps. Use support handles in all cases. Personal injury can result from a fall.

2. Carefully climb to roof of shelter.
3. Remove screws (2) securing hinge (3) to shelter roof (4).
4. Remove hatch (1) from shelter roof (4).
5. Remove sealer from shelter roof (4), clean with alcohol and rags.
6. Apply sealer to hinge (3).
7. Position hatch (1) and secure hinges (3) to shelter roof (4) using screws (2).
8. Close hatch.

3-16. HATCH - Continued.



3-17. HATCH WEATHER SEAL.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)
Caulking Gun (Item 8, Appendix B)

Materials/Parts:

Gasket (Appendix F, Figure F-1, -2)
Adhesive (Item 2, Appendix E)
Isopropyl Alcohol (Item 33, Appendix E)
Rags (Item 7, Appendix E)

Equipment conditions:
Hatch removed (para 3-16)

REPLACE

1. Remove weather seal (1) from track (2) around door.

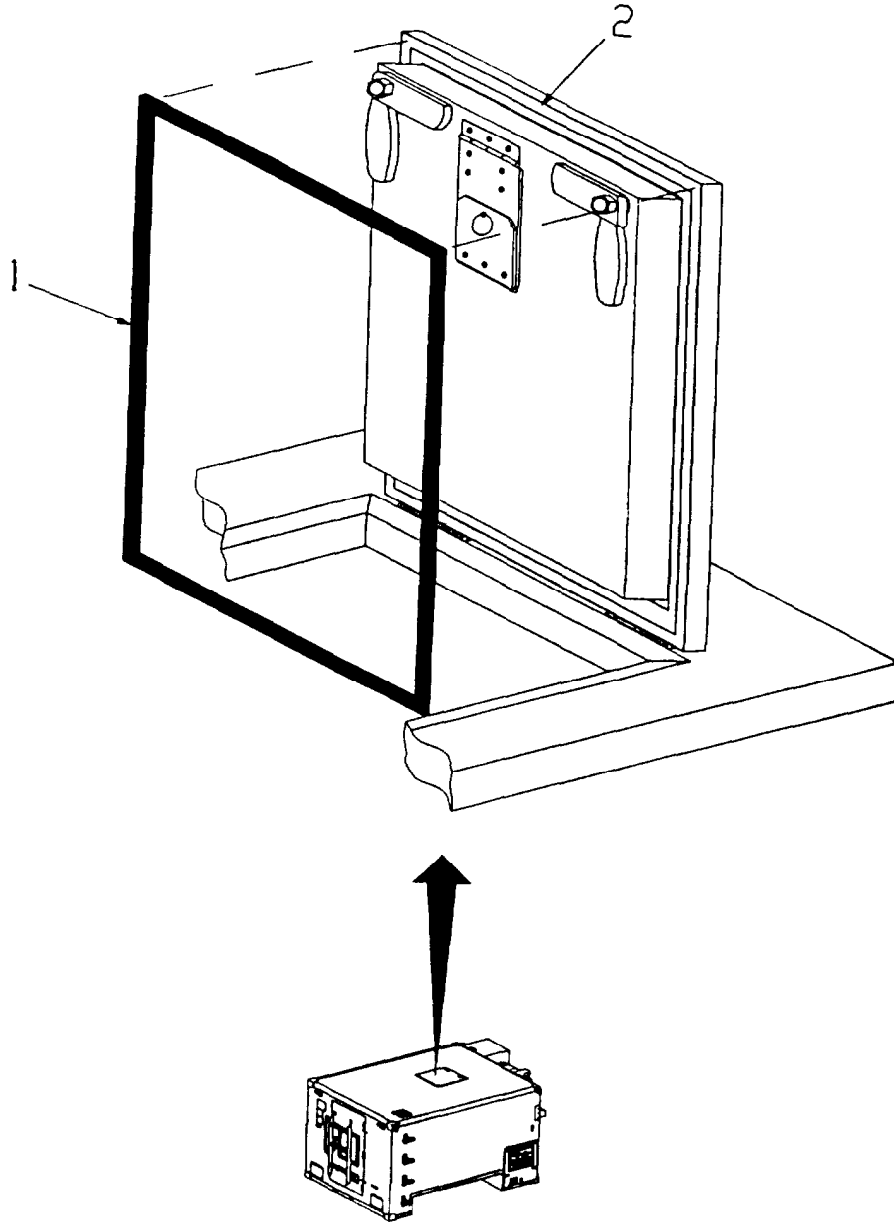
WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flames. Keep containers closed when not in use. Use only in well-ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin.

2. Clean remaining adhesive and dirt from track using rags and alcohol.
3. Cut length of seal (1) to fit around door track (2). Cut ends of seal at a 45° miter.
4. Apply a bead of adhesive in track (2) and carefully press seal section **(1)** in place.
5. Fill corners with adhesive and where ends meet.

Follow-on maintenance: replace hatch (para 3-16).

3-17. HATCH WEATHER SEAL - Continued.



3-18. STEP ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

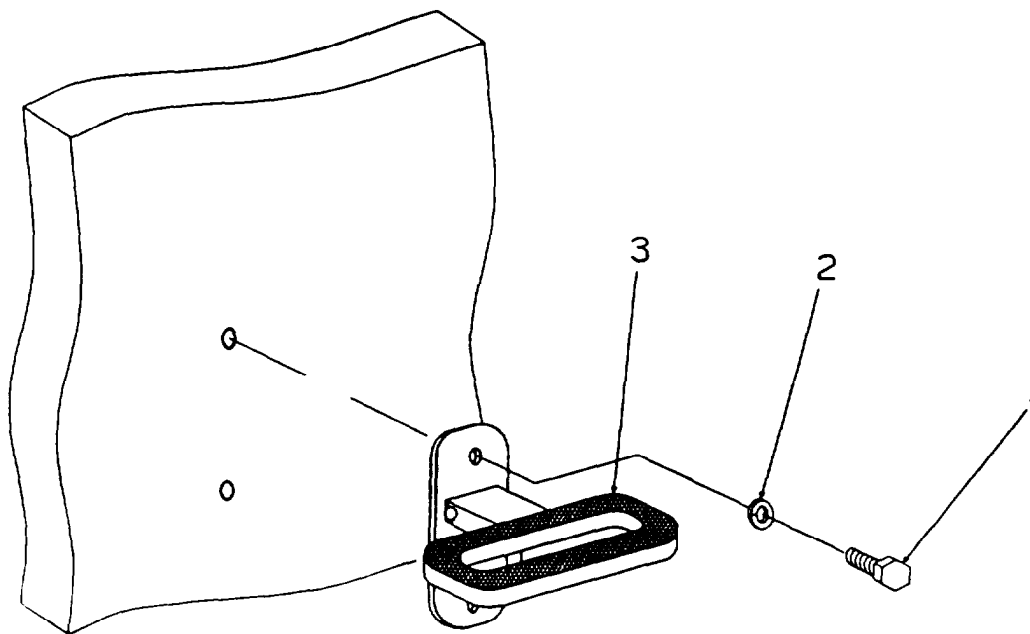
Materials/Parts:

Step

Lockwasher (Item 11, Appendix E)

REPLACE

1. Remove bolts (1) and lockwashers (2) securing step (3) to shelter.
2. Remove step (3).
3. Locate step (3) on shelter.
4. Secure step (3) using bolts (1) and lockwashers (2).



3-19. COMMO ENTRY COVER ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools;
General Mechanics Tool Kit (Item 1, Appendix B)

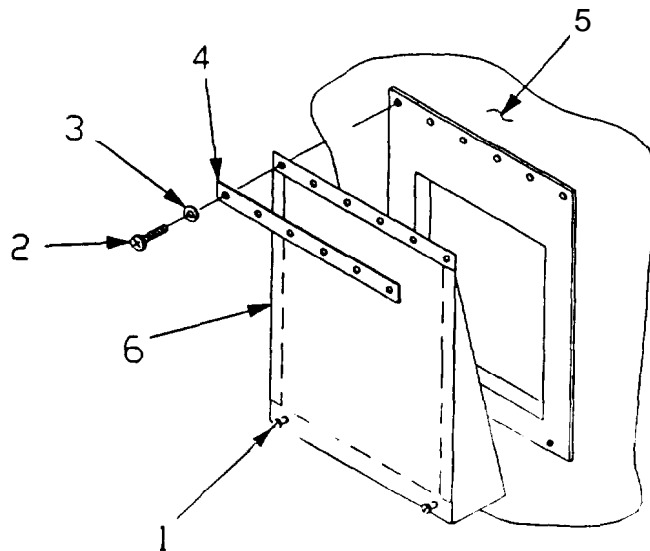
Materials/Parts

COMMO Entry Cover

Lockwasher (Item 9, Appendix E)

REPLACE

1. Unscrew fasteners (1).
2. Remove screws (2) and lockwashers (3) securing door cap strip (4) to the shelter (5).
3. Remove cover (6).
4. Locate cover (6) on shelter (5).
5. Locate door cap strip (4) over cover (6) and secure with lockwashers (3) and screws (2).
6. Secure with fasteners (1).



3-20. TIP ENTRY PANEL COVER ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

TIP Entry Panel Cover

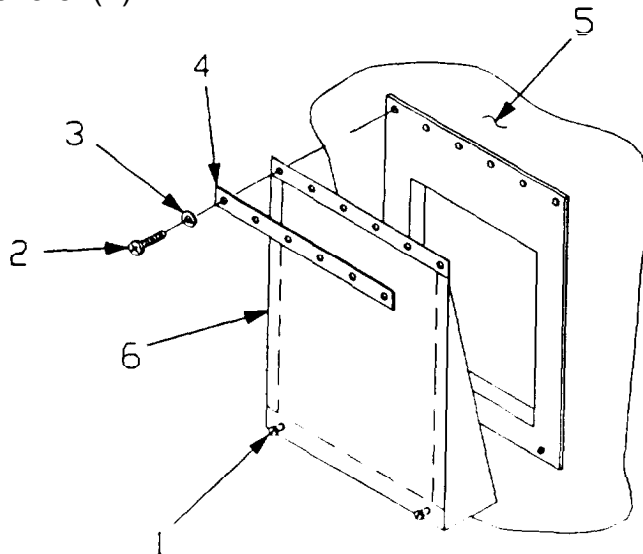
Lockwasher (Item 9, Appendix E)

REPLACE

NOTE

The following procedure applies to both the Power and Interface panel covers.

1. Unscrew fasteners (1).
2. Remove screws (2) and lockwashers (3) securing door cap strip (4) to the shelter (5).
3. Remove cover (6).
4. Locate cover (6) on shelter (5).
5. Locate door cap strip (4) over cover (6) and secure with lockwashers (3) and screws (2).
6. Secure with fasteners (1).



3-21. CREW BLOWER DOOR ASSEMBLY.

This task covers: a. Repair

INITIAL SETUPTools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Crew Blower Door

Cable

Cotter Pin (Item 4, Appendix E)

Lockwasher (Item 8, Appendix E)

Lockwasher (Item 15, Appendix E)

REPAIRDisassemble

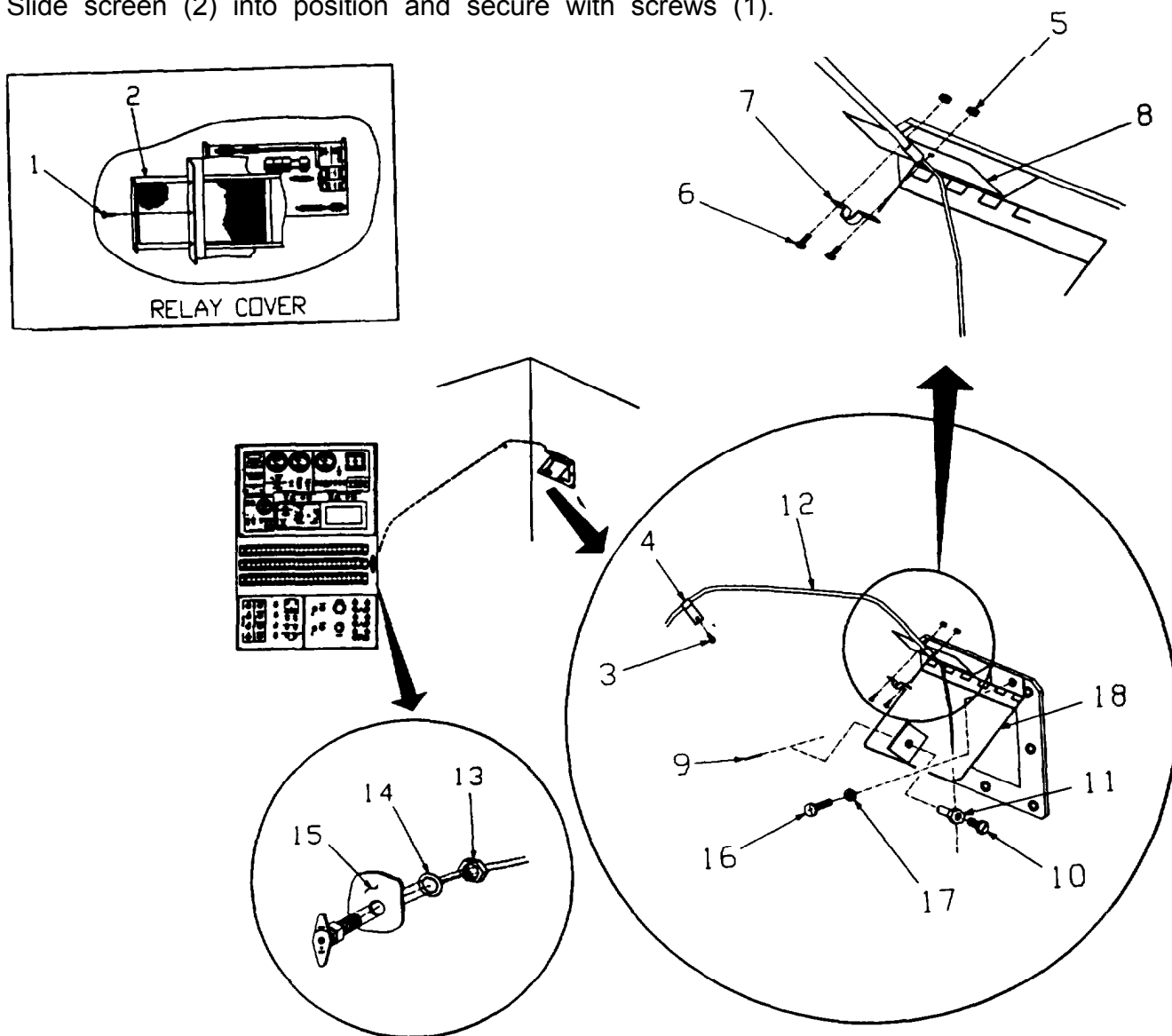
1. Remove screws (1) and slide screen (2) to gain access to Relay Panel Assembly area.
2. Loosen screw (3) on cable clamp (4).
3. Remove nuts (5), screws (6) and cable clamp (7) on cable support (8).
4. Remove cotter pin (9) and loosen screw (10) on cable pivot (11) and slide cable assembly (12) from cable pivot (11).
5. Remove nut (13) and lockwasher (14) from cable assembly (12).
6. Remove cable assembly (12) by pulling through hole in Power Monitor Assembly (15).
7. Remove screws (16) and lockwashers (17) securing crew door (18).
8. Remove crew door (18).

Assemble

1. Locate crew door (18) and secure with lockwashers (17) and screws (16).
2. Slide cable assembly (12) through hole in Power Monitor Faceplate Assembly (15).

3-21. CREW BLOWER DOOR - Continued.

3. Slide lockwasher (14) and nut (13) onto cable assembly (12) and secure cable assembly (12) to Power Monitor Faceplate Assembly (15).
4. Slide cable into cable pivot (11), tighten screw (10) and secure with cotter pin (9).
5. Position cable clamp (7) on cable support (8) and secure using screws (6) and nuts (5).
6. Secure cable clamp (4) to roadside wall with screw (3).
7. Slide screen (2) into position and secure with screws (1).



3-22. POWER ENTRY DOOR ASSEMBLY.

This task covers: a. Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Power Entry Door

Door Latch

Gasket (Appendix F, Figure F-5)

Adhesive (Item 2, Appendix E)

Lockwasher (Item 9, Appendix E)

Isopropyl Alcohol (Item 33, Appendix E)

Rags (Item 7, Appendix E)

REPAIR

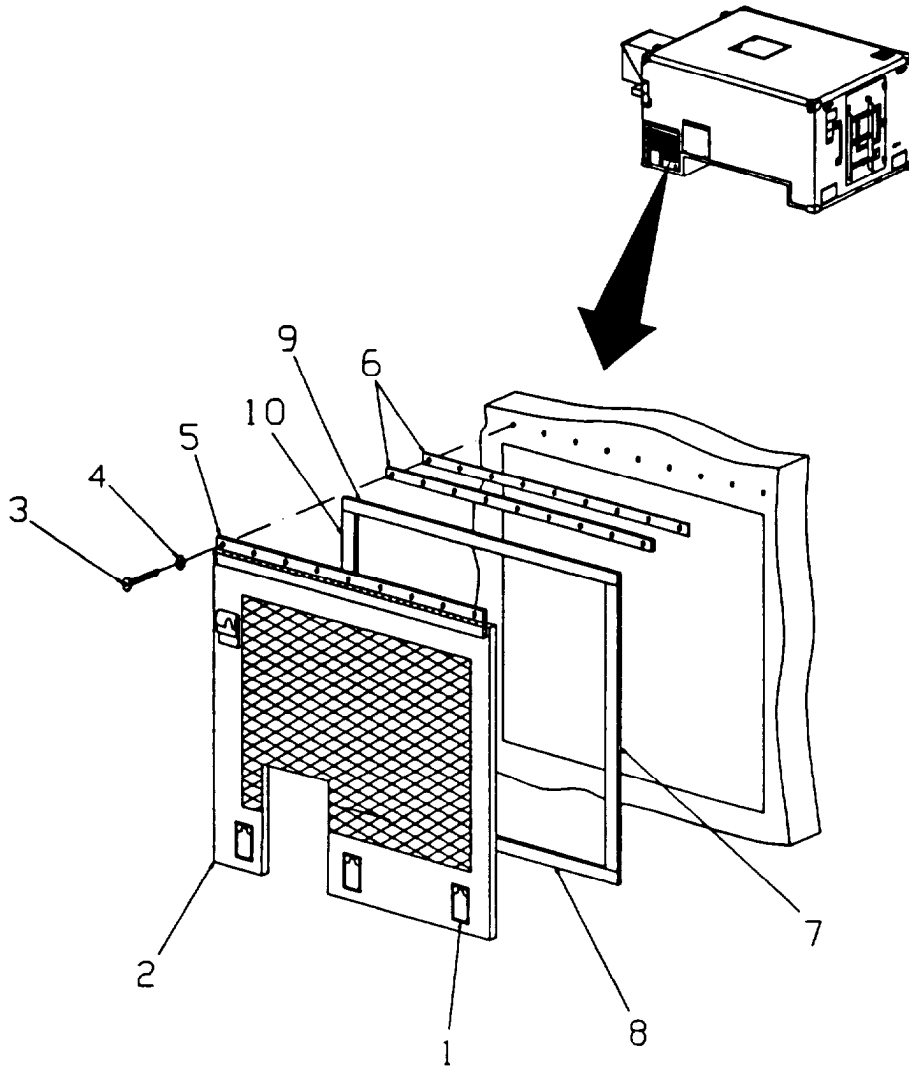
Disassemble

1. Open three latches (1) securing power entry door (2) to the shelter by lifting latch (1) and turning 45 degrees in a counterclockwise direction.
2. While supporting the power entry door, remove the screws (3) and lockwashers (4) securing the hinge (5) and two shims (6) to the shelter. Remove power entry door (2).
3. Remove gaskets (7, 8, 9, and 10) from power entry door.
4. Clean with Isopropyl alcohol and rags.

Assemble

1. Install and secure gaskets (7, 8, 9, and 10) with adhesive.
2. Position power entry door (2), shims (6), and hinge (5) on shelter and secure using screws (3) and lockwashers (4).
3. Close and secure power entry door (2) using latches (1).

3-22. POWER ENTRY DOOR ASSEMBLY - Continued.



3-23. GENSET DOOR ASSEMBLY.

This task covers: a. Repair

INITIAL SETUPTools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

GENSET Door

Seal

Seal holder

Gasket (Appendix F, Figure F-5, F-7, F-8)

Adhesive (Item 2, Appendix E)

Isopropyl Alcohol (Item 33, Appendix E)

Rags (Item 7, Appendix E)

Cotter Pin (Item 3, Appendix E)

Lockwasher (Item 9, Appendix E)

REPAIRDisassemble

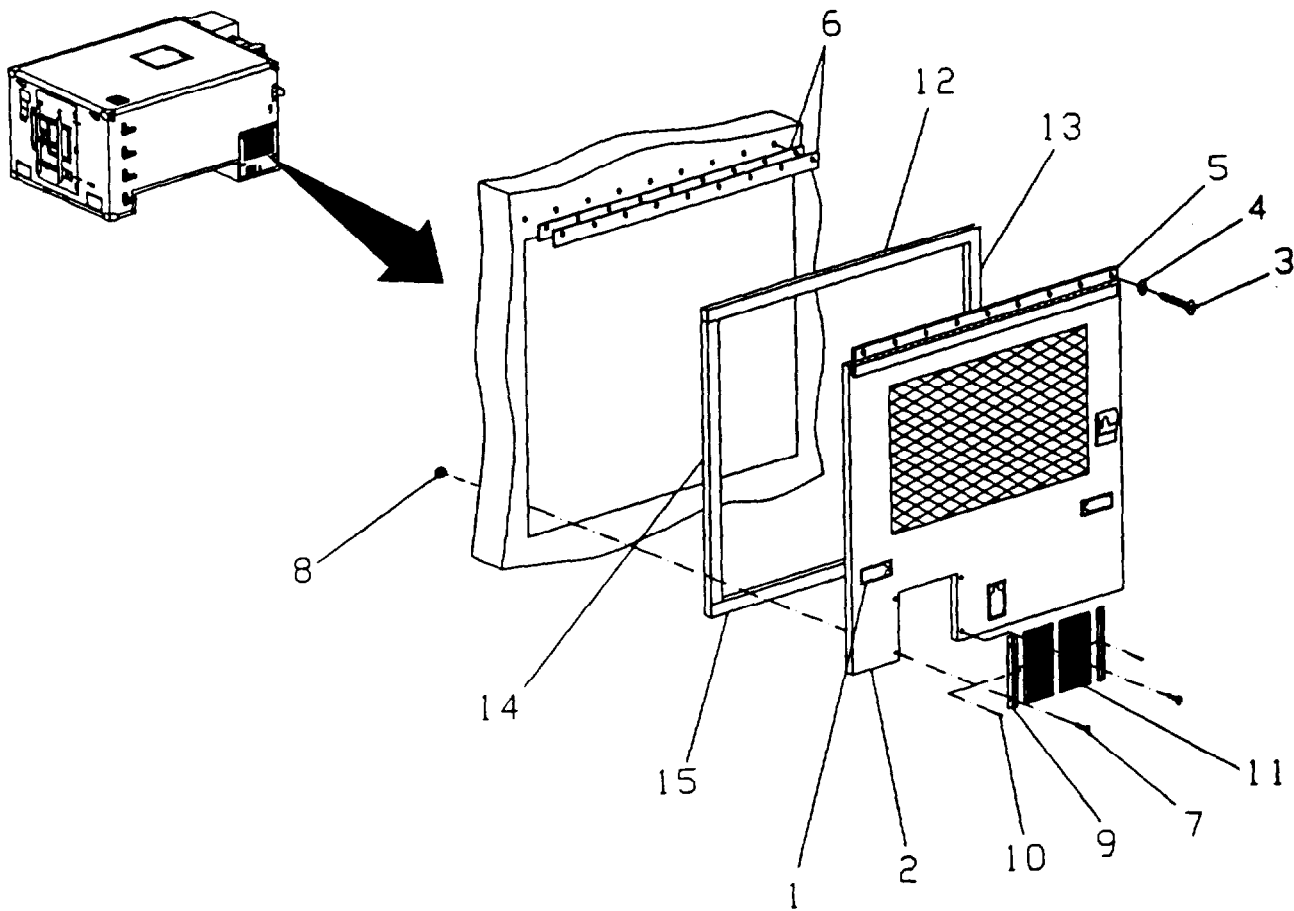
1. Open three latches (1) securing GENSET door (2) to the shelter by lifting latch (1) and turning 45 degrees in a counterclockwise direction.
2. While supporting the GENSET door (2), remove the screws (3) and lockwashers (4) securing the hinge (5) and shims (6) to the shelter. Remove GENSET door (2).
3. Remove screws (7) and nuts (8) securing each seal bracket (9) to the GENSET door (2).
4. Remove cotter pin (10) securing seal (11) to bracket (9).
5. Remove gaskets (12, 13, 14, and 15) from GENSET door (2).
6. Clean with Isopropyl alcohol and rags.

Assemble

1. Secure gaskets (12, 13, 14, and 15) GENSET door (2) with adhesive.
2. Locate seal (11) on seal bracket (9) and secure with cotter pin (10).

3-23 GENSET DOOR ASSEMBLY - Continued

3. Locate seal bracket (9) and secure to GENSET door (2) using screws (7), nuts (8).
4. Locate GENSET door hinge (5) and shims (6) on shelter and secure using screws (3) and lockwashers (4).
5. Close and secure tunnel access door (2) using latches (1).



3-24. FOLDING BACK SEAT.

This task covers: a. Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Eye Bolt

Strap Assembly

Lockwasher (Item 16, Appendix E)

Folding Back Seat

Personnel Required: 2

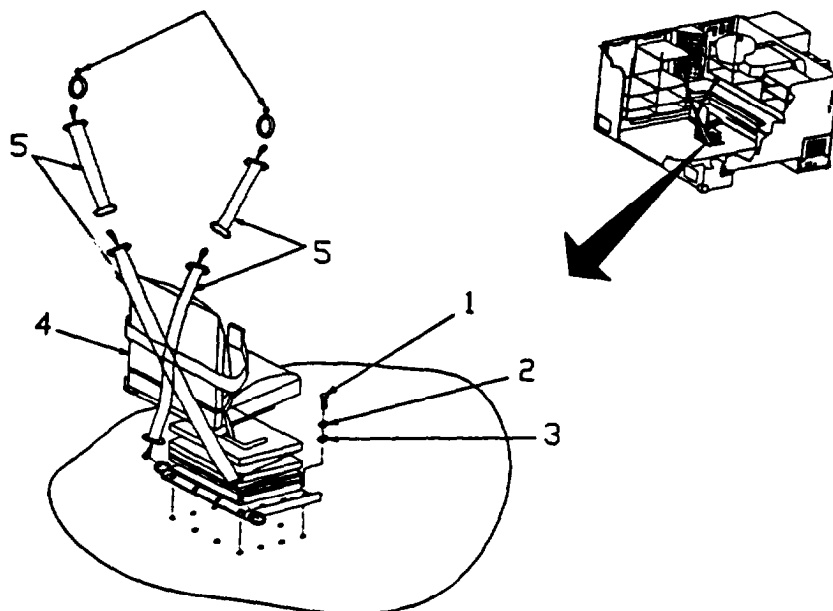
REPAIR

Disassemble

1. Remove strap (5) from seat (4) and ceiling hooks (6).
2. Remove bolts (1), lockwashers (2), and flat washers (3) securing seat (4) to floor.

Assemble

1. Secure strap (5) to seat (4) and ceiling hooks (6).
2. Locate seat (4) on floor and secure with bolts (1) lockwashers (2) and flat washers (3).



3-25. UPPER (LOWER) ANTENNA MAST MOUNT.

This task covers: a. Replace

INITIAL SETUP

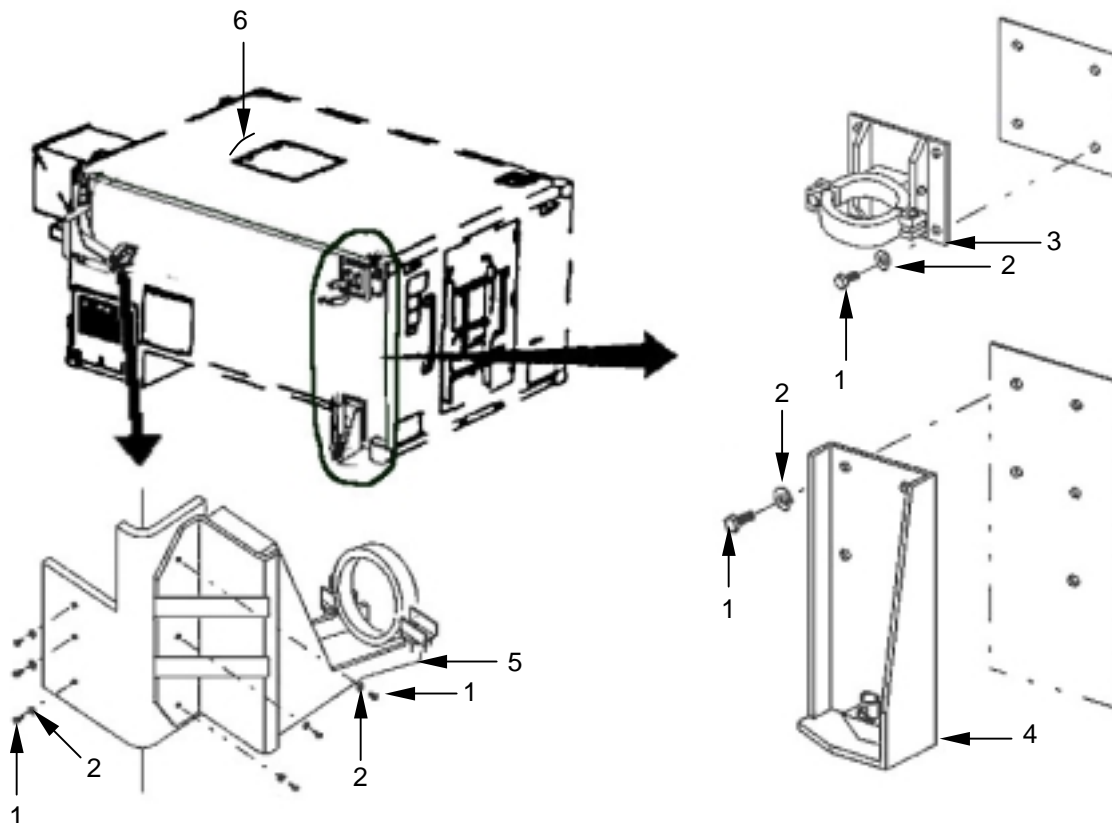
Tools:
General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:
Forward Mast Mount
Upper Mast Mount
Lower Mast Mount
Lock washer (Item 17, Appendix E)

Equipment Conditions
Mast removed.
Refer to TM 11-7010-260-12&P

REPLACE

1. Remove screws (1) and lock washers (2) securing mast mount (3, 4, or 5) to shelter (6).
2. Secure mast mount (3, 4, or 5) to shelter (6) using screws (1) and lock washers (2).



Follow-on maintenance: replace antenna mast. Refer to TM 11-7010-260-12&P

3-26. ANTENNA MOUNT.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Antenna Mount

Cover

Lockwasher (Item 17, Appendix E)

Equipment Conditions

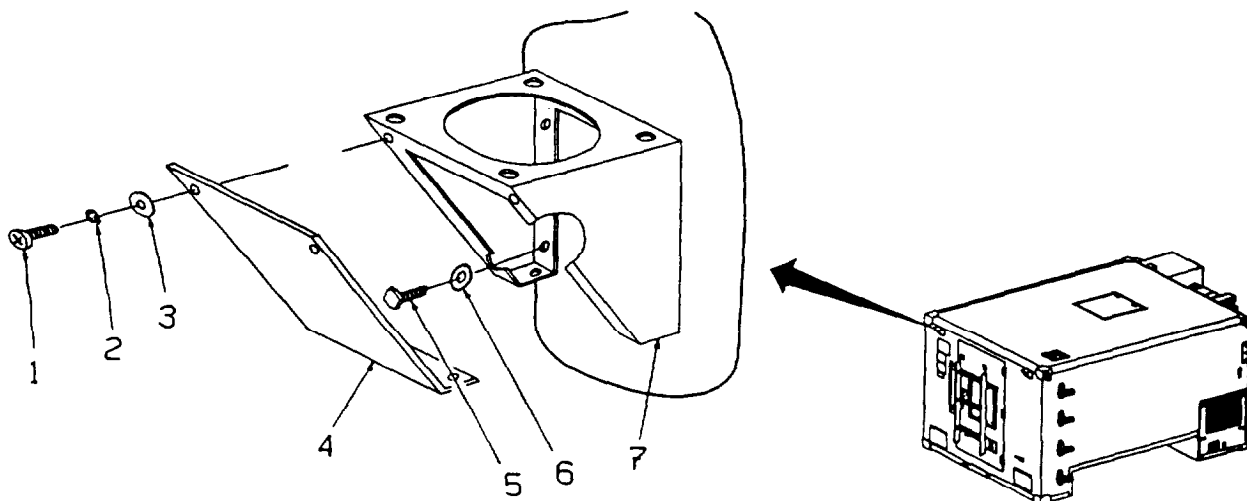
Antenna removed.

Refer to TM 11-7010-260-12&P.

REPLACE

1. Remove screws (1) lockwashers (2) and flat washers (3) securing the antenna mount cover (4) and remove cover.
2. Remove bolts (5) and lockwashers (6) securing the antenna mount (7) to the shelter.
3. Position antenna mount (7) on shelter and secure with lockwasher (6) and bolts (5).
4. Position antenna mount cover (4) on antenna mount (7) and secure with flat washers (2), lockwashers (3), and screws (1).

Follow-on maintenance: replace antenna. Refer to TM 11-7010-260-12&P.



3-27. RAPID DECOMPRESSION RFI FILTER.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

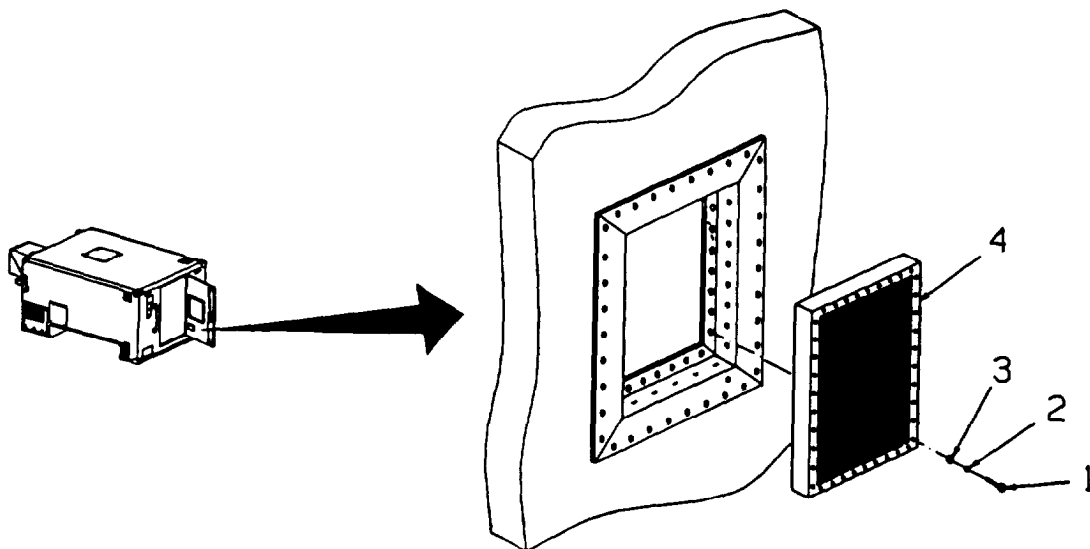
Materials/Parts:

RFI Filter

Lockwasher (Item 14, Appendix E)

REPLACE

1. Open shelter door and remove screws (1), lockwashers (2), and flat washers (3) securing the RFI filter (4).
2. Remove RFI filter (4).
3. Locate RFI filter (4) and secure RFI filter (4) using flat washers (3), lockwashers (2), and screws (1).
4. Close shelter door.



3-28. GPFU CONTROL PANEL.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

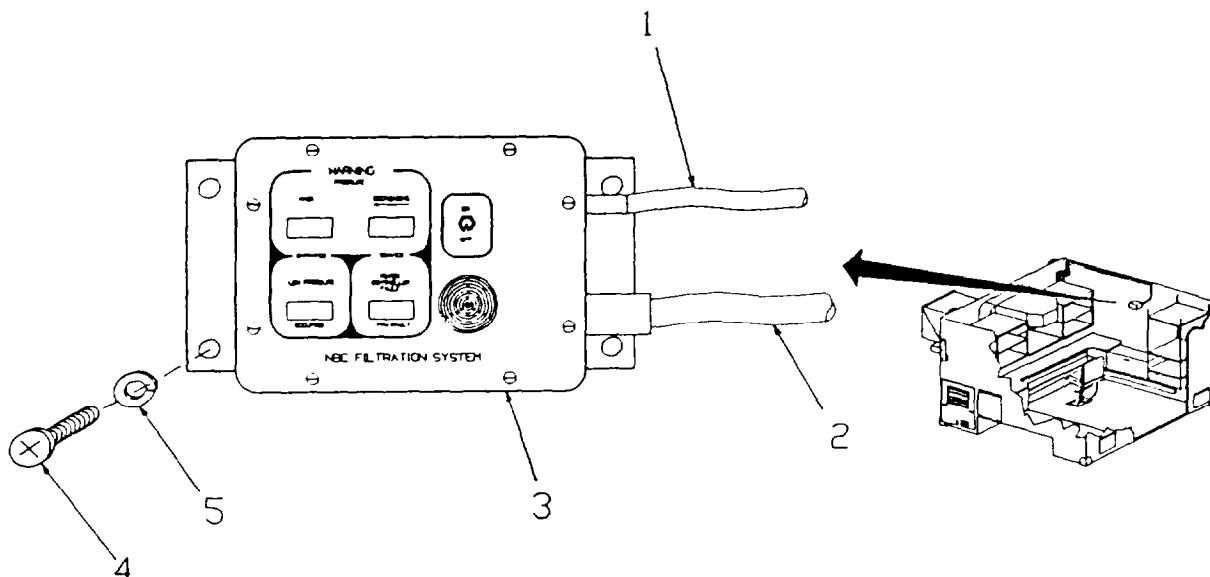
Materials/Parts

GPFU Control Panel

Lockwasher (Item 15, Appendix E)

REPLACE

1. Disconnect GPFU Control Panel hose (1) and power cable (2) from unit.
2. While supporting GPFU Control Panel (3), remove screws (4) and lockwashers (5).
3. Remove GPFU Control Panel (3).
4. Locate GPFU Control Panel (3) against shelter and secure with lockwashers (5), and screws (4).
5. Connect GPFU power cable (2) and hose (1) to unit.



3-29. ENTRANCE PANEL ASSEMBLY

This task covers: a. Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts:

Entrance Panel Assembly

Hook

Rope Channel

Top Support Assembly

Left Support Assembly

Right Support Assembly

Lockwasher (Item 16, Appendix E)

REPLACE

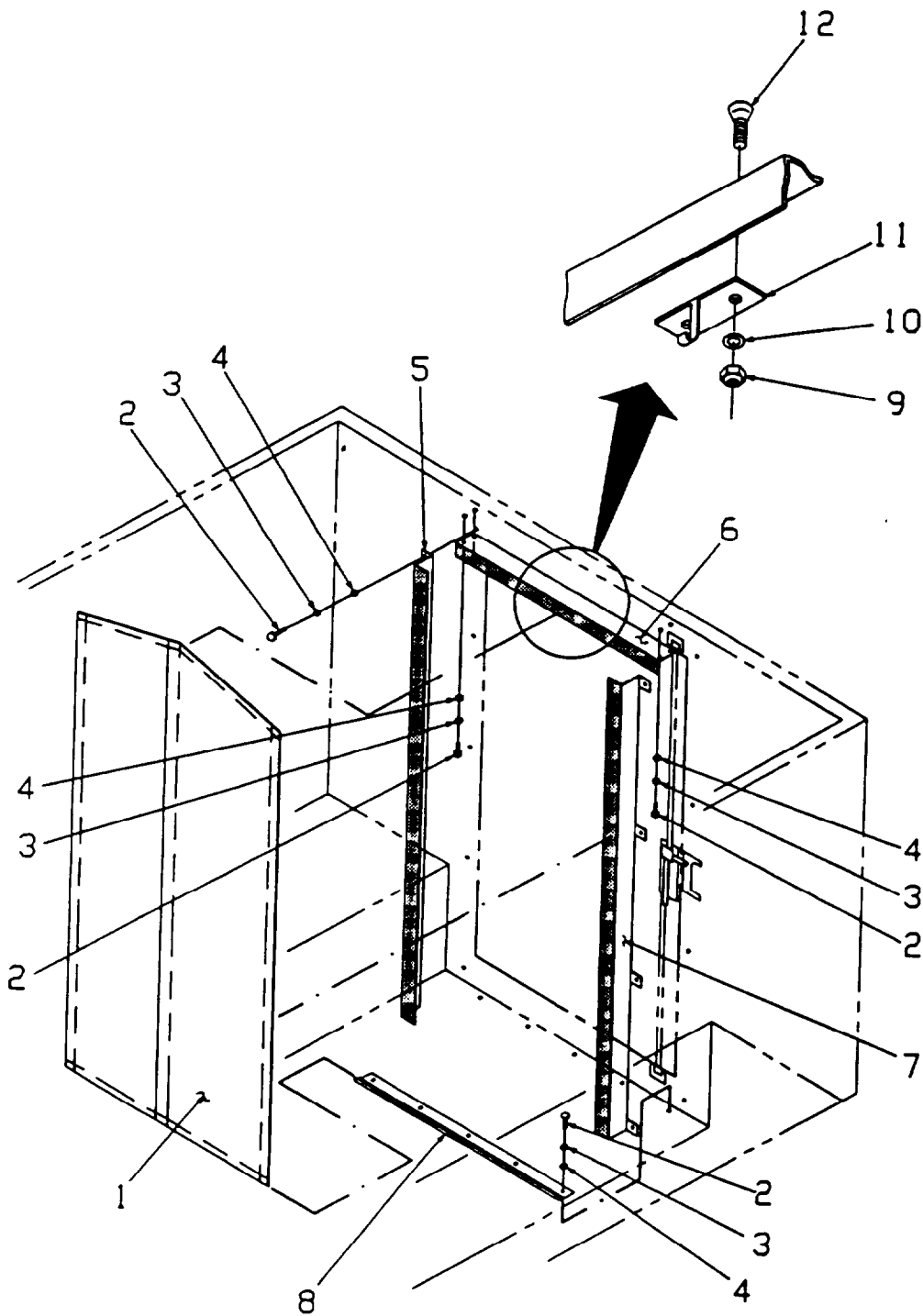
Disassemble

1. Remove Entrance Panel Assembly (1) from velcro attachment.
2. Remove screw (2), lockwasher (3), and flat washer (4) from left (5), top (6), and right (7) support assemblies and from the rope channel (8).
3. Remove cape.
4. Remove nut (9) and lockwashers (10) and screw (12) securing hook (11).

Assemble

1. Position left (5), top (6), and right (7) support assemblies and secure each with flat washer (4), lockwasher (3), and screw (2).
2. Position rope channel (8) and secure with flat washer (4), lockwasher (3), and screw (2).
3. Position hook (11) and secure using screws (12) and lockwashers (10) and nut (9).
4. Secure Entrance Panel Assembly (1) to velcro attachment.

3-29. ENTRANCE PANEL ASSEMBLY - Continued.



INTERIOR REAR VIEW

3-30. ROOF HANDLE ASSEMBLY.

This task covers: a. Replace

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Material/Parts:

Handle

Lockwasher (Item 15, Appendix E)

REPLACE

WARNING

Use caution when climbing and descending ladder steps. Use support handles in all cases. Personal injury can result from a fall.

1. To remove handle (1), remove bolts (2) and lockwashers (3)
3. Locate handle (1) on shelter.
4. Secure handle (1) using bolts (2) and lockwashers (3).

Section V. PREPARATION FOR SHIPMENT AND STORAGE.

3-31. GENERAL. No special preparation is required for shipment of the shelter other than making sure that the correct sling assembly is available and in good condition, the skids are in good condition and securely mounted to the shelter, and the drain plug is loosened for air or rail transport. When air transporting open the rapid decompression panel in the shelter door.

3-32. LOADING. Shelters may be shipped in Type 1AA ANSI/ISO containers only when crated or pallet-mounted. Block crates or pallets securely in the container to prevent movement and damage during transit.

3-33. UNLOADING. Shelters may be unloaded per the instructions contained in paragraph 3-4, Service Upon Receipt of Shelter.

3-34. STORAGE. Accumulation of moisture within the shelter resulting from temperature and humidity fluctuations can damage equipment. Minimize moisture accumulation by keeping the shelter doors, louver covers, and drain holes open during indoor storage. During outdoor storage, keep doors and drain holes closed, but, keep louver covers open. A free breather assembly may also be used, when available, to absorb moisture inside the shelter. When using the free breather assembly, doors, louver covers, and drain holes must be closed. For usage information, refer to the applicable drawing for the free breather system being used.

3-35. SPECIAL INSTRUCTIONS FOR ADMINISTRATIVE STORAGE. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept. Before placing equipment in administrative storage, current maintenance services and Equipment, Serviceable Criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all Modification Work Orders (MWOs) should be applied.

Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers, and other containers may be used.

**CHAPTER 4
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS**

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Section I. REPAIR PARTS, TOOLS, SPECIAL TOOLS, TEST MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT.

4-1. COMMON TOOLS AND EQUIPMENT. A list of common tools and tool kits may be found in Section III of Appendix B, Maintenance Allocation Chart. For authorized common tools and equipment, refer to the Modified Table of Organizational and Equipment (MTOE) applicable to your unit. Each maintenance procedure lists tools needed to perform the task.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. There are no special tools or test equipment needed to maintain the SICPS shelter.

4-3. REPAIR PARTS. Repair parts are listed and illustrated in TM 10-5411-222-24P (RPSTL).

Section II. PRINCIPLES OF OPERATION.

4-4. POWER DISTRIBUTION. The following paragraphs identify the power distribution for the SICPS shelter. The principles of operation encompass primary ac power (both on-board and external), AC distribution, grounds, and DC distribution. Reference figure 4-1 when reading the following paragraphs.

NOTE

Relay Panel and Power Entry Box each contain relays identified as K1, K2, K3, etc. When reviewing the schematic (figure 4-1), take note of which relay on which assembly is being talked about.

a. Onboard Generator Power. The 115 Vac from the GENSET is applied to the Power Control Box (TB3E-2 AC hot and TB3E-1 neutral). Filtering of the AC input is accomplished through electromagnetic pulse filters RV5 and RV6 and through electromagnetic interference filters FL15 (hot) and FL17 (neutral). Monitoring and control of the GENSET is accomplished via the Fault Indicator Panel located on the Power Monitor Faceplate.

During the SICPS shelter power-up sequence (para. 2-15), the ENABLE/DISABLE GENERATOR AC PWR switch (S3) is momentarily set to the enable position. This causes current to flow from the negative (-) terminal of DC connector J1, through pins B and A of relay K3, through pins 3 and 2 of the ENABLE/DISABLE GENERATOR AC PWR switch (S3), through the closed contacts 3 and 9 to the positive (+) side of J1, via pin 13 and 11 of S3 and the DC circuit breaker CB1. Energizing AC INTERRUPT relay K3, closes contacts 4 and 7 of K3, which energizes PWR SELECT RELAY K1. With relay K1 energized, its contacts A1 and A2 (AC hot line) and C1 and C2 (AC neutral line) are closed. 115 Vac is applied to the AC KILL switch (S3) and to the metering circuits located on the Power Monitor Faceplate, via the 3A fuse (F1) located on the Power Entry Box.

NOTE

Initial DC power for energizing relay K3 is derived from the vehicle's battery voltage, which is applied to connector J1. The voltage on J1 from the battery is also applied to the GENSET for starting the generator.

When the ENABLE/DISABLE GENERATOR AC PWR switch (S3) is released, relay K3 is kept energized through contacts 6 and 9 of K3 and pins 6 and 5 of the ENABLE/DISABLE GENERATOR AC PWR switch (S3). This also keeps relay K1 energized.

Current is monitored through pick-off transformer CT1. The current flows through R1 and the A.C. % RATED CURRENT meter (M3). Should an overload condition occur, the voltage across R1 increases, energizing OVERLOAD/SHORT CIRCUIT relay K5. Energizing K5 opens contacts 11 and 12, which causes relay K1 to deenergize, removing AC power from the shelter.

With no overload condition, power is applied through AC KILL switch (S5), through the Main Power SOURCE SELECT switch (S6) to the appropriate set of relays, which are determined upon whether onboard or external power is selected. If onboard power is selected, relay K3 and relay K5 energize, via the close contacts (A2 and A1) of relays K2 and K4. If external power is selected, relay K2 and relay K4 energize, via the close contacts (A2 and A1) of relays K3 and K5. Energizing K3 and K5 (onboard power) or K2 and K4 (external power) applies AC power to the uninterruptible power supplies (UPS1 and UPS2), ECU, GPFU, DC power supplies, AC lights, and to the appropriate AC outlets. Each circuit is protected from overload conditions by a circuit breaker.

The 115 Vac applied to the two DC Power Supplies (PS1 and PS2) is rectified to an output of 26.4 Vdc. To meet the high current draw of the system, the outputs from the power supplies are connected to the system in parallel. Diodes D1 and D2 are used as isolation diodes to isolate the vehicle's battery voltage from the power supplies and to isolate the power supplies from each other. The voltage is applied to the 200 Amp DC CB 18, then to the uninterruptible power supplies (UPS1 and UPS2), the DC lights, the vehicle batteries (through the NATO slave connector J1), and to the appropriate DC outlets. Each circuit is protected from overload conditions by a circuit breaker.

b. *External Power Source.* Any external power source meeting the power input criteria of 115 Vac, 50/60 hertz, single phase, 90 amps can provide the necessary power for the SICPS shelter. An external power source is connected at J2-A (AC hot) and J2-N (neutral). Power is applied to the system in a similar manner as the onboard generator power. The input lines pass through electromagnetic pulse filters RV3 and RV4 to the electromagnetic interference filters FL10 (hot) and FL12 (neutral). The input is protected by a 90A EXTERNAL POWER circuit breaker (CB2). The AC input is applied to the metering circuit for monitoring the external power and to relay K8 (1A1A3). Energizing relay K8, closes contacts 6 and 8 which, in turn, applies the AC input to the AC KILL switch and the MAIN PWR SOURCE SELECT switch (S6). Relay K8 also monitors the AC input for over/under voltage. Distribution is as shown on figure 4-1.

c. *Export Power.* AC power is exported from either the GENSET or an imported source through electromagnetic pulse filters RV5 and RV6 to Export Connector J1.

NOTE

This power does not pass through the voltage monitor relay K8 prior to export.

d. *System Ground Technique.* In order to provide optimum use of the shelter, the ground system ties both the AC neutral, safety ground, and DC ground to the same electrical point E1, E2, and E3. During stationary operations, ground is supplied by the common earth ground connected to the shelter ground terminal lug E1 on the Power Entry Box. The engine ground or chassis ground system is connected at E3. During operations on the move the chassis ground provides the primary ground. This technique makes any difference of potential between earth and chassis ground completely transparent to the shelter regardless of the operational mode.

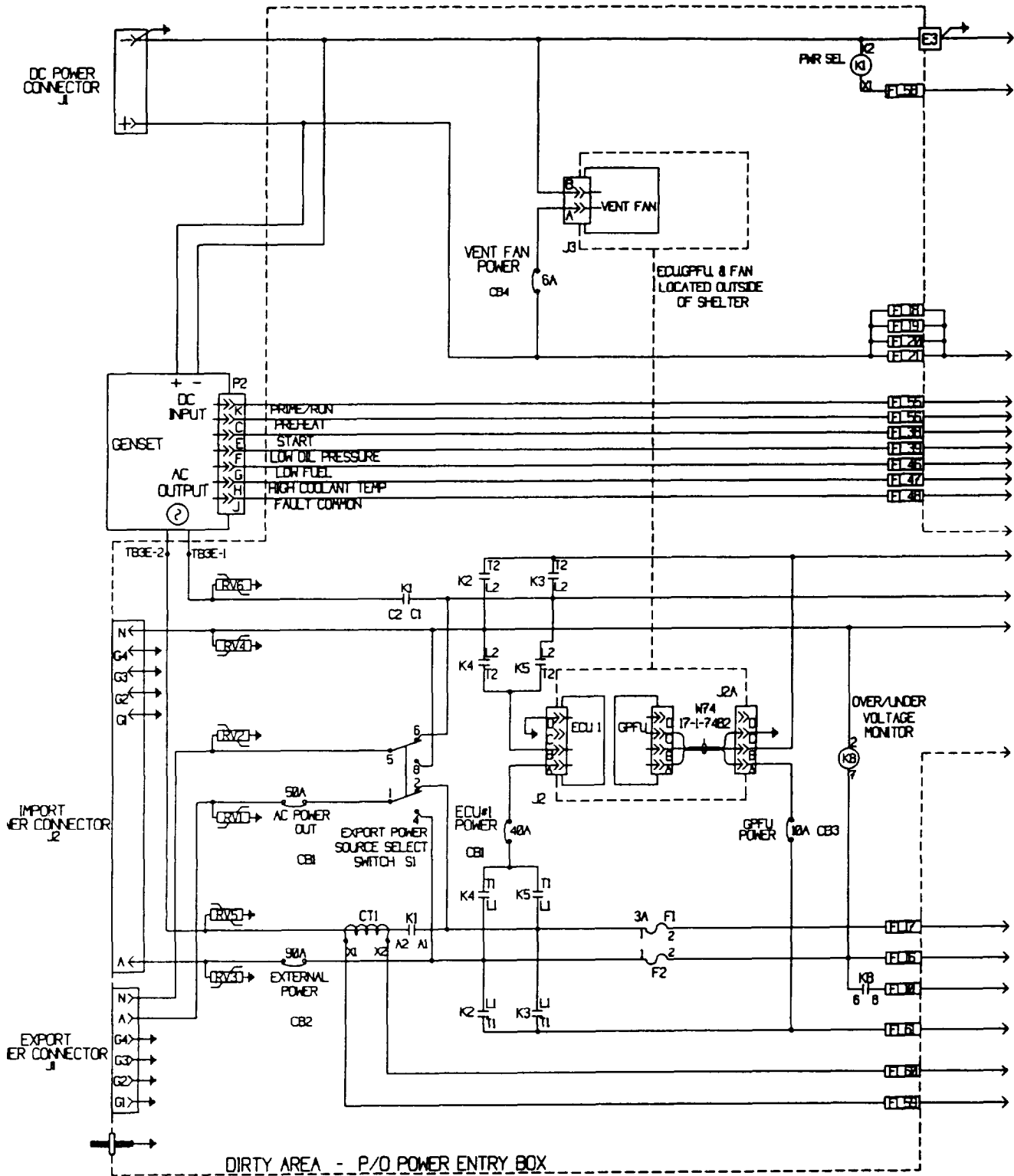


Figure 4-1. Power Distribution Schematic
(Sheet 1 of 4)

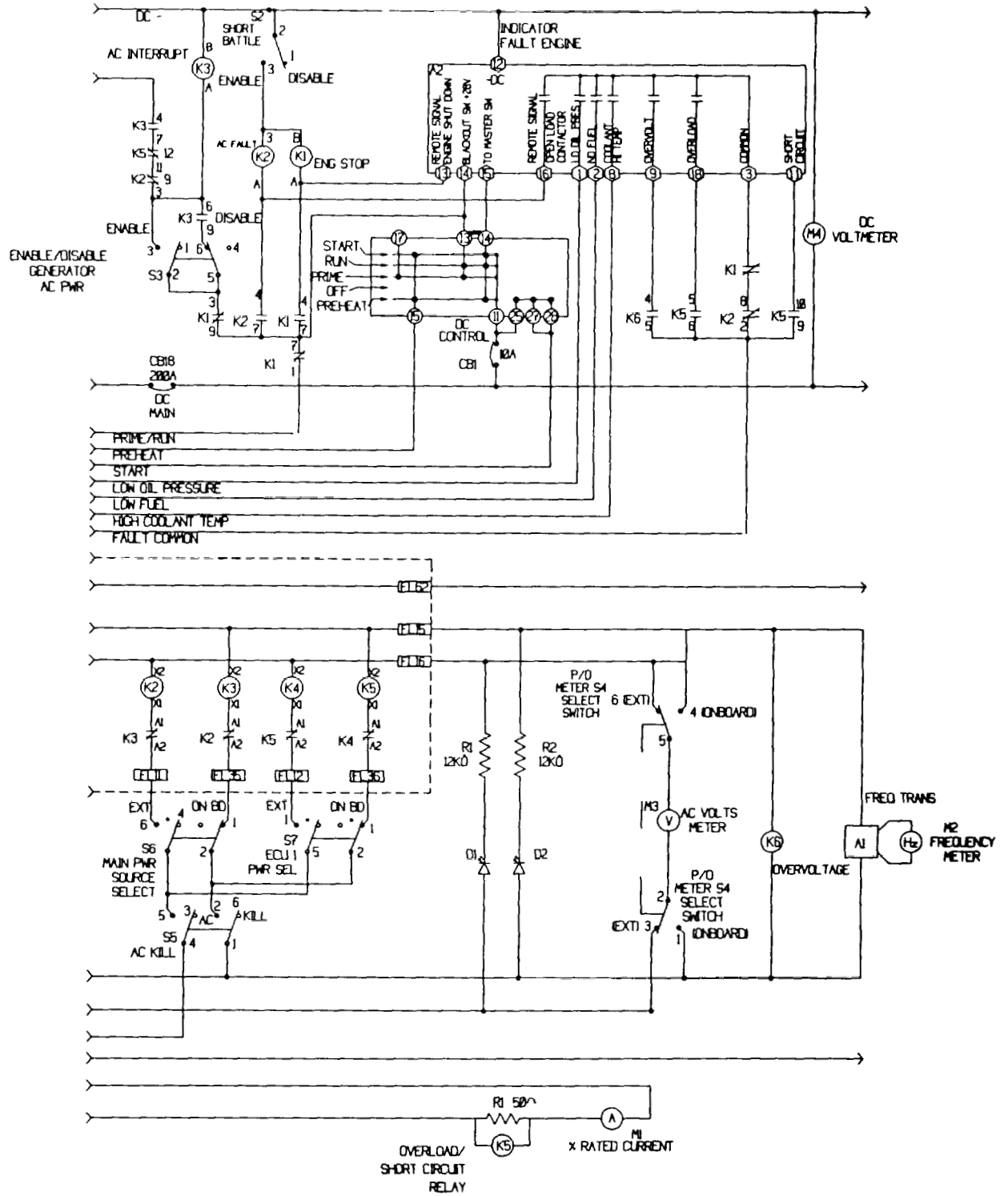


Figure 4-1. Power Distribution Schematic (Sheet 2 of 4)

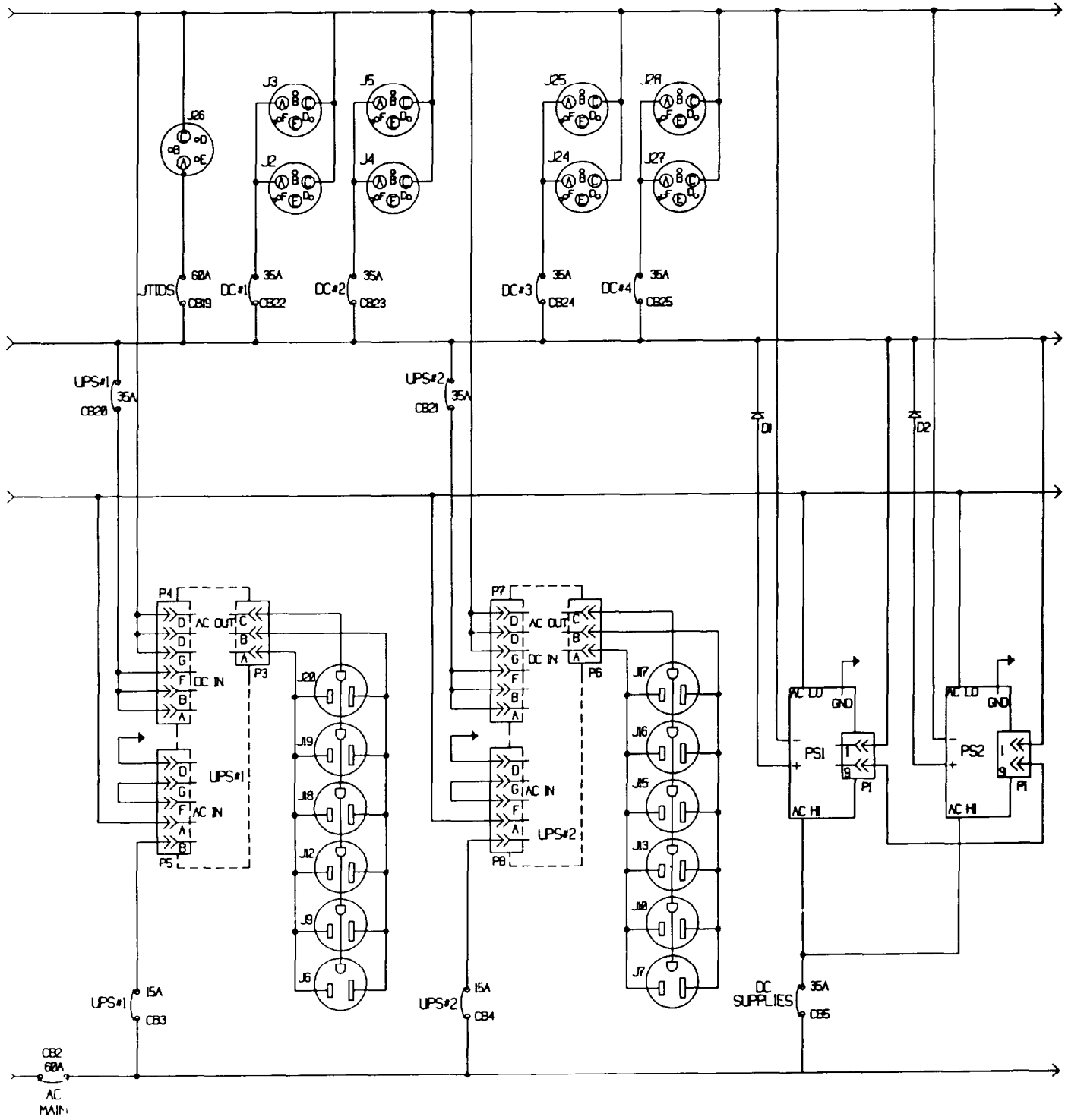


Figure 4-1. Power Distribution Schematic
(Sheet 3 of 4)

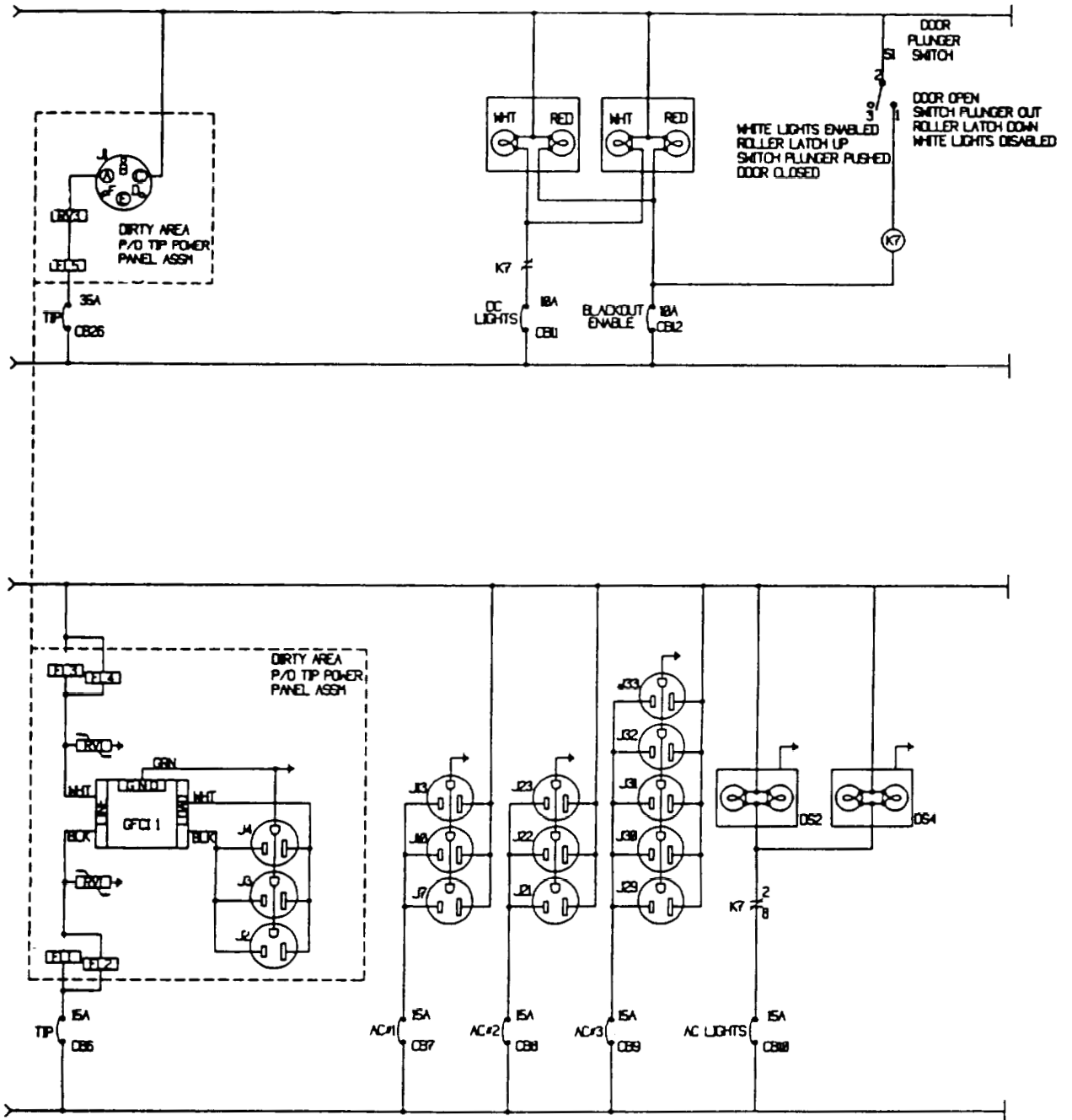


Figure 4-1. Power Distribution Schematic
(Sheet 4 of 4)

Section III. SERVICE UPON RECEIPT.

4-5. Service Upon Receipt of Shelter.

If the shelter is crated or pallet-mounted, refer to the end item technical manual for unpacking instructions. If the shelter is to be loaded onto a new HMMWV, perform the following:

NOTE

For shelters to be replaced or moved from one vehicle to another and for any component of the installation mounting kit which requires maintenance, perform only the steps which are applicable. Prior to performing the following procedures, remove Shelter-To-Vehicle Mounting Kit and inventory per Table C-I.

Front and rear mounting hardware appears similar, but is not interchangeable. Carefully maintain the integrity of the two packages.

a. Rear Vehicle Preparations

(1) Remove tailgate by removing screws, washers, and nuts securing hinges to HMMWV. Remove chain and related hardware.

(2) Remove antenna mount from rear of vehicle by removing screws, washers, and nuts. Carefully feed antenna cable back through grommet, place protective cap over connectors, and secure cables so they are not loose.

(3) Remove taillights from HMMWV lower frame. Retain hardware.

(4) Remove reflectors from rear of the vehicle by removing screws. Retain hardware.

(5) Remove towing pintle assembly. Retain towing pintle assembly and mounting hardware for later use. Discard spacer bracket (1).

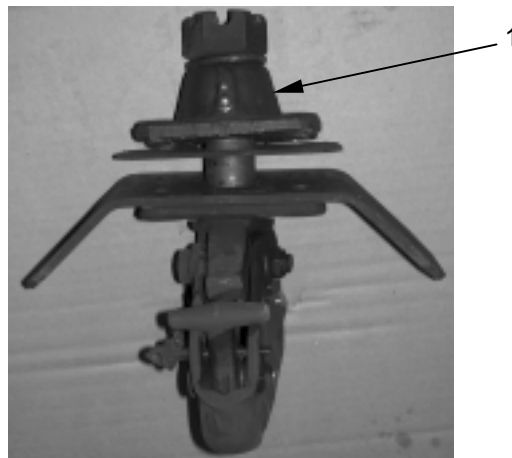


Figure 4-2. Towing Pintle Assembly

(6) From inside the rear wheel wells, remove the wiring harness clamp mounting bracket (1) from each side. Remove cable clamps from wiring.

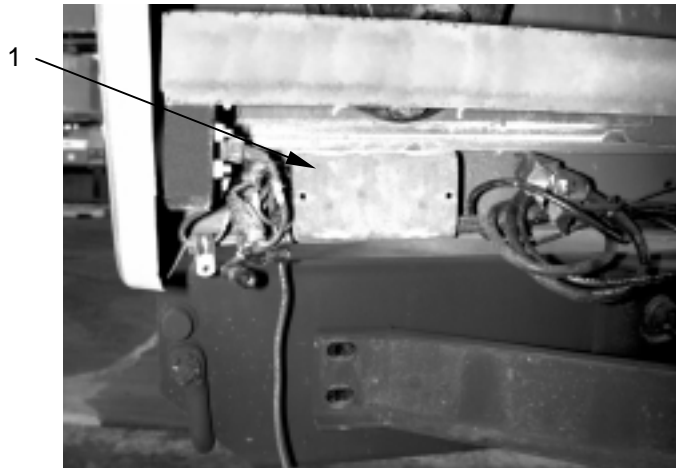


Figure 4-3. Wiring Harness Mounting Bracket

(7) Remove four nuts (1) and screws (7) securing cover assembly (6) and trailer connector (5) to receptacle mounting bracket (4). Retain cover assembly.

(8) Remove two nuts (2) and screws (3) securing receptacle mounting bracket (4) to rear bumper. Discard bracket.

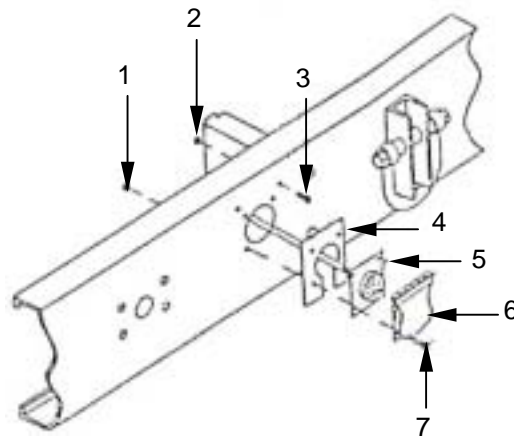


Figure 4-4. Trailer Receptacle

(9) Remove two screws and clamps securing body wiring harness to support.

(10) Remove four inside screws ((3)-Figure 4-5, next page), four flat washers (4), four lock washers (2) and four nuts (1) securing rear bumper to right and left inner supports. Retain hardware. Leave the outer four screws in place.

(11) Secure braces to rear bumper with four screws (5), four existing flat washers (6), existing backing plate (9), four locking washers (8), and four nuts (7). Tighten nuts to 90 lb-ft.

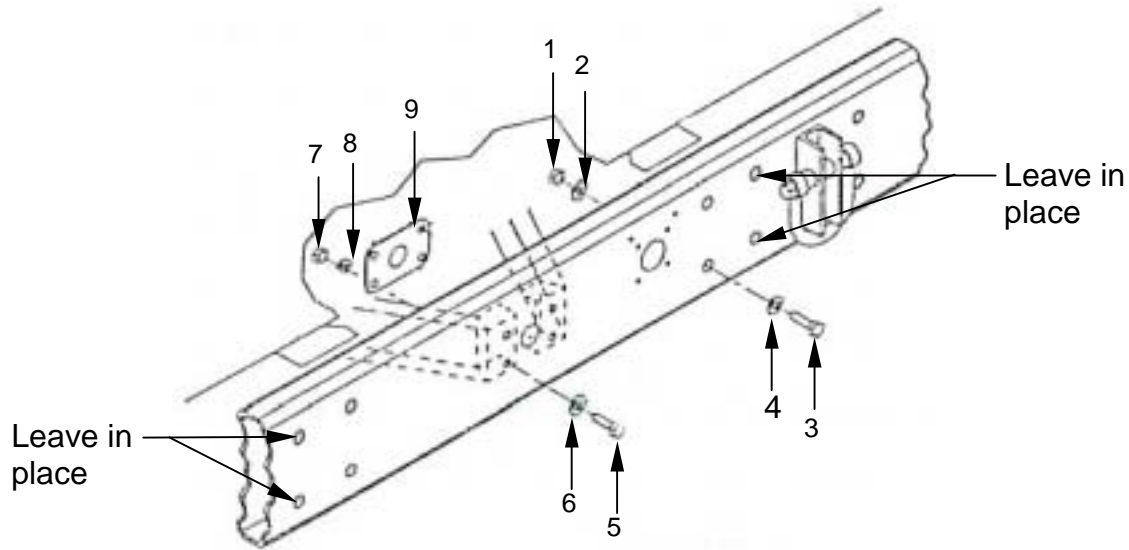


Figure 4-5. Bumper Preparation

b. Trailer Receptacle Installation.

(1) Secure receptacle bracket (2) to rear bumper with two existing screws and two new screws (4), flat washers (3), and lock nuts (1). Secure clamp bracket (8) with lower left screw (5), flat washer (6), and locking nut (7). Tighten nuts to 8 lb-ft.

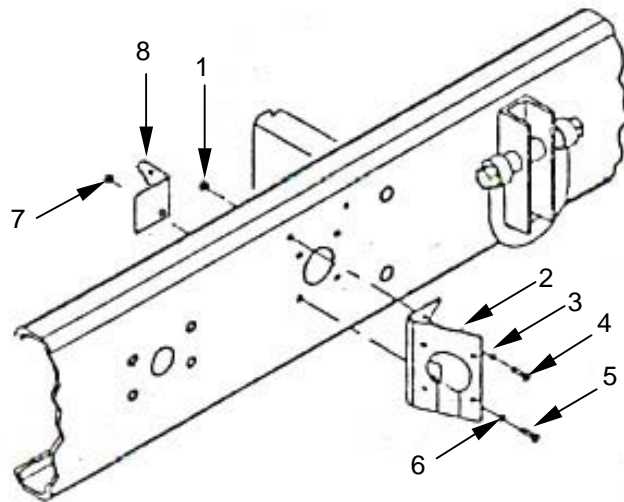


Figure 4-6. Clamp Bracket

NOTE

When performing step 2, ensure trailer connector key is located at the 12 O-Clock position (1).

(2) Secure trailer connector (4) and cover assembly (5) to new receptacle bracket (3) with four screws (6) and nuts (2). Tighten nuts to 8 lb-ft.

(3) Secure body wiring harness to clamp bracket with clamp (8), screw (9), and nut (7). Tighten nuts to 8 lb-ft.

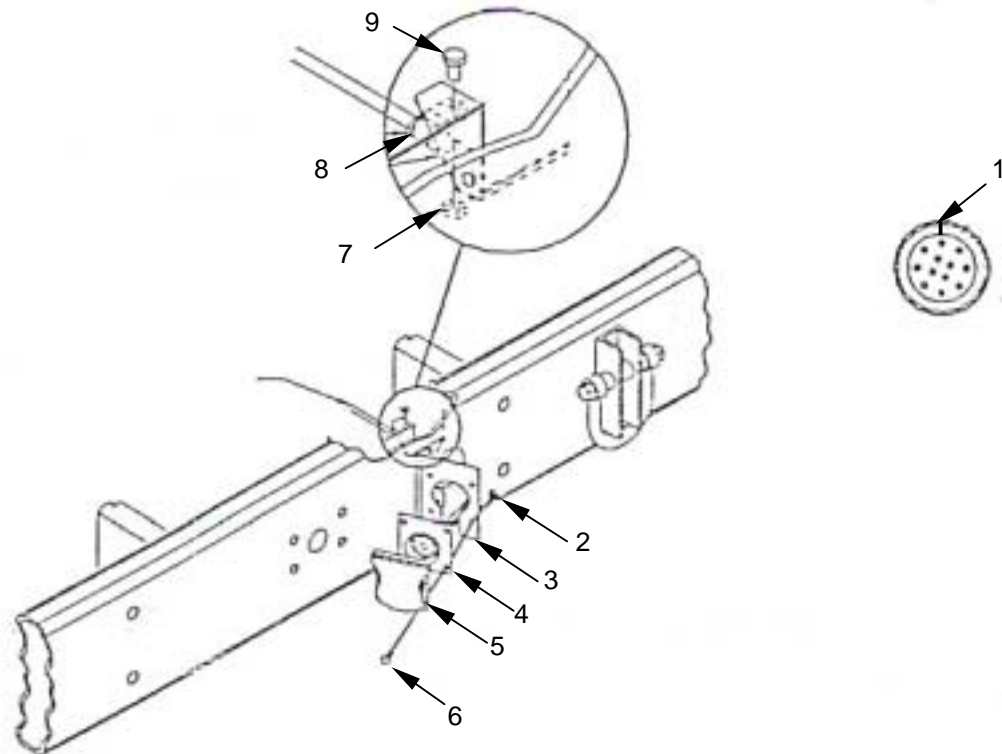


Figure 4-7. Trailer Connector

c. Pintle Extension Installation.

(1) Secure pintle extension ((1)-Figure 4-8 next page) to rear bumper with two plates (15), four screws (14), eight existing washers (16), four lock washers (17), and four lock nuts (18).

(2) Secure existing safety chain plate (2), support plate (6), and pintle plate (7) to pintle extension with four screws (4), washers (3), lock washers (8), and lock nuts (9). Do not tighten.

NOTE

Do not over tighten nut. Ensure pintle assembly rotates when turned by hand.

(3) Secure towing pintle assembly (5) to pintle extension (1) with existing washer (10), three washers (11), existing nut (12), and cotter pin (13).

(4) Tighten nuts installed in step 2 to 90 lb-ft.

(5) Spot paint as necessary (refer to TM 43-01349).

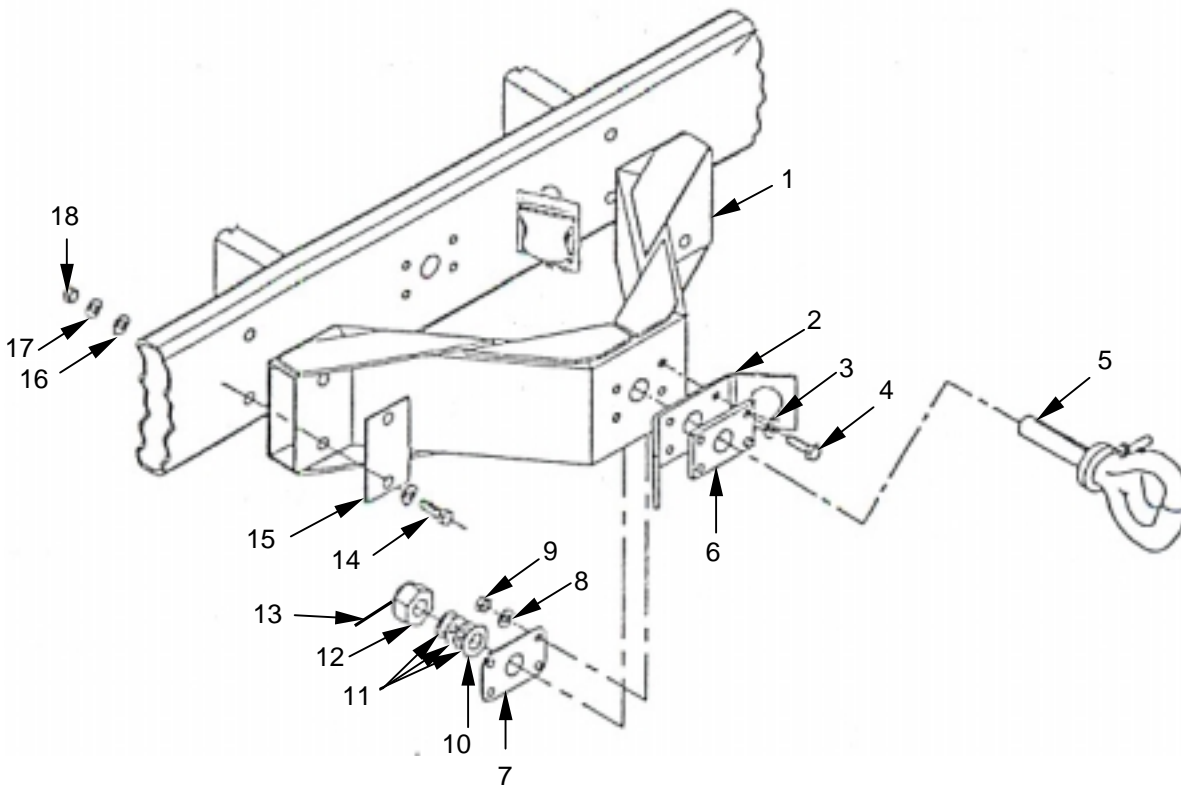


Figure 4-8. Pintle Extension Installation

e. Fuel Line Installation

(1) Underneath the vehicle wedge the vehicle fuel tank (see Figure 4-10) away from the bed of the vehicle with the small width of a hammer or similar blunt object. Do not use sharp objects or excess force.

(2) Remove passenger wheel well panels and dislodge plastic plugs in the bed of the vehicle, then dislodge insulation with screwdriver or some other blunt object. Insert fuel lines into the openings. Leave enough slack so the hoses may reach the fuel line connectors at the front of the shelter once it is mounted.

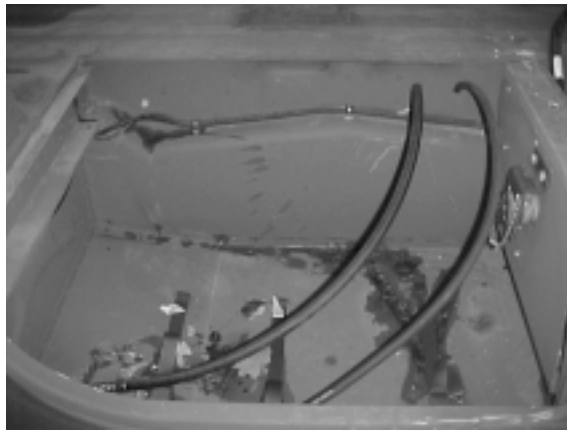


Figure 4-9. Insert Fuel Hoses

NOTE

The connectors on the fuel hoses will mount only one way with the connectors on the shelter. The larger hose is the supply to the generator from the vehicle's fuel tank and the smaller is the return line.

(3) Under the vehicle, remove the rubber tips from the two unused fuel lines. Loosen the clamps (2) and insert a hose onto each of the lines. The large hose (4) goes to the large fuel line (5), the smaller hose (3) to the small fuel line (1). Tighten the clamps (2) to hold the hoses in place.

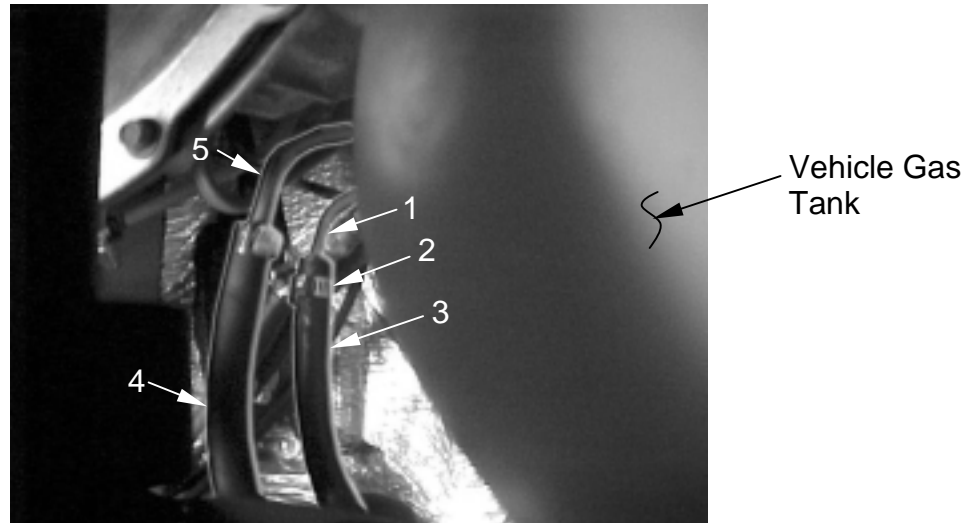


Figure 4-10. Attach Vehicle Fuel Lines
(View from underneath vehicle)

f. Front Vehicle Preparations

(1) Remove camlock fasteners from the vehicle mounting beam located in the front of the vehicle's bed, on both sides. Using a drill, enlarge the holes 1/8".

(2) Remove strap tie down ring from the front of the bed floor, passenger side.

(3) Assemble short screw ((1)-does not come with mounting kit), flat washer (2), spacer sleeve (3), isolator (4) and isolator washers ((5)-used only on the outside three assemblies) together. Loosely attach outside three isolator assemblies to the bar assembly (6). Loosely attach inside assembly in place with flat washer (8), and non-locking nut ((7)-does not come with the kit).

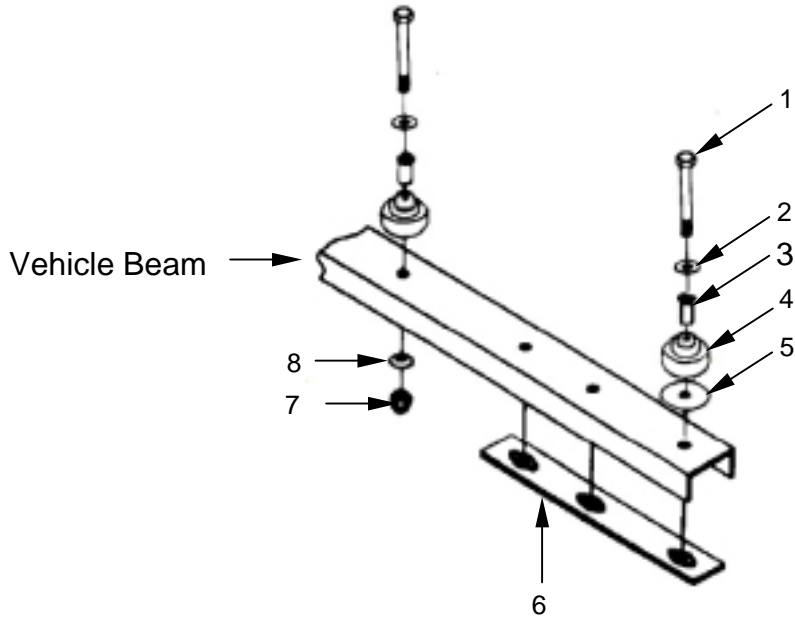


Figure 4-11. Front Vehicle Preparation

(4) Position NATO slave cable (1) in between the mounting hardware. Connect the cable to the vehicle batteries connector (2).

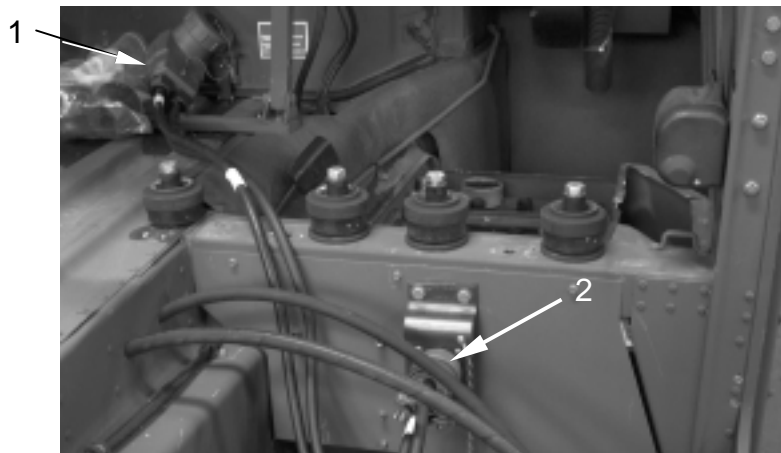


Figure 4-12. Position NATO Slave Cable

h. *Rear Shelter Preparations.***WARNING**

Be sure shelter is properly positioned on support stands capable of supporting 2000 Lbs. Failure to observe safety procedures when working under the shelter could result in severe injury or death. Set support stands so that floor-to-shelter clearance is approximately 20 inches.

NOTE

There are left and right mounting brackets. They will mount only one way. Ensure integrity between each side.

(1) Assemble rear mounting bracket (upper) by inserting isolator mount washers (4) into the channel of the mounting bracket (3). Insert an isolator mounting screw (2), and flat washer (1) down through each opening in the bracket.

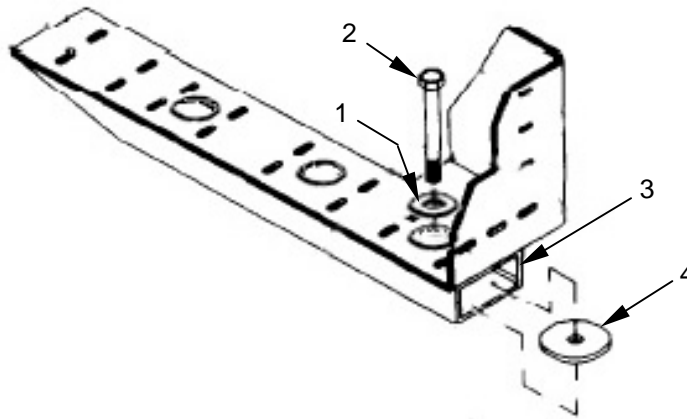


Figure 4-13. Assemble Rear Mounting Bracket (Upper)

(2) Attach rear mounting bracket to shelter as follows:

(a) On the bottom of the shelter, remove all debris, paint, or sealer from any rivet head that may come in contact with the rear mounting bracket. Ensure threaded holes are clear of burrs or debris. Tap to clean foreign matter from holes.

CAUTION

Do not use excessive force when tightening nuts. Damage to the equipment can occur.

(b) Attach assembled rear mounting bracket ((1)-Figure 4-14 next page) to the shelter by loosely attaching forward and side screws (4 and 7), flat washers (2 and 5), and lock washers (3 and 6).

(c) Loosely attaching bottom screws (8 and 9), flat washers (5), and lock washers (6).

(d) After all screws are loosely in place, check for proper alignment. Usually, the screws should be centered in the oblong bracket slots. Tighten screws to approximately 8 ft. lbs.

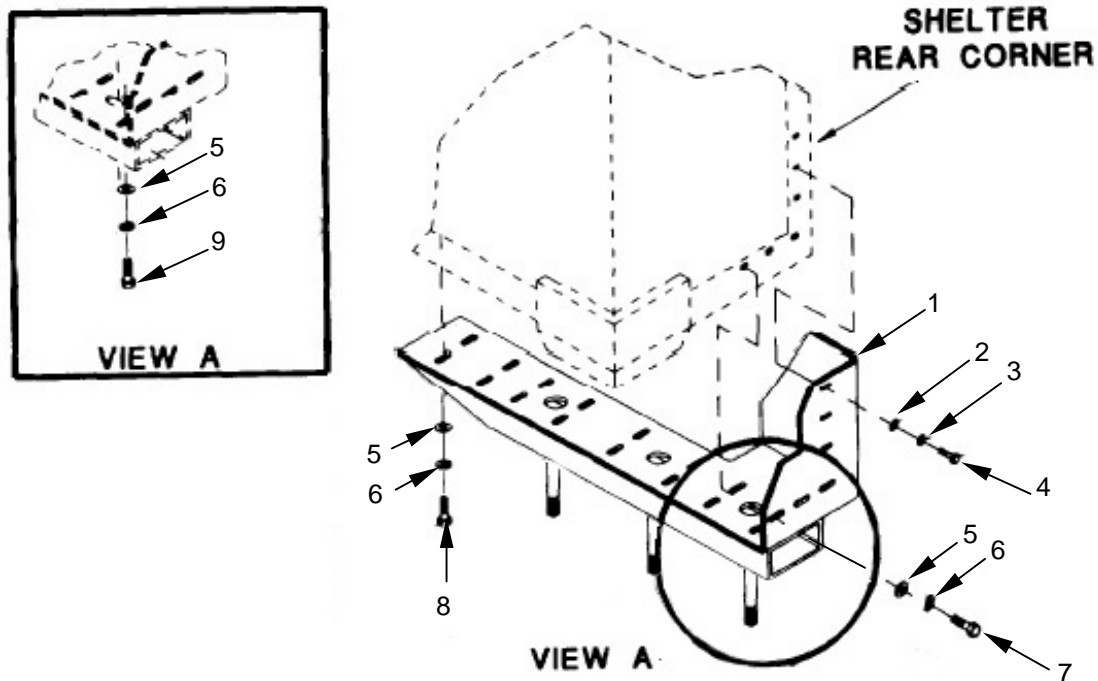


Figure 4-14. Attach Rear Mounting Bracket (Upper)

(3) Attach rear mounting bracket (lower) as follows:

(a) Secure clamping bracket ((2)-Figure 4-15 next page) and shim (3) to lower section of rear mounting bracket (4) using screw (1), flat washer (12), lock washer (13), and nut (14).

NOTE

It is helpful to use a small amount of lubricant when assembling isolators and spacers.

(b) Slide isolator (16) and isolator spacer (17) together onto each mounting screw (15).

(c) Press spacer (7) into isolator (8). Press isolators ((8 and 5)-with beveled edges facing each other) and sleeve spacer (6) together. Hold lower bracket (4) onto mounting screw (15) and slide isolator assembly onto mounting screw (15). Secure with flat washer (9), lock washer (10), and locking nut (11). Repeat for the other three screws.

(4) Repeat steps 1 through 3 for other side of the shelter.

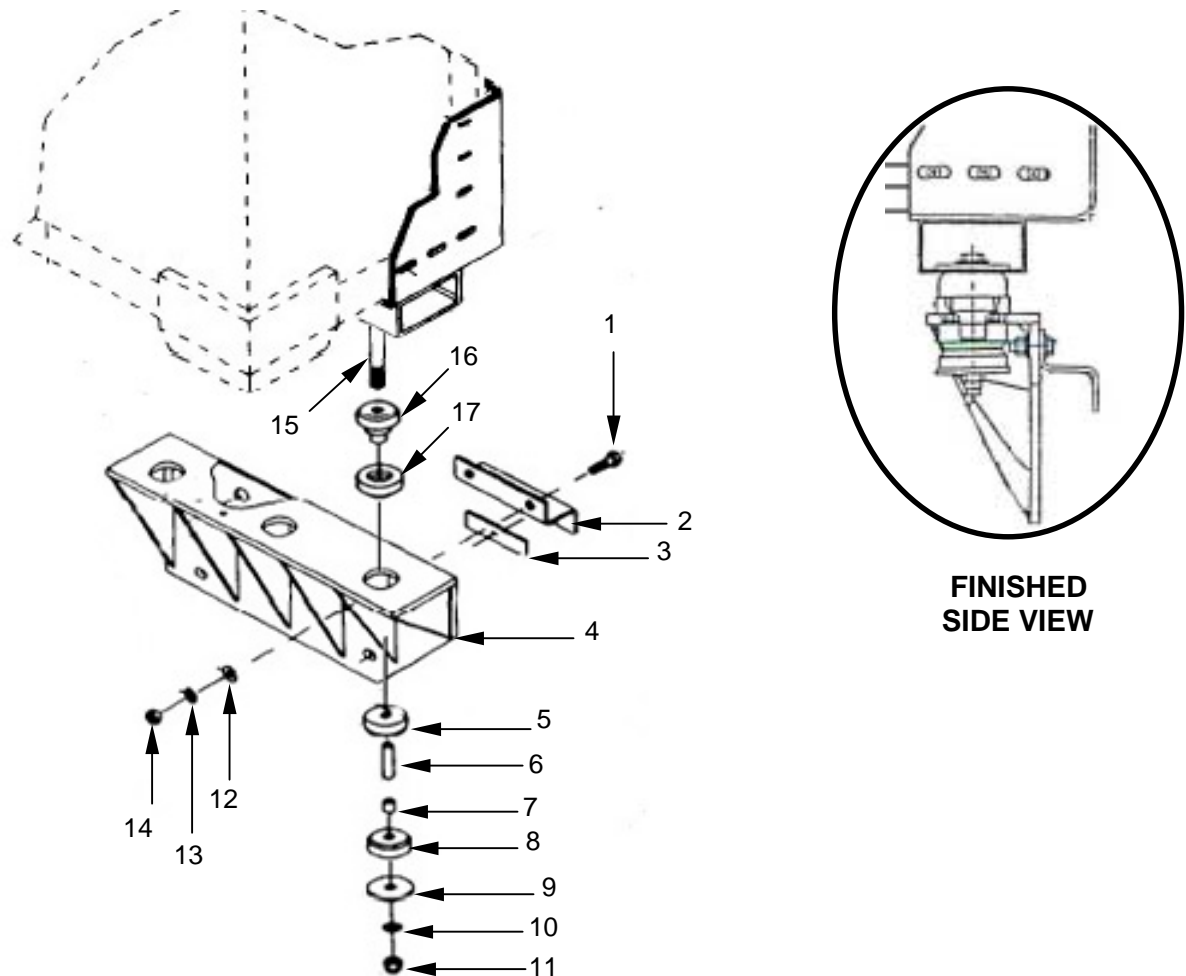


Figure 4-15. Attach Rear Mounting Bracket (Lower)

i. Front Shelter Preparations.

(1) Remove bolts/plugs from the front and bottom front surfaces of the shelter. Inspect to ensure holes are free from debris, burrs, or other obstructions.

CAUTION

Ensure use of correct screws as they are threaded differently. Do not use power tools or excessive force when tightening screws. Damage to equipment may occur.

(2) Set mounting angle assembly (1) to shelter and secure front section with screws (2), lock washers (3), and flat washers (4). Then secure bottom section with screws (5) and flat washers (6). Tighten screws to 8-10 ft-lbs.

(3) Repeat steps 1 and 2 for other side of shelter.

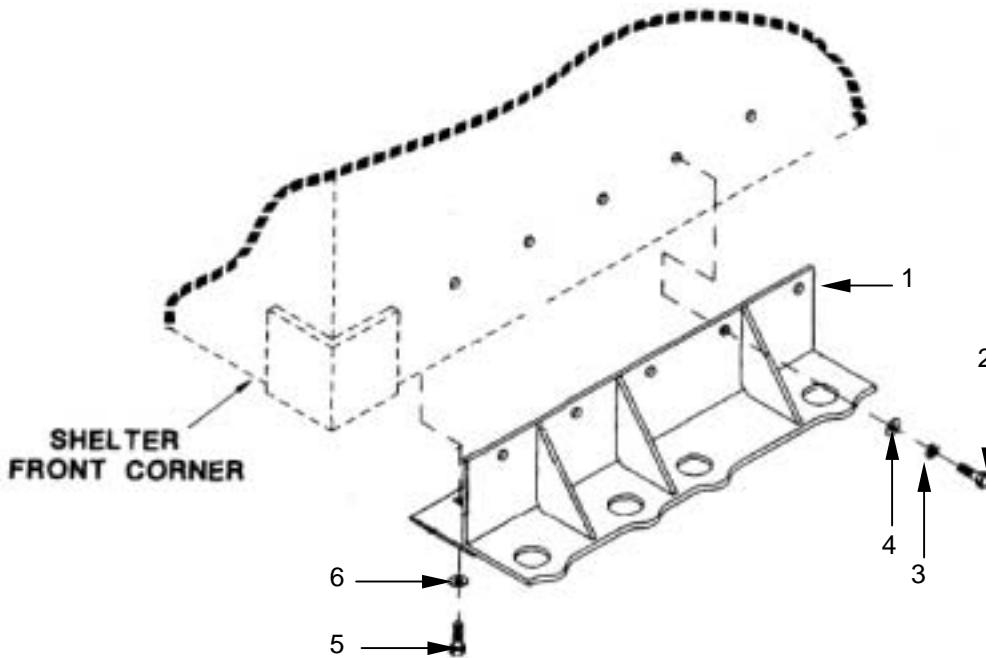


Figure 4-16. Attach Front Mounting Bracket

j. Mounting Shelter on Vehicle.

WARNING

To prevent injury or death to personnel, ensure hooks of lifting device are inspected and securely attached before lifting shelter.

Slings and hoists must be properly certified. Use of an uncertified sling, or a sling which is not currently certified, may result in equipment damage or severe injury or death to personnel.

Do not use handling and lifting equipment of less capacity than the gross shelter weight. Failure to observe warning may result in equipment damage or severe injury or death to personnel.

SICPS shelter weighs in excess of 3500 pounds. Failure to follow safety procedures when the shelter is being lifted and handled can result in severe injury or death.

CAUTION

Do not jerk, bounce, or jar shelter when lifting. Avoid swinging shelter from side to side. Do not attempt to butt or push shelter into place with a forklift. If shelter is crated or palletted, follow the stenciled instructions for forklift operations.

If shelter panel is punctured during loading or securing, repair puncture as soon as possible to prevent moisture from seeping into panels and to restore RFI/EMI shielding.

(1) Attach certified sling assembly ((1)-Figure 4-17 next page) to all four lifting rings (5) on shelter using the four sling hooks (4) at opposite ends of cables from sling assembly lifting ring (3).

(2) Insert lifting hook (2) of the lifting device into sling assembly lifting ring (3).

(3) Carefully lift shelter with lifting device, then set shelter down onto the vehicle so the front mounting bracket (6) is just resting on the previously assembled isolators (7). Use a hammer to tap the isolator assemblies into the bracket.

(4) Remove old bolts, and flat washers (10) lock washers (9), and nuts (8) securing rear bumper to vehicle frame. Retain nuts, lock washers, and flat washers.

(5) Slowly lower the rear of the shelter so that the rear mounting bracket (12) fits over the vehicle bumper (11). When the bracket and bumper are properly aligned, insert two new, longer screws (13), two retained screws, retained flat washers (10), retained lock washers (9), and retained nuts (8).

(6) Repeat step 5 for the other side.

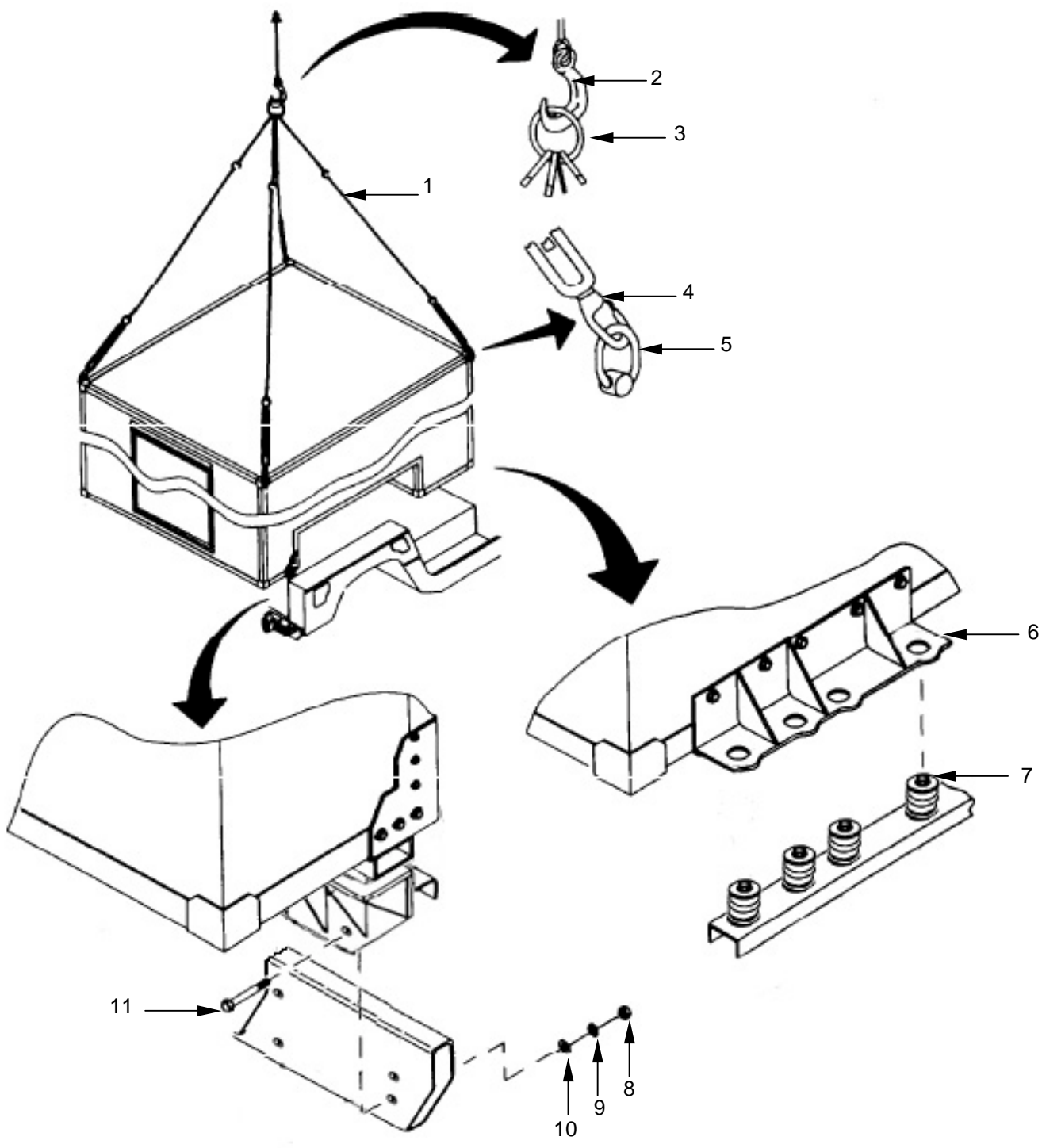


Figure 4-17. Mounting the Shelter

k. Front Mount Completion

(1) At the front of the shelter, remove short screw, flat washer, and locking nut from inside isolator assembly. Insert new, long screw (1), flat washer (2), isolator mount washer (3) and isolator (4) through front mounting bracket (5) and emplaced isolators. Secure with retained flat washer (6) and locking nut (7).

(2) One at a time, remove the three short screws from the outside isolator assemblies. Insert new, longer screw (1), flat washer (2), isolator mount washer (3), and isolator (4) into each slot of front mounting bracket (5), and emplaced isolators. Secure into the nut bar (8).

(3) Repeat both steps for the other side of shelter. Do not over-tighten screws.

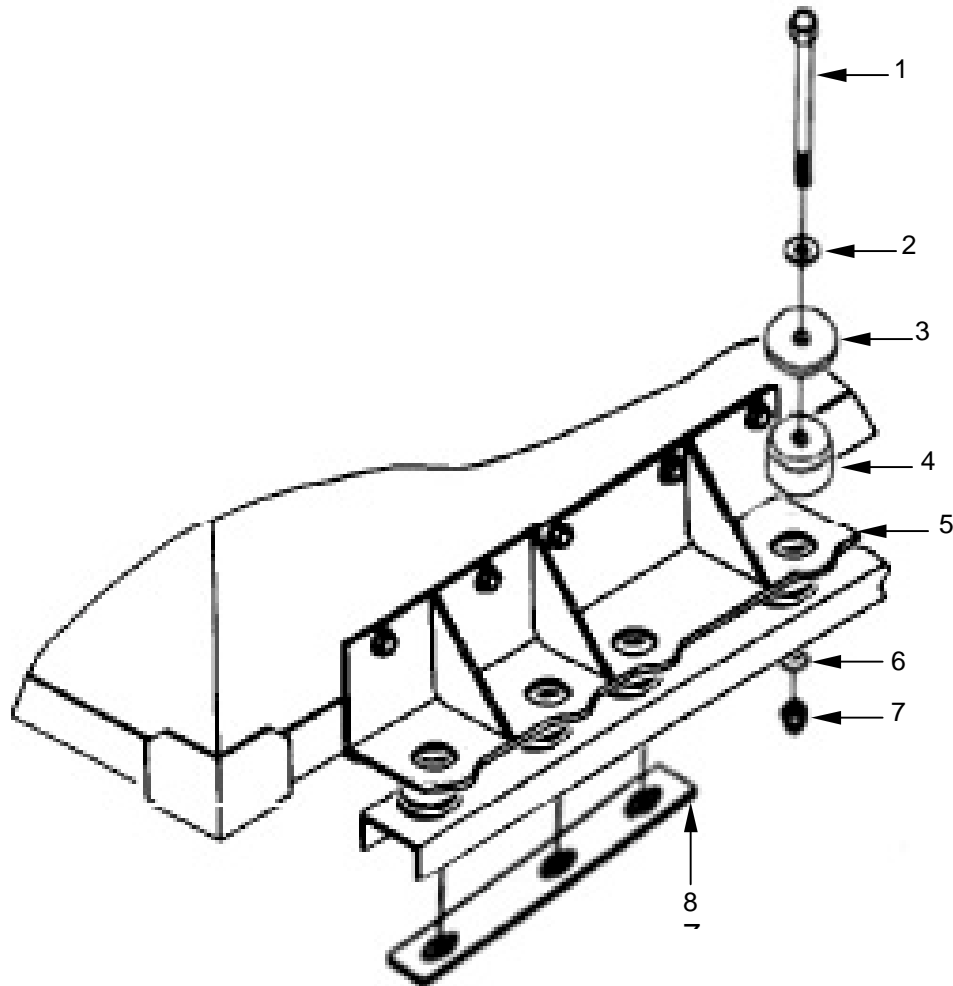


Figure 4-18. Shelter Front Mount Completion

I. Tail Light Mounting

(8) Place tail light mounting bracket (6) with tail light (5) onto lower section of rear mounting bracket (1) and secure with nut (7), flat washers (4), lock washer (3), and screw (2).

(9) Insert taillight wiring connectors through hole in lower section of rear mounting bracket (1) and reconnect to vehicle wiring harness.

(10) Cut an 1/8" notch out of grommet (8) and install in hole in rear mounting bracket (1) around tail light wires.

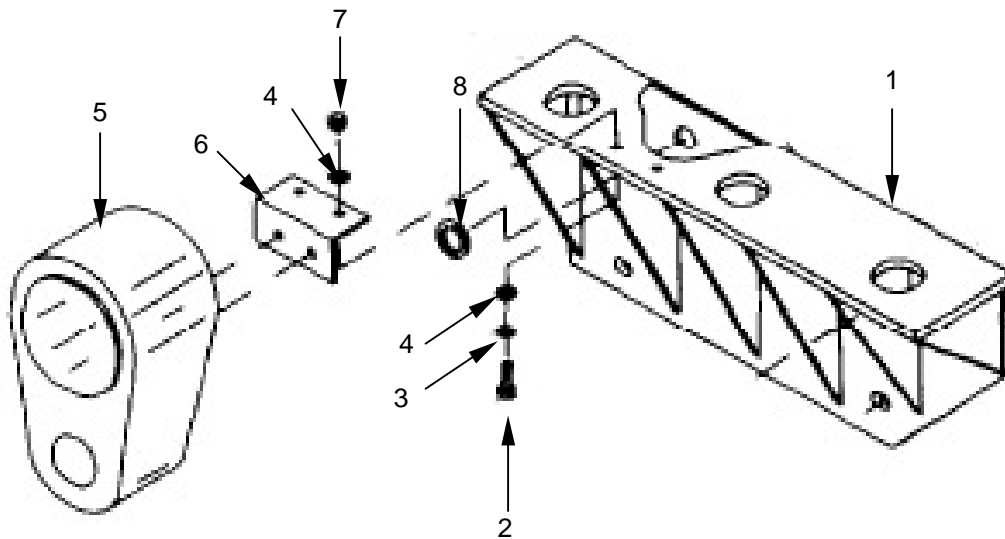


Figure 4-19. Tail Light Installation

Section IV. TROUBLESHOOTING

4-6. GENERAL. This section contains troubleshooting information for malfunctions which may develop during maintenance or operation. Maintenance is limited to those components which may be repaired or replaced at the direct support level. Table 4-1 identifies each malfunction followed by the test or inspection followed by a corrective action. These tests or inspections and corrective actions should be performed in the order listed. An index is provided to assist you in quickly locating a problem. This manual cannot list all malfunctions that may occur. If you encounter a malfunction that is not listed or that cannot be corrected by the listed corrective actions, notify your supervisor.

4-7. CABLES/ELECTRICAL WIRING. Although cables within the SICPS shelter can be tested for continuity using a multimeter, troubleshooting and testing of mission equipment cables are accomplished under a system configuration (refer to TM 11-7010-260-12&P). Figure 4-20 provides a wiring diagram for the SICPS shelter signal/data lines. Maintenance of cables and electrical lines at the direct support level is limited to the removal and replacement. Although some of the cables and electrical lines can be accessed relatively easy, many require the removal of the racks (para 4-37), which in turn requires the removal of installed equipment. The repair times listed in the Maintenance Allocation Chart do not include the time it takes to remove the mission equipment or racks.

4-8. AUXILIARY COMPONENTS. Troubleshooting of the GENSET, GPFU, ECU, and their control panels is covered under separate manuals. See Appendix A.

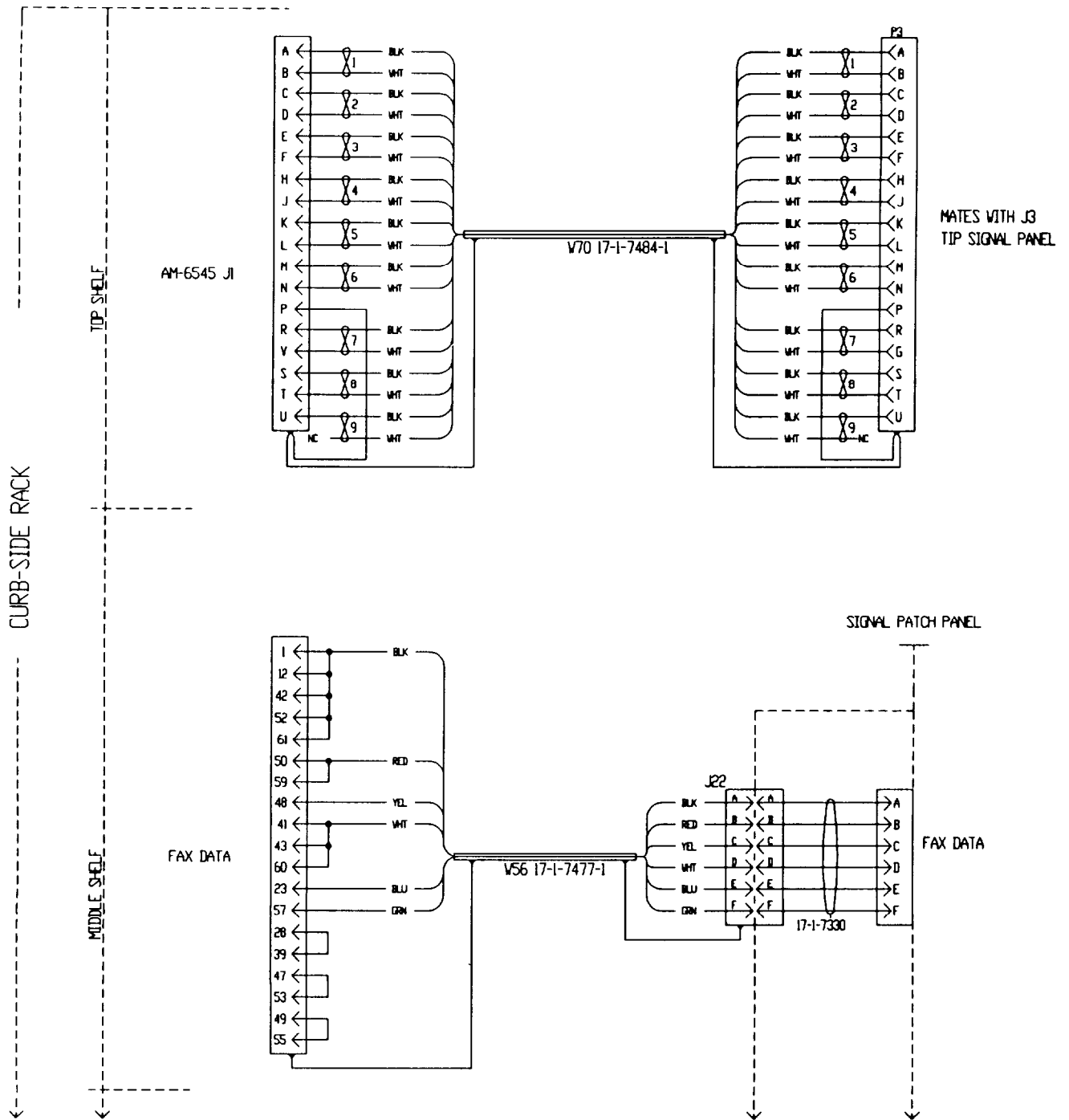


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 1 of 11)

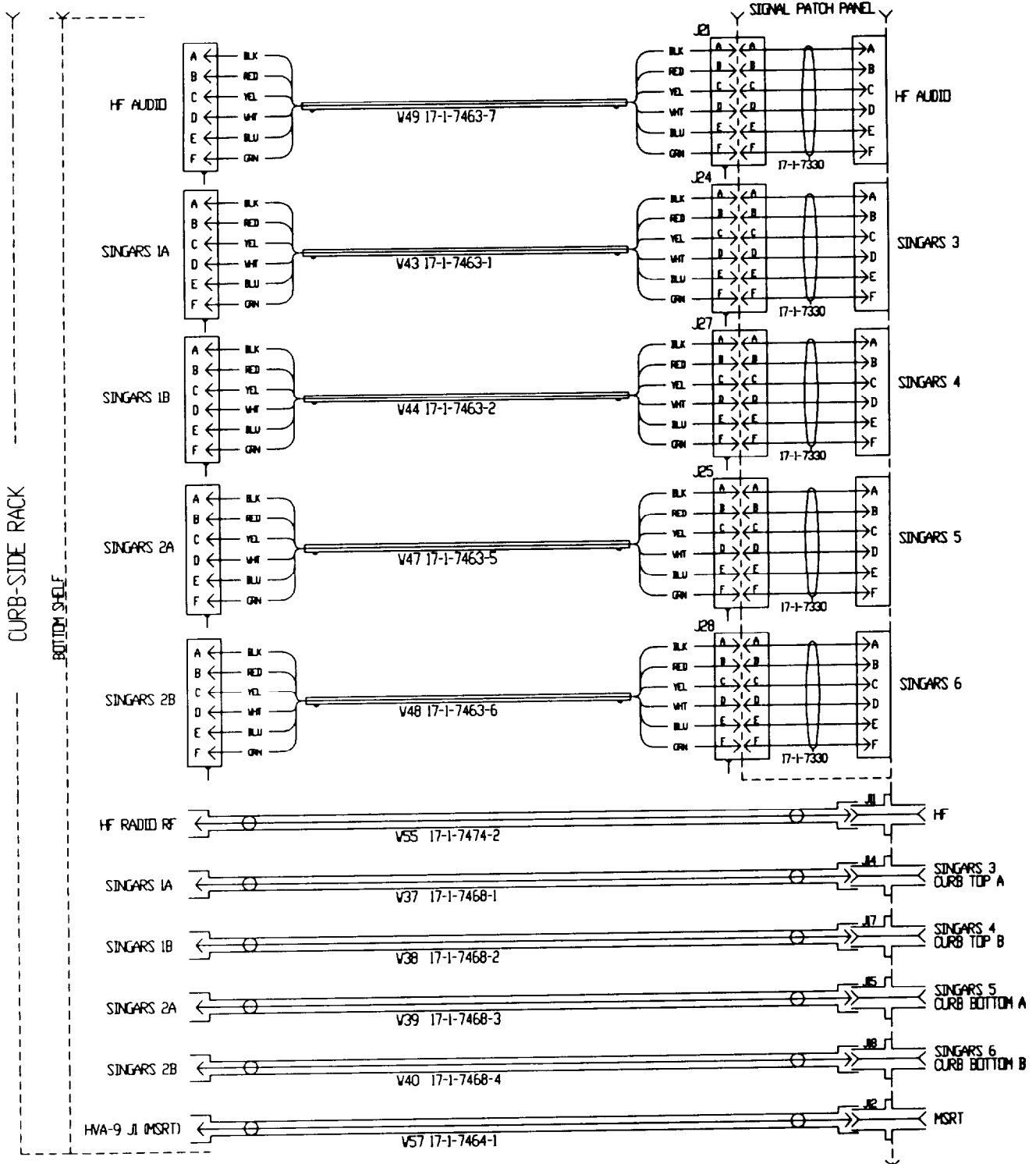


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 2 of 11)

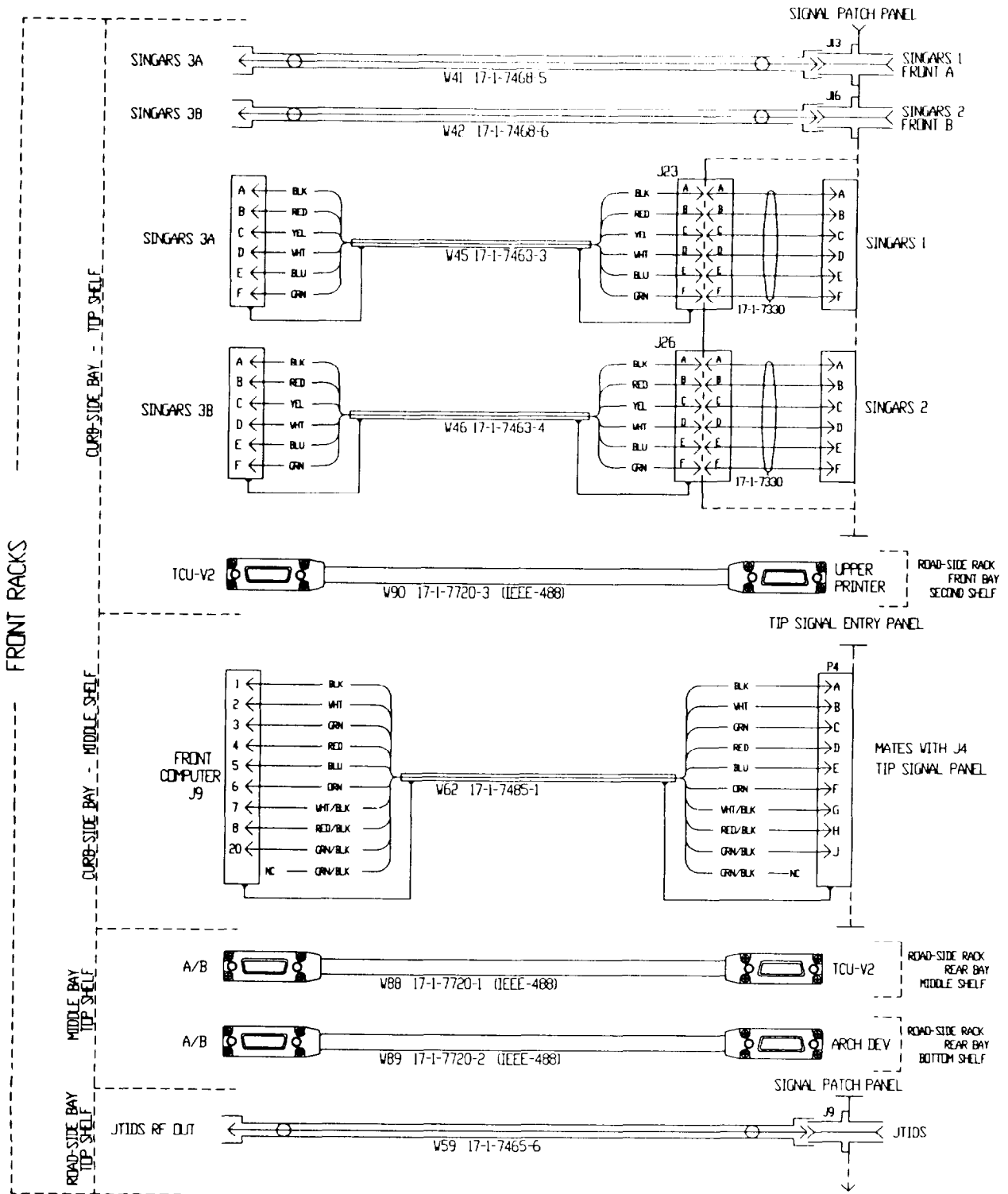


Figure 4-20. Signal/Data Wiring Diagram (Sheet 3 of 11)

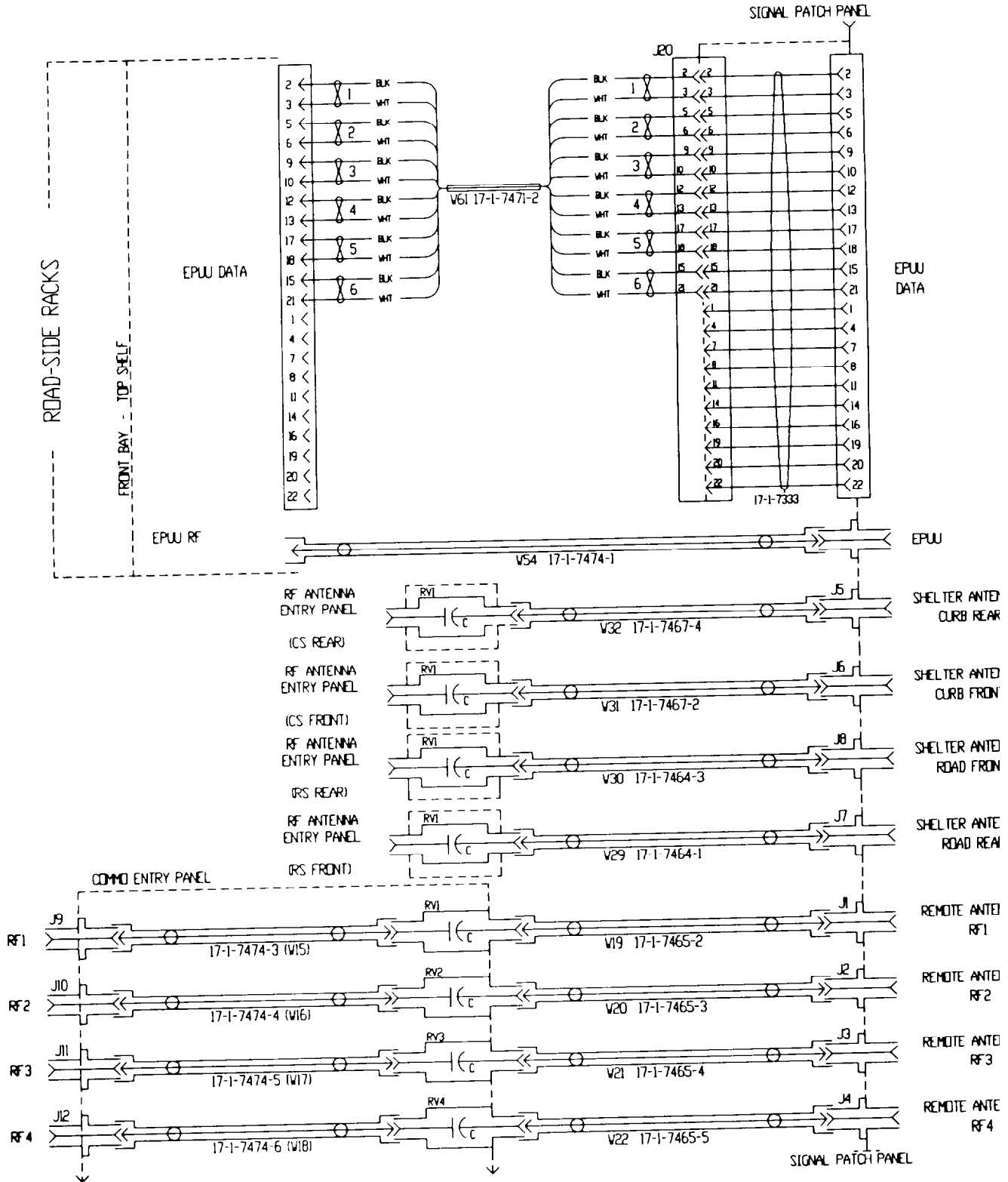


Figure 4-20. Signal/Data Wiring Diagram (Sheet 4 of 11)

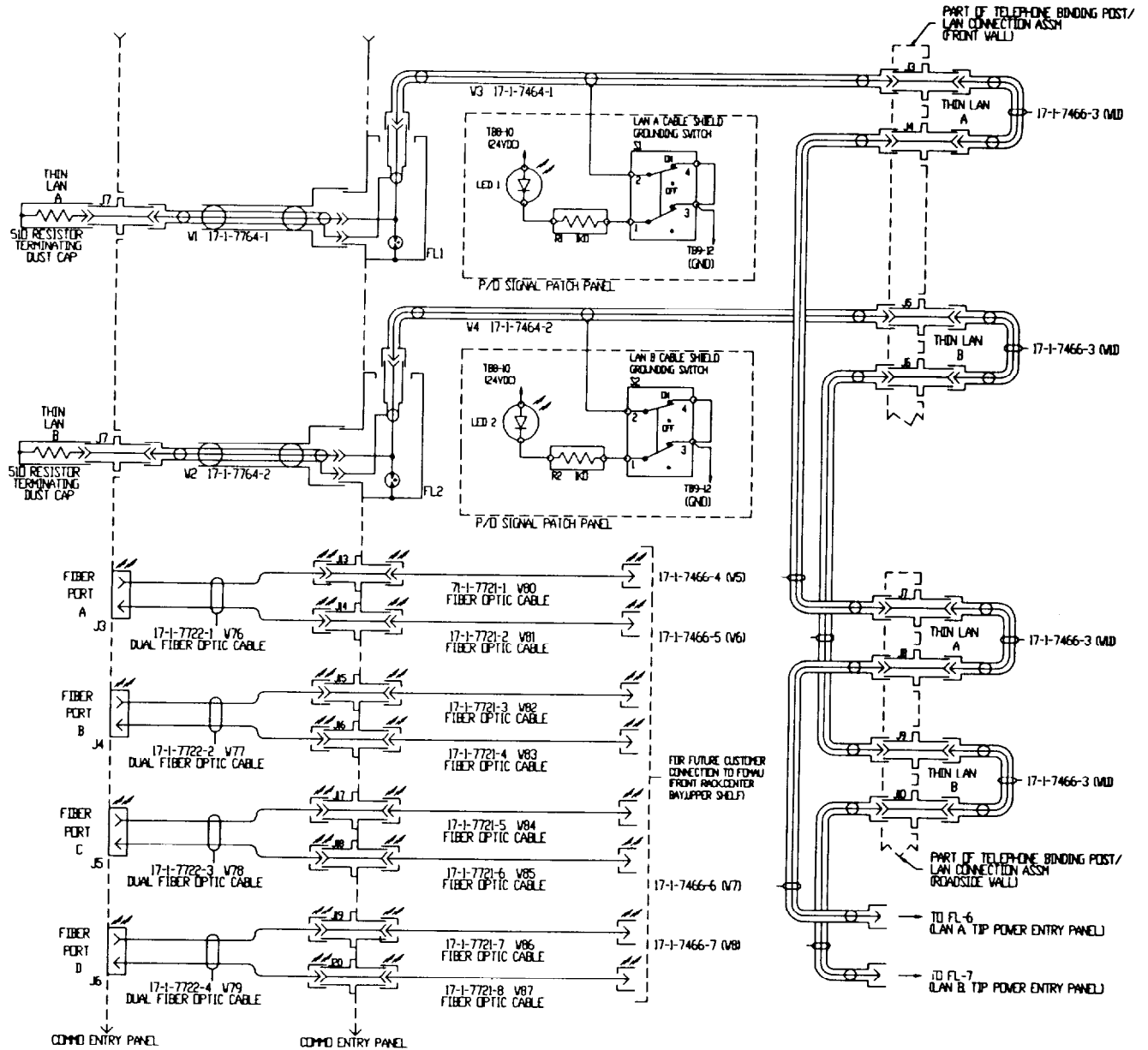


Figure 4-20. Signal/Data Wiring Diagram (Sheet 5 of 11)

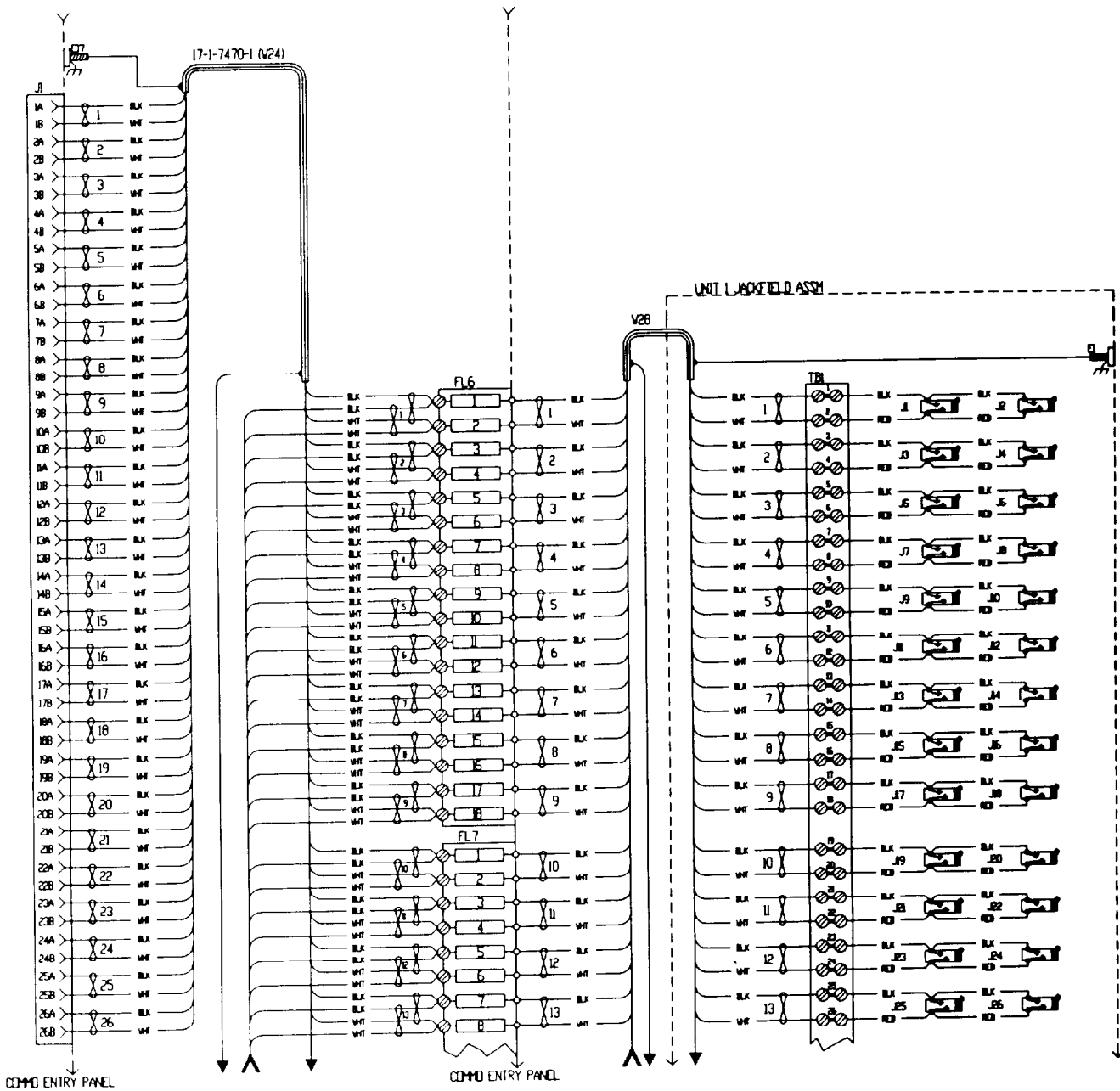


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 6 of 11)

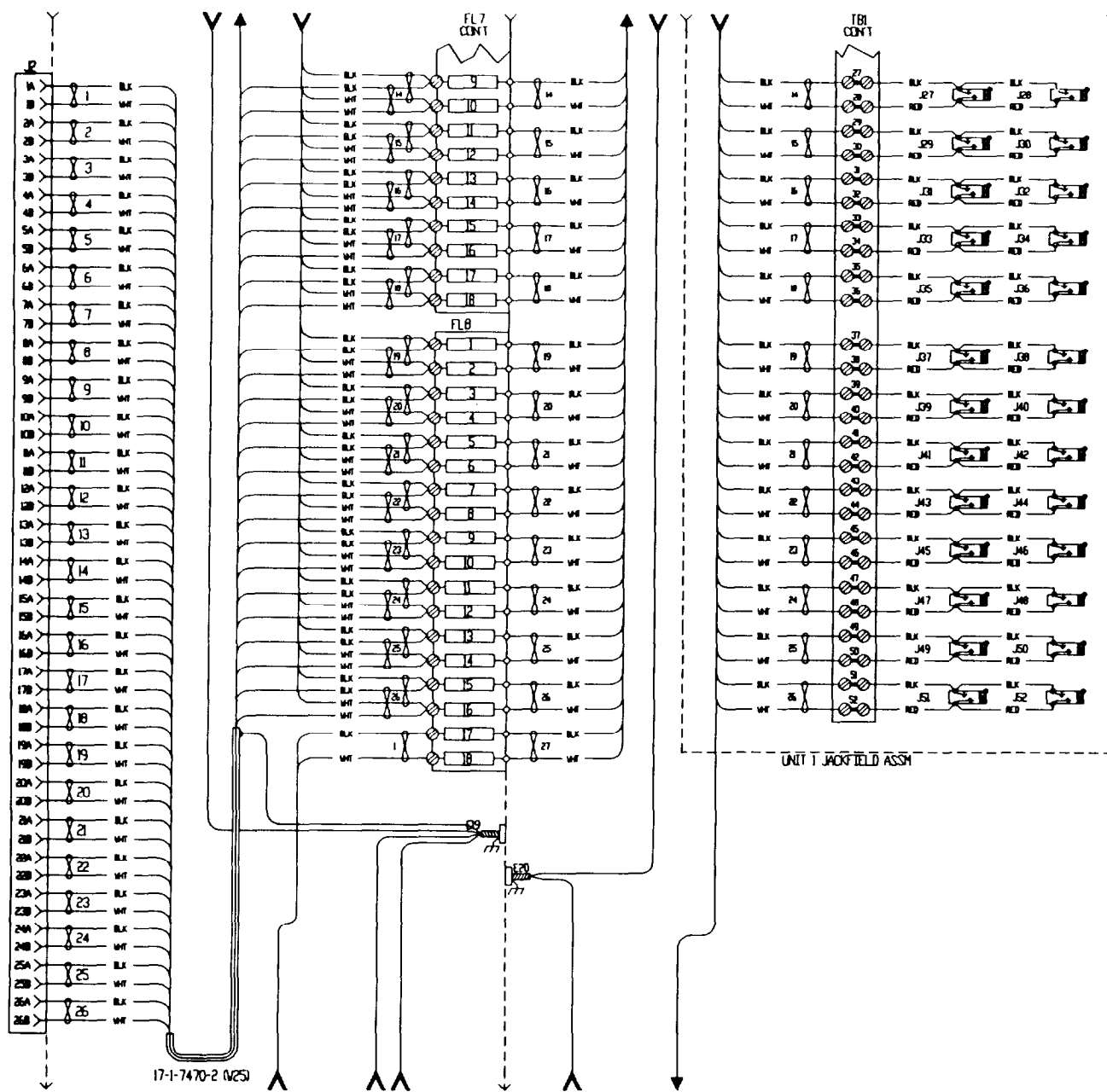


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 7 of 11)

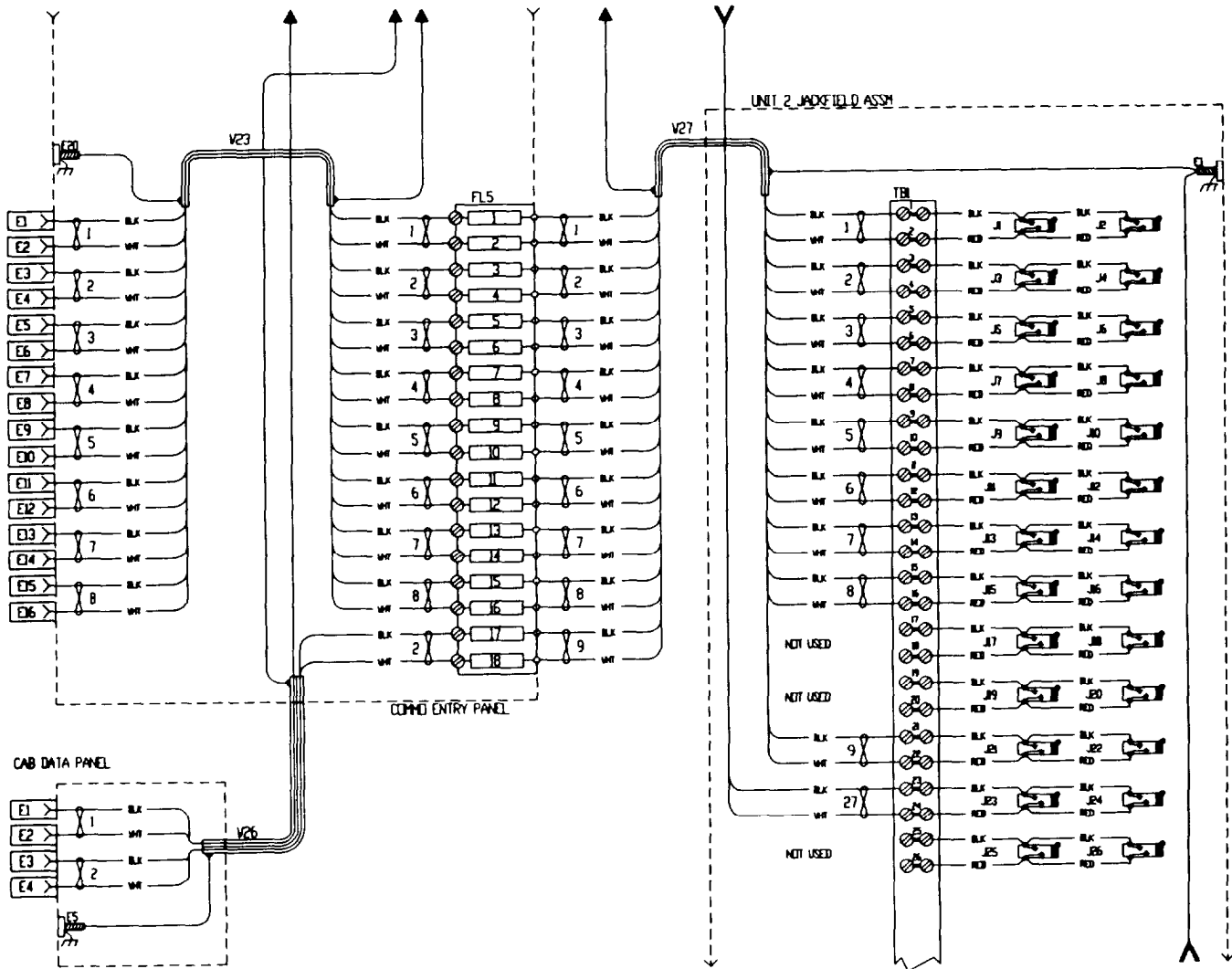


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 8 of 11)

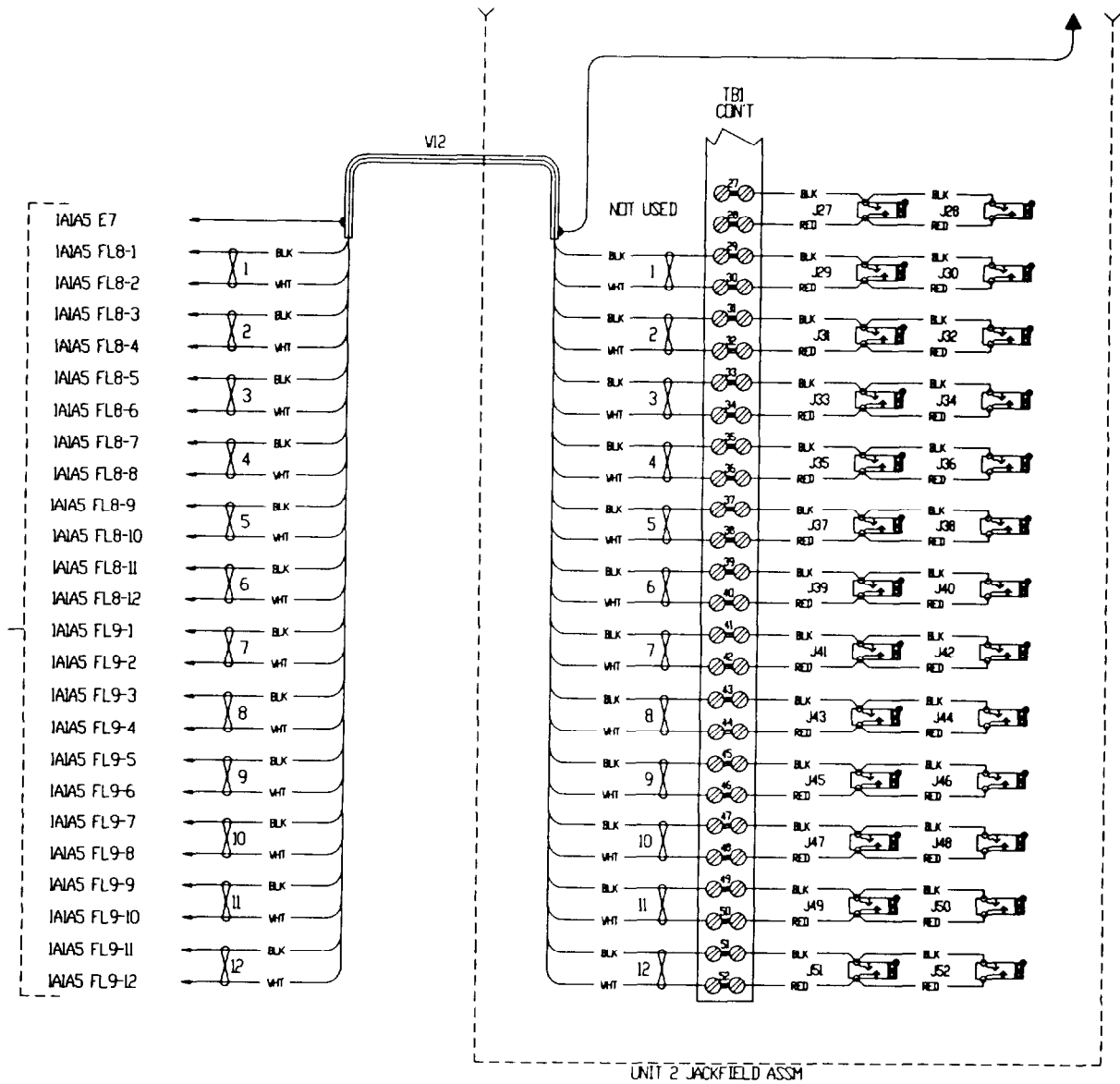


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 9 of 11)

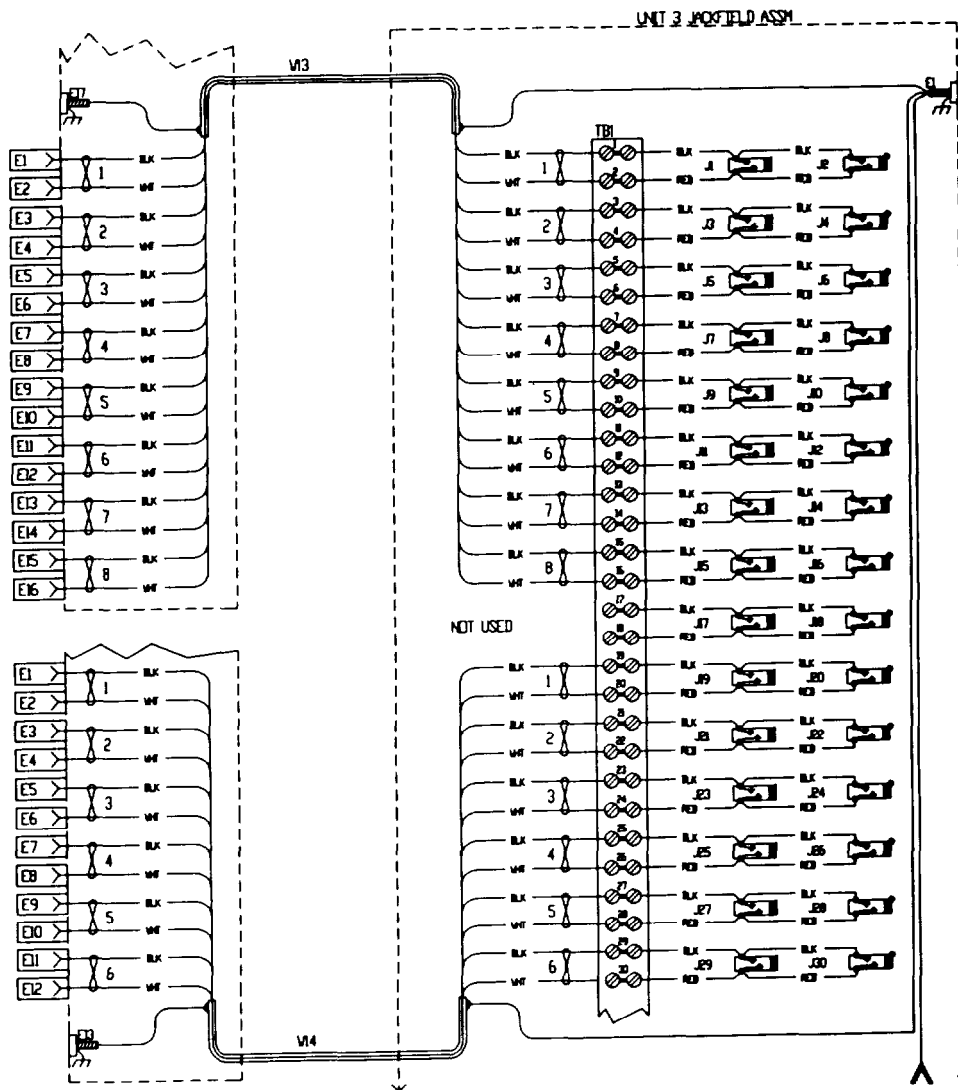


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 10 of 11)

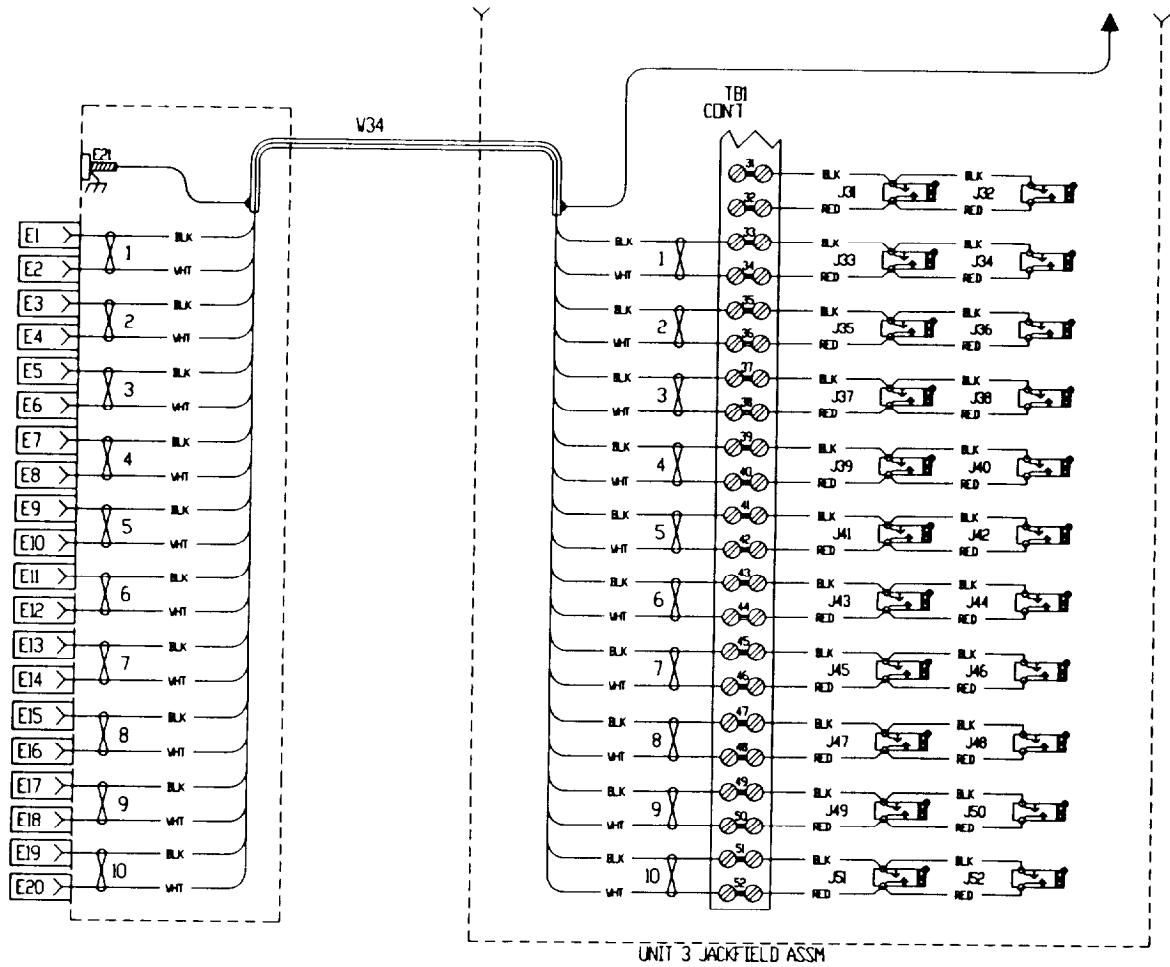


Figure 4-20. Signal/Data Wiring Diagram
(Sheet 11 of 11)

Malfunction Index

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Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

- Reference figure 4-1 when troubleshooting the SICPS shelter.
- Access to the Relay Panel and other components of the SICPS shelter may require the removal of racks (para 4-35) and system equipment (TM 11-7010-260-12&P). In such cases, notify your supervisor.

1. GENERATOR SHUTS DOWN WITH OVERVOLTAGE FAULT INDICATION.

WARNING

- Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Monitor Panel and Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Remove relay K6 from Relay Panel per 4-24.

Step 2. Connect ohmmeter across pins 4 and 5 and measure for an open condition (maximum resistance).

If not open, replace relay per 4-24.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

Step 3. Apply 120 Vac across pins 1 and 2 and slowly increase voltage until the ohmmeter reads 0 resistance (pins 4 and 5 closed). Input voltage should be 153 (150 - 156) Vac.

If pins 4 and 5 do not close with the specified input voltage, replace relay per 4-24.

Step 4. Reference TM 9-6115-641-24 for further troubleshooting.

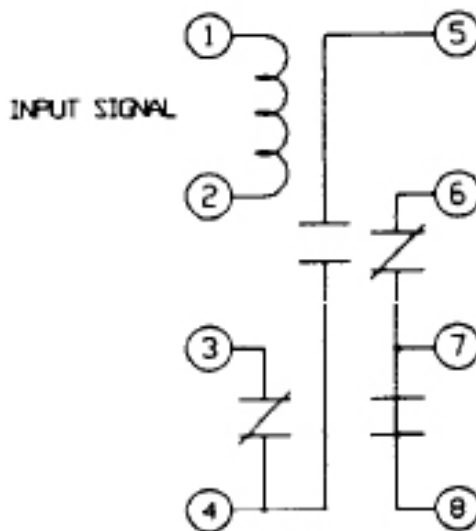
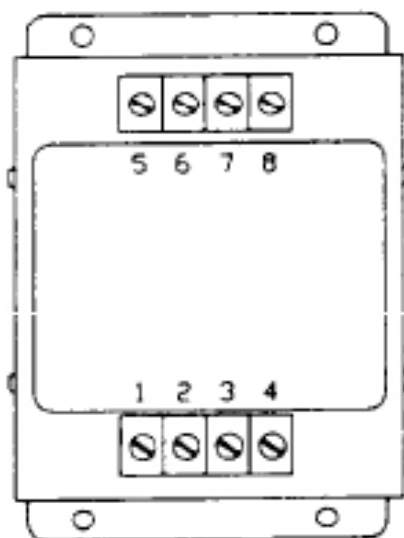


Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. GENERATOR SHUTS DOWN WITH OVERLOAD OR SHORT CIRCUIT FAULT INSPECTION.

WARNING

- Shelter contains high electrical currents, To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Monitor Panel and Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Remove relay K5 from Relay Panel per 4-24 and measure:

- Between pins 5 and 6 for maximum resistance - Normally open
- Between pins 9 and 10 for maximum resistance - Normally open
- Between pins 11 and 12 for continuity - Normally closed

If not in normally closed/open position, replace relay per 4-24.
 If overvoltage condition, go to step 3.
 If short circuit condition, go to step 5.

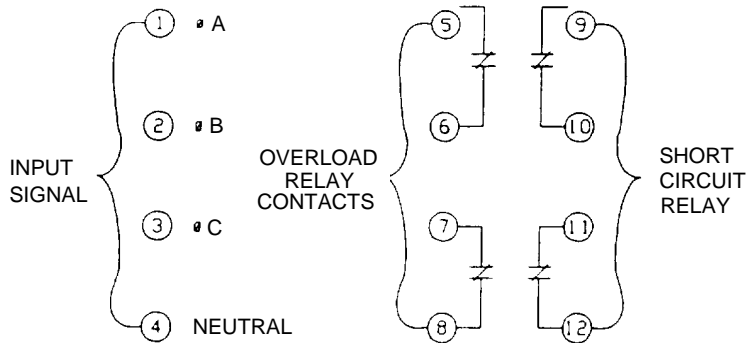
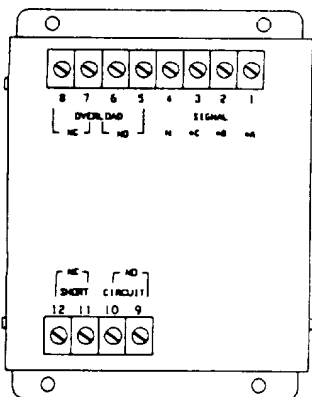


Table 4-1. Troubleshooting

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION****2. GENERATOR SHUTS DOWN WITH OVERLOAD OR SHORT CIRCUIT FAULT INDICATION - Continued.****NOTE**

Pins 5 and 6 are used for overload conditions and pins 9 through 12 are used for short circuit conditions.

Step 3. Apply 5.62 Vac, 60 Hz (100% rated load) across pins 3 and 4.

Step 4. With an ohmmeter across pins 5 and 6, slowly increase input load to 130% (7.30 Vac) of rated value. Pins 4 and 5 should close in 8 ± 3 minutes.

If pins do not close, replace relay per 4-24.

Short Circuit Operation

Step 5. Increase input voltage on pins 3 and 4 from 5.62 Vac to 23.9 ± 1.4 Vac. Pins 9 and 10 should close and pins 11 and 12 should open.

If pins do not close/open as indicated, replace relay per 4-24.

Step 6. Reference TM 9-6115-641-24 for further troubleshooting.

3. GENERATOR SHUTS DOWN WITH COOLANT HIGH TEMP, LOW OIL PRESSURE, OR LOW FUEL FAULT INDICATION (SYSTEM SERVICED).

Reference TM 9-6115-641-24 for troubleshooting.

4. LED ON FAULT INDICATOR PANEL FAILS TO COME ON WITH KNOWN GENSET PROBLEM OR FAILS TO LIGHT UNDER PRESS-TO-TEST.

Reference TM 9-6115-641-24 for troubleshooting.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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5. NO AC TO SHELTER.

Step 1. Check fuse (top for import or bottom for on-board power) on Power Entry Box.

If open, replace fuse.

NOTE

Some shelters have no onboard generator. In this case, the bottom fuse has no function and may be used as a spare.

Step 2. If external power is used, verify that CB2 on Power Entry Box is depressed (ON). If onboard power is being used, verify that circuit breakers on Power Monitor Faceplate Panel are depressed and momentarily set AC POWER switch (S3) to ENABLE.

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Monitor Panel and Power Entry Box areas.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 3. If onboard power is being used, remove cover to Relay Panel and remove relays K1, K2, and K3. If external power is being used go to step 7.

Step 4. For each relay, measure:

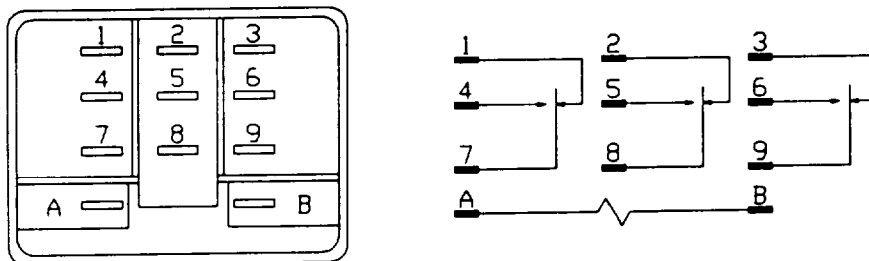
- a. Between pins 1 and 7 for continuity - Normally closed
- b. Between pins 2 and 8 for continuity - Normally closed
- c. Between pins 3 and 9 for continuity - Normally closed
- d. Between pins 1 and 4 for maximum resistance (infinity) - Normally open
- e. Between pins 2 and 5 for maximum resistance (infinity) - Normally open
- f. Between pins 3 and 6 for maximum resistance (infinity) - Normally open

If not in normally closed or open position, replace relay per Maintenance Procedure 4-24.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

5. NO AC TO SHELTER - Continued.



Step 5. For each relay, apply 24Vdc across pins A and B and measure:

- Between pins 1 and 7 for maximum resistance - open
- Between pins 2 and 8 for for maximum resistance - open
- Between pins 3 and 9 for for maximum resistance - open
- Between pins 4 and 7 for continuity - closed
- Between pins 5 and 8 for for continuity - closed
- Between pins 6 and 9 for continuity - closed

If relay does not open/close as indicated in step 3, replace per 4-24.

Step 6. Test ENABLE/DISABLE GENERATOR AC PWR switch (S3).

If bad, replace per 4-23.

Step 7. Check continuity of lines. Refer to figure 4-1.

Repair.

Step 8. Check filters in Power Entry Installation. Refer to figure 4-1 and Malfunction 22.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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6. NO AC TO SHELTER - METER READINGS NORMAL.

Step 1. Verify that the MAIN POWER SOURCE (S6) is set to the correct position (GEN if the generator power is being used or IMP if import power is being used).

Step 2. Verify that the AC KILL switch (S5) is set to AC.

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Monitor Panel and Power Entry Box areas.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 3. Remove Power Entry Box covers, tag and remove leads from relays K1, K2, K4, and K8 if export power is being used or K3, K5 and K8 if onboard power is being used, and test relays as follows.

Step 4. For relay K1, measure:

- a. Between pins A1 and A2 for maximum resistance - Normally open
- b. Between pins C1 and C2 for maximum resistance - Normally open

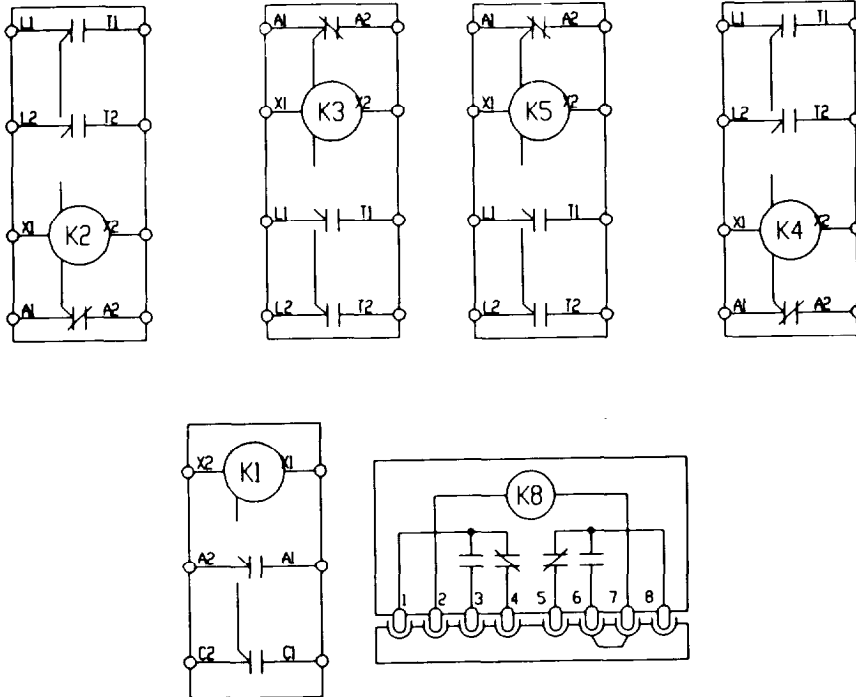
Step 5. Apply 115 Vac across pins X1 and X2 and measure:

- a. Between pins A1 and A2 for continuity - closed
- b. Between pins C1 and C2 for continuity - closed

Table 4-1. Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. NO AC TO SHELTER - METER READINGS NORMAL - Continued



Step 6. For relays K2 through K5, measure:

- Between pins A1 and A2 for continuity - Normally closed
- Between pins L1 and T1 for maximum resistance - Normally open
- Between pins L2 and T2 for maximum resistance - Normally open

Step 7. Apply 115 Vac across pins X1 and X2 and measure:

- Between pins A1 and A2 for maximum resistance - open
- Between pins L1 and T1 for continuity - closed
- Between pins L2 and T2 for continuity - closed

Step 8. For relay K8, measure:

- Between pins 1 and 4 for continuity - Normally closed
- Between pins 5 and 8 for continuity - Normally closed
- Between pins 1 and 3 for maximum resistance - Normally open
- Between pins 6 and 8 for maximum resistance - Normally open

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
--------------------	---------------------------	--------------------------

6. NO AC TO SHELTER - METER READINGS NORMAL - Continued.

Step 9. Apply 115 Vac across pins 2 and 7 and measure:

- a. Between pins 1 and 4 for maximum resistance - open
- b. Between pins 5 and 8 for maximum resistance - open
- c. Between pins 1 and 3 for continuity - closed
- d. Between pins 6 and 8 for continuity - closed

Step 10. Test AC KILL and MAIN POWER SOURCE SELECT switches.

If bad, replace.

Step 11. Check continuity of lines. Refer to figure 4-1.

Repair.

7. ECU INOPERATIVE - AC NORMAL.

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Verify that the ECU SOURCE POWER SELECTION switch (S7) is set to the correct position (GENERATOR if the generator power is being used or EXTERNAL if import power is being used).

Step 2. Verify that the ECU (40A) circuit breaker (CB1) at the circuit breaker box and the CONTROL CIRCUIT BREAKER (CB14) (1A) at the control panel are enabled.

If either CB is bad, replace CB. If CB will not remain set, use wiring diagram (Figure 4-1) to check continuity of lines.

Step 3. Remove cover at front of shelter and verify that circuit breaker switch on ECU is set to ON.

If CB will not remain set, replace ECU.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

7. ECU INOPERATIVE - AC NORMAL - Continued.

Step 4. Test ECU per TM 5-4120-378-14. Ref to TM 5-4120-378-24.

Step 5. Remove Power Entry Box covers, tag and remove leads, remove relays K4 and K5, and test relays per malfunction 6, step 6.

If bad, replace.

Step 6. Remove Power Monitor Panel Faceplate per 4-23 and test ECU SOURCE POWER SELECTION switch (S7).

If bad, replace per 4-23.

Step 7. Check continuity of lines. Refer to figure 4-1.

Repair

8. NO READING ON A.C. VOLTSMETER - LED ON.**WARNING**

- Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around high voltages.

Step 1. Remove Power Monitor Faceplate per 4-23.

Step 2. Open lead on one side of A.C. VOLTS METER (M3) and measure meter for 20K.

If open, replace per 4-23.

Step 3. Check continuity of wires from METER SELECT switch to meter. Refer to figure 4-1.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. READING ON A.C. VOLTS METER - LED OFF.

WARNING

- Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Remove Power Monitor Faceplate per 4-23.

Step 2. Open lead on one side of diode (D1 for onboard or D2 for external power) and test diode.

If bad, replace per 4-23.

Step 3. Remove lead from one side of resistor (R1 for onboard or R2 for external power) and measure for 12 Kohm.

If open, replace per 4-23.

Step 4. Check continuity of wires in LED circuit. Refer to figure 4-1.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

10. NO READING ON FREQUENCY METER (M2).

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Remove Power Monitor Faceplate per 4-23.

Step 2. Open one side of meter M2 and test for open condition.

If open, replace per 4-23.

Step 3. Remove relay K5 from Relay Panel and connect a microammeter capable of reading up to 300 micro amps between pins (+) and (-).

Step 4. With 120 Vac applied across pins L, increase the input frequency from 55 Hz to 65 Hz. Current out should increase proportionally and linear from 0 microamps to 200 micro amps.

If bad, replace per 4-23.

Step 5. Reference TM 9-6115-641-24 for further troubleshooting.

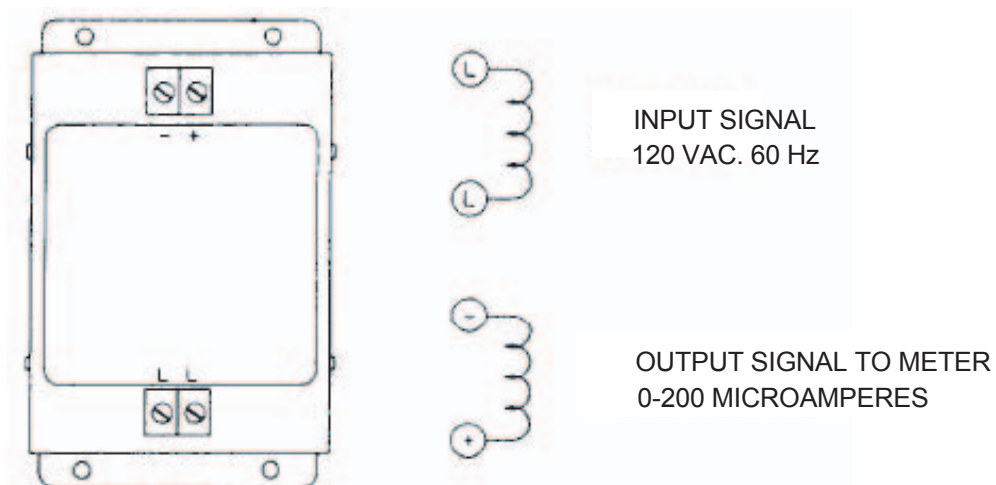


Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

11. NO READING ON % RATED CURRENT METER (M3).

WARNING

- Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Remove Power Monitor Faceplate per 4-23, open lead on one side of % RATED CURRENT meter M3, and test for open condition.

If open, replace per 4-23.

Step 2. Open lead on one side of resistor R1 and measure for 50 ohms across resistor.

If bad, replace per 4-23.

Step 3. Measure for continuity across pick-off coil CT1.

If open, replace per 4-23.

Step 4. Check continuity of wires in pick-off coil circuit. Refer to figure 4-1.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

12. NO AC OR DC POWER TO OUTLET(S).**WARNING**

Shelter contains high electrical currents. Use proper safety procedures when testing circuits.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Verify that the AC (or DC) circuit breaker(s) are depressed (ON).

Step 2. Check outlet for AC (or DC) voltage.

Step 3. If no reading, carefully remove outlet and test wires for voltage.

If AC (or DC) voltage on wires, switch power off and replace outlet.

Step 4. Open Power Monitor Faceplate according to 4-23 and test the corresponding circuit breaker, referencing figure 4-1.

If bad, repair according to 4-23.

13. FILTER BLOWER INOPERATIVE.**WARNING**

Shelter contains high electrical currents, Use proper safety procedures when testing circuits.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Verify that vent fan (CB4) circuit breaker (located in the circuit box on the inside, roadside wall of the shelter) is depressed (ON).

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 2. Disconnect Filter Blower Assembly power cable and measure for 24 Vdc at the power outlet connector (J3) located on the outside, back, roadside corner of the shelter.

If voltage present, replace Filter Blower Assembly (para 4-11).

Step 3. Remove power, open circuit breaker panel, and remove CB4 for testing as follows: Remove screws (1), lock washers (2) and flat washers (3) securing circuit breaker (4) to panel. Carefully pull circuit breaker out of panel and remove screws (5) and lock washers (6) securing wires to circuit breaker.

If bad, replace.

Step 4. Check continuity of wires. Refer to figure 4-1.

Repair.

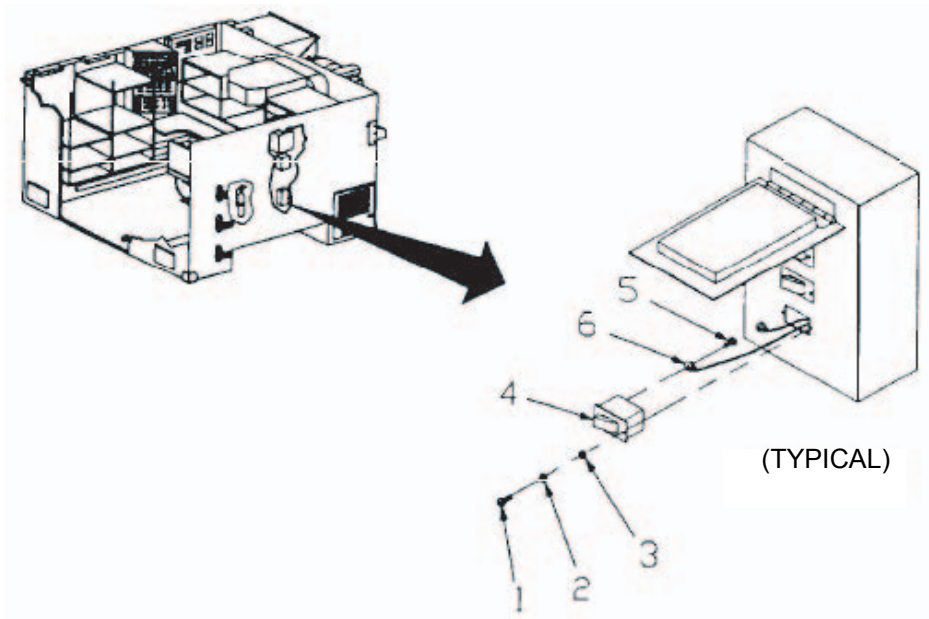


Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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14. GPFU INOPERATIVE.**WARNING**

- Shelter contains high electrical currents. Use proper safety procedures when testing circuits.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Verify that GPFU (CB3) circuit breaker (located in the circuit box on the inside, roadside wall of the shelter) is depressed (ON).

Step 2. Disconnect GPFU power cord and measure for 115 Vac at the power outlet connector (J2) located on the outside, back, roadside corner of the shelter.

If voltage present, reference TM 3-4240-302-330&P-8.

Step 3. Remove power, open circuit breaker panel, and remove and test CB3. (Refer to figure under 13.)

If bad, replace.

Step 4. Check continuity of wires. Refer to figure 4-1.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

15. NO OUTPUT FROM EXPORT POWER CONNECTOR (J1).

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. Verify that the EXPORT POWER SOURCE SELECT switch (S1) is set to the correct position (ONBOARD if the generator power is being used or EXTERNAL if import power is being used).

Step 2. Verify that the AC POWER OUT (CB1) circuit breaker at the Power Entry Box is depressed (ON).

Step 3. Remove Power Entry Box covers and test EXPORT POWER SOURCE SELECT switch (S1).

If bad, replace.

Step 4. Check continuity of lines. Refer to figure 4-1.

Repair.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

16. INTERIOR DC (WHITE) LIGHT DOES NOT ILLUMINATE.

WARNING

- Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or battery cables if onboard power is being used, and tag Power Entry Box areas.
- Remove jewelry and observe all safety rules for working around potentially high voltages.

Step 1. If both lights are out, verify light (10A) circuit breaker (CB11) on Power Monitor Faceplate is depressed (ON). If one light is out, go to step 4.

Step 2. Gain access to Relay Panel, remove relay K7 per 4-24, and measure:

- Between pins 1 and 7 for continuity - Normally closed
- Between pins 2 and 8 for continuity - Normally closed
- Between pins 3 and 9 for continuity - Normally closed
- Between pins 1 and 4 for maximum resistance - Normally open
- Between pins 2 and 5 for maximum resistance - Normally open
- Between pins 3 and 6 for maximum resistance - Normally open

If not in normally closed or open position, replace relay per 4-24.

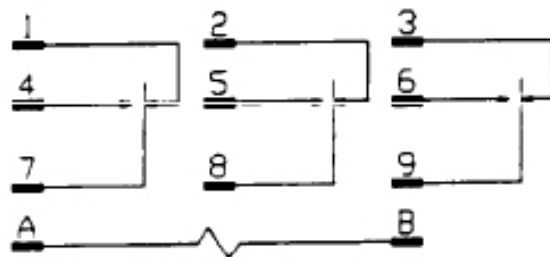
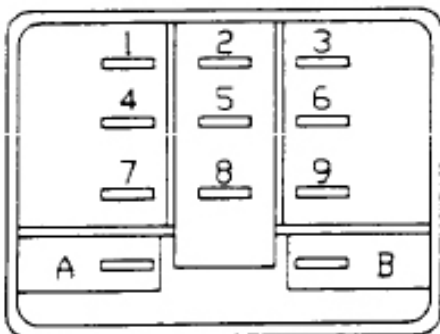


Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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16. INTERIOR DC (WHITE) LIGHT DOES NOT COME ON - Continued.

Step 3. Apply 24Vdc across pins A and B and measure:

- a. Between pins 1 and 7 for maximum resistance - open
- b. Between pins 2 and 8 for maximum resistance - open
- c. Between pins 3 and 9 for maximum resistance - open
- d. Between pins 1 and 4 for continuity - closed
- e. Between pins 2 and 5 for continuity - closed
- f. Between pins 3 and 6 for continuity – closed

If relay does not open/close as indicated in step 3, replace relay per 4-24.

Step 4. If only one light is out, remove cover and replace light bulb.

If replacing the light bulb does not rectify problem, check continuity of lines. Refer to figure 4-1.

**17. INTERIOR DC WHITE LIGHTS FAIL TO GO OFF WHEN DOOR IS OPENED-
BLACKOUT ENABLE CIRCUIT BREAKER ACTIVATED.**

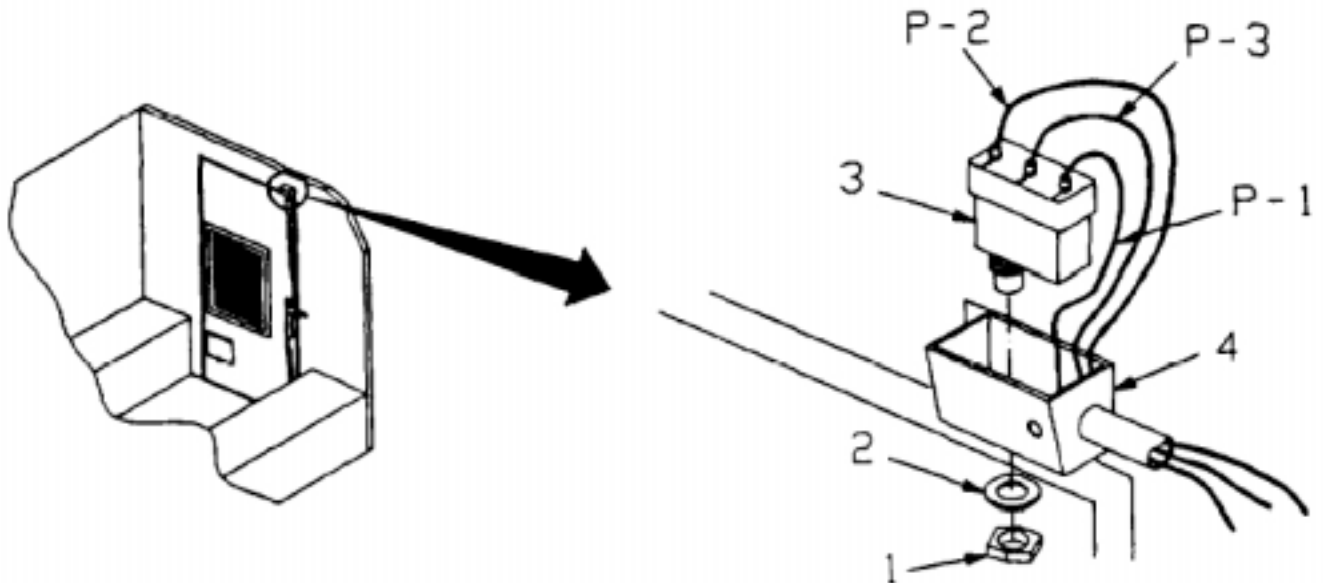
WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or NATO Slave if onboard or vehicle power is being used.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 1. Remove leads from blackout switch above the door and measure:

- Pins 3 and 2 for maximum resistance - door open
- Pins 2 and 1 for continuity - door open
- Pins 2 and 1 for maximum resistance - door closed
- Pins 3 and 2 for continuity - door closed

If bad, replace.

Step 2. Remove K7 from Relay Panel per 4-24 and test relay K7 per malfunction 16, steps 2 and 3.

18. INTERIOR AC LIGHTS DO NOT ILLUMINATE.

WARNING

Shelter contains high electrical currents. To prevent electrical shock, turn power switches off, remove power cable if external power is being used or NATO slave cable if onboard or vehicle power is being used.

Remove jewelry and observe all safety rules for working around potentially high voltages.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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18. INTERIOR AC LIGHTS DO NOT ILLUMINATE - Continued.

Step 1. If both lights are out, verify light circuit breaker (CB10) on Power Monitor Faceplate is depressed (ON). If one light is out, go to step 4.

Step 2. Remove K7 from Relay Panel per 4-24 and test relay K7 per malfunction 16, steps 3 and 4.

Step 3. If only one light is out, remove cover and replace light bulb.

Step 4. If replacing the light bulb does not rectify problem, check continuity of lines. Refer to figure 4-1.

19. CO MONITOR INOPERATIVE.

Step 1. Verify that the CO Monitor's circuit breaker (AC#2) on Power Monitor Faceplate depressed (ON).

Step 2. Make sure CO Monitor's power cord is plugged in.

Step 3. Remove power cord and test outlet per malfunction 12.

Step 4. Remove Power Monitor Faceplate per 4-23 and test CB AC#2.

If bad, replace.

Step 5. Check continuity of wires. Refer to figure 4-1.

Repair.

20. No AC to TIP

Step 1. Verify voltage is absent from all three outlets.

If voltage is absent from only one outlet, replace outlet.

Step 2. Verify that TIP Branch Circuit Breaker (A1CB4) is in the ON position.

Step 3. Verify that GFCI RESET button is pushed in.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 4. Test voltage at GFCI.	If bad, replace GFCI.
	Step 5. Open the Power Monitor Faceplate per 4-23 and test circuit breaker.	If bad, replace circuit breaker.
	Step 6. Perform wiring continuity check, referencing figure 4-1.	Repair.
	Step 7. Test TIP filters using troubleshooting techniques in Malfunction 22.	If bad, replace filter.
21. No DC to TIP		
	Step 1. Verify that TIP Branch DC Circuit Breaker is in the ON position.	
	Step 2. Open TIP Faceplate and check voltage at wiring.	If power is present at wiring, replace outlet.
	Step 3. Open the Power Monitor Faceplate per 4-23 and test circuit breaker.	If bad, replace circuit breaker.
	Step 4. Perform wiring continuity check, referencing figure 4-1.	Repair.
	Step 5. Test TIP filter using troubleshooting techniques in Malfunction 22.	If bad, replace filter.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

22. Filter is Defective**WARNING**

Each filter is a capacitor and may be storing a high-voltage electrical charge. Properly discharge filter(s) prior to proceeding with troubleshooting. Failure to observe this warning may result in damage to equipment or shock to personnel.

NOTE

The filters are not repairable for all types of failures. All cylindrical filters are resin impregnated and cannot be removed without destroying the entire unit.

Step 1. Verify if filter is shorted out to case. The most common failure mode for cylindrical filters is Shorts to Case. The cause of this is a dielectric failure of the capacitor(s) inside the case. To check, disconnect filter from circuit and check the resistance between any of the two terminals to case.

If resistance measured is 100 KOHMS or less, the filter is shorted. Replace filter.

Step 2. Verify if filter is open. In rare cases, a filter may have an open circuit. This is usually the result of severely high over current causing the internal wiring to fuse open. A common result of an open filter is noise in the communications equipment. To check for opens, check for continuity between terminal 1 and terminal 2. If low or no resistance is measured, filter has not failed open.

If resistance is infinite (OL), filter is open. Replace filter.

23. Fiber Optics Inoperative

Step 1. Check the optical connectors (at both ends of the fiber) for dust.

Use a clean cloth or gauze moistened with alcohol to gently clean the tip of the connectors.

Step 2. Use a small penslight or flashlight to ensure the fiber passes light.

Replace the cable, referencing the Signal Distribution in paragraph 1-14.

Table 4-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3. Is the fiber broken in any of the connectors?

Replace the connector according to Maintenance Procedure 4-30.

24. Coax LAN Inoperative

Step 1. Remove terminator at either panel (TIP or Commo Entry Panel) and inspect pins for obvious damage

Replace connector according to Maintenance Procedures 4-25 or 4-30.

Step 2. Ensure the LAN is properly terminated at one end (SEP or TIP). Conduct Ohm check at open end. Multimeter should read 50 Ohms.

Replace terminator according to Maintenance Procedure 4-25 or 4-30.

Step 3. Conduct continuity check on cables.

Replace cables as necessary.

Step 4. Remove and replace EMI/EMP filter according to Maintenance Procedure 4-26 or 4-31 for LAN located on the TIP or Commo Entry Panel, respectively.

25. 26-Pair Cable Hocks Inoperative

Step 1. Conduct continuity check by placing terminating plugs at the jackfield inside the shelter.

If all lines are inoperative, replace data filter according to Maintenance Procedure 4-31.

Step 2. Conduct individual line continuity check by using Signal Distribution in paragraph 1-14.

Replace either the 26-Pair Cable Hocks according to Maintenance Procedure 4-4-31, or replace individual wiring inside the shelter.

Table 4-1. Troubleshooting

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

26. External Binding Post Pairs Inoperative

Step 1. Inspect connector(s) for obvious damage

Replace connector(s) according to Maintenance Procedure 4-25 for TIP data pairs, and 4-29 for Commo Entry Panel data pairs.

Step 2. Conduct wire continuity check by using Signal Distribution in paragraph 1-14.

Repair wiring inside the shelter.

Step 3. Replace data filter according to Maintenance Procedure 4-26 for TIP data pairs, and 4-31 for Commo Entry Panel data pairs.

Section V. DIRECT SUPPORT MAINTENANCE PROCEDURES

PARA	DESCRIPTION	PAGE
4-10	Rivets.....	4-64
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4-12	Structure Assembly – Repair of Dents.....	4-77
4-13	Structure Assembly – Repair of Exterior Punctures/No Core Damage	4-79
4-14	Structure Assembly – Repair of Exterior Punctures/Damage to Core	4-83
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4-16	Structure Assembly – Repair of Interior Punctures/Damage to Core.....	4-92
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4-18	Door Assembly – RFI Seal	4-103
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4-20	CO Monitor	4-109
4-21	Power Entry Installation	4-110
4-22	DC Power Supply	4-118
4-23	Power Monitor Faceplate.....	4-120
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4-26	TIP Power Entry Assembly	4-130
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4-37	Rack Assembly	4-166

4-9. GENERAL. The procedures, as identified under this heading, are general in nature and may be used during repair or replacement of shelter components.

4-10. RIVETS.

a. Blind Rivets. Blind rivets are used in locations where only one side of the area to be worked on is accessible. Blind pop rivets must be used in the shelter honeycomb panels since the hammering required to install conventional rivets would damage the material. The types of rivets used in the shelter are shown in figure 4-21 and described in table 4-2. When installing floor patches, countersunk head rivets (styles K and T) are preferred, but dome head rivets (styles R and S) are acceptable alternates. When installing interior wall patches, countersunk head rivets shall be used in any instance where dome head rivets will interfere with the installation of equipment. Closed end rivets (styles K and R) must be used for exterior repairs and floor repairs to prevent moisture and dirt from entering panels.

NOTE

- Use open end rivets only where moisture and dirt intrusion will not effect the shelter.
- When installing new rivets in the same location as a rivet that has been removed, use next larger diameter rivet for replacement.
- Clean rivets with solvent before installing.

(1) Installation. (figure 4-22)

(a) Determine type, size, and grip range of rivet to be used. Grip length equals the combined thickness of the materials being riveted together. Grip range of the rivet must encompass the grip length.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

Use a drill stop when drilling to prevent damage to the reverse skin of the shelter.

NOTE

Drill hole size must match the size of the rivet being used. Quantities of sheets may be drilled at the same time when held together with sheet fasteners.

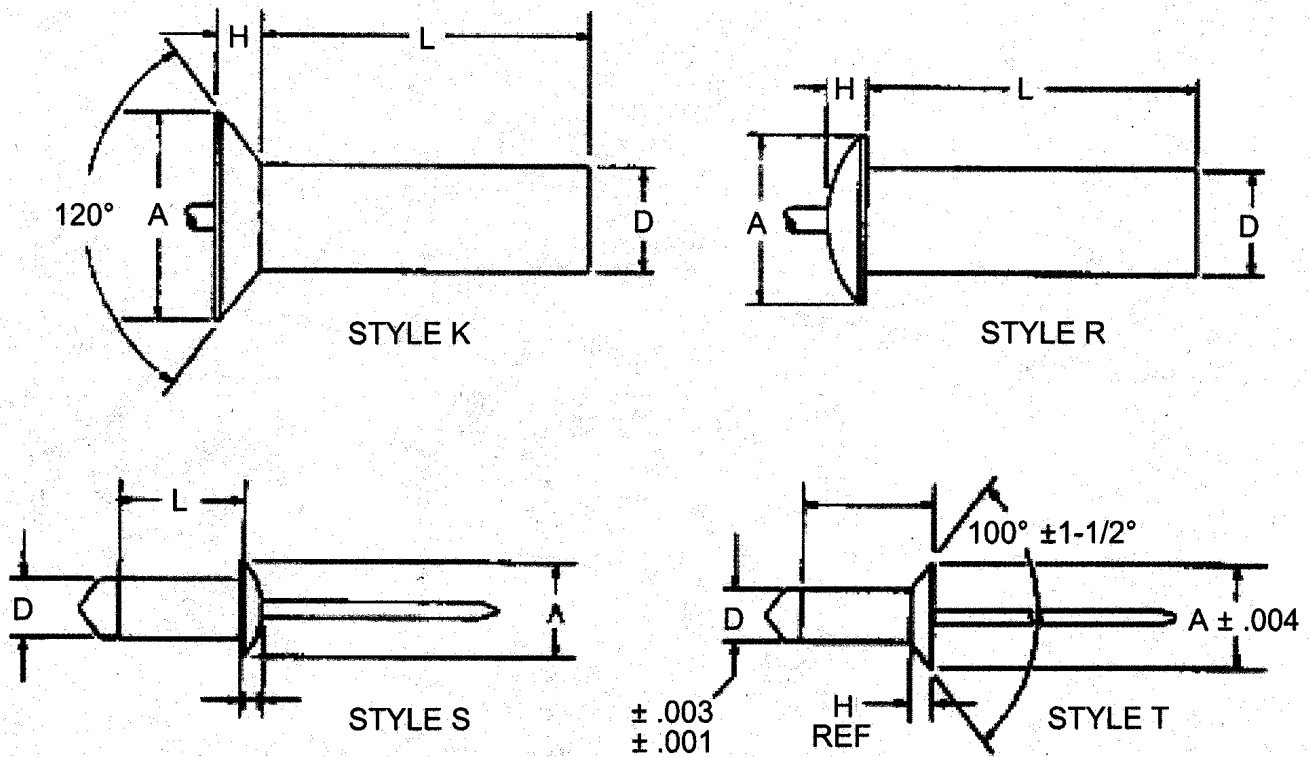
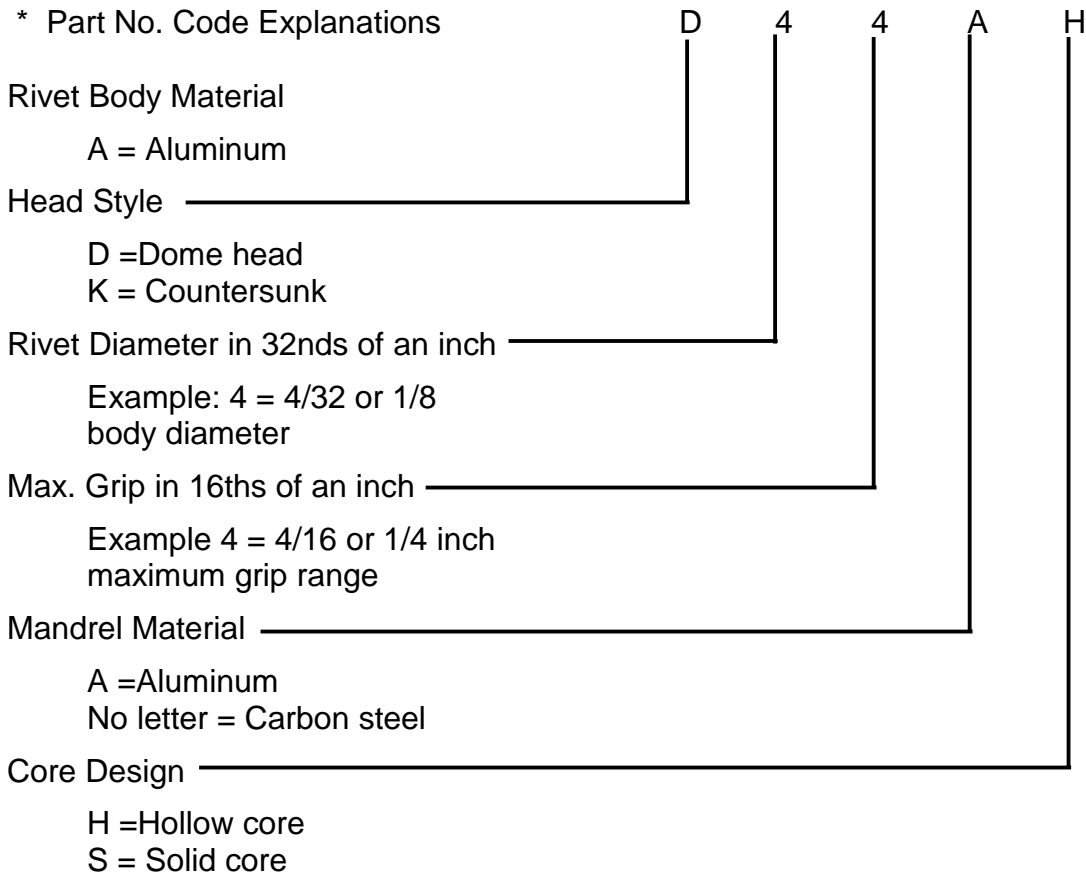


Figure 4-21. Rivet Styles

Table 4-2 Blind Rivets

Part No.*	Style	Dim A	Dim H	Dim D	Dim L
AD42H	R	0.236	0.051	1/8	0.361
AD43H	R	0.236	0.051	1/8	0.377
AD45H	R	0.236	0.051	11/8	0.502
AD62H	R	0.375	0.081	3/16	0.345
AD64H	R	0.375	0.081	3/16	0.470
AD68H	R	0.375	0.081	3/16	0.720
AD42S	R	0.236	0.051	1/8	0.361
MS20470AD6-8	R	0.375	0.080	3/16	0.375
NAS1398D4-3	R	0.250	0.067	0.156	0.326
NAS1398D4-4	R	0.250	0.067	0.156	0.388
NAS139806-3	R	0.375	0.080	0.187	0.350
NAS1398D6-5	R	0.375	0.080	0.187	0.475
NAS1398D6-8	R	0.375	0.080	0.187	0.662
NAS139904-4	R	0.225	0.042	0.125	0.385
NAS1399D6-6	R	0.353	0.070	0.187	0.537
NAS1739E4-3	R	0.286	0.047	0.173	0.375

* Part No. Code Explanations



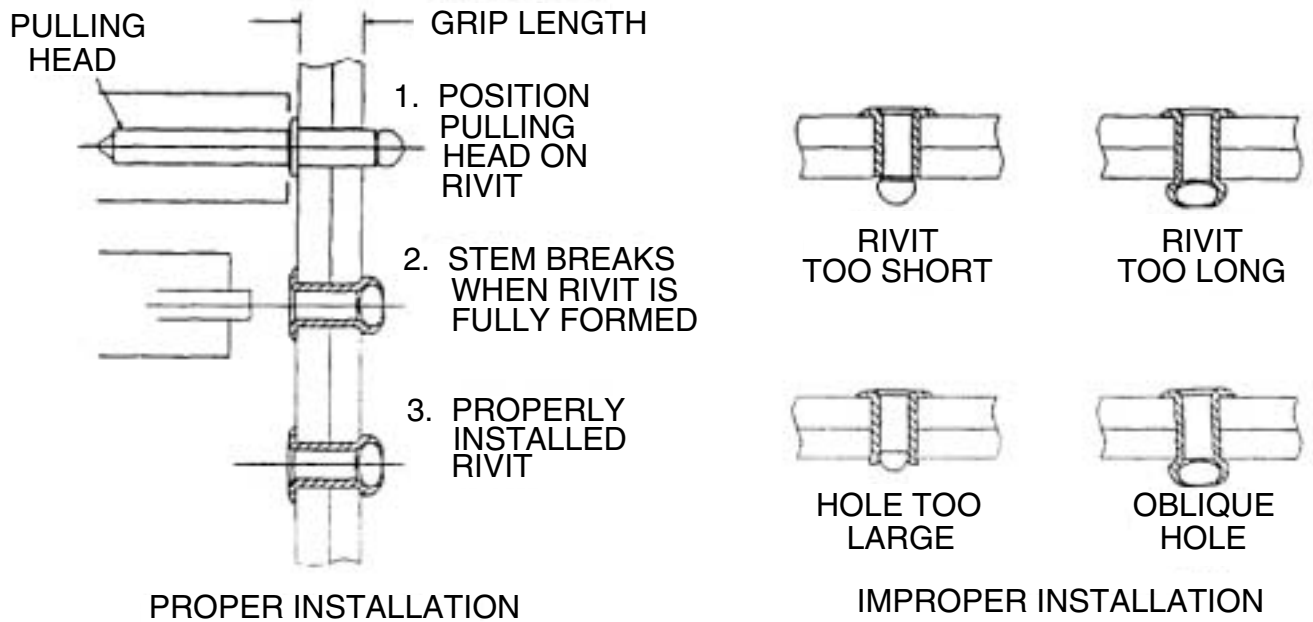


Figure 4-22. Rivet Installation

- (b) Drill hole in structure.
 - (c) Remove all metal chips and burrs from drilled holes.
 - (d) If flush head rivet is being installed, countersink hole using a 100-degree or 120-degree machine countersink.
 - (e) Coat all rivet bodies with fiber filled polyester resin (Item 36, Appendix E) before installing.
 - (f) Insert rivet in hole. Make sure sheets are held tightly together before upsetting or pulling rivet.
 - (g) Select proper pulling head for rivet being installed and install pulling head on rivet gun.
 - (h) Insert stem of rivet into pulling head.
 - (i) With pulling head parallel to axis of rivet, upset rivet. Exert firm pressure but do not bend or buckle metal sheets. Stem will break off below rivet head surface. No trimming should be required.
 - (j) Make sure riveted parts are not loose, rivet does not rotate, and rivet head is seated tightly against riveted surface. If rivet is loose or improperly installed, remove the rivet and repeat steps (a) through (j).
- (2) Removal. (figure 4-23)

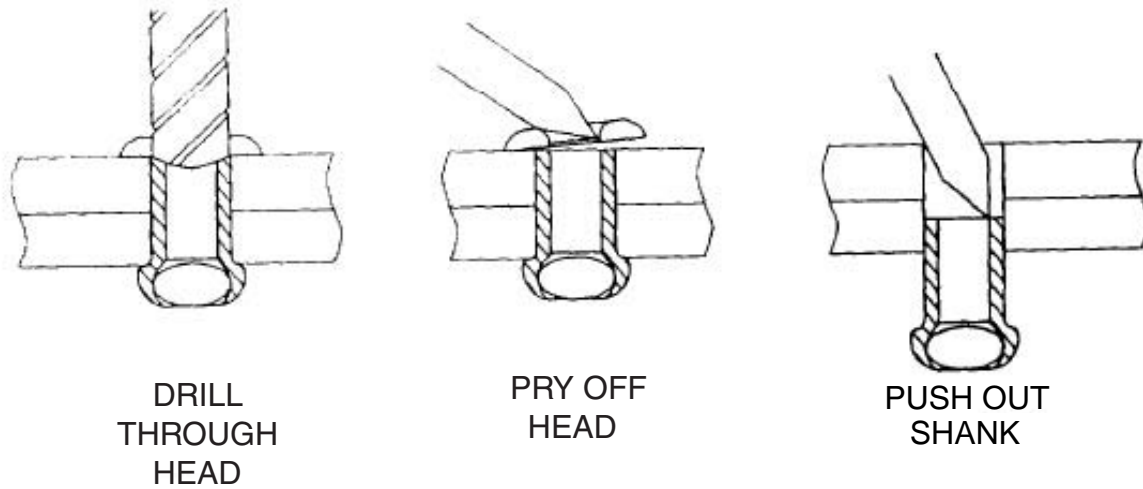


Figure 4-23. Removal

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

NOTE

When drilling through rivet head, be careful not to enlarge hole in structure. Keep drill perpendicular to material being drilled and do not use excessive pressure, or replacement rivets will be too loose.

(a) Drill through head of rivet only, using hole in rivet as a guide. Use the proper drill size as follows:

Rivet Size (in.)	Drill Size
1/8	N o. 30
5/32	N o. 20
3/16	N o. 11
1/4	1/4 inch

(b) Using a pin punch pry off rivet head.

CAUTION

Do not punch rivet shanks out or damage to the reverse skin may result.

b. Rivnut Installation and Removal. Rivnuts (threaded inserts) are tubular rivets with internal threads and are used throughout the shelter wherever blind threads are required. The types of rivnuts used in the shelter are shown on figure 4-6 and described in table 4-3.

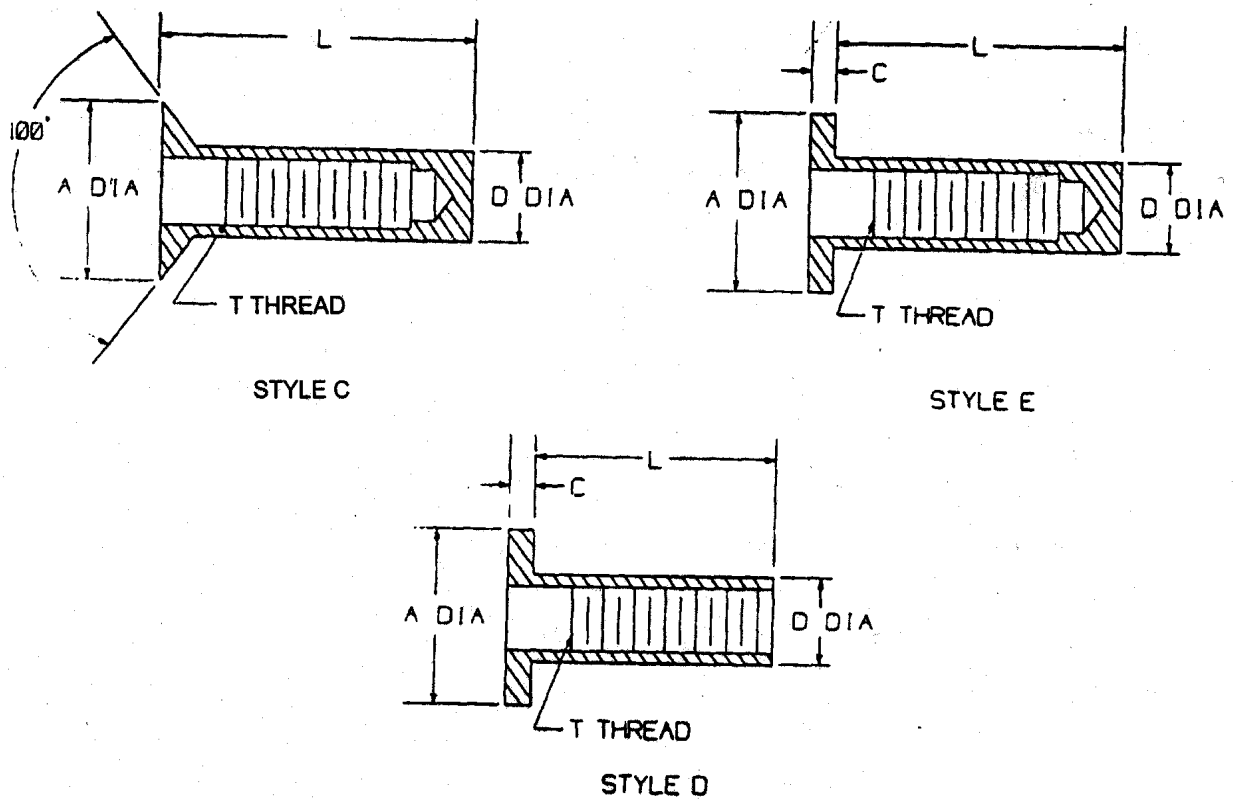


Figure 4-24. Types of Rivnuts

Table 4-3. Rivnuts

Dash No.	Part No.	Style	Dim A	Dim D	Dim L	T	Dim C	Grip Range
SM-C-563711-1	S25B151	C	0.529	0.332	1.000	1/4-20 UNC-3B		.089 - .151
SM-C-563711-2	S258211	C	0.529	0.332	1.062	1/4-20 UNC-3B		.151 - .211
SM-C-563711-3	S25B451	C	0.529	0.332	1.312	1/4-20 UNC-3B		.391 - .451
SM-C-563711-4	S10B366	C	0.391	0.250	1.094	10-32 UNC-3B		.316 - .366
SM-C-563711-5	S25B140	E	0.475	0.332	1.000	1/4-20 UNC-3B	0.058	.080 - .140
SM-C-563711-6	S8B106	C	0.355	0.221	0.687	8-32 UNC-38		.065 - .106
SM-C-563711-7	S31B350	D	0.665	0.413	1.032	5/16-18 UNC-3B	0.062	.275 - .350
SM-C-563711-8	S31B125	E	0.665	0.413	1.187	5/16-18 UNC-3B	0.062	.030 - .125
SM-C-563711-9	S31B481	C	0.656	0.413	1.562	5/16-18 UNC-3B		.406 - .481
SM-C-563711-10	S8B201	C	0.355	0.221	0.687	8-32 UNC-3B		.161 - .201
SM-C-563711-11	S8B161	C	0.355	0.221	0.687	8-32 UNC-3B		.106 - .161
SM-C-563711-12	S25B320	E	0.475	0.332	1.187	1/4-20 UNC-3B	0.058	.260 - .320
SM-C-563711-13	S31B425	E	0.665	0.413	1.531	5/16-UNC-3B	0.062	.350 - .425
SM-C-563711-14	S31B350	E	0.665	0.413	1.437	5/16-18 UNC-3B	0.062	.275 - .350

Flat head rivnuts (style D and E) may be used wherever head thickness will not interfere with the installation of equipment. Countersunk head rivnuts (style C), are used for flush installation. Keyed rivnuts are used in locations which are subject to vibration and torque. Closed end rivnuts (styles C and E) must be used for exterior repairs and floor repairs to keep moisture and dirt from entering panels. Open end rivnuts (style D) may be used in areas where sealing is not required.

(1) Installation (figure 4-25)

NOTE

When installing new rivnuts in the same location as a rivnut that has been removed , use the next larger diameter rivnut for replacement.

(a) Determine thread size, grip range, style, and material of rivnut to be used. Grip length equals combined thickness of materials being fastened together. Grip range of rivnuts must encompass grip length.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Wear eye protection when drilling.

CAUTION

Do not drill deeper than necessary to install rivet or damage to reverse skin can result.

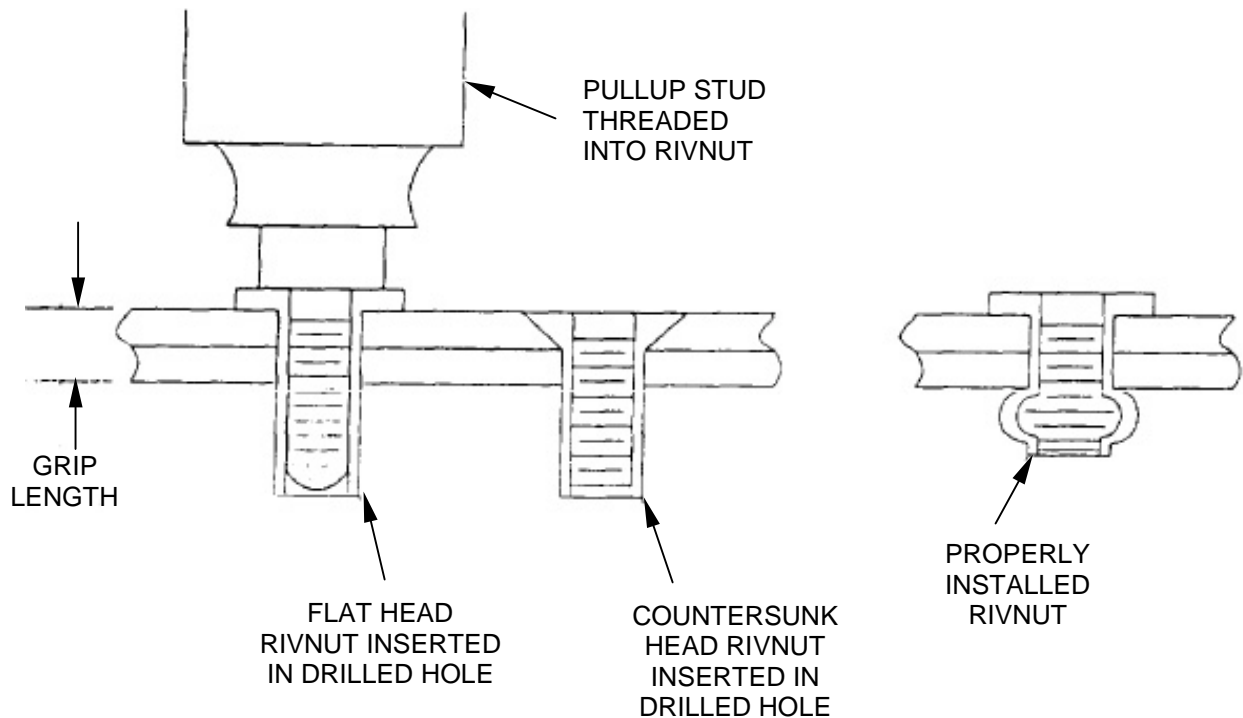


Figure 4-25. Rivnut Installation

NOTE

Drill hole size must match size of rivnut being in-stalled. Quantities of sheets may be drilled at the same time when held together with sheet fasteners.

- (b) Drill hole in structure.
- (c) Remove all metal chips and remove burrs from drilled holes.
- (d) If a countersunk rivnut is being installed, countersink hole using a 100-degree machine countersink.
- (e) Thread stem of appropriate pull-up stud into rivnut. Stud should protrude through open-end rivnuts or be 1-1/2 threads from bottoming in closed end rivnuts.
- (f) Coat rivnut body with fiber filled polyester resin before installing.
- (g) insert rivnut in hole. Make sure sheets are held tightly together before pulling.
- (h) With pull-up stud parallel to axis of rivnut, pull up on rivnut. Exert firm pressure but do not bend or buckle metal sheets.

(i) Make sure fastened parts are not loose, rivnut does not rotate, and rivnut head is seated tightly against surface. Make sure rivnut threads are in good condition. If threads are damaged or rivnut is improperly installed, remove it and install a new one.

(2) Removal (figure 4-26)

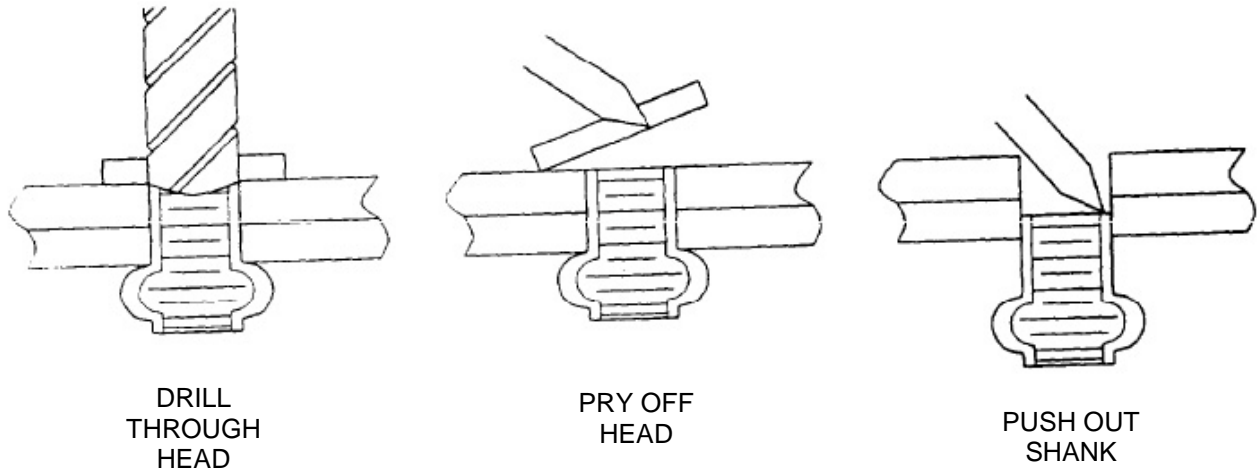


Figure 4-26. Rivnut Removal

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Wear eye protection when drilling.

- (a) Drill through head of rivnut, using same size drill used to make original hole. Counterbore in rivnut will act as a drill guide.
- (b) Remove head of rivnut.

CAUTION

Do not puncture opposite face sheet of panel when punching out rivnut shank.

(c) Punch out shank of rivnut using a pin punch slightly smaller than hole in structure. Punch only enough to disengage. Move rivnut aside to install new rivnut.

(3) Repair. (figure 4-27) When excessive torque is applied on screws attached on rivnuts, it may cause a rivnut to spin (turn). Table 4-4 provides the maximum torque requirement for hardware to prevent rivnut turning: To correct a spinning rivnut, proceed as follows:

Table 4-4. Maximum Torque Requirements for Rivnut Screws.

<u>Screw Size</u>	<u>Torque lbs/in.)</u>
4 - 40	8 inch lb
6 - 32	12 inch lb
8 - 32	20 inch lb
10 - 32	20 inch lb
1/4 - 20	50 inch lb
5/16 - 18	65 inch lb
3/8 - 16	120 inch lb

(a) Drill a .062 (+ .003, - .001) diameter hole by 1.00 inch long on the stem of the spinning rivnut as shown in figure 4-27.

(b) Install a headless straight pin.

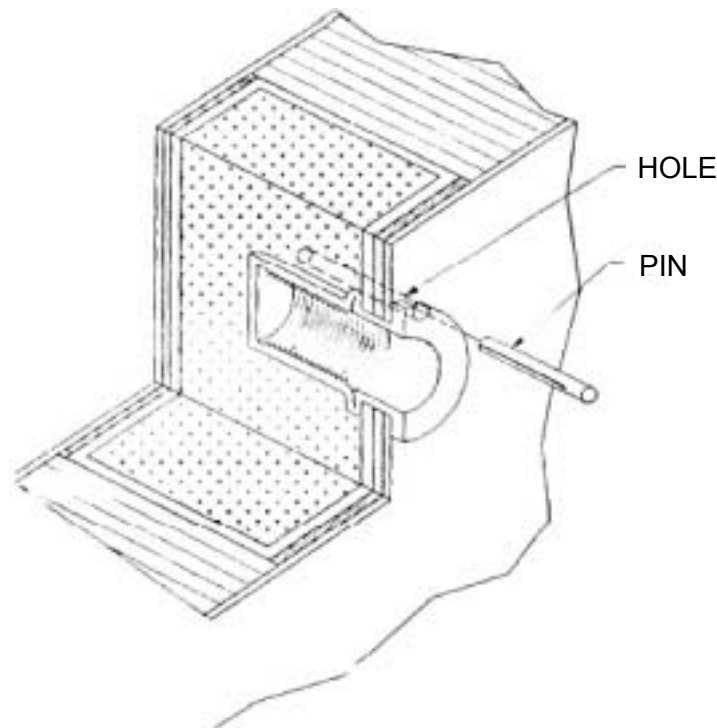


Figure 4-27. Spinning Rivnut

4-11. FILTER BLOWER ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Filter Blower Assembly

RFI Filter

Foam Filter

Polyester Filter

Rags (Item 7, Appendix E)

Alcohol, Isopropyl (Item 33, Appendix E)

Gasket (Appendix F, Figure F-5, -1 and -2)

Gasket (Appendix F, Figure F-6, -1 and -2)

Lock washer (Item 14, Appendix E)

Lock washer (Item 15, Appendix E)

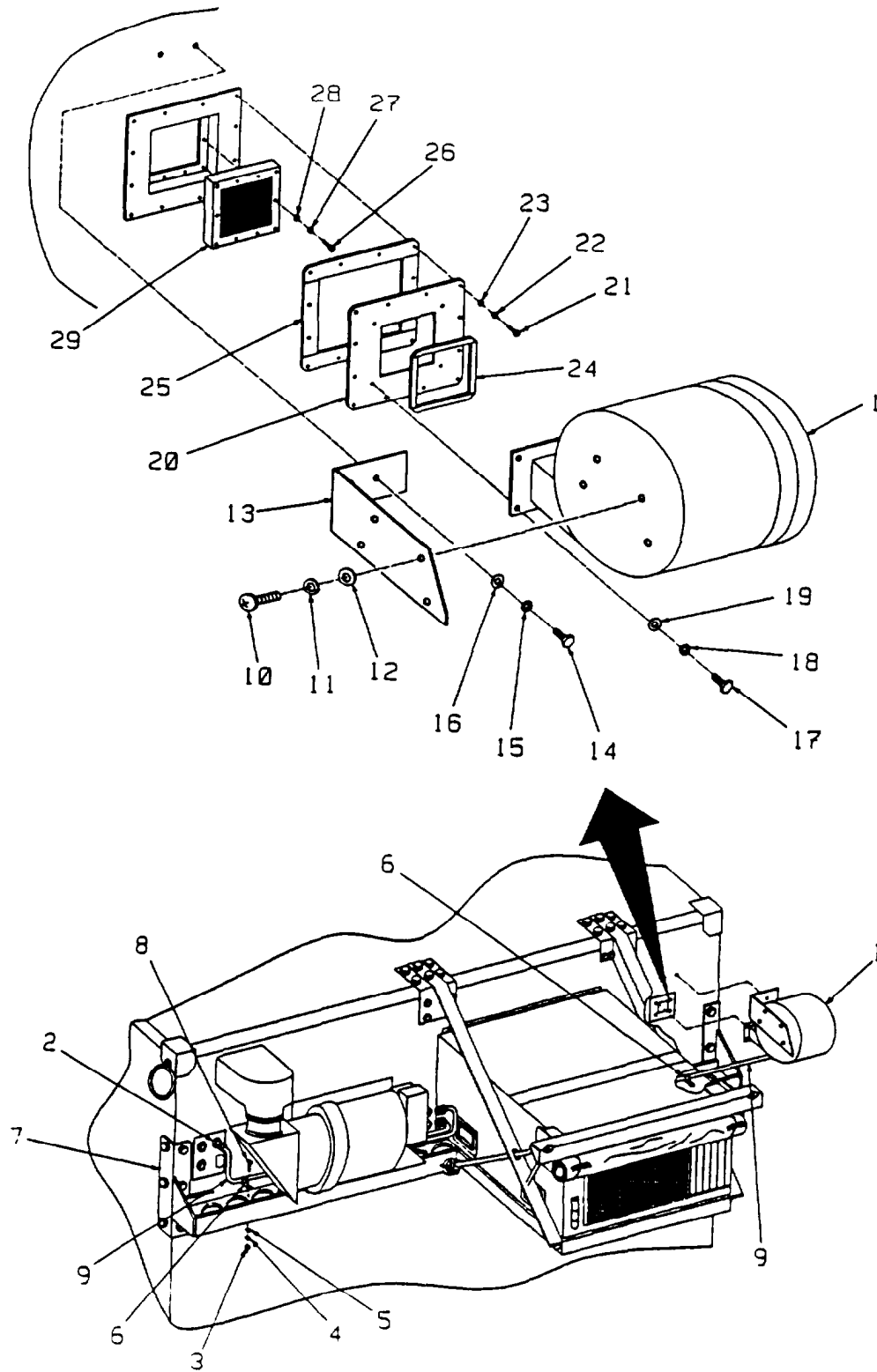
Lock washer (Item 16, Appendix 5)

REPAIR

Disassemble

1. Disconnect Filter Blower Assembly (1) from power outlet (2).
2. Remove nuts(3), lock washers (4), and flat washers (5) securing the cable support (6) to frame (7). Remove bolts (8) and cable support clamps (6) from power cable (9).
3. While supporting Filter Blower Assembly (1), remove the screws (10), lock washers (11), and flat washers (12) securing Filter Blower Assembly (1) to the bracket (13).
4. Remove screws (14), lock washers (15), and flat washers (16) securing bracket (13) to shelter (1).
5. Remove screws (17), lock washers (18), and flat washers (19) securing RFI filter.
6. Remove weather gasket (20).

4-11. FILTER BLOWER ASSEMBLY - Continued



4-11. FILTER BLOWER ASSEMBLY - Continued

8. Remove screws (26), lock washers (27), and flat washers (28) securing RFI Filter (29) to Filter Blower Assembly Frame.

Assemble

1. Using rags and isopropyl alcohol, clean weather gasket channel and secure weather gasket to channel using adhesive.

2. Secure RFI Filter (29) to Filter Blower Assembly Frame using screws (26), lock washers (27), and flat washers (28).

3. Secure Weather Gasket Mounting Plate (20) and RFI Gasket plate (25) to Filter Blower Assembly Frame using screws (21), lock washers (22), and flat washers (23).

4. Secure bracket (13) to shelter with screws (14), lock washers (15), and flat washers (16).

5. Locate Filter Blower Assembly (1) on bracket (13) and secure with screws (10), lock washers (11), and flat washers (12).

6. Secure power cable (9) to shelter using support clamps (6), nuts (3), lock washers (4), and bolts (5).

7. Connect Filter Blower power cable (9) to outlet.

4-12. STRUCTURE ASSEMBLY – REPAIR OF DENTS

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Oscillating Sander (Item 4, Appendix B)

Putty Knife (Item 16, Appendix B)

Safety Glasses (Item 9, Appendix B)

Materials/Parts

Alcohol, Isopropyl (Item 33, Appendix E)

Rags (Item 7, Appendix E)

Fiber Filled Polyester Resin (Item 36, Appendix E)

Gloves, Rubber (Item 37, Appendix E)

Sandpaper, 80-grit Abrasive (Item 38, Appendix E)

Polysulfide Sealer (Item 49, Appendix E)

REPAIR

1. Using an oscillating sander, roughen the skin surface with 80 grit abrasive sandpaper to remove all paint and foreign matter from around the dent.

WARNING

- Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.
- To avoid injury or death to personnel, no smoking is allowed when working with flammable materials.

NOTE

Make sure that the area is completely clean. Do not touch the area with hands or any item that may leave an oily residue.

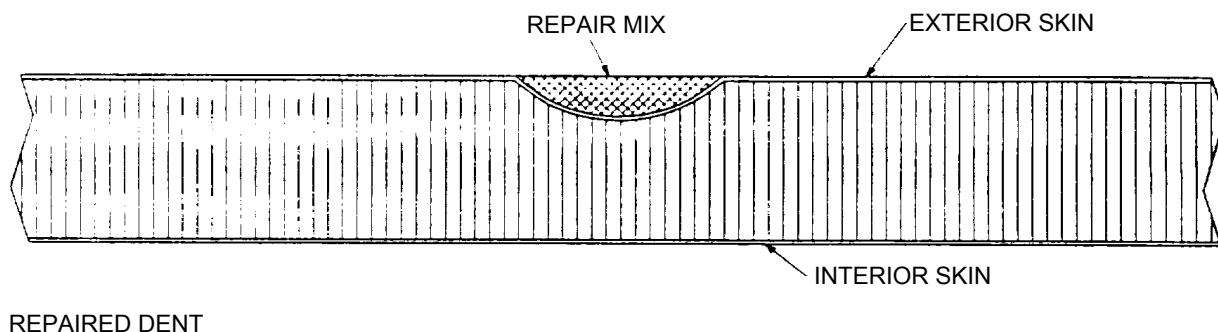
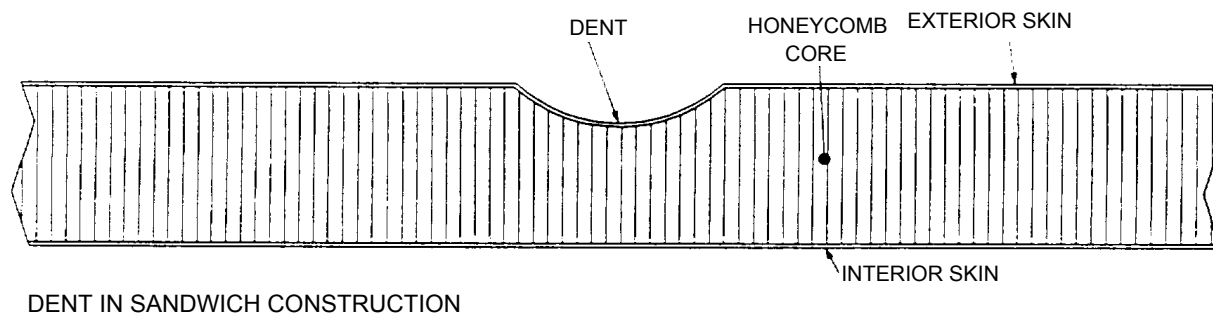
4-12. STRUCTURE ASSEMBLY - REPAIR OF DENTS - Continued

2. Wear rubber gloves and use a clean cotton cloth with alcohol to clean entire surface.
3. Use a putty knife and a fiber filled polyester resin (or suitable substitute for body putty), to fill dent and smooth the surface evenly.
4. Allow resin to cure (approximately one hour, depending on ambient air temperature) in accordance with manufacturer's recommendations.

WARNING

To avoid injury to personnel, safety glasses must be worn during drilling and sanding operations

5. Using an oscillating sander, sand off excess material to a flat smooth finish.
6. Prime and paint repaired surface in accordance with paragraph 3-8.



4-13. STRUCTURE ASSEMBLY – REPAIR OF EXTERIOR PUNCTURES/NO CORE DAMAGE

This task covers: Repair

INITIAL SETUP

Tools;

Drill (Item 6, Appendix B)
General Mechanics Tool Kit (Item 1, Appendix B)
Oscillating Sander (Item 4, Appendix B)
Putty Knife (Item 16, Appendix B)
Riveting Tool (Item 15, Appendix B)
Safety Glasses (Item 9, Appendix B)

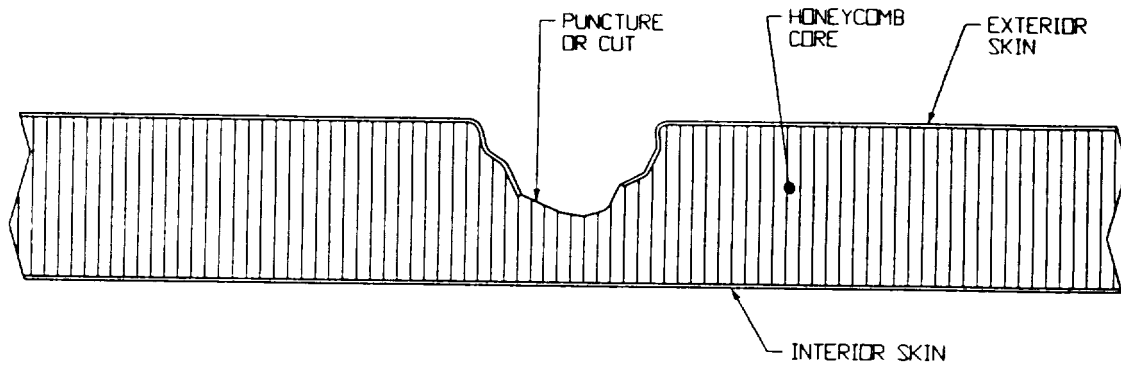
Materials/Parts

Alcohol, Isopropyl (Item 33, Appendix E)
Aluminum (Item 39, Appendix E)
Brush , Applicator (Item 74, Appendix E)
Rags (Item 7, Appendix E)
Fiber Filled Polyester Resin (Item 36, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Polysulfide Sealer (Item 49, Appendix E)
Rivet, Domehead (Item 46, Appendix E)
Sandpaper, 80-grit abrasive (Item 38, Appendix E)

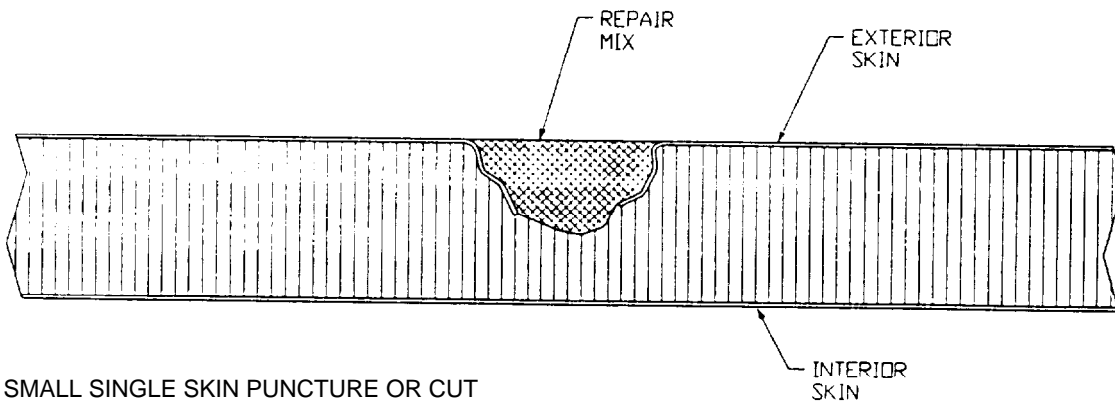
REPAIR

1. Select an aluminum patch that overlaps the puncture or cut by one-inch in all directions.
2. Roughen the skin surface with 80-grit abrasive sandpaper around the damaged area.
3. Use a putty knife and a fiber filled polyester resin (or suitable substitute for body putty), fill the dent and smooth the surface evenly.
4. Allow resin to cure (approximately 1 hour depending on ambient air temperature) in accordance with manufacturers recommendations.

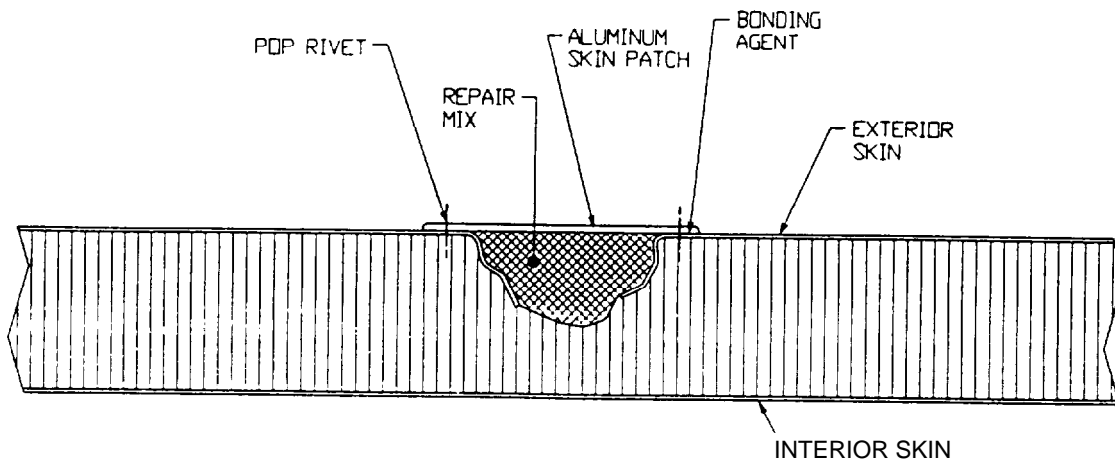
4-13. STRUCTURE ASSEMBLY- REPAIR OF EXTERIOR PUNCTURES/NO CORE DAMAGE - Continued



SMALL SINGLE SKIN PUNCTURE OR CUT IN SANDWICH CONSTRUCTION



SMALL SINGLE SKIN PUNCTURE OR CUT FILLED WITH REPAIR MIX



REPAIRED SMALL-ANGLE SKIN PUNCTURE OR CUT

4-13. STRUCTURE ASSEMBLY- REPAIR OF EXTERIOR PUNCTURES/NO CORE DAMAGE - Continued

WARNING

To avoid injury to personnel, safety glasses must be worn during drilling and sanding operations

5. Using an oscillating sander, sand off excess material to a flat smooth finish.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

Make sure drill bit has a stop attached to keep the drill from exceeding a depth of 5/8 inch.

6. Locate patch to the shelter and drill holes for 3/16-inch pop rivets (#11 drill bit) through the patch and skin of the shelter (approximately one-inch spacing between centers and one-half inch from the edge of the patch).

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

**4-13. STRUCTURE ASSEMBLY- REPAIR OF EXTERIOR PUNCTURES/NO CORE
DAMAGE - Continued**

7. Wearing rubber gloves and safety glasses use a clean cotton cloth with alcohol and remove all dust and residue.

WARNING

To avoid injury to personnel, gloves must be worn when working with polysulfide sealer.

8. Dip pop rivets in polysulfide sealer and using a pop rivet gun, secure aluminum patch to the skin.

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

NOTE

Make sure that the area is completely clean. Do not touch the area with hands or any item that may leave an oily residue.

9. Wear rubber gloves and use a clean cotton cloth with alcohol and clean the entire surface.

10. Apply a bead of polysulfide sealer around the edge of the patch.

11. Prime and paint the repaired surface in accordance with para 3-8.

4-14. STRUCTURE ASSEMBLY – REPAIR OF EXTERIOR PUNCTURES/ DAMAGE TO CORE

This task covers: Repair

INITIAL SETUP

Tools:

Circular Saw (Item 7, Appendix B)
Drill (Item 6, Appendix B)
General Mechanics Tool Kit (Item 1, Appendix B)
Oscillating Sander (Item 4, Appendix B)
Paint Brush (Item 2, Appendix B)
Putty Knife (Item 16, Appendix B)
Riveter (Item 5, Appendix B)
Safety Glasses (Item 9, Appendix B)

Materials/Parts

Adhesive, Polysulfide sealer (Item 49, Appendix E)
Alcohol, Isopropyl (Item 33, Appendix E)
Aluminum (Item 39, Appendix E)
Brush, Applicator (Item 74, Appendix E)
Chalk (Item 31, Appendix E)
Rags (Item 7, Appendix E)
Core, Honeycomb (Item 35, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Rivet, AD64H (Item 59, Appendix E)
Sandpaper (Item 38, Appendix E)

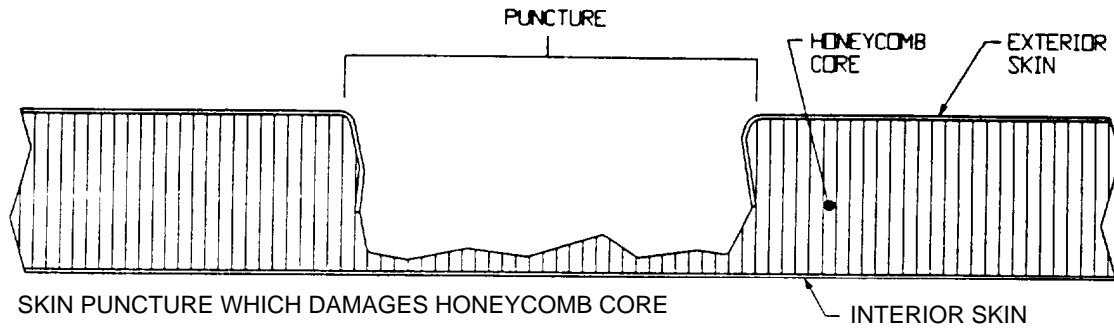
REPAIR

NOTE

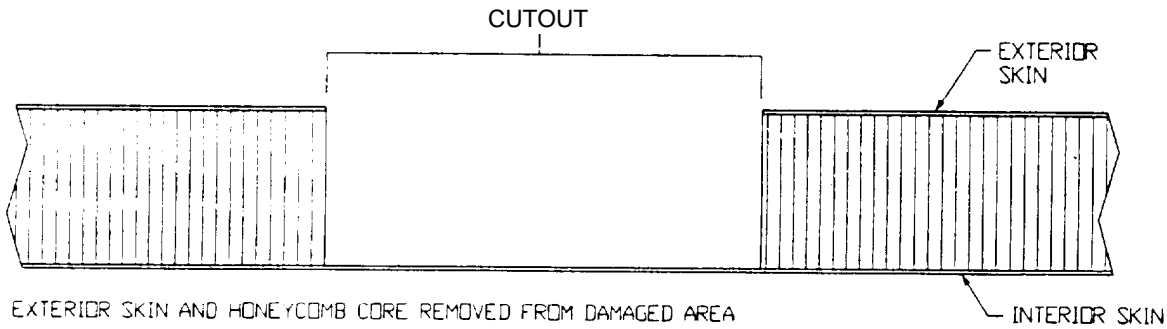
The following repair procedures are used for punctures and for delaminations that exceed ten square inches. If the puncture or cut is in the interior of the shelter, use the procedures in paragraph 4-16.

1. Use a piece of chalk to mark off an area one-inch around the puncture.
2. Use a circular saw to make a cutout around the puncture using the chalk mark as a guide.

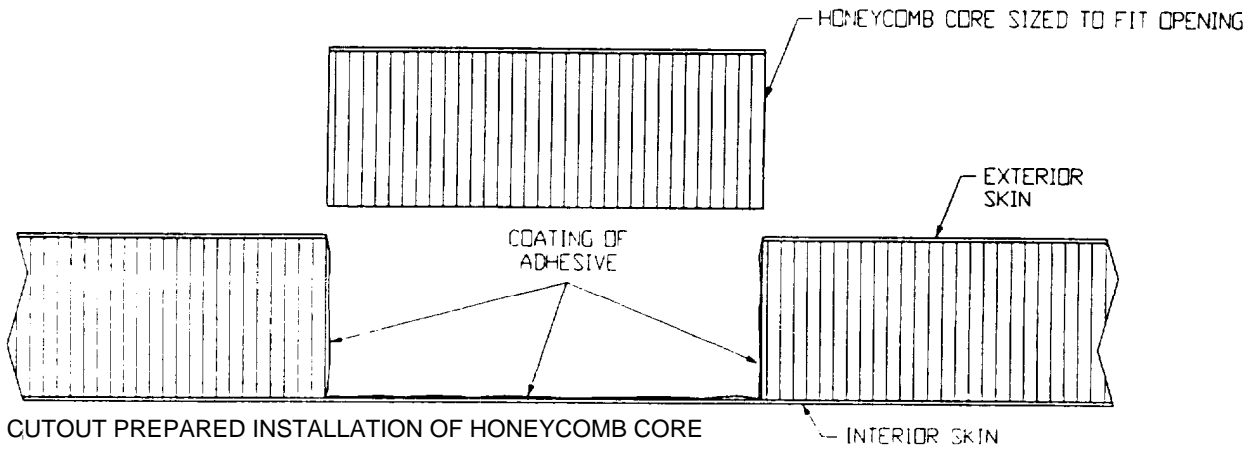
4-14. STRUCTURE ASSEMBLY - REPAIR OF EXTERIOR PUNCTURES/DAMAGE TO CORE - Continued



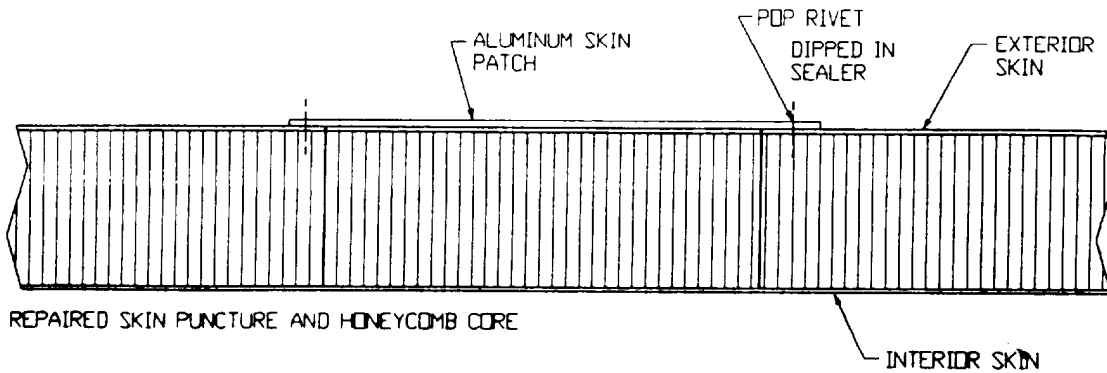
SKIN PUNCTURE WHICH DAMAGES HONEYCOMB CORE



EXTERIOR SKIN AND HONEYCOMB CORE REMOVED FROM DAMAGED AREA



CUTOUT PREPARED INSTALLATION OF HONEYCOMB CORE



REPAIRED SKIN PUNCTURE AND HONEYCOMB CORE

4-14. STRUCTURE ASSEMBLY - REPAIR OF EXTERIOR PUNCTURES/DAMAGE TO CORE - Continued

CAUTION

Make sure knife does not cut opposite skin of the shelter or RFI/EMI integrity will be lost.

3. Select an aluminum patch that overlaps the cutout by one-inch.
4. Using a putty knife, cut the honeycomb core evenly using the cutout as a guide and maintaining straight lines perpendicular to the skin.
5. Remove the honeycomb core.
6. Select a piece of honeycomb core of the same type of construction as the piece that was removed.
7. Size the honeycomb to fit the cutout.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

Make sure drill bit has a stop attached to keep the drill from exceeding a depth of 5/8 inch.

8. Locate patch to the shelter and drill holes for 3/16-inch pop rivets (#11 drill bit) through the patch and skin of the shelter (approximately one inch spacing between centers and 1/2 inch from the edge of the patch).
9. Place patch aside for later use.

4-14. STRUCTURE ASSEMBLY - REPAIR OF EXTERIOR PUNCTURES/DAMAGE TO CORE - Continued

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

To avoid injury or death to personnel, no smoking is allowed when working with flammable materials.

10. Wear rubber gloves and use a clean cotton cloth with alcohol and remove all dust and residue.

NOTE

Make sure that the area is completely clean. Do not touch the area with hands or any item that may leave an oily residue.

11. Using an applicator brush, coat the interior of the cutout with adhesive.

12. Using an applicator brush, coat the entire piece of replacement honeycomb with adhesive.

13. Insert the replacement honeycomb into the cutout.

14. Position the aluminum skin patch.

15. Dip pop rivets in polysulfide sealer and use the riveting tool to install pop rivets to secure the skin patch to the shelter skin.

16. Apply a bead of polysulfide sealer around the edge of the aluminum patch.

4-14. STRUCTURE ASSEMBLY - REPAIR OF EXTERIOR PUNCTURES/DAMAGE TO CORE - Continued

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

To avoid injury or death to personnel, no smoking is allowed when working with flammable materials.

17. Wear rubber gloves and use a clean cotton cloth with alcohol and remove all excess polysulfide sealer.

18. Prime and paint the repaired surface in accordance with paragraph 3-8.

4-15. STRUCTURE ASSEMBLY – REPAIR OF INTERIOR PUNCTURES/NO CORE DAMAGE

This task covers: Repair

INITIAL SETUP

Tools;

Drill (Item 6, Appendix B)
General Mechanics Tool Kit (Item 1, Appendix B)
Oscillating Sander (Item 4, Appendix B)
Putty Knife (Item 16, Appendix B)
Riveting Tool (Item 15, Appendix B)
Safety Glasses (Item 9, Appendix B)

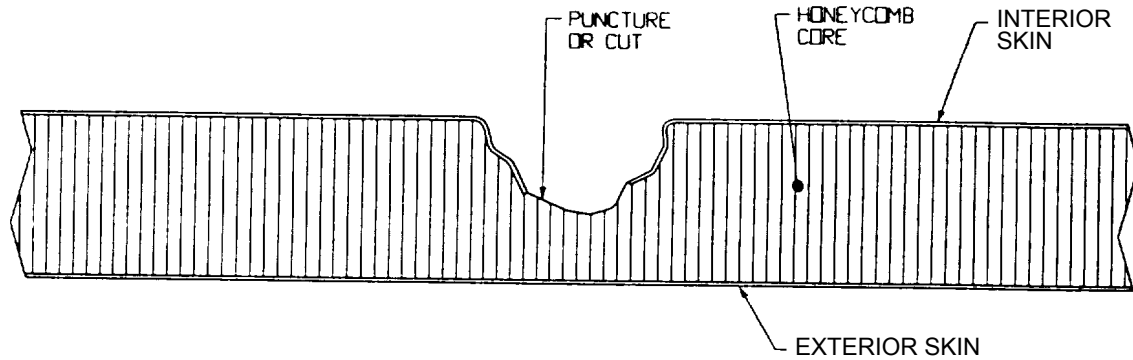
Materials/Parts

Adhesive, Polysulfide Sealer (Item 49, Appendix E)
Alcohol, Isopropyl (Item 33, Appendix E)
Aluminum (Item 39, Appendix E)
Brush , Applicator (Item 74, Appendix E)
Rags (Item 7, Appendix E)
Fiber Filled Polyester Resin (Item 36, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Rivet, AD64H (Item 59, Appendix E)
Sandpaper, 80-grit abrasive (Item 38, Appendix E)
VY Compound (Item 73, Appendix E)

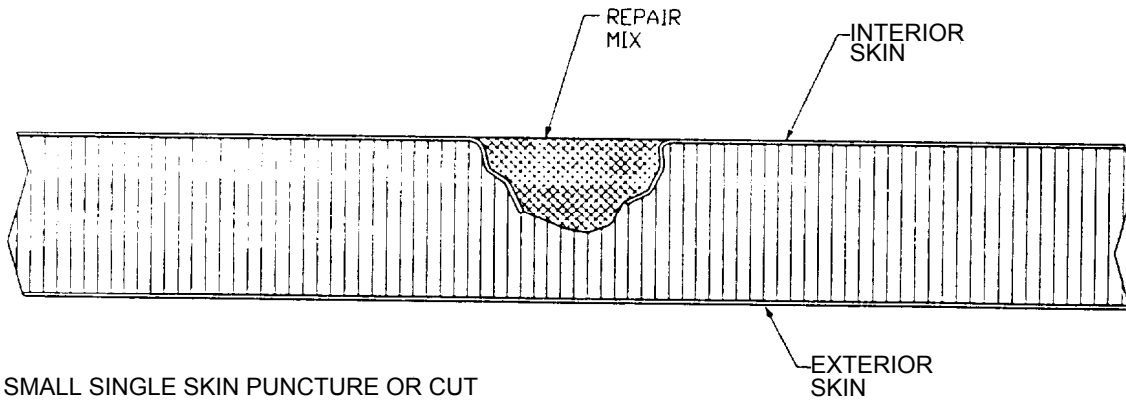
REPAIR

1. Select an aluminum patch that overlaps the puncture or cut by one-inch in all directions.
2. Roughen the skin surface with 80-grit abrasive sandpaper around the damaged area.
3. Use a putty knife and a fiber filled polyester resin (or suitable substitute for body putty) and fill the dent and smooth the surface evenly.
4. Allow resin to cure (approximately 1 hour depending on ambient air temperature) in accordance with manufacturers recommendations.

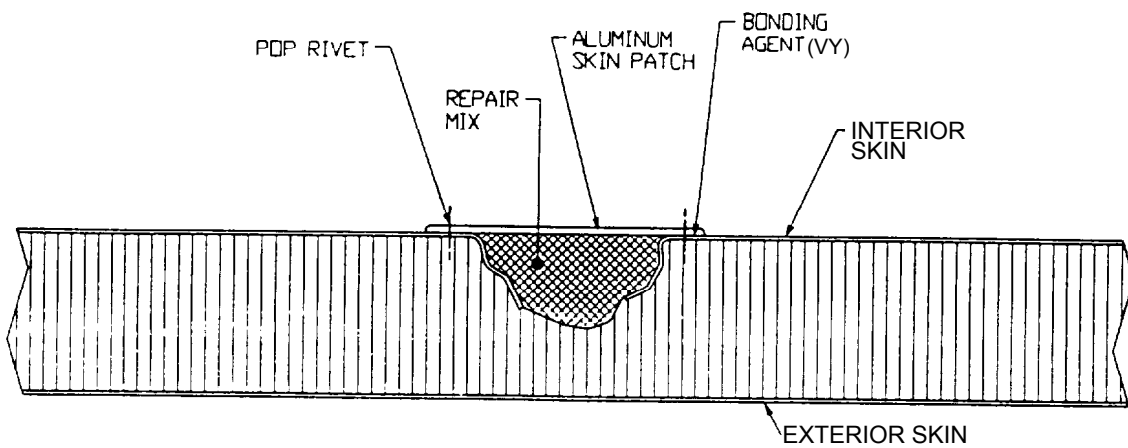
4-15. STRUCTURE ASSEMBLY- REPAIR OF INTERIOR PUNCTURES/NO CORE DAMAGE - Continued



SMALL SINGLE SKIN PUNCTURE OR CUT IN SANDWICH CONSTRUCTION



SMALL SINGLE SKIN PUNCTURE OR CUT FILLED WITH REPAIR MIX



REPAIRED SMALL-ANGLE SKIN PUNCTURE OR CUT

4-15. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/NO CORE DAMAGE - Continued

WARNING

To avoid injury to personnel, safety glasses must be worn during drilling and sanding operations

5. Using an oscillating sander, sand off excess material to a flat smooth finish.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

Make sure drill bit has a stop attached to keep the drill from exceeding a depth of 5/8 inch.

6. Locate patch to the shelter and drill holes for 3/16-inch pop rivets (#11 drill bit) through the patch and skin of the shelter (approximately one-inch spacing between centers and one-half inch from the edge of the patch).

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

7. Wearing rubber gloves and safety glasses use a clean cotton cloth with alcohol and remove all dust and residue.

4-15. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/NO CORE DAMAGE - Continued

WARNING

To avoid injury to personnel, gloves must be worn when working with polysulfide sealer and VY Compound.

8. Apply a bead of VY compound along the inside of the hole pattern of the aluminum skin patch and position over the cutout.
9. Dip pop rivets in polysulfide sealer, and use a pop rivet gun to secure aluminum patch to the skin.

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

NOTE

Make sure that the area is completely clean. Do not touch the area with hands or any item that may leave an oily residue.

10. Wear rubber gloves and use a clean cotton cloth with alcohol and clean the entire surface.
11. Apply a bead of polysulfide sealer around the edge of the patch.
12. Prime and paint the repaired surface in accordance with paragraph 3-8.

4-16. STRUCTURE ASSEMBLY – REPAIR OF INTERIOR PUNCTURES/ DAMAGE TO CORE

This task covers: Repair

INITIAL SETUP

Tools;

Circular Saw (Item 7, Appendix B)
Drill (Item 6, Appendix B)
General Mechanics Tool Kit (Item 1, Appendix B)
Oscillating Sander (Item 4, Appendix B)
Paint Brush (Item 2, Appendix B)
Putty Knife (Item 16, Appendix B)
Riveter (Item 5, Appendix B)
Safety Glasses (Item 9, Appendix B)

Materials/Parts

Adhesive, Polysulfide sealer (Item 49, Appendix E)
Alcohol, Isopropyl (Item 33, Appendix E)
Aluminum (Item 39, Appendix E)
Brush , Applicator (Item 74, Appendix E)
Chalk (Item 31, Appendix E)
Rags (Item 7, Appendix E)
Core, Honeycomb (Item 35, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Rivet, AD64H (Item 59, Appendix E)
Sandpaper (Item 38, Appendix E)
VY Compound (Item 73, Appendix E)

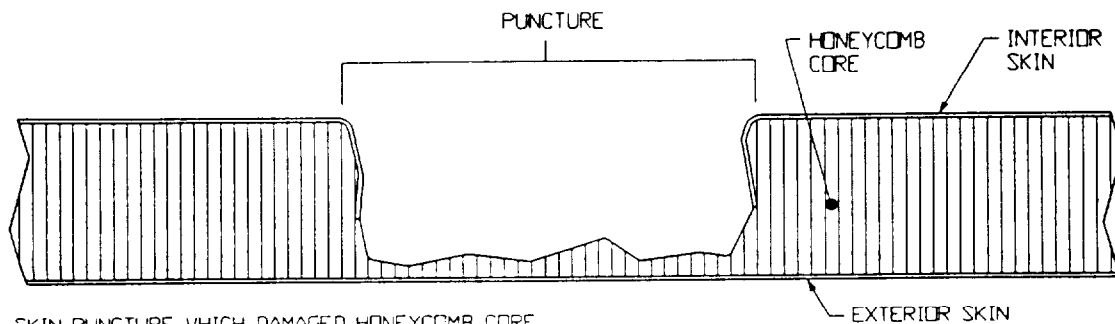
REPAIR

NOTE

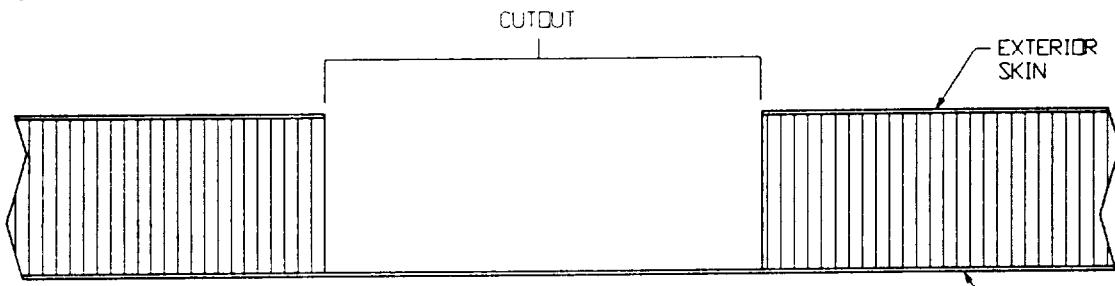
The following repair procedures are used for punctures and for delaminations that exceed ten square inches. If the puncture or cut is in the interior of the shelter, use the procedures in paragraph 4-15.

1. Using a piece of chalk, mark off an area one-inch around the puncture.

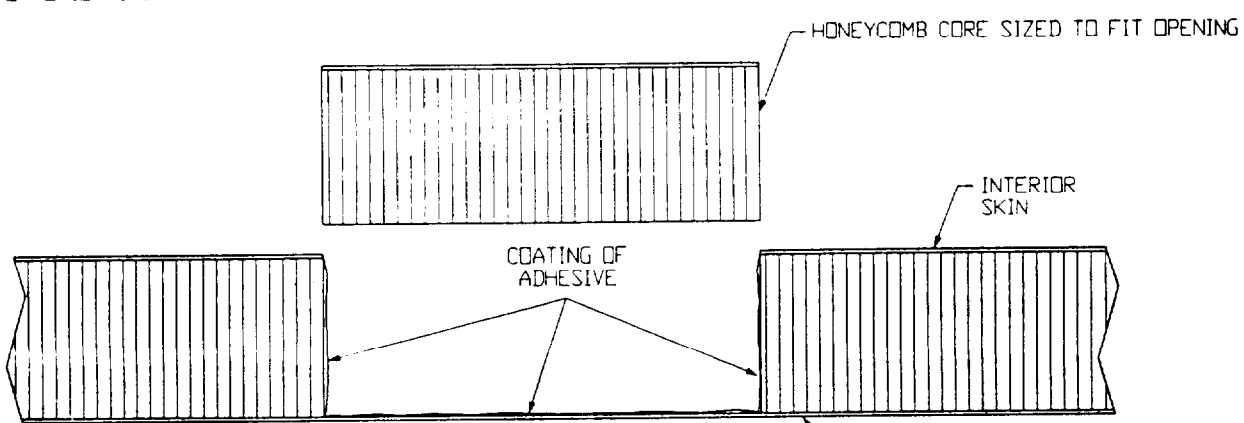
4-16. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/DAMAGE TO CORE - Continued



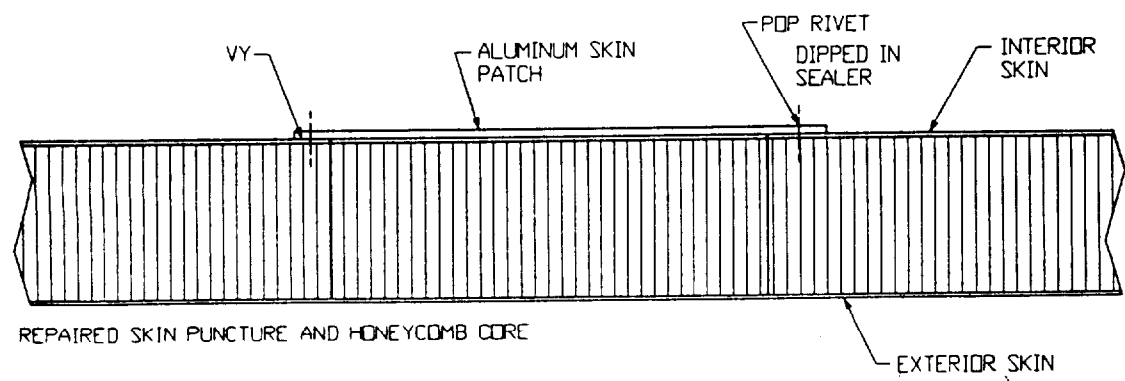
SKIN PUNCTURE WHICH DAMAGED HONEYCOMB CORE



EXTERIOR SKIN AND HONEYCOMB CORE REMOVED FROM DAMAGED AREA



CUT-OUT PREPARED INSTALLATION OF HONEYCOMB CORE



REPAIRED SKIN PUNCTURE AND HONEYCOMB CORE

4-16. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/ DAMAGE TO CORE - Continued

2. Using a circular saw, make a cutout around the puncture using the chalk mark as a guide.
3. Select an aluminum patch that overlaps the cutout by one-inch.

CAUTION

Make sure knife does not cut opposite skin of the shelter or RF/EMI integrity will be lost.

4. Using a putty knife, cut the honeycomb core evenly using the cutout as a guide and maintaining straight lines perpendicular to the skin.
5. Remove the honeycomb core.
6. Select a piece of honeycomb core of the same type of construction as the piece that was removed.
7. Size the honeycomb to fit the cutout.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

Make sure drill bit has a stop attached to keep the drill from exceeding a depth of 5/8 inch.

8. Locate patch to the shelter and drill holes for 3/16-inch pop rivets (#11 drill bit) through the patch and skin of the shelter (approximately one-inch spacing between centers and one-half inch from the edge of the patch).
9. Place patch aside for later use.

4-16. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/ DAMAGE TO CORE - Continued

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

To avoid injury or death to personnel, no smoking is allowed when 10. Wear rubber gloves and use a clean cotton cloth with alcohol to remove all dust and residue.

NOTE

Make sure that the area is completely clean. Do not touch the area with hands or any item that may leave an oily residue.

10. Using an applicator brush, coat the interior of the cutout with adhesive.
11. Using an applicator brush, coat the entire piece of replacement honeycomb with adhesive.
12. Insert the replacement honeycomb into the cutout.

WARNING

To avoid injury to personnel, gloves must be worn when working with polysulfide sealer and VY Compound.

13. Apply a bead of VY compound along the inside of the hole pattern of the aluminum skin patch and position over the cutout.

4-16. STRUCTURE ASSEMBLY - REPAIR OF INTERIOR PUNCTURES/DAMAGE TO CORE - Continued

14. Dip pop rivets in polysulfide sealer and use the riveting tool to install pop rivets to secure the skin patch to the shelter skin.

15. Apply a bead of polysulfide sealer around the edge of the aluminum patch.

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

To avoid injury or death to personnel, no smoking is allowed when working with flammable materials.

16. Wear rubber gloves and use a clean cotton cloth with alcohol and remove all excess polysulfide sealer.

17. Prime and paint the repaired surface in accordance with paragraph 3-8.

4-17. STRUCTURE ASSEMBLY – REPAIR OF DELAMINATIONS

This task covers: Repair

INITIAL SETUP

Tools;

Drill (Item 6, Appendix B)
General Mechanics Tool Kit (Item 1, Appendix B)
Paint Brush (Item 2, Appendix B)
Putty Knife (Item 16, Appendix B)
Riveting Tool (Item 15, Appendix B)
Safety Glasses (Item 9, Appendix B)
Caulking Gun (Item 8, Appendix B)

Materials/Parts

Alcohol, Isopropyl (Item 33, Appendix E)
Caulking Cartridge (Item 40, Appendix E)
Chalk (Item 31, Appendix E)
Rags (Item 7, Appendix E)
Container, Unwaxed (Item 41, Appendix E)
Epoxy Resin (Items 44 and 45, Appendix E)
Fiber Filled Polyester Resin (Item 36, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Plywood (Item 75, Appendix E)
Polyethylene, Wrap (Item 32, Appendix E)
Rivet, AD64H (Item 59, Appendix E)
Tape, Masking (Item 76, Appendix E)

REPAIR

NOTE

The area between the inner and outer aluminum panels is filled with a honeycomb core bonded to the panels with an epoxy adhesive. Separation of this core from the aluminum panel will cause a structural weakness called a delamination. Delaminated areas produce a light hollow sound similar to the sound the bottom of an oil can makes when hit lightly with a hammer. A bonded area produces a dull solid sound. The sound may change somewhat when crossing reinforced areas. Large delaminations, greater than 10-inches square should be repaired as soon as possible using the procedures identified for the repair of a puncture. Delaminations of less than 10-inches square can be repaired using the following repair procedures.

4-17. STRUCTURE ASSEMBLY - REPAIR OF DELAMINATIONS - Continued

1. Using a tapping hammer to identify the limits of the delamination, use chalk to mark the limits of the delamination.

WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

To ensure that the opposite shelter wall is not punctured, make sure the drill bit has a drill stop attached to prevent exceeding a depth of 5/8 in. or damage to the other shelter wall will occur.

2. Using the chalk limits marked in step 1, approximate the center of the delamination and drill a 3/16 in. diameter hole.

3. Using the chalk limits marked in step 1, use chalk to mark points approximately 2 inches apart, no further away than 1/2 inch from the delaminated area.

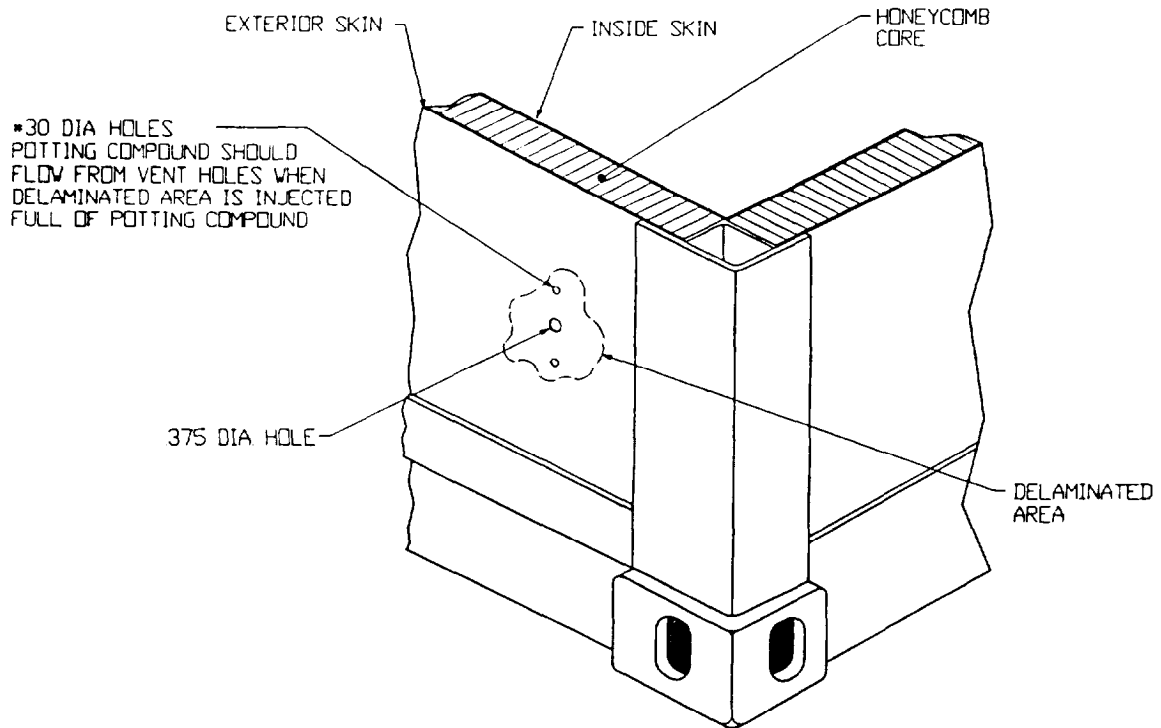
WARNING

Drilling creates metal chips, which can enter eyes and cause serious injury. Eye protection is required.

CAUTION

To ensure that the opposite shelter wall is not punctured, make sure the drill bit has a drill stop attached to prevent exceeding a depth of 5/8 in. or damage to the other shelter wall will occur.

4-17. STRUCTURE ASSEMBLY - REPAIR OF DELAMINATIONS - Continued



4-17. STRUCTURE ASSEMBLY - REPAIR OF DELAMINATIONS - Continued

4. Drill 3/16 in. pressure relief holes at each point marked in step 3.
5. Using the chalk outline of the delamination, use Kraft wrapping paper and masking tape to mask off the surrounding area to a width of about two feet.
6. Mix adhesive in an unwaxed clean container using either of the following methods:

WARNING

Gloves are to be worn when mixing and applying adhesive material due to possible skin irritation caused by adhesive coming into contact with the body skin surface.

NOTE

The Versamid material is extremely sensitive to moisture absorption. Make sure Versamid 140 container lid is secure after material has been removed from the shipping or storage container. Both the Epic R1003 and the Versamid 140 materials have a shelf life of one-year.

- a. Mixing by weight -Use 15 ounces of Epic R1003 to 5 ounces of Versamid 140.
 - b. By volume - 2 parts of Epic R1003 to 1 part of Versamid 140.
7. Fill a caulking cartridge with the adhesive and insert into a caulk gun.

CAUTION

The following repair procedures must be accomplished within one-hour of mixing the adhesive. Do not attempt repairs unless temperature is between 60°F and 85°F.

Inject adhesive slowly. If adhesive is injected too quickly, additional delamination of the area may occur causing more damage.

4-17. STRUCTURE ASSEMBLY - REPAIR OF DELAMINATIONS - Continued

8. Place nozzle of caulking gun in the bottom center pre-drilled 3/16 in. hole.
9. Inject adhesive into the hole.
10. When the lower area is filled, adhesive will start to seep from the adjacent pre-drilled holes.

WARNING

Gloves are to be worn when mixing and applying adhesive material due to possible skin irritation caused by adhesive coming into contact with the body skin surface.

11. Dip rivets in polysulfide sealer and rivet each hole when adhesive starts to seep out of the hole.
12. When the holes on each side of the injection hole are riveted, install a rivet in the injection hole, and use the next series of pre-drilled holes to continue injecting adhesive.

WARNING

Alcohol solvents are flammable. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only in well ventilated areas. Avoid prolonged breathing of vapors or repeated contact with skin or death or serious injury may result.

13. Use rubber gloves and a cotton cloth saturated with alcohol and wipe off any excess adhesive or polysulfide sealer.
14. Cover the delaminated area with a sheet of polyethylene.
15. Place a 1/2 in. sheet of plywood against the polyethylene sheet. Brace the plywood so that an even pressure is maintained over the repaired area for at least 24-hours.

4-17. STRUCTURE ASSEMBLY - REPAIR OF DELAMINATIONS - Continued

16. After adhesive has been allowed to cure for the required time, remove plywood and polyethylene sheet.

17. Prime and paint repaired panel surface in accordance with paragraph 3-8.

4-18. DOOR ASSEMBLY - RFI SEAL

This task covers: Repair

INITIAL SETUP

Tools;

Drill (Item 6, Appendix B)

Safety Glasses (Item 9, Appendix B)

Riveting Tool (Item 15, Appendix B)

Materials/Parts

RFI Seal (Appendix F, Figure F-2)

Metal Strips (Horizontal)

Metal Strips (Vertical)

Alcohol, Isopropyl (Item 33, Appendix E)

Rags (Item 7, Appendix E)

Gloves, Rubber (Item 37, Appendix E)

Rivet (Item 54, Appendix E)

REPAIR

NOTE

For the removal and replacement of rivets reference paragraph 4-10a. For removal and replacement of rivnuts, reference paragraph 4-10b.

1. Open door.

WARNING

Drilling creates metal chips, which may enter eyes and cause serious injury. Eye protection is required.

CAUTION

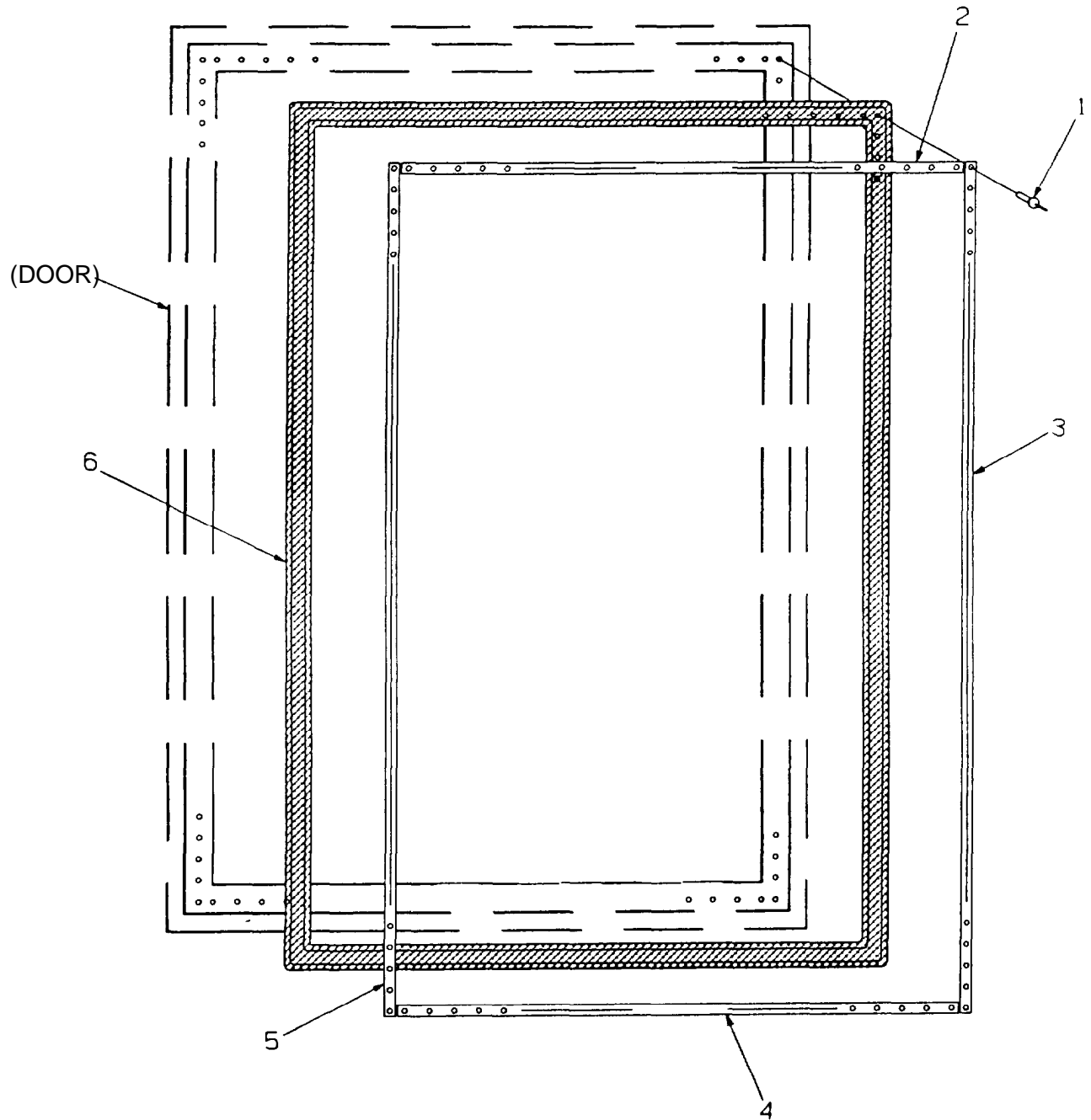
Make sure the drill bit has a drill stop attached to prevent the drill bit from exceeding a depth of one inch.

2. Using a No. 30 drill bit, drill out the 58 rivets (1) securing metal strips (2), (3), (4), (5), and RFI seal (6) around track of door and remove strips and RFI seal.

4-18. DOOR ASSEMBLY - RFI SEAL - Continued

3. If track needs cleaning, clean with rags and alcohol.
4. Press RFVEMI gasket (6) in track around perimeter of door, starting midway on hinged side. Ensure there is an overlap at the ends.
5. Position metal strip (2) in channel of RFI seal (6) at the top of the door and align holes by pushing two or three rivets (1) through strip and RFI seal (6) material and into holes in track.
6. Secure strip (2) and RFI seal (6) in track at top of door with 11 rivets (1).
7. Firmly press RFI seal (6) around top corner and down the handle side of door.
8. Position metal strip (3) in channel of RFI seal (6) on the handle side of door and align strip holes by pushing several rivets (1) through strap (3) and RFI seal material and into holes in track.
9. Secure strip (3) and RFI seal (6) in track along handle side of door with 18 rivets (1).
10. Firmly press RFI seal (6) around bottom corner and continue around corner at hinged side of door.
11. Position metal strip (4) in channel of RFI seal (6) at the bottom of the door and align strip holes by pushing two or three rivets (1) through strip (4) and RFI seal material and into holes in track.
12. Secure strap (4) and RFI seal (6) in track along bottom of door with 11 rivets (1).
13. Firmly press RFI seal in track and at overlap of RFI seal material on the hinged side of door, trim all but a one inch excess.
14. Roll back approximately one inch of the braided shield at the ends of the RFI seal (6) and cut 1/2 inch off the core material of each end.
15. Butt the two ends of the RFI seal (6) and roll the braid of one end over the braid of the other and firmly press RFI seal (6) into the track.
16. Position metal strip (5) in channel of RFI seal (6) on the hinged side of door and align strip holes by pushing several rivets (1) through strip (5) and RFI seal material and into holes in track.
17. Secure strip (5) along hinged side of door with 18 rivets (1).

4-18. DOOR ASSEMBLY - RF SEAL - Continued



4-19. HATCH ASSEMBLY - RFI SEAL

This task covers: Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)
Drill (Item 6, Appendix B)
Safety Glasses (Item 9, Appendix B)
Riveting Tool (Item 15, Appendix 8)

Materials/Parts

Metal Strips (Horizontal)
Metal Strips (Vertical)
RFI Seal (Appendix F, Figure F-2)
Alcohol, Isopropyl (Item 33, Appendix E)
Rags (Item 7, Appendix E)
Gloves, Rubber (Item 37, Appendix E)
Rivet (Item 54, Appendix E)

Equipment Conditions:
Hatch removed (para 3-16)

REPAIR

NOTE

For the removal and replacement of rivets reference paragraph 4-10a. For removal and replacement of rivnuts, reference paragraph 4-10b.

WARNING

Drilling creates metal chips, which may enter eyes and cause serious injury. Eye protection is required.

CAUTION

Make sure the drill bit has a drill stop attached to prevent the drill bit from exceeding a depth of one inch.

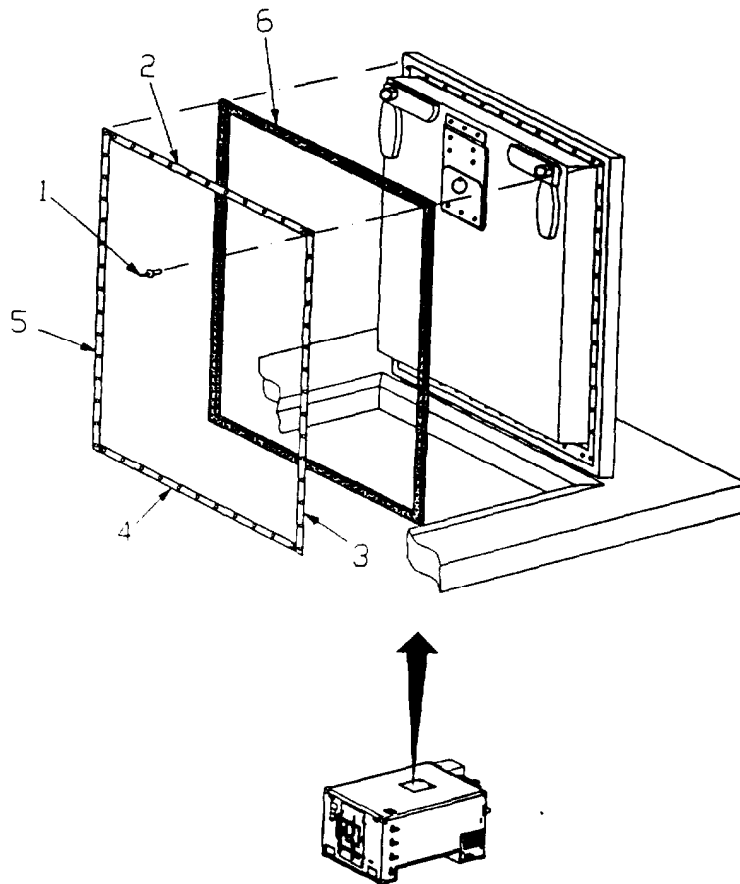
1. Using a No. 30 drill bit, drill out the 52 rivets (1) securing the closure angle (metal strips) (2), (3), (4), (5), and RFI seal (6) around track of hatch and remove strips and RFI seals.

4-19. HATCH ASSEMBLY - RFI SEAL - Continued

2. If track needs cleaning, clean with cloth and alcohol.
3. Press RFI seal (6) in track, starting midway on hinged side. Ensure there is an overlap at the ends.
4. Position metal strip (2) in channel of RFI seal (6) at the top of the hatch and align holes by pushing two or three rivets (1) through strip and RFI seal (6) material and into holes in track.
5. Secure strip (2) and RFI seal (6) in track at top of hatch with rivets (1).
6. Firmly press RFI seal (6) around top corner.
7. Position metal strip (3) in curbside channel of RFI seal (6) and align strip holes by pushing several rivets (1) through strip (3) and RFI seal material and into holes in track.
8. Secure strip (3) and RFI seal (6) in track along handle side of door with rivets (1).
9. Firmly press RFI seal (6) around bottom corner and continue around corner.
10. Position metal strip (4) in roadside channel of RFI seal (6) and align strip holes by pushing two or three rivets (1) through strip (4) and RFI seal material and into holes in track.
11. Secure strip (4) and RFI seal (6) in track along bottom of door with 11 rivets (1).
12. Firmly press RFI seal in track and at overlap of RFI seal material on the hinged side of hatch trim all but a one inch excess.
13. Roll back approximately one inch of the braided shield at the ends of the RFI seal (6) and cut 1/2 inch off the core material of each end.
14. Butt the two ends of the RFI seal (6) and roll the braid of one end over the braid of the other and firmly press RFI seal (6) in the track.
15. Position metal strip (5) in channel of RFI seal (6) on the hinged side and align strip holes by pushing several rivets (1) through strip (5) and RFI seal material and into holes in track.
16. Secure strip (5) along hinged side of hatch with rivets (1).

Follow-on maintenance: Replace hatch per 3-16.

4-19. HATCH ASSEMBLY - RFI SEAL - Continued



4-20. CO MONITOR

This task covers: Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

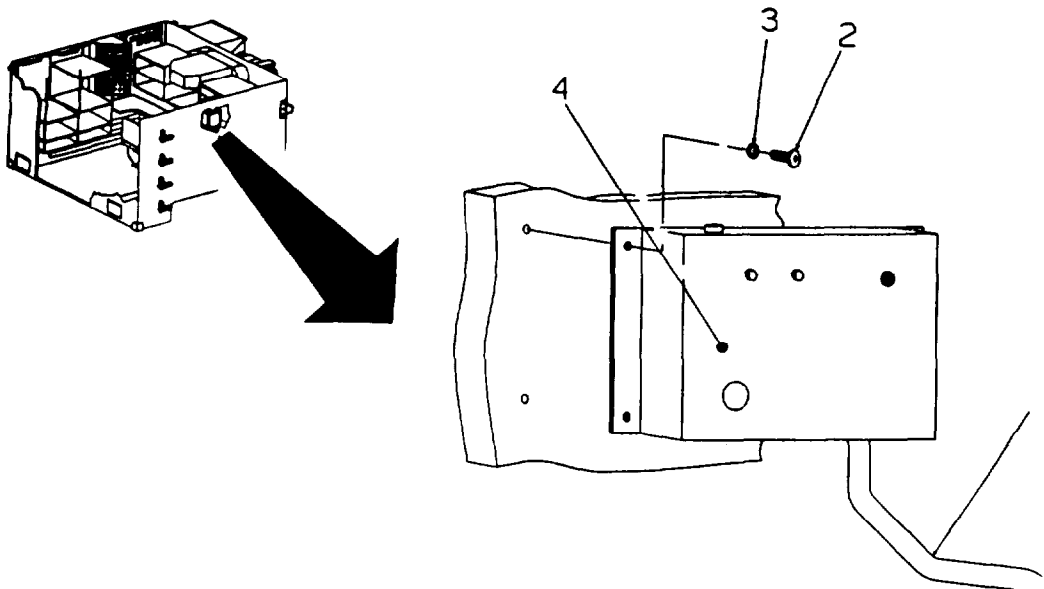
CO Monitor

Ty-raps (Item 1, Appendix E)

Lockwasher (Item 15, Appendix E)

REPAIR

1. Disconnect power cable (1) from outlet.
2. Cut four ty-wraps securing power cable (1).
3. While supporting CO Monitor (4), remove the four screws (2) and lockwashers (3).
4. Remove CO Monitor (4).
5. Position CO Monitor (4) on shelter wall.
6. Secure CO Monitor with screws (2) and lockwashers (3).
7. Reconnect CO Monitor power cable (1) to outlet.
8. Secure cable with ty-wraps (four locations).



4-21. POWER ENTRY INSTALLATION

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-wraps (Item 1, Appendix E)

Solder (Item 77, Appendix E)

Equipment Conditions

Import Power Cable and NATO Slave Cable Disconnected.

DISASSEMBLE

1. Remove screws securing front and side access panels, and remove panels.

WARNING

Filters are capacitors and must be properly discharged prior to maintenance procedures. Failure to observe this warning may result in electrical shock.

Power Select Switch

2. Loosen setscrew (5) securing switch knob (4) to switch (1) shaft and remove knob.
3. Remove nut (3) and lock washer (2), along with screws (6) securing switch to panel assembly front.
4. Remove screws (10) and lock washers (9), and nuts (8) securing wiring to defective switch and disconnect wires.
5. Remove defective switch.

Connector Receptacle

NOTE

Procedures are the same for the import and export connectors.

6. Remove screws (18), washers (16), flat washers (13), and locknuts (12) securing defective connector (15) to front panel.
7. Loosen connector backshell nut (11).
8. Disconnect cables from connector.
9. Remove backshell nut.

4-21. POWER ENTRY INSTALLATION – Continued

10. Pull connector away from panel assembly front.

Fuse

11. Remove fuse (23) by unscrewing from receptacle.

12. Tag wires and remove from receptacle by removing retaining screws.

13. Remove nut and lock washer, and remove receptacle from panel assembly front.

Circuit Breaker

14. Tag wires and remove from circuit breaker (19) by removing screw (21) and lock washers (20).

15. Remove screws (18) securing circuit breaker to panel assembly front.

Grounding Lug

16. Disconnect ground strap connecting the shelter to the vehicle.

17. Remove screws, washers and nut securing lug (22) to panel assembly front.

Filters

18. Remove nut (24) (may be solder or nut and lock washer) securing cable or wire to top of defective filter (27).

19. Remove nut (25) and lock washer (26) securing defective filter to EMI plate.

20. Remove screw, lock washer, washer, and nut (may be solder or nut and lock washer) securing cable or wire to bottom of defective filter and disconnect cable or wire from filter.

Electromagnetic Relay

21. Tag and remove wires from relay (28).

22. Remove screws (32), lock washers (31) and flat washers (30) securing relay in place.

Current Transformer

23. Tag and remove wires from transformer (28).

24. Clip tie wraps and remove cable from electromagnetic relay (28) and unwind from around transformer (29).

25. Remove screws (32), lock washers (31), and flat washers (30) securing transformer in place.

4-21. POWER ENTRY INSTALLATION – Continued

Contactors

26. Tag and remove wires from contactor (33).

27. Remove screws (32), lock washers (31), and flat washers (30) securing contactor in place.

Transformer Suppressor

28. Tag and remove wires by removing nut and lock washer.

29. Remove suppressor (34).

Power Distribution Block

30. Tag and remove wires from distribution block (36).

31. Remove screws (35), and lock washers (31) securing distribution block in place.

Terminal Board

32. Remove terminal board cover (39) by loosening the gray knobs.

33. Tag and remove wires by loosening nut (45), lock washers (44), flat washers (43), and screw (37).

34. Remove nuts (42), lock washers (41), and flat washers (40) holding defective board (38) in place.

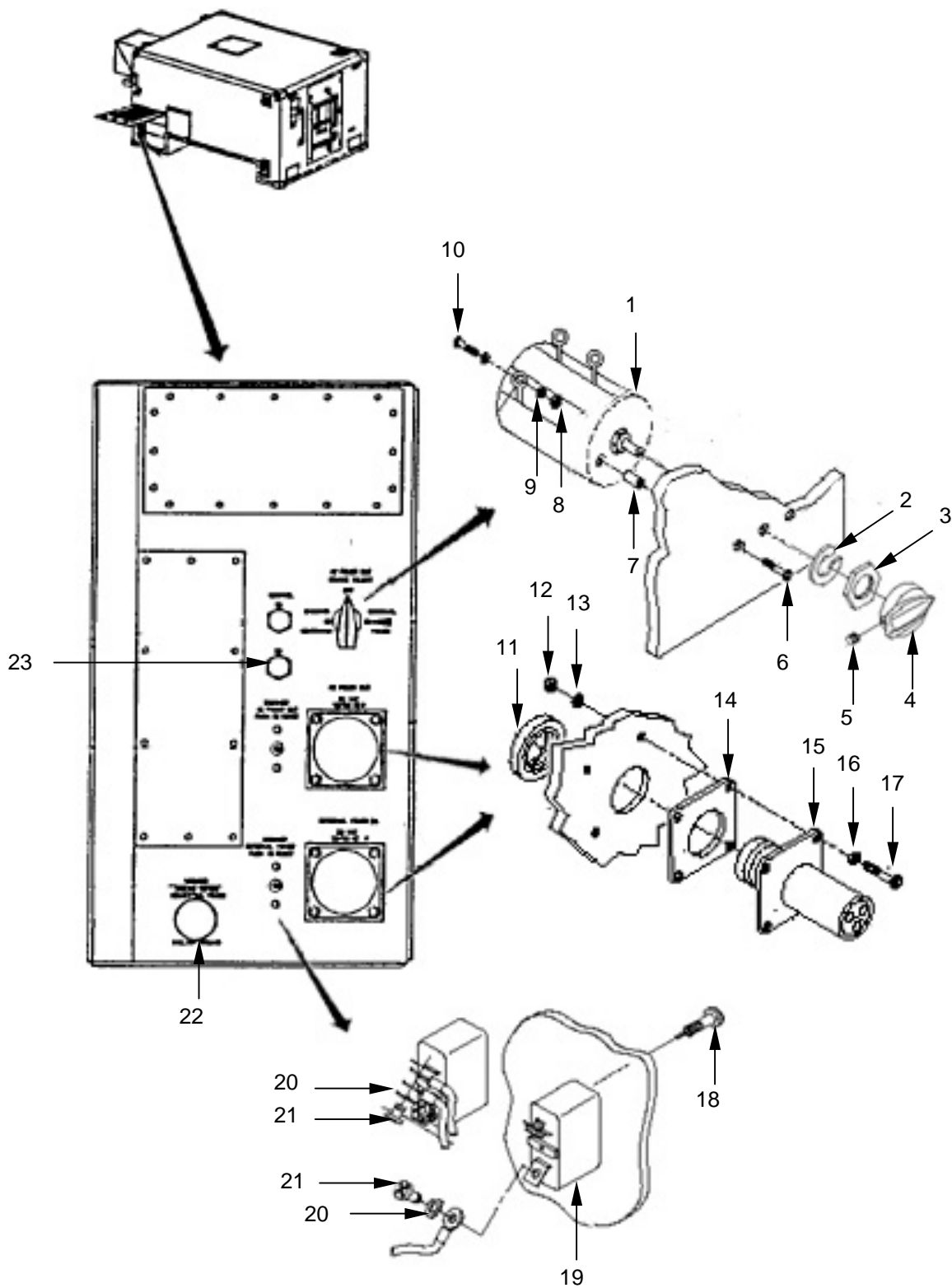
Volt Monitor Relay

35. Disconnect hi-low monitor control from relay (49) by pulling it straight out.

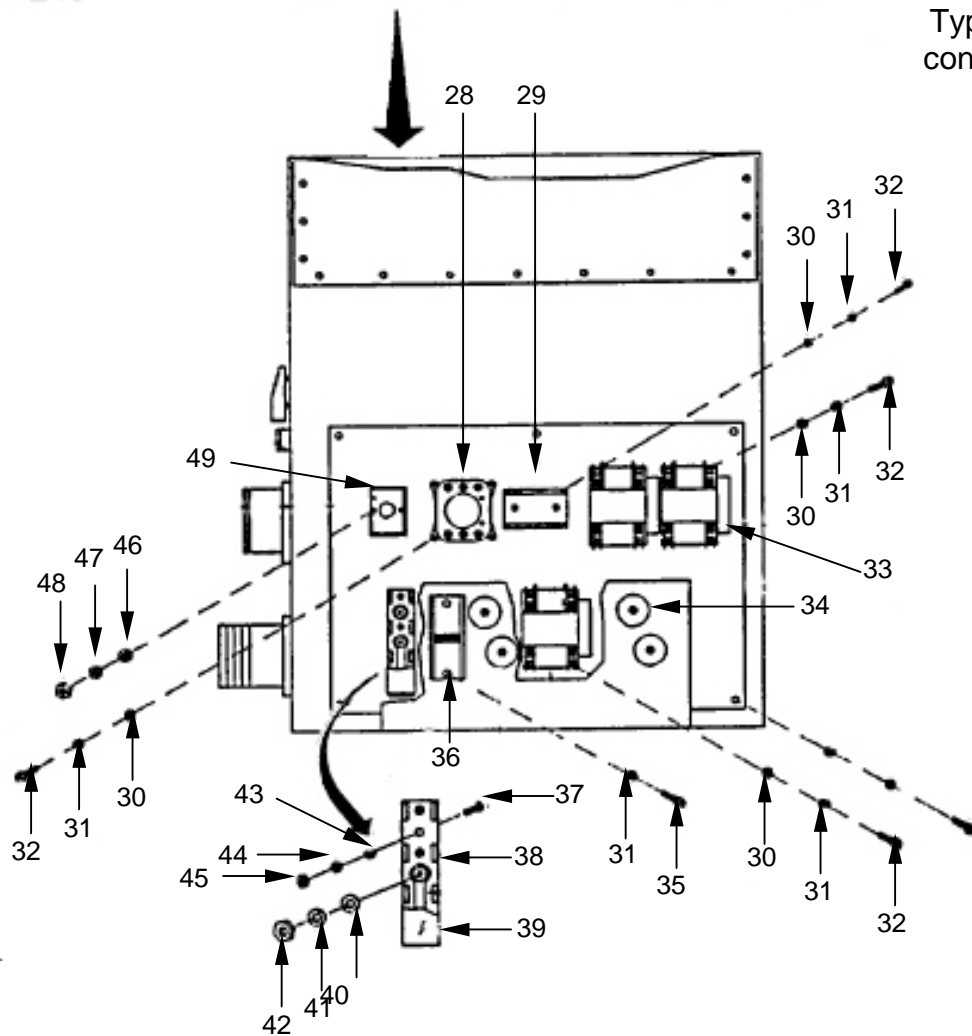
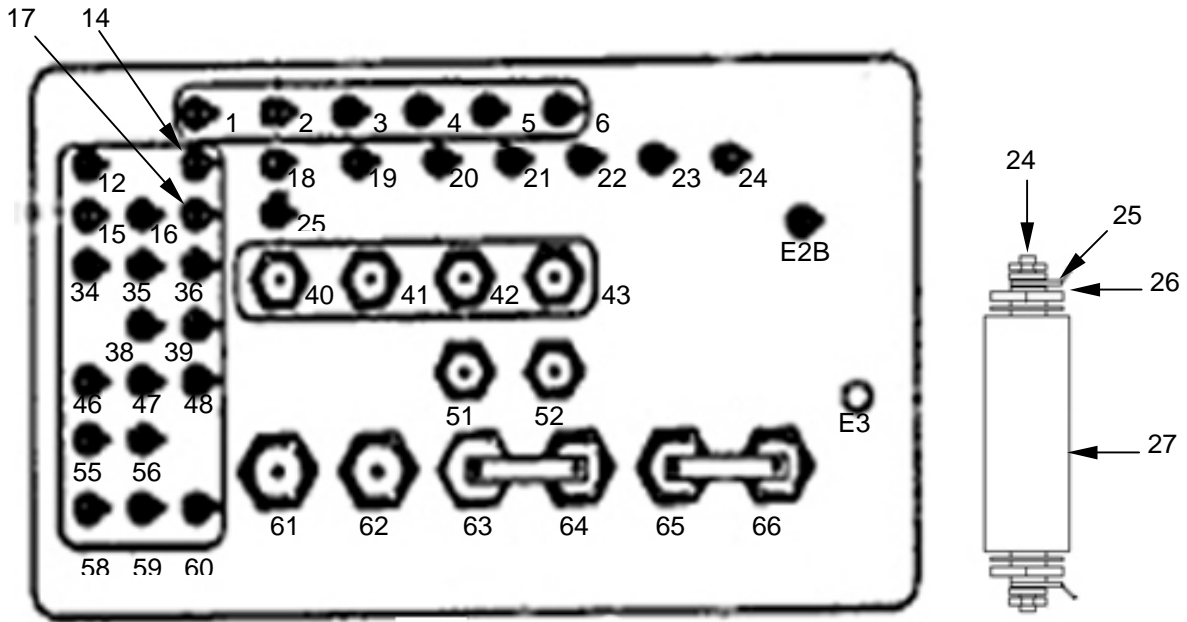
36. Tag and remove wires from relay.

37. Remove nuts (48), lock washers (47), and flat washers (46) securing relay in place.

4-21. POWER ENTRY INSTALLATION – Continued



4-21. POWER ENTRY INSTALLATION – Continued



4-21. POWER ENTRY INSTALLATION – Continued

ASSEMBLY

WARNING

Filters are capacitors and must be properly discharged prior to maintenance procedures. Failure to observe this warning may result in electrical shock.

Power Select Switch

38. Connect wires to switch (1) with screws (10), lock washers (9), and nuts (8).
39. Position switch in panel assembly mounting hole.
40. Install nut (3) and lock washer (2) securing switch to panel assembly front.
41. Position knob (4) on switch shaft and tighten setscrew (5).

Connector Receptacle

NOTE

Procedures are the same for the import and export connectors.

42. Insert wires through backshell nut (12), and through the gasket (14).
43. Connect the wires to the new connector (15).
44. Secure connector and gasket to panel assembly front with screw (17), lock washer (16), flat washer (13), and nut (12).
45. Secure backshell nut (11) onto connector.

Fuse

46. Insert receptacle into panel assembly front and secure with nut and lock washer.
47. Secure wires to receptacle with retaining screws.
48. Insert new fuse (23) into receptacle and twist into place.

Circuit Breaker

49. Secure circuit breaker (19) to panel assembly front with screws (18).
50. Secure wires to circuit breaker with screw (21) and lock washers (20).

4-21. POWER ENTRY INSTALLATION – Continued

Grounding Lug

51. Insert grounding lug (22) into panel assembly front.
52. Inside the power entry box, install and tighten flat washer, ground strap, flat washer, lock washer, and nut.
53. At the panel front, install and tighten the flat washer, vehicle ground strap, flat washer, lock washer and butterfly nut.

Filters

54. Position replacement filter (27) through EMI plate.
55. While one person holds filter in place, secure filter to top of filter plate with nut (25) and lock washer (26).
56. Connect cable or wire to top connection on filter with nut (24) (may be solder or nut and lock washer).
57. Connect cable or wire to bottom connection on filter with nut (may be solder or nut and lock washer).

Electromagnetic Relay

58. Secure relay (28) in place with screws (32), lock washers (31), and flat washers (32).
59. Connect cables and secure with lock washer and nut.

Current Transformer

60. Secure transformer (29) in place with screws (32), lock washers (31), and flat washers (30).
61. Wind cable around transformer and secure with ty-wraps.
62. Connect cable to electromagnetic relay (28).
63. Connect wires to transformer.

Contactor

64. Secure contactor (33) in place with screws (32), lock washers (31), and flat washers (30).
65. Connect wires and tighten screws to secure in place.

Transformer Suppressor

66. Position suppressor (34) onto plate.
67. Assemble and tighten cable, flat washer, lock washer, and nut to secure in place.

4-21. POWER ENTRY INSTALLATION – Continued

Power Distribution Block

68. Secure distribution block (36) in place with screws (35), and lock washers (31).

69. Connect wires and secure with lock washers and screws.

Terminal Board

70. Connect wires and secure with nuts (45), lock washers (44), flat washers (43), and screws (37).

71. Secure distribution block (38) in place with nuts (42), lock washers (41), and flat washers (40).

72. Replace cover (39) and secure with gray knobs.

Volt Monitor Relay

73. Securing relay in place with nuts (48), lock washers (47), and flat washers (46).

74. Connect wires to relay and secure with screws.

75. Line pins up and connect hi-low monitor control into relay.

76. Set monitor controls to 3 (top) and 7 (bottom) (90 Vac to 130 Vac).

4-22. DC POWER SUPPLY

This task covers: Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

NATO Slave Cable and Import Power Disconnected.

REPAIR

WARNING

Part of this procedure requires working with the power applied. However, when disconnecting or connecting cables, the power should be off.

Circuits contain high electrical currents. Remove jewelry and ensure proper safety precautions are followed for working around live voltage.

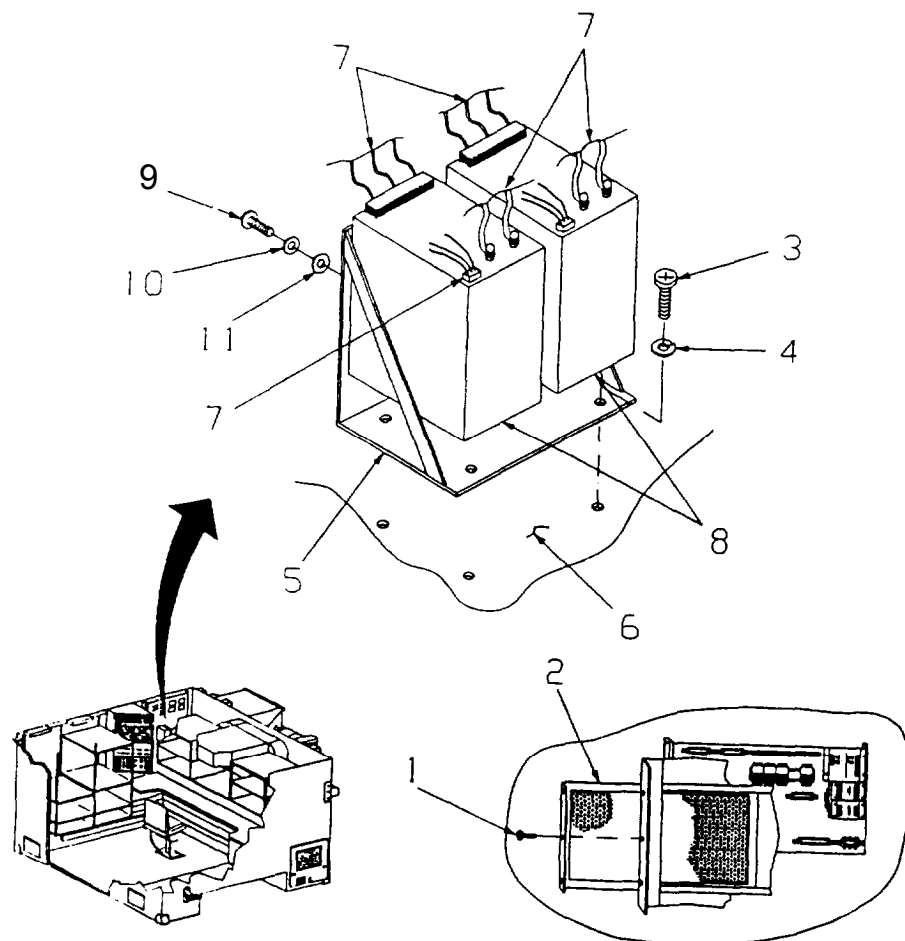
1. Remove screws (1) and slide screen (2) to gain access to Relay Panel area.
2. Remove screws securing upper screen support bracket and remove bracket (not shown).
3. Remove screws (3) and lock washers (4) securing power supply frame (5) to shelter (6).
4. Tag and remove wires/plugs (7) from power supplies (8).
5. Carefully lift power supplies/frame from its location.
6. Remove screws (9), flat washer (11), and lock washers (12) securing power supply (8) to frame (5).
7. Locate power supply (8) on power supply frame (5) and secure with screws (9), flat washers (11) and lock washers (12).
8. With power off, connect input power to high side of one of the power supplies. Do not interconnect power supplies at this time.
9. Attach multimeter leads to power supply output.
10. Apply 115 Vac power to the unit by pressing in the Power Supplies CB on the AC CB Panel and tune output to 26.4 Vdc by using a screwdriver to turn tuning screw at the top of the unit either way until output voltage is correct.

4-22. DC POWER SUPPLY - Continued

NOTE

When JTIDS is utilized in your configuration, tune power supplies to 28 Vdc.

11. Repeat steps 8 through 10 for the other power supply.
12. With power off, attach all cables/buss bar according to their labeling.
13. Secure upper screen support bracket with screws.
14. Install and secure screen (2) with screws (1).



4-23. POWER MONITOR FACEPLATE

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-wraps (Item 1, Appendix E)

Solder (Item 77, Appendix E)

Equipment Conditions

Import Power Cable and NATO Slave Cable Disconnected.

DISASSEMBLE

1. Remove screws (1), lock washer (2), and flat washers (3) securing Power Monitor Faceplate Panel (4) to frame (5).

Meters

2. Remove nuts (6) and lock washers (7) securing wires to meter.

3. Remove screws (8), lock washers (9) and nuts (10) securing meter (11) to faceplate.

Circuit Breakers

4. Tag wires and remove from circuit breaker by removing screw (12) and lock washers (13). (If a buss bar is used in place of wire disconnect one end).

5. Remove circuit breakers by either applicable method: Remove screws (14) securing circuit breaker (15) to panel (4), or remove nut (16) and lock washer (17) securing circuit breaker (18) to panel (4).

Toggle Switches

6. Tag wires and remove from switch (19) by removing screws (20) and lock washers (21).

7. Remove nuts (22), lock washers (23) and flat washer (24) securing switch (19) to faceplate.

Light Emitting Diodes (LEDs)

8. Remove nut (32) securing LED (33) to panel (4).

9. Unsolder LED (33) connections.

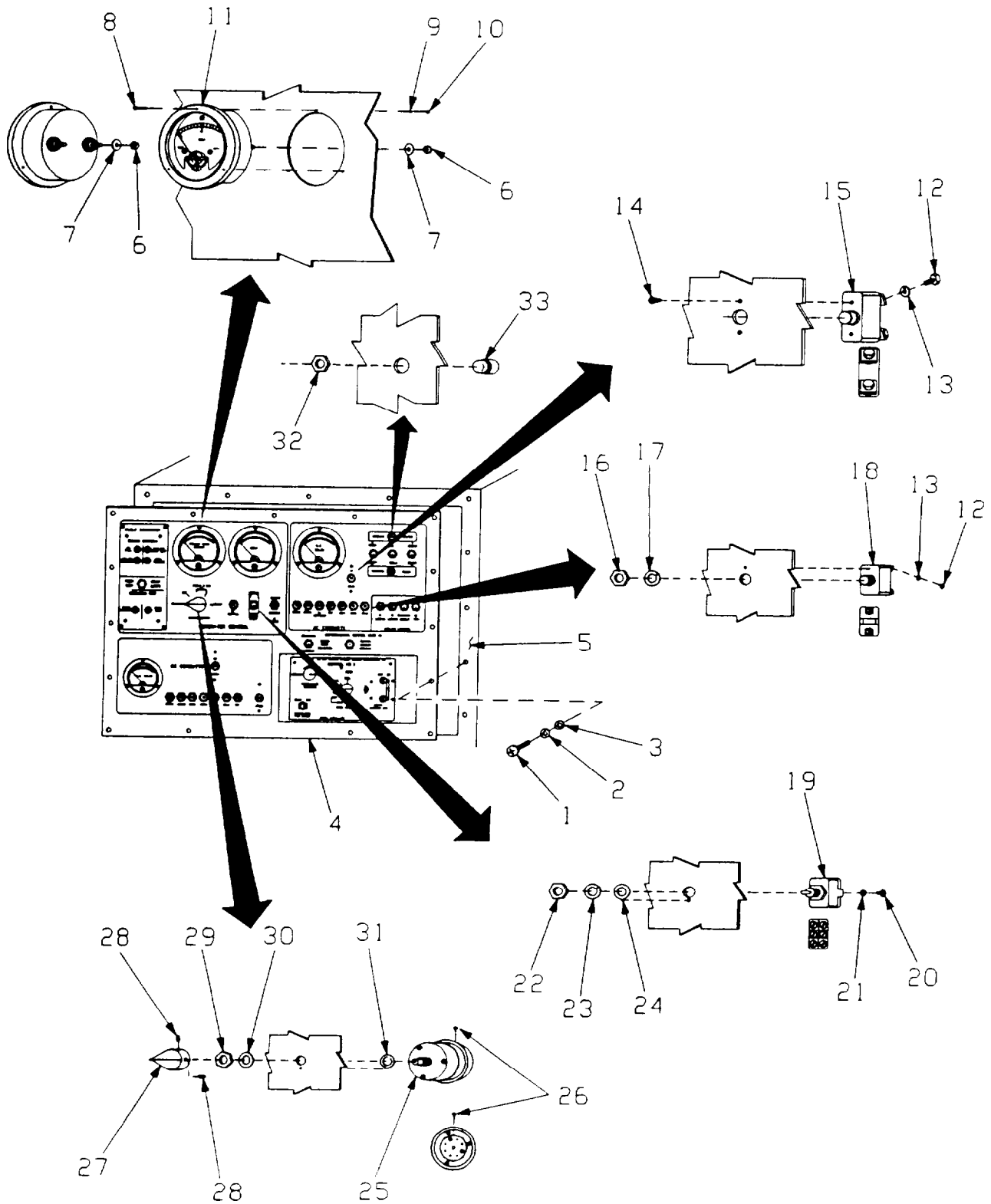
Rotary Switch

11. Tag wires and remove from switch (25) by loosening screws (26).

12. Remove knob (27) by loosening set screws (28).

13. Remove nut (29), lock washer (30), flat washer (31), and switch (25).

4-23. POWER MONITOR FACEPLATE - Continued



4-23. POWER MONITOR FACEPLATE – Continued

ASSEMBLE

Toggle Switches

14. Position switch (19), secure using nut (22), lock washer (23) and flat washer (24).
15. Remove tags and secure wires to switch using screws (20) and lock washers (21).

Circuit Breaker

16. To install circuit breaker (18), secure with nut (16) and lock washer (17). To install circuit breaker (15), secure using screws (14).
17. Remove tags and secure wires to circuit breaker(s) using screws (12) and lock washers (13).

Meters

18. Position meter (11) to panel (4) and secure using screws (8), lock washers (9) and nuts (10).
19. Secure wires to the meter (11) using nuts (6) and lock washers (7).

Light Emitting Diodes (LEDs)

20. Solder LED (33) connections.
21. Insert LED (33) in mounting hole and secure with nut (32)

Rotary Switch

22. Position switch (25) on panel (4) and secure using nut (29), Lock washer (30) and flat washer (31).
23. Position knob (27) on switch (25) and secure by tightening set screws (28).
24. Remove tags and secure wires in correct location by tightening screws (26).
25. Replace screws (1), lock washer (2), and flat washers (3) securing Power Monitor Faceplate Panel (4) to frame (5).

4-24. RELAY PANEL

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-wraps (Item 1, Appendix E)

Solder (Item 77, Appendix E)

Equipment Conditions

Import Power Cable and NATO Slave Cable Disconnected.

DISASSEMBLE

1. Remove screws (1) and slide screen (2) to gain access to Relay Panel (3).

Relays K1, K2, K3 and K7

2. Release hold-down spring (4) securing relay to socket and remove relay.

Relays K5, K6, and Frequency Transducer A1

3. Tag and remove wires from relay.

4. Remove screws (5) and lock washers (6) securing relay to Relay Panel (3).

Resistor R1

5. Unsolder resistor R1 (7).

ASSEMBLE

Relays K1, K2, K3, and K7

6. Secure relay to socket using hold-down spring (4).

Relays K5, K6, and Frequency Transducer A1

7. Secure relay to Relay Panel (3) with screws (5) and lock washers (6).

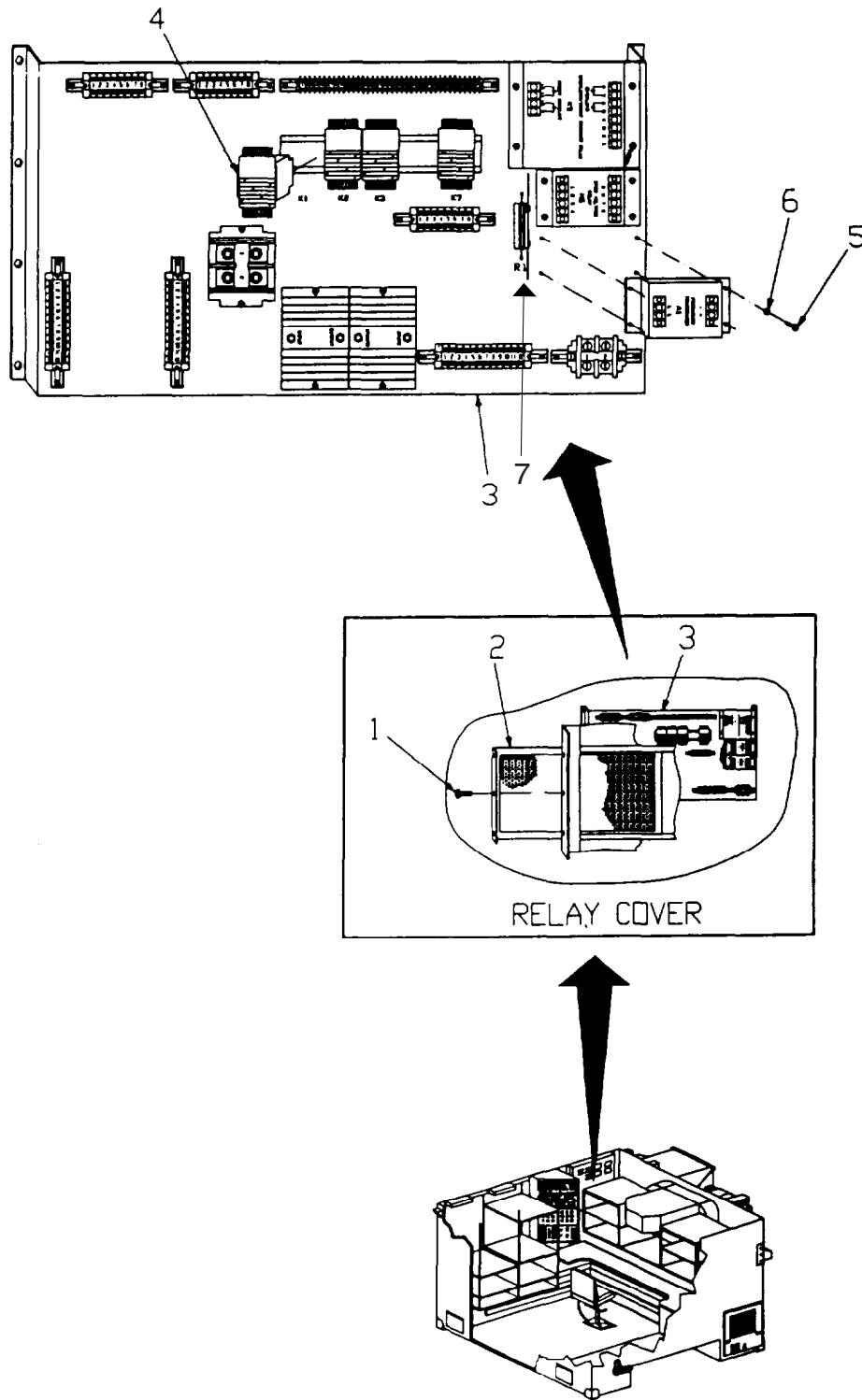
8. Secure wires to relay and remove tags.

Resistor R1

9. Solder resistor R1 (7) to contacts on Relay Panel.

10. Slide Screen (2) into position and secure with screws (1).

4-24. RELAY PANEL - Continued



4-25. TIP FACEPLATE ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

AC TIP and DC TIP circuit breakers set to OFF.

DISASSEMBLE

FACEPLATE

1. Remove screws (23), lock washers (22), and flat washers (21) securing faceplate panel to gain access to area behind faceplate.

GROUND FAULT RESET

2. Tag and disconnect all wires.

3. To remove the entire unit, remove screws (25), flat washers (30), lock washers (31) and nuts (32).

4. To remove the unit's cover, remove the screw (24), flat washer (27), lock washer (28) and nuts (29).

TERMINAL BOARD

5. Remove nuts (13), lock washers (12), flat washers (17) and screws (18) securing Terminal Mounting Board Cover (11) and Terminal Board Mounting Block (9).

NOTE

If removed, mark position of connecting links for installation.

6. Remove nut (14), lock washer (15) and flat washer (16) and remove connecting link (10) and leads to terminal board. Tag leads.

BINDING POST

7. Unsolder and tag wires.

8. Loosen nuts and remove binding posts (1) and (2).

THINLAN

9. Disconnect coax cable from adapter.

10. Remove terminator cap (7).

11. Remove nut (5) and remove adapter (6).

4-25. TIP FACEPLATE ASSEMBLY – Continued

AC CONNECTORS

12. Remove cap.
13. Tag and disconnect all wires.
14. Remove screws securing connector (4).
15. Remove connector.

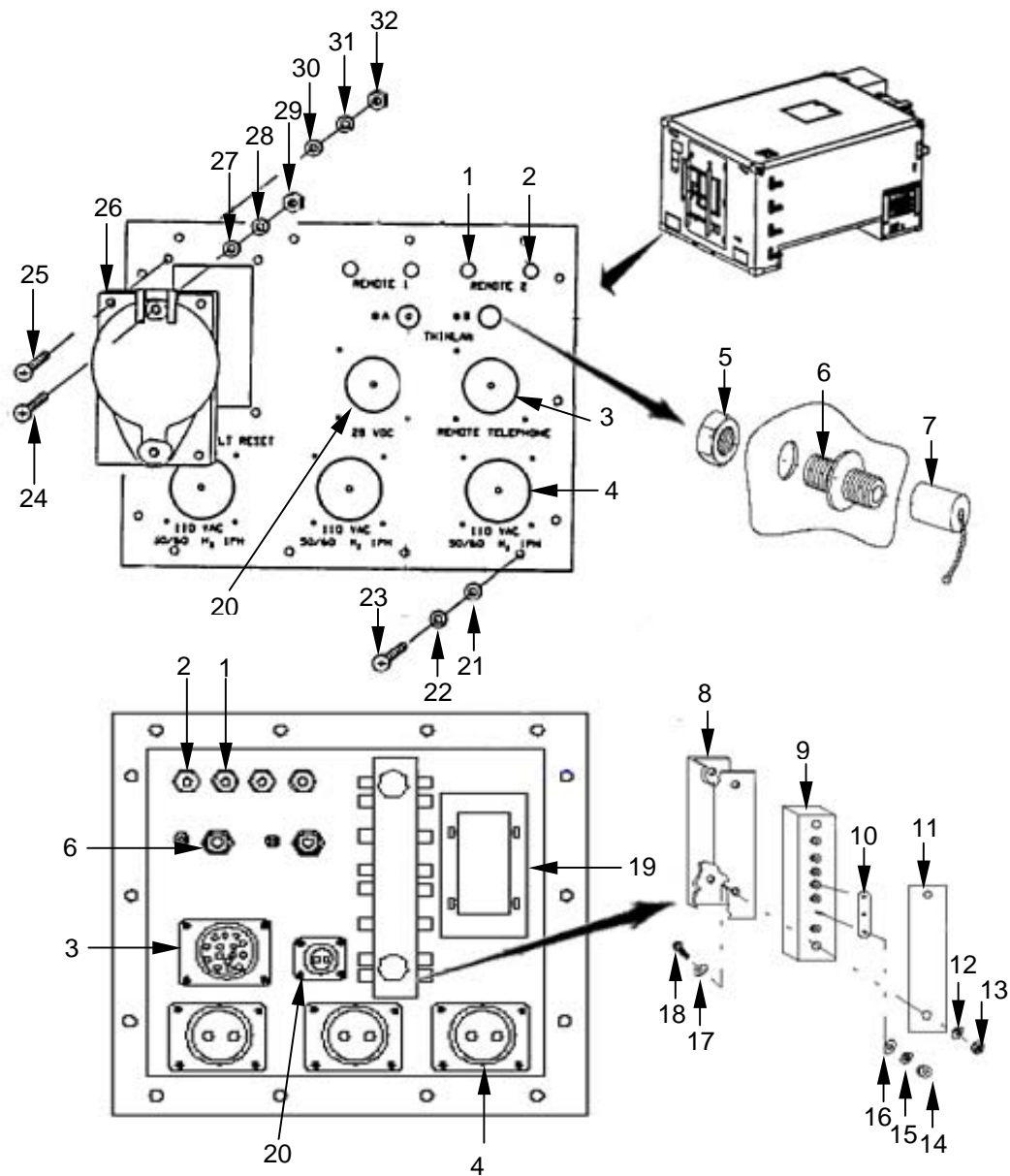
DC CONNECTOR

12. Remove cap.
13. Tag and disconnect all wires.
14. Remove screws securing connector (24).
15. Remove connector.

REMOTE TELEPHONE CONNECTORS

12. Remove cap.
13. Tag and disconnect all wires.
14. Remove screws securing connector (3).
15. Remove connector.

4-25. TIP FACEPLATE ASSEMBLY – Continued.



4-25. TIP FACEPLATE ASSEMBLY – Continued

ASSEMBLY

GROUND FAULT RESET

16. Replace cover by replacing screw (24), flat washer (27), lock washer (28), and nut (29).
17. Connect all wires.
18. Replace unit and secure with screws (26), flat washers (30), lock washers (31), and nuts (32).

TERMINAL BOARD

19. Install leads and connecting link(s) (10) on terminal block (9). Secure with flat washer (16), lock washer (15) and nut (14).
20. Position Terminal Board Mounting Block (9) in terminal board mounting angle (8). Position cover (11) on Terminal Board Mounting Block and secure to assembly with screw (18), flat washer (17), lock washer (12) and nut (13).

BINDING POST

21. Mount binding posts (1) and (2).
22. Solder wires.
23. Secure binding posts with nuts.

THINLAN

24. Install adapter (6) and secure with nut (5).
25. Connect coax cable.
26. Install terminator cap (7).

AC CONNECTORS

27. Connect all wires
28. Secure connector (4) with screws.
29. Replace cap.

4-25. TIP FACEPLATE ASSEMBLY – Continued

DC CONNECTOR

30. Connect all wires
31. Secure connector (20) with screws.
32. Replace cap.

REMOTE TELEPHONE CONNECTORS

33. Connect all wires
34. Secure connector (3) with screws.
35. Replace cap.

FACEPLATE

36. Secure faceplate panel with screws (23), lock washers (22), and flat washers (21).

4-26. TIP POWER ENTRY ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-Wraps (Item 1, Appendix E)

Solder (Item 77, Appendix E)

Equipment Conditions

AC TIP and DC TIP circuit breakers set to OFF.

DISASSEMBLE

WARNING

Filters are capacitors and must be properly discharged prior to maintenance procedures. Failure to observe this warning may result in electrical shock.

1. Remove TIP Faceplate Assembly according to 4-25. TIP FACEPLATE ASSEMBLY.
2. Remove rear roadside equipment rack and base according to paragraph 4-37.

NOTE

There are several different size screws used to secure the rack assembly and base. Note locations of the screws for reinstallation.

3. Remove screws, lock washers, and washers securing TIP EMI plate assembly cover (not shown).

NOTE

The TIP EMI plate assembly does not require removal to replace individual components. However, it will require two people to perform all procedures except removal and replacement of the resistor.

FILTERS - FL1 and FL2 or FL3 and FL4

4. Remove nut (20), and lock washer (19), from top of the filter.
5. Disconnect wire and remove bus bar (18).
6. Remove flat washers (17 and 16), nut (15), and washer (14).

4-26. TIP POWER ENTRY ASSEMBLY - Continued

7. Remove nut (1), and lock washer (2), from bottom of the filter.

8. Disconnect wire and remove bus bar (3) and washers (4 and 5).

9. Remove defective filter(s).

EMI FILTER - FL5

10. Remove nut (25), flat washer (24), and lock washer (26) attaching wire to top of filter (47). Remove wire and washer (23).

11. Remove nut (46), flat washer (45), and lock washer (44) attaching wire to top of filter. Disconnect wire and remove washer (43).

12. Remove nut (22) and washer (21) securing defective filter to TIP EMI plate assembly.

13. Remove defective filter.

EMI/EMP FILTERS - FL6 or FL7

14. Disconnect coax cable from top of defective filter (9).

15. Disconnect coax cable from bottom of defective filter.

16. Remove four nuts (11) and lock washers (12) from bottom of EMI plate securing defective filter to the assembly.

17. Remove defective filter.

DATA FILTER - FL8 or FL9

18. Disconnect wires from bottom of filter (33).

20. Unsolder wires from top of filter.

21. Remove ty-wraps securing wiring bundles, if necessary.

22. Remove nuts (32), lock washers (31), and washers (30) securing filter to TIP EMI plate assembly.

23. Remove defective filter.

EMP FILTERS - RV1 or RV2

24. Disconnect wires from filter (10).

25. Remove screws (13), washers (34), lock washers (35), and nuts (36) securing filter to TIP EMI plate assembly.

26. Remove filter.

4-26. TIP POWER ENTRY ASSEMBLY - Continued

SUPPRESSOR - RV3

NOTE

Only the suppressor positive terminals are connected in the TIP EMI Plate Assembly.

27. Disconnect 28VDC cables from suppressor (8) terminals.

28. Remove screw (40), two lock washers (41 and 39), cable clamps (42 and 38), cables and standoff (37) securing terminal board assembly and suppressor to TIP EMI Plate Assembly.

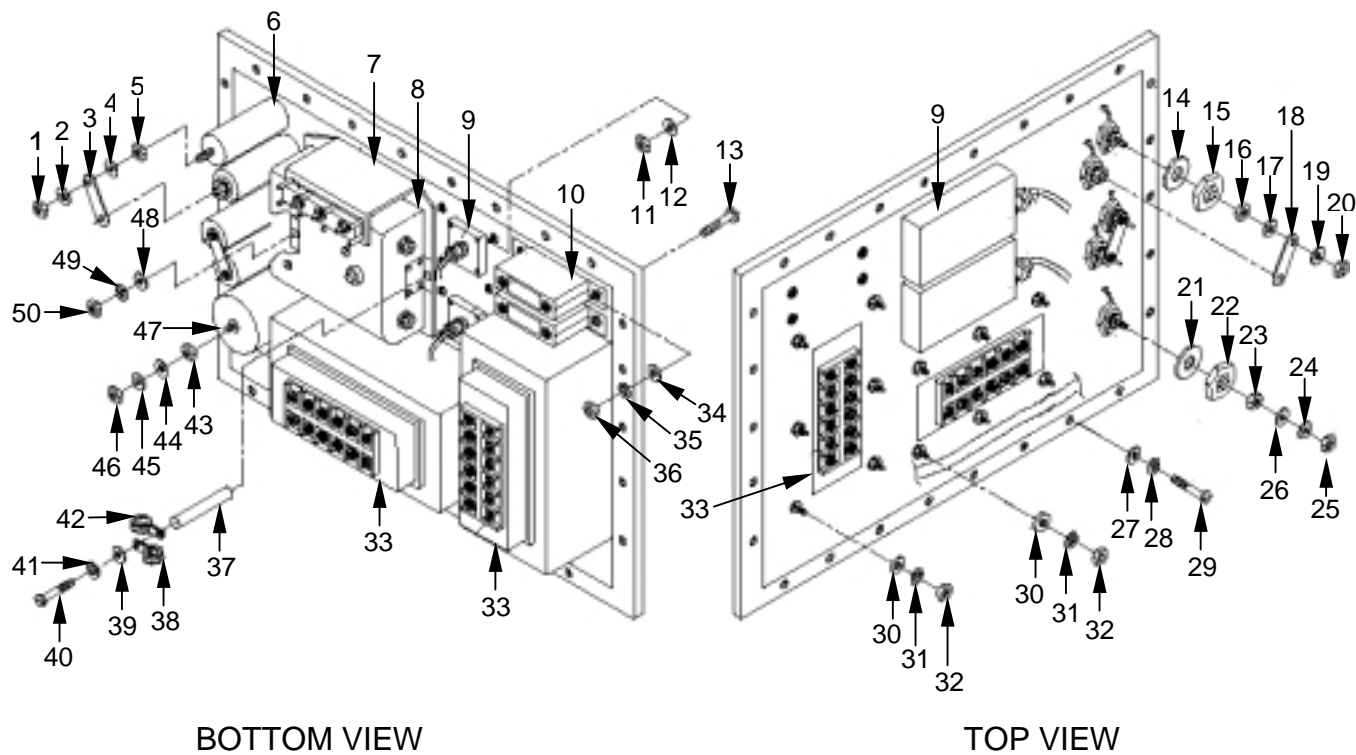
29. Remove nut (50), lock washer (49), and washer (48) securing terminal board assembly (7) and suppressor to TIP.

EMI PLATE ASSEMBLY

30. Remove RF filters (6 and 47), EMP filters (10) and suppressor (7) from TIP EMI Plate assembly.

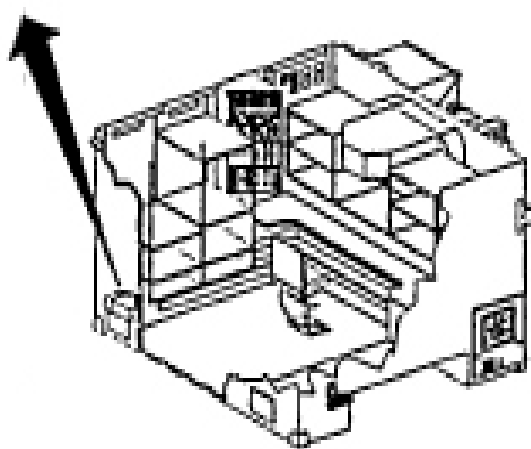
31. Remove screws (29), lock washers (28), and flat washers (27).

4-26. TIP POWER ENTRY ASSEMBLY – Continued



BOTTOM VIEW

TOP VIEW



4-26. TIP POWER ENTRY ASSEMBLY – Continued

ASSEMBLE

FILTERS - FL1 and FL2 or FL3 and FL4

32. Position replacement filter (6) on TIP EMI plate assembly and secure with nut (15) and washer (14).

33. Position washers (4 and 5) and bus bar (3) on bottom of replacement and parallel filters, connect wire, and secure with nuts (1) and lock washers (2).

34. Position washers (16 and 17) and bus bar (18) on top of replacement and parallel filters, connect wire, and secure with two nuts (19) and lock washers (20).

EMI FILTER - FL5

35. Position replacement filter (47) on TIP EMI plate assembly and secure with nut (22) and washer (21).

36. Assemble washers (23 and 26) and connect wire to top of filter. Secure with nut (25) and lock washer (24).

37. Assemble washers (43 and 44) and connect wire to bottom of filter. Secure with nut (46) and lock washer (45).

EMI/EMP FILTERS - FL6 or FL7

38. Position replacement filter (9) on TIP EMI plate assembly and secure with nuts (11) and lock washers (12).

39. Connect RF cable to bottom of filter.

40. Connect RF cable to top of filter.

DATA FILTER - FL8 or FL9

41. Secure filters (33) to EMI plate with nut (32), lock washer (31), and flat washer (30).

42. Solder wires to top of filter.

43. Ty-wrap wires, if they were previously clipped.

43. Connect wires to bottom of filter.

EMP FILTERS - RV1 or RV2

44. Position replacement filter (10) on TIP EMI plate assembly and secure with nuts (36), lock washers (35), washers (34), and screws (13).

45. Connect wires to filter.

4-26. TIP POWER ENTRY ASSEMBLY – Continued

SUPPRESSOR - RV3

46. Slide suppressor (8) into terminal board assembly (7).

47. Position suppressor and terminal board assembly on TIP EMI plate assembly and secure outboard side with nut (50), lock washer (49), washer (48).

48. Secure inboard side with screw (40), two washers (41 and 39), cable clamps (38 and 42), cables, and standoff (37).

NOTE

Only the suppressor positive terminals are connected in the TIP EMI Plate Assembly.

49. Connect 28Vdc cables to suppressor positive terminals.

Follow-on Maintenance

50. EMI plate assembly and secure with screws (29), lock washers (28), and flat washers (29).

51. Position TIP EMI plate assembly cover on shelter frame and secure with screws, lock washers, and washers.

52. Replace roadside rack base and equipment rack according to 4-38.

4-27. TIP SIGNAL FACEPLATE ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

RS-232 and AN/GRC-193 cables disconnected from equipment.

REPAIR

1. Remove screws, lock washers, and washers securing TIP signal faceplate assembly cover.

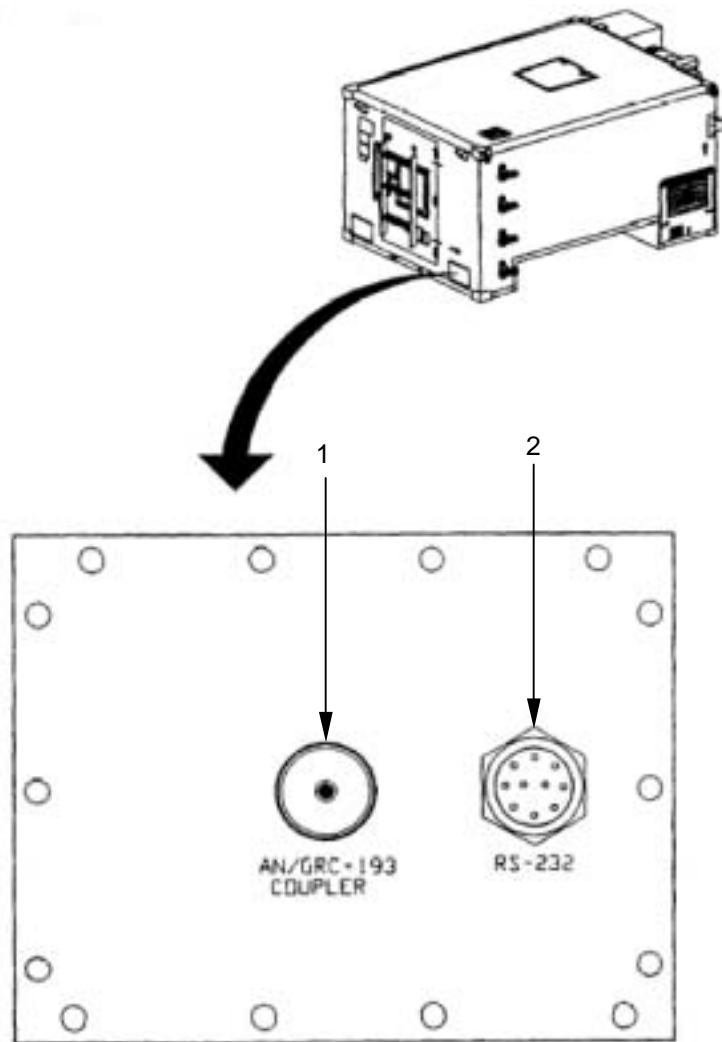
AN/GRC-193

2. Tag and disconnect wires from connector (1).
3. Remove retaining ring securing connector and nut.
4. Remove defective connector.
5. Connect wires to new connector.
6. Insert new connector through nut into faceplate.
7. Secure with retaining ring.

RS-232 CONNECTOR

8. Tag and disconnect wires from connector (2).
9. Remove backshell securing connector and nut.
10. Remove defective connector.
11. Connect wires to new connector.
12. Insert new connector through nut into faceplate.
13. Secure with backshell.

4-27. TIP SIGNAL FACEPLATE ASSEMBLY - Continued



4-28. TIP SIGNAL EMI PLATE ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-wraps (Item 1, Appendix E)

Solder (Item 77, Appendix E)

Equipment Conditions

RS-232 and AN/GRC-193 cables disconnected from equipment.

REPAIR

WARNING

Filters are capacitors and must be properly discharged prior to maintenance procedures. Failure to observe this warning may result in electrical shock.

NOTE

There are several different size screws used to secure the rack assembly and base. Note locations of the screws for reinstallation.

1. Remove rear curbside equipment rack and base according to paragraph 4-37.
2. Remove RS-232 and AN/GRC-193 cables (not shown), and screws (8) from TIP EMI plate assembly cover (7).
3. Remove screws securing TIP faceplate assembly cover (not shown).
4. Remove screws, lock washers, and washers (6) securing TIP EMI plate assembly (5).

NOTE

The TIP EMI plate assembly does not require removal to replace individual components. However, it will require two people to perform all procedures.

RF FILTERS

5. Disconnect RF cable from top of defective filter (9).
6. Disconnect RF cable from bottom of defective filter.
7. Remove nut and washer securing defective filter to the assembly.
8. Remove defective filter.

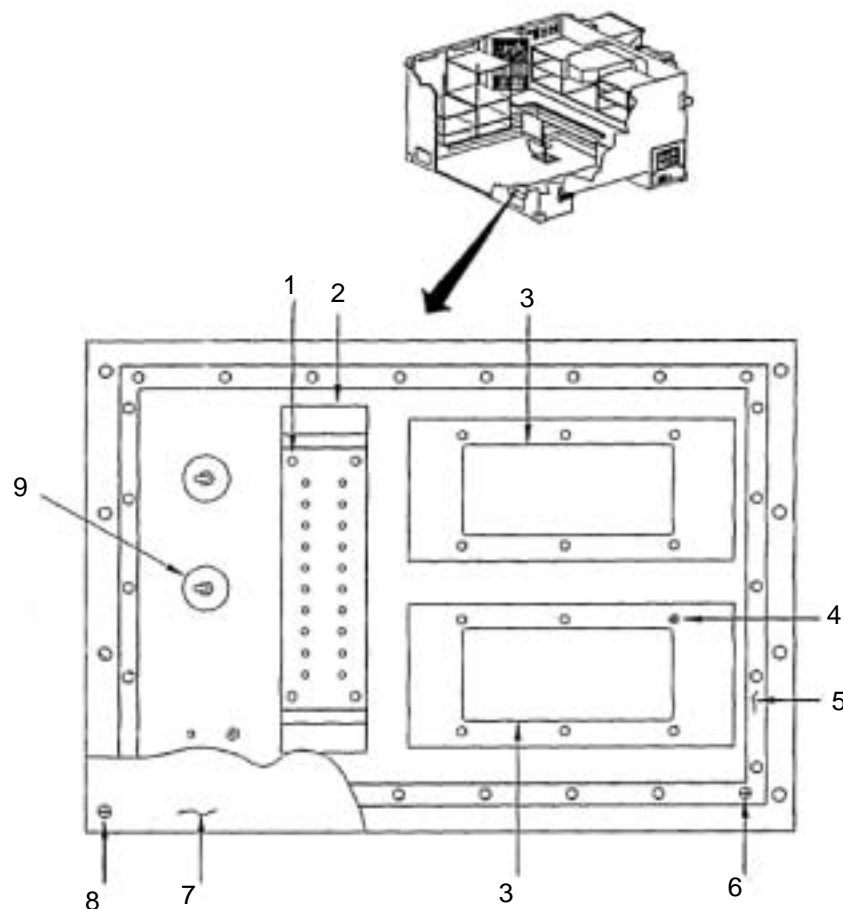
4-28. TIP SIGNAL EMI PLATE ASSEMBLY – Continued

VARISTOR PLATE ASSEMBLY

9. Remove wires from the varistor plate (2).
10. Remove screws, lock washers, and flat washers (1), securing varistor plate to EMI Plate Assembly.
11. Remove defective varistor plate.

DATA FILTER

12. Disconnect wires from bottom of filter (3).
13. Unsolder wires from top of filter.
14. Remove clamps and ty-wraps securing wiring bundles, if necessary.
15. Remove nuts, lock washers, and washers (4) securing filter to TIP EMI plate assembly.
16. Remove defective filter.



4-28. TIP SIGNAL EMI PLATE ASSEMBLY – Continued

ASSEMBLY

RF FILTERS

17. Secure filters (9) to EMI plate with nut and washer.
18. Connect wires to top of filter.
20. Connect wires to bottom of filter.

VARISTOR PLATE ASSEMBLY

21. Secure varistor plate (2) to EMI Plate Assembly with screws, lock washers, and flat washers (2).
22. Connect wires to the varistor plate.

DATA FILTER

23. Secure filters (3) to EMI plate with nut, lock washer, and flat washer (4).
24. Solder wires to top of filter.
25. Ty-wrap wires, if they were previously clipped.
26. Connect wires to bottom of filter.

FOLLOW-ON MAINTENANCE

27. Position curbside TIP faceplate on shelter and secure with screws, lock washers, and flat washers.
28. Remove screws, lock washers, and washers (6) securing TIP EMI plate assembly (5).
29. Position TIP EMI plate assembly cover (7) on shelter frame and secure with screws, lock washers, and flat washers (8).
30. Replace curbside rack base according to 4-37.
31. Connect RS-232 and AN/GRC-193 to EMI cover assembly
32. Replace curbside rack base and equipment rack according to 4-38.

4-29. COMMO ENTRY PANEL ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

NATO slave cable disconnected, external AC power cable disconnected.

DISASSEMBLE

1. Loosen four captive screws at bottom of Commo Entry Panel cover
2. Remove screw (4), lock washer (3), and flat washer (2) securing Commo Entry Panel (5).

BINDING POSTS

3. Unsolder wire from defective binding post (1).
4. Remove nut, lock washer, washer, and spacer securing binding post to panel and push defective binding post out of panel.

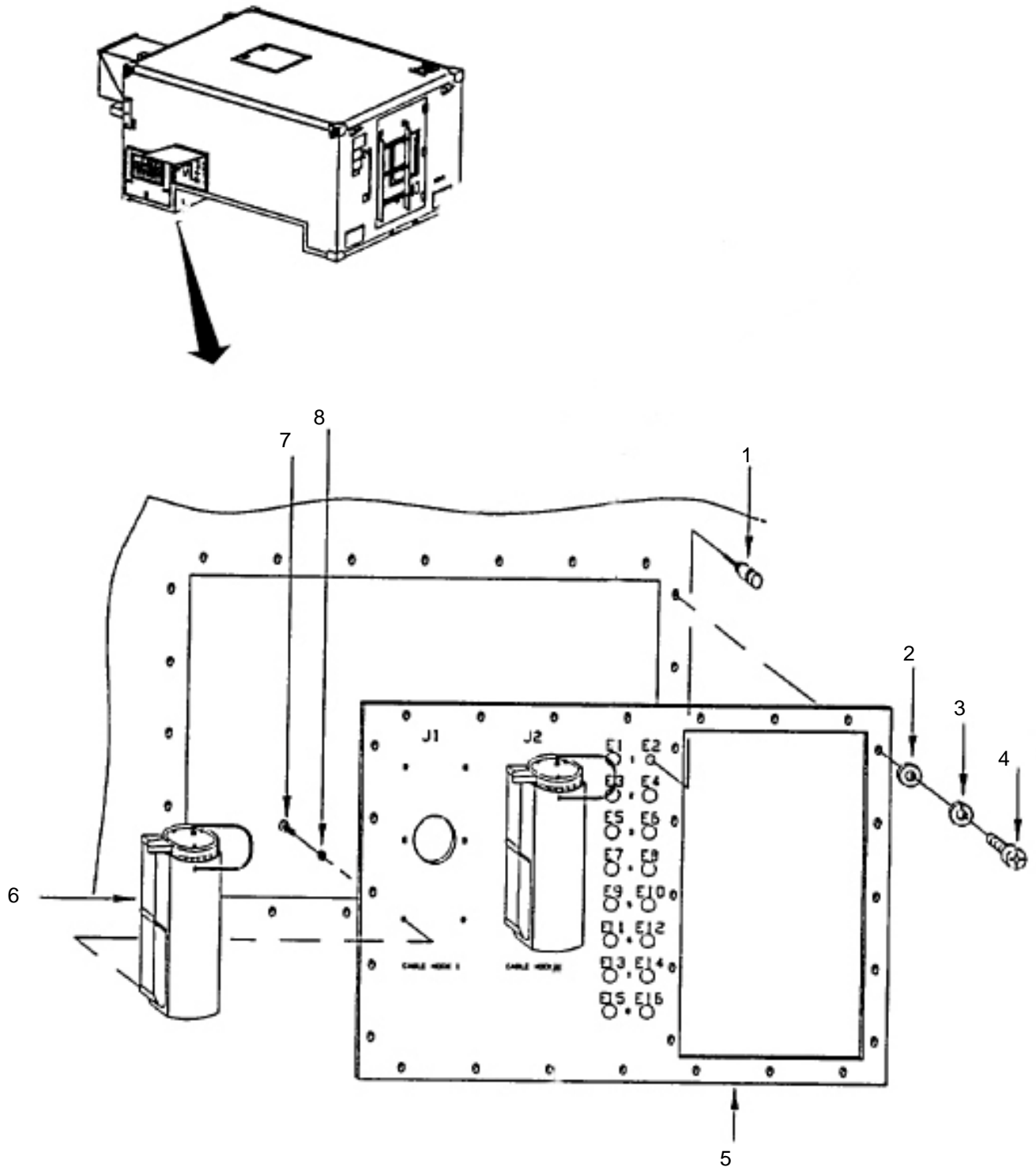
CABLE HOCK ASSEMBLIES

NOTE

Tag wires to aid in reinstallation if wires are not previously labeled.

5. Disconnect defective cable hock assembly (6) from data filters on SEP EMI Plate Assembly (see procedure 4-30).
6. Remove six screws (7) and lock washers (8) securing cable hock assembly to panel.
7. Pull defective cable hock assembly from panel.

4-29. COMMO ENTRY PANEL ASSEMBLY – Continued



4-29. COMMO ENTRY PANEL ASSEMBLY – Continued

ASSEMBLE**NOTE**

If the wires and cables have been temporarily tagged to facilitate installation, remove tags before connecting.

BINDING POSTS

8. Position replacement binding post (1) and spacer on front panel and secure with nut, lock washer, and washer.
9. Solder wire to binding post.

CABLE HOCK ASSEMBLIES

10. Feed cable hock assembly wires through access hole in panel.
11. Secure cable hock (6) to panel with six screws (7) and lock washers (8).
12. Connect cable assembly wires to data filters on SEP EMI Plate Assembly.

FOLLOW ON MAINTENANCE

13. Position Commo Entry Panel (5) on shelter wall and secure with screws (4), lock washers (3), and washers (2).
14. Secure cover to shelter with four captive screws.
15. Reconnect power as required.

4-30. WATERFALL PANEL ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Ty-wraps (Item 1, Appendix E)

Equipment Conditions

NATO slave cable disconnected,
external AC power cable disconnected.

DISASSEMBLE

1. Loosen four captive screws at bottom of Commo Entry Panel cover.
2. Remove screws (5), lock washers (4), and washers (3) securing Waterfall Panel Assembly (2) to shelter.

NOTE

If the wire markers are illegible or have been removed, tag wires for identification when reconnecting.

FIBER OPTIC CABLE ASSEMBLIES

3. Remove protective cap.
4. Remove retaining ring securing Fiber Optic Cable Assembly (1) to panel.
5. Disconnect defective cable assembly from SEP EMI filters (see paragraph 4-30).
6. Remove defective cable assembly.

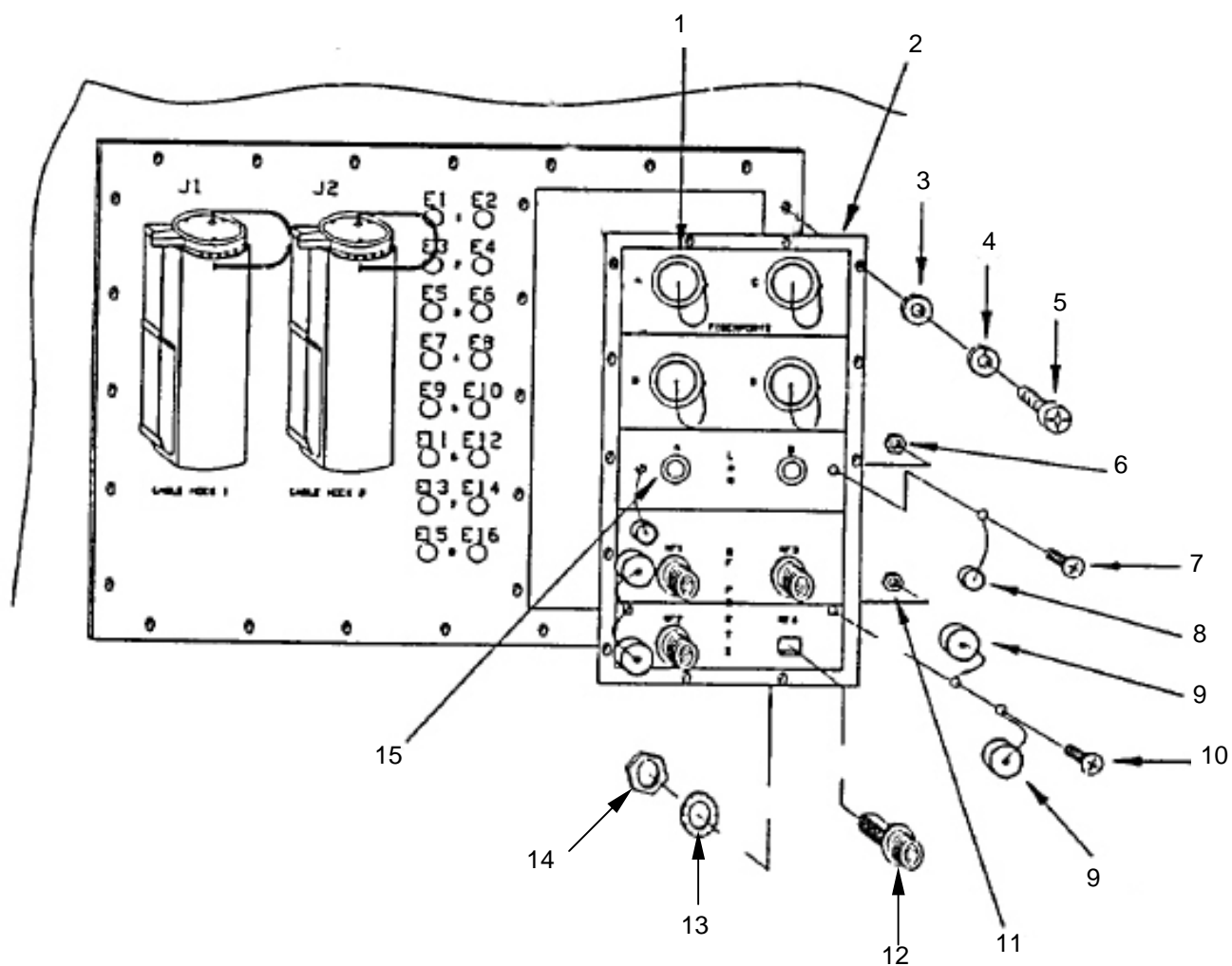
LAN A and B CONNECTORS

7. Remove 50 Ohm terminator (8), retaining screw (7), and nut (6).
8. Disconnect LAN cable assembly.
9. Remove nut and lock washer securing LAN connector (15) to panel.
10. Push defective LAN connector out of panel.

4-30. WATERFALL PANEL ASSEMBLY - Continued

RF PORTS RF1 through RF4

11. Remove retaining screw (10), protective caps (9), and nut (11).
12. Disconnect RF cable assembly (12).
13. Remove nut (14) and lock washer securing RF port (13) to panel.
14. Push defective RF port out of panel.



4-30. WATERFALL PANEL ASSEMBLY - Continued

ASSEMBLE

FIBER OPTIC CABLE ASSEMBLIES

15. Position replacement Fiber Optic Cable Assembly (1) in panel and secure with retaining ring.
16. Connect cable assembly to applicable SEP EMI Plate Assembly filters.
17. Install protective cap.

LAN A and B CONNECTORS

18. Position replacement LAN connector (15) in panel and secure with nut and lock washer.
19. Connect LAN cable assembly to connector.
20. Secure 50 Ohm terminator (8) on connector and install retaining screw (7) and nut (6).

RF PORTS

21. Position replacement RF port (12) in panel and secure with nut (14) and lock washer (13).
22. Connect RF cable assembly.
23. Secure protective cap (9) on connector and install retaining screw (10) and nut (11).

FOLLOW ON MAINTENANCE

24. Position Waterfall Panel Assembly (2) on Commo Entry Panel and secure with screws (5), lock washers (4), and washers (3).
25. Secure cover to shelter with four captive screws.

4-31. SEP EMI PLATE ASSEMBLY

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Equipment Conditions

DC Main Circuit Breaker Off

DISASSEMBLE

1. Remove Commo Entry Panel (Refer to task 4-29) to access exterior SEP EMI Plate Assembly.

NOTE

Two people are required to perform the removal and replacement of filters.

2. From inside the shelter, underneath the counter on the roadside, remove screws (8) securing SEP EMI Plate (9) cover and remove cover.

EMI/EMP FILTERS

3. Disconnect coaxial cable from filter (3) on both sides of plate assembly.

4. Remove four nuts (2), lock washers, and washers securing filter to plate assembly.

5. Remove defective filter.

DATA FILTERS

6. Disconnect wires from data filter (7) on both sides of plate assembly.

7. Remove six nuts (6), lock washers, and washers securing filter to plate assembly.

8. Remove defective filter.

EMP SURGE SUPPRESSORS

9. Disconnect cable suppressor (5) from both sides of plate assembly.

10. Remove screw (4) and washer securing surge suppressor to plate assembly.

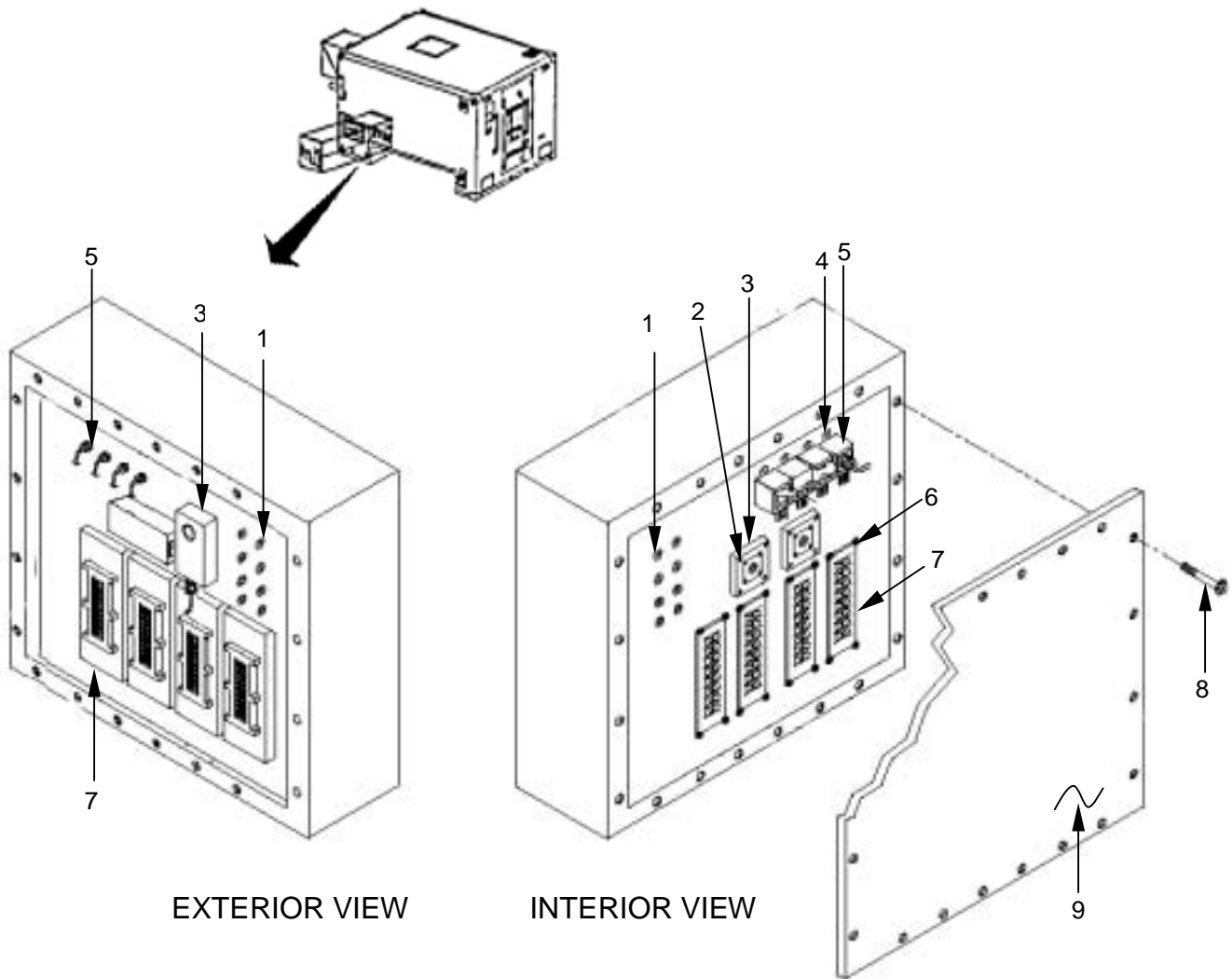
11. Remove defective suppressor.

4-31. SEP EMI PLATE ASSEMBLY – Continued

FIBER OPTIC PASS THROUGH

12. Remove fiber optic cable from pass through (1).

13. Disassemble pass through by removing nut and washer on either side.



4-31. SEP EMI PLATE ASSEMBLY - Continued

ASSEMBLEEMI/EMP FILTERS

14. Position replacement filter (3) to SEP EMI Plate Assembly.
15. Secure filter with four nuts (2), lock washers, and washers.
16. Connect coaxial cable to both sides of filter.

DATA FILTERS

17. Position replacement filter on SEP EMI Plate Assembly.
18. Secure filter with six nuts (9), lock washers, and washers.
19. Solder wires to data filter.

EMP SURGE SUPPRESSORS

20. Position replacement suppressor on SEP EMI Plate Assembly.
21. Secure suppressor with screw (4).
22. Connect cable to both sides of surge suppressor.

FIBER OPTIC PASS THROUGH

23. Remove fiber optic cable from pass through (1).
24. Disassemble pass through by removing nut and washer on either side.

FOLLOW ON MAINTENANCE

25. Close Commo Entry Panel (Refer to task 4-29).
26. Position plate assembly interior cover (9) on frame and secure with screws (8).

4-32. SIGNAL PATCH PANEL

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

Import Power Cable and NATO Slave Cable Disconnected.

DISASSEMBLE

1. Remove screws (14), lock washers (13) and flat washers (12). Carefully pull faceplate (10) forward.

LED

2. Disconnect wires from LED.

3. Remove nut (3) and lock washer (4).

4. Remove LED (5) from faceplate (10).

TOGGLE SWITCH

5. Tag and disconnect wires from switch.

6. Remove nut (6) and flat washer (7).

7. Remove toggle switch (9) and flat washer (8) from faceplate (10).

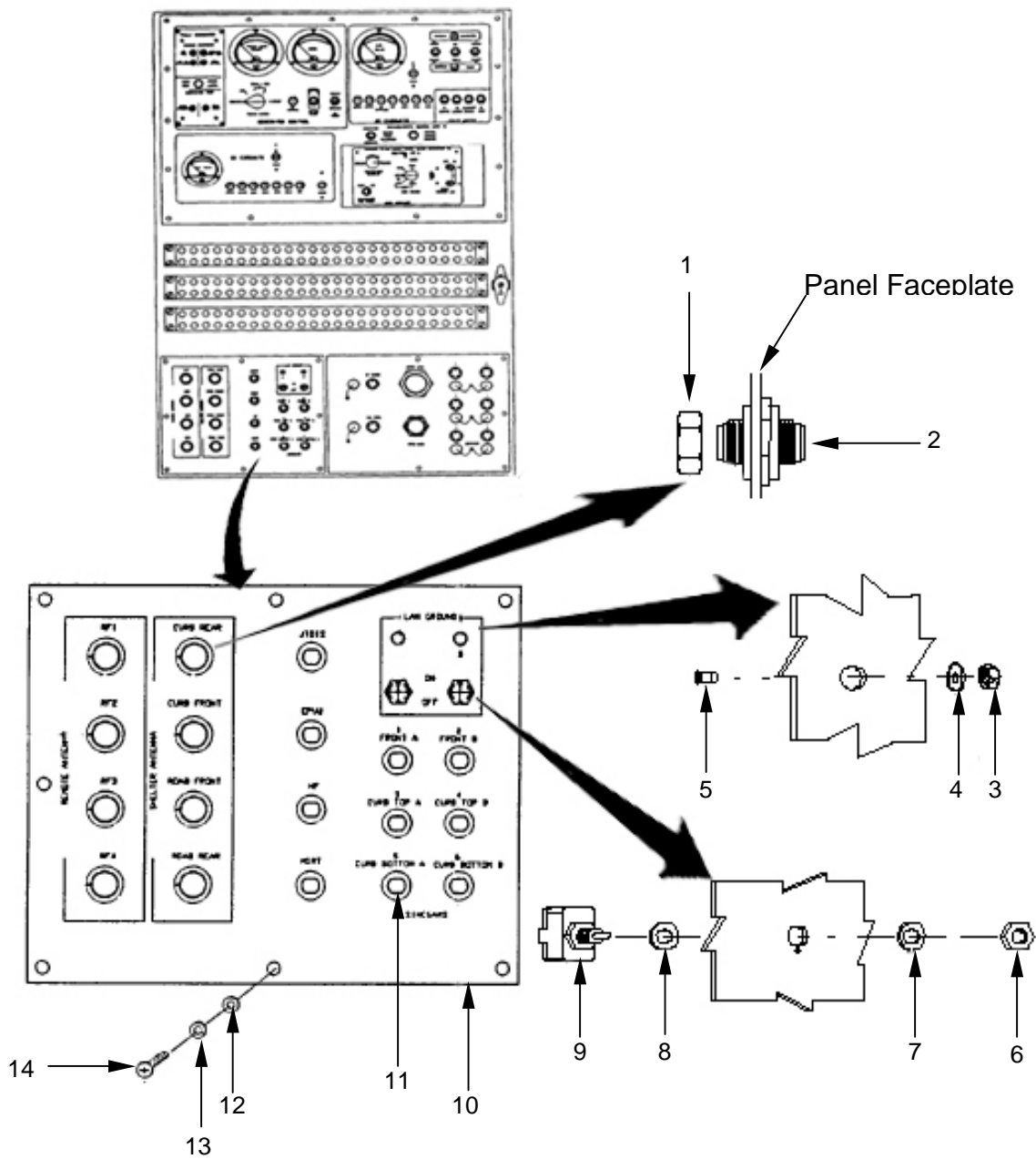
SIGNAL/DATA CABLE CONNECTORS

8. Disconnect cable from connector (2).

9. Remove nut (1) securing connector.

10. Push connector through faceplate and remove.

4-32. SIGNAL PATCH PANEL - Continued



4-32. SIGNAL PATCH PANEL - Continued

ASSEMBLE

LED

11. Insert LED (5) into faceplate (10).
12. Secure LED with nut (3) and lock washer (4).
13. Connect wires to LED.

TOGGLE SWITCH

14. Insert toggle switch (9) and flat washer (8) through faceplate (10).
15. Secure switch with nut (6) and flat washer (7).
16. Connect wires to switch.

SIGNAL/DATA CABLE CONNECTORS

17. Insert connector through faceplate.
18. Secure connector with nut (1).
19. Connect cable to connector (2).

FOLLOW-ON MAINTENANCE

20. Position faceplate (10) and secure with screws (14), lock washers (13) and flat washers (12).

4-33. SIGNAL PATCH FACEPLATE

This task covers: Repair

INITIAL SETUP

Tools;

General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

Equipment is Off and DC Main breaker is Off

REPAIR

1. Remove screws (4), lock washers (5) and flat washers (6). Carefully pull faceplate (3) forward.

RF Connectors

NOTE

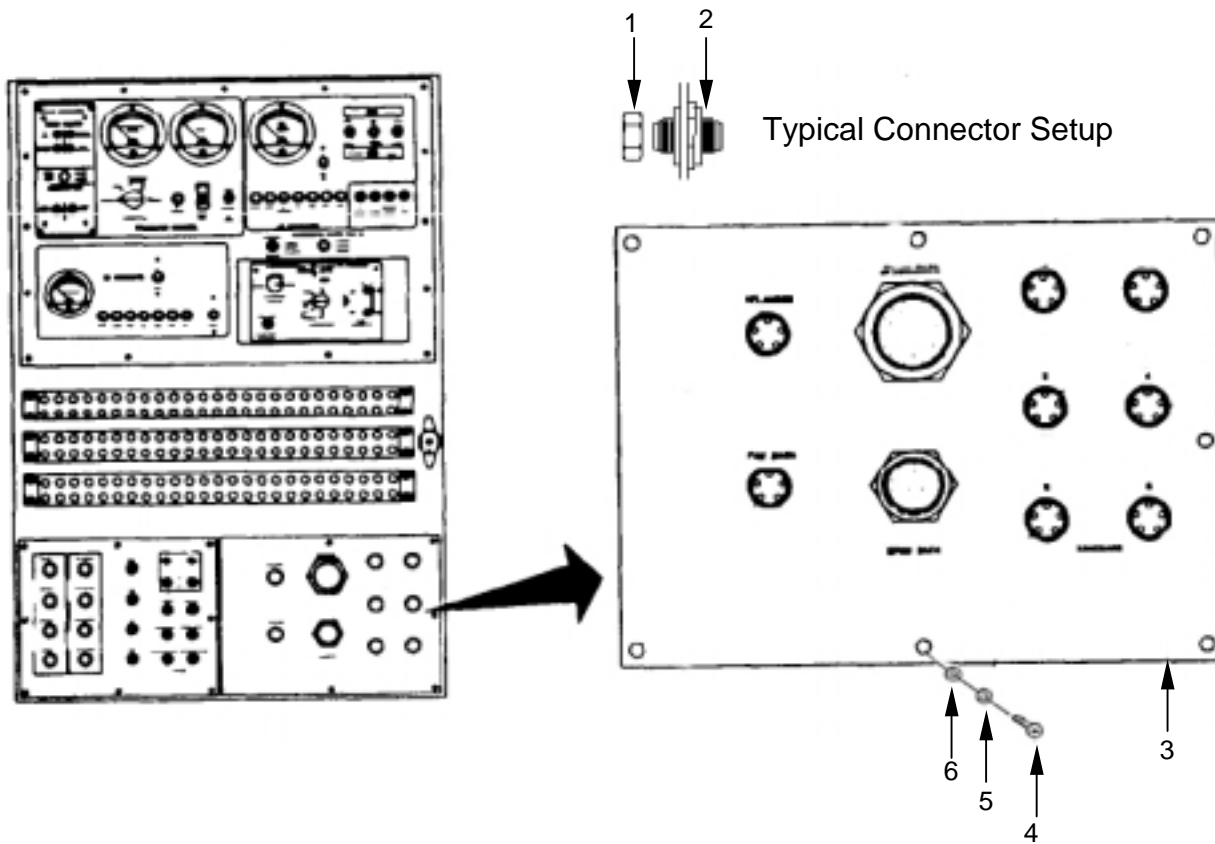
There are male and female connectors of various sizes and shape on this panel. They are all repaired in the same manner.

2. Disconnect cable at rear of connector.
3. Remove locking nut (1) from connector (2).
4. Push defective connector through faceplate.
5. Place replacement connector into faceplate.
6. Secure connector (2) with locking nut (1).
7. Connect cable at rear of connector.

FOLLOW ON MAINTENANCE

8. Position faceplate and secure with screws (4), lock washers (5), and flat washers (6).

4-33. SIGNAL PATCH FACEPLATE - Continued



4-34. GENSET

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Teflon Pipe Tape (Item 79, Appendix E)

Equipment Conditions

GENSET Door Removed (para. 3-23).
NATO Slave Cable Disconnected

REMOVE

WARNING

Generator is hot and can cause serious burns if skin comes in direct contact. Let generator cool down for 60 minutes before removing.

The generator is extremely heavy and bulky, use extreme care when removing and installing.

1. Remove exhaust pipe extension (1).
2. Remove safety pin (2).
3. Pull and turn release handle (3) and pull generator (4) out as far as it will go.
4. Tag and remove fuel lines (5 and 6). Place them out of the way.

WARNING

With safety wire removed, the GENSET can be removed from the shelter tunnel. Do not pull GENSET out until a crane is attached or a fork lift is in position.

5. Remove nuts (7) on U-bolt (8) for the safety wire (9).

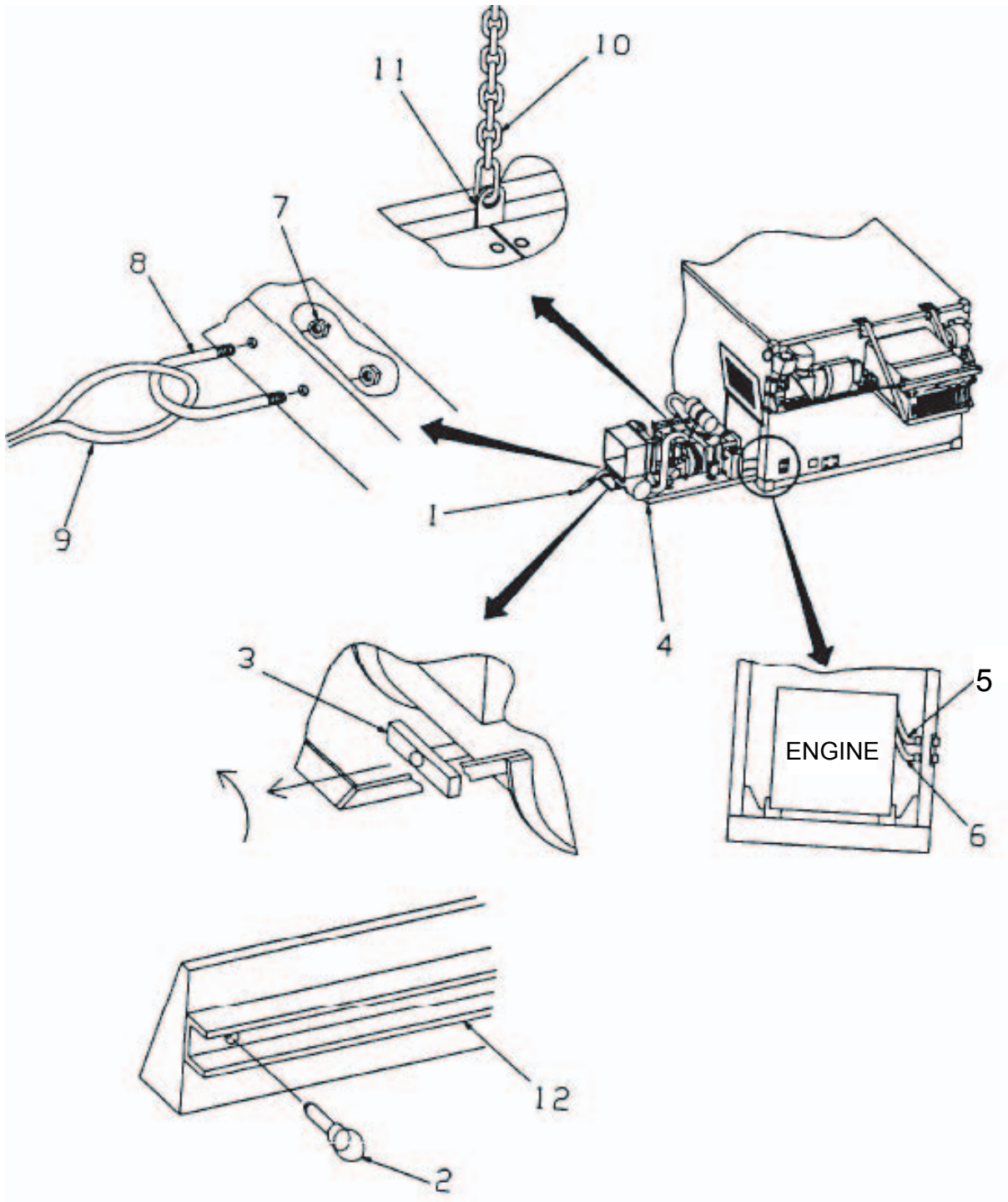
4-34. GENSET – Continued

NOTE

The GENSET is removed using a forklift or crane. If a forklift is used go to step 6. If a crane is used go to step 7. A forklift or similar device is recommended.

6. Position forklift tines under GENSET and lift tines until they contact the bottom of the GENSET. Go to step 8.
7. Using a crane with a chain (10), attach chain (10) to the GENSET lift point (11), lift the GENSET only far enough to place tension (no slack) on the chain.
8. Carefully slide the GENSET out just far enough to gain access to the electrical cables.
9. Tag and disconnect electrical cables. (refer to GENSET manual TM 9-6115-641-10) Make *sure* no other lines, cables, or other devices are in the way for removal of the generator.
10. Slowly lift and remove the generator (4) from the shelter.

4-34. GENSET - Continued



4-34. GENSET - Continued

REPLACE

WARNING

The generator is extremely heavy and bulky, use extreme care when removing and installing. Personal injury may occur.

11. Using a forklift or crane with a chain (10) connected to the GENSET's lift point (11), carefully guide the GENSET (4) into the tunnel entrance.
12. Guide the GENSET (4) rollers onto the roller guides (12) a short distance.
13. Release the tension on the chain (10) slightly (if using a crane) and push the generator (4) into the tunnel, on the roller guides (12).
14. With the chain still attached to GENSET, (or GENSET still resting on tines if a forklift is being used) connect all electrical cables. Remove tags attached in step 9 above.
15. Slide generator into the tunnel enough to attach and secure generator's safety wire (9) with U-bolt (8) and nuts (7).
16. If using a crane, release tension on chain (10) and remove from lift point (11). For forklift operation, lower the tines and back the forklift out.
17. Apply Teflon tape to the threaded male component of the fuel line connections (5 and 6).
18. Connect fuel lines (5 and 6), remove tags installed in step 4.
19. Slide generator (3) into tunnel and attach safety Pin (1).

FOLLOW-ON MAINTENANCE

Replace GENSET door (para. 3-23).

4-35. GPFU

This task covers: Replace

INITIAL SETUP

Tools:

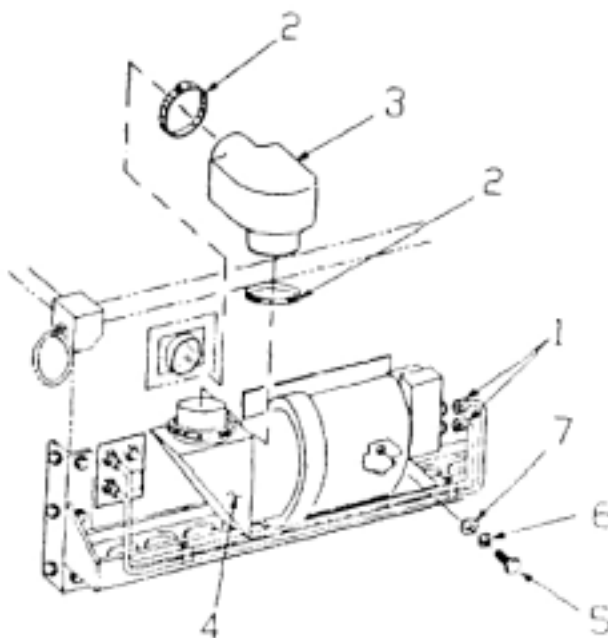
General Mechanics Tool Kit (Item 1, Appendix B)

Equipment Conditions

AC Main Circuit Breaker Off

REPLACE

1. Disconnect GPFU electrical connectors (1).
2. Loosen support clamps (2) from output hose (3).
3. While supporting GPFU (4), remove bolts (5) lock washers (6) flat washers (7).
4. Locate GPFU (4) against shelter and secure with flat washers (7), lock washers (6), and bolts (4).
5. Slide output hose (3) into position and secure support clamps (2).
6. Connect electrical connectors (1).



4-36. AIR CONDITIONER

This task covers: a. Repair

INITIAL SETUP

Tools:

General Mechanics Tool Kit (Item 1, Appendix B)
Fork Lift or Crane

Materials/Parts:

Alcohol
Rags
Weather Gasket (Appendix F, Figure F-3, F-4)
Adhesive (Item 2, Appendix E)

Equipment Conditions

AC Main Circuit Breaker is Off

DISASSEMBLE

1. From inside shelter, at the back of the air conditioner remove access panel (1) cover (not shown) by loosening captive screws.
2. Flip circuit breaker at access panel (1) to OFF and disconnect power cord connector (2). Replace connector cap.
3. Loosen captive screws and disconnect control modules (3).
4. Remove bolts (14), flat washers (13), rubber shocks (12) and spacers (11) from bottom of air conditioner (6).
5. Loosen nuts (7), lock washer (8), and flat washer (9) on support rod (4).
6. Remove angle support (5).

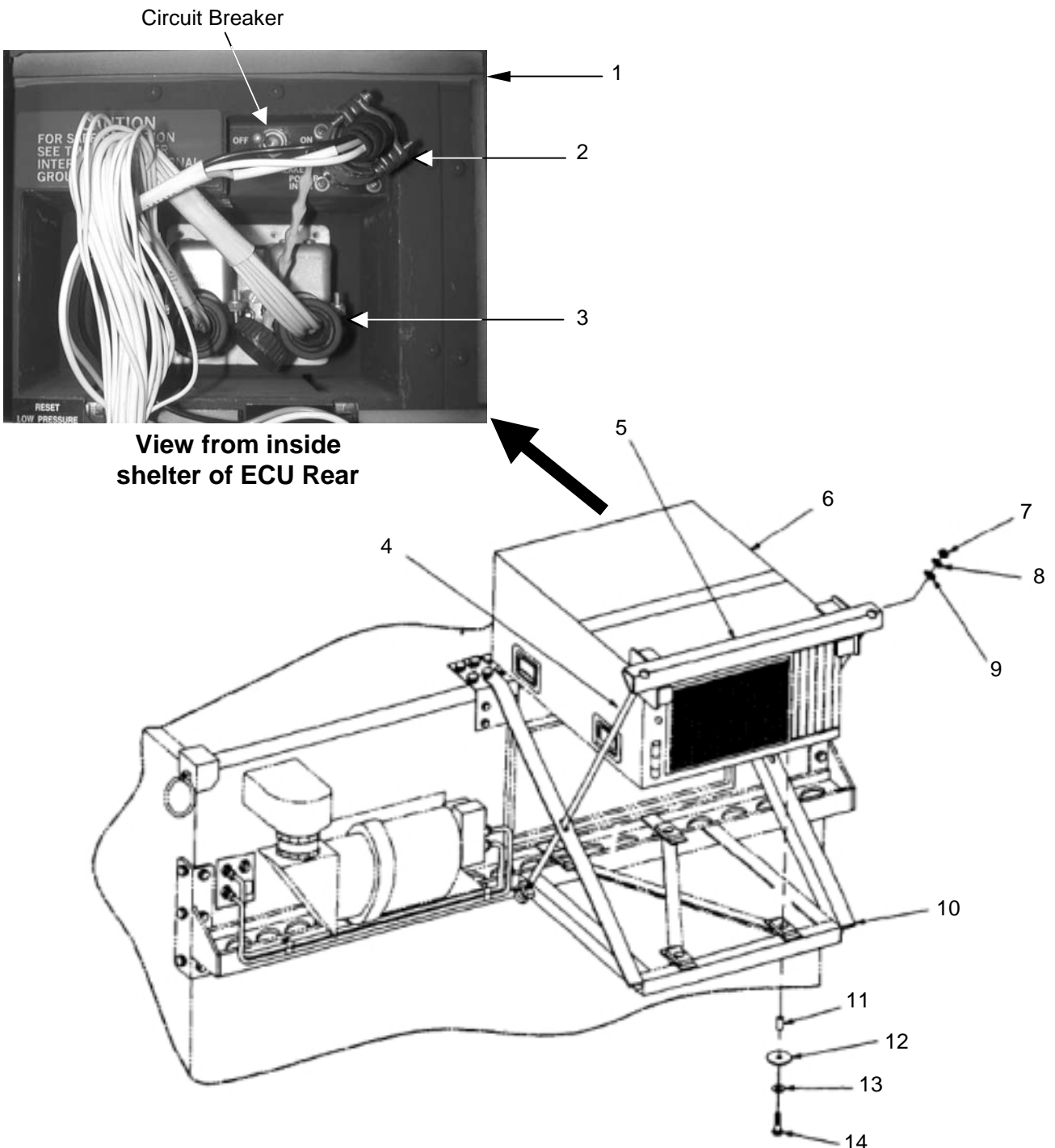
WARNING

Air conditioner weighs in excess of 250 pounds, use a forklift, crane or other proper lifting techniques. Failure to observe this warning may result in personnel injury.

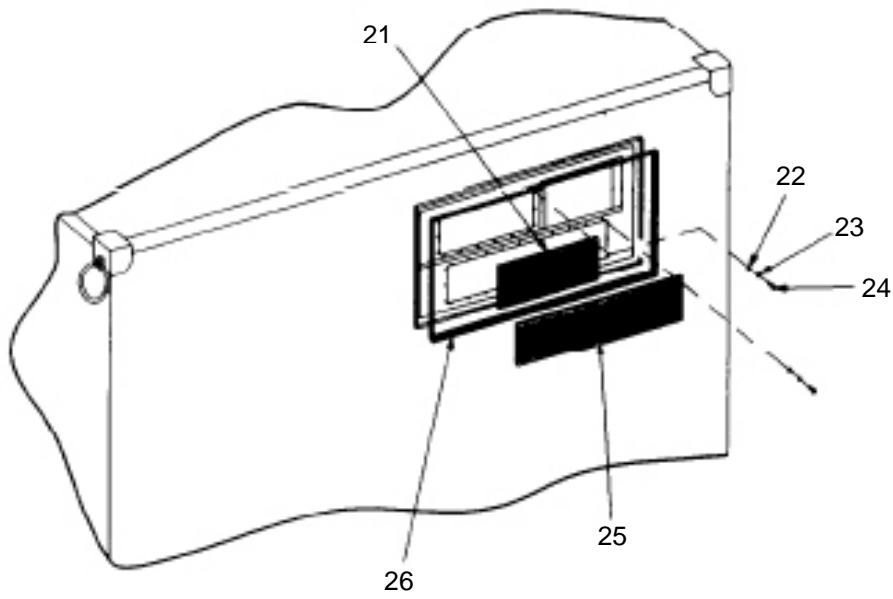
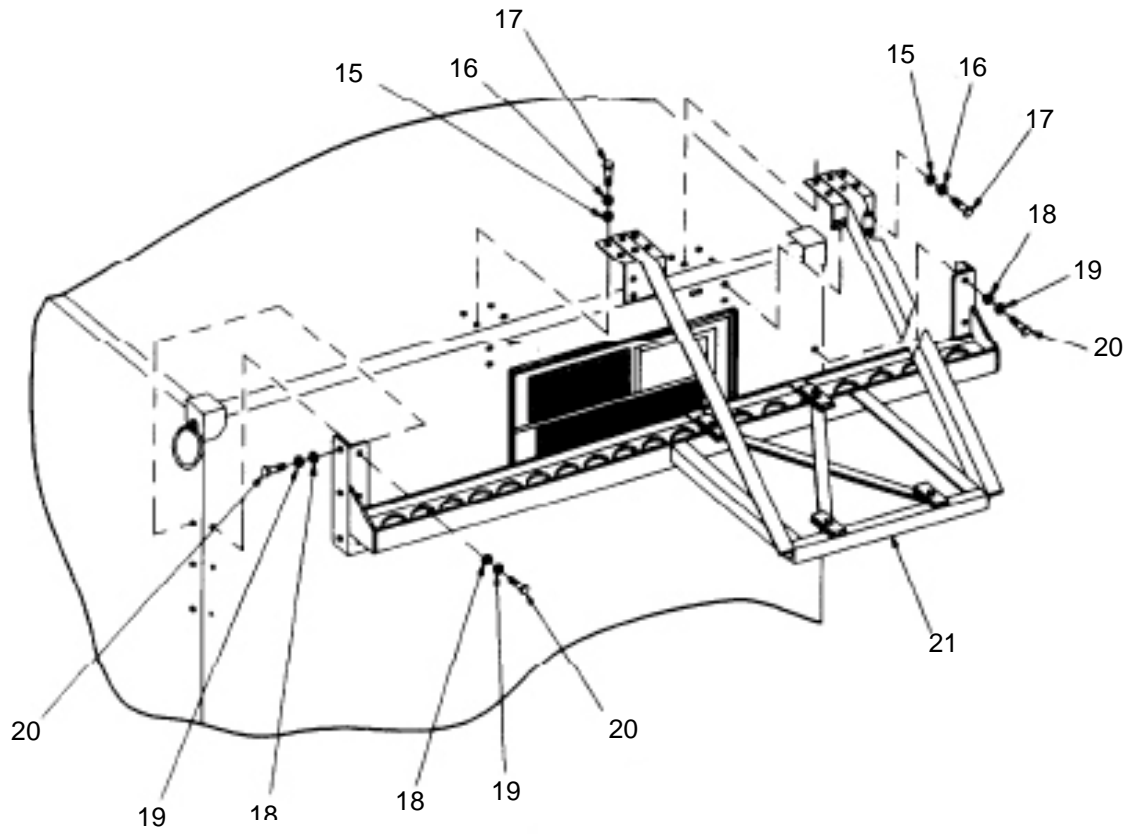
7. Slide Air Conditioner (6) from its frame (10).
8. Remove RFI filters (26 and 25) by removing screws (24), lock washers (23) and flat washers (22).
9. Remove air conditioner frame assembly (21) by removing screws (20), lock washers (19), and flat washers (18) from the sides; screws (17 and 20), lock washers (16 and 19) and flat washers (15 and 18) from the front; screws (17), lock washers (16) and flat washers (15) from the top.

4-36. AIR CONDITIONER - Continued

10. Inspect weather seal (26), if replacement is required, remove old seal, clean adhesive and residue from inside the weather seal mounting frame using a rag and alcohol. Coat the inside of the weather seal mounting frame with adhesive and press new weather seal in place. Allow adhesive to cure for one hour before proceeding.



4-36. AIR CONDITIONER - Continued



4-36. AIR CONDITIONER - Continued

ASSEMBLE

11. Position RFI Filters (21 and 25) and secure in place using screws (24), lock washers (23) and flat washers (22).
12. Position air conditioner frame assembly (21) to the front of the shelter and secure using screws (17), lock washers (16) and flat washers (15) in the top; screws (17 and 20), lock washers (16 and 19) and flat washers (15 and 18) in the front; screws (20), lock washers (19), and flat washers (18) in the sides.
13. Slide air conditioner (6) into position on air conditioner frame assembly (10).
14. Position angle support (5) and attach rod support (4). Secure rod support with nuts (7), lock washers (8), and flat washer (9).
15. Secure air conditioner (6) to air conditioner frame assembly (10) using bolts (14), flat washers (13), rubber shocks (12), spacers (11).
16. Inside the shelter, connect control modules (3) to air conditioner, tighten captive screw (1).
17. Connect power cord (2) to air conditioner and flip circuit breaker to ON.
18. Position air conditioner access panel cover (not shown), and secure by tightening captive screws.

4-37. RACK ASSEMBLY

This task covers: Replace

INITIAL SETUP

Tools

General Mechanics Tool Kit (Item 1, Appendix B)

Materials/Parts

Lock washer (Item 16, Appendix E)

Lock washer (Item 78, Appendix E)

Equipment conditions

Equipment removed

(refer to TM 11-7010-260-12&P)

REPLACE

NOTE

In order to gain access to curbside or roadside TIP EMI panels, remove the rack assembly from the base, ceiling, and walls. The individual shelves do not need to be removed.

Roadside Rack

1. To remove rack assembly from ceiling, wall, and base follow these procedures:

- Remove screws (6), lock washers (5), and flat washers (4) securing rack support brackets (3) to ceiling.
- Remove screws (2), flat washers (19), lock washers (18), and nuts (17) securing rack to wall support brackets (1) on shelter wall. If necessary, remove wall support brackets by removing screw (14), lock washer (15), and flat washer (16).
- Remove screws (13), and lock washers (12) securing rack to base (7).
- Remove rack from shelter.

2. Remove screws (9 and 10) and lock washers (8 and 11) securing base (7). Remove base.

3. To disassemble racks, follow these procedures:

- Remove screws (24) and lock washers (23) securing screen (26).
- Remove braces (22, 25, and 36) by removing screws (34) and lock washers (35).
- Remove shelves (28, 29, 30, and 33) by removing screws (31) from nut clips (20-View A).

4. To assemble racks, follow these procedures

- Secure braces (22, 25, and 36) with screws (34) and lock washers (35).
- Secure shelves (28, 29, 30, and 33) with screws (31) from nut clips (20-View A).
- Secure screen (26) with screws (24) and lock washers (23).

4-37. RACK ASSEMBLY - Continued

5. Secure rack base (7) with screws (9 and 10) and lock washers (8 and 11).
6. To install rack assembly, follow these procedures:
 - Secure wall braces (1) with screws (14), lock washers (15), and flat washers (16).
 - Set ceiling braces (3) onto rack assembly. Set rack assembly onto rack base (7).
 - Secure rack to base (7) with screws (13), and lock washers (12).
 - Secure rack to wall support brackets (1) with screws (2), flat washers (19), lock washers (18), and nuts (17).
 - Secure rack support brackets (3) to ceiling with screws (6), lock washers (5), and flat washers (4).

Forward Rack

7. Remove screws (4), lock washers (3), and flat washers (2) securing rack support brackets (1) to ceiling.
8. Remove screws (6), and lock washers (5) securing rail base (13).

NOTE

By removing middle shelves (step 11), the racks on the left or right side may be removed at this point without further disassembly, if desired.

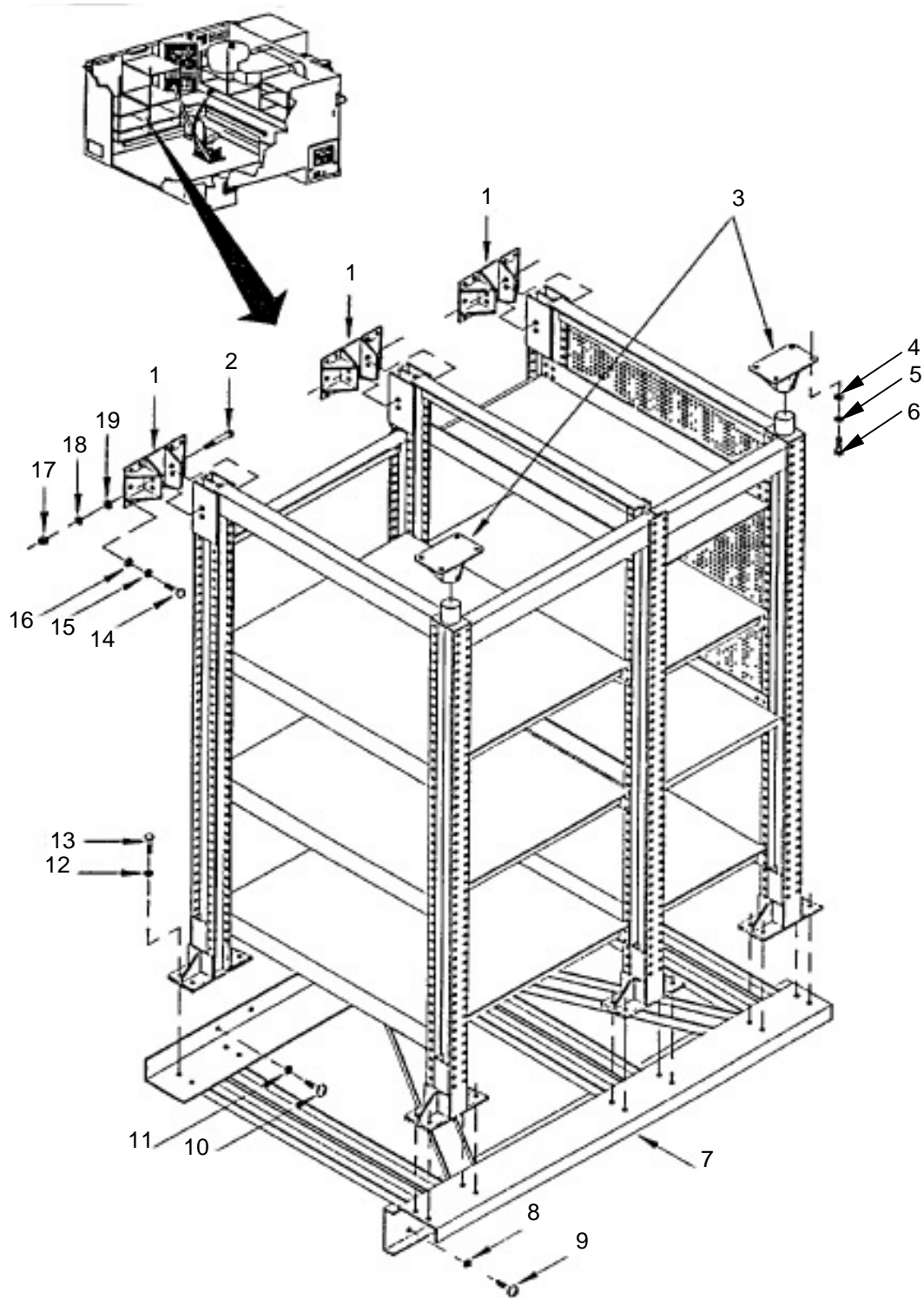
9. Remove screws (14) securing screen (16) and slide screen out.
10. Remove braces (10, 18, and 19) from rails (13) by removing screws (11) and lock washers (12).
11. Remove shelves (15 and 17) by removing screws (14) from nut clips (7-View A).
12. Assemble braces (10, 18, and 19) onto rails (14) with screws (11) and lock washers (12).
13. Secure shelves (28, 29, 30, and 33), except for middle ones, with screws (15) and nut clips (7-View A).
14. Secure screen (16) with screws (14).
15. Secure middle shelves.

4-37. RACK ASSEMBLY - Continued

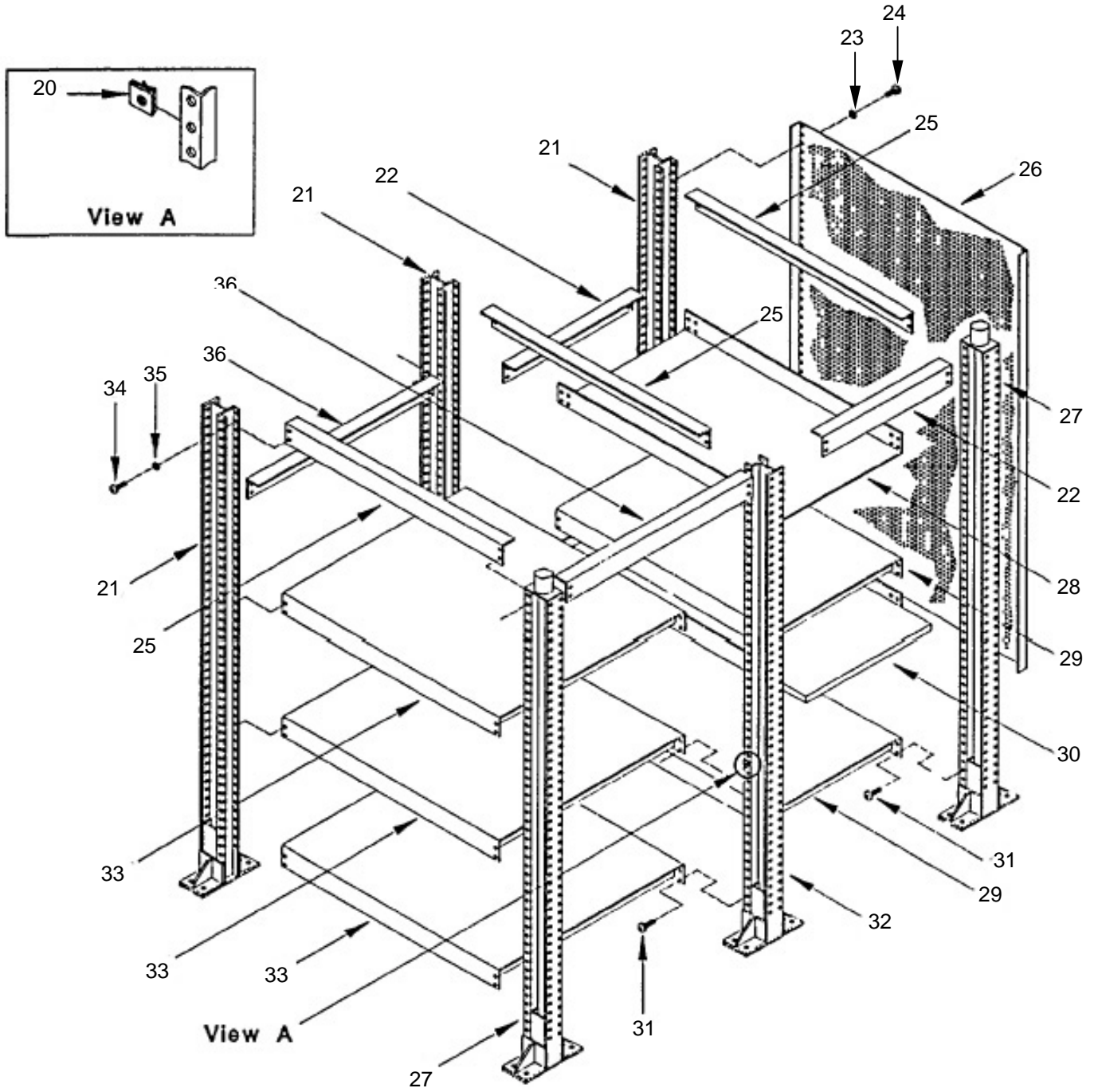
Curbside Rack

16. Remove fire extinguisher and bracket (25) by removing screws (24).
17. To remove rack assembly from ceiling, wall, and base follow these procedures:
 - Remove screws (6), lock washers (5), and flat washers (4) securing rack support brackets (3) to ceiling.
 - Remove screws (2), flat washers (17), lock washers (16), and nuts (15) securing rack to wall support brackets (1) on shelter wall. If necessary, remove wall support brackets by removing screw (12), lock washer (13), and flat washer (14).
 - Remove screws (11), and lock washers (8) securing rack to base (7).
 - Remove rack from shelter.
18. Remove screws (9 and 10) and lock washers (8) securing base (7). Remove base.
19. To disassemble racks, follow these procedures:
 - Remove braces (20, 22, and 27) from rails (19 and 23) by removing screws (29) and lock washers (30).
 - Remove shelves (21 and 26) by removing screws (24) from nut clips (18-View A).
20. To assemble racks, follow these procedures
 - Secure braces (20, 22, and 27) to rails (19 and 23) with screws (29) and lock washers (30).
 - Secure shelves (21 and 26) with screws (24) from nut clips (18-View A).
21. Secure rack base (7) with screws (9 and 10) and lock washers (8).
22. To install rack assembly, follow these procedures:
 - Secure wall braces (1) with screws (15), lock washers (16), and flat washers (17).
 - Set ceiling braces (3) onto rack assembly. Set rack assembly onto rack base (7).
 - Secure rack to base (7) with screws (11), and lock washers (8).
 - Secure rack to wall support brackets (1) with screws (2), flat washers (17), lock washers (16), and nuts (15).
 - Secure rack support brackets (3) to ceiling with screws (6), lock washers (5), and flat washers (4).

4-37. RACK ASSEMBLY - Continued

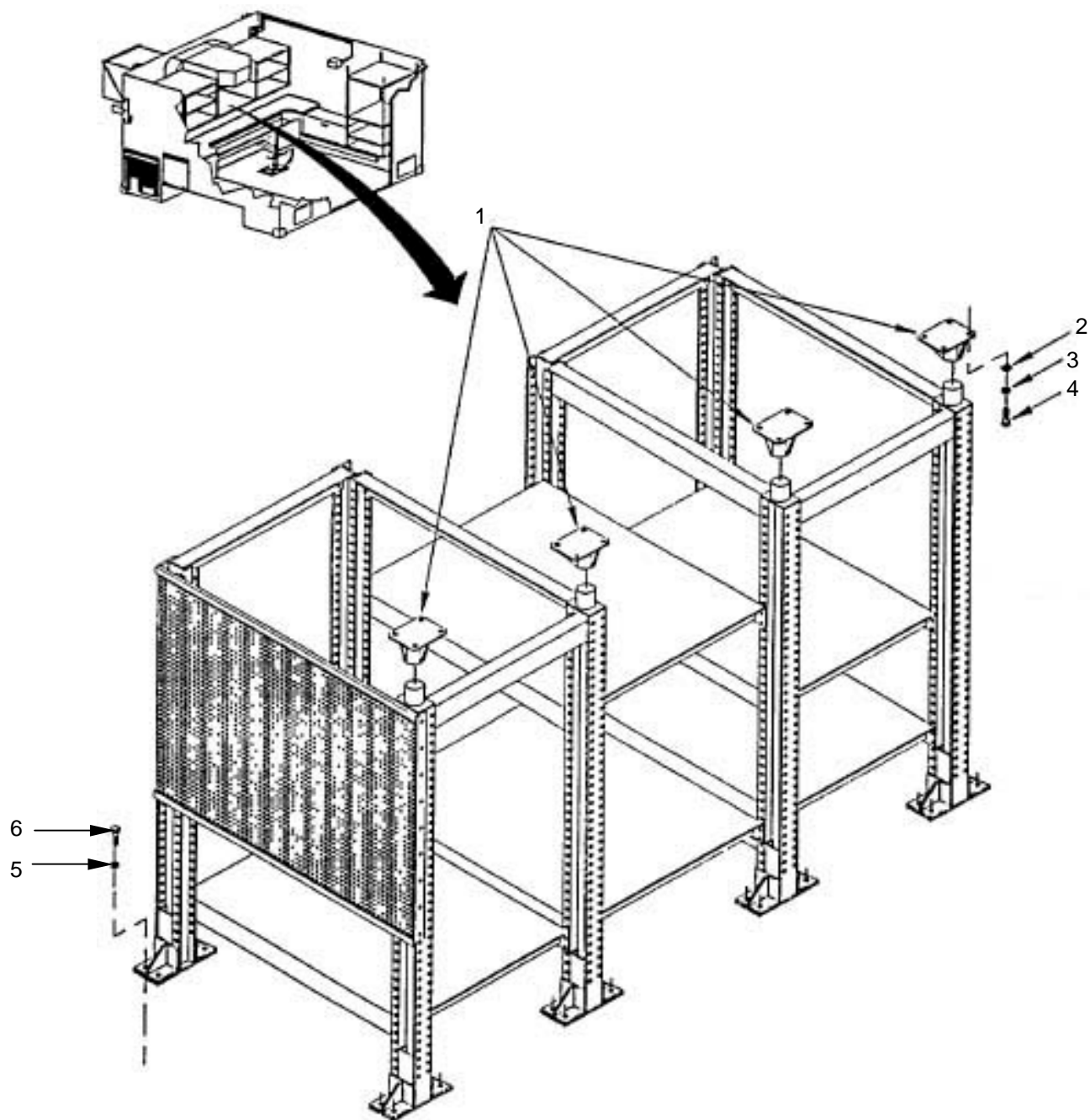


4-37. RACK ASSEMBLY - Continued



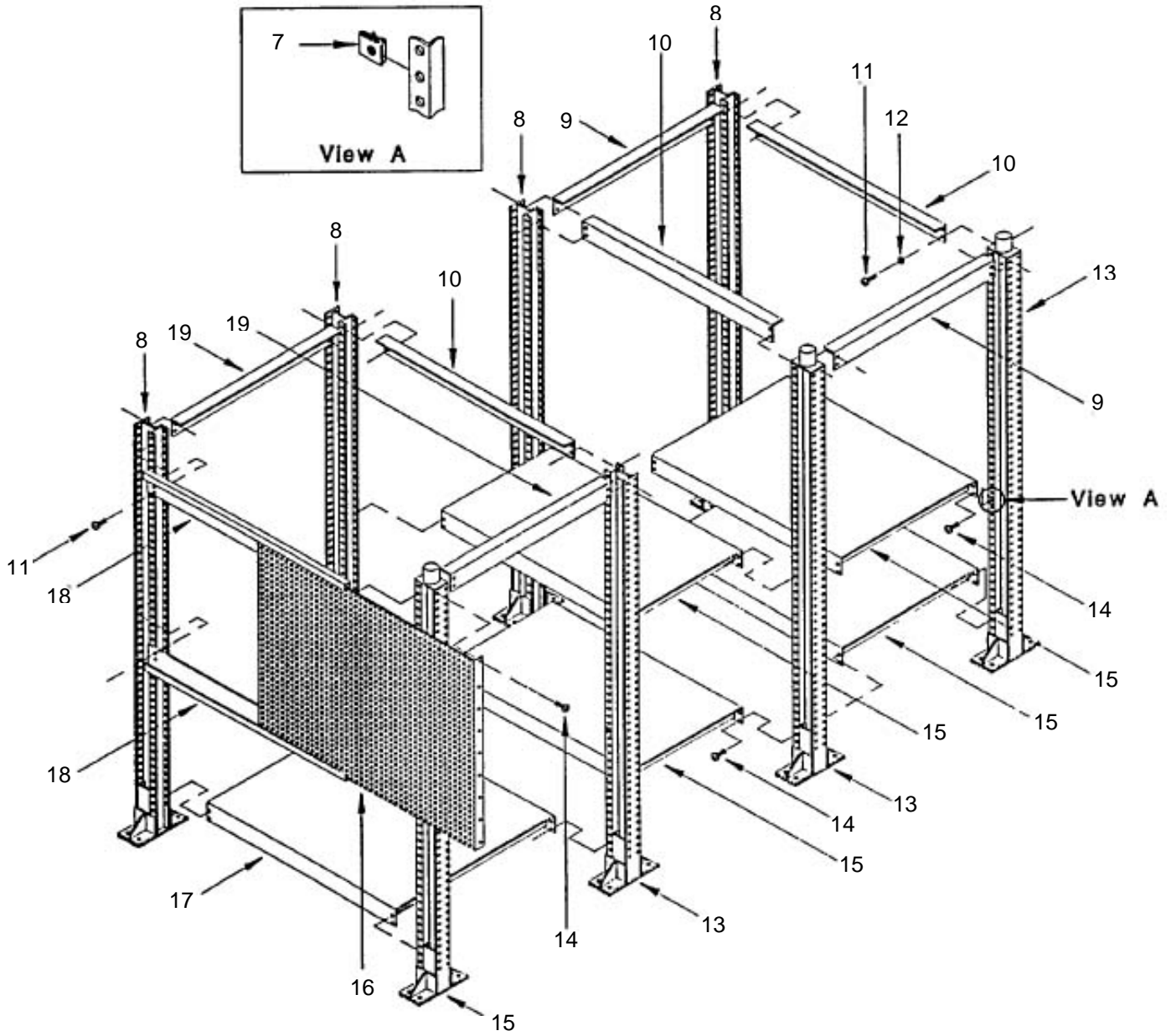
Roadside Rack, Page 2 of 2

4-37. RACK ASSEMBLY - Continued

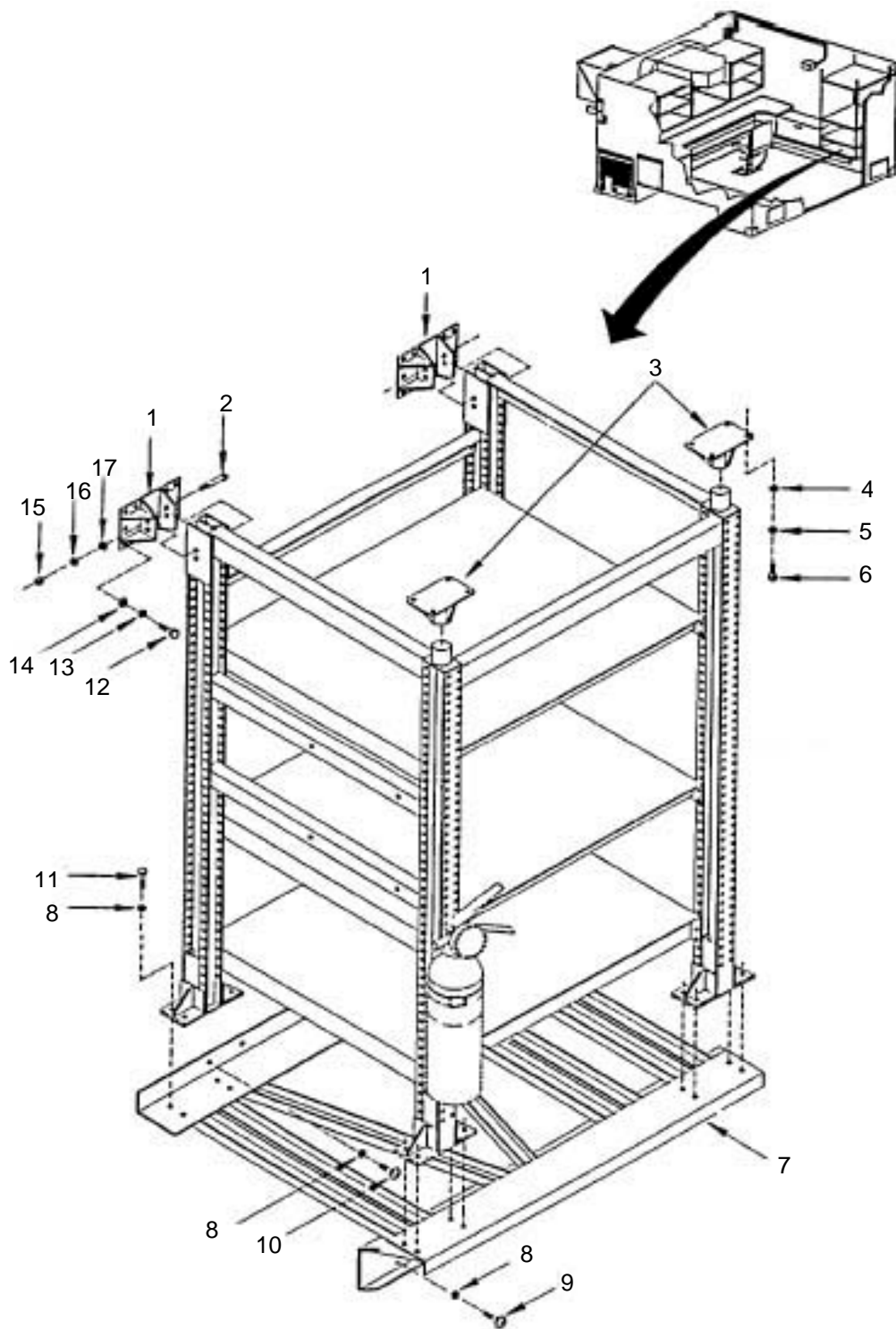


Forward Rack, Page 1 of 2

4-37. RACK ASSEMBLY - Continued

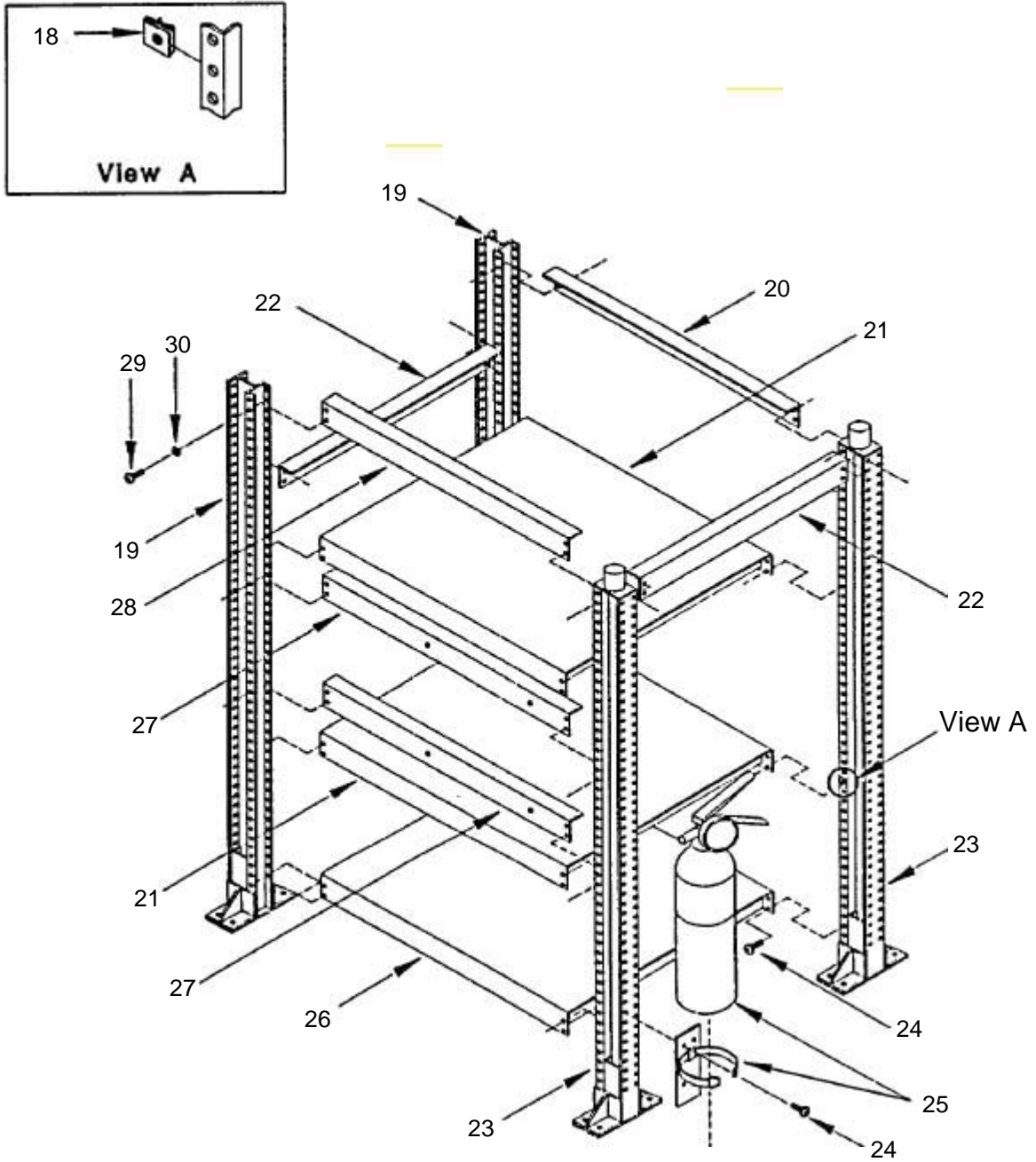


4-37. RACK ASSEMBLY - Continued



Curbside Rack, Page 1 of 2

4-37. RACK ASSEMBLY - Continued



CHAPTER 5
GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

There are no General Support Maintenance Procedures

**APPENDIX A
REFERENCES**

A-1. SCOPE. This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2. FORMS.

Recommend Changes to Publications and Blank Forms DA-2028

Product Quality Deficiency Report SF-368

Equipment Inspection & Maintenance Worksheet. DA-2404

A-3. FIELD MANUALS.

First Aid FM 21-11

A4. LUBRICATION ORDERS.

Generator Set Skid Mounted, Tactical Quite 5KW, 60 Hz LO 9-6115-641-12

A-5 TECHNICAL MANUALS.

Destruction of Army Equipment to Prevent Enemy Use TM 750-244-2

Technical Manual Operator, Unit, Direct Support and General Support
Maintenance Manual Repair Parts and Special Tools Lists for
Shelter, Integrated Command Post, (SICPS), Type II TM 11-5411-222-24P

System Manual Operator, Unit, Direct Support and General Support
Maintenance Manual for shelter, Integrated Command Post, (SICPS),
Type II TM 7010-260-12&P

Painting Instructions for Army Materiel TM 43-0139

Operator's Manual for M1097 Utility Truck (HMMWV) TM 9-2320-280-10

Operator's Manual for Generator Set Skid Mounted,
Tactical Quite 5KW, 60 Hz TM 9-6115-641-10

Technical Manual, Repair Parts and Special Tools List
Diesel Engine Model DN2M-1 TM 9-2815-252-24P

A-5 TECHNICAL MANUALS - Continued.

Technical Manual Unit, Direct Support and General Support
Maintenance Repair Parts and Special Tools List for
Air Conditioner, Horizontal, Compact 9,000 BTU/Hr TM 5-4120-378-24P

Technical Manual, Unit Maintenance Manual including Repair
Parts and Special Tools List for Filter Unit (GPFU) TM 3-4240-325-20&P

Technical Manual, Intermediate Direct Support Maintenance
Manual including Repair Parts and Special Tools List for System
Control Module TM 3-4240-302-30&P-7

Technical Manual, Intermediate Direct Support Maintenance
Manual (including Repair Parts and Special Tools List for
Centrifugal Fan TM 3-4240-302-30&P-8

Unit, Direct Support and General Support Maintenance Manual
for Generator Set Skid Mounted, Tactical Quite 5KW, 60 Hz. . . TM 9-6115-641-24

Operator's, Unit, Direct Support and General Support
Maintenance Manual for Air Conditioner, Horizontal,
Compact 9,000 BTU/Hr TM 5-4120-378-14

Warranty Program for Shelter, Standardized Integrated
Command Post, Model S-787/G, Type II TB 10-5411-222-24

A6. PAMPHLETS.

The Army Maintenance Management SystemDA Pamphlet 738-750

APPENDIX B MAINTENANCE ALLOCATION CHART (MAC)

SECTION I. INTRODUCTION

B-1. THE ARMY MAINTENANCE SYSTEM MAC.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit - includes two subcolumns, C (operator/crew) and 0 (unit) maintenance.

Direct Support - includes an F subcolumn.

General Support - includes an H subcolumn.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions are limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared,

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3rd position code of the SMR code.

i. Repair. The application of maintenance services¹, including fault location/troubleshooting², removal/installation, and disassembly/assembly³ procedures, and maintenance actions⁴ to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

¹ Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

² Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

³ Disassembly/assembly - The step-by-step breakdown (taking apart of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

⁴ Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/action necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 7, Group, Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 list the functions to be performed on the item listed in Column 2.
(For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Cateaoxy. Column 4 specifies each level of maintenance authorized to perform each function listed in column 3, by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures are shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C Operator or Crew
- 0 Unit Maintenance
- F Direct Support Maintenance
- H General Support Maintenance

e. Column 5. Tools and Test Equipment Reference Code Column 5 specifies, by code, those common tool sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in section III.

f. Column 6. Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. Column 7. Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, section II, column 5.

b. Column 2. Maintenance Level. The lowest maintenance level of maintenance authorized to use the tool or test equipment.

c. Column 3. Nomenclature. Name or identification of the tool or test equipment.

d. Column 4. National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5. Tool Number. The manufacturer's part number, model number, or type number.

B-5. Explanation of Columns in Remarks, Section IV.

a. Column 7. Remarks Code. The code recorded in column 6, section II.

b. Column 2. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

Section II. MAINTENANCE ALLOCATION CHART

**Maintenance Allocation Chart
for
Rigid Wall Shelter (V)1**

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT	(6) REMARKS CODE	
			UNIT		DS U	GSU			DEPOT
			C	O	F	H			D
00	Rigid Wall Shelter	Inspect Inspect Repair Repair Repair	0.3						
				0.3 1.0					
					4.0				
						X			
01	Filter Blower Assembly	Inspect Service Repair Replace	0.1 0.1					A A C E	
					0.5 0.3		3, 11 11		
	RFI Seal	Replace			0.5				
	Weather Seal	Replace			0.5				
02	Shelter Assembly	Inspect Repair Repair	0.1	0.5				A	
					2.0				
	Structure Assembly	Inspect Repair	0.1						
					4.0		1, 2, 4, 5, 6 7, 8, 9, 12, 13, 14, 15		
	Door Assembly	Inspect Replace Adjust Test	0.1	0.5 0.3 0.1			1, 2, 8 1	A E	
	Roller Latch Assembly	Inspect Replace	0.1	0.3			1, 2	A,D	
	Handle Assembly, Door	Inspect Replace	0.1	0.3			1, 2	A,D	
	Air Vent Frame	Inspect Repair	0.1	1.0			1	A	
	Air Vent Frame RFI Filter	Inspect Replace	0.1	0.2			1	A	
	Weather Seal	Inspect Replace	0.1		2.0		1, 8	A	
	RFI Seal	Inspect Replace	0.1		2.0		1, 2, 5, 6, 9, 15	A	

Maintenance Allocation Chart for Rigid Wall Shelter (V)1

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS CODE
			UNIT		DS U	GSU	DEPOT		
			C	O	F	H	D		
03	Brace Assembly	Inspect Repair	0.1	0.3				1, 2	A E
	Rear Ladder	Inspect Replace	0.1	0.1					A
	Hatch Assembly	Inspect Replace	0.1	0.3				1, 2	A E
	Weather Seal	Inspect Replace	0.1	2.0				1, 8	A
	RFI Seal	Inspect Replace	0.1		2.0			1, 2, 5, 6, 9, 15	A
	Step Assembly	Inspect Replace	0.1	0.2				1, 2	A E
	Hand Hold	Inspect Replace	0.1	0.2				1, 2	A E
	Bracket Assembly	Inspect Repair Repair	0.1	0.5	2.0			1 1	A
	Cover Assembly, COMMO Entry	Inspect Replace	0.1	0.2				1	A
	Cover Assembly, TIP Entry Panel	Inspect Replace	0.1	0.2				1	A
	Door, Crew Blower	Inspect Replace	0.1	0.3				1	A
	Door Assembly. Power Entry	Inspect Replace	0.1	0.5				1, 2	A,D E
	Door Assembly, GENSET	Inspect Replace	0.1	0.5				1, 2	A E
	Seat, Folding Back	Inspect Replace	0.2	0.5				1	A
	Upper (Lower) Mount, Antenna	Inspect Replace	0.1	0.3				1, 2	A E

**Maintenance Allocation Chart
for
Rigid Wall Shelter (V1)**

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS CODE
			UNIT		DSU	GS U	DEPOT		
			C	O	F	H	D		
	Antenna Mount	Inspect Replace	0.1	0.2				1, 2	A E
	Shelter Modifications	Inspect	0.1						A
	Rack Assemblies	Inspect Replace	0.1		4.0			1	A
	CO Monitor	Test Replace Repair	0.1		0.2		X	1	A
	Power Entry Installation	Inspect Repair	0.1		1.2			1, 3, 11	A B
	DC Power Supply	Test Replace Repair			0.2 0.5		X	3, 11 1,3,11	A
	Power Monitor Faceplate	Inspect Test Repair	0.1		0.3 1.0			1, 3, 11	A B
	Relay Panel Assembly	Test Repair			0.2 1.2			1, 3, 11	A B
	TIP Faceplate Assembly	Inspect Repair	0.1		0.6			1, 3, 11	A B
	Signal Patch Panel	Inspect Repair	0.1		0.6			1, 3, 11	A B
	SEP EMI Plate Assembly	Inspect Repair	0.1		1.1			1, 3, 11	A B
	TIP Power Entry Assembly	Inspect Repair	0.1		1.1			1, 3, 11	A B
	COMMO Entry Panel Assembly	Inspect Repair	0.1		1.2			1, 3, 11	A B

Maintenance Allocation Chart For Rigid Wall Shelter (V)1

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS CODE
			UNIT		DS U	GSU	DEPOT		
			C	O	F	H	D		
04	Waterfall Panel Assembly, COMMO Entry	Inspect Repair	0.1		1.0			1, 3, 11	A B
	Plate, Assembly, TIP Signal Entry	Inspect Repair	0.1		1.0			1, 3, 11	A B
	Signal Patch Panel	Inspect Repair	0.1		1.0			1, 3, 11	A B
	Jackfield Assembly	Inspect Repair	0.1		1.0			1, 11	A B
	Rapid Decompression Installation	Inspect	0.1						A
	Rapid Decompression Filter	Replace		0.2				1	
	GENSET Installation	Inspect Replace Repair	0.1		1.0			1, 16	A C
05	Generator	Repair			X			F	
06	Gas Particulate Filter Unit	Inspect	0.1		0.5		X	1	A
		Replace Repair							C
07	GPFU Control Panel	Inspect Replace	0.1	0.3				1	A
08	Nameplate Installation	Entry Deleted							
09	Entrance Panel Assembly	Inspect Replace	0.1	0.3				1	A
10	Air Conditioner Installation	Inspect Replace Repair	0.1		0.5			1, 16	A E, G C
	RFI Seals	Replace			0.5			1, 2	
	Weather Seal	Replace			0.5			1	
	HMMWV Mounting Kit	Inspect Install			2.0			1, 10, 16	A

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

**Tool and Test Equipment Requirements
for
Rigid Wall Shelter**

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	Tool Kit, General Mechanics	5180-00-177-7033	SC5180-90-CL-N26
2	O/F	Paint Brush	8020-00-256-6480	
3	O/F	Multimeter	6625-01-139-2512	AN/PSM-45
4	F	Oscillating Sander	5130-00-409-8653	00-S-90
5	F	Riveter, Blind, Hand	5120-00-017-2849	250K
6	F	Drill, Electric, Portable, ¼ inch cap with Drill Bits	5130-00-561-1389	W-D-661
7	F	Circular Saw	5130-00-089-3354	GGG-S-51
8	F	Caulking Gun	5120-00-072-6977	A6372
9	F	Safety Glasses	6520-01-140-5364	
10	F	Tool Kit, Shop Equipment, Automotive	4910-00-754-0654	SC4910-95CLA74
11	F	Tool Kit, Electronics Equipment	5920-00-241-1441	
12	F	Welding Equipment	4940-00-209-6240	SC4940-95C
13	F	Crimping Tool	5130-00-863-8006	MS25441
14	F	Crimping Die	5130-00-863-2991	MS23002
15	F	Riveting Tool	3530-00-8902-4631	GGG-R-00395
16	F	*Crane or Forklift		

*A crane or similar device must be used to lift shelter for mounting. The lifting device must be of sufficient capacity to lift the shelter.

**Section IV. REMARKS
for
Rigid Wall Shelter**

REFERENCE CODE	REMARKS
A	Routine maintenance/PMCS.
B	Replace damaged or missing part. Reference RPSTL for breakdown.
C	Test and repair using component-specific technical manual/drawing package.
D	Lubricate hinges as needed.
E	Use touch-up paint as needed.
F	See TM 9-6115-641-24 for generator repairs.
G	For complete AC Installation see groups 01 & 03 in RPSTL.

APPENDIX C
COMPONENTS OF END ITEM (COEI) LIST
AND BASIC ISSUE ITEMS (BII)

SECTION I. INTRODUCTION

C-1. SCOPE.

This appendix lists components of the end item and basic issue items for the SICPS shelter to help you inventory the items for safe and efficient operation of the equipment.

C-2. GENERAL.

The Components Of End Item (COEI) and Basic Issue Items (BII) Lists are divided into the following sections:

a. Section II. Components of End Item. As components of the SICPS shelter, these items must be issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. This listing is for information purposes only and is not authority to requisition replacements. Illustrations are furnished to help you find and identify the items.

b. Section III. Basic Issue Items, sue Items, These items are required to place the SICPS shelter in operation, operate it, and do emergency repairs. Although packaged and shipped separately, basic issue items must be with the SICPS shelter during operation and when it is transferred between property accounts. This list is your authority to request/requisition basic issue items for replacement, based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

C-3. EXPLANATION OF COLUMNS.

a. Column (1), Illus Number, gives you the number of the item illustrated.

b. Column (2), National Stock Number, identifies the stock number of the item to be used for requisitioning purposes,

c. Column (3), Description and Usable On Code, identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses! and the part number.

d. Column (4), U/I (unit of issue), indicates how the item is issued for the National Stock Number shown in column two.

e. Column (5), Qty Rqd, indicates the quantity required.

SECTION II. COMPONENTS OF END ITEM

(1) Illus number	(2) National Stock number	(3) Description CAGEC and Part number	(4) U/I	(5) Qty rqr
1		MOUNTING KIT,SHELTER TO HMMWV (81337) 17-1-8584-1 (SEE TABLE C-1 FOR BREAKDOWNI)	EA	1
2		PHONE EXTENSION BOX ASSEMBLY (81337) 17-1-7561	EA	1
3		RF PATCH CORD (81337) 17-1-7485	EA	6
4		PWR INPUT, AC (Extension) (81337) 17-1-7461	EA	1
5		PWR INPUT, AC (pigtail) (81337) 17-1-7475	EA	1
8		PATCH, JACKFIELD (120") (81337) 17-1-7462-1	EA	2
7		PATCH, JACKFIELD (36") (81337) 17-1-7462-2	EA	2
8		PATCH, DATA (81337) 17-1-7473	EA	3
9		PWR INPUT, DC (NATO Plug) (81337) 17-1-7478	EA	1
10		ANGLE ADAPTER (81337) M55339/03-00027	EA	1
11		FUEL SUPPLY HOSE (81337) 17-1-7573	EA	1
12		EXHAUST HOSE EXTENSION (81337) 17-1-7575	EA	1
13		RF COAX CABLE (81337) 17-1-7468-7	EA	4
14		FUEL RETURN HOSE (81337) 17-1-7586	EA	1
15		PORTABLE FUEL HOSE (81337) 17-1-7587	EA	1
16		JF PATCH CORD (81337) 17-1-6802-1	EA	20
17		JF PATCH CORD (81337) 17-1-6802-2	EA	15
18		LADDER ASSEMBLY (Stored on door) (81337) 17-1-3619-1	EA	1

TABLE C-I. HMMWV Mounting Kit Parts List (29381) 17-1-8584-1

Part Number	Nomenclature	Quantity
17-1-8583-1	MOUNTING ASSEMBLY, REAR	1
17-1-8220-1	BRACKET, REAR MOUNTING	1
17-1-8220-2	BRACKET, REAR MOUNTING	1
17-1-8221-1	ADAPTER, MOUNTING	1
17-1-8221-2	ADAPTER, MOUNTING	1
17-1-3607-1	ISOLATOR	12
17-1-3605-2	WASHER, ISOLATOR MOUNT	6
17-1-3606-1	WASHER, ISOLATOR MOUNT	12
AN960C816	WASHER, FIAT	16
MS21045C8	NUT, SELF LOCKING	6
NAS43HT8-156	SPACER, SLEEVE	6
MS35308-426	SCREW, CAP	6
B1821BH050C325N	SCREW, CAP	8
MS35307-307	SCREW, CAP	6
MS15795-810	WASHER, FLAT	6
MS35338-139	WASHER, LOCK	6
MS35307-360	SCREW, CAP	6
MS35338-141	WASHER, LOCK	42
MS15795-814	WASHER, FLAT	46
MS35307-363	SCREW, HEX	8
MS35307-361	SCREW, HEX	28
B1B21BH050C150N	SCREW, HEX	4
MS35338-48	WASHER, LOCK	4
MS51967-14	NUT, HEX	4
17-1-8245-1	BRACKET, CLAMP	2
17-1-8244-1	SHIM, BRACKET	2
17-1-8243-1	SPACER	6
MS51971-3	NUT, HEX	4
17-1-8246-1	BRACKET, TAIL LIGHT	2
17-1-6854-1	GROMMET	2
17-1-3597-1	BAR ASSEMBLY, MOUNTING KIT	2
17-1-3599-1	ANGLE ASSEMBLY, MOUNTING	1
17-1-3599-2	ANGLE ASSEMBLY, MOUNTING	1
NAS43HT8-156	SPACER, SLEEVE	8
17-1-3605-1	WASHER, ISOLATOR MOUNT	8
MS35307-410	SCREW, HEX	10
17-1-3606-1	WASHER, ISOLATOR MOUNT	16
17-1-3607-1	ISOLATOR, MOUNTING INSTALLATION	8
AN8C7A	BOLT, MACHINE	8
MS21045C8	NUT, SELF LOCKING	2
MS35308-426	SCREW, HEX	8
AN960C816	WASHER, FLAT	28
MS35338-143	WASHER, LOCK	10

SECTION III. BASIC ISSUE ITEMS (BII)

(1) Illus number	(2) National Stock number	(3) Description CAGEC and Part number	(4) U / I	(5) Q t y rqr
		WARRANTY PROGRAM FOR SHELTER, STANDARDIZED INTEGRATED COMMAND POST, MODEL S-787, TYPE II TB 10-5411-222-24	EA	1
		OPERATOR, UNIT DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST FOR SHELTER, STANDARDIZED INTEGRATED COMMAND POST SYSTEM, TYPE II TM 10-5411-222-24P	EA	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

D-1. **SCOPE.** This appendix lists additional items you are authorized for the support of the SICPS shelter.

D-2. **GENERAL.** This list identifies items that do not have to accompany the SICPS shelter and do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. **EXPLANATION OF COLUMNS.** National stock numbers, descriptions, and quantities are provided to help you identify and request additional items you require to support this equipment. The items are listed in alphabetical sequence by item name. If the item you require differs between serial numbers of the same model, effective serial numbers are shown in the last line of the description. If item required differs for different models of this equipment, the model is shown under the "Usable on" heading in the description column. These codes are not required for this model.

SECTION II. ADDITIONAL AUTHORIZED ITEMS LIST (AAL)

(1) National Stock Number (NSN)	(2) Description CAGEC and Part Number	(3) USABLE ON CODE	(4) U/M	(5) Quantity Recommended
6115-01-274-7387	Generator Set, MEP-802A, (81337), 17-1-7558-1		Ea.	1
5410-01-334-7529	Environmental Control Unit (ECU) (97403), 13225E8452		Ea.	1

**APPENDIX E
EXPENDABLE AND DURABLE ITEMS LIST**

SECTION I. INTRODUCTION

E-1. SCOPE.

This appendix lists expendable and durable items that you will need to operate and maintain the SICPS Shelter. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-790, Expendable/Durable Items (except medical, class V repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-2. EXPLANATION OF COLUMNS.

a. Column 1. Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item (e.g. "Use cleaning compound, item 5, Appendix E".)

b. Column 2. Level. This column identifies the lowest level of maintenance that requires the item.

c. Column 3. National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column 4. Item Name Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column 5. Unit of Measure. This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
1	0		CABLE TIE (96906) MS5281-R4	EA
2	0		ADHESIVE (81349) M4610611DWY	GL
3	0	5315-00-839-5820	COTTER PIN (96906) MS24665-134	EA
4	0	5315-00-842-3044	COTTER PIN (96906) MS24665-283	EA
5	0	5315-00-234-1863	COTTER PIN (96906) MS24665-300	EA
6	0	5315-01-359-1451	COTTER PIN (96906) MS24665-285	EA
7	0	7920-00-148-9666	RAG, WIPING (58536) A-A531	LB
8	0	5310-00-576-5752	LOCKWASHER (96906) MS35333-39	EA
9	0	5310-00-550-1130	LOCKWASHER (96906) MS35333-40	EA
10	0	5310-00-592-5965	LOCKWASHER (96906) MS35338-44	EA
11	0	5310-01-338-7338	LOCKWASHER (96906) MS35338-45	EA
12	0	5310-00-933-8118	LOCKWASHER (96906) MS35338-135	EA
13	0	5310-00-929-6395	LOCKWASHER (96906) MS35338-136	EA
14	0	5310-00-933-8119	LOCKWASHER (96906) MS35338-137	EA
15	0	5310-00-933-8120	LOCKWASHER (96906) MS35338-138	EA
16	0	5310-00-933-8121	LOCKWASHER (96906) MS35338-139	EA

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
17	0	5310-00-067-6357	LOCKWASHER (96906) MS45904-69	EA
18	0	9158-00-759-0014	LUBRICANT, SOLID FILM (81349) MIL-L-23398	A/R
19	0	8030-01-136-8953	SEALER (800631) SM-B-563756	GL
20	0		SHIM (81337) 17-1-3565-1	EA
21	0		SHIM (81337) 17-1-3565-2	EA
22	0		SHIM (81337) 17-1-3565-3	EA
23	0		SHIM (81337) 17-1-3566-1	EA
24	0		SHIM (81337) 17-1-3566-2	EA
25	0		SHIM (81337) 17-1-3566-3	EA
26	F		SEALER, CONDUCTIVE (80063) 17-1-6612-1	AR
27	F	8040-00-078-9774	ADHESIVE (80063) M4610611 DWY	GL
28	F		ADHESIVE, GASKET (81337) 17-1-6626-1	GL
29	F		ADHESIVE (80063) 17-1-6612	GL
30	F	8040-01-197-0228	ADHESIVE (80063) SM-B-563559	GL
31	F	7830-00-884-4014	CHALK (71207) 7-10-8	GR
32	F		POLYETHYLENE WRAP	SH

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
33	F	6810-00-286-5435	ALCOHOL, ISOPROPYL (81349) TT1735	GL
34	F		COMMERCIAL BODY FILLER WHITELIGHTNIN 01125	GL
35	F		CORE, HONEYCOMB Ceiling: 17-1-6628-1 (81337) Walls: 17-1-6629-1 (81337) Floor: 17-1-6630-1 (81337)	AR
36	F	8040-01-197-0028	FIBER FILLED POLYESTER RESIN (80063)	GL
37	F	8415-00-009-1900	GLOVES, RUBBER (05963) N35	PR
38	F	5350-00-161-9043	SANDPAPER (81348) P-P-121	SH
39	F	5420-00-501-6998	ALUMINUM (81348) QQ-A-250, 6061-T6, .042"	AR
40	F	5120-00-673-1886	CARTRIDGE, DISPOSABLE (92108)	EA
41	F		CONTAINER, UNWAXED UU-C-80611	EA
42	F	5315-00-839-5820	COTTER PIN (96069) MS24665-134	EA
43	F		RIVNUT NAS1329S04B85	EA
44	F	8040-00-222-9059	EPOXY RESIN (11884) Versimid 140	GL
45	F	8040-01-197-0228	EPOXY RESIN (53462) EPIC R1003	GL
46	F	5320-00-956-7355	RIVET, DOMED HEAD, POP, (07707) AD64H	EA
47	F	8030-01-136-8953	SEALER (80063) SM-B-563756	AR
48	F	8030-01-136-8953	SEALER (80063) SM-B-563756	AR
49	F	8030-01-136-8953	POLYSULFIDE SEALER	AR

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
50	F	5320-00-882-3375	RIVET,DOMED,HEAD,POP (07707) AD66H	EA
51	F	5320-01-032-6534	RIVET, DOMED HEAD, POP (07707) AD68H	EA
52	F	5320-01-210-7955	FASTENER, BLIND (96906) MS90354U0603	EA
53	F		SEALER, CONDUCTIVE (29381) 17-1-5706-1	AR
54	F		RIVET, BLIND (07707) 17-1-5711-1	EA
55	F	5320-01-295-9924	RIVET, DOMED HEAD, POP (07707) AD42H	EA
56	F	5320-00-882-8388	RIVET, BLIND (07707) AD43H	EA
57	F	5320-00-882-8386	RIVET, BLIND (07707) AD44H	EA
58	F	5320-00-956-7362	RIVET, BLIND (07707) AD62H	EA
59	F	5320-00-956-7355	RIVET, BLIND (07707) AD64H	EA
60	F		RIVET, BLIND (07707) AD86H	EA
61	F	5320-00-143-6149	RIVET, BLIND (07707) AK43H	EA
62	F	5320-00-420-2165	RIVET, BLIND (07707) AK64H	EA
63	F	5320-00-490-5523	RIVET, BLIND (07707) AK66H	EA
64	F		RIVET, BLIND (07707) AK68H	EA
65	F		RIVET, BLIND (07707) AK86H	EA
66	F		RIVET, BLIND (81349) MS24243/10AH2	EA

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC, PART NUMBER	(5) U/M
67	F	5320-00-117-6885	RIVET, BLIND (96906) MS20426AD5-8	EA
68	F	5320-00-117-6886	RIVET, BLIND (96906) MS20426AD5-9	EA
69	F	5320-00-117-7522	RIVET, BLIND (96906) MS20470AD8-10	EA
70	F		ADHESIVE (81349) M4610611 DWY	AR
71	F		ADHESIVE (81349) M4610611 DGY	AR
72	F	8040-01-197-0228	ADHESIVE (80063) SM-B-563559	AR
73	F	8030-00-181-7225	VY COMPOUND (04552) ECCOSHIELD VY	LB
74	F	7920-01-115-4727	BRUSH, APPLICATOR (17987) 110313	EA
75	F		PLYWOOD	EA
76	F	7510-00-680-2395	TAPE, MASKING 180244) MIL-T-21595	RO
77	F	3439-00-224-3567	SOLDER (81348) QQ-S-571	RO
78	F	5310-00-974-6623	LOCKWASHER (96906) MS35338-140	EA
79	F	8030-01-333-4123	TEFLON PIPE TAPE (03950) MIL-T-27730	RO

APPENDIX F
ILLUSTRATED LIST OF MANUFACTURED ITEMS

F-1. INTRODUCTION. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at unit support maintenance level.

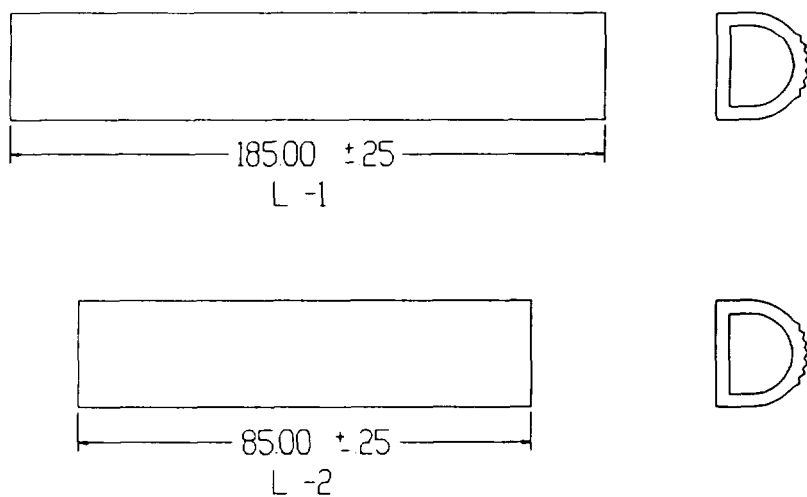
A Part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

F-2. MANUFACTURED ITEMS PART NUMBER INDEX. Table F-1 provides a list of those items that are manufactured at unit support maintenance level.

Table F-1. Unit Level Manufactured Items

Part No.	Figure
17-1-3704	F-1
17-1-3705	F-2
17-1-8037	F-3
17-1-8041	F-4
17-1-8078	F-5
17-1-8079	F-6
17-1-8158	F-7
17-1-8181	F-8
17-1-8507	F-9
17-1-8552	F-10

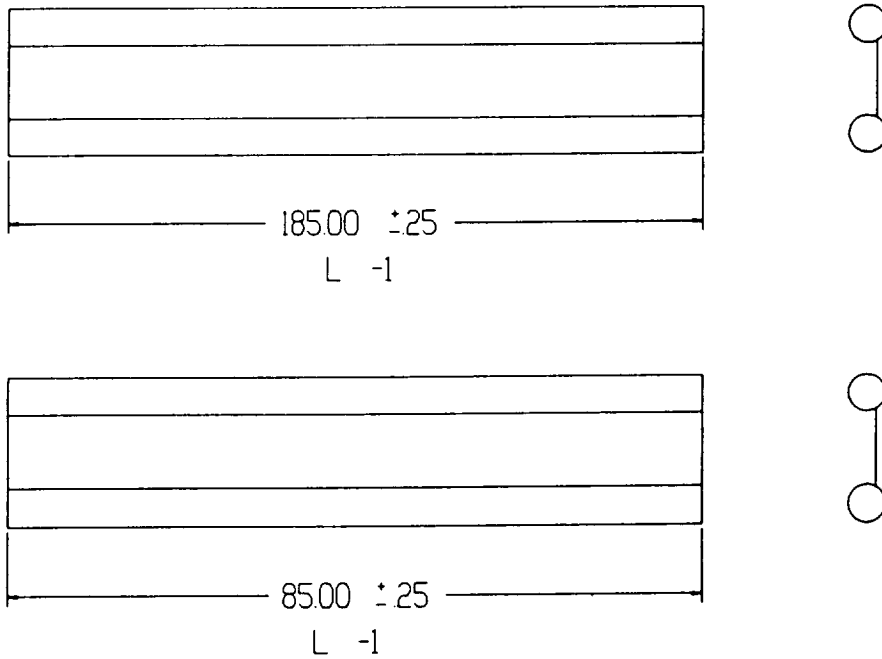


MATERIALS	
DESCRIPTION	PART NUMBER
RUBBER, NEOPRENE, DUROMETER 40, D-SHAPE, EXTRUDED, OVZL4.	B1-12009-40

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. WORKMANSHIP IAW MIL-STD-454, REQ T 9.

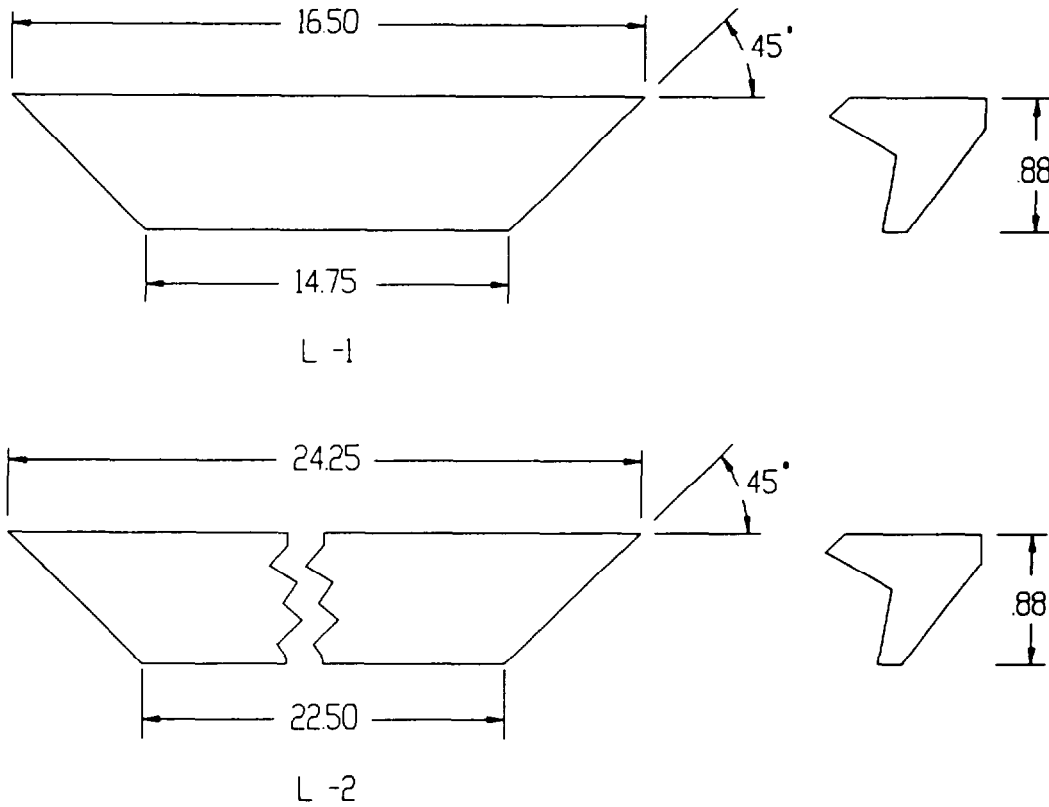
Figure F-1. Personnel Door Environmental Gasket



MATERIALS	
DESCRIPTION	PART NUMBER
.025 O.D. X .045 SILICONE TUBING PER ZZ-R-765, CLASS II, GRADE 40 WITH 3 COVERS,.0045 DIA FERREX WIRE MESH PER ASTM B-520,18565.	01-0504-6424

- NOTES:
1. DIMENSIONS SHOWN ARE IN INCHES.
 2. WORKMANSHIP IAW MIL-STD-454, REQT 9.

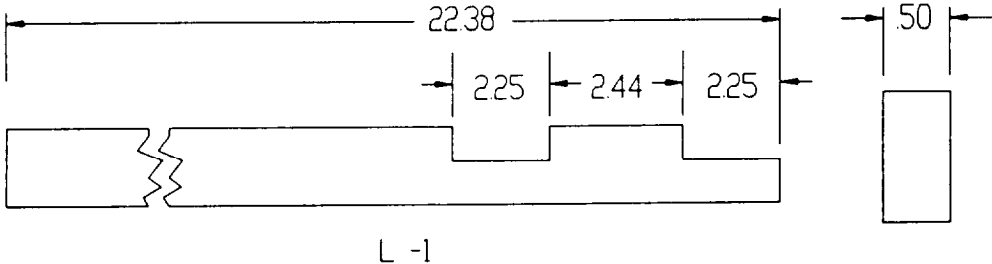
Figure F-2. RFI/EMI Gasket



MATERIALS	
DESCRIPTION	PART NUMBER
(2 Each Required)	17-1-8037-1 17-1-8037-2

- NOTES:
1. DIMENSIONS SHOWN ARE IN INCHES + 0.6 IN.
 2. WORKMANSHIP IAW MIL-STD-454, REQT 9.

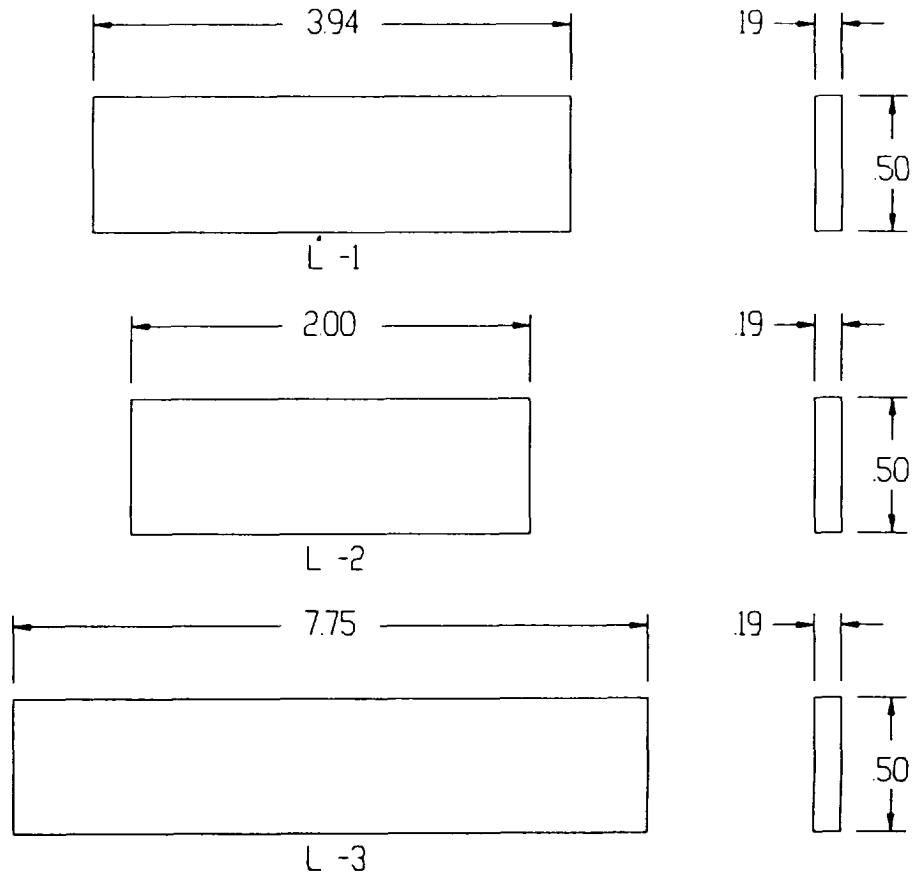
Figure F-3. Air Conditioner Weather Gasket



MATERIALS	
DESCRIPTION	PART NUMBER
.50 X .75 Flexible Polyurethane Foam. Open Cell. Color Gray.	17-1-8041

- NOTES:
- 1. DIMENSIONS SHOWN ARE IN INCHES.
 - 2. WORKMANSHIP IAW MIL-STD-454, REQ T 9.

Figure F-4. Air Conditioner Weather Gasket

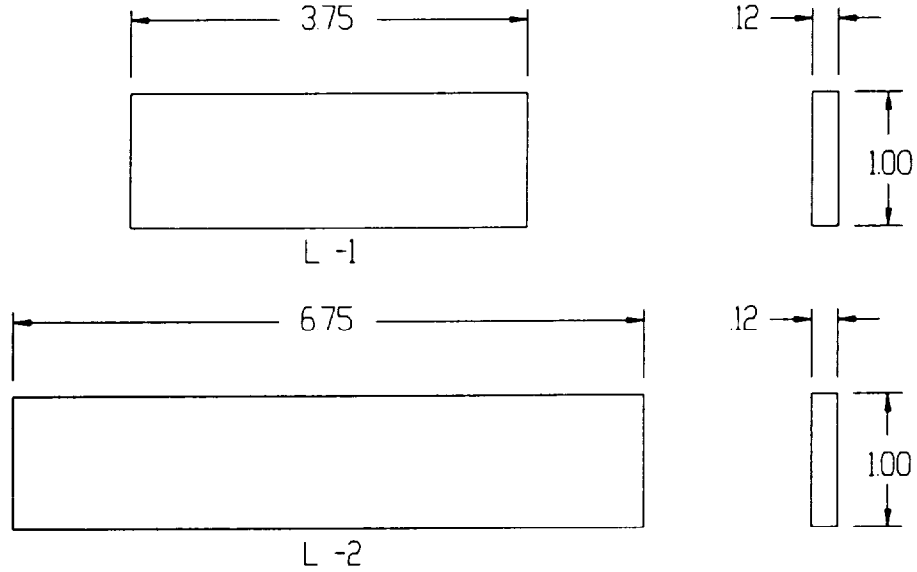


MATERIALS	
DESCRIPTION	PART NUMBER
(MAKE-FROM), 71643	200A

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. WORKMANSHIP IAW MIL-STD-454, REQ T 9.

Figure F-5. Blower/GENSET Door Environmental Gasket

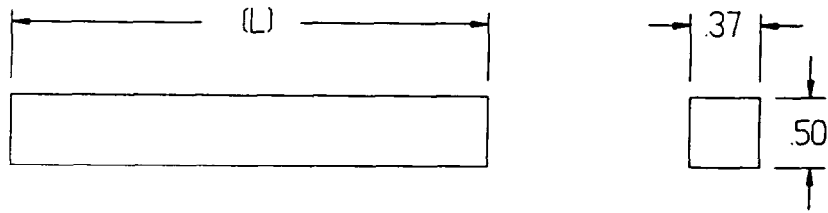


MATERIALS	
DESCRIPTION	PART NUMBER
Material, 81337	17-1-6609

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. WORKMANSHIP IAW MIL-STD-454, REQ T 9.

Figure F-6. Filter blower Environmental Gasket



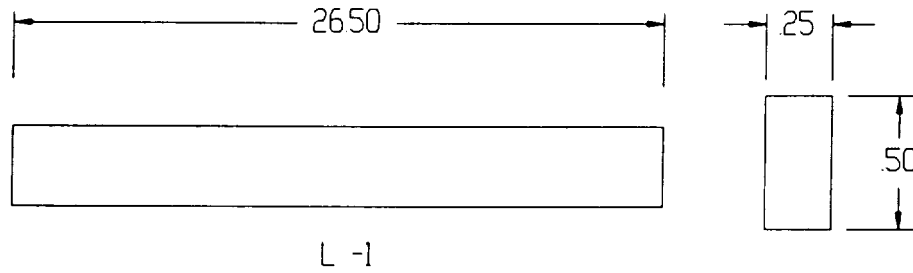
-6	5.62
-5	30.50
-4	14.12
-3	2.62
-2	26.75
-1	7.75
PN	LENGTH (L)

MATERIALS	
DESCRIPTION	PART NUMBER
Material, 81337	17-1-6715

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. WORKMANSHIP IAW MIL-STD-454, REQT 9.

Figure F-7. Power **Entry/GENSET Door Environmental Gasket**

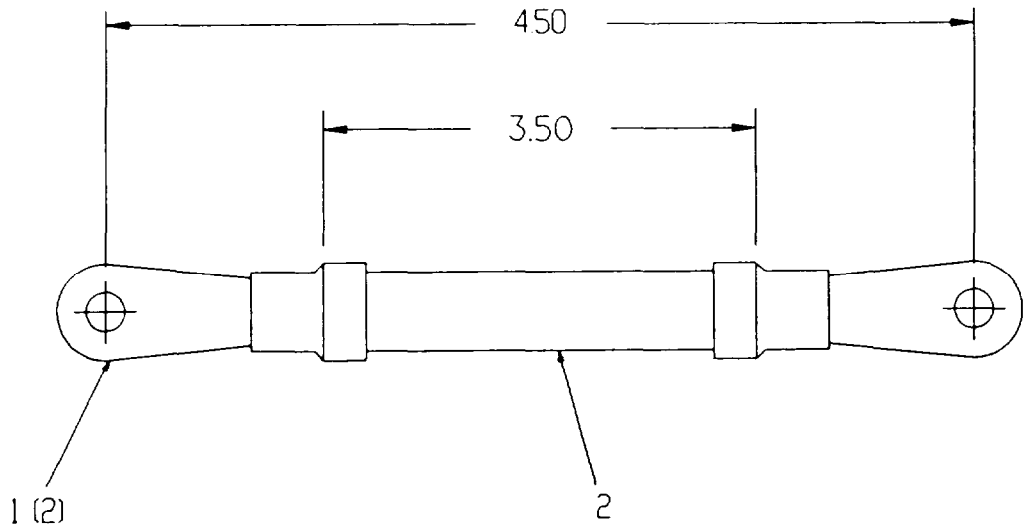


MATERIALS	
DESCRIPTION	PART NUMBER
Material, 81337	17-1-67161

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. WORKMANSHIP IAW MIL-STD-454, REQ T 9.

Figure F-8. Power Entry/GENSET Door Environmental Gasket



MATERIALS	
DESCRIPTION	PART NUMBER
1. TERMINAL LUG, 96906	MS25036-119 1234
2. WOVEN TINNED COPPER BRAID ROLLED FLAT GROUND STRAP, 92191	

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES ± 0.6 IN.
2. WORKMANSHIP IAW MIL-STD-454, REQT 9.
3. CUT ITEM 2 TO $3.5 \pm .25$ IN. AND CRIMP ITEM 1 ON BOTH ENDS USING TOOL MS25441 AND DIE MS23002.

Figure F-9. Ground Jumper

MATERIALS	
DESCRIPTION	PART NUMBER
STAINLESS STEEL HINGE AND PIN, TYPE 304, QQ-S-763, 6 FOOT LENGTH, 03007	SS09080711

NOTES:

1. DIMENSIONS SHOWN ARE IN INCHES.
2. REMOVE ALL BURRS AND SHARP EDGES R.005 - R.015.
3. UNTOLERANCED DIMENSIONS LOCATING TRUE POSITION ARE
4. WELD END (2 PLACES) TO RETAIN PIN PER MIL-STD-2219, CL C.

BASIC

Figure F-10. Personnel Door Hinge

F-11 (F-12 blank)

ALPHABETICAL INDEX

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THEN ... JOT DOWN THE INFO ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.

FROM: (PRINT YOUR UNIT'S COMPLETE
 Commander
 Stateside Army Depot
 ATTN: AMSTA-US
 Stateside, N.J. 07703-5007

DATE SENT
 10 July 1975

PUBLICATION TM 11-5840-340-12	PUBLICATION DATE 23 Jan 74	PUBLICATION Radar Set AN/PRC-
---	--------------------------------------	---

BE EXACT PIN-POINT WHERE IT				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			<p>Recommend that the installation antenna alignment procedure be changed throughout to specify a 20 IFF antenna lag rather than 10.</p> <p>REASON: Experience has shown that with only a 10 lag, the antenna servo system is too sensitive to wind gusting excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 20 degradation of operation.</p>
3-10	3-3		3-1	<p>Item 5, Functional column. Change "2 dB" to "3 dB".</p> <p>REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 dB (500 watts) adjustment to light the TRANS POWER FAULT indicator.</p>
5-6	5-8			<p>Add new step f.1 to read, "Replace cover plate removed in step e.1 above."</p> <p>REASON: To replace the cover plate.</p>
		FO-3		<p>Zone C 3. On J1-2, change "+24 VDC" to "+5 VDC".</p> <p>REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.</p>

PRINTED NAME, GRADE OR TITLE AND TELEPHONE SSG I. M. DeSpirito 999-1776	SIGNATURE
---	---------------

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

PLEASE
AFFIX
STAMP
POSTAGE
REQUIRED

TEAR ALONG DOTTED LINE

SAMPLE

Commander
U.S. Army Communications-Electronics Command
and Fort Monmouth
ATTN: AMSEL-LC-LEO-D-CS-CFO
Fort Monmouth, New Jersey 07703-5006

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PUBLICATION TITLE

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PARA GRAPH

FIGURE NO

TABLE NO

TEAR ALONG DOTTED LINE

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REQUIRED

TEAR ALONG DOTTED LINE

Commander
U.S. Army Communications-Electronics Command
and Fort Monmouth
ATTN: AMSEL-LC-LEO-D-CS-CFO
Fort Monmouth, New Jersey 07703-5006

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PAGE NO

PARA GRAPH

FIGURE NO

TABLE NO

TEAR ALONG DOTTED LINE

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AFFIX
STAMP
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Commander
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and Fort Monmouth
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By Order of the Secretary of the Army:

Official:


JOEL B. HUDSON
*Administrative Assistant to the
Secretary of the Army*
0306903

ERIC K. SHINSEKI
*General, United States Army
Chief of Staff*

DISTRIBUTION:

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = 39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = **.15 grain**
 1 decigram = 10 centigrams = 1.54 grains
 1 **gram** = decigram = .035 ounce
 1 dekagram = 10 = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 **gallons**
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 millimeters = .155 inch
 1 sq. decimeter = 100 centimeters = 15.5 inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 dekameters = 2.47 acres
 1 sq kilometer = 100 hectometers = .386 mile

Cubic Measure

1 cu centimeter = 1000 cu. millimeters = .06 cu inch
 1 cu decimeter = 1000 cu centimeters = 61.02 cu inches
 1 cu meter = 1000 cu. decimeters = 35.31 cu feet

Approximate Conversion Factors

To change	TO	Multiply by	To change	TO	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.496
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.023	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.765	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature
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