

**TECHNICAL MANUAL**  
**OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL**  
**LAUNDRY UNIT, SINGLE TRAILER**  
**MOUNTED**  
**W/CANVAS COVER; ARMY MODEL**  
**M-532**  
**(EIDAL MODEL ELT9T)**  
**NSN 3510-00-782-5294**  
**AND (EDRO MODEL EP120-LTU)**  
**NSN 3510-00-169-4735**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**SEPTEMBER 1977**

# **SAFETY PRECAUTIONS**

## **BEFORE OPERATION**

**Do not operate the unit until the ground terminal stud of the engine-generator set has been connected to a suitable ground.**

**Electrical faults in the engine-generator set, load lines or load equipment can cause death by electrocution from contact with an ungrounded system.**

**Do not operate the unit in an enclosed area unless the exhaust gases are piped to the outside.**

**Inhalation of exhaust fumes will result in serious illness or death.**

## **DURING OPERATION**

**Do not make or change electrical connections while the unit is in operation.**

**The voltage generated by the engine-generator can cause death by electrocution.**

**Keep moisture away from the engine-generator and keep the surrounding area dry when operating the unit.**

**Failure to observe this warning may result in death by electrocution.**

**Do not service the unit with gasoline or fuel while the unit is in operation.**

**Failure to observe this warning may result in serious injury or death to personnel.**

## **WARNING**

**Dry cleaning solvent (Fed. Spec, P-D-680) used to clean parts is potentially dangerous to personnel and property.**

**Clean all parts in a well-ventilated area.**

**Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent.**

**Wash exposed skin thoroughly.**

**Do not use near open flame or excessive heat.**

**Flash point of solvent is 100 to 138F. (38 to 59C.).**

## **DURING OPERATION**

**To eliminate the possibility of explosion and injury to personnel by the accumulation of excess fuel vapors in the Hot Water Heater and Dryer Tumbler Combustion Chambers during emergency shutdown or failure of the electrical power supply, the following steps will be taken before resuming Normal Operation.**

- 1. Close fuel valves immediately.**
- 2. Disconnect ignition electrodes at Combustion Chambers.**
- 3. Restart unit and allow Combustion Chambers to be air purged for not less than 3 minutes before shutdown.**
- 4. Reconnect ignition electrodes, resume normal operation.**

## **WARNING**

**After shutdown in freezing temperature drain all water from filters, tanks, pumps and hoses.**

**Leave drain valves open.**

**Inspect unit to insure all water has been drained.**

**Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel, wear ear muffs or ear plugs which were fitted by a trained professional.**

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LAUNDRY UNIT, SINGLE TRAILER MOUNTED  
W/CANVAS COVER; ARMY MODEL M-532  
(EIDAL MODEL ELT9T) NSN 3510-00-782-5294

and

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NSN 3510-00-782-5294

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**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support [ Aviation Materiel Readiness Command, ATTN: DRSTS-MPSD, 4800 Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished to you.

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## CHAPTER 1

### INTRODUCTION

#### Section I. GENERAL

##### 1-1. Scope

This manual is for your use in operating and maintaining the Army Model M-532; Eidal Model ELT9T and Edro Model EP120-LTU, single trailer mounted laundry units.

##### 1-2. Maintenance Forms and Records

- 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. Maintenance forms and records are prescribed by DA Pam 738-750.

##### 1-3. Equipment Serviceability Criteria (ESC)

The laundry unit end item is not covered by an ESC. The engine-generator is covered by TM 5-6100-207 ESC.

##### 1-4. Destruction of Army Materiel to Prevent Enemy Use

Procedures for the destruction of Army materiel to prevent enemy use are explained in TM 750-244-3.

##### 1-5. Administrative Storage

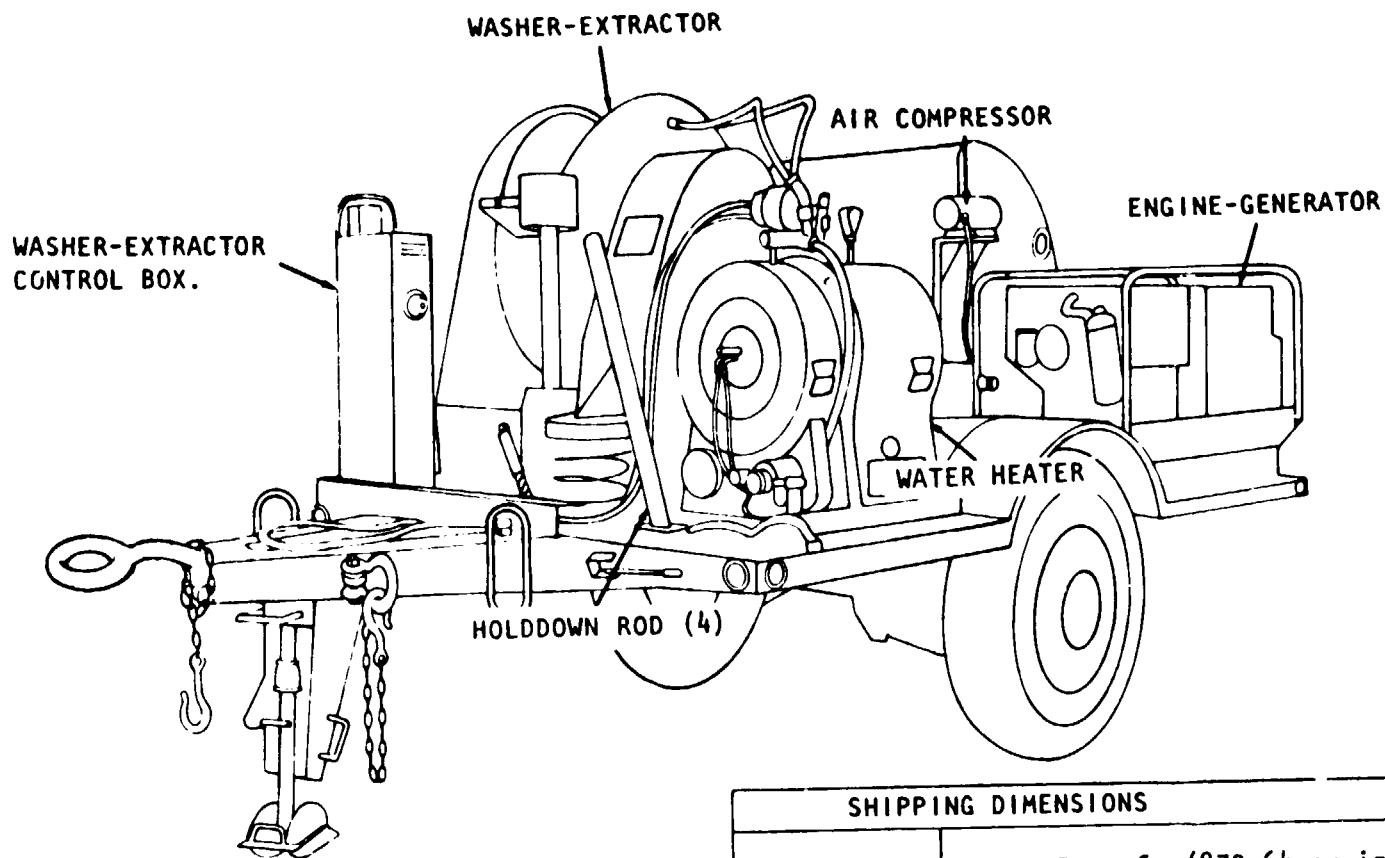
Administrative storage procedures are described in TM 740-90-1.

#### Section II. DESCRIPTION AND DATA

##### 1-6. Description

Laundry Unit. The Eidal Laundry Unit, Model ELT9T (figs 1-1 and 1-2) and Edro Model EP120-LTU (figs. 1-3 and 1-4), is a complete laundry unit capable of operation for 20 hours per day continuous operation. It

is powered by a 10 KW engine-generator set. The Water Heater and Dryer Tumbler Burners can be operated using either gasoline or fuel oil. When Mogas is utilized as the fuel source, add one quart (0.95 liters) of OE-30 engine oil to each 5 gallons (19 liters) of Mogas.

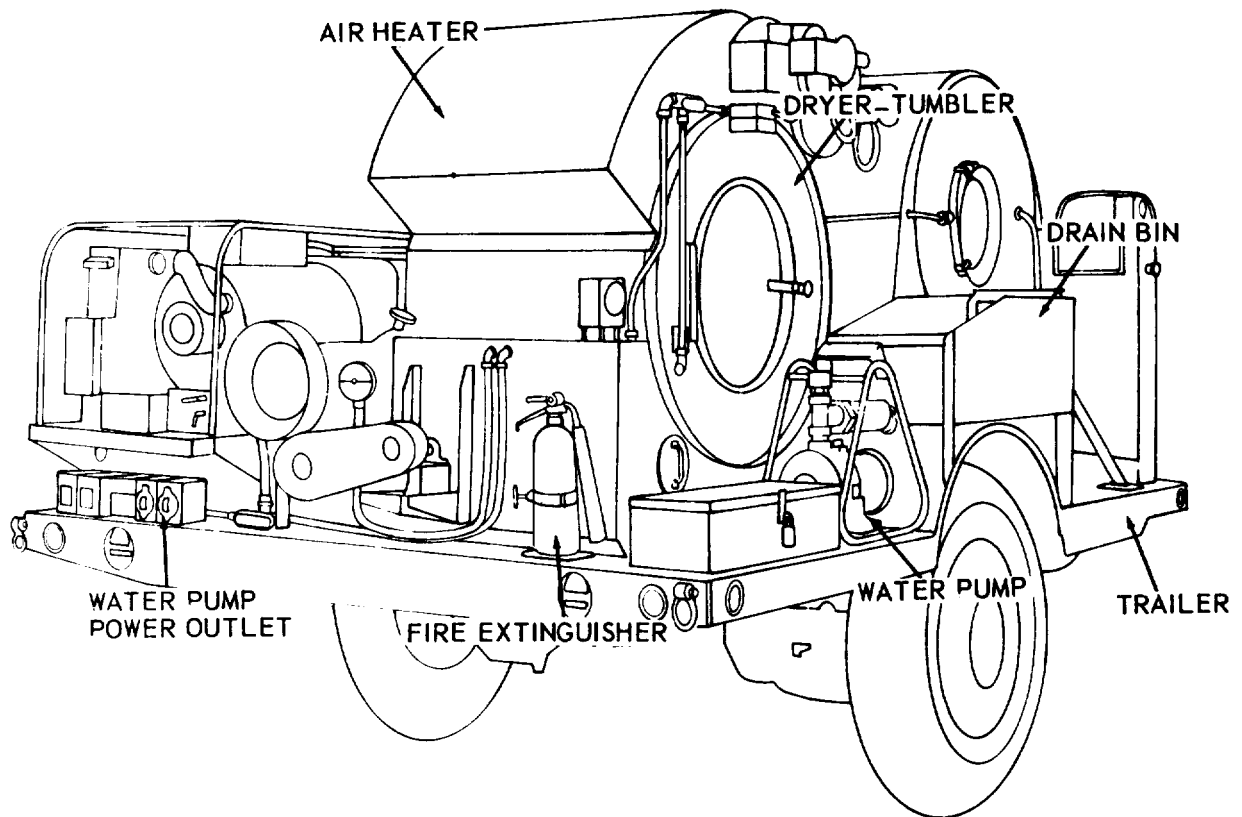


SHIPPING DIMENSIONS	
CUBAGE	505 cu.ft. (872.64 cu.in.)
LENGTH	16 2/3 ft. (500.32 cm.)
WIDTH	8 ft. (240 cm.)
HEIGHT	8 ft. (240 cm.)
WEIGHT	9,300 lbs. (4185 kg.)

TS 3510-208-12/1-1

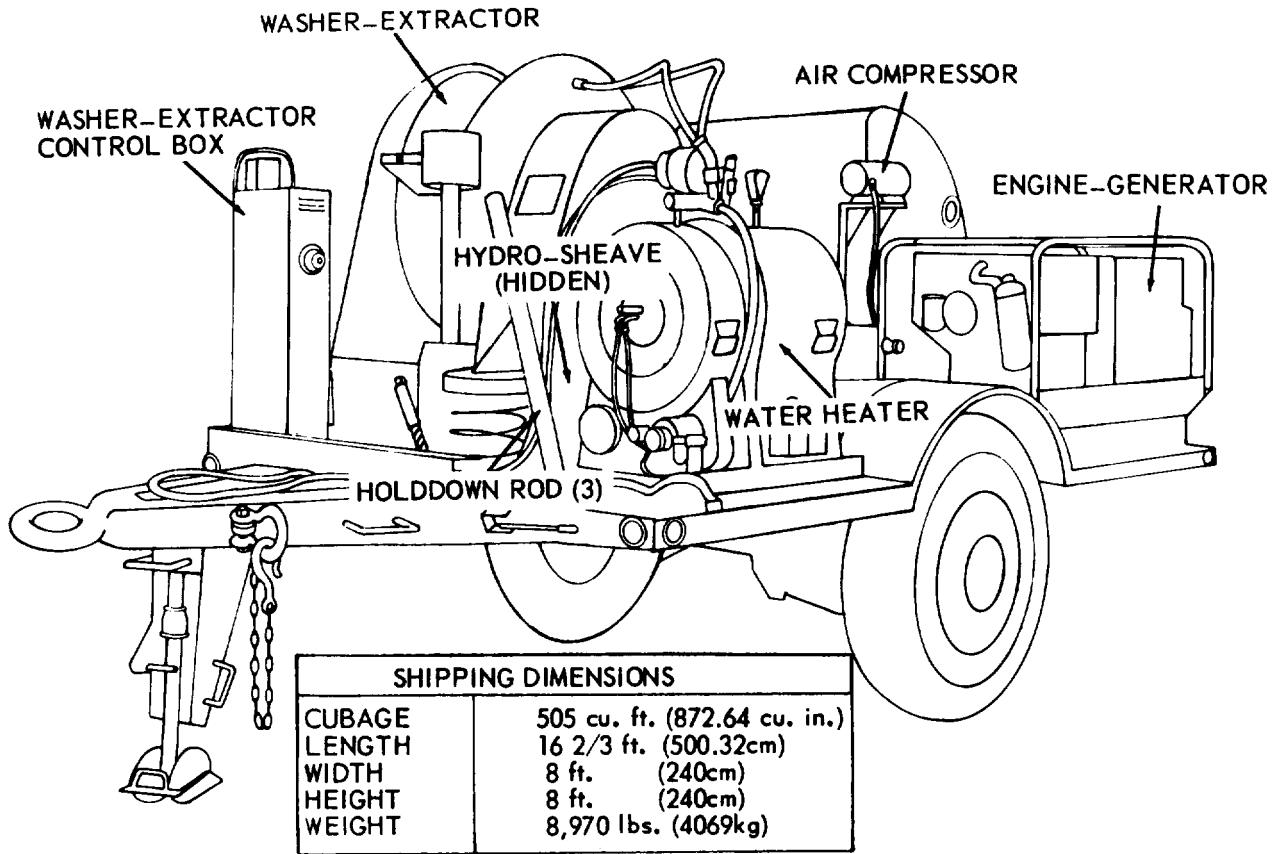
Figure 1-1 Laundry unit, left front, three-quarter view, with shipping dimensions (Eidal Model ELT9T)





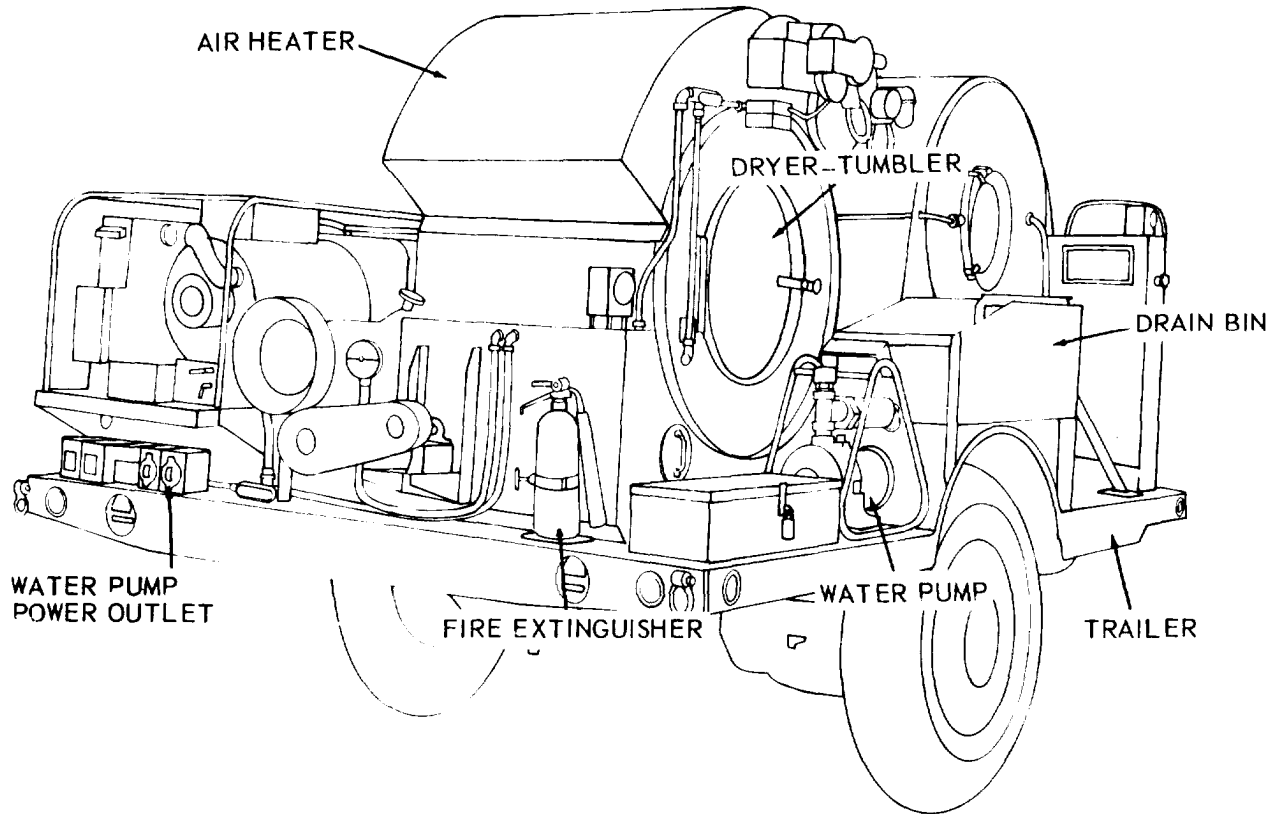
TS 10-3510-208-12/1-2

Figure 1-2. Laundry unit right rear, three-quarter view (Eidal Model ELT9T).



TS 10-3510-208-12/1-3

Figure 1-3. Laundry unit, left front, three-quarter view with shipping dimensions (Edro Model EP12-LTU).



TS 10-3510-208-12/1-4

Figure 1-4. Laundry-unit right rear, three-quarterview (Edro Model EP120-LTU).

*b. Trailer.* For a general description of the trailer, refer to TM 9-2330-274-14.

*c. Engine-Generator.* For general description of the engine-generator, refer to TM 5-6115-275-14.

*d. Water Heater.* The water heater, located on the left front end of the trailer, heats incoming water to the desired washing temperature. Two automatic, air-operated valves, one for hot water and one for cold water, control the water that is supplied to the washer-extractor. The water heater burner is equipped with a 6 1/2 gph (gallons per hour) (24.7 liters) fuel nozzle having a burning rate of 2 to 6 1/2 gph (7.6 to 24.7 liters). The burner nozzle and ignition electrodes are positioned in the nozzle and electrode holder, which is mounted on the front of the burner tube. Continuous ignition is supplied to the burner by means of a transformer located at the bottom rear of the heater. A blower, mounted below the water heater, supplies air to the firebox for fuel combustion. The fuel pump, coupled to the blower, draws fuel from the fuel

source and through a filter, and delivers it to the burner.

*e. Water Pump.* A portable, centrifugal-type water pump, mounted in a carrying frame, is provided with the laundry unit. After the initial prime, this pump is self-priming, and will deliver 18 to 20 gallons (68.4 to 76 liters) of water per minute.

*f. Air Compressor.* The air compressor is mounted behind the drying tumbler, and provides air pressure for the operation of the laundry unit. Laundry operation requires compressed air at a minimum of 75 to 90 psi (pounds per square inch) (5.27 to 6.33 kg per sq cm).

*g. Washer-Extractor.* The washer-extractor is an end-loading reversible-cylinder type. The unit is supported on each corner by a large coil spring and is provided with four shock absorbers. The washer cylinder, inside the shell, is constructed of corrosion-resistant metal and perforated to allow water to flow through the clothes during washing

and to escape during extinction. Ribs located inside the cylinder cause the clothes to tumble. There are two electric motors provided with the washer-extractor; one for washing operations and one for extraction operations. During washing, the belts from the jackshaft to the extractor motor are kept tight by a coil spring located above the air cylinder. During extractions, the air cylinder causes the washer motor and jackshaft to move on a slide mount toward the extractor motor, loosening the belts between the jackshaft and the extractor motor. As it slides, the washer motor activates a microswitch which energizes the holding coil to the extractor motor starter and starts the extraction operation. The washer-extractor is designed to be operated either manually or automatically. The necessary controls and instruments for either method of operation are located on the control panel at the right of the trailer.

*h. Tumbler.* The drying tumbler is an open-end, nonreversible type. The tumbler cylinder is perforated and has ribs to tumble the clothes. A motor, located on the rear of the tumbler shell, operates the cylinder.

*i. Air Heater.* An air heater is located on top of the tumbler shell and furnishes the hot air necessary for drying the clothes. Fuel for the operation of the burner is drawn through lines connected to an external fuel container.

*j. Hydro-Sheave.* (Edro Model EP120-LTU laundry unite only) The twin discs hydro-sheave is used to overcome the problems of inadequate torque or excessive consumption of electrical current at starting speeds. In addition, the hydro-sheave also cushions the electric motors against sudden shocks or overloads and overcomes momentary demands which would otherwise stop the power source completely.

**1-7. Tabulated Data**

*a. Identification.* The laundry unit has identification plates located on the major accessories. The data from these plates can be found under tabulated data (b. below).

*b. Tabulated Data.*

*(1) Dryer-Tumbler.*

*(a) Ignition Transformer.*

Manufacturer . . . . .	Jefferson Electric Co.
Model . . . . .	296
Primary:	
Volts . . . . .	208
Cycles . . . . .	60
Secondary:	
Volts . . . . .	10,000
MA (milliamperes) . . . . .	23

*(b) Dryer-Tumbler.*

Manufacturer . . . . .	Troy Laundry, Inc. and Edro Corp.
------------------------	-----------------------------------

*(c) Magnetic Valve.*

1. Eidal Model ELT9T laundry units.

Manufacturer . . . . .	ITT General Controls
Volts . . . . .	220-440
Cycles . . . . .	50-60
Watts . . . . .	14
Port . . . . .	5/32

2. Edro Model EP120-LTU laundry units.

Manufacturer . . . . .	Skinner Electric, Valve Div. New Britain, Conn.
PSI . . . . .	100
Volts . . . . .	24-60
Orifice . . . . .	1/16 x 1/16
Watts . . . . .	10
Valve No . . . . .	XT659
Code No . . . . .	D12

*(d) Fuel Filter.*

Manufacturer . . . . .	Cuno Engineering Corp.
------------------------	------------------------

*(e) Burner Motor.*

Manufacturer . . . . .	Marathon Electric
Model . . . . .	3M
Hp (horsepower) . . . . .	1/2
Rpm (revolutions per minute) . . . . .	3450
Phase . . . . .	3
Cycles . . . . .	60
Volts . . . . .	208-220/440
Amperes . . . . .	2/1
Type . . . . .	TS
Duty . . . . .	Continuous
Rise . . . . .	40C. (Centigrade)

*(f) Fuel Pump.*

Manufacturer . . . . .	Sundstrand
Part No . . . . .	J3CA-178P9

*(g) Limit Switch.*

Manufacturer . . . . .	Micro Switch, a division of Minneapolis-Honeywell
Part No . . . . .	BAF1-2RN-LH

*(h) Timer.*

Manufacturer . . . . .	Industrial Timer Corp.
------------------------	------------------------

*(i) Tumbler Cylinder Motor.*

Manufacturer . . . . .	Howell Electric Motors
Hp . . . . .	112
Volts . . . . .	208-220/40
Phase . . . . .	3
Cycles . . . . .	60
Amperes . . . . .	2.0-1.0
Rise . . . . .	40C.

*(j) Warm Air Limit Control.*

Manufacturer . . . . .	The Mercoid Corp.
Volts . . . . .	116-230
Amperes . . . . .	10-5
Hp (ac) (alternating current) . . . . .	3/4
Hp (dc) (direct current) . . . . .	1/3

(k) *Tumbler Exhaust Motor.*

Manufacturer	Century Electric Co.
Frame	SC184-KCA-EA19310872-01
HP	1.5
Voltage	208-220/440
Ram	1.730
Cycles	.60
Amperes	4.7-4.4/2.2

(2) *Water Heater.*

(a) *Low Water Cutoff.*

Manufacturer	McDonnell and Miller, Inc.
Model	.63 SV
Motor duty	.115v-ac; 230 v-ac
Full load	10.2; 5.1
Locked rotor	.61.2; 30.6
Pilot duty:	
Volts	.115/230
Cycles	.60
VA (voltampere)	.125

(b) *Water Heater Ignition Transformer.*

Manufacturer	Jefferson Electric Co.
Model	.296
Volts:	
Primary	.208
Secondary	10.000
Cycles	.60

(c) *Fuel Pump.*

Manufacturer	Sundstrand
Type	1-stage-gear
Model	J3CA-178P3
Pressure	0 to 150 psi (pounds per square inch) (0 to 10.555 kg per sq cm)

(d) *Water Heater Burner Motor.*

Manufacturer	General Electric
Model	.5K36FG 288
Rpm (60 cycles)	3,450
(50 cycles)	2,850
Phase	.3
Cycles	.60-50
Volts	.208-220/440
Duty	Continuous

(3) *Water Pump.*

Manufacturer	Gorman-Rupp Co.
Model	.81 1/2 E1 E3/4
Type	Centrifugal, self-priming, after initial prime
Rate capacity	18 to 20 gpm (gallons per minute) (68.4 to 76 liters) at 65-foot head

(4) *Water Pump Motor.*

Manufacturer	General Electric Corp.
Model	.5K43HG1230
Ram	.3450/2850
Hp	.3/4
Volts	.208-220/440

Amperes	2.6-1.3
Cycles	.60-50
Duty	Continuous
Rise	55C.
Phase	.3

(5) *Washer Motor.*

Manufacturer	Peerless Electric
Model	11800
Frame	P213D
Hp	1
Phase	.3
Cycles	.60
Ram	.850
Duty	Continuous
Amperes	4.2/2.1
Volts	.208

(6) *Extractor Motor.*

Manufacturer	Peerless Electric
Model	11801
Frame	P213H
Hp	5.5
Phase	.3
Cycles	.60
Ram	1650
Amperes	17.6/8.8
Volts	208-220/440
Duty	Ext (extract)

(7) *Hydro-Sheave (Edro Model EPI20-LTU only)*

Manufacturer	Twin Disc Clutch Company Rockford Works
Model	8.4HSD
Part No	X-217402-A
Horsepower	1.5
Revolutions Per Minute (Maximum)	2,400 rpm
Capacity (oil-OE10)	2.4quarts

(8) *Air Compressor.*

Manufacturer	Bell and Gossett Hydraulics, Inc.
Model	Sye-12-1, 75 lb (33.75 kg), single stage
Cam	3.8 at 1,725 rpm (revolutions per minute)
Horsepower	.1/2
Volts	.208
Phase	.3
Amperes	2.5

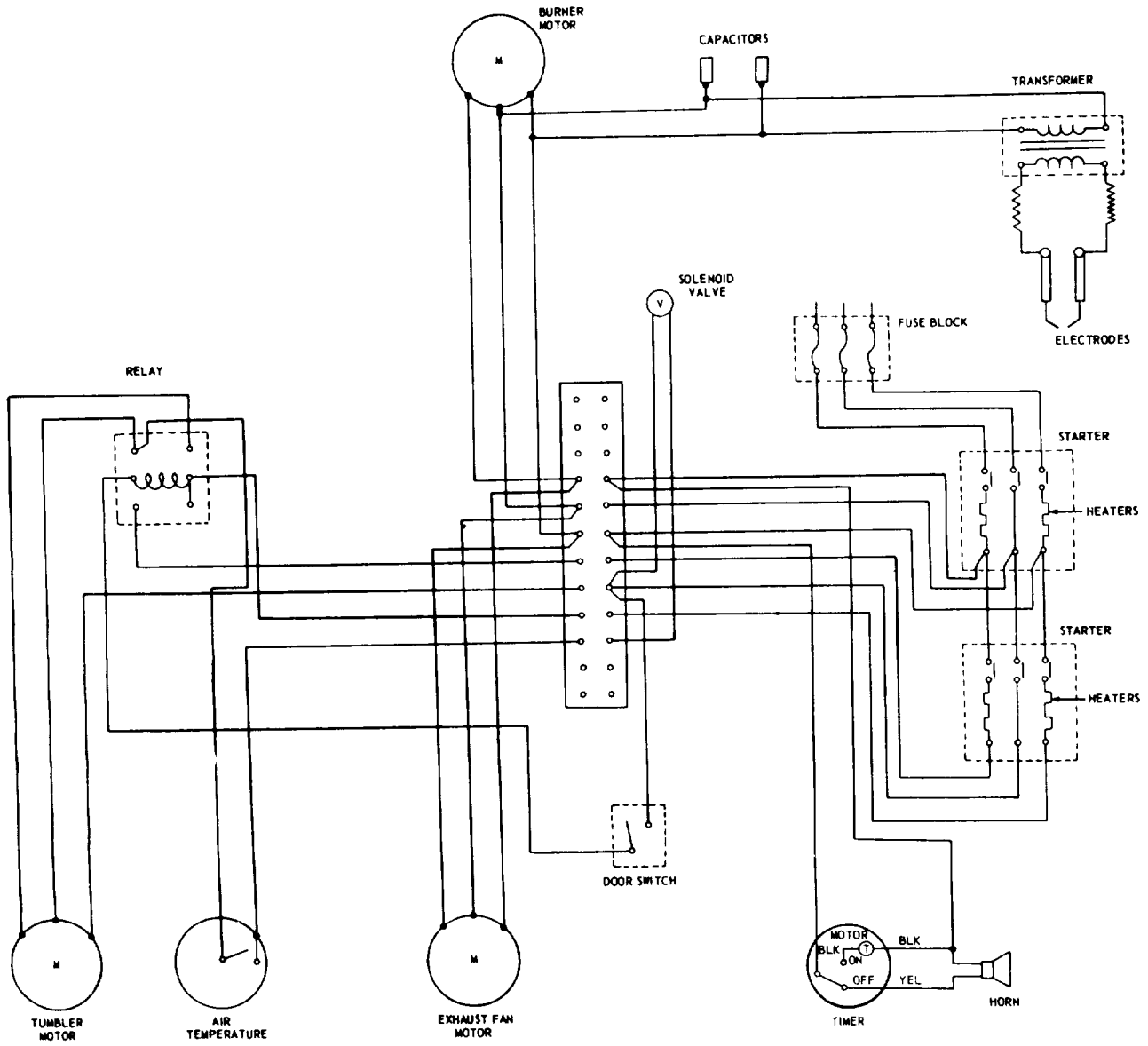
(9) *Wiring Diagrams.*

(a) *Control Panel.*

Figure FO-1. Wiring diagram.  
(Located in back of manual)

Figure FO-2. Wiring diagram.  
(Located in back of manual)

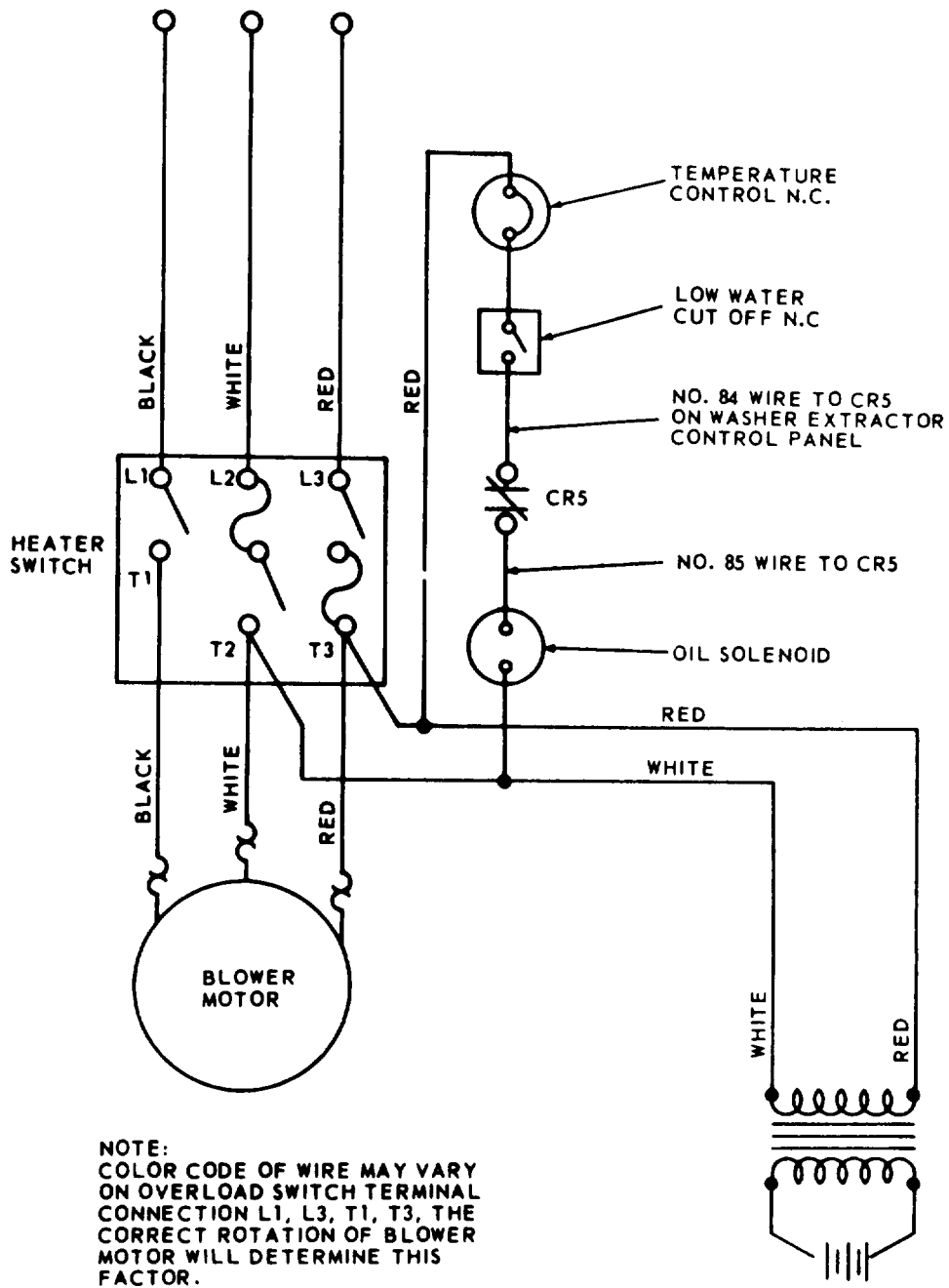
(b) *Dryer-Tumbler.*



TS 10-3510-208-12/1-5

Figure 1-5. Dryer-tumbler wiring diagram.

(c) Water Heater.



TS 10-3510-208-12/1-6

Figure 1-6. Water heater wiring diagram.

(d) Air Compressor.

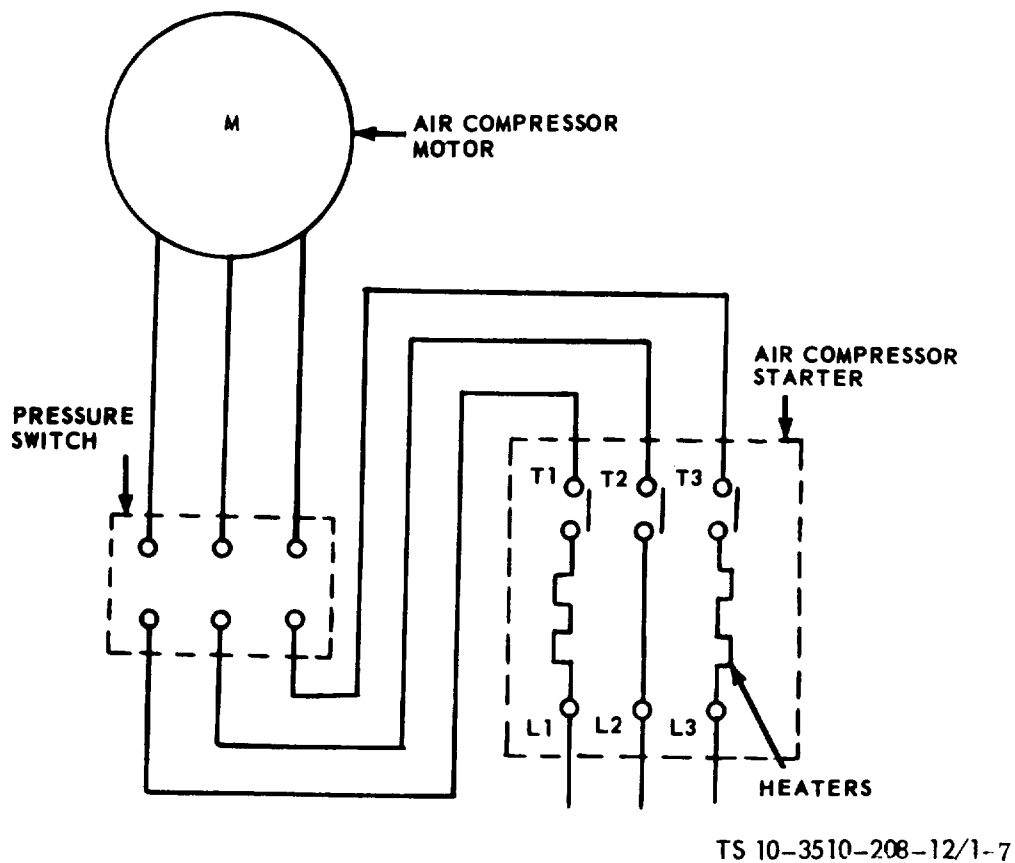


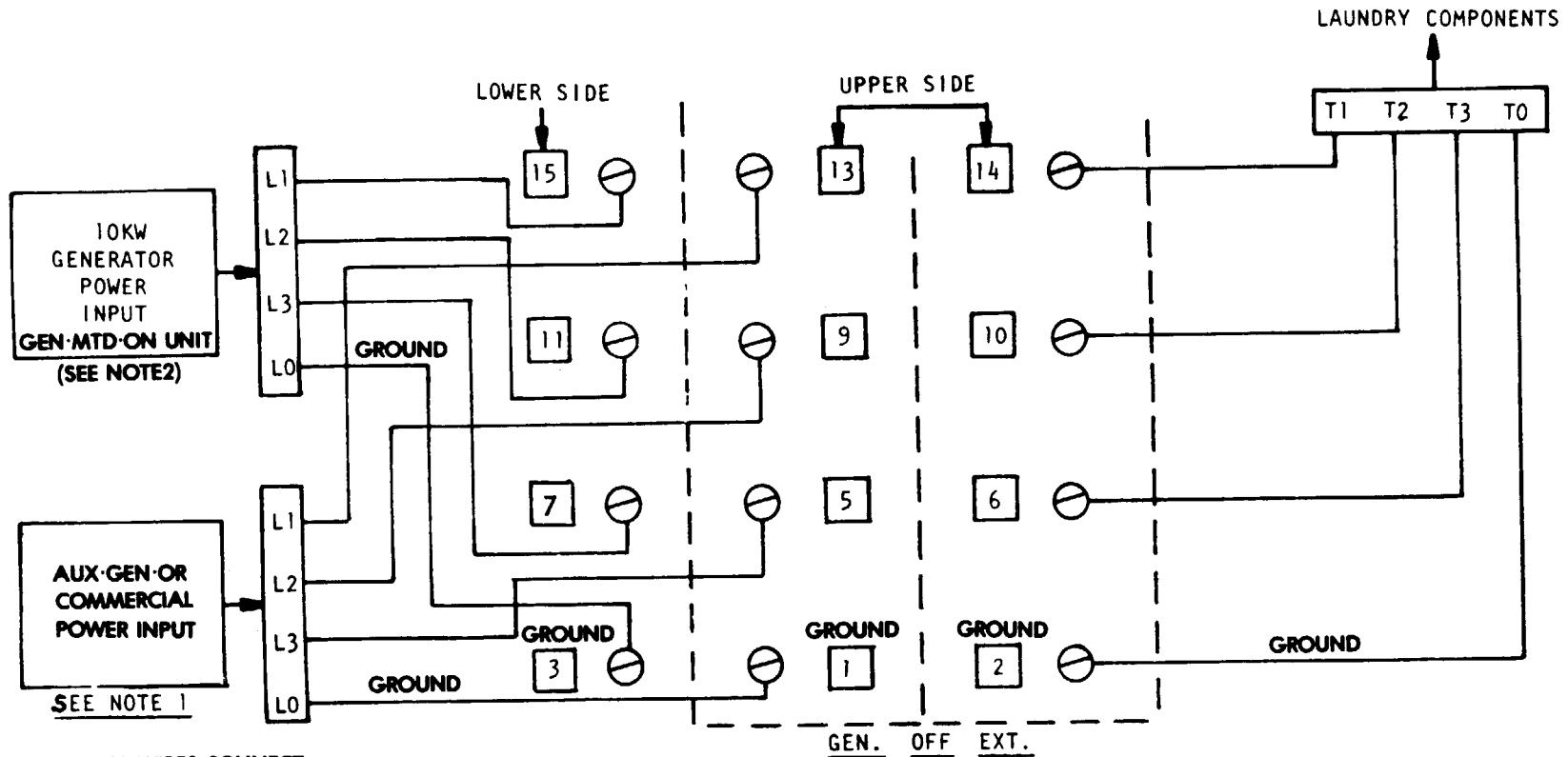
Figure 1-7. Air compressor wiring diagram.

(e) End Item.

Figure FO-3. Electrical Distribution System Schematic.  
(Located in back of manual)



**GENERATOR/EXTERNAL POWER SELECTOR SWITCH**



**EXTERNAL WIRES CONNECT THROUGH SPRINGCLIP HOLE**

**NOTE 1**

CONNECT COMMERCIAL AUXILIARY POWER LINES (208 VOLT, 3 PHASE, 60 Hz, 4 WIRE) TO EXTERNAL POWER SELECTOR SWITCH TERMINALS 5, 9, 13, AND 1. NOTE THAT NO. 1 IS NEUTRAL. REVERSE TERMINALS 9 AND 13 TO CORRECT A IMPROPER ROTATION CONDITION

**NOTE 2**

CONNECT 10 KW<sup>3</sup> GEN POWER LINES (208V, 3 PH, 60 HZ, 4 WIRE) TO GENERATOR POWER SELECTOR SWITCH TERMINALS 7, 11, 15 AND 3. NOTE THAT NO. 3 IS NEUTRAL. REVERSE TERMINALS 11 AND 15 TO CORRECT IMPROPER ROTATION CONDITION.

**NOTE 3**

THE FOURTH WIRE INCORPORATED INTO THE WIRING COMPONENTS ARE THE WIRES CONNECTED AT TERMINALS TO 2, 1, 3 AND L0.

**Figure 1-8. Electrical Generator/External Power Schematic.**

(10) Bolt, Capscrew, and Nut Torque Wrench Specifications. Refer to table 1-1.

Table 1-1. Bolt, Capscrew and Nut Torque Wrench Specifications

Standard Torque Specifications for Capscrews and Nuts Capscrew Grade Identification - Capscrew heads are marked as follows:

Grade 2	No marks
Grade 6	Three Marks -120° apart
Grade 8	Six Marks - 60° apart

SAE STANDARD TORQUE SPECIFICATIONS IN POUND-FEET\*

GRADE 2		GRADE 5			GRADE 8	
SIZE	NC	NF	NC	NF	NC	NF
1/4"	5-7	6-8	9-11	11-13	12-14	14-16
(0.64 cm)	(0.69-0.97 kgm)	(0.83-1.11 kgm)	(1.24-1.52 kgm)	(1.52-1.80 kgm)	(1.66-1.94 kgm)	(1.94-2.21 kgm)
5/16"	11-13	13-15	18-20	21-23	25-27	28-30
(0.79 cm)	(1.52-1.80 kgm)	(1.80-2.07 kgm)	(2.49-2.77 kgm)	(2.90-3.18 kgm)	(3.46-3.73 kgm)	(3.87-4.15 kgm)
3/8"	18-21	19-22	28-33	30-35	41-46	43-48
(0.95 cm)	(2.49-2.90 kgm)	(2.63-3.04 kgm)	(3.87-4.56 kgm)	(4.15-4.84 kgm)	(5.67-6.36 kgm)	(5.95-6.64 kgm)
7/16"	30-33	32-35	44-49	50-55	69-74	72-77
(1.11 cm)	(4.15-4.56 kgm)	(4.43-4.84 kgm)	(6.09-6.78 kgm)	(6.92-7.61 kgm)	(9.54-10.23 kgm)	(9.96-10.65 kgm)
1/2"	45-50	45-50	68-73	68-73	95-105	95-105
(1.27 cm)	(6.22-6.92 kgm)	(6.22-6.92 kgm)	(9.40-10.10 kgm)	(9.40-10.10 kgm)	(13.14-14.52 kgm)	(13.14-14.52 kgm)
9/16"	60-65	60-65	95-105	95-105	130-140	130-140
(1.43 cm)	(8.30-8.99 kgm)	(8.30-8.99 kgm)	(13.14-14.52 kgm)	(13.14-14.52 kgm)	(17.98-19.36 kgm)	(17.98-19.36 kgm)
5/8"	75-85	75-85	125-135	125-135	170-190	170-190
(1.59 cm)	(10.37-11.76 kgm)	(10.37-11.76 kgm)	(17.29-18.67 kgm)	(17.29-18.67 kgm)	(23.51-26.28 kgm)	(23.51-26.28 kgm)
3/4"	125-135	125-135	210-230	210-230	290-310	290-310
(1.91 cm)	(17.29-18.67 kgm)	(17.29-18.67 kgm)	(29.04-31.81 kgm)	(29.04-31.81 kgm)	(40.11-42.88 kgm)	(40.11-42.88 kgm)
7/8"	105-115	105-115	290-310	290-210	450-500	450-500
(2.22 cm)	(14.52-15.90 kgm)	(14.52-15.90 kgm)	(40.11-42.88 kgm)	(40.11-42.88 kgm)	(62.24-69.15 kgm)	(62.24-69.15 kgm)
1"	140-150	450-475	380-410		600-630	
(2.54 cm)	(19.36-20.75 kgm)	(62.24-65.69 kgm)	(52.54-56.70 kgm)		(82.98-87.13 kgm)	

\*All torque values listed in this table are for threads lubricated with engine oil.

1-8. Difference in Models.

This manual covers both the Eidal and Edro Model M-532 Laundry Unit. Difference in models do exist and are annotated in the applicable maintenance paragraph. The differences are as follows:

a. Redesigned washer-extractor main drive assembly.

b. Transportation tiedown struts (washer-extractor).

c. Washer-extractor control panel assembly. (The air actuated control solenoid valve).

d. Design important of trailer chassis.

# CHAPTER 2

## OPERATING INSTRUCTIONS

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### Section I. OPERATING PROCEDURES

#### **WARNING**

If equipment fails to operate, refer to troubleshooting procedures in Chapter 3.

#### **CAUTION**

Prior to all towing operations of the laundry unit, in order to prevent damaged or broken mercury bulbs utilized with the dryer tumbler air temperature control, it is essential that the following protective measures be taken.

(1) Remove the dial face cover from the control. Insert cushioning material, such as soft sponge robber or packing paper into the mercury bulb housing of the control. Reinstall the dial face cover.

(2) Upon completion of the towing operation, remove the cushioning material from the mercury bulb housing and reinstall the cover.

#### **2-1. General**

This section describes, locates, illustrates, and furnishes the operator, crew, or organizational maintenance personnel sufficient information

about the various controls and instruments for the proper operation of the laundry unit.

#### **2-2. Controls and Instruments**

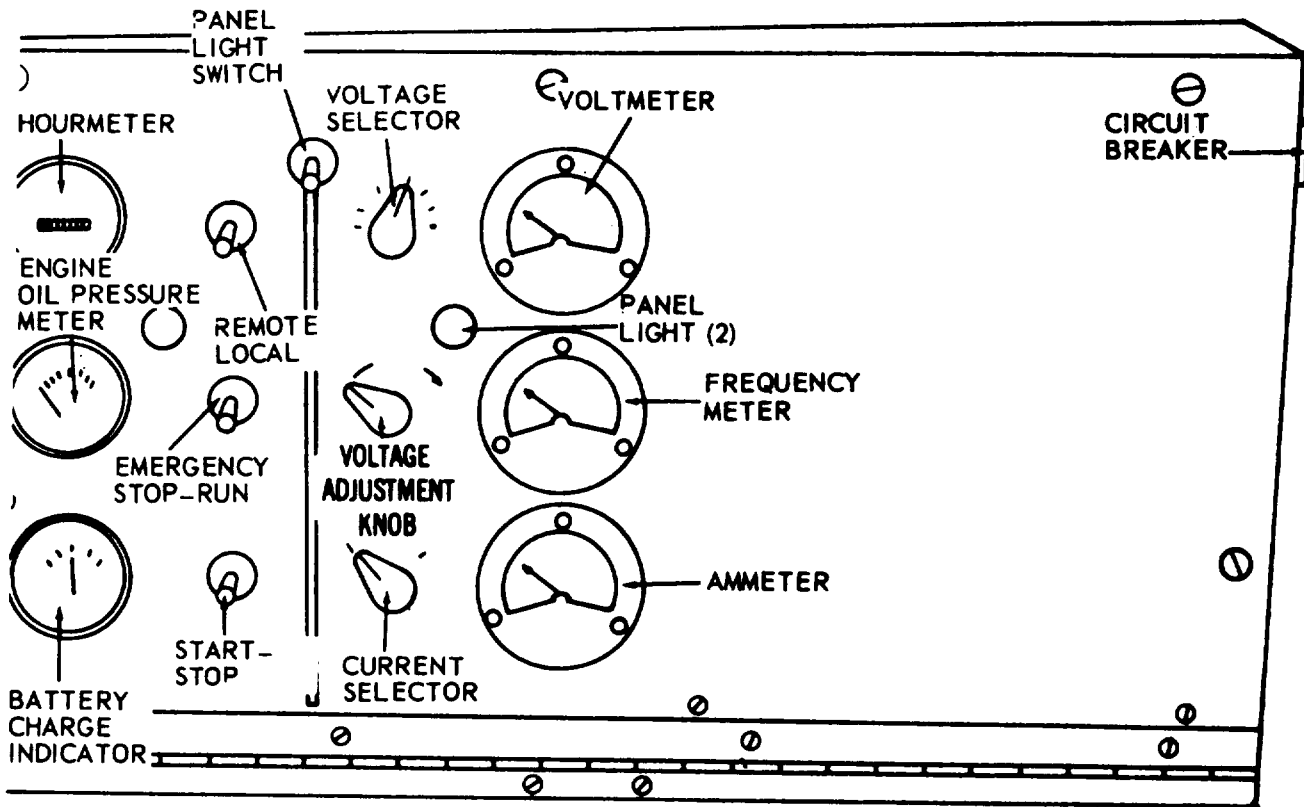
*a. Trailer.* Refer to TM 9-2330-274-14 for the location and purpose of the trailer controls.

*b. Engine-Generator.* The purpose of the controls and instruments and the normal and maximum reading of the instruments are illustrated in figure 2-1.

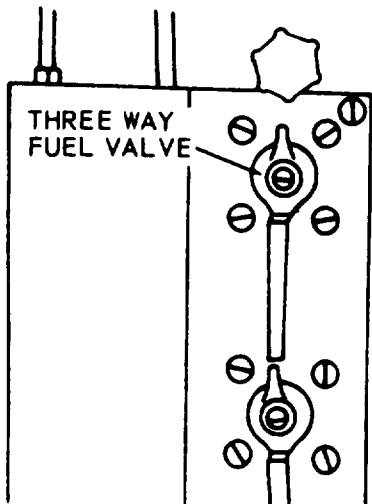
#### **WARNING**

**If operating a laundry unit with a Model M-80 Water Heater (NSN 4520-01-162-0385) in a shelter or other enclosed area, ensure the area is well-ventilated. Noxious fumes may flow back through the exhaust ducts after the water reaches the proper temperature and the blower shuts off.**

*c. Water Heater.* Refer to figure 2-2 for the purpose and location of the water heater and instruments.

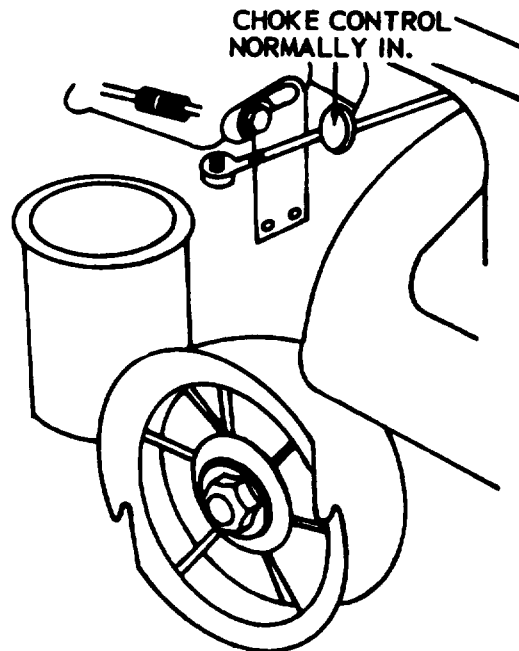


A. ENGINE AND GENERATOR CONTROLS AND INSTRUMENTS.



NOTE:  
FOR FUEL TANK SUPPLY, PLACE IN SET POSITION. FOR AUXILIARY FUEL SUPPLY, PLACE IN AUX POSITION.

B. THREE WAY FUEL VALVE.



C. CHOKE CONTROL

Figure 2-1. Controls and instruments (engine-generator).

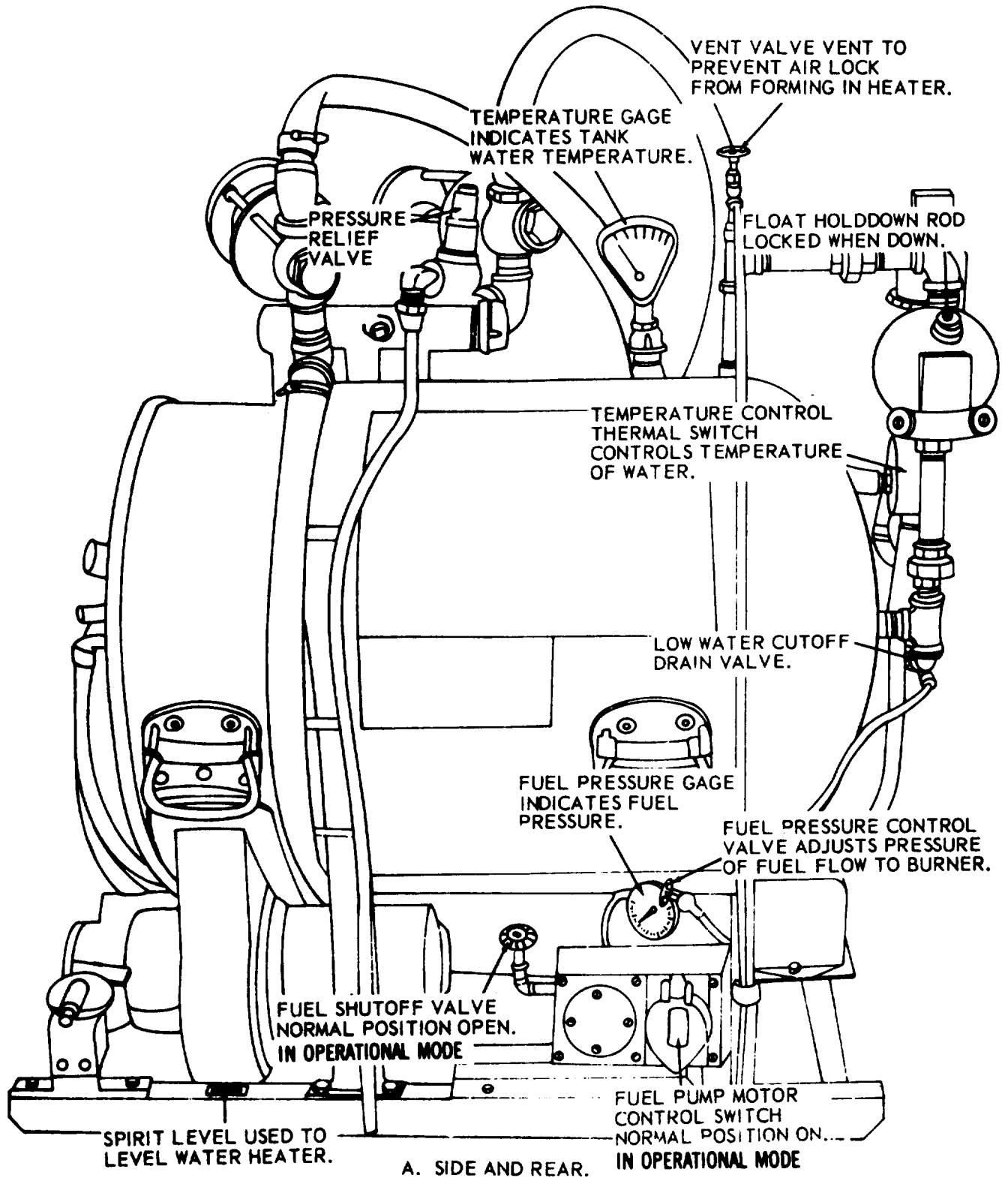


Figure 2-2. Water heater, controls and instruments (sheet 1 of 2).

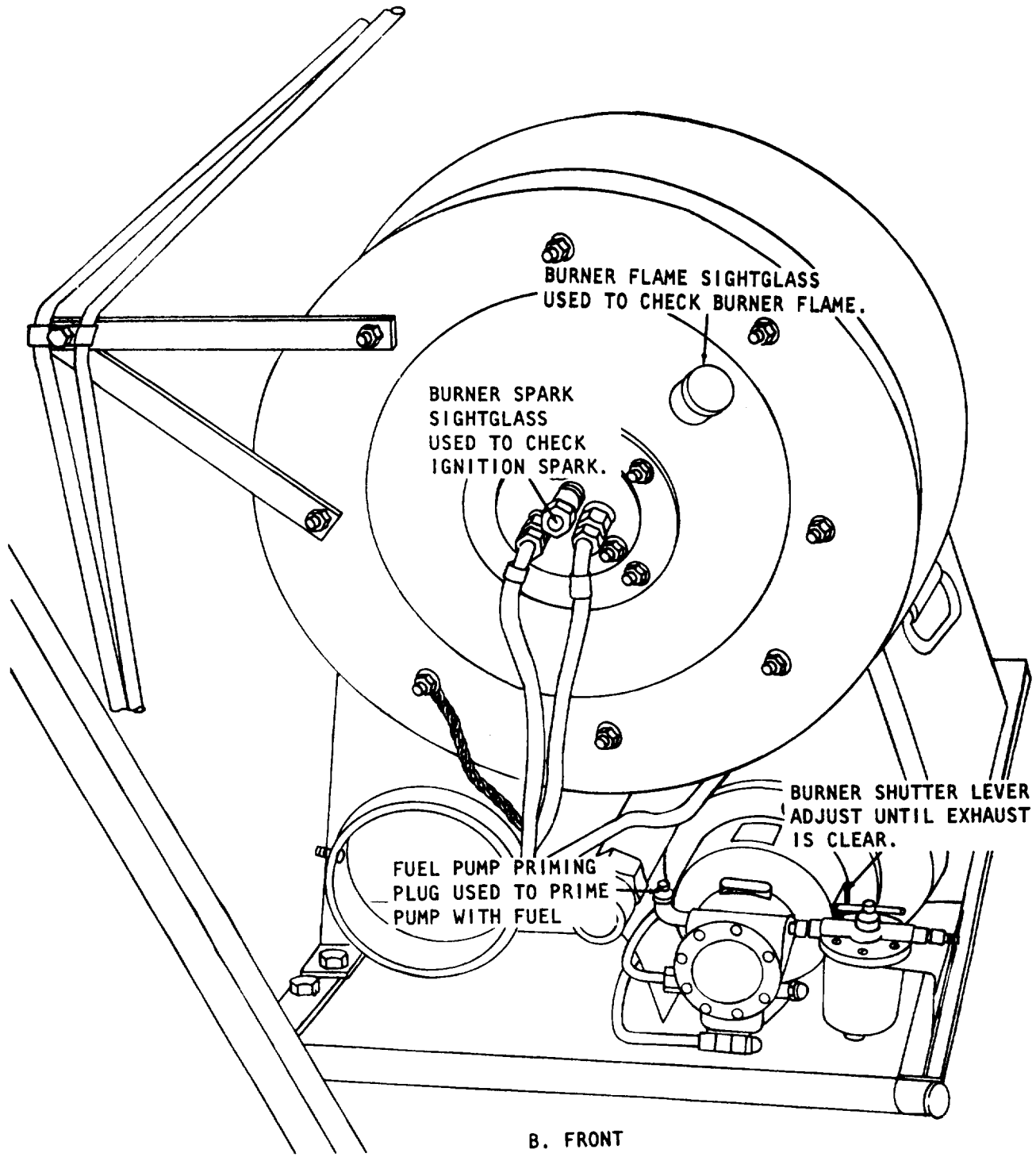


Figure 2-2. Water heater, controls and instruments (sheet 2 of 2).

d. *Water Pump.* Refer to figure 2-3 for the purpose and location of the water pump controls and instruments.

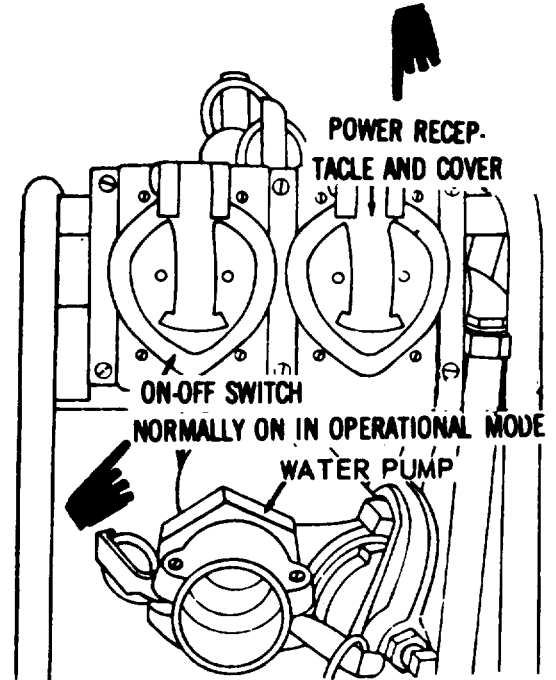
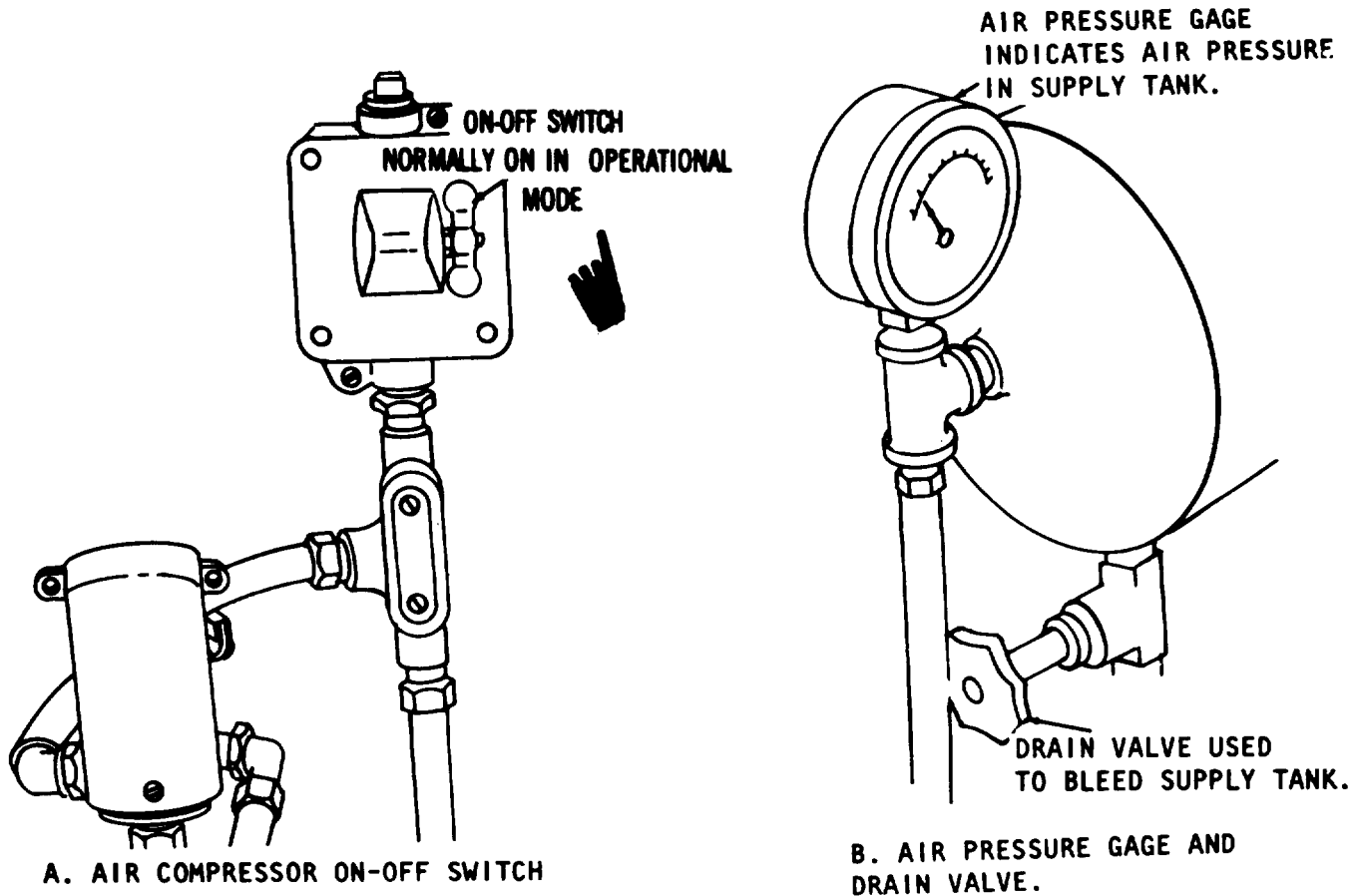


Figure 2-2. Water pump controls

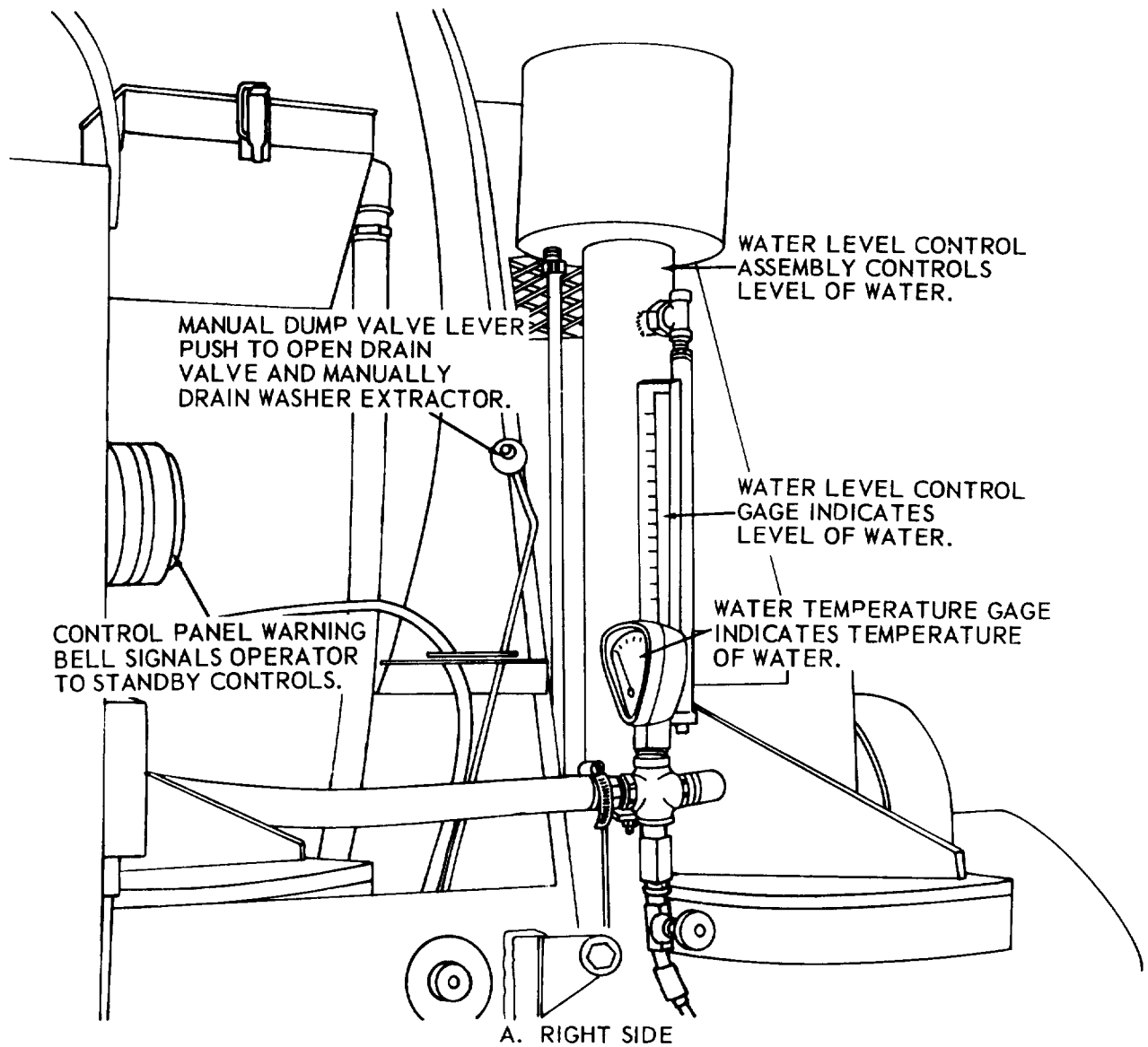
e. *Air Compressor.* Refer to figure 2-4 for the purpose and location of the air compressor controls and instruments.



2-4. Air compressor, controls and instruments

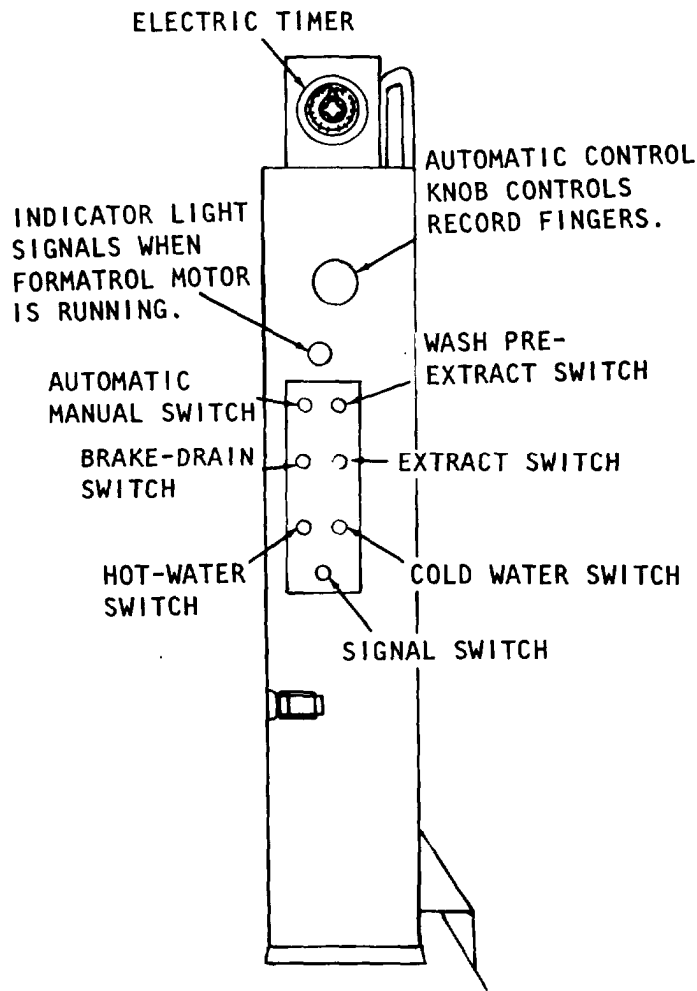


f. *Washer-Extractor.* Refer to figure 2-5 and table 2-1 for the purpose and location of the washer-extractor controls and instruments.



TS 10-3510-208-12/2-5 (Sheet 1 of 2)

Figure 2-5. Washer-extractor, controls and instruments (sheet 1 of 2).



B. CONTROL PANEL

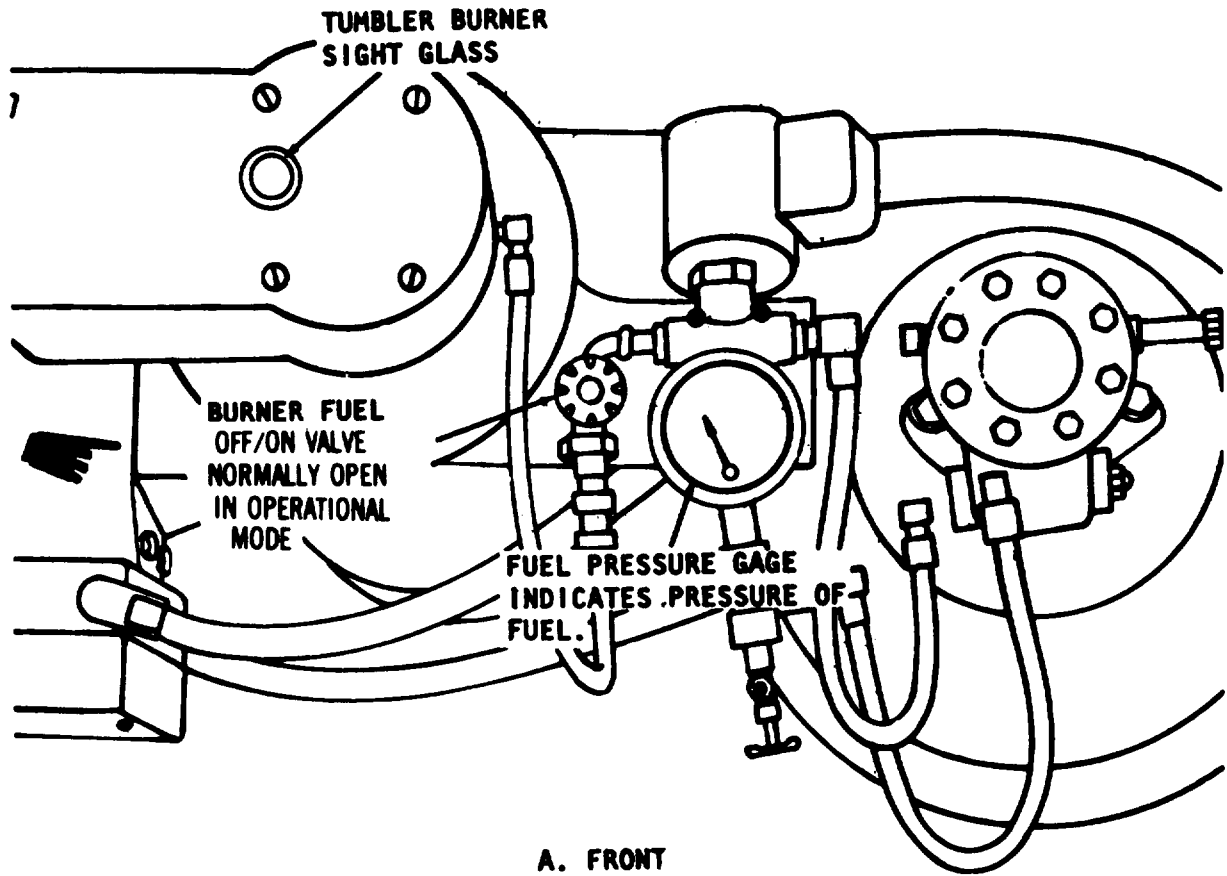
TS 3510-208-12/2-5 (Sheet 2 of 2)

Figure 2-5. Washer-extractor, controls and instruments (sheet 2 of 2)

Table 2-1. Record Control Finger Functions

Finger No.	Function
4	Preextract.
5	Extract.
6	Brake.
7	Hot water.
8	Washer motor.
9	Cold water.
11	Drum stop.
12	Drain.
14	Signal.
15	Low water level.
16	High water level.
21	Common lead.

g. *Tumbler*. Refer to figure 2-6 for the purpose and location of the tumbler controls and instruments.



2-6. *Tumbler*, controls end instruments (sheet 1 of 2)

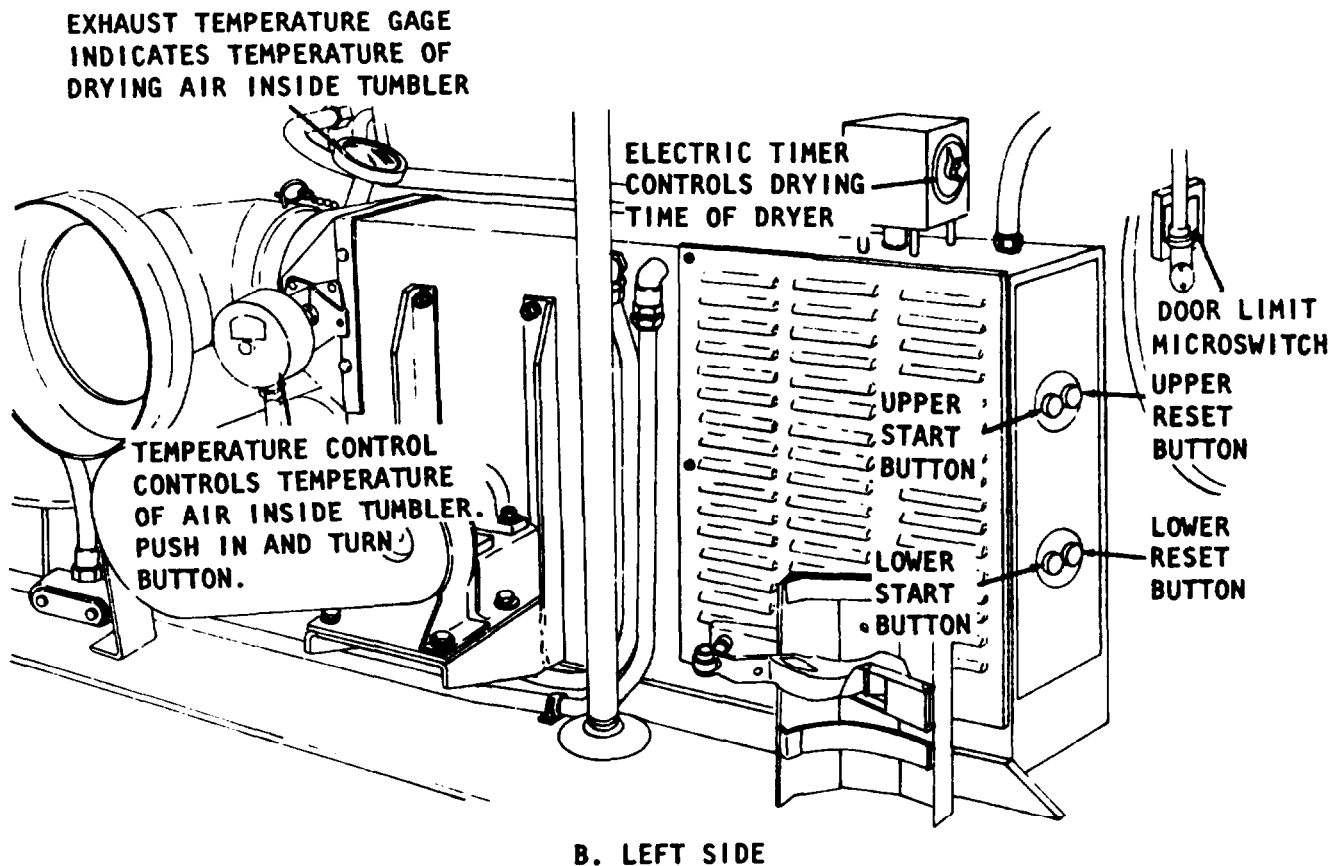


Figure 2-6. Tumbler, controls and instruments (sheet 2 of 2).

**2-3. Operating the Equipment**

*a. General.*

(1) The instructions in this section are published for the information and guidance of the personnel responsible for the operation of the laundry unit.

(2) The operator must know how to perform every operation of which the laundry unit is capable. This section gives instructions on starting, stopping or shutting down the unit, and coordinating the basic motions to perform the task for which the equipment is designed. Since nearly every job presents a different problem, the operator may have to vary the given procedure to fit the individual job.

(3) It is essential for the well-being and safety of the operator and persons assisting him that safety warnings appearing throughout this manual be strictly observed.

*b. Starting.*

(1) *Preparation for Starting.* Refer to paragraph 3-3 and perform the daily operator preventive maintenance service on the laundry unit before starting.

(2) *Engine-Generator.*

(a) *Preparation for Starting.*

1. Place the three-way fuel valve (fig. 2-1) in the SET position when starting, then position the valve in the set or AUX position, depending on the source of fuel.

2. See that the unit is properly grounded. Refer to TM 5-115-275-14.

3. Connect the load lines (fig. 2-7) and select the proper voltage (fig. 2-8).

**WARNING**

Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for

unprotected personnel, wear ear muffs or ear plugs which were fitted by a trained professional.

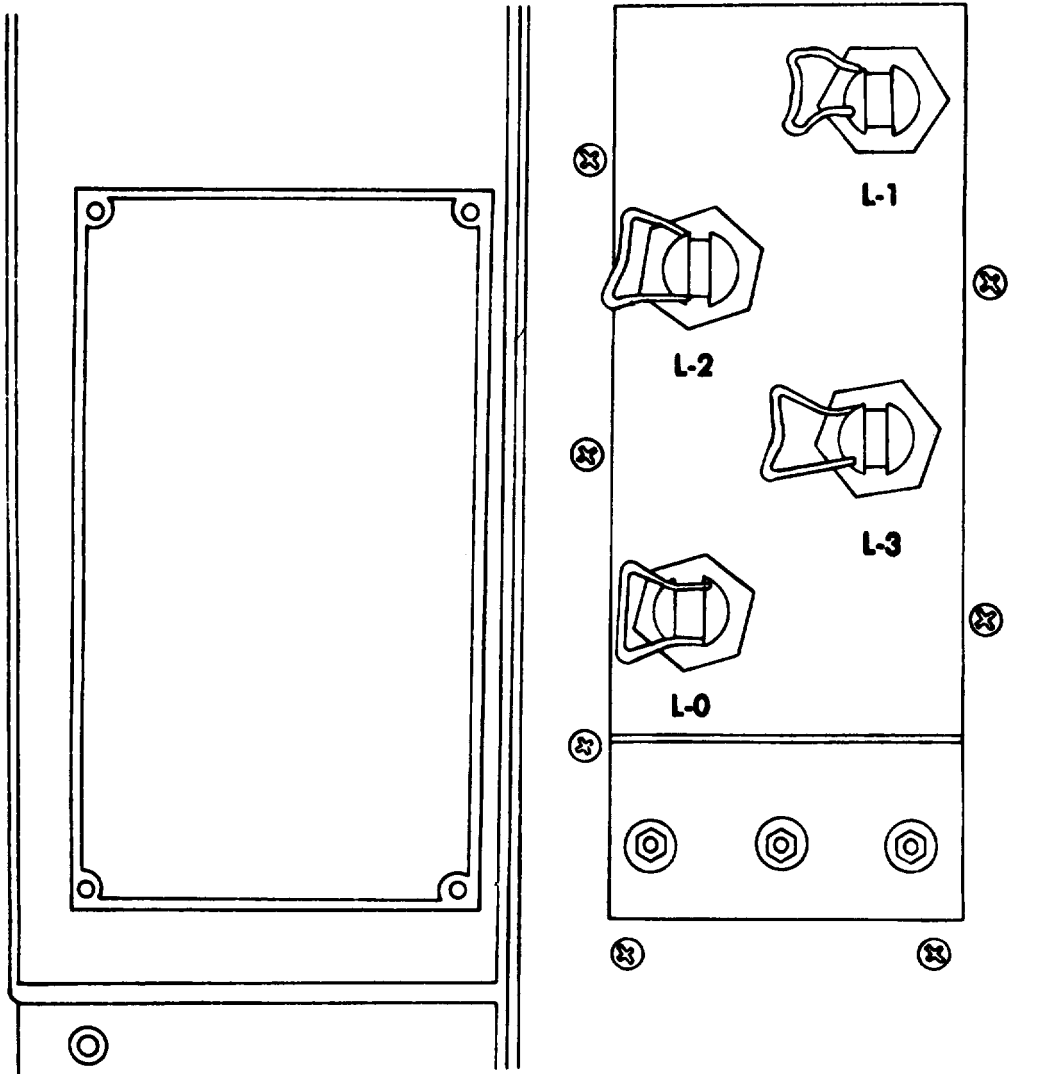
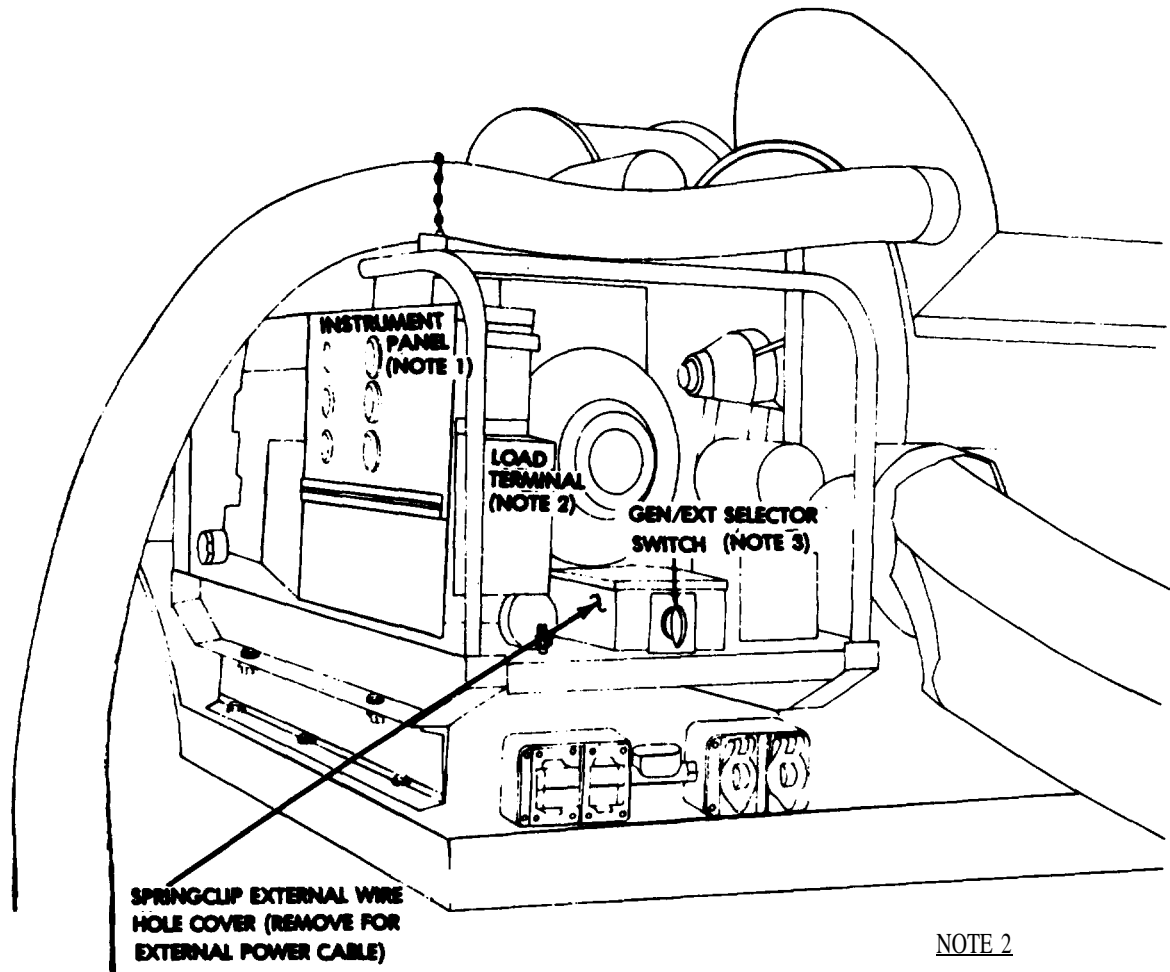


Figure 2-7. Load connections.



**NOTE 1**

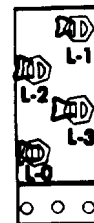
VOLTAGE SELECTION SWITCH (LOCATED BEHIND INSTRUMENT PANEL) MUST BE IN THE 120/208V, 3 PH POSITION. (TM 5-6115-275-15 Fig. 2-6)

**NOTE 3**

GEN/EXT SELECTOR SWITCH TO MAKE SELECTION FOR TYPE OF INPUT POWER.

**NOTE 2**

LOAD TERMINALS ARE LOCATED BEHIND COVER WITH OUTPUT TERMINAL NUMBERS AS FOLLOWS



(TM 5-6115-275-15, Fig. 2-5)

Figure 2-8. Voltage selection.

(b) *Electrical Starting.* Start the generator set using the following instructions and figure 2-9.

1. Place circuit breaker in OFF position.
2. Place remote-local switch in LOCAL position.
3. Place emergency stop-run switch in NORMAL position.
4. Turn voltage adjusting knob fully counterclockwise.
5. Set voltage selector switch to monitor desired phase or line voltage.
6. Set current selector switch to monitor desired current.

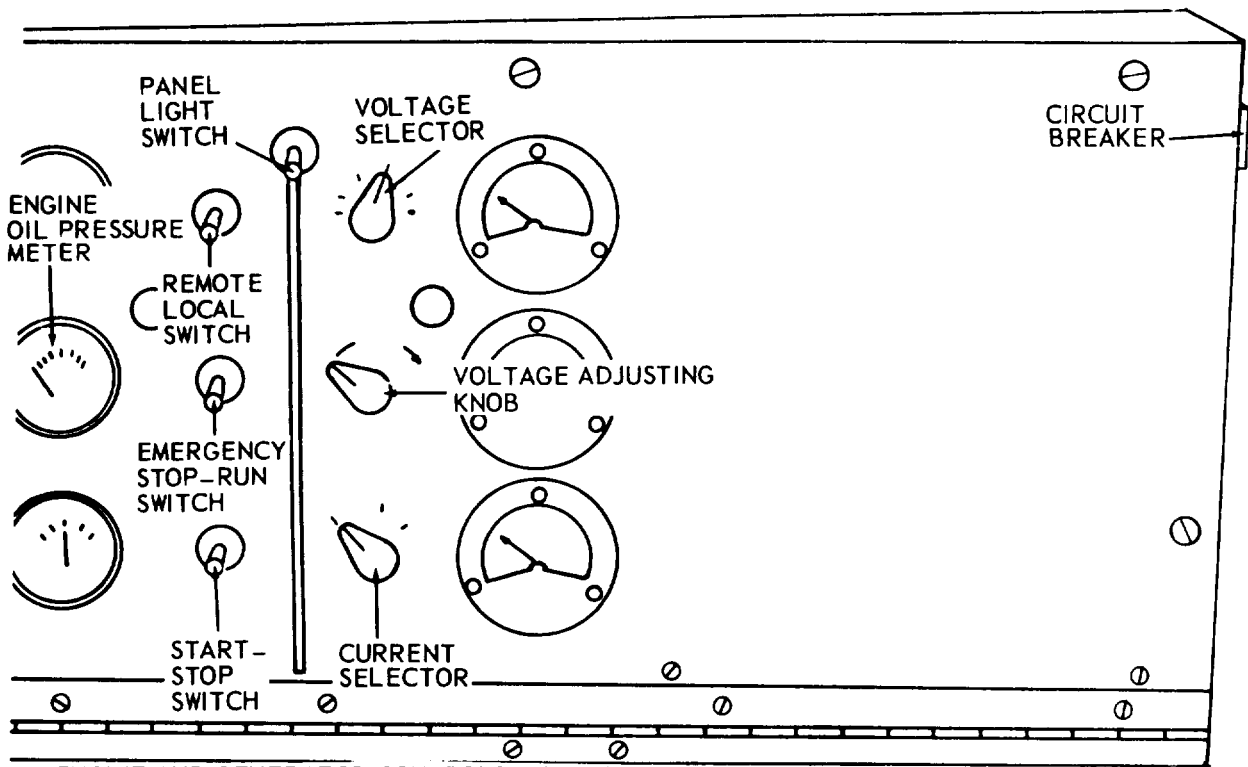
7. Place governor control in GOVERN position.

8. Pull OUT choke control, after engine starts slowly return to IN position.

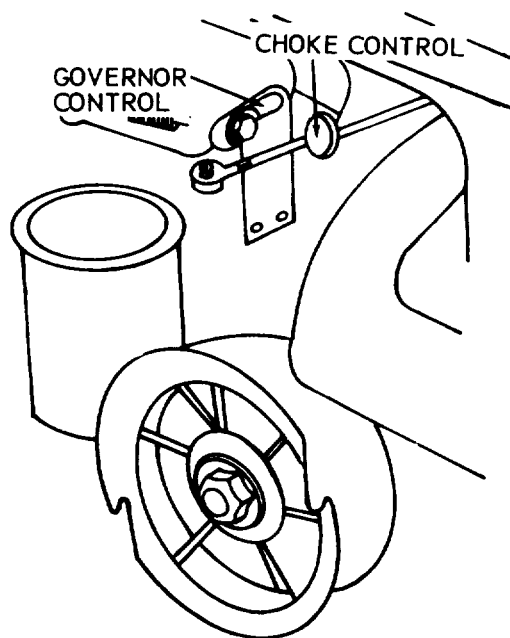
**NOTE**

Before starting engine, check load terminals for correct output connection and voltage phase switch position.

9. Press the start-stop switch to the START position, release after engine starts.



A. ENGINE AND GENERATOR CONTROLS AND INSTRUMENTS.



B. GOVERNOR AND CHOKE CONTROL.

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Figure 2-9. Generator electrical starting controls.

(c) *Manual Starting.* Manually start the generator set using the following instructions and figure 2-10.

NOTE

Before starting perform step 1. of para (b) as listed above.

**CAUTION**

Do not operate at idle speed. At idle speed, frequency drops below 60 cycles, exciter field voltage increases, thereby causing voltage regulator to operate at maximum output. This causes overloading of power transistor.

NOTE

Manual start should not be attempted with a weak battery or without a battery. Battery voltage is

essential in performing step 4. below. Minimum voltage required for energizing K1 is 18 volts.

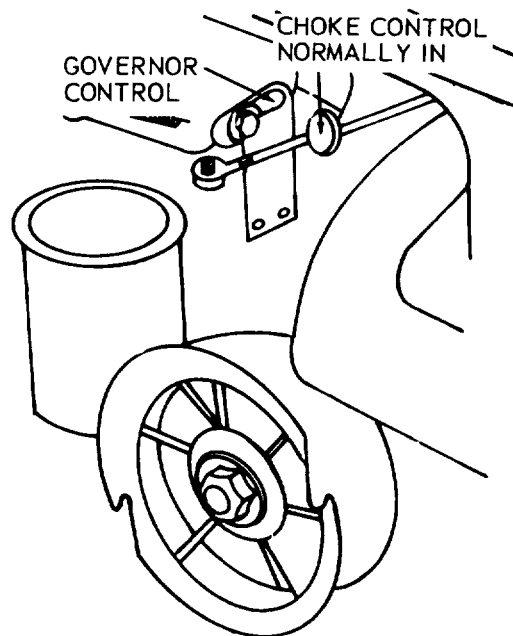
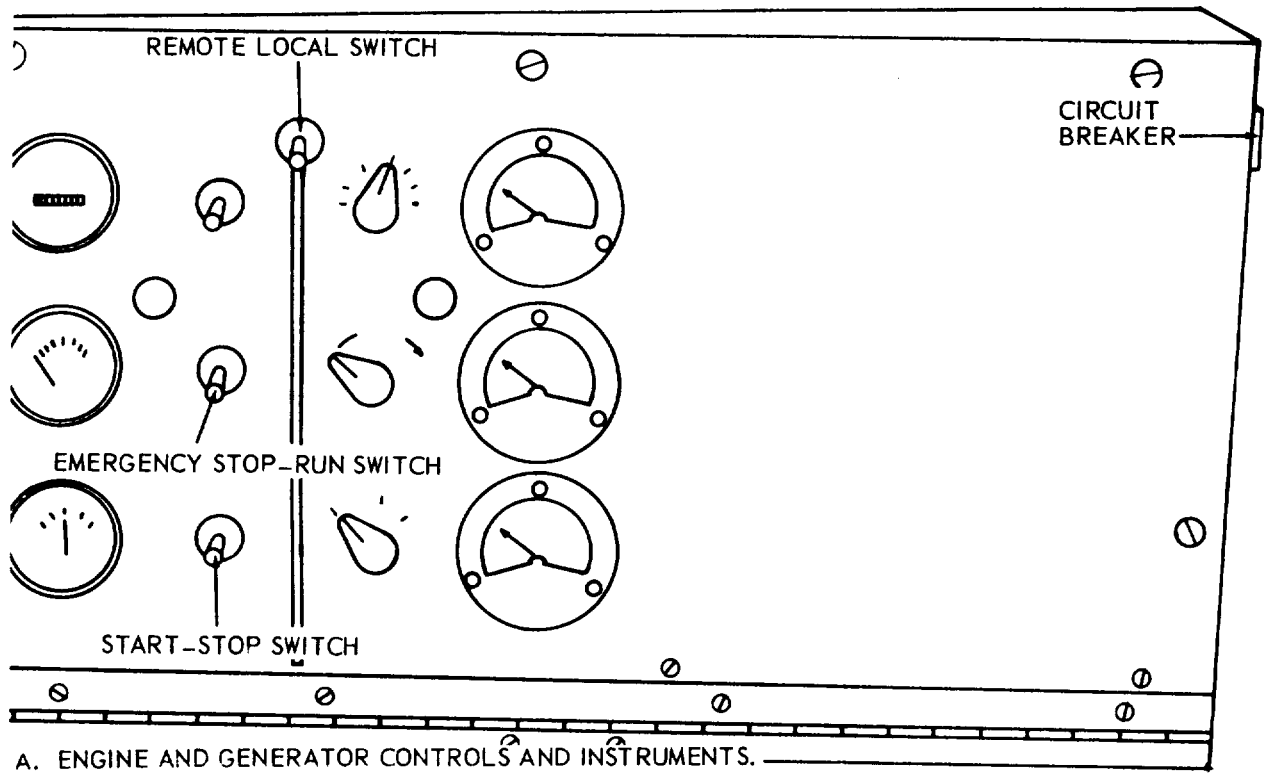
1. Place emergency stop-run switch in **EMERGENCY RUN** position.

2. Place remote-local switch in **LOCAL** position.

3. Pull **OUT** choke control, after engine starts slowly return choke control to the **IN** position.

4. When engine oil pressure reaches operating pressure, place emergency stop-run switch in **NORMAL** position and at the same time, press start-stop switch to **START** position and release.





TS 10-3510-208-12/2-10

Figure 2-10. Generator manual starting controls.

(3) *Air Compressor.* Refer to the following instructions and figure 2-11 and start the air compressor.

(a) Push on-off switch to ON position.

(b) When air pressure gage reading is between 60 and 70 pounds (8.30 and 9.68 kgm), open bleeder valve to bleed condensation from air supply tank. Close bleeder valve.

(c) Be sure air pressure gage reads between 75 and 90 pounds (10.37 and 12.45 kgm) before starting operation.

(d) Turn off engine-generator and listen for air leaks.

(e) Rest art engine-generator.

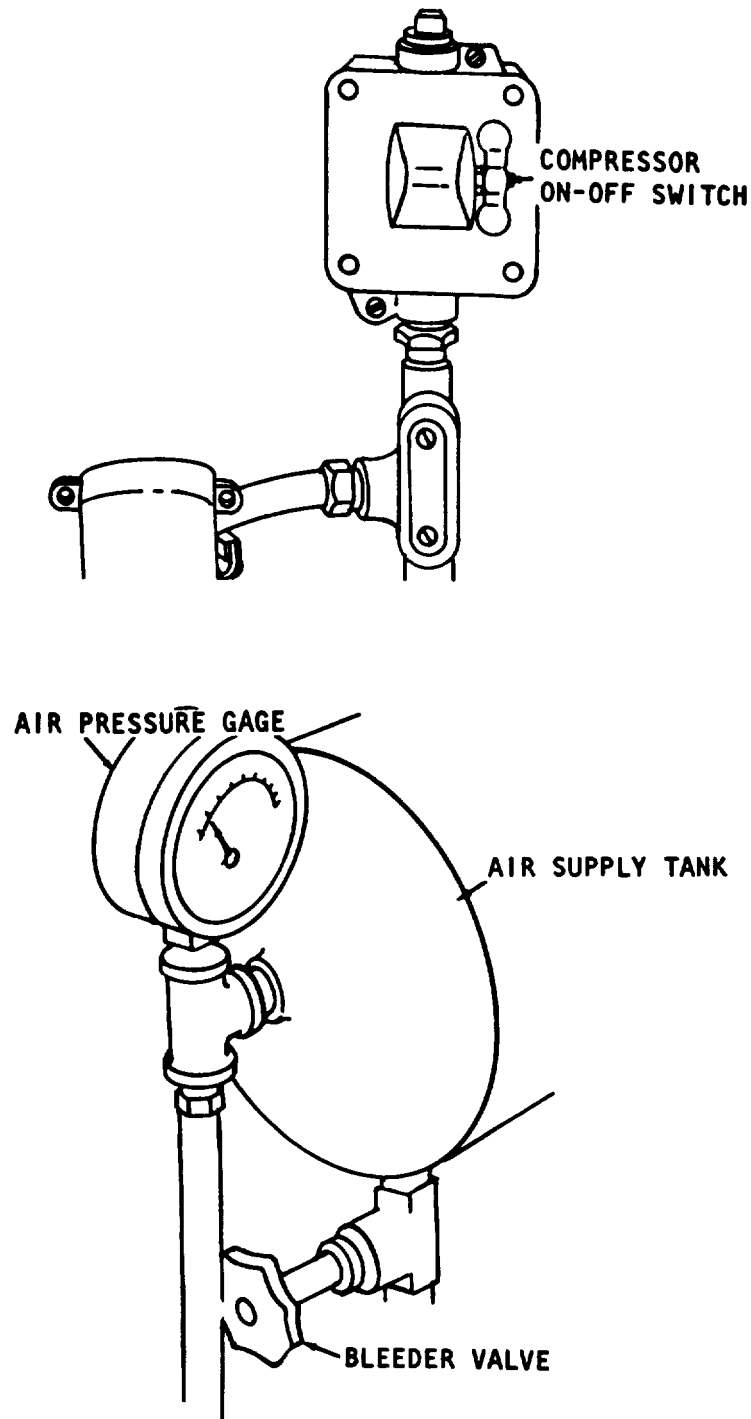


Figure 2-11. Air compressor starting.

**(4) Water Heater and Water Pump Starting Instructions.**

(a) Push the water pump power switch (located on the frame of the engine-generator) to the ON position.

(b) Remove the priming plug, fill pump

with water, then replace the priming plug. Push the water pump switch to the ON position.

(c) Make certain the float holddown rod is in the released position.

(d) Open the water heater vent valve and keep it open until a steady stream of water flows from the vent drain pipe.

**WARNING**

If operating a laundry unit with a Model M-80 Water Heater (NSN 452041-162-0385) in a shelter or other enclosed area, ensure the area is well-ventilated. Noxious fumes may flow back through the exhaust ducts after the water reaches the proper temperature and the blower shuts off.

(e) Adjust temperature control thermal switch to position No. 4, and push the water heater switch (fig. 2-2) to the ON position.

(f) Be sure the fuel pressure gage (fig. 2-2) registers 80 psi (5.62 kg per sq cm). If the gage shows less than this, check for air leaks in the suction line. Vent or prime the pump as necessary. Adjust the pump pressure adjusting setscrew to increase the pressure.

(g) Observe through the burner spark sightglass (fig. 2-2) to determine that a spark is present.

(h) Open the fuel pressure control valve (fig. 2-2) until the fuel pressure registers 60 to 80 psi (4.22 to 5.62 kg per sq cm).

**WARNING**

Be sure the Burner Shutoff Valve and the Fuel Pressure Control Valve is not opened unless a spark is present. Failure to observe this warning may result in serious injury to personnel. Turn Burner Shutoff Valve clockwise to OFF position, Fuel Pressure Control Valve is turned counterclockwise to decrease the flow of fuel to the Burner and clockwise to increase the flow of fuel to the Burner.

(i) Turn the burner shutter lever until the shutter is about halfway open.

(j) Open the fuel shutoff valve about one-quarter turn, and look through the burner flame sightglass (fig. 2-2) to determine that a flame is present. If a flame is present, turn the shutoff valve all the way on.

(k) Make adjustments as necessary to the shutter so that no smoke is evident in the heater exhaust.

(l) For normal wash water temperature set the water temperature control thermal switch (fig. 2-2) at 4. When the temperature limit is reached, the heater will shutoff automatically and the fuel pressure gage will register zero. Observe the temperature gage to determine the temperature of the water when the heater cuts off. The proper temperature limit for operation is 160F. (71 C). Adjust the thermal switch until the heater automatically shuts off at 160F (71 C).

**NOTE**

Individual heater units will vary as to the most efficient fuel to air ratio adjustment. The operator

should adjust the fuel and air controls until the most efficient operation of the unit is obtained. Normally, 60-75 psi fuel pressure with air ratio set for clear exhaust (approximately one-half air shutter opening) will result in efficient operation of the unit. This will provide a 160F (128C) water temperature at the number four position on the temperature control for normal laundry operation.

(m) Make fuel pressure adjustments and motor corrections as listed below:

1. Adjust the fuel pressure until the pressure gage reads approximately 85 psi (5.978 kg per sq cm), and adjust the air shutter as necessary to obtain optimum heater performance.

2. The blower and fuel pump electric motor are equipped with thermal overload protectors which will, in case of bind or short circuit, react by opening the circuit to the motor in less than 20 seconds. When this condition occurs, a hum from the motor will be audible as the motor temperature rises. After activation of the thermal protector, it will be necessary to wait for the motor to cool before the thermal protector can be reset. To reset, press the button located on the endbell of the motor. If the motor does not turn after resetting refer to table 4-2, Step 3 of 7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL and follow the listed instructions.

(5) *Tumbler Starting Instruction.*

(a) Set the temperature control (fig. 2-6) to the proper setting.

(b) Push the start button on the upper manual starter (fig. 2-6).

(c) Make certain the fuel pump rotates in the correct direction, as indicated by the arrow on the fuel pump.

(d) Observe the reading on the fuel gage.

1. If the indicator on the gage (fig. 2-6) jumps back and forth after 20 seconds of operation, there is a leak in the fuel line or a shortage of fuel in the fuel pump. Push upper stop-reset button, and make a thorough check of each fitting and connection of fuel supply lines to the fuel container. If necessary, disconnect fitting to make certain that screw threads are in good condition,

2. Push the upper start button and observe the reading of the fuel pressure gage. The gage should indicate 100 psi (7.03 kg per sq cm). If the gage does not indicate the proper pressure, adjust the fuel pump,

(e) Observe through the burner sightglass to determine if a spark is present. The reflection of the spark and not the spark itself, may be seen.

(f) Push the start button of the lower manual starter assembly (fig. 2,6).

(g) Open the burner fuel cutoff valve one full turn. If the fuel does not ignite within 10 seconds, close the valve and wait 10 to 15 seconds before again opening the valve for fuel ignition. The flame should become steady within 10 seconds after fuel ignites. Adjust the air shutters so that the exhaust from the heater has a steady, muffled roar, as distinguished from a pulsating roar. The flame should be slightly orange. Adjust the shutters as necessary.

(h) Open the door to the tumbler dryer to see if the flame goes out, then close the door and lock it to see if the flame returns. If not, refer to troubleshooting chart.

(i) Open the door all the way and push in the lower manual starter assembly STOP RESET button.

(j) When clothes are ready for drying place in dryer, shut the door and push in the lower START button.

(6) **Washer-Extractor.** The washer-extractor is now ready for manual operation. If the unit is to be operated by the automatic controls, be sure the proper formula control record is installed on the drum. Perform the following steps to install the formula control record.

(a) Refer to the following instructions and

Figure 2-12 to remove and install the formula control record.

1. Turn off power source and remove control box cover by releasing the clamps securing the control box cover to control box.
2. Raise finger lock, open lock handle, and raise finger block out of the way.
3. Pull out on automatic control knob and remove formula drum from drum heads.
4. Remove the record lock from the tube in drum and remove formula record.
5. Mount the desired formula record over drum screen with bent ends of record in slot of drum. Install record lock, being sure it separates ends of record.
6. Pull out on automatic control knob and mount drum on shoulder of drive end (left hand) drum head, rotating drum slowly by hand, until drive clips seat in drum head.
7. Release knob so that free end drum head enters drum. Turn knob counterclockwise until notch in drum head seats over clip.
8. Lower finger block and lock in place. Make sure fingers contact and are at proper columns on record. Close control box cover.

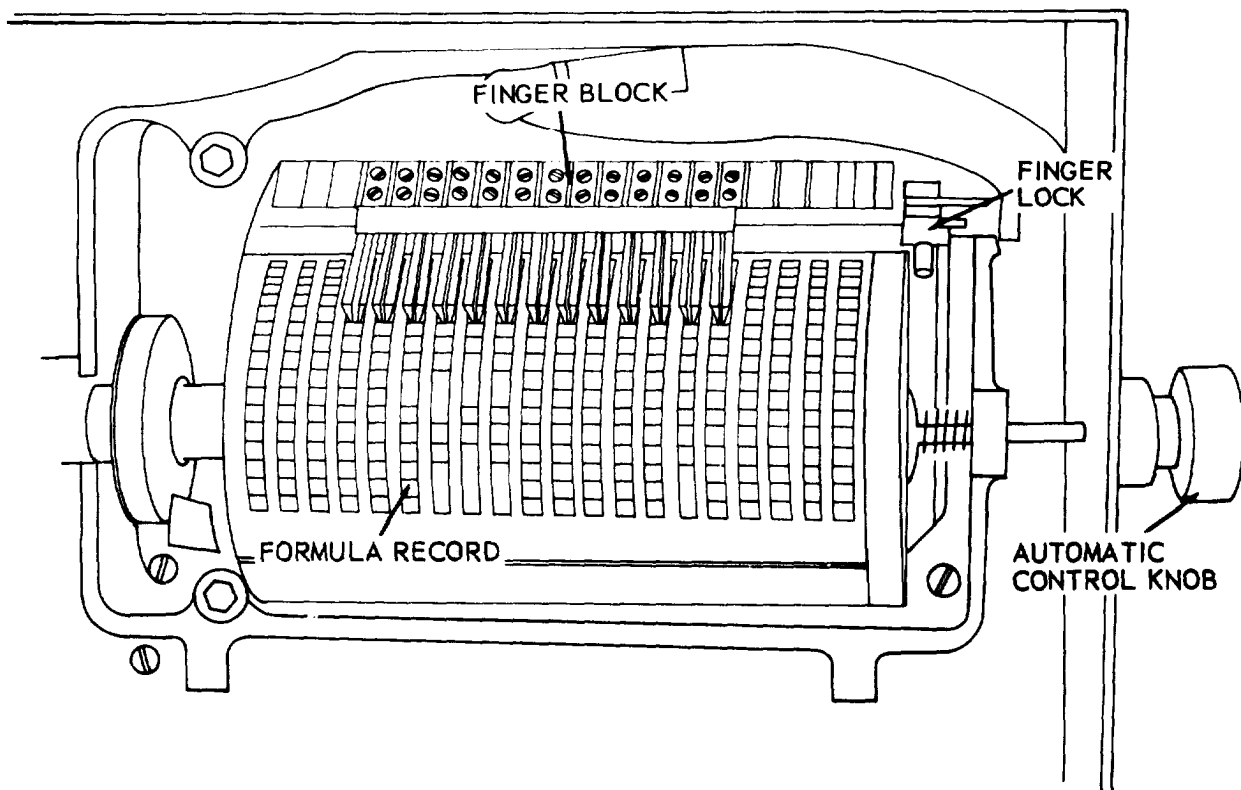


Figure 2-12. Formula control record, removal and installation

(b) Position the control box cover in place on the main control box and secure by depressing the clamps to lock the cover in place.

c. *Generator Operation.* Refer to the following instructions and figure 2-13 for generator operation,

**WARNING**

Do not install or change load cables or change voltage selector switch while the generator is in operation.

- (1) Set voltage selector switch for desired output .
- (2) Place circuit breaker in the *OFF* position.
- (3) Insure that load line is connected to the proper terminals. Refer to figure 2-7.
- (4) Start the generator set. Refer to paragraph 2-3b .
- (5) Observe engine oil pressure indicator for proper oil pressure.

(6) Observe battery-charging meter for proper operation.

(7) Check frequency meter for proper reading. If meter dose not indicate 61 cycle, the engine governor must be adjusted.

(8) Check generator output voltage. Output voltage is controlled by "VOLT ADJ" knob on the front panel.

**NOTE**

If no output is indicated the generator set has been in storage or out of operation for a long period of time, lower the front panel of the control cabinet and momentarily press the field flash switch.

(9) When set is adjusted to proper levels and the engine has reached operating temperature (3 to 5 minutes) place circuit breaker in *ON* position.

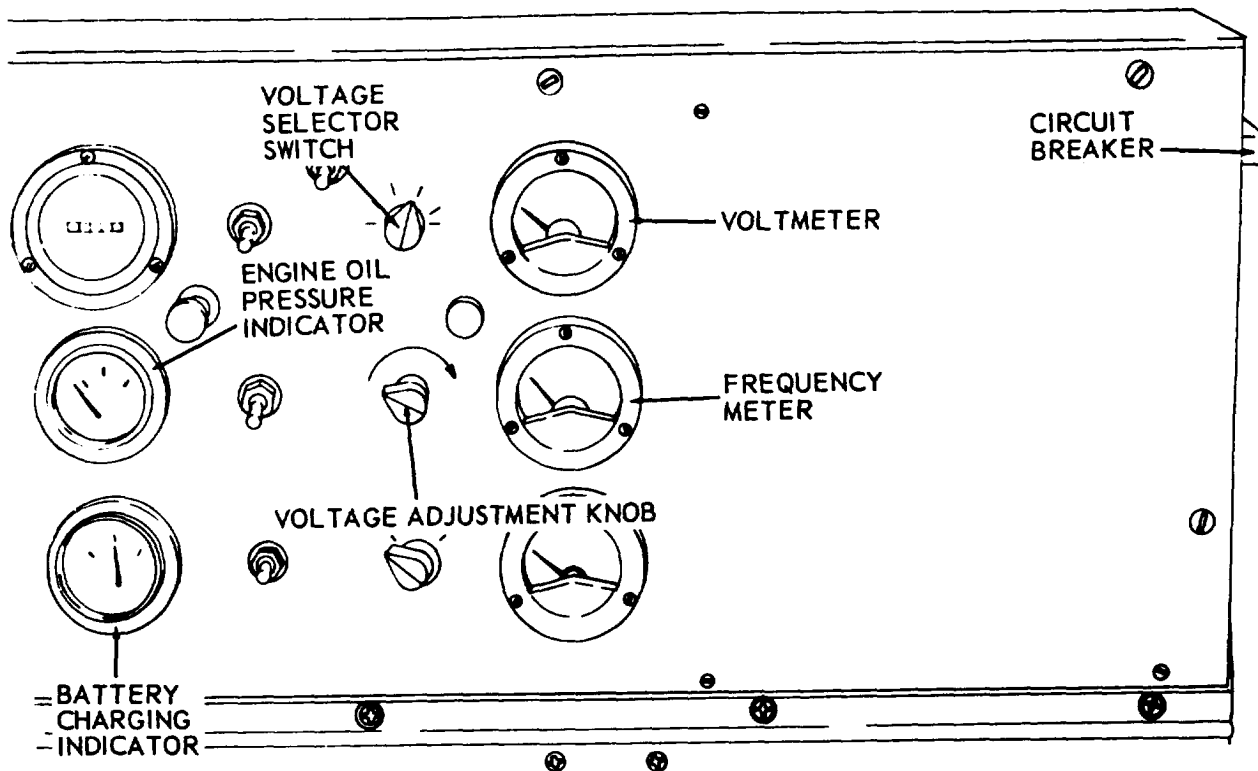


Figure 2-13. Engine-generator operating controls.

d. *Laundry Unit Operation.*

(1) *Washing and Extracting the Load.*

(a) *Automatic Operation.*

1. Make certain the AUTO-MANUAL control switch is in the OFF position. With the proper control record on the drum, turn the control

knob (fig. 2-5) counterclockwise until the record is at the start of the cycle.

2. Load the washer-extractor with 60 pounds (27 kg) of wash, refer to table 2-2 as a reference to the weight of certain items.

Table 2-2. List of Weights

COLD-DRY STANDARD ENSEMBLE		Dry Weight
Items		(pounds)
(One each-medium size)		(kg)
CAP, field, pile, M-51 . . . . .		.45 (0.20 kg)
HOOD, winter, w/fur ruff, M-51 . . . . .		.85 (0.38 kg)
MITTEN SET, arctic . . . . .		1.45 (0.65 kg)
MITTEN, inserts,3-fmger . . . . .		.20 (0.09 kg)
SOCKS, wool, cushion sole . . . . .		.20 (0.09 kg)
BOOT, insulated, combat, rubber, white (cold-dry) . . . . .		5.00 (2.25 kg)
MUFFLER, wool . . . . .		.40 (0.18 kg)
SUSPENDERS, trousers . . . . .		.25 (0.11 kg)
UNDERSHIRT, winter, M-1950 . . . . .		.87 (0.39 kg)
DRAWERS, winter, M-1950 . . . . .		.88 (0.40 kg)
TROUSERS, shell, field, M-51 . . . . .		2.25 (1.013 kg)
LINER, trousers, shell, field, M-51 . . . . .		1.70 (0.77 kg)
SHIRT, field, wool, OG108 . . . . .		1.60 (0.72 kg)
COAT, field, cotton, M-51 . . . . .		3.25 (1.46 kg)
LINER, coat, field, cotton, M-51 . . . . .		2.20 (0.99 kg)
TROUSERS, shell, arctic, M-51 . . . . .		1.12 (0.50 kg)
LINER, trousers, shell, arctic, M-51 . . . . .		2.20 (0.99 kg)
PARKA, shell, M-51 . . . . .		2.25 (1.013 kg)
LINER, parka, shell, M-51 . . . . .		3.10 (1.40 kg)
MITTENS, overwrite . . . . .		.20 (0.09 kg)
PARKA, overwrite . . . . .		1.50 (0.68 kg)
TROUSERS, overwhite . . . . .		.90 (0.41 kg)
<b>CHEMICAL PROTECTION</b>		
HOOD, field, protective, M-4 . . . . .		.60 (0.27 kg)
UNDERSHIRT, cotton, lightweight, special protective . . . . .		.70 (0.32kg)
DRAWERS, cotton, lightweight, special protective . . . . .		.85 (0.38 kg)
COAT (PARKA), vesicant protective . . . . .		1.80 (0.81 kg)
TROUSERS, vesicant protective. . . . .		.95 (0.43 kg)
<b>HOT WEATHER STANDARD ENSEMBLE</b>		
CAP, cotton, utility, OD . . . . .		.18 (0.081 kg)
SOCKS, wool, cushion sole . . . . .		.20 (0.09 kg)
UNDERSHIRT, cotton, knit, 1/4 sleeve . . . . .		.30 (0.14 kg)

Items (One each-medium size)	Dry Weight (pounds)
DRAWERS, cotton, shorts . . . . .	.22 (0.10 kg)
TROUSERS, cotton utility, OG 107 . . . . .	1.39 (0.63 kg)
SHIRT, cotton, utility,OG 107.. . . . .	1.35 (0.61 kg)
<b>CHEMICAL PROTECTION</b>	
HOOD, field, protective, M-4 . . . . .	.60 (0.27 kg)
UNDERSHIRT, cotton, lightweight, special protective . . . . .	.70 (0.32 kg)
DRAWERS, cotton, lightweight, special protective . . . . .	.85 (0.38 kg)
GLOVES, cotton, special (CW protective). . . . .	.35 (0.16 kg)
<b>HOSPITAL CLOTHING/LINEN</b> (Note: Representative Weights-Medium Sizes)	
SLIPPERS, canvas, pair . . . . .	1.2860 (.5833 kg)
CAP, oper, surg, green . . . . .	.0781 (.0345 kg)
GOWN, oper, surg, green . . . . .	1.2600 (.5715 kg)
TROUSERS, oper, aura . . . . .	7333 (.3326 kg)
SHIRT, mane, oper . . . . .	.7167 (.3250 kg)
ROBE, dress, cord . . . . .	2.2500 (1.013 kg)
GOWN, oper, surg, white . . . . .	2.000 (.9072 kg)
SHEET, bed, ctn, white . . . . .	2.000 1.9072 kg)
PILLOWCASE, ctn, white . . . . .	4.000 (1.814 kg)
SHEET, bed, ctn, green . . . . .	2.000 (.9072 kg)
SHEET, bed, ctn, fitted . . . . .	5833 (.2645 kg)
BLANKET, bed, ctn, white . . . . .	3.3750 (1.5309 kg)
BLANKET, heal, wool, od . . . . .	4.6667 (2.1168 kg)

3. Check the air compressor pressure gage (fig. 2-4), and determine that it registers at least 60 pounds(27 kg) pressure.

**NOTE**

The desirable pressure reading is 80 psi (5.62 kg per sq cm).

4. Add the proper amount of washing supplies through the supply lid. Refer to table 2-3 for the cotton wash formula and to table 2-4 for the wool wash formula.

*Table 2-3. Cotton Wash Formula for Manual Operation*

Operation	Water level	Time (includes filling & draining)	Water temperature (approx.)	Detergent
1. Suds . . . . .	8 in. (20.32 cm) . . . . . bin . . . . . bin . . . . .	5min . . . . .	100F. (38C.) . . . . .	6 oz. (168 gr)
2. Suds . . . . .		5min . . . . .	130F. (54C.) or higher . . . . .	3 oz. (84 gr)
3. Suds . . . . .		5min . . . . .	130F. or higher. . . . .	2oz. (56 gr)
4. Rinse . . . . .	11 in. (27.94 cm) . . . . . 1a in . . . . . 1ain . . . . .	2min . . . . .	130F. (54C.) or higher.	open drain valve after 1 1/2 min.
5. Rinse . . . . .		2min . . . . .	130F. or higher.	
6. Rinse . . . . .		2min . . . . .	130F. or higher . . . . .	



Operation	Water level	Time (includes filling & draining)	Water temperature (approx.)	Detergent
7. Preextract . . .	.....	10 sec . . . 4.....	.....	drain remains open.
8. Extract . . . . .	.....	5 min . . . . .	.....	drain remains open.
9. Brake to complete stop.				

NOTE

Water levels are average with fully loaded washer in motion. Allow for absorption before first suds.

Table 2-4. Wool Wash Formula for Manual Operation

Operation	Water level	Time (includes filling & draining)	Water temperature (approx.)	Detergent
1. Suds . . . . .	11 in. (27.94 cm) . . . . .	5 min . . . . .	100F. (38C.) . . . . .	6oz. (168gr)
2. Suds . . . . .	11 in . . . . .	5 min . . . . .	100F . . . . .	3 oz. (84 gr)
3. Suds . . . . .	11 in . . . . .	5 min . . . . .	100F . . . . .	2oz. (56gr)
4. Rinse . . . . .	11 in. (27.94 cm) . . . . .	2 min . . . . .	100F. (38C.)	
5. Rinse . . . . .	11 in . . . . .	2 min . . . . .	100F.	
6. Rinse . . . . .	11 in . . . . .	2 min . . . . .	100F . . . . .	open drain valve after 1 1/2 min.
7. Preextract . . . . .	.....	10 sec . . . . .	.....	drain remains open.
8. Extract . . . . .	.....	5 sec . . . . .	.....	drain remains open.
9. Brake to complete stop.				

NOTE

When filling or draining washer, it must be stopped to prevent damage to woolen items.

5. Turn the AUTO-MANUAL switch to the AUTO position.

6. When the warning bell (fig. 2-6) sounds and the signal light comes on, the operator's attendance at the control panel is mandatory. The operator must stand by to add washing supplies when using a multi-suds formula, to initiate the pre-extract-extract phase, to take corrective measures in the case of rough extraction, and to remove the wash at the end of the washing cycle.

7. When using a multi-suds formula, the warning bell will sound and the signal light will go out to summon the operator to add more washing supplies. After the supplies are added through the supply lid, depress the signal switch (fig. 2-6), hold it down for 10 seconds, and release the switch. If the warning bell still sounds after the switch is released, repeat the procedure until the bell stops ringing (until signal finger leaves No. 14 slot of the control record (fig. 2-6)).

8. At the completion of the washing (rinse) cycle but just before the start of the pre-extract-extract cycle, the bell will sound and the signal light will go out. The operator's presence at the control panel is again mandatory to initiate the

pre-extract-extract cycle. Depress the signal switch and hold it down until the signal finger leaves No. 14 slot of the control record. Allow the switch to return to its normal position, and the pre-extract-extract cycle will begin automatically. In the case of extremely rough extraction, push the AUTO-MANUAL control switch to the MANUAL position and push the BRAKE-DRAIN switch (fig. 2-5) to the BRAKE position. After the washer-extractor door locking pin returns to the unlocked position, push the AUTO-MANUAL switch to the OFF position, and turn the control record until the finger contacts the beginning of the pre-extract-extract (No. 4) slot. Push the AUTO-MANUAL switch to the AUTO position to pre-extract and extract the load. In case of subsequent rough extractions, continue to repeat the procedures described above until the extraction is smooth.

9. The warning bell will sound at the completion of the formula to signal the operator that the load should be withdrawn from the washer-extractor.

10. Repeat washing-extraction operations with the remaining loads in a similar manner.

(b) Manual Operation.

1. Load the washer with 60 pounds (27

kg) of wash; refer to Table 2-2 as a reference to the weight of certain items.

2. Select the proper formula from tables 2-3 and 2-4.

3. Turn the drum (fig. 2-5, sheet 2 of 2) until the finger on the extreme right is on the red line on the record.

4. Check the air compressor pressure gage (fig. 2-4), and determine that the air pressure is at least 60 psi (4.22 kg per sq cm).

NOTE

The desirable pressure reading is 80 psi (5.62 kg per sq cm).

5. Add the washing supplies through the supply lid.

6. With all control panel switches in the OFF position, push the AUTO-MANUAL switch to the MANUAL position.

7. Set the electrical timer (fig. 2-5, sheet 2 of 2) to the desired position and push the WASH-PRE-EXT switch to the WASH position to start the washing cycle.

8. Add water to the proper level in the washer-extractor, holding down the HOT water switch (fig. 2-5, sheet 2 of 2) to add hot water and the COLD water switch (fig. 2-5, sheet 2 of 2) to add cold water. Refer to the formula (tables 2-3 or 2-4) for the proper level and temperature of the water for each operation. If after the first attempt the washer-extractor does not contain water of the proper temperature, as indicated by the temperature gage (fig. 2-5, sheet 1 of 2), add additional hot or cold water to obtain the desired water temperature. Water in excess of the desired level may be dumped by pushing the BRAKE-DRAIN switch (fig. 2-5, sheet 2 of 2) to the DRAIN position, and then returning it to the OFF position.

9. After the washing cycle, the load may be rinsed by pushing the BRAKE-DRAIN switch to the DRAIN position and after water drains,

returning the switch to the OFF position. Add water of the proper temperature and to proper level prescribed in the formula (tables 2-3 or 2-4).

10. After repeating washing and rinsing cycles as required by the selected formula, the load is ready for extraction. To extract the water from the load, proceed in the following manner:

(a) To begin the extraction cycle, push the BRAKE-DRAIN switch to the DRAIN position to drain the rinse water from the load.

(b) Push the WASH-PRE-EXT switch to the PRE-EXT position. Wait about 10 seconds before proceeding with the next step.

(c) Push the EXTRACT switch from the OFF position to the EXTRACT position. Turn PRE-EXTRACT switch to OFF position.

(d) Leaving the drain open, extract clothes for about 5 minutes.

(e) Push EXTRACT switch to the OFF position.

(f) Push the BRAKE-DRAIN switch to the BRAKE position, and leave it there until the cylinder stops. Push the BRAKE -DRAIN switch to the OFF position.

11. When the pin withdraws from the washer-extractor door, push the AUTO-MANUAL switch to the OFF position.

12. Remove the load from the washer-extractor.

(2) *Dying the Load.*

(a) Remove the load from the washer-extractor and place not more than 30 pounds (13.5 kg) in the dryer-tumbler (fig. 1-1) and the remainder in the transfer-drain bin (fig. 1-2).

(b) Close the tumbler door securely.

(c) Set the control switch (fig. 2-6, sheet 2 of 2) to the desired temperature, and the electrical timer (fig. 2-6, sheet 2 of 2) at the desired position. Refer to table 2-5 for drying times and temperatures.

Table 2-5. Timing Cycles and Drying Temperatures

Operation	Drying time (minutes)	Air temperature control netting (degrees F.)
Balanced:*		
Cotton . . . . .	13 . . . . .	250(121 C) . . . . .
Woolen . . . . .	13 . . . . .	200(93 C) . . . . .
Unbalanced: ●*		
Cotton . . . . .	As required . . . . .	180 (82C) . . . . .
Woolen . . . . .	As required . . . . .	160 (71C) . . . . .
	As required . . . . .	130(54 C) . . . . .

\*30 lbs. maximum damp.

\*\*Less than maximum load.

**(9) Drying Durable Press Garments.**

(a) Load the dryer tumbler (fig. 1-2) to 2/3 capacity. Do not overload.

(b) Place tumbler control switch to the down position (Durable Press) figure 2-13.1.

(c) Set timer to ten minutes.

(d) Close upper and lower start "Control Switch" buttons of dryer tumbler. The tumbler will heat up and recycle at 170°F ± 5°F (77°C ± 15°C). At end of ten (10) minutes, the fuel solenoid will close, and the tumbler will cool down to 110°F ± 5°F (43°C ± 15°C) at which time the signal will sound. Shut OFF tumbler at control switch, remove garments immediately from the tumbler for further processing.

(e) If touch-up is required, use a hand iron, steam or dry heat with temperature dial set at "Synthetic".

**(4) Table 2-6. Field Laundry Washing and Decontamination Formulas.**

All formulas in this table are for use in the single-trailer laundry unit. Water level, length of time, and temperature for each operation are shown with each formula. The detergent types can be used with good results in both soft and hard water.

**(5) Formula 1.** Formula 1 is used to launder cotton clothing, and to decontaminate cotton clothing that has been radioactively contaminated below the maximum tolerance level. When the supply of freshwater is low, seawater can be used with type II detergent and double the amount shown for each suds operation. Fresh water should be used for the last two rinses, A bleaching agent should be used when white clothing is laundered.

Operation	Water Level in.	Time min.	Temperature		Supplies
			'F	'C	
Suds	8	5	100/23		Detergent, type I, 6 oz
Suds	8	5	130/39.5		Detergent, type I, 4 oz
Suds	8	5	140/45		Detergent, type I, 2 oz
Rinse	11	2	140/46		.....
Rinse	11	2	120/34		.....
Rinse	11	2	100/23		sour, 202

**(6) Formula II.** Formula II is used to launder woolen items such as blankets, uniforms, and socks. To reduce shrinkage and strain on the

items, the washer should be fully loaded and stopped during filling and draining. Also, the tumbler should be fully loaded.

Operation	Water Level in.	Time min.	Temperature		Supplies
			'F	'C	
Suds	11	5	90/17.5		Detergent, type II, 6 oz
Suds	11	5	90/17.5		Detergent, type II, 4 oz
Rinse	11	2	90/17.5		-----
Rinse	11	2	90/17.5		-----
Rinse	11	2	90/17.5		sour, 202

**(7) Formula III.** Formula III is used to launder cotton items used in hospitals. When the supply of fresh water is low, seawater can be used if type II detergent is used in twice the amount

shown for each suds operation. Fresh water should be used for the last two rinses. A bleaching agent should be used when white clothing or bedding is laundered.

Operation	Water Level in.	Time min.	Temperature		Supplies
			'F	"C	
Suds	8	5	100	23	Detergent, type I, 6 oz
Suds	8	5	130	39.5	Detergent, type I, 4 oz
Suds	8	5	140	45	Detergent, type I, 2 oz
Rinse	11	2	160	56	.....
Rinse	11	2	140	45	.....
Rinse	11	2	110	28.5	Sour, 1 oz

**(8) Formula IV.** Formula IV is used to make outer clothing, such as field wear and raincoats, water-repellant. Soiled garments sometimes lose repellency. If the garments show poor water-

repellency after they are laundered and dried, they should be treated again. Water-repellant-treated garments must never be starched.

Operation	Water Level in.	Time min.	Temperature		Supplies
			"F	"C	
Suds	8	5	100	23	Detergent, Type I, 6 oz
Suds	8	5	130	39.5	Detergent, Type I, 4 oz
Rinse	11	2	140	45	.....
Rinse	11	2	140	45	.....
Rinse	11	2	120	34	.....
Rinse	11	2	120	34	.....
Water-repellant treatment	1 1/2	10	100	23	Compound, water-repellant, textile-finish, type I aqueous, 3 pints

**(9) Formula V.** Formual V is used for mothproofing wool items prior to summer storage or return to stock. After items are washed, they

should be extracted for 4 minutes. Items are then placed in the drying tumbler and dried at temperature not to exceed 140° F.

Operation	Water Level in.	Time min.	Temperature		Supplies
			"F	"C	
Suds	11	5	100		Detergent, Type II, 6 oz
Suds	11	5	100		Detergent, Type II, 4 oz
Rinse	11	3	100		.....
Rinse	11	3	100		.....
Rinse	11	5	100		Mothproofing Cone., 1 pt.

**(10) Formula VI.** Formula VI is used to decontaminate clothing that has been radioactively contaminated above the maximum tolerance level. For woolen clothing, the formula must be changed to use type II powder detergent with water temperature not more than 100°F/23°C. Also, the washer must be stopped during filling and draining. For white clothing or bedding, a bleaching agent should be used. A recommended

organic chelating agent is tetrasodium salt of ethylene diamine tetraacetic acid which is available commercially as Versene, Nullapon, or Sequestrene S. T. When hard water is used, the amount of chelate should be increased at the rate of 1 ounce chelate per 83 grains of water hardness. An equal weight of sodium hexametaphosphate or sodium tetrphosphate may be substituted for the organic chelating agents.

Operation	Water Level in.	Time min.	Temperature °F °C	Supplies
Suds	6	5	90/17.5	Detergent, type I, 6 oz
Acid	11	5	140/45	Citric acid crystals, 4 lb
Acid	11	5	140/45	Citric acid crystals, 2 lb
Chelate	11	5	140/45	Chelating agent, lb dry weight
Chelate	11	5	140/45	Chelating agent, 12 lb dry weight
Rinse	11	3	140/45	.....
Rinse	11	3	120/34	.....
Sour	11	5	Tap water	Laundry sour, 1 1/2 oz (use equal parts of sodium silicoflouride and sodium acid flouride)

**(11) Formula VII.** Formula VII is used to launder and decontaminate unimpregnated cotton and woolen items that have been chemically or biologically contaminated. Woolen and Cotton Items. Detergent and super tropical bleach must be mixed together in water before they are put in

the washer. Cotton and woolen items must not be put in the same wash load. When items such as belts, webbing, canteen covers, and pack carriers are washed, the time of the first suds should be increased to 15 minutes.

Operation	Water Level in.	Time min.	Temperature °F °C	Supplies
Suds	11	5	90/17.5	Detergent, type II, 6 oz; decontaminating agent super tropical bleach (STB), 2.5 lb
Suds	11	5	90/17.5	Detergent, type II, 4 oz
Rinse	11	2	90/17.5	.....
Rinse	11	2	90/17.5	.....
Rinse	11	2	90/17.5	Sour, 2 oz

**(12) Formula VIII.** Durable Press Garments. The washer should be loaded to only two-thirds of its capacity.



Do not use chlorine bleach. Do not mix all cotton with durable press garments. Do not starch. Do not wring or twist

garments. Heavy stains may require presoaking or pre-spotting, using a pre-spotting Agent. The garments should be extracted for no longer than necessary to allow the extractor to reach maximum speed. Then, extractor should be shut off to prevent setting of creases. Add detergent and laundry, Nonionic, Type 1, to machine while filling.

Operation	Water Level in.	Time min.	Temperature		Supplies
			"F	"C	
Suds	11	5	140/45		Detergent, type 11,8 oz
Suds	11	5	140/45		Detergent, type
Suds	11	5	125/36.75		Detergent, type II, 4 oz
Rinse	11	2	110/28.5		.....
Rinse	11	2	100/23		.....
Rinse	11	2	100/23		.....

**(13) Formula IX.** White, Polyester/Cotton Nurses Uniforms.

step	Operation	Water Level (Inches)	Cycle Time (Min.)	Temp. "F	Supplies
1	Suds <u>1/</u>	6	5-8	160	Detergent Laundry (Type 1) - 4 oz by volume. Sodium-orthosilicate 4 oz by volume
2	Suds <u>2/</u>	6	5	160	Detergent Laundry (Type 1) 4 oz by volume
3	Rinse	12	3	150	None
4	Rinse <u>3/</u>	12	3	135	None
5	Sour	12	3	120	Sour to pH 6.5
6	Rinse	12	3	105	None
7	Anti-stat <u>4/</u>	5	5	90	Anti-static agent-24 oz by volume

1/ The washer load should be about 2/3 the rated capacity of the washer. The washer should be stopped during filling and emptying of washer. Before placing in washer, the zipper and snap fasteners of the uniforms should be closed.

2/ If bleach is required, use at the rate of 2 quarters of 1 percent bleach or 2 oz. of dry bleach (15-16% available chlorine) per 100 pounds of garments.

3/ If bleach is used, add antichlor, sodium thiosulfate, to the second rinse following the bleach, at the rate of 1 oz. per 100 pounds of garments.

4/ Dilute the antistatic agent with at least an equal amount of water before adding to the washwheel.

e. *Stopping the Generator.* Refer to the following instructions and figure 2-14 for normal and emergency stopping.

**NOTE**

When emergency stopping is necessary, perform step (5) only.

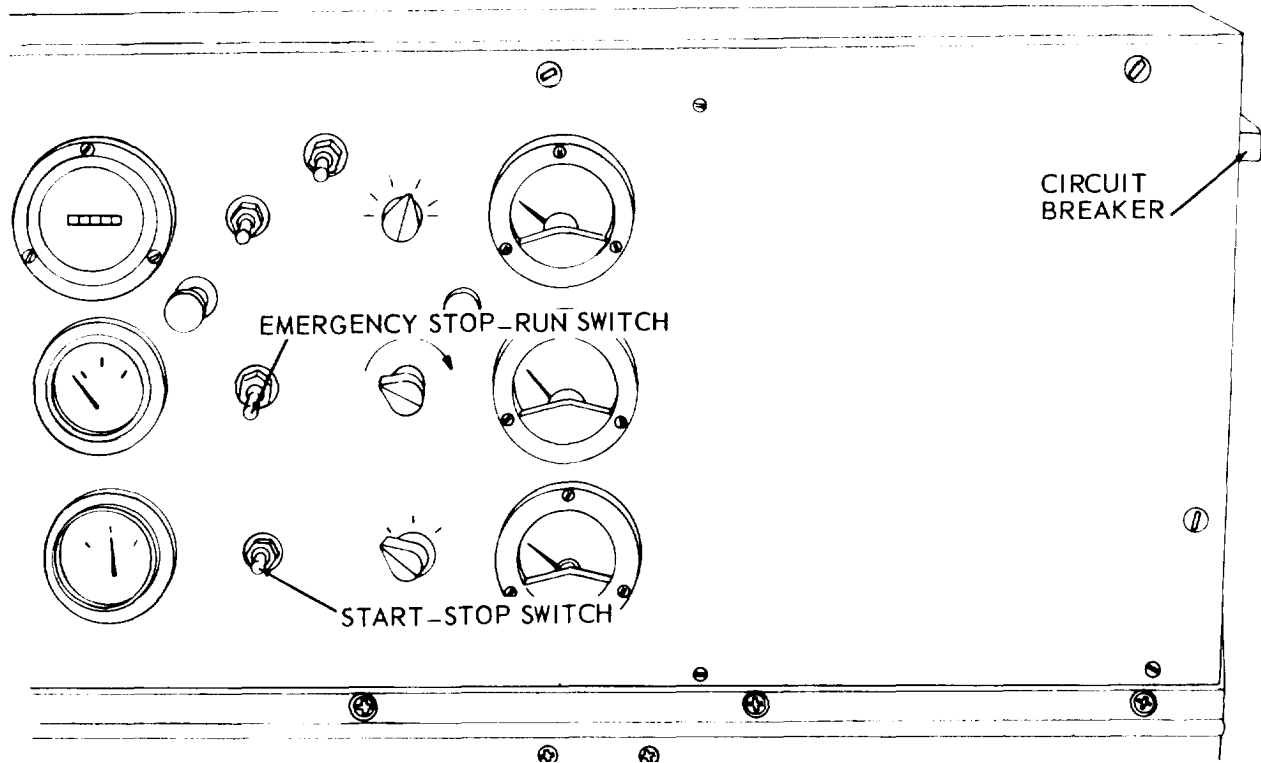
(1) Remove the load by placing the circuit breaker in the *OFF* position.

(2) Allow engine to run with no load 3 to 5 minutes,

(3) Press the start-stop switch to the *STOP* position and release.

(4) Close the fuel selector valve.

(5) Place the emergency stop-run switch in the *EMERGENCY STOP* position.



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Figure 2-14. Normal and emergency stopping controls

f. *Stopping or Shutting Down the Unit.*

(1) Shutting down the laundry unit may begin while the last load of wash is being dried in the tumbler.

(2) Make certain that all washer-extractor control panel switches are in the *OFF* position (fig. 2-5, sheet 2 of 2).

(3) Turn off the air compressor.

(4) Close the water heater fuel shutoff valve (fig. 2-2). Allow the heater to operate a few minutes so that the blower may purge any vaporized fuel from the burner. Then turn off the heater fuel pump switch (fig. 2-2).

(5) Drain heater, valves, and hoses by pushing of the *AUTO-MANUAL* control switch

(fig. 2-5, sheet 2 of 2) to the *MANUAL* position and holding down the *HOT* and *COLD* water switches (fig. 2-5, sheet 2 of 2) for two minutes.

(6) Turn off the water pump switch (fig. 2-3) at the pump and disconnect the water pump outlet hose at the water heater inlet. Disconnect the rubber boot connecting the washer and the tank. Turn on the water pump switch and use the disconnected hose to flush the washer-extractor and tank. Turn off the water pump switch.

(7) Open the air vent valve on the water heater (fig. 2-2) to aid in draining.

(8) When drying operations are complete, push the stop-reset button (fig. 2-6) of the lower manual starter assembly on the tumbler.

(9) Turn off the fuel cut-off valve (fig. 2-6) at the tumbler.

(10) Open the tumbler door and allow the tumbler to cool for 3 to 5 minutes.

(11) Stop the blower and burner by pushing the stop-reset button (fig. 2-6) of the upper manual starter assembly.

(12) Stop the engine generator set.

*g. Temporary Shutdown of Unit for Five or More Days.*

NOTE

Perform the following procedure to assure adequate preservation of the dryer-tumbler and water heater fuel pump assemblies when the laundry unit is to remain idle for five days or more.

(1) Close the burner fuel shutoff valve.

(2) Operate the unit a few minutes after the burner shutoff valve is closed. This allows the blower to purge any vaporized fuel from the burner.

(3) Remove the end of the fuel feed hoses assembly from the 55 gallon (209 liters) fuel drums.

(4) Place the end of the hose into a quart container filled with OE-30 oil for temperature at +40 to -10F (4 to -23C), or OES oil for temperatures at 0 to -65F (-18 to -54C).

(5) Operate the fuel pump until the quart container is empty and then stop the pumps.

(6) Install protective caps on fuel pump inlet and outlet connections.

## Section II. OPERATION OF AUXILIARY EQUIPMENT

### 2-4. Fire Extinguisher (Carbon Dioxide Type)

The carbon dioxide type fire extinguisher is suitable for electrical and flammable liquid fires. The carbon dioxide types are of the 4-pound (1.8 kg), 7½ pound (3.375 kg), and 10 pound (4.5 kg) sizes. The 4 pound (1.8 kg) extinguisher is portable; the other two are the fixed type.

### 2-5. Fire Extinguisher Operation and Maintenance

*a. Operation.* Remove fire extinguisher from its location; break the seal, operate the control valve, and direct the stream at base of flame.

*b. Maintenance.* For maintenance of the fire extinguisher, refer to TB 5-4200-200-10.

## Section III. OPERATION UNDER UNUSUAL CONDITIONS

### 2-6. Operation in Extreme Cold (Generator Set and Laundry Unit)

*a. Generator Set Operation in Extreme Cold (Below OF. (-18C.)).*

(1) *General.* The generator set is designed to operate at temperatures as low as -25F (-32C). Care should be taken to keep the engine in good operating condition, to assure quick starting in very cold weather.

(2) *Fuel System.*

(a) Keep the fuel tank as full as possible to prevent condensation.

(b) Remove ice and snow from the fuel tank cap and dispensing equipment before filling the fuel tank.

(c) Drain and service the fuel filter more frequently during cold weather to remove water and prevent freezing.

(3) *Lubrication.* Lubricate the engine in accordance with the current lubrication order, LO 5-2805-259-14.

(4) *Electrical System.*

(a) Before attempting to start the engine, remove any accumulation of ice or snow from the spark plugs or wiring.

### CAUTION

Insulation on wires becomes brittle in extreme cold and will break if twisted or bent. Disturb wiring as little as possible while inspecting *or* removing moisture or snow.

(b) Keep the batteries fully charged and free of dirt, moisture, and snow. Normally an operating period of one hour per day will be sufficient to keep the batteries charged

### WARNING

Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas. Failure to observe this warning may result in serious injury to personnel.

(c) Check the electrolyte for proper level, and see that the batteries are properly charged (TM 9-6140-200-15). The danger of freezing depends on the specific gravity of the electrolyte.

### CAUTION

Water added to a battery will freeze unless it is mixed by charging. Do not add water



unless the engine is to be operated immediately afterwards for at least 1 hour.

(d) Make sure the battery cap vents are not clogged.

(e) See that the battery terminal clamps are tight, clean, and lightly coated with a general purpose grease to retard corrosion.

(5) Heating. Position oil pan baffle rod toward front of engine for OF. (-18C.) and below.

*b. Laundry Unit Operation in Extreme Cold (Below 0F. (-18C.)).*

**WARNING**

If operating a laundry unit with a Model M-80 Water Heater (NSN 4520-01-1624)385) in a shelter or other enclosed area, ensure the area is well-ventilated. Noxious fumes may flow back through the exhaust ducts after the water reaches the proper temperature and the blower shuts off.

(1) *During Operation.* During operation in extreme cold, steps must be taken to protect the equipment from freezing. Operate the unit inside a tent or other suitable enclosure if necessary. Water must be supplied without exposing the water pump or water hoses to below-freezing temperatures.

(2) *After Operation.*

(a) Before shutting down the unit, be sure to vent the valve on top of the water heater.

(b) Drain the water pump and store it in an inverted position.

(c) Drain the water heater by draining the water through the hose from the pump to the waste water area. Make sure the drain hose is not mashed or damaged so that proper drainage can be accomplished.

(d) Drain all water valves and hoses by pushing the AUTO-MANUAL control switch to the MANUAL position and holding down the HOT and COLD water switches for two minutes.

(e) Open the drain valve located at the bottom of the washer water level control and drain water. Close the drain valve.

(f) Open the drain valve under the compressor air supply tank to drain condensation.

(g) Load the trailer and store it in a heated shelter if possible.

**2-7. Operation in Extreme Heat (Generator Set)**

*a. Indoor Ventilation.* When the generator set is operated indoors, allow sufficient room around the equipment for air circulation, and ventilate the room.

**WARNING**

Do not operate the generator set in an inclosed area unless the exhaust gases are piped to the outside, Inhalation of exhaust fumes will result in serious illness or death,

*b. Cooling.* Inspect the air baffles frequently to make sure they are clean. Position oil pan baffle rod toward rear of engine for OF. (-18C.) and above.

*c. Generator.*

(1) Inspect the instruments frequently to make sure the generator is not overloaded.

(2) Inspect the generator ventilating screens to make sure they are clean.

**2-8. Operation in Dusty or Sandy Areas (Generator Set and Laundry Unit)**

*a. Generator Set Operation in Dusty or Sandy Areas.*

(1) *Protection.* Shield the generator set from dust. Take advantage of natural barriers which offer protection from dust and sand.

(2) *Cleaning.* Keep the unit as clean as possible. Pay particular attention to the engine air baffles and the generator ventilating covers. Use compressed air, if possible, to aid in cleaning.

(3) *Air Cleaner.* Service the air cleaner daily to keep the carburetor free of dirt and sand (TM 5-2805-259-14) .

(4) *Fuel System.* Take all precautions necessary to keep dust and sand out of the fuel system. Clean the area around the tank filler and the spout of the dispensing equipment before adding fuel. Inspect and clean the fuel filter frequently.

(5) *Lubrication.* When operating in dusty or sandy areas the oil filter must be cleaned and the element replaced more frequently. Clean the lubrication points before applying any lubricants. Lubricate the engine in accordance with the current lubrication order, LO 5-2805-259-14.

*b. Laundry Unit Operation in Dusty or Sandy Areas.*

(1) Lubricate the equipment in accordance with the current lubrication order.

(2) If possible, shut down the unit during severe dust storms and cover it with a tarpaulin or other suitable protective covering. When the area is reasonably clear of dust, clean the unit thoroughly and use dry compressed air to blow hard-to-reach places.

**2-9. Operation Under Rainy or Humid Conditions (Generator Set and Laundry Unit )**

*a. Generator Set Operation Under Rainy or Humid Condition.*

(1) *General.* Take special precautions to keep the equipment dry. If possible, provide a shelter for the equipment. If a sheltered area is not available, cover the equipment with canvas when not in use. Remove canvas during dry periods.

(2) *Lubrication.* Lubricate the engine in accordance with the current lubrication order, LO 5-2805-259-14.

(3) *Fuel System.* Keep the fuel tank as full as possible to prevent condensation. Drain and service the fuel filter more frequently than under normal conditions.

(4) *Electrical System.* Humid conditions can cause corrosion and deterioration of electrical components. Keep wiring as clean and dry as possible.

*b. Laundry Unit Operation Under Rainy or Humid Conditions.*

(1) Keep machinery and motors as dry as possible at all times. If possible, operate the unit inside a tent or other suitable inclosure.

(2) During transit, make certain the trailer is covered with the tarpaulin provided for that purpose.

#### CAUTION

Prior to all towing operations of the laundry unit, in order to prevent damaged or broken mercury bulbs utilized with the dryer tumbler air temperature control, it is essential that the following protective measures be taken.

(a) Remove the dial face cover from the control. Insert cushioning material, such as soft sponge robber or packing paper into the mercury bulb housing of the control. Reinstall the dial face cover.

(b) Upon completion of the towing operation, remove the cushioning material from the mercury bulb housing and reinstall the cover.

#### WARNING

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(3) Wipe wet or damp electrical equipment with a cloth dampened with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

#### WARNING

Do not use water pressure through a fire or water hose to wash the item down, or in cleaning operations of the end item, Hosing down with water will cause a malfunction or electrical shorts to the voltage regulator of the 10 KW generator set, or damage to the components of the washer-extractor control panel, motors, switches, and other related items,

(4) When cleaned parts are dry, thoroughly lubricate the unit in accordance with the current lubrication order.

#### 2-10. Operation in Salt Water Areas (Generator Set)

*a. General.* Wash the unit frequently with clean, fresh water. Use care not to contaminate the fuel supply or damage the electrical system.

*b. Lubrication.* Lubricate the engine in accordance with the current lubrication order, LO 5-2805-259-14.

*c. Preservation.* Paint all exposed non-polished surfaces. Coat exposed parts of polished steel or other ferrous material with standard issue, rust-proofing material, if available, or cover parts with a light coat of grease. Refer to TM 43-0139.

# CHAPTER 3

## OPERATOR MAINTENANCE INSTRUCTIONS

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### Section 1. LUBRICATION INSTRUCTIONS

#### 3-1. General Lubrication Information

Refer to LO 10-3510-208-12.

All data on pages 3-2 and 3-3 deleted.





### 3-2, Detailed Lubrication Information

*a. Care of Lubricants.* Keep all lubricants in sealed containers and stored in a clean dry place away from external heat. Allow no dirt, dust, or water to mix with the lubricant at any time. Keep all lubrication equipment clean and ready for use.

*b. Points of Lubrication.* Follow the detailed instructions given on LO 10-3510-208-12. Always apply lubricant specified on the current lubrication order.

*c. Cleaning.* Keep all external parts not requiring lubrication clean from lubricant. After

every external lubrication operation, remove any excess lubricant from the points of lubrication and wipe away spilled lubricant.

*d. Operation Immediately After Lubrication.* Operate the unit for five minutes immediately after lubrication. Inspect all parts for leakage.

*e. Trailer Lubrication.* Refer to TM 9-2330-274-14 for lubrication of the trailer.

*f. Engine-Generator.* Refer to TM 5+15-275-14 for lubrication of the engine-generator.

## Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

### 3-3. General

To insure that the laundry unit is ready for operation at all times, it must be inspected systematically, so that faults may be discovered and corrected before they result in serious damage and failure. The necessary preventive maintenance service to be performed are listed and described in paragraph 3-4. The item number indicates the sequence of minimum inspection requirements. Faults discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a fault is noted during operation which would damage the equipment if operation were

continued. All faults will be recorded, together with the corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

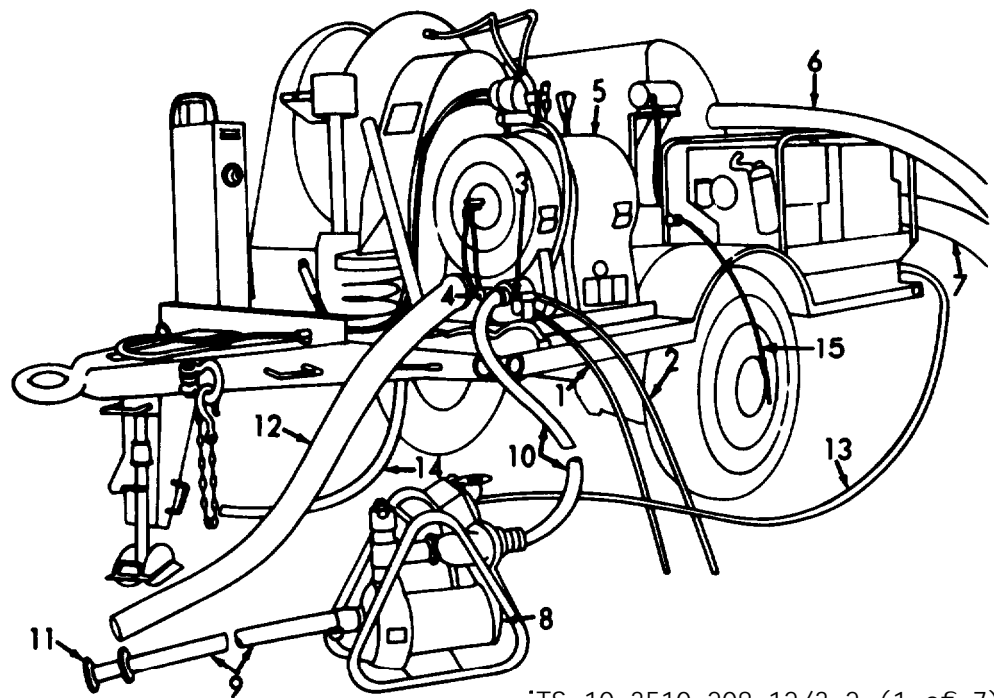
### 3-4. Preventive Maintenance Checks and Services

This paragraph contains a tabulated list of preventive maintenance services which must be performed daily or weekly by the operator. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

*Table 3.1. Deleted*

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			B-BEFORE OPERATION D-DURING OPERATION	A-AFTER OPERATION	EQUIPMENT IS Not Ready/ Available if:
	B	D	A	ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	
1	●			Laundry unit	Check fuel supply connections. Check for proper water, drain, and exhaust connections. Check fire extinguisher to insure seal has not been broken. Inspect tumbler dryer and washer extractor tubs for damage.	



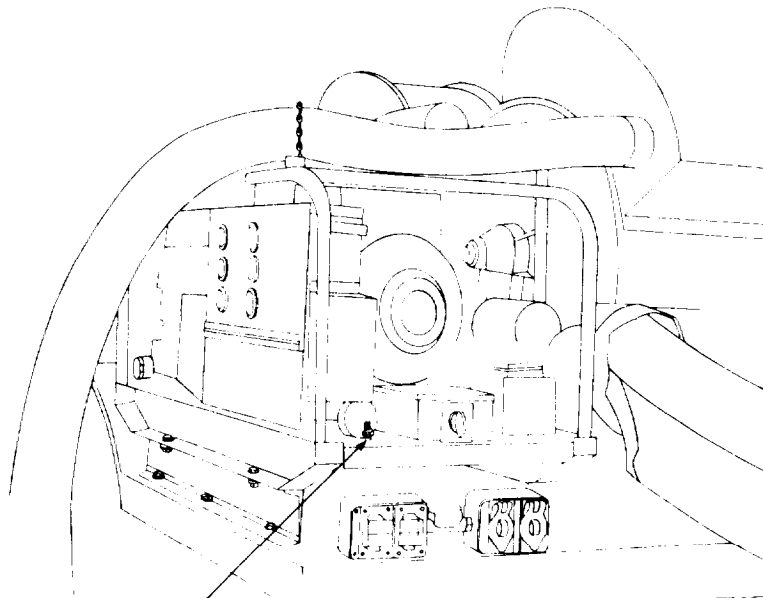
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Legend

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| 1. Water heater fuel feed line       | 7. Dryer tumbler hot air exhaust duct |
| 2. Water heater fuel return line     | 8. Water pump                         |
| 3. Fuel filter                       | 9. Suction hose                       |
| 4. Fuel pump                         | 10. Feed hose                         |
| 5. Water heater                      | 11. Suction strainer                  |
| 6. Dryer tumbler burner exhaust duct | 12. Water heater burner exhaust duct  |
|                                      | 13. Power cable                       |
|                                      | 14. Hose                              |
|                                      | 15. Generator exhaust duct            |

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			B-BEFORE OPERATION D-DURING OPERATION	A-AFTER OPERATION	EQUIPMENT IS Not Ready/ Available if: -
	B	D	A	ITEM TO BE INSPECTED	PROCEDURES	
2	●			Generator Set	<p>Check for and have repaired or adjusted as necessary</p> <p>Check for adequate fuel supply. Check engine oil level and replenish as necessary. Check that the unit is properly grounded. The ground can be, in order of preference, an underground metallic water piping system, a driven rod, or a buried metal plate. A ground rod must have a minimum diameter of 5/8 inch if solid or 3/4 inch if pipe, and must be driven to a depth of 8 feet. A ground plate must have a minimum area of 9 square feet and be buried at a minimum depth of 4 feet. The ground lead must be a number 6 AWG copper wire and be bolted or clamped to the rod, plate, or piping system. Connect the other end of the ground lead to the generator ground stud.</p>	



GENERATOR GROUND STUD TS 10-3510-208-12/3-2 (2 Of 7)

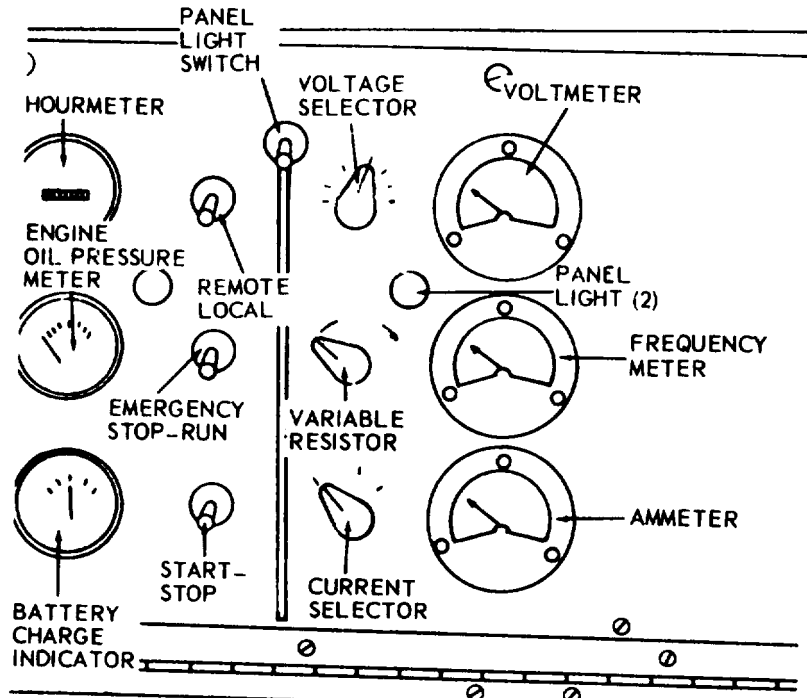


OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	B	D	A			
3		●		Controls and Instruments	<p>NOTE</p> <p>Prior to starting the water heater or tumbler dryer, observe the spark through the spark observation port glass. The spark should be clear blue approximately 3/16 inch long. If a purple spark is observed, remove the electrode assembly and adjust electrodes.</p> <p>With unit operating check the instruments for the following indications:</p>	
				a. Frequency meter	Adjust for 61 Hz operation.	Frequency cannot be properly adjusted.
				b. Voltmeter	Adjust for either 120/208 volts.	Voltage cannot be properly adjusted.
				c. A.C. Ammeter	Not to exceed 100% under steady state operation.	
				d. Battery charging ammeter	Indicates charging current. (Plus side of scale)	Charging current is not indicated.
				e. Engine oil pressure	20 to 60 psig.	Oil pressure is below 20 psig.

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	B	D	A			



TS 10-3510-208-12/3-2 (3 of 7)

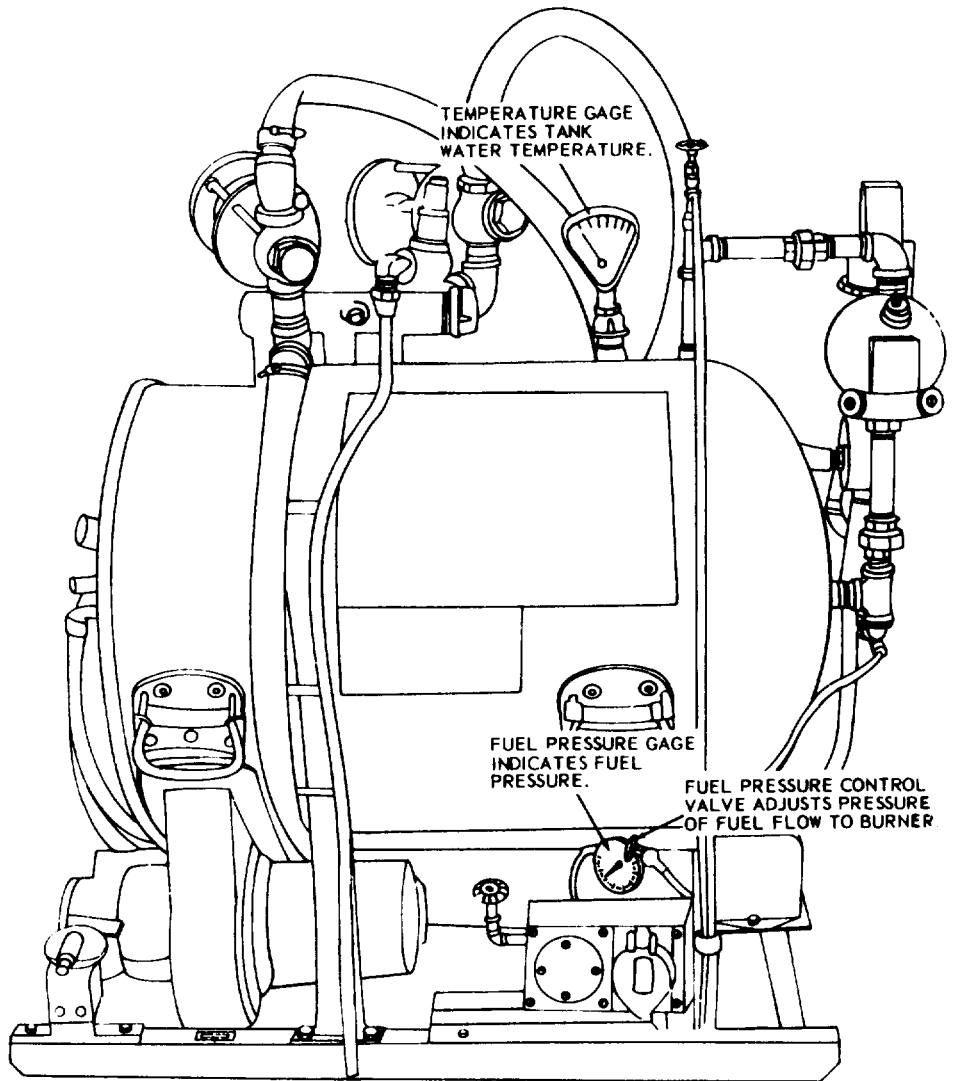
4	<p>Controls and Instruments</p> <p>a. Water heater fuel pressure</p> <p>b. Water heater temperature gage</p>	<p>With unit operating, check the laundry unit instruments and gages for the following indications:</p> <p>75 to 80 psig.</p> <p>150°F ±5° with water temperature select knob in #4 position</p>	<p>Fuel pressure cannot be properly adjusted.</p> <p>Temperature gage does not indicate properly.</p>
---	--	--	---

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	B	D	A			

B-BEFORE OPERATION  
D-DURING OPERATION

A-AFTER OPERATION

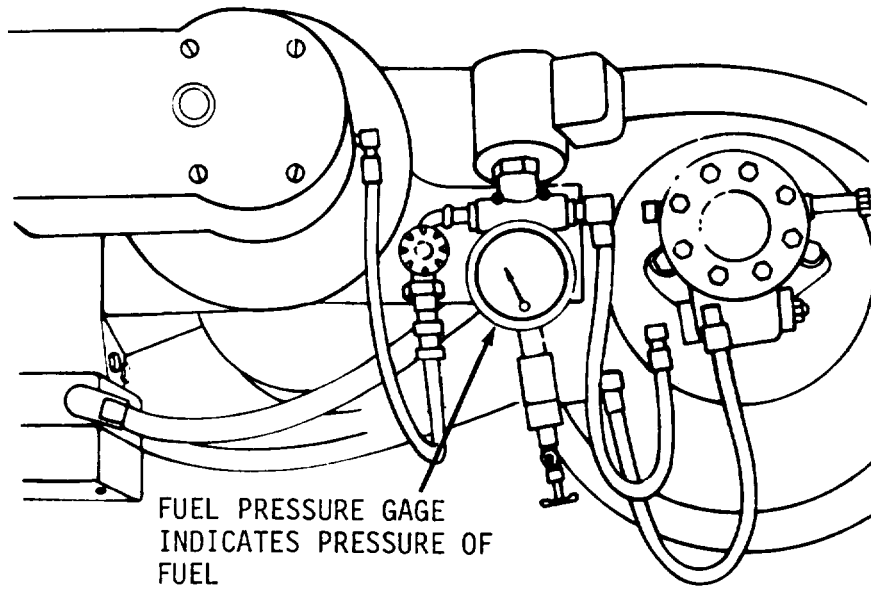


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c. Tumbler fuel pressure gage	75 to 80 psi g.	Fuel pressure is not within specified limits.
-------------------------------	-----------------	---

OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			B-BEFORE OPERATION D-DURING OPERATION	A-AFTER OPERATION	EQUIPMENT IS Not Ready/
	B	D	A	ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	

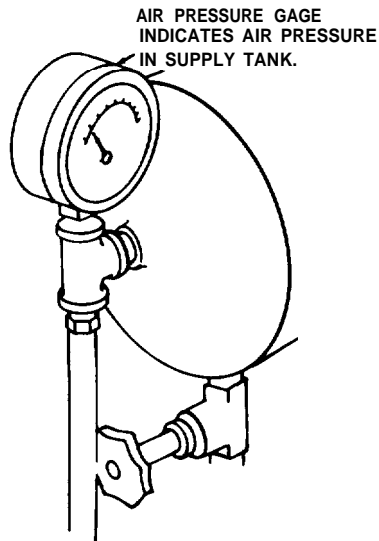


TS 10-3510-208-12/3-2 (5 of 7)

d. Air pressure gage

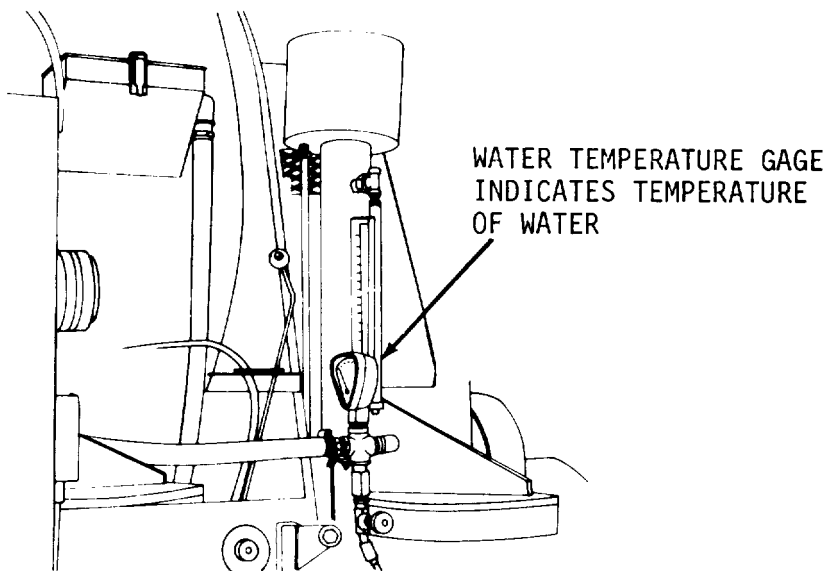
80 to 95 psi.g.

Proper pressure cannot be maintained.



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OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL			B-BEFORE OPERATION D-DURING OPERATION	A-AFTER OPERATION	EQUIPMENT IS Not Ready/ Available if:
	B	D	A	ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	
				e. Washer water temperature gage	Washer water temperature gage 100°F (38C), or 130°F (54C) depending on wash formula selected. Ref. table 2-3, 2-4 page 2-22, 23.	
 <p>TS 10-3510-208-12/3-2 (7 of 7)</p>						
5			●	Fuel containers	After operation, fill fuel containers.	
6			●	Lint trap	Remove and clean dryer tumbler lint trap after daily operation.	
7			●	Fuel pumps	If unit is to remain idle 3 days or more drain tumbler dryer and water heater fuel pumps and refill with OE oil. Reference paragraph 2-3g, page 2-26.	

## 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 laundry unit(s). Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine probable causes and 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.

### 3-6. Troubleshooting Table

Refer to table 3-2 for troubleshooting information.

#### NOTE

Before you use this table, be sure you have performed all applicable operating checks.

Table 3-2 Troubleshooting

---

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

---

**1. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL**

*Step 1.* Check for loose fuel lines.

Tighten loose fuel lines.

*Step 2.* Check the fuel pump strainer for clogging.

Service the water heater fuel pump strainer as follows:

- a. Remove six mounting screws (1, fig. 3-3) on fuel filter.
- b. Remove fuel filter sump and cartridge disk (2).

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C).

- c. Clean cartridge disk with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.
- d. Install cartridge disk and fuel filter sump (2) (fig. 3-3) and secure with six screws (1).
- e. Remove eight mounting screws (3, fig. 3-3) on fuel pump (4).

**WARNING**

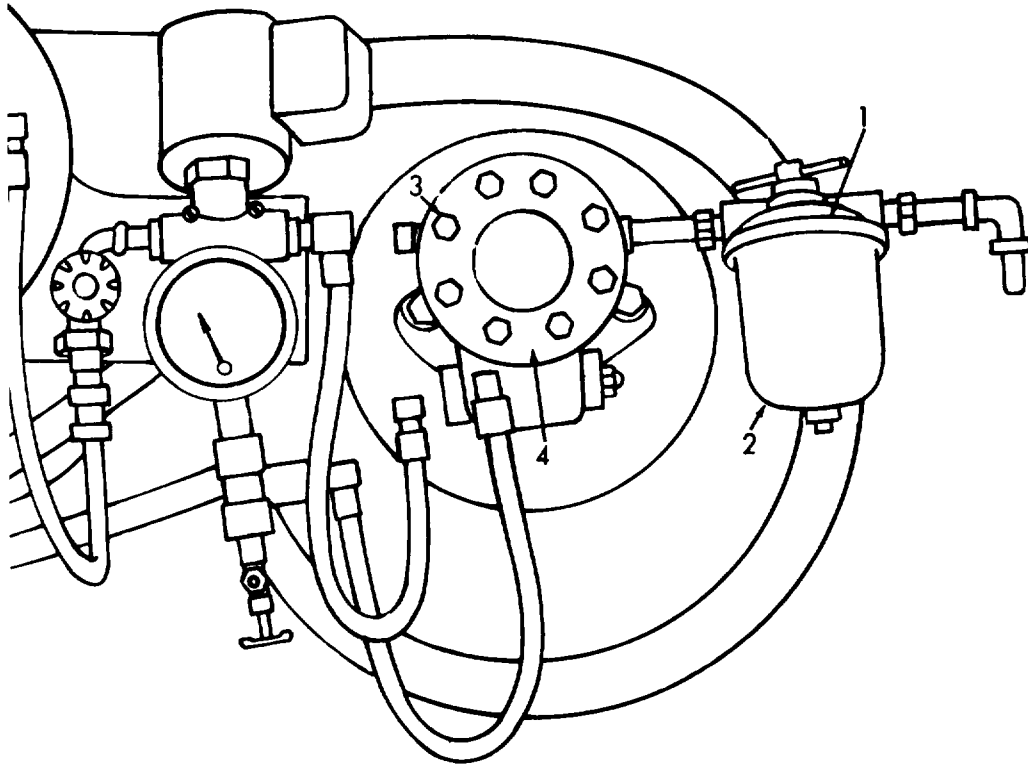
Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C).

- f. Remove strainer and gasket and clean strainer with cleaning solvent, Fed. Spec. P-D -680, and dry thoroughly.
- g. Install strainer and new gasket and secure with eight mounting screws (3, fig. 3-3).

---

**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**

---



TS 10-3510-208-12/3-3

- |          |              |
|----------|--------------|
| 1. Screw | 3. Screw     |
| 2. Sump  | 4. Fuel Pump |

Figure 3-3. Fuel pump and fuel filter service.

**2. AIR HEATER FUEL PUMP FAILS TO DELIVER FUEL**

*Step 1.* Check for loose fuel lines.

Tighten loose fuel lines.

*Step 2.* Check the fuel pump strainer for clogging.

Service the air heater fuel pump using instructions listed under 1. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL, a. through g.

**NOTE**

Water heater fuel pump and air heater fuel pump are serviced in a similar manner.

**3. BURNER FLAME FAILS**

*Step 1.* Check for loose fuel lines.

Tighten loose fuel lines.

*Step 2.* Check for empty fuel supply drum.

Fill drum with fuel.

**4. PULSATING FLAME**

*Step 1.* Check the air shutter to see if the vent holes are blocked.

Adjust the shutter by depressing the pin and spring and moving the shutter up or down until a near clear smoke emits from the exhaust duct, approximately 1/2 of total opening.



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

*Step 2.* Check fuel level.

If fuel level is low, fill the fuel supply drum.

*Step 3.* Check for water in fuel by draining some fuel and checking for bubbles.

Drain and refill fuel supply drum if water is evidenced.

## 5. BURNER SMOKES

*Step 1.* Check the air shutter to see if the vent holes are blocked.

Adjust the shutter by depressing the pin and spring and moving the shutter up or down until a near clear smoke emits from the exhaust duct, approximately  $\frac{1}{2}$  of total opening.

*Step 2.* Check the fuel pressure for being too high or too low. With the fuel pressure control valve (fig. 2-2, sheet 1 of 2) turned counterclockwise (shut) and the burner control valve clockwise (shut), the gage should register 100 pounds per square inch (7.03 kg per sq cm).

Adjust the fuel pressure as follows:

### NOTE

Adjustment must be made with the fuel pump operating.

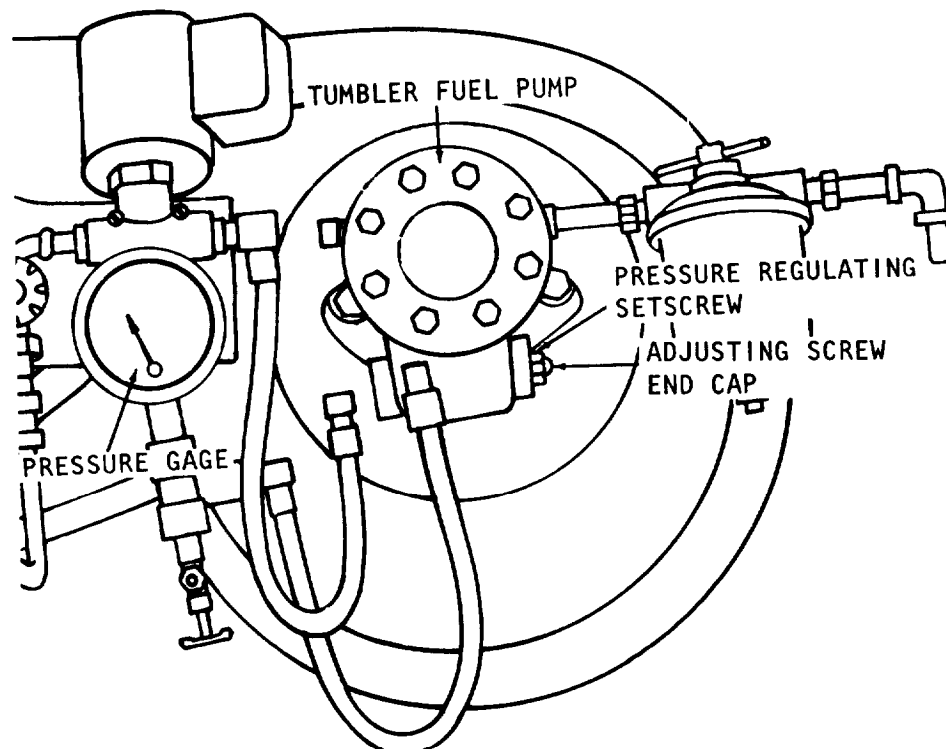
a. Remove the adjusting screw end cap from the side of the pump (fig. 3-4).

b. Turn the pressure regulating setscrew clockwise to increase the pressure, and turn it counterclockwise to decrease the pressure on the pump.

### NOTE

Narrow tip screwdriver must be used to adjust pressure. If a wide tip screwdriver is forced into screwdriver slot, damage will occur to the pressure adjusting screw.

c. Replace the adjusting screw end cap on the pump.



TS 3510 -208-12/3-4

Figure 3-4. Fuel pump adjustment.

---

**MALFUNCTION  
TEST OR INSPECTION  
CORRECTIVE ACTION**

---

**6. WATER LEVEL LOW**

*Step 1.* Start the water pump (fig. 3-2, sheet 4 of 4) and check for proper operation, refer to paragraph 2-3b (4). Rated capacity of water pump is 18 to 20 gpm (gallons per minute) (68,4 to 76 liters) at 65 foot head.

Fill heater and maintain pressure, paragraph 2-3b (4).

*Step 2.* Check for the drain valve being opened (it is open when the drain valve dump lever is all the way to the right of the "open" mark).

Close the valve by swinging the lever to the left of the "open" mark.

**7. WASHER-EXTRACTOR WILL NOT CHANGE PHASES OF OPERATION**

Check the reading on the air pressure gage (fig. 2-4) (located on air supply tank). Gage should read between 75 and 80 psi (5.27 and 5.63 kg per sq cm).

Adjust pressure and bleed supply tank by opening and closing the bleeder valve (fig. 2-4) (located at front bottom of air supply tank).

---

**Section IV. MAINTENANCE PROCEDURES**

**3-7. Fuel Pumps and Filters**

Refer to the following instructions and service the fuel pumps and filters.

*a. Air Heater Fuel Pump and Filter.*

(1) Remove six mounting screws, (1, figure 3-3) on fuel filter,

(2) Remove fuel filter sump and cartridge disk (2).

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(3) Clean cartridge disk with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(4) Install cartridge disk and fuel filter sump (2, fig. 3-3) and secure with six screws (1).

(5) Remove eight mounting screws (3, fig. 3-3) on fuel pump (4).

(6) Remove strainer and gasket and clean strainer with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(7) Install strainer and new gasket and secure with eight mounting screws (3, fig. 3-3).

*b. Water Heater Fuel Pump and Filter.* Service the water heater fuel pump and filter in a similar manner as the air heater fuel pump and filter.

**NOTE**

When Mogas is used as the fuel source, add one quart (.95 liters) of OE-30 engine oil to each 5 gallons (19 liters) of Mogas.

**3-8. Fuel Pump Adjustment**

*a. Air Heater Fuel Pump Adjustment.*

(1) Remove adjusting screw end cap (fig. 3-4).

(2) With the fuel pump operating, turn pressure regulating setscrew until reading on the pressure gage indicates 100 psi (7.03 kg per sq cm).

(3) Install adjusting screw end cap on pressure regulating setscrew.

*b. Water Heater Fuel Pump Adjustment.* Adjust the water heater fuel pump in a similar manner as the air heater fuel pump.

**3-9. Suction Line Sediment Strainer**

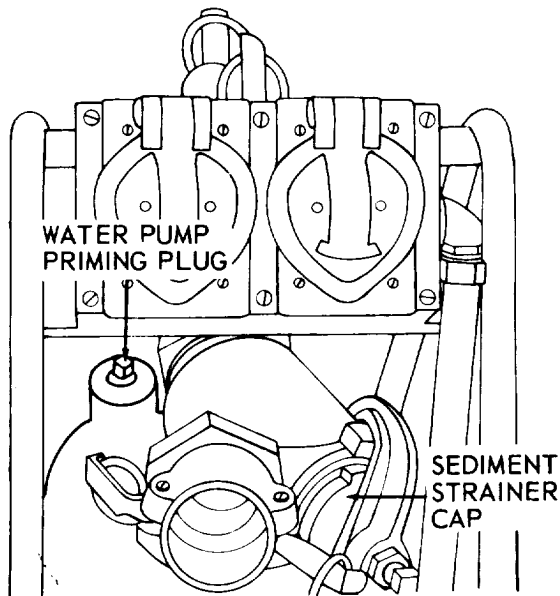
Refer to the following instructions and service the suction line sediment strainer.

*a. Remove priming plug (fig. 3-5).*

*b. Fill pump with water.*

*c. Replace priming plug.*

*d. Remove sediment strainer cap and strainer.*



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Figure 3-5. Suction line sediment strainer service and water pump priming instructions.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C).

- e. Clean strainer in cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.
- f. Install strainer and cap.

**3-10. Water Pump Priming**

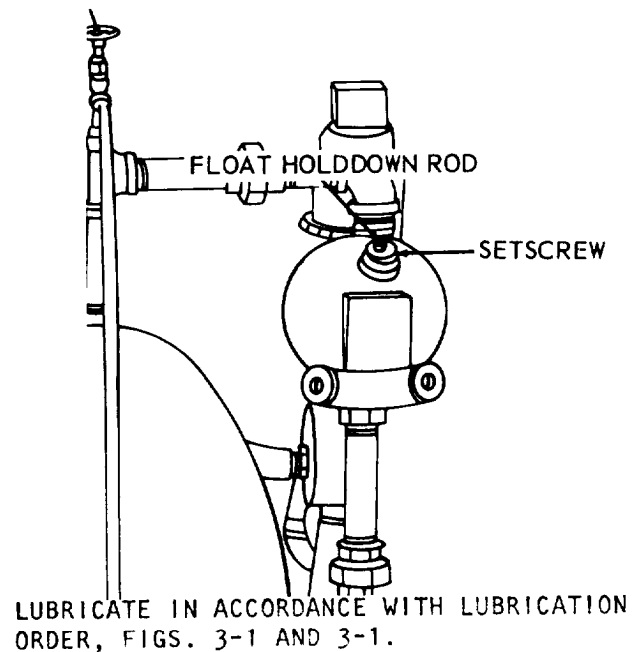
Refer to the following instructions and figure 3-5 to prime the water pump.

- a. Remove priming plug.
- b. Fill pump with water.
- c. Replace priming plug.

**3-11. Float Holddown Rod**

Refer to the following instructions and adjust the float holddown rod.

- a. Loosen setscrew and pull float holddown rod, figure 3-6, up to release. Tighten setscrew.
- b. Loosen setscrew and push holddown rod down to secure. Tighten setscrew.

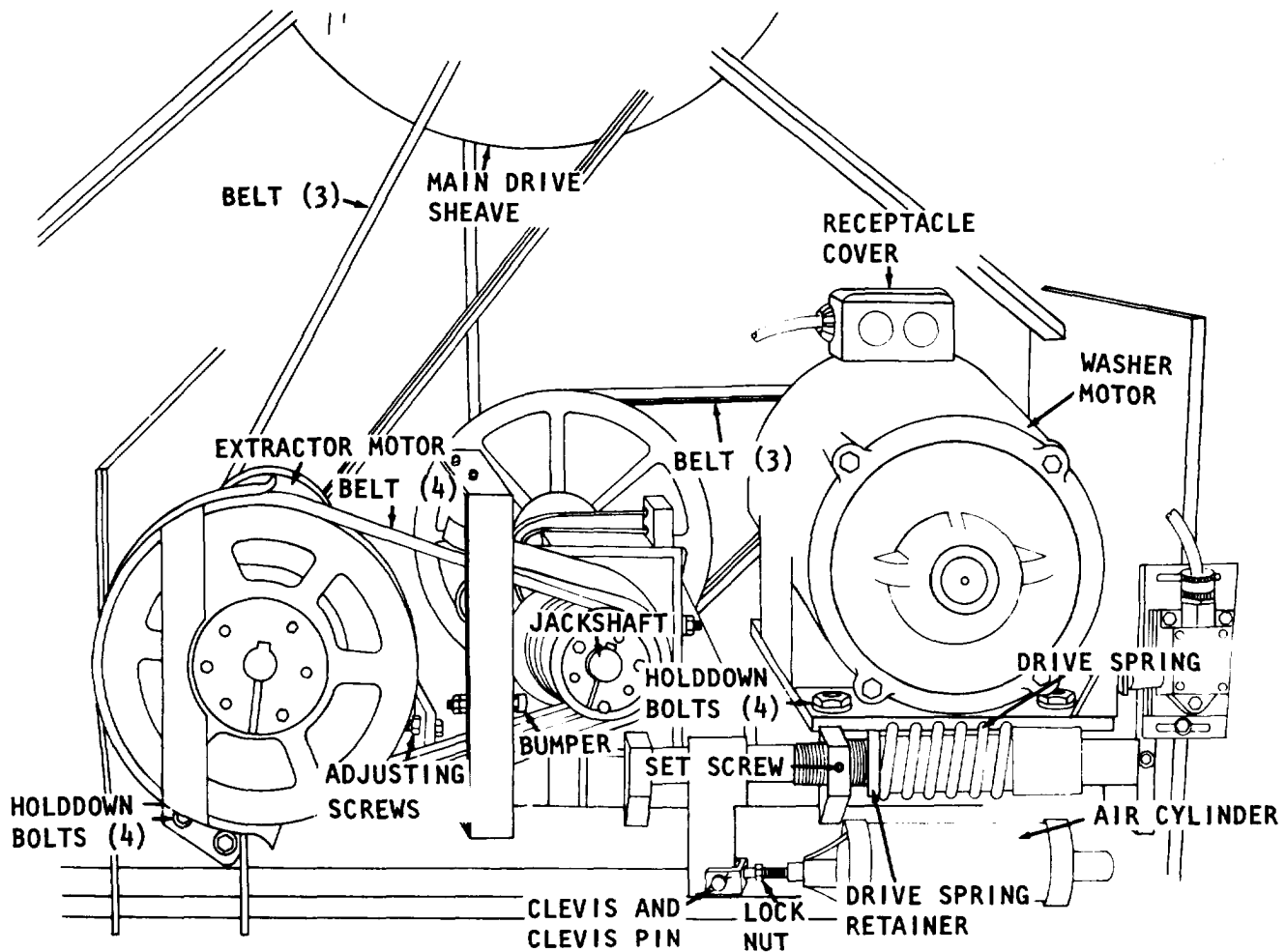


TS 10-3510-208-12/3-6

Figure 3-6. Float holddown rod releasing and securing instructions.

**3-12. Drive Belts**

- a. *Dryer Motor Drive Belts (Adjustment).* Loosen four holddown bolts, figure 3-7, and move motor until belt has ½ inch (1.27 cm) deflection between motor pulley and exhaust fan pulley.



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Figure 3-7. Extractor-washer drive belt adjustment (Eidal Model ELT9T).

b. *Extractor-Washer Drive Belts, Eidal Model ELT9T (Adjustment).* Refer to figure 3-7 and adjust the extractor-washer drive belts in the following sequence.

- (1) Loosen the four holddown bolts. Using the adjusting screws, adjust the belts on the main drive sheave and extractor motor to ½ inch (1.27 cm) deflection.
- (2) Tighten the holddown bolts.
- (3) Loosen the guide rod set screw at drive spring.
- (4) Rotate the drive spring retainer until the drive spring is adjusted to 4 inches (10.16 cm).

NOTE

Make adjustment while spring is in the relaxed position (wash cycle).

- (5) Tighten the guide rod setscrew.
- (6) Remove the clevis pin from the air cylinder assembly.
- (7) Loosen the locknut and compress the spring (inside air cylinder) three-fourths of an inch (1.91 cm) by rotating the clevis. Tighten the locknut and attach clevis and clevis pin in original position.

**CAUTION**

During extraction, the travel of the washer motor base is limited in one direction by the tension of its belts and in the other direction by an adjustable rubber bumper. The amount of travel should be adjusted to one-fourth inch (.64 cm). Less travel will

fail to free the belts. Greater travel will make the belts tend to wrap around the extractor motor sheave.

c. *Extractor-Washer Drive Belts, EdroModel EP120-LTU (Adjustment)*. Refer to figure 3-8 and adjust the extractor-washer drive belts as follows:

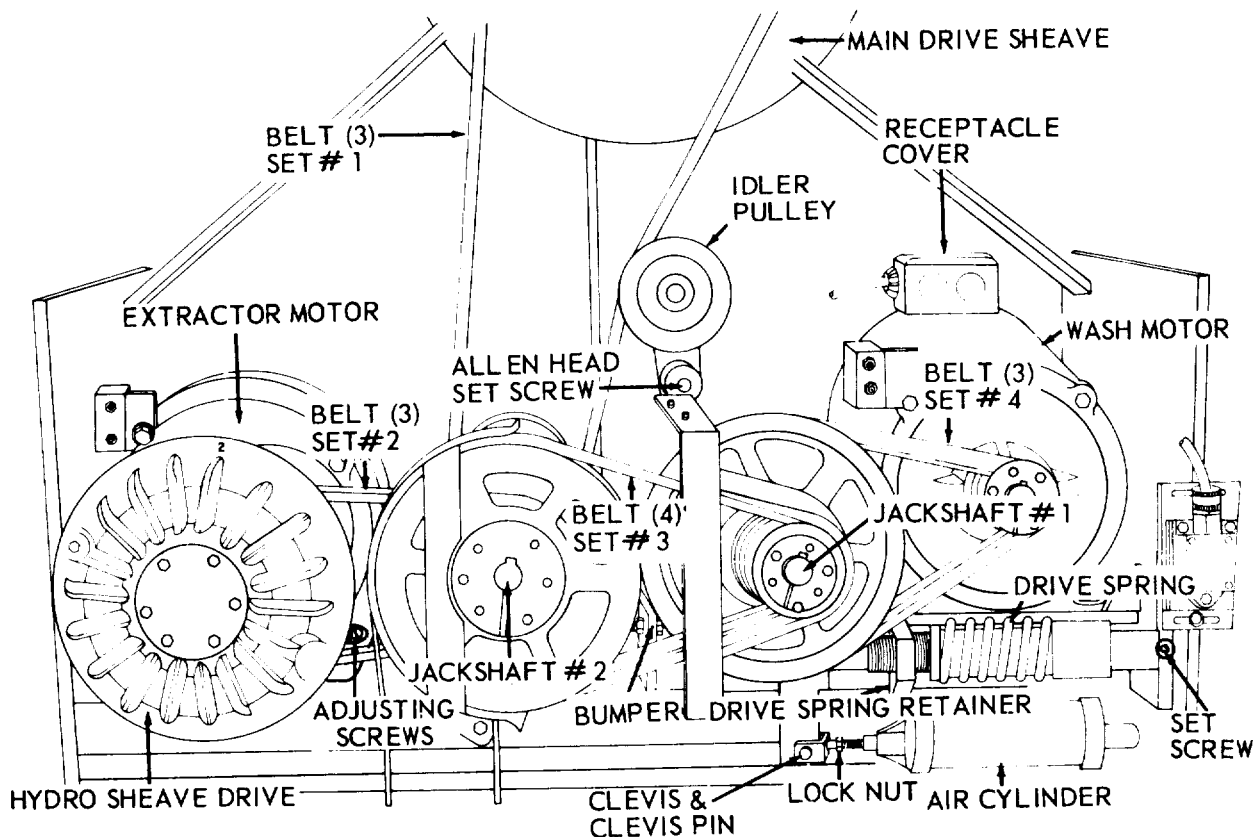
(1) *Washer motor drive belts*. Loosen motor mounting nuts and adjust belts to ½ inch (1.27 cm) deflection between pulleys.

(2) *Jackshaft to jackshaft belts*. Remove clevis pin from drive shifting air cylinder rod

clevis. Adjust the drive shifting air cylinder rod clevis to a minimum of ¼ inch (.64 cm) interference fit (short) between the eye of the clevis and the hole in the base arm. Activate cylinder to install clevis pin.

(3) *Extractor motor drive belts*. Adjust as in (1) above.

(4) *Main drive belts*. Loosen screw in idler pulley arm, turn arm counterclockwise, adjust belts to ½ inch (1.27 cm) deflection between pulleys, tighten screw in idler pulley arm.



TS 3510-208-12/3-8

Figure 3-8. Extractor-washer drive belt adjustment (Edro Model EP120-LTU).

**3-13. Magnetic Valve Adjustment (Eidal Model ELT9T only)**

a. *Valve Leaks Air in the Open Position (Magnet Not Energized)*.

(1) Remove the locking spring (1, fig. 3-9) and turn the slotted plunger screw (2), one-half turn at a time, in the counterclockwise direction.

(2) Replace locking spring.

b. *Valve Leaks Air Through the Exhaust Port (Magnet Is Energized)*.

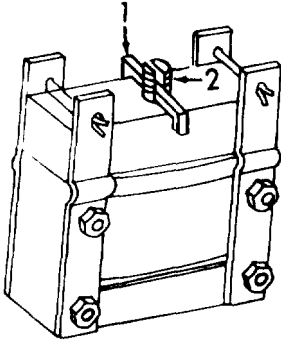
(1) Remove the locking spring (1, fig. 3-9) and turn the slotted plunger screw (2), one-half turn at a time, in the clockwise direction.

(2) Replace locking spring.

3-14. Fuses

a. Removal.

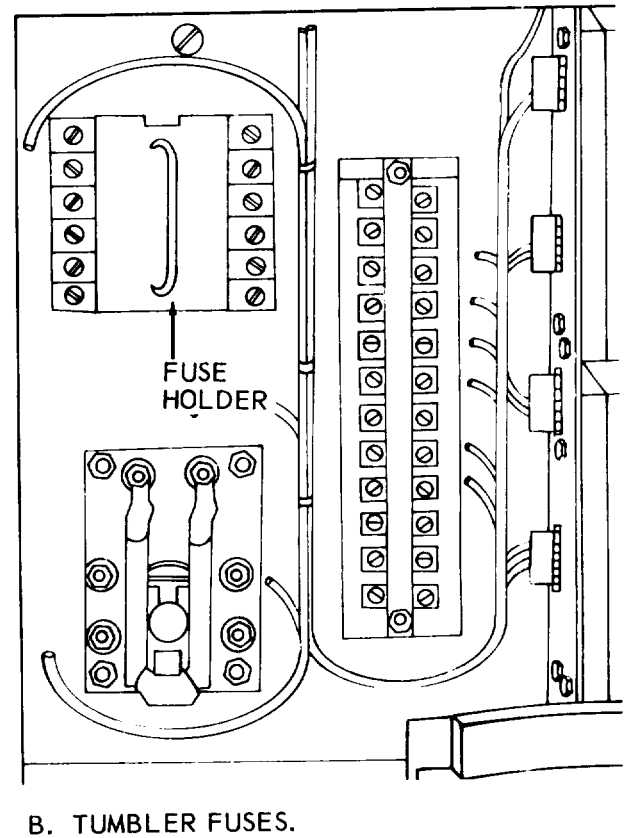
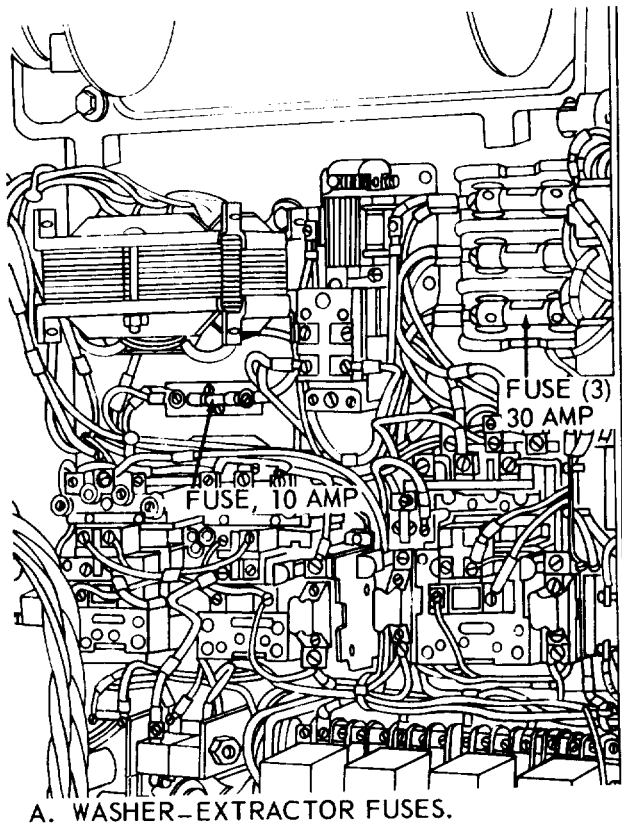
- (1) Remove the fuseholder, figure 3-10, by pulling out .
- (2) Remove the three fuses.



TS 10-3510-208-12/3-9

1. Spring 2. Screw

Figure 3-9, Magnetic Valve Adjustment  
(EIDAL MODEL ELT9T only).



TS 10-3510-208-12/3-10

Figure 3-10. Fuses, removal and installation.

*b. Installation.*

- (1) Install new fuses.
- (2) Install fuseholder.

**3-15. Air Compressor Air Filter**

To service the air compressor air filter, refer to

figure 3-11 and remove the screen and filter, blow out filter with compressed air, dip in diesel fuel or light engine oil, press out excess oil, then install the filter and screen.

**3-16. Hydro-Sheave Drive (Edro Model EP120-LTU only)**

Refer to figure 3-12 and service the hydro-sheave drive by filling with OE10 oil to proper level.

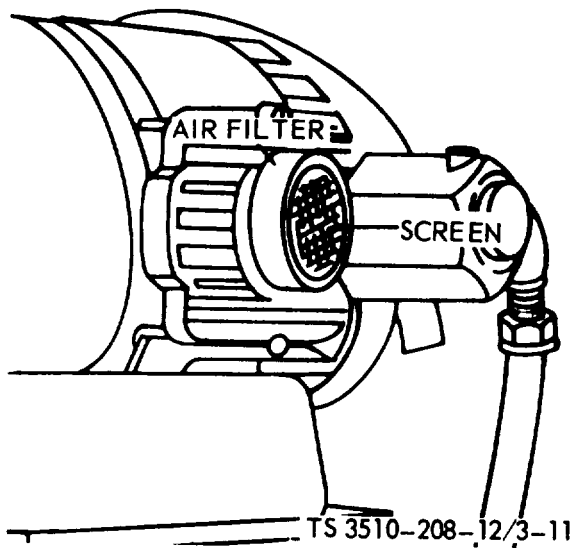


Figure 3-11. Air compressor air filter service.

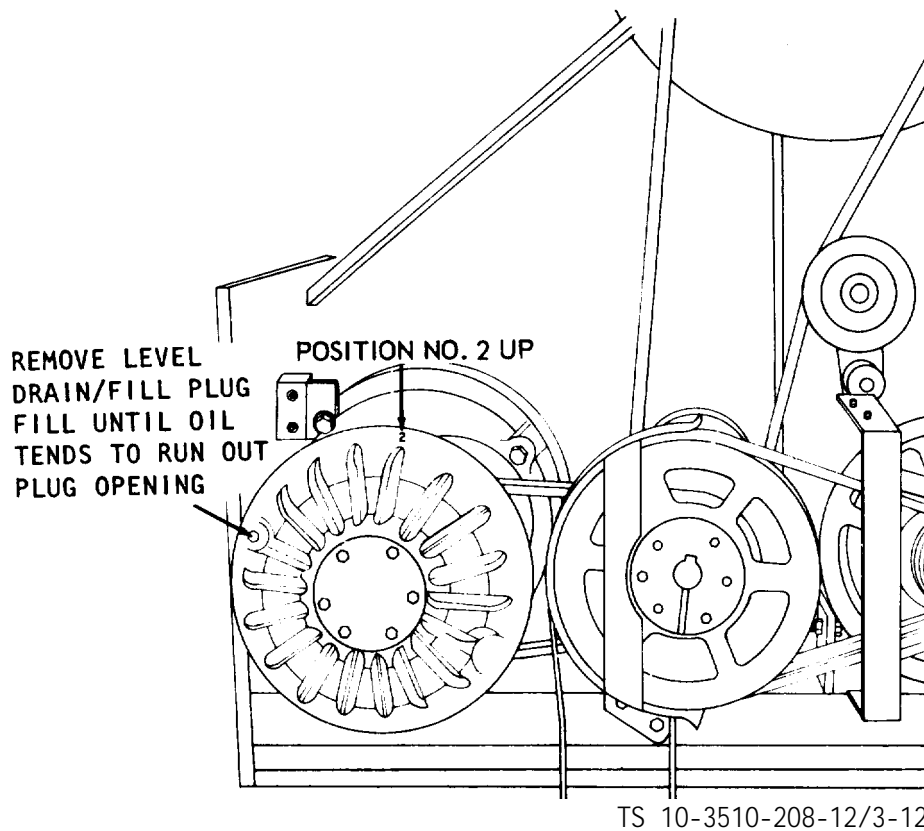


Figure 3-12. Hydro-Sheave service, (Edro Model EP120-LTU only).



## CHAPTER 4

## ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

## Section 1. SERVICE UPON RECEIPT OF MATERIEL

**4-1. Inspecting and Servicing the Equipment**

a. *Deprservation.* Prepare the unit for inspection and operation as outlined on DA Form 2258, attached on or near the operator's controls.

b. *Inspection.* Make a thorough visual inspection of the entire laundry unit for loose or missing mounting hardware, damage, and missing parts and components. Correct all faults or report the conditions to direct support maintenance.

c. *Servicing.*

(1) *Engine-Generator.* Refer to TM 5-6115-275-14 and service the engine-generator.

(2) *Trailer.* Refer to TM 9-2330-274-14 and service the trailer.

(3) *Laundry unit.*

(a) Perform the daily preventive maintenance services.

(b) Lubricate the unit in accordance with the current Lubrication order.

**4-2. Installation****CAUTION**

Prior to all towing operations of the laundry unit, in order to prevent damaged

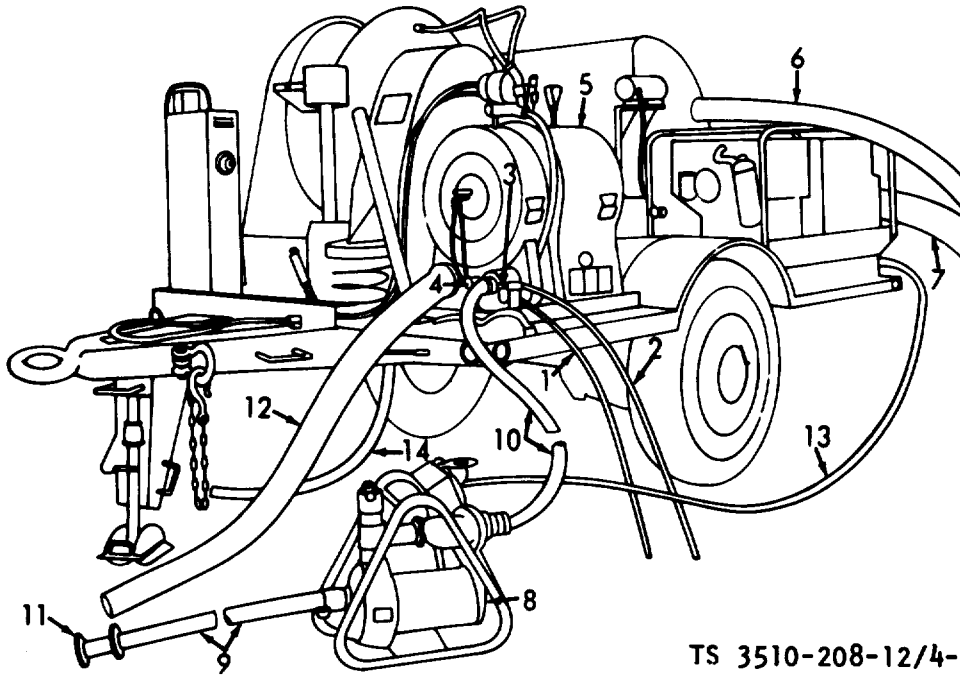
or broken mercury bulbs utilized with the dryer tumbler air temperature control, it is essential that the following protective measures be taken.

(1) Remove the dial face cover from the control. Insert cushioning material, such as soft sponge rubber or *packing* paper into the mercury bulb housing of the control. Reinstall the dial face cover.

(2) Upon completion of the towing operation, remove the cushioning material from the mercury bulb housing and reinstall the cover.

a. Tow the trailer to the water source and set it up with the water heater side next to the water source. Set the handbrake levers and lower the trailer support and caster wheel. If necessary, dig holes or block wheels to make sure the trailer is level.

b. Install the fuel lines (1 and 2, fig. 4-1) from the fuel container to the fuel filter (3) and to the fuel pump (4) of the water heater (5).



TS 3510-208-12/4-1

- |                 |                 |
|-----------------|-----------------|
| 1. Line         | 8. Water Pump   |
| 2. Line         | 9. Hose         |
| 3. Fuel Filter  | 10. Hose        |
| 4. Fuel Pump    | 11. Strainer    |
| 5. Water Heater | 12. Duct        |
| 6. Exhaust Duct | 13. Power Cable |
| 7. Exhaust Duct | 14. Hose        |

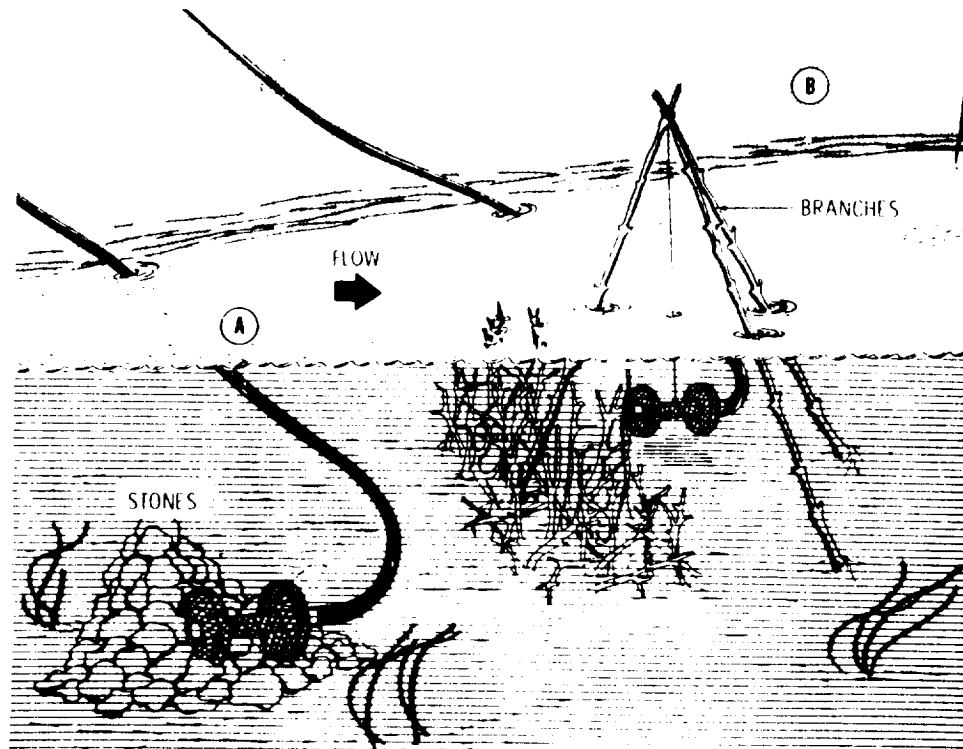
Figure 4-1. Installation of lines, hoses, and ducts

c. Install the fuel lines from the fuel container to the tumbler in a similar manner.

d. Install the flexible exhaust ducts (6 and 7) to the tumbler burner exhaust port (6) and the engine-generator exhaust (7).

e. Remove the water pump (8) from the trailer deck and locate it not more than 10 feet (300 cm) above the water source. Install the suction hose (9)

to the water pump connections. Connect the water pump-to-water heater hose (10). Have the suction strainer (11) from the tool box and install it on the end of the suction hose. In placing the strainer in the water source (fig. 4-2), protect it from weeds, sand, and refuse. Whenever possible, center the strainer in a cubic yard of gravel.



TS 10-3510-208-12/4-2

Figure 4-2, Positioning strainer in water source.

- f. Connect the water heater exhaust duct (12, fig. 4-1 ) to the water heater exhaust port.
- g. Connect the power cable (13) to the water pump power receptacle and to the pump service outlet.
- h. Connect the tumbler air exhaust duct to the tumbler air exhaust port. If possible, use scrap lumber or other suitable materiel to raise and support the ducts free from the ground. Be sure the exhaust from the tumbler is vented to open air and never inside a tent.

- i. Connect the washer-extractor drain hose (14) to the drain pipe. Locate the other end of the hose in water, downstream from the water pump suction hose.
- j. Remove the step from the storage bin and install it.
- k. Release the float holddown rod.
- l. Remove the holddown bars.

## Section II. MOVEMENT TO A NEW WORKSITE

### 4-3. Dismantling for Movement

- a. Secure the float holddown rod.
- b. Remove the step and stow it in the storage bin.
- c. Remove all hoses, lines, and ducts and stow them securely.
- d. Remove the suction line strainer and stow it in the tool box.

- e. Secure the water pump to the deck of the trailer.
- f. Install the holddown and tiedowns.

#### CAUTION

To prevent the washer-extractor tiedown mounting bolts from vibrating loose during towing, it is essential that an additional lock-nut 3/4" x 10 UNC. NSN

5310 -00-045-1029, be installed on each basic mounting bolt, nut, and lockwasher. After installation, a periodic inspection during travel will be made to insure that the mounting hardware remains secure. Torque tiedown mounting bolts to 170 ft-lbs (23.51 kg).

Prior to all towing operations of the laundry unit, in order to prevent damaged or broken mercury bulbs utilized with the dryer tumbler air temperature control, it is essential that the following protective measures be taken.

(1) Remove the dial face cover from the control. Insert cushioning material, such as soft sponge rubber or packing paper into the mercury bulb housing of the control. Reinstall the dial face cover.

(2) Upon completion of the towing operation, remove the cushioning material from the mercury bulb housing and reinstall the cover

NOTE

If unit is to be shut down for 5 days or longer, drain fuel from fuel pumps and fill pumps with OE. Turn pumps several revolutions to thoroughly lubricate internal parts.

*g.* Lubricate the unit as specified in the lubrication order.

**4-4 Reinstallation after Movement**

*a.* Ramp Unloading.

(1) Remove any blocking and tiedowns that secure the laundry unit to the flatcar or carrier.

(2) The laundry unit may be towed from the flatcar or carrier by use of a suitable ramp and towing vehicle provided the required de preservation and services have been performed.

*b. Lifting Device.*

(1) Remove any blocking and tiedowns that secure the laundry unit to the flatcar or carrier.

(2) Attach the cables of a suitable lifting device to the lifting eyes of the trailer and lift the laundry unit from the carrier.

**WARNING**

Do not use a lifting device with a capacity of less than 10,000 pounds (4500 kg). Do not allow the unit to swing back and forth while suspended. Failure to observe this warning may result in serious injury or death to personnel.

*c. Unpacking the Equipment.*

(1) Remove all paper, tape, and other packing material from the equipment.

(2) Use cleaning solvent and remove the compound sprayed over the metal surfaces. This compound is not a lubricant; be sure it is removed from all wearing surfaces.

*d. Reinstallation.* Refer to paragraph 4-2 and reinstall the equipment using procedures listed therein after unloading and unpacking has been accomplished.

**section III. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT**

**4-5. Tools and Equipment**

Tools, equipment, and repair parts issued with or authorized for the Eidal Model ELT9T and Edro Model EP120-LTU, laundry unit(s) are listed in TM 10-3510-208-20P.

**4-6. Special Tools and Equipment**

No special tools or equipment are required for the laundry units.

**4-7. Maintenance Repair Parts**

Repair parts and equipment are listed and illustrated in the repair parts and special tools list covering organizational maintenance for this equipment, TM 10-3510-208-20P.

**Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**4-8. General**

To insure that the Eidal Model ELT9T and Edro Model EP120-LTU laundry unit(s) are ready for operation at all times, they must be inspected systematically so that faults may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services are listed and described in paragraph 4-9.

All faults will be recorded together with corrective action taken on DA Form 2404 at the earliest possible opportunity.

**4-9. Preventive Maintenance Checks and Services**

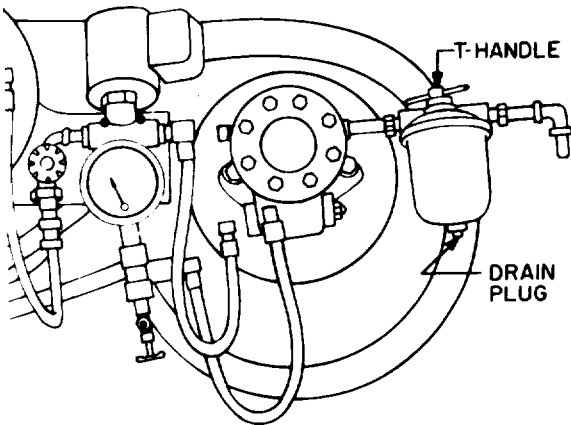
This paragraph contains a tabulated listing of preventive maintenance services which must be performed quarterly by organizational maintenance

personnel. The item numbers are listed consecutively and indicate the sequence of minimum requirements. A quarterly interval is equal to three

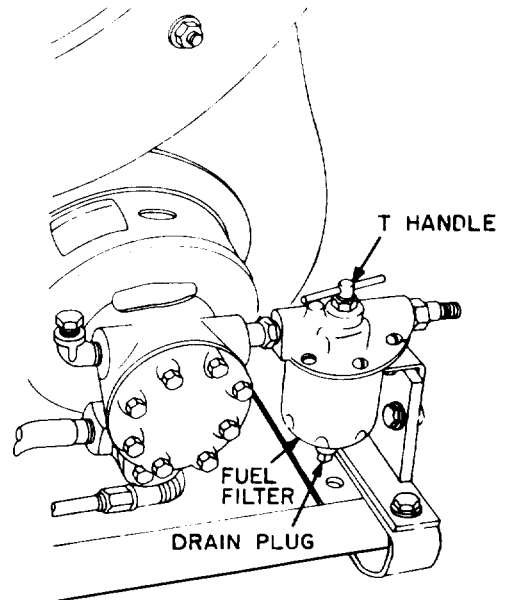
calendar months, or 250 hours of operation, whichever occurs first. Refer to table 4-1 for quarterly preventive maintenance services.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
1	●				Fuel filter	Turn "T" handle on top of filter canister, then remove drain plug and drain water and sediment from fuel filters. (Water Heater and Tumbler).	



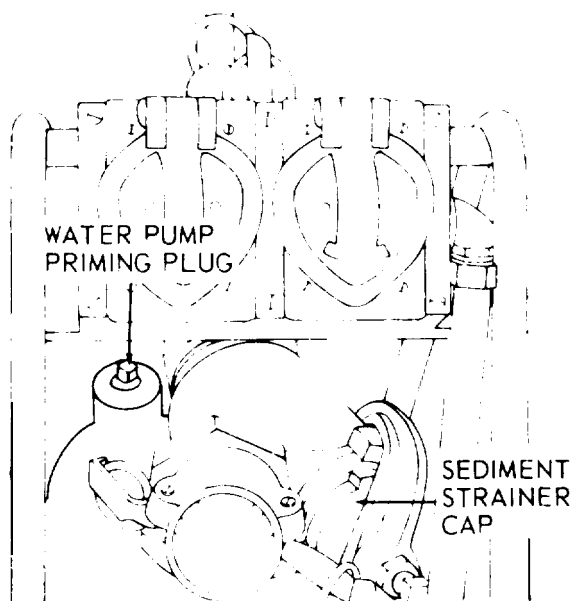
TS 10-3510-208-12/4-3 (1 of 15)



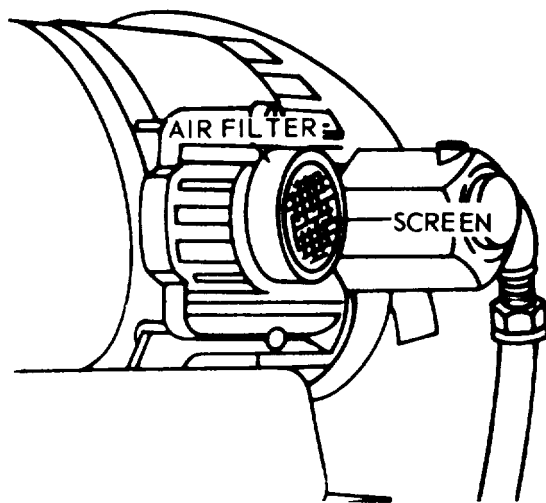
TS 10-3510-208-12/4-3 (2 of 15)

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
	●				Water pump strainer	Remove and clean water pump strainer.	
3	●				Air compressor	Remove and clean air compressor inlet filter.	



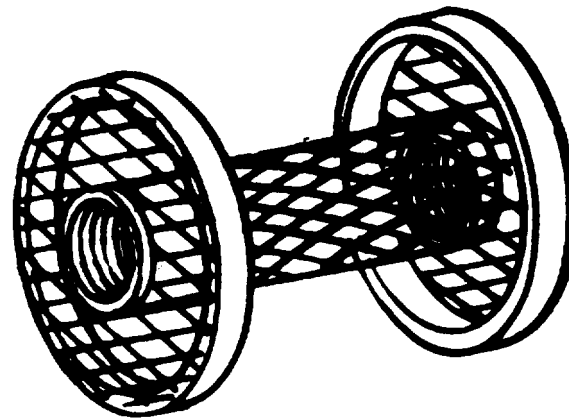
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TS 10-3510-208-12/4-3 (4 of 15)

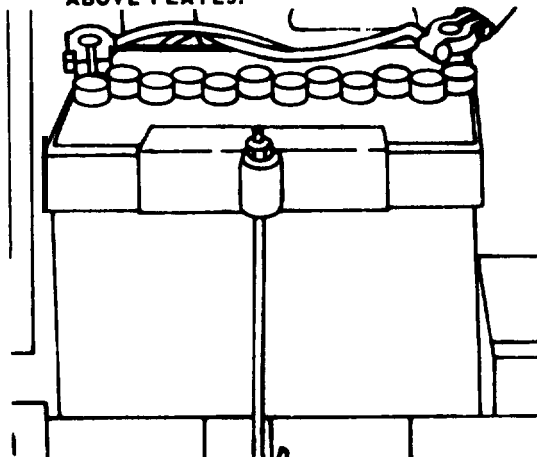
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				W-WEEKLY (40 HOURS)	S-SEMI ANNUAL (500 HOURS)	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H	M-MONTHLY (100 HOURS)	H-HOURS (AS INDICATED)		
4	●						Clean suction screen of obstructions or contamination.	
5		●					Inspect battery electrolyte level, clean battery and connections.	



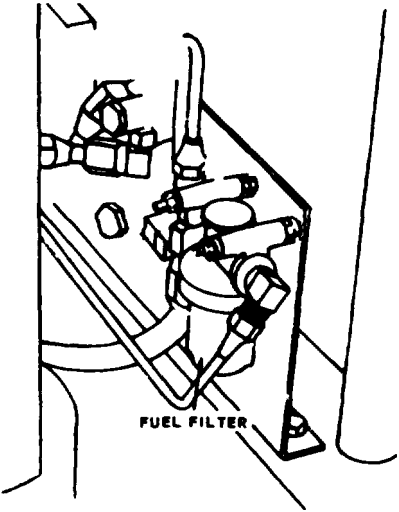
TS 10-3510-208-12/4-3 (5 of 15)

**NOTE: REMOVE VENT CAPS (12) AND FILL BATTERY WITH ELECTROLYTE TO 3/8 INCH (0.9525 cm) ABOVE PLATES.**



TS 10-3510-208-12/4-3 (6 of 15)

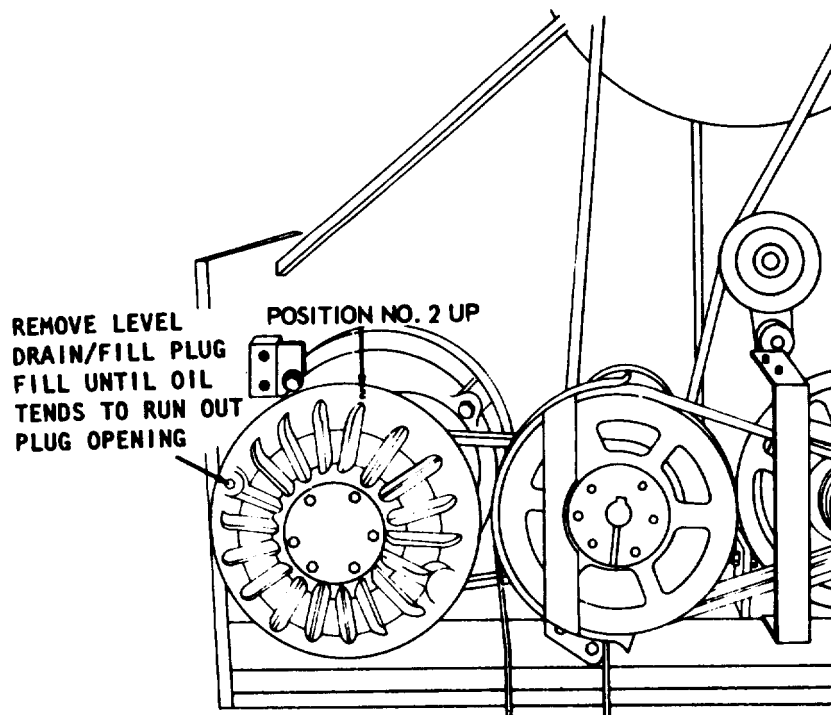
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
6		●			Fuel filter	Clean generator set fuel filter.	
							
TS 10-3510-208-12/4-3 (7 of 15)							
7		●			Generator set	Visually inspect entire generator set for loose, missing, or damaged components, and unusual wear or deterioration. Clean as required. Inspect air cleaner restriction indicator and clean or replace element as required.	
8		●			Laundry unit	Visually inspect entire laundry unit for loose, missing, or damaged components, and unusual wear or deterioration. Clean unit as required.	



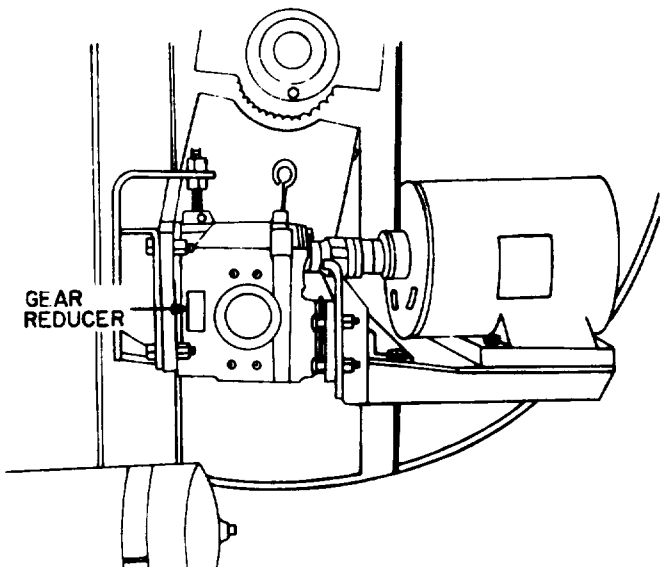
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
9		●			Hydro-sheave	<p>NOTE</p> <p>Pay particular attention to the low water shut off rod and valve actuating rods on water heater. Clean lint from dryer tumbler helix control stem in dryer exhaust port. Clean dryer tumble combustion chamber.</p> <p>Check oil level and replenish as necessary. Clean main drive and hydro sheave, guide rods on washer extractor and main brake assembly.</p>	



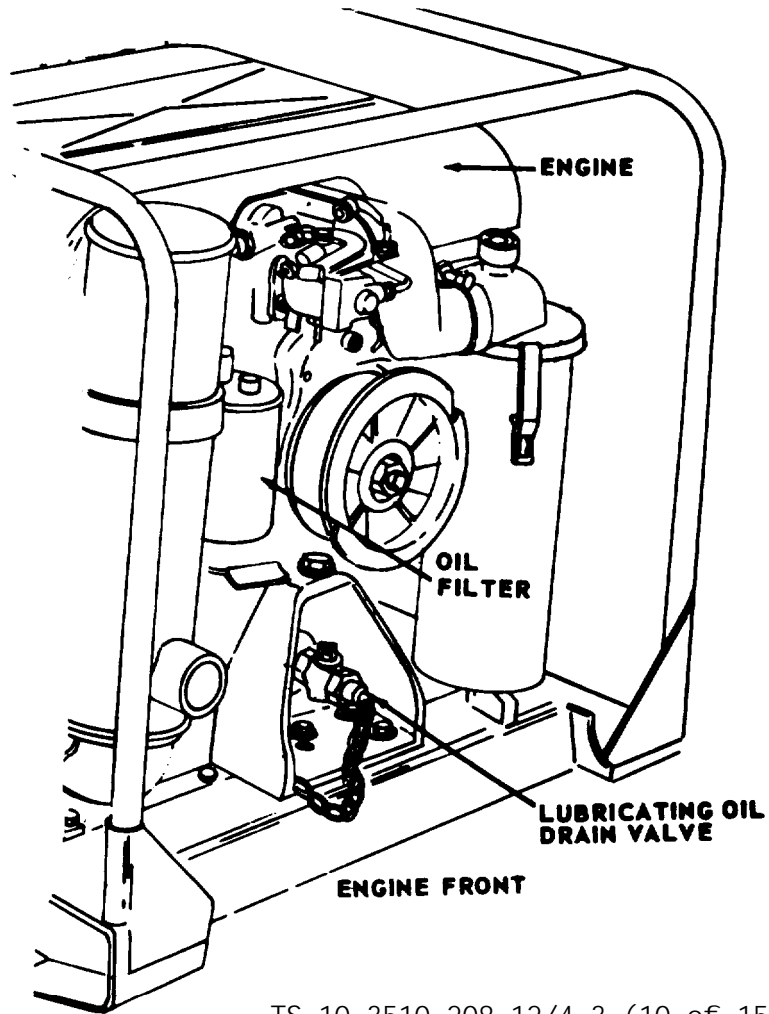
TS 10-3510-208-12/4-3 (8 of 15)

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
10		●			Gear reducer	Check and replenish oil in the gear reducer unit as required.	
							
TS 10-3510-208-12/4-3 (9 of 15)							
11		●			Fuel filters	Remove and clean fuel filter elements on tumbler and water heater.	

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

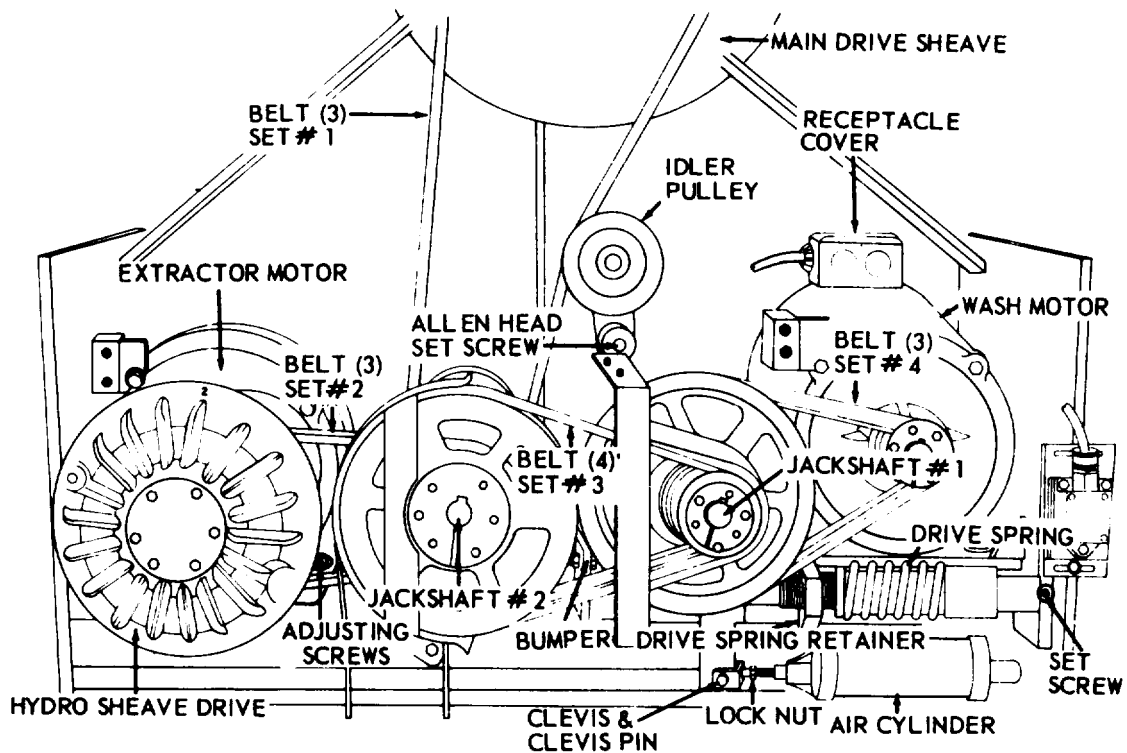
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
12				●	Generator set	a. Drain and refill engine lubricating oil every 300 hours or 6 months.  b. Change lubricating oil filter every 300 hours or 6 months.	



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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
13		●			Control boxes	Remove front covers and clean interior of the washer extractor and tumbler dryer control boxes. Use care when cleaning to prevent damage to components.	
14		●			Fuel drums	Dump remaining fuel in fuel drums to remove water and contamination.	
15			●		Washer-extractor	Check and adjust extractor washer V Belts.	

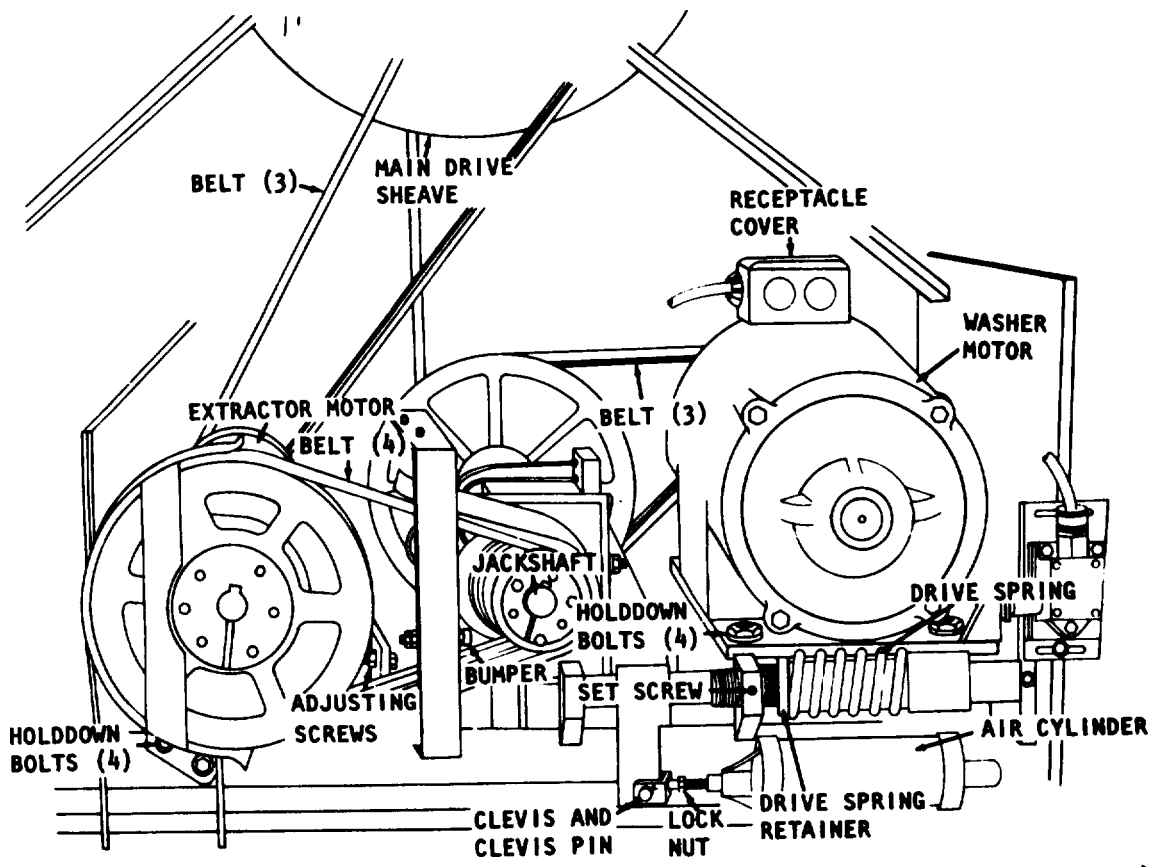


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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			

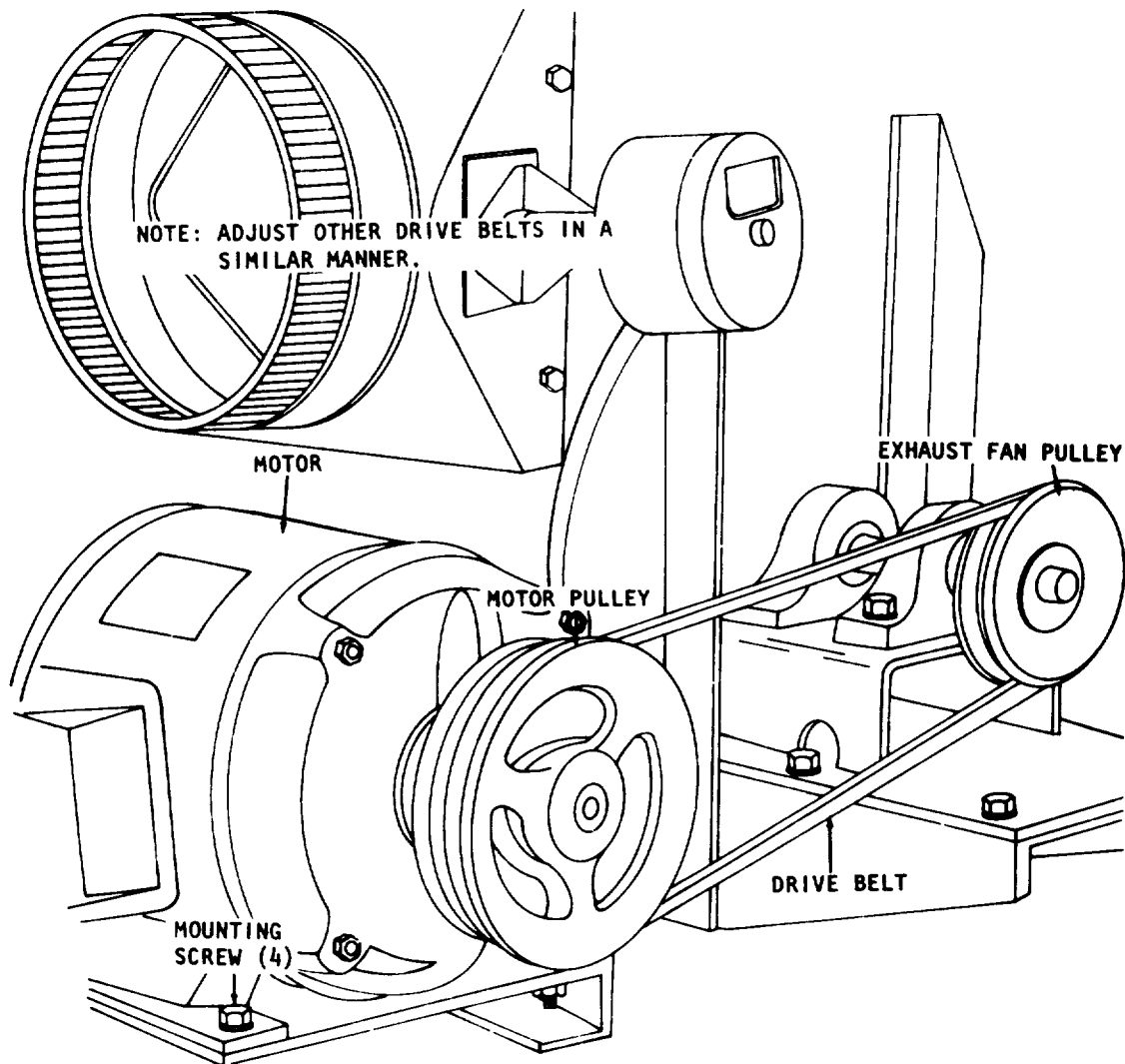
15  
Cont.



TS 10-3510-208-12/4-3 (12 of 15)

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
16			●		Tumbler	Check and adjust tumbler chain and V Belts.	



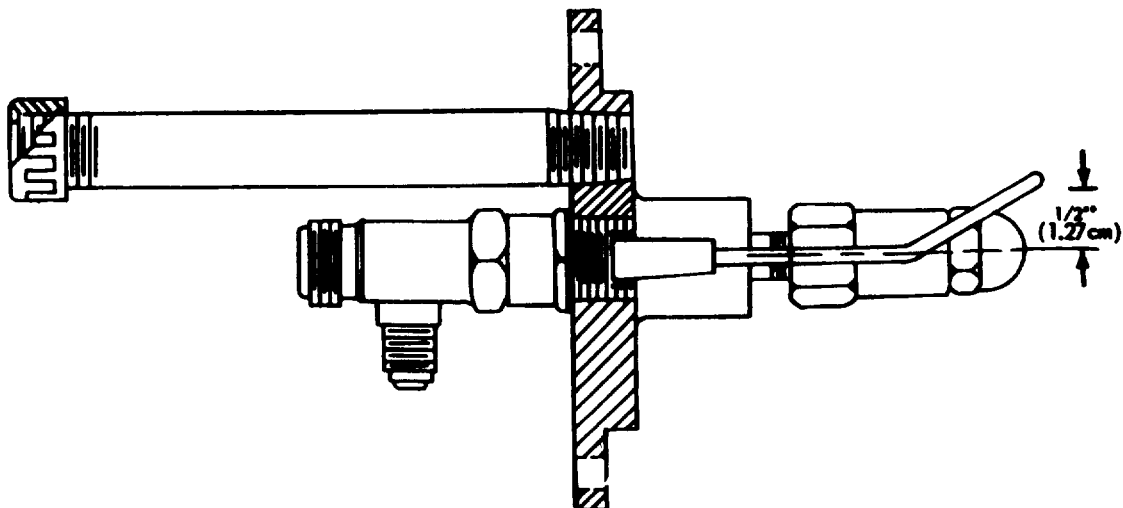
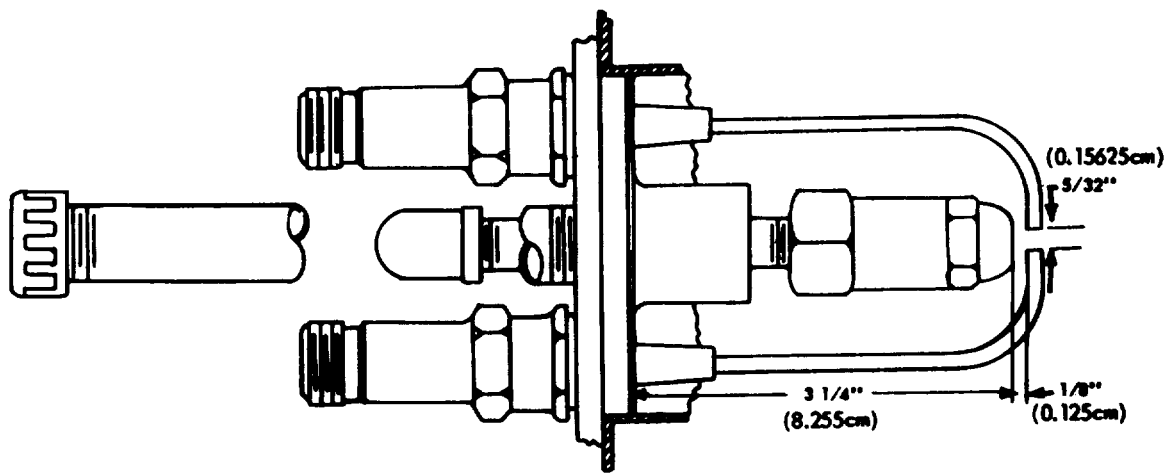
**ADJUSTMENT:**

LOOSEN MOUNTING SCREW (4) AND MOVE MOTOR UNTIL BELT HAS 1/2 INCH (1.27 CM) DEFLECTION BETWEEN MOTOR PULLEY AND EXHAUST FAN PULLEY.

TS 10-3510-208-12/4-3 (13 of 15)

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

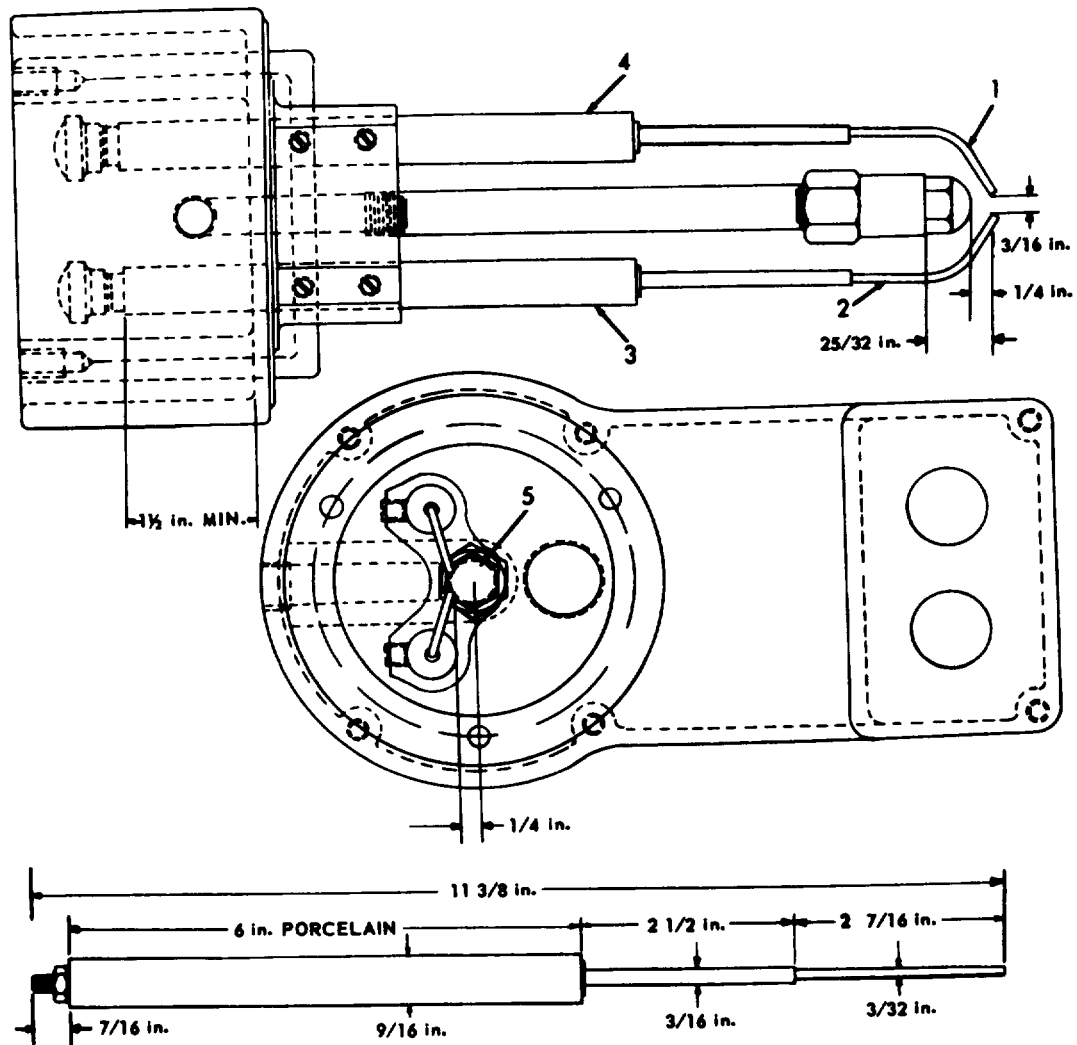
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
17			●		Water heater	Adjust water heater burner electrode gap, and clean burner nozzle.	



TS 10-3510-208-12/4-3 (14 of 15)

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED	PROCEDURES Check for and have repaired or adjusted as necessary	EQUIPMENT IS Not Ready/ Available if:
	W	M	S	H			
18			●		Tumbler	Adjust tumbler burner electrode gap. Clean burner nozzle.	



TS 10-3510-208-12/4-3 (15 of 15)

Legend

- 1. Electrode
- 2. Electrode
- 3. Porcelain
- 4. Porcelain
- 5. Nozzle Tip



Table 4-2 Troubleshooting

**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION****1. GENERATOR FAILS TO BUILD UP RATED VOLTAGE**

- Step 1.* Check for a defective voltmeter. (Refer to TM 5-6115-275-14).  
Replace voltmeter. (Refer to TM 6-6115-275-14).
- Step 2.* Check for improper or lose of polarity. (Refer to TM 5-6115-275-14).  
Flash field. (Refer to TM 5-6115-275-14).
- Step 3.* Check for a defective voltage regulator. (Refer to TM 5-6115-275-14).  
Replace voltage regulator. (Refer to TM 5-6115-275-14).

**2. GENERATOR OVERHEATS**

- Step 1.* Check for generator overload. (Refer to TM 5-6115-275-14).  
Reduce the load. (Refer to TM 5-6115-275-14).
- Step 2.* Check for obstruction of generator ventilation. (Refer to TM 5-6115-275-14).

**3. GENERATOR FAILS TO SUPPLY POWER TO LOAD**

- Step 1.* Check for loose load connections. (Refer to TM 5-6115-275-14).  
Tighten load connection. (Refer to TM 5-6115-275-14).
- Step 2.* Check for generator overload. (Refer to TM 5-6115-275-14).  
Reduce the load. (Refer to TM 5-6115-275-14).

**4. GENERATOR VOLTAGE FLUCTUATES**

- Step 1.* Check for faulty engine operation. (Refer to TM 5-2805-259-14).  
Refer to TM 5-2805-259-14 for engine maintenance.
- Step 2.* Check for generator overload. (Refer to TM 5-6115-275-14).  
Reduce the load. (Refer to TM 5-6115-275-14).
- Step 3.* Check for loose load connection. (Refer to TM 5-6115-275-14).  
Tighten load connection. (Refer to TM 5-6115-275-14).
- Step 4.* Test the voltage regulator. (Refer to TM 5-6115-275-14).  
Replace voltage regulator. (Refer to TM 5-6115-275-14).

**5. FREQUENCY FLUCTUATES**

- Step 1.* Check for loose generator mounting bolts.  
Tighten bolts.
- Step 2.* Check governor for out of adjustment. (Refer to TM 5-2805-259-14).  
Refer to TM 5-2805-259-14 for engine maintenance.

**6. ENGINE OIL PRESSURE NOT INDICATED ON GAGE**

- Step 1.* Check for a cracked, or broken oil pressure indicator. Inspect for broken wiring. Test with a multimeter.  
Replace indicator. (Refer to TM 5-2605-259-14).
- Step 2.* Check for a defective transmitter.  
Replace transmitter. (Refer to TM 5-2805-259-14).

**7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL**

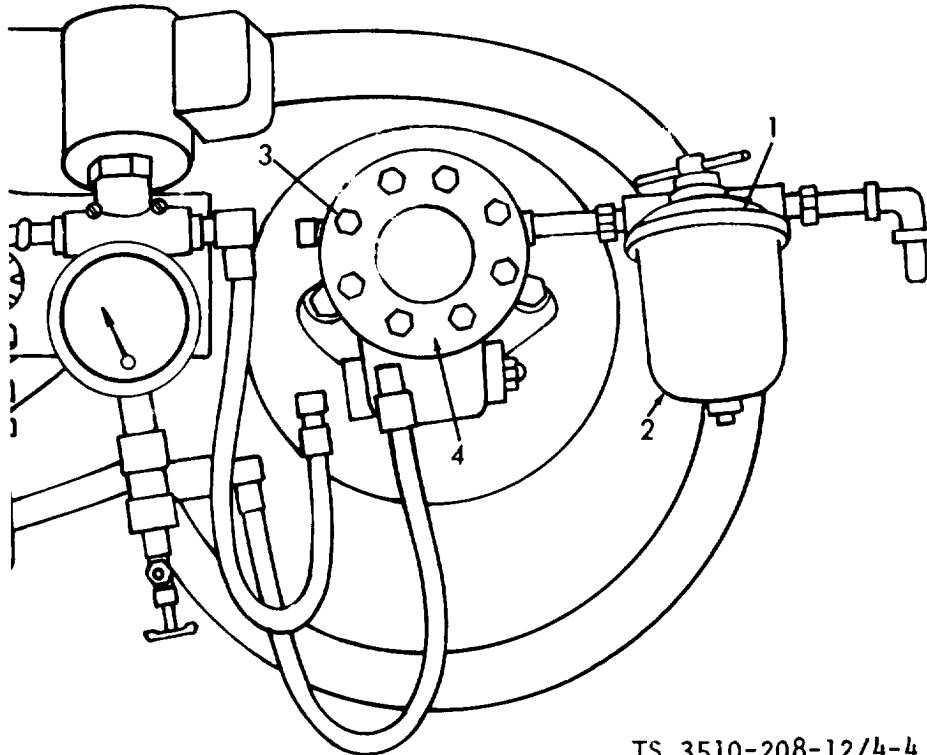
- Step 1.* Check for a clogged fuel pump strainer.  
Service the water heater fuel pump strainer as follows:
- a. Remove eight mounting screws, (3, fig. 4-4) on fuel pump (4).
  - b. Remove strainer and gasket. Discard gasket.



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MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

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TS 3510-208-12/4-4

- |          |              |
|----------|--------------|
| 1. Screw | 3. Screw     |
| 2. Sump  | 4. Fuel pump |

Figure 4-4. Water heater fuel pump and fuel filter service.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

- c. Clean strainer with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.
- d. Install strainer and new gasket and secure with eight mounting screws (3, fig. 4-4).

**Step 2. Inspect fuel pump for loose mounting. Check pumps for cracks, breaks, and leaks.**

Tighten the mounting. Replace the fuel pump as follows:

- a. Refer to figure 4-5 and remove the fuel filter and bracket.
- b. Refer to figure 4-6 and remove the fuel pump.

**Step 3. Check fuel pump electric motor for binding or a short circuit that will cause the thermal protector to deactivate.**

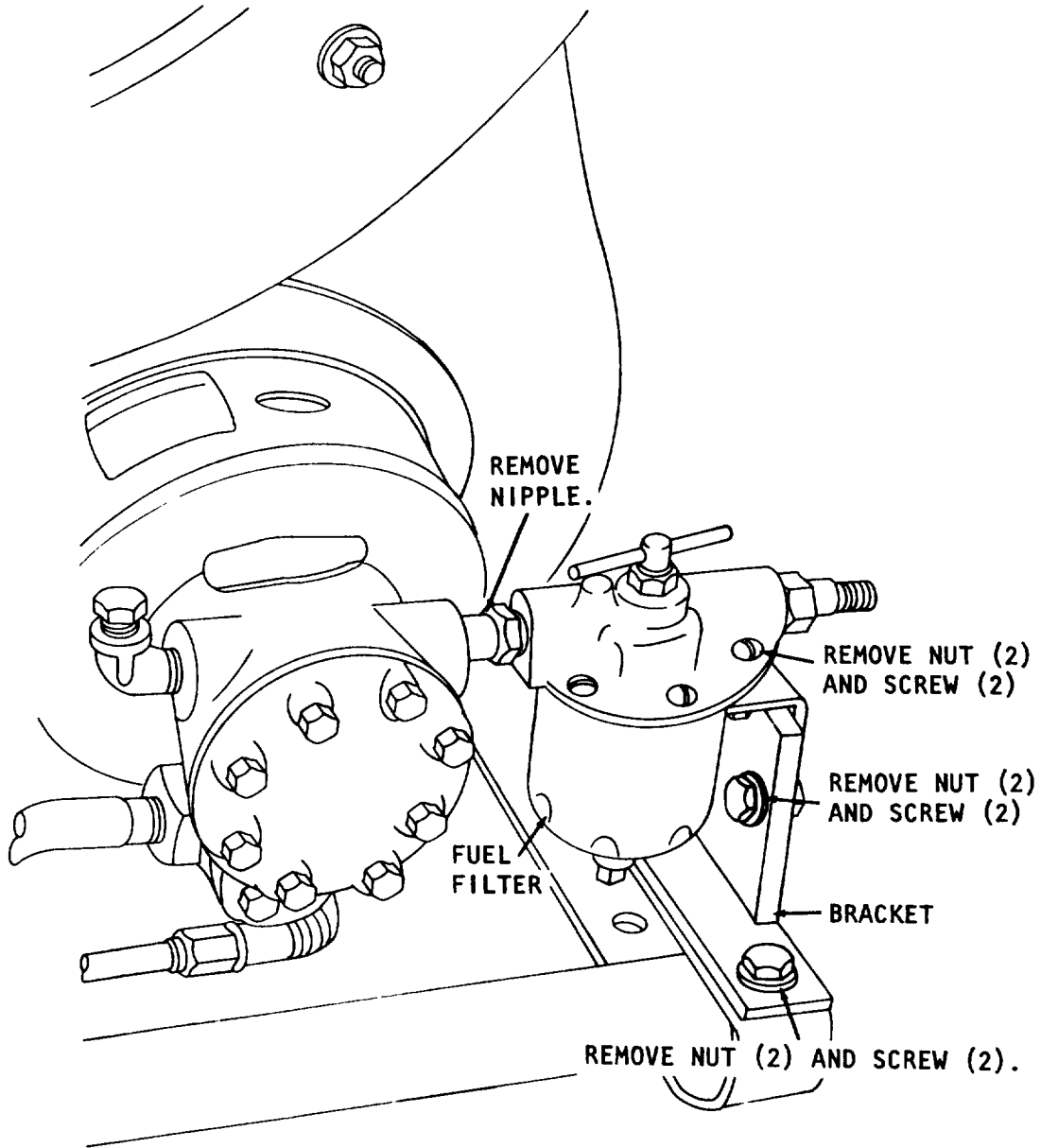
Reset thermal protector by pressing button located on the end bell of the motor. If the motor does not turn after resetting, proceed as follows:

- a. Shut off the electrical power, open the blower air gate, and try to rotate the motor by inserting a screwdriver through the air gate opening and turning the blower.
- b. If unable to turn the motor, disconnect the fuel pump coupling to determine whether the motor or the fuel pump is bound. If the pump is bound, fill the pump housing with lubricant and attempt to turn the shaft with a wrench. If unable to free pump or motor replace defective item.

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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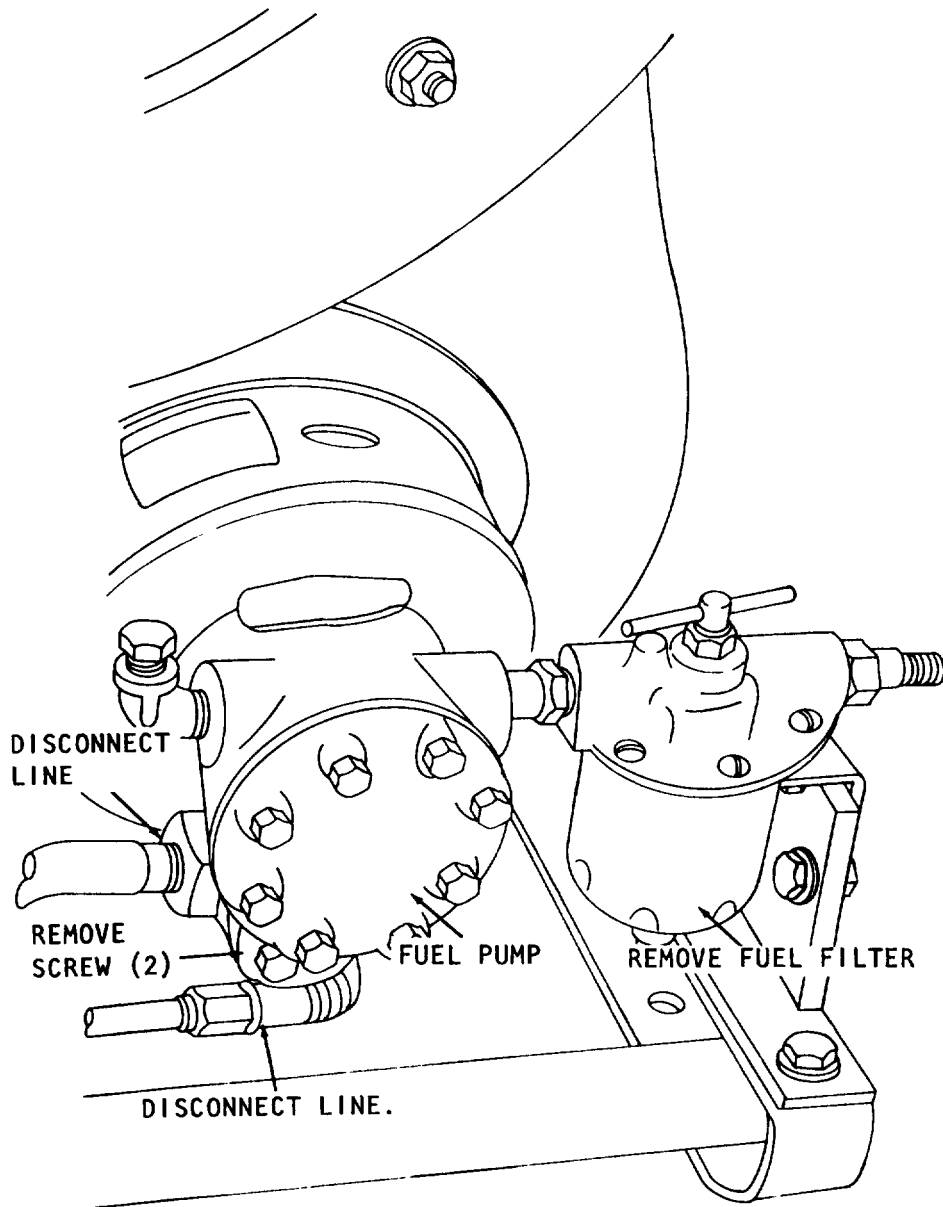
TS 3510-208-12/4-5

Figure 4-5. Fuel filter and bracket, removal and installtion.

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MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

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TS 3510-208-12/4-6

*Figure 4-6. Fuel pump, removal and installation.*

**8. AIR HEATER FUEL PUMP FAILS TO DELIVER FUEL**

*Step 1. Check for a clogged fuel pump strainer.*

Refer to instruction a. through d., listed under Step 1. of 7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL, and service the air heater fuel pump in a similar manner.

**MALFUNCTION**

**TEST OR INSPECTION**

**CORRECTIVE ACTION**

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*Step 2.* Check for a cracked, broken or a leaking fuel pump.

Refer to instructions *a.* and *b.*, listed under Step 2. of 7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL, and replace the fuel pump.

**9. AIR OR WATER HEATER FUEL PUMP NOISY**

*Step 1.* Check for loose pump coupling.

Tighten coupling screws.

*Step 2.* Check for frozen fuel pump shaft (no movement) or worn shaft seal.

Refer to instructions *a.* and *b.*, listed under step 2. of 7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL, and replace the fuel pump.

**10. PULSATING PRESSURE INDICATED BY PRESSURE GAGE**

*Step 1.* Check for a cracked or broken pressure gage.

Refer to figure 4-7 and replace the fuel pressure gage.

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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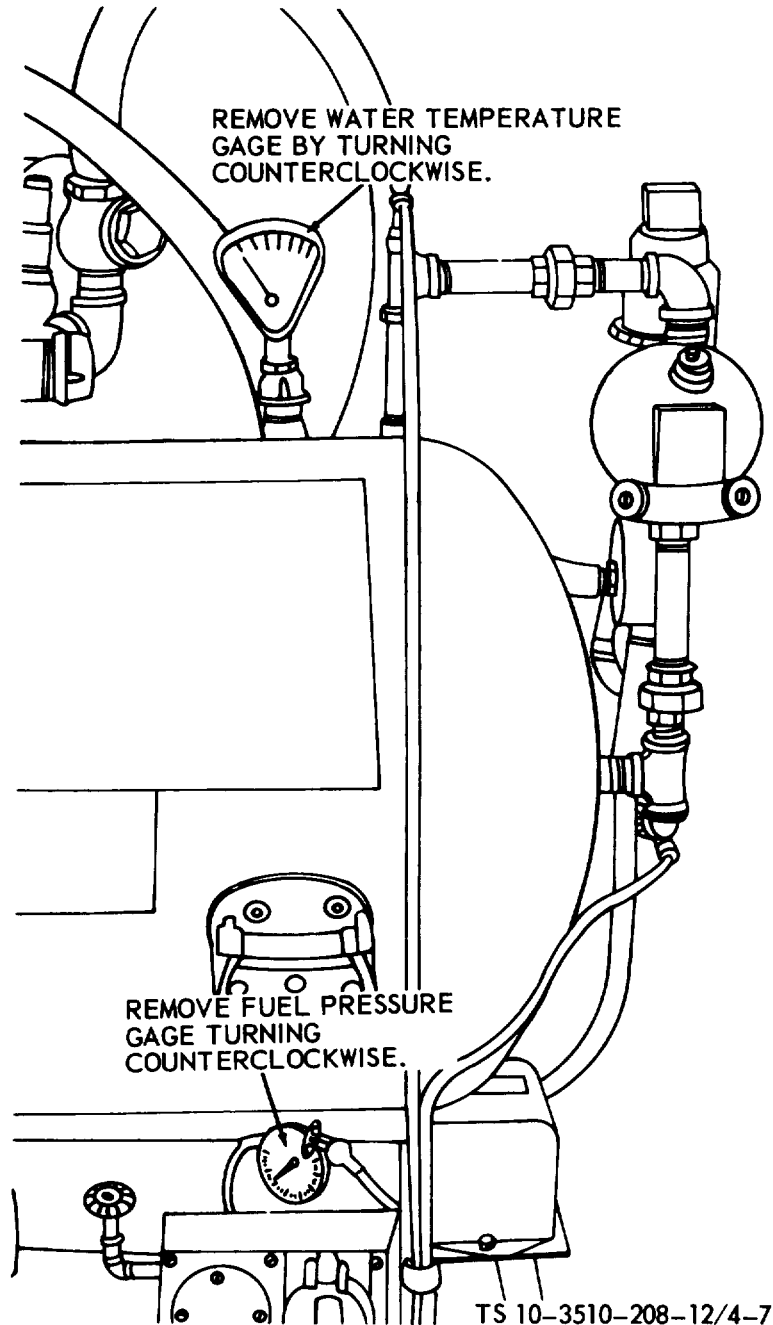


Figure 4-7. Fuel pressure gage and water temperature gage, removal and installation

**Step 2.** Check the pressure gage to see if pump pressure is 100 psi (7.03 kg per sq cm) with pump operating. Refer to the following instructions and adjust the fuel pump pressure.

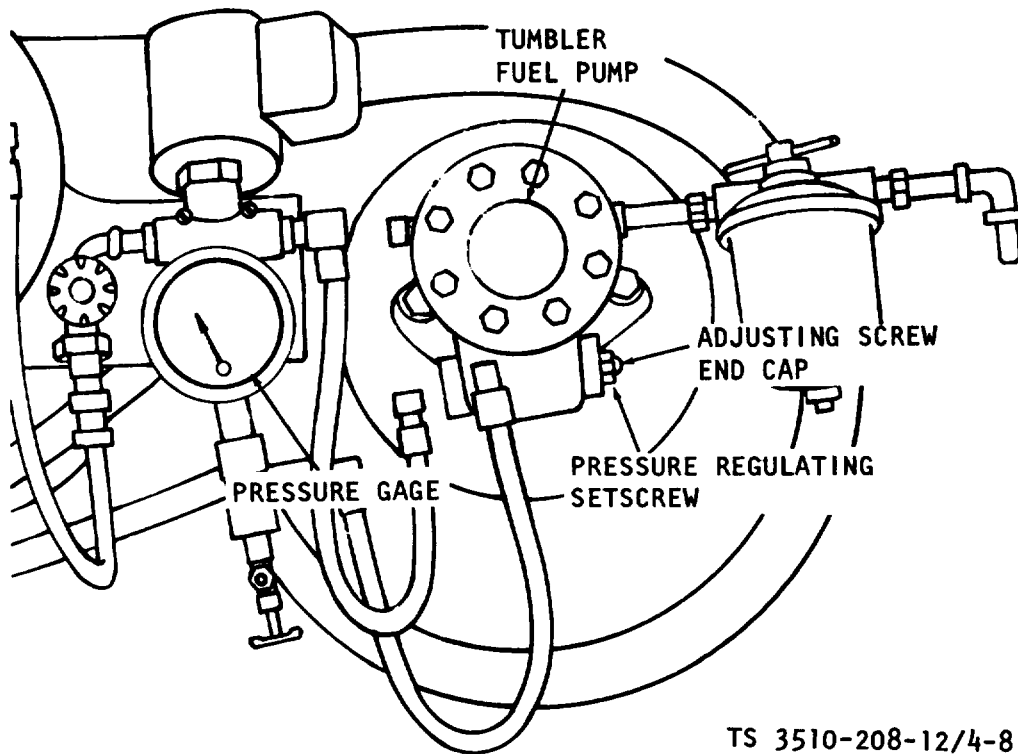
a. Remove adjusting screw end cap, Figure 4-8, from pressure regulating setscrew.

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MALFUNCTION  
 TEST OR INSPECTION  
 CORRECTIVE ACTION

---

- b. With the fuel pump operating, turn pressure regulating setscrew until the reading on the pressure gage indicates 100 psi (7.03 kg per sq cm).
- c. Install adjusting screw end capon setscrew.



TS 3510-208-12/4-8

Figure 4-8. Fuel pump adjustment.

**11. BURNER FLAME FAILS**

**Step 1. Check fuel drum supply.**

Fill drum with fuel, if empty.

**Step 2. Check for clogged fuel lines.**

Blow out fuel lines.

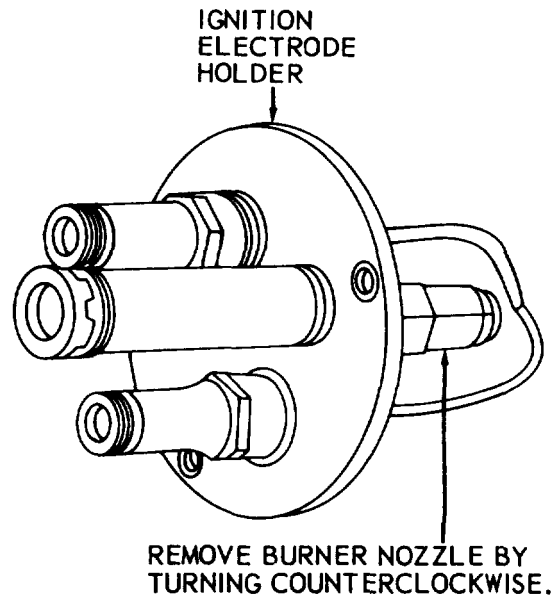
**Step 3. Check for clogged burner nozzle.**

Refer to the following instructions to remove and clean the burner nozzle.

- a. Remove the burner nozzle, Figure 4-9, by turning counterclockwise.



MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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TS 10-3510-208-12/4-9

Figure 4-9. Dryer tumbler burner nozzle, removal and installation

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C).

- b. Clean the burner nozzle using cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.
- c. Install the burner nozzle and secure by turning clockwise.

Step 4. Check for improper electrode gap.

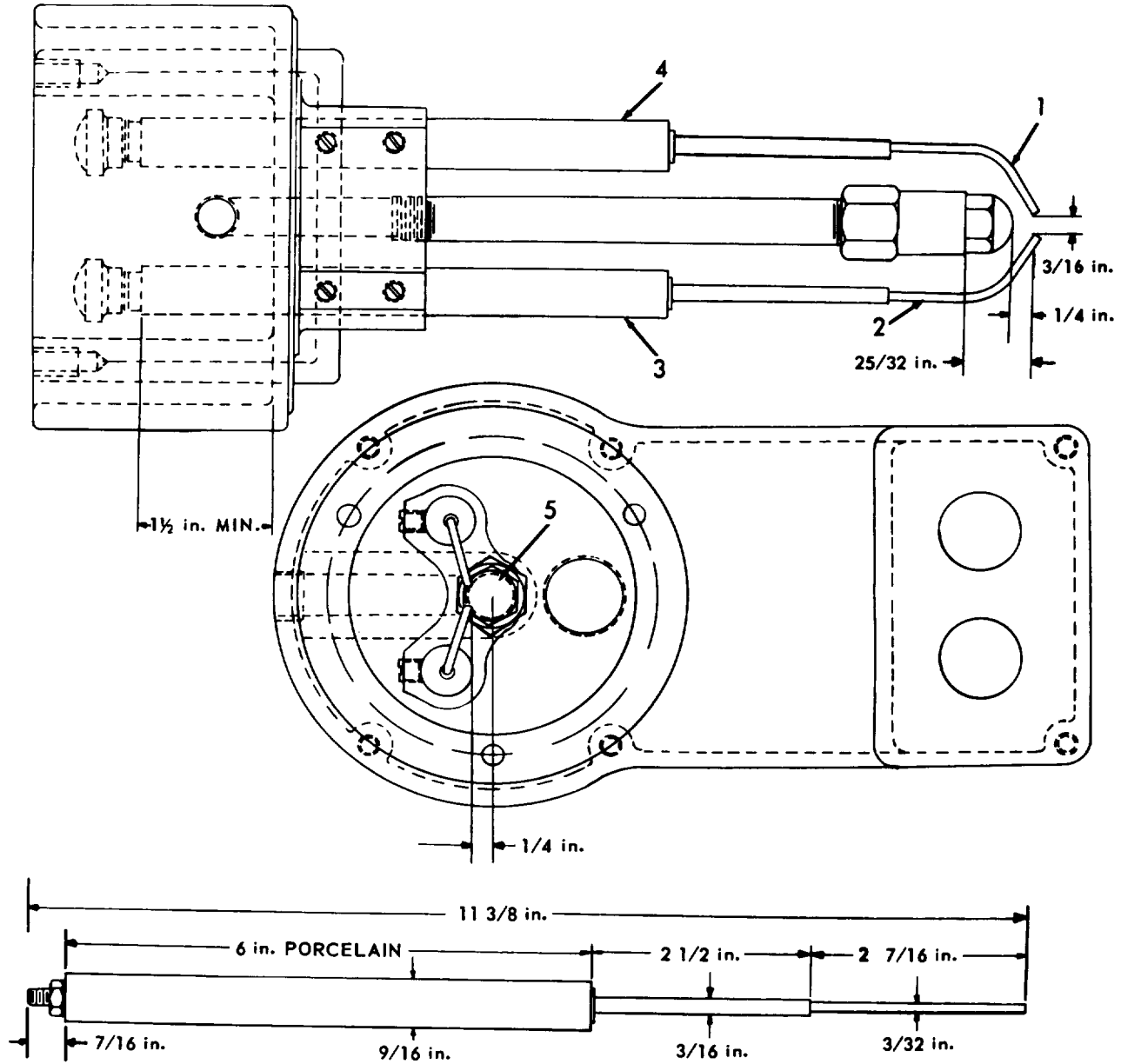
- a. Remove tumbler burner electrode and nozzle.
- b. Refer to figure 4-10 and adjust the burner ignition gap as follows:
  - (1) Adjust ignition electrodes (1 and 2, fig. 4-10) by bending until a 3/16 inch (.4763 cm) clearance exists between inside edge of electrode tips.

**NOTE**

When bending electrodes, exercise care to prevent cracking the porcelain, (3 and 4).

- (2) Adjust clearance between the center of the fuel nozzle tip (5) and the edge of the electrode to 1/4 inch (.64 cm).
- (3) Install tumbler burner electrode and nozzle.

**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**



TS 10-3510-208-12/4-10

- 1. Electrode      3. Porcelain      4. Porcelain
- 2. Electrode      5. Nozzle Tip

Figure 4-10. Tumbler burner electrode setting and nozzle details.

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**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**

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*Step 5.* Check for a cracked, broken or leaking fuel pump.

Refer to instructions a. and b., listed under step 2. of 7. WATER HEATER FUEL PUMP FAILS TO DELIVER FUEL, and replace the fuel pump.

**12. PULSATING FLAME**

*Step 1.* Check the air shutter to see if the vent holes are blocked.

Adjust the shutter by depressing the pin and spring and moving the shutter up or down until a near clear smoke emits from the exhaust duct. Approximately 1/2 of total opening.

*Step 2.* Check fuel level.

Fill fuel supply drum, if low.

*Step 3.* Check for water in fuel by draining some fuel and checking for bubbles.

Drain and refill fuel supply drum if water is evidenced in fuel.

**13. BURNER SMOKES**

*Step 1.* Check the air shutter to see if the vent holes are blocked.

Adjust the shutter by depressing the pin and spring and moving the shutter up and down until a near clear smoke emits from the exhaust duct. Approximately 1/2 of total opening.

*Step 2.* Check the fuel pressure for being too high or too low. With the fuel pressure control valve (fig. 2--2 (sheet 1 of 2)) turned counterclockwise (shut) and the burner control valve clockwise (shut) the gage should register 100 pounds per square inch (7.03 kg per sq cm).

Adjust the fuel pressure as follows:

**NOTE**

Adjustment must be made with the fuel pump operating.

a. Remove the adjusting screw end cap from the side of the pump (fig. 3-4).

b. Turn the pressure regulating setscrew clockwise to increase the pressure, and turn it counterclockwise to decrease the pressure on the pump.

c. Replace the adjusting screw end cap on the pump.

**14. WATER LEVEL LOW**

*Step 1.* Start the water pump (fig 3-2 (sheet 4 of 4)) and check for proper operation, refer to paragraph 2-36. (4).

Rated capacity of water pump is 18 to 20 gpm (gallons per minute) (68.4 to 76 liters) at 65 foot head.

Fill heater and maintain pressure, paragraph 2-3b. (4).

*Step 2.* Check for leaks.

Tighten connections or replace hose.

*Step 3.* Check for the drain valve being opened (it is open when the valve dump lever is all the way to the right of the "open" mark).

Close the valve by swinging the lever to the left of the "open" mark.

**15. WATER PUMP FAILS TO DELIVER WATER**

*Step 1.* Check for reversed rotation.

Interchange any two external leads at the motor.

*Step 2.* Check for a clogged or defective impeller,

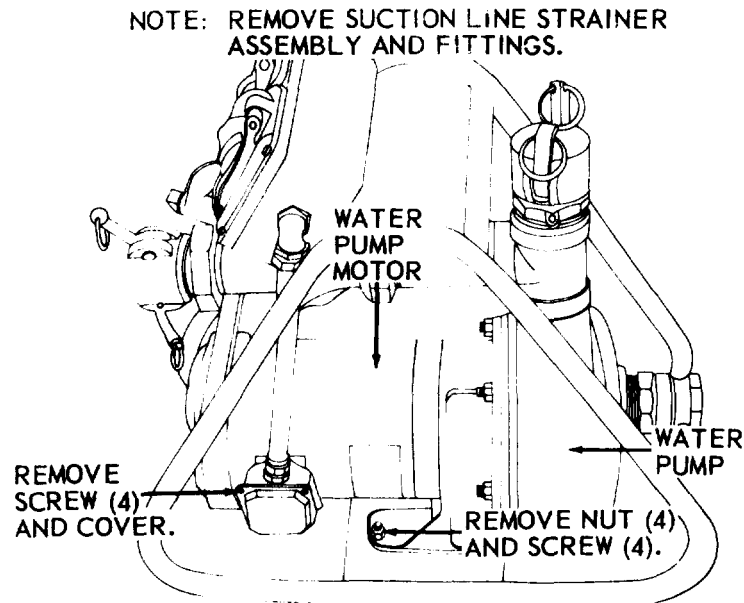
Refer to the following instructions and clean or replace the impeller.

a. Refer to figure 4-11 and remove the water pump and motor assembly.

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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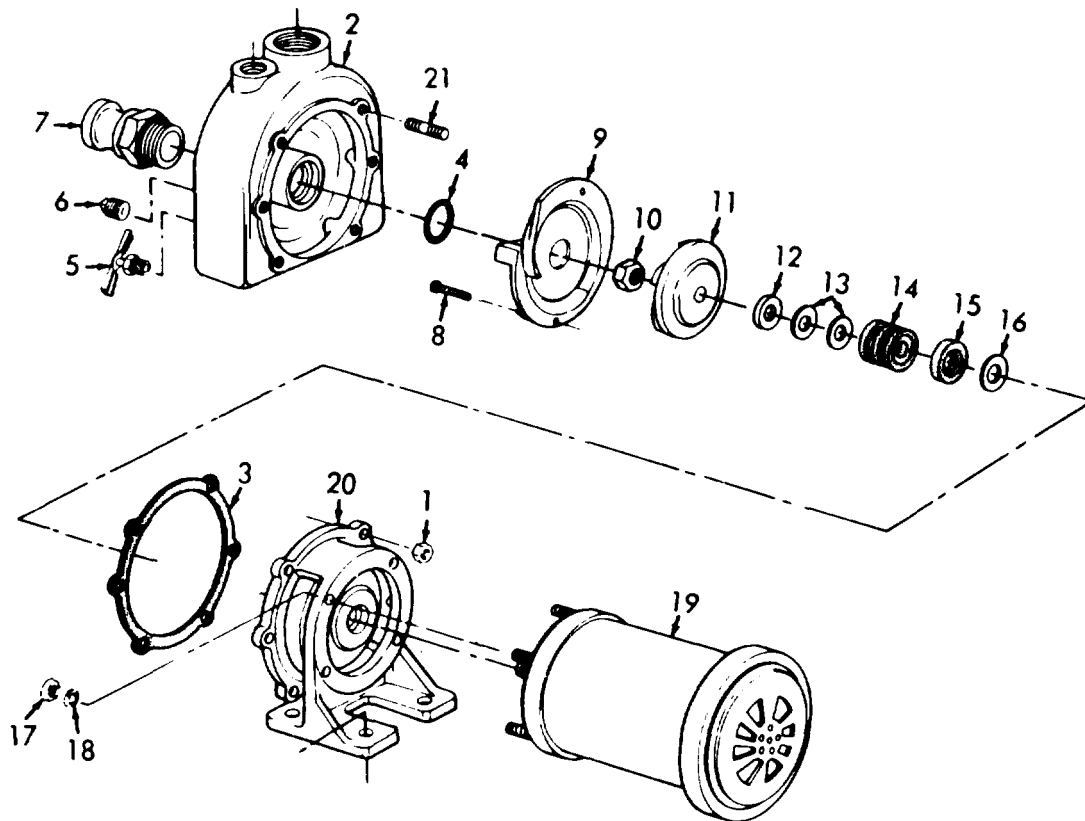
NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.

TS 10-3510-208-12/4-11

*Figure 4-11. Water pump and motor assembly, removal and installation.*

**b. Refer to figure 4-12 and disassemble the water pump and motor assembly.**

**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**



TS 10-3510-208-12/4-12

- |             |              |             |
|-------------|--------------|-------------|
| 1. Nut      | 8. Screw     | 15. Washer  |
| 2. Housing  | 9. Plate     | 16. Grommet |
| 3. Gasket   | 10. Nut      | 17. Nut     |
| 4. O-ring   | 11. Impeller | 18. Washer  |
| 5. Cock     | 12. Shim     | 19. Motor   |
| 6. Plug     | 13. Washer   | 20. Bracket |
| 7. Coupling | 14. Seal     | 21. Stud    |

Figure 4-12. Water pump and motor assembly, disassembly and reassembly.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

c. Clean the impeller using cleaning solvent, Fed. Spec. P-D-680 and dry thoroughly.

d. Replace impeller if damaged.

e. Refer to figure 4-12 and reassemble the water pump and motor assembly

f. Refer to figure 4-11 and install the water pump and motor assembly.

**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**

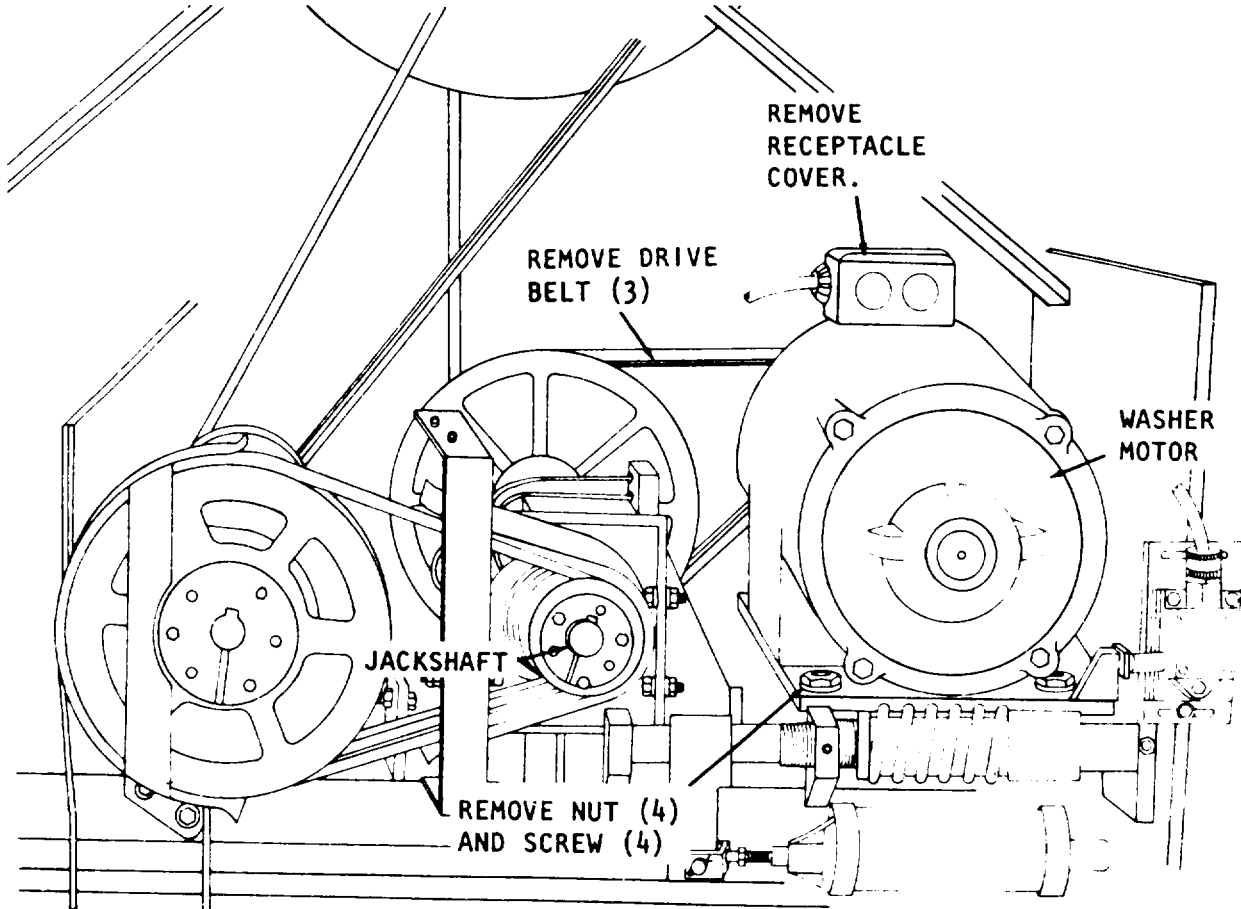
**16. WATER PUMP FAILS TO ROTATE**

- Step 1.* Check for a broken or cracked motor, damaged shaft threads, and bent shaft.  
 Replace motor, if defective. Remove the motor using illustrations and instructions listed in figures 4-11 and 4-12.
- Step 2.* Check for a clogged impeller,  
 Clean the impeller.

**17. WASHER-EXTRACTOR BASKET WILL NOT ROTATE**

- Step 1.* Check for locked brake assembly.  
 Correct pressure or replace possible defective air cylinder (fig. 4-95).
- Step 2.* Check for a broken or cracked motor, damaged shaft threads, and bent shaft.  
 Refer to figure 4-13 (Eidal Model) and figure 4-14 (Edro Model) and replace motors.

**NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.**

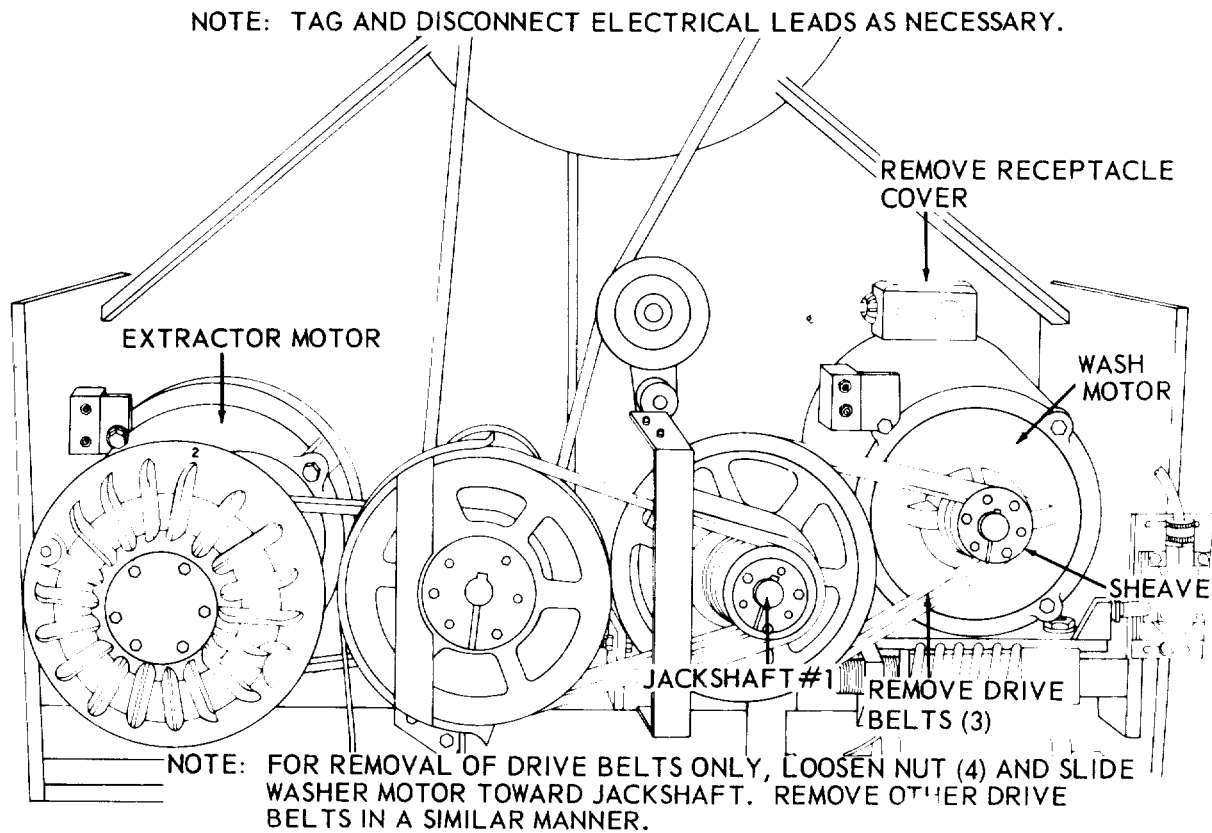


**NOTE: FOR REMOVAL OF DRIVE BELTS ONLY, LOOSEN NUT (4) AND SLIDE WASHER MOTOR TOWARD JACKSHAFT. REMOVE OTHER DRIVE BELTS IN A SIMILAR MANNER.**

TS 3510-208-12/4-13

*Figure 4-13. Washer motor, drive belts, and sheave, removal and installation (Eidal Model ELT9T).*

MALFUNCTION  
TEST OR INSPECTION  
CORRECTIVE ACTION



TS 10-3510-208-12 4-14

Figure 4-14. Washer motor, drive belts, and sheave, removal and installation (Edro Model EP120-LTU).

**Step 3. Check for broken drive belts.**

Refer to figure 4-13 (Eidal Model) and figure 4-14 (Edro Model) and replace belts.

**Step 4. Check hydro-sheave for low oil. (Edro Model EP120-LTU only)**

Refer to figure 3-12 and fill hydro-sheave to proper level.

**18. WASHER-EXTRACTOR WILL NOT CHANGE PHASES OF OPERATION**

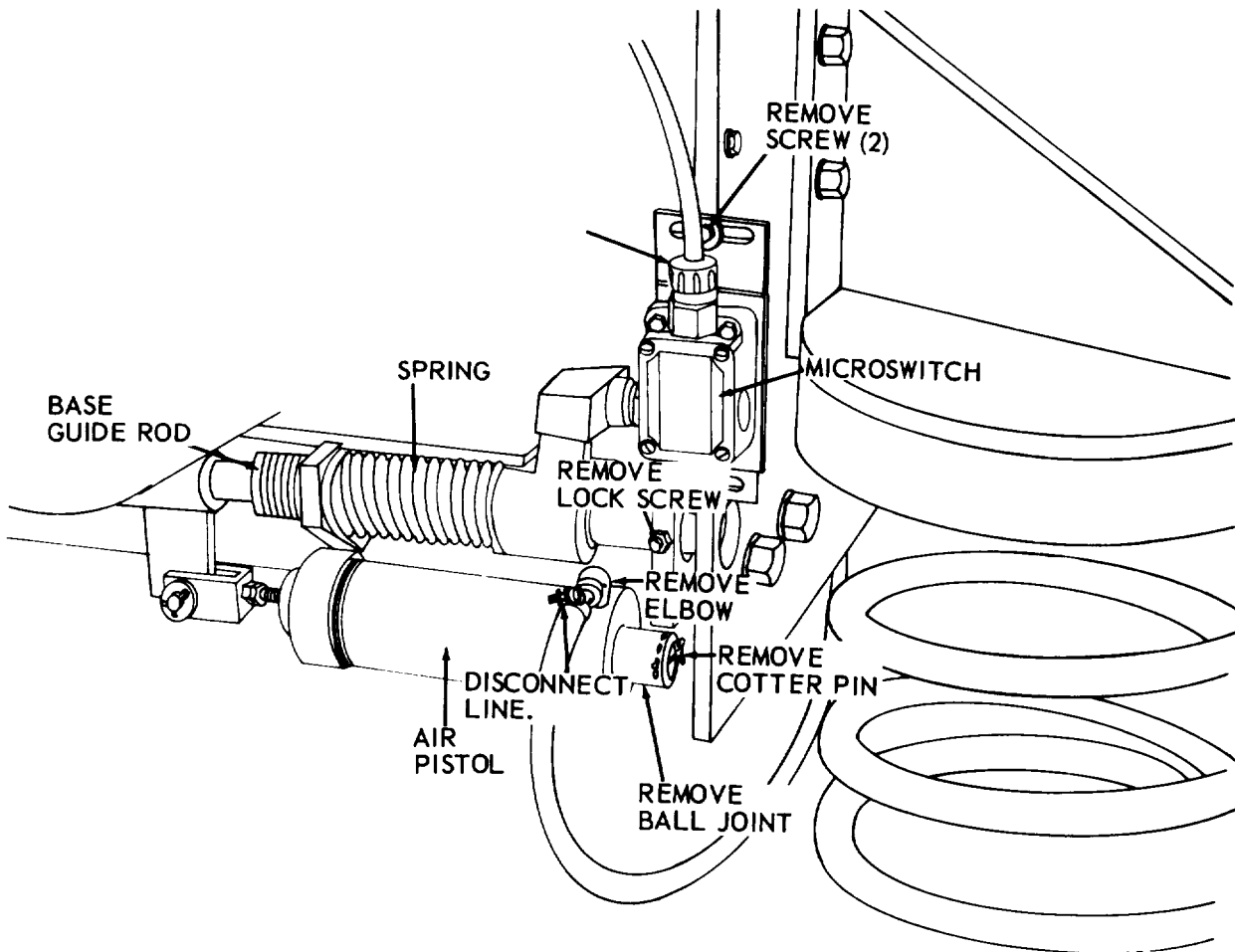
**Step 1. Check air piston that shifts washer motor for cracks, breaks, and wear.**

Refer to figure 4-15 (Eidal Model) and figure 4-16 (Edro Model) and replace piston.

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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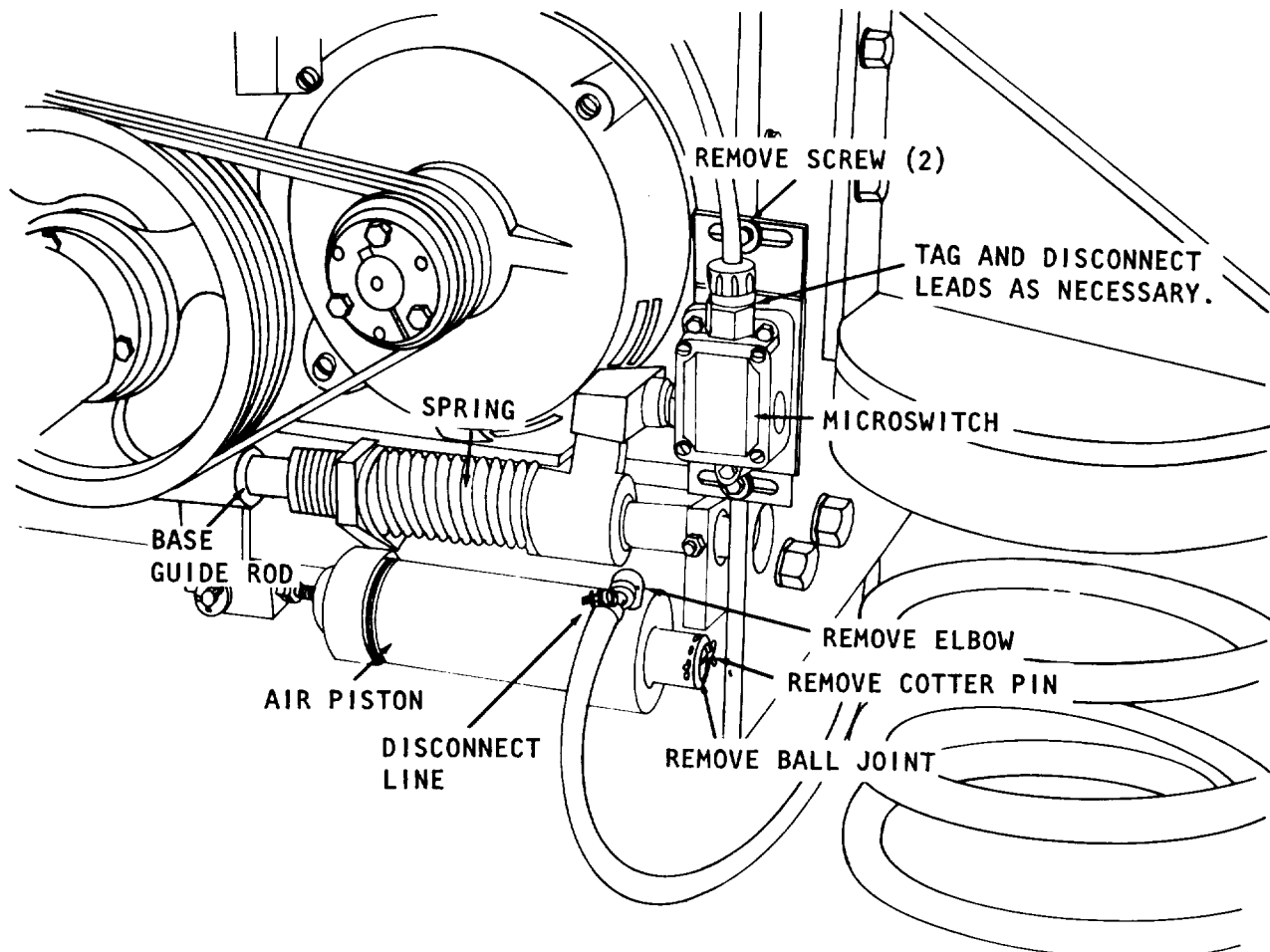


TS 3510-208-12/4-15

Figure 4-15. Washer motor base guide rods, air pistons, microswitch, and spring, removal and installation (Eidal Model ELT9T).



MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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TS 3510-208-12/4-16

Figure 4-16. Washer motor base guide rods, air piston, microswitch and spring, removal and installation (Edro Model EP120-LTU).

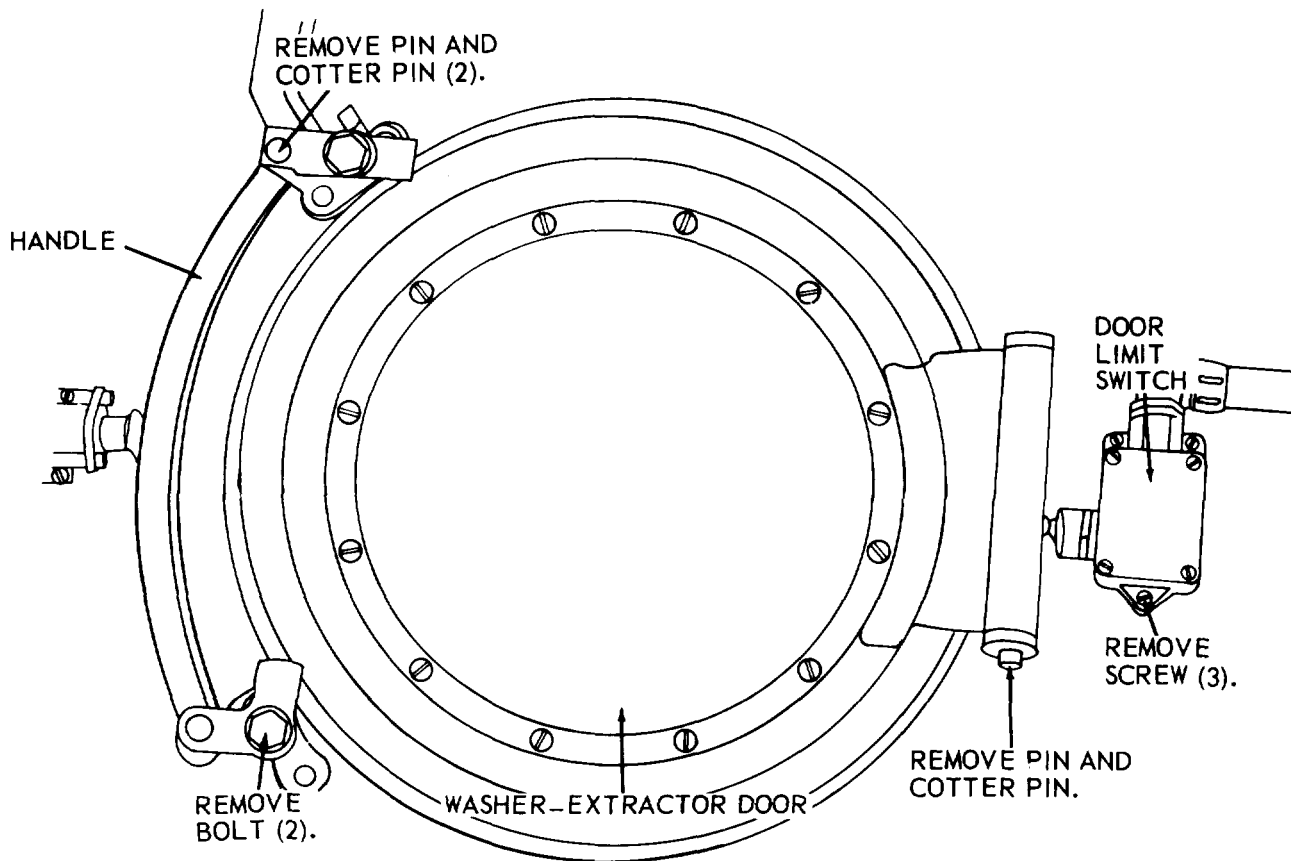
**Step 2.** Check the reading on the air pressure gage (fig. 2-4) (located on the air supply tank). Gage should read between 75 and 60 psi (5.27 and 5.62 kg per sq cm).

Adjust pressure and bleed supply tank by opening and closing the bleeder valve (fig. 2-4) (located at front bottom of air supply tank).

**Step 3.** Check for a cracked or broken limit switch.

Refer to figure 4-17 and replace limit switch.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.

TS 10-3510-208-12/4-17

Figure 4-17. Washer-extractor door and limit switch, removal and installation.

**19. FORMATROL DRUM FAILS TO REVOLVE IN AUTOMATIC OPERATION**

Check for loose setscrews at friction hub to formatrol motor drive shaft.

**Tighten the setscrews.**

**20. WASHER MOTOR REVOLVES AT EXCESSIVELY HIGH SPEED**

Check for a cracked, broken, or bent pneumatic time delay relay.

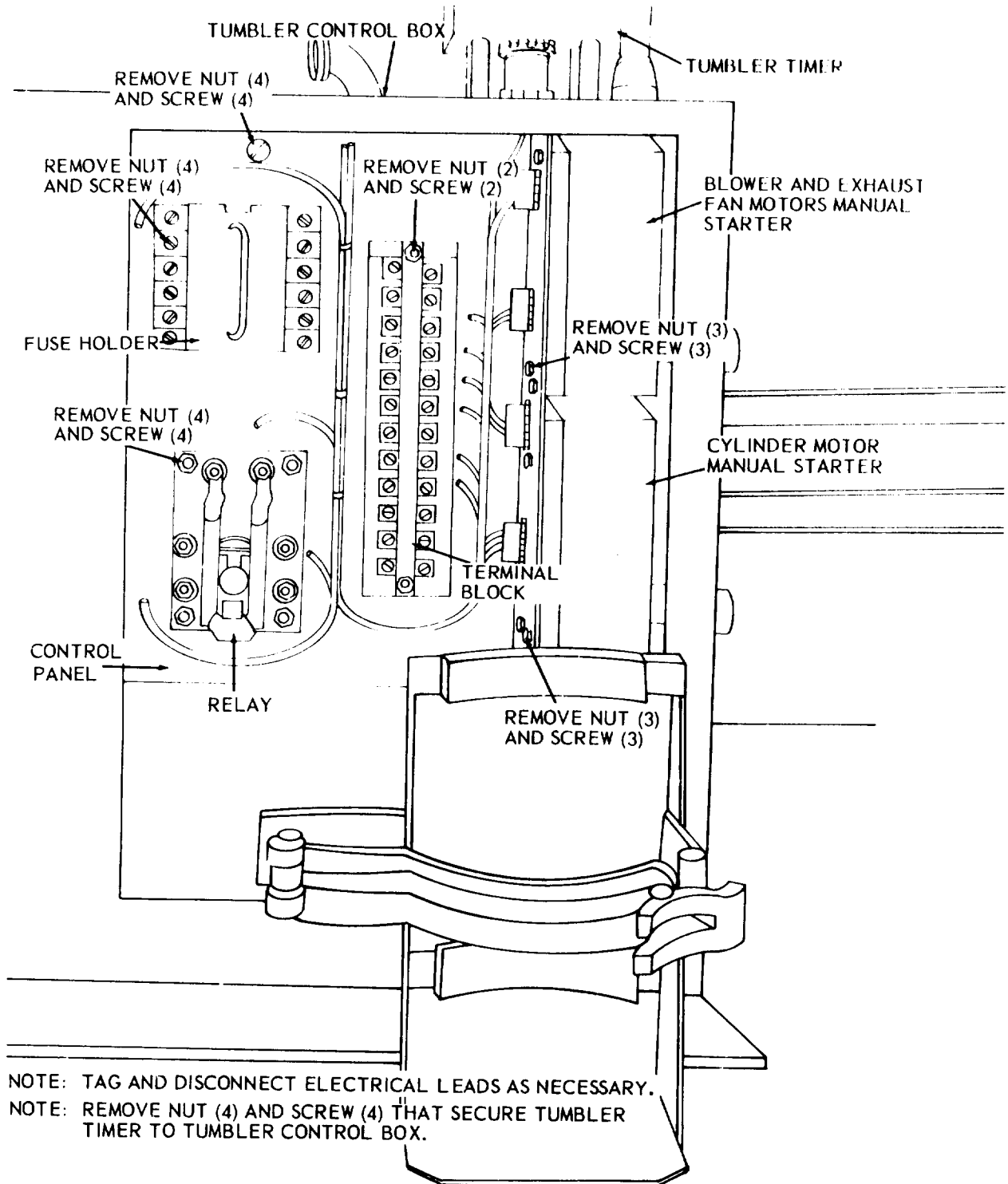
**Replace relay, figure 4-90.**

**21. TUMBLER CYLINDER DOES NOT ROTATE**

Step 1. Check for a cracked, broken or worn cylinder motor manual starter.

**Refer to Figure 4-18 and replace the starter.**

MALFUNCTION  
 TEST OR INSPECTION  
 CORRECTIVE ACTION



TS 3510-208-12/4-18

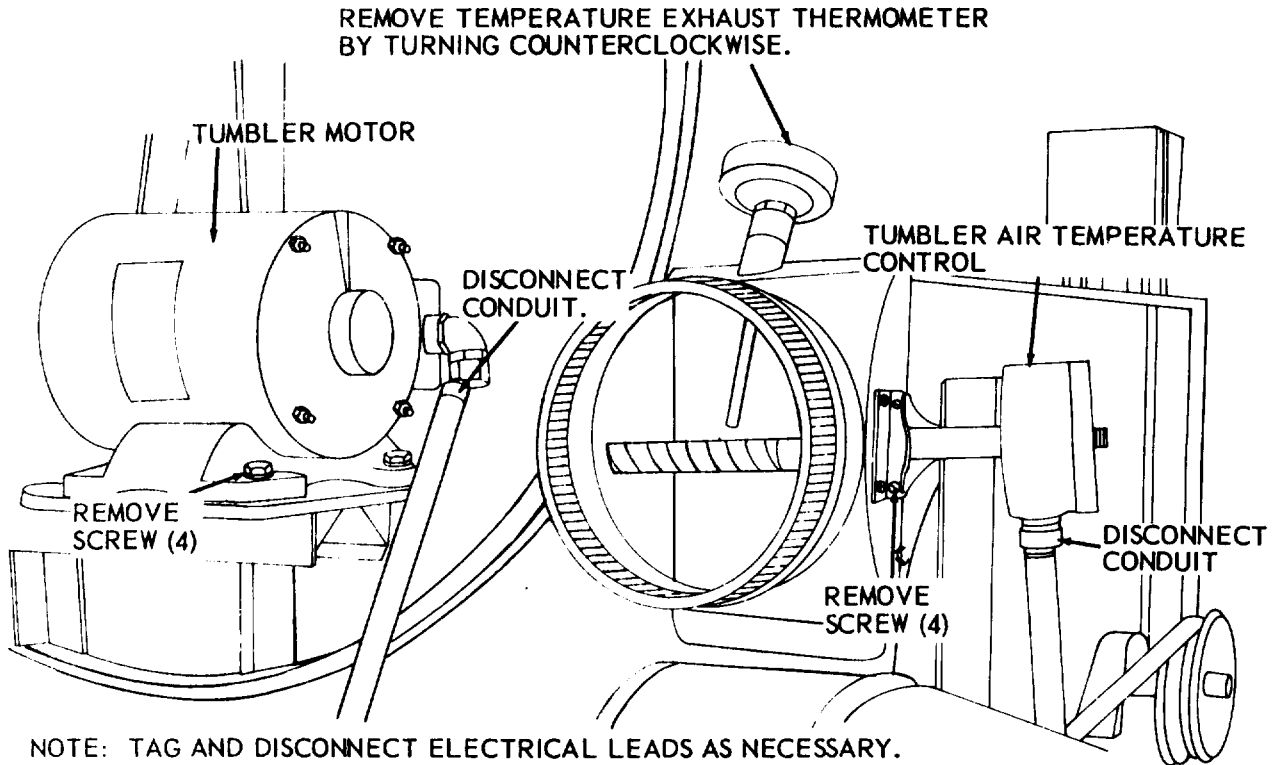
Figure 4-18. Tumbler control box components and controls, removal and installation.

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**MALFUNCTION**  
**TEST OR INSPECTION**  
**CORRECTIVE ACTION**

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**Step 2. Inspect for a broken or cracked motor, damaged shaft threads and bent shaft.**  
Refer to figure 4-19 and replace the motor.

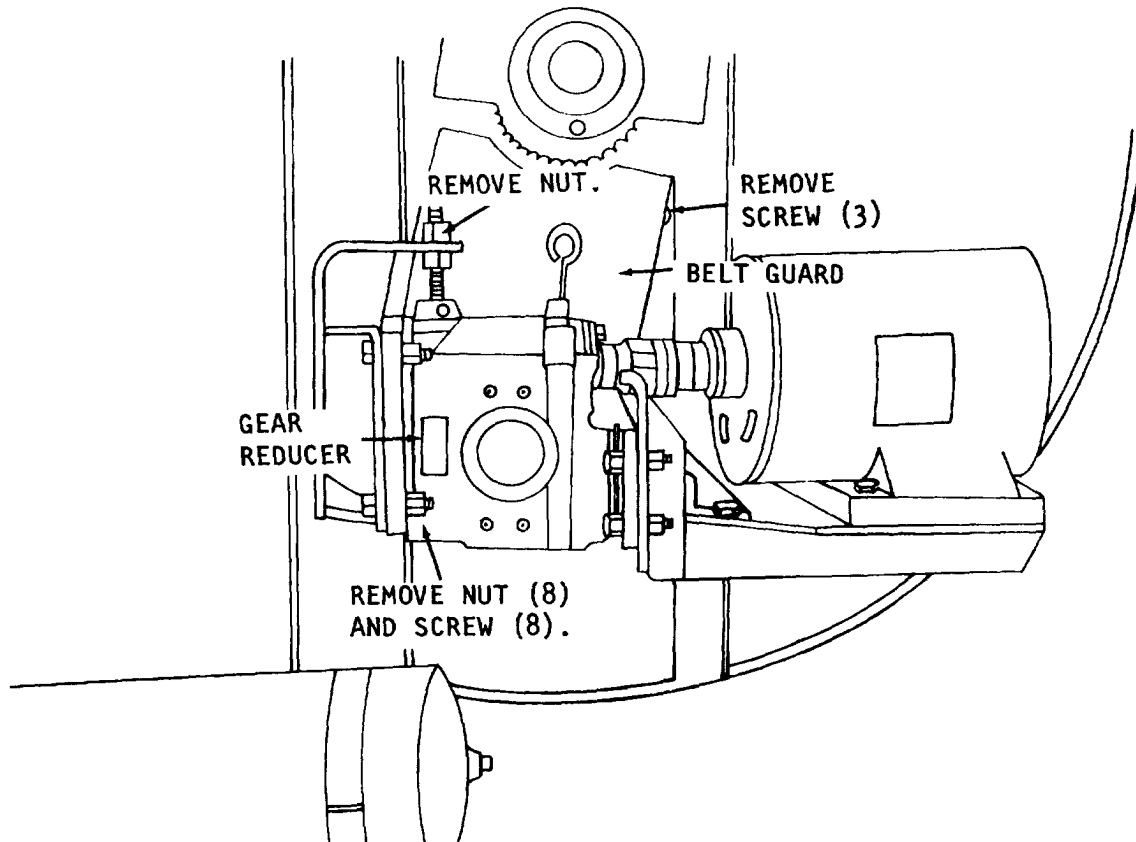


TS 3510-208-12/4-19

Figure 4-19. Cylinder motor, brackets, tumbler temperature control and temperature exhaust thermometer, removal and installation.

**Step 3. Check for a broken, cracked, or worn gear reducer.**  
Refer to figure 4-20 and replace the gear reducer.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE: AFTER REMOVAL OF GEAR REDUCER, REMOVE CHAIN DRIVE.

TS 3510-208-12/4-20

Figure 4-20. Gear reducer, removal and installation.

Step 4. Check for a cracked, broken, or worn cylinder drive motor coupling.  
Refer to figure 4-19 and replace the coupling.

## Section VI. RADIO INTERFERENCE SUPPRESSION

### 4-12. General Methods Used to Attain Proper Suppression

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

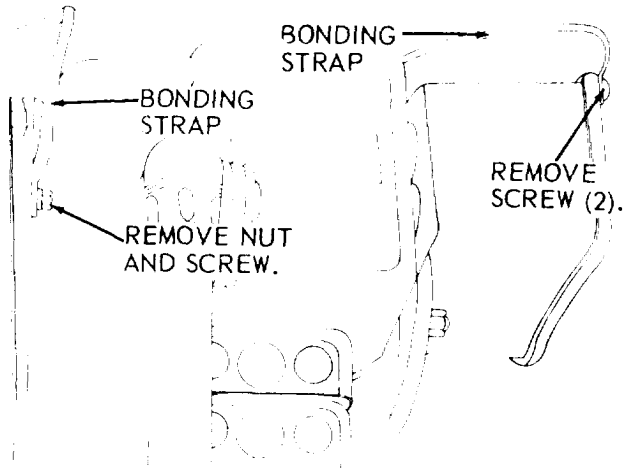
resistors. For general information on radio interference suppression, refer to TM 11-483.

### 4-13. Interference Suppression Components, Location and Replacement

a. Refer to figure 4-12 for the location and

replacement of radio interference suppression components.

b. Always relate interference suppression components with identical items.



TS 10-3510-208-12/4-21

Figure 4-21. Radio interference suppression components, location, removal and installation.

#### 4-14. Testing of Radio Interference Suppression Components

If interference is indicated, isolate the cause of interference by the trial-and-error method or replacing each suppression component in turn, until the cause of interference is located and eliminated.

### Section VII. MAINTENANCE OF ENGINE-GENERATOR

#### 4-15. General

The engine-generator set is a self-contained, skid-mounted, portable unit. It is powered by a 4-cylinder, air-cooled engine that is directly coupled to a 10-kilowatt, alternating current generator.

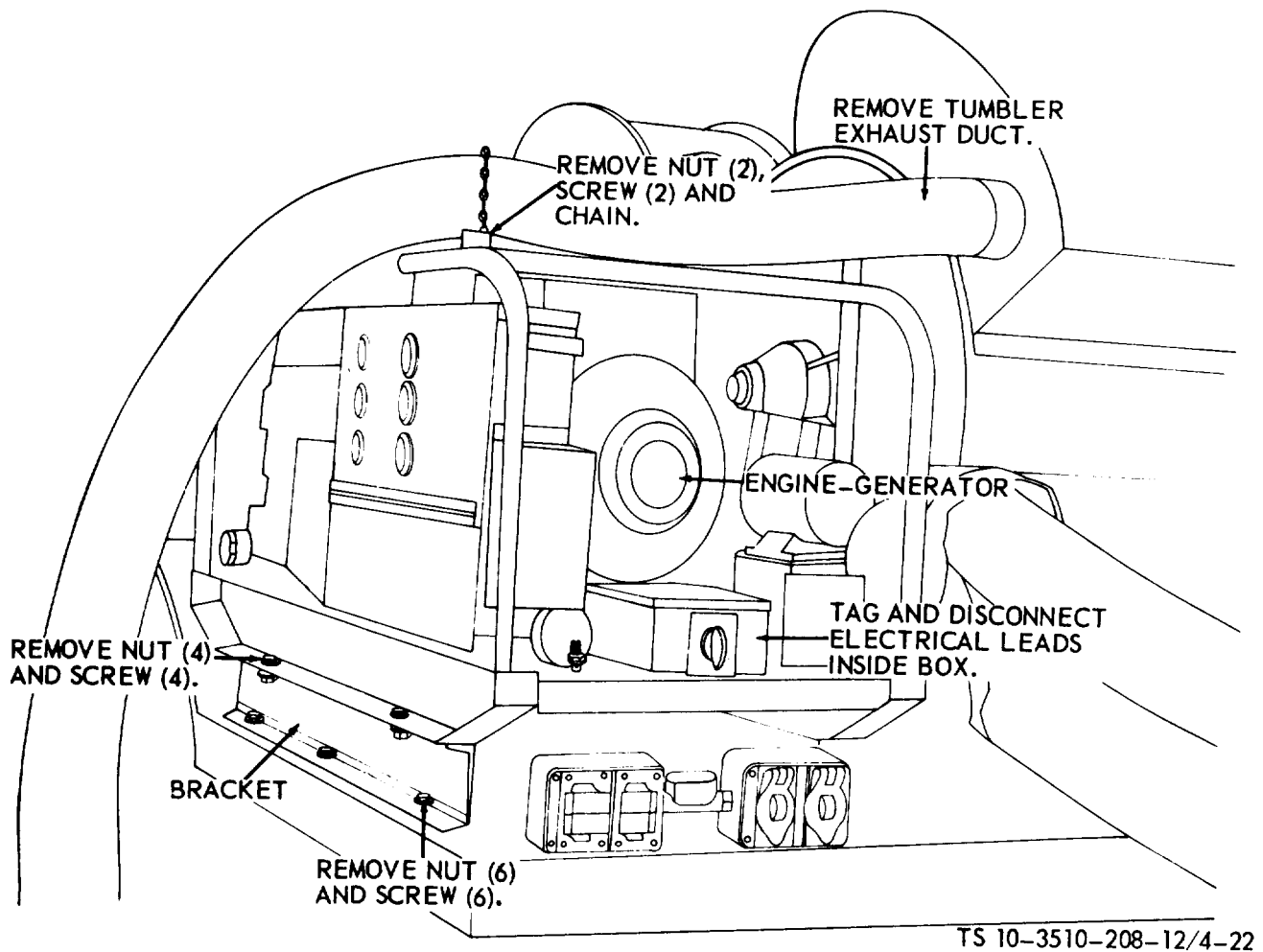
**NOTE**

Prior to operating laundry equipment, adjust

governor setting so that engine-generator registers 61 cycles at no load.

#### 4-16. Engine-Generator

a. *Removal.* Refer to figure 4-22 and remove the engine-generator from the trailer.



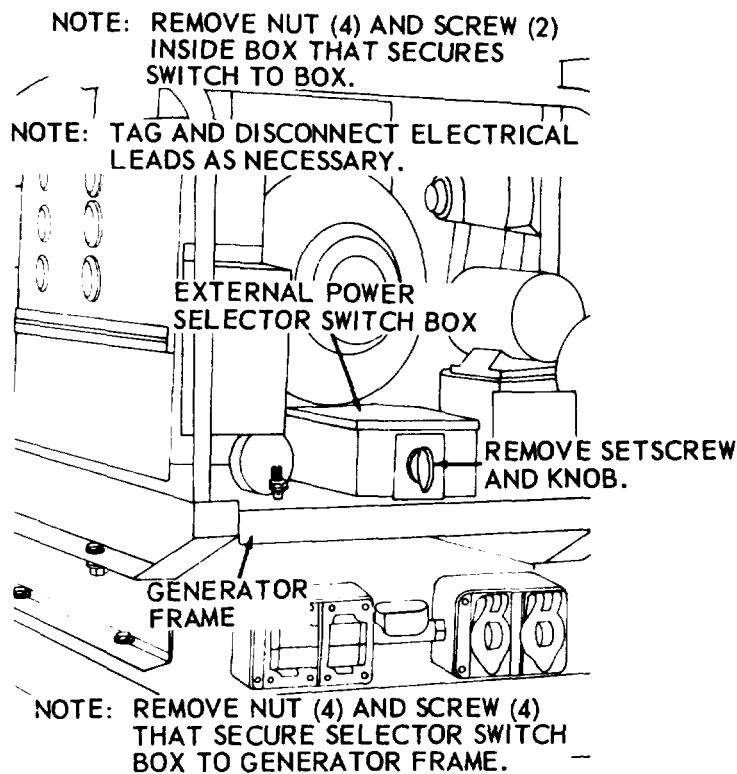
TS 10-3510-208-12/4-22

Figure 4-22. Engine-generator, removal and installation.

**b. Installation.** Refer to figure 4-22 and install the engine-generator on the trailer.

**4-17. External Power Selector Switch and Box**

**a. Removal.** Refer to figure 4-23 and remove the external power selector switch and box.



TS 10-3510-208-12/4-23

Figure 4-23. External power selector switch and box, removal and installation.

b. *Installation.* Refer to figure 4-23 and install the external power selector switch and box.

## Section VIII. TRAILER

### 4-18. Trailers

a. *Eidal Model ELT9T.* The two-wheel trailer chassis has a front retractable support and a leveling jack. Service brakes are air-over-hydraulic, using standard design and components. The parking brakes are mechanical. The trailer electrical system consists of an intervehicular cable, wiring harness, two standard taillights, and one blackout stoplight. For maintenance of the trailer, refer to TM 9-2330-274-14.

b. *Edro Model EP120-LTU.* The two-wheel

trailer chassis has a front retractable support and a leveling jack. Service brakes are air-over-hydraulic, using standard design and components. The parking brakes are mechanical and hand operated. The towing lunette is of a welded one piece design and the safety chains are mounted on the sides directly behind the lunette. The trailer electrical system consists of an intervehicular cable, wiring harness, two standard taillights, and one blackout stoplight. For maintenance of the trailer refer to TM 9-2330-2374-14.

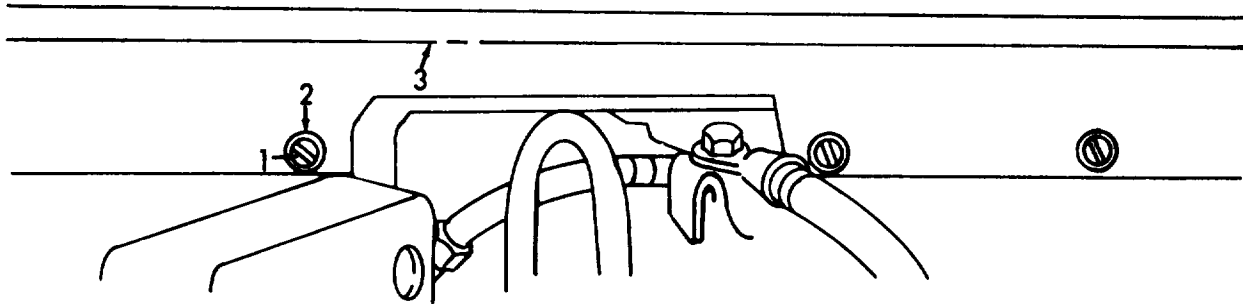


Section IX. HOSE GUARD, DRAIN BIN, STORAGE CYLINDER BOX,  
TOOL BOX, MAIN GUARD, JACKSHAFT GUARD,  
HOSES AND CABLES

4-19. Hose Guard

a. *Removal.* Remove the screws (1, fig. 4-24)

and lockwashers (2) securing the hose guard (3) to the trailer.



TS 10-3510-208-12/4-24

1. Screw            2. Lockwasher    3. Hose guard

Figure 4-24. Hose guard, removal and installation.

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of advent is 100 to 138F. (38 to 59C.).

Clean the hose guard, with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

c. *Inspection and Replacement.*

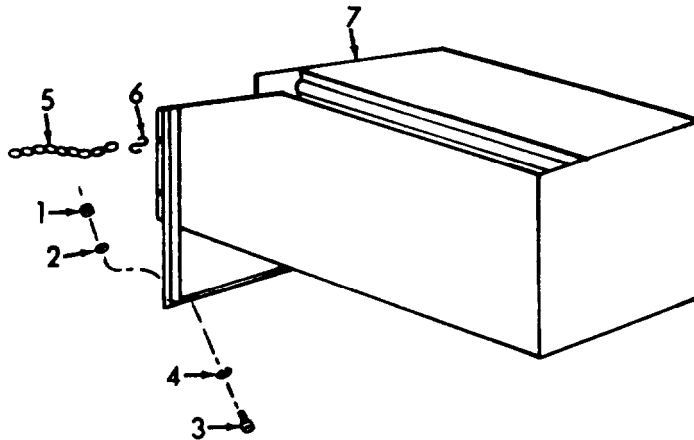
(1) Inspect the hose guard for damage.

(2) Replace a damaged hose guard.

d. *Installation.* Position the hose guard (3, fig. 4-24) onto the trailer and secure with lockwashers (2) and screws (1).

4-20. Drain Bin

a. *Removal.* Remove the nuts (1, fig. 4-25), flatwashers (2), bolts (3), lockwashers (4), chain (5) and chain hook (6) securing the drain bin (7) to the trailer.



TS 10-3510-208-12/4-25

- |               |               |                |
|---------------|---------------|----------------|
| 1. Nut        | 4. Lockwasher | 6. Hook, chain |
| 2. Flatwasher | 5. Chain      | 7. Bin         |
| 3. Bolt       |               |                |

Figure 4-25. Drain bin removal and installation

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 136F. (38 to 59C. ).

Clean the drain bin with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Replacement.**

- (1) Inspect the drain bin for damage.
- (2) Replace a damaged drain bin.

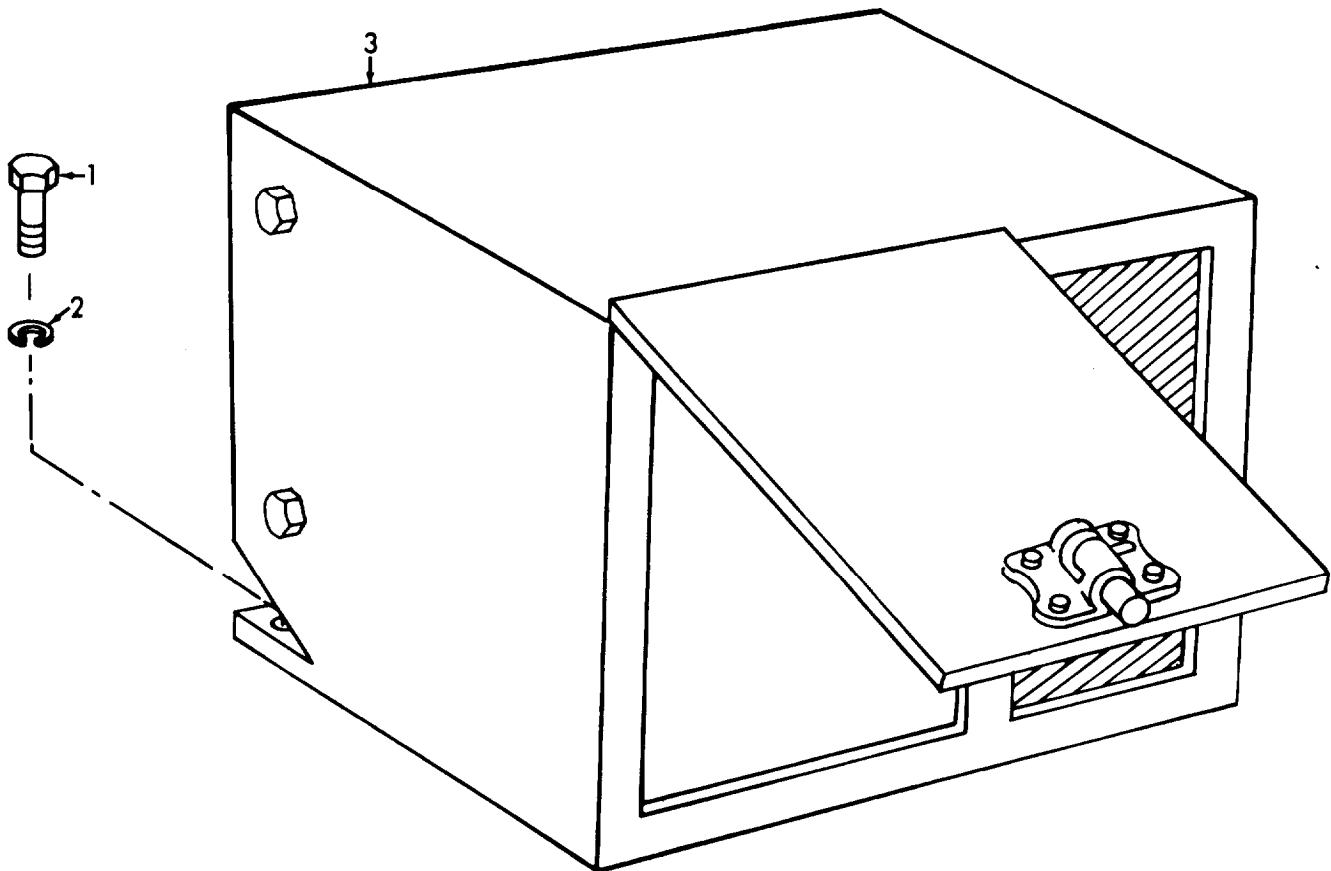
**d. Installation.** Position the drain bin (7, fig. 4-25) onto the trailer and secure with chain hook (6), chain (5), lockwashers (4), bolts (g), flatwashers (2) and nuts (1).

**4-21. Storage Cylinder Box**

**a. Removal.**

(1) Refer to paragraph 4-19 and remove the drain bin.

(2) Remove the bolts (1, fig. 4-26) and lockwashers (2) securing the storage cylinder box (3) to the trailer.



TS 10-3510-208-12/4-26

- 1. Bolt
- 2. Lockwasher
- 3. Storage cylinder box

Figure 4-26. Storage cylinder box, removal and installation.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean the storage cylinder box with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Replacement.**

(1) Inspect the storage cylinder box for damage.

(2) Replace a damaged storage cylinder box.

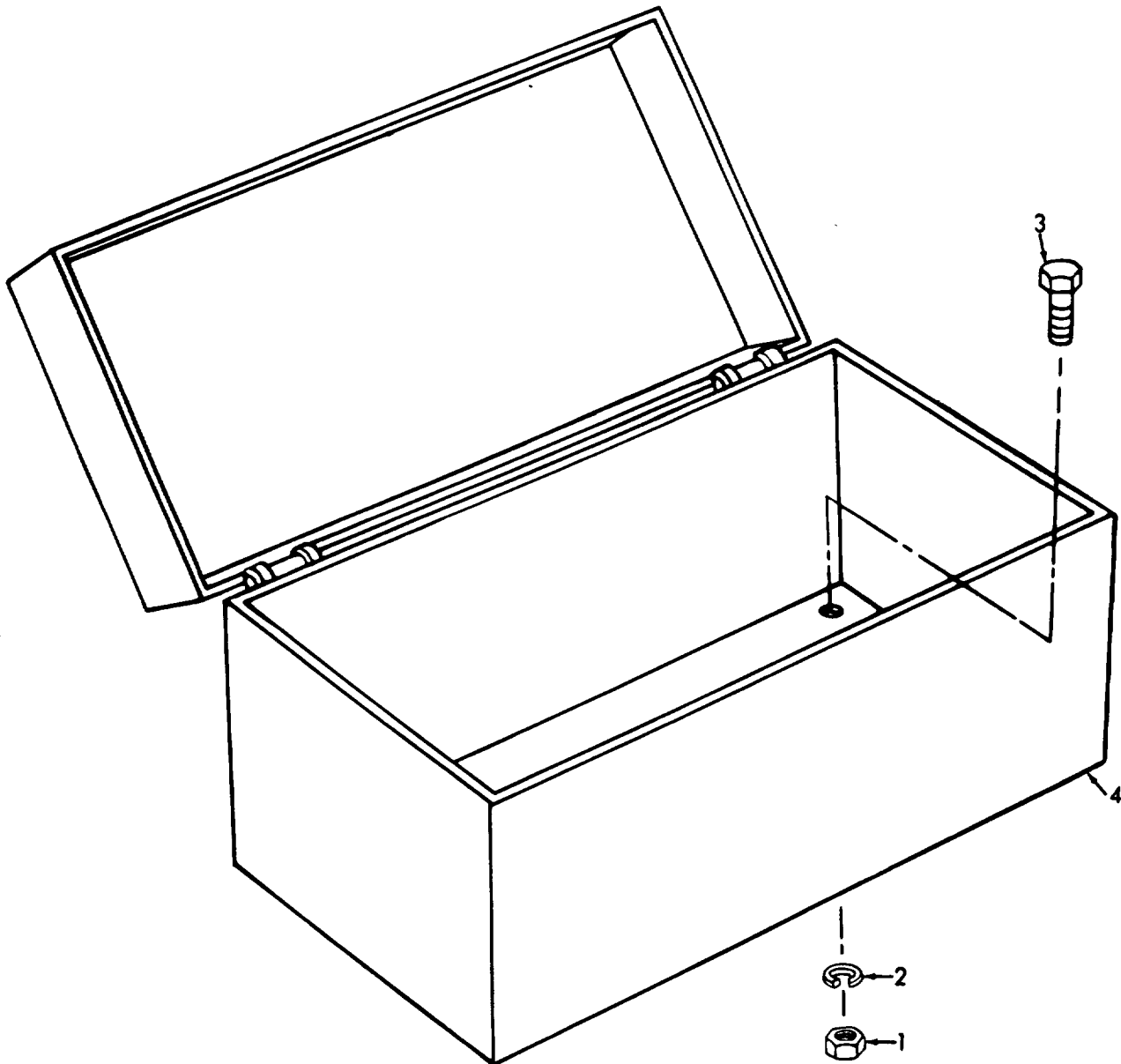
**d. Installation.**

(1) Position the storage cylinder box (3, fig. 4-26) onto the trailer and secure with lockwashers (2) and bolts (1).

(2) Refer to paragraph 4-19 and install the drain bin.

**4-22. Tool Box**

**a. Removal.** Remove the nuts (1, fig. 4-27), lockwashers (2) (from the trailer underside) and bolts (3) (from the inside of tool box) securing the tool box (4) to the trailer.



TS 10-3510-208-12/4-27

- |               |         |
|---------------|---------|
| 1. Nut        | 3. Bolt |
| 2. Lockwasher | 4. Box  |

Figure 4-27. Tool box, removal and installation.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680)

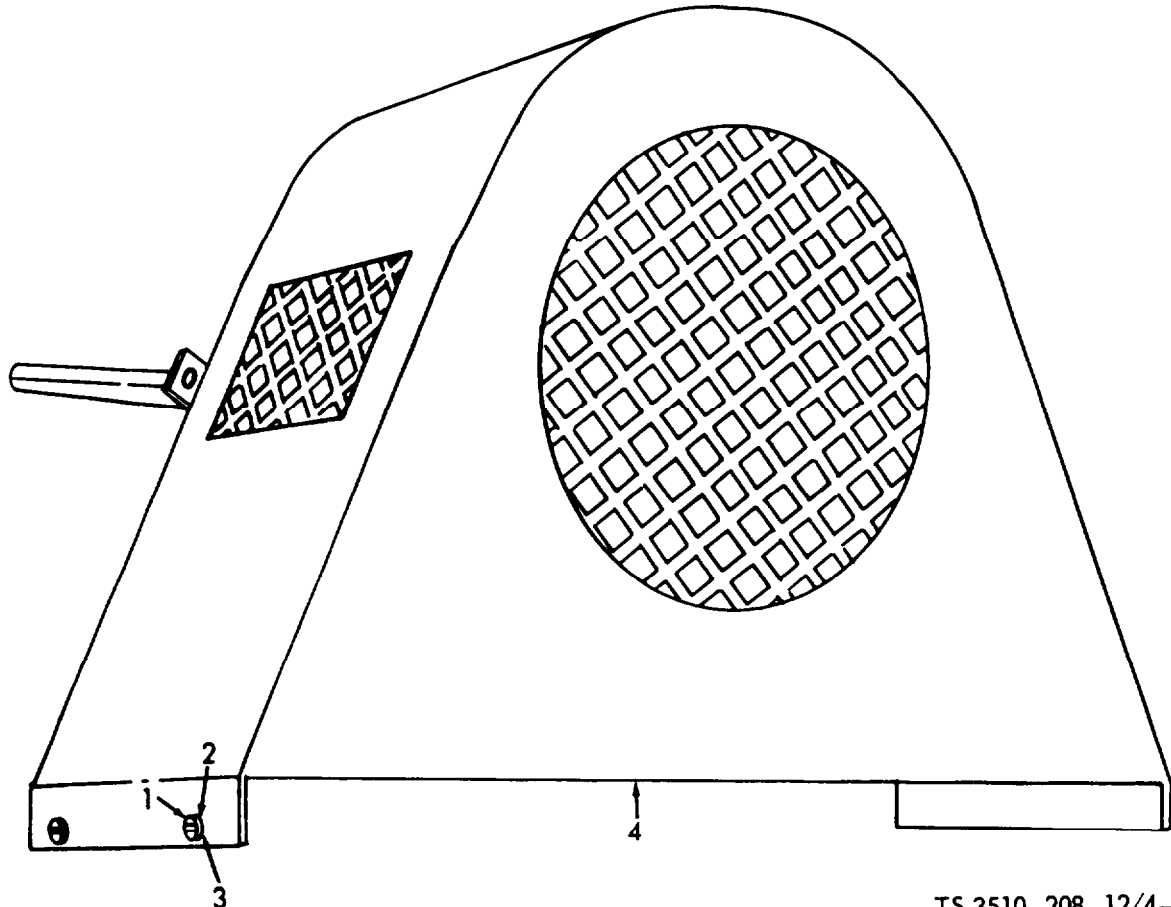
used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ). Clean the tool box with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Replacement.**

- (1) Inspect the tool box for damage.
- (2) Replace a damaged toolbox.
- d. **Installation.** Position the tool box (4, fig. 4-27) onto the trailer and secure with bolts (3), lockwashers (2) and nuts (1).

#### 4-23. Main Drive Guard

- a. **Removal.** Remove the screws (1, fig. 4-28), lockwashers (2) and flatwashers (3) securing the main drive guard (4) to the washer-extractor.



TS 3510-208-12/4-28

- |               |               |
|---------------|---------------|
| 1. Screw      | 3. Flatwasher |
| 2. Lockwasher | 4. Guard      |

Figure 4-28. Main drive guard, removal and installation.

#### b. *Cleaning.*

##### **WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not be near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean the main drive guard with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

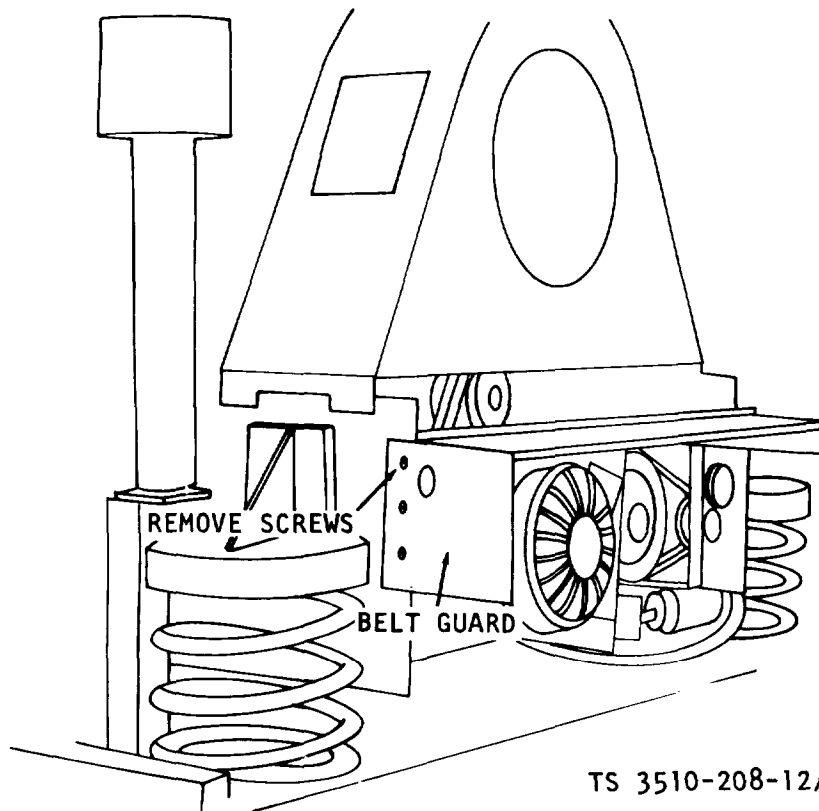
#### c. *Inspection and Repair.*

- (1) Inspect the main drive guard for damage.
- (2) Weld any cracks or breaks, straighten any dents and/or replace damaged guard.

- d. **Installation.** Position the main drive guard (4, fig. 4-28) onto the washer-extractor and secure with flatwashers (3), lockwashers (2) and screws (1).

#### 4-24. Washer Extractor Hydro-Sheave Drive Guard (Edro Model EP120-LTU)

- a. **Removal** Refer to figure 4-29 and remove the washer extractor main drive guard from the laundry unit.



TS 3510-208-12/4-29

Figure 4-29. Washer Extractor Main Drive Guard removal and installation.

**b. Cleaning.**

**WARNING**

**Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).**

**Clean the washer extractor main drive guard with cleaning solvent, Fed. Spec. P-D-680 and dry thoroughly .**

**c. Inspection and Repair.**

(1) Inspect washer extractor main drive guard for cracks, breaks, dents, or distortion.

(2) Weld cracks or breaks, straighten dents and distortion and/or replace damaged guard.

**d. Installation**

Refer to figure 4-29 and install the washer extractor hydro-sheave drive guard onto the laundry unit.

**4-25. Jackshaft Guard**

**a Removal**

(1) Eidal Model (ELT9T)

(a) Disconnect lubrication lines (1 and 2, fig. 4-30).

(b) Remove nuts (3), washers (4), bolts (5), and washers (6) securing jackshaft guard to jackshaft pillow block and washer base.

(c) Remove screws (7), washers (8) and locking plate (9) securing jackshaft guard to the washer base.

(d) Remove jackshaft guard (10).

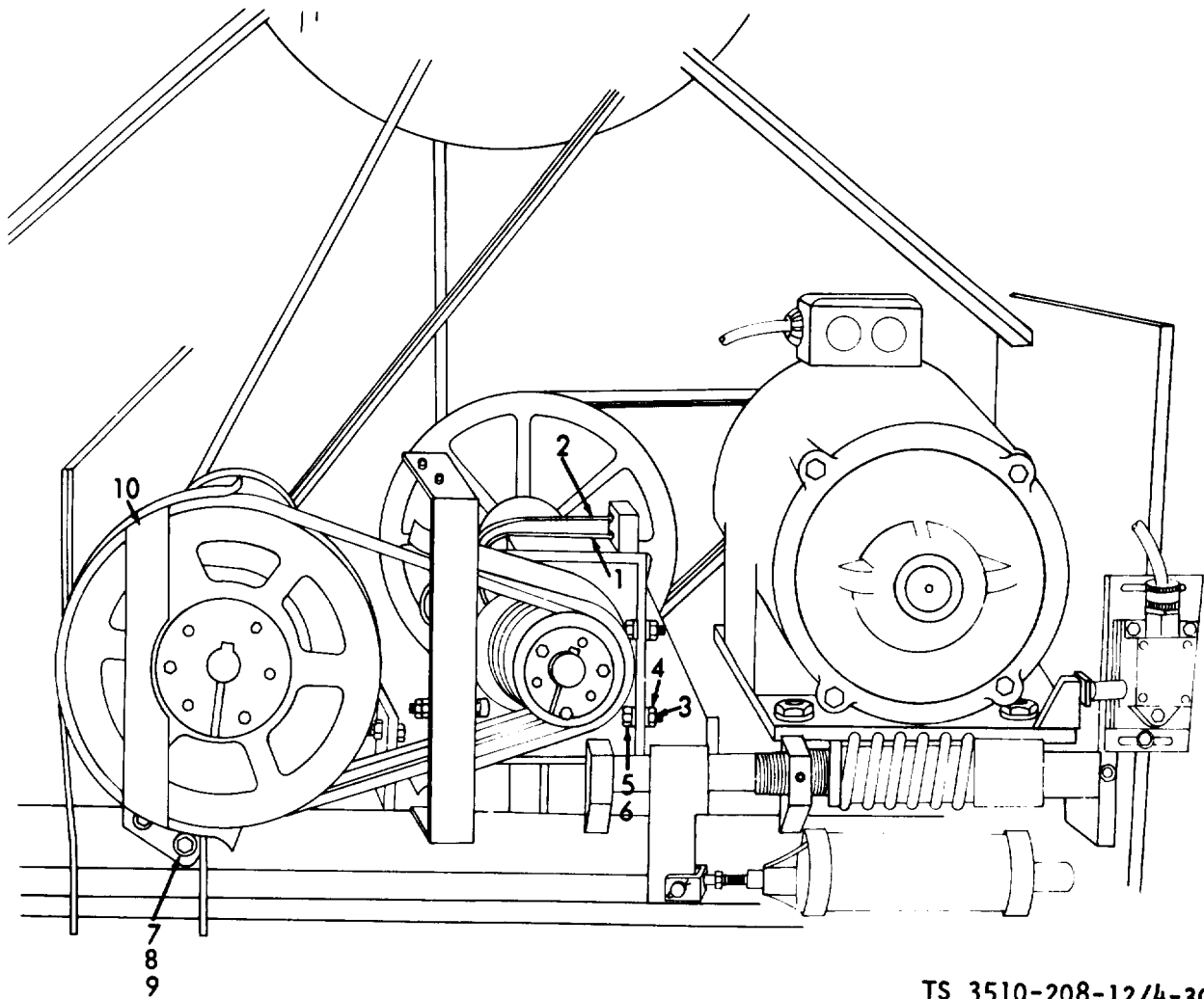
(2) Edro Model (EP120-LTU)

(a) Remove nuts, (1, fig. 4-91) washers (2), and screws (3) securing jackshaft guard to the upper support bracket (4).

(b) Remove nuts (5), washers (6), and screws (7) securing jackshaft guard to the lower support bracket (8).

(c) Bend tangs on locking plate down and remove screws (9) and locking plate (10) securing jackshaft guard to the motor base.

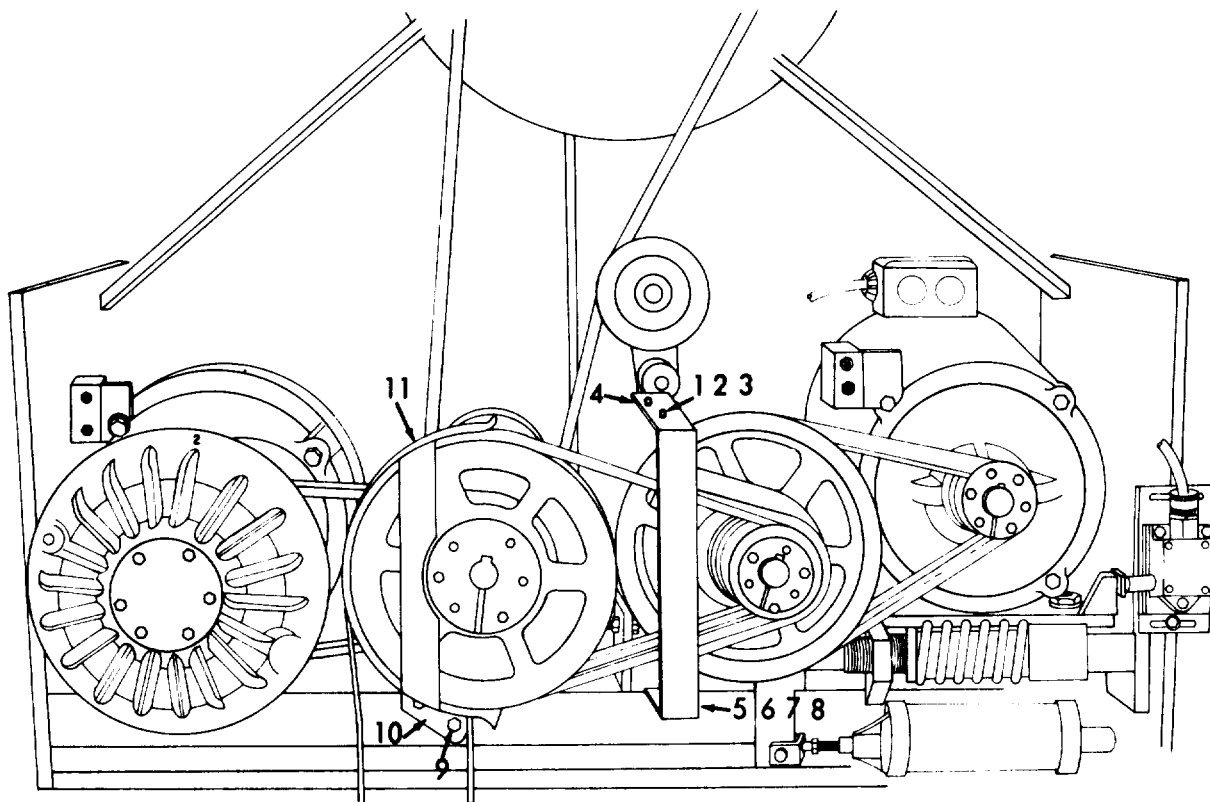
(d) Remove jackshaft guard (11).



TS 3510-208-12/4-30

- |                  |                     |
|------------------|---------------------|
| <b>1. Line</b>   | <b>6. Washer</b>    |
| <b>2. Line</b>   | <b>7. Screw</b>     |
| <b>3. Nut</b>    | <b>8. Washer</b>    |
| <b>4. Washer</b> | <b>9. Lockplate</b> |
| <b>5. Bolt</b>   | <b>10. Guard</b>    |

Figure 4-30. Jackshaft guard, removal and installation. (Eidal Model ELT9T).



TS 10-3510-208-12/4-31

- |            |           |                   |
|------------|-----------|-------------------|
| 1. Nut     | 5. Nut    | 8. Bracket        |
| 2. Washer  | 6. Washer | 9. Screw          |
| 3. Screw   | 7. Screw  | 10. Locking plate |
| 4. Bracket |           | 11. Guard         |

Figure 4-31. Jackshaft guard removal and installation (Edro Model EP120-LTU).

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean the jackshaft guards with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Repair.**

- (1) Inspect the jackshaft guards for damage.
- (2) Replace damaged jackshaft guards.

**d. Installation.**

**(1) Edro Model (EP120-LTU).**

(a) Position jackshaft guard (11, fig. 4-31) in place and secure to motor base with locking plate (10) and screws (9).

(b) Bend tangs on locking plate (10) up over screws (9).

(c) Secure guard to lower support bracket (8), using screws (7), washers (6), and nuts (5).

(d) Secure guard to upper support bracket (4) with screws (3), washers (2) and nuts (1).

**(2) Eidal Model (ELT9T).**

(a) Position jackshaft guard (10, fig. 4-29) in place and secure to motor base with locking plate (9), washers (8), and screws (7).

(b) Secure guard to washer base and jackshaft pillow block with washers (6), bolts (5), washers (4) and nuts (3).



(c) Reconnect lubrication lines (2 and 1).

**4-26. Fire Hose**

Remove the fire hoses (2, fig. 4-32) and replace a damaged or defective hose, coupling or clamp as required.

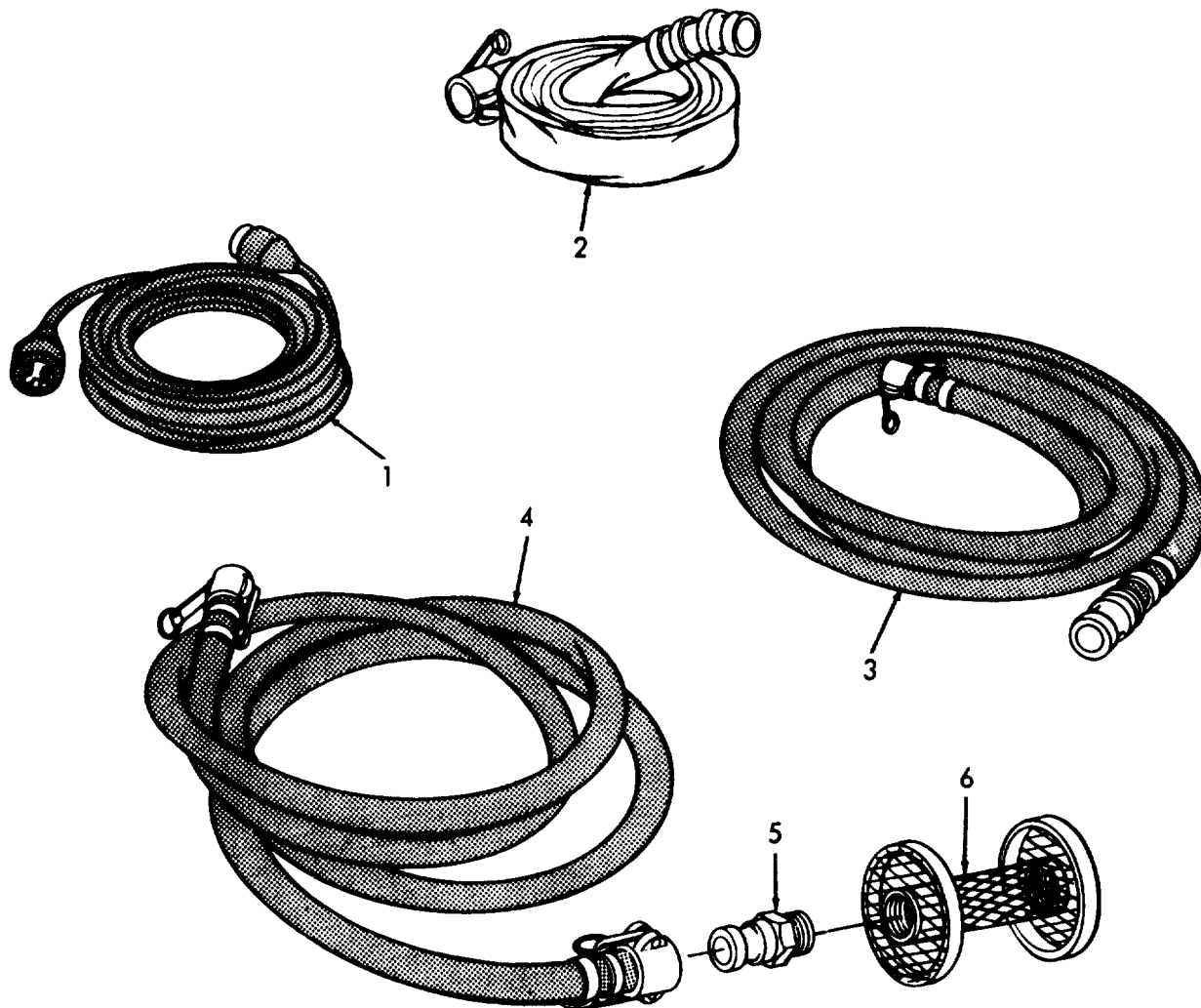
**4-27. Drain Hose Assembly**

Remove the drain hose assembly (3, fig. 4-32)

and replace a damaged or defective hose, coupling or clamp as required.

**4-28. Suction Hose, Coupling, and Strainer**

Remove the suction hose, coupling, and strainer (4, 5 and 6, fig. 4-32) and replace a damaged or defective hose, strainer or coupling as required. Service the strainer.



TS 10-3510-208-12/4-32

- |               |                  |
|---------------|------------------|
| 1. Cable      | 4. Hose, Suction |
| 2. Hose, Fire | 5. Coupling Half |
| 3. Hose Assy  | 6. Strainer      |

Figure 4-32. Strainer, Coupling Half, Suction and Fire Hose and Hose Assembly.

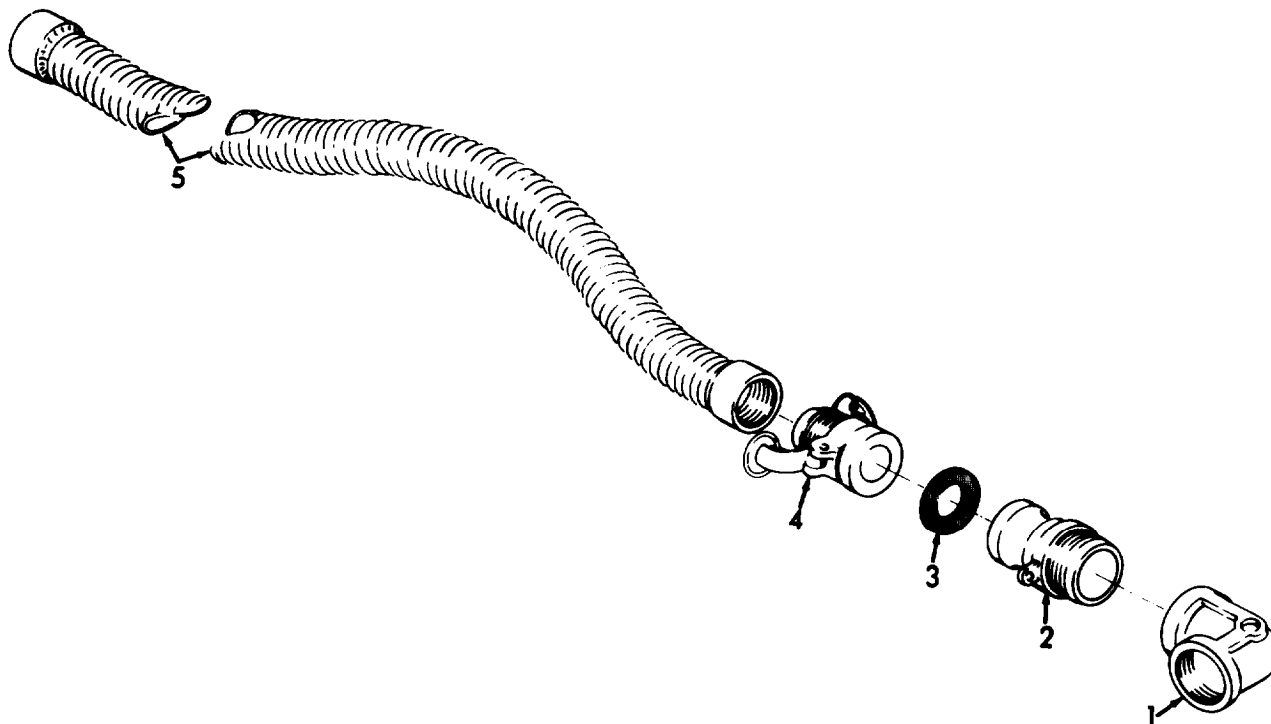
## Section X. GENERATOR EXHAUST DUCT AND GROUND ROD

### 4-29. Generator Exhaust Duct

#### a. Removal and Disassembly.

(1) Remove the exhaust duct by disconnecting at the elbow (1, fig. 4-33).

(2) Remove the pipe elbow (1), coupling (2), gasket (3) and coupling (4) from the exhaust duct (5).



TS 10-3510-208-12/4-33

- |               |           |                 |
|---------------|-----------|-----------------|
| 1. Pipe elbow | 3. Gasket | 4. coupling     |
| 2. Coupling   |           | 5. Exhaust duct |

Figure 4-33. Generator exhaust duct, removal, disassembly, reassembly and installation.

#### b. Inspection and Replacement.

(1) Inspect exhaust duct for punctures, tears, cracks or other damage.

(2) Inspect elbow and couplings for corks, breaks or thread damage.

(3) Replace damaged or defective parts as required.

#### c. Assembly and Installation.

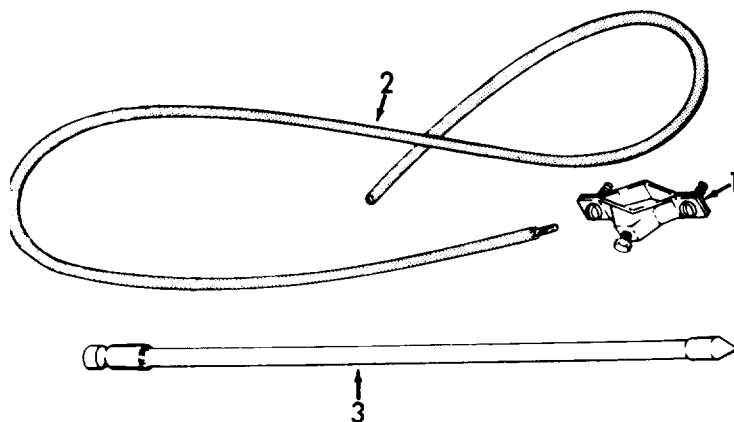
(1) Install the coupling (4, fig. 4-33), gasket

(3), coupling (2) and pipe elbow (1) onto the exhaust duct (5).

(2) Install the exhaust duct by reconnecting at elbow (1).

### 4-30. Ground Rod

a. Removal and Disassembly. Loosen the screws on clamp (1, fig. 4-34) and remove the wire (2) and rod (3).



TS 10-3510-208-12/4-34

1. Clamp
2. Wire
3. Rod

Figure 4-34. Generator ground rod, removal and installation.

*b. Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Repair and/or replace parts as necessary.

- c. Assembly and Installation.* Install the rod (3, fig. 4-34) and wire (2) and secure by tightening the screws on clamp (1).

## Section XI. WASHER-EXTRACTOR TIEDOWN BAR AND SUPPORTS

### 4-31. Washer-Extractor Tiedown Bar

*a. Removal.*

(1) Eidal Model ELT9T

(a) Remove the screws (1, fig. 4-35) and lockwashers (2) securing the chain to the trailer.

(b) Remove the nuts (3), bolts (4) and lockwashers (5) securing the upper end of the tiedown bar (8) to the washer-extractor.

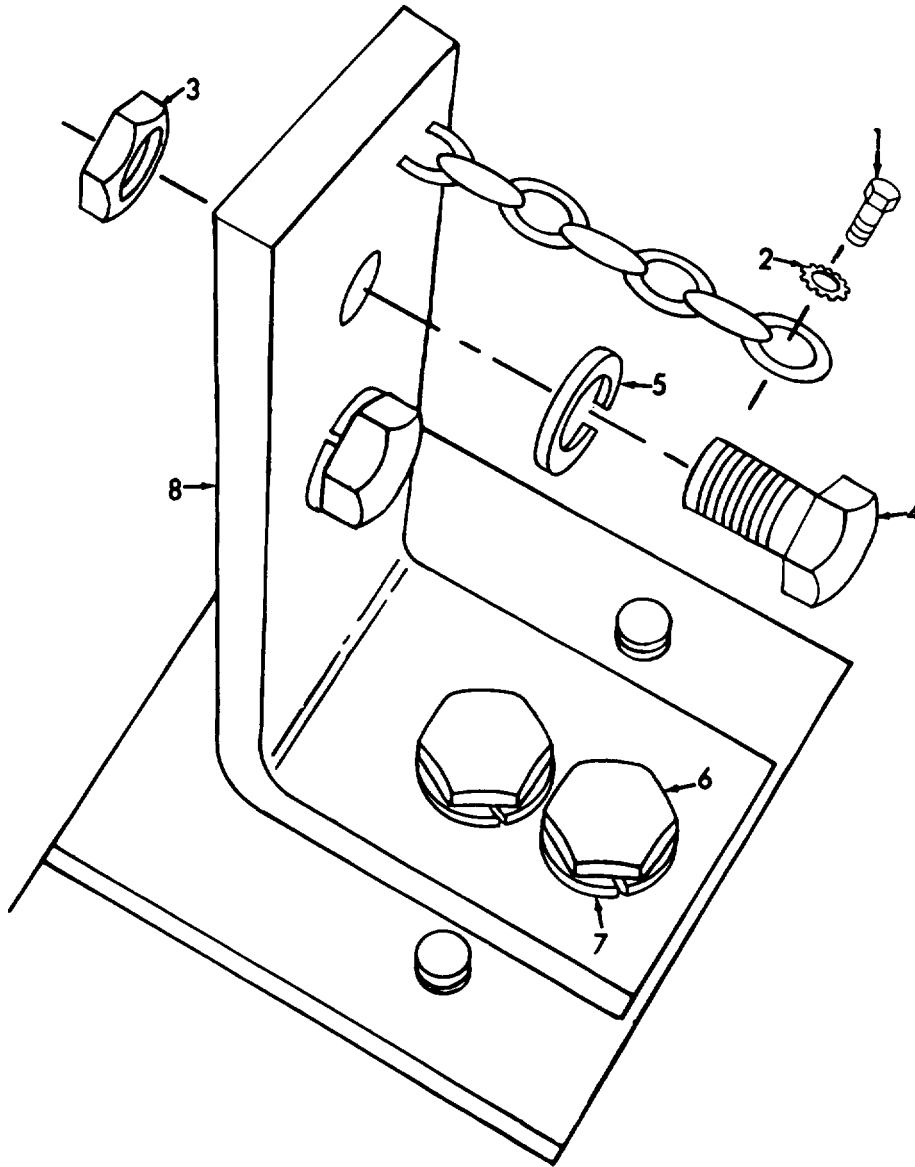
(c) Remove the bolts (6) and lockwashers (7) securing the tiedown bar (8) to the trailer.

(2) Edro Model EP120-LTU

(a) Remove screw (1, fig. 4-36) securing chain to the washer extractor frame.

(b) Remove self-locking nuts (2), bolts (3) and internal-external lockwashers (4) securing the upper end of the tiedown bar (7) to the washer-extractor.

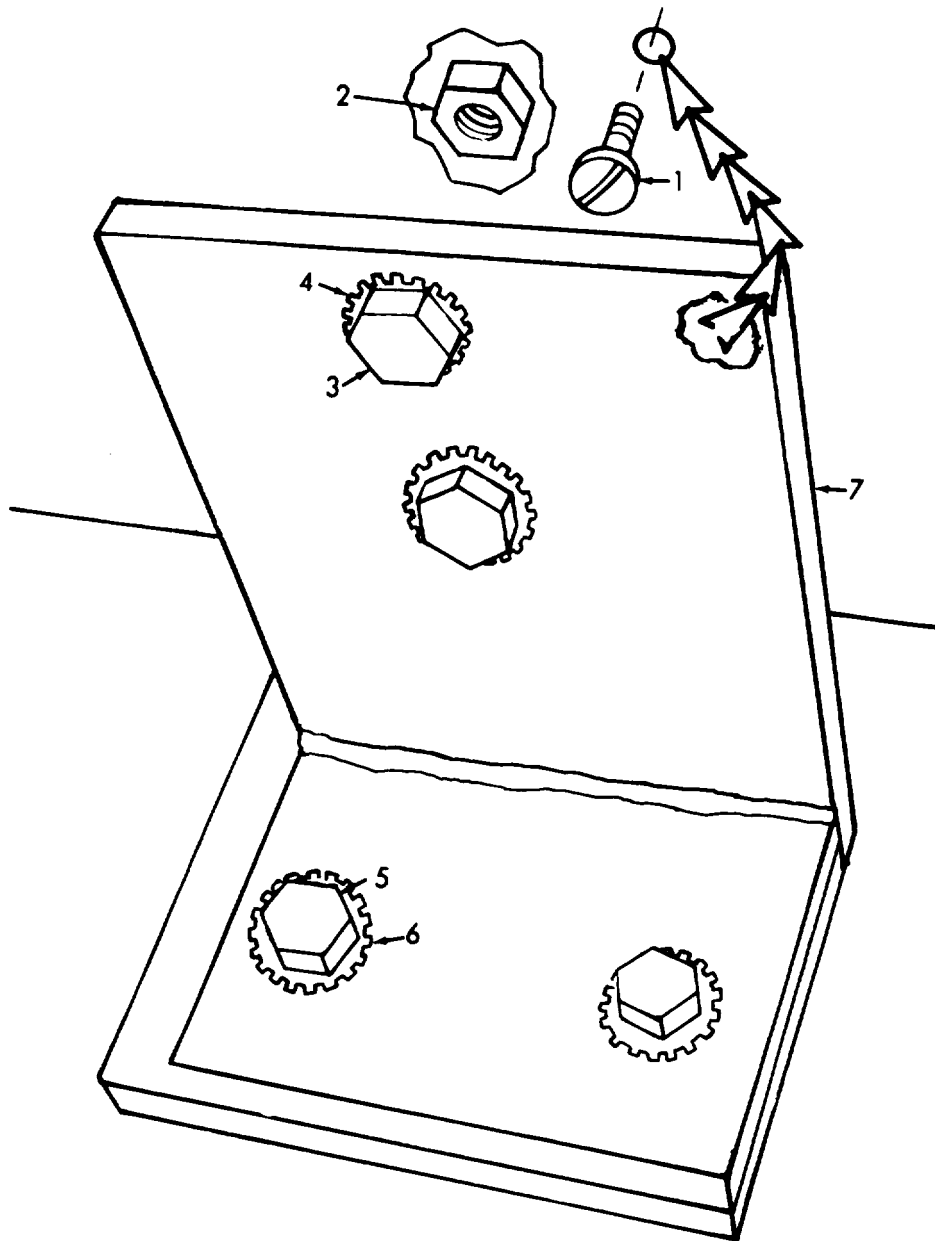
(c) Remove the bolts (5) and internal-external lockwashers (6) securing the tiedown bar (7) to the trailer bed. Remove tiedown bar.



TS 10-3510-208-12/4-35

- |                      |                      |
|----------------------|----------------------|
| <b>1. Screw</b>      | <b>5. Lockwasher</b> |
| <b>2. Lockwasher</b> | <b>6. Bolt</b>       |
| <b>3. Nut</b>        | <b>7. Lockwasher</b> |
| <b>4. Bolt</b>       | <b>8. Bar</b>        |

Figure 4-35. Washer-extractor tiedown bar, removal and installation (Eidal Model ELT9T).



TS 3510-208-12/4-36

- |               |               |
|---------------|---------------|
| 1. Screw      | 5. Bolt       |
| 2. Nut        | 6. Lockwasher |
| 3. Bolt       | 7. Bar        |
| 4. Lockwasher |               |

Figure 4-36. Washer-extractor tiedown bar, removal and installation (Edro Model EP120-LTU).

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and

prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous

to personnel and property, Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean the tiedown bar with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

- (1) Inspect the tiedown bar for damage.
- (2) Replace damaged tiedown bar,

*d. Installation.*

(1) Eidal Model ELT9T.

(a) Position the tiedown bar (8, fig. 4-35) and secure to the trailer with lockwashers (7) and bolts (6).

(b) Secure the tiedown bar (8) to the washer-extractor with lockwashers (6), bolts (4), and nuts (3).

(c) Secure the chain to the trailer with lockwashers (2) and screws (1).

(2) Edro Model EP120-LTU.

(a) Position the tiedown bar (7, fig. 4-36) and secure to trailer bed with internal-external lockwashers (6) and bolts (5).

(b) Secure the tiedown bar (8) to the washer-extractor frame with internal-external lockwashers (4), bolts (3), and self-locking nuts (2).

(c) Secure chain to the washer-extractor frame with screw (1).

**4-32. Washer-Extractor Supports**

*a. Removal.*

(1) Remove the nuts (1, fig. 4-37), lockwashers (2) and capscrews (3) securing the upper portion of the rear support (6) to the washer-extractor frame.

(2) Remove the capscrews (4, fig. 4-37), and lockwashers (5) and remove the rear support (6).

(3) Remove the other rear support in the same manner.

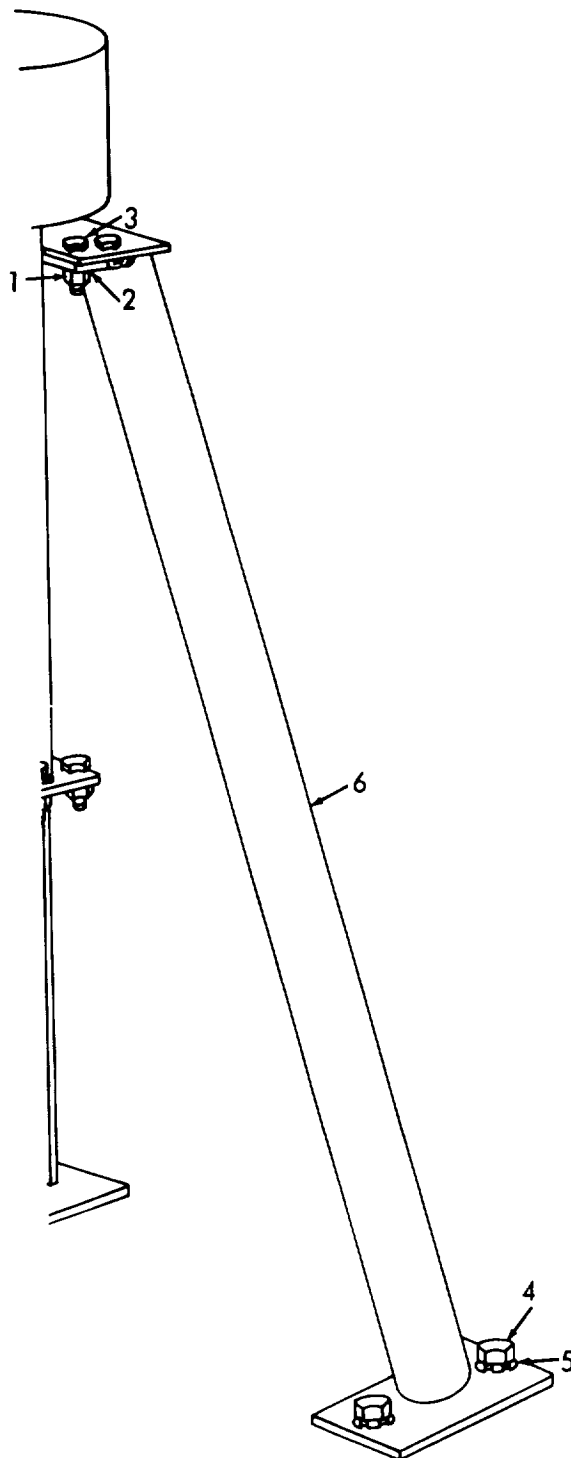
**NOTE**

The rear supports (fig. 4-38) on the Edro Model EP120-LTU laundry unit are secured to the trailer bed with four (4) bolts and the Eidal Model ELT9T are secured with two (2).

(4) Remove self-linking nuts (1, fig. 4-39), bolts (2), and internal-external lockwashers (3) securing front support to washer-extractor frame.

(5) Remove bolts (4) and internal-external lockwashers (5) securing front support (6) to the trailer bed.

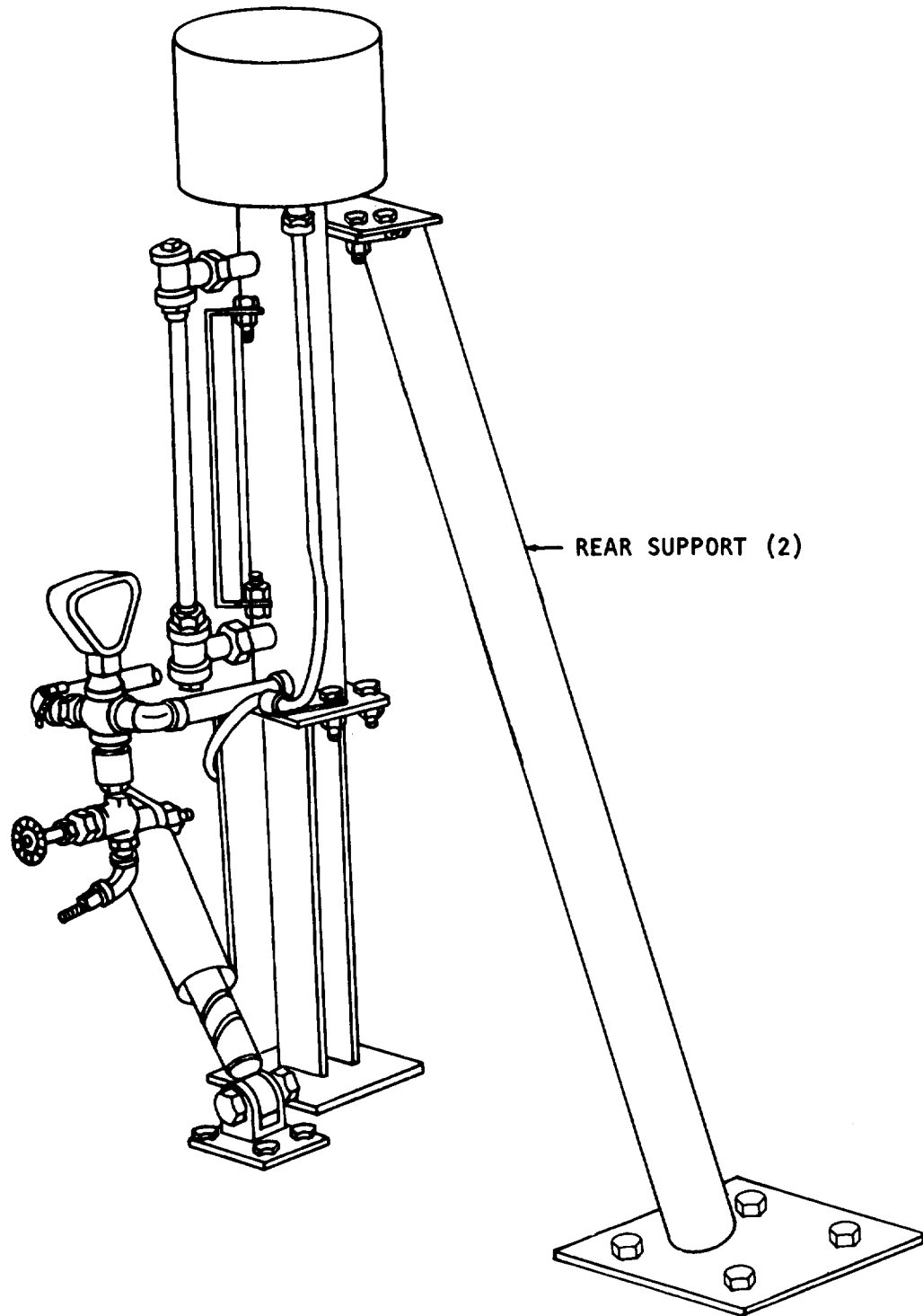
(6) Remove front support (6).



TS 10-3510-208-12/4-37

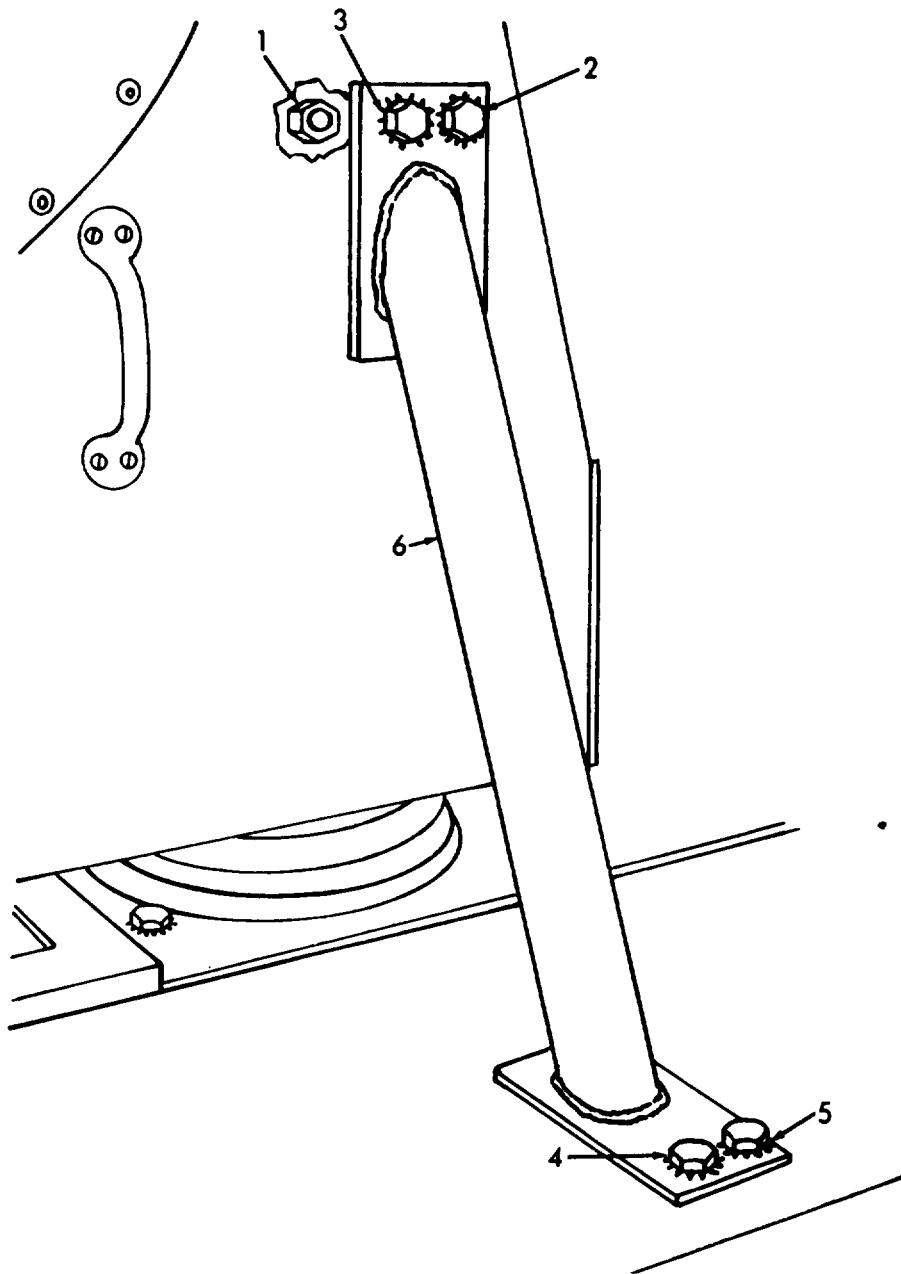
- |               |              |               |
|---------------|--------------|---------------|
| 1. Nut        | 3. Cap screw | 5. Lockwasher |
| 2. Lockwasher | 4. Cap screw | 6. Support    |

Figure 4-37. Rear washer-extractor supports, removal and installation (Eidal Model ELT9T).



TS 3510-208-12/4-38

Figure 4-38. Rear washer-extractor support (Edro Model EP120-LTU).



TS 3510-208-12/4-39

- 1. Nut.
- 2. Bolt
- 3. Lockwasher

- 4. Bolt
- 5. Lockwasher
- 6. Support

Figure 4-39. Front washer-extractor support, removal and installation.

**Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.**

**Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 136F. (38 to 59C. ).**



Clean the supports with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

- (1) Inspect the supports for damage.
- (2) Replace damaged Supports.

*d. Installation.*

(1) Install the rear support (6, fig. 4-37) and secure to the trailer with lockwashers (5) and capscrews (4).

(2) Secure the upper portion of the support (6) with capscrews (3), lockwashers (2) and nuts (1).

(3) Install the other support in the same manner.

(4) Secure the front support (6, fig. 4-39) to the trailer bed with internal-external lockwashers (5) and bolts (4).

(5) Secure the upper portion of the front support to the washer-extractor frame with internal-external lockwashers (3), bolts (2) and self-locking nuts (1).

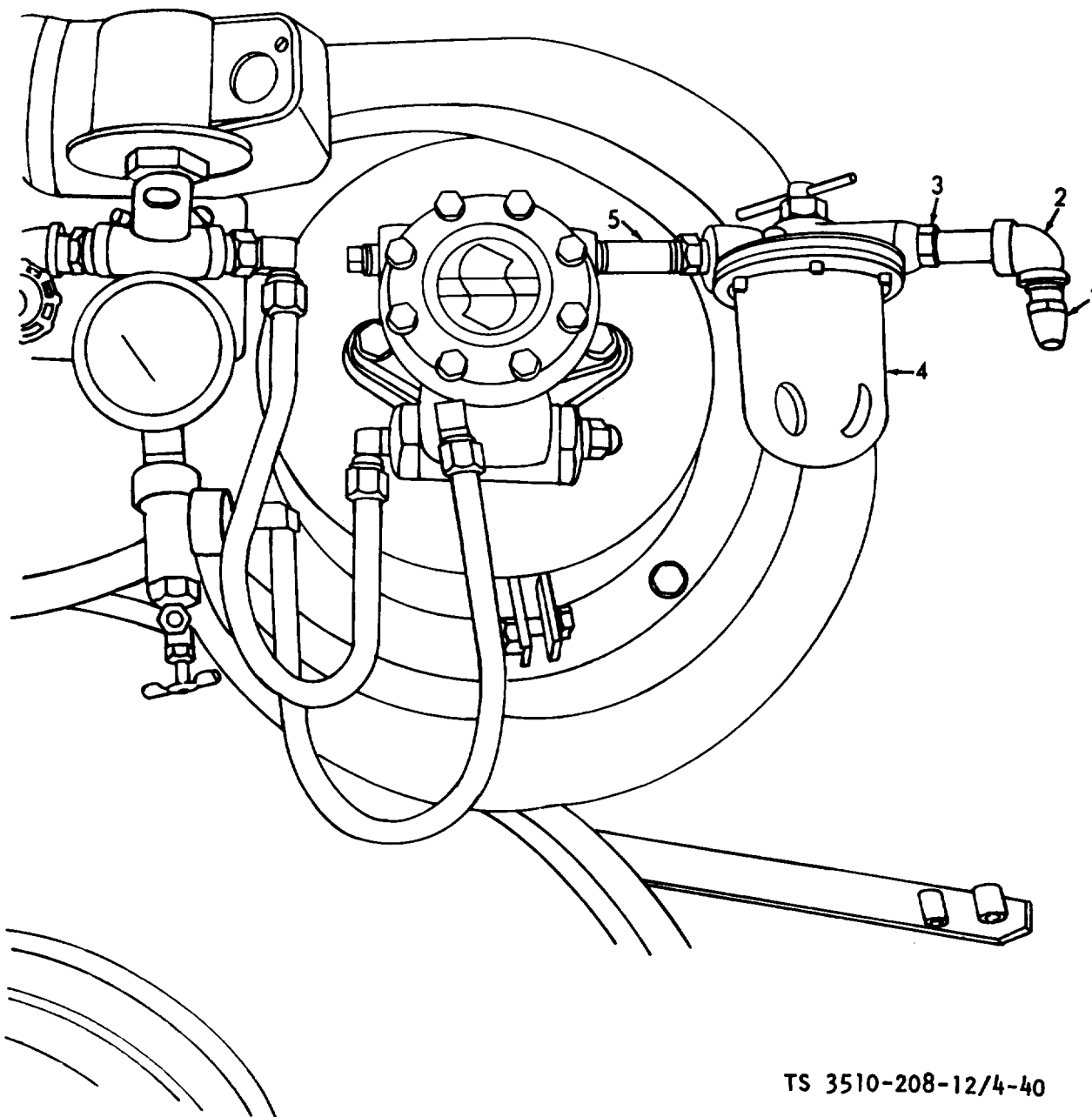
## Section XII. TUMBLER BURNER FUEL FILTER, FUEL PUMP, AND BLOWER ASSEMBLY

### 4-33. Tumbler Burner Fuel Filter

*a. Removal*

(1) Remove the adapter (1, fig. 4-40), elbow (2) and nipple (3) from the fuel filter.

(2) Remove the fuel filter (4) from the dryer-tumbler.



TS 3510-208-12/4-40

- |            |           |           |
|------------|-----------|-----------|
| 1. Adapter | 3. Nipple | 4. Filter |
| 2. Elbow   |           | 5. Nipple |

Figure 4-40. Tumbler burner fuel filter, removal and installation.

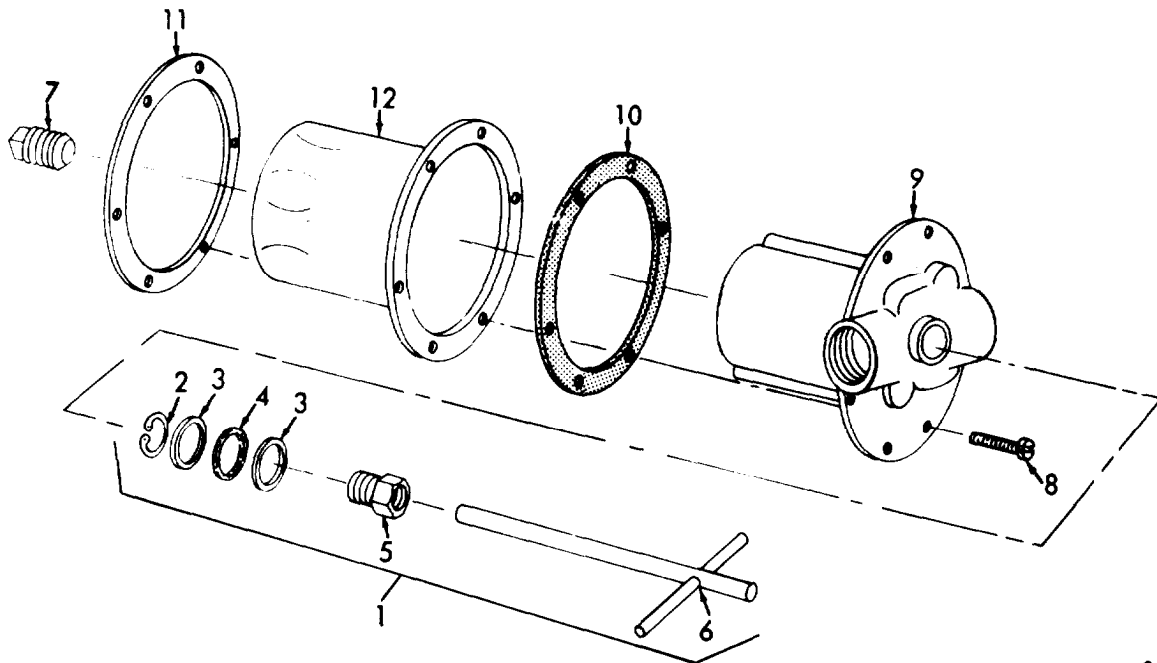
*b. Disassembly.*

(1) Loosen the handle nut (5, fig. 4-41) and pull the handle assembly (1) out of the filter.

(2) Remove the retaining ring (2) securing the washers (3), packing (4, fig. 4-41) and handle nut (5) to the handle (6).

(3) Remove the drain plug (7) from the filter.

(4) Remove the screws (8) securing the fuel filter cover assembly (9), its gasket (10) and ring (11) to the fuel filter housing (12).



TS 10-3510-208-12/4-41

- |                    |                   |
|--------------------|-------------------|
| 1. Handle assembly | 7. Plug           |
| 2. Ring            | 8. Screw          |
| 3. Washer          | 9. Cover assembly |
| 4. Packing         | 10. Gasket        |
| 5. Nut             | 11. Ring          |
| 6. Handle          | 12. Housing       |

Figure 4-41. Tumbler burner fuel filter, disassembly and reassembly.

c. *Cleaning.*

**WARNING**

**Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).**

**Clean all parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.**

d. *Inspection and Repair.*

- (1) Inspect all parts for wear and damage.
- (2) Replace all damaged parts.

e. *Assembly.*

- (1) Install the ring (11, fig. 4-41), gasket (10) and cover assembly (9) onto the fuel filter housing (12) and secure with screws (8).

- (2) Install the drain plug (7).

- (3) Install the handle nut (5), packing (4) and washers (3) on the handle (6) and secure with retaining ring (2).

- (4) Install the handle assembly (1) into the filter and secure by tightening the handle nut.

f. *Installation.*

- (1) Install the fuel filter (4, fig. 4-40) onto the nipple (5).

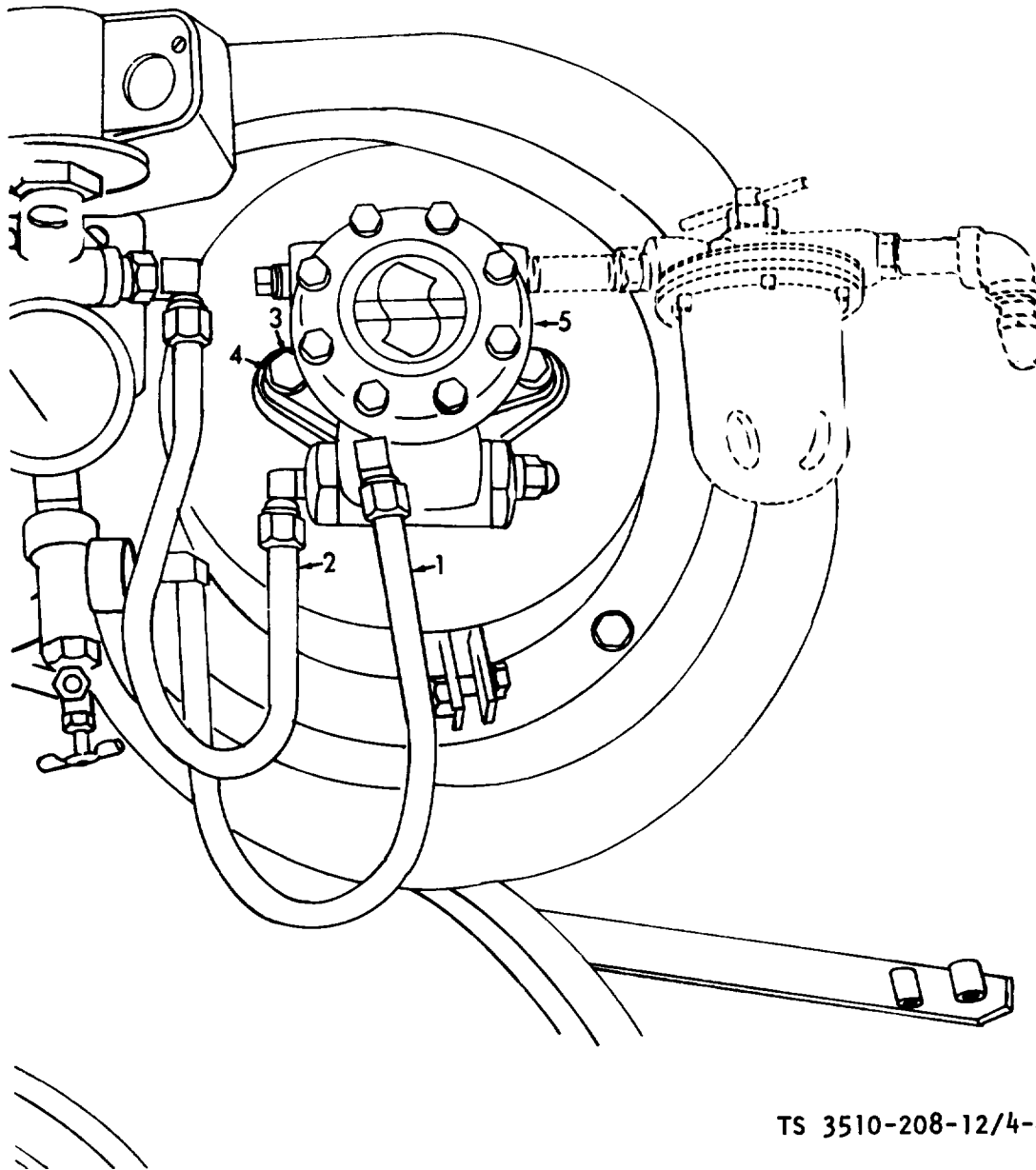
- (2) Install the nipple (3, fig. 4-40), elbow (2) and adapter (1).

**4-34. Tumbler Burner Fuel Pump**

a. *Removal.*

- (1) Tag and disconnect the fuel lines (1 and 2, fig. 4-42) from the fuel pump.

- (2) Remove the bolts (3) and lockwashers (4) securing the fuel pump (5) to the dryer-tumbler.



TS 3510-208-12/4-42

- |         |         |               |
|---------|---------|---------------|
| 1. Line | 3. Bolt | 4. Lockwasher |
| 2. Line |         | 5. Pump       |

Figure 4-42. Tumbler burner fuel pump and line, removal and installation.

*b. Disassembly.*

- (1) Remove the nut caps (1, fig. 4-43) and their gaskets (2) from the end plugs.
- (2) Remove the end plugs (3 and 4, fig. 4-43) and their gaskets (5 and 6) from the fuel pump body.
- (3) Remove the thrust washer (7) and packing (8) from the fuel pump body.
- (4) Push the spring seats (9 end 10), spring

(11) and control piston (12) out of the fuel pump body.

(5) Drive the sleeve bearing (13) out of the fuel pump body.

(6) Remove the bolts (14) securing the front cover (15) its gasket (16), and the pump strainer (17) to the fuel pump.

(7) Remove screws (18) securing the front gear

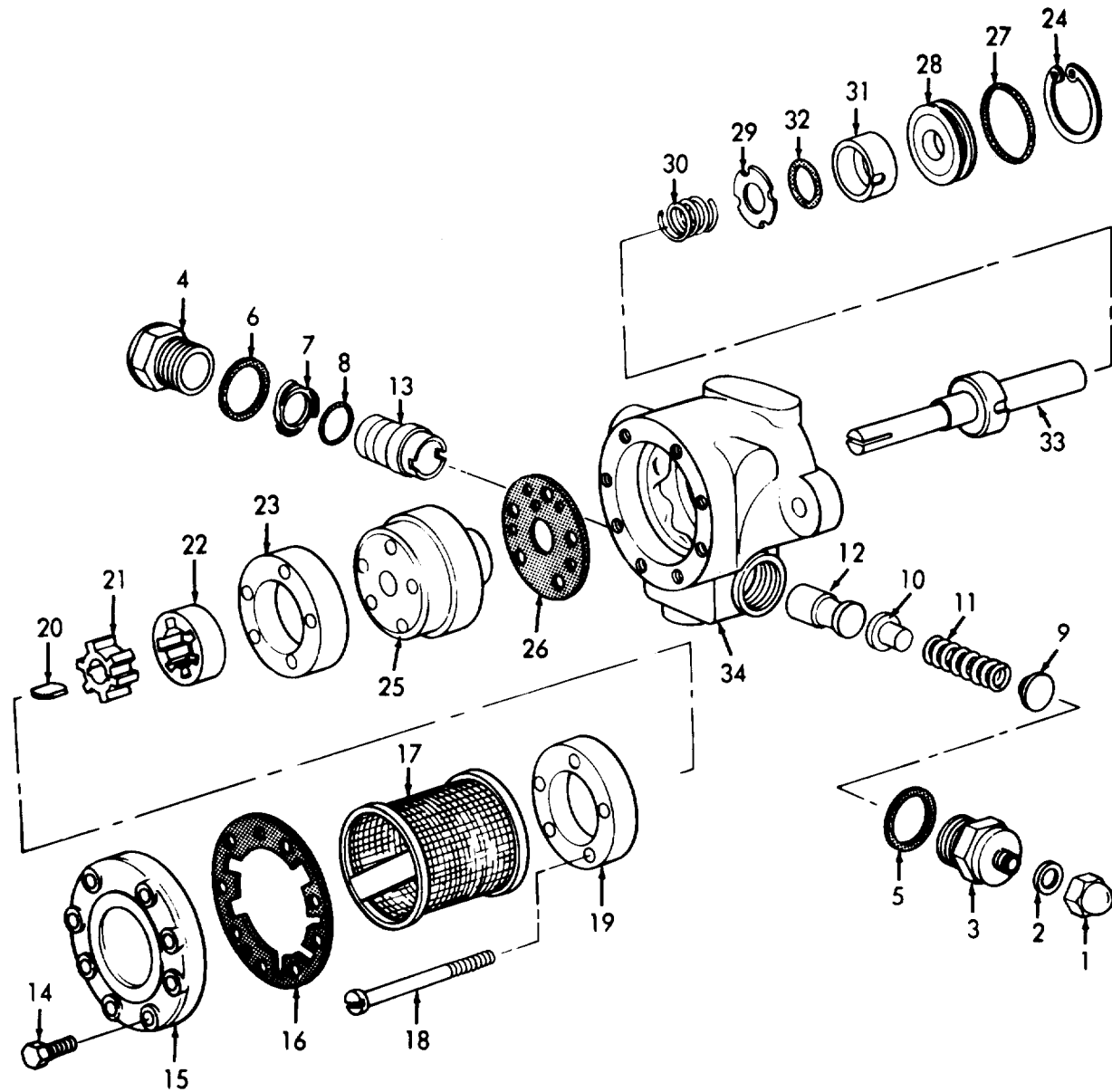
plate (19), key (20) drive gear (21), gear housing (22) and rear gear plate (23) to the fuel pump.

(8) Remove the retaining ring (24) from the fuel pump.

(9) Drive the shaft assembly (33) through the housing (25) and its gasket (26) and out of the fuel pump body (34) .

(10) Pull the seals (27 and 28) from the shaft assembly.

(11 ) Remove the washer (29) securing spring (30). Remove packing (31) and lock (32).



TS 10-3510-208-12/4-43

- |            |              |             |                    |
|------------|--------------|-------------|--------------------|
| 1. Cap     | 10. Seat     | 18. Screw   | 26. Gasket         |
| 2. Gasket  | 11. Spring   | 19. Plate   | 27. Seal           |
| 3. Plug    | 12. Piston   | 20. Key     | 28. Seal           |
| 4. Plug    | 13. Bearing  | 21. Gear    | 29. Washer         |
| 5. Gasket  | 14. Bolt     | 22. Housing | 30. Spring         |
| 6. Gasket  | 15. Cover    | 23. Plate   | 31. Packing        |
| 7. Washer  | 16. Gasket   | 24. Ring    | 32. Lock           |
| 8. Packing | 17. Strainer | 25. Housing | 33. Shaft assembly |
| 9. Seat    |              |             | 34. Body           |

Figure 4-43. Tumbler burner fuel pump, disassembly and reassembly.

c. *Cleaning.***WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Clean all parts of the fuel pump, using cleaning solvent, Fed. Spec. P. D. 680, and dry thoroughly. Direct a jet of dry compressed air through the pores in the strainer to remove any foreign matter that may have been lodged.

d. *Inspection and Repair.*

(1) Inspect the front cover and fuel pump body for cracks, chips, nicks and other damage.

(2) Inspect the gaskets and seals for tears, cracks and excessive wear.

(3) Inspect the shaft assembly and gear set for breaks, cracks, chips and other damage.

(4) Inspect all hardware for thread damage, replace as necessary.

(5) Install repair kit to replace parts that are damaged, defective, or worn. If replacing parts included in the repair kit is not practical, replace the fuel pump.

e. *Assembly.*

(1) Install lock (32, fig. 4-43), packing (31), spring (30), washer (29) and seals (28 and 27) on shaft assembly (33).

(2) Install assembled shaft assembly in fuel pump body (34, fig. 4-43), then install gasket (26) and housing (25).

(3) Install retaining ring (24).

(4) Install rear gear plate (23), gear housing (22), drive gear (21), key (20) and front gear plate (19) and secure with screws (18).

(5) Install strainer (17), front cover gasket (16) front cover (15) and secure with bolts (14).

(6) Install sleeve bearing (13).

(7) Install control piston (12), spring (11), spring seats (10 and 9), packing (8), thrust washer (7), end plug gaskets (6 and 5) and end plugs (4 and 3).

(8) Install nut cap gaskets (2) and nut caps (1) to end plugs.

f. *Installation.*

(1) Install the fuel pump (5, fig. 4-42) onto the dryer-tumbler and secure with lockwashers (4) and bolts (3).

(2) Reconnect the fuel lines (2 and 1) on the fuel pump (5).

## NOTE

When Mogas is utilized as the fuel source, add one quart (.95 Mere) of OE-30 engine oil to each 5 gallons (19 liters) of Mogas.

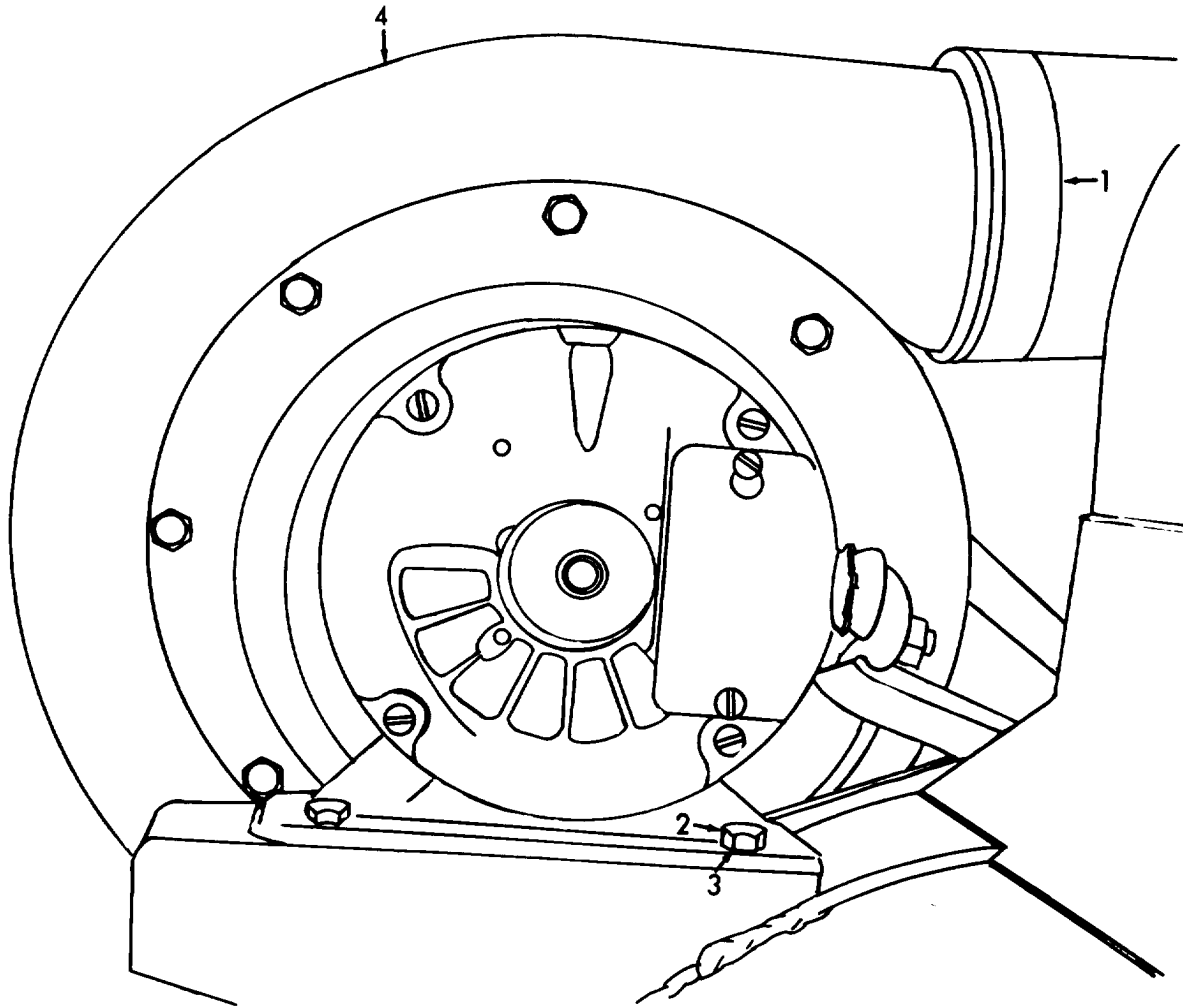
## 4-35. Tumbler Burner Blower Assembly

a. *Removal.*

(1) Remove the hose clamp (1, fig. 4-44) from the hose.

(2) Tag and disconnect all electrical wiring going to the blower and motor.

(3) Remove the screws (2) and lockwashers (3) securing the tumbler burner blower assembly (4) to the dryer-tumble.



TS 10-3510-208-12/4-44

- |          |                    |
|----------|--------------------|
| 1. Clamp | 3. Lockwasher      |
| 2. Screw | 4. Blower assembly |

Figure 4-44. Tumbler burner blower assembly, removal and installation.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean the tumbler burner blower with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Repair.**

(1) Inspect the tumbler burner blower for damage.

(2) Replace a damaged tumbler burner blower, **d. Installation.**

(1) Install the tumbler burner blower assembly (4, fig. 4-44) and secure with lockwashers (3) and screws (2).

(2) Reconnect all wiring going to the blower and motor.

(3) Reconnect the hose and tighten the screw on hose clamp (1) to secure.



## Section XIII. WATER PUMP, FRAME AND SWITCH

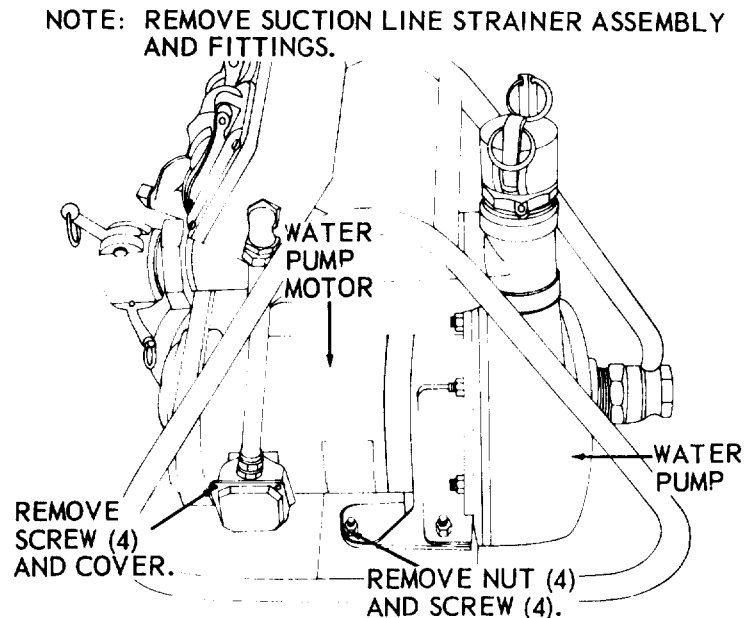
## 4-36. General

The centrifugal type water pump, mounted on a tubular frame, is operated by an electric motor mounted to the water pump housing. A sediment strainer is located in the strainer housing on the

discharge side of the pump. The strainer prevents foreign matter from entering the water heater.

## 4-37. Water Pump and Motor

**a. Removal.** Refer to figure 4-45 and remove the water pump and motor.



NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.

TS 10-3510-208-12/4-45

Figure 4-45. Water pump and motor assembly, removal and installation.

*b. Disassembly.*

(1) Remove the protective dust cap (1, fig. 4-46) from the discharge coupling. Remove the discharge coupling (2) from the tee coupling.

(2) Remove the suction coupling (3) from the strainer body.

(3) Remove the strainer screw (4), nut (5), strainer cap clamp (6), strainer cap (7), gaskets (8 and 9), and gage and screen element (10) from the strainer body.

(4) Remove the strainer body (11) and pipe nipple (12) from the tee coupling.

(5) Remove the tee coupling (13, fig. 4-46) and close nipple (14) from the water pump housing.

(6) Remove the pipe plugs (15) and 16) and the drain cock (17) from the water pump housing.

(7) Remove coupling (18) from housing (34).

(8) Remove nuts (19) and remove bracket (20), with attachments, and gasket (21) from housing (34).

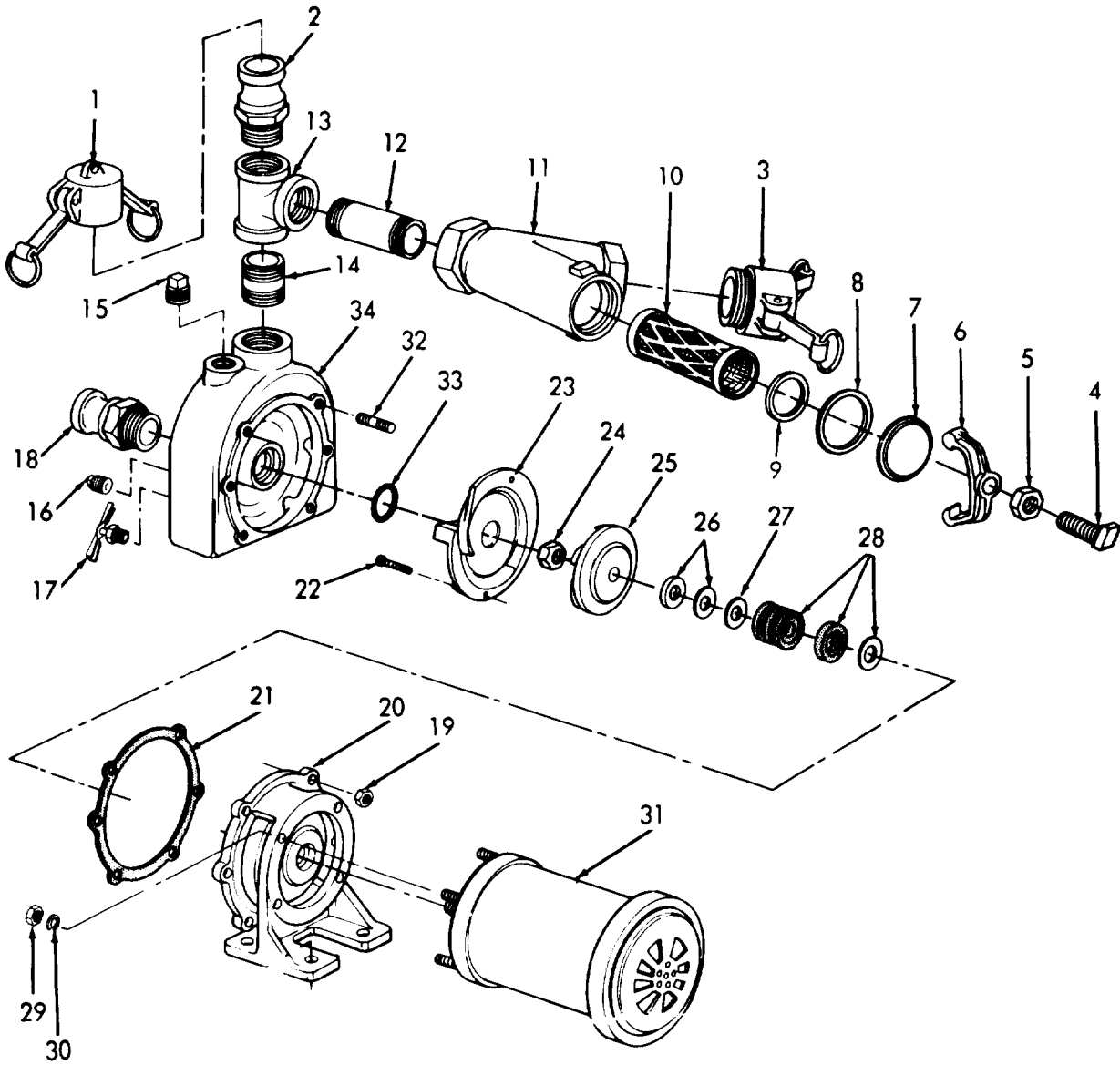
(9) Remove the screws (22) securing the plate vane (23) to the water pump mounting bracket (20).

(10) Holding the motor shaft stationary with a screwdriver placed through the center hole of the motor front cover and into the shaft end slot, remove nut (24).

(11) Remove the impeller (25), shims (26), flatwasher (27), and seal assembly (28) from the water pump mounting bracket (20).

(12) Remove nuts (29) and lockwashers (30) securing the motor (31) to mounting bracket (20).

(13) Remove the studs (32) and preformed packing (33) from the water pump housing (34).



TS 10-3510-208-12/4-46

- |             |              |              |                   |
|-------------|--------------|--------------|-------------------|
| 1. Cap      | 10. Element  | 18. Coupling | 26. Shim          |
| 2. Coupling | 11. Body     | 19. Nut      | 27. Flatwasher    |
| 3. Coupling | 12. Nipple   | 20. Bracket  | 28. Seal assembly |
| 4. Screw    | 13. Coupling | 21. Gasket   | 29. Nut           |
| 5. Nut      | 14. Nipple   | 22. Screw    | 30. Lockwasher    |
| 6. Clamp    | 15. Plug     | 23. Vane     | 31. Motor         |
| 7. Cap      | 16. Plug     | 24. Nut      | 32. Stud          |
| 8. Gasket   | 17. Cock     | 25. Impeller | 33. Packing       |
| 9. Gasket   |              |              | 34. Housing       |

Figure 4-46. Waterpump and motor, disassembly and reassembly.

**c. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area.

Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean all parts with cleaning solvent, Fed. spec. P-D-680, and dry thoroughly.

(1) Inspect the impeller for cracks, dents and clogged conditions. Replace it if any of these conditions are present.

(2) Examine the seal assembly for cracking, holes and other conditions which might cause leaks. Replacement is necessary, if any such condition is present.

(3) Check pump attaching hoses for cuts, cracks, holes and other leak causing conditions. Damaged hoses should be replaced.

(4) Remove the filter cover and if obstructions which could cause a clogged filter are present, the filter and screen should be cleaned, if possible, or replaced.

(5) Inspect all wiring for cracked insulation, broken wires, and loose or corroded connections. Damaged wiring should be replaced.

(6) Examine gaskets and packing for cracks, tears and wear. Replacement is necessary if gaskets or packing are damaged.

(7) Inspect the caps, housing and mounting bracket for cracks, chips and other damage. Repair or replace these items when damage is present.

(8) Inspect all hardware for thread damage and proper size. Replace hardware when necessary.

(1) Install the preformed packing (33, fig. 4-46) and studs (32) on the water pump housing (34).

(2) Position the motor (31) onto the mounting bracket (20) and secure with lockwashers (30) and nuts (29).

(3) Oil shaft and seal assembly using a light oil.

(4) Install seal assembly (28), flatwasher (27), shims (26) and impeller (25), then install nut (24) to secure.

#### NOTE

Slide the seal assembly onto the shaft as far as it will go, being sure to press only on the tail section of the bellows and driving band. If it is not possible to slide the assembly with the fingers, use a smooth sleeve of about 1/32 in. (0.08 cm) over shaft diameter with a wall thickness of about 1/4 in. (0.64 cm) to push the assembly into position.

#### NOTE

Hold the motor shaft stationary by inserting a screwdriver through the center hole of the motor front cover and into the shaft end slot.

(5) Install the plate vane (23, fig. 4-46) on the water pump mounting bracket (20) and secure with screws (22).

#### NOTE

Adjustment of the Impeller to Vane clearance is obtained by installing or removing the Impeller Adjusting Shims (Item 26, Figure 4-46). Install Shims until the Impeller will rub against the vane plate when it is installed. Remove 0.004 Shim and install Impeller and Vane Plate. The Impeller should turn freely without rubbing against the vane plate after proper adjustment is obtained.

(6) Install gasket (21) and bracket (20), with attachments, onto housing (34) and secure with nuts (19).

(7) Install the coupling (18) on housing (34).

(8) Install drain cock (17), pipe plugs (16 and 15), close nipple (14) and tee coupling (13) in pump housing (34).

(9) Install pipe nipple (12) and strainer body (11).

(10) Install gage and screen element (10), gasket (9 and 8), strainer cap (7), strainer cap clamp (6) and secure with nut (5) and screw (4).

(11) Install suction coupling (3), discharge coupling (2) and dust cap (1).

*f. Installation.* Refer to Figure 4-45 and install the water pump and motor.

4-38. Water Pump Frame and Switch Box

*a. Disassembly.*

(1) Remove the screws (1, fig. 4-47) securing the covers (2 and 3) to the switch box front cover (5).

(2) Remove the screws (4) securing the front cover (5) and its gasket (6) to the switch box.

(3) Remove the screws (7) securing the circuit breaker (8) to the front cover (5, fig. 4-47).

(4) Remove the screws (9) securing the thermal release heaters (10) to the circuit breaker.

(5) Tag and disconnect all electrical leads entering the switch box.

(6) Remove the nuts (11) and bolts (12) securing to the switch box (13) to the water pump frame (14).

(7) Remove the locknut (15) and remove the connectors (16 and 17), conduit (18), and connectors (19 and 20).

*b. Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent. (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use

near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Replacement.*

(1) Inspect the circuit breaker and thermal release heaters for cracks, breaks, and for evidence of overheating.

(2) Inspect front cover and water pump frame for cracks or breaks.

(3) Inspect threaded parts for thread damage.

(4) Replace damaged or defective parts as required.

*d. Assembly.*

(1) Install the connectors (20 and 19, fig. 4-47), conduit (18), connectors (17 and 16) and locknut (15).

(2) Install the assembled water pump and motor to frame (14, fig. 4-47).

(3) Install switch box (13) to water pump frame (14) with bolts (12) and nuts (n).

(4) Install connectors (17 and 19), straight connector (16) and elbow connector (20) on conduit (18), then secure assembled unit to switch box with locknut (15).

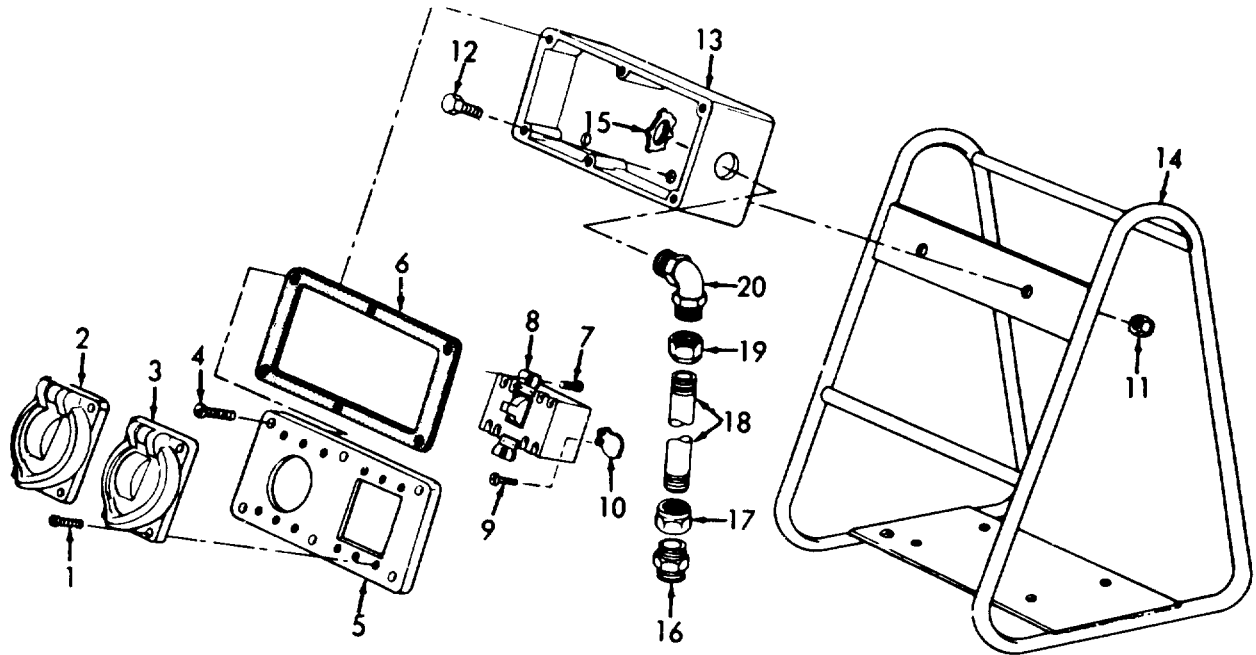
(5) Secure circuit breaker (8) to front cover (5) with screws (7).

(6) Secure thermal release heaters (10) to circuit breaker (8) with screws (9).

(7) Reconnect all leads.

(8) Position cover assembly gasket (6) in place and secure cover (5) to switch box (13) with screws (4).

(9) Install covers (2 and 3) with screws (1).



TS 10-3510-208-12/4-47

- |          |            |             |               |
|----------|------------|-------------|---------------|
| 1. Screw | 6. Gasket  | 11. Nut     | 16. Connector |
| 2. Cover | 7. Screw   | 12. Bolt    | 17. Connector |
| 3. Cover | 8. Breaker | 13. Box     | 18. Conduit   |
| 4. Screw | 9. Screw   | 14. Frame   | 19. Connector |
| 5. Cover | 10. Heater | 15. Locknut | 20. Connector |

Figure 4-47. Water pump frame and switch box, disassembly and reassembly.



## Section XIV. TRANSFORMER, HANDY BOX AND SOLENOID

## 4-39. Transformer and Handy Box

a. **Removal.** Refer to figure 4-48 and remove the handy box and transformer.

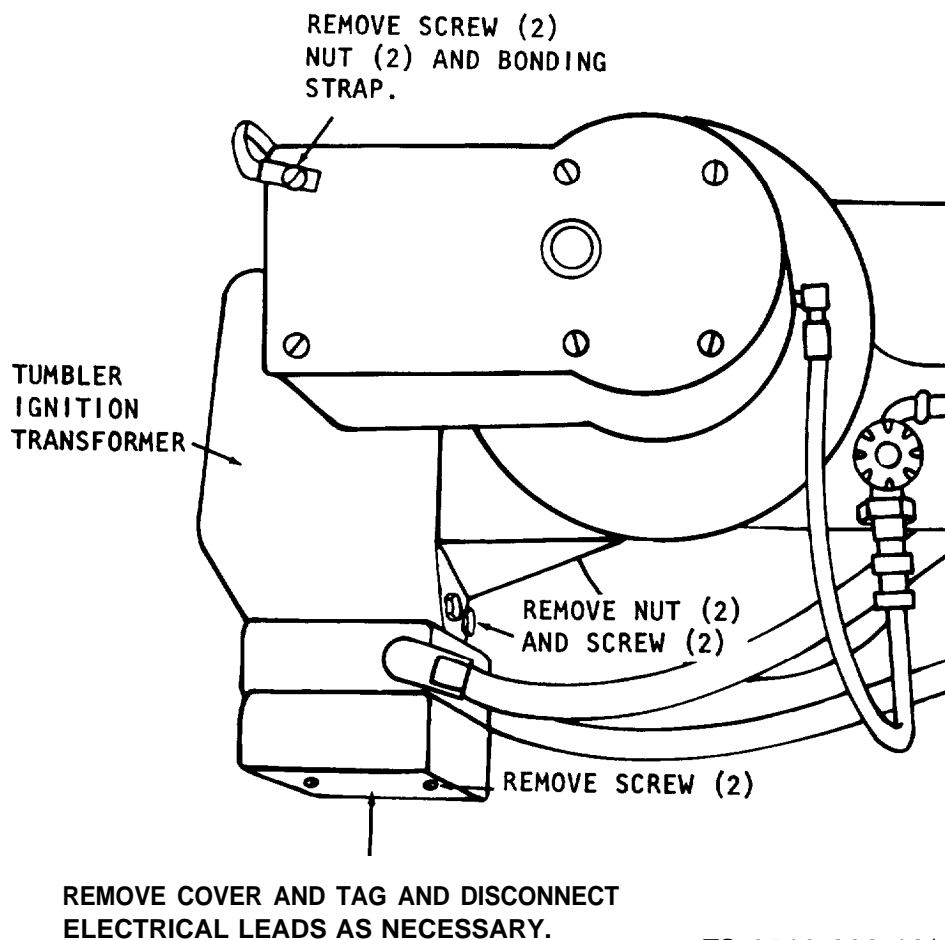


Figure 4-48. Ignition transformer and handy box, removal and installation

b. *Cleaning.*

**WARNING**

Clean parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean metal parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

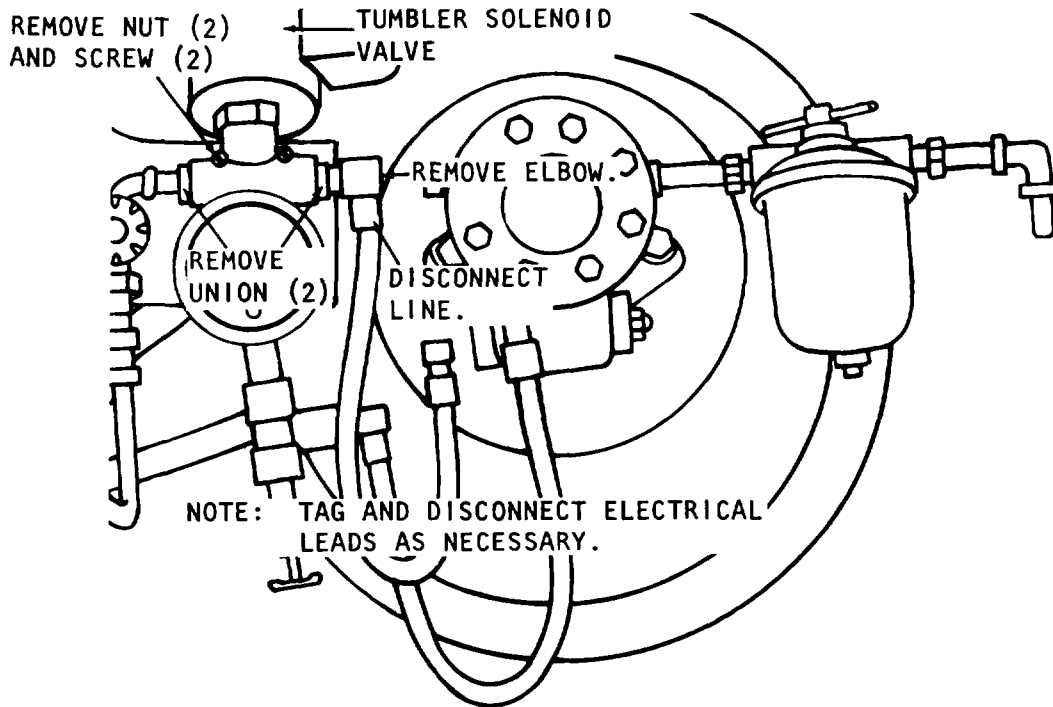
c. *Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Replace all damaged parts.

d. *Installation.* Refer to Figure 4-48 and install the transformer and handy box.

4-40. Solenoid and Bracket

a. **Removal.** Refer to figure 4-49 and remove the solenoid and bracket.



TS 3510-208-12/4-49

Figure 4-49. Tumbler solenoid and bracket, removal and installation.

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near

open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.). Clean metal parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Replace all damaged parts.

*d. Installation.* Refer to figure 4-49 and install the solenoid and bracket.

## Section XV. TUMBLER BURNER, EXHAUST MOTOR AND RELATED PARTS, DRIVE MOTOR CONDUIT BOX, DRIVE MOTOR AND RELATED PARTS

### 4-41. Tumbler Burner

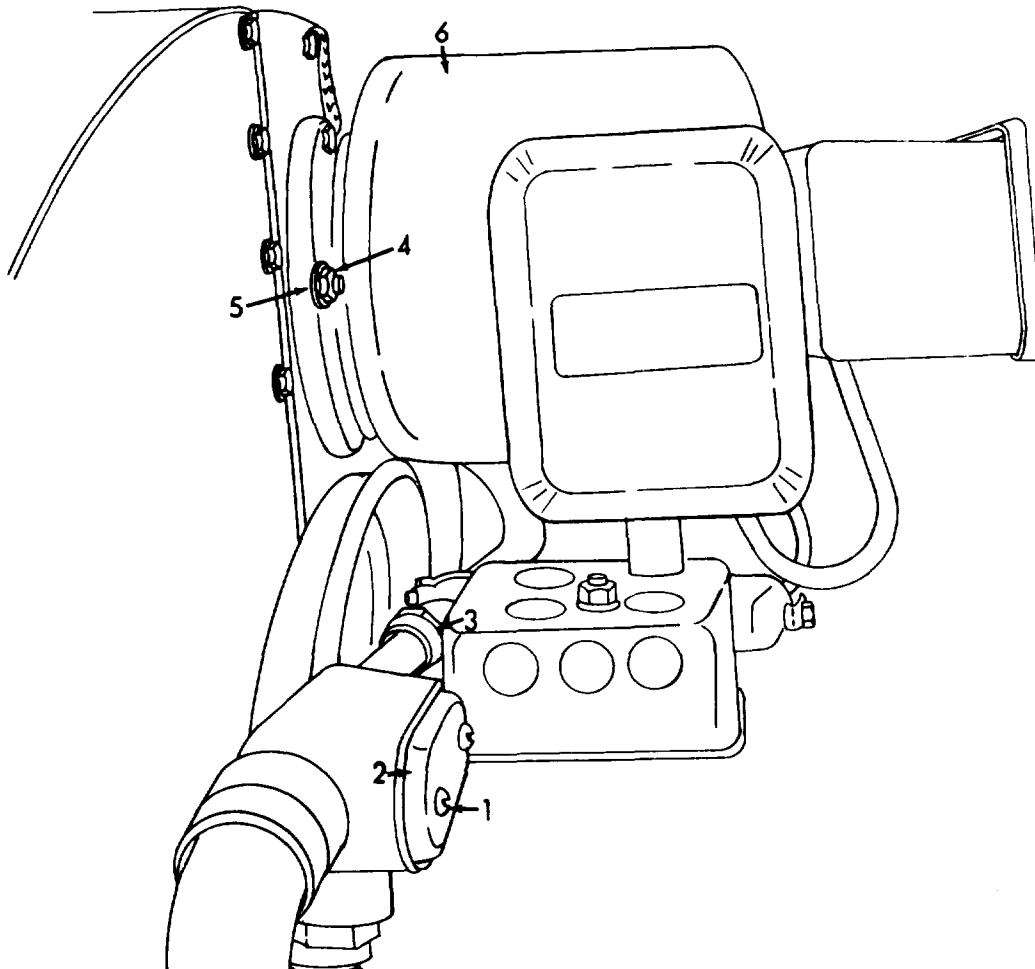
#### *a. Removal.*

- (1) Remove the screws (1, fig. 4-50) securing the conduit box cover (2) to the conduit box.
- (2) Tag and disconnect all wiring to the burner assembly.

- (3) Remove the conduit (3) from the burner assembly.

- (4) Remove the nuts (4) and lockwashers (5) securing the burner assembly (6) to the dryer-tumbler.





TS 3510-208-12/4-50

- |            |                    |
|------------|--------------------|
| 1. Screw   | 4. Nut             |
| 2. Cover   | 5. Lockwasher      |
| 3. Conduit | 6. Burner assembly |

Figure 4-50. Tumbler burner assembly, removal and installation.

**b. Disassembly.**

(1) Remove the tube nut (1, fig. 4-51), drain cock (2) and bushing (3) from the tee.

(2) Remove the elbow (4), bushing (5) and tee (6) from the pressure gage.

(3) Remove the screws (7) and lockwashers (8) securing the pressure gage (9) to the solenoid bracket.

**NOTE**

When disconnecting elbow (17) with power cable (18) below, also disconnect from handy box (43).

(4) Remove the hose (10), connector (11), glove valve (12), elbow (13), nipple (14), bushings (15 and 16) and elbow (17) with power cable (18) from the valve solenoid.

(5) Remove the nuts (19), lockwashers (20) and screws (21) securing the valve solenoid (22) to the solenoid bracket.

(6) Remove the screws (23), lockwashers (24) and peep hole bushing (25) securing the electrode cover (26) to the burner base.

(7) Remove the washer (27), peep hole glass (28) and pipe nipple (29) from the burner base.

(8) Disconnect the electrode leads from the electrodes.

(9) Remove the bushing (30) from the burner base.

(10) Remove the nuts (31), lockwashers (32) and bolts (33) securing the solenoid bracket (34) to the plenum chamber.

(11) Remove the screws (35) securing the junction box cover (36) to the handy box.

(12) Remove the nut (37), lockwasher (38) and screw (39) securing the capacitors (40) to the handy box.

(13) Remove the elbow (41, fig. 4-51) from the handy box.

(14) Remove the bushing (42) securing the handy box (43) to the power transformer.

(15) Remove the nuts (44), lockwashers (45), bolts (46) and lockwashers (47) securing the cable (16) from the burner base.

(16) Remove the nuts (50), lockwashers (51)

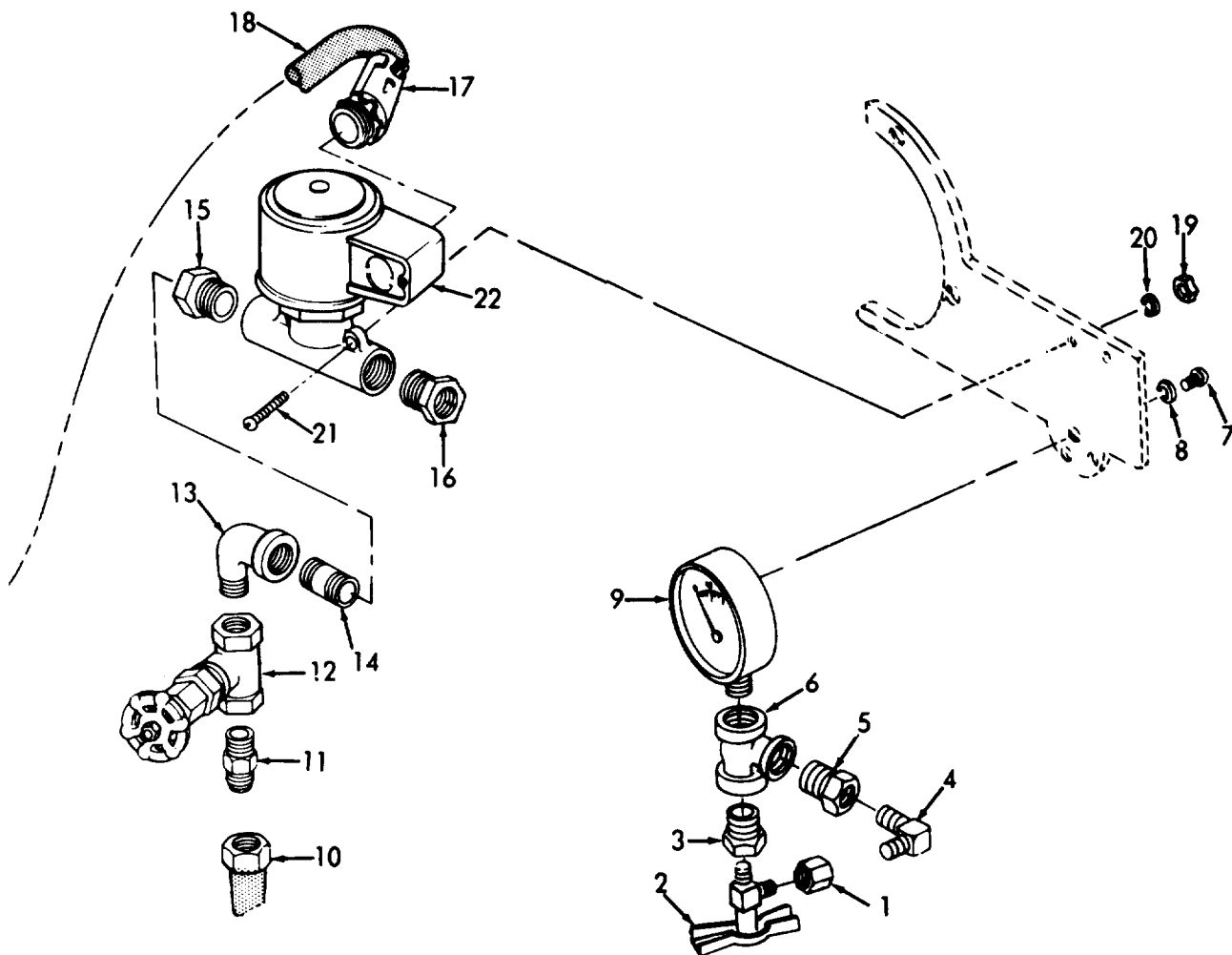
and bolts (52) securing the transformer bracket (53) and the plenum chamber (54) to the air nozzle.

(17) Remove the shutter (55), screw (56) and nut (57) from the air nozzle.

(18) Remove the screws (58) and lockwashers (59) securing the air nozzle (60) to the burner base.

(19) Remove the oil burner nozzle (61), nozzle adapter (62), pipe nipple (63) and elbow (64) from the burner base.

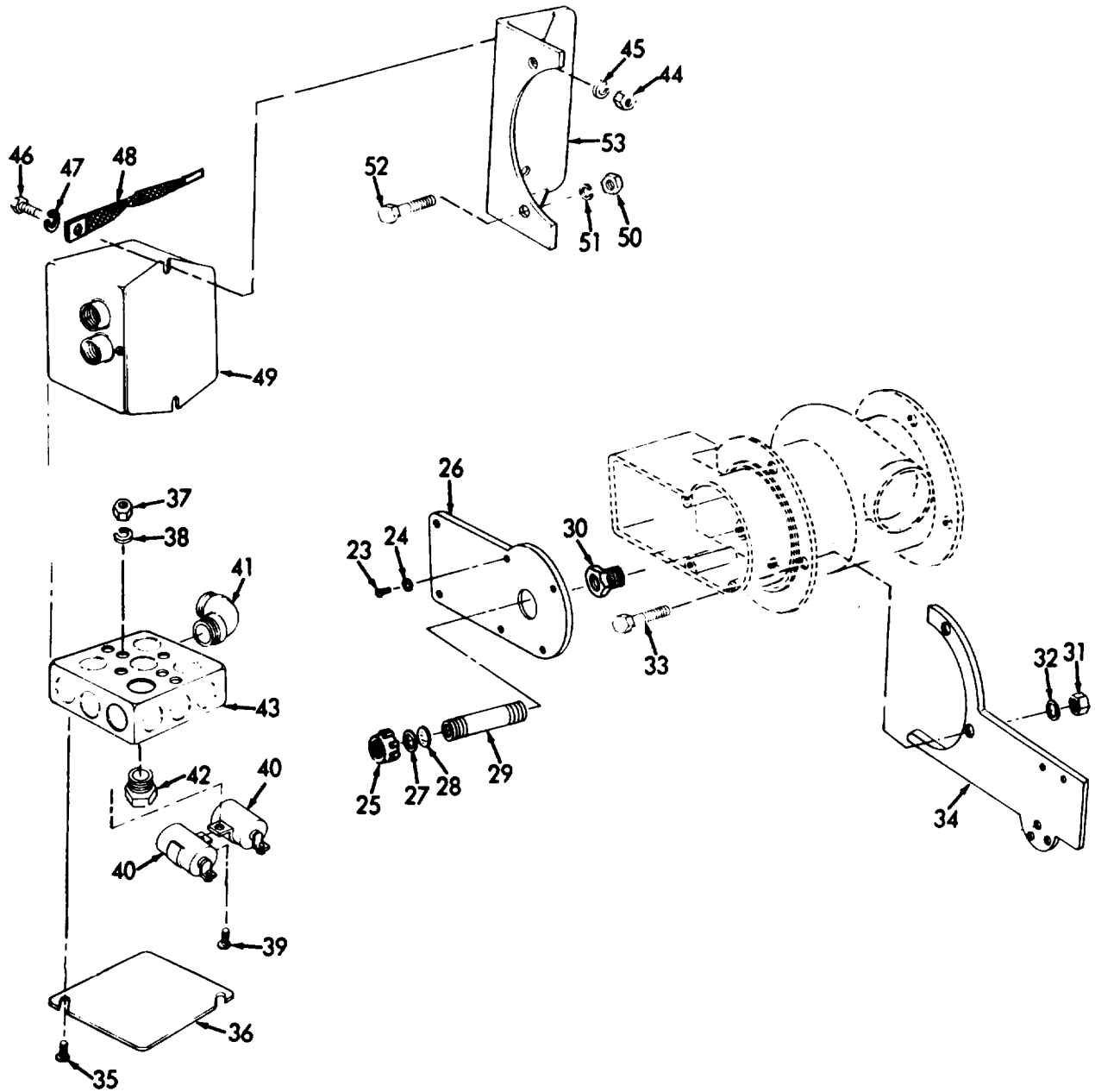
(20) Remove the setscrews (65) securing the electrodes (66) to the burner base (67).



TS 10-3510-208-12/4-51 (Sheet 1 of 3)

- |            |               |             |                |
|------------|---------------|-------------|----------------|
| 1. Nut     | 7. Screw      | 12. Valve   | 17. Elbow      |
| 2. Cock    | 8. Lockwasher | 13. Elbow   | 18. Cable      |
| 3. Bushing | 9. Gage       | 14. Nipple  | 19. Nut        |
| 4. Elbow   | 10. Hose      | 15. Bushing | 20. Lockwasher |
| 5. Bushing | 11. Connector | 16. Bushing | 21. Screw      |
| 6. Tee     |               |             | 22. Solenoid   |

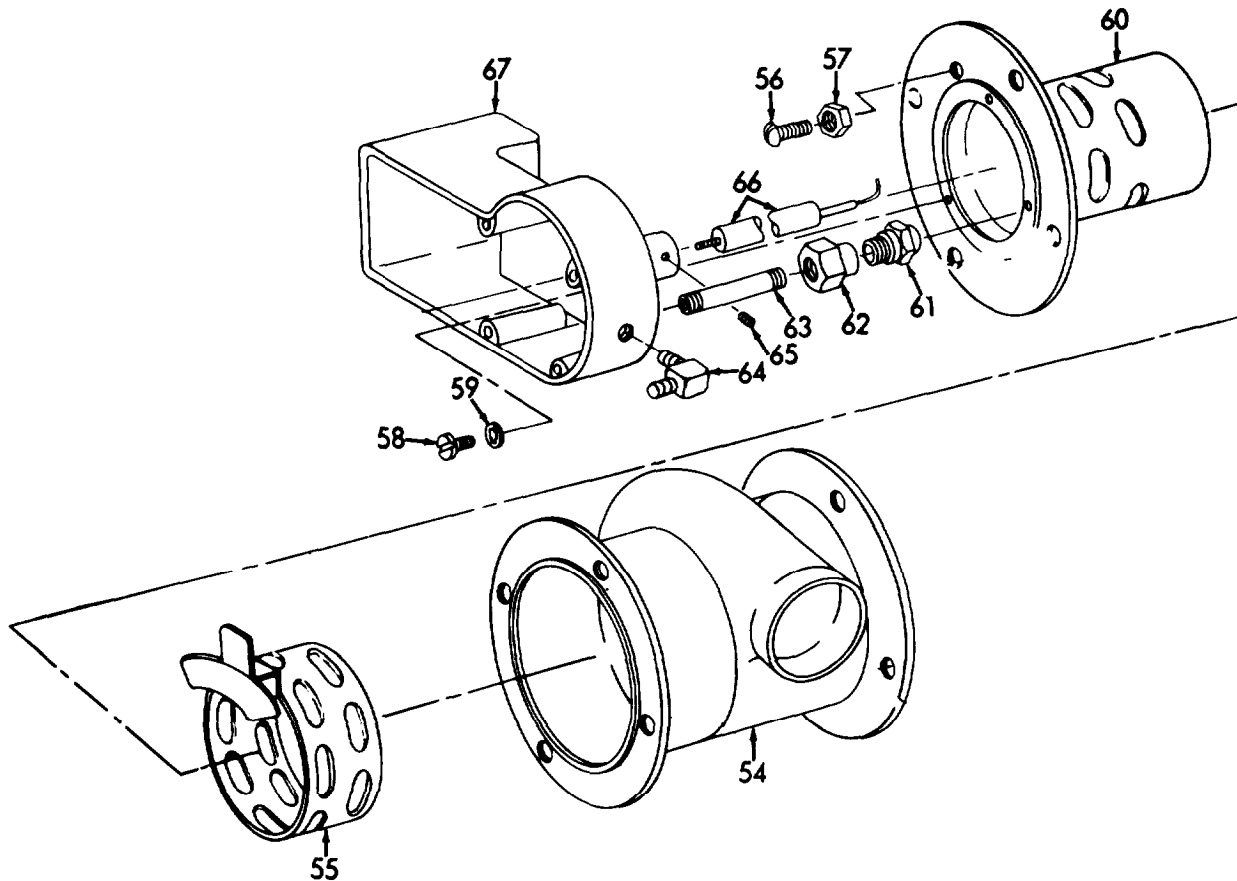
Figure 4-51. Tumbler burner assembly, disassembly and reassembly (sheet 1 of 3).



TS 10-3510-208-12/4-51 (Sheet 2 of 2)

- |                |                |                 |
|----------------|----------------|-----------------|
| 23. Screw      | 33. Bolt       | 44. Nut         |
| 24. Lockwasher | 34. Bracket    | 45. Lockwasher  |
| 25. Bushing    | 35. screw      | 46. Bolt        |
| 26. Cover      | 36. Cover      | 47. Lockwasher  |
| 27. Washer     | 37. Nut        | 48. Cable       |
| 28. Glass      | 38. Lockwasher | 49. Transformer |
| 29. Nipple     | 39. Screw      | 50. Nut         |
| 30. Bushing    | 40. Capacitor  | 51. Lockwasher  |
| 31. Nut        | 41. Elbow      | 52. Bolt        |
| 32. Lockwasher | 42. Bushing    | 53. Bracket     |
| 43. Box        |                |                 |

Figure 4-51. Tumbler burner assembly, disassembly and reassembly (sheet 2 of 3).



TS 10-3510-208-12/4-51 (Sheet 3 of 3)

- |             |                |                |
|-------------|----------------|----------------|
| 54. Chamber | 59. Lockwasher | 63. Nipple     |
| 55. Shutter | 60. Nozzle     | 64. Elbow      |
| 56. Screw   | 61. Nozzle     | 65. Setscrew   |
| 57. Nut     | 62. Adapter    | 66. Electrodes |
| 58. Screw   |                | 67. Base       |

Figure 4-51. Tumbler burner assembly, disassembly and reassembly (sheet 3 of 3).

c. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.). Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

- (1) Clean the *exterior surface* and glass of the pressure gage in a mild soap and water solution.
- (2) Clean all electrical parts with dry compressed air and a clean cloth.
- (3) Clean hoses and cables using a clean cloth.
- (4) Clean remaining parts using solvent, Fed. Spec. P-D-680, and dry thoroughly.

d. *Inspection.*

- (1) Inspect all parts of the burner assembly for cracks, dents, chips, nicks, deep scores, and other damage.
- (2) Inspect all hardware for thread damage.

e. *Repair.* Unless damage is extremely minor and can be repaired, replacement is recommended for all damaged items of the burner assembly.

f. *Assembly.*

(1) Install the electrodes (68, fig. 4-51) to the burner base (67) and secure with setscrews (65).

(2) Install the elbow (64), pipe nozzle (63), nozzle adapter (62 ) and oil burner nozzle (61) on the burner base.

(3) Install the air nozzle (60) on the burner base (67) and secure with lockwashers (59) and screws (58).

(4) Install the nut (57), screw (56) and shutter (55) on air nozzle (60).

(5) Position the plenum chamber (54) and transformer bracket (53) on air nozzle (60) and secure by installing bolts (52), lockwashers (51) and nuts (50).

(6) Position the power transformer (49) and cable (48) on bracket and secure with lockwashers (45) and nuts (44).

(7) Secure the handy box (43) to the power transformer (49) with bushing (42).

(8) Install the elbow (41) on handy box (43).

(9) Position the capacitors (40, fig. 4-51) in the handy box (43) and secure by installing screw (39), lockwasher (38) and nut (37).

(10) Reconnect all disconnected wiring.

(11) Install the junction box cover (36) and secure with screws (35).

(12) Install the solenoid bracket (34) on the plenum chamber and secure with bolts (33), lockwashers (32) and nuts (31).

(13) Install the bushing (30) on the burner base (67).

(14) Reconnect the electrode leads.

(15) Install the pipe nipple (29) to the burner base, then install the peep hole glass (28) and washer (27).

(16) Install the electrode cover (26) and secure by installing the peep hole bushing (25), lockwashers (24) and screws (23).

(17) Position the valve solenoid (22) onto the solenoid bracket (34) and secure by installing screws (21 ), lockwashers (20) and nuts (19).

(18) Install the power cable (18) and elbow (17) on valve solenoid and handy box.

(19) Install bushings (15 and 16), nipple (14), elbow (13), globe valve (12), connector (11) and hose (10).

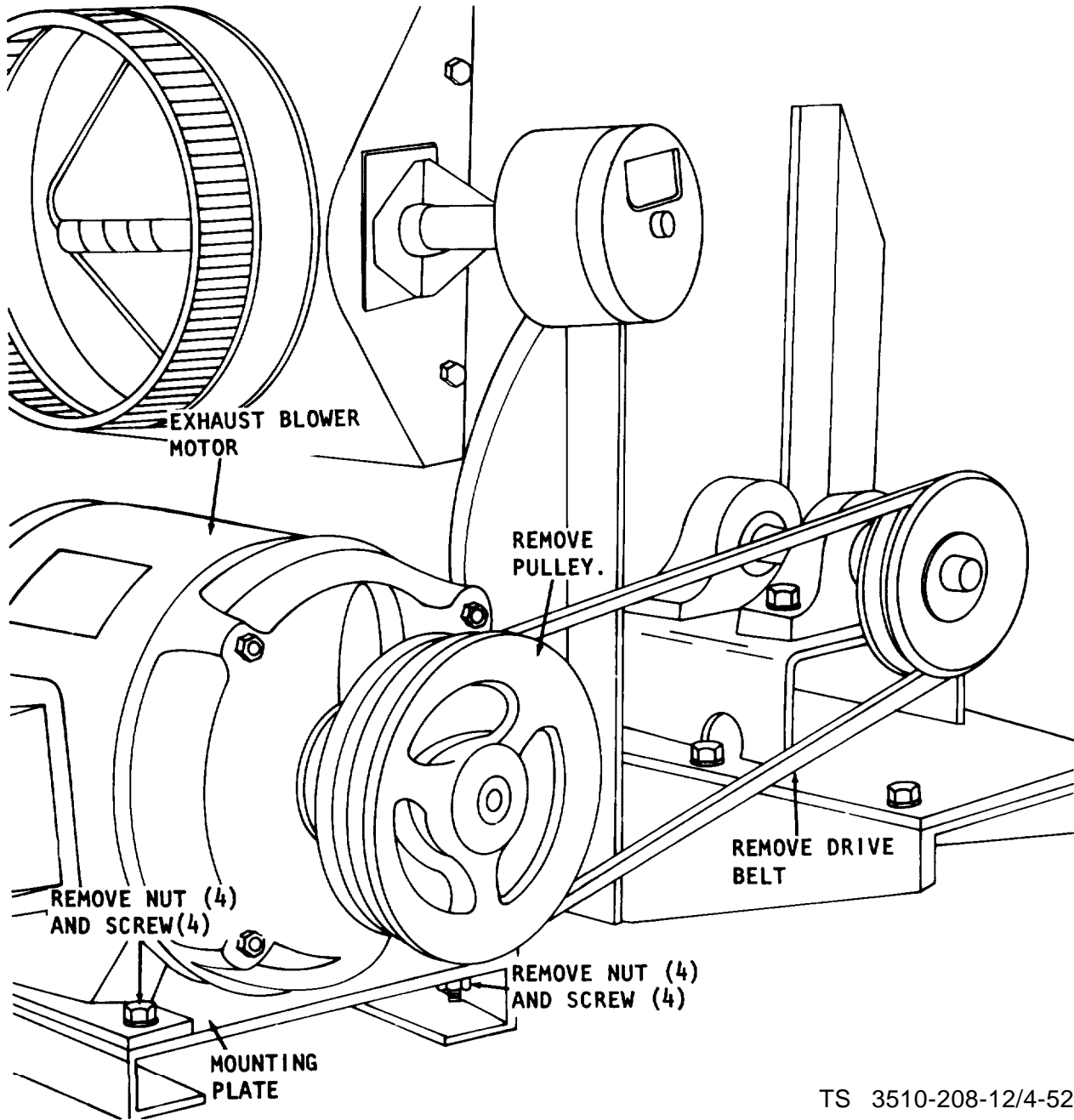
(20) Position the pressure gage (9) on the solenoid bracket and secure with lockwashers (8) and screws (7).

(21) Install the tee (6), bushing (5) and elbow (4) on the pressure gage (9).

(22) Install the bushing (3), drain cock (2) and tube nut (1) onto the tee (6).

#### 4-42. Tumbler Exhaust Motor and Related Parts

*a. Removal.* Refer to Figure 4-52 and remove the exhaust motor and related parts.



TS 3510-208-12/4-52

Figure 4-52. Exhaust motor mounting plate and pulley, removal and installation.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous

to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138C. (38 to 59C.).

Clean the metal parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Repair.**

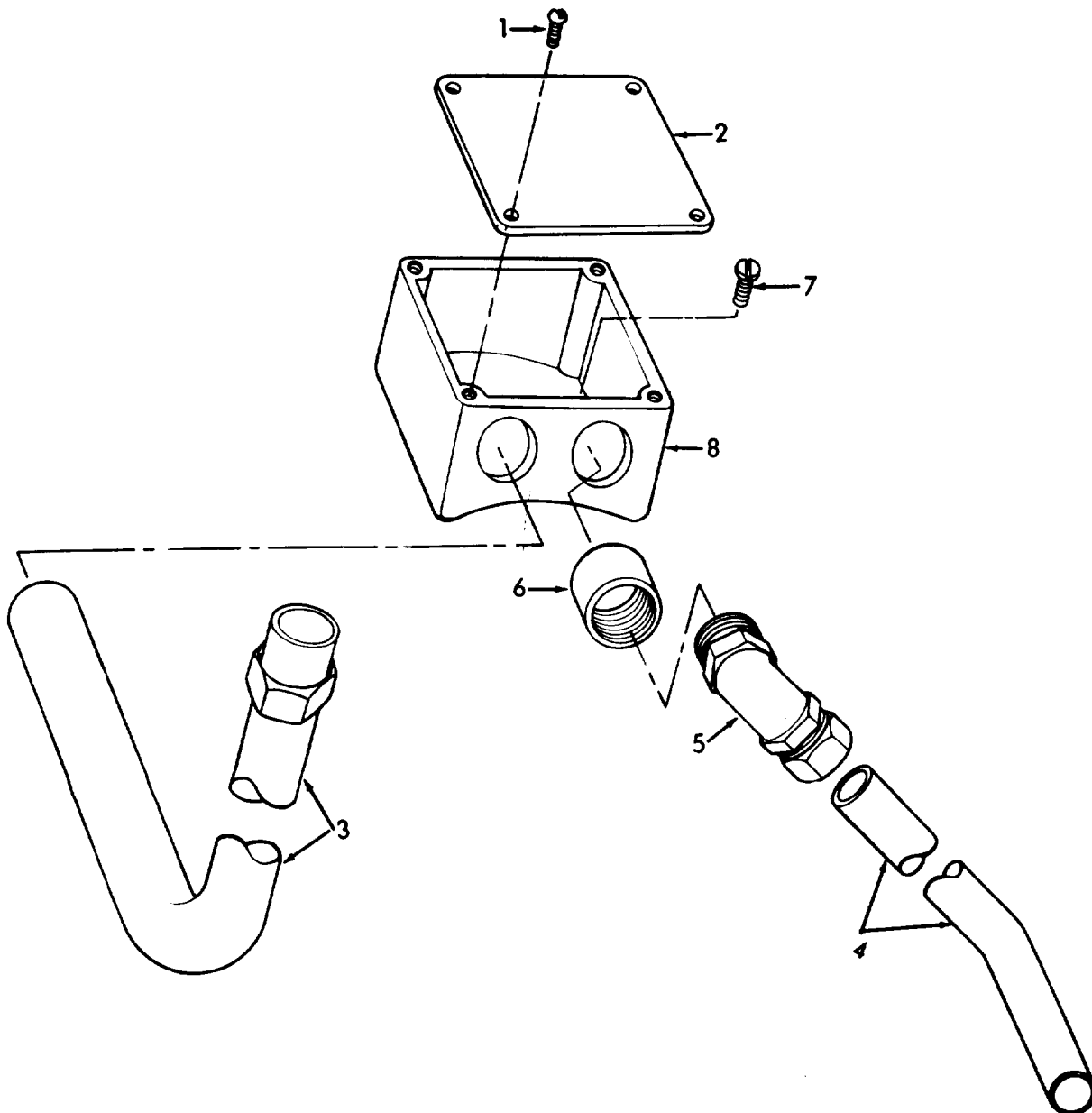
(1) Inspect the motor, belt guard and belt for wear and damage.

(2) Replace all worn and/or damaged parts.  
*d. Installation.* Refer to Figure 4-52 and install the exhaust motor and related-parts.

(2) Remove the conduits (3 and 4).  
 (3) Remove the connector elbow (5) and connector (6).  
 (4) Remove the screws (7) and remove the conduit box (8).

**4-43. Tumbler Drive Motor Conduit Box and Related Parts**

*a. Removal.*  
 (1) Remove the screws (1, fig. 4-53) and remove the conduit box cover (2).



TS 10-3510-208-12/4-53

- |          |            |              |                |
|----------|------------|--------------|----------------|
| 1. Screw | 3. Conduit | 5. Elbow     | 7. Screw       |
| 2. Cover | 4. Conduit | 6. Connector | 8. Conduit box |

Figure 4-53. Tumbler drive motor conduit box and related parts, removal and installation.

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

c. *Inspection and Replacement.*

(1) Inspect the conduit box and cover for cracks or breaks.

(2) Inspect threaded parts for thread damage.

(3) Replace damaged or defective parts as required.

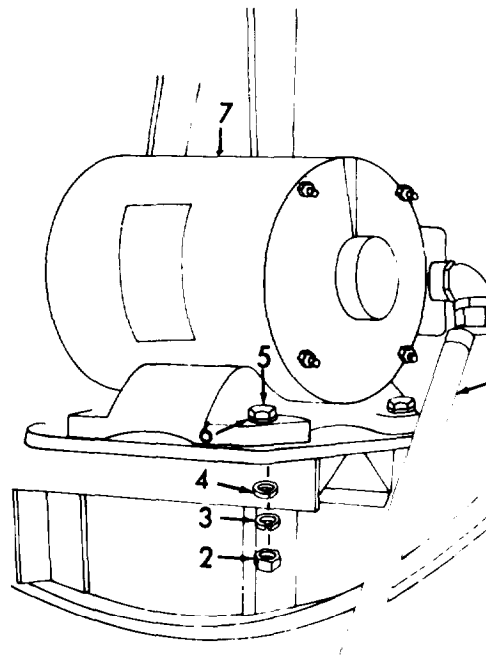
d. *Installation.*

(1) Install the conduit box (8, fig. 4-53) and secure with screws (7).

(2) Install the connector (6) and connector elbow (5).

(3) Install the conduits (4 and 3).

(4) Install the cover (2) and secure with screws (1).



TS 3510-208-12/4-54

- |               |               |               |
|---------------|---------------|---------------|
| 1. Conduit    | 4. Flatwasher | 5. Bolt       |
| 2. Nut        |               | 6. Flatwasher |
| 3. Lockwasher |               | 7. Motor      |

Figure 4-54. Tumbler drive motor and related parts, removal and installation.

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and



prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean exterior of motor and mounting with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

c. *Inspection and Repair.*

- (1) Inspect the motor for damage.
- (2) Replace a damaged motor.

d. *Installation.*

(1) Position the tumbler drive motor (7, fig. 4-54) on the dryer-tumbler and secure with bolts (5), flatwashers (6 and 4), lockwashers (3) and nuts (2).

(2) Reconnect the two conduits (1) on the drive motor.

(3) Reconnect all wiring to the tumbler drive motor.

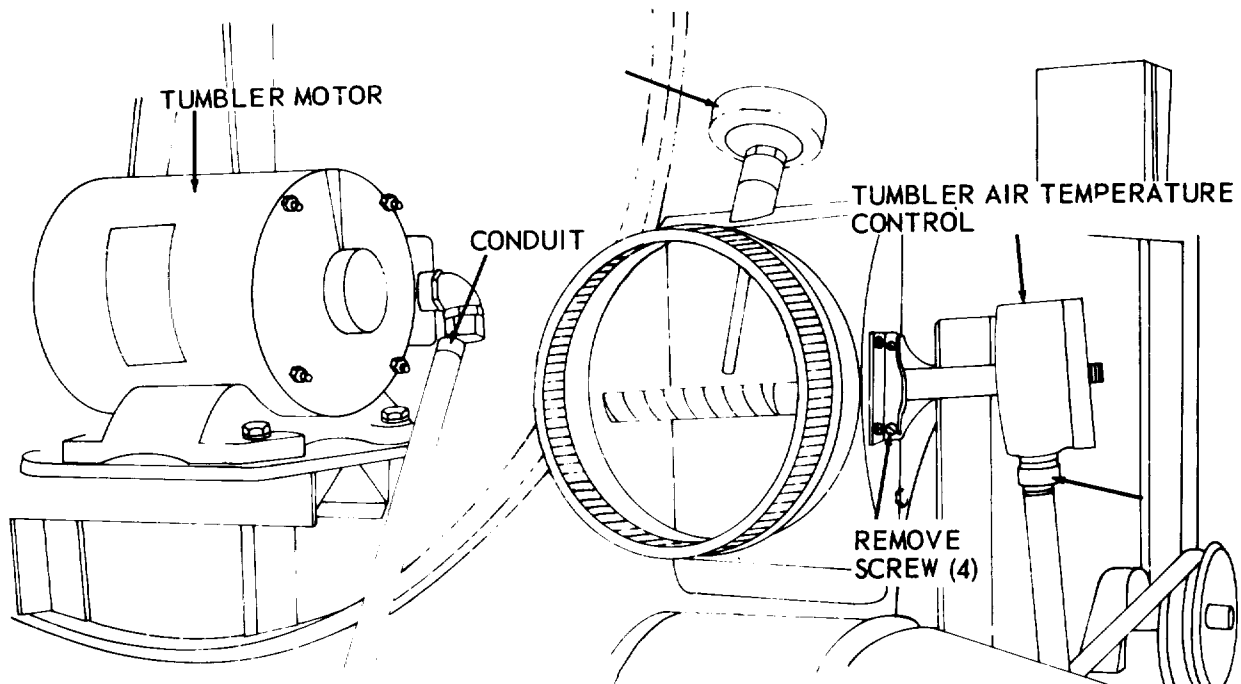
## Section XVI. TEMPERATURE EXHAUST THERMOMETER, TUMBLER AIR TEMPERATURE CONTROL, EXHAUST FAN, BRACKET AND JACKSHAFT

### 4-45. Tumbler Temperature Control and Temperature Exhaust Thermometer

a. *Removal.* Refer to figure 4-55 and remove

the tumbler temperature control and temperature exhaust thermometer.

REMOVE TEMPERATURE EXHAUST THERMOMETER BY TURNING COUNTERCLOCKWISE.



NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.

TS 3510-208-12/4-55

Figure 4-55. Tumbler temperature control and temperature exhaust thermometer, removal and installation

b. *Cleaning.*

**WARNING**

Do not use compressed air for cleaning purposes except where reduced to less than

30 psi and then only with effective chip guarding and personal protective equipment.

Clean parts using compressed air and a dry clean cloth.

*c. Inspection and Repair.*

(1) Inspect the tumbler temperature control and temperature exhaust thermometer for damage,

(2) Replace all damaged parts.

*d. Installation.* Refer to Figure 4-55 and install the tumbler temperature control and temperature exhaust thermometer.

**4-46. Exhaust Fan, Bracket and Jackshaft**

*a Removal.*

(1) Remove the nuts (1, fig. 4-56) and lockwashers (2) securing the tumbler exhaust fan assembly to the dryer-tumbler.

(2) Remove the tumbler exhaust fan assembly from the dryer-tumbler.

(3) Remove cotter pin (3), nut (4) and flat-washer (5) securing the exhaust fan (6) to shaft.

(4) Remove the key (7).

(6) Remove the setscrew (8) securing the pulley (9) to the shaft.

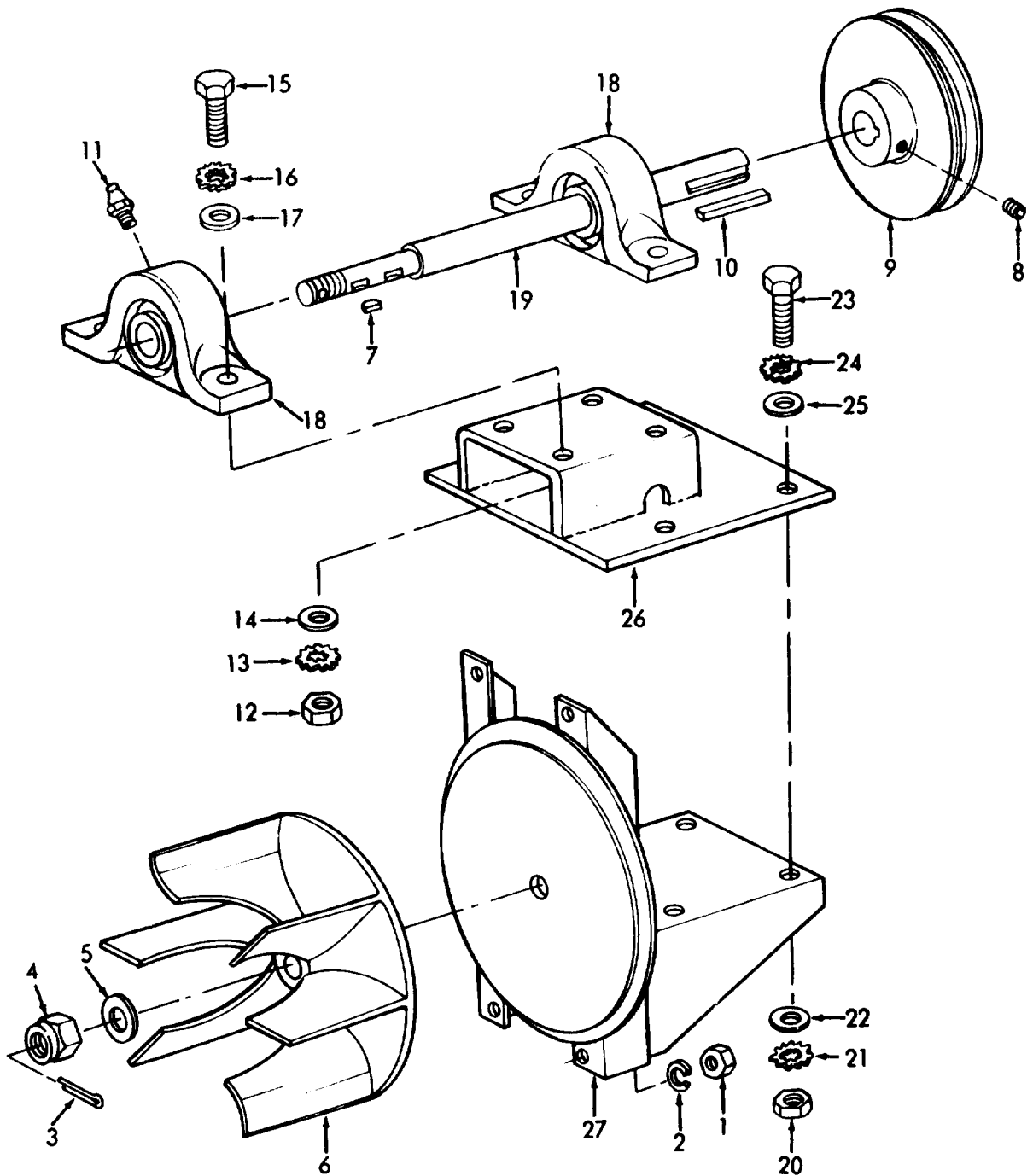
(6) Remove the key (10).

(7) Remove the grease fittings (11) from the pillow blocks (18) .

(8) Remove nuts (12), lockwashers (13), flatwashers (14), bolts (15), lockwashers (16) and flatwashers (17) securing the pillow block assembly to bracket.

(9) Slide the pillow blocks (18) off the blower shaft (19).

(10) Remove nuts (20), lockwashers (21), flatwashers (22), bolts (23), lockwashers (24) and flatwashers (25) and remove the exhaust fan bracket (26) from the exhaust fan cover (27).



TS 10-3510-208-12/4-56

- |               |                |                  |                |
|---------------|----------------|------------------|----------------|
| 1. Nut        | 8. Setscrew    | 15. Bolt         | 22. Washer     |
| 2. Lockwasher | 9. Pulley      | 16. Lockwasher   | 23. Bolt       |
| 3. Cotter pin | 10. Key        | 17. Washer       | 24. Lockwasher |
| 4. Nut        | 11. Fitting    | 18. Pillow block | 25. Washer     |
| 5. Washer     | 12. Nut        | 19. Shaft        | 26. Bracket    |
| 6. Fan        | 13. Lockwasher | 20. Nut          | 27. Cover      |
| 7. Key        | 14. Washer     | 21. Lockwasher   |                |

Figure 4-56. Tumbler exhaust fan assembly, removal and installation.

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138C. (38 to 59C.).

(1) Clean all parts of the exhaust fan assembly (except pillow blocks) using cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(2) Clean pillow blocks with lightweight motor oil.

c. *Inspection.*

(1) Inspect the exhaust fan for cracked, chipped or otherwise damaged blades.

(2) Inspect the blower shaft and pulley for cracks, burrs, deep scores and other damage.

(3) Inspect the exhaust fan cover and bracket for dents, cracks, chips and other damage.

(4) Inspect all hardware for thread damage.

d. *Repair.*

(1) A cracked cover or bracket can be repaired by welding.

(2) Replacement of all other damaged parts is recommended.

e. *Installation.*

(1) Position the exhaust fan bracket (26), fig. 4-56) on the exhaust fan cover (27) and secure with flatwashers (25), lockwashers (24), bolts (23), flatwashers (22), lockwashers (21) and nuts (20).

(2) Install the pillow blocks (18, fig. 4-56) onto the blower shaft (19).

(3) Install the pillow block assembly on the bracket (26) and secure with flatwashers (17), lockwashers (16), bolts (15), flatwashers (14), lockwashers (13) and nuts (12).

(4) Install the grease fittings (11) on the pillow blocks (18).

(5) Install the key (10).

(6) Position the pulley (9) on the shaft and secure with setscrew (8).

(7) Install the key (7).

(8) Install the exhaust fan (6) on the blower shaft (19) and secure by installing flatwasher (5), nut (4) and cotter pin (3).

(9) Position the tumbler exhaust fan assembly onto the dryer-tumbler.

(10) Secure the tumbler exhaust fan assembly using lockwashers (2) and nuts (1).

## Section XVII. GENERATOR TO WATER PUMP SWITCH BOX, OUTLET DUPLEX BOX, COMPRESSOR ASSEMBLY AND COMPRESSOR STARTER SWITCH

### 4-47. Generator to Water Pump Switch Box and Outlet Duplex Box

a. *Removal.*

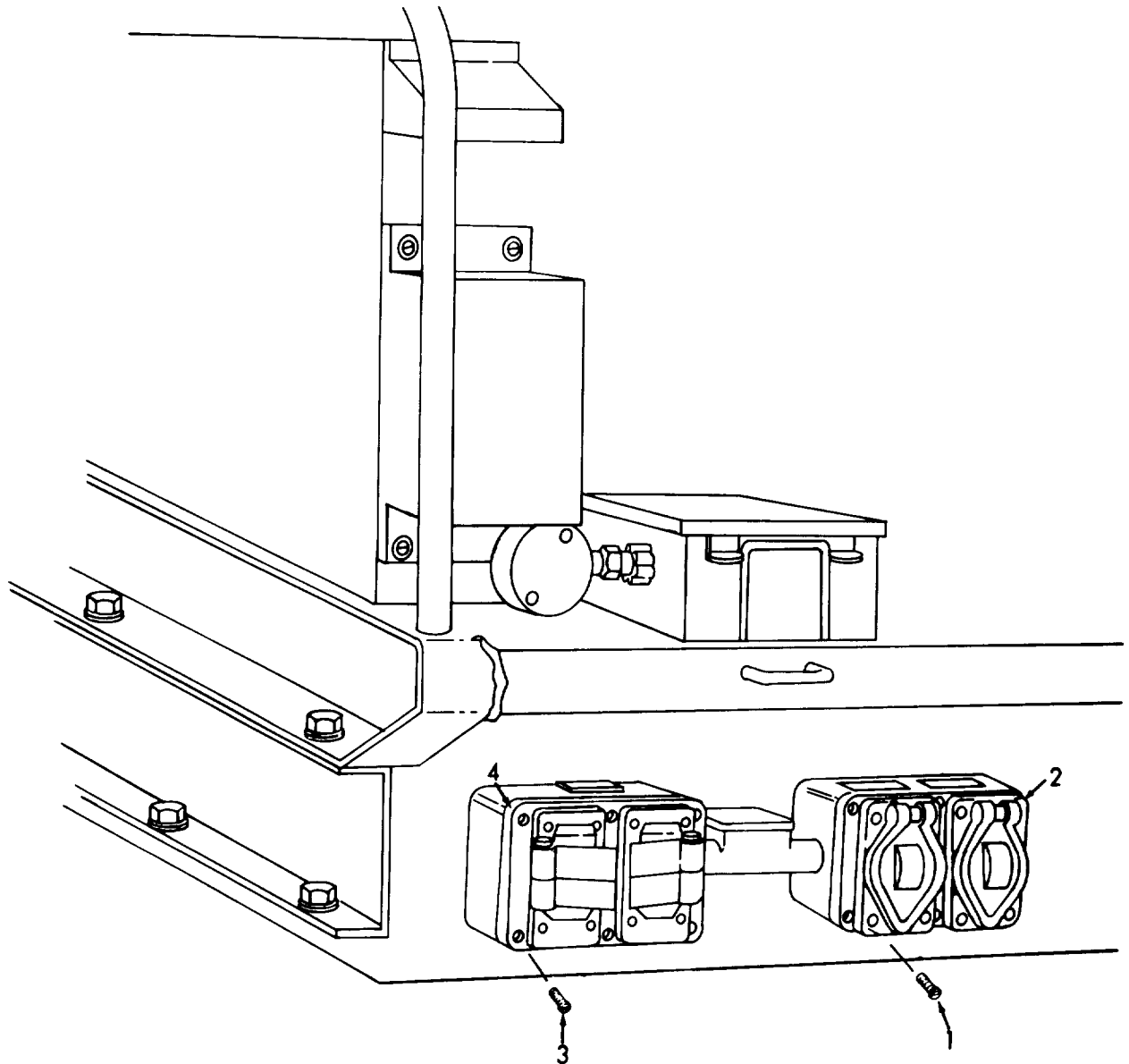
(1) Remove the screws (1 and 3, fig. 4-57) securing the water pump switch box cover assembly (2) and outlet duplex box cover assembly (4) to the water pump switch box and outlet.

(2) Tag and disconnect all electrical wiring

from the water pump switch box and the outlet duplex box.

(3) Remove the connector (5) securing the conduit to the switch box and outlet duplex box.

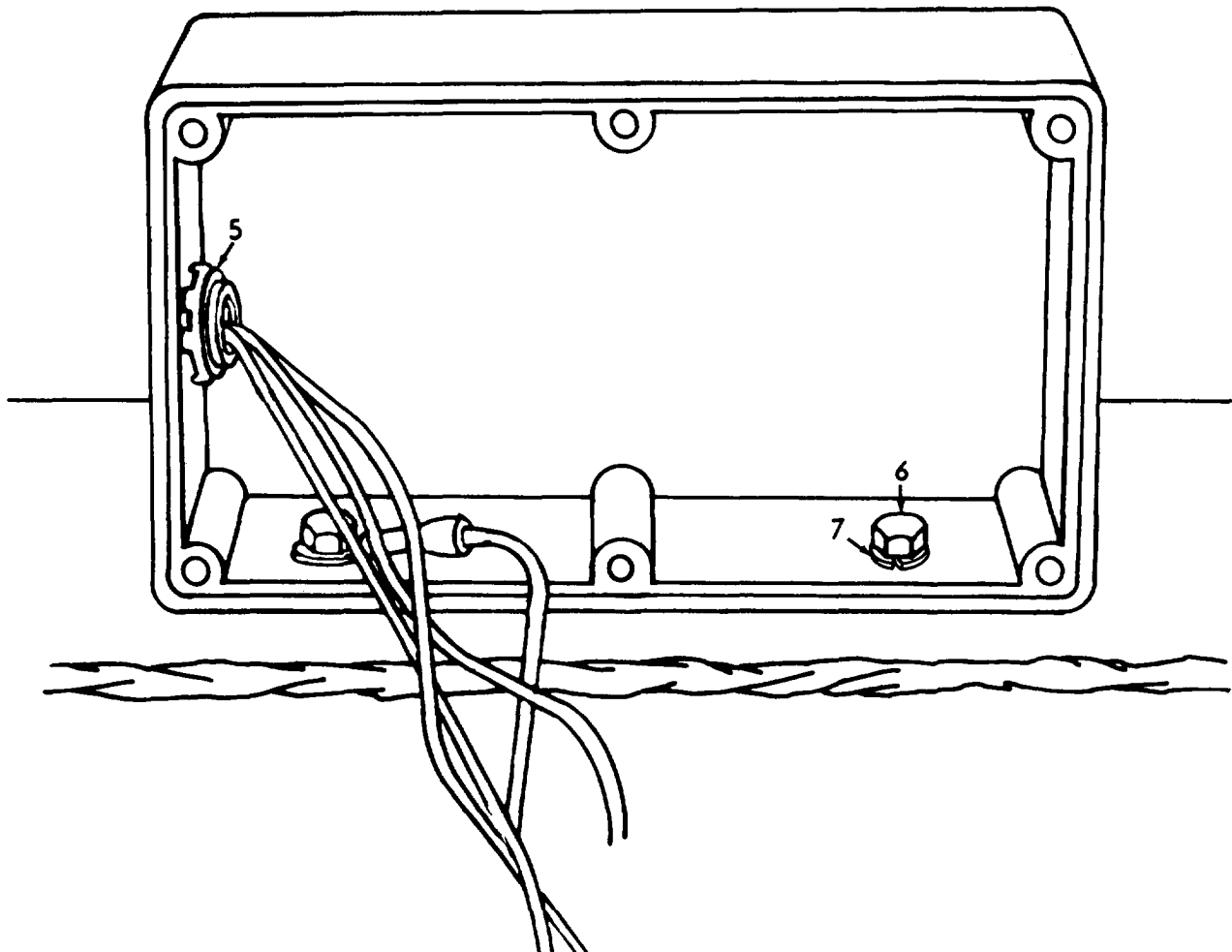
(4) Remove the screws (6) and lockwashers (7) securing the water pump switch box (8) and outlet duplex box (9) to the trailer.



TS 3510-208-12/4-57 (Sheet 1 of 3)

- |                   |                   |
|-------------------|-------------------|
| 1. Screw          | 3. Screw          |
| 2. Cover assembly | 4. Cover assembly |

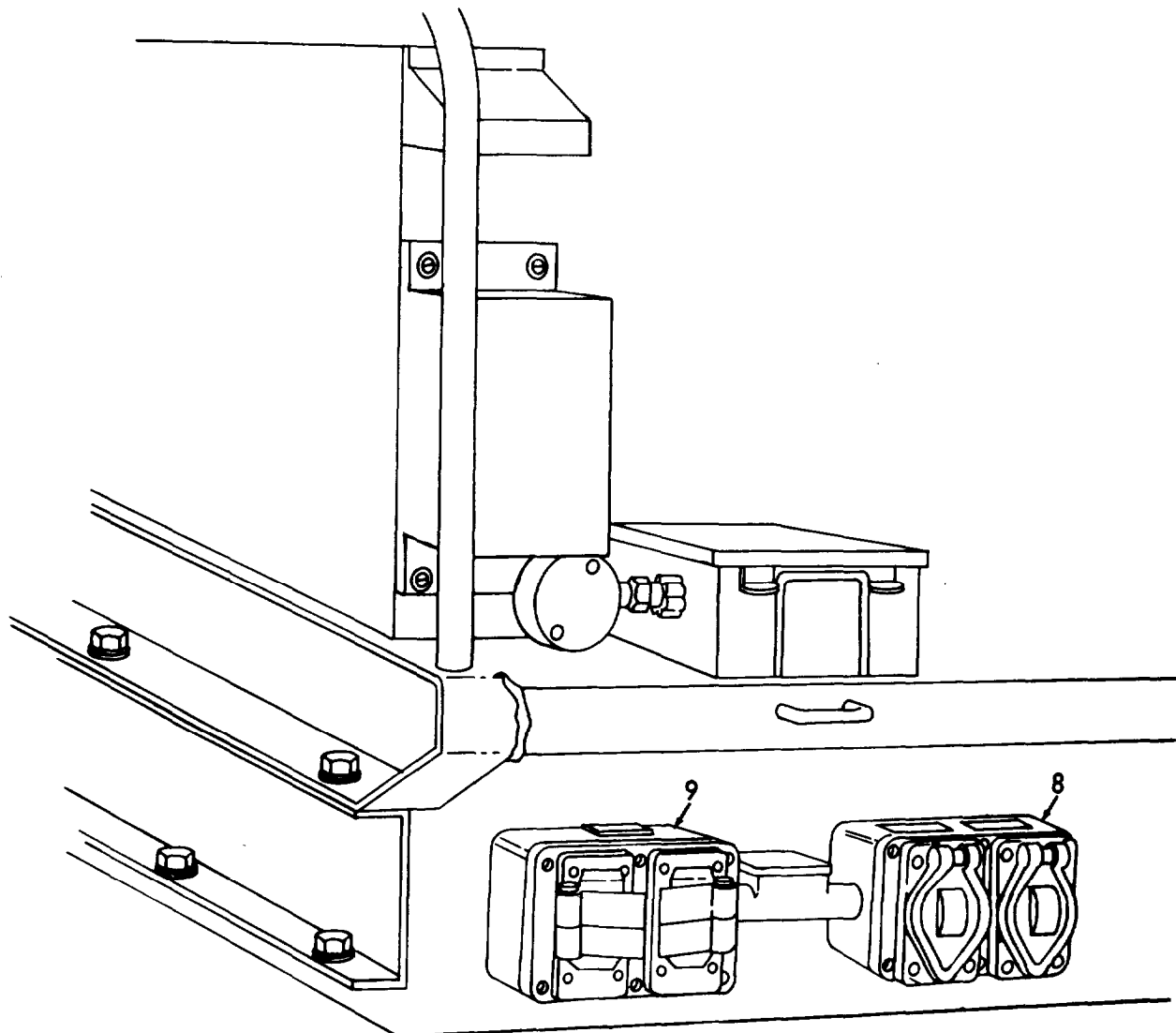
Figure 4-57. Water pump switch box and outlet duplex box, removal and installation (sheet 1 of 3).



TS 3510-208-12/4-57 (Sheet 2 of 3)

- 5. Connector
- 6. Screw
- 7. Lockwasher

Figure 4-57. Water pump switch box and outlet duplex box, removal and installation (sheet 2 of 3).



TS 3510-208- 2/4-57 (Sheet 3 of 3)

8. Switch box

9. Outlet duplex box

Figure 4-57. Water pump switch box and outlet duplex box, removal and installation (sheet 3 of 3).

*b. Disassembly.*

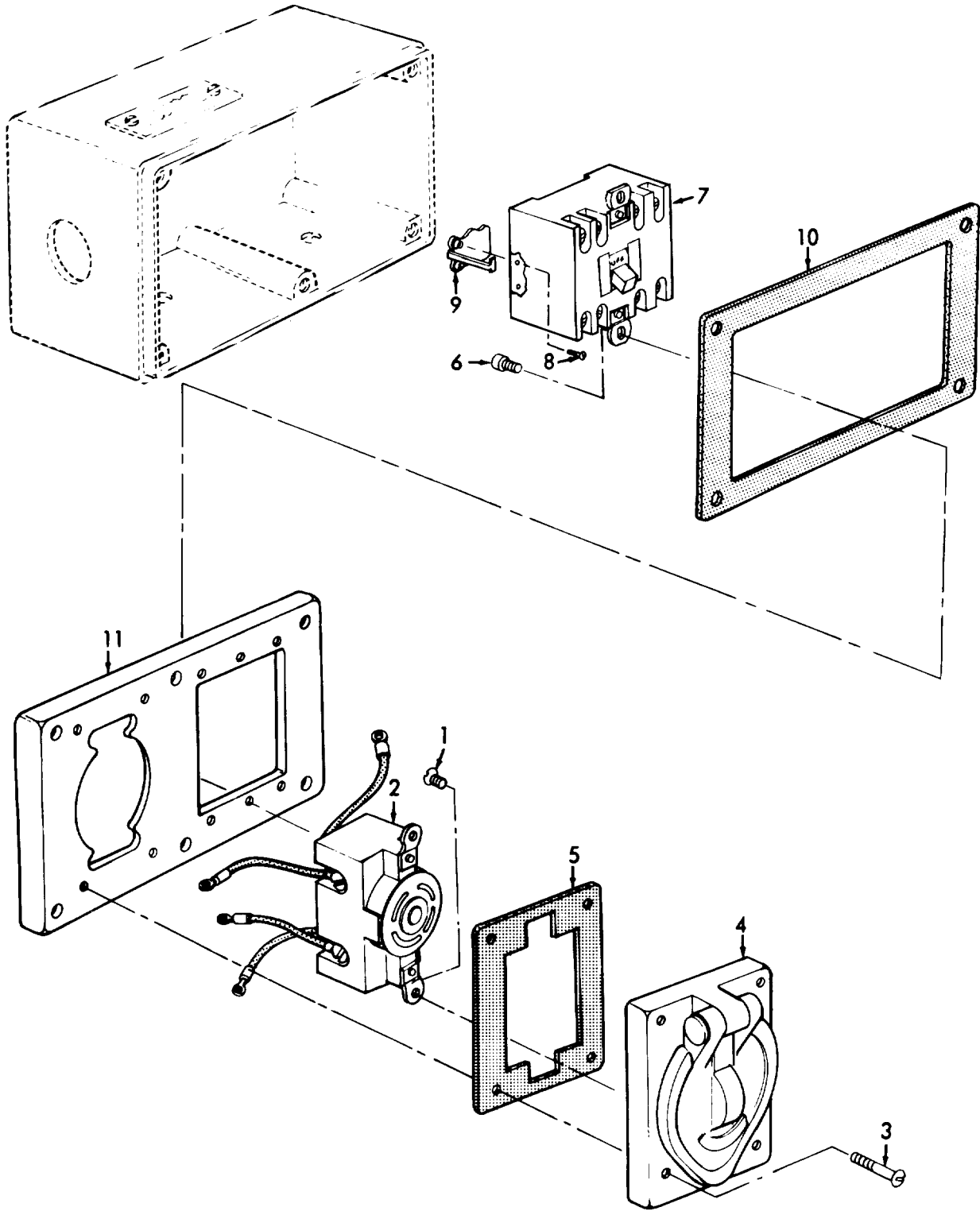
(1) Remove the screws (1, fig. 4-58) securing the receptacle connector (2) to the water pump control box cover.

(2) Remove the screws (3) securing the outlet covers (4) and gasket (5) to the water pump control box cover.

(3) Remove the screws (6) securing the circuit breaker (7) to the water pump control box cover.

(4) Remove the screws (8) securing the thermal release heaters (9) to the circuit breaker (7).

(5) Remove the gasket (10) from the water pump control box cover (11).



TS 10-3510-208-12/4-58

Figure 4-58. Water pump switch box, disassembly and reassembly.



KEY to Figure 4-58

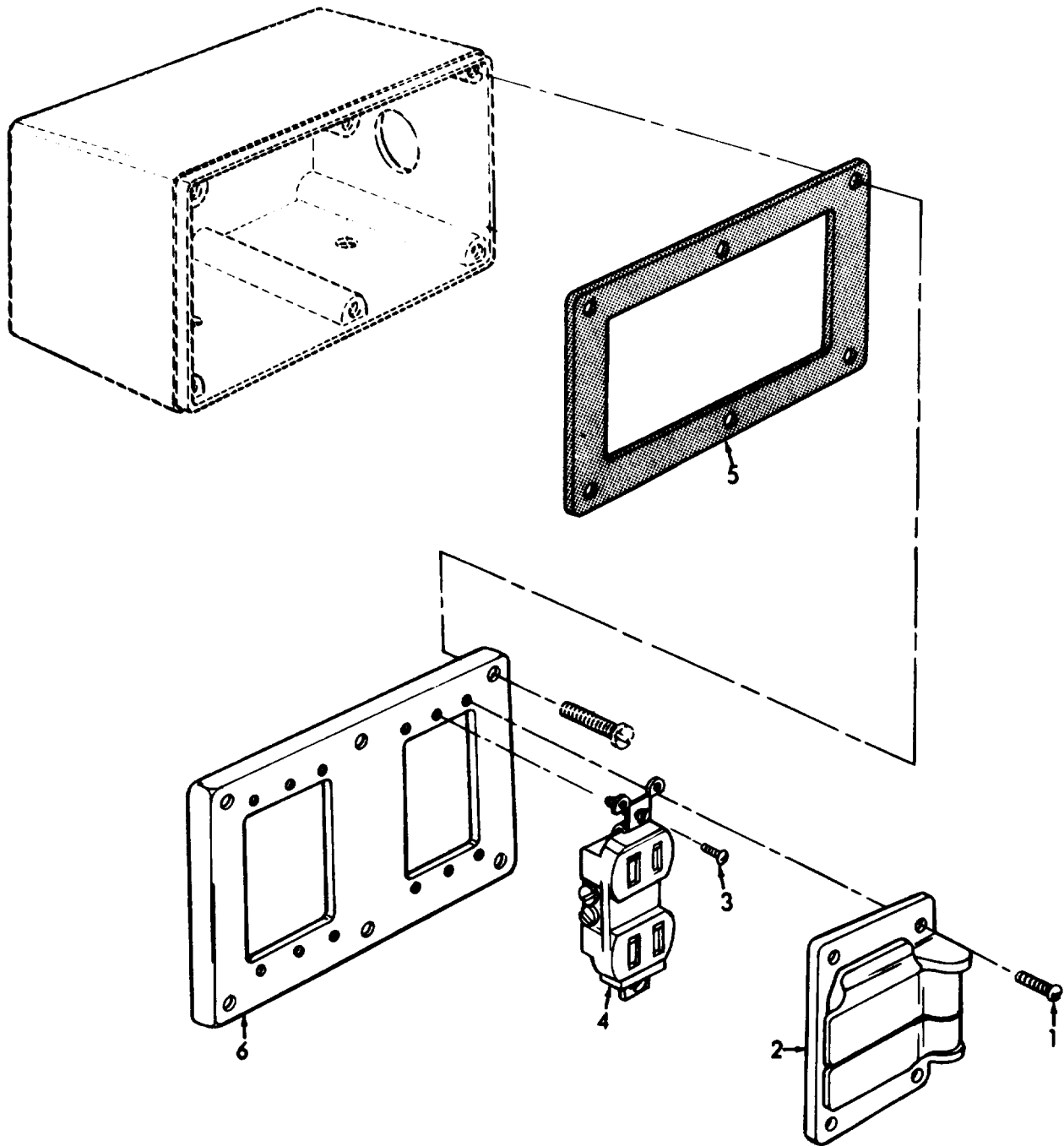
- |              |            |
|--------------|------------|
| 1. Screw     | 6. Screw   |
| 2. Connector | 7. Breaker |
| 3. Screw     | 8. Screw   |
| 4. Cover     | 9. Heater  |
| 5. Gasket    | 10. Gasket |
|              | 11. Cover  |

(6) Remove the screws (1, fig. 4-59) securing

the outlet covers (2) to the external power outlet cover.

(7) Remove the screws (3) securing the receptacle connectors (4) to the external power outlet cover.

(8) Remove the gasket (5) from the external power outlet cover (6).



TS 10-3510-208-12/4-59

- |          |              |
|----------|--------------|
| 1. Screw | 4. Connector |
| 2. Cover | 5. Gasket    |
| 3. Screw | 6. Cover     |

Figure 4-59. Outlet duplex box, disassembly and reassembly.

**c. Cleaning.****WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680 used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.). Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

(1) Clean metal non-electrical parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(2) Clean remaining parts with dry compressed air and a clean cloth.

**d. Inspection and Repair.**

(1) Inspect all parts for damage.

(2) Replace all damaged parts.

**e. Assembly.**

(1) Install the gasket (5, fig. 4-59) on the outlet duplex box cover (6).

(2) Install the receptacle connectors (4) onto cover and secure with screws (3).

(3) Install the outlet covers (2) onto the outlet duplex box cover (6) and secure with screws (1).

(4) Install the gasket (10, fig. 4-58) onto the water pump switch box cover (11).

(5) Position the thermal release heaters (9) on the circuit breaker (7) and secure with screws (8).

(6) Install the circuit breaker (7) in the water pump switch box cover and secure with screws (6).

(7) Install the gasket (5) and outlet covers (4) onto the water pump switch box cover and secure with screws (3).

(8) Position the receptacle connector (2) on the water pump switch box cover (11) and secure with screws (1).

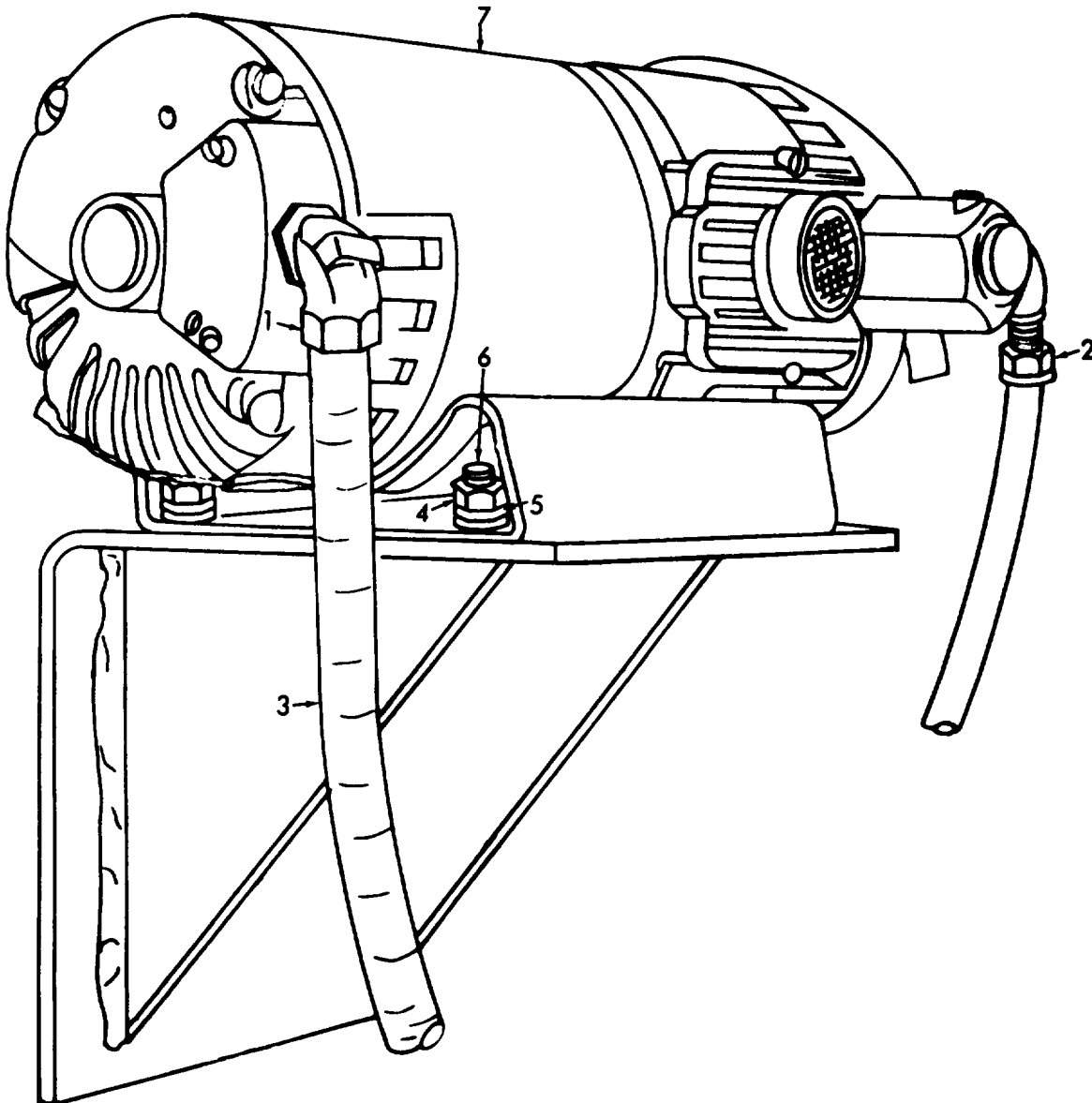
**4-48. Air Compressor Assembly****a. Removal.**

(1) Tag and disconnect elbow connectors (1 and 2, fig. 4-60) from the air compressor.

(2) Remove conduit (3).

(3) Remove the four nuts (4), lockwashers (5) and bolts (6) securing the air compressor to the laundry unit.

(4) Remove the air compressor (7) from the laundry unit.



TS 10-3510-208-12/4-60

- |                    |               |                   |
|--------------------|---------------|-------------------|
| 1. Elbow connector | 3. Conduit    | 6. Bolt           |
| 2. Elbow connector | 4. Nut        | 7. Air Compressor |
|                    | 5. Lockwasher |                   |

Figure 4-60. Air compressor, removal and installation.

*b. Cleaning, Inspection and Repair.*

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous

to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(1) Thoroughly clean the air compressor assembly with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(2) Inspect the air compressor assembly for dents, cracks, nicks and other damage.

(3) Replace a damaged and/or defective compressor.

*c. Installation.*

(1) Install the air compressor (7, fig. 4-60) on the laundry unit and secure with bolts (6), lock-washers (5) and nuts (4).

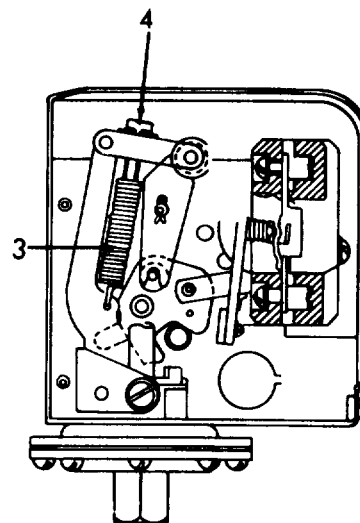
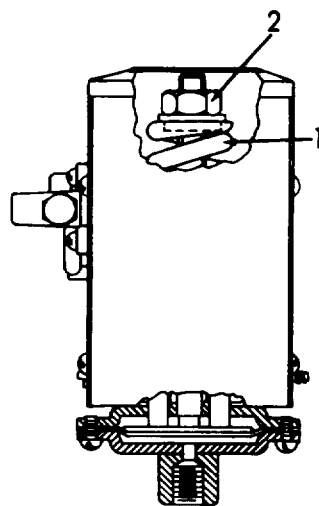
(2) Install conduit (3) in elbow connectors.

(3) Reconnect the elbow connectors (2 and 1) on the air compressor (7).

*d. Adjustment.* Refer to figure 4-61 and the following instructions and adjust the air compressor.

(1) Working range - adjust range (75 to 90 lbs (10,37 to 12.45 kgm) working pressure) by increasing or decreasing tension on spring (1, fig. 4-61), with adjusting nut (2).

(2) Differential - refers to pounds pressure between cut-in and cut-out. Increase spring (3) tension to widen differential, decrease spring tension for closer setting. Differential adjusting nut (4). (Differential pressure 15 lb (2.08 kgm)).



TS 10-3510-208-12/4-61

- 1. Spring
- 2. Adjusting nut

- 3. Spring
- 4. Adjusting nut

Figure 4-61. Air pressure control switch adjustment.

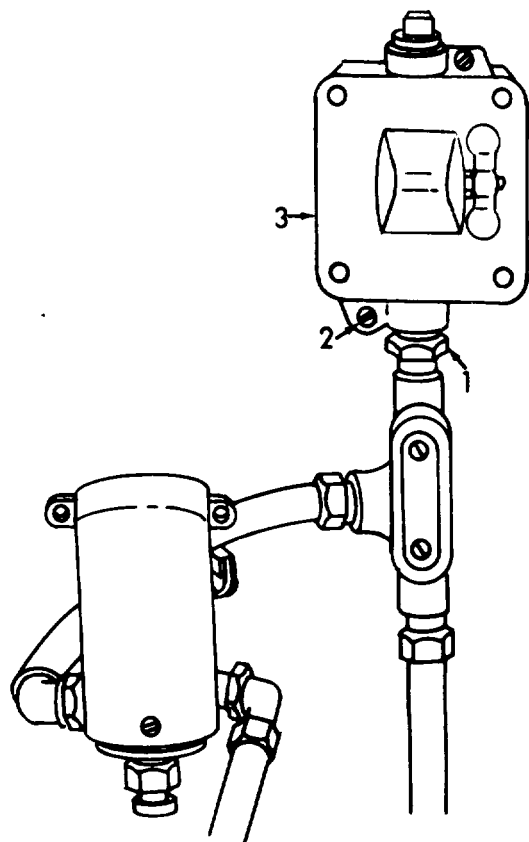
**4-49. Compressor Starter Switch**

*a. Removal.*

(1) Tag and disconnect all electrical wiring going to the compressor starter switch.

(2) Loosen nut (1, fig. 4-62) securing the conduit to the switch.

(3) Remove the two screws (2) securing the compressor starter switch (3).

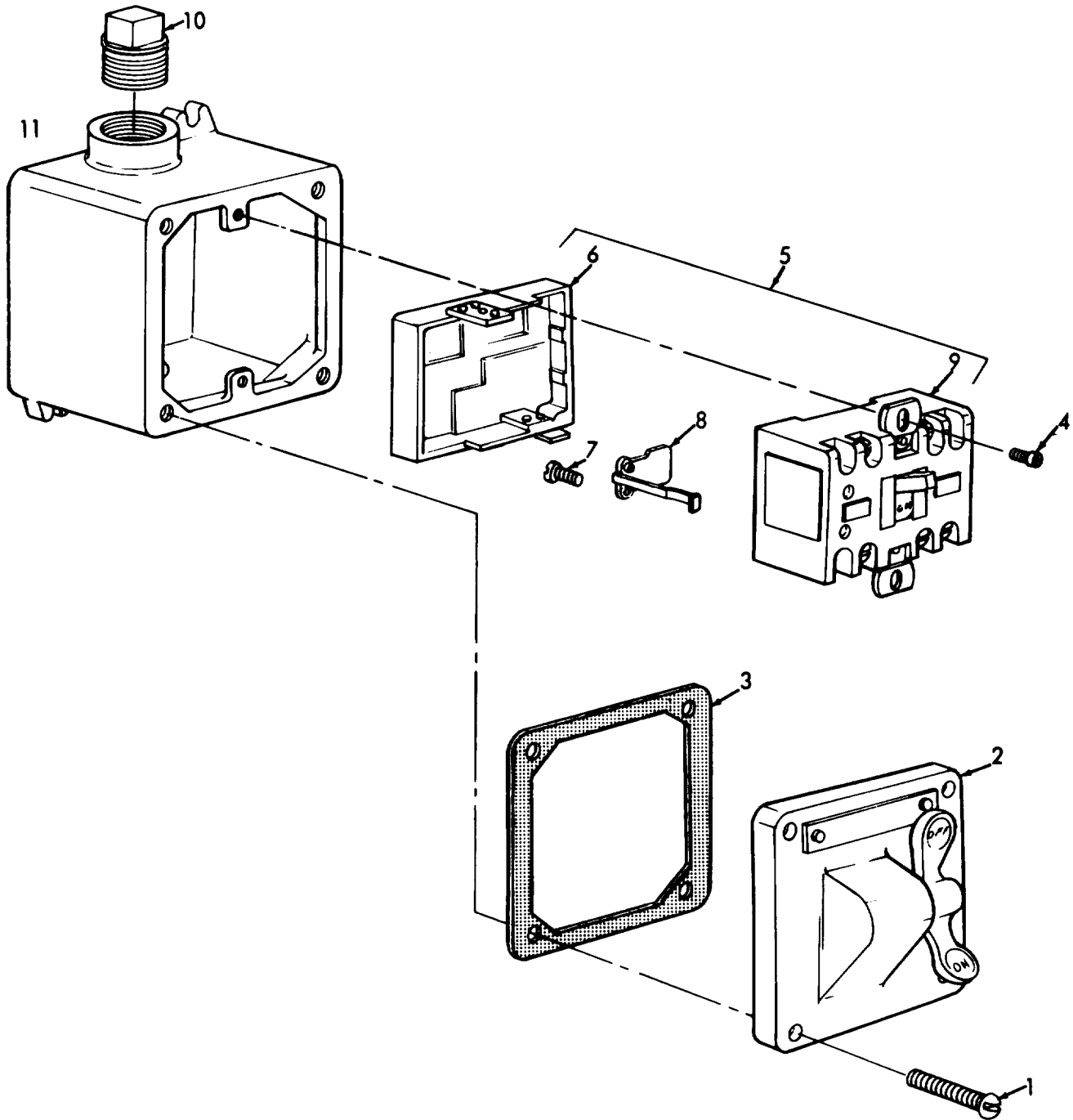


- b. *Disassembly.*
- (1) Remove screws (1, fig. 4-63) and remove the cover (2) and gasket (3) from the switch box (11).
  - (2) Remove screws (4) and remove the switch assembly (5) from the switch box.
  - (3) Remove the back cover (6) from the compressor starter switch (9).
  - (4) Remove screws (7) and remove the thermal release heaters (8) from the compressor starter switch (9).
  - (5) Remove the pipe plug (10) from the switch box (11).

TS 10-3510-206-12/4-62

1. Nut
2. Screw
3. Switch

Figure 4-62. Compressor starter switch, removal and installation



TS 3S10-208-12/4-63

- |           |                    |           |
|-----------|--------------------|-----------|
| 1. Screw  | 5. Switch assembly | 8. Heater |
| 2. Cover  | 6. Cover           | 9. Switch |
| 3. Gasket | 7. Screw           | 10. Plug  |
| 4. Screw  |                    | 11. Box   |

Figure 4-63. Compressor starter switch unit, disassembly and reassembly.

c. *Cleaning.*

**WARNING**

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Clean all parts of the compressor starter switch unit, using dry compressed air and a clean cloth and dry thoroughly.

d. *Inspection.*

(1) Inspect the switch, switch box and switch cover for cracks, chips, scores and other damage,

(2) Inspect the gasket for tears, cracks, nicks and excessive wear.

(3) Inspect all hardware for thread damage.

e. *Replacement .*

(1) Replace a damaged switch, switch box or switch cover.

(2) Replace a damaged gasket and all missing or damaged hardware.

f. *Assembly.*

(1) Install the pipe plug (10, fig. 4-63) in the switch box (11).

(2) Position the thermal release heaters (8, fig. 4-63) on the compressor starter switch (9) and secure with screws (7).

(3) Install the back plate (6) on the compressor starter switch (9).

(4) Install the switch assembly (5) in the switch box (11) and secure with screws (4).

(5) Install the gasket (3) and cover (2) onto the switch box (11) and secure with screws (1).

g. *Testing.* Using a multimeter, test for continuity of the switch contacts.

h. *Installation.*

(1) Install the compressor starter switch (3, fig. 4-62) and secure with two screws (2).

(2) Install the conduit and tighten the nut (1).

(3) Reconnect all electrical wiring which may have been disconnected,

## Section XVIII. AIR CYLINDER AND RELATED PARTS

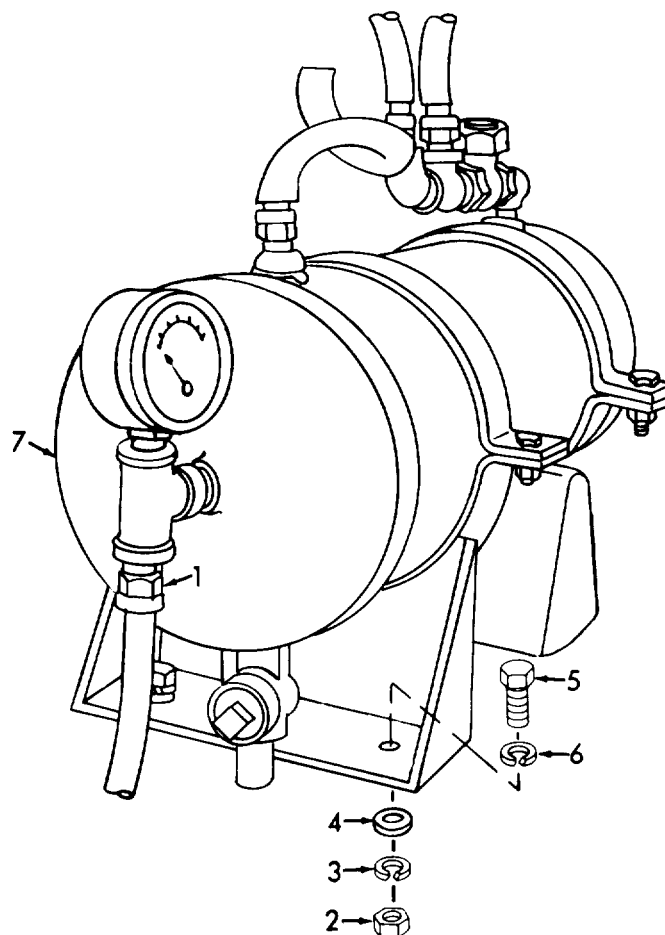
### 4-50. Air Cylinder

a. *Removal.*

(1) Disconnect the lines (1, fig. 4-64).

(2) Remove the nuts (2), lockwashers (3), flatwashers (4), bolts, (5) and lockwashers (6) and remove the air cylinder (7).





TS 3510-29812/4-64

- |         |               |               |
|---------|---------------|---------------|
| 1. Line | 3. Lockwasher | 6. Lockwasher |
| 2. Nut  | 4. Flatwasher | 7. Cylinder   |
|         | 5. Bolt       |               |

Figure 4-64. Air cylinder, removal and installation

*b. Disassembly.*

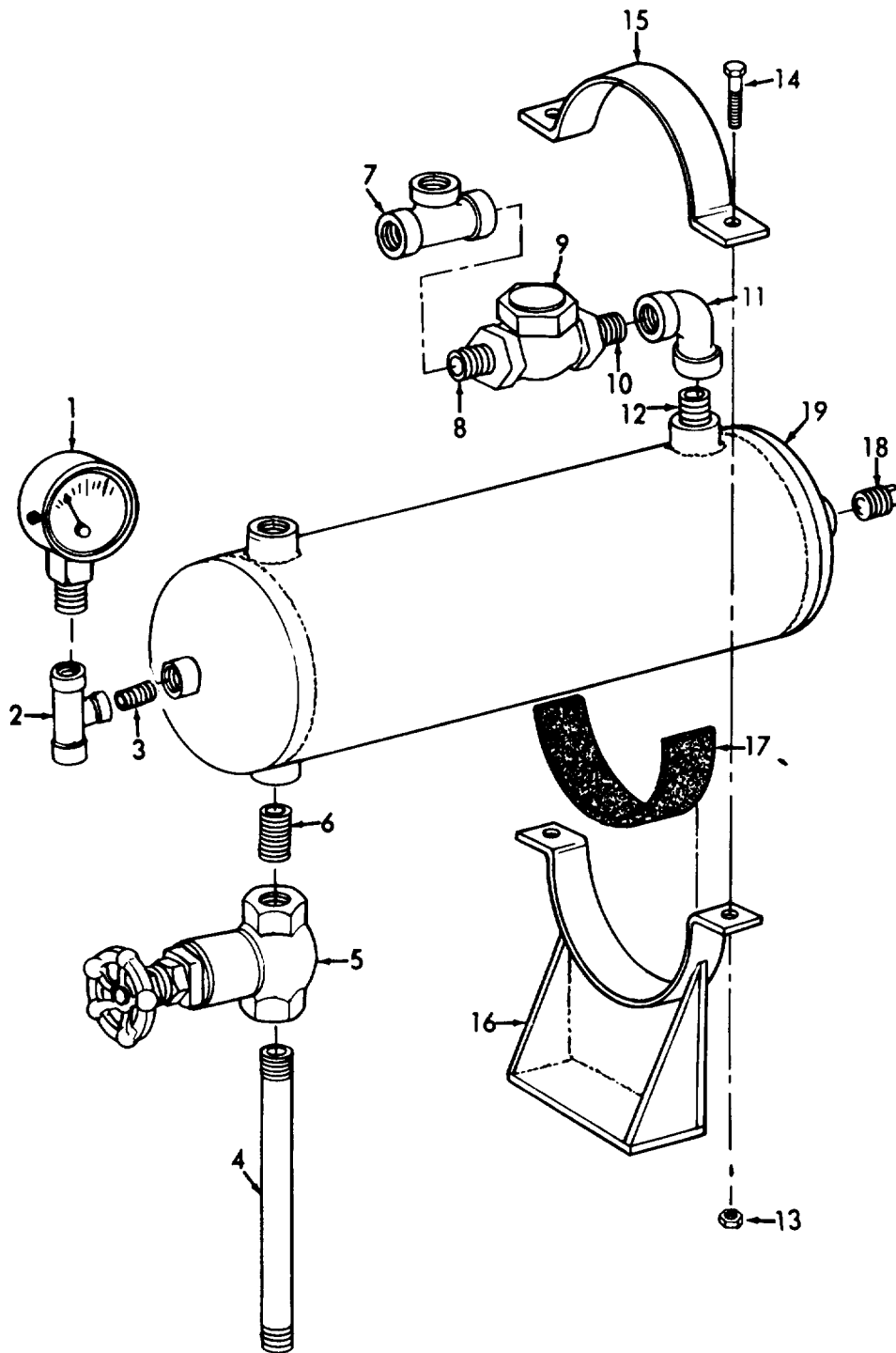
(1) Remove the pressure gage (1, fig. 4-65), pipe tee (2) and nipple (3) from the air tank (19).

(2) Remove the pipe nipple (4), gate valve (5) and nipple (6) from the air tank.

(3) Remove the pipe tee (7, fig. 4-65, nipple (8), lift valve (9), nipple (10), elbow (11) and nipple (12) from the air tank.

(4) Remove nuts (13) and bolts (14) securing the air tank collar (15), bracket (16) and webbing (17) to the air tank.

(5) Remove the plug (18) from the air tank (19).



TS 10-3510-208-12/4-65

- |           |           |            |             |             |
|-----------|-----------|------------|-------------|-------------|
| 1. Gage   | 5. Valve  | 9. Valve   | 13. Nut     | 17. Webbing |
| 2. Tee    | 6. Nipple | 10. Nipple | 14. Bolt    | 18. Plug    |
| 3. Nipple | 7. Tee    | 11. Elbow  | 15. Collar  | 19. Tank    |
| 4. Nipple | 8. Nipple | 12. Nipple | 16. Bracket |             |

Figure 4-65. Air cylinder, disassembly and reassembly.

c. *Cleaning.***WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not be near open flame or excessive heat. Flash point of solvent is 100 to 136F. (36 to 59C).

Clam the pressure gage with mild soap and water. Clean all other parts of the air cylinder using cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

d. *Inspection and Repair.*

(1) Inspect the gage and valves for cracks, dents, chips and other damage. Replace damaged gage and valves.

(2) Inspect the air tank for holes, cracks, nicks and other leak causing conditions. Replace a damaged tank.

(3) Inspect the nipples and hardware for thread damage. Replace damaged nipples and hardware.

(4) Inspect the collar and bracket for cracks, scores and other damage. Replace damaged collar and/or bracket.

(5) Inspect the webbing for tears and wear. Replace worn and/or damaged webbing.

e. *Assembly.*

(1) Install the plug (18, fig. 4-65) into the air tank (19).

(2) Install the webbing (17), bracket (16) and collar (15) on the air tank and secure with bolts (14) and nuts (13).

(3) Install the nipple (12), elbow (11), nipple (10), lift valve (9), nipple (8) and pipe tee (7) onto the air tank.

(4) Install the nipple (6), gate valve (5) and pipe nipple (4) onto the air tank.

(5) Install the nipple (3), pipe tee (2) and pressure gage (1) onto the air tank (19).

f. *Installation.*

(1) Install the air cylinder (7, fig. 4-64), and secure with lockwashers (6), bolts (5), flatwashers (4), lockwashers (3) and nuts (2).

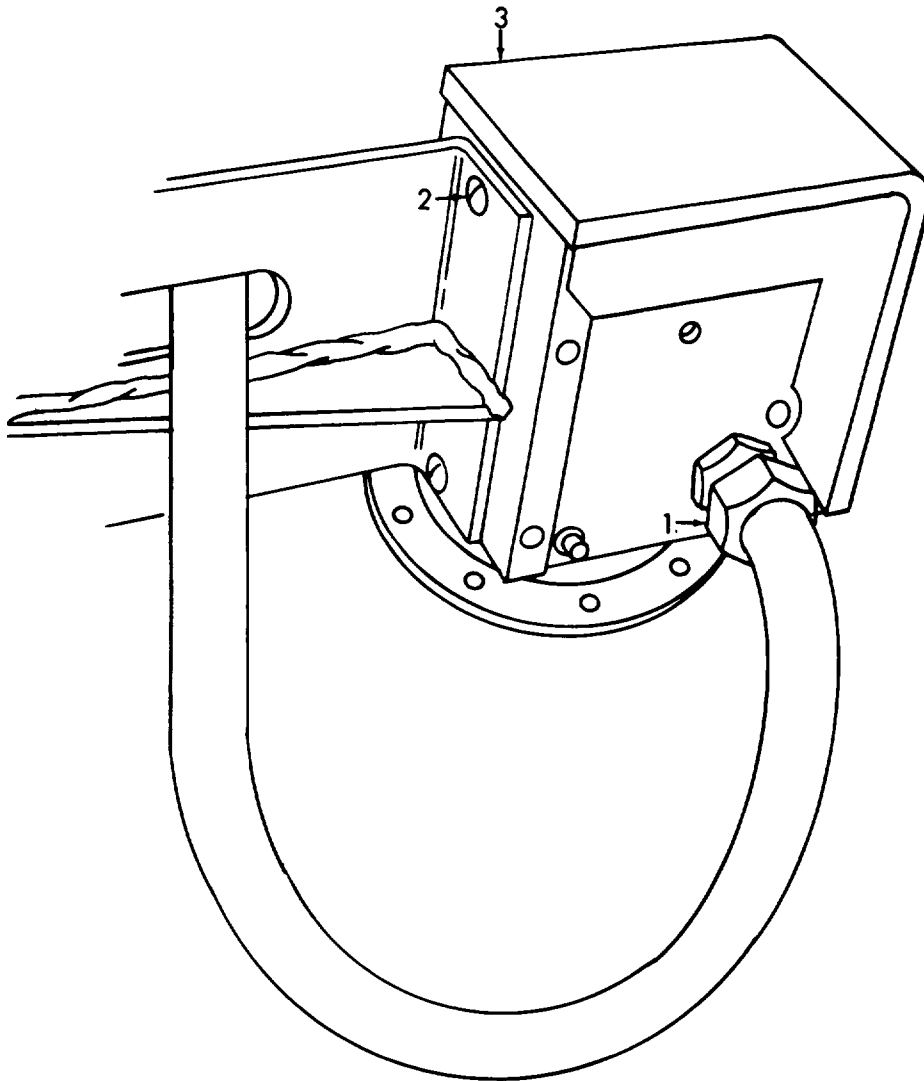
(2) Reconnect the lines (1).

## 4-51. Air Pressure Switch

a. *Removal.*

(1) Disconnect the lines (1, fig. 4-66).

(2) Remove the screws (2) and remove the switch (3).



TS 10-3510-208-12/4-66

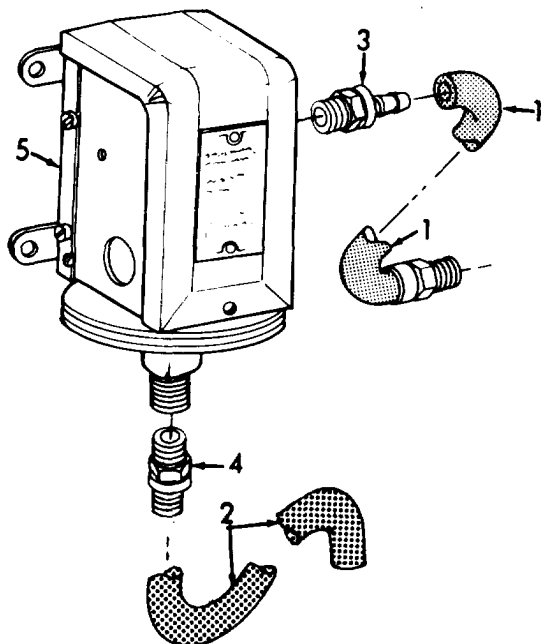
1. Line      2. Screw      3. Switch

Figure 4-66. Air pressure switch, removal and installation.

*b. Disassembly.*

(1) Remove the hoses (1 and 2, fig. 4-67) from their connectors.

(2) Remove the hose connectors (3 and 4) from the air pressure control switch (5).



TS 10-3510-208-12/4-67

- |              |              |
|--------------|--------------|
| 1. Hose      | 4. Connector |
| 2. Hose      | 5. Switch    |
| 3. Connector |              |

Figure 4-67. Air pressure control switch, disassembly and reassembly.

c. *Cleaning.* Clean all parts of the air pressure control switch assembly, with a clean cloth to remove oil, grease or other matter and dry thoroughly.

d. *Inspection and Repair.*

(1) Inspect the hoses for cracks, holes, pitting and other leak causing conditions. Replace as necessary.

(2) Inspect the air pressure control switch for cracks, dents, nicks and other damage. Replace as necessary.

(3) Inspect the hose connectors and all hardware for thread damage. Replace as necessary.

(4) Replace a damaged air pressure control switch.

e. *Assembly.*

(1) Install the connectors (4 and 3, figure 4-67) in air pressure control switch (5).

(2) Install hoses (2 and 1).

f. *Installation.*

(1) Install the switch (3, fig. 4-66), and secure with screws (2).

(2) Reconnect the lines (1).

## Section XIX. TUMBLER CONTROL PANEL AND RELATED PARTS

### 4-52. Control Panel and Related Parts

a. *Removal.*

(1) Remove the screws (1, fig. 4-68), and lockwashers (2) securing the tumbler control panel cover (3) to the dryer-tumbler.

(2) Tag and disconnect all wiring from the control panel assembly, timer and relay contact sets.

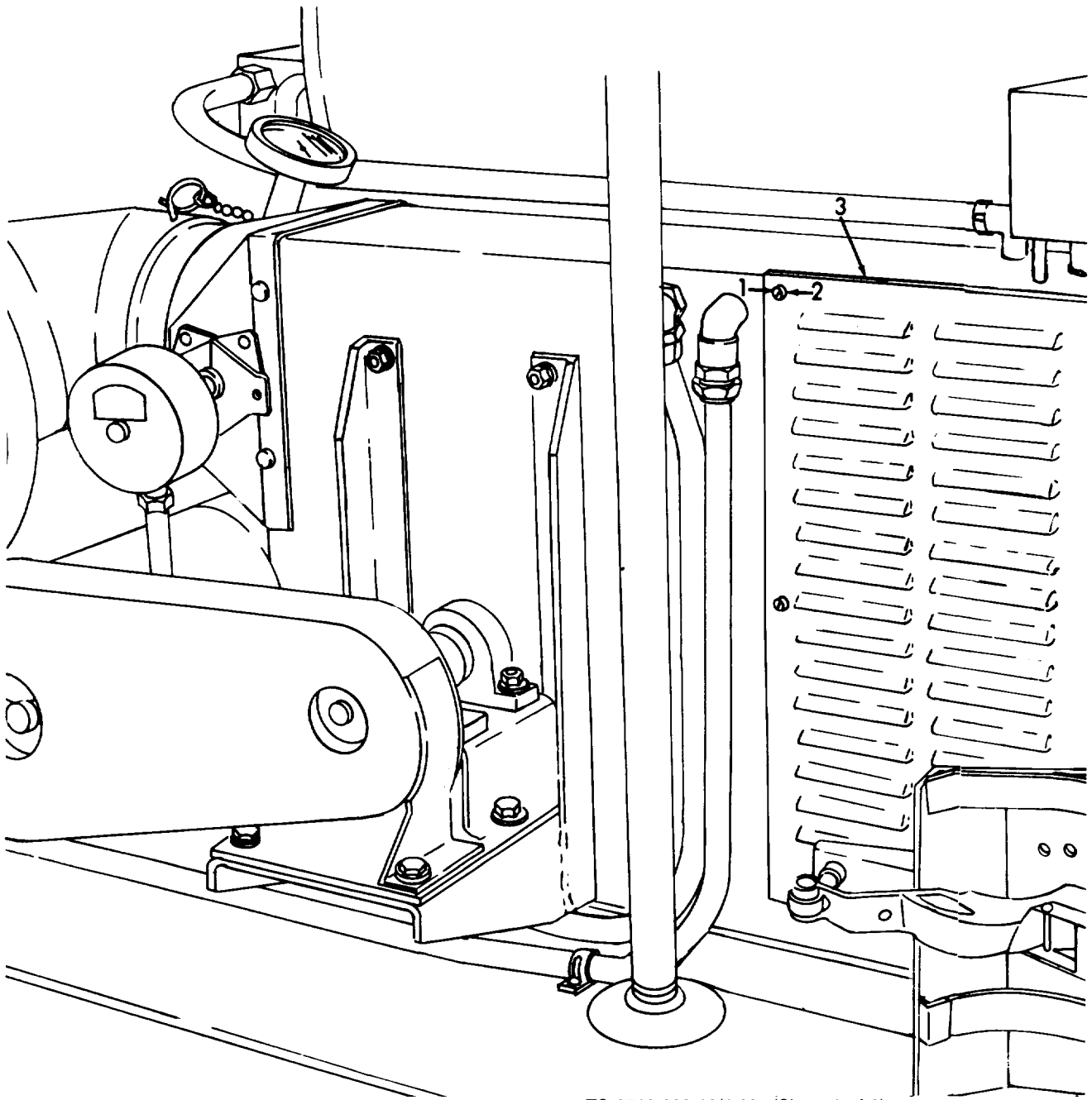
(3) Remove the nuts (4), screws (5) and spacers (6) and keeper (7) securing the timer (8) to the dryer-tumbler.

(4) Remove the screws (9) and lockwashers (10) securing the control panel assembly (11) to the dryer-tumbler.

(5) Remove locknuts (12) and remove the keepers (13).

(6) Remove the screws (14) and lockwashers (15) securing the switch box cover (16).

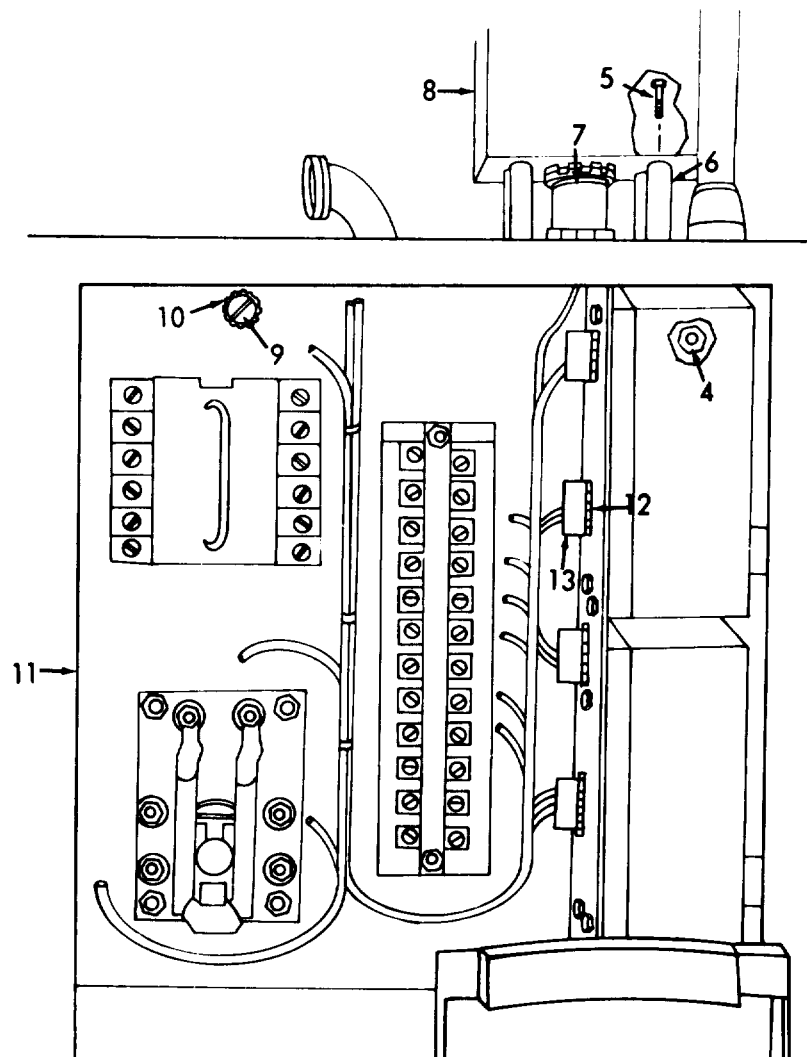
(7) Remove nuts (17), lockwashers (18) and screws (19) and remove the relay switch assemblies (20) from the dryer-tumbler.



TS 3510-208-12/4-68 (Sheet 1 of 3)

1. Screw    2. Lockwashers    3. Cover

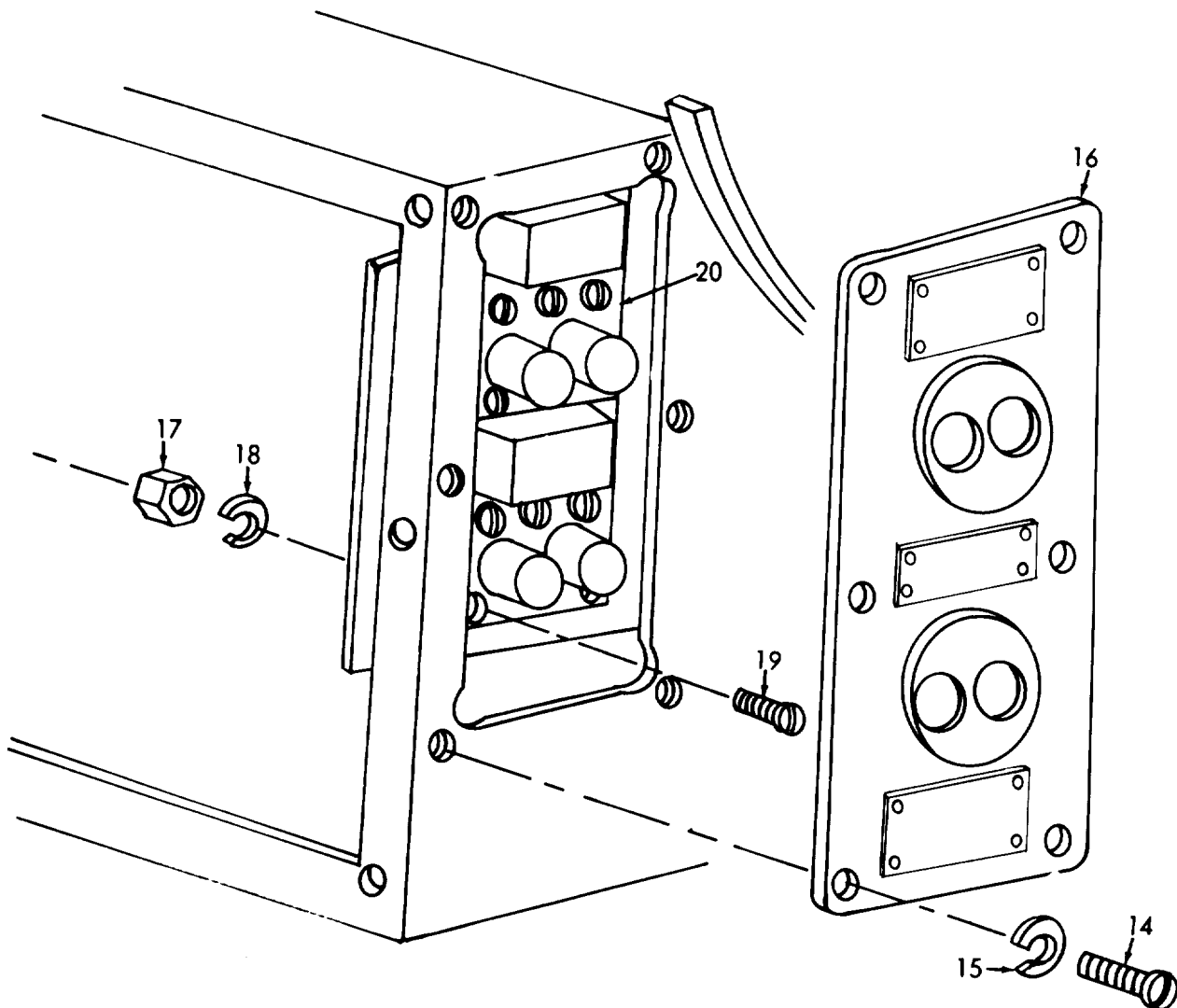
Figure 4-68. Tumbler controls, removal and installation (sheet 1 of 3).



TS 10-3510-208-12/4-68 (Sheet 2 of 2)

- |           |                |
|-----------|----------------|
| 4. Nut    | 9. Screw       |
| 5. Screw  | 10. Lockwasher |
| 6. Spacer | 11. Panel ay   |
| 7. Keeper | 12. Locknuts   |
| 8. Timer  | 13. Keeper     |

Figure 4-68. Tumbler controls, removal and installation (sheet 2 of 3).



TS 10-3510-208-12/4-68 (Sheet 3 of 3)

- 14. Screw
- 15. Lockwasher
- 16. Cover
- 17. Nut

- 18. Lockwasher
- 19. Screw
- 20. Relay switch ays

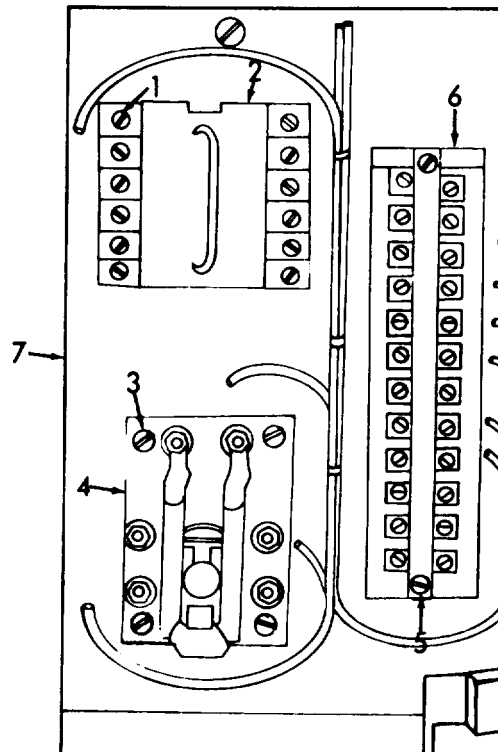
Figure 4-68. Tumbler controls, removal and installation (sheet 3 of 3).

*b. Disassembly.*

- (1) Remove the screws (1, fig. 4-69) securing the the box (2) to the control panel (7).
- (2) Remove the screws (3) securing the relay (4) to the control panel.
- (3) Remove the screws (5) securing the terminal block (6) to the control panel (7).
- (4) Remove the screws (8) and remove the thermal release heaters (9) from the relay switch boxes.

- (5) Remove screws (10) and terminal clamps (11) securing the contacts (12) to the relay switch boxes.
- (6) Remove screws (13) securing the contacts (14) to the relay switch boxes.
- (7) Remove the contacts (15) by pulling out from the retaining clips, then remove the contact springs (16) which are below the contacts.

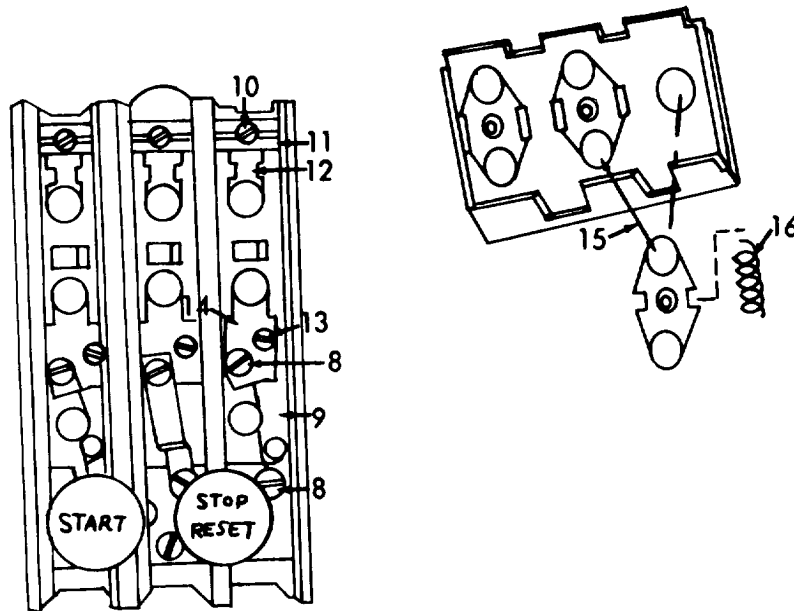




10-208-12/4-69 (Sheet 1 of 2)

- |            |          |
|------------|----------|
| 1. Screw   | 5. Screw |
| 2. Fusebox | 6. Block |
| 3. Screw   | 7. Panel |
| 4. Relay   |          |

Figure 4-69. Tumbler controls, disassembly and reassembly (sheet 1 of 2).



TS 10-3510-206-12/4-69 (Sheet 2 of 2)

- |             |             |
|-------------|-------------|
| 8. Screw    | 13. Screw   |
| 9. Heater   | 14. Contact |
| 10. Screw   | 15. Contact |
| 11. Clamp   | 16. Spring  |
| 12. Contact |             |

Figure 4-69. Tumbler controls, disassembly and reassembly (sheet 2 of 2).

c. *Cleaning.* Clean all parts of the tumbler controls, using dry compressed air and a clean cloth.

d. *Inspection.*

(1) Inspect all parts of the tumbler controls for cracks, chips, dents, and other damage.

(2) Inspect all hardware for thread damage.

e. *Repair.*

(1) Weld cracks or breaks and straighten dents.

(2) Replace damaged controls and/or parts therein, and hardware.

f. *Assembly.*

(1) Insert the contact springs (16, fig. 4-69), then press the contacts (15) into position within the retaining clips.

(2) Install the contacts (14) into the relay switch boxes and secure with screws (13).

(3) Install the contacts (12) into the relay switch boxes and secure with terminal clamps (11) and screws (10).

(4) Install the thermal release heaters (9) into the relay switch boxes and secure with screws (8).

(5) Install the terminal block (6) on the control panel (7) and secure with screws (5).

(6) Install the relay (4) on the control panel and secure with screws (3).

(7) Install the fuse box (2) on the control panel (7) and secure with screws (1).

g. *Installation.*

(1) Install the switch assemblies (20, fig. 4-68) and secure with screws (19), lockwashers (18) and nuts (17).

(2) Install the switch box cover (16) and secure with lockwashers (15) and screws (14).

(3) Install the keepers (18) and locknuts (12).

(4) Install the control panel assembly (11) and secure with lockwashers (10) and screws (9).

(5) Install the timer (8) and secure with keeper (7), spacers (6), screws (5) and nuts (M).

(6) Reconnect all disconnected wiring.

(7) Install the panel cover (3) and secure with lockwashers (2) and screws (1).

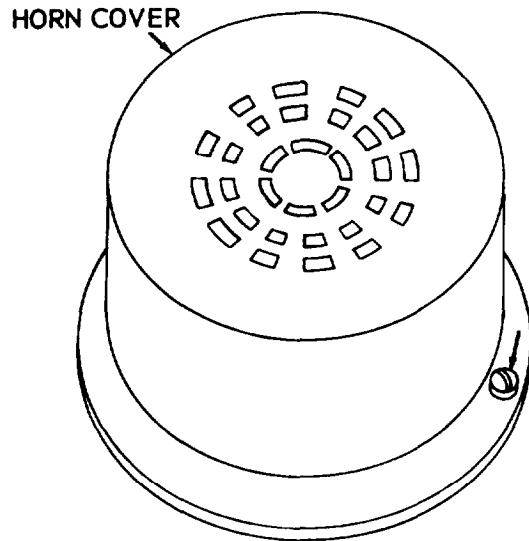
#### 4-53. Timing and Alarm Device

a. *Removal.*

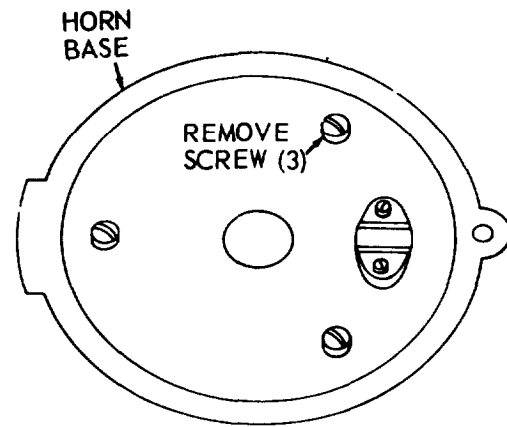
(1) Refer to paragraph 4-52 for removal instructions of the timing device.

(2) Refer to figure 4-70 and remove the horn alarm device.

**NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.**



A. HORN COVER REMOVAL



B. HORN BASE REMOVAL

TS 3510-208-12/4-70

Figure 4-70. Horn, removal and installation.

*b. Cleaning.* Clean the horn alarm device using dry compressed air and a clean cloth.

*c. Inspection and Repair.* Inspect the alarm device for damage, and replace as necessary.

*d. Installation.*

(1) Refer to figure 4-70 and install the horn alarm device.

(2) Refer to paragraph 4-52 for installation instructions of the timing device.

## **Section XX. WATER HEATER ASSEMBLY, WATER HEATER PANEL BOARD, BURNER ASSEMBLY, FUEL LINES AND PRESSURE GAGE, VALVES, LINES AND FITTINGS, FUEL FILTER AND RELATED PARTS**

### **4-54. Water Heater Assembly**

#### *a. Removal.*

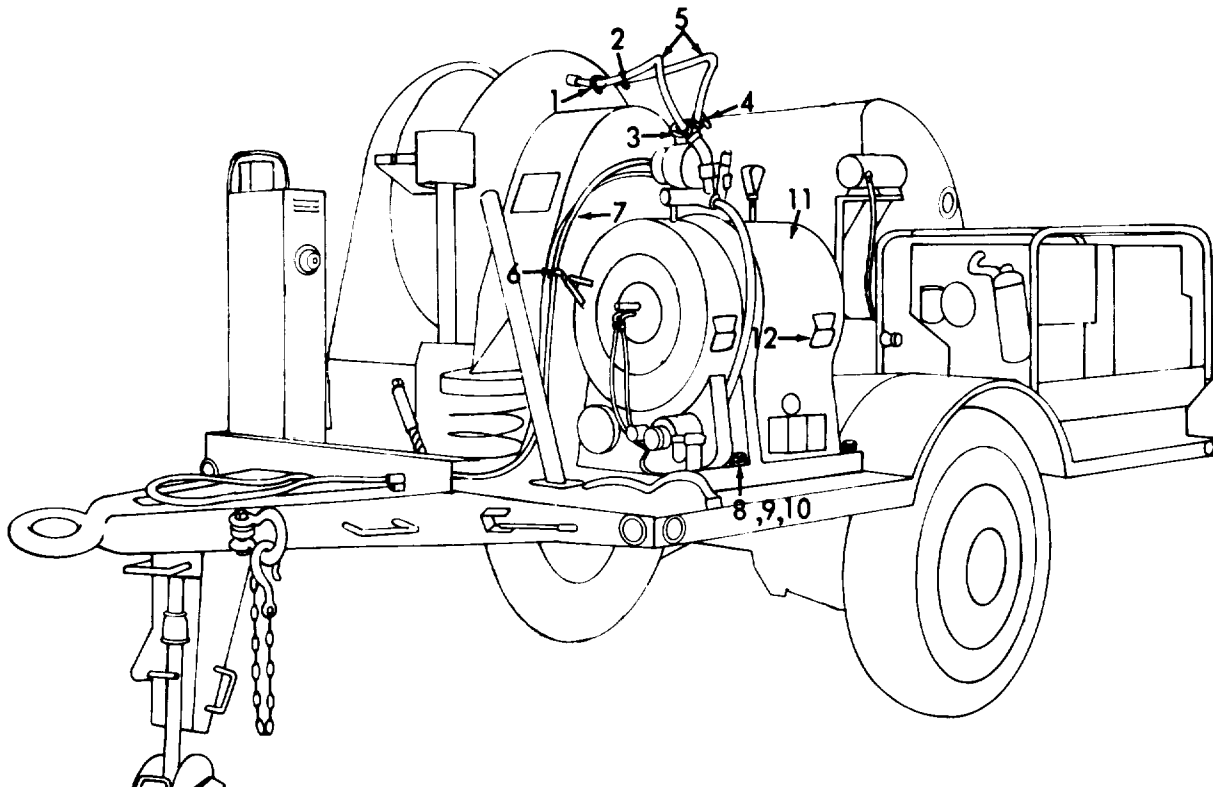
(1) Loosen hose clamps (1, 2, 3 and 4, fig. 4-71) and remove water lines (5).

(2) Loosen clamp (6) securing the air lines to mounting bracket and remove air lines (7).

(3) Tag and disconnect wiring from junction box (not shown), located at rear lower right hand portion of water heater assembly.

(4) Remove nuts (8), lockwashers (9), and screws (10) securing the water heater assembly to the trailer bed.

(5) Remove water heater assembly (11) from trailer. Carrying handles (12) are provided for lifting purposes.



TS 3510-208-12/4-71

- |          |              |            |                      |
|----------|--------------|------------|----------------------|
| 1. Clamp | 4. Clamp     | 7. Airline | 10. Screw            |
| 2. Clamp | 5. Waterline | 8. Nut     | 11. Water heater ay. |
| 3. Clamp | 6. Clamp     | 9. Washer  | 12. Handle           |

Figure 4-71. Water Heater Assembly, removal and installation.

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean metal surface of water heater assembly using a clean cloth dampened with cleaning solvent Fed. Spec. P-D-680. Dry thoroughly.

c. *Inspection.* Inspect water heater assembly for evidence of leaking, cracked or broken welds or other damage.

d. *Installation.*

(1) Position water heater assembly (11, fig.

4-71) in place on trailer and secure to trailer bed with screws (10), lockwashers (9), and nuts (8).

(2) Install air lines (7) and secure to mounting bracket with clamp (6).

(3) Install water lines (5) and secure with hose clamps (4, 3, 2 and 1).

4-55. Water Heater Panel Board

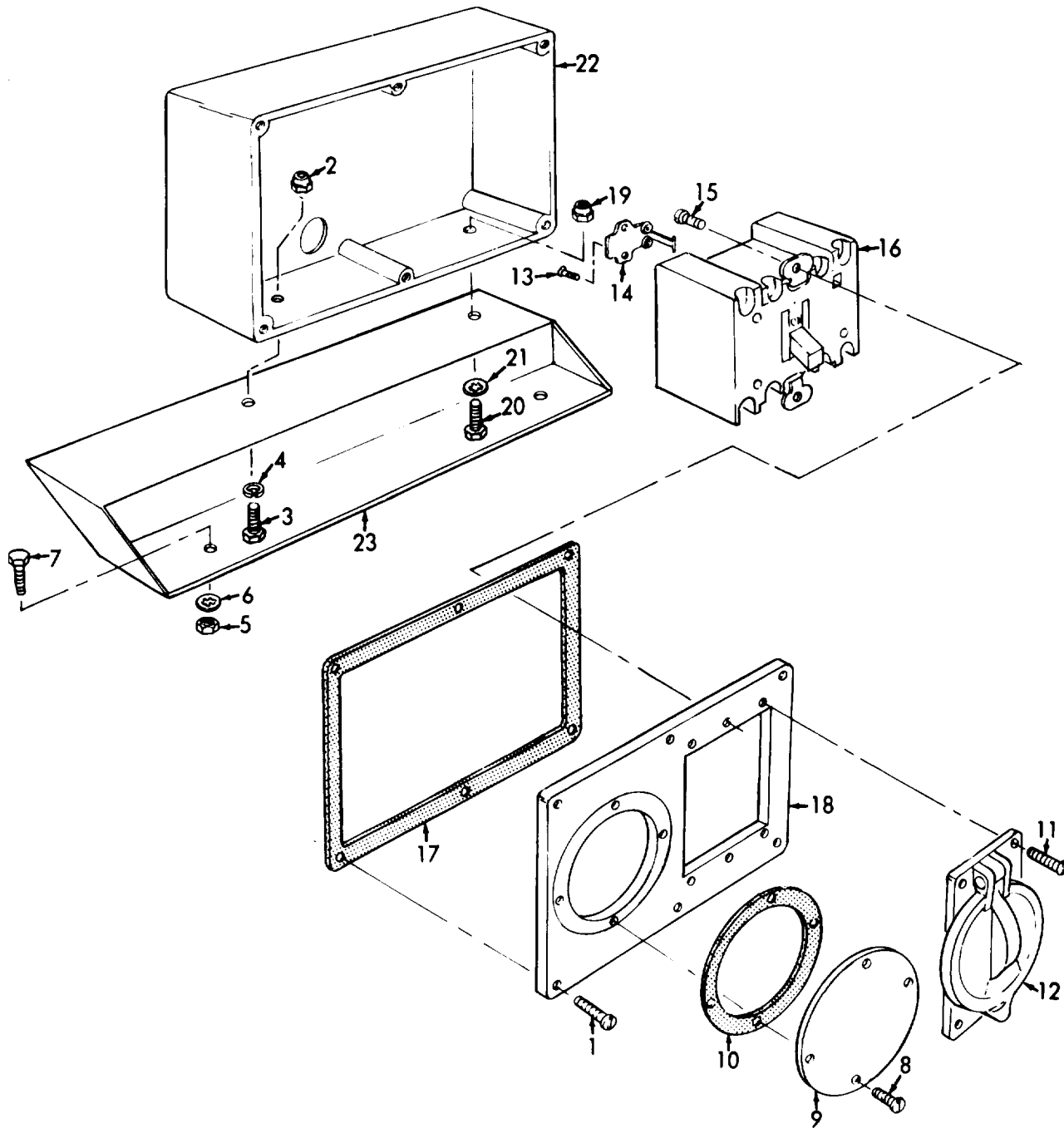
a. *Removal.*

(1) Remove the six screws (1, fig. 4-72) and pull the switch box cover assembly (items 8 thru 18) away from the switch box (22).

(2) Tag and disconnect all electrical wiring, disconnect all conduits and valve line.

(3) Remove the nut (2), bolt (3) and lockwasher (4) securing the fuel line bracket to the water heater panel board and bracket.

(4) Remove nuts (5), lockwashers (6) and bolts (7) securing the water heater panel board mounting bracket.



TS 3510-208-12/4-72

- |               |            |             |                |
|---------------|------------|-------------|----------------|
| 1. Screw      | 7. Bolt    | 13. Screw   | 19. Nut        |
| 2. Nut        | 8. Screw   | 14. Heater  | 20. Bolt       |
| 3. Bolt       | 9. Plate   | 15. Screw   | 21. Lockwasher |
| 4. lockwasher | 10. Gasket | 16. Breaker | 22. Box        |
| 5. Nut        | 11. Screw  | 17. Gasket  | 23. Bracket    |
| 6. Lockwasher | 12. Cover  | 18. Cover   |                |

Figure 4-72. Water heater panel board, removal disassembly, reassembly and installation.

*b. Disassembly.*

(1) Remove screws (8, fig. 4-72) securing the cover plate (9) and gasket (10) to the switch box cover (18).

(2) Remove screws (11) seaming the conduit outlet cover (12) to the switch box cover (18).

(3) Remove screws (13) securing the thermal release heaters (14) to the circuit breaker (16).

(4) Remove screws (15, fig. 4-72) securing the circuit breaker (16) to the switch box cover.

(5) Remove gasket (17) from the switch box cover (18).

(6) Remove nut (19), bolt (20), and lockwasher (21) securing the switch box (22) to the panel board mounting bracket (23).

*c. Cleaning.* Clean all parts of the panel board using dry compressed air, a clean lint free cloth and dry thoroughly.

*d. Inspection.*

(1) Inspect the mounting bracket, switch box cover, and switch box for cracks, dents and other damage.

(2) Inspect the circuit breaker for dents, chips, breaks and cracks.

(3) Inspect all gaskets for tears, pitting, cracks and wear.

(4) Inspect all hardware for thread damage.

*e. Repair.*

(1) Repair or replace a damaged bracket, switch box cover or circuit breaker.

(2) Replace all missing or damaged hardware and gaskets.

*f. Assembly.*

(1) Secure switch box (22, fig. 4-72) to the panel board mounting bracket (23) with lockwasher (21), bolt (20) and nut (19).

(2) Install new gasket (17) when installing the switch box cover assembly.

(3) Install the circuit breaker (16) on switch box cover (18) and secure with screws (15).

(4) Install the thermal release heaters (14, fig. 4-72) onto the circuit breaker (16) and secure with screws (13).

(5) Install the conduit outlet cover (12) on the switch box cover and secure with screws (11).

(6) Install gasket (10) and cover plate (9) on the switch box cover (18) and secure with screws (8).

*g. Installation.*

(1) Install the water heater panel board mounting bracket and secure with bolts (7, fig. 4-72), lockwashers (6) and nuts (5).

(2) Secure the fuel line bracket to the water heater panel board and bracket with lockwasher (4), bolt (3), and nut (2).

(3) Reconnect all valve lines, conduits and electrical wiring.

(4) Install the switch box cover assembly (items 8 through 18) in the switch box (22) and secure with six screws (1).

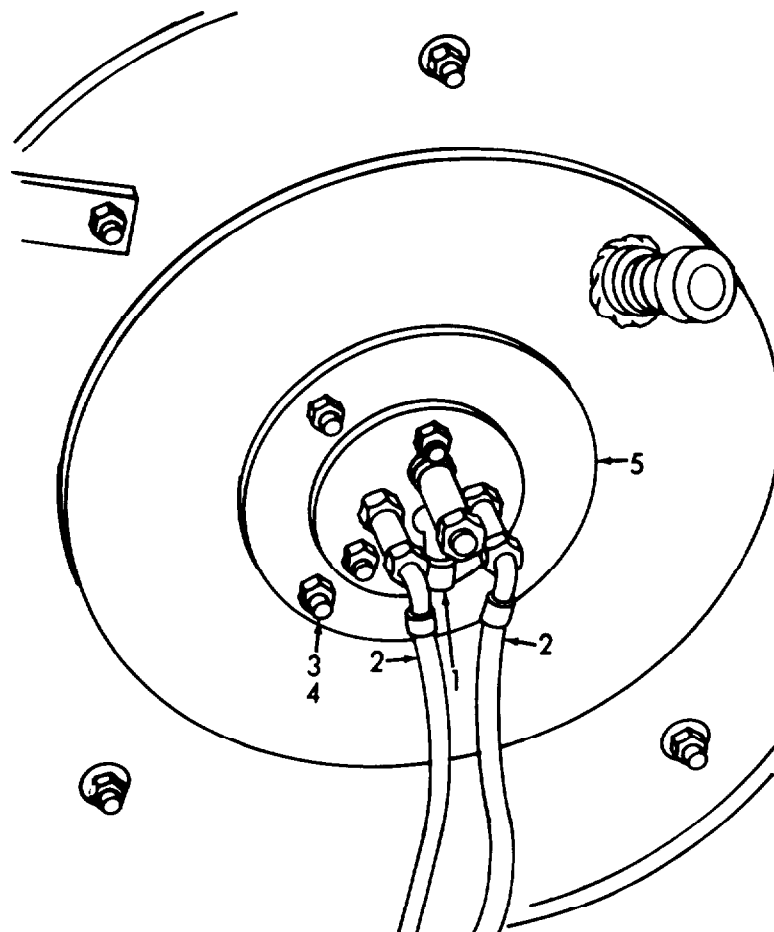
*4-56. Burner Assembly*

*a. Removal.*

(1) Remove the fuel line adapter (1, fig. 4-73) securing the fuel line to the water heater.

(2) Tag and disconnect the ignition cables (2) from the burner.

(3) Remove the four nuts (3) and flatwashers (4) securing the burner (5) to the water heater, remove burner assembly.



TS 10-3510-208-12/4-73

- |            |        |               |
|------------|--------|---------------|
| 1. Adapter | 3. Nut | 4. Flatwasher |
| 2. Cable   |        | 5. Burner     |

Figure 4-73. Burner assembly, removal and installation.

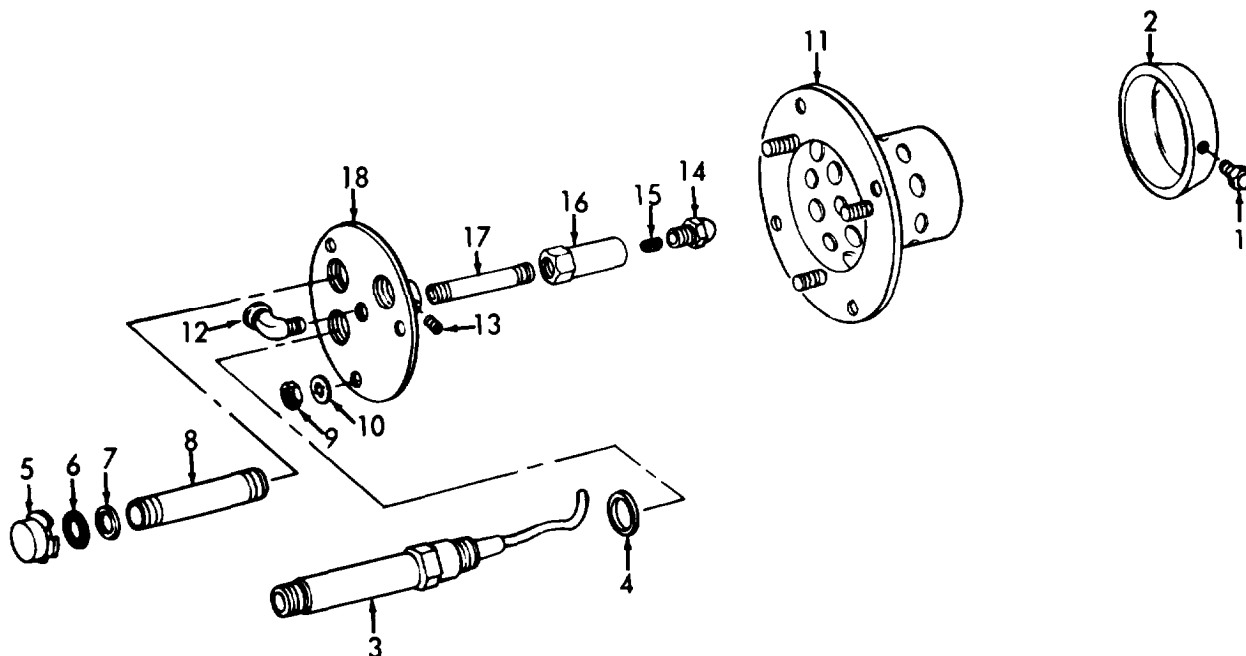
*b. Disassembly*

- (1) Remove the screws (1, fig. 4-74) securing the air nose (2) to the burner tube (11).
- (2) Remove the electrodes (3) and gaskets (4) from the burner.
- (3) Remove the sight hole cap (5), gasket (6), glass (7) and pipe nipple (8) from the burner.
- (4) Remove the nuts (9) and lockwashers (10)

securing the burner tube (11) and remove the burner tube.

(5) Remove the street elbow (12) and set-screws (13) from the electrode and nozzle holder.

(6) Remove the nozzle (14, fig. 4-74), nozzle strainer (15), adapter (16) and nipple (17) from holder (18).



TS 10-3510-208-12/4-74

- |              |                |              |
|--------------|----------------|--------------|
| 1. Screw     | 7. Glass       | 13. Setscrew |
| 2. Nose      | 8. Nipple      | 14. Nozzle   |
| 3. Electrode | 9. Nut         | 15. Strainer |
| 4. Gasket    | 10. Lockwasher | 16. Adapter  |
| 5. Cap       | 11. Tube       | 17. Nipple   |
| 6. Gasket    | 12. Elbow      | 18. Holder   |

Figure 4-74. Water heater burner, assembly, disassembly and reassembly.

c. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec, P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

d. *Inspection and Repair.*

(1) Inspect the electrode and nozzle burner tube and electrode holder for crocks, nicks, chips, and other damage.

(2) Replacement of all damaged items of the burner is recommended unless damage is extremely minor.

e. *Assembly.*

(1) Install nipple (17, fig. 4-74), nozzle adapter (16), nozzle strainer (15) and nozzle (14) to the electrode and nozzle holder (18).

(2) Install setscrew (13) and elbow (12) in the holder.

(3) Secure the burner tube (11) to the electrode and nozzle holder with lockwashers (10) and nuts (9).

(4) Install the pipe nipple (8) and glass (7) in burner, then position gasket (6) in place and install cap (5).

(5) Place gasket (4, fig. 4-74) over end of electrode (3) and the install electrode.

(6) Secure air nose (2) to burner tube with screws (1).

f. *Adjustment.* Adjust the electrodes, figure 4-75.

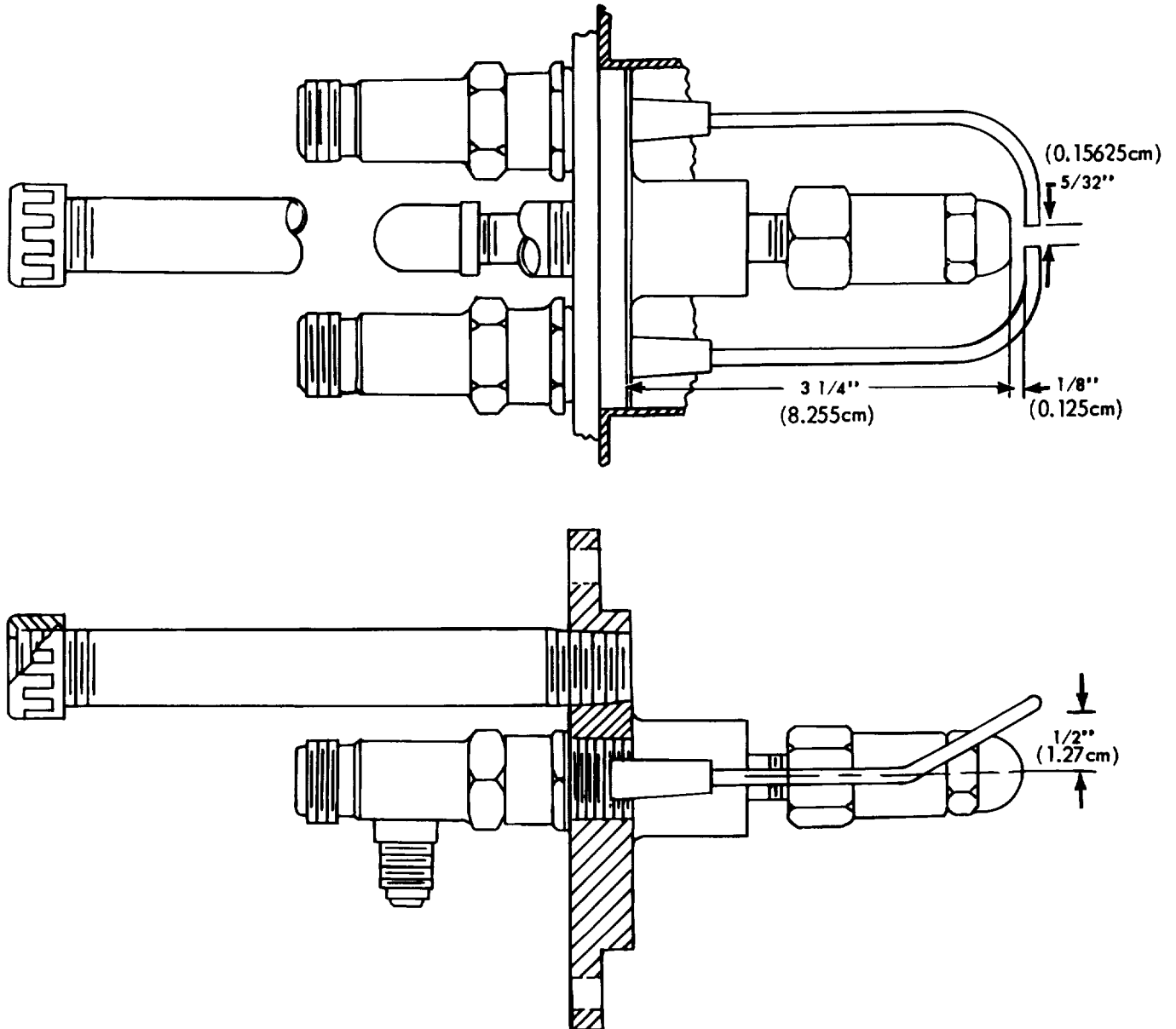
g. *Installation.*

(1) Install the burner assembly (5, fig. 4-73)



into the water heater and secure with flatwaters (4) and four nuts (3).  
 (2) Reconnect the ignition cables (2).

(3) Position the fuel line on the water heater and secure with the fuel line adapter (1).



TS 10-3510-208-12/4-75

Figure 4-75. Water heater ignition electrode adjustment.

4-57. Water Heater Fuel Lines And Pressure Gage

a. Removal and Disassembly.

(1) Remove the nuts (1 and 2, fig. 4-76) and screws (3 and 4) securing the retaining straps (5 and 6) to the fuel line bracket (7).

(2) Remove the fuel lines (8, 9 and 10) from their adapters.

(3) Remove the male connector (11), needle valve (12), street elbow (19) and pipe nipple (14) from the reducing tee.

(4) Remove the pressure gage (15, fig. 4-76),

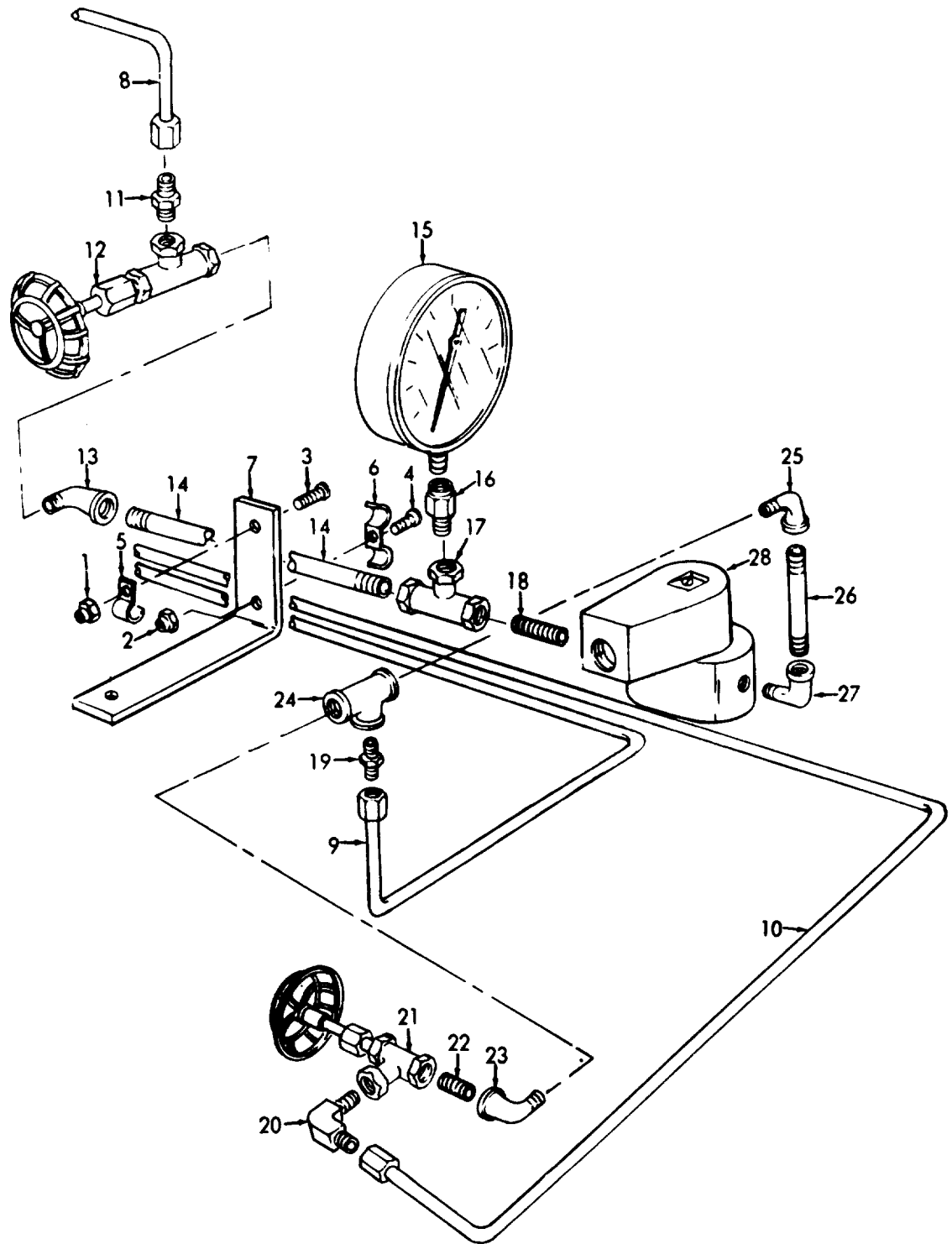
damper (16), reducing tee (17) and nipple (18) from the solenoid valve.

(S) Remove the adapter (19) from the pipe tee.

(6) Remove the elbow (20), needle valve (21), nipple (22), street elbow (23), pipe tee (24), street elbow (25), pipe nipple (26) and street elbow (27) from the solenoid valve (28).

KEY to figure 4-76.

- |            |               |             |            |
|------------|---------------|-------------|------------|
| 1. Nut     | 6. Line       | 15. Gage    | 22. Nipple |
| 2. Nut     | 9. Line       | 16. Damper  | 23. Elbow  |
| 3. screw   | 10. Line      | 17. Tee     | 24. Tee    |
| 4. Screw   | 11. Connector | 18. Nipple  | 25. Elbow  |
| 5. Strap   | 12. Valve     | 19. Adapter | 26. Nipple |
| 6. Strap   | 13. Elbow     | 20. Elbow   | 27. Elbow  |
| 7. Bracket | 14. Nipple    | 21. Valve   | 28. Valve  |



TS 10-3510-208-12/4-76

Figure 4-76. Water heater fuel lines and pressure gage, removal disassembly reassembly and installation.

*b. Cleaning.* Clean the pressure gage and fuel lines using dry compressed air and a clean cloth.

*c. Inspection and Repair.*

(1) Inspect all parts for damage.

(2) Repair and/or replace parts as necessary.

*d. Assembly and Installation.*

(1) Install elbow (27, fig. 4-76), nipple (26), elbow (25), pipe tee (24), elbow (23), nipple (22), needle valve (21) and elbow (20) to the solenoid valve (28),

(2) Install adapter (19) in pipe tee (24).

(3) Install nipple (18), reducing tee (17), damper (16) and pressure gage (15) to the solenoid valve (28).

(4) Install nipple (14), elbow (13), needle valve (12) and male connector (11) to the reducing tee (17).

(5) Connect fuel lines (8, 9 and 10).

(6) Secure fuel lines (9 and 10) to fuel line bracket (7) with retaining straps (5 and 6), screws (3 and 4) and nuts (1 and 2).

#### 4-58. Water Heater Valves, Lines and Fittings

*a. Removal and Disassembly.*

(1) Remove the connector (1, fig. 4-77), valve (2), nipple (3), bushing (4), union (6) and nipple (6) from the tee (7).

(2) Remove the tee (7) and nipple (8) from the water heater tank.

(3) Remove the nipples (9 and 11) and elbows (10 and 12) from the cutoff valve (13).

(4) Remove the cutoff valve (13), bushing (14), nipple (15), union (16) and nipple (17).

(5) Remove the connector (18), needle valve (19), nipple (20) and bushing (21) from tee (22),

(6) Remove the tee (22) and nipple (23) from the water heater tank.

(7) Remove nut (24), washer (25), bolt (26) and lockwasher (27) securing the drain tube clip (28).

(8) Remove the drain tube (29), and elbow (30) from the relief valve (31).

(9) Remove the relief valve (31) and elbow (32) from the water heater tank.

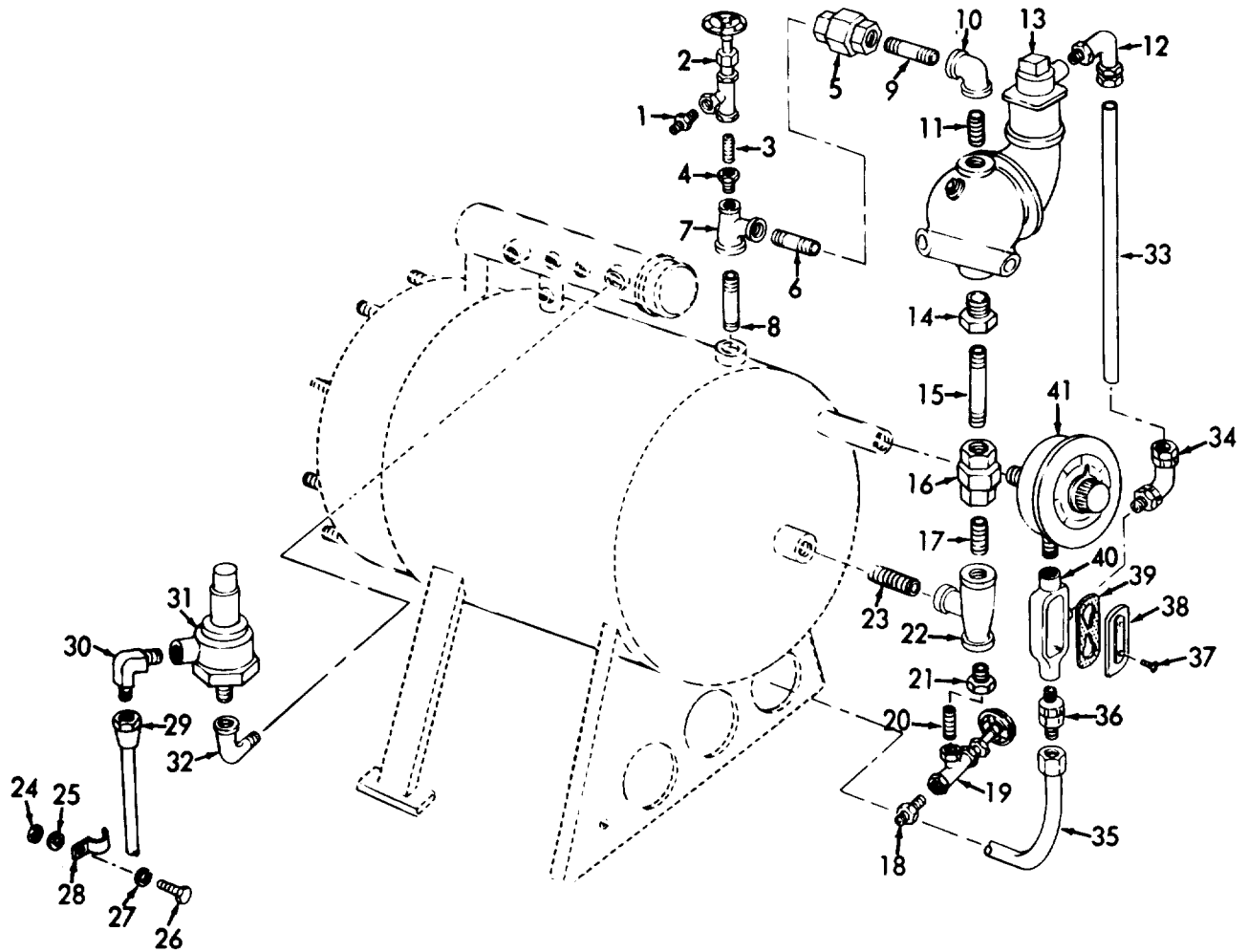
(10) Remove the conduit (33) and elbow (34) from the conduit outlet (40).

(11) Remove the conduit (35) and connector (36) from the conduit outlet (40).

(12) Remove the screws (37) securing the conduit outlet cover (38) and gasket (39).

(13) Remove the conduit outlet (40) from the temperature control (41).

(14) Remove the temperature control (41) from the water heater tank.



TS 10-3510-208-12/4-77

- |              |               |                |               |
|--------------|---------------|----------------|---------------|
| 1. Connector | 12. Elbow     | 22. Tee        | 32. Elbow     |
| 2. Valve     | 13. Valve     | 23. Nipple     | 33. Conduit   |
| 3. Nipple    | 14. Bushing   | 24. Nut        | 34. Elbow     |
| 4. Bushing   | 15. Nipple    | 25. Washer     | 35. Conduit   |
| 5. Union     | 16. Union     | 26. Bolt       | 36. Connector |
| 6. Nipple    | 17. Nipple    | 27. Lockwasher | 37. Screw     |
| 7. Tee       | 18. Connector | 28. Clip       | 38. Cover     |
| 8. Nipple    | 19. Valve     | 29. Tube       | 39. Gasket    |
| 9. Nipple    | 20. Nipple    | 30. Elbow      | 40. Outlet    |
| 10. Elbow    | 21. Bushing   | 31. Valve      | 41. Control   |
| 11. Nipple   |               |                |               |

Figure 4-77. Water heater valves, lines and fittings, disassembly and reassembly

b. Cleaning.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat, Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean all valves, lines and fittings using cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

(1) Inspect all valves, lines and fittings for cracks, nicks, dents and other damage. Repair and/or replace all damaged parts.

(2) Replace missing and/or damaged hardware.

*d. Assembly and Installation.*

(1) Install the temperature control (41, fig. 4-77) onto the water heater tank.

(2) Install the conduit outlet (40) onto the temperature control (41).

(3) Install the gasket (39) and conduit outlet cover (38) and secure with screws (37).

(4) Install the connector (36) and conduit (35) to the conduit outlet (40).

(5) Install the elbow (34) and conduit (33) to the conduit outlet (40).

(6) Install the elbow (32) and relief valve (31) to the water heater tank.

(7) Install the elbow (30) and drain tube (29) on the relief valve (31).

(8) Install the drain tube clip (28) and secure

with lockwasher (27), bolt (26), washer (26) and nut (24).

(9) Install the nipple (23) and tee (22) to the water heater tank.

(10) Install the bushing (21), nipple (20), needle valve (19) and connector (18) to the tee (22).

(11) Install the nipple (17, fig. 4-77), union (16), nipple (15), bushing (14) and cutoff valve (13).

(12) Install the elbows (10 and 12) and nipples (9 and 11) to the cutoff valve (13).

(13) Install the nipple (8) and tee (7) to the water heater tank.

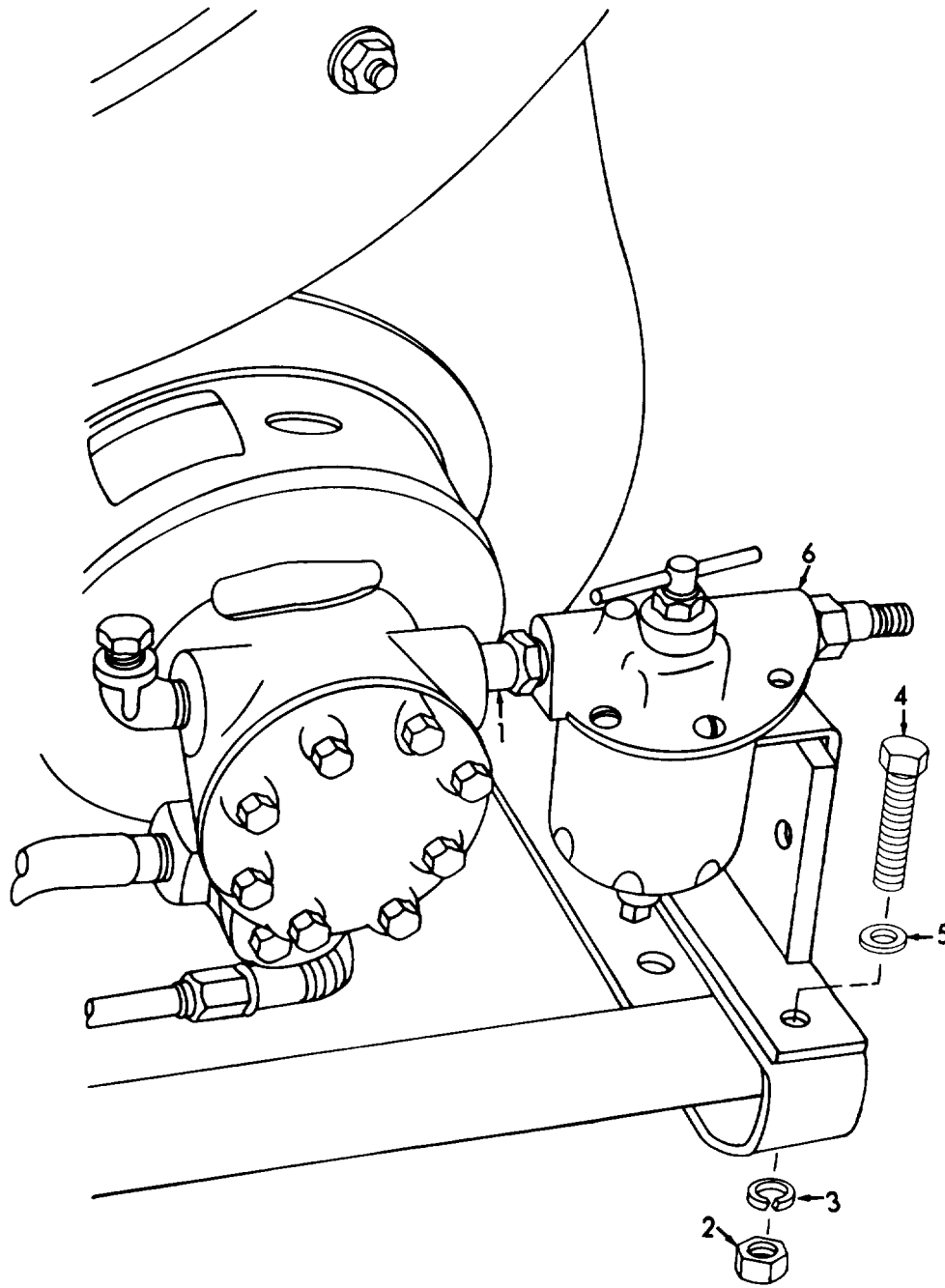
(14) Install the nipple (6), union (5), bushing (4), nipple (3), valve (2) and connector (1) to the tee (7).

**4-59. Water Heater Fuel Filter**

*a. Removal.*

(1) Remove the nipple (1, fig. 4-78) from the fuel filter.

(2) Remove the two nuts (2), lockwashers (3), bolts (4) and flatwashers (5) securing the fuel filter (6) to the water heater skid.



TS 10-3510-208-12/4-78

- |               |               |
|---------------|---------------|
| 1. Nipple     | 4. Bolt       |
| 2. Nut        | 5. Flatwasher |
| 3. Lockwasher | 6. Filter     |

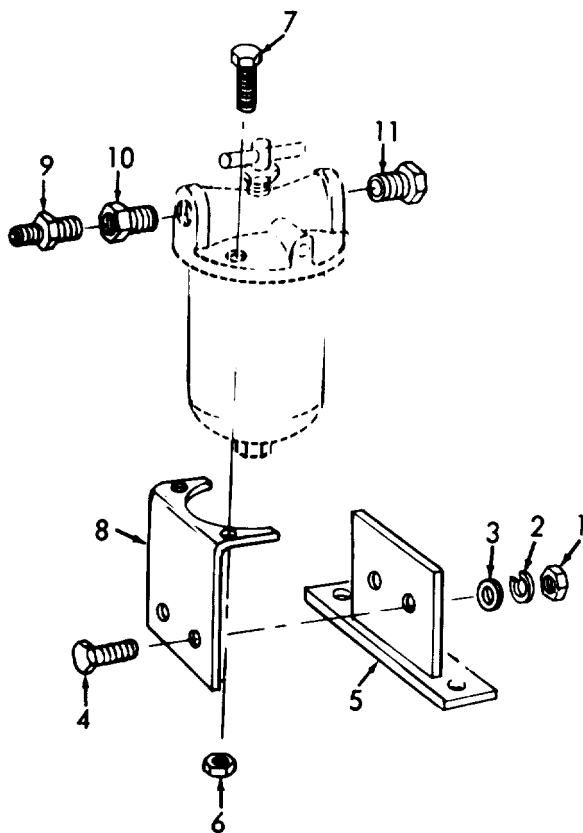
Figure 4-78. Fuel filter and bracket removal and installtion.

*b. Disassembly.*

(1) Remove the nuts (1, fig. 4-79), lock-

washers (2), flatwashers (3) and bolts (4) securing the filter mounting bracket (5) to the filter bracket.

- (2) Remove the nuts (6) and bolts (7) securing the filter bracket (8) to the filter.
- (3) Remove the straight adapter (9) and bushing (10 and 11) from the filter.
- (4) Loosen the handle nut and remove the handle assembly (12).
- (5) Remove the retaining ring (13), washer (14), packing (15), washer (16) and handle nut (17) from the handle (18).
- (6) Remove the drain plug (19) from the filter hewing.
- (7) Remove the screws (20), securing ring (21), filter housing (22) and its gasket (23) to the filter cap (24).

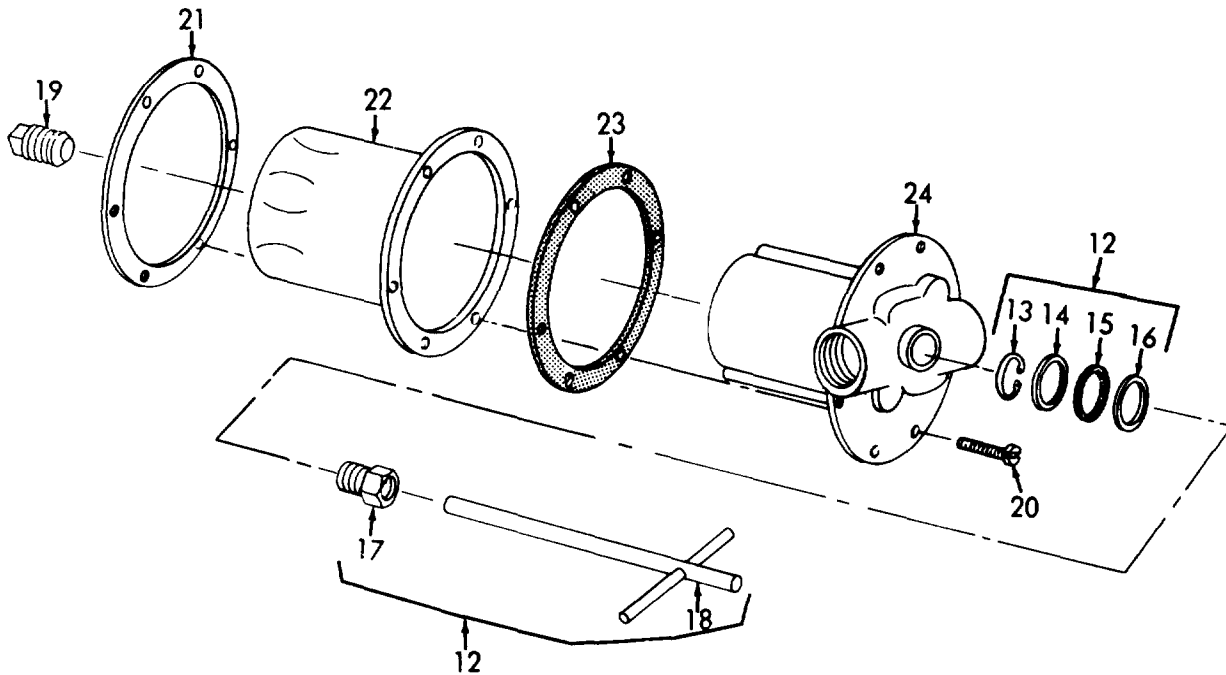


TS 10-3510-208-12/4-79 (Sheet 1 of 2)

- |               |            |             |
|---------------|------------|-------------|
| 1. Nut        | 5. Bracket | 9. Adapter  |
| 2. Lockwasher | 6. Nut     | 10. Bushing |
| 3. Flatwasher | 7. Bolt    | 11. Bushing |
| 4. Bolt       | 8. Bracket |             |

Figure 4-79. Fuel filter, disassembly (sheet 1 of 2)





TS 10-3310-208-12/4-79 (Sheet 2 of 2)

- |               |            |             |
|---------------|------------|-------------|
| 12. Handle ay | 16. Washer | 20. Screw   |
| 13. Ring      | 17. Nut    | 21. Ring    |
| 14. Washer    | 18. Handle | 22. Housing |
| 15. Packing   | 19. Plug   | 23. Gasket  |
|               |            | 24. Cap     |

Figure 4-79. Fuel filter, disassembly (sheet 2 of 2).

c. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

d. *Inspection and Repair.*

- (1) Inspect all parts for wear and damage.
- (2) Repair and/or replace damaged parts.

e. *Assembly.*

- (1) Position filter housing mounting gasket

(23, fig. 4-79) in place and secure housing (22) and ring (21) to filter cap (24) with screws (20). Install drain plug (19) into housing.

(2) Install handle nut (17), washer (16), packing (15), washer (14) and retaining ring (13) on handle (18), then install handle assembly (12).

(3) Install bushings (11 and 10) and adapter (9).

(4) Secure filter bracket (8) to filter assembly with bolts (7) and nuts (6).

(5) Secure filter bracket (5) to assembled unit using bolts (4), washers (3 and 2) and nuts (1).

f. *Installation.*

(1) Position the fuel filter (6, fig. 4-78) on the water heater skid and secure with flatwashers (5), bolts (4), lockwashers (3) and nuts (2).

- (2) Install the nipple (1).

Section XXI. WATER HEATER TRANSFORMER, FUEL PUMP, WATER TEMPERATURE GAGE, WATER CONTROL VALVE LINES AND FITTINGS, WATER LEVEL PLATES AND TUBES, AND WATER LEVEL CONTROL

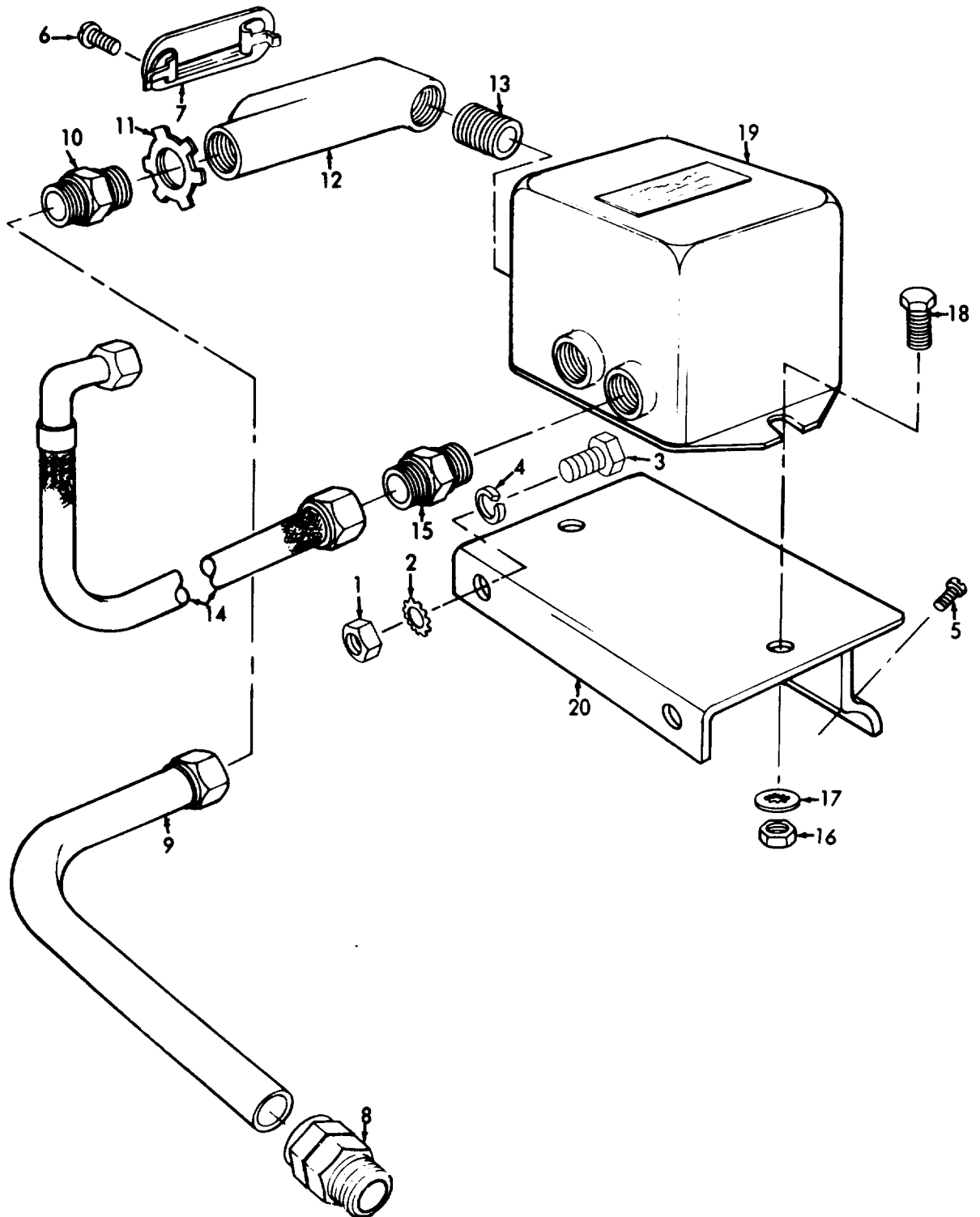
4-60. Water Heater Transformer

a. *Removal.* Remove the nuts (1, fig. 4-80), lockwashers (2 and 4) and screws (3 and 5)

securing the transformer bracket to the water heater, and remove the transformer assembly.

KEY to figure 4-60.

- |               |                 |
|---------------|-----------------|
| 1. Nut        | 11. Keeper lock |
| 2. Lockwasher | 12. outlet      |
| 3. Screw      | 13. Nipple      |
| 4. Lockwasher | 14. Cable       |
| 5. Screw      | 15. Connector   |
| 6. Screw      | 16. Nut         |
| 7. Cover      | 17. Lockwasher  |
| 8. Connector  | 18. Bolt        |
| 9. Tubing     | 19. Transformer |
| 10. Connector | 20. Bracket     |



TS 10-3510-208-12/4-80

Figure 4-80. Water heater transformer, disassembly and reassembly.

*b. Disassembly.*

(1) Remove the screws (6, fig. 4-80) securing the conduit outlet cover (7) to the conduit outlet (12).

(2) Remove the box connector (8), tubing (9), male connector (10), keeper lock (11), conduit outlet (12) and nipple (13) from the power transformer (19).

(3) Remove the ignition cables (14) and male connectors (15) from the power transformer.

(4) Remove nuts (16), lockwashers (17) and bolts (18) and remove the power transformer (19) from the bracket (20).

*c. Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(1) Clean all electrical components with dry compressed air and a clean cloth.

(2) Wipe cables with a clean cloth.

(3) Clean all other parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*d. Inspection and Repair.*

(1) Inspect all parts for damage.

(2) Repair and/or replace damaged parts.

*e. Assembly.*

(1) Position the power transformer (19, fig. 4-80) onto the bracket (20) and secure by installing bolts (18), lockwashers (17) and nuts (16).

(2) Install the male connectors (15) and ignition cables (14) to the power transformer.

(3) Install the nipple (13), conduit outlet (12), keeper lock (11), male connector (10), tubing (9) and box connector (8) to the power transformer (19).

(4) Install the conduit outlet cover (7) to the conduit outlet (12) and secure with screws (6).

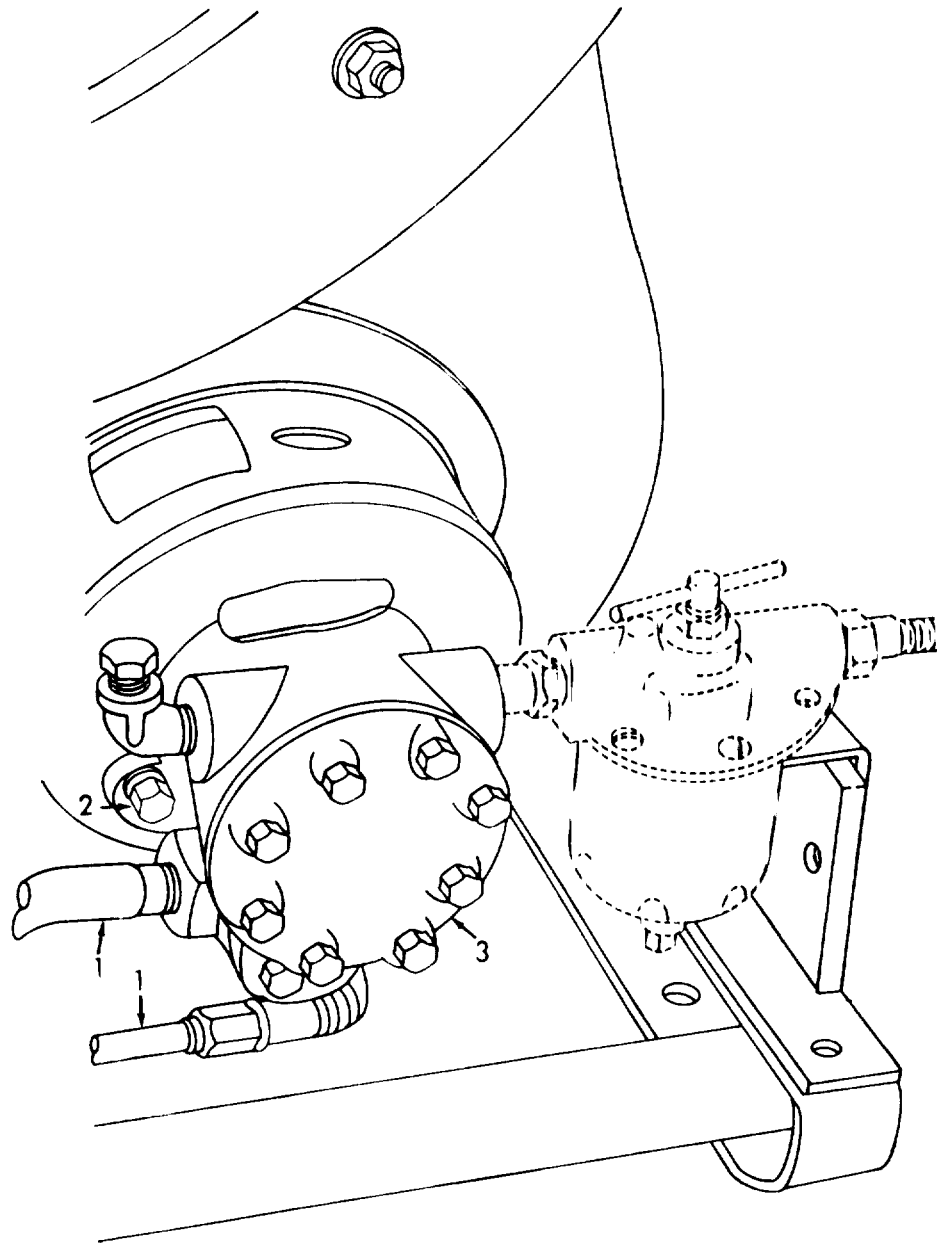
*f. Installation.* Position the transformer assembly onto the water heater, secure the transformer bracket with screws (5 and 3), lockwashers (4 and 2) and nuts (1).

4-61. Water Heater Fuel Pump

*a. Removal.*

(1) Tag and disconnect the lines (1, fig. 4-81) entering the fuel pump.

(2) Remove the two screws (2) securing the fuel pump (3) to the water heater.



TS 10-3510-208-12/4-81

1. Line    2. Screw    3. Pump

Figure 4-81. Fuel pump, removal and installation.

*b. Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used

to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.). Clean the pump with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

- (1) Inspect the fuel pump for damage.
- (2) Replace damaged fuel pump.

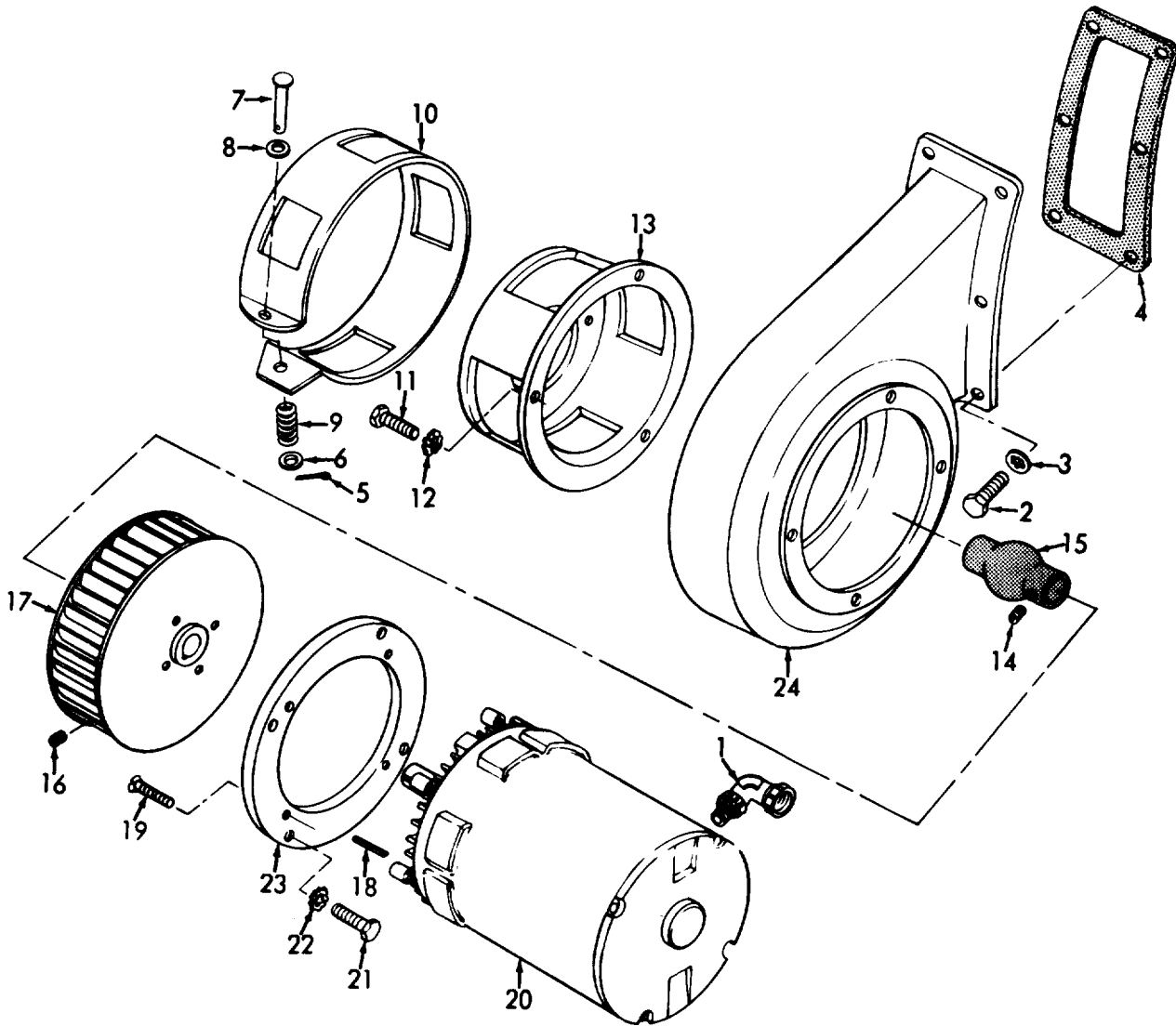
d. Installation.

- (1) Install the fuel pump (3, fig. 4-81) on the water heater and secure with screws (2).
- (2) Reconnect the lines (1) entering the fuel pump.

4-62. Water Heater Blower and Motor

a. Removal.

- (1) Disconnect the connector (1, fig. 4-82) from the blower motor.
- (2) Remove the six bolts (2) and lockwashers (3) and remove the blower and motor the water heater. Remove gasket (4).



TS 10-3510-208-12/4-82

- |               |                |              |                |
|---------------|----------------|--------------|----------------|
| 1. Connector  | 7. Rivet       | 13. Bracket  | 19. screw      |
| 2. Bolt       | 8. Washer      | 14. Setscrew | 20. Motor      |
| 3. Lockwasher | 9. Spring      | 15. Coupling | 21. Bolt       |
| 4. Gasket     | 10. Shutter    | 16. Setscrew | 22. Lockwasher |
| 5. Cotter pin | 11. Bolt       | 17. Wheel    | 23. Plate      |
| 6. Flatwasher | 12. Lockwasher | 18. Key      | 24. Housing    |

Figure 4-82. Water heater blower and motor, removal disassembly, reassembly and installation

*b. Disassembly.*

(1) Remove the cotter pin (5, fig. 4-82), flatwasher (6), rivet (7), washer (8) and spring (9) securing the shutter (10) to its bracket.

(2) Remove the bolts (11) and lockwashers (12) securing the shutter bracket (13) to the blower.

(3) Remove the setscrew (14) securing the coupling (15) to the motor shaft.

(4) Remove the setscrew (16) securing the blower wheel (17) to the motor shaft.

(5) Remove the key (18) from the motor shaft.

(6) Remove the screws (19) securing the motor (20) to the blower.

(7) Remove the bolts (21) and lockwasher (22) securing the motor plate (23) to the housing (24).

*c. Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean all parts of the blower and motor using a clean cloth dampened in cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*d. Inspection.*

(1) Inspect the shutter, and blower housing for cracks, dents, nicks and other damage.

(2) Inspect the blower wheel for cracks, dents, and damaged blades.

(3) Inspect the asbestos gasket for tears, cracks, pitting and wear.

(4) Inspect the motor and motor plate for cracks, dents, scores and other damage.

(5) Inspect all hardware for thread damage.

*e. Repair.*

(1) Repair and/or replace a damaged shutter, housing, wheel, motor or motor plate.

(2) Replace all missing or damaged hardware and gasket.

*f. Assembly.*

(1) Secure motor plate (23, fig. 4-82) to housing (24) with washers (22) and bolts (21).

(2) Secure motor (20) to blower with screws (19).

(3) Install key (18) in slot on motor shaft and install blower wheel (17) on shaft. Secure with setscrew (16).

(4) Install coupling (15) on motor shaft and secure with setscrew (14).

(5) Install shutter bracket (13) with washers (12) and bolts (11).

(6) Install shutter (10) and secure with spring (9), washer (8), rivet (7), washers (6) and cotter pins (5).

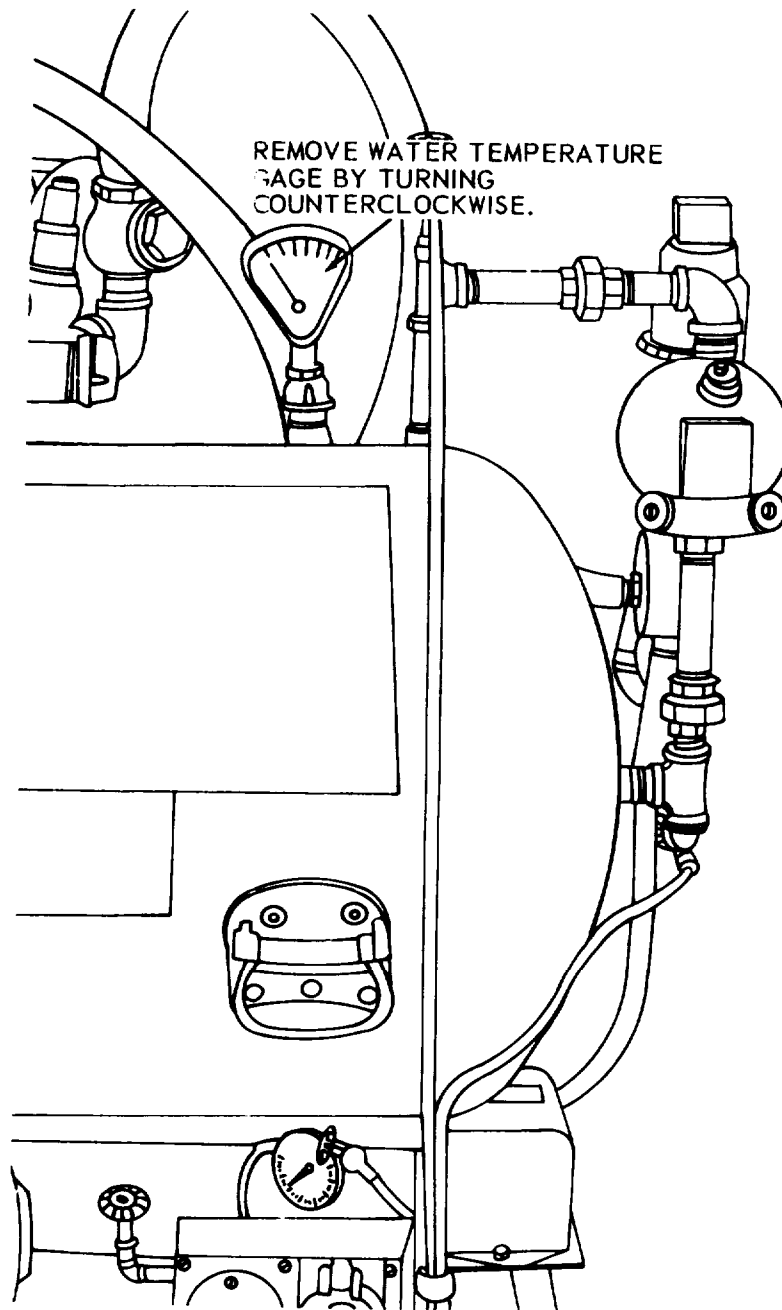
*g. Installation.*

(1) Install the gasket (4, fig. 4-82) and blower and motor on water heater and secure with lockwashers (3) and bolts (2).

(2) Reconnect the connector on the blower motor.

4-63. Water Temperature Gage

*a. Removal.* Refer to figure 4-83 and remove the water temperature gage.



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Figure 4-83. Water temperature gage, removal and installation

*b. Charting.* Clean the gage with dry compressed air and a clean cloth.

*c. Inspection and Repair.*

- (1) Inspect the temperature gage for damage.
- (2) Replace a damaged temperature gage.

*d. Installation.* Refer to figure 4-83 and install the water temperature gage.

4-64. Water Control Valve Lines, and Fittings

*a. Removal.* Refer to figure 4-84 and remove the water control valve lines and fittings.



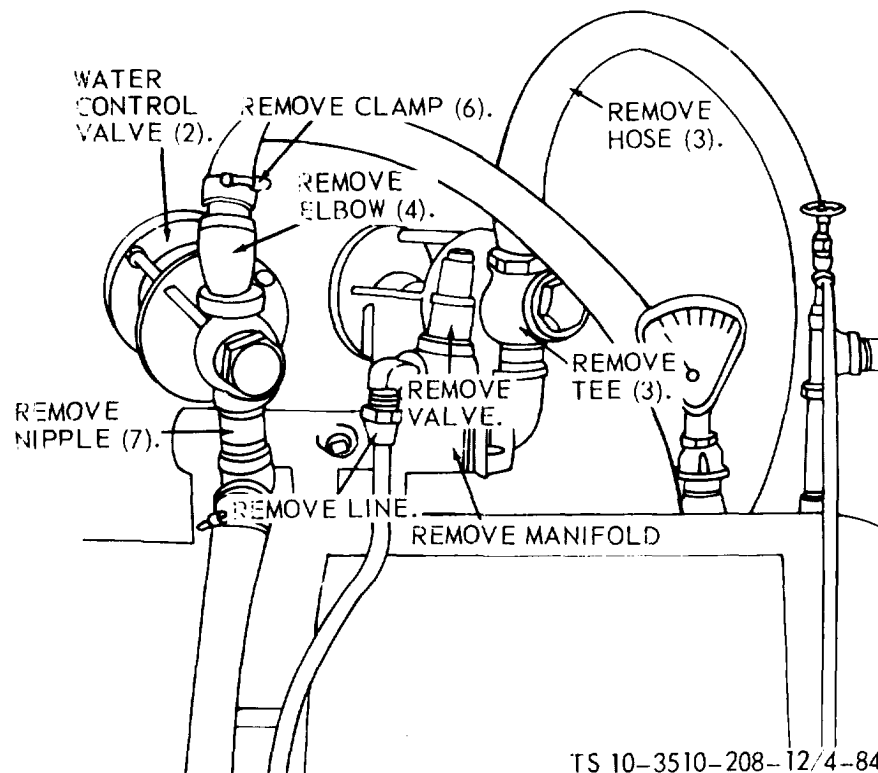


Figure 4-84. Water control valve lines, and fittings, removal and installation.

b. *Cleaning.* Clean all lines using a clean cloth.

c. *Inspection and Repair.*

(1) Inspect all lines and fittings for damage.

(2) Replace all damaged lines and fittings.

d. *Installation.* Refer to figure 4-79 and install the water control fittings and valve lines.

#### 4-65. Water Level Plates and Tubes

a. *Removal and Disassembly.*

(1) Remove the screws (1, fig. 4-85) securing the water level control cover (2) to water level control assembly.

(2) Tag and disconnect all wiring going to the water level control assembly.

(3) Disconnect the two hoses (3) from the water level switches and the water level air tubes.

(4) Remove the screws (4) and lockwashers (5)

securing the switch fingers (6) and water level switches (7) to the switch mounting plate.

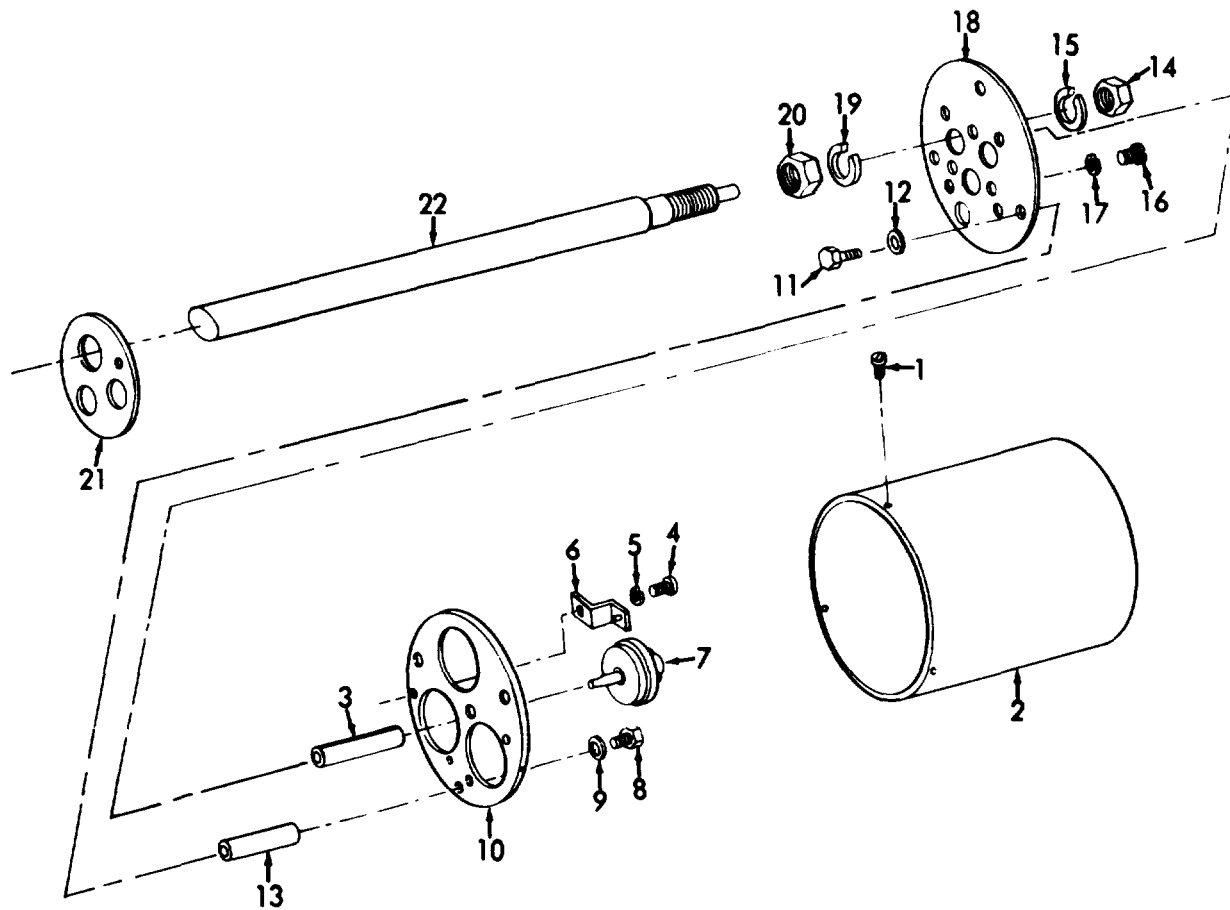
(5) Remove the bolts (8) and lockwashers (9) securing the switch mounting plate (10) to the plate separators.

(6) Remove the screws (11) and lockwashers (12) securing the plate separators (13) to the cover plate.

(7) Remove the nuts (14) and lockwashers (15) from the air tubes.

(8) Remove the screws (16) and lockwashers (17) securing the cover plate (18) to the water container.

(9) Remove the lockwashers (19), nuts (20) and tube separator (21) from the water level air tubes (22).



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- |               |               |                |                |
|---------------|---------------|----------------|----------------|
| 1. screw      | 7. Switch     | 12. Lockwasher | 17. Lockwasher |
| 2. cover      | 8. Bolt       | 13. Separators | 18. Plate      |
| 3. Hose       | 9. Lockwaeher | 14. Nut        | 19. Lockwasher |
| 4. screw      | 10. Plate     | 15. Lockwasher | 20. Nut        |
| 5. Lockwasher | 11. screw     | 16. Screw      | 21. Separator  |
| 6. Finger     |               |                | 22. Tube       |

Figure 4-85. Water level plates and tubes, removal disassembly, reassembly and installation.

b. Cleaning, Clean all parts with dry compressed air and a clean cloth.

c. Inspection and Repair.

(1) Inspect all parts for damage.

(2) Repair and/or replace damaged parts as necessary.

d. Assembly and Installation.

(1) Install the tube separator (21, fig. 4-85), nuts (20) and lockwashers (19) on the water level air tubes (22).

(2) Install the cover plate (18) and secure with lockwashers (17) and screws (16),

(3) Install the lockwashers (15) and nuts (14) on the air tubes.

(4) Install the plate separators (19) on the cover plate and secure with lockwashers (12) and screws (11).

(5) Install the switch mounting plate (10) on the plate separators and secure with lockwashers (9) and bolts (8).

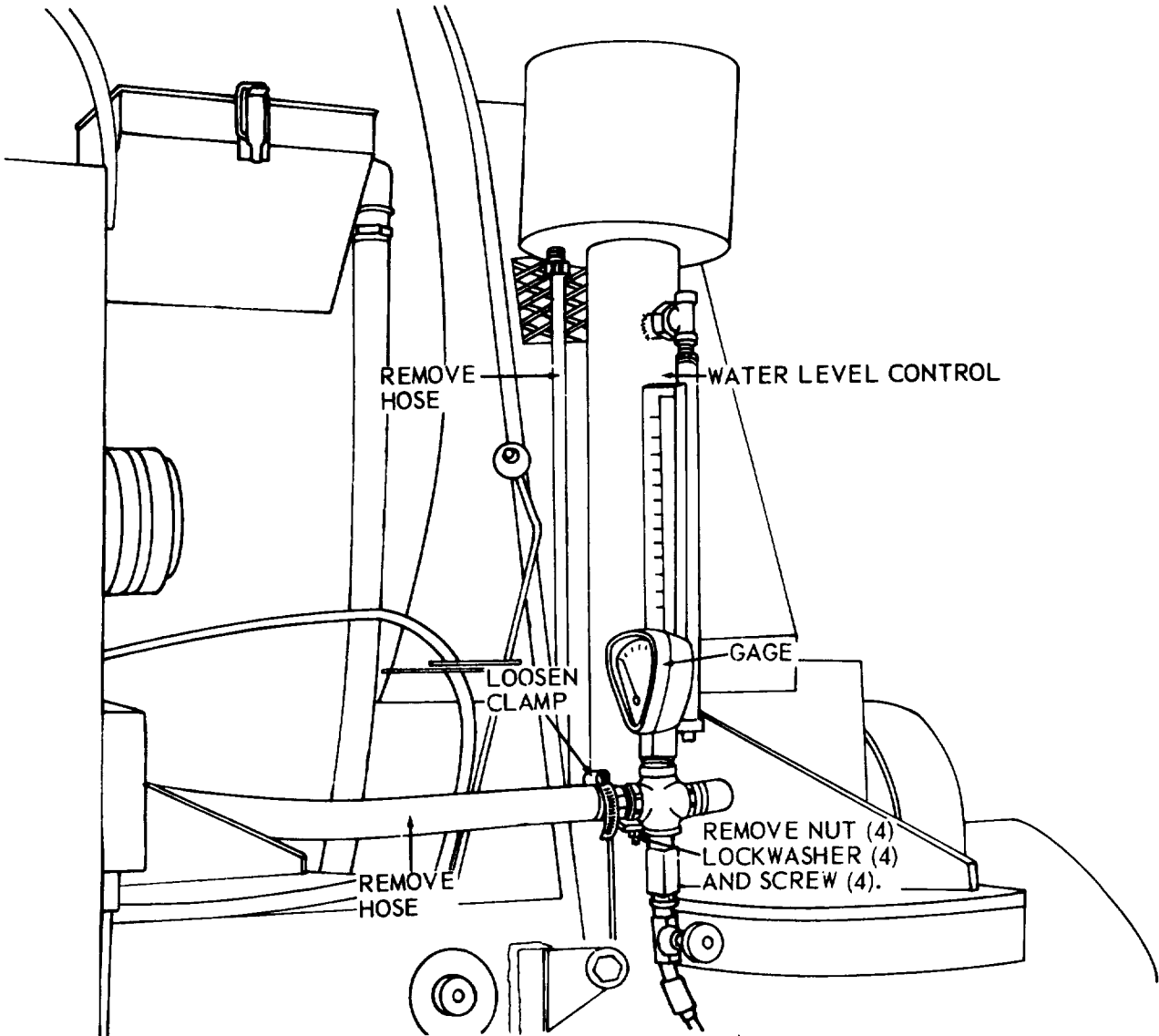
(6) Install the water level switches (7) and switch fingers (6) on the switch mounting plate and secure with lockwashers (5) and screws (4).

(7) Reconnect the water level hoses (3).

- (8) Reconnect all disconnected wiring.
- (9) Secure the water level control cover (2) by installing screws (1).

4-66. Water Level Control

- a. Removal. Refer to figure 4-86 and remove the water level control.



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Figure 4-86 Water level control removal and installation.

b. Disassembly.

- (1) Remove the hoses adapter (1, fig. 4-87), elbow (2) and nipple (3) from the gate valve (4).
- (2) Remove the gate valve (4), nipple (5), bushing, (6), Coupling (7) and nipple (8) from the cross (11).
- (3) Remove the hose adapter (9) and temperature gage (10) from the cross (11).
- (4) Remove the cross (11), nipple (12), elbow

(13) and pipe nipple (14) from the water container (35).

(5) Remove the pipe plugs (15 and 16) from their union tees.

(6) Back off the sight gage bushings (24 and 27) from the glass guard (23) freeing the water level sight assembly (17).

(7) Remove the mounting rings (18 and 20),

**TM 10-3510-208-12**

packings (19 and 21) and sight glass (22) from the sight glass guard (23).

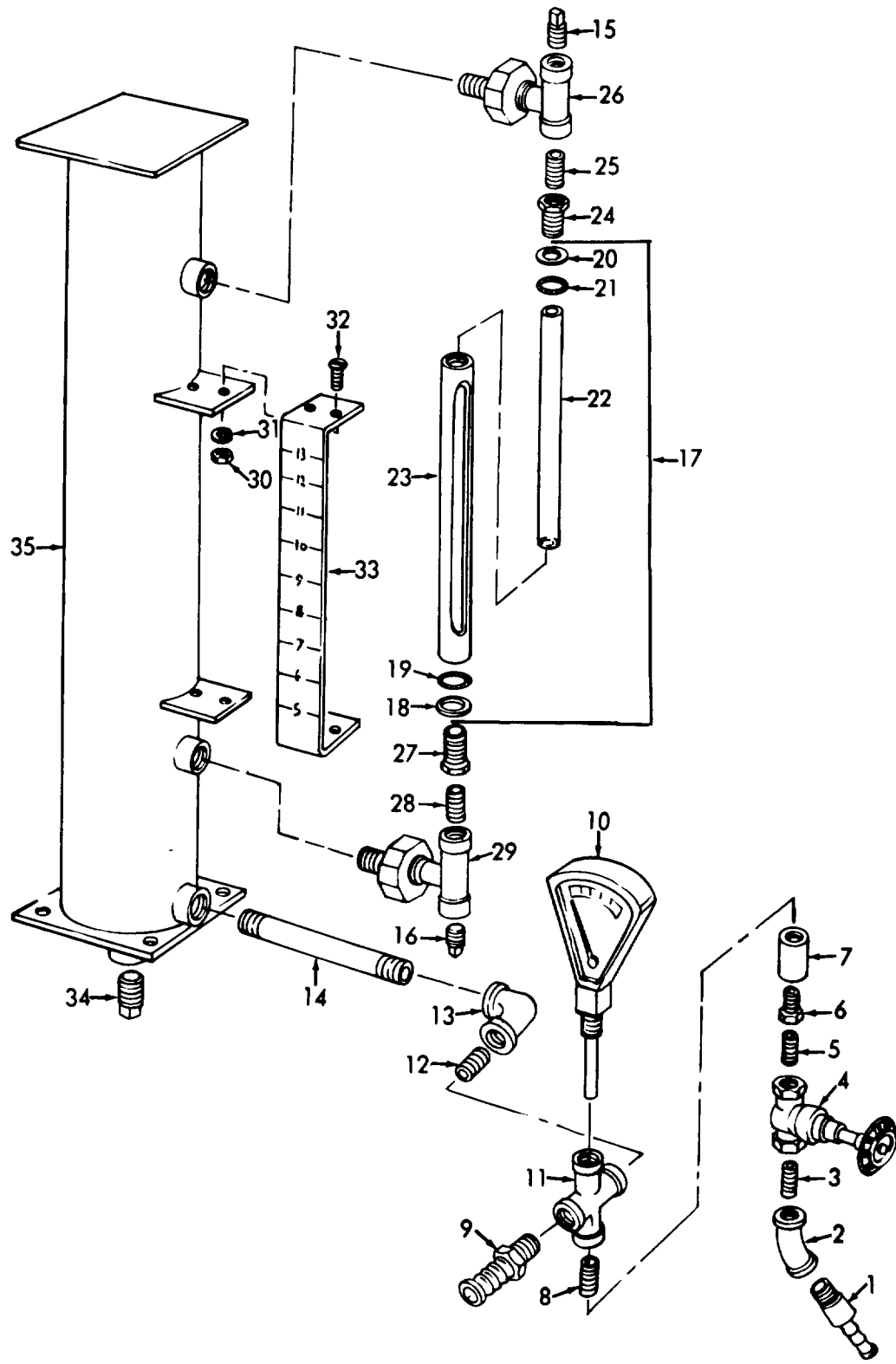
(8) Remove the bushings (24 and 27), nipples (25 and 28) and union tees (26 and 29) from the water container (35).

(9) Remove nuts (30), lockwashers (31) and screws (32) and remove the water height graduator (33).

(10) Remove the drain plug (34) from the water container (35).

**KEY to figure 4-87**

- |             |              |                |
|-------------|--------------|----------------|
| 1. Adapter  | 13. Elbow    | 25. Nipple     |
| 2. Elbow    | 14. Nipple   | 26. Tee        |
| 3. Nipple   | 15. Plug     | 27. Bushing    |
| 4. Valve    | 16. Plug     | 28. Nipple     |
| 5. Nipple   | 17. Sight ay | 29. Tee        |
| 6. Bushing  | 18. Ring     | 30. Nut        |
| 7. Coupling | 19. Packing  | 31. Lockwasher |
| 8. Nipple   | 20. Ring     | 32. Screw      |
| 9. Adapter  | 21. Packing  | 33. Graduator  |
| 10. Gage    | 22. Glass    | 34. Plug       |
| 11. Cross   | 23. Guard    | 35. Container  |
| 12. Nipple  | 24. Bushing  |                |



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Figure 4-87. Water level control, disassembly and reassembly.

*c. Cleaning.*

**WARNING**

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Clean all parts of the water level control, with dry compressed air and a clean cloth and dry thoroughly.

*d. Inspection.*

- (1) Inspect the water container for cracks, dents, nicks and other damage.
- (2) Inspect the air hoses and packing and other parts for cracks, pits, holes and other leak causing conditions.
- (3) Inspect all hardware and piping for thread damage.

*e. Repair.*

- (1) The water container, if damaged, should be replaced.
- (2) Replace all damaged hardware and piping.

*f. Assembly.*

- (1) Install the drain plug (34, fig. 4-87) in the water container (35).
- (2) Position the water height graduator (33) on the water container and secure with screws (32), lockwashers (31) and nuts (30).

(3) Install the union tees (26 and 29), nipples (25 and 28) and bushings (24 and 27) onto the water container (35).

(4) Install the sight glass (22), packings (19 and 21) and mounting rings (18 and 20) in the sight glass guard (23).

(5) Position the water level sight assembly (17) with the sight gage bushings (24 and 27) contacting the glass guard (23), then insert and tighten the bushings to secure.

(6) Install the pipe plugs (15 and 16, fig. 4-87).

(7) Install the pipe nipple (14), elbow (13), nipple (12) and cross (11) on water container (35).

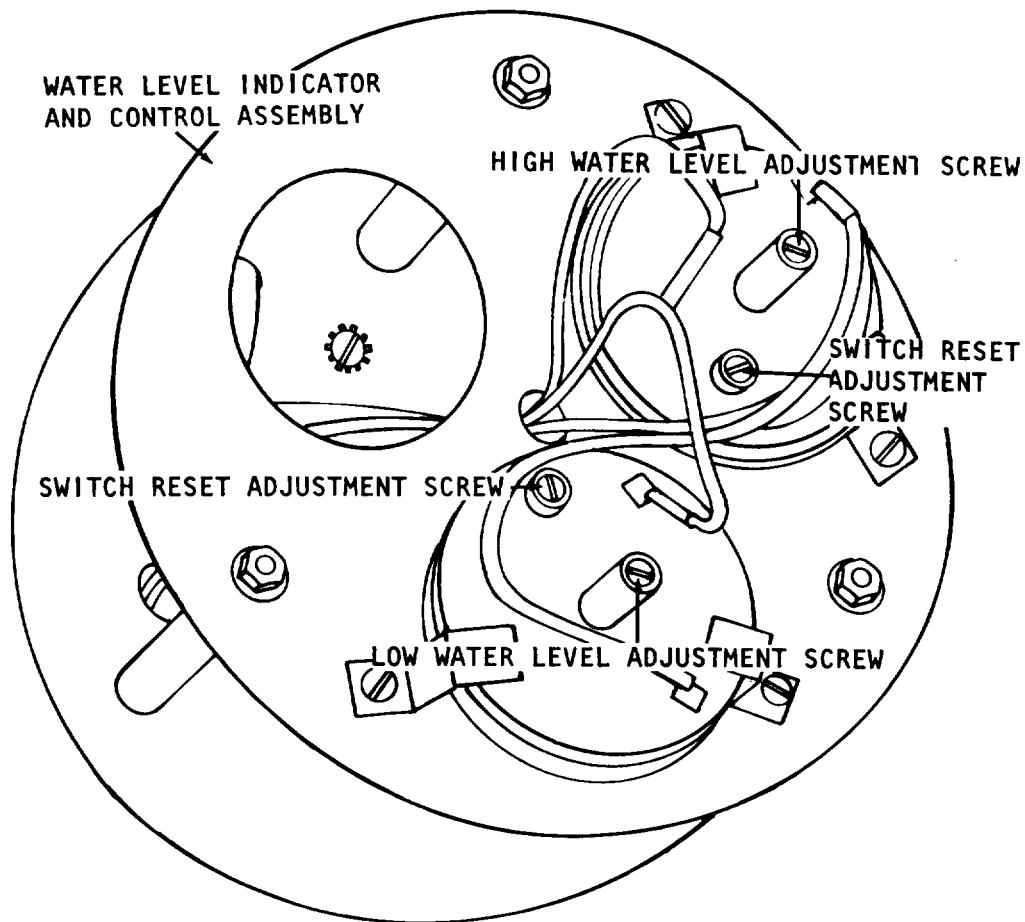
(8) Install the temperature gage (10) and hose adapter (9) on cross (11).

(9) Install the nipple (8), coupling (7), bushing (6), nipple (5) and gate valve (4).

(10) Install the nipple (3), elbow (2) and hose adapter (1) on the gate valve (4).

*g. Installation.* Refer to figure 4-66 and install the water control level.

*h. Adjustment.* Refer to figure 4-88 and the below listed instructions to adjust the water level control.



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Figure 4-88 Water level indicator and control assembly adjustment.

**NOTE**

For all adjustments completely drain the washer then refill for water level check. The unit water level at high setting should be 11 in. (27.94 cm) from inside tub surface. The lower end of measuring device is on the tub surface and not housing stud plate. The low level should be 7 in. (17.78cm). Tolerances are  $\pm 1/4$  in. (0.64cm).

(1) Adjust (upper) high level adjustment screw to obtain 11 inch (27.94 cm) water level. Rotation of screw clockwise will increase water level, while counterclockwise will decrease water level. One eighth (1/8) turn will vary water level approximately one-fourth (1/4) inch (0.64 cm). Repeat adjustment until desired level is obtained.

(2) Adjust switch reset adjustment screw (similar step) same as the high level adjust screw above. This adjustment is necessary to assure that pressure switch will reset or close its contacts during unit draining or water level change,

(3) Adjust (lower) low level adjustments screw to obtain 7 inch (17.78 cm) water level. Repeat adjustments until 7 inch level  $\pm 1/4$  inch (17.78 $\pm$  0.64 cm) is obtained.

(4) Make similar adjustments in same directions on switch reset screw. Adjust until opening and closing of reset switch insured.

Section XXII. WASHER-EXTRACTOR CONTROLS AND INSTRUMENTS AND  
CONTROL BOX COMPONENTS

4-67. Washer-Extractor Controls and Instruments  
and Control Box Components

a. Panel Light

(1) *Removal.* Refer to figure 4-89 and the following instructions to remove the formatrol panel light.

(a) Tag and disconnect electrical leads from the formatrol panel light.

(b) Remove bulb by depressing and turning counterclockwise.

(c) Remove the nut and washer securing the lamp socket to the lamp bracket.

(d) Remove the lamp socket.

(2) *Installation.*

(a) Position the lamp socket in place on the lamp bracket.

(b) Secure lamp socket to the lamp bracket with washer and nut.

(c) Install bulb in socket by depressing and turning clockwise.

(d) Reconnect leads to the formatrol panel light.

b. Washer Reversing Switch.

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the washer reversing switch.

(a) Tag and disconnect leads from the washer reversing switch.

(b) Remove the screws and washers that secure the washer reversing switch on the mounting plate.

(c) Remove the washer reversing switch.

(2) *Installation.*

(a) Position the washer reversing switch in place on the mounting plate.

(b) Secure with washers and screws.

(c) Reconnect leads to the washer reversing switch.

c. Signal Light.

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the signal light.

(a) Tag and disconnect leads from the signal light.

(b) Remove the shield from the signal light.

(c) Remove bulb from signal light socket by depressing and turning counterclockwise.

(d) Remove locking nut securing the signal light to the control box.

(e) Remove the signal light.

(2) *Installation.*

(a) Position the signal light in place and secure with locking nut.

(b) Install bulb by depressing in socket and turning clockwise.

(c) Install shield.

(d) Reconnect leads to the signal light.

d. Auto-Manual Switch.

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the auto-manual switch.

(a) Tag and disconnect leads from the auto-manual switch.

(b) Remove the locking nut securing the auto-manual switch to the control box.

(c) Remove the auto-manual switch.

(2) *Installation.*

(a) Position the auto-manual switch in place and secure with locking nut.

(b) Reconnect leads to the auto-manual switch.

e. Wash and Pre-Extract Switch.

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the wash and pre-extract switch.

(a) Tag and disconnect leads from the wash and pm-extract switch.

(b) Remove the locking nut securing the wash and pre-extract switch to the control box.

(c) Remove the wash and pre-extract switch.

(2) *Installation.*

(a) Position the wash and pre-extract switch in place on the control box and secure with locking nut.

(b) Reconnect leads.

f. Brake-Drain Switch.

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the brake-drain switch.

(a) Tag and disconnect leads from the brake-drain switch,

(b) Remove the locking nut securing the brake-drain switch to the control box.

(c) Remove the brake-drain switch.

(2) *Installation.*

(a) Position the brake-drain switch in place and secure with locking nut.

(b) Reconnect leads to the brake-drain switch.

g. Extract Switch.

(1) *Removal.* Refer to figure 4-90 or 4-91 and



the following instructions to remove the extract switch.

(a) Tag and disconnect leads from the extract switch.

(b) Remove the locking nut securing the extract switch to the control box.

(c) Remove the extract switch.

(2) *Installation.*

(a) Position the extract switch in place and secure with locking nut.

(b) Reconnect leads to the extract switch.

*h. Hot Water Switch.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the hot water switch .

(a) Tag and disconnect leads from the hot water switch.

(b) Remove the screws and washers securing the nameplate to the control box.

(c) Remove the nameplate.

(d) Remove the screws securing the hot water switch to the control box.

(e) Remove the hot water switch.

(2) *Installation.*

(a) Position the hot water switch in place on the control box.

(b) *Secure* with screws.

(c) Position the nameplate in plain on the control box.

(d) Secure with washers and screws.

(e) Reconnect leads to the hot water switch.

*i. Cold Water Switch.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the cold water switch.

(a) Tag and disconnect leads from the cold water switch.

(b) Remove the screws and washers securing the nameplate to the control box.

(c) Remove the nameplate.

(d) *Remove* the screws securing the cold water switch to the control box.

(e) Remove the cold water switch.

(2) *Installation.*

(a) Position the cold water switch in place on the control box.

(b) Secure with screws.

(c) Position the nameplate in place on the control box.

(d) *Secure* with washers and screws.

(e) Reconnect leads to the cold water Switch.

*j. Signal Switch.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the signal switch,

(a) Tag and disconnect leads from the signal switch.

(b) Remove the screws and washers securing the nameplate to the control box.

(c) Remove the nameplate.

(d) Remove the screws securing the signal switch to the control box.

(e) Remove signal switch.

(2) *Installation.*

(a) Position signal switch in place on the control box.

(b) Secure with screws.

(c) Position nameplate in place on the control box.

(d) Secure with washers and screws.

(e) Reconnect leads to the signal switch.

*k. Reversing Timer.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the reversing timer .

(a) Tag and disconnect leads from the reversing timer.

(2) Remove the screws and washers securing the reversing timer to the control panel.

(c) Remove the reversing timer.

(2) *Installation.*

(a) Position the reversing timer in place on the control panel.

(b) Secure with washers and screws.

(c) Reconnect leads to the reversing timer.

*l. Terminal Block.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the terminal block.

(a) Tag and disconnect leads from the terminal block.

(b) Remove the screws and washers that secure the terminal block to the control panel.

(c) Remove the terminal block.

(2) *Installation.*

(a) Position the terminal block in place on the control panel.

(b) Secure with washers and screws.

(c) Reconnect leads to the terminal block.

*m. Extractor Starter.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the extractor starter.

(a) Tag and disconnect leads from the extractor starter.

(b) Remove the screws and washers that secure the extractor starter to the control panel.

(c) Remove the extractor starter.

(2) *Installation.*

(a) Position the extractor starter in place on the control panel.

- (b) Secure with washers and screws.
- (c) Reconnect leads to the extractor starter.

*n. Fuseholder.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the fuseholder.

- (a) *Remove* the fuses from the fuseholder.
- (b) Tag and disconnect leads from the fuseholder.
- (c) Remove the screws and washers which secure the fuseholder to the control panel.
- (d) Remove the fuseholder.

(2) *Installation.*

- (a) Place the fuseholder in place on the control panel.
- (b) Secure with washers and screws.
- (c) Reconnect leads to the freeholder.
- (d) Install fuses in the fuseholder.

*o. Transformer.*

(1) *Removal.* Refer to figure 4-90 and 4-91 and the following instructions to remove the transformer.

- (a) Tag and disconnect leads from the transformer.
- (b) Remove the screws and washers that secure the transformer to the control panel.
- (c) Remove the transformer.

(2) *Installation.*

- (a) Position the transformer in place on the control panel.
- (b) Secure transformer with washers and screws.
- (c) Reconnect leads to the transformer.

*p. Relay.*

(1) *Removal* Refer to figure 4-90 or 4-91 and remove the relay by pulling straight out to release the relay from the socket.

(2) *Installation.* Push relay into the socket using a straight forward motion.

*q. Magnetic Control Solenoid and Air Valves.*

(1) *Removal.*

(a) Refer figure 4-90 for Eidal Model and the following instructions to remove the magnetic control solenoids and air valves.

1. Tag and disconnect leads from magnetic control valve.
2. Unscrew the control valve from the air valve.
3. Remove the air line from the air valve.
4. Unscrew the air valve from the air manifold assembly.

(b) Refer to figure 4-91 for Edro Model and remove the magnetic control solenoids and air valves in the same manner as stated above.

(2) *Installation.*

- (a) Install the air valve in the air manifold assembly.
- (b) Install the air line to the air valve.
- (c) Install the magnetic control valve to the air valve,
- (d) Reconnect leads

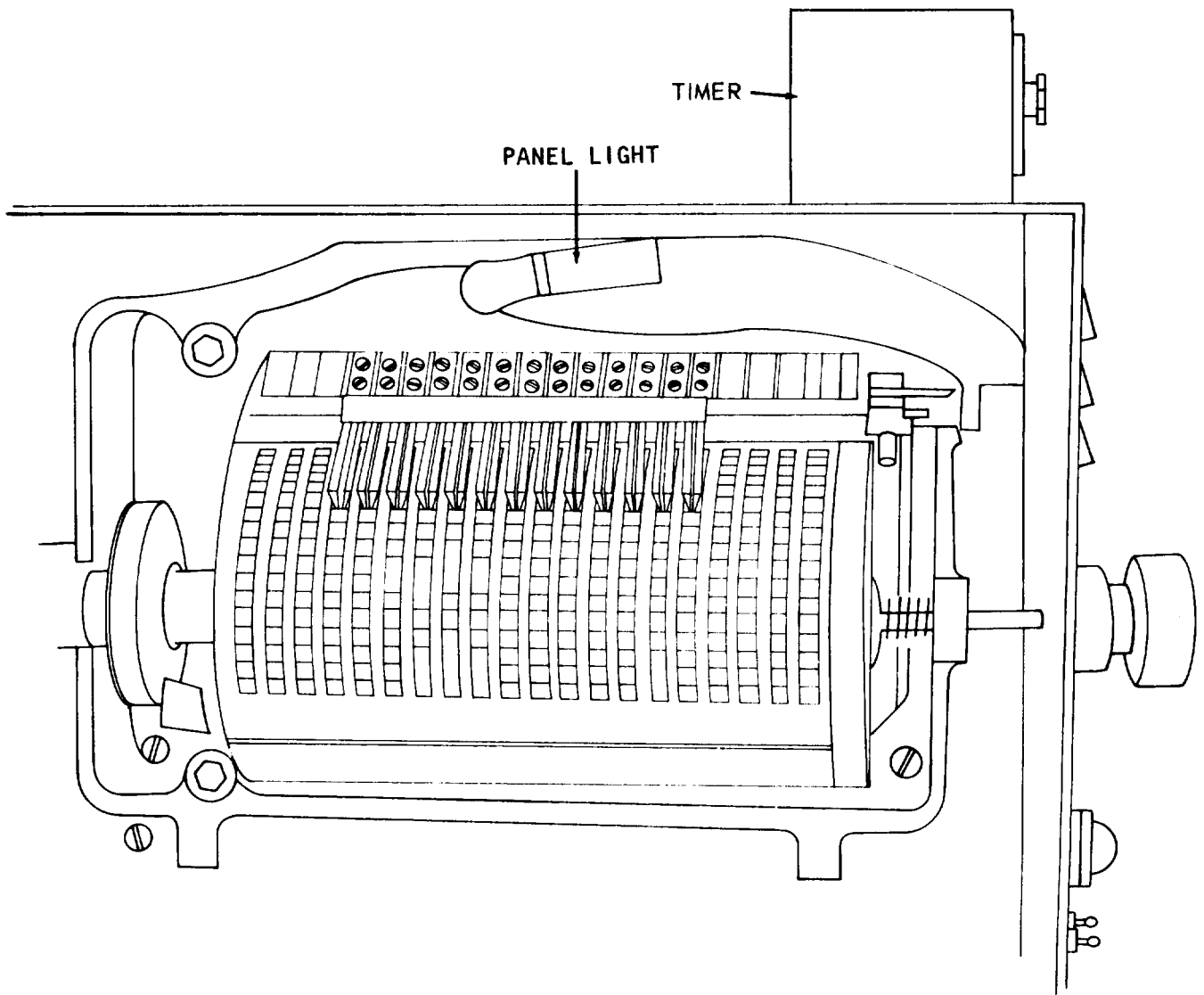
*r. Washer Motor Forward Contactor.*

(1) *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the washer motor forward contactor.

- (a) Tag and disconnect leads from the washer motor forward contactor.
- (b) Remove the screws and washers that secure the washer motor forward contactor to the control panel.
- (c) Remove the washer motor forward contactor.

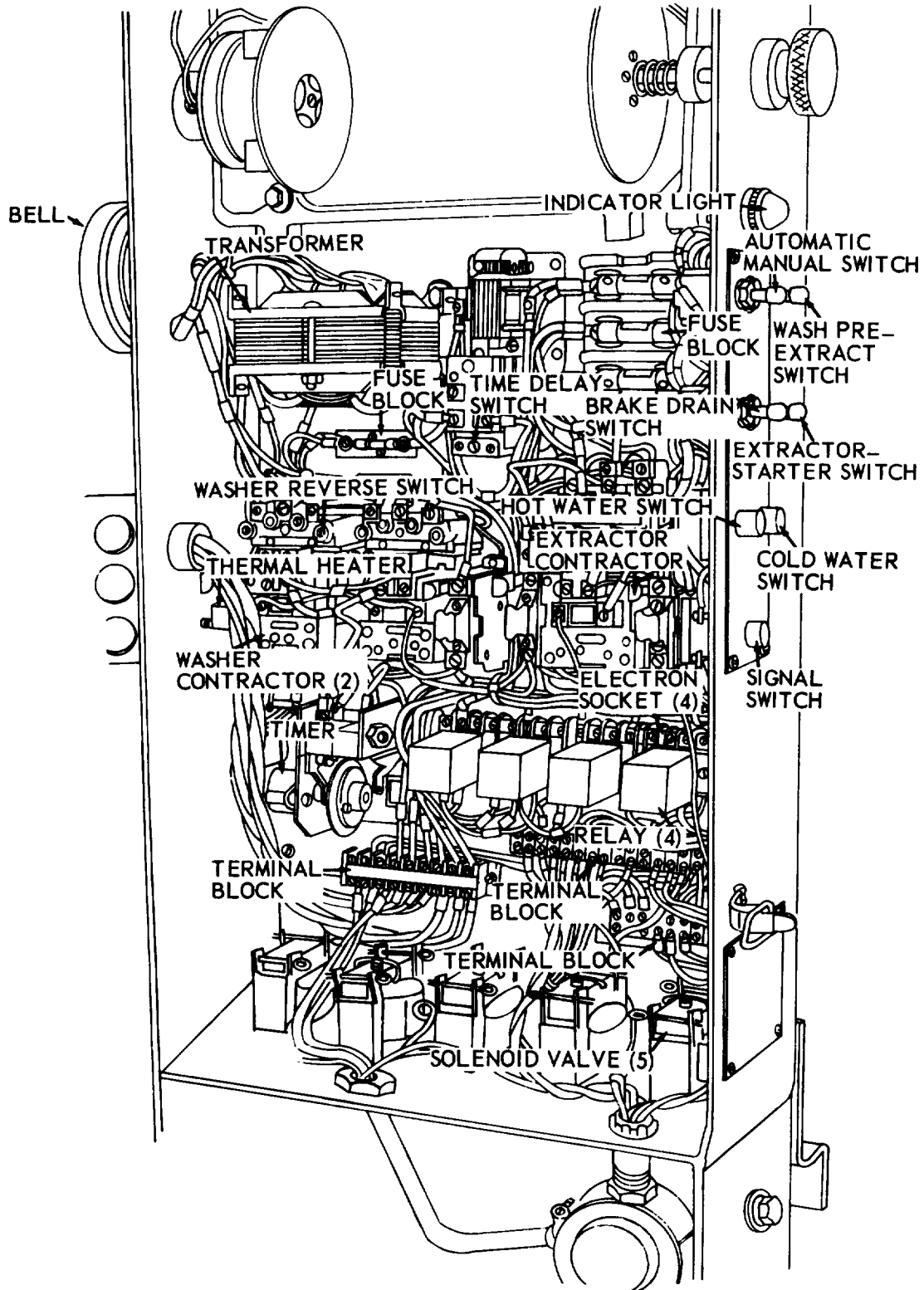
(2) *Installation.*

- (a) Position the washer motor forward contactor in place on the control panel.
- (b) Secure the contactor to the control panel with washers and screws.
- (c) Reconnect leads to the washer motor forward contactor.



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Figure 4-89. Inside washer-extractor upper control box components and controls, removal and installation.



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Figure 4-90. Inside washer-extractor lower control box components and controls, removal and installation (Eidal Model ELT9T).

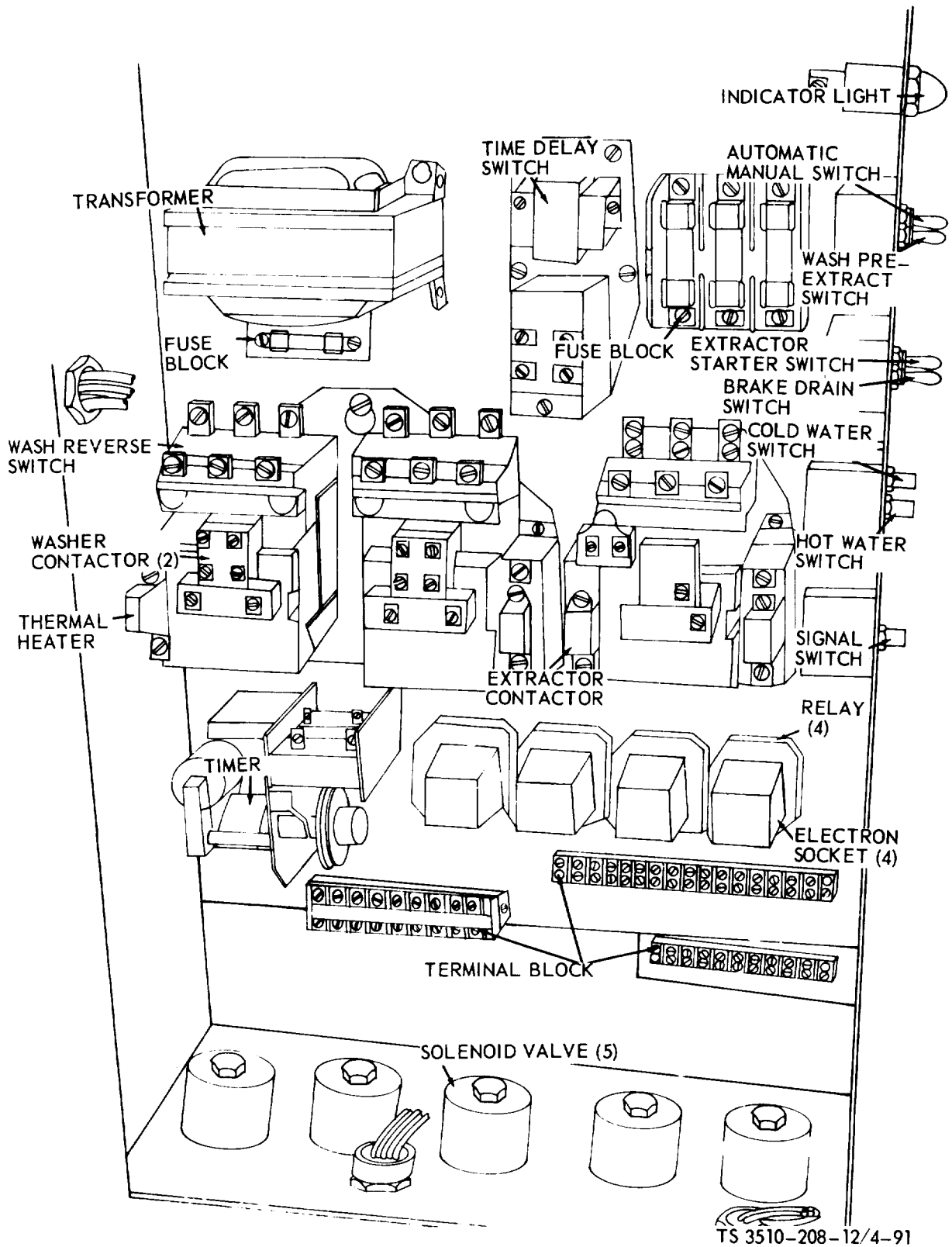


Figure 4-91. Inside washer-extractor lower control box components and controls, removal and installation (Edro Model EP120-LTU).

4-68. Warning Bell

a. *Removal.* Refer to figure 4-92 and the following instructions to remove the warning bell.

(1) Tag and disconnect leads from the alarm bell.

(2) Remove the screws and washers securing the alarm bell to the control box.

(3) Remove the alarm bell.

b. *Installation.*

(1) Position the alarm bell in place on the control box.

(2) Secure with washers and screws.

(3) Reconnect leads to the alarm bell.

4-69. Washer-Extractor Electric Timer

a. *Removal.* Refer to figure 4-90 or 4-91 and the following instructions to remove the tumbler electric timer.

(1) Tag and disconnect all necessary leads from the washer-extractor timer.

(2) Remove the screws and washers which secure the timer to the control panel.

(3) Remove the timer.

b. *Installation.*

(1) Position the washer-extractor timer in place on the control panel.

(2) Secure with washers and screws.

(3) Reconnect all leads.

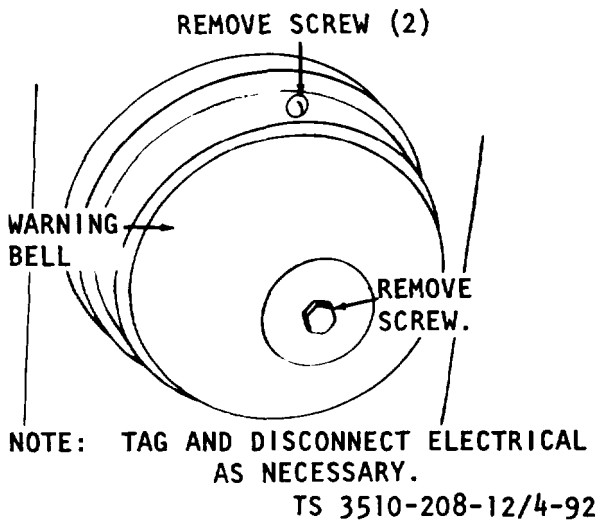


Figure 4-92. Warning bell, removal and installation.

Section XXIII. AIR LINES, WASHER-EXTRACTOR MSIN DRIVE BRAKE ASSEMBLY, MAIN DRIVE BELT ISLER PULLEY, AIR CYLINDER AND MAIN DRIVE SHEAVE, DOOR ASSEMBLY, AND VALVE DRAIN ASSEMBLY

4-70. Air Lines

a. *Removal.* Refer to figure 4-93 and remove the air lines in the numerical sequence indicated.

b. *Cleaning.*

**WARNING**

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

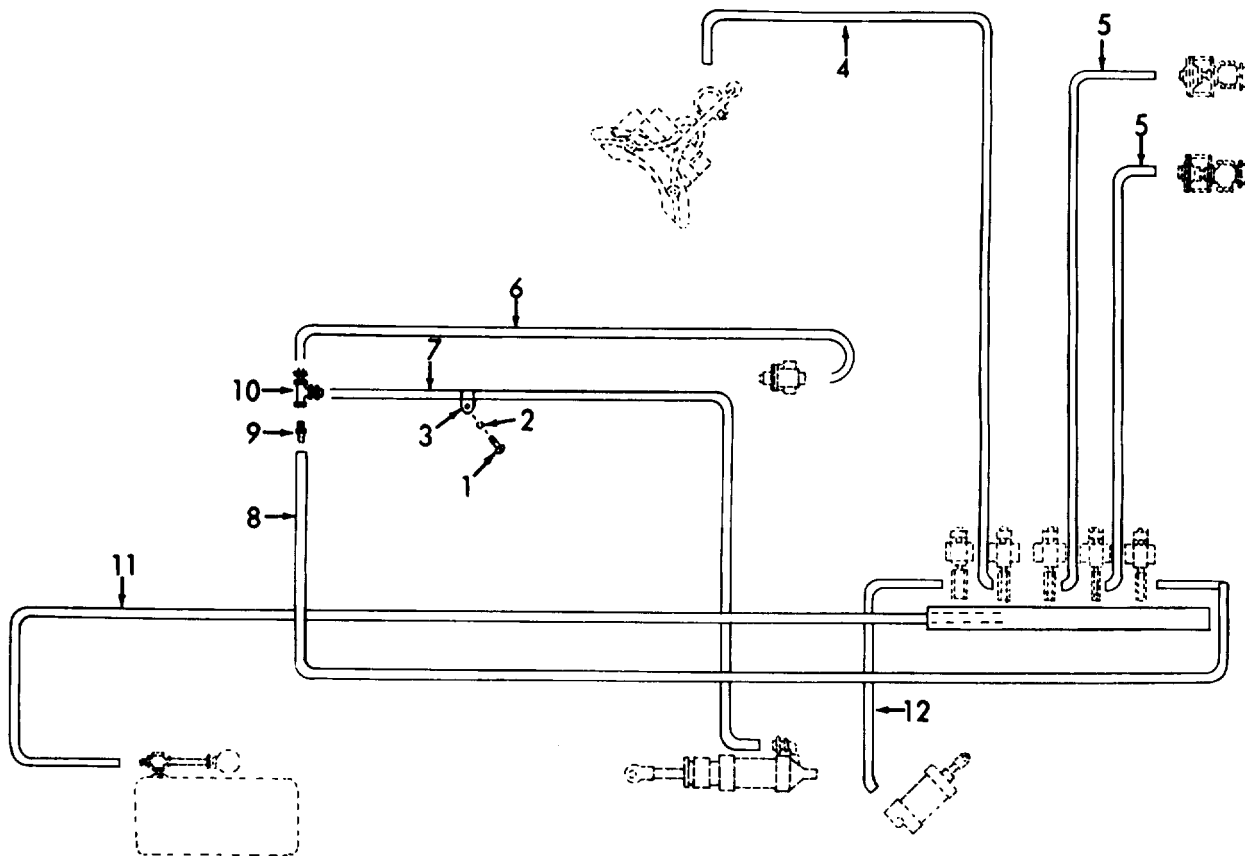
Clean parts using dry compressed air and a clean cloth.

c. *Inspection and Repair.*

(1) Inspect the hoses and hardware for

(2) Replace parts as necessary.

d. *Installation.* Refer to figure 4-93 and install the air lines in the reverse of numerical sequence indicated ,



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- |               |         |           |
|---------------|---------|-----------|
| 1. Screw      | 5. Hose | 9. Nipple |
| 2. Lockwasher | 6. Hose | 10. Tee   |
| 3. Clamp      | 7. Hose | 11. Hose  |
| 4. Hose       | 8. Hose | 12. Hoes  |

Figure 4-93. Air lines, removal and installation

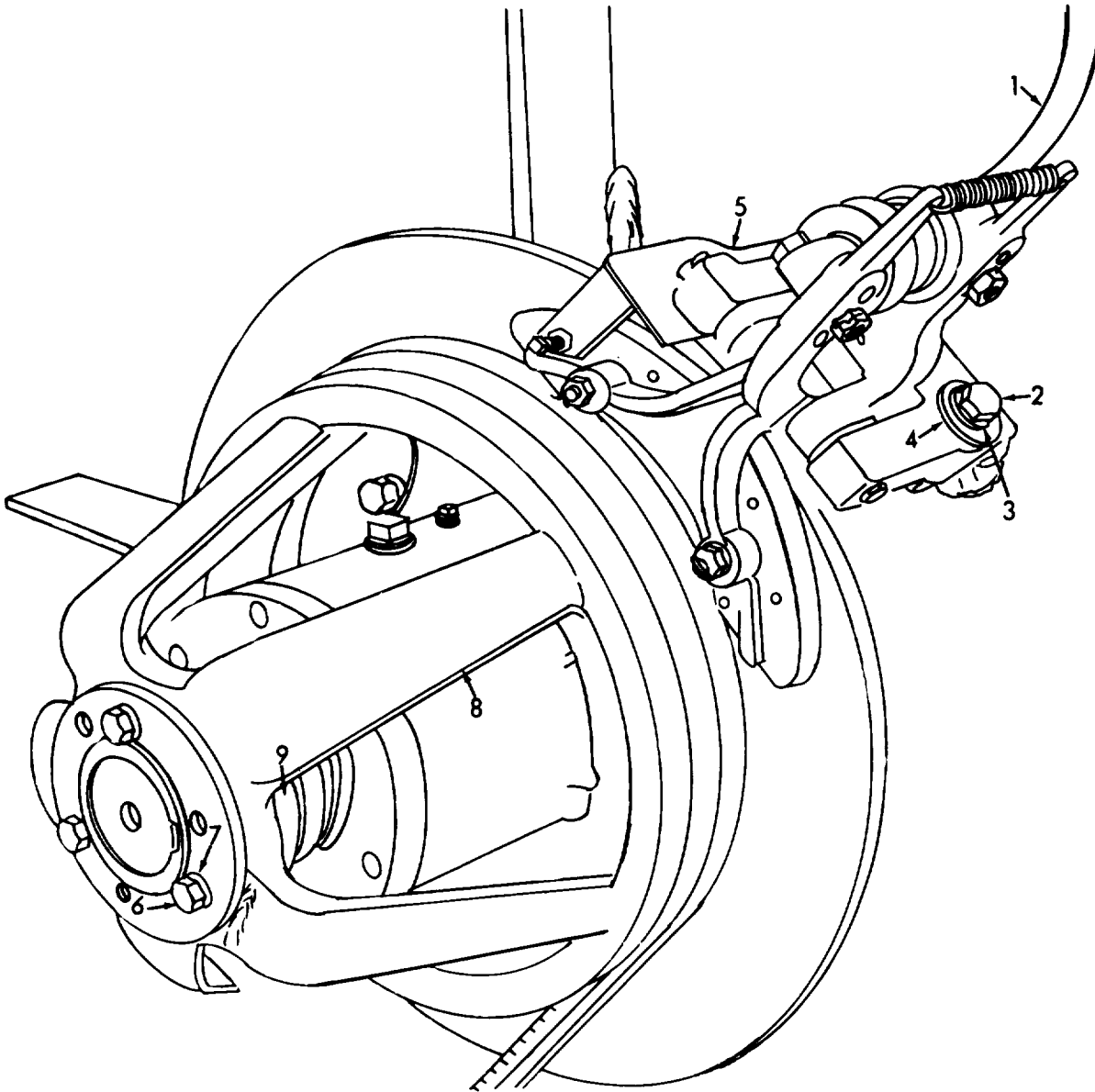
**4-71. Washer-Extractor Main Drive Brake Assembly**

*a Removal.*

- (1) Tag and disconnect the hose (1, fig. 4-94) going to the air brake cylinder, remove the belts.
- (2) Remove the bolts (2), lockwashers (3) and

flatwashers (4) securing the air brake cylinder and shoe assembly (5) to the washer-extractor.

(3) Remove the bolts (6), and lockwashers (7) securing the main drive sheave (8) and its hub (9) to the washer-extractor.



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- |               |                                   |               |
|---------------|-----------------------------------|---------------|
| 1. Hose       | 4. Flatwasher                     | 7. Lockwasher |
| 2. Bolt       | 5. Air brake cylinder and shoe ay | 8. Sheave     |
| 3. Lockwasher | 6. Bolt                           | 9. Hub        |

Figure 4-94. Main drive broke assembly, removal and installation.

b. Cleaning.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).



Clean the main drive brake assembly with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

c. *Inspection and Repair.*

(1) Inspect the main drive brake assembly for damage

(2) Replace damaged brake assembly.

d. *Installation.*

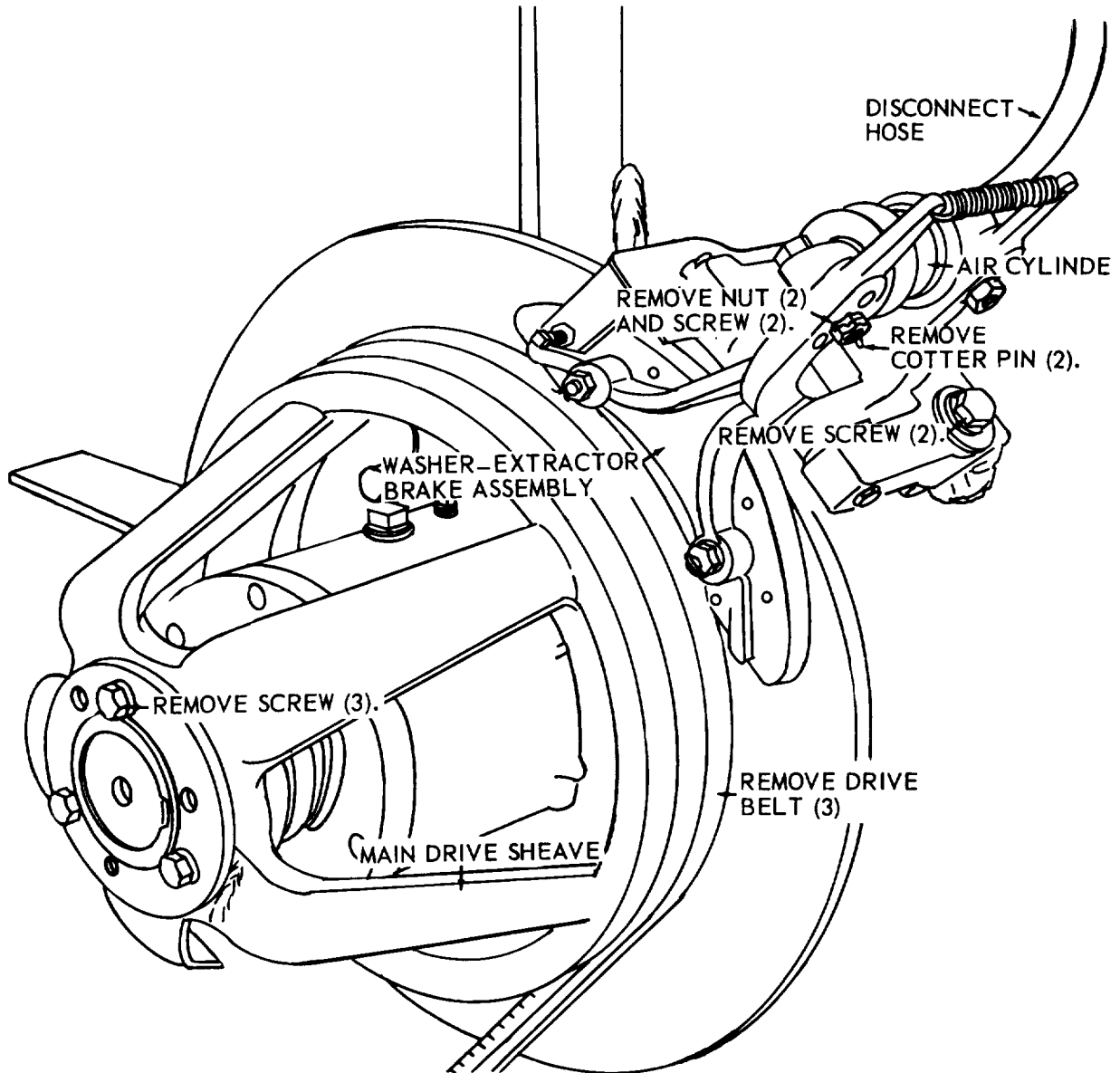
(1) Install hub (9, fig. 4-94) and drive sheave (8) and secure them with lockwashers (7) and bolts (6).

(2) Install the air brake cylinder and shoe assembly (5) and secure it with flatwashers (4), lockwashers (3) and bolts (2).

(3) Connect hose (1).

4-72. Washer-Extractor Air Cylinder and Main Drive Sheave

a. *Removal.* Refer to figure 4-95 and remove the air cylinder and main drive sheave.



TS 10-3510-208-12/4-95

Figure 4-95. Washer-extractor, air cylinder and main drive sheave, removal and installation.

b. Cleaning.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean all metal parts with cleaning solvent, Fed. Spec. P-D-680 and dry thoroughly.

c. Inspection and Repair.

(1) Inspect the air cylinder and sheave for damage

(2) Replace a damaged air cylinder and sheave.

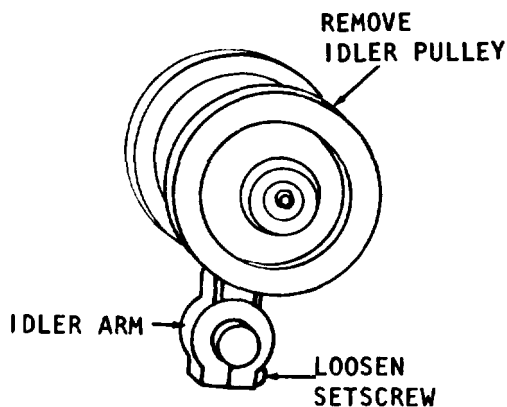
d. Installation. Refer to figure 4-95 and install the main drive sheave and air cylinder.

4-73. Main Drive Belt Idler Pulley (Edro Model EP120-LTU only)

a. Removal.

(1) Refer to paragraph 4-22 and remove the main drive guard.

(2) Refer to figure 4-96 and remove main drive belt idler pulley.



TS 3510-208-12/4-96

Figure 4-96 Main Drive Belt Idler Pulley, removal and installation (Edro Model EP120-LTU only).

b. Cleaning.

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680)

used to clean is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean all metal parts with cleaning solvent, Fed. Spec. P-D-680 and dry thoroughly.

c. Inspection and Repair.

(1) Inspect main drive belt idler pulley for damage

(2) Replace damaged or defective idler pulley.

d. Installation.

(1) Refer to figure 4-96 and install the main drive belt idler pulley.

(2) Refer to paragraph 4-22 and install main drive guard.

e. Drive Belt Adjustment. Using idler pulley, turn idler arm counterclockwise and adjust belts to a 1/2 inch (1.27 cm) deflection between pulleys. Tighten screw in idler arm.

4-74. Washer Door Assembly

a. Removal and Disassembly.

(1) Tag and disconnect all wiring and line to the washer door assembly.

(2) Remove cotter pins (1 and 4, fig. 4-97), flatwashers (2 and 5) and pins (9 and 6) securing the door latch link (7) to the door assembly.

(3) Remove the stud (8) securing the door handle (9).

(4) Remove the rivets (10) securing the door handle Support (11).

(5) Remove the stud (12) securing the door catch (13).

(6) Remove the rivets (14) securing the door lock handle support (15).

(7) Remove the screws (16) and washers (17) securing the cylinder to the sheet, and remove cylinder (18).

(8) Remove the conduit (19) and connector (20).

(9) Disconnect the switch (25) from the sheet. Remove the elbow (21), and locknut (22). Remove mounting screws (23) and lockwashers (24).

(10) Pull cotter pin (26) out and remove the straight pin (27).

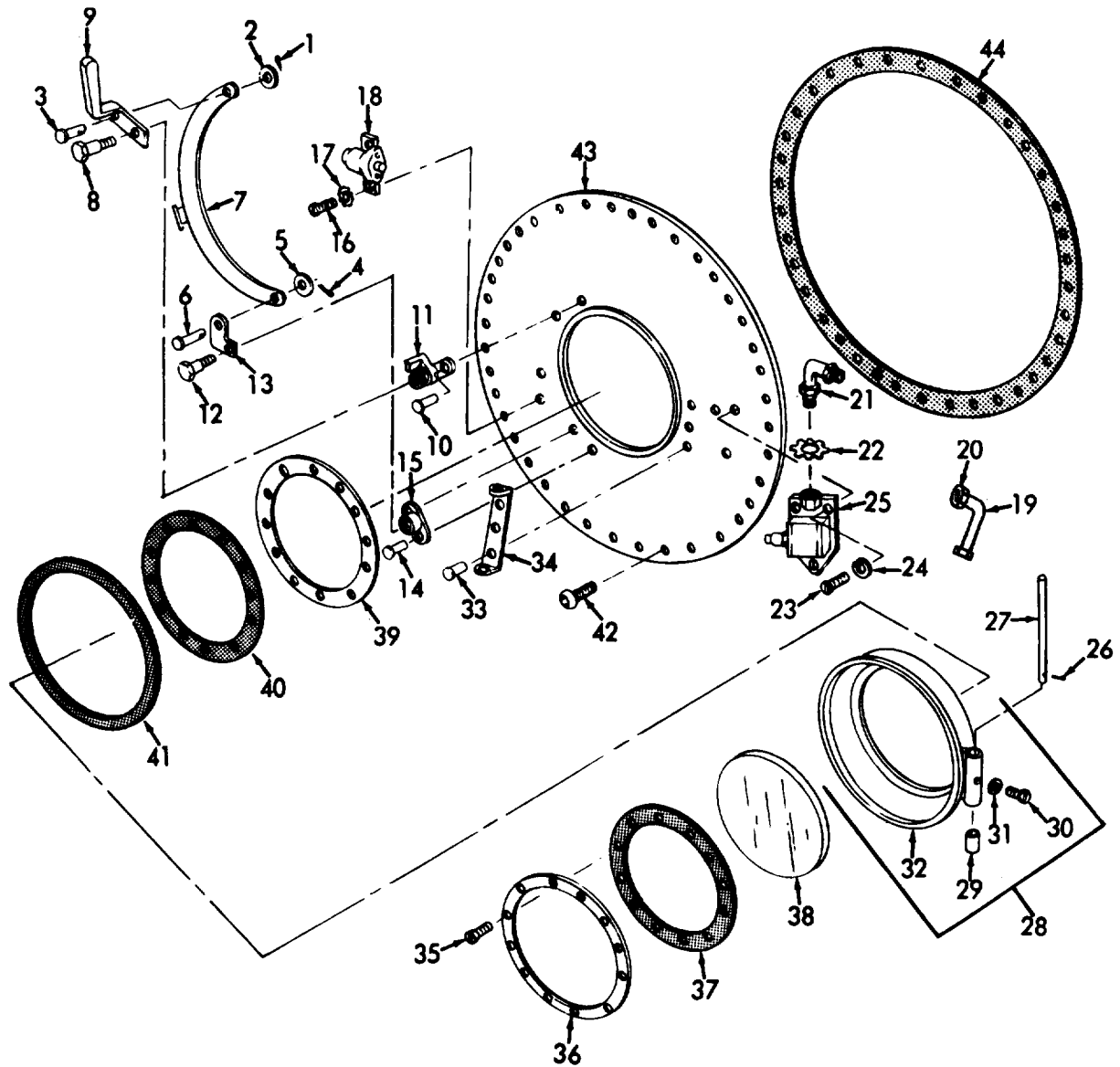
(11) Disassemble the door assembly (28). Remove bushing, (29). Remove the screw (30) and lockwasher (31) freeing door (32).

(12) Remove rivets (33) securing the bracket to the sheet, and remove bracket (34).

(13) Remove screws (35), damp (36), gasket (37) and glass (38) from door.

(14) Remove clamps (39), gasket (40), and seal (41).

(15) Remove the screws (42) securing the sheet (43); remove sheet gasket (44),



TS 10-3310-208-12/4-97

- |               |                |                |             |
|---------------|----------------|----------------|-------------|
| 1. Cotter pin | 12. Stud       | 23. Screw      | 34. Bracket |
| 2. Flatwasher | 13. Catch      | 24. Lockwasher | 35. Screw   |
| 3. Pin        | 14. Rivet      | 25. Switch     | 36. clamp   |
| 4. Cotter pin | 15. Support    | 26. Cotter pm  | 37. Gasket  |
| 5. Flatwasher | 16. Screw      | 27. Pin        | 38. Glass   |
| 6. Pin        | 17. Lockwasher | 28. Door ay    | 39. clamp   |
| 7. Link       | 18. Cylinder   | 29. Bushing    | 40. Gasket  |
| 8. Stud       | 19. Conduit    | 30. Screw      | 41. Seal    |
| 9. Handle     | 20. Connector  | 31. Lockwasher | 42. Screw   |
| 10. Rivet     | 21. Elbow      | 32. Door       | 43. Sheet   |
| 11. Support   | 22. Locknut    | 33. Rivet      | 44. Gasket  |

Figure 4-97. Washer door removal disassembly, reassembly and installation.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure to akin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean all metal parts of the washer door assembly using cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly. Clean door glass and seal with mild soap and water and dry thoroughly.

**c. Inspection.**

(1) Inspect the head sheet, door latch link, and door for cracks, dents, burrs and other damage.

(2) Inspect the door glass for breaks, cracks and Chips.

(3) Inspect the gaskets for tears, pits, cracks and excessive wear.

(4) Inspect all hardware for thread damage.

**d. Repair.**

(1) Repair or replace a damaged head sheet, door latch link or door.

(2) Replace a damaged gasket or door glass and all missing or damaged hardware.

**e. Assembly and Installation.**

(1) Position gasket (44, fig. 4-97) on sheet (43). Secure sheet with screws (42).

(2) Install seal (41), gasket (40), and clamps (39).

(3) Install glass (38), gasket (37), clamp (36), and screws (35) on door.

(4) Position the bracket (34) on the sheet and secure it with rivets (33).

(5) Reassemble the door assembly (28). Install door (32) and secure it with lockwasher (31) and screw (30). Install bushing (29).

(6) Install straight pin (27) and secure it with cotter pin (26).

(7) Assemble the switch (25) to the sheet. Install lockwashers (24) and screws (23). Install locknut (22) and elbow (21).

(8) Install connector (20) and conduit (19).

(9) Install cylinder (18) on sheet and secure it with washers (17) and screws (16).

(10) Install the door lock handle support (15) and secure it with rivets (14).

(11) Install the door catch (13) and secure it with stud (12).

(12) Install the door handle support (11) and secure it with rivets (10).

(13) Install the door handle (9) and secure it with stud (8).

(14) Install the door latch link (7), and secure it with pins (3 and 6), flatwashers (2 and 5) and cotter pins (1 and 4).

(15) Connect all wiring and lines to the washer door assembly.

**4-75. Valve Drain Assembly**

**a. Removal.**

(1) Disconnect tube assembly (1, fig. 4-98), and remove tubing (2) and nut (3).

(2) Disconnect tube assembly (4) and remove tubing (5) and nut (6).

(3) Remove elbow (7).

(4) Remove adapter (8).

(5) Remove cotter pin (9) and straight pin (10).

(6) Loosen nut (12) and remove lever (11); disassemble by removing nut (12) and knob (13) from lever.

(7) Remove nuts (14), washers (15) and screws (16) securing the support and remove support (17).

(8) Remove screws (18) and washers (19) securing the housing; removing housing (20) and housing gasket (21).

(9) Slip the support (22) off the shaft.

(10) Pull taper pin (23) from the dog, and slip dog (24) from the shaft.

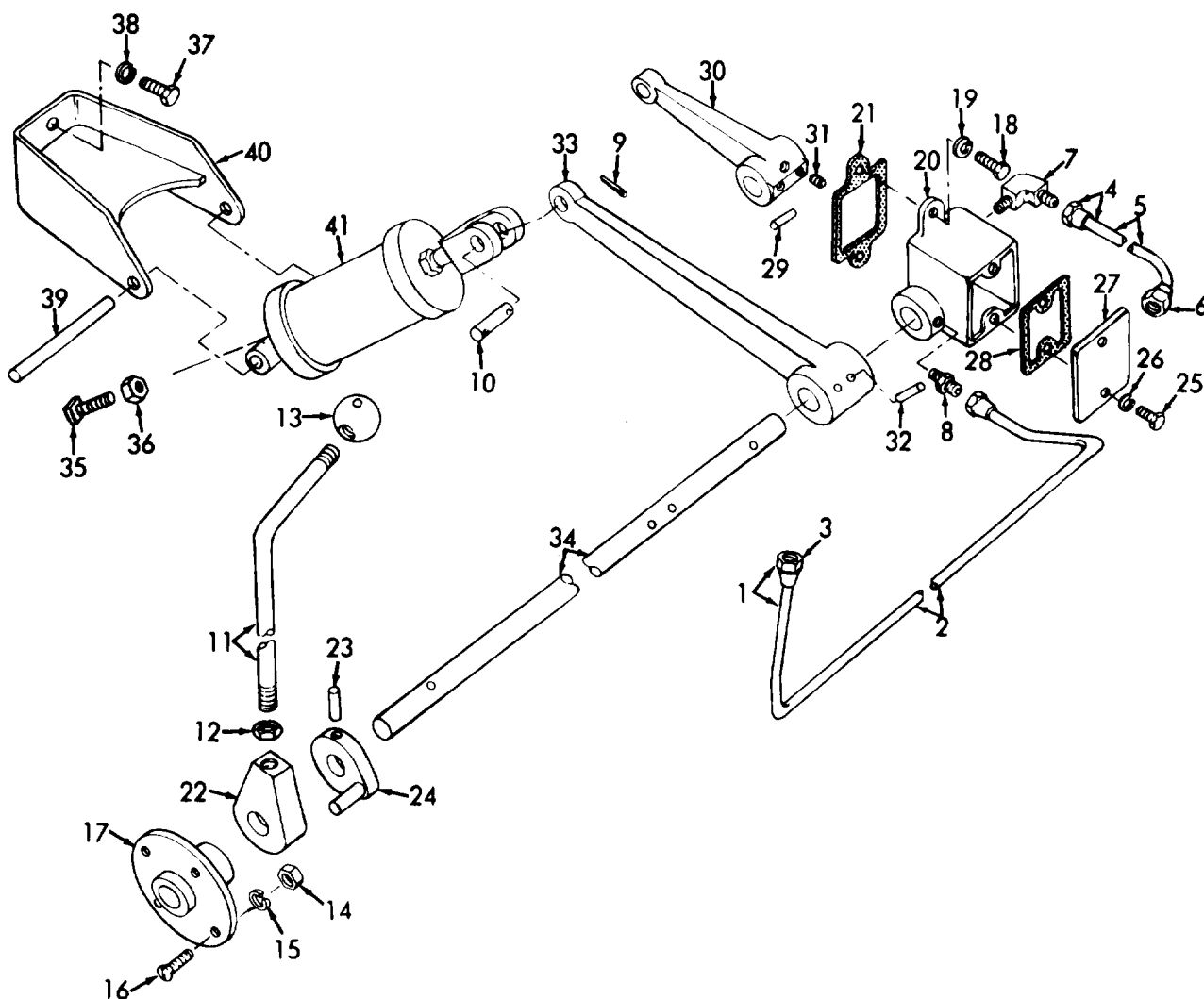
(11) Remove the screws (25) and washers (26) securing the housing cover to the housing, and remove cover (27) and cover gasket (28).

(12) Pull out taper pin (29) freeing lever (30); remove setscrew (31) from lever.

(13) Pull taper pin (32) from lever and remove lever (33) from shaft (34).

(14) Remove setscrew (35), nut (36), screw (37) and washer (38).

(15) Remove straight pin (39) from the bracket; separating bracket (40) and air cylinder assembly (41).



TS 10-3510-208-12/4-98

- |                  |             |               |                  |
|------------------|-------------|---------------|------------------|
| 1. Tube ay       | 12. Nut     | 22. Support   | 32. Taper pin    |
| 2. Tubing        | 13. Knob    | 23. Taper pin | 33. Lever        |
| 3. Nut           | 14. Nut     | 24. Dog       | 34. Shaft        |
| 4. Tube ay       | 15. Washer  | 25. Screw     | 35. Setscrew     |
| 5. Tubing        | 16. Screw   | 26. Washer    | 36. Nut          |
| 6. Nut           | 17. Support | 27. Cover     | 37. Screw        |
| 7. Elbow         | 18. Screw   | 28. Gasket    | 38. Washer       |
| 8. Adapter       | 19. Washer  | 29. Taper pin | 39. Straight pm  |
| 9. Cotter pin    | 20. Housing | 30. Lever     | 40. Bracket      |
| 10. Straight pin | 21. Gasket  | 31. Setscrew  | 41. Air cylinder |
| 11. Lever        |             |               |                  |

Figure 4-98 Drain valve, drain valve cylinder and controls, removal and installation

b. Cleaning.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning advent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts if potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean items with cleaning solvent, Federal Specification P-D-680, and dry thoroughly.

c. *Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Replace all damaged parts.

d. *Installation.*

(1) Place the cylinder assembly (41, fig. 4-98) in the mounting bracket (40), slip the straight pin (39) through bracket and cylinder.

(2) Install mounting hardware for bracket and cylinder assembly. Install washer (38), screw (37), nut (36) and setscrew (35).

(3) Install lever (33) on shaft (34); secure lever on shaft with taper pin (32).

(4) Install setscrew (31) .

(5) Install taper pin (29, fig. 4-98) securing lever (30).

(6) Position a new gasket (28) on cover (27).

(7) Secure the cover (37) on the housing with washers (26) and screws (25).

(8) Place the dog (24) on shaft and secure with taper pin (23).

(9) Slip support (22) on shaft.

(10) Position a new gasket (21) on the housing (20).

(11) Secure the housing (20) with washers (19) and screws (18).

(12) Install the support (17) and secure it with screws (16), washers (15) and nuts (14).

(13) Install knob (13) on *lever* (11).

(14) Install nut (12) and lever (11). Tighten nut (12).

(15) Install straight pin (10) and cotter pin (9).

(16) Install adapter (8).

(17) Install elbow (7).

(18) Install nut (6) and assemble tubing (5) and tube assembly (4).

(19) Install nut (3) and tubing (2); connect tube assembly (1).

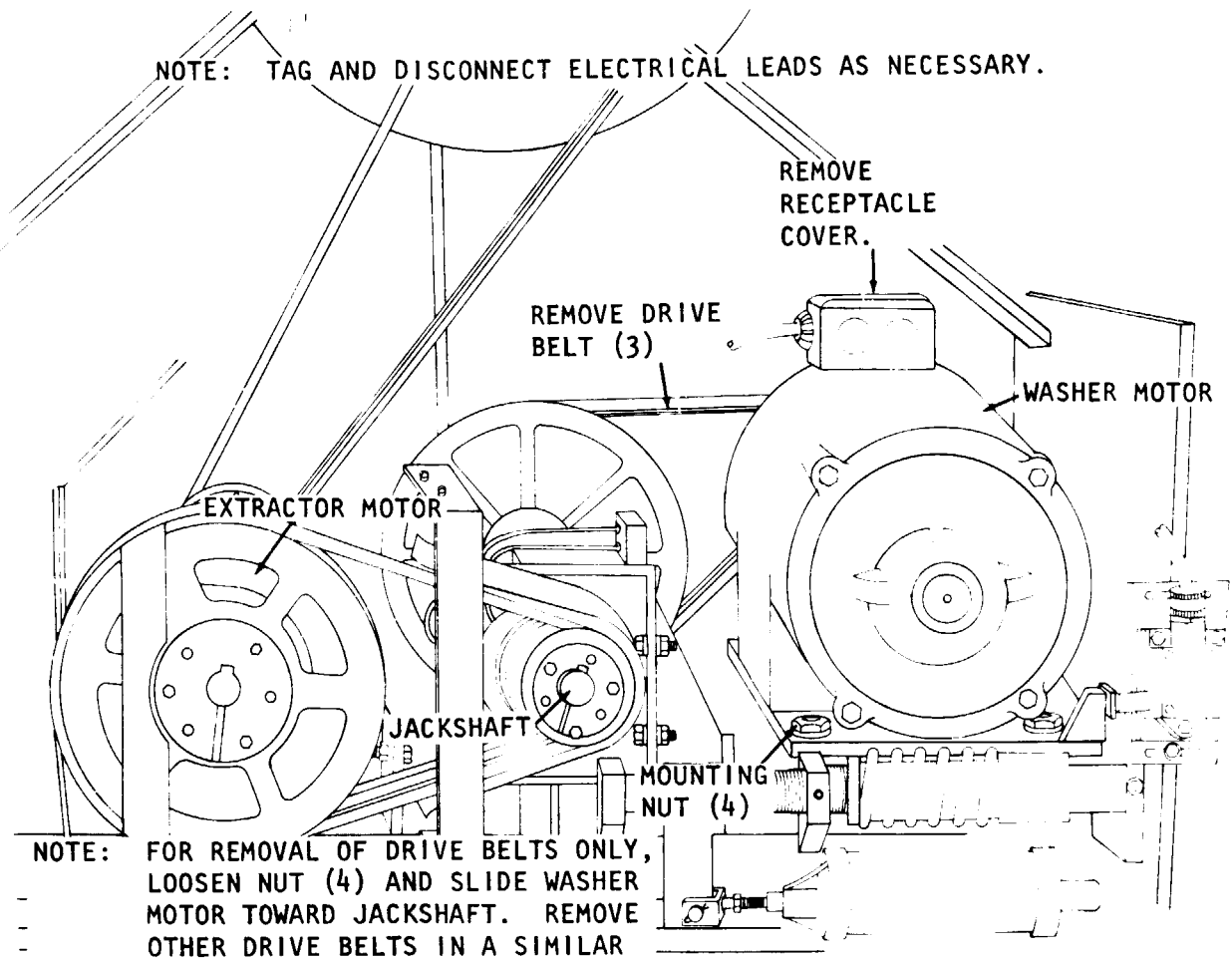
#### Section XXIV. WASHER-EXTRACTOR MOTORS, DRIVE, HYDROSHEAVE AND RELATED PARTS

##### 4-76. Washer Motor, Drive Belts and Sheave

a. *Removal.*

(1) Refer to figure 4-99 for Eidal Model and remove the washer motor, drive belts and sheave.

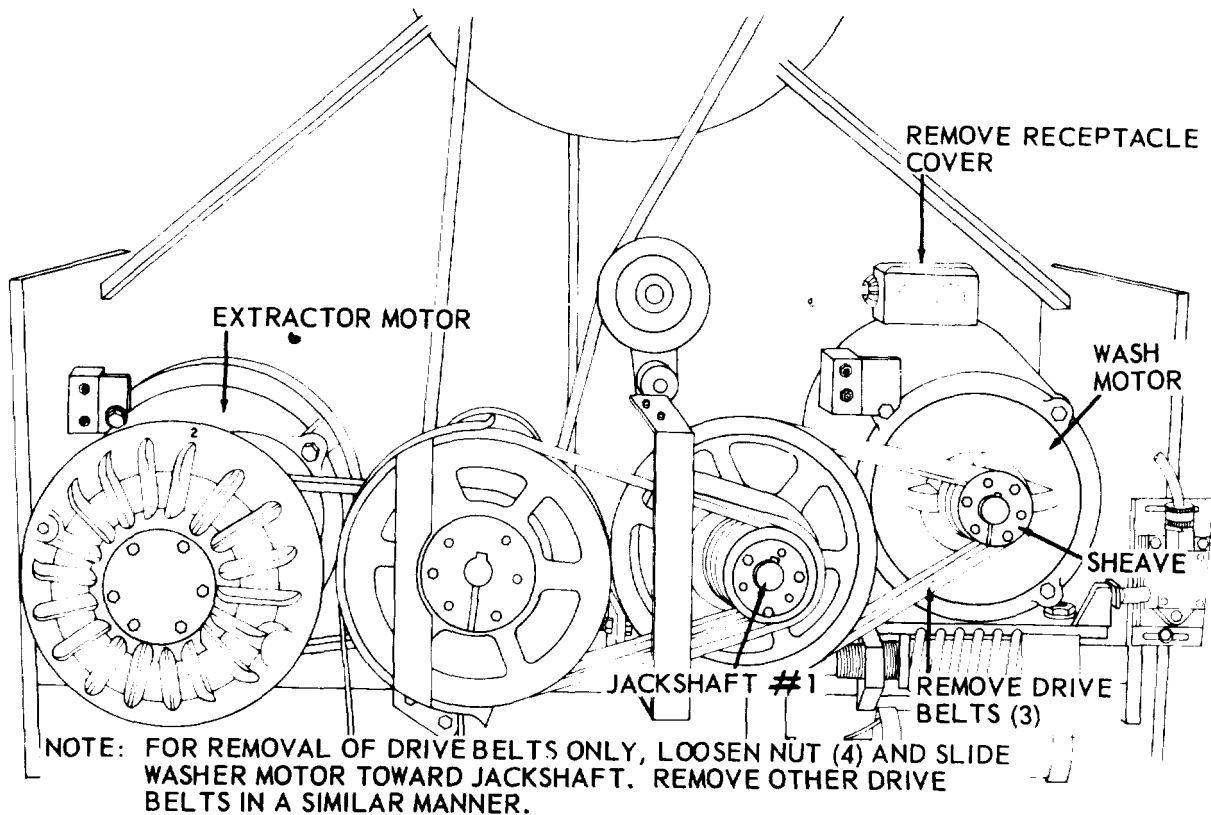
(2) Refer to figure 4-100 for Edro Model and remove the washer motor, drive belts and sheave.



TS 3510-208-12/4-99

Figure 4-99. Washer motor, drive belts, and sheave, removal and installation (Eidal Model ELT9T).

NOTE: TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.



TS-10-3510-208-12/4-100

Figure 4-100. Washer motor, drive belts, and sheave, removal and installation (Edro Model EP120-LTU).

b. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(1) Clean the outer surface of the motor and sheave using a cloth dampened in cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(2) Clean the drive belts using a dry clean cloth.

c. *Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Replace all damaged parts.

d. *Installation.*

(1) Refer to figure 4-100 for Edro Model and install the sheave, washer motor and drive belts.

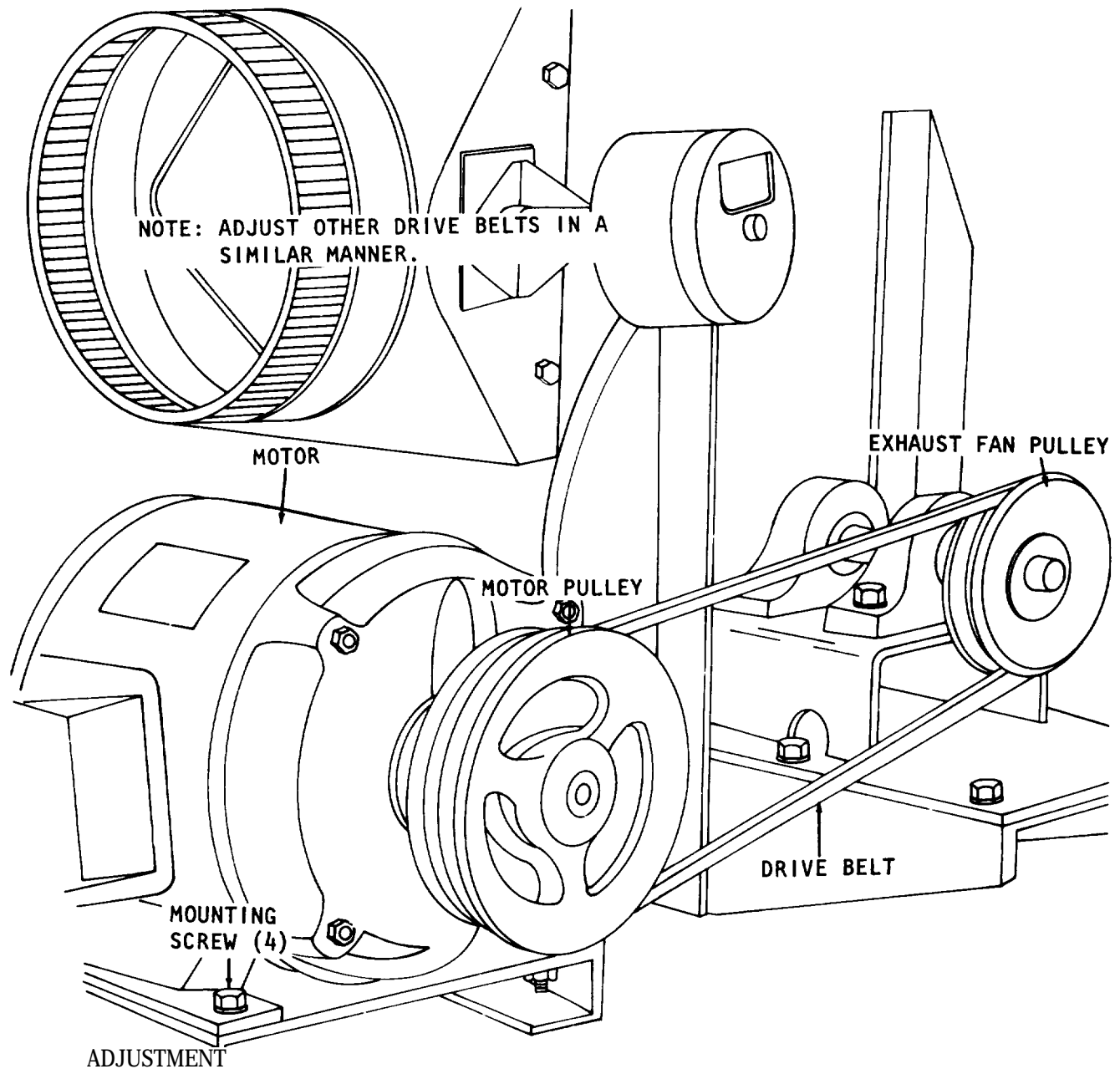
(2) Refer to figure 4-99 for Eidal Model and install the sheave, washer motor and drive belts.

e. *Drive Belt Adjustment.*

(1) Refer to figure 4-101 (Eidal Model ELT9T, only) and adjust the drive belts.

(2) Refer to figure 4-102 (Edro Model EP120-LTU, only) and adjust the drive belts as follows: Loosen motor mounting nuts and adjust belts to 1/2 inch (1.27 cm) deflection between pulleys.

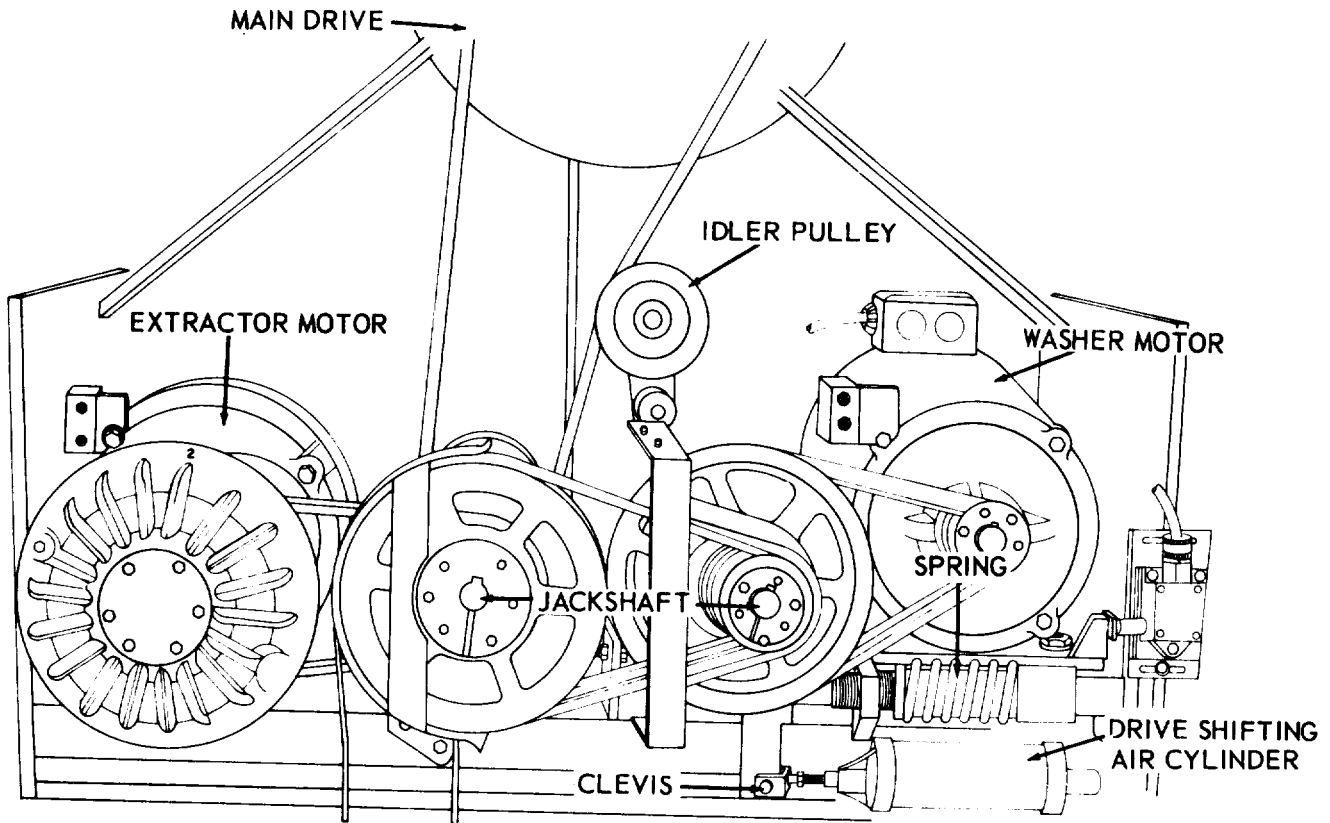




LOOSEN MOUNTING SCREW (4) AND MOVE MOTOR UNTIL BELT HAS 1/2 INCH (1.27 CM) DEFLECTION BETWEEN MOTOR PULLEY AND EXHAUST FAN PULLEY.

TS 3510-208-12/4-101

Figure 4-101. Drivebelt, adjustment (Eidal Model ELT9T only).



TS 10-3510-208-12/4-102

Figure 4-102. Drive belt adjustment (Edro Model EP120-LTU).

4-77. Extractor Motor, Drive Belts and Sheave

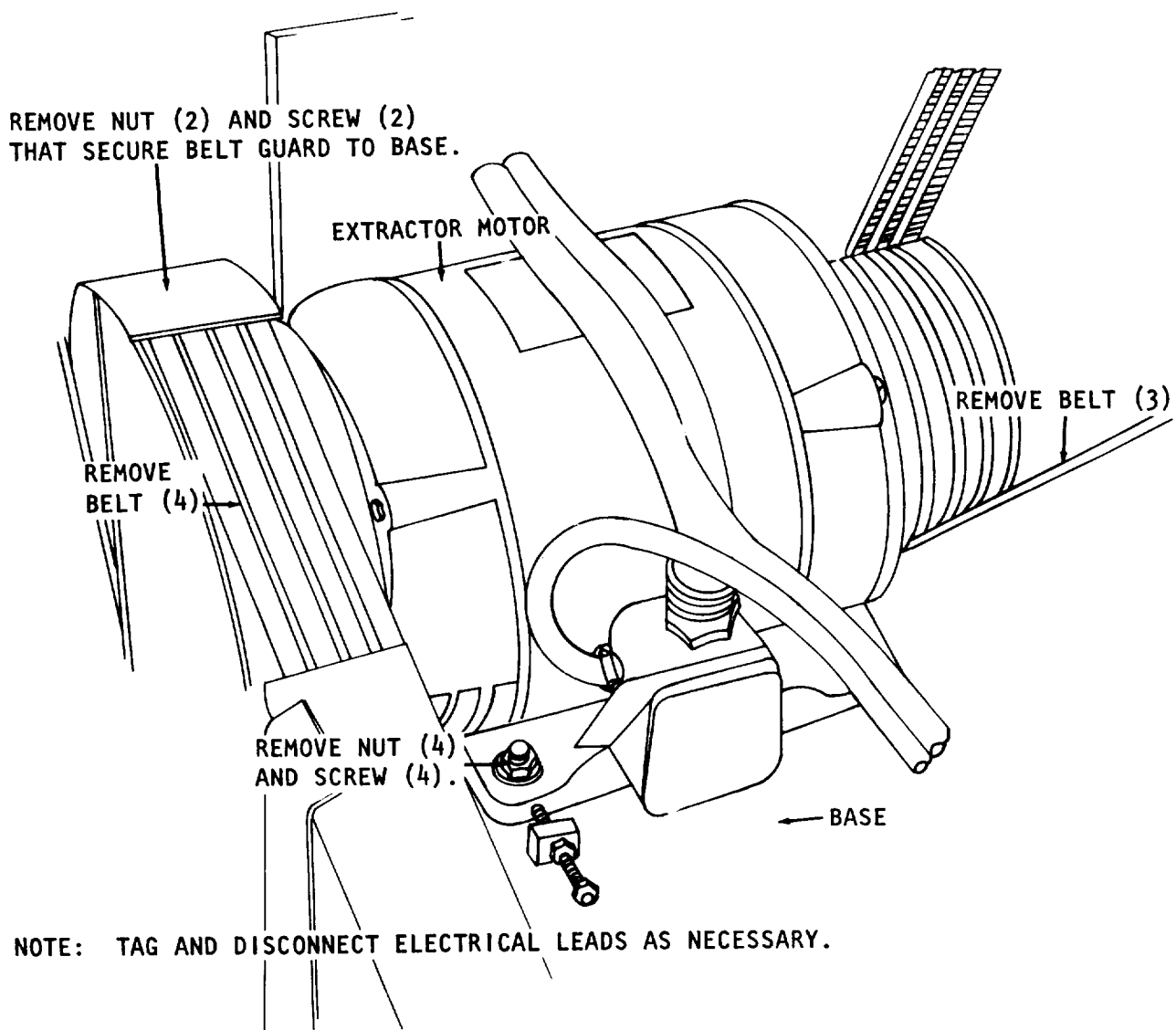
a. Removal.

(1) Refer to figure 4-103 for Eidal Model and remove the extractor motor, drive belts and sheave.

(2) Refer to figure 4-104 for Edro Model and

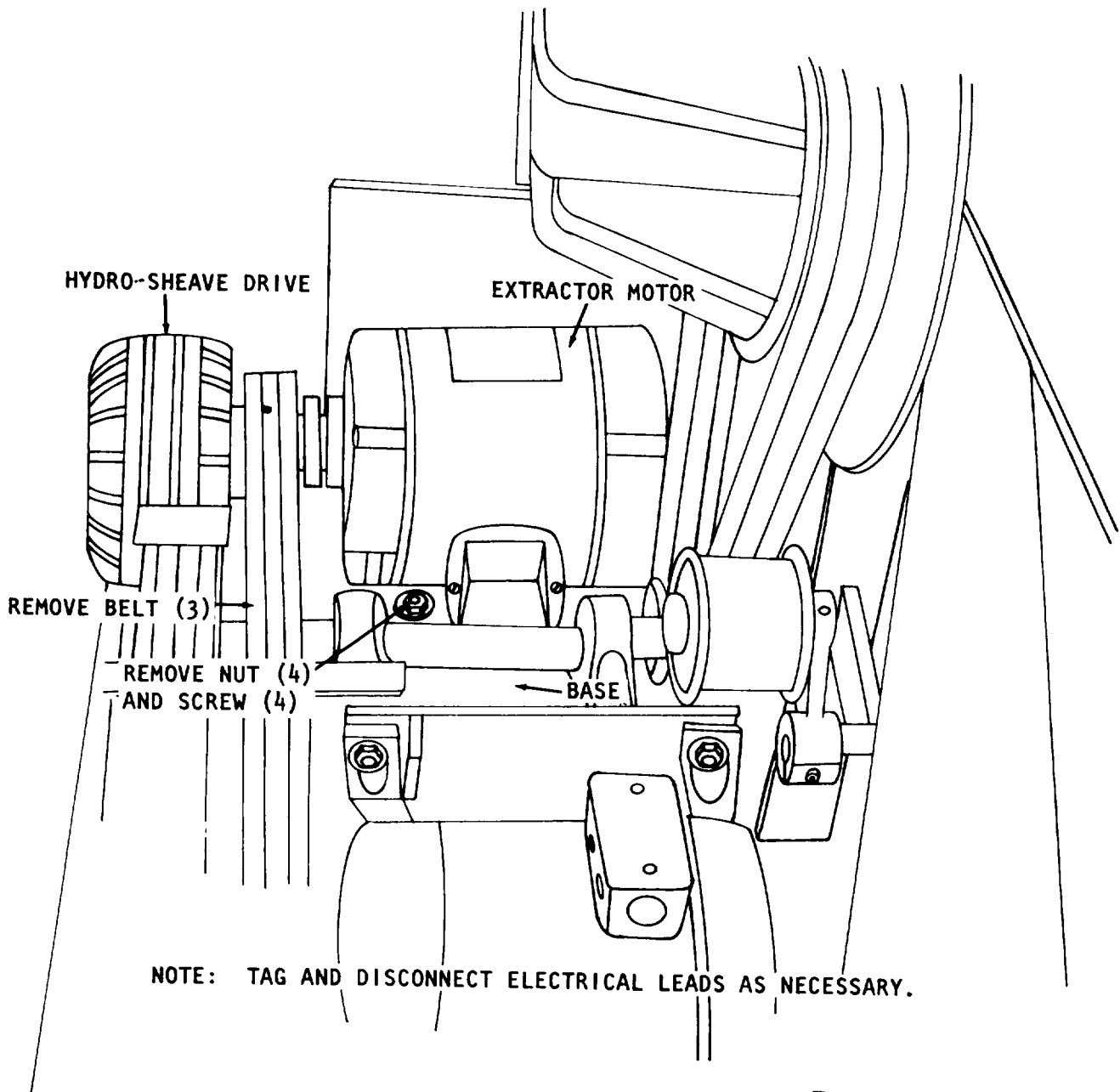
remove the extractor motor, drive belts and sheave.

(3) Refer to figure 4-97 and remove the hydro-sheave drive from the extractor motor. (Edro Model EP120-LTU only).



TS 3510-208-12/4-103

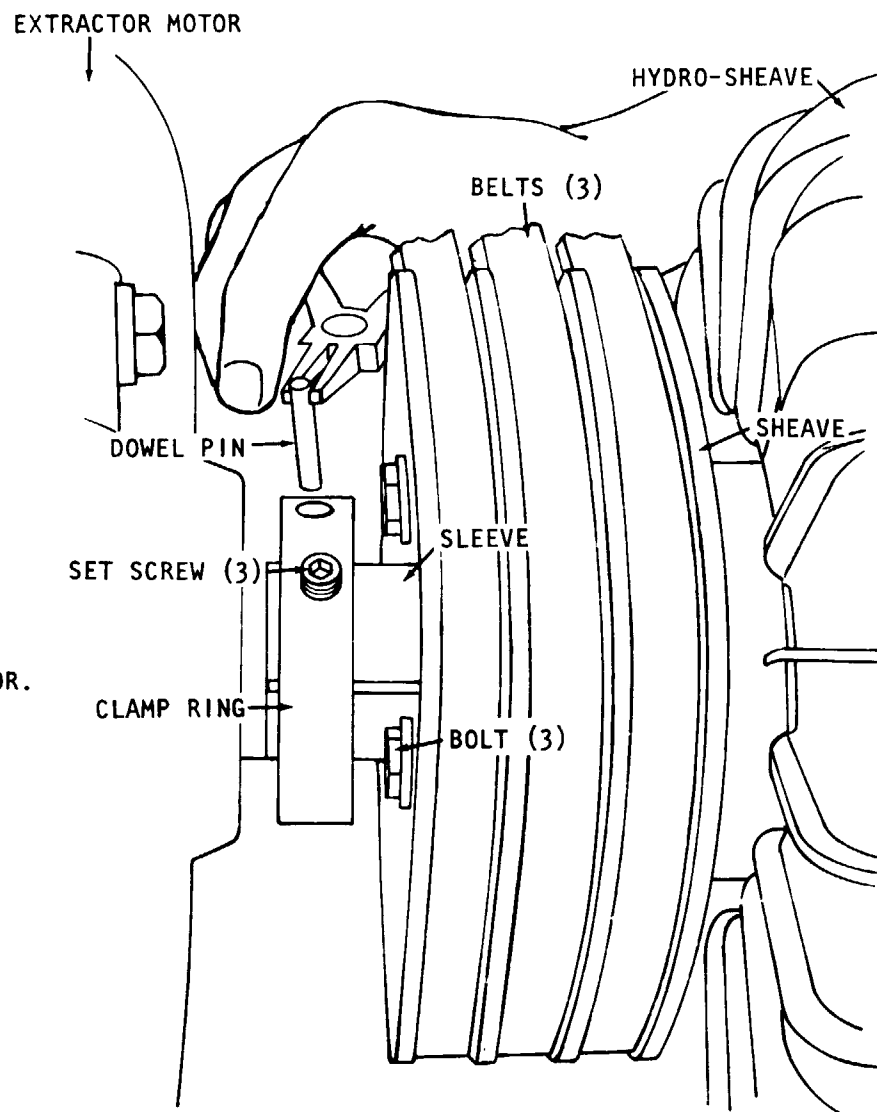
Figure 4-103. Extractor motor, drive belts and sheave, removal and installation (EidalModelELT9T).



TS 3510-208-12/4-104

Figure 4-104. Extractor motor, drive belts and sheave, removal and installation (Edro Model EP120-LTU).

- STEP 1. LOOSEN EXTRACTOR MOTOR MOUNTING BOLTS AND SLIDE MOTOR TOWARD JACKSHAFT.
- STEP 2. REMOVE BELTS.
- STEP 3. LOOSEN TWO (2) OUTER SETSCREWS
- STEP 4. REMOVE CENTER SETSCREW.
- STEP 5. ALIGN CLAMP RING WITH HOLE IN SLEEVE.
- STEP 6. REMOVE DOWEL PIN.
- STEP 7. REMOVE HYDRO-SHEAVE FROM EXTRACTOR MOTOR.
- STEP 8. REMOVE THREE (3) BOLTS FROM SHEAVE.
- STEP 9. REINSTALL BOLTS IN HOLES PROVIDED AND JACK OUT SHEAVE FROM HYDRO-SHEAVE. BOLTS.
- STEP 10. INSTALL IN REVERSE ORDER.



TS 3510-208-12/4-105

Figure 4-105. Hydro-sheave, removal and installation (Edro Model EP120-LTU only).

*b. Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent. (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(1) Clean the outer surface of the motor and sheave using a cloth dampened in cleaning solvent Fed. Spec. P-D-680, and dry thoroughly.

(2) Clean the drive belts using a dry clean cloth.

*c. Inspection and Repair.*

(1) Inspect all parts for damage.

(2) Replace all damaged parts.

*d. Installation.*

(1) Refer to figure 4-106 and install the hydro-sheave. (Edro Model EP120-LTU only).

(2) Refer to figure 4-104 for Edro Model and install the extractor motor, drive belts and sheave.

(3) Refer to figure 4-103 for Eidal Model and install the extractor motor, drive belts and sheave.

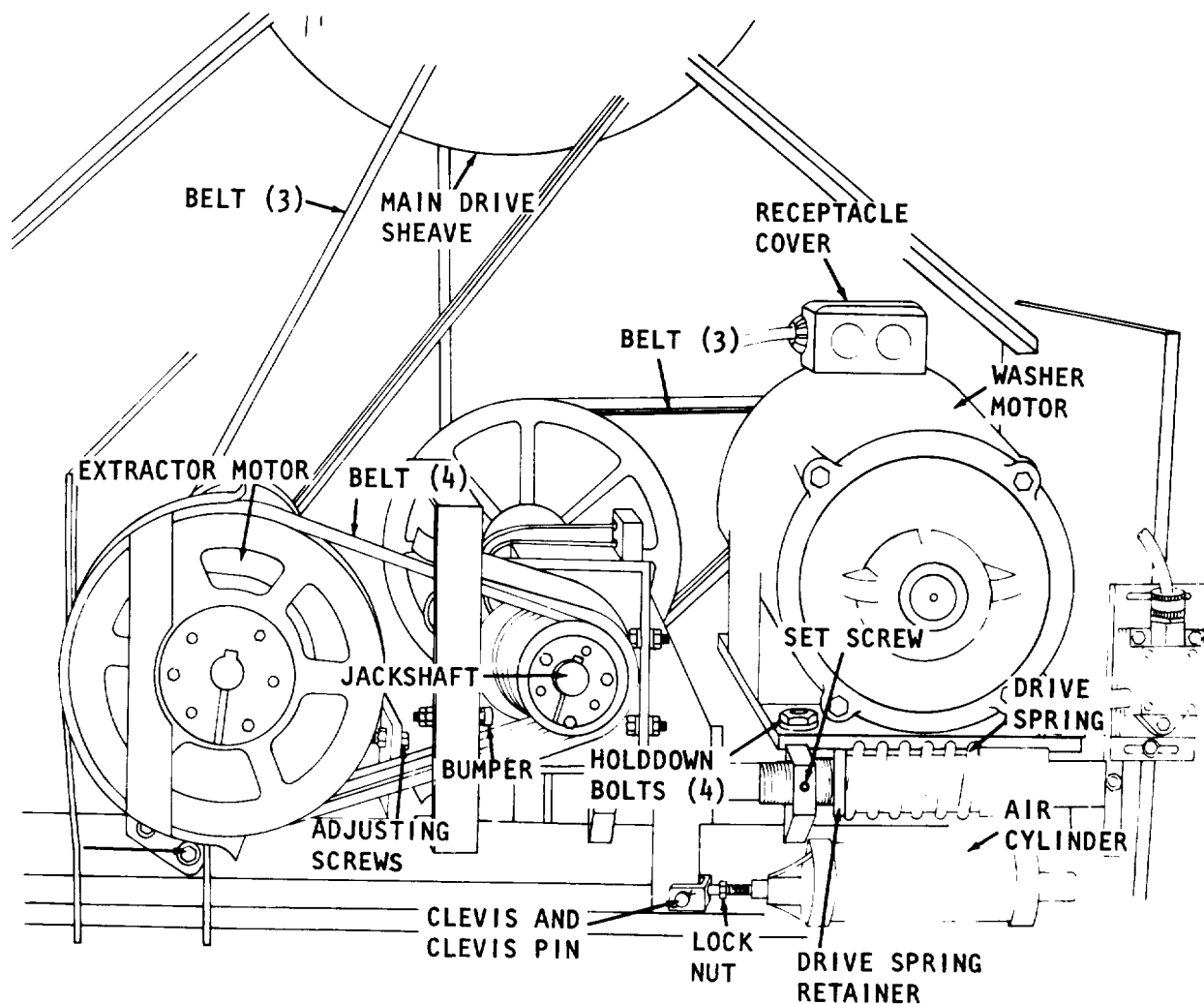
*e. Drive Belt Adjustment.*

(1) Refer to figure 4-107 and adjust the drive belts. (Eidal Model ELT9T only).

(2) Refer to figure 4-104 and the following instructions and adjust drive belts. (Edro Model EP120-LTU only). Loosen motor mounting nuts and adjust belts to 1/2 inch (1.27 cm) deflection between pulleys.

**CAUTION**

To prevent excessive drive belt wear and breakage, it is essential that care be taken to insure that a proper adjustment of the time relay is obtained. The correct time interval delay after completion of the extract cycle, complete braking, of the cylinder, return of the washer motor to the was position, and the release of access door air cylinder lock is forty seconds. Arrows shown on the relay body indicate the direction of adjustment to increase or decrease the time delay intervals.



TS 3510-208-12/4-106

Figure 4-106. Hydro-Sheave Drive, Removal and Installation (Edro Model EP120-LTU only).

#### 4-78. Hydro-Sheave (Edro Model EP120-LTU only)

- a. *Removal.* Refer to figure 4-105 and remove the hydro-sheave drive from the extractor motor.
- b. *Cleaning.*

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

Clean hydro-sheave using a clean cloth dampened in cleaning solvent (Fed. Spec. P-D-680). Dry thoroughly.

#### c. *Inspection and Repair.*

- (1) Inspect all parts for damage,
- (2) Replace damaged parts.

d. *Installation.* Refer to figure 4-105 and install the hydro-sheave drive.

e. *Drive Belt Adjustment.* Refer to figure 4-103 and the following instructions and adjust the drive belts:

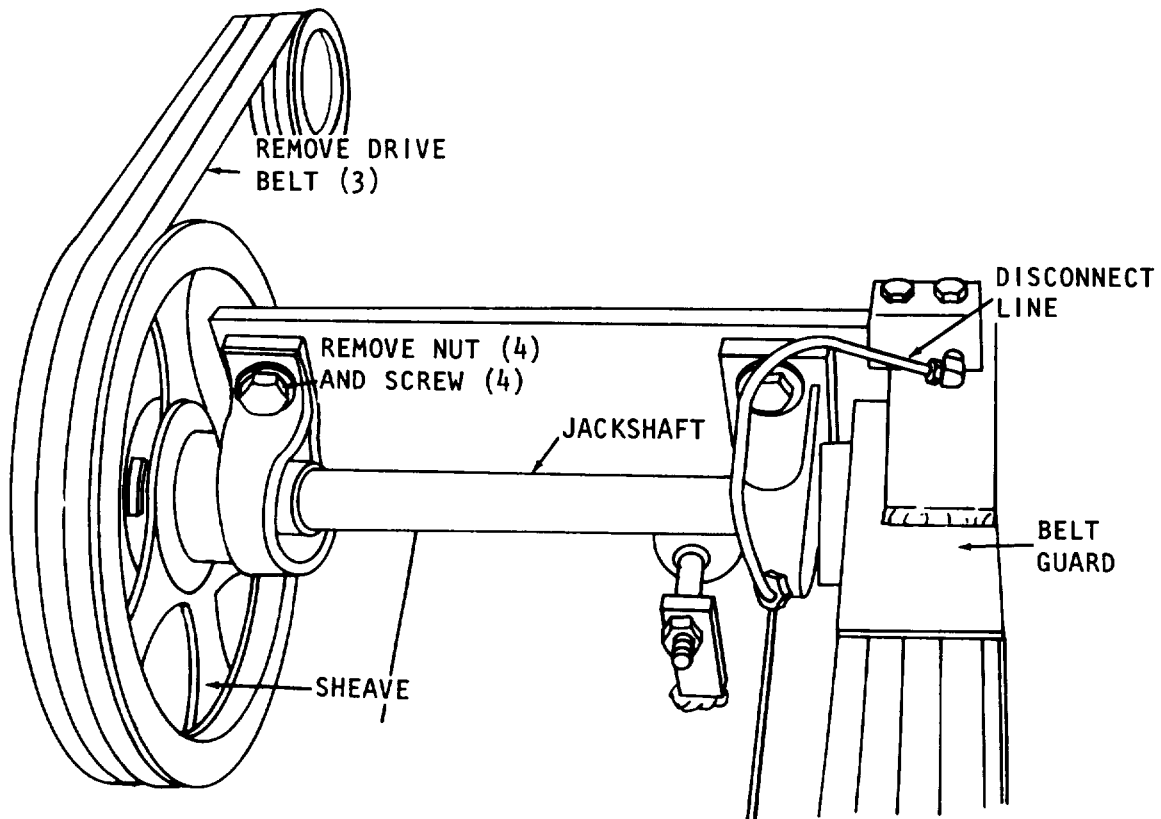
- (1) Adjust drive belts to a 1/2 inch (1.27 cm) deflection between pulleys.
- (2) Tighten motor mounting nuts.

4-79. Washer Motor Jackshaft Sheave and Belt Guard

a. Removal.

(1) Refer to figure 4-107 for Eidal Model and remove the jackshaft, sheave and belt guard.

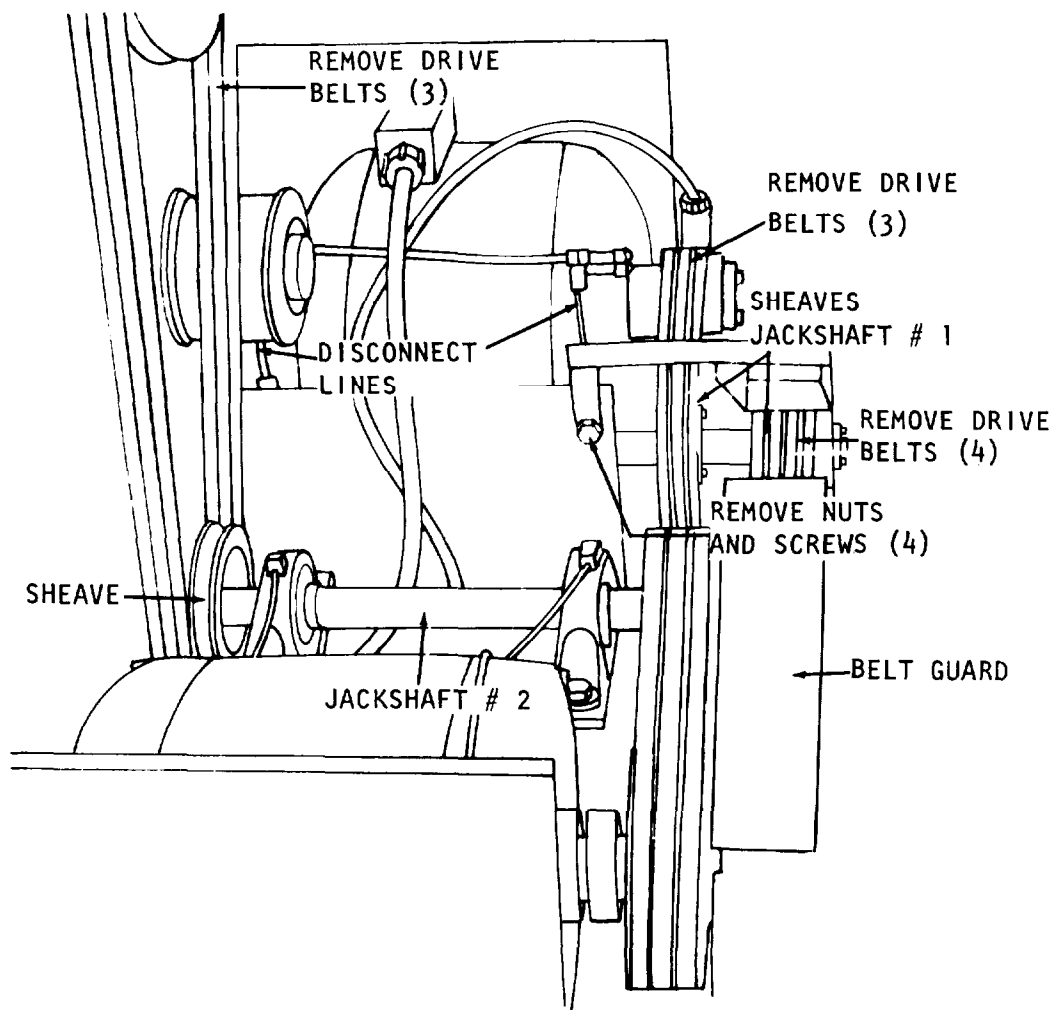
(2) Refer to figure 4-108 for Edro Model and remove the jackshaft, sheave and belt guard.



TS 3510-208-12/4-107

Figure 4-107. Washer motor, jackshaft sheave and belt guard removal and installation (Eidal Model ELT9T).





TS 3510-208-12/4-108

Figure 4-108. Jackshaft sheave, and belt guard removal and installation(Edro Model EP120-LTU.

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean all parts using cleaning solvent, Federal Specification P-D-680, and dry thoroughly.

c. *Inspection and Repair.*

- (1) Inspect all parts for damage.

- (2) Replace all damaged parts.

d. *Installation.*

- (1) Refer to figure 4-108 for Edro Model and install the jackshaft, sheave and belt guard.

- (2) Refer to figure 4-107 for Eidal Model and install the jackshaft, sheave and belt guard.

4-80. Washer Motor and Extractor Base Guide Rods, Air Piston, Micro-switch and Spring.

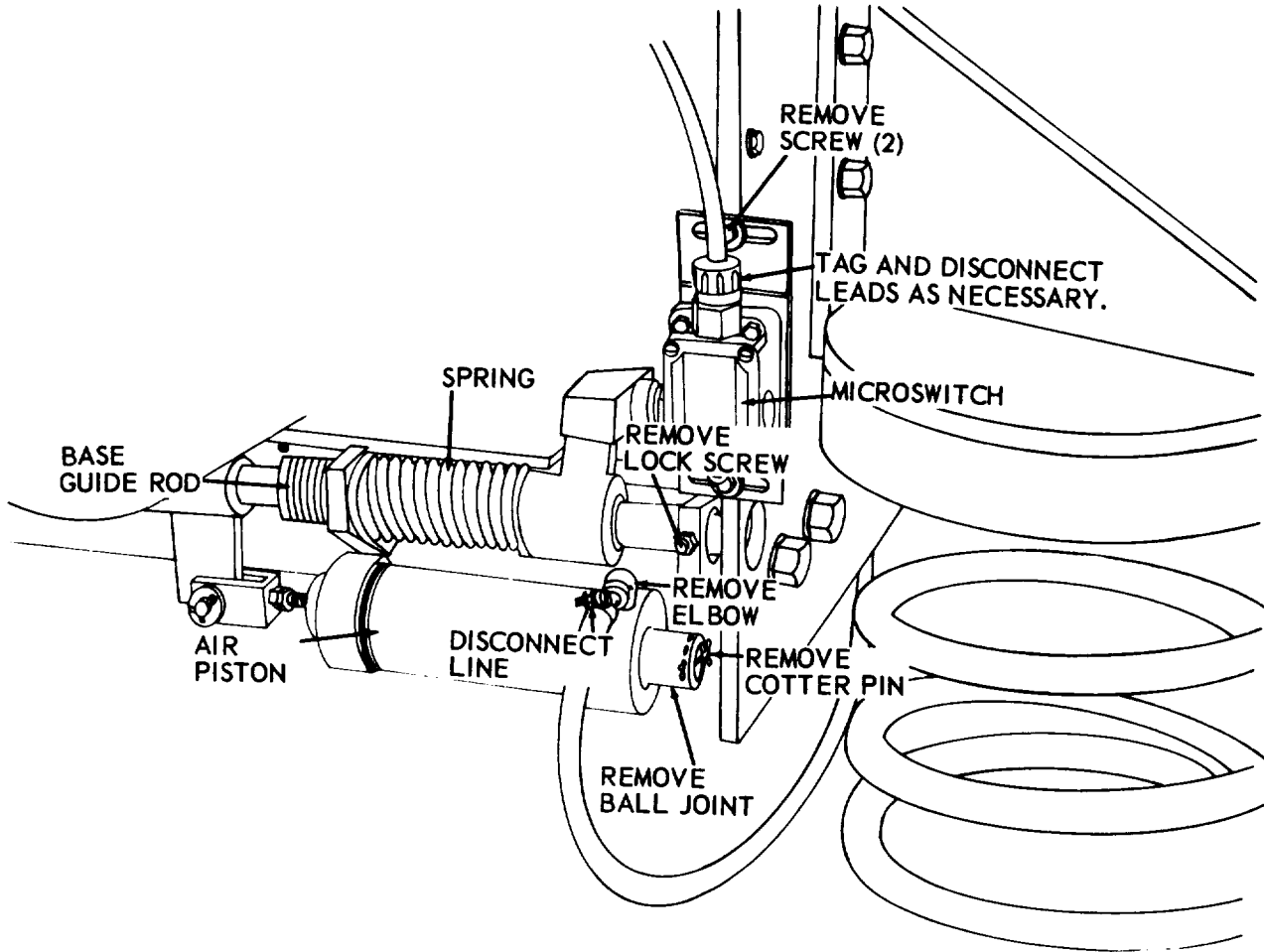
CAUTION

A cumulation of dirt on the guide rod surface will create a binding action preventing travel of the washer motor base into the extract position. The surface must be thoroughly cleaned and lubricated.

a. Removal.

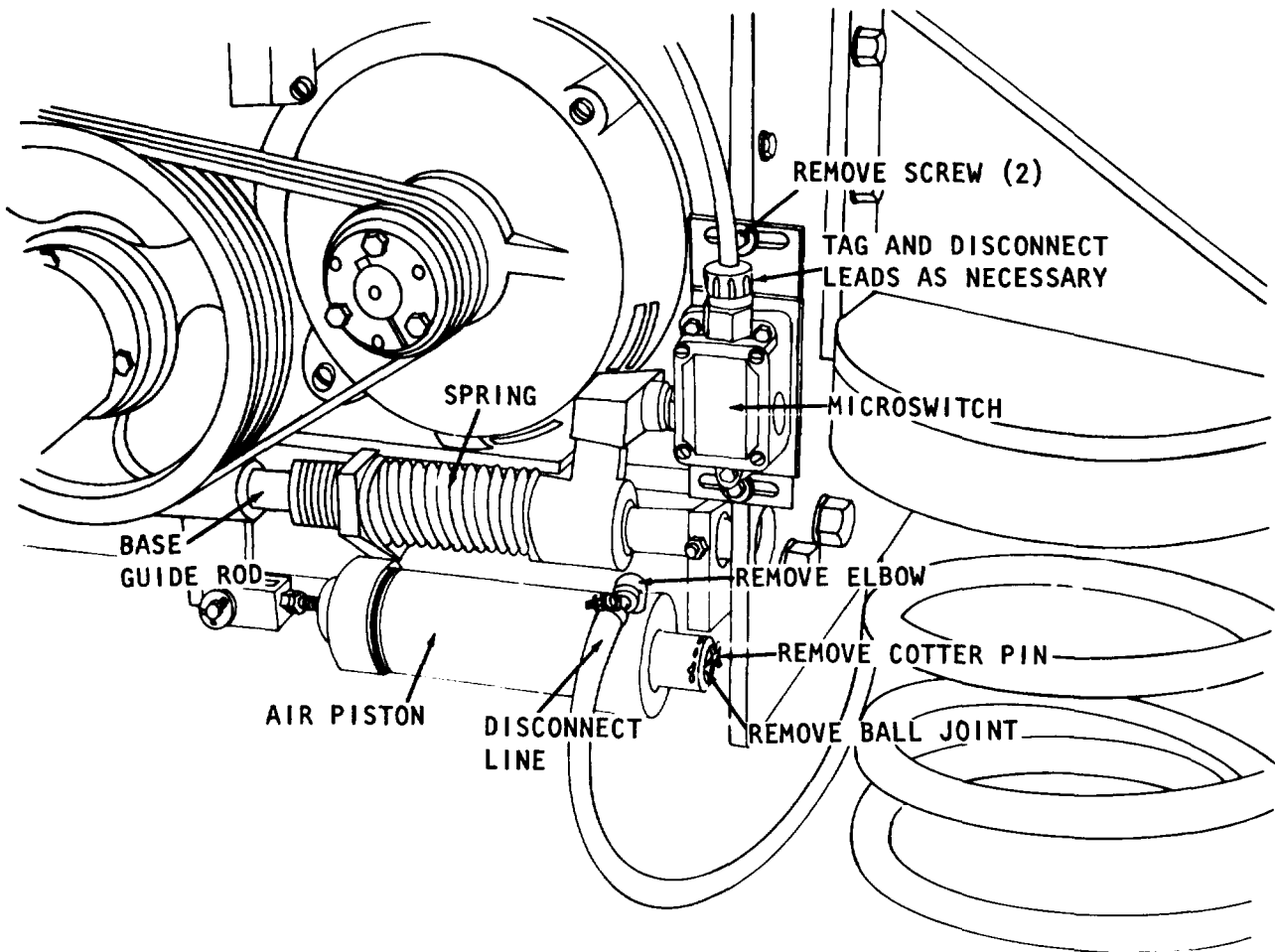
(1) Refer to figure 4-109 for the Eidal Model and remove the washer motor base guide rods, air pistons, microswitch and spring.

(2) Refer to figure 4-110 for the Edro Model and remove the washer motor base guide rods, air piston, microswitch and spring.



TS 3510-208-12/4-109

Figure 4-109. Washer and extractor, motor base guide rods, airpistons microswitch and spring, removal and installation (Eidal Model ELT9T).



TS 3510-208-12/4-110

Figure 4-110. Washer and extractor, motor base guide rods, air pistons, microswitch and spring, removal and installation (Edro Model EP120-LTU)

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C.).

(1) Clean all metal parts with cleaning solvent, Fed. Spec. P-D-W, and dry thoroughly.

(2) Clean other parts with dry compressed air and a clean cloth.

**c. Inspection and Repair.**

(1) Inspect all parts for damage.

(2) Replace all damaged parts.

**d. Installation.**

(1) Refer to figure 4-110 for the Edro Model and install the washer motor base guide rods, air piston, microswitch and spring.

(2) Refer to figure 4-100 for the Eidal Model and install the washer motor base guide rods, air piston, microswitch and spring.

**Section XXV. ELECTRICAL CONDUIT, HEAT EXCHANGER EXHAUST  
DUCT AND RETAINER GENERATOR SWITCH AND  
OUTLET BOX AND STEP ASSEMBLY**

**4-81, Electrical Conduit**

**a. Removal and Disassembly.**

(1) Remove all conduit outlet covers (1, 3, 5, 7, 9, 11 and 13, fig. 4-111) and gaskets (2, 4, 6, 8, 10, 12 and 14) and remove all wiring.

(2) Remove the capscrews (15) and lock-washers (16) securing the conduit retaining straps (17).

(3) Remove the elbow (18), connector (19), conduit (20), connector (21) and bushing (22) from the conduit receptacle.

(4) Remove the receptacle (23), elbow (24), connector (25), conduit (26), connector (27), bushing (28) from the conduit receptacle.

(5) Remove the connector (29), conduit (30), and connector (31) from the conduit receptacle (32), then remove the receptacle.

(6) Remove the elbow (33), conduit (34) and elbow (35) from the conduit outlet.

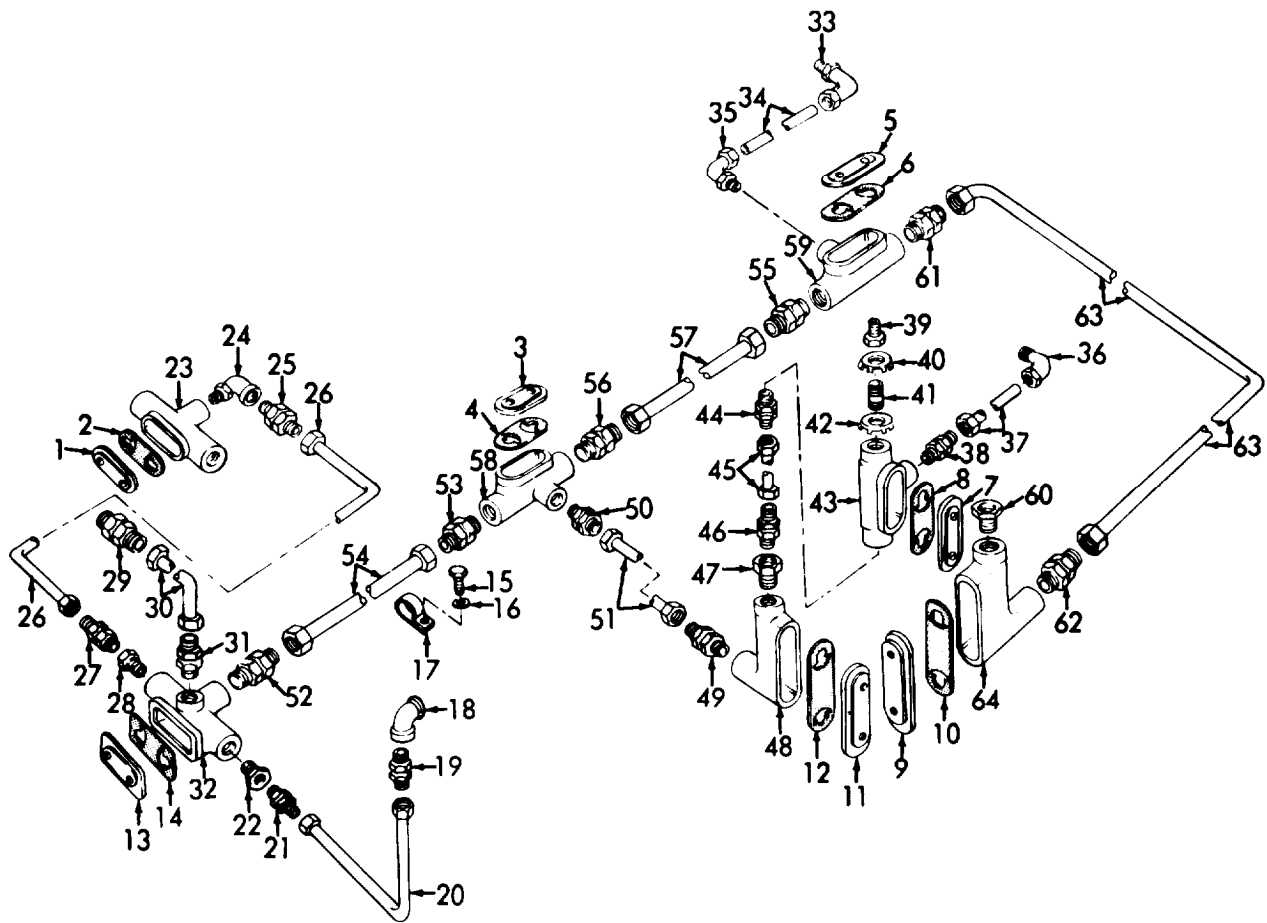
(7) Remove the elbow (36), conduit (97) and connector (38) from the conduit receptacle.

(8) Remove the bushing (39), keeper (40), nipple (41) and keeper (42) from the conduit receptacle

(9) Remove the conduit receptacle (43), connector (44), conduit (45), connector (46) and bushing (47) from the conduit receptacle (48), then remove the receptacle.

(10) Remove the connectors (49, 50, 52, 53, 55 and 56), conduits (51, 54 and 57) and conduit outlets (58 and 59).

(11) Remove the bushing (60), then remove the connectors (61 and 62), conduit (63) and receptacle (64).



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- |                |                     |                |                    |
|----------------|---------------------|----------------|--------------------|
| 1. Cover       | 17. Retaining strap | 33. Elbow      | 49. Connector      |
| 2. Gasket      | 18. Elbow           | 34. Conduit    | 50. Connector      |
| 3. Cover       | 19. Connector       | 35. Elbow      | 51. Conduit        |
| 4. Gasket      | 20. Conduit         | 36. Elbow      | 52. Connector      |
| 5. Cover       | 21. Connector       | 37. Conduit    | 53. Connector      |
| 6. Gasket      | 22. Bushing         | 38. Connector  | 54. Conduit        |
| 7. Cover       | 23. Receptacle      | 39. Bushing    | 55. Connector      |
| 8. Gasket      | 24. Elbow           | 40. Keeper     | 56. Connector      |
| 9. Cover       | 25. Connector       | 41. Nipple     | 57. Conduit        |
| 10. Gasket     | 26. Conduit         | 42. Keeper     | 58. Conduit outlet |
| 11. Cover      | 27. Connector       | 43. Receptacle | 59. Conduit outlet |
| 12. Gasket     | 28. Bushing         | 44. Connector  | 60. Bushing        |
| 13. Cover      | 29. Connector       | 45. Conduit    | 61. Connector      |
| 14. Gasket     | 30. Conduit         | 46. connector  | 62. Connector      |
| 15. Capscrew   | 31. Connector       | 47. Bushing    | 63. Conduit        |
| 16. Lockwasher | 32. Receptacle      | 48. Receptacle | 64. Receptacle     |

Figure 4-111. Electrical conduit removal disassembly, reassembly and installation.

b. Cleaning.

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.

Dry cleaning solvent (Fed. Spec. P-D-680 used to clean parts if potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean all metal parts with cleaning solvent, Fed. Spec. P-D-680 and dry thoroughly.

*c. Inspection and Repair.*

- (1) Inspect all parts for damage.
- (2) Replace all damaged parts.

*d. Assembly and Installation.*

(1) Install the connectors (61 and 62, fig. 4-111), conduit (63) and bushing (60) to the receptacle (64).

(2) Install the conduit outlets (58 and 59), conduits (51, 64 and 57) and connectors (49, 60, 52, 53, 56 and 56).

(3) Install the receptacle (48), then install the bushing (47), connector (46), conduit (46) and connector (44).

(4) Install the conduit receptacle (43), then install the keeper (42), nipple (41), keeper (40) and bushing (39).

(5) Install the connector (38, fig. 4-111), conduit (37) and elbow (36).

(6) Install the elbow (35), conduit (34) and elbow (33).

(7) Install the conduit receptacle (32), then

install the connector (31), conduit (30) and connector (29).

(8) Install the bushing (28), connector (27), conduit (26), connector (26), elbow (24), and receptacle (23).

(9) Install the bushing (22), connector (21), conduit {20}, connector (19) and elbow (18).

(10) Install the conduit retaining straps (17) and secure with lockwashers (16) and capscrews (15).

(11) Install and reconnect all wiring, than install gaskets (2, 4, 6, 8, 10, 12 and 14) and conduit outlet covers (1, 3, S, 7, 9, 11 and 13).

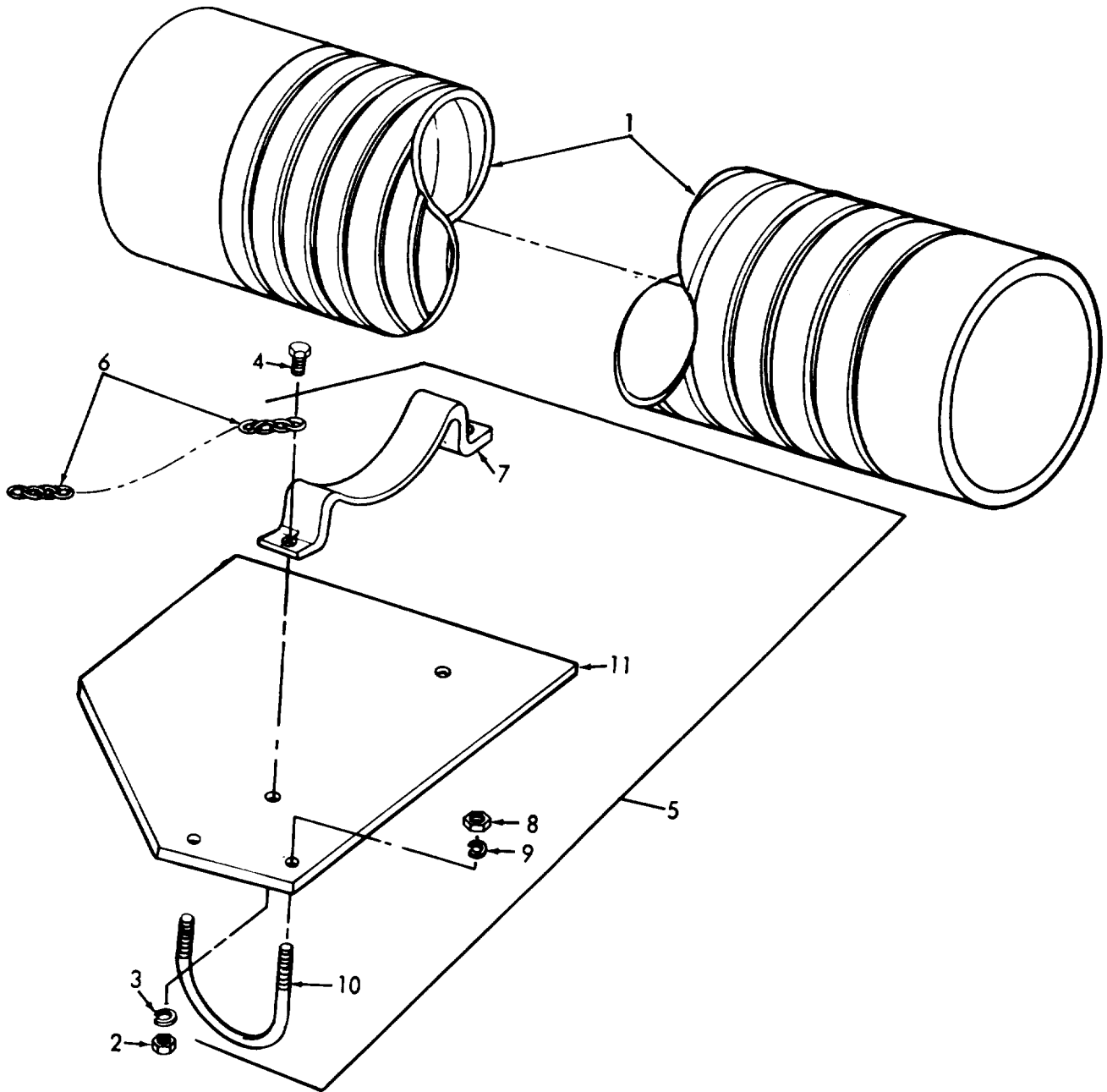
**4-82. Heat Exchanger Exhaust Duct and Retainer**

*a. Removal and Disassembly.*

(1) Remove the exhaust duct (1, fig. 4-112).

(2) Remove the nuts (2), lockwashers (3) and capscrews (4) and remove retainer assembly (5), chain (6) and retainer (7).

(3) Remove the nuts (8), lockwashers (9) and remove the straps (10) from the retainer base (11).



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- |                 |                  |                   |
|-----------------|------------------|-------------------|
| 1. Exhaust duct | 5. Retainer tray | 8. Nut            |
| 2. Nut          | 6. Chain         | 9. Lockwasher     |
| 3. Lockwasher   | 7. Retainer      | 10. Strap         |
| 4. Capscrew     |                  | 11. Retainer base |

Figure 4-112. Heat exchanger exhaust duct and retainer.

**b. Cleaning.**

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and

prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean part is potentially dangerous

to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean metal parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

**c. Inspection and Repair.**

(1) Inspect all parts for damage.

(2) Repair and/or replace a damaged exhaust duct.

(3) Replace all other damaged parts.

**d. Assembly and Installation.**

(1) Install the straps (10, fig. 4-112) onto the retainer base (11) and secure with lockwashers (9) and nuts (8).

(2) Install the retainer (7), chain (6) and retainer assembly (5), then install capscrews (4), lockwashers (3) and nuts (2).

(3) Install the exhaust duct (1).

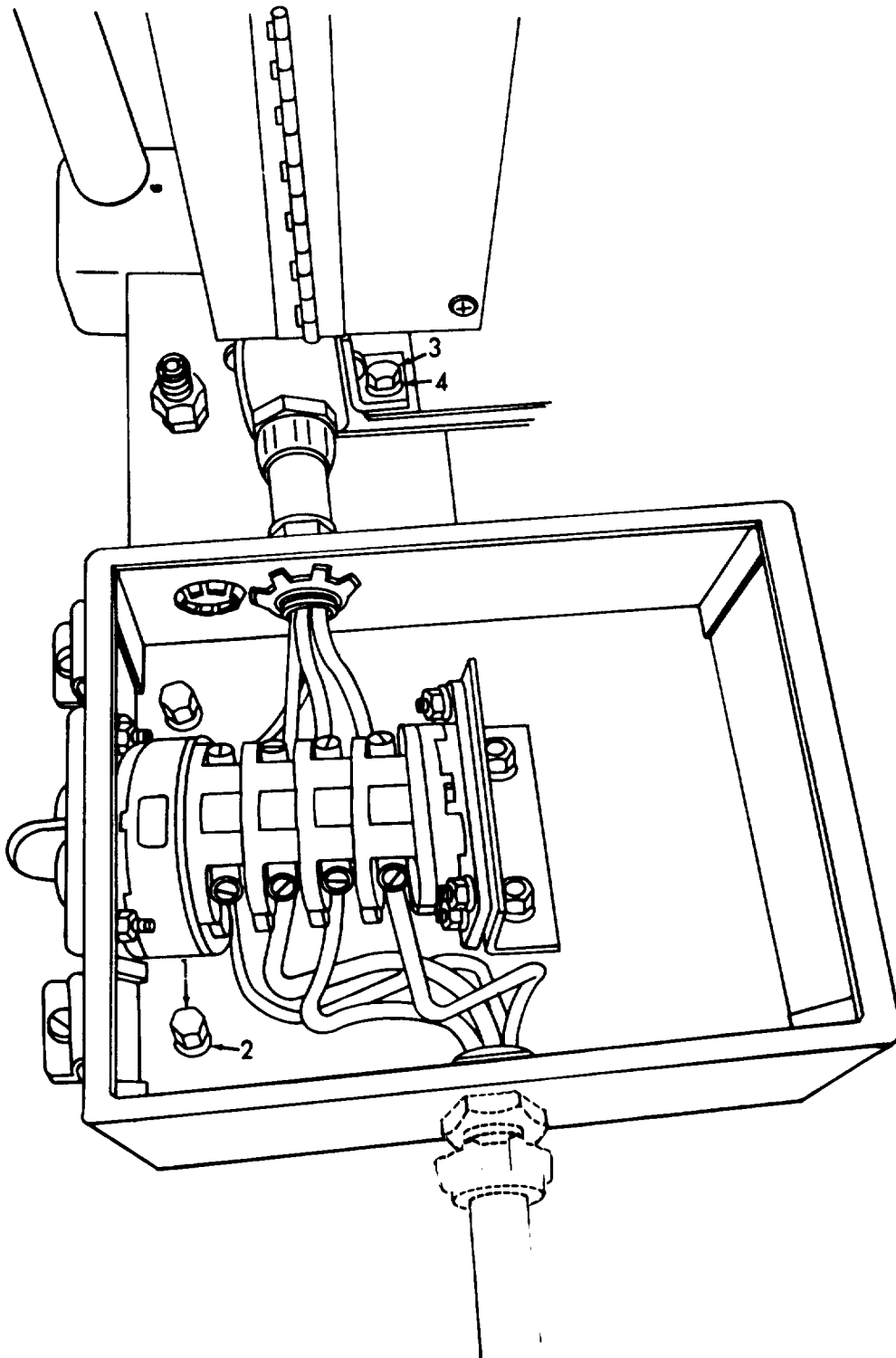
**4-83. Generator Switch Box and Outlet Box**

**a. Removal.**

(1) Tag and disconnect all wiring to the generator switch box and outlet box assemblies.

(2) Remove the four screws (1, fig. 4-113) and lockwashers (2) from inside the generator switch box. Remove the bolt (3) and washer (4) securing the generator switch box and outlet box assemblies to the engine-generator.





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- |               |           |
|---------------|-----------|
| 1. Screw      | 3. Bolt   |
| 2. Lockwasher | 4. Washer |

Figure 4-113. (Generator switch box and outlet box assemblies, removal and installation)

*b. Disassembly.*

(1) Remove the screws (1, fig. 4-114) securing the outlet box cover (2) to the outlet box.

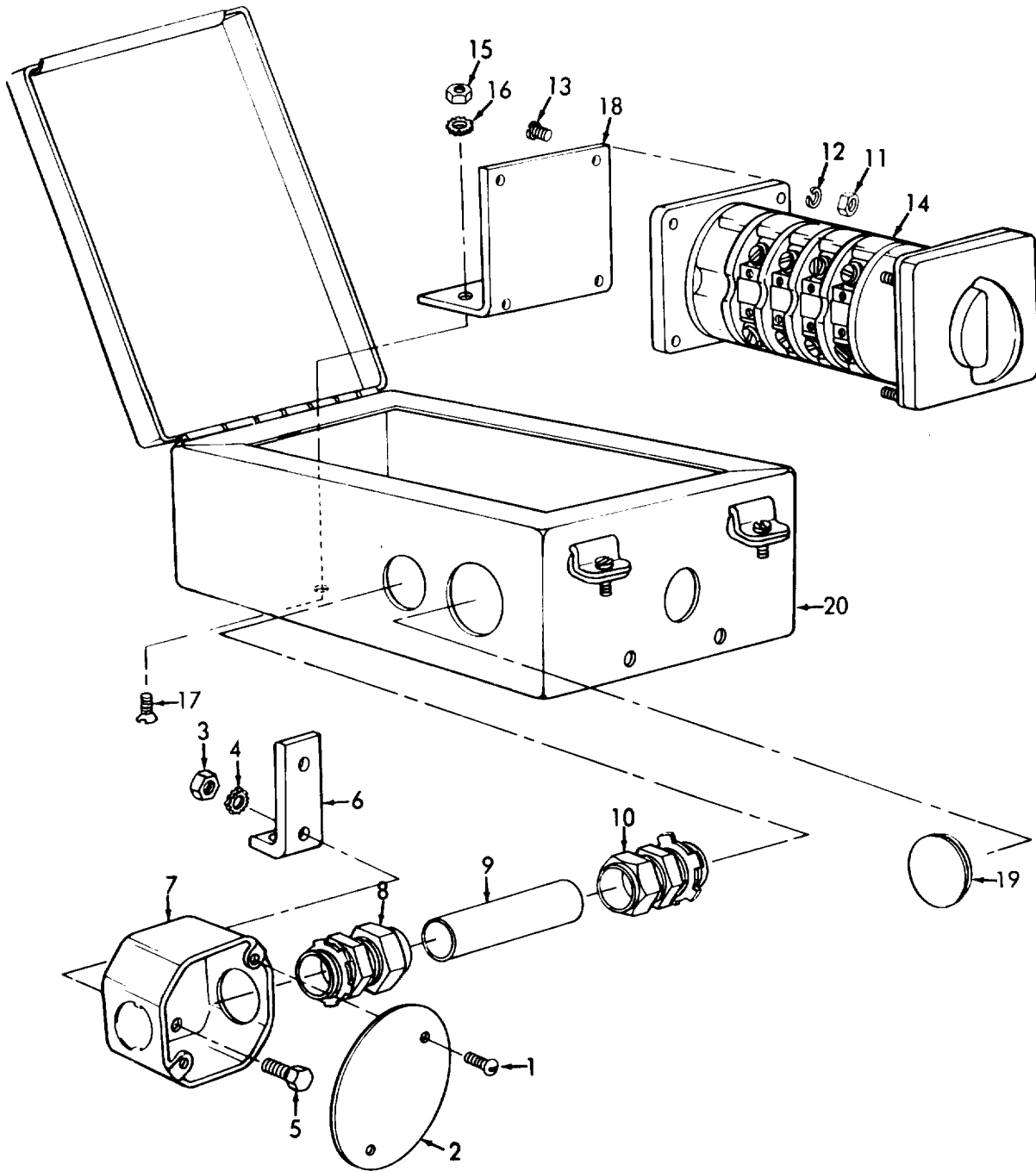
(2) Remove the nuts (3), lockwashers (4) and bolts (5) securing the junction support (6) to the outlet box.

(3) Remove the outlet box (7), connectors (8 and 10) and conduit (9) from the generator switch box.

(4) Remove the nuts (11), lockwashers (12) and screws (13) securing the rotary switch (14) and its support bracket.

(5) Remove the nuts (15), lockwashers (16) and screws (17) securing the support bracket (18) to the generator switch box.

(6) Remove the snap-in blank (19) from the generator switch box (20).



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- |               |               |                |                |
|---------------|---------------|----------------|----------------|
| 1. Screw      | 6. support    | 11. Nut        | 16. Lockwasher |
| 2. Cover      | 7. Outlet box | 12. Lockwasher | 17. Screw      |
| 3. Nut        | 8. Connector  | 13. Screw      | 18. Bracket    |
| 4. Lockwasher | 9. Conduit    | 14. Switch     | 19. Blank      |
| 5. Bolt       | 10. Connector | 15. Nut        | 20. Switch box |

Figure 4-114. Generator switch box and outlet box assemblies, disassembly and reassembly.

c. *Cleaning.*

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C).

(1) Clean metal parts with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

(2) Clean electrical components with dry compressed air and a clean cloth.

a. *Inspection and Repair.*

(1) Inspect all parts for damage.

(2) Replace all damaged parts.

e. *Assembly.*

(1) Install the snap-in blank (19, fig. 4-114) on the generator switch box (20).

(2) Install the support bracket (18) in the generator switch box and secure with screws (17), lockwashers (16) and nuts (15).

(3) Position the rotary switch unit (14) on the bracket ( 18) and secure with screws (13), lockwashers (12) and nuts (11).

(4) Install the conduit (9), connectors (8 and 10) and outlet box (7) on the generator switch box.

(5) Install the junction support (6) on the outlet box (7) and secure with bolts (5), lockwashers (4) and nuts (3).

(6) Install the outlet box cover (2) onto the outlet box (7) and secure with screws (1).

f. *Installation.*

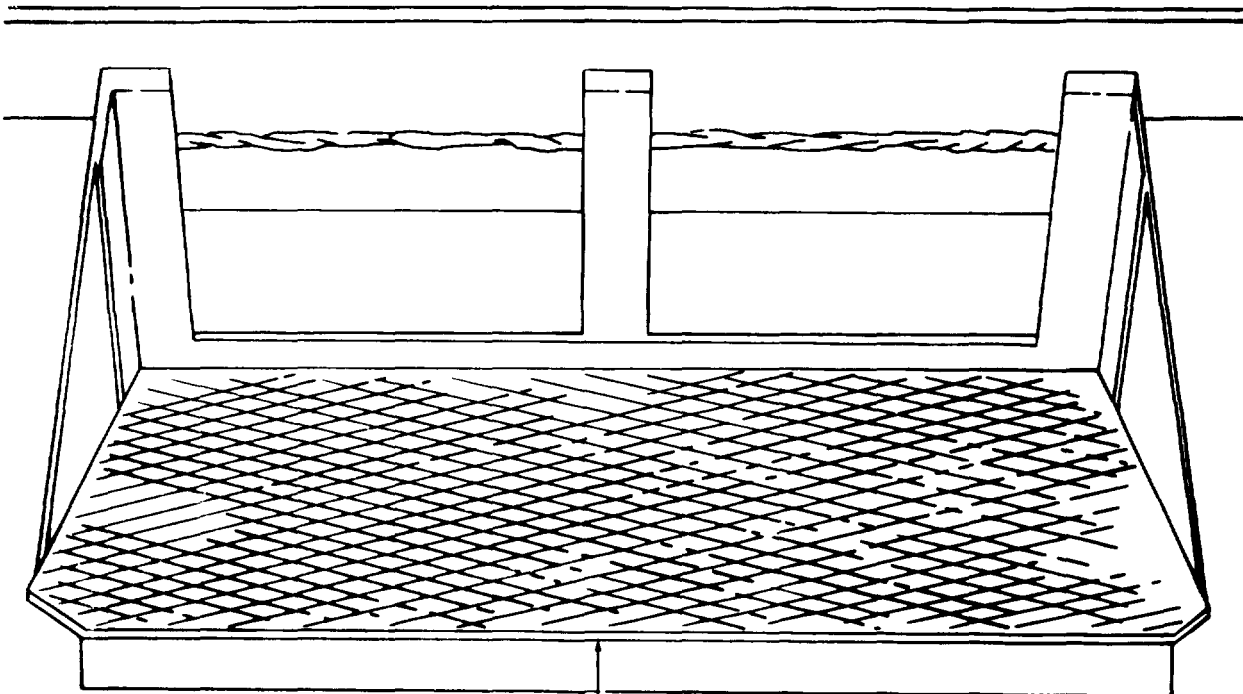
(1) Install the outlet box and generator switch box assemblies onto the engine-generator, then install the washer (4, fig. 4-113) and bolt (3). Install the lockwashers (2) and four screws (1) inside the generator switch box.

(2) Reconnect all wiring to the generator switch box and outlet box assemblies.

(3) For external power requirements with correct electrical connections, refer to wiring diagram shown in figure 1-8.

4-84. Step Assembly

a. *Removal* For removal of the step assembly refer to figure 4-115.



REMOVE STEP ASSEMBLY BY LIFTING UP AND PULLING OUT.

TS 10-3510-208-12/4-115

Figure 4-115. Step assembly, removal and installation.

## b. Cleaning

**WARNING**

Clean all parts in a well-ventilated area. Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly. Dry cleaning solvent (Fed. Spec. P-D-680) used to clean part is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100 to 138F. (38 to 59C. ).

Clean the step assembly with cleaning solvent, Fed. Spec. P-D-680, and dry thoroughly.

*c. Inspection and Repair.*

{1} Inspect the step assembly for cracks, breaks and other damage.

{2} Weld minor cracks and breaks.

*d. Installation.* Refer to figure 4-115 and install the step assembly.



**A P P E N D I X A**

**R E F E R E N C E S**

**A-1. Fire Protection**

TB 5-4200-200-10 ..... **Hand Portable Fire Extinguishers for Army Users.**

**A-2. Lubrication**

C9100-1L ..... **Fuels, Lubricants, Oils and Waxes**

LO 10-3510-208-12 ..... **Laundry Unit, Single Trailer Mounted W/Canvas Cover; Army Model M532 (Eidal Model ELT9T) NSN 3510-00-782-5294 (Edro Mode. EP120-LTU) NSN 3510-00-169-4735**

**A-3. Painting**

TM 43-0139 ..... **Painting Instruction for Field Use.**

**A-4. Maintenance**

LO 10-3510-208-12 ..... **Lubrication Order; Laundry Unit, Single Trailer Mounted w/Canvas Cover; Army Type M532 (EIDAL MDL ELT9T & EDRO MDL EP120LTU).**

TM 5-2805-204-14 ..... **Operator, Organizational, DS and GS Maintenance Manual: Engine Gasoline, Military Standard Models (2A042-11) 10 hp NSN 2805-00-952-3927; (4A084-11) 20 hp NSN 2805-00-952-3926; (2A042-111) 10 hp NSN 2805-00-872-5971; (4A084-III) 20 hp NSN 2805-00-872-5792**

TM 5-6115-275-14 ..... **Operator and Organizational Maintenance Manual: Generator Set, Gasoline Engine, 10 KW, (Iees engine) (Military Standard Model SF-10-MD) NSN 6115-00-075-1641.**

TM 740-90-1 ..... **Administrative Storage**

TM 750-244-3 ..... **Destruction of Army Materiel to Prevent Enemy Use**

TM 9-1870-1 ..... **Care and Maintenance of Pneumatic Tires**

TM 9-2330-274-14 ..... **Operator, Organizational, DS and GS Maintenance Instruction with Repair Parts and Special Tools List: Chassis Trailer, 3-1/2 Ton, 2 Wheel M536 (NSN 2330-00-777-2957) (Used with Laundry Unit, Trailer Mounted M532**

TM 10-3510-208-20P ..... **Organizational Maintenance Repair Parts and Special Tools List: Laundry Unit, Single Trailer, Mounted, W/Canvas Cover; Army Model M532 (Eidal Model ELT9T) NSN 3510-00-782-5294 (Edro Model EP120-LTU) NSN 3510-00-169-4735**

DA Pam 738-750 ..... **The Army Maintenance Management System (TAMMS)**

**A-5. Shipment and Storage**

TB 740-93-2 ..... **Preservation of TROSCOM Mechanical Equipment for Shipment and Storage**

TB740-93-3..... **Administrative Storage of TROSCOM Mechanical Equipment**





## APPENDIX B

## COMPONENTS OF END ITEMS LIST

## Section I. INTRODUCTION

## B-1. Scope

This appendix lists Integral Component *of and* Basic Issue Items (BII) for the Laundry Unit to help you inventory items required for safe and efficient operation.

## B-2. General

The components of end item list are divided into the following sections:

a. *Section II, Integral Components of the End Item.* These items, when assembled, comprise the Laundry Unit and must accompany it whenever it is transferred or turned in. These illustrations will help you identify these items.

b. *Section III, Basic Issue Items.* These are *minimum* essential items required to place the Laundry Unit in operation, to operate it and to perform emergency repairs. Although shipped separately packed, they must accompany the Laundry Unit 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 Table(s) of Organization and Equipment (TOE) /Modification Table of Organization and Equipment (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 end item 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 this list are:

code	<i>Used on</i>
ATX	Eidal, Model ELT-9T
CWE	Edro, Model EP120- LTU

g. *Quantity Required (Qut 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 inventory. Under the received column, list the quantity you actually receive on your major item. The date columns are for 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) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) US-ABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCV' D	DATE	DATE	DATE
4-32	1							6145-00-519-2821		Cable Assembly, Special Purpose. Consisting of the following items: Cable, Power, Electrical, 25 Feet Required	.....
		5935-00-981-6078	100456	Connector, Plug, Electrical.....	.....	ATX CWE	2EA				
		5935-00-581-4099	100447	Connector, Plug, Electrical.....	.....	ATX CWE	2EA				
		5935-00-284-3366	7541	Cover, Electrical.....	.....	ATX CWE	2EA				
4-32	2	4720-00-223-7362	MIL-H-370	Hose, Assembly, Fire, Consisting of the following items: Hose, Rubber, Fire, 25FT Required.	.....	ATX CWE	2EA				
		4730-00-948-1722	MS27025-9	Coupling Half, Quick Disconnect...	.....	ATX CWE	2EA				
		4730-00-360-0592	MS27021-9	Coupling Half, Quick Disconnect...	.....	ATX CWE	2EA				
		4730-00-055-8704	QS100M285	Clamp, Hose, Fire Hose.....	.....	ATX CWE	8EA				
4-32	3	4720-00-223-7362	MIL-H-370	Hose Assembly, Drain, 25FT, Consisting of the following items: Hose, Rubber, 25FT, Required.....	.....	ATX CWE	1EA				
		4730-00-055-8704	6-1-2207-125-1	Clamp, Hose.....	.....	ATX CWE	4EA				
		4730-00-950-9646	MS27025-10	Coupling Half, Quick Disconnect...	.....	ATX CWE	1EA				
		4730-00-949-8291	MS27021-10	Coupling Half, Quick Disconnect...	.....	ATX CWE	1EA				
		5330-00-360-0595	MS27030-5	Gasket, Coupling, Quick Disconnect	.....	ATX CWE	2EA				
4-32	4	4720-00-223-7362	MIL-H-390	Hose Assembly, Suction, 25FT, Consisting of the following items: Hose, Rubber, 25FT, Required.....	.....	ATX CWE	1EA				
		4730-00-360-0592	6-1-746-7-1	Coupling Half, Quick Disconnect...	.....	ATX CWE	2EA				
		4730-00-360-0589	MS27022-9	Coupling Half, Quick Disconnect...	.....	ATX CWE	2EA				

**Section II. INTEGRAL COMPONENTS OF END ITEM**

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) US-ABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a)	(b)							RCV'D	DATE	DATE	DATE
FIGURE NO.	ITEM NO.										
4-1	8	4730-00-585-8394	6-1-746-6-5 (60883)	Clamp, Hose.....	.....	ATX CWE	4EA				
		4730-00-707-6626	47416 (79466)	Strainer, Suction Hose.....	.....	ATX CWE	1EA				
4-1	1	4320-00-707-5969	47895 (79466)	Water Pump, Portable.....	.....	ATX CWE	1EA				
4-1	1	4720-00-540-2469	H134 (79470)	Hose Assembly, Fuel, Tumbler Burner Fuel Pump to Fuel Drum 11FT Required. Consisting of the fol- lowing items:	.....	ATX CWE	2EA				
				4720-00-540-2469	H134 (79470)	Hose, Nonmetallic Fuel, 5/16 in. I.D., 11FT Required.	.....	ATX CWE	2EA		
4-1	1	4730-00-533-4840	00904B604 (79470)	Adapter, Straight Tube.....	.....	ATX CWE	4EA				
		4720-00-708-8047	47888 (79466)	Hose Assembly, Fuel, 5/16 in. I.D., Heater Fuel Pump to Fuel Drum. Plug Assembly, Barrel, Fuel Supply Drum. Dryer Heater and Water Heater, Consisting of the following items:	.....	ATX CWE ATX	2EA				
2-5		4530-00-359-9569	67243 (79466)	Plug, Barrel, Standard.....	.....	ATX CWE	2EA				
		4710-00-359-9570	59-15A (60883)	Pipe Metallic 1/8 in. N.P.I.....	.....	ATX CWE	2EA				
2-5		4730-00-142-2177	MS39158-4 (96906)	Adapter, Straight, Pipe to tube...	.....	ATX CWE	2EA				
		3510-00-411-2671	6-1-1924-27-34A (72869)	Drum Assembly, Formula Control, Washer-Extractor, Consisting of the following items:	.....	ATX CWE	1EA				
2-5		3510-00-411-2668	6-1-1925-27-36 (81337)	Screen, Drum, Formula Control....	.....	ATX CWE	1EA				
		3510-00-930-2356	6-1-1928-27-73 (60883)	Record, Cotton, Formula Control...	.....	ATX CWE	1EA				
2-5		3510-00-411-2671	6-1-1924-27-34 (72869)	Drum Assembly, Formula Control, Washer-Extractor, Consisting of the following items:	.....	ATX CWE	1EA				
		3510-00-411-2668	6-1-1925-27-36 (81337)	Screen, Drum, Formula Control.....	.....	ATX CWE	1EA				
4-1	12	3510-00-930-2355	6-1-1928-27-74A (60883)	Record, Wool, Formula Control.....	.....	ATX CWE	1EA				
		4520-00-950-6357	90329 (79466)	Pipe Air Condition .....	.....	ATX CWE	1EA				

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) US-ABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a)	(b)							RCV' D	DATE	DATE	DATE
FIGURE NO.	ITEM NO.										
4 - 3 3	5	4720-00-903-4148	6-1-1900-113 (72869)	Hose Assembly, Metal. Duct, Exhaust, Generator w/Coupling half and Gasket	.....	ATX CWE	1EA				
4 - 2 2		4520-00-300-0333	13219E2501 (947403)	Heater, Duct Type, Tumbler Air Heater Exhaust	.....	ATX CWE	1EA				
		3510-00-933-7923	MI1-1-40624 (81349)	Tarpaulin, Canvas, Laundry Unit...	.....	ATX CWE	1EA				
4 - 1 1 5		3510-01-044-2503	6-1-1900-22 (81337)	Step Assembly, Operators Platform.	.....	ATX CWE	1EA				
		6115-00-066-4933	13211E6769-2 (97403)	Cover Assembly, Canvas, Generator Set.....	.....	ATX CWE	1EA				
4 - 3 4		5975-00-642-8937	6-1-1912-21-48A (72869)	Rod Assembly, Ground, Consisting of the following items: Rod, Ground.....	.....	ATX CWE	1EA				
		5999-00-496-5834	GG1 Type 9446 9489 (03743)	Clamp, Electrical.....	.....	ATX CWE	1EA				
		6145-00-189-6695	J-C-30	Wire, Electrical 24FT Required....	.....	ATX CWE	24FT				

Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) US-ABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a)	(b)							RCV' D	DATE	DATE	DATE
FIGURE NO.	ITEM NO.										
1-2		4210-00-270-4512	7714780 (19207)	Extinguisher: Fire, Carbon Dioxide 10 lb. Charged Capacity, Quick Release Type w/Bracket. DA Publications: TM 5-2809-259-14	.....	ATX CWE	1EA				
				TM 5-6115-275-14	.....	ATX CWE	1EA				
				TM 9-2330-274-14	.....	ATX CWE	1EA				
				TM 10-3510-208-12	.....	ATX CWE	1EA				

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section 1. INTRODUCTION

1. Scope. This appendix lists expendable supplies and materials you will need to operate and maintain the laundry unit. These items are authorized to you by CIA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

2. Explanation of Columns.

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instruction to identify the material (e.g., "Use cleaning compound, item 5, App. D").

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

- C - Operator/Crew
- 0- Organizational Maintenance

- F - Direct Support Maintenance
- H - General Support Maintenance

c. Column 3- *National Stock Number*. This is the National stock number assigned to the item use it to request or requisition the item.

d. *Column 4- Description*. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. *Column 6- 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 SUPPLIES AND MATERIALS LIST.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	9130-00-221-0680	MIL-G-3056 (81349) Gasoline, Automotive, Bulk as follows: Automotive Combat 91A	55 Gal Drum 3 Ea
2	C	9150-00-188-9858	Lubricating Oil, Engine 5 Gal. Pail as follows: OE 30	4-1/2 Qt
3	C	9150-00-186-6668	MIL-L-2104 (81349) Lubricating Oil, Engine 5 Gal Pail as follows: OE 10	Level Plug #2 Setting
4	C	6850-00-264-8942	Detergent and Super Tropical Bleach	Oz
5	C	6850-01-015-7939	Pre-spotting Agent	Oz
6	C	7930-00-985-6911	Detergent and Laundry, Nonionic, Type I	Oz
7	C	7930-00-965-9830	Anti-static Agent	Oz



## APPENDIX D

## MAINTENANCE ALLOCATION CHART

## Section 1. INTRODUCTION

## D-1. General

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component and the work measurement time required to perform the functions by the designated maintenance level. 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 tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions or explanatory notes for a particular maintenance function.

## D-2. Explanation of Columns in Section 11

a. Group Number, Column (1). A number is assigned to each group in a top-down breakdown sequence. The applicable groups are listed in the MAC in disassembly sequence beginning with the first group removed.

b. Assembly Group, Column (2). This column contains a brief description of the components of each numerical group.

c. Maintenance Functions, Column (3). This column lists the functions to be performed on the items listed in Column 2. The lowest maintenance level authorized to perform these functions is indicated by a symbol in the appropriate column. The symbol designators 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.

The maintenance functions are defined as follows:

(1) *Inspect*. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards through examination.

(2) *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.

(3) *Service*. Operations required periodically to keep an item in proper operating condition, i.e., to clean, to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

(4) *Adjust*. To maintain within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

(5) *Align*. To adjust specified variable elements of an item to bring about optimum or desired performance.

(6) *Calibrate*. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

(7) *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.

(8) *Replace*. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

(9) *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), end item, or system.

(10) *Overhaul*. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DM-WR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul

does not normally return an item to a like-new condition.

(11) 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 materiel 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.

d. *Maintenance Level, Column (4).* This column is made up of subcolumns for each category of maintenance. Work time figures are listed in these

subcolumns for the lowest level of maintenance authorized to perform the function listed in Column 3. These figures (shown directly below the symbol) indicate the average active time required to perform the maintenance function at the indicated category of maintenance under typical field operating conditions.

e. *Tools and Equipment, Column (5).* This column is provided for referencing by code, the special tools and test equipment (Sec. III) required to perform the maintenance functions (Sec. 11).

f. *Remarks, Column (6).* This column shall contain a letter code in alphabetic order which shall be keyed to the remarks contained in Section Iv.

**Section II. MAINTENANCE ALLOCATION CHART**

(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
01	HOSE GUARD, DRAIN BIN AND STORAGE CYLINDER BOX							
	Hose Guard .....	Replace		.4				
	Drain Bin .....	Replace		.5				
02	TOOL BOX, MAIN DRIVE GUARD AND JACKSHAFT GUARD							
	Tool Box .....	Replace		.3				
	Main Drive Belt Guard .....	Replace		.4				
03	HOSES AND CABLES							
	Cable, Special Purpose (Electrical) .....	Inspect		.06				
	Hose, Fire .....	Replace		.03				
04	GENERATOR MOUNTING FRAME, EXHAUST DUCT AND GROUND ROD							
	Supports, Engine-Generator (Inner and Outer) .....	Replace			1.0			
	Exhaust Duct Assembly (Pipe Elbow, Couplings, Gasket and Duct) .....	Inspect		.06				
	Ground Rod Assembly (Wire, Clamp and Rod) .....	Replace		.03				
		Repair		.06				

\*SUBCOLUMNS ARE AS FOLLOWS:  
 F - DIRECT SUPPORT  
 \*\*INDICATES WTMH REQUIRED

C - OPERATOR/CREW;  
 H - GENERAL SUPPORT;

O - ORGANIZATIONAL;  
 D - DEPOT



(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*				(5) Tools and equipment
			O	F	H	D	
05	WASHER, WIPER, TIE-DOWN BAR AND SUPPORTS	Replace	.3				
		Replace	.6				
06	FUEL FILTER, TUMBLER BURNER	Service	.2				
		Replace	.3				
07	RING, PACKING, WASHER AND BUSHING TUMBLER BURNER FUEL PUMP AND BLOWER AY	Replace	.2				
		Replace	.3				
08	HOSES, FITTINGS, PLUG AND PIPE ROTARY PUMP	Replace	.3				
		Replace	.6				
09	COVER AND BODY (FUEL PUMP) AND SHAFT ASSEMBLY	Replace	.4				
		Repair	1.5				
10	RINGS, PLUGS, SEALS AND GEARS TUMBLER BURNER BLOWER ASSEMBLY (INCLUDES MOTOR)	Replace	.4				
		Repair	1.5				
08	WATER PUMP, FRAME, AND SWITCH BOX	Replace	.6				
		Repair	1.1				
09	CIRCUIT BREAKER	Test	.2				
		Replace	.3				
10	CONDUIT OUTLET COVER, SWITCH BOX COVER, FRONT BOX COVER AND CONDUIT BOX	Replace	.5				
		Replace	.3				
09	FRAME ASSEMBLY	Replace	.3				
		Replace	.3				
09	TRANSFORMER, HANDY BOX AND SOLENOID	Replace	.4				
		Replace	.4				
10	ELECTRICAL CABLES	Replace	.4				
		Replace	.4				
10	FITTINGS, ELECTRICAL AND NONELECTRICAL	Test	.4				
		Replace	.5				
10	POWER TRANSFORMER	Replace	.5				
		Replace	.5				
10	HANDY BOX	Replace	.5				
		Replace	.5				
10	TRANSFORMER BRACKET AND JUNCTION BOX	Replace	.4				
		Test	.2				
10	COVER	Replace	.2				
		Replace	.2				
10	CAPACITOR, CONDENSER AND RESISTOR	Replace	.2				
		Replace	.2				
10	PIPES, HOSES AND FITTINGS	Replace	.4				
		Adjust	.2				
10	VALVE, GLOBE AND SOLENOID	Replace	.4				
		Replace	.4				
10	TUMBLER BURNER	Service	.2				
		Adjust	.2				
10	TUMBLER BURNER AND MOUNTING	Inspect	.2				
		Replace	1.0				
10	REPAIR	Repair	2.0				
		Repair	.35				
10	AIR SHUTTER	Service	.1				
		Adjust	.1				
10	ELECTRODE BURNER	Inspect	.1				
		Replace	.7				
10	NEZZLE	Service	.1				
		Inspect	.1				
10	PIPES AND FITTINGS	Replace	.7				
		Inspect	.2				
10	REPAIR	Replace	.4				
		Replace	.4				

\*STANDARD MAINTENANCE CATEGORIES: O - OIL, F - FUEL, H - HOSES, D - DRAINAGE  
 \*TYPICAL MAINTENANCE CATEGORIES: O - OIL, F - FUEL, H - HOSES, D - DRAINAGE

(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
11	Pressure Gage .....	Adjust		.1				
		Inspect		.1				
		Replace		.2				
	<b>TUMBLER EXHAUST MOTOR AND RELATED PARTS</b>							
	Exhaust Motor .....	Service	.2					
		Inspect	.1					
		Replace		1.0				
		Repair			1.7			
	Base .....	Replace			.6			
	Bearings, Seals .....	Replace			1.1			
	Belt Guard and Pulley .....	Replace		.5				
V-Belt .....	Adjust	.1						
	Replace		.3					
12	<b>TUMBLER DRIVE MOTOR CONDUIT BOX</b>							
	Conduit Box and Cover .....	Replace		.4				
		Repair		.3				
	Conduit, Elbow and Connectors .....	Replace		.3				
13	<b>TUMBLER DRIVE MOTOR AND RELATED PARTS</b>							
	Tumbler Drive Motor .....	Repair		.2				
		Adjust	.2					
14		Inspect	.1					
		Replace		1.0				
		Repair			1.7			
	Brace, Bracket and Base .....	Replace			.3			
	Coupling, Spider .....	Replace			.3			
	Bearings .....	Replace			1.1			
	<b>SPEED REDUCER</b>							
	Bearings, Seals .....	Replace			1.3			
	Worm and Shaft Gear, Shaft and Sprocket	Replace			1.7			
	Roller Chain .....	Repair			.5			
Housing and Housing Cap .....	Replace			.7				
15	<b>EXHAUST DUCT AND ADAPTER</b>							
	Air Temperature Control and Ther-	Adjust	.1					
	момeter .....	Inspect	.1					
		Replace	.2					
	Conduit and Fittings .....	Replace			.4			
		Repair			.3			
	Flange Assembly, Flue Elbow, Spout (Discharge Assy) .....	Replace			.5			
16	<b>EXHAUST FAN, BRACKET AND JACKSHAFT</b>							
	Exhaust Fan, Pulley and Shaft .....	Replace	.6					
	Bearing Units .....	Replace	.5					
	Cover and Bracket .....	Replace	.5					
17	<b>SWITCH BOX, GENERATOR TO WATER PUMP</b>							
	Conduit Box, Box Cover and Conduit	Replace	.4					
	Outlet Cover .....	Replace	.3					
18	<b>OUTLET DUPLEX BOX</b>							
	Conduit Box, Box Cover .....	Replace	.4					
	Receptacle Connector .....	Replace	.3					

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 \*\*INDICATES W/T/MH REQUIRED

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(1) Group number	(2) Component / assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
19	<b>COMPRESSOR AND MOUNTING BRACKET</b> Air Compressor Ay. ....	Service	.2					
		Adjust	.3					
		Test	.4					
		Replace	.5					
		Repair			2.0			
		Replace	.3					
		Replace	.7					
		Replace			1.0			
		Replace	.5					
		Replace	.2					
20	<b>COMPRESSOR STARTER SWITCH</b> Compressor Starter Switch Assembly Cover and Box (Compressor Starter Switch) .....	Replace	.4					
		Compressor Starter Switch (Circuit Breaker)						
		Test	.1					
		Replace	.2					
21	<b>AIR CYLINDER AND RELATED PARTS</b> Thermal Release Heater .....	Replace	.2					
		Air Cylinder and Bracket .....	Replace	.5				
		Pressure Switch .....	Replace	.4				
		Pressure Gage .....	Replace	.2				
		Hose and Pipe .....	Replace	.3				
22	<b>HEAT EXCHANGER HOOD</b> Valves & Fittings .....	Replace	.5					
		Plate Backup and Strut .....	Replace			.4		
		Screen, Rear Cover, Front Cover and Cover Plates .....	Replace			.6		
		Hood Assembly .....	Replace	.5				
		Repair	.3					
23	<b>TUMBLER AIR HEATER</b> Mounting Plate and Box Covers .....	Replace	.5					
		Air Return Boxes (Flue's) .....	Replace	.7				
24	<b>AIR HEATER MOUNTING PLATE AND FUEL LINE SUPPORT</b> Fuel Line Support .....	Replace	.2					
		Air Heater Mounting Plate .....	Replace	.6				
		Repair	.3					
25	<b>TUMBLER CYLINDER, BASE, CONTROL PANEL AND RELATED PARTS</b> Tumbler Barrel and Trunnion .....	Replace			3.0			
		Repair			1.0			
		Tumbler Cylinder .....	Replace			6.0		
		Repair			2.0			
		Control Panel .....	Test	.6				
		Replace	.5					
		Repair	.8					
		Tumbler Control With Durable Press ...	Test	.3				
Replace	.5							
	Repair	.8						

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(1) Group number	(2) Component / assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
	Tumbler Base .....	Replace			4.0			
		Repair			1.5			
	Switch Box Cover, Control Box Cover, and Cleanout Door .....	Replace			2.0			
		Repair			.6			
	Timing Device Minute Timer .....	Test		.2				
		Replace		.3				
	Alarm Device Signal Horn .....	Replace		.2				
	Conduit and Fittings .....	Replace		.4				
		Repair		.6				
26	<b>WATER HEATER PANEL BOARD</b>							
	Covers, Plate and Bracket .....	Replace		.2				
	Circuit Breaker .....	Test		.1				
		Replace		.2				
27	<b>Switch Box</b> .....	Replace		.2				
	<b>WATER HEATER BURNER AND RELATED PARTS</b>							
	Burner Assembly (Water Heater) .....	Service		.2				
		Adjust		.2				
		Aline		.1				
		Replace		.5				
		Repair		.8				
	Electrodes, Nozzle and Air Nose (Burner)	Service		.2				
		Adjust		.2				
		Inspect		.2				
		Replace		.9				
	Water Heater Fuel Lines and Pressure Gage							
	Fuel Lines and Fittings .....	Replace		.2				
		Repair		.3				
	Pressure Gage .....	Replace		.2				
	Water Heater, Valves, Lines and Fittings Lines and Fittings .....	Replace		.4				
		Repair		.3				
	Valves .....	Replace		.3				
28	<b>WATER HEATER FUEL FILTER AND RELATED PARTS</b>							
	Fuel Filter .....	Service	.2					
		Replace		.4				
		Repair		.5				
	Pipe and Fittings .....	Replace		.3				
	Brackets .....	Replace		.4				
29	<b>WATER HEATER TRANSFORMER</b>							
	Cable Assembly .....	Replace		.4				
	Conduit & Fittings .....	Replace		.4				
	Power Transformer .....	Test		.4				
		Replace		.5				
	Bracket and Cover .....	Replace		.4				
30	<b>FUEL PUMP WATER HEATER BUR- NER</b>							
	Power Rotary Pump .....	Replace		.6				
		Repair		.8				
	Cover Plate and Body .....	Replace		.4				
	Strainer Plate .....	Service	.3					
	Gear Set, Seals and Housing .....	Replace		.1.2				
	Shaft Assembly .....	Replace		.5				

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(1) Group number	(2) Component / assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
31	WATER HEATER BLOWER AND MOTOR Blower Assembly.....  Shutter and Blower Wheel..... Conduit and Fittings.....	Inspect		.5				
		Replace		1.5				
		Repair		1.7				
		Replace		1.75				
		Replace		.3				
		Repair		.2				

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(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
32	Motor, Electrical .....	Service		.2				
	WATER HEATER BURNER BLOWER MOTOR	Replace		.5				
33	Blower Motor .....	Service		.2				
	Bearings (Front and Rear) .....	Replace		.4				
33	WATER HEATER TANK AND RELATED PARTS	Replace			1.7			
	Water Heater Assembly Temperature Gage .....	Adjust		.1				
34	Hose, Pipe and Fittings .....	Inspect		.1				
	Diaphragm Valve .....	Replace		.2				
34	Water Heater Tank .....	Replace		.5				
	Skid Assembly .....	Replace						
34	WATER LEVEL PLATES AND TUBES	Replace						
	Water Level Plates .....	Replace		.4				
35	Water Level Control	Replace		.3				
	Hose and Fittings .....	Adjust		.2				
35	Sight Assembly Gage .....	Replace		.7				
	Water Height Graduator .....	Repair		.8				
36	Temperature Gage .....	Replace		.7				
	Water Container .....	Repair		.5				
36	CONTROL BOX ASSEMBLY	Adjust		.1				
	Timing Device Minute Timer .....	Inspect		.1				
37	Signaling Device Alarm Bell .....	Replace		.4				
	Lights .....	Replace		.2				
37	FORMULA CONTROL FINGER BOX AND RELATED PARTS	Replace		.2				
	Formula Control Ay .....	Replace			.5			
38	Finger Box .....	Repair			1.0			
	Record Lock Ay Drum Ay .....	Replace		.2				
38	Motor Electric (Drum Drive) .....	Replace		.4				
	PANEL AND MAIN CONTROL BOX, AND AIR MANIFOLD ASSEMBLY	Replace		.4				
38	Tumbler Control Panel Main Control Panel and Control Box Window .....	Replace		1.5				
	Fuse Block, Terminal Blocks, Junction Rox and Fuse Holder .....	Repair		1.8				
38	Starter, Relays, Switches, Valves, Contacts, Sockets, Heaters, Terminals	Test		.6				
		Replace			1.3			
38		Test		.8				
		Replace			1.5			

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(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
39	Fuses	Test		.2				
		Replace		.2				
	Air Manifold Assembly	Replace		1.2				
		Repair		.6				
	AIR LINES							
	Hose	Service		.2				
		Replace		.5				
		Repair		.6				
		Nipples and Tee	Service		.2			
			Replace		.5			
40	WASHER EXTRACTOR MAIN DRIVE BRAKE ASSEMBLY, BRAKE AIR CYLINDER, CYLINDER LOCK PLATE, MAIN BEARING ASSEMBLY AND IDLER PULLEY							
	Main Brake Assembly (Air Brake Cylinder, Hub, Sheave and Related Parts)	Replace		.6				
		Repair		.7				
	Brake Air Cylinder	Replace		.3				
		Repair		.7				
	Main Bearing Assembly	Replace		2.0				
	Idler Pulley	Inspect	.1					
		Replace		.5				
		Repair		1.0				
	41	WASHER EXTRACTOR FRONT HEAD SHEET ASSEMBLY AND CYLINDER						
Head Sheet (door) Assembly		Replace		.8				
		Repair		.8				
Cylinder Assembly		Replace		1.3				
42	VALVE DRAIN ASSEMBLY	Repair		1.2				
		Replace		1.0				
43	WASHER EXTRACTOR FRAME AND RELATED PARTS							
	Washer-Extractor Frame	Replace		.8				
		Repair		1.6				
44	Shock Absorber Assembly	Replace		.7				
	Washer-Extractor Base	Replace		2.0				
		Repair		1.0				
	WASHER MOTORS, EXTRACTOR MOTORS, WASHER DRIVE AND RELATED PARTS							
Motor, Electrical (Washer)	Adjust		.2					
	Inspect	.1						
	Replace		1.0					
	Repair		1.7					
Extractor Belt Guard	Replace		.2					
V-Belts	Adjust		.2					
	Replace		.3					
Motor, Electrical (Extractor)	Adjust		.2					
	Inspect	.1						
	Replace		1.0					
	Repair		1.7					
Bearings, Motor	Replace		1.2					
Drive Sheaves	Replace		.6					

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(1) Group number	(2) Component assembly	(3) Maintenance function	(4) Maintenance category*					(5) Tools and equipment
			C	O	F	H	D	
	Air Cylinder .....	Replace		.4				
	Repair .....				.7			
	Base, Motor .....	Replace			1.5			
	Repair .....				.5			
	Hydro-Sheave .....	Inspect	.1					
	Replace .....			1.5				
	Repair .....				2.0			
45	<b>ELECTRICAL CONDUIT</b>							
	Conduit Outlet Covers .....	Replace		.3				
	Outlet and Receptacles .....	Replace		.2				
	Conduit & Fittings .....	Replace		.4				
46	<b>DRAIN PAN ASSEMBLY</b>							
	Drain Pan .....	Replace			1.0			
	Repair .....				1.2			
47	<b>HEAT EXCHANGER EXHAUST DUCT AND RETAINER</b>							
	Exhaust Duct .....	Replace		.05				
	Repair .....			.2				
	Retainer and Retainer Base .....	Replace		.05				
48	<b>GENERATOR SWITCH BOX AND OUTLET BOX</b>							
	Generator Switch Box .....	Replace		.8				
	Switch, Rotary .....	Replace		.3				
	Outlet Box, Cover, Supports, Connectors and Conduit .....	Replace		.4				
49	<b>FIRE EXTINGUISHERS, STEP ASSEMBLY AND CANVAS ITEMS</b>							
	Fire Extinguishers .....	Service	.2					
	Inspect .....		.1					
	Step Assembly .....	Replace		.2				
	Canvas Cover .....	Replace	.3					
	Repair .....				.8			

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By Order of the Secretary of the Army:

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

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FROM: (YOUR UNIT'S COMPLETE ADDRESS)  
 PFC JOHN DOE  
 CoA, 3<sup>d</sup> ENGINEER BN  
 FT. LEONARD WOOD MO 63108  
 DATE 16 DEC 74

PUBLICATION NUMBER: TM5-6115-200-20 AND P  
 DATE: 1 APR 72  
 TITLE: GENERATOR SET 10 KW  
 NSN 6115-00-231-7286

BE EXACT... PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has <u>6</u> cylinders. The engine on my set only has <u>4</u> cylinders. Change the manual to show <u>4</u> cylinders
81		4-3		Callout <del>16</del> on figure 4-3 is pointing at a <u>bolt</u> . In the key to fig. 4-3, item 16 is called a <u>shim</u> . Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered so the NSN is wrong. Please give me a good NSN

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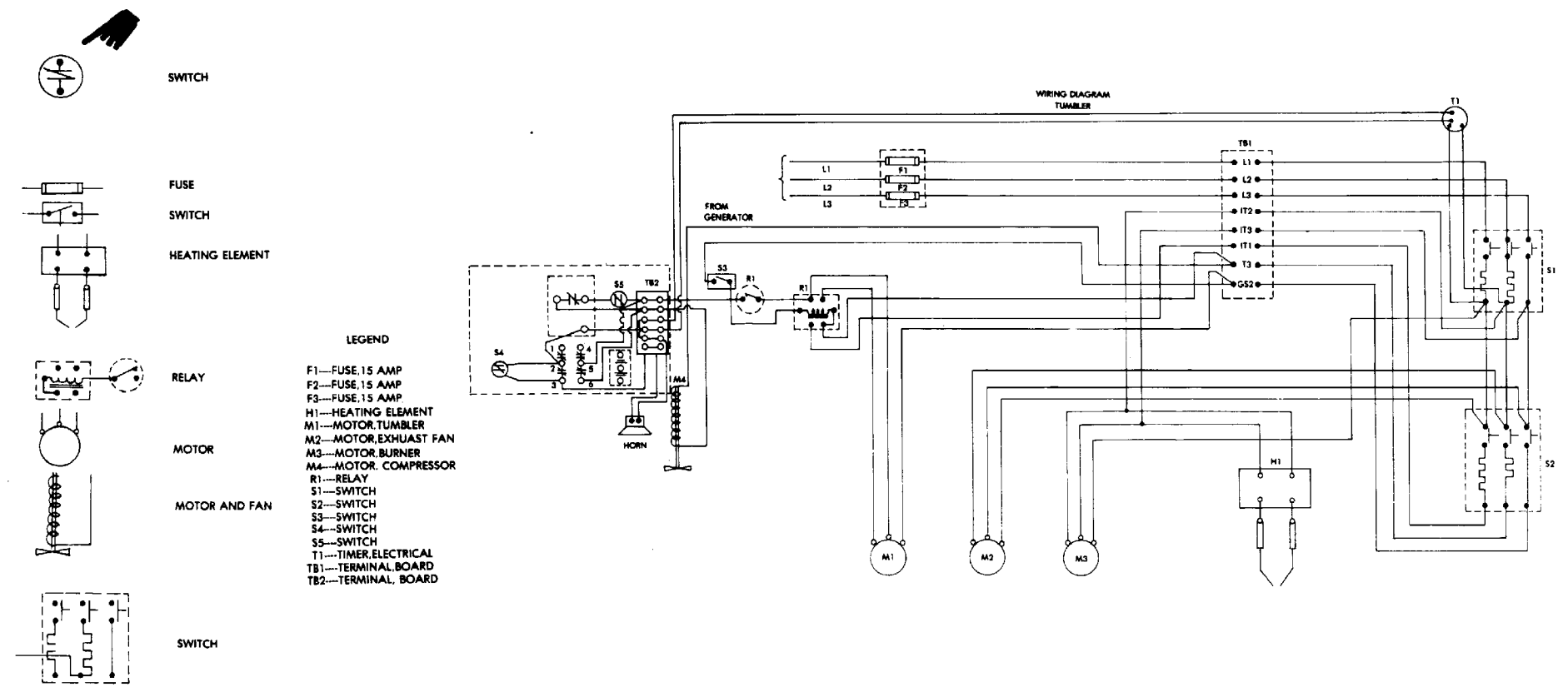
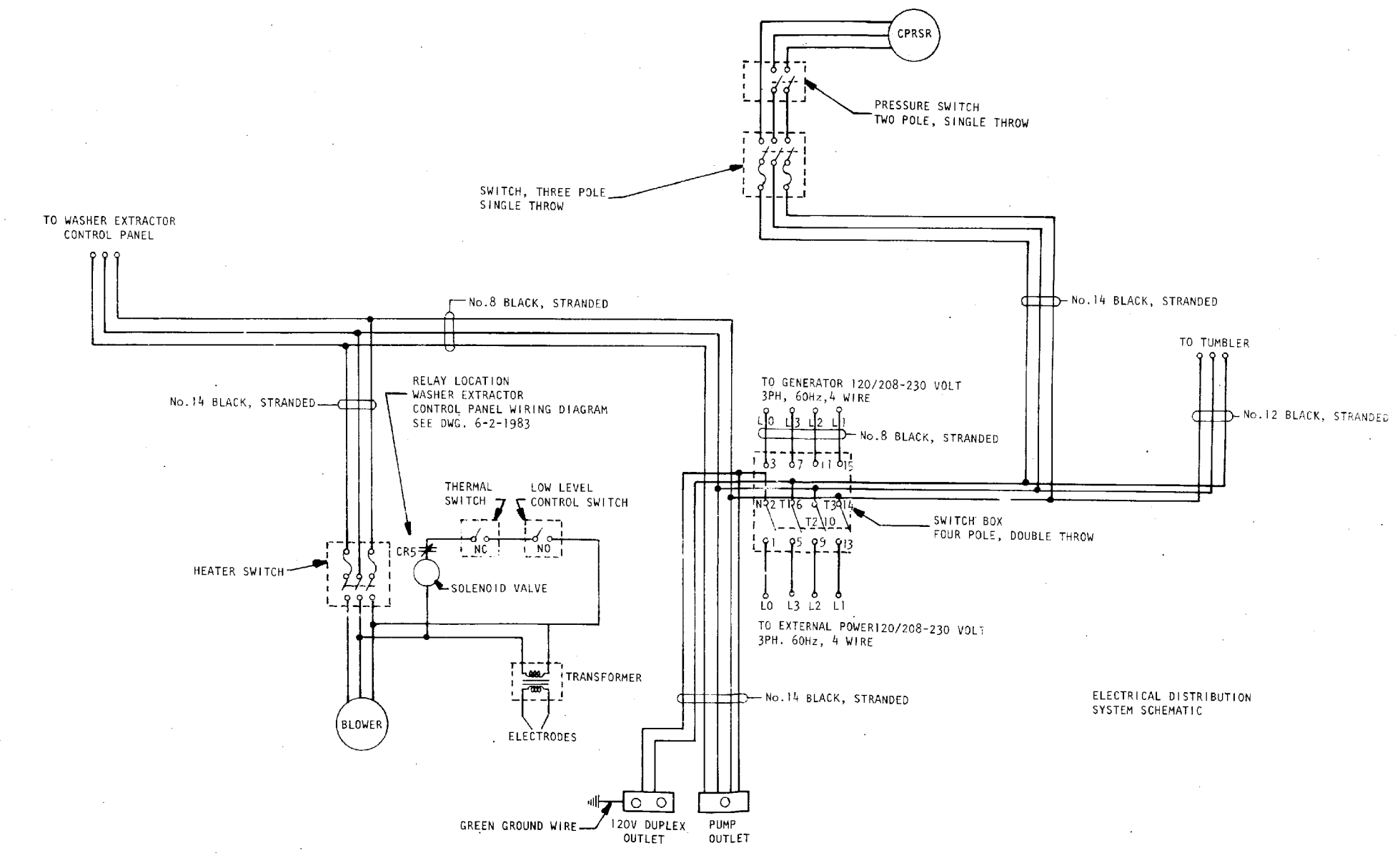


Figure FO-2 Wiring Diagram



ELECTRICAL DISTRIBUTION SYSTEM SCHEMATIC

Figure FO-3. Electrical distribution system schematic.

# 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 milliliters = .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

