D E P A R T M E N T O F T H E A R M Y T E C H N I C A L M A N U A L

ORGANIZATIONAL, DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL

SHELTER, EXPANDABLE, RIGID CONSTRUCTION W/AIR-LOCK (ZERO MANUFACTURING CORP MODEL SEU-2) FSN 5410-933-9387

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y
NOVEMBER 1968

SAFETY PRECAUTIONS

Adhesives and solvents are highly flammable; perform work in well ventilated area and away from fire. Do not store adhesives or solvents in or near shelter.

Personnel must observe extreme caution to avoid contact with electrical circuits when power source is connected. In case of accident from electric shock, disconnect power source at once. If power source cannot be disconnected, free victim from live conductor with a board or other nonconductor. If victim is unconscious, apply artificial respiration and obtain medical help.

In the event of fluorescent lamp breakage, care must be taken in the removal of broken glass fragments and white phosphorus dust that may be dispersed within the fixture. Excessive inhalation of phosphorus dust must be avoided.
Do not use lifting equipment with capacity of less than 7, 500 pounds. Do not allow container to swing back and forth when it is suspended. Failure to observe this warning may result in damage to equipment, or severe injury or death to personnel.

Do not attach hoisting sling to the lifting equipment in such a manner that the angle between any of the hoist lines and the top of the container is less than 45 degrees. Any angle less than *j15* degrees will cause an excessive strain, which could damage the container.

Fork extensions are required for fork lifting the shelter in order to prevent damage to the raceways located on the underside of the shelter.

Do not use fork lift with capacity of less than 7, 500 pounds. Do not allow container to rock excessively on fork lift. Failure to observe this a warning may result in damage to equipment, or severe injury or death to personnel.

Limit skidding of the shelter to short distances over smooth level terrain to prevent damage to shelter skids.

Position shelter with skid base parallel to the longitudinal axis of the carrier to prevent excessive side loads on the skids. Make sure the carrier and restraining methods are capable of supporting a weight of 7, 500 pounds minimum.

Use extreme care in cutting stitches to prevent cutting or other damage to fabric. If fabric is cut or otherwise damaged, apply patch to damaged area as described in paragraph 2-20.

Changes in force: C2, C3, C4, and C5

TM 10-5410-221-24
C5

CHANGE }
NO. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 20 July 1987

Organizational, Direct and General Support Maintenance Manual

SHELTER, EXPANDABLE, RIGID CONSTRUCTION W/AIR-LOCK (ZERO MANUFACTURING CORP MODEL SEU-2) (NSN 5410-00-933-9387)

TM 10-5410-221-24, 14 November 1968, is changed as follows:

Page 5-6, figure 5-2 is superseded as follows.

By Order of the Secretary' of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Unit, Direct and General Support Maintenance Requirements for Shelter, Expandable, Rigid Construction, w/Air Lock Model SEU-2 (TM 10-5410-221 Series)

Changes in force: C2, C3 and C4

CHANGE

HEADQUARTERS

DEPARTMENT OF THE ARMY

NO. 4

WASHINGTON, D.C., 10 February 1987

Organizational, Direct and General Support Maintenance Manual

SHELTER, EXPANDABLE, RIGID CONSTRUCTION W/AIR-LOCK (ZERO MANUFACTURING CORP MODEL SEU-2) (NSN 5410-00-933-9387)

TM 10-5410-221-24, 14 November 1968, is changed as follows:

Page 1-1, paragraph 1-2.b. is superseded by "For other record and report forms applicable to organizational maintenance, refer to DA Pam 738-750".

Page 5-6, bottom of page; "J-28 REC 60 CPS RH WALL" should read "J-28 REC 400 CPS RH WALL"; "J-27 REC 400 CPS RH WALL" should read "J-27 REC 60 CPS WALL"; Figure 1-7, bottom of page; "J28 RECEIPT WALL 120V 60C (DUPLEX)" should read "J28 RECEIPT
WALL 120V 400C (DUPLEX)

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Organizational, Direct and General Support Maintenance requirements for Shelter, Expandable, Rigid Construction, w/Air Lock Model SEU-2

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Changes in force: C 2 and **C 3**

CHANGE } HEADQUARTERS

DEPARTMENT OF THE ARMY

No. 3. WASHINGTON, DC, *11 February 1977*

Organizational, Direct Support and General

Support Maintenance Manual

For

SHELTER, EXPANDABLE, RIGID CONSTRUCTION

W/AIR-LOCK (ZERO MANUFACTURING

CORP MODEL SEU-2)

NSN 5410-00-933-9387

TM 10-5410-221-24, 14 November 1968, is changed as follows:

All references to "7500 pounds'" lifting capacity and weight is changed to, "9000 pounds." *Page* i. Under title, add the following:

"You can help to improve this manual by calling attention to errors and by recommending improvements Your letter, DA Form 202E (Recommended Changes to Publications and Blank Forms) and/or DA Form 2028-2 (Recommended Changes to Equipment Technical Manuals), may be used. Copies of DA Form 2028-2 are attached for your use. Please mail your recommended changes direct to Commander, US Army Troop Support Command, ATTN: DRSTS-MPP, 430 (Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished direct to you."

Page 1-1. Delete paragraph 1-1c.

Page 2-2. Delete figure 2-1.

Page 2-9, paragraph 2-23d. Subparagraph (7) is superseded as follows.

(7) Cure at room temperature for 4 hours, after one day, the tape can be removed and parts handled and fasteners inserted. The adhesive requires 72 hours of curing to develop full strength.

Page 2-12. Paragraph 2-25a (1) is superseded as follows:

(1) Mix equal parts of adhesive and accelerator by volume.

Page 2-40. Figure 2-15 is superseded as follows:

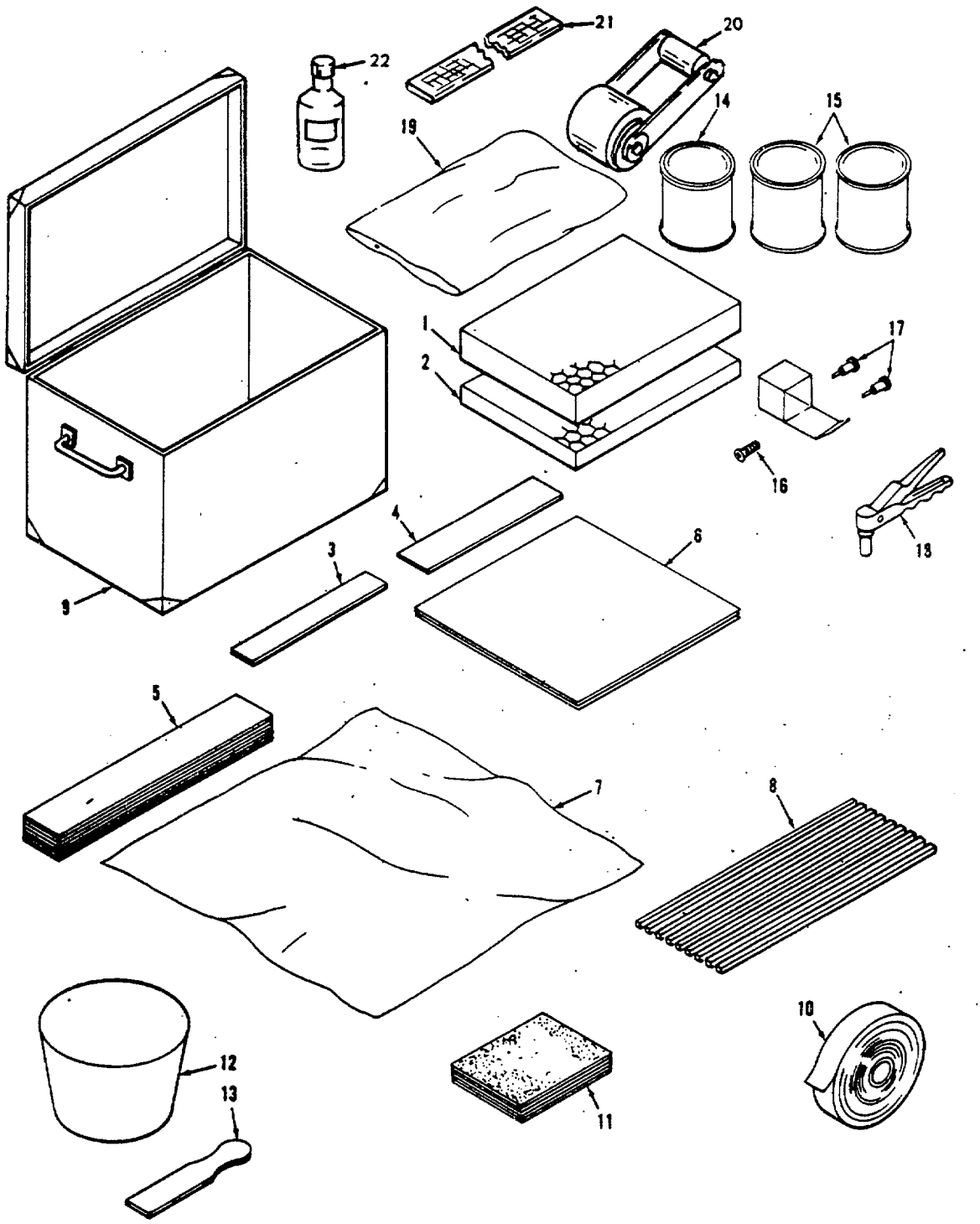


Figure 2-15. Repair kit.

Page 2-41: key to figure 2-15. Add the following :

20 Rubber roller
21 Fabric adhesive
22 Cleaning solvent

Page 2-41: Add the following section including illustrations 2-16 through 2-26.

Section XV. REPAIR PROCEDURE RIGID SHELTERS

2-54. **General**

a. This procedure provides a general guideline for field repair of certain components of the MUST hard shelters, particularly early models. The extent of repair required will vary in each instance and must be determined by inspection. During in spection the shelter should be supported or suitable blocking or be mounted on the mobilizer dolly to permit access. The leveling jacks must not be used. Removal of equipment inside the shelters to accomplish inspection will be at the discretion of the inspector.

b. The procedure is divided into three sections covering repair of jack mounting points on the fixed end panels, corner supports and brackets for the roof posts, and installations of grease fittings on the leveling jacks.

2-55. Jack Mounting, Fixed End

a. General. Visual damage usually shows up in the form of a ruptured wall panel or loose/shifted jack mounting support plate. Hidden defects car be loose threaded inserts behind the jack mounting plate, skin delamination, and water damage to the core material inside the wall.

b. Inspection.

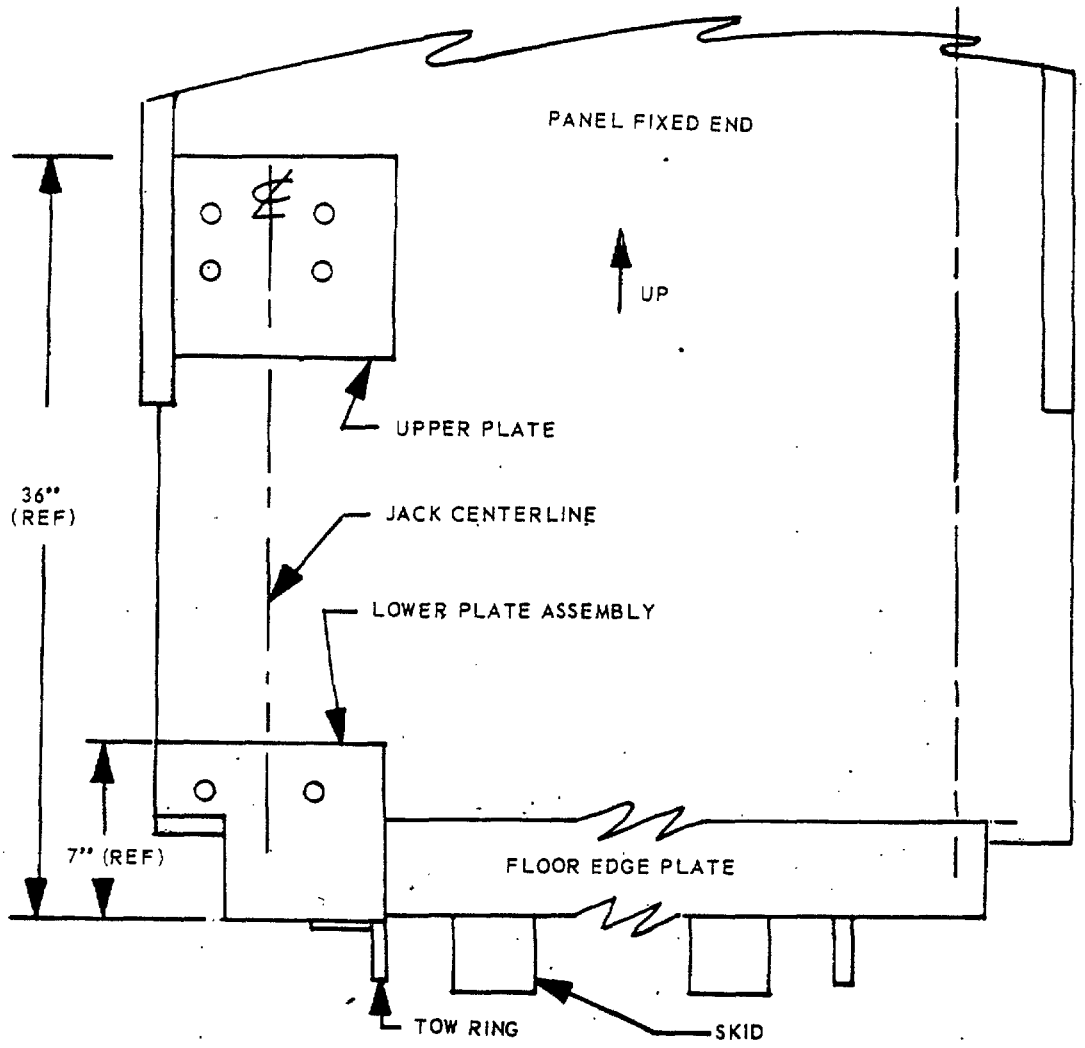
(1) Remove the jack mounting bolts (4 upper and 2 lower) and then lay the jack aside. If the existing support plate on the wall is loose or shifted, remove and discard it. Remove and retain all loose inserts unless they are damaged or stripped. Those inserts which are secure shall not be disturbed. Four jack mountings comprising a total of 24 inserts must be inspected on the fixed end panels. Inserts can be tested for security by screwing a 3/8-24 UNF by 1" long both into the insert. Apply 40 lb. ft. of torque with a torque wrench. If there is no rotation, the insert is satisfactory. If there is movement, remove the insert for later use as described in c below.

(2) Inspect the core material at the damaged jack mounting points. If moisture damage has occurred, the outer panel skin must be cut away with a shears to expose the damage. Do not cut a skin opening larger than.11" x 11" square. If the core material is dry and the outer skin is not extensively damaged, no cutting or core removal is necessary. Reference paragraph c for repair instructions.

c. *Repair Instructions.*

(1) *General.*

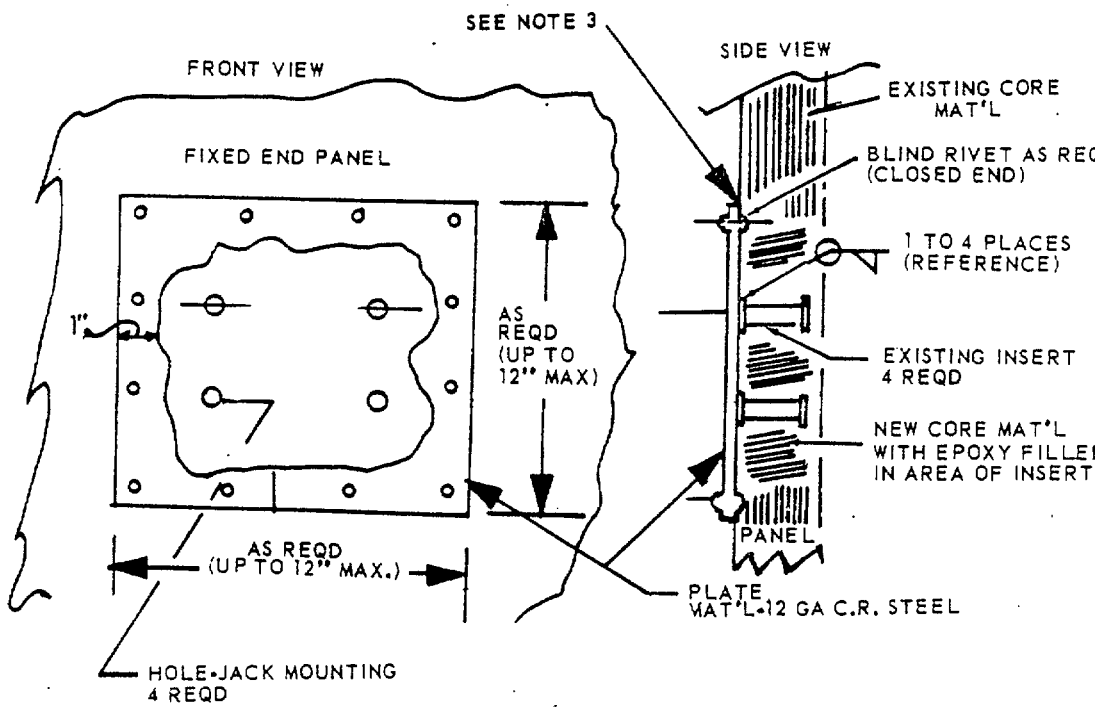
(a) A typical view of the general location of the upper and the lower jack mounting plates are shown in figure 2-16. The size of the upper plate will be determined by the extent of damage involved, but in general should not exceed 12" x 12" in size. Figure 2-17 depicts a typical upper- plate assembly if core material has to be replaced; figure 2-18 of no core material is replaced. A typical lower plate assembly is shown in figure 2-19.



VIEW – TYPICAL, FIXED END, SHOWING APPROXIMATE LOCATION OF EACH TYPE OF REPAIR PLATE FOR SECURING JACK. ALL PLATES CAN BE FABRICATED FOR RIGHT HAND OR LEFT HAND APPLICATION.

ME 5410-221-24/2-16

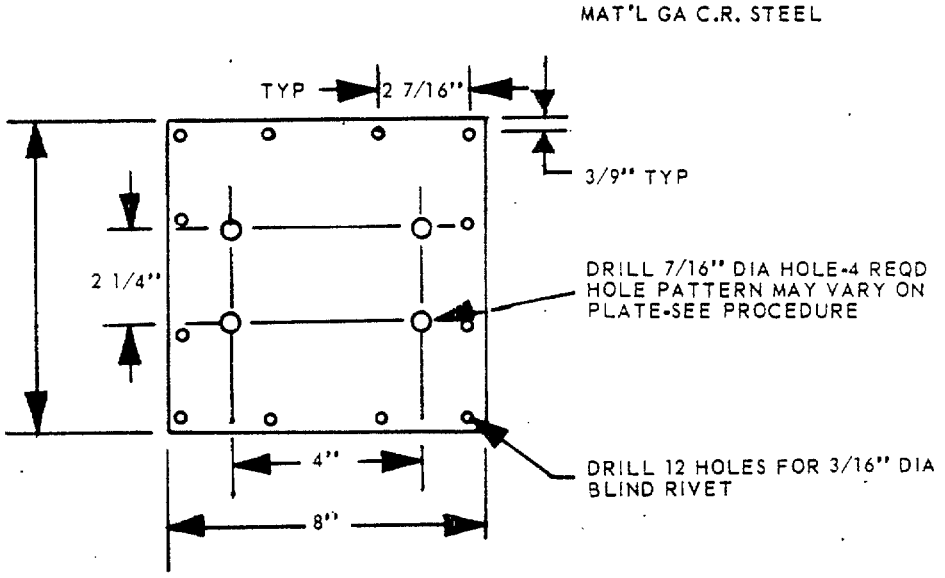
Figure 2-16. Fixed end, typical view.

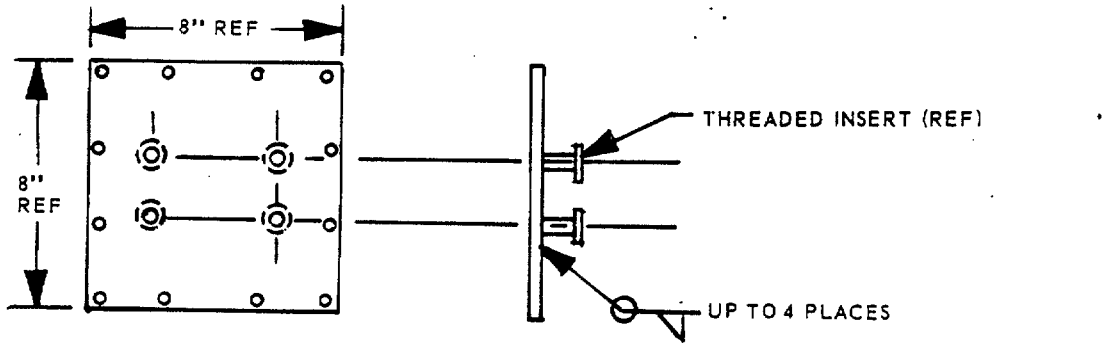


NOTE: 1. FABRICATE PLATE AT LEAST 1 INCH LARGER THAN REPAIR AREA.
2. SEE REPAIR PROCEDURE FOR DETAILS.
3. APPLY A BEAD OF EPOXY BETWEEN PLATE AND PANEL TO FORM A WEATHERPROOF MOISTURE SEAL. APPLY BEAD AT ALL EDGES.

ME 5410-221-24/2-17

Figure 2-17. Upper plate jack mounting.





NOTES:
1. UP TO 4 INSERTS MAY BE WELDED TO PLATE.
2. FOR ADDITIONAL INSTRUCTIONS SEE REPAIR PROCEDURE.

ME 5410-221-24/2-18

Figure 2-18. Upper plate assembly, typical view.

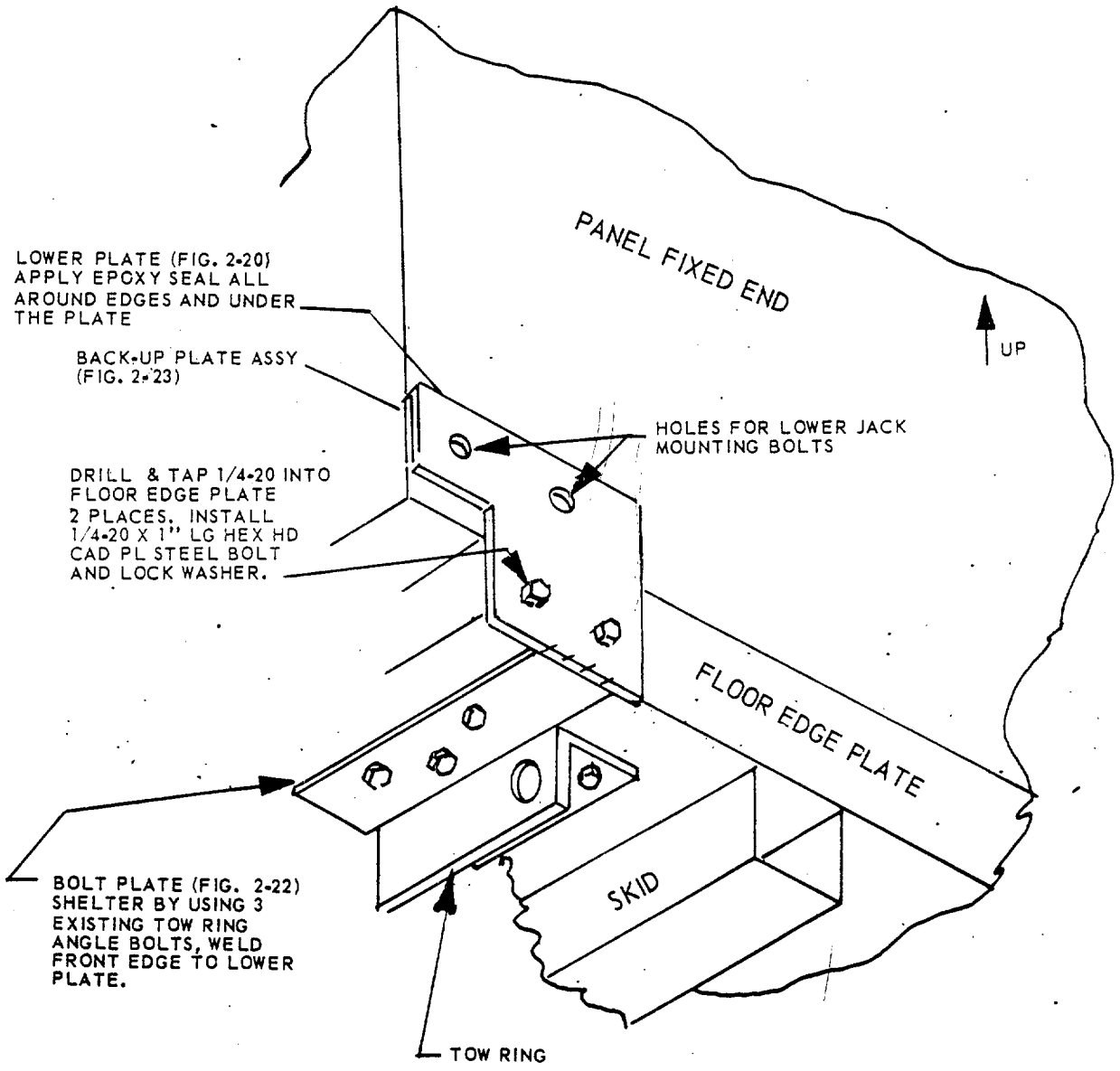


Figure 2-19. Lower plate installation

(b) Loose inserts must be removed and the mounting holes cleaned out. Remove loose epoxy or core material before applying the repair plates.
If core material is soaked or otherwise damaged, must also be removed after cutting an opening the skin (no larger than 11" x 11" opening). Clear out the damaged core material from the opening and permit the area to dry if moisture is present.

(c) Unusable or lost threaded inserts can fabricated from 3/4" round or square steel stock 1V/2" long. Drill and tap through with a 3/24 UNF thread. Inserts will be welded to steel plates as depicted on the illustration.

(d) Before beginning work, be sure to shelter is raised up off the floor, at least 18" permit access under the floor when repairing to lower jack mounting. Do not raise the shelter with the jacks.

(e) Location of hole patterns in the up and lower plates will require the jacks in the operating position. One end of the jack must mounted to properly locate the opposite end.

(2) *Upper plate.*

(a) In case no core material was replaced (or was very small in area) the typical upper plate shown on figure 2-18. Locate the 7/16" diameter jack mounting bolt holes in conjunction with the jack. Bolt the jack to the lower mounting end swing up into position. In the event the low mount is not useable, one end, either the upper lower mount, must be repaired first in order gain a reference point.

(b) Once the 7/16" diameter bolt holes a located, the plate can be bolted to a jack, the inserts screwed on and held in position. Weld the inserts to the plate as shown in figure 2-18. Remove the plate and insert assembly mounting to the end panel as noted in (4) below.

(c) The same procedure would be employ when core material has to be replace, except the size of the plate may be larger.

(3) *Lower plate.*

(a) Lower plate parts are shown on figures 2-20 through 2-23. Assembly detail to the end panel is shown in figures 2-19 and 2-24.

(b) Fabricate the lower and back-up plates as shown on figures 2-20 and 2-21. Drill the 5/16" diameter holes in the lower plate. The 7/16" diameter holes should be drilled later with the jack in position as a guide. Locate, drill, and tap two L/4-20 holes in the floor edge plate (fig. 2-18).

(c) Position the back-up plate and the lower plate and bolt to the floor edge plate. Mount the jack in position at upper mounting. Locate and drill two 7/16" diameter holes through the lower and back-up plates in alignment with existing threaded inserts. Remove the jack and plates. If inserts have been removed from the panel, weld them to the rear of the back-up plate as shown in figure 2-23.

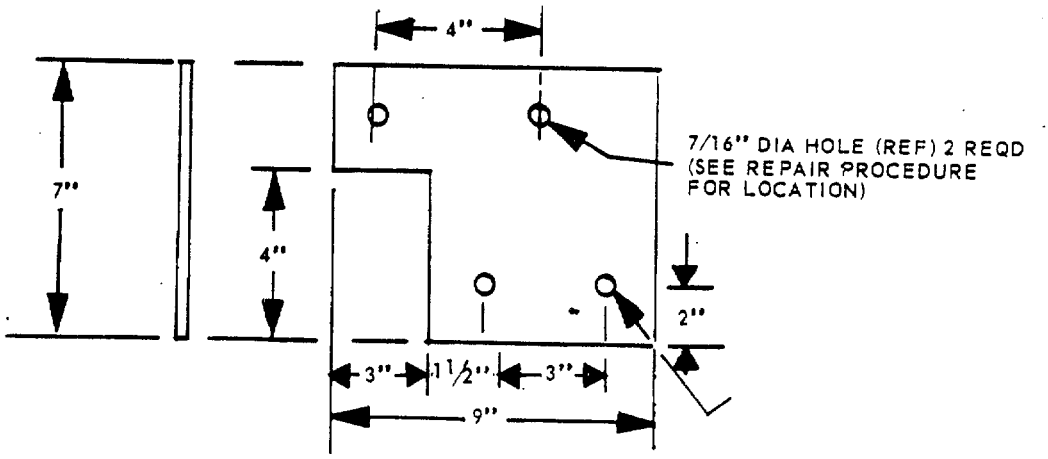
(d) Fabricate the tow ring plate (fig. 2.22). Remove three /4" diameter mounting bolts from 'the tow ring (see fig. 2-18) and locate the. Mating hole pattern on the new plate. Drill three 5/16"' :diameter holes to bolt and plate underneath the floor. The tow ring plate will be welded to the slower plate upon assembly.

(e) The lower place assembly is now ready for assembly to shelter. Repair damaged panel area with new core material, if required, as stated in the following paragraphs.

(4) *Installation of jack mounting plates.*

(a) If the jack mounting area requires replacement of core material, cut new core material to size as required. Locate and cut clearance holes in the core to permit insertion of the threaded inserts.

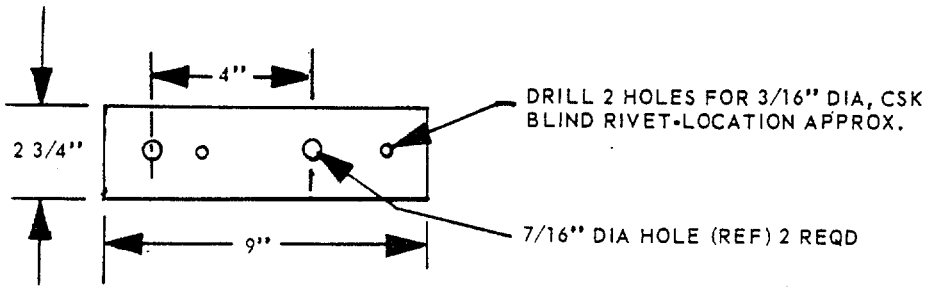
(b) Mix and apply epoxy. Position core material, if required, in place. Fill insert holes with epoxy and over entire .area to be covered by the plate. Install plates in position with jacks making sure epoxy thoroughly covers the interface between the plates and the panel skin or core material. This will insure a water tight fix.



NOTE: 1. LEFT HAND SHOWN, RIGHT HAND OPPOSITE.
2. MAT'L - 7 GA C.R. STEEL

ME 5410-221-24/2-20

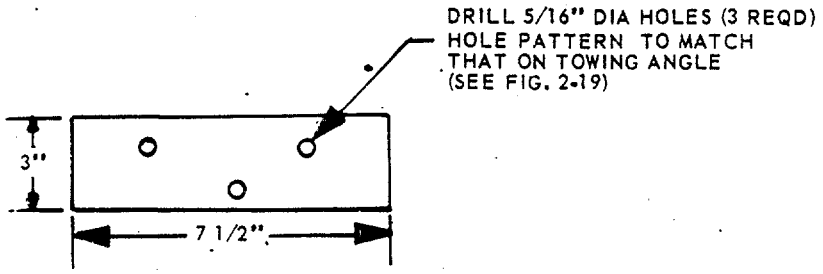
Figure 2-20. Lower plate mounting.



NOTE: 1. FOR RIGHT OR LEFT HAND LOCATION.
2. SEE REPAIR PROCEDURE FOR LOCATING HOLES.
3. MAT'L–12 GA C.R. STEEL

ME 5410-221-24/2-21

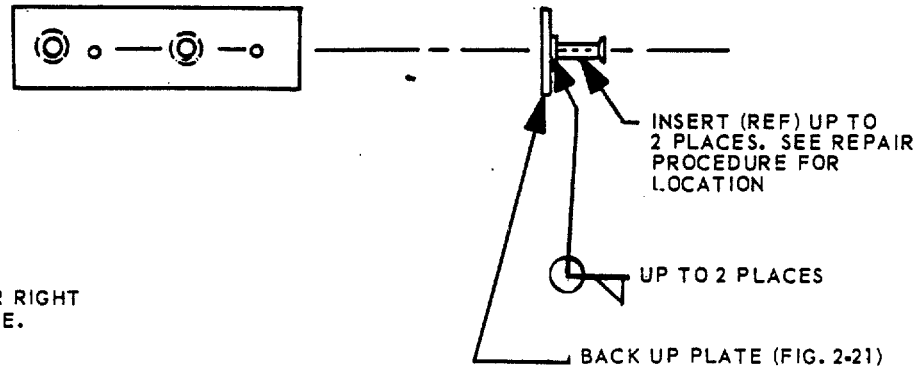
Figure 2-21. Back-up plate.



NOTE: 1. LEFT HAND SHOWN RIGHT HAND OPPOSITE.
2. MAT'L–7GA. C.R. STEEL

ME 5410-221-24/2-22

Figure 2-22. Tow ring plate.



NOTE: LEFT OR RIGHT HAND USE.

ME 5410-221-24/2-23

Figure 2-23. Back-up plate assembly.

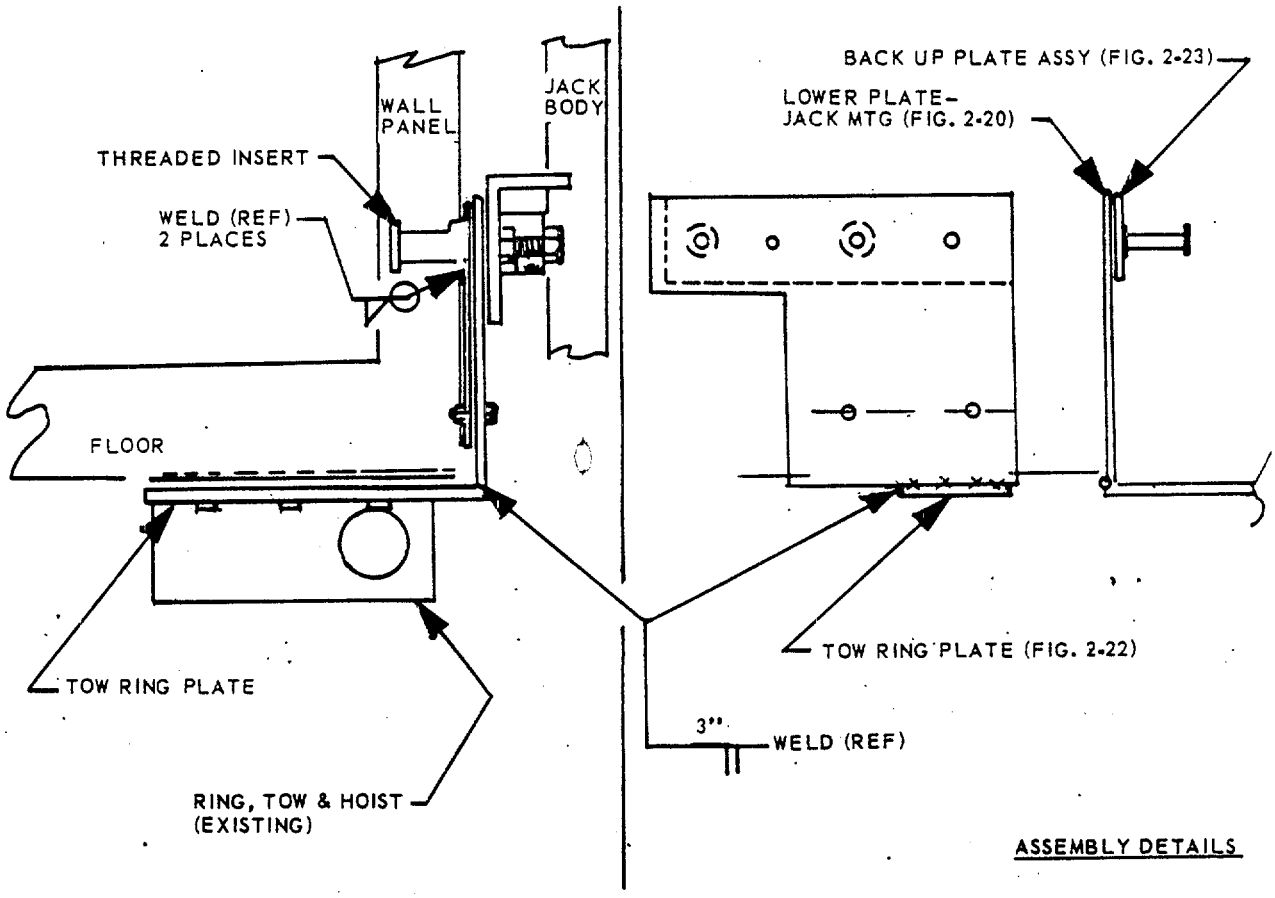


Figure 2-24. Lower plate assembly.

(c) After the plates are epoxied in correct alignment, secure the upper plate with 3/16" diameter closed end blind rivets as shown in figures 17 and 2-18. The lower back-up plate assembly (fig. 2-23) can be held' in position with two countersunk blind rivets to affect a secure bond to the panel.

(d) Bolt lower plate (fig. 2-20) in place. Position tow ring plate and attach underneath the shelter with three existing towing angle bolts. The tow ring, plate must touch the lower plate. Weld the two plates together as shown in figure 2-24.

(e) Allow all epoxied areas to cure for least 72 hours or as stated on the directions. Do not apply a load to jacking points until epoxy has cured.

(5) *Painting.* Paint all exposed, bare metal surfaces. Touch up other areas as required.

2-55. **Corner Support and Bracket**

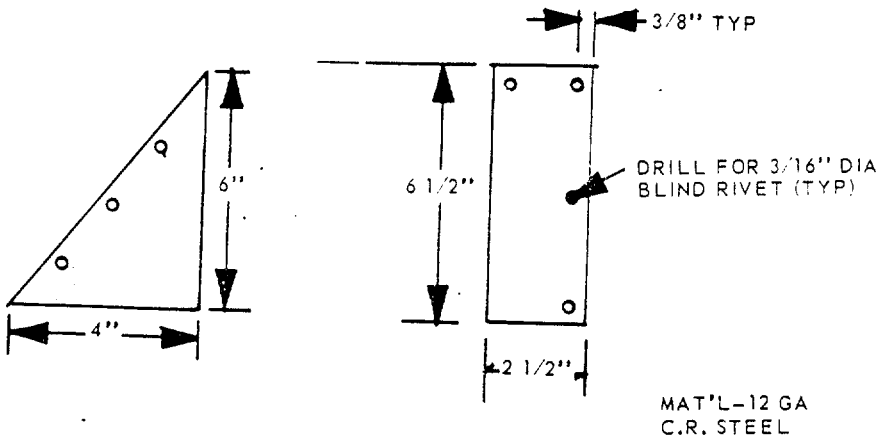
a. General. This section concerns reinforcement of the roof post corner plates and the addition of roof post brackets on the Expandable Shelter. The post brackets provide additional support to the roof posts during transit.

b. Inspection. Examine corner plates for distortion. Missing plates must be replaced or fabricated. If there is no damage to the corner plate, no reinforcing shall be required. The four roof supports are removed and stored inside the shelter during transporting or storage modes.

c. Repair Instructions.

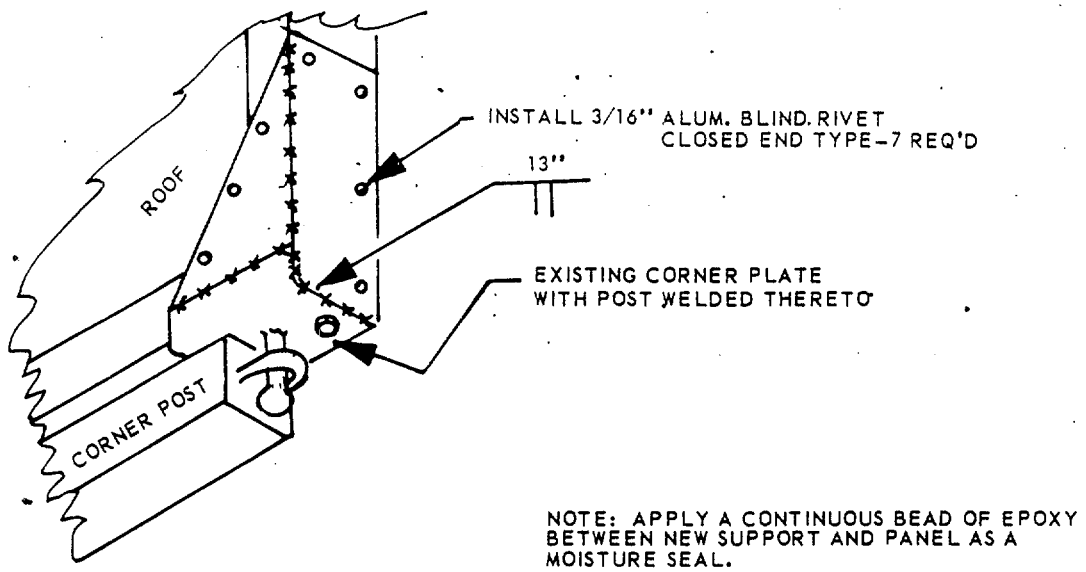
(1) Damaged comer plates must be removed and straightened. Replace the plate before fabricating the corner support details. Clean surfaces to be welded.

(2) Fabricate corner support parts as shown on figure 2:25. The parts can be held in position on the roof corner and tack welded for location. Before final installation, apply a bead of epoxy under the new corner support to seal out moisture. Secure the support with closed end blind rivets.



CORNER SUPPORT PLATES-DETAILS

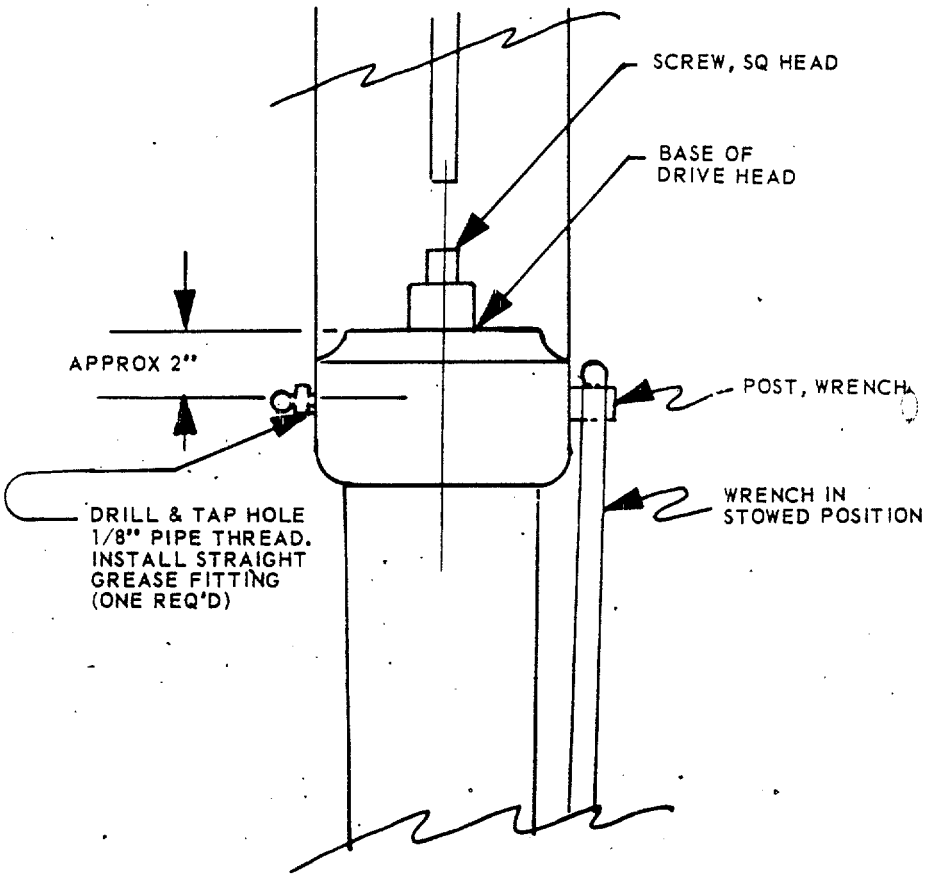
4EA. REQ'D PER SHELTER
RH SHOWN-LH OPPOSITE



NOTE: APPLY A CONTINUOUS BEAD OF EPOXY BETWEEN NEW SUPPORT AND PANEL AS A MOISTURE SEAL.

ME 5410-221-24/2-25

Figure 2-25. Corner support assembly.



ME 5410-221-24/2-26

Figure 2-26. Typical grease fitting installation.

(3) This procedure applies to all four row support assemblies.

(a) Remove pin that holds the roof support assembly to the folding roof. (See figure 2-2 (1 TM 10-5410-221-10.)

(b) Swing support out and down to allow removal of pin, spring, that holds roof support to the folding roof.

(c) Remove the pin, spring, using a punch drive pin and hammer. Support the assembly while removing the pin, spring, so that the roof support does not fall and cause an injury or damage the equipment.

(d) Cut the cable that holds the pin (Item (a) above) to the support assembly. This is accomplished by using diagonal cutting pliers or chisel. Cut the cable close to the welded terminal. Remove any sharp burrs that are present. Reinstall cable near pivot eye end of support.

(e) Use new lock pin, (NSN' 5310-00-017-9228) to hold roof support assembly to the roof when unit is set up in the operational mode (expanded). Attach cable to lock pin; when, installing lock pin, insert straight portion of pin through existing hole in support strut pivot, until it locks in first rounded portion of lock pin.

d. Painting. Paint all exposed bare metal surfaces.

2-56. Jack Lubricating Fitting

a. General. This procedure applies to jacks installed on early production hard shelters. It outlines a general method of installing a grease fitting to those jacks which do not operate properly due to lack of lubrication.

b. Inspection. Operate each leveling jack to check ease of operating. Check for evidence of binding or damage which may affect operation.

c. Corrective Action.

(1) Remove jacks which do not operate freely. Disassemble the jack for examination and cleaning. Lubricate sealed bearing if needed.

(2) Drill and tap a hole as shown on figure 2-26. Remove metal. chips. Install grease fitting. Reassembly jack.

(3) Operate jack to full compressed position. Using a grease gun, insert GAA grease until it seeps out around the base of the square drive head.

(4) Reinstall the jack on the shelter.

By Order of the Secretary of the Army:

BERNARD ;W. ROGERS
Major General,. United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General. United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-25A, organizational Maintenance requirements for Shelter.

☆U.S. GOVERNMENT PRINTING OFFICE1984 0 - 421-302 4734)

Change in force: C 2

Change
No. 2

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DEPARTMENT OF THE ARMY
Washington, D. C., 4 *June 1971*

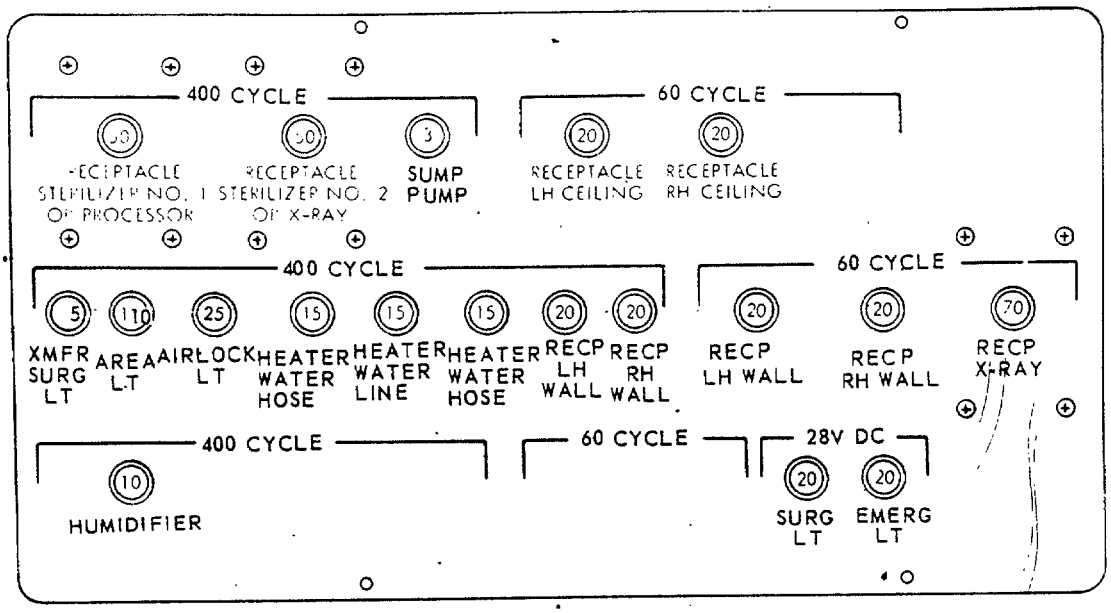
Organizational, Direct and General 'Support/
Maintenance Manual
SHELTER, EXPANDABLE, RIGID CONSTRUCTION, W/AIRLOCK
(ZERO MANUFACTURING CORP. MODEL SEU-2)
FSN 5410-933-9387

TM 10-5410-221-24, 14 November 1968, is changed as follows:.

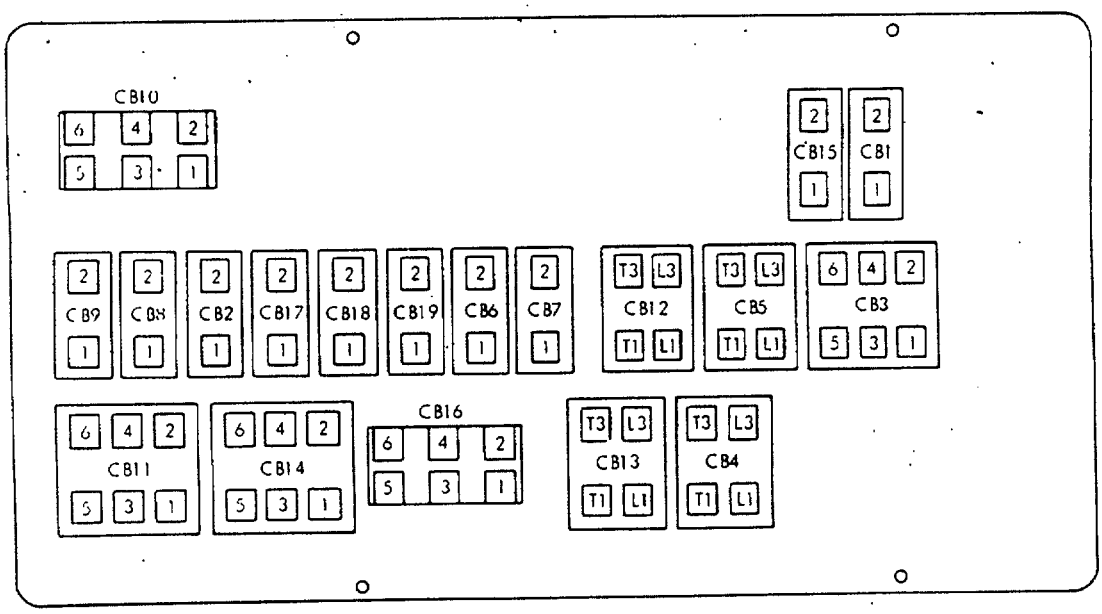
Page 1-9. Paragraph *1-4b* (9) *(a). Change part Nos. "889140-3 or 889140-1 "to read* "889140-6".to read *Paragraph 1-4b* (9) (c). Change part No. "697193-3" "697193-9".

***This change supersedes C 1, 26 August 1970.**

Page 1-11. Figure 1-6 (sheet 2 of 2) is superseded as follows:



FRONT VIEW OF CIRCUIT BREAKER PANEL



REAR VIEW OF CIRCUIT BREAKER PANEL (ROTATED 180°)

ME 5410-221-24/1-6 (2) C2

Figure 1-6. Power distribution panel assembly (sheet 2 of 2).

Page 2-1, Table 2-1 as changed by C 1, *Reference column,* delete figure 2-4, in two places and change paragraph 2-21c to read 2-22c, in two places.

Page 3-1, Paragraph 3-2b. Rescind by C1.

Page 3-2, Figure 3-1 as changed by C 1, Delete "FORK HERE", in two places.

Page 6-59. Refer to paragraph 6-36*a* , line 6, and change "5" to read "25".

Page 9-2. Paragraph 9-5*b* (3) through (18) superseded as follows:

(3) Remove nuts (15 and 16), packing (17), elbow (18), and disconnect cold water supply tube assembly (22) from union (20). Remove union (20). Disconnect supply tube (22) and cold water inlet tube assembly (24) from tee (23). Remove cold water supply tub assembly (22) and tee (23) from water box.

(4) Disconnect cold water inlet tube assembly (24) from tee (25) and remove potting compound from around cold water inlet tube (24) where it enter shelter and remove cold water inlet tube (24) from water box. Remove cap assemblies (26) from tee (25).

(5) Remove nut (29), and packing (28) from elbow (29). Disconnect hot water supply tube (30) from elbow (29) and tee (31). Remove elbow (29) and hot water supply tube (30) from water box. Disconnect hot water inlet tube assembly (32) from tee (31 and remove potting compound from around hot water inlet tube assembly (32) where it enters shelter and remove from water box.

(6) Loosen nuts (33 and 37), from drain union (35) and remove packing (38) and drain union (35 from mounting bracket and drain manifold (45).

(7) Remove union (39), and packing (40) from drain manifold ((45). Loosen nut (42) and remove union (43) and packing (41) and packing (44) from lower drain manifold (45) and upper drain manifold (50).

(8) Remove union (46) and packing (47) from upper drain manifold (50) by disconnecting drain tube assembly (54). Remove union (48) and packing (49) from upper drain manifold (50). Separate washer drain coupling (51) from union (48). Remove plug (53) and packing (52).

(9) Disconnect drain tube assembly (54) from check valve (6, fig. 2-14). Disconnect pump outlet drain tube assembly (55, fig. 9-1)) from check valve and pump. Disconnect pump inlet tube assembly (56) from tee (57) and pump inlet. Remove potting compound from around pump inlet drain tube assembly (56) where it enters shelter and remove pump inlet drain tube assembly (56) from shelter water box.

(10) Disconnect humidifier overboard drain tube assembly (58) from tee (25) and remove potting compound from around tube where it enters shelter. Remove the shelter water box.

(11) Disconnect sump vent tube assembly (59) from union (60) and tee (25). Remove union (60) and packing (61) from drain sump.

(12) Remove bolts (62), washers (63) and remove clamps (64). Disconnect vacuum tube assembly (65) from vacuum nipple and cap assembly (76) and remove tube assembly (65) from shelter water tunnel.

NOTE

Access to shelter water tunnel is made by jacking up shelter and removing the water tunnel covers. (para 10-14*c*).

(13) Remove nut (66), washer (67), and bolt (68), remove clamp (69) from hot water tube assembly (72). Remove bolt (70) and bracket (71) and disconnect hot water tube assembly (72) from hot water union (85).

(14) Disconnect cold water tube assembly (73) from cold water union (85) and remove from shelter water tunnel.

(15) Remove clamp (74) from drain tube assembly (75) and disconnect drain tube assembly (75) from drain union (82) and remove tube assembly from shelter water tunnel.

(16) Remove nuts (77 and 78) from vacuum nipple and cap assembly (76) and remove from shelter water outlet box.

(17) Remove nuts (79) from hot and cold water unions (85) and remove from shelter water outlet box with washers.

(18) Remove nut (80) and remove drain union (82) from water outlet box with washers.

Page 9-3. Paragraph 9-5d (3) is rescinded.

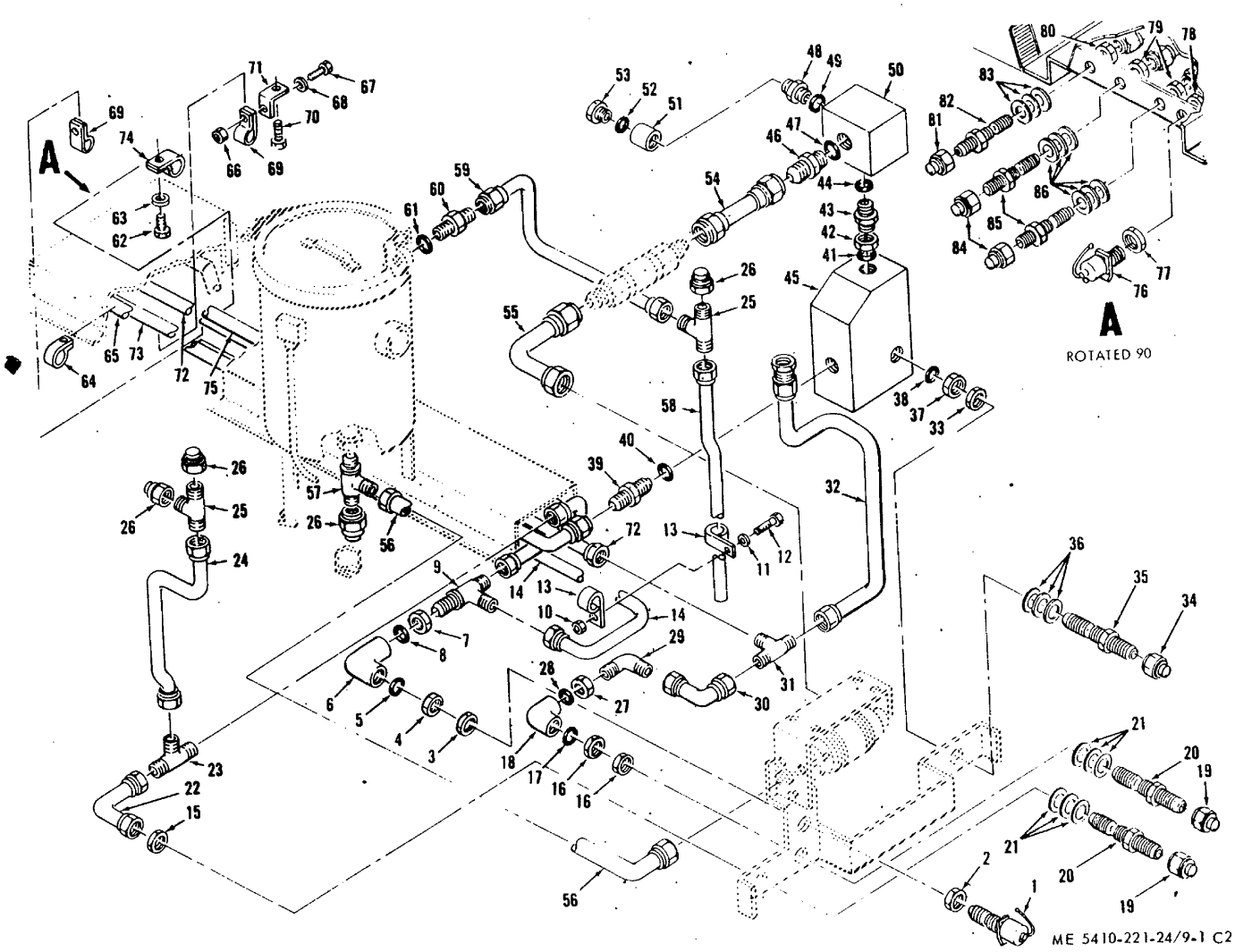


Figure 9-1. Plumbing system, installation and assembly.

1 Vacuum nipple and cap assembly
2 Nut
3 Nut
4 Nut
5 Packing O-ring
6 Elbow
7 Nut
8 Packing O-ring
9 Tee
10 Nut
11 Washer
12 Bolt
13 Clamp
14 Vacuum supply tube assembly
15 Nut
16 Nut
17 Packing 0-ring
18 Elbow
19 Cap
20 Union
21 Washer
22 Cold water supply tube assembly
23 Tee
24 Cold water inlet tube assembly
25 Tee
26 Cap assembly
27 Nut
28 Packing 0-rink
29 Elbow
30 Hot water supply tube
31 Tee
32 Hot water inlet tube assembly
33 Nut
34 Cap
35 Union
36 Washer
37 Nut
38 Packing O-ring
39 Union
40 Packing O-ring
41 Packing O-ring
42 Nut
43 Union
44 Packing O-ring
.45 Lower drain manifold
46 Union
47 Packing O-ring
48 Union
49 Packing O-ring
50 Upper drain manifold
51 Washer drain coupling
52 Packing O-ring
53 Plug
54 Drain tube assembly
55 Pump outlet drain tube assembly
56 Pump inlet drain tube assembly
57 Tee, bulkhead
58 Humidifier overboard drain tube assy
59 Sump vent tube assembly
60 Union
61 Packing O-ring
62 Bolt (6)
63 Washer (6)
64 Clamp (3)
65 Vacuum tube assembly
66 Nut (6)
67 Washer (6).
68 Bolt (6)
69 Clamp (6)
70 Bolt (6)
71 Bracket (6)
72 Hot water tube assembly
73 Cold water tube assembly
74 Clamp (3)
75 Drain tube assembly
76 Vacuum nipple and cap assembly
77 Nut
78 Nut
79 Nut
80 Nut
81 Cap
82 Union
83 Washer
84 Cap
85 Union
86 Washer

Page 9-6. Paragraph 9-7b (1). In line 2, delete "Quick disconnect".
In line 3 change "coupling" to read "union" and "19" to read "20".
Paragraph 9-7d, *In line 4, change "coupling .assembly" to read "unions "and "19 " to read "20".*
In line 5, change "outlet coupling" to read "unions" and "(76)" to read "(85)."
Paragraph 9-8b (1). In lines 1 and 2, change "quick disconnect type connector" to read "union".
In *d*, line 3, change "coupling" to read "union" and "32" to read "35".
Line 4, change "coupling assembly" to read "union" and "(78)" to read "(82)".

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Stiff.

Official:

VERNE L.. BOWERS,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-25, Sec I (qty rqr Block #278), Organizational maintenance requirements for Equipment: Tents.

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DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *14 November 1968*

ORGANIZATIONAL, DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL
SH'ELT, ER, EXPANDABLE, RIGID CONSTRUCTION W/AIR-LOCK
(ZERO MANUFACTURING CORP MODEL SEU-2)
FSN 5410-933-9387

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. These instructions are published for us by personnel to whom the expandable shelter is issued. Chapters 1 through 2 provide information for organizational maintenance of equipment, accessories, components and attachments. Chapters 4 through 10 provide information for direct and general support maintenance. Also included are descriptions of main units and their functions in relationship t other components.

b. Numbers in parenthesis following nomenclature callouts on illustrations indicate, quantity; numbers preceding nomenclature callouts indicate preferred sequence.

c. Report of errors, omissions and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on a DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, U.S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

1-2. (Record and Report Forms

a. DA Form 2258 (Depreservation Guide for Vehicles and Equipment).

b. For other record and report forms applicable to organizational maintenance, refer to TM 38-750.

Note. Applicable forms, excluding Standard Form 46 (United States Government Motor Vehicles Operators Identification Card) which is carried by the operator, shall be kept in a canvas bag mounted on equipment.

Section II. DESCRIPTION AND TABULATED DATA

1-3. Description

a. General. The expendable shelter is a element of the Medical Unit Self Contained Transportable and provides an environment controlled shelter for surgeries, laboratories pharmacies, central material supplies, X-ray facilities, or other similar uses (fig. 1-1 and 1-2). The shelter is an expandable structure constructed of aluminum-faced foam filled honeycomb panels. The shelter is supported by a central skid base, and is equipped wit built-in leveling jacks. The basic shelter includes imbedded inserts for the mounting of medical equipment such as surgical light intravenous (I.V.) brackets, scrub sinks, sponge racks, X-ray illuminators, a chart holder, etc, when used as an operating room or central material supply (CMS). The shelter has provisions for the attachment of such optional equipment as a humidifier and 24 volt dc power supply for surgical lights. An airlock chamber secured to the shelter over the door provides an entry and exit vestibule to restrict entry of drafts, dust, etc, into the expandable shelter. An electrical system provides for distribution of 120-240 volts, 60 Hertz and 120/208 volts, 400 Hertz power within the shelter. A conditioned air duct provides passage for conditioned air from an

external source to the shelter through openings in the roof. A repair kit containing to and materials for minor repairs is provided for expandable shelter. A hot and cold water system and vacuum line are provided for convenience.

b. Air-Lock Chamber. The air-lock champ is constructed of heavy duty coated fabric supported on a tubing frame. A double door assembly with 12 inch diameter windows provide entry into the chamber. A zipper provides for connection of the chamber to the shelter air-lock adapter. The air-lock chamber is cured in place with guy line ropes to tent pi and arrowhead anchors. A light assembly installed in the top of the chamber provides chamber illumination, when connected to the shelter electrical system. An air-lock chamber adapter is provided for attaching the air-lock chamber to the shelter.

c. Electrical System. The electrical system consists of power input panel, power output panel, electrical cable assemblies, electrical convenience receptacles, light switches and fluorescent light assemblies (fig. 1-3 and 1-7).

(1) *Power input panel.* The power input panel is recessed on the lower outside of the front, center section wall. The power input receptacles for 120/208 volts, 400 Hz, and 120-240 volts, 60 Hz power. Additional receptacles provide for air-lock light, water line heater, remote temperature-sensor, and telephone communications input (fig. 1-4).

(2) *Power output panel.* The power output panel is mounted on the rear, center-section wall, adjacent to the, shelter access door. The power output panel provides output receptacles for 120/208 volts, 400 Hz power, 120-240 volts, 60 Hz power air-lock light, and surgical-light power-supply (fig. 1-5).

(3) *Power distribution panel.* The power distribution panel is located above the access door on the inside of the rear, center-section wall. The panel contains all of the circuit breakers with a hinged door for access. Three toggle switches are provided to operate the 28 volt dc ceiling mounted surgery lights when used. The left end of the power panel includes a means for attaching and electrically connecting a humidistat from the humidifier system, when used. The right end of the power panel includes a means for attaching and electrically connecting a thermostat from the temperature control system, when used. Two connectors are provided for supplying 120/208 volts, 400 Hz power for sterilizer cabinets, when used; and one connector for supplying 120-240 volts, 60 Hz power for an X-ray machine, when used (fig. 1-6).

(4) *Electrical cable assemblies.* The electrical assemblies consist of 120/208 volt, 400 Hz input cable assembly, and a 120-240 volt, 60 Hz input cable assembly. The input cable assemblies are heavy duty, weather-proofed cables used to connect the power source to the power input panel or interconnection with another expandable shelter.

(5) *Electrical convenience receptacles.* The convenience receptacles consist of twelve duplex outlets, located at intervals along the left and right walls, and on the left and right sides of the ceiling, providing 120 volt, 60 Hz and 400 Hz electrical power.

(6) *Fluorescent light assemblies.* Two fluorescent light assemblies are provided in the center section ceiling, and two light assemblies in each of the foldout sections. The light assemblies are flush-mounting, replaceable type, housing one 80-watt square fluorescent lamp panel. The interconnecting wiring for the lights are contained in raceways that are separate from other wiring for radio noise filtering purposes. A flexible shielded insulated cable is provided for connecting the fold out ceiling lights across the hinge line.

(7) *Air-lock lighting.* The air lock light/ cable assembly is a rugged, weatherproof type of fixture, accepting a standard-base 50 watt, incandescent lamp. The light operates on 120 volt, 400 Hz power and is connected directly either to the power input or power output panel.

d. Vacuum *System.* The vacuum system consists of two quick disconnect fittings located at the water service input and output panels, and a vacuum line terminating with a flared tube and fitting inside the shelter. A flexible vacuum hose is provided with each shelter for connection between the vacuum source and the

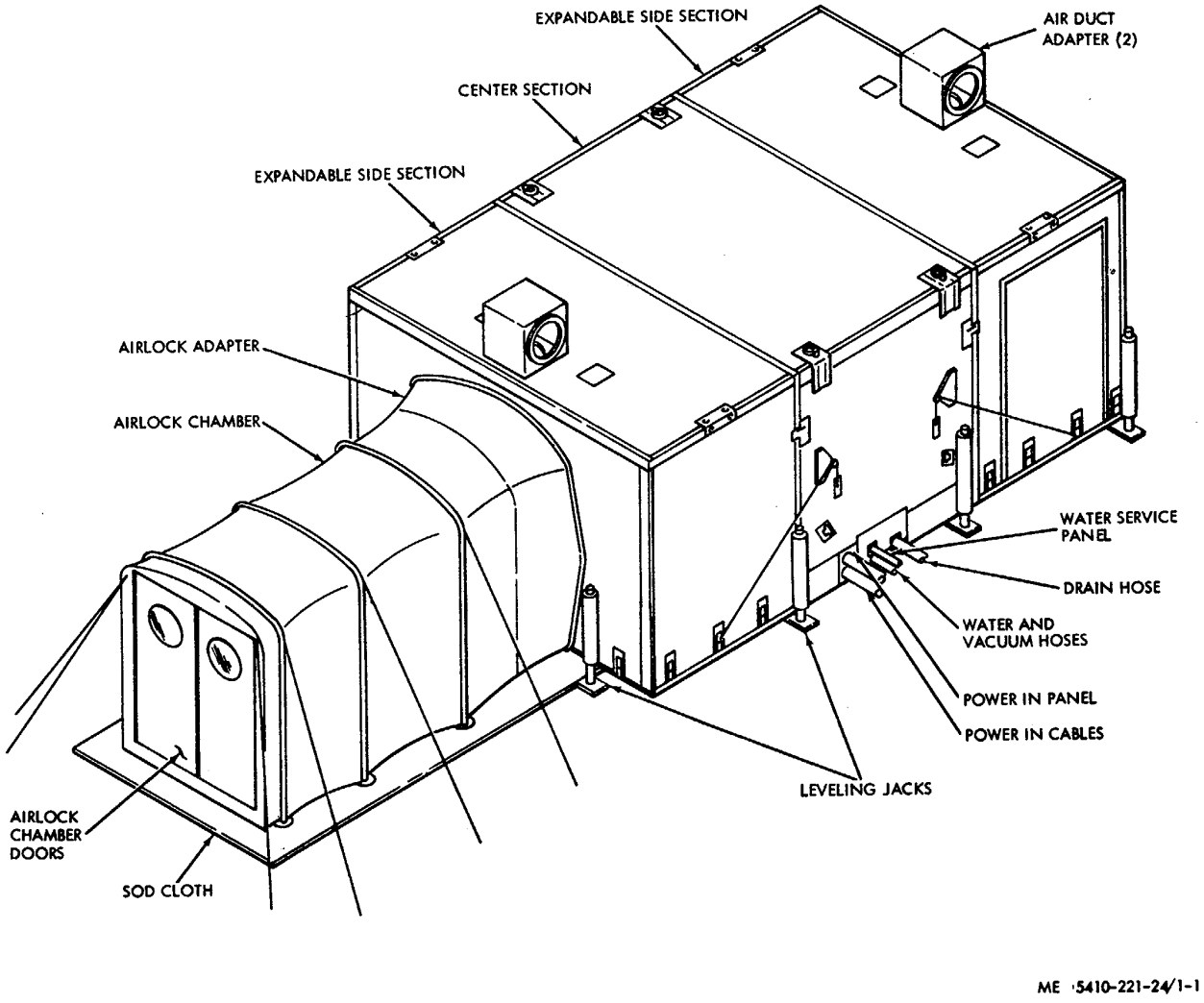


Figure 1-1. Expandable shelter.

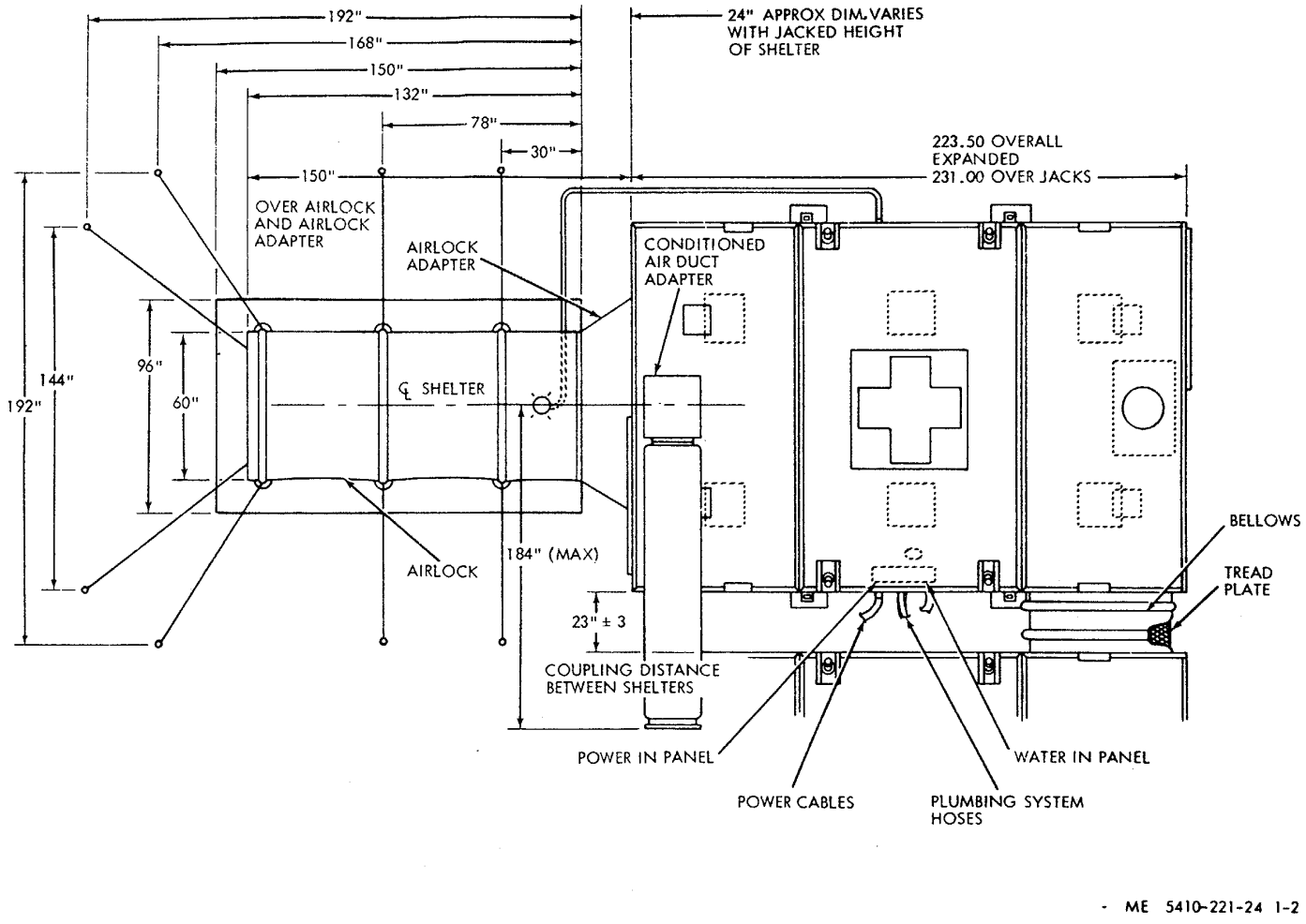


Figure 1-2. Plan view of expandable shelter.

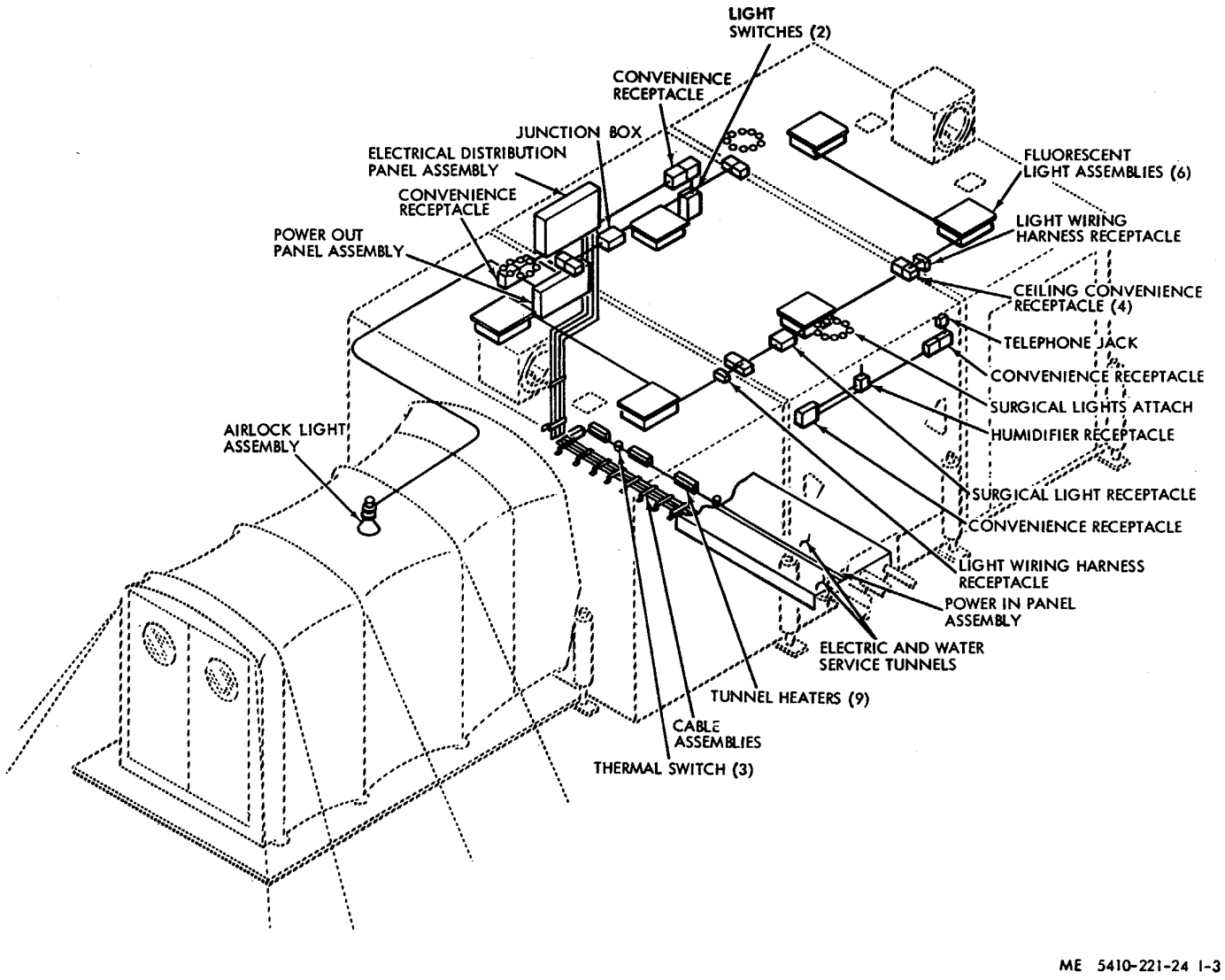


Figure 1-3. Expandable shelter electrical system.

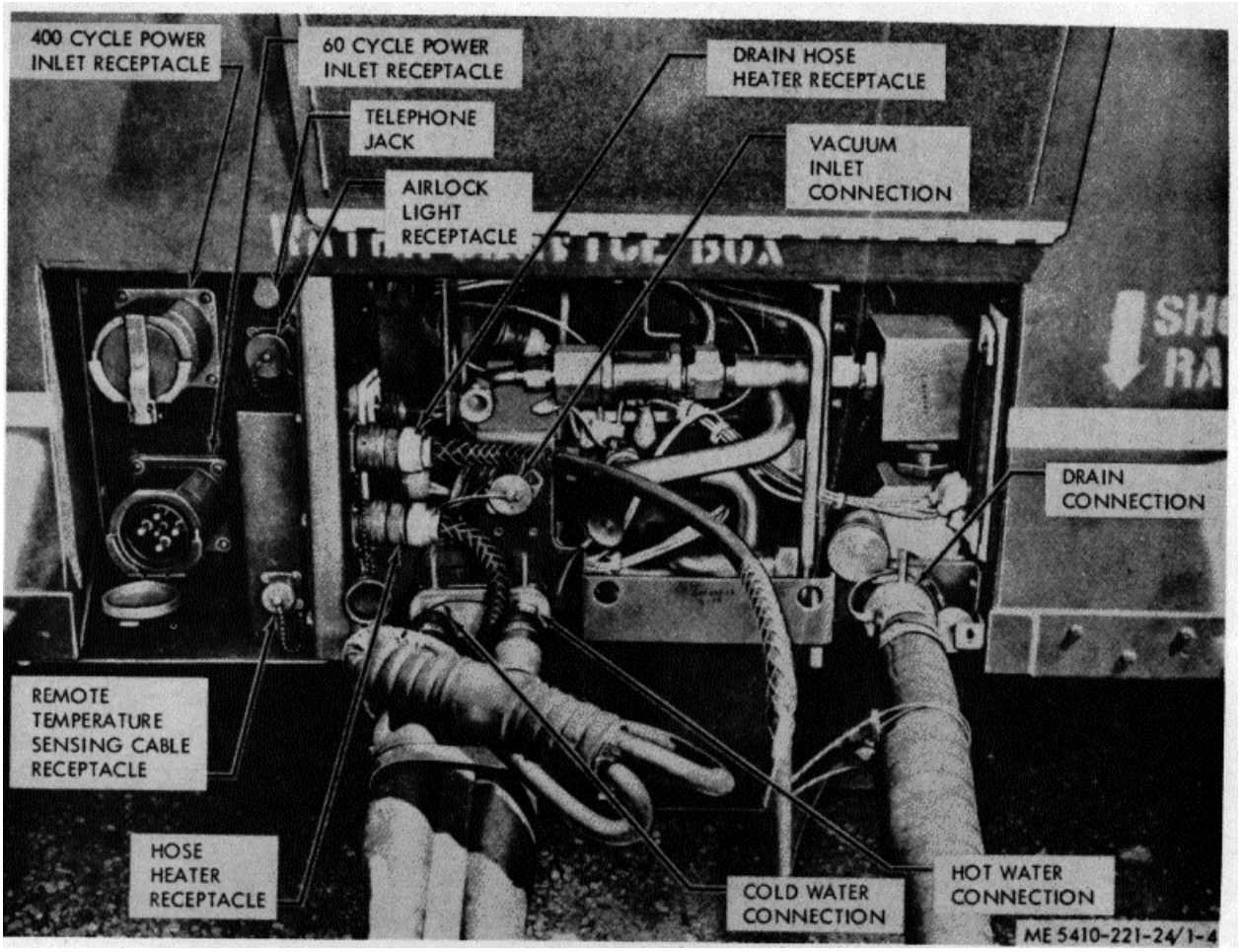


Figure 1-4. Power input panel and water service box.

water service input panel, or to another expandable shelter (fig. 1-8 and 1-9).

e. Hot and Cold Water System. Hot and cold water inlet connections, a drain (waste) water outlet connection, and an attached sump are provided inside the shelter for connection to a sink. The water service input box is recessed at the bottom front side of the shelter containing hot and cold water quick disconnect fittings, drain connection, and a vacuum connection. A water output panel is located at the bottom rear of the shelter for interconnecting with an adjacent shelter. The water box and tunnel housing the plumbing lines and fittings is insulated and equipped with thermostatically controlled heaters to prevent plumbing freeze-up during environmental extremes. A dual heated or unheated hot and cold water hose, and a drain hose is provided with each shelter for connection to the water source or to another expandable shelter (fig. 1-4, 1-8, 1-9, and 1-10).

f. Conditioned Air Duct. The conditioned air duct is fabricated from two layers of cloth separated by one-half inch of polyethylene insulating foam and reinforced with wire. The duct is installed between a conditioned air source and the expandable shelter roof duct adapter to provide inlet or return air passage for the shelter. Metal flanges at each end of the duct provide for connection by clamping to the shelter and air source or additional ducts may be joined together if required. Tie down tabs are located at four foot intervals

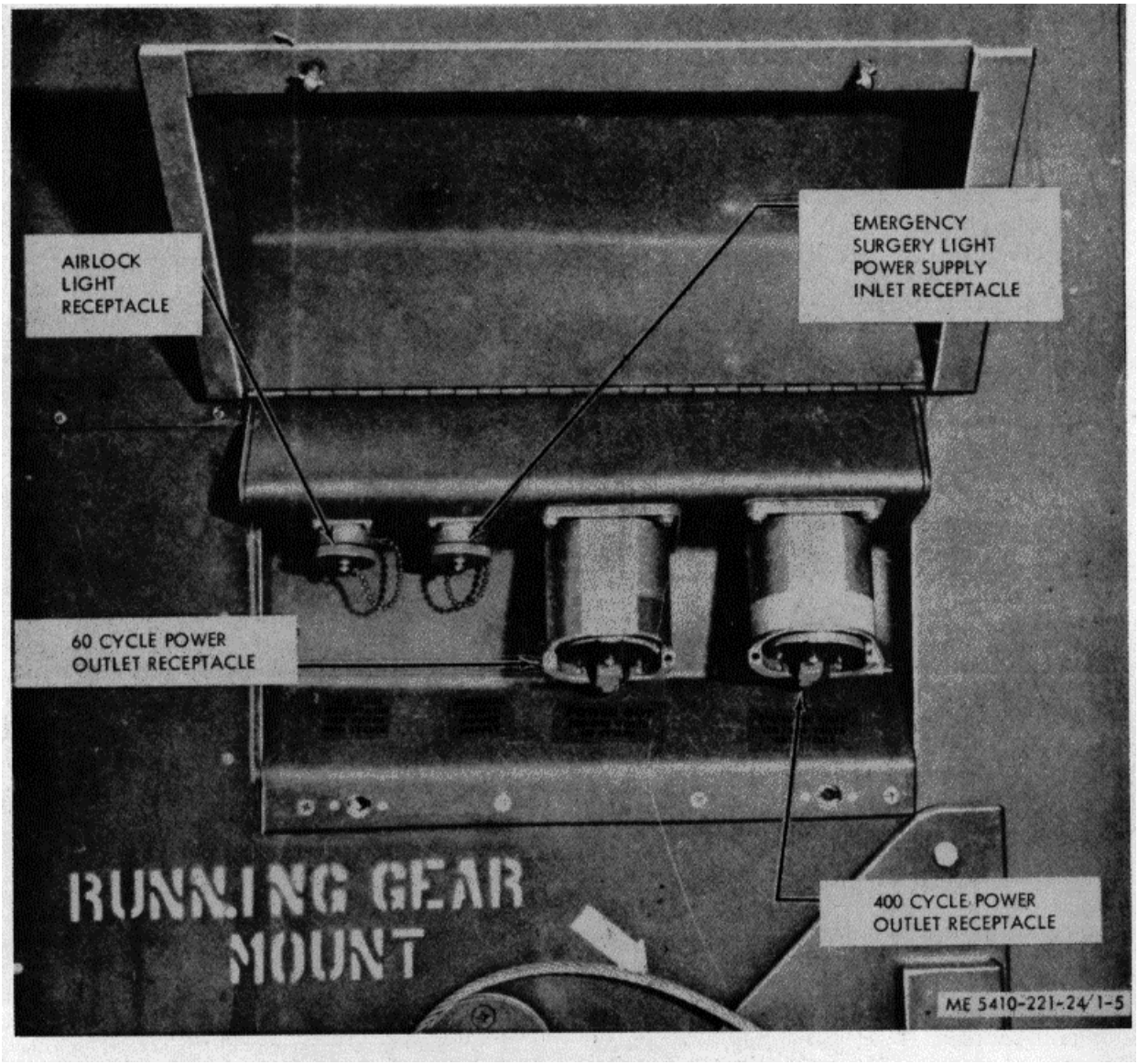


Figure 1-5. Power output panel assembly.

along the duct for use in positioning and securing the duct.

g. Leveling Jacks. Manually operated, adjustable screw type jacks are provided on the shelter center section and folding floor panel assemblies to allow for vertical adjustment to compensate for irregular terrain.

h. Bellows. Bellows are provided with each shelter to interconnect two shelters. The bellows is fabricated of two neoprene coated dacron layers separated by a layer of foam. Each layer of the dacron fabric is coated with hypalon on the outside surface. The bellows includes an adjustable nonskid tread plate which serves as a walkway between connected shelters.

i. Repair Kit. The expandable shelter repair kit consists of assorted sizes of seal rubber, hand riveter, nose piece, rivets, foam paper core, phenolic, flooring, facing, and

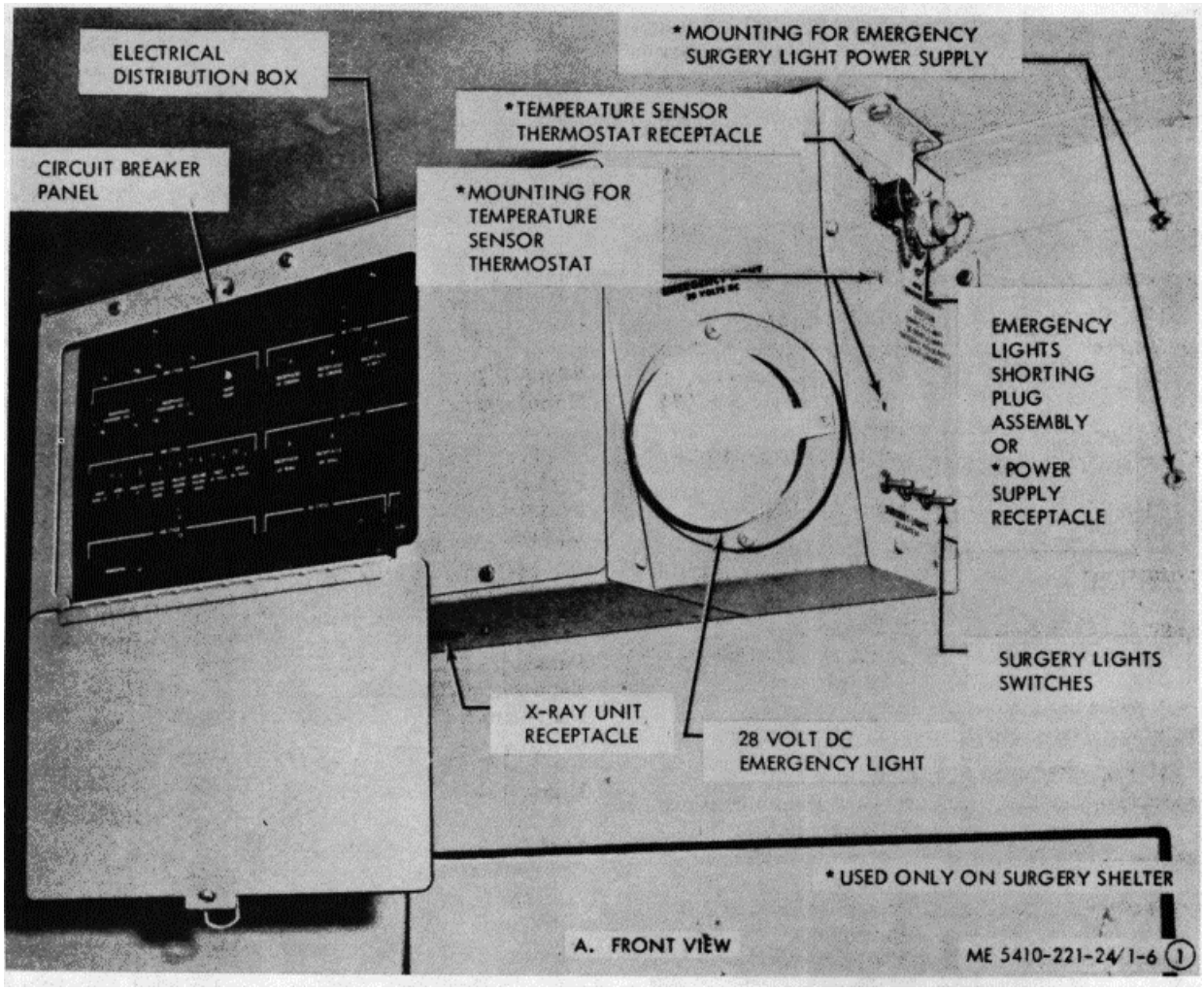


Figure 1-6. Power distribution panel assembly (sheet 1 of 2)

nylar tapes, emery cloth, adhesive, and mixing cups and paddles. A box assembly is provided for storage of the repair kit components.

1-4. Identification and Tabulated Data

a. Identification. The expandable shelter is identified as Part No. 380656-1, Model No. SEU-2. An identification nameplate is attached to the shelter center section. Individual parts of the expandable shelter are identified by their part number which is stenciled on the part.

b. *Tabulated Data.*

(1) *Expandable shelter.*

Manufacturer ---------- Zero Manufacturing Co. Burbank, California
Part No. 380656-1
Model No. ---------- SEU-2

(2) *Bellows adapter.*

Manufacturer ---------- Aero Leather Products Los Angeles, California
Part No. ---------- 1-661129
Type ---------- Fabric with foam insulation

(3) *Air-lock adapter.*

Manufacturer ---------- Aero Leather Products Los Angeles, California
Part No. ---------- 1-661130
Type ---------- Fabric

(4) *Air-lock chamber.*

Manufacturer ---------- Aircruisers Div., Garrett Corp. Balmar, New Jersey
Part No. ---------- 380301-1-1

Model No.---------- CAL-1
Type---------- Rigid frame, fabric covered
Fasteners---------- Guy line ropes and zipper

(5) *Conditioned air duet.*

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No. ---------- 697941-3
Type---------- Wire reinforced, insulated fabric
Fasteners---------- Clamp and tie down tab

(6) *Conditioned air duct adapter.*

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No. ---------- 69702-1
Type---------- Insulated fabric with wire stiffeners
Fasteners---------- Clamps and flange

(7) *Electrical system.*

Manufacturer---------- Zero Manufacturing Co. Burbank, California
Voltage and frequency------ 120/249 volts AC, 60 Hertz 120/208 volts AC, 400 Hertz
Circuit protection---------- Circuit breakers
Light assemblies---------- Six 80-watt fluorescent

(8) *Plumbing system.*

Manufacturer---------- Zero Manufacturing Co. Burbank, California
Type---------- Hot and cold water, vacuum
Flow (water)---------- 1GPM (min) hot, 3GPM (min) cold
Suction (vacuum)---------- 3 SCFM (max), 18-20 In. Hg

(9) *Hose and cable assemblies.*

(a) Dual hose, hot and cold water.

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No. ---------- 889140-3 or 889140-1
Length---------- 6.5 feet

(b) Hose-vacuum.

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034'
Part No. ---------- 697191-1
Length---------- 6 feet

(c) *Drain hose.*

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No. ---------- 697193-3
Length---------- 6.5 feet

(d) Power cable, 60 Hertz.

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No.---------- 697124-1
Length ---------- 25 feet

(e) Power cable, 400 Hertz.

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85034
Part No.---------- 697125-1
Length ---------- 25 feet

(f) Air-lock electric light and cable assembly.

Manufacturer---------- Garrett Corp. AiResearch Mfg. Co. of Arizona Phoenix, Arizona 85084
Part No.---------- 694400-1
Length ---------- 25 feet
Light type---------- 50 watt, incandescent

(10) *Air distribution plenum.*

Manufacturer---------- Zero Manufacturing Co. Burbank, California
Part No.---------- 889276-1
Type---------- Fabric and metal
Fasteners ---------- Metal hooks

(11) *Repair kit.*

Manufacturer---------- Zero Manufacturing Co. Burbank, California
Part No.---------- 889351-1
Components---------- Box assembly, kit
Core, 1.92 and 2.90 inch thick
Phenonlic, 12 x 2 and 12 x 3 inches (2)
Facing, 15 x 15 inches (3)
Facing, 3 x 18 inches (8)
Flooring, 2 ft'
Seals (6)
Seal (polyurethane tape)
Seal (neoprene)
Seal (silicone)
Tape, mular
Cloth, emery (6)
Cup, mixing (12)
Paddle, mixing (12)
Rivet, AD42H, AK42H, (200 each)
Screw (200)
Riveter, hand
Nose piece
Adhesive (1 part and 2 part)
Bag, cotton

(12) *Dimensions.* See figures 1-1 and 1-2

Expanded shelter
- Length----------19 feet 3 inches
- Width ----------12 feet 10.75 inches
- Height ----------8 feet
- Floor space ----------207 square feet
- Air-lock length----------11 feet

Folded shelter
- Length----------12 feet 10.75 inches
- Width ----------7 feet 8 inches
- Height ----------8 feet

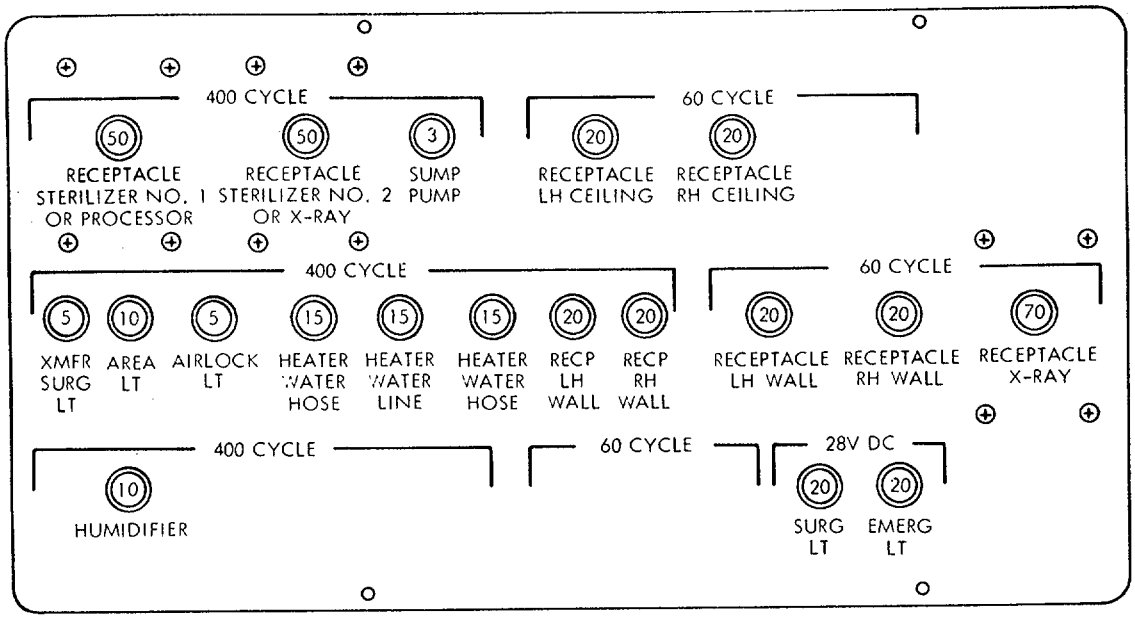
Weight (with air-lock) ------- 4,200 lbs

(13) *Wiring diagram.* See figure 1-7.

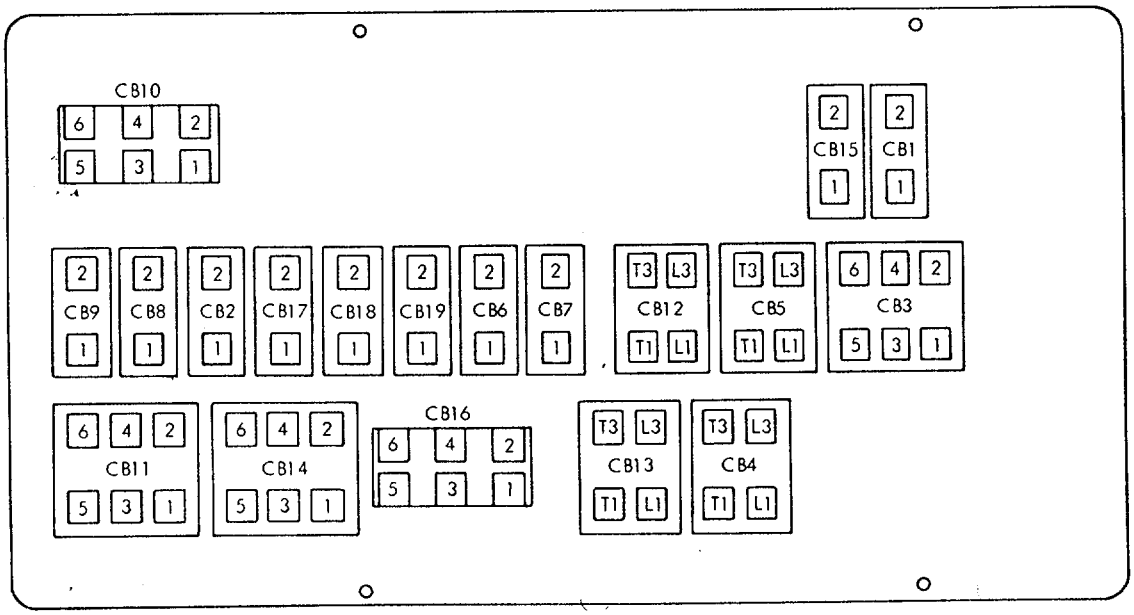
(14) *Plan view.* See figure 1-2.

1-5. Differences in Models

This manual covers only the model SEU-2, part number 380656-1-1 expandable shelter. No known unit differences exist for the model covered by this manual.



B. FRONT VIEW OF CIRCUIT BREAKER PANEL



C. REAR VIEW OF CIRCUIT BREAKER PANEL (ROTATED 180°)

ME 5410-221-24/1-6 ②

Figure 1-6. Power distribution panel assembly (sheet 2 of 2)

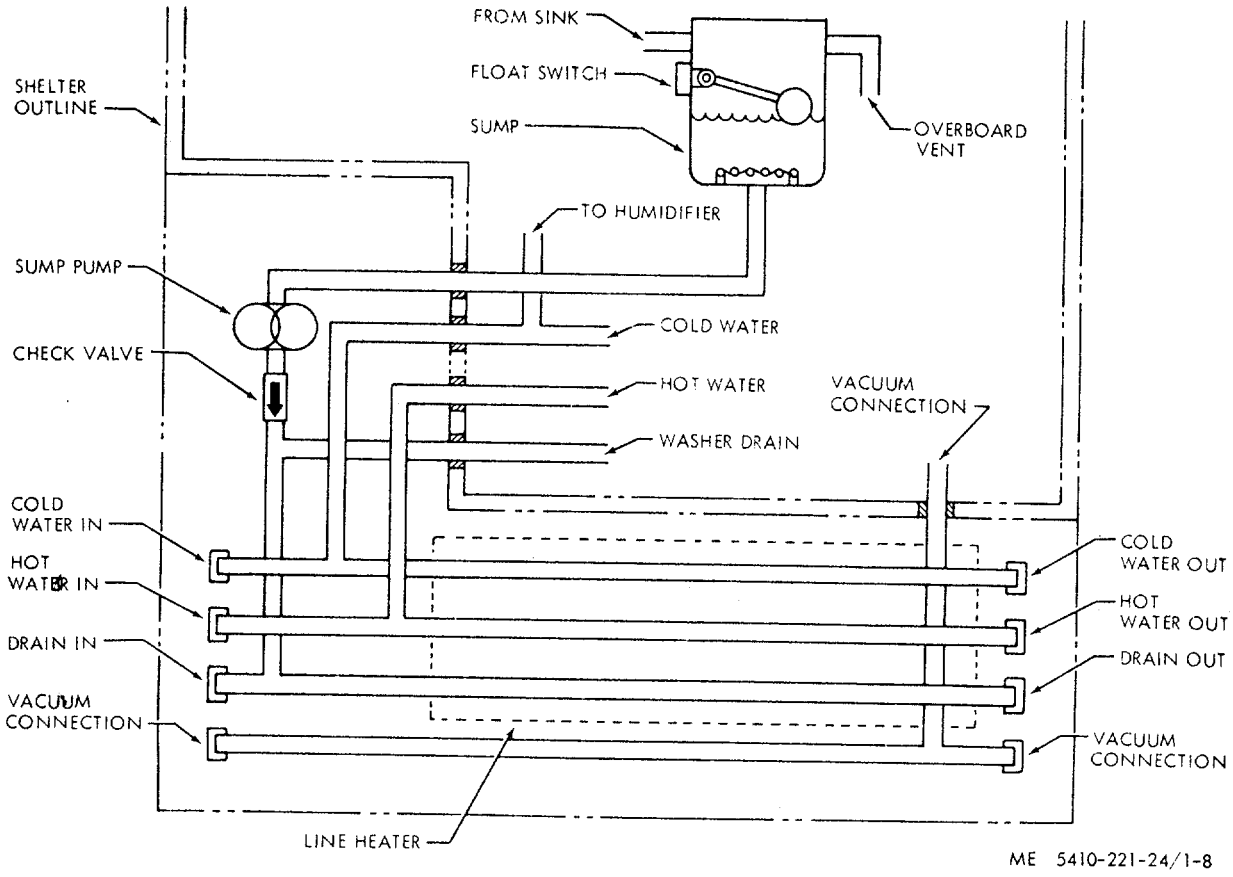


Figure 1-8. Plumbing system schematic.

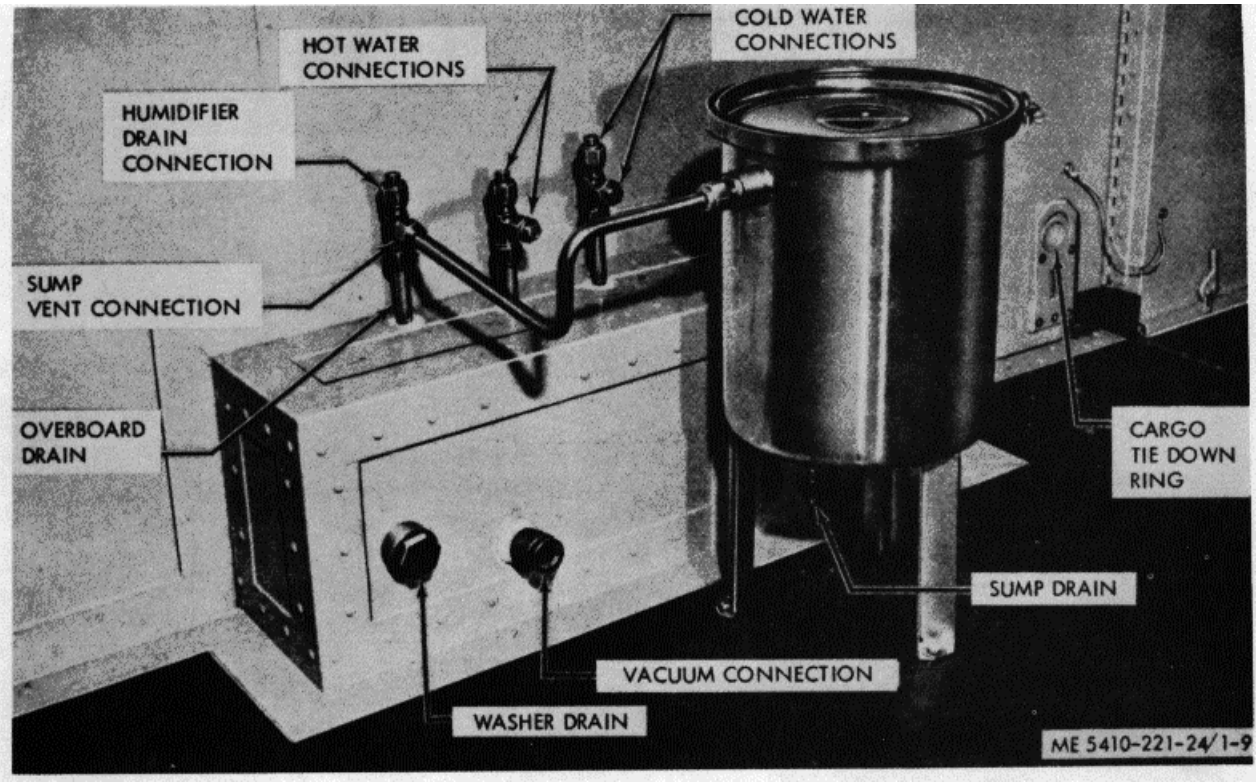


Figure 1-9. Water box interior connections and sump installation.

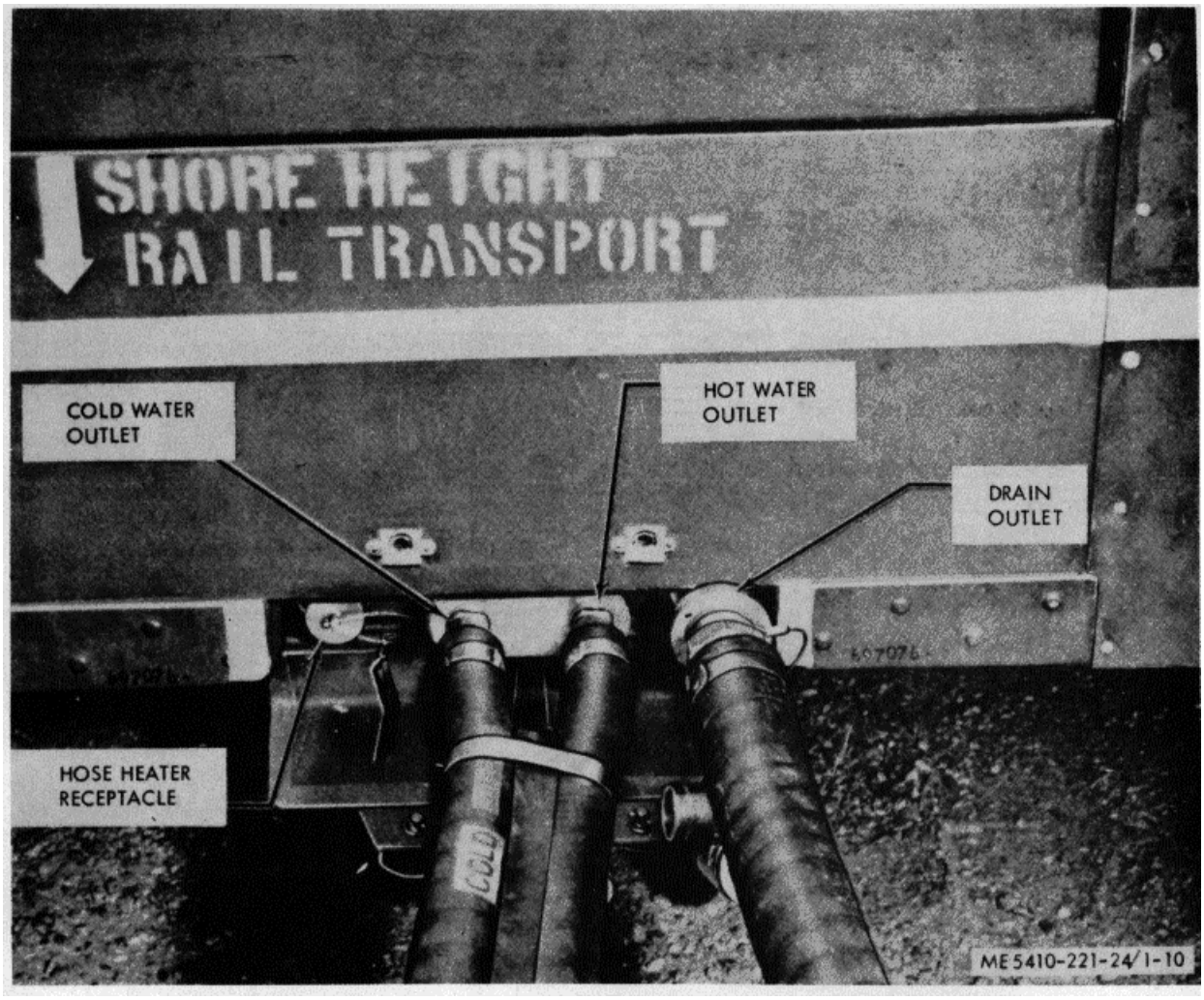


Figure 1-10. Water outlet panel with hose assemblies attached.

CHAPTER 2

ORGANIZATIONAL MAINTENANCE INSTRUCTION

Section I. SPECIAL TOOLS AND EQUIPMENT

2-1. Special Tools and Equipment

Special tools or equipment required by organizational personnel for maintenance of the expandable shelter are listed in table 2-1.

2-2. Specially Designed Tools and Equipment

No specially designed tools or equipment are required by organizational personnel for maintenance of the expandable shelter.

Section II. LUBRICATION

Lubrication of the expandable shelter is not required.

Section III. PREVENTIVE MAINTENANCE SERVICES

2-3. General

To ensure that the expandable shelter is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance serv-ices to be performed are listed and described in paragraphs 2-4 and 2-5. Item numbers indicate the sequence of minimum inspection requirements. All deficiencies and short comings will be recorded together with the corrective action taken on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

Table 2-1. Special Tools

Item	Federal stock Number or Part Number	Reference		Use
		Figure	Paragraph	
Riveter, hand Nosepiece	PRG402-8 PRN314	2-4 2-4	2-21, c 2-21, c	For all blind (POP) rivet application on shelter.

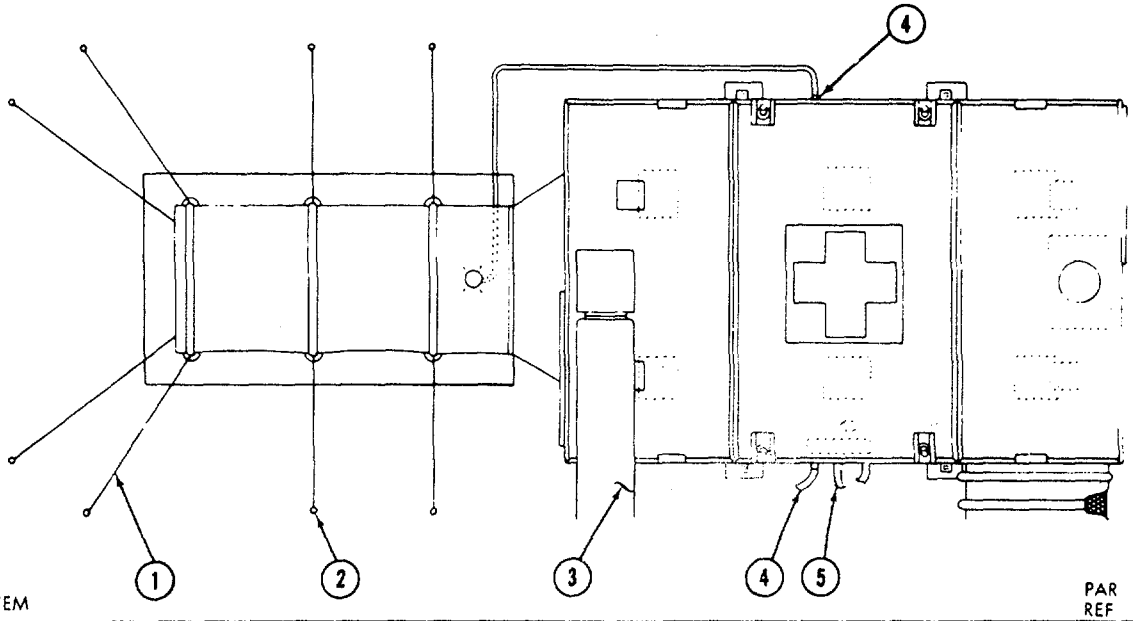
2-4. Daily Preventive Maintenance Services

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by organizational maintenance personnel. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 2-1. For the daily preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES

DAILY

TM10-5410-221-24 AIRESEARCH MODEL SEU-2 EXPANDABLE SHELTER



ITEM		PAR REF
	NOTE: PERFORM DAILY PREVENTIVE MAINTENANCE SERVICES AT FREQUENT INTERVALS DURING HIGH WIND OR SEVERE STORM CONDITIONS.	
1	GUY ROPES AND CABLE ASSEMBLIES: CHECK FOR EVEN TENSION AND FOR FRAYING OR BREAKS. TIGHTEN OR REPLACE GUY ROPES OR CABLE ASSEMBLIES AS REQUIRED.	2-34 2-35
2	TENT PINS AND ARROWHEAD ANCHORS. CHECK FOR SECURE INSTALLATION. REINSTALL PIN OR ANCHORS AS REQUIRED.	2-35 2-36
3	CONDITIONED AIR DUCTS. CHECK AIR DUCTS FOR SECURE ATTACHMENT AND FOR HOLES, TEARS, OR OTHER DAMAGE. PATCH DAMAGED AIR DUCTS.	2-44
4	ELECTRICAL CONNECTIONS: CHECK FOR SECURE INSTALLATION OF ELECTRICAL CONNECTIONS.	2-27
5	PLUMBING CONNECTIONS: CHECK FOR SECURE INSTALLATION OF PLUMBING CONNECTIONS.	2-47 9-5

ME 5410-221-24 2-1

Figure 2-1. Daily preventive maintenance services.

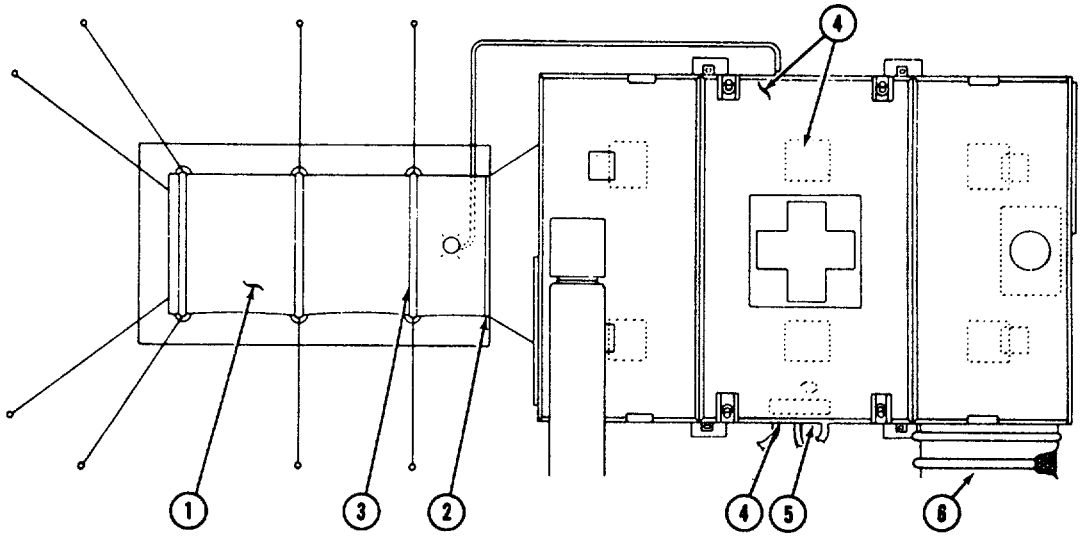
2-5. Weekly Preventive Maintenance Services

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by organizational maintenance personnel at weekly intervals. Refer to figure 2-2 for the weekly preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES

WEEKLY

TM10-5410-221-24 AIRESEARCH MODEL SEU-2 EXPANDABLE SHELTER



ITEM		PAR REF
1	SHELTER FABRIC: CHECK FABRIC INSIDE AND OUTSIDE OF AIRLOCK FOR WEAR AT SEAMS, FOR BROKEN STITCHES, FOR HOLES, FOR WEAK SPOTS, OR OTHER DAMAGE TO FABRIC. REPAIR AS REQUIRED.	5-4, 5-5
2	ZIPPERS: CHECK ZIPPERS FOR SMOOTH OPERATION, COMPLETE CLOSURE, MISSING TEETH, UNSTITCHED SEAMS OR OTHER DAMAGE. REPAIR AS REQUIRED. APPLY ZIPPER EASE TO ZIPPER TEETH FOR LUBRICATION.	5-4, 5-5, 7-7
3	FABRIC FASTENER TAPE: CHECK FOR DAMAGE AND UNSTITCHED SEAMS. REPAIR AS REQUIRED.	5-4, 5-5, 7-7
4	ELECTRICAL SYSTEM: CHECK ALL ELECTRICAL CONNECTIONS, CABLES, RECEPTACLES, CIRCUIT BREAKERS AND LIGHT ASSEMBLIES FOR DAMAGE, BURNED CONTACTS OR INSULATION. CHECK LIGHT ASSEMBLIES FOR BURNED OR WEAK TUBES. REPLACE COMPONENTS AS REQUIRED.	5-6, 6-20 THRU 6-43
5	PLUMBING SYSTEM: CHECK ALL LINES AND FITTINGS FOR LEAKS, OR OTHER DAMAGE, CHECK PUMP AND FLOAT SWITCH OPERATION. REPLACE COMPONENTS AS REQUIRED.	9-2 THRU 9-5
6	BELLOWS ADAPTER: CHECK FABRIC INSIDE AND OUTSIDE OF BELLOWS FOR WEAR AT SEAMS, FOR FABRIC STITCHES, FOR HOLES, FOR WEAK SPOTS, OR OTHER DAMAGE. REPAIR AS REQUIRED.	5-4 5-5

ME 5410-221-24/2-2

Figure 2-2. Weekly preventive maintenance services.

Section IV. TROUBLESHOOTING

2-6. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the expandable shelter and its components. Each trouble sympton stated is followed by a list of probable cause. The possible remedy recommended is described opposite the probable cause. Any trouble beyond the scope of organizational maintenance shall be reported to direct support maintenance.

2-7. Water Leakage into Shelter.

Probable cause	Possible remedy
Weather seal assemblies damaged, loose or improperly positioned	Replace damaged seal assemblies. Position seal assemblies to cover joints in shelter and secure (para 10-2 through 10-14).

2-8. Circuit Breaker Tripped

Probable cause	Possible remedy
Electrical overload in overload and shorts	Check circuit for circuit. shorts, remove overload condition and reset circuit breaker (para 5-7).
Circuit breaker malfunctioning.	Report condition to Direct support maintenance for removal and replacement (para 6-33, 6-40).

2-9. No Electrical Power Inside Shelter

Probable cause	Possible remedy
Circuit breakers tripped	Refer to paragraph 2-8.
External power source not connected.	Check connections to external power source (para 2-26).

2-10 No Hot or Cold Water Inside Shelter

Probable cause	Possible remedy
External water source not connected	Check connections to water service inlet (fig. 1-4, para 9-7).
Dual water hose heater receptacle, or water tunnel heater circuit breakers tripped or dual water hose heater defective (shelters used in areas having ambient temperatures below 38°F only).	Reset circuit breaker (para 2-8).

2-11. Waste Water Will not Drain or Drains Slowly

Probable cause	Possible remedy
Drain hose or lines clogged.	Clean drain hose and lines (para 9-7).
Filter screen in sump dirty.	Remove and clean Screen (para 2-48).
Sump pump circuit breaker tripped.	Reset circuit breaker (para 2-8).
Check valve defective	Replace valve (para 2-50).
Sump pump defective	Replace pump (para 2-49).
Water tunnel heater or drain hose heater receptacle circuit breakers tripped (shelters used in areas having ambient temperatures below 38°F only).	Reset circuit breaker (para 2-8).
Drain hose heater defective	Replace drain hose (para 9-7).

2-12. No Vacuum Inside Shelter

Probable cause	Possible remedy
External vacuum source not connected.	Check connection to vacuum inlet.

Section V. RADIO INTERFERENCE SUPPRESSION

2-13. General

The fluorescent lighting fixtures are the only components which cause radio interference. The fluorescent fixtures and their ballast transformers meet the applicable radio interference reduction requirements of MIL-E55301 for tactical support classification, conducted and radiated RFI (Radio Frequency Interference) and do not produce audible noise of an objectionable level. The interconnecting wiring for the lights are contained in

separate raceways for radio noise shielding purposes. All replacement fluorescent lighting components must be of the same type or part number as the replaced components.

2-14. Replacement of Fluorescent Light Components

a. Removal. Remove components in accordance with paragraph 2-30 and figure 2-8.

b. Disassembly. Disassemble in accordance with paragraph 2-30 and figure 2-8.

2-15. Testing of Radio Interference Components

Test the ballast transformer and electric wiring for shorts and leaks using a multimeter or other suitable test equipment. Replace defective ballast or wiring. If test equipment is not available and interference is indicated; isolate the cause for interference by the trial and error method of replacing each component in turn until the cause of interference is located and eliminated.

Section VI. FIELD EXPEDIENT REPAIRS

2-16. General

Organizational maintenance troubles may occur while the expandable shelter is operating in the field where supplies and repair parts are not available and normal corrective action cannot be performed. When this condition exists, the following expedient repairs may be used in emergencies upon the decision of the unit commander. Equipment so repaired must be removed from operation as soon as possible and properly repaired before being placed in operation again.

2-17. Torn or Otherwise Damaged Fabric Panels or Fasteners

Trouble	Expedient remedy
Damaged fabric or honeycomb panels.	Repair damaged with tape pressure sensitive, 2 inch wide, cloth back, until normal repairs can be made.
Damaged or missing fasteners.	If possible, use rope, cord, wire or other material to replace fastener. If not possible evacuate to next higher level maintenance as assigned.

2-18. No Electrical Power Inside Shelter

Trouble	Expedient remedy
Damaged wiring, cable assemblies ents, may be discon-	Damaged wiring, cable assemblies and electrical compon- nected and bypassed with comparable wire type and size for temporary operation. Refer to figure 1-7 for electrical system connection points.

Section VII. GENERAL FABRIC REPAIR PROCEDURES

2-19. General

This section provides organizational maintenance personnel with general repair instructions applicable to the fabric parts of the expandable shelter.

2-20. Fabric Repair Procedures Using Adhesive

Note. Two fabric repair kits are furnished with each field hospital or evacuation hospital. The fabric repair kit is to be used in making fabric repairs to components of the expandable shelter.

a. Application of Adhesive. Apply adhesive for installation of patches to cover holes or other damage to fabric, to recement seams and to replace damaged cemented fabric as follows.

Warning: **Adhesives and solvents are highly flammable; perform work in well ventilated area and away from fire. Do not store adhesives or solvents in or near shelter.**

(1) Clean the area to be cemented with a clean cloth dampened (but not saturated) with

an approved solvent to remove dust and foreign material. Do not allow excess solvent to collect at edges of seams. If the area is painted, remove all paint; adhesive will not adhere to painted surfaces. Dampen a clean cloth with approved solvent and rotate over the area until all paint is removed.

(2) Apply first coat of adhesive (from repair kit) to both surfaces to be cemented in medium to heavy coats. Brush back and forth to work adhesive in.

Note. Coated side of fabric (side with smooth slick surface) requires only one coat of adhesive. Uncoated side of fabric requires three coats of adhesive. The first coat of adhesive should be applied within 30 seconds after cleaning. If more than 30 seconds elapses, reclean surfaces. Thin adhesive with an approved solvent as required to obtain smooth brushing consistency.

(3) Allow adhesive to dry to a tacky condition (approximately 15 min.) before applying next coat. Test for proper drying of adhesive by lightly pressing finger-knuckle against the adhesive surface. If there is a snap when the knuckle is pulled away from the adhesive, the surface is ready for another coat of adhesive.

Note. Drying time will differ under cold or externally hot weather conditions. In direct sunlight at 70°F or higher, the drying time required between coats of adhesive is approximately eight minutes.

(4) Apply a second even coat of adhesive to both surfaces. Allow second coat to dry to a tacky condition as determined in step (3), then apply a third even coat of adhesive.

(5) Activate the adhesive surfaces by wiping the surfaces with a clean cloth wet (not damp, not dripping) with approved solvent.

Note. This activates the adhesive and makes the surfaces ready for joining, this can be done up to eight hours after second coat of adhesive. Otherwise apply one more coat of adhesive.

(6) Press the adhesive surfaces together using rubber roller provided in repair kit. Be sure the fabric is backed up against a smooth, hard surface to provide pressure and ensure a good bond. After completion of cementing procedure, dust the cemented area with talc or powdered soapstone to cover up any exposed adhesive.

Note. Do not stress the cemented area for at least 4 hours after cementing.

b. Patching Holes. Apply patches to small holes in fabric as follows.

Note. Immediate repair of small pin or nail holes is not required. However, repair of small holes should be made as soon as it is convenient to do so.

(1) Cut a round patch from the bulk material provided in the repair kit. Use a one inch diameter patch for holes up to 1/16 inch, a two inch patch for holes up to 1/4 inch and a 3 1/2 inch patch for holes up to 1/2 inch. For larger holes, cut a patch large enough to allow a three inch overlap beyond the edges of the. hole.

(2) Clean both the area to be patched and the patch, then apply, and activate adhesive as described in paragraph a, above.

Note. Clean and apply adhesive to the proper side of the patch so that after installation the same color will be visible on the patch and the shelter.

(3) Join the adhesive surface of the patch to the adhesive surface of the shelter. Squeeze out all air bubbles between joined surfaces.

Note. The patch should be laid on gradually, one side on the other or from the center to the edges, to minimize the possibility of entrapped air. Use two men to apply patches larger than four inches, one to hold the top edges up and away from prepared surface while the other starts applying patch evenly and smoothly from the bottom. This will prevent the patch from wrinkling and forming air bubbles.

(4) Press the joined surfaces together using roller provided in repair kit.

Note. Pressure is important for a good bond. Be sure the fabric is backed up against a smooth hard surface.

(5) After pressing, dust the cemented areas with talc or powered soapstone.

c. Patching Tears. Apply patches to the outside of a tear as follows.

(1) Trim off loose threads from the tear with shears provided in the repair kit.

(2) Cut a patch from bulk material provided in repair kit, large enough to allow a two inch overlap beyond torn edges.

(3) Clean the surface around the tear and clean the applicable side of the patch. Apply adhesive as described in paragraph a, above.

(4) Join the adhesive surface on the patch to the adhesive surface of the shelter. Squeeze all air bubbles from between the adhesive surfaces and use roller with pressure to bond the patch to the fabric. Dust the cemented area with talc or powdered soapstone.

d. Repairing Cemented Seams and Re- placing Cemented Parts. Repair separated or damaged cemented seams and parts as follows.

(1) Carefully peel the cemented parts to separate, keeping the cloth soaked with solvent as the parts are peeled apart. Examine the separated parts for damage and repair damage by patching or replacement, before recementing parts.

(2) Thoroughly clean surfaces to be cemented as described in paragraph a, above.

(3) Apply adhesive as described in paragraph *a,* above. Activate about 10 to 12 inches of the adhesive surfaces at a time as described in paragraph *a,* above. Allow the activating solvent to evaporate slightly (not wet) and press together about six to eight inches of the seam to ensure that no more seam will be joined at a time than has been activated.

(4) Join seams gradually. Press the surfaces together by moving the finger or thumb along the seam. Squeeze out all air bubbles from between the adhesive surfaces.

(5) Roll each six to eight inch section immediately with the roller provided in the repair kit. When the seam is completely joined, reroll the length of the seam with roller.

e. Replacing Repair Patches (patches over- holes, tears, etc). If a repair patch loosens at the edges, do not remove the complete patch for repair; cut off loose or fringed ends and cover the old patch with a new larger patch as follows.

Note. If old patch is off or is removed, install oversize patch to replace old patch.

(1) Repair a one inch patch with a three patch, a two inch patch with six inch patch and all larger patches with a patch extending three inches beyond the old area.

(2) Clean the area to be cemented and the applicable side of the patch as described in paragraph a, above.

(3) Apply adhesive and activate adhesive as described in paragraph *a,* above.

(4) Install new patch and use roller with pressure to bond patch.

Section VIII. GENERAL RIVET AND INSERT REPAIR

2-21. General

This section provides organizational maintenance personnel with general repair and replacement instructions applicable to rivets and inserts used in the expandable shelter.

2-22. Blind Type Rivet Replacement

a. Storage and Handling. Rivets must be stored in the original labeled packages. The packages shall be kept closed when not in use to prevent dirt, grit, metal chips, etc, from coming in contact with the lubricated stems.

b. Removal. Rivets which are damaged or used for securing a replaceable part shall be removed as follows.

(1) Drill through the center of the rivet. Use a drill bit with the same diameter as the original rivet hole. The drill must be held perpendicular to the surface to prevent enlargement or damage to the existing hole. Drill through just deep enough to sever the rivet head from the shank.

(2) Remove any remaining rivet with a pin punch and remove any burrs from rivet hole.

c. Rivet Replacement. Select a rivet of the proper diameter and length and install as follows.

Note. Proper length of rivet to be used shall be determined by measuring the actual thickness of material through which the rivet will go and then selecting proper grip length per table 2-2. Proper rivet diameter is important as blind rivets installed in over- size holes will not retain the stem satisfactorily. Undersize holes will not permit proper pull-in of stems (fig. 2-3).

(1) Hold parts to be riveted tightly together with clecos, clamps or other satisfactory method.

(2) Insert proper rivet in hole and apply with gun (supplied with repair kit) by inserting stem head of rivet in bottom slot in gun pulling head (nose piece).

Note. Wet all rivets with sealant (PRC 611, Products Research Co., Burbank, California, or equivalent) before installation.

(3) Hold gun at right angle to work. Push gun against work with just enough force to firmly seat rivet and to aid in avoiding sheet or other part separation.

(4) Pull rivet until stem breaks.

(5) Installed blind rivets shall be checked per paragraph 2-22, *d,* before proceeding.

(6) Trim the broken stem flush with the rivet head.

(7) Firmly press on the installed rivet to assure tightness.

d. Inspection of Installed Rivets. Installed rivets shall be inspected as follows.

Table 2-2. Blind Rivet Selection Chart

Nominal rivet diameter	Hole size and drill number	Diam-eter	Length	Grip range	Rivet No.
3/32	0.096.100		.212	.020-.125	32
	#41	.094	.337	.126-.250	34
1/8	.128-.132		.170	.020-.062	41
			.232	.063-.125	42
			.294	.126-.187	43
			.357	.188-.250	44
	#30	.125	.419	.251-.312	45
			.481	.313-.375	46
			.628	.376-.500	48
5/32	.160-.164		.254	.020-.125	52
			.316	.126-.187	
	#20	.156	.379	.126-.150	54
		.	504	.251-.375	56
			.629	.376-.500	
3/16	.192-.196		.277	.020-.125	62
			.402	.126-.250	64
	#11	.187	.527	.251-.375	66
			.652	.376-.500	68
			.777	.501-.625	610
			.902	.626-.750	
¼	.257-.261		.447	.125-.250	84
	F	.250	.572	.251-.375	86
			.697	.376-.500	88
			.947	.626-.750	812

(1) The rivet stem and collar shall be flush within the limits described in figure 2-3.

(2) A slight "flash" caused by the pressure necessary to drive the rivet is acceptable within the limits shown in figure 2-3.

(3) The configurations of installed rivets with the blind side visible shall be similar to hose shown in figure 23.

(4) Superficial stretch marks which may appear on the rivet are not detrimental to rivet strength and are acceptable.

(5) After stem trimming, stem can be checked for tightness by applying a force of approximately ten pounds to the trimmed stem of the rivet, push steadily; do not strike. If the stem is neither pushed out or loose, tightness is satisfactory.

(6) Rivet head gapping shall be checked with a 0.002 feeler gage. Rivets with a 0.002 gap on more than 40 percent of the rivet head circumference shall not be acceptable.

(7) A partial gap on a round surface is acceptable, provided the rivet head bears at tangent points, as shown in figure 2-3.

2-23. Insert Replacement

a. Removal. Inserts which are damaged or missing shall be removed as follows.

(1) Using a drill with the same size as the initial potting hole, drill out the insert.

Note. For Rosan inserts, the initial hole diameter shall be 0.03 to 0.05 inch greater than the counter- sink diameter. For Shurlok inserts, the initial hole shall be as recommended by the manufacturer.

(2) Remove loose particles from the hole using a compressed air blast with clean air.

b. Potting Resin (adhesive) Mixing. The adhesive compound shall be blended using a 50 percent resin and 50 percent curing agent ratio. Blend the resin and the curing agent together in a paper mixing cup using long, smooth strokes, rather than a whipping motion. Pot life after mixing is 10 minutes and shall be discarded after 8 minutes.

c. Application of Potting Compound. Apply the adhesive compound observing the following.

(1) Use a clean tongue depressor to trowel the adhesive compound into the insert hole.

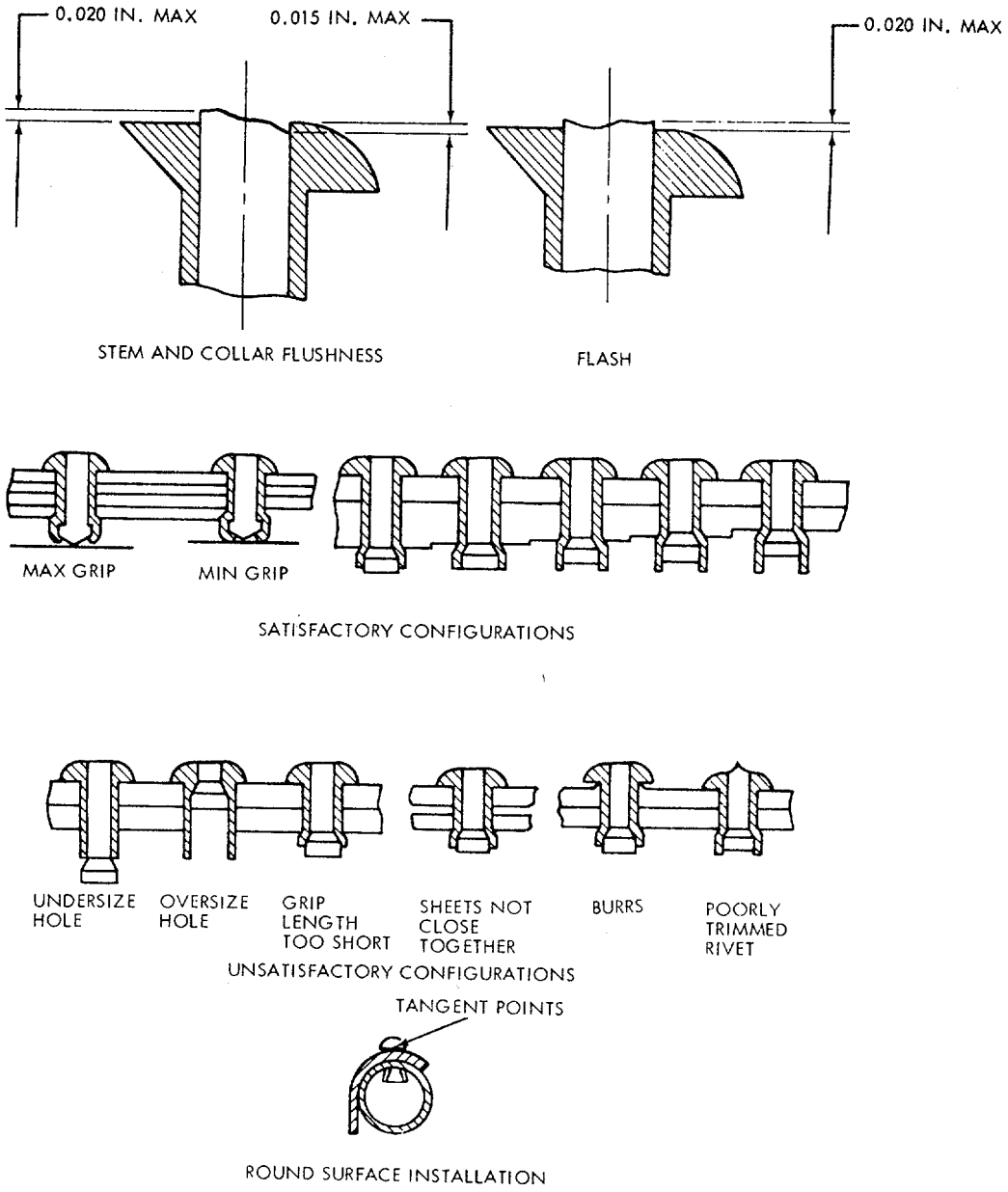


Figure 2-3. Rivet inspection.

(2) Care shall be exercised during the trowelling operation to prevent entrapment of air pockets in the insert hole.

(3) Use enough adhesive to ensure complete filling of the hole after application of the insert.

d. Installation of Inserts. Use the same size and type of insert as the one removed, observing the following.

(1) Coat washer and screw with a suitable mold release, or tape over bottom of insert to prevent epoxy from entering inside of insert.

(2) Turn screw and washer completely and tightly into insert.

(3) Clean outside of insert with a lint-free cloth soaked with methyl-ethyl-ketone. Allow insert to dry.

(4) Place insert in hole and press down firmly.

(5) Wipe hole area with lint-free cloth soaked with methyl-ethyl-ketone, to remove adhesive residue left on the surface.

(6) Cover the hole area with tape, making sure that the washer is held down firmly by the tape. A diagram of a typical installation of an insert in a honeycomb panel is given in figure 2-4.

(7) Cure at room temperature for 4 hours, after one day, the tape can be removed and parts handled and fasteners inserted.

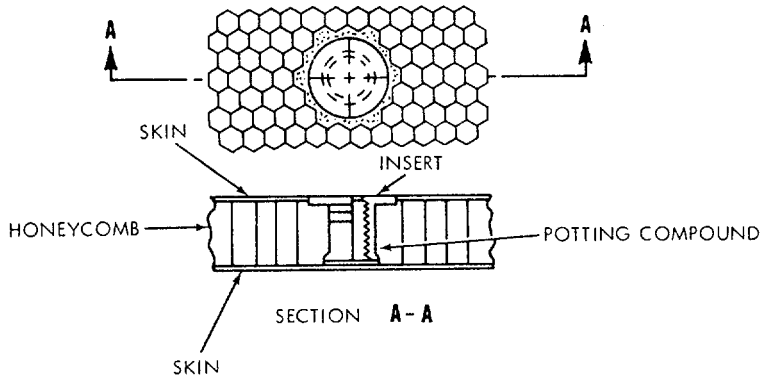


Figure 2-4. Typical insert installation.

Section IX. GENERAL HONEYCOMB PANEL REPAIR

2-24. General

This section provides organizational maintenance personnel with general repair instructions applicable to the honeycomb parts of the expandable shelter.

2-25. Repair Procedures Using Plug Patches and Adhesive

a. Mixing of Two Part Adhesive. Mixing of adhesive, used for repair of honeycomb core, shall be accomplished as follows.

(1) Use a mixing ratio of from 50 parts accelerator to 100 parts base by volume, to 100 parts accelerator to 100 parts base by volume.

Warning: **Adhesives and solvents are highly flammable; perform work in well ventilated area and away from fire.**

(2) Add the proper amount of adhesive base and accelerator to a mixing cup (from repair kit) and mix thoroughly using a mixing paddle from the repair kit. The pot life of the adhesive after mixing is 45 minutes.

b. Repairing Honeycomb Panel with Damaged to One Surface Only. Repair damaged honeycomb panel as follows.

(1) Trim the damaged area of the aluminum facing using tin snips, circular saw or other suitable tool (fig. 2-5).

(2) Trim honeycomb core with a knife to the same size as the trimmed hole in the facing through the entire thickness of the core (fig. 2-5).

Note. In general, trimmed holes are not restricted as to size or shape; however, those of rectangular, circular, square and oval and rectangular with round ends usually are more desirable as to appearance and ease of installation.

(3) Clean the interior surface of the undamaged facing with emery cloth, and a clean lintfree cloth soaked with methyl-ethyl-ketone.

(4) Cut a plug patch plate of the same size as the trimmed hole using the aluminum facing furnished with the repair kit.

(5) Cut a section of honeycomb core material the same size as the trimmed hole using the honeycomb furnished with the repair kit.

(6) Fabricate a doubler plate the same shape of the trimmed area using figure 2-5 as a guide.

(7) Drill rivet holes in the doubler plate using a number 30 drill (0.128-0.132 inch diameter) and spaced as illustrated in figure 2-5.

(8) Drill matching holes in the plug patch plate and panel using the doubler plate as a template.

(9) Apply a thin coat of adhesive to the cleaned interior facing (step (3), above), the edges of the honeycomb core and to the back of the plug patch plate.

(10) Insert the honeycomb core into the trimmed area of the panel and press firmly in place. Place the plug patch plate in position and press firmly.

(11) Secure the patch plate in position using 1/8 inch domed head blind rivets (from repair kit), using procedures given in section VIII as a guide (fig. 2-5).

(12) Apply primer and after primer is dry repaint repair area using paint conforming to Federal Standard 595, Color Chip 34087 (para 10-18).

c. Repair to Honeycomb Panel with Damage to Both Surfaces. Damage to a panel which penetrates both surfaces shall be repaired using procedure given in paragraph *b,* above. Both facings shall be repaired.

d. Repair to Fabric Floor Covering. Repair damage or worn floor fabric as follows.

(1) With a sharp knife cut a square area from around damaged or worn section.

Note. If aluminum facing or honeycomb core is damaged, repair using procedures given in paragraph 2-25, *b*, steps (1 through 5), (9 and 10). Do not install doubler plate in order to assure a smooth surface.

(2) Peel away damaged flooring. Use the removed flooring as a template and cut a new section using the velstat flooring fabric supplied in the repair kit.

(3) Thoroughly clean the repair area with emery cloth and a clean, lint-free cloth soaked in methyl-ethyl-ketone.

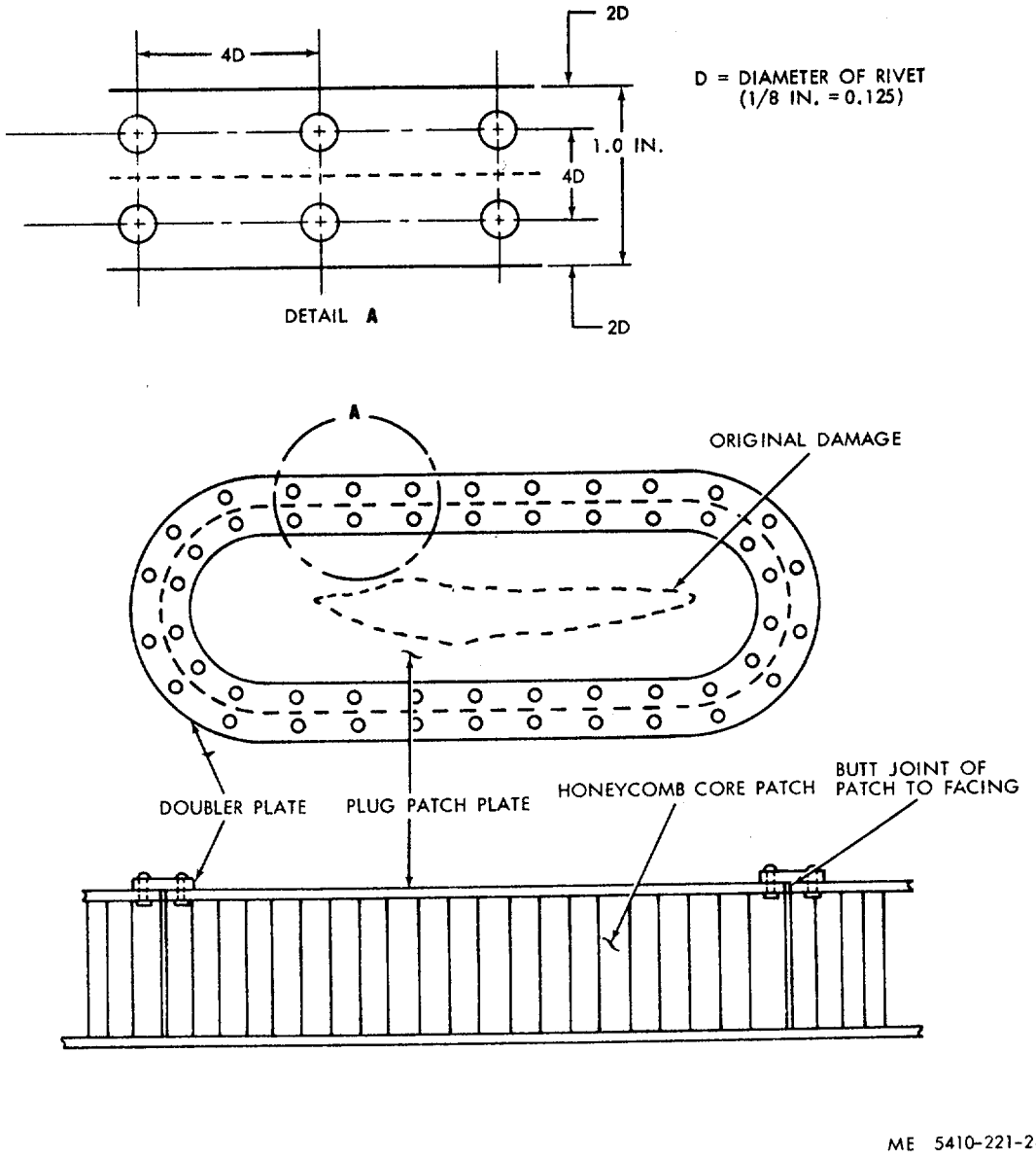


Figure 2-5. Typical honeycomb panel repair.

(4) Apply a thin coat of the one part adhesive, supplied with the repair kit, to the floor surface and also to the floor fabric.

(5) Press the patch over the trimmed damaged area and work out any trapped air bubbles.

Note. The patch should be laid on gradually, one side on the other, or from the center to the edges, to minimize the possibility of entrapped air. Use two men to apply patches larger than four inches, one to hold the top edges up and away from prepared surface while the other starts applying patch evenly and smoothly from the bottom. This will prevent the patch from wrinkling and forming air bubbles.

(6) Cover the seams of the repaired area with mylar tape (supplied with repair kit).

e. Repair to Damaged Honeycomb Panel Edging (closeouts). Repair damaged panel edging as follows.

(1) Remove the damaged phenolic edging with a sharp knife to cut away from honeycomb core, using care to prevent damage to honeycomb core and aluminum facing edge.

(2) Cut a section of phenolic edging the same size as the damaged area and apply a thin coat of the two part adhesive to the phenolic edging back.

(3) Press the edging firmly in place and allow to cure for a minimum of 8 hours.

Section X. ELECTRICAL SYSTEM

2-26. General

This section provides instructions for repair and replacement of those items considered as part of the electrical system. The electrical system consists of a power distribution box assembly, a 60 Hertz power input cable assembly, a 400 Hertz power input cable assembly, an air-lock light assembly, twelve convenience receptacles, six fluorescent lamps assemblies, power input and output panels and a light switch (fig. 1-3).

Warning: **Personnel must observe extreme caution to avoid contact with electrical circuits when power source is connected. In case of accident from electrical shock, disconnect power source at once. If power source cannot be disconnected, free victim from live conductor with a board or other nonconductor. If victim is unconscious, apply artificial respiration and obtain medical help**.

2-27.60 Hertz and 400 Hertz Power Input Cable Assemblies

a. Removal. Disconnect cable assemblies (1, 2, fig. 2-6) from power source and power inlet and power outlet panel assemblies (fig. 1-4).

b. Cable Assembly Test. Check continuity of cable assembly wires using a continuity light, multimeter, or other continuity checking device. Refer to figure 1-7 and 2-6 for cable , assembly wire routing and terminal identification. Continuity must not exist between terminals and connector or between wires. Continuity must exist between connectors (wire terminal to wire terminal). If continuity check indicates a damaged or defective cable, replace cable.

c. Installation. Connect cable assemblies (1, 2, fig. 2-6) to power source and to power inlet or outlet panel assemblies (fig. 1-4 and 1-5.)

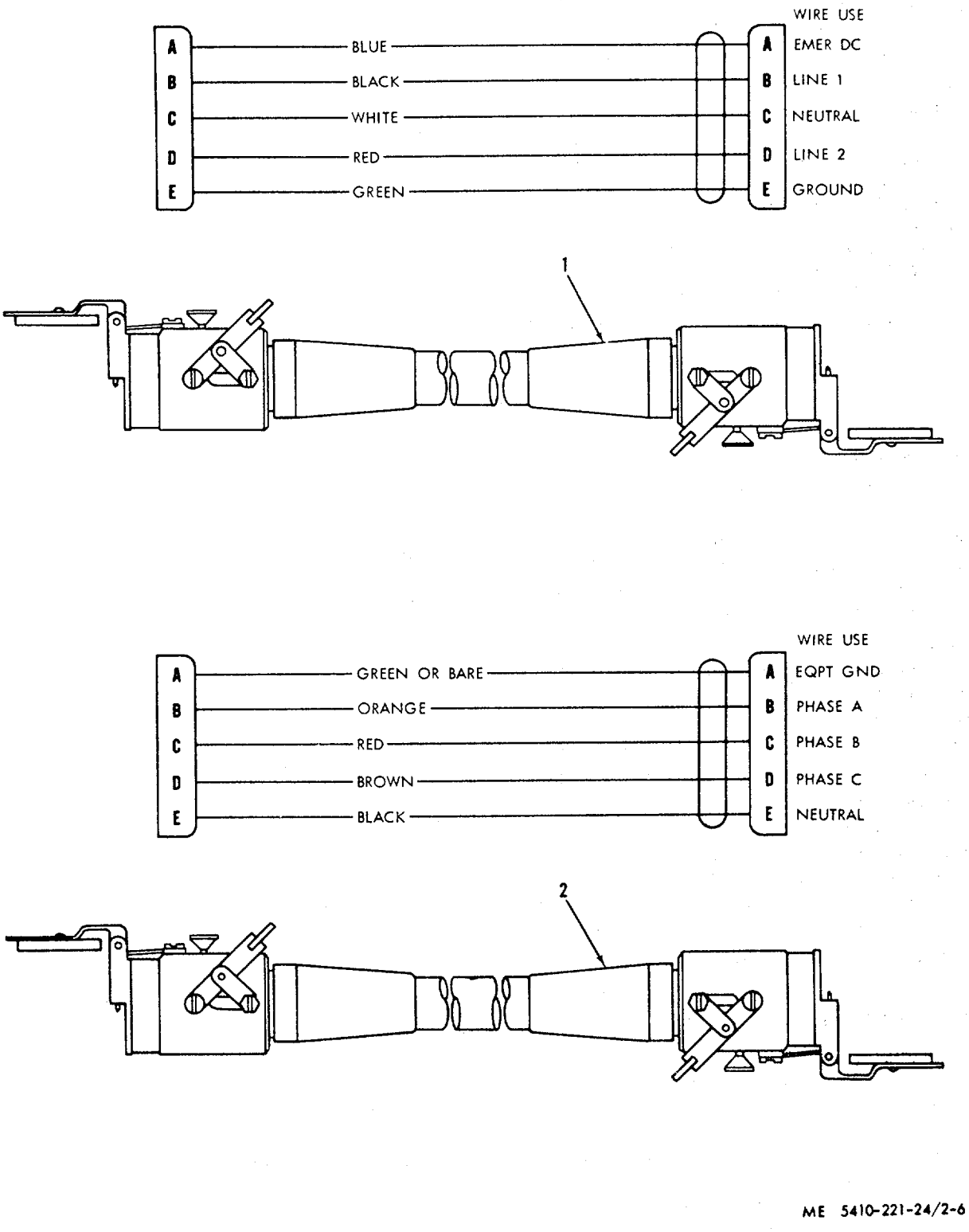
2-28. Air-Lock Light Assembly

a. Removal. Disconnect cable assembly for light assembly (5, fig. 2-7) from air-lock light receptacle on power inlet or outlet panel and remove light assembly from hook in air-lock chamber.

b. Air-Lock Light Assembly Test. Check continuity of light assembly using a continuity light, multimeter or other continuity checking device. Refer to figure 1-7 for light assembly wire routing and terminal identification. Continuity must exist between terminals C. and D and between E and light assembly housing. Continuity must not exist between terminals C or D and light assembly housing or between C or D and E.

c. Disassembly. Disassemble light assembly for replacement of lamp or guard according to sequence of index numbers assigned to figure 2-7.

d. Assembly. Assemble guard (4, fig. 2-7) and lamp (1) to light assembly in reverse



1 60 Hertz power cable assembly

2 400 Hertz power cable assembly

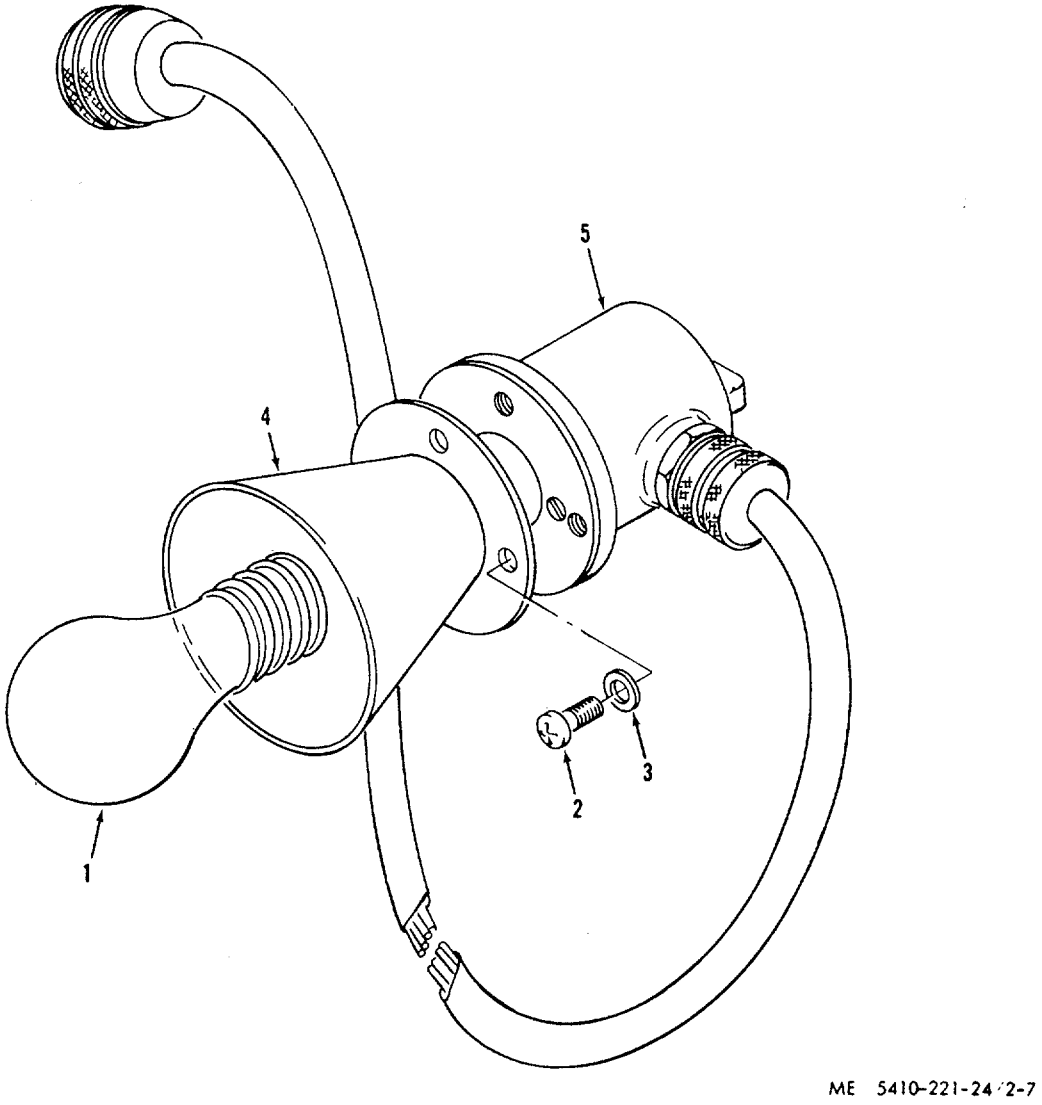
Figure 2-6. Electric power cable assemblies.

order of disassembly and using figure 2-7 as a guide.

e. Installation. Install light assembly (5, fig. 2-7) on hook in air-lock chamber and connect cable assembly to power inlet or outlet panel, which ever is convenient.

2-29. Convenience Receptacles

a. Convenience Receptacle Inspect. Remove receptacle cover and inspect for damaged or burned terminals. Replace or repair any damaged receptacle covers.



1 Lamp
2 Screw
3 Washer
4 Guard
5 Light assembly

Figure 2-7. Air-lock light assembly partial disassembly.

b. Convenience Receptacle Test. Check continuity of receptacle wires using a continuity light, multimeter, or other continuity checking device. Refer to figure 1-7 for receptacle wire routing and terminal identification. Continuity must exist through receptacle wires. *Note.* Refer any defects found during above test to direct support maintenance level.

2-30. Fluorescent Light Assemblies

a. Removal.

(1) Turn off input power to fluorescent light assembly by pulling out area light circuit breaker (CB8).

(2) Loosen (about one-half inch) but do not remove completely screws (1, fig. 2-8) allowing light assembly (2) to be lowered from flange assembly (3) exposing power in- put terminals (4) and ground terminal (5).

(3) Remove input power leads (6) from input power terminals (4) and ground terminal (5). Remove screws (1) to allow repair or replacement on bench or table top.

b. Disassembly. Disassemble fluorescent light assembly (2) to repair or replace damaged parts by observing sequence of index numbers assigned to figure 2-8 and observing the following.

(1) Grasp bar connector, figure 2-8, just behind wire group with thumb and forefinger. Push connector in direction of arrow impressed on side of connector and depress spring, allowing opposite end of connector bar to be lifted free of lamp end.

Warning: **In the event of lamp break- age, care must be taken in the removal of broken glass fragments and white phosphorous dust that may be dispersed within the fixture. Excessive inhalation of phosphorus dust must be avoided**.

(2) Remove screws (7) and rotate lamp (10), left hand mount channel (8) and right hand mount channel (9) to approximately 450 angle.

(3) Slightly spread the mount channels (8, 9) in direction of the arrows using care not be deform the lamp case at the mount channel pivot and remove lamp (10) by sliding from mount channels (8, 9) in direction of the arrow.

(4) Detach bar connector from lamp exposing the three ballast attach points. Remove nuts (11, 12), lock washers (13), ground lead (14), washers (15), barrel nuts (16) and power leads (17, 18). Remove terminal board (19).

(5) Remove nut (20) and washer (21) from opposite end of ballast (22) and remove ballast (22) and bar connector.

c. Assembly. Assemble the fluorescent light assembly in reverse order of disassembly using figure 2-8 as a guide.

d. Installation. Install fluorescent light assembly in reverse order of removal using figure 2-8 as a guide.

2-31. Power Input and Power Output Panel Assemblies

a. General. The input and output panel assemblies consist of a 400 Hertz input and output connectors (J1 and J2) and a 60 Hertz input and output connectors (J3 and J4). The input panel assembly is mounted adjacent to the water box assembly at the bottom center of the front fixed end panel. The output panel assembly is mounted midway up the rear fixed end panel assembly adjacent to the access door (fig. 1-4 and 1-5).

b. Panel Assemblies Test. Check continuity of input and output connectors and cables using a continuity light, multimeter or other continuity checking device. (Continuity must exist between the 400 Hertz input connector J1 and output connector J2 and 60 Hertz input connector J3 to output connector J4.) Refer to figure 1-7 for wire routing and terminal identification.

Note. Refer any defects found during the above continuity checks to direct support level maintenance.

2-32. Power Distribution Pane! Assembly

a. General. The power distribution panel assembly is mounted above the rear access door. It contains the shelter circuit breaker panel, an emergency light, terminal boards and wire and harness assemblies (fig. 1-6).

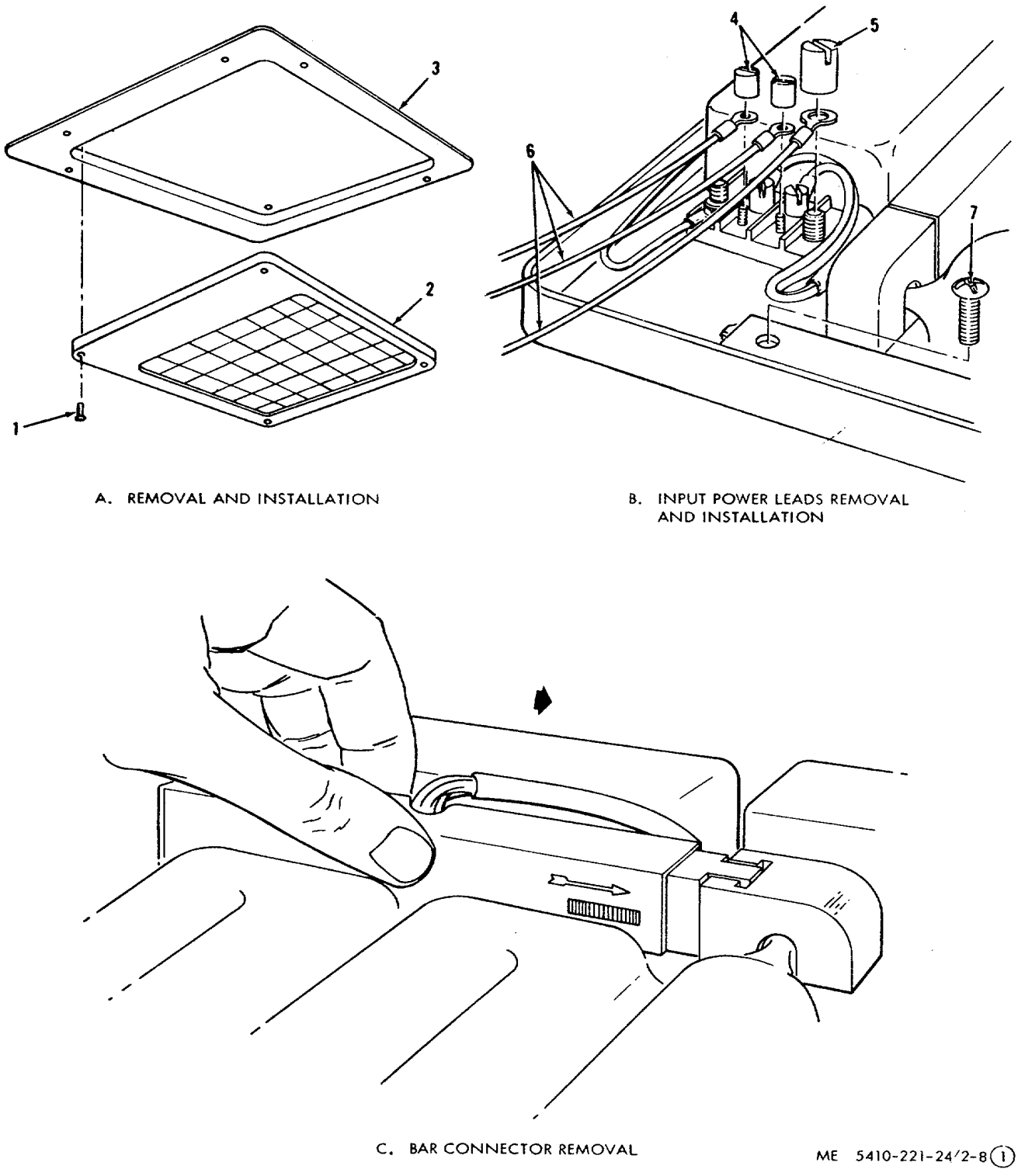
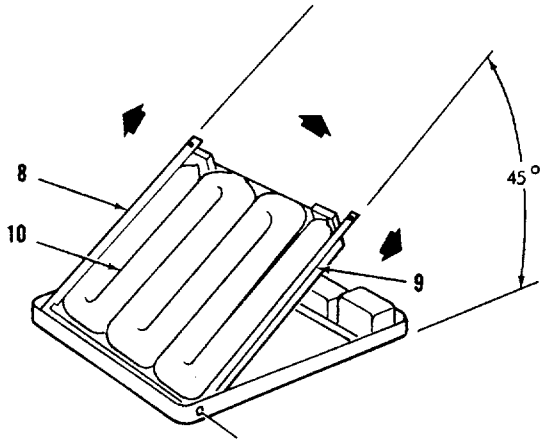


Figure 2-8. Fluorescent light assembly-disassembly (sheet 1 of 2).

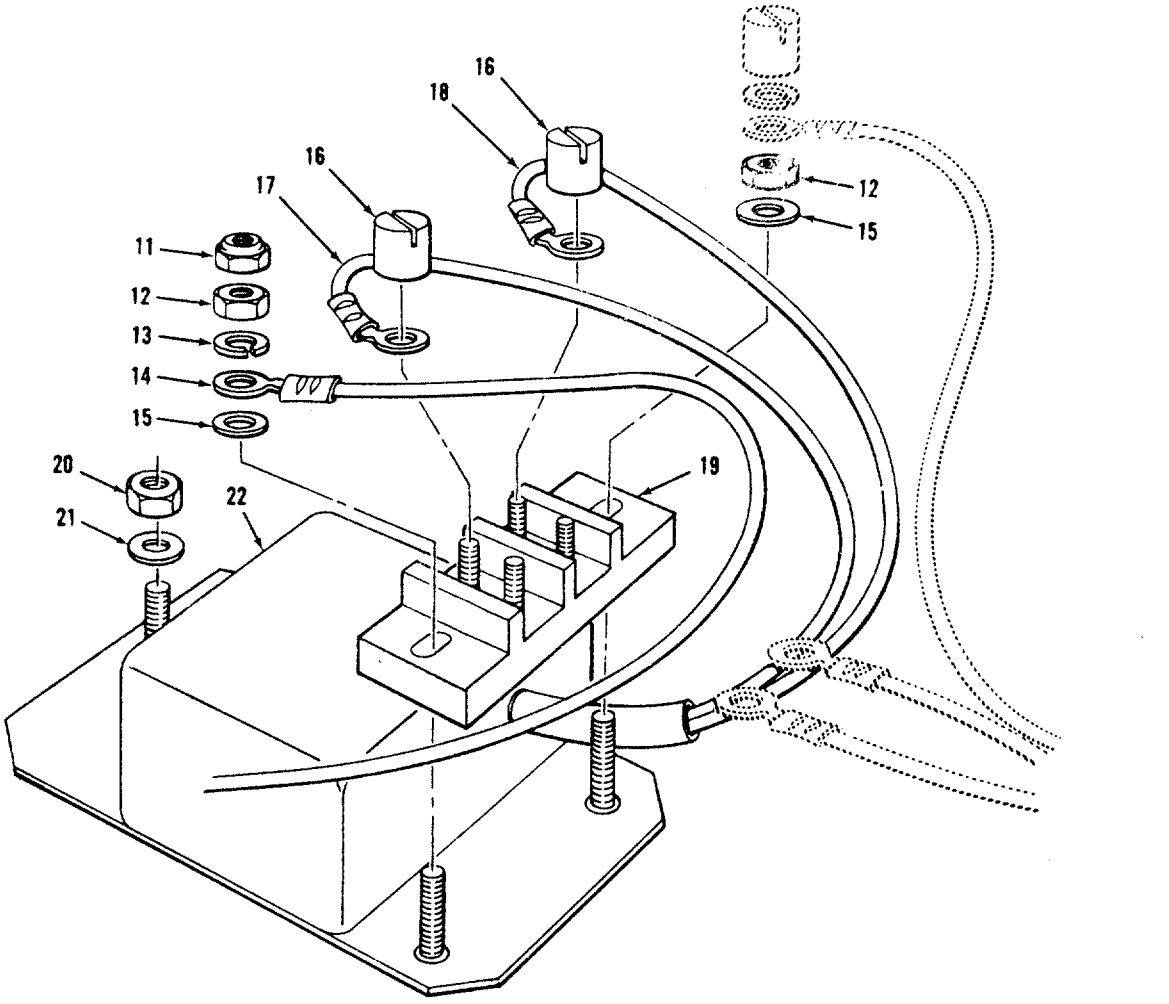
1 Screw (4)
2 Light assembly
8 Flange assembly
4 Input power terminals
5 Ground terminal
6 Input power leads
7 Screw (2)

Figure 2-8--Continued.

b. Power Distribution Panel Assembly Test. Check continuity of panel assembly using a continuity light, multimeter or other continuity checking device. Refer to figure 1-7 for wire routing and terminal identification. Continuity must exist through wire and cable assemblies and their connectors and terminal boards. Re- place any damaged or missing receptacle covers.



D. LAMP REMOVAL AND INSTALLATION



E. BALLAST AND TERMINAL BOARD REMOVAL AND DISASSEMBLY ME 5410-221-24/2-8 (2)

Figure 2-8. Fluorescent light assembly-disassembly (sheet 2 of 2).

8 LH lamp mount channel
9 RH lamp mount channel
10 Fluorescent lamp
11 Nut
12 Nut (2)
13 Lockwasher (2)
14 Lamp ground lead (green)
15 Washer (2)
16 Terminal barrel nut (2)
17 Lamp power lead (black)
18 Lamp power lead (white)
19 Terminal board
20 Nut (1)
21 Washer (1)
22 Ballast

Figure 2-8-Continued

Section XI. SHELTER ACCESSORIES

2-33. General

This section provides instructions for repair and replacement of those items considered as accessories to the expandable shelter. The expandable shelter accessories consists of the guy line slips, guy line ropes, ground anchors (arrowhead anchors), air-lock chamber, air-lock adapter, bellows adapter, , tread plate, shelter jack assemblies and cargo tie down components (fig. 2-9).

2-34. Guy Line Slips and Line Ropes

a. Removal. Remove guy line rope tension on slip (1, fig. 2-9) and untie knot in rope (2) to permit rope end to pass through eyes of slip (1).

b. Installation. Pass end of guy line rope (2) through eye of slip (1) through tie down ring on air-lock chamber and then through other eye of slip (1). Tie a suitable knot in rope (2) to prevent end from slipping back through eye. Tighten guy line rope (2) by pulling downward on slip (1), slip secures the rope position when released.

2-35. Ground Anchors and Cable Assemblies

a. Removal. Release tension on guy line rope (2, fig. 2-9) to cable assembly (3). Remove cable clamps and loop on one end of cable assembly (3) and pull cable assembly (3) through slots in installed ground anchor (5). Replace hook in end of cable assembly (3) and install cable clamps to secure.

Note. Ground anchors are expendable items and are not removed after installation.

b. Installation.

(1) Use driving rod and holder from inflatable Shelter Erection Kit.

(2) Install cable assembly (3, fig. 2-9) in grooves in ground anchor (5).

(3) Insert shaft of ground anchor in hole in end of driving rod. Place holder over rod to hold rod. Use sledge hammer to drive anchor into ground approximately two feet deep with point of ground anchor angled away from shelter in line with the applicable guy line rope (2) from the air-lock.

(4) Attach guy line rope (2) to cable assembly (3) and tighten guy line rope with guy line slip (1).

2-36. Tent Pins

a. Removal. Pull straight out on tent pin (6, fig. 2-9) to remove from ground.

b. Installation. Install tent pin (6, fig. 2-9) through O-ring on air-lock ground apron with tang on tent pin pointed away from shelter. Use a sledge hammer to drive tent pin flush with ground.

2-37. Air-Lock Chamber

Note. Repair holes, tears and other damage to fabric of air-lock chamber as described in section VII.

a. Removal.

(1) Remove light assembly from air-lock chamber as described in paragraph 2-28, *a.*

(2) Disconnect air-lock chamber guy line ropes (2, 4, fig. 2-9) from cable assemblies (3).

Notes. Remove tent pins (6) used to secure air-lock chamber ground apron. Remove cable assemblies as described in paragraph 2-35, *a,* if replacement chamber is not to be installed at the same location.

(3) Open and disengage zipper between air-lock chamber (8) and chamber adapter.

(4) Lift upon bow assemblies (3 through 10, fig. 2-10) to free bow assemblies from

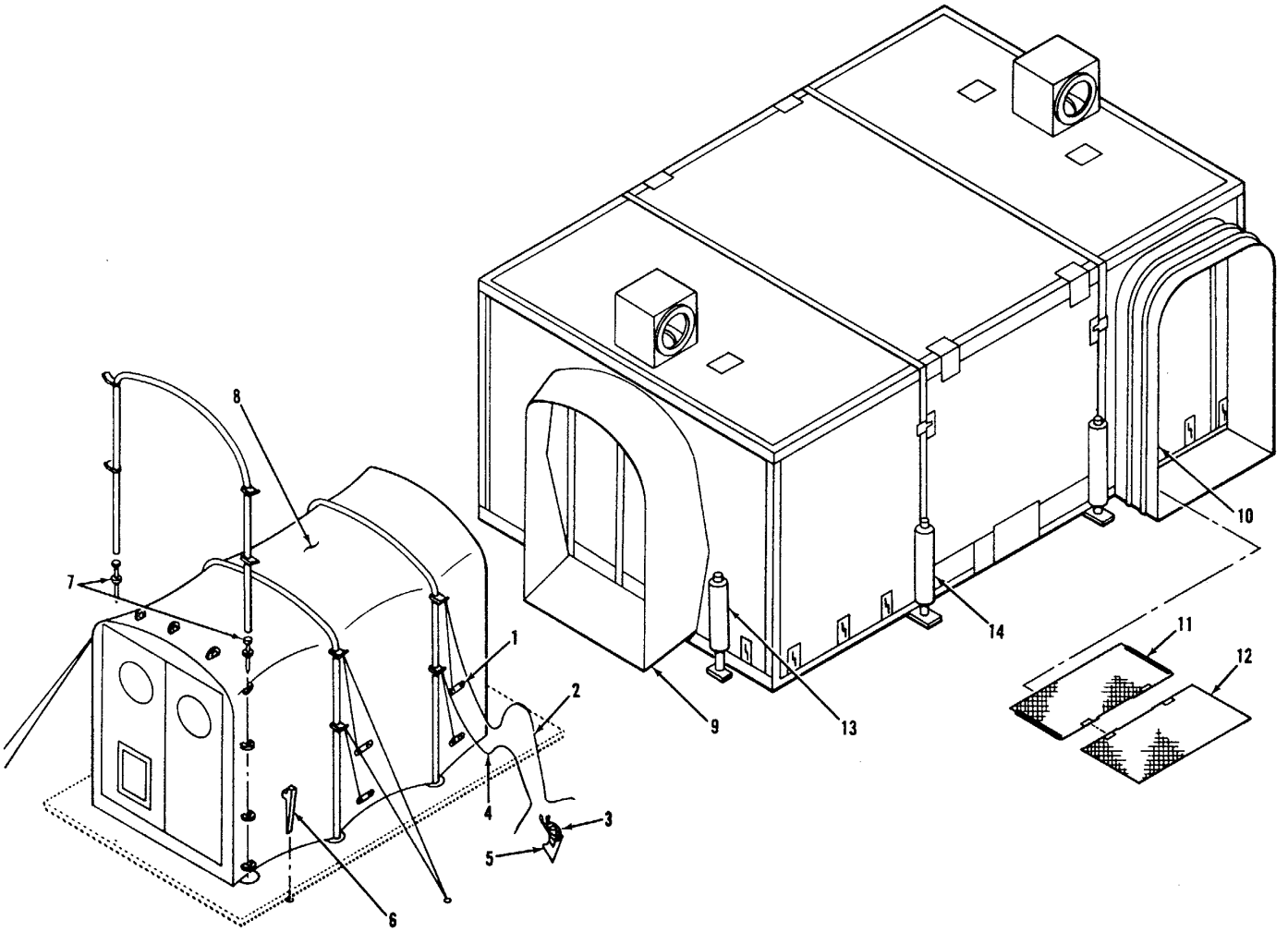


Figure 2-9. Shelter accessories disassembly.

I Guy line slip (14)
2 Guy line rope (8)
3 Cable assembly (14)
4 Guy line rope (6)
5 Ground anchor (14)
6 Tent pin (6)
7 Bow spike (6)
8 Air-lock chamber
9 Air-lock adapter
10 Bellows adapter
11 Tread plate, upper
12 Tread plate, lower
13 Jack assembly (4)
14 Jack assembly (4)

Figure 2-9-Continued.

bow spikes (7, fig. 2-9). Remove bow spikes from ground. Remove air-lock chamber (8).

b. Disassembly. Disassemble air-lock chamber as required to replace damaged components as shown in figure 2-10 and observing the following.

(1) Remove nut (1) to remove eye bolt (2).

(2) Remove retaining pin (3) to separate bows (10).

(3) Remove rivet (5) to separate bow support (7).

c. Assembly. Assemble air-lock chamber in reverse order of disassembly procedures using figure 2-10 as a guide and observing the following.

(1) Install rivet (5) and upset to secure bow support (7) to bow (10).

(2) Join bow (10) with bow support (7) and secure with retaining pin (3).

(3) Install eye bolt (2) and secure with nut (1).

d. Installation.

(1) Position air-lock chamber (8, fig. 2-9) adjacent to doors in end panel of shelter. Engage zipper between air-lock adapter and air-lock chamber and close zipper.

(2) Pull chamber out to full length from shelter entrance. Straighten sod cloth around chamber.

(3) Drive bow spikes (7, fig. 2-9) at base of bows (11, fig. 2-10). Install bows over head of bow spikes.

(4) Drive tent pins (6, fig. 2-9) to secure sod cloth of chambers as described in paragraph 2-36, *b.*

(5) Install ground anchors (5) and cable assemblies (3) as described in paragraph 2-35, *b.*

(6) Connect air-lock chamber guy lines to cable assemblies (3). Tighten guy lines evenly.

2-38. Air-Lock Adapter

Note. Repair holes, tears and other damage to fabric of air-lock adapter as described in section VII.

a. Removal.

(1) Remove fasteners located around edge of adapter (9, fig. 2-9) and loosen drawstring on adapter. Remove pins from lower receptacles.

(2) Remove adapter (9) from air-lock chamber as described in paragraph 2-37, *a*.

b. Installation.

(1) Select door to be used as entry-exit door.

(2) Insert pins located at top of adapter, through holes in corresponding straps and into receptacles above door opening on panel.

(3) Place adapter over frame. Pull drawstring so that adapter fits tightly around frame and lock drawstrings in place.

(4) Insert fasteners, located around edge of adapter, into receptacles around face of frame.

(5) Remove pins installed in step (2) above. Move pins from upper holes to lower holes in corresponding straps and reinsert into receptacles.

(6) Attach air-lock chamber to adapter with zipper as described in paragraph 2-37, *d.*

2-39. Bellows Adapter

a. Removal.

(1) Remove metal tread plates (11, 12, fig. 2-9) from mounts below door and slide tread plate (11) away from tread plate (12).

(2) Remove fasteners, located around edge of frame from receptacles.

(3) Remove pins from lower receptacles and loosen drawstring on adapter and remove bellows adapter (10).

(4) Remove bellows from adjacent shelter observing procedure given in steps (1 through 3) above.

b. Installation.

(1) Insert pins, located at top of bellows, through holes in corresponding straps and into receptacles above door opening on panel.

(2) Place bellows over frame. Pull drawstring so that bellows fits tightly around frame and lock drawstrings in place.

(3) Insert fasteners, located around edge of bellows, into receptacles around face of frame.

(4) Remove pins installed step (1) above. Move pins to lower holes in corresponding straps and reinsert into receptacles.

(5) Attach bellows to adjacent shelter observing procedures given in steps (1 through 4) above, then install metal nonskid tread plates (11, 12) into mounts below door openings.

2 40. Jack Assemblies (Fixed End)

a. Removal. The fixed end jack assemblies (5, fig. 2-11) shall be removed as follows.

(1) Remove cotter pin (1) from pin (2) and push pin (2) from hole.

(2) Unscrew bolts (3) from shelter panel and remove nut (4).

b. Installation. Install jack assembly (5, fig. 2-11) in reverse order of removal procedure using figure 2-11 as a guide and observing the following.

(1) Screw retainer nut (4) onto bolt (3).

(2) Place jack assembly (5) into position and insert pin (2) into hole and install new cotter pin (1).

(3) Secure jack to shelter with bolts (3).

2-41. Jack Assembly (folding floor)

a. Removal. Jack assembly (10, fig. 2-11) shall be removed observing the following.

(1) Unscrew bolt (6) from panel and remove nut (7).

(2) Remove bolts (8) from attaching bracket and the four flat head screws (9) from bottom of bracket. Remove jack assembly (10).

b. Installation. Install jack assembly in reverse order of removal procedure using figure 2-11 as a guide and observing the following.

(1) Replace retainer nut (7) on bolt (6).

(2) Place jack assembly (10) into position and screw bolt (6) into shelter.

(3) Replace bolt (8) and flat head screws (9) and tighten all bolts and screws securely.

2-42. Cargo Tie Down Installation

a. Removal. Removal of the cargo tie down installation shall be accomplished using figure 2-12 as a guide and observing the following.

(1) Remove the rope net assembly (3, fig. 2-12) by removing the tie down ropes securing it to the strap assembly (1).

(2) Remove the web net assembly (2) from the cargo top.

(3) Remove the strap assembly (1) from the shelter tie down fitting by disconnecting the metal ring.

b. Installation. Install the cargo tie down assembly in reverse order of removal using figure 2-12 as a guide and observing the following.

(1) Attach the metal ring of the strap assembly (1, fig. 2-12) to the shelter tie down fittings and tighten the strap assembly.

(2) Place the web net assembly (2) over the cargo and fasten securely.

(3) Place miscellaneous cargo on top of main cargo and secure with the rope net assembly (3) using the strap assembly (1) as a means of attachment.

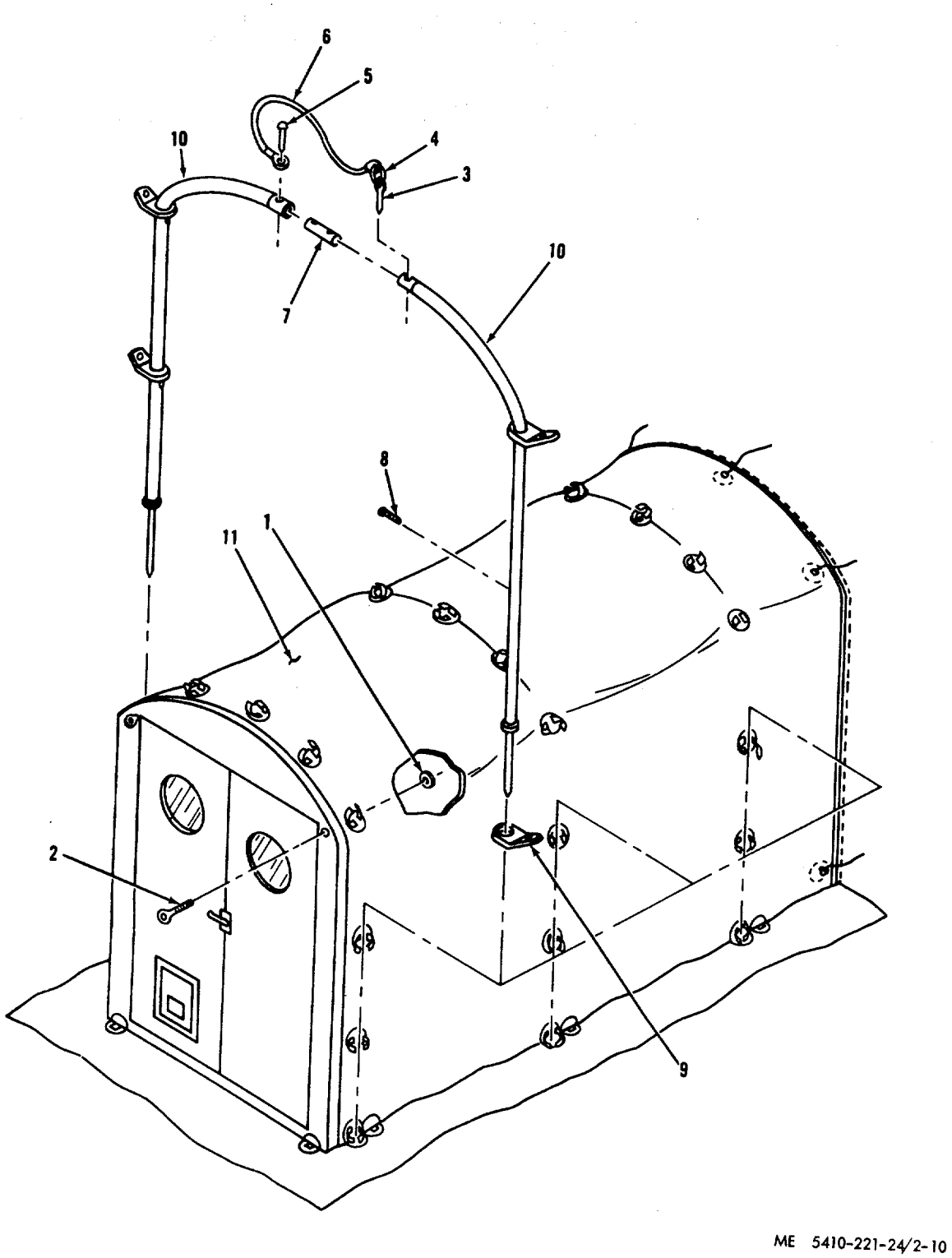


Figure 2-10. Air-lock chamber partial disassembly.

1 Nut (2)
2 Eyebolt (2)
8 Retaining pin (9)
4 Retaining pin ring (8)
5 Rivet (8)
6 Retaining pin lanyard (8)
7 Bow support (8)
8 Screw (12)
9 Guy line bracket (12)
10 Bow (6)
11 Air-lock chamber

Figure 2-10--Continued.

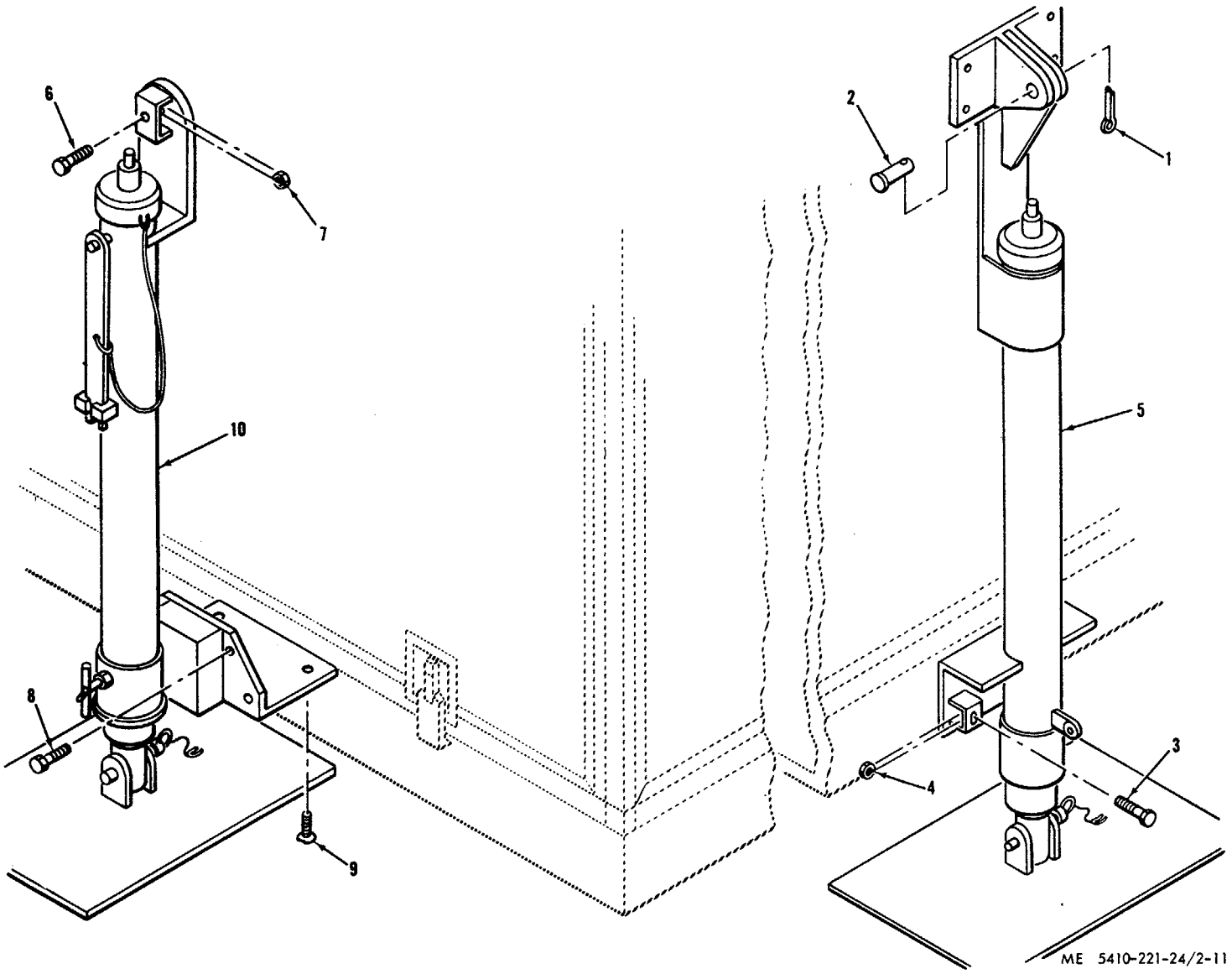
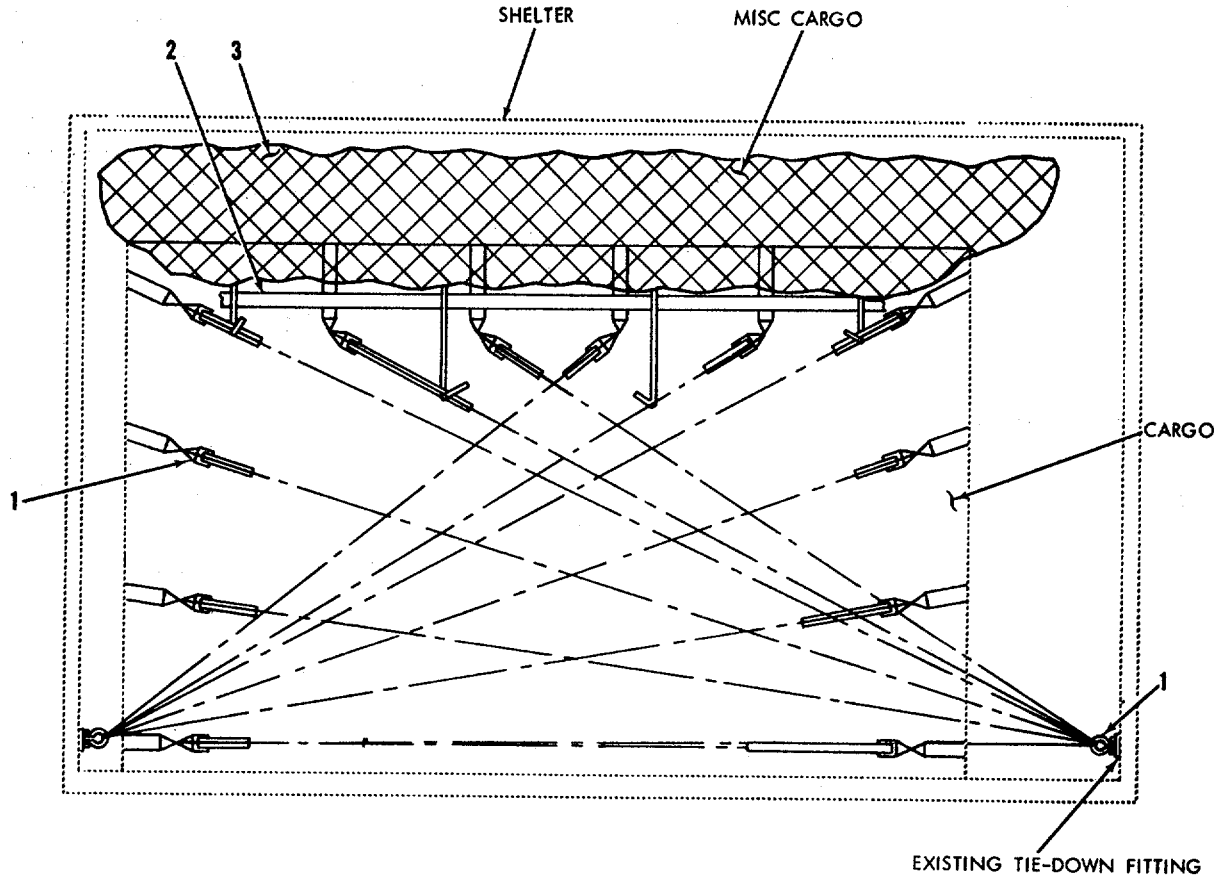


Figure 2-11. Jack assemblies removal.

1 Cotter pin (4)
2 Pin (4)
8 Bolt (8)
4 Nut (8)
5 Jack assembly (4)
6 Bolt (4)
7 Nut (4)
8 Bolt (8)
9 Screw (16)
10 Jack assembly (4)

Figure 2-11 - Continued.



1 Strap assembly 2 Web net assembly 3 Rope net assembly

Figure 2-12. Cargo tie down installation

Section XII. CONDITIONED AIR SYSTEM

2-43. General

This section provides instructions for repair and replacement of those items considered as part of the conditioned air system. They consist of two air duct assemblies, two air duct adapter assemblies, coupling clamps and air conditioning plenum assembly (fig. 2-13).

2-44. Air Duct Assemblies and Coupling Clamps

Note. Repair minor holes, tears and other damage to fabric of air duct assembly as described in section VII.

a. Removal.

(1) Disconnect air duct assemblies (2, fig. 2-13) from source of conditioned air.

(2) Loosen coupling clamp (1) and disconnect air duct assemblies (2) from air duct adapter (4). Remove coupling clamps (1) and air duct assemblies (2).

b. Installation.

(1) Install duct assembly (2) at conditioned air inlet flange on air duct adapter (4) and secure with coupling clamp (1).

(2) Position duct assembly (2) along roof panel and secure.

(3) Connect duct assemblies (2) to source of conditioned air.

2-45. Air Duct Adapter

a. *Remove.*

(1) Climb up on shelter roof. Unfasten latches securing flange assembly (3, fig. 213) to air inlet and outlet ports and remove adapter (4).

(2) Loosen air duct adapter cuff clamp and remove flange assembly (3) from adapter assembly (4).

b. Installation. Install air duct adapter in reverse order of disassembly using figure 2-13 as a guide and observing the following.

(1) Insert the bead side of flange assembly (3, fig. 2-13) inside the air duct adapter (4) past the cuff clamp. Tighten the -cuff clamp using the thumb screw.

(2) Install the air duct adapters (4) over the inlet and outlet air ports. Orient adapter with open side toward conditioned air source and secure with latches on flange assembly (3).

2-46. Conditioned Air Distribution Plenum

a. Removal.

(1) Open zipper on air distribution plenum (5, fig. 2-13) and unfasten latches on flange assembly (3).

(2) Remove air distribution plenum (6).

b. *Installation*

(1) Position air distribution plenum (5) at port selected as inlet port.

(2) Secure plenum (5) with latches on flange assembly .(8).

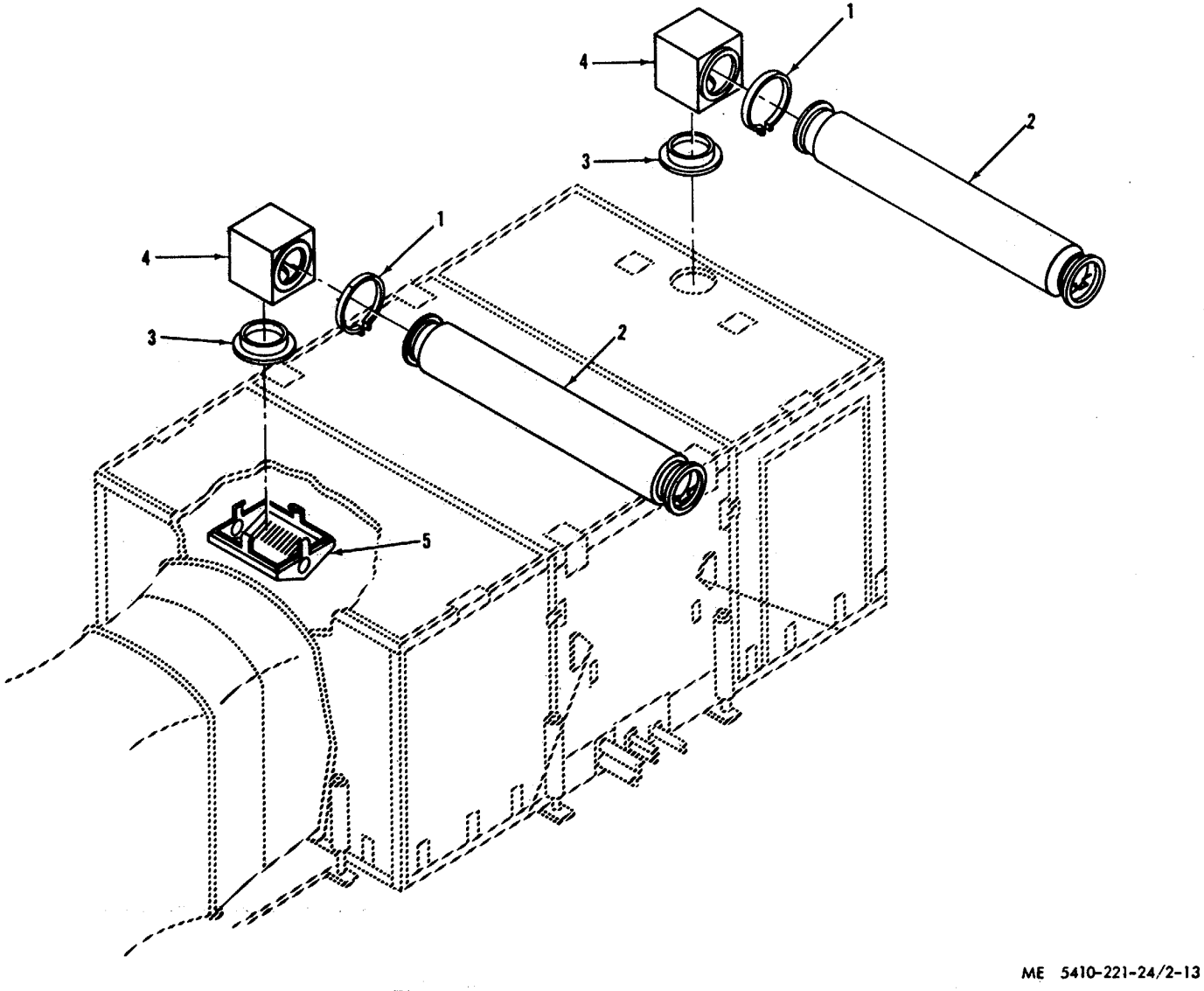


Figure 2-13. Conditioned air system removal.

1 Air duct clamps (2)
2 Conditioned air duct (2)
3 Flange assembly (2)
4 Air duct adapter (2)
5 Air distribution plenum

Figure 2-13--Continued.

Section XIII. SHELTER WATER SYSTEM

2-47. General

This section provides instructions for repair and replacement of those items considered as part of the shelter water system. Items of the water system repairable or replaceable at organizational level maintenance consist of a drain sump assembly, centrifugal sump pump assembly, check valve and miscellaneous fittings and clamps (fig. 2-14).

2-48. Drain Sump Assembly

a. Removal.

Caution: ***Turn*** **off power to shelter before disconnecting electrical leads from float switch.**

(1) Disconnect vent and drain inlet lines from side of drain sump (20, fig. 2-14). Disconnect outlet line from bottom of sump (20).

(2) Loosen nut (13) and remove tee from outlet drain boss; remove packing (14). Remove union (15) from vent boss on sump (20) and remove packing (16). If applicable, remove union from inlet boss and remove packing.

(3) Disconnect float switch electrical leads.

(4) Remove bolts (17) and washers (18, 19) from drain sump legs and remove sump (20).

b. Repair. Repair the shelter sump assembly as required to return to a serviceable condition as follows.

(1) Inspect drain sump assembly for damaged threads, nicks, dents, or burrs. If possible, dress all nicks and burrs with emery cloth assuring that enough wall thickness of sump remains to assure sufficient strength. Minor dents in :the sump assembly are acceptable so long as the function or fit is not affected. Dress minor damage to threads with emery cloth and then test per paragraph 2-49, *c* and assure that there are no leaks present. If methods listed above cannot return the sump assembly to serviceable condition, replace the sump assembly.

(2) Remove clamp which secures cover assembly to sump and inspect filter screen for damage or dirt, replace damaged screen. Clean screen assembly by washing with clean water under slight pressure and hitting against a solid surface using care not to dam- age screen assembly.

c. *Installation.* Install drain sump assembly in reverse order of removal procedure using figure 2-14 as a guide and observing the following.

(1) Position the sump legs over the inserts in the floor and secure in place using bolts (17) and washers (18, 19).

(2) Install tee and new packing (14) in outlet boss. Tighten nut (13). Install union (15) and new packing (16) in vent boss.

(3) Connect float switch electrical -leads.

(4) Connect and tighten plumbing line to sump.

2-49. Centrifugal Pump Assembly

a. Removal. Remove damaged or defective pump assembly according to sequence of index numbers assigned to figure 2-14 and observing the following.

(1) Disconnect inlet and outlet lines from pump (4, fig. 2-14) located inside water service inlet box.

(2) Disconnect electrical connector from end of pump (4).

(3) Remove nuts (2) and washers (3) securing the pump to the pump mounting bracket.

(4) Loosen and slide off clamp (1) securing pump (4) to pump mounting bracket.

(5) Remove pump (4) from water service inlet box.

b. Installation. Install centrifugal pump assembly (4, fig. 2-14) in reverse order of removal procedure using figure 2-14 as a guide and observing the following.

Caution: **Be sure electrical** source is off before , connecting electrical leads.

(1) Position pump (4) in proper position and secure with nuts (2) and washers (3).

(2) Slide clamp (1) over pump (4) and pump mounting bracket and tighten securely.

(3) Connect electrical connector to end of pump (4).

(4) Connect inlet and outlet lines to pump (4).

c. Centrifugal Pump *Test and Float Switch Test.*

(1) Remove cover from drain sump (20, fig. 2-14) and fill with water.

(2) Close centrifugal sump circuit breaker located on electrical distribution panel assembly.

(3) Float switch inside the sump assembly (20) shall energize the pump motor and discharge water from sump (20).

(4) Float switch shall shut off pump (4) when approximately two inches of water is remaining in sump (20). The remaining water will drain by gravity.

2-50. Check Valve

a. Removal. Remove damaged or defective check valve according to sequence of index numbers assigned to figure 2-14 and observing the following.

(1) Disconnect inlet and outlet fittings from check valve (6, fig. 2-14) located directly behind centrifugal pump (4) in water service inlet box.

(2) Remove check valve (6) from water service box.

(3) Remove expander fitting from valve (6) and remove packing (5).

b. Installation. Install check valve (6, fig. 2-14) in reverse order of removal procedure using figure 2-14 as a guide and observing the following.

(1) Install new packing (5) on check valve (6) and install expander.

(2) Position check valve (6) with the arrow pointing down-stream and tighten fittings on check valve (6).

2-51. Tube Assembly Clamps

a. Removal. Remove damage or defective tube clamps according to sequence of index numbers assigned to figure 2-14 and observing the following.

(1) Remove nut, washer and bolts (7, 8, 9, fig. 2-14). Spread clamps (10, 11) apart and slip from tube assemblies.

(2) Remove bolt (21), washer (22) and spread clamps (23, 24) apart and slip' from tube assembly.

(3) Remove nut, washer and bolts (25, 26, 27). Remove bracket (29) and spread clamps(28) apart and slip from tube assemblies.

Note. Clamps (23, 24 and 28) are located inside the water tunnel and are reached by jacking up the shelter and removing the panels covering the water tunnel (para 10-14, *c* and fig. 10-12).

b. Installation. Install clamps in reverse order of removal using figure 2-14 as a guide.

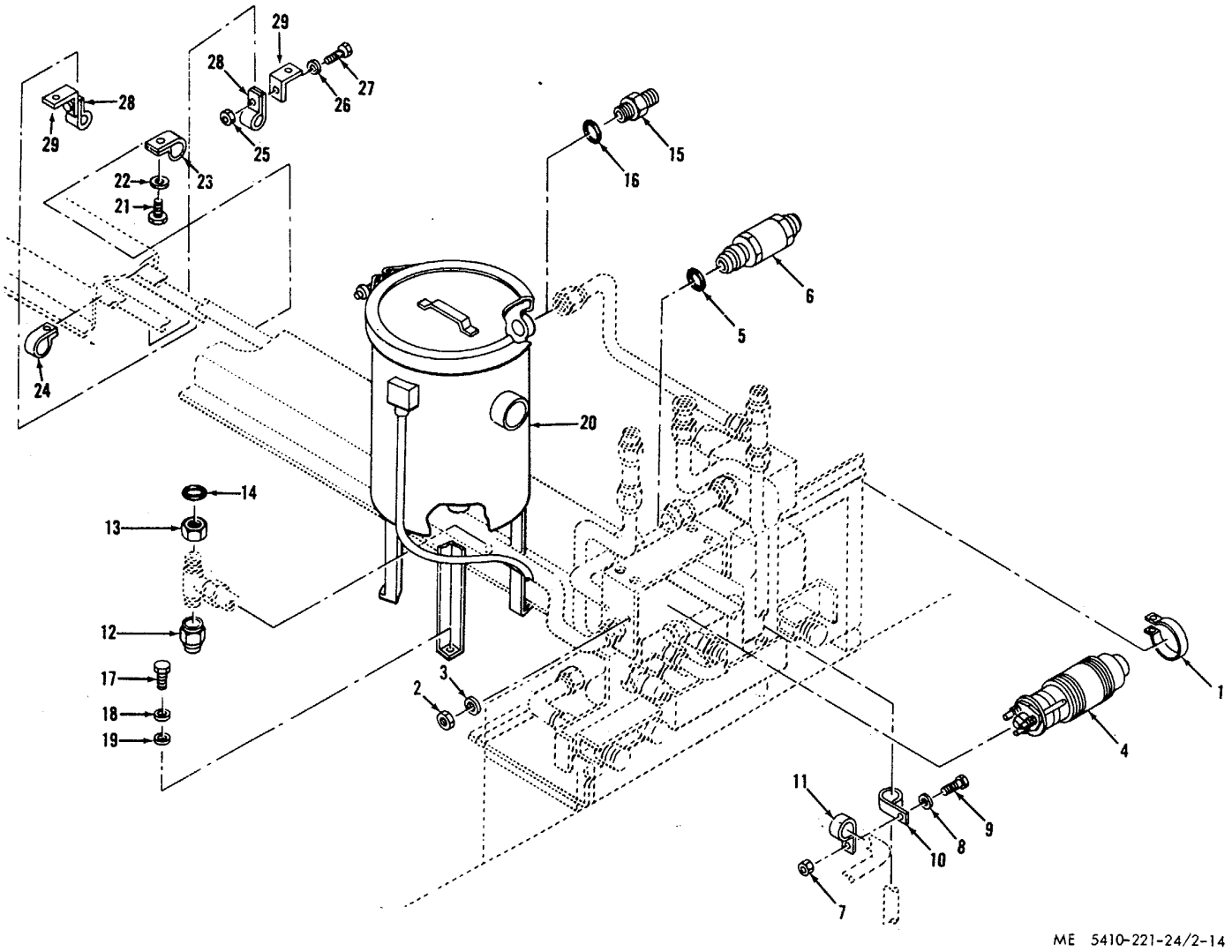


Figure 2-14. Plumbing system installation partial disassembly.

1 Hose Clamp
2 Nut (3)
3 Washer (3)
4 Centrifugal sump pump
5 Packing
6 Check valve
7 Nut
8 Washer
9 Bolt
10 Clamp
11 Clamp
12 Cap
13 Nut
14 Packing
15 Union
16 Packing
17 Bolt (3)
18 Washer (3)
19 Washer (3)
20 Drain sump
21 Bolt
22 Washer
23 Clamp (4)
24 Clamp (4)
25 Nut
26 Washer
27 Bolt
28 Clamp (6)
29 Bracket

Figure 2-14-Continued.

Section XIV. EXPANDABEL SHELTER REPAIR KIT

2-52. General

This section provides instructions for replacement of those items considered as part of the expandable shelter repair kit. The components of the repair kit are stowed in a plywood box assembly 24 inch x 16 inch x 16.5 inch and are listed in the Tabulated Data, paragraph 1-4.

2-53. Replacement of Components of Repair Kit

Components of the repair kit should be replaced as soon as possible after use in order to maintain a complete kit at all times. See tabulated data, paragraph 1-4 and figure 2-5 for identification of components of the repair kit.

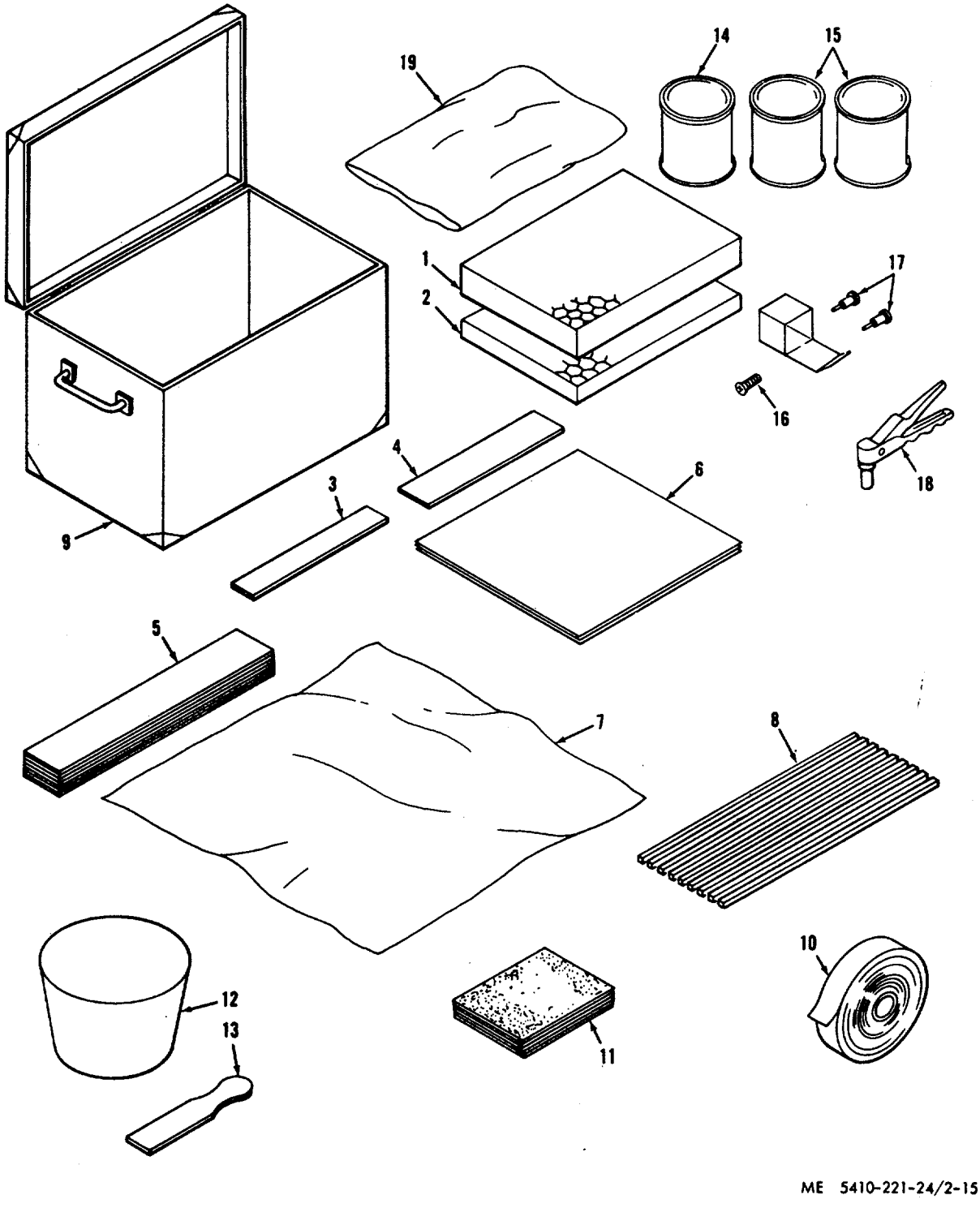


Figure 2-15. Repair kit.

1 Honeycomb core (2.90 inches thick, 1)
2 Honeycomb core (1.92 inches thick, 1)
3 Phenolic (12 in. x 2.00 in. x 0.12 in., 2)
4 Phenolic (12 in. x 3.00 in. x 0.12 in., 2)
5 Facing, aluminum (3.0 in. x 18.0 in. x 0.050 in., 8)
6 Facing, aluminum (15.0 in. x 15.0 in. x 0.050 in., 8)
7 Velstat flooring (2 ft^2)
8 Seal assemblies (6 ft long, 9)
9 Box assembly (1)
10 Mylar tape (1 roll)
11 Emery cloth (6)
12 Mixing cup (12)
13 Mixing paddle
14 Adhesive (1 pint)
15 Adhesive, two part (1 quart each)
16 Screw (MS21207-8-6, 200)
17 Rivet (AK42H, AD42H, 200)
18 Hand riveter and nose piece (1 each)
19 Cotton bag (1)

Figure 2-15--Continued.

CHAPTER 3
SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

3-1. General
This section provides instructions for handling, shipment, and limited storage of the expandable shelter.

3-2. Handling
Handling of the shelter may be accomplished by crane hoist hooked to the lifting eyes o the shelter, by fork lift, wheeled transporter, and may be skidded for short distances. See figure 3-1 for location and identification of handling points and hardware. Perform the various handling operations as follows.

a. Hoisting. Attach a hoisting sling 7,500 pound minimum capacity to the four hoist rings (fig. 3-1). Secure hoisting sling to crane or other hoisting device capable of hoisting a minimum of 7,500 pounds and hoist to the desired location.

Warning: **Do not use lifting equipment with capacity of less than 7,500 pounds. Do not allow shelter to swing back and fort when it is suspended. Failure to observe this warning may result in damage to equipment or severe injury or death to personnel.**

Caution: **Do not attach hoisting sling to the lifting equipment in such a manner that the angle between any of the hoist lines an the top of the shelter is less than 45 degrees. Any angle less than 45 degrees will cause a excessive Strain, which could damage the shelter.**

b. Fork Lift. Position the fork lift 7,500 pound minimum capacity at the lift points designated on the shelter and shown in figure 3-1 and lift shelter for loading or transport for short distances.

Caution: **Fork extensions are required for fork lifting the shelter in order to prevent damage to the raceways located on the underside of the shelter.**

Warning: **Do not use fork lift with capacity of less than 7,500 pounds. Do not allow shelter to rock excessively on fork lift. Failure to observe' this warning may result in damage to equipment, or severe injury, or death to personnel.**

c. Wheeled Transporter. A wheeled transporter or mobilizer may be attached to the shelter to permit towing as follows.

(1) Separate transporter sections and prepare transporter for use observing all recommendations of transporter manufacture.

(2) Position transporter sections at ends of shelter adjacent to mobilizer brackets at ends of shelter (fig. 3-1).

(3) Position transporter brackets to connect with shelter brackets and secure transporter to shelter.

(4) Operate transporter according to transporter manufacturer's instructions to raise shelter to towing height.

(5) Connect towing equipment to transporter tow bar or manually move shelter to desired position.

(6) When shelter is in desired position, operate transporter to lower shelter and remove transporter sections.

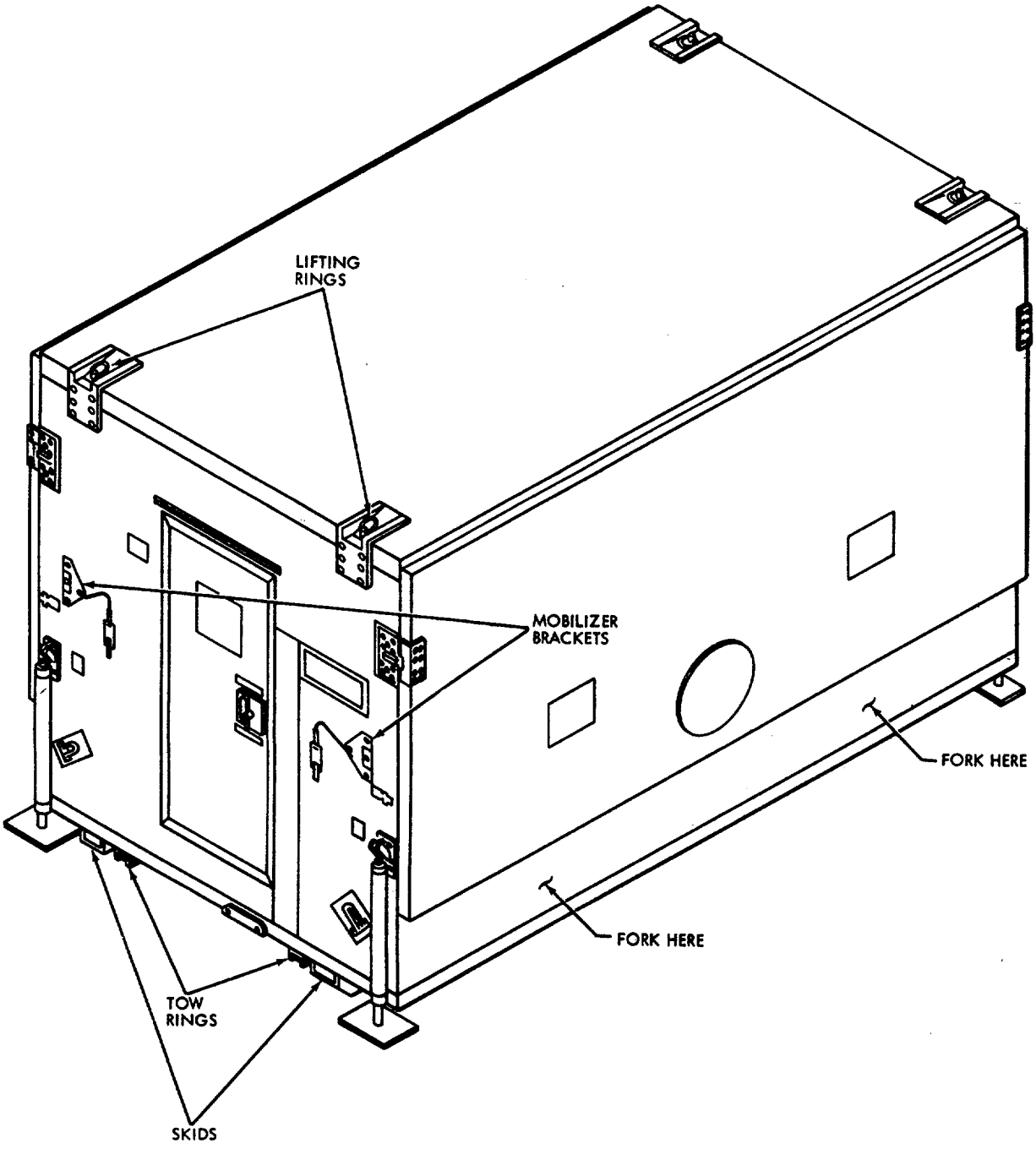


Figure 3-1. Shelter handling points.

d. Skidding. Attach a cable or chain sling to towing rings identified on the shelter and shown in figure 3-1 and connect to suitable equipment for skidding the shelter.

Caution: **Limit skidding of the shelter to short distances over smooth level terrain to prevent damage to shelter skids**

3-3. Preparation of Equipment for Shipment

a. Inspection. Examine the item for any unusual conditions such as damage or missing components. Inspect the item in accordance with steps outlined in Weekly Preventive Maintenance Services (para 2-5). Deficiencies and shortcomings along with corrective action taken will be recorded on DA Form 2404 (TM 38-750).

b. Preparation for Shipment. The following items shall be performed prior to folding the shelter for shipment.

(1) Drain all water from equipment in shelter.

(2) Disconnect dual water hose assemble from water service box and from water outlet box as applicable. If provided, disconnect heater receptacles. Drain and store hoses. Install covers on all connections and on hose assemblies.

(3) Disconnect telephone inlet line from telephone jack.

(4) Disconnect 400 Hertz and 60 Hertz cables from power inlet receptacles and from power outlet box as applicable. Disconnect emergency light power supply, if indicated. Store cables and power supply.

(5) If applicable, disconnect surgery light power supply and humidistat.

(6) Detach, disassemble, and stack for storage all Medical Corps equipment in accordance with instructions on instruction placard located on inside of access door. Secure equipment with applicable tie down apparatus in accordance with instructions placard.

(7) Disconnect and store conditioned air system components (para 2-43).

c. Marking. Marking shall be in accordance with MIL-STD-129.

d. Shipment. The expandable shelter may be transported by airplane, helicopter, ship, truck, or train. Various tie down and hoisting rings identified on the shelter and shown in figure 3-1 may be used to secure the shelter to the transport equipment. Refer to Association of American Railroads Rules Governing the Loading of Commodities' on Open Top Cars (sec. 4, fig. 1A) for blocking and tie down procedures when shipment is by railroad flatcar.

Caution: **Position shelter with skid base parallel to the longitudinal axis of the carrier to prevent excessive side loads on the skids. Make sure the carrier and restraining methods are capable of supporting a weight of 7,500 pounds minimum.**

3-4. Limited Storage

a. General. Every effort should be made to provide covered storage for the expandable shelter. If this is impossible, select a firm, level, well-drained storage location, protected from prevailing winds. Position the shelter on heavy planking. Cover the shelter with a tarpaulin or other suitable waterproof covering and secure in a manner that will provide the shelter maximum protection from the elements.

b. Inspection. Examine the item for any unusual conditions such as damage or missing components. Inspect the item in accordance with steps outlined in Weekly Preventive Maintenance Services (para 2-5). Deficiencies and shortcomings along with corrective action will be recorded on DA Form 2404 (TM-38-750).

c. Preparation for Limited Storage. The following items shall be performed prior to folding the shelter for limited storage.

(1) rain all water from equipment in shelter.

(2) Disconnect dual water hose assembly from water service box and from water outlet box as applicable. If provided, disconnect heater receptacles on hoses from power receptacles. Drain and store hoses. Install covers on all connections and on hose assemblies.

(3) Disconnect telephone inlet line from telephone jack.

(4) Disconnect 400 Hertz and 60 Hertz cables from power inlet receptacles and from power outlet box as applicable. Disconnect emergency light power supply, if indicates Store cables and power supply.

(5) If applicable, disconnect surgery light power supply and humidistat.

(6) Detach, disassemble, and stack for storage all Medical Corps equipment in accordance with instructions on instruction placard located on inside of access door. Secure equipment with applicable tie down apparatus in accordance with instructions placard.

(7) Disconnect and store conditioned air system components (para 2-43).

d. Inspection and Maintenance of Equipment in Limited Storage. After equipment has been placed in limited storage, suspend all regularly scheduled preventive maintenance services and inspect as specified herein. Visual inspection of the shelter in limited storage must consist of at least a walk-around examination of the equipment to observe any deficiencies that may have occurred. Inspect equipment in open storage weekly and that in covered storage monthly. Immediately after any severe storm or environmental change inspect all equipment. Record all deficiencies and short-comings together with corrective action taken, on DA Form 2404. Keep equipment in an optimum state of readiness. Accomplish required services and repairs as expeditiously as possible. Whenever possible, perform all maintenance "on-site." To assure utilization of all assigned materiel, rotate shelters in accordance with any rotational plan that will keep equipment in an operational condition and reduce maintenance effort.

Section II. DEMOLITION TO PREVENT ENEMY USE

3-5. Authority

The expandable shelter will be destroyed only if it is in danger of being captured and use by the enemy, and only upon the order of the unit commander.

3-6. Method

Destroy the same parts on all similar equipment to prevent enemy use through cannibalization.

a. Destruction by Hand.

(1) Use sledge hammers, axes, crowbars or any other heavy tools to smash the components.

(2) Slash electrical wires, cables, cords, hose, and fabric.

(3) Remove easily removable assemblies.

(4) Punch holes in sump drain.

(5) Destroy electrical controls and lights.

(6) If a stream is nearby, throw loose parts into the water. Bury or scatter remaining parts.

b. Destruction by Explosives. If demolition explosives are available, charges should be placed in the following areas.

(1) Inside of shelter.

(2) Inside water service box.

CHAPTER 4

DIRECT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

4-1. Scope

These instructions are published for the use of direct and general support maintenance personnel maintaining the expandable shelter. They provide information on the maintenance of the equipment, which is beyond the scope of tools, equipment, personnel, or supplies normally available to using organization.

4-2. Record and Report Forms

For record and report froms applicable to direct support maintenance, refer to TM 38-750.

Note. Applicable forms, excluding Standard Form 46 which is carried by the operator, shall be kept in a container mounted on the equipment.

Section II. DESCRIPTION AND TABULATED DATA

4-3. Description

For a complete description of the expandable, shelter, see paragraph 1-3.

4-4. Tabulated Data

For tabulated data on the expandable shelter, see paragraph 1-4, step b.

CHAPTER 5

GENERAL MAINTENANCE INSTRUCTIONS

Section I. SPECIAL TOOLS AND EQUIPMENT

5-1. Special Tools and Equipment
Special tools or equipment required by direct and general support maintenance personnel for maintenance of the expendable shelter are listed in table 2-1.

5-2. Specially Designed Tools and Equipment
No specially designed tools or equipment are required by direct and general support maintenance personnel for maintenance of the expandable shelter.

Section II. TROUBLESHOOTING

Refer to chapter 2, section IV for troubleshooting information for the expendable shelter.

Section III. RADIO INTERFERENCE SUPPRESSION

Refer to chapter 2, section V, for radio interference suppression information.

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS OR AUXILIARIES

Refer to chapter 2, sections X through XIV for removal and installation of major components and auxiliaries.

Section V. GENERAL FABRIC REPAIR PROCEDURES

5-3. General
This section provides direct and general support maintenance personnel with general repair instructions applicable to the fabric parts of the expandable shelter.

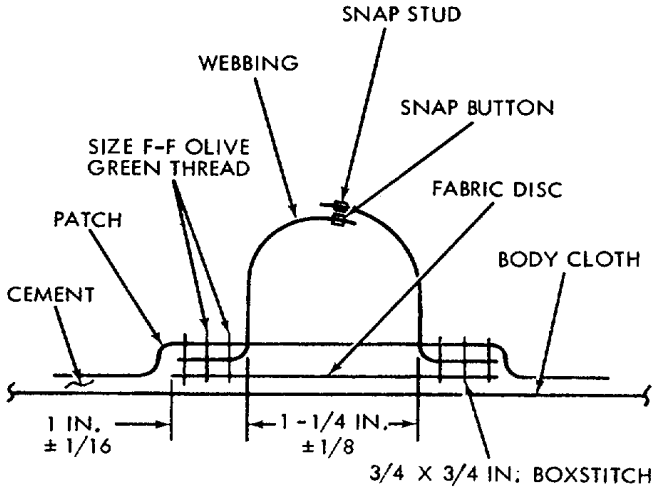
54. Fabric Repair Procedures
Refer to paragraph 2-20 for repair of fabric or replacement of fabric parts using adhesive.

5-5. Repair Procedures For Sewn Fabric Parts

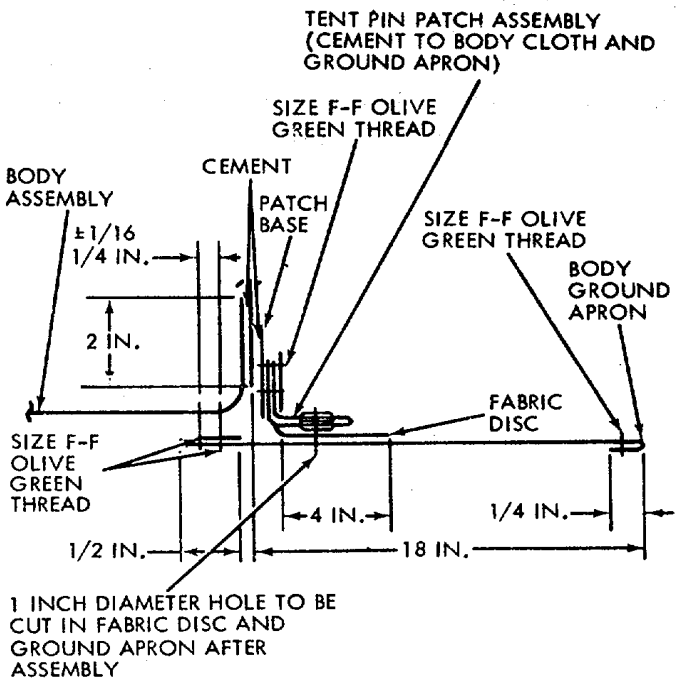
a. Removal of Sewn Fabric Parts. Remove sewn fabric parts by carefully cutting stitches securing parts with a seam ripper or other sharpened tool. Remove cut stitches from fabric parts.

Caution: **Use extreme care in cutting stitches to prevent cutting or other damage to fabric. If fabric is cut or otherwise damaged, apply patch to damaged area as described in paragraph 2-19.**

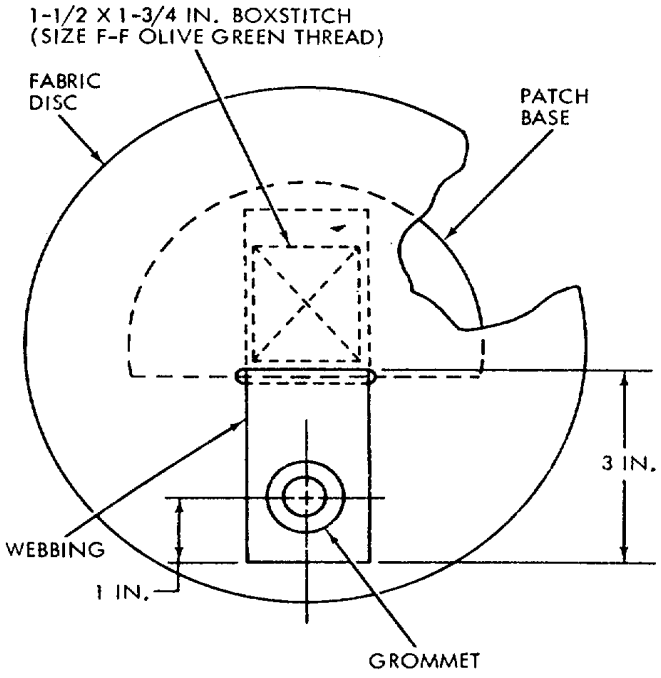
b. Installation of Sewn Fabric Parts. Position parts to be sewn together and temporarily secure the position of parts. Sew parts together according to Method 301 of Federal Standard 751, with five to nine stitches per inch. Use single needle or double needle stitching as noted on removed part. Figure 5-1 illustrates sewing repair procedures on air-lock chamber components.



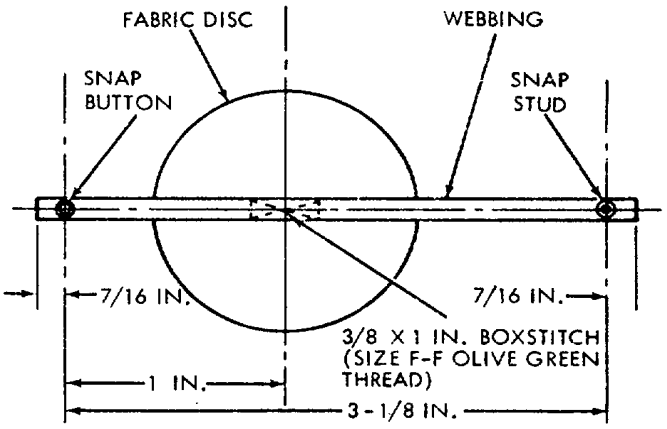
A. BOW HOLDING SNAP ASSEMBLY



B. TENT PIN PATCH ASSEMBLY



C. TENT PIN PATCH ASSEMBLY INSTALLATION



D. LIGHT FIXTURE PATCH ASSEMBLY

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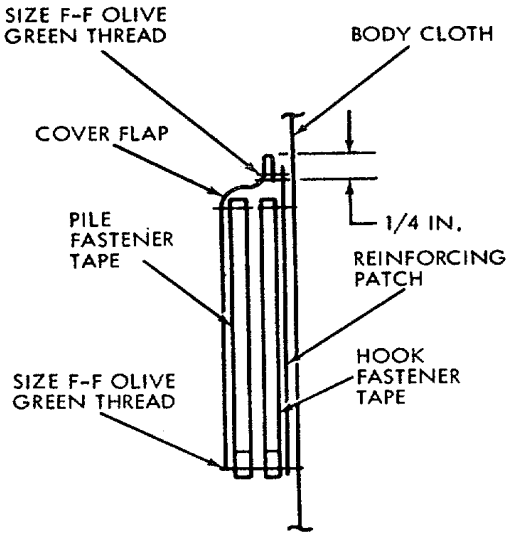
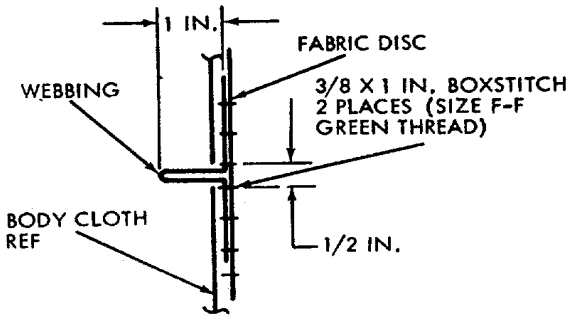
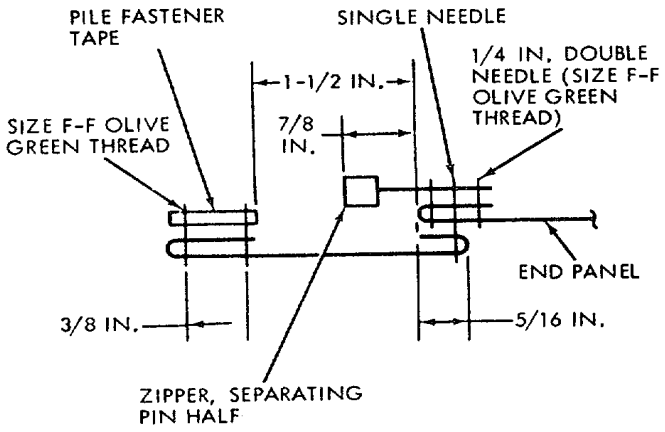
Figure 5-1. Air-lock components sewing (sheet 1 of 2).

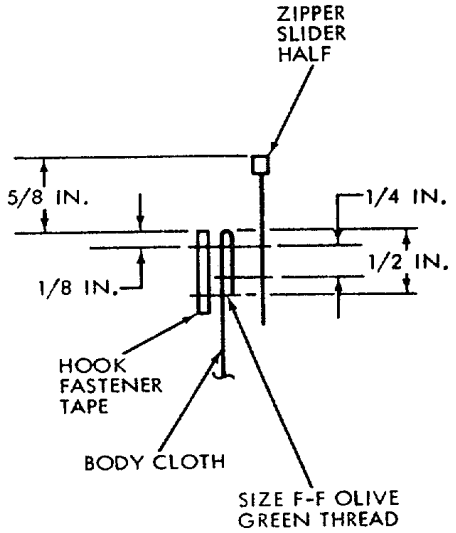


E. ELECTRICAL PATCH ASSEMBLY



F. TIE PATCH ASSEMBLY





G. ZIPPER ASSEMBLY

ME 5410-221-24 5-1 (2)

Figure 5-1. Air-lock components sewing (sheet 2 of 2).

Section VI. ELECTRICAL SYSTEM TEST

5-6. General

This section provides direct and general support maintenance personnel with general testing and checking instructions applicable to the expandable shelter electrical system.

5-7. Electrical System Test Procedure

a. General. The procedure outlined below shall be used as a guide for testing of the electrical system. The sequence of the test is to be followed in the order listed. Figure 5-2 illustrates the test points indicated in the procedure. Refer also to figure 1-7 for wiring schematic of the electrical system. Table 5-1 lists electrical power sources needed.

Table 5-1. Electrical Power Requirement

Item	Description	System
DC power	External 28 VDC	Check emergency lighting system
400 Hertz AC	4-Wire service 120/208 VAC 3KW	Test receptacles, lights heater and pump
60 Hertz AC	3-Wire service 120/240 Volts	Test receptacles in 50 hertz service

b. Preliminary Test.

(1) Open all circuit breakers located in the power distribution box.

(2) All switches shall be in the "off" position.

(3) Remove all power feed cables attached to "input or output" receptacles.

(4) Remove all plugs from all receptacle on ceiling or wall or distribution box. (Exception: The surgery light fixture need not be removed should this device be plugged into the raceway surgery light receptacle).

(5) Using a continuity light or continuity checker, determine the continuity of the following input to output connectors located in the power service input and output panels located on the outside of the shelter. Check the circuit of the 400 Hertz input connector J-1 to the output connecort J-2.

J-1 Pin A to J-2 Pin B
J-1 Pin B to J-2 Pin C
J-1 Pin C to J-2 Pin A
J-1 Pin D to J-2 Pin D
J-1 Pin E to J-2 Pin E
J-1 Pin E to Shelter Ground

(6) Check circuit of the 60 Hertz input connector J-3 to the output connector J-4.

J-3 Pin A to J-4 Pin A
J-3 Pin B to J-4 Pin D
J-3 Pin C to J-4 Pin C
J-3 Pin D to J-4 Pin B

(7) Remove the circuit breaker panel from the electrical distribution box and perform the following test.

(8) Connect the lead of a continuity tester to one terminal of the ground terminal block TB4 (located in back of the electrical distribution box). With the other lead check each connection of all circuit breakers. All points should be clear of grounds.

(9) Replace the circuit breaker panel.

(10) Open all circuit breakers on power distribution panel.

c. Power on Test.

(1) Connect 400 Hertz and 60 Hertz cables to connector J-1 and J-3, located at water ,box end of shelter.

(2) Apply power to 400 Hertz and 60 Hertz cable to energize shelter.

(3) Using voltmeter or multimeter check voltage at output connectors in power output box as follows.

(a) J-2 400 *cycles.*

Pin D (neutral) to pins A, B, and C.	120 V.
Voltage between and (2) of following pins A, B, and C.	208 V.
Pin E, common to ground, and pin D neutral.	

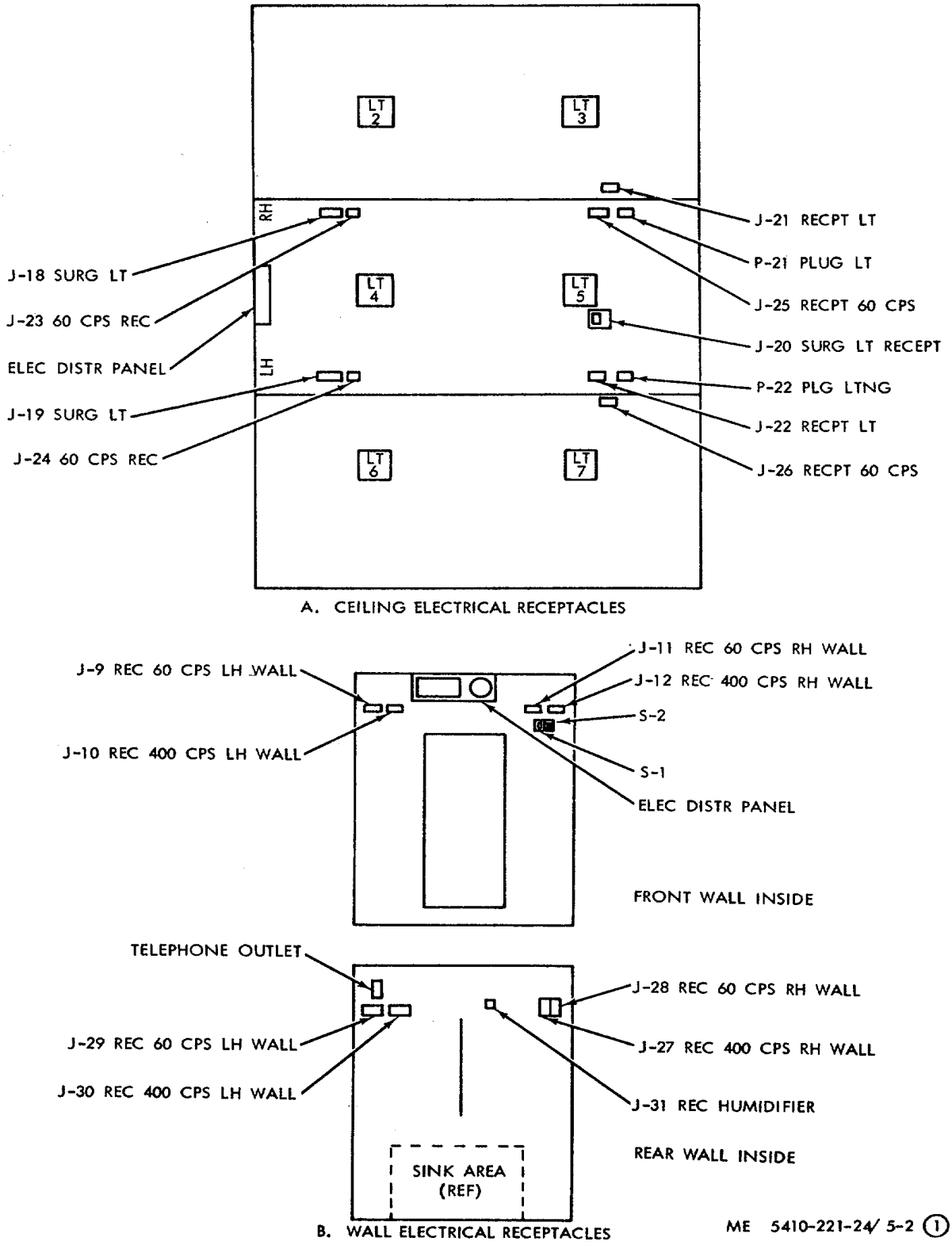


Figure 5-2. Electrical system test points (sheet 1 of 2).

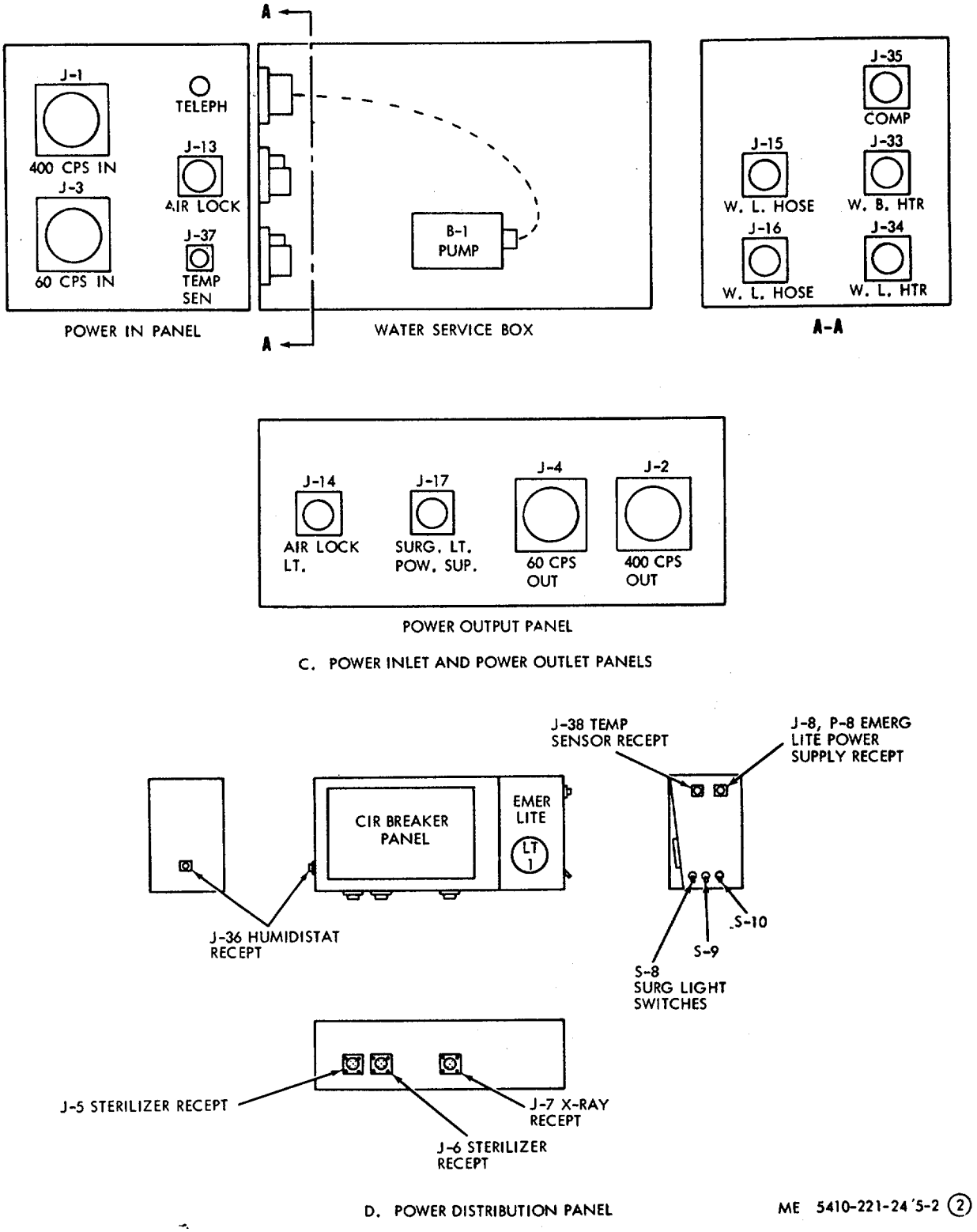


Figure 5-2. Electrical system test points (sheet 2 of 2).

(b) J-4 60 cycles.

Pin C (common) to either pins B or D. 120 V.
Pin B to pin D ---------- 240 V.
No voltage between pins A or E and either pins B, C, D or shelter ground.

(c) J-17 surgery light external power.

Pin E continuity to ground.
Close CB 9 circuit breaker.
Pin C to pin D ---------- 120 V.

(4) Remove 400 Hertz power and close circuit breaker CB 15. Close switches S8, S9, and S10 toggle switches (up position) on the power distribution box and check for continuity between J-17. pins A and B and J-18, J-19, and J-20 as follows.

J-17 Pin A to J-18 Pin 3
J-17 Pin B to J-18 Pin 1
J-17 Pin A to J-19 Pin 3
J-17 Pin B to J-19 Pin 1
J-17 Pin A to J-20 Pin 3
J-17 Pin B to J-20 Pin 1

(5) Restore 400 Hertz power.

(6) Plug connectors P 21 and P 22 into receptacles J-21 and J-22. Close CB1 (28v) circuit breaker and CB8 (400 Hertz) circuit breaker. Turn fluorescent light switches S1 and S2 to the ON position. Area fluorescent fixtures shall light. Remove P 21 and P22 from J-21 and J-22 and make the following voltage checks.

J-21 Pin 13 to Pin 14 ---------- 120 V.
J-22 Pin 13 to Pin 14 ---------- 120 V.
Pin 15 common to ground.

(7) With fluorescent area lights turned on perform the following tests.

(a) Remove dummy plug P8. Area lights shall go off.

(b) Replace dummy plug P8 and trip off 400 Hertz input power by opening CB8 circuit breaker.

(c) Connect two 12 volt batteries in series to supply 24 VDC. Remove 60 Hertz power.

(d) Connect battery leads to pins A and E of 60 Hertz receptacles J-4. 28 volt emergency light shall be on, and area lights shall be off.

(e) Operate ceiling light toggle switches S1 and S2 to OFF position. 28 volt emergency light shall go off.

(f) Turn off 28 volt power by removing battery leads and restore 60 Hertz power.

(8) Close CB8 circuit breaker.

(9) Close CB4 and CB13. Check presence of 120 volt, 60 Hertz power at ceiling receptacles J23, J24, J25 and J26. Use 120 volt lamp connected to a standard twist lock cap.

(10) Close CB5 and CB12. Check presence of 120 volt, 60 Hertz power at wall receptacles J9, J11, J27 and J29 using a 120 volt lamp connected to a standard twist lock cap.

(11) Close CB6 and CB7. Check presence of 400 Hertz, 120 volt power at wall receptacles J10, J12, J28 and J30. Use 120 volt lamp connected to a twist lock cap for 400 Hertz receptacles.

(12) Close CB11 and CB14. Measure power at receptacles J5 and J6 at base of the power distribution box. Pins A, B and C on J6 are connected to the three phase and pin D to neutral of 400 Hertz power. Read 208 volt between phases and 120 volt between any phase and neutral.

J5 and J6

Pin A to Pin B ---------- 208 V.
Pin A to Pin C ---------- 208 V.
Pin B to Pin C ---------- 208 V.
Pin C to Pins A, B or C. 120 V.

(13) Close CB3 at 60 Hertz X-ray receptacle J-7, located at base of power distribution box, measure 240 volt between pins A and C. Measure 120 volts between pins A and C and pin B. Pin D is ground and should show continuity to grounding screws on base of power distribution panel.

(14) Install jumper between pins A and B of receptacle J-36. Install a jumper between pins F and G of receptacle J-31. Close CB10, humidifier circuit breaker.

J-31

Pin A to Pin B ---------- 208 V.
Pin A to Pin C ---------- 208 V.
Pin B to Pin C ---------- 208 V.
Pin D (neutral)
Pin D to Pin A ---------- 120 V.
Pin D to Pin B ---------- 120.V.
Pin D to Pin C ---------- 120 V.
Pin E to ground

(15) Remove jumper.

(16) Install jumper between pins F and G of receptacle J-35. Close circuit breaker CB16, sump pump.

J-35

Pin A to Pin B ---------- 208 V.
Pin A to Pin C ---------- 208 V.
Pin B to Pin C ---------- 208 V.
Pin D (neutral)
Pin D to Pin A ---------- 120 V.
Pin D to Pin B ---------- 120 V.
Pin D to Pin C ---------- 120 V.
Pin E to ground

(17) Close CB18. By means of a refrigerant, lower the temperature of the then switch S4 located in the water service box. Switch will operate when temperature is lowered to any point below 38°F. When S4 thermo-switch operates, the strip heaters, HTR. 1, 2 and 3 in the water service box will begin to heat. Observe that heaters will be turned *off* when S4 thermo-switch warms above 38°F.

(18) Close CB18 and CB19 (heater water hose) and perform the following voltage check.

J-15 and J-16

Pin C to Pin D ---------- 120 V.

(19) Close CB17 (heater water line). Use refrigerant to lower temperature of thermo-switches S5 and S7 to 38°F or below. S5 operates heater number 4, 5, and 6. S7 operates heater number 7, 8, and 9.

(20) Raise temperature to above 380F and note that heaters shut off.

(21) With CB17 closed, remove connector P34 from J-34, and perform the following voltage check.

J-34

Pin C to Pin D ---------- 120 V.

(22) Open all circuit breakers and place all switches in off position.

CHAPTER 6

ELECTRICAL SYSTEM REPAIR INSTRUCTIONS

Section I. CABLE ASSEMBLIES REPAIR INSTRUCTIONS

6-1. General

This section contains the electrical cable assemblies used to connect an external electric power source to the expendable shelter. They consist of a 60 Hertz input cab assembly and a 400 Hertz power input cab assembly. See figure 2-4 for schematic of cab assemblies.

Warning: **Personnel must observe extreme caution to avoid contact with electrical circuits when power source is connected. In case of accident from electrical shock, disconnect power source at once. If power source cannot be disconnected, free victim from live conductor with a board or other nonconductor. If victim is unconscious, apply artificial respiration and obtain medical help.**

6-2. 60 Hertz and 400 Hertz Power Input Cable Assemblies

a. General. The 60 Hertz and 400 Hertz power input cable assemblies are heavy duty weather protected cable assemblies used to connect an electrical power source of 120/240 volt 60 Hertz and 120/208 volt 400 Hertz power to the electrical system.

b. Removal, Test and Installation. Remove, test and install the cable assemblies as described in paragraph 2-27.

c. Repair. Minor cuts or abrasions to the rubber insulation are acceptable and may be repaired by wrapping with vinyl electrical tape. Replace cable assemblies if cuts or abrasions have severed or otherwise damaged the individual wires.

Section II. HARNESS ASSEMBLIES AND WIRE REPAIR INSTRUCTIONS

6-3. General

This section contains the electrical harness assemblies and wires used to interconnect the electrical components of the electrical system. They consist of a 400 Hertz and 60 Hertz power harness assemblies. Surgical and air-lock lights harness assembly, lights harness assemblies, surgical lights harness assemblies, under floor heater harness assemblies an shelter loose wire assemblies.

Note. When removing the harness assemblies and loose wire assemblies from the shelter electrical race ways an electrical wire or other flexible cable (fishing tool) must be tied to the harness or wire assembly end and pulled into the raceway as the harness or wire assembly is being pulled out. The connecting wire must be of sufficient strength to allow pulling the replacement harness into raceway during installation procedure.

** Figure 6-1. Shelter harness assemblies removal.*
(Located in back of manual)

6-4. 400 Hertz (power in) Harness and Connector Assembly

a. Removal.

(1) Jack up the shelter to gain enough height for access to the electrical cable raceway under the shelter, and remove the access panels (fig. 10-12).

(2) Remove the eight bolts and washers securing the harness clamps to the raceway.

(3) Disconnect the electrical leads from terminals 1 through 5 of TB1 terminal board in the power distribution box (fig. 6-22, item 52).

(4) Remove the nuts, washers, and screws securing the harness and connector assembly (2, fig. 6-1) to the power inlet panel and remove the harness assembly from the shelter.

b. Disassembly. Disassemble power harness assemblies as required to replace damaged terminals according to sequence of index numbers assigned to figure 6-2, and by removing terminals (1, 2) from electrical leads.

c. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasion are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are out or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

d. Assembly. Assemble power harness assemblies in reverse order of disassembly using figures 6-2 as a guide; install terminals (1, 2, fig. 6-2) and crimp to secure.

e. Test. Use a continuity light, multimeter, or other continuity checking device and check wire continuity (fig. 6-2). There must be continuity between corresponding terminals and connector pins. Continuity must not exist between pins or between pins and connector shell. If test indicates a defective connector, replace harness and connector assembly.

f. Installation. Install 400 Hertz harness and connector assembly in reverse order of removal observing figure 6-2 as a guide for

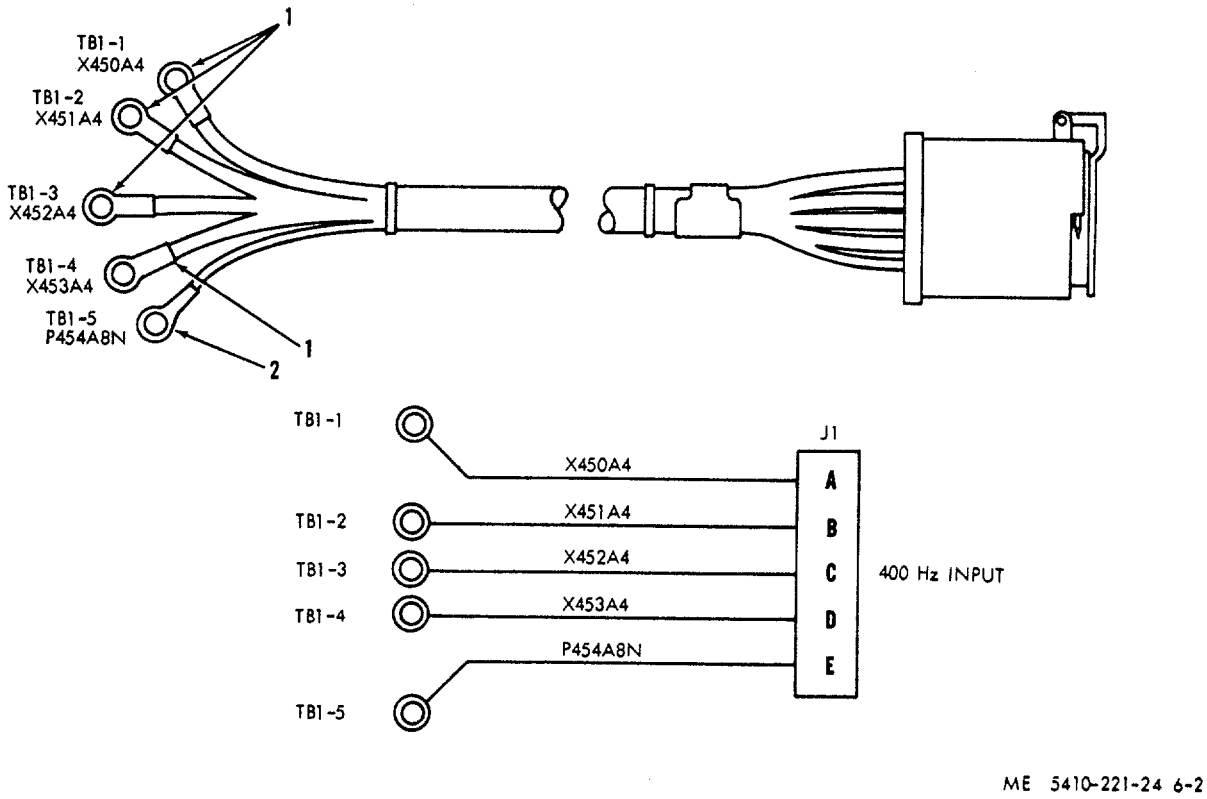


Figure 6-2. 400 Hertz power is harness assembly.

terminal identification and figure 1-7 for wiring schematic.

6-5. 400 Hertz Power (power out) Wiring Harness and Connector Assembly

a. General. The 400 Hertz (power out) wiring harness and connector assembly provides for connection of additional shelters or for other external 120/208 volts, 400 Hertz power requirements to the power out box assembly. The wiring harness assembly consists of a connector and five electrical leads with terminals.

b. Removal.

(1) Remove the nuts, washers, and screw securing the 400 Hertz harness and connector assembly (8, fig. 6-1) to the power out panel assembly.

(2) Remove the electrical lead from terminals 1 through 5 on TB1 terminal board in the power distribution box (fig. 6-22, item 52).

(3) Remove cover from raceway adjacent to power out panel and remove all clamps securing the harness to the electrical raceway. Remove the harness and connector gasket.

c. Disassembly. Disassemble 400 Hertz harness and connector assembly as required to replace damaged terminals according to sequence of index numbers assigned to figure 6-3 and by removing terminals (1, 2) from electrical leads.

d. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor outs and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

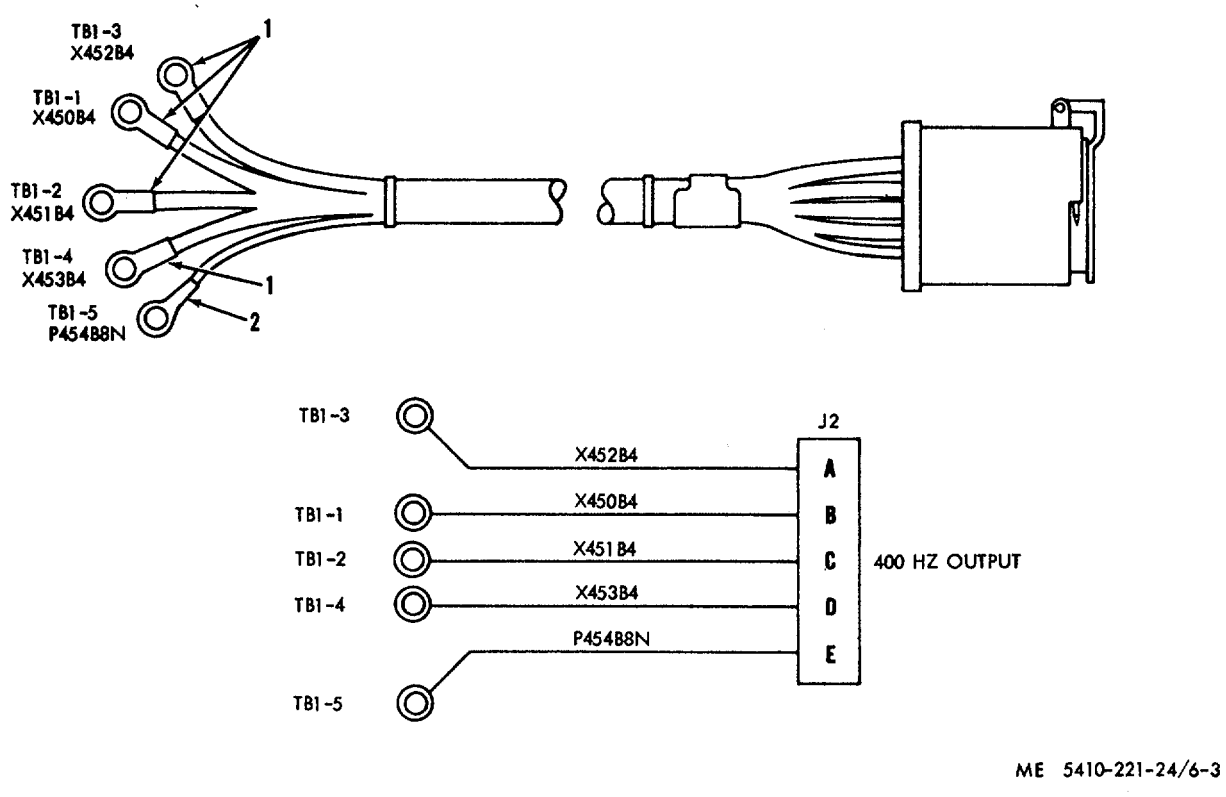


Figure 6-3. 400 Hertz power out harness assembly.

e. Assembly. Assemble 400 Hertz harness and connector assembly in reverse order of disassembly using figure 6-3 as a guide; install terminals (1, 2) and crimp to secure.

f. Test. Use a continuity light, multimeter, or other continuity checking device and check wire continuity (fig. 6-3). There must be continuity between corresponding terminals and connector pins. Continuity must not exist between connector pins or between pins and connector shell. If test indicates a defective connector or wires, replace harness assembly.

g. Installation. Install 400 Hertz power out harness assembly in reverse order of removal using figure 6-3 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-6. 60 Hertz (power in) Harness and Connector Assembly

a. Removal. Remove the 60 Hertz (power in) harness and connector assembly (1, fig. 6-1) using procedure given in paragraph 6-4, a, (1), (2) and observing the following.

(1) Disconnect electrical leads from terminals 1 through 5 on TB2 terminal board (fig. 6-22, item 60).

(2) Remove the nuts, washers and screws securing the 60 Hertz harness and connector assembly (1, fig. 6-1) to the power inlet panel.

b. Disassembly. Disassemble power harness assembly as required to replace damaged terminals according to sequence of index number assigned to figure 6-4 and by removing terminals (1, 2).

c. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceway interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

d. Assembly. Assemble power harness assembly in reverse order of disassembly using figure 6-4 as a guide; install terminals (1, 2) and crimp to secure.

e. Test. Use a continuity light, multimeter, or other continuity checking device to check wiring continuity (fig. 6-3). Continuity must exist between connector pins and corresponding terminal. Continuity must not exist between connector pins or between connector pins and connector shell. If test indicates a defective connector or wires, replace harness assembly.

f. Installation. Install 60 Hertz power harness assembly in reverse order of removal using figure 6-4 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-7. 60 Hertz Power (power out) Wiring Harness and Connector Assembly

a. General. The 60 Hertz power (power out) wiring harness and connector assembly provides for connection of additional shelters or for other external 120/240 volts, 60 Hertz power requirements to the power out box assembly. The wiring harness assembly consists of a connector and five electrical leads with terminals.

b. Removal.

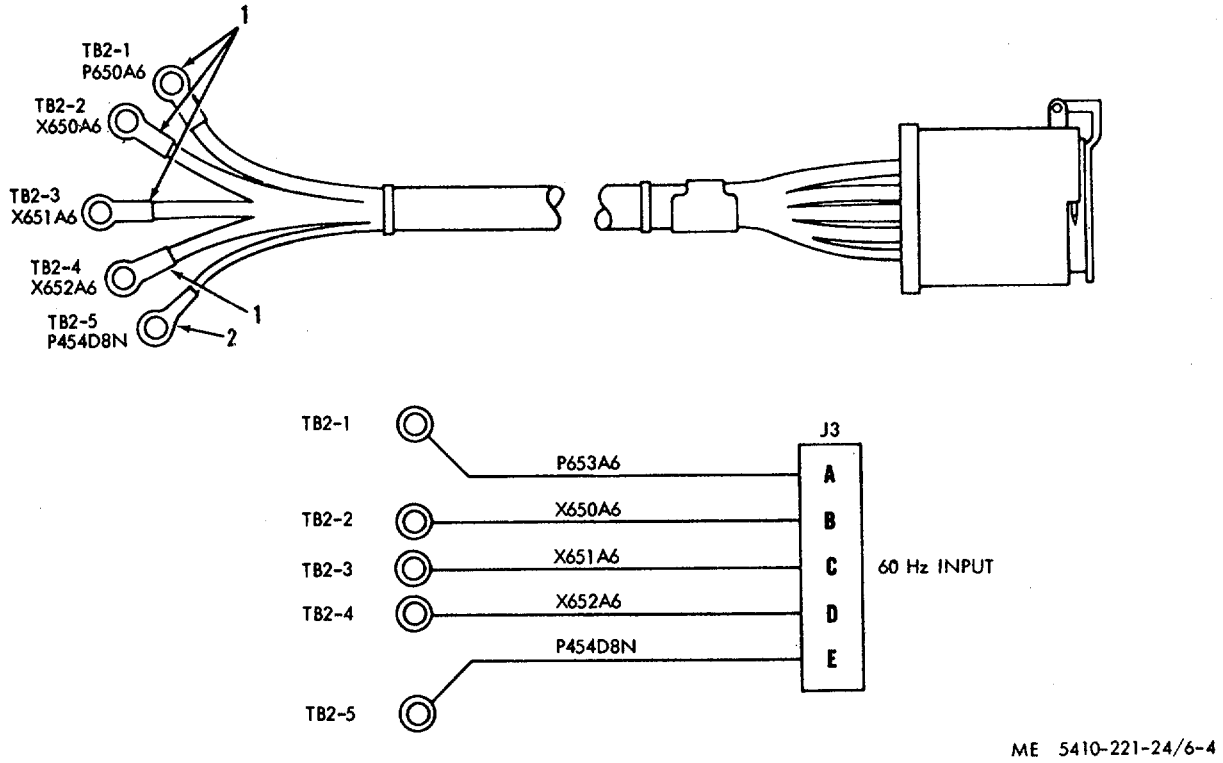
(1) Remove the nuts, washers and screws securing the 60 Hertz harness and connector (9, fig. 6-1) to the power out panel assembly.

(2) Remove the electrical leads from terminals 1 through 5 on TB2 terminal board in the power distribution box (fig. 6-22, item 60).

(3) Remove cover from raceway adjacent to power out panel and remove all clamps securing the harness to the electrical raceway and remove harness and connector gasket.

c. Disassembly. Disassemble power harness assemblies as required to replace damaged parts according to sequence of index numbers assigned to figure 6-5 and by removing terminals (1, 2) from electrical leads.

d. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly



1 Terminal (4)

2 Terminal (1)

Figure 6-4. 60 Hertz power in harness assembly.

if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

e. Assembly. Assemble power harness assembly in reverse order of disassembly using figure 6-5 as a guide) install terminals (1, 2) and crimp to secure.

f. Test. Use continuity light, multimeter, or other continuity checking device to check wiring continuity (fig. 6-5). Continuity must exist between connector pins and corresponding terminal. Continuity must not exist between connector or between connector pins and connector shell. If test indicates a defective connector or wires, replace harness assembly.

g. Installation. Install 60 Hertz power harness assemblies in reverse order of removal using figure 6-5 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-8. Surgical and Air-Lock Lights Harness and Connector Assembly

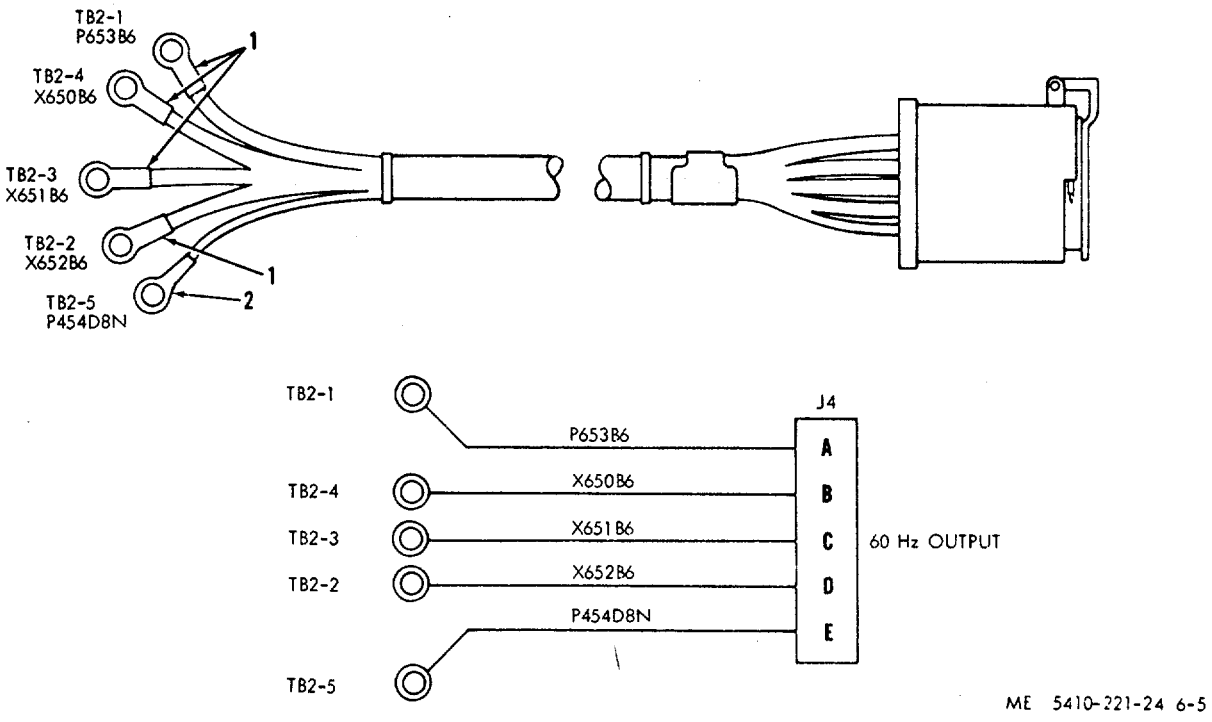
a. Removal.

(1) Disconnect terminals (1, 2, fig. 6-6) from terminal boards TB3, TB4, and TB5 inside power distribution box (fig. 6-22, items 28, 38, 45).

(2) Remove cover from raceway adjacent to power out panel and remove clamps securing the harness to the raceway.

Note. Tag or otherwise identify electrical leads as to connection point for aid at installation.

(3) Remove nuts, washers and screws securing the surgical and air-lock lights harness



1 Terminal (4)

2 Terminal (1)

Figure 6-5. 60 Hertz power out harness assembly.

and connector assembly (7, fig. 6-1) to the output panel assembly.

(4) Pull the surgical and air-lock light harness assembly from the shelter.

b. Disassembly.

(1) Remove terminals (1, fig. 6-6).

(2) Remove terminals (2).

c. Repair. If possible, straighten any be connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assembly may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

d. Assembly. Assemble harness assembly reverse order of disassembly using figure 6-6 as a guide and observing the following.

(1) Install terminals (1) on wires and crimp to secure.

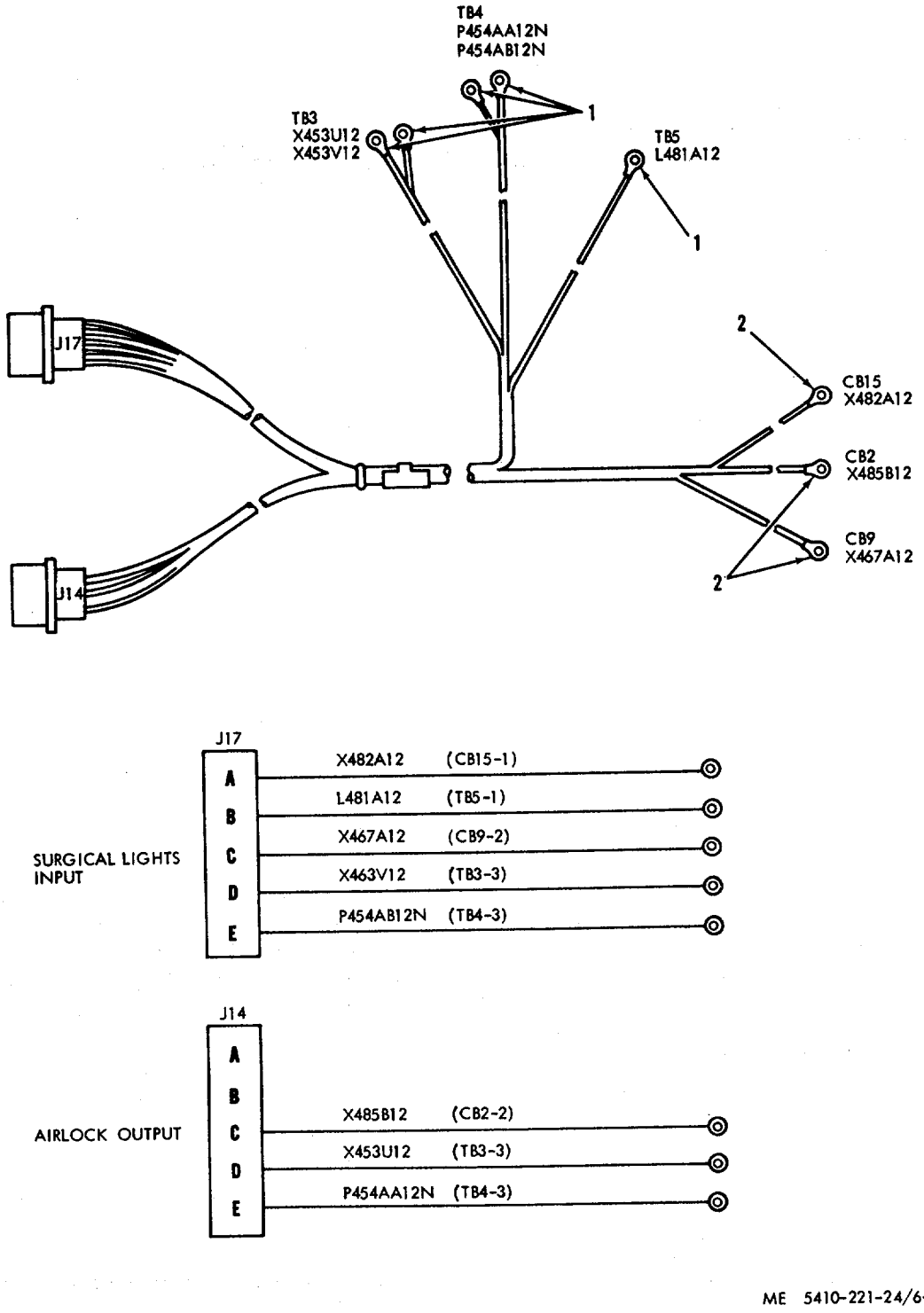
(2) Install terminals (2) on wires and crimp to secure.

e. Test. Use a continuity light, multimeter, or other continuity checking device to check wiring continuity (fig. 6-6). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If test indicates a defective connector or wire, replace the harness assembly.

f. Installation. Install harness assembly in reverse order of removal using figure 6-6 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-9. Fluorescent Lights Female Harness Assemblies

a. General. The fluorescent light female harness assemblies (11, 12, fig. 6-1) consist



1 Terminal (5)

2 Terminal (8)

Figure 6-6. Surgical and air-lock lights harness assembly.

of a female connector and three electrical leads to provide interconnection between lights LT3, LT5 and LT7 and light switch S2.

b. Removal.

(1) Disconnect harness assemblies (11 12) from receptacle boxes J21 and J22 located on the shelter ceiling.

(2) Remove screws (1, fig. 6-8) and remove cover plates (2). Remove nuts (3), washer (4) and screw (5) and remove harness clamp (6). Remove screw (7) and yoke (8) and remove harness assemblies (11, 12 fig. 6-1) from junction box.

(3) Disconnect terminals (1, 2, fig. 6-7) from LT5 light (para 2-30) and S2 switch

(4) Pull the harness assemblies (11, 12 fig. 6-1) from the electrical wiring raceways

c. Disassembly.

(1) Remove terminals (1, 2, fig. 6-7)

(2) Remove hood (3) from harness.

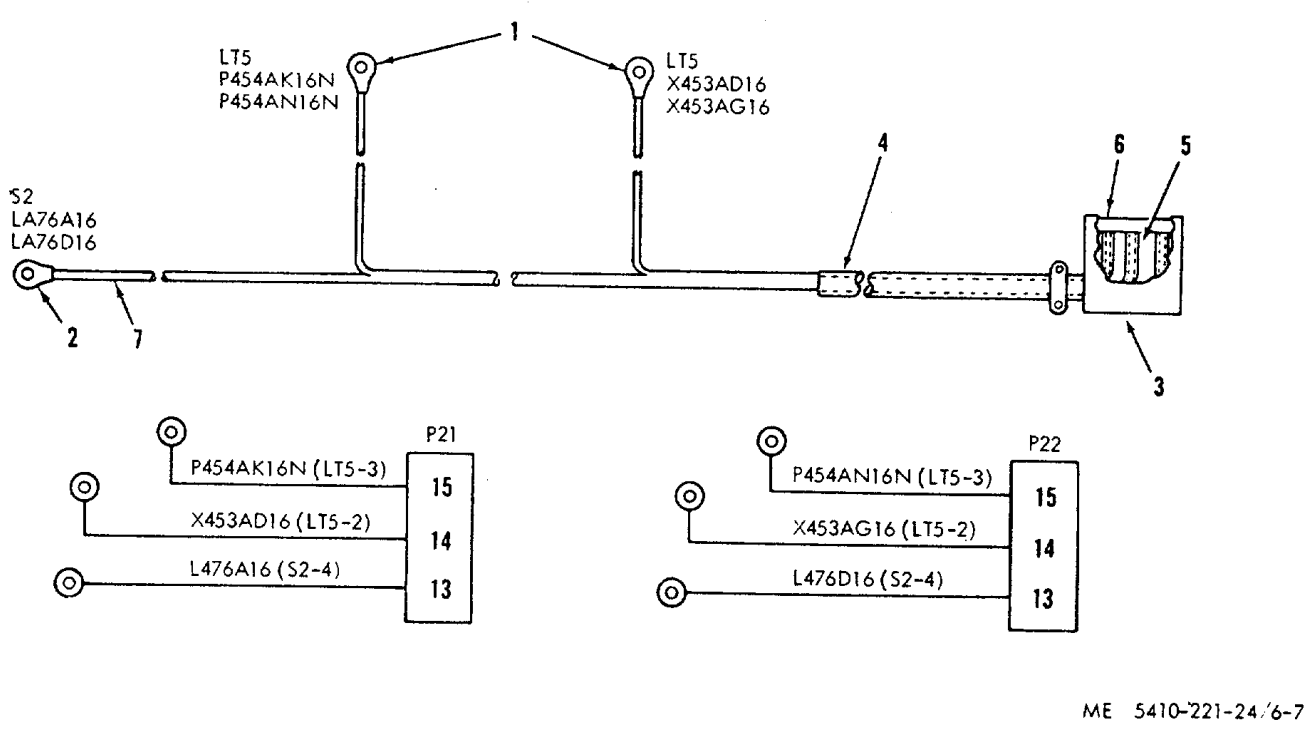
(3) Slide insulation sleeving (4, 5) back to expose soldered wire connections to connector receptacle (6). Unsolder connections and remove wires (7) from receptacle (6). Remove sleeving (4, 5).

d. Repair. Inspect wires and insulation sleeving for abrasions and cuts. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace individual wires if cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

e. Assembly. Assemble light wiring harness assembly in reverse order of disassembly using figure 6-7 as a guide and observing the following.

(1) Install insulation sleeving (4, 5) over wires (7) and push back to expose connection end. Solder wires (7) to receptacle (6) according to Specification MIL-S-6872 using Sn60



1 Terminal (2)
2 Terminal (1)
3 Hood
4 Sleeving, insulation
5 Sleeving, insulation
6 Receptacle
7 Wire (AN16)

Figure 6-7. Fluorescent lights junction box disassembly.

solder that conforms to Federal Specification QQ-571. Slide insulation sleeving (4, 5) over soldered connection points.

Note. Install wires on connector pins accord- ing to figure 6-7. If wires are replaced, mark wire location number from removed wire onto replacement wire.

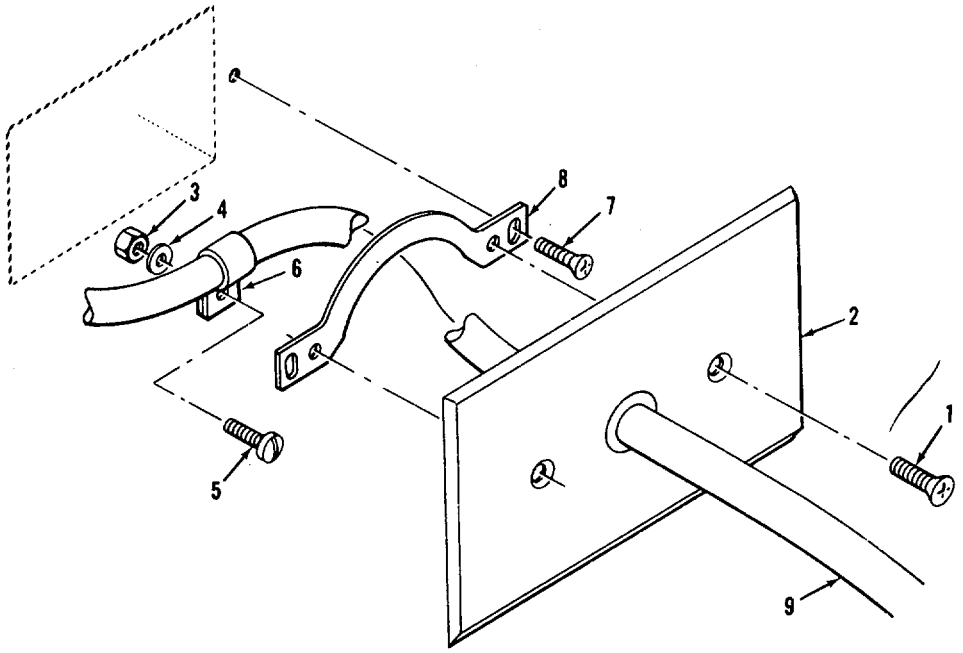
(2). Install terminals (1, 2) on wires and crimp to secure. (3) Install hood (8) on receptacle (6).

f. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-7). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If continuity does not exist between end fittings on individual wires, replace wire or connector.

g. Installation. Install female harness assemblies in reverse order of removal using figure 6-18 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-10. Fluorescent Light Male Harness Assemblies

a. General. The male fluorescent light harness assemblies (13, 14, fig. 6-1) consist of a male con-



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1 Screw (2)
2 Cover plate
3 Nut
4 Washer
5 Screw
6 Clamp
7 Screw (2)
8 Yoke
9 Female flourescent harness assembly

Figure 6-8. Fluorescent lights junction box disassembly.

nector and three electrical leads to provide interconnecting between lights LT and LT7 and between LT3 and LT5.

b. Removal.

(1) Disconnect female harness connector (13, 14) from receptacle boxes J21 and J22 o the shelter ceiling.

(2) Remove screws (1, fig. 6-10) an cover plates (2) from receptacle boxes and re move screw (3) and bracket (4). Separate male harness (8) from bracket (4) by removing nut (5), washer (6) and screw (7).

(3) Disconnect terminals (1, fig. 6-9 from light assemblies LT3 and LT7 (par 2-30).

(4) Pull harness assemblies (13, 14 fig 6-1) from the electrical wiring raceways.

c. Disassembly.

(1) Remove terminals (1, fig. 6-9).

(2) Remove identification strap (2). Slide insulation sleeving

(3) back to expose soldered wire connections to connector (4). Unsolder connections and remove wires (5) from connector. Remove sleeving (3).

d. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace individual wires if cut or otherwise damaged. Inspect connector for any conductive wire or debris between connector pins which may cause a short and remove if required.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

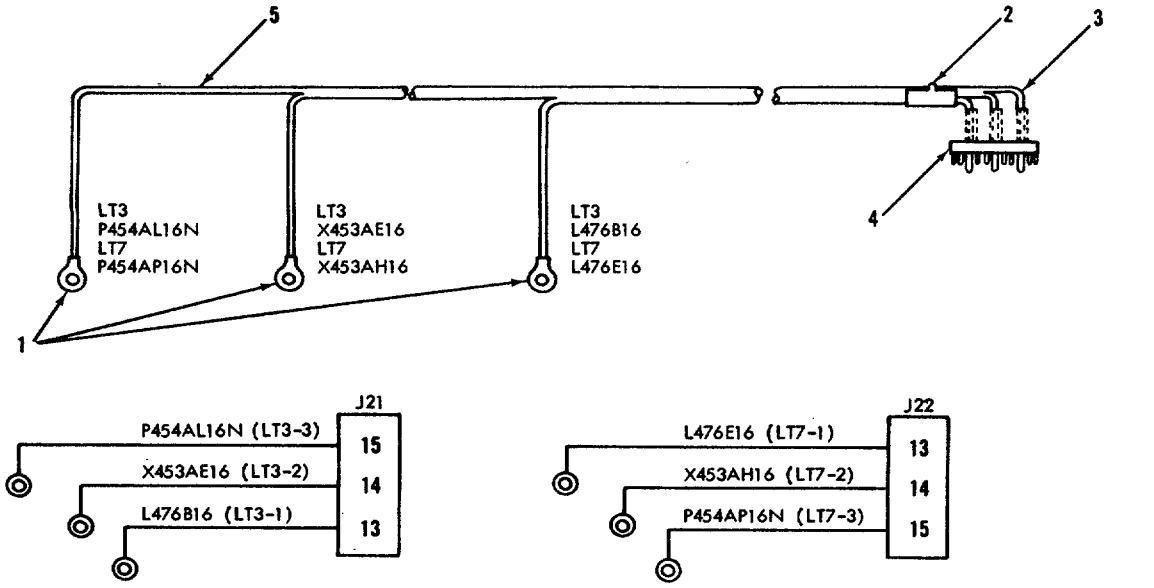


Figure 6-9. Fluorescent lights male harness assembly.

e. Assembly. Assemble light wiring harness (13, 14 fig. 6-1) in reverse order of' disassembly using figure 6-19 as a guide and observing the following.

(1) Install insulation sleeving (3) over wires (5) and push back to expose connection end. Solder wires (5) to connector (4) according to Specification MIIS872 using Sn60 solder that conforms to Specification QQ-' 571. Slide insulation sleeving (3) over soldered connection points.

Note. Install wires on connector pins accor ing to figure 6-9. If wires are replaced, mark wire 1 cation number from removed wire onto replacement wire.

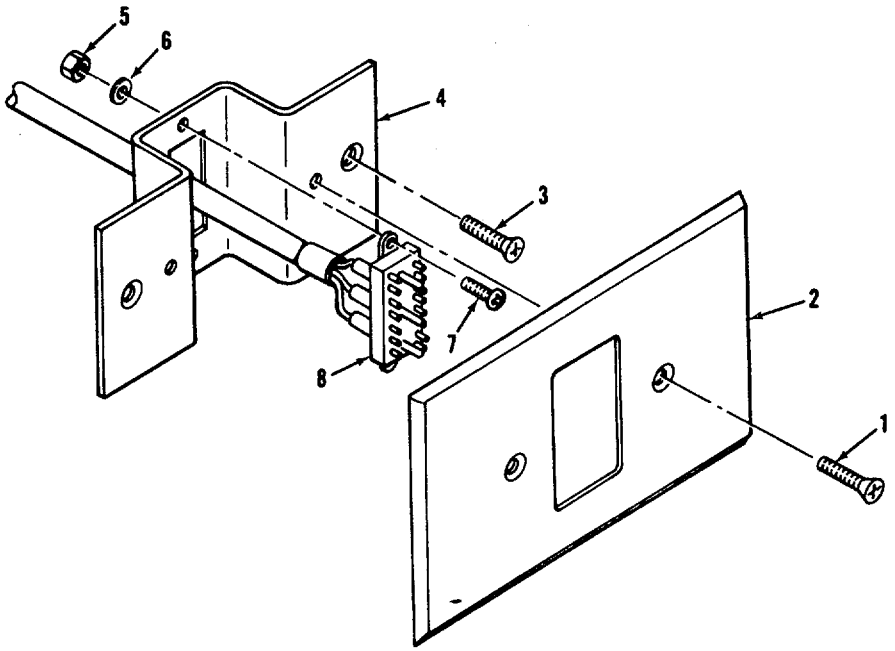
(2) Install terminals (1) on wires (5 and crimp to secure.

.

(3) Install identification strap(2) around wires (5).

f. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-19). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If continuity does not exist between end fitting on wires replace wire or connector.

g. Installation. Install male fluorescent light harness assemblies in reverse order of removal using figure 6-19 as a guide for terminal identification and figure 1-7 for wiring schematic.



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1 Screw (2)
2 Cover plate
3 Screw (2)
4 Bracket
5 Nut (2)
6 Washer (2)
7 Screw (2)
8 Male fluorescent harness connector assembly (J21 and J22)

Figure 6-10. Fluorescent lights receptacle box assembly.

6-11. Surgical Lights Wire Harness Assemblies

a. General. The surgical lights wire harness assemblies (15, 16, 17, fig. 6-1) consists of connector receptacle and three electrical lead to provide interconnection from the power distribution box to the surgical light switches and the surgical lights, when used.

b. Removal.

(1) Remove screw (1, fig. 6-2) and r(move receptacle box covers (2) from J18, J1 and J20 receptacle boxes.

(2) Remove screw (3) and bracket (4 from receptacle box.

(3) Remove nut (5), washer (6) an screw (7) and remove harness (8) from receptacle box.

(4) Disconnect terminals (1, 2, fig. 6-11 from appropriate terminal boards and switches in power distribution box using figure 6-1 as a guide for terminal identification.

(5) Pull the harness assemblies (15, 1(17, fig. 6-1) from the electrical wiring race ways.

c. Disassembly.

(1) Remove terminals (1, 2, fig. 6-11).

(2) Remove identification strap (3).

(3) Slide insulation sleeving (4) back t expose soldered wire connections to contact socket (5). Unsolder connections and remove wires (7) from connector (6). Remove sleet ing (4).

d. Assembly. Assemble light wiring harness in reverse order of disassembly using figure 6-12 as a guide and observing the following

(1) Install insulation sleeving (4) over wires (7) and push back to expose connection: end. Solder wires (7) to connector (6) according to Specification MIL-S-6872 using Sn6 solder that conforms to Specification QQ-S 571. Slide insulation sleeving (4) over soldered connection points.

Note. Install wires on connector pins accor(ing to figure 6-11. If wires are replaced, mark wire location number from removed wire onto replacement wire.

(2) Install terminals (1, 2) on wires an crimp to secure.

(3) Install identification strap (3) around wires (7).

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-12). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. Replace wire or connector if continuity does not exist between wire ends.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged. Inspect connector for conductive debris or wires between connector pins which may cause a short and remove if required.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of /electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

g. Installation. Install surgical light harness assemblies in reverse order of removal using figure 6-12 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-12. Underfloor Heaters and Water System Power Harness Assembly

a. General. The underfloor heaters and water systems power harness assembly (3, fig. 61) consists of 6 connectors and 14 electrical leads to provide interconnection between the power distribution box and water system heaters, sump pump and air-lock light receptacle located in the water box and water tunnel areas (fig. 1-7).

b Removal.

(1) Jack up the expandable shelter to gain access to the electrical cable raceway under the shelter and remove the raceway access panels (fig. 10-12).

(2) Remove clamps used to secure harness to electrical raceway.

(3) Remove electrical leads of wiring harness assembly from terminals CB19-2, CB118-2, and CB17-2, OB2-2 circuit breakers.

Remove electrical leads from terminals 1 through 3 of terminal board TB3, from terminals 1 through 3 on TB4 and from terminals ’through 10 on TB5 using figures 6-13 and 6-22 as a guide.

(4) Remove nuts, washers and screw securing connectors to water box assembly at remove harness from shelter (fig. 6-1).

c. Disassembly. Disassemble wiring harness as required for replacement of damaged par by removing terminals (1, 2, fig. 6-13) from electrical leads.

d. Assembly. Assemble wiring harness reverse order of disassembly using figure 6-13 as a guide and by installing terminals (1, 2 and crimping to secure.

e Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-13). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and col nector shell. If test indicates a defective col nector or wires, replace harness.

f. Installation. Install wiring harness assembly in reverse order of removal using figure 6-13 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-13. Water Box Heater Harness Assembly

a. General. The water heater harness assembly (5, fig. 6-1) consists of electrical connection and 17 electrical leads to provide interconnection between the water system power harness and the water box heaters (fig. 1-7 and 6-14.

b. Removal.

(1) Disconnect connector P33 from J3 in the water box assembly.

(2) Remove the screws and washers use to secure thermo switch S4 (19, fig. 6-1) to the water box.

(3) Remove wiring harness electric; leads from the HTR-1, HTR-2 and HTR(20, fig. 6-1) strip heaters using figure 6-1 as a guide for terminal identification and re move the harness.

c Disassembly. Disassemble wiring harness as required for replacement of damaged part as follows.

(1) Remove terminal (1, fig. 6-14).

(2) Remove adhesive from around electrical leads and unsolder wires from S4 thermo switch (2) and remove switch.

(3) Disassemble strip heater assemblies to replace defective parts as follows.

(a) Remove nipple (1, fig. 6-15) from terminals.

(b) Remove nut (2), screw (3) and washer (4) used to secure terminal leads and heater assembly.

(c) Remove gasket (5), heater (6), reflector (7) and insulator (8) from the shelter.

d. Assembly. Assemble wiring harness in reverse order of disassembly using figures 614 and 6-1 as a guide and observing the following.

(1) Install terminals (1, fig. 6-14) and crimp to secure.

(2) Solder wires to terminals on switch (2), according to Specification MIL-S-6872 using Sn60 solder that conforms to Specification QQ-S-571.

(3) Assemble strip heaters in reverse order of step c(3) above and observing figure 6-15.

e Test. Use a’ continuity light, multimeter of other continuity checking device to check continuity of wiring (fig. 6-14). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If test indicates a defective connector or wires replace harness assembly.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

g. Installation. Install wiring harness assembly in reverse order of removal procedure using figure 6-14 as a guide for terminal identification and figure 1-7 for wiring schematic. Use figure 6-15 as a guide for heater installation.

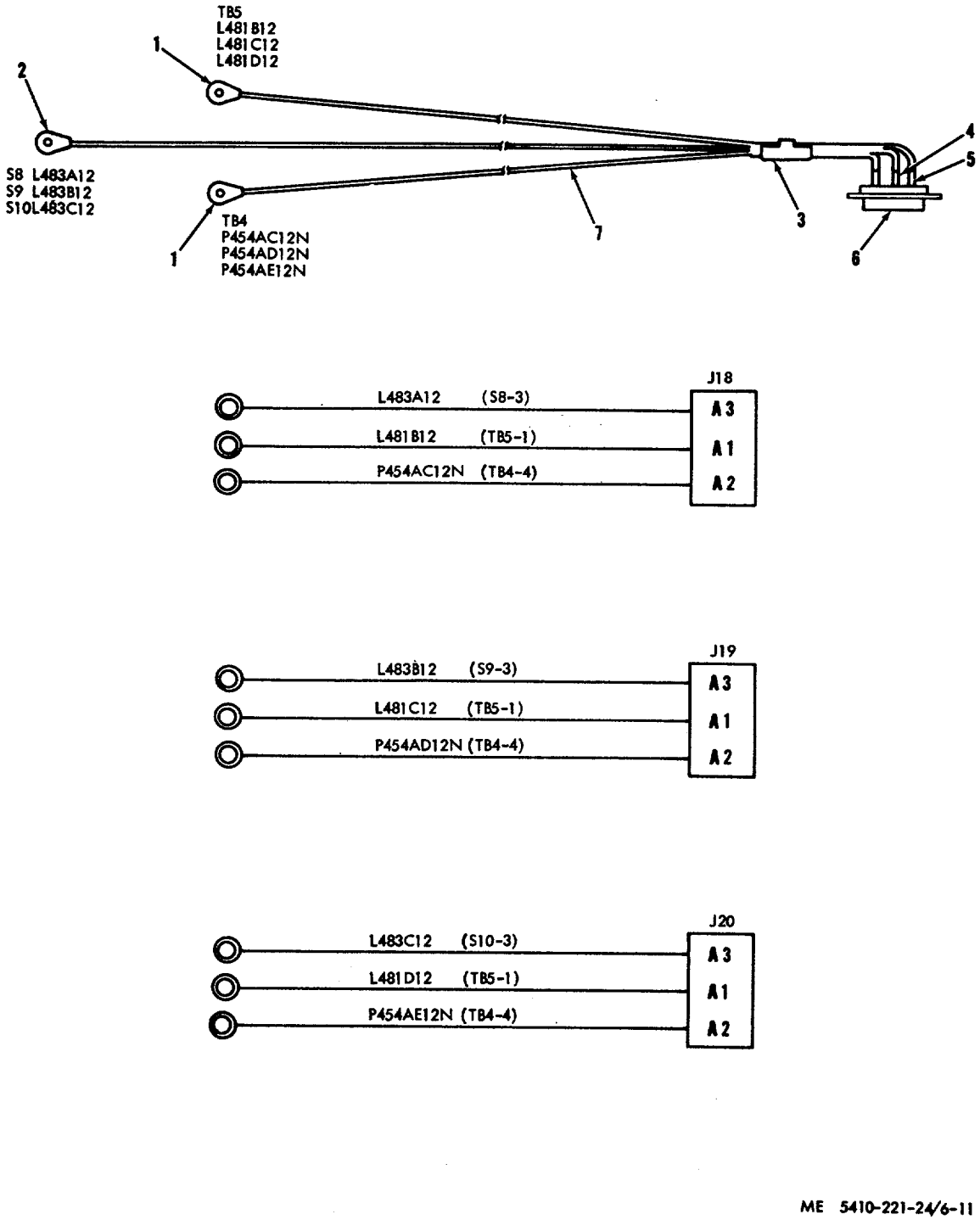
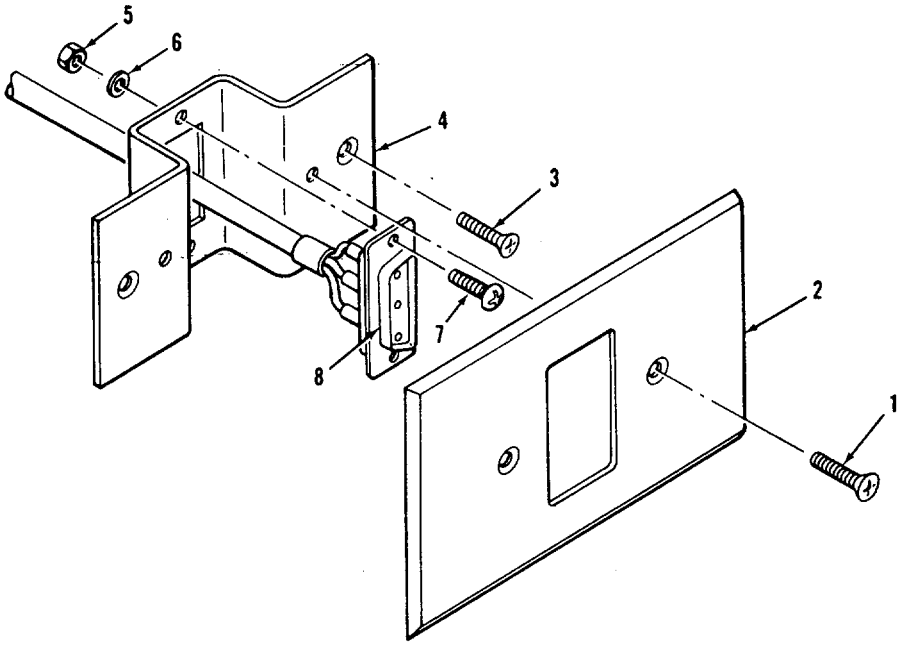


Figure 6-11. Surgical lights receptacle box disassembly

1	Terminal (6, 2 per assy)	4	Sleeving, insulation	7	Wire (AN12)
2	Terminal (3, 1 per assy)	5	Contact, socket (9, 3 per assy)		
3	Strap, identification	6	Connector (3, 1 per assy)		

Figure 6-11-Continued.



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1	**Screw (2)**	**4**	**Bucket**	**7**	**Screw (2)**
2	**Cover plate**	**5**	**Nut (2)**	**8**	**Surgical light harness assembly**
3	**Screw (2)**	**6**	**Washer (2)**		

Figure 6-12. Surgical lights receptacle box disassembly.

6-14. Water Line Heaters Harness Assembly

a. General. The water box heater harness assembly (6, fig. 6-1) consists of an electrical connector and 29 electrical leads to provide interconnection between the water system power harness and the water line heaters (fig. 1-7 and 6-16).

.

b. Removal.

(1) Jack up the expandable shelter to gain access to the water line tunnel under the shelter and remove the tunnel access panels (fig. 10-12).

(2) Remove clamps used to secure the wiring harness to the water line tunnel.

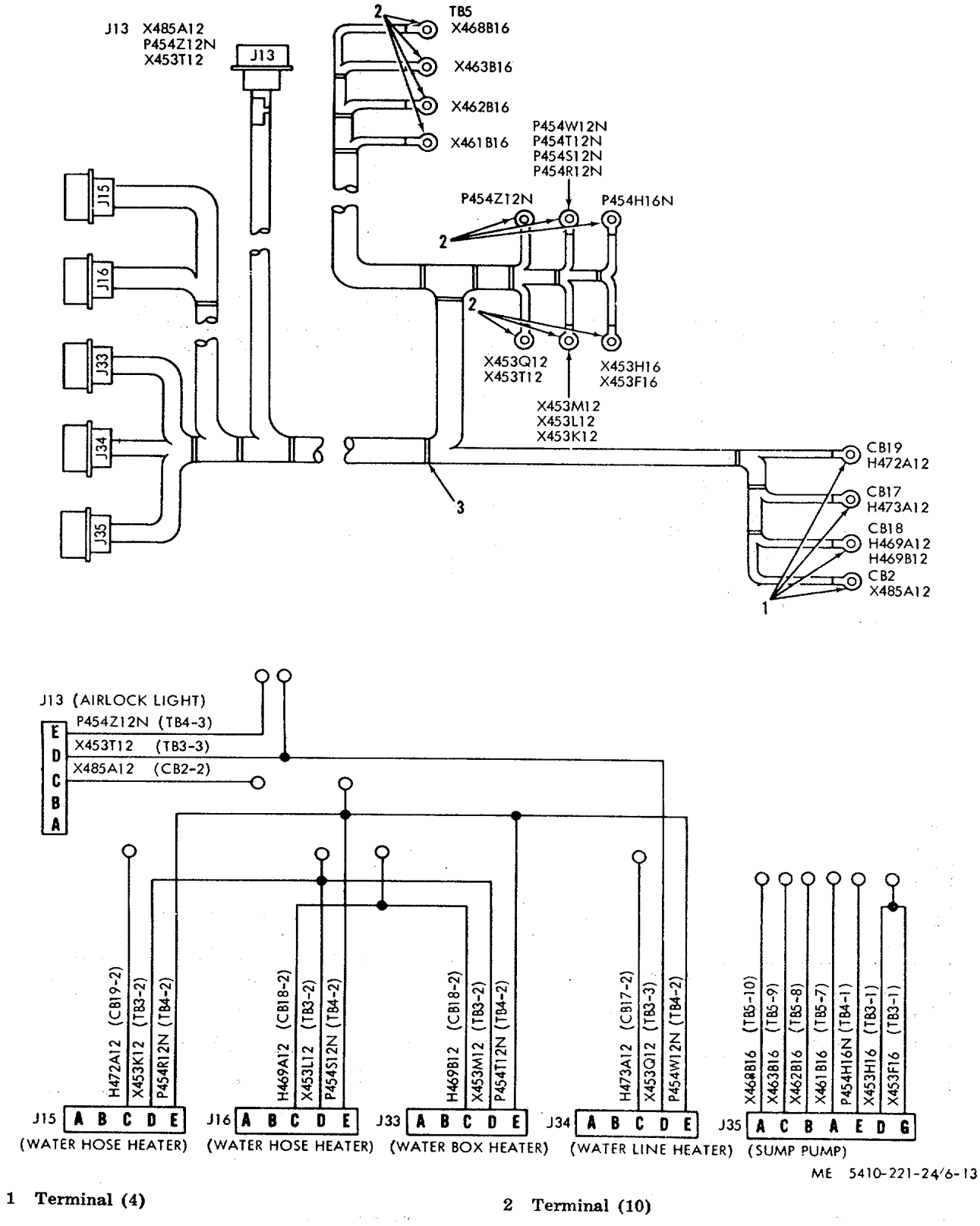
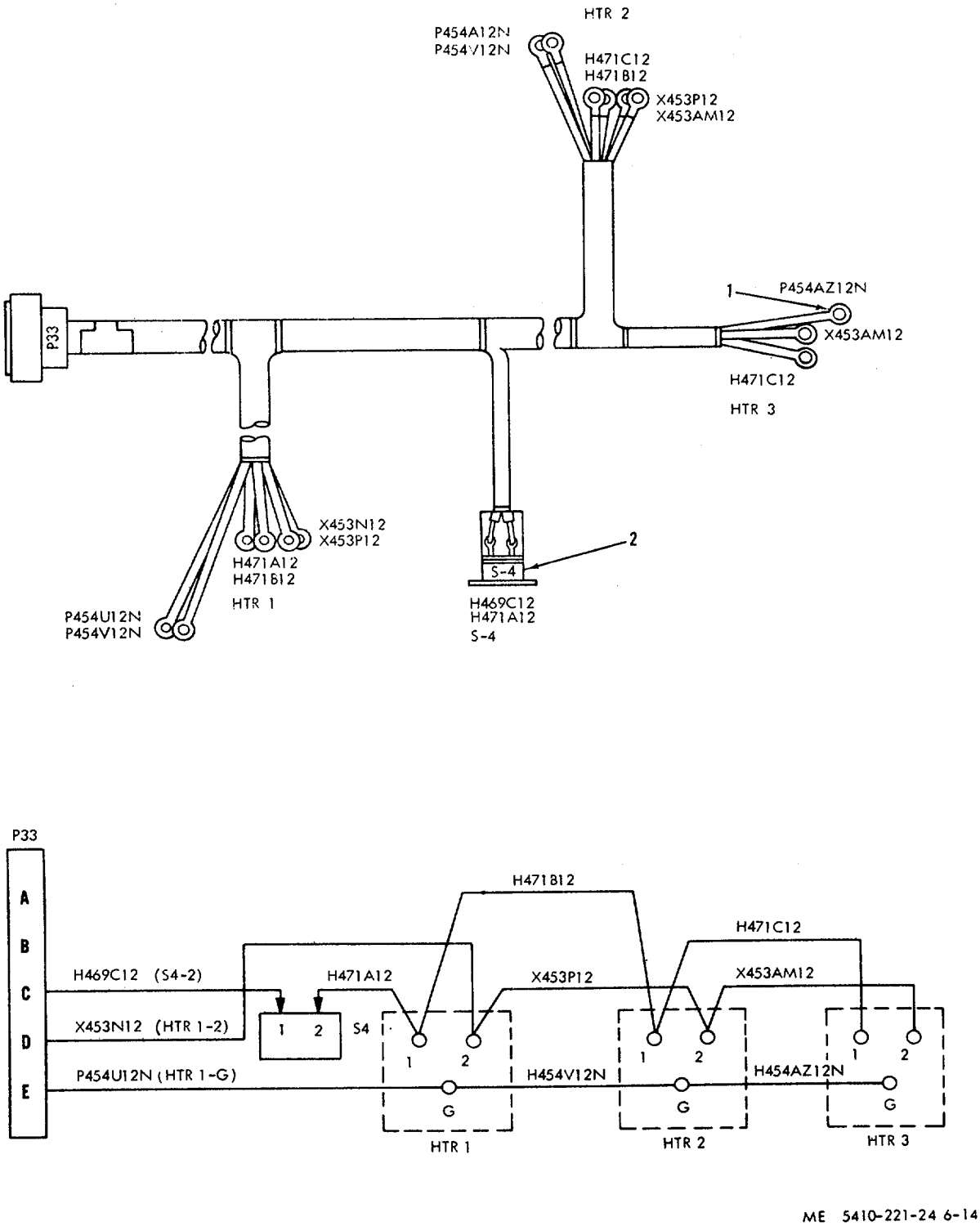


Figure 6-13. Underfloor heaters power harness assembly



1 Terminal (15) **2 Thermo switch (S4)**

Figure 6-14. Water box heaters harness assembly

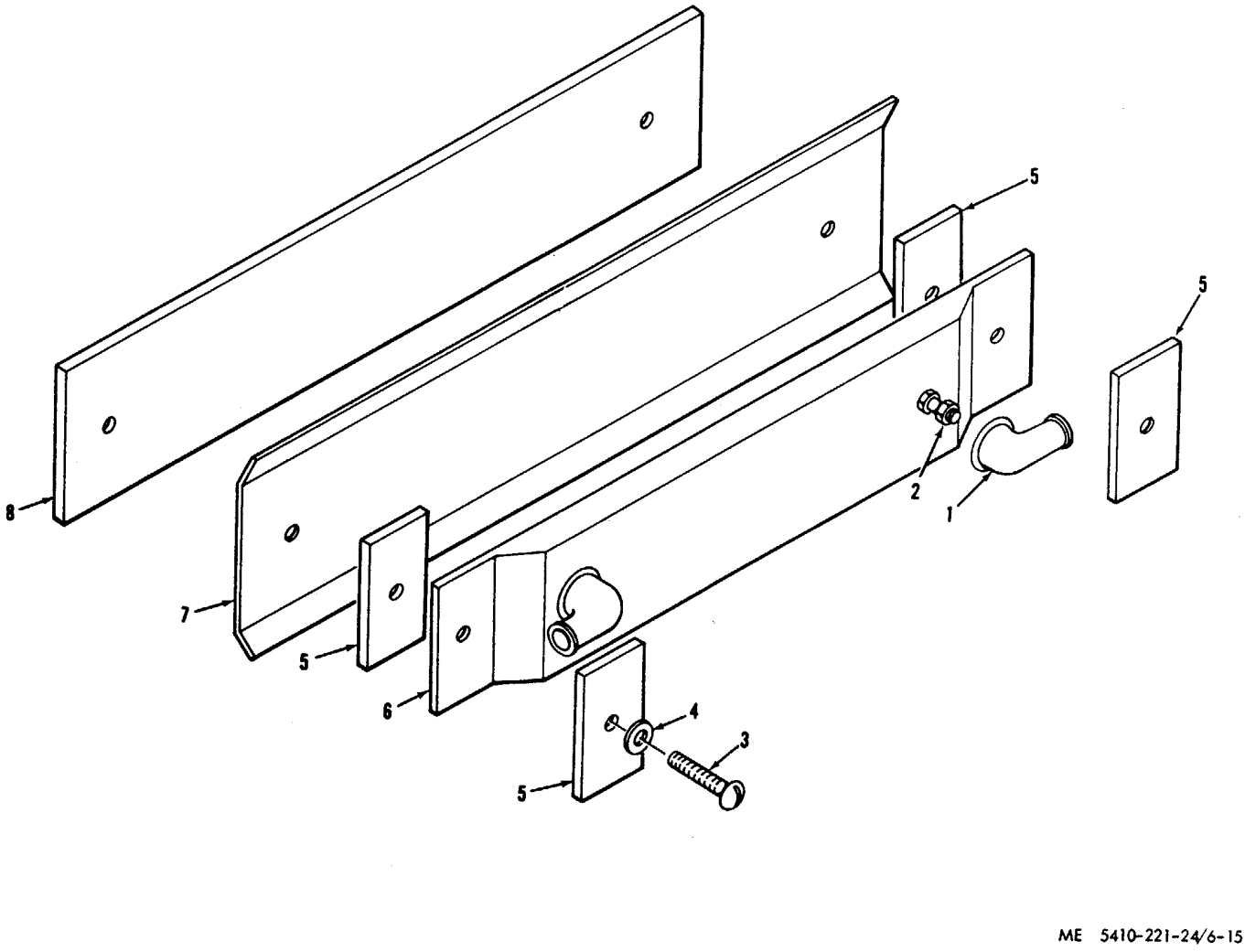


Figure 6-15. Heater assemblies-disassembly.

1	Nipple (18)	4	Washer (10)	7	Reflector
2	Nut (20)	5	Gasket (20)	8	Insulator
3	Screw (10)	6	Heater		

Figure 6-15-Continued.

(3) Remove the screws and washers used to secure the thermo switches S5 and S7 (3, fig 6-16) to the water tunnel.

(4) Remove wiring harness terminals (1 2, fig. 6-16) from HTR4 through HTR9 using figure 6-16 as a guide for terminal identification.

(5) Disconnect connector P34 from J34 in the water box and remove the harness.

c. Disassembly. Disassemble wiring harness as required for replacement of damaged parts as follows.

(1) Remove terminals (1, 2, fig. 6-16)

(2) Remove adhesive from electrical leads and unsolder wires from thermo switches (3)

(3) Remove the thermo switches (3).

(4) Disassemble heater assemblies in accordance with paragraph 6-13, c.

d Assembly. Assemble wiring harness in reverse order of disassembly using figure 616 as a guide and observing the following.

(1) Install terminals (1, 2, fig. 6-16) and crimp to secure.

(2) Solder wires to terminals on thermo switches (3) according to Specification MIL S-6872 using Sn60 solder that conforms to Specification QQ-571.

e. Test. Use a continuity light, multimeter of other continuity checking device to check continuity of wiring (fig. 6-16). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If test indicates a defective connector or wires, replace harness.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

g. Installation. Install wiring harness assembly in reverse order of removal procedure missing figure 6-16 as a guide for terminal identification and figure 1-7 for wiring schematic.

.

Use figure 6-15 as a guide for heater installation.

6-15. Remote Temperature Sensing Harness Assembly

a. General. The remote temperature sensing harness assembly (4, fig. 6-1) consists of a connector and three electrical leads to provide interconnection between the shelter and a remote conditioned air source (fig. 1-7 and 6-17).

b. Removal.

(1) Jack up the shelter to gain access to the electrical cable raceway under the shelter and remove the raceway access panels (fig.10-12).

(2) Remove the clamps used to secure the wiring harness to the raceway.

(3) Disconnect electrical leads from terminals 1 through 3 on TB6 terminal board (68, fig. 6-22) in the power distribution box.

(4) Remove the nuts, washers and screws used to secure connector J37 to the water box and remove the wiring harness.

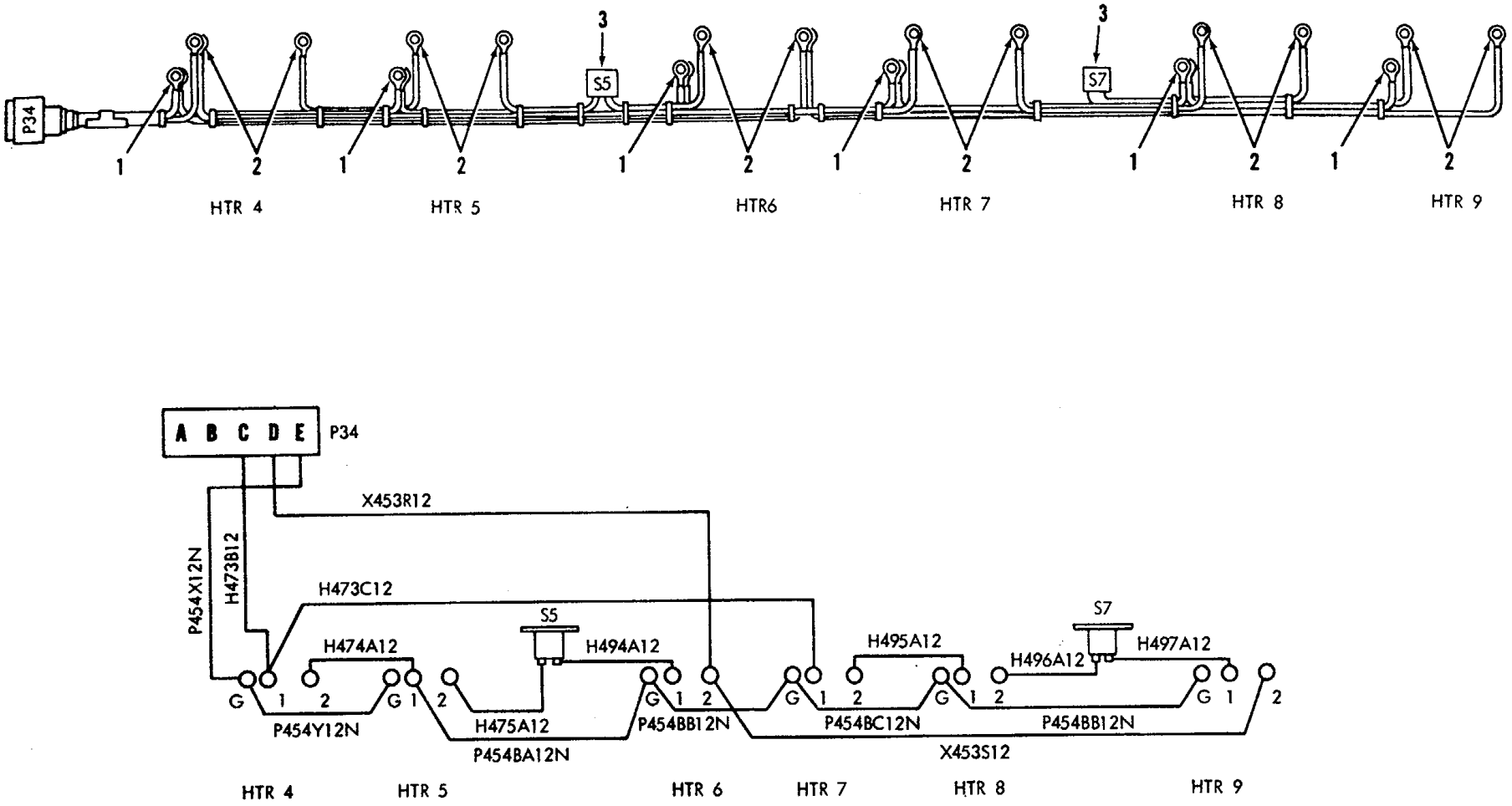
c. Disassembly. Disassembly wiring harness as required for replacement of damaged parts by removing terminals (1, fig. 6-17) from electrical leads.

d. Assembly. Assemble wiring harness in reverse order of disassembly using figure 6-17 as a guide; install terminals (1) and crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-17). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. If test indicates a defective connector or wires, replace harness assembly.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.



1 Terminal (11) **2 Terminal (14)** **3 Thermo switch (S5, S7)**

Figure 6-16. Water line heaters harness assembly

g. Installation. Install wiring harness as sembly in reverse order of removal procedure using figure 6-17 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-16. Humidifier Wiring Harness Assembly

a. General. The humidifier wiring harness assembly (10, fig. 6-1) consists of a connection and 7 electrical leads to provide interconnection between the power distribution box and a humidifier output receptacle (fig. 1-7 and 6-18).

b. Removal.

(1) Remove electrical leads from terminal 4 on TB3 (38, fig. 6-22), terminal 5 on TB, (28) and terminals 2 through 6 on TB5 (45) terminal boards in the power distribution box.

(2) Remove screws securing cover (5, fig 6-18) to receptacle box J31.

.

(3) Pull wiring harness from electrical raceway.

c. Disassembly. Disassemble wiring harness as required for replacement of damaged parts as follows.

(1) Remove terminals (1, fig. 6-18).

(2) Remove nuts (2), washers (8) and screws (4) used to secure cover (5) to connector (7) and remove cover (5).

(3) Slide insulation sleeving (6) back to expose soldered wire connections to connector (7). Unsolder connections and remove wires (8, 9) from connector (7). Remove sleeving (6).

d. Assembly. Assemble humidifier wiring harness in reverse order of disassembly using figure 6-18 as a guide and observing the following.

(1) Install insulation sleeving (6) over wires (8) and push back to expose connection.

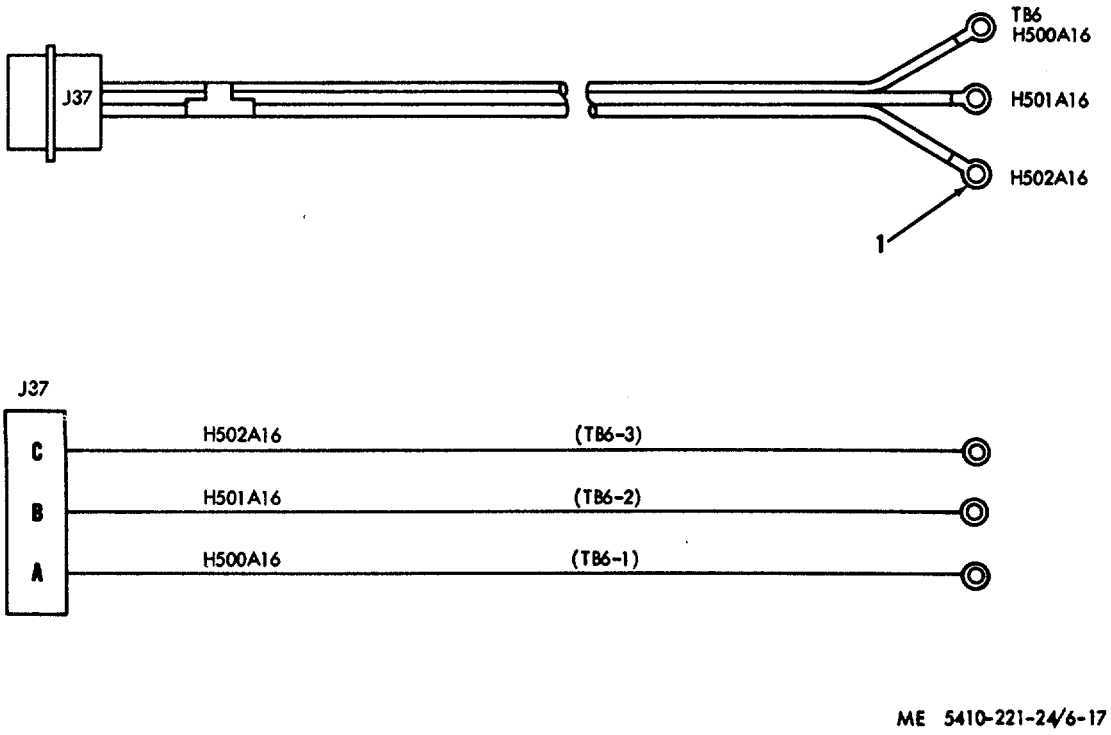


Figure 6-17. Remote temperature sensor harness assembly.

end. Solder wires (8, 9) to connector (7) according to Specification MILS-6872 using Sn60 solder that conforms to Specification QQS571. Slide insulation sleeving (6) over soldered connection points.

Note. Install wires on connector pins according to figure 6-13. If wires are replaced, mark wire location number from removed wire onto replacement wire

(2) Install cover plate (5, fig. 6-18) on connector (7) and secure with screws (4), washers (3) and nuts (2).
1) and crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-18). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. Replace individual wires or connector if continuity does not exist.

f. Repair. If possible, straighten any bent connector pins. Inspect wires and insulation sleeves for abrasions and cuts. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace if cut or otherwise damaged. Bent or damaged cover (5, fig. 6-18) shall be repaired, if possible, by straightening using a padded vise hammer or other suitable tool.

Note. Cuts or abrasions of harness assemblies may be due to sharp edges of electrical raceways, interference with other components or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

g. Installation. Install humidifier wiring harness in reverse order of removal procedure using figure 6-18 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-17. Special Purpose Cable (Telephone)

a General. The special purpose cable connects the interior telephone jack with the exterior telephone jack. The cable consists of two electrical leads (black lead shielded) encased in a nylon covering.
.

b. Removal. Remove special purpose cable (1, fig. 6-19) as follows.

(1) Remove nut (2) securing exterior telephone jack (4) to cover (3) and remove cover.

(2) Remove screw (5), cover plate (6), nut (7) and remove cover (8) and interior jack (9).

(3) Unsolder leads of cable from terminals on interior telephone jack (9) and exterior telephone jack (4) and remove cable.

c. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of cable leads and shielding. There must be continuity through individual leads and through shielding. There must not be continuity between leads or between leads and shielding. Replace cable if continuity does not check satisfactory.

d. Repair. Inspect cable insulation and wires for abrasions and cuts. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace cable assembly if individual wires or shielding is cut, damaged or if continuity does not exist.

Note. Cuts and abrasions of cable assembly may be due to sharp edges of electrical raceways, interference with other components, or improper handling. The cause shall be determined and eliminated before installation of the harness assemblies.

e. Installation. Install cable in reverse order of removal procedure using figure 1-7 as a guide for wiring schematic and observing the following.

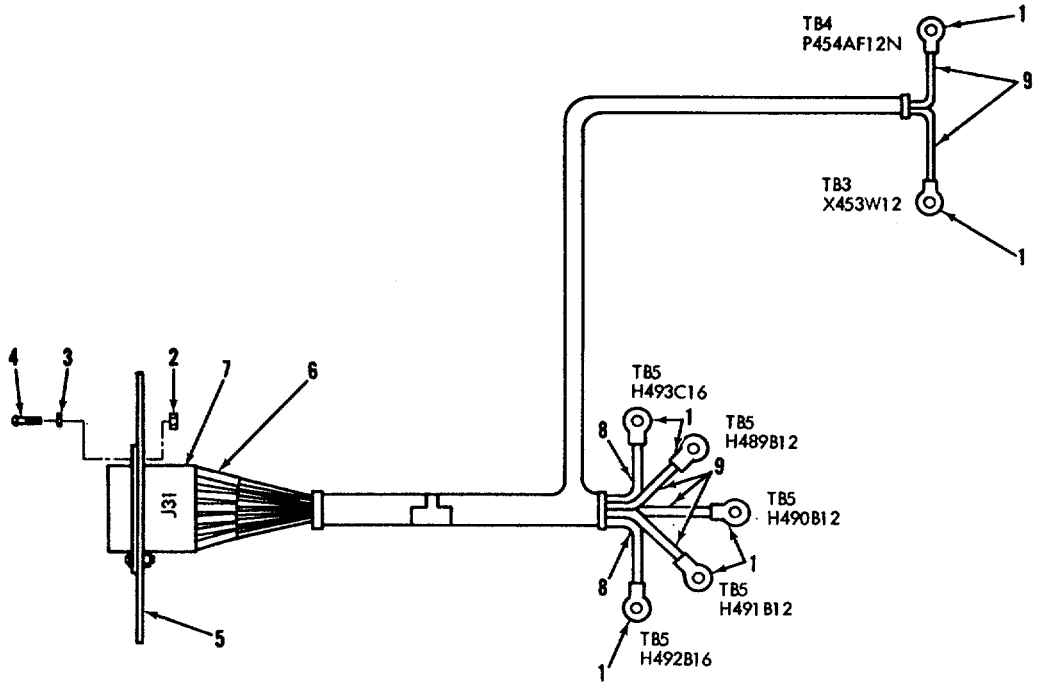
(1) Solder cable leads to terminals of 'interior telephone jack and exterior telephone jack according to Specification MIL-S-6872 using Sn60 solder that conforms to Specification QQ-S-571.

(2) Secure jack (4, fig. 6-19) to cover (3) using nut (2) and tighten securely.

(3) Secure jack (9) to cover plate (6) and cover (8) with nut (7). Position cover plate (6) and secure with screws (5).

6-18. Loose Wire Assemblies

a. General. The loose wire assemblies provides for interconnection of the shelter electrical system components. The loose wires consists of a single wire with a terminal lug on each end. See figure 1-7 for



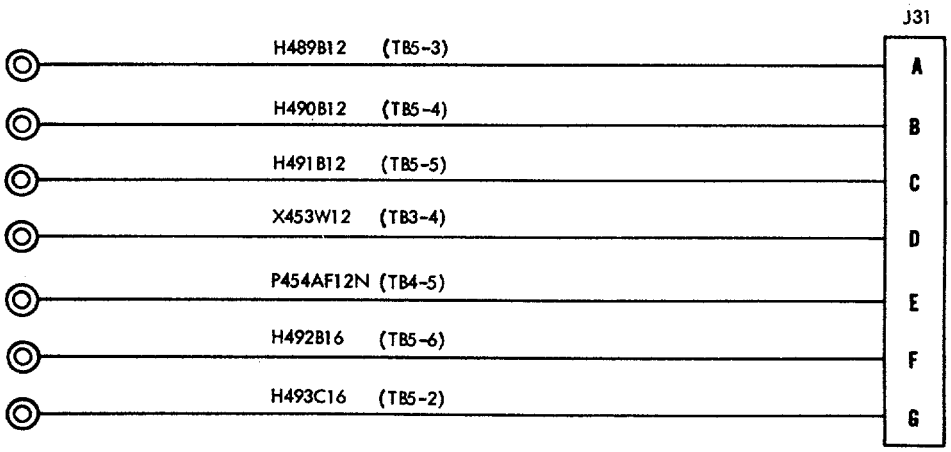


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Figure 6-18. Humidifier wiring harness assembly

1	Terminal (7)	4	Screw (4)	7	Connector
2	Nut (4)	5	Cover plate	8	Wire (AN16)
3	Washer (8)	6	Sleeving, insulation	9	Wire (AN12)

Figure 6-18-Continued.

wiring schematic and table 6-1 for wire chart.

b. Removal. Remove loose wires according to defective circuit involved referring to table 6-1 for terminal identification and observing the following.

(1) Remove applicable access cover plates and remove the appropriate electrical leads using table 6-1 for identification and location.

(2) Pull the loose wire assembly from the shelter electrical raceways.

c. Disassembly. Disassemble loose wire assemblies as required to replace damaged components by removing applicable terminals (table 6-1).

d. Assembly. Assemble loose wire assemblies in reverse order of disassembly using table 6-1 as a guide, install appropriate terminal and crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (table 6-1). Continuity must exist between end fittings on wires. Replace wire if continuity does not exist.

Table 6-1. Loose Wire Assemblies Wiring Char

Component and terminal identification

From	Terminal item No.	To	Terminal item No.	No. req'd	Wire No.	Wire item no.*
--	4	--	4	24	Jumper (convenience receptacles)	1
J25-L2	4	J23-L2	4	1	X663B12	1
J23-L2	4	CB13-L3	4	1	X663A12	1
J25-COM	4	J23-COM	4	1	X662B12	1
J23-COM	4	CB13-L1	4	1	X662A12	1
J27-COM	4	CB12-L1	4	1	X661B12	1
J9-COM	4	CB12-L1	4	1	X661A12	1
J27-L1	4	CB12-L3	4	1	X660B12	1
J9-L1	4	CB12-L3	4	1	X660A12	1
J29-COM	4	CB5-L1	4	1	X659B1 2	i
J11-COM	4	CBS-L1	4	1	X659A12	1
J29-L1	4	CB5-L,	4	1	X658B12	1
J11-L1	4	CB5-L3	4	1	X658A12	1
.T26-COM	4	J24-COM	4	1	X657B12	1
J24-COM	4	CB4-L1	4	1	X657A12	1
J26-L2	4	J24-L2	4	1	X656B12	1
J24-L2	4	CB4-L3	4	1	X656A12	1
LT5-1	6	LT4-1	6	1	L480B16	2
LT4-1	6	S1-4	3	1	L480A16	2

Table 6-1. Loose Wire Assemblies Wiring Chart-Continued

Component and terminal identification

From	Terminal item No.	To	Terminal. item No.	No. req'd	Wire No.	Wire item no.*
LT6-1	6	LT7-1	6	1	L476F16	2
LT3-1	6	LT2-1	6	1	L476C16	2
J28-BO	4	CB6-2	4	1	X465B12	1
J10-BO	4	CB6-2	4	1	X465A12	1
J30-AO	4	CB7-2	4	1	X46B12	1
J12-AO	4	CB7-2	4	1	X464A12	1
S1-1	3	S2-2	3	1	P45Q16N	2
S1-1	3	J11-GND	4	1	P454P16N	2
J11-GND	4	J12-GND	4	1	P454N12N	1
J10-GND	4	J11-GND	4	1	P454M'12N	1
J9-GND	4	J10-GND	4	1	P454L12N	1
J9-GND	4	TB4-1	5	1	P454K12N	1
J30-GND	4	J29-GND	4	1	P454AY12N	1
J27-GND	4	J30-GND	4	1	P454AX12N	1
J28-GND	4	J27-GND	4	1	P454AW12N	1
J28-GND	4	J26-GND	4	1	P454AV12N	1
J26-GND	4	J25-GND	4	1	P454AU12N	1
J25-GND	4	J24-GND	4	1	P454AT12N	1
J23-GND	4	J24-GND	4	1	P454AS12N	1
J23-GND	4	TB4-4	5	1	P454AR12N	1
LT6-3	6	LT7-3	6	1	P454AQ16N	2
LT3-3	6	LT2-3	6	1	P454AM16N	2
LTS-3	6	LT4-3	6	1	P454AJ16N	2
LT4-3	6	TB4-4	5	1	P454AH16N	2
J10-NEUT	4	J12-NEUT	4	1	X453Y12	1
J10-NEUT	4	TB3-4	5	1	X453X12	1
J28-NEUT	4	J3O-NEUT	4	1	X4563AL12	1
J28-NEUT	4	TB3-4	5	1	X453AK12	1
LT6-2	6	LT7-2	6	1	X453AJ16	2
LTS-2	6	LT2-2	6	1	X453AF16	2
LT--2	6	LT4-2	6	1	X453AC16	2
LT4-2	6	TB3-5	5	1	X453AB16	2
CB82	4	S2-3	3	1	X466A16	2
S2-1	3	S1-2	3	1	L669B16	2

Table 6-1. Loose Wire Assemblies Wiring Chart-Continued

Component and terminal identification						
From	Terminal item No.	To	Terminal item No.	No. req'd	Wire No.	Wire item no.*
S-1-3	3	S2-3	3	1	X466B16	2
LT1-1	3	S2-1	3	1	L669A16	2

*Wire and terminal key
1. AN12 Wire (type II)
2. AN16 Wire (type I)
3. Terminal (AN16 to AN12 wire No. 6 stud)
4. Terminal (AN16 to AN14 wire No. 8 stud)
5. Terminal (AN16 to AN14 wire No. 10 stud)
6. Terminal (AN16 to AN14 wire No. 4 stud)

f. Installation. Install loose wire assemblies in reverse order of removal using table 6-1 as guide for terminal identification and figure 1-7 for wiring schematic.

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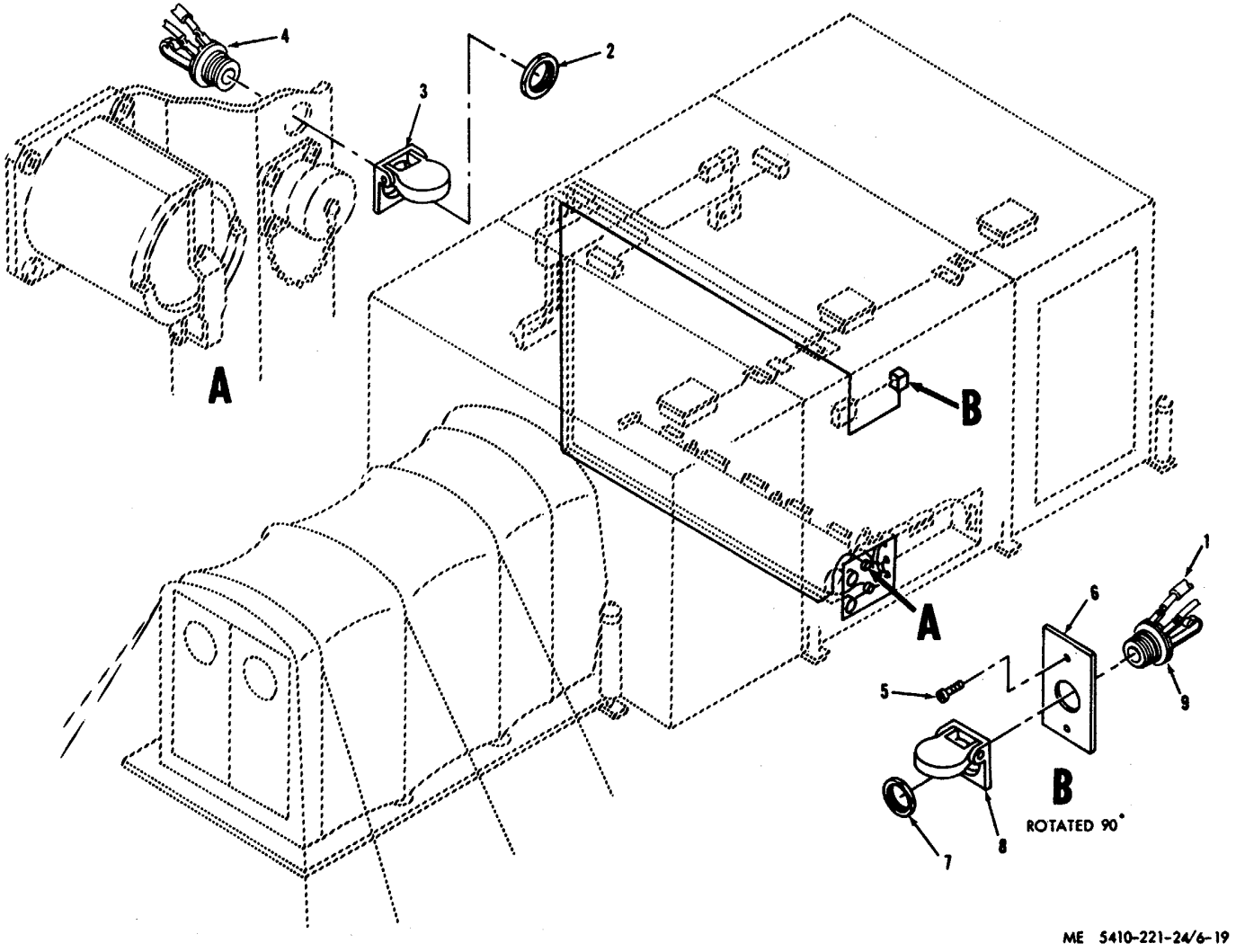


Figure 6-19. Special purpose cable (telephone) removal and disassembly

1	Special purpose cable (telephone)	4	Jack (exterior)	7	Nut
2	Nut	5	Screw (2)	8	Cover
3	Cover	6	Cover plate	9	Jack (interior)

Figure 6-19 -Continue*d.*

Section III. LIGHT ASSEMBLIES AND CONVENIENCE RECEPTACLES

6-19. General

This section contains the light assemblies used for illumination in the shelter and air-lock chamber and the convenience receptacles used for connection of electrical appliances along the shelter walls and ceiling. They consist of an air-lock chamber light assembly, six fluorescent light assemblies and twelve convenience receptacles.

6-20. Air-Lock Light Assembly

a. General. The air-lock light assembly provides illumination in the air-lock chamber. The light assembly consists of a junction box, lamp socket, incandescent lamp and a wiring harness.

b Removal. Remove air-lock light assembly as described in paragraph 2-28, step a.

c. Test. Test air-lock light assembly as described in paragraph 2-28, step b.

d. .Repair. Inspect individual exposed wires and cable insulation for cuts and abrasions. Repair minor cuts and abrasions to cable and wires by wrapping with electricians vinyl tape or Mylar tape. Inspect mounting bracket (11, fig. 6-20) for damage and misalignment. If possible, straighten bracket (11) by means of a vise, pliers or hammer. Painted components of the light assembly shall be repainted, as required, by sanding, applying primer and painting with paint conforming to Federal Standard 595, Color Chip 34087. If continuity does not exist through light or cable assembly, replace cable assembly (17) or socket assembly (12).

e. Disassembly. Disassemble light assembly as required for replacement of damaged or malfunctioning components according to sequence of index numbers assigned to figure 6-20 and observing the following.

(1) Remove lamp (1) and place in a protected area to prevent breakage.

(2) Remove screws (2), washer (3) and guard (4).

(3) Remove screws (5), cover (6) and gasket (7).

(4) Loosen knurled nut on connector (13) to permit pulling cable (17) through connector. Pull assembled socket (12), bracket (11) and leads of cable (17) out of junction box (18) far enough to permit access to screws (8, 10).

(5) Remove screws (8, 10) and washer (9). Separate terminals (14, 15) and bracket (11) from socket (12).

Note. Tag or otherwise identify electrical leads as to connection point for aid at assembly.

(6) Pull cable (17) through connector (13). Remove connector (13) from junction box (18).

(7) If required for replacement, remove terminals (14, 15) from leads of cable (17).

f. Assembly. Assemble light assembly in reverse order of disassembly using figure 6-20 as a guide and observing the following.

(1) Install terminals (15, fig. 6-20) on white and black leads of cable (17) and crimp to secure. Install terminal (14) on green lead of cable (17) and crimp to secure.

(2) Install connector (13) on cable (17) and insert electrical leads of cable (17) into junction box (18). Position bracket (11) on socket (12) and secure with screw (8), washer (9) and terminal on green electrical lead. Install terminals on black and white electrical leads on socket (12) and secure with screws (10).

(3) Pull cable (17) back through connector (13) and position assembled bracket (11) and socket (12) in junction box (18). Secure bracket (11) to junction box (18) with gasket (7), cover (6) and screws (6).

(4) Install guard (4) and secure with screws (2) and washers (3).

(5) Install lamp (1).

g. Installation. Install light assembly as described in paragraph 228, step e.

6-21. Electrical Convenience Receptacles

a. General. The twelve convenience receptacles connected to the shelter wire assemblies provide

for connection of appliances and accessories within the expandable shelter. The receptacles consist of a duplex receptacle installed in a housing. See figure 1-3 for location and identification of receptacles. See figure 1-7 for electrical schematic.

b. Removal.

(1) Remove screw (1, fig. 6-21) securing the receptacle cover plate (2) to the receptacle.

(2) Remove screws (3) securing the receptacles (4) to the receptacle housing.

(3) Disconnect electrical leads and jumper wire (5) from the receptacle (4) and remove receptacle from housing.

c. Test. Check continuity of convenience receptacles using a continuity light, multimeter or other continuity checking device. Refer to figure 1-7 for wire routing and terminal identification. Continuity must exist through receptacle outlets and terminals. Replace receptacle if continuity does not exist or if any evidence of shorting is present.

d. Installation. Install convenience receptacles in reverse order of removal using figure 6-21 as a guide.

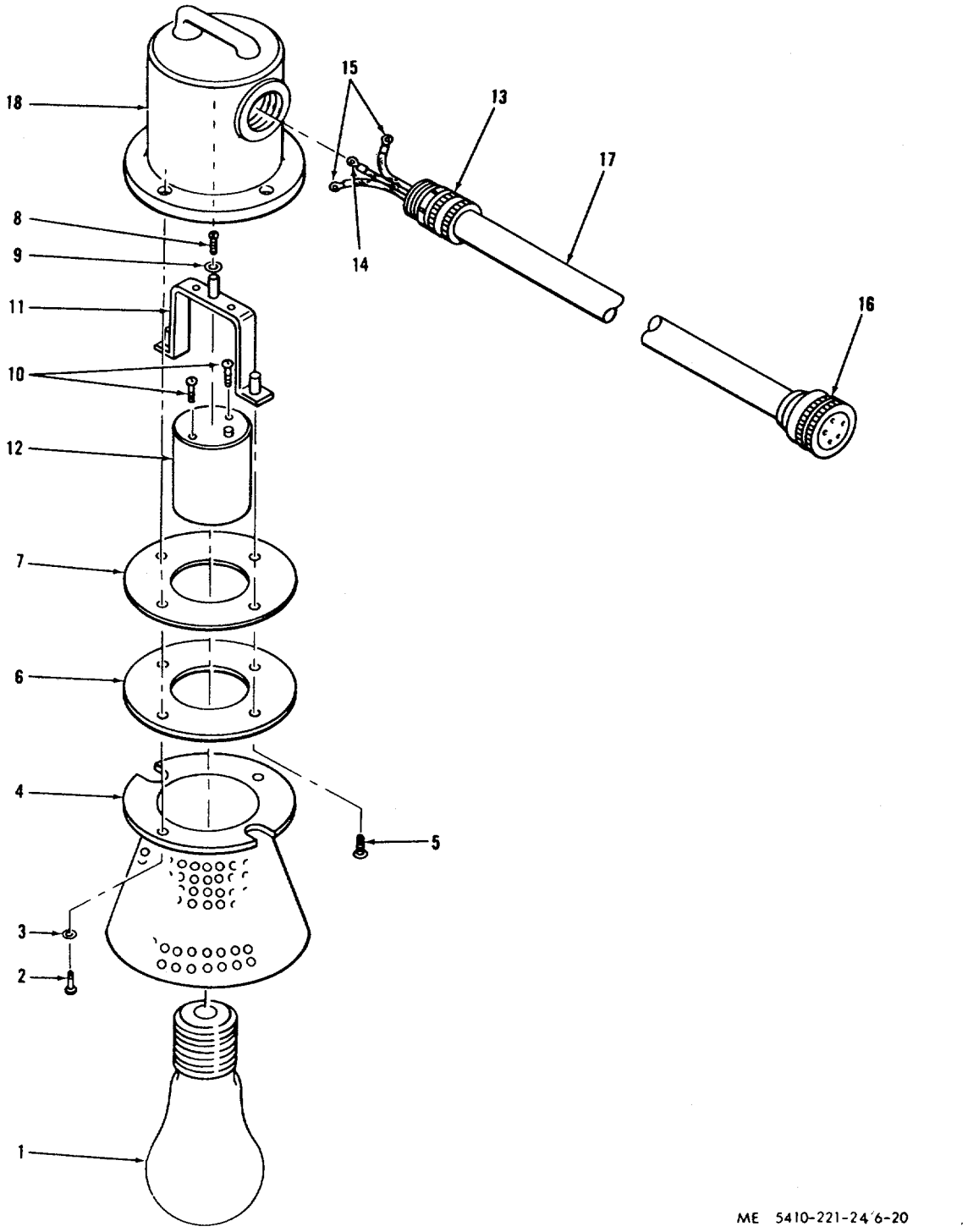
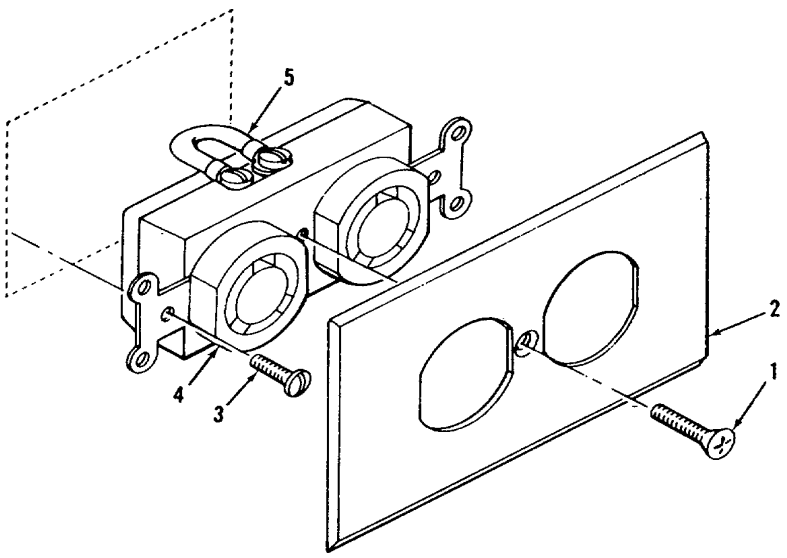


Figure 6-20. Air-lock light assembly disassembly.

1	Incandescent lamp	7	Receptacle gasket	13	Cable connector
2	Screw (4)	8	Screw	14	Terminal
3	Washer (4)	9	Washer	15	Terminal (2)
4	Air-lock light guard	10	Screw (2)	16	Connector assembly
5	Screw (2)		Receptacle bracket	17	Cable
6	Junction box cover	12	Socket	18	Junction box

Figure 6-20-Continued.



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1 Screw (1)
2 Cover plate
3 Screw (2)
4 Convenience receptacle
5 Jumper wire

Figure 6-21. Electrical convenience receptacle disassembly.

Section IV. POWER DISTRIBUTION BOX ASSEMBLY REPAIR INSTRUCTIONS

6-22. General

This section contains the Power distribution box assembly used for distribution and control of electrical power within the shelter. The distribution box assembly consists of nine wiring harness assemblies, seven wire and terminal assemblies, nineteen circuit breakers, six receptacles, three

toggle switches, an emergency light and six terminal boards enclosed a metal distribution box assembly. See figure 1-7 for electrical schematic and table 6-2 f wiring chart.

** Figure 6-22. Distribution box assembly disassembly (sheet I of 7).*

(Located in back of manual)

** Figure 6-22. Distribution box assembly disassembly (sheet 2 of 7).*

(Located in back of manual)

Note. Tag or otherwise identify all electrical lea as to connection point as soon as removed for aid assembly. All soldering of electrical connection should be accomplished according to Specification MI-S--6872 using Sn60 solder which conforms Specification QQ-S-71.

6-23. 60 Hertz Wiring Harness Assembly

a. General. The 60 Hertz wiring harness provides 60 Hertz power between TB2 terminal board and electrical components of the power distribution box. The 60 Hertz wiring harness consists of electrical wires terminating at 18 terminal lugs. Refer to figure 6-22(1)

b. Removal. Remove 60 Hertz wiring harness assembly (19, fig. 6-22(3)) as require to replace damaged or defective components a follows.

(1) Open circuit breaker panel assembly cover (125, fig. 6-22(7)).
(2) Remove screws which secure circuit breaker panel (123) to distribution box (124 and fold back exposing interior of distribution box.
(3) Remove terminal board cover (57) and nuts (53), lockwashers (54) and washers (55) to disconnect electrical leads from terminals 1, 2, 8 and 4, on terminal board TB: (60).
(4) Remove screws (17) and disconnect electrical leads from CB1, CB4, CB5, CB12 and CB13 circuit breakers.
(5) Remove 60 Hertz wiring, harness assembly (19).

c. Disassembly. Disassemble 60 Hertz wiring harness as required to replace damaged parts as follows (fig. 6-28).
(1) Remove terminals (1, 2, 8, 4).
(2) Remove tie straps (5), identification strap (6) and remove damaged or defective wires.

d. Assembly. Assemble 60 Hertz wiring harness in reverse order of disassembly using figure 6-23 as a guide and observing the following.
(1) Replace wires and straps.
(2) Install terminals (1, 2, 3, 4) and crimp to secure.

e. Test. Check continuity of wiring harness using a continuity light, multimeter or other continuity checking device. Refer to figure 1-7 and table 6-2 for wiring routing and terminal identification. Continuity must exist between wire ends. Replace applicable wire if continuity does not exist between wire ends.

f. Repair. Repair 60 Hertz wiring harness assembly to return to a serviceable condition as follows.
(1) Inspect individual wires for cuts and abrasions of insulation. Minor cuts and abrasions are acceptable and shall be repaired by wrapping damaged area with vinyl tape or other suitable electrical wiring tape.
(2) Inspect tie straps (5, fig. 6-23) for tightness and fraying. Replace any loose or frayed tie straps.

g Installation. Install 60 Hertz wiring harness in reverse order of removal using figures 6-22 as a guide and figure 1-7 and table 6-2 for terminal location and identification and observing the following.
(1) Position harness assembly (19, fig. 6-22) in distribution box and install electrical leads (P653C16, X650C10, X651C10 and X652C10) on terminals 1, 2, 3 and 4 respectively of TB2 terminal board (60). Install electrical leads i(X651E10 and X651D10) on CB4-1 circuit breaker. Install electrical lead (X652D10) on CB4-3 circuit breaker. Install electrical lead (X651F10) on CB5-1 circuit breaker. Install electrical lead (X650D10) on CB5 circuit breaker. Install electrical lead (P653C16) on CB1-1 circuit breaker. Install electrical leads (X651D10, X651C10) on CB13-1 circuit breaker. Install electrical leads (X652C10, X652D10) on CB13-3 circuit breaker. Install electrical leads (X651F10, X651E10) on CB12-1 circuit breaker. Install electrical leads (X650D10, X650C10) on CB123 circuit breaker.

(2) Install terminal board cover (57, fig 6-22) on TB2 terminal board (60).

(3) Place circuit breaker panel (123) in position and secure with screws
.

6-24. 400 Hertz Wiring Harness Assembly

a. General. The 400 Hertz wiring harness provides 400 Hertz power between terminal boards TB1, TB2, TB3 and TB4 and electrical components of the power distribution box. The 400 Hertz wiring harness consists of electrical wires terminating at 46 terminal lugs. Refer to figures 6-22 and 6-24.

Table 6-2. Distribution Box Assembly Wiring Chart

Component and terminal identification

From	To	Wire No.	From	To	Wire No.
TB2-1	CBl-1	P653C16	CB3-2	J7-A	X670A8
TB2-2	CB13-1	X650C10	TB4-5	J7-D	P454AG12N
TB2-3	CB12-3	X651C10	S8-2	S9-2	X498B12
TB2-4	CB183	X652C10	CB15-2	S8-2	X498A12
CB4-1	CB13-1	X651D10	S9-2	S10-2	X498C12
CB4-1	CB12-1	X651E10	CB3-1	TB2-2	X650E8
CB4-3	CB13-3	X652D10	CB33	TB2-3	X651G8
CB5-1	CR12-1	X651F10	CB3-5	TB2-4	X652E8
CB5-8	CB12-3	X650D10	CB1-2	LT1-2	P667A16
CB11-1	TBI-1	X450C6	J37-C	TB6-3	H502A16
CB-113	TB1-2	X451C6	J37-B	TB6-2	H501A16
CBll-5	TB1-3	X452C6	J37-A	TB6-1	H500A16
CB11-1	CB14-1	X450D8	J38-C	TB6-3	H502B16
CB11-3	CB14-3	X451D8	J38-B	TB6-2	H501B16
CB11-5	CB14-5	X452D8	J38-A	TB6-1	H500B16
CB11-l	CB19-1	X450F10	CB10-6	J36-A	H488B16
CB11-3	CB17-1	X451F10	CB10-6	K1-C2	H488A12
CB11-5	CB18-1	X452F10	CB10-4	K1-B2	H487A12
CB2-1	CB8-1	X452H12	CB10-2	K1-A2	H486A12
CB2-1	CB18-1	X452G12	TB5-2	J36-B	H493B16
CB6-1	CB10-3	X451H12	TB5-6	K1-X2	H492A16
CB6-1	CB17-1	X451G12	TBS-5	Ki-C1	H491A12
CB8-1	CB9-1	X452J12	TB5-4	Kl-B1	H490A12
CB9-1	CB10-5	X452K12	TB5-3	K1-A1	H489A12
CB14-1	CB16-1	X450E16	K1-X1	TB3-2	X453E16
CB14-3	CB16-3	X451E16	K2-X2	TB5-10	H468A16
CB14-5	CB16-5	X452E16	K2-C1	TBS-9	X463A16
TB1-4	TB3-1	X453C6	K2-B1	TBS-8	X462A16
TB1-5	TB2-5	P454C8N	K2-A1	TBs-7	X461A16
TB1-5	TB4-1	P454F8N	K2-C2	K2-X1	X460B16
CB7-1	CB10-1	X450H12	K2-C2	CB16-6	X460A16
CB7-1	CB19-1	X450G12	K2-B2	CB16-4	X459A16
J6-D	TB3-5	X453AA8	K2-A2	CB16-2	X458A16
J6-C	CB14-6	X479A8			
J6-B	CB14-4	X478A8			
J6-A	CB14-2	X477A8			
JS-D	TB3-4	X453Z8			
J5-C	CBll-6	X457A8			
JS-B	CB11-4	X456A8			
JS-A	CBll-2	X455A8			
CB3-6	J7-C	X672A8			
CB3-4	J7-B	X671A8			

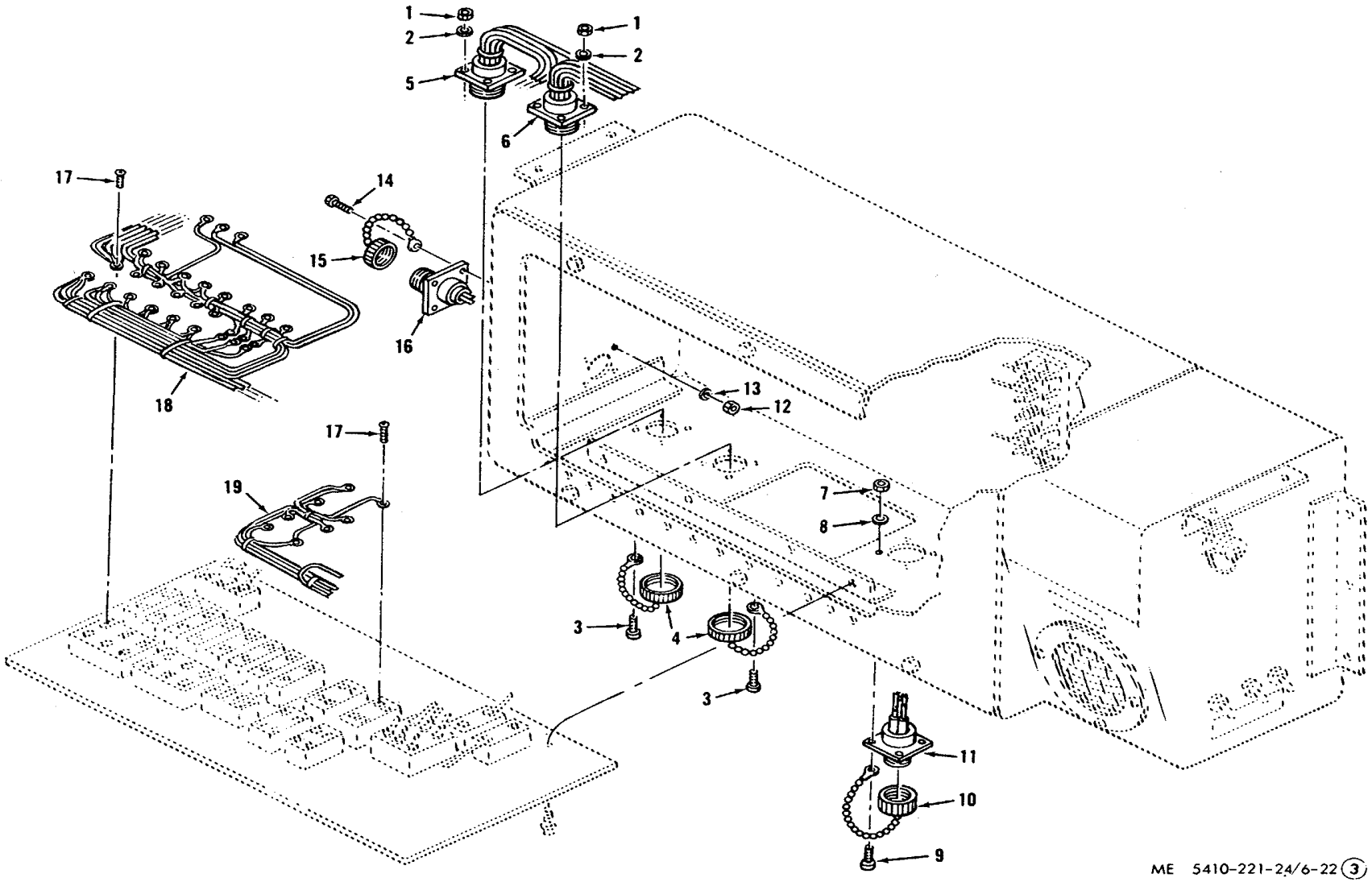


Figure 6-22. Distribution box assembly disassembly (sheet 3 of 7)

1 Nut (8)
2 Washer (16)
3 Screw (8)
4 Cover (2)
5 J5 sterilizer harness assembly
6 J6 sterilizer harness assembly
7 Nut (4)
8 Washer (8)
9 Screw (4)
10 Cover
11 J-7 X-ray wiring harness ass assembly
12 Nut (4)
13 Washer (8)
14 Screw (4)
15 Cover
16 J36 humidifier harness assembly
17 Screw (50)
18 400 HZ wiring harness
19 60 HZ wiring harness

Figure 6-22 -Continued.

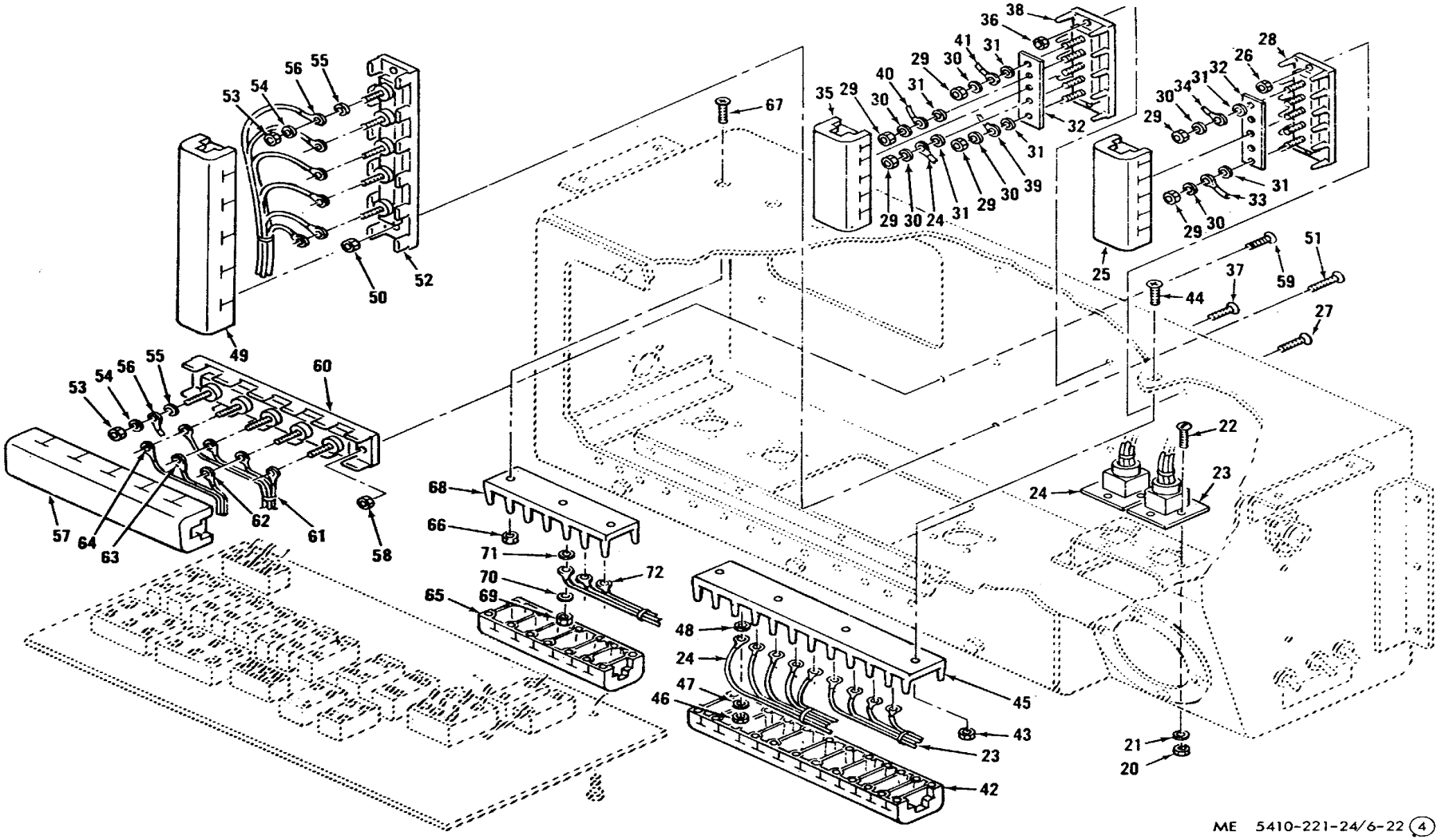


Figure 6-22. Distribution box assembly (sheet 4 of 7)

20 Nut (8)
21 Washer (16)
22 Screw (8)
23 K2 upper case water line heater harness assembly and relay
24 K1 humidifier harness assembly and relay
25 Terminal board cover
26 Nut (3)
27 Screw (3)
28 TB4 terminal board
29 Nut (10)
30 Lockwasher (10)
31 Washer (10)
32 Connector link
33 400 Hertz wire and terminal assembly
34 J7 sterilizer wire and terminal assembly
35 Terminal board cover
36 Nut (3)
37 Screw (3)
38 TB3 Terminal board
39 400 Hertz wire and terminal assembly
40 J5 sterilizer wire and terminal assembly
41 J6 sterilizer wire and terminal assembly
42 Terminal board cover
43 Nut (4)
44 Screw (4)
45 TB5 terminal board
46 Nut (11)
47 Lockwasher (11)
48 Washer (11)
49 Terminal board cover
50 Nut (3)
51 Screw (3)
52 TB1 terminal board
53 Nut (10)
54 Lockwasher (10)
55 Washer (10)
56 400 Hertz harness wire and terminal assemblies
57 Terminal board cover
58 Nut (3)
59 Screw (3)
60 TB2 terminal board
61 60 Hertz harness wire and terminal assemblies
62 X-ray wire and terminal assembly
63 X-ray wire and terminal assembly
64 X-ray wire and terminal assembly
65 Terminal board cover
66 Nut (3)
67 Screw (3)
68 TB6 terminal board
69 Nut (3)
70 Lockwasher (6)
71 Washer (3)
72 Remote temperature sensor harness assembly

Figure 6-22--Continued.

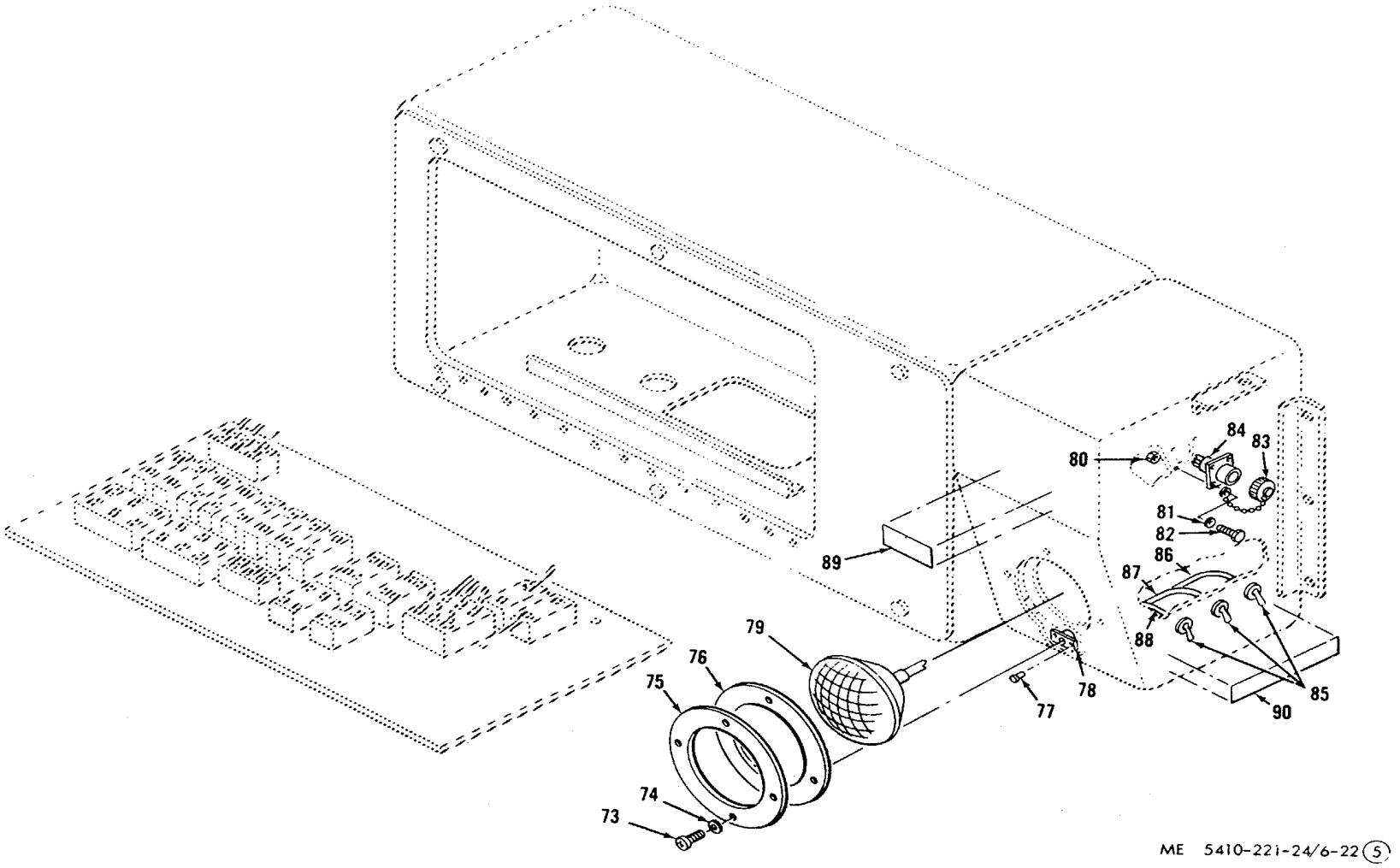
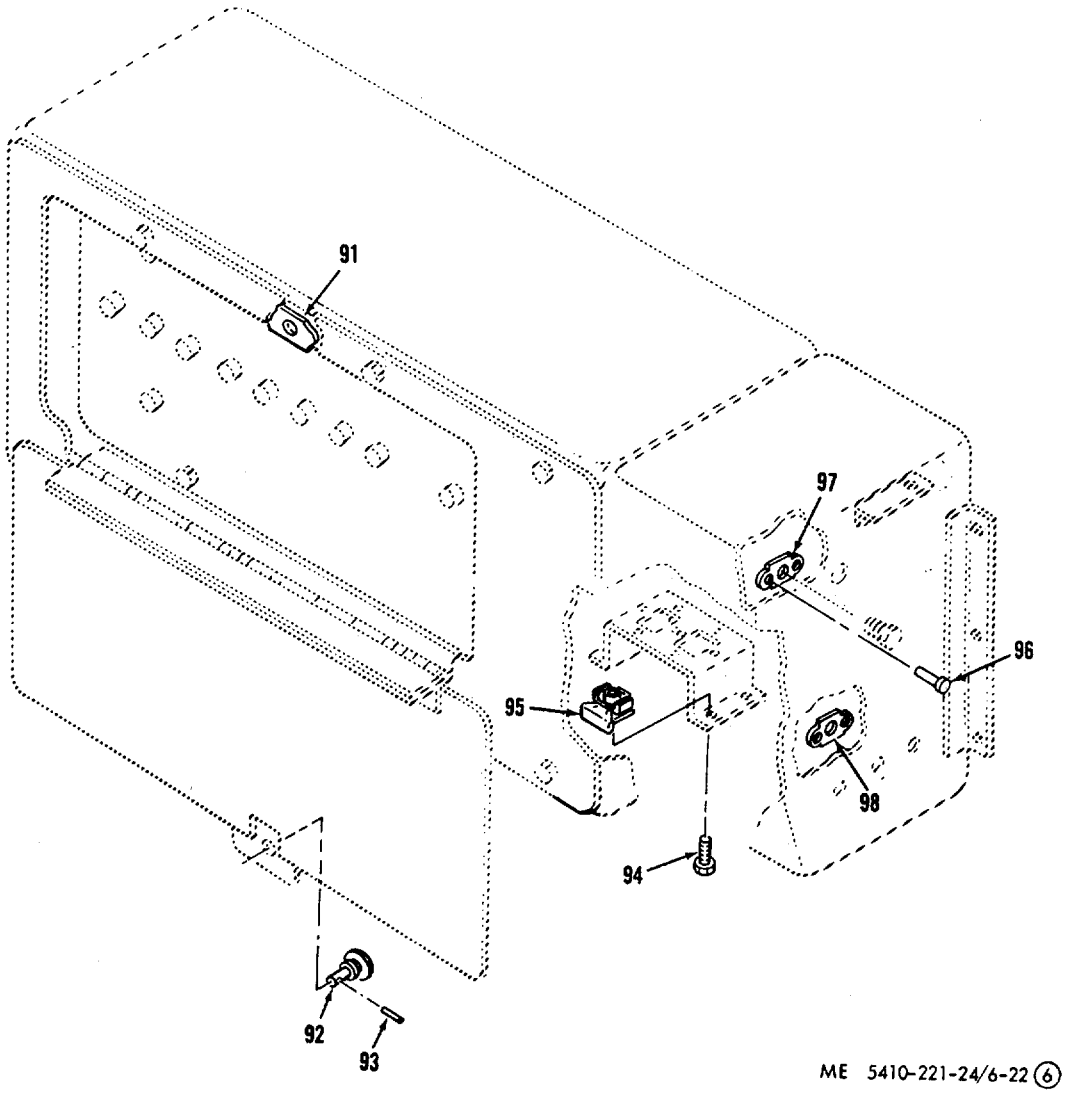


Figure 6-22. Distribution box assembly disassembly (sheet 5 of 7).

73 Screw (4)
74 Washer (4)
75 Retainer ring
76 Gasket
77 Rivet (8)
78 Nut plate (4)
79 LT1 lamp
80 Nut (4)
81 Washer (8)
82 Screw (4)
83 Cover
84 J38 remote temperature sensor harness assembly connector
85 S8, S9 and S10 surgical light toggle switches
86 Wire and terminal assembly (X498C12)
87 Wire and terminal assembly (X498B12).
88 Wire and terminal assembly (X498A12)
89 Self adhesive label
90 Self adhesive label

Figure 6-22--Continued.



91 Receptacle	94 Bolt (4)	97 Nut plate
92 Fastener stud	95 Clip nut (4)	98 Nut plate
93 Pin	96 Rivet	

Figure 6-22. Distribution box assembly disassembly (sheet 6 of 7

b. Removal. Remove 400 Hertz wiring harness assembly (18, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cove (125, fig. 6-22).

(2) Remove circuit breaker panel per paragraph 6-23, *b*(2).

(3) Remove terminal board covers (49, 57) and remove nuts (53), lockwashers (54) and washers (55) to disconnect electrical leads from terminals 1, 2, 3, 4 and 5 on terminal board TB1 (52) and terminal 5 on TB2 (60). Remove terminal board cover (25, 35) from terminal boards TB3 (38) and TB4 (28) and remove nut (29), lockwasher (30) and washer (31) to disconnect terminal 1 on TB3 and TB4.

(4) Remove screws to disconnect electrical leads from CB2, CB6, CB7, CB8, CB9, CB11, CB14, CB-16, CB17, CB18 and CB19 circuit breakers.

(5) Remove 400 Hertz wiring harness (18) from distribution box.

c. Disassembly. Disassemble 400 Hertz wiring harness as required to replace damaged parts as follows (fig. 6-24).

(1) Remove terminals (1 through 8).

(2) Remove identification strap (9) and tie straps (10) from harness assembly.

(3) Remove any damaged or defective electrical leads.

d. Assembly. Assemble 400 Hertz wiring harness in reverse order of disassembly using figure 6-24 as a guide and observing the following.

(1) Install new wires, if required, and secure with tie straps (9, fig. 6-24).

(2) Install terminals (1 through 8) and crimp to secure.

e. Test. Check continuity of wiring harness using a continuity light, multimeter, or other continuity checking device. Refer to figure 1-'7 and table 6-2 for wiring routing and terminal identification. Continuity must exist between wire ends. Replace wire if continuity does not exist between wire ends.

f. Repair. Repair 400 Hertz wiring harness assembly to return to a serviceable condition as follows.

(1) Inspect individual wires for cuts and abrasions of insulation. Minor cuts and abrasions are acceptable and shall be repaired by wrapping damaged area with vinyl tape or other suitable electrical wiring tape. Replace any individual wires which are cut through or otherwise damaged.

(2) Inspect tie straps (10, fig. 6-24) for tightness and fraying. Replace any loose or frayed tie straps.

g. Installation. Install 400 Hertz wiring harness in reverse order of removal using figure 6-22 as a guide and figures 1-7 and table 6-2 for terminal location and identification and observing the following.

(1) Position harness assembly (18, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart (table 6-2).

(2) Replace washers (55, 31), lockwashers (54, 30) and nuts (53, 29) on terminals of terminal boards TB1, TB2, TB3 and TB4 and tighten nuts securely. Replace terminal board covers (25, 35, 49, 57, fig. 6-22).

(3) Place circuit breaker panel in position and secure with screws.

6-25. Sterilizer Wiring Harness Assemblies

a. General. The sterilizer wiring harness assemblies consist of a connector and four electrical leads to provide interconnection between the electrical system and two sterilizers, when used.

b. Removal. Remove sterilizer harness assemblies (5, 6, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cover (125, fig. 6-22).

(2) Remove circuit breaker panel per paragraph 6-23, b(2).

(3) Remove terminal board cover (35) and remove nut (29) lockwasher (30) and washer (31) from terminal 5 on TB3 terminal board (38) for the J5 harness assembly (5) and terminal 4 for the J6 harness assembly (6) and remove the electrical leads from the terminal boards.

(4) Remove nuts (1), washers (2) and screws (3) and remove J5 (5) and J6 (6) connectors from distribution box. Remove cover (4).

(5) Remove screws to disconnect the harness electrical leads from CB14 circuit breaker for the J5 sterilizer harness (5) and CB11 circuit breaker for the J6 sterilizer harness (6).

(6) Remove the harness assemblies (5, 6) from the distribution box.

c. Disassembly. Disassemble the sterilizer harness assemblies as required to replace damaged parts as follows (fig. 6-25).

(1) Remove terminals (1, fig. 6-25).

(2) Remove cable straps (2) and identification strap (3).

(3) Slide back insulation sleeving (4, 5) to expose solder connections at connector (6) and unsolder

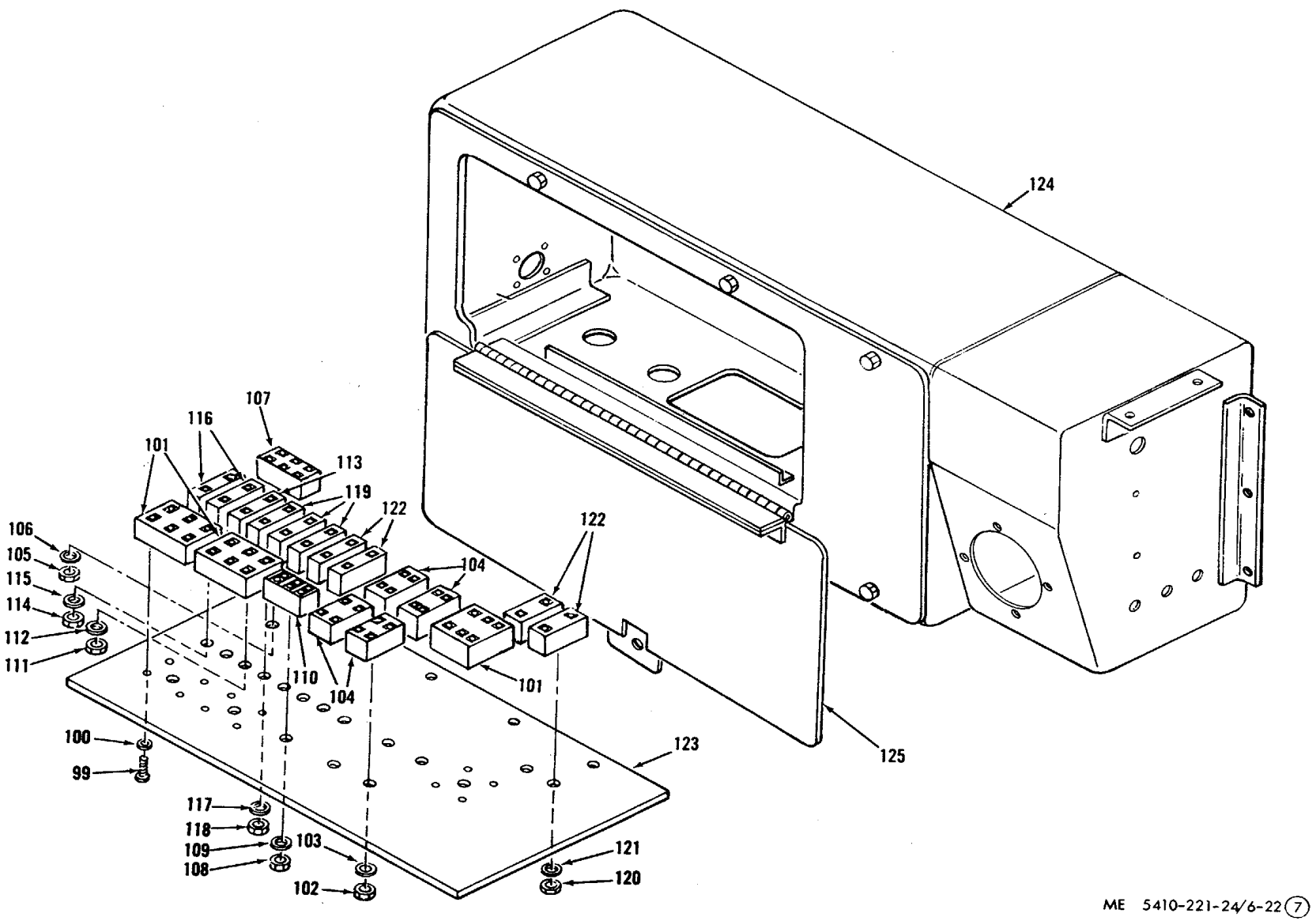


Figure 6-22. Distribution box assembly disassembly (sheet 7 of 7).

99 Screw (12)
100 Washer (12)
101 X-ray and sterilizers receptacle circuit break (CB3, CB11, CB14)
102 Nut (4)
103 Washer (4)
104 60 Hertz ceiling and wall convenience receptacles circuit breakers (CB4, CB5, CB12, CB13)
105 Nut (1)
106 Washer (1)
107 Humidifier receptacle circuit breaker (CB10)
108 Nut (1)
109 Washer (1)
110 Sump pump receptacle circuit breaker (CB16)
111 Nut (1)
112 Washer (1)
113 Air-lock light receptacle circuit breaker (CB2)
114 Nut (2)
115 Washer (2)
116 Surgical and fluorescent lights circuit breaker (CB8, CB9)
117 Nut (3)
118 Washer (3)
119 Water hose and water line heater circuit breakers (CB17, CB18, CB19)
120 Nut (2)
121 Washer (2)
122 400 Hertz convenience receptacles and surgical lights circuit breakers (CB1, CB6, CB7, CB15)
123 Circuit breaker panel
124 Distribution box
125 Circuit breaker panel cover

Figure 6-22-Continued.

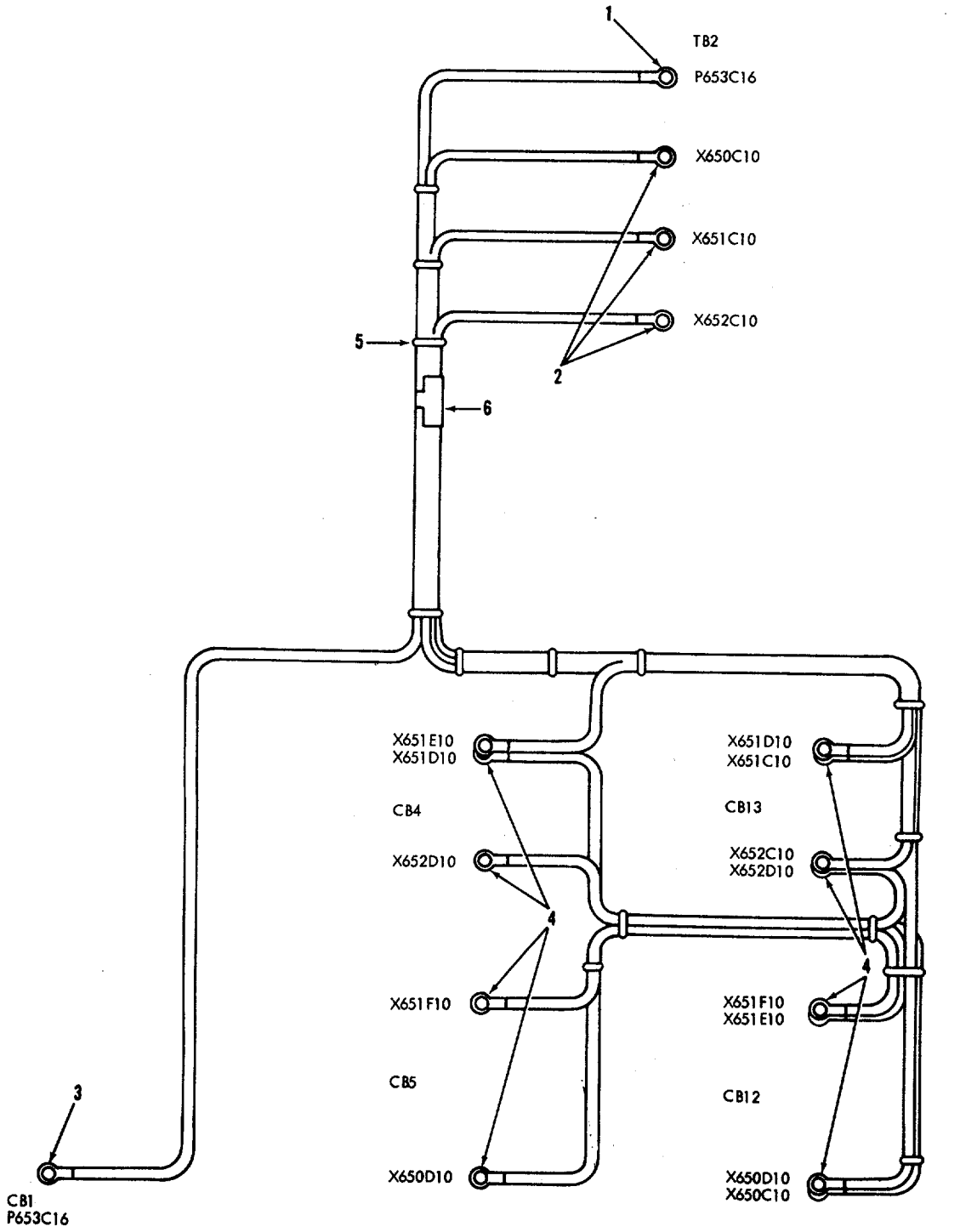


Figure 6-23. 60Hz wiring harness assembly.

1	Terminal (1)	3	Terminal (1)	5	Tie straps
2	Terminal (8)	4	Terminal (13)	6	Identification strap

Figure 6-23–Continued

electrical wires (7) from connector (6). Remove sleeving (4, 5).

d. Assembly. Assemble sterilizer harness assemblies in reverse order of disassembly using figure 6-25 as a guide and observing the following.

(1) Place insulation sleeving (4, 5) over wires (7) and slide back to expose solder connections.

(2) Solder wires (7) to connectors J5 and J6 (6) in accordance with Specification MIL S-6872 using Sn60 solder which conforms to Specification QQ-S-571. Refer to figure 6-2 for terminal identification.

(3) Replace cable straps (2) and identification strap (3).

(4) Install terminals (1) and crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device on check continuity of wiring (fig. 6-25). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. Replace any faulty wires or connectors as indicated during continuity test.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace individual wires if cut or otherwise damaged.

g. Installation. Install the sterilizer harness assemblies in reverse order of removal using figure 6-22 as a guide and figure 1-7 and table 6-2 for terminal identification and observing the following.

(1) Position harness assemblies (5, 6, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart (table 6-2).

(2) Replace washers (31), lockwashers (30) and nuts (29) on terminals 4 and 5 of TB3 terminal board (38) and tighten securely. Replace terminal board cover (35).

(3) Position J5 and J6 connectors (6, fig. 6-25) in mounting holes and secure with screws (3, fig. 6-22), washers (2) and nuts (1).

(4) Position circuit breaker panel (123) on distribution box (124) and secure with screws.

6-26. X-Ray Wiring Harness Assembly

a. General. The X-ray wiring harness assembly consists of a connector and four electrical leads to provide interconnection between the electrical system and an X-ray unit.

b. Removal. Remove X-ray wiring harness assembly (11, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cover.

(2) Remove circuit breaker panel per paragraph 6-23, *b(2).*

(3) Remove terminal board cover (25) and remove nut (29), lockwasher (30) and terminal 5 on TB4 terminal board (28). Remove the electrical lead.

(4) Remove screws and disconnect electrical leads from CB3 circuit breaker.

(5) Remove nuts (7), washers (8) and screws (9) to remove J7 connector (11) from the distribution box.

(6) Remove the X-ray harness assembly (11) from the distribution box.

c. Disassembly. Disassemble the X-ray harness assembly (11, fig. 6-22) as required to replace damaged parts as follows (fig. 6-26).

(1) Remove terminals (1, 2).

(2) Remove identification strap (3).

(3) Slide back insulation sleeving (4, 5) to expose soldered wire connectors to connector (6). Unsolder connections and remove wires (7, 8) from connector (6). Remove sleeving (4, 5).

d. Assembly. Assemble X-ray harness assembly in reverse order of disassembly using

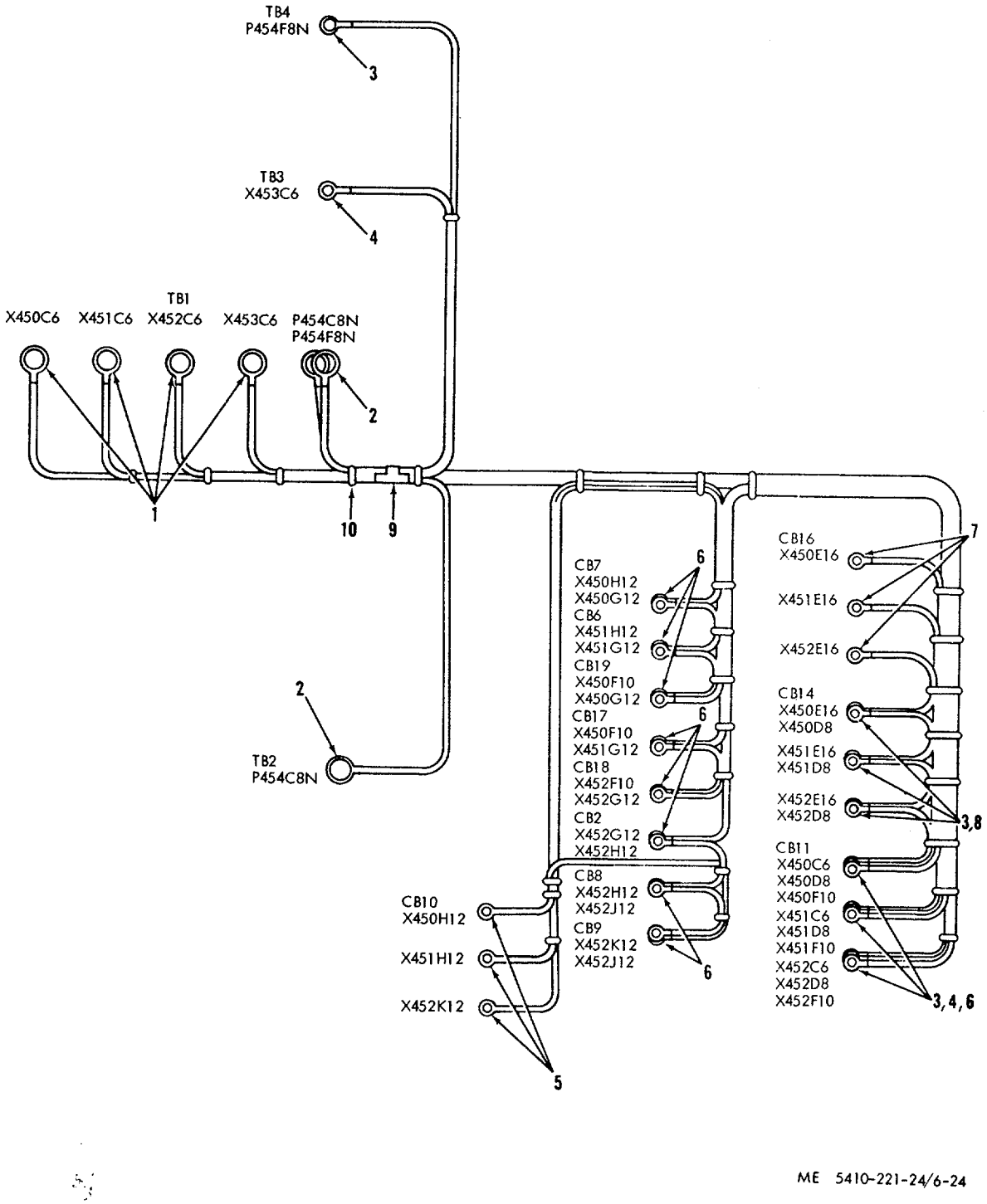


Figure 6-24. 400 Hertz wiring harness assembly.

1	Terminal (4)	5	Terminal (3)	9	Identification strap
2	Terminal (3)	6	Terminal (19)	10	Tie strap
3	Terminal (7)	7	Terminal (3)		
4	Terminal (4)	8	Terminal (3)		

Figure 6-24--Continued

figure 6-26 as a guide and observing the following.
(1) Place insulation sleeving (4, 5) over wires (7, 8) and slide back to expose solder connections.

(2) Solder wires (7, 8) to connector (6 in accordance with Specification MIL-S-6872 using Sn60 solder which conforms to Specification QQ-S-571. Refer to figure 6-26 for terminal identification.

(3) Replace identification strap (3).

(4) Install terminals (1, 2) and crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-26). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. Replace defective components as required, if indicated by continuity test

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace individual wires if cut or otherwise damaged.

g. Installation. Install the X-ray harness in reverse order of removal using figure 6-22 as a guide and figures 1-7 and table 6-2 for terminal identification and observing the following.

(1) Position harness assembly (11, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart, table 6-2.

(2) Replace washers (31), lockwasher (30) and nut (29) on terminal 5 of TB4 terminal board (28). Replace terminal board cover (25).

(3) Position J7 connector (11) in mounting hole and secure with screw (9), washer (8) and nut (7).

(4) Position circuit breaker panel (123) on distribution box (124) and secure.

6-27. Water Line Heater Harness Assembly

a. General. The water line heater harness assembly consists of a relay K2 and 7 electrical leads to provide interconnection between the power distribution box and the water line heater power harness.

b. Removal. Remove water line heater harness (23, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cover.

(2) Remove circuit breaker panel per paragraph 6-23, *b*(2).

(3) Remove terminal board cover (42) and remove nut (46), lockwasher (47) and washer (48) from terminals 7 through 10 on TB5 terminal board (45). Remove the electrical leads.

(4) Remove screws (17) and disconnect electrical leads from CB16 circuit breaker.

(5) Remove nut (20), washer (21) and screw (22) used to secure relay K2 to mounting bracket. Remove harness (23) from distribution box.

c. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-27). Continuity must exist between end fittings on individual wires. Refer to chapter 5, section VI for additional testing. Replace harness assembly if continuity does not exist or K2 relay is defective.

d. Repair. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged or K2 relay is damaged or defective.

e. Installation. Install the water line heater harness assembly (23, fig. 6-22) in reverse order of

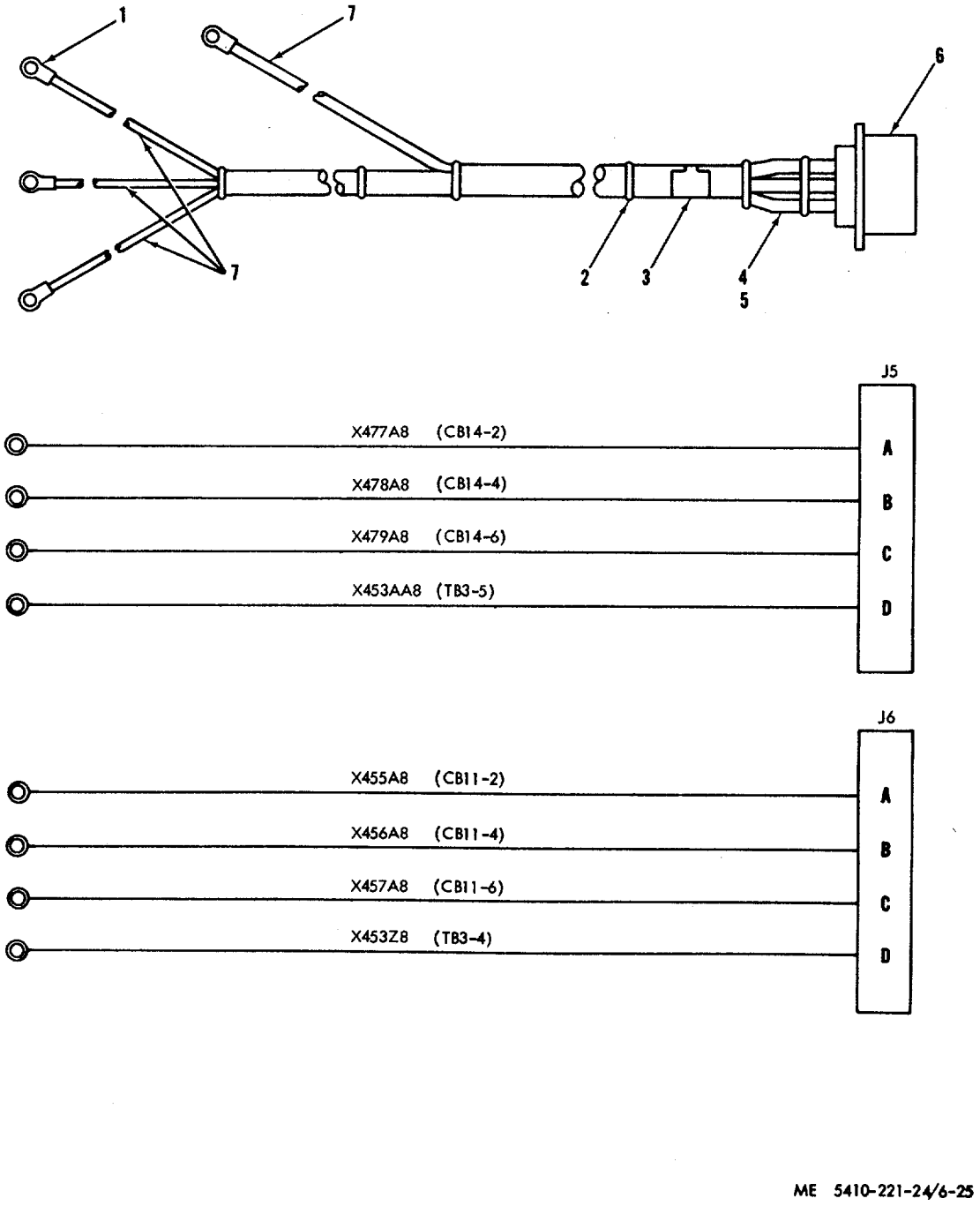


Figure 6-25. Sterilizer wiring harness assembly.

1	Terminal (8, 4 per assembly)	4	Sleeving (2, 1 per assembly)	7.	Wire (AN8)
2	Strap, cable	5	Sleeving (6, 3 per assembly)		
8	Strap, identification	6	Connector (2, J6 and J6)		

Figure 6-25--Continued.

removal using figure 6-22 as a guide and figure 1-7 and table 6-2 for terminal identification, observing the following.

(1) Position harness assembly (23, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart, table 62.

(2) Replace washers (48), lockwasher (47) and nuts (46) on terminals 7 through 1 on TB5 terminal board (45). Replace terminal board cover (42).

(3) Position K2 water line heater assembly relay (23) on mounting bracket and secure with screw (22), washer (21) and nut (20) (4) Position circuit breaker panel (1231 on distribution box (124) and secure with screws.

6-28. Humidifier Harness Assembly

a. General. The humidifier harness assembly consists of an electrical connector and relay (K1) and ten electrical leads to provide for interconnection of the humidifier component and the electrical system.

b. Removal. Remove humidifier harness (16, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cover (2) Remove circuit breaker panel per paragraph 6-23, b(2).

(3) Remove terminal board cover (42) and remove nut (46), lockwasher (47) and washer (48) from terminals 3 through 6 or TB5 terminal board (45). Remove the electrical leads. Remove electrical lead from terminal 2 on TB3 terminal board (38).

(4) Remove screws (17) and disconnect electrical leads from CB10 circuit breaker.

(5) Remove nut (20), washer (21) and screw (22) used to secure relay K1 (24) to mounting bracket.

(6) Remove nut (12), washer (13) and screw (14) used to secure J36 humidifier harness (16) (humidistat receptacle) to distribution box. Remove receptacle cover (15).

(7) Remove the J36 humidifier harness assembly (16) from the distribution box.

c. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-28). Continuity must exist between end fittings on individual wires. Refer to chapter 5, section VI for additional testing. Replace harness assembly, if continuity does not exist or K1 relay is defective.

d. Repair. Inspect wires for abrasions and cuts of insulation. Minor cuts and abrasions are acceptable and may be repaired by wrapping with vinyl tape. Replace harness assembly if individual wires are cut or otherwise damaged or K1 relay is damaged or defective.

e. Installation. Install the humidifier harness assembly (16, fig. 6-22) in reverse order of removal using figure 6-22 as a guide and figure 1-7 and table 6-2 for terminal identification and observing the following.

(1) Position harness assembly (16, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart, table 6-2.

(2) Replace washers (48) lockwashers (47) and nuts (46) on terminals 3 through 6 on TB5 terminal board (45), and terminal 2 on TB3 terminal board (38). Replace terminal board cover (42) on TB5 terminal board (45) and terminal board cover (35) on TB3 terminal board (38).

(3) Position K1 relay (24) on mounting bracket and secure with screw (22), washer (21) and nut (20).

(4) Position circuit breaker panel (123) on distribution box (124) and secure.

6-29. Remote Temperature Sensing Harness Assembly

a. General. The remote temperature sensing harness consists of a connector and 3 electrical leads to provide interconnection between the

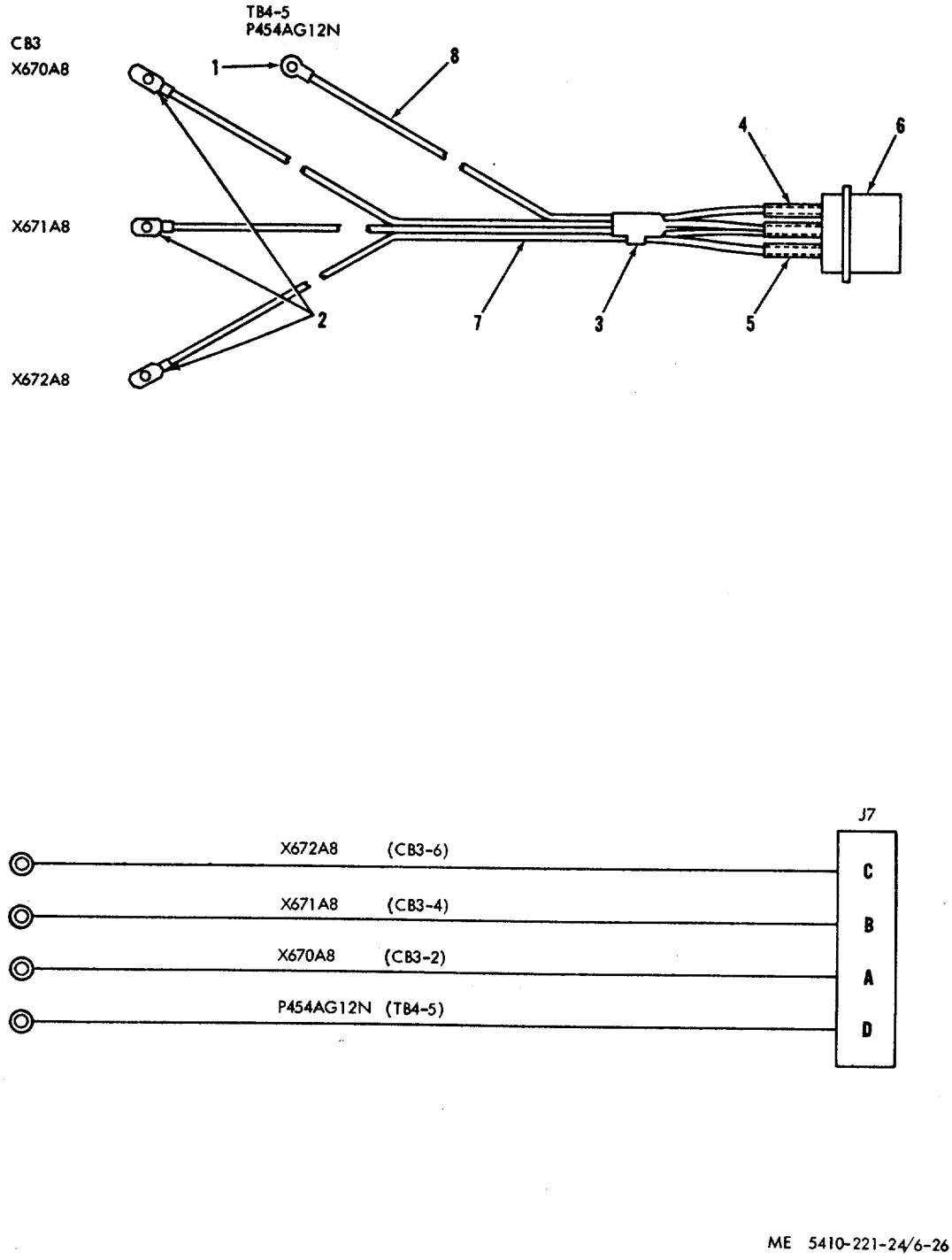


Figure 6-26. X-ray wiring harness assembly.

1	Terminal (1)	4	Sleeving (1)	7	Wire (ANS)
2	Terminal (3)	5	Sleeving (3)	8	Wire (AN12)
3	Strap, identification	6	Connector		

Figure 6-26-Continued.

electrical system and a remote temperature probe.

b. Removal. Remove remote temperature harness assembly (72, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Open circuit breaker panel cover.

(2) Remove circuit breaker panel per paragraph 6-23, *b*(2).

(3) Remove terminal board cover (65) and remove nut (69), lockwasher (70) and washer (71) from terminals 1 through 3 on TB6 terminal board (68). Remove the electrical leads.

(4) Remove nuts (80), washer (81) and screws (82) to remove J38 connector (84) from the distribution box. Remove connector cover (83) from connector.

(5) Remove the remote temperature sensing harness (72) from the distribution box.

c. Disassembly. Disassemble the remote temperature sensing harness to replace damaged parts by removing terminals (1, fig. 6-29).

d. Assembly. Assemble harness assembly in reverse order of disassembly using figure 6-29 as a guide and observing the following.

(1) Install terminals (1, fig. 6-29).

(2) Crimp to secure.

e. Test. Use a continuity light, multimeter or other continuity checking device to check continuity of wiring (fig. 6-29). Continuity must exist between end fittings on individual wires. Continuity must not exist between connector pins or between connector pins and connector shell. Replace harness assembly if continuity test indicates defective wires or connection.

f. Repair. If possible, straighten any bent connector pins. Inspect wires for abrasion and cuts)f insulation. Minor cuts and abrasions are acceptable and may be repaired be wrapping with vinyl tape. Replace harness assembly if individual wires are cut or other wise damaged.

g. Installation. Install the remote temperature sensing harness in reverse order of removal using figure 6-22 as a guide and figure 1-7 and table 6-2 for terminal identification, and observing the following.

(1) Position harness assembly (72, fig. 6-22) in distribution box and install electrical leads in accordance with wiring chart, table 6-2.

(2) Replace washers (71), lockwashers (70), and nuts (69) on terminals 1 through 3 of TB6 terminal board (68). Replace terminal board cover (65) on TB6 terminal board (68).

(3) Position J38 connector (84) into mounting hole on distribution box and secure with screws (82), washers (81), and nuts (80).

(4) Place circuit breaker panel in position on distribution box and secure with screws.

6-30. Wire and Terminal Assemblies

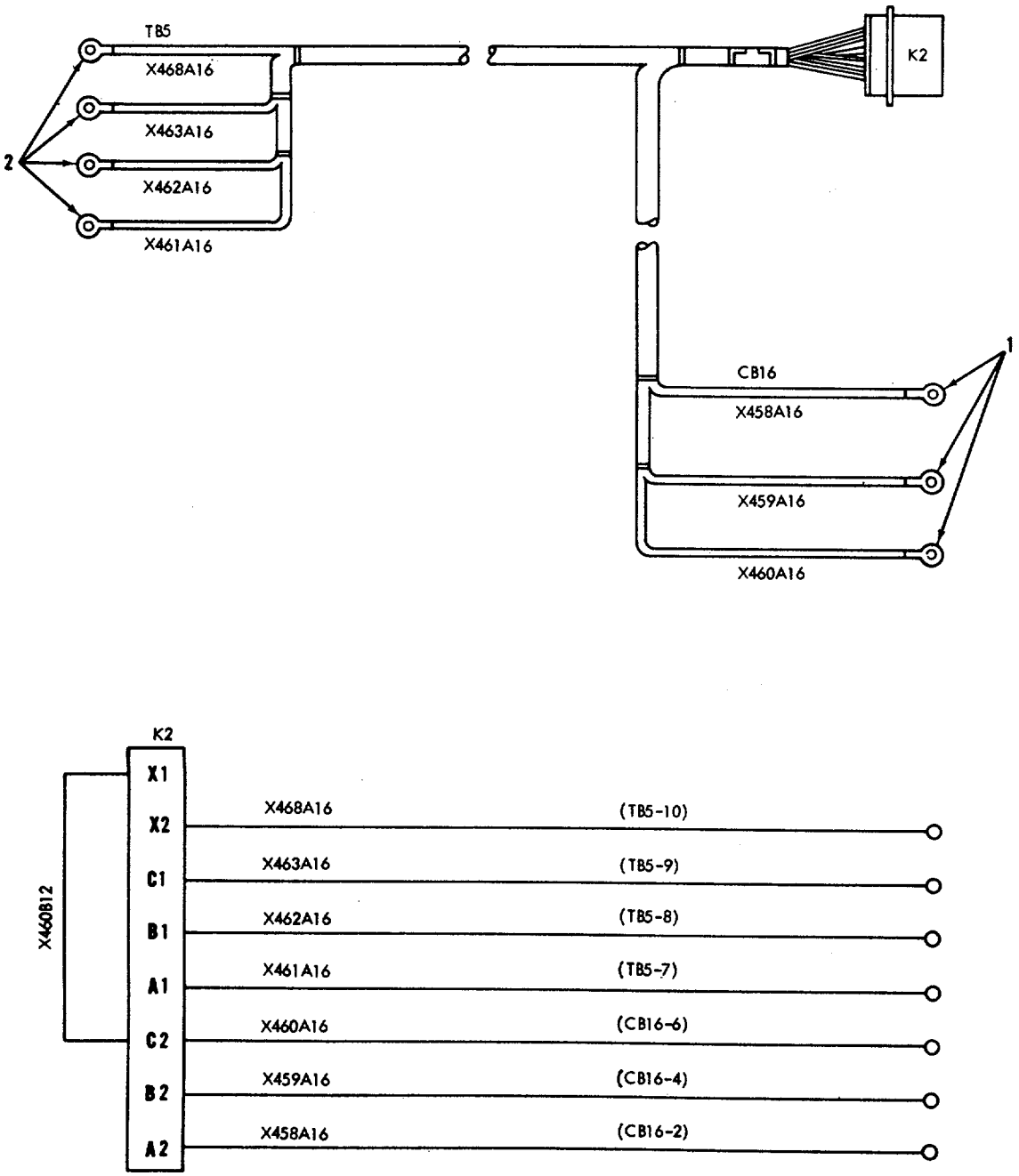
a. General. The wire and terminal assemblies provide for interconnection of the power distribution box electrical system. The wire and terminal assemblies consist of a single wire with a terminal lug on each end. See figure 1-7 for wiring schematic and table 6-2 for wire chart.

b. Removal. Remove loose wires according to sequence of index numbers assigned to figure 6-22 and referring to table 6-2 for terminal identification and observing the following.

(1) Open circuit breaker panel cover door.

(2) Remove screw to disconnect electrical wire X498A12 (88, fig. 6-22) from terminal 2 on CB15 circuit breaker (108). Disconnect other end of wire from terminal 2 S8 toggle switch (85).

(3) Disconnect wires X498B12 and X498C12 (86, 87) from S8, S9, and S10 toggle switches (85).



1 Terminal (3) **2 Terminal (4)**

Figure 6-27. Water line wiring assembly harness assembly.

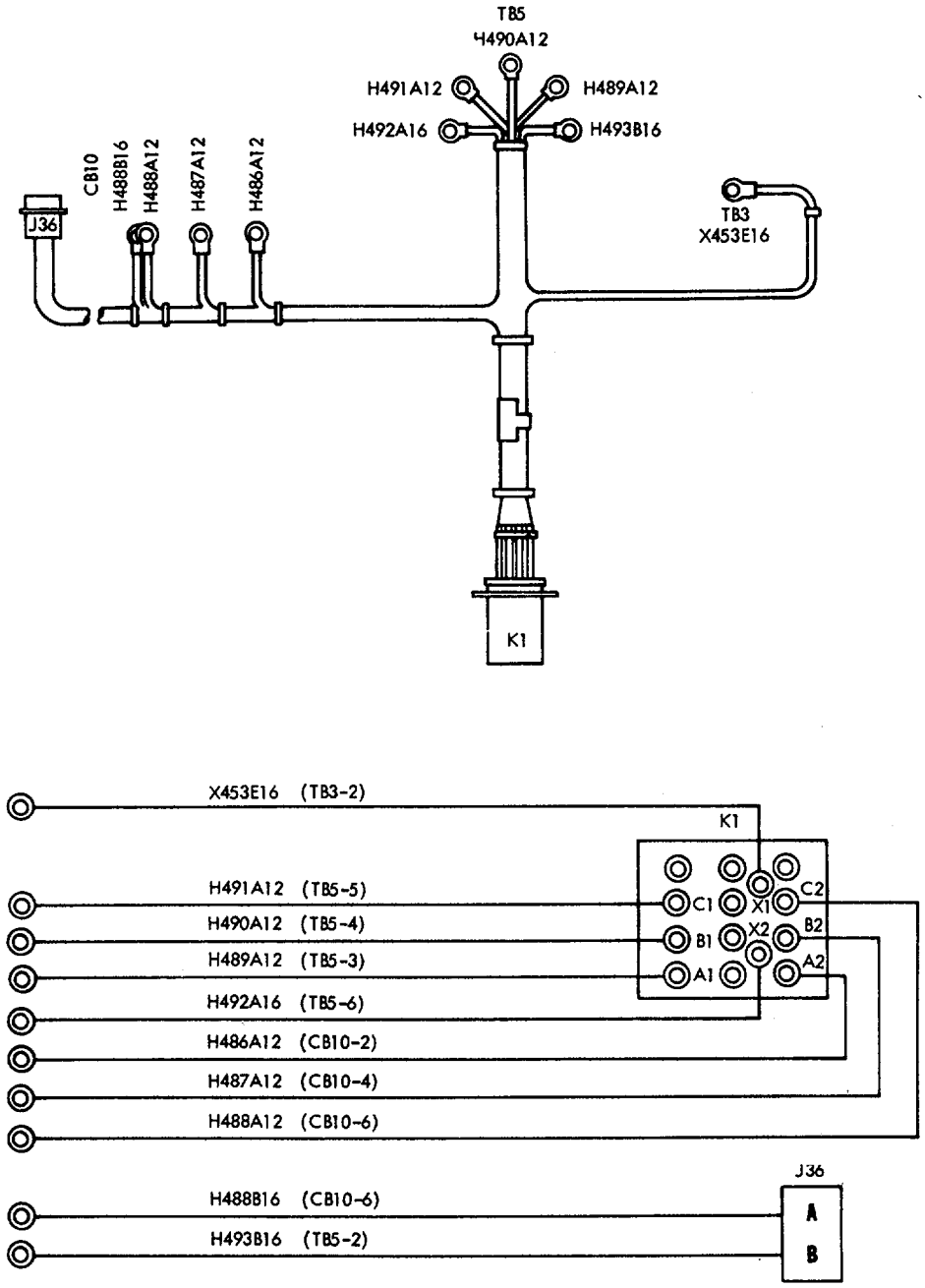
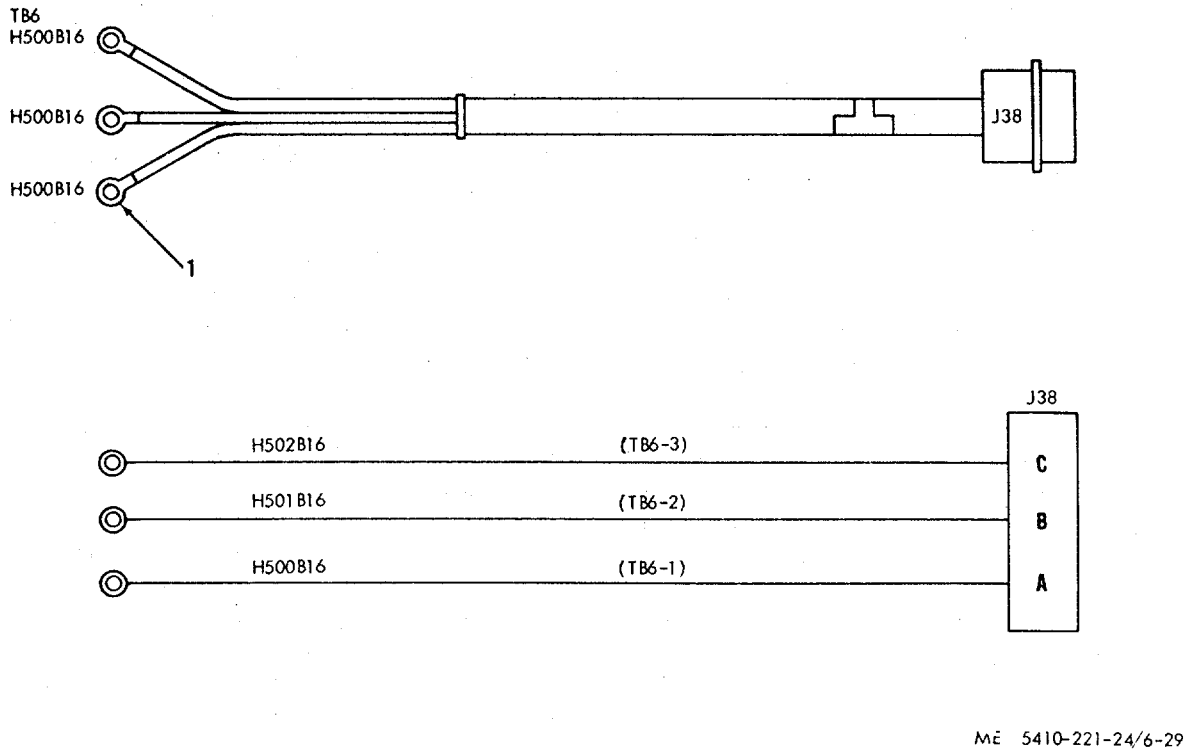


Figure 6-28. Humidifier wiring harness assembly.



1 Terminal (3)

Figure 6-29. Remote temperature wiring harness assembly.

(4) Disconnect wires X650E8, X651GE and X652E8 from terminals 1, 3, and 5 of CB circuit breaker (101). Disconnect other end of wires from terminals 2, 3, and 4 on TB2 terminal board (60).

(5) Disconnect wire P667A16 from terminal 2 of CB1 circuit breaker (108). Remove other end of wire from terminal 2 of LT1 lamp (79).

c. Disassembly. Disassemble wire assemblies as required to replace damaged component by removing terminals (1, 2, 3 or 4, fig. 6-30)

d. Assembly. Assemble wire assemblies in reverse order of disassembly using figure 6-30 as a guide and observing the following.

(1) Install terminals (1 through 4).

(2) Crimp to secure.

e. Test. Use a continuity light, multimeter, or other continuity checking device to check continuity of wires (table 6-2). Continuity must exist between end fittings on wires.

f. Installation. Install wire and terminal assemblies in reverse order of removal using table 6-2 as a guide for terminal identification and figure 1-7 for wiring schematic.

6-31. Distribution Box Assembly

a. General. The distribution box assembly is a metal structure used to house the electrical components of the power distribution electrical system (fig. 6-22).

b. Removal. Remove the distribution box assembly using figure 6-22 as a guide and observing the following.

(1) Remove electrical wiring harness assemblies according to procedures outlined in paragraphs 6-23 through 6-30.

(2) Disconnect all shelter harness assemblies and wires running to and from box using section III as a guide and referring tables 6-1, and 6-2.

(3) Remove bolts and washers used to secure the distribution box to the shelter walls and ceiling. Remove the distribution box.

c. Disassembly. Disassemble distribution box as required to replace damaged parts according to sequence of numbers assigned to figure 6 22, and observing the following.

(1) Remove screw (73, fig. 6-22), washer (74) and remove lamp retainer ring (75 gasket (76), rivet (77) and nut plate (78 Remove lamp (79).

(2) Remove shelf adhesive labels (81, 90) by peeling from surface of distribution box.

(3) Remove fastener stud (92) frog door assembly by removing pin from stud (92). Remove fastener receptacle (91) from distribution box by removing rivets.

(4) Remove bolts (94) and clip nuts (95) which secure relay mounting bracket to distribution box.

(5) Remove damaged nut plates (97) by removing rivets (96).

d. Assembly. Assemble distribution box in reverse order of disassembly using figure 6-22 as guide and observing the following.

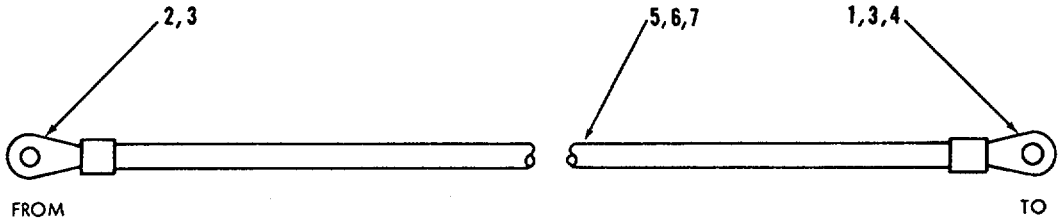
(1) Replace nut plates (97, fig. 6-22) and secure with rivets (96) per paragraph 2-22 *c.*

(2) Replace clip nuts (95) and bolts (94) on distribution box.

(3) Replace fastener receptacle (91) and secure with rivets per paragraph 2-22, *c.* Position fastener stud (92) in door assembly hole and replace pin to secure.

(4) Clean label area of distribution box with an approved cleaning solvent to remove all traces of adhesive and remove protective backing from labels (89, 90). Press firmly into position on distribution box and smooth out any wrinkles or air bubbles under label.

(5) Place nut plate in position and secure with rivet (77). Replace lamp (79), gasket (76), retainer ring (75) and secure with washer (74) and screw (73).



ME 5410-221-24/6-30

1 **Terminal (3, Wires X650E8, X651G8, X652E8)**
2 **Terminal (3, Wires X650E8, X651G8, X652E8)**
3 **Terminal (6, Wires P667A16, X498C12, X498B12, X498A12)**
4 **Terminal (2, Wires X498A12, P667A12)**
5 **Wire (AN8, Wires X650E8, X651G8, X652E8)**
6 **Wire (AN12, Wires X498A12, X498B12, X498C12)**
7 **Wire (AN16, Wire P667A16)**

Figure 6-30. Wire and terminal assemblies.

e. Repair. Repair the distribution box as sembly as required to return to a serviceable condition as follows.

(1) Inspect distribution box assembly for damaged clip nuts, nut plates, fastener stud and receptacles, nicks, dents, or scratches. Dress all nicks and scratches with emery cloth Replace damaged clip nuts, fasteners, and nut plates in accordance with disassembly and assembly procedures outlined in steps *c* and *d* above. Minor dents are acceptable as long as function or fit of the distribution box is not affected.

(2) Inspect distribution mounting brackets for damaged and misalinement. If possible straighten any bent or misalined brackets by means of a vise, pliers, or hammer.

(3) Repaint distribution box assembly by applying primer and allowing to air dry 18 hours or 30 minutes at 150^0F to 300^0F and painting with paint conforming to Federal Standard 595, color match No. 24516. Air dry 18 hours or 30 minutes at 150^0F to 300^0F. Apply new labels to repainted distribution box in accordance with step *d* (4) above.

f. Installation. Install the distribution box in reverse order of removal using figure 6-2 as a guide and observing the following.

(1) Place distribution box in proper position and secure with bolts and washers.

(2) Replace electrical wiring and components in accordance with procedures outline in paragraphs 6-23 through 6-30 and section III, chapter 6. Refer to figure 1-7 for wiring schematic and tables 6-1 and 6-2 for wiring chart.

6-32. CB3, CBll1, and CB14 Circuit Breakers

a. General. The CB3, CB11, CB14 circuit breakers provides protection against damage resulting from an overload in the electrical circuit through the sterilizers of X-ray receptacles. The circuit breakers opens the receptacles in the event the electrical load reached 50 amperes. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

Note. Refer to figure 6-22 (7) for circuit breaker panel terminal identification.

b. Removal. Remove CB3, CB11, and CB14 circuit breakers (101, fig. 6-22) as required to replace damaged or defective circuit breakers as follows.

(1) Remove screws (17) from terminals and disconnect electrical leads (X652E8, X651G8, X650E8, X672A8, X671A8, X670A8) from CB3 circuit breaker. Disconnect leads(452C6, X652F10, X452D8, X451D8, X451F10, X451C6, X450C6, X450F10, X450D8, X457A8, X456A8, X455A8) from CB11 circuit breaker. Disconnect leads(X452D8, X452E16, X451D8, X450D8, X451E16, X450E16, X479A8, X478A8, X477A8) from CB14 circuit breaker.

(2) Remove screws (99) and washers (100) and circuit breakers CB3, CB11, and CB14 (101).

c. Installation. Install circuit breakers CB3, CB11, and CB14 in reverse order of removal using figure 6-22 as a guide and observing the following.

(1) Position circuit breakers on panel and secure with screws (99) and washer ’(100).

(2) Connect wire and terminal assemblies in accordance with wiring schematic figure 1-7, paragraph 6-34, b(1), and procedures described in chapter 6, sections II, and III.

6-33. CB4, CB5, CB12, and CB13 Circuit Breakers

a. General. CB4, CB5, CB12, and CB13 (104, fig. 6-22) circuit breakers provide protection against damage resulting from an overload in the interior 60 Hertz ceiling and wall receptacles. All the circuit breakers open at 20 amperes. Opening of the circuit breakers is indicated by the extension of the reset button. The circuit breakers are reset by pressing in on the reset button.

b. Removal.

(1) Remove the screws (17, fig. 6-22) from the terminals and disconnect electrical leads (X457A12, X456A12, X651D10, X651E10, X652D10) from CB4 circuit breaker. Remove leads (X651F10, X650D12, X659B12, X659A12, X658A12, X658B12) from CB5

circuit breaker. Remove leads (X650C10, X651F10, X651E10, X661B1, X661A12, X660B12, X660A12) from GCB1 circuit breaker. Remove leads, (X651C1, X651D10, X652C10, X652D10, X663A1, X662A12) from CB13 circuit breaker.

(2) Remove nuts (102) and washers (103) used to secure circuit breakers (10, fig. 6-22) to panel (123).

c. Installation. Install circuit breakers in reverse order of removal using figure 6-22 as a guide referring to figure 1-7, tables 6-1, and 6-2, and chapter 6, sections II and III for wiring schematic and wiring terminal identification.

6-34. CB10 Circuit Breaker

a. General. CB10 circuit breaker (107, fig. 6-22) provides protection against damage resulting from an overload in the humidifier receptacle. The CB10 circuit breaker open the receptacle on the event the load reaches 10 amps. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

b. Removal.

(1) Remove the screws (17) from the terminals and disconnect electrical lead (X450H12, H488A12, H488B16, H487A12, H486A12, X452K12, X451H12) from circuit breaker.

(2) Remove nuts (105) and washer (106) used to secure circuit breaker (107) to panel, and pull circuit breaker in a straight line from rear of panel (123).

c. Installation. Install circuit breaker in reverse order of removal using figure 6-22 as a guide, referring to figure 1-7, and table 6-2 and for wiring schematic and wiring terminal identification.

6-35. CB16 Circuit Breaker

a. General. CB16 circuit breaker (116, fig 6-22) provides protection against damage resulting from an overload in the sump pump receptacle. The CB16 circuit breaker open the receptacle in the event the load reaches amps. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

b. Removal.

(1) Remove the screws from the terminals and disconnect electrical leads (X458A16, X452E16, X451E16, X450E16, X460A16, X459A16) from CB16 circuit breaker (110).

(2) Remove nuts (108) and washers (109) used to secure circuit breaker (110, fig. 6-22) to panel, and remove by pulling from rear of panel (123).

c. Installation. Install circuit breaker in reverse order of removal using figure 6-22 as a guide, referring to figure 1-7 and table 6-2 for wiring schematic and wiring terminal identification.

6-36. CB2 Circuit Breaker

a. General. CB2 circuit breaker (113, fig. 6-22) provides protection against damage resulting for an overload in the air-lock light receptacle. The CB2 circuit breaker (113) opens the receptacle in the event the load reaches 5 amps. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

b. Removal.

(1) Remove the screws (17) from the terminals and disconnect electrical leads (X452H12, X452G12, X485B12, X485A12) from circuit breaker.

(2) Remove nuts (111) and washers (112) used to secure circuit breaker (113) to panel, and remove by pulling from rear of panel (123).

c. Installation. Install circuit breaker in reverse order of removal using figure 6-22 as a guide, referring to figure 1-7, tables 6-1 and 6-2 and chapter 6, sections II and III for wiring schematic and wiring terminal identification.

6-37. CB8 and CB9 Circuit Breakers

a. General. CB8, and CB9 circuit breakers (116, fig. 6-22) provide protection against damage resulting from an overload in the surgical light receptacle and the fluorescent area lights. The CB8 circuit breaker opens

the receptacle in the event the load reaches 1(amps, and the CB9 circuit breaker opens in the event the load reaches 5 amps. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button

b. Removal.

(1) Remove the screws from the terminals and disconnect electrical leads (X422J12, X452H12, X466A16, X452K12, X467A12 from circuit breakers CB8 and CB9 (116, fig. 6-22).

(2) Remove nuts (114) and washer (115) used to secure circuit breakers (116 to panel (123), and remove circuit breaker by pulling from rear of panel.

c. Installation. Install circuit breakers in reverse order of removal using figure 6-22 as a guide referring to figure 1-7, table 6-2 and chapter 6, sections II and III for wiring schematic and wiring terminal identification

6-38. CB17, CB18, and CB19 Circuit Breakers

a. General. CB17, CB18, and CB19 circuit breakers (119, fig. 6-22) provide protection against damage resulting from an overload in the water hose or water line receptacles. The CB17, CB18, and CB19 circuit breakers open the receptacles in the event the load reached 15 amps. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

b. Removal.

(1) Remove screws (17) from the terminals and disconnect electrical lead (X452F10, X452G12, H473A12) from CB1 circuit breaker. Remove electrical lead (X452G12, X451F10, X469A12, X469B12 from CB18 circuit breaker. Remove electrical leads (X450G12, X450F10, H472A12) from CB19 circuit breaker.

(2) Remove nuts (117, fig. 6-22) and washers (118) used to secure circuit breakers (119) to panel, and remove by pulling from rear of panel (123).

c. Installation. Install circuit breakers in reverse order of removal using figure 6-22 as a guide, referring to figure 1-7, table 6-1, and 6-2 and chapter 6, sections II and III for wiring schematic and wiring terminal identification.

6-39. CB1, C86, CB7, and CB1 5 Circuit Breakers

a. General. CB1, CB6, CB7, and CB15 circuit breakers (122, fig. 6-22) provide protection against damage resulting from an overload in the 400 Hertz left hand and right hand receptacles, and the 28 vdc surgical and emergency light circuits. The CB1, CB6, CB7, and CB15 circuit breakers open the circuits or receptacles in the event the load reaches 20 amperes. Opening of the circuit breaker is indicated by the extension of the reset button. The circuit breaker is reset by pressing in on the reset button.

b. Removal.

(1) Remove the screws (17) from the terminals and disconnect electrical leads (P653C16, P667A16) from CB1 circuit breaker. Remove electrical leads (X451G12, X451H12, X465B12, X465A12) from CB6 circuit breaker. Remove electrical leads (X450G12, X450H12, X464B12, X464A12) from CB7 circuit breaker. Remove electrical leads (X498A12, X482A12) from CB15. circuit breaker.

(2) Remove nuts (12) and washers (121) used to secure circuit breakers (122) to panel (123) and remove by pulling from rear of panel (123).

c. Installation. Install circuit breaker in reverse order of removal using figure 6-22 as a guide referring to figure 1-7, tables 6-1, 6-2, and chapter 6, sections II and III for wiring schematic and wiring terminal identification.

6-40. TB1 Terminal Board

a. Removal. Remove terminal board TB1 (52, fig. 6-22) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Remove cover (49) from TB1 terminal board (52).

(2) Remove nut (53), lockwasher- (5and washer (55). Remove electrical leads from terminals 1 through 5.

Note. Mark or otherwise identify electrical leads for ease at installation. Refer to tables 6-1 6-2 and procedures outlined for harness and wire semblies removal and replacement, chapter 6, section II, III and IV.

(3) Remove nut (50) and screw (5) from terminal board (52) and remove from distribution box.

b. Installation. Install TB1 terminal board (52) in reverse order of removal using figure 6-22 as a guide and observing the following.

(1) Position terminal board (52) in distribution box and secure with nuts (50) and screws (51).

(2) Replace electrical leads on prop terminals referring to tables 6-1 and 6-2, and sections II, III, and IV for terminal identification and location. Secure leads with wash (55), lockwasher (54) and nut (53).

(3) Press terminal board cover (49) securely over terminal board.

6-41. TB2 Terminal Board

a. Removal. Remove TB2 terminal board (60) according to sequence of index number assigned to figure 6-22 and observing the following.

(1) Remove cover (57) from terminal board (60).

(2) Remove nuts (53), lockwashers (54) and washers (55), and remove electrical leads from terminals 1 through 5.

Note. Mark or otherwise identify electric leads for ease at installation. Refer to tables 6-1 and 6-2 and procedures outlined for harness and wire assemblies removal and replacement, chapter 6, section II, III, and IV.

(3) Remove nuts (58) and screws (59) which secure the terminal board (60) to the distribution box.

b. Installation. Install TB2 terminal board (60) in reverse order of removal using figure 6-22 as a guide and observing the following (1) Position terminal board (60) in distribution box and secure with nuts (5, 8) at screws (59).

(2) Replace electrical leads on proper terminals and secure with washer (55), lockwasher (54) and nut (53).

(3) Press terminal board cover (57) on terminal board.

6-42. TB3 Terminal Board

a. Removal. Remove TB3 terminal board (38) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Remove cover (35) from terminal board (38).

(2) Remove nuts (29), lockwashers (30), and washers (31), and remove electrical leads from terminals 1 through 5.

Note. Mark or otherwise identify electrical leads for ease at installation. Refer to tables 6-1 and 6-2 and procedures outlined for harness and wire assemblies removal and replacement, chapter 6, sections II, Ill, and IV.

(3) Remove connector link (32) from terminals.

(4) Remove nuts (36) and screws (37) which secure the terminal board (38) to the distribution box.

b. Installation, Install TB3 terminal board (38) in reverse order of removal using figure 6-22 as a guide and observing the following.

(1) Position terminal board (60) in distribution box and secure with nuts (36) and screws (37).

(2) Place connector link (32) over terminals on terminal board.

(3) Replace electrical leads on proper terminals and secure with washer (31), lock washer (30) and nut (29).

(4)Press cover (35) on terminal board (38).

6-43. TB4 Terminal Board

a. Removal. Remove TB4 terminal board (28) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Remove cover (25) from terminal board (28).

(2) Remove nuts (29), lockwashers (30), and washers (31), and remove electrical leads from terminals 1 through 5.

Note. Mark or otherwise identify electrical leads for ease at installation. Refer to tables 6-1 and 6-2 and procedures outlined for harness and assemblies removal and replacement, chapter 6, sections II, III, and IV.

(3) Remove connector link (32) terminals.

(4) Remove nuts (26) and screws which secure the terminal board (28) to distribution box.

b. Installation. Install TB4 terminal *b* in reverse order of removal using figure as a guide and observing the following.

(1) Position terminal board (28) in distribution box and secure with nuts (26) and screws (27).

(2) Place connector link (32) over terminals on terminal board.

(3) Replace electrical leads on proper terminals and secure with washer (31), washer (30) and nut (29).

(4) Press cover (25) over terminal board (28).

6-44. TB5 Terminal Board

a. Removal. Remove TB5 terminal board *(*45) according to sequence of index number assigned to figure 6-22 and observing the following.

(1) Remove cover (42) from terminal board (45).

(2) Remove nuts (46), lockwashers (47) and washers (48), and remove electrical leads from terminals 2 through 10.

Note. Mark or otherwise identify electrical leads for ease at installation. Refer to tables 6-1 6-2 and procedures outlined for harness and assemblies removal and replacement, chapter 6, sections II, III, and IV.

(3) Remove nuts (43) and screws which secure the terminal board (45) to distribution box.

b. Installation. Install TB5 terminal board (45) in reverse order of removal using figure 6-22 as a guide and observing the following.

(1) Position terminal board (45) in distribution box and secure with nuts (43) and screws (44).

(2) Replace electrical leads on proper terminals and secure with washers (48), lockwashers (47) and nuts (46).

(3) Press cover (42) on terminal board (45).

6-45. TB6 Terminal Board

a. Removal. Remove TB6 terminal board (68) according to sequence of index numbers assigned to figure 6-22 and observing the following.

(1) Remove cover (65) from terminal board (68).

(2) Remove nuts (69), lockwashers (70), and washers (71), and remove electrical leads from terminals 1 through 6.

Note. Mark or otherwise identify electrical leads for ease at installation. Refer to tables 6-1 and 6-2 and procedures outlined for harness and wire assemblies removal and replacement, chapter 6, sections II, III, and IV.

(3) Remove nuts (66) and screws (67) which secure the terminal board (68) to the distribution box.

b. Installation. Install TB6 terminal board (68) in reverse order of removal using figure 6-22 as a guide and observing the following.

(1) Position terminal board (68) in distribution box and secure with nuts (66) and screws (67).

(2) Replace electrical leads on proper terminals and secure with washers (71), lockwashers (70) and nuts (69).

(3) Press cover (65) firmly in place over terminal board (68).

CHAPTER 7

SHELTER ACCESSORIES

Section I. AIR-LOCK CHAMBER

7-1. General

This section provides instructions for repair and replacement of components of the air-lock chamber. They consist of bow assemblies, door assembly, and fabric body assembly (fig. 7-1)

7-2. Bow Assemblies

a. General. The bow assemblies provide support for the air-lock chamber fabric body assembly. They consist of two metal bows joined with a metal support bar which it riveted to one bow and secured to the other bow with a removable pin (fig. 7-1).

b. Removal. Remove bow assemblies (items 3 through 10, fig. 7-1) as described in paragraph 2-37, step *a*.

c. Disassembly. Disassemble bow assemblies as required for replacement of damaged parts as described in paragraph 2-37, step b (2 and 3).

d. Repair. Repair bow assemblies as required to return to a serviceable condition as follows.

(1) Inspect bow assemblies for dents misalinement, nicks, and scratches. Minor dents are acceptable as long as function or fit is not affected. Dress all nicks, and scratches with emery cloth assuring that enough wall thickness of the tube remains to assure sufficient strength. If possible, straighten bent or misaligned bow assemblies using a one inch conduit tube bending tool or by inserting a tube or pipe inside, or over the bow assembly ends to use as leverage. If methods listed above cannot return the bow assemblies to a serviceable condition, replace the bow assemblies.
epoxy primer and air, drying for 18 hours or 30 minutes at 1500 to 3000F. Apply two finish coats of paint conforming to Specification TT-E-527, color match per Standard 595, No. 34087, and air dry 18 hours or 30 minutes at 150^0 to 300°F.

e. Assembly. Assemble bow assemblies as described in paragraph 2-37, step *c* (1 and 2).

f. Installation. Install bow assemblies as described in paragraph 2-37, step *d*.

Note. If bow is used for left hand side it has correct hole size for rivets (0.196). If it is used for right hand side the hole must match the pin hole of the bow support (0.250). Ream hole if required.

7-3. Air-Lock Chamber End Panel and Door Assembly

a. General. The end panel and door assembly encloses the end and provides entry into the air-lock chamber. The end panel and door assembly consists of an end panel assembly and an anti-backdraft valve, door assembly with two doors equipped with 12 inch diameter windows.

b. Removal. Remove end panel and door assembly as follows (fig. 7-1).

(1) Remove cemented blackout curtain assemblies (11) as described in paragraph 2-20, step *d*(1).

(2) Open fabric fastener tape and zipper that attaches end panel and door assembly (12) to the fabric body assembly (13). Remove end panel and door assembly (12).

c. Disassembly. Disassemble end panel and door assembly as required to replace damaged parts as follows (fig. 7-2).

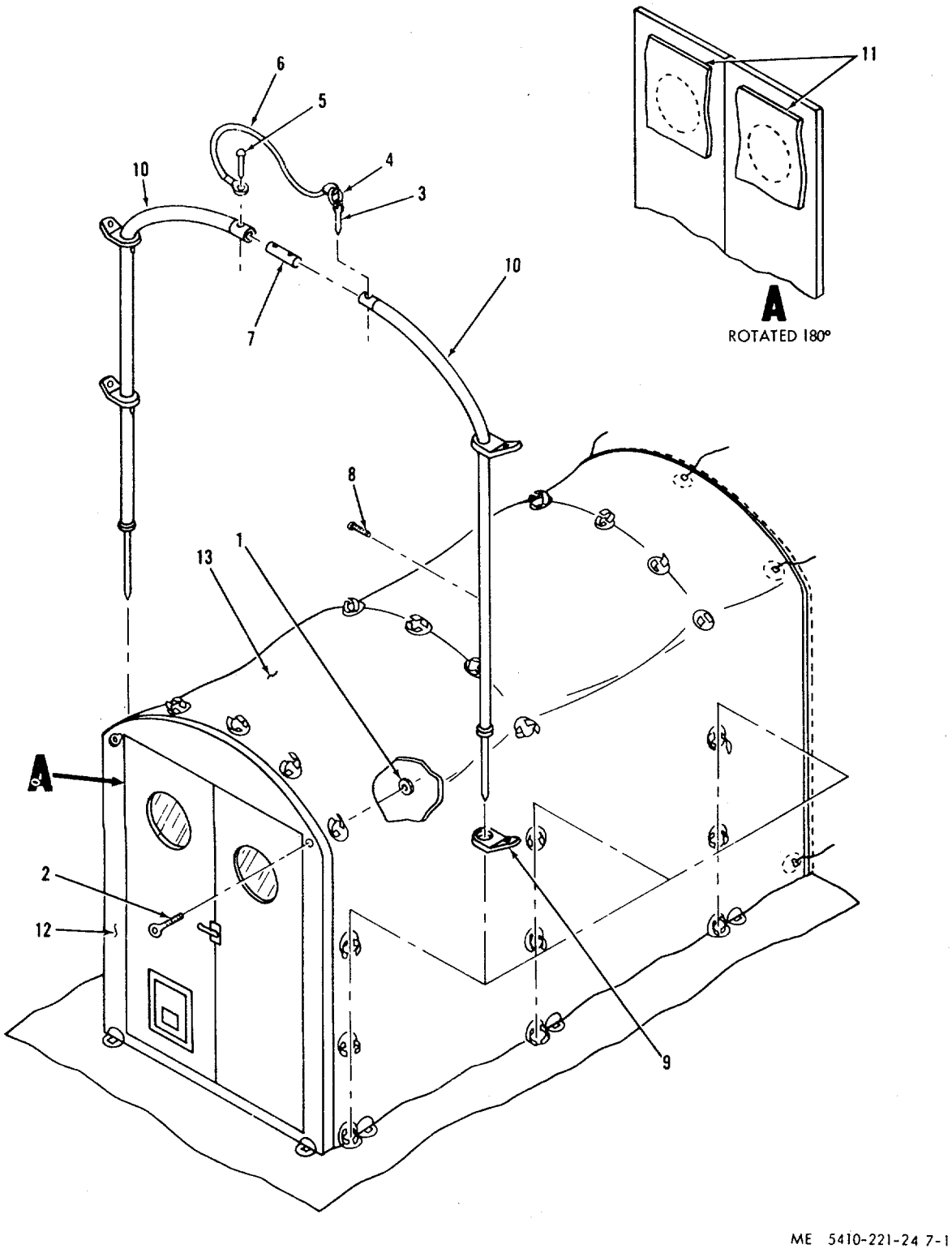
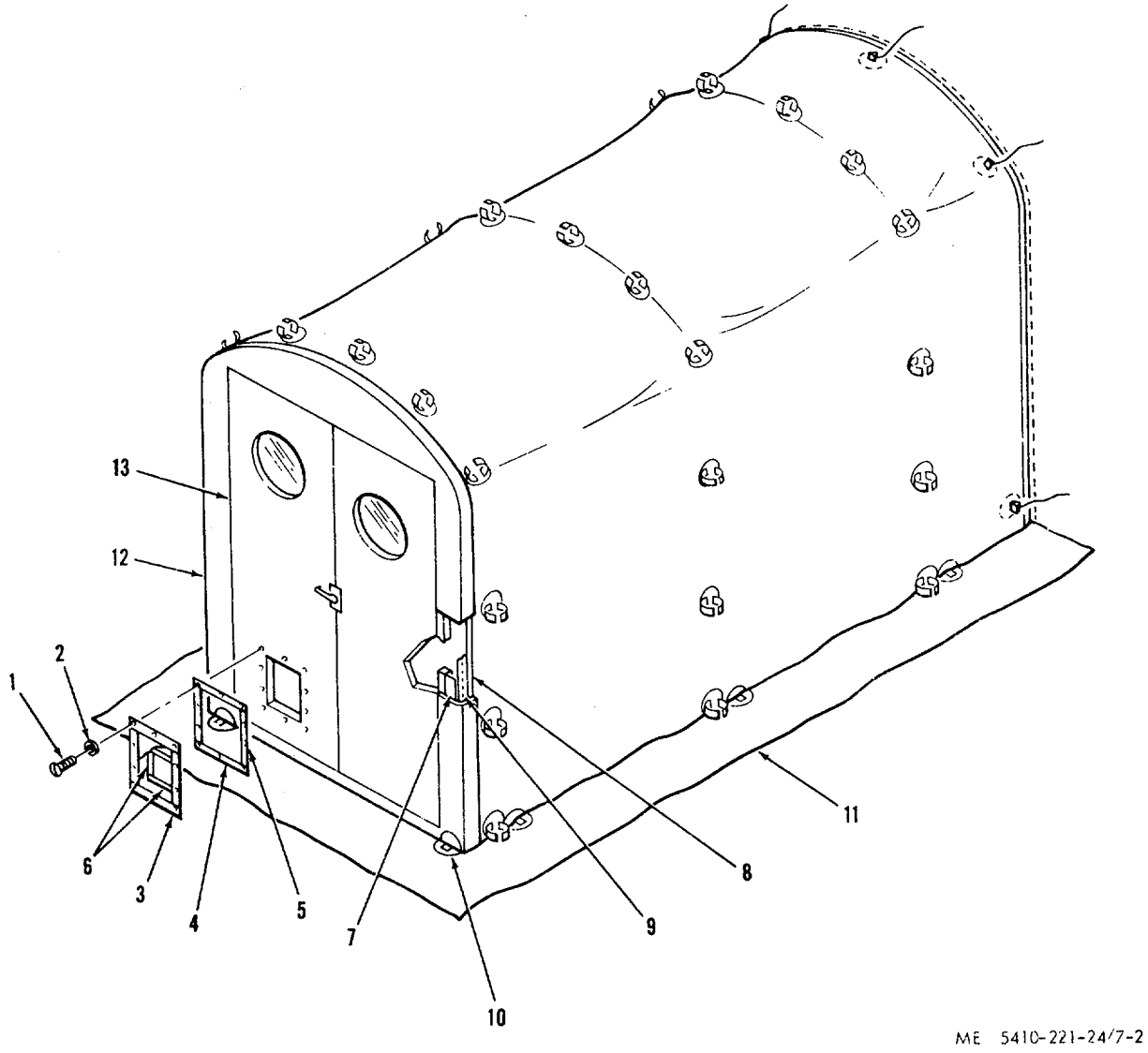


Figure 7-1. Air-lock chamber disassembly.

1 Nut (2)
2 Eyebolt (2)
3 Retaining pin (8)
4 Retaining pin ring (3)
5 Rivet (3)
6 Retaining pin lanyard (3)
7 Bow support (3)
8 Screw (12)
9 Guy line bracket (12)
10 Bow (6)
11 Blackout curtain assembly (2)
12 End panel and door assembly
13 Fabric body assembly

Figure 7-1-Continued.



1 Screw (10)
2 Lockwasher (10)
3 Anti-backdraft valve
4 Gasket (2)
5 Gasket (2)
6 Gasket (2)
7 Reinforcing tape
8 Pile fabric fastener tape
9 Separating pin half of zipper
10 Tent pin patch assembly (2)
11 Ground apron
12 End panel
13 Door assembly

Figure 7-2. Air-lock chamber door disassembly.

(1) Remove screws (1), lockwashers (2), and anti-backdraft valve (3). If required for replacement, peel gaskets (4, 5, 6) from anti-backdraft valve (3) and use an approved clearing solvent to remove adhesive from valve housing.

(2) Peel reinforcing tape (7) from door assembly (13) and end panel (12) as describe in paragraph 2-20, step d (1). Peel end pans (12) from door assembly.

(3) Cut stitches and remove pile fabric fastener tape (8), and separating pin half of zipper (9) as described in paragraph 5-5, step *a.*

(4) Disassemble window blackout curtains by cutting stitches as described in paragraph 5-5, a and separating parts as shown in figure 7-4.

d. Repair. Repair damage to air-lock components as described in paragraph 2-20 and 5-5.

e. Assembly. Assemble end panel and door assembly in reverse order of disassembly using figure 7-2 as a guide and observing the following.

(1) Install ground apron (11), tent pin patch assemblies (10), separating pin half of zipper (9), and pile fabric fastener tape (8) on end panel (12) and secure by sewing as described in paragraph 5-5, step *b* using size F-F olive green thread, and observing figure 5-1.

(2) Cement end panel (12, fig. 7-2) to door assembly (13) and cement reinforcing tape (7) to end panel (12) and door assembly (13) as described in paragraph 2-19, step *d.*

(3) Install gaskets (4, 5, 6) on valve (3) using adhesive (140, Dow Corning Corp. Midland, Michigan). Install anti-backdraft valve (3) on door assembly (13) (with valve counter-weight up) and secure with lockwashers (2) and screws (1).

(4) Position blackout curtain component together and secure by sewing as described in paragraph 5-5, b using olive green, size F, thread.

f. Installation. Install end panel and door assembly (12, fig. 7-1) in reverse order of removal procedure using figure 7-1 as a guide and observing the following.

(1) Install blackout curtain assemblies over door assembly windows as described in paragraph 2-20, step *d*.

(2) Engage and close zipper between end panel and door assembly (12) and fabric body assembly (13). Close fabric fastener tape between end panel and door assembly (12) and fabric body assembly (13).

7-4. Fabric Body Assembly

a. General. The fabric body assembly provides top, sides, and bottom of the air-lock chamber. The body assembly consists of a fabric body with various fabric attachment and reinforcing components installed.

b. Removal. Removal of fabric body assembly consists of removing the other components of the air-lock chamber as described in paragraph 7-2 through 7-7.

c. Disassembly. Disassemble fabric body assembly as required for replacement of damaged components as follows (fig. 7-3).

(1) Untie and remove cord (1). Peel tie patch assemblies (2), bow holding snap assemblies (3), light and fixture patch assemblies (4), and reinforcing patches (5) from body cloth (11) as described in paragraph 2-20, step *d* (1).

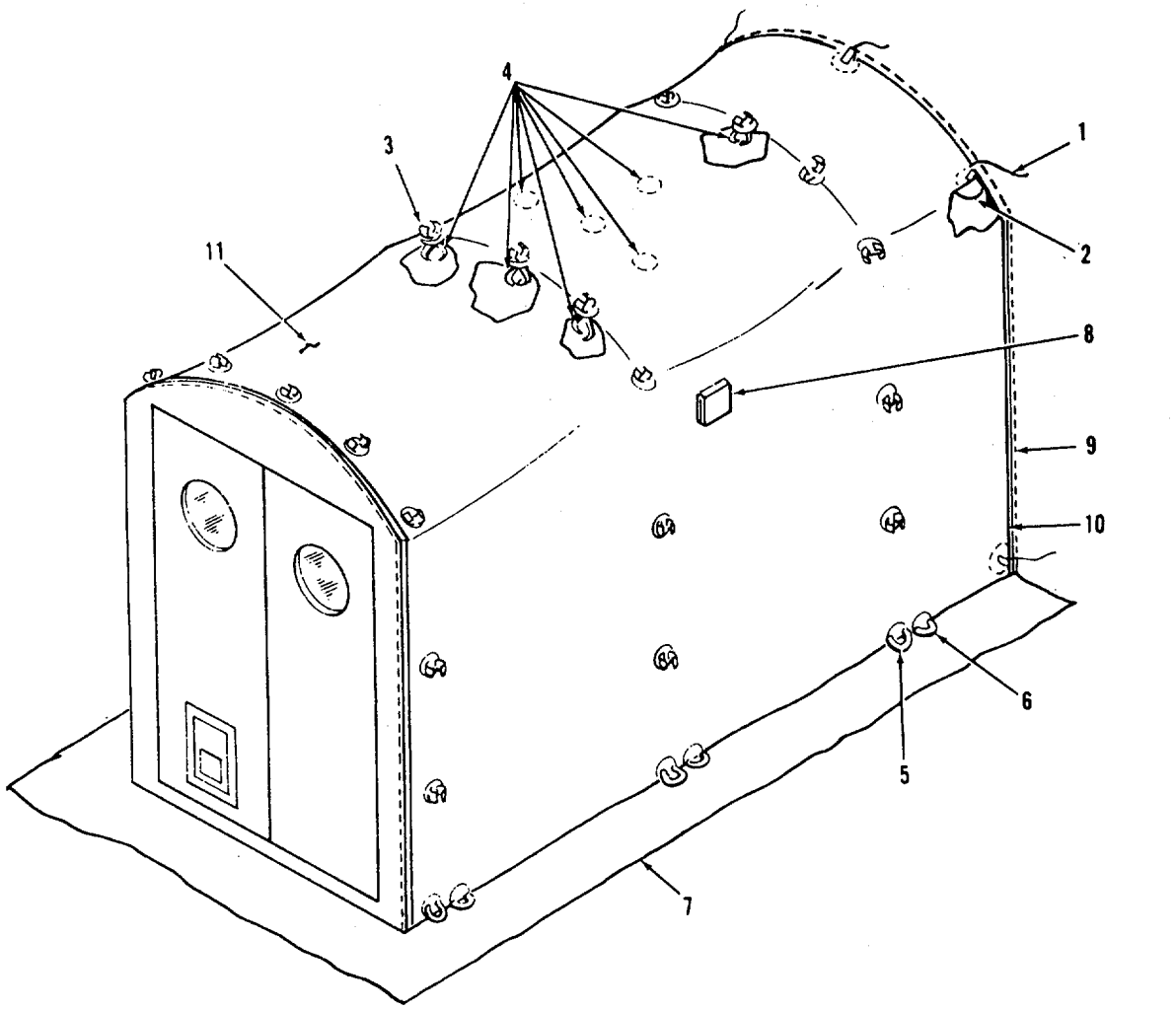
(2) Cut stitches and remove tent pin patch assemblies (6), ground aprons (7), electrical patch assemblies (8), slider half of zippers (9), and hook fabric fastener tape (10) from body cloth (11) as described in paragraph 5-5, step *a*.

d. Repair. Repair damage to fabric body assembly as described in paragraphs 2-20 and 5-5.

e. Assembly. Assemble fabric body assembly in reverse order of disassembly using figure 7-3 as a guide and observing the following.

(1) Install hook fabric fastener tapes (10), slider half of zippers (9), electrical patch assemblies (8), ground aprons (7), and tent pin patch assemblies (6) on body cloth (11) and secure by sewing as described in paragraph 5-5 step *b*, using size F-F olive green thread, and observing figure 5-1.

(2) Cement reinforcing patches (5), light and fixture patch assemblies (4), bow

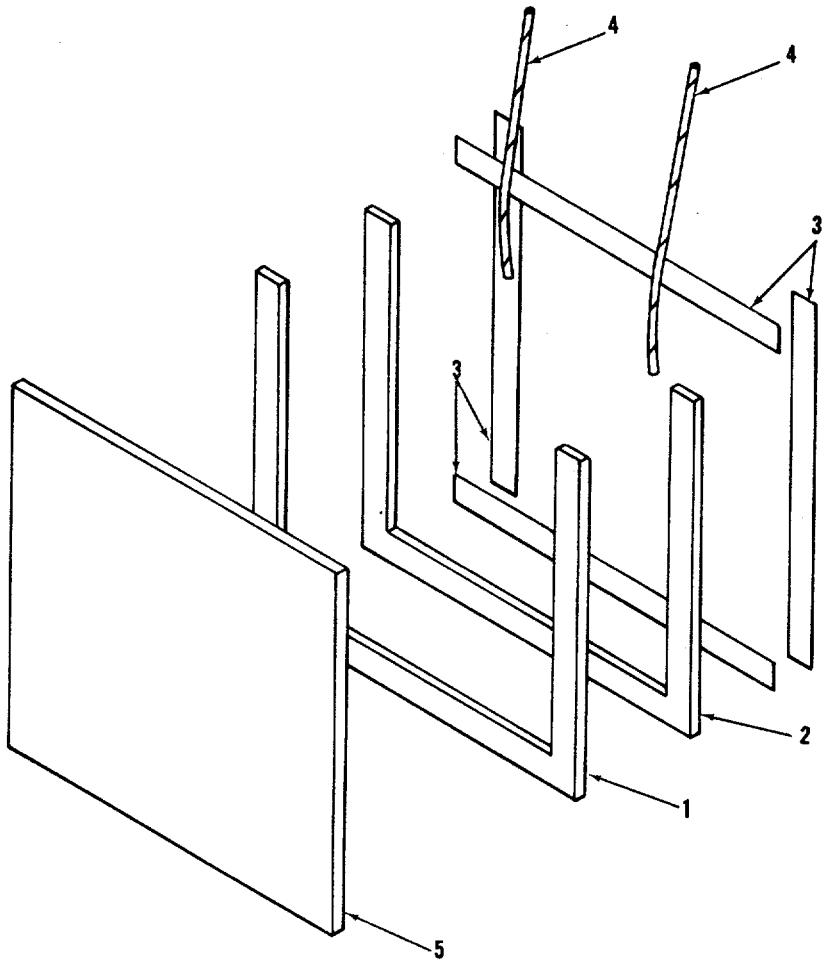


1 Cord (5)
2 Tie patch assembly (5)
3 Bow holding snap assembly (8)
4 Light and fixture patch assembly (8)
5 Reinforcing patch (6)
6 Tent pin patch assembly (6)
7 Ground apron (2)
8 Electrical patch assembly (2)
9 Slider half of zipper (2)
10 Hook fabric fastener tape (2)
11 Body cloth

Figure 7-3. Air-lock chamber fabric body disassembly.

holding snap assemblies (3), and tie patch assemblies (2) on body cloth as described in paragraph 2-20, step *a.* Tie cord (1) in tie patch assemblies (2).

f. Installation. Install fabric body assembly(13. fig. 7-1) in reverse order of removal procedure using figure 7-1 as a guide and observing installation procedures described in paragraphs 7-2 through 7-7.



MEC 5410-221-24/7-4

1 Pile fabric fastener tape
2 Hook fabric fastener tape
3 Reinforcing strip
4 Cord (12 in. long, O.D. color) (2)
5 Curtain body

Figure 7-4. Blackout curtain disassembly.

CHAPTER 8

CONDITIONED AIR SYSTEM

Section I. CONNECTION COMPONENTS

8-1. General

This section provides instructions for replacement of those items considered as connection components for the conditioned air system They consist of the air duct assembly, air duct adapter coupling clamps, duct covers, air distribution plenum and the air duct adapter flange.

8-2. Air Duct Assembly, Coupling Clamps, and Duct Covers

a. General. The duct covers are hinged formed metal discs that are used to cover the shelter air inlet and outlet ducts when ducts are not in use. The coupling clamps are standard V-clamp used to secure the air duct assembly to the shelter air duct adapter. The air duct assembly is a wire reinforced, insulated fabric, flexible duct used to connect a conditioned air source to the shelter inlet duct.

b. *Removal.* Remove air duct assembly, distribution plenum coupling clamps, air duct adapter and duct covers as described in paragraph 2-44, step a.

c. Installation. Install air duct assembly, coupling clamps, and duct covers as described in paragraph 2-44, step b.

Section II. CONTROL COMPONENTS

8-3. General

This section provides instructions for replacement of those items considered as component of the conditioned air control system. The) consist of a remote temperature sensor receptacle and a humidifier receptacle used only when the shelter is designated as a surgical unit.

8-4. Remote Temperature Sensor Receptacle and Harness

a. General. The remote temperature sensor harness and receptacle provide a means of interconnecting a temperature sensor from the shelter interior to the remote conditioned ail source for precise temperature control of th' shelter air. The harness assemblies consist of an exterior receptacle (J37) and harness (fig 6-1 and 6-17) which runs through the shelter electrical raceway to the distribution box where it connects to the interior receptacle (J38) and harness assembly (fig. 6-22 and 6-29).

b. Removal. Remove the exterior harness and connection (4, fig. 6-1) as described in paragraph 6-15, b. Remove the interior harness and receptacle assembly (84, fig. 6-22) as described in paragraph 6-30, b.

c. Installation. Install the interior and exterior receptacle and harness assemblies as described in paragraphs 6-15, f and 6-30, *f.*

8-5. Humidifier Receptacle and Harness Assembly

a. General. The humidifier receptacle (J31) and harness assembly (10, fig. 6-1) provides for connection of a humidifier to control the humidity inside the shelter.

b. Removal. Remove the humidifier receptacle and harness assembly as described in paragraph 6-16b.

c. *Installation.* Install the humidifier receptacle and harness assembly as described in paragraph 6-16f.

CHAPTER 9

WATER SYSTEM

Section I. PLUMBING COMPONENTS REPAIR INSTRUCTIONS

9-1. General

This section contains the water system pluming components used to supply the shelter with hot and cold water and drainage provisions. The water plumbing system consists a centrifugal sump pump, sump assemble check valve, water and drain tube assemblies manifold assemblies, and external supply and drain hoses.

9-2. Centrifugal Sump Pump

a. General. The sump pump is used pump water from the stainless steel sum located inside the shelter, to an external drain line.

b. Removal. Remove the sump pump assembly as described in paragraph 2-49, a.

c. Test. Test water pump -using a multimeter, continuity light or other suitable continuity checking device. Continuity must exist between the following pins. A to B, A to A to D, B to D, and C to D. Continuity must exist between pin E and the pump case (ground). If above tests indicate an op circuit replace the pump.

d. Installation. Install the sump pump assembly as described in paragraph 2-49b.

e. *Repair and Overhaul.* The sump pun is not provisioned for breakdown or replacement of parts. Remove and replace defective pump assembly only.

9-3. Drain Sump Assembly

a. General. The drain sump assembly used to collect waste water from shelter al discharge it to the sump pump through meal of a float switch inside the sump.

b. *Removal.* Remove the drain sump as described in paragraph 2-48a.

c. Repair. Repair drain sump assembly as described in paragraph 2-48b.

d. Installation. Install the drain sump as described in paragraph 2-48c.

9-4. Check Valve

a. General. The check valve is used to re-strict flow of drain water in one direction only to prevent waste water from backing up into shelter.

b. Removal. Remove the check valve as described in paragraph 2-50a.

c. *Repair.* Check valve is not reparable. Remove and replace defective valve only.

d. Installation. Install the check valve as described in paragraph 2-50b.

9-5. Water Supply and Drain Tube Assemblies

a. General. The water and drain tube assemblies are used to supply hot and cold water to the shelter and drain waste water from the shelter. They consist of stainless steel tubes with flared ends and equipped with nuts and sleeves.

b. Removal. Remove the supply and drain tube assemblies according to sequence of index numbers assigned to figure 9-1 and observing the following.

(1) Remove vacuum nipple and cap assembly (1, fig. 9-1) from mounting bracket by removing nuts (2, 3, 4), packing (5) and elbow (6).

(2) Remove nut (7) and packing (8) from tee (9). Remove nut (10), washer (11),

and bolt (12) and separate clamps (13) a remove from vacuum supply tube (14) a humidifier overboard drain (54). Disconnect vacuum supply tube (14) from tee (9) a remove potting compound from around vacuum supply line where it enters shelter. Remove vacuum supply tube (14).

(3) Remove nuts (15, 16), packing (17) elbow (18), and disconnect cold water supply tube assembly (20) from coupling assemble (19). Remove coupling assembly (19). Disconnect supply tube (20) and cold water in tube assembly (22) from tee (21). Remove cold water supply tube assembly (20) and (21) from water box.

(4) Disconnect cold water inlet tube assembly (22) from tee (23) and remove potting compound from around cold water inlet tube (22) where it enters shelter and remove cold water inlet tube (22) from water box. Remove cap assemblies (24) from tee (23).

(5) Remove nut (25), and packing (26) from elbow (27). Disconnect hot water supply tube (28) from elbow (27) and tee (29).Remove elbow (27) and hot water supply tube (28) from water box. Disconnect hot water inlet tube assembly (30) from tee (29) a remove potting compound from around water inlet tube assembly (30) where it enter shelter and remove from water box.

(6) Loosen nuts (31, 33) from drain coupling (32) and remove packing (34) a drain coupling (32) from mounting bracket and drain manifold (41).

(7) Remove union (35), and pack: (36) from drain manifold (41). Loosen (38) and remove union (39) and packing (37) and packing (40) from lower drain manifold (41) and upper drain manifold (46).

(8) Remove union (42) and pack (43) from upper drain manifold (46) by r connecting drain tube assembly (50). Remove union (44) and packing (45) from up drain manifold (46). Separate washer drain coupling (47) from union (44). Remove p (49) and packing (48).

(9) Disconnect drain tube assembly (4 from check valve (6, figure 2-14). Disconnect pump outlet drain tube assembly (51, Fig 9-1) from check valve and pump. Disconnect pump inlet tube assembly (52) from tee (53) and pump inlet. Remove potting compound from around pump inlet drain tube assembly (52) where it enters shelter and remove pump inlet drain tube assembly (52) from shelter water box.

(10) Disconnect humidifier overboard drain tube assembly (54) from tee (23) and remove potting compound from around tube where it enters shelter. Remove the shelter water box.

(11) Disconnect sump vent tube assembly

(55) from union (56) and tee (23). Remove union (56) and packing (57) from drain sump.

(12) Remove bolts (58), washers (59) and remove clamps (60). Disconnect vacuum tube assembly (61) from vacuum nipple and cap assembly (72) and remove tube assembly (61) from shelter water tunnel.

*Note. Ac*cess to shelter water tunnel is made by jacking up**,** shelter and removing the water tunnel' covers (para 10-14c).

(13) Remove nut (62), washer (63) and bolt (64), remove clamp (65) from hot water tube assembly (68). Remove bolt (66) and bracket (67) and disconnect hot water tube assembly (68) from hot and cold water coupling (76).

(14) Disconnect cold water tube assembly

(69) from hot and cold water coupling (76) and remove from shelter water tunnel.

(15) Remove clamp (70) from drain tube assembly (71) and disconnect drain tube assembly (71) from drain coupling (78) and remove tube assembly from shelter water tunnel.

(16) Remove nuts (73, 74) from vacuum nipple and cap assembly (72) and remove from shelter water outlet box.

(17) Remove nuts (75) from hot and cold water coupling assembly (76) and remove from shelter water outlet box.

(18) Remove nut (77) and remove drain coupling assembly (78) and shims (79) from water outlet box.

c. Repair and Overhaul. Repair or over-haul the shelter supply and tube assemblies

as required to return to a serviceable condition as follows.

(1) Inspect all tube assemblies for damaged threads, nicks, dents, bent tubes or burr If possible, dress all nicks and burrs wit emery cloth assuring that enough wall thickness of tube remains to assure sufficient strength. Minor dents in the tube assemblies are acceptable so long as the function or fit o tubes is not affected. Dress minor damage to threads with emery cloth and then pressure check per paragraph 95, to assure that there are no leaks present. Minor bent tubes are acceptable as long as function or fit is not affected. If possible straighten tubes using tube bending tool or clamping in a padded vise, or by hand. If methods listed above car not return the tube assemblies to serviceable condition, replace the tube assembly.

(2) Inspect mounting brackets for damage and misalignment. If possible straighten any bent or misaligned brackets by means of padded vise, pliers, or hammer. Repaint brace et assemblies by applying primer and allowing to dry and painting with paint conforming to Federal Standard 595, Color Chip 34087.

d. *Installation.* Install the water supply and drain tube assemblies in reverse order o removal using figure 9-1 as a guide and observing the following.

(1) Use new packings at required fittings using figure 9-1 as a guide.

(2) Pot all tube assemblies which enter the shelter using RTV-731, Dow Corning Corp., Midland, Michigan, or equivalent.

(3) Shim drain coupling assembly (78, fig. 9-1) as required to assure alinement with the hot and cold water coupling (76).

(4) Torque all fittings using good shop practice.

e. Test. Test the water system and vacuum plumbing for leaks as follows.

(1) Install and tighten all nuts, caps, and plugs on water line and vacuum stubs extending from water box into shelter.

(2) Install and tighten all nuts, caps, and plugs in plumbing outlet box of shelter.

(3) Connect air supply (60 PSIG) to “cold water in” and check connections for leaks.

(4) Connect air supply (60 PSIG) to “hot water in” and check connections for leaks.

(5) Install plug in sump drain line. Apply air and check drain lines for leaks.

(6) Connect air supply (60 PSIG) to vacuum system and check for leaks. Liquid soap solution may be used to detect leaks.

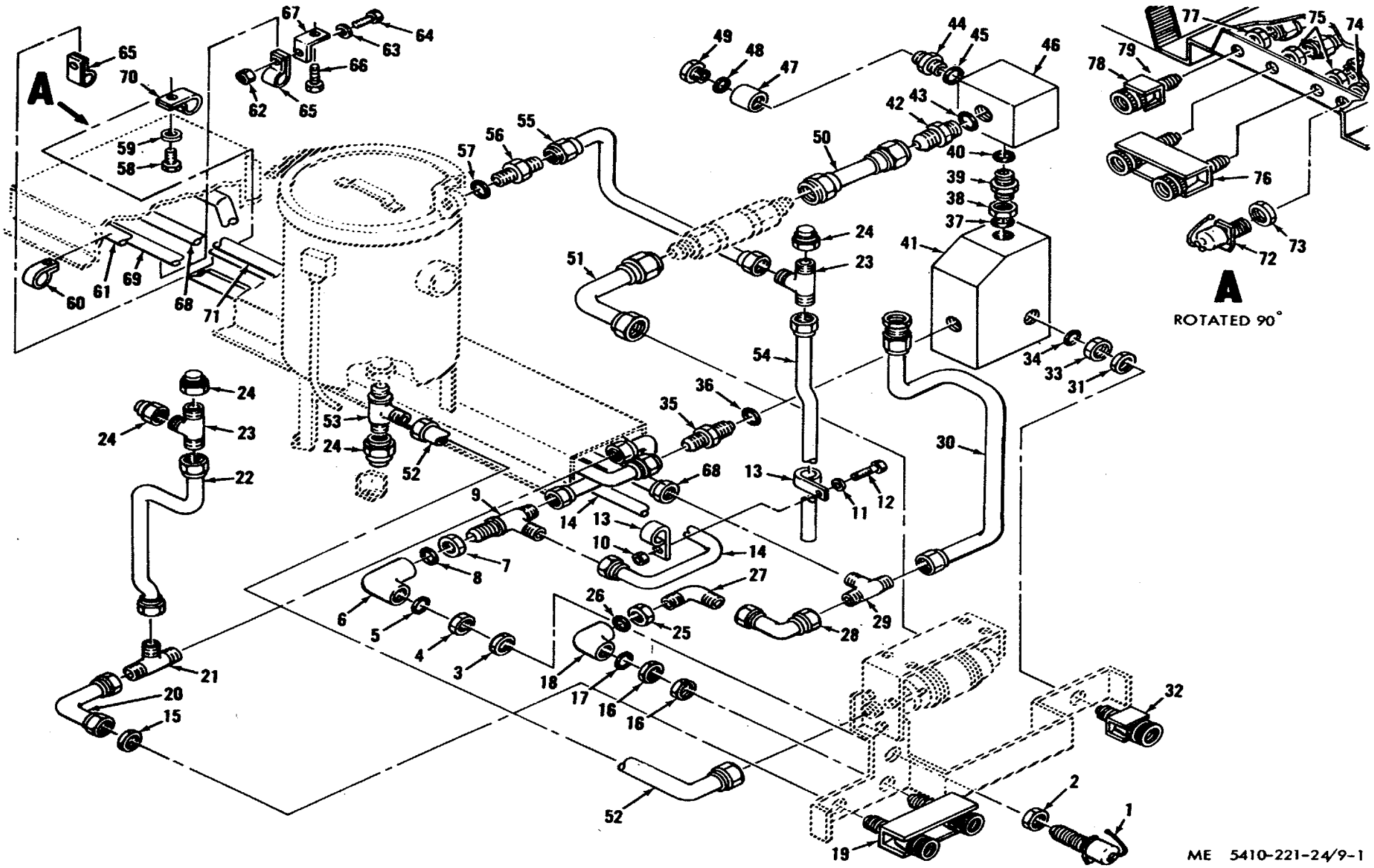


Figure 9-1. Plumbing system installation disassembly.

1 Vacuum nipple and cap assembly
2 Nut
3 Nut
4 Nut
5 Packing, O-ring
6 Elbow
7 Nut
8 Packing, O-Ring
9 Tee
10 Nut
11 Washer
12 Bolt
13 Clamp
14 Vacuum supply tube assembly
15 Nut
16 Nut
17 Packing, O-ring
18 Elbow
19 Hot and cold water coupling assembly
20 Cold water supply tube assembly
21 Tee
22 Cold water inlet tube assembly
23 Tee
24 Cap assembly
25 Nut
26 Packing, O-ring
27 Elbow
28 Hot water supply tube
29 Tee
30 Hot water inlet tube assembly
31 Nut
32 Drain coupling
33 Nut
34 Packing, O-ring
35 Union
36 Packing, O-ring
37 Packing, 0-ring
38 Nut
39 Union
40 Packing, O-ring
41 Lower drain manifold
42 Union
43 Packing, O-ring
44 Union
45 Packing, O-ring
46 Upper drain manifold
47 Washer drain coupling
48 Packing, O-ring
49 Plug
50 Drain tube assembly
51 Pump outlet drain tube assembly
52 Pump inlet drain tube assembly
53 Tee-bulkhead
54 Humidifier overboard drain tube assembly
55 Sump vent tube assembly
56 Union
57 Packing, O-ring
58 Bolt (6)
59 Washer (6)
60 Clamp (3)
61 Vacuum tube assembly
62 Nut (6)
63 Washer (6)
64 Bolt (6)
65 Clamp (6)
66 Bolt (6)
67 Bracket (6)
68 Hot water tube assembly
69 Cold water tube assembly
70 Clamp (3)
71 Drain tube assembly
72 Vacuum nipple and cap assembly
73 Nut
74 Nut
75 Nut
76 Hot and cold water coupling assembly
77 Nut
78 Drain coupling assembly
79 Shims (as required)

Figure 9-1 -Continued.

Section II. EXTERNAL WATER AND DRAIN HOSE ASSEMBLIES

9-6. General

This section contains the water system external water and drain hose assemblies used to connect an external supply of hot and cold water to the shelter water service inlet box, or out let box if an adjacent shelter is used. The drain hose assembly provides a means of draining waste water to an area away from shelter.

9-7. Hot and Cold Water Hose

a. *General.* The hot and cold water hose assembly is a dual heavy duty neoprene hose used to supply the shelter with hot and code water.

Note. Shelters used in areas with ambient temperatures below 38°F must be equipped with an electrically heated hose assembly.

b. Removal.

(1) Detach the dual hot and cold water: hose from the quick disconnect hot and cold water coupling (19, fig. 9-1) at the water: service inlet or outlet boxes.

(2) Detach the water hose heater receptacle if used, from the receptacle at the water: service inlet or outlet boxes.

c. Repair and Overhaul. Repair or overhaul the dual hot and cold water hose assemblies as required to return to a serviceable condition as follows.

(1) Dress any nicks, scratches, or burrs on fittings with emery cloth, and pressure test for leaks.

(2) Minor cuts or abrasions on the rubber portion of the hose are acceptable if normal function of the hose is not impaired. Cove abrasions and minor cuts with vinyl or mylar tape. Minor cuts or holes which extend to the-interior of the hose shall be repaired by vulcanizing a rubber patch over the hole or cut in accordance with manufacturer's instructions.

(3) Clean the hose assembly by blowing out with compressed air. Large obstructions in the hose shall be removed using a plumber's snake or other suitable cleaning tool.

d. Installation. Install the dual hot and cold water hose assembly by inserting the hose assembly fittings over the hot and cold water coupling assembly (19, fig. 9-1) or hot and cold water outlet coupling (76).

9-8. Water Drain Hose

a. General. The drain hose assembly is a heavy duty neoprene hose used to provide waste water drainage away from the expand-able shelter.

Note. Shelters used in areas with ambient temperatures below 385F must be equipped with an electrically heated hose assembly.

b. Removal.

(1) Detach from the drain quick disconnect type connector at the water service inlet or outlet boxes (fig. 1-4).

(2) Detach the drain hose heater receptacle, if used, from the receptacle at the water service inlet or outlet water boxes.

c. Overhaul. Overhaul the drain hose assembly using procedures outlined in paragraph 9-7, c.

d. Installation. Install the drain hose assembly by inserting the hose assembly fitting over the drain coupling (32, fig. 9-1) or drain coupling assembly (78).

CHAPTER 10

SHELTER BODY ASSEMBLY

Section I. FOLDING PANEL ASSEMBLIES

10-1. General

This section provides instructions for replacement of those items considered as part of the folding panel assemblies. They consist of four door panel assemblies, folding end jack assemblies, folding side panels, folding end panels, folding floor panels, and folding roof panels (fig. 10-1).

10-2. Door Panel Assemblies

a. General. The door panel assemblies are a metal faced honeycomb core panel. They consist of a weather seal assembly on the door inner edge, a hinge assembly, door stops, window assemblies with blackout curtains, and an anti-back draft valve located on one of the panel assemblies at each side of the shelter (fig. 10-2).

b. Removal. Remove the door assemblies according to sequence of index numbers as-signed to figure 10-2 and observing the following.

(1) Remove grounding straps located at the upper left and right hand corners of the doors.

(2) Remove the captive screws (1, fig.

10-2) on the side panel side of the hinge (11) and the pan head screws securing the hinge to the edge of the side panels (60, 61, fig. 10-3).

(3) Remove doors (75, 76, fig. 10-2) from the folding side panels.

c. Disassembly. Disassemble the door panel assemblies for replacement of damaged parts according to sequence of index numbers as-signed to figure 10-2 and observing the following.

(1) Remove washer (2) and retainer washer (3) from captive screw (1).

(2) Remove screw (4), rivets (6, 7) which secure hinge half (10) to door panel assemblies. Remove blind nut (5) in accordance with paragraph 2-23, a.

(3) Remove hinge pin (8) and separate hinge halves (10, 11), and torsion springs (9).

(4) Remove screw (12), washer (13) and remove ground rod (14) from panel.

(5) Remove screw (15) to remove upper bar retainer (17) from panel. Remove rivet (19) and remove lower bar retainer (20) and retainer shim (21). Remove blind nut (16) in accordance with paragraph 2-23, a.

(6) Remove screws from lock assembly plate and remove lock assembly from door. Disassemble door lock assembly according to sequence of index numbers assigned to detail A and observing the following.

(a) Remove screws (22, 23) and re-move handle bar (24). Remove nut (25), washer (26), and screw (27); remove locking bar (28), handle bail (29), keeper plate (30) and stop arm (31).

(b) Remove screw (32) and remove idler block (33), stop arm (34), keeper plate (30) and locking blade (3F).

(c) Remove screw (23) to remove interior handle bar (24), and handle bail (29).

(7) Remove rivet (36), window frame (37), spacer (38) and window (39). Remove blackout curtain pile tape (41, 42) by peeling from window frame (37) in accordance with paragraph 2-20d. Remove close outs (40) by running a knife or other sharp instrument between close out and paper honeycomb core.

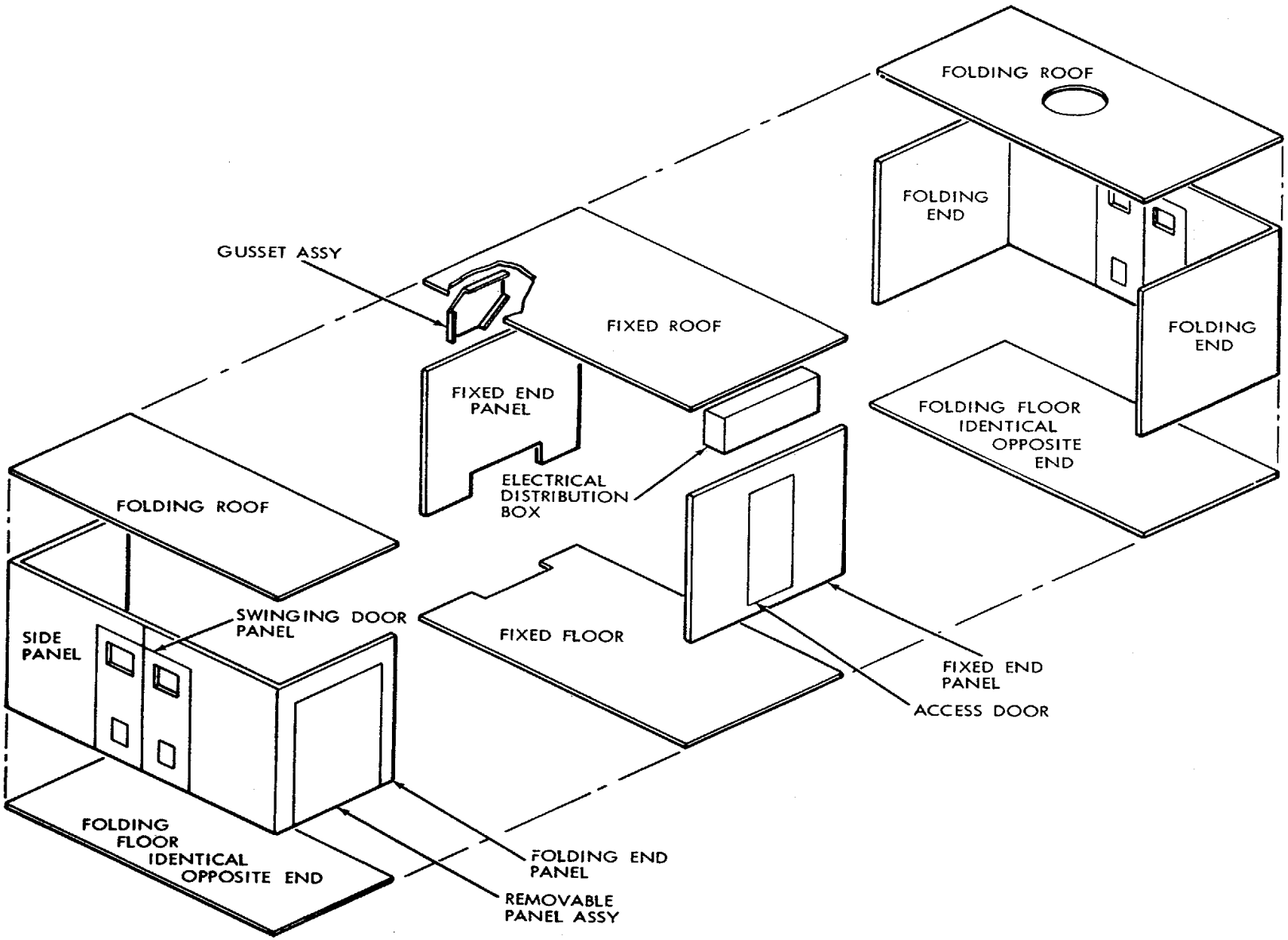


Figure 10-1. Shelter body assembly identification.

(8) Remove push plate (43) from door by breaking adhesive bond and peeling from door.

(9) Remove door stop (45) by removing rivet (44). Remove kick plate (47) by removing rivets (46).

(10) Remove rivets (48) from door by drilling out with drill bit of the same diameter as the rivets.

(11) Remove and disassemble anti-back-draft valve by observing the following.

(a) Remove screw (49) and remove housing assembly (51), gasket (52), and grill (53).

(b) Remove damper assembly (60) by removing cotter pin (54) from pin (55). Re-move pin (55) and washers (56) from hinges to allow damper assembly (60) to be removed from housing assembly (51).

(c) Remove counterweight (59) by removing nut (57) and screw (58) from counterweight support (65).

(d) Remove hinges (62, 63) by re-moving rivet (61).

(e) Remove counterweight support (65) by removing rivet (64).

(12) Remove close-outs (66, 67) by running a knive or other sharp tool between the close-out and the paper honeycomb core.

(13) Remove seal assembly (70) by re-moving rivets (68) and retainer strip (69).

(14) Remove close-outs (71, 72) using procedure given in step (12) above.

(15) Remove door pull (74) from door panel assemblies (75, 76) by removing rivets (73).

d. Overhaul. Overhaul the door panel assemblies as required to return to a serviceable condition per chapter 10, section III, paragraph 10-16.

e. Assembly. Assemble the door panel assemblies in reverse order of disassembly using figure 10-2 as' a guide and observing the following.

(1) Install blind nuts and rivets using installation procedures recommended by the manufacturer.

(2) Replace rivets observing procedures outlined in paragraph 2-22, c.

(3) During assembly of door window assemblies, place a bead of PRC 611 sealant, Product Research Co., Burbank, California, or equivalent, around edge of outer window (39, fig. 10-2). Paint interior surface of spacer (38) with one coat of TT-E-527, Color 3407 per Federal Standard 595.

(4) Assemble close-outs (40, 66, 67, 71, 72) on door panel assemblies using procedures outlined in paragraph 2-25e.

f. *Installation.* Install the door assemblies in reverse order of removal procedure observing the following.

(1) Position the doors and secure the hinges to the side panels with the captive screws (1, fig. 9-2). Adjust doors to assure that no binding or rubbing is present.

(2) Replace the grounding straps at the upper left and right hand corners.

10-3. Folding Floor Jack Assemblies

a. General. The folding floor jack assemblies are used to level the folding ends of the expandable shelter.

b. Removal. Remove the jack assemblies as described in paragraph 2-41a.

c. *Installation.* Install the jack assemblies as described in paragraph 2-41b.

10-4. Folding Side Panel Repair Procedures

a. General. The folding side panel assemblies are an aluminum faced honeycomb core panel which house the door assemblies. There are four side panel assemblies on the shelter; two at each side (fig. 10-1).

b. Removal. Remove the side panel assemblies as follows.

(1) Remove the folding floor jack assemblies as described in paragraph 2-41a.

(2) Disengage all latches and hardware which attach the side panels to the folding roof panels and folding floor panels observing the procedures given on the shelter instruction plate located on the door.

(3) Remove the grounding straps between the folding end panels and folding side panels.

(4) Remove screws (1, fig. 10-3) and washers (2) which secure the hinge half (11)

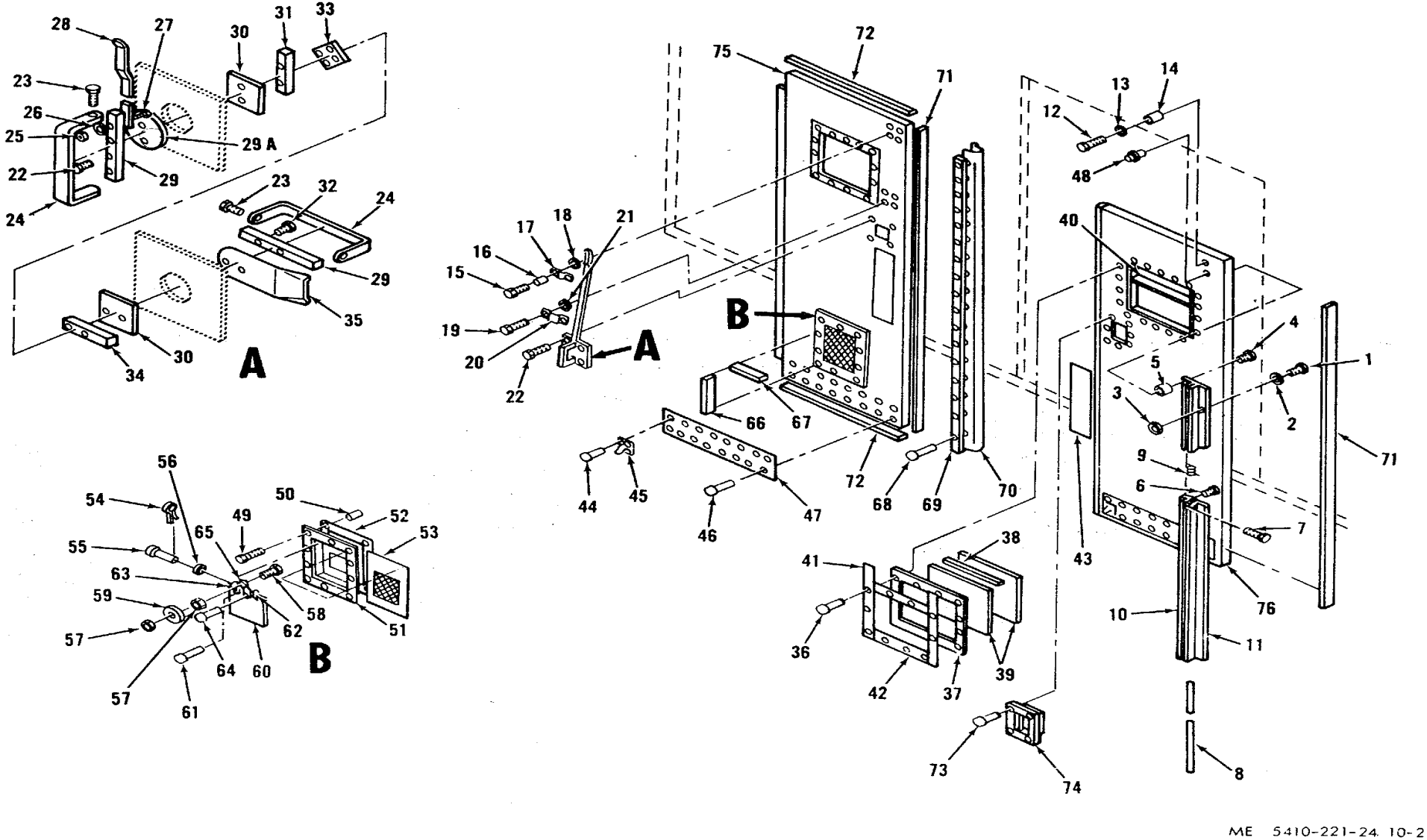


Figure 10-2. Swinging door panel assemblies-disassembly.

1	Captive screw (10)
2	Washer (10)
8	Retainer washer
4	Screw (4)
5	Blind nut assembly (4)
6	Rivet (40)
7	Rivet (40)
8	Hinge pin (2)
9	Torsion spring (16)
10	Hinge half, door
11	Hinge half, side
12	Screw (4)
13	Washer (4)
14	Ground rod (2)
15	Screw (4)
16	Blind nut (4)
17	Upper bar retainer
18	Retainer shim
19	Rivet (4)
20	Lower bar retainer
21	Retainer him
22	Screw (2)
23	Screw (4)
24	Handle bar
25	Nut
26	Washer
27	Screw
28	Locking bar
29	Handle bail
29A.	Spacer
30	Keeper plate
31	Stop arm
32	Screw (2)
33	Idler block
34	Stop arm
35	Locking blade
36	Rivet (80)
37	Window frame
38	Spacer
39	Window
40	Closeout
41	Pile tape
42	Pile tape
43	Push plate
44	Rivet (8)
45	Door stop
46	Rivet (36)
47	Kick plate
48	Rivnut (2)
49	Screw (10)
50	Blind nut (10)
51	Housing assembly
52	Gasket
53	Grill
54	Cotter pin (2)
55	Pin (2)
56	Washer (4)
57	Nut (2)
58	Screw
59	Counterweight
60	Damper assembly
61	Rivet (4)
62	Hinge
63	Hinge
64	Rivet (2)
65	Counterweight support
66	Closeout (2)
67	Closeout (2)
68	Rivet (48)
69	Strip (2)
70	Seal assembly (2)
71	Closeout (4)
72	Closeout (2)
73	Rivet (24)
74	Door pull
75	Door panel assembly, L.
76	Door panel assembly, R.H.

Figure 10-2 Continued.

to the folding end panels. Lift up the folding roof panel and support roof using the adjustable roof support; remove the side panel assemblies.

c. Disassembly. Disassemble the side pan' as required to replace damaged parts according to sequence of numbers assigned to figure 10-3 and observing the following.

(1) Remove screws (3, fig. 10-3), washers (4), rivets (6) and screws (7) and remove hinge assembly from panel edge. Remove hinge pin (.10) by pulling in a straight ;if using pliers or other suitable tool to grip t pin. Separate hinge half (11) from hinge half (12).

(2) Remove insert (8) using procedure outlined in paragraph 2-23a.

(3) Remove rivets (13) which secure angles (14) to side panel.

(4) Remove closeouts (15) by sliding sharp knife or other suitable tool between closeout and honeycomb paper core using ca: not to damage panel or honeycomb core.

(5) Remove screw (16), washer (1I and ground rod (18) from panel.

(6) Remove rivnut (19) from panel l drilling using a drill bit with the same diameter as the rivnut.

(7) Remove rivnut (20) which secure the top angles (21) to the panel top edge

(8) Remove closeout (22) using procedure given in step c(4), above.

(9) Remove tee (25) by removing rive (24).

(10) Remove bulb and tail seal (26) b peeling from cemented area on tee (25) pre paragraph 2-20d.

(11) Remove bulb seal (27) by peeling from cemented area on tee (25).

(12) Remove closeout (28) using procedure given in paragraph 10-4e (4).

(13) Remove tee (31) by removing rivet (29, 30).

(14) Remove bulb and tail seal (32) b peeling from cemented area on tee (31) per paragraph 2-20d.

(15) Remove closeout (33) per para 10-4, c(4).

(16) Remove ball lock receptacles (35 from panel by removing rivet (34).

(17) Remove rivets (36, 37) and remove shim (38) and latch assembly (39) from the panel.

(18) Remove latch assembly (41) from panel by removing rivets (40).

(19) Remove alignment plate (43) from panel by removing rivets (42).

(20) Remove right hand adapter frame (46) and left hand adapter frame (47) from panel by removing screws (44). Remove rivnut (45) from panel by drilling using a drill bit with the same diameter as the rivnut.

(21) Remove tee (50) by removing rivets (48, 49).

(22) Remove bulb and tail seal (51) by peeling from cemented area on tee (50).

(23) Remove closeout (52) per paragraph 10-4, c(4).

(24) Remove rivet (53) and remove latch and box assembly from panel. Remove rivet (54) and separate latch (55) from latch box (56).

(25) Remove rivet (57) to remove angle (58) from panel bottom edge.

(26) Remove closeout (59) per paragraph 10-4, c(4).

d. Repair. Repair damage to honeycomb core panel assemblies using procedures de-scribed in paragraph 2-24. Replace any dam-aged inserts using procedures described in paragraph 2-22. If possible, straighten any bent plates, tees, angles or latches. Repair dam-aged closeouts per paragraph 2-25.

e. Overhaul. Overhaul the side panel assemblies (60, 61, fig. 10-3) as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. Assemble the side panel assemblies in reverse order of disassembly using figure 10-3 as guide and observing the following.

(1) Install all blind nuts and rivnuts using installation procedures recommended by the manufacturer.

(2) Replace all rivets observing procedures outlined in paragraph 2-22c.

** Figure 10-3. Side panel assembly-disassembly.*
(Located in back of manual)

(3) Seal all cracks around hinge half edges with sealant PRC 611, Products RE search Co., Burbank, California, or equivalent

(4) Cement seal assemblies using procedures outlined in paragraph 2-20.

g. Installation. Install the panel assembly in reverse order of removal. Refer to shelter instruction plate on the shelter door for procedures on securing the side panel assemble to the folding roof and folding end panel:

10-5. Folding End Panel Assemblies

a. General. The folding end panels are a aluminum faced honeycomb core panel. Th shelter is equipped with two folding en panels (fig. 10-1).

b. Removal. Remove the folding end pans assemblies as follows.

(1) Disengage all latches and hardware which secure the folding end panels to th folding floor panel observing the procedure given on the shelter instruction plate locate on the door.

(2) Remove the grounding straps between the fixed end panels and folding en panels, and between the folding side pan, and folding end panel.

(3) Remove the screws (1, fig. 10-4 and washers (2) and rivets (3) which secure the hinge assemblies to the fixed end pane and the folding side panels and remove th folding end panel.

c. Disassembly. Disassemble the folding end panel assemblies as required to replace damaged parts according to sequence of numbers assigned to figure 10-4 and observing the following.

(1) Remove screw (4), washer (5) an rivets (6) to remove hinge assembly from panel. Remove blind nut (9).

(2) Remove closeout (10) from pan edge.

(3) Remove hinge pin (11) and separate hinge half (12) from hinge half (13).

(4) Remove rivets (14) and remove thermal strip (15). Remove bulb and tail seal from thermal strip (15) by peeling from cemented area per para 2-20d.

(5) Remove hinge assembly (19) from panel by removing screws (17). Remove blind nuts (18) from panel by drilling using a drill bit with a diameter the same size as the blind nut.

(6) Remove rivnut (20) by drilling using a drill bit having the same diameter as the rivnut.

(7) Remove screw (21), washer (22), and remove ground rod (23).

(8) Remove rivets (24) and remove angle (25) from top edge of panel.

(9) Remove closeout (26) from panel edge by inserting a knife or other sharp tool between closeout and panel honeycomb core.

(10) Remove rivets (27) and remove angle (28) from panel edge. Remove closeout (30) from panel edge.

(11) Remove seal (29) by peeling from cemented area on panel per paragraph 2-20d.

(12) Remove rivets (31, 32) which secure angle (33) to panel bottom edge. Remove closeout (34) from panel assembly (35) bottom edge.

d. Repair. Repair damage to honeycomb core panel using procedures outlined in para-graph 2-25. If possible, straighten any bent plates, angles, or latches. Repair damaged closeouts per paragraph 2-25e.

e. Overhaul. Overhaul the folding end panel as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. Assemble the folding end panel assemblies in reverse order of disassembly using figure 10-4 as a guide and observing the following.

(1) Install blind nuts and rivnuts using manufacturers recommended procedures.

(2) Replace rivets observing procedures outlined in paragraph 2-22c.

(3) Seal all cracks around hinge half edges with sealant PRC 611, Products Re-search Co., Burbank, California, or equivalent.

(4) Cement seal assemblies using procedures outlined in paragraph 2-20.

g. Installation. Install the panel assembly in reverse order of removal. Refer to shelter instruction plate on the shelter door for procedures on securing the end panel assembly to the folding floor and folding side panels.

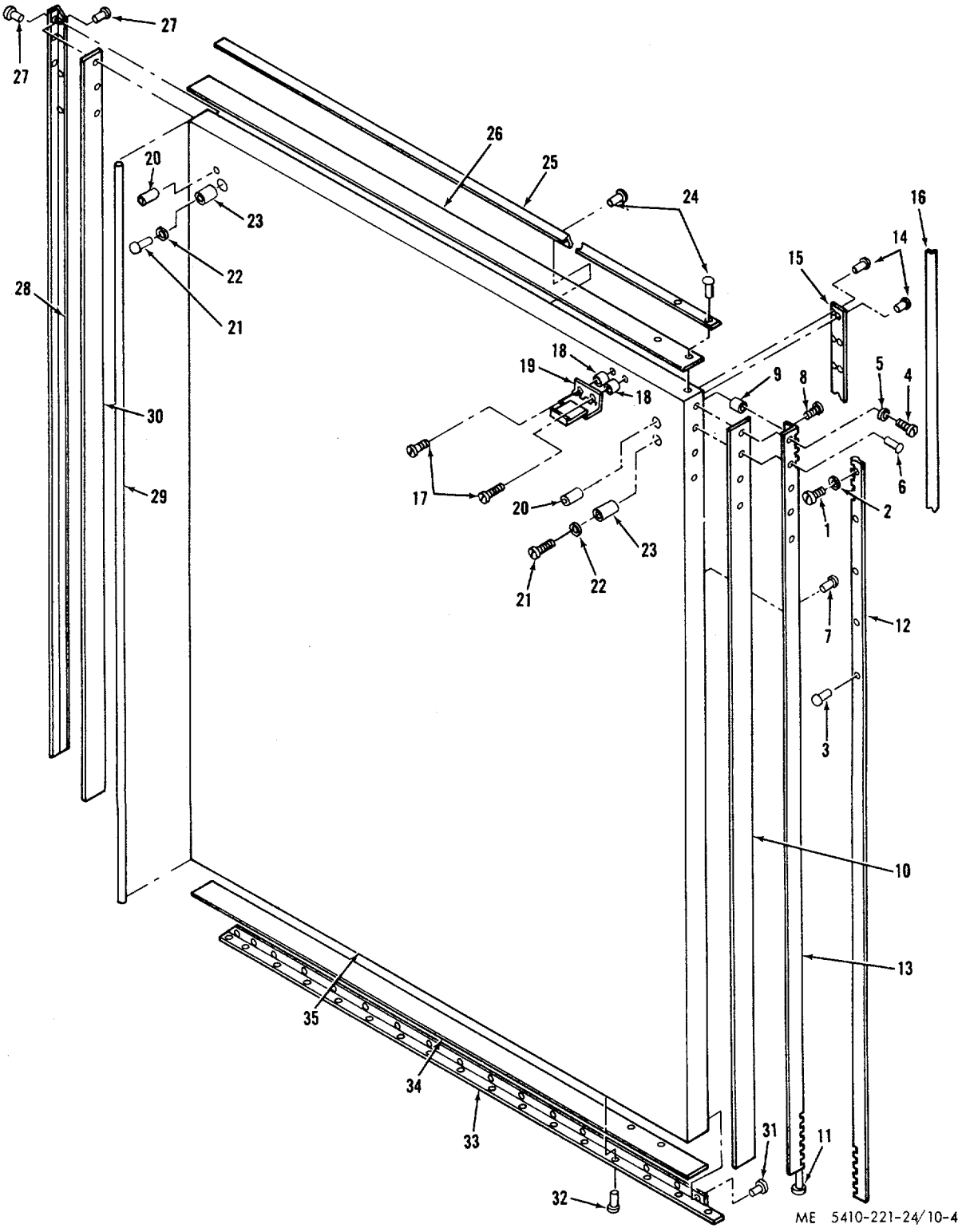


Figure 10-4. Folding end panel assembly-disassembly.

1	Screw (2)	13	Hinge half, folding panel	25	Angle
2	Washer (2)	14	Rivet (58)	26	Closeout
3	Rivet (28)	15	Thermal strip	27	Rivet (42)
4	Screw (2)	16	Seal, bulb and tail	28	Angle
5	Washer (2)	17	Screw (2)	29	Seal
6	Rivet (26)	18	Blind nut (2)	30	Closeout
7	Rivet (24)	19	Hinge assembly	31	Rivet (22)
8	Screw (4)	20	Rivnut (2)	32	Rivet (22)
9	Blind nut (4)	21	Screw (2)	33	Angle
10	Closeout	22	Washer (2)	34	Closeout
11	Hinge pin	23	Ground rod	35	Panel assembly
12	Hinge half, fixed panel	24	Rivet (36)		

Figure 10-4--Continued.

10-6. Folding End Panels W/Removable Panel

a. General. The folding end panels are a aluminum faced honeycomb core pane equipped with a removable insert panel for use when attaching to an adjacent shelter, b means of a bellows adapter (fig. 10-1).

b. Removal. Remove the folding end panel as follows.

(1) Disengage all latches and hardware which secures the folding end panels to th folding floor panel and observing the procedures given on the shelter instruction plat located on the access door.

(2) Remove the grounding straps between the fixed end panels and folding en panels, and between the folding side pane and folding end panel.

(3) Remove the screws (1, fig. 10-5) washers (2) and rivets (3) which secure th hinges to the fixed end panel and the folding side panels and remove the folding end panel

c. Disassembly. Disassemble the end pane assemblies as required to replace damage(components according to sequence of index numbers assigned to figure 10-) and observing the following.

(1) Remove rivets (4), screws (5) an/ remove hinge assembly (9) from panel edge Remove blind nut (6) and blind nut (8) from panel edge.

(2) Remove closeout (10) by sliding a knife or other sharp tool between closeout and panel core.

(3) Remove bulb and tail seal (11) from thermal strip (13). Remove thermal strip (13) by removing rivets (12).

(4) Remove screw (14) to remove hinge assembly (16). Remove blind nut (15) from panel by drilling.

(5) Remove rivet (17) and angle (18) from top edge of panel. Remove closeout (19) using procedure given in step (2) above.

(6) Remove rivnut (20) from panel by drilling out with a drill having a drill bit the same diameter as the rivnut.

(7) Remove screw (21), washer (22), and remove ground rod (23) from panel.

(8) Remove angle (26) by removing rivets (25).

(9) Remove seal (27) by peeling from cemented area using procedure given in para 2-20d.

(10) Remove closeout (28) per step (2) above.

(11) Remove rivet (29, 30) and remove tee (31).

(12) Remove bulb and tail seal (32) by peeling from cemented area on tee (31) per paragraph 2-20d. Remove closeout (33) from panel edge. Remove blind nut (34) from panel.

(13) Remove screw (35) and remove right hand and left hand adapter frames (37, 38) from panel. Remove rivnut (36) by drilling using same size drill bit as rivnut diameter.

(14) Remove rivet (39) and remove angle (40), closeout (41), angle (42) and closeout (43) from bottom edge of panel.

(15) Remove box (44) from panel by running a knife around edges to break adhesive bond between core and box (44).

(16) Remove rivets (29, 30) to remove upper tee (45). Remove bulb and tail sea! (46) by peeling from cemented area per para-graph 2-20d.

(17) The removable panel assembly (61 shall be removed from the end panel (47) b removing screws (48), washers (49), an lockwashers (50) and pulling panel (61 away from end panel assembly (47).

(18) Remove strap(52) by removing rivets (51).

(19) Remove closeout (53, 60) per step

(2) above.

(20) Remove screw (55), washer (56 and remove ground rod (57). Remove rivnut (54) by drilling out with a drill having a drill bit the same diameter as the rivnut.

(21) Remove handle assembly (59) b removing rivets (58).

d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-25. If possible straighten any bent plate, latches, angles or tees. Repair damaged close outs per paragraph 2-25e.

e. Overhaul. Overhaul the folding en panels as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. .Assemble the folding en panel assemblies in reverse order of disassembly using figure 10-5 as a guide and observing the following.

(1) Install blind nuts and rivnuts per manufacturer's recommended procedures.

(2) Replace rivets observing procedure given in paragraph 2-22c.

(3) Seal all cracks around hinge edge using sealant PRC 611, Products Research Co Burbank, California, or equivalent.

(4) Cement seals using procedures out lined in paragraph 2-20.

g. Installation. Install panel assemblies i reverse order of removal using figure 10-5 a guide and referring to instruction plate o shelter door for procedures on securing th end panel assembly to floor and folding side panels.

10-7. Folding Roof Panel Assemblies Repair

a. General. The folding roof panel assemblies are aluminum faced honeycomb core panels. There are two folding roof panels one on each end of the shelter. The folding roof panels provide for attachment of the condi tioned air distribution plenums and conditioned air duct adapters (fig. 10-1).

b. *Removal.* Remove the folding roof panel assembly as follows.

(1) Disconnect wiring harness assemblies at the J21 and J22 receptacle boxes per paragraph 6-10b.

(2) Disengage all latches which secure the roof to the end and side panels.

(3) Place folding end and folding side panels in the folded position.

(4) Lower folding roof to gain access to the hinge assemblies which secure the fold-ing roof to the fixed roof.

(5) Remove the rivets (1, fig. 10-6) which secure the retainer strip (2) and seal (3) to the hinge halves and remove the seal (3).

(6) Remove the hinge pin (4) to separate the hinge halves and remove the panel assembly.

c. Disassembly. Disassembly the folding roof panel as required to replace damaged parts using figure 10-6 as a guide and observing the following.

(1) Remove gasket retainers (6, 7, 8, 9) by removing rivets (5). Slide bulb seal (10, detail B) from groove in gasket retainers.

(2) Remove strike assembly (12) by re-moving bolt (11).

(3) Remove rivet (13) and remove retainer strip (14) and seal (15) from panel edge.

(4) Remove ball lock receptacle (17) by removing rivet (16).

(5) Remove pin (62) from pivot assembly (20) and remove support assembly (66).

(6) Remove bolt (18), washer (19) and remove pivot assembly (20) from edge of extrusion (22).

(7) Remove rivet (21) and remove extrusion (22, 30) from panel edge.

(8) Separate shear angle (27) from extrusion (30) by removing bolt (23), washer (24), bolt (25) and washer (26). Remove rivet (28) to remove spacer (29).

(9) Remove screw (31), washer (32) and ground rod (33) from panel.

(10) Remove fluorescent light assumable from fiberglass box (38, 39) using procedure outlined in paragraph 2-30a.

(11) Remove bolt (34) and rivet (35) t remove light box (36, 37). Remove fiberglass box (38, 39) from roof cut out by sliding knife or other suitable tool along edges c fiberglass box (38, 39) to break the adhesive bond between the fiberglass box and pane honeycomb core.

(12) Unfasten latches on flange (50) frog strike assembly (48) and remove flange (50

(13) Remove duct cover (46) by removing rivets (40) from hinge assembly (41 Remove strap (45) from duct cover (46) b removing screw (42) and washers (43, 44 Remove strike assembly (48) from duct cove (46) by removing rivets (47). Remove du(cover seat (49) from duct port angle (53) b peeling away from cemented area per para 2-*20d*. Separate angles (53, 54) by removing rivets (52). Peel gasket (51) away from cemented area on duct port angle (54 per para 2-20d.

(14) Remove screw (55), washer (56 clamp (57) and spacer (58) from panel.

(15) Remove seal (59) by peeling from] cemented area on panel per paragraph 2-20,

(16) Remove mobilizer scuff plate (61 by removing rivets (60).

(17) Disassemble support assembly (66 by removing ball lock pin (63), cable (64 and ball lock pin (65). Slip the support foe half from the pivot half.

d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-24. If possible, straighten any bent plate latches, angles or extrusions.

e. Overhaul. Overhaul the folding roc panel assembly as required to return to a serviceable condition per chapter 10, section II

f. Assembly. Assemble the folding roc panel in reverse order of disassembly using figure 10-6 as guide and observing the following.

(1) Cement seals using procedures outlined in paragraph 2-20.

(2) Cement fiberglass light boxes in position using the two part adhesive from the re pair kit (fig. 2-15), and mixing per paragraph 2-25a.

g. Installation. Install the folding roof panel assembly in reverse order of removal using figure 10-6 as a guide and observing the following.

(1) Position the hinge halves together and secure with the hinge pin (4).

(2) Rivet the seal assemblies in place using rivet procedure given in paragraph 2-21c.

(3) Securely fasten all latches to the fold-ing end and side panels.

(4) Reconnect the wiring harness as receptacle boxes J21 and J22.

10-8. Folding-Floor Panel Assemblies

a. General. The folding floor panel assemblies are aluminum faced honeycomb core panel with the interior face covered with a nonslip velstat fabric. There are two panel assemblies, one on each side of the shelter (fig. 10-1).

b. Removal. Remove the folding floor panel assemblies as follows.

(1) Remove the folding end jack assemblies per paragraph 2-41a.

(2) Disengage all latches and hardware which secure the folding floor panels to the folding end panels and folding side panels observing the procedures given on the shelter instruction plate located on the door.

(3) Remove the grounding straps between the fixed floor panel and folding floor panels.

(4) Place folding end and side panels in the folded position, or remove per para-graphs 10-2 through 10-6.

(5) Raise the floor panel to gain access to the hinge which secures the folding floor panel to the fixed floor panel.

(6) Remove Mylar tape (1, fig. 10-7) from hinge joint. and remove rivets (2) which secure the seal (3) to the folding floor and fixed floor panels. Remove hinge pin (4) and remove folding floor panel (40).

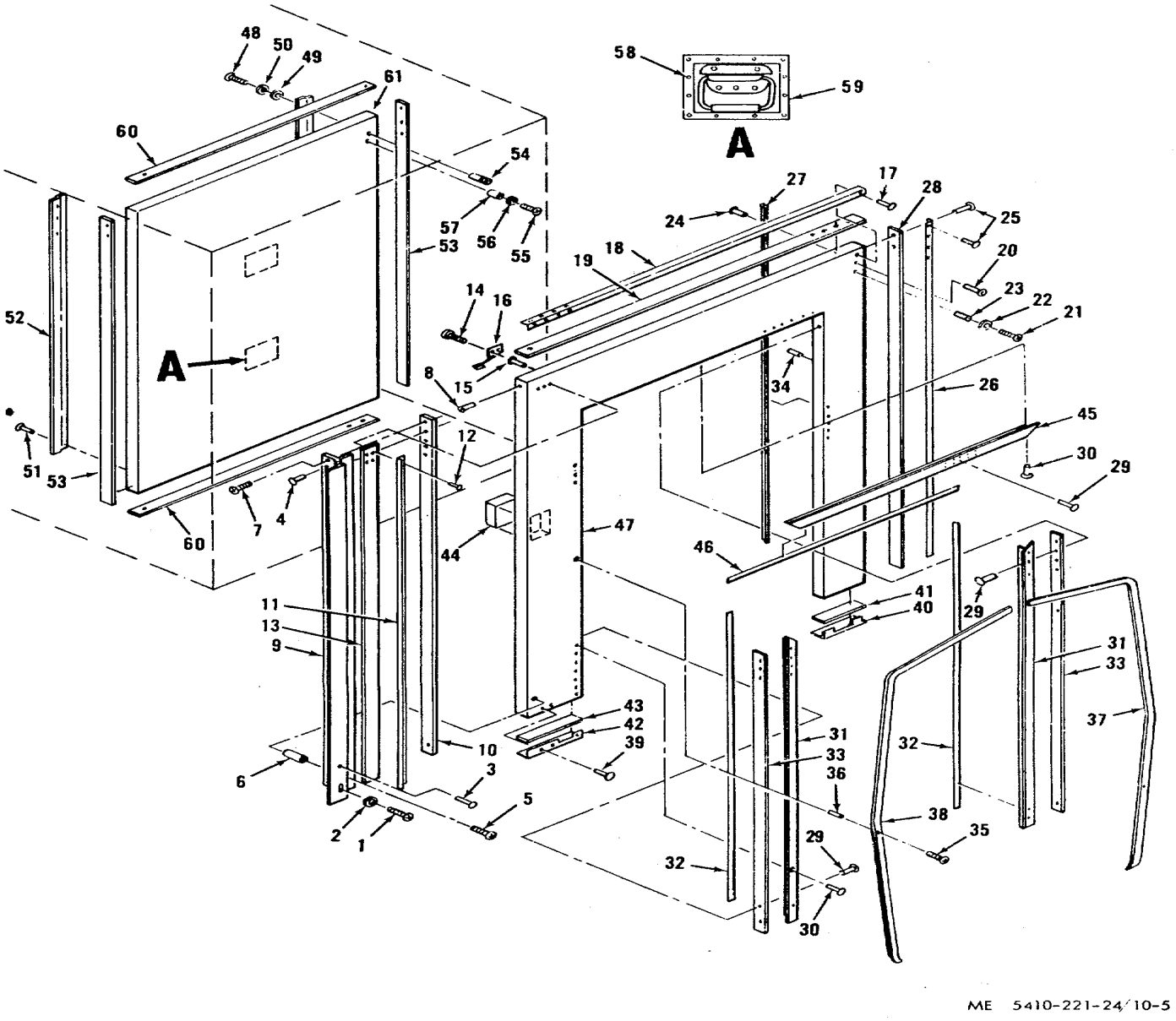


Figure 10-5. End panel disassembly (with removal pane)

1	Screw (2)	17	Rivet (34)	33	Closeout	49	Washer (10)
2	Washer (2)	18	Angle	34	Blind nut (10)	50	Lockwasher (10)
3	Rivet (25)	19	Closeout	35	Screw	51	Rivet (23)
4	Rivet (56)	20	Rivnut	36	Rivnut	52	Strap
5	Screw (2)	21	Screw (2)	37	Adapter frame, R.H.	53	Closeout
6	Blind nut (2)	22	Washer (2)	38	Adapter frame, L.H.	54	Rivnut
7	Screw (4)	23	Ground rod	39	Rivet (6)	55	Screw (2)
8	Blind nut (4)	24	Blind nut	40	Angle	56	Washer (2)
9	Hinge assembly	25	Rivet (44)	41	Closeout	57	Ground rod
10	Closeout	26	Angle	42	Angle	58	Rivet (24)
11	Seal, bulb and tail	27	Seal	43	Closeout	59	Handle assembly
12	Rivet (58)	28	Closeout	44	Box	60	Closeout
13	Thermal strip	29	Rivet (66)	45	Tee, upper	61	Removable panel
14	Screw (2)	30	Rivet (66)	46	Seal, bulb and tail		
15	Blind nut assembly (2)	31	Tee	47	End panel assembly		
16	Hinge assembly	32	Seal, bulb and tail	48	Screw (10)		

Figure 10-5 - Continued

** Figure 10-6. Folding roof panel assembly-disassembly*
(Located in back of manual)

c. Disassembly. Disassembly the folding floor panel as required to replace damage using figure 10-7 as a guide and observing the following.

(1) Remove rivet (5) and screw (6) t remove hinge half (7) from panel edge. Re move seal (10) by peeling from cemented are per paragraph 2-19d.

(2) Remove rivet (8) and retainer strip (9) and remove seal (10) from panel edge

(3) Remove screw (11) and remove bellows frame (12). Remove screw (13) bracket and spacer (16). Remove insert (14 by drilling using a drill bit with the same diameter as the insert.

(4) Remove bellows frame (18, 19) b. removing screws (17).

(5) Remove keeper plate (21) by re moving screws (20).

(6) Remove rivets (22) and remove gasket retainers (23, 24, 25). Remove bulb seal (26) by sliding from gasket retainer groove per detail A.

(7) Remove inserts (27, 28) by drilling using a drill bit with the same diameter as the insert, and remove doubler (29, 30).

(8) Remove bolt (31), washer (32) and ring assembly (34) from panel. Disassemble ring assembly (34) from plate by removing pin. Remove insert (33) from panel by drilling out with a drill bit having the same diameter as the insert.

(9) Remove rivet (35) to remove handle assembly (36) and shims (37, 38) from panel.

(10) Remove velstat floor covering (39) from panel facing by peeling from cemented area per paragraph 2-20d.

d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-24. If possible, straighten any bent plates, latches, angles, or extrusions using hammer, pliers, vise or other suitable tool.

e. Overhaul. Overhaul the folding floor panel assembly as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. Assemble the folding roof panel in reverse order of disassembly using figure 10-7 as a guide and observing the following.

(1) Cement seals (10, fig. 10-7) using procedures outlined in paragraph 2-20.

(2) Replace velstat flooring (39), apply-ing the one part adhesive from the repair kit -to both the floor facing and back of' velstat cover. Clean bonding area thoroughly to as-sure all old adhesive residue is removed. Care-fully position velstat cover along one edge of panel and work toward the opposite edge using a hand roller or other suitable tool to work out any wrinkles or air bubbles.

(3) Replace potted inserts using procedure outlined in paragraph 2-23b.

(4) Replace bulb seal assemblies (26) by coating bottom edge with one part adhesive from repair kit and sliding into groove in gasket retainers (23, 24, 25).

(5) Seal all cracks around hinge edge using sealant PRC 611, Products Research Co. Burbank, California, or equivalent.

g. Installation. Install the folding floor panel assembly in reverse order of removal and observing the following.

(1) Position hinge half (7, fig. 10-7) into fixed floor hinge half and insert the hinge pin (4).

(2) Rivet the seal (8) to the folding floor and the fixed floor panels using rivet replacement procedure described in paragraph 222c.

(3) Install the adhesive backed Mylar tape (1) to hinge joint. (Mylar tape is sup-plied with the shelter repair kit.)

(4) Replace the grounding straps between the fixed floor panel and the folding floor panel.

(5) Engage all latches which secure the folding floor panel to the folding end and side panels.

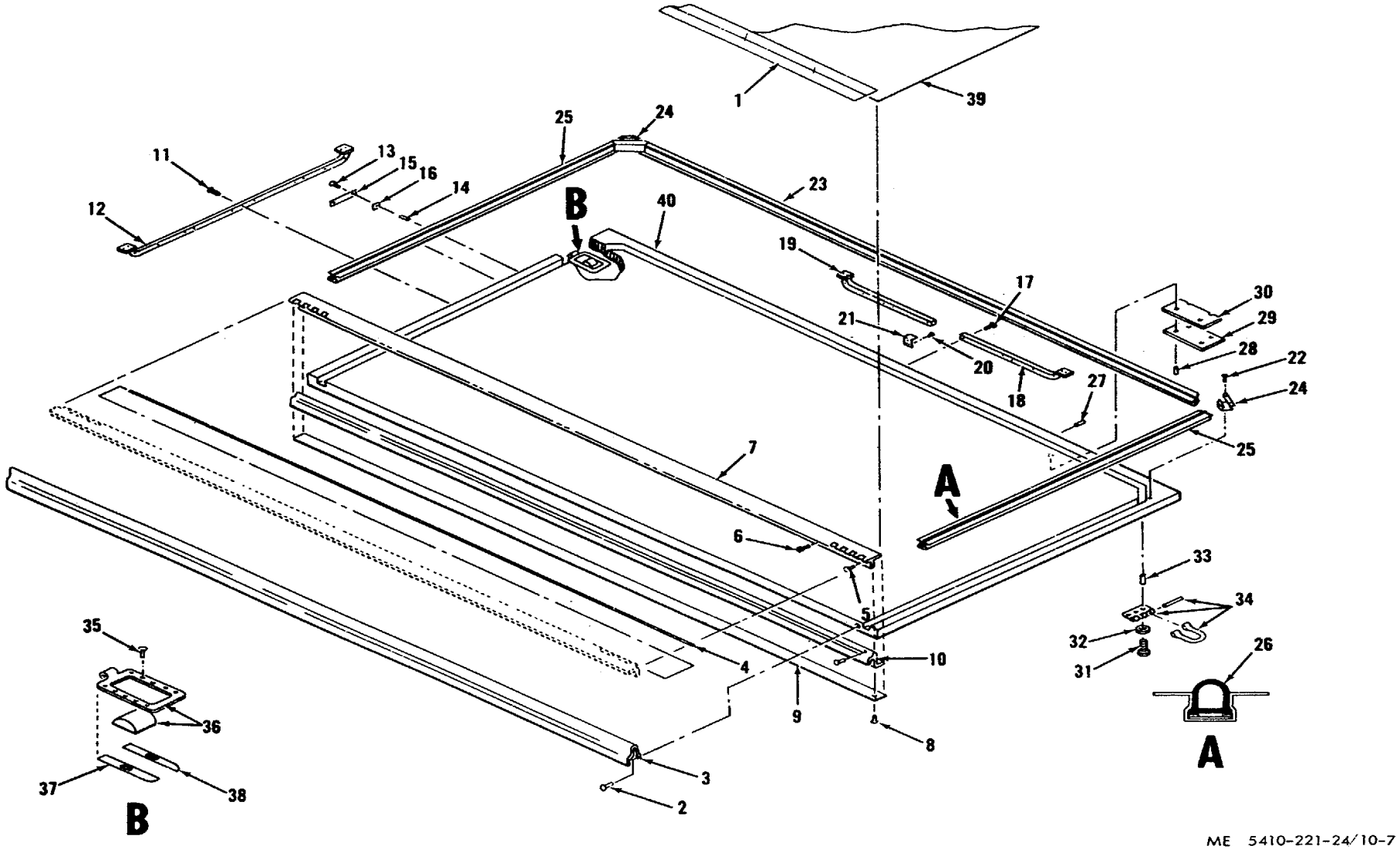


Figure 10-7. Folding floor panel assembly-disassembly.

1	Mylar Tape	11	Screw (11)	21	Keeper plate (2)	31	Bolt (6)
2	Rivet (184)	12	Frame, bellows	22	Rivet (96)	32	Washer (6)
3	Seal	13	Screw (4)	23	Gasket retainer	33	Insert (6)
4	Hinge pin	14	Insert (4)	24	Gasket retainer (2)	34	Ring assembly
5	Rivet (178)	15	Bracket (2)	25	Gasket retainer	35	Rivet (32)
6	Screw (23)	16	Spacer (4)	26	Seal, bulb	36	Handle assembly
7	Hinge half	17	Screw (10)	27	Insert (4)	37	Shim
8	Rivet (44)	18	Frame, bellows	28	Insert (4)	38	Shim
9	Retainer strip	19	Frame, bellows	29	Doubler	39	Floor cover
10	Seal	20	Screw (6)	30	Doubler	40	Folding floor panel assembly

Figure 10-7 - Continued.

Section II. FIXED PANEL ASSEMBLIES

10-9. General

This section provides instructions for replacement of those items considered as part of the fixed panel assemblies. They consist of or door assembly, fixed end jack assemblies, watt box fixed end panel, door fixed end pane fixed floor panel, and fixed roof panel (fig. 10-1).

10-10. Fixed 'Roof Panel Assembly

a. General. The fixed roof panel assembly is a metal faced honeycomb core panel. Th fixed roof panel consists of hinge assemblies. which attach to the folding roof panels, two fluorescent light assemblies, receptacle boxes and electrical raceways and wiring harness assemblies (fig. 10-1).

b. Removal. Remove the fixed roof assembly as required to replace damaged component using figure 10-8 as a guide and observing the following.

(1) Remove all electrical wiring and harness assemblies from ceiling using procedure outlined in chapter 6, section II as a guide figures 6-1 through 6-21 and table 6-1 ant figure 1-7 for terminal identification and wiring schematic.

(2) Remove bolts from ceiling mount flanges on the power distribution box.

(3) Remove hinge pins (4, fig. 10-6) from hinge halves (10, fig. 10-8) to disconnect fixed roof panel from folding roof pane using procedure given in paragraph 10-7b

(4) Remove bolt (1, fig. 10-8), washers (2, 3) from fixed end panel, leave bolts in fixed roof panel.

(5) Remove bolt (5), washers (6, 7) and remove gusset assembly (8).

(6) Lift roof assembly up with a hoist, or lift by hand using two or more men. Use lift ring assemblies (4) and handles (28) for attach and handling points.

c. Disassembly. Disassemble fixed roof panel as required to replace damaged parts using figure 10-8 as a guide and observing the following.

(1) Remove bolts (1), washers (2, 3) and remove lift ring assembly (4) from roof panel.

(2) Remove hinge half (10) by removing rivet (9).

(3) Remove screw (11), washer (12) and remove ground rod (13) from panel.

(4) Remove surgical light inserts (14) by drilling out with a drill bit having the same diameter as the insert.

(5) Remove outlet box cover (16) from fixed roof panel (29) by removing screws (15).

(6) Remove conduit box covers (18, 19) from panel (29) by removing screws (17). , (7) Remove rivets (20) to remove light boxes (22) from fixed roof panel (29). Re-move fiberglass box (21) by running a knife or other suitable tool around edges of box to cut adhesive bond and separate box (21) from panel core.

(8) Remove extrusions (25, 26) from panel by removing rivets (23) and plate (24).

(9) Remove rivet (27) and remove handle (28) from panel (29).

d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-24. If possible, straighten any bent plates, latches, angles, or extrusions using a hammer, vise, or other tool to restore to a serviceable condition.

e. Overhaul. Overhaul the folding roof assembly as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. Assemble the fixed roof panel in reverse order of disassembly using figure 10-8 as guide and observing the following.

(1) Cement fiberglass light boxes (21, fig. 10-8) in position using the two part adhesive from repair kit.

(2) Seal all 'cracks around hinge edges using sealant, PRC 611, Products Research Co., Burbank, California, or equivalent.

(3) Replace inserts in panel using procedure outlined in paragraph 2-23b.

g. Installation. Install the fixed roof panel assembly in reverse order of removal using

figure 10-8 as a guide and observing the following.

(1) Lower roof assembly into proper position assuring that all gusset and lift ring bolt holes in panel align with those in fixed end panels.

(2) Secure fixed roof panel by placing gusset (8, fig. 10-8) into position and securing with bolts (5) and washers (6, 7). Replace bolts (1) and washers (2, 3) into end panel portion of lift ring assembly (4) and tighten securely.

(3) Replace bolts into the ceiling mount flanges on the distribution box and tighten securely.

(4) Replace hinge pins and seal assemblies per paragraph 10-7b.

(5) Remove fixed end jack assemblies per paragraph-,40a.

(6) Replace all electrical wiring in roof panel per chapter 6, section II, table 6-1, figures 6-1 through 6-21.

10-11. Door Fixed End Panel Assembly

a. General. The door fixed end panel assembly is a metal faced honeycomb core panel which houses the access door assembly.

b. Removal. Remove the door fixed end panel as required to replace damaged components using figure 10-9 as a guide and observing the following.

(1) Remove gusset assembly from fixed roof and door fixed end panel per paragraph

10-10b.

(2) Remove distribution box from wall per paragraph 6-32b and figure 6-22.

(3) Remove electrical wiring from door fixed end panel per chapter 6, section II.

(4) Remove grounding straps from door fixed end panel.

(5) Remove rivets (1, fig. 10-9) and angle (2) from bottom edge of panel.

(6) Remove hinges from door fixed end panel per paragraph 10-6b and remove door fixed end panel from shelter.

c. Disassembly. Disassemble the door fixed panel assembly as required to replace damaged parts according to sequence of index numbers assigned to figure 10-9 and observing the following.

(1) Remove latch assembly (4) by re-moving screw (3). Remove screw (5) and re-move shear plate (6).

(2) Remove bolt (7), washer (8) and remove mobilizer bracket (9).

(3) Remove electrical raceway cover (11) by removing rivets (10).

(4) Remove rivet (12) and remove the level indicators from end panel.

(5) Remove rivets (14) and instruction plate (15) from access door.

(6) Remove rivets (16) and identification plate (17) from end panel.

(7) Remove rivets (18) and remove doubler plate (19) from panel.

(8) Remove gutter (21) by removing rivets (20).

(9) Remove outlet panel assembly (25), from shelter end panel by removing screws (22) and washers (23, 24).

(10) Remove screws (26), cover (27) and receptacle box (28) from panel.

(11) Remove screws (29), cover (30) and switch box (31) from panel.

(12) Remove sterilize vent (32) and cap (33) by pushing from outside facing of panel with a fiber or soft metal punch.

(13) Remove seal (34) from bottom open-ing in edge extrusion.

(14) Remove seal (35) by peeling from cemented area per paragraph 2-20d.

(15) Remove nut (36), screw (37), and screw (38). Remove brace (39). Remove bolt (40) and remove doubler (41) and angle (42).

(16) Remove handbook container (45) from door assembly by removing rivet (44).

(17) Remove rivet (46), hinge (47) and spacer (48). Remove door assembly from end panel.

(18) Remove rivets (49, 50) and remove tees (51, 53) from door. Remove seals (52, 54) from tees (51, 53) by peeling from cemented areas per paragraph 2-20d.

(19) Remove rivets(57) and remove angles (58, 59) from door edge. Remove close-outs (55, 56) from edge of door by running **a** knive or other suitable tool between closeout and door edge.

(20) Remove doubler (61) from door by removing rivet (60).

(21) Remove nut (62) and screw (63); remove the door lock assembly from door and

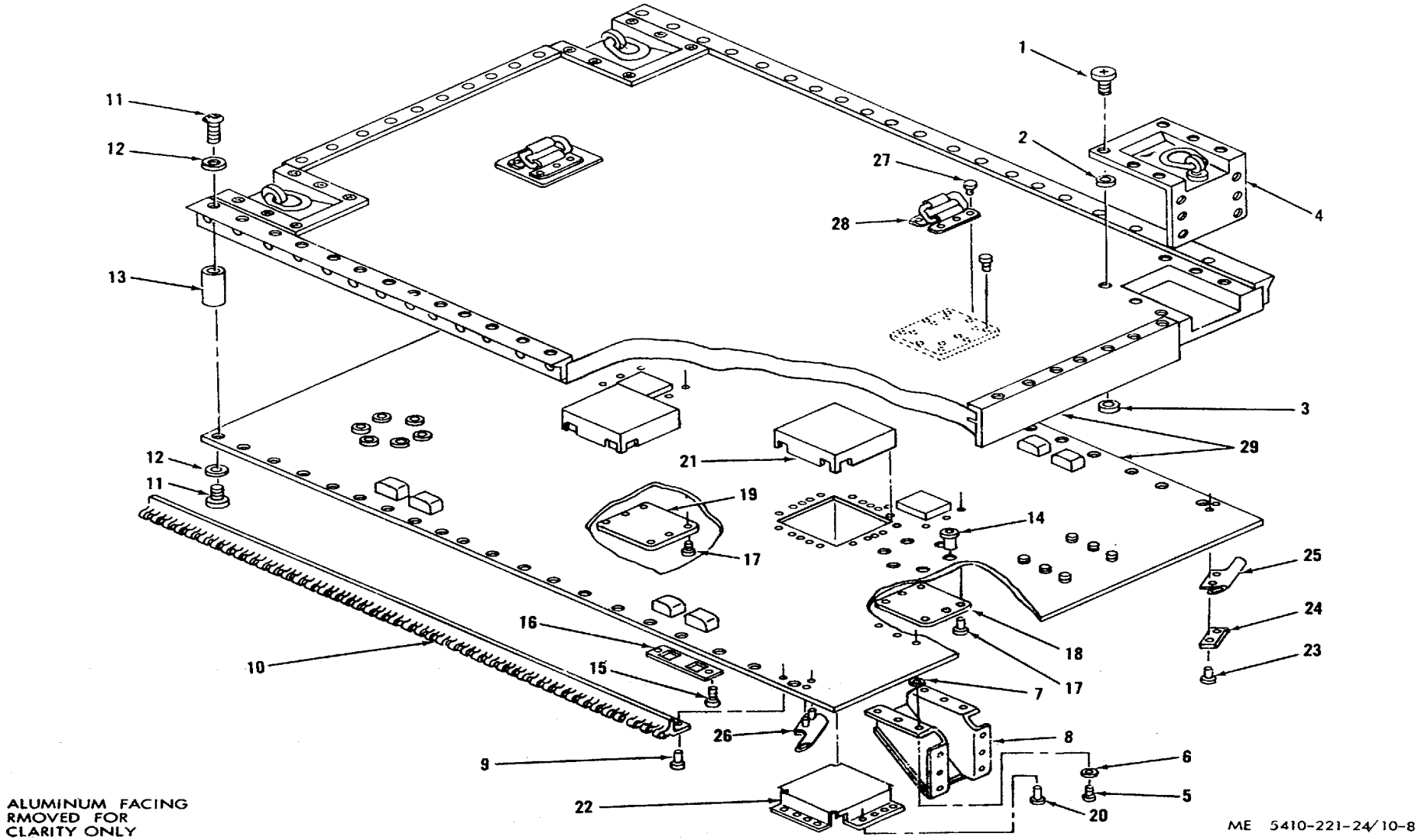


Figure 10-8. Fixed roof panel assembly-disassembly.

1	Bolt (36)	11	Screw (2)	21	Box, fiberglass
2	Washer (36)	12	Washer (2)	22	Box, light
3	Washer (36)	13	Ground rod	23	Rivet (8)
4	Lift ring assembly (4)	14	Insert, surgical light attach	(18)	24 Plate (4)
5	Bolt (48)	15	Screw (16)	25	Extrusion, RH. (2)
6	Washer (48)	16	Cover, outlet box (4)	26	Extrusion, LH. (2)
7	Washer (48)	17	Screw (12)	27	Rivet (6)
8	Gusset assembly (4)	18	Cover, conduit box	28	Handle
9	Rivet (178)	19	Cover, conduit box	29	Panel, fixed roof
10	Hinge half	20	Rivet (32)		

Figure 10-8--Continued.

disassemble observing detail A and the following.
(a) Remove screw (64), handle bar (65). Remove screw (66) and remove hand bail (67) from lock. Remove spacer (69) from handle bail (67) and remove plate (68).
(b) Remove keeper (70) and stop arm (71). Remove screw (72) and remove idle block (73), stop arm (74), keeper (75) an locking blade (76).
d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-24. If possible, straighten any bent plate latches, angles, or extrusions using plier hammer, vise or other suitable tool.
e. *Overhaul.* Overhaul the door fixed en panel assembly as required to return to a serviceable condition per chapter 10, section II
f. Assembly. Assemble the door fixed en panel in reverse order of disassembly using figure 10-9 as guide and observing the following.
(1) Cement all seals in position using the one part adhesive from the repair kit Clean all old adhesive residue from the bone ing area using an approved cleaning solvent
(2) Replace all rivets per paragraph 2-22c.
(3) Seal all cracks around hinge edge using PRC 611, Products Research Co., Bu bank, California, or equivalent.
g. Installation. Install the door fixed en panel in reverse order of removal using figure 10-9 as a guide and observing the follow ing.

** Figure 10-9. Fixed end panel assembly-disassembly.*
(Located in back of manual)
(1) Position fixed end panel on the shelter and secure hinges per paragraph 10-6 ,
(2) Install angle (2, fig. 10-9) and so cure with rivets (1).
(3) Install ground straps between fixed end and folding end panel assemblies.
(4) Replace electrical wiring in door fixed end panel per chapter 6, section II.
(5) Install distribution box assembly per para 6-32.

(6) Install gusset assembly and secure with bolts and washers per paragraph 10-10t

10-12. Water Box Assembly

a. General. The water box assembly is a metal faced honeycomb core box assembly housing water system and electrical system components.
b. Disassembly. Disassemble the water box assembly as required to replace damaged components according to sequence of index numbers assigned to figure 10-10 and observing the following.
(1) Remove all plumbing system components per paragraph 2-47 and chapter 9.
(2) Remove electrical system components as outlined in chapter 6, section II.
(3) Remove screw (1, fig. 10-10), washer (2) and remove cover assembly (3).
(4) Separate hinge (5) from cover assembly (3) by removing rivet (4). Remove seals (6, 7, 8) by peeling from cemented area per paragraph 2-20d.
(5) Remove rivets (9), door assembly (10) and remove seals (11, 12, 13, 14) by peeling from cemented area per paragraph 2-20d.
(6) Remove rivet (15), door assembly (16) and remove seals (17, 18, 19, 20) by peeling from cemented area per paragraph 2-20d.
(7) Remove pin (21) and remove fastener stud (22) from cover assembly (3).
(8) Remove rivet (23) and remove cover assembly (24). Remove hinge (26) by removing rivet (25).
(9) Remove pin (27) and remove fastener stud (28) from cover assembly (24). Remove rivet (29) and remove receptacle (30).
(10) Remove seals (31) and insulation (32) by peeling from cemented area per para-graph 2-20d.
(11) Remove bolts (33), washers (34) and remove receptacles mounting bracket (35).
(12) Remove bolts (36), washers (37) and remove receptacle mounting bracket (38).
(13) Remove rivet (39) to remove receptacle (40) from bracket (38). Remove rivet (41) and nut plate (42).
(14) Remove insulation (43) by peeling
from cemented area per paragraph 2-20d.

(15) Remove bolt (44), washer (45) and remove disconnect mounting bracket (46).

(16) Remove bolt (47), washer (48) and remove pump mounting bracket (49).

(17) Remove water box (51) from shelter by removing rivets (50) from angles on interior and exterior of box.

c. *Assembly* Assemble the water box assembly in reverse order of disassembly using figure 10-10 as guide.

d. Repair. Repair damage to honeycomb panel using procedure outlined in paragraph 2-25. If possible straighten any bent or dented brackets, or hinges using a hammer, pliers, vise, or other suitable tool.

10-13. Water Box Fixed End Panel Assembly

a. General. The water box fixed end panel is a metal faced honeycomb core panel housing the water box assembly at the bottom edge of the panel (fig. 10-1).

b. Removal.

(1) Remove gusset assembly from end panel and roof panel per paragraph 10-10b.

(2) Remove hinge half from water box fixed panel per paragraph 10-6b.

(3) Remove electrical wiring assembly per chapter 6, section II.

(4) Remove rivets (1, fig. 10-11) and move angles (2, 3) from bottom edge of panel, and remove water box fixed end panel from -shelter.

c.. Disassembly. Disassemble water box fixed end panel assembly as required to replace damaged parts according to sequence of index numbers assigned to Figure 10-11 and observing the following.

(1) Remove screw (4) and cover (5) from receptacle box (8). Remove rivet (6) and remove grounding angle (7) and remove receptacle box (8) from panel.

(2) Remove screw (4), cover (9) and remove receptacle box (10) from panel by running a knife or other suitable tool around edge to separate from core.

(3) Remove screw (11), washer (12) and remove ground rod (13) from panel.

(4) Remove cover (16) by removing screw (14). Remove rivet (17) and grounding angle (18) from receptacle box (19). Remove rivnut (15) by drilling out using a drill bit with the same diameter as the rivnut. Remove box (19) per step (2) above.

(5) Remove screw (20) and remove cover (21), remove box (22) from panel per step (2) above.

(6) Remove seal (23) from opening at bottom of extrusion. Remove seal (24) by peeling from cemented area per paragraph 2'-20d.

(7) Remove ring assembly (28, 29) from panel by removing bolt (25), washers (26, 27). Separate fitting (33) from ring assembly (28, 29) by removing screws (30) and washers (31, 32).

(8) Remove plate (35) by removing rivets (34).

(9) Remove steps (38) by removing bolt (36) and washer (37).

(10) Remove striker plate (41) by removing screw (39). Remove insert (40) by drilling out using a drill bit with the same diameter as the insert.

(11) Remove bracket (45) and spacer (44) by removing bolt (42) and washer (43).

(12) Remove latch assembly (47) by removing screw (46).

(13) Remove screw (48), washer (49) and remove clamp assembly (50). Remove cable assembly (51) and remove lockwire and unscrew hook (52) from turnbuckle (53). Unscrew turnbuckle (53) from terminal (54).

(14) Remove screw (55) and remove capstan (56) from panel.

(15) Remove screw (57), rasher (.58) and remove spacer (59). Remove insert (60) by drilling out using a drill bit with same size diameter as insert.

(16) Remove tie down assembly (62) by removing rivet (61).

(17) Remove spacer (64) by removing screw (63).

(18) Remove bolt ('65), washers (66, 67) and remove guide assembly (68) from fixed end panel (69).

d. Repair. Repair damage to honeycomb panel using procedures outlined in paragraph 2-24. If possible, straighten any bent plates, latches, angles, or extrusions using hammer, pliers, vise or other suitable tool.

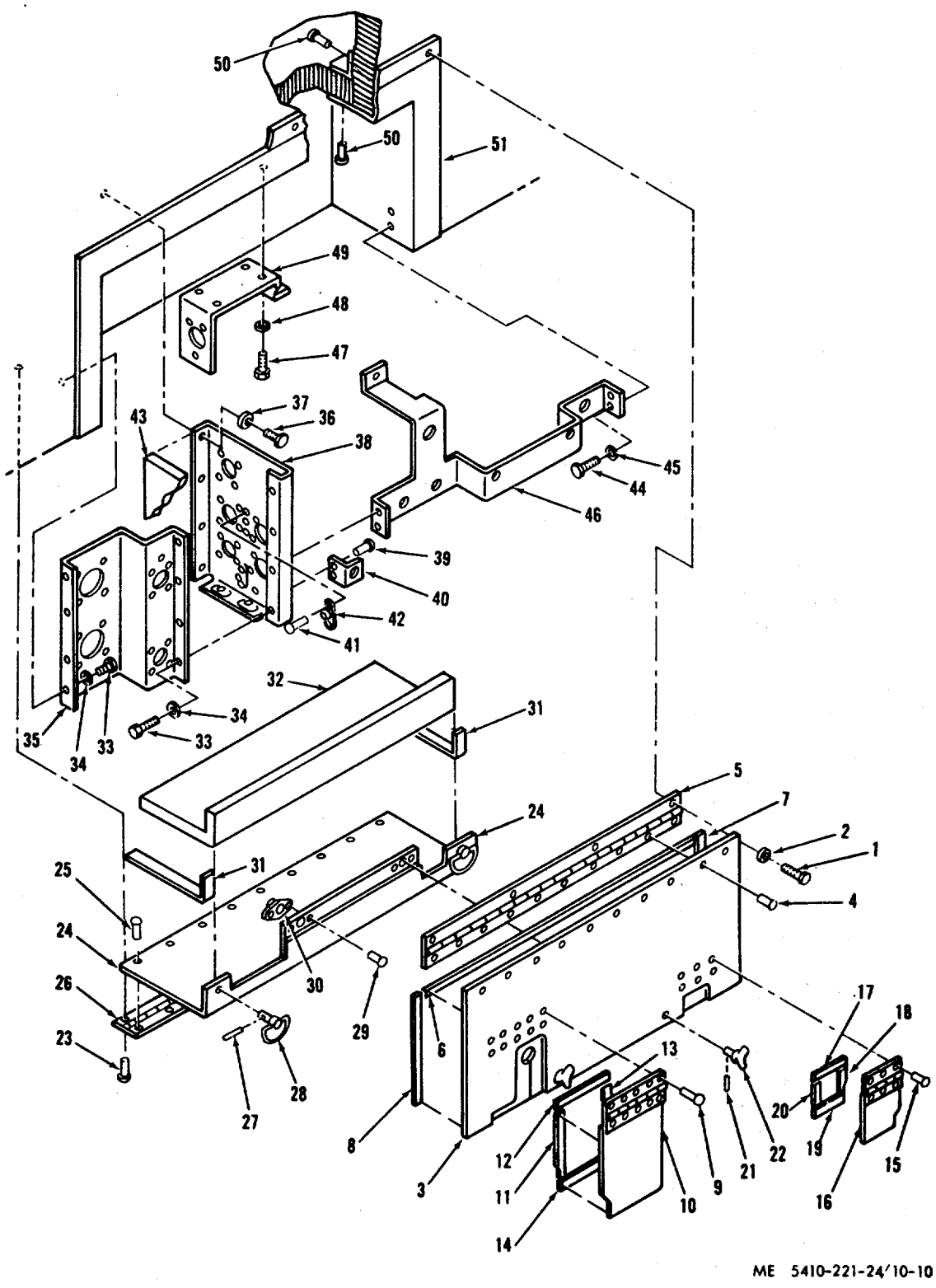


Figure 10-10. Water and electrical box assembly-disassembly.

1	Screw (4)	18	Seal	35	Bracket, receptacle mounting
2	Washer (4)	19	Seal	36	Bolt (8)
8	Cover assembly	20	Seal	37	Washer (8)
4	Rivet (10)	21	Pin	38	Bracket, receptacle mounting
6	Hinge	22	Fastener stud	39	Rivet (2)
6	Seal	23	Rivet (8)	40	Receptacle
7	Seal	24	Cover assembly	41	Rivet (20)
8	Seal	25	Rivet (9)	42	Nut plate (10)
9	Rivet (5)	26	Hinge	43	Insulation
10	Door assembly	27	Pin (2)	44	Bolt (5)
11	Seal	28	Fastener stud (2)	45	Washer (5)
12	Seal	29	Rivet (4)	46	Bracket, disconnect mounting
13	Seal	30	Receptacle (2)	47	Bolt (4)
14	Seal	31	Seal	48	Washer (4)
15	Rivet (8)	32	Insulation	49	Bracket, pump mounting
16	Door assembly	33	Bolt (8)	50	Rivet (29)
17	Seal	34	Washer (8)	51	Water box assembly

Figure 10-10-Continued

e. O*verhaul.* Overhaul the water box fixed end panel assembly as required to return to 2 serviceable condition per chapter 10, section III.

f. Assembly. Assemble the folding roof panel in reverse order of disassembly using figure 10-11 as a guide and observing the following.

Figure 10-11. Fixed end panel (water box) assembly.
(Located in back of manual)

(1) Cement seals using procedures outlined in paragraph 2-20.

(2) Cement receptacle boxes in position using the two part adhesive from the repair kit (fig. 2-15).

g. Installation. Install the water box fixed end panel in reverse order of removal using figure 10-11 as a guide.

10-14. Fixed Floor Panel Assembly

a General. The fixed floor panel assembly is a metal faced honeycomb core panel housing the shelter water tunnel and electrical raceway. It provides mounting for the shelter skid assembly, (fig. 10-1).

b. Removal. Remove the fixed floor panel assembly as required to replace damaged parts as follows.

(1) Remove fixed end panels, fixed roof panels and water box assembly according to procedures outlined in paragraphs 10-11 b, 10-13 *b,* and 10-12*c*.

.

(2) Remove hinge pins from hinge halves and remove seals per paragraph 10-7 b.

Note. Block up folding portion of shelter after removal from fixed portion to prevent any possible damage to panel assemblies.

c. Disassembly. Disassemble the fixed floor panel assembly as required to replace damaged part according to sequence of index numbers assigned to figure 10-12 and observing the following.

(1) Remove cover assembly (3) by removing bolt (1) and washers (2). Remove hinge (5) from cover (3) by removing rivets (4). Remove gasket (6, 7, 8) from cover assembly (3) by peeling from cemented area per paragraph 2-20d. Remove pin (9) and remove fastener stud (10) from cover assembly (3).

(2) Remove bolt (11) and washer (12) to remove bulkhead assembly (13, 14). Separate bulkhead (13) from bulkhead (14) by removing screw (17). Remove seal (15) from bulkhead assemblies (13, 14).

(3) Remove screws (16, 17) and remove water tunnel cover assemblies (18, 19, 20, 21, 22).

(4) Remove screws (23) and remove electrical raceway cover assembly (24). Remove rivnut (25) by drilling out using a drill bit having the same diameter as the rivnut.

(5) Remove towing bracket (28) by removing screws (26) and washers (27). Remove

blind nut (29) by drilling using a drill bit having the same diameter as the blind nut.

(6) Remove mobilizer bracket (33) by removing screws (30) and washers (31, 32) (7)

Remove support assembly (38) by removing bolt (35) and washers (36, 37) Remove spacer (39), separate channel insert (34) from support assembly (38) by removing detent pin (41).

(8) Remove screw (42), screw (43) and washer (44) to remove ground rod (45).

(9) Remove rivet (46) and remove sea' angle (47) from edge of panel.

(10) Remove rubber guards (48, 49) by peeling from cemented area per paragraph 2-20d.

(11) Remove bolt (50), washer (51) and remove skid assembly (52). Disassemble skid assembly (52) by removing bolt (53) to separate channel (54) from extrusion (57). Remove nut plate (56) by removing rivet (55).

d. Repair. Repair damage to honeycomb
.

panel using procedures outlined. in paragraph 2-25. If possible, straighten any bent plates, latches, angles, or extrusions. Repair velstat floor covering per paragraph 2-25.

e. Overhaul. Overhaul the fixed floor panel assembly as required to return to a serviceable condition per chapter 10, section III.

f. Assembly. Assemble the fixed floor panel in reverse order of disassembly using figure 10-12 as a guide and observing the following.

(1) Cement guards (48, 49) using procedures outlined in paragraph 2-20.

(2) Replace inserts per paragraph 2-23b.

(3) Replace rivets per paragraph 2-22c.

(4) Replace rivnuts and blind nuts per manufacturer's recommended procedures.

g. Installation. Install the fixed floor panel in reverse order of removal using figure 10-12 as a guide and observing procedures outlined for replacement of fixed end and fixed roof panel assemblies in paragraphs 10-11, 10-12, and 10-13.

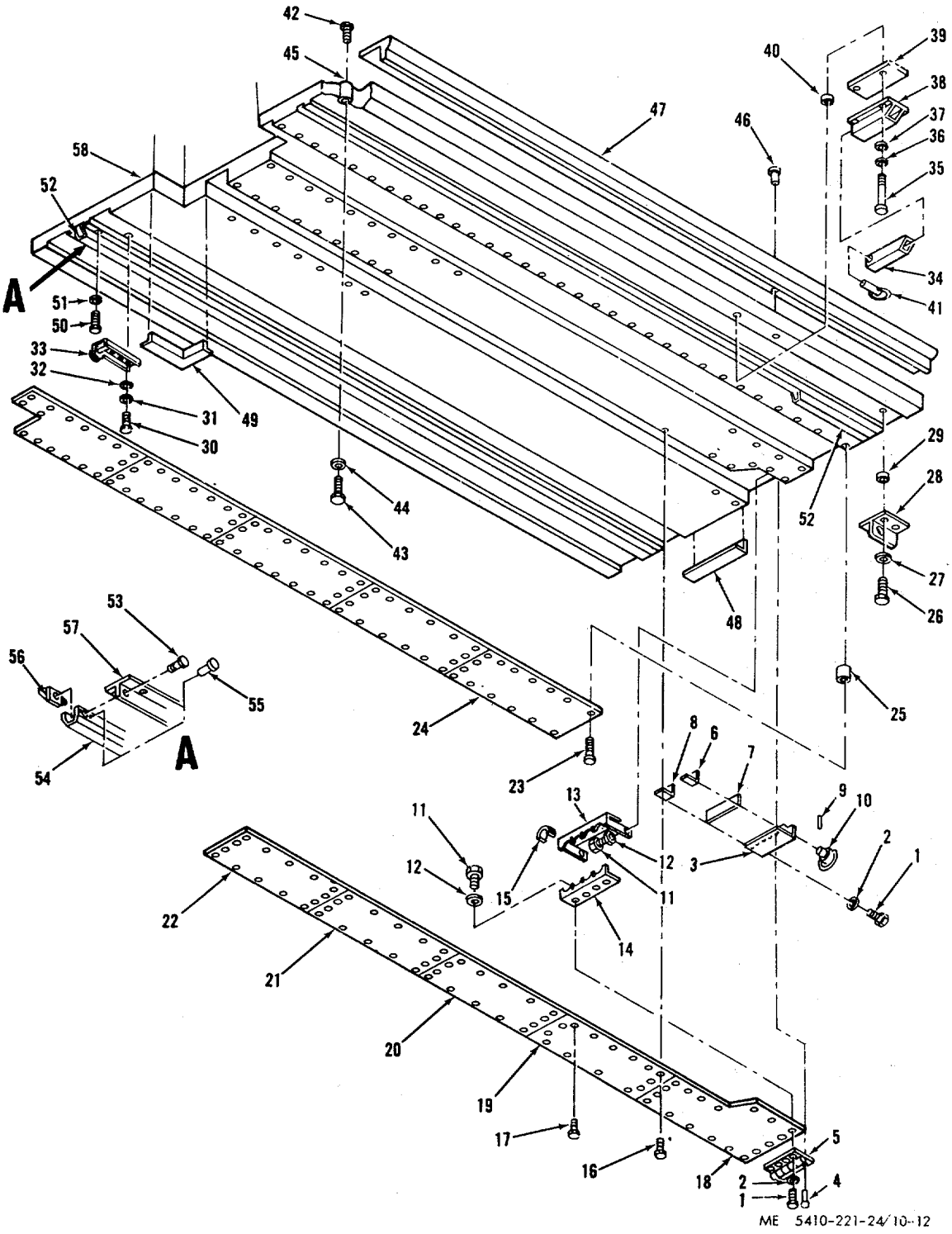


Figure 10-12. Fixed floor panel assembly-disassembly.

1	Bolt (5)	21	Cover assembly	41	Detent pin
2	Washer (5)	22	Cover assembly	42	Screw
3	Cover assembly	28	Screw (24)	43	Screw
4	Rivet (5)	24	Cover assembly	44	Washer
5	Hinge	25	Rivnut (16)	45	Ground rod
6	Gasket	26	Screw (6)	46	Rivet (4)
7	Gasket	27	Washer (6)	47	Seal angle (2)
8	Gasket	28	Towing bracket (4)	48	Guard
9	Pin	29	Blind nut (6)	49	Guard
10	Fastener stud	30	Screw (6	50	Bolt (38)
11	Bolt (13)	31	Washer (6)	51	Washer (88)
12	Washer (13)	32	Washer (6)	52	Skid assembly (2)
13	Bulkhead assembly	83	Mobilizer bracket (4)	63	Bolt (22)
14	Bulkhead assembly	34	Channel insert	54	Channel (2)
15	Seal	35	Bolt (8)	55	Rivet (44)
16	Screw (58)	36	Washer (8)	56	Nut plate (22)
17	Screw (12)	3	Washer (8)	57	Extrusion (4, 2 per assembly)
18	Cover assembly	38	Support assembly	58	Panel assembly, fixed floor
19	Cover assembly	39	Spacer		
20	Cover assembly	40	Blind nut		

Figure 10-12 - Continued.

Section III. SHELTER BODY ASSEMBLY OVERHAUL

10-15. General

This section provides information necessary for the overhaul of shelter body assembly. Sea assemblies are to be removed and replaced o a yearly basis. The shelter interior and exterior shall be painted on a yearly basis.

10-16. Panel Assemblies Overhaul

Overhaul of the panel assemblies shall consist of a complete inspection for corrosion dents, scratches, nicks, or other surface irregularities. Use emery cloth to dress to a smooth surface all nicks, cuts, corrosion and scratches Minor dents are acceptable. Cuts through the aluminum facing or large dents shall be repaired in accordance with paragraph 2-25b Replace velstat flooring per repair procedure outlined in para 2-25d.

10-17. Seal Replacement

Replace seal assemblies as outlined in pane disassembly paragraphs, sections I and l] chapter 10.

10-18. Shelter Painting

a. General. This procedure defines the surface preparation, type of primer, paint, and colors to be used on all surfaces to be painted.

b. Surface Preparation. The surface preparation shall be in accordance with MIL-T-704.

c. Exterior Surfaces. Exterior surfaces and components shall be primed with one coat Epoxy Primer, or equivalent (catalyze per manufacturers instructions). Air dry 18 hours or 30 minutes at 1500 to 3000F. Dry film thickness shall be 0.3 to 0.4 mil. Apply two finish coats of Specification TT-E-527 enamel (catalyze per manufacturer's instructions). Air dry 18 hours or 30 minutes at 1500 to 3000F. Dry film thickness shall be 1.2 +0.2 mils per coat. Color match per Federal Standard 595 No. 34087.

d. Interior Surfaces. Interior walls shall be primed with one coat of Epoxy Primer, or equivalent (catalyze per manufacturer's instructions). Air dry 18 hours or 30 minutes at 1500 to 3000F. Dry film thickness to be 0.3 to 0.4 mil. Apply two finish coats Epoxy Base, Semi-Gloss Green (catalyzer per manufacturer's instructions). Air dry 18 hours or 30 minutes at 1500 to 3000F. Dry film to be 1.2 +0.2 mils per coat. Color match per Federal Standard 595 No. 24516.

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e. Interior Ceiling. Interior ceiling shall b primed with one coat of Epoxy Primer, o equivalent (catalyze per manufacturer's in structions). Air dry 18 hours or 30 minutes a 1500 to 3000F. Dry film thickness shall b 0.3 to 0.4 mil. Apply two finish coats Epoxy Base, Semi-Gloss Green, or equivalent (catalyze per manufacturer's instructions). Air dry 18 hours or 30 minutes at 150° to 3000F. Dry film shall be 1.2 ±0.2 mils per coat. Color: match per Federal Standard 595 No. 24554

f. Quality Control Requirements (1) A sufficient number of parts shall b examined to assure acceptable quality of finish ing on all parts. In general, the criteria listed in steps (2) and (3) shall be evaluated Properties or performance characteristics other than those shown below may be required by applicable drawings or other authoritative documents.

(2) The finish in all types shall show no visual indication of alligatoring, blistering chalking, checking, cracking, crawling flaking, lifting, peeling, or sealing. The finish shall exhibit no sags, runs, skips, shading dusting, or dry overspray.

(3) Adhesion test shall be conducted on finished parts at regular intervals. The test shall be conducted on a sufficient number of parts selected at random to assure maintenance of a satisfactory level of adhesion on all parts In performing this test, it is suggested that 6 plastic or wood stylus be used to scratch the(paint films. A metal stylus may be used, but extreme care must be exercised to avoid dam aging the basic surface of the part. Several parallel scratches shall be made approximately one-sixteenth inch apart. Apply a one inch wide strip of tape, adhesive side down over the scratches. Only newly manufactured tape less then six months old shall be used. Press the tape down with a firm pressure of the hand. Remove the tape in one abrupt action and examine the tested area for any paint damage such as removal of paint at one of the layers of the finishing system or removal of the entire system from the surface. Test panels may be used.

(4) Touch-up after test. Areas which have been used for testing shall be refinished to equal as nearly as possible the original finish requirement. The color of touched up areas shall be reasonably close to that of the surrounding area.

10-19. Shelter Air Leakage Test

a. *General.* The shelter shall be tested on a yearly basis for air leakage to determine correct installation and integrity of the seal assemblies.

b. Test Procedure.

(1) Apply an internal pressure of 0.4 inches of water (gage) to the shelter using a barometer or other suitable pressure gage to determine pressure level.

(2) Leakage from the shelter shall not exceed 60 standard cubic feet per minute.

c. Repair. If test in step b above is unsatisfactory make the following checks and correct if required.

(1) Inspect for loose window assemblies on doors. Replace or repair as required.

(2) Inspect water inlet, drain, and vacuum lines where they enter shelter for damaged or missing potting compound. Repot if required using RTV rubber, or equivalent.

(3) Check seal assemblies around doors for leakage, and reposition or replace as required.

(4) Check panel assemblies seals for proper installation or damage. Repair or replace as required.

(5) Check seals on removable panel assemblies for damage or improper installation. Replace or repair as required.

APPENDIX A
REFERENCES

A-1. Fire Protection

TB 5-4200-200-10	Hand Portable Fire Extinguishers for Army use.

A-2. Preventive Maintenance

TM 38-750	Army Equipment Records Procedures
Federal Stand- and 751-Stitch	Seam and Stitching
Specification MILS-6872	Soldering Process
Specification QQS71	Solder
Federal Stand- and 595	Painting
Specification TT-E-627	Enamel Paint
Specification MILT-704	Surface Preparation

A-3. Shipment

American Railroads Operation and Maintenance Loading of -Commodities on Open Top Flat Cars (sec. 4, fig. 1A)

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION.

B-1. General

a. This section provides a general explanation of all maintenance and repair function authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component The implementation of the maintenance functions upon the end item or component will b consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance fun(tion as referenced from section II.

d. Section IV contains supplemental in structions, explanatory notes and/or illustrations required for a particular maintenance function.

B-2. Explanation of Columns in Section II

a. Group Number, Column (1). The functional group is a numerical group set up on functional basis. The applicable functions grouping indexes obtained from TB 750-93-1 (Functional Grouping Codes) are listed on the MAC (Maintenance Allocation Chart) in the appropriate numerical sequence. These indexes are normally set up in accordance with their function and proximity to each other.

b. Functional Group, Column (2). This column contains a brief description of the components of each functional group.

c. *Maintenance Functions, Column* (3) This column lists the various maintenance functions (A through K) and indicates the lowest maintenance category authorized to per form these functions. The symbol designation
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for the various maintenance categories are as follows.

C-Operator or crew
O-Organizational maintenance
F-Direct support maintenance
H-General support maintenance
D-Depot maintenance

The maintenance functions are defined as follows.

A—Inspect: To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B—Test: To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

C—Service: To clean; to preserve, to charge, to paint, and to add fuel, lubricants, cooling agents, and air.

D—Adjust: To rectify to the extent necessary to bring into proper operating range.

E—Aline: To adjust specified variable elements of an item to bring to optimum performance.

F—Calibrate: To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the 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 with the certified standard.

G—Install: To set up for use in an operational environment such as an emplacement, site, or vehicle.

H—Replace: To replace unserviceable item with serviceable assemblies, subassemblies, or parts.

I—Repair: To restore an item to serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, an strengthening.

J—Overhaul: To restore an item to a completely serviceable condition as prescribe by maintenance serviceability standards using the Inspect and Repair Only As Necessary '(IROAN) technique.

K—Rebuild: To restore an item to a standard as nearly as possible to original or new condition in appearance, performance, an life expectancy. This is accomplished through complete disassembly of the item inspection of all parts or components, repair or replacement of worn or unserviceable elements (items) using original manufacturing tolerances and specification and subsequent reassembly of the item

d. Tools and Equipment, Column (4). This column is provided for referencing by code the special tools and test equipment, (sec. III required to perform the maintenance function (sec. II).

e. Remarks, Column (5). This column provided for referencing by code the remark (sec. IV) pertinent to the maintenance functions

.

B-3. Explanation of Columns in Section III

a. Reference Code. This column consists of a number and a letter separated by a dash. The number references the T and TE requirements column on the MAC. The letter represents the specific maintenance function the item is to be used with. The letter is representative of columns A through K on the MAC.

b. Maintenance Category. This column shows the lowest level of maintenance authorized to use the special tool or test equipment.

c. *Nomenclature.* This column lists the name or identification of the tool or test equipment.

d. Tool Number. This column lists the manufacturer's code and part number, or Federal stock number of tools and test equipment.

B-4. Explanation of Columns in Section IV

a Reference Code. This column consists of two letters separated by a dash, both of which are references to section II. The first letter references/column 5 and the second letter references a maintenance function, column 3, A through K.

b. Remarks. This column lists information pertinent to the maintenance function being performed, as indicated on the MAC, section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Functional Group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A	B	C	D	E	F	G	H	I	J	K		
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
42	ELECTRICAL EQUIPMENT													
4216	Misc Wiring & Fittings	O	O	O	O	F								
48	HYDRAULIC FLUID, AIR & ...VACUUM SYSTEM													
4315	Vacuum System	O	O	O	O	F								
52	REFRIGERATION & AIR CON- ...DITIONING COMPONENTS													
5246	Conditioned Air System	O	O	O	O	O								
54	TENTAGE, EQUIPAGE & SPECIAL ...PURPOSE CLOTHING COMPO- ...NENTS													
5401	Shelter Body Assy	O	O	O	O	O	H	1	A					
5405	Shelter Accessories	O	O	O	O	O	F	B						

(1) Group No.	(2) Functional Group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
55	PUMPS													
5505	Water Discharge System	O	O	O	O	F								
59	WATER SUPPLY SYSTEM													
5900	Water Supply System	O	O	O	O	F								

Section III. SPECIAL TOOL AND SPECIAL TEST EQUIPMENT REQUIREMENTS

Reference code	Maintenance category	Nomenclature	Tool Number
1I	0, F and H	Pop Rivet Tools plier type with 1/8 in. and 3/16 in. diameter heads for application of 1/8 in. and 3/16 in. diameter pop rivets.	

Section IV. REMARKS

Reference code	Remarks
A-I	All seal to prevent air leakage must be replaced every 12 months. Plus the entire shelter will be repainted interior and exterior.
AJ	Same infor for A-I.
B-I	Machine sewing at direct support level for the air-lock assembly.

INDEX

A

By Order of the Secretary of the Army:

W. C. WESTMORELAND;
General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States *Army,*
The *Adjutant General.*

Distribution:

To be distributed in accordance with DA Form 12-25, Sec I (qty rqr Block #278), Organizational maintenance requirements for (Shelters, Expandable) tents.

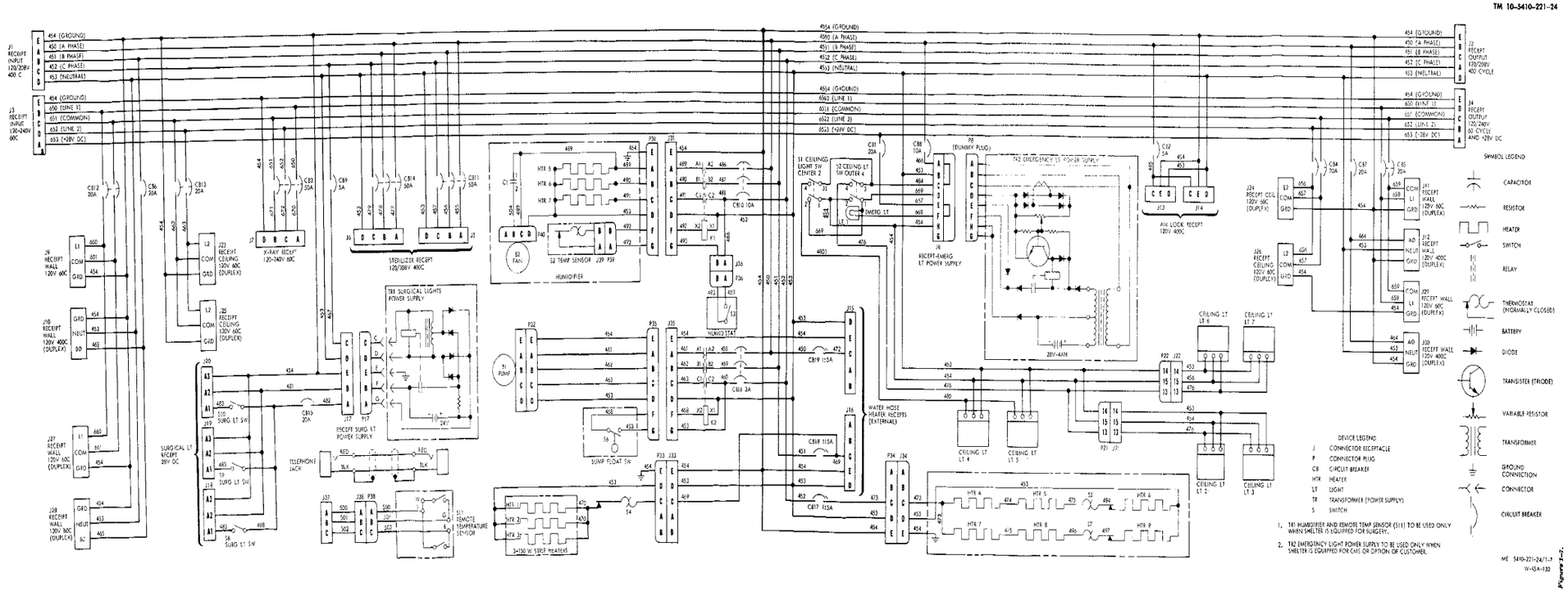
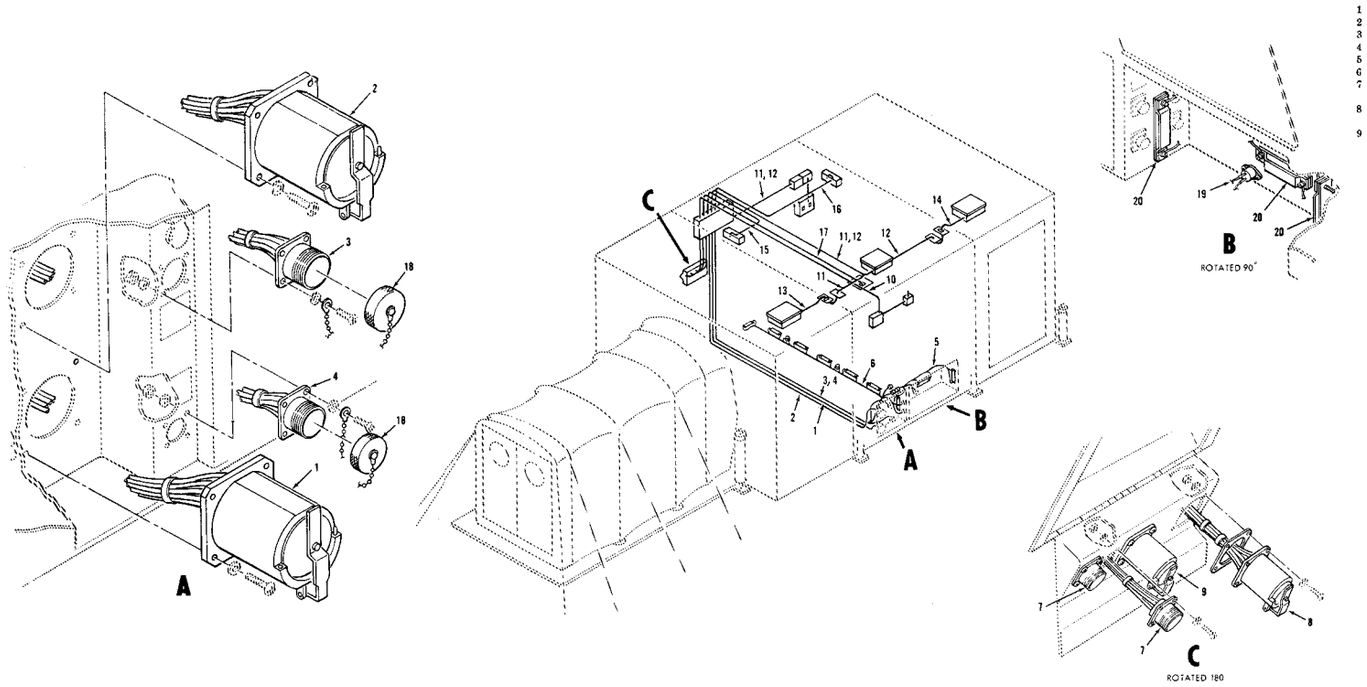


Figure 1-7. Expandable shelter electrical system schematic.



1 60 Hz power in harness and connector assembly
2 400 Hz power in harness and connector assembly
3 Heater and water box power harness assembly
4 Remote temperature sensor harness assembly
5 Water box heaters harness assembly
6 Water line heaters harness assembly
7 Surgical and air-lock light harness and connector assembly
8 400 Hz power out harness and connector assembly
9 60 Hz power out harness and connector assembly
10 Humidifier harness assembly
11 Fluorescent lights harness assembly (P21)
12 Fluorescent light harness assembly (P22)
13 Fluorescent light harness assembly (J21)
14 Fluorescent light harness assembly (J22)
15 Surgical lights harness assembly (J18)
16 Surgical lights harness assembly (J19)
17 Surgical lights harness assembly (J20)
18 Receptacle cover
19 Thermo switch
20 Water box heaters

Figure 6-1.

Figure 6-1. Shelter harness assemblies removal.

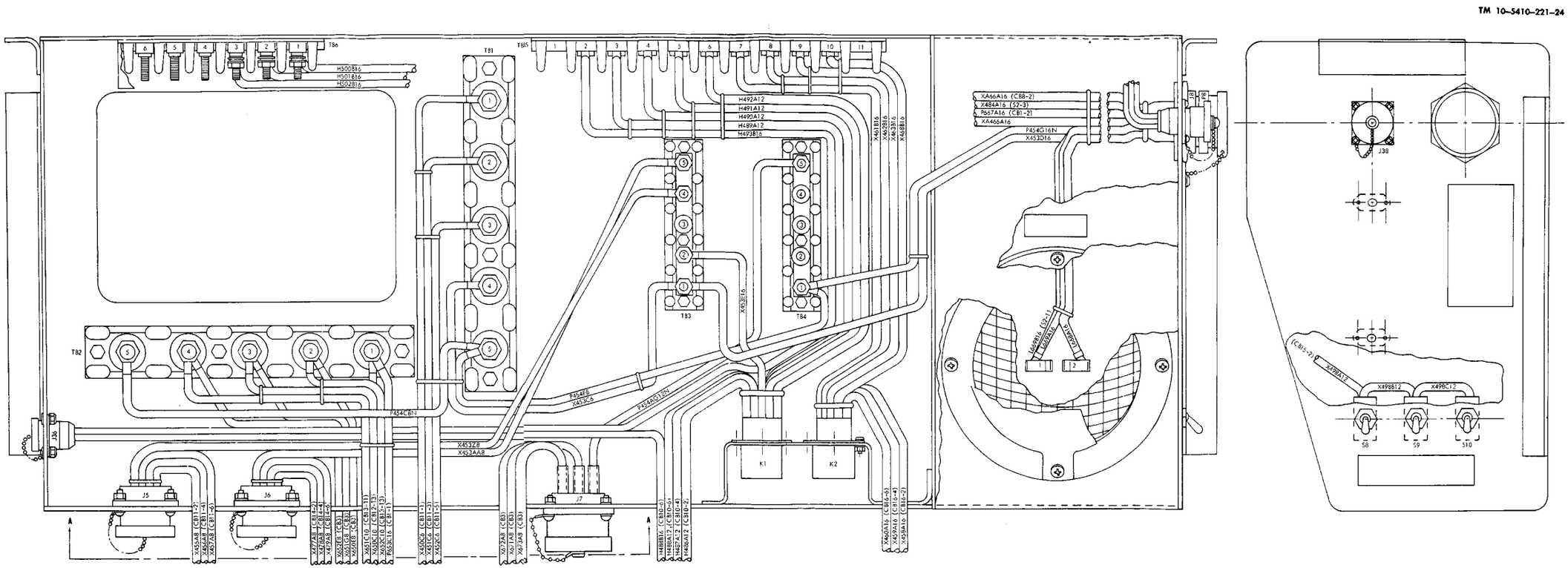


Figure 6-22. Distribution box assembly-disassembly (sheet 1 of 7).

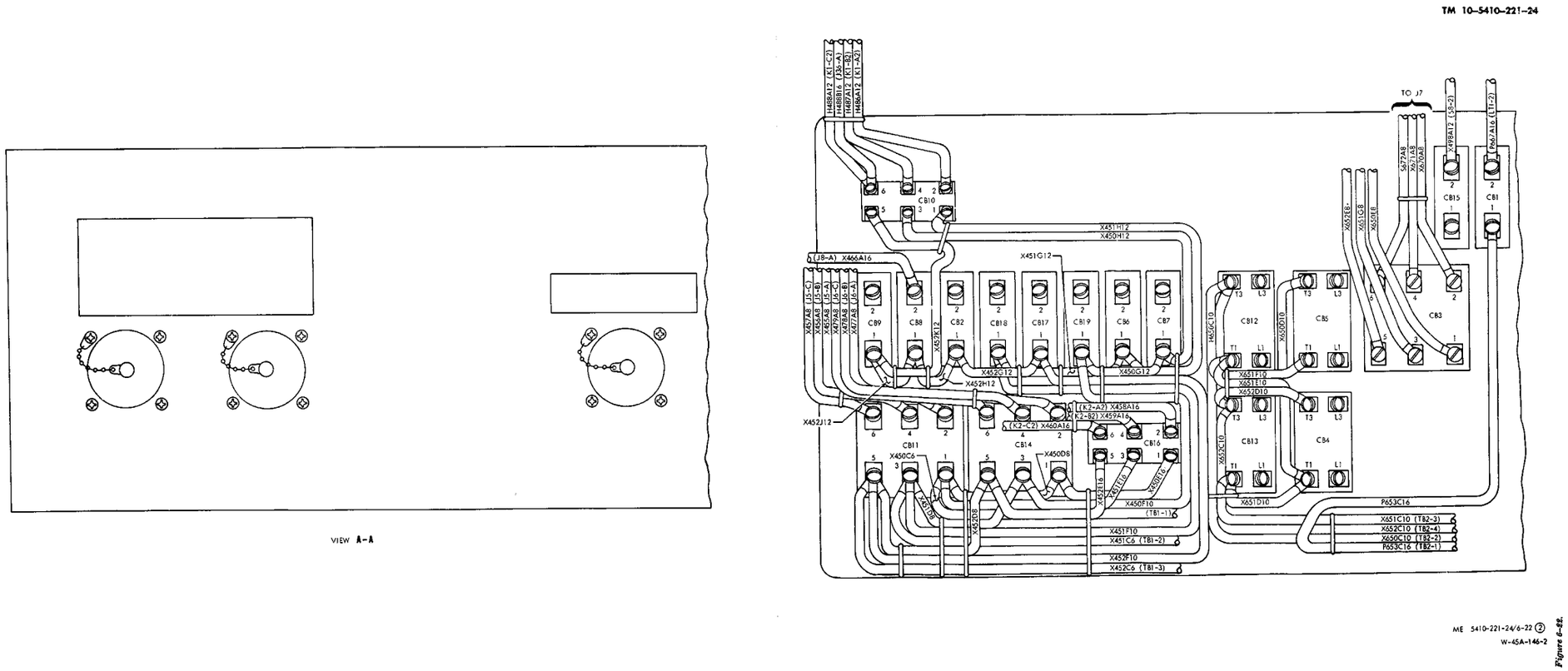


Figure 6-22. Distribution box assembly-disassembly (sheet 2 of 7).

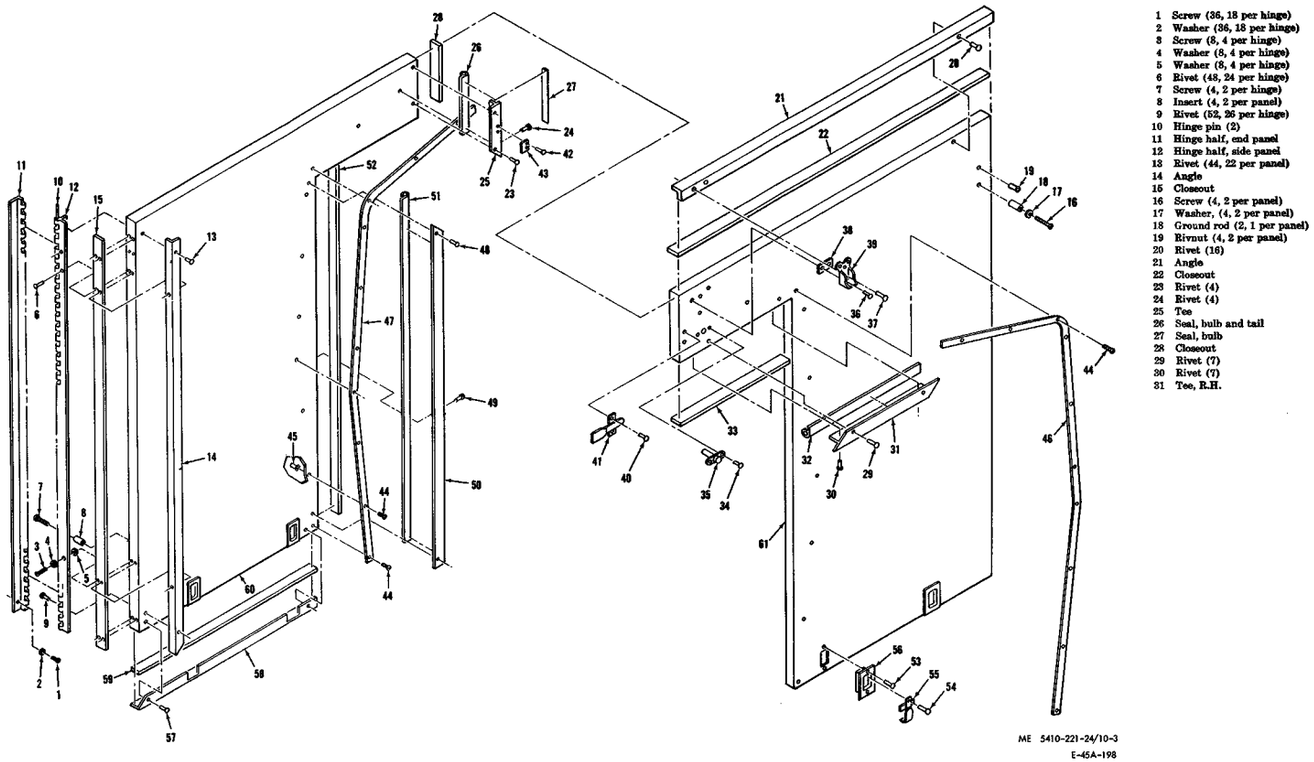
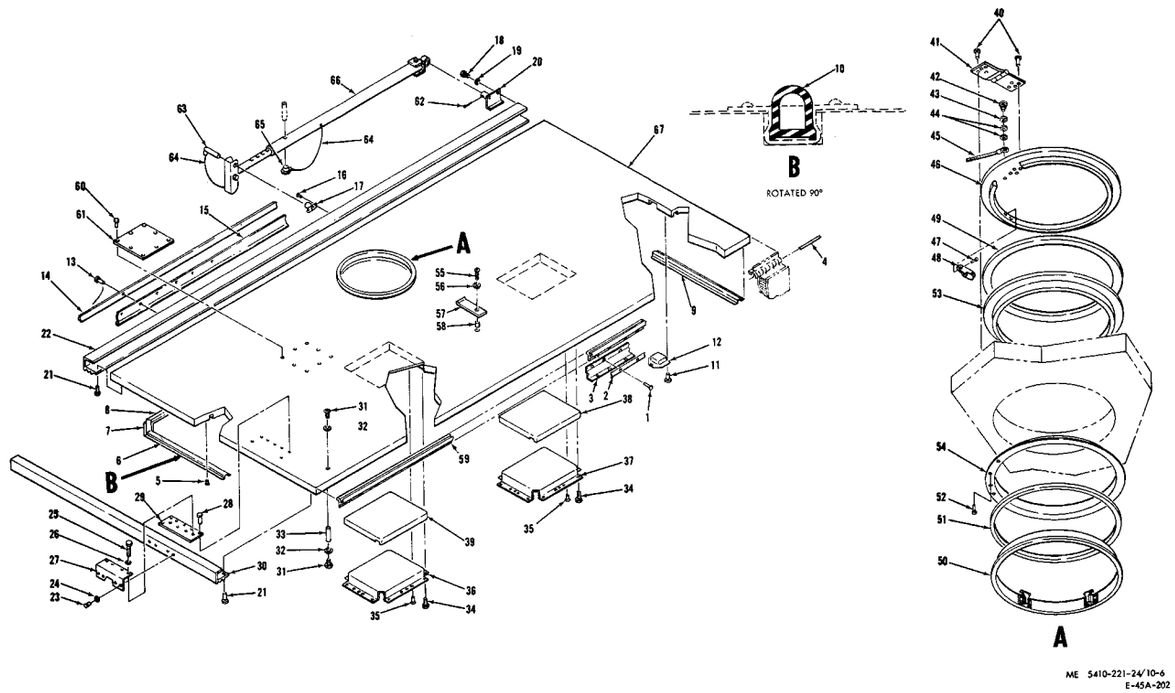


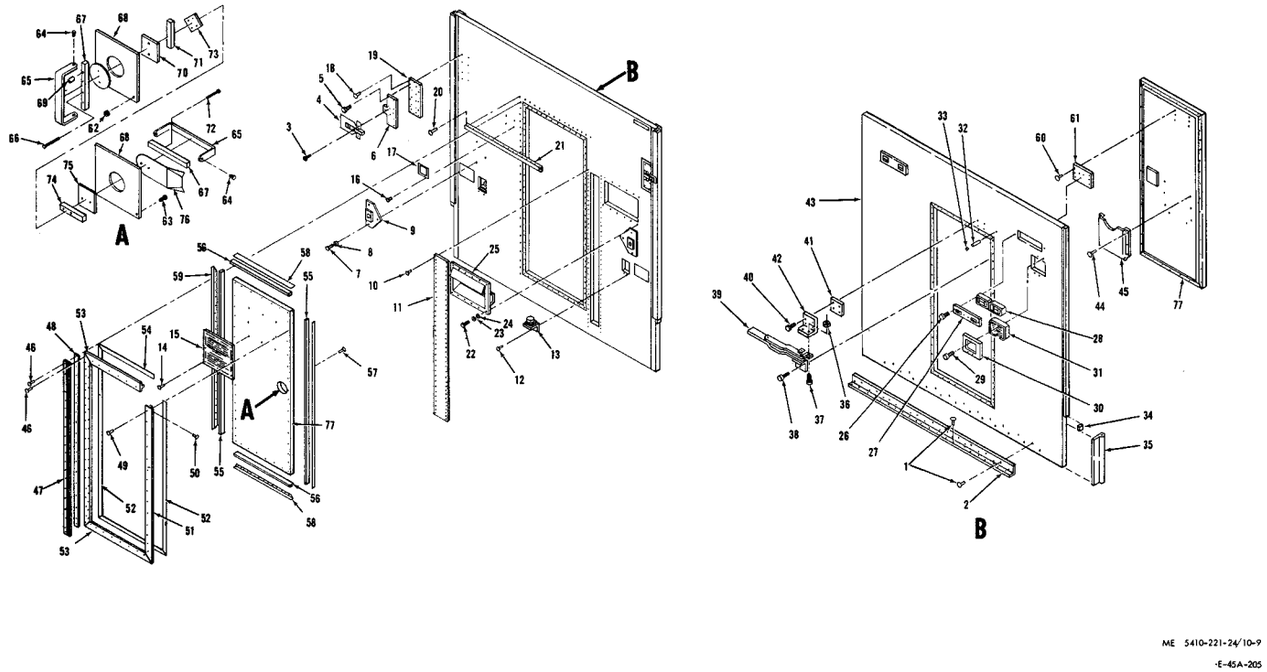
Figure 10-3. Side panel assembly disassembly.



1 Rivet (184)
2 Retainer strip (2)
3 Seal
4 Hinge pin
5 Rivet (133)
6 Gasket retainer
7 Gasket retainer
8 Gasket retainer
9 Gasket retainer
10 Seal, bulb
11 Bolt
12 Strike assembly
13 Rivet (42)
14 Retainer strip
15 Seal
16 Rivet (4)
17 Receptacle, ball lock
18 Bolt (4)
19 Washer (4)
20 Pivot assembly (2)
21 Rivet
22 Extrusion
23 Bolt (8)
24 Washer (8)
25 Bolt (8)
26 Washer (8)
27 Shear angle
28 Rivet (14)
29 Spacer
30 Extrusion
31 Screw (2)
32 Washer (2)
33 Ground rod
34 Bolt (16)
35 Rivet (32)
36 Box, light
37 Box, light
38 Box, fiberglass
39 Box, fiberglass
40 Rivet
41 Hinge assembly
42 Screw (2)
43 Washer (2)
44 Washer (4)
45 Strap
46 Duct cover
47 Rivet
48 Strike assembly
49 Duct cover seal
50 Flange
51 Gasket
52 Rivet
53 Angle, duct port
54 Angle, duct port
55 Screw
56 Washer
57 Clamp
58 Spacer
59 Seal
60 Rivet (16, 8 per scuff plate)
61 Scuff plate, mobilizer (2)
62 Pin
63 Pin, ball lock (2)
64 Cable (4)
65 Pin, ball lock (2)
66 Support assembly (2)
67 Folding roof panel

Figure 10-6.

Figure 10-6. Folding roof panel assembly disassembly.



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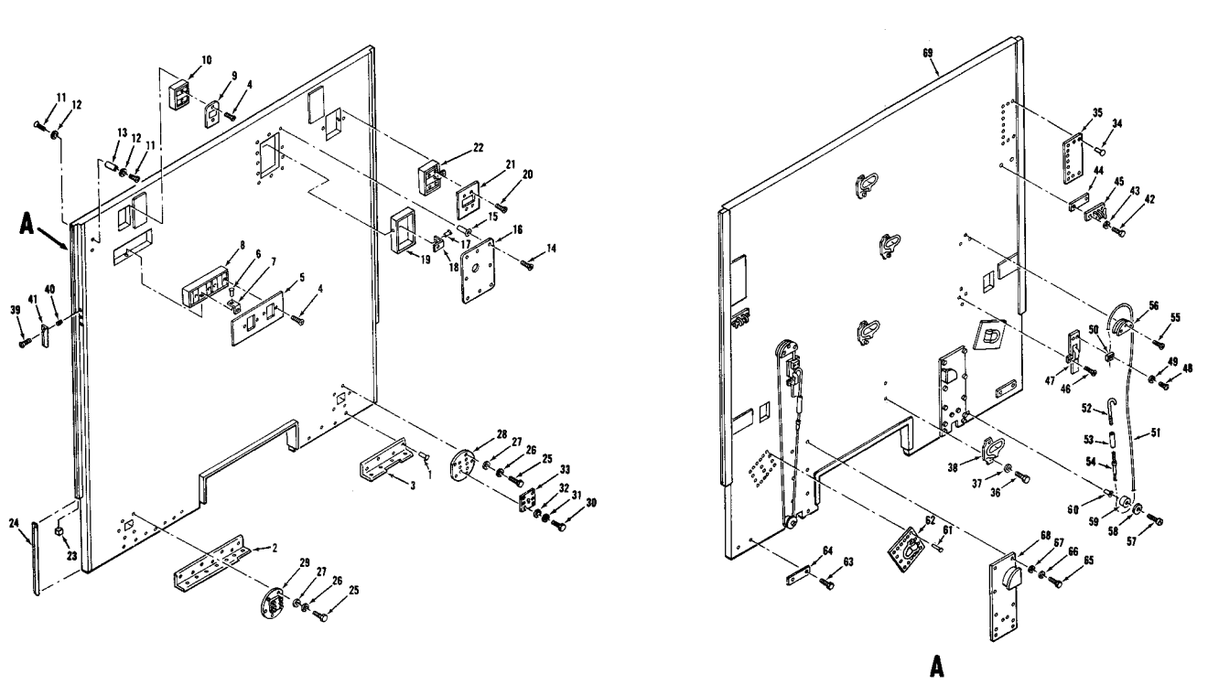
E-45A-205

1 Rivet (44)
2 Angle
3 Screw (8)
4 Latch assembly (2)
5 Screw (20)
6 Shear plate
7 Bolt (6)
8 Washer (6)
9 Mobilizer bracket
10 Rivet (76)
11 Cover
12 Rivet (8)
13 Level indicator (2)
14 Rivet (8)
15 Instruction plate
16 Rivet (4)
17 Identification plate
18 Rivet (22)
19 Plate, doubler (2)
20 Rivet (20)
21 Gutter
22 Screw (12)
23 Washer (12)
24 Washer (12)
25 Panel assembly
26 Screw (8)
27 Cover (2)
28 Receptacle box
29 Screw
30 Cover
31 Switch box
32 Sterilizer vent
33 Cap
34 Seal
35 Seal
36 Nut (2)
37 Screw (2)
38 Screw (3)
39 Brace
40 Bolt (4)
41 Doubler
42 Angle
43 Fixed end panel assembly
44 Rivet (8)
45 Container
46 Rivet (22)
47 Hinge
48 Spacer
49 Rivet (54)
50 Rivet (54)
51 Tee (2)
52 Seal (2)
53 Tee (2)
54 Seal (2)
55 Closeout (2)
56 Closeout (2)
57 Rivet (54)
58 Angle (2)
59 Angle (2)
60 Rivet (6)
61 Doubler
62 Nut (4)
63 Screw (4)
64 Screw (4)
65 Handle, bar
66 Screw (2)
67 Handle, bail
68 Plate
69 Spacer
70 Keeper
71 Stop arm
72 Screw
73 Idler block
74 Stop arm
75 Keeper
76 Locking blade
77 Access door panel assembly

Figure 10-9.

Figure 10-9. Fixed end panel assembly disassembly.



1 Rivet (22)
2 Angle
3 Angle
4 Screw (6)
5 Cover
6 Rivet (2)
7 Angle, grounding
8 Box
9 Cover
10 Box
11 Screw (2)
12 Washer (2)
13 Ground rod
14 Screw (8)
15 Rivnut (8)
16 Cover
17 Rivet (2)
18 Angle, grounding
19 Box
20 Screw
21 Cover
22 Box
23 Seal
24 Seal
25 Bolt (10)
26 Washer (10)
27 Washer (10)
28 Ring assembly, R. H.
29 Ring assembly, L. H.
30 Screw (6)
31 Washer (6)
32 Washer (6)
33 Fitting
34 Rivet (11)
35 Plate
36 Bolt (2)
37 Washer (2)
38 Step (4)
39 Screw (3)
40 Insert (3)
41 Striker plate
42 Bolt (2)
43 Washer (2)
44 Spacer (2)
45 Bracket (2)
46 Screw (4)
47 Latch assembly (2)
48 Screw (2)
49 Washer
50 Clamp assembly (2)
51 Cable assembly (2)
52 Hook (2)
53 Turnbuckle (2)
54 Terminal (2)
55 Screw (3)
56 Capstan (2)
57 Screw
58 Washer
59 Spacer
60 Insert
61 Rivet (16)
62 Tie down assembly (2)
63 Screw (2)
64 Spacer
65 Bolt (12)
66 Washer (12)
67 Washer (12)
68 Guide assembly (2)
69 Panel, fixed end

Figure 10–11.

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Figure 10-11. Fixed end panel (water box) assembly.

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