TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

PRESS SHELTER
NSN 3610-00-987-9067
COMPONENT OF PRINTING PLANT, SPECIAL WARFARE, TRANSPORTABLE
NSN 3610-00-889-3311

HEADQUARTERS, DEPARTMENT OF THE ARMY
JUNE 1978

WARNING

HIGH VOLTAGE
is used in the operation of this equipment.

DEATH ON CONTACT
may result if personnel fail to observe safety precautions.

WARNING

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.

WARNING

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 degrees F to 138 degrees F (38 degrees C to 59 degrees C).

CHANGE

NO.1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 11 August 1990

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

PRESS SHELTER
NSN 3610-00-987-9067
COMPONENT OF PRINTING PLANT
SPECIAL WARFARE, TRANSPORTABLE
NSN 3610-00-889-3311

Approved for public release; distribution Is unlimited

TM 10-3610-203-14, 26 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
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, Press & Platemaking, Component of Print Plant, Special Warfare, Transportable.

TECHNICAL MANUAL
NO. 10-3610-203-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 26 June 1978

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

PRESS SHELTER
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NSN 3610-00-889-3311

REPORTING ERROR AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, U S Army Troop Support and Aviation Materiel Readiness Command, ATTN: DRSTS-MTPS, 4300 Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished to you.

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*This manual supersedes TM 10-3610-203-14, 4 December 1970.

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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 the press 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 740-90-1 (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 Recommendations (EIR). EIR's will be prepared on DA Form 2407, Maintenance Request. Instructions for preparing EIRs are provided in TM 38-750, The Army Maintenance Management System. EIRs 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 and right 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 printing and duplicating unit of the special warfare printing plant are contained in the press shelter. Duplication of master copy to be used in producing special warfare leaflets is the primary function of this shelter unit. A list of major items of equipment which make up the press shelter unit is contained in table 1-1. The location of all these items is shown in figures 1-1 thru 1-5.

Table 1-1. Contents of Press Shelter

Description of Equipment	NSN or Part No.
Air conditioner with heating and humidifying capabilities	4120-00-926-1203
Bench, steel	6-1-5887(81337)
Blackout warning buzzer with pushbutton	340A (19557)
Paper storage cabinet, Type A	6-1-5890 (81337)
Paper storage cabinet (2), Type B	6-1-5891 (81337)
Duplicating machine, offset with receding stacker	3610-00-086-7293
Color press	3610-00-987-8909
Papercutter, electrically operated, hydraulically powered	3610-00-124-0568

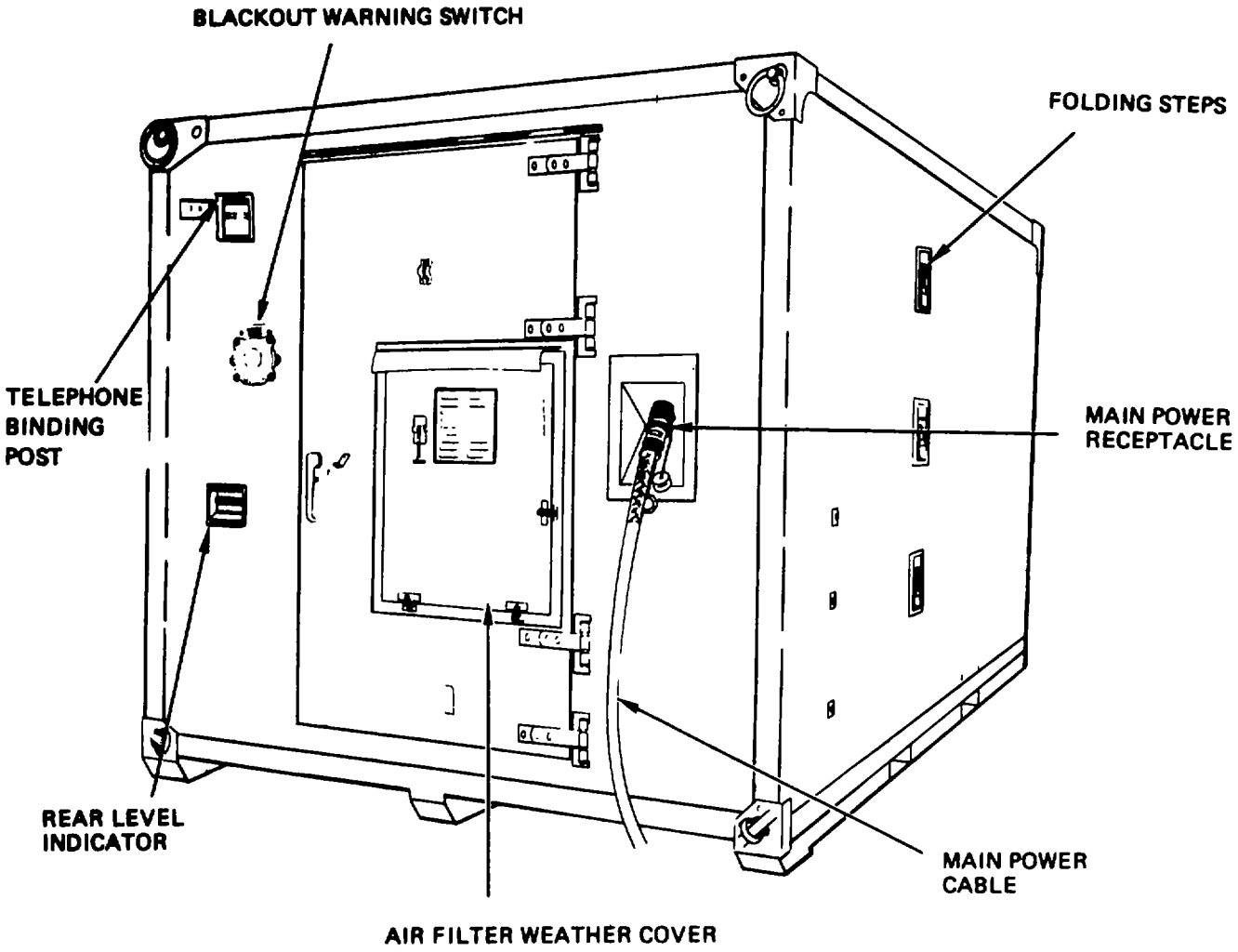


Figure 1-1. Press Shelter View From Rear.

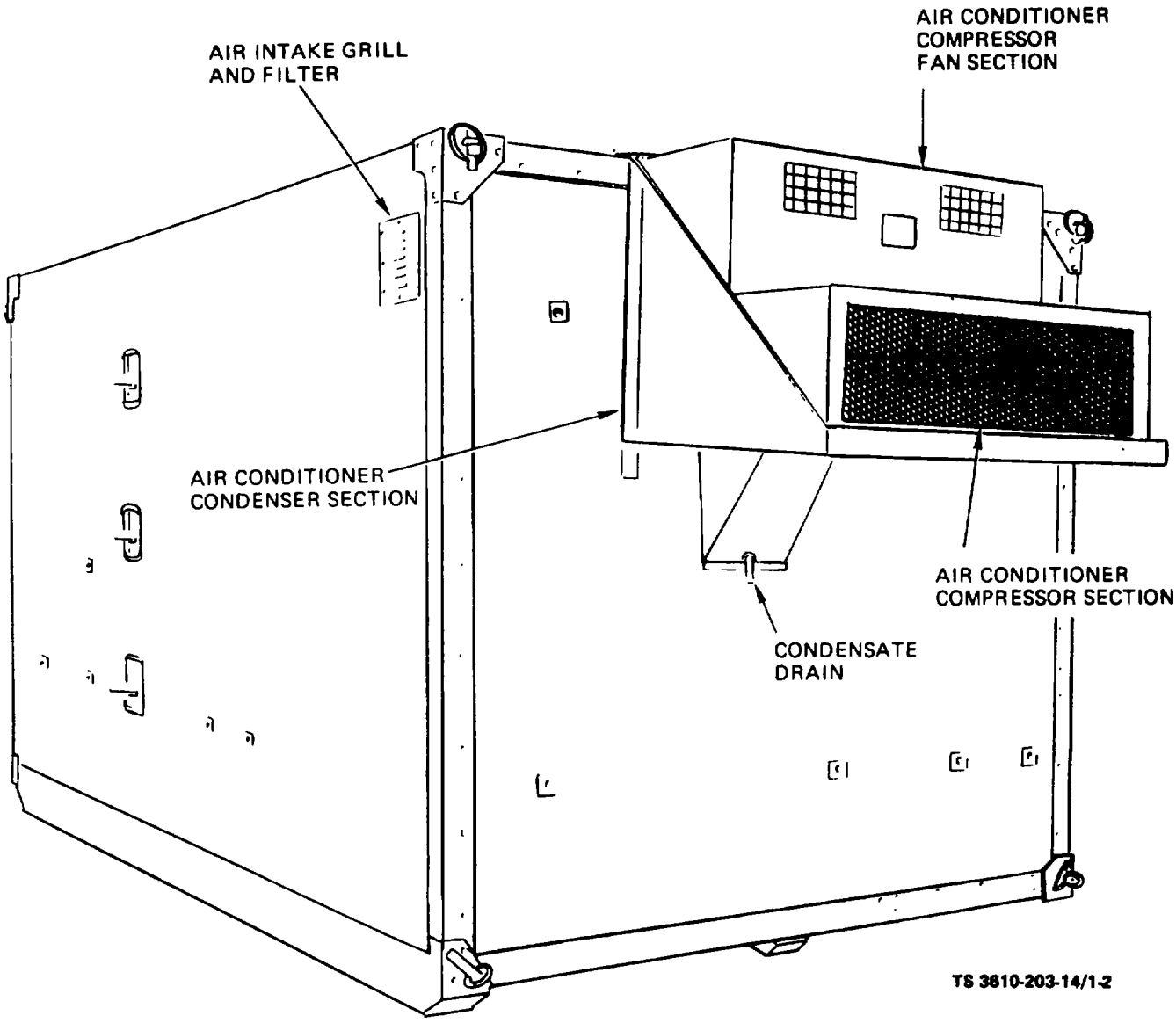


Figure 1-2. Press Shelter View From Front.

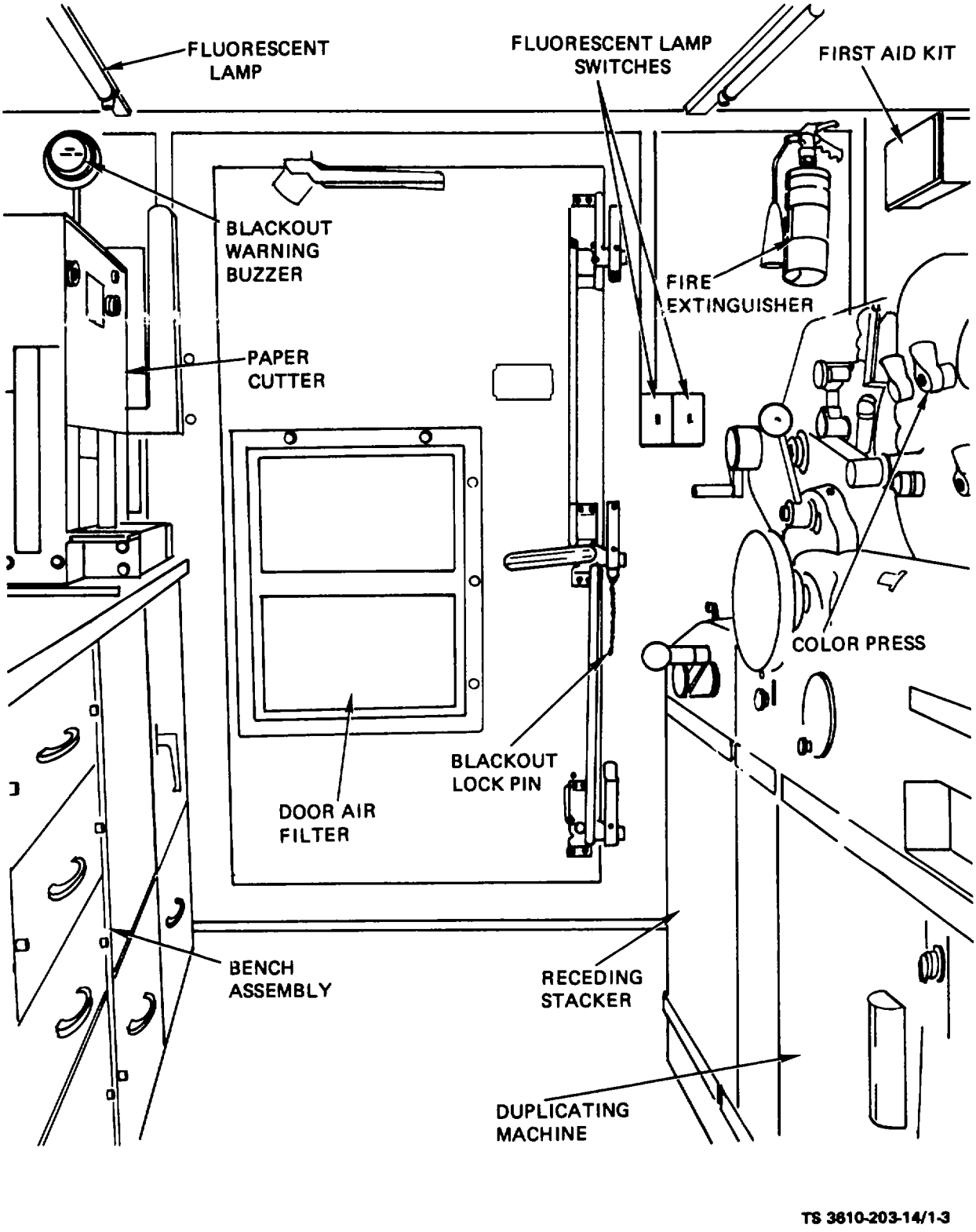


Figure 1-3. Press Shelter Interior View From Front.

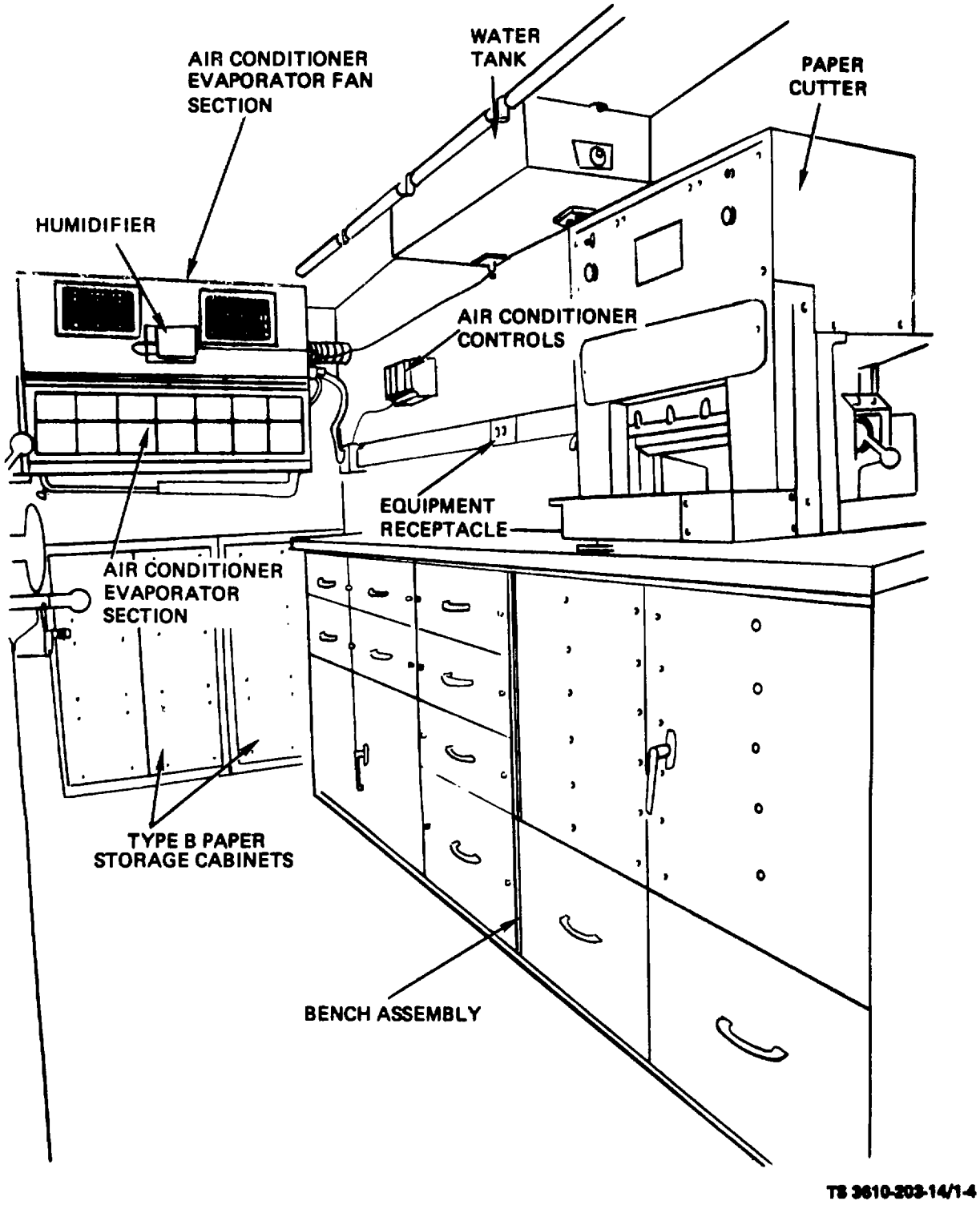


Figure 1-4. Press Shelter Right Interior View From Rear.

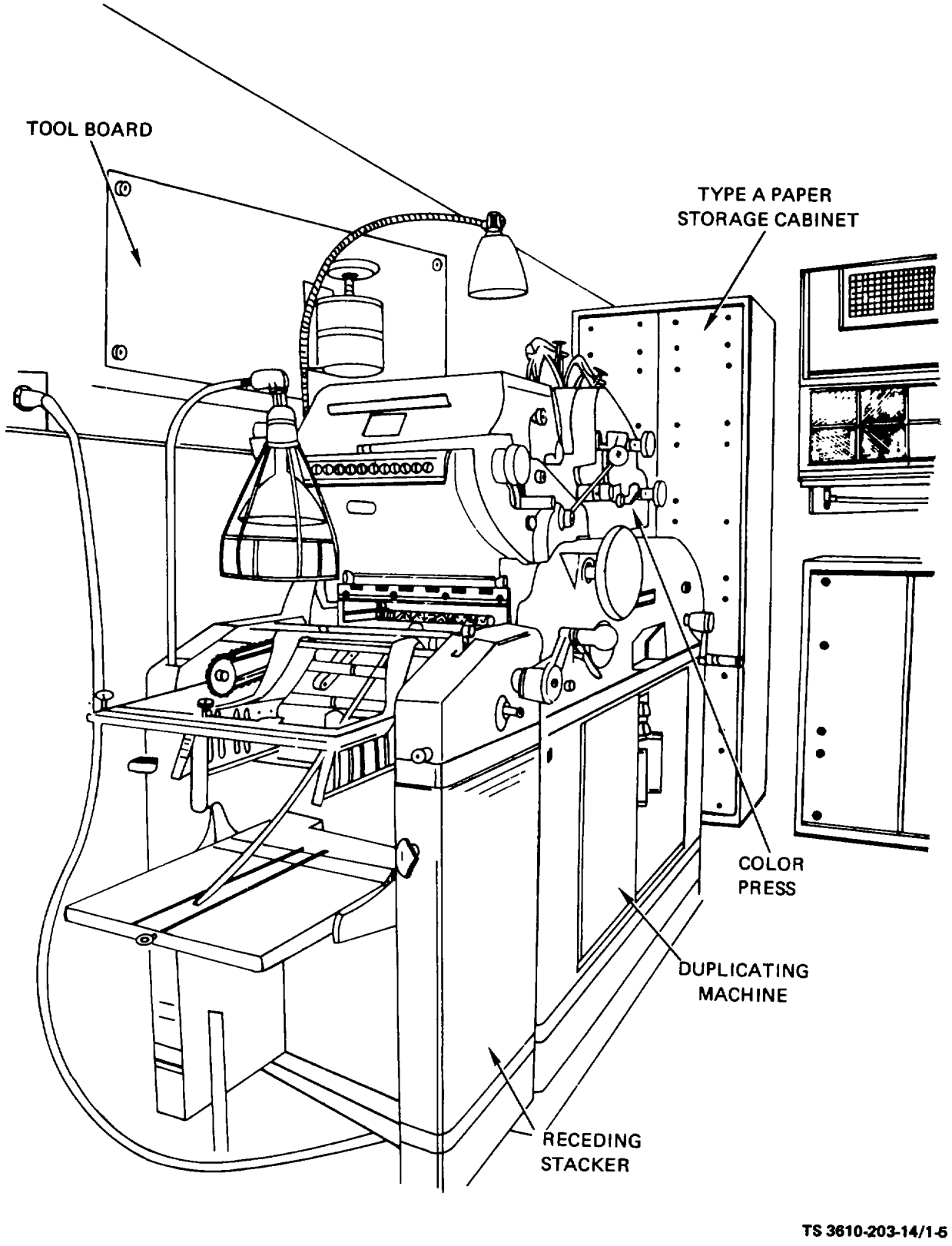


Figure 1-5. Press Shelter Left Interior View From Rear.

b. Press 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 follow:

(1) Shelter fixtures and components. (See figs. 1-1 thru 1-5.)

(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 strap mounted to two retainer brackets on the forward left-hand shelter wall.

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

(f) 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 press 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. Press Shelter Army Identification Plate Information.

NSN	3610-00-987-9067	A Component of Printing
Unit	2 of 2	Plant, Special Warfare, Transportable (Lightweight)
Serial No.....		NSN 3610-00-889-3311

Table 1-3. Press Shelter and Components Tabulated Data.

(1) Press Shelter.

Type of Construction	Stressed aluminum panels with foam core bonded between inner and outer panels.
Volume	614 cu. ft. (18 cu. m)
Dimensions:	
Length	147 in. (373.38 cm)
Width	87 in. (221 cm)
Height	83 in. (211 cm)

(2) Blackout warning buzzer.

Manufacturer	Edwards Company Incorporated
Model	340-A
Power Requirements	120 volts, 60 Hz, 0.04 amps

(3) Water storage tank.

Manufacturer	Wickes Industries, Inc.
Dimensions:	
Length	30 inches
Width	13 inches (33 cm)
Height	6 inches (15.24 cm)
Capacity	10 gallons (37.85 l)

(4) Duplicating Machine.

Manufacturer	Addressograph Multigraph Corp.
Model	1250
Dimensions:	
Length	78 inches (198 cm)
Width	27 inches (68.58 cm)
Height	52 inches (132 cm)
Weight	650 pounds (293.84 kg)
Power Requirements	115VAC 60Hz, 14 amps

(5) Color Press.

Manufacturer	Townsend Industries, Inc.
Model	T-51LW
Dimensions:	
Length	13 inches (33 cm)
Width	18 inches (46 cm)
Height	13 inches (33 cm)
Weight	65 pounds (29.4 kg)

(6) Papercutter.

Manufacturer	Alton Iron Works Inc.
Model	4906
Dimensions:	
Length	20 inches (50.8 cm)
Width	20 inches (50.8 cm)
Height	23 inches (58.42 cm)
Weight	300 pounds (136.08 kg)
Power Requirements	120 VAC 60 Hz, 1 Phase 3/4 HP

b. Electrical Data. The total electrical demand load for the press shelter and component is 5KW. Refer to figure 1-6 for the press shelter wiring diagram. Wiring diagrams for the press shelter air conditioning system are contained in figure 1-7.

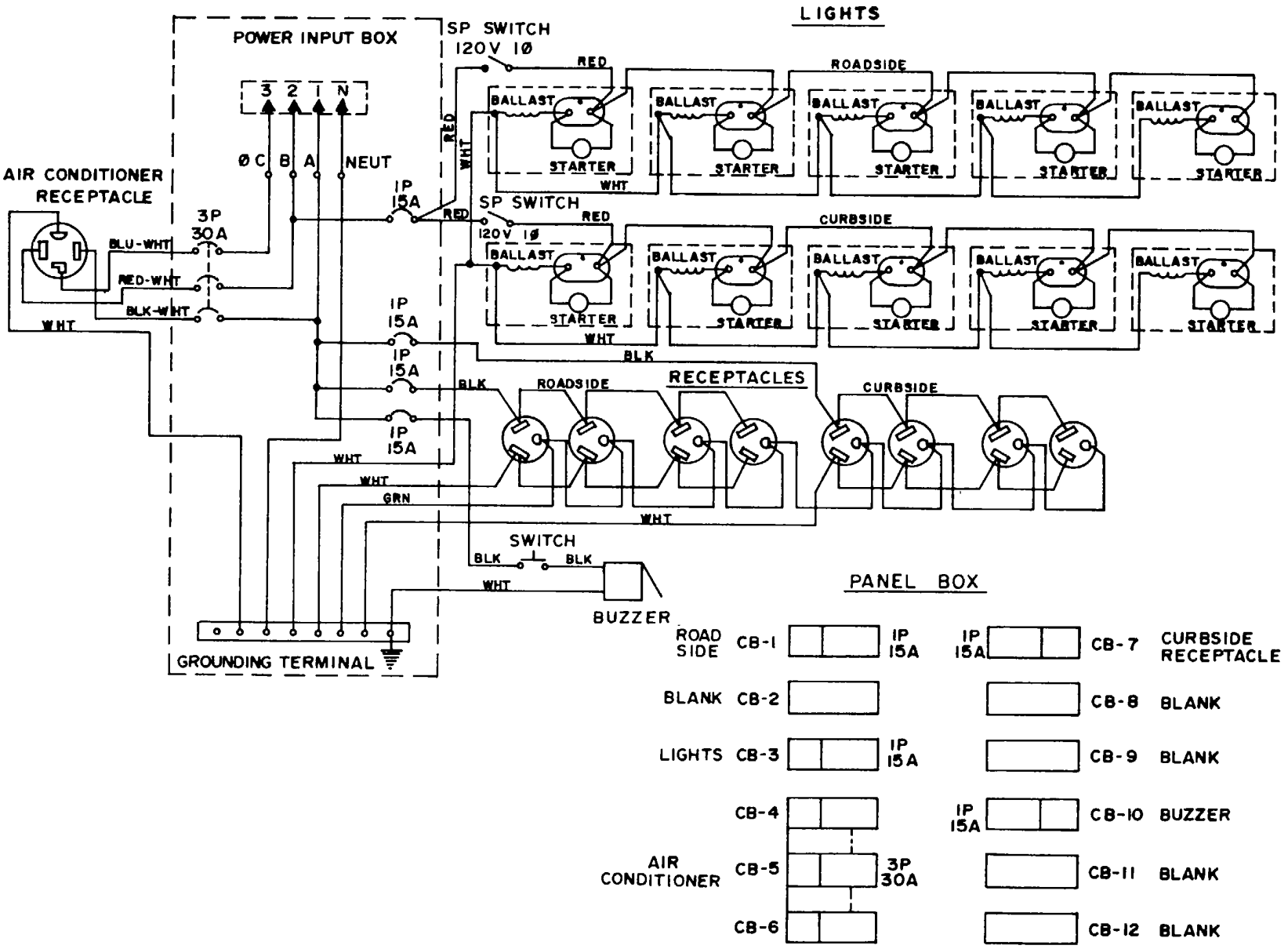


Figure 1-6. Press Shelter Wiring Diagram.

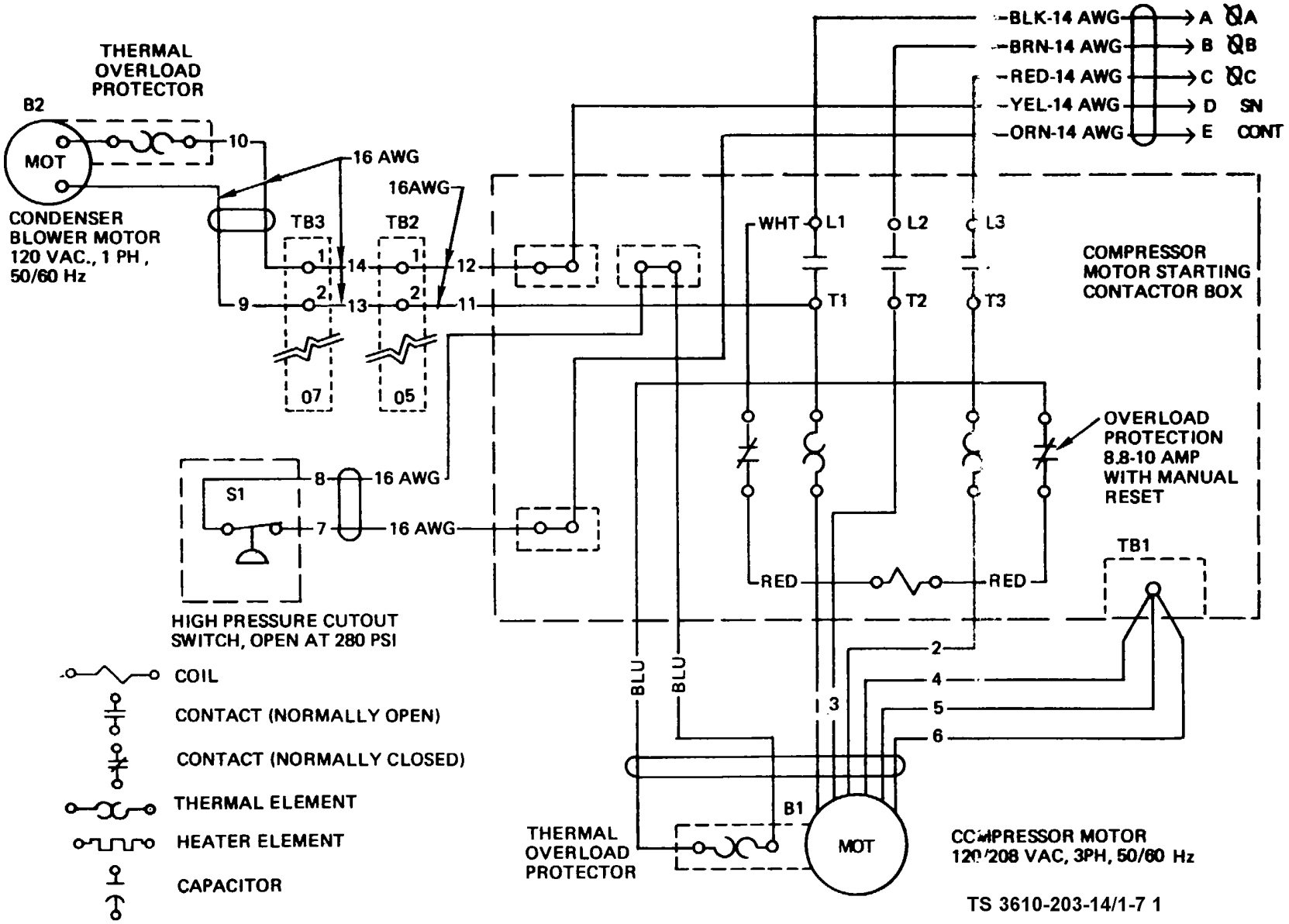


Figure. 1-7. Air Conditioner Wiring Diagram (Sheet 1 of 3).

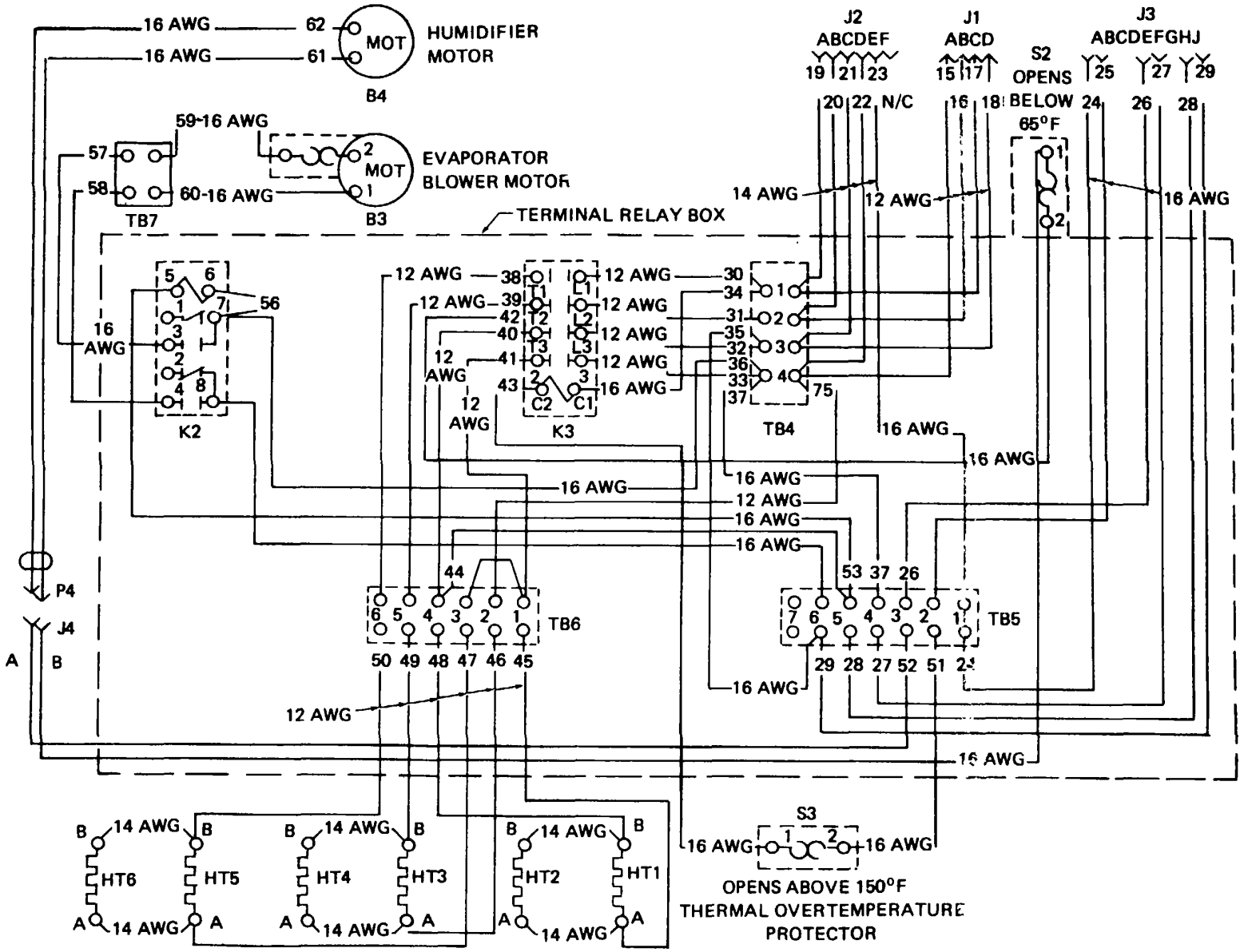


Figure 1-7. Air Conditioner Wiring Diagram (Sheet 2 of 3).

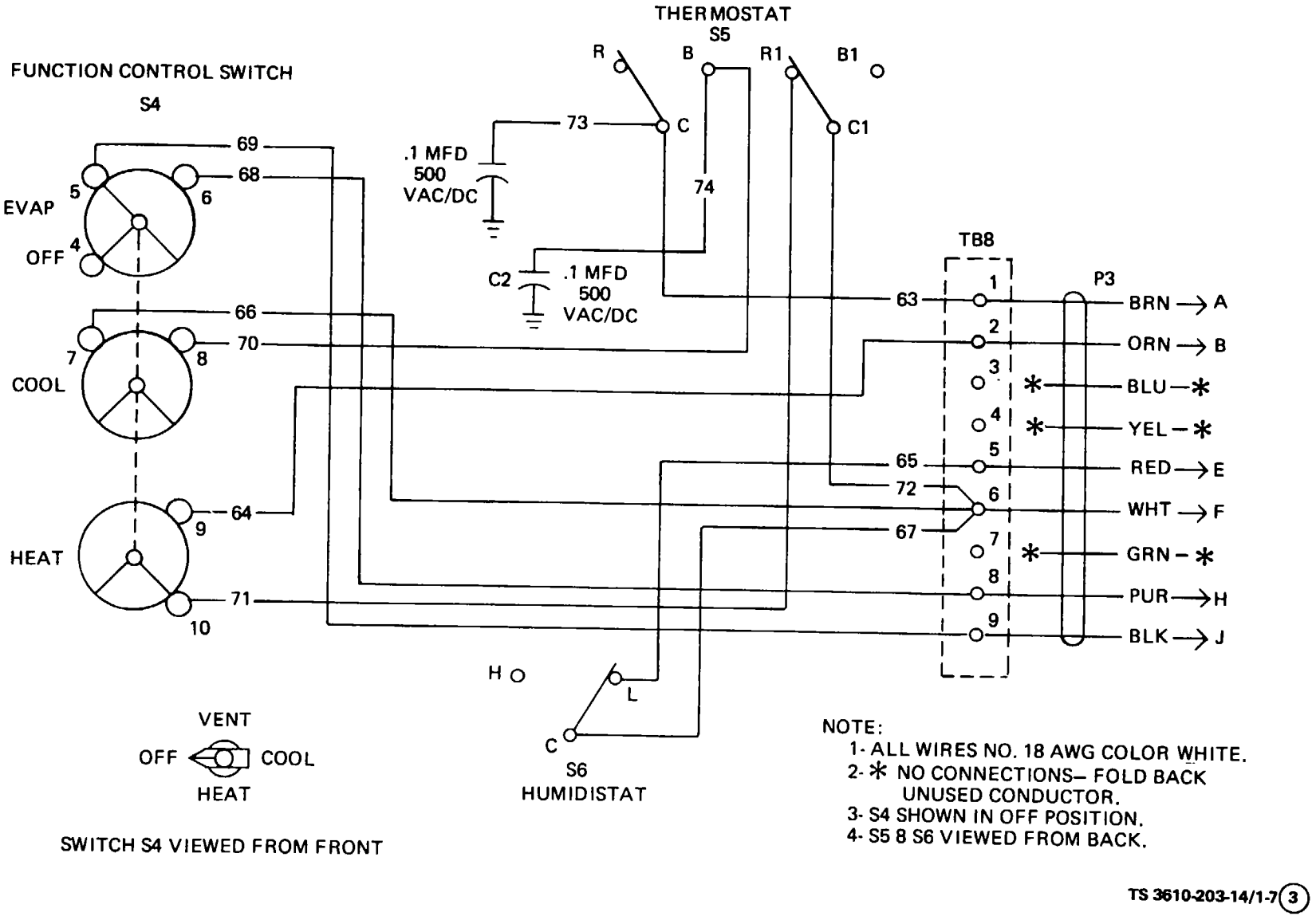


Figure 1-7. Air Conditioner Wiring Diagram (Sheet 3 of 3).

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 gives instructions on starting and stopping the printing plant which consist of procedures to apply primary power and adjust 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 (i5 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.)

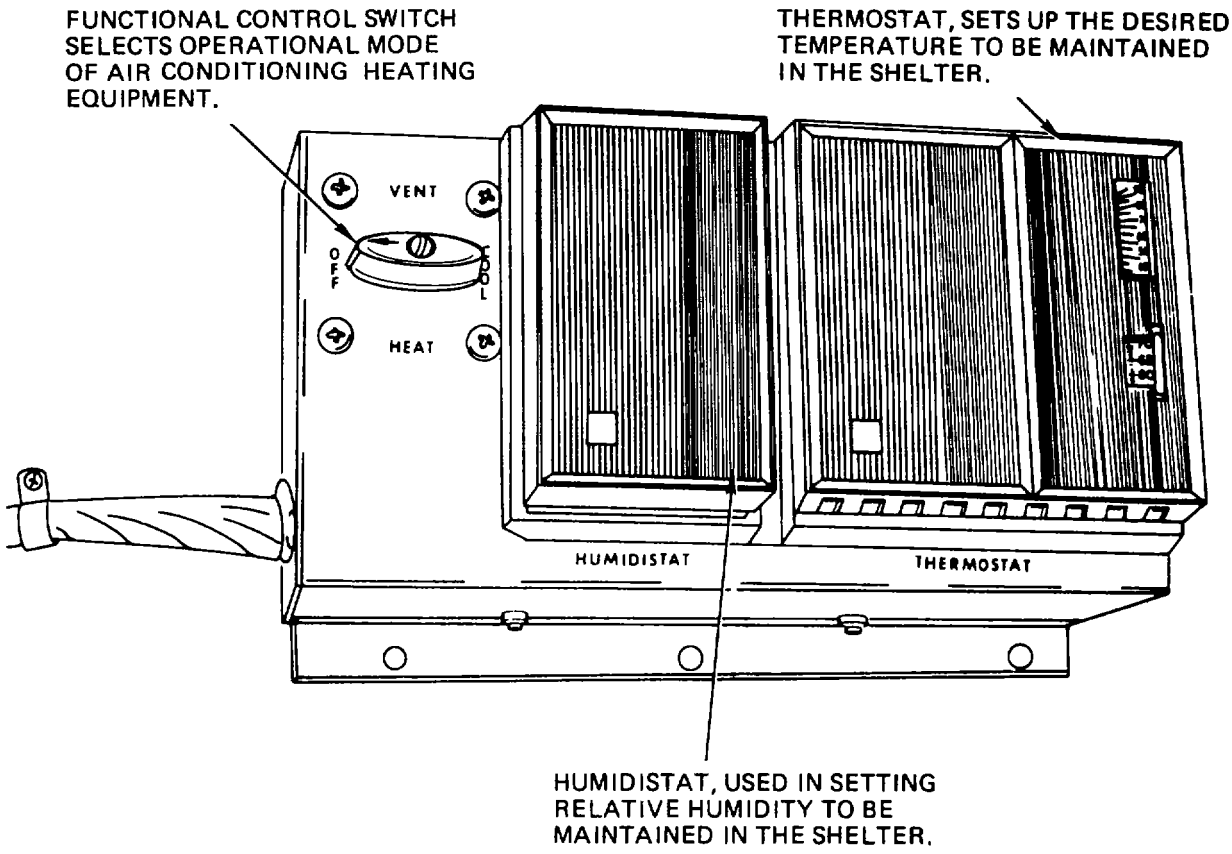


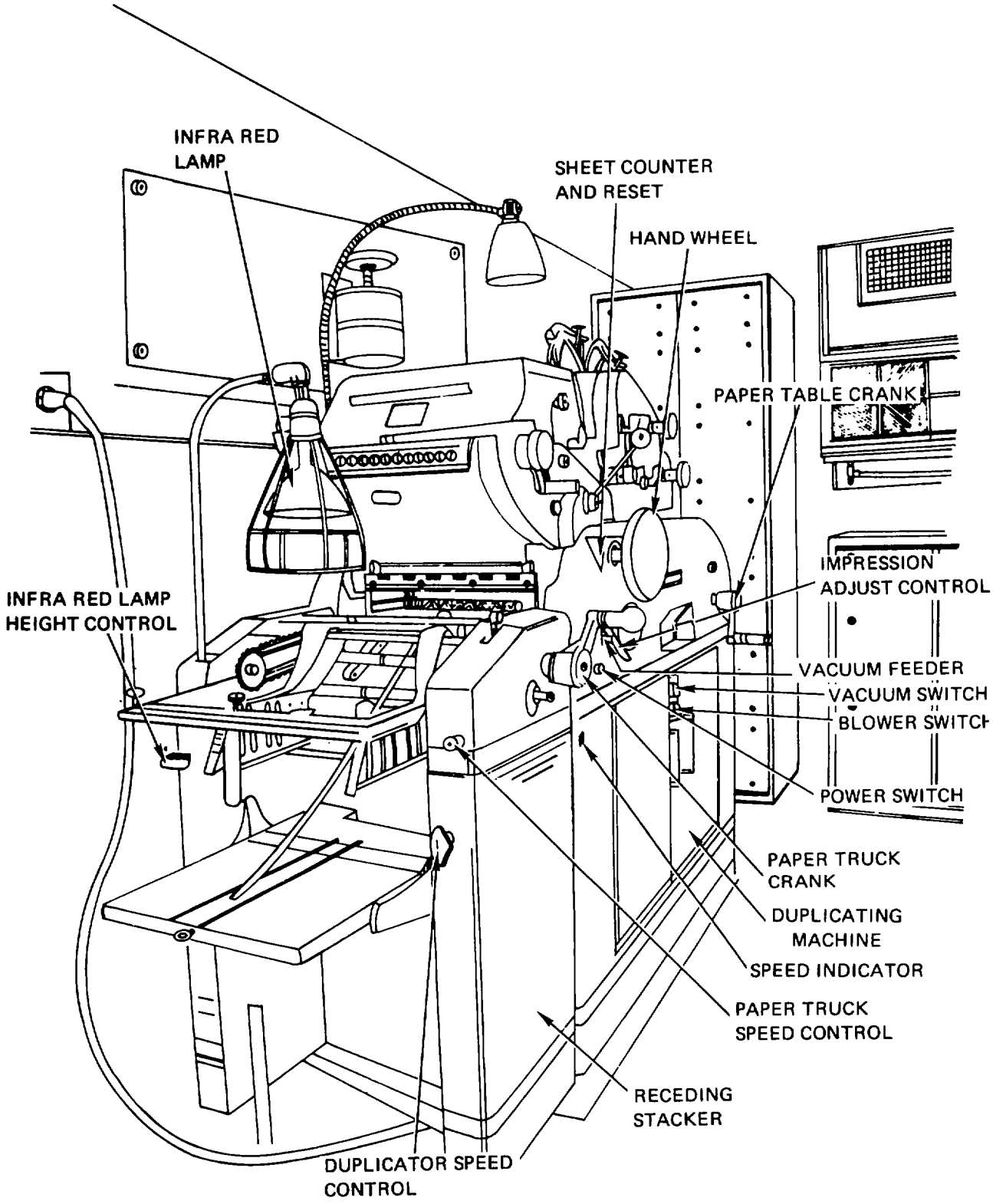
Figure 2-1. Air Conditioner Controls.

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. Duplicating Machine and Stacker. The Addressograph Multigraph Model 1250 Multilith Offset duplicator is electrically operated and is ready for operation when the unit power cord is inserted into the adjacent polarized wall receptacle. The duplicating machine is of the offset process type, whereby the latent image on the master receives moisture from the dampener mechanism and ink from the inker mechanism for every revolution of the master cylinder. A rubber covered blanket cylinder rotates in contact with the inked image on the master cylinder, transferring the image to the blanket cylinder. An impression cylinder rotates against the blanket cylinder while paper is fed between the impression and blanket cylinders. In this manner, the image on the blanket cylinder is transferred to the paper. The receding stacker which forms a part of the duplicating machine provides mechanical jogging of the duplicated material on a rubber tired paper truck, the downward speed of which is adjusted to correspond with the upward speed of the duplicating machine paper magazine. An infrared lamp mounted above the paper truck speeds the drying of the duplicated material.

(1) Duplicating machine controls. Duplicating machine controls are illustrated in figure 2-2. Machine speed is variable through a range of 4,500 ipr (impressions per hour) to 9,000 ipr. A manually reset sheet counter has a registration capability of 99,999, registering only those sheets which pass through the machine and not machine revolutions.



TS 3610-203-14/2-2

Figure 2-2. Duplicating Machine and Stacker Controls.

(2) Receding stacker controls. The controls for the receding stacker are illustrated in figure 2-2. The stacker has a capability of handling up to 5,000 sheets of duplicated material. The infrared drying lamp is connected to the motor side of the vacuum pump switch so that the lamp will not remain illuminated when the duplicator is not feeding paper. The lamp may be extinguished when the duplicator is not feeding paper by means of a switch located on the rear (roadside) of the stacker.

b. Color Press. The Townsend Industries Model T-51 color press provides a two-color capability to the offset duplicating machine. The color press is mounted on and operates in conjunction with the duplicator by means of gear mesh contact between the press plate cylinder and the duplicator blanket cylinder. The color press controls are illustrated in figure 2-3.

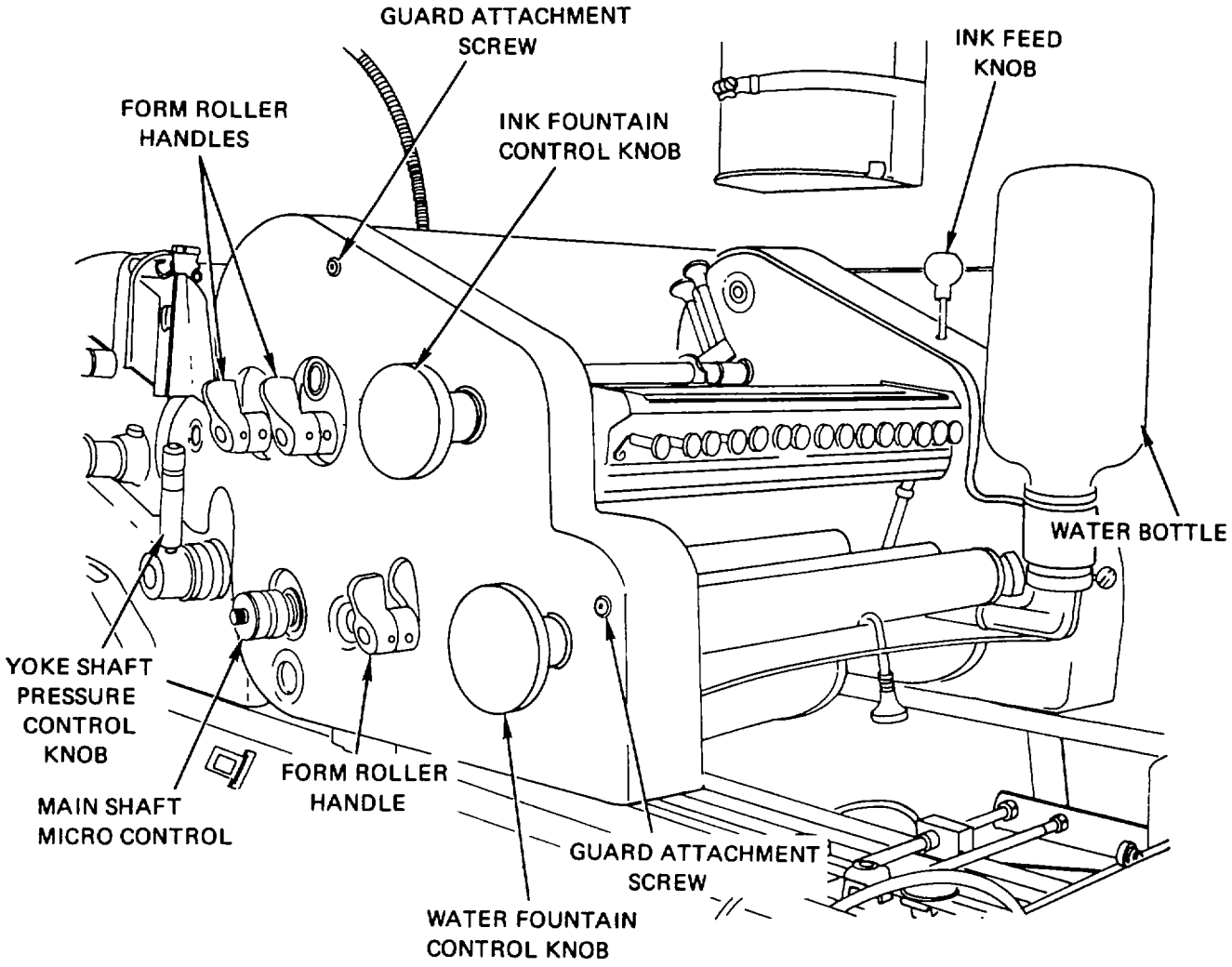


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Figure 2-3. Color Press Controls.

c. Papercutter. An Alton Iron Works Model 4906 guillotine type paper cutter is mounted toward the rear of the bench assembly and is electrically operated and hydraulically powered. Electrical power to the unit is controlled by a two-position switch in the upper left corner of the front panel. (See fig. 2-4.) An indicator light illuminates when the power switch is positioned to on. Two pushbutton type cutter operating switches, also located on the front panel, must be depressed simultaneously in order to operate the cutter blade. When the blade reaches the bottom of the stroke, it will reverse automatically and return to the starting position. The cutting stroke will not be repeated until the control switches have been released and again depressed. A scale located at the right section of the cutter base, is used to measure the size of paper to be cut. When measured cuts less than 4 inches (10.16 cm) are required, a spacer block should be installed in front of the back gage.

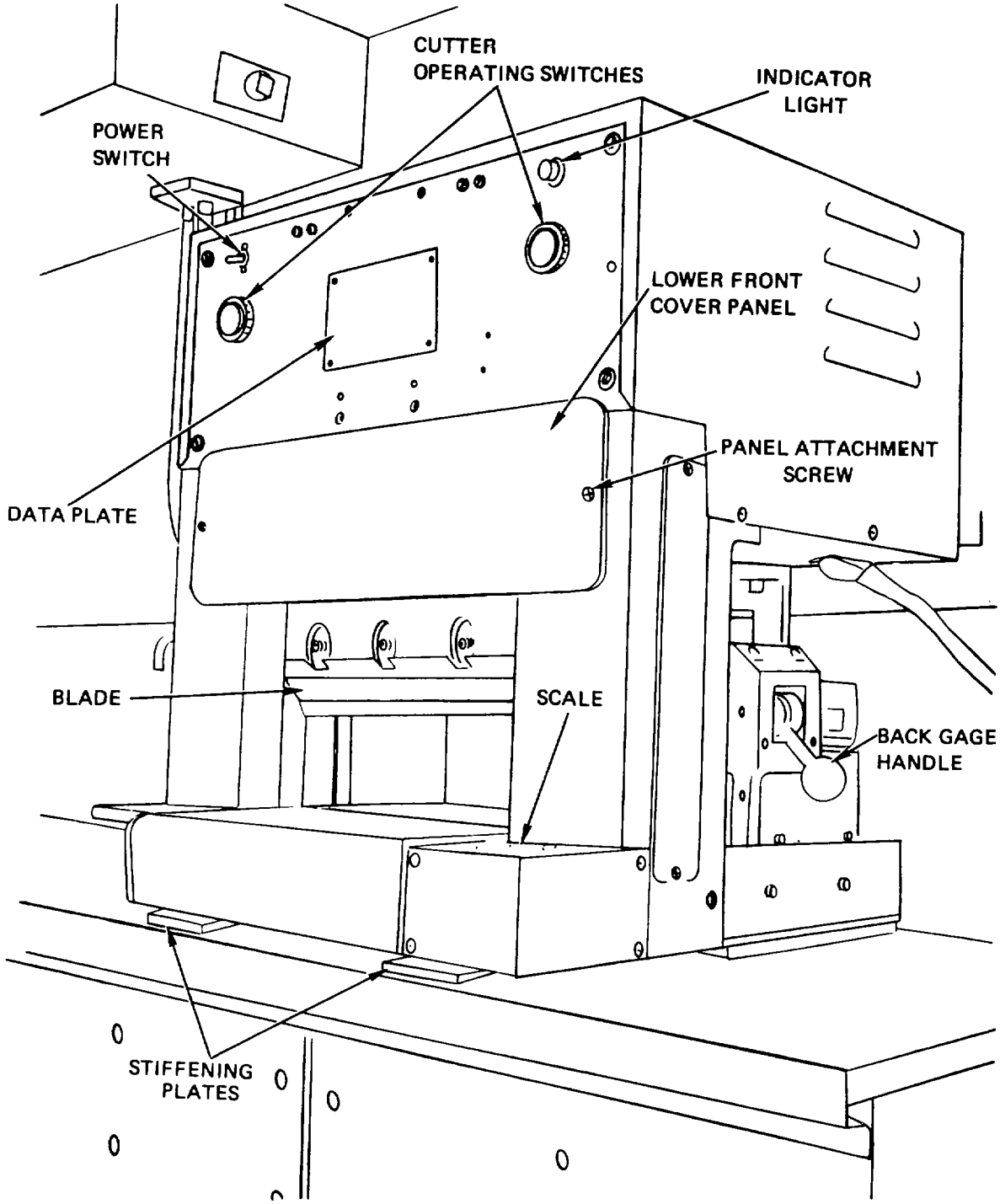

Figure 2-4. Papercutter Controls.

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

e. 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 storage 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 after using.

f. 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 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 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.

g. 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.

h. 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 and are provided to facilitate connection of a field telephone between the units of the special warfare printing plant.

i. 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 wall. During operation, the shelter should be as level as possible so as not to affect the calibration of plant components.

j. 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.

k. Light 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. Five light fixture assemblies are installed along the left and right 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. Shut down 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 press unit of the special warfare printing plant is used in conjunction with the editorial and photomechanical shelter unit, operating procedures for which are contained in TM 10-3610-202-14. 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 press shelter unit such as fountain chemicals, inks, paper, etc., the shelter interior must be 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 press shelter unit 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 press shelter with a few drops of lubricating oil (Item 16, App. D) 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. 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. Before and during operation, ensure that attention is given to applicable warnings and cautions and perform the before (B) and during (D) preventive maintenance checks and services as applicable.

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 in the column headed D, and if the same check is to be made in two or more periods, a dot will be 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 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.

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
D - During
A - After
M - Monthly
M - Monthly
C - Combat Operability Check

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	●						Duplicating Machine	Check connection of unit power cord, good character impression, and correct operation of unit. If necessary, service unit in accordance with commercial manual instructions.	
3		●					Receding Stacker	Check installation of unit and correct speed adjustment of paper truck. Check for correct operation of infrared lamp. If necessary, adjust and service unit in accordance with commercial instructions.	
4	●	●					Tool Board	Check operation of plunger-type dispenser can and filled to correct level with proper solution.	

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
D - During
A - After
M - Monthly
M - Monthly
C - Combat Operability Check

Item No.	Interval					C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	For Readiness Reporting Equipment is not Ready/Available if:
	B	D	A	W	M				
5		●					Papercutter	Check for smooth operation of unit. Check that knife blade produces clean cut through paper stock. If necessary, remove and sharpen knife in accordance with TM 5-3610-246-14.	
6	●						Water System	Water tank filled to correct level and smooth and leak-free operation of faucet.	

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 press shelter 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 press shelter system and components. Any trouble, the correction of which is beyond the scope of the operator/crew, should be reported 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 me that the generator is operating properly.
Start the generator set in accordance with the applicable Department of the Army Technical Manual.

Step 2. Check that main power cable is correctly connected at main power 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 (marked with blue band) - Pin 3
Neutral - white - Pin 4

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

2. NO ELECTRICAL POWER AT EQUIPMENT RECEPTACLES

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

3. DUPLICATING MACHINE NOT PRODUCING GOOD COPY

Check for incorrect impression-to-blanket cylinders adjustment.
Adjust cylinder pressure in accordance with commercial manual instructions.

Table 3-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

4. INSUFFICIENT DRYING OF DUPLICATED MATERIAL

Step 1. Check for failure of infrared drying lamp.
Replace lamp with serviceable 250 watt unit.

Step 2. Check for correct height setting of infrared light assembly.
Adjust drying lamp so that the bottom of the lamp is set approximately 10 inches (25.4 cm) above the top of the paper stack.

5. DUPLICATED MATERIAL PASSING FROM DUPLICATING MACHINE AT TOO GREAT A RATE FOR RECEDING STACKER

Check that stacker paper truck lowering speed corresponds to the raising speed of the paper feeder magazine.
Adjust paper truck lowering speed in accordance with commercial manual instructions.

6. POOR SECOND COLOR REGISTRATION

Step 1. Check for incorrect color press ink or waterflow.
Adjust ink or waterflow in accordance with commercial manual instructions.

Step 2 Check for incorrect plate to blanket pressure.
Adjust color press cylinder pressures in accordance with commercial manual instructions

7. PAPER CUTTER KNIFE STOPS IN PAPER STOCK

Carefully check for burrs on knife cutting edge.
Sharpen knife and remove burrs with honing stone supplied with paper cutter. Refer to TM 5-3610-246-14 for removal and sharpening procedures.

8. 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. Duplicator Blanket

A new blanket (Item 17, App. D) should be cleaned thoroughly with blanket solvent before duplicator is operated, to remove the fine powder on surface of new blanket. The maximum life of a blanket may be obtained by frequently rotating it in use with one or more extra blankets reserved for this purpose. In this manner a blanket is given time to dry out and recuperate from the effects of pressure, inks, and operating solutions used during production. Where frequent cleaning of the blanket is required because of large number of masters used (short runs), the blanket should be rotated every day. To prepare a blanket for recuperation, clean blanket thoroughly with blanket solvent while still on cylinder. Remove blanket from cylinder and lightly dust rubber surface with blanket dust. Hang blanket in a cool, dry place with both surfaces exposed to air. Do not roll the blanket or place it on any object which would retard drying.

3-9. Water Storage Tank

Fill water storage tank as follows:

a. Check that 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 press 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:

(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, 6x6 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:

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.

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

(1) Select a bolt or screw to which the ground lead can be fastened securely, and attach the lead to the bolt.
(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.

e. Connect Power Cable to Shelter. 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 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-Up 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 traveled 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:

(1) Drain the water storage tank by opening the water drain valve and draining the water through 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) Remove all expendable materials and supplies in accordance with the applicable commercial technical publication.

(3) Position all circuit breakers in main power service box to off.

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

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

(6) Correctly stow access ladder.

(7) Disconnect and stow input power cable. Cap power receptacle.

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

(9) Using an approved pressure sensitive tape, cover all shelter apertures.

(10) Close and lock shelter door with the 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 4-1, ensuring that the turnbuckle ends of the sling cables are connected to the lifting eyes.

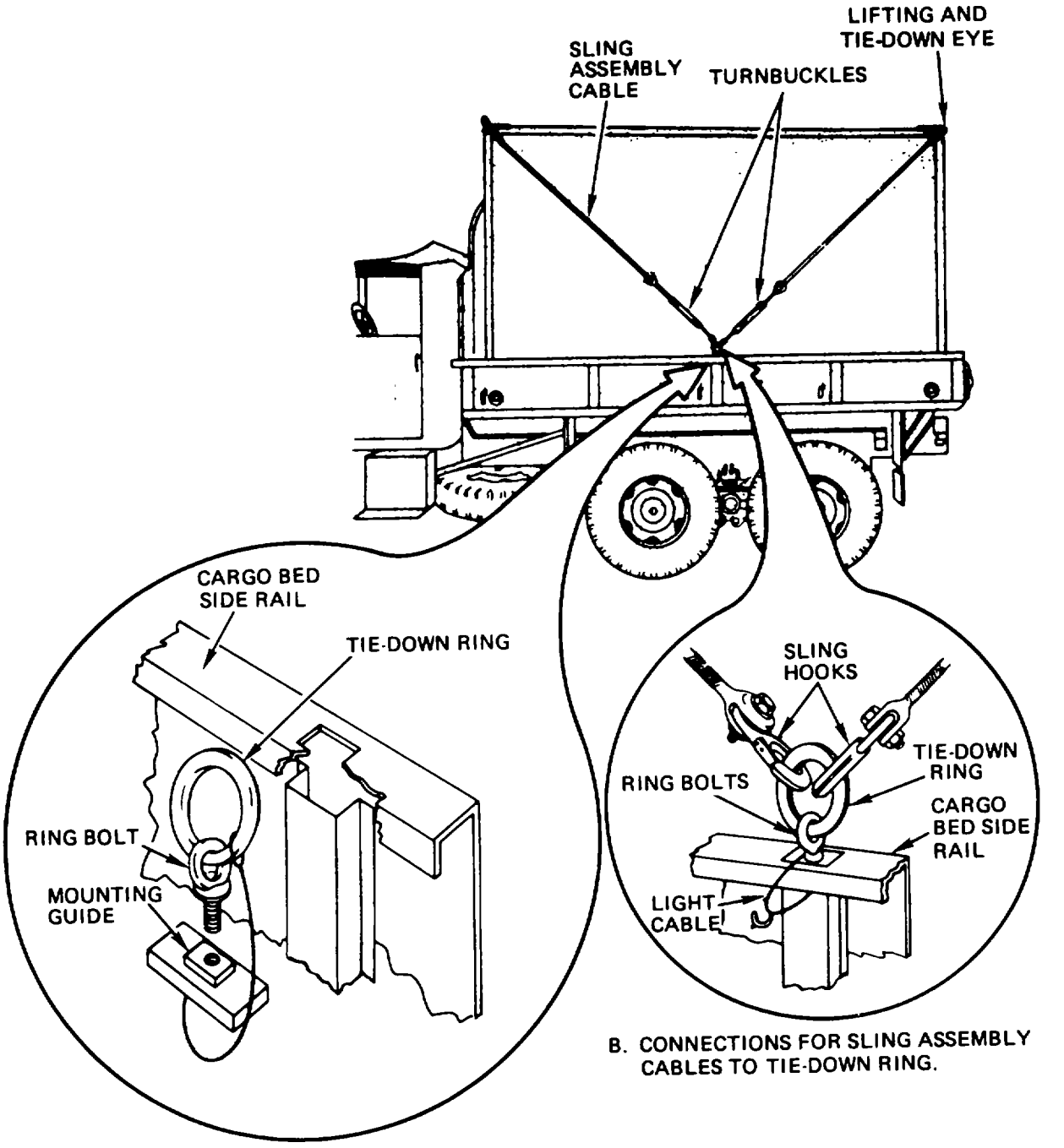

Figure 4-1. Attachment of Lifting Slings.

(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 just 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 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.

(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 of the shelter.

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

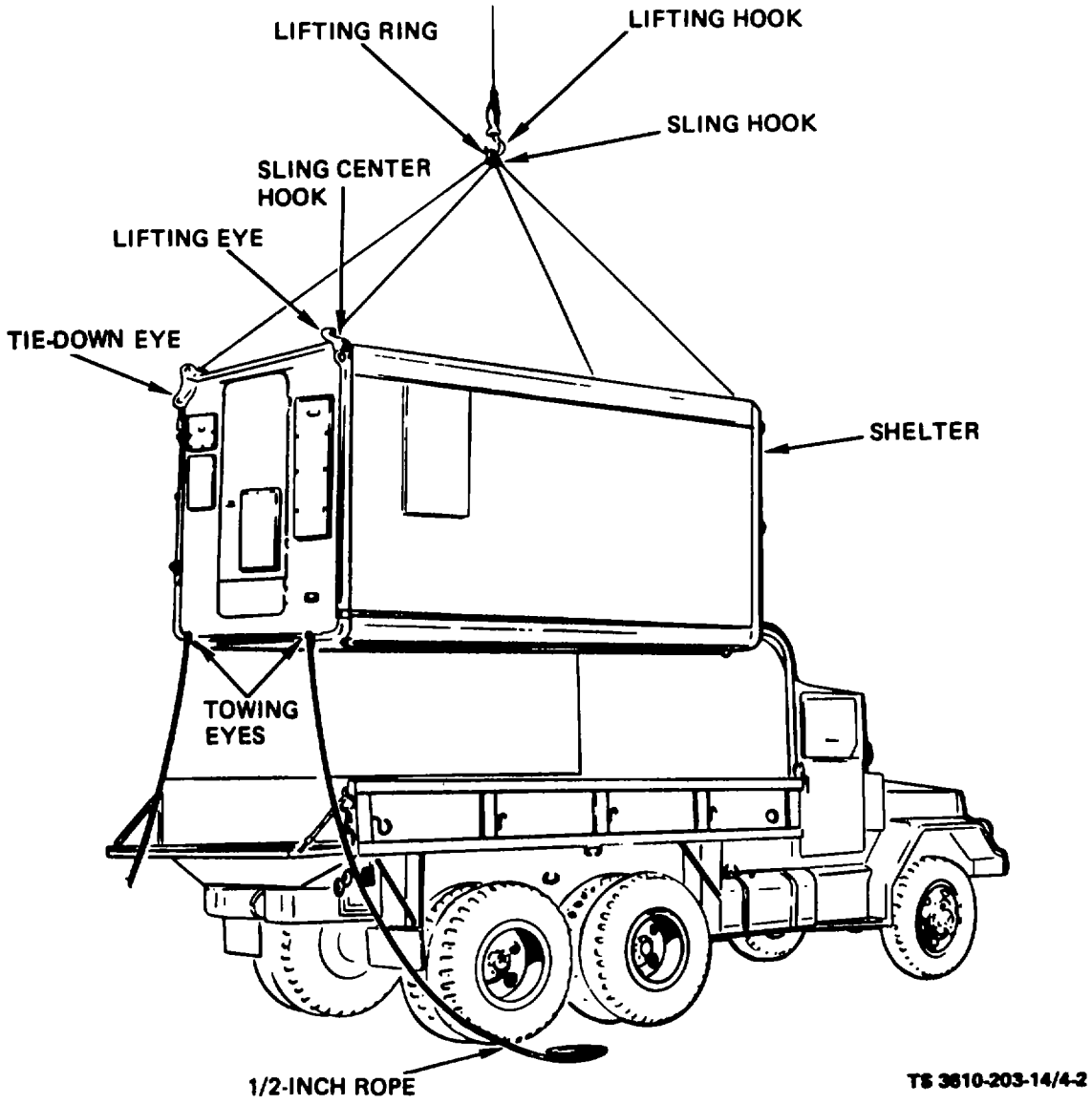

Figure 4-2. Rigging Instructions for Transportation of Shelter.

(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 appropriately sized 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 traveled 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 4-1, 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.

WARNING

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 press 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, TM 10-3610-203-20P. 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 press shelter.

Section IV. LUBRICATION INSTRUCTIONS

4-8. General Lubrication Information

This section contains lubrication instructions for the press 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 press shelter with a few drops of lubricating oil (Item 16, App. D) 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 or 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.

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, 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. Procedure. This column contains a brief description of the checks to be performed.

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

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:
1	●								Color Press	Inspect the color press as follows: Inspect color press for correct and security of installation. Inspect press for dents, cracks, or any other signs of structural damage. Inspect control knobs for ease of operation and security of installation. Check for damage to paintwork and for signs of environmental damage. If inspection indicates that replacement of the press is necessary, refer to paragraph 4-19.	
2			●						Tool Board	Inspect tool board for security of installation and damage. Inspect solvent dispenser plunger can for damage and evidence of leaks. If necessary, replace tool board or dispenser can as described in paragraph 4-21.	
3			●						Ladder Assembly	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 4-23.	
4	●								Papercutter Assembly	Inspect papercutter as follows: Inspect papercutter for security of installation and damage. Inspect shock mounts for security and condition.	

Table 4-1. Organizational Preventive Maintenance Checks and Services - Cont

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:
4	●								Papercutter Assembly - Cont	Inspect for worn, cracked or frayed hydraulic pump drive belt in accordance with the applicable technical manual. Inspect hydraulic oil level and system components in accordance with applicable technical manual. Report any damage to direct support maintenance.	
5			●						Water Supply Plumbing	Inspect valves, faucet, liner and fittings for damage which could cause leaks. If inspection indicates that replacement of plumbing components is necessary, refer to paragraph 4-27.	
6			●						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 or more. If inspection indicates that replacement of the fire extinguisher is necessary, refer to paragraph 4-33.	
7			●						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 4-35.	
8		●							Shelter Door Filter	Inspect for cleanliness, damage and proper installation. If necessary, clean filter as follows: 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.	

Table 4-1. Organizational Preventive Maintenance Checks and Services - Cont

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:
8		●							Shelter Door Filter - Cont	Unscrew the interior thumbscrews until the filter frame is released. Remove the filter and frame assembly from the outside of the door. Remove the door air filter by pulling the foam material from the frame. Clean the filter material by washing in a soap and water solution. Dry thoroughly and spray with air filter coater (Item 2, App. D). 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. Position the frame assembly from the outside of the door and secure the interior thumbscrews. Release the bracket hinged weather cover retaining rod and close weather cover. Secure the weather cover fasteners.	
9		●							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 4-39.	
10		●							Fluorescent Lamps	Inspect lamp for correct illumination. If inspection indicates that replacement of the lamp is necessary, refer to paragraph 4-41.	

Table 4-1. Organizational Preventive Maintenance Checks and Services - Cont

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:
11			●						Lamp Switches	Inspect for proper operation, loose connections and excessive wear, Inspect switchbox cover for security of mounting. If inspection indicates that replacement of a switch is necessary, refer to paragraph 4-43.	
12			●						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 4-45.	

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 press 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 malfunction 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 press 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 AND COMPONENTS

1. UNABLE, TO DUPLICATE SECOND COLOR

Step 1. Check for incorrect color press ink and water adjustment.
Adjust for correct ink and water flow in accordance with commercial manual instructions.

Step 2. Check color press for damage or defects.
If necessary, replace defective color press as described in paragraph 4-19.

2. NO WATER AT FAUCET

Step 1. Inspect for lack of water in storage tank.
If necessary, fill water storage tank u follows:
a. Check that all valves in the water line are closed.
b. Remove the tank filler cap located on the root 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. 4-3) allowing the humidifier water tank to fill to its preset level.

Table 4-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

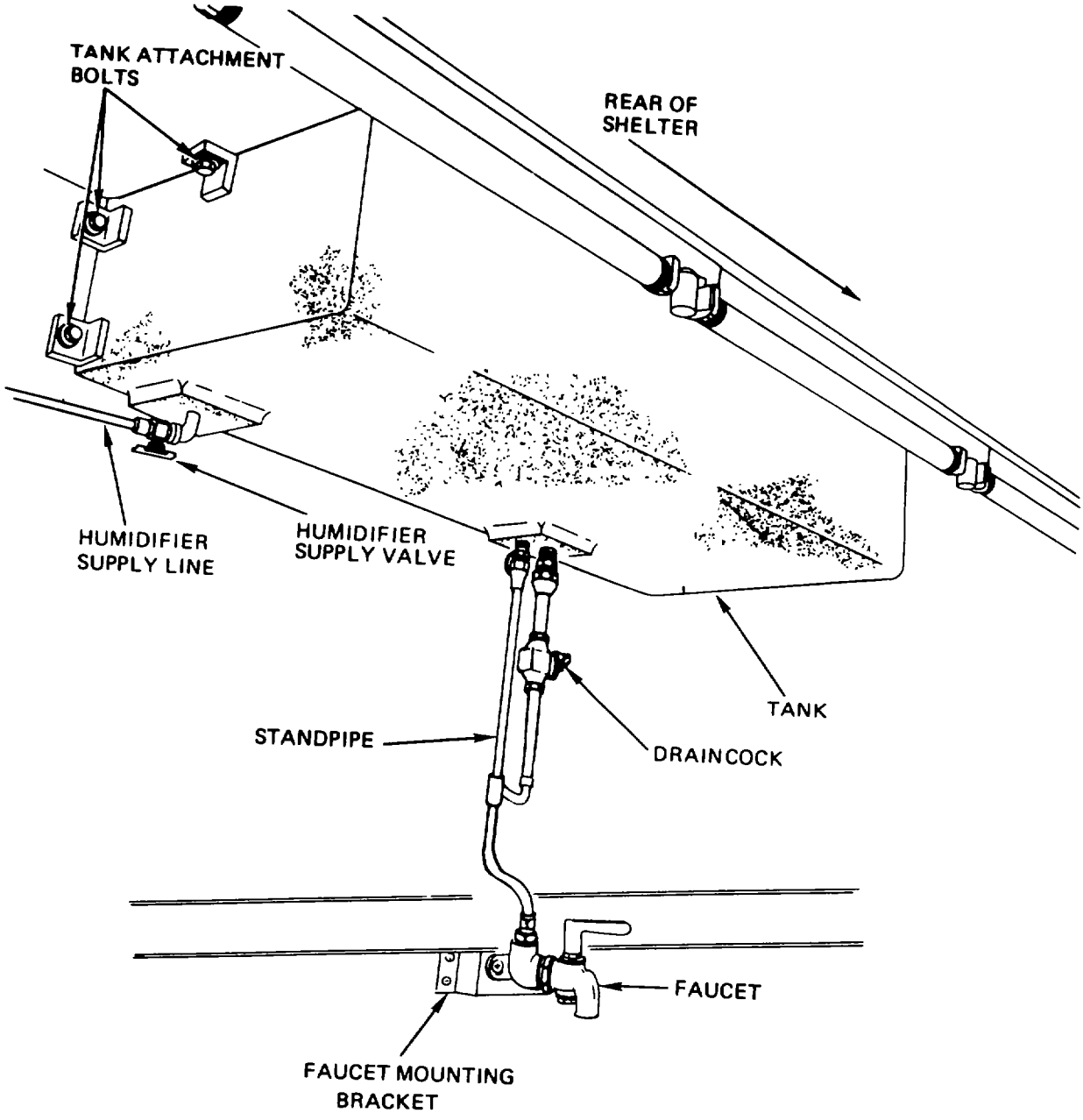

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Figure 4-3. Water Supply System Plumbing and Fittings.

Table 4-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

Step 2. Inspect water line between tank and faucet for damage which would prevent water flow.

If necessary, replace defective line as follows:

a. Position a suitable container beneath water faucet and open faucet to drain tank.
b. Open draincock (see fig. 4-3).
c. Unscrew the tank-to-faucet water line fitting at the base of the tank.
d. Unscrew the water line fitting immediately below the stand pipe 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 fittings 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.
l. Fill tank with approximately 10 gallons (37.8 liters) of water.
m. Check for water leaks and secure fittings as necessary.

3. 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 replacement 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. 4-4.)

Table 4-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

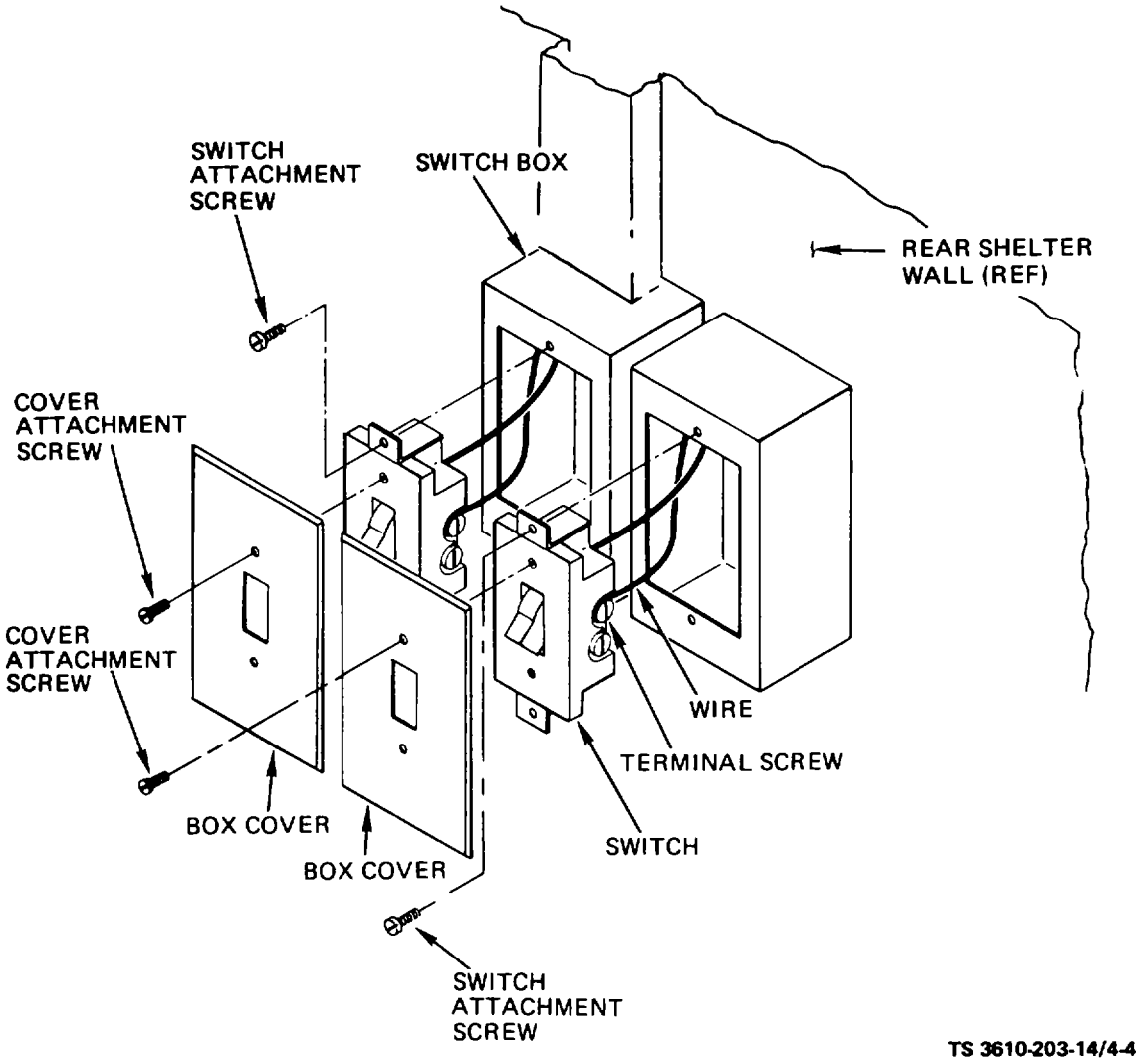

Figure 4-4. Fluorescent Lamp Switches.

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 position to off.

Table 4-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action
SHELTER SYSTEM AND COMPONENTS
If necessary, position LIGHTS circuit breaker in service box to on.
4. 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 RECEPTACLES circuit breaker in main power service box to off.** **b. Remove three screws which attach receptacle cover to conduit box. (See fig. 4-5.)**

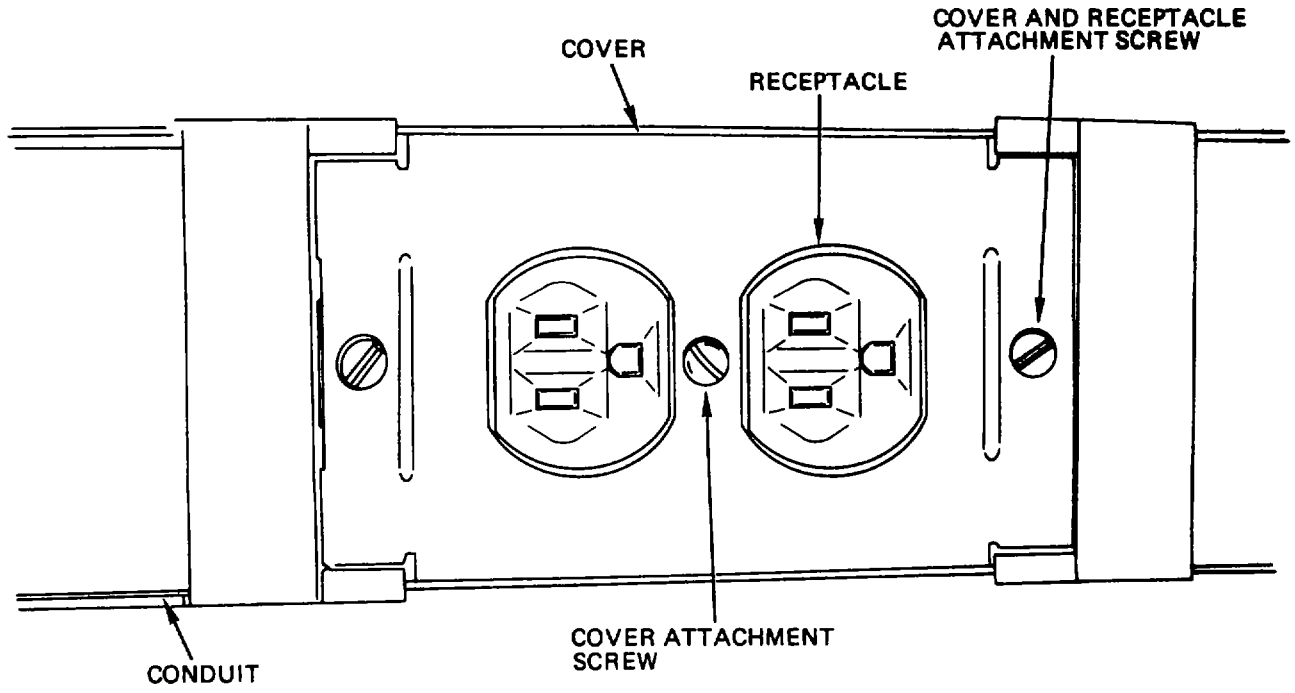

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Figure 4-5. Equipment Receptacle.

Table 4-2. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action	
	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 providing 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 press 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, 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 duplicating machine, paper cutter 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 de-ionization 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 duplicating machine, paper cutter, machine, and air conditioning system.

4-17. Testing of Radio Interference Suppression Components

Test capacitors or 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 COLOR PRESS

4-18. General

The Townsend Model T-51 color press attachment is used in conjunction with the offset process duplicating machine, and permits the painting of two colors in a single operation. This is achieved by the use of a twin cylinder, roller and inking system incorporated into the color press to match the same system in the duplicator. An additional plate containing only the image to appear in the second color is installed in the color press. This image is then transferred to the paper before duplication of the primary (darker) color image. The twin-color printed paper is then passed from the duplicating machine to the receding stacker for drying and jogging.

4-19. Color Press

a. Removal. Remove the color press assembly as follows:

(1) Disconnect duplicating machine power cord.
(2) Remove the ink and water fountain control knobs. (See fig. 4-6.)

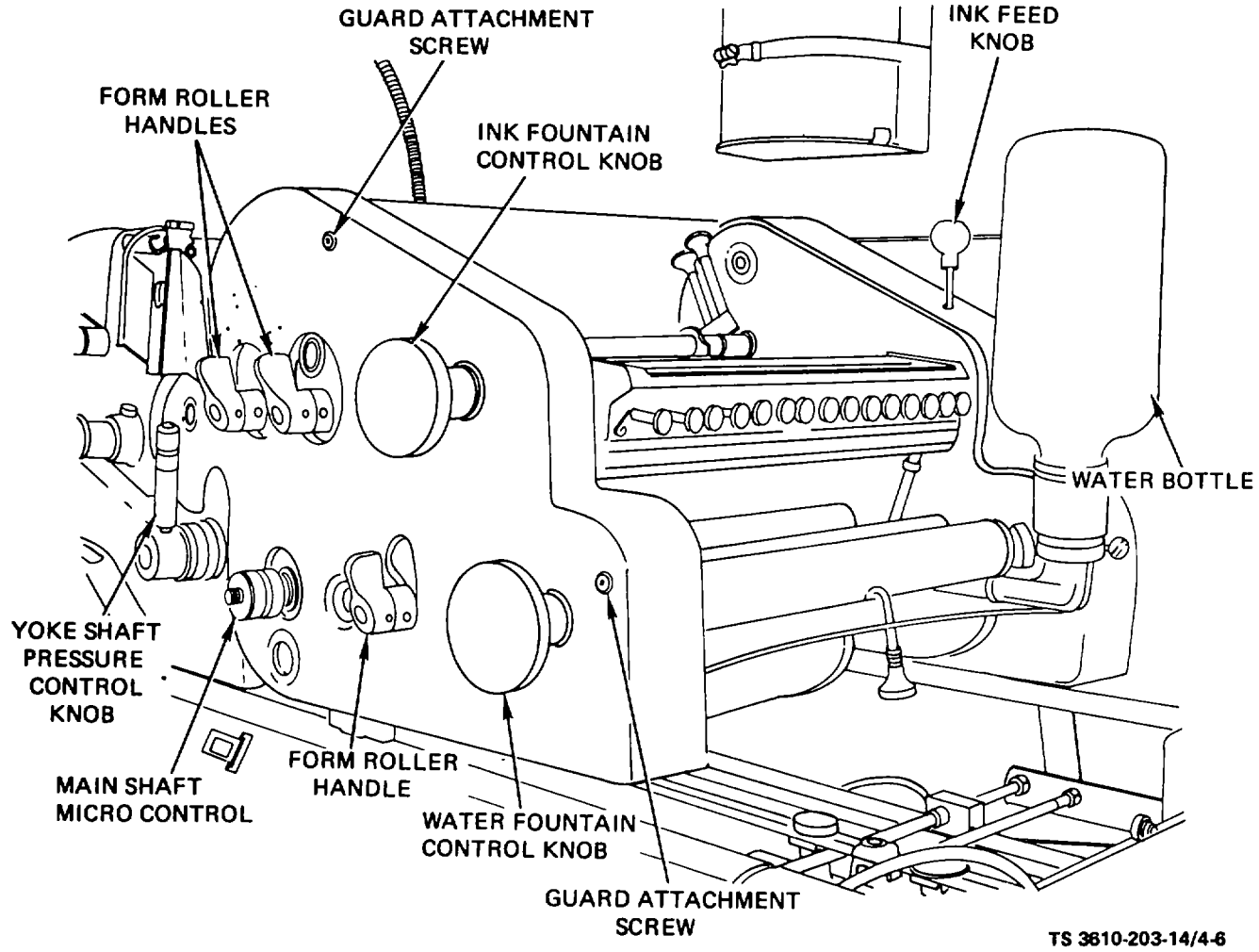


Figure 4-6. Color Press Guard, Removal and Installation.

(3) Remove the knobs from the ink and water feed control shafts. (See fig. 4-6 and 4-7.)

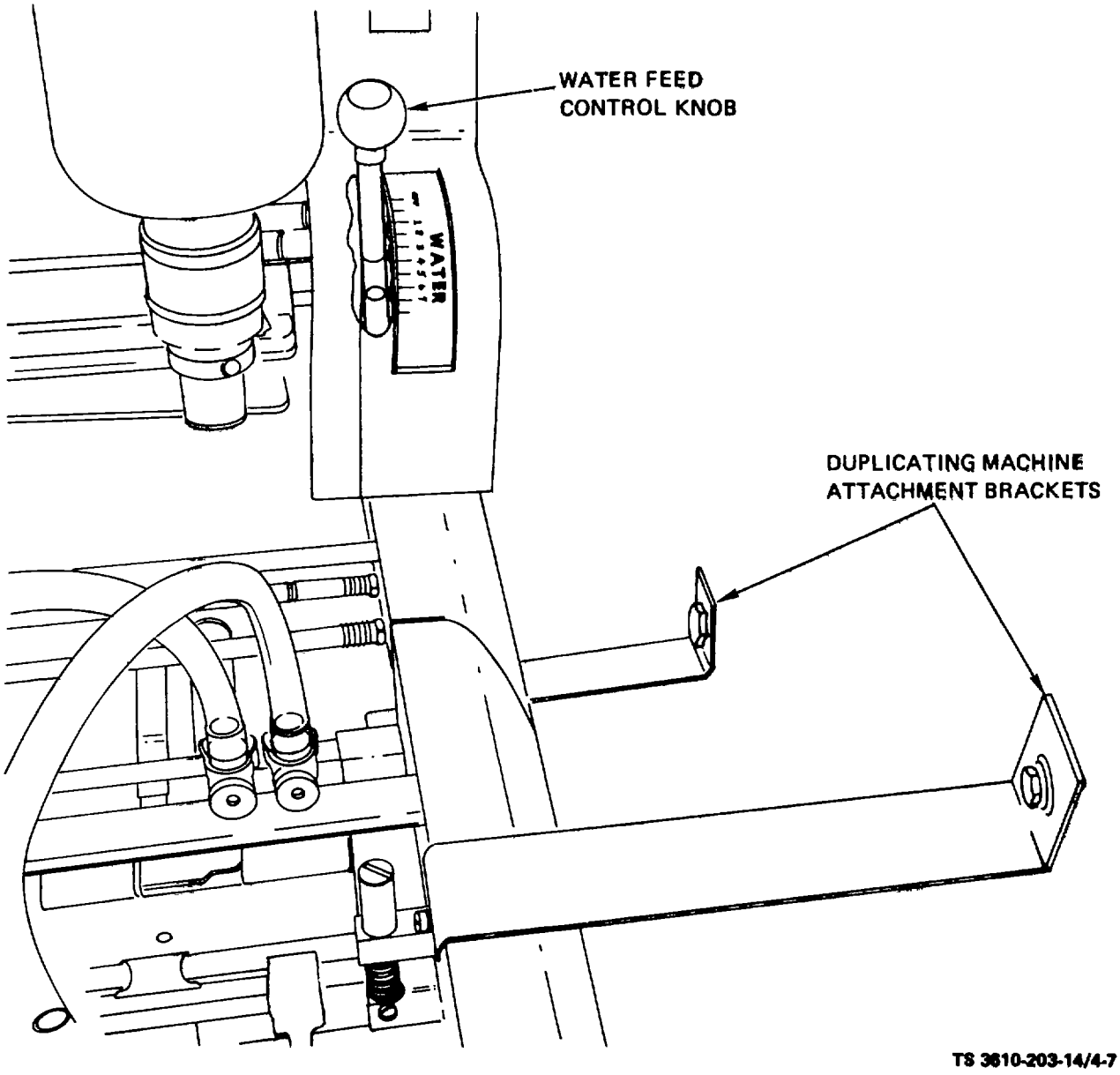
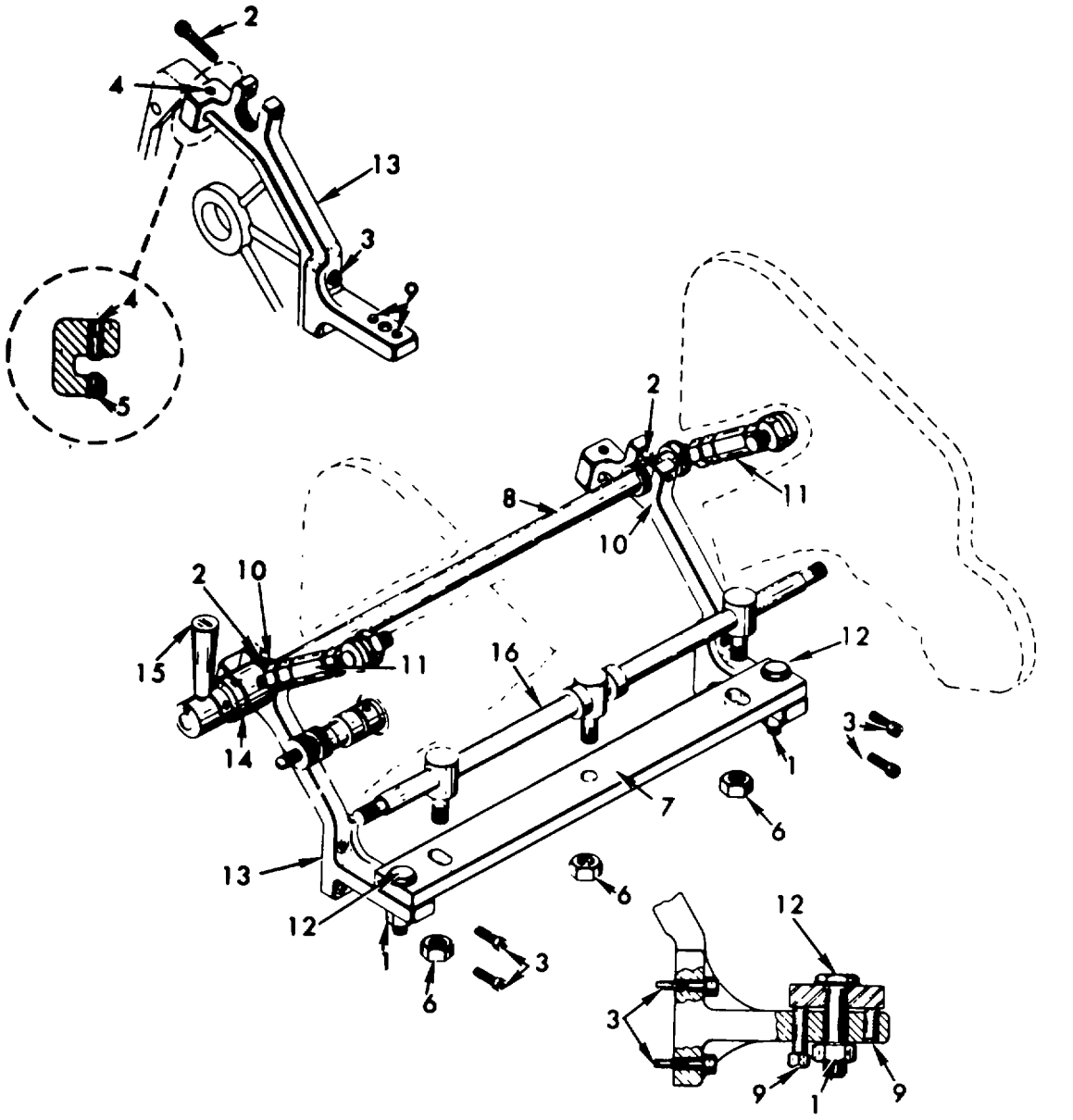


Figure 4-7. Water Feed Control

(4) Remove the two screws which attach the left and right guards and remove the guards.
(5) Remove the nuts (1, fig. 4-8) attached to the bolts (12) which protrude through holddown bar.
(7) into mounting brackets.



1. *Nuts*
2. *Screws*
3. *Screws*
4. *Setscrews*
5. *Setscrews*
6. *Main Tie Rod Nuts*
7. *Holddown Bar*
8. *Yoke Shaft*
9. *Leveling Screws*
10. *Yoke Shaft Bushings*
11. *Turnbuckles*
12. *Holddown Bar Bolts*
13. *Mounting Bracket Screws*
14. *Collar Setscrew*
15. *Yoke Shaft Pressure Handle*
16. *Main Tie Rod*

Figure 4-8. Color Press Removal and Installation.

(6) Remove screws (2) from upper portion of mounting brackets (13) and move yoke shaft bushings (10) clear of mounting bracket openings.

(7) Lift yoke shaft (8) out of mounting bracket openings.

CAUTION

When removing color press, secure yoke shaft bushings (10) to turnbuckles (11) to prevent cylinder surface damage.

(8) Remove the color press assembly, leaving mounting brackets in position on the duplicating machine.

NOTE

If the mounting brackets are undamaged, they may be retained for use with new color pres.

(9) If necessary, remove mounting brackets (13) by removing attaching screws (3) and releasing setscrews (4 and 5).

b. Installation.

(1) Adjust setscrews (4, fig. 4-8) so as to clear the opening in the top portion of each mounting bracket (13).

(2) Position mounting brackets on duplicating machine and install attaching screws (3).

(3) Tighten setscrews (5) to provide for a snug fit against duplicating machine frame.

(4) Tighten setscrew (4) on each mounting bracket.

(5) Remove the ink and water fountain control knobs. (See fig. 4-6.)

(6) Remove the knobs from the ink and water feed control shafts. (See fig. 4-6 and 4-7.)

(7) Remove the two screws which attach the left and right guards and remove the guards.

(8) Remove the ink and water oscillators and the number 2 form from the color press assembly in accordance with commercial manual instructions.

(9) Loosen the three main tie rod (16, fig. 4-8) attaching and adjusting nuts(6).

(10) Position the color press assembly on the mounting brackets with the bolts on holddown bar (7) protruding through the rear holes of the mounting brackets (13).

(11) Position yoke shaft (8) through slotted holes in mounting brackets and insert screw (2).

(12) Install holddown bar attachment nuts (1) and secure main tie rod attaching and adjusting nuts (6).

(13) Place a level on the duplicator blanket cylinder and then on the color press plate cylinder. The level indications should be identical. If they are not, adjust color press plate cylinder as follows:

(a) Loosen holddown bar attachment nuts (1).

(b) Adjust leveling screws (9) until level indications of duplicator blanket cylinder and color press plate cylinder are identical.

(c) Tighten holddown bar attachment nuts (1).

(14) Loosen the main tie rod attaching and adjusting nuts (6). The center bolt acts as a pivot point in relation to the turnbuckles (11). The two outside bolts pass through elongated holes in the holddown bar (7), to permit movement around the pivot point, when adjusting the turnbuckles (11).

(15) Position yoke shaft bushings (10) into mounting brackets, ensuring that slot in bushing is uppermost and is visible in the bracket openings.

(16) Secure screws (2) in mounting brackets at the same time moving the yoke shaft pressure handle (15) backwards and forwards until a tightening in the handle is felt.

(17) With pressure applied to the pressure handle, adjust turnbuckles (11) until the color press plate and duplicator blanket cylinders are approximately parallel. This is achieved by sighting between the two cylinders and adjusting each until any light visible between the two can no longer be seen.

(18) Check that slots in yoke shaft bushings are still uppermost and that slight pressure can still be felt in the yoke shaft pressure handle (15).

(19) Install the ink and water oscillators and the number 2 form in accordance with commercial manual instructions.

(20) Fill the ink fountain of the color press and adjust flow. Overall flow is regulated with the ratchet control on the upper right side of the machine. Sectional flow is controlled with the individual fountain keys.

(21) Start and operate the duplicating ma- chine in accordance with commercial manual instructions in order to run down the ink. Move ink forms down so as to apply ink to the cylinder. Stop the duplicating machine.

(22) Move the yoke shaft pressure handle (15) forward to lay a stripe on the blanket cylinder.

(23) If necessary, adjust turnbuckles (11) until an even strip of between 0.125 inch (3.2 mm) and 0.188 inch (4.75 mm) is achieved.

(24) Secure turnbuckle locknuts and recheck the stripe.

(25) With the yoke shaft pressure handle forward, secure the main tie rod attaching and adjusting nuts (6), tightening the center nut first.

CAUTION

Turnbuckles (11) should never be adjusted without first loosening main tie rod nuts (6).

(26) If necessary, adjust plate to blanket cylinders pressure by loosening setscrew (14) in calibrated collar and then moving the yoke shaft pressure handle forward or back to increase or decrease pressure. Note graduations in calibrated collar. Secure setscrew.

(27) Position the left and right guards and install attaching screws.

(28) Install knobs on ink and water feed control shafts.

(29) Install the ink and water fountain control knobs.

Section IX. MAINTENANCE OF TOOL BOARD

4-20. General

The tool board, which is of wooden construction, is mounted on the left shelter wall above the duplicating machine. The tool board incorporates a plunger-type dispenser can which contains the solution used to clean inker rollers and rubber blanket.

4-21. Tool Board

a. Inspection. Inspect the tool board as follows:

(1) Inspect tool board for security of installation and signs of damage.

(2) Inspect complete assembly for missing hardware.

(3) Inspect plunger-type dispenser can for damage and evidence of leaks.

b. Removal. Remove tool board as follows:

(1) Remove worm drive retaining clamp which attaches plunger can to holder mount. (See fig. 4-9).

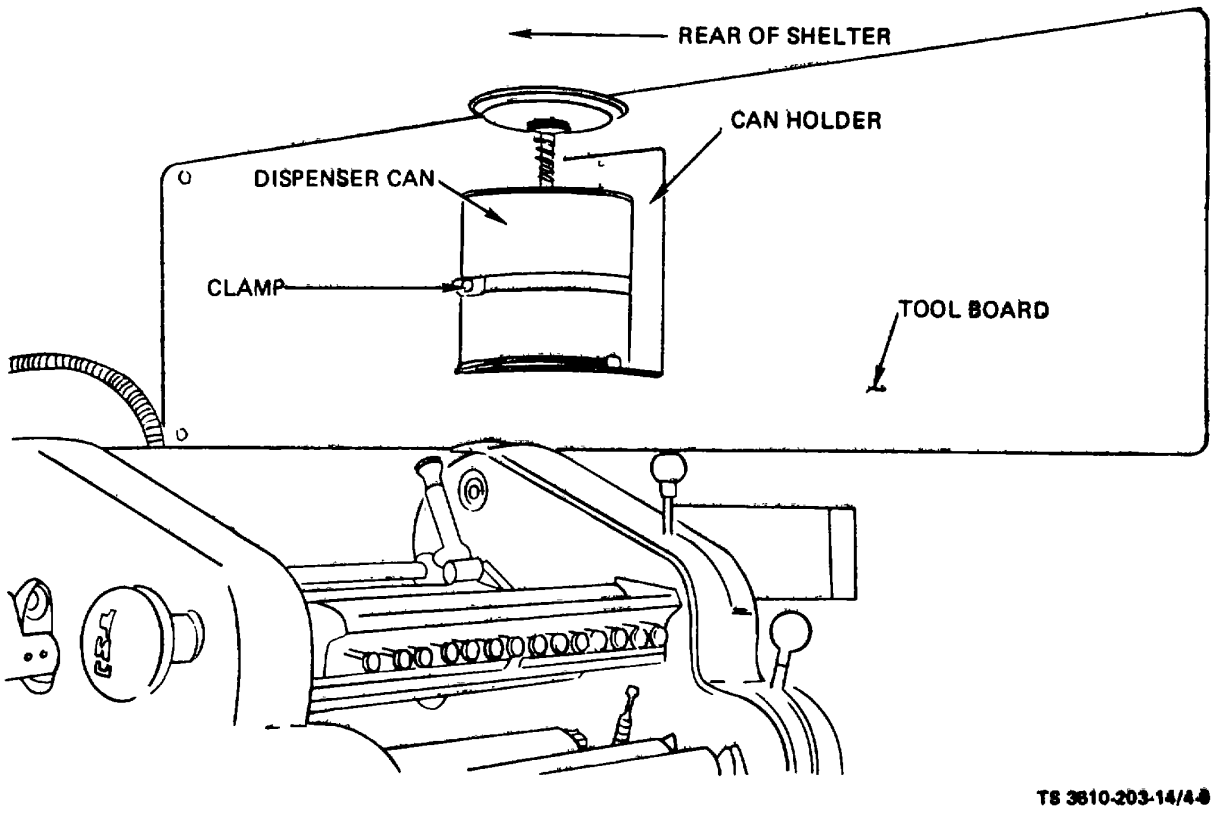


Figure 4-9. Tool Board Assembly, Removal and Installation.

(2) Carefully remove the plunger can, ensuring that any solvent in the can is not spilled.

(3) Remove the self-tapping screws which attach the plunger can holder mount to the tool board and remove the holder.

(4) Remove the screws, flat washers and lock-washers which attach the tool board to the shelter wall and remove the board.

c. Installation. Install the replacement tool board assembly as follows:

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

NOTE

Ensure mounting holes for the plunger can are included in the template.

(2) Using the template as a pattern, drill mounting holes in the replacement tool board,

(3) Position the tool board in the correct location on the shelter wall and install the attaching screws, flat washers and lockwashers.

(4) Position the dispenser can mount on the tool board so that the holes in the mount align with the marks previously made on the board, and install the attaching self-tapping screws.

(5) Position dispenser can in holder mount and install attaching worm drive clamp.

Section X. MAINTENANCE OF LADDER

4-22. General

A steel ladder, used to gain entry to the shelter when truck mounted, is located on the left shelter wall just forward of the duplicating machine. Two metal clamps are attached to the upper end of the ladder and are used for securing the ladder while in use. (See fig. 4-10.)

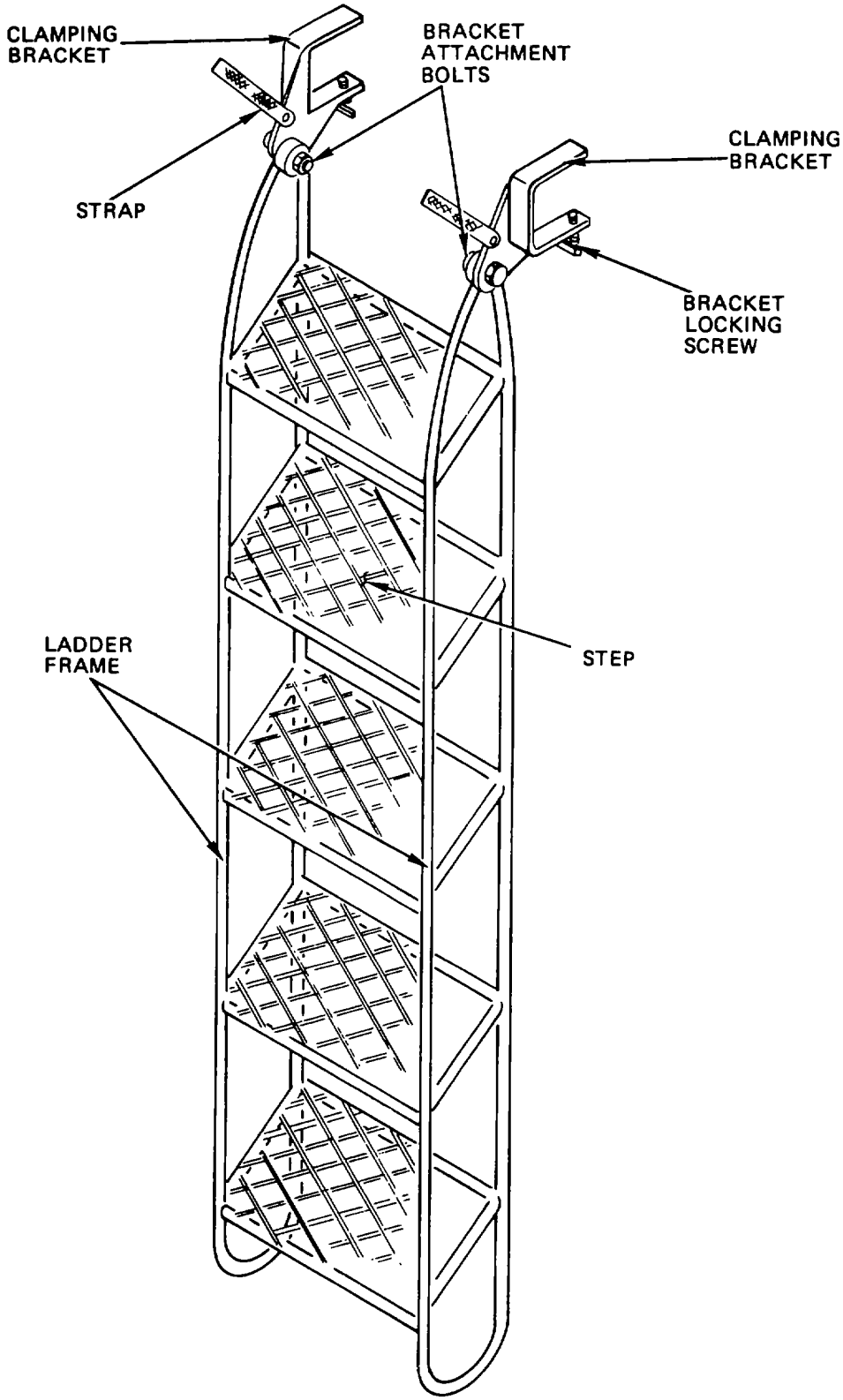


Figure 4-10. Ladder Assembly.

4-23. Ladder

a. Inspection. Inspect ladder as follows:

(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. Remove ladder as follows:

(1) Unbuckle retaining strap. (See fig. 4-11.)

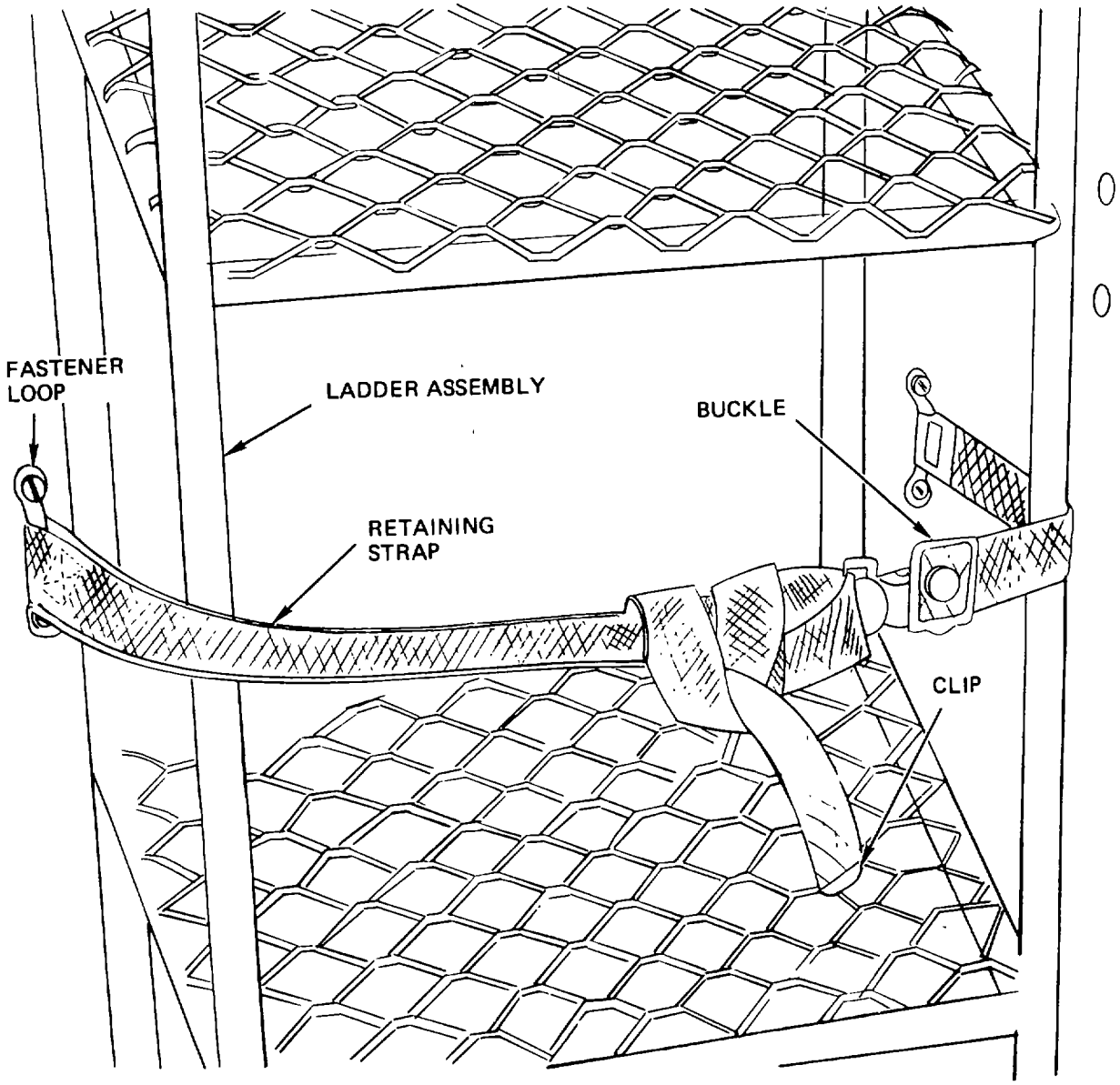


Figure 4-11. Ladder Assembly, Removal and Installation.

(2) Lift ladder and remove ladder from wall.

c. Installation. Install ladder as follows:
(1) Position ladder against wall and lower into position.
(2) Secure ladder with retaining strap.

d. Repair. If ladder is to be repaired, the procedures are as follows:
(1) Unbuckle retaining strap, and remove from wall. (See fig. 4-11.)
(2) Remove dents on ladder steps.
(3) Remove dents on clamps or replace clamps as necessary.
(4) Position ladder against wall, and secure with retaining strap.

Section XI. MAINTENANCE OF PAPER CUTTER ASSEMBLY

4-24. General

An Alton Iron Works Model 4906 guillotine-type papercutter is mounted on the rear end of the bench assembly. The cutter incorporates an electric motor which drives a hydraulic pump. The pump provides power for a hydraulic cylinder, the rod of which is attached, by means of a tie bar, to the knife bar assembly. When the two cutter operating switches are depressed, a solenoid valve is actuated, allowing pressurized fluid to pass to the cylinder. When the cylinder reaches the bottom of the power stroke, a lower limit switch is activated, deenergizing the solenoid valve, restricting fluid flow to the upper side of the piston. Fluid flow is then directed to the lower side of the cylinder piston, causing the cylinder rod to retract, bringing the knife to the topmost position. In this position, an upper limit switch is activated, in turn causing the solenoid valve to bypass fluid back to the pump reservoir. The papercutter assembly is shock mounted on two stiffening plates mounted on the bench top. (See fig. 4-12.)

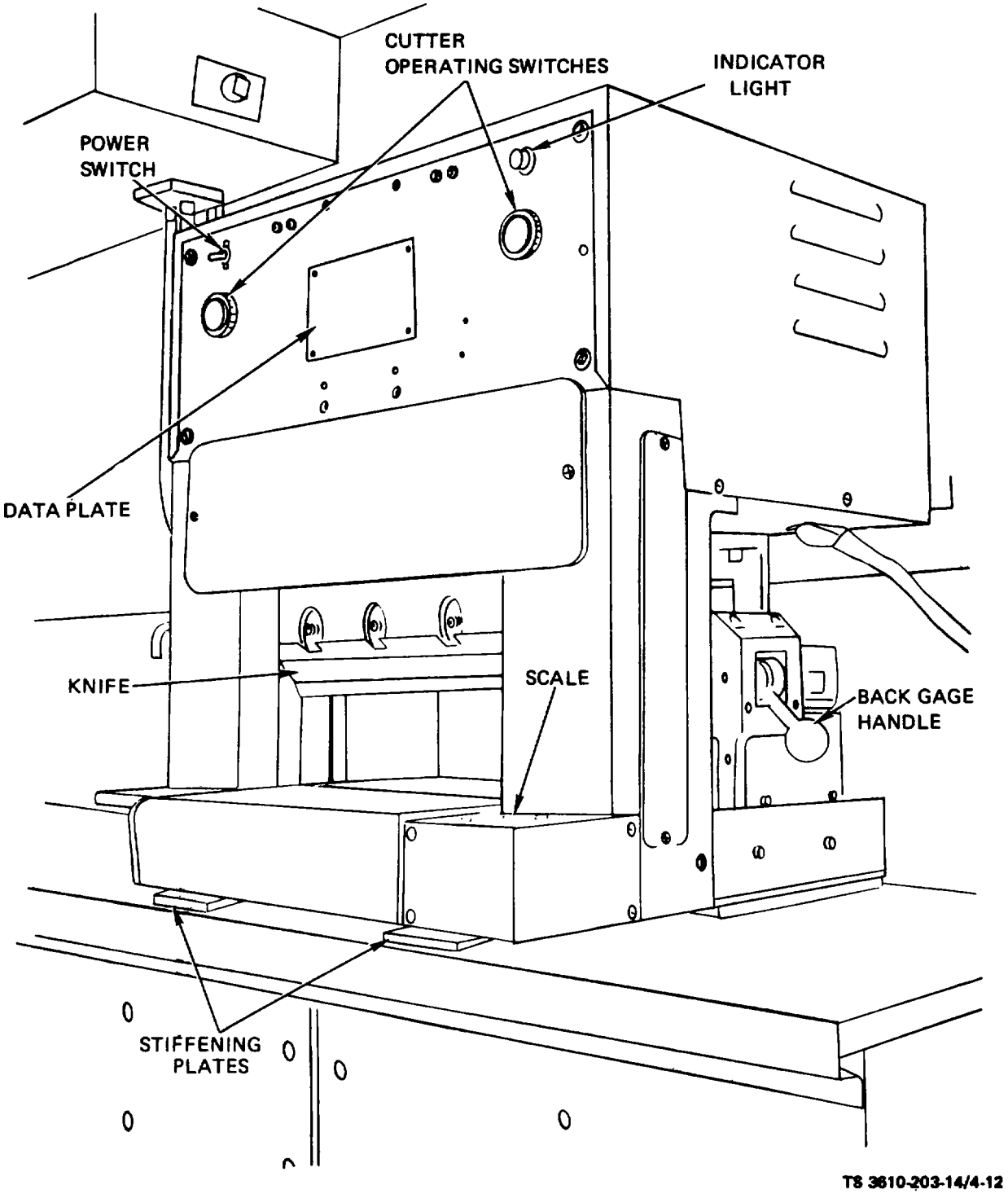


Figure 4-12. Papercutter Assembly.

e. Inspect tape scale for correct operation and for wear, cracks and cuts.

f. Inspect back gage for correct operation and adjustment and for cracks or other damage.

g. Inspect knife for correct operation and adjustment and for burrs, or other damage to the knife edge.

h. Inspect the unit power cord and connector for fraying or other damage.

4-25. Papercutter Assembly

Inspect the papercutter assembly as follows:

a. Inspect the toggle and pushbutton switches for security of attachment and correct operation.

b. Inspect indicator light for damage and correct operation.

c. Inspect all covers, panels and guards for security and damage. Also inspect data plate for damage and legibility.

d. Inspect area surrounding paper cutter for evidence of hydraulic leaks.

Section XII. MAINTENANCE OF WATER SUPPLY PLUMBING

4-26. 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. 4-13.)

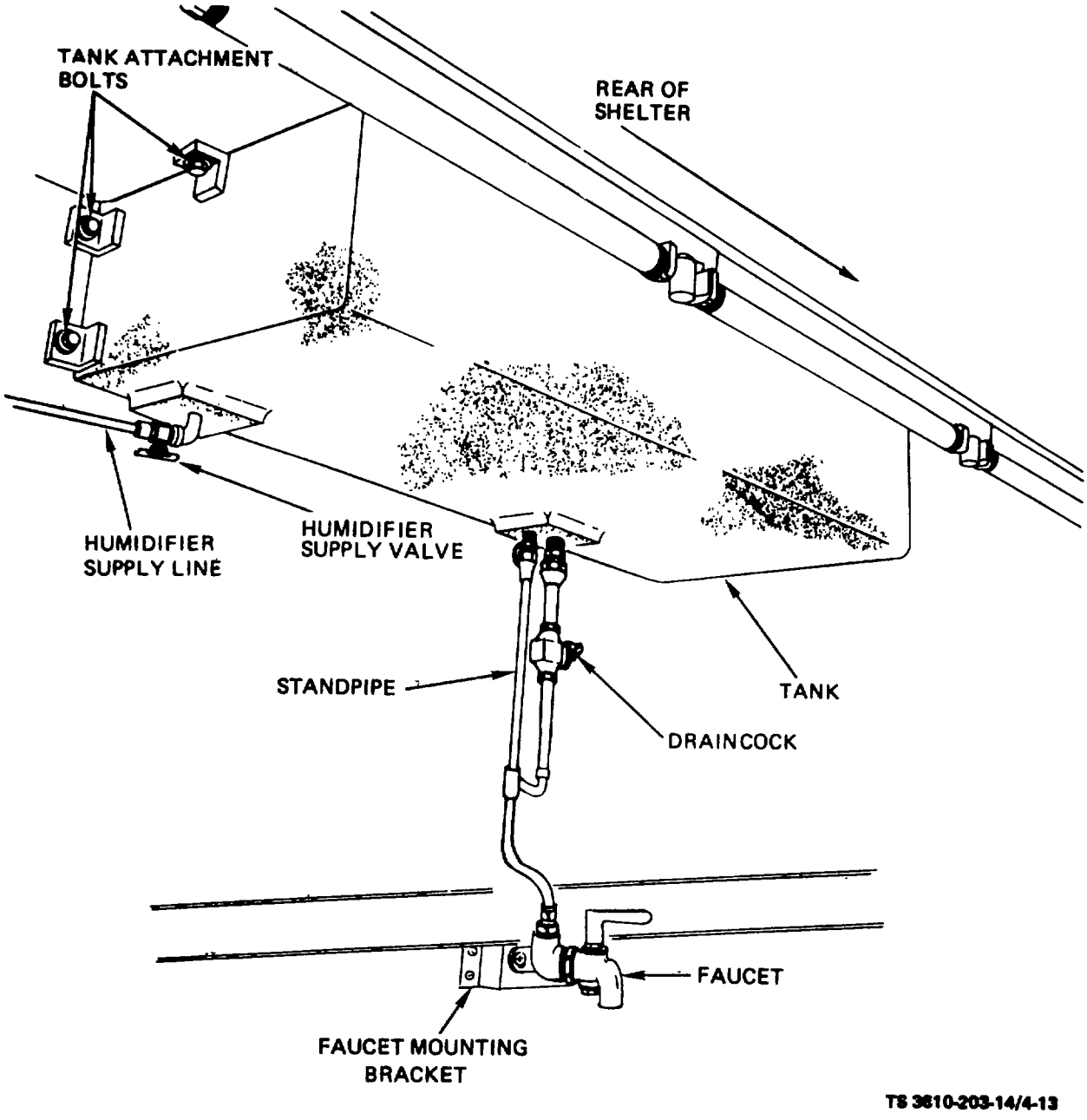


Figure 4-13. Water Supply System Plumbing and Fittings.

4-27. 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 the faucet from its fitting.

(c) Remove water line 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 water line to tank.

(b) Position valve or faucet and secure to fitting.

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

b. Water Lines and Fittings.

(1) Inspection. Inspect water lines 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 fittings 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) Shut off humidifier water supply by closing valve located at bottom of water tank. (See fig. 4-13.)'

(b) Using a suitable container, drain the humidifier supply line by opening the humidifier drain valve. (See fig. 4-14.)

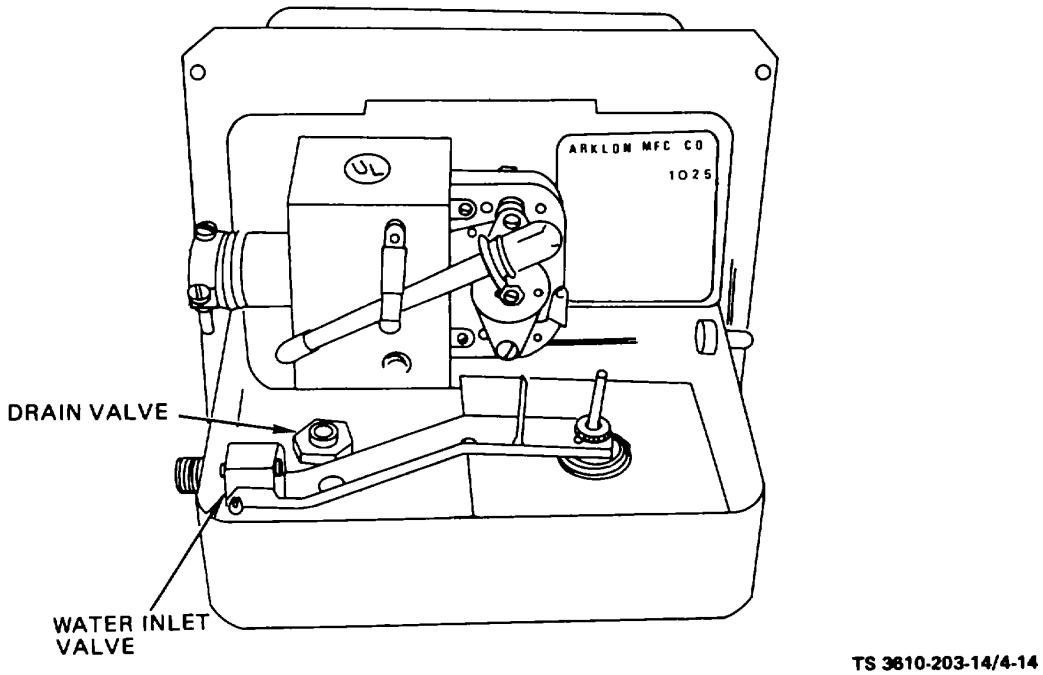


Figure 4-14. Humidifier Assembly (Front Cover Removed).

(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 replacement 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 replacement 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 XIII. MAINTENANCE OF AIR CONDITIONER AIR INTAKE FILTER

4-28. General

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

4-29. 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. 4-15.)

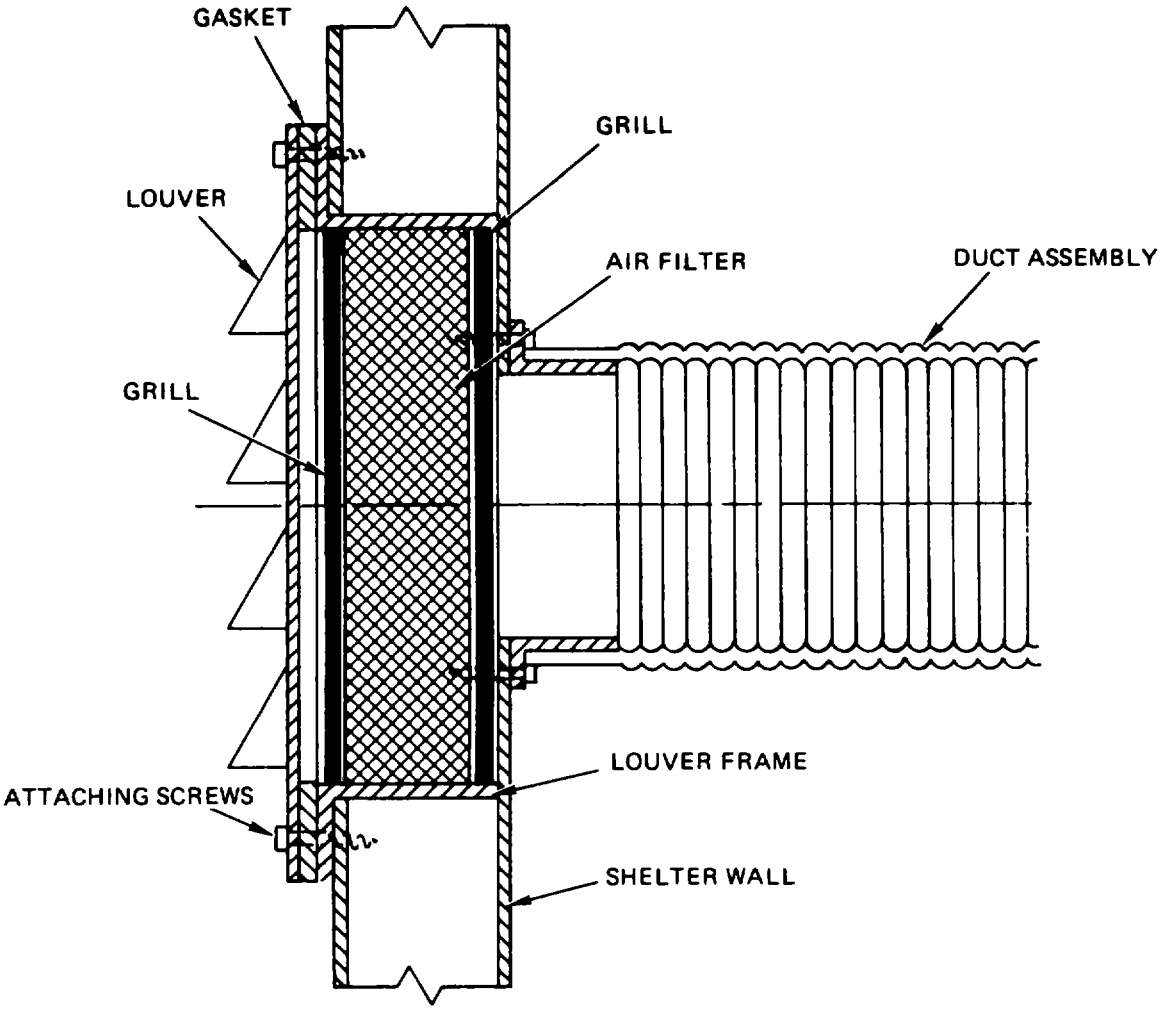


Figure 4-15. Air Conditioner Air Intake Filter Replacement.

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

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 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 XIV. MAINTENANCE OF HUMIDIFIER ASSEMBLY

4-30. 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.

4-31. 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. 4-13.)
(2) Using a suitable container, drain the humidifier supply line by opening the humidifier drain valve. (See fig. 4-16.)

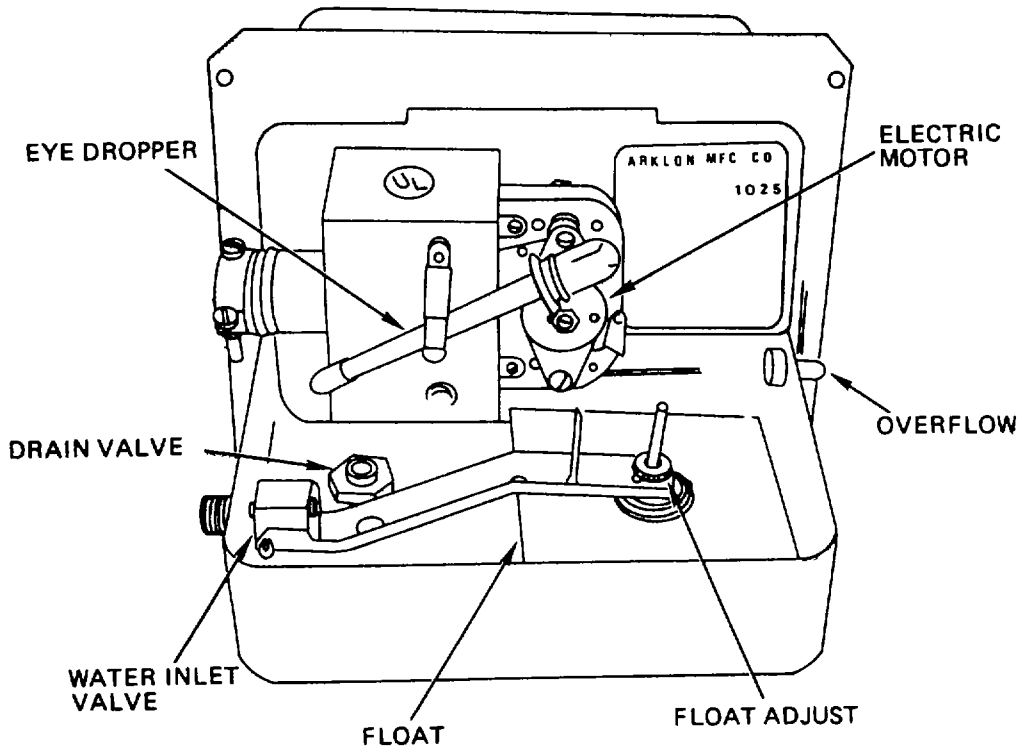


Figure 4-16. Humidifier Assembly Removal and Installation.

(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. 4-17) 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. 4-16.)

CAUTION

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

(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. 4-17). Rinse the humidifier thoroughly.

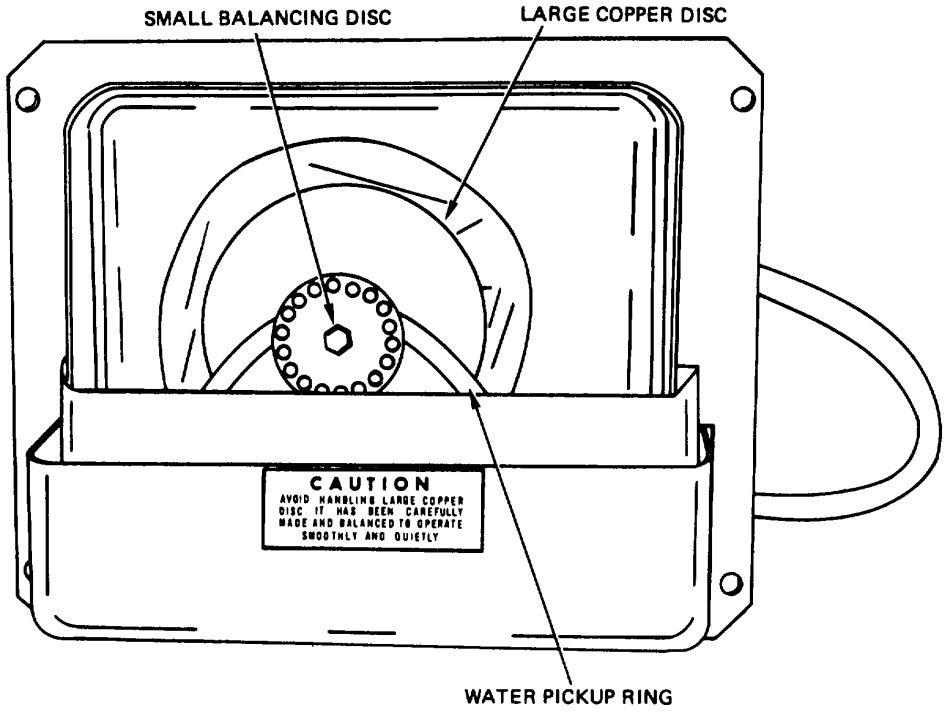


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Figure 4-17. Humidifier Rear View.

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 lubricating oil, (Item 16, App. D). For ease in application an eye dropper is provided with the humidifier. (See fig. 4-16.)

(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. 4-17) 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 XV. MAINTENANCE OF FIRE EXTINGUISHER

4-32. General

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

4-33. 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. 4-18.)

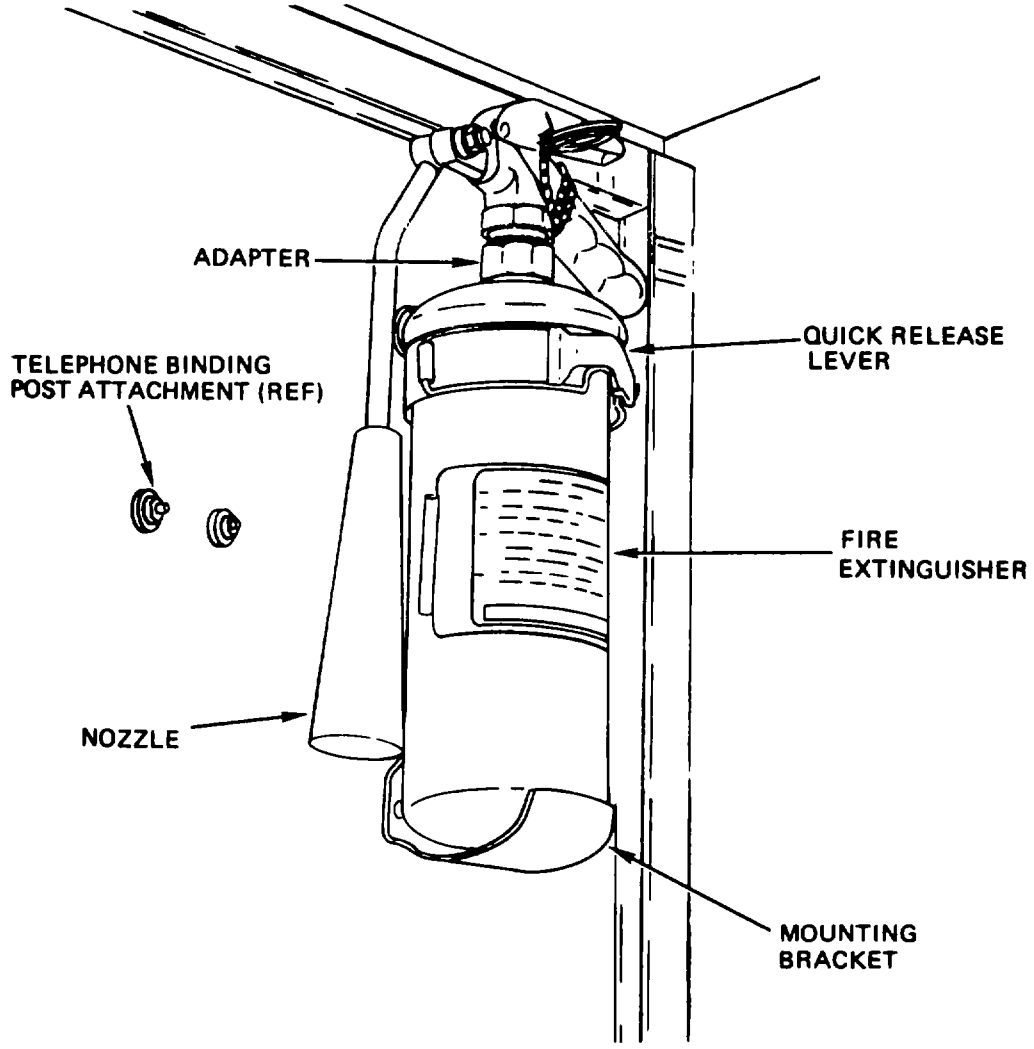


Figure 4-18. Fire Extinguisher, Removal and Installation.

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

e. Installation. Install fire extinguisher as follows:

(1) Lubricate threads on replacement cylinder with one drop of lubricating oil (Item 16, App. D) 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 XVI. MAINTENANCE OF FIRST AID KIT

4-34. General

A first aid kit is furnished with the shelter for the use of shelter personnel. It is mounted on the left wall adjacent to the fire extinguisher. (See fig. 4-19).

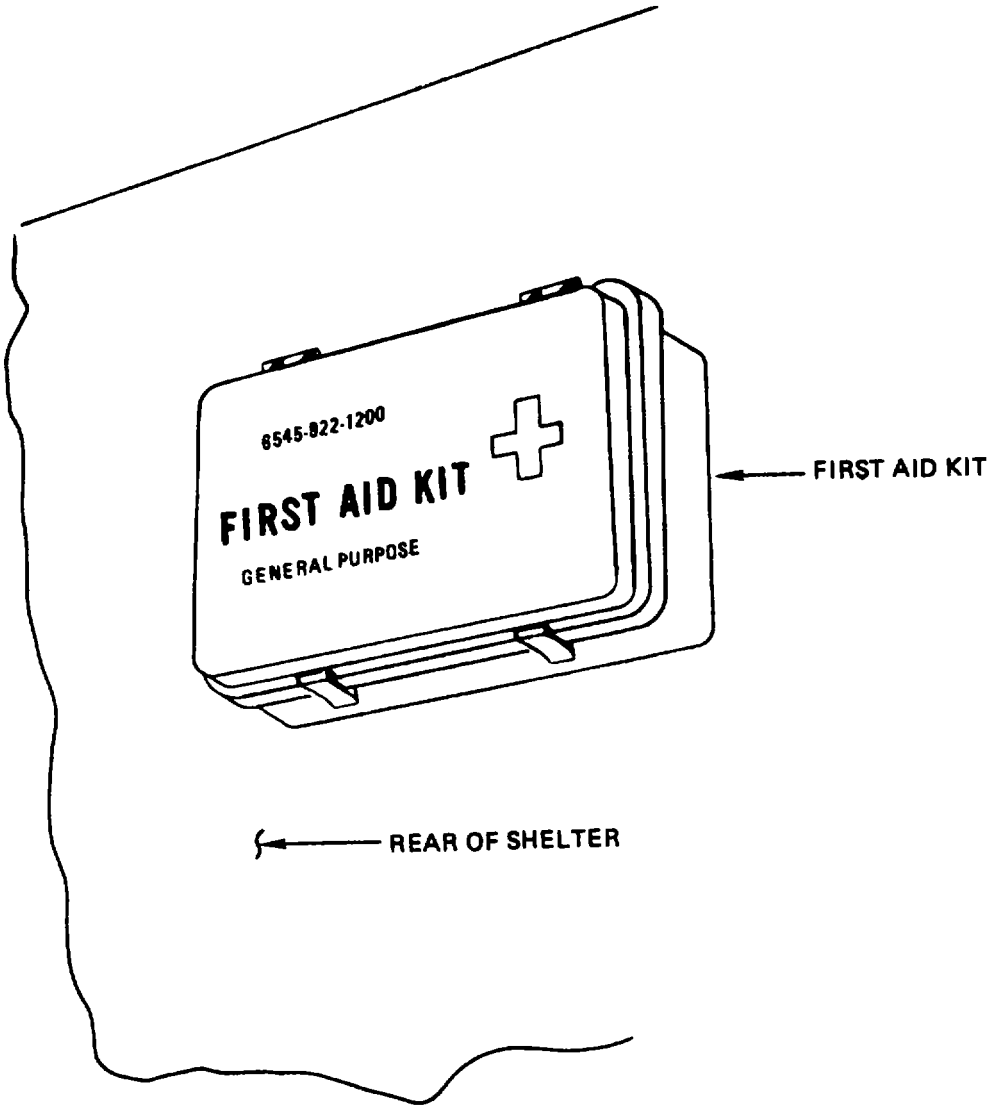


Figure 4-19. First Aid Kit.

4-35. 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 replacement 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 pattern, 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 XVII. MAINTENANCE OF SHELTER DOOR FILTER

4-36. General

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

4-37. 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. 4-20.)

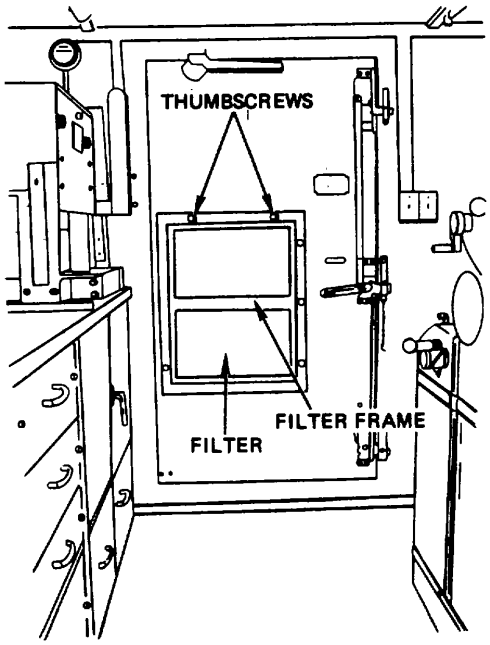
(2) Unscrew the interior thumbscrews until the filter frame is released. (See fig. 4-20).

(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, (Item 2, App. D).

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 out- side of the door and secure the interior thumbscrews.
(3) Release the bracket hinged weather cover retaining rod and close weather cover.
(4) Secure the weather cover fasteners.



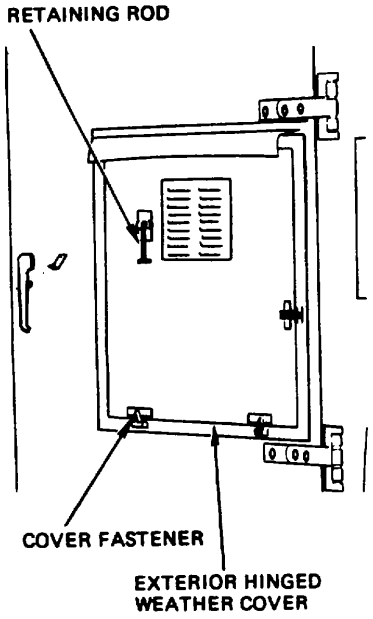


Figure 4-20. Shelter Door Air Filter, Removal and Installation.

Section XVIII. MAINTENANCE OF LEVEL INDICATOR GAGE

4-38. General

Two recessed level indicator assemblies are in6talled 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 wall of the shelter. The indicators are used to level the shelter during installation on uneven terrain.

4-39. 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. 4-21).

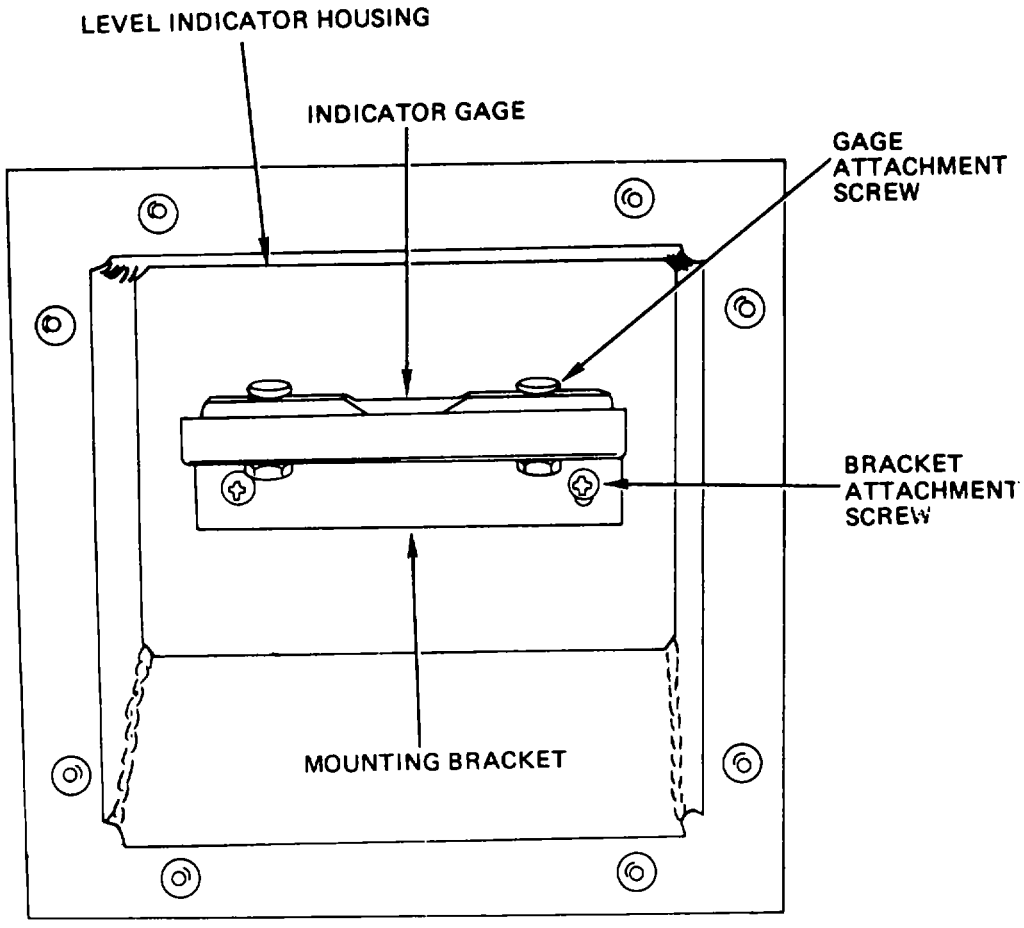


Figure 4-21. Level Indicator Gage, Removal and Installation.

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 XIX. MAINTENANCE OF FLUORESCENT LAMPS

4-40. 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 rear wall.

4-41. Fluorescent Lamps

a. Removal. To remove a fluorescent lamp grasp the lamp tube, rotate it 90 degrees, and lower it from its sockets. (See fig. 4-22).

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.

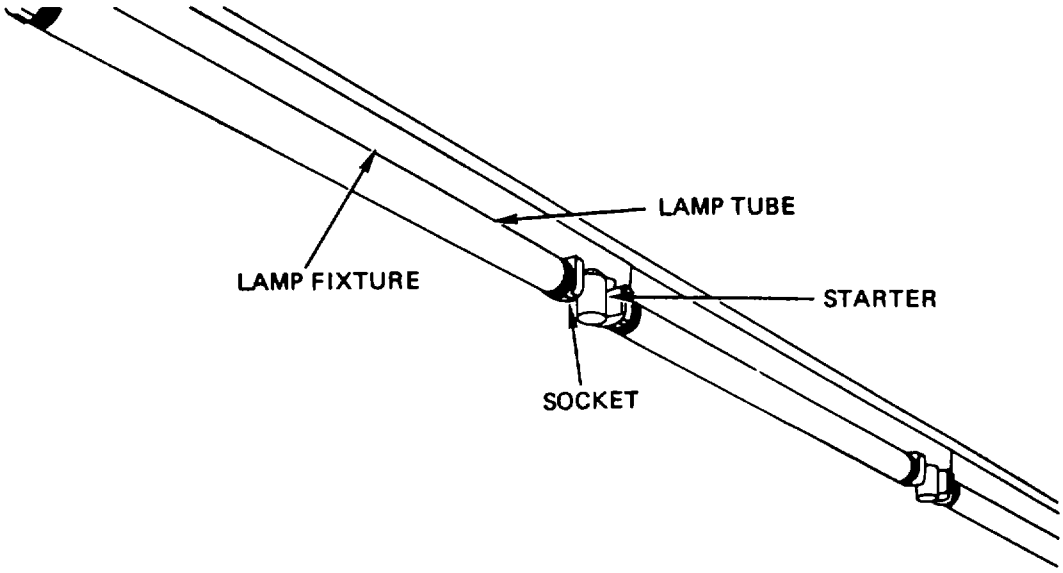


Figure 4-22. Fluorescent Lamp Tube Replacement.

Section XX. MAINTENANCE OF LAMP SWITCHES

4-42. General

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

4-43. 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. 4-23).

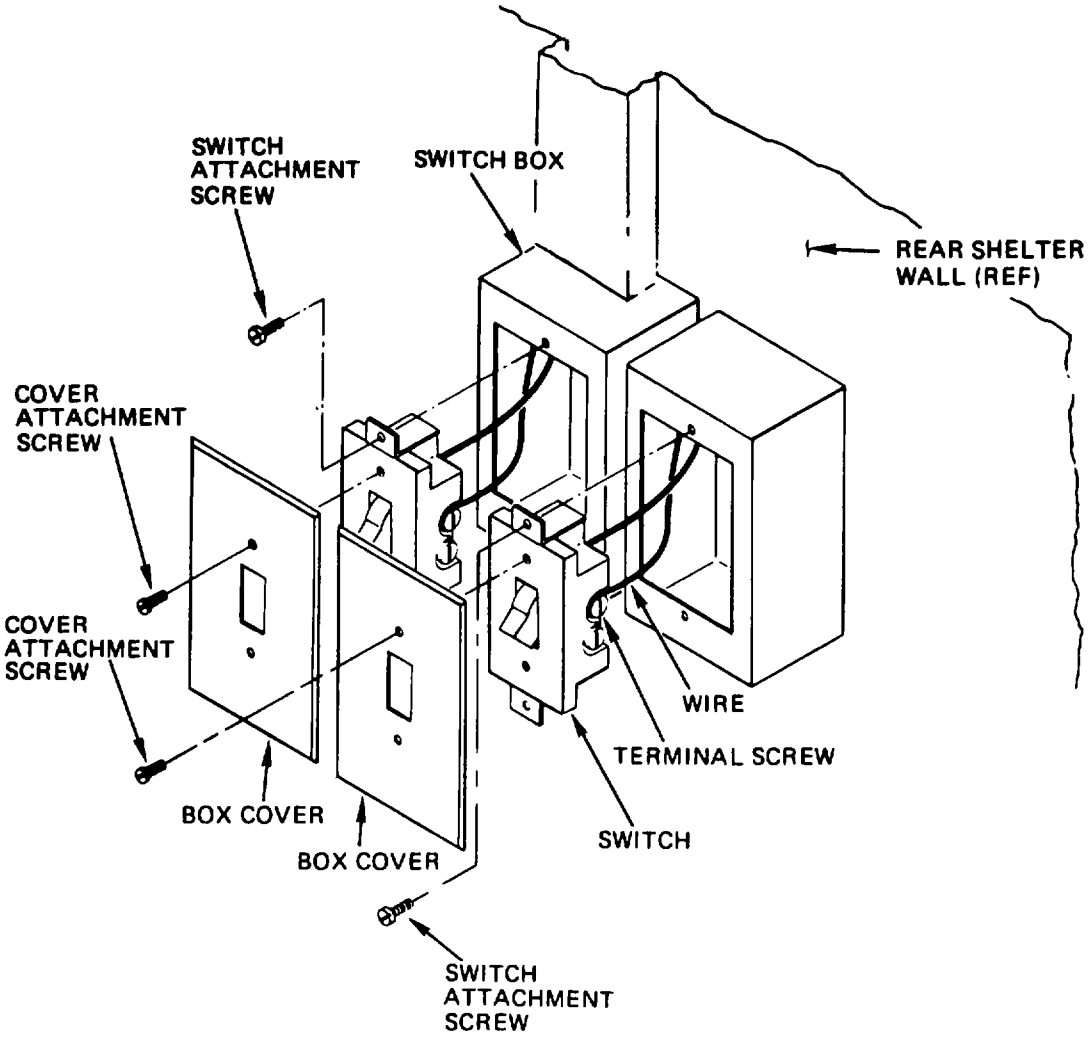


Figure 4-23. Fluorescent Lamp Switches, Removal and Installation.

(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 se- cure it in the switchbox with two capscrews.
(3) Install the switchbox cover on the switch- box and secure it with two screws.
(4) Position the LIGHTS circuit breaker to the on position.

Section XXI. MAINTENANCE OF EQUIPMENT RECEPTACLES

4-44. 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.

4-45. 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 de. fective units by replacing receptacle.

b. Removal. Remove equipment receptacles as follows:
(1) Position applicable RECEPTACLES circuit breaker to off.
(2) Remove screws that attach receptacle cover to conduit. (See fig. 4-24).

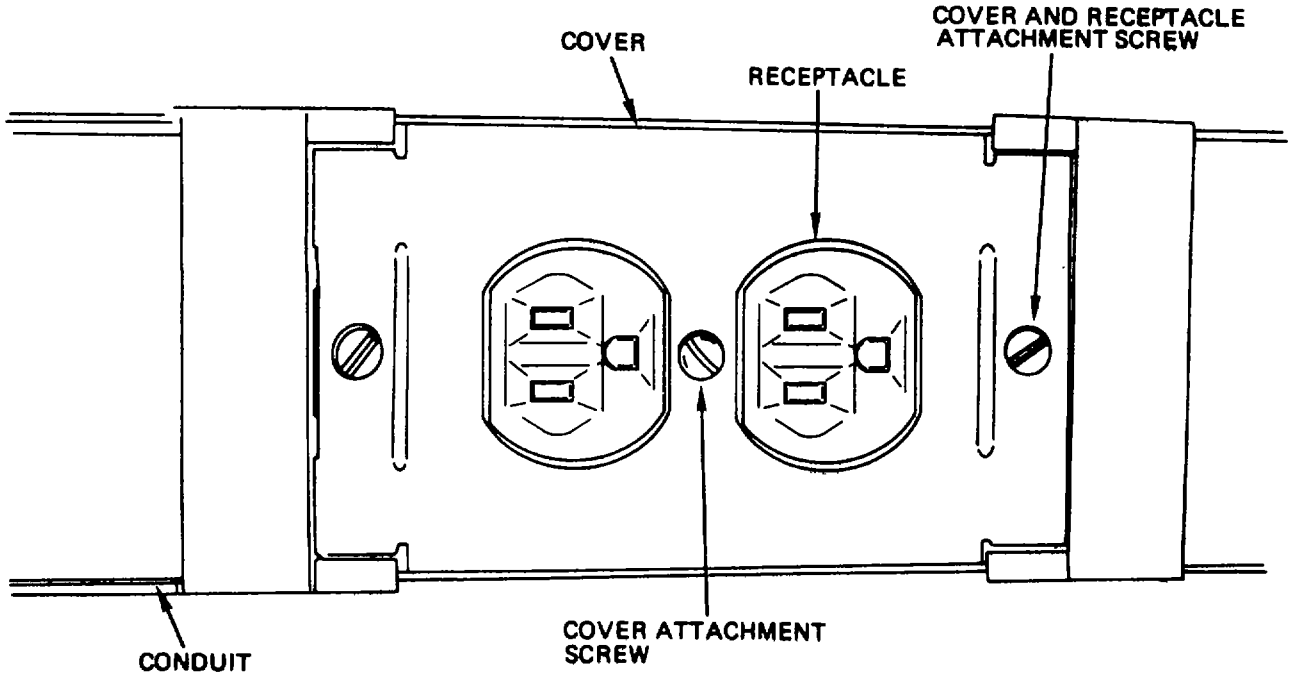


Figure 4-24. Equipment Receptacles, Removal and Installation.

(3) Pull receptacle conduit, tag 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 press 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 10-3610-203-34P. 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 press 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 press 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.

5-5. Troubleshooting

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

Table 5-1. Troubleshooting

Malfunction
Test or Inspection
Corrective Action

SHELTER SYSTEM AND COMPONENTS

1. 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 12-3.

Step 2. Test for defective heating elements as described in paragraph 12.1. Replace defective elements as necessary in accordance with procedures described in paragraph 12-1.

2. BLACKOUT WARNING BUZZER WILL NOT ACTIVATE WHEN SWITCH DEPRESSED

Step 1. 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 blackout warning switch is depressed.

If necessary, replace defective buzzer as described in paragraph 13-2.

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 13-2.

Table 5-1. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

3. 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 15-2.

4. NO ELECTRICAL POWER TO SHELTER SYSTEM

Step 1. 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 (Cont'd)

Malfunction Test or Inspection Corrective Action

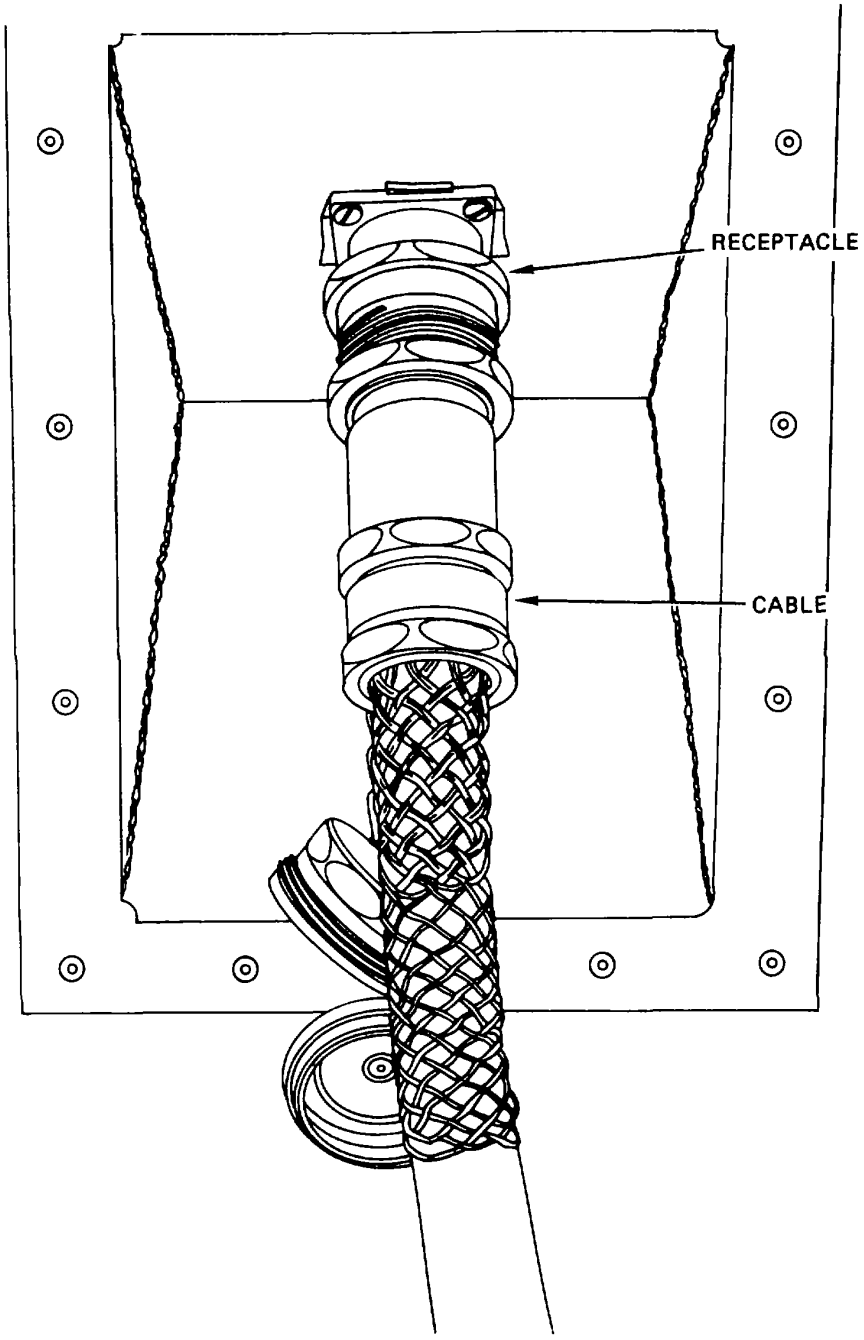


Figure 5-1. Main Power Cable and Receptacle.

Table 5-1. Troubleshooting (Cont'd)

Malfunction
Test or Inspection
Corrective Action

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, 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.

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

Table 5-1. Troubleshooting (Cont'd)

Malfunction Test or Inspection Corrective Action

6. 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.

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 level the light assembly away from the ceiling light channel.

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 press 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. Duplicating Machine and Stacker

a. General. An Addressograph Multigraph Model 1250 Multilith Offset duplicating machine is floor mounted along the left wall of the shelter. The duplicating machine, which is of the single lever control type, incorporates an integral Model 1210 receding stacker which is used to speed the drying of ink and to provide mechanical jogging of duplicated material. Ink drying is accomplished by means of an infrared drying lamp. The press is capable of high speed production of clear, quality impressions of a duplicating master.

b. Removal.

(1) Disconnect the duplicating machine power cord from the equipment receptacle.

(2) Remove the color press attachment as follows:

(a) Remove the ink and water fountain control knobs. (See fig. 5-2.)

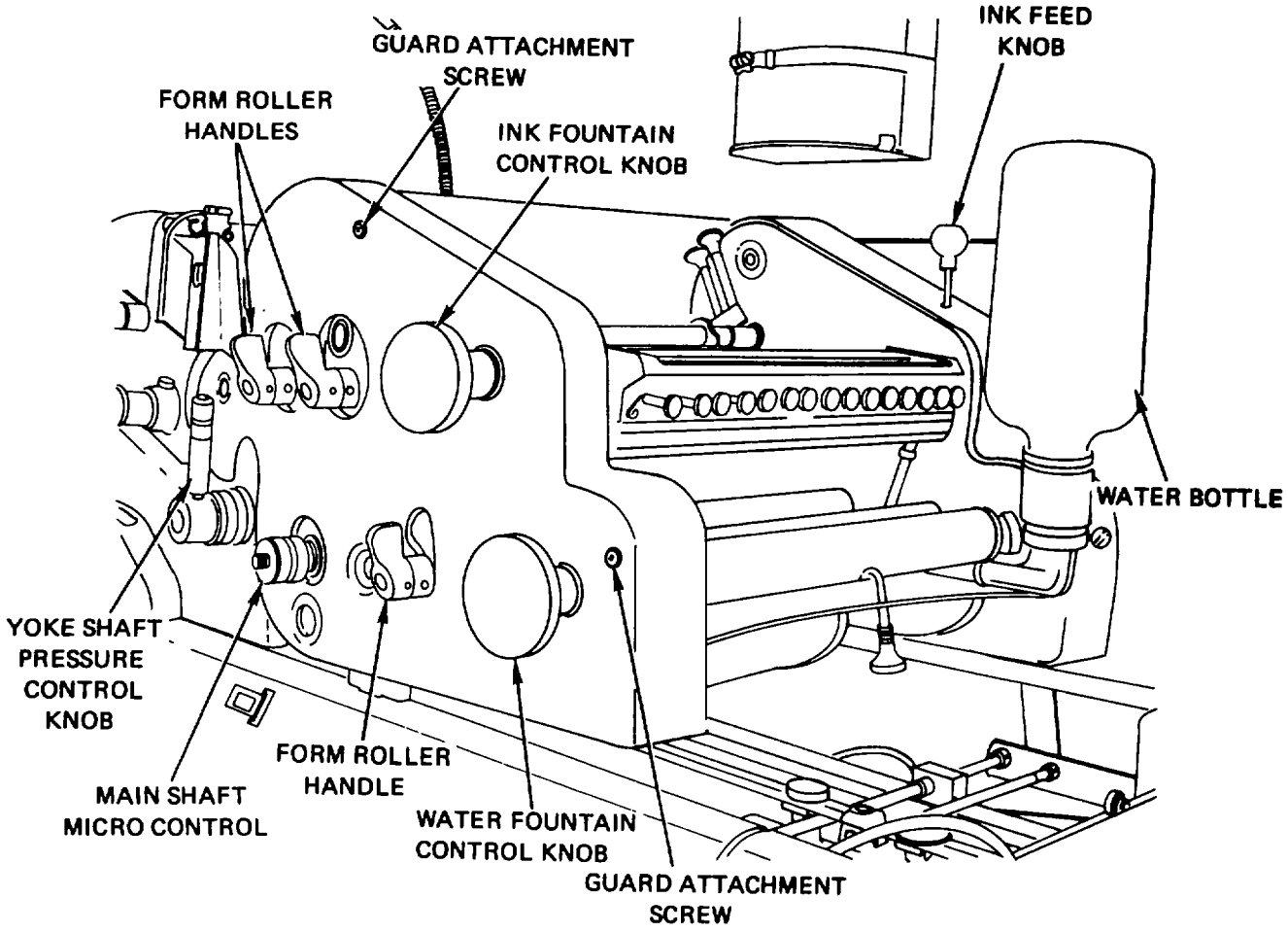


Figure 5-2. Color Press Guard, Removal and Installation.

(b) Remove the knobs from the ink and water feed control shafts. (See figs. 5-2 and 5-3).

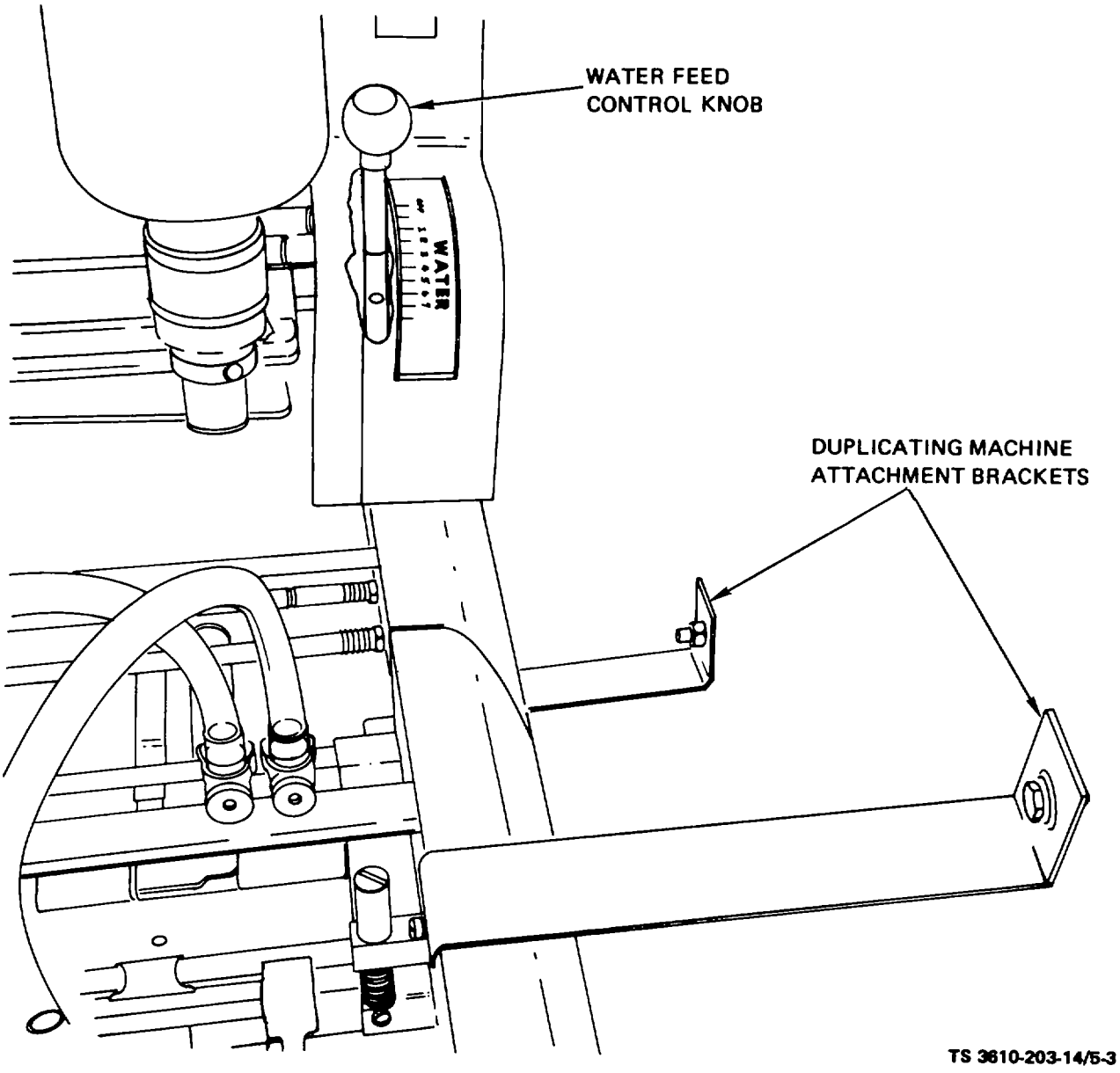
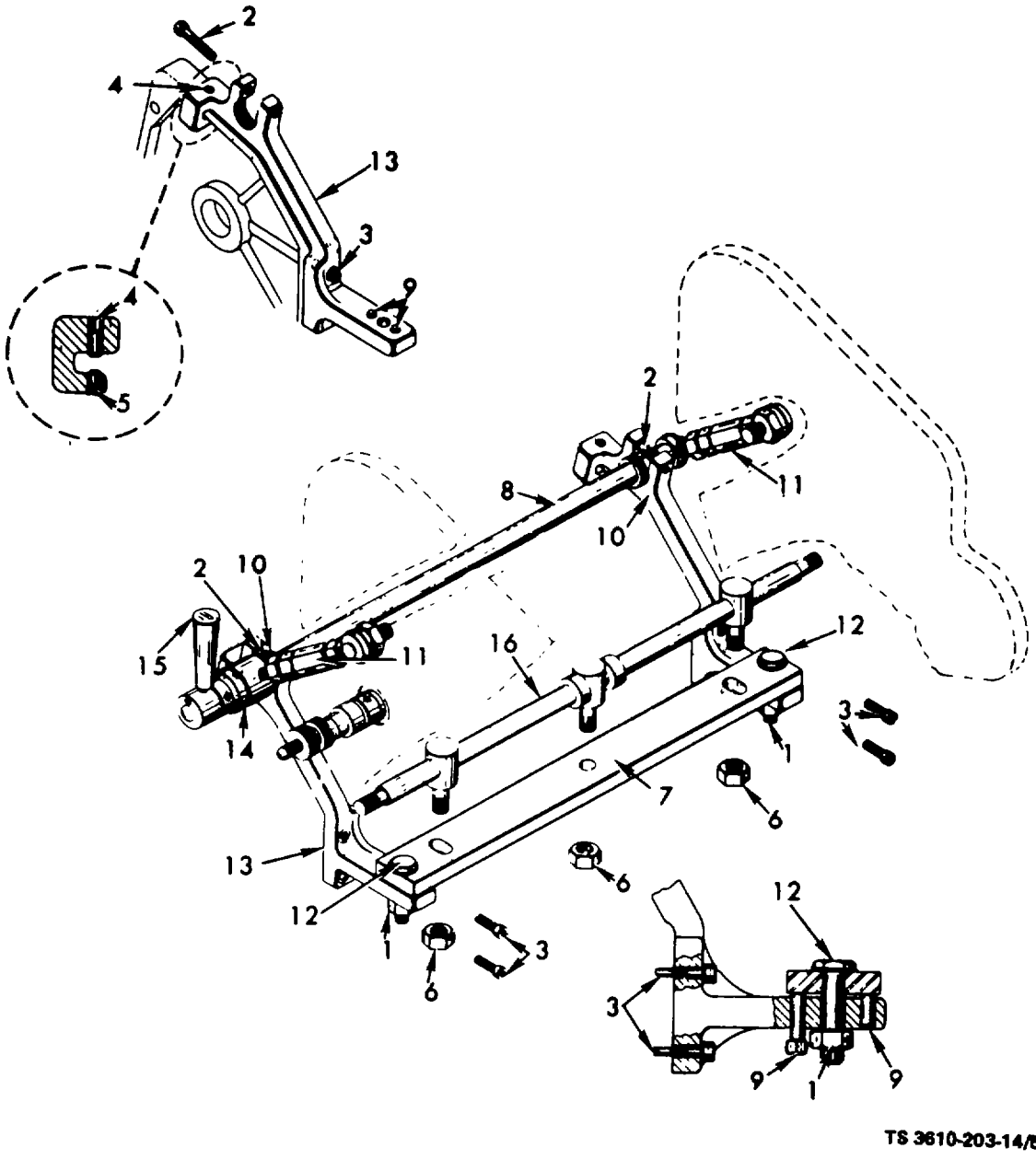


Figure 5-3. Water Feed Control

(c) Remove the two screws which attach the left and right guards.

(d) Remove the nuts (1, fig. 5-4) attached to the bolts (12) which protrude through hold down bar (7), into mounting brackets.



1. Nuts
2. Screws
3. Screws
4. Setscrews
5. Setscrews
6. Main Tie Rod Nuts
7. Holddown Bar
8. Yoke Shaft
9. Leveling Screws
10. Yoke Shaft Bushings
11. Turnbuckles
12. Holddown Bar Bolts
13. Mounting Bracket Screws
14. Collar Setscrew
15. Yoke Shaft Pressure Handle
16. Main Tie Rod

Figure 5-4. Color Press Removal and Installation

(e) Remove screws (2) from upper portion of mounting brackets (13) and move yoke shaft bushings (10) clear of mounting bracket openings.
(f) Lift yoke shaft (8) out of mounting bracket openings.

CAUTION

When removing color press, secure yoke shaft bushings (10) to turnbuckles (11) to prevent cylinder surface damage.

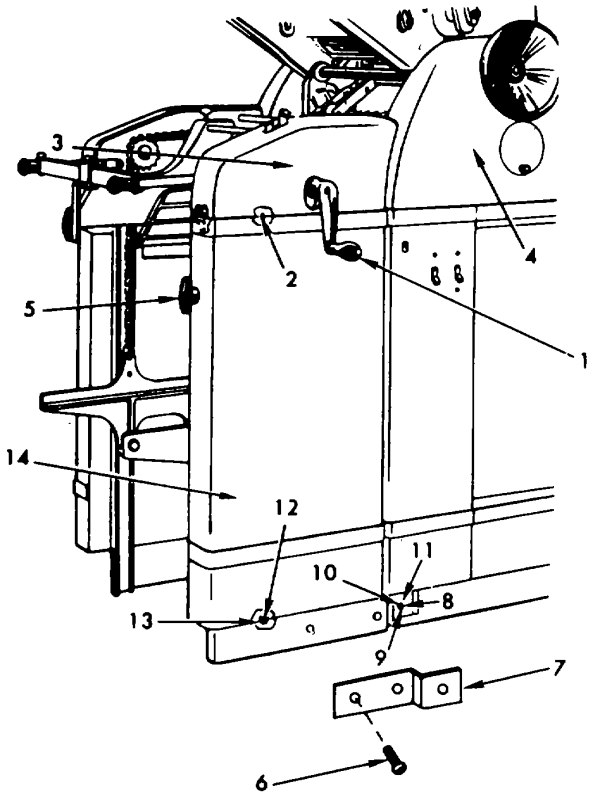
(g) Remove the color press assembly, leaving mounting brackets in position on the duplicating machine.

NOTE

If the mounting brackets are undamaged, they may be retained for use with new color prem.

(h) Remove mounting brackets (13) by removing attaching screws (3) and releasing setscrews (4 and 5).

(3) Remove the receding stacker as follows:
(a) Remove any paper from the paper truck and remove the paper truck.
(b) Remove the screws which secure the paper truck crank handle (1, fig. 5-5) and remove the handle.

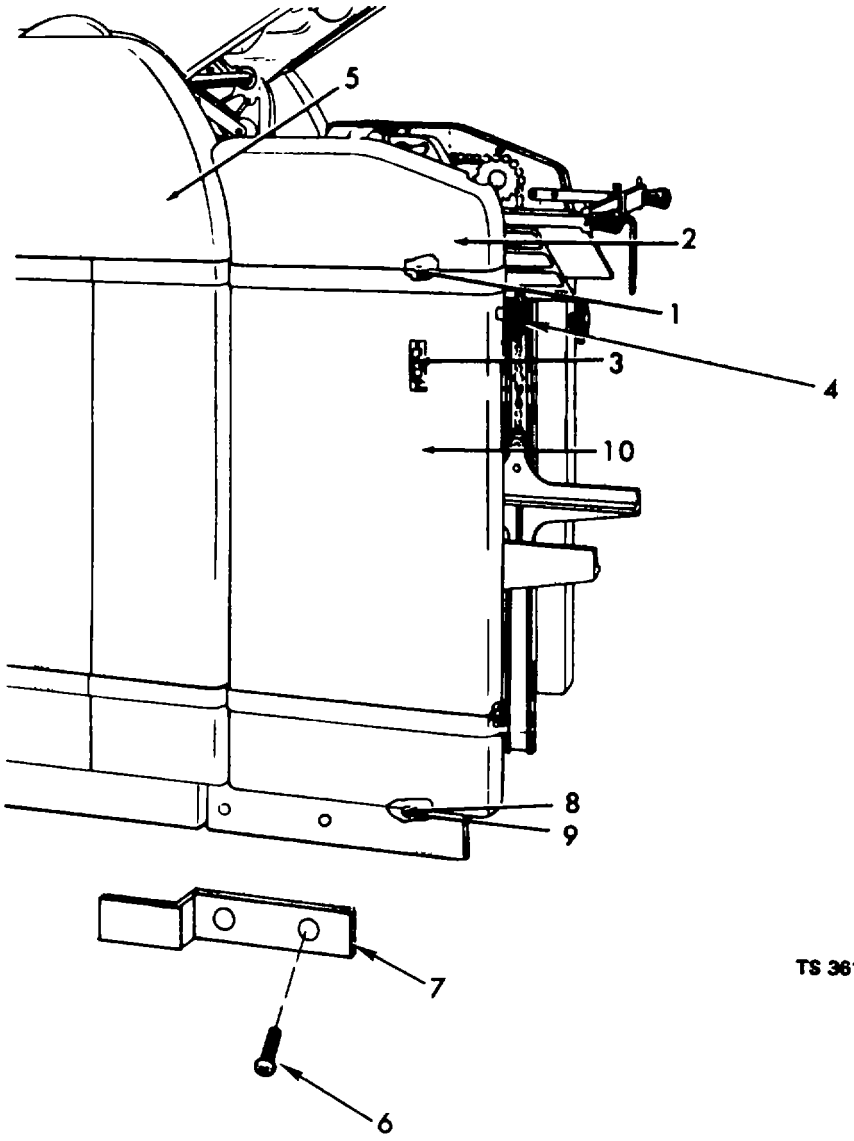


1. Paper Truck
2. Pins
3. Left Cover Panel
4. Duplicator Left Side Cover
5. Speed Control Knob
6. Screw
7. Strap
8. Screw
9. Washer
10. Nut
11. End Cap
12. Screw
13. Washer
14. Cover Panel

Figure 5-5. Receding Stacker Left Side.

(c) Remove pins (2) attaching upper left cover (3) and remove cover.

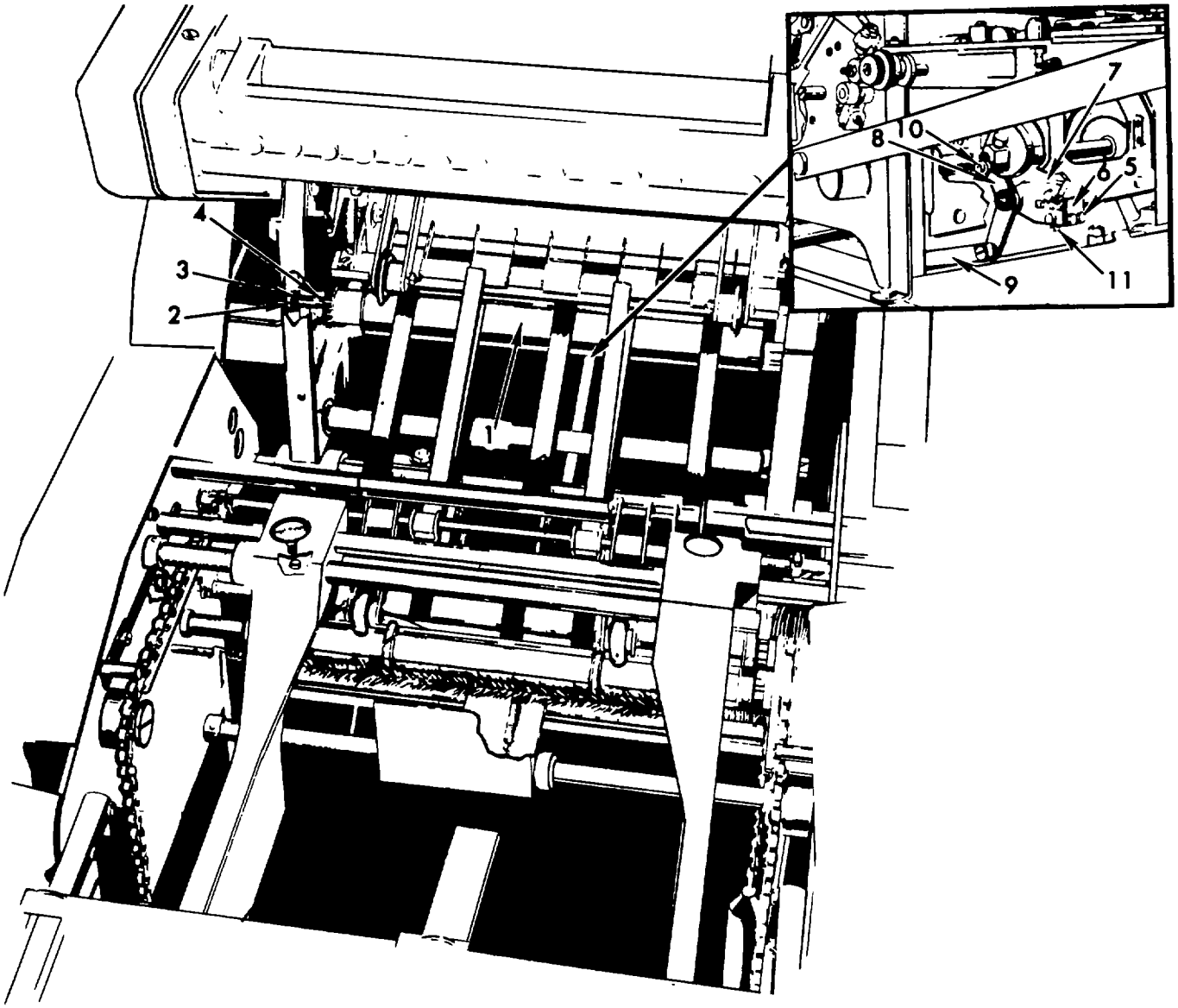
(d) Remove pins (1, fig. 5-6) attaching upper right cover (2) and remove cover.



1. Pins
2. Right Cover Panel
3. Infrared Lamp Switch
4. Lamp Fixture Knob
5. Duplicator Right Side Cover
6. Screws
7. Strap
8. Screws
9. Washers
10. Cover Panel

Figure 5-6. Receding Stacker Right Side.

(e) Tag and disconnect electrical wires from infrared lamp switch (3).
(f) Loosen knob (4) to release infrared lamp fixture and carefully remove fixture.
(g) Remove duplicating machine right side cover (5).
(h) Remove duplicating machine left side cover (4, fig. 5-5).
(i) Pull out on speed control knob (5) to disengage extension shaft slot from speed control.
(j) Remove screw attaching pin bearing in right-hand end of ejector roller (1, fig. 5-7).



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1. Ejector Roller
2. Nut
3. Lockwasher
4. Bearing Stud
5. Screws
6. Cap
7. Bearing Block
8. Cam Lever
9. Drive Link
10. Roller
11. Screw

Figure 5-7. Ejector Roller, Removal and Installation.

(k) Remove nut (2), lockwasher (3) and bearing stud (4) from right end of ejector roller (1). Remove roller.

(l) Remove screws (6, figs. 5-5 and 5-6), washers and nuts attaching straps (7) connecting stacker and duplicating machine and remove straps.

(m) Remove screw (8, fig. 5-5), washer (9) and nut (10)attaching end cap (11) to duplicating machine.

(n) Remove upper stacker mounting screws (see fig. 5-8) from both sides of duplicator and carefully remove stacker.

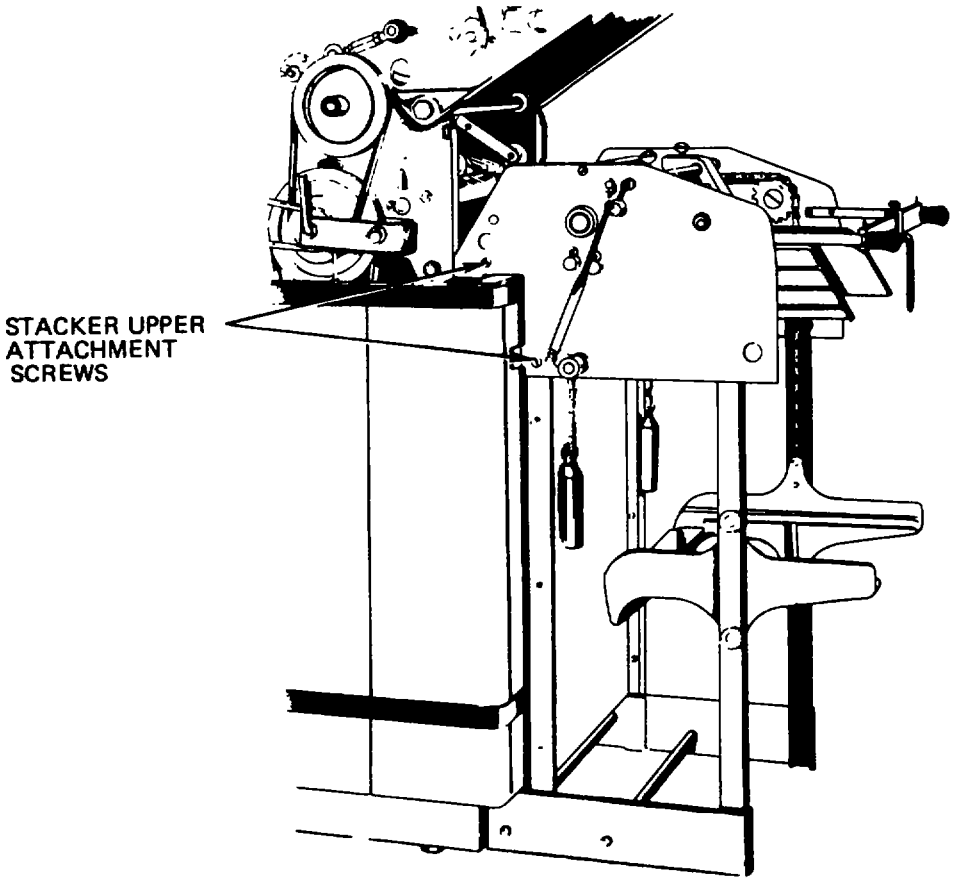

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Figure 5-8. Receding Stacker Upper Mounting Screws

(4) Remove the screws and washers attaching the duplicator upper and lower support brackets to the shelter wall. (See fig. 5-9).

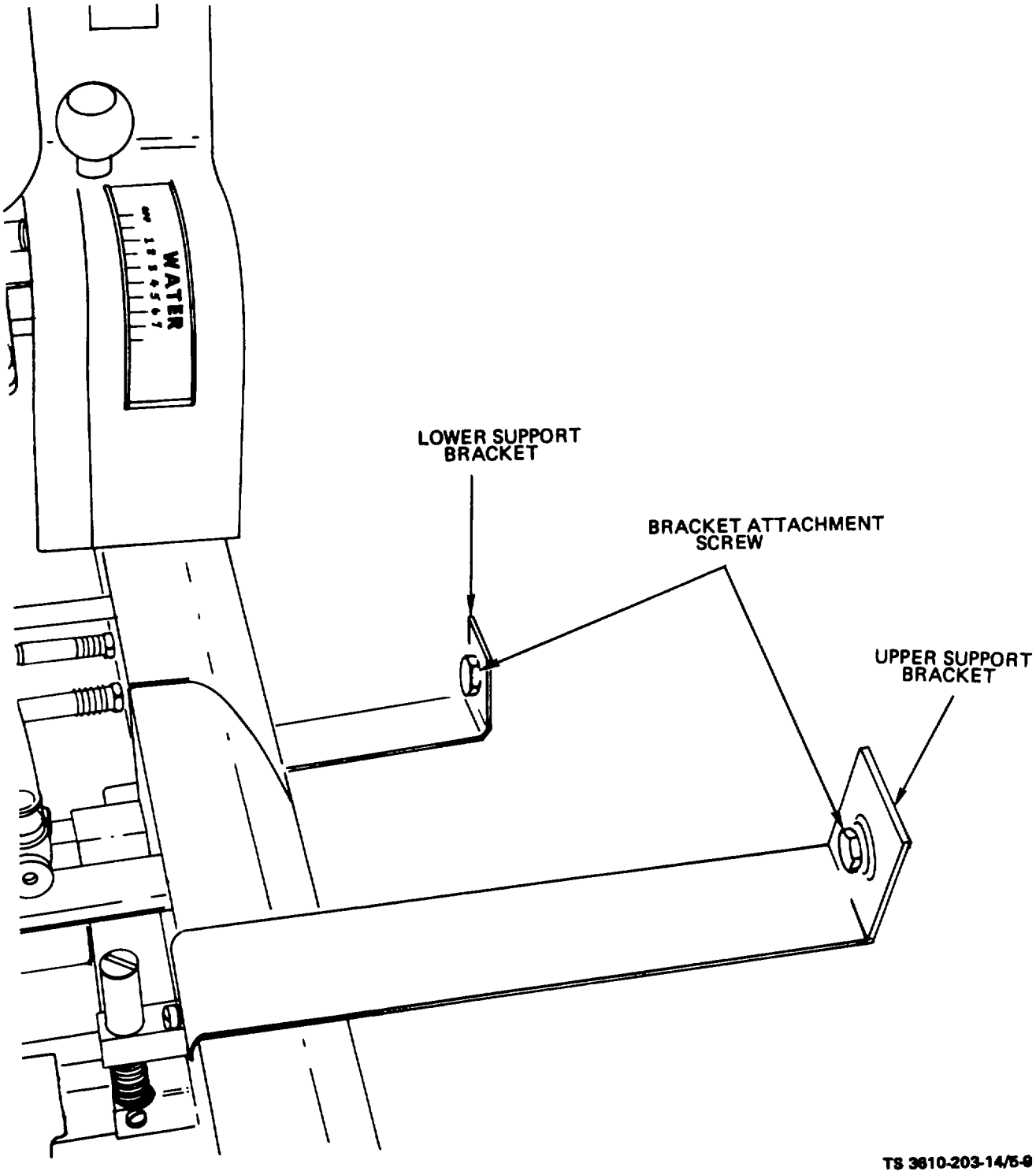

Figure 5-9. Duplication Machine Support Brackets.

(5) Open cabinet doors on operator's side of duplicating machine to obtain access to machine interior.

(6) Remove bolts and washers which attach duplicator to shelter floor mounting plate. (See fig. 5-10).

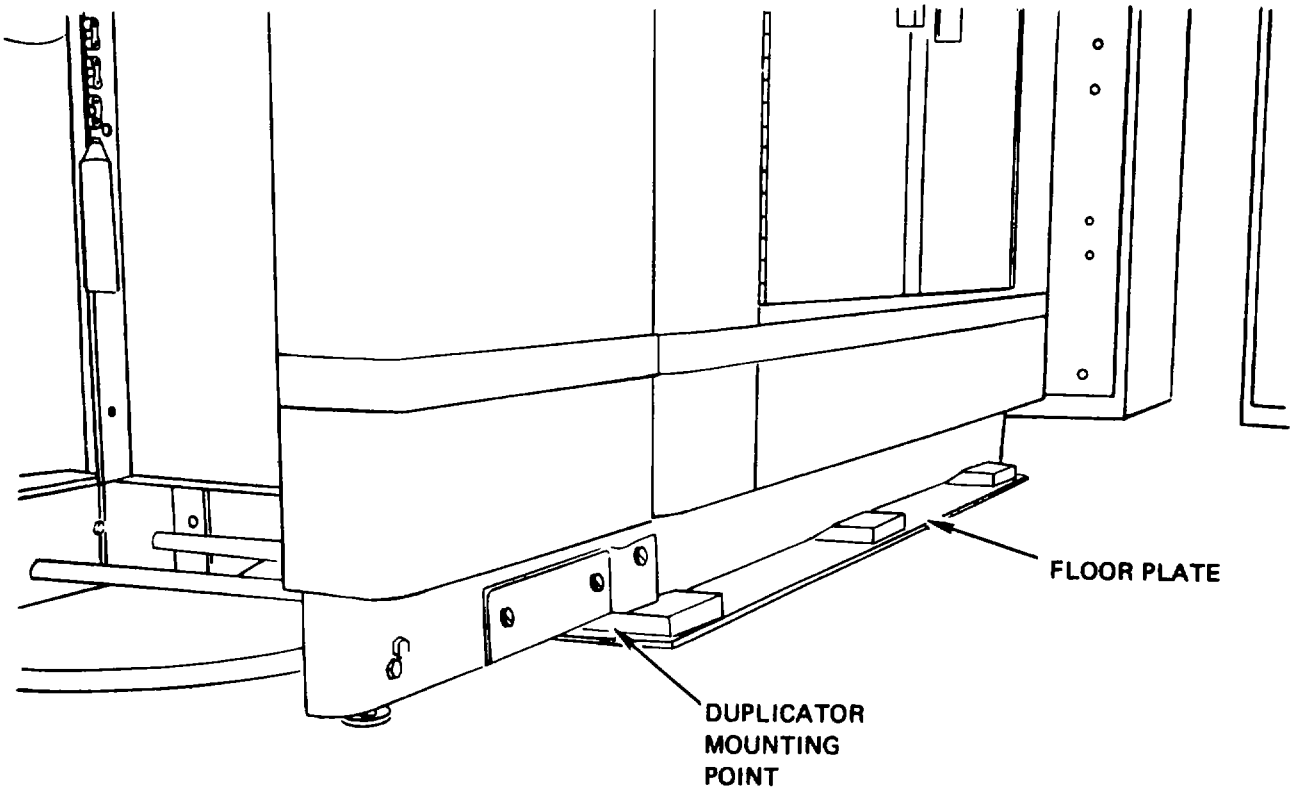

Figure 5-10. Duplicating Machine Mounting Points.

WARNING

The duplicating machine weighs approximately 650 pounds (295 kilograms). Extreme care should be taken in handling the machine to prevent injury to personnel and damage to other equipment in the shelter.

(7) Carefully remove duplicating machine from shelter.

(8) Remove the screw and washer attaching upper support bracket to duplicating machine and remove bracket.

(9) Remove screw, washer and nut attaching lower support bracket to duplicating machine and remove bracket.

(10) Install the left and right side machine covers.

(11) Position ejector roller and roller bearing and install bearing stud and attaching nut and lockwasher.

(12) Tag and disconnect stacker lamp switch wires from duplicator vacuum pump switch and remove wires.

c. Installation.

(1) Remove the left register board cover panel immediately above cabinet doors of replacement duplicating machine.

(2) Modify removed cover panel as shown in figure 5-11.

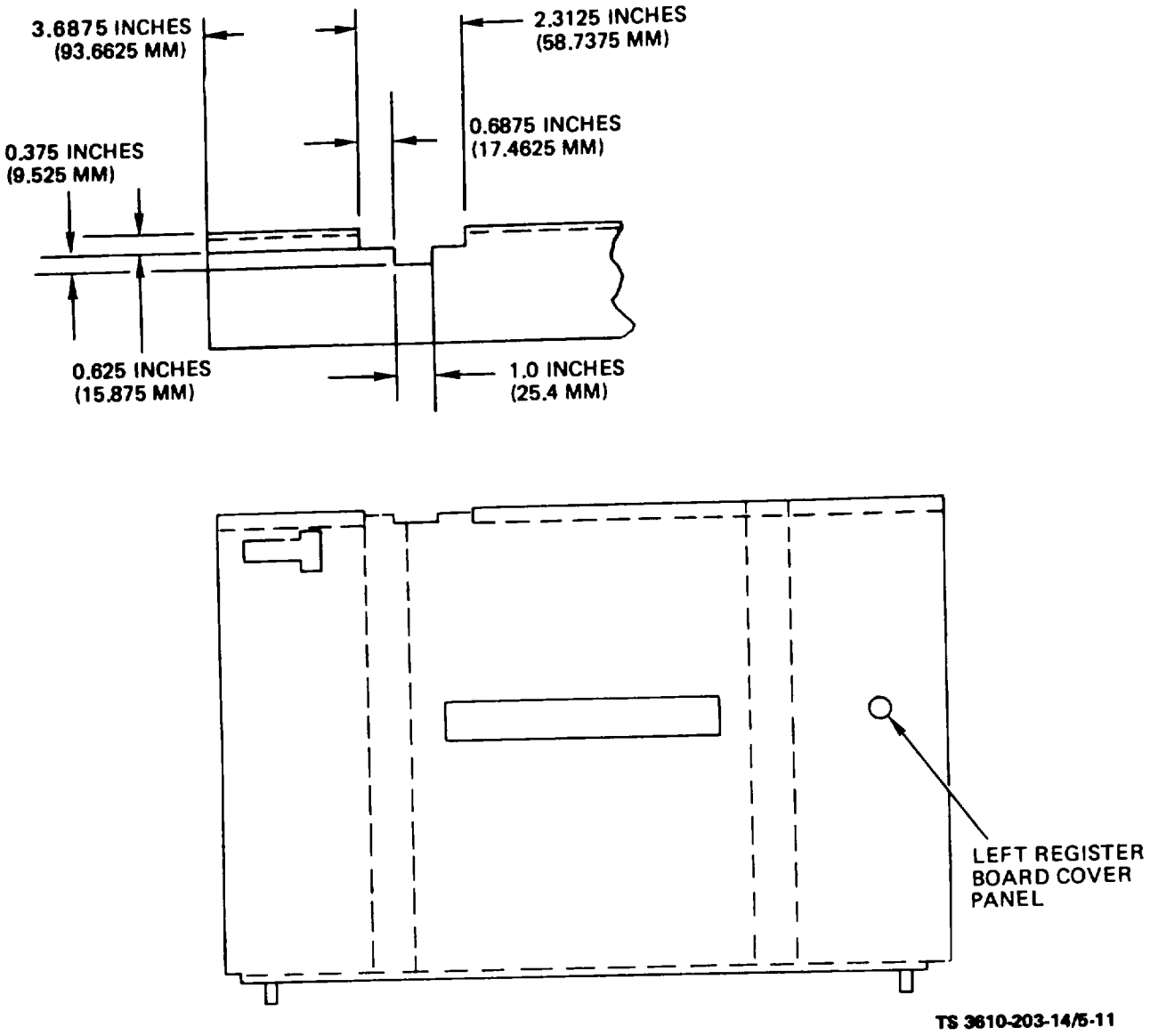

Figure 5-11. Left Register Board Cover Modification.

(3) Install modified left register board cover panel.
(4) Remove the right conveyor cover panel from shelter wall side of duplicating machine.
(5) Modify removed cover panel as shown in figure 5-12.

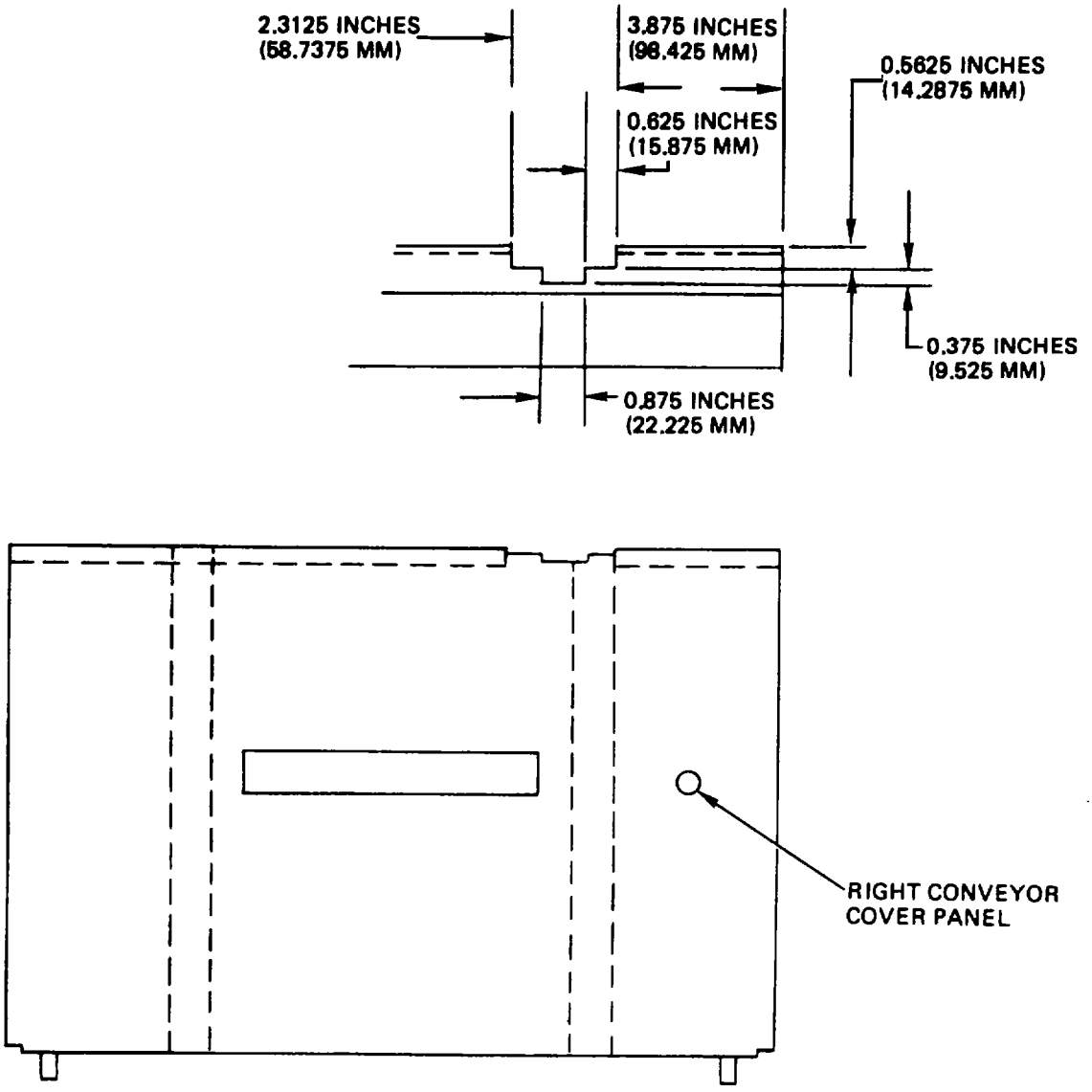

Figure 5-12. Right Conveyor Cover Panel Modification.

(6) Install modified conveyer cover panel.

WARNING

The duplicating machine weighs approximately 650 pounds (295 kilograms). Extreme care should be taken in handling the machine to prevent injury to personnel and damage to other equipment in the shelter.

(7) Carefully install duplicating machine in shelter and position machine over shelter floor plate mounting points. (See fig. 5-10.)

(8) Open cabinet doors on operator's side of duplicating machine to obtain access to machine interior.

(9) Apply Grade C Locktite sealant, Specification MIL-S-22473 to bolts and install bolts and washers to secure duplicating machine to floor plate mounting points.

(10) Position upper and lower support brackets on shelter wall mounting points and mark bracket attachment locations on duplicating machine panels.

(11) Using appropriate tools, drill support bracket attachment holes in duplicating machine.

(12) Install the screw and washer which attach the upper support bracket to the duplicating machine. (See fig. 5-9).

(13) Install the screw, washer and nut attach- ing the lower support bracket to the duplicating machine.

(14) Install the screws and washers which attach the support brackets to the shelter wall.

(15) Install the receding stacker as follows:

(a) Remove paper receiver from duplicating machine.

(b) Remove left side and right side covers from duplicating machine. (See figs. 5-5 and 5-6).

(c) Loosen the screws (12, fig. 5-5) and washers (13) at the top and the bottom of stacker left cover panel (14).

(d) Loosen the screws (8, fig. 5-6) and washers (9) at the top and bottom of stacker right cover panel (10).

(e) Using a suitable punch, remove the pin attaching the speed control knob to the speed control shaft. (See fig. 5-13). Remove the knob.

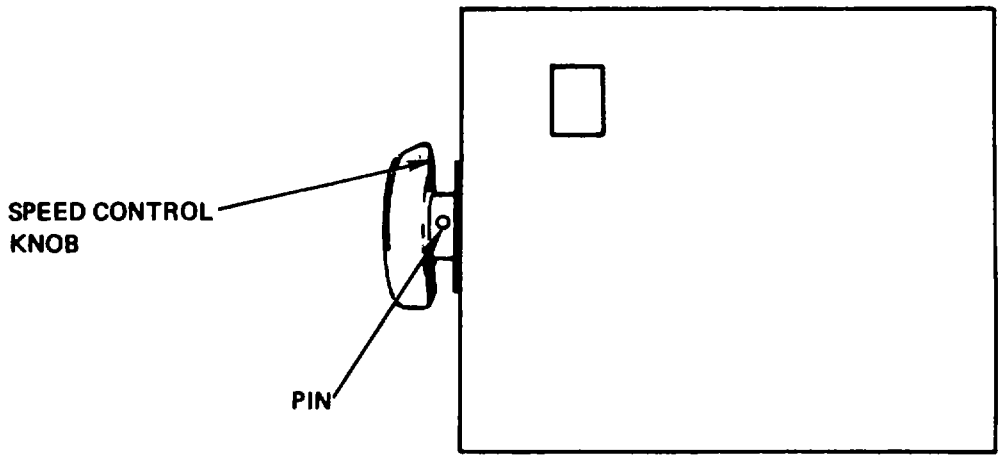

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Figure 5-13. Speed Control Knob Removal

(f) Replace the pin in the speed control shaft after removing the knob. Drive the pin in solidly to prevent it from falling out, as the slotted collar of the extension shaft fits over the pin.

(g) Remove nut (2, fig. 5-7) lockwasher (3) and bearing stud (4) from the right end of the ejector roller(l).

(h) Using a drift smaller than the bearing drive the other bearing towards the inside of the duplicator. Remove the ejector roller.

(i) Remove screws (5, fig. 5-7) attaching end cap (6) at rear of duplicator and remove end cap.

(j) Position stacker against duplicating machine and install upper mounting screws. (See fig. 5-8).

(k) Install screw (8, fig. 5-5) washer (9) and nut (10) attaching end cap (11) to duplicating machine.

(l) Install cam lever bearing block (7, fig. 5- 7) cam lever (8) and drive link (9), for the stacker. Lubricate roller (10), lever (8) and link (9) with general purpose oil (Item 16, App. D).

(m) Check that drive link (9) is parallel with the side of the duplicator. If necessary, loosen screws (5 and 11) attaching bearing block (7) and move the block to align link (9). Move cam so that cam is aligned with cam bearing portion of cam lever (8). Tighten screws (5 and 11).

(n) Install the ejector roller bearing, bearing stud (4) and attaching lockwasher (3) and nut (2).

(o) Feed ejector roller (1) through the stacker conveyor tapes and slide roller onto bearing stud.

(p) Pull out on speed control knob (5, fig. 5- 5) and engage extension shaft slot with speed control shaft of duplicator.

(q) Loosen the setscrew for the jogger cam in the duplicator. Turn handwheel until the high point of the operating cam for the impression cylinder is touching the cam roller (10). Turn cam until the screw in the cam points straight up, and secure screw. Be sure the cam roller is riding fully on the cam.

(r) Position straps (7, figs. 5-5 and 5-6) connecting stacker and duplicating machine and install attaching screws (6), washers and nuts.

(s) Carefully install the infrared lamp fixture in the stacker and secure with knob (4, fig. 5-6).

(t) Remove duplicator vacuum pump switch from the conduit box.

(u) Knock out the disc from the upper right side of the conduit box and feed the infrared lamp wires through the hole.

(v) Connect the lamp wires to the top of the pump switch as shown in figure 5-14. Remove wire tags and install pump switch.

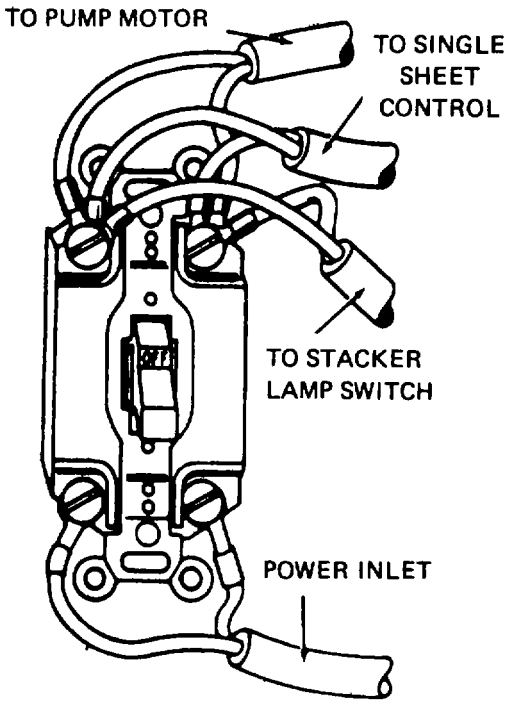

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Figure 5-14. Infrared Lamp Wiring.

(w) Connect electrical wires to stacker lampswitch (3, fig. 5-6) and remove tags.

(x) Slide stacker right cover panel (10) toward duplicator for a closer fit and secure attaching screws (8) and washers (9).

(y) Slide stacker left cover panel (14, fig. 5- 5) toward duplicator and secure attaching screws (12) and washers (13).

(z) Install duplicating machine left side cover (4).

(aa) Position upper left stacker cover (3) and install attaching pins (2).

(ab) Position paper truck crank handle (1) and install attaching screws.

(ac) Install duplicating machine right side cover (5, fig. 5-6).

(ad) Position upper right cover (2) and install attaching pins (1).

(ae) Install the paper truck. (See fig. 5-15).

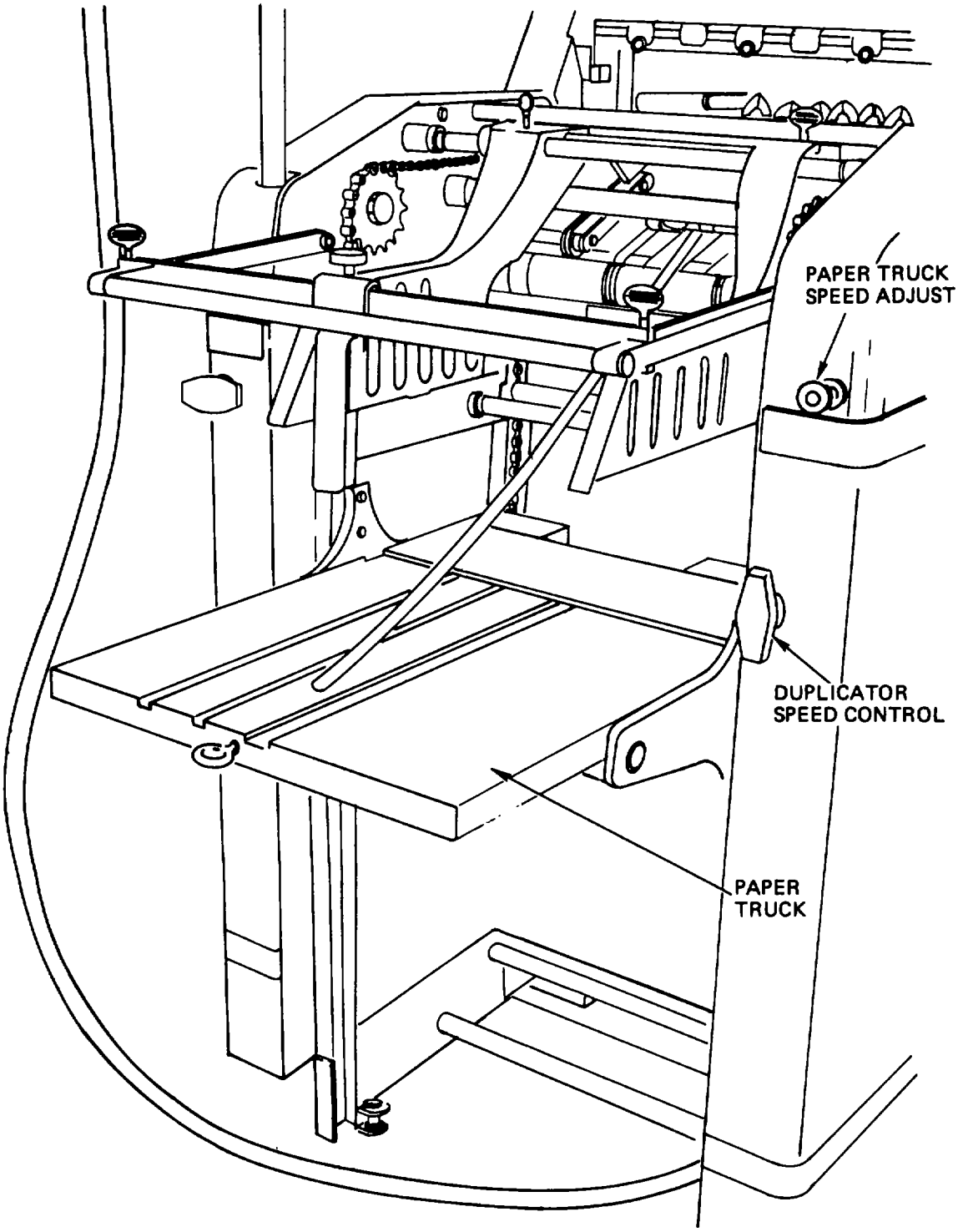

Figure 5-15. Receding Stacker Assembly Installed.

(16) Install color press attachment as follows:

(a) Adjust setscrews (4, fig. 5-4) so as to clear the opening in the top portion of each mounting bracket (13).

(b) Position mounting brackets on duplicating machine and install attaching screws (3).

(c) Tighten setscrews (5) to provide for a snug fit against duplicating machine frame.

(d) Tighten setscrew (4) on each mounting bracket.

(e) Remove the ink and water oscillators and the number 2 form from the color press assembly in accordance with commercial manual instructions.

(f) Loosen the three main tie rod (16, fig. 5-4) attaching and adjusting nuts (6).

(g) Position the color press assembly on the mounting brackets with the bolts on holddown bar (7) protruding through the rear holes of the mounting brackets (13).

(h) Position yoke shaft (8) through slotted holes in mounting brackets and insert screw (2).

(i) Install holddown bar attachment nuts (1) and secure main tie rod attaching and adjusting nuts (6).

(j) Place a level on the duplicator blanket cylinder and then on the color press plate cylinder. The level indications should be identical. If they are not, adjust color press plate cylinder as follows:

1. Loosen holddown bar attachment nuts(1).
2. Adjust leveling screws (9) until level indications of duplicator blanket cylinder and color press plate cylinder are identical.
3. Tighten holddown bar attachment nuts (1).

(k) Loosen the main tie rod attaching and adjusting nuts (6). The center bolt acts as a pivot point in relation to the turnbuckles (11). The two outside bolts pass through elongated holes in the holddown bar (7), to permit movement around the pivot point, when adjusting the turnbuckles (11).

(l) Position yoke shaft bushings (10) into mounting brackets, ensuring that slot in bushings is uppermost and is visible in the bracket openings.

(m) Secure screws (2) in mounting brackets at the same time moving the yoke shaft pressure handle (15) backwards and forwards until a tightening in the handle is felt.

(n) With pressure applied to the pressure handle, adjust turnbuckles (11) until the color press plate and duplicator blanket cylinders are approximately parallel. This is achieved by sighting between the two cylinders and adjusting each until any light visible between the two can no longer be seen.

(o) Check that slots in yoke shaft bushings are still uppermost and that slight pressure can still be felt in the yoke shaft pressure handle (15).

(p) Install the ink and water oscillators and the number 2 form in accordance with commercial manual instructions.

(q) Fill the ink fountain of the color press and adjust flow. Overall flow is regulated with the ratchet control on the upper right-hand side of the machine. Sectional flow is controlled with the individual fountain keys.

(r) Start and operate the duplicating machine in accordance with commercial manual instructions in order to run down the ink. Move ink forms down so as to apply ink to the cylinder. Stop the duplicating machine.

(s) Move the yoke shaft pressure handle (15) forward to lay a stripe on the blanket cylinder.

(t) If necessary, adjust turnbuckles (11) until an even stripe of between 0.125 inches (3.2 mm) and 0.188 inches (4.75 mm) is achieved.

(u) Secure turnbuckle locknuts and recheck the stripe.

(v) With the yoke shaft pressure handle for- ward, secure the main tie rod attaching and adjusting nuts (6), tightening the center nut first.

CAUTION

Turnbuckles (11) should never be adjusted without first loosening main tie rod nuts (6).

(w) If necessary, adjust plate to blanket cylinders pressure by loosening setscrew (14) in calibrated collar and then moving the yoke shaft pressure handle forward or back to increase or decrease pressure. Note graduations in calibrated collar. Secure setscrew.

(x) Position the left and right guards and install attaching screws. (See fig. 5-2.)

(y) Install knobs on ink and water feed control shafts.

(z) Install the ink and water fountain control knobs.

5-9. Papercutter Assembly

An Alton Iron Works Model 4906 guillotine-type papercutter is mounted on the rear end of the bench assembly. The cutter incorporates an electric motor which drives a hydraulic pump. The pump provides power for a hydraulic cylinder the rod of which is attached, by means of a tie bar, to the knife bar assembly. When the two cutter operating switches are depressed, a solenoid valve is actuated, allowing pressurized fluid to pass to the cylinder. When the cylinder reaches the bottom of the power stroke, a lower limit switch is activated, deenergizing the solenoid valve, so restricting fluid flow to the upper side of the piston. Fluid flow is then directed to the lower side of the cylinder piston, causing the cylinder rod to retract, bringing the knife to the topmost position. In this position, an upper limit switch is activated, in turn causing the solenoid valve to bypass fluid back to the pump reservoir. The papercutter assembly is shockmounted on two stiffening plates mounted on the bench top.

a. Removal Remove the papercutter as follows: (See fig. 5-16).

WARNING

The papercutter weighs approximately 300 pounds (136 kilograms). Extreme care should be taken in handling the machine to prevent injury to personnel and damage to other equipment in the shelter.

(1) Disconnect papercutter electrical connector from equipment receptacle.

(2) Open the rear bench cupboard doors and remove the four papercutter mounting bolts from the underside of the bench top.

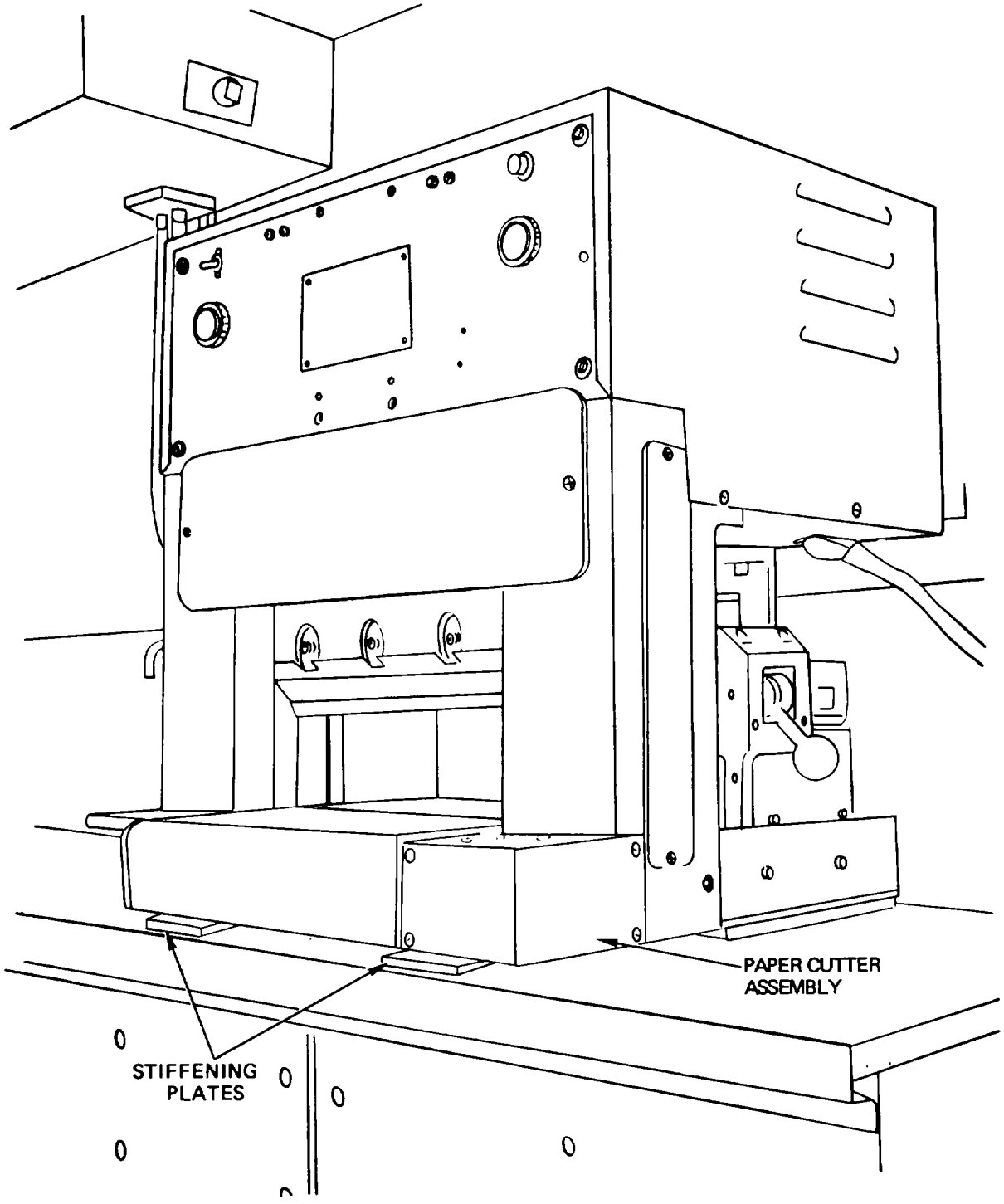

Figure 5-16. Paper Cutter, Removal and Installation.

(3) Carefully remove the paper cutter from the shelter.

b. Installation. Install papercutter as follows:

WARNING

The papercutter weighs approximately 300 pounds (136 kilograms).

Extreme care should be taken in handling the machine to prevent injury to personnel and damage to other equipment in the shelter.

(1) Carefully position papercutter assembly over shockmount bushings and install attaching mounting bolts from the underside of the bench top.

(2) Connect papercutter electrical connector to adjacent equipment receptacle.

(3) Check papercutter operation and observe for equipment movement during operation.

CHAPTER 6

REPAIR OF LADDER HOLDDOWN ASSEMBLY

6-1. General

A personnel access ladder used to gain entry to the shelter when truck-mounted is secured to the left shelter wall, just forward of the duplicating machine. A holddown retaining strap is provided to secure the ladder during movement of the shelter.

6-2. Ladder Holddown Assembly

a. Inspection. Inspect the ladder holddown 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. Replace as necessary.

b. Removal. Remove the ladder holddown as follows:

(1) Unlatch the retaining strap and remove the ladder.

(2) Remove the screws that attach the fastener loops to the shelter wall and remove the fastener loops from the retaining strap. (See fig. 6-1).

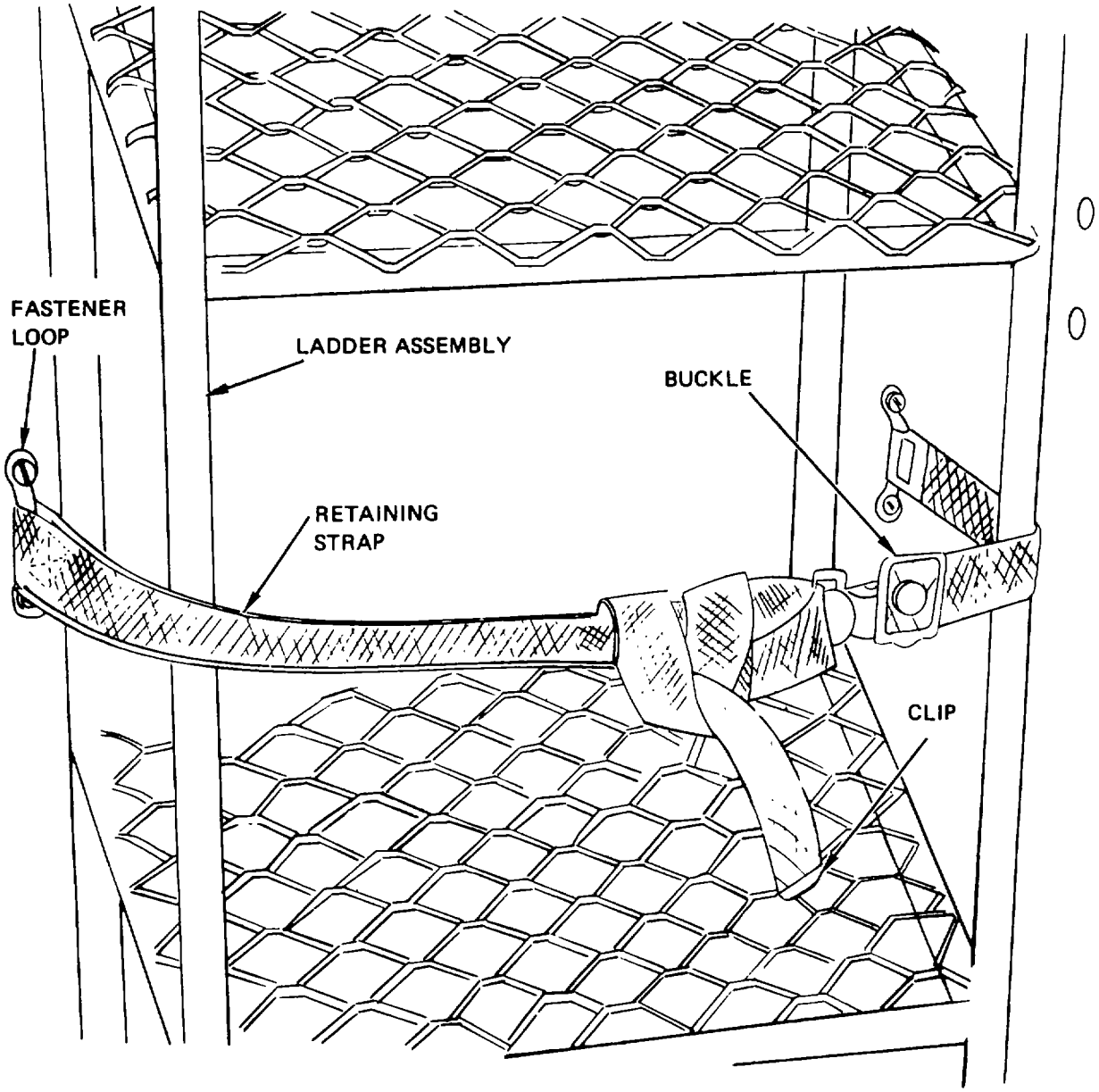

Figure 6-1. Ladder Assembly Holddown, Removal and Installation.

c. Installation. Install the ladder holddown as follows:

(1) Fabricate replacement 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.

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

(3) Position the ladder on the shelter wall and secure with the retaining strap.

CHAPTER 7

REPAIR OF TYPE A PAPER STORAGE CABINET

7-1. General

A storage cabinet, type A, located in the forward left corner of the shelter, extends from the floor to the ceiling and is used to store paper, duplicating supplies and the printing plant vacuum cleaner. Two hinged doors with control arm type latches provide access to the cabinet interior.

7-2. Type A Paper Storage Cabinet

a. Inspection. Inspect the type A paper storage 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, cracks or other damage.

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

b. Removal. Remove the type A paper storage cabinet as follows:

(1) Release the personnel ladder retaining strap and remove ladder from shelter wall.

(2) Remove the contents from the paper storage cabinet.

(3) Support the cabinet and remove the bolts, washers and nuts which attach the cabinet rear panel to the shelter wall mounting points. (See fig. 7-1).

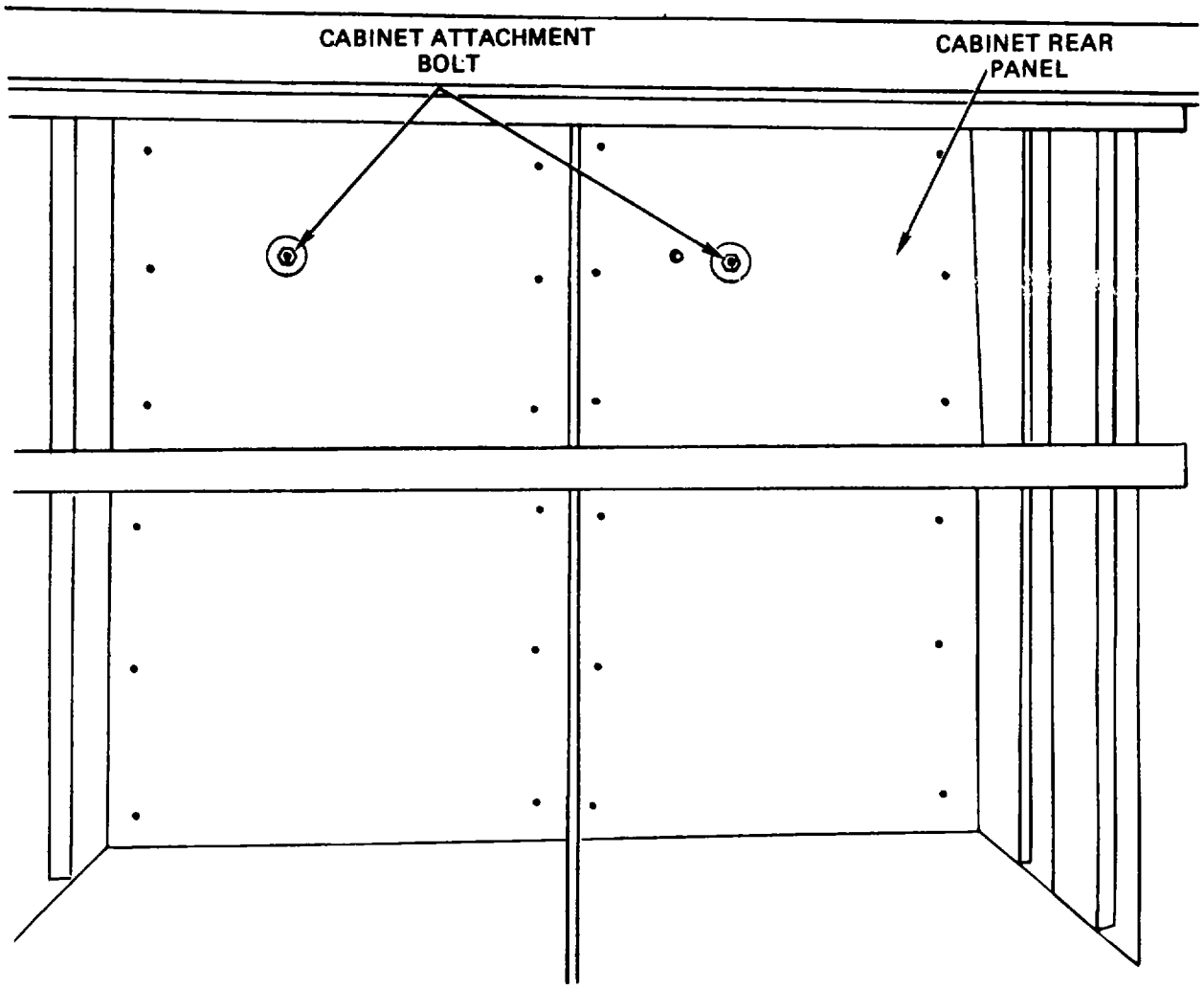

Figure 7-1. Type A Cabinet, Removal and Installation.

c. Repair. Replace door handles and latching mechanism as follows:

(1) Remove the two screws and nuts which attach the handle to the right door. (See fig. 7-2).

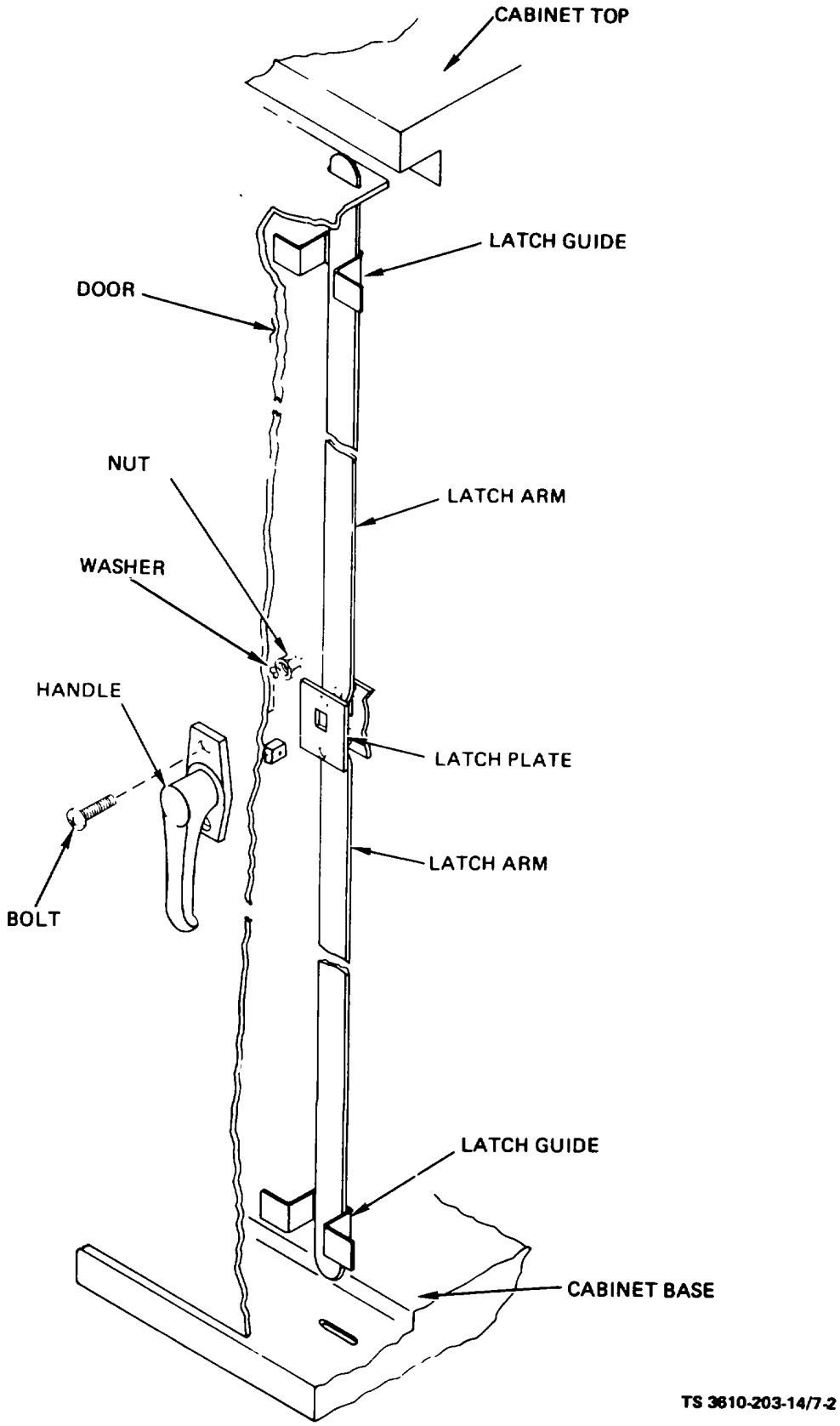

Figure 7-2. Storage Cabinet Latching Mechanism.

(2) Remove the single screw which attaches the center plate of the latching mechanism to the handle center flange.

(3) Remove the handle and withdraw the latching mechanism from the mechanism bar guides.

(4) Position new handle in door and secure with two attaching screws and nuts.

(5) Insert the latching mechanism bars into the bar guides.

(6) Position the latching mechanism center plate against the handle inner flange and install the attaching screw.

(7) Check handle and mechanism for correct operation.

(d) Installation. Install the type A paper storage cabinet as follows:

(1) Position cabinet against front shelter wall and align cabinet holes with nut plate holes.

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

(3) Install cabinet contents.

(4) Position personnel ladder against shelter wall and secure with retaining strap.

CHAPTER 8

REPAIR OF TYPE B PAPER STORAGE CABINETS

8-1. General

Two storage cabinets, type B, are mounted on the forward wall of the shelter beneath the air conditioning unit. The cabinets are used to store paper and other supplies. Two hinged doors with control arm type latches provide access to the interior of each cabinet.

8-2. Type B Paper Storage Cabinets

a. Inspection. Inspect the paper storage cabinets 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, cracks or other damage.

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

b. Removal. Remove the type B paper storage cabinet as follows:

(1) Release the stool assembly retaining strap and remove stool from shelter wall.

NOTE
Removal procedures are identical for each cabinet.

(2) Remove the contents from the paper storage cabinet.

(3) Support the cabinet and remove the bolts, washers and nuts which attach the cabinet rear panel to the shelter wall mounting points. (See fig. 8-1).

(4) Remove the cabinet.

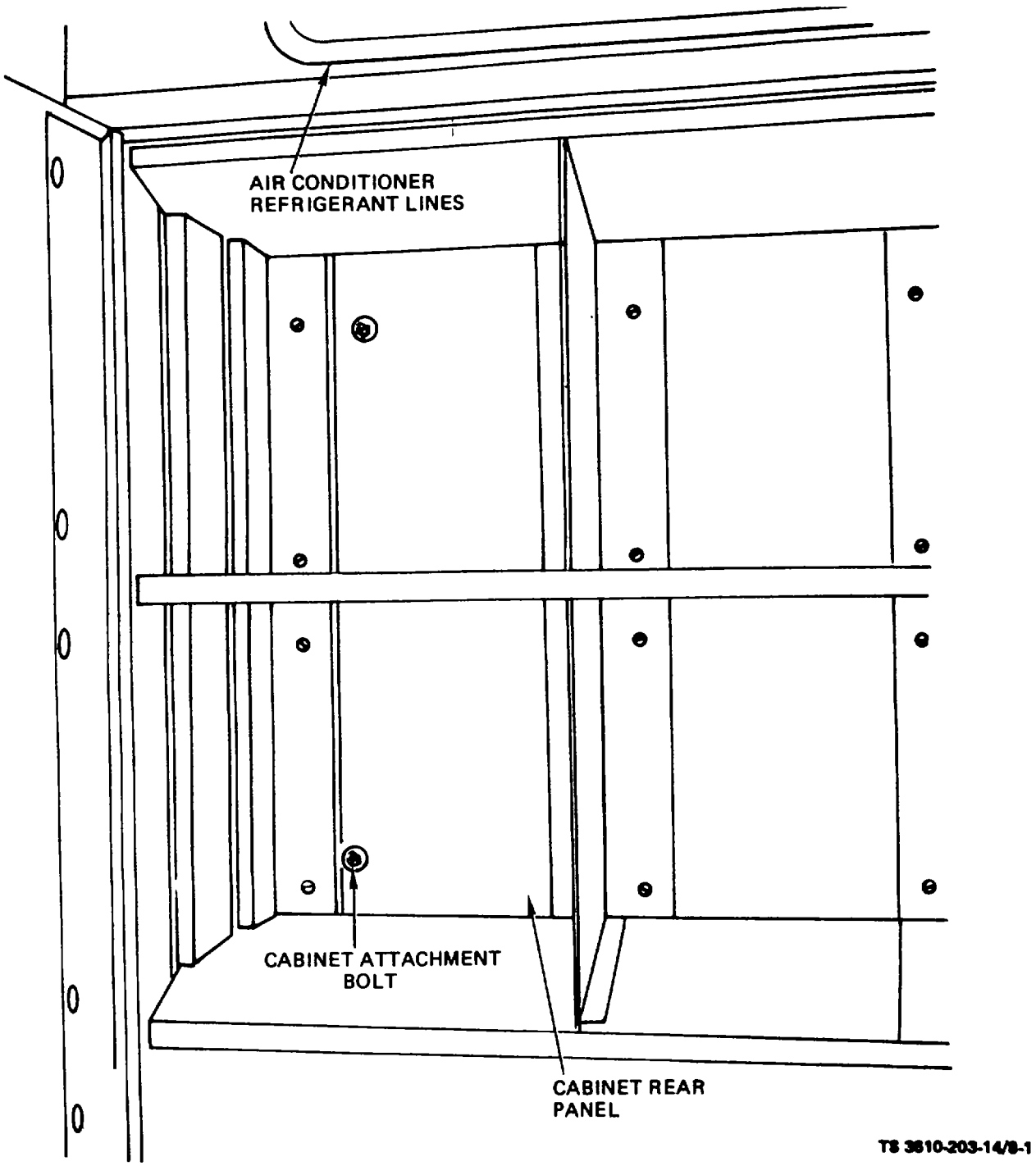

Figure 8-1. Type B Cabinet, Removal and Installation.

c. Repair. Replace door handles and latching mechanism as follows:

(1) Remove the two screws and nuts which attach the handle to the right door. (See fig. 7-2).
(2) Remove the single screw which attaches the center plate of the latching mechanism to the handle center flange.
(3) Remove the handle and withdraw the latching mechanism from the mechanism bar guides.
(4) Position new handle in door and secure with two attaching screws and nuts.
(5) Insert the latching bars into the bar guides.
(6) Position the latching mechanism center plate against the handle inner flange and install the attaching screw.
(7) Check handle and mechanism for correct operation.

d. Installation. Install the type B paper storage cabinet as follows:

NOTE

Installation procedures are identical for each cabinet.

(1) Position cabinet against front shelter wall and align cabinet holes with mounting nut plate holes.
(2) Support cabinet and install bolts, washers and nuts which attach the cabinet rear panel to the shelter wall.
(3) Install cabinet contents.
(4) Position stool assembly against shelter wall and secure retaining straps.

CHAPTER 9

REPAIR OF STOOL HOLDDOWN ASSEMBLY

9-1. General

The stool holddown assembly secures the stool to the right shelter wall just forward of the bench assembly and aft of the paper storage cabinet, by means of a retaining strap and two fastener loops which are attached to the wall of the shelter.

9-2. Stool Assembly Holddown

a. Inspection. Inspection procedures for the stool holddown assembly 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 stool holddown assembly as follows:

(1) Unlatch the retaining strap and remove the stool assembly. (See fig. 9-1).

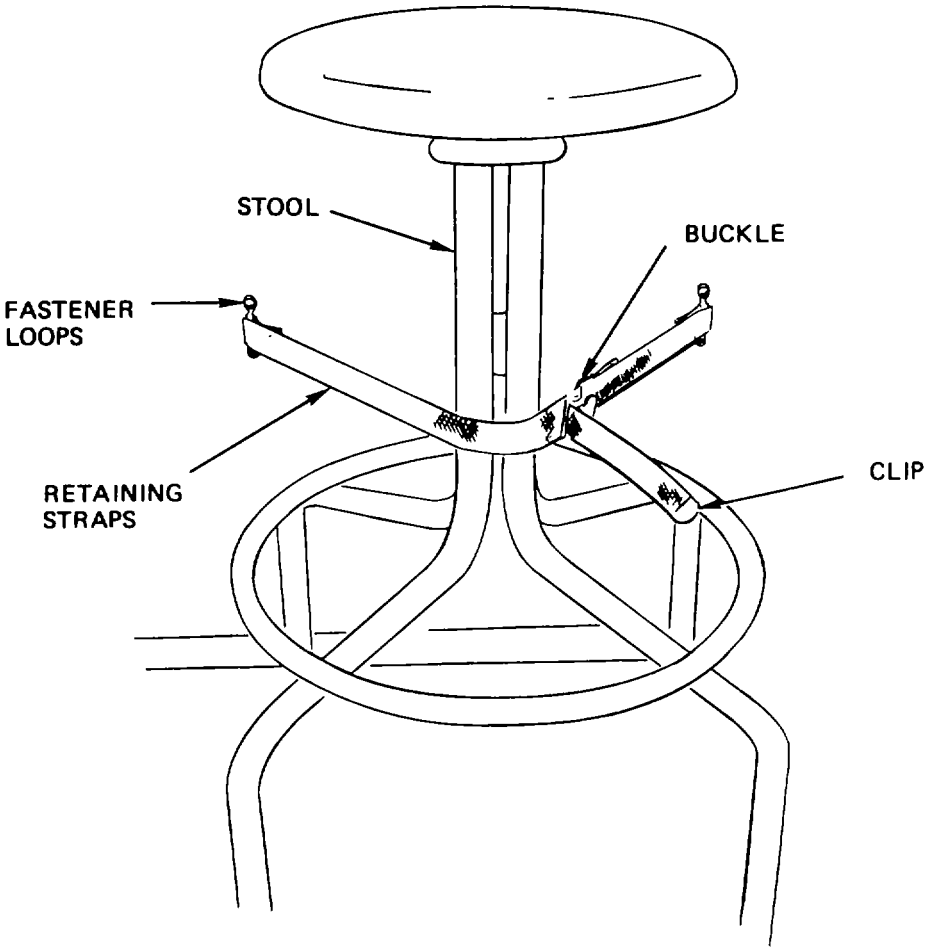

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Figure 9-1. Stool Holddown Assembly, Removal and Installation.

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

c. Repair. Repair of the stool holddown assembly consists of fabricating new retaining straps 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 assembly as follows:

(1) Install the fastener loops through the ends of the replacement 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 10

REPAIR OF BENCH ASSEMBLY

10-1. General

The bench assembly is of steel construction and is secured to the right wall of the shelter, extending approximately half the length of the shelter. The papercutter is mounted on the rear end of the bench. The bench incorporates two cupboards and ten drawers, each drawer having two knurled locking knobs which are used to lock the drawers in the closed position to prevent drawer movement during equipment handling. The dual-door type cupboards are located at the front and rear ends of the counter. Each right door is provided with a keylock latching mechanism and permits access to the compartmented storage shelves. Two vertical rows of ventilation holes are located in each door. (See fig. 10-1).

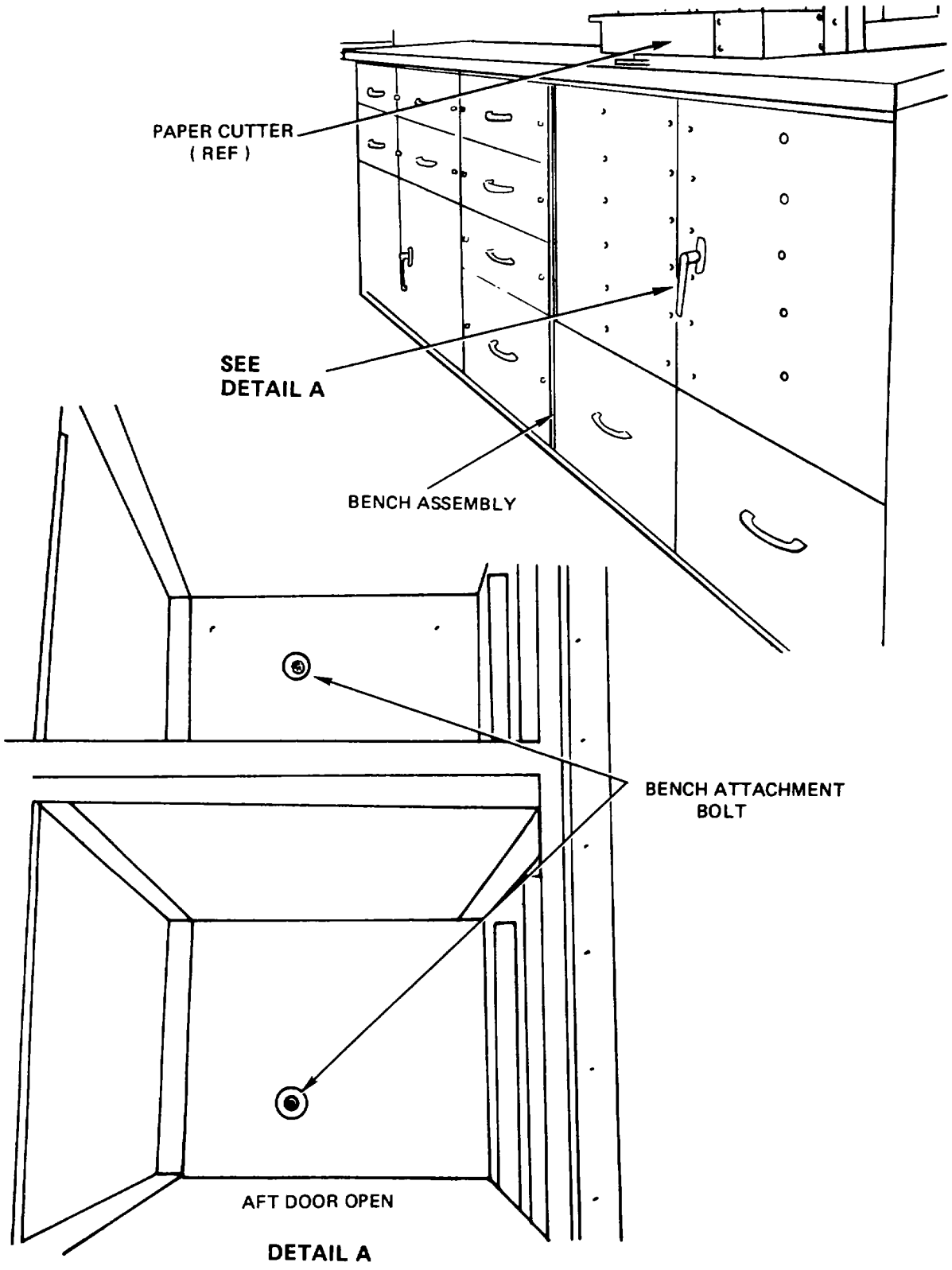

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Figure 10-1. Bench Assembly, Removal and Installation.

10-2. Bench Assembly

a. Inspection. Inspect the bench assembly as follows:

(1) Inspect the bench for dents, cracks and any other signs off 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 paintwork for any signs of peeling or cracking and check bench for evidence of environmental damage.
(5) Inspect bench assembly for security of mounting. Repair as necessary.
(6) Inspect drawers for ease of movement and drawer runners for damage.
(7) Inspect drawer knurled locking knobs for correct operation and damage. Replace as necessary.
(8) Inspect drawer hook catches for damage and correct operation.
(9) Inspect drawer handles and latching mechanism for security and correct operation. Repair or replace as necessary.
(10) Inspect door hinges for ease of movement and door for damage.

b. Removal. Remove the bench assembly as follows:

(1) Remove the papercutter as directed in paragraph 5-9.
(2) Remove the screws, nuts and washers which attach the papercutter stiffening plate mounts (See fig. 10-2).
(3) Using a suitable lever, carefully pry the platecutter mounting bushings from the bench top.

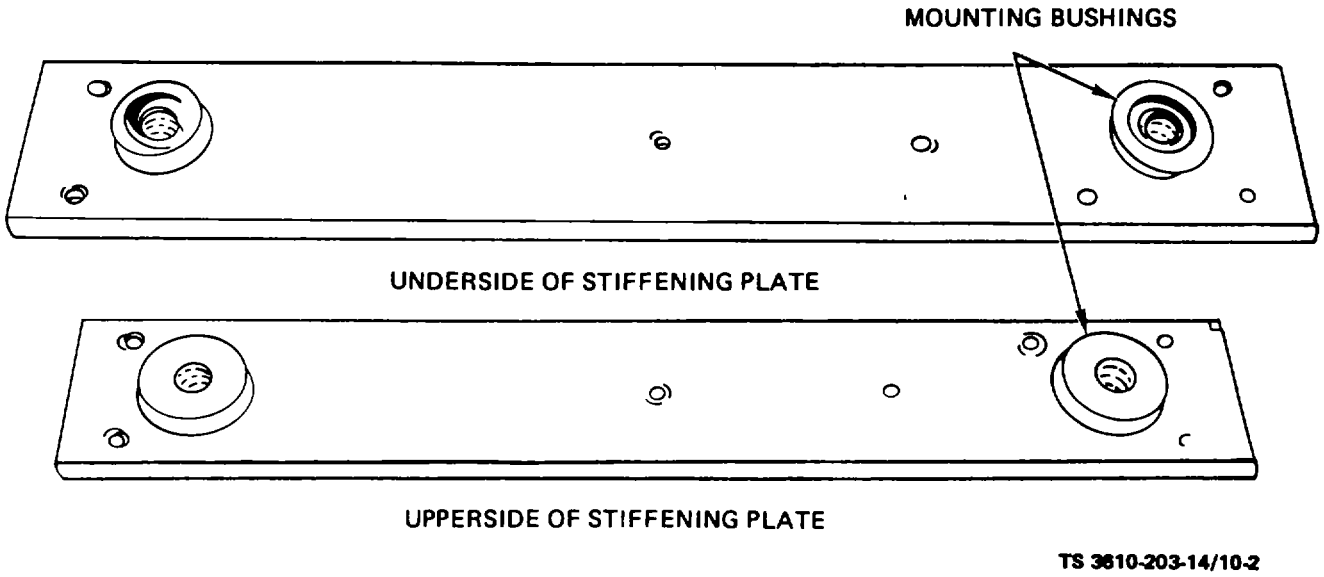


Figure 10-2. Papercutter Mounting Plates.

(4) Remove retaining bolts and nuts, and remove bench assembly from shelter.

c. Repair. Repair the bench assembly as follows:

(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) Open applicable drawer and remove contents.
(b) Remove the two screws which attach the handle from the inside of the drawer and remove the handle.
(c) Position new handle on cabinet drawer and install attaching screws.
(d) Install drawer contents, and close drawer.

(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 bench assembly as follows:

(1) Using heavy paper, construct a mounting hole location template using the removal bench as a pattern.
(2) Drill the replacement bench attachment bolt holes using the template as a pattern.
(3) Obtain measurements from removed counter, and drill papercutter stiffening plate mounting holes and mounting bushing holes.
(4) Position stiffening plates on bench top and install attaching screws, washers and nuts.
(5) Position bench assembly in shelter and secure with bolts and nuts (see fig. 10-2).
(6) Install the papercutter in accordance with paragraph 5-9.

CHAPTER 11

REPAIR OF WATER TANK ASSEMBLY

11-1. General

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 (37.8 liters). It is filled through a filler cap in the roof of the shelter. A draincock is located in a fitting screwed into the bottom of the tank. (The tank will not drain fully from the faucet unless the draincock is opened, as a standpipe is contained inside the tank to prohibit rust and scale from being drawn into the piping system.) The draincock should be kept fully closed at all times except when draining and flushing the tank. The water faucet is located in the water line directly below the water tank.

11-2. Water Tank Assembly

a. Inspection. Inspect water tank for leaks, cracks and security.

b. Removal. Remove water tank assembly as follows:

(1) Position a suitable container beneath water faucet and open faucet to drain tank.
(2) Open draincock. (See fig. 11-1).

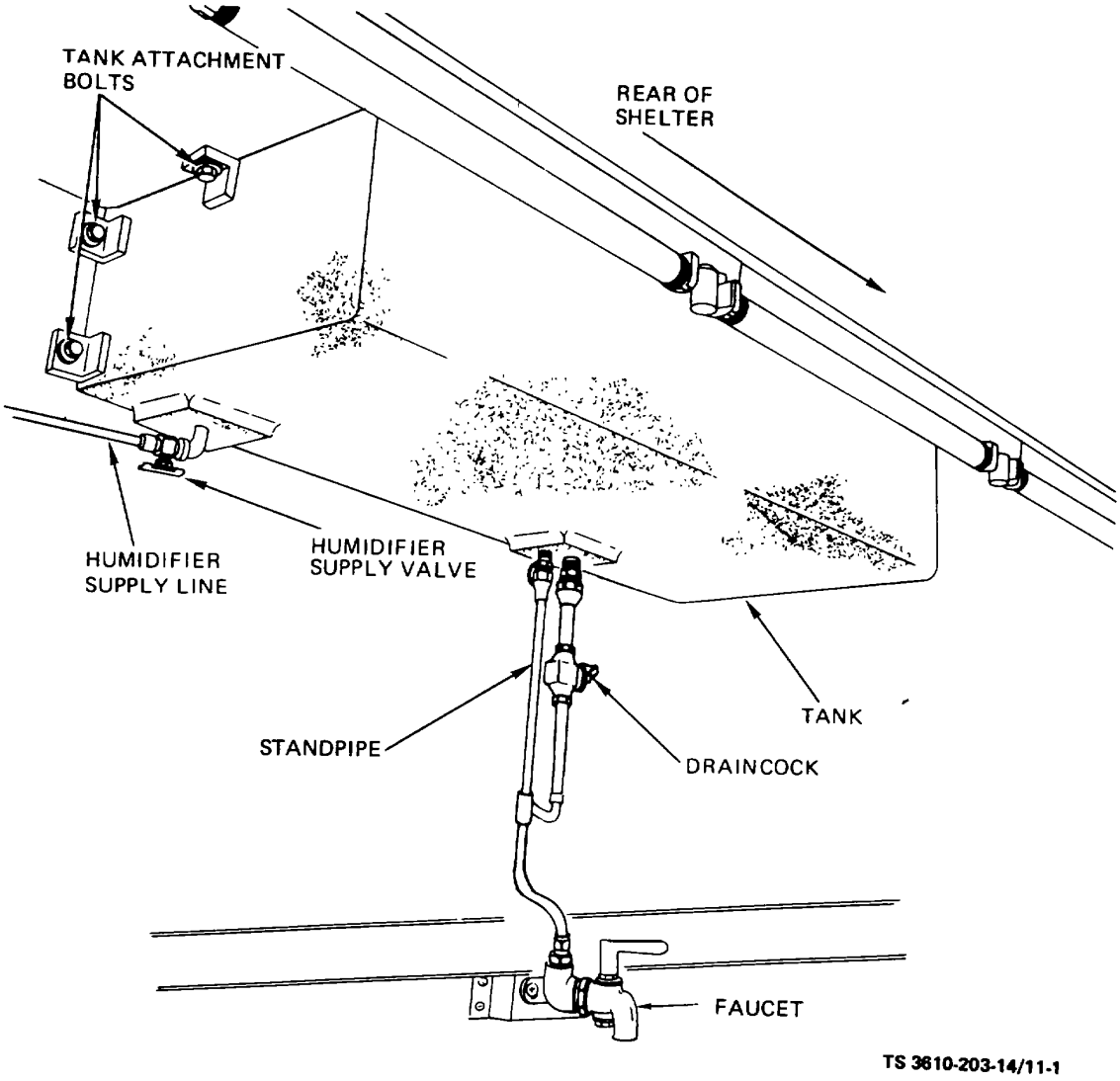


Figure 11-1. Water Tank, Removal and Installation

(3) Close humidifier line supply valve at bottom of tank. Disconnect humidifier line and faucet lines from base of tank.
(4) Remove screws that secure collar to tank at filler cap on roof of shelter. Remove collar.
(5) Remove screws and washers that secure tank to shelter ceiling and remove tank.

c. Installation. Install water tank assembly as follows:

(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 cover 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 supply valve (See fig. 11-1).
(6) Fill tank with approximately 10 gallons (37.8 liters) of water.
(7) Check system for leaks.

CHAPTER 12

REPAIR OF AIR CONDITIONER

12.1. Heating Element Assembly

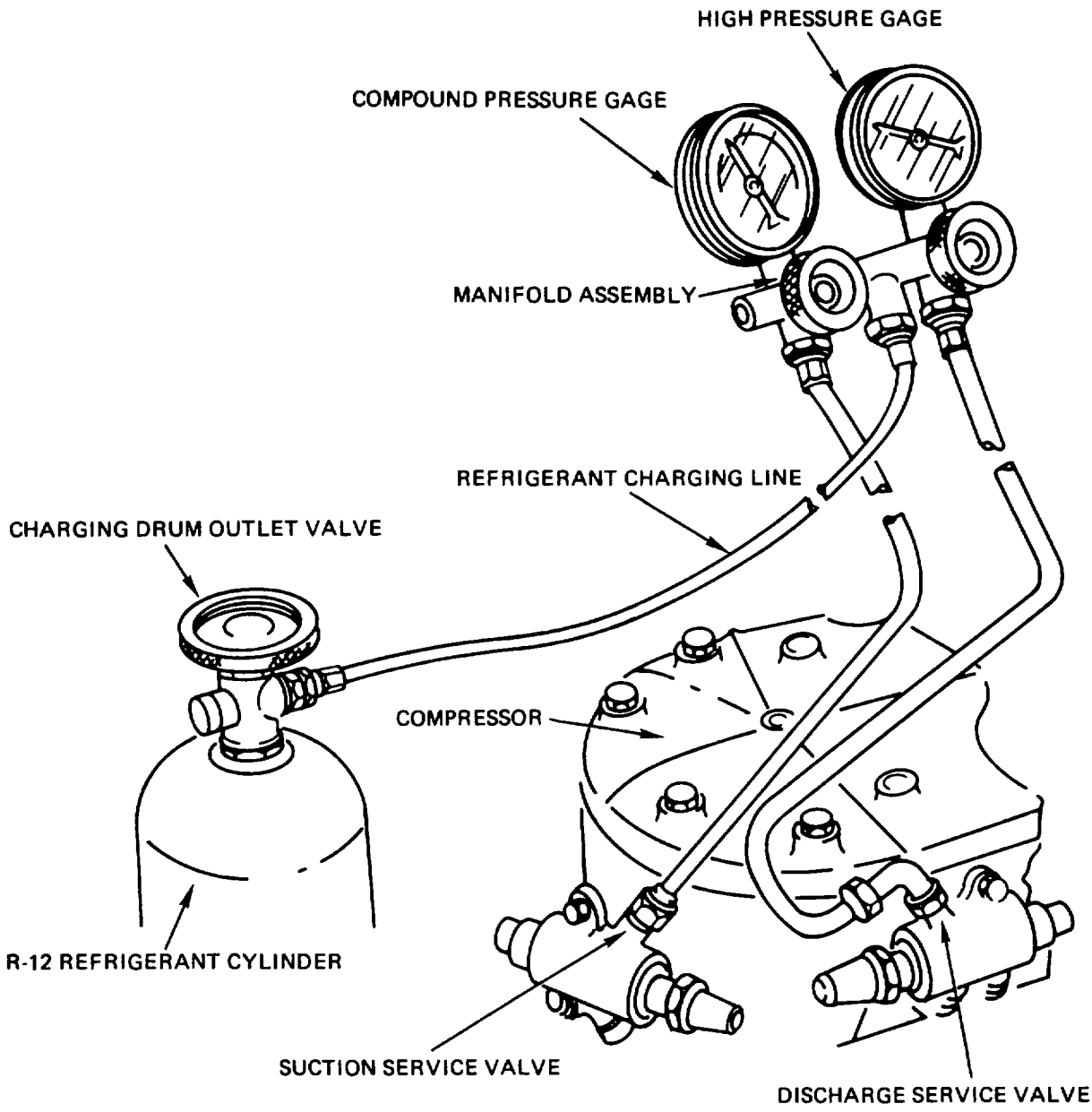
The air conditioning unit at the forward end of the shelter incorporates six 1000 watt heating elements which produce a maximum surface temperature of 1500 degrees F (815.5 degrees C). The elements are used to provide better climate control under all operating conditions.

a. Inspection/Test. Inspect/test the air conditioner heating elements as follows:

(1) Remove the heating elements as directed in paragraph 12-1 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 4-31.
(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 continuity across all terminals of terminal board TB6 located at left side of terminal relay box.
(6) Position air conditioner circuit braker 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. 12-1).



TS 3510203-14/12-1

Figure 12-1. 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 shelter wall adjacent to unit.

(17) Remove the three MS electrical connectors (see fig. 12-1) on the right side of air conditioner evaporator section.

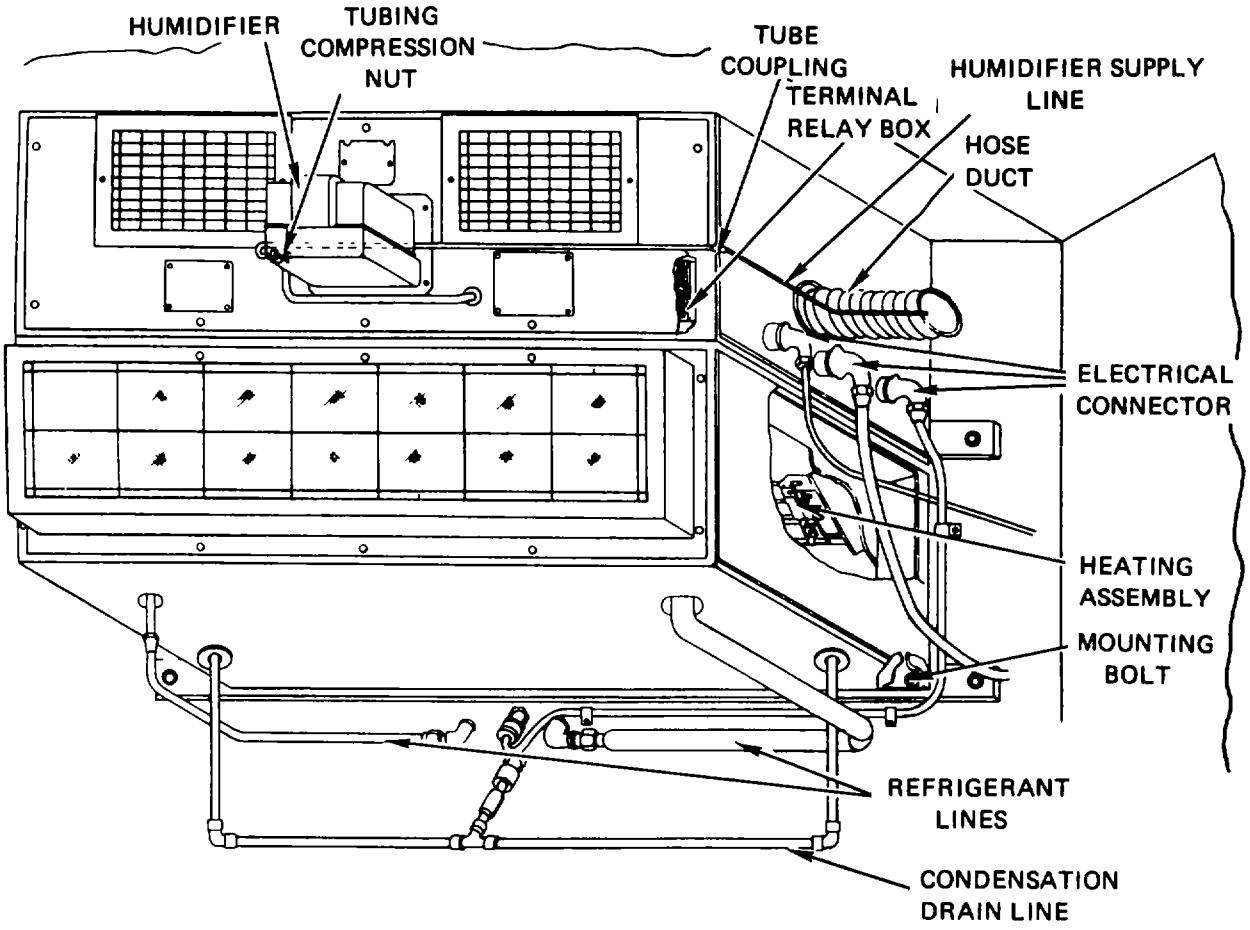


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Figure 12-2. Air Conditioner, Interior View.

(18) Remove hose duct which connects air intake grill 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. 12-3) for piping to the shelter wall.
(24) Remove interconnecting refrigerant lines.

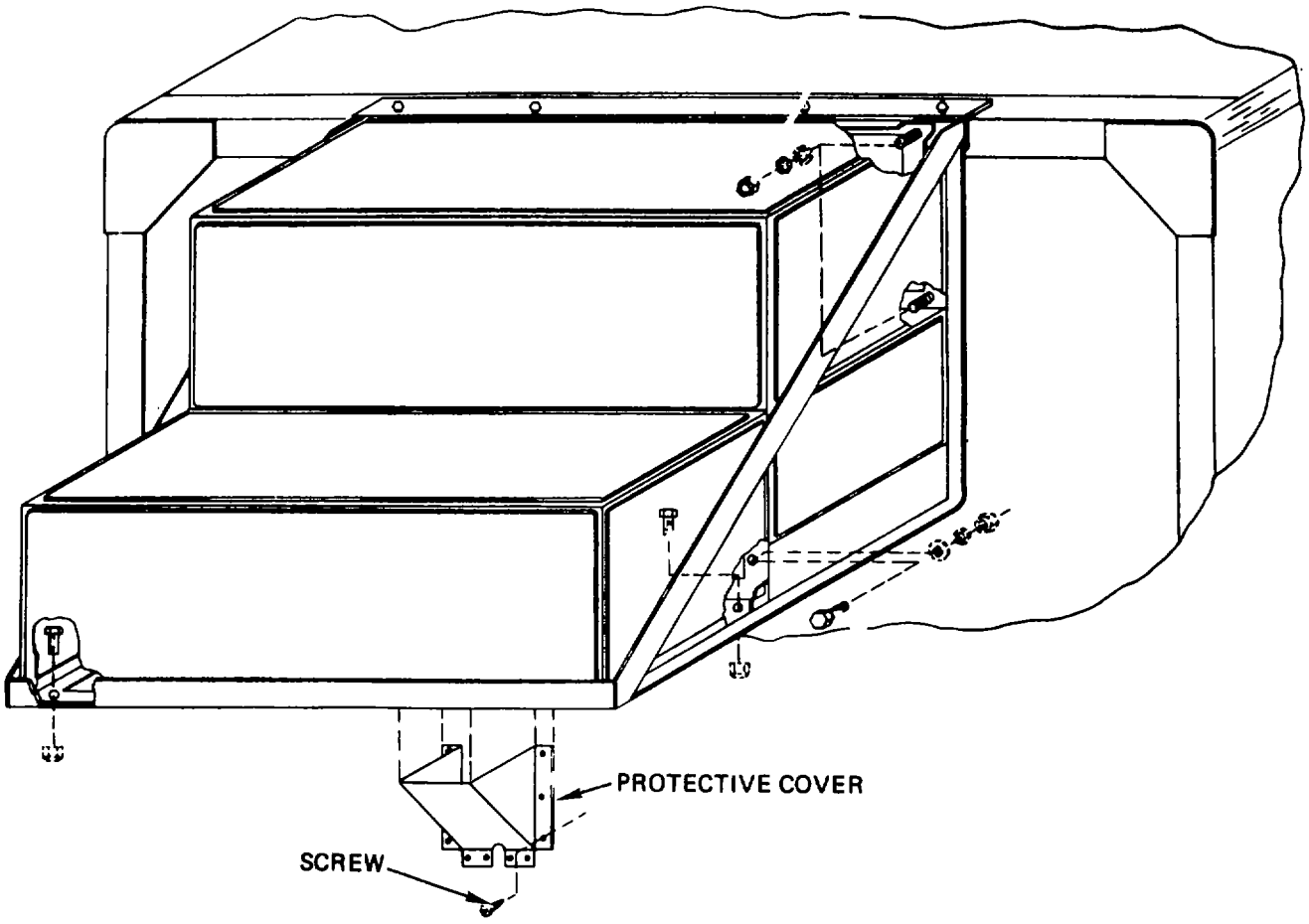

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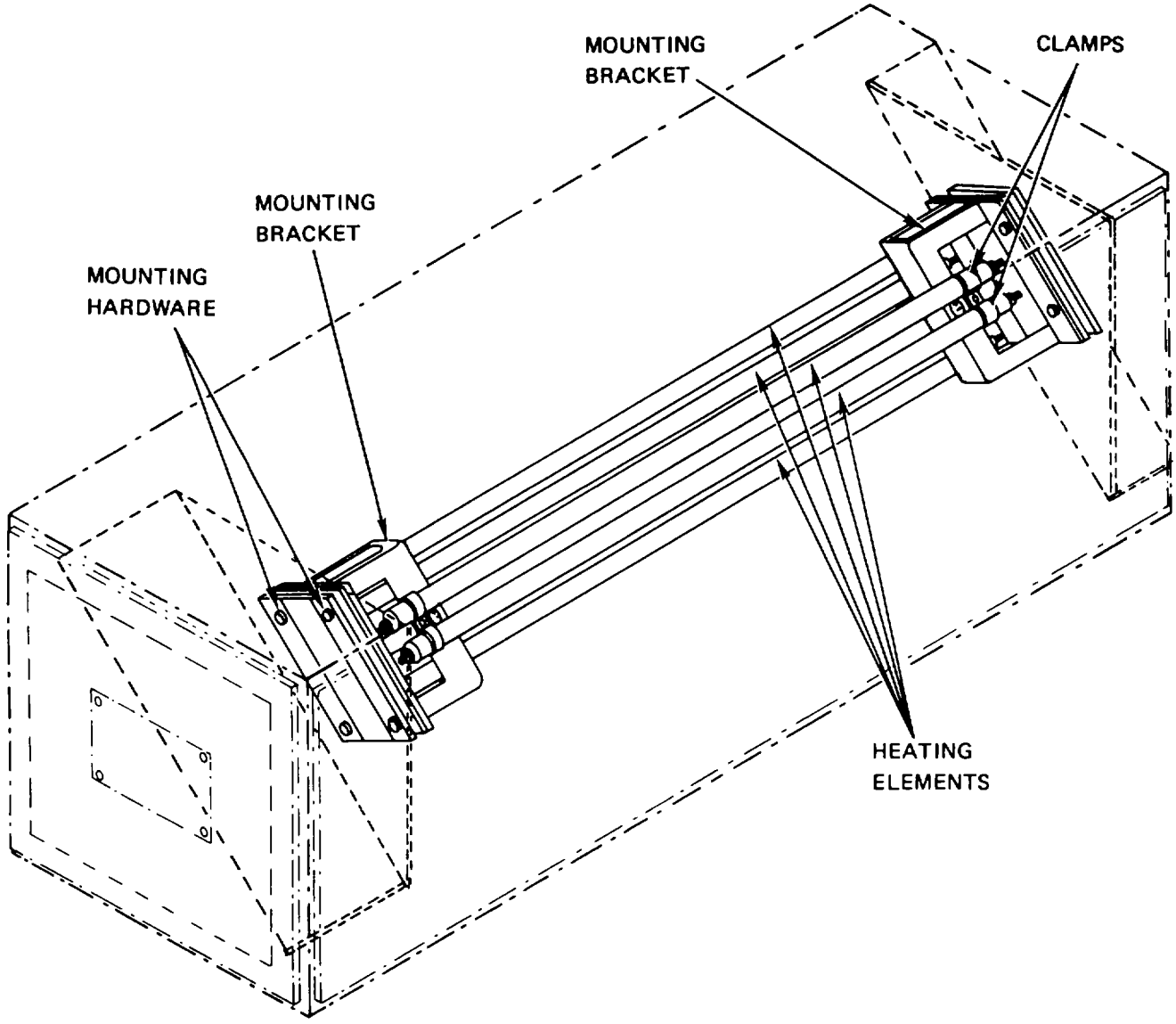
Figure 12-3. Air Conditioner, Exterior View.

(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. 12-4).

(27) Loosen heating element holddown clamps and remove desired heating elements.



TS 3610-203-14/12-4

Figure 12-4. Heating Element, Removal and Installation.

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 4-31.
(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 a large capacity drier.

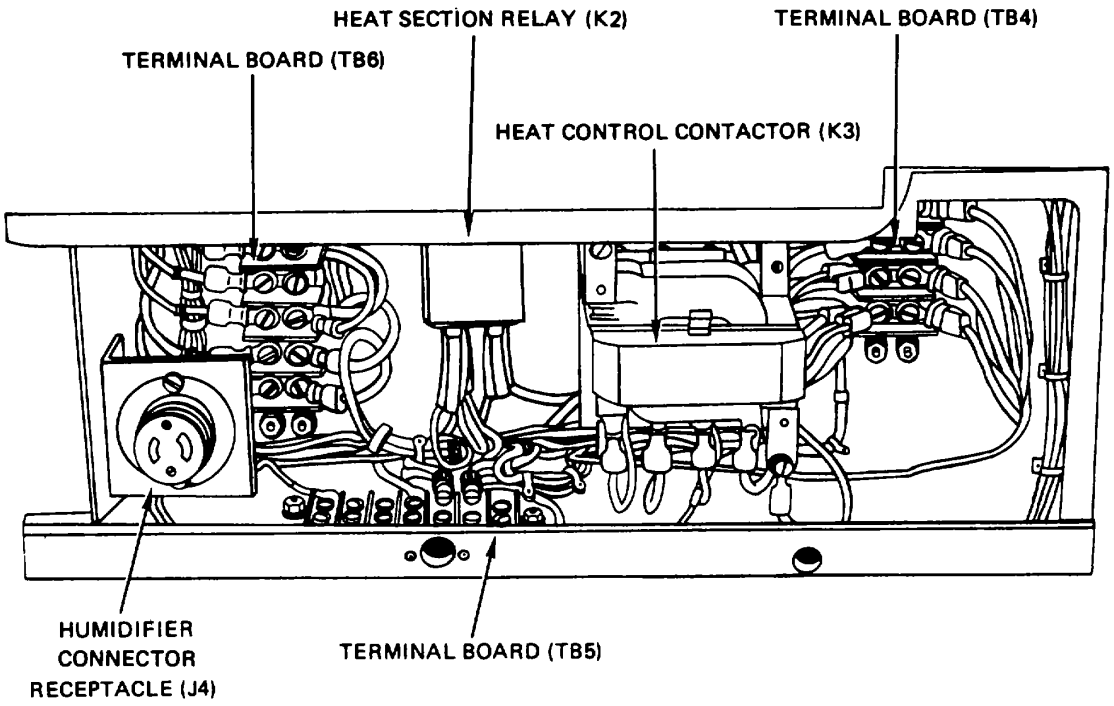
(22) Attach a charging line to the R-12 drum (see fig. 12-1).
(23) Weigh the drum so that 13 pounds can be measured into the system.
(24) Attach charging line to unit. Do not tighten.

(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 R-12 are added.
(29) Backseat suction service valve (or close charging valve).
(30) Remove charging line from valve.
(31) Replace cap on valve.

12-2. Terminal Relay Box

The terminal relay box (see fig. 12-5), 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.



TS 3610-203-14/12-5

Figure 12-5. 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 4-31.
(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 12-2c. 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 4-31.
(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 dry cleaning 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 4-31.

12-3. 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. 12-6).

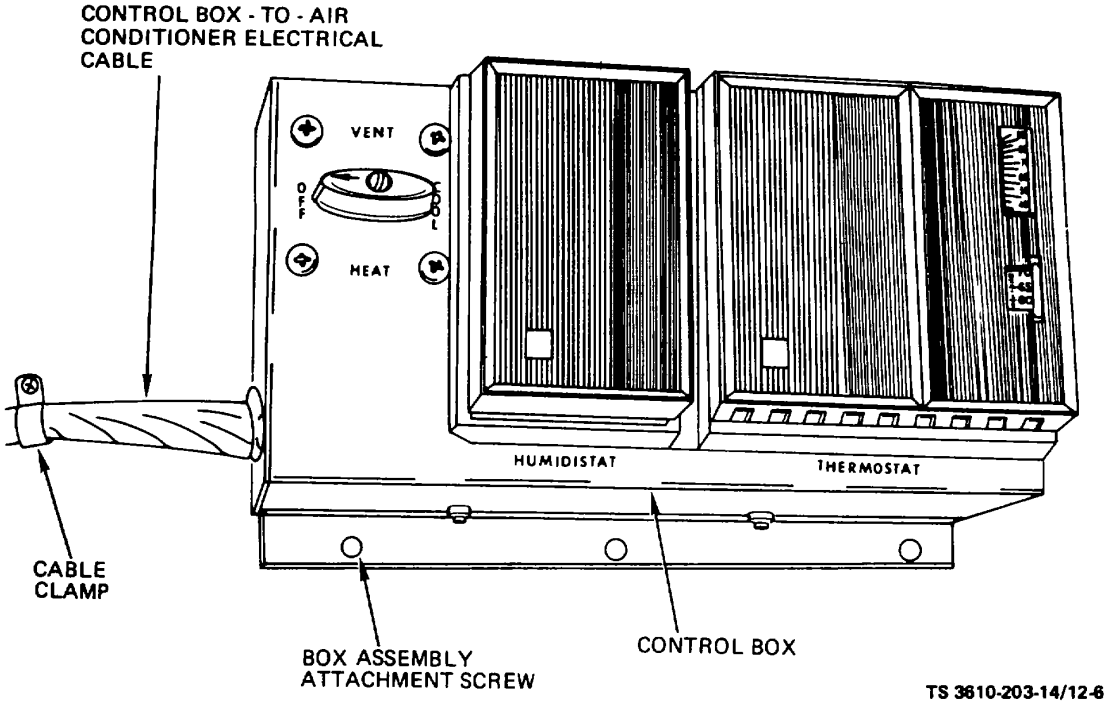


Figure 12-6. Air Conditioner Control Box.

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. 12-6).
(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. 12-6).
(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 13

REPAIR OF BLACKOUT WARNING SYSTEM

13-1. 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-hand rear wall, and a blackout buzzer warning pushoutton located on the rear outside wall to the left of the shelter door.

13-2. Blackout Warning Buzzer

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. 13-1).

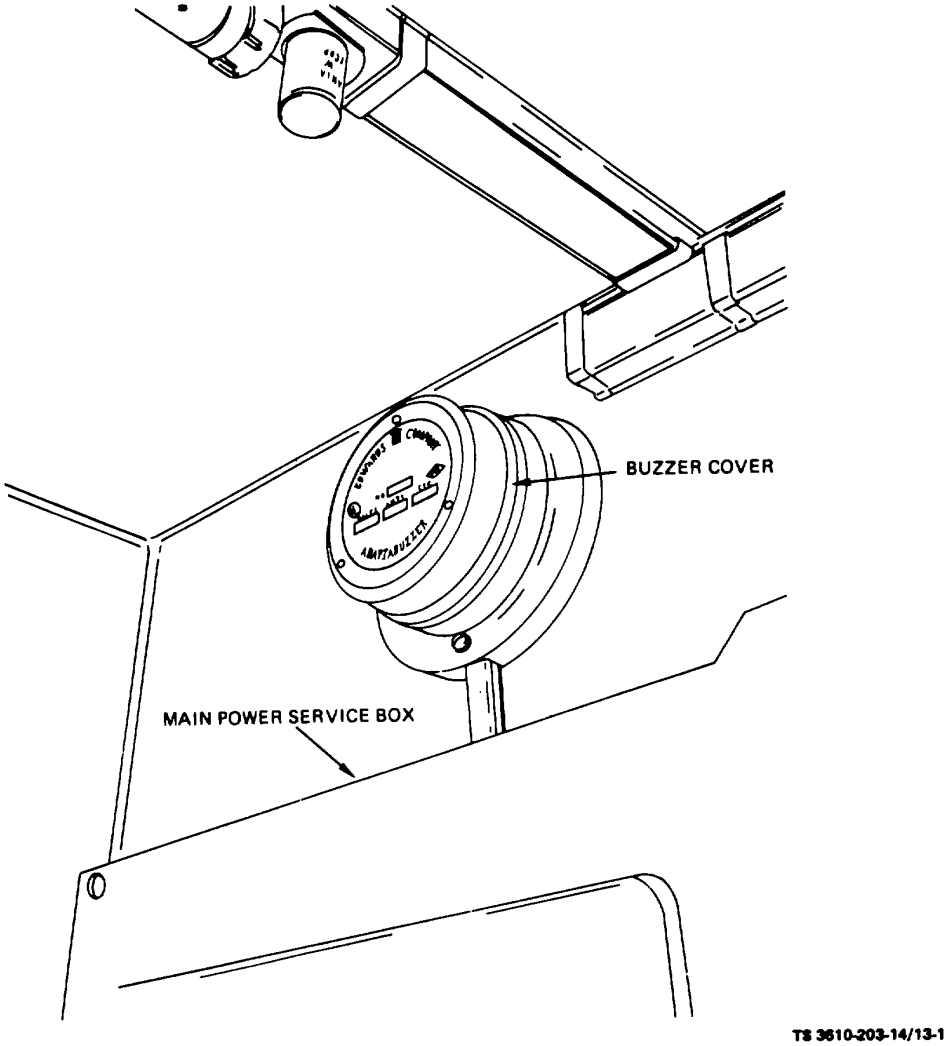


Figure 13-1. Blackout Warning Buzzer, Removal and Installation.

(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 replacement 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. 13-2).

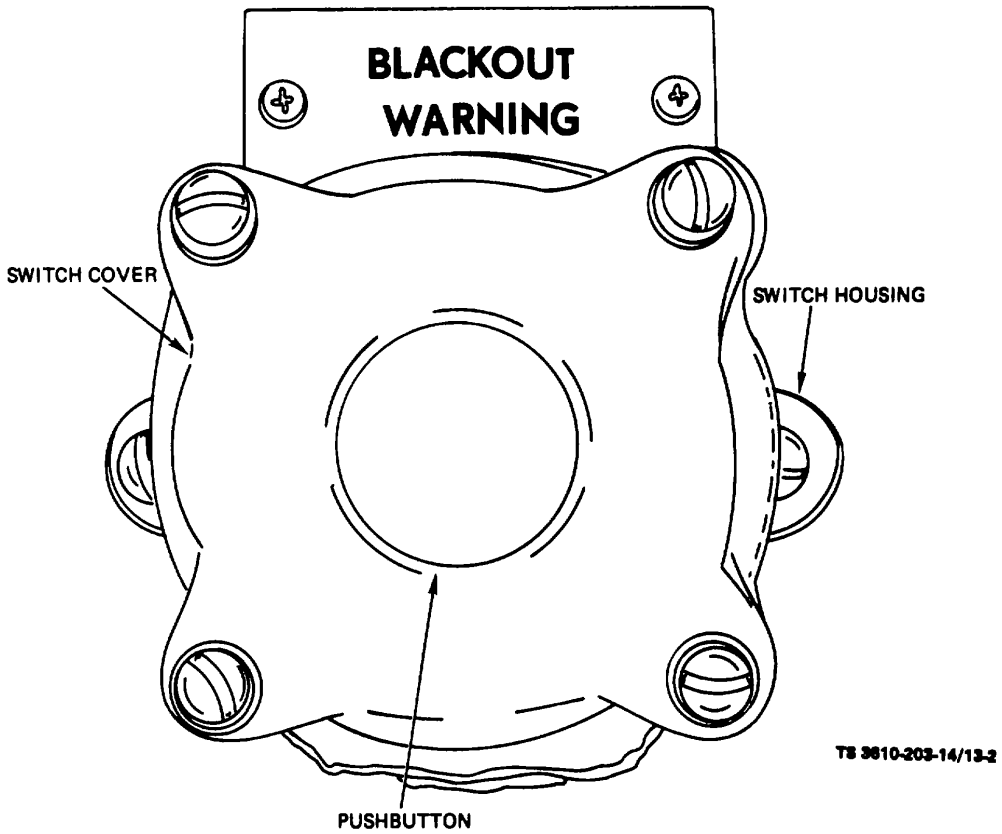


Figure 13-2. Blackout Warning Switch, Removal and Installation.

(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 14

REPAIR OF BLACKOUT DOOR LOCKSPIN ASSEMBLY

14-1. 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. 14-1).

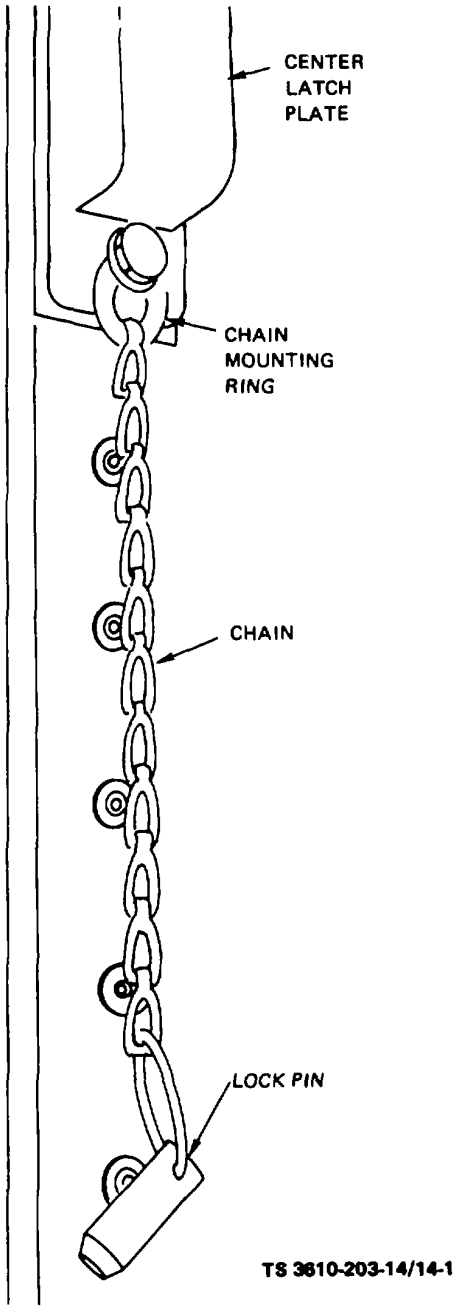


Figure 14-1. Blackout Door Lockpin Assembly.

14-2. 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:
c. Replacement. Replace defective lockpin 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 replacement lockpin chain mounting plate and install attaching bolt.
(2) The pin-to-chain attachment ring is an ordinary keyring device and both the pin and the ring can be replaced in the same manner as a key.

CHAPTER 15

REPAIR OF TELEPHONE BINDING POST ASSEMBLY

15-1. 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.

15-2. 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. 15-1).

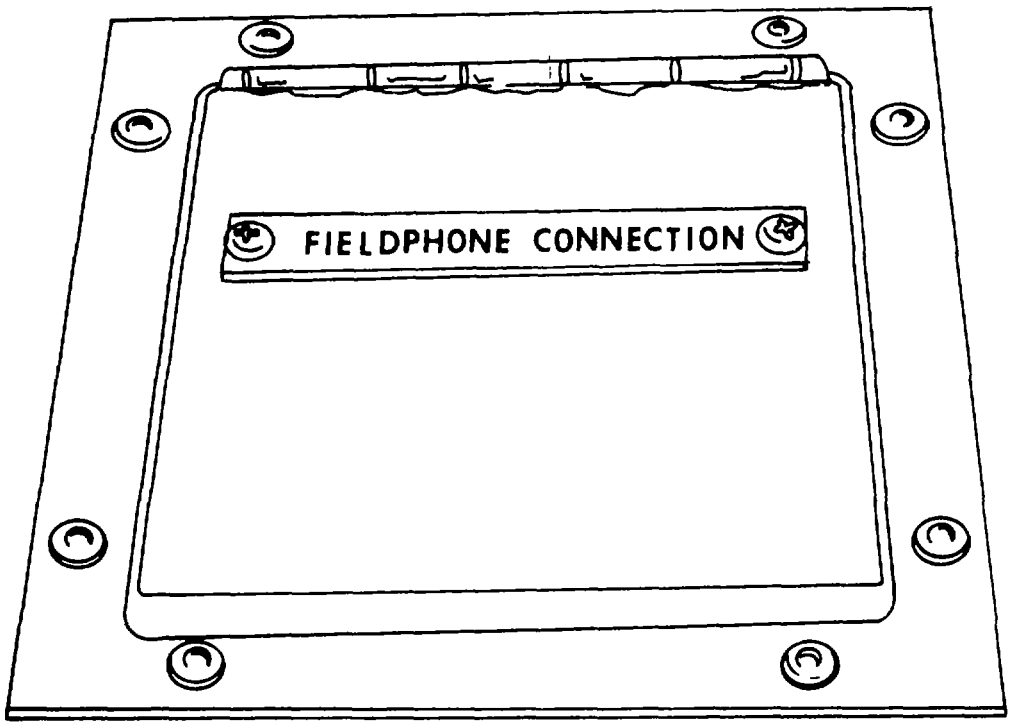


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Figure 15-1. Fieldphone Connection Cover.

(b) Remove the nuts and washers, located on the interior wall of the shelter, from the binding post. (See fig. 15-2).

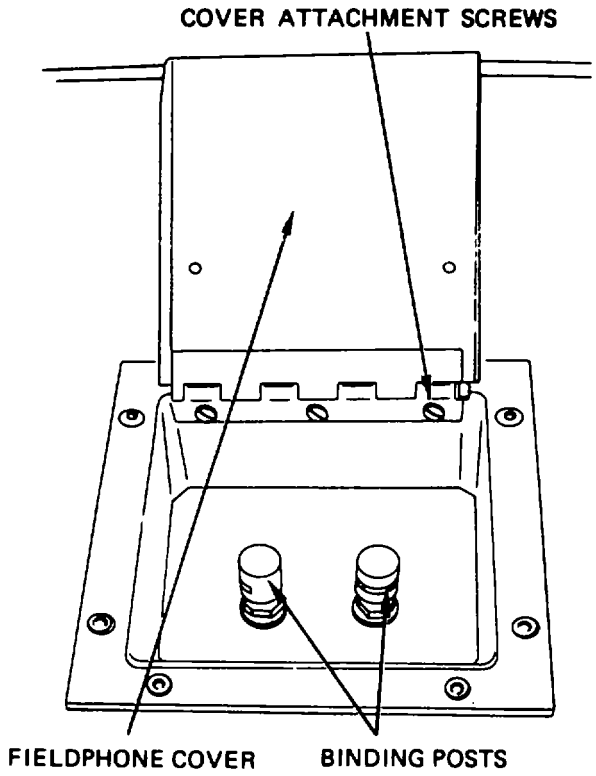

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Figure 15-2. Telephone Binding Post, Removal and Installation.

(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 replacement binding posts as follows:

NOTE

Installation procedures are identical for each binding post.

NOTE

Assure that binding posts are positioned so that telephone wires can be inserted 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. 15-2).
(b) Remove hinged cover.
(c) Remove attaching screws from nomenclature placard and remove placard (See fig. 15-1).

(2) *Repair*. Repair of the fieldphone hinged cover consists of replacement.
(3) *Installation*. Install replacement 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 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).

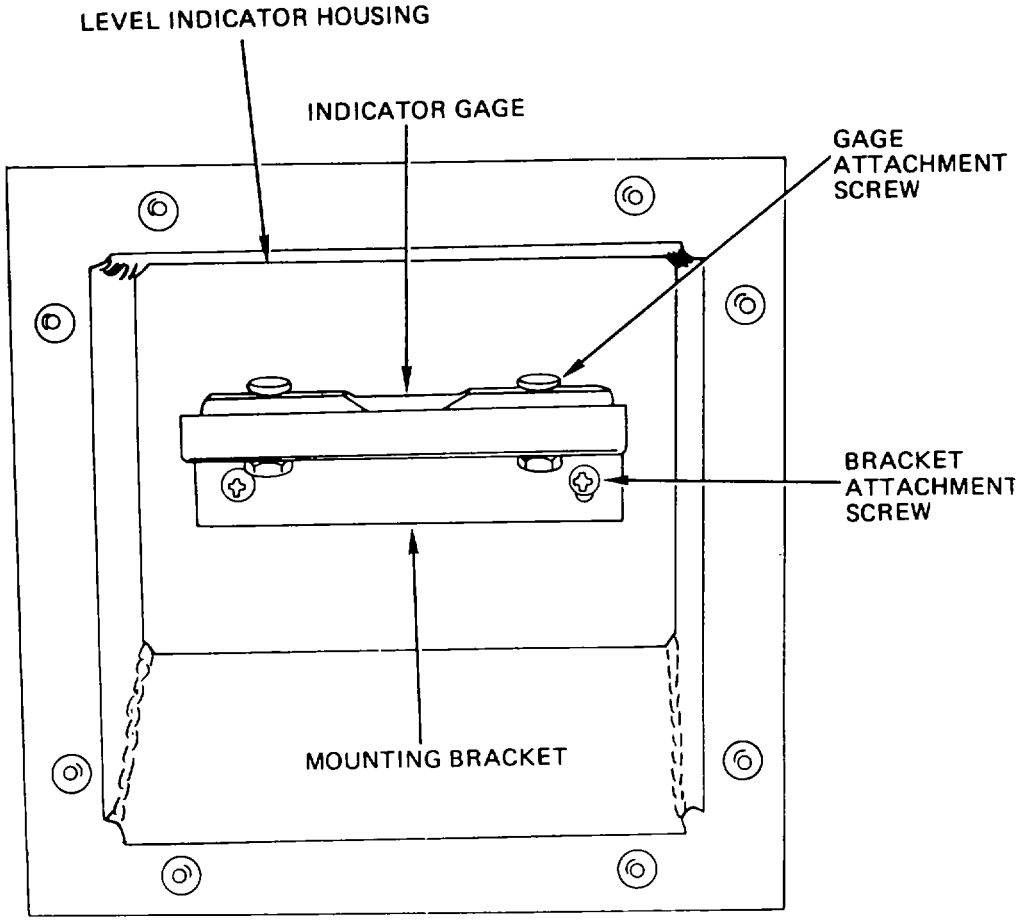

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Figure 16-1. Level Indicator Gage and Housing.

a. ***Removal***. Remove the level indicator assembly 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) If necessary, place the old and replacement assemblies back-to-back and match drill the mounting holes.

(2) Apply sealant to back of assembly and position in shelter wall.

(3) 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.)

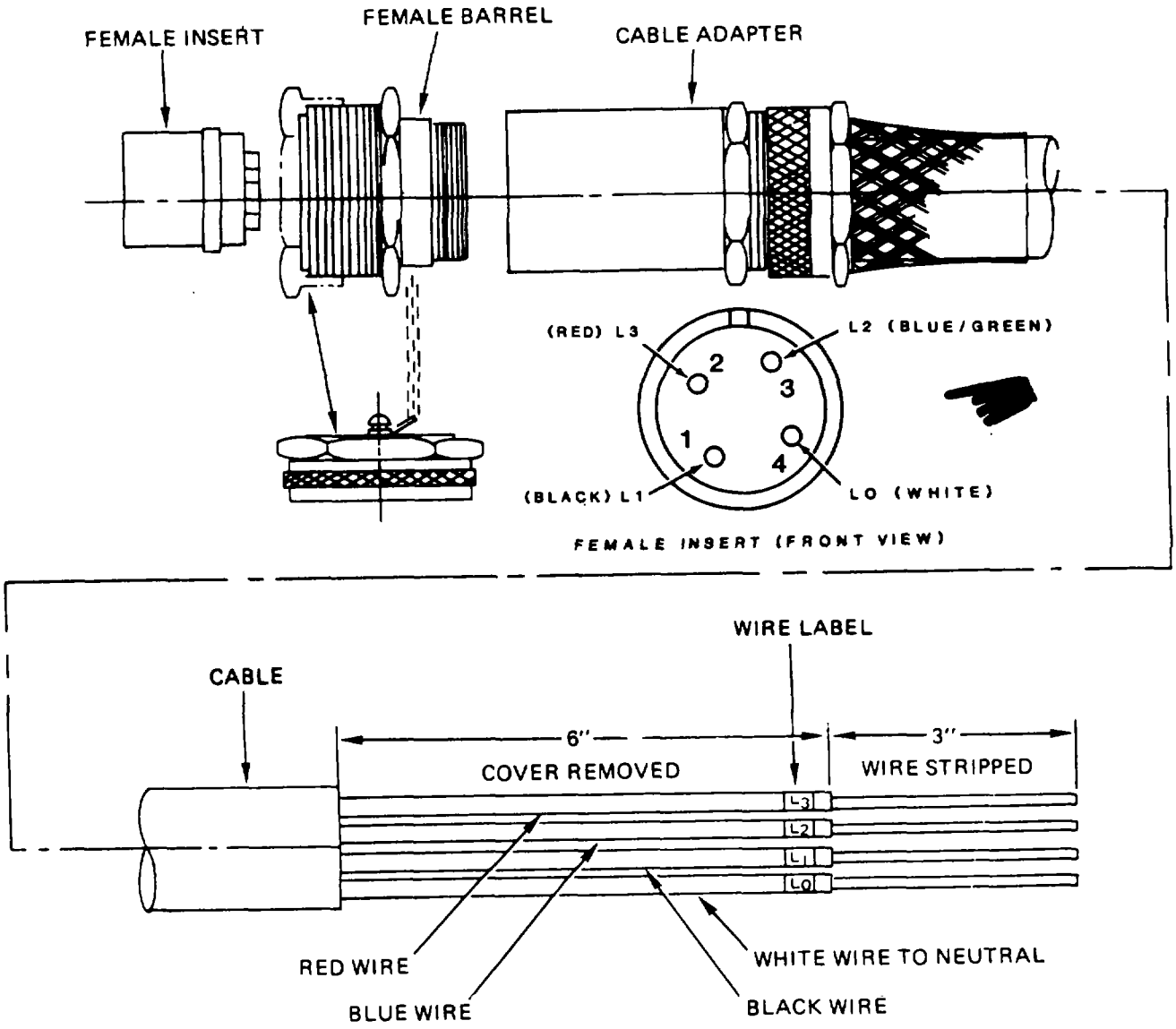


Figure 17-1. Main Power Cable Assembly

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.)

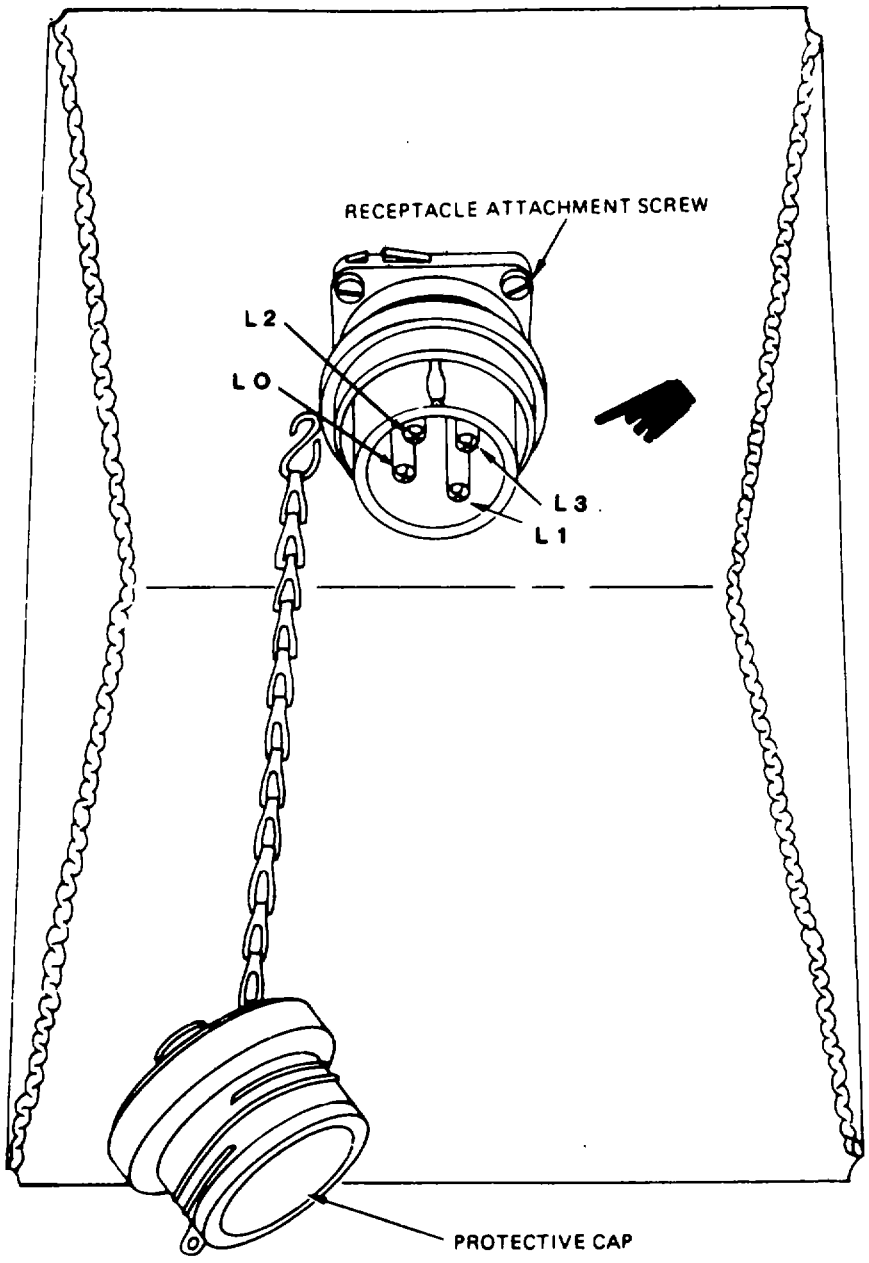


Figure 18-1. Main Power Receptacle, Removal and Installation

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.

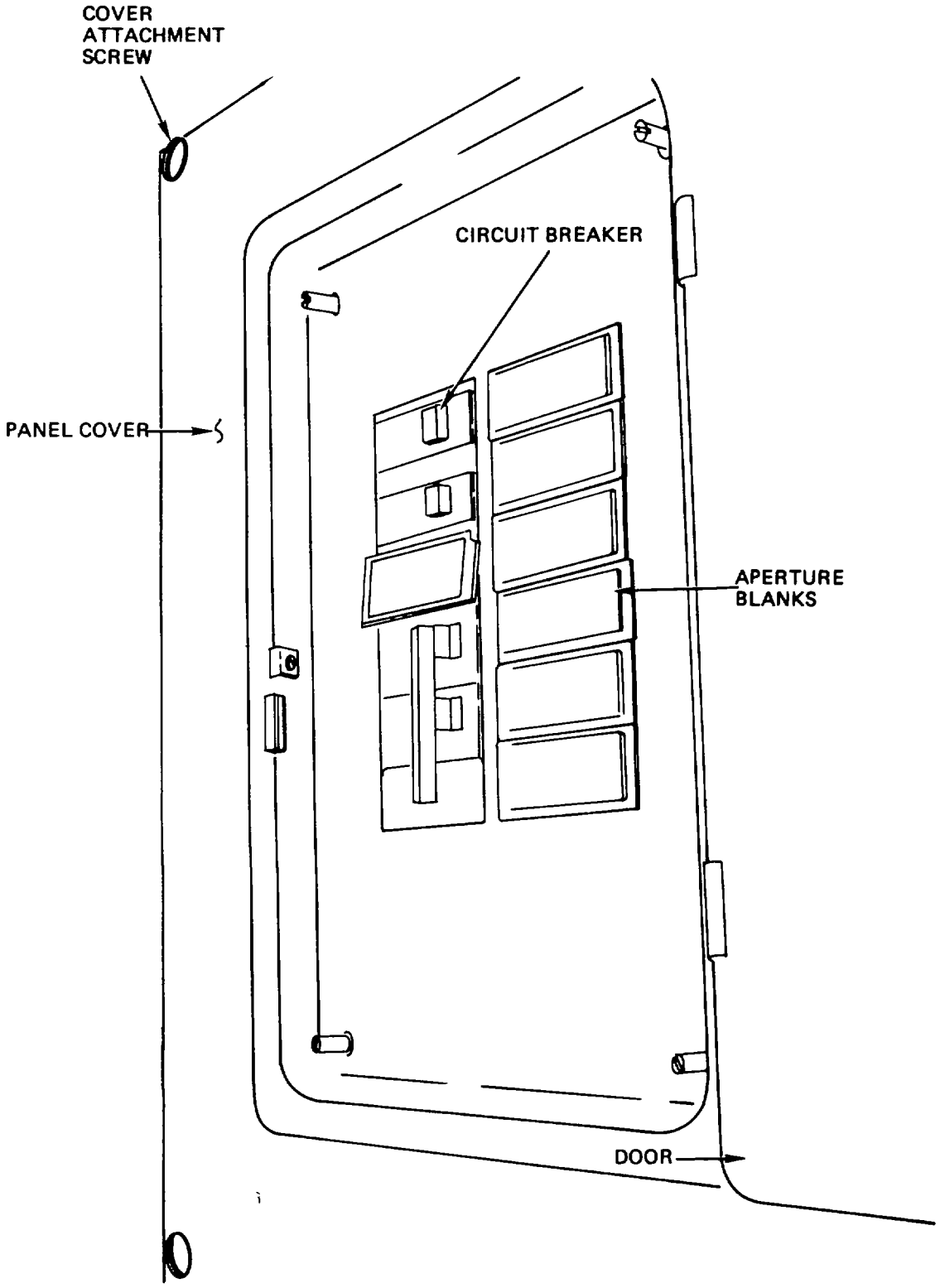
*U.S. GOVERNMENT PRINTING OFFICE: 1990 - 754-029/20171

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).



TS 3610-203-14/19-1

Figure 19-1. Main Service Box Assembly.

19-2. 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 on 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 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).

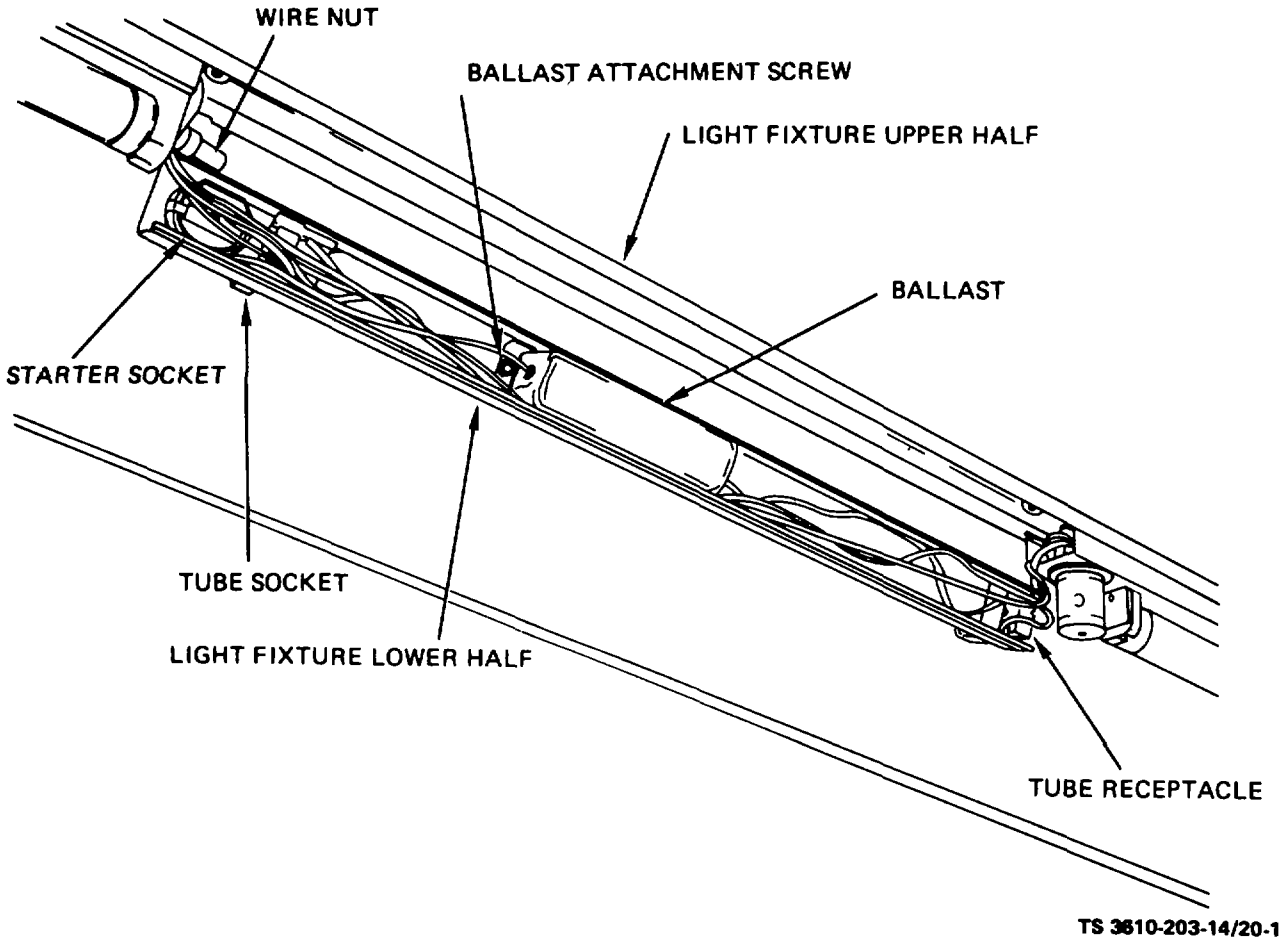


Figure 20-1. Fluorescent Lamp Assembly Ballast, Removal and Installation.

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 5-4200-200-10	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 10-3610-203-20P	Organizational Maintenance Repair Parts and Special Tools Lists. Press and Plate Making Shelter Component of Printing Plant, Special Warfare, Transportable, NSN 3610-00-889-3311.
	TM 10-3610-203-34P	Direct and General Support and Depot Maintenance Repair Parts and Special Tools Lists. Press and Plate Making Shelter Component of Printing Plant, Special Warfare, Transportable, NSN 3610-00-889-3311.
	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 of 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. INTRODUCTION

B-1. Scope

This appendix lists integral components of and basic issue items for the Press 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
CSQ	Shelter NSN 3610-00-987-9067

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 Rcvd 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) Fig. No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rcv'd	Date	Date	Date
		2540-00-892-6243	SCDL108736 8750519-1 (80063)	Ladder, Steel, Vehicle Boarding		CSQ	1				
		3940-00-846-9858	SC-D-36423 (80063)	Sling, Multiple leg, lifting and tiedown		CSQ	1				
17-1		3610-00-410-8523	6-1-2125-3-64	Power cable assembly,		CSQ	1				
			(74451)	50 ft long							
		4720-00-112-7393	6-1-2426-4-61 (74451)	Hose, drain, 8 ft long, condensate, air conditioner		CSQ	1				
		5975-00-642-8937		Rod, ground, copper weld, 108 ñ1.25, 5/8 dia., cone point; with drawing stud, clamp, 3 couplings, 3 rods 3 ft long. Ground cable 6 ft. long with ground terminal, Fed Spec. W-R-550, Type III, Class B		CSQ	1				
		7110-00-634-8596	AAS700 (81348)	Stool, revolving, steel drafting, w/o back, Fed. Spec. AA-S-700, Type II, Size I		CSQ	1				
		4210-00-555-8837		Extinguisher, fire, MIL-E-52031		CSQ	1				
		6545-00-922-1200		First Aid Kit, General Purpose		CSQ	1				
		7910-00-267-1205		Cleaner, Vacuum, portable, 115V, 60 Hz, Type HVU		CSQ	1				
		3610-00-843-5818		Funnel, steel, rigid spout 1 pint		CSQ	1				
		3610-00-843-5733		Gage, type, brass, point and inch measure 6 inch long		CSQ	1				
		3610-00-843-5747		Gage, type, brass, point and inch measure 12 inch long		CSQ	1				
		4930-00-253-2478		Lubricating gun, hand operated, MIL-G-3859, Size 1		CSQ	1				
		7240-00-889-3765		Measure, Graduated, 32 oz.		CSQ	1				
		3610-00-843-5797	4704356 (81902)	Rod, stirring		CSQ	2				
		6640-00-439-7350		Spatula, laboratory, Fed. Spec. GG-S-593, Class II, Size 3		CSQ	2				

Section III. BASIC ISSUE ITEMS

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Fig. No.	(b) Item No.	National Stock No.	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rcvd	Date	Date	Date
		7110-00-634-8596	AAS700 (81348)	Stool, revolving, steel drafting, w/o back, Fed. Spec. AA-S-700, TYPE II, SIZE I		CSQ	1				
		4120-00-555-8837		Extinguisher, fire, MIL-E-52031		CSQ	1				
		6545-00-922-1200		First Aid Kit, General Purpose		CSQ	1				
		7910-00-267-1205		Cleaner, Vacuum, portable, 115v. 60 Hz, TYPE HVU		CSQ	1				
		3610-00-843-5818		Funnel, steel, rigid spout 1 pint		CSQ	1				
		3610-00-843-5733		Gage, type, brass, point and inch measure 6 inches long		CSQ	1				
		3610-00-843-5747		Gage, type, brass, point and inch measure 12 inches long		CSQ	1				
		4930-00-253-2478		Lubricating gun, hand operated, MIL-G-3859, Size 1		CSQ	1				
		7240-00-889-3765		Measure, Graduated, 32 oz.		CSQ	1				
		3610-00-843-5797	4704356 (81902)	Rod, stirring		CSQ	2				
		6640-00-439-7350		Spatula, laboratory, Fed. Spec. GG-S-593. CLASS II, Size 3		CSQ	2				

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 (MAC) 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.(Not applicable).

d. Section IV contains supplemental instructions on explanatory notes for a particular maintenance function. (Not applicable).

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 com- pared.

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 pre- scribed 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, sub- assemblies 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 para. 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 per- form the specific tasks identified for the maintenance functions authorized in the maintenance al- location chart. The symbol designations for the various maintenance levels are as follows:

C - Operator or Crew
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance
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 designation 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 of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name of identification of the tool or test equipment.

d. Column 4, National/NATO Stock Number. The National or NATO stock number of the tool or

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 1, Section III.

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)	(2)	(3)	(4) Maintenance Category					(5)	(6)
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
01	DUPLICATING MACHINE AND STACKER	Replace				16			
02	COLOR PRESS	Replace		4.0					
03	TOOL BOARD	Inspect		0.1					
		Replace		0.5					
04	LADDER ASSEMBLY								
	Ladder	Inspect		0.1					
		Replace		0.3					
		Repair		1.0					
	Ladder Holddown	Inspect			0.1				
		Replace			1.0				
05	PAPER STORAGE CABINET, TYPE A	Inspect			0.2				
		Replace			2.0				
		Repair			1.0				
06	PAPER STORAGE CABINET, TYPE B	Inspect			0.2				
		Replace			2.0				
		Repair			1.0				
07	STOOL HOLDDOWN ASSEMBLY	Inspect			0.1				
		Replace			1.0				
08	PAPERCUTTER ASSEMBLY	Inspect		0.2					
		Replace			1.5				
09	BENCH ASSEMBLY	Inspect				0.2			
		Replace				12.0			
		Repair				4.0			
10	WATER TANK ASSEMBLY								
	Water Tank	Inspect			0.2				
		Replace			8.0				
	Plumbing	Inspect		0.2					
		Replace		4.0					
		Repair		2.0					
11	AIR CONDITIONER								
	Heating Element Assembly	Inspect				2.0			
		Test				1.0			
		Repair				24.0			
	Terminal Box Relay	Inspect			0.5				
		Replace			4.0				
		Repair			2.0				
	Control Box	Inspect			0.5				
		Replace			8.0				
		Repair			4.0				
	Intake Filter	Inspect		0.1					
		Service		0.5					
		Replace		0.3					

SECTION II. MAINTENANCE ALLOCATION CHART

(1)	(2)	(3)	(4) Maintenance Category					(5)	(6)
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
	Humidifier Assy	Inspect		0.1					
		Service		0.2					
		Replace		2.0					
12	FIRE EXTINGUISHER	Inspect		0.1					
		Service		0.5					
		Replace		0.2					
13	FIRST AID KIT ASSEMBLY	Inspect		0.1					
		Replace		0.2					
14	BLACKOUT WARNING	Inspect			0.3				
	SYSTEM	Replace			1.0				
		Repair			0.5				
15	BLACKOUT LOCKPIN	Inspect			0.2				
	ASSEMBLY, DOOR	Replace			0.5				
		Repair			0.7				
16	FILTER, SHELTER DOOR	Inspect		0.1					
		Service		0.5					
		Replace		0.3					
17	TELEPHONE BINDING	Inspect			0.1				
	POST ASSEMBLY	Replace			1.0				
		Repair			0.5				
18	LEVEL INDICATOR	Inspect		0.1					
	ASSEMBLY	Replace			4.0				
		Repair		0.5					
19	MAIN POWER CABLE	Inspect			0.2				
	ASSEMBLY	Replace			0.2				
		Repair			1.0				
20	MAIN POWER RECEPTACLE	Inspect			0.2				
		Replace			8.0				
		Repair			1.5				
21	MAIN POWER SERVICE	Inspect			0.2				
	BOX ASSEMBLY	Repair			0.5				
22	LAMP ASSEMBLY								
	Fixture	Inspect			0.2				
		Repair			1.0				
	Fluorescent Lamps	Replace		0.2					
23	LAMP SWITCHES	Inspect		0.1					
		Repair		0.5					
24	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 press 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 1 - Item Number. This number is as- signed to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., Use cleaning compound, Item 3, App. D).

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item. (enter as applicable)

C - Operator or 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 Sup- ply 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/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	3610-00-973-9944	Cleaner sheet, offset duplicator roller, P/N 50-2503A, FMC (00494)	PG
2	C	4130-00-860-0042	Coater, air filter	EA
3	C	3610-00-066-6630	Degreasing solution	PT
4	C	3610-00-066-6629	Dispenser, solution, one pint, P/N 200-849, FMC (00494)	EA
5	C	7510-00-582-3756	Erasers, image, 12 per box	EA
6	C	3610-00-843-5447	Static eleminator, Garland, P/N C42, FMC (95320)	BX
7	C	8520-00-527-9942	Hand cleaner, Fed. Spec. P-H-31, Type I, Class I	PT
8	C	7510-00-985-7005	Ink, lithographic, black, 51b can, IPI Speed King	CN
9	C	7510-00-985-7002	Ink, lithographic, blue, 51b can	CN
10	C	7510-00-147-8455	Ink, lithographic, bright green, 51b can, IPI Speed King	CN
11	C	7510-00-985-7004	Ink, lithographic, red, 51b can	CN
12	C	7510-00-985-6999	Ink, lithographic, lemon-yellow, 51b can, IPI Speed King	CN
13	C	6240-00-152-2982	Lamp, fluorescent, Fed. Spec. W-L- 116-9T	EA
14	C	6850-00-291-0963	Lithographic blanket roller, wash P/N D-L-298 (81348)	GL
15	C	6850-00-290-5164	Lithographic, fountain solution, reflex, P/N 200-722-2A, FMC (00494)	

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
16	C	9150-00-252-6173	Lubricating oil, Fed. Spec. V-V-L 820	CN
17	C	3610-00-973-9943	Offset blanket, Fed. Spec. ZZ-0-220	EA
18	C	9310-00-752-9537	Paper, book, 10-1/2" x 16" sheet size, Fed. Spec. UU-P-465, Type II, 500 sheets per ream	RM
19	C	3610-00-943-0439	Parts kit, offset, dampener set, P/N D2F2, FMC (75271)	SE
20	C	6850-00-551-5237	Regenerator, lithographic blanket, P/N 200-720-A1, FMC (00494)	BX
21	C	3610-00-843-5369	Rejuvenator, lithographic blanket, P/N NY 121, FMC (23953)	GL

ALPHABETICAL INDEX

ALPHABETICAL INDEX (Cont'd)

ALPHABETICAL INDEX (Cont'd)

ALPHABETICAL INDEX (Cont'd)

ALPHABETICAL INDEX (Cont'd)

ALPHABETICAL INDEX (Cont'd)

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

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

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DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

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 decigrams = .035 ounce
1 dekagram - 10 grams = .35 ounce
1 hectogram - 10 dekagrams = 3.52 ounces
1 kilogram - 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals - 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter - 10 centiliters = 3.38 fl. ounces
1 liter - 10 deciliters = 38.82 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	3.94
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	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	.11375			

Temperature (Exact)

°F Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 009771-000