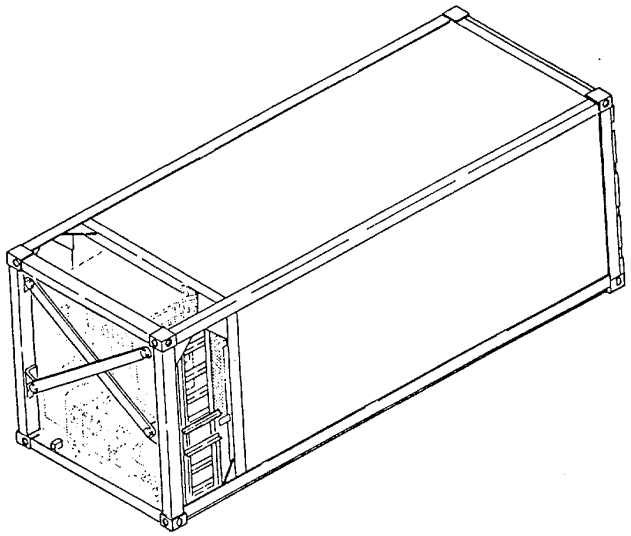
TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR CONTAINER, REFRIGERATED MODEL SC219

NSN: 8145-01-337-9997



HEADQUARTERS, DEPARTMENT OF THE ARMY
18 MAY 1992

WARNINGS

ELECTRICAL HAZARD

Never work on electrical equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Be careful not to contact high-voltage connections of 1 15-volt ac input connections when installing or operating this equipment.

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

Do not disconnect power cables when power is on or generator set is operating.

SOLVENT HAZARD

Drycleaning solvent, P-D-680, Type II, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact by wearing rubber or nonporous gloves when handling the solvent or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 140°F (60'C). Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

HEAVY EQUIPMENT HAZARD

Lifting or moving heavy equipment incorrectly can cause serious injury. Do not try to lift or move more than 50 pounds by yourself. Get an assistant. Bend legs while lifting. Don't support heavy weight with your back.

Always use assistants during lifting operations. Use guide ropes to move hanging assemblies.

A lack of attention or being in an improper position during lifting operations can result in serious injury or death. Pay close attention to movements of assemblies being lifted. Do not stand under lifted assembly or in a position where you could be pinned against another object. Watch your footing.

Make sure rear doors are secured to container frame when in the open position. A gust of wind can cause unsecured doors to slam shut with great force.

A loaded refrigerated container is extremely heavy. Use a hoist and sling rated at a minimum capacity of40 tons (80,00 pounds) when lifting refrigerated container.

To prevent slippage of hoisting slings during lifting operations, away use spreader bars.

WARNINGS

HEAVY EQUIPMENT HAZARD- cont

Never lift, move, or push refrigerated container with a regular forklift. Refrigerated container can fall from regular forklift tines or cause forklift to flip over. Use only equipment designed for use with the MIL-VAN

RIVET HAZARD

Rivets can shatter during removal or installation and cause serious injury to eyes. Wear eye protection.

FIRE HAZARD

To prevent injury to personnel and damage to equipment, do not fill fuel tank above white line marked on side of tank. Movement of refrigerated container during transport will cause fuel to spill if tank is over filled. Make sure a fire extinguisher is nearby when refueling or operating the generator set or fuel tank.

For Artificial Respiration, refer to FM 21-11.

CHANGE NO. 1

HEADQUARTERS DEPARTMENT OF THE ARMY WASHINGTON, DC, 30 SEPTEMBER 2005

TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR CONTAINER, REFRIGERATED MODEL SC219 NSN 8145-01-337-9997

DISTRIBUTION STATEMENT A: - Approved for public release; distribution is unlimited.

TM 55-8145-201-14, dated 18 May 1992, is changed as follows:

1. File this sheet in front of the manual for reference.

2. This change implements Army Maintenance Transformation and changes the Maintenance Allocation Chart (MAC) to support Field and Sustainment Maintenance.

3. New or updated text is indicated by a vertical bar in the outer margin of the page.

4. Added illustrations are indicated by a vertical bar adjacent to the figure number. Changed illustrations are indicated by a miniature pointing hand adjacent to the updated area and a vertical bar adjacent to the figure number.

5. Remove old pages and insert new pages as indicated below:

Remove Pages	Insert Pages
	A/(B blank)
B-1 through B-6	B-1 through B-7/(8 blank)
	Electronic 2028 Instructions/(blank)
	Sample DA Form 2028 Front/Back
DA Form 2028	DA Form 2028 Front/Back
	DA Form 2028 Front/Back

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General, United States Army
Chief of Staff

Official:

SANDRA R. RILEY
Administrative Assistant to the
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Dates of issue for original and changed pages / work packages are:

Original .. 0 .. 18 May 1992
Change .. 1 .. 30 September 2005

TOTAL NUMBER OF PAGES FOR THIS PUBLICATION IS 196, CONSISTING OF THE FOLLOWING:

Page No.	Change No.
Title	0
a/b	0
i-vi/(vii blank)	0
1-0 - 1-10	0
2-1 - 2-28	0
3-1 - 3-4	0
4-1 - 4-82	0
5-1 - 5-20	0
A-1 - A-2	0
B-1 - B-7/(8 blank)	1
C-1 - C-3/(C-4 blank)	0
D-1 - D-2	0
E-1/(E-2 blank)	0
F-1/(F-2 blank)	0
Index-1 - index 3/(Index 4 blank)	0
Back Cover	0

TECHNICAL MANUAL
NO. TM 55-8145-201-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 18 MAY 1992

OPERATOR'S, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL for CONTAINER, REFRIGERATED MODEL SC219 NSN 8145-01-337-9997

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MMTS, 4300 Goodfellow Blvd., St. Louis, Mo. 63120-1798.

In either case, a reply will be furnished directly to you.

Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

TABLE OF CONTENTS - cont

HOW TO USE THIS MANUAL

Spend a few minutes looking through this manual. It has a new look that is very different tom the manuals you've been using. You'll find the new look is a lot easier to use, and you can find what you're looking for a lot faster.

Each chapter begins with an index that lists each paragraph or section in the chapter. Each section in the maintenance chapter also has an index that lists the procedures in the section and gives page numbers. Or you can look for the information you want in the alphabetical subject index at the back of the manual.

We got rid of as many words as we could and put in a lot of illustrations to show just about everything you will be doing to maintain your equipment.

The text is keyed to the illustration with callout numbers (sometimes words). The callout numbers are in parentheses in the text.

So, HOW DO YOU USE THIS MANUAL?

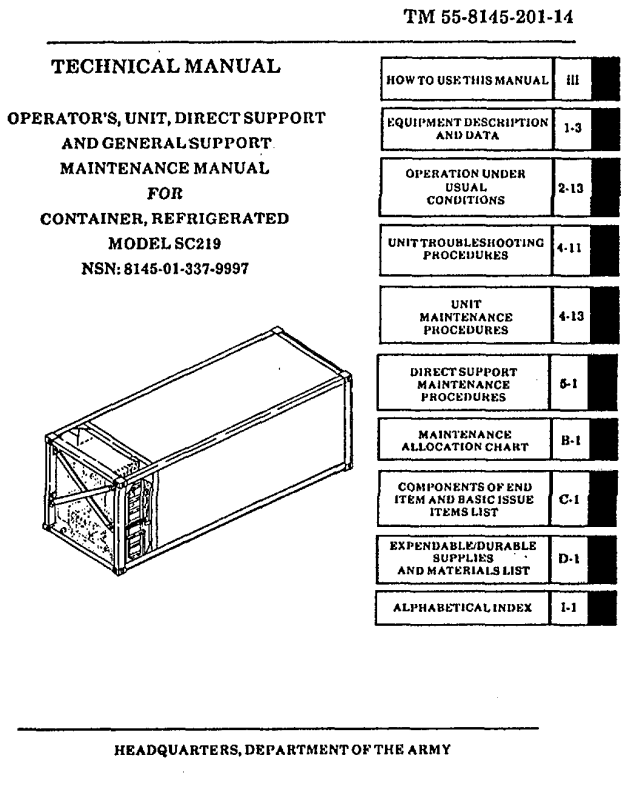
Like This:

1. Suppose the container doors will not close and you want to troubleshoot the unit

2. Look at the cover and you'll see index boxes near the right-hand edge with subject titles in them. You'll find "UNIT TROUBLESHOOTING 4-11." You can skip over to page 4-11.

   OR

3. Bend the pages a bit and look at the edges. You'll see black bars on some of the pages that are lined up with the index boxes on the cover.


TM 55-8145-201-14

TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL *FOR* CONTAINER, REFRIGERATED MODEL SC219 NSN: 8145-01-337-9997

HEADQUARTERS, DEPARTMENT OF THE ARMY

Table 4-1. Unit Preventive Maintenance Checks and Services for Model SC-219 - cont.

Item No.	Interval	Location — Item to Check/Service	Procedure	Not Fully Mission Capable If:
		EXTERIOR		
6	Monthly	Container Frame	Inspect for cracked, bent or broken corner fittings and frame members.	Frame or welds cracked.
		INTERIOR		
7	Monthly	Container Frame	Inspect for bare metal and corrosion.	

Section IV. UNIT TROUBLESHOOTING PROCEDURES

4-10. INTRODUCTION.

This section provides the troubleshooting information for the Refrigerated Container at the Unit Maintenance level. It consists of the symptom index, listing the most common malfunction symptoms, and the troubleshooting table, Table 4-2. This table repeats the malfunctions, and provides the procedural steps and corrective actions necessary to return the system to operational readiness.

4-11. TROUBLESHOOTING.

a. The troubleshooting table lists the common malfunctions which you may find during operation of the refrigerated container. You should perform the tests, inspections and corrective actions in the order they appear in the table.

b. This table cannot list all the malfunctions that may occur, all the tests or inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

c. Refer to TM 9-4110-252-14 for troubleshooting malfunctions on the refrigeration unit.

d. Refer to TM 5-6115-585-12/34 for troubleshooting malfunctions on the generator set.

4-12. MALFUNCTION INDEX.

4-11

4. If you put your thumbnail on the black bar that is lined up with the box on the cover for UNIT TROUBLESHOOTING and open the manual, you'll be on page 4-11.

5. On page 4-11, you'll find Section IV, UNIT TROUBLESHOOTING PROCEDURES. The first major item in the section is a SYSTEM INDEX that list the major assemblies that make up the Refrigerated Container. Look for REAR DOORS WILL NOT CLOSE in the Malfunction column. Item 1 under REAR DOORS WILL NOT CLOSE will give you page number 4-12.

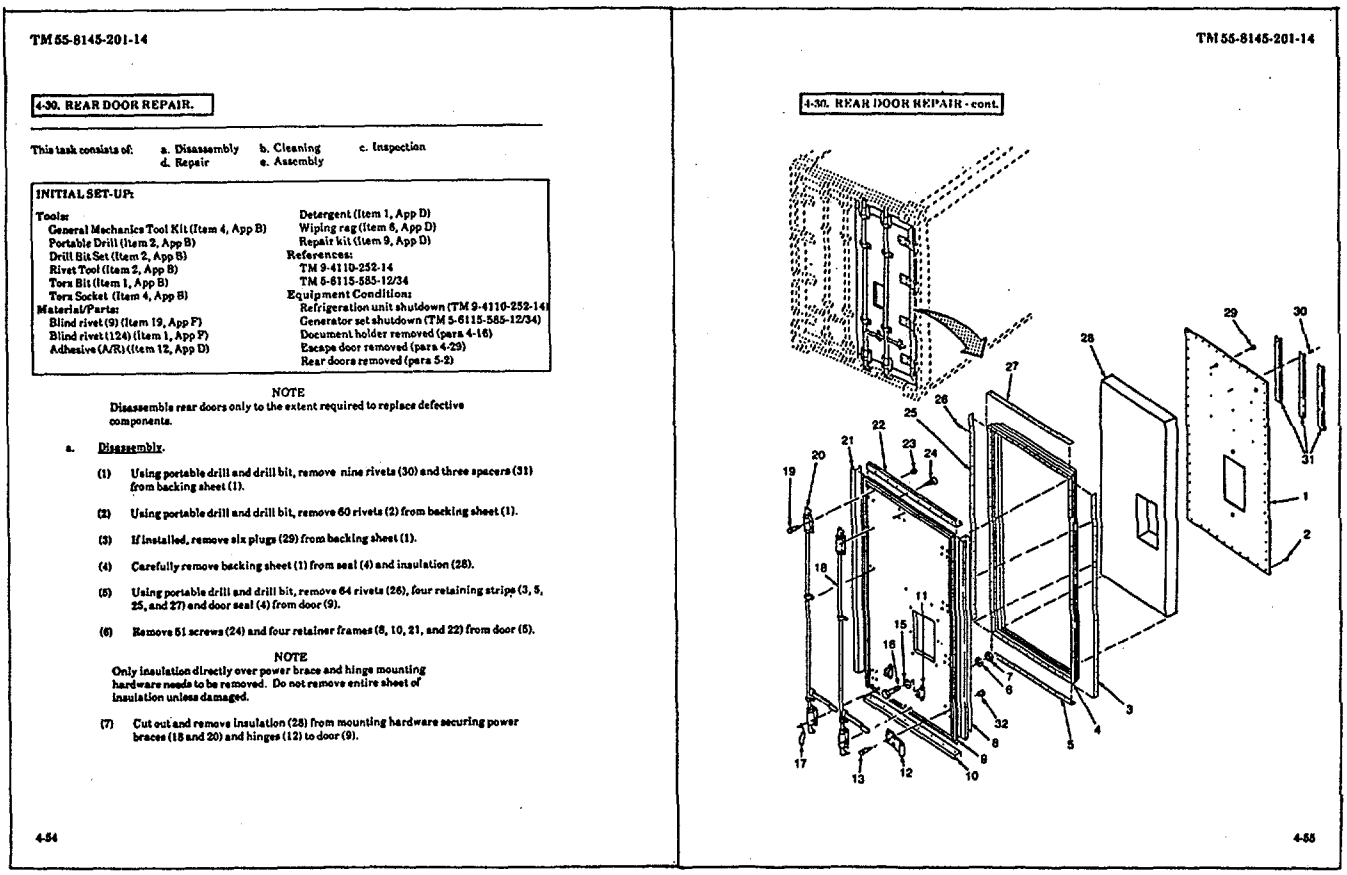
Table 4-2. Unit Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. REAR DOORS WILL NOT CLOSE
Step 1. Inspect for torn, loose or damaged door seals in door closure area.
Repair rear door (para. 4-30).
Step 2. Inspect doors for bent, cracked, or worn latch handles and door locking hardware.
Repair rear door (para. 4-30).
Step 3. Inspect door for cracked, bent, or frozen hinges.
If door is damaged or defective, notify direct support maintenance.
2. WATER WILL NOT DRAIN FROM CONTAINER FLOOR.
Check for clogged or damaged floor drains.
Remove dirt and debris from floor drain.
If clog cannot be removed or drain is damaged, replace floor drain (para. 4-35).
3. TEMPERATURE RECORDER DOES NOT RECORD OR DOES NOT RECORD PROPERLY.
Step 1. Check for loose thermometer element coupling at temperature recorder.
Tighten thermometer element screws on bottom of temperature recorder.
Test and adjust thermometer (para 4-21).
Step 2. Check that temperature recorder stylus is in contact with paper chart.
If stylus is bent or broken, replace temperature recorder (para. 4-19).
Step 3. Inspect thermometer element sensing line for damage.
Replace thermometer element (para. 4-20).
Step 4. Inspect thermometer bulb (mounted on container front) wall for damage.
Replace thermometer element (para. 4-20).

4-12

6. Turn to page 4-12 and find the malfunction "REAR DOORS WILL NOT CLOSE."

7. As you do the tests and corrective actions in the order listed, you will get to "Inspect fr torn, loose or damaged door seals in door closure area." The corrective action directs your to "Repair rear door (para 4-30)."



TM 55-8145-201-14

4-30. REAR DOOR REPAIR.

This task consists of: a. Disassembly b. Cleaning c. Inspection d. Repair e. Assembly

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)
Rivet Tool (Item 2, App B)
Torx Bit (Item 1, App B)
Torx Socket (Item 4, App B)

Material/Parts:
Blind rivet (9) (Item 19, App F)
Blind rivet (124) (Item 1, App F)
Adhesive (A/R) (Item 12, App D)
Detergent (Item 1, App D)
Wiping rag (Item 6, App D)
Repair kit (Item 9, App D)

References:
TM 9-4110-252-14
TM 5-8115-585-12/34

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-8115-585-12/34)
Document holder removed (para 4-16)
Escape door removed (para 4-29)
Rear doors removed (para 5-2)

NOTE

Disassemble rear doors only to the extent required to replace defective components.

a. Disassembly.

(1) Using portable drill and drill bit, remove nine rivets (30) and three spacers (31) from backing sheet (1).

(2) Using portable drill and drill bit, remove 60 rivets (2) from backing sheet (1).

(3) If installed, remove six plugs (29) from backing sheet (1).

(4) Carefully remove backing sheet (1) from seal (4) and insulation (28).

(5) Using portable drill and drill bit, remove 64 rivets (26), four retaining strips (3, 5, 25, and 27) and door seal (4) from door (9).

(6) Remove 51 screws (24) and four retainer frames (8, 10, 21, and 22) from door (5).

NOTE

Only insulation directly over power brace and hinge mounting hardware needs to be removed. Do not remove entire sheet of insulation unless damaged.

(7) Cut out and remove insulation (28) from mounting hardware securing power braces (18 and 20) and hinges (12) to door (9).

4-54

TM 55-8145-201-14

4-30. REAR DOOR REPAIR - cont.

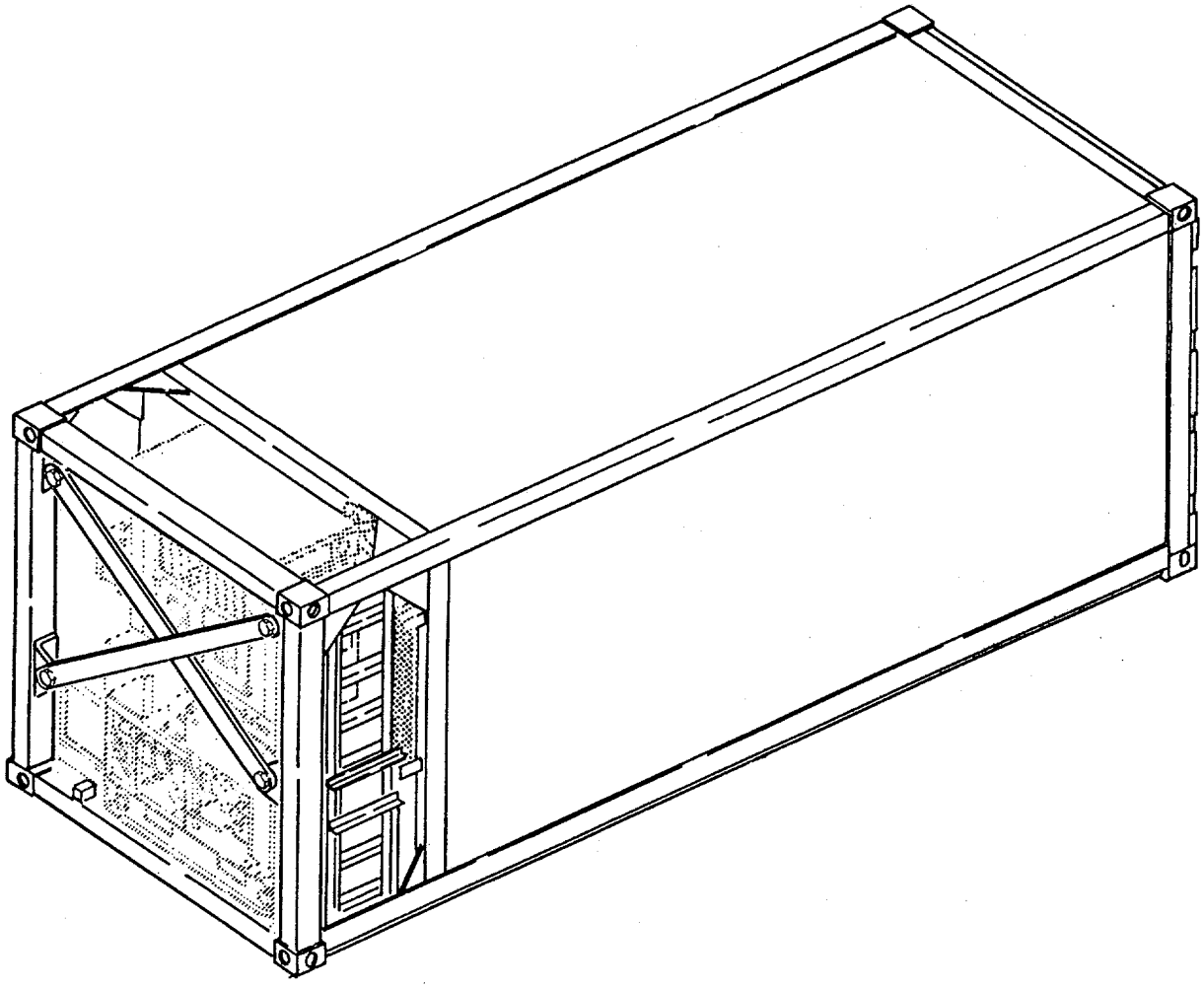
4-55

8. Turn to paragraph 4-30 and look at the procedure. The “INITIAL SETUP" section tells you what tools, materials, and parts are needed to complete this task. It also tells you what you must do before starting this task and it gives general warnings about hazards that can exist while you perform this task.

9. The procedure itself has a picture to show you where to look and what to look at, plus the steps you will perform to complete the task.

10. Notice the numbered arrows. These are the callout numbers. As you read each step, we tell you where to look by including the callout number (in parentheses) after the name of each component we call out.

11. Do the procedure, then check to see if you have corrected the fault symptom.



CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

This manual covers Operating Instructions and Unit, Direct Support, and General Support maintenance procedures required to operate and maintain the Refrigerated Container, Model SC-219, less generator set and refrigeration unit. The refrigerated container is designed to be used with the Refrigeration Unit, Model CH-609-32, mounted on the front wall panel. The refrigerated container provides storage and transport of perishable materiel.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army Forms and procedures used fr equipment maintenance will be those prescribed by DA Pam 738-750 (The Army Maintenance Management System (TAMMS) (Maintenance Management Update).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Methods and procedures for destruction of Army materiel to prevent enemy use are covered in TM 750-244-3.

1-4. CORROSION PREVENTION AND CONTROL.

a. Corrosion Prevention and Control (CPC) of Army Materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

1-4. CORROSION PREVENTION AND CONTROL - cont.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem.

c. If a corrosion problem is identify, it can be reported using Standard Form 368, Product Quality Deficiency Report Using key words such as "rust", "deterioration", or "cracking" will insure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

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

If your container needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at :Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MOF, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. We'll send you a reply.

1-6. NOMENCLATURE CROSS REFERENCE LIST.

Common Name	Official Nomenclature
Container	Container, Refrigerated, Model SC-219

1-7. LIST OF ABBREVIATIONS.

Abbreviation	Nomenclature
°F	Degrees Fahrenheit
Hz	Hertz

1-8. GLOSSARY.

Term	Description
Stylus	A point used to mark or write on paper. The temperature recorder stylus marks the paper chart to record the temperature changes inside the container.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

a. Characteristics.

(1) Easily transportable.

(2) Fully operational during transport.

(3) Stand alone operation when equipped with generator set.

(4) Operates from 10K generator set or external electrical power sources.

(5) Can be transported on flatbed truck, railway car or ship.

(6) Can be stacked or connected in tandem fr transporting or storage.

(7) Operator controlled internal lighting.

(8) Escape hatch permits emergency exit from container interior.

(9) Provides both heating and cooling capacity.

b. Capabilities.

(1) Will maintain internal temperatures of 0° to + 40°F in ambient temperature of + 100°F.

(2) Will maintain internal temperature of + 40°F in ambient temperature of -40°F.

(3) Conforms to MIL-C-52788 and associated standards fr handling, securing and storage of military container.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. Corner Fittings (1). Four upper corner fittings provide hoist points during lifting operations. Spacer blocks placed in the two front or rear corner fittings position and align container during tandem transport. Four lower corner fittings mate with coupling hardware on transport vehicle. Corner fittings also allow stacking of refrigerated containers during shipment and storage.

b. Ladder (10). Permits personnel to access equipment and roof of container. Lower section of ladder folds down during use and up for storage.

c. Refrigeration Unit (2). Cools container interior. Refer to TM 9-4110-252-14 fr additional information on the refrigeration unit.

d. Generator Set (3). Provides electrical power to operate refrigeration unit and container interior light. Refer to TM 5-6115-585-12/34 for additional information on the generator set.

NOTE

Spacer block is not supplied with the refrigerated container.

e. Spacer Block (9). Positions and provides clearance between containers during tandem transport. One spacer block is supplied with each container.

f. Spacer Block Bracket (8). Stores spacer block when not in use.

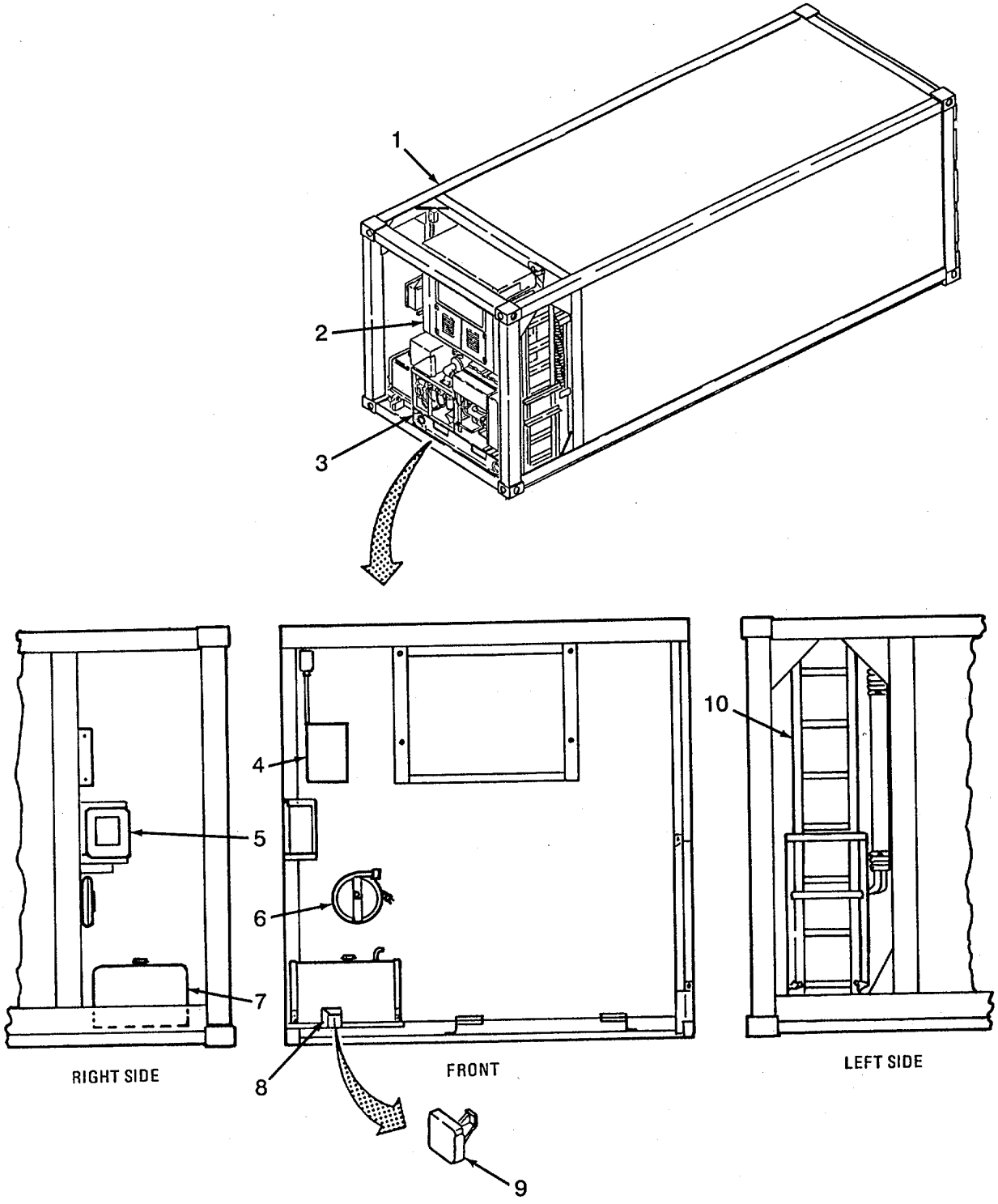
g. Fuel Tank (7). Stores and supplies fuel to the generator set.

h. Temperature Recorder (5). Spring operated mechanical plotter records container interior temperature.

i. Manual Holder (4). Provides waterproof storage for technical manual, temperature recorder paper charts and related documentation.

j. Power Cable (6). Five-foot long cable connects 10Kw generator set to refrigeration unit power cable.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS- cont.



1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - cont.

k. Right door (4). Provides access to container interior. Seals and secures cargo inside container.

1. Document Holder (5). Provides storage for shipping, storage and related documents

m. Escape Door (6). Permits emergency escape from container interior. Can only be removed from inside container.

n. Left Door (1). Provides access to container interior. Seals and secures cargo inside container.

o. Light (7). Provides light inside container.

p. Light Switch (8). Hand operated switch on container wall turns light on or off.

q. Spacer Strips (11). Prevent cargo from blocking air circulation along walls when container is full.

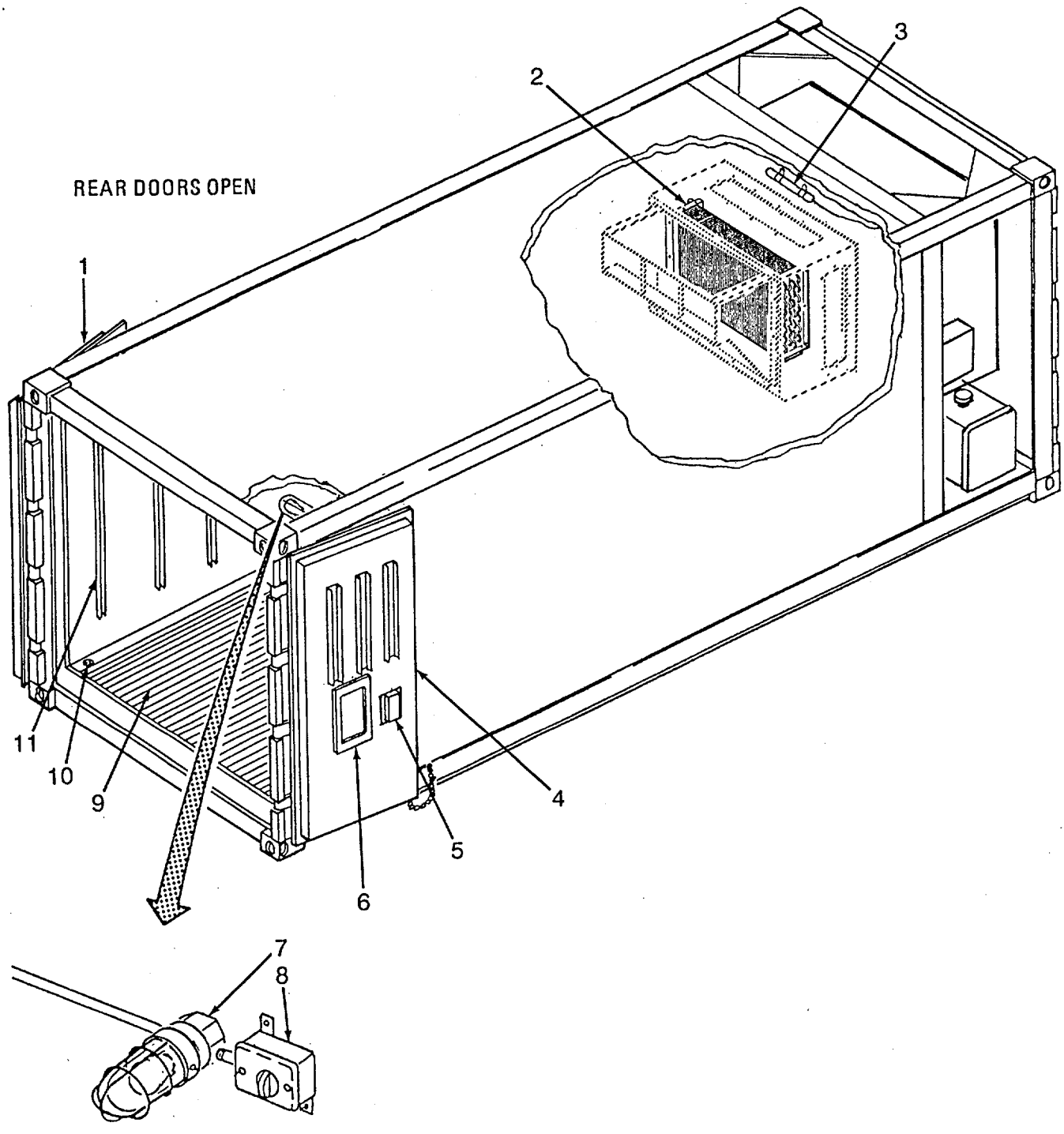
r. Ribbed Floor (9). Ribs built into the floor permit air circulation between floor and cargo and aid drainage of condensation.

s. Floor Drains (10). Four self closing floor drains allow water and condensation to drain from container interior.

t. Evaporator Coil (2). The evaporator coil is part of refrigeration unit that extends into the container. The coil provides cold air to cool container.

u. Sensing Bulb (3). The sensing bulb is part of the temperature recorder system. It is connected to the recorder by a small copper sensing line.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - cont.



1-11. EQUIPMENT DATA(Refer toTable 1-1).

Table 1-1. Equipment Data

REFRIGERATED CONTAINER

CONTAINER

Model No.	SC219
Manufacturer	Engineered Air Systems Inc.
Length	20 ft(6.10 m)
Height	8 ft (2.44 m)
Width	8 ft(2.44 m)
Empty Weight (Tare)	7,965 lbs (3,612 kg)
Maximum Gross Weight	44,800 lbs (20,320 kg)
Shipping Cube	1,280 cu ft (36.25 cu m)
Interior Light	100 watts

TEMPERATURE RECORDER

Model No.	TRLW
Manufacturer	Partlow Inc.
Drive Mechanism	Mechanical, spring driven, hand wound
Temperature range	-20°F to +80°F
Recording Period	31days

FUEL TANK

Capacity (To FULL line)	26 Gallons (US)

REFRIGERATION UNIT

NOTE

Data for the refrigeration unit is provided for reference only. Refer to TM 9-4110-252-14 for specific equipment data on the refrigeration unit.

Model	CH609-32
Manufacturer	Engineered Air Systems Inc.
Type	Vapor Cycle, Electrically driven
Power	208 Vac, 3-phase, 60 hz, 4-wire
Amperes	16
Weight	818lbs
Cooling Capacity	9,000 Btu/Hr
Heating Capacity	7,000 Btu/Hr
Refrigerant Type	R-12
Refrigerant Charge	18lbs

GENERATOR SET

Refer to TM 5-6115-585-12/34 for equipment data on the generator set.

Section III. PRINCIPLES OF OPERATION

1-12. SYSTEM TECHNICAL PRINCIPLES OF OPERATION.

a. Refrigerated Container. The refrigerated container is designed for use with the Model CH-609-32 Refrigeration Unit installed on the front wall panel. Power to operate the refrigeration unit and the container interior light is provided by the 10KW generator set. The refrigerated container is a framed, insulated box that prevents the thermal transfer of heat into or out of the container. Both interior walls and the floor are ribbed to permit proper air circulation around cargo when the container is fully loaded. Two insulated and sealed exterior door panels open the full width of the container to allow easy loading and unloading. A light inside the container is controlled by a switch mounted on the interior wall. A fuel tank, mounted on the front of the container, stores extra fuel for the Generator Set.

b. Refrigeration System. Interior container temperature is controlled and maintained by the refrigeration unit mounted on and through the front wall section of the refrigerated container. The refrigeration unit consists of a condenser section and evaporator section which extends into the container. The evaporator section provides cooling by heat absorption, and heating through the use of electrical resistance elements (TM 9-4110-252-14). Electrical power to operate the refrigeration unit is supplied by the 10KW generator set. An external power source may also be used in place of the generator set.

1-13. COMPONENT TECHNICAL PRINCIPLES OF OPERATION.

a. Container. Insulation built into the walls, floor, and ceiling reduces the gain and/or loss of heat between the container interior and ambient conditions.

b. Doors. Two doors provide access to the container interior. Each door is insulated and seals tightly against the container frame when closed. The right access door contains an emergency escape door to prevent entrapment of personnel. The emergency door can only be removed from inside the container.

c. Light. The 100 watt interior light receives electrical power from the power cord plugged into the 110-volt receptacle on the generator set (refer to TM 5-6115-585-12/34). The light is controlled by a hand operated switch mounted overhead near the right door.

d. Fuel Tank. The metal 26 gallon fuel tank stores fuel for the generator set Fuel level is indicated by the float actuated fuel gage. Fuel lines connect the tank to the generator set (refer to TM 5-6115-585-12/34 for fuel line connection).

e. Temperature Recorder. The temperature recorder maintains a 24 hour record of the container's internal temperature. A sensing bulb, mounted on the inside container wall, causes the cartridge pen to move up or down on the paper chart. At the same time, a spring driven timer turns the chart paper. As the pen moves along the paper, a permanent 48 hour record of the time and temperature is made. The timer must be wound at least every 30 days.

1-13. COMPONENT TECHNICAL PRINCIPLES OF OPERATION - cont.

f. Power Cable. The power cable distributes electrical power from the generator set to the refrigeration unit. The receptacle end of the cable connects to the refrigeration unit power cable. The electrical leads on the opposite end connect to the generator set terminal box (refer to TM 5-6115-585-12/34).

g. Exhaust Extension. The exhaust extension diverts exhaust gases from the generator set to the top of the container frame. A dust cap on top of the exhaust tube prevents rain, birds, and contaminants from entering the exhaust tube.

h. Refrigeration Unit. For detailed Refrigeration Unit component principles of operation, refer to TM 9-4110-252-14.

i. Generator Set. For detailed Generator Set component principles of operation, refer to TM 5-6115-585-1134.

CHAPTER 2

OPERATING INSTRUCTIONS

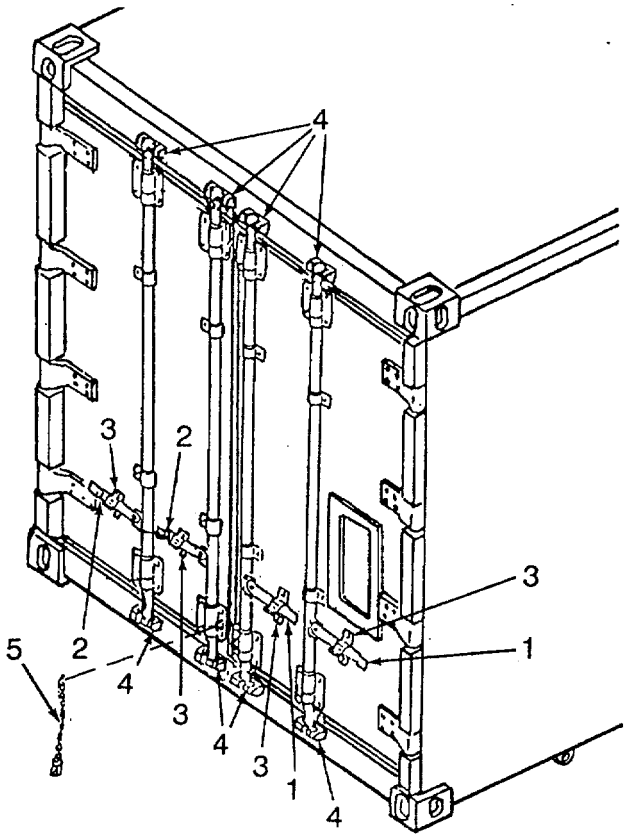
Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

This section provides the operator with information needed to locate, identify, and use the controls and indicators on the refrigerated container.

Refer to TM 9-4110-252-14 for description and use of operator's controls and indicators for the Refrigeration Unit.

Refer to TM 5-6115-85-12/34 for description and use of operator's controls and indicators for the Generator Set.

2-1. REAR DOORS.



1 Right Door Release Handles
Control right door locking and unlocking. Manually lift handle and rotate left to unlock, or right to lock. Always open right rear door first, and close last.

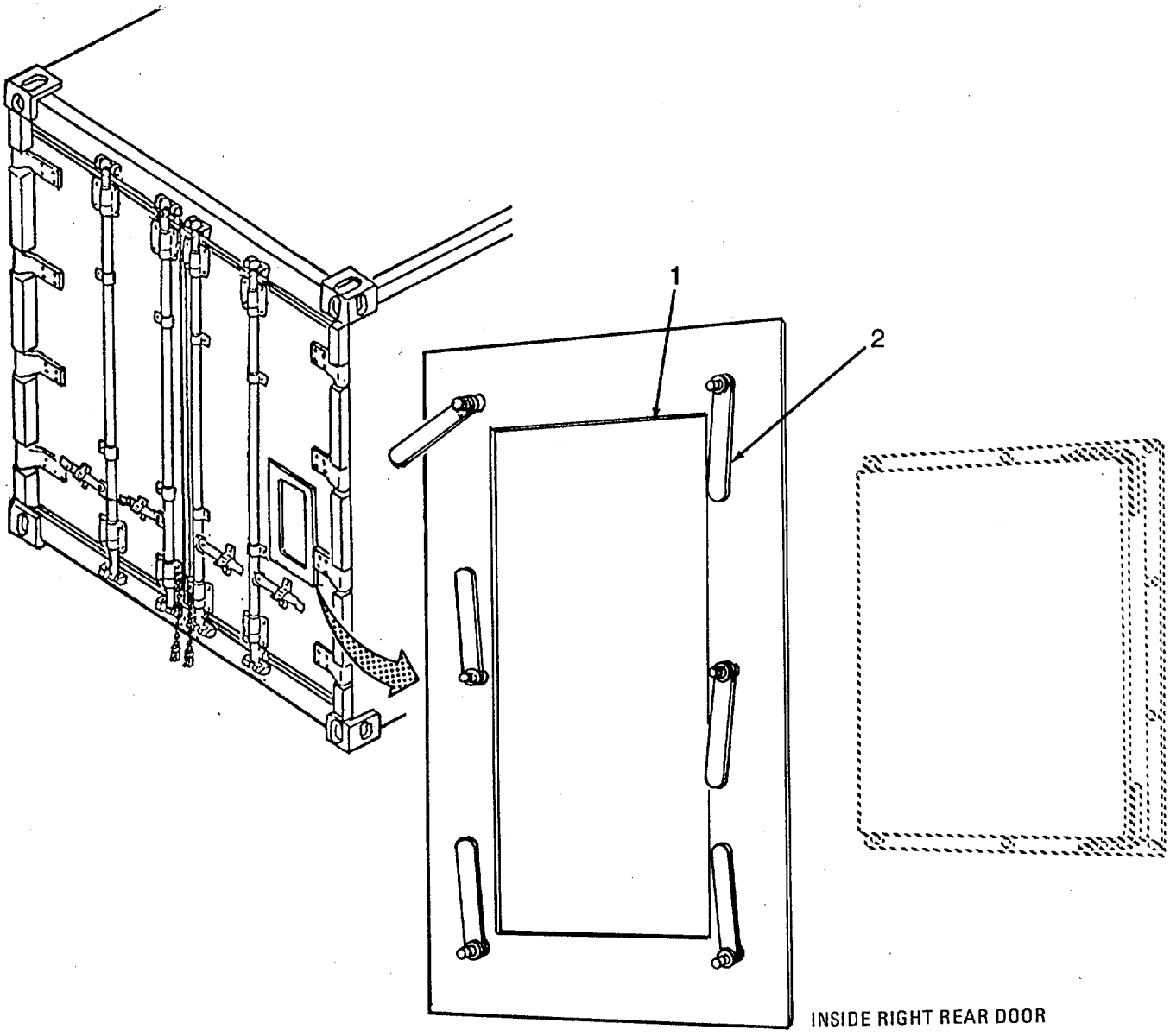
2 Left Door Release Handles
Control left door locking and unlocking. Manually lift handle and rotate right to unlock, or left to lock.

3 Handle Locks
Secure left and right rear door release handles in locked position. Hole in top and bottom of lock permits installation of padlock, clasp or similar equipment.

4 Lock Keepers
Couple with container frame when door release handles are moved to lock position.

5 Door Chains and Hooks
Attach to container hook eyes to secure left and right doors when doors are fully open.

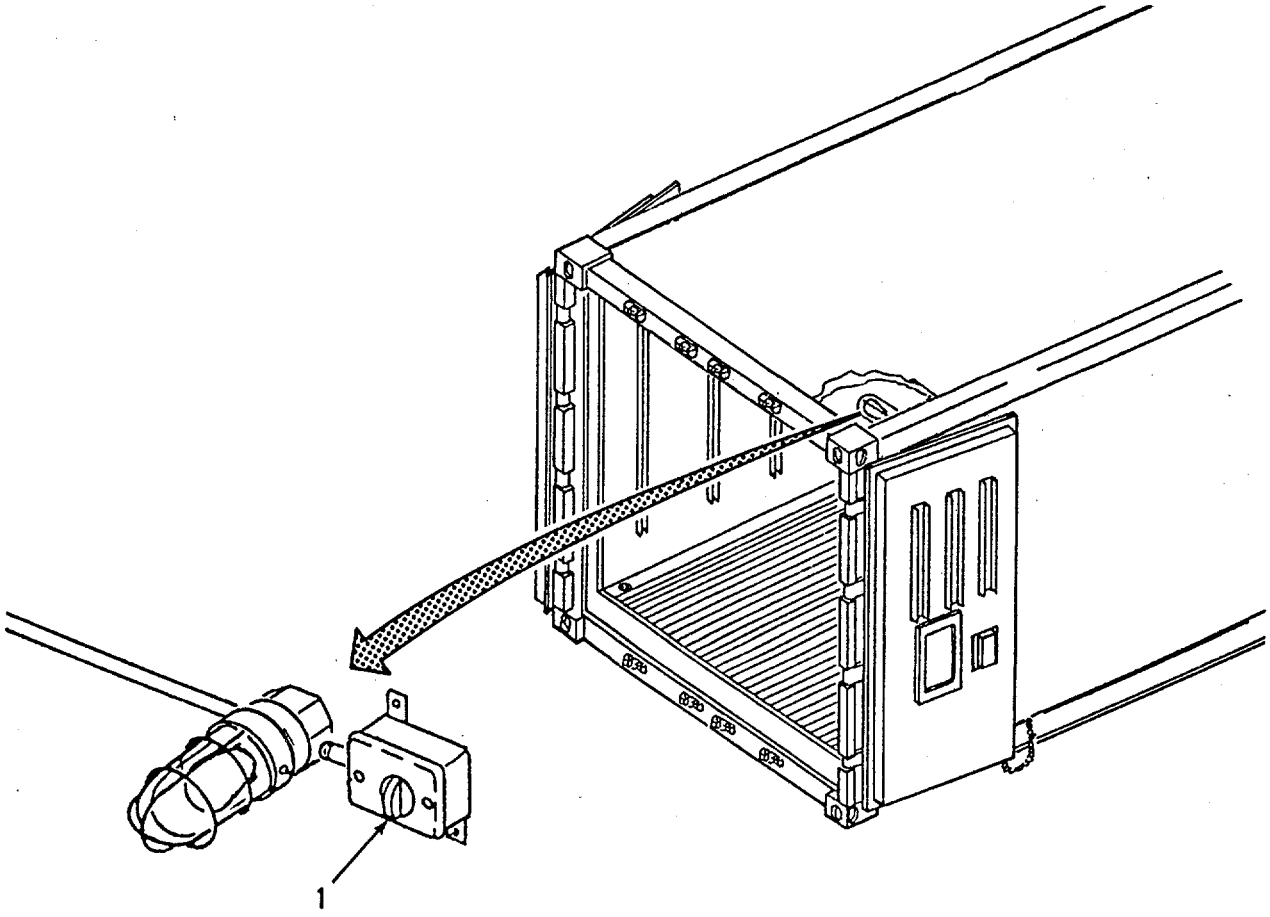
2-2. ESCAPE DOOR.



1 Escape Door
Provides emergency personnel exit from inside refrigerated container.

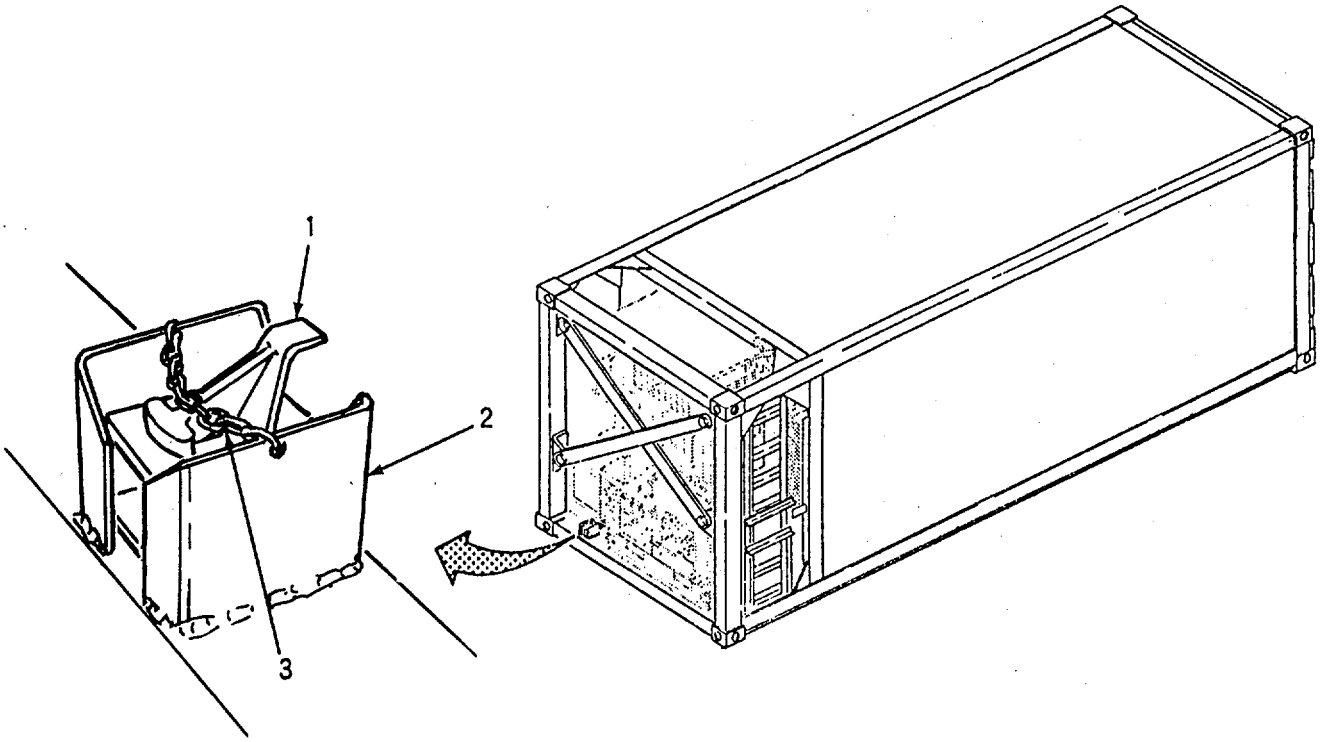
2 Escape Door Handles
Threaded handles secure escape door onto right rear door. To remove escape door, unscrew and remove six door handles. Push escape door out from rear door.

2-3. LIGHT SWITCH.



1 Light Switch
Controls interior light. Rotate switch left to turn light off. Rotate switch right to turn light on.

2-4. SPACER BLOCK.

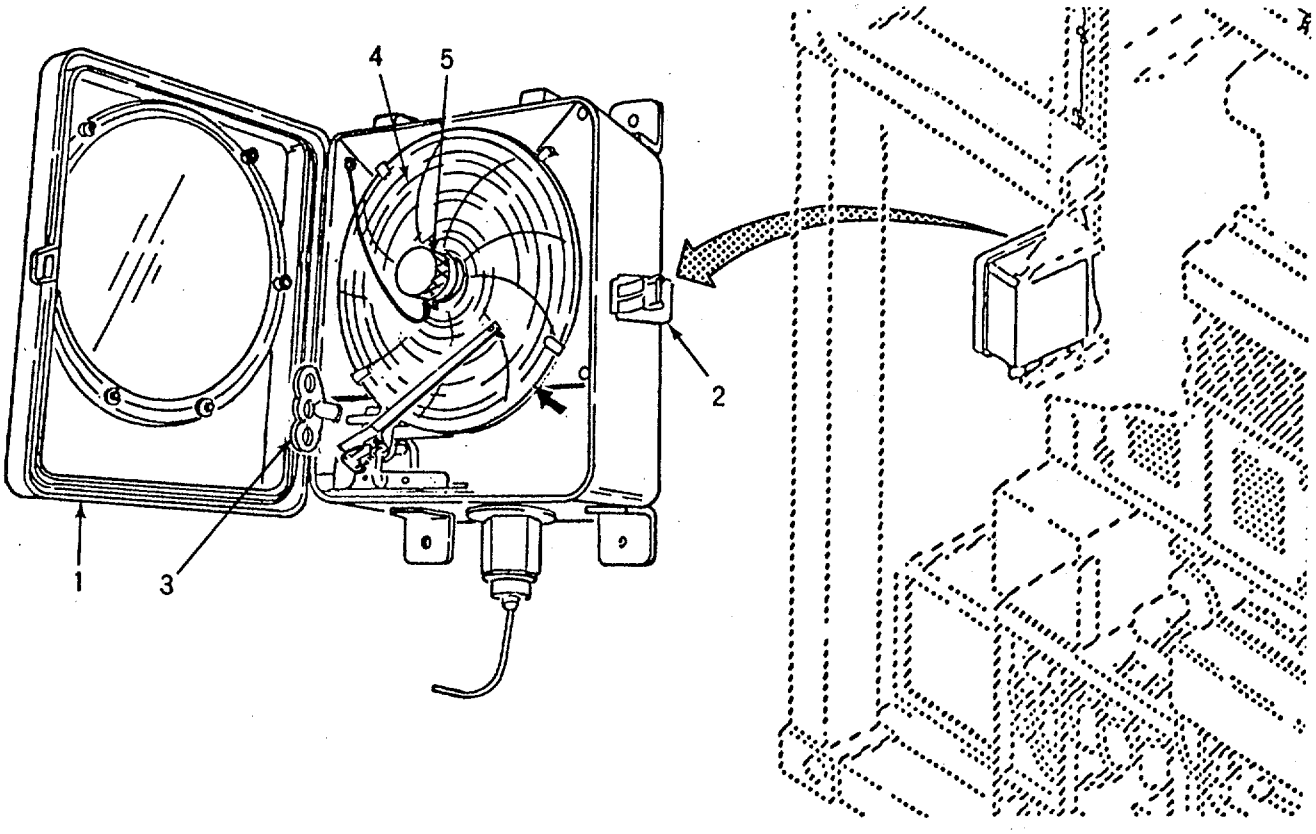


1 Spacer Block
One spacer block is provided with the container and is used when two containers are mounted front end to rear end on a 40-foot container chassis. The blocks, one fom each container are installed in the top rear corner fittings of the front container. Blocks are installed finger up into corner of fitting hole, and hang in place. To remove blocks, lift up slightly and pull outward until finger is free.

2 Storage Bracket
Provides storage for spacer block.

3 Chain
Retains spacer block in storage bracket.

2-5. TEMPERATURE RECORDER.



1 Cover
Protects temperature recorder from damage.

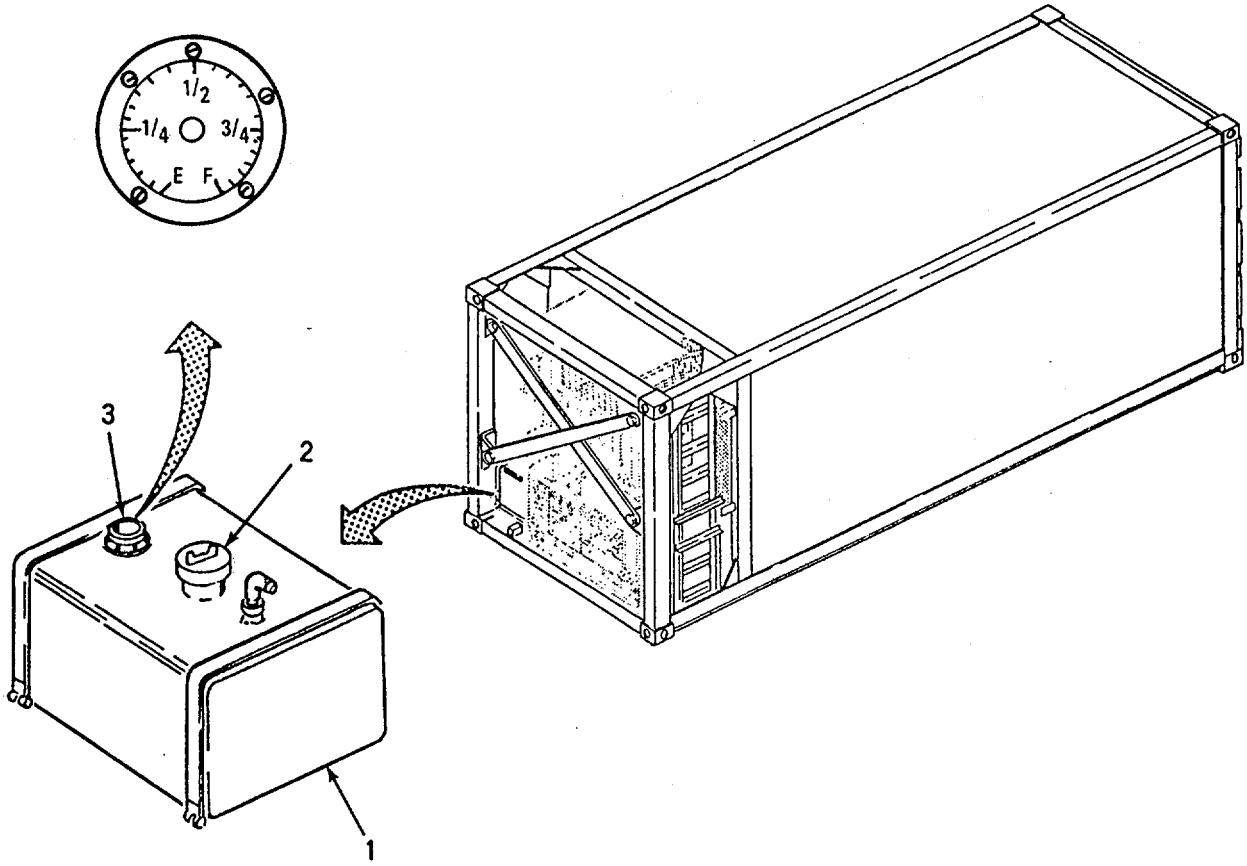
2 Latch
Fastens cover to temperature recorder frame. Lift latch handle to unfasten.

3 Key
Used to wind movement of temperature recorder. Insert key into recorder back plate and turn right (clockwise) to wind.

4 Chart
Pressure sensitive paper chart indicates temperature of container interior and time readings were made. To replace chart, remove knurled knob and remove old chart. Position new chart in recorder and install knurled knob.

5 Knurled knob
Secures paper chart to temperature recorder. Remove knob to replace paper chart

2-6. FUELTANK.



1 Fuel Tank
Stores diesel fuel for use by generator set. Refill tank before empty.

2 Filer Cap
Turn left (counterclockwise) to remove, turn right (clockwise) to install.

3 Fuel Gage
Indicates fuel level in fuel tank.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-7. GENERAL

a. The Preventive Maintenance Checks and Services presented in Table 2-1 list the inspections and care of your equipment required to keep it in good operating condition and ready for its primary mission.

b. When a check and service procedure is required for both weekly and before intervals, it is not necessary to do the procedure twice if the equipment is operated during the weekly period.

2-8. WARNINGS AND CAUTIONS.

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

2-9. PMCS TABLE.

Refer to Table 2-1 for Preventive Maintenance Checks and Services.

NOTE

Be sure to observe all special information and notes that appear in your table.

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

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

c. Location, Check/Service Column. This column provides the location and the item to be checked or serviced. The item location is underlined.

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

e. Not Fully Mission Capable If Column. Information in this column tells you what faults will keep your equipment from being capable of performing its mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

Table 2-1. Operator Preventive Maintenance Checks and Services for Model SC-219.

NOTE

If the equipment must be kept in continuous operation, do only the procedures that can be done without disturbing operation. Make complete checks and services when the equipment is shut down.

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable If:
		EXTERIOR		
1	Before	Name Plates	Inspect for missing, damaged or illegible name plates.	
2	Before	Door Hardware (Rear Doors)	a. Inspect for bent or broken door release handles.	Any release handle broken off or badly bent.
			b. Inspect for broken or missing handle locks.	
			c. Inspect for broken lock keepers.	Lock keeper broken.
			d. Inspect for loose or missing fasteners.	
3	Before	Doors (Rear)	a. Inspect door exterior for obvious damage, cracks, splits, or delamination.	Door panel split or badly cracked.
			b. Inspect door hinges for cracks and missing fasteners.	Door hinge cracked top to bottom.
			c. Inspect container frame around doors for cracks, splits, and broken welds.	Container frame cracked.
4	Before	Left Side Panel	a. Inspect for obvious damage, cracks, splits or delamination.	Side panel split, cracked or punctured through interior.
			b. Check for loose or missing fasteners.	
			c. Inspect container upper and lower side frame for cracks, splits, and broken welds.	Container frame cracked.
5	Before	Ladder	Inspect ladder for cracked welds and bent frame.	

Table 2-1. Operator Preventive Maintenance Checks and Services for Model SC-219 - cont.

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable If:
6	Before	Roof Panel	a. Inspect for obvious damage, cracks, splits or delamination.	Roof panel split, cracked or punctured through to interior.
			b. Check for loose or missing fasteners.	
			c. Inspect container upper side frame for cracks, splits, and broken welds.	Container frame cracked.
7	Before	Refrigeration Unit	a. Check for loose or missing bolts securing refrigeration unit to container.	Mounting bolts missing.
			b. Perform Before PMCS on refrigeration unit (TM 9-4110-252-14).	
8	Before	Generator Set	a. Check for loose or missing bolts securing generator set to container.	Mounting bolts missing.
			b. Perform Before PMCS on generator set (TM5-6115-585-12/34	
9	Before	Electrical Cables	a. Inspect for cuts, deep abrasions, and burned or discolored wiring.	Cables cut or burned.
			b. Check that cable connections to refrigeration unit and generator set are secure.	
10	Before	Fuel Tank	a. Check fuel level in tank. If low, remove filler cap and add fuel as required.	
			b. Inspect fuel tank, lines, and connections for leaks.	Fuel tank leaks.
			c. Inspect fuel tank gage for damaged or missing indicator.	

Table 2-1. Operator Preventive Maintenance Checks and Services for Model SC-219 - cont.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
11	Before	Temperature Recorder	a. Inspect cover for damaged or missing latch. b. Inspect for cracked or missing cover glass. c. Inspect for loose sensing bulb connection at bottom of recorder.	
12	Before	Right Side Panel	a. Inspect for obvious damage, cracks, splits or delamination. b. Check for loose or missing fasteners. c. Inspect container upper and lower side frame for cracks, splits, and broken welds.	Side panel split, cracked or punctured through interior. Container frame cracked.
		INTERIOR		
13	Before	Rear Doors	Open rear doors and inspect right and left door seals for cuts, tears and loose seal material.	Door seal badly torn.
14	Before	Light	With power applied, rotate light switch to on position. Check that bulb lights up.	
15	Before	Floor	a. Inspect container floor for punctures and obvious damage. b. Inspect floor for blocked or clogged drain screens (one at each corner). Clean screens as required.	Floor punctured through to exterior.
		EXTERIOR		
16	During	Refrigeration Unit	Perform During PMCS on refrigeration unit per TM9-4110-252-14.	Refrigeration unit not operational.
17	During	Generator Set	If required for operation, perform During PMCS on generator set per TM5-6115-585-12/34.	Generator set not operational.

Table 2-1. Operator Preventive Maintenance Checks and Services for Model SC-219 - cont.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
18	During	Temperature Recorder	Verify that recorder is operating.	
19	During	Fuel Tank	a. Check fuel level. Refuel as required (para 2-10). b. Inspect fuel tank, fuel line and connections for leaks.	Fuel tank, lines, or connections leak.
		INTERIOR		
20	During	Container Interior	Check free flow of air over cargo. There must be at least one foot of space between top of cargo and container ceiling. Make sure cargo does not block evaporator section of refrigeration unit on front container wall.	

Section III. OPERATION UNDER USUAL CONDITIONS

2-10. ASSEMBLY AND PREPARATION FOR USE.

a. Fuel Tank. Before using the refrigerated container, fill the fuel tank (2) as follows:

(1) Remove fuel tank filler cap (1).

WARNING

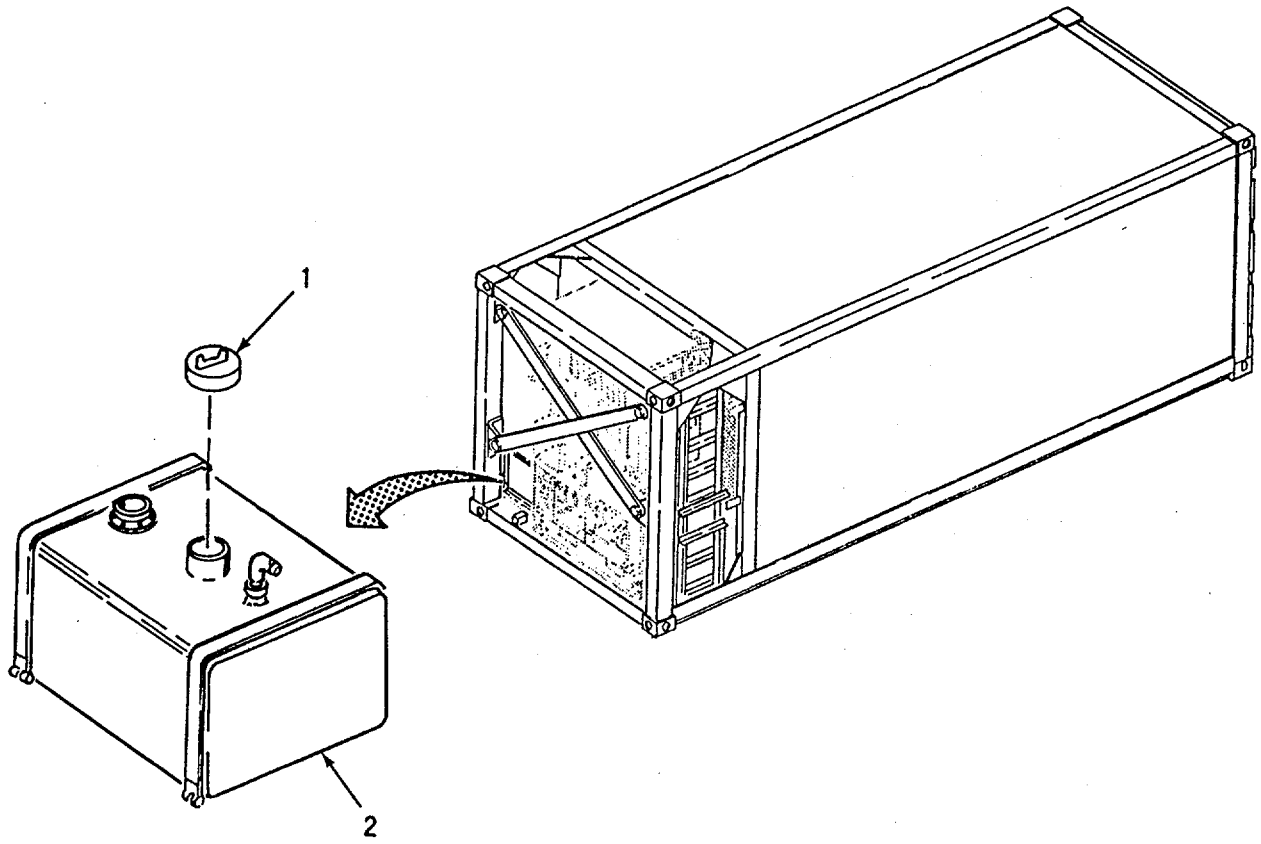
To prevent injury to personnel and damage to equipment, do not fill fuel tank above white line marked on side of tank. Movement of refrigerated container during transport will cause fuel to spill if tank is over filed.

CAUTION

To prevent damage to generator set, use only fuels specified in the generator set manual (TM 5-6115-585-12/34).

(2) Fill fuel tank (2) to level marked on side of tank.

(3) Install fuel tank filler cap (1).



2-10. ASSEMBLY AND PREPARATION FOR USE - cont.

b. Temperature Recorder. Before using the refrigerated container, prepare temperature recorder as follows:

(1) Unfasten latch (6) and open cover (1).

(2) Depress stylus lifter (9). Make sure stylus (7) clears paper chart (5).

(3) Remove knurled knob (2) from of chart platen (3).

(4) If installed, remove old paper chart (5).

CAUTION

To prevent damage to temperature recorder, do not over wind timer movement.

(5) Insert winding key (11) into winder hole (10) and wind timer movement clockwise. Be careful not to over wind.

NOTE

Spare charts are stored in the document holder.

(6) Position new chart (5) on chart platen (3). Make sure chart fits under four guide tabs (4) on face plate (8).

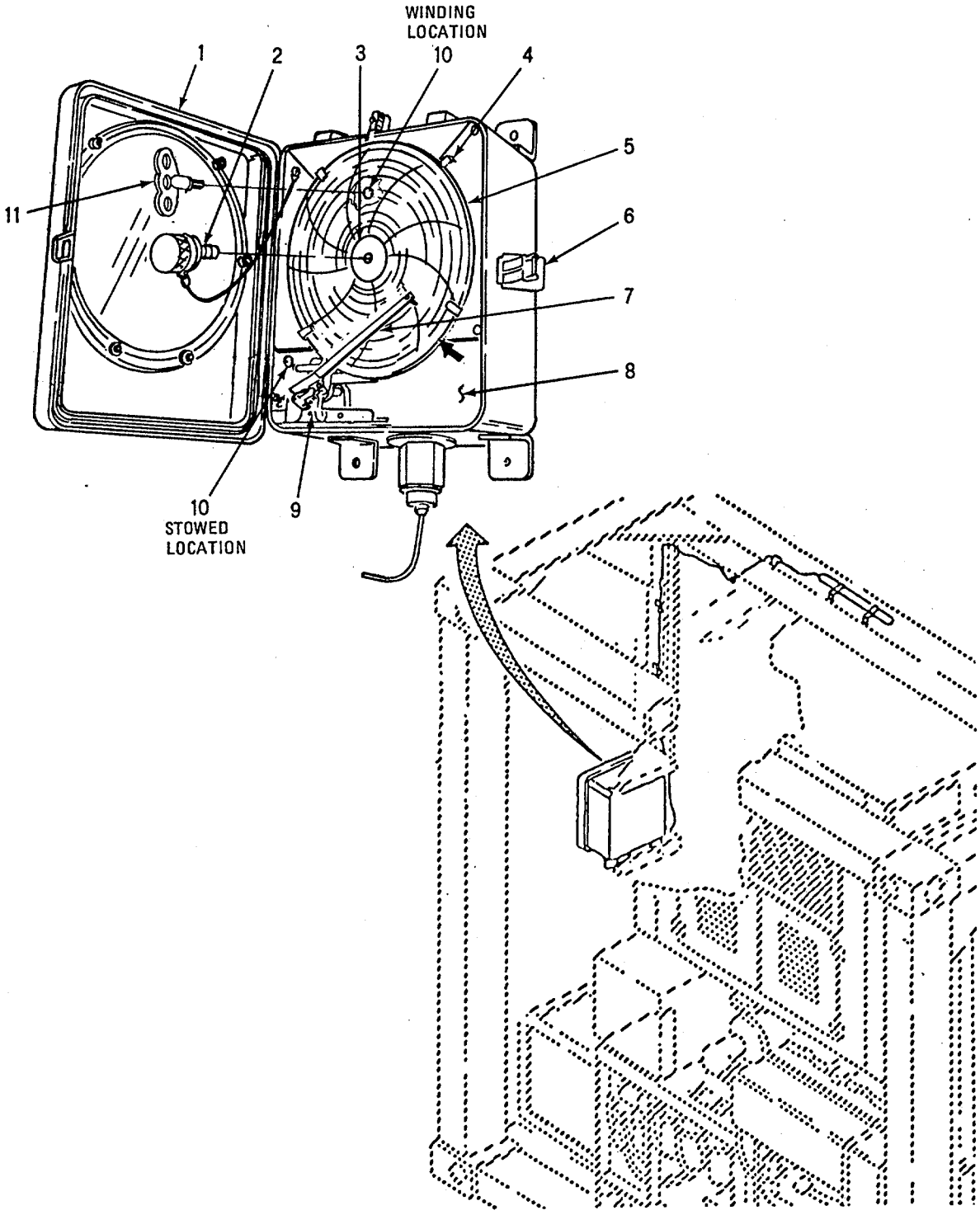
(7) Rotate chart (5) so that correct day (1 to 31) and morning (M) or night (N) is alined with STARTING TIME arrow on face plate (8).

(8) Install knurled knob (2) on chart platen (3).

(9) Slowly release stylus lifter (9) so that stylus rests on chart (4).

(10) Close cover (i) and fasten latch (6).

2-10. ASSEMBLY AND PREPARATION FOR USE - cont.



2-10. ASSEMBLY AND PREPARATION FOR USE - cont.

c. Refrigeration Unit. Perform assembly and preparation for use instructions contained in TM 9-4110-252-14.

d. Power Source.

(1) Generator Set. If the generator set is being used to power the refrigeration unit, perform assembly and preparation for use instructions contained in TM 5-6115-585-12/34.

(2) External Power Source. If an external electrical source is being used to power the refrigeration unit, perform assembly and preparation for use instructions contained in the applicable power source manual.

2-11. INITIAL ADJUSTMENT.

a. Refrigerated Container. No initial adjustment of the refrigerated container is required.

b. Refrigeration Unit. Perform initial adjustment instructions in accordance with TM 9-4110-252-14.

c. Power Source

(1) Generator Set. Perform initial adjustment instructions in accordance with TM 5-6115-585-12/34.

(2) External Power Source. Perform initial adjustment instructions in accordance with the applicable power source manual.

2-12. OPERATING PROCEDURES.

a. Starting.

(1) Verify that both rear doors are closed.

(2) Start and operate generator set (refer to TM 56115-585-1234). If external power is being used, verify that power cable is connected to refrigeration unit (TM 9-4110-252-14).

(3) Start and operate refrigeration unit (refer to TM 9-4110-252-14).

NOTE

Temperature inside the refrigerated container may take up to five hours to reach selected thermostat setting.

(4) Check temperature indication on temperature recorder and refrigeration .unit (TM 9-4110-252-14). Allow refrigeration unit to operate until container interior reaches setpoint temperature (thermostat setting).

b. Open Rear Doors.

NOTE

Always open right rear door first.

(1) On right door (2), rotate top handle lock (4) upward to clear door release handle (5).

(2) Rotate door release handle (5) until clear of bottom handle lock (6).

(3) Rotate door release handle (5) to left until lock cams (and 7) are clear of container frame (17).

(4) Repeat steps (1), (2), and (3) for other release handle (8).

WARNING

To prevent injury to personnel and damage to the equipment, make sure doors are secured to container with chains when in the open position.

(5) Open right door (2) and secure to container frame (17) with chain (9).

(6) On left door (15), rotate top handle lock (14) upward to clear door release handle (13).

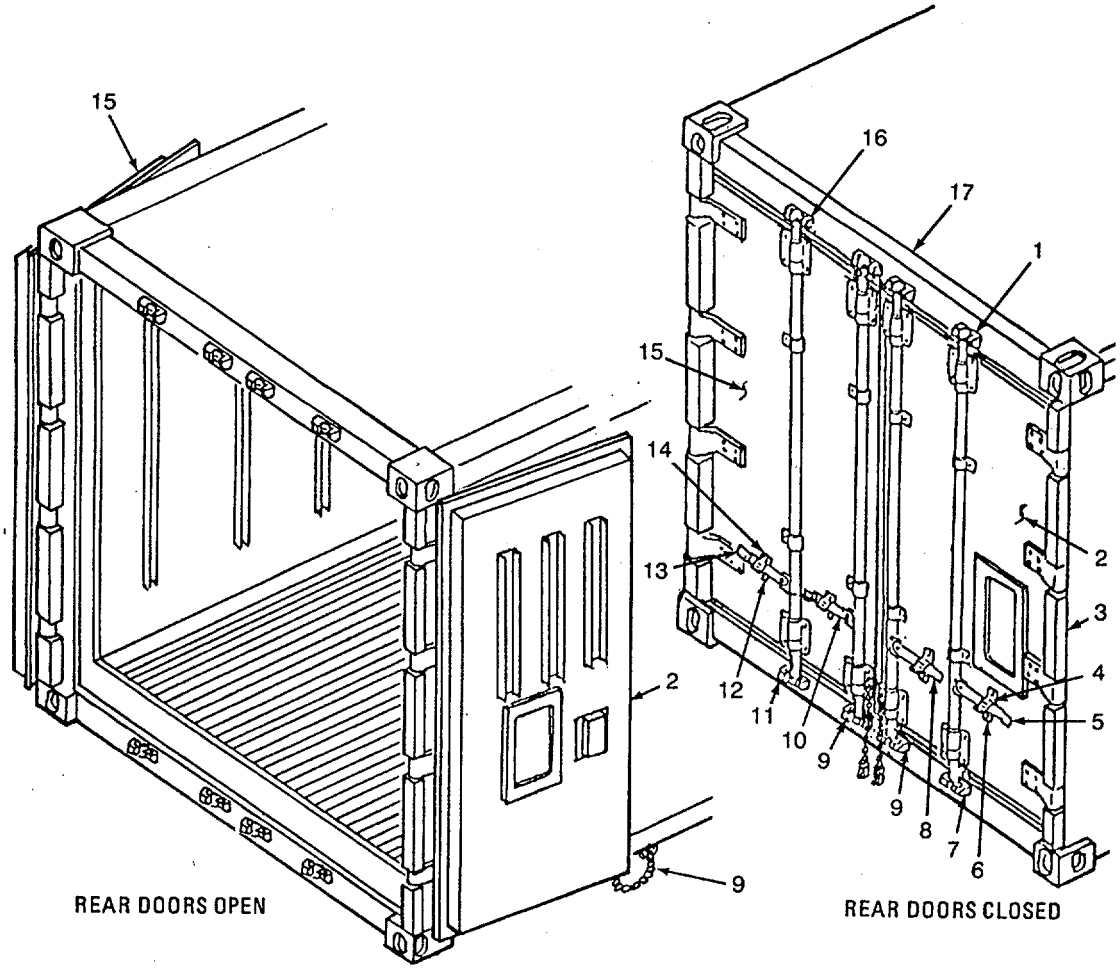
(7) Lift door release handle (13) until clear of bottom handle lock (12).

(8) Swing door release handle (13) to right until lock cams (16 and 11) are clear of container frame (17).

(9) Repeat steps (6), (7) and (8) for other release handles (10).

(10) Open left door (15) and secure to container frame (17) with chain (9).

2-12. OPERATING PROCEDURES - cont.



2-12. OPERATING PROCEDURES- cont.

c. Load Container.

CAUTION

- To prevent heavy sweating and frosting of evaporator coils and container walls, shut down refrigeration unit if doors must be open for a long time.
- To ensure proper operation of the refrigerated container, air flow around cargo must be clear of obstructions. Observe the following precautions when loading cargo in the container:

  Leave a one foot space between the top of the cargo and the ceiling of the container.

  Make sure that cargo does not block refrigeration unit evaporator coil on container front wall.

  Make sure that air from the refrigeration unit can flow under and around cargo.

Stack container with cargo. Refer to AR 700-15 (Packaging of Materiel) and AR 746-1 (Packaging of Army Materiel for Shipment and Storage).

d. Close Rear Doors.

WARNING

To prevent death or injury to personnel, make sure all personnel are clear of container before closing rear doors.

(1) Inspect container interior. Verify that all personnel are out of container.

CAUTION

Left rear door must be closed before right rear door. Failure to close left door first can result in damage to door frames and will prevent proper sealing.

(2) Release left door chain (9) from container frame (17) and close left door (15).

(3) Swing door release handle (13) to left until lock cams (16 and 11) mate with container frame (17).

(4) Push door release handle (13) down into bottom of handle lock (12).

(5) Rotate top handle lock (14) down over door release handle (13).

(6) Repeat steps (3), (4), and (5) for other left door release handle (10).

(7) Release door chain (9) from container frame (17) and close right door (2).

2-12. OPERATING PROCEDURES - cont.

(8) Swing door release handle (5) to right until lock cams (1 and 7) mate with container frame (17).

(9) Push door release handle (5) down into bottom of handle lock (6).

(10) Rotate top handle lock (4) down over door release handle (5).

(11) Repeat steps (8), (9) and (10) for other release handle (8).

e. Continuous Operation.

(1) Monitor temperature indication on temperature recorder. Make sure temperature is correct for the type of cargo being stored in container.

(2) Check operation of refrigeration unit. Refer to TM 9-4110-252-14 or normal indications.

(3) Check operation of generator set or external power source. Refer to TM 5-6115-585-12/34 for generator set normal indications.

(4) Monitor fuel level in fuel tank. Add fuel as required.

f. Stopping.

(1) Shutdown refrigeration unit (TM 9-4110-252-14).

(2) Shutdown generator set (TM 5-6115-585-12/34).

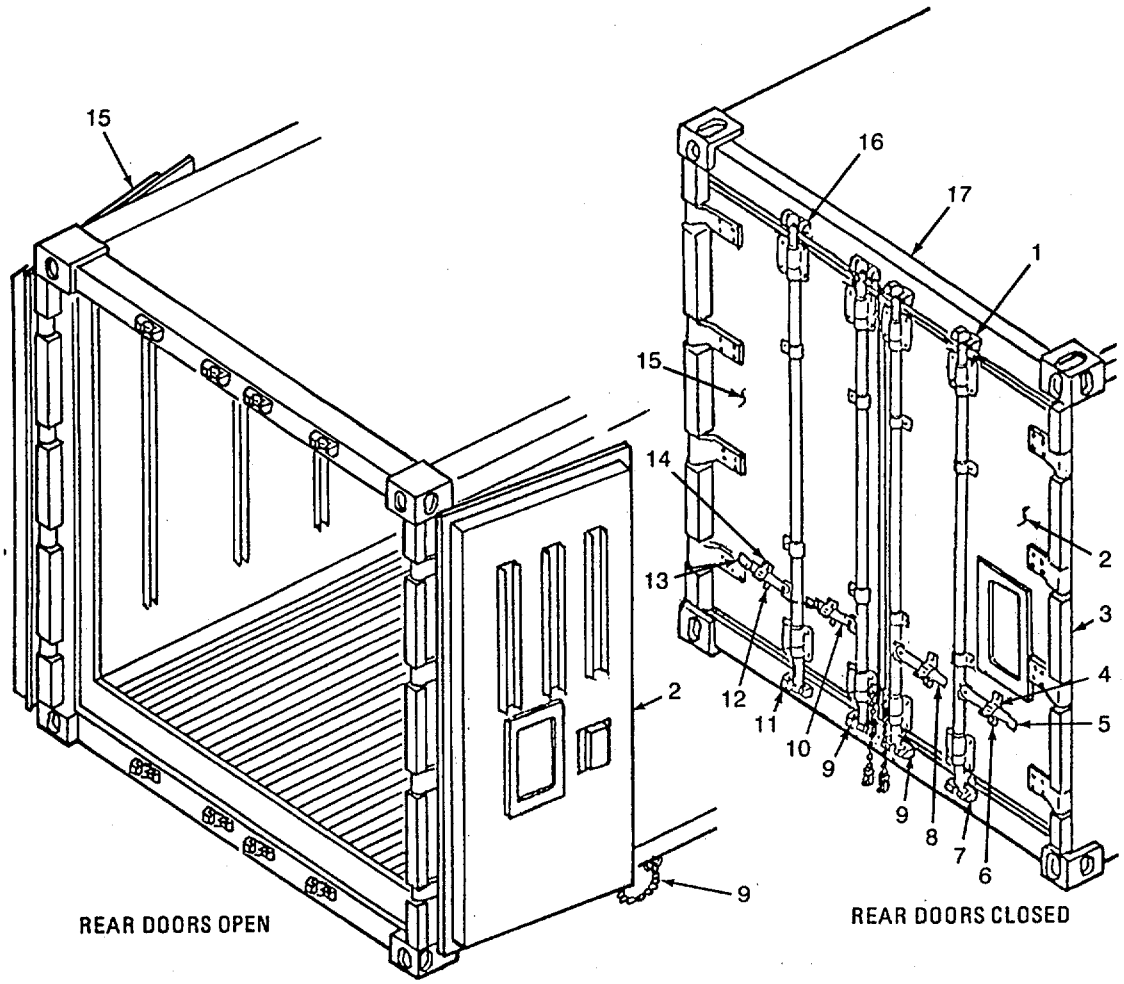
g. Unloading.

(1) Open rear doors (para. 2-12b)

(2) Unload refrigerated container. Refer to :Refer to AR 700-15 (Packaging of Materiel) and AR 746-1 (Packaging of Army Materiel for Shipment and Storage).

(3) Close rear doors (para. 2-12d).

2-12. OPERATING PROCEDURES - cont.

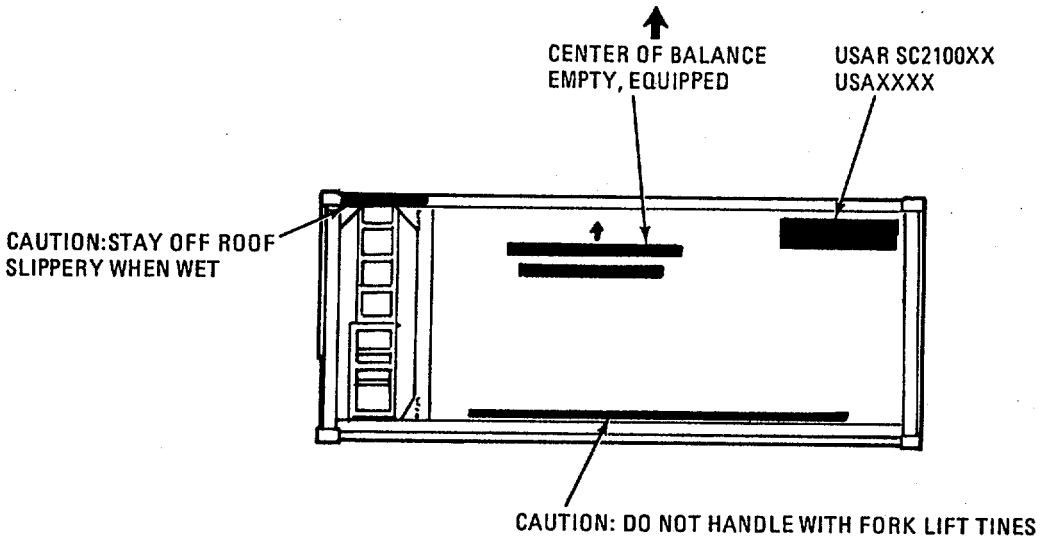


2-13. DECALS AND INSTRUCTION PLATES.

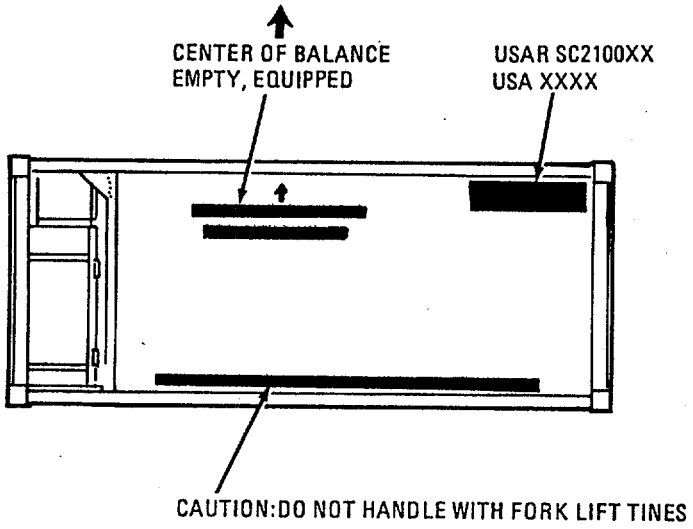
a. For decals and instruction plates on the refrigeration unit, refer to TM 9-4110-252-14.

b. For decals and instruction plates on the generator set, refer to TM 5-6115-585-12/34.

c. Instruction plates and stencils are used on the refrigerated container to advise the operator of proper operating procedures, additional operating information, and cautions to be observed during use of the equipment. The following illustrations show where identification plates and stencils are located on the container.

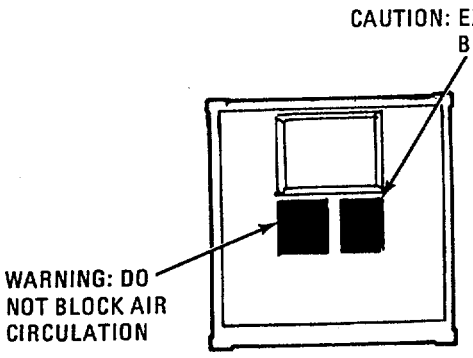


(CONTAINER EXTERIOR VIEW, LEFT SIDE PANEL)

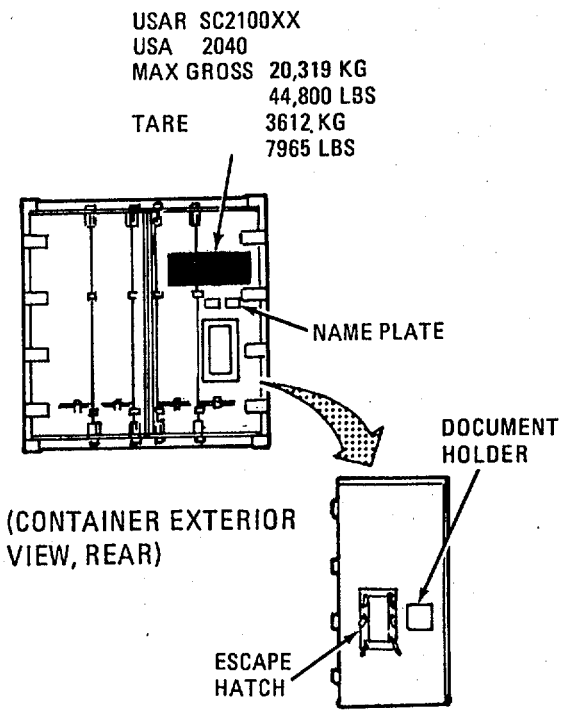


(CONTAINER EXTERIOR VIEW, RIGHT SIDE PANEL)

2-13. DECALS AND INSTRUCTION PLATES- cont.

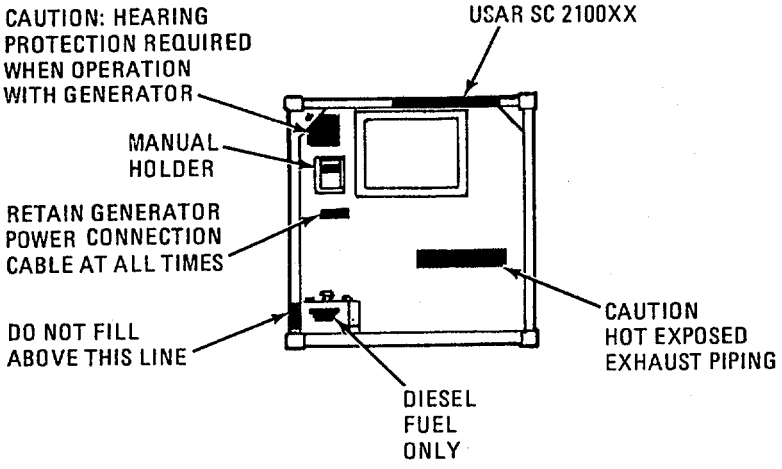


(CONTAINER INTERIOR VIEW, FRONT PANEL)



(CONTAINER EXTERIOR VIEW, REAR)

(INSIDE RIGHT DOOR)



(CONTAINER EXTERIOR VIEW, FRONT

NOTE: XX REPESENTS LAST TWO DIGITS OF SERIAL NUMBER

2-14. PREPARATION FOR MOVEMENT.

a. Preparation.

CAUTION

To prevent damage to container cargo, make sure cargo is securely packed in container.

(1) Check container cargo. Make sure all boxes and packages are properly secured. Refer to AR 746-1, Packaging of Army Materiel for Shipment and Storage.

(2) Verify that no personnel are inside the container.

(3) Verify that all doors and guards are installed and securely fastened.

(4) Check temperature recorder indication. Verify container temperature is correct for type of cargo being stored. If required, allow refrigeration unit to operate until temperature has stabilized.

CAUTION

To prevent damage to cargo, make sure electrical power, external or generator set, is available at new work site. Refrigeration unit should only be shutdown for short periods of time as required to load/unload container from transport vehicle.

(5) Shutdown refrigeration unit (TM 9-4110-252-14).

(6) If generator set is being used, shutdown generator set (TM 5-6115-585-12/34).

(7) If external power is being used, shutdown power source (power source manual). Disconnect refrigeration unit external power cable from power source (TM 9-4110-252-14).

b. Movement.

WARNING

- A loaded refrigerated container is extremely heavy. To prevent injury to personnel and damage to equipment, use a hoist and sling rated at a minimum capacity of 40 tons (80,000 pounds).
- Commercial container handling equipment (cranes, top-lift devices, front and side loaders and self loading transporters) is suitable for handling the refrigerated container.
- Always use spreader frame when top lifting container.
- Containers must be lifted vertically from four corner fittings.

2-14. PREPARATION FOR MOVEMENT- cont.

- Do not lift container with cable slings at an angle.
- Never use fork lift to move, lift or push container unless forklift is designed for use with MIL-VAN.

(1) Have refrigerated container loaded onto trailer/chassis, railway car, or ship as required.

(2 If container will be operated off external power, connect refrigeration unit power cable to power source.

(3) If container will be operated off generator set, start generator (TM 5-6115-585-12/34).

(4) Start refrigeration unit (TM 9-4110-252-14).

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-15. OPERATION IN EXTREME COLD (BELOW 0 °F).

CAUTION

In extremely cold weather, if the rear doors remain open for a long period of time, the door seals become hard and brittle. The rear doors will be difficult to close and the seals will be damaged. Warm seals before closing rear doors doors.

To warm the rear doors seals during extremely cold weather, proceed as follows:

(1) Start generator set (TM 5-6115-585-12/34) or external power source (power source manual).

(2) Start refrigeration unit and operate in heating mode (TM 9-4110-252-14).

(3) Close rear doors as much as possible without compressing door seals. Do not close door release handles.

(4) Allow refrigeration unit to operate in heating mode until doors seals warm up. When warm, doors seals will be soft and flexible.

CAUTION

To prevent damage to rear door seals, keep doors closed during extremely cold weather. Open only for loading or unloading.

(5) Close rear doors.

(6) Refer to TM 9-4110-252-14 for operation of the refrigeration unit in extreme cold.

(7) Refer to TM 5-6115-585-12/34 for operation of the generator set in extreme cold.

2-16. OPERATION IN EXTREME HEAT.

Observe the following precautions when operating the refrigerated container in extreme heat:

(1) If possible, keep container out of direct sunlight. Shade container with a tarp or similar type cover.

(2) Do not block air circulation around refrigeration unit. Keep area clear of equipment and other obstructions.

(3) Periodically inspect refrigeration unit condenser coils. Coils must be kept clean. Refer to TM 9-4110-252-14 for cleaning instructions

(4) Periodically inspect refrigeration unit evaporator coils (inside container). If frost becomes 1/8 to 1/2 inch thick before unit defrosts, perform manual defrosting of refrigeration unit (TM 9-4110-252-14).

(5) Refer to TM 9-4110-252-14 for operation of the refrigeration unit in extreme heat.

2-16. OPERATION IN EXTREME HEAT- cont.

(6) Refer to TM 5-6115-585-12/34 for operation of the generator set in extreme heat.

2-17. OPERATION IN RAINY OR HUMID CONDITIONS.

Observe the following precautions when operating the refrigerated container in rainy or humid conditions:

(1) To prevent frosting of container interior, rear doors should be opened only for loading or unloading.

(2) If possible, keep refrigeration unit and generator set sheltered from rain.

(3) Make sure generator set is properly grounded to prevent electrical shock (TM 5-6115-58-12/34).

(4) Periodically inspect refrigeration unit evaporator coils (inside container). If frost becomes 1/8 to 1/2 inch thick before unit defrosts, perform manual defrosting of refrigeration unit (TM 9-4110-252-14).

(5) Refer to TM 9-4110-252-14 for operation of the refrigeration unit in rainy or humid conditions.

(6) Refer to TM 5-6115-585-12/34 for operation of the generator set in rainy or humid conditions.

2-18. OPERATION IN SALT WATER AREAS.

Operation in salt water areas accelerates corrosion on bare metal surfaces. Observe the following precautions when operating the refrigerated container in saltwater areas:

(1) Carefully inspect container before use. If bare metal is fund, notify unit maintenance to preserve or paint the metal as required.

(2) Following operation in salt water areas, rinse outside of refrigerated container with clean fresh water to remove salt spray and/or deposits. Use care not to get water in refrigeration unit, generator set, or wiring.

(3) Refer to TM 9-4110-252-14 for operation of the refrigeration unit in salt water areas.

(4) Refer to TM 5-6115-585-12/34 for operation of the generator set in salt water.

2-19. OPERATION IN HIGH ALTITUDES.

a. Elevations Up To 5,000 Feet. The refrigerated container and refrigeration unit are designed to operate at elevations up to 5,000 feet above sea level without special servicing or adjustments.

b. Elevations Above 5,000 Feet. At elevations greater than 5,000 feet above sea level output of the refrigeration unit will be reduced. The refrigeration unit will take longer to cool down the container during startup, and it will run longer during each cooling cycle. Refer to TM 9-4110-252-14 for operating the refrigeration unit at high altitudes.

2-20. GENERAL CLEANING AND DECONTAMINATION.

a. Wash the exterior of the refrigerated container with any suitable detergent. Thoroughly rinse with fresh water and allow to air dry.

NOTE

Each deck stored container must be washed by using organization after each ocean voyage to retard deterioration.

b. For decontamination, procedures required by TM 743-200 and FM 3-5 shall apply.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

There are no operator lubrication requirements for the refrigerated container.

Refer to TM 9-4110-252-14 for lubrication requirements on the refrigeration unit.

Refer to TM 5-6115-585-12/34 for lubrication requirements on the generator set.

Section II. OPERATOR TROUBLESHOOTING

3-1. INTRODUCTION.

a. The troubleshooting table lists the common malfunctions which you may find during operation of the refrigerated container. You should perform the tests, inspections and corrective actions in the order they appear in the table.

b. This table cannot list all the malfunctions that may occur, all the tests or inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

c. Refer to TM 9-4110-252-14 for troubleshooting malfunctions on the refrigeration unit.

d. Refer to TM 5-6115-585-12/34 r troubleshooting malfunctions on the generator set.

3-2. MALFUNCTION INDEX

3-3. TROUBLESHOOTING TABLE

Refer to Table 3-1.

Table 3-1. Operator Troubleshooting

WARNING

Be sure to read ALL Warnings in front of manual before troubleshooting.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. REAR DOORS WILL NOT CLOSE.

Step 1. Verify that left rear door was closed before right door.

Close left door, then right door.

Step 2. Inspect for cargo, rocks, or packaging material between doors and container frame.

Remove obstructions from container opening.

Step 3. Inspect for bent, broken, or twisted door latch hardware.

2. WATER WILL NOT DRAIN FROM CONTAINER FLOOR.

Step 1. Check for clogged floor drain screens.

Clean floor drain screens.

NOTE

Drain hose is flat. Do not mistake flat hose for kinks.

Step 2. Check for kinked, twisted or folded drain hoses under corners of container.

Straighten drain hose. Hose should hang straight down.

3. TEMPERATURE RECORDER DOES NOT RECORD OR DOES NOT RECORD PROPERLY.

Step 1. Verify that temperature recorder has been wound.

Wind temperature recorder (para. 2-10a).

Step 2. Check for loose knurled nut securing paper chart to recorder platen.

Tighten knurled nut.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. TEMPERATURE RECORDER DOES NOT RECORD OR DOES NOT RECORD PROPERLY - cont.

Step 3. Check that stylus is in contact with paper chart.

If stylus is bent, damaged or defective, notify unit maintenance.

4. TEMPERATURE INSIDE CONTAINER WILL NOT STABILIZE.

Step 1. Check for improperly stacked cargo inside container.

Restack cargo as required so that:

a. Cargo does not block refrigeration unit evaporator coil (on container front wall).

b. Cargo is stacked no higher than one foot from container ceiling.

c. Air can circulate between cargo and container side walls.

Step 2. Check for open or unlatched rear doors.

Close and latch doors.

Step 3. Check for loose escape door.

Open rear doors.

Tighten escape door handles.

Step 4. Inspect rear doors for damaged or missing seals.

If doors are damaged or defective, notify unit maintenance.

Step 5. Check operation of refrigeration unit (TM 9-4110-252-14).

Troubleshoot refrigeration unit malfunctions in accordance with TM 9-4110-252-14.

Step 6. Check generator set for proper power output (TM 5-6115-585-12/34).

Troubleshoot generator set malfunctions in accordance with TM 5-6115-585-12/34.

Table 3-1. Operator Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

5. GENERATOR SET NOT OPERATING PROPERLY.

Troubleshoot generator set malfunctions in accordance with TM 5-6115-585-12/34.

Section III. OPERATOR MAINTENANCE PROCEDURES

a. Refer to TM 9-4110-252-14 for operator maintenance procedures applicable to the refrigeration unit.

b. Refer to TM 5-6115-585-12/34 for operator maintenance procedures applicable to the generator set.

c. There are no operator maintenance tasks requirements on the refrigerated container.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS AND SPECIAL TOOLS LIST

4-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970 or CTA 8-100, applicable to your unit,

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Refer to the Appendix B of this manual for special tools, TMDE, and support equipment..

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in the repair parts and special tools list, TM 55-8145-201-24P, covering unit direct support, and general support maintenance of this equipment.

Section II. SERVICE UPON RECEIPT

4-4. SITE AND SHELTER REQUIREMENTS.

a. Siting.

(1) Transport. The refrigerated container is designed for highway, railway and water transport of perishable materials. Load and transport the refrigerated container only on equipment compatible with MIL-VAN transport requirements.

(2) Fixed Site. When operating the refrigerated container at a fixed site, select an area that is flat and level, and provides good water drainage away from container. If the refrigeration unit will be powered by an external electrical source, the refrigerated container must be located within 20 feet of the electrical source.

(3) Refer to TM 9-4110-252-14 for applicable refrigeration unit siting requirements.

(4) Refer to TM 5-6115-585-12/34 for applicable generator set siting requirements.

b. Shelter Requirements.

The refrigerated container does not require special sheltering. If shelter is available, storing the container under cover will minimize routine maintenance.

4-5. SERVICE UPON RECEIPT OF MATERIEL.

a. Checking Unpacked Equipment

(1) Inspect container frame, corner posts, and upper and lower fittings for damage. Containers damaged in these areas should not be used.

(2) Inspect container exterior wall panels and roof for punctures, tears, cracks, delamination of panels and loose or missing fasteners.

(3) Inspect for loose, missing, or broken door hardware.

(4) Inspect container interior for punctures tears, cracks, and delamination of wall and ceiling panels.

(5) Inspect container stencils, markings and information plates. All items should be clear and readable.

(6) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

(7) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750 or DA Pam 738-751 as applicable.

(8) Check to see if the equipment has been modified.

(9) Refer to TM 9-4110-252-14 for unpacking the refrigeration unit.

(10) Refer to TM 5-6115-58-12/34 for unpacking the generator set.

b. Processing Unpacked Equipment.

(1) Remove all preservative coatings, grease, tape and packing materials.

(2) Refer to TM 9-4110-252-14 for processing and servicing of the refrigeration unit.

(3) Refer to TM 5-6115-585-12/34 for processing and servicing of the generator set.

4-6. INSTALLATION INSTRUCTIONS.

a. General.

(1) Electrical power required to operate the refrigeration unit can be supplied by the generator set or an external power source. Conversion of the refrigeration unit from one power source to the other is accomplished by changing power cable connections.

(2) A five-foot long generator power cable is supplied with the refrigerated container to connect the generator set to the refrigeration unit. A thirty-foot long power cable is supplied with the refrigeration unit for connection to an external power source.

(3) An extra power cable receptacle is stored in the refrigeration unit power cable compartment. To use the 5-foot generator power cable as an extension, solder power cable leads to the receptacle.

b. Generator Set Installation.

(1) Remove fur screws (8), lockwashers (7), and beveled washers (6) from container fame (5).

(2) Using forklift, position generator set (9) on container frame (5). Refer to TM 5-6115-585-12/34 for specific generator setting/hoisting requirements.

(3) Aline mounting holes in generator set (9) with mounting holes in container frame (5).

(4) Install fur beveled washers (6), lockwashers (7) and screws (8) to secure generator set (9) to container frame (5).

(5) Connect generator set fuel line (2) to fuel tank elbow (1). Refer to TM 5-6115-585-12/34 for fuel line connection.

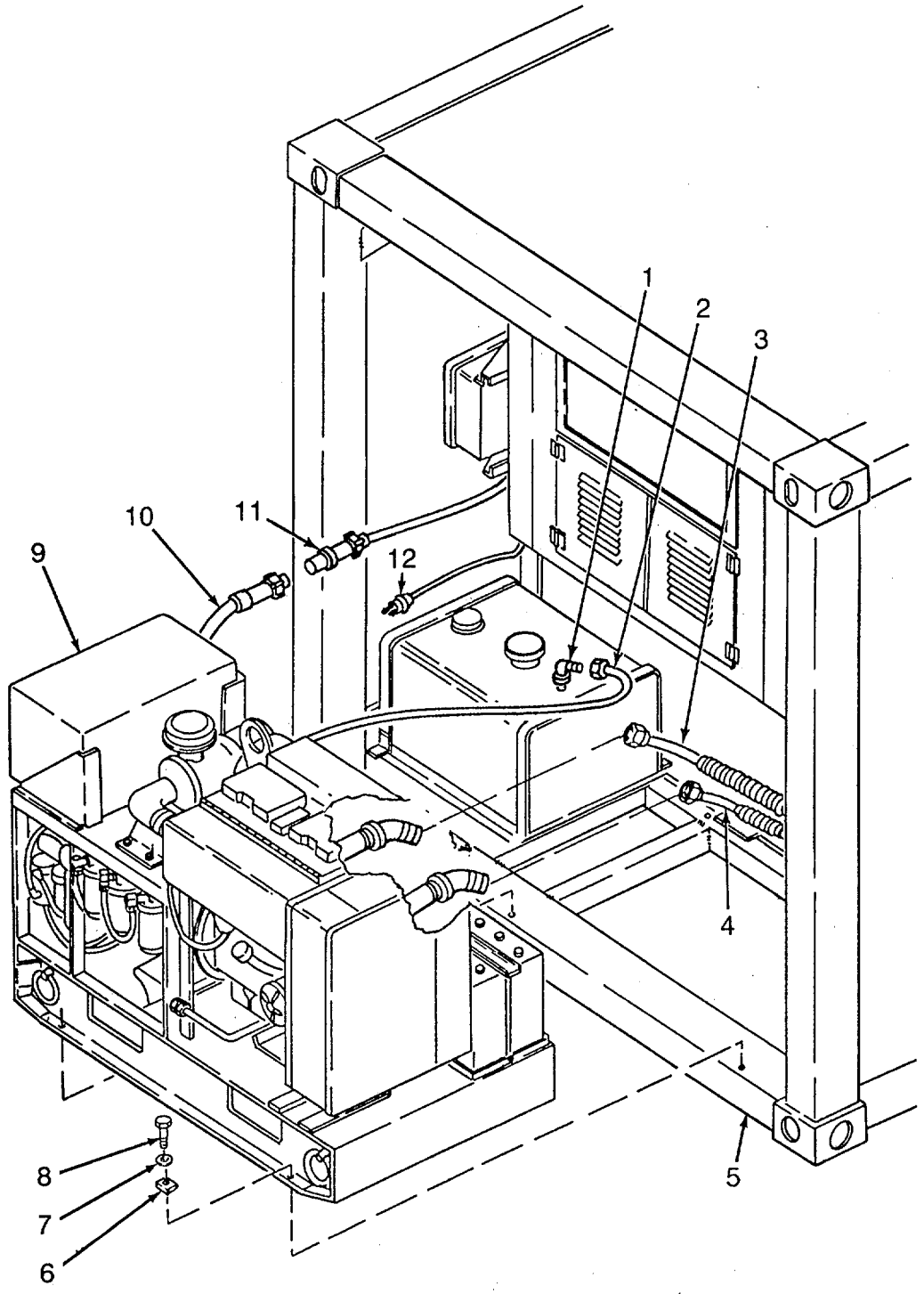
(6) Connect two exhaust tubes (3 and 4) to generator set (9).

WARNING

To prevent injury to personnel and damage to the equipment, make sure generator set is not operating when connecting or disconnecting power cable from terminal box. Refer to TM 5-6115-585-12/34 for generator set shutdown instructions.

(7) Remove cover from generator set terminal box (TM 5-6115-585-12/34).

4-6. INSTALLATION INSTRUCTIONS- cont.



4-6. INSTALLATION INSTRUCTIONS- cont.

(8) Connect five-foot power cable (10) to generator set (9) as follows:

(a) Connect black wire to terminal L3 on generator set (9).

(b) Connect red wire to terminal L2 on generator set (9).

(c) Connect white wire to terminal L1 on generator set (9).

(d) Connect green wire to terminal L0 on generator set (9).

(9) Install cover on generator set terminal box (TM 5-6115-585-12/34).

(10) Connect five-foot power cable (10) to refrigeration unit power cable (11).

(11) Connect interior light cable (12) to 110 Vac receptacle on generator set (TM 5-6115-585-12/34).

CAUTION

To prevent damage to refrigeration unit, stop operation immediately if fan motor runs backwards.

(12) Service, start, and operate generator set (TM 5-6115-585-12/34).

(13) Service, start, and operate refrigeration unit (TM 9-4110-252-14).

(14) Check rotation of fan motor on refrigeration unit (TM 9-4110-252-14). If motor runs backwards, shutdown refrigeration unit (TM 9-4110-252-14) and generator set (TM 5-6115-85-12/34), then change five-foot power cable wiring as follows:

(a) Remove cover from generator set terminal box (TM 5-6115-585-1234).

(b) Disconnect black wire and red wire from generator set (9).

(c) Connect black wire to terminal L2 on generator set (9).

(d) Connect red wire to terminal L3 on generator set (9).

(e) Install generator set cover on terminal box.

c. External Power Connection (208 Vac, 3-Phase, 4 Wire).

WARNING

To prevent injury to personnel and damage to the equipment, make sure generator set is not operating when connecting or disconnecting power cable. Refer to TM 5-6115-58-12/34 for generator set shutdown instructions.

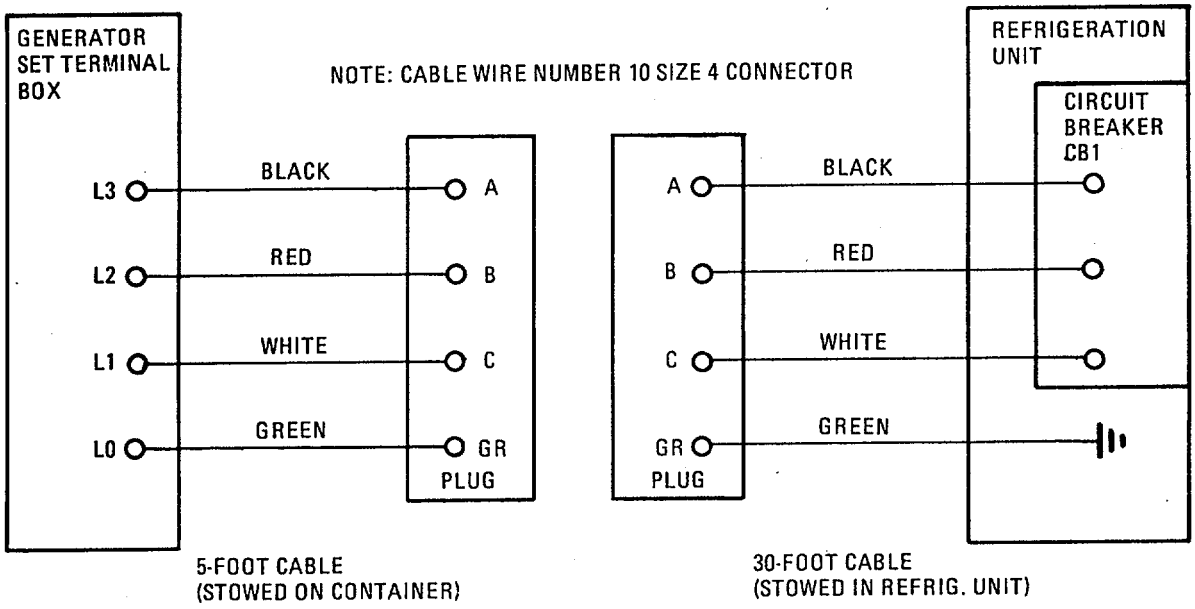
(1) Shutdown refrigeration unit (TM 9-4110-252-14).

4-6. INSTALLATION INSTRUCTIONS- cont.

(2) Shutdown generator set (TM 5-6115-585-12/34).

(3) If connected, disconnect 5-foot power cable from 30-foot refrigeration unit power cable.

(4) Connect 30-foot refrigeration unit power cable to external 208 Vac, 3-phase, 4-wire external power source.



4-6. INSTALLATION INSTRUCTIONS- cont.

d. External Power Connection (230 Vac, 3-Phase).

WARNING

To prevent injury to personnel and damage to the equipment, make sure generator set is not operating when connecting or disconnecting power cable. Refer to TM 5-6115-585-12/34 for generator set shutdown instructions.

(1) If connected, disconnect 5-foot generator set power cable from 30-foot refrigeration unit power cable.

CAUTION

To prevent damage to the refrigeration unit, external power must not exceed 230 volts at any time during operation. Do not use an external power source that may fluctuate above maximum voltage.

(2) Connect 30-foot refrigeration unit power cable to external 230 Vac, 3-phase external power source.

e. External Power Connection (380 Vac, 50 Hz, 3-Phase, with 2/1 Stepdown Transformer).

WARNING

To prevent injury to personnel and damage to the equipment, make sure generator set is not operating when connecting or disconnecting power cable. Refer to TM 5-6115-585-12/34 for generator set shutdown instructions.

(1) If connected, disconnect 5-foot generator set power cable from 30-foot refrigeration unit power cable.

WARNING

To prevent injury to personnel and damage to equipment from electrical hazards, all appropriate and pertinent national and local electrical codes shall be complied with.

CAUTION

- When operating with this external power source, be sure that voltage at the secondary terminals does not exceed 190 volts at any time. The voltage range using 50 hz power for continuous operation of the refrigeration unit is limited to 173 to 190 volts.

- Due to reduced refrigeration capacity when operating with a 50 hz power, monitor container interior temperature to prevent damage to cargo.

(2) Connect 30-fot refrigeration unit power cable to external 380 volt, 3-phase external power source with a 2/1 stepdown transformer between power source and refrigeration unit.

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

4-7. GENERAL

a. The Preventive Maintenance Checks and Services presented in Table 2-1 list the inspections and care of your equipment required to keep it in good operating condition and ready for its primary mission.

b. When a check and service procedure is required for both weekly and monthly intervals, it is not necessary to do the procedure twice if the equipment is operated during the weekly period.

4-8. WARNINGS AND CAUTIONS.

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

4-9. PMCS TABLE.

Refer to Table 4-1 for Preventive Maintenance Checks and Services.

NOTE

Be sure to observe all special information and notes that appear in your table.

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

b. Interval Columns. This column tells you when you must do the procedure in the procedure column. WEEKLY procedures must be done during the seven day operating period. MONTHLY procedures must be done during the time you are operating or using the equipment for its intended mission.

c. Location, Check/Service Column. This column provides the location and the item to be checked or serviced. The item location is underlined.

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

e. Not Fully Mission Capable If :Column. Information in this column tells you what faults will keep you equipment from being capable of performing its mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

Table 4-1. Unit Preventive Maintenance Checks and Services for Model SC-219.

NOTE

If the equipment must be kept in continuous operation, do only the procedures that can be done without disturbing operation. Make complete checks and services when the equipment is shut down.

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable If:
		EXTERIOR		
1	Weekly	Refrigeration loose Unit	a. Check for mounting hardware.	Mounting bolts damaged or missing.
			b Check security of power cable connection.	
			b. Perform Weekly PMCS on refrigeration unit (TM 9-4110-252-14).	
2	Weekly	Generator Set	a. Check for loose, missing or damaged mounting hardware.	Mounting bolts damaged, loose or missing.
			b. Perform Weekly PMCS on generator set (TM5-6115-585-12/34	
3	Weekly	Fuel Tank	a. Check fuel tank for loose or missing attaching hardware.	Mounting straps loose, cracked or missing.
			b. Inspect fuel tank for corrosion.	Fuel tank leaks.
			c. Inspect fuel lines for deterioration and leakage.	Fuel lines cracked, split or leaking
4	Weekly	Temperature Recorder	a. Inspect temperature sensing tube for dents, kinks and punctures.	Sensing line kinked or punctured.
			b. Check for loose mounting hardware.	
		INTERIOR		
5	Weekly	Temperature Recorder Sensing Bulb	a. Inspect sensing bulb r dents, kinks in sensing line, and obvious damage.	Sensing bulb damaged.
			b. Check security of mounting hardware.	Missing mounting screws.

Table 4-1. Unit Preventive Maintenance Checks and Services for Model SC-219 - cont.

Item No.	Interval	Location — Item to Check/Service	Procedure	Not Fully Mission Capable If:
		EXTERIOR		
6	Monthly	Container Frame	Inspect for cracked, bent or broken corner fittings and frame members.	Frame or welds cracked.
		INTERIOR		
7	Monthly	Container Frame	Inspect for bare metal and corrosion.	

Section IV. UNIT TROUBLESHOOTING PROCEDURES

4-10. INTRODUCTION.

This section provides the troubleshooting information for the Refrigerated Container at the Unit Maintenance level. It consists of the symptom index, listing the most common malfunction symptoms, and the troubleshooting table, Table 4-2. This table repeats the malfunctions, and provides the procedural steps and corrective actions necessary to return the system to operational readiness.

4-11. TROUBLESHOOTING.

a. The troubleshooting table lists the common malfunctions which you may find during operation of the refrigerated container. You should perform the tests, inspections and corrective actions in the order they appear in the table.

b. This table cannot list all the malfunctions that may occur, all the tests or inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

c. Refer to TM 9-4110-252-14 or troubleshooting malfunctions on the refrigeration unit.

d. Refer to TM 5-6115-585-12/34 for troubleshooting malfunctions on the generator set.

4-12. MALFUNCTION INDEX.

Table 4-2. Unit Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. REAR DOORS WILL NOT CLOSE

Step 1. Inspect for torn, loose or damaged door seals in door closure area.

Repair rear door (para. 4-30).

Step 2. Inspect doors for bent, cracked, or worn latch handles and door locking hardware.

Repair rear door (para. 4-30).

Step 3. Inspect door for cracked, bent, or frozen hinges.

If door is damaged or defective, notify direct support maintenance.

2. WATER WILL NOT DRAIN FROM CONTAINER FLOOR.

Check for clogged or damaged floor drains.

Remove dirt and debris from floor drain.

If clog cannot be removed or drain is damaged, replace floor drain (para. 4-35).

3. TEMPERATURE RECORDER DOES NOT RECORD OR DOES NOT RECORD PROPERLY.

Step 1. Check for loose thermometer element coupling at temperature recorder.

Tighten thermometer element screws on bottom of temperature recoder.

Test and adjust thermometer (para 4-21).

Step 2. Check that temperature recorder stylus is in contact with paper chart.

If stylus is bent or broken, replace temperature recoder (para. 4-19).

Step 3. Inspect thermometer element sensing line for damage.

Replace thermometer element (para. 4-20).

Step 4. Inspect thermometer bulb (mounted on container front) wall for damage.

Replace thermometer element (para. 4-20).

Table 4-2. Unit Troubleshooting - cont.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
4. TEMPERATURE INSIDE CONTAINER WILL NOT STABILIZE.
Check operation of refrigeration unit (TM 9-4110-252-14).
Troubleshoot refrigeration unit malfunctions in accordance with TM 9-4110-252-14.
5. GENERATOR SET NOT OPERATING PROPERLY.
Check generator set for proper power output TM 5-6115-585-12/34.
Troubleshoot generator set malfunctions in accordance with TM 5-6115-585-12/

Section V. UNIT MAINTENANCE PROCEDURES

4-13. GENERAL.

This section contains instructions for performing unit level maintenance on the refrigerated container.

4-14. PERSONAL SAFETY.

To ensure safety of personnel, proper care should be used when handling assemblies and parts. Many assemblies are heavy. The assistance of another person, lifting device, or other support equipment may be required to move or position heavy items.

Personnel must remove all items of jewelry (rings, bracelets, watches, necklaces etc) and loose clothing before working on the equipment. Jewelry and loose clothing can get caught in moving equipment and result in injury to personnel. Jewelry can cause electrical shorts or severe injury when working around electrical equipment.

When performing maintenance on the refrigerated container, keep in mind that the purpose of the equipment is to store and transport perishable materiel, such as food. Cleaning fluids, lubricants, preservatives, paint or other chemicals must not be allowed to contaminate the container. Clean container interior with only approved materials. Operate the refrigerated container after performing maintenance. Make sure corrective action has been performed correctly.

4-15. PROPER EQUIPMENT.

Obtain proper equipment before beginning maintenance. This includes hand tools and/or special tools, receptacles for storing small parts, and expendable materials required by the maintenance task.

4-16. DOCUMENT HOLDER REPAIR.

This task consists of a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)
Rivet Tool (Item 2, App B)

Material/Parts:
Blind Rivet (10) (Item 1, App F)
Rivet (4) (Item 3, App F)
Gasket (A/R) (Item 2, App F)
Adhesive (A/R) (Item 1, App D)
Drycleaning solvent (Item 7, App D)
Wiping rags (Item 6, App D)

a. Removal.

(1) Open right rear door (9).

(2) Unfasten two latches (2) and remove cover (7).

(3) Using drill and bit, remove six rivets (1) and box (8) from right rear door (9).

b. Disassembly.

NOTE

Disassemble components only to the level required to perform repair.

(1) Using drill and bit, remove four rivets (3) and separate two latches (2) from box (8).

(2) Using drill and bit, remove four rivets (6) and separate two latch hooks (5) from cover (7).

(3) Remove gasket (4) from cover (8).

c. Cleaning.

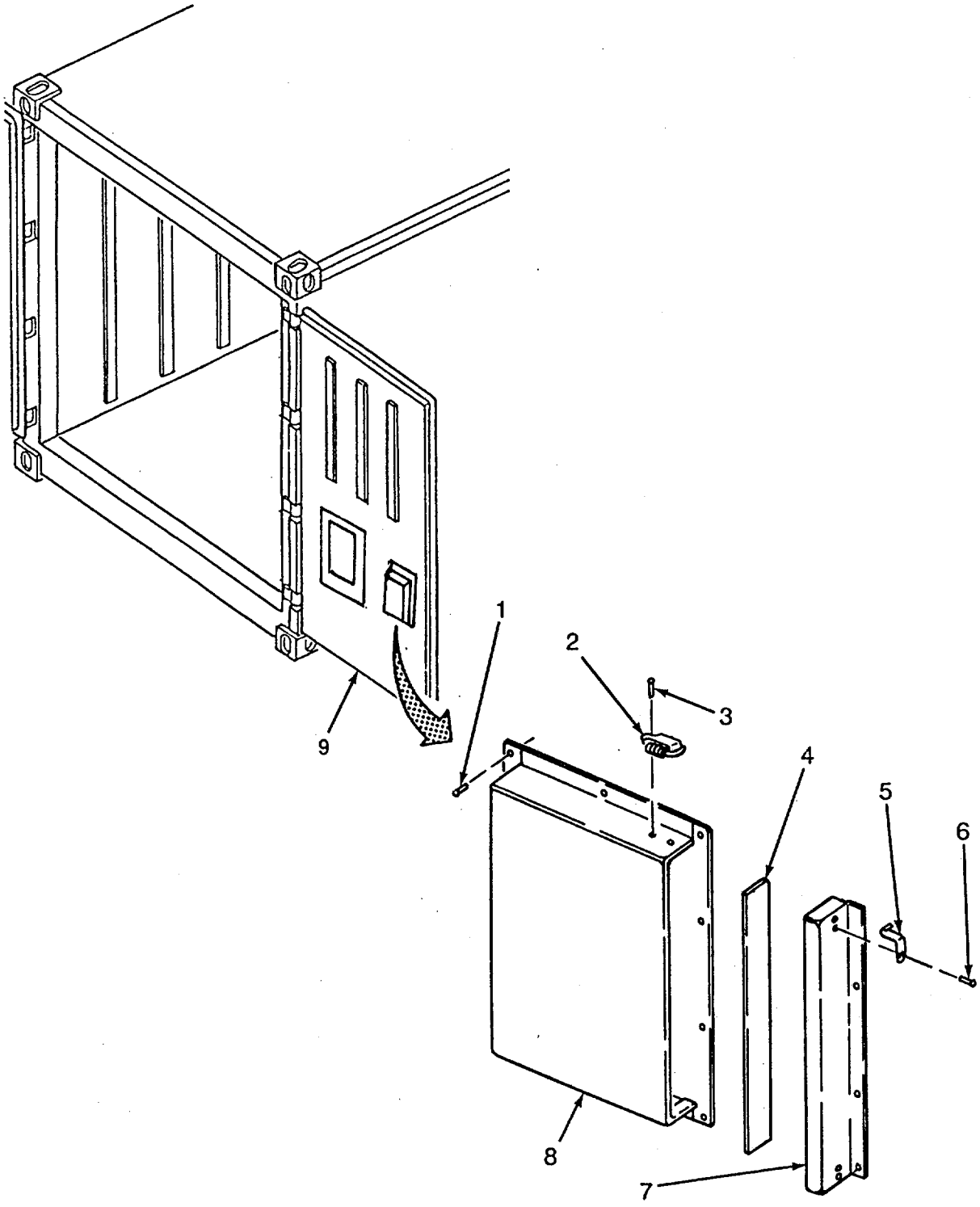
WARNING

To prevent injury to personnel and damage to equipment, use dry cleaning solvent only in well ventilated areas. Avoid repeated or prolonged contact with skin. Do not use near sparks, open flame or excessive heat.

(1) Clean all parts with dry cleaning solvent.

(2) Wipe parts dry with wiping rag.

4-16. DOCUMENT HOLDER REPAIR- cont.



4-16. DOCUMENT HOLDER REPAIR - cont.

d. Inspection.

(1) Inspect box (8) and cover (7) for cracks.

(2) Inspect latches (2) for cracks or broken springs.

e. Repair. Replace defective components.

f. Assembly.

(1) Apply adhesive to inside surface of cover (7).

(2) When adhesive becomes tacky, press gasket (4) in place on cover (7).

(3) Using rivet tool, install two latch hooks (5) on cover (7) with four rivets (6).

(4) Using rivet tool, install two latches (2) on box (8) with four rivets (3).

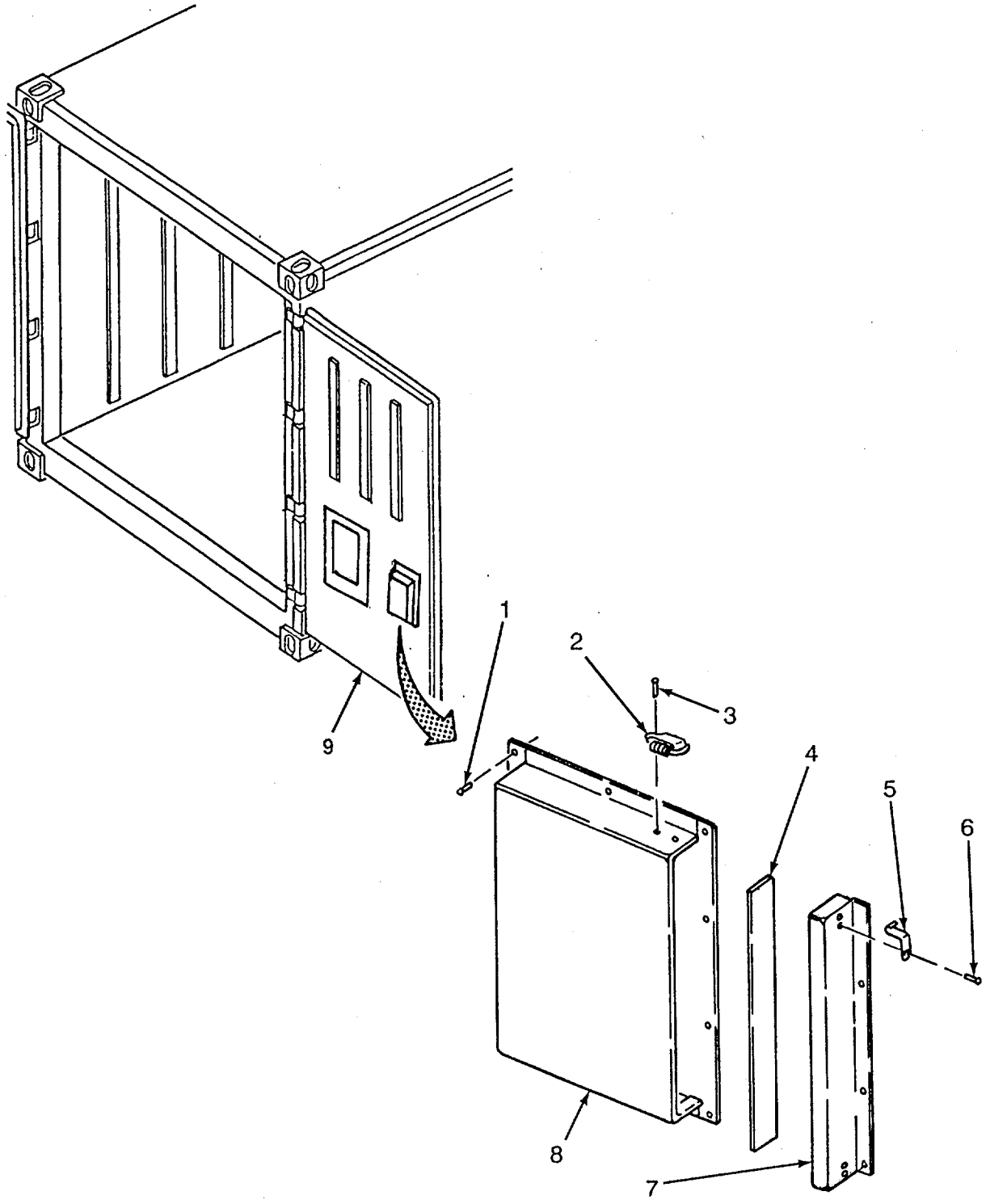
g. Installation.

(1) Using rivet tool, install box (8) on right rear door (9) with ten rivets (1).

(2) Install cover (7) on box (8) and fasten two latches (2).

(3) Close right rear door (9).

4-16. DOCUMENT HOLDER REPAIR - cont.



4-17. MANUAL HOLDER REPAIR.

This task consists of a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)
Rivet Tool (Item 2, App B)

Material/Parts:
Blind Rivet (10) (Item 1, App F)
Rivet (4) (Item 3, App F)
Gasket (A/R) (Item 2, App F)
Adhesive (A/R) (Item 1, App D)
Drycleaning solvent (Item 7, App D)
Wiping rags (Item 6, App D)

a. Removal.

(1) Unfasten two latches (6) and remove cover (3) from box (7).

(2) Remove ten drive rivets (8) and box (7) from container wall (9).

b. Disassembly.

NOTE

Disassemble components only to the level required to perform repair.

(1) Using drill and bit, remove four rivets (5) and separate two latches (6) from box (7).

(2) Using drill and bit, remove four rivets (1) and separate two latch hooks (2) from cover (3).

(3) Remove gasket (4) from cover (3).

c. Cleaning.

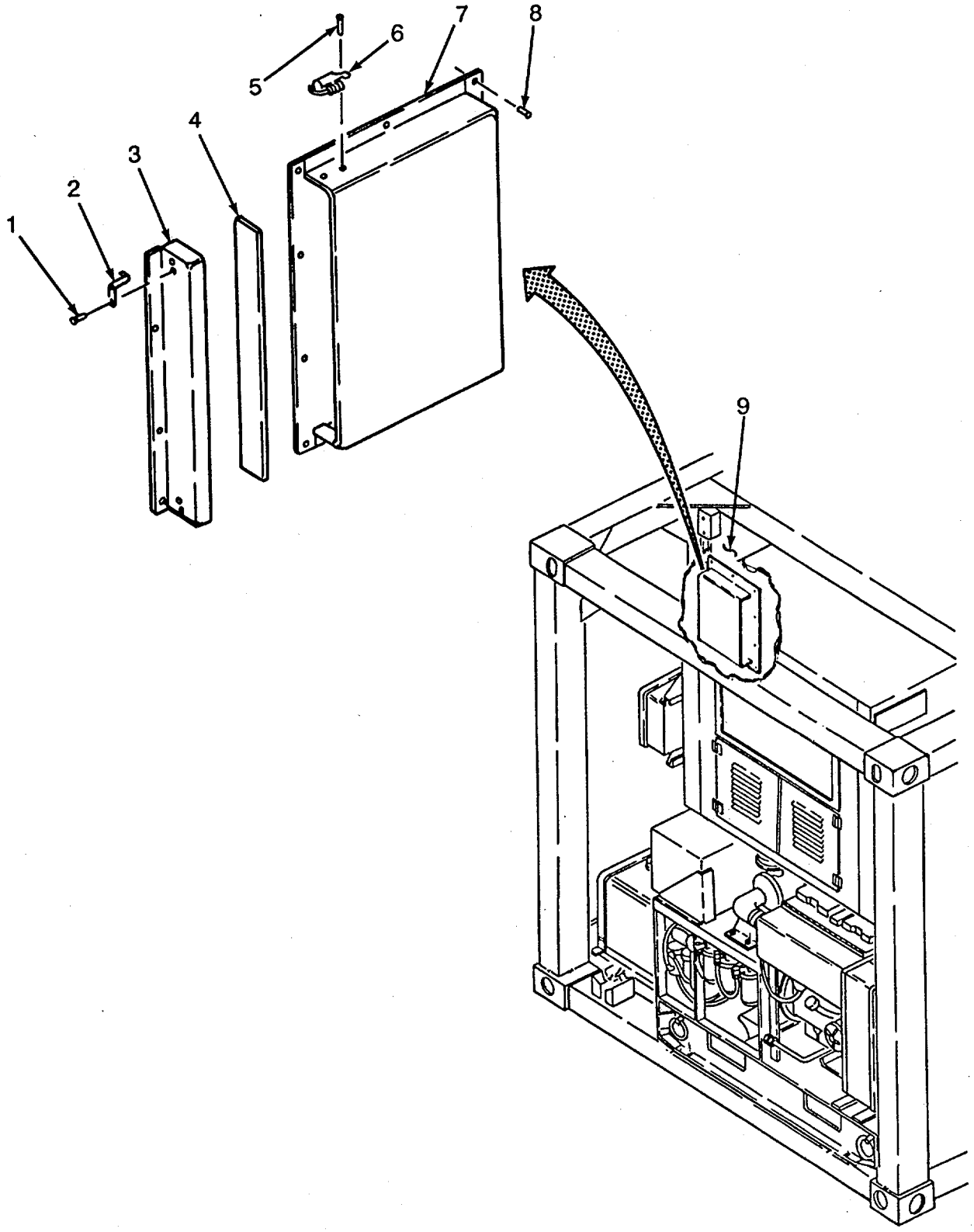
WARNING

To prevent injury to personnel and damage to equipment, use dry cleaning solvent only in well ventilated areas. Avoid repeated or prolonged contact with skin. Do not use near sparks, open flame or excessive heat.

(1) Clean all parts with dry cleaning solvent.

(2) Wipe parts dry with wiping rag.

4-17. MANUAL HOLDER REPAIR- cont.



4-17. MANUAL HOLDER REPAIR- cont.

d. Inspection.

(1) Inspect box (7) and cover (3) for cracks.

(2) Inspect latches (6) for cracks or broken springs.

e. Repair. Replace defective components.

f. Assembly.

(1) Apply adhesive to inside surface of cover (3).

(2) When adhesive becomes tacky, press gasket (4) in place on cover (3).

(3) Using rivet tool, install two latch hooks (2) on cover (3) with four rivets (1).

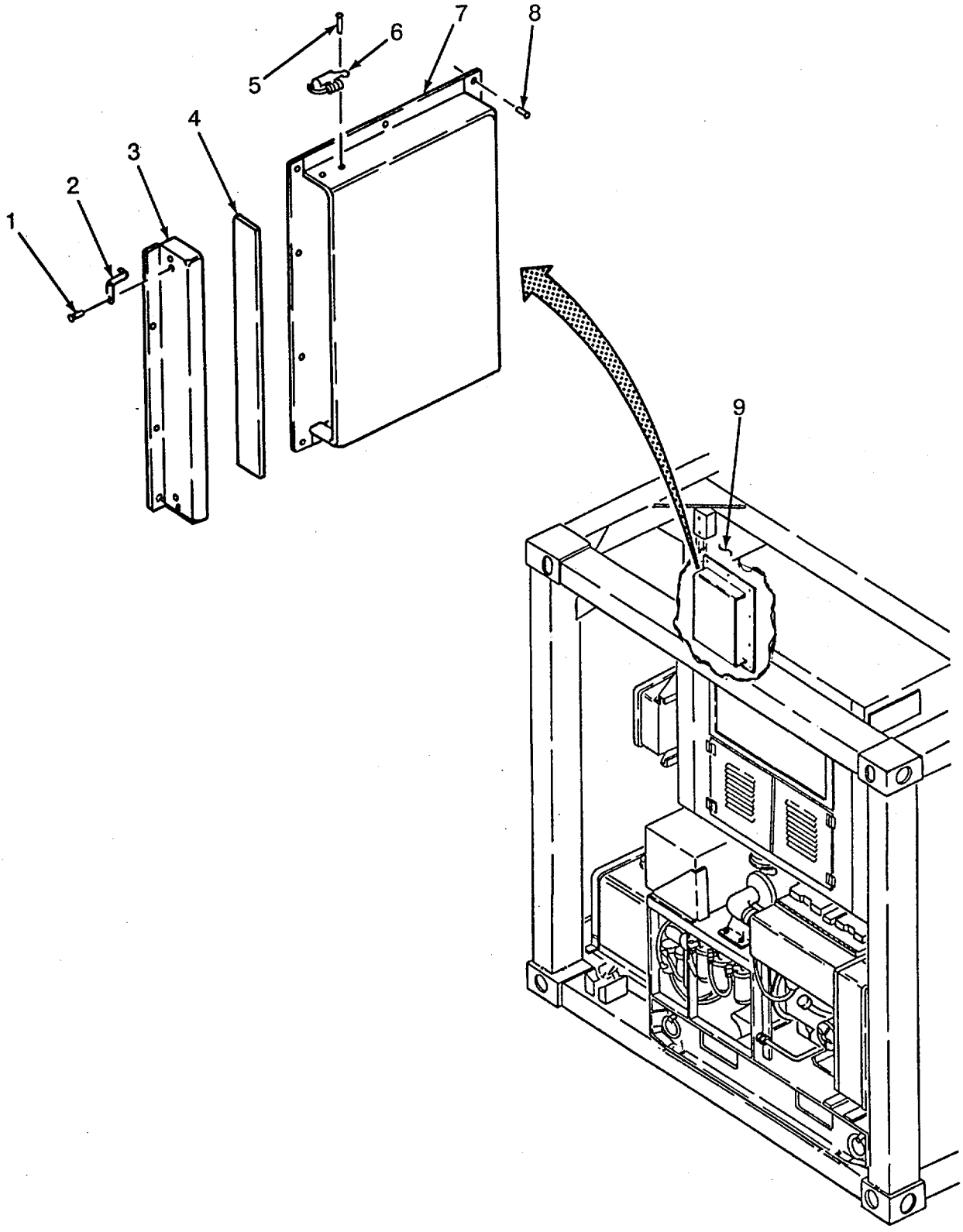
(4) Using rivet tool, install two latches (6) on box with four rivets (s).

g. Installation.

(1) Position box (7) on container wall (9) and install ten drive rivets (8).

(2) Position cover (3) on box (7) and fasten two latches (6).

4-17. MANUAL HOLDER REPAIR - cont.



4-18. IDENTIFICATION PLATE REPLACEMENT.

This task consists off: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)

Material/Parts:
Drive Rivet (4) (Item 4, App F)

a. Removal.

(1) Remove four drive rivets (2) from identification plate (1).

(2) Remove identification plate (1) from right rear door (3).

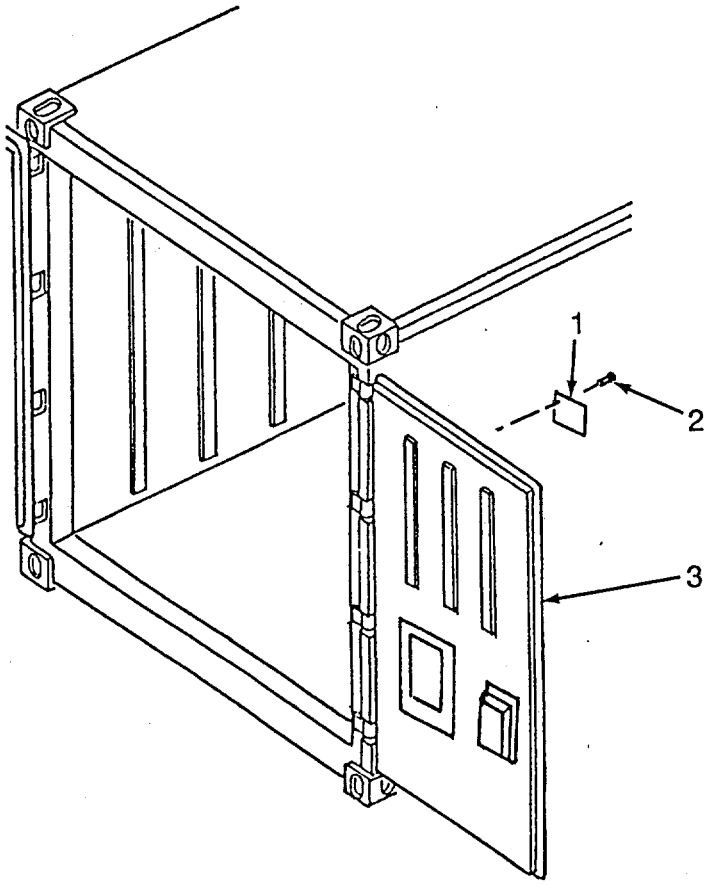
b. Installation.

(1) Position identification plate (1) on right rear door (3).

(2) Aline mounting holes in identification plate (1) with holes in right rear door (3).

(3) Install four drive rivets (2) in identification plate (1).

4-18. IDENTIFICATION PLATE REPLACEMENT -cont.



4-19. TEMPERATURE RECORDER (THERMOMETER) REPLACEMENT.

This task consists of a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)
Material/Parts:
Star washer (8) (Item 7, App F)

a. Removal.

(1) Unfasten latch (2) and open cover (11).

(2) Remove two screws (9) from sensing element (10)

CAUTION

To prevent damage to sensing element, do not bend or kink element tubing.

(3) Separate sensing element (10) from temperature recorder (1).

(4) Remove four nuts (5) and star washers (4) from back of flex shafts (3).

(5) Remove temperature recorder (1) from frame (6).

(6) Remove four nuts (8), lockwashers (7), and flex bolts (3) from temperature recorder (1).

b. Installation.

(1) Install four flex bolts (3), lockwashers (7), and nuts (8) on temperature recorder (1).

(2) Position temperature recorder (1) and attached parts on frame (6).

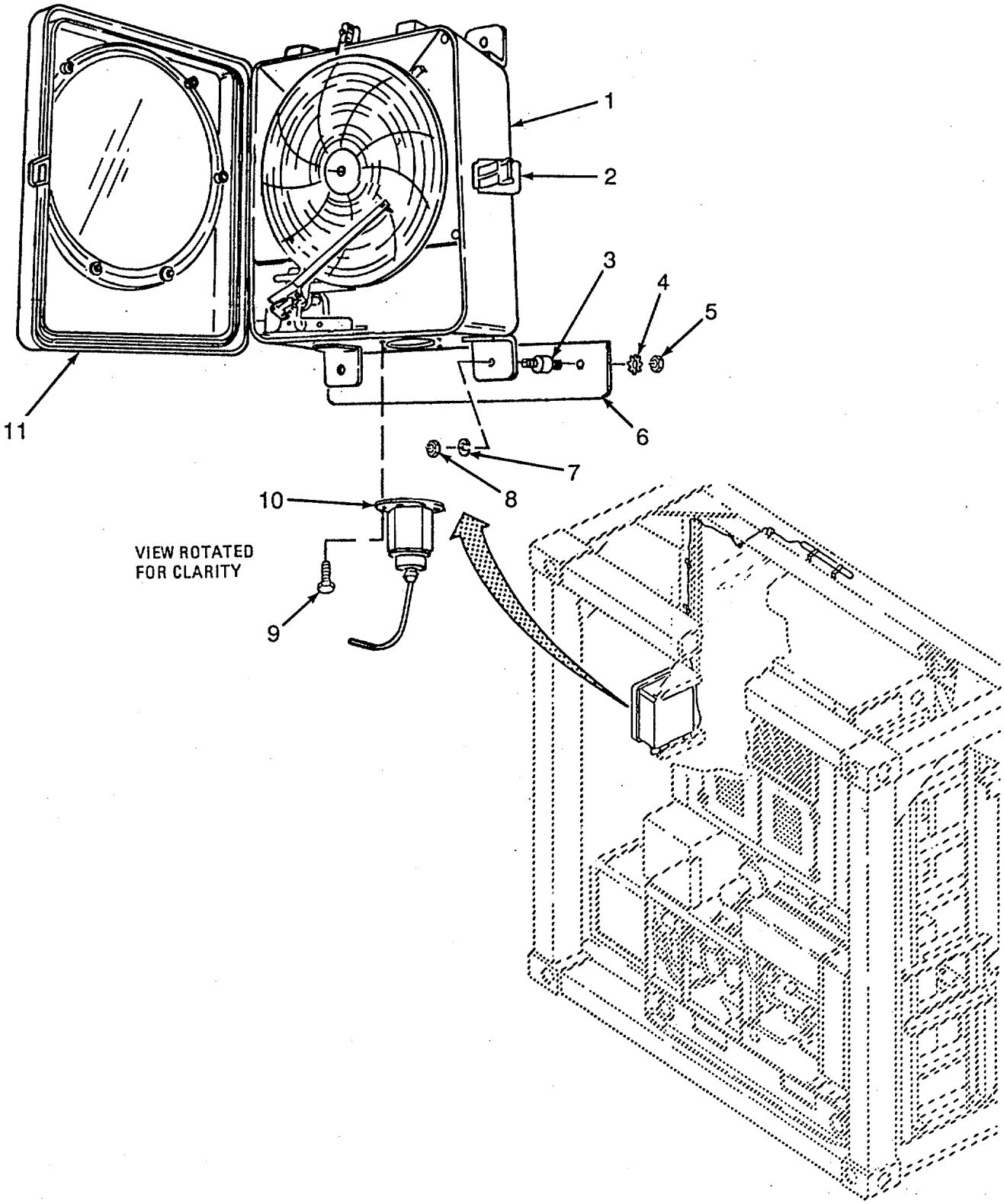
(3) Install four star washers (4) and nuts (5) on back of flex shafts (3).

(4) Position sensing element (10) on temperature recorder (1) and install two screws (9).

(5) Close cover (11) and fasten latch (2).

(6) Adjust temperature recorder (para. 4-21).

4-19. TEMPERATURE RECORDER (THERMOMETER) REPLACEMENT.



4-20. THERMOMETER ELEMENT REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)
Material/Parts:
Drive rivets (5) (Item 8, App F)

a. Removal.

(1) Unfasten latch (2) and open cover (7).

(2) Remove two screws (4) from thermometer element (3).

CAUTION

To prevent damage to thermometer element, do not bend or kink element tubing.

(3) Separate thermometer element (3) from temperature recorder (1).

(4) Remove five drive rivets (5) and clamps (6) from element tubing (9).

(5) Remove element bulb (10) from two supports (11).

NOTE

Element bulb must be pushed through wall grommet to remove thermometer element.

(6) Working from inside container, remove element tubing (9) and bulb (10) through wall grommet (8).

b. Installation.

CAUTION

To prevent damage to thermometer element, do not bend or kink element tubing.

(1) Install element bulb (10) and tubing (9) through wall grommet (8).

(2) Install element bulb (10) in two supports (11).

(3) Position five clamps (6) on element tubing (9) and install five drive rivets (5).

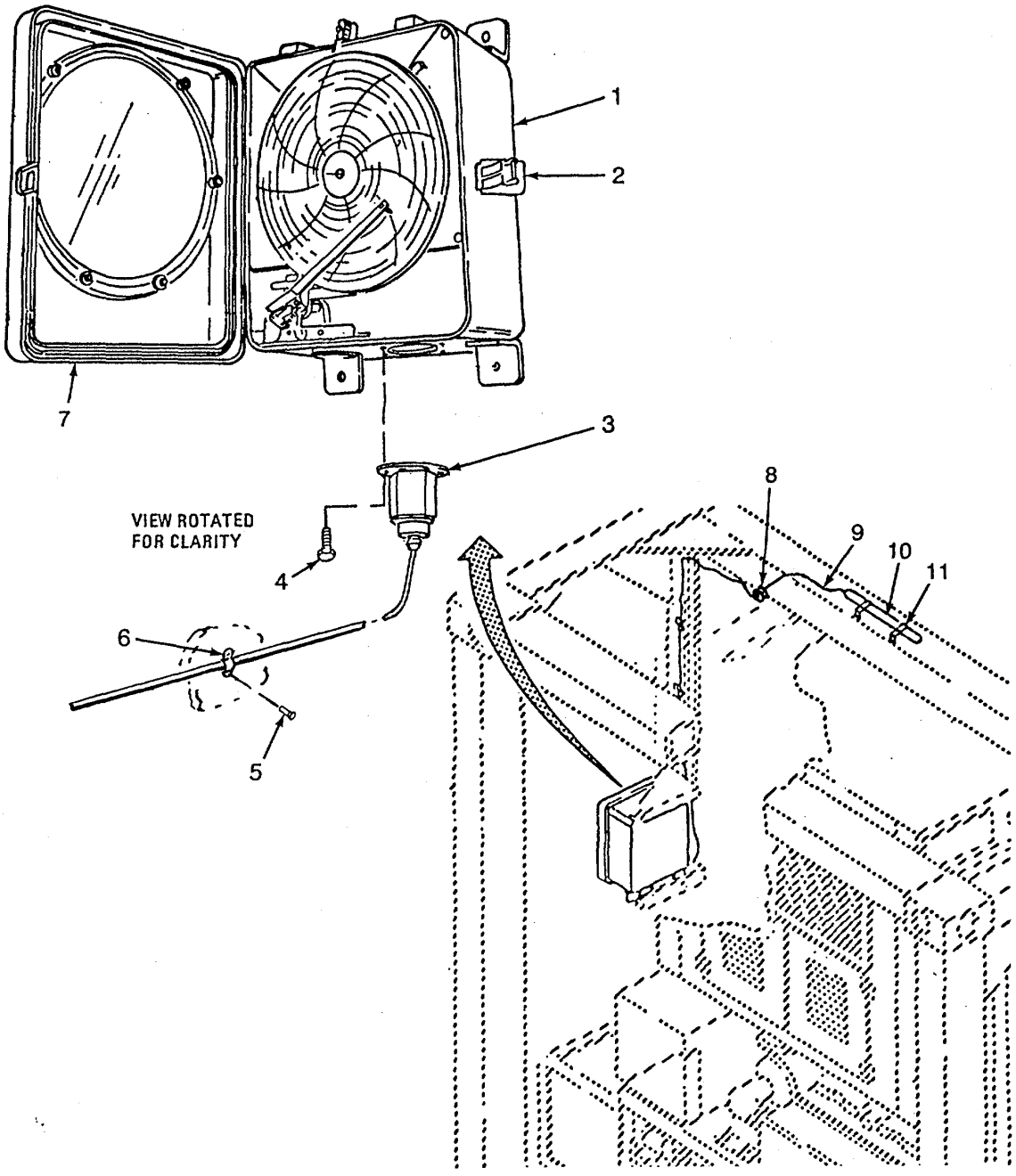
(4) Position thermometer element (3) on temperature recorder (1).

(5) Install two screws (4) on thermometer element (3).

4-20. THERMOMETER ELEMENT REPLACEMENT- cont.

(6) Close cover (9) and fasten latch (2).

(7) Adjust temperature recorder (parla. 4-21).



4-21. THERMOMETER ELEMENT TESTING AND ADJUSTMENT.

This task consists of: a. Testing b. Adjustment

INITIAL SET-UP:

Tools: Equipment Condition:
General Mechanics Tool Kit (Item 4, App B)
Thermometer (Item 6, App B)

Equipment Conditions:
Refrigeration unit operating (TM 9-4110-252-14)
Generator set operating (TM 5-6115-585-12/34)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34

a. Testing.

(1) Position test thermometer probe (8) next to thermometer element bulb (7).

(2) Close container doors.

(2) Allow time for temperature to stabilize inside container.

(3) Compare indication on temperature recorder paper chart (2) with temperature indicated by test thermometer.

(4) If temperature indications on test thermometer and temperature recorder (1) are not the same, temperature recorder must be adjusted.

b. Adjustment.

(1) Unfasten latch (3) and open cover (6).

(2) Loosen setscrew (4).

NOTE

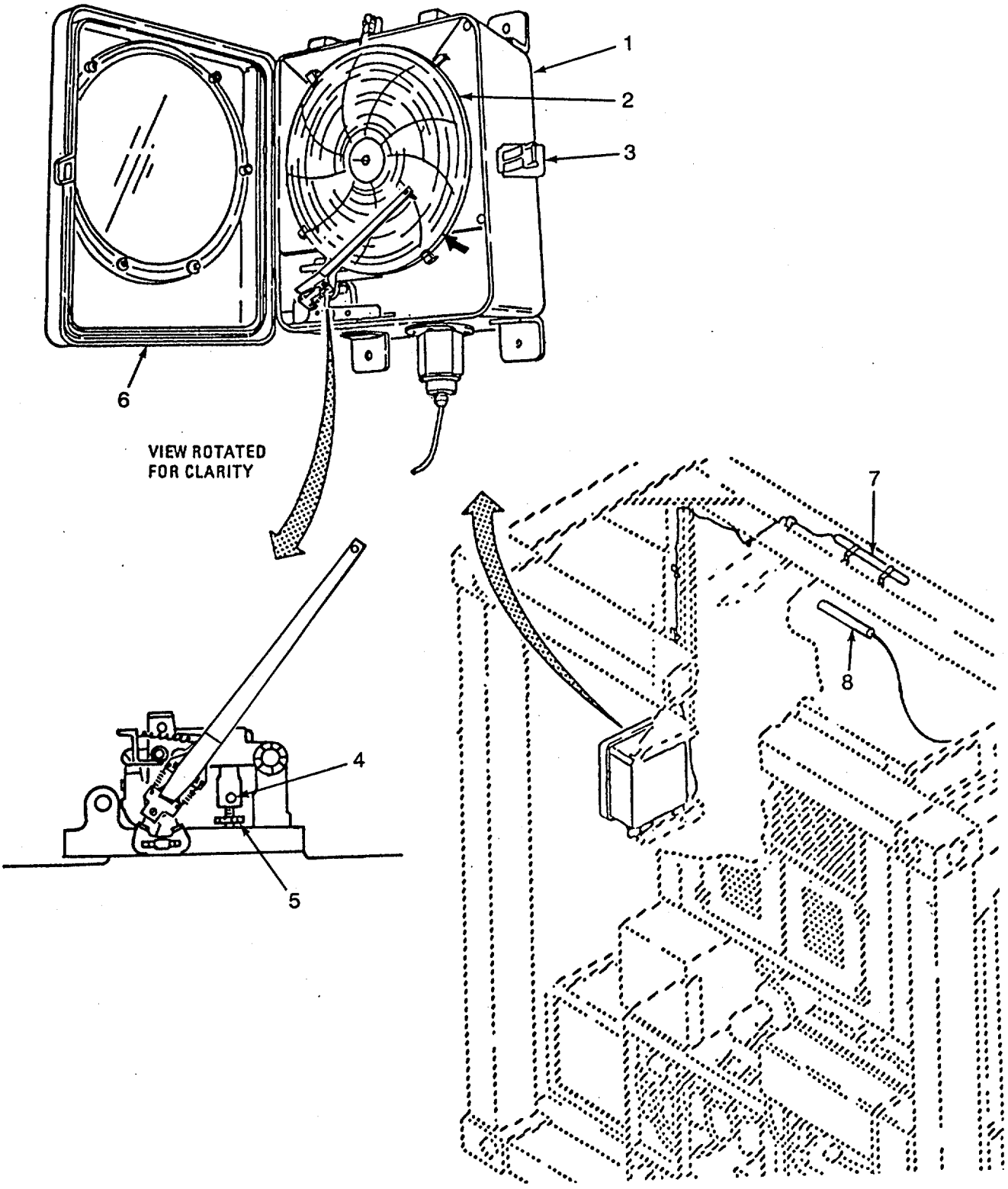
Turning pinion shaft left (counterclockwise) raises temperature indication. Turning pinion shaft right (clockwise) lowers temperature indication.

(3) Turn pinion shaft (5) as required to match temperature recorder indication with test thermometer indication.

(4) Tighten setscrew (4).

(5) Close cover (6) and fasten latch (3).

4-21. THERMOMETER ELEMENT TESTING ANI) AI)JUSTMENT - cont.



4-22. FUEL TANK REPAIR.

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)

Material/Parts:
Lockwasher (3) (Item 9, App F)
Lockwasher (5) (Item 10, App F)
Gasket (Item 11, App F)
Drycleaning solvent (Item 7, App D)
Wiping rags (Item 6, App D)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. Removal.

WARNING

To prevent injury to personnel, damage to equipment, or fire make sure fuel tank is empty before working on fuel tank.

NOTE

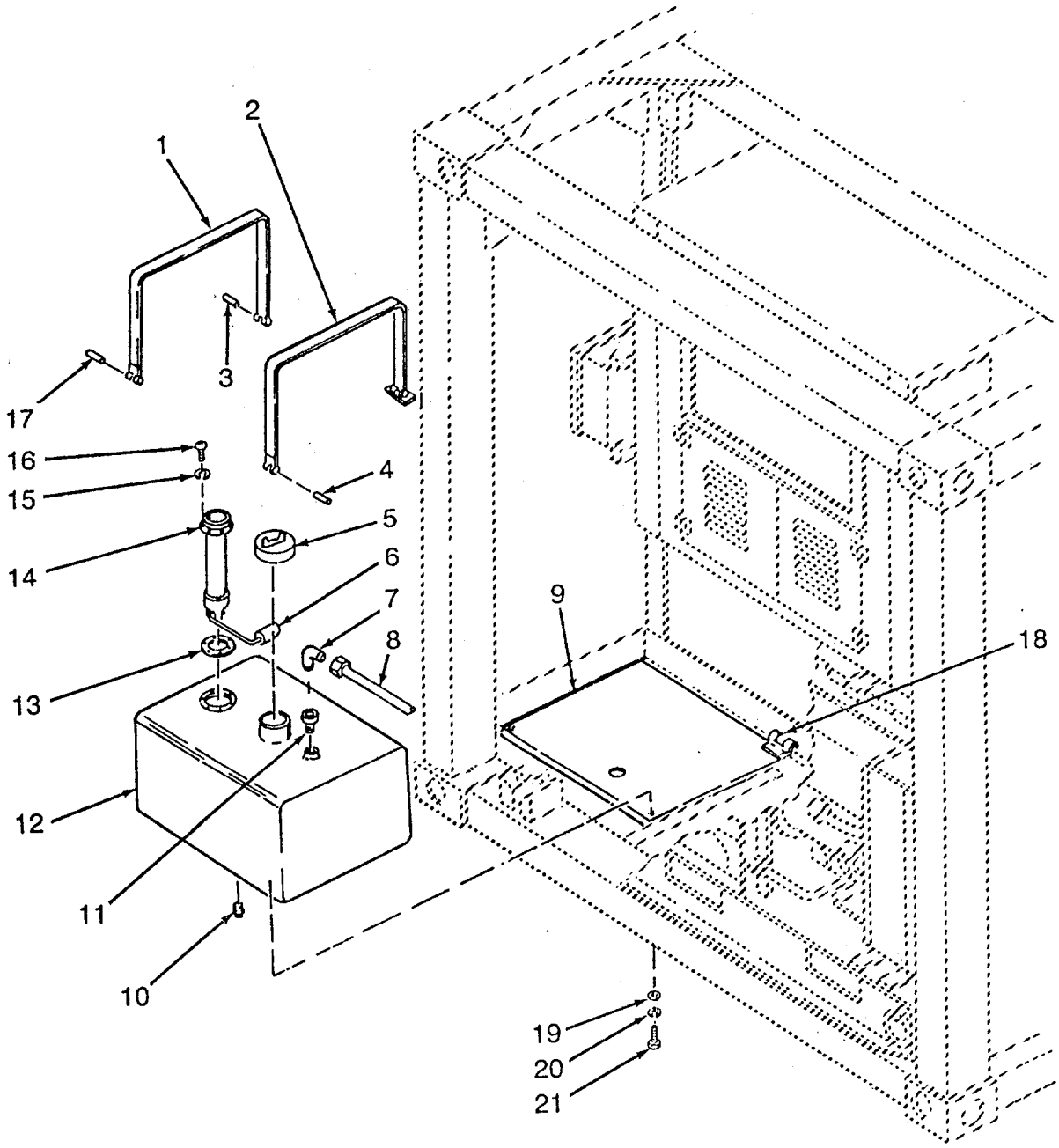
Fuel line is not supplied with container. Refer to TM 5-6115-585-12/34 for specific fuel line maintenance instructions.

(1) Disconnect fuel line (8) from elbow (7).
(2) Remove three screws (21), lock washers (20), and flat washers (19) from bottom of plate (9).
(3) Remove bracket (1) from fuel tank (12).
(3) Lift and separate strap (2) from bracket (18).
(4) Remove fuel tank (12) and attached parts from plate (9).

b. Disassembly.

(1) Remove cap (5) from fuel tank (12).
(2) Remove elbow (7) and reducer (11) from fuel tank (12).
(3) Remove five screws (16) and lockwashers (15) from fuel gage (14).
(4) Carefully remove fuel gage (14) and gasket (13) from fuel tank (12).
(5) Remove plug (10) from bottom of fuel tank (12).
(6) Remove barrel nuts (3 and 17) from strap (1).
(7) Remove barrel nut (4) from strap (2).

4-22. FUEL TANK REPAIR- cont.



4-22. FUELTANK REPAIR-cont.

c. Cleaning.

WARNING

To prevent injury to personnel and damage to equipment, use dry cleaning solvent only in well ventilated areas. Avoid repeated or prolonged contact with skin. Do not use near sparks, open flame or excessive heat.

(1) Clean components with dry cleaning solvent and wiping rag. Pay close attention to inside of tank.

(2) Dry components with wiping rag.

d. Inspection.

(1) Inspect fuel tank (12) for cracks, and punctures, and pin holes caused by corrosion.

(2) Inspect straps (1 and 2) for cracks.

(3) Inspect barrel nuts (3, 4, and 17) for stripped threads.

(4) Inspect fuel gage (14) for cracks and deformed or worn components.

e. Repair. Replace defective components.

f. Assembly.

(1) Install barrel nut (4) on strap (2).

(2) install barrel nuts (3 and 17) on strap (1).

(3) Install plug (10) on bottom of fuel tank (12).

(4) Carefully install gasket (13) and fuel gage (14) on fuel tank (12).

(5) Install five lockwashers (15) and screws (16) on fuel gage (14).

(6) Install reducer (11) and elbow (7) on fuel tank (12).

(7) Install cap (5) on fuel tank (12).

g. Installation.

(1) Position fuel tank (12) and attached parts on plate (9).

(2) Attach strap (2) to bracket (18) and lower bracket over fuel tank (12).

(3) Position bracket (1) on fuel tank (12).

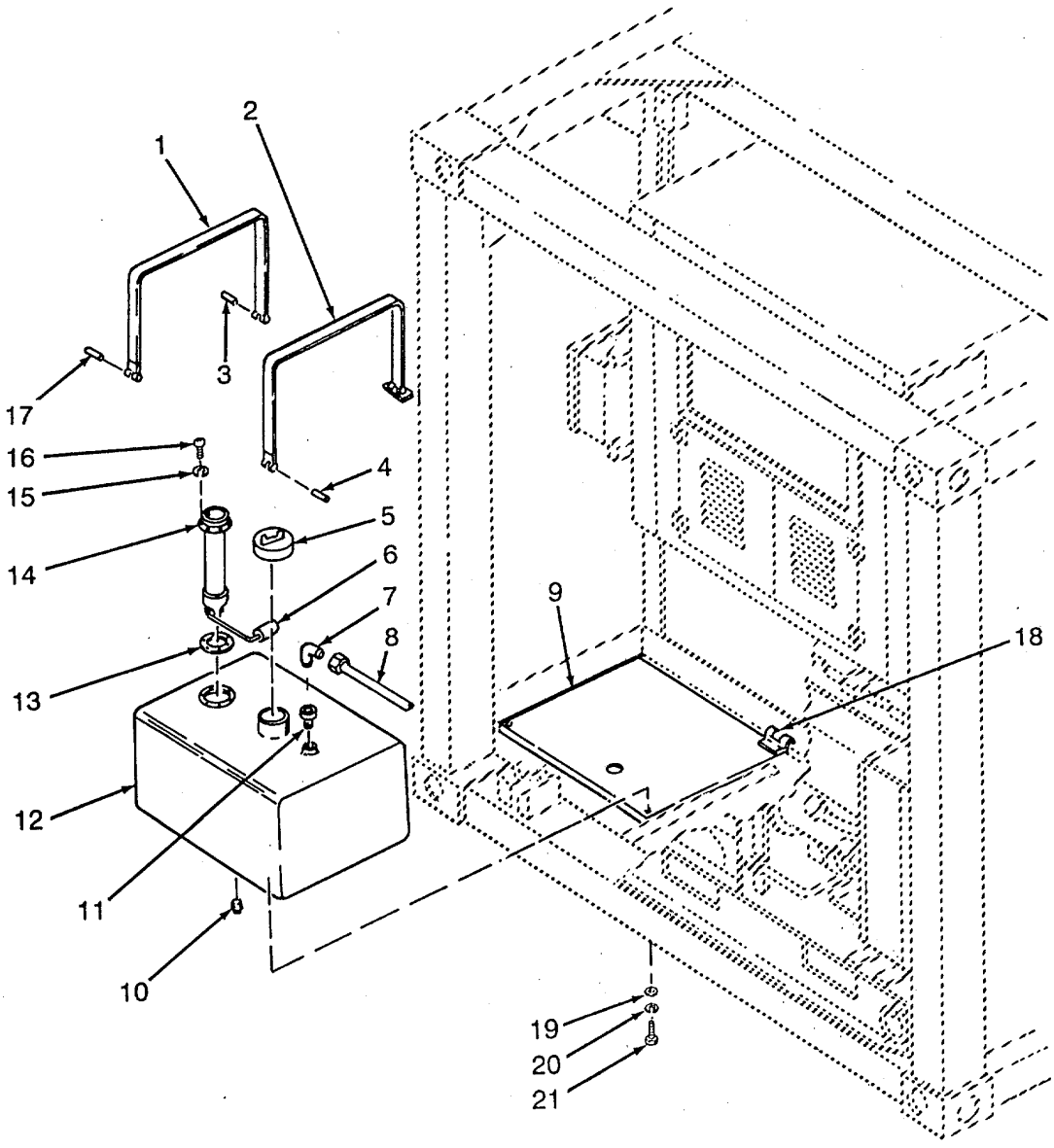
4-22. FUEL TANK REPAIR - cont.

(4) Aline barrel nuts (3, 4, and 17) with screw holes in plate (9) and install three flat washers (19), lockwashers (20), and screws (21).

NOTE

Fuel line is not supplied with container. Refer to TM 5-6115-585-12/34 for specific fuel line maintenance instructions.

(5) Connect fuel line (8) to elbow (7).



4-23. FUEL LINE STORAGE BOX REP*I.*ACEMENI.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)

Material/Parts:
Drive rivet (4) (Item 12, App F)

a. Removal.

(1) Remove screw (1), flat washer (2), and clamp (3) from box (5).

(2) Remove four drive rivets (4) from box (5).

(3) Remove box (5) from container wall (6).

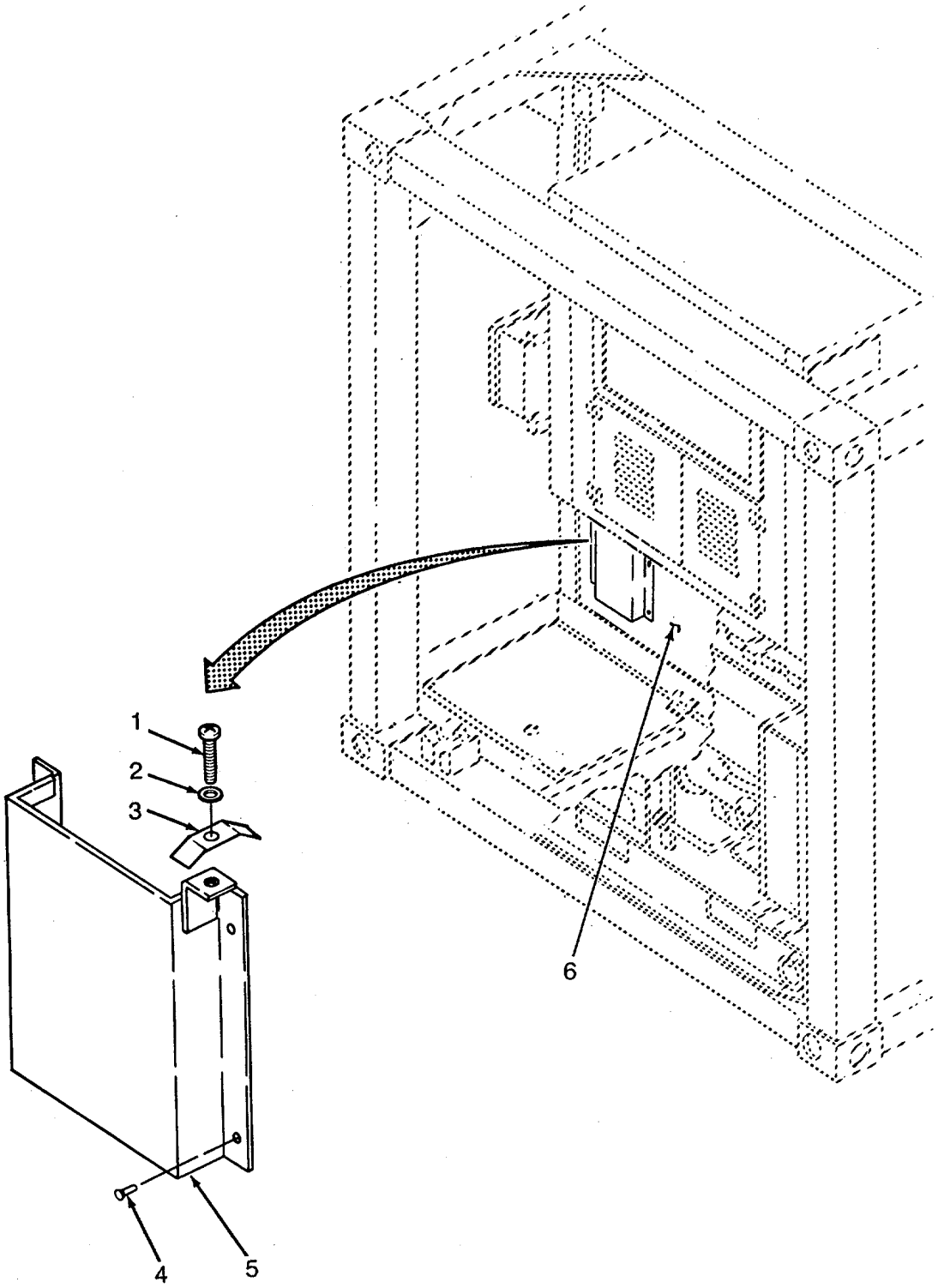
b. Installation.

(1) Position box (5) on container wall (6).

(2) Install four drive rivets (4) in box (5).

(3) Install clamp (3), flat washer (2) and screw (1) on box (5).

4-23. FUEL LINE STORAGE BOX REPLACEMENT - cont.



4-24. EXHAUST ,LINE REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App 13)
Material/Parts: TM 5-6115-585-12/34
Self locking nut (6) (Item 13, App F)

References:
TM 9-4110-252-14

Equipment Condition :
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. Removal.

WARNING

To prevent injury to personnel, allow generator set and exhaust lines to cool before removal.

(1) Disconnect exhaust coupling (12 and 13) from generator set (TM 5-6115-585- 12/34).

(2) Remove nuts (7 and 8), screws (16 and 19), and rings (17 and 20) from screen (18).

(3) Remove screen (18) from exhaust tubes (11 and 14).

(4) Remove two nuts (10), spacer (9), and clamp (15) from exhaust tubes (11 and 14).

(5) Remove two nuts (6),spacer (5), and clamp (21) from exhaust tubes (11 and 14).

(6) Remove two nuts (4),spacer (22), and clamp (24) from exhaust tubes (11 and 14).

(7) Remove exhaust tubes (11 and 14) from container frame (27).

(8) Remove two nuts (3), flat washers (2), screws (1) and bracket (23) from container frame (27).

(9) Loosen screw (26) and remove cap (25) from bracket (23).

b. Installation.

(1) Position cap (25) on bracket (23) and tighten screw (26).

(2) Position bracket (23) on container frame (27) and install two flat washers (2), screws (1) and nuts (3).

(3) Position exhaust tubes (11 and 14) in container frame (27). Make sure upper ends of both tubes extend into bracket (23).

(4) Connect exhaust couplings (12 and 13) to generator set (TM 5-6115-585-12/34).

(5) Install spacer (22), clamp (24), and two nuts (4) on exhaust tubes (11 and 14).

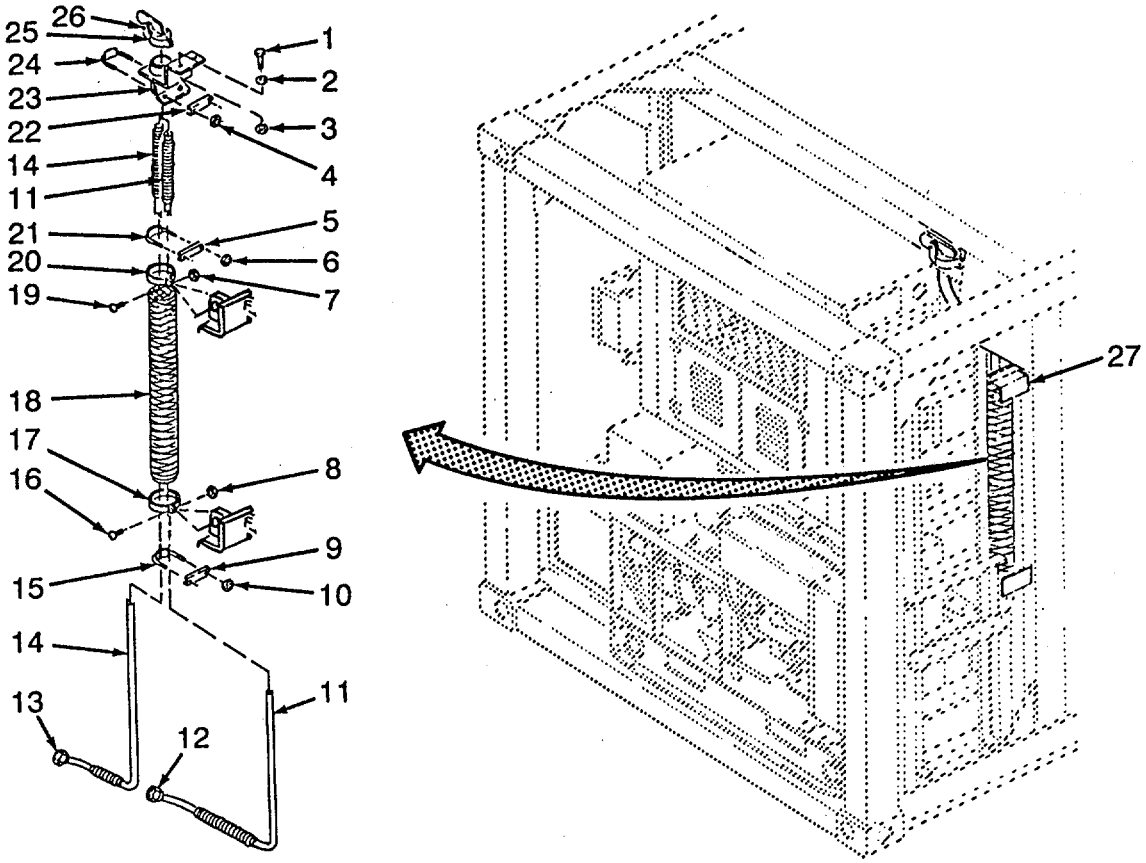
4-24. EXHAUST LINE REPLACEMENT- cont.

(5) Install spacer (5), clamp (21) and two nuts (6) on exhaust tubes (11 and 14).

(6) Install spacer (9), clamp (15) and two nuts (10) on exhaust tubes (1 l and 14).

(7) Position screen (18) over exhaust tubes (11 and 14).

(8) Install rings (17 and 20), screws (16 and 19), and nuts (8 and 7) on screen (18).



4-25. LADDER REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)

Material/Parts:
Lockwasher (2) (Item 9, App F)
Spring pin (2) (Item 14, App F)

a. Removal.

(1) Using hammer and punch, remove spring pin (6) from knob (3).

(2) Remove knob (3), lockwasher (4), and flat washer (5) from ladder (2).

(3) Using hammer and punch, remove spring pin (7) from knob (10).

(4) Remove knob (10), lockwasher (9), and flat washer (8) from ladder (2).

(5) Remove ladder (2) from container frame (1).

b. Installation.

(1) Position ladder (2) on container frame (1).

(2) Install flat washer (8), lockwasher (9), and knob (10) on ladder (2).

(3) Install spring pin (7) in knob (10).

(4) Install flat washer (5), lockwasher (4), and knob (3) on ladder (2).

(5) Install spring pin (6) in knob (3).

4-25. LADDER REPLACEMENT - cont.

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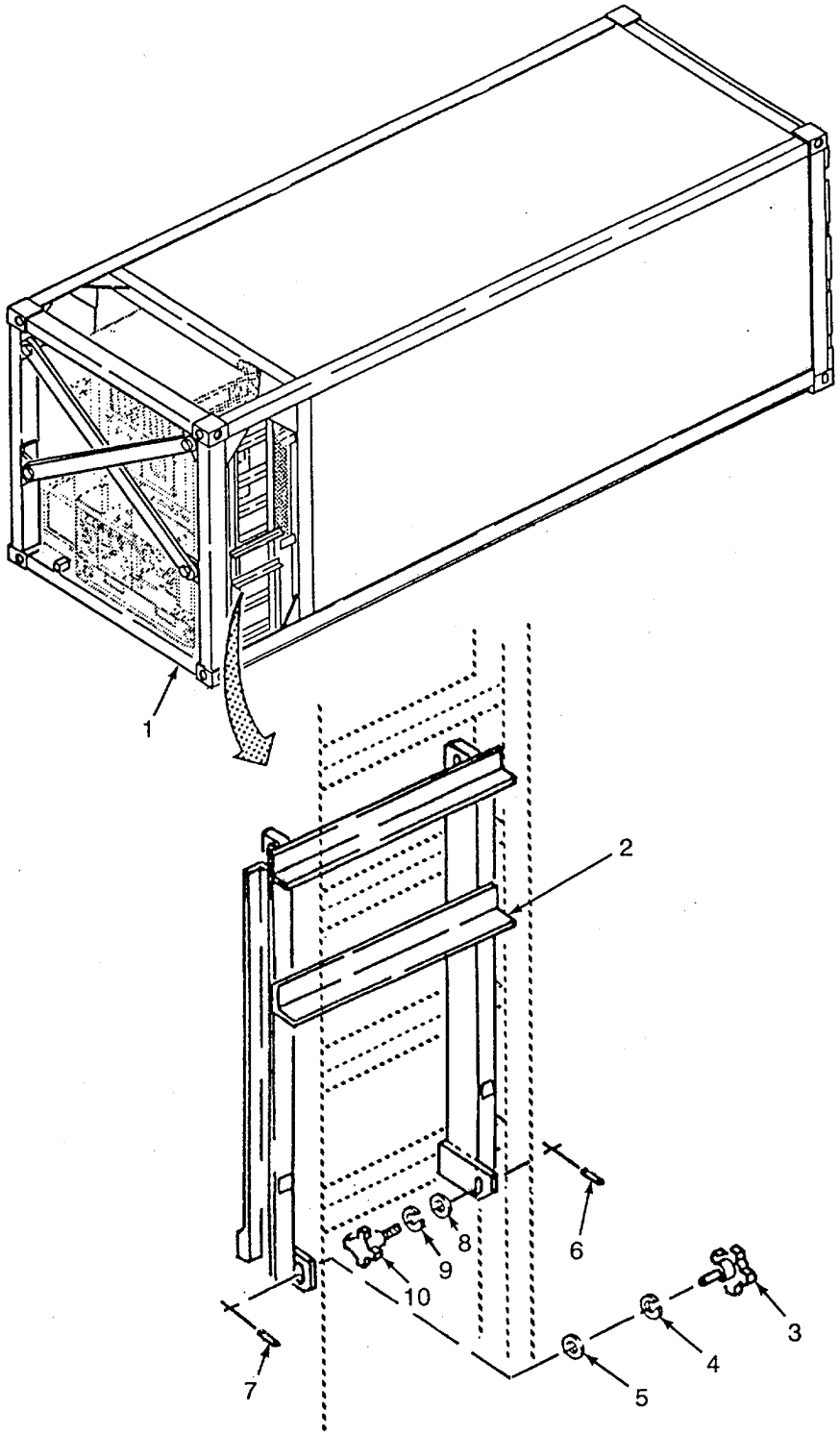


4-26. ELECTRIC POWER CABLE REPAIR.

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Electrical Repair Kit (Item 2, App B)

Materials/Parts:
Wiping rag (Item 6, App D)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. Removal.

(1) Disconnect power cable from refrigeration unit (TM 9-4110-252-14).

(2) Remove power cable from generator set (TM 5-6115-585-12/34).

b. Disassembly.

(1) Loosen setscrew (6) on nut (9).

(2) Unscrew nut (9) from housing (1).

(4) Pull terminal block (2), wiring (7) and attached parts from housing (1).

(5) Loosen four screws (3) and disconnect wiring (7) from terminal block (2).

(6) Pull sleeve (4), bushing (5),washer (10), and nut (9) from cable (8).

c. Cleaning. Wipe dirt, grease, oil, and contaminants from cable using wiping rag.

d. Inspection.

(1) Inspect cable (8) insulation for cuts, tears, cracks, and deep scratches.

(2) Inspect wiring (7) for cuts and signs of over heating.

(3) Inspect housing (1), nut (9) and sleeve (4) for cracks.

(4) Inspect terminal block (2) for cracks, corrosion and missing terminal screws (3).

(5) Inspect bushing (5) for cracks, tears and deterioration.

4-26. ELECTRIC POWER CABLE REIPAIR - cont.

e. Repair.

NOTE,
If any connector component is defective, replace entire connector.

Replace defective components.

f. Assembly.

(1) Position nut (9), washer (10), bushing (5), and sleeve (4) on cable (8).

(2) Loosen four screws (3) and connect wiring (7) to terminal block (2) as shown.

(3) Aline terminal block (2) with housing (1) and push block into housing.

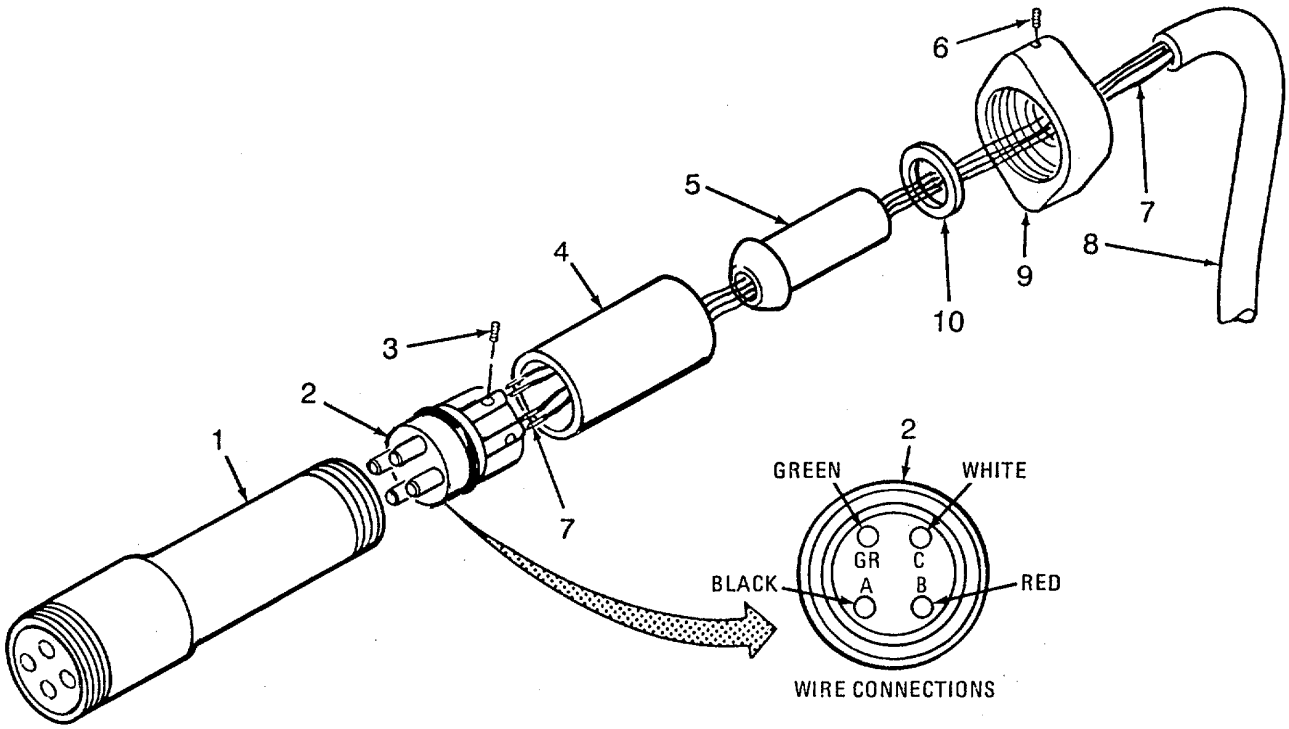
(4) Slide sleeve (4), bushing (5), and washer (10) into housing (1).

(5) Screw nut (9) onto housing (1) and tighten setscrew (6).

g. Installation.

(1) Connect power cable to generator set (TM 5-6115-585-12/34).

(2) Connect power cable to refrigeration unit (TM 9-4110-252-14).



4-27. LIGHT ASSEMBLY (EXTERIOR) REPAIR.

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App 13)
Material/Parts:
Solstice sealant (Item 10, App D)
Wiping rag (Item 6, App D)
Lockwasher (Item 10, App F)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. Removal.

(1) Disconnect power cable (9) from generator set (TM 5-6115-585-12/34).

(2) Remove nut (8), lockwashers (7), screw (11), and clamp (6) from bracket (10).

(3) Remove two screws (15), cover (1) and gasket (14) from box (4).

(4) Tag wiring (12) and remove three wire nuts (2).

(5) Pull power cable (9) out of box (4) and through bushing (13).

b. Disassembly.

CAUTION
To prevent damage to the equipment, do not attempt to remove adapter from container wall unless defective. Adapter is glued in place.

(1) Remove two screws (3) from box (4).

(1) Unscrew box (4) from adapter (5) on container wall (16).

(2) Remove bushing (13) from box (4).

c. Cleaning. Clean components with wiping rag. Remove all grease, dirt, and contaminants.

d. Inspection.

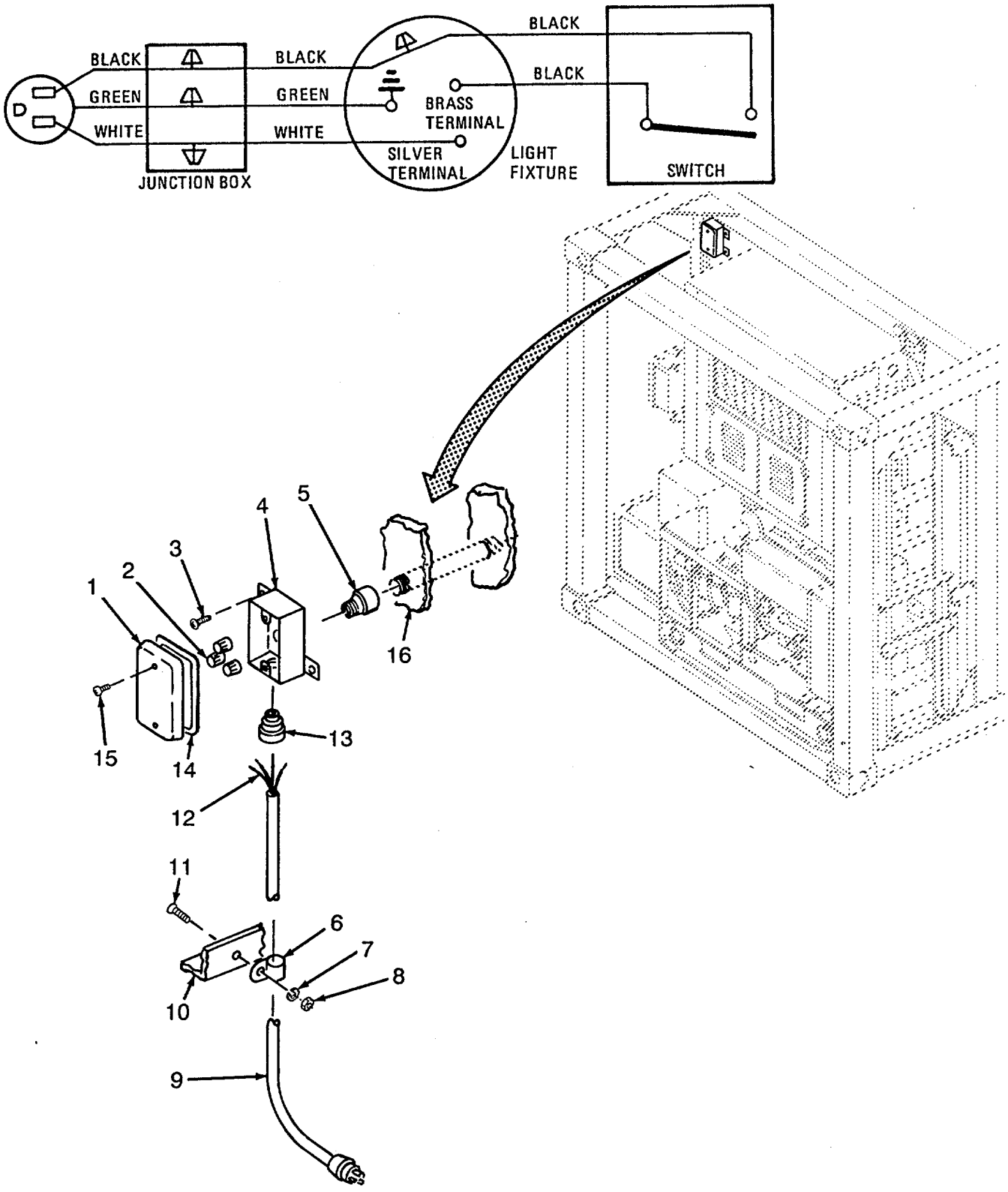
(1) Inspect cable (9) for cuts, tears and deterioration of insulation.

(2) Inspect plug on cable (9) for bent, burnt or broken spades.

(3) Inspect bushing (13) and adapter (5) for cracks.

e. Repair. Replace defective components.

4-27. LIGHT ASSEMBLY (EXTERIOR) REPAIR - cont.



4-27. LIGHT ASSEMBLY (EXTERIOR) REPAIR - cont.

f. Assembly.

(1) Install bushing (13) in box (4).

(2) Apply sealant to threads of adapter (5).

(3) Screw adapter (5) onto box (4).

(4) Install box (4) on container wall (16) with two screws (3).

g Installation.

(1) Push wiring (12) through bushing (13) and into box (4).

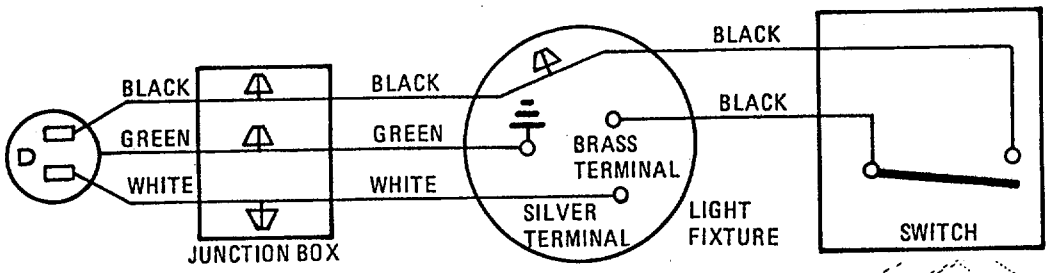
(2) Connect wiring (12) as shown, and install three wire nuts (2).

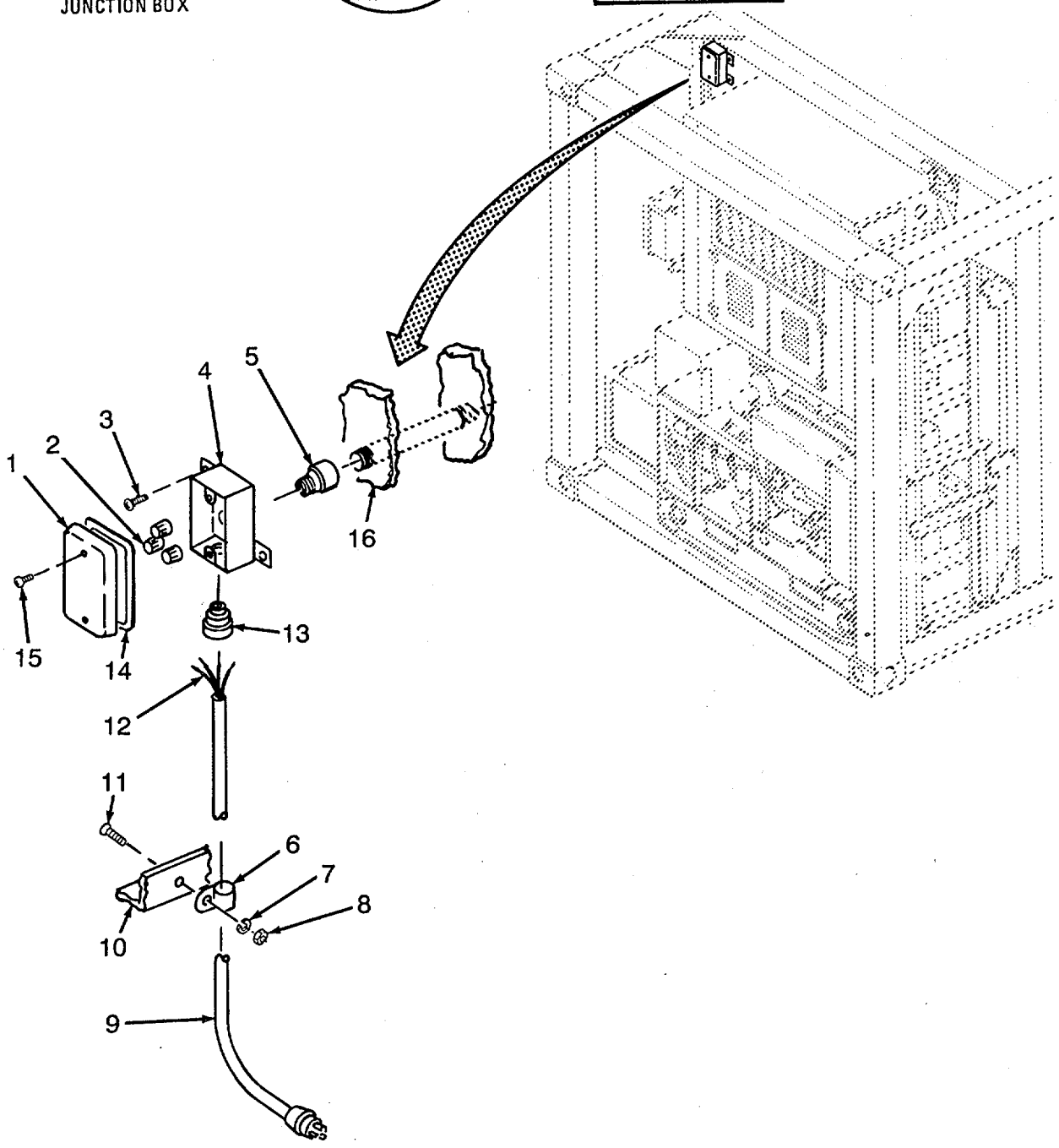
(3) Install gasket (14), cover (1), and two screws (15) on box (4).

(4) Position clamp (6) on cable (9).

(5) Install screw (11), lockwasher (7) and nut (8) on clamp (6) and bracket (10).

4-27. LIGHT ASSEMBLY (EXTERIOR) REPAIR- cont.





4-28. LIGHT ASSEMBLY (INTERIOR) REPAIR

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

Tools:	**References**:
General Mechanics Tool Kit (Item 4, App 13)	TM 9-4110-252-14
Material/Parts:	TM 5-6115-585-12/34
Adhesive (Item 1, App D)	**Equipment Condition**:
PVC Cement (Item 11 App D)	Refrigeration unit shutdown (TM 9-4110-252-14)
Wiping rags (Item 6, App D)	Generator set shutdown (TM 5-6115-585-12/34)
	Light assembly (exterior) removed (para. 4-27).

a. Removal.

(1) Loosen screw (25) and remove guard (26) from fixture (21).

(2) Remove globe (24) and bulb (23) from fixture (21).

b. Disassembly.

NOTE
Disassemble components only to the level required to perform repair.

(1) Remove two screws (22) and fixture (21) from lamp holder (11).

(2) Tag and disconnect wiring (15) from fixture (21).

(3) Remove two outer screws (20), switch (19) and gasket (18) from box (16).

(4) Tag and disconnect wiring (15) from switch (19).

(5) Remove seven screws (27) and clamps (28). Lower assembled components from container wall (29).

(6) Remove wiring (15) from box (16), nipple (13), box (11) and conduit (5 and 7).

(7) Loosen locknut (14) and remove box (16) from nipple (13).

(8) Loosen locknut (12) and remove nipple (13) from lamp holder (11).

(9) Loosen locknut (9) and remove lamp holder (11) from connector (8).

(10) Remove lock nut (9) and connector (8) from conduit (7).

(11) Loosen connector (6) and disconnect conduit (7) from conduit (5).

(12) Remove connector (4) from adapter (3).

4-28. LIGHT ASSEMBLY (INTERIOR) REPAIR - cont.

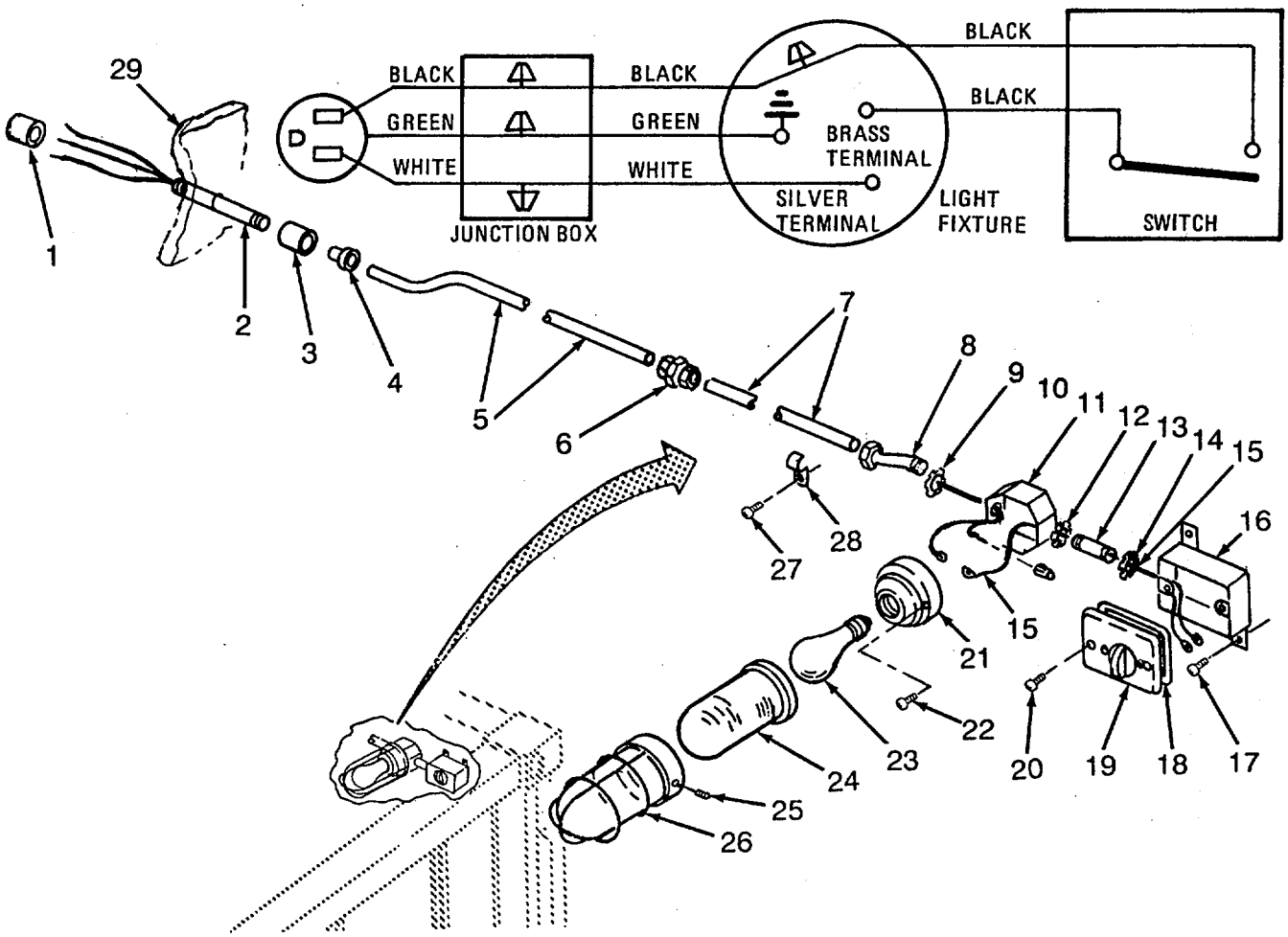
(13) Remove adapters (1 and 3) and nipple (3) from container wall (29).

c. Cleaning. Remove dirt firom all components using clean wiping rag.

d. Inspection.

(1) Inspect globe (24) for cracked or broken glass.

(2) Inspect switch (19) for sign of overheating, shorting, and corrosion.



4-28. LIGHT ASSEMBLY (INTERIOR) REPAIR - cont.

(4) Inspect wiring (15) for cut, burned, or deteriorated insulation.

(5) Inspect conduit (5 and 7) for corrosion.

e. Repair. Replace defective components.

f. Assembly.

(1) Position nipple (2) in container wall (29).

(2) Apply cement to ends of adapters (1) and 3). Before cement dries, install adapters on nipple (2).

(2) Install connector (4) on adapter (3).

(3) Connect conduit (5) to conduit (7) with connector (6)

(4) Install locknut (9) and connector (8) on lamp holder (10).

(5) Install lamp holder (11) on conduit (7) and tighten connector (8).

(6) Install locknuts (12 and 14) on nipple (13).

(6) Install nipple (13) on lamp holder (11),then tighten locknut (12).

(7) Install box (16) on nipple (13) and tighten locknut (14).

(8) Position assembled components on container wall and push conduit (5) into adapter (4).

(9) Secure conduit (5 and 7) to container wall (29) with seven clamps (28) and screws (27).

(10) Secure box (16) on container wall (29) with two screws (17).

(11) Install wiring (15) from lamp holder (11) out through nipple (2) in container wall (29).

(12) Install wiring (15) from box (16) to lamp holder (11).

(13) Connect wiring (15) to fixture (21) as tagged during removal.

(14) Connect wiring (15) to switch (19) as tagged during removal.

(15) Install gasket (18), switch (19) and two outer screws (20) on box (16).

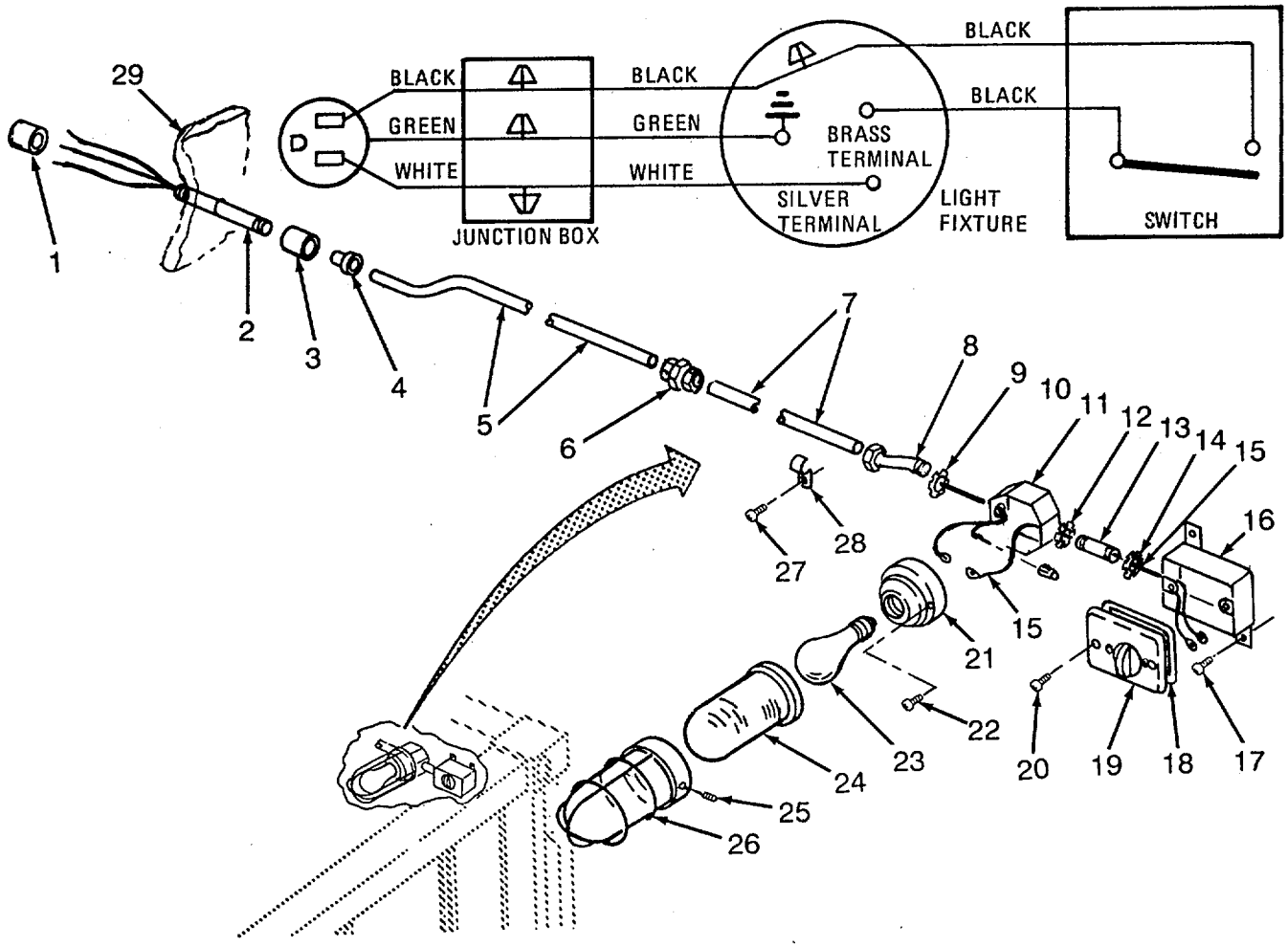
(16) Install fixture (21) on lamp holder (11) with two screws (22).

4-28. LIGHT ASSEMBLY (INTERIOR) REPAIR - cont .

g. Installation.

(1) Install bulb (23) and globe (24) on fixture (21).

(2) Install guard (26) on fixture (21) and tighten screw (25).



4-29. ESCAPE DOOR REPAIR

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App 13)
Material/Parts:
Adhesive (Item 1, App D)
Wiping rag (Item 6, App D)
Detergent (Item 2, App D)
Gasket (Item 15, App F)
Gasket (Item 16, App F)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. Removal.

(1) Open right door (5).

(2) Remove six handles (1), flat washers (2), and interior frame (15) from right door (5).

(3) Push escape panel (12) and exterior frame (8) from right door (5).

b. Disassembly.

(1) Remove four gasket strips (3, 4, 13, and 14) from interior frame (15).

(2) Remove four gasket strips (6, 7, 10, and 11) from exterior frame (11).

c. Cleaning.

(1) Wash components with fresh water and detergent.

(2) Rinse components with clean water.

(3) Dry components with wiping rag.

d. Inspection.

(1) Inspect interior frame (15) for cracks and corrosion.

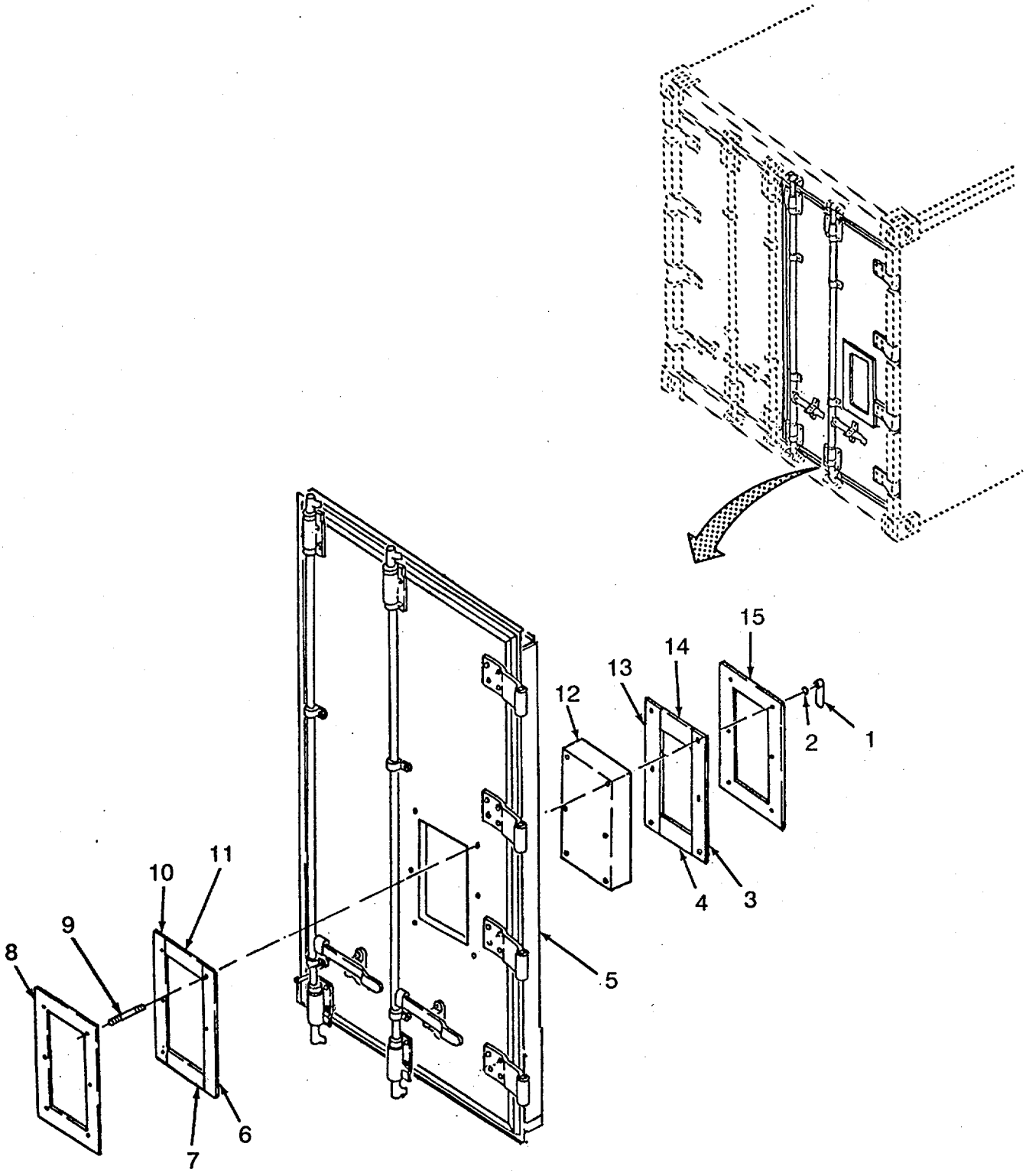
(2) Inspect exterior frame (8) for cracks, corrosion, and stripped threads on studs (9).

(3) Inspect handles (1) for cracks and stripped threads.

(4) Inspect escape panel (12) for cracks, tears, and punctures.

e. Repair. Replace defective components.

4-29. ESCAPE DOOR REPAIR-cont.



4-29. ESCAPE DOOR REPAIR-cont.

f. Assembly.

(1) Position four gasket strips (6, 7,10 and l l) over studs (9) on exterior panel (8). Mark location of studs on gaskets. Cut holes in gaskets to match location of studs.

(2) Remove protective backing fiom gasket strips (6, 7,10 and l). Install gasket strips on exterior frame (8).

(3) Position gasket strips (3, 4, 13, and 14) over interior frame (15). Cut gaskets to match location of holes in frame.

(4) Remove protective backing from gaskets (3, 4, 13, and 14). Install gaskets on interior frame (15).

g. Installation.

(1) Aline studs (9) with holes in right door (5) and push exterior frame (8) into door.

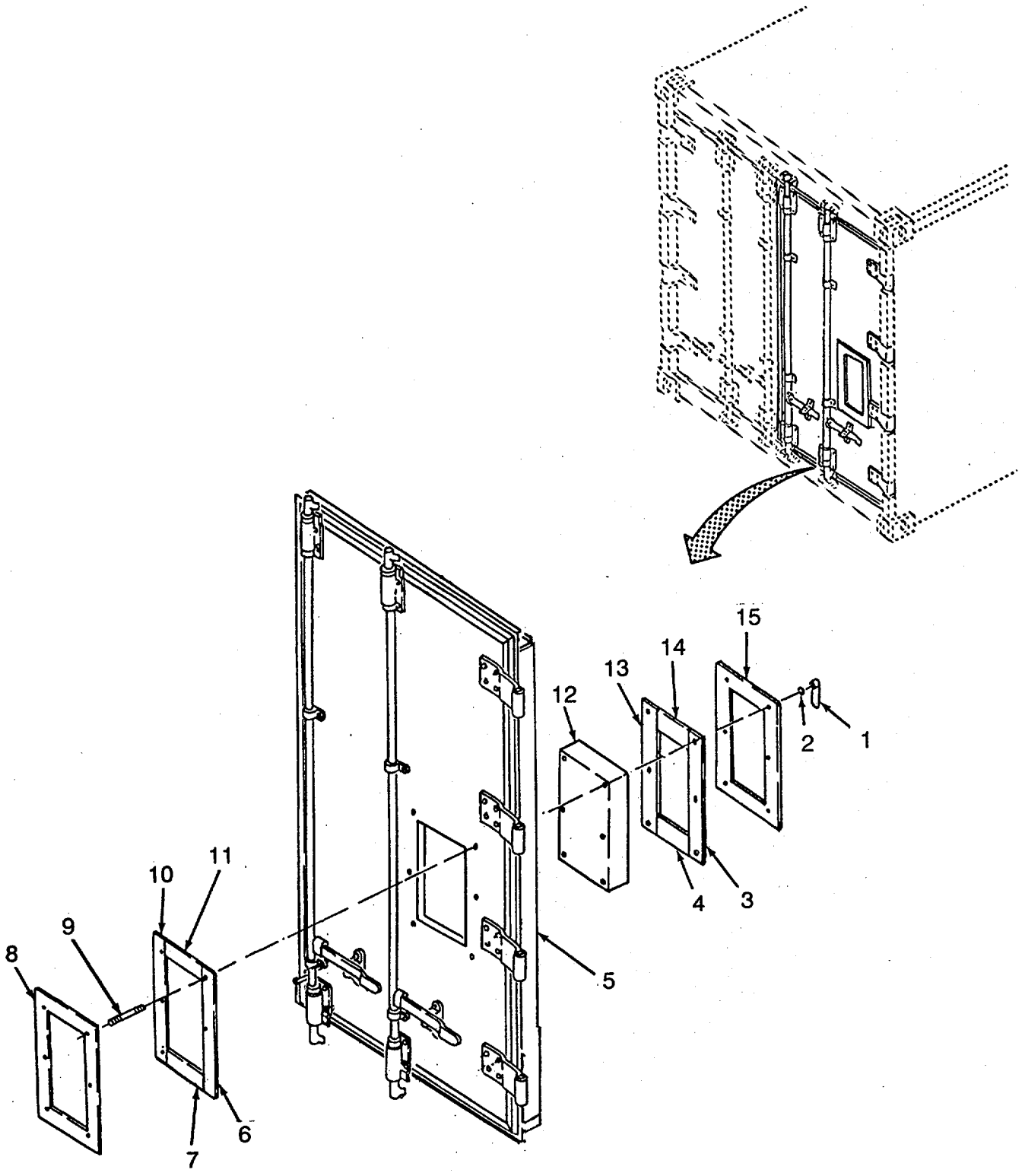
(2) Install escape panel (12) over studs (9) on exterior frame (8).

(3) Install interior frame (15) over escape panel (12). Make sure gasket strips (3, 4, 13, 14) are facing escape panel.

(4) Install six flat washers (2) and handles (1).

(5) Close right door (5).

4-29. ESCAPE DOOR REPAIR-cont.



4-30. REAR DOOR REPAIR.

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
- General Mechanics Tool Kit (Item 4, App B)
- Portable Drill (Item 2, App B)
- Drill Bit Set (Item 2, App B)
- Rivet Tool (Item 2, App B)
- Torx Bit (Item 1, App B)
- Torx Socket (Item 4, App B)

Material/Parts
- Blind rivet (9) (Item 19, App F)
- Blind rivet (124) (Item 1, App F)
- Adhesive (A/R) (Item 12, App D)
- Detergent (Item 1, App D)
- Wiping rag (Item 6, App D

References:
- TM 9-4110-252-14
- TM 5-6115-585-12/34

Equipment Condition:
- Refrigeration unit shutdown (TM 9-4110-252-14)
- Generator set shutdown (TM 5-6115-585-12/34)
- Document holder removed (para 4-16)
- Escape door removed (para 4-29)
- Rear doors removed (para 5-2)

NOTE

Disassemble rear doors only to the extent required to replace defective components.

a. Disassembly.

(1) Using portable drill and drill bit, remove nine rivets (30) and three spacers (31) from backing sheet (1).

(2) Using portable drill and drill bit, remove 60 rivets (2) from backing sheet (1).

(3) If installed, remove six plugs (29) from backing sheet (1).

(4) Carefully remove backing sheet (1) from seal (4) and insulation (28).

(5) Using portable drill and drill bit, remove 64 rivets (26), four retaining strips (3, 5, 25, and 27) and door seal (4) from door (9).

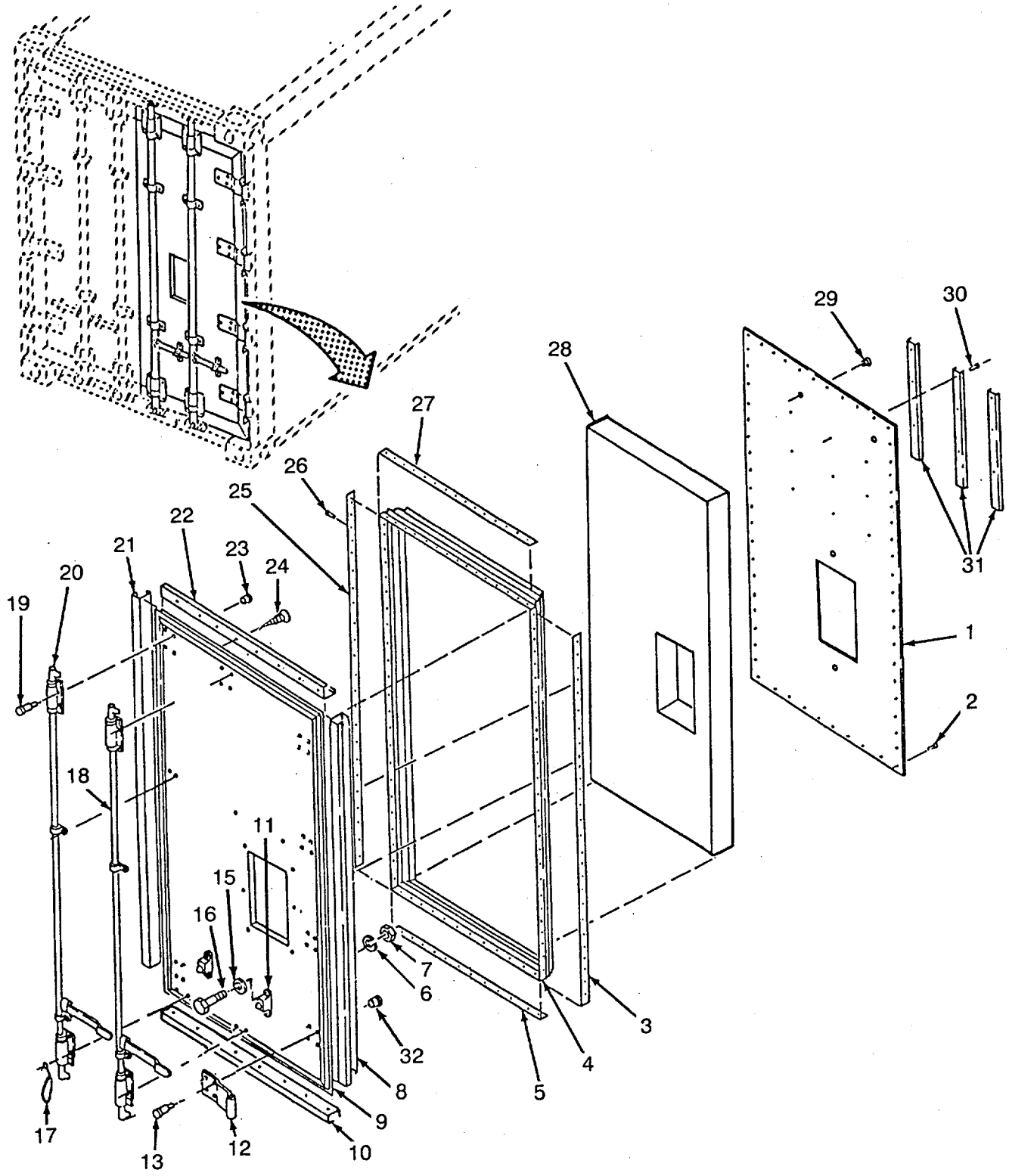
(6) Remove 51 screws (24) and four retainer frames (8, 10, 21, and 22) from door (5).

NOTE

Only insulation directly over power brace and hinge mounting hardware needs to be removed. Do not remove entire sheet of insulation unless damaged.

(7) Cut out and remove insulation (28) from mounting hardware securing power braces (18 and 20) and hinges (12) to door (9).

4-30. REAR DOOR REPAIR-cont.



4-30. REAR DOOR REPAIR- cont.

(8) Using torx bit and socket, remove 12 camtainer nuts (23), bolts (19),power brace (20) and chain (17) from door panel (9).

(9) Repeat step (8) for other power brace (18).

(10) Using torx bit and socket, remove 16 camtainer nuts (32), bolts (13) and four hinges (12) from door panel (9).

(11) Remove four nuts (7), four flat washers (6), four flat washers (15) and four bolts (16) from two seal plates (11)

b. Cleaning.

WARNING

To prevent injury to personnel and damage to equipment, use dry cleaning solvent only in well ventilated areas. Avoid repeated or prolonged contact with skin. Do not use near sparks, open flame or excessive heat.

(1) Clean power braces (18 and 20) with wiping rag and with drycleaning solvent. Dry with wiping rag.

(2) Wash door panel (9), seal (4), and backing sheet (1) with fresh water and detergent. Rinse panel with fresh water and dry with wiping rag.

c. Inspection.

(1) Inspect door panel (9) for cracks, punctures and delamination. Check door edge seal for tears.

(2) Inspect power braces (18 and 20) for cracks, broken welds, and corrosion.

(3) Inspect seal (9) for tears, punctures and deterioration.

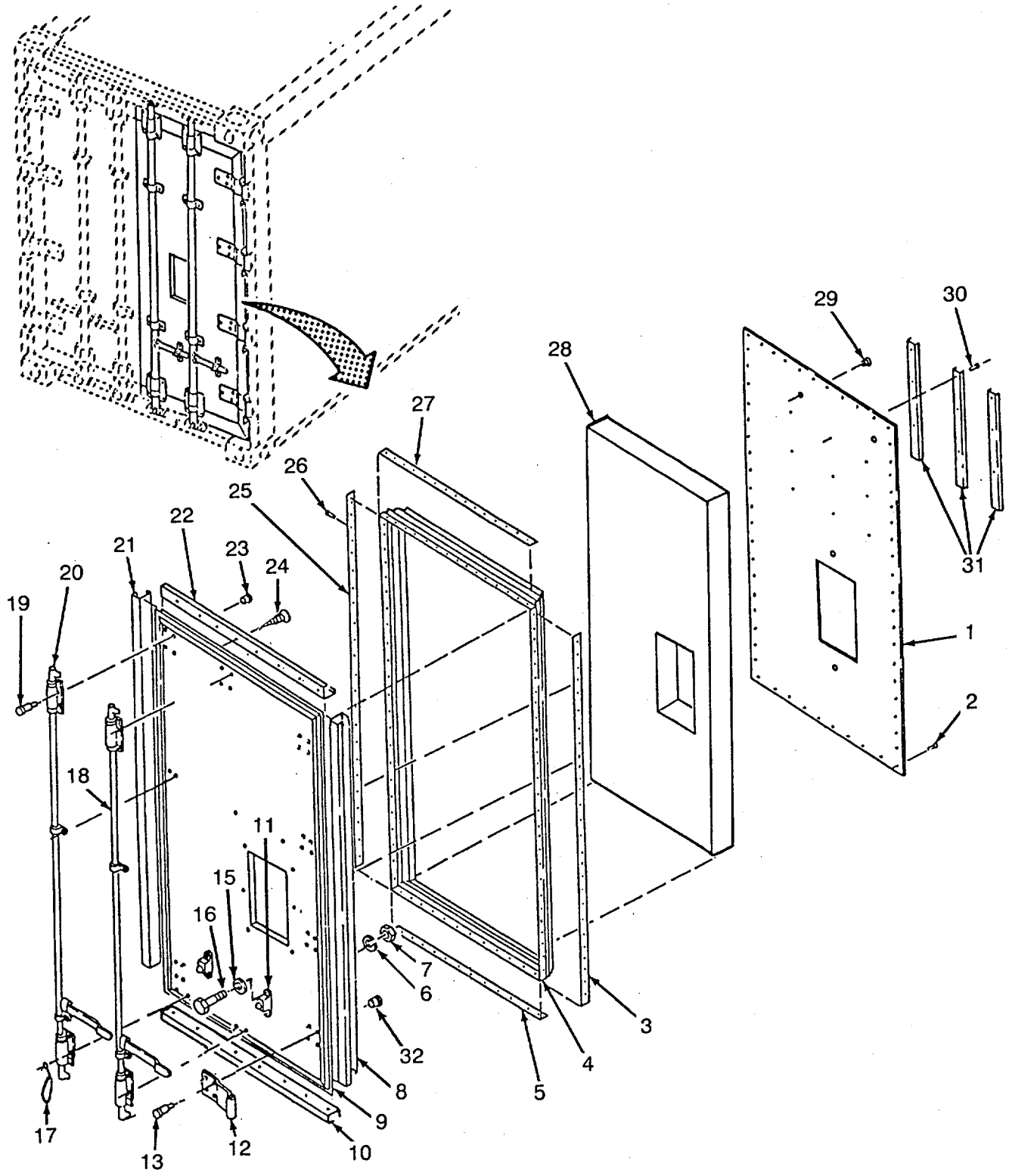
(4) Inspect backing sheet (1) for cracks, holes, and delamination.

d. Repair.

(1) Using repair kit, repair door panel (9) and backing sheet (1) in accordance with instructions supplied with kit.

(2) Replace all other defective components.

4-30. REAR DOOR REPAIR-cont.



4-30. REAR DOOR REPAIR - cont.

e. Assembly.

(1) Install four flat washers (15), four bolts (16), four flat washers (6), and four nuts (7) on two seal plates (11). Do not over tighten nut.

(2) Using torx bit and socket, install 16 camtainer bolts (13), nuts (32), and four hinges (12) on door panel (9).

(3) Using torx bit and socket, install chain (17), 12 camtainer bolts (19), nuts (23), and power brace (20) on door panel (9).

(4) Repeat step (4) for other power brace (18).

(5) Apply adhesive to door panel (9) and allow adhesive to dry until tacky.

NOTE

If only a small area of insulation was removed, insulation may be repaired by cutting, fitting, then gluing a block of insulation into the repair area. Do not replace entire sheet of insulation unless damaged.

(6) Cut to fit and press insulation (28) onto door panel (9).

(7) Position four retainer frames (21, 10, 8, and 22) on door panel (9) and install 51 screws (24).

(8) Position door seal (4) over four retainer frames (21, 10, 8, and 22).

(9) Position four retaining strips (3, 5, 25, and 27) over door seal (4) and a with holes in retainer frames (8, 10, 21, and 22).

(10) Using rivet tool, install 64 rivets (26) through retaining strips (3, 5, 25, and 27), seal (4), and retaining frames (9, 10, 21, and 22).

(11) Apply adhesive to back of insulation (28) and allow to dry until tacky.

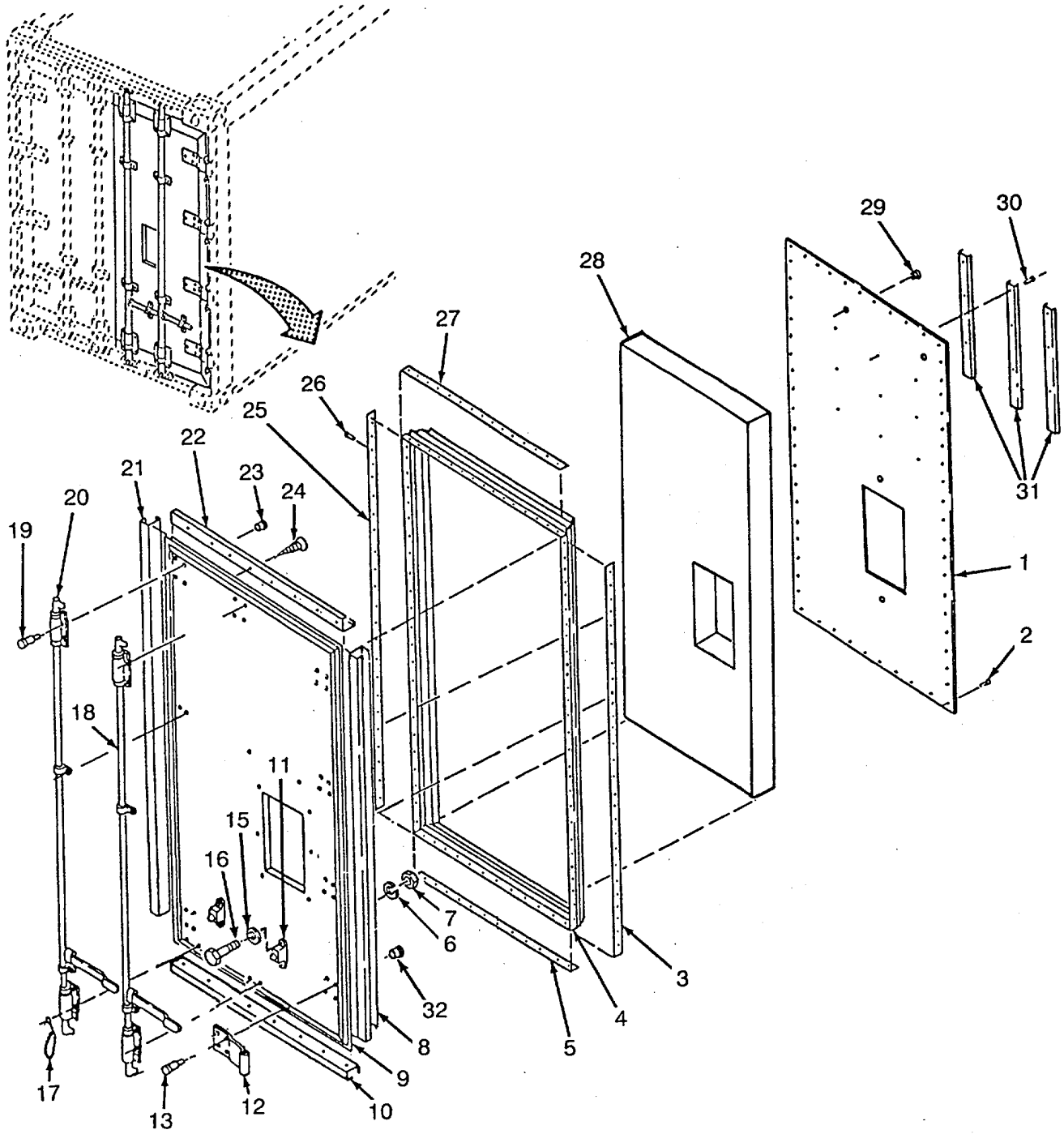
(12) While aliening rivet holes, position backing sheet (1) on seal (4) and insulation (28).

(13) Using rivet tool, install 60 rivets (2) on backing sheet (1).

(14) If removed, install six plugs (29) on backing sheet (1).

4-30. REAR DOOR REPAIR -cont.

(15) Using rivet tool, install three spacers (31) and nine rivets (30) on backing sheet (1)



14-31. INSULATED PANEL REPAIR.

This task consists of: a. Cleaning b. Inspection c. Repair

INITIAL SET-UP:

Tools:	TM 5-6115-585-12/34
General Mechanics Tool Kit (Item 4, App B)	TM 9-213
Saw (Item 2, App B)	TM 43-0139
Material/Parts:	**Equipment Condition**:
Repair kit (Item 9, App D)	Refrigeration unit shutdown (TM 9-4110-252-14)
References	Generator set shutdown (TM 5-6115-585-12/34)
TM 9-4110-252-14	

NOTE

Repair of one insulated panel is shown. Repair of other insulated panels is similar.

a. Cleaning.

(1) Wash damaged area of insulated panel (8) with detergent and clean water.

(2) Rinse insulated panel (8) with clean water and allow panel to air dry.

(3) Remove pieces of loose glass cloth (6), interior plywood (3)/exterior plywood (2), and insulation (4) from damaged area of insulated panel (8).

b. Inspection.

(1) Inspect interior and exterior surface of insulated panel (8) to determine extent of damage.

(2) Inspect glass cloth (6), interior plywood (3), and exterior plywood (2) for damage.

c. Repair.

Surface scrapes and cuts (that do not puncture plywood).

Repair damaged gelcoat and glass cloth in accordance with the instructions supplied with the repair kit.

Punctures and ruptures.

NOTE

- The following instructions apply to panel damage that goes through the interior/exterior plywood.
- Inner and outer plywood panels are repaired the same. Outer plywood is thicker than inner plywood.

4-31. INSULATED PANEL REPAIR - cont.

(1) To aid repair, outline damaged area in a square, circle, or rectangle so that replacement plywood (5) and insulation (4) can be easily measured and fitted into place.

(2) Using a hole saw, cut damaged area from insulated panel (8). Angle saw blade so that edges of cut are beveled into the damaged area, as shown.

(3) Cut and remove damaged insulation (4) from insulated panel (8).

(4) If required, cut and remove damaged rib section (1) from insulated panel (8).

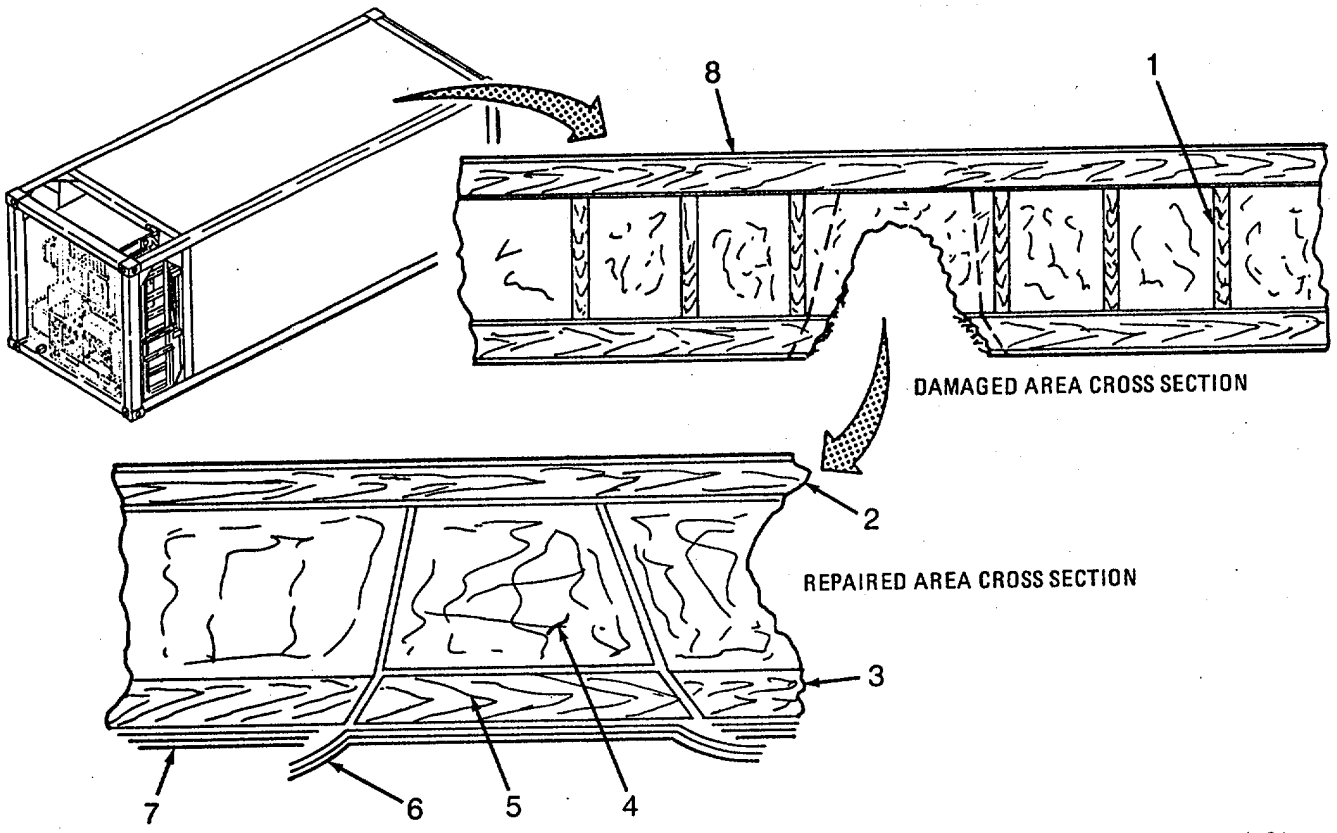
(5) Replace damaged rib section (1) with the same size and type of material (3/4 inch thick plywood). Cut rib material to length and glue in place using glass cloth and resin (see instructions in repair kit).

(6) Cut and fit replacement insulation (4) into damaged area of panel (8).

(7) Cut replacement plywood (5) to fit into damaged area of panel (8). Angle saw blade so that plywood edges are beveled to match repair area of panel.

(8) Glue replacement plywood (5) in place with three layers of glass cloth (6) and resin (see instructions in repair kit). Repair surfaces must overlap undamaged glass cloth (7).

(9) Paint repaired areas. Refer to TM 9-213 and TM 43-0139.



4-32. ROOF PANEL REPAIR.

Unit level maintenance of the roof is limited to repair of the insulated panel. Refer to paragraph 4-31 for specific repair instructions.

4-33. SIDE PANEL REPAIR

This task consists of: a. Removal b. Disassembly c.. Inspection d. Repair e Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App 13)
Material/Parts:
Detergent (Item 2, App D)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

NOTE
Repair of one side panel is shown. Repair of the other side panel is similar.

a. Removal.

(1) Open rear doors (4).

(2) Remove 66 screws (2) and six spacers (3) from side panel (1).

b. Cleaning.

(1) Wash spacers (3) and side panel (1) with detergent and clean water.

(2) Allow parts to air dry.

c. Inspection.

(1) Inspect spacers (3) for cracks, bends, and scrapes.

(2) Inspect interior and exterior surfaces of side panel (1) for deep scratches, cracks, punctures and delamination.

d. Repair.

(1) Replace defective spacers (3).

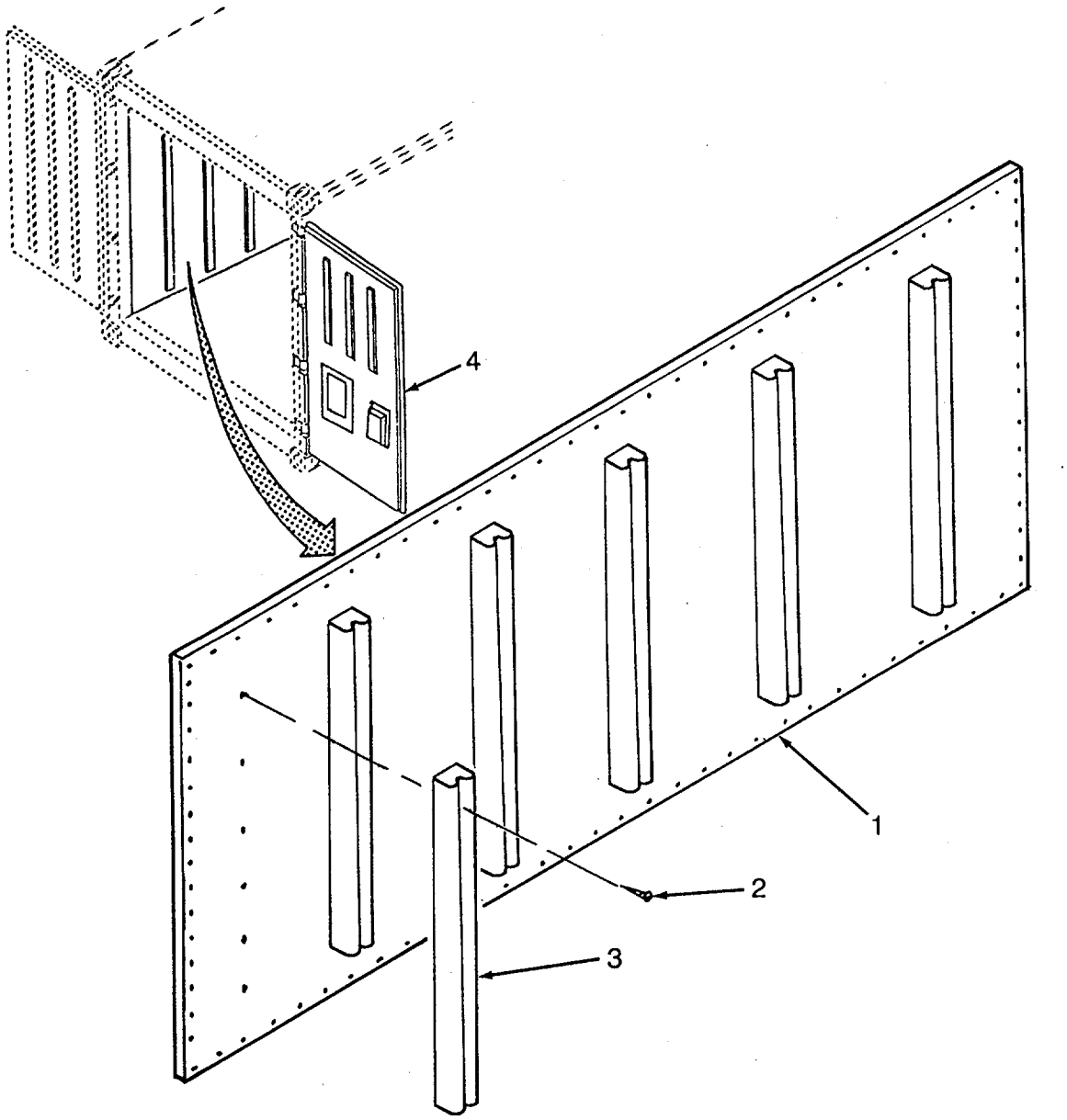
(2) If damaged, repair side panel (para 4-31).

4-33. SIDE PANEL REPAIR- cont.

e. Installation.

(1) Install six spacers (3) and 66 screws (2) on side panel (l).

(2) Close rear doors (4).



4-34. FRONT PANEL REPAIR.

This task consists of: a. Removal b. Disassembly c. Cleaning d. Inspection e. Repair f. Assembly g. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)

Material/Parts:
Drive Rivet (12) (Item 20, App F)
Drive Rivet (56) (Item 21, App F)
Solstice Sealant (Item 10, App D)

References:
TM 9-4110-252-14
TM 5-6115-585-12/34

Equipment Condition
Refrigeration unit shutdown (TM 9-4110-252-14
Generator set shutdown (TM 5-6115-585-12/34)
Refrigeration unit removed (para 4-37)

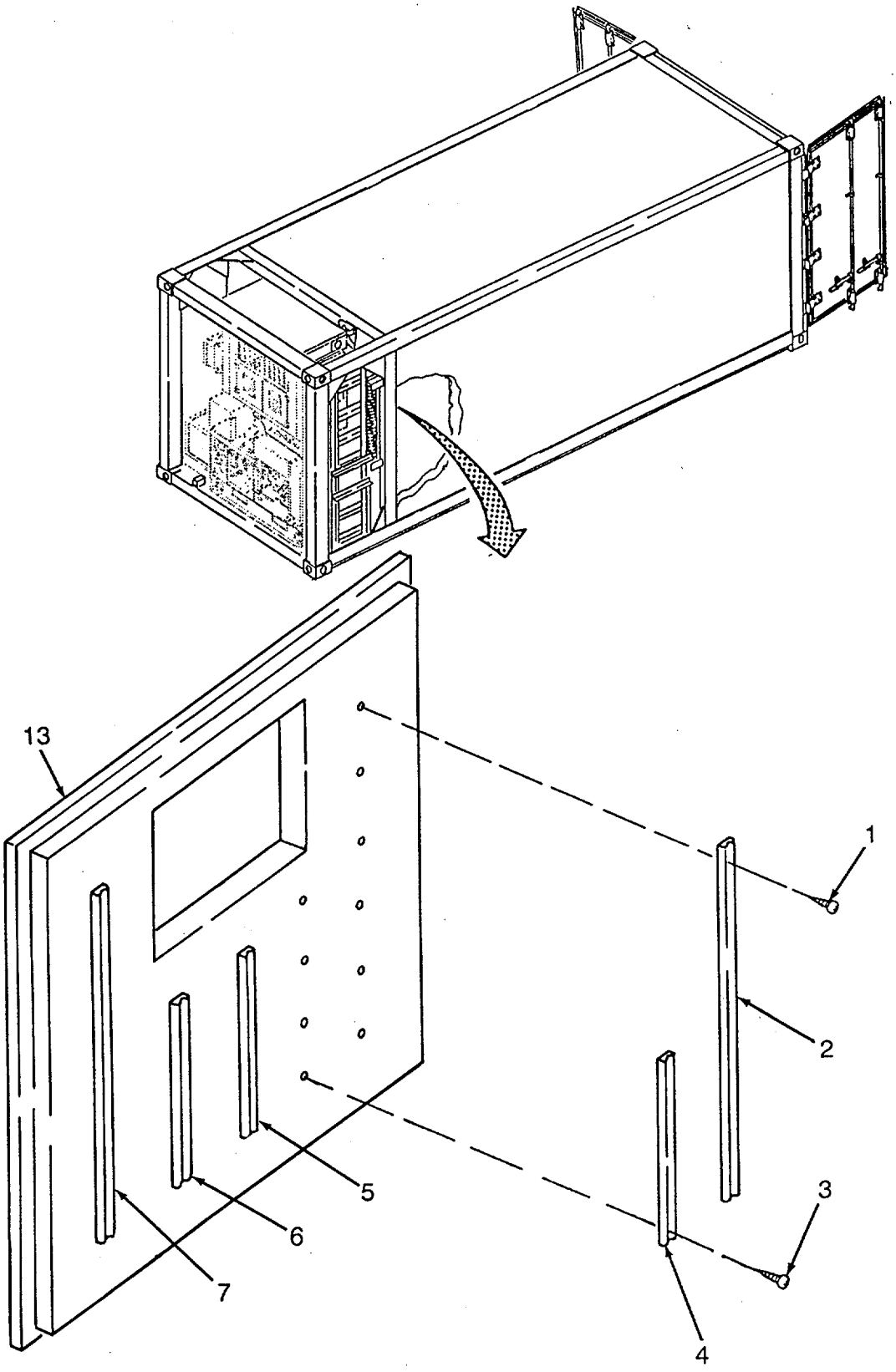
a. Removal.

(1) Open rear doors.

(2) Remove 12 screws (1) and two long spacers (2 and 7) from front panel (13).

(3) Remove 12 screws (3) and three short spacers (4, 5 and 6) from front panel (13).

4-34. FRONT PANEL REIPAIR - cont.



VIEW FROM INSIDE CONTAINER

4-34. FRONT PANEL REPAIR - cont.

b. Disassembly.

NOTE
Disassemble font panel only to the level required to replace defective component(s).

(1) Using pin punch and hammer, drive out center of 32 rivets (10).

(2) Using portable drill and bit, drill out 32 rivets (10) and remove four angle plates (8, 9, 11, and 12) from front panel (13).

(3) Using pin punch and hammer, drive out center of 36 rivets (16).

(4) Using portable drill and bit, drill out 36 rivets (16) from four angle plates (14, 15, 17, and 18).

c. Cleaning.

(1) Wash all components with detergent and fresh water.

(2) Rinse all components with clean water and allow to air dry.

d. Inspection.

(1) Inspect long spacers (2 and 7) and short spacers (4, 5 and 6) for cracks, breaks and deformation.

(2) Inspect angle plates (8, 9, 11, and 1 2) for cracks.

(3) Inspect angle plates (14, 15, 17, and 18) for cracks.

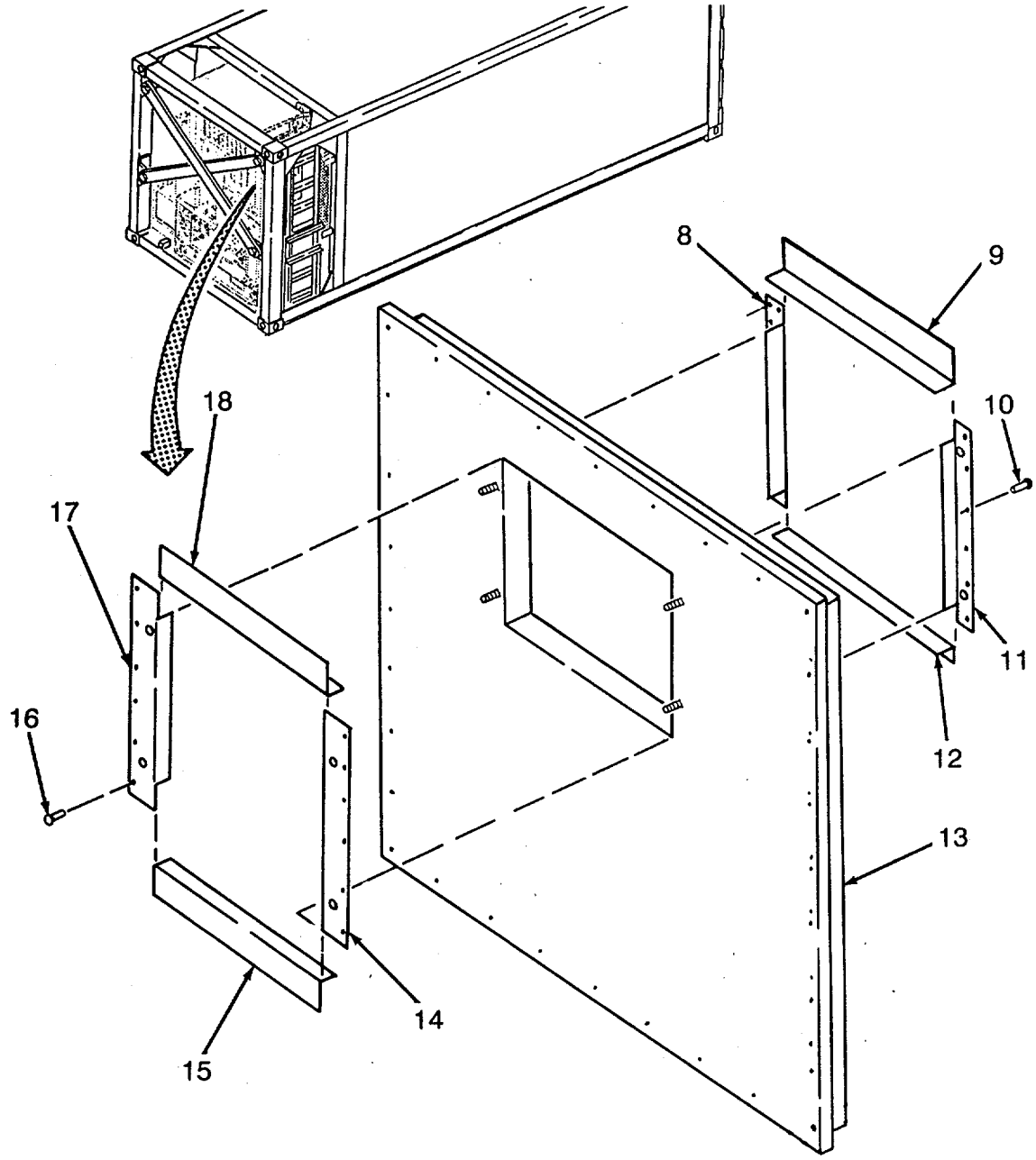
(4) Inspect interior and exterior surfaces of front panel (13) for deep scratches, cracks, punctures and delamination.

e. Repair.

(1) Replace defective components.

(2) If damaged, repair side panel (para 4-31).

4-34. FRONT PANEL REPAIR-cont.



VIEW FROM OUTSIDE CONTANIER

4-34. FRONT PANEL REPAIR-cont.

f. Assembly.

(1) Position four angle plates (14, 15, 17, and 18) on front panel (13) and install 36 rivets (16).

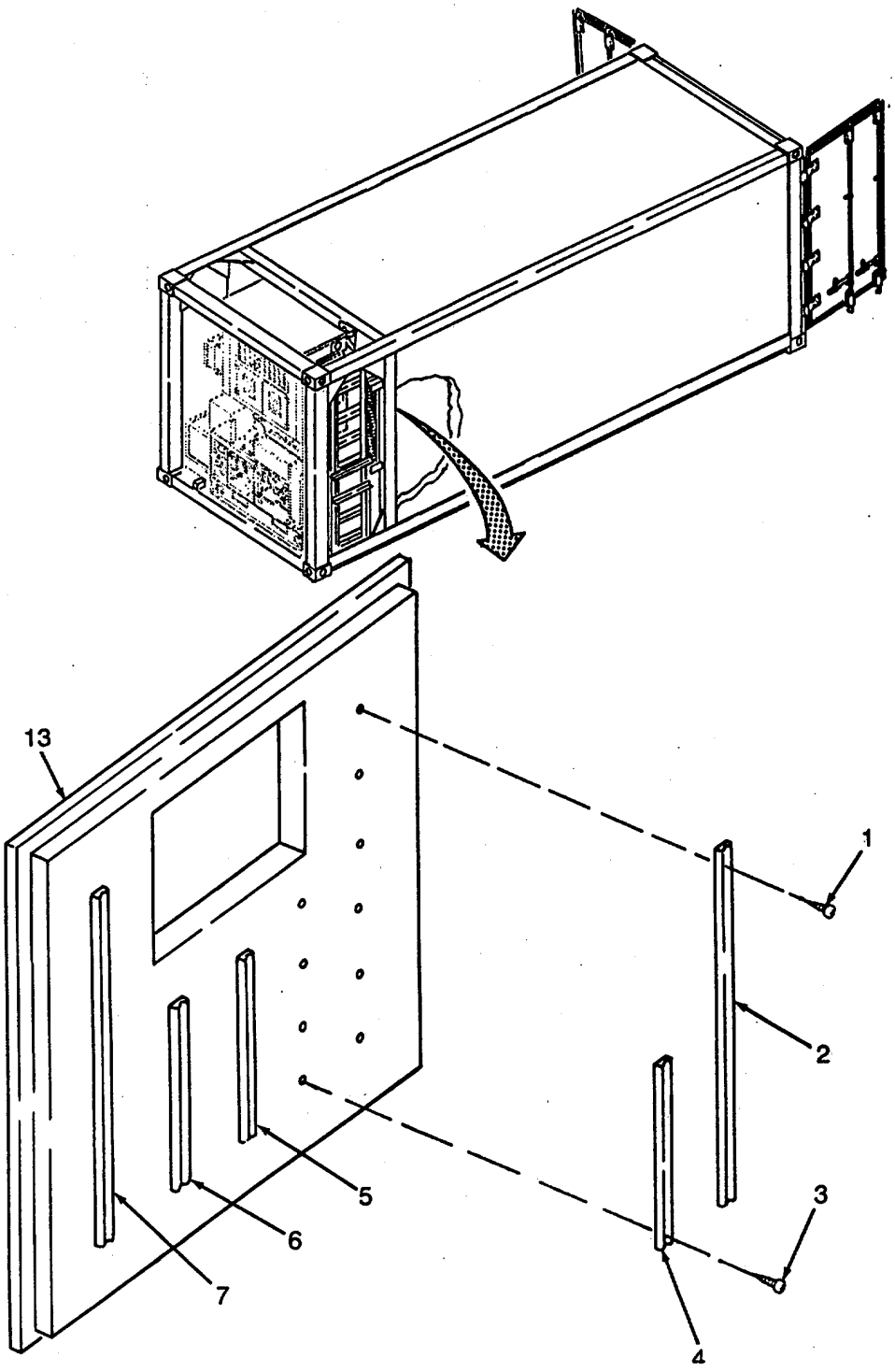
(2) Position four angle plates (8,9, 11, and 12) on front panel (13) and install 32 rivets (10).

g. Installation.

(1) Position three short spacers (4, 5 and 6) on front panel (13) and install 12 screws (3).

(2) Position two long spacers (2 and 7) on front panel (13) and install twelve screws (1).

4-34. FRONT PANEL REPAIR-cont.



VIEW FROM INSIDE CONTAINER

4-35. DRAIN REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:
Tools:
General Mechanics Tool Kit (Item 4, App B)
Material/Parts:
Adhesive (A/R) (Item 1, App D)
Sealant (Item 10, App D)

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

NOTE
There are four drains in the container floor. Removal of one drain is shown, the others are similar.

a. Removal.

(1) Open rear doors.

(2) Remove sealant and pull screen (1) from floor (4).

(3) Remove sealant from around tube (2) and push tube through floor (4).

(4) Cut and remove drain hose (3) from tube (2).

(5) Clean sealant and adhesive from tube (2).

b. Installation.

(1) Apply adhesive to end of tube (2), then install drain hose (3) on tube.

(2) Push tube (2) up through bottom of floor (4).

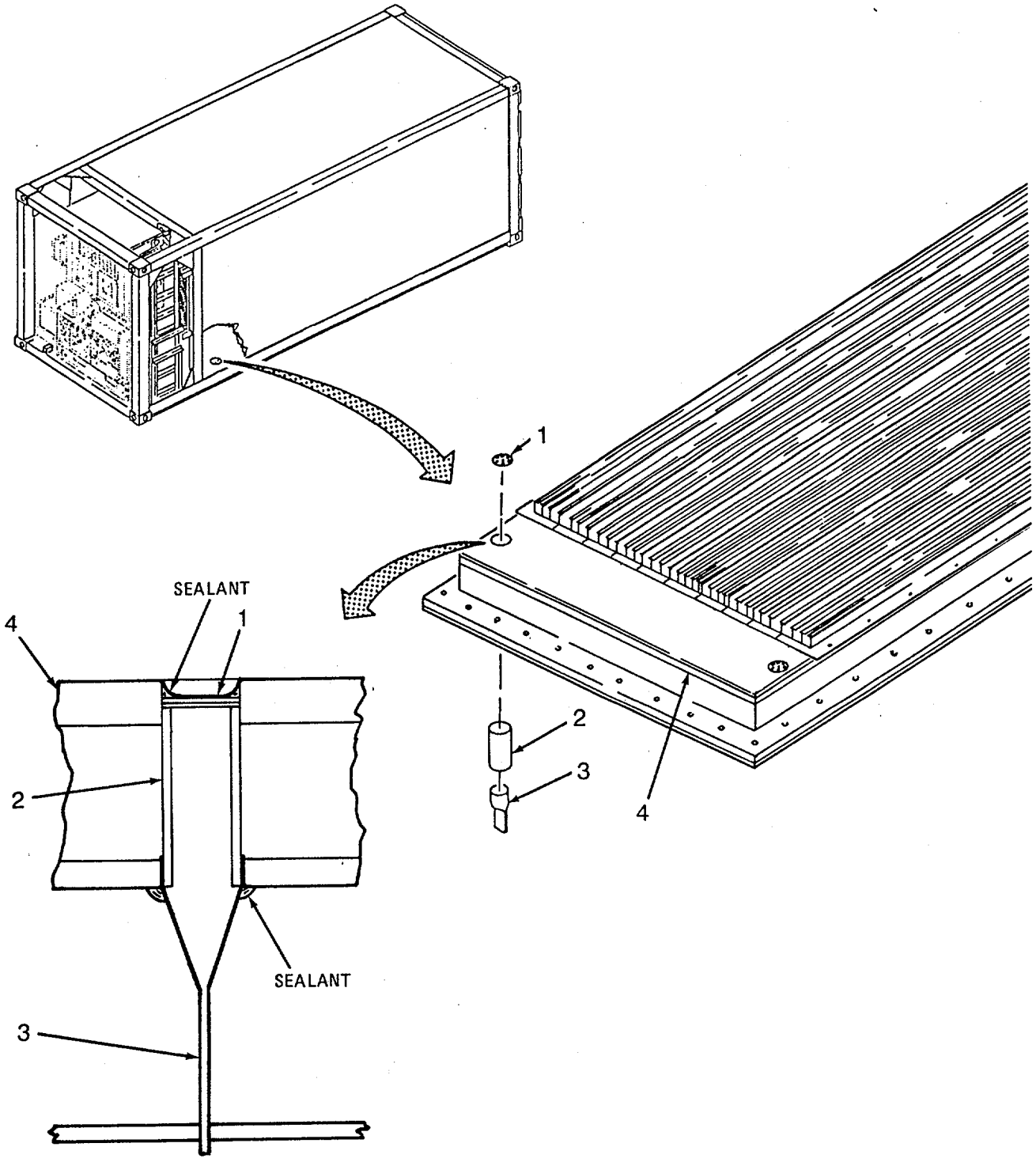
(3) Position screen (1) on top of tube (2).

(3) Secure screen (1) to tube (2) and floor (4) by applying a bead of sealant around edge of screen.

(4) Apply bead of sealant between drain hose (3), tube (2) and floor (4) as shown.

(5) Close rear doors.

4-35. DRAIN REPLACEMENT. cont.



4-36. FLOOR BOARD REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:
Tools:
General Mechanics Tool Kit (Item 4, App B)

a. Removal.

(1) Open rear doors.

(2) Remove 82 screws (2) from floor board (1).

(3) Lift and remove floor board (1) from floor panel (3).

b. Installation.

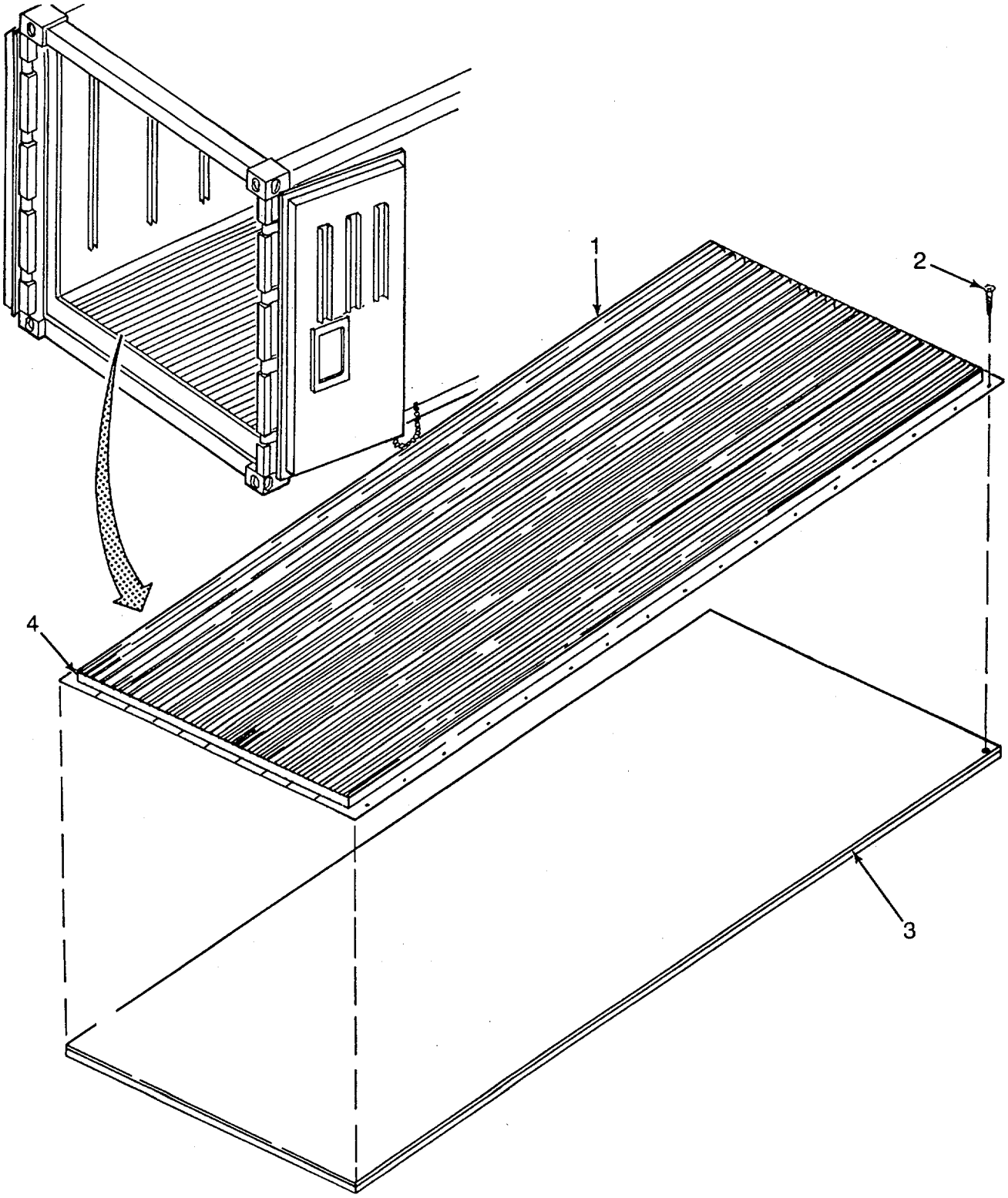
NOTE
Floor board must be installed so that brace is toward door opening.

(1) Position replacement floor board (1) on floor panel (3). Make sure brace (4) is toward door opening.

(2) Install 82 screws (2) in floor board (1).

(3) Close rear doors.

4-36. FLOOR BOARD REPLACEMENT- cont.



4-37. CROSS BRACE REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:
Tools:
General Mechanics Tool Kit (Item 4, App B)
Personnel Required:
Two (2)
Material/Parts:
Lockwasher (4) (Item 29, App F)

a. Removal.

WARNING

Cross brace is heavy/difficult to handle. Two personnel are required to remove brace from container frame.

CAUTION

Do not remove cross braces from container frame when:

- Container is in transport.
- Container is stacked on or under other containers.
- Container will be moved or hoisted.

If required, unstack container before performing maintenance. Cross braces are required to prevent twisting or warping of container frame. If container is moved with braces removed, braces may be very difficult to install.

(1) Remove two nuts (1), lockwashers (2), flat washers (3), bolts (5) and flat washers (4) from brace (13).

(2) Remove brace (13) from frame (6).

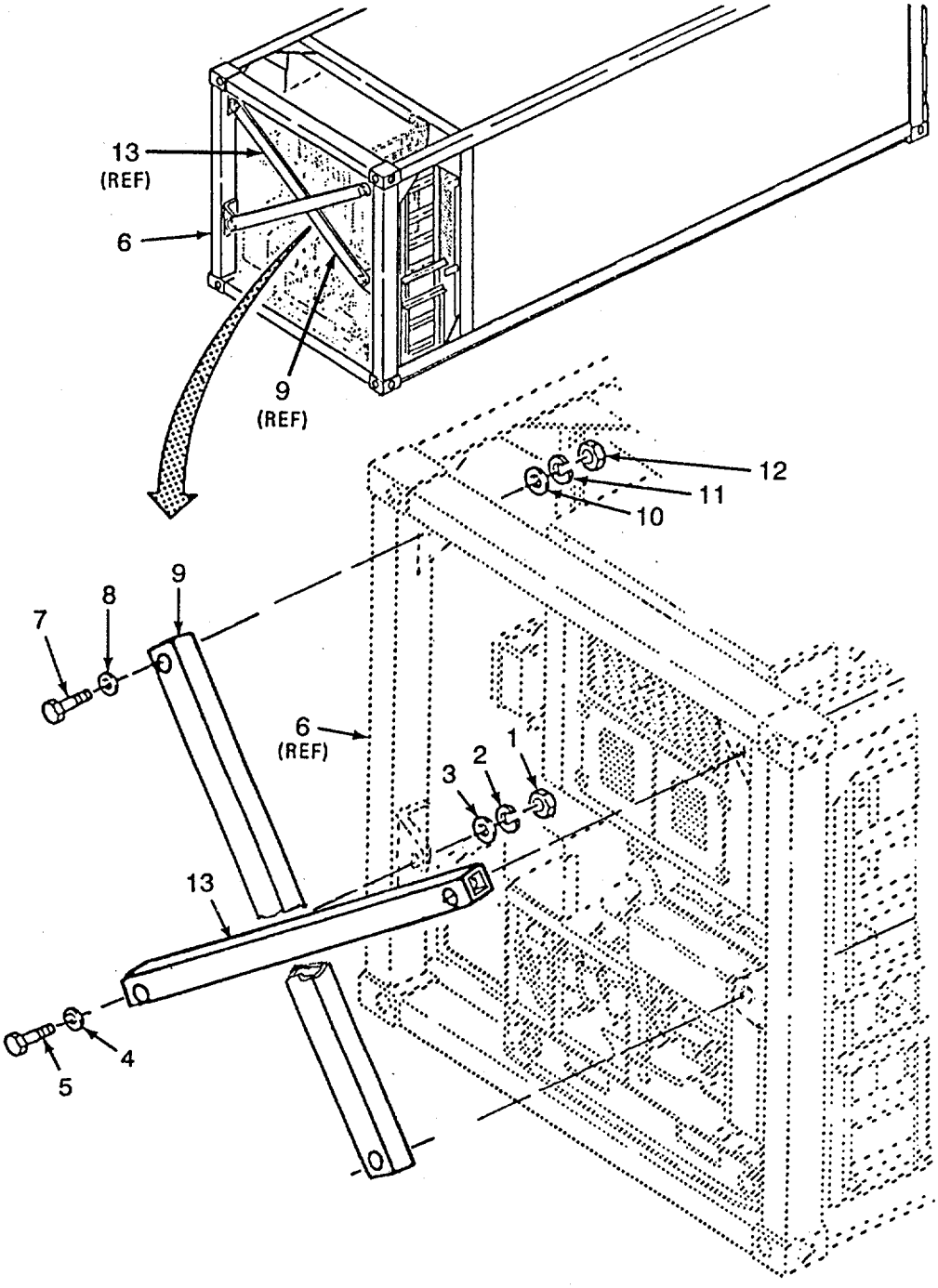
WARNING

Cross brace is heavy/difficult to handle. Two personnel are required to remove brace from container frame.

(3) Remove two nuts (12), lockwashers (11), flat washers (10), bolts (7) and flat washers (8) from brace (9).

(4) Remove brace (9) from frame (6).

4-37. CROSS BRACE REPLACEMENT - cont.



4-37. CROSS BRACE REPLACEMENT- cont.

b. Installation.

WARNING

Cross brace is heavy/difficult to handle. Two personnel are required to install brace on container frame.

(1) Position brace (9) on frame (6) and aline mounting holes.

(2) Install two flat washers (8), bolts (7), flat washers (10), lockwashers (11) and nuts (12).

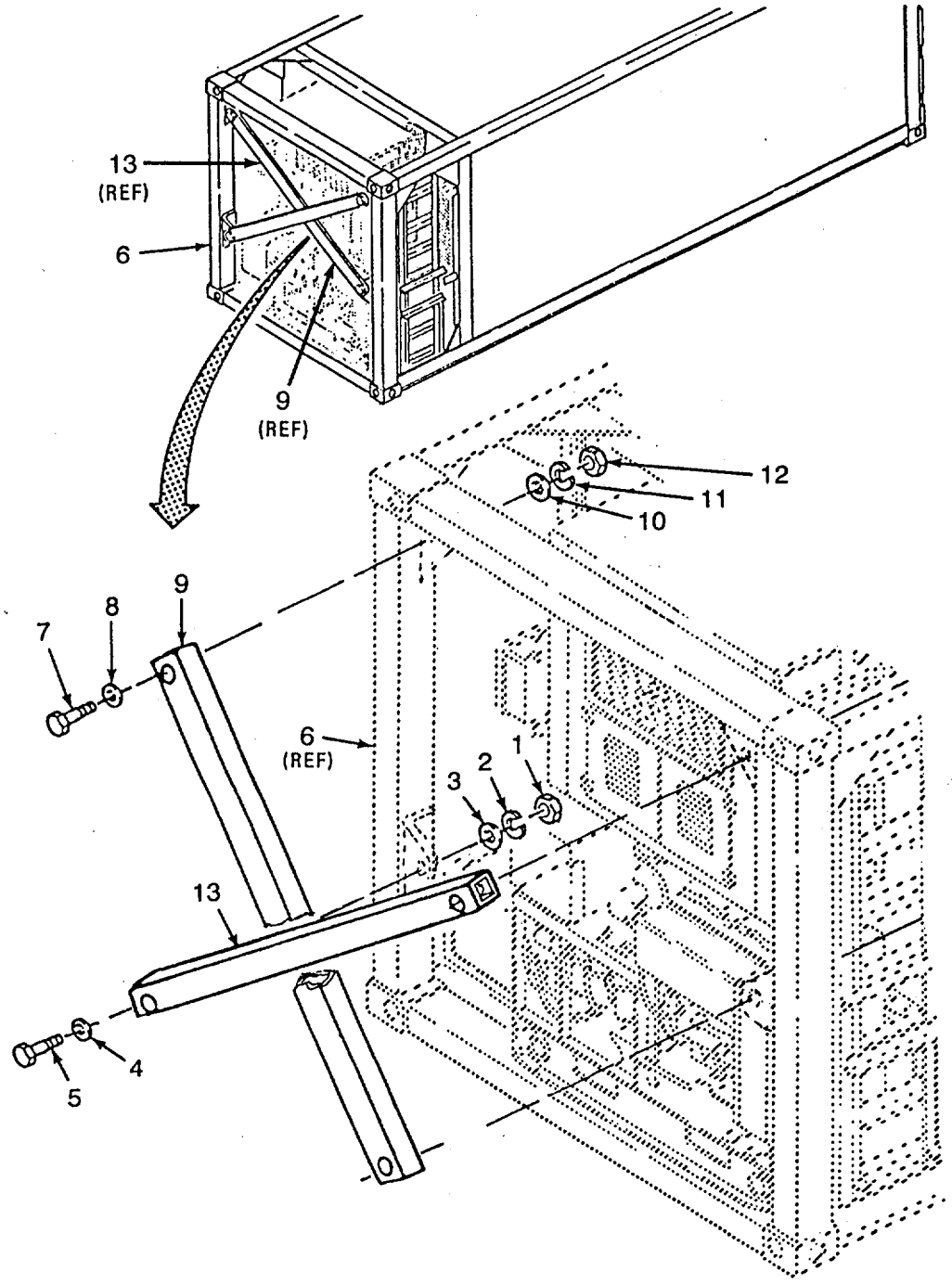
WARNING

Cross brace is heavy/difficult to handle. Two personnel are required to install brace on container frame.

(3) Position brace (13) on frame (6) and aline mounting holes.

(4) Install two flat washers (4), bolts (5), flat washers (3), lockwashers (2) and nuts (1).

4-37. CROSS BRACE REPLACEMENT - cont.



4-38. REFRIGERATION UNIT REMOVAL/INSTALLATION.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Sling (Item 2, App B)
Forklift

Personnel Required:
Three (including forklift operator)

Material/Parts:
Silastic Sealant (Item 10, App D)

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)
Cross Braces removed (para 3-37)

a. Removal.

(1) Remove eight bolts (8), lockwasher (9), flatwashers (10) and top grill (11) from refrigeration unit (6).

(2) Disconnect refrigeration unit power cable (7) from power source.

(3) Open left and right access panels on refrigeration unit (6) (TM 9-4110-252-14).

(4) Wrap power cable (7) around cable reel located inside refrigeration unit (6) (TM 9-4110-252-14).

(5) Position tines of forklift under refrigeration unit (6).

WARNING

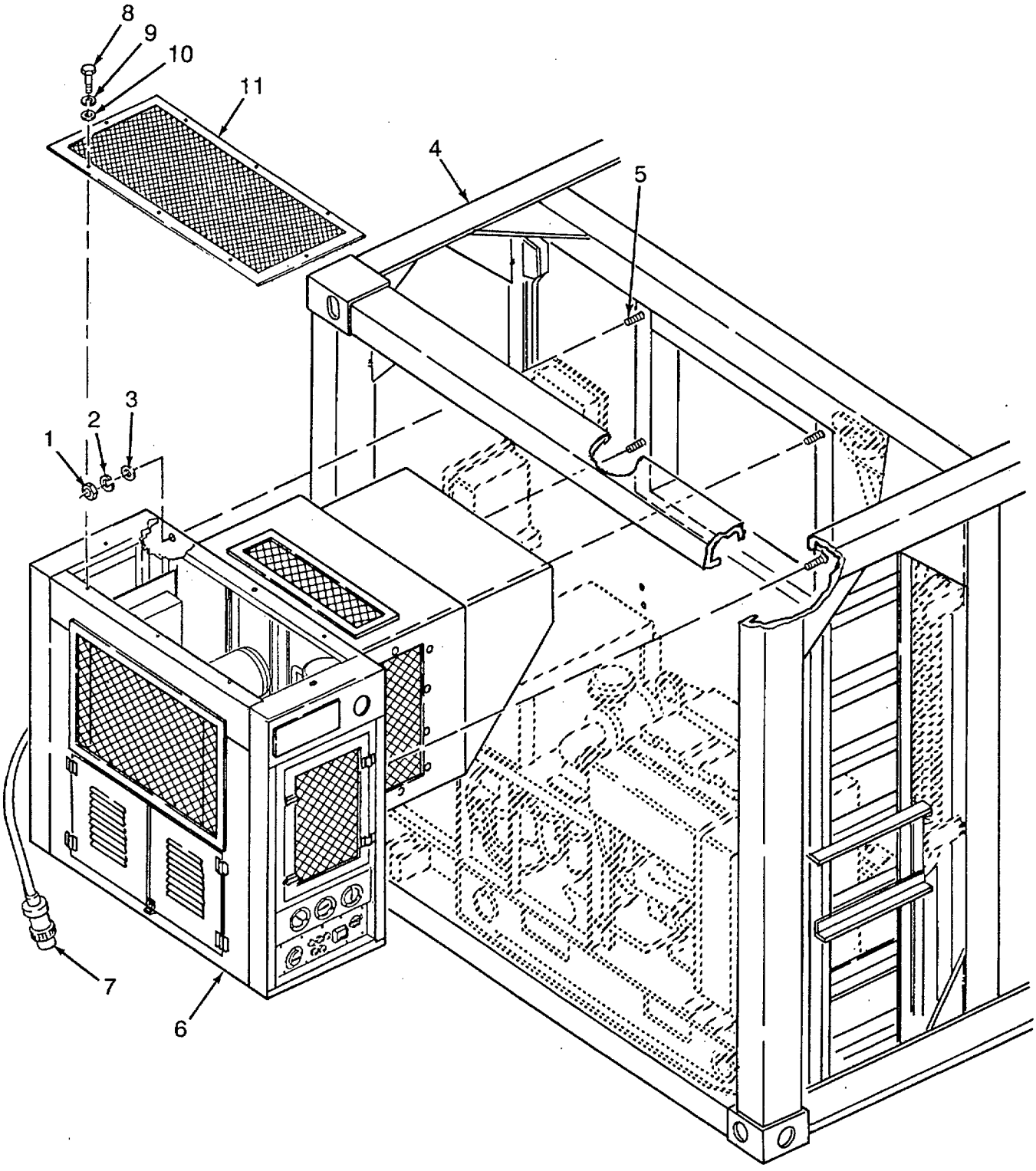
To prevent injury to personnel and damage to equipment, make sure refrigeration unit is secured to forklift tines. Refrigeration unit is top heavy. Weight of evaporator coil (inside container) may cause unit to tip forward when removed. Make sure top of refrigeration unit is tied back and bottom of unit is secured to forklift.

(6) Secure refrigeration unit (6) to tines of forklift.

(7) Remove four nuts (1), lockwashers (2) and flat washers (3) from studs (5).

(8) Carefully remove refrigeration unit (6) from container (4).

4-38. REFRIGERATION UNIT REMOVAL/INSTALLATION- cont.



4-38. REFRIGERATION UNIT REMOVAL/INSTALLATION - cont.

b. Installation.

WARNING

To prevent injury to personnel and damage to equipment, make sure refrigeration unit is secured to forklift tines. Refrigeration unit is top heavy. Weight of evaporator coil (inside container) may cause unit to tip forward when removed. Make sure top of refrigeration unit is tied back and bottom of unit is secured to forklift. Unit may fall off forklift if not properly secured.

(1) Aline refrigeration unit (6) with opening in container (4) and carefully install refrigeration unit on four studs (5).

(2) Install four flat washers, (3), lockwashers (2) and nuts (1) on studs (5).

(3) Remove forklift from refrigeration unit (6).

(4) Install top grill (11), eight flatwashers (10), lockwashers (9), and bolts (8) on refrigeration unit (6).

(5) Unwrap power cable (7) from cable reel located inside refrigeration unit (TM 9-4110-252-14).

(6) Connect power cable to power source (TM 9-4110-252-14).

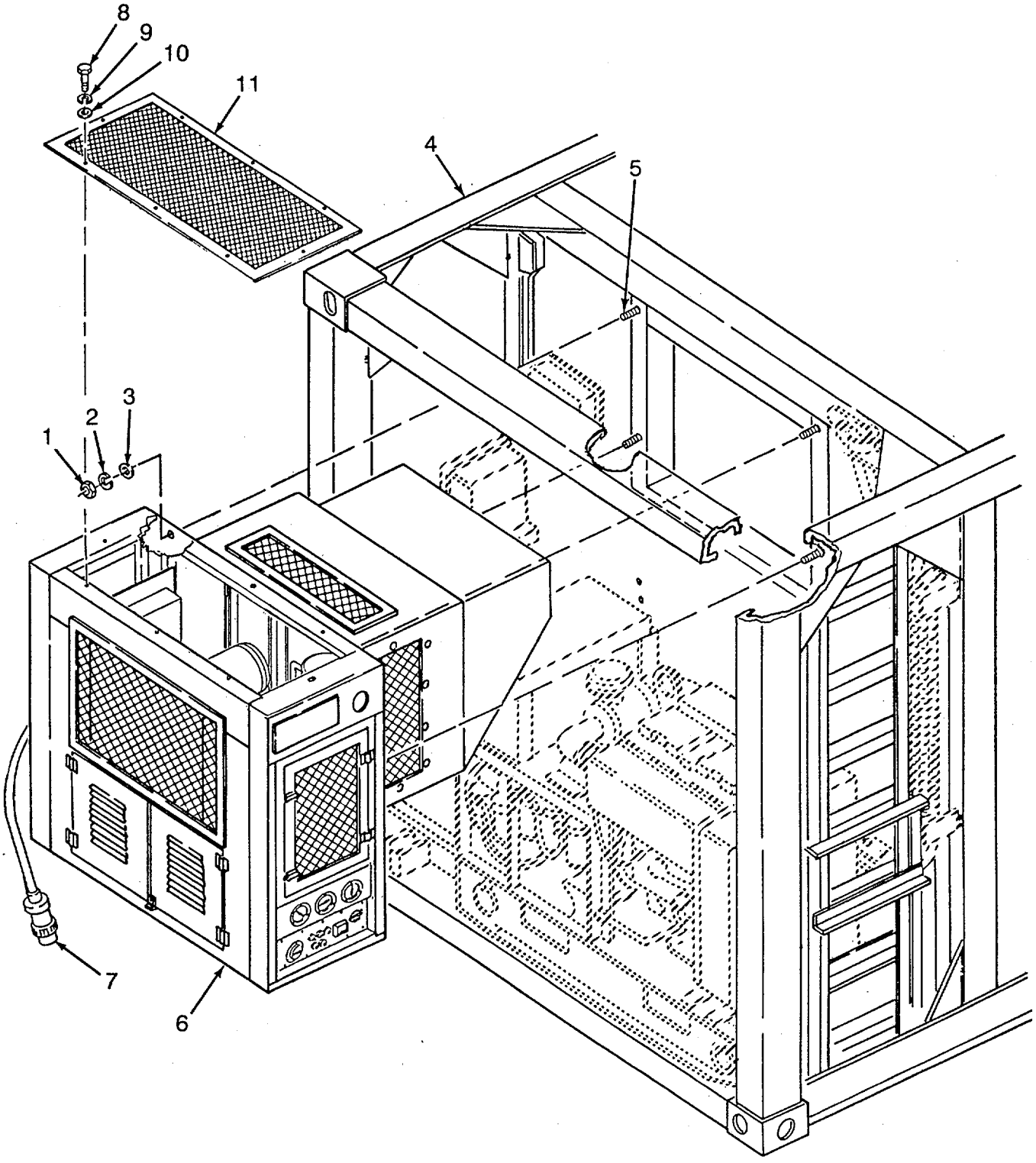
(7) Close right access panel on refrigeration unit (6) (TM 9-4110-252-14).

(8) Install cross braces (para 3-37).

(9) Start and operate generator set (TM 5-6115-585-12/34).

(10) Start and operate refrigeration unit. Check refrigeration unit operation and performance. (Refer to TM 9-4110-252-14.)

4-38. REFRIGERATION UNIT REMOVAL/INSTALLATION - cont.



Section VI. PREPARATION FOR STO RAGE OR SHIPMENT

4-39. SECURITY PROCEDURES.

Refer to AR 190-11 or AR 190-13.

4-40. ADMINISTRATIVE STORAGE.

a. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. items should be mission ready within 24 hours or within the time factors as determined by the directing authority. During the shortage period, appropriate maintenance records will be kept.

b. Before placing equipment in administrative storage, current maintenance services and equipment serviceable criteria (ECS) evaluations should be completed, shortcomings and deficiencies should be corrected, and all modification work orders (MWOs) should be applied.

c. Remove all cargo, containers, and packaging materials from refrigerated container.

d. Wash container interior with fresh, clean water and detergent. Rinse with clean water and allow container interior to dry before closing rear doors.

e. If container was used in a a salt air environment, wash container exterior with detergent and fresh water. Rinse with clean water and allow to dry.

f. Storage Site Section. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, keep container away from corrosive materials, such as saltwater spray

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

DIRECT SUPPORT MAINTENANCE PROCEDURES

5-1. INTRODUCTION.

This Chapter contains instructions for performing Direct Support level maintenance on the refrigerated container.

5-2. REAR DOOR REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Welding Shop (Item 5, App B)
Hoist (Item 2, App B)
Sling (Item 2, App B)

Material/Parts:
Hinge Pin (4) (Item 24, App F)
Hinge Bearing (8) (Item 23, App F)

Personnel Required:
Two

References:
TM 9-4110-252-14
TM 5-6115-585-12/34
TM 9-237
TM 9-213

Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

NOTE
Replacement of right rear door is shown. Replacement of left rear door is similar.

a. Removal.

(1) Open rear door (9).

(2) Using cutting torch or grinder, remove weld securing hinge pin (2) to hinge brackets (1 and 8). Repeat for three other hinges.

WARNING
Door is heavy/difficult to handle. Use two personnel when removing door.

(3) While supporting rear door (9) with hoist, drive out hinge pins (2) from four door hinges (5).

(4) Remove rear door (9) from hinge brackets (1 and 8).

(5) Remove washers (3 and 7) and bushings (4 and 6) from door hinges (5).

b. Installation.

(1) Install new bushings (6 and 4) in door hinges (5).

WARNING
Door is heavy/difficult to handle. Use two personnel when installing door.

(2) Hoist rear door (9) into position on hinge brackets (1 and 8).

(3) Position washers (7 and 3) between hinge bushing (6 and 4) and hinge brackets (1 and 8) as shown.

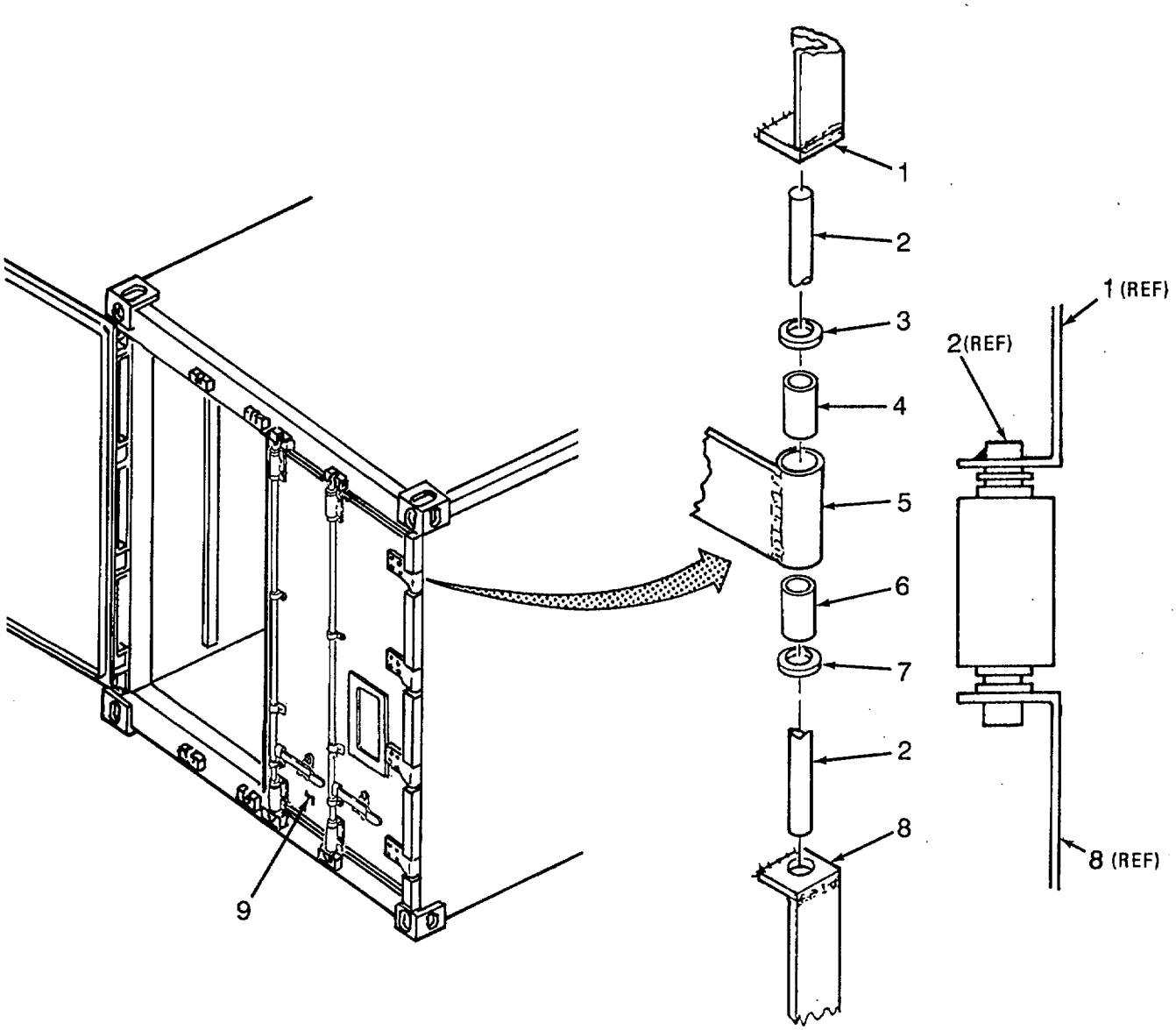
5-2. REAR DOOR REPLACEMENT - cont.

(4) Install hinge pins (2) through hinge brackets (1 and 8) and door hinges (5).

(5) Weld top end of hinge pins (2) to hinge bracket (1) (refer to TM9-237).

(6) Clean and paint bare metal surfaces (refer to TM9-213).

(7) Close rear door (9).



5-3. ROOF PANEL REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools: Sealant (Item 10, App D)
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)
Torx Bit (Item 1, App B)
Torx Socket (Item 3, App B)
Hoist (Item 2, App B)
Sling (Item 2, App B)
Rivet Tool (Item 2, App B)
Material/Parts:
Pop Rivet (169) (Item 28, App F)
Filler Rope (Item 22, App F)
Sealant Tape (Item 25, App F)
Container Bolt (138) (Item 27, App F)
Container nut (138) (Item 26, App F)
Personnel Required:
Two
References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)

a. **Removal.**

(1) Mark and record location of five angle plates (6, 7, 9,10, and 11).

(2) Using a pin punch and hammer, drive out center of 169 rivets (5 and 17) from five angle plates (6, 7, 9,10, and 11).

(3) Using portable drill and drill bit, drill out rivets (5 and 17) from six angle plates (6, 7, 9,10, and 11).

(4) Remove thirteen bolts (19) and fourteen screws (18) from angle plate (16).

(5) Carefully pry six angle plates (6, 7, 9,10, 11, and 16) from roof panel (1), front panel (8) and side panel (4).

(6) Remove insulation (2) from space between front panel (8) and roof panel (1).

(7) Remove insulation (2) from space between side panels (4) and roof panel (1).

(8) Remove sealant and filler rope (12) from edges of roof panel (1).

(9) Using torx bit and socket, remove 138 container nuts (15) and bolts (14).

(10) Push up on roof panel (1) to break seal between panel and container frame (3).

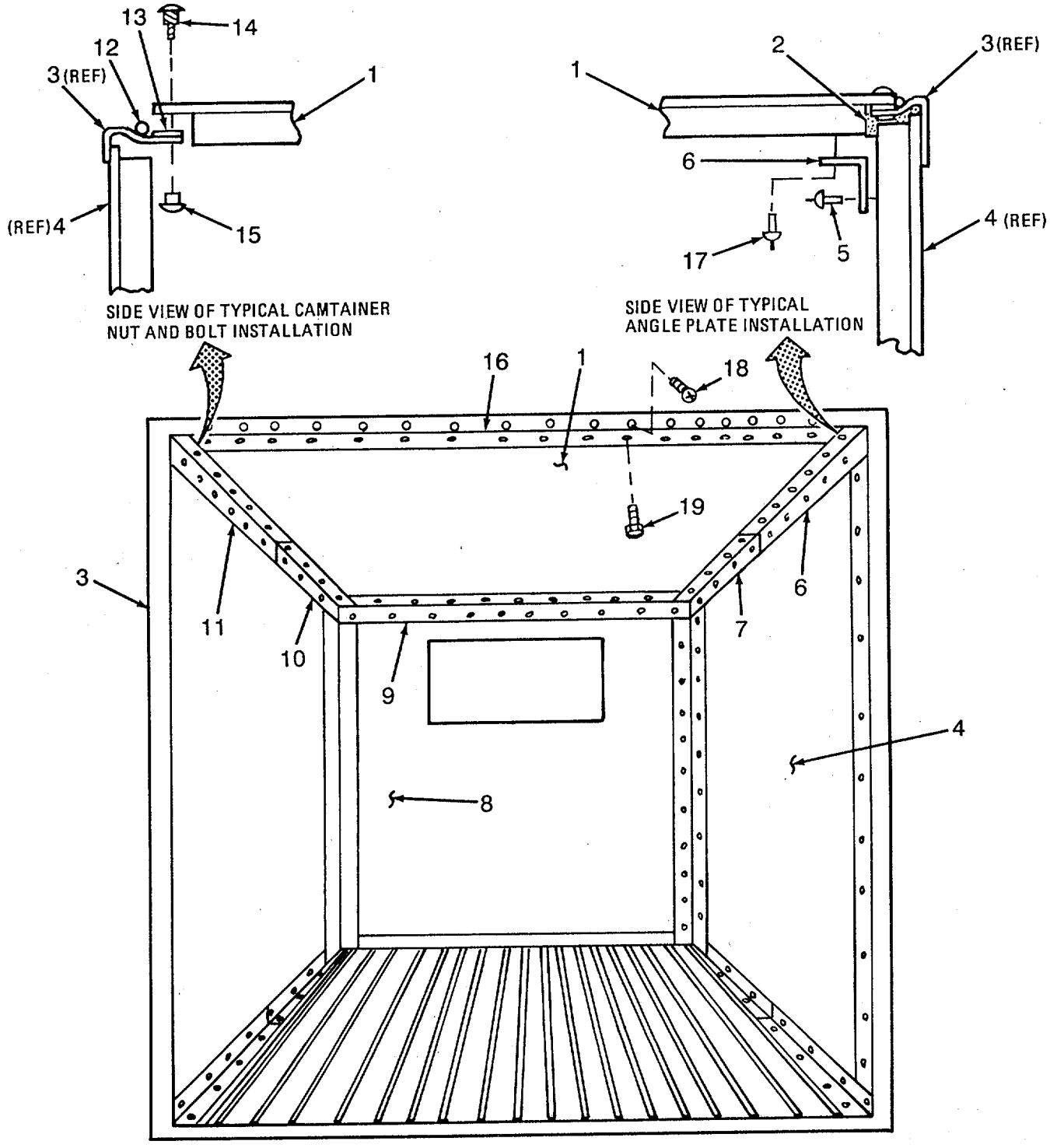
WARNING

Roof panel is heavy/difficult to handle. Use two personnel when removing roof panel.

(11) Using hoist and sling, remove roof panel (1) from container frame (3).

5-3. ROOF PANEL REPLACEMENT - cont.

(12) Scrape old sealant tape (13) and sealant from container frame (3) and roof panel (1) sealing surfaces.



5-3. ROOF PANEL REPLACEMENT - cont.

b. Installation.

(1) Peel backing from sealant tape (13), then apply tape along container frame (3) and roof panel (1) sealing surfaces.

WARNING

Roof panel is heavy/difficult to handle. Use two personnel when installing roof panel.

(2) Using hoist and sling, position replacement roof panel (1) on container frame (3).

(3) Center roof panel (1) on container frame (3).

NOTE

- Replacement roof panel is supplied without holes for mounting hardware. Panel must be drilled during installation.

- To aid alinement of roof panel mounting holes with container frame, install one fastener in each side of roof panel before drilling remaining mounting holes.

(4) Using portable drill and 13/32 - inch drill bit, drill one hole up through each side of the roof panel (1). Use existing holes in container frame (3) as a template.

CAUTION

To prevent water leaks, container bolts must be installed so that bolt head is on outside of container.

(5) Using torx bit and socket, install four container bolts (14) and nuts (15), one in each side.

(6) Using container frame (3) as a template, drill remaining mounting holes up through roof panel (1).

(7) Install 134 container bolts (14) and nuts (15).

(8) Install filler rope (12) along all four sides of roof panel (1). Make sure rope is pushed in tight against panel edges.

(9) Apply sealant over filler rope (12) so that gap between roof panel (1) edge and top surface of container frame (3) is filled flush.

(10) Cut and fit insulation (2) into gaps between side panels (4) and roof panel (1), and front panel (8).

(11) Apply sealant around inside surface of rivet holes and screw holes on six angle plates (6, 7, 9, 10, 11, and 16).

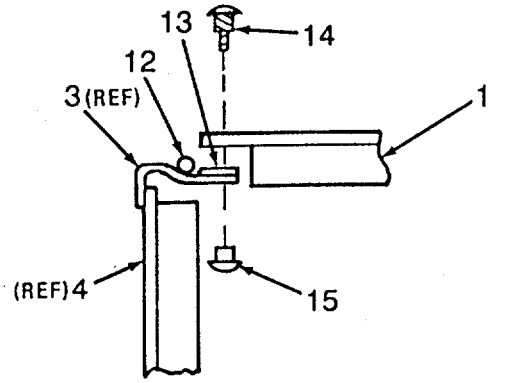
5-3. ROOF PANEL REPLACEMENT.

(12) Position six angle plates (6,7, 9, 10, 11, and 16) against front panel (8), side panels (4) and roof panel (1) as marked during removal and install rivets (5) in bottom holes of angle plates.

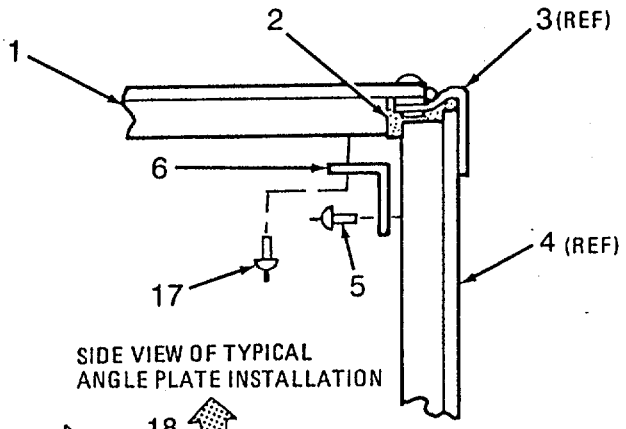
(13) Using portable drill and No. 9 drill bit, drill holes into roof panel (1) using top holes in angle plates (6, 7, 9, 10, 11, and(16) as a template.

(14) Using rivet tool, install rivets (17) in top holes of six angle plates (6, 7, 9, 10, 1 1, and 16)

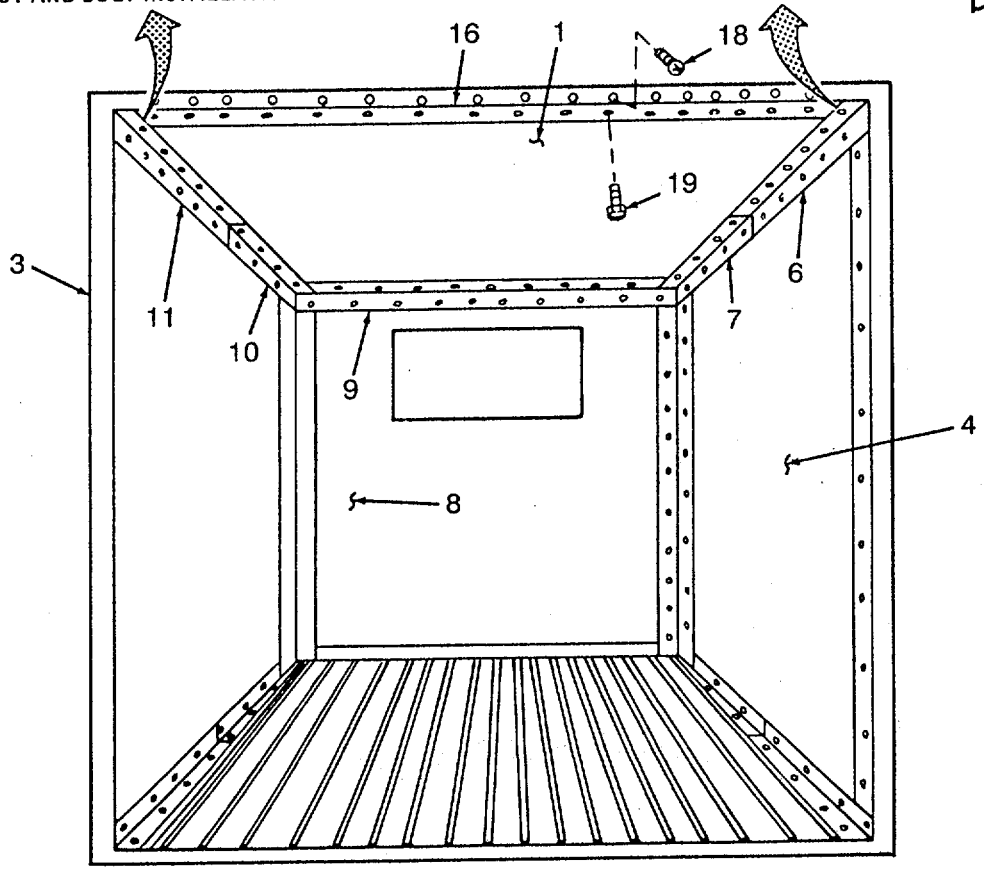
(15) Install fourteen screws (18) and thirteen bolts (19) in angle plate (16).



SIDE VIEW OF TYPICAL CAMTAINER NUT AND BOLT INSTALLATION



SIDE VIEW OF TYPICAL ANGLE PLATE INSTALLATION



5-4. SIDE PANEL REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
- General Mechanics Tool Kit (Item 4, App B)
- Portable Drill (Item 2, App B)
- Drill Bit Set (Item 2, App B)
- Torx Bit (Item 1, App B)
- Torx Socket (Item 3, App B)
- Hoist (Item 2, App B)
- Sling (Item 2, App B)

Material/Parts:
- Pop Rivet (38) (Item 28, App F)
- Filler Rope (Item 22, App F)
- Sealant (Item 10, App D)
- Sealant Tape (Item 25, App F)
- Container Bolt (138) (Item 27, App F)
- Container nut (138) (Item 26, App F)

Personnel Required:
- Two

References:
- TM 9-4110-252-14
- TM 5-6115-585-12/34

Equipment Condition:
- Refrigeration unit shutdown (TM 9-4110-252-14)
- Generator set shutdown (TM 5-6115-585-12/34)
- Roof panel removed (para 5-3)

NOTE

Replacement of the right side panel is shown. Replacement of the left side panel is similar.

a. Removal.

(1) Mark and record location of four angle plates (9, 10, 11 and 13).

(2) Using portable drill and drill bit, drill out rivets (14) from angle plates (11 and 13).

(3) Remove fourteen screws (15) and thirteen bolts (16) from angle plate (13).

(4) Remove sixty-two screws (8) from two floor angle plates (9 and 10).

(5) Carefully pry four angle plates (9, 10, 11 and 13) from side panel (3), front panel (12) and floor panel (6).

(6) Remove insulation (5) from space between side panel (3), front panel (12) and floor panel (16).

(7) Remove sealant tape (7) from edges of edge of floor panel (6).

(8) Using torx bit and socket, remove container nuts (2) and bolts (4) from top, bottom, and sides of side panel (3).

WARNING

Floor panel is heavy/difficult to handle. Use two personnel when installing floor panel.

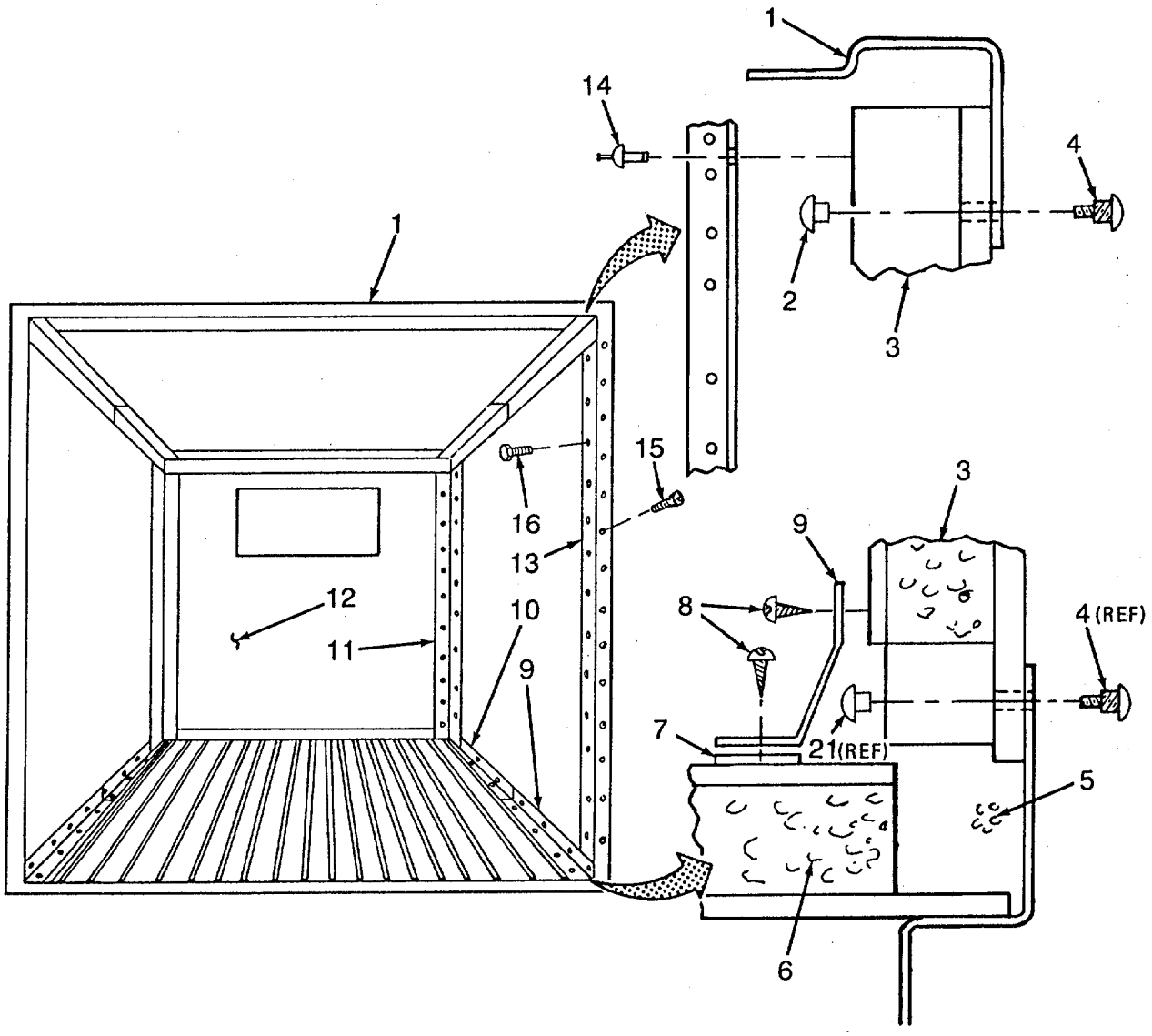
(9) Connect hoist and sling to side panel (3).

5-4. SIDE PANEL REPLACEMENT- cont.

(10) Push in on side panel (3) to break seal between panel and container frame (1).

(11) Using hoist and sling, remove side panel (3) through container frame (1).

(12) Remove old sealant from container frame (1) and side panel (3) sealing surfaces.



5-4. SIDE PANEL REPLACEMENT - cont.

b. Installation.

(1) Apply sealant along container frame ( ) and side panel (3) mating surfaces.

WARNING

Side panel is heavy/difficult to handle. Use two personnel when installing panel

(2) Using hoist and sling, lower replacement side panel (3) through opening in top of container frame (1).

(3) Position side panel (3) on container frame (1).

NOTE

- Replacement side panel is supplied without holes for mounting hardware. Panel must be drilled during installation.

- To hold side panel in position for drilling mounting holes, drill panel and install one fastener in each side of side panel before drilling remaining mounting holes.

(4) Using portable drill and 13/32 - inch drill bit, drill one hole through top, bottom and sides of the side panel (3). Use existing holes in container frame as a template.

CAUTION

To prevent water leaks, container bolts must be installed so that bolt head is on outside of container.

(5) Using torx bit and socket, install four container bolts (4) and nuts (2), one in each side of side panel (3).

(6) Using container frame (1) as a template, drill remaining mounting through side panel (3).

(7) Install remaining container bolts (4) and nuts (2).

(8) Cut and fit insulation (5) into gaps between side panel (3), floor panel (6), and front panel (12).

(9) Peel backing from sealant tape (7), then apply tape along floor panel (6) where angle plates (9 and 10) fasten to floor.

(10) Apply sealant around inside surface of screw and rivet holes on four angle plates (9, 10, 11, and 13).

5-4. SIDE PANEL REPLACEMENT - cont.

(11) Position angle plates (9, 10, 11, and 13) against front panel (12), side panel (3). and floor panel (6) as marked during removal.

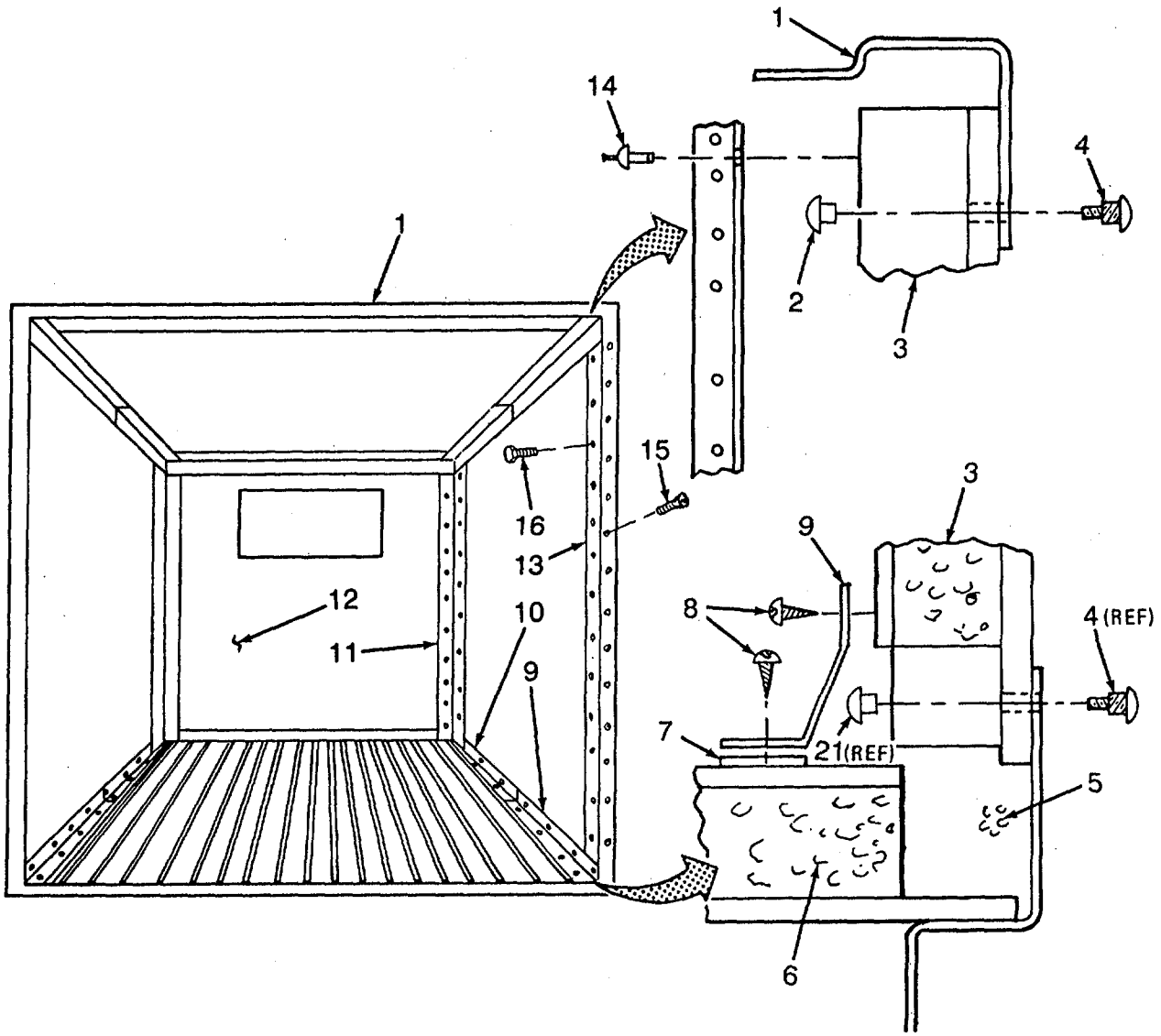
(12) Install screws (8) in angle plates (9 and 10). install screws into floor only.

(13) Using portable drill and drill bit, drill holes into side panel (3) using existing holes in angle plates (9, 10, 11, and 13) as a template.

(14) Install remaining screws (5) in angle plates (9 and 10).

(15) Using rivet tool, install rivets (14) in two angle plates (11 and 13).

(16) Install fourteen screws (15) and thirteen bolts (16) in angle plate (13).



5-5. FRONT PANEL REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Portable Drill (Item 2, App B)
Drill Bit Set (Item 2, App B)
Torx Bit (Item 1, App B)
Torx Socket (Item 3, App B)
Hoist (Item 2, App B)
Sling (Item 2, App B)
Material/Parts:
Sealant (Item 10, App D)
Container Bolt (76) (Item 27, App F)
Container Nut (76) (Item 26, App F)
Personnel Required:
Two
References:
TM 9-4110-252-14
TM 5-6115-585-12/34
Equipment Condition:
Refrigeration unit shutdown (TM 9-4110-252-14)
Generator set shutdown (TM 5-6115-585-12/34)
Roof panel removed (para 5-3)
Side panels removed (para 5-4)

a. Removal.

(1) Mark and record location of angle plates (6).

(2) Remove thirty screws (5 and 8) from angle plate (6).

(3) Carefully pry angle plate (6) from front panel (4) and floor panel (7).

(4) Remove insulation (9) from space between front panel (4) and floor panel (7).

(5) Using torx bit and socket, remove seventy-six container nuts (3) and bolts (2) from top bottom and sides of front panel (4).

WARNING

Front panel is heavy/difficult to handle. Use two personnel when removing front panel.

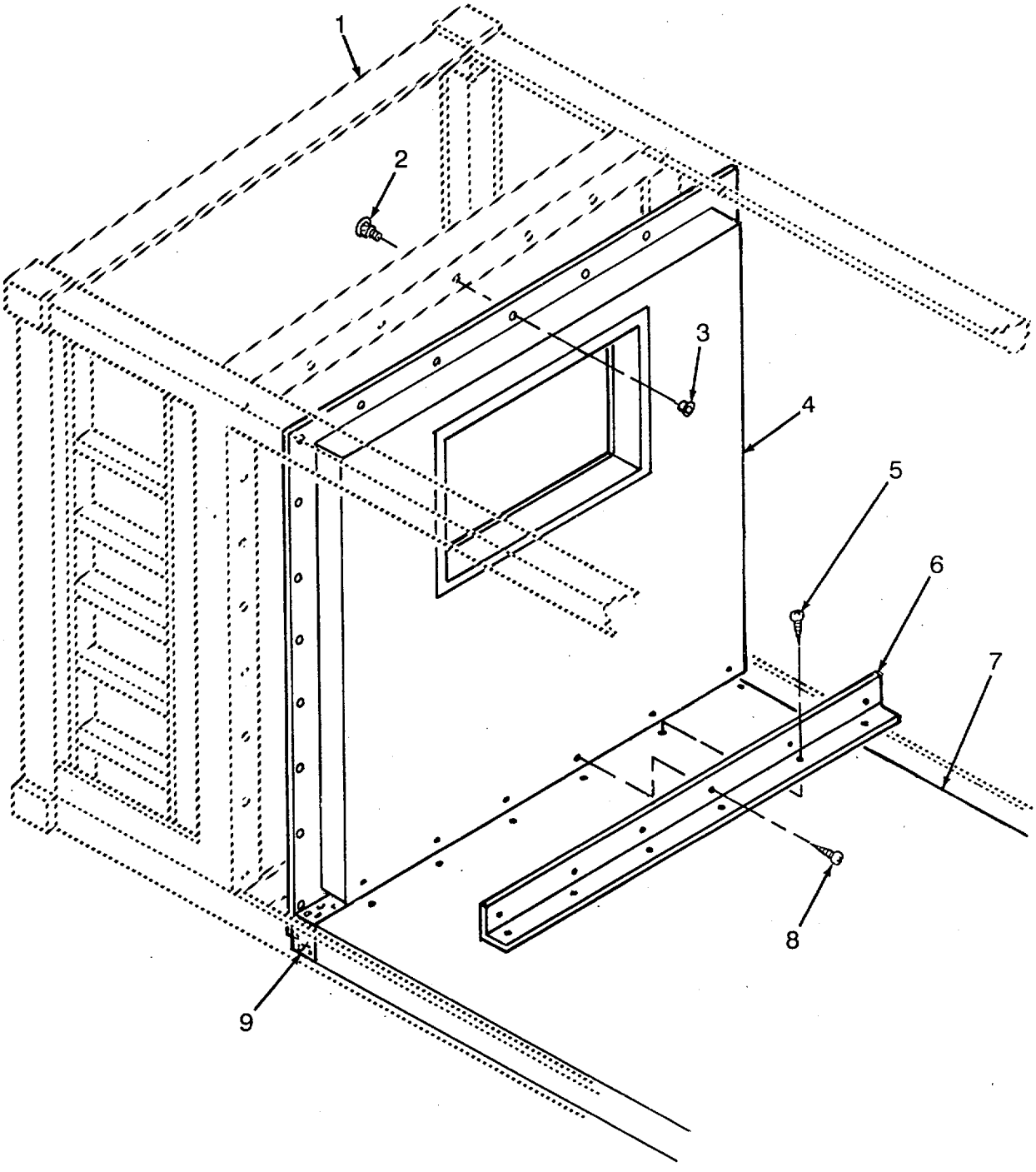
(6) Connect hoist and sling to front panel (4).

(7) Push in on front panel (4) to break seal between panel and container frame (1).

(8) Using hoist and sling, remove front panel (4) from container frame (1).

(9) Remove old sealant from container frame (1) front panel mounting surfaces.

5-5. FRONT PANEL REPLACEMENT-cont.



5-5. FRONT PANEL REPLACEMENT- cont.

b. Installation.

(1) Apply sealant along container frame (1) front panel mounting surfaces.

WARNING

Front panel is heavy/difficult to handle. Use two personnel when installing panel

(2) Using hoist and sling, lower replacement front panel (4) through opening in top of container frame (1).

(3) Position front panel (4) on container frame (1) and center panel in frame.

NOTE

* Replacement front panel is supplied without holes for mounting hardware. Panel must be drilled during installation.

* To hold front panel in position for drilling mounting holes, drill panel and install one fastener in each side of front panel before drilling remaining mounting holes.

(4) Using portable drill and 13/32 - inch drill bit, drill one hole through top, bottom, and sides of the front panel (4). Use existing holes in container frame (1) as a template.

CAUTION

To prevent water leaks, container bolts must be installed so that bolt head is on outside of container frame.

(5) Using torx bit and socket, install two container bolts (2) and nuts (3), one in each side of front panel (4).

(6) Using container frame (1) as a template, drill remaining mounting holes through front panel (4).

(7) Install seventy-four remaining container bolts (2) and nuts (3).

(8) Cut and fit insulation (9) into gap between front panel (4) and floor panel (7).

(9) Apply sealant around inside surface of screw holes on angle plate (6).

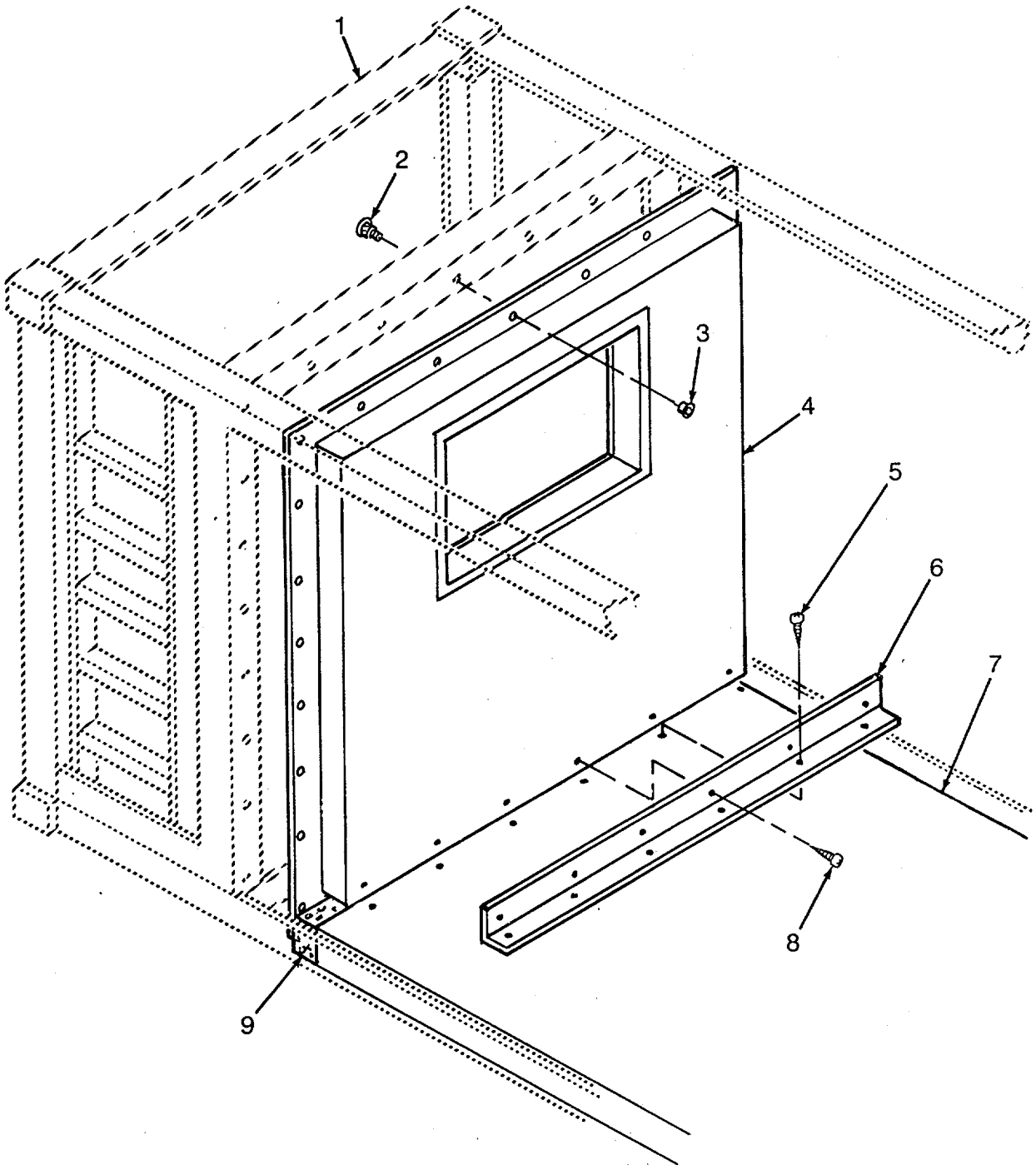
(10) Position angle plate (6) against front panel (4) and floor panel (7) as marked during removal.

(11) Install fifteen screws (5) through angle plate (6) and into floor panel (7).

5-5. FRONT PANEL REPLACEMENT - cont.

(13) Using portable drill and drill bit, drill screw holes into front panel (4) using existing holes in angle plate (6) as a template.

(14) Install fifteen screws (8) in angle plate (6).



5-6. FLOOR PANEL REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
- General Mechanics Tool Kit (Item 4, App B)
- Portable Drill (Item 2, App B)
- Drill Bit Set (Item 2, App B)
- Torx Bit (Item 1, App B)
- Torx Socket (Item 3, App B)
- Hoist (Item 2, App B)
- Sling (Item 2, App B)

Material/Parts:
- Filler Rope (Item 22, App F)
- Sealant (Item 10, App D)
- Sealant Tape (Item 25, App F)
- Container Bolt (138) (Item 27, App F)
- Front panel removed (para 5-5)
- Container nut (138) (Item 26, App F)

Personnel Required:
- Two

References:
- TM 9-4110-252-14
- TM 5-6115-585-12/34

Equipment Condition:
- Refrigeration unit shutdown (TM 9-4110-252-14)
- Generator set shutdown (TM 5-6115-585-12/34)
- Drain removed (para 4-35)
- Floor Board removed (para 4-36)
- Roof panel removed (para 5-3)
- Side panes removed (para 5-4)

a. Removal.

(1) Remove twenty-one bolts (5), fourteen screws (6), and zee plate (4) from floor panel (1) and container frame (3).

(2) Carefully pry zee plate (4) from container frame (3) and floor panel (1).

(3) Remove insulation (7) from space between floor panel (1) and container frame (3) at door opening.

(4) Using torx bit and socket, remove 138 container nuts (2) and bolts (8) from floor panel (1).

(5) Push up on floor panel (1) to break seal between panel and container frame (3).

WARNING

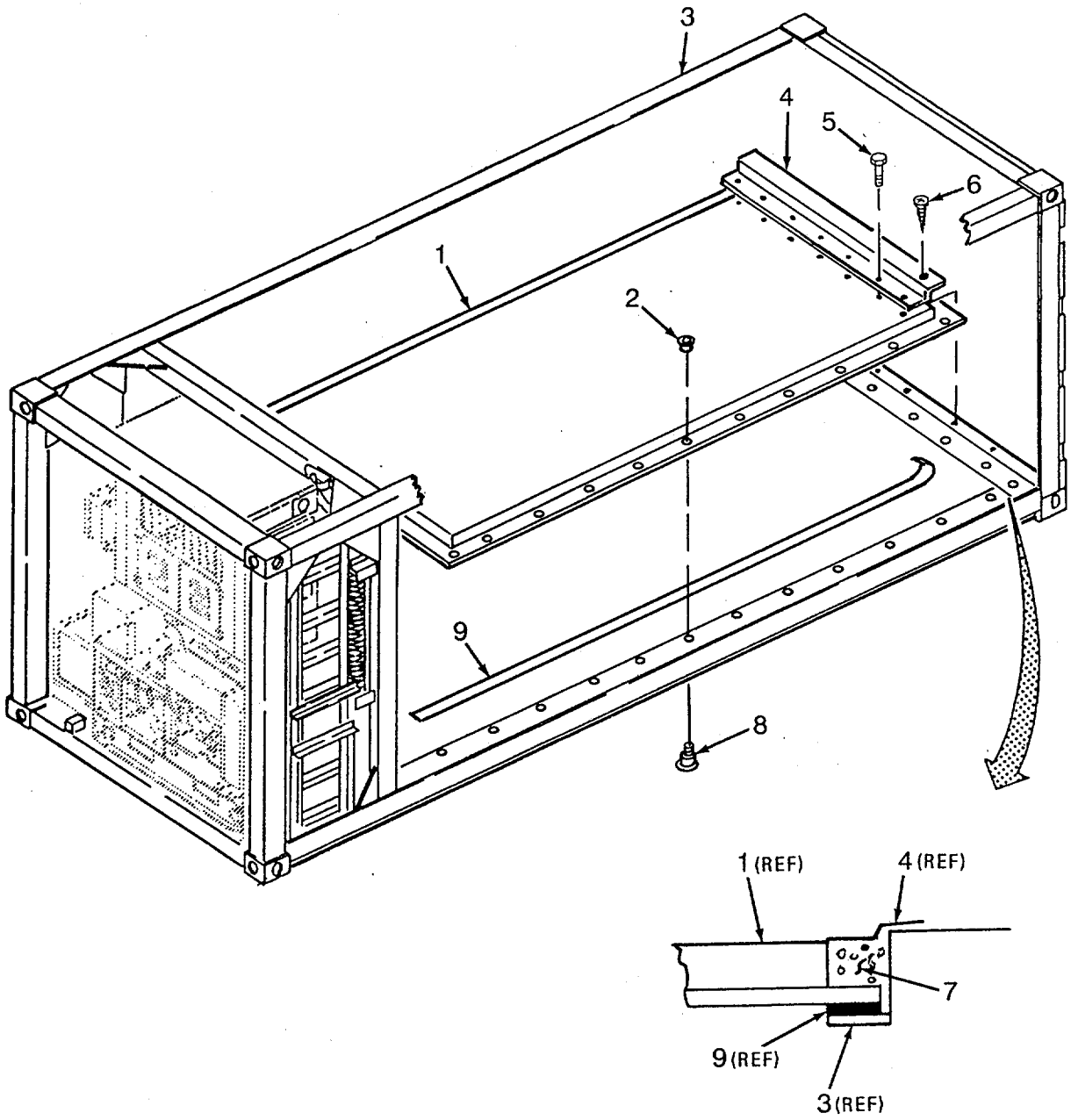
Floor panel is heavy/difficult to handle. Use two personnel when removing floor panel.

(6) Connect hoist and sling to floor panel (1).

(7) Remove floor panel (1) from container frame (3).

(8) Scrape old sealant tape (9) and sealant from container frame (3) and floor panel (1) sealing surfaces.

5-6. FLOOR PANEL REPLACEMENT - cont.



5-6. FLOOR PANEL REPLACEMENT-cont.

b. Installation.

(1) Peel backing from sealant tape (9), then apply tape along sealing surfaces of container frame (3) and floor panel (I).

WARNING

Floor panel is heavy/difficult to handle. Use two personnel when installing floor panel.

(2) Using hoist and sling, lower replacement floor panel (1) into container frame (3).

(3) Center floor panel (1) on container frame (3).

NOTE

•· Replacement floor panel is supplied without holes for mounting hardware. Panel must be drilled during installation.

• To aid alinement of floor panel mounting holes with container frame, install one fastener in each side of floor panel before drilling remaining mounting holes.

(4) Using portable drill and 13/32 - inch drill bit, drill one hole up through each side of the floor panel (1). Use existing holes in container frame (3) as a template.

CAUTION

To prevent water leaks, container bolts must be installed so that bolt head is on outside of container frame.

(5) Using torx bit and socket, install four container bolts (8) and nuts (2), one in each side floor panel (1).

(6) Using container frame (3) as a template, drill remaining mounting holes up through floor panel (1).

(7) Install remaining 134 container bolts (8) and nuts (2) in floor panel (1).

(8) Cut and fit insulation (7) into gap between floor panel (1) and container frame (3).

(9) Apply sealant around inside surface of screws holes on zee plate (4).

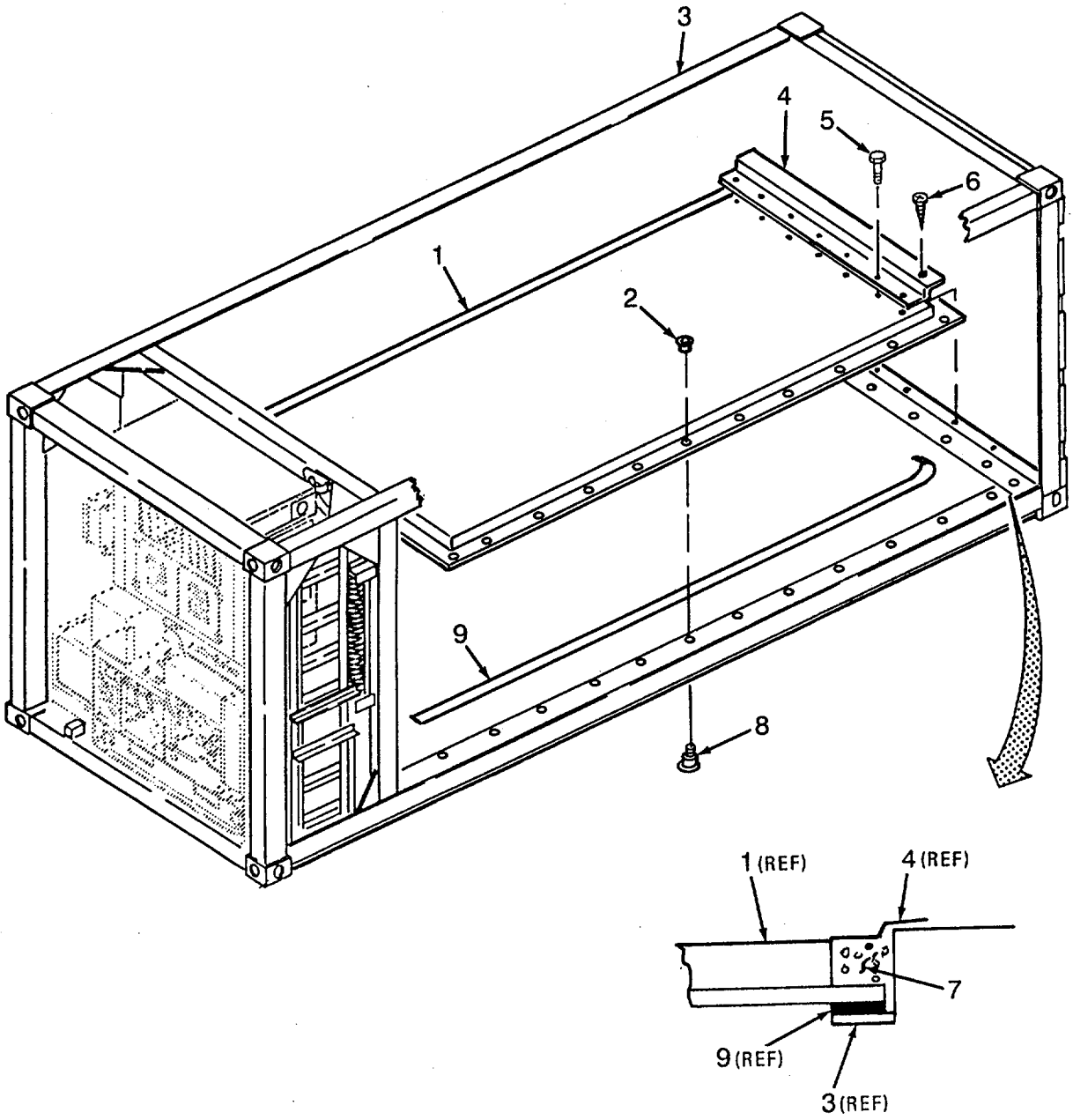
(10) Position zee plate (4) against floor panel (1) and container frame (3).

(11) Install screws (6) through zee plate (4) into container frame (3).

5-6. FLOOR PANEL REPLACEMENT - cont.

(14) Using portable drill and No. 9 drill bit, drill screw holes into floor panel (1) using existing holes in zee plate (4) as a template.

(15) Install twenty-one bolts (5) through zee plate (4) and into floor panel (1).



5-7. FRAME REPAIR.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:
General Mechanics Tool Kit (Item 4, App B)
Weld Shop (Item 5 App B)

References:
TM9-237
TM9-450
TM9-213

Repair.

a. Repair minor bends and dents in container frame in accordance with TM9-450.

b. Weld minor cracks in container frame in accordance with TM9-237.

c. Remove corrosion and paint bare metal surfaces of frame components in accordance with TM9- 213.

APPENDIX A

REFERENCES

A-1. SCOPE.

This appendix contains all forms, pamphlets and technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS.

Discrepancy in Shipment Report ..... Form SF 361

Equipment Inspection and Maintenance Worksheet ..... DA Form 2404

Recommended Changes to Publications and Blank Forms ..... DA Form 2028

Maintenance Request ..... DA Form 2407

Modification Work Order ..... DA Form 2408-5

Packaging Improvement Report ..... DD Form 6

Recommended Changes to Equipment Technical Manuals ..... DA Form 2028-2

Report of Discrepancy ..... Form SF 364

Quality Deficiency Report ..... Form SF 368

A-3. TECHNICAL MANUALS.

Destruction of Army Materiel to Prevent Enemy Use ..... TM 750-244-3

Equipment Records Procedures ..... TM 4700-15/1

Metal Body Repair and Related Operations ..... TM 9-450

Operator's and Organizational Maintenance Manual for Generator Set,
Diesel Engine Driven, Tactical Skid MTD, 10KW, 1 Phase, 2 Wire;
1 Phase, 3 Wire; Phase, 4 Wire;
120/240 and 120/208 V, 60 Hz, and 400 Hz ..... TM 5-6115-585-12

A-3. TECHNICAL MANUALS- cont.

Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Refrigerated Container, Model SC219 ..... TM 55-8145-201-24P

Operator's Manual: Welding Theory and Application ..... TM 9-237

Operator's, Unit, Direct Support and General Support Maintenance Manual for Refrigeration Unit, Model CHI-609-32 .....TM 9-4110-252-14

Painting Instructions for Field Use ..... TM 9-213

Painting Instructions for Field Use .....TM 43-0139

Painting, Preservation, and Waterproofing Instructions ..... TM 740-90-1

Preservation, Packaging and Packing of Military Supplies and Equipment..... TM 38-230-1/-2

Storage and Materials Handling .....TM 743-200

A-4. MISCELLANEOUS.

Camouflage of Vehicles .....FM 5-20B

First Aid for Soldiers..... FM 21-11

Nuclear, Biological and Chemical Decontamination..... FM 3-5

Packing of Army Material for Shipment and Storage .....AR 246-1

Packing of Material .....AR 700-15

Packaging Improvement Reporting .....AR 735-11-2

Report of Item and Packaging Discrepancy.....MCO 4430.3

Report of Item and Packaging Discrepancy.....NAVMATINST 4355.73B

Reporting of Transportation Discrepancies in Shipment .....AR 55-38

Security Procedures ..... AR 190-11, AR 190-13

The Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

APPENDIX B

MAINTENANCE ALLOCATION CHART (MAC)

Section I. INTRODUCTION

B-1. The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component levels, which are shown on the MAC in column (4) as:

Field - includes two columns, Unit Maintenance and Direct Support maintenance. The Unit maintenance column is divided again into two more subcolumns, C for Operator or Crew and O for Unit maintenance.

Sustainment – includes two subcolumns, general support (H) and depot (D)

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions

Maintenance functions will be limited to and are defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel.) This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

    a. Unpack. To remove from packing box for service or when required for the performance of maintenance operations.

    b. Repack. To return item to packing box after service and other maintenance operations.

    c. Clean. To rid the item of contamination.

d. Touch up. To spot paint scratched or blistered surfaces.

e. Mark. To restore obliterated identification.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. Remove/install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. Paint. To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.

9. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

10. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

NOTE

The following definitions are applicable to the “repair” maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step- by- step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e. identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

11. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

12. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles.) considered in classifying Army equipment/components.

B-3. Explanation of Columns in the MAC, Section II

Column (1) Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above).

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The system designations for the various maintenance levels are as follows:

Field:

C Operator or Crew maintenance
O Unit maintenance
F Direct Support maintenance

Sustainment:

L Specialized Repair Activity
H General Support maintenance
D Depot maintenance

NOTE

The “L” maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by work time figure in the “H” column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

B-4. Explanation of Columns in the Tools and Test Equipment Requirements, Section III

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer’s part number, model number, or type number.

B-5. Explanation of Columns in Remarks, Section IV

Column (1) - Remarks Code. The code recorded in Column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

Section II. MAINTENANCE ALLOCATION CHART FOR CONTAINER, REFRIGERATED MODEL SC219

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	CONTAINER, REFRIGERATED								
01	DOCUMENT HOLDER AND PLATES								
0101	DOCUMENT HOLDER	Inspect Replace	0.1	 0.5				 2,4	
0102	MANUAL HOLDER	Inspect Replace	0.1	 0.5				 2,4	
0103	IDENTIFICATION PLATE	Inspect Replace	0.1	 0.5				 4	
02	THERMOMETER ASSEMBLY								
0201	THERMOMETER	Inspect Replace	0.1	 4.0				 4	
0202	ELEMENT	Test Replace		2.0 4.0				2 4	
03	FUEL SYSTEM								
0301	FUEL TANK AND CONNECTIONS	Inspect Replace Repair	0.1	 0.5 1.5				 4 4	
0302	FUEL LINE STORAGE BOX	Inspect Replace	0.1	 1.0				 2,4	
04	EXHAUST LINE EXTENSION								
0401	EXHAUST LINES	Inspect Replace	0.1	 1.0				 4	
05	LADDER (SECTION)	Inspect Replace	0.1	 0.5				 4	
06	ELECTRICAL EQUIPMENT								
0601	CABLE, ELECTRIC POWER (GEN SET)	Inspect Replace Repair	0.1	 1.0 2.0				 4 2	

Section II. MAINTENANCE ALLOCATION CHART FOR CONTAINER, REFRIGERATED MODEL SC219 - Continued

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0602	LIGHT ASSEMBLY	Inspect	0.1						
		Replace		1.5				4	
		Repair		0.5				2	
07	BOX ASSEMBLY								
0701	RIGHT DOOR	Inspect	0.1						
		Replace			1.0				4,5
		Repair		4.0				1,2,3,4	D
0702	LEFT DOOR	Inspect	0.1						
		Replace			1.0				4,5
		Repair		4.0				1,3,4	D
0703	ROOF PANEL	Inspect	0.1						
		Replace			6.0			1,2,34	C
		Repair		2.0				4	B
0704	SIDE PANELS	Inspect	0.1						
		Replace			8.0			1,2,3,4	C
		Repair		2.0				4	B
0705	FRONT PANEL	Inspect	0.1						
		Replace			6.0			1,2,3,4	C
		Repair		2.0				4	B
0706	DRAIN	Inspect	0.1						
		Replace		0.5				4	C
0707	FLOOR	Inspect	0.1						
		Replace			8.0			1,2,3,4	C
		Repair		2.0				4	B
0708	FRAME	Inspect	0.1						
		Repair		8.0				5	A
08	REFRIGERATION UNIT (REF)	Remove/ Install		1.5				4	E
09	GENERATOR SET, DIESEL (REF)	Remove/ Install		1.5				4	F

Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS FOR CONTAINER, REFRIGERATED MODEL SC219

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL NUMBER
1	0	Bit, Torx	5130-01-091-3750	T55
2	0	Shop Set, Automotive Vehicle	4910-00-754-0654	SC4910-95-CL-A74
3	0	Socket, Torx	5130-01-088-8833	EI6
4	0	Tool Kit, General Mechanic's	5180-00-177-7033	SC5180-90-CL-N26
5	F	Welding Shop, Trailer Mounted	3431-01-090-1231	SC3431-95-CL-A04

Section IV. REMARKS FOR CONTAINER, REFRIGERATED MODEL SC219

(1) REMARKS CODE	(2) REMARKS
A	Repair limited to straightening and welding frame components.
B	Repair limited to patching.
C	Replacement of panel requires special tool for removal of fasteners.
D	Replacement of door and hardware requires special tool for removal of fasteners.
E	Reference TM 9-4110-252-14 for Refrigeration Unit.
F	Reference for TM 5-6115-585-12 for 10Kw Generator Set.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the refrigerated container to help you inventory the items required for safe and efficient operation of the equipment.

C-2. GENERAL

The Components of End Item and Basic Issue Items (BII) are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the refrigeration unit, but they are to be removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to help you find and identify the items.

b Section III. Basic Issue Items. These are the minimum essential items required **to** place the refrigerated container in operation, to operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the refrigerated container during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify these items.

C-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listing:

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the national stock number assigned to the item and will be used for requisitioning purposes.

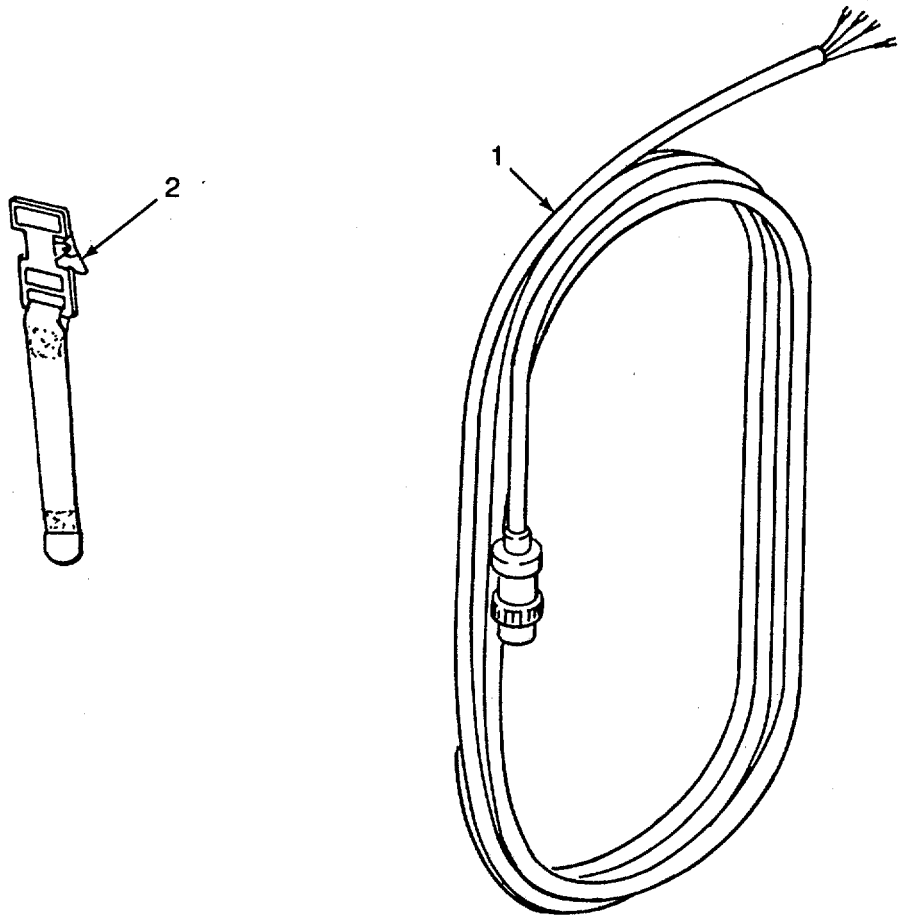
c. Column (3) - Description. Indicates the Federal item and name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGEC (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) - Quantity required (Qty rqd). Indicates the quantity of the item authorized to be used with/on the equipment.

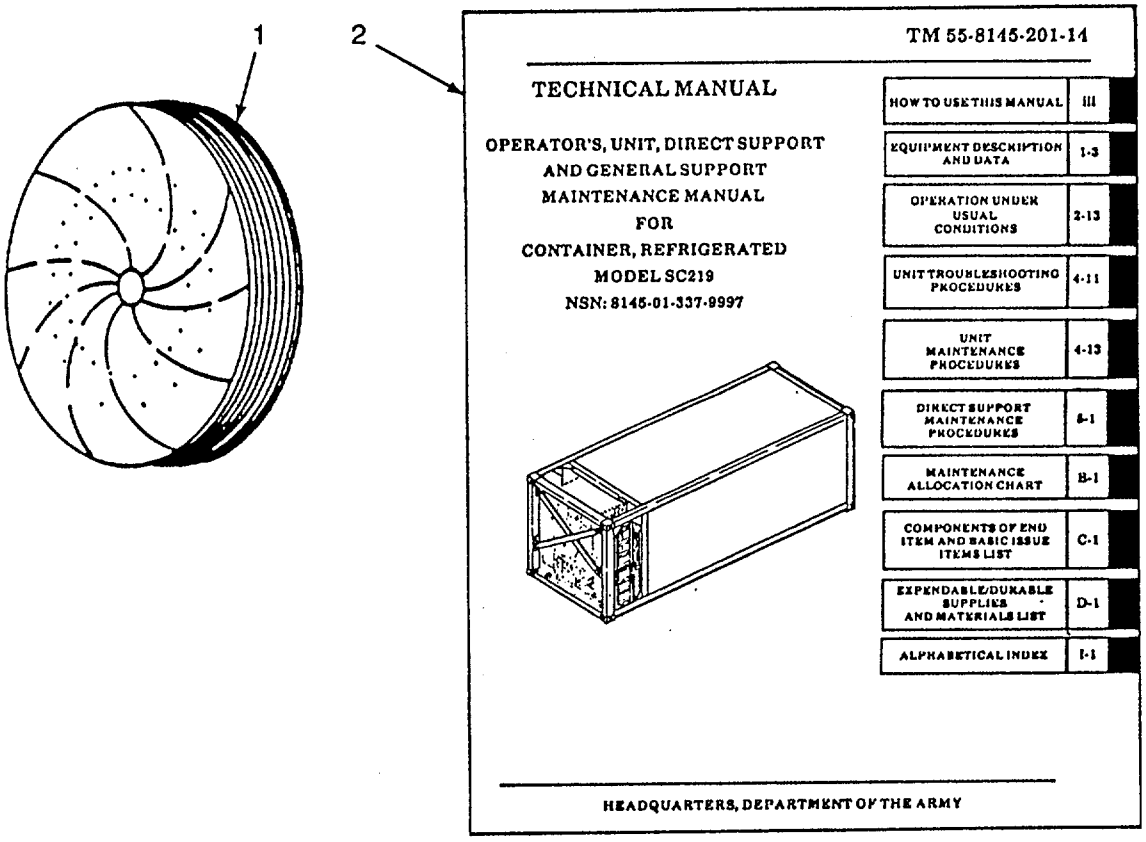
Section II. COMPONENTS OF END ITEM

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC and Part Number	Usable on Code	(4) U/I	(5) QTY. RQD
1		Cable Assembly (90598) 30442-100		EA	1
2		Strap (39428) 3706T13		EA	1



Section III. BASIC ISSUE ITEMS

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC and Part Number	Usable on Code	(4) U/I	(5) QTY. RQD
1		Chart (45809) D217F31D2DEG.DIV		EA	100
2		Technical Manual (TM 55-8145-201-14): Operator's, Unit, Direct Support and General Support Maintenance Manual for Container, Refrigerated Model SC 219, NSN 8145-01-337-9997		EA	1



APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists expendable/clurable supplies and materials you will need to operate and maintain the Refrigerated Container. I'his listing is for informational purpose only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and HERALDIC Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS.

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the task Initial Setup instructions to identify the material; e.g., "Drycleaning solvent (App E)."

b. Column 2 - Category. This column identified the lowest category of maintenance that requires the listed item:

C - Operator/Crew
O - Unit Maintenance
F - Direct Support Maintenance
G - General Support Maintenance

c. Column 3 - National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the items.

d. Column 4 - Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Commercial And Government Entity (CAGE) Code for Manufacturer in parentheses, if applicable.

e. Column 5 - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the rest of the issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Item Number	Category	National Stock Number	Description	U/M
1	O	8030-00-080-2171	Adhesive (04963) EC800	TB
2	O	7930-00-282-9699	Detergent, GP, Liq, WS, A (81349) MIL-D-16791	GL
3	O	9150-00-190-0904	Grease, automotive and artillery, GAA (81349) MIL-G-10924	EA
4	O	9150-01-161-4600	Grease, silicone (71984) DC-18	TB
5	O	9150-01-035-5395	Oil, lubricating (81349) MIL-L-2105	GL
6	O	7920-00-205-1711	Rags, wiping (58536) A-A-531	LB
7	O	6850-00-110-4498	Solvent, drycleaning (81349) PD-680, Type II	PT
8	O	5970-00-147-5674	Tape, electrical roll (81349) MIL-I-24391	EA
9	O	2090-00-372-6054	Repair Kit, glass laminate (81349) MIL-R-19907	EA
10	O	8040-00-078-9774	Sealant, silastic (71984) 732RTV	TU
11	O	8040-01-126-1422	Scotchgrip adhesive, (049463) 1099	QT
12	O	8040-00-978-1407	Adhesive, contact (25999) 2672-5	PT

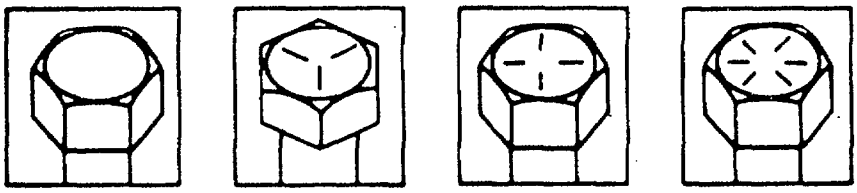
APPENDIX E

TORQUE LIMITS

USAGE	MUCH USED	MUCH USED	USED AT TIMES	USED AT TIMES
CAPSCREW DIAMETER AND MINIMUM TENSILE STRENGTH PSI (KG/SQ CM)	To 1/2–69,000 (4850.7000) To 3/4–64,000 (4499.2000) To 1 –55,000 (3866.5000)	To 3/4–120,000 (8436.0000) To 1 –115,000 (8084.5000)	To 5/8–140,000 (9842.0000) To 3/4–133,000 (9349.9000)	150,000 (10545.0000)
QUALITY OF MATERIAL	INDETERMINATE	MINIMUM COMMERCIAL	MEDIUM COMMERCIAL	BEST COMMERCIAL
SAE GRADE NUMBER	*1 or 2*	*5*	*6 or 7*	*8*

CAPSCREW HEAD MARKINGS

Manufacturer's marks may vary. These are all SAE Grade 5 (3-line)



CAPSCREW BODY SIZE (INCHES)–(THREAD)	TORQUE FT-LB (KG M)	TORQUE FT-LB (KG M)	TORQUE FT-LB (KG M)	TORQUE FT-LB (KG M)
1/4–20	5 (0.6915)	8 (1.1064)	10 (1.3830)	12 (1.6596)
–28	6 (0.8293)	10 (1.3830)		14 (1.9362)
5/16–18	11 (1.5213)	17 (2.3511)	19 (2.6277)	24 (3.3192)
–24	13 (1.7979)	19 (2.6277)		27 (3.7341)
3/8–16	18 (2.4894)	31 (4.2873)	34 (4.7022)	44 (6.0852)
–24	20 (2.7660)	35 (4.8405)		49 (6.7767)
7/16–14	28 (3.8132)	49 (6.7767)	55 (7.6065)	70 (9.6810)
–20	30 (4.1490)	55 (7.6065)		78 (10.7874)
1/2–13	39 (5.3937)	75 (10.3725)	85 (11.7555)	105 (14.5215)
–20	41 (5.6703)	85 (11.7555)		120 (16.5960)
9/16–12	51 (7.0533)	110 (15.2130)	120 (16.5960)	155 (21.4365)
–18	55 (7.6065)	120 (16.5960)		170 (23.5110)
5/8–11	83 (11.4789)	150 (20.7450)	167 (23.0961)	210 (29.0430)
–18	95 (13.1385)	170 (23.5110)		240 (33.1920)
3/4–10	105 (14.5215)	270 (37.3410)	280 (38.7240)	375 (51.8625)
–16	115 (15.9045)	295 (40.7985)		420 (58.0860)
7/8–9	160 (22.1280)	395 (54.6285)	440 (60.8520)	605 (83.6715)
–14	175 (24.2025)	435 (60.1605)		675 (93.3525)
1–8	235 (32.5005)	590 (81.5970)	660 (91.2780)	910 (125.8530)
–14	250 (34.5750)	660 (91.2780)		990 (136.9170)

1. Always use the torque values listed above when specific specifications are are not available.

NOTE

Do not use above values in place of those specified in this manual, special attentional should be observed in case of SAE Grade 6, 7 and 8 capscrews.

2. The above is based on use of clean and dry threads.
3. Reduce torque by 10% when oil is used as a lubricant.
4. Reduce torque by 20% if new plated capscrews are used.

CAUTION

Capscrews threaded into aluminum may require reductions in torque of 30% or more, unless inserts are used.

APPENDIX F

MANDATORY REPLACEMENT PARTS

ITEM NO.	NOMENCLATURE	PART NUMBER
1	BLIND RIVET	AD44BS
2	GASKET	30405-2
3	BLIND RIVET	AD42H
4	DRIVE RIVET	38-104-05-93
5	BLIND RIVET	AD42BSH
6	GASKET	30405-2
7	WASHER, STAR	MS35333-40
8	DRIVE RIVET	38-106-12-91
9	LOCKWASHER	MS35338-46
10	LOCKWASHER	MS35338-43
11	GASKET	15-423
12	DRIVE RIVET	38-106-12-93
13	SELF-LOCKING NUT	CLF-3816-5
14	SPRING PIN	MS9048-104
15	GASKET	30356-3
16	GASKET	30358-2
17	GASKET	30356-2
18	GASKET	303566-3
19	BLIND RIVET	AD68BS
20	DRIVE RIVET, STEEL	38-106-12-91
21	RIVET, 3G	10-15-706-13
22	FILLER ROPE	30301-28
23	HINGE BEARING	BU-1062-2
24	HINGE PIN	HP-1054-3
25	SEALANT TAPE	PF5422
26	CAMTAINER NUT	890-60008
27	CAMTAINER BOLT	821-82120
28	POP RIVET	AD64H
29	LOCKWASHER	MS35338-5

ALPHABETICAL INDEX

ALPHABETICAL INDEX - cont

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ALPHABETICAL INDEX - cont

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
02472

DI**ST**RI**BU**TI**ON:**
To be distributed in accordance with DA Form 12-25-E, block 5951, Operator, Unit, Direct and General Support Maintenance requirements for TM 55-8145-201-14.

*** U.S. GOVERNMENT PRINTING OFFICE: 1992 654-122/40092**

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: amssbriml@natick.army.mil

Subject: DA Form 2028

1. From: Joe Smith
2. Unit: home
3. Address: 4300 Park
4. City: Hometown
5. St: MO
6. Zip: 77777
7. Date Sent: 19-OCT-93
8. Pub no: 55-2840-229-23
9. Pub Title: TM
10. Publication Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. Submitter FName: Joe
14. Submitter MName: T
15. Submitter LName: Smith
16. Submitter Phone: 123-123-1234
17. Problem: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. Text:

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE
21 October 2003

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
COMMANDER
U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND
ATTN: AMSTA-LC-CECT
15 KANSAS STREET
NATICK, MA 01760-5052

FROM: *(Activity and location) (Include ZIP Code)*
PFC Jane Doe
CO A 3rd Engineer BR
Ft. Leonardwood, MO 63108

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*
	0036 00-2				*1*	*In table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MD ZZ not MD 22.* *Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MD ZZ code symbol.*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Jane Doe, PFC	508-233-4141	Jane Doe *Jane Doe*

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V3.00

TO: (*Forward direct to addressee listed in publication*)	**FROM:** (*Activity and location*) (*Include ZIP Code*)	**DATE**
COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA-LC-CECT 15 KANSAS STREET NATICK, MA 01760-5052	*PFC Jane Doe* *CO A 3rd Engineer BR* *Ft. Leonardwood, MO 63108*	*21 October 2003*

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	**DATE**	**TITLE**
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

PAGE NO.	**COLM NO.**	**LINE NO.**	**NATIONAL STOCK NUMBER**	**REFERENCE NO.**	**FIGURE NO.**	**ITEM NO.**	**TOTAL NO. OF MAJOR ITEMS SUPPORTED**	**RECOMMENDED ACTION**
0066 00-1					*4*			*Callout 16 in figure 4 is pointed to a D-Ring. In the Repair Parts List key for figure 4, item 16 is called a Snap Hook. Please correct one or the other.*

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.*)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)* Commander U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT Kansas Street, Natick, MA 01760-5052	**FROM:** *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 55-8145-201-14	DATE 18 May 1992	TITLE Operator's, Unit, Direct Support and General Support Maintenance Manual for Container, Refrigerated Model SC219

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
Commander U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT Kansas Street, Natick, MA 01760-5052		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C