TECHNICAL MANUAL

Operator, Organizational, Direct Support and General Support Maintenance Manual

EDITORIAL AND PHOTOMECHANICAL SHELTER

NSN 3610-00-987-9066

COMPONENT OF PRINTING PLANT, SPECIAL WARFARE,

TRANSPORTABLE

NSN 3610-00-889-3311

This copy is a reprint which includes current pages from Changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY
JUNE 1978

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions. Learn areas containing high voltage in each piece of' equipment. Before working inside the equipment, turn OFF and ground points of high voltage before touching them.

Drycleaning solvent. P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of' solvent is 100° F to 138° F (38° C to 59° C).

CHANGE

NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 16 SEPTEMBER 1992

Operator's, Organizational, Direct Support,
and General Support Maintenance Manual

EDITORIAL AND PHOTOMECHANICAL SHELTER
NSN 3610-00-987-9066
COMPONENT OF PRINTING PLANT
SPECIAL WARFARE, TRANSPORTABLE
NSN 3610-00-889-3311

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TM 10-3610-202-14, 12 June 1978 is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
D-1 through D-4	D-1 through D-4

2. Retain this sheet in front of manual for reference purposes.

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
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CHANGE

NO. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 July 1990

Operator's, Organizational, Direct Support,
and General Support Maintenance Manual

EDITORIAL AND PHOTOMECHANICAL SHELTER
NSN 3610-00-987-9066
COMPONENT OF PRINTING PLANT
SPECIAL WARFARE, TRANSPORTABLE
NSN 36100-889-3311

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Remove pages	Insert pages
17-1 and 17-2	17-1 and 17-2
18-1 and 18-2	18-1 and 18-2

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army

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

Official:

WILLIAM J. MEEHAN, II
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION;
To be distributed in accordance with DA Form 12-25E, Operator, Unit, Direct Support and General Support Maintenance Requirements for Shelter, Editorial & Photochemical, Component of Print Plant, Spec Warfare, Transportable.

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *22 March 1979*

Operator, Organizational
Direct Support and General Support
Maintenance Manual

EDITORIAL AND PHOTOMECHANICAL SHELTER
NSN 3610-00-987-9066
COMPONENT OF PRINTING PLANT
SPECIAL WARFARE, TRANSPORTABLE
NSN 3610-00-889-3311

TM 10-3610-202-14, 12 June 1978, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration identification number.

Remove Pages	Insert Pages
1-1 and 1-2	1-1 and 1-2
1-7 and 1-8	1-7 and 1-8
4-7 thru 4-14	4-7 thru 4-9/(4-10 blank)
5-1 and 5-2	5-1 and 5-2

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By Order of the Secretary of the Army:

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

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J. C. PENNINGTON
Major General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-25A, Operator maintenance requirements for Shelters.

TECHNICAL MANUAL

No. 10-3610-202-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *12 June 1978*

Operator, Organizational, Direct Support
and General Support Maintenance Manual

EDITORIAL AND PHOTOMECHANICAL SHELTER
NSN 3610-00-987-9066
COMPONENT OF
PRINTING PLANT, SPECIAL WARFARE, TRANSPORTABLE
NSN 3610-00-889-3311

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual by calling attention to errors and by recommending improvements Your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) and/or DA Form 2028-2 (Recommended Changes to Equipment Technical Manuals), may be used. Copies of DA Form 2028-2 are attached In the back of the manual for your use Please mail your recommended changes directly to Commander, Headquarters, U S. Army Troop Support and Aviation Materiel Readiness Comma rd. ATTN. DRSTS-MTPS, 4300 Goodfellow Blvd., St. Louis, MO 63120 A reply will be furnished directly to you.

***This manual supersedes TM 10-3610-202-14, 5 January 1971**

List of Illustrations

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

The instructions in this manual are published for the use of personnel responsible for the operation and maintenance of editorial and photomechanical shelter unit of the transportable special warfare printing plant.

1-2. Maintenance Forms and Records.

Maintenance forms and records that you are required to use are as follows:

a. DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

b. DA Form 2407 (Maintenance Request Used for Requesting Support Maintenance).

c. DA Form 2407-1 (Continuation Sheet Used for Requesting Support Maintenance).

d. For further information, refer to TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. Administrative Storage.

a. Storage Site.

(1) Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area Administrative Storage.

(2) Covered space is preferred. When sufficient covered space for all items to be stored is not available, priority should be given to items which are most susceptible to deterioration.

(3) Open sites should be improved hardstand, if available. Unimproved sites should be firm, well-drained, and kept free of excessive vegetation.

b. Storage Plan.

(1) Store equipment so as to provide maximum protection from the elements and to provide access for inspection, maintenance, and exercising. Anticipate removal or deployment problems and take suitable precautions.

(2) Take into account environmental conditions, such as extreme heat or cold; high humidity; blowing sand, dust, or loose debris; soft ground; mud; heavy snows; earthquakes; or combinations thereof and take adequate precautions.

(3) Establish a fire plan and provide for adequate firefighting equipment and personnel.

(4) For further information, refer to TM 74090-1 (Administrative Storage).

1-4. Destruction of Army Material to Prevent Enemy Use.

a. Demolition of Shelter and Contents. Methods of destruction should achieve such damage to equipment and repair parts that it will not be possible to restore the equipment to a usable condition in the combat zone either by repair or cannibalization.

(1) Mechanical destruction. Using an axe, pick, mattock, sledge, or any other heavy implement, damage all vital elements such as controls, switches and valves, electric motors and any other major assemblies and components.

WARNING

Point blank firing at equipment with weapons should not be attempted unless the safety of all personnel in the area is assured.

(2) Gunfire. Fire on equipment with the heaviest weapons available, aiming at the major assemblies and controls. Although one well placed direct hit may render the equipment inoperative, several hits may be required for complete destruction of all components.

b. Additional Information. For additional information on procedures for destruction of equipment to prevent enemy use, refer to TM 750-244-3.

1-5. Reporting Equipment Improvements Recommendation (EIR).

EIR's will be prepared on DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed directly to Commander, Headquarters, U.S. Army Troop Support and Aviation Materiel Readiness Command, ATTN: DRSTS-MEM, 4300 Goodfellow Blvd., St. Louis, MO. 63120. A reply will be furnished directly to you.

Section II. DESCRIPTION AND DATA

1-6. Description.

NOTE
Reference to left-hand sides of the shelter are made when viewing the unit from the rear (door) end.

a. General. The items of equipment which make up the editorial and photomechanical unit of the special warfare printing plant are contained in the editorial and photomechanical shelter. Composition of master copy to be used in producing special warfare leaflets is the primary function of this shelter unit. A list of items of equipment which make up the editorial and platemaking unit is contained in table 1-1. The location of these items is shown in figures 1-1 through 1-4.

Table 1-1. Contents of Editorial and Photomechanical Shelter

Description of Equipment	NSN or Part No.
Air conditioner with heating and humidifying capabilities	4120-00-926 1203
Headliner counter assembly	
File Cabin-et	
Platemaker Assembly	NuArc Model 18V
Light table assembly	
Composing machine	Varityper Model 1010F
Vertical camera assembly	Goodkin Astro Model 18
Film dryer	Decco Model 1418
Headliner Assembly	Varityper Model 820

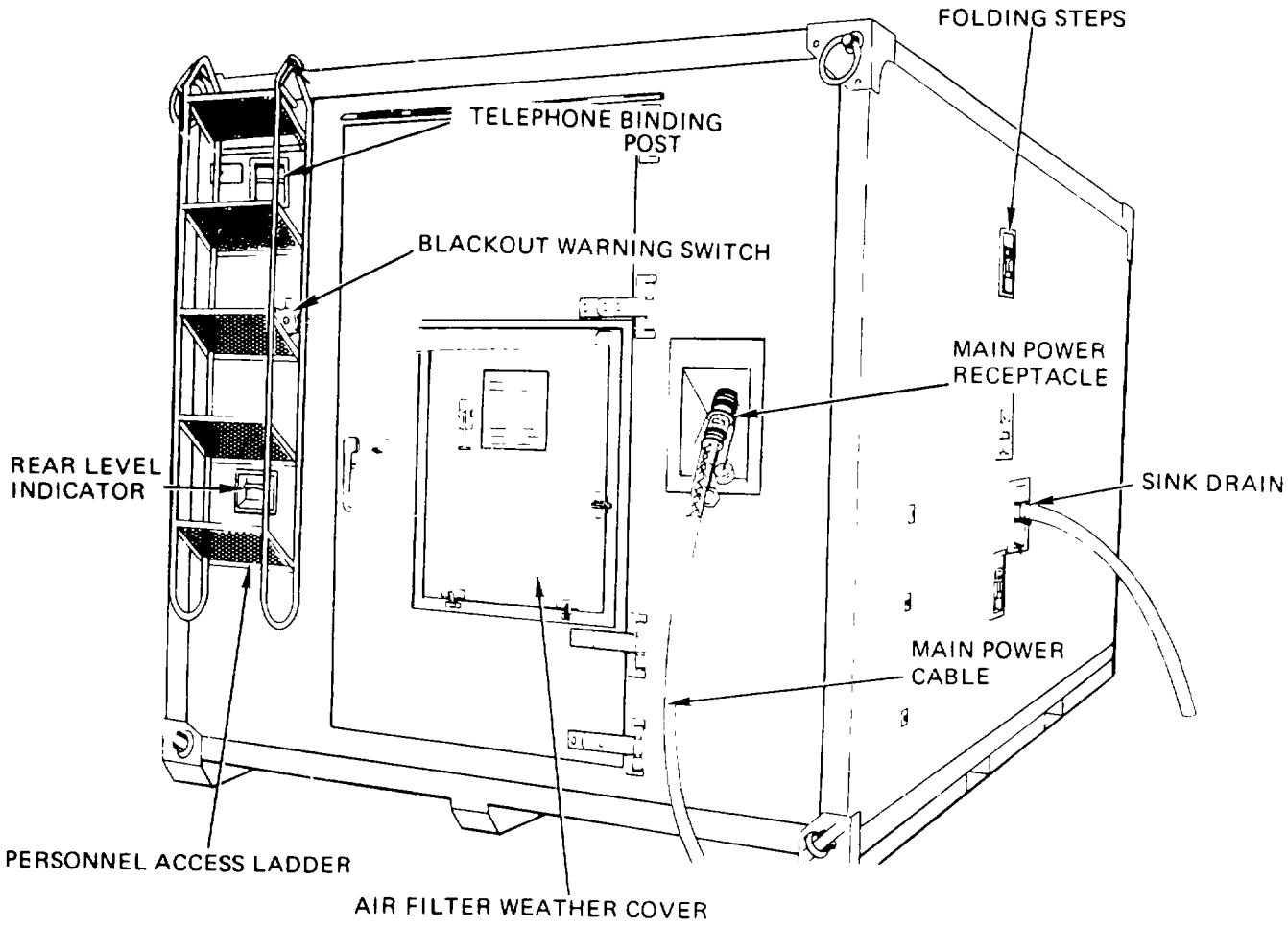

Figure 1-1. Editorial and Photomechanical Shelter View From Rear

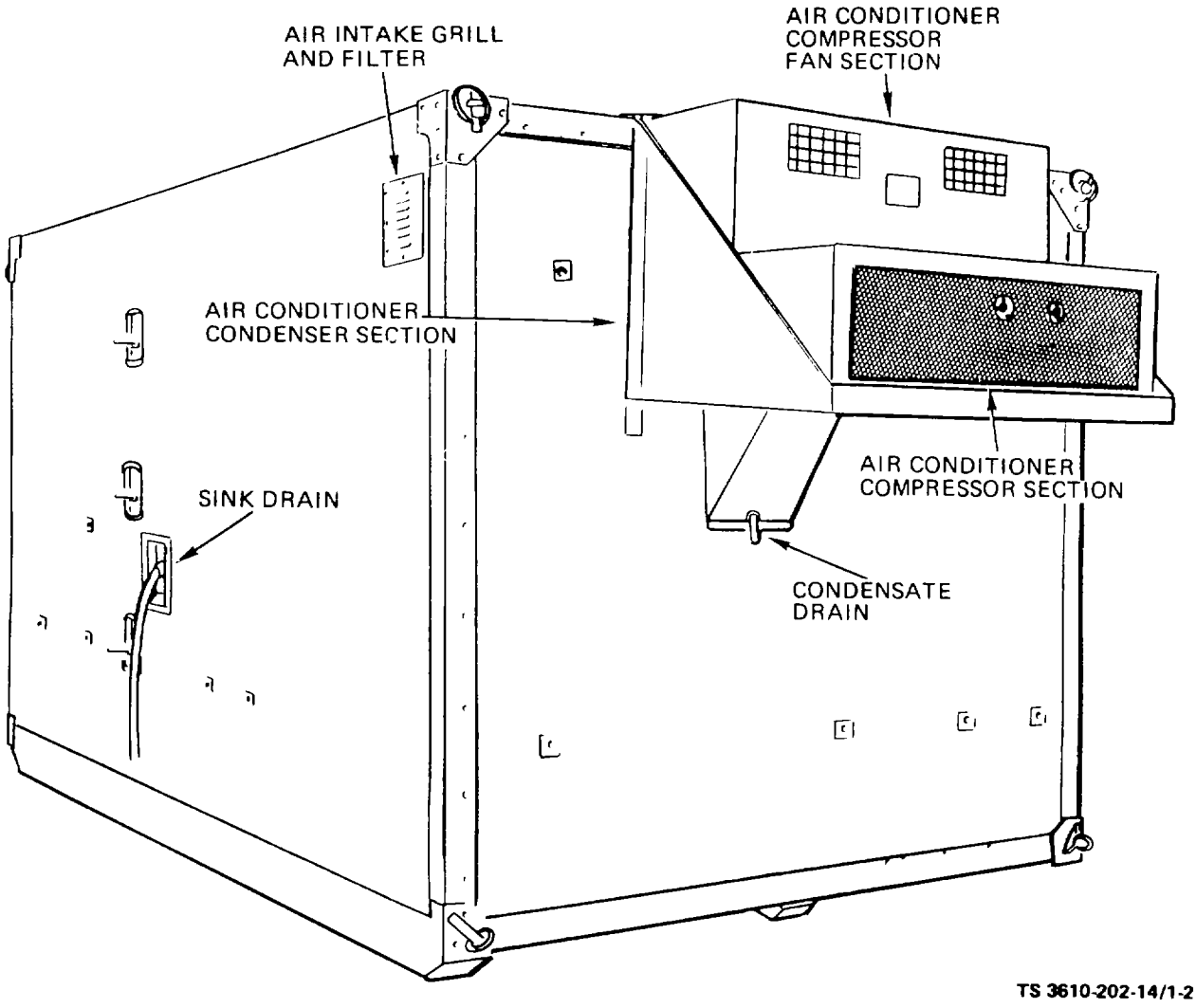

Figure 1-2. Editorial and Photomechanical Shelter View From Front

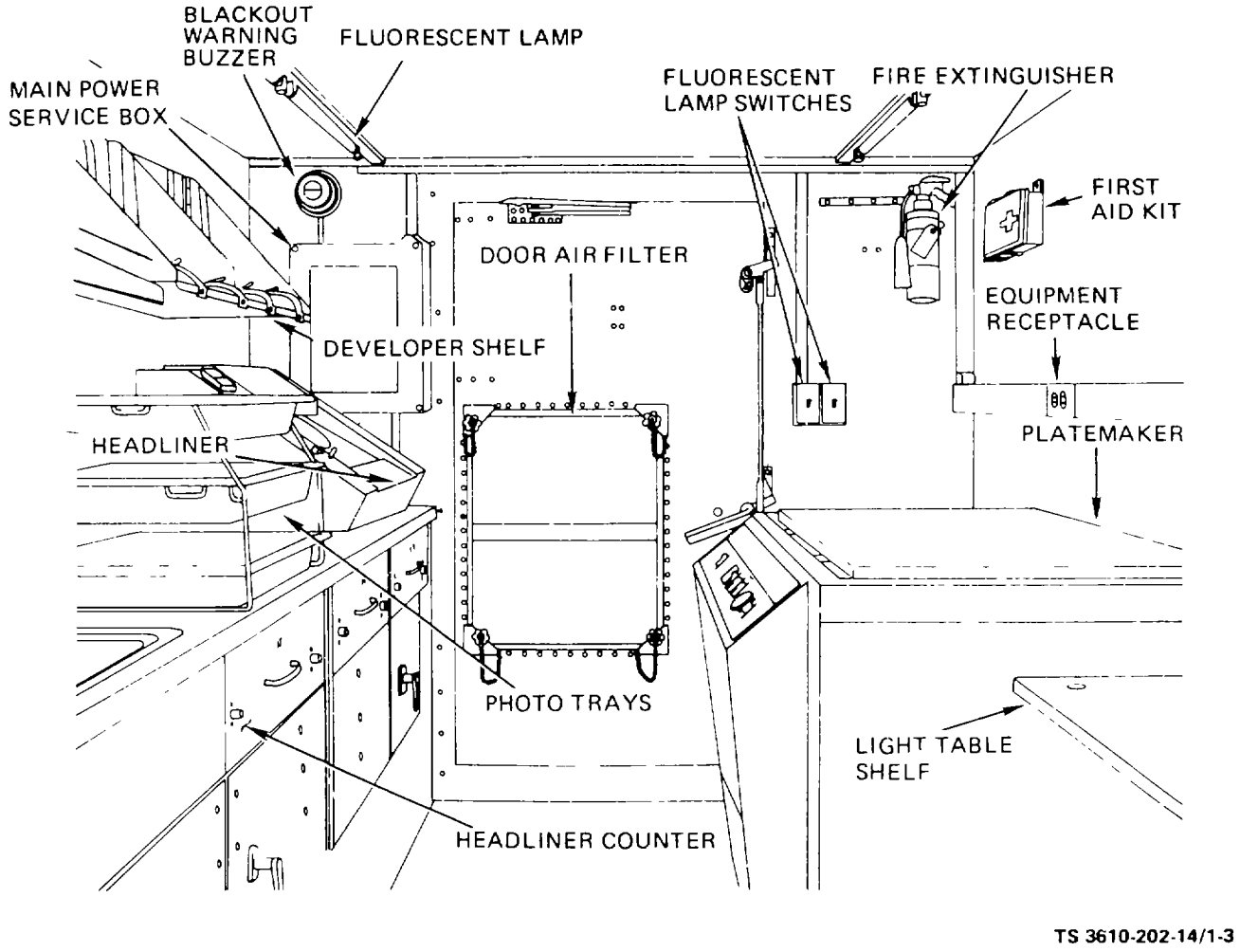

Figure 1-3. Editorial and Photomechanical Shelter Interior View From Front

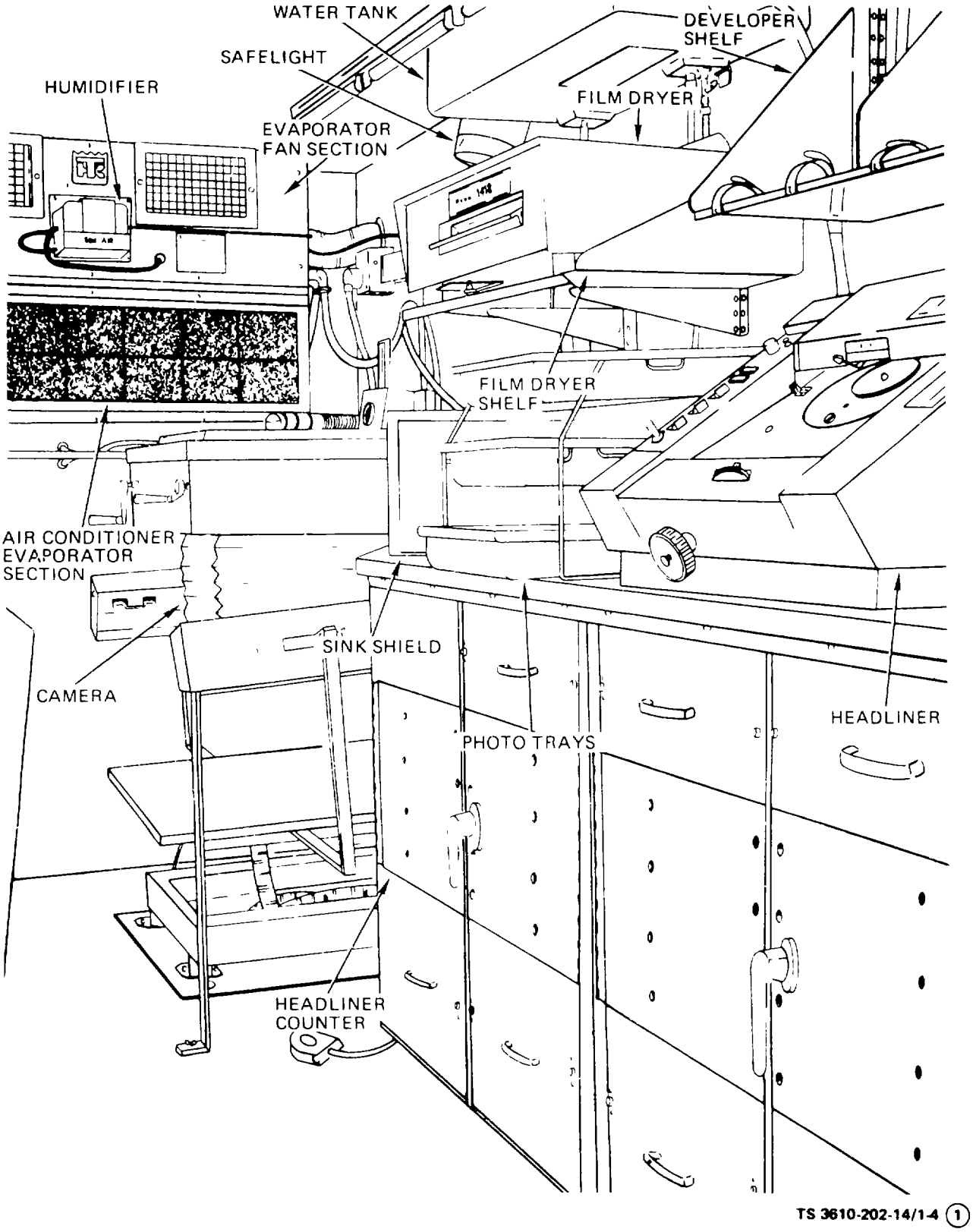

Figure 1-4. Editorial and Photomechanical Shelter Interior View From Rear (Sheet 1 of 2)

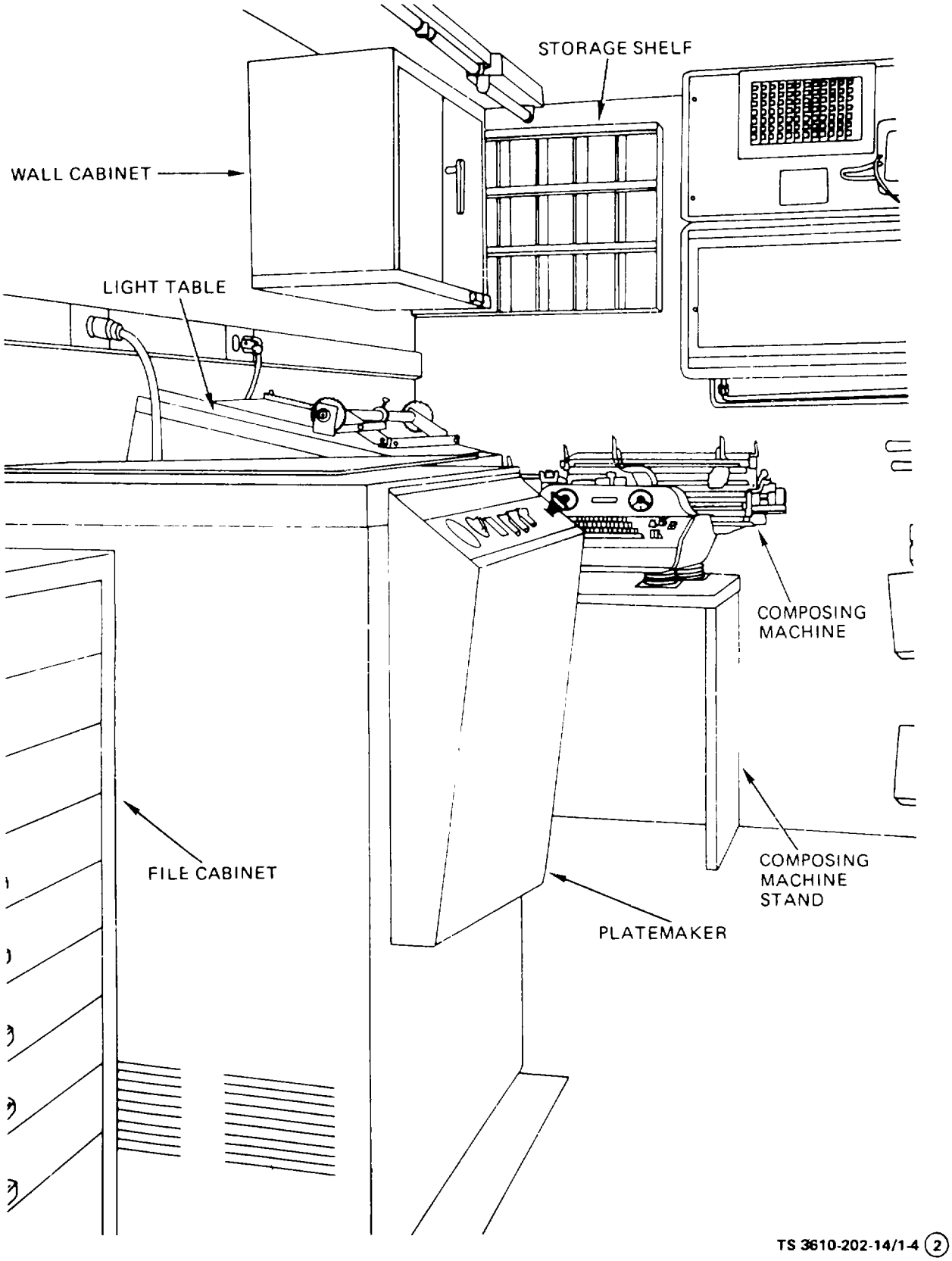

Figure 1-4. Editorial and Photomechanical Shelter Interior View From Rear (Sheet 2 of 2)

b. Editorial and Photomechanical Shelter. The shelter is constructed of stressed aluminum panels with foam core bonded between the inner and outer layers. The shelter components and their function are listed in the subparagraphs which follows:

(1) Shelter fixtures and components. (See figs. 1-1 through 1-4.)

(a) The corners of the shelter contain the lifting eyes for attaching a crane or helicopter sling for transportation.

(b) Aluminum channel skids on the bottom of the shelter add rigidity to the shelter floor to support the equipment inside, and to enable it to be dragged for short distances.

(c) Cabinets and drawers are installed along the walls inside the shelter for storing paper, artists' supplies, ink, utensils, and other material.

(d) A ladder used to gain entry to the shelter when it is truck mounted, is mounted on a bracket left of the door and just above the field-phone connection Two steady brackets adjacent to the level gage prevent sideways movement of the ladder. The ladder is lashed to the shelter wall.

(e) The units of specialized equipment installed in the shelter are secured to the floors, walls, or cabinet tops to prevent them from shifting when the shelter is being transported Shock mounts art, installed between the units and the mounting surface to absorb road shocks and vibrations.

(f) Shelving area for the storage of chemicals and solvents is provided adjacent to the film dryer unit, above the sink and work surface.

(g) Three fold-down steps are installed on the exterior curbside wall of the shelter to provide access to the shelter roof.

1-7. Tabulated Data.

a. General. The editorial and photomechanical shelter identification plate information is contained in table 1-2. Additional shelter pertinent data and major component information is contained in table 1-3.

Table 1-2. Editorial and Photomechanical Shelter Army

Identification Plate Information

NSN	3610-00-987-9066
Unit	1 of 2
Weight	4400 pounds
Serial No	

A Component of Printing Plant, Special Warfare. Transportable (Lightweight) NSN 3610-00-889-3311.

Table 1-3. Editorial and Photomechanical Shelter and Components Tabulated Data

(1) Editorial and photomechanical shelter.			
	Type of construction	Stressed aluminum panels with foam core bonded between inner and outer panels	
	Volume	614 cubic feet	18 cm
	Dimensions		
	Length	147 inches	373.38 cm
	Width	87 inches	220.98 cm
	Height	83 inches	210.82 cm
(2) Blackout warning buzzer.			
	Manufacturer	Edwards Company Incorporated	
	Model	340-A	
	Power Requirements	120VAC, 60 Hz, 0 04 amps	
(3) Water storage tank.			
	Manufacturer	Craig Systems, Inc	
	Dimensions-		
	Length	30 inches	76.2 cm
	Width	13 inches	33.02 cm
	Height	6 inches	15.24 cm
	Capacity	10 gallons	37.85

(4) Water heater.	Manufacturer	Edward L Wiegand Co.	
	Heater Element	Chromalox Type ARTM-2000	
	Power Requirements	240VAC, 60 Hz, 2000 watts	
	Thermostat Range	60 degrees F to 180 degrees F (15 degrees C to 82 degrees C)	
(5) Platemaker.	Manufacturer	NuArc Co. Inc	
	Model	FT18V	
	Dimensions		
	Length	30 inches	76.2 cm
	Width	32 inches	81 28 cm
	Height	39 inches	99 06 cm
	Weight	250 pounds	113 5 Kg
	Power Requirements	115VAC 60 Hz, 17 5 amps	
(6) Light Table.			
	Dimensions		
	Length	16 inches	4064 cm
	Width	26 inches	66 04 cm
	Height	8 inches	20.32 cm
	Weight	30 pounds	13 62 Kg
	Power Requirements	115VAC, 60 Hz	
(7) Composing Machine, Type.	Manufacturer	Varityper	
	Model	DS2	
	Dimensions		
	Length	19 inches	489 26 cm
	Width	28 inches	71 12 cm
	Height	12 inches	30 48 cm
	Weight	57 pounds	25 88 Kg
	Power Requirements	115VAC, 60 Hz, 0 55 amps	
(8) Camera.	Model	Goodkin Astro Model 18	
	Dimensions.		
	Length	28 inches	71 12 cm
	Width	25 5 inches	64 77 cm
	Height	50 inches	127 (m
	Weight	200 pounds	90.8 Kg
	Power Requirements	110 VAC, 60 Hz, 30 amps	
(9) Film Dryer.	Model	Decco Model 1418	
	Dimensions		
	Length	16 inches	40 64 cm
	Width	26 inches	66 04 cm
	Height	8 inches	20.32 cm
	Weight	30 pounds	13.62 Kg
	Power Requirements	115VAC, 60 Hz, 7 amps	

(10)	Composing Machine, Headliner.	Manufacturer	Varityper Corporation	
		Model	H-1	
		Dimensions:		
		Length	18 ½ inches	46.99 cm
		Width	26 inches	66.04 cm
		Height	15.5 inches	39.37 cm
		Weight	53 pounds	24 Kg
		Power Requirements	115VAC, 60Hz, 1.2 amps	
(11)	Air Conditioner	Model	A18-104TM5	
		Dimensions		
		Length	30 inches	76.2 cm
		Width	32 inches	81.28 cm
		Height	39 inches	99.06
		Weight	512 pounds	232.45 Kg
		Capacity	18,000 BTU/HR Cooling	
		Power Requirements	240VAC, 3 Phase	

b. Electrical Data. The total electrical demand load for the shelter and components is 10KW. Refer to figure 1-5 for the shelter wiring diagram. Wiring diagrams for the shelter air conditioning are contained in figure 1-6.

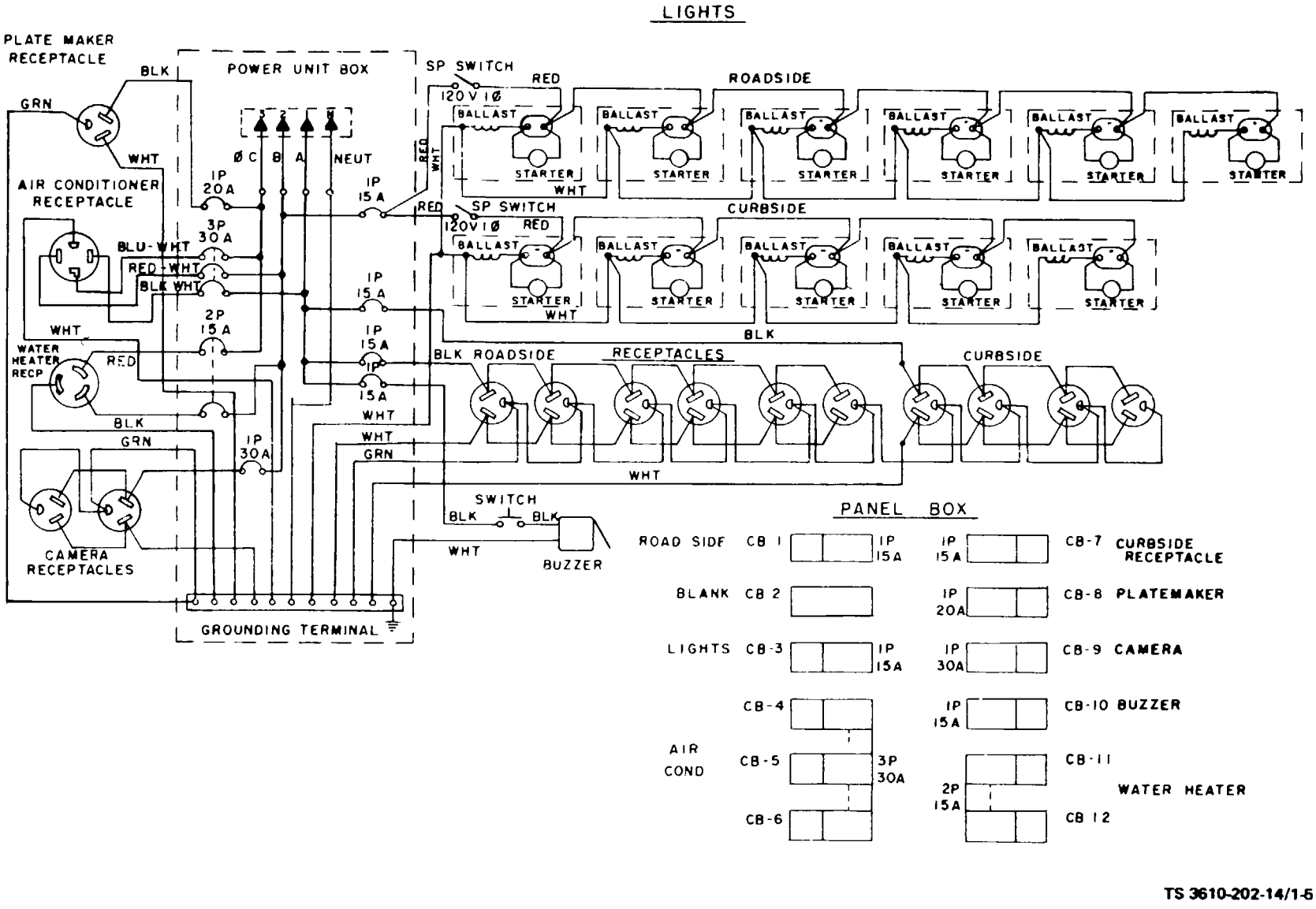

Figure 1-5. Editorial and Photomechanical Shelter Wiring Diagram

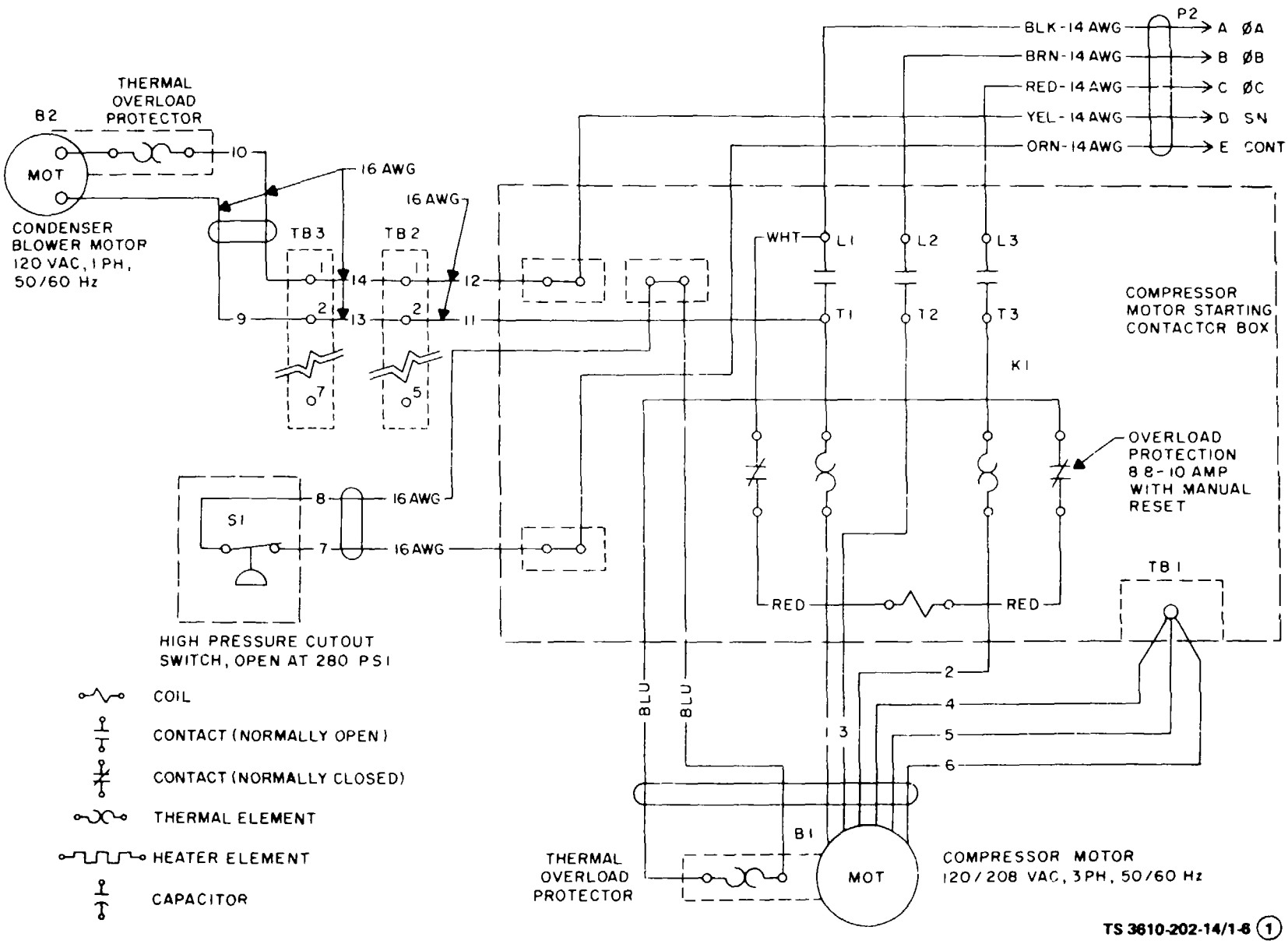

Figure 1-6. Air Conditioner Wiring Diagram (Sheet 1 of 3)

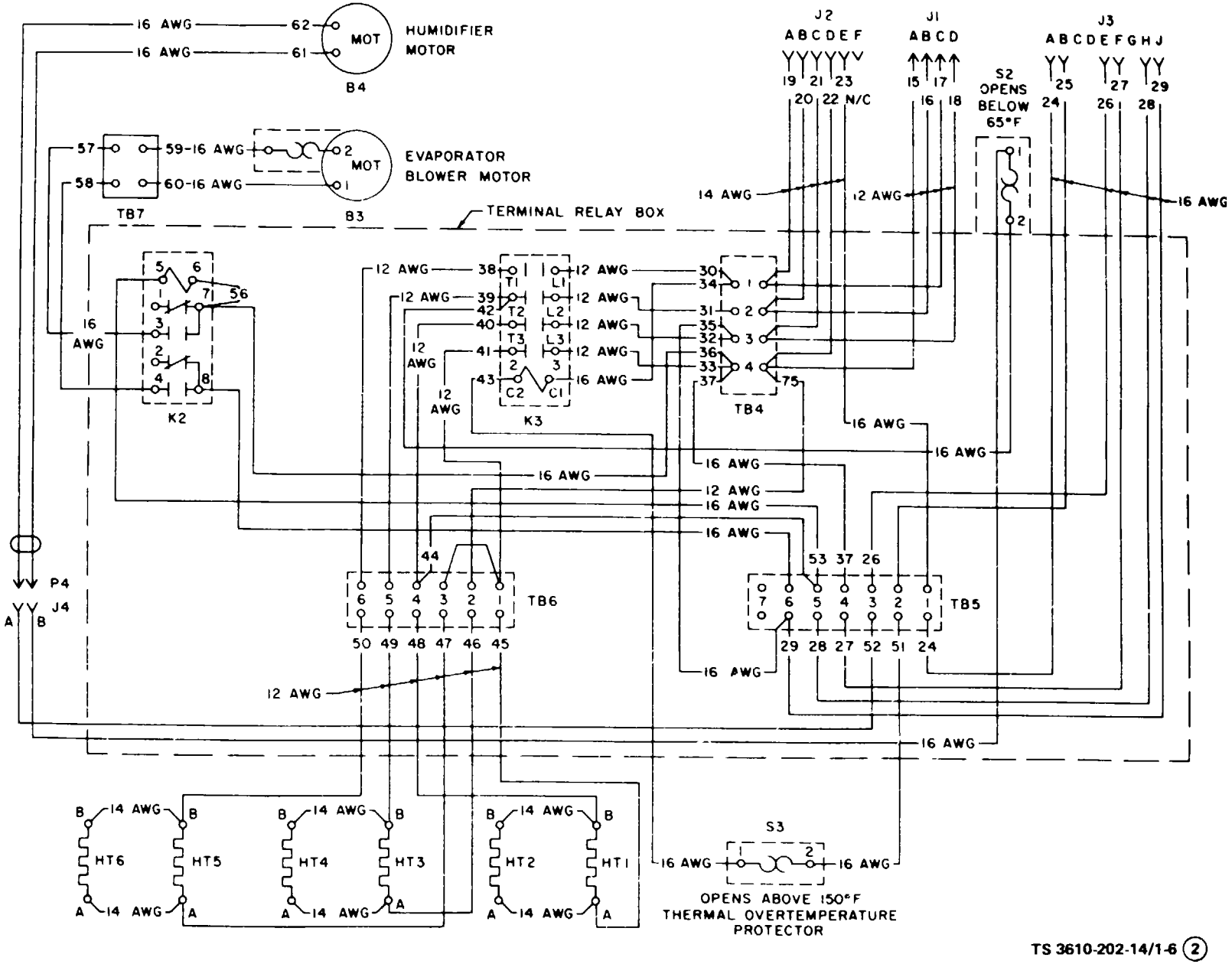

Figure 1-6. Air Conditioner Wiring Diagram (Sheet 2 of 3)

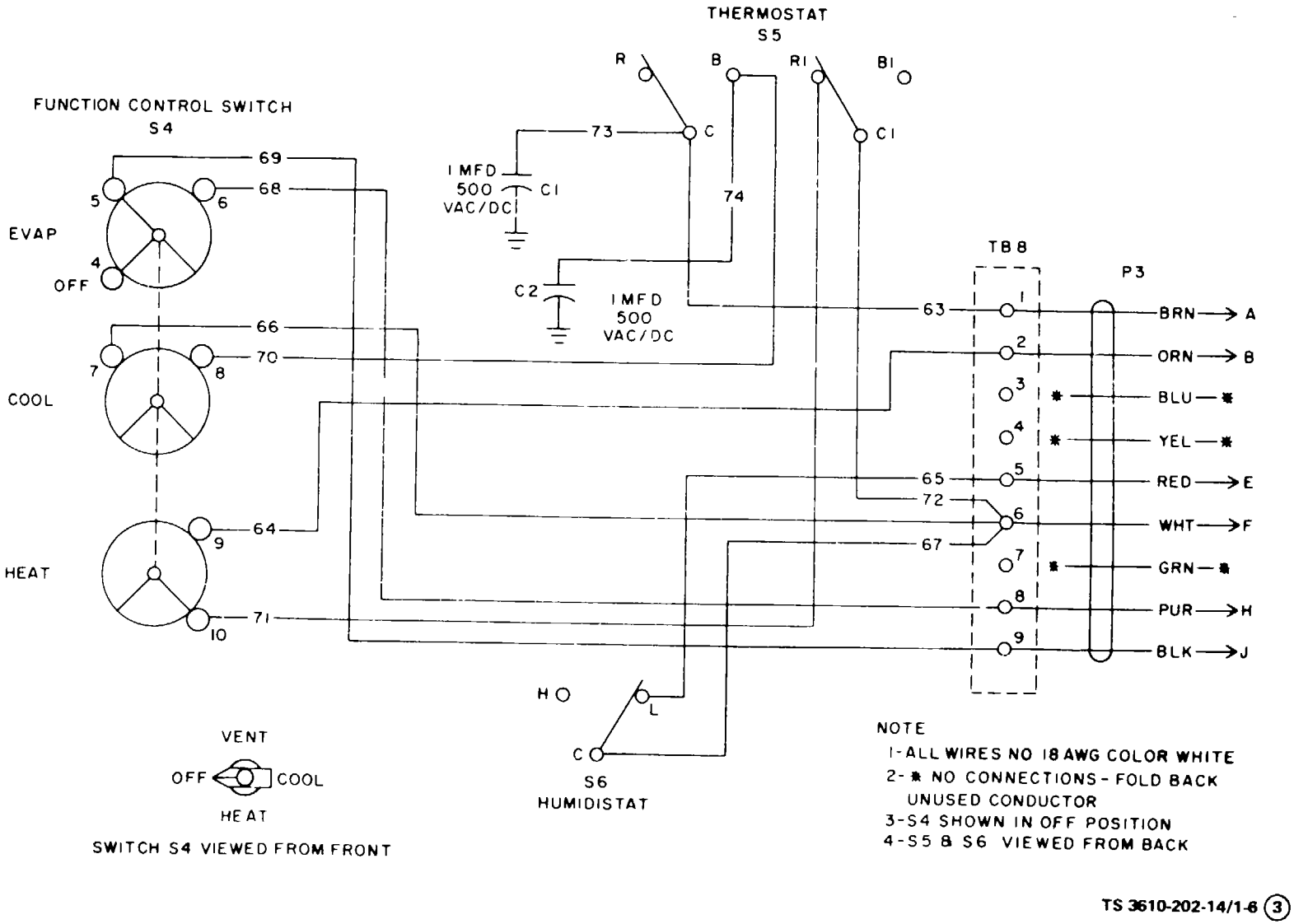

Figure 1-6. Air Conditioner Wiring Diagram (Sheet 3 of 3)

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. General.

a. The instructions in this section are published for the information and guidance of personnel responsible for operation of the printing plant. The editorial and photomechanical unit of the special warfare transportable printing plant is used in conjunction with the press shelter component of the printing plant.

b. The operator must know how to perform every operation of which the printing plant is capable. This section provides instructions on starting and stopping the printing plant which includes procedures for applying primary power and adjusting the lighting and air conditioning. This section also provides instructions on the operation of the major components installed in the printing plant and on coordinating the basic motions to perform the specific tasks for which the equipment is designed. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

2-2. Starting the System.

NOTE

Power to the shelter Unit is provided by a 15KW diesel powered generator.

a. Grounding the Shelter. Before the shelter is connected to a power source, it must be grounded as follows:

WARNING

Do not connect shelter to power supply or attempt to operate shelter equipment until the shelter is properly connected to a suitable ground. Failure to observe this warning may result in serious injury or death.

(1) Select a bolt or a screw to which the ground lead can be fastened securely and attach the lead to the bolt. The ladder-attaching screw will serve this purpose satisfactorily.

(2) Remove any paint or grease from the ground rod. Select the lowest. dampest area within 10 feet (3 meters) of the bolt to which the ground lead is attached, scoop out a hole about 6 inches (15 cm) deep, and drive the ground rod into the hole until only about 3 Inches (7.5 cm) of the rod extends above the ground.

(3) Attach the ground lead to the ground rod then saturate the ground around the rod with water.

b. Preparation for Starting.

WARNING

Do not perform any electrical maintenance or make any electrical connection or disconnection at the main power receptacle while the generator set engine is running.

(1) Connect the primary power cable to the input power receptacle located near the door of the shelter, prior to connecting the cable to the power source The cable connector and the receptacles are keyed to ensure proper connection.

(2) Connect the power cable to the generator power source.

c. Starting the System.

(1) Start the generator set in accordance with the applicable Department of the Army Technical Manual.

(2) Position all circuit breakers in the main power service box to the right of the shelter door to on.

(3) Position both fluorescent light switches to the left of the shelter door to on.

(4) Position the air conditioner controls for the desired mode of operation, relative humidity and temperature setting. (See fig. 2-1.)

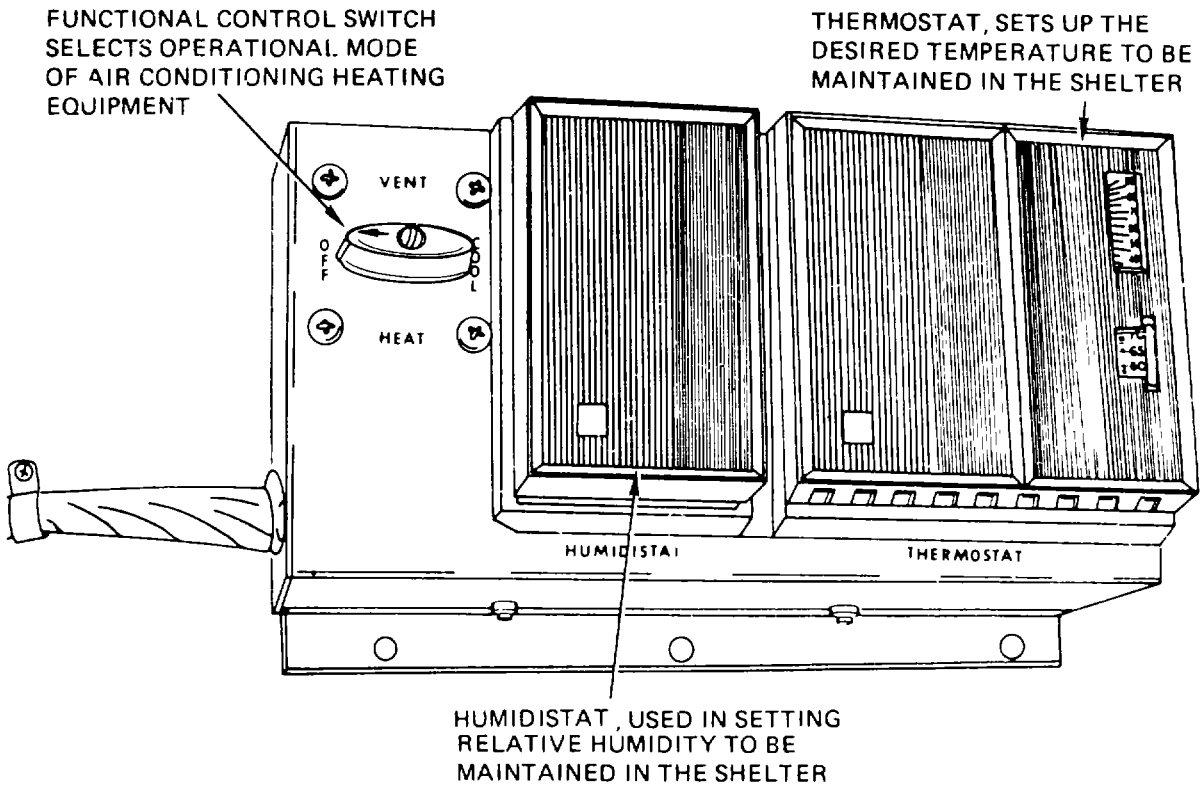

Figure 2-1. Air Conditioner Controls

2-3. Operation.

This paragraph provides generalized operating procedures for the information and guidance of the personnel responsible for the operation of the printing plant and the installed equipment. More detailed information pertaining to equipment operation is contained in the various commercial manuals supplied with the equipment.

a. Platemaker.

(1) The electrically operated NuArc 18V platemaker is shock mounted and ready for operation when the power cord is inserted into the applicable polarized wall receptacle. The flip-top vacuum printer frame is used to hold film securely against a sensitized plate while the image on the film is being printed on the plate. The vacuum for the flip-top printing frame is developed by a vacuum pump.

(2) Due to installation requirements, the blower unit, used to ventilate the machine, which is normally mounted on the external side of the rear panel, is now located within the lower compartment. To gain access to the mercury vapor lamp mechanism, which is located directly above lower compartment, position flip-top frame in a vertical position to expose the lamp reflector. Remove the glass shield within the unit to expose the lamp mechanism for cleaning and replacement of vapor lamp tube.

WARNING

The mercury vapor lamp should not be operated above 110 of rated voltage. Such operation increases pressure within the lamp which could cause a tendency to shatter with subsequent ultraviolet output causing skin and eye irritation.

CAUTION

To avoid mercury vapor lamp failure, white gloves should be worn when handling the glass portion of the tube, to prevent transfer of fingerprints to the glass, and subsequent decrease of lamp efficiency.

b. Light Table. The light table is a Foster Model 36 G/S and is used to prepare copy from which the lithographic printing plates are made. The preparation includes layout of the copy and retouching, opaquing, masking and stripping. The unit is shock mounted to a shelf attached to the left-hand shelter wall. A rotating type stool is provided for the operator and is secured when not in use immediately below the shelf. The electric power cord of the unit is inserted into a convenient wall receptacle above the shelf. A two position toggle switch installed on the front of the light table controls illumination of the fluorescent tubes within the unit.

c. Composing Machine. The type composing machine is a Varityper Model 1010F and is used in the preparation of master copy for reproduction. The composer which is a cold type direct impression machine incorporates power control of the keyboard, carriage return and paper advance. Interchangeable type faces provide a variety of point sizes with a differential spacing capability automatically selecting correct letter design width. Right-hand margin justification is achieved automatically through the use of margin stops for the desired column width. A forms ruling device provides for ruling of any style of line or leader. The composer is shock mounted to a stand attached to the front wall of the shelter. A folding chair is provided for the operator and is secured when not in use to the left-hand shelter wall adjacent to the light table shelf. The electric power cord of the unit is inserted into a convenient wall receptacle immediately below the wall cabinet.

d. Camera. The camera is a Goodkin vertical process 18 inch unit equipped with an 8.25 inch focal length wide-angle color corrected lens. Recalibration of the lens is accomplished by adjustment of the calibration tapes for the lens and copyboard. Two vacuum pumps are provided with the camera. (See fig. 2-2.) The pump to the right of the camera, controlled by a foot pedal, is connected by means of a flexible hose to the underside of the copyboard. During operation this pump provides the vacuum for even contact for the material to be re produced. The pump to the left of the camera, controlled by the camera power switch, is connected by means of a flexible hose to the film case and provides vacuum for even contact of the film during exposure. Camera lighting is supplied by four 650 watt quartz lamps located in two housings, bracket mounted, one on each side of the copyboard base. A one-piece conical bellows serves as a light-tight seal between the lens case and the film case. Camera controls and timer are located in a control panel installed on top of the equipment. The camera lens is removed and placed on a bracket in the inverted position during camera moving.

CAUTION

Never leave lens bellows extended when the camera is not in use. Retract bellows so as to maintain folds in correct position.

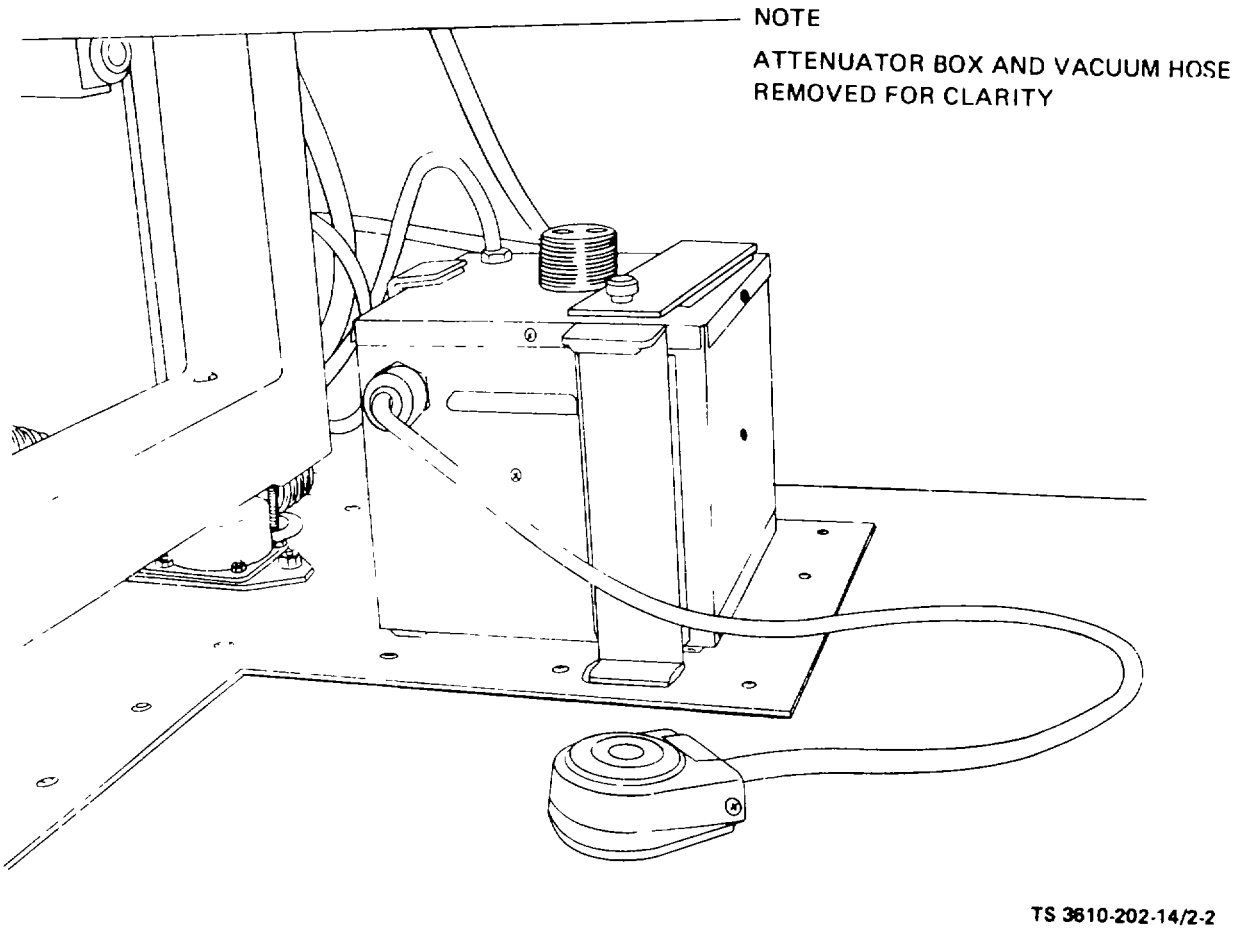

Figure 2-2. Foot Operated Camera Vacuum Pump

e. Film Dryer. The electric film dryer is a Decco Model 1418 which utilizes air blade drying to provide quicker film production. The dryer is mounted on a shelf attached to the right-hand shelter wall above the sink. The wet processed film is fed into the dryer through a slot located in the front panel of the unit. A series of squeegee rollers then carries the film through the dryer passing it between a set of upper and lower air tubes which direct the air over the surfaces of the film. The dried film is then passed through a slot in the rear of the dryer housing. A deflector mounted on the rear housing then steers the film upward and back over the top of the dryer unit to bring it within reach of the operator. (See fig. 2-3.) Power for the dryer is obtained through an adjacent equipment receptacle and is controlled by means of a two-position switch on the front of the unit.

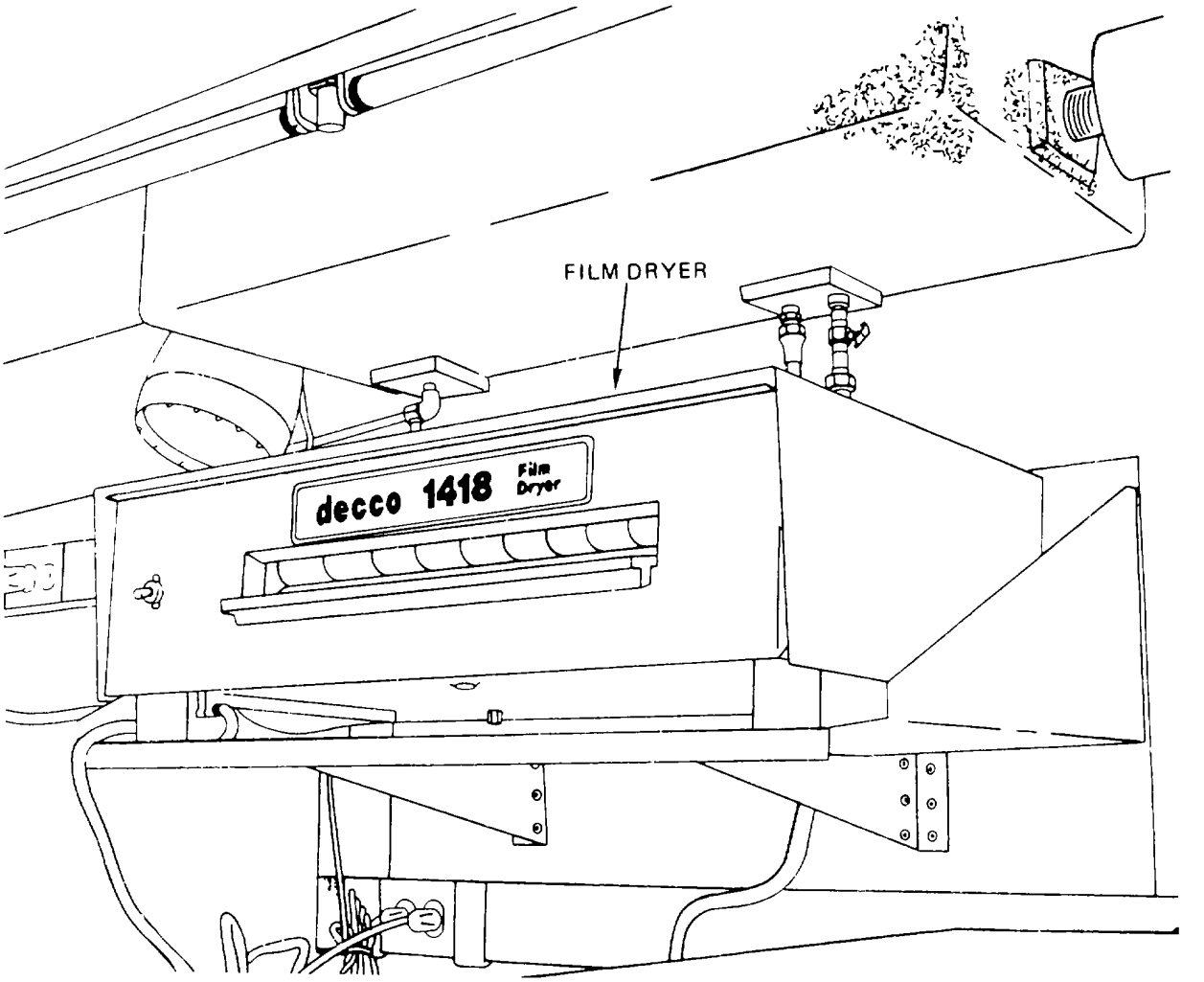

Figure 2-3. Film Dryer Assembly

f. Safelight. The darkroom safelight is a Natick Model PH-422 utilizing a series of interchangeable filters. The light provides illumination of a color and intensity which will not affect the photographic material during processing. The light is controlled from a switch incorporated in the unit power cord which is inserted into a convenient wall receptacle immediately below the film dryer.

g. Headliner. The Headliner is a Varityper Model 820 photo composing machine with an integral automatic developer processing unit. The machine uses 35 mm film or paper to produce headline copy in sizes ranging from 12 to 84 points which can be pasted directly to a master copy and reproduced. The Headliner is installed on a track type mount attached to the rear end of the headliner countertop. Pulling the machine away from the shelter wall on the track permits access to the rear of the unit for service and maintenance. The main controls for the headliner are grouped in a console on the left-hand side of the machine. The electric power cord of the unit is inserted into a convenient wall receptacle immediately behind the machine.

h. Air Conditioner. Refer to TM 5-4120-226-15 for the necessary air conditioner operating instructions.

i. Fire Extinguisher. The monobromotrifluoromethane type fire extinguisher is bracket mounted on the rear wall of the shelter just left of the shelter door. it is generally suitable for use on all types of fires, with the exception of fires involving LOX (liquid oxygen) generating equipment. The fire extinguisher is furnished with a disposable type cylinder. To operate the fire extinguisher, perform the following operations:

(1) Remove the fire extinguisher from its

stowage bracket.

(2) Break the seal by pulling the safety pin from the handle.

(3) Point the horn at base of the flame.

(4) Depress trigger for discharge and direct the stream at the base of the fire.

(5) Replace used cylinder with a new cylinder immediately alter using.

j. Blackout Warning. A blackout warning system consisting of an external pushbutton switch and an internal buzzer Is provided to alert shelter personnel to extinguish all lights before the door is opened during blackout periods. The pushbutton switch is mounted on the outside wall of the shelter to the left of the door. The buzzer is mounted on the rear wall of the shelter above the main power service box. A chain mounted blackout lockpin is Installed on the door center latch plate on the interior rear left-hand wall. When the door is closed and latched, the pin passes through a hole in the locking mechanism to prevent the door from being Inadvertently opened during a blackout or during processing of photographic material.

k. Shelter Door Filter. An air filter is located near the center of the shelter door and incorporates an upward hinging weather cover over the filter opening on the door exterior.

l. Telephone Binding Post Two external binding posts are located on the exterior rear shelter wall to the left of the door. They are protected by a hinged weather cover arid are provided to facilitate connection of a field telephone between the units of the special warfare printing plant.

m. Personnel Ladder. A personnel access ladder is mounted on a bracket bolted to the exterior shelter wall above the fieldphone connection. This U-shaped bracket supports the top step of the ladder while the ladder frame tubes are steadied In two retaining brackets, one on each side of the rear level indicator. A holddown strap which passes around the two lower steps of the ladder and through tiedown brackets above and below the level indicator, secures the ladder assembly during transit and storage. The ladder itself is used to provide personnel access to the shelter when the unit is truck mounted.

n. Level Indicator. Two bubble-gage type level indicators are installed in the exterior shelter wall, one on the rear wall and one on the left-hand wall. During operation, the shelter should be as level as possible so as not to affect the calibration of plant components.

o. Main Power Service Box. The main power service box mounted on the rear wall of the shelter to the right of the door, contains the circuit breakers which control electrical power to the shelter components and afford overload protection to these circuits. The circuit breakers are switch type components which also provide a convenient means of disconnecting power to all shelter circuits.

p. Lights and Switches. Illumination of the shelter is provided by two rows of ceiling lights, controlled by two light switches on the rear wall of the shelter to the left of the door. Each light fixture Incorporates a ballast, a lamp starter and a fluorescent lamp tube. Six light fixture assemblies are installed along the left-hand ceiling and five along the right-hand ceiling.

2-4. Stopping.

WARNING

Do not perform any electrical maintenance or make any electrical connection or disconnection at the main power receptacle while the generator set engine is running.

a. Shutdown the generator set power source in accordance with the applicable Department of the Army Technical Manual.

b. Position all circuit breakers in the main power service box to the right of the shelter door to off.

c. Position all equipment and shelter power switches to the off or neutral position.

d. Disconnect the main power cable from the generator power source.

e. Disconnect the cable from the main power receptacle.

f. Coil and correctly stow main power cable.

Section II. OPERATION OF AUXILIARY EQUIPMENT

The editorial and photomechanical unit of the special warfare printing plant is used in conjunction with the press and duplicating shelter unit, operating procedures for which are contained in TM 10-3610-203-14. The primary mission of both units is the production of special psychological warfare leaflets.

Section III. OPERATION'UNDER UNUSUAL CONDITIONS

Because of the nature of some of the materials used in the editorial and photomechanical shelter unit such as developing chemicals, photosensitive paper, etc., the shelter interior must he kept with fixed environmental limits This controlled environment is provided by the various functions of the air conditioning unit

CHAPTER 3
OPERATOR'S MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS.

3-1. General Lubrication Information.

This section contains lubrication instructions for the editorial and photomechanical shelter of the special warfare printing plant.

3-2. Detailed Lubrication Information.

a. General. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Allow no dust, dirt, or other foreign material to mix with the lubricants. Keep all lubrication equipment clean and ready for use.

b. Cleaning. Keep all external parts not requiring lubrication clean of lubricants Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating to prevent accumulation of foreign matter.

c. Points of Lubrication. Lubricate the door hinges and handles of the editorial and photomechanical shelter with a few drops of OE-10 (Lubricating Oil, Internal Combustion Engine) monthly, or if binding occurs during operation.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-3. General.

To ensure that the printing plant is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services are listed in table 3-1. Defects discovered during operation of the system shall be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation, which would damage the equipment if operation were continued.

a. Before you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform the before (B) PMCS.

b. While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform the during (D) PMCS.

c. After you operate. Be sure to perform your after (A) PMCS.

d. If your equipment fails to operate Troubleshoot with proper equipment. Report any deficiencies using the proper forms, see paragraph 1-2.

3-4. Daily Preventive Maintenance Services.

Refer to table 3-1 for a listing of preventive maintenance checks and services which must be performed by the operator. An explanation of the tabular columns is as follows:

a. Item Number. The number appearing In this column indicates the chronological order of the checks and services regardless of interval. This column is used as a source of item numbers for the TM Number column on DA Form 2404. Equipment Inspection and Maintenance Worksheet. in recording results of Preventive Maintenance Checks and services.

b. Interval. The columns headed B, D. A. W. and M contain a dot (.) opposite the appropriate check Thus, if a given check is to be performed before operation, a dot is placed in the B column opposite the check to be performed. If the check is to be accomplished during operation. the dot would be placed In the column headed D, and if the same check is to be made in two or more periods, a dot will be placed in each applicable column.

c. Combat Operability (C). The C column identifies combat operability checks for unit readiness reporting purposes d. Item To Be Inspected. The items listed in this column are divided into groups under which the item to be inspected is identified.

e. Procedures. This column contains a brief description of the checks to be performed.

f. For Readiness Reporting Equipment Is Lot Ready/At-ailab4e If. This column contains the criteria which will cause the equipment to be classified as not ready/available because of inability to perform Its primary mission.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE
Within designated interval, these checks are to be performed in the order listed.
B - Before A - After M - Monthly
D - During M - Monthly C - Combat Operability

ITEM NO.	INTERVAL B	D	A	W	M	C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary.	For Readiness Reporting, Equipment Is Not Ready/Available If:
							Air Conditioner		
1	•	•					Humidifier	Check water level of humidifier. Adjust float.	
							Shelter Components		
2		•					Composing Machine, Type	Check good character impression, and correct operation of unit. If necessary, service unit in accordance with commercial manual instructions.	
3	•	•					Composing Machine, Headliner	Check developer tank filled to correct levels with developer, fixer, and water, check correct installation of paper or film cartridge, and distinct and sharp character copy. If necessary, service unit in accordance with commercial manual instructions.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Cont

NOTE
Within designated interval, these checks are to be performed in the order listed.
B - Before **A - After** **M - Monthly**
D - During **M - Monthly** **C - Combat Operability**

ITEM NO.	INTERVAL B	D	A	W	M	C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary.	For Readiness Reporting, Equipment Is Not Ready/Available If:
4	•	•					Light Table	Check that both fluorescent tubes are illuminated, correct engagement of gears on gear track and gearshaft clamps on track angles, and smooth operation of straight edge and gear assembly. If necessary, service unit in accordance with commercial manual instructions.	
5	•	•					Camera	Check correct lens calibration, leaks from vacuum hoses, correct operation of vacuum pumps, and smooth operation of lens and copyboard system. If necessary, service unit in accordance with commercial manual instructions.	
6	•						Water System	**CAUTION** **Do not operate water tank immersion heater when water tank is empty.** Water tank filled to correct level, smooth and leak-free operation of faucet, correct connection of heater power cord and adequate water temperature.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Cont

NOTE
Within designated interval, these checks are to be performed in the order listed.
B - Before A - After M - Monthly
D - During M - Monthly C - Combat Operability

ITEM NO.	INTERVAL B	D	A	W	M	C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary.	For Readiness Reporting, Equipment Is Not Ready/Available If:
7		•					Film Dryer	Check correct and smooth operation of the unit, and cleanliness of filter intake pads and drive and air mechanism. If necessary, service unit in accordance with commercial manual instructions.	
8		•					Platemaker	Check correct operation of vacuum pump and 1000 watt mercury vapor lamp and smooth operation of flip top release knob and frame. If necessary, service unit in accordance with commercial manual instructions. **WARNING** **The mercury vapor lamp should not be operated above 110% of rated voltage. Such operation increases pressure within the lamp which could cause the lamp to shatter with subsequent ultraviolet output causing skin and eye irritation.**	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Cont

NOTE
Within designated interval, these checks are to be performed in the order listed.
B - Before **A - After** **M - Monthly**
D - During **M - Monthly** **C - Combat Operability**

ITEM NO.	INTERVAL B	D	A	W	M	C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary.	For Readiness Reporting, Equipment Is Not Ready/Available If:
8		•					Platemaker - Cont	**CAUTION** **To avoid mercury vapor lamp failure, white gloves should be worn when handling the glass portion of the tube, to prevent transfer of fingerprints to the glass and subsequent decrease of lamp efficiency**.	

Section III. TROUBLESHOOTING

3-5. General.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the editorial and photomechanical unit of the special warfare printing plant. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

3-6. Troubleshooting.

Refer to table 3-2 for troubleshooting information and procedures applicable to the editorial and photomechanical shelter system and components. Any trouble, the correction of which is beyond the scope of the operator/crew, should be re ported to the maintenance echelon indicated in the Maintenance Allocation Chart (MAC)

Table 3-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM AND COMPONENTS

1. NO ELECTRICAL POWER TO SHELTER SYSTEM

Step 1. Inspect to see that generator is operating properly,.
Start the generator set in accordance with the applicable technical manual.

Step 2. Check that main power cable is correctly connected at main proper receptacle.

WARNING

Do not perform any electrical maintenance or make any electrical connection or disconnection at the main power receptacle while the generator set engine is running. Connect the primary power cable to the input power receptacle located near the door of the shelter. The cable connector and the receptacles are keyed to ensure proper connection.

Step 3. Check to see if the main power cable leads are properly connected at generator.
The leads of the power cable are color coded as follows:
Phase A black Pin 1
Phase B red Pin 2
Phase C green Pin 3 (marked with blue band)
Neutral white Pin 4

Step 4. Inspect to see if main circuit breaker is in the on position. Position the applicable circuit breaker to **on.**

2. NO ELECTRICAL POWER AT EQUIPMENT RECEPTACLES.

Inspect to see if the proper circuit breaker is in the on position.

Position applicable circuit breaker to on.

Table 3-2. Troubleshooting (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
3. PRINTING LAMP DOES NOT COME ON WHEN OPERATING PLATEMAKER. I
Step 1. Inspect for failure of mercury vapor lamp Replace failed lamp as described in paragraph 3-9.
4. LIGHT TABLE WILL NOT ILLUMINATE.
Check for defective fluorescent tube Replace defective fluorescent tube as described in paragraph 3-9.
5. CAMERA VACUUM COPYBOARD INOPERATIVE.
Using foot pedal. operate vacuum pump and check for leaks from vacuum hose extending from pump to underslide of copyboard. **Disconnect defective hose at pump and copyboard and replace hose as described in paragraph 3-11.**
6. WATER SUPPLY IS COLD.
Step 1. Check to see if the immersion heater is plugged into wall receptacle **Plug immersion heater into wall receptacle.**
Step 2. Check to see if the proper circuit breaker In the main panel for the immersion heater Is in the or position. **Position applicable circuit breaker to on.**
7. RELATIVE HUMIDITY WITHIN SHELTER BELOW 50.
Check for closed humidifier water supply line valve at base of water tank. **Open humidifier supply line valve.**

Section IV. MAINTENANCE PROCEDURES

3-7. General.

Maintenance procedures applicable to the operator are, for the most part, limited to servicing and secondary type maintenance on the commercial equipment which forms a part of the shelter system. Many of these servicing and maintenance procedures are outlined in the commercial publications supplied with the various items of equipment. This section contains those procedures not covered by commercial publications or procedures deemed to be operator responsibility.

3-8. Platemaker Mercury Vapor Tube.

Replace mercury vapor light tube as follows:

a. Position PLATEMAKER circuit breaker in main power service box to off.

b. Pull out on flip-top frame release knob and move knob down to lowest position. Place flip-top frame to vertical position.

c. Remove the Allen setscrews and clamps from each side of the lamp reflector and remove the glass shield.

WARNING

Extreme care should be taken when handling mercury vapor lamps to prevent shattering and subsequent ultraviolet output causing skin and eye irritation.

d. Push lamp tube to one side into tube holder against spring tension and carefully remove lamp tube.

CAUTION

To avoid mercury vapor lamp failure, white gloves should be worn when handling the glass portion of the tube, to prevent transfer of fingerprints to the glass, and subsequent decrease of lamp efficiency.

e. Insert lamp tube (Item 7, App. D) end into one tube holder and push against spring tension until the other end of the tube can be inserted Into the other tube holder.

f. Check that the lamp tube rotates freely in tube holders.

g. Rotate the tube until the small protrusion in the center of the tube is positioned to point towards the rear or front of the platemaker. The protrusion should never point toward the top or bottom of the unit.

h. Position the light glass shield and install the attaching clamps and setscrews.

i. Position flip-top frame to horizontal position.

WARNING

The mercury vapor lamp should not be operated above 110 of rated voltage. Such operation increases pressure within the lamp which could cause the lamp to shatter with subsequent ultraviolet output causing skin and eye irritation.

j. Position PLATEMAKER circuit breaker in main power service box to on.

3-9. Light Table Fluorescent Tube.

Replace the light table fluorescent tube follows a. Position ROADSIDE RECEPTACLES circuit breaker in main power service box to off b. Remove sheet metal screws attaching straightedge holddown straps to light table housing.

c. Lift light table top cover to obtain access to light table interior.

d. Remove defective fluorescent tube and install serviceable unit.

e. Carefully lower light table top.

f. Position straightedge holddown straps over holes in table housing and install attaching screws g. Position ROADSIDE RECEPTACLES circuit breaker in main power service box to on.

3-10. Camera Lamp.

Replace the camera lamp as follows:

NOTE

It may be necessary to retract the camera bellow or reposition the lamp fixtures in order to gain access to the camera lamps a. Position CAMERA circuit breaker in main power service box to off.

b. Carefully remove defective camera lamp from lamp fixture.

c. Insert replacement lamp (Item 25. App. D) into fixture.

d. Position CAMERA circuit breaker in main power service box to on.

3-11. Camera Copyboard Vacuum Hose.

Replace vacuum hose as follows: a. Position CAMERA circuit breaker in main power service box to off.

b. Remove clamp attaching hose to flange on underside of camera copyboard.

c. Remove clamp attaching hose to pump flange on the top of the sound attenuator.

d. Remove vacuum hose.

e. Position ends of replacement hose over pump and copyboard flanges and secure with attaching clamps.

f. Position CAMERA circuit breaker in main power service box to on.

3-12. Water Storage Tank.

Fill water storage tank as follows:

a. Check that faucet faucet and all valves in the water line are closed.

b. Remove the tank filler cap located on the roof of the shelter.

c. Fill the tank to its full capacity of approximately 10 gallons (37.8 liters with clean water, and replace the filler cap.

d. Open the humidifier supply valve allowing the humidifier water tank to fill to its preset level.

CHAPTER 4
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS
Section I. SERVICE UPON RECEIPT OF MATERIAL

4-1. Inspecting and Servicing the Equipment.

When the editorial and photomechanical unit of the special warfare printing plants is received by an organization, it must be inspected and serviced to prepare it for operation. These services will be performed by organizational maintenance personnel. The operator will assist the maintenance personnel when so directed by the commanding officer.

a. Unpacking. Remove the tape seals which secure the doors and other apertures of the shelter during transit. Remove the tiedown straps which secure the smaller items of equipment inside the shelter. The individual items of equipment in the shelters are usually transported intact in their operating position and no installation procedures are deemed necessary. Remove paper or other packing material from cables, etc. Use care when unpacking any of the items of the unit.

b. Inspecting. Inspect the shelter and all equipment and material packed therein for damage during transit. Report all deficiencies on the proper form (see TM 38-750).

c. Removal of Preservatives. Remove, with SD (solvent, drycleaning), the preservative compound which has been applied on all unfinished metal surfaces of the various pieces of equipment. Because this compound is not a lubricant, take special care to see that it is removed completely from all wearing surfaces.

d. Fill Water Storage Tank. Fill the water storage tank in the shelter as follows: CAUTION Do not operate water tank immersion heater when tank is empty.

(1) Check to be sure that all valves in the water line are closed.
(2) Remove the tank filler cap located on the roof of the shelter.
(3) Fill the tank to its full capacity of approximately 10 gallons (37.8 liters) with clean water, and replace the filler cap.
(4) Open the humidifier supply valve allowing the humidifier water tank to fill to its preset level.

e. Preventive Maintenance Services. The maintenance services performed at the time of receipt of the equipment will begin the regularly scheduled organizational maintenance PMCS.

4-2. Installation.

The shelter Is installed for operation either on the bed of a 2-1/2 ton, 6 x 6 cargo truck or on the ground. Check the level at the rear of the shelter and at the left side of the shelter, and make any adjustments necessary to level the shelter. After the shelter has been installed at the worksite, perform the setup procedures described in the following paragraphs:

a. Ground the Shelter. Before the shelter is connected to a power source. it must be grounded as follows:

WARNING

Do not connect shelter to power supply or attempt to operate shelter equipment until the shelter is properly connected to a suitable ground. Failure to observe this warning may result in serious injury or death.

(1) Select a bolt or screw to which the ground lead can be fastened securely, and attach the lead to the bolt The ladder-attaching screw will serve this purpose satisfactory.

(2) Remove any paint or grease from the ground rod. Select the lowest, dampest. area within 10 feet (3 meters) of the bolt to which the ground lead is attached, scoop out a hole about 6 inches (15 cm) deep, and drive the ground rod into the hole until only about 3 inches (7.5 cm) of the rod extends above the ground.

(3) Attach the ground lead to the ground rod then saturate the ground around the rod with water.

b. Set up the Generator. Refer to the appropriate generator technical manual for instructions on installation and operation of the 15 KW generator c. Connect Power Cable to Shelter. Connect the primary power cable to the input power receptacle located near the door of the shelter prior to con.

necting the cable to the power source. The cable connector and the receptacle are keyed to ensure proper connection. The leads of the power cable are color coded as follows:

Phase A black Pin 1
Phase B red Pin 2
Phase C green Pin 3 (marked with blue band)
Neutral white Pin 4

d. Setting-lip Equipment. Plug the power cords of the individual items of equipment into the wall receptacles provided near their operating positions. Specialized preoperating instructions for individual items of equipment, where necessary, will be found in the respective commercial equipment manuals provided with the shelter. Position all circuit breakers in main power service box to on.

Section II. MOVEMENT TO A NEW WORKSITE

4-3. Dismantling For Movement. Prior to movement to a new worksite a certain amount of disassembly will be required. The degree of disassembly will depend to a great extent on the distance to be travelled to a new site and the time to be spent in transit. Analysis of the individual situation should determine the extent to which the following procedures will be followed.

a. Preparation For Movement. Dismantle the shelter unit as follows: CAUTION Do not operate water tank immersion heater when tank is empty.

(**1**) Drain the water storage tank by opening the water tank drain valve and draining the water tnrou,b' the faucet into a suitable receptacle. Then close the water tank drain valve. Drain the water from the humidifier water tank by opening the humidifier drain valve and draining the water into a suitable container. Then close the humidifier drain valve.

(**2)** Position vertical camera lens within the camera in the inverted storage position.

(**3**) Remove sound attenuator box from camera and place into a suitable storage cabinet.

(**4)** Remove all expendable materials and supplies in accordance with the applicable commercial technical publication.

(**5**) Position all circuit breakers In main power service box to off.

(**6**) Apply an approved preservative compound to all unfinished metal surfaces of the various pieces of equipment.

(**7**) Fasten the tiedown straps which secure the smaller items of equipment inside the shelter. (The larger items of equipment are shock mounted in position.)

(**8**) Correctly stow access ladder.

(**9**) Disconnect and stow input power cable. Cap power receptacle.

(**10**) Remove and stow exterior water drain hose. Cap water outlet.

(**11**) Ensure all cabinet and bench doors and drawers are securely latched and that fieldphone connection cover is closed.

(**12**) Using an approved pressure sensitive tape (Item 43, App. D), cover all shelter apertures.

(**13**) Close and lock shelter door with padlock provided.

b. Loading For Movement. If the shelter is situated on the ground at the current worksite, the following steps describe the procedures for loading and transporting the shelter unit to the new worksite. The shelter may be transported by either rail, truck or air.

(**1**) Install sling assembly as shown in figure 41, ensuring that the turnbuckle ends of the sling cables are connected to the lifting eyes.

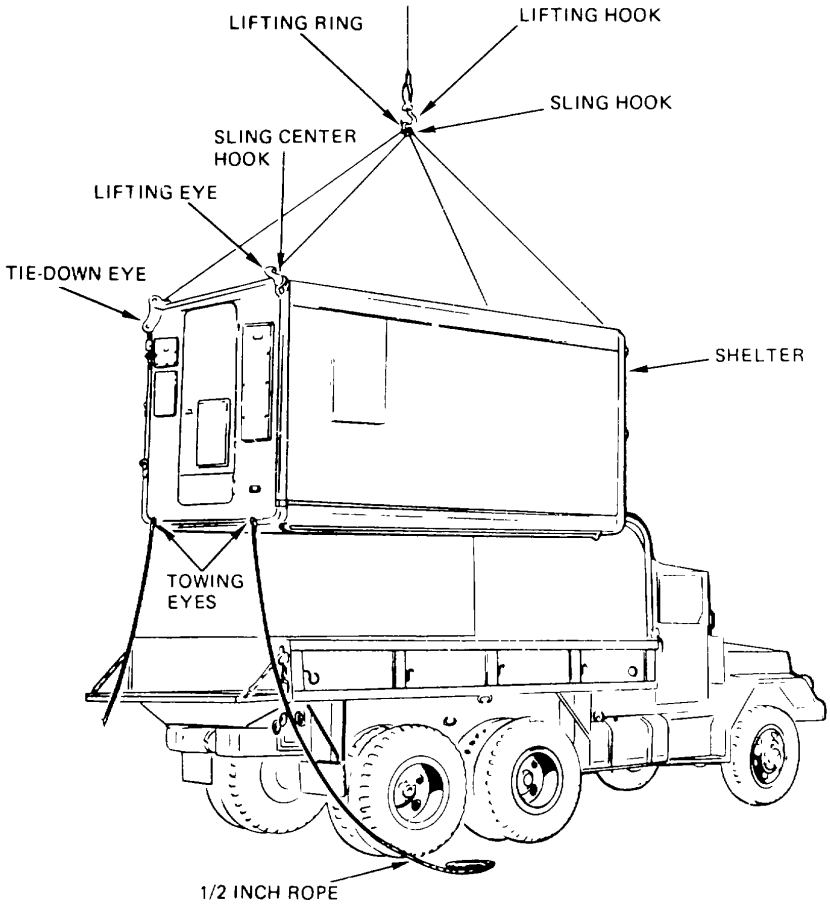

Figure 4-1 Attachment of Lifting Slings TS 3610-202-14/4-1

Figure 4-1. Attachment of Lifting Slings

(**2**) Tie a 1/2-inch rope at least 15 feet (4.6 meters) long to each rear shelter towing eye.

(**3**) Position a man on each rope to assist in positioning the shelter during the lifting operation.

(**4**) Lower the truck tailgate and make sure that all tools and equipment have been removed from the truck body.

WARNING

To avoid injury to personnel and damage to equipment, permit only those individuals actually engaged in the lifting operation to be near the vehicle and the lifting device. Also, all instructions relative to the lifting operations must come from the crew supervisor.

CAUTION

Do not jerk the shelter when lifting. A pull greater than the actual amount required to lift the shelter will tear the lifting eye assemblies from the shelter.

CAUTION

Avoid swinging the shelter from side to side. The additional stress placed on the lifting eye assemblies will tear the lifting eye assemblies from the shelter.

(5) Slowly lift the shelter with the crane or helicopter, to a position lust high enough to clear the body of the transportation vehicle. The unit may be transported to the new operating site by helicopter if necessary.

WARNING

All personnel must remain clear of the truck while the assemblage ;s being lowered into position.

CAUTION

Do not bounce or jar the shelter. Bouncing or jarring can loosen the bond between the skin and foam-core and reduce the rigidity and strength of the shelter.

(6) Back the truck into position under the assemblage and using the towing eye ropes to guide the assemblage into position, slowly lower it onto the truck body.

(7) Remove the lifting ring from the lifting hook and disassemble the lifting ring and sling hooks. Remove the sling center hooks from the lifting eyes and the 1/2-inch ropes from the rear towing eyes.

NOTE

Tiedown procedures are identical for each side or the shelter

(8) Install the tiedown ring assembly (see fig. 4-2) above the center support on the cargo bed siderail of the truck.

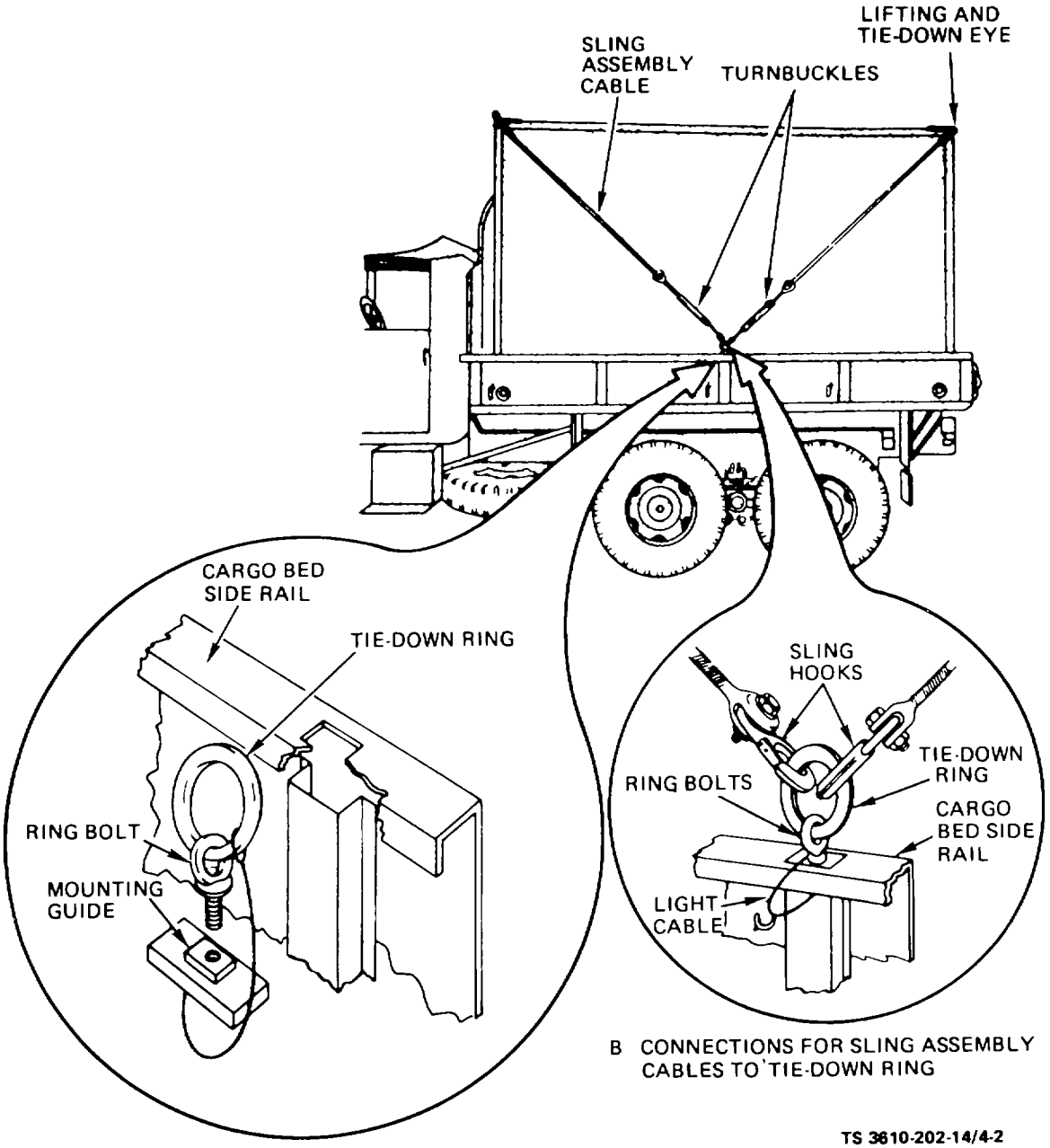

Figure 4-2. Rigging Instructions for Transportation of Shelter

(**9**) Use the hook at the farthest end from the turnbuckle, and hook each end of the sling assemblies to a tiedown eye of the assemblage.

(**10**) Secure the sling hooks to the tiedown ring (see fig. 4-2).

CAUTION
Do not overtighten the turnbuckles. Overtightening turnbuckles will tear the lifting eye assemblies from the shelter.

(**11**) Tighten all turnbuckles evenly by hand; then turn each turnbuckle an additional one-half turn with a bar or rod inserted in the turnbuckle slot.

(**12**) Insert the appropriate size skid wooden blocks between the shelter skids and the sides of the truck bed to prevent movement and strain on the sling assembly cables.

(**13**) Insert appropriately sized wooden blocks between the shelter skids and the cab wall of the truck bed to protect the towing eyes of the shelter and the cab wall of the truck bed.

4-4. Reinstallation After Movement.

After arrival at the new worksite, a certain amount of assembly will be required. The degree of assembly will depend to a great extent on the distance travelled and the time spent in transit. Analysis of the individual situation should determine the extent to which the following procedures will be followed:

a. Unloading After Movement. If it is desired to set up the shelter on the ground, proceed as follows:

(**1**) Select a site where the ground is firm and dry and has good drainage.

(**2**) Level the ground on which the shelter will be placed, and position enough concrete blocks or wooden beams on the. leveled spot to support the shelter adequately.

(**3**) Remove the wooden blocks installed between the shelter and the sides and front of the truck body.

(**4)** Loosen all tiedown turnbuckles and remove sling hooks from truck and shelter tiedown rings.

(**5**) Install the lifting ring on the sling hooks to form the sling assembly.

(**6**) Install sling assembly as shown in figure 41, ensuring that the turnbuckle ends of the sling cables are connected to the lifting eyes.

(**7**) Tie a 1/2-inch rope at least 15 feet (4.6 meters) long to each rear shelter towing eye.

(**8**) Position a man on each rope to assist in positioning the shelter during the lifting operation.

(**9**) Lower truck tailgate.

WARNING
To avoid injury to personnel and damage to equipment, permit only those individuals actually engaged in the lifting operation to be near the vehicle and the lifting device. Also, all instructions relative to the lifting operations must come from the crew supervisor.

CAUTION
Do not jerk the shelter when lifting. A pull greater than the actual amount required to lift the shelter will tear the lifting eye assemblies from the shelter.

CAUTION
Avoid swinging the shelter from side to side. The additional stress placed on the lifting eye assemblies will tear the lifting eye assemblies from the shelter.

(**10**) Slowly lift the shelter with the crane or helicopter, to a position just high enough to clear the body of the transportation vehicle.

WARNINGI
All personnel must remain clear of the truck while the assemblage is being lowered into position.

CAUTION
Do not bounce or jar the shelter. Bouncing or jarring can loosen the bond between the skin and foam-core and reduce the rigidity and strength of the shelter.

(**11**) Move the transportation truck clear of the area and carefully lower the shelter to the previously prepared area of ground.

(**12**) Check the level at the rear of the shelter and at the side. Make any adjustment necessary to level the shelter.

(**13**) Remove sling assemblies from the shelter and 1/2 inch ropes from towing eyes.

b. Installation.

(**1**) Refer to paragraph 4-2 for necessary installation instructions.

(**2**) Refer to paragraph 4-1d. for instructions on filling the water tank.

Section III. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

4-5. Special Tools and Equipment.

No special tools or equipment are required by organizational maintenance personnel for the maintenance of the editorial and photomechanical shelter.

4-6. Maintenance Repair Parts.

Repair parts and equipment are listed and illustrated in the repair parts and special tools list covering organizational maintenance in TM 10-3610202-20P. Repair parts required for maintenance of the various items of equipment which form a part of the shelter system are defined in the applicable publication supplied with each unit.

4-7. Fabricated Tools and Equipment.

No fabrication of special tools and equipment is necessary for maintenance of the editorial and photo mechanical shelter.

Section IV. LUBRICATION INSTRUCTIONS

4-8. General Lubrication Information.

This section contains lubrication instructions for the editorial and photomechanical shelter of the special warfare printing plant.

4-9. Detailed Lubrication Information.

a. General. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Allow no dust, dirt, or other foreign material to mix with the lubricants. Keep all lubrication equipment clean and ready for use.

b. Cleaning. Keep all external parts not requiring lubrication clean of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating to prevent accumulation of foreign matter.

c. Points of Lubrication Lubricate the door hinges and handles of the editorial and photomechanical shelter with a few drops of OE-10 (Lubricating Oil, Internal Combustion Engine) monthly, or if binding occurs during operation.

d. Unusual Conditions Reduce service intervals i.e., lubricate more frequently, to compensate for abnormal or extreme conditions, such as high o low temperatures, continued operation in sand or dust, immersion in water, or exposure to moisture.

Any one of these operations or conditions may cause contamination and quickly destroy the protective qualities of the lubricants. Intervals may be extended during inactive periods commensurate with adequate preservation.

NOTE

A lubricant which is fouled by dust and sand acts as an abrasive mixture and causes rapid wear of parts

Section V. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-10. General.

To ensure that the printing plant is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services are listed in table 4-1. Defects discovered during operation of the system shall be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation, which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly	**Q - Quarterly**	**A-Annually**	**H - Hours**
M - Monthly	**S - Semiannually**	**B - Biennially**	**MI - Miles**

Item No.	Interval								Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
	W	M	Q	S	A	B	H	MI			
1									Water Supply Plumbing	Inspect draincock, faucet, lined and fittings for damage which could cause leaks. If Inspection indicates that replacement of plumbing components is necessary, refer to paragraph 4-31.	
2									Air Conditioner Air Intake Filter	Inspect for cleanliness, damage and proper install-ation as follows: (1) Remove the eight screws attaching the louver to the shelter exterior wall. (2) Remove the louver and gasket. (3) Pull out filter and grills from louver frame. (4) Clean filter by wash-ing in a soap and water solution. Dry thoroughly and spray with coater (NSN 4130-00-860-0042). (5) If filler is damaged, replace with new filter. (6) Install filter by inserting filter and grills into louver frame. (7) Position gasket and louver on shelter wall. (8) Secure with eight attaching screws.	
3									Fire Extinguisher	Inspect nozzle and adapter assembly for security and condition. Weigh cylinder every six months and re-place if gross weight has decreased by six ounces (17.0 gm) or more. If Inspection indicates 'that replacement of the fire extinguisher Is necessary, refer to paragraph 4-47.	

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly	**Q - Quarterly**	**A-Annually**	**H - Hours**
M - Monthly	**S - Semiannually**	**B - Biennially**	**MI - Miles**

Item No.	Interval								Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
	W	M	Q	S	A	B	H	MI			
4		•							Shelter Door Filter	Inspect for cleanliness, damage and proper installation. If necessary, clean filter as follows: Remove the filter by pulling the foam material from the frame. Clean by washing in a soap and water solution. Dry thoroughly and spray with coater (NS:4 4130-00-860-0042). Install filter by inserting foam material under bottom lip of frame, then tucking it under remaining three lips of frame.	
5				•					Ladder	Inspect for damage and ensure that clamps are properly attached and are not damaged. If inspection indicates that repair or replacement of the ladder is necessary, refer to paragraph.	
6			•						Level Indicator Gages	Inspect the level gages for secure mounting, broken or cracked sight glass. If inspection indicates that replacement of the level gages is necessary, refer to paragraph 4-55.	

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly **M - Monthly** **Q - Quarterly** **S - Semiannually** **A-Annually** **B - Biennially** **H - Hours** **MI - Miles**

Item No.	Interval W	M	Q	S	A	B	H	MI	Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
9		•							Safelight - Cont	Inspect power cord and switch for proper operation. Inspect safelight bulb for proper operation. If inspection indicates that repair or replacement of the safelight is necessary, refer to paragraph 4-29.	
10			•						Water Supply Plumbing	Inspect draincock, faucet, liner and fittings for damage which could cause leaks. If inspection indicates that replacement of plumbing components is necessary, refer to paragraph 4-31.	
11		•							Composing Machine Headliner	Inspect headliner for general condition and security of mounting. If inspection indicates that replacement of the headliner is necessary, refer to paragraph 4-33.	
12		•							Phototray	Inspect the phototray assembly frame for rust and corrosion and inspect trays for cracks. If inspection indicates that replacement of phototray components is necessary, refer to paragraph 4-35.	
13		•							Rub Up Board	Inspect rub up board for cleanliness or damage. Repair or replace as described in paragraph 4-37.	
14			•						Sink Shield	Inspect the sink shield for security of attachment and general condition. If inspection indicates that replacement of the sink shield is necessary, refer to paragraph 4-39.	
15			•						Sink	Inspect sink for signs of rust or clogging and plug and chain for signs of wear or damage.	

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly	**Q - Quarterly**	**A-Annually**	**H - Hours**
M - Monthly	**S - Semiannually**	**B - Biennially**	**MI - Miles**

Item No.	Interval								Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
	W	M	Q	S	A	B	H	MI			
16		•							Air Conditioner Air Intake Filter	Inspect for cleanliness, damage and proper installation as follows: (1) Remove the eight screws attaching the louver to the shelter exterior wall. (2) Remove the louver and gasket. (3) Pull out filter and grills from louver frame. (4) Clean filter by washing In a soap and water solution. Dry thoroughly and spray with coater (NSN 4130-00-860-0042). (5) If filler is damaged, replace with new filter. (6) Install filter by inserting filter and grills into louver frame. (7) Position gasket and louver on shelter wall. (8) Secure with eight attaching screws.	
17				•					Fire Extinguisher	Inspect nozzle and adapter assembly for security and condition. Weigh cylinder every six months and replace if gross weight has decreased by six ounces (170 gm) or more. If inspection indicates that replacement of the fire extinguisher is necessary, refer to paragraph 4-47.	
18		•							First Aid Kit	Inspect first aid kit for security and for condition of contents: If inspection indicates that replacement of the first aid kit is necessary, refer to paragraph 4-49.	

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly	**Q - Quarterly**	**A-Annually**	**H - Hours**
M - Monthly	**S - Semiannually**	**B - Biennially**	**MI - Miles**

Item No.	Interval W	M	Q	S	A	B	H	MI	Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
19		•							Shelter Door Filter	Inspect for cleanliness, damage and proper installation. If necessary, clean filter as follows: Remove the filter by pulling the foam material from the frame. Clean by washing in a soap and water solution. Dry thoroughly and spray with coater (NSN 4130-00-860-0042). Install filter by inserting foam material under bottom lip of frame, then tucking it under remaining three lips of frame.	
20			•						Ladder	Inspect for damage and ensure that clamps are properly attached and are not damaged. If inspection indicates that repair or replacement of the ladder is necessary, refer to paragraph 4-53.	
21			•						Level Indicator Gages	Inspect the level gages for secure mounting, broken or cracked sight glass. if inspection indicates that replacement of the level gages is necessary, refer to paragraph 4-55.	
22		•							Fluorescent Lamps	Inspect lamp for correct illumination. If inspection indicates that replacement of the lamp is necessary, refer to paragraph 4-57.	
23			•						Lamp Switches	Inspect for proper operation, loose connections and excessive wear. Inspect switch box cover for security of mounting. If inspection indicates that replacement of a switch is necessary, refer to paragraph 4-59.	

Table 4-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly	**Q - Quarterly**	**A-Annually**	**H - Hours**
M - Monthly	**S - Semiannually**	**B - Biennially**	**MI - Miles**

Item No.	Interval								Item To Be Inspected	Procedures	For Readiness Reporting Equipment is Not Ready/Available If:
	W	M	Q	S	A	B	H	MI			
4			•						Equipment Receptacles	Inspect for secure mounting, broken or cracked body, and proper cover installation. If inspection indicates that repair of the receptacle is necessary, refer to paragraph 4-61.	

4-11. Preventive Maintenance Services.

Refer to table 4-1 for a listing of preventive maintenance checks and services which must be performed by organizational maintenance. An explanation of the tabular columns is as follows:

a. Item Number. The number appearing in this column indicates the chronological order of the checks and services regardless of interval. This column is used as a source of item numbers for the TM Number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of Preventive Maintenance Checks and Services.

b. Interval. The columns headed W, M, Q, S, A, B, TM 10-3610-202-14 H and MI contain a dot (•) opposite the appropriate check. Thus if a given check is to be performed weekly, a dot appears in the W column, opposite the check to be performed. If the same check is to be made in two or more periods, a dot appears in each applicable column.

c. Item To Be Inspected. This column contains an entry which identifies the item to be inspected.

d. Procedures. This column contains a brief description of the checks to be performed.

e. For Readiness Reporting Equipment Is Not Ready, Available If. This column contains the criteria which will cause the equipment to be classified as not ready/available because of inability to perform its primary mission.

Section VI. TROUBLESHOOTING

4-12. General.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the editorial and photomechanical unit of the special warfare printing plant. Each malfunction for an individual component, unit or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

4-13. Troubleshooting.

Refer to table 4-2 for troubleshooting information and procedures applicable to the editorial and photomechanical shelter system and components. Any trouble the correction of which is beyond the scope of organizational maintenance should be reported to the maintenance echelon indicated in the Maintenance Allocation Chart (MAC).

Table 4-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS

1. TYPE COMPOSING MACHINE NOT PRODUCING GOOD COPY.

Service and adjust composer in accordance with applicable commercial manual.

If service and adjustment procedures fail to rectify defects, replace composer as follows:

a. Using a socket wrench, remove the four recessed attaching bolts from the underside of the stand assembly top. (See fig. 4-3.)

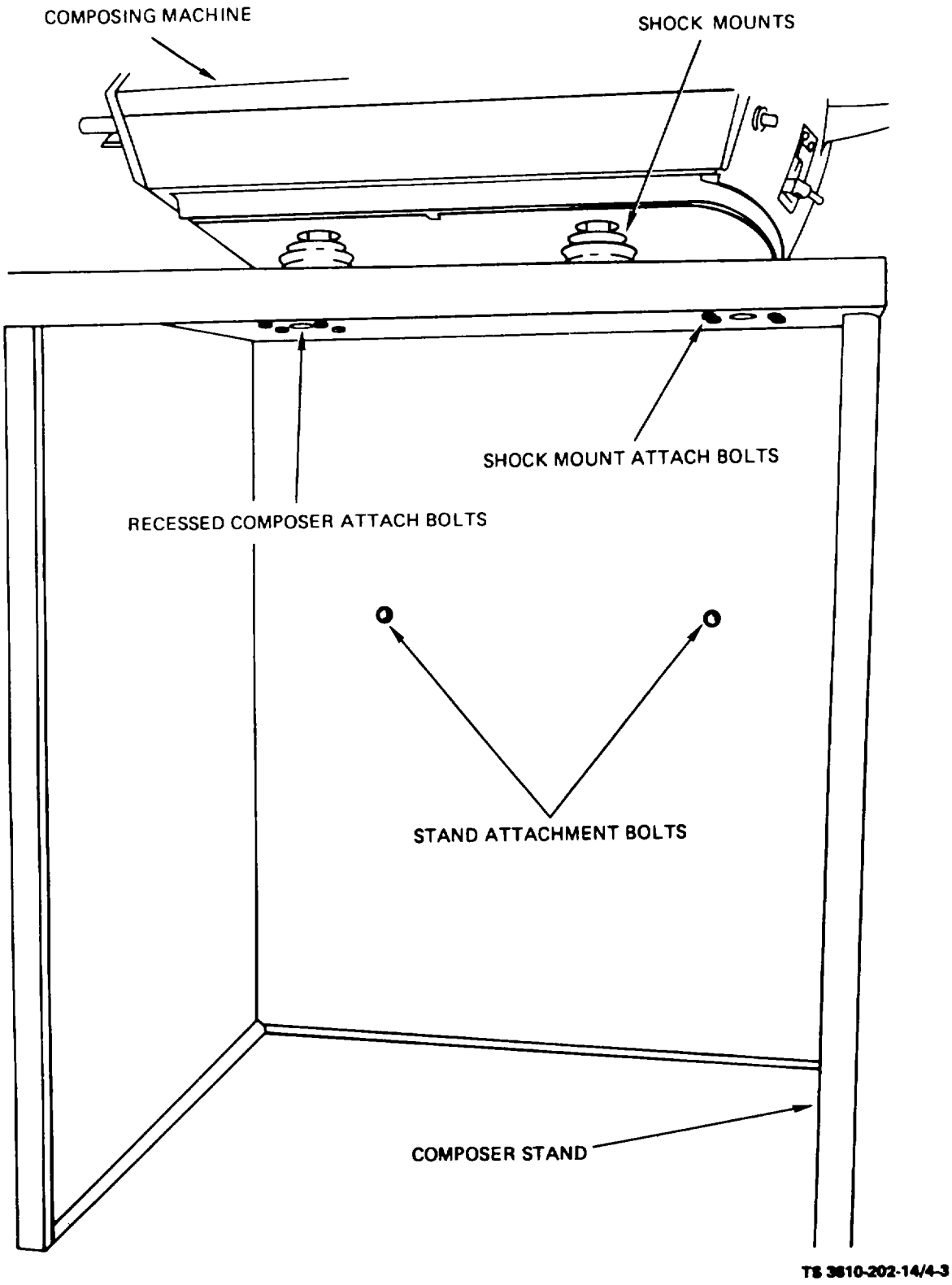

Figure 4-3. Type Composing Machine, Removal and Installation

Table 4-2. Troubleshooting (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS (Con't)

b. Remove the composing machine.

c. Remove the screws which attach the mounts on the replacement composer and remove the mounts.

d. Position the replacement composing machine over the four mounting holes in the stand assembly top.

e. Insert and finger tighten the four attach bolts from the underside of the stand assembly top.

f. Tighten the four attach bolts with a socket wrench.

2. NO WATER AT FAUCET.

Step 1. Inspect for lack of water In storage tank.

If necessary, fill water storage tank as follows:

CAUTION
Do not operate immersion heater when water tank is empty.

a. Check that all valves in the water line are closed.

b. Remove the tank filler cap located on the roof of the shelter.

c. Fill the tank to its full capacity of approximately 10 gallons (37.8 liters) with clean water, and replace the filler cap.

d. Open the humidifier supply valve (see fig. 4-4) allowing the humidifier water tank to fill to its preset level.

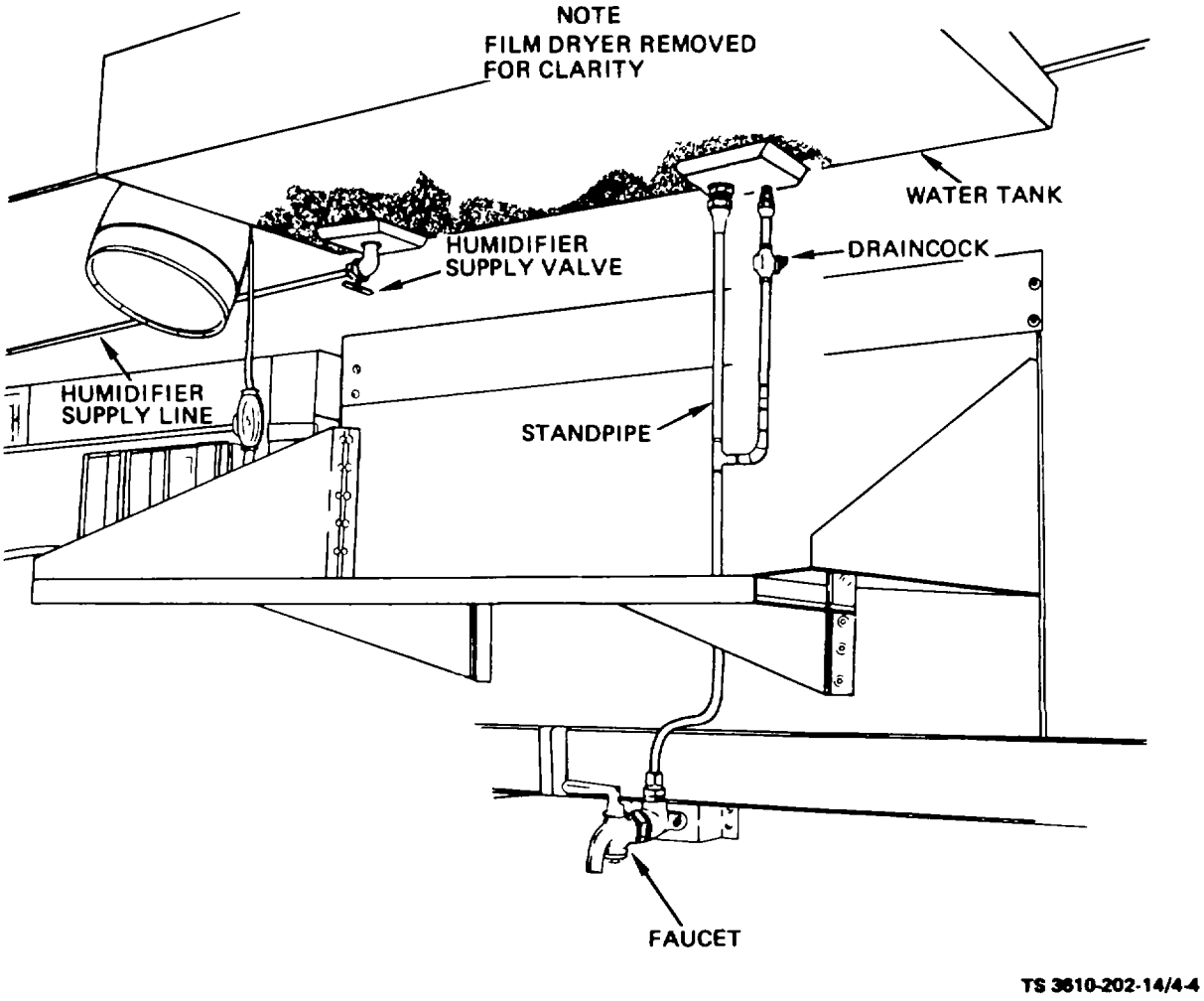

Figure 4-4. Water Supply System Plumbing and Fittings

Table 4-2. Troubleshooting (Con't)

Step 2. Inspect water line between tank and faucet for damage which would prevent water flow.
If necessary, replace defective line as follows:
a. Disconnect immersion heater power cord from heater receptacle.
b. Open draincock and faucet to drain tank. (See fig. 4-4.)
c. Unscrew the tank-to-faucet water line fittings at the base of the tank.
d. Unscrew the water line fitting immediately below the standpipe draincock.
e. Unscrew the water line fitting above the faucet and remove damaged line.
f. Position replacement line assembly, carefully bending tube to align fittings.
g. Connect line fitting at faucet union. Do not tighten at this time.
h. Connect line fitting at water tank base union. Do not tighten at this time.
i. Connect line fitting to standpipe draincock.
j. Tighten all fittings.
k. Close faucet and draincock.
I. Fill tank with approximately 10 gallons (37.8 liters) of water.
m. Connect immersion heater power cord to heater receptacle.
n. Check for water leaks and secure fittings as necessary.

3. HEADLINER COMPOSING MACHINE NOT PRODUCING GOOD COPY

Step 1. Inspect headliner in accordance with applicable commercial manual.
Service and adjust headliner in accordance with applicable commercial manual.

Step 2. Inspect headliner for irreparable damage. If necessary, replace headliner as described in paragraph 4-33.

4. SHELTER LIGHTING COMPONENT FAILURE

Step 1. Inspect for failure of one or more fluorescent tubes.
If necessary, replace defective fluorescent tubes as follows:
a. Grasp lamp tube, rotate 90 degrees and lower from sockets.
b. Place new lamp below sockets with pins vertical. Insert lamp into sockets and twist until pins lock.

Step 2. Inspect lamp switches for excessive wear, loose connections and proper operation and switchbox cover for security of mounting
If necessary, replace defective switch as follows:
a. Position the LIGHTS circuit breaker to the OFF position.
b. Remove the two screws that secure the switchbox cover to the switchbox and remove the cover. (See fig. 4-5.)

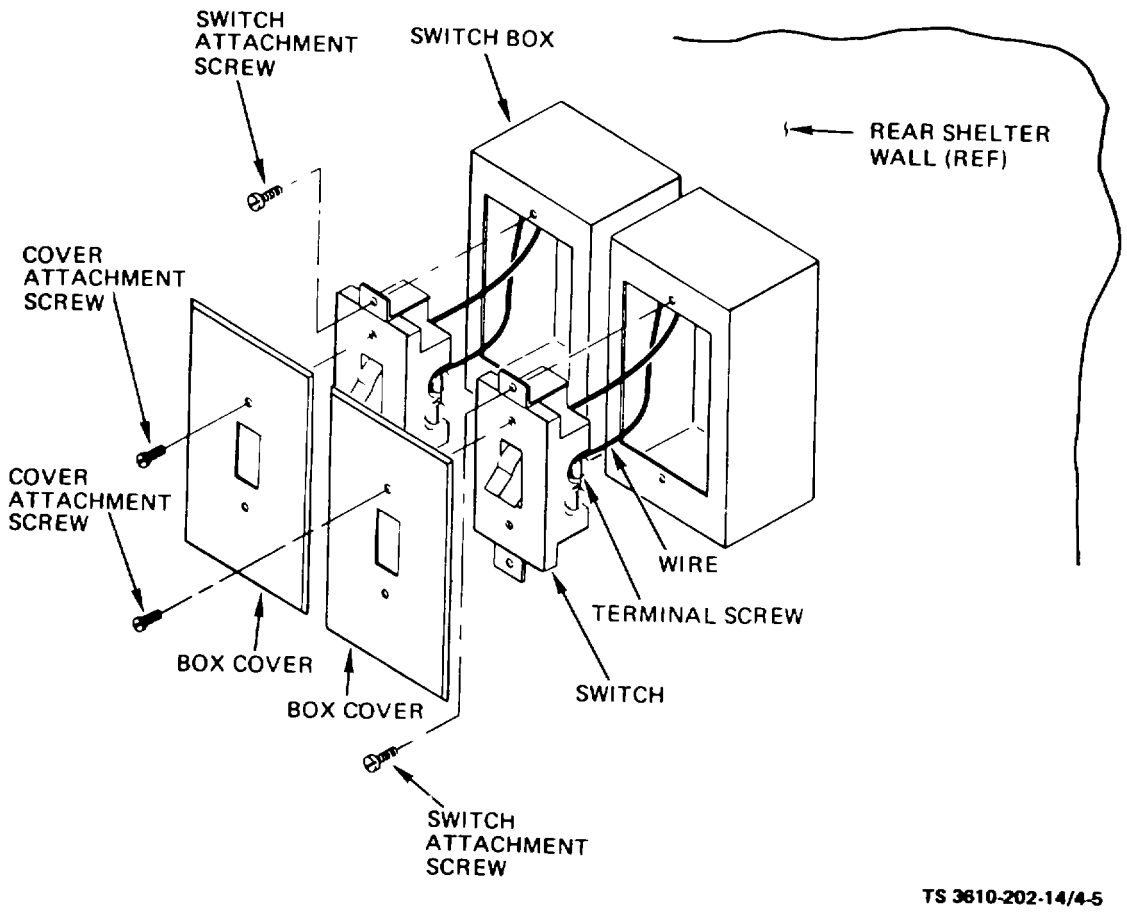

Figure 4-5. Fluorescent Lamp Switches, Removal and Installation

Table 4-2. Troubleshooting (Con't)

Malfunction Test or Inspection Corrective action

c. Remove the two capscrews that secure the switch in the switchbox, and pull the defective switch from the switchbox.
d. Tag and disconnect the wires from the switch.
e. Connect the wires to the replacement switch and remove the tags.
f. Install the switch in the switchbox and secure it in the switchbox with two capscrews.
g. Install the switchbox cover on the switchbox and secure it with two screws.
h. Position the LIGHTS circuit breaker to the ON position.

Step 3. Inspect the main power service box for LIGHTS circuit breaker positioned to off.
If necessary position LIGHTS circuit breaker in service box to on.

5. NO POWER AT ONE OR MORE EQUIPMENT RECEPTACLES.

Step 1. Inspect the main power service box for applicable RECEPTACLES circuit breaker position to off.
If necessary, position applicable RECEPTACLES circuit breaker in service box to on.

Step 2. Inspect for defective receptacle or faulty wire connections as follows: a. Position applicable

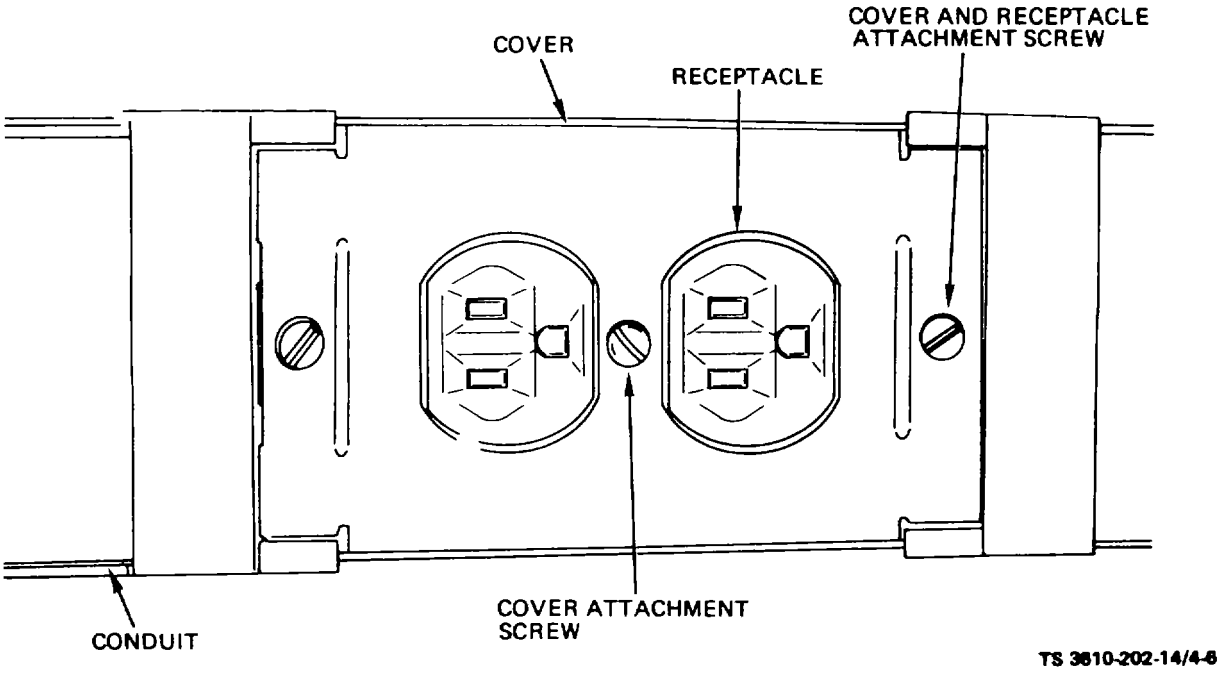

Figure 4-6. Equipment Receptacles, Removal and Installation

c. Pull receptacle from conduit box and inspect receptacle and wiring connections.
If necessary, replace defective receptacle and secure wiring connections as follows.
(1) Tag and disconnect wires and remove receptacle.
(2) Remove tags and connect wires to new receptacle.
(3) Insert receptacle into conduit.
(4) Position receptacle cover and secure with screws.
(5) Position applicable RECEPTACLES circuit breaker in main power service box to on.

Section VII. RADIO INTERFERENCE SUPPRESSION

4-14. General Methods Used to Attain Proper Suppression.

a. Essentially, suppression is attained by provide a low resistance path to ground for stray currents. The methods used include shielding the ignition and high-frequency wires, grounding the frame with bonding straps, and using capacitors and resistors.

b. The term interference as used herein applies to electrical disturbances in the radio frequency range which are generated by the special warfare printing plant and which may interfere with the proper operation of radio receivers or other electronic equipment, or may enable the enemy to locate the equipment.

c. The term interference suppression as used herein applies to the methods as used to eliminate or effectively reduce radio interference generated by the special warfare printing plant.

d. The items of equipment which make up the editorial and photomechanical unit of the special warfare printing plant have been chosen to meet military requirements for radio interference suppression. All electric motors are either of the brushless type or, as in the Varityper composing machine, have built-in suppression features. The shelter construction is such that radio interference from the fluorescent lighting or other equipment is greatly reduced.

4-15. Interference Suppression Components.

The equipment installed within the shelter system which could cause radio interference includes motors installed in the platemaker, composing machine, and air conditioner and the fluorescent lighting used for shelter and light table illumination.

a. Motor Suppression. Motor suppression is achieved through the use of capacitors and appropriate shielding. Reference should be made to the applicable technical publication for the type and location of equipment radio suppression components.

b. Fluorescent Lighting Suppression. Fluorescent lamps contain mercury vapor at low pressure. This vapor is ionized by a flow of electrons in the tube. The deionization that follows causes ultraviolet radiation which excites the internal phosphor coating causing it to radiate and give off light. The electron stream, or arc, in the tube is a source of radio interference. The interference may be radiated from the lamp or the power leads, or transmitted by conduction through a common power system. For systems that use starters, a capacitor may be placed across the starter terminals. Systems without starters usually have built-in capacitors mounted in the ballast, or current limiting device. It is impossible to suppress direct radiation from fluorescent lamps since shielding defeats the purpose for which the lamps are used.

4-16. Replacement of Suppression Components.

Refer to the applicable technical publication for removal and installation of suppression components used in the platemaker, composing machine, air conditioning system and light table.

4-17. Testing of Radio Interference Suppression Components.

Test capacitors for leaks and shorts on a capacitor tester; replace defective capacitors. If test equipment is not available and interference is indicated, isolate the cause of interference by the trial and error method of replacing each capacitor in turn until the cause is located and eliminated.

Section VIII. MAINTENANCE OF CABINETS AND STORAGE COMPARTMENTS

4-18. File Cabinet Assembly.

The file cabinet assembly is a ten-drawer unit installed at the left-hand shelter wall adjacent to the door. The upper drawers are provided with compartments for storage of smaller items. Label holders are attached to each to provide for content identi

fication labels. An upper and lower locking clip permits insertion of a vertical locking bar to prevent movement of the drawer during shipment and storage (See fig. 4-7.) The cabinet, which is of welded metal construction is used for storage of artist historic files and supplies.

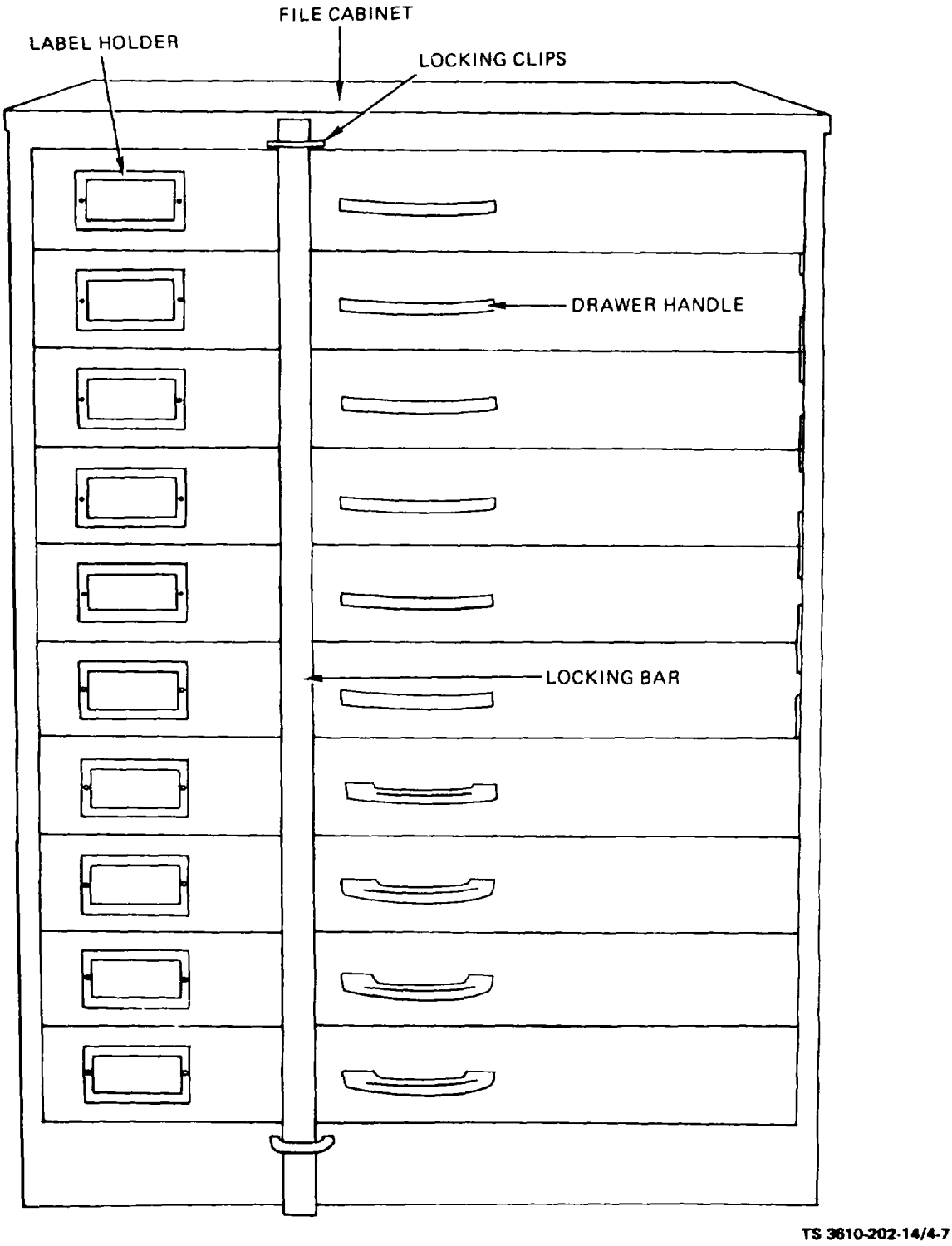

Figure 4-7. File Cabinet Assembly

a. Inspection Inspect the file cabinet assembly as follows:

(1) Inspect cabinet for dents or cracks and any other signs of structural damage.

(2) Inspect welded areas for breaks or separation of weld seams.

(3) Inspect drawer handles for security of installation and damage. Repair or replace as necessary.

(4) Inspect label holders for security of installation and damage. Repair or replace as necessary.

(5) Inspect locking bar for bending or any other damage. Repair or replace as necessary.

(6) Inspect paintwork for any signs of peeling or cracking and check cabinet for evidence of environmental damage.

(7) Inspect cabinet assembly for security of mounting.

(8) Inspect locking clips for breaks or other damage.

b. Removal. If inspection indicates that replacement of the file cabinet is necessary, remove the unit as follows:

(1) Remove locking bar from upper and lower clips.

(2) Remove all drawers from cabinet.

(3) Remove the four bolts which attach the cabinet shell to the nutplates welded to the lefthand exterior shelter wall.

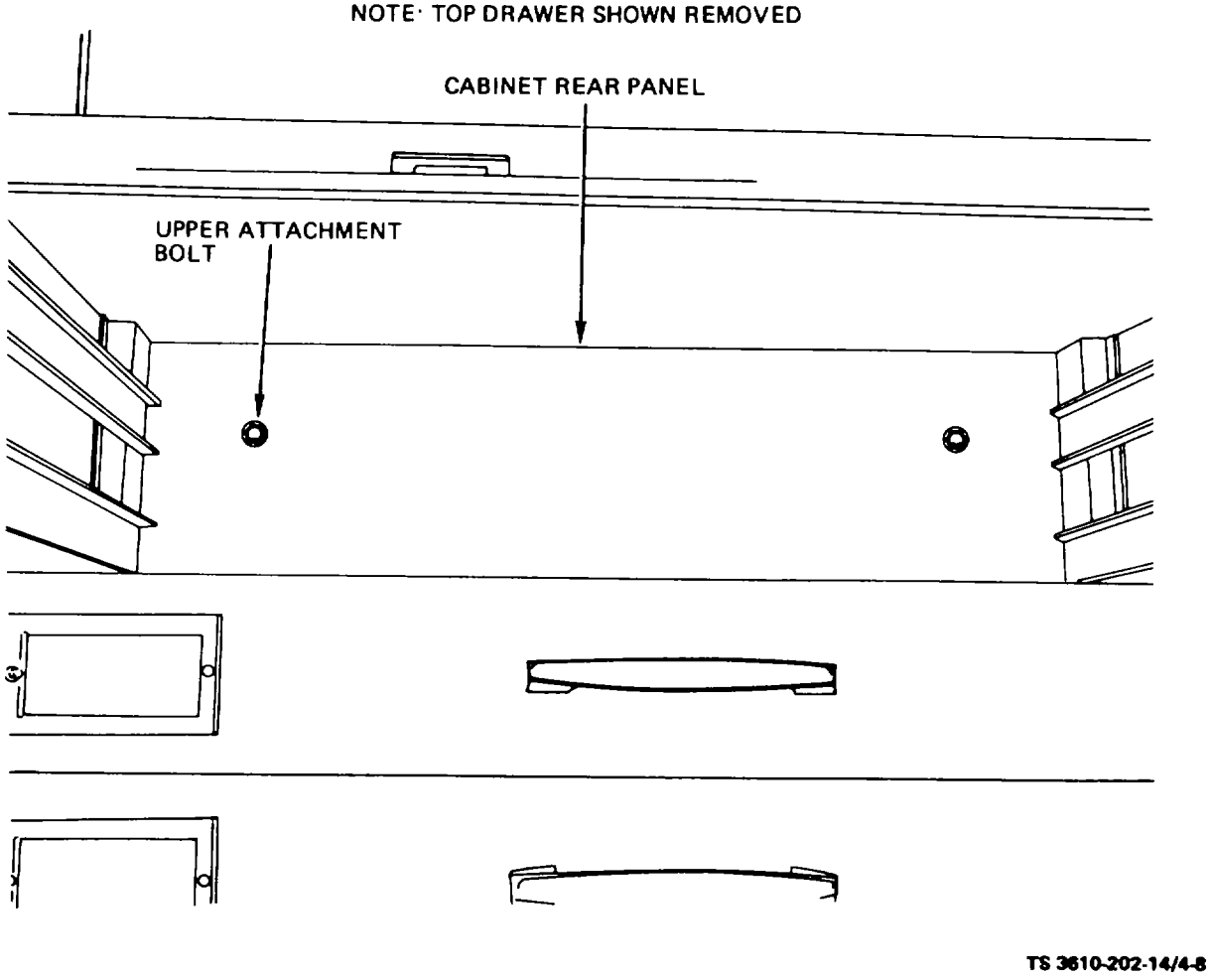

Figure 4-8. File Cabinet, Removal and Installation

(4) Lift cabinet shell away from wall and remove from shelter.

(5) Remove locking bar from upper and lower clips of new cabinet and remove all drawers.

(6) Using heavy paper, construct a mounting hole location template by placing the paper on the removed cabinet and marking mounting holes.

(7) Using the template as a guide, drill mounting holes in the replacement cabinet.

(8) Remove contents from all old cabinet drawers and install drawers in cabinet.

(9) Install locking bar through upper and lower clips.

NOTE

When cabinet is mounted In shelter, the locking bar rests on the floor when Installed in locking clips When lifting the cabinet, ensure that bar Is held in position to prevent movement of drawers.

c. Installation Install new cabinet assembly as follows:

(1) Position cabinet against left-hand shelter wall and align cabinet holes with mounting nutplate holes.

(2) Install the four bolts which attach the cabinet shell to the welded nutplates.

(3) Install all drawers in their correct location.

(4) Install locking bar through upper and lower clips.

d. Repair. Repair of the file cabinet assembly includes replacement of drawer handles and label holders and minor repairs to the locking bar.

(1) **Drawer handle replacement**. Replace drawn. handles as follows:

(a) Remove locking bar from upper and lower clips.

(b) Open applicable drawer.

(c) Remove the two screws which attach the handle from the inside of the drawer and remove the handle

NOTE

The top drawer handle attachment screws are located in a small top drawer compartment. A short screwdriver is required to remove these screws.

(d) Position handle on cabinet drawer and install attaching screws.

(e) Install drawer contents, close drawer and install locking bar through upper and lower clamps.

(2) **Label holder replacement**. Replace label holders as follows:

(a) Remove the two screws attaching the label holder to the front of the drawer. Remove the holder.

(b) Position the label holder to the drawer mounting location and install attaching screws.

(3) **Locking bar repair**. Repair of the locking bar is limited to straightening of minor bends. This can best be accomplished by placing the bar in a vise and applying pressure to the damaged area.

4-19. Storage Compartment.

The stainless steel storage compartment mounted on the lower forward roadside wall of the shelter provides storage for the vertical camera accessories. The storage compartment has three portions to separate and protect the camera accessories. It is also equipped with a strap-type cover with pull-type latch.

a. Inspection Inspect the storage compartment for security of attachment, cracks, dents, and condition of strap-type cover and latch. Replace as required.

b. Removal To remove the storage compartment proceed as follows:

(1) Remove contents from the storage compartment.

(2) Remove the composing machine stand assembly as described in paragraph 4-23.

(3) Move the composer and composing machine stand assembly to the right to allow enough room to gain access to the storage compartment.

(4) Drill out the six blind rivets at the bottom of the storage compartment.

(5) Drill out the 11 blind rivets attaching the storage compartment to the wall. (See fig. 4-9.)

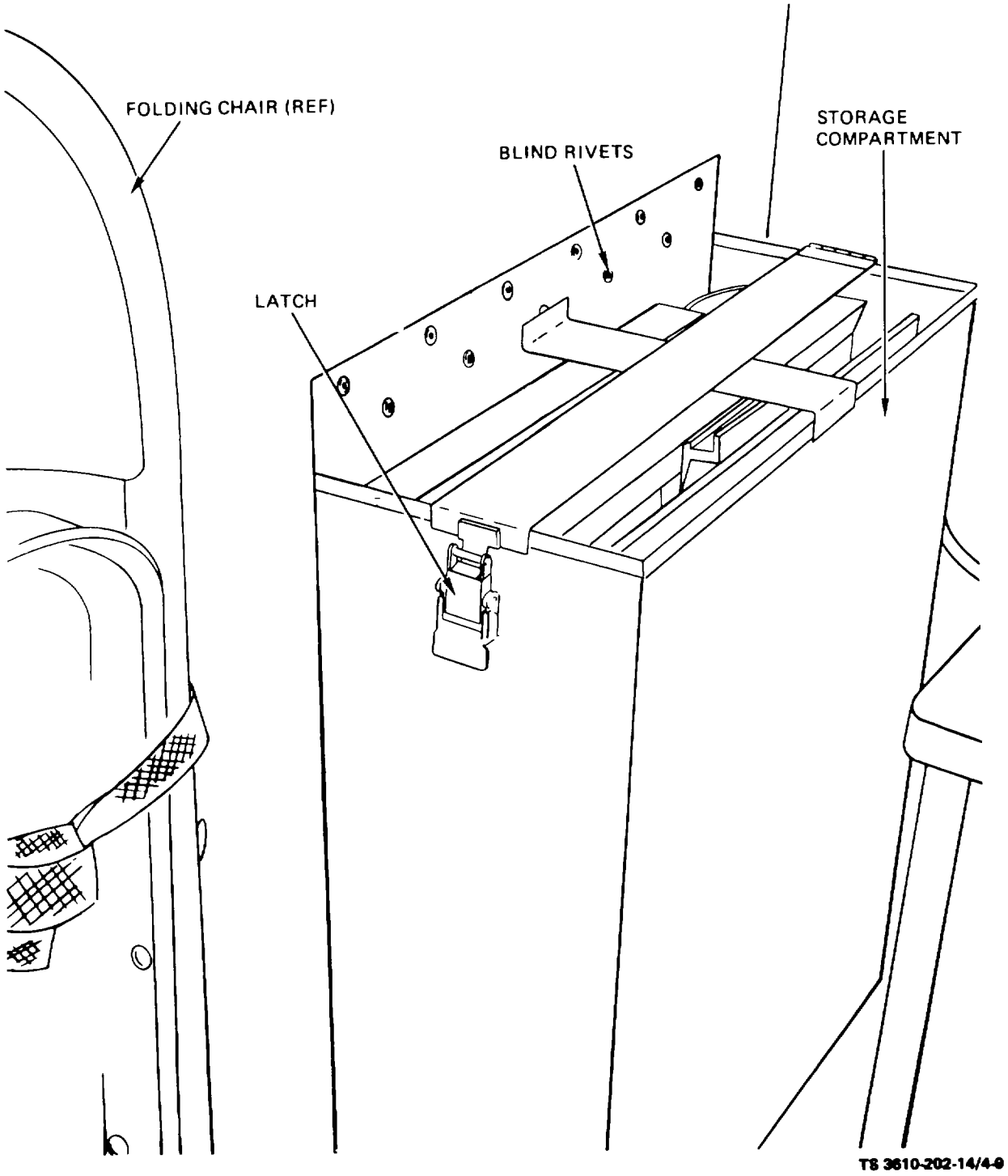

Figure 4-9. Storage Compartment, Removal and Installation

(6) Remove the storage compartment.

c. Installation To install the storage compartment proceed as follows:

(1) Place storage compartment against shelter wall and align mounting holes.

(2) Secure with blind rivets.

(3) Move composing machine and stand assembly against shelter wall and align mounting holes.

(4) Install two mounting bolts.

d. Repair. Repair of the storage compartment consists of removing minor dents.

4-20. Wall Cabinet Assembly.

The wall cabinet assembly is a two-shelf unit of metal construction mounted on the left-hand wall towards the front of the shelter. Two hinged doors with control rod type latches provide access to the cabinet interior. Removable steel rods extend above and parallel to the shelves to help retain cabinet contents. Two rubber protective guards are installed on the lower front corners of the cabinet. (See fig. 4-10.)

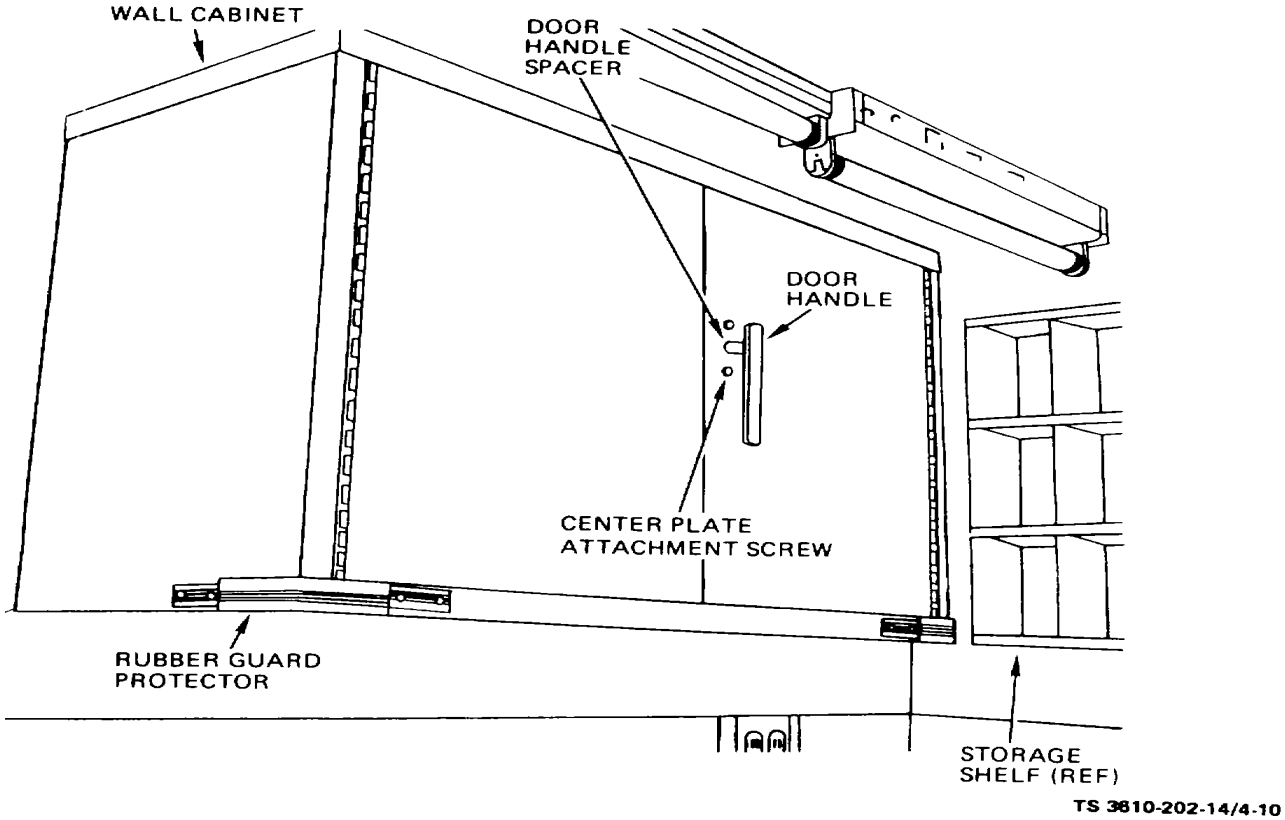

Figure 4-10. Wall Cabinet assembly

a. Inspection Inspect the wall cabinet assembly as follows:

(1) Inspect cabinet for dents or cracks and any other signs of structural damage.

(2) Inspect welded areas for breaks or separation of weld seams.

(3) Inspect cabinet handles for security of installation and damage. Repair or replace as necessary.

(4) Inspect paintwork for any signs of peeling or cracking and check cabinet for evidence of environmental damage.

(5) Inspect cabinet assembly for security of mounting. Repair as necessary.

(6) Inspect shelves for bends, cranks or other damage.

(7) Inspect content retaining rods for damage and security of installation. Repair or replace as necessary.

(8) Inspect latching mechanism and latching rods for freedom of movement, security of installation and signs of damage. Repair or replace as necessary.

(9) Inspect doors and hinges for freedom of movement and damage. Replace as necessary.

(10) Inspect rubber guard protector for

missing parts and security of installation.

b. Removal If inspection indicates that replacement of the cabinet is necessary, remove the unit as follows:

(1) Remove content retaining rods and shelf contents from cabinet.

(2) Support the cabinet and remove the bolts, washers and nuts which attach the cabinet rear panel to the shelter wall mounting points. (See fig. 4-1.) Remove the cabinet.

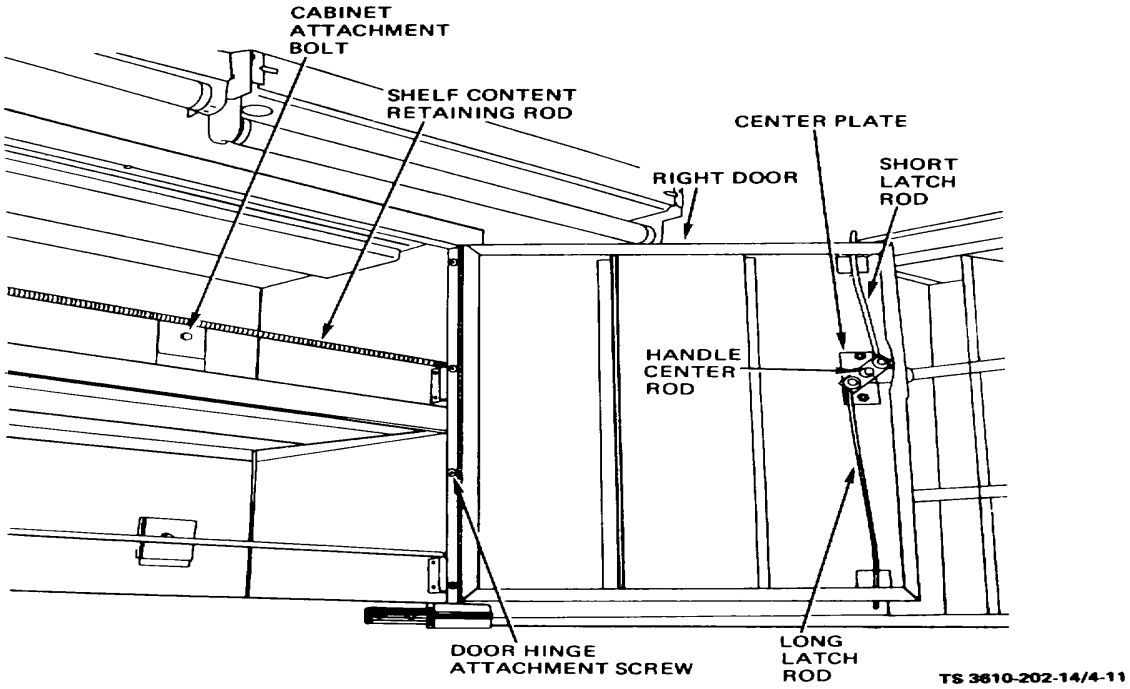

Figure 4-11. Wall Cabinet, Removal and Installation

c. Installation Install replacement cabinet assembly as follows:

(1) Position cabinet against left-hand shelter wall and align cabinet holes with mounting nutplate holes.

(2) Support cabinet and install bolts, washers and nuts which attach the cabinet rear panel to the shelter wall.

d. Repair. Repair of the wall cabinet assembly includes replacement of door handle, latch mechanism, door and hinge assemblies, and minor repair of shelf content retainers.

(1) Door handle replacement. Replace door handle as follows:

(a) Loosen locking screw which secures handle and center rod assembly to the latching mechanism inside right-hand door.

(b) Withdraw handle and remove handle spacer.

(c) Position spacer over replacement handle assembly center rod and insert rod through door and into latching mechanism.

(d) With handle pointing down and with latch mechanism in locked position, tighten locking screw.

(2) Latch mechanism replacement. Replace latch mechanism assembly as follows:

(a) Loosen locking screw which secures handle and center rod assembly to the latching mechanism inside right-hand door.

(b) Withdraw handle and remove handle spacer.

(c) Remove screws, nuts and washers which attach the latch mechanism center plate to the inside of the door and withdraw mechanism.

(d) Position replacement latch mechanism with long rod through lower door hole, short rod through upper door hole and align center plate mounting holes.

(e) Install screws, nuts and washers which attach the latch mechanism.

(f) Transfer door handle locking screw from old latch mechanism.

(g) Position spacer over new handle assembly center rod and insert rod through door and into latching mechanism.

(h) With handle pointing down and with latch mechanism in locked position, tighten locking screw.

(3) Door assembly replacement. Replace door assembly as follows:

(a) Remove screws attaching door hinge and remove door.

(b) If right-hand door has been removed, transfer handle and latch mechanism as follows:

1. Loosen locking screw which secures handle and center rod assembly to the latching mechanism inside right-hand door.

2. Withdraw handle and remove handle spacer.

3. Remove screws, nuts and washers which attach the latch mechanism center plate to the inside of the door and withdraw mechanism.

4. Position latch mechanism in replacement door with long rod through lower door hole, short rod through upper door hole and align center plate mounting holes.

5. Install screws, nuts and washers which attach the latch mechanism.

6. Position spacer over handle assembly center rod and insert rod through door and into latching mechanism. With handle pointing down and with latch mechanism in locked position, tighten locking screw.

(c) Position door assembly against cabinet panel and install attaching screws.

(4) Shelf content retainer repair. Repair of the retainer bar is limited to straightening of minor bends. This can best be accomplished by placing the bar in a vise and applying pressure to the damaged area.

4-21. Storage Shelf.

The storage shelf mounted on the left forward wall of the shelter provides storage for the art supplies. The shelf is constructed of welded steel and contains 18 compartments.

a. Inspection Inspect the storage shelf for general condition and security of attachment. Replace as required.

b. Removal To remove the storage shelf proceed as follows:

(1) Drill out existing six attaching blind rivets. (See fig. 4-12).

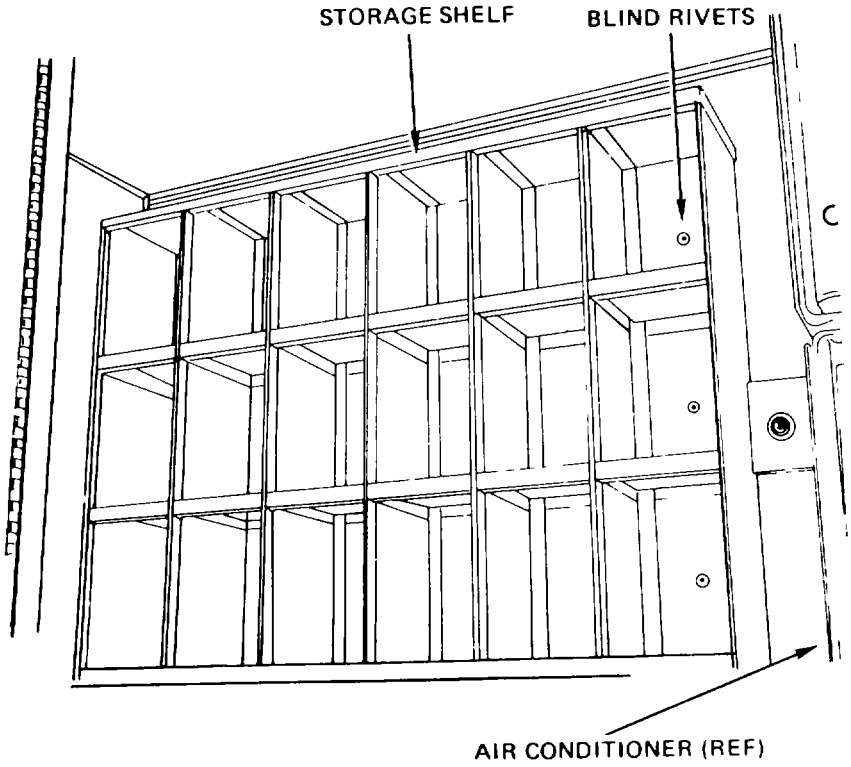

Figure 4-12. Storage Shelf Assembly, Removal and Installation

(2)Remove storage shelf.

c. Installation To install the storage shelf proceed as follows:

(1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed shelf and marking mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement shelf.

(3) Position storage shelf on the shelter wall.

(4) Secure with blind rivets.

Section IX. MAINTENANCE OF TYPE COMPOSING MACHINE AND COMPOSING MACHINE STAND

4-22. Type Composing Machine.

The changeable type-plate, nonjustifying, differential spacing, composing machine is shock mounted to the composer stand assembly located at the front of the shelter. (See fig. 4-13.)

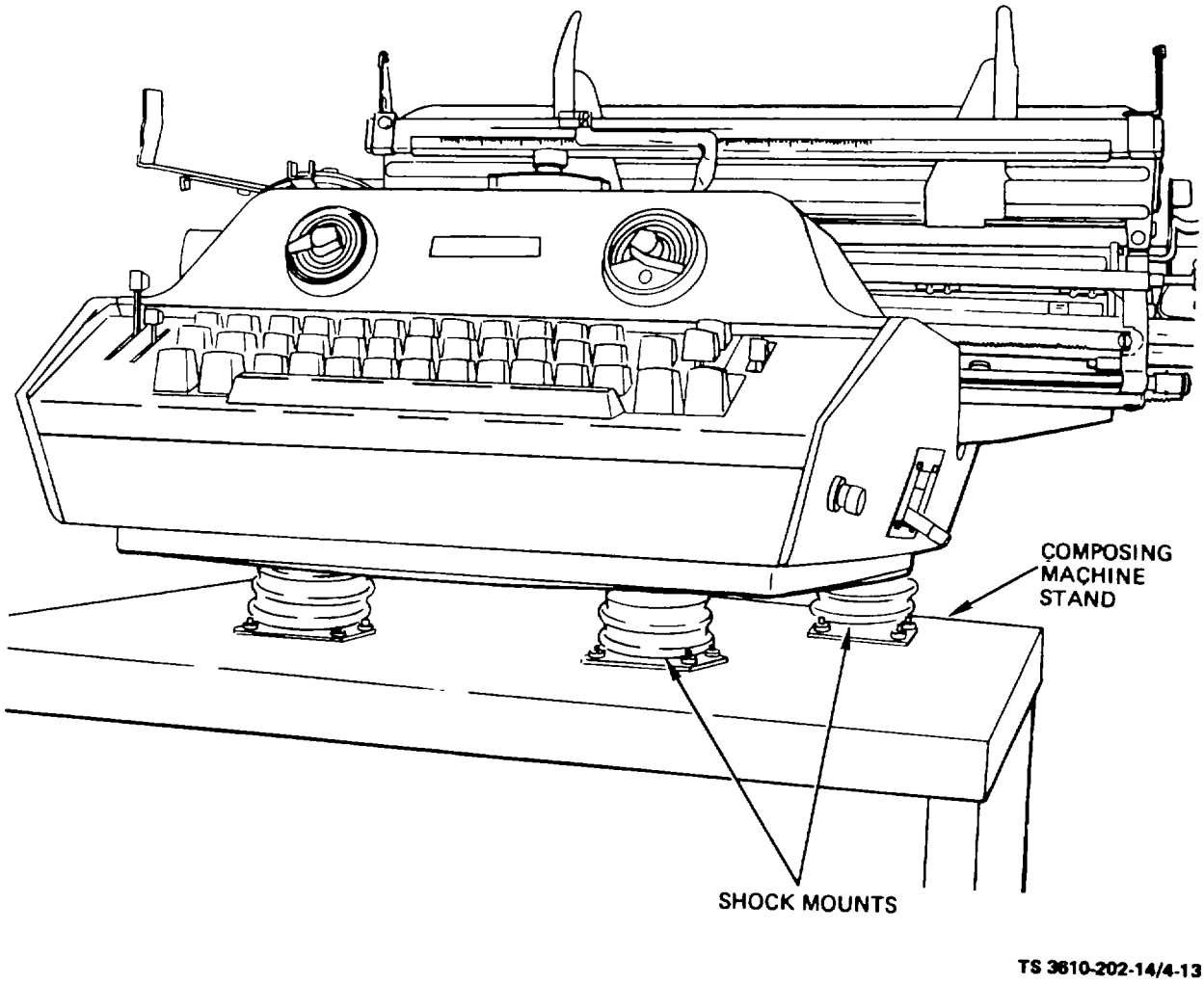

Figure 4-13. Type Composing Machine

a.Removal. To remove the composing machine, proceed as follows:

(1) Using a socket wrench, remove the four recessed attaching bolts from the underside of the stand assembly top. (See fig. 4-14.) 4-32

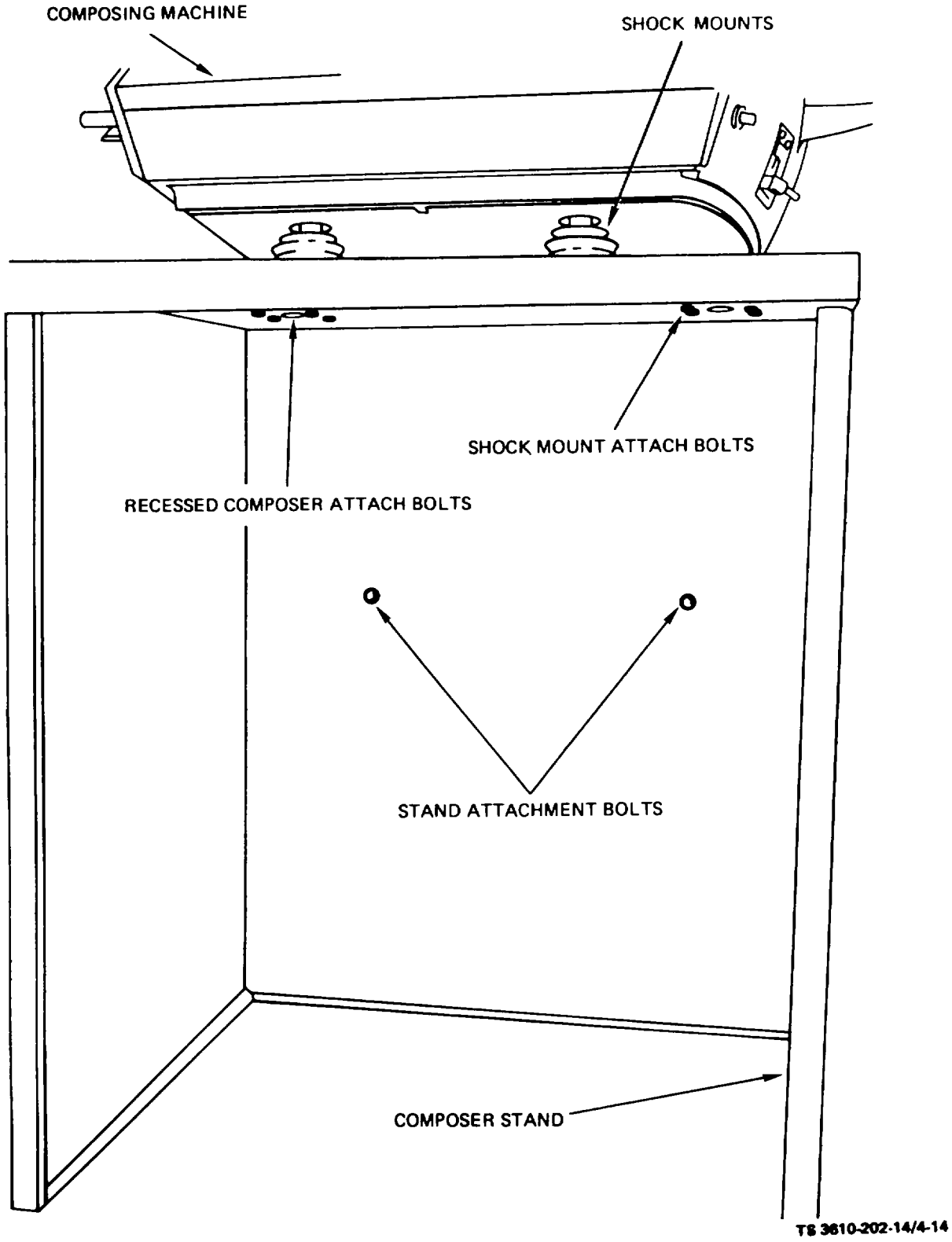

Figure 4-14. Type Composing Machine and Stand, Removal and Installation

(2)Remove the composing machine.

b. Installation. To install the composing machine proceed as follows:

(1) Position the composing machine over the four mounting holes in the stand assembly top.

(2) Insert and finger tighten the four attach bolts from the underside of the stand assembly top.

(3) Tighten the four attach bolts with a socket wrench.

4-23. Composing Machine Stand.

The composing machine stand which is of steel construction is mounted on the front shelter wall to the left of and below the air conditioner unit.

a. Inspection Inspect the composing machine stand assembly for security of mounting, general condition of the stand and condition and security of the shock mounts. Replace as required.

b. Removal To remove the composing machine stand assembly proceed as follows:

(1) Using a socket wrench remove the four recessed attaching bolts securing the composing machine to the stand assembly.

(2) Remove the composing machine.

(3) Remove the two attaching bolts from the body of the stand assembly at the point where it is secured to the forward shelter wall. (See fig. 4-14.)

(4) Remove the composing machine stand assembly.

c. Installation To install a new composing machine stand assembly proceed as follows:

(1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed stand assembly and marking mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement stand assembly.

(3) Position replacement stand assembly against shelter wall and align mounting holes with wall receptacle.

(4) Insert mounting bolts and tighten.

(5) Position the composing machine over the four mounting holes in the stand assembly top.

(6) Insert and finger tighten the four attach bolts from the underside of the stand assembly top.

(7) Tighten the four attach bolts with a socket wrench.

Section X. MAINTENANCE OF CAMERA MODIFICATION

4-24. General.

The vertical process camera is modified for use in the editorial and photomechanical shelter system by means of a clamp-type latching clip installed to retain the film case cover in the closed position during use and shipment or storage. (See fig. 4-15.)

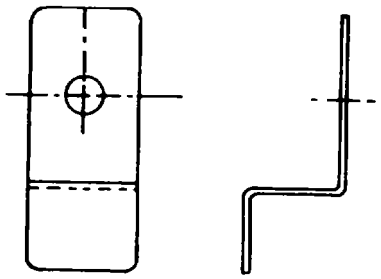

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Figure 4-15. Camera Modification Clamp

4-25. Camera Modification.

a. Removal. Remove the camera film case cover latching clamps as follows:

(1) Remove the capscrew which attaches the clamp at the right rear corner of the film case. (See fig. 4-16.)

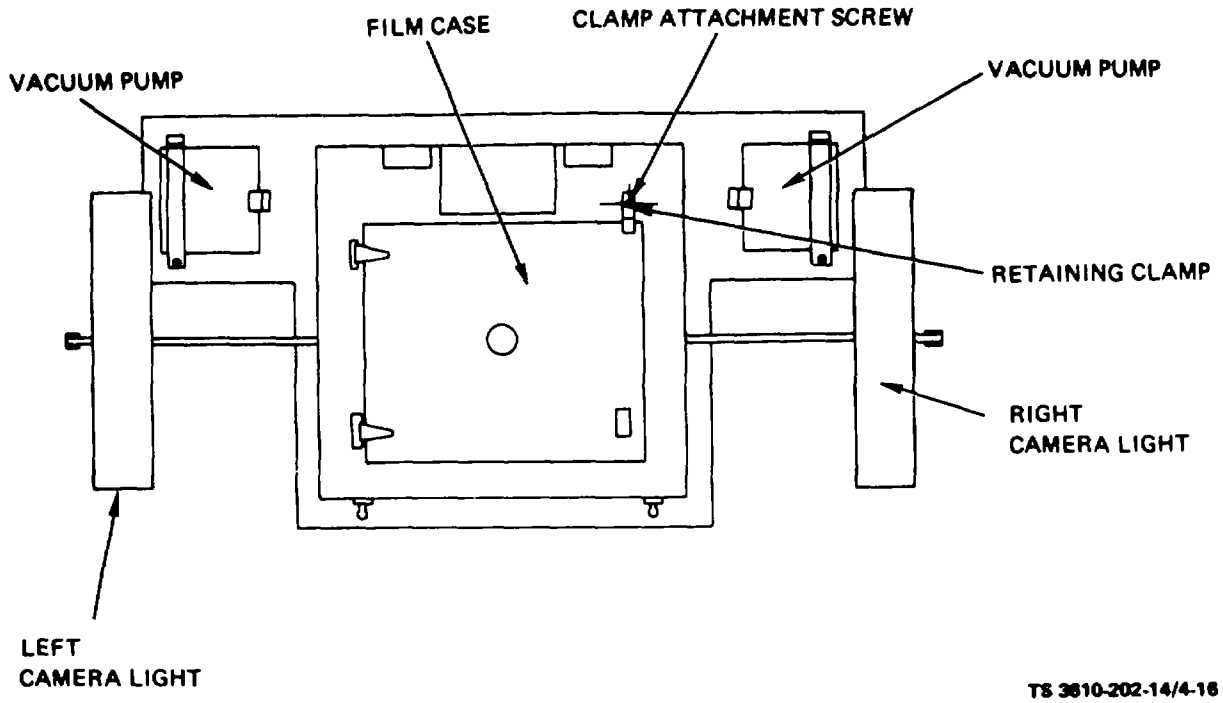

Figure 4-16. Camera Film Case Retaining Clamp, Removal and Installation

(2) Remove the retaining clamp.

b. Installation. Install the camera film case cover latching clamp as follows:

(1) Position the retaining clamp with the recessed end over the film case cover and the clamp mounting hole over the hole provided in the camera at the right rear corner of the film case.

(2) Install the attaching capscrew.

Section XI. MAINTENANCE OF VACUUM PUMP SOUND ATTENUATOR

4-26. General.

The two vertical process camera vacuum pumps are each provided with a sound attenuator to reduce pump noise during operation. The attenuators which are of particle board construction, slide down over the pumps and incorporate slots to accommodate the foot and power inlet cables. A hole in the attenuator top allows connection of the vacuum pump flexible hose.

4-27. Vacuum Pump Sound Attenuator.

NOTE
Replacement procedures are identical for each sound attenuator.

a. Removal Remove vacuum pump sound attenuator as follows:

(1) Position CAMERA circuit breaker in main power service box to off.

(2) Disconnect hose from the vacuum pump. (See fig. 4-17.)

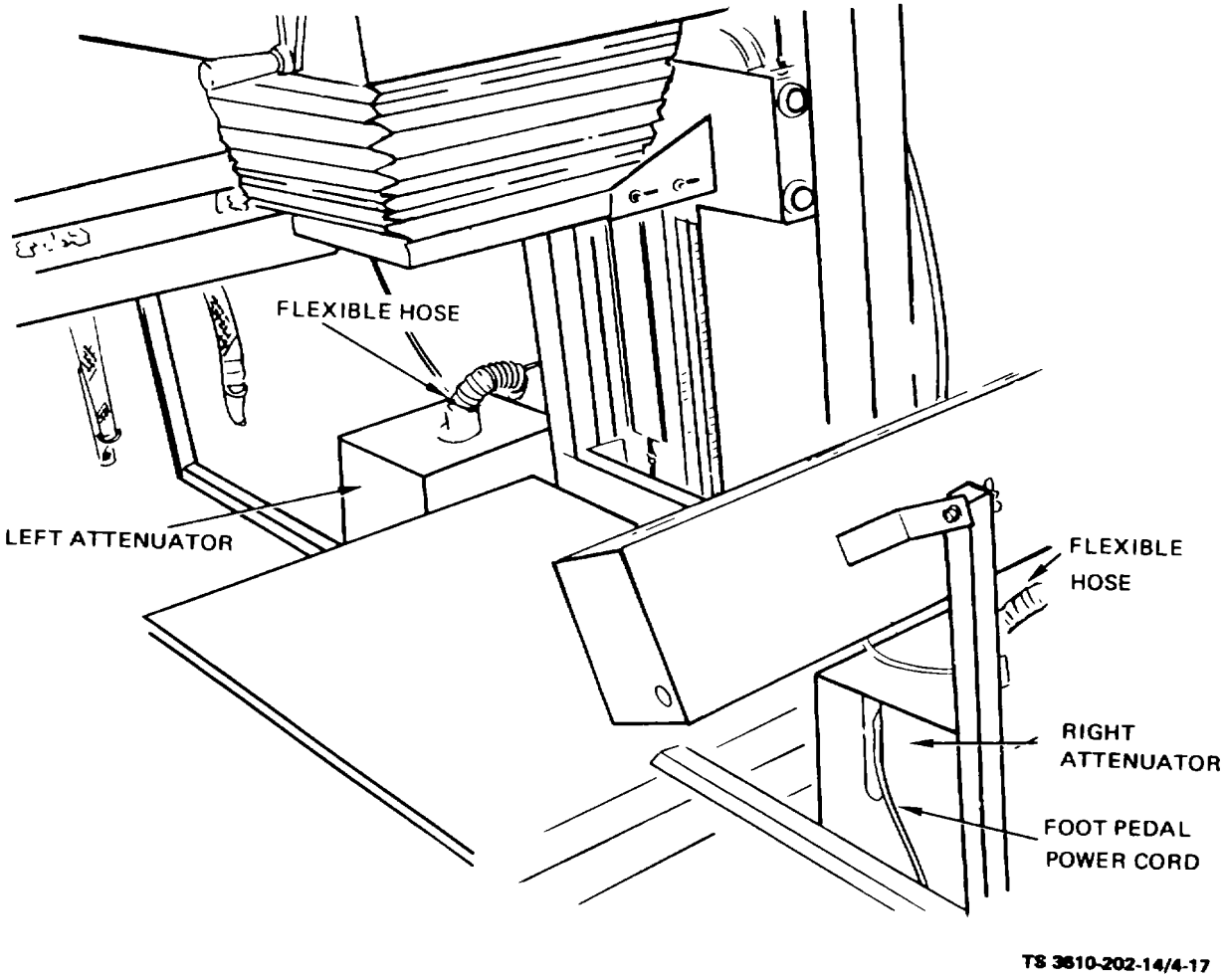

Figure 4-17. Vacuum Pump Sound Attenuator, Removal and Installation

(3)Lift attenuator cover vertically and remove.

(4) Disconnect electrical cords and place within the attenuator box and lift box and remove.

b. Installation. Install the vacuum pump sound attenuator as follows:

(1) Place replacement attenuator box over vacuum pump and cables.

(2) Place electrical cords in slots in attenuator box.

(3) Position replacement attenuator cover on box.

(4) Connect hose to the vacuum pump.

(5) Connect electrical cord and place the CAMERA circuit breaker in main power service box to on.

Section XII. MAINTENANCE OF SAFELIGHT

4-28. General. A swivel mounted darkroom safelight is installed on the right-hand wall just forward of the water tank. The safelight includes several filters behind which is installed a 15w lamp. The light is provided to supply illumination of a color which will not affect the photographic material during the processing period. The light consists of a dome shaped casing which contains the bulb and which is mounted in a swivel installed in the shelter ceiling. The safelight power cord plugs into a receptacle on the shelter wall and incorporates a two-position switch.

4-29. Safelight.

a. Inspection Inspect the safelight assembly as follows:

(1) Inspect safelight for security of mounting. Secure as necessary. (See fig. 4-18.)

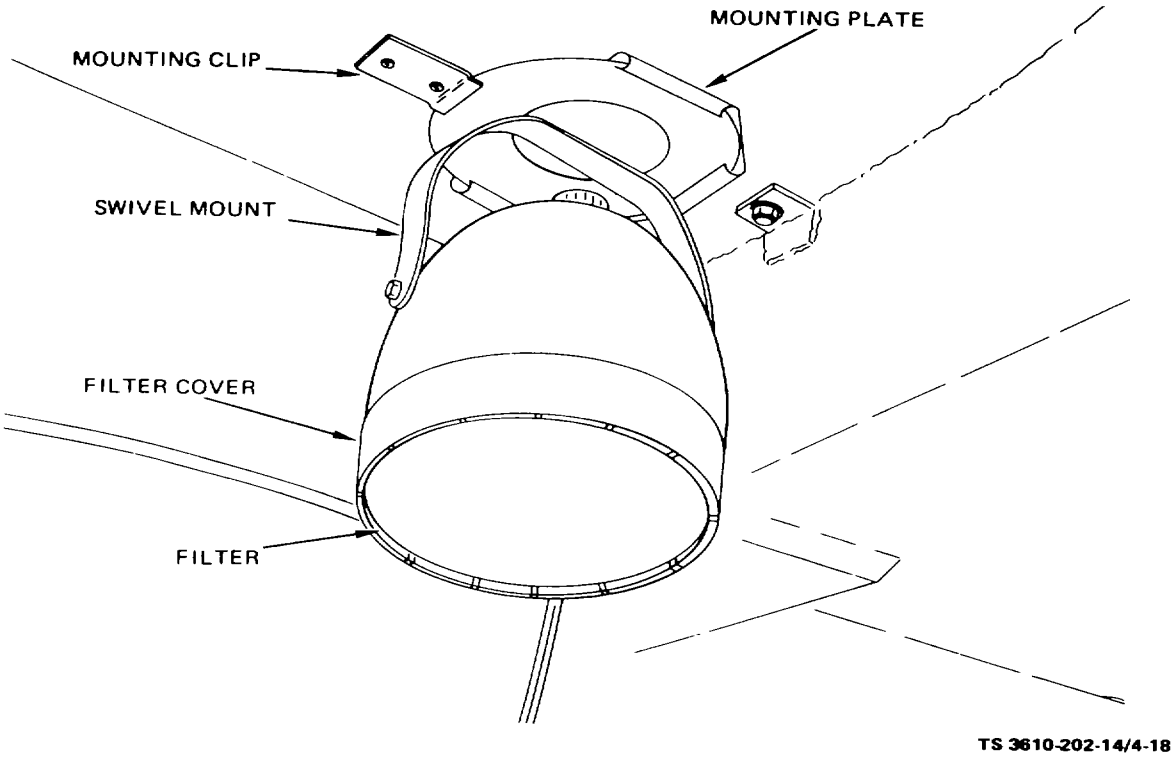

Figure 4-18. Safelight Assembly, Removal and Installation

(2)Inspect safelight casing and filter for damage. Replace as necessary.

(3) Inspect power cord and switch for proper operation.

(4) Inspect safelight bulb for proper operation.

b. Removal If inspection indicates that replacement of the safelight is necessary, remove the unit as follows:

(1) Disconnect safelight power cord.

(2) Remove the two screws which secure the safelight mounting clip and remove the mounting clip.

(3) Slide the safelight from mounting plate on shelter ceiling.

c. Installation Install new safelight assembly as follows:

(1) Slide the safelight into the mounting plate on shelter ceiling.

(2) Position mounting clip and install attaching screws.

(3) Connect safelight power cord..

(4) (Check safelight for proper operation.

d. Repair. Repair of the safelight assembly includes replacement of filter and bulb.

(1) Filter replacement. Replace safelight filter as follows:

(a) Grasp filter cover and rotate cover counterclockwise until cover key lugs are aligned with casing keyways. Pull cover and filter from casing.

(b) Remove filter from cover.

(c) Position replacement filter in cover.

(d) Align cover key with casing keyways and push cover onto casing. Rotate cover clockwise until secure. **(2) Bulb replacement**. Replace safelight bulb as follows:

(a) Grasp filter cover and rotate cover counterclockwise until cover key lugs are aligned with casing keyways. Pull cover and filter from casing

(b) Unscrew bulb from socket

(c) Screw replacement bulb into socket.

(d) Align cover key with casing keyways and push cover onto casing. Rotate cover clockwise until secure.

Section XIII. MAINTENANCE OF WATER SUPPLY PLUMBING

4-30. General.

The water supply and plumbing consists of a draincock a faucet, various lines and fittings and a water supply line to the humidifier. The purpose of the water supply and plumbing is to make readily available a supply of water for various components and operations used in conjunction with the shelter. (See fig. 4-19.)

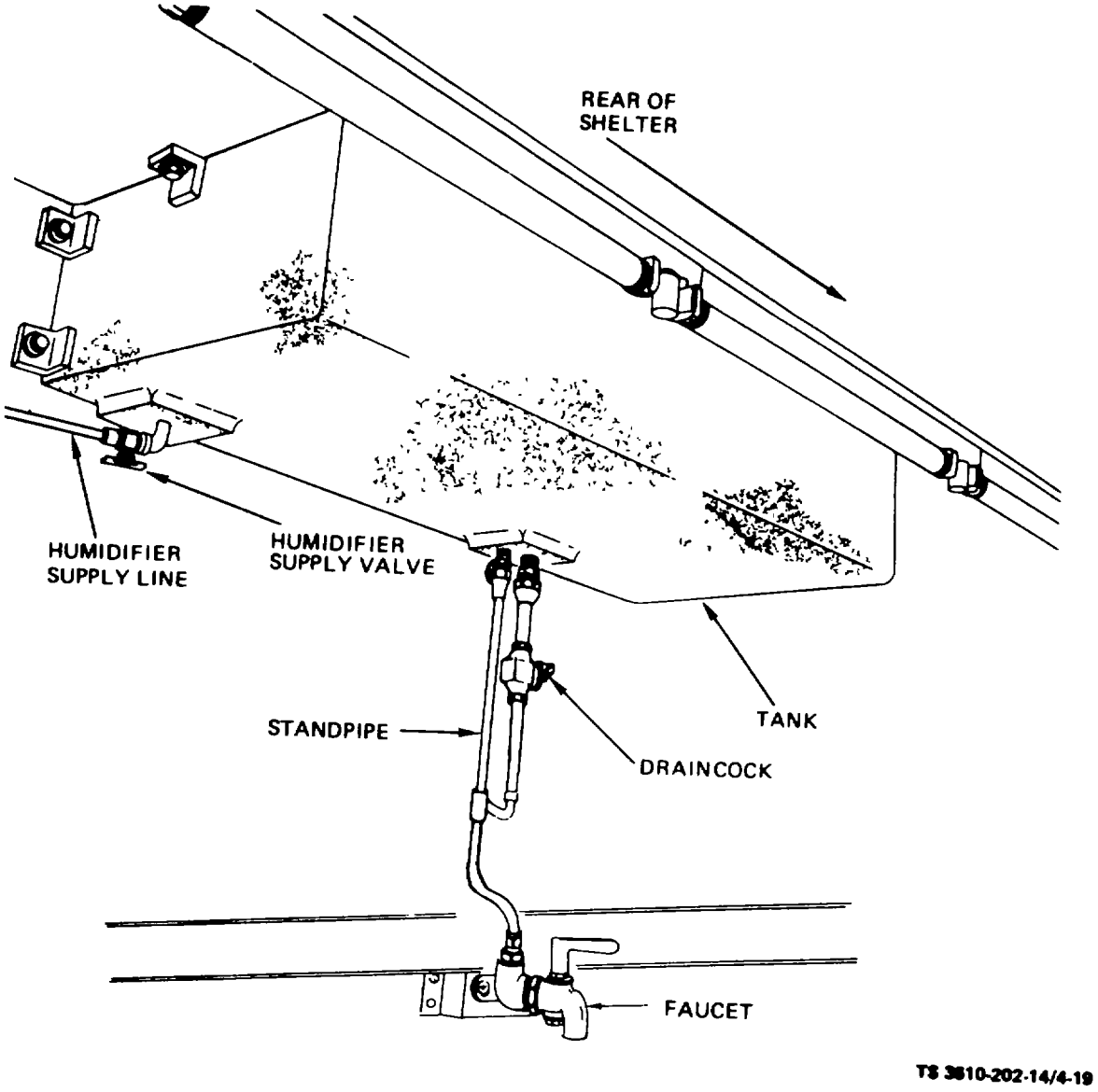

Figure 4-19. Water Supply. System Plumbing and Fittings

4-31. Water Supply Plumbing.

a. Draincock and Faucet.

(1) Inspection.

(a) Inspect draincock and faucet for wear or damage which could cause leaks.

(b) Replace damaged components as necessary.

(2) Removal.

(a) Drain the water system by opening the faucet and draincock.

(b) Remove faucet from its fitting with a pipe wrench.

(c) Remove waterline from tank, loosen the two compression nuts above and below the draincock, and remove the draincock.

(d) Inspect faucet and draincock for further signs of damage or wear.

(3) Installation.

(a) Position draincock and tighten the two compression nuts. Resecure waterline to tank.

(b) Position valve or faucet and secure to fittings with pipe wrench.

(c) If replacement of a valve or faucet is necessary, position replacement valve or faucet to fitting and secure with pipe wrench.

b. Waterlines and Fittings.

(1) Inspection. Inspect waterlines and fittings for signs of damage which could cause leaks.

(2) Removal. Remove portions by uncoupling line and fitting from tank.

(3) Installation.

(a) Secure lines and fittings to tank.

(b) If replacement of lines or fitting is necessary, secure replacement lines or fittings to tank.

c. Humidifier Water Supply Line.

(1) Inspection. Inspect humidifier water supply line for any damage which could cause leaks.

(2) Removal.

(a) Shutoff humidifier water supply by closing valve located at bottom of water tank. (See fig. 4-19.)

(b) Using a suitable container, drain the humidifier supply line by opening the humidifier drain valve. (See fig. 4-20.)

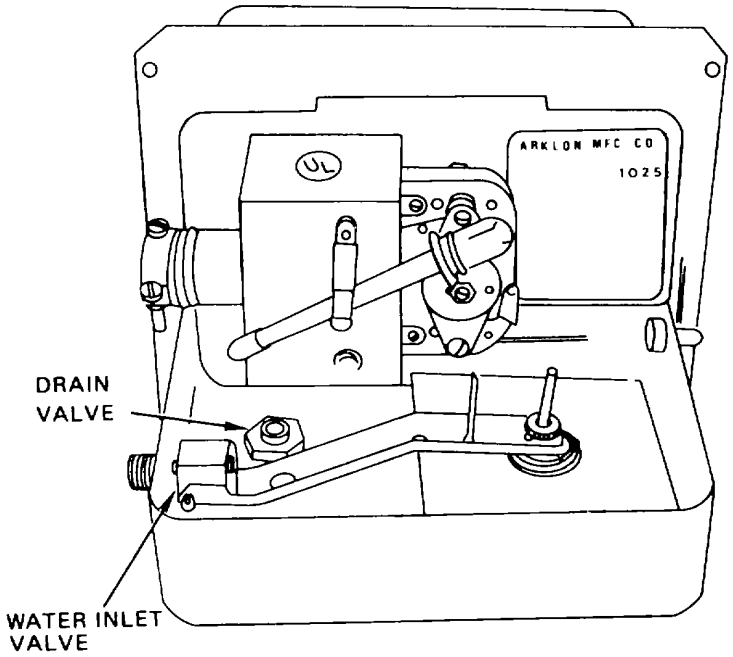

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Figure 4-20. Humidifier Assembly (Drain Valve and Water Inlet Valve)

(c)Remove screws and clamps that secure tubing to shelter wall and front panel.

(d) Disconnect water supply line at connectors and remove tubing.

(e) Close humidifier drain valve.

(3) Installation.

(a) Position tubing and connect water supply line at connectors.

(b) Position tubing on shelter wall and secure with clamps and screws.

NOTE

Open previously closed valve at bottom of tank to allow waterflow to humidifier before placing unit in operation.

(c) If replacement of tubing is required, bend and cut a new piece of tubing using the old tubing as a pattern.

(d) Place replacement compression nuts and sleeves on each end of new tubing.

(e) Place new tubing into position and tighten compression nuts at connectors.

(f) Turn on water supply at the supply tank and check fittings for leaks. Tighten as necessary to stop leaks.

(g) Position tubing on shelter wall and secure with clamps and screws.

Section XIV. MAINTENANCE OF HEADLINER COMPOSING MACHINE

4-32. General.

The Headliner photocomposing machine, installed on the headliner counter in the right rear section of the shelter, provides a variety of styles and sizes of display type. For further information refer to applicable commercial manuals.

4-33. Headliner Composing Machine.

a. Removal. To remove the headliner composing machine proceed as follows:

(1) Disconnect the headliner composing machine electrical connector from the wall receptacle.

(2) Remove the thumbscrew securing the stop lock to the headliner counter and remove the stop lock. (See fig. 4-21.)

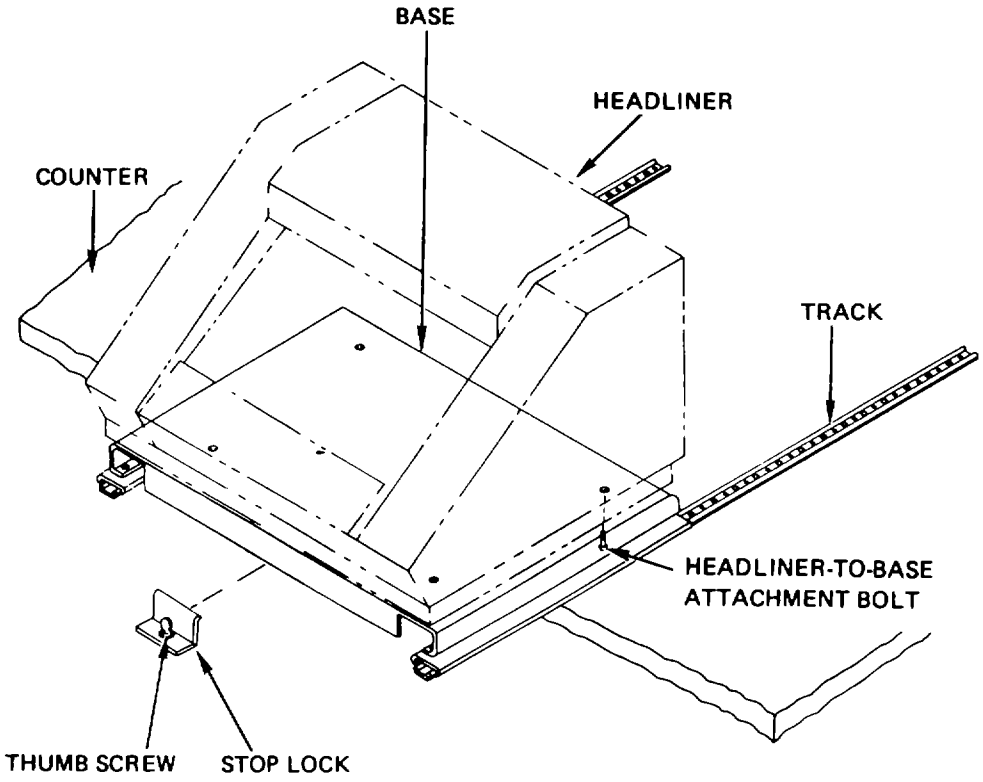

Figure 4-21. Headliner Composing Machine, Removal and Installation

(3)roll the headliner composing machine and attached base toward the front of the headliner counter and remove.

(4) Remove the four mounting bolts attaching the headliner composing machine to the base and remove the composing machine.

b. Installation. To install the headliner composing machine proceed as follows:

(1) Mount the headliner composing machine on the base and secure with four mounting bolts.

(2) Position the headliner composing machine and base on the tracks and push the entire assembly toward shelter wall.

(3) Install the stop lock on headliner counter and secure with thumbscrew.

(4) Plug the headliner composing machine electrical connector into wall receptacle.

Section XV. MAINTENANCE OF PHOTOTRAY ASSEMBLY

4-34. General.

A three level phototray assembly (see fig. 4-22) for use in photographic developing consisting of three plastic trays and metal frame is located on the headliner counter, between the utility sink and Varitype Headliner.

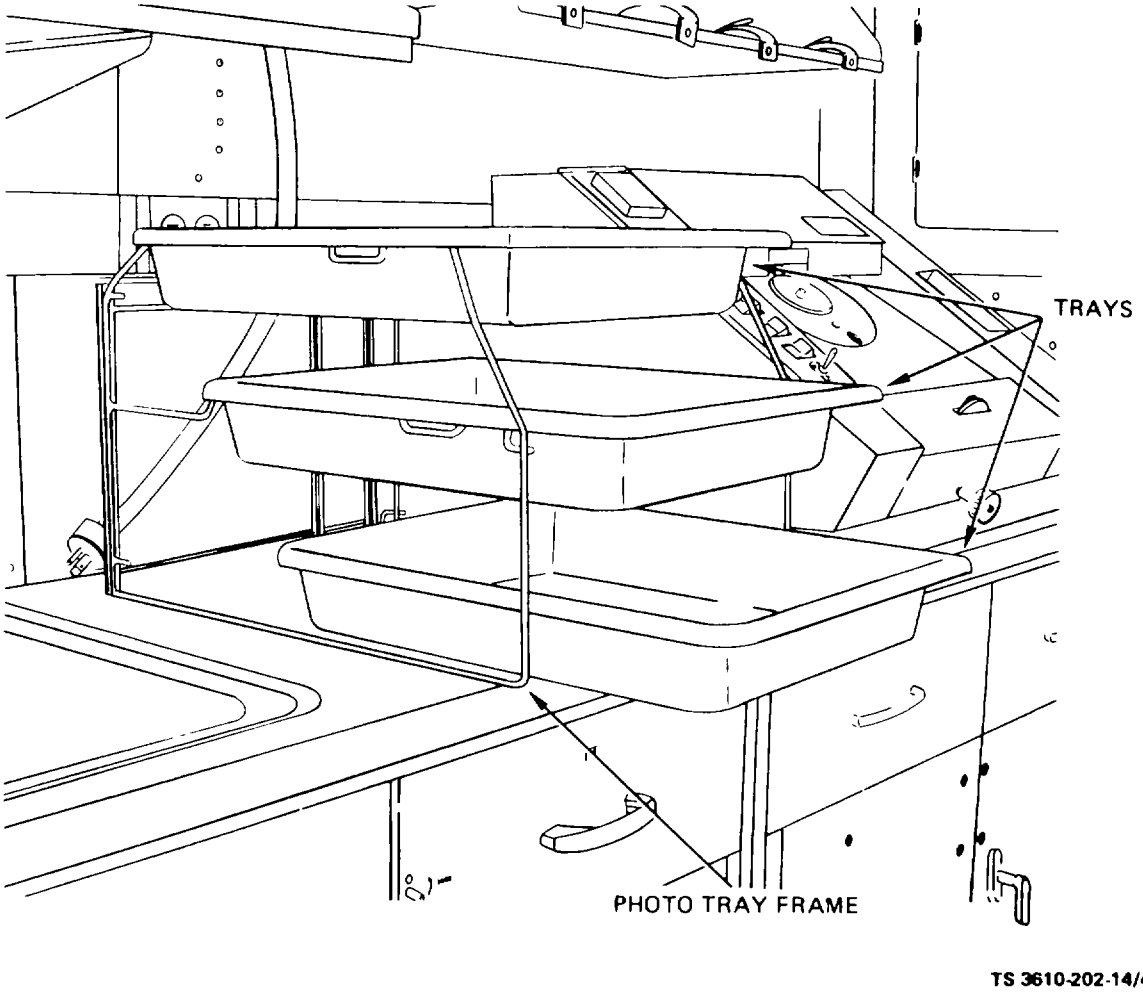

Figure 4-22. Phototray Assembly

4-35. Phototray Assembly.

a. Inspection. Inspect the phototray assembly frame for rust and corrosion and inspect trays for cracks.

b. Removal. Lift phototrays off the phototray assembly frame and unhook the sides of the frame from the back of the frame and store in storage cabinet.

c. Installation. Hook the side pieces of the phototray frame assembly to the back piece of the frame and slide the phototrays into place.

Section XVI. MAINTENANCE OF RUB-UP BOARD

4-36. General.

The rub-up board (see fig. 4-23) is kept in storage compartment located at left front corner of shelter. When in use, the board is located to the right of the sink. The board is of metal construction with a rubber fixture secured on the working area and is used in rubbing, proofing and developing procedures in platemaking operation.

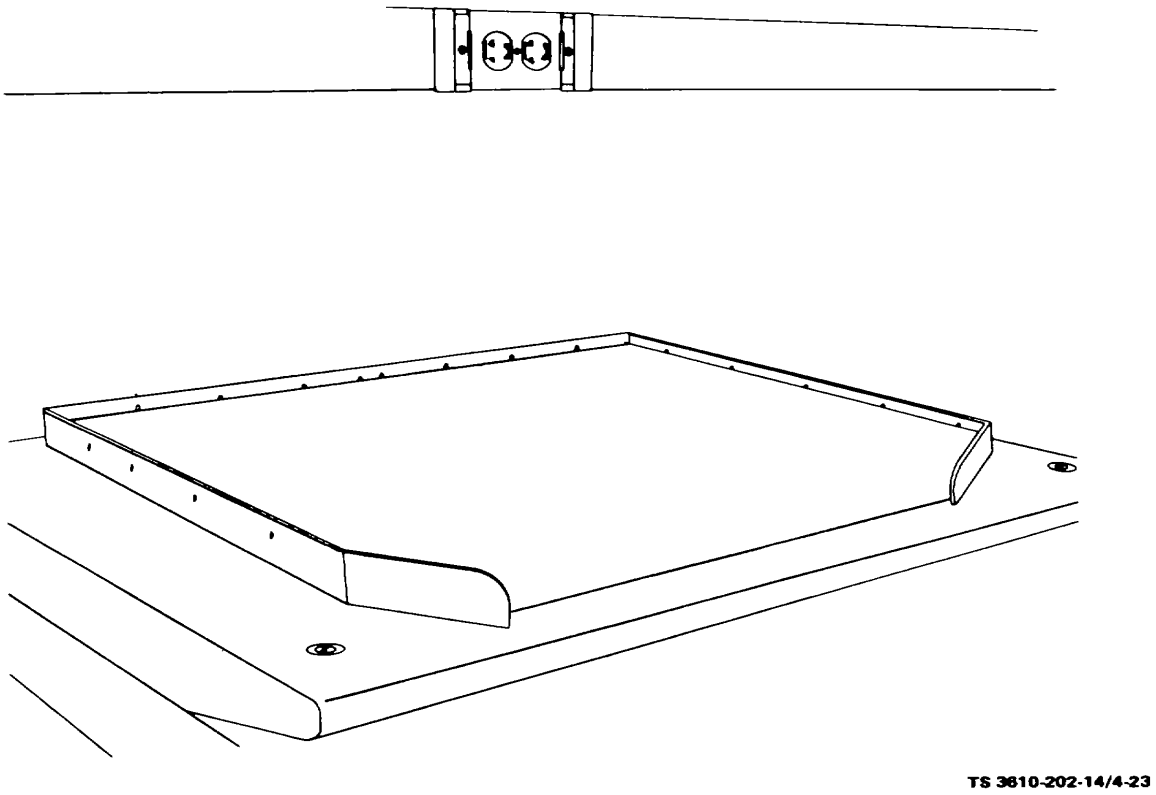

Figure 4-23. Rub-Up Board Assembly

4-37. Rub-Up Board.

a. Inspection

(1) Inspect board assembly for burrs, sharp edges and signs of rust or excessive dirt.

(2) Inspect for dents or cracks.

(3) Inspect rubber pad for condition and security.

(4) Replace damaged board assembly as necessary.

b. **Removal.** Open latch on storage container and remove rub-up board assembly.

NOTE

Rub-up board is located on left-most side of storage compartment.

c. Installation. Carefully lower rub-up board into left-most side of storage compartment and secure latch.

d. Repair. If rub-up board is to be repaired, the procedures are as follows:

(1) Open latch on storage container and remove rub-up board assembly.

(2) Remove dents by utilizing a suitable hammer.

(3) Remove all burrs from finish and smooth all sharp edges.

(4) Remove damaged rubber surface from rubup board.

(5) Using an approved solvent, remove any remaining adhesive from surface of rub-up board.

(6) Apply a coat of adhesive (Item 1, App. D) to the back of the replacement rubber surface and carefully place into position on rub-up board.

NOTE

Allow the cementing compound sufficient time to dry before cleaning the rub-up board assembly.

(7) Thoroughly clean all surfaces.

(8) Carefully lower rub-up board into left-most side of storage compartment and secure latch.

Section XVII. MAINTENANCE OF SINK SHIELD

4-38. General.

A stainless steel sink shield, installed on forward end of the headliner counter, prevents water from being splashed on the vertical camera installation when using the utility sink.

4-39. Sink Shield.

a. Inspection Inspect the sink shield for security of attachment and general condition. Replace as required.

b. Removal To remove the sink shield proceed as follows:

(1) Remove the screws securing the faucet bracket to the rear side of the sink shield and shelter wall. (See fig. 4-24.)

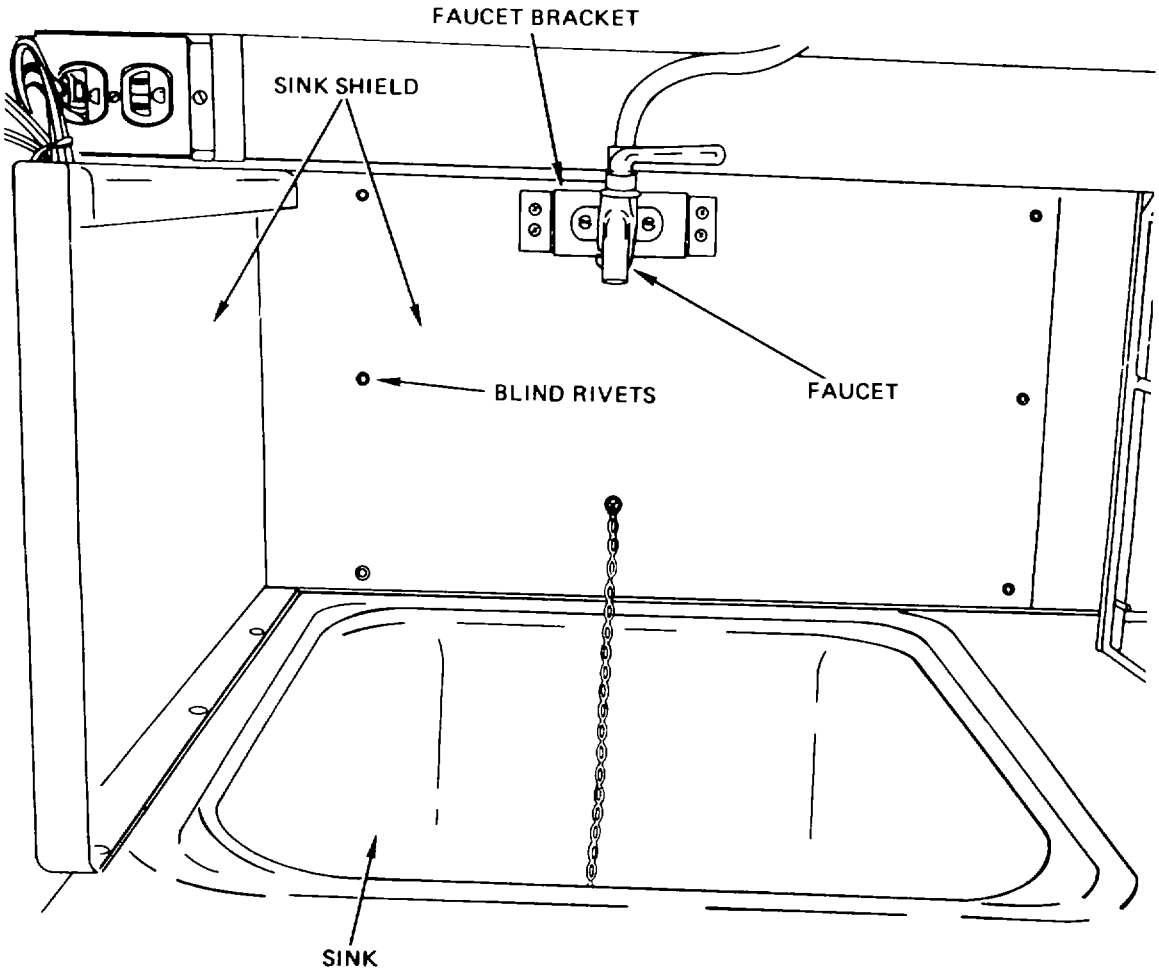

Figure 4-24. Sink Shield, Removal and Installation

(2) Drill out the blind rivets securing the sink shield to the headliner counter and shelter wall.

(3) Slide the sink shield to the left and remove.

c. Installation To install the sink shield proceed as follows:

(1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed sink shield and marking mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement sink shield.

(3) Position the sink shield on the headliner counter with rear shield positioned behind the faucet bracket.

(4) Secure the sink shield with blind rivets.

(5) Position the faucet bracket on the sink shield and install attaching screws.

Section XVIII. MAINTENANCE OF SINK ASSEMBLY

4-40. General. The sink assembly is recessed in forward section of headliner counter directly below water tank. The sink is used to contain and/or eliminate discarded water and other liquids used in conjunction with the operation of the shelter. The sink assembly also contains ai plug and chain which are secured to the wall directly above the sink. (See fig. 4-26.)

4-41. Sink Assembly.

a. Inspection Inspect the sink assembly as follows:

(1) Inspect sink for signs of rust and clogging.

(2) Inspect plug and chain for signs of wear or damage.

(3) Inspect sink for damage which could cause leakage into area of counter below sink.

(4) Report any defects to direct and general support maintenance personnel.

Section XIX. MAINTENANCE OF AIR CONDITIONER AND AIR INTAKE FILTER

4-42. General.

A removable air filter, installed in the air conditioner intake louver permits filtered outside air to enter the air conditioner.

4-43. Air Conditioner Air Intake Filter.

a. **Removal** To inspect the air filter, remove as follows:

(1) Remove the eight screws attaching the air conditioner air intake louver to the right exterior shelter wall. (See fig. 4-25.)

(2) Remove the louver and gasket.

(3) Remove the filter and two grills from the louver frame.

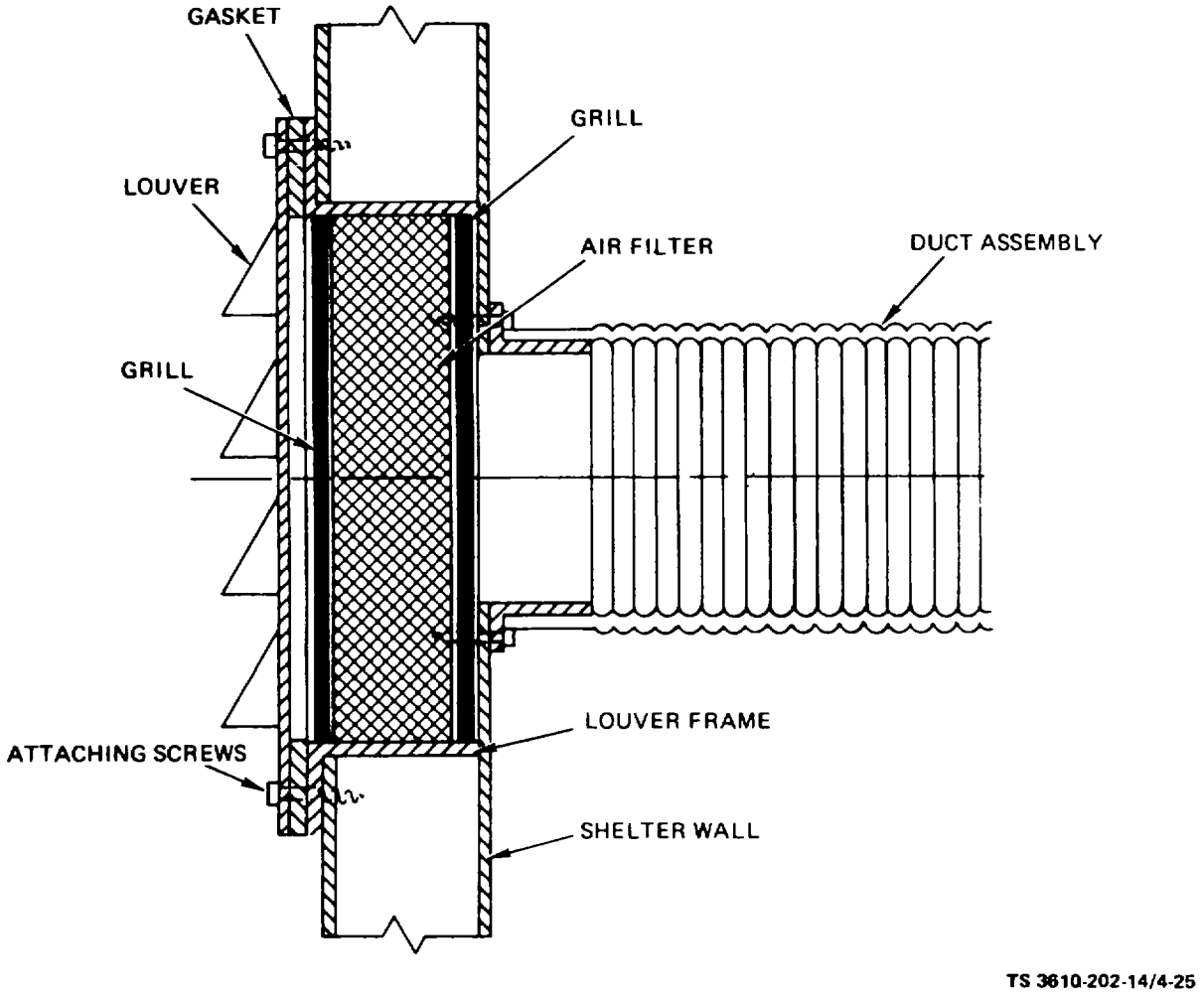

Figure 4-25. Air Conditioner Air Intake Filter Replacement

b. **Inspection** Inspect the air filter and grills as follows:

(1) Inspect the filter and grills for dirt accumulation which could prevent air flow through the filter material.

(2) Inspect the air filter for damage or deterioration.

(3) Replace air filter if damaged or 446 deteriorated.

c. **Cleaning**. Clean the air filter by washing in a soap and water solution. Dry thoroughly and spray with air filter coater, NSN 4130-00-860-0042.

d. **Installation** Install the air filter as follows:

(1) Place a grill on each side of the air filter and insert in the louver frame.

(2) Position gasket and louver on louver frame.

(3) Secure with eight attaching screws.

Section XX. MAINTENANCE OF HUMIDIFIER ASSEMBLY

4-44. General.

A humidifier assembly is mounted on the front panel of the air conditioner evaporator fan section and functions to spray an atomized water mist into the evaporator blower as required by a humidistat control. Remote control of the humidifier is achieved through a humidistat which forms a part of the air conditioner control box. The humidifier assembly consists of an electric motor, motor balancing discs and a water inlet valve controlled by a float.

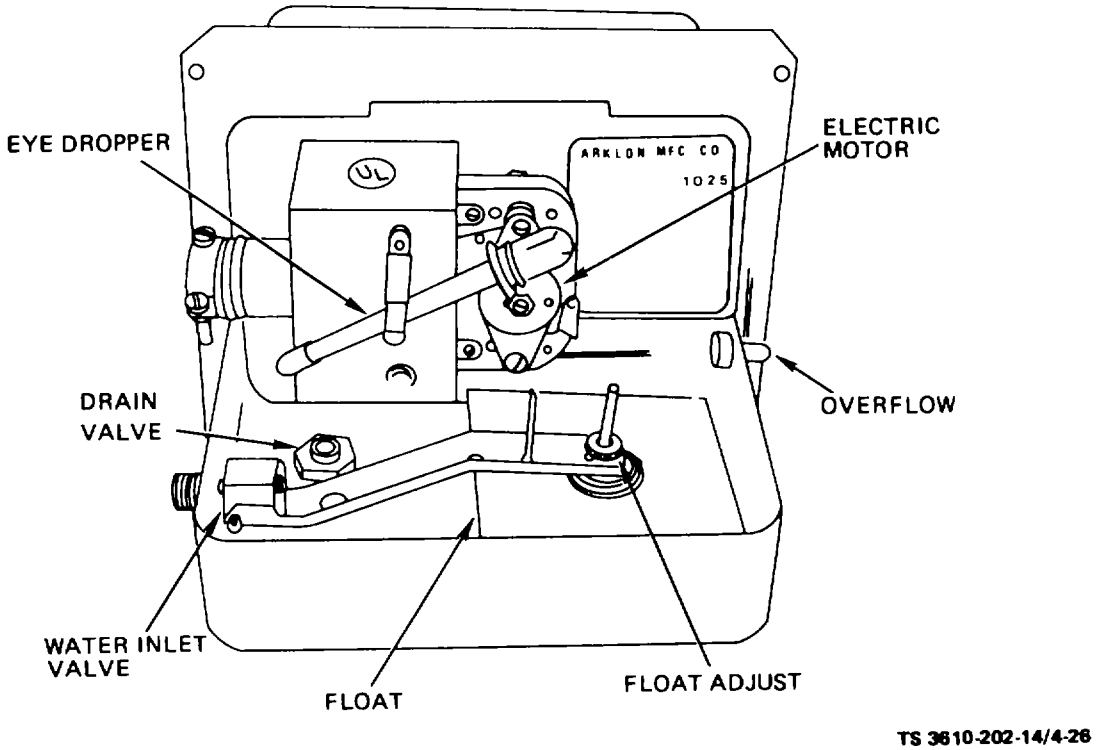

Figure 4-26. Humidifier Assembly (Front Cover removed)

4-45. Humidifier Assembly.

a. Removal Remove the humidifier assembly as follows:

(1) Close the humidifier supply draincock at the base of the water tank. (See fig. 4-19.)

(2) Using a suitable container, drain the humidifier supply line by opening the humidifier drain valve. (See fig. 4-26.)

(3) Disconnect the humidifier supply line from the humidifier.

(4) Loosen the receptacle access plate on the evaporator blower section cover so as to permit access to the humidifier power input plug.

(5) Disconnect the humidifier input power plug.

(6) Remove the self-tapping screws which attach the humidifier assembly mounting flange to the air conditioner unit and carefully remove the humidifier.

CAUTION

Do not handle the large copper disc (see fig. 4-27) at the rear of the unit as it has been carefully made and balanced to provide smooth and quiet operation.

b. Cleaning and Inspection Clean and inspect the humidifier assembly as follows:

(1) Remove humidifier front cover. Check for proper operation of inlet valve by raising and lowering valve arm. If necessary adjust water inlet valve for correct opening by turning the knurled adjusting nut above the humidifier float. (See fig. 4-26.)

CAUTION

Do not handle the large copper disc at the rear of the unit as it has been care fully made and balanced to provide a smooth and quiet operation.

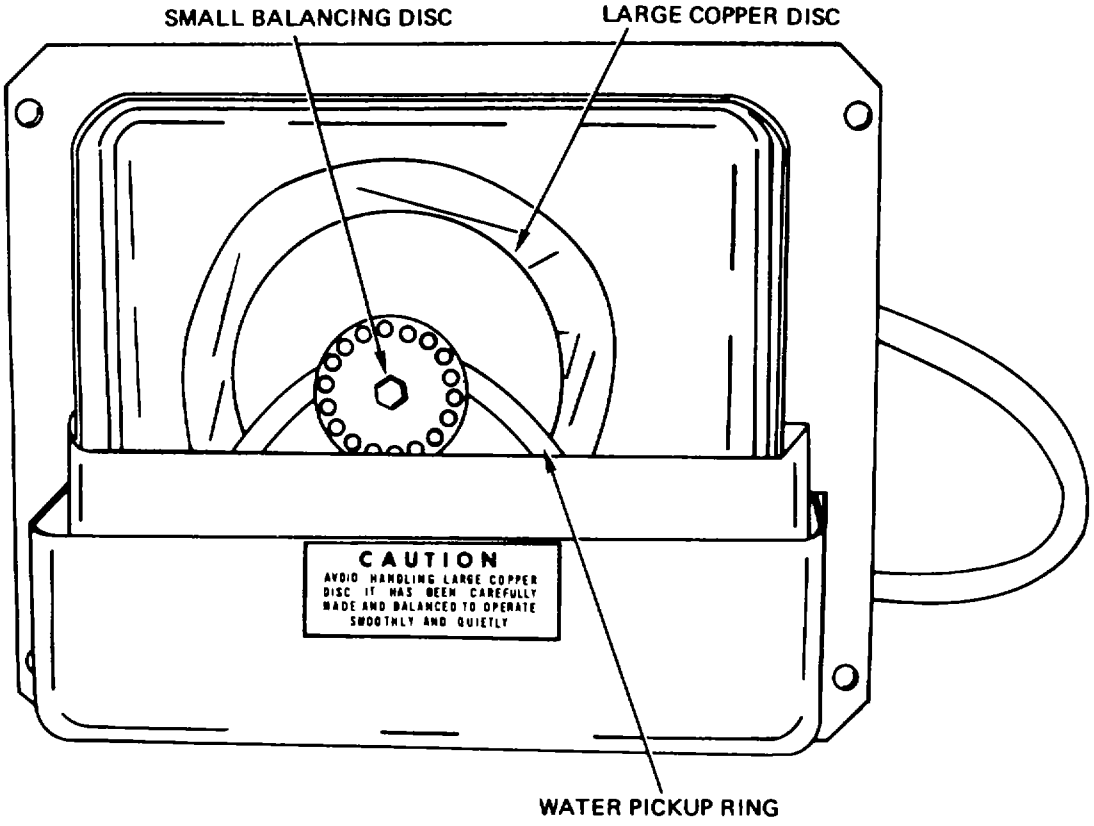

Figure 4-27. Humidifier Rear View

(2) Where local water may have a high mineral content, the user may experience a buildup of scale on some surfaces of the humidifier due to repeated wetting and drying during operation. This scaling can be removed by cleaning with household vinegar or a diluted solution of acetic acid (2 percent by volume). Perform carefully to avoid distortion of large copper disc (see fig. 4-27). Rinse the humidifier thoroughly.

(3) Make sure all surfaces are clean and that the motor shaft turns freely by gently turning the small disc.

(4) Install humidifier front cover.

c. Lubrication. Lubricate the humidifier assembly as follows:

(1) Remove humidifier front cover.

(2) Lubricate the motor bearings every six months at the two holes in the motor bearing caps using a few drops of OE-10 (Lubricating Oil, Internal Combustion Engine). For ease in application an eye dropper is provided with the humidifier. (See fig. 4-26.)

(3) Install the humidifier front cover.

d. Installation. Install the humidifier assembly as follows:

NOTE
Before installing humidifier, make sure that neoprene water pickup ring (see fig. 4-27) is on motor shaft between two discs.

(1) Install humidifier on mounting plate and secure with self-tapping screws.

(2) Connect humidifier input power plug.

(3) Tighten receptacle access plate on evaporator blower section cover.

(4) Connect humidifier water supply line to humidifier.

(5) Close the humidifier drain valve.

(6) Open the humidifier supply draincock at the base of the water tank.

Section XXI. MAINTENANCE OF FIRE EXTINGUISHER

4-46. General.

A Class 2-B dry chemical fire extinguisher is located in the upper corner of the left hand rear wall of the shelter and is easily removed from its mounting with a quick release lever.

4-47. Fire Extinguisher.

a. Inspection. Inspection of the fire extinguisher should proceed as follows:

(1) Inspect nozzle and adapter assembly for security and condition.

(2) Weigh cylinder every six months and replace if gross weight has decreased by six ounces (170 gm) or more.

NOTE
Replace cylinder immediately after use.

b. Removal. Remove fire extinguisher as follows:

(1) Unlock quick release lever on fire extinguisher mounting bracket and remove fire extinguisher from mounting bracket. (See fig. 4-28.)

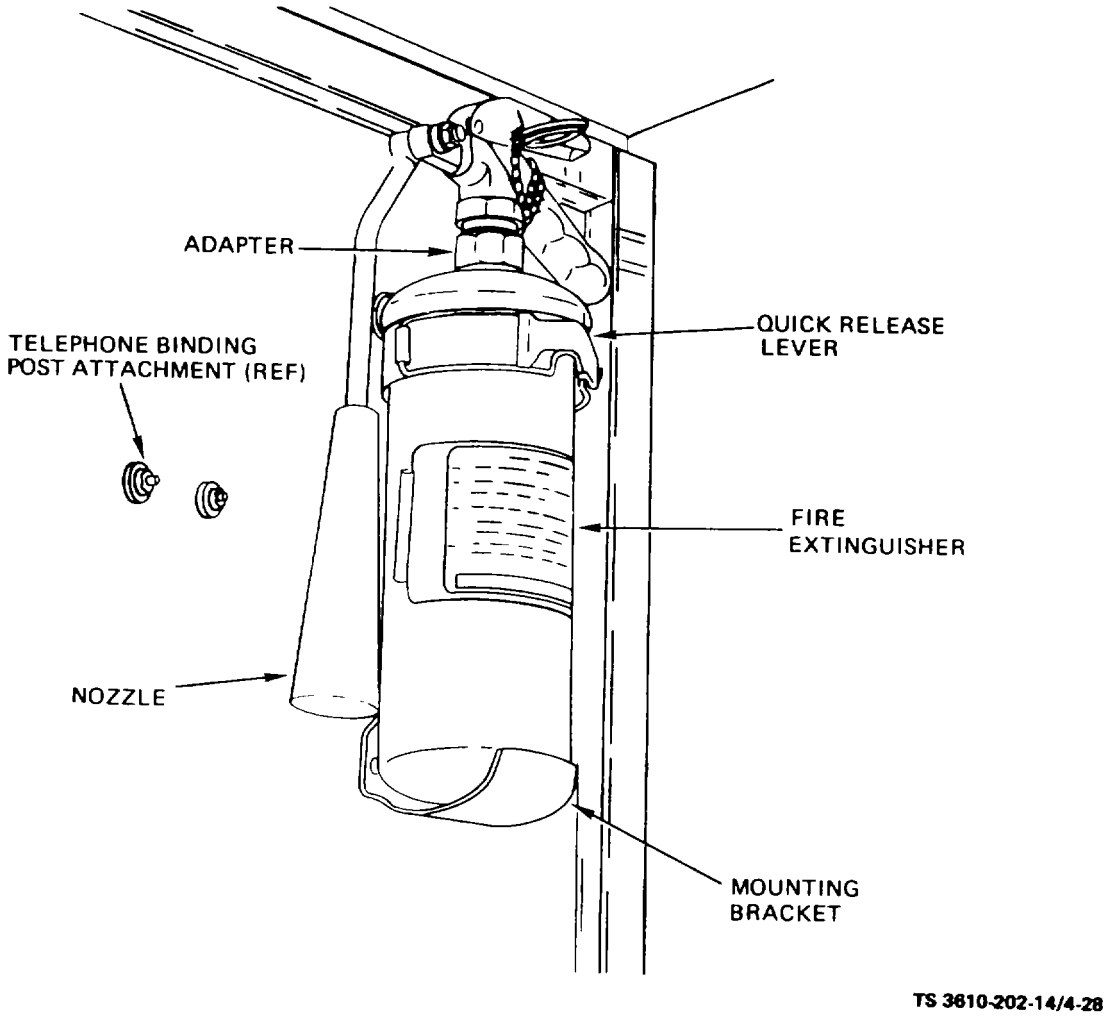

Figure 4-28. Fire Extinguisher, Removal and Installation

(2) Unscrew adapter and nozzle from the cylinder and discard the used cylinder.

c. Installation. Install fire extinguisher as follows:

(1) Lubricate threads on replacement cylinder with one drop of OE 30 oil and install adapter and nozzle assembly on cylinder.

(2) Position fire extinguisher in the fire extinguisher mounting bracket and lock the quick release lever.

Section XXII. MAINTENANCE OF FIRST AID KIT

4-48. General.

A first aid kit is furnished with the shelter for the use of the shelter personnel. It is mounted on the left-hand wall adjacent to the fire extinguisher. (See fig. 4-29.)

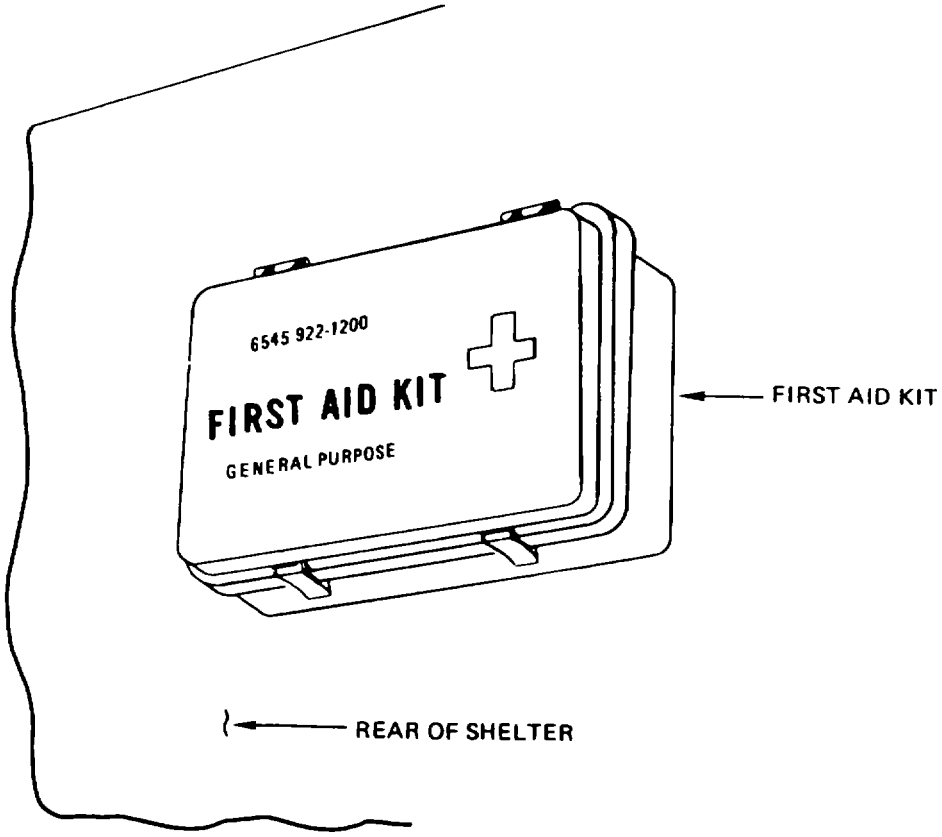

Figure 4-29. First Aid Kit

4-49. First Aid Kit.

a. Inspection. Inspect first aid kit for security and for condition of contents. Remove and replace first aid kit as required.

b. Removal. Remove the first aid kit from the shelter wall as follows:

(1) Remove contents from the first aid kit.

(2) Drill out four blind fasteners that secure the first aid kit to the wall of the shelter.

c. Installation. Install first aid kit on wall of shelter as follows:

(1) Remove contents of new first aid kit.

(2) Using heavy paper, construct a mounting hole location template by placing the paper on the defective first aid kit and marking mounting holes.

(3) Using the template as a guide, drill mounting holes in the replacement first aid kit.

(4) Install first aid kit on the shelter wall using four blind fasteners and four existing holes in the shelter wall.

(5) Replace contents of first aid kit and secure lid.

Section XXIII. MAINTENANCE OF SHELTER DOOR FILTER

4-50. General.

A removable foam-type air filter located near the center of the shelter door permits filtered outside air to enter the shelter when the door is closed and the hinged weather cover, mounted on the outside of the door, is open.

4-51. Shelter Door Filter.

a. Inspection. Inspect the door filter as follows:

(1) Inspect the filter for dirt which could

prevent the passage of air through the filter material.

(2) Inspect the filter for cuts, tears or other damage which would permit the passage of unfiltered air through the filter material.

(3) Inspect the filter frame assembly for security of attachment and proper mounting.

(4) Inspect filter for correct insertion into filter frame assembly.

b. Removal. If inspection indicates that replacement or cleaning of the filter is necessary, remove the unit as follows:

(1) Open the hinged exterior weather cover by releasing the fasteners. Secure the cover in the open position by means of the bracket-hinged retaining rod. (See fig. 4-30.)

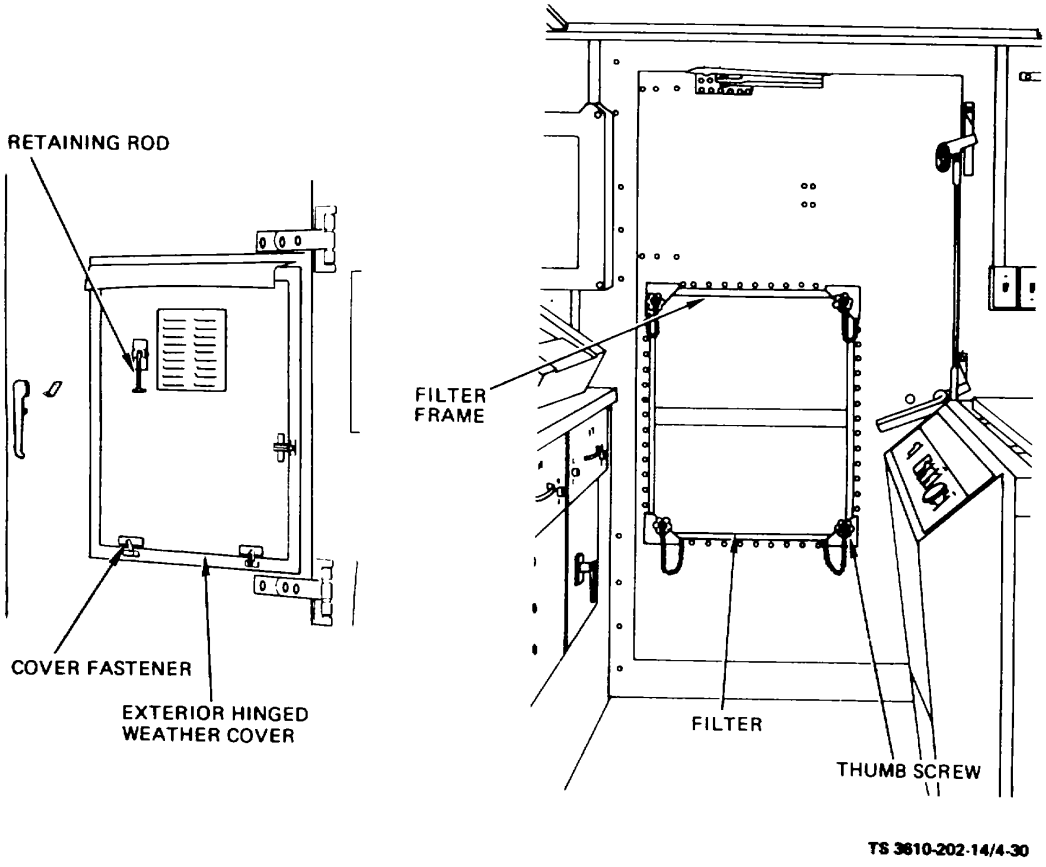

Figure 4-30. Shelter Door Air Filter, Removal and Installation

(2) Unscrew the chain-mounted thumbscrews until the filter frame is released.

(3) Remove the filter and frame assembly from the outside of the door.

(4) Remove the door air filter by pulling the foam material from the frame.

c. Cleaning. Clean the filter material by washing in a soap and water solution. Dry thoroughly and spray with air filter coater, NSN 4130-00-860- 0042.

d. Installation. Install the air filter assembly as follows:

(1) Insert the foam material under the bottom lip of the filter frame. Tuck in the remaining sides of the filter under the other three lips of the frame.

(2) Position the frame assembly from the outside of the door and secure the chain-mounted thumbscrews.

(3) Release the bracket hinged weather cover retaining rod and close weather cover.

(4) Secure the weather cover fasteners.

Section XXIV. MAINTENANCE OF LADDER

4-52. General.

A steel ladder, used to gain entry to the shelter when truck mounted, is located on the shelter wall, left of the shelter door. Two metal clamps are also attached to the ladder for securing while in use. (See fig. 4-31.)

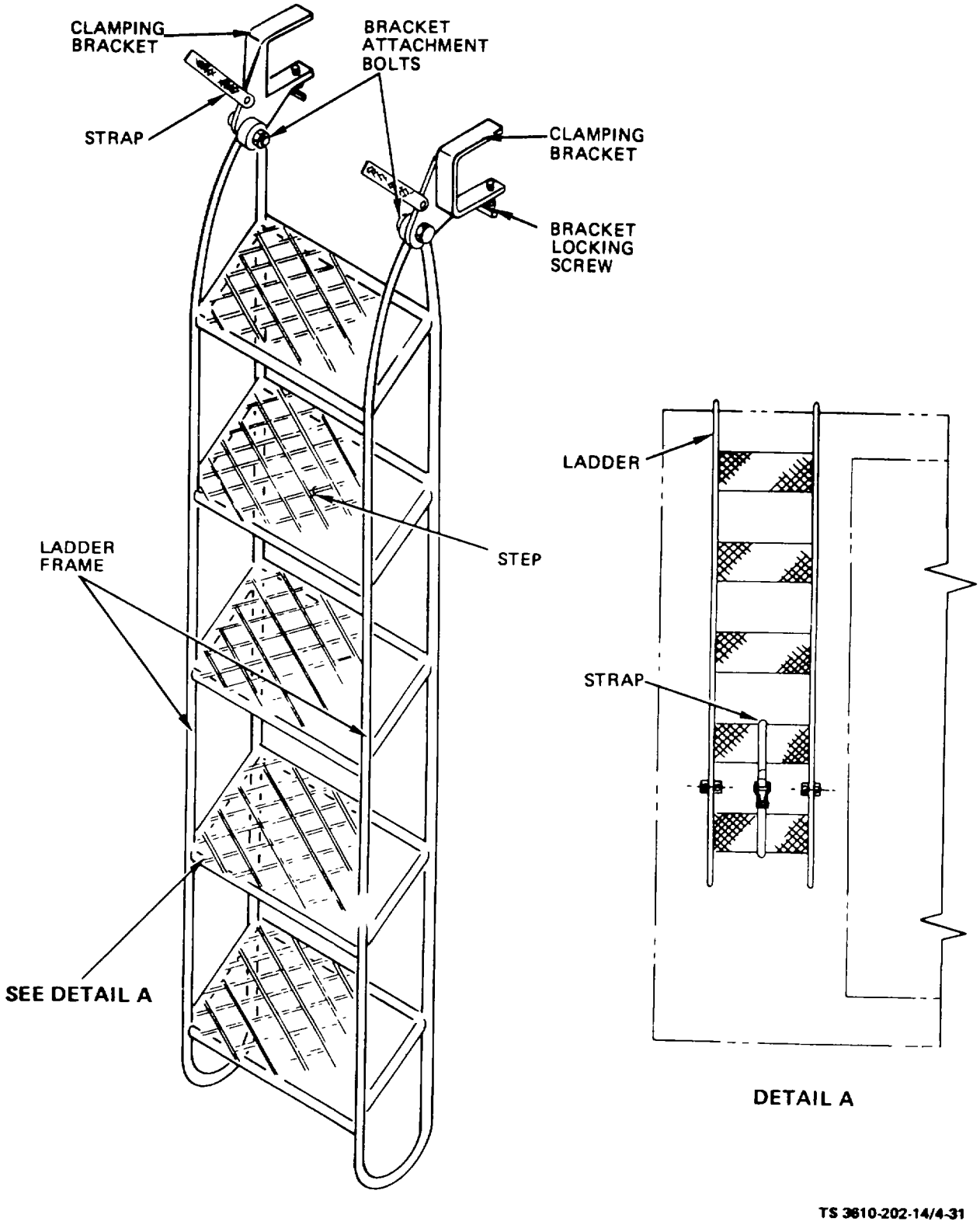

Figure 4-31. Ladder Assembly, Removal and Installation

4-53. Ladder.

a. Inspection.

(1) Inspect ladder for dents, cracks, bends or other damage.

(2) Ensure clamps are properly attached to ladder, and are not severely damaged.

(3) Replace any damaged parts as necessary.

b. Removal.

(1) Unbuckle retaining strap. (See fig. 4-31.)

(2) Lift ladder from mounting bracket and remove ladder from wall.

c. Repair. If ladder is to be repaired, the procedures are as follows:

(1) Remove dents on ladder steps.

(2) Remove dents on clamps or replace clamps as necessary.

d. Installation.

(1) Position ladder against wall and lower onto mounting bracket.

(2) Secure ladder with retaining strap.

Section XXV. MAINTENANCE OF LEVEL INDICATOR GAGE

4-54. General.

Two recessed level indicator assemblies are installed on the shelter. One gage is installed on the outside rear wall of the shelter to the left of the shelter door. The second is installed on the outer left hand wall of the shelter. The indicators are used to level the shelter during installation on uneven terrain.

4-55. Level Indicator Gage.

a. Inspection.

(1) Inspect the level gages for secure mounting, broken or cracked sight glass.

(2) Inspect for correct level indication by placing several levels in various locations and positions on the shelter floor and compare the headings with those of the shelter levels.

(3) Remove and repair as required. If replacement of the entire assembly is necessary, notify direct and general support maintenance.

b. Removal. Remove the two mounting screws and nuts that secure the gage to the mounting bracket and remove the gage. (See fig. 4-32.)

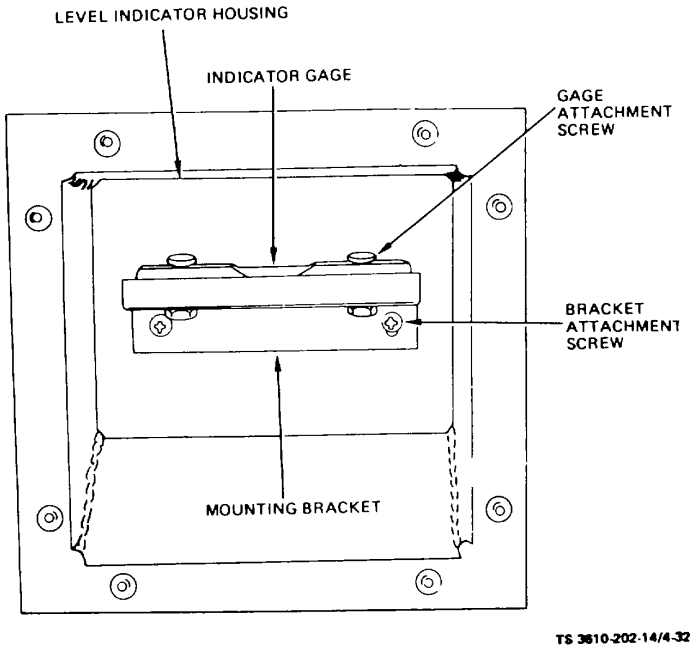

Figure 4-32. Level Indicator Gage, Removal and Installation

c. Installation.

(1) Install the gage; position the gage in the mounting bracket; install the two mounting screws and nuts and tighten nuts securely.

(2) Check gages for correct level indication by placing several levels in various locations and positions on shelter floor. Adjust shelter level gages accordingly.

Section XXVI. MAINTENANCE OF FLUORESCENT LAMPS

4-56. General.

Two rows of fluorescent lamps are installed along the ceiling of the shelter; five lamps on the left side and five lamps on the right side. They are controlled by two switchboxes located on the inside of the left-hand rear wall.

4-57. Fluorescent Lamps.

a. Removal. To remove a fluorescent lamp, grasp the lamp tube, rotate it 90 degrees, and remove from sockets. (See fig. 4-33.)

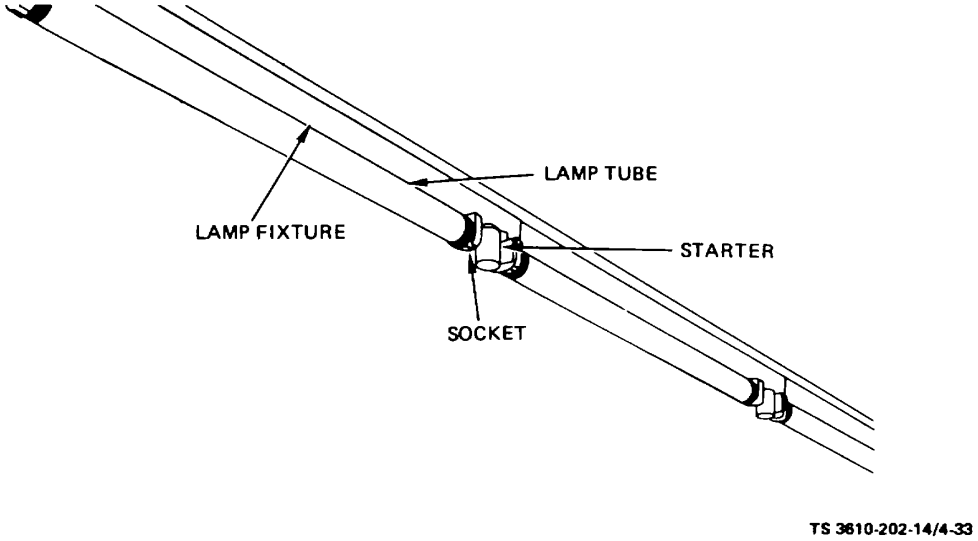

Figure 4-33. Fluorescent Lamp Tube Replacement

b. Installation. To install a fluorescent lamp, place the replacement lamp below the sockets with the pins vertical, insert the lamp into the sockets, and twist the lamp until the pins lock into position.

Section XXVII. MAINTENANCE OF LAMP SWITCHES

4-58. General.

The fluorescent lamp switches are mounted in two switchboxes on the inside of the left-hand rear wall. The switches are used to control the two rows of fluorescent lamps located along the shelter ceiling.

4-59. Lamp Switches.

a. Inspection. Check the fluorescent lamp switches for proper operation, loose connections, and excessive wear. Remove and replace as required. Inspect the switchbox cover for secure mounting.

b. Removal. Remove the fluorescent lamp switches as follows:

(1) Position the LIGHTS circuit breaker to off.

(2) Remove the two screws that secure the switchbox cover to the switchbox and remove the cover. (See fig. 4-34.)

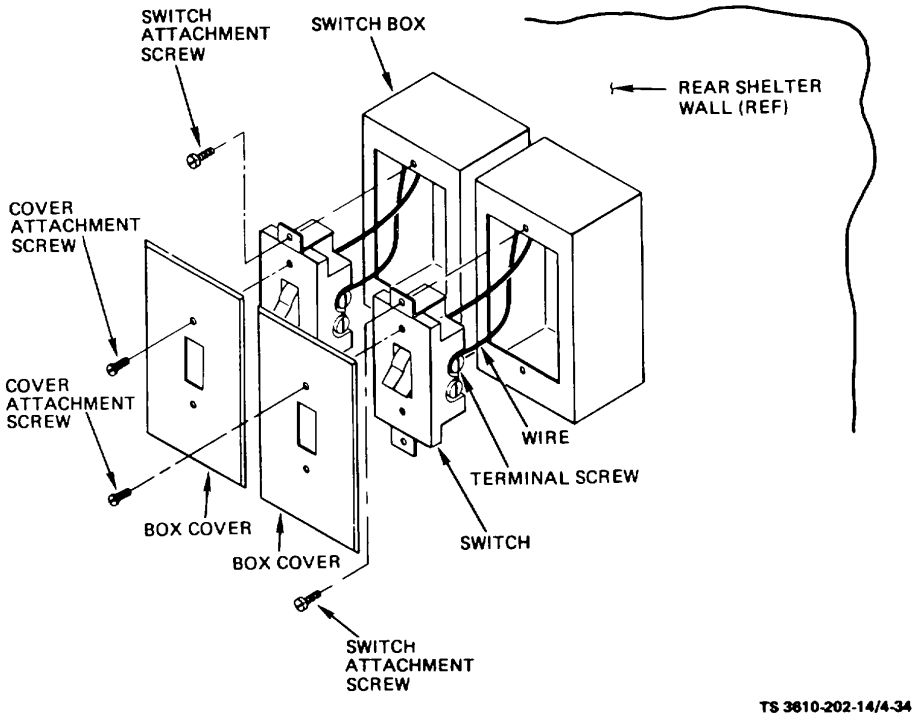

Figure 4-34. Fluorescent Lamp Switches, Removal and Installation

(3) Remove the two capscrews that secure the switch in the switchbox, and pull the switch from the switchbox.

(4) Tag and disconnect the wires from the switch.

c. Installation. Install the replacement light switch as follows:

(1) Connect the wires to the switch and remove the tags.

(2) Install the switch in the switchbox and secure it in the switchbox with two capscrews.

(3) Install the switchbox cover on the switchbox and secure it with two screws.

(4) Position the LIGHTS circuit breaker to the ON position.

Section XXVIII. MAINTENANCE OF EQUIPMENT RECEPTACLES

4-60. General.

Equipment receptacles are located in the conduits on both left and right walls of shelter. The receptacles are used as a power supply source for the electrical components used in conjunction with the shelter. The receptacles may also be used as convenience outlets.

4-61. Equipment Receptacles.

NOTE
Inspection and repair procedures are identical for all equipment receptacles.

a. Inspection. Inspect the equipment receptacles for secure mounting, broken or cracked body, and proper cover installation. If necessary, repair defective units by replacing receptacle.

b. Removal. Remove equipment receptacle as follows:

(1) Position applicable RECEPTACLES circuit breaker to off.

(2) Remove screws that attach receptacle cover to conduit. (See figure 4-35.)

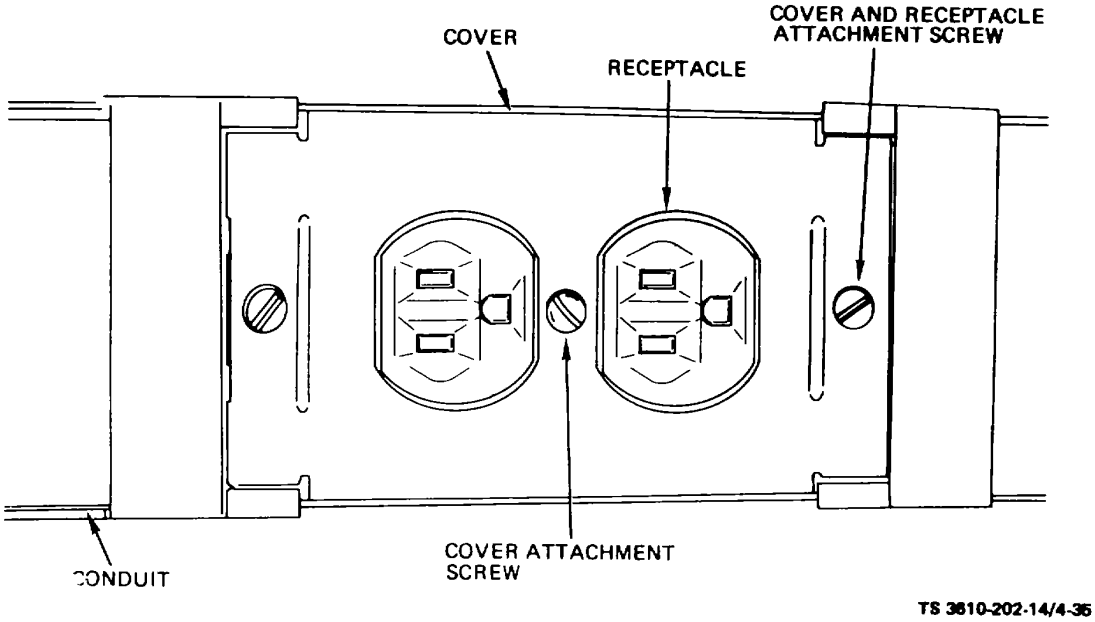

Figure 4-35. Equipment Receptacles, Removal and Installation

(3) Pull receptacle from conduit . g and disconnect wires, and remove receptacle.

c. Installation. Install equipment receptacles as follows:

(1) Connect wires to receptacle and position receptacle in conduit.

(2) Position receptacle cover and secure with screws.

(3) Position applicable RECEPTACLES circuit breaker to on.

CHAPTER 5

DIRECT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

5-1. Special Tools and Equipment.
No special tools or equipment are required by direct and general support maintenance personnel for the maintenance of the editorial and photo- mechanical shelter.

5-2. Maintenance Repair Parts.
Repair parts and equipment are listed and illustrated in the repair parts and special tools list covering direct and general support maintenance in TM 10-3610-202-34P. Repair parts required for maintenance of the various items of equipment which form a part of the shelter system are defined in the applicable publication supplied with each unit.

5-3. Fabricated Tools and Equipment.

No fabrication of special tools and equipment is necessary for maintenance of the editorial and photomechanical shelter.

Section II. TROUBLESHOOTING

5-4. General.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the editorial and photomechanical unit of the special warfare printing plant. Each malfunction for an individual component, unit or system is followed by a list of tests or inspections which will help you to deter- mine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

5-5. Troubleshooting.

Refer to table 5-1 for troubleshooting information and procedures applicable to the editorial and photomechanical shelter system and components.

Table 5.1. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
SHELTER SYSTEM COMPONENTS
1. LIGHT TABLE GEAR TRACK NOT OPERATING CORRECTLY.
Inspect gear track assembly in accordance with applicable commercial publication.
If necessary, replace defective gear track assembly in accordance with applicable commercial publication.

Table 5-1. Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS (Con't)

2. FILM DRYER DOES NOT DRY PROCESSED FILM.

Inspect film dryer for damage and general condition.
If necessary, replace defective film dryer as described in paragraph 5-14.

3. NO HOT WATER AT FAUCET.

Inspect immersion heater as follows:
Remove cap from water heater and check switch for continuity with a multimeter.
If water heater is found defective, replace a required.

4. AIR CONDITIONING UNIT DOES NOT HEAT

Step 1. Inspect air conditioner control box function switch as follows:
a. Position the AIR CONDITIONER circuit breaker to off.
b. Disconnect the electrical cable which extends between the control box and the air conditioner at the air conditioner connector.
c. Remove the cable clamps which secure the control box cable to the shelter wall.
d. Remove the screws and lockwashers which attach the control box to the shelter wall and remove the box complete with cable.

CAUTION

Extreme care must be exercised while performing maintenance on humidistats and/or thermostats. They are designed to operate within a very small change in temperature and will easily become maladjusted.

e. Check the function switch to ensure correct control operation and smooth rotation to each switch position. If necessary, repair or replace as described in paragraph 11-3.

Step 2. Test for defective heating elements as described in paragraph 11-1. Replace defective elements as necessary

5. BLACKOUT WARNING BUZZER WILL NOT ACTIVATE WHEN SWITCH DEPRESSED.

Step1. Inspect main power service box for correct positioning of BLACKOUT BUZZER circuit breaker. Position BLACKOUT BUZZER circuit breaker to on.
Step 2. Inspect for correct electrical connection at buzzer as follows:
a. Position BLACKOUT BUZZER circuit breaker in main power service box to on.
b. Remove the screws that attach the buzzer cover to the base and remove the cover.
c. Using a suitable meter or test light, check for continuity at wire connections when blac kout warning switch is depressed. If necessary, replace defective buzzer as described in paragraph 12-2.

Step 3. Inspect for correct electrical connection at BLACKOUT WARNING switch as follows:
a. Remove three nuts, lockwashers and bolts that secure the cover to the housing. Loosen the fourth nut and allow the cover to swing down.
b. Using a suitable meter or test light, check for continuity at wire connections when blackout warning switch is activated. If necessary, replace defective switch as described in paragraph 12-2.

Table 5-1. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS (Con't)

6. UNABLE TO MAKE TELEPHONE CONNECTION WITH OTHER UNITS OF THE SPECIAL WARFARE PRINTING PLANT.

Inspect for one or more defective telephone binding posts. If necessary, replace defective binding posts as described in paragraph 14-2.

7. NO ELECTRICAL POWER TO SHELTER SYSTEM.

Step1. Inspect for generator set power source not operating. Start the generator set in accordance with the applicable Department of the Army Technical Manual
Step 2. Inspect for circuit breakers not positioned to on. Position applicable circuit breakers to on.
Step 3. Check that main power cable is correctly connected at main power receptacle. (See fig. 5-1.)

Table 5-1. Troubleshooting (Con't)

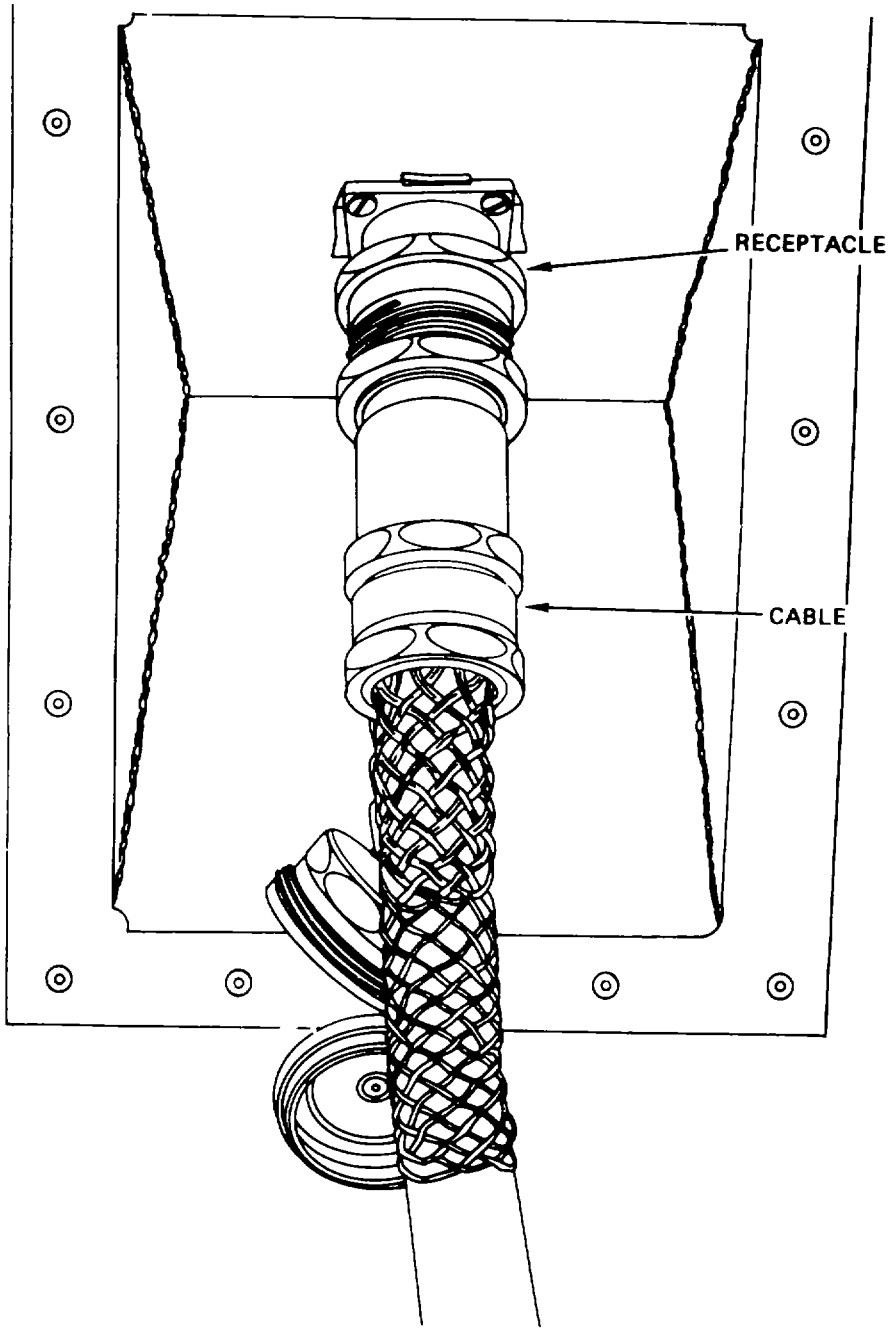

Figure 5-1. Main Power Cable and Receptacle

Table 5-1. Troubleshooting (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS (Con't)

WARNING

Do not perform any electrical maintenance or make any electrical connection or disconnection at the main power receptacle while the generator set engine is running.

a. Connect the primary power cable to the input power receptacle located near the door of the shelter.
b. The cable connector and the receptacles are keyed to ensure proper connection. The leads of the power cable are color coded as follows:
Phase A - black - Pin 1
Phase B - red - Pin 2
Phase C - green - Pin 3 (marked with blue band)
Neutral - white - Pin 4

Step 4. Inspect main power cable for continuity as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Generator set must be turned off before making connections.

a. Disconnect power cable from receptacle.
b. Cover receptacle with receptacle cover.
c. Start generator set power source in accordance with the applicable technical manual.
d. Using a suitable test meter, check for continuity across power cable leads. If necessary, repair or replace defective power cable as described in paragraph 17-2.

Step 5. Inspect main power receptacle for pin damage or faulty wiring as necessary.
If necessary, replace or repair main power receptacle as described in paragraph 18-2.

Table 5-1. Troubleshooting (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

SHELTER SYSTEM COMPONENTS (Con't)

8. CIRCUIT BREAKER WILL NOT REMAIN IN ON POSITION.

Step 1. Inspect the component served by the circuit breaker concerned for electrical defects in accordance with the applicable commercial manual.
If necessary, rectify any defects in accordance with the applicable commercial manual.

Step 2. Inspect circuit breaker involved for failure.
If necessary, replace circuit breaker as described in paragraph 19-2

9. SHELTER LIGHTING COMPONENT FAILURE.

Step 1. Inspect the main power service box for LIGHTS circuit breaker positioned to off.
If necessary position LIGHTS circuit breaker in service box to on.

SHELTER SYSTEM COMPONENTS (Con't)

Step 2. Inspect for failure of fluorescent lamp starter.
If necessary, replace defective lamp starter as follows:
a. Rotate the starter counterclockwise and remove from starter socket.
b. Insert serviceable starter and rotate clockwise until the starter locks.

Step 3. Inspect for failure of fluorescent lamp ballast as follows
a. Position the LIGHTS circuit breaker in the main power service box to off.
b. Grasp fluorescent lamp tube, rotate 90 degrees and lower from tube sockets.
c. Rotate the starter counterclockwise and remove from starter socket.
d. Using a thin bladed screwdriver or similar tool, carefully lever the light assembly away from the ceiling light channel. (See fig. 5-2.)

Table 5-1. Troubleshooting (Con't)

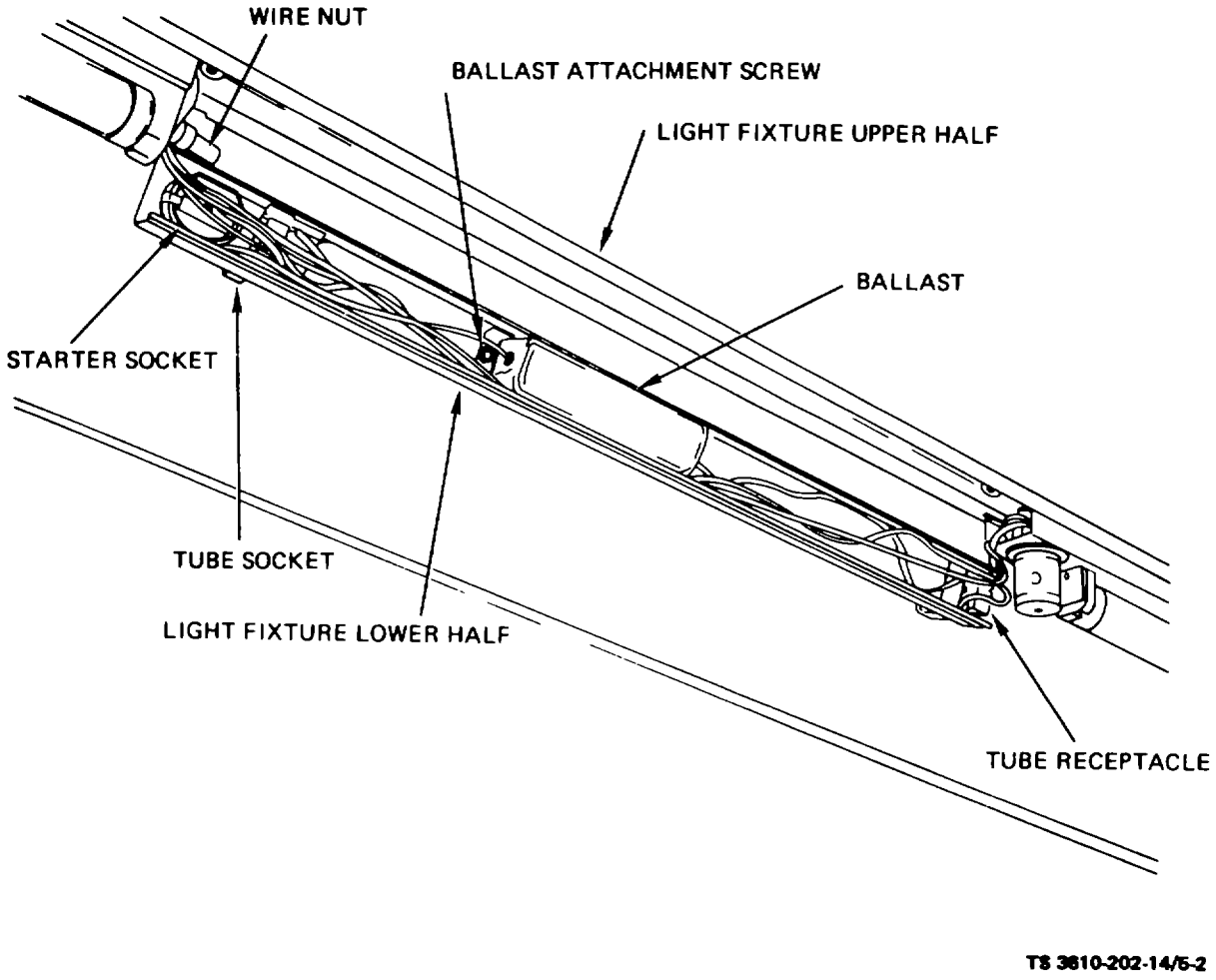

Figure 5-2. Fluorescent Lamp Ballast

Table 5-1. Troubleshooting (Con't)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
SHELTER SYSTEM COMPONENTS (Con't)
e. Insert serviceable starter into socket and rotate clockwise until the starter locks. f. Position lamp tube below socket receptacles with pins vertical. Insert lamp into sockets and twist until pins lock. g. Position the LIGHTS circuit breaker in the main power service box to on. h. Using a suitable test meter and probe, check operation of ballast unit. If necessary, replace defective lamp ballast as described in paragraph 20-2.

Section III. GENERAL MAINTENANCE

5-6. General.

The instructions contained in this chapter are for the use of direct and general support personnel responsible for maintenance of the editorial and photomechanical shelter unit of the special warfare printing plant.

5-7. General Maintenance Procedures.

Procedures for general repair and maintenance are defined where they occur during the performance of maintenance activity covered by the various sections and paragraphs of this chapter. Maintenance procedures for the items of equipment which form a part of the shelter system are included in the various commercial manuals supplied with the equipment. Refer to TB 750-240 for maintenance and repair procedures pertaining to the shelter itself.

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS AND ASSEMBLIES

5-8. Platemaker.

a. The electrically operated NuAr 18V plate- maker is shock mounted and ready for operation when the power cord is inserted into the applicable polarized wall receptacle. The flip-top vacuum printer frame is used to hold film securely against a sensitized plate while the image on the film is being printed on the plate. The vacuum for the flip-top printing frame is developed by a vacuum pump.

b. Due to installation requirements, the blower unit, used to ventilate the machine, which is normally mounted on the external side of the rear panel, is now located within the lower compartment. The method of gaining access to the arc lamp mechanism is normally obtained by removing the rear panel of the unit; this method is impractical for this installation. To gain access to the mercury vapor lamp mechanism, which is located directly above lower compartment, position flip-top frame in a vertical position to expose the lamp reflector. Remove the lamp reflector within the unit to expose the lamp mechanism for cleaning and replacement of vapor lamp tube.

WARNING

The mercury vapor lamp should not be operated above 110 of rated voltage. Such operation increases pressure within the lamp which could cause a tendency to shatter with subsequent ultraviolet output causing skin and eye irritation.

CAUTION

To avoid mercury vapor lamp failure, white gloves should be worn when handling the glass portion of the tube, to prevent transfer of fingerprints to the glass, and subsequent decrease of lamp efficiency.

c. Removal. Remove the offset platemaker as follows:

(1) Disconnect platemaker from electrical receptacle.

(2) Remove the two nuts which attach platemaker lower front cover and remove cover. (See fig. 5-3.)

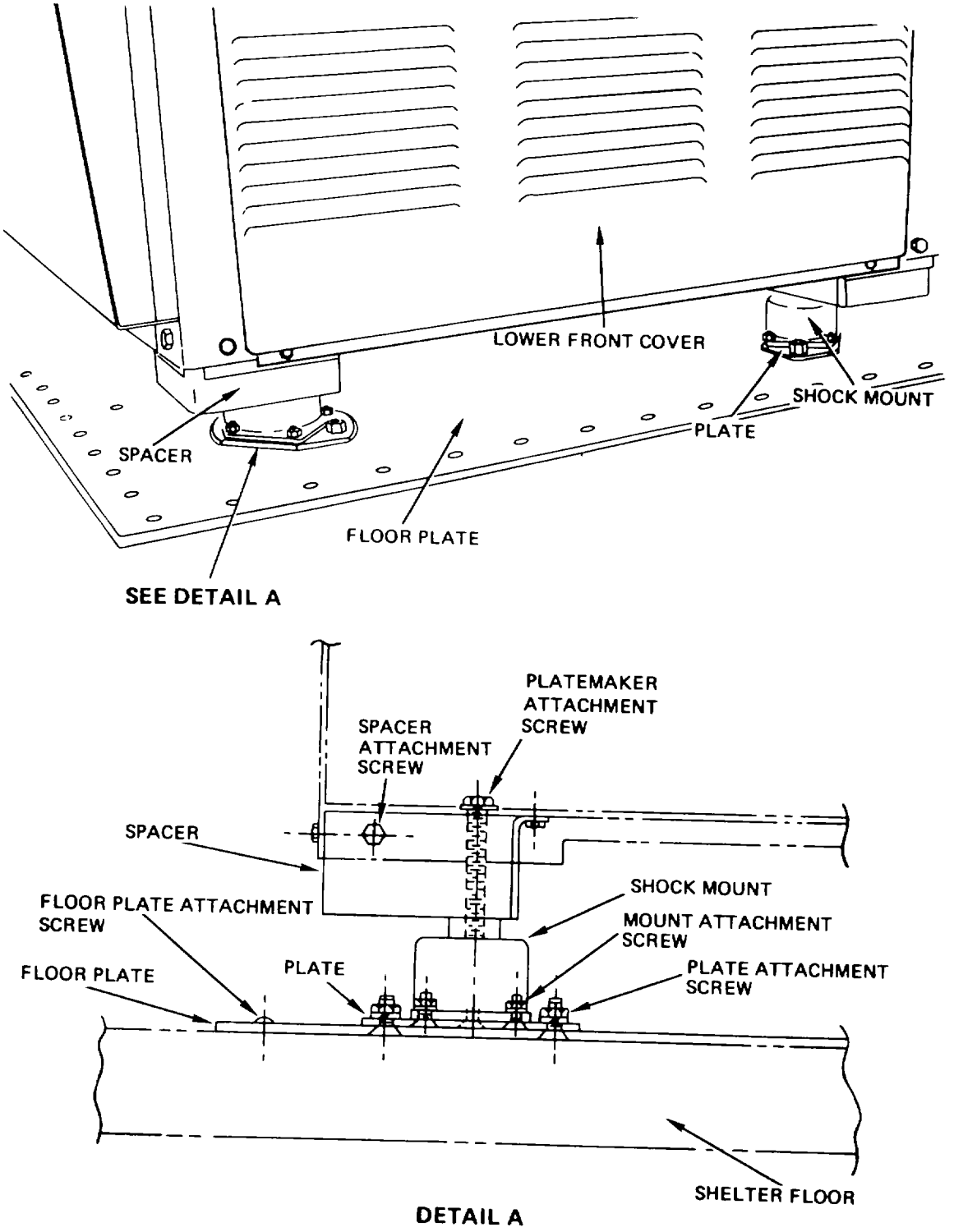

Figure 5-3. Platemaker, Removal and Installation

(3)Remove the four bolts and washers which attach the platemaker to the shelter floor mounting points.

(4) Carefully move the platemaker away from the shelter wall so as to clear the shock mounts, file cabinet, and light table. Remove the platemaker from the shelter.

(5) Remove the bolts, washers and nuts which attach the support leg to each corner of the platemaker and remove the legs.

(6) Remove the screws which attach the stainless steel tray type duct at the rear of the platemaker and remove the duct. (See fig. 5-4.)

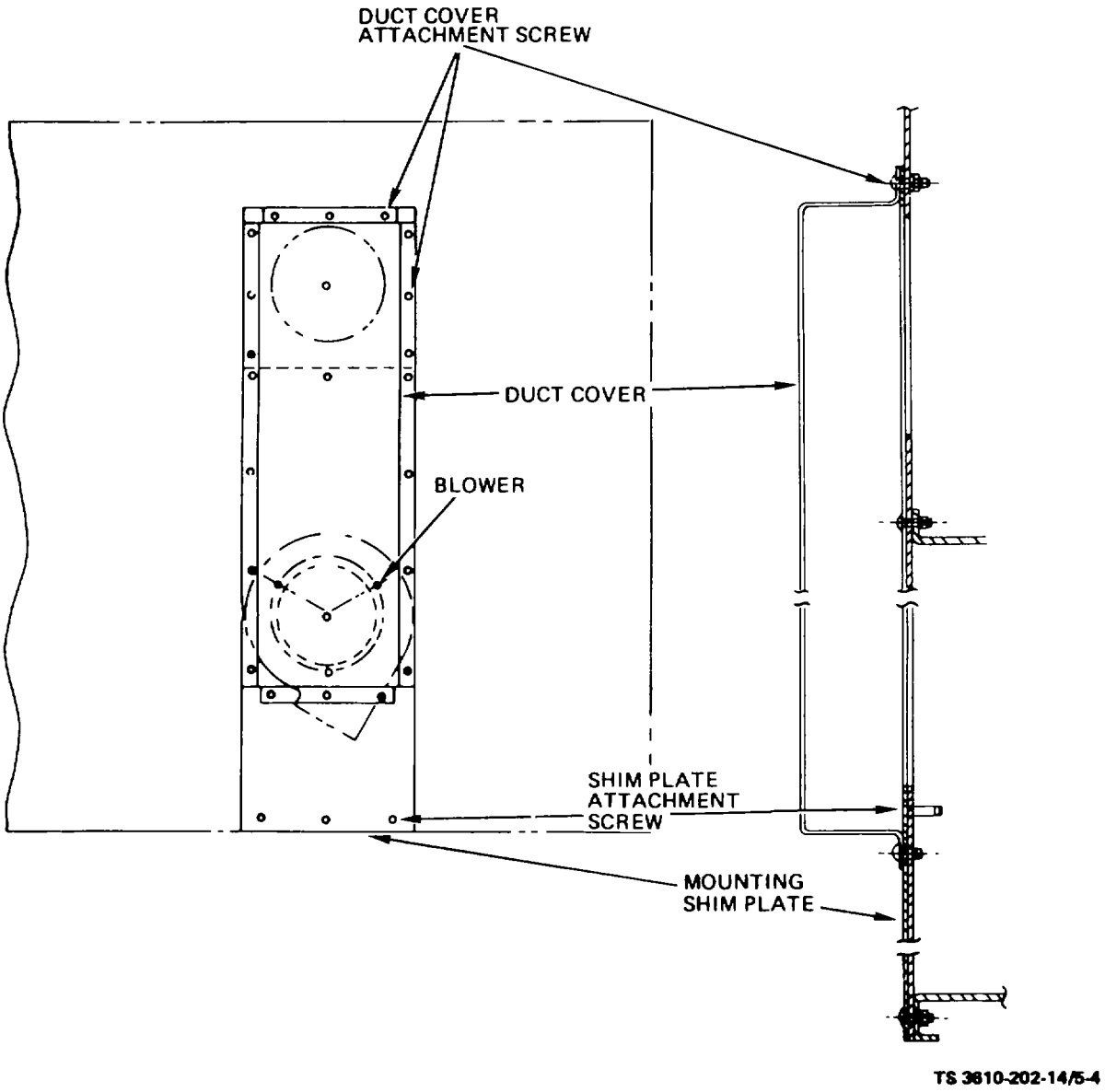

Figure 5-4. Duct and Blower Motor, Removal and Illustration

(7)Remove the bolts which attach the lower metal shim at the rear of the unit and remove the shim.

(8) Note and record wire positions on blower motor receptacle and disconnect wires.

(9) Remove blower motor receptacle.

(10) Position the platemaker lower front cover and install the attaching screws, washers and nuts.

d. Installation. Install the replacement offset platemaker as follows:

(1) Remove the two nuts, which attach the platemaker lower front cover and remove the cover.

(2) Position the support leg to each corner of the platemaker and install the attaching bolts, washers and nuts.

(3) Disconnect blower motor lead from external receptacle.

(4) Remove the screws which attach the pump at the upper rear of the platemaker and remove the pump.

(5) Obtain measurements from defective platemaker and using a suitable drill, drill a new pump intake hole and pump mounting holes.

(6) Remove the two screws which attach the blower motor receptacle and from inside platemaker, pull receptacle to inside of unit.

(7) Obtain measurements from defective platemaker and, using a suitable drill, drill mounting holes for stainless steel duct and shims.

(8) Position blower motor inside unit with housing outlet pointing toward left side of unit and install attaching screws.

(9) Using previously recorded wire configuration, install new blower motor plug.

(10) Position stainless steel duct and upper and lower shims at rear of unit and install attaching screws and bolts.

(11) Connect blower motor lead to replaced blower motor plug.

(12) Carefully move the platemaker into the shelter and position over the shelter floor mounting points.

(13) Install the four bolts and washers which attach the platemaker to the mounting points.

(14) Position the platemaker lower front and install the two attaching nuts.

(15) Check that all switches are in off or neutral position and connect platemaker power cord to electrical receptacle.

5-9. Light Table Assembly.

A light table assembly, located on the left side of the shelter next to the platemaker, is supplied for tracing, artwork, and opaquing negatives. The light table consists of a metal shell which encases the fluorescent lamp mechanism. The light table glass forms a part of the lid. A straightedge assembly with integral rotary gears is mounted on two gear tracks, one on each side of the glass. (See fig. 5-5.)

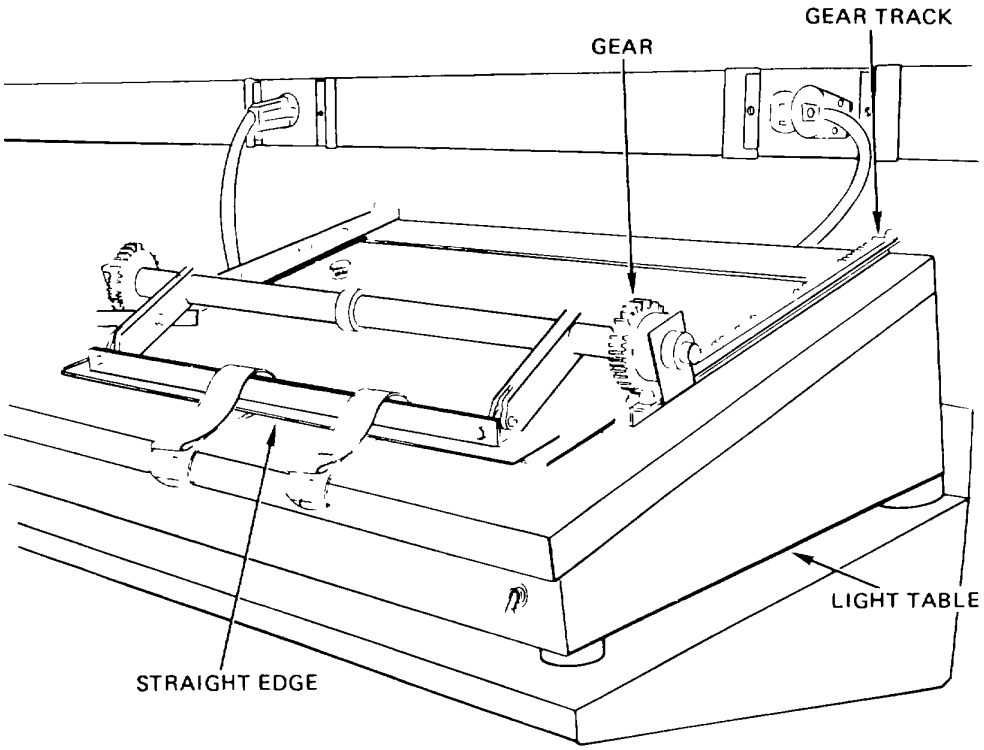

Figure 5-5. Light Table Assembly

a. Removal. Remove the light table assembly as follows:

(1) Remove four wingnuts and washers that secure the light table assembly to the light table shelf and remove the light table assembly from the shelter.

(2) Open the light table cover assembly and remove the four nuts and washers that secure the mounts to the bottom of the light table assembly and remove the mounts.

b. Installation. Install the light table assembly as follows:

(1) Match drill four holes in the bottom of the light table assembly and install previously removed mounts on light table assembly and secure with four nuts and washers.

(2) Position light table assembly on light table shelf and secure with four wingnuts and washers.

5-10. Light Table Shelf.

The light table shelf is of sheet metal construction and is located on the left-hand wall of the shelter next to the platemaker; it supports the light table assembly.

a. Inspection. Inspect the light table shelf for security of attachment and general condition. Replace as necessary.

b. Removal. Remove the light table shelf as follows:

(1) Remove the four wingnuts and washers that secure the light table assembly to the light table shelf and remove the light table assembly. (See fig. 5-5.)

(2) Drill out the blind fasteners that secure the light table shelf to the wall of the shelter. (See fig. 5-6.)

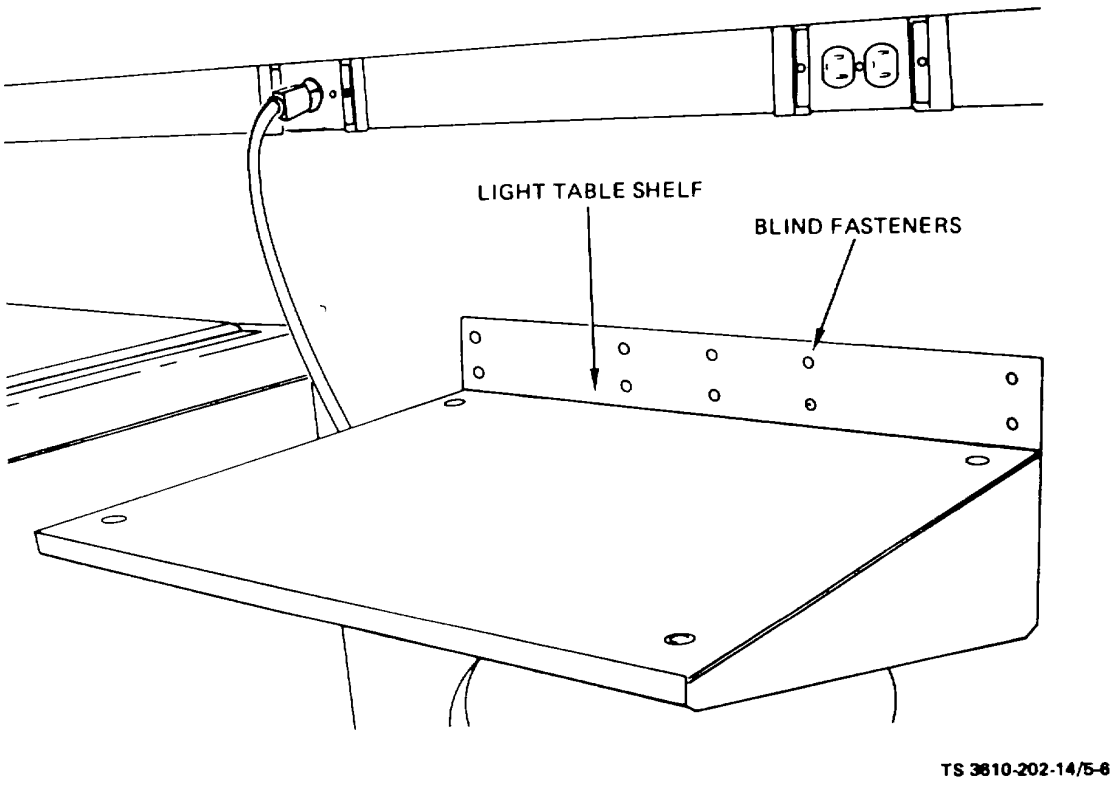

Figure 5-6. Light Table Shelf, Removal and Installation

c. Installation. Install the light table shelf as follows:

(1) Using heavy paper, construct a template by marking mounting holes from removed shelf.

(2) Match drill replacement light table shelf from template.

(3) Secure light table shelf to the wall of the shelter with blind fasteners utilizing existing holes in the wall of the shelter.

(4) Position light table assembly on light table shelf and secure with four wingnuts and washers.

5-11. Camera.

The camera is a Goodkin vertical process 18-inch unit equipped with an 8.25 in. focal length wide- angle color corrected lens. Recalibration of the lens is accomplished by adjustment of the calibration tapes for the lens and copyboard. Two vacuum pumps are provided with the camera. The pump to the right of the camera, controlled by a foot pedal, is connected by means of a flexible hose to the under- side of the copyboard. During operation this pump provides the vacuum for even contact for the material to be reproduced. The pump to the left of the camera, controlled by the camera power switch, is connected by means of a flexible hose to the film case and provides vacuum for even contact of the film during exposure. Camera lighting is supplied by four 650 watt quartz lamps located in two housings, bracket mounted, one on each side of the copy-board base. A one-piece conical bellows serves as a light-tight seal between the lens case and the film case. Camera controls and timer are located in a control panel installed on top of the equipment. The camera lens is removed and placed on a bracket in the inverted position during camera moving.

CAUTION

Never leave lens bellows extended when the camera is not in use. Retract bellows so as to maintain folds in correct position.

a. Removal. Remove the process camera as follows:

(1) Disconnect the camera electrical connector from the wall receptacle.

(2) Disconnect the vacuum hoses from the film holder and copyboard adapters.

CAUTION

To prevent damage to camera lens, store lens in the inverted storage position before moving camera.

(3) Store camera lens.

(4) Disconnect the two camera light electrical connectors from the rear of the camera.

(5) Unlatch the retaining straps securing the camera left light to the shelter wall, if required.

(6) Unlatch the retaining straps securing the right camera light to the camera light holddown, if required.

(7) Remove the attaching bolts securing the camera light holddown bracket to the shelter floor, if required.

(8) Remove the bracket.

(9) Raise the camera bellows.

(10) Remove the four attaching bolts securing the camera base to the mounts. (See fig. 5-7.)

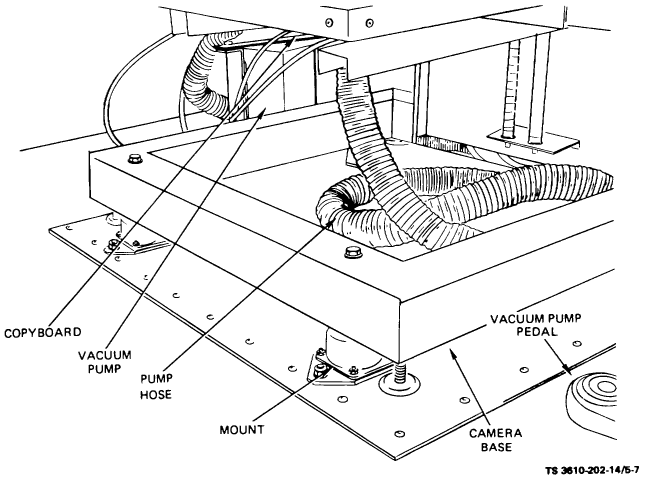

Figure 5-7. Camera, Removal and Installation

(11) Using an Allen wrench, loosen the camera light arms retaining studs.

(12) Position both camera lights in as far as possible.

(13) Carefully slide the camera toward the center of the shelter.

(14) Remove both camera light assemblies and place in protected area.

(15) Disconnect vacuum pump connectors at rear of camera.

(16) Turn the front of the camera toward the shelter door.

CAUTION

The camera should be removed very carefully because of the close proximity of other shelter components.

(17) Using two men, carefully remove the camera from the shelter.

(18) Remove the screw attaching the film case cover retaining clamp and remove the clamp. (See fig. 5-8).

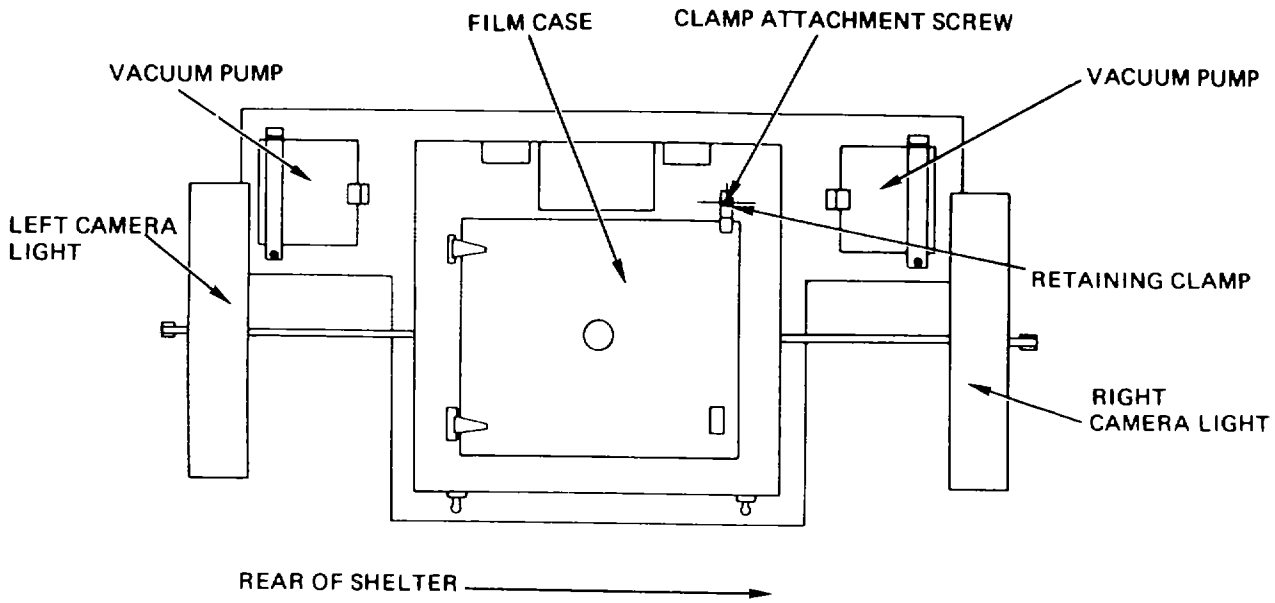

Figure 5-8. Camera Film Case Retaining Clamp, Removal and Installation

b. Installation. Install the camera as follows:

(1) Assure that the bellows is retracted and both camera lights are installed.

(2) Position the camera so that the aft side faces the shelter door.

CAUTION
The camera should be moved very carefully because of the close proximity of other shelter components.

(3) Using two men, place the camera in the forward portion of the shelter.

(4) Position the camera, with the back toward the right shelter wall, on the four shock mounts.

(5) Secure camera base to the shock mounts using four attaching bolts.

(6) Move left camera light out against the forward shelter wall and secure with attaching straps, if required.

(7) Position the camera light holddown bracket over the two floor receptacles and secure with attaching bolts, if required.

(8) Move camera light out to bracket and secure with attaching straps, if required.

(9) Drill and tap a film case cover retaining clamp attachment hole in accordance with figure 5-9.

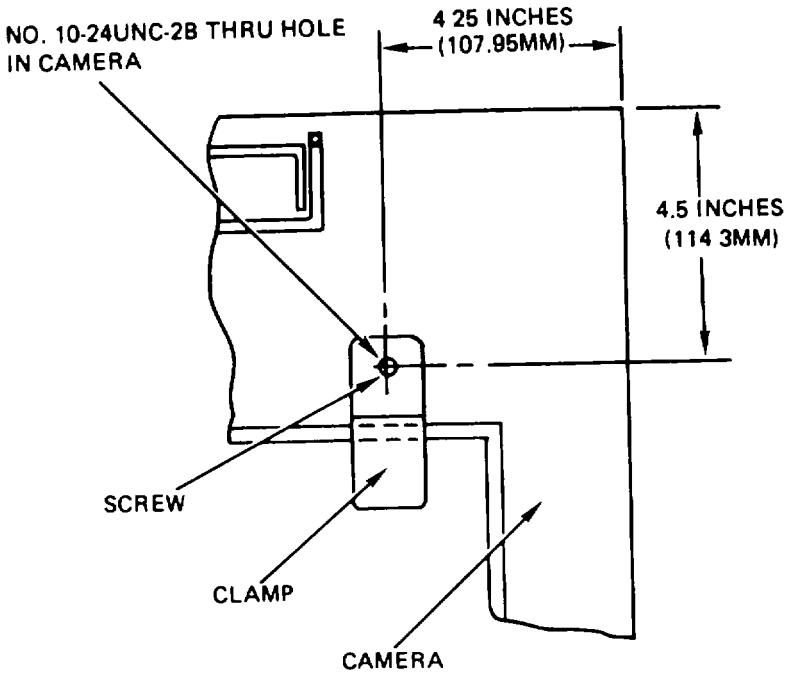

Figure 5-9. Modifying Camera For Film Case Clamp

(10) Position the retaining clamp with the recessed end over the film case cover and the clamp mounting hole over the hole provided in the camera at the right rear corner of the film case and install the attaching capscrew.

(11) Connect camera light and vacuum pump electrical connectors at rear of camera.

(12) Connect the vacuum hoses to the film holder and copyboard adapters.

(13) Connect the camera electrical connector to the wall receptacle.

(14) Remove lens from stored position and install.

(15) Calibrate the camera in accordance with the applicable commercial manual.

5-12. Vacuum Pumps.

Two vacuum pumps are furnished with the cam- era to supply vacuum at the copyboard and the film-holder. The right pump, controlled with a foot switch, provides vacuum for the copyboard. The left pump controlled with the camera main power switch provides vacuum for positive film contact during exposure. The pumps are connected to these components by means of two flexible hoses. Power for the vacuum pumps is supplied from an electrical connector at the rear of the camera.

a. Removal. Remove the vacuum pumps as follows:

NOTE
Removal procedures are identical for both vacuum pumps.

(1) Disconnect the camera electrical connector from the wall receptacle.

(2) Disconnect the vacuum hose from the adapter on top of the vacuum pump. (See fig. 5-10.)

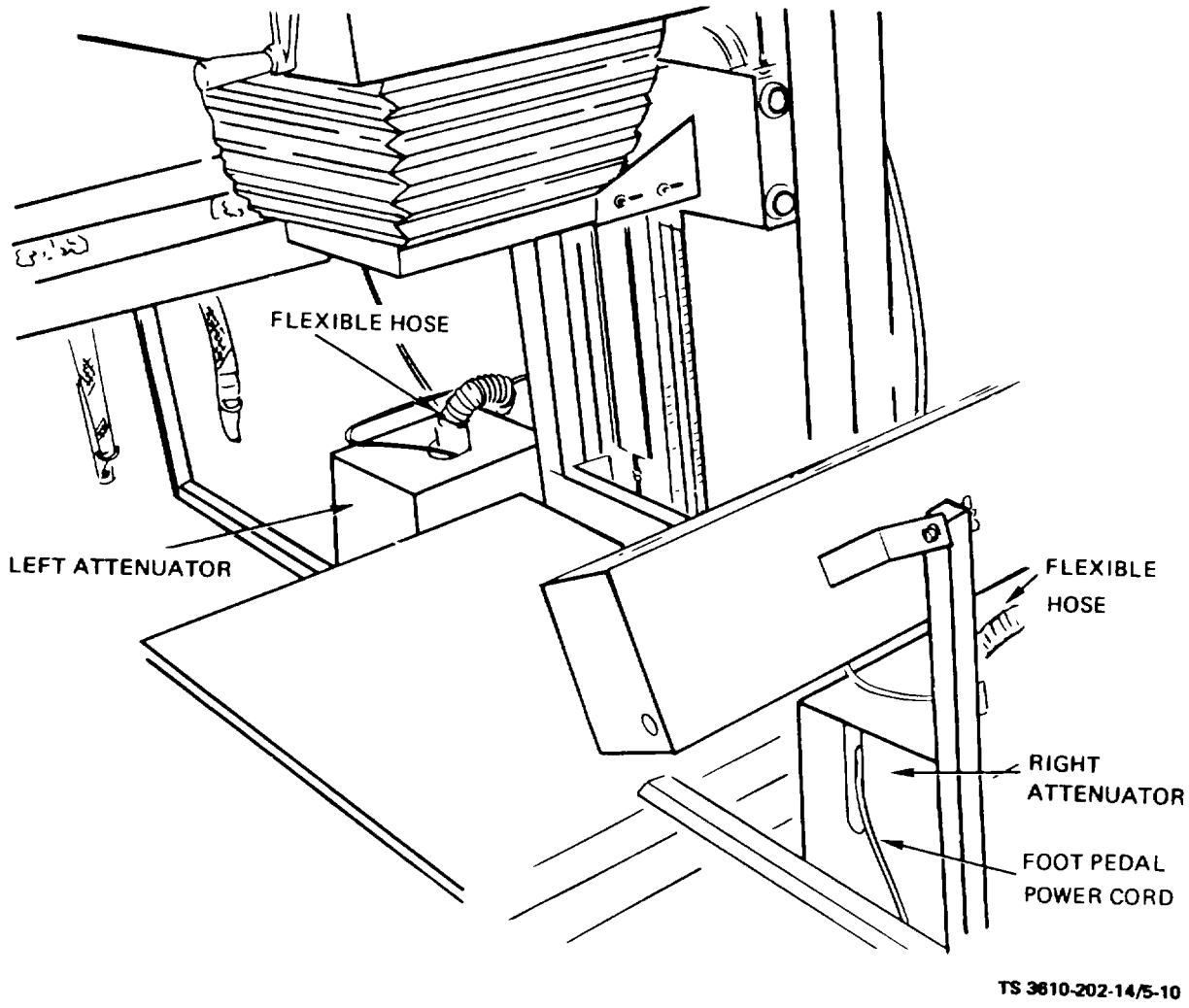

Figure 5-10. Vacuum Pump Sound Attenuator, Removal and Installation

(3) Remove the attenuator cover and position electrical cords inside the attenuator box.

(4) Lift the attenuator box vertically and remove.

(5) Disconnect vacuum pump connector at rear of camera.

(6) Unscrew the retaining stud securing the holddown on top of the pump. (See fig. 5-11.)

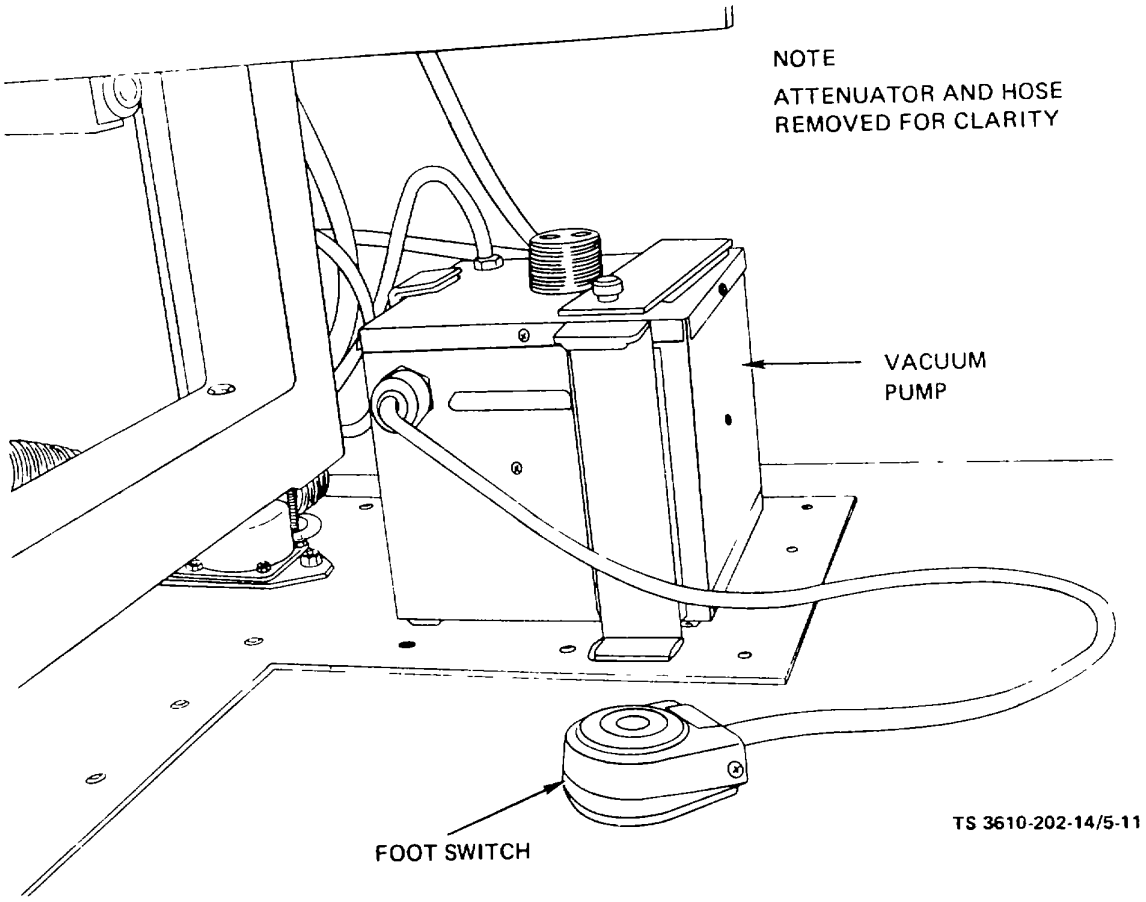

Figure 5-11. Right Vacuum Pump, Removal and Installation

(7) Move pump toward rear of shelter so as to clear forward retaining bracket and remove pump.

b. Installation. Install vacuum pumps as follows:

NOTE
Installation procedures are identical for both vacuum pumps

(1) Position pump between rear support brackets and slide pump toward front of shelter until entered into forward retaining bracket.

(2) Hinge down the top holddown over the rear end of the pump and secure the retaining stud.

(3) Place attenuator box over pump and bring electrical cords up through box and place in slot on side of box.

(4) Lower box over pump and install cover.

(5) Connect flexible vacuum hose to pump flange and secure with attaching clamp.

(6) Connect vacuum pump electrical connector at rear of camera.

(7) Connect the camera electrical connector to the wall receptacle.

5-13. Camera Lamp Holddowns.

Each camera lamp assembly can be secured when the equipment is not in use or during shipment and storage. The left light is retained by means of two retaining straps attached to corresponding fastener loops installed on the front wall of the shelter. The right light is retained by means of two retaining straps which pass around a U-shaped holddown bracket secured to the floor of the shelter immediately below the lamp assembly. (See fig. 5-12.)

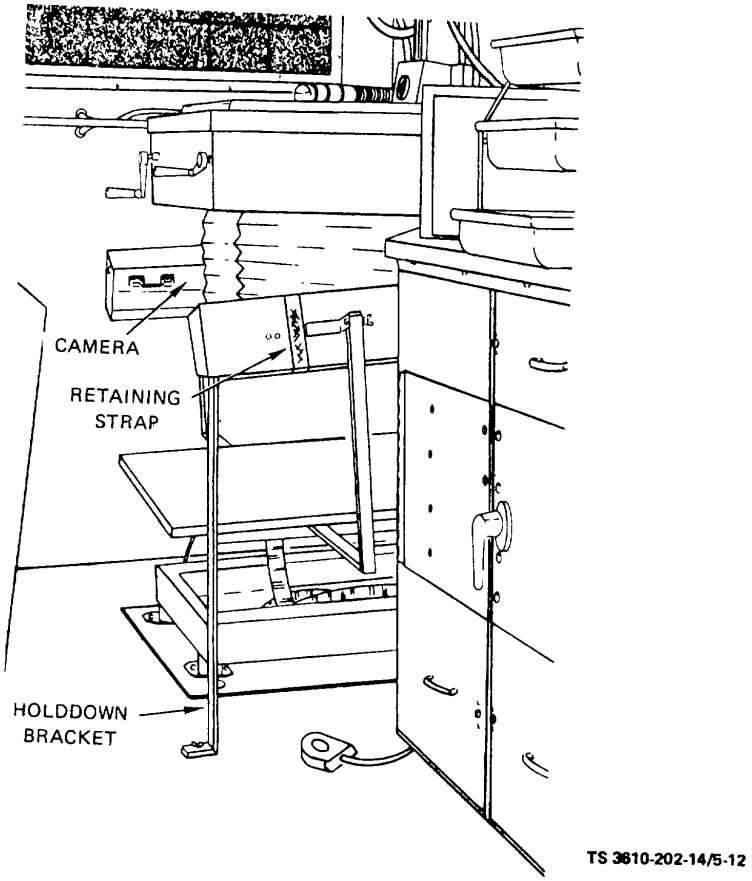

Figure 5-12. Rear Camera Lamp Holddown Bracket

a. Inspection. Inspect the camera lamp holddowns as follows:

(1) Inspect for proper security.

(2) Inspect the straps and buckles for general condition.

(3) Replace as necessary.

b. Left Lamp Holddown.

(1) Removal Remove the left lamp holddown as follows:

(a) Unlatch the retaining straps and loosen retaining stud; move lamp assembly clear.

(b) Remove the screws that attach the fastener loops to the shelter wall and remove the fastener loops from the retaining straps.

(2) Installation. Install the left lamp holddowns as follows:

(a) If necessary, fabricate new retaining strap as follows:

1. Cut appropriate length of cotton webbing to match previously removed retaining strap.

2. Machine sew loop ends and buckle to webbing.

3. Cut webbing end to receive end clip and press clip to webbing.

(b) Install the fastener loops through the ends of the new retaining strap and secure the fastener loops to the shelter wall with two screws.

(c) Position the lamp assembly and secure with retaining straps.

c. Right Lamp Holddowns.

(1) ***Removal.*** Remove the right lamp holddowns as follows:

(a) Unlatch the retaining straps securing the right camera light to the camera light holddown bracket. (See fig. 5-12.)

(b) Remove the attaching wingbolts securing the camera light holddown bracket to the shelter floor.

(c) Remove the bracket.

(2) Installation. Install the right lamp holdowns as follows:

(a) If necessary, fabricate new retaining strap as follows:

1. Cut appropriate length of cotton webbing to match previously removed retaining strap.
2. Machine sew loop ends and buckle to webbing.
3. Cut webbing end to receive end clip and press clip to webbing.

(b) Position the camera light holddown bracket over the two floor fasteners and secure with attaching wingbolts.

(c) Position the light assembly and secure with retaining strap.

5-14. Film Dryer.

The electric film dryer is a Decco Model 1418 which utilizes air blade drying to provide quick film drying. The dryer is mounted on a shelf attached to the right-hand shelter wall above the sink. The wet processed film is fed into the dryer through a slot located in the front panel of the unit. A series of squeegee rollers then carries the film through the dryer passing it between a set of upper and lower air tubes which direct the air over the surfaces of the film. The dried film is then passed through a slot in the rear of the dryer housing. A deflector mounted on the rear housing then steers the film upward and back over the top of the dryer unit to bring it within reach of the operator. (See fig. 5-13.) Power for the dryer is obtained through an adjacent equipment receptacle and is controlled by means of a two-position switch on the front of the unit.

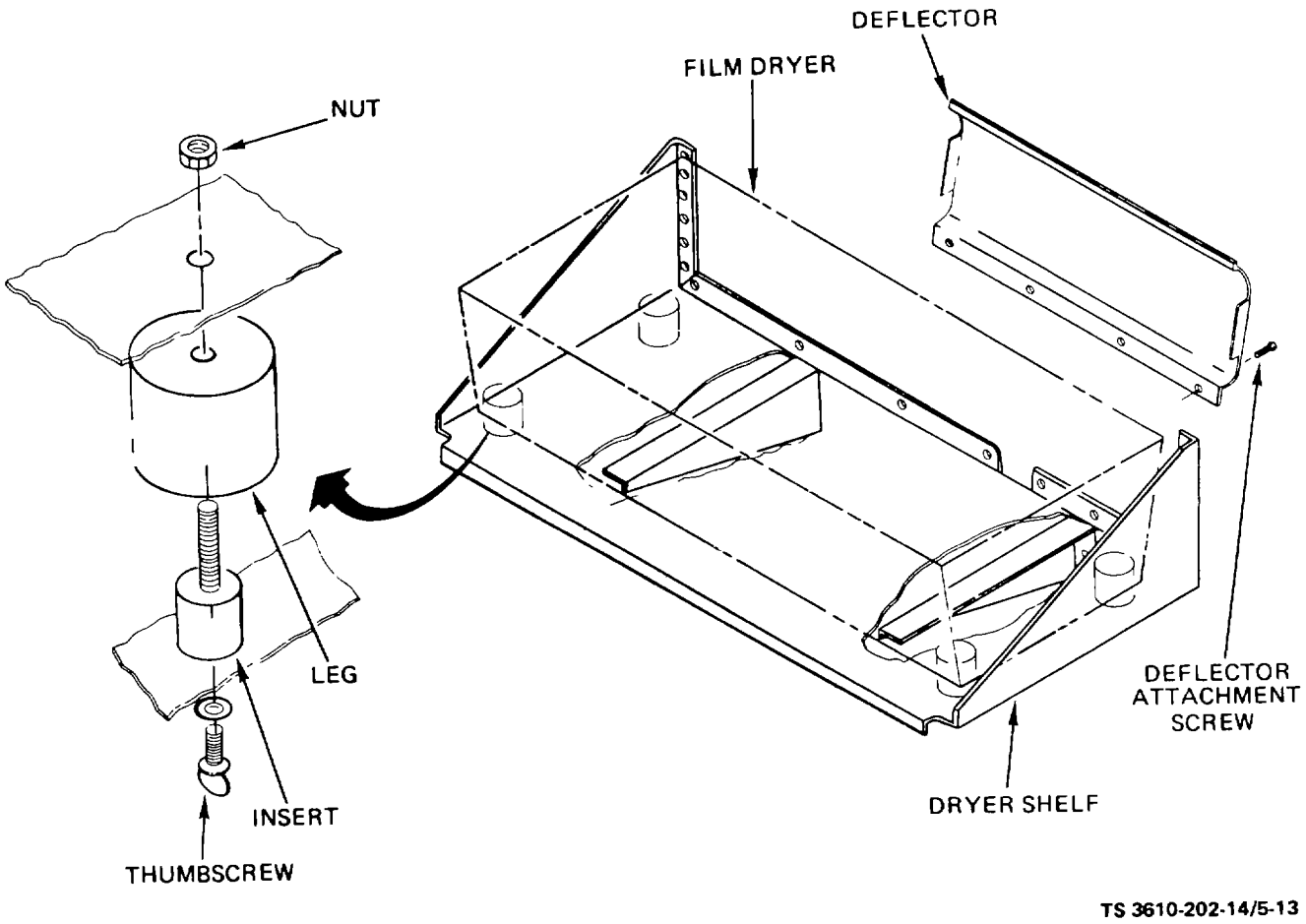

Figure 5-13. Film Dryer and Deflector Assembly

a. Removal. Remove the film dryer as follows:

(1) Disconnect electrical connector from wall receptacle.

(2) Remove attaching wing screws from underside of film dryer shelf.

(3) Remove dryer.

(4) Remove attaching screws from back of dryer and remove deflector.

(5) Remove four mounts.

b. Installation. Install the film dryer as follows:

(1) Remove existing mounts from the replacement film dryer.

(2) Install mounts from removed film dryer, on replacement film dryer.

(3) Refer to figure 5-14 and drill deflector attachment holes in rear of dryer.

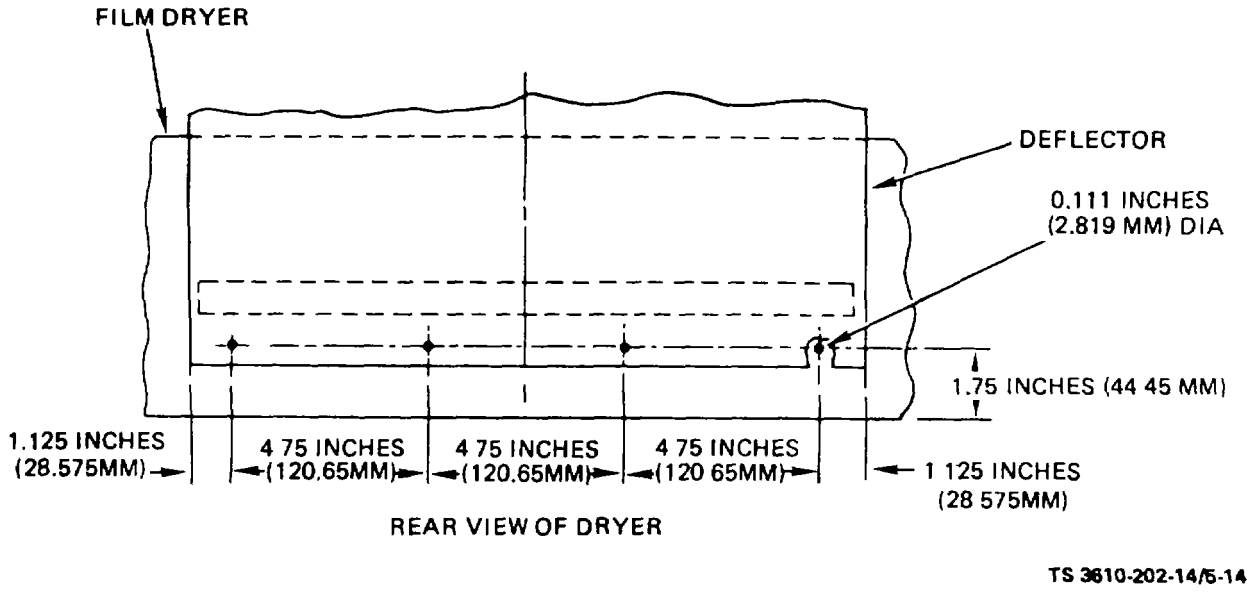

Figure 5-14. Film Dryer Deflector Installation

(4) Position deflector on back of new dryer at same position as previously mounted on removed film dryer.

(5) Secure deflector with four existing thread forming screws,

(6) ,Position film dryer on film dryer shelf and secure with four attaching wing screws.

5-15. Film Dryer Shelf.

A stainless steel film dryer shelf is mounted on the right shelter wall immediately above the sink.

a. Removal. Remove the film dryer shelf as follows:

(1) Disconnect film dryer electrical connector from wall receptacle.

(2) Remove film dryer attaching wing screws from underside of film dryer shelf.

(3) Remove film dryer.

(4) Drill out blind rivets attaching film dryer shelf to the shelter wall and backing sheet. (See fig. 5-15.)

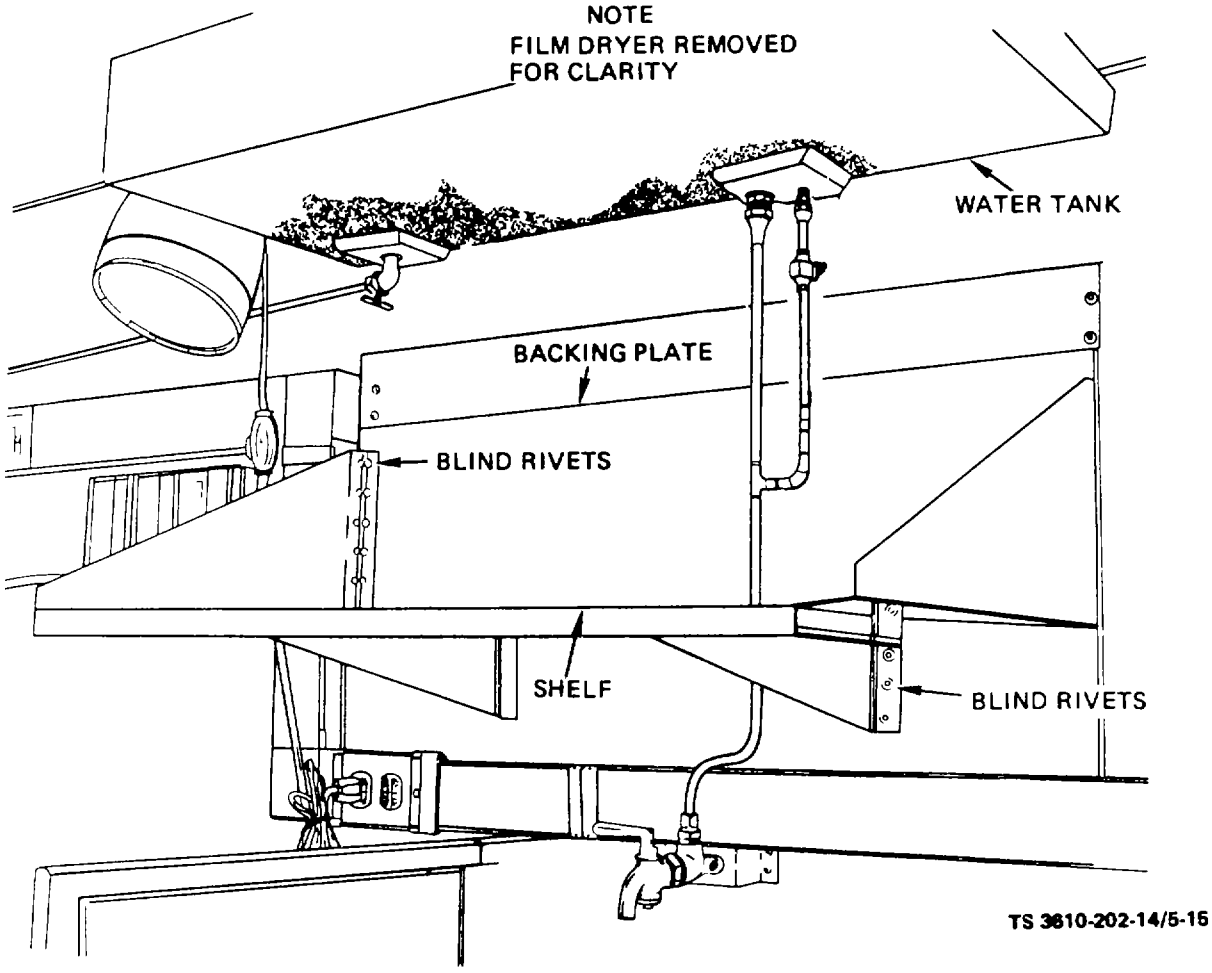

Figure 5-15. Film Dryer Shelf. Removal and Installation

(5) Remove the shelf.

b. Installation. Install the film dryer shelf as follows:

(1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed shelf and marking mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement shelf.

(3) Position film dryer shelf to shelter wall and backing sheet and secure with blind rivets.

(4) Position film dryer on the film dryer shelf and secure with four thumbscrews.

(5) Connect electrical connector to wall receptacle.

CHAPTER 6

REPAIR OF STOOL ASSEMBLY HOLDDOWN

61. General.

The stool assembly holddown secures the stool to the left-hand of the shelter between 'the light table shelf and the paper storage cabinet by means of a retaining strap and two fastener loops which are attached to the wall of the shelter.

6-2. Stool Assembly Holddown.

a. Inspection. Inspection procedures for stool assembly holddown are as follows:

(1) Inspect the fastener loops and the screws that attach them to the shelter wall for security and condition. Remove and replace as required.

(2) Inspect the retaining strap and the retaining strap buckle for security and condition. Remove and replace as required.

b. Removal. Remove the tool assembly holddown as follows:

(1) Unlatch the retaining strap and remove the stool assembly. (See fig. 6-1.)

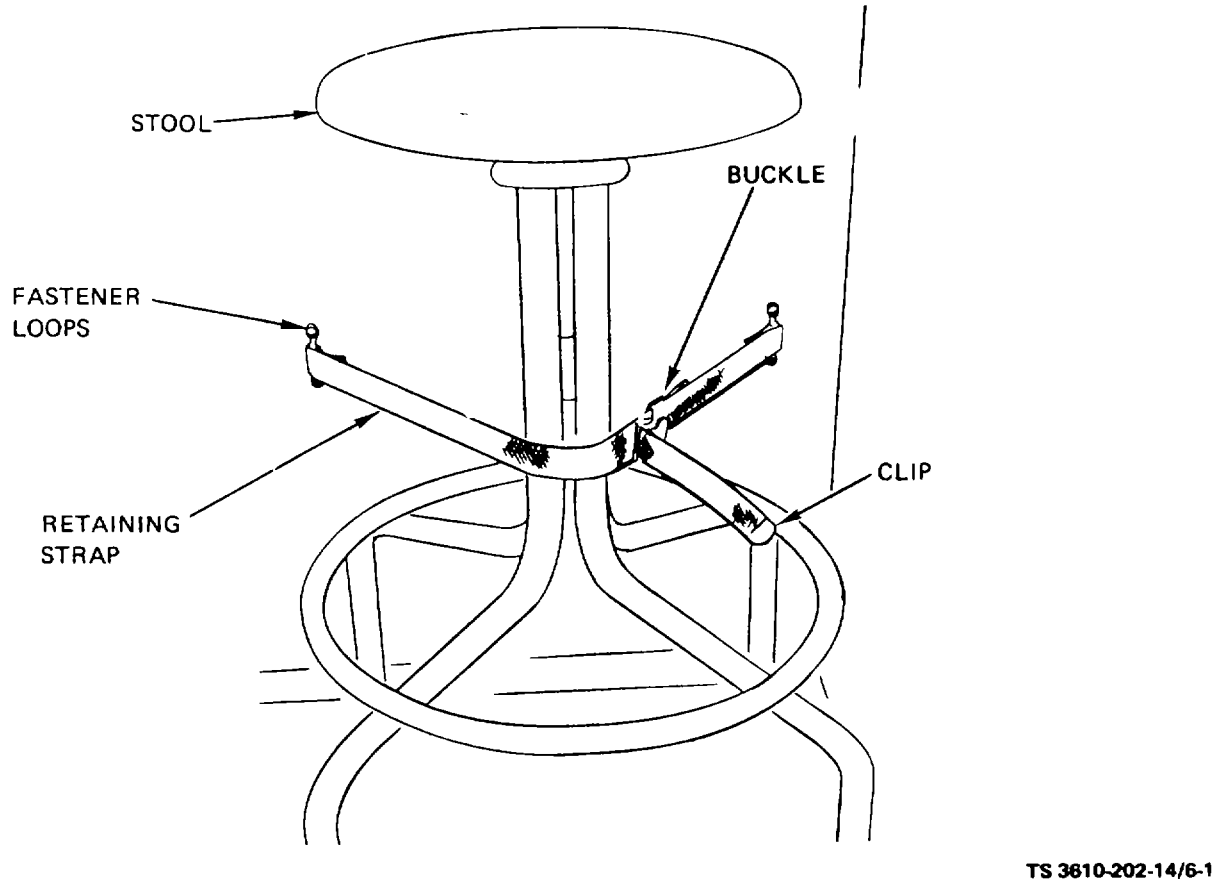

Figure 6-1. Stool Assembly Holddown, Removal and Installation

(2) Remove the screws that attach the fastener loops to the shelter wall and remove the fastener loops from the retaining strap.

c. Repair. Fabricate new retaining strap as follows

(1) Cut four feet of cotton webbing and cut to match previously removed retaining strap.

(2) Machine sew loop ends and buckle to webbing.

(3) Cut webbing end to receive clip and press clip to webbing.

d. Installation. Install the stool holddown as follows:

(1) Install the fastener loops through the ends of the retaining strap and secure the fastener loops to the shelter wall with two screws each.

(2) Position the stool assembly against the shelter wall and secure with the retaining strap.

CHAPTER 7

REPAIR OF FOLDING CHAIR HOLDDOWN

7-1. General.

The folding chair holddown secures the folding chair to the left back wall of the shelter by means of a retainer strap and two fastener loops attached to the wall of the shelter.

7-2. Folding Chair Holddown.

a. Inspection. Inspection procedures for the folding chair holddown are as follows:

(1) Inspect the fastener loops and the screws that secure them to the shelter walls for security and condition. Remove and replace as required.

(2) Inspect the retaining strap and the retaining strap buckle for condition and security. Remove and replace as required.

b. Removal. Remove the folding chair holddown as follows:

(1) Unlatch the retaining strap buckle and remove the folding chair. (See fig. 7-1.)

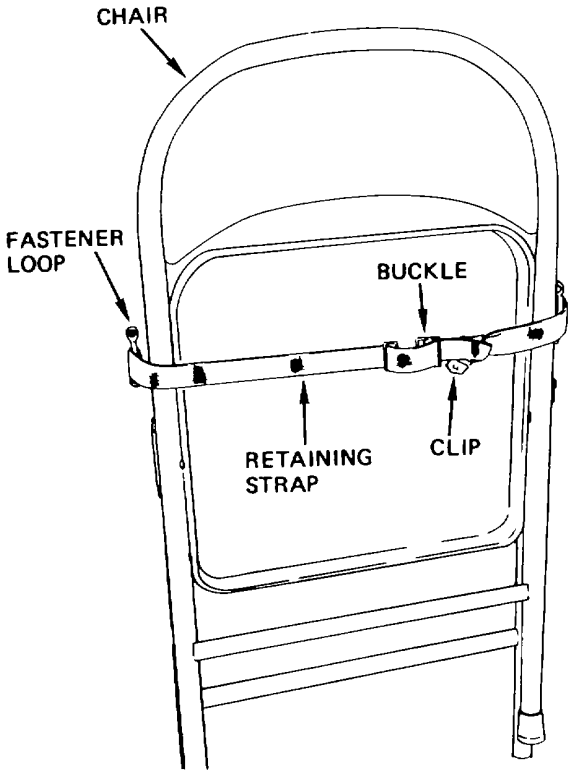

Figure 7-1. Folding Chair Holddown, Removal and Installation

(2) Remove the two screws that attach the fastener loops to the wall of the shelter and remove the fastener loops from the ends of the retainer strap.

c. Repair. Fabricate new retaining strap as follows:

(1) Cut four feet of cotton webbing and cut to match previously removed retaining strap.

(2) Machine sew loop ends and buckle to webbing.

(3) Cut webbing end to receive clip and press clip to webbing.

d. Installation. Install the folding chair holddown as follows:

(1) Install the fastener loops through the ends of the retaining strap and secure the fastener loops to the shelter wall with two screws each.

(2) Position the folding chair against the shelter wall and secure with the retaining strap.

CHAPTER 8

REPAIR OF DEVELOPER SHELF ASSEMBLY

8-1. General.

A developer shelf consisting of a divided sheet metal tray and four cotton straps is located against the inside right wall, next to the film dryer and is designed for storage of developer chemical containers.

8-2. Developer Shelf Assembly.

a. Inspection. Inspect the developer tray assembly as follows:

(1) Inspect tray, tray ends and divider for cuts, dents, corrosion or other damage.

(2) Inspect tray attaching rivets for condition and security.

(3) Inspect container retaining straps for condition and security of attachment.

b. Removal. Remove the developer tray assembly as follows:

NOTE

Support tray during removal operation.

(1) Drill out the blind fasteners that secure the developer shelf, to the wall of the shelter. (See fig. 8-1.)

(2) Remove the developer shelf.

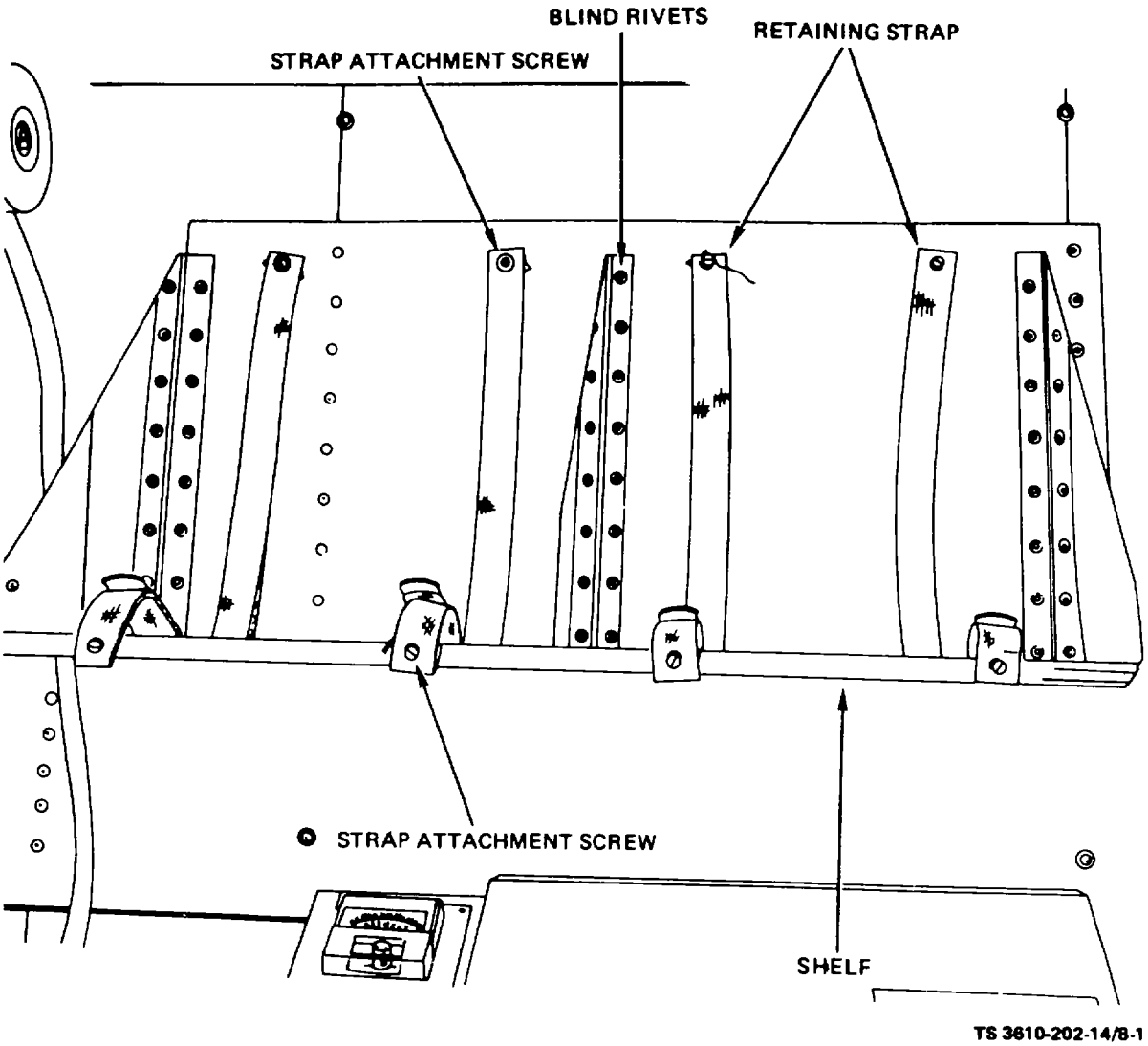

Figure 8-1. Developer Shelf, Removal and Installation

c. Repair. Replace defective container retaining strap as follows:

NOTE
Replacement procedures ire identical for all four strap.

(1) Remove the screw which attaches the strap portion to the tray and remove the strap. (See fig. 8-1.)

(2) Remove the screw which attaches the strap portion to the shelter wall and remove the strap.

(3) Fabricate new strap as follows:

(a) Cut two pieces of cotton webbing to match previously removed retaining straps; one approximately 12 inches (306 mm) long and one approximately 21.5 inches (546 mm) long.

(b) Machine sew loop end to longer strap.

(c) Cut webbing ends to receive grommets and press grommets into webbing.

(d) Machine sew hook and pile fastener tapes to shorter strap.

(e) Cut shorter strap webbing end to receive clip and press slip to webbing.

(4) Position longer retaining strap to shelter wall and install attaching screw.

(5) Position shorter strap to developer tray and install attaching screw.

d. Repair of Shelf. Repair of minor dents can be accomplished by using a suitable hammer and by then removing all burrs and sharp edges.

c. Installation. Install developer shelf as follows:

(1) Position replacement developer shelf on shelter wall and secure with blind fasteners.

(2) Replace the contents of the shelf and secure retaining straps.

CHAPTER 9

REPAIR OF WATER TANK ASSEMBLY

9-1. Water Tank.

The water tank is suspended from the right side of the ceiling near the midpoint of the length of the shelter. The water tank is of corrosion-resistant construction and has a capacity of ten gallons. It is filled through a filler cap in the roof of the shelter. A drain valve is located in a fitting screwed into the bottom of the tank.

a. Inspection. Inspect water tank for leaks, cracks and security.

b. Removal. Remove water tank assembly as follows:

(1) Disconnect immersion heater power cord from heater receptacle.

(2) Open faucet to drain tank into sink.

(3) Open draincock to completely drain tank. (See fig. 9-1.)

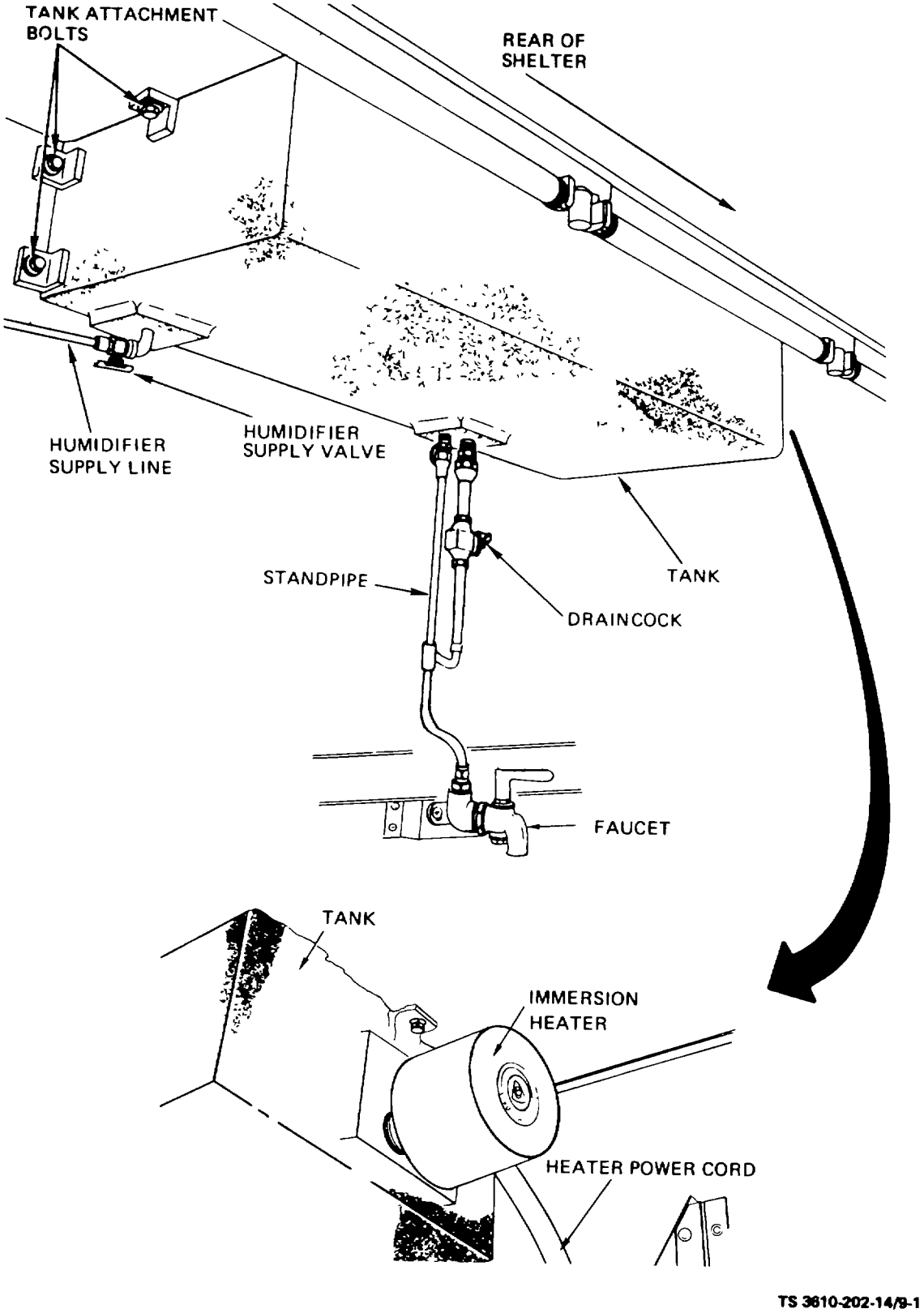

Figure 9-1. Water Tank, Removal and Installation

(4) Close humidifier line supply valve at bottom of tank.

(5) Disconnect humidifier line and faucet lines from base of tank.

(6) Unscrew immersion heater from tank.

(7) Remove screws that secure collar to tank at filler cap on roof of shelter. Remove collar.

(8) Remove screws and washers that secure tank to shelter ceiling and remove tank.

c. Installation.

(1) Position tank in correct location on shelter ceiling and install attaching screws and washers.

(2) Apply a suitable waterproofing cement to shelter roof and tank fill pipe.

(3) Position filler collar over tank fill pipe and install attaching screws.

(4) Connect humidifier line and faucet lines to base of tank.

(5) Close faucet and draincock and open humidifier line draincock.

(6) Install immersion heater into tank.

(7) Fill tank with approximately 10 gallons (37.8 liters) of water.

(8) Open humidifier line supply valve.

(9) Connect immersion heater power cord to heater receptacle.

(10) Check plumbing for water leaks.

9-2. Immersion Heater.

A 2,000-watt immersion type water heater is built into the water tank to furnish the heated water needed in processing the printing plates. The water heater is thermostatically controlled and maintains selected water temperature of approximately 82 degrees F (28 degree C). Power to the water heater is controlled by the WATER HEATER circuit breaker in the electrical main power service box.

a. Inspection. Inspect the water heater for corrosion of controls and condition of electrical cord.

b. Removal. Remove the immersion heater as follows:

(1) Disconnect immersion heater power cord from heater receptacle.

(2) Open faucet to drain tank into sink.

(3) Open draincock.

(4) Using a suitable wrench, carefully loosen the heater.

(5) Unscrew water heater and remove from water tank.

(6) If necessary, temporarily cover hole from which water heater was removed to prevent dirt from entering tank.

c. Testing. Test the immersion heater as follows:

(1) Drain a small quantity of water from the tank and then place a thermometer in the water as it flows from the faucet. The thermometer should indicate approximately 82 degrees F (28 degrees C).

(2) Remove cover from immersion heater and rotate the thermostatic control from high to low and observe audible sound of thermostat. (See fig. 9-2.)

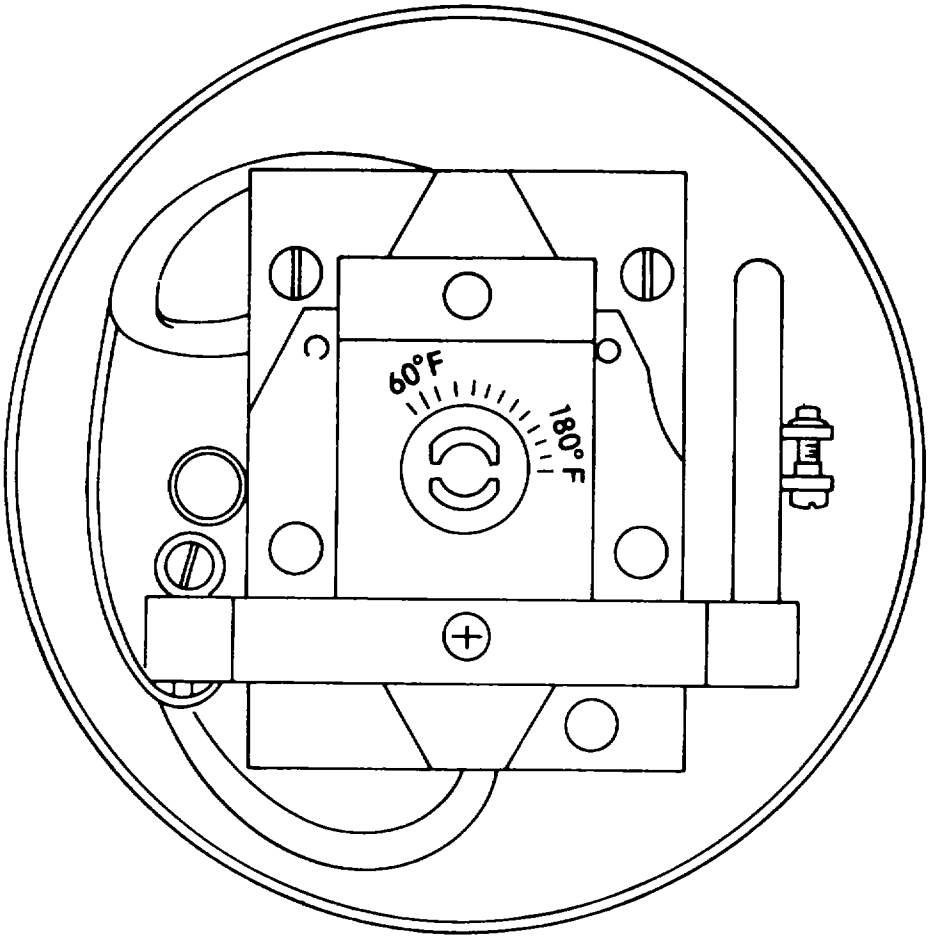

Figure 9-2. Immersion Heater Control

(3) If water temperature cannot be maintained at approximately 82 degrees F (28 degrees C), replace immersion heater.

d. Installation. Install the immersion heater as follows:

(1) If necessary, remove any temporary cover from immersion heater hole in tank.

(2) Install heater into tank and using a suitable wrench, tighten to correct position.

(3) Close faucet and draincock.

(4) Fill tank with approximately 10 gallons (37.8 liters) of water.

(5) Connect immersion heater power cord to heater receptacle.

CHAPTER 10

REPAIR OF HEADLINER COUNTER ASSEMBLY

10-1. Headliner Counter.

The headliner counter is of steel construction and is secured to the right wall of the shelter. The counter assembly extends approximately half the length of shelter. Mounted on the counter assembly are the varityper headliner, composing machine photo-trays, rub-up board, sink assembly, and sink shield.

a. Inspection. Inspect the headliner counter as follows:

(1) Inspect doors, shelves, drawers and countertop for dents, burrs or other signs of damage.

(2) Inspect all metal surfaces for signs of rust.

(3) Inspect condition of locks on all drawers and doors.

(4) Inspect all door hinges for signs of damage.

(5) Assure that all handles are properly attached to drawers and doors.

(6) Inspect headliner composing machine ball bearing roller brackets for signs of damage.

b. Removal. Remove headliner counter as follows:

(1) Remove the screws securing the faucet bracket to the sink shield and shelter wall. (See fig. 10-1.)

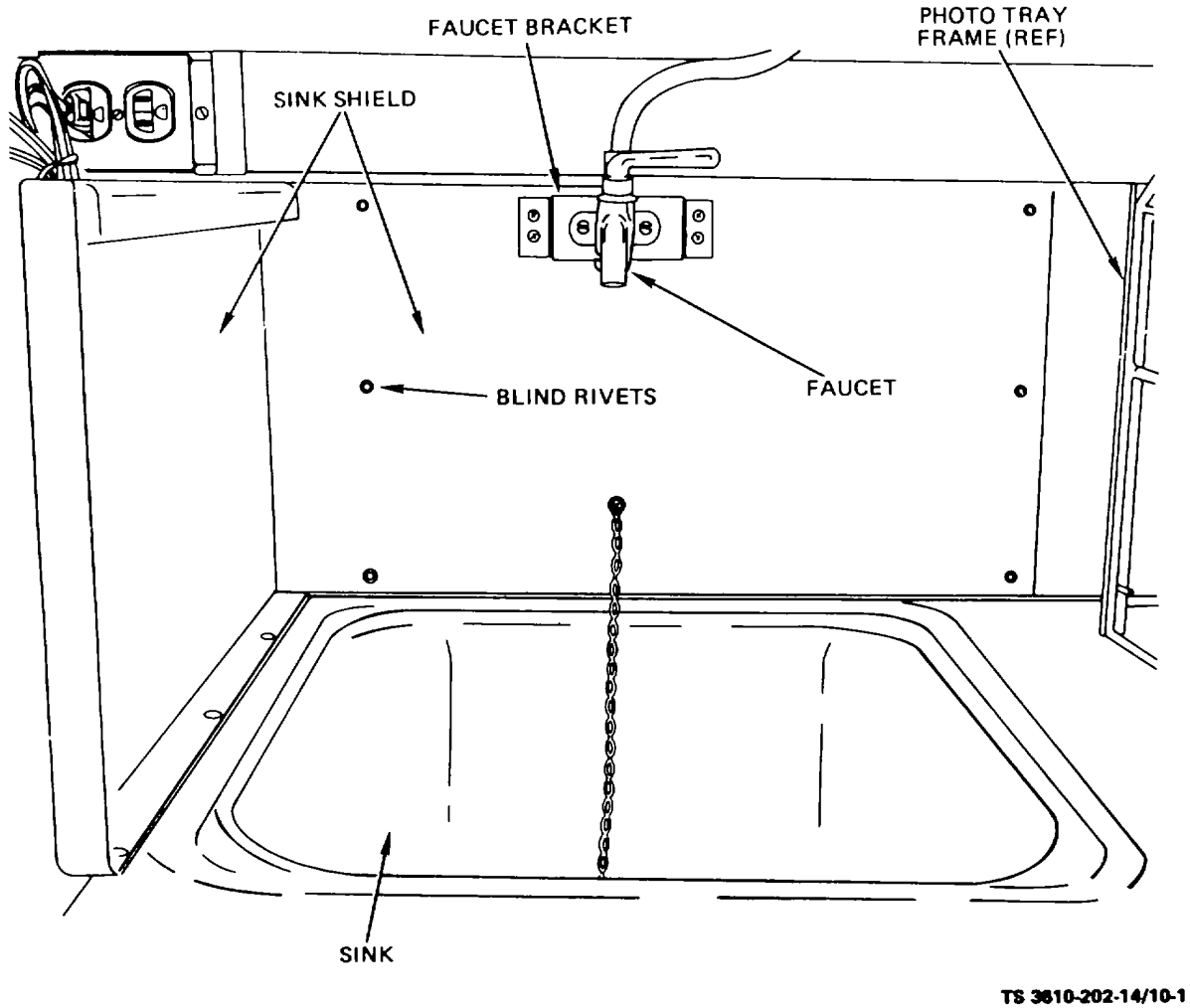

Figure 10-1. Sink and Shield, Removal and Installation

(2) Drill out the blind rivets securing the sink shield to the headliner counter and shelter wall.

(3) Slide the sink shield to the left and remove.

NOTE

Assure that little or no liquid is present in sink drain assembly.

(4) Remove top drawer adjacent to sink to gain access to drain assembly.

(5) Loosen hose clamp, nearest to shelter wall (see fig. 10-2) to free drain assembly.

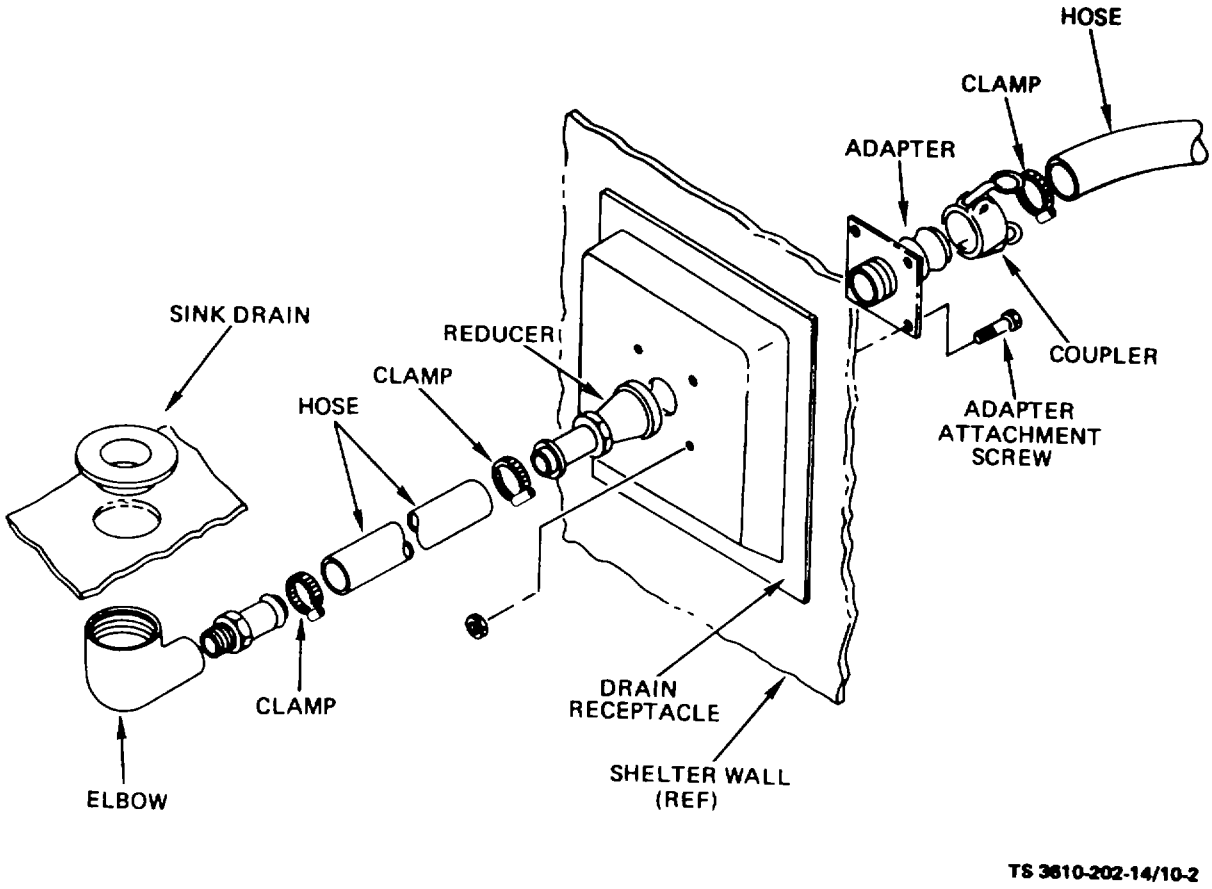

Figure 10-2. Sink Drain Assembly, Removal and Installation

(6) Remove rub-up board assembly from counter assembly if necessary.

(7) Remove phototrays from counter.

(8) Remove headliner composing machine (refer to paragraph 4-33).

(9) Remove the counter assembly from the shelter.

c. Repair. Repair of the counter consists of the following:

(1) Door handles and latching mechanism. Replace door handles and latching mechanism as follows:

(a) Remove the two screws and nuts which attach the handle to the right-hand door.

(b) Remove the single screw which attaches the center plate of the latching mechanism to the handle center flange.

(c) Remove the handle and withdraw the latching mechanism from the mechanism bar guides.

(d) Position new handle in door and secure with two attaching screws and nuts. *(e)* Insert the latching mechanism bars into the bar guides.

(f) Position the latching mechanism center plate against the handle inner flange and install the attaching screw.

(g) Check handle and mechanism for correct operation.

(2) Drawer handles. Replace the drawer handles as follows:

(a) Remove the two screws which attach the handle from the inside of the drawer and remove the handle.

(b) Position new handle on cabinet drawer and install attaching screws.

(3) Drawer locking knob. Replace the drawer locking knob as follows: *(a)* Open drawer and remove clip at inner end of knob shaft.

(b) Withdraw knob and remove locking lever and spring.

(c) Insert new knob into front drawer panel hole and position spring and locking lever onto knob shaft.

(d) Push knob shaft through rear guide hole and install retainer clip.

d. Installation Install the headliner counter as follows: (1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed counter and marking mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement counter.

(3) Position counter assembly in shelter and secure with bolts and nuts.

(4) Position the headliner chassis tracks on the counter top and secure with attaching screws and washers.

(5) Install the headliner composing machine (refer to paragraph 4-33).

(6) Place phototrays on counter.

(7) Place rub-up board assembly on counter assembly if necessary.

(8) Remove top drawer adjacent to sink and secure drain assembly with hose clamp.

(9) Position sink shield and secure with blind rivets.

(10) Position faucet bracket to side of sink shield and shelter wall, and secure with screws.

10-2. Sink Assembly.

A sink assembly is recessed in the forward section of headliner counter directly below the water tank. The sink is used to contain and/or eliminate discarded water and other liquids The sink assembly also contains a plug and chain which are secured to the wall directly above the sink.

a. Removal. Remove the sink assembly as follows:

NOTE

Assure that little or no liquid is present in sink or sink drain before removal.

(1) Remove headliner counter top drawer adjacent to sink to obtain access to internal portion of sink drain.

(2) Loosen two hose clamps and remove rubber hose portion of drain assembly. (See fig. 10-2.)

(3) Remove the screws securing the faucet bracket to the sink shield shelter wall. (See fig. 10-1.)

(4) Drill out the blind rivets securing the sink shield to the headliner counter and shelter wall.

(5) Slide the sink shield to the left and remove.

(6) Remove the thread forming screws which attach the counter panel immediately above the foremost cupboard door and remove the panel.

(7) From the underside of the sink, release the sink mounting fasteners and remove the fasteners.

(8) Using a suitable solvent to soften the Locktite sealant, carefully remove the sink retaining rim while supporting the sink from the underside.

(9) Carefully remove the sink unit together with any spacers through the counter front panel aperture.

(10) Using a suitable solvent, remove all traces of Locktite sealant from sink aperture in counter top. Ensure that all surfaces are clean and dry.

(11) Using a suitable solvent, carefully soften the sealer around the removed sink drain.

(12) Using a suitable wrench, remove the sink drain which passes through the sink and into the drain elbow. Remove the drain and elbow.

b. Installation. Install the sink assembly as follows:

(1) Apply Alumalastic sealer to mating surfaces of new sink and sink drain.

(2) Correctly position drain elbow on new sink and install sink drain. Wipe away any excess sealer.

(3) Apply blue grade C Locktite sealant to inner surfaces of new sink retaining rim and new sink lip.

(4) Insert new sink through counter front panel aperture and position sink below sink aperture together with any necessary spacers.

(5) Position retaining rim around sink on counter top.

(6) Position the sink mounting fasteners around the underside of the sink and secure evenly.

(7) Excess sealant will be forced from both inner and outer edges of the retaining rim during the tightening process. Wipe away any excess sealant before it dries. Do not use any solvent.

(8) Position rubber hose portion of sink drain assembly and secure hose clamps. (See fig. 10-2.)

(9) Position the headliner counter front panel and install the attaching screws.

(10) Install headliner counter top drawer.

(11) Position the sink shield on the headliner counter with aft shield positioned behind the faucet bracket. (See fig. 10-1.)

(12) Secure the sink shield with blind rivets.

(13) Position the faucet bracket on the sink shield and install attaching screws.

10-3. Sink Drain Assembly.

The sink drain assembly consists of an internal drain pipe which angles toward right side of shelter to outside drain opening, and a drain b -se with attaching coupler. The drain assembly used in conjunction with sink assembly for removal of water and other liquids from inside of shelter. A cap is also provided on outside of shelter to prevent dirt or other material from clogging drain assembly.

a. Inspection. Inspect sink drain as follows:

(1) Inspect all portions of drain assembly for cracks which could cause leaks.

(2) Inspect hoses for condition and clamps for security.

(3) Ensure drain assembly is properly aligned.

(4) Pour water into sink and ensure there is no clogging or blockage present in drain assembly.

(5) Inspect all metal components for signs of rust or corrosion.

(6) Inspect drain plug for proper fitting.

b. Removal.

NOTE

Assure that little or no liquid is present in sink drain assembly before removal.

(1) Remove headliner counter drawer IT to gain access to internal portion of drain.

(2) Loosen two hose clamps and remove rubber hose. (See fig. 10-2.)

(3) Using a wrench (sink adapter), remove elbow pipe from adapter drain plate.

(4) Remove drain assembly cap or uncouple outside drain hose as necessary. (See fig. 10-2.)

(5) Remove nuts and screws which secure coupling adapter and reducer. Remove coupling adapter and reducer from shelter wall.

(6) Discard gasket.

c. Repair. Repair procedures for the sink drain assembly consist of replacement of defective parts.

d. Installation.

(1) Install new gasket on shelter wall adapter mounting point.

(2) Install coupling adapter and reducer. Secure coupling adapter and reducer with nuts and screws. (See fig. 10-2.)

(3) Install drain assembly cap or outside drain hose as necessary.

(4) Apply sealer to elbow pipe and secure to adapter drain plate with wrench (sink adapter).

NOTE

Adjust elbow pipe to ensure proper alignment before connecting rubber hose.

(5) Install rubber hose and secure with hose clamps.

CHAPTER 11

REPAIR OF AIR CONDITIONER

11-1. Heating Element Assembly.

The air conditioning unit at the forward end of the shelter incorporates six 1000 watt heating elements which produce a maximum surface temperature of 1500 degrees F (816 degrees C). The elements are used to provide better climate control under all operating conditions.

a. Inspection/Test. Inspect/test the air conditioner heating elements as follows:

(1) Remove the heating elements as directed in paragraph 11-1 *(b)*.

(2) Inspect each heating element for breakage or cracks in the outer covering.

(3) Check each element for an open circuit between the two terminals (resistance should read approximately 11 ohms).

(4) Check each element for a short circuit between the heating element casing and terminal.

(5) If any of the above conditions exist, replace the heating element.

b. Removal. Remove the heating elements as follows:

(1) Remove the humidifier as described in paragraph 4-45.

(2) Loosen the quarter-turn spring fasteners which attach the evaporator section front cover and remove cover.

(3) Check that air conditioner circuit breaker is positioned to on and that air conditioner electrical power cable is connected to wall receptacle.

(4) Position air conditioner control box rotary switch to HEAT.

(5) Using a suitable test meter, assure that continuity across all terminals of terminal board TB6 located at left side of terminal relay box.

(6) Position air conditioner circuit breaker to off and turn heat switch to off.

(7) Check that the compressor suction and discharge valves are open.

(8) Close the receiver outlet valve by turning valve stem fully clockwise.

(9) Install a suction pressure gage on the compressor suction service valve (see fig. 11-1).

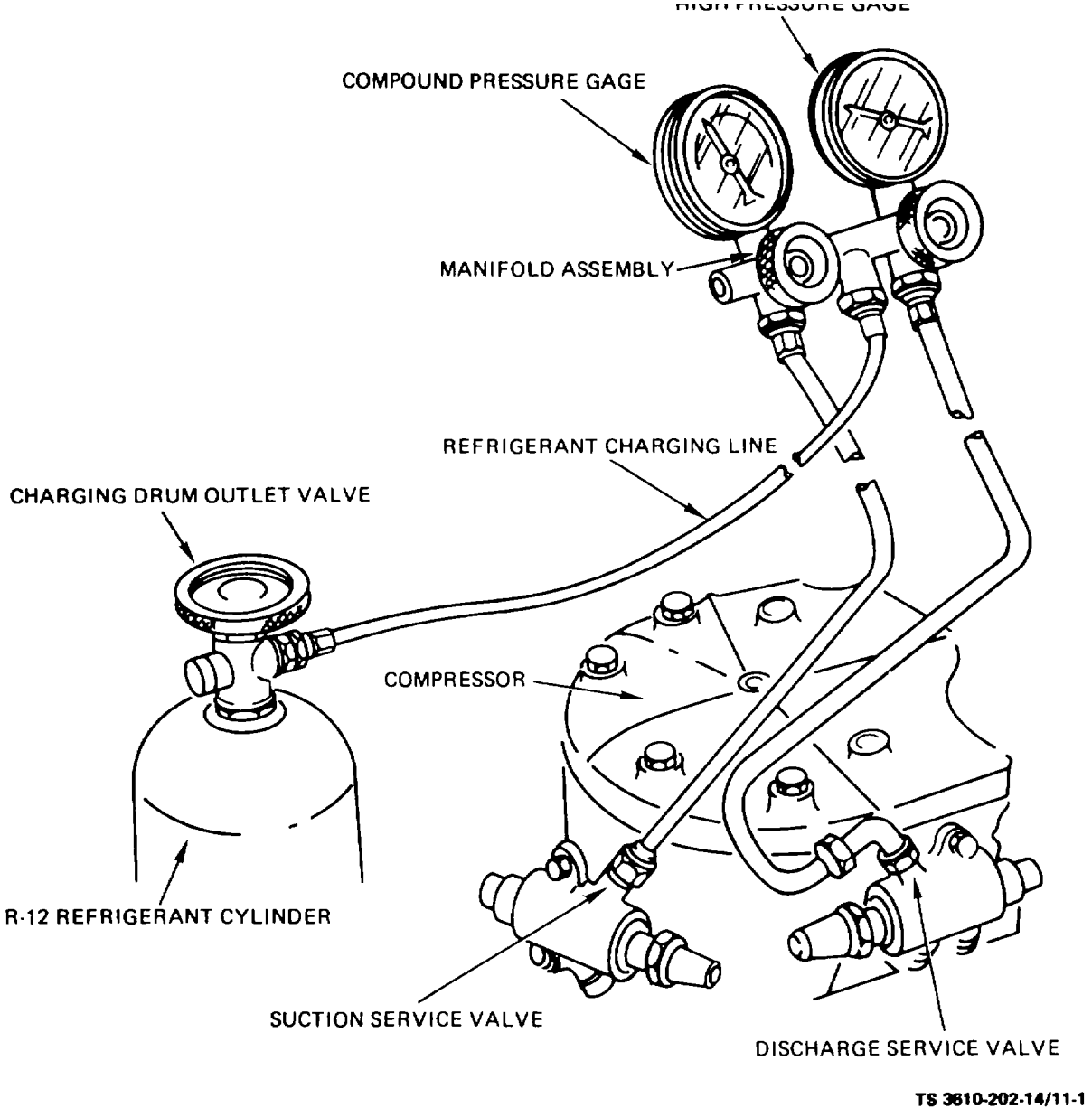

Figure 11-1. Pressure Gage Installation and Charging

(10) Operate unit until suction pressure gage registers between 5 and 10 inches of mercury vacuum.

(11) Shut off machine and observe suction pressure gage for a few minutes. If pressure rebuilds, operate unit until pressure does not rebuild appreciably.

(12) Crack receiver outlet valve until three to four psig is indicated on suction gage.

(13) Close receiver inlet valve by turning valve stem clockwise as far as it will go.

(14) Remove suction pressure gage.

(15) Before opening the refrigerant system, the pressure in the system should be known. If the system is opened under high pressure, excessive loss of refrigerant will occur. If opened under vacuum, air is drawn into the system which will cause operating difficulties. If the pressure gage indicates a vacuum after pumping down, open the receiver outlet valve slightly to build three to four pounds of pressure in the system.

(16) Disconnect air conditioner power cord from right-hand shelter wall adjacent to unit.

(17) Remove the three MS electrical connectors (see fig. 11-2) on the right side of air conditioner evaporator section.

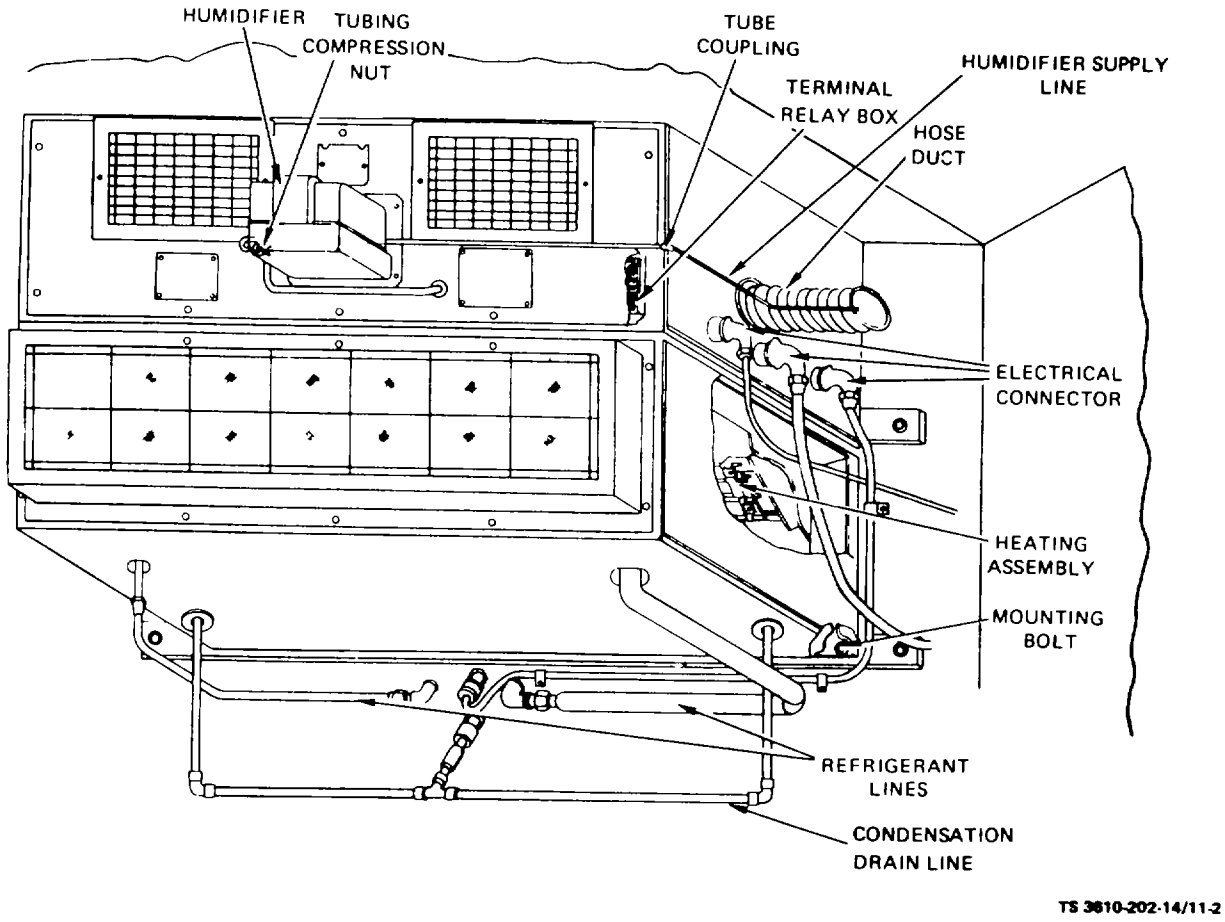

Figure 11-2. Air Conditioner Interior View

(18) Remove hose duct which connects air intake grille to evaporator section by pulling it forward or compressing it.

(19) Remove covers from all air conditioner sections.

(20) Remove interconnecting liquid lines between interior and exterior sections of air conditioner.

CAUTION

Support air conditioner sections while removing bolts.

(21) Remove mounting bolts which secure air conditioner to inside shelter wall. Remove inner sections.

(22) On the outside of shelter, remove hose clamp and hose from air conditioner drain.

(23) Remove self-tapping screws which secure protective cover (see fig. 11-3) for piping to the shelter wall.

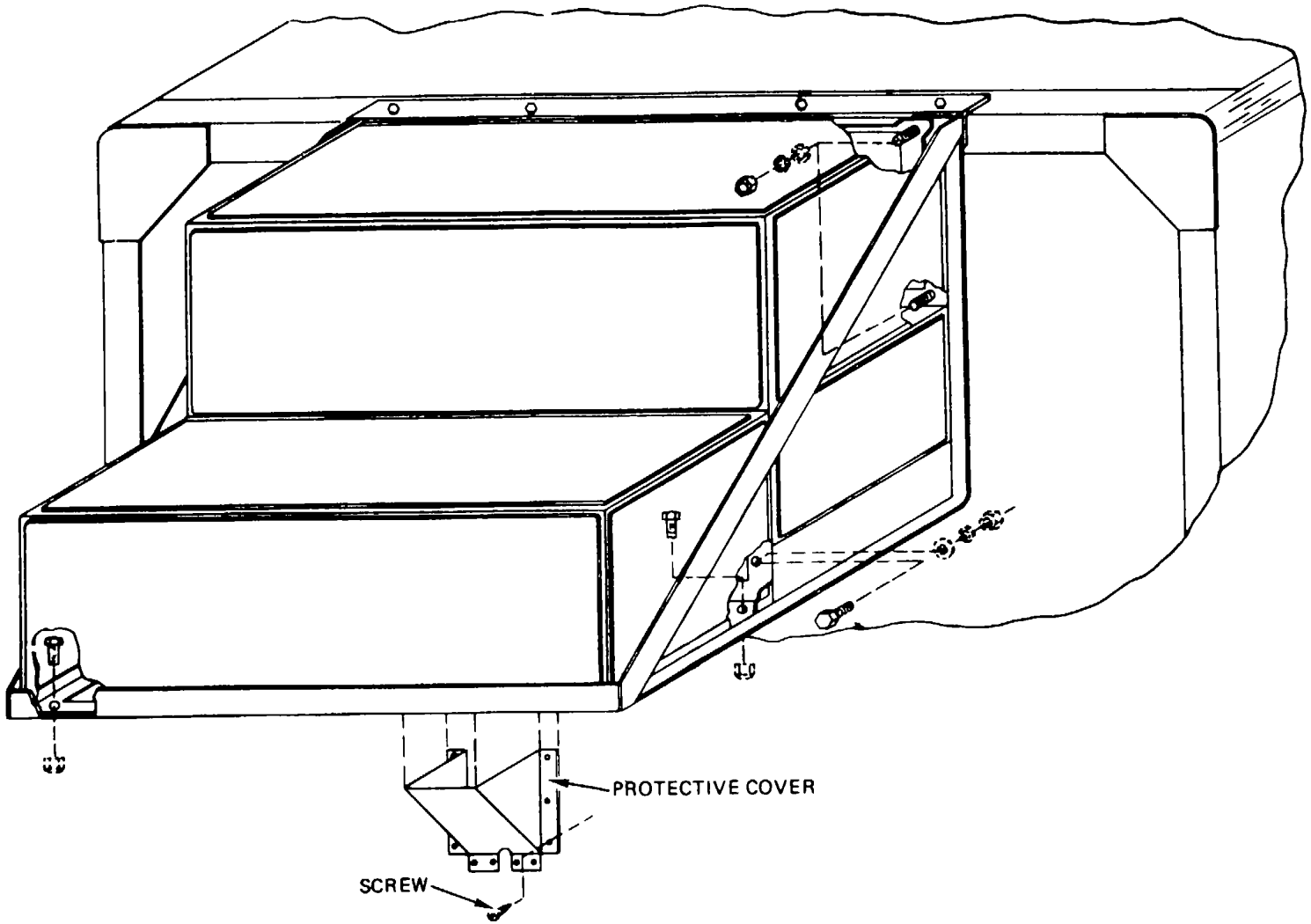

Figure 11-3. Air Conditioner Exterior View

(24) Remove interconnecting refrigerant lines.

(25) Disconnect all wires after carefully tagging them as to their proper location.

(26) Remove all mounting hardware from heating element mounting brackets and carefully remove the complete assembly. (See fig. 11-4.)

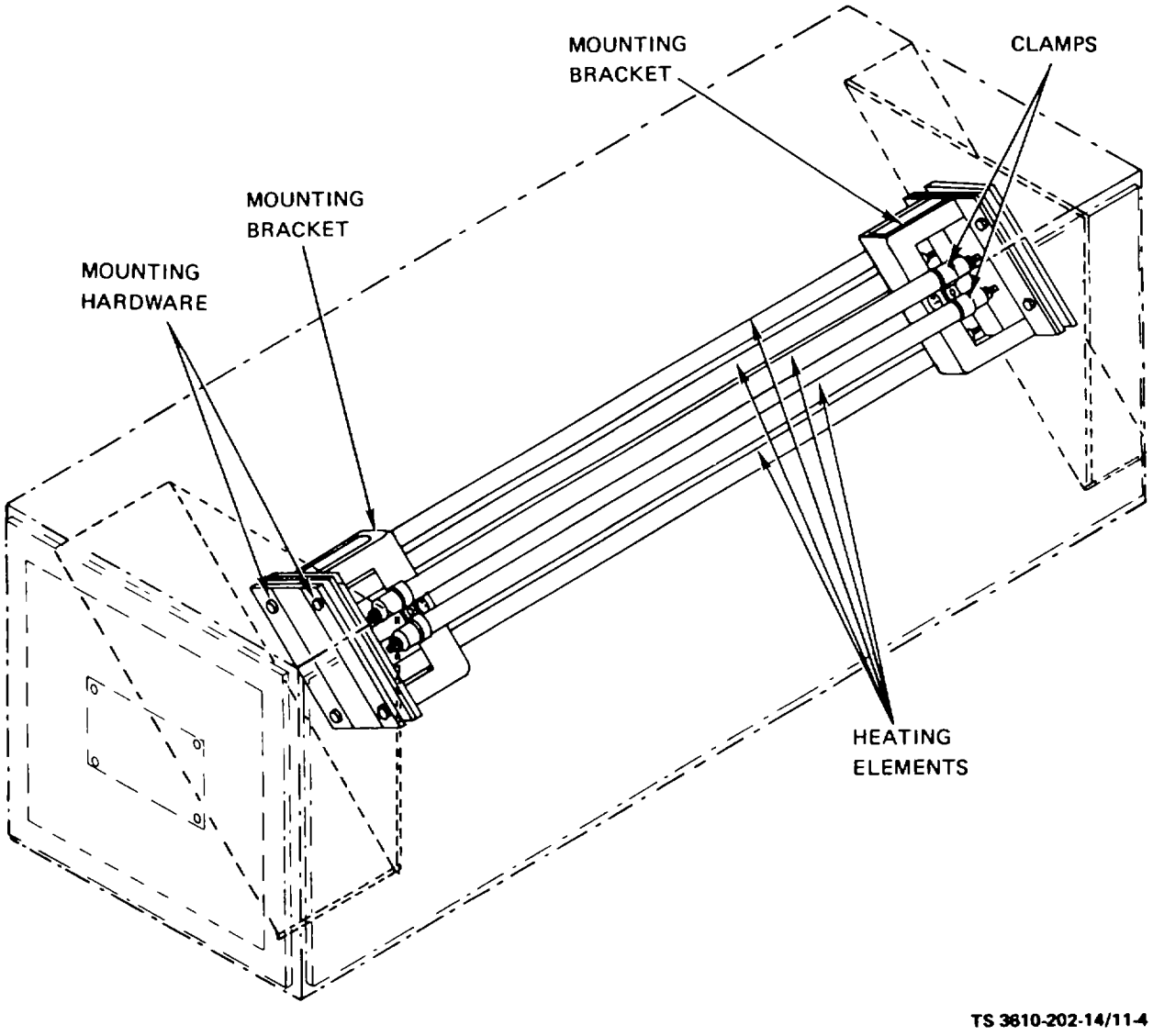

Figure 11-4. Heating Elements, Removal and Installation

(27) Loosen heating element holddown clamps and remove desired heating elements.

c. Repair. Repair of the heating elements consists of replacement.

d. Installation. Install heating elements as follows:

(1) Position heating elements in the heating element holddown brackets and install all mounting hardware.

(2) Tighten all heating element holddown clamps.

(3) Reinstall complete heating assembly and secure with attaching hardware.

(4) Connect all wires to their proper location and remove tags.

(5) Connect interconnecting refrigerant lines.

(6) Secure protective cover for piping to the shelter wall with self-tapping screws.

CAUTION

Support air conditioner sections while installing bolts.

(7) Position inner sections on the inside front wall and secure with mounting bolts.

(8) Install interconnecting liquid lines between interior and exterior sections of the air conditioner.

(9) Install all covers to air conditioner sections.

(10) Install the hose duct which connects the air intake grill to the evaporator section.

(11) Install the humidifier as described in paragraph 4-45.

(12) Install the three MS electrical connectors on the right side of the air conditioner evaporator section and turn on electrical power to the air conditioner.

(13) Attach charging line to suction service valve port.

(14) Backseat the discharge service valve and remove the cap from the port.

(15) Open the suction service valve so both port and compressor are open.

(16) Open the valve on the refrigerant drum and build 30 pounds pressure in system.

(17) Test for leaks using halide detector torch.

(18) Release pressure in system and replace cap on discharge service valve port.

(19) Using an evacuator, pull a 20 to 25 inch vacuum on the refrigerant system, attaching the vacuum line to suction service valve port. Purge with gas from freon drum and again pull vacuum.

(20) When 20 to 25 inch vacuum is reached, backseat the suction service valve.

(21) Remove the evacuator vacuum line.

NOTE

The R-12 drum for recharging should be equipped with large capacity drier.

(22) Attach a charging line to a drum of R-12 (see fig. 11-1).

(23) Weigh the drum so that 13 pounds can be measured into the system.

(24) Attach charging line to unit. Do not tighten.

(a) If charging line is attached to suction service valve, be sure drum is upright so only gas will be drawn off.

(b) If charging line is attached to charging valve in condenser fan section, close valve at condenser outlet, and invert drum so only liquid will be drawn off.

(25) Open R-12 drum valve slightly and then close, to purge air from charging line. Tighten charging line on service valve fitting.

(26) Open valve on R-12 drum about 2 turns.

(27) Open the system charging valve about 2 turns and allow pressure to equalize.

(28) Start unit and run until 13 pounds of R12 are added.

(29) Backseat suction service valve (or close charging valve).

(30) Remove charging line from valve.

(31) Replace cap on valve.

11-2. Terminal Relay Box.

The terminal relay box (see fig. 11-5), located in the evaporator section of the air conditioner, contains two power relays and one magnetic contactor which are used in the heating control circuit.

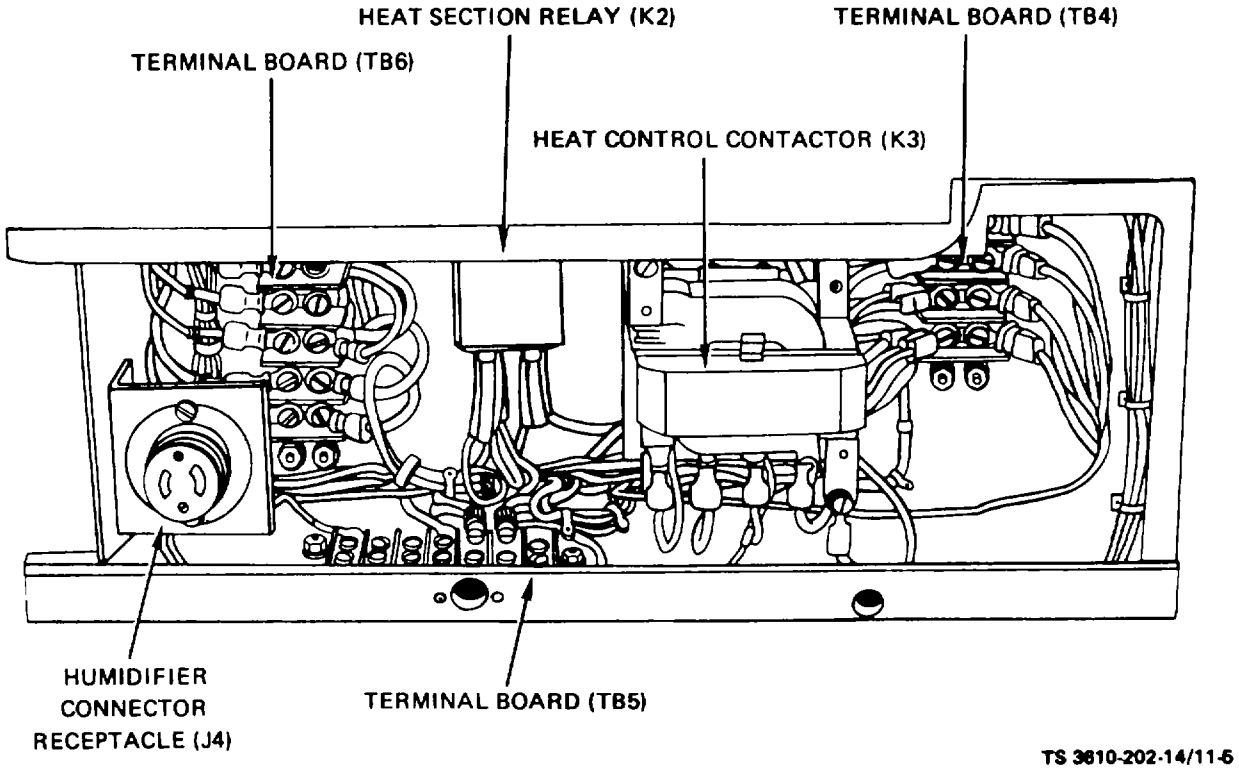

Figure 11-5. Terminal Relay Box

a. Inspection. Inspect the terminal relay box as follows:

(1) Turn off electrical power to air conditioner.

(2) Remove the humidifier as directed in paragraph 4-45.

(3) Remove the evaporator front cover by releasing the spring fasteners and remove the cover.

NOTE The power relays can be inspected without disassembly, except for the removal of the protective cover.

(4) Inspect the relays to assure that the moving and stationary contacts are aligned and make a positive contact.

CAUTION

Care should be taken during inspection so as not to damage the relay mechanism.

(5) Inspect the armature of the plunger mechanism for freedom of movement.

(6) Inspect the contacts for burns, pits, and dirt.

.

(7) Clean the contacts as directed in paragraph 11-2c or replace as required.

b. Removal . Remove the terminal box relays as follows:

(1) Turn off electrical power to air conditioner.

(2) Remove the humidifier as directed in paragraph 4-45.

(3) Remove the evaporator front cover by releasing the spring fasteners and remove the cover.

(4) Carefully remove and identify wires attached to relay.

(5) Remove the relay mounting hardware and remove the relay.

c. Repair. Repair the terminal box relays as follows:

CAUTION

Care should be taken during cleaning and repair of the relays so as not to damage the relay mechanism

CAUTION

Never use highly abrasive materials, such as emery cloth, coarse sandpaper, or carborundum paper for surfacing relay contacts. They will damage the contacts.

(1) Dress the relay contacts with crocus cloth until the burned or pitted spots are removed.

(2) Wipe the contacts thoroughly with a cloth moistened in drycleaning solvent and dry with a clean soft cloth.

(3) If the contacts are dirty, clean as directed in step (2).

(4) If the relay does not conform to acceptable standards replace the relay.

d. Installation. Install the terminal box relays as follows: (1) Position the replacement relay in the terminal box and secure with mounting hardware.

(2) Attach applicable wires.

(3) Apply electrical power and check operation of relay by moving air conditioner controls.

(4) Install evaporator front cover and secure with spring fasteners.

(5) Install humidifier as directed in paragraph 4-45.

11-3. Control Box.

The air conditioner control box consists of a function control switch, humidistat, and thermostat which are all mounted to a chassis. This in turn is then mounted to the curbside shelter wall. (See fig. 11-6.)

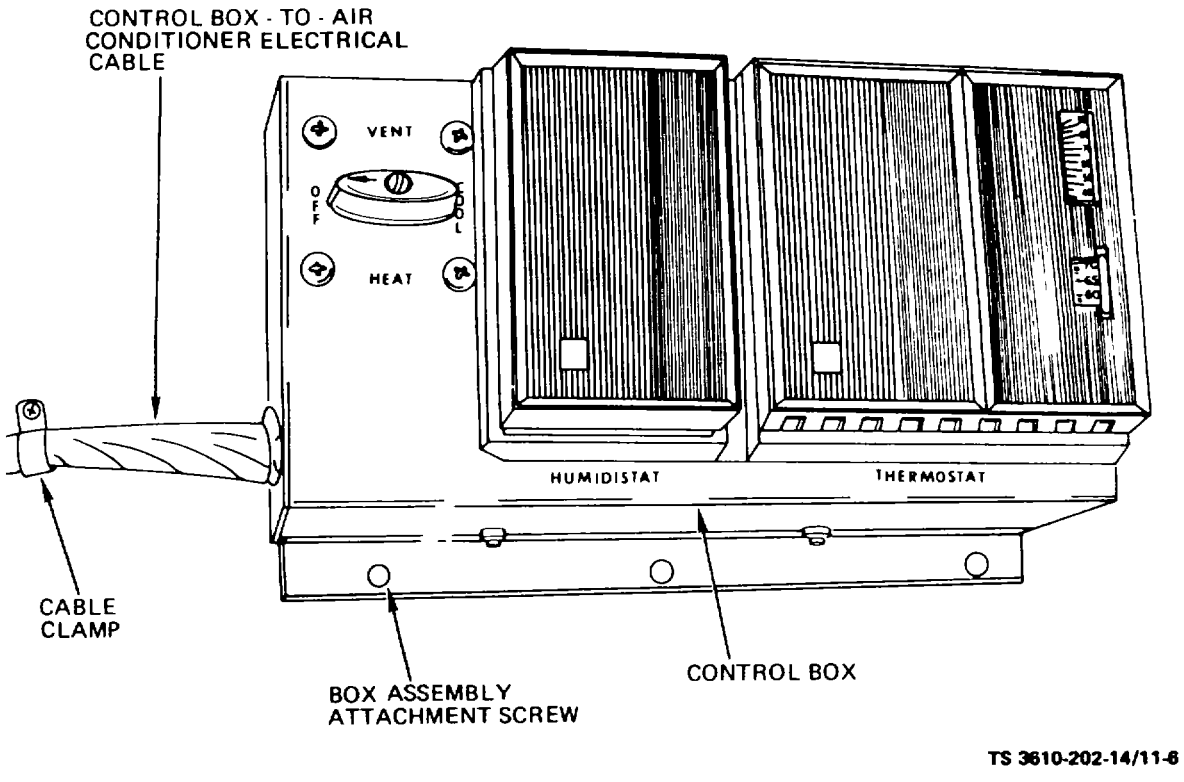

Figure 11-6. Air Conditioner Control Box, Removal aid Installation

a. Inspection. Inspect the control box as follows:

(1) Check the function control switch to ensure smooth rotation to each switch position.

(2) Check the function switch to ensure correct contact operation.

NOTE

Extreme care must be exercised while performing maintenance on humidistats and/or thermostats. They are designed to operate within a very small change in temperature and will easily become maladjusted.

(3) Loosen the locking screws which attach the humidistat and thermostat front covers, remove the covers and inspect the units.

(4) Inspect the entire assembly for loose or broken connections, dirt, dust, corrosion, fungus growth, etc.

(5) Position front covers and tighten locking screws.

b. Removal. Remove the air conditioner control box as follows:

(1) Position the air conditioner circuit breaker to off.

(2) Disconnect the electrical cable which extends between the control box and the air conditioner at the air conditioner connector. (See fig. 11-6.)

(3) Remove the cable clamps which secure the control box cable to the shelter wall.

(4) Remove the screws and lockwashers which attach the control box to the shelter wall and remove the box complete with cable.

c. Repair. Repair the control box as follows:

(1) Clean contacts with a strip of bond paper. If necessary, moisten the paper with drycleaning solvent and then polish contacts with another strip of dry paper.

(2) Repair and tighten any faulty wires or connections.

(3) Check the temperature setting against the requirements of the air conditioner and readjust if necessary.

d. Installation. Install control box as follows:

(1) Position air conditioner control box on shelter wall and secure with mounting screws and lockwashers. (See fig. 11-6.)

(2) Connect interconnecting power control cable to air conditioner and secure cable to shelter wall with cable clamps.

(3) Position air conditioner circuit breaker to on.

CHAPTER 12
REPAIR OF BLACKOUT WARNING SYSTEM

12-1. General.

The blackout warning system is intended to warn personnel in the shelter to turn off the lights in the shelter before the shelter door is opened during a blackout. The system consists of a blackout warning buzzer, located directly above the electrical control box against the inside of the right rear wall, and a blackout buzzer warning pushbutton located on the rear outside wall to the left of the shelter door.

12-2. Blackout Warning System.

a. Blackout Warning Buzzer.

(1) Inspection. If the blackout warning buzzer is not activated when the switch is depressed, inspect/test the buzzer as follows:

(a) Position blackout buzzer circuit breaker in main power service box to on.

(b) Remove the screws that attach the buzzer cover to the base and remove the cover. (See fig. 12-1.)

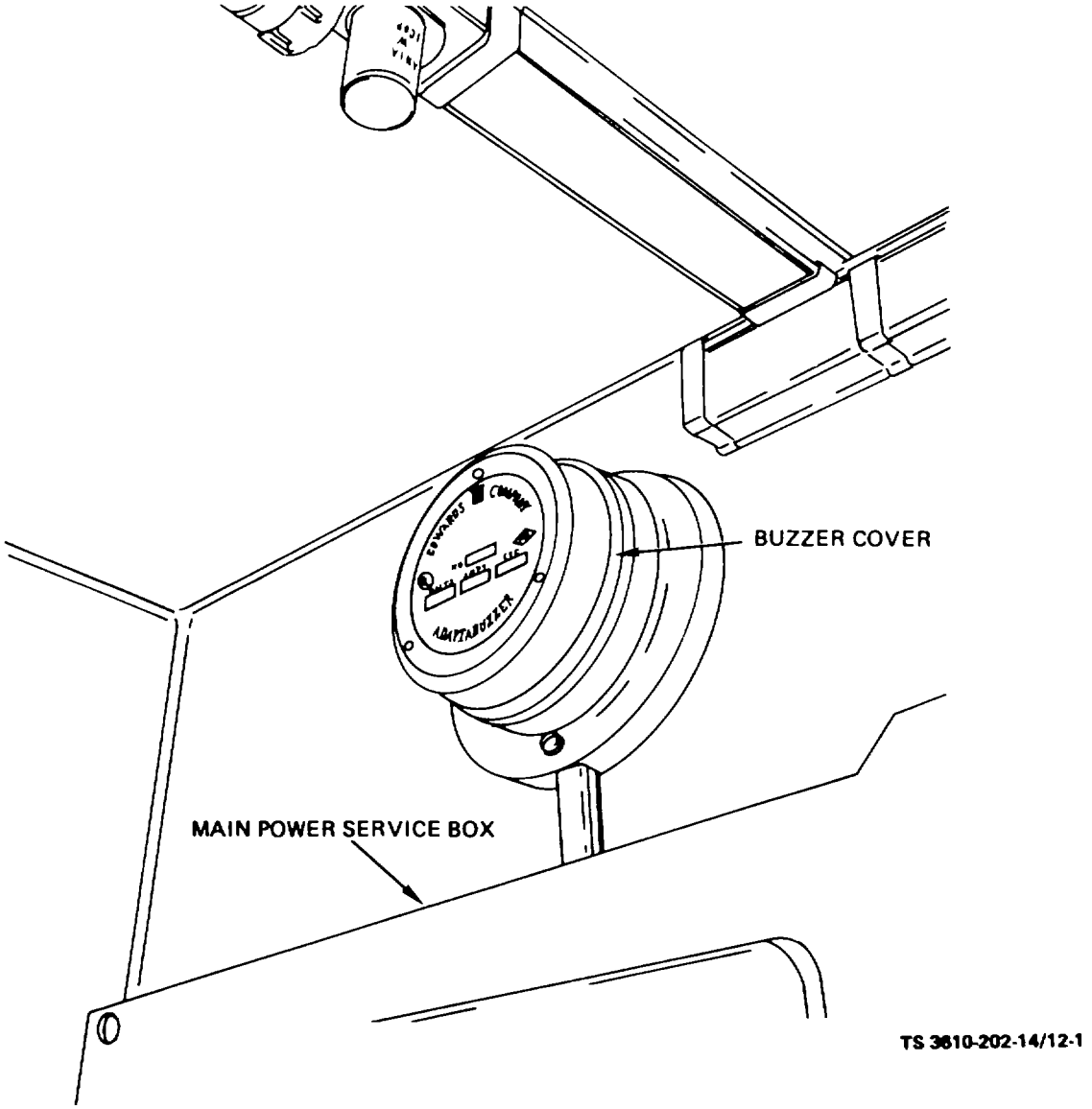

Figure 12-1. Blackout Warning Buzzer, Removal and Installation

(c) Using a suitable meter or test light, check for continuity at wire connections when blackout warning switch is depressed.

(2) Removal. Remove blackout warning buzzer as follows: (a) Position blackout buzzer circuit breaker in main power service box to off.

(b) Tag and disconnect two wires at the buzzer base.

(c) Remove the screws which attach the buzzer base to the outlet box on the shelter wall and remove the base.

(3) Repair. Repair of the blackout warning buzzer consists of replacement.

(4) Installation. Install the blackout buzzer as follows:

(a) Position new buzzer base on the outlet box and secure with attaching screws.

(b) Connect two wires at the buzzer base and remove tags.

(c) Position the blackout warning buzzer cover on the buzzer base and secure with attaching screws.

(d) Position blackout buzzer circuit breaker in main power service box to on.

(e) Depress blackout warning switch and ensure that buzzer operates correctly.

b. Blackout Warning Switch.

(1) Inspection. If the blackout warning buzzer is not activated when the switch is depressed, inspect/test the switch as follows: (a) Remove three nuts, lockwashers and bolts that secure the cover to the housing. Loosen the fourth nut and allow the cover to swing down. (See fig. 12-2.)

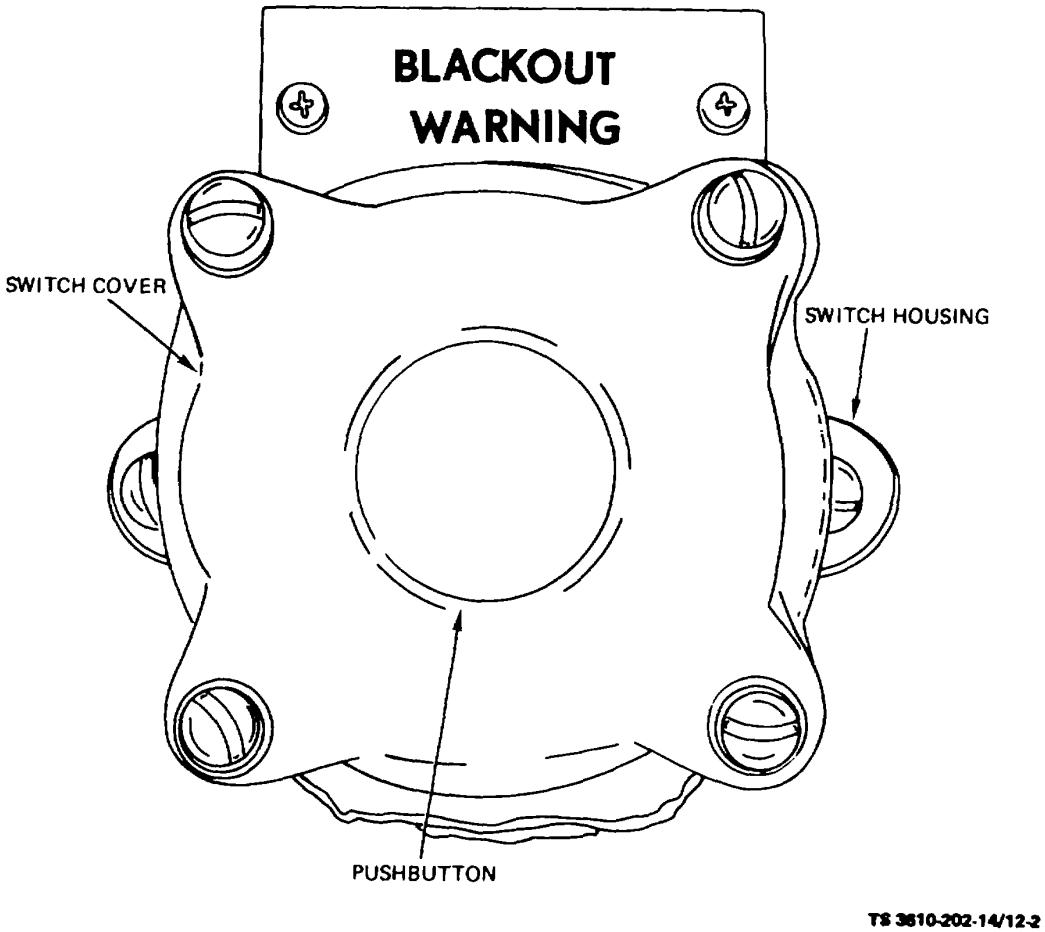

Figure 12-2. Blackout Warning Switch, Removal and Installation

(b) Position the blackout buzzer circuit breaker in the main power service box to on.

(c) Using a suitable meter or test light, check for continuity at wire connections when blackout warning switch is activated.

(2) Removal. Remove the blackout warning switch as follows:

(a) Position the blackout buzzer circuit breaker in the main power service box to off.

(b) Tag and disconnect the wires from the switch.

(c) Remove the two screws that secure the switch to the switch housing and remove the switch.

(3) Repair. Repair of the blackout warning switch consists of replacement.

(4) Installation. Install the blackout warning switch as follows:

(a) Position the replacement switch in the switch housing and secure with two screws.

(b) Connect the wires to the switch and remove the tags.

(c) Swing the cover up into position over the switch housing, tighten the nut and install and tighten the remaining three nuts, lockwashers and bolts.

(d) Position the blackout buzzer circuit breaker in the main power service box to on.

(e) Depress blackout warning switch and assure that buzzer operates correctly.

CHAPTER 13
REPAIR OF BLACKOUT DOOR LOCKPIN ASSEMBLY

13-1. General.

The blackout lockpin is used to prevent the shelter door from being opened from the outside during blackout periods. The chain mounted pin is located on the inside rear wall of the shelter to the left of the door. When in use, the pin passes through a hole in the shelter door locking mechanism. (See fig. 13-1.)

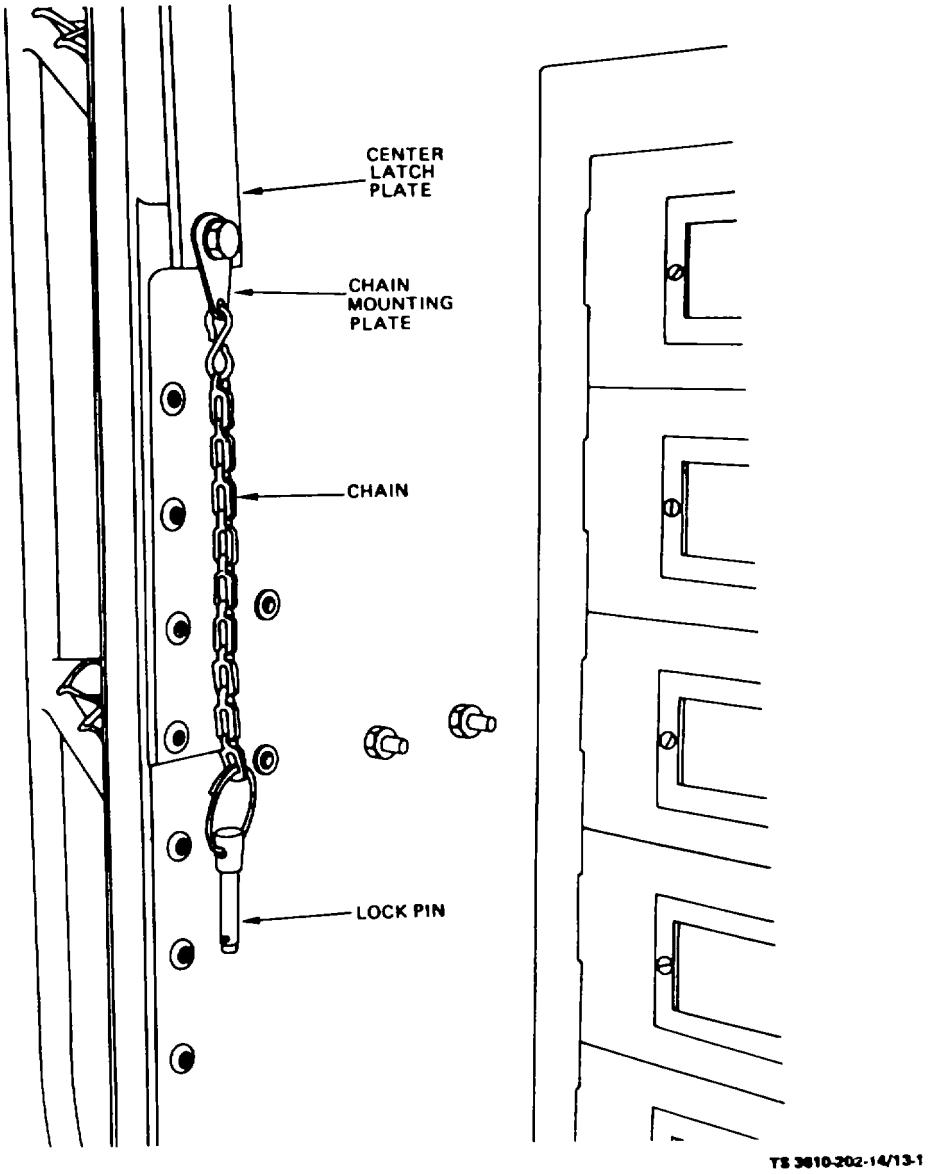

Figure 13-1. Blackout Door Lockpin Assembly

13-2. Blackout Door Lockpin Assembly.

a. Inspection. Inspect the blackout pin assembly as follows:

(1) Inspect pin for any damage which would prevent insertion into the door locking mechanism. Replace as necessary.

(2) Inspect pin chain for security of installation.

(3) Inspect chain for breaks or apparent weakening of links.

(4) Inspect pin for security of attachment to chain.

b. Removal. Remove blackout pin assembly as follows:

(1) Remove bolt attaching chain mounting plate and remove blackout lockpin assembly.

(2) The chain mounting plate attachment bolt also secures the center latch plate. If a new lockpin is not to be immediately installed, install latch plate bolt.

(3) If necessary, remove lower latch plate attachment bolt.

c. Repair. Repair of the blackout pin consists of replacement.

d. Installation. Install the blackout pin as follows:

(1) Position new lockpin chain mounting plate and install attaching bolt.

(2) The pin-to-chain attachment ring is an ordinary key ring device and both the pin and the ring can be replaced in the same manner as a key.

CHAPTER 14
REPAIR OF TELEPHONE BINDING POST ASSEMBLY

14-1. General.

Two telephone binding posts, located on the left aft exterior wall of the shelter, provide connections for telephone communication with other units of the transportable special warfare printing plant.

14-2. Telephone Binding Post Assembly.

a. Inspection. Inspect the binding posts as follows:

(1) Inspect fieldphone connection cover for damage, ease of movement and presence of nomenclature plate.

(2) Inspect the telephone binding post assembly for general condition, corrosion, and security of mounting.

(3) Inspect each binding post for freedom of movement and correct return to the spring-loaded out position.

b. Binding Posts.

(1) Removal. Remove binding posts as follows:

NOTE

Removal procedures are identical for each binding post.

(a) Raise hinged fieldphone connection cover. (See fig. 14-1.)

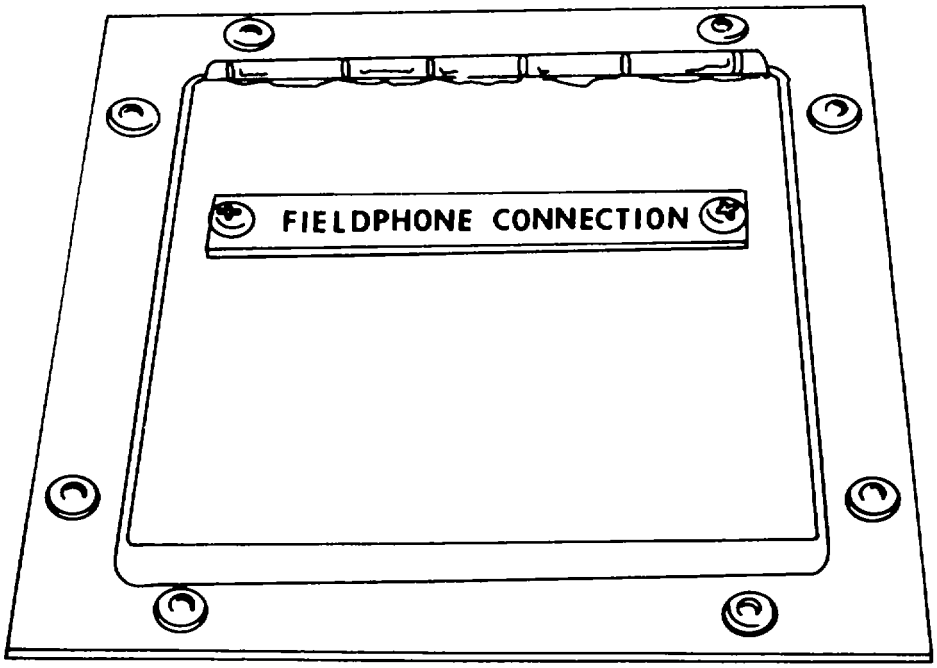

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Figure 14-1. Fieldphone Connection Cover

(b) Remove the nuts and washers, located on the interior wall of the shelter, from the binding post. (See fig. 14-2.)

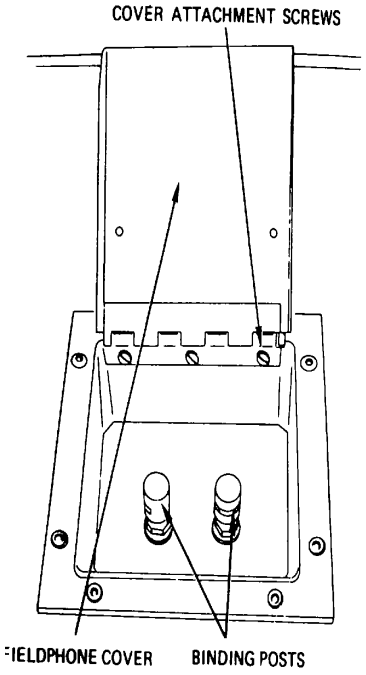

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Figure 14-2. Telephone Binding Post, Removal and Installation

(c) Remove the binding post by pulling out from exterior end.

(2) Repair. Repair of the telephone binding posts consists of replacement.

(3) Installation. Install new binding posts as follows:

NOTE

Installation procedure are identical for each binding post.

NOTE

Assure that binding post am positioned so that telephone wires can be invited from the underside of the post

(a) Insert two binding posts through holes in assembly frame and shelter wall.

(b) Install washers and nuts on the binding posts and tighten.

(c) Close hinged fieldphone connection cover.

c. Hinged Cover.

(1) Removal. Remove the hinged fieldphone connection cover as follows:

(a) Raise cover and remove the screws attaching the cover hinge to the frame assembly. (See fig. 19-2.)

(b) Remove hinged cover.

(c) Remove attaching screws from nomenclature placard and remove placard. (See fig. 14-1.)

(2) Repair. Repair of the fieldphone hinged cover consists of replacement.

(3) Installation. Install new hinged fieldphone connection cover as follows:

(a) Position the nomenclature placard on the replacement cover and match drill attaching holes.

(b) Secure placard with attaching screws.

(c) Position removed cover hinge on new hinge and match drill attaching holes.

(d) Weld new hinge to cover.

(e) Position hinged cover on assembly frame and attach with screws.

(f) Close cover.

CHAPTER 15
REPAIR OF LADDER ASSEMBLY

15-1. General.

A ladder mounting bracket assembly is provided on the outside of the rear wall of the shelter to the left of the shelter door consisting of an upper bracket, a backing plate, two retainers and a holddown assembly. A holddown retaining strap is provided to secure the ladder during movement of the shelter.

15-2. Ladder Assembly.

a Inspection. Inspect the ladder mounting bracket and holddown assembly as follows:

(1) Inspect the fastener loops and the screws that attach them to the shelter wall for security and condition.

(2) Inspect the retaining strap and the retaining strap buckle for security and condition.

(3) Inspect upper mounting bracket for cracks, rust, corrosion, security of attachment and sealant condition.

(4) Inspect retainer brackets for cracks, rust, corrosion, security of attachment and sealant condition.

b. Ladder Holddown.

(1) Removal. Remove ladder holddown as follows: (a) Unlatch the retaining strap and remove the ladder.

(b) Remove the screws that attach the fastener loops to the shelter wall and remove the fastener loops from the retaining strap. (See fig. 15-1.)

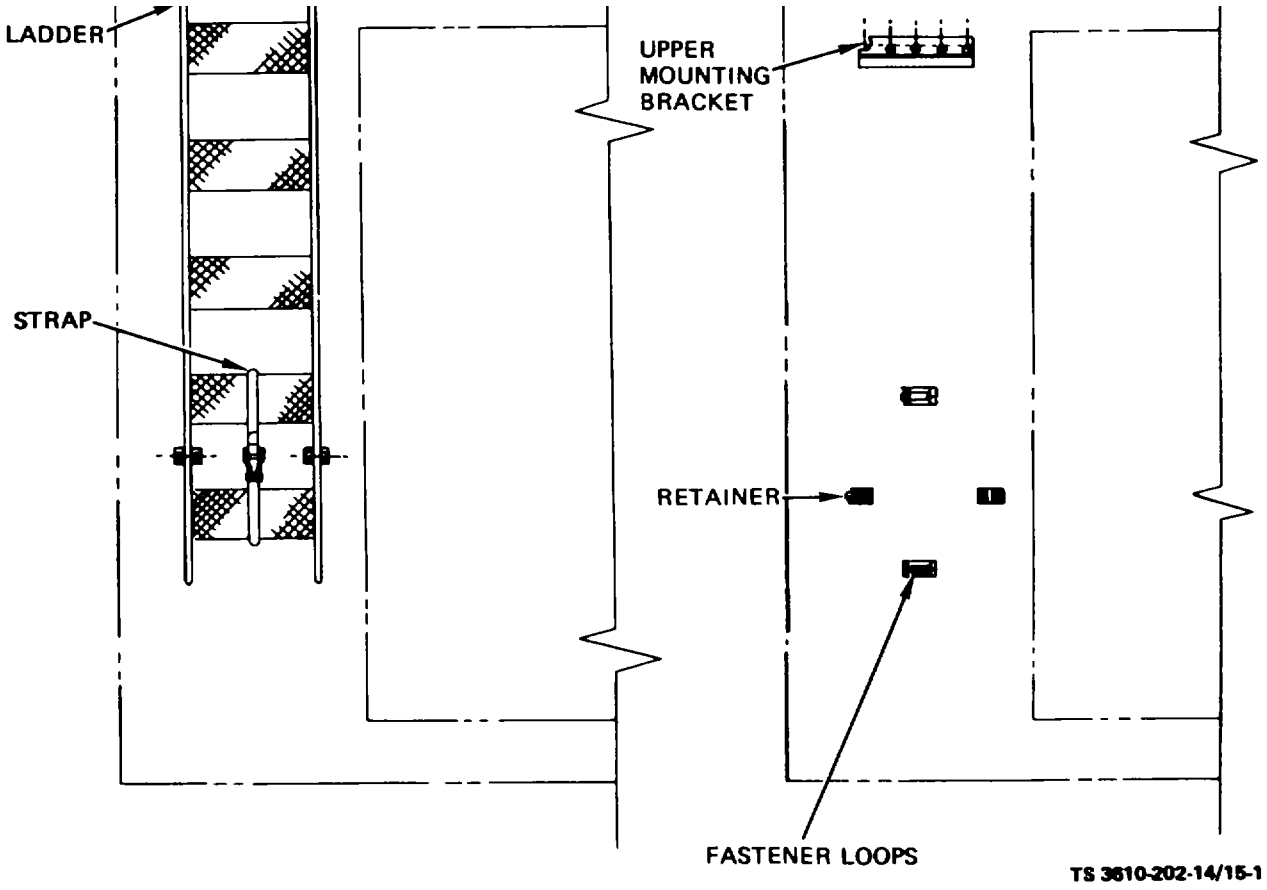

Figure 15-1 Ladder Assembly Holddown, Removal and Installation

Figure 15-1. Ladder Assembly Holddown, Removal and Installation

(2) Repair. Repair of the ladder holddown consists of fabricating a new retaining strap as follows:

(a) Cut three feet of cotton webbing to match previously removed retaining strap.

(b) Machine sew loop ends and buckle to webbing.

(c) Cut webbing end to receive clip and press clip to webbing.

(3) Installation.

(a) Install the fastener loops through the ends of the retaining strap and secure the fastener loops to the shelter wall with two screws each.

(b) Position the ladder on the ladder mounting bracket assembly and secure with the retaining strap.

c. Upper Mounting Bracket.

(1) Removal Remove the upper mounting bracket as follows:

(a) Unlatch the retaining strap and lift ladder off ladder mounting bracket assembly.

(b) Remove five bolts, nuts, and washers from upper bracket, cut through sealant, and remove the bracket and the backing plate. (See fig. 15-2.)

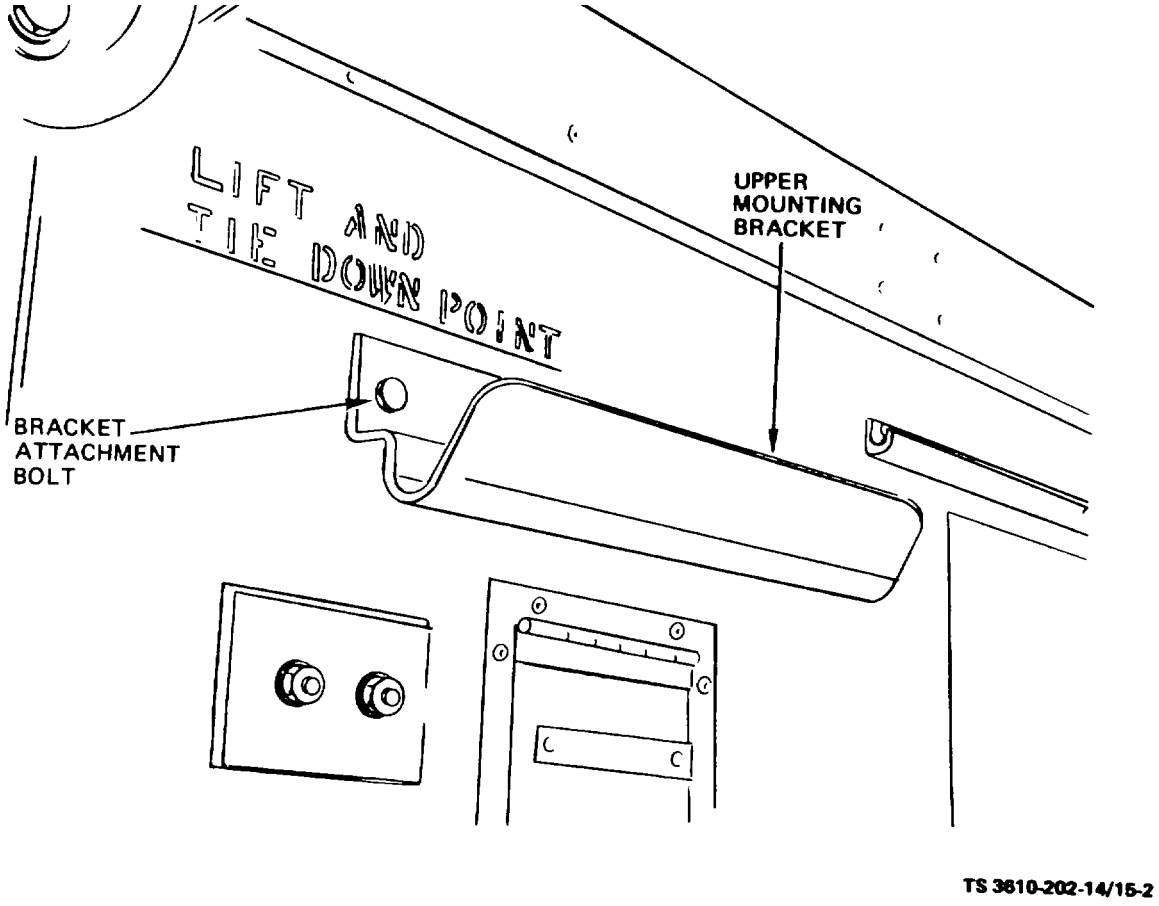

Figure 15-2. Ladder Upper Mounting Bracket, Removal and Installation

Figure 15-2. Ladder Upper Mounting Bracket, Removal and Installation

(2) Repair. Repair of the upper mounting bracket consists-of replacement.

(3) Installation. Install the upper mounting bracket as follows: (a) Using heavy paper, construct mounting hole location templates by placing the paper on the removed backing plate and upper bracket and marking mounting holes.

(b) Using the templates as guides, drill mounting holes in the replacement backing plate and upper bracket. Secure backing plate and upper bracket to the shelter with five nuts, bolts and washers utilizing existing holes in the shelter and seal around the edges of the bracket.

(c) Position ladder on ladder mounting brackets and secure the retaining strap.

d. Retainer Brackets.

(1) Removal Remove the retainer brackets as follows:

NOTE

Replacement procedures are identical for both retainer brackets.

(a) Unlatch the retaining strap and lift ladder off ladder mounting bracket assembly.

(b) Remove two bolts, nuts, and washers attaching the retainer, cut away sealant, and remove retainer and mounting plate. (See fig. 15-1.)

(2) Repair. Repair of the retainer brackets consists of replacement.

(3) Installation. Install the retainer brackets as follows:

(a) Match drill the replacement retainer with the existing retainer, position mounting plate and secure to the shelter wall with two nuts, bolts and washers utilizing existing holes in the shelter wall.

(b) Apply sealant around edges of bracket.

(c) Position ladder on mounting brackets and secure the retaining strap.

CHAPTER 16
REPAIR OF LEVEL INDICATOR ASSEMBLY

16-1. General.

Two recessed level gages are installed on the shelter. One gage is installed on the outside wall of the shelter to the left of the shelter door. The second is installed at the same level on the outer roadside wall of the shelter. The gages are used to level the shelter during installation on uneven terrain. (See fig. 16-1.)

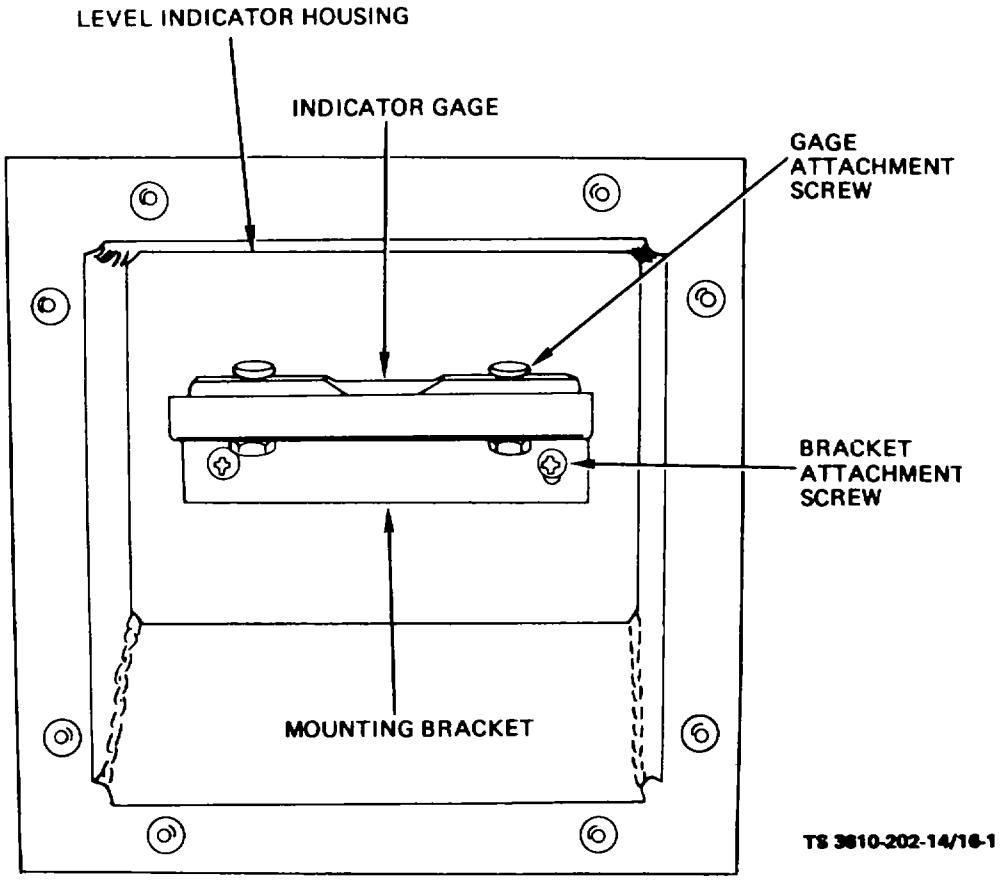

Figure 16-1. Level Indicator Gage and Housing, Removal and Installation

1

6-2. Level Indicator Assembly.

a. Removal. Remove the level indicator assemblies as follows:

NOTE
Removal procedures are identical for both assemblies.

(1) Drill out the blind rivets securing the level indicator assembly to the shelter wall and remove the assembly. (See fig. 16-1.)

(2) Remove sealant from shelter wall.

b. Installation. Install the level indicators as follows:

(1) Using heavy paper, construct a mounting hole location template by placing the paper on the removed indicator assembly and mark mounting holes.

(2) Using the template as a guide, drill mounting holes in the replacement indicator assembly.

(3) Apply sealant to back of assembly and position in shelter wall.

(4) Secure with blind rivets.

CHAPTER 17
REPAIR OF MAIN POWER CABLE ASSEMBLY

17-1. General.

The main power cable is used to supply the shelter with power from the power source. The cable is equipped with a plug which inserts into main power receptacle at right of shelter door. The cable is a type SO, 50 feet (15.25 meters) in length utilizing four conductors in accordance with Specification MIL-C-3432. (See fig. 17-1.)

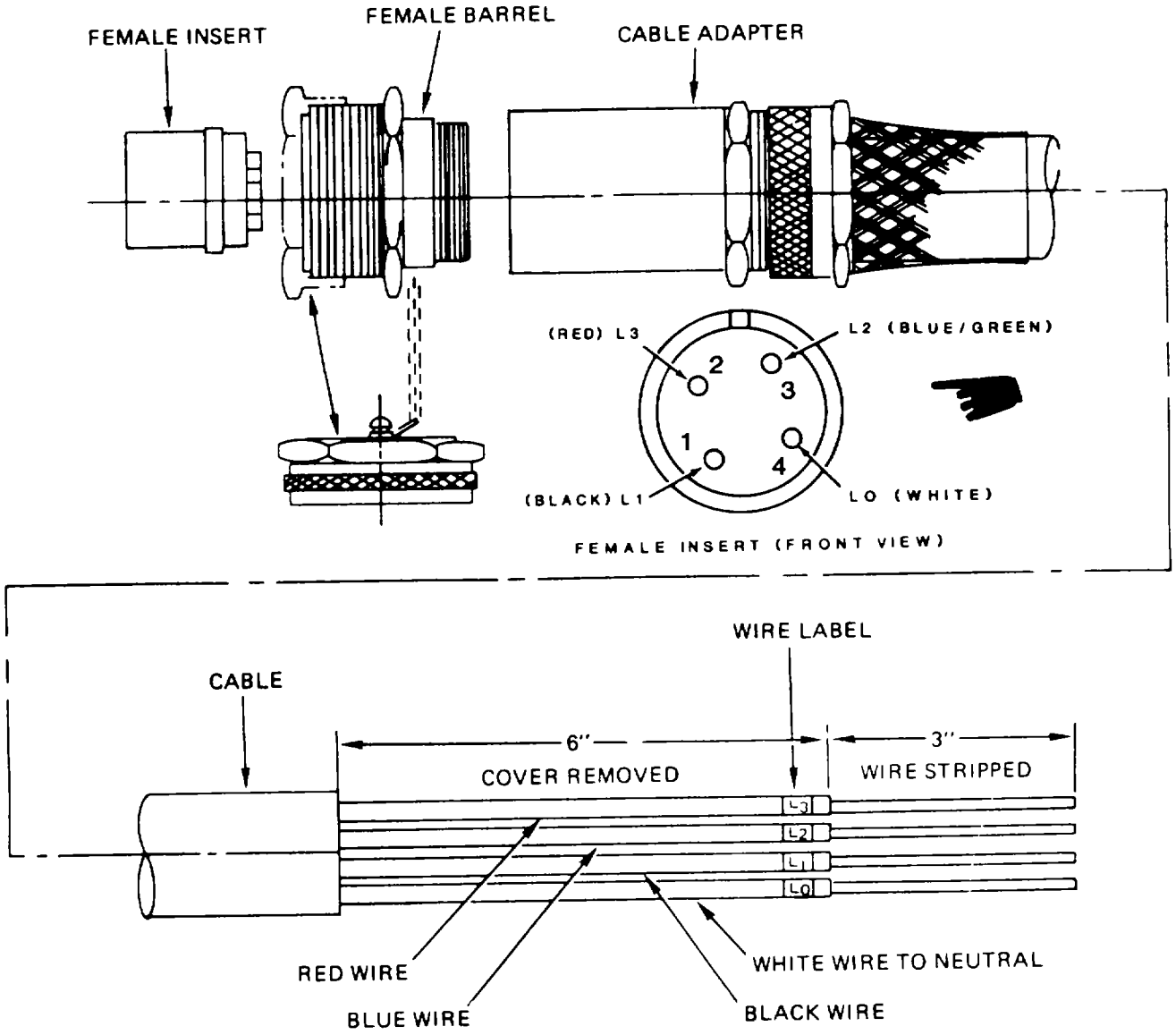

Figure 17-1. Main Power Cable Assembly

17-2. Main Power Cable Assembly.

a. Inspection. Inspect the main power cable for general condition of the insert, barrel, cable adapter, and deterioration of cable. Replace as required.

b. Insert and Barrel.

(1) Removal. Remove female barrel and insert as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Use extreme caution during the disconnect process.

(a) Shut down the generator power source in accordance with the applicable technical manual.

(b) Disconnect the main power cable from the power receptacle.

(c) Using suitable wrenches on the hexagonal portions of the barrel and cable adapter, loosen the connection between the two and separate the unit.

(2) Repair. Repair of the main power cable consists of replacing components.

(3) Installation. Install the female barrel and insert as follows:

(a) Install the threaded male portion of the replacement barrel into the female portion of the cable adapter.

(b) Using suitable wrenches, tighten the connection between the two units.

(c) Connect power cable to receptacle.

c. Cable and Cable Adapter.

(1) Removal. Remove the cable and cable adapter as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Use extreme caution during the disconnect process.

(a) Shut down the generator power source in accordance with the applicable technical manual.

(b) Disconnect the main power cable from the power receptacle.

(c) Using suitable wrenches on the hexagonal portions of the barrel and cable adapter, loosen the connection between the two and separate the units.

(d) Using suitable wrenches on the hexagonal portions of the adapter and the cable end, loosen the connection between the two and separate the units.

(2) Repair. Repair of the power cable consists of replacing components.

(3) Installation. Install the cable and cable adapter as follows:

(a) Inspect the new cable for correct wire color coding and wire end labels.

NOTE

Green wire may be used in lieu of blue. However, the green wire should be marked as a blue wire by painting or similar identification as a hot lead.

(b) Install the threaded male portion of the adapter into the female portion of the cable end.

(c) Using suitable wrenches, tighten the connection between the two units.

(d) Install the threaded male portion of the barrel into the female portion of the cable adapter.

(e) Using suitable wrenches, tighten the connection between the two units.

(f) Connect power cable to receptacle.

CHAPTER 18
REPAIR OF MAIN POWER RECEPTACLE

18-1. General.

The main power receptacle is located in the rear of the shelter, right of the shelter door. The receptacle permits the supply of power to the main power service box when the power cable is connected. The receptacle consists of a receptacle box, an electrical shield, a barrel and a connector. (See fig. 18-1.)

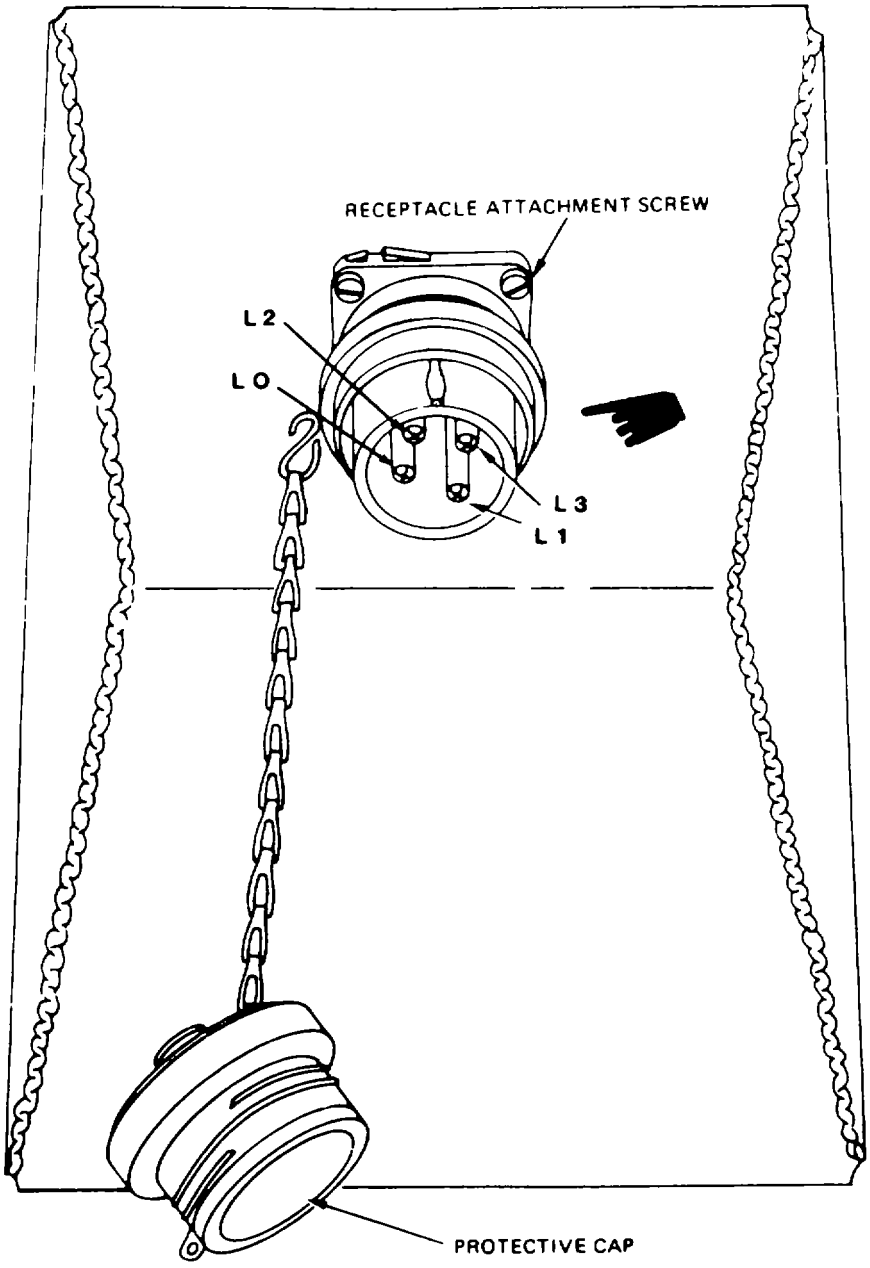

Figure 18-1. Main Power Receptacle, Removal and Installation.

18-2. Main Power Receptacle.

a. Inspection. Inspect the main power receptacle as follows:

(1) Inspect the electrical connector pins for damage and security.

(2) Inspect the knurled, threaded female portion of the connector for thread damage.

(3) Inspect protective cap and chain for damage and security.

(4) Inspect electrical shield and mounting screws for damage, security and correct sealing.

b. Removal. Remove the main power receptacle as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Use extreme caution during the disconnect process.

(1) Disconnect main power cable from receptacle.

(2) Remove receptacle access plate from rear of receptacle box by removing attaching screws.

(3) Remove nuts and bolts which secure cover of main power service box and remove cover.

(4) Tag and disconnect the four main electrical wires and remove from terminals. Remove wiring clamps as necessary.

(5) Remove receptacle mounting nuts and screws and remove receptacle, gasket, cap and wiring from shelter wall. (See fig. 18-1.)

c. Repair. Repair of the main power receptacle consists of replacement of receptacle and cap, gasket, and wiring as necessary.

d. Installation. Install the main power receptacle as follows:

(1) If necessary, solder wiring to new receptacle using removed receptacle as a pattern.

(2) Install receptacle, cap and gasket and secure with nuts and screws.

(3) Carefully slide wires into main power service box. Using previously tagged wiring as a pattern, position wiring on appropriate terminal and secure with screws. Install wiring lamps as necessary.

(4) Install cover on main power service box and secure with nuts and bolts.

(5) Install access plate on rear of receptacle box and secure with screws.

(6) Connect main power cable to receptacle.

CHAPTER 19
REPAIR OF MAIN POWER SERVICE BOX ASSEMBLY

19-1. General.

The main power service box assembly, located on the interior right aft shelter wall, contains circuit breakers and distribution terminals for the shelter electrical system. The circuit breakers function as input power safety devices; they will automatically open and disconnect a line if it is overloaded. The circuit breakers may be manually opened or closed. The input power cable from the input power receptacle enters the bottom of the service box and is provided with a protective cover plate. (See fig. 19-1.)

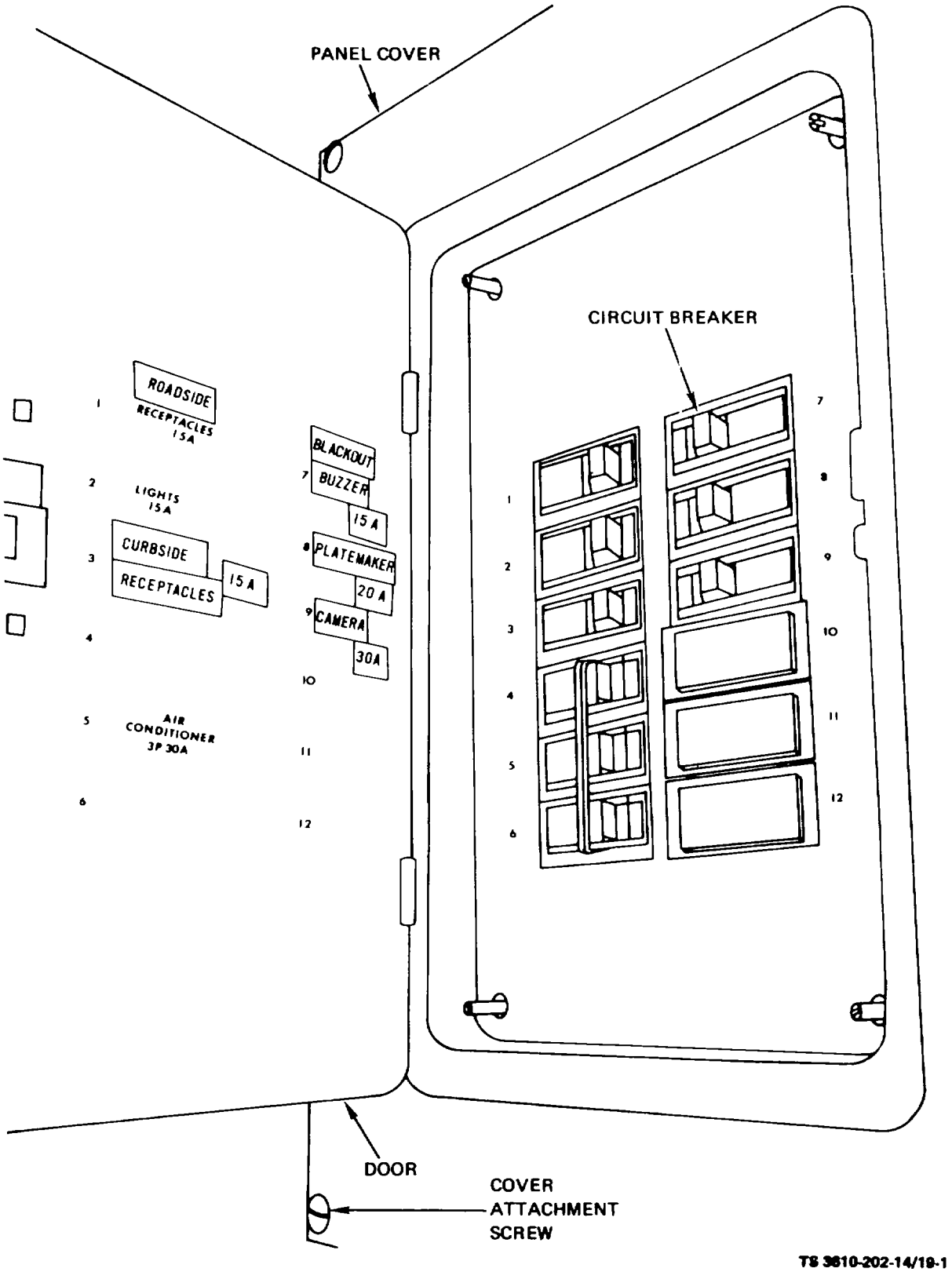

Figure 19-1. Main Power Service Box Assembly

19-2. Main Power Service Box Assembly.

a. Inspection. Inspect the main power service box assembly as follows:

(1) Inspect service box door and hinges for damage and ease of movement. Ensure that data stencils are legible.

(2) Inspect protective cover panel for damage and security.

(3) Inspect service box housing for dents, defective paintwork or other damage.

(4) Inspect circuit breakers for correct operation.

(5) Inspect circuit breaker aperture blanks for damage and security.

b. Circuit Breaker Panel.

(1) Removal. Remove the circuit breaker panel assembly as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Use extreme caution during the disconnect process.

(a) Disconnect main power cable from main power receptacle.

(b) Remove the four door panel screws and remove the door panel. (See fig. 19-1.)

(c) Remove the four circuit breaker panel screws and remove the circuit breaker panel.

(d) Detach and tag all wires.

(e) Loosen the four nuts at the four corners of the interior panel.

(f) Remove the interior panel by sliding up and lifting out.

(2) Repair. Repair of the circuit breaker panel consists of replacement.

(3) Installation. Install the circuit breaker panel as follows:

(a) Position replacement panel over nuts and slide downwards.

(b) Tighten the interior panel attaching nuts.

(c) Connect all wires and remove tags.

(d) Position circuit breaker panel and install attaching screws.

(e) Position front door panel and install attaching screws.

(f) Connect main power cable.

c. Circuit Breakers.

(1) Removal. Remove circuit breakers as follows:

WARNING

High voltage capable of causing death is utilized in this power circuit. Use extreme caution during the disconnect process.

(a) Disconnect main power cable from main power receptacle.

(b) Remove the four screws that attach the circuit breaker panel cover to the service box and remove the cover. (See fig. 19-1.)

(c) Disconnect and tag wires from the circuit breaker and pull the circuit breaker from the mounting bar and contact bar.

(2) Repair. Repair of the circuit breakers consists of replacement.

(3) Installation. Install the circuit breakers as follows:

(a) Position replacement circuit breaker and push into mounting and contact bars.

(b) Connect wires to the circuit breaker and remove tags.

(c) Position the panel cover in the service box and install attaching screws.

(d) Connect main power cable to main power receptacle.

CHAPTER 20
REPAIR OF FLUORESCENT LAMP ASSEMBLY

20-1. General.
Two rows of fluorescent ceiling lamp assemblies provide illumination for the editorial and photomechanical shelter. The five-lamp rows are controlled by two switches mounted on the interior aft wall of the shelter to the left of the shelter door. Each fixture consists of two halves, the upper half being secured to the shelter ceiling. The lower half which clips into the upper half contains the ballast transformer, lamp starter, fluorescent tube and sockets and associated wiring. (See fig. 20-1.)

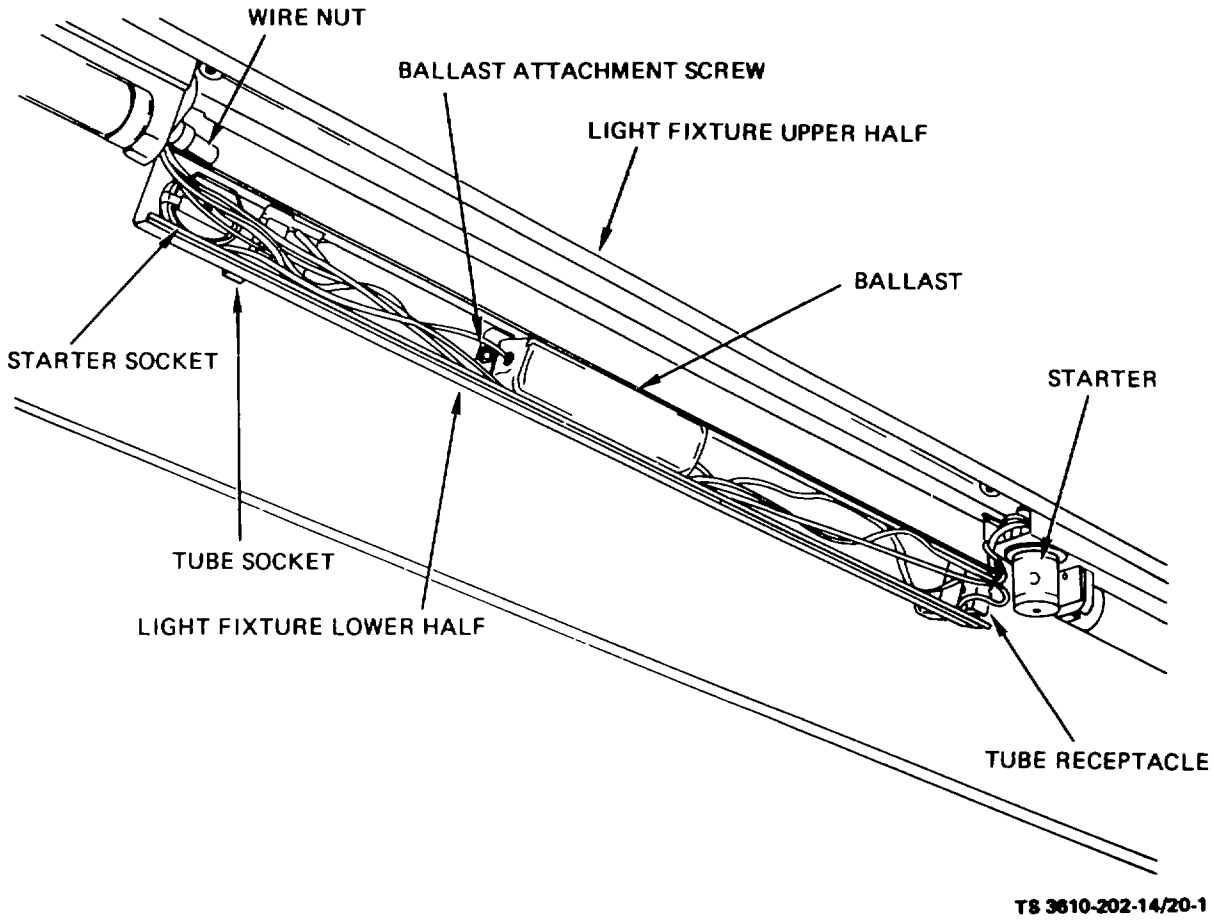

Figure 20-1. Fluorescent Lamp Assembly

20-2. Fluorescent Lamp Assembly.

a Inspection. Inspect the fluorescent lamp assemblies as follows:

(1) Inspect fluorescent tubes for discoloration and adequate illumination or failure. Replace as required.

(2) Inspect fluorescent tube sockets for damage and security.

(3) Inspect lamp fixture halves for damage and correct attachment.

(4) Inspect starter and replace if defective.

(5) Inspect ballast and replace if defective.

b. Removal. Remove ballast as follows:

(1) Grasp fluorescent lamp tube, rotate 90 degrees and lower from tube sockets.

(2) Rotate the starter counterclockwise and remove from starter socket.

(3) Position the lights circuit breaker in the

main power service box to off.

(4) Using a thin bladed screwdriver or similar tool, carefully lever the light assembly away from the ceiling light channel. (See fig. 20-1.)

(5) Remove the wire nut which connects one ballast wire to the other lamp circuit wires at one end of the fixture.

(6) Disconnect the remaining ballast wire from the fluorescent tube receptacle at the other end of the fixture.

(7) Remove the screws which attach the ballast to the upper side of the light fixture and remove the ballast.

c. Repair. Repair of the fluorescent lamp assembly consists of replacement of the components.

d. Installation. Install the ballast as follows:

(1) Correctly position replacement ballast unit on upper side of light fixture and install attaching screws.

(2) Connect one ballast wire to other lamp circuit wires at one end of fixture using a wire nut.

(3) Connect remaining ballast wire to the fluorescent tube receptacle at the other end of the fixture.

(4) Ensuring that no wires become trapped, position the light fixture into the ceiling light channel and snap into position.

(5) Insert serviceable starter and rotate clockwise until the starter locks.

(6) Position lamp tube below socket receptacles with pins vertical. Insert lamp into sockets and twist until pins lock.

(7) Position the lights circuit breaker in the main power service box to on.

APPENDIX A
REFERENCES

A-1. Fire Protection.

TB 5-5420-200-10	Hand Portable Fire Extinguishers for Army Users.

A-2. Lubrication.

C91001L	Fuels, Lubrication, Oil and Waxes.

A-3. Painting.

TM 9-213	Painting Instructions for Field Use.

A-4. Cleaning.

C68001L	Chemicals and Chemical Products.

A-5. Maintenance.

TB 750-240	Maintenance and Repair Procedures for S-141/G, S-144/G, S-250/G, S-280/G, and S-318G, type shelters.
TM 11-5410-213-15P	Shelters, Electrical Equipment S-280A/G and S-280B/G.
TM 5-671	Preventive Maintenance for Refrigeration, Air Conditioning, Mechanical Ventilation and Evaporative Cooling.
TM 5-764	Electric Motor and Generator Repair.
TM 5-4120-226-15/20P/35P	Air Conditioner, 18,000 BTU Thermo King Model S18-105TM2.
TM 5-7430-212-13/23P	Composing Machine, Changeable Plate Type, Varitype Corp. Model 660 and 660F.
TM 5-7430-213-13/23P	Composing Machine, Photo Printing, Varitype Corp. Model 840.
TM 10-3610-202-20P	Organizational Maintenance Repair Parts and Special Tools Lists. Editorial Shelter NSN 3610-00-987-9066 Component of Printing Plant, Special Warfare: NSN 3610-00-889-3311 Transportable.

TM 10-3610-202-34P	Direct and General Support and Depot Maintenance Repair Parts and Special Tools List. Editorial Shelter NSN 3610-00-987-9066 Component of Printing Plant, Special Warfare: NSN 3610-00-889-3311) Transportable.
TM 38-750	The Army Maintenance Management System.

A-6. Shipment and Storage.

TB 740-93-2	Preservation of USAMEC Mechanical Equipment for Shipment and Storage.
TM 38-230-1	Preservation and Packing o" Military Equipment.
TM 740-90-1	Administrative Storage of Equipment.

A-7. Destruction of Material to Prevent Enemy Use.

TM 750-244-3	Destruction of Material to Prevent Enemy Use.

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTON

B-1. Scope.

This appendix lists integral components of and basic issue items for the Editorial and Photomechanical Shelter to help you inventory items required for safe and efficient operation.

B-2. General.

This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the shelter and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the shelter in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the shelter during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns.

a. Illustration. This column is divided as follows:

(1) Figure Number. Indicates the figure number of the illustration on which the item is shown (if applicable).

(2) Item Number. The number used to identify item called out in the illustration.

b. National Stock Number (NSN). Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Part Number (P/N). Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. USABLE ON codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are:

Code	Used On
AYC	Shelter NSN 3610-00-987-9066

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
15-1		2540-00-892-6243	SCDL108736 (80063)	ladder, steel, vehicle boarding	AYC	1					
4-1		3940-00-846-9858	SC-D-36423 (80063)	Sling, multiple leg, lifting ad tiedown	AYC	1					
17-1		3610-00-410-8523	6-1-2125-3-64 (74451)	Power Cable Assembly, 50 feet long	AYC	1					
		4720-00-112-7393	6-1-2426-4-61 (81902)	Hose, drain, 8 ft. long condensate, air conditioner Drain Hose Assembly, Sink, consisting of:	AYC	1					
10-2		4720-00-882-1379	168W (74034)	Hose, low pressure, 1" ID	AYC	1					
10-2		4730-00-908-3195	MS35842-2 (96906)	Clamp for 1" ID hose	AYC	1					
10-2		4320-00-360-0944	S327025-5 (96906)	Coupler, quick, disa-connect for 1" ID hose	AYC	1					
4-23		3610-01-037-6326	6-1-5873 (81337)	Rub-Up board assembly	AYC	1					
4-17		4310-01-041-6869	6-1-5892 (81337)	Box, sound-proof, Vacuum pump	AYC	2					
		5975-00-642-8937		Rod, ground, copper weld, 108 ± 1.25, 5/8 dia., coae point; with drawing stud, clamp, 3 couplng, 3 rods 3 ft. long. Ground cable 6 ft. long with ground terminal. Fed. Sec. W-R-550, Type m, Class B.	AYC	1					

Section III. BASIC ISSUE ITEMS

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
7-1		7105-00-269-8463	109 (12017)	Chair, folding, metal tubular frame, Fed. Spec. AA-C-291, Type I, Class I, Style 4	AYC	1					
6-1		7110-00-634-8596	AAS700(81348)	Stool, revolving, steel drafting, w/o back, Fed. Spec. AA-S-700, Type II, Size 1	AYC	1					
4-18		6740-00-403-5664	6-1-5014-55 (81337)	Safelight, Dark room	AYC	1					
4-22		6740-01-033-1075	Model 1400 (10066)	Trays, photo w/tray rack	AYC	1					
4-28		4210-00-555-8837		EXTINGUISHER, fire, MIL-E-52031	AYC	1					
4-29		6545-00-922-1200		First Aid Kit, general purpose	AYC	1					
		6720-01-030-7980	420 (47904)	Camera, ill picture, self processing w/ Flashgun, P/N 490 (47904) Carrying case, P/N 477 (47904)	AYC	1					
		5675-00-514-3537		Curve, drafting, irregular, plastic, french, pattern 13, Fed. Spec. GG-C-871, TYPE I	AYC	1					
		6875-00-641-3531		Draftng Instrument Set, lined case, TROBCOM SC 6675-97-CL-E07	AYC	1					
		3610-00-843-5811		Funnel, steel, rigid, spout, 1 pint	AYC	1					
		5110-00-595-8400		Knife, craftman's Fed. Spec. GGG-K-450, CLASS II	AYC	1					
		6675-00-551-3234		Lettering Set, Fed. Spec. GG-L-256, TYPE 1 Style 2, Set #3	AYC	1					
		7350-00-249-5165		Pitcher, solution, stainless, steel, 2 qt	AYC	1					
		3610-00-843-5797		Rod, stirring	AYC	2					
		3610-00-843-5584		Ruler, steel, No. 605	AYC	1					
		6740-00-403-5664		Safelight, darkroom, Photo, type, PH-422	AYC	1					

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
		5110-00-161-6912		Shears, straight Trimmers, Fed. Spec. GG-S-278 CLASS I, Style A		AYC	1				
		6645-00-246-4934		Timer, Industrial		AYC	1				
		6675-00-190-5867		Triangle, Drafting plastic, 30-60 degree Fed. Spec. GG-T-671 TYPE I, composition A							
		6675-00-190-5863		Triangle, drafting, plastic, 45 degree, Fed. Spec. GG-T-671, TYPE I, Composition A		AYC	1				
		NSN in process		Varigraph Production Outfit w/composing table complete. (Composing Machine, Type) Varigraph Co.		AYC	1				

APPENDIX C
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

C-1. General.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (0'AC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions on explanatory notes for a particular maintenance function.

C-2. Maintenance Functions.

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), and item, or system.

j. Overhaul That maintenance effort (services/ actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) 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.

k. 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 (hours/miles, etc.) considered in classifying Army equipments/components.

C-3. Column Entries Used in the MAC

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph C-2.)

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The number of man-hours specified by 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, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C	Operator or crew
O	Organization maintenance
F	Direct support maintenance
H	General support maintenance D
D	Depot maintenance

e. **Column 5, Tools and Equipment**. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall contain a letter code in alphabetic order which shall be keyed to the remarks contained in Section IV.

C-4. Column Entries Used in Tool and Test Equipment Requirements.

a. Column 1, Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a maintenance function on the identified end item or component.

b. Column 2, Maintenance Level. The lowest level of maintenance, authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National/NATO Stock Number. The National or NATO stock number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

C-5. Explanation of Columns in Section IV.

a. Reference Code. The code scheme recorded in column 6, Section II.

b. Remarks. This column lists information pertinent to the maintenance function being performed as indicated on the MAC, Section II.

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
01	FILE CABINET ASSEMBLY	Inspect		0.2					
		Replace		1.0					
		Repair		0.5					
02	PLATEMAKER								
	Modification	Replace			12.0				
	Mercury Vapor Tube	Replace		0.2					
03	LIGHT TABLE								
	Modification	Replace			6.0				
	Shelf	Inspect			0.1				
	Replace	4.0							
	Fluorescent Tube	Replace		0.2					
04	STOOL HOLDDOWN ASSEMBLY	Inspect			0.1				
	Replace	1 0							
05	FOLDING CHAIR HOLDDOWN	Inspect			0.1				
	ASSEMBLY	Replace			1.0				
06	STORAGE COMPARTMENT	Inspect		0.2					
		Replace		2.0					
		Repair		1.0					
07	WALL CABINET ASSEMBLY	Inspect		0.1					
		Replace		0.5					
		Repair		1.0					
08	STORAGE SHELF	Inspect		0.1					
		Replace		0.5					
09	COMPOSING MACHINE, TYPE								
	Composing Machine	Replace		8.0					
	Stand Assembly	Inspect		0.2					
		Replace		12.0					
10	CAMERA								
	Modification	Replace		1.0					
	Camera	Replace				32.0			
	Lamp Holddown	Inspect			0.1				
		Replace			1.0				
	Camera Lamp	Replace		0.2					
	Vacuum Pump Sound								
	Attenuator	Replace		0.2					
	Vacuum Hose	Replace		0.2					
11	FILM DRYER								
	Modification	Replace			1.5				
	Shelf	Inspect			0.1				
		Replace			2.0				
12	DEVELOPER SHELF	Inspect			0.1				
		Replace			2.0				
		Repair			1.0				

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
13	SAFELIGHT ASSEMBLY	Inspect	0.1						
		Replace	0.2						
		Repair	0.2						
14	WATER TANK ASSEMBLY								
	Water Tank	Inspect	0.2						
		Replace	8.0						
	Immersion Heater	Inspect	0.1						
		Test	0.5						
		Replace	1.0						
	Plumbing	Inspect	0.2						
		Replace	4.0						
		Repair	2.0						
15	COMPOSING MACHINE, HEADLINER	Replace	2.0						
16	PHOTOTRAY ASSEMBLY	Inspect	0.1						
		Replace	0.2						
17	RUB-UP BOARD ASSEMBLY	Inspect	0.1						
		Replace	0.2						
		Repair	1.0						
18	SINK SHIELD	Inspect	0.1						
		Replace	0.5						
19	HEADLINER COUNTER ASSEMBLY								
	Counter	Inspect	0.2						
		Replace	8.0						
		Repair	4.0						
	Sink Assembly	Inspect	0.2						
		Replace	4.0						
	Sink Drain Assembly	Inspect	0.2						
		Replace	4.0						
		Repair	2.0						
20	AIR CONDITIONER								
	Heating Element Assembly	Inspect	2.0						
		Test	1.0						
		Repair	24.0						
	Terminal Relay Box	Inspect	0.5						
		Replace	4.0						
		Repair	2.0						
	Control Box	Inspect	0.5						
		Replace	8.	0					
		Repair	4.0						
	Intake Air Filter	Inspect	0.2						
		Service	0.5						
		Replace	0.2						
	Humidifier Assembly	Inspect	0.1						
		Service	0.2						
		Replace	2.0						

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
21	FIRE EXTINGUISHER ASSEMBLY	Inspect		0.1					
		Service		0.5					
		Replace		0.2					
22	FIRST AID KIT	Inspect	0.1						
		Replace	0.2						
23	BLACKOUT WARNING SYSTEM	Inspect		0.3					
		Replace		1.0					
		Repair		0.5					
24	BLACKOUT LOCKPIN ASSEMBLY, DOOR	Inspect		0.2					
		Replace		0.5					
		Repair		0.7					
25	FILTER, SHELTER DOOR	Inspect	0.1						
		Service	0.5						
		Replace	0.3						
26	TELEPHONE BINDING POST ASSEMBLY	Inspect		0.1					
		Replace		1.0					
		Repair		0.5					
27	LADDER ASSEMBLY								
	Ladder	Inspect	0.1						
		Replace	0.3						
		Repair	1.0						
	Mounting Bracket and Holddown Assembly	Inspect		0.2					
		Replace		0.7					
		Repair		1.0					
28	LEVEL INDICATOR ASSEMBLY	Inspect	0.1						
		Replace		4.0					
		Repair	0.5						
29	MAIN POWER CABLE ASSEMBLY	Inspect		0.2					
		Replace		0.2					
		Repair		1.0					
30	MAIN POWER RECEPTACLE	Inspect		0.2					
		Replace		8.0					
		Repair		1.5					
31	MAIN POWER SERVICE BOX ASSEMBLY	Inspect	0.2						
		Repair	0.5						
32	LAMP ASSEMBLY								
	Fixture	Inspect	0.2						
		Repair	1.0						
	Fluorescent Lamp	Replace	0.2						
33	LAMP SWITCHES	Inspect	0.1						
		Repair	0.5						
34	EQUIPMENT RECEPTACLES	Inspect	0.1						
		Repair	0.5						

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the Editorial and Photomechanical Shelter. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heralidic Items).

D-2. Explanation of Columns.

a. Column I Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., Use cleaning compound, Item 9, App. D).

b. Column 2 Level. This column identifies the lowest level of maintenance that requires the listed item (Enter as applicable).

C Operator/Crew
O Organizational Maintenance
F Direct Support Maintenance
H 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 item.

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 Federal Supply Code for Manufacturer (FSCM) 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 unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC AND PART NUMBER	(5) U/M
1	C	8040-00-291-8625	Adhesive, Fed. Spec. MMM-A-185	JR
2	C	7520-00-935-7136	Ballpoint pen	DZ
3	C	6750-00-147-2777	Bath, stop indicator w/hardener	QT
4	C	8530-00-162-5629	Blade, safety razor, Fed. Spec. GG-R-60	PG
5	C	8020-00-598-5907	Brush, artist, metal ferrule, Fed. Spec. H-B- 118, Type II	EA
6	C	8020-00-224-8027	Brush, artist, metal ferrule, Fed. Spec. H-B-1 18, Type II, Class 3	EA
7	C	6240-01-041-4406	Lamp, vapor mercury, Nu Arc P/N GW 1 14(93791)	EA
8	C	9310-00-290-2972	Cardboard, Fed. Spec. UU-C-190	SH
9	C	6850-00-015-3507	Cleaner, conditioner	QT
10	C	7430-00-843-5156	Cleaning Kit, headliner, P/N 3220 FMC (62812)	KT
11	C	6750-00-843-5 158	Developer, composition, power, u/w composing machine, MIL-D-4827	PG
12	C	6850-00-558-0140	Developer, image, plate, 3M brand	QT
13	C	6750-01-293-9083	Developer, photographic, black and white reproduction type, 2 1/2 gal.	EA
14	C	7530-00-612-4000	Envelope, photo negative x-ray negative preserver	HD
15	C	7510-00-223-7044	Eraser, rubber, Fed. Spec. ZZ-E-661, Type LV, Composition 13	DZ
16	C'	6850-00-551-97 15	Etch, litho plate, (process gum)	QT

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC AND PART NUMBER	(5) U/M
17	C	6750-00-252-9553	Film packets, Polaroid Land No. 107	PG
18	C	6750-01-290-5169	Film, photographic, black and white emulsion 11 in X 14 in, 100 sheets per box	BX
19	C	6750-00-15 1-5624	Fixer-, powder, headliner	PG
20	C	6750-01-205-3748	Fixer, photographic, liquid; 5 gal.	EA
21	C	361 0-00-066-6630	Gum, solution, 14° [Baume, P/N 200-726-1A FMC (00494)	GL
22	C	7510-00-286-6899	Holder, pen, Fed. Spec. GG-P-181, Type IV	DZ
23	C	751 0-00-224-6744	Ink, drawing, waterproof, black, Fed. Spec. TT-1-528	BT
24	C	7510-00-237-7048	Ink, drawing, waterproof, white, Fed. Spec. TT-1-531, I oz. size	BT
25	C	6240-01-032-7138	Lamp, quartz iodine, FAD 650W, 120V (08805)	EA
26	C	7530-00-875-8102	Overlay, pad, acetate, clear finish, size 11"x14"	EA
27	C	3610-00-864-5585	Pads, cotton, A/M, P/N 200-847	BX
28	C	7530-00-285-6034	Paper, blotting, photo, white, size 19" x 24"	DZ
29	C	7530-00-515-1716	Paper, composition, Varityper, P/N 202	PG
30	C	6640-00-559-1385	Paper, lens, Fed. Spec. NNN-P-40	HD
31	C	6750-00-250-6653	Paper, photo, contact, size 11" x 14", 50 sheets per box	BX

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC AND PART NUMBER	(5) U/M
32	C	6750-00-761-4030	Paper, photoprinting, Varityper 820	RO
33	C	7510-00-237-7991	Pen Cleaner, liquid, Fed. Spec. P-P-200	JR
34	C	7510-00-223-0400	Pen point and pen holder, Fed. Spec. SE GG-P- 1264	
35	C	7510-00-227-1548	Pen point assortment	AT
36	C	7510-00-189-7875	Pencil, drawing, Fed. Spec. SS-P-181, No. 2B	DZ
37	C	7510-00-189-7878	Pencil, drawing, Fed. Spec. SS-P-181, No. HB	DZ
38	C	7510-00-189-7880	Pencil, drawing, Fed. Spec. SS-P-181, No. 2H	DZ
39	C	7510-00-237-4926	Pencil pointer, Fed. Spec. SS-P-551, Type II	EA
40	C	3610-00-729-6286	Plate, litho, aluminum, 3M Brand K	HD
41	C	6750-00-834-0696	Photoscreen kit, instant	KT
42	C	7510-00-926-4783	Ribbon, composing machine, Varityper, No. 1900	DZ
43	C	7510-00-266-6711	Tape, pressure, sensitive, Fed. Spec. UU-T-106, Type I	RO
44	C	7530-00-875-8103	Tracing pad, empire, P/N 62B, FMC (81562)	EA
45	C	7510-00-843-5176	Transparent Film, black P/N Z301M FMC (98493)	EA

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SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC AND PART NUMBER	(5) U/M
46	C	7510-00-843-5212	Transparent Film, black, P/N Z304M FMC (98493)	EA
47	C	7510-00-843-5222	Transparent Film, black, P/N Z306M FMC (98493)	EA
48	C	7510-00-843-5242	Transparent Film, black, P/N Z339M FMC (98493)	EA
49	C	6810-01-036-4953	Vari-Spray. Varityper Corp., P/N 48-1145-0 (62812)	CN
50	C	7430-00-651-4119	Shield, shuttle, Varityper Corp. P/N 13-1011-0	EA

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By Order of the Secretary of the Army:

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

Official:

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

Distribution:
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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

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

PIN: 009768-000