TM 5-4940-225-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL

SHOP EQUIPMENT, ORGANIZATIONAL REPAIR

TRUCK MOUNTED

(SOUTHWEST TRUCK BODY MODEI SEORL)

FSN 4940-169-3041

(SOUTHWEST TRUCK BODY MODEL SEORLT)

FSN 4940-164-4719

HEADQUARTERS, DEPARTMENT OF THE ARMY

08 DECEMBER 1971

WARNING

Static electricity and leakage currents from electric equipment can build up in the shop set and cause injury or death to personnel unless the equipment is Properly grounded.

WARNING

When the dynamotor-weldor is rigged for remote fine adjustment of D.C. amperes, the rheostat assembly must be protected from elements that are a conductor of electricity such as water, mud, etc.

TECHNICAL MANUAL
No. 5-4940-225-12

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *8 December 1971*

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

SHOP EQUIPMENT, ORGANIZATIONAL REPAIR, TRUCK MOUNTED

(SOUTHWEST TRUCK BODY MODEL SEORL)

FSN 4940-169-3041

(SOUTHWEST TRUCK BODY MODEL SEORLT)

FSN 4940-164-4719

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. scope

These instructions are published for the use of the personnel to whom the Southwest Model SEORL Shop Set, Serial Number Range S-2-864 thru S-2-866 and Model SEORLT Shop Set, Serial Number Range S-12-001 thru S-12-048 is issued. The Organizational Maintenance Repair Parts and Special Tools List will be contained in TM 5-4940-225-20P.

1-2. Maintenance Forms and Records

a. DA Forms and records used for equipment maintenance will be only those prescribed in TM 38-750.

b. See TM 740-90-1 for administrative storage of the shop truck.

c. See TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command) for destruction of the shop truck.

1-3. Reporting of Errors

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

Section II. DESCRIPTION AND DATA

1-4. Description

The Southwest Model SEORL and Model SEORLT Shop Sets (fig. 1-1) are truck mounted and contain tools and equipment that are used for maintenance and repair of equipment. The shop set is equipped with door's to provide easy access to the equipment in the set (fig. 1-2). A weather protected work area is provided when the tent is installed (fig. 1-3). A dynamotor-welder is installed in the shop set, and can be driven by the truck's engine through the power take-off (P. T. O.) or by a 240-volt AC external power source. When driven by the engine, it provides direct current for welding and alter. nating current for the shop set tools and equipment. When driven by an external power source, the alternating current generator acts as a synchronous motor and drives the d dynamotor-welder to provide direct current for welding. The external power is also utilized to operate the electrical tools and equipment.

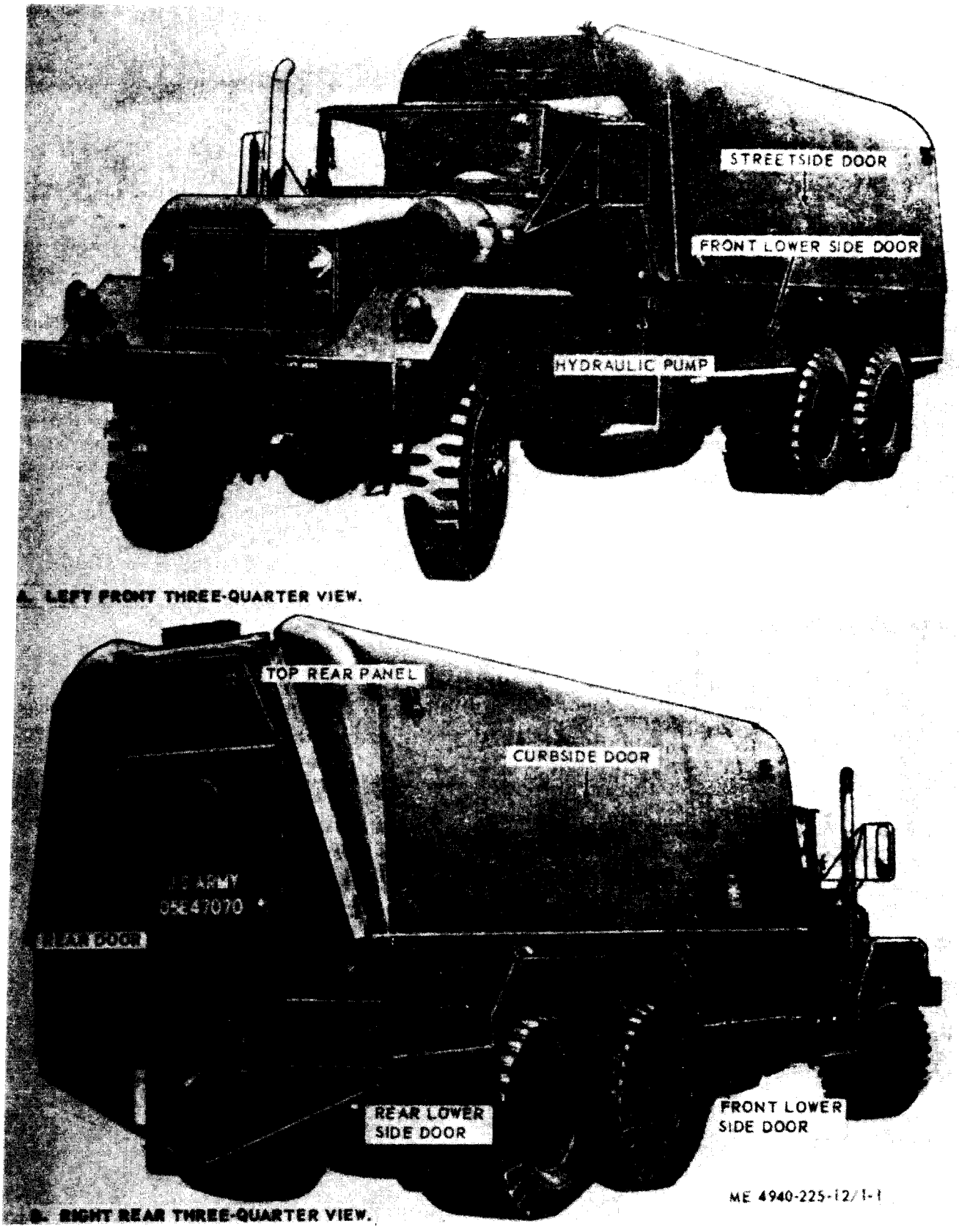
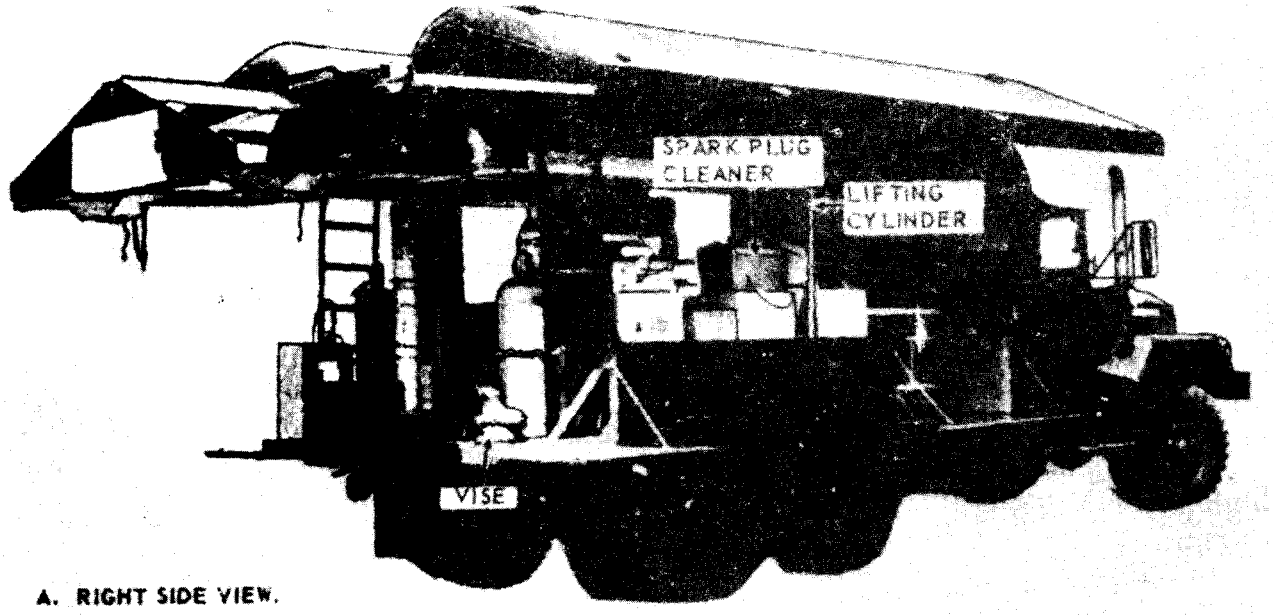
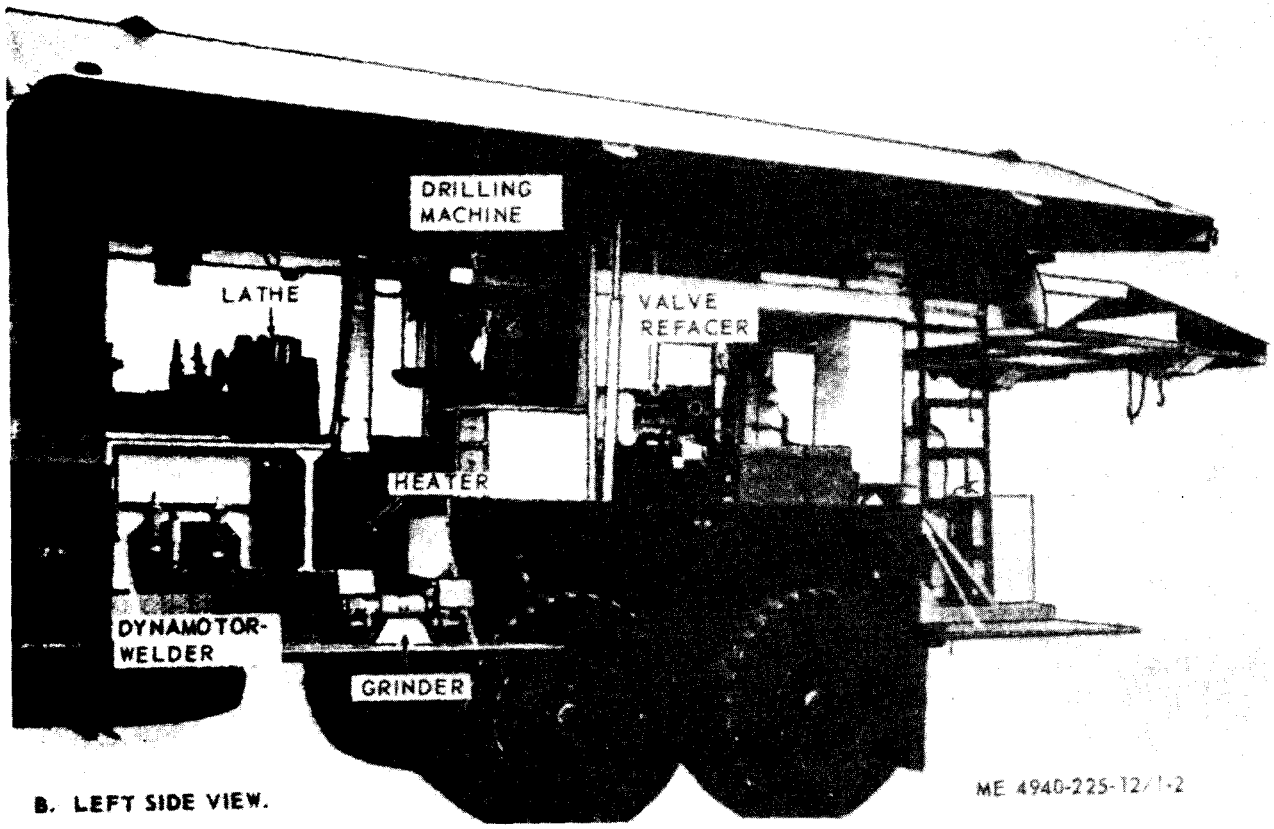


Figure 1-1. Shop set, doors closed.

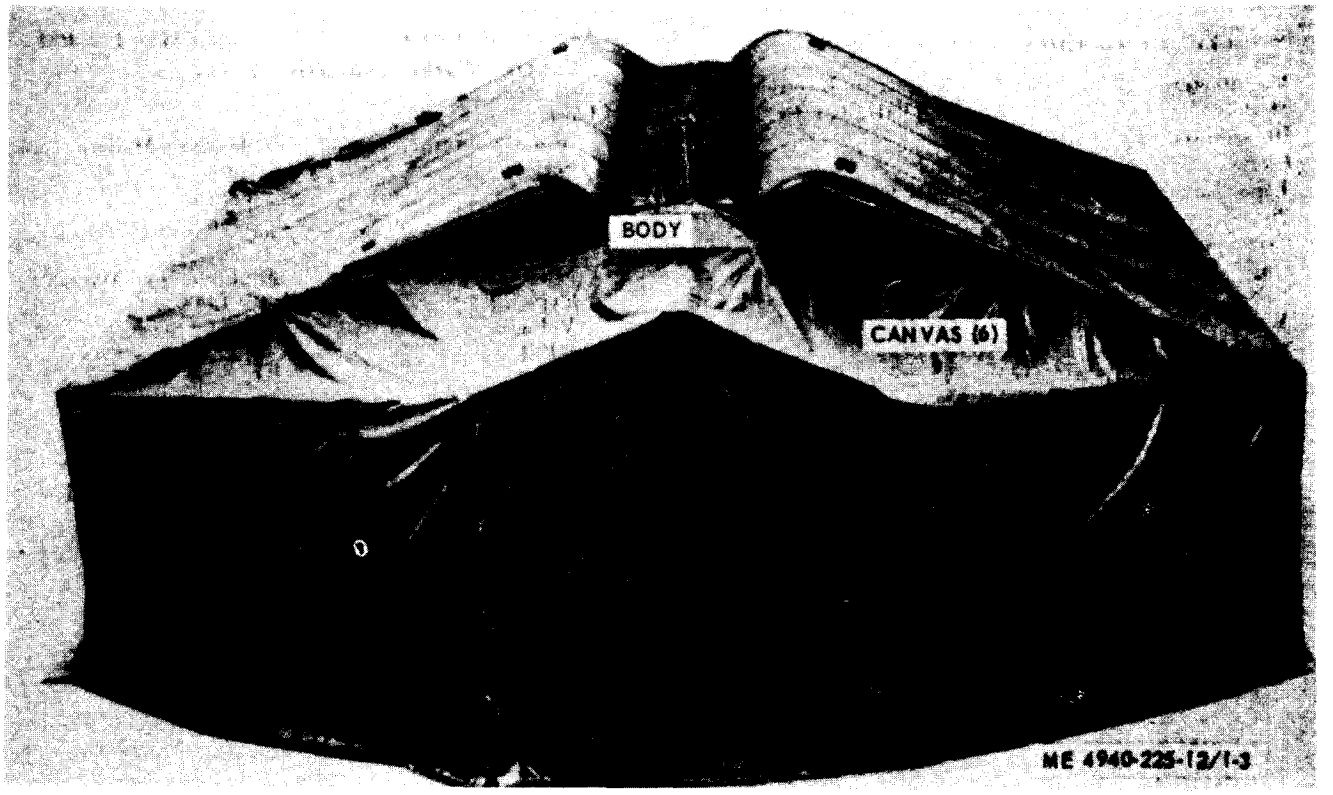


A. RIGHT SIDE VIEW.



B. LEFT SIDE VIEW.

Figure 1-2. Shop set, doors open.



Fiigure 1-3. Shop set. tent installed,

1-5. Difference Between Models

This manual covers Southwest Model SEORLT and Model SEORL. The major difference is that Model SEORLT is mounted on truck chassis Model XM8ll and is equipped with an overspeed relay and a cab controlled governor to protect the dynamotor-welder. Model SEORL has a mechanical governor to protect the dynaMotor-welder. All other components are identical.

1-6. Identification and Tabulated Data

a. Identifcation. The shop set has 4 major instruction plates.

(1) *Tie down plate.* Located on the left and -right front side of shop set. Specifies tie down points.

(2) *Lift pump plate.* Located at lift pump, specifies operating instructions.

(3) *Canvas support frame.* Located on the interior of the side doors. Illustrates the erected canvas frame.

(4) *Transportation data plate.* Located on right front, side door. Specifies shipping data and dimensions.

b. Tabulated Data.

(1) *Shop set.*

Manufacturer. . . . . Southwest Truck Body Co., Inc.
Model . . . . . SEORL
Serial number range. .. . . . . S-12-864 thru S-1 2-866
Model . . . . SEORLT
serial number range. . . . . S-12-001 thru S-12-048

(2)Dynamotor-welder.

Manufacturer. . . . . Hobart
Model . . . . . SMR 300
Specification. . . . . 3766 Var. 3
D.C. Generator:
volts 40
Amperes 300
RPM l500-l800
Duty Cycle 60percent
A.C. Generator:
volts 240
Amperes (per phase) 36
KW 12
P.F. (Power Factor) 0.8
Phase 3
Cycle . . .60 60
RPM 1800
Duty Cycle . . . . . 100 per cent
Motor:
Volts 240
Amperes 56
Phase 3
Cycle 30/60
RPM 1500-1800
HP 23

(3) *Personnel heater.*

Nomenclature. . . . . Heater. Multifuel. Space w/ Blower. 60,000 BTU.
FSN 3420-113-1033
Manufacturer. . . . . Hunter Mfg. Co.
Model . . . .UH-68D Type l

Voltage ..... 120 Volts A.C. 50 / 60 cycle single phase

(4) *Air compressor drive motor.*

Manufacturer ..... Marathon Electric Mfg. Co.
Model ..... 184T4R2474 BC
Horsepower 2
Frame 184
Type T4R-BE
Phase 3
Cycle 60
Duty ..... Continuous
Volts 220
Amps 6.4
Speed 1730
Rise ..... 440°C

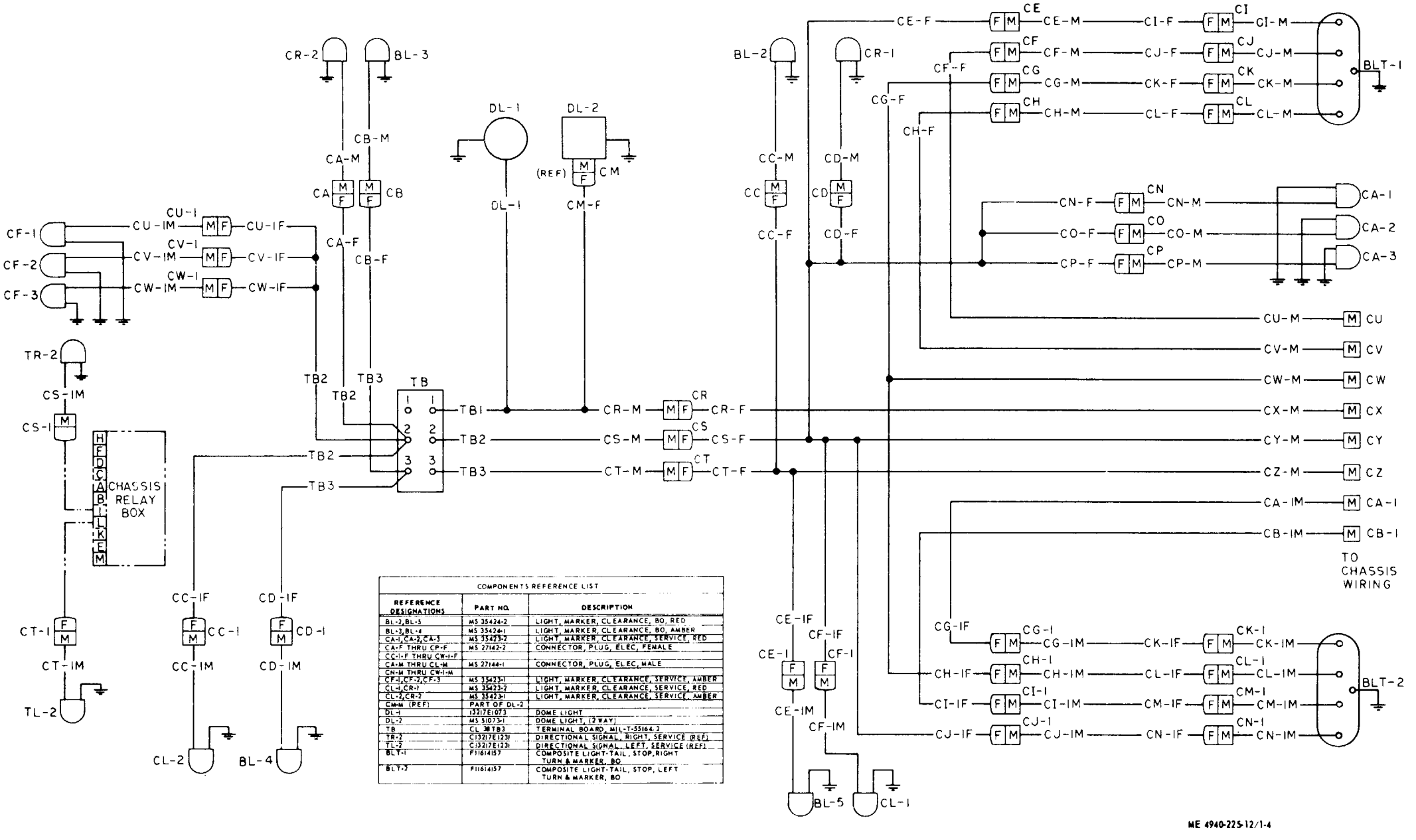
(5) *Air compressor.*

Manufacturer ..... Curtis Mfg. Co.
Model C-90
Type ..... Two-stage, reciprocating
Bore ..... 3⅜ and 1-7 / 8
Speed ..... 595 RPM
Stroke 2¼
Compressor output ..... 5.3 CFM @ 175 PSI

(6) *Lathe and drive motor.*

Lathe:
Manufacturer ..... Standard Modern Tool Co.
Series 2000
Model 32435
FSN 3416-826-3890
Drive Motor:
Manufacturer ..... Robbins and Myers
Type FP-BOW-1
Voltage ..... 230 V. 60 cycle
RPM 1725
Amps 2.6
Frame 561
Rise ..... 50°C

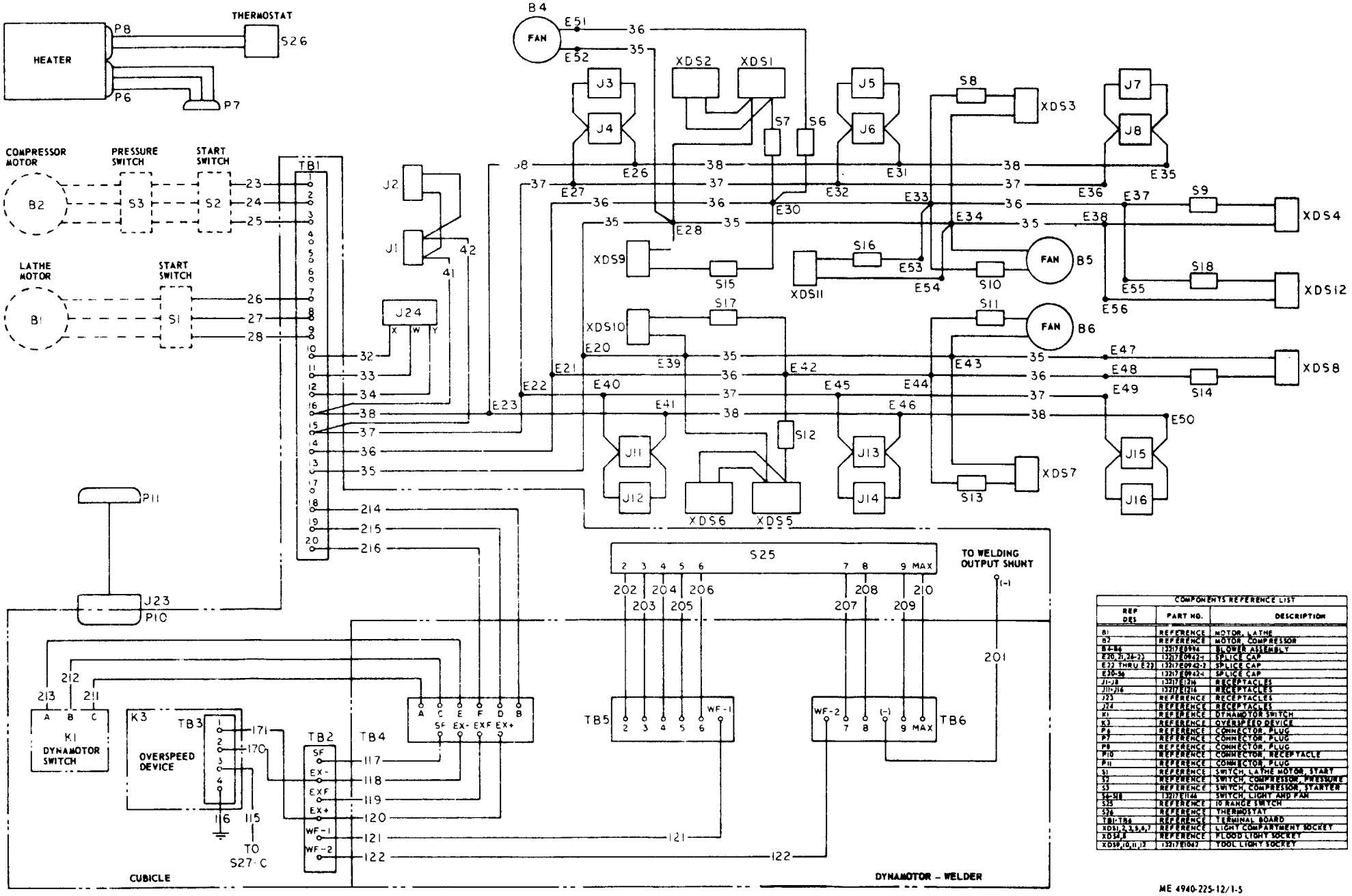
(7) *Wiring diagrams.* See figures 1-4, 1-5, and 1-6



COMPONENTS REFERENCE LIST		
REFERENCE DESIGNATIONS	PART NO.	DESCRIPTION
BL-2,BL-5	MS 35424-2	LIGHT, MARKER, CLEARANCE, BO, RED
BL-3,BL-4	MS 35424-1	LIGHT, MARKER, CLEARANCE, BO, AMBER
CA-1,CA-2,CA-3	MS 35423-2	LIGHT, MARKER, CLEARANCE, SERVICE, RED
CA-F THRU CP-F	MS 27142-2	CONNECTOR, PLUG, ELEC, FEMALE
CC-1-F THRU CW-1-F		
CA-M THRU CL-M	MS 27144-1	CONNECTOR, PLUG, ELEC, MALE
CN-M THRU CW-1-M		
CF-1,CF-2,CF-3	MS 35423-1	LIGHT, MARKER, CLEARANCE, SERVICE, AMBER
CL-1,CR-1	MS 35423-2	LIGHT, MARKER, CLEARANCE, SERVICE, RED
CL-2,CR-2	MS 35423-1	LIGHT, MARKER, CLEARANCE, SERVICE, AMBER
CM-M (REF)	PART OF DL-2	
DL-1	13217E1073	DOME LIGHT
DL-2	MS 51073-1	DOME LIGHT, (2 WAY)
TB	CL 38TB3	TERMINAL BOARD, MIL-T-55164.2
TR-2	C13217E1231	DIRECTIONAL SIGNAL, RIGHT, SERVICE (REF)
TL-2	C13217E1231	DIRECTIONAL SIGNAL, LEFT, SERVICE (REF)
BLT-1	F11614157	COMPOSITE LIGHT-TAIL, STOP, RIGHT TURN & MARKER, BO
BLT-2	F11614157	COMPOSITE LIGHT-TAIL, STOP, LEFT TURN & MARKER, BO

ME 4940-225-12/1-4

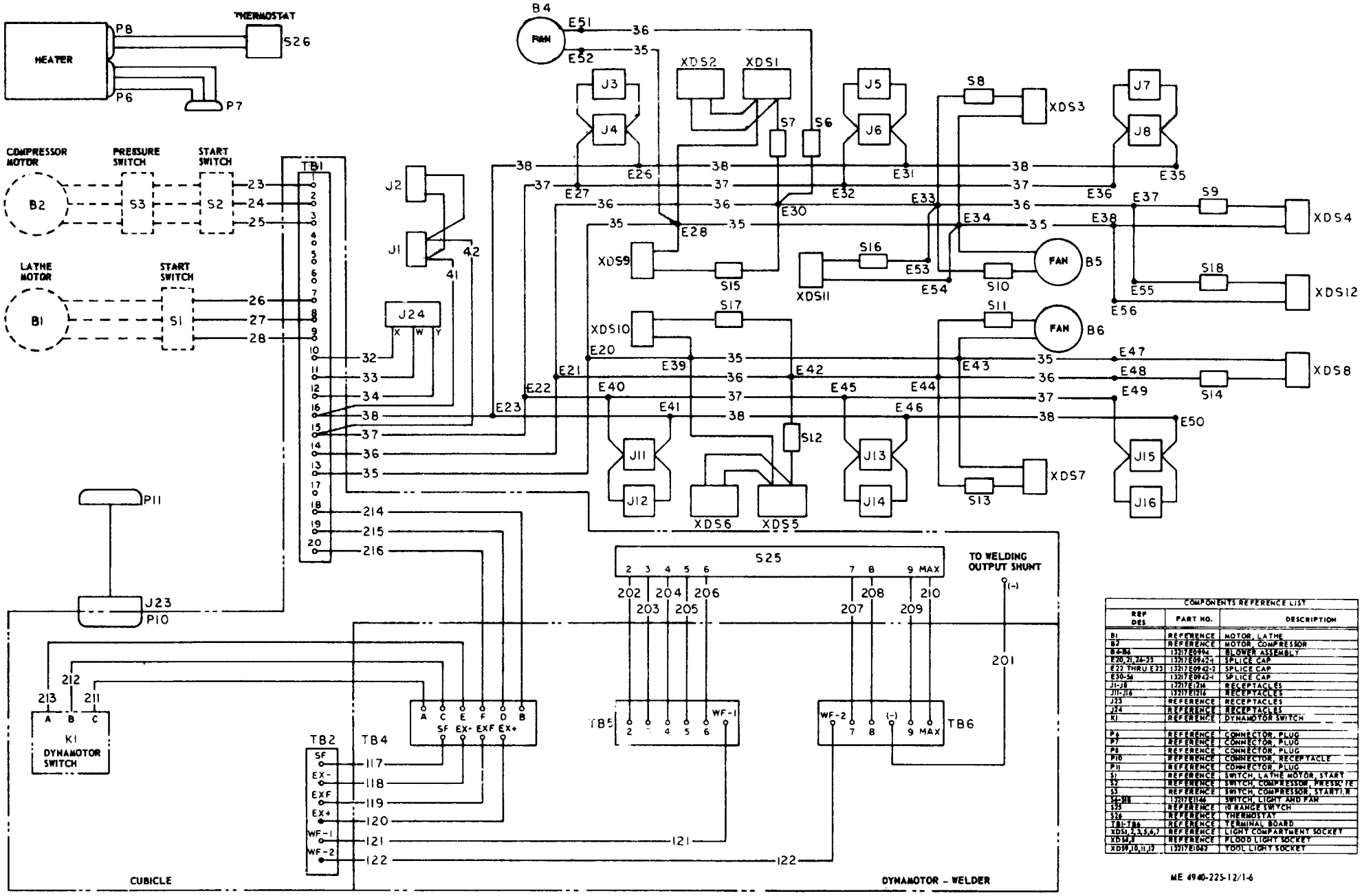
Figure 1-4. Wiring diagram, 24 Volt.



COMPONENTS REFERENCE LIST		
REF DES	PART NO.	DESCRIPTION
B1	REFERENCE	MOTOR, LATHE
B2	REFERENCE	MOTOR, COMPRESSOR
B4-B6	13217E8994	BLOWER ASSEMBLY
E20,21,24-27	13217E8942-1	SPLICE CAP
E22 THRU E23	13217E8942-3	SPLICE CAP
E30-56	13217E8942-4	SPLICE CAP
J1-J8	13217E1216	RECEPTACLES
J11-J16	13217E1216	RECEPTACLES
J23	REFERENCE	RECEPTACLES
J24	REFERENCE	RECEPTACLES
K1	REFERENCE	DYNAMOTOR SWITCH
K3	REFERENCE	OVERSPEED DEVICE
P6	REFERENCE	CONNECTOR, PLUG
P7	REFERENCE	CONNECTOR, PLUG
P8	REFERENCE	CONNECTOR, PLUG
P10	REFERENCE	CONNECTOR, RECEPTACLE
P11	REFERENCE	CONNECTOR, PLUG
S1	REFERENCE	SWITCH, LATHE MOTOR, START
S2	REFERENCE	SWITCH, COMPRESSOR, PRESSURE
S3	REFERENCE	SWITCH, COMPRESSOR, STARTER
S6-S18	13217E1144	SWITCH, LIGHT AND FAN
S25	REFERENCE	10 RANGE SWITCH
S26	REFERENCE	THERMOSTAT
TB1-TB6	REFERENCE	TERMINAL BOARD
XDS1,2,3,5,6,7	REFERENCE	LIGHT COMPARTMENT SOCKET
XDS4,8	REFERENCE	FLOOD LIGHT SOCKET
XDS9,10,11,12	13217E1042	TOOL LIGHT SOCKET

ME 4940-225-12/1-5

Figure 1-5. Wiring diagram, (SEORLT ONLY)



COMPONENTS REFERENCE LIST		
REF DES	PART NO.	DESCRIPTION
B1	REFERENCE	MOTOR, LATHE
B2	REFERENCE	MOTOR, COMPRESSOR
B4-B6	13217E0904	BLOWER ASSEMBLY
E20, 21, 24-33	13217E0942-1	SPLICE CAP
E22 THRU E23	13217E0942-2	SPLICE CAP
E30-56	13217E0942-1	SPLICE CAP
J1-J8	13217E1216	RECEPTACLES
J11-J16	13217E1216	RECEPTACLES
J23	REFERENCE	RECEPTACLES
J24	REFERENCE	RECEPTACLES
K1	REFERENCE	DYNAMOTOR SWITCH
P6	REFERENCE	CONNECTOR, PLUG
P7	REFERENCE	CONNECTOR, PLUG
P8	REFERENCE	CONNECTOR, PLUG
P10	REFERENCE	CONNECTOR, RECEPTACLE
P11	REFERENCE	CONNECTOR, PLUG
S1	REFERENCE	SWITCH, LATHE MOTOR, START
S2	REFERENCE	SWITCH, COMPRESSOR, PRESSURE
S3	REFERENCE	SWITCH, COMPRESSOR, START/R
S4-S18	13217E1146	SWITCH, LIGHT AND FAN
S25	REFERENCE	10 RANGE SWITCH
S26	REFERENCE	THERMOSTAT
TB1-TB6	REFERENCE	TERMINAL BOARD
XDS1, 2, 3, 5, 6, 7	REFERENCE	LIGHT COMPARTMENT SOCKET
XDS4, 8	REFERENCE	FLOOD LIGHT SOCKET
XDS9, 10, 11, 12	13217E1062	TOOL LIGHT SOCKET

ME 4940-225-12/1-6

Figure 1-6. Wiring diagram. (SEORL ONLY)

(8) Maintenace and operating supplies. **Refer to appendix C for a complete list of maintenance and operating supplies required for initial operation.**

(9) *Contents of shop set.* **Refer to appendix D, for a list of all shop set components and location reference.**

(10) ***Overall dimensions and weights.***

Overall length	**356 in.**
Overall height	**..125 in.**
Overall weight	**..98.5 in.**
Shipping cubage.	**2537 cu. ft.**
Shipping weight.	**33,860 lb.**
Shipping tonnage.	**63.4 tons**

CHAPTER 2

OPERATING INSTRUCTIONS

Section 1. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Inspecting and Servicing Equipment

a. Perform daily preventive maintenance services (para 3-4).

b. Make a complete inspection of the shop set and the equipment, visually inspecting for loss or dam age which may have occurred in shipment. Open the boxes, exercising caution in cutting the banding and removing the nails in order to prevent damage to the contents.

c. Inspect the floor and other body members for dents, breaks, cracks, or loose or missing parts.

d. Inspect the dynamotor-welder for breaks, dents, cracks, and loose or missing parts.

e. Inspect the air compressor for defects and for loose or missing parts.

f. Correct any deficiencies or refer them to Direct Support Maintenance.

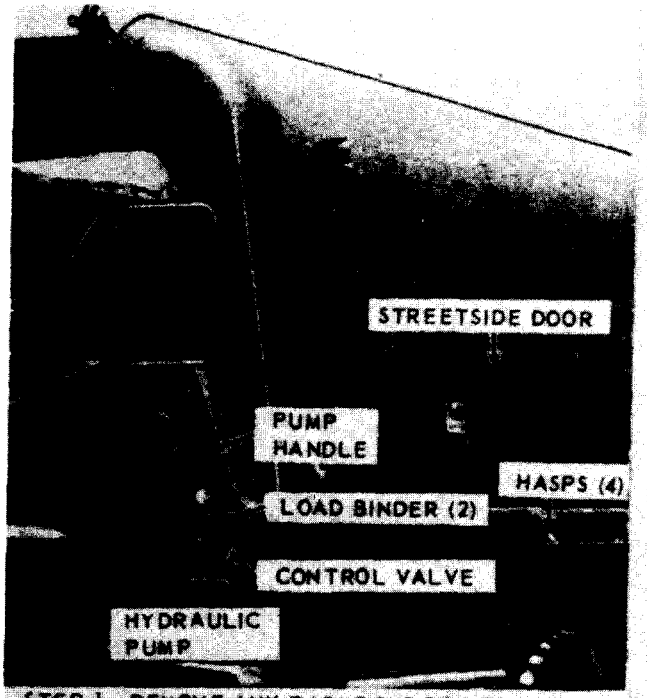
g. Lubricate the shop set in accordance with the current lubrication order LO 5-4940-225-12.

2-2. Installation

a.. *General.* Power for operation of the shop set may come from either of two sources: The truck engine driving the dynamotor-welder through a power take-ff, or an external power source of 240 volt, 3-phase, 50 or 60-cycle power driving the dynamotor-welder. The external power source, if available and practical, will require setting-up procedures (see c. below). The setting-up procedures for the shop set to use either of the two power sources will vary according to the amount of canvas erected and other factors, dependent primarily on the expected time duration of the installation, available power source, weather conditions and terrain.

b. Location and Leveling. The shop set should be set up on cleared, flat, level terrain. The wheels must be blocked in such a way as to keep the shop set from rolling. The area required by the shop set, with the canvas erected, is approximately 40 x 25 feet. The location of the shop set must provide additional cleared ground area as is required for adequate access to the shop set components from all sides. Select a site that is protected from the elements (i.e.; dust, sand, and mud).

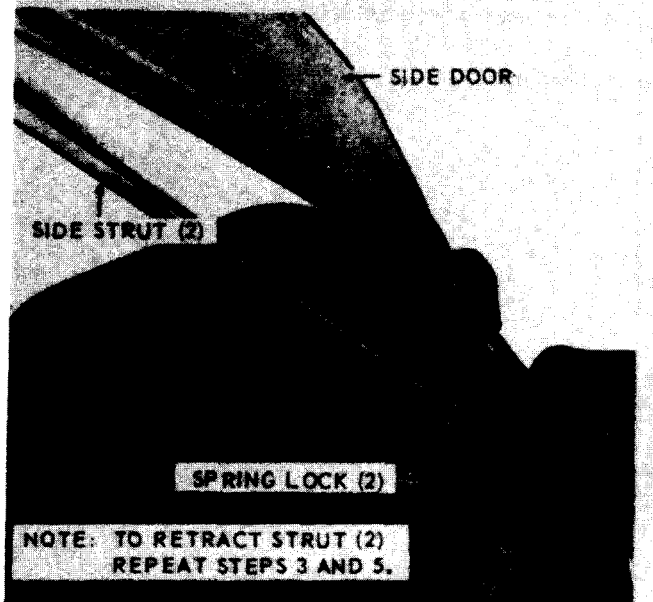
c. *Opening Shop Set.* Refer to figures 2-1 and 2-2 and open the shop set doors, and extend the hoist track.



STEP 1. REMOVE ANY PADLOCKS OR LOCKING DEVICES FROM THE HASPS (4).

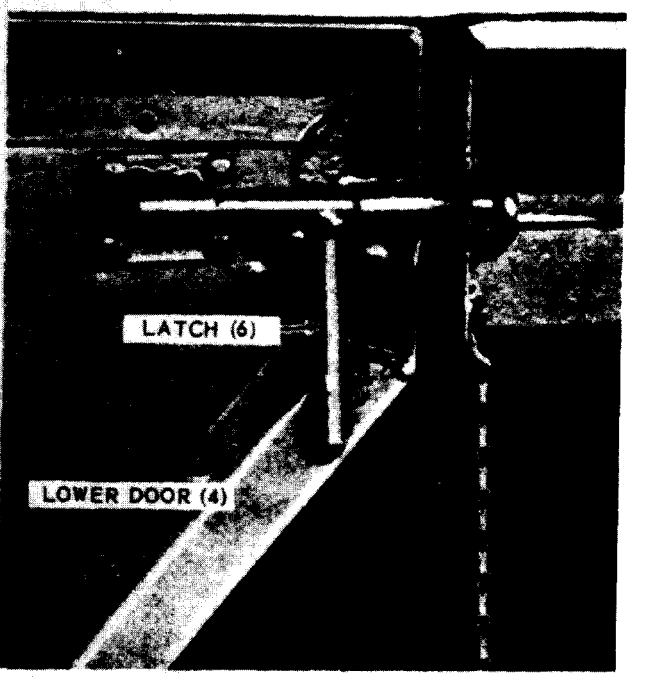
STEP 2. RELEASE LOAD BINDER (2).

STEP 3. REMOVE HANDLE FROM HANDLE RACK AND INSERT IN PUMP SOCKET. TURN CONTROL VALVE FULLY CLOCKWISE AND OPERATE PUMP TO RAISE SIDE DOORS TO EXTREME POSITION.



STEP 6. FREE SIDE STRUT (2) FROM SIDE DOOR AND POSITION AGAINST SPRING LOCK (2).

STEP 7. LOWER SIDE DOOR SO THAT SIDE STRUT (2) BEARS WEIGHT OF DOOR.



STEP 4. RELEASE LATCH (6) AND LOWER DOOR (4).

STEP 5. REMOVE HANDLE FROM PUMP SOCKET AND INSTALL IN PUMP RACK.

NOTE: TO LOWER SIDE DOOR, TURN CONTROL VALVE COUNTERCLOCKWISE ENOUGH TO ALLOW DOOR TO DROP.

NOTE: RAISE AND LOWER OTHER SIDE DOOR IN A SIMILAR MANNER.

NOTE: BEFORE FULLY LOWERING SIDE DOOR SECURE SIDE STRUT (2) IN RETRACTED POSITION ON SIDE DOOR.

ME 4940-225-12/2-1

Figure 2-1. Raising and lowering shop set side doors.

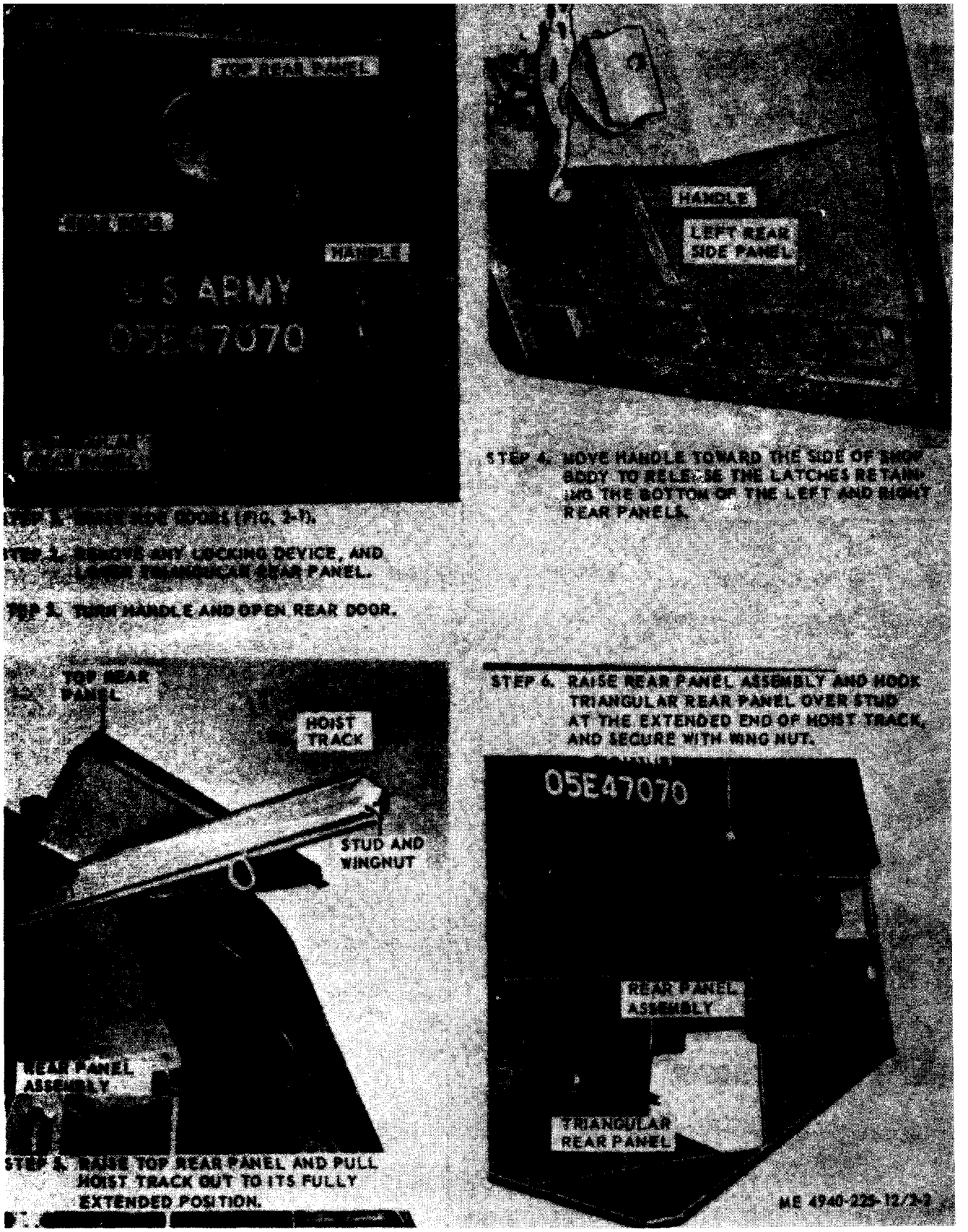


Figure 2-2. Opening shop set rear doors and panels.

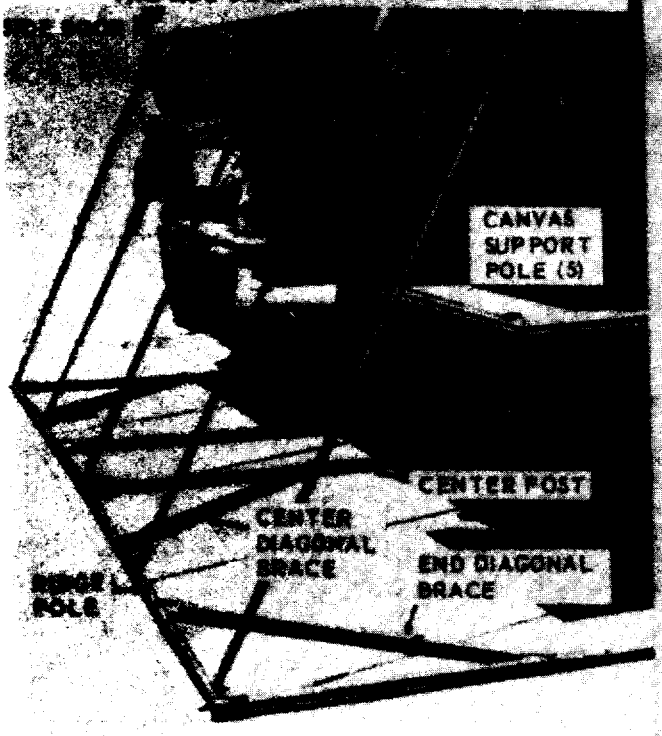
d. Erecting Tenting.

(1) Remove the straps that secure the tent frames to the roof of the shop set and remove the tent frames from the shop set.

(2) **Refer to figures 2-3, 2-4, 2-5 and 2-6 for assembling and erecting the tent frames and tenting. The tent frames and rear diagonal brace will fit either side of the shop set.**

STEP 1. RAISE SIDE DOOR TO HALF-WAY POSITION.

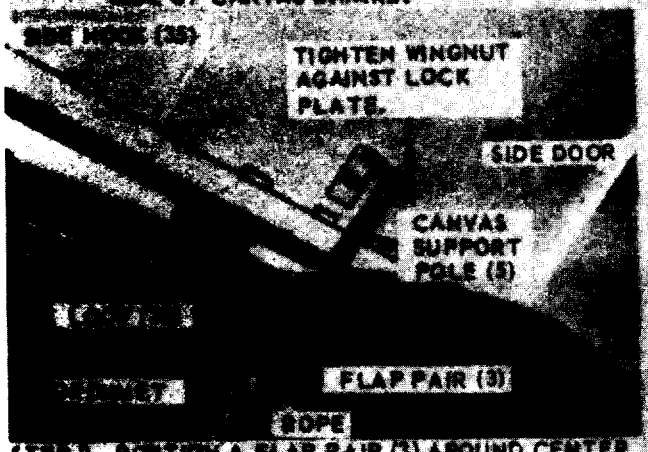
STEP 2. LAY OUT TENT FRAME SO THAT RIDGE POLE IS STRAIGHT AND PARALLEL TO THE SIDE DOOR.



STEP 3. ATTACH THE TWO END DIAGONAL BRACES TO THE RIDGE POLE AND THE TWO CENTER DIAGONAL BRACES TO THE CENTER POST AND SECURE WITH THE LOCKING PINS ATTACHED TO THE BRACES.

4. INSTALLING ROOF AND SIDE TENT FRAME.

STEP 1. PULL LOOP EDGE UP AND OVER TENT FRAME AND INSTALL LOOP (35) ON SIDE HOOK (36) OF SIDE DOOR. KEEP MARKED SIDE OF CANVAS INWARD.



STEP 2. POSITION A FLAP PAIR (3) AROUND CENTER CANVAS SUPPORT POLE (3) AND SECURE BY LACING ROPE THROUGH GROMMETS OF EACH FLAP PAIR (3).

C. ATTACHING ROOF AND SIDE CANVAS.

STEP 1. RAISE THE SUPPORT POLE (5) TO THE SIDE DOOR AND SECURE THE SUPPORT TO THE BRACKET (3).

B. INSTALLING CANVAS SUPPORT POLE (5).

NOTE: THE TENT FRAME AND THE ROOF AND SIDE CANVAS WILL FIT EITHER SIDE OF SHOP SET.

ME 4940-228-12/3-3

Figure 2-3. Erecting roof and side tent frame.

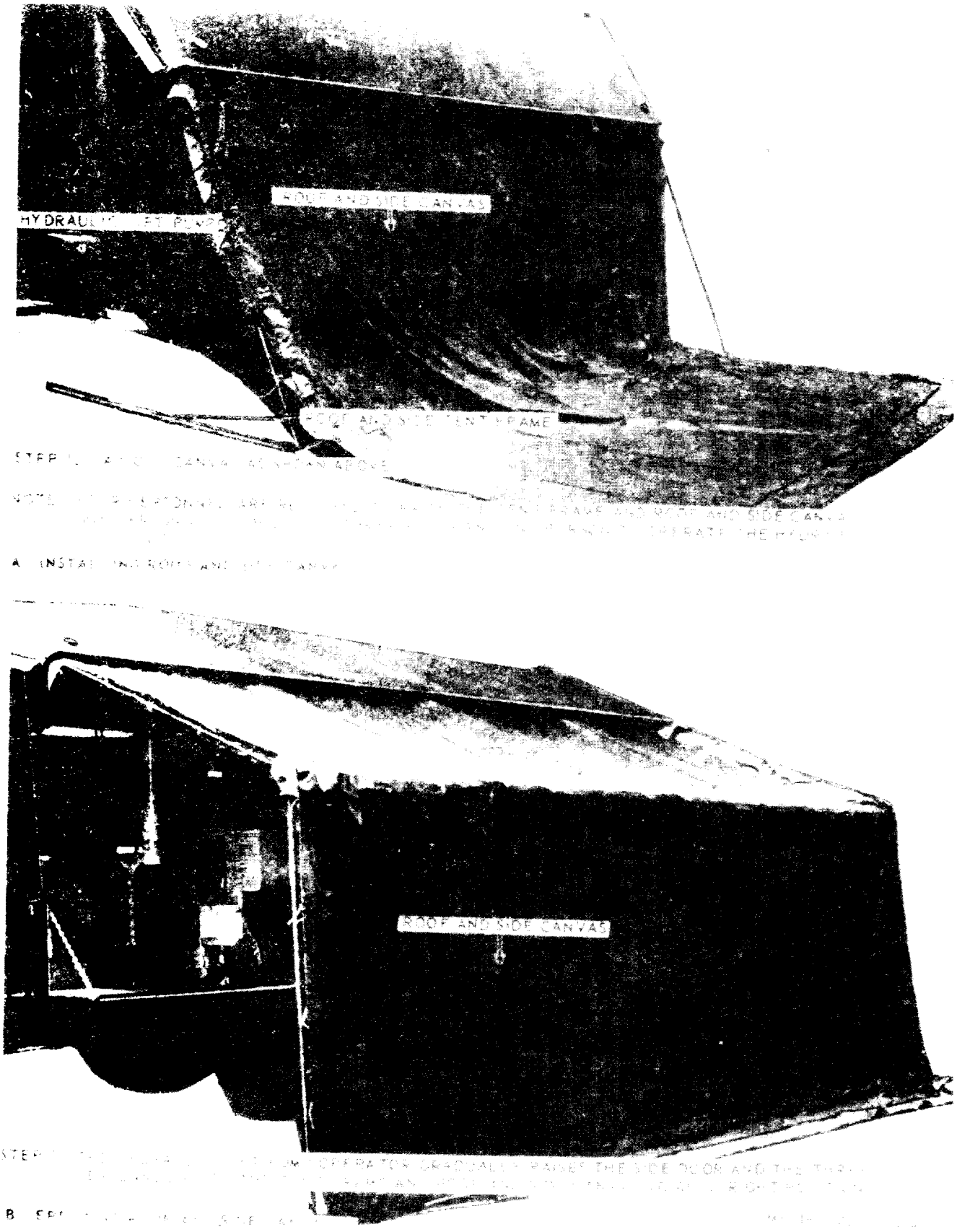
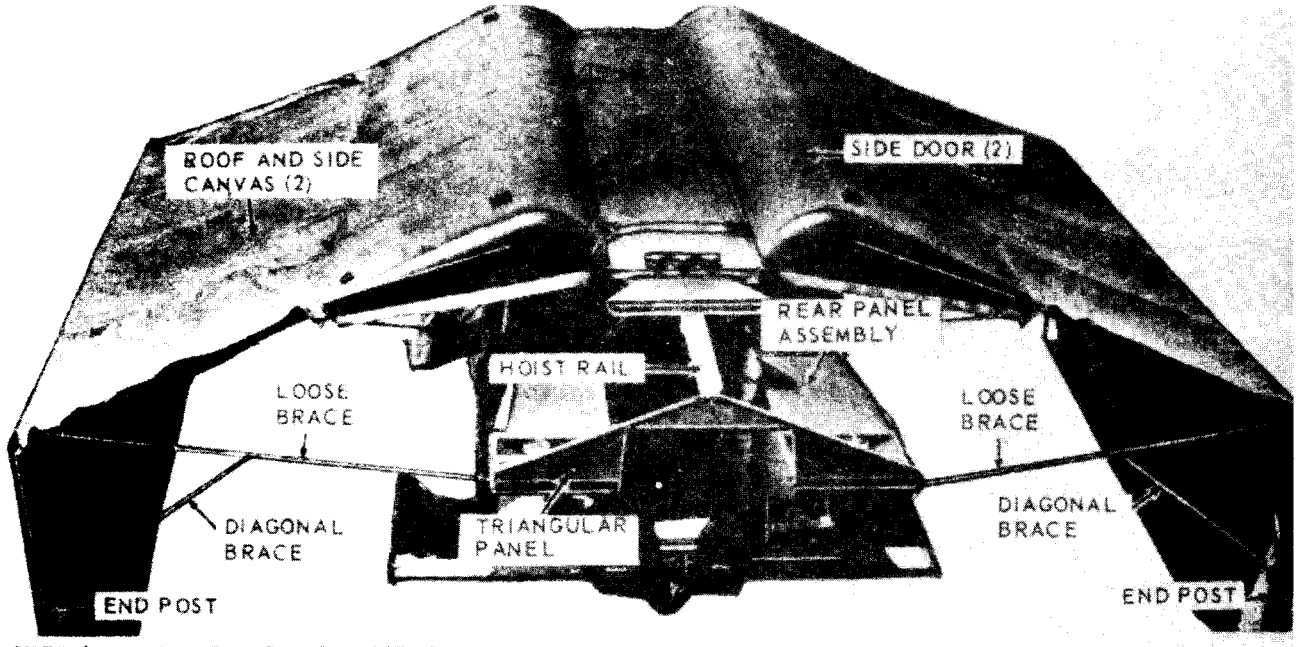


Figure 2-4. Installing roof and side canvas.



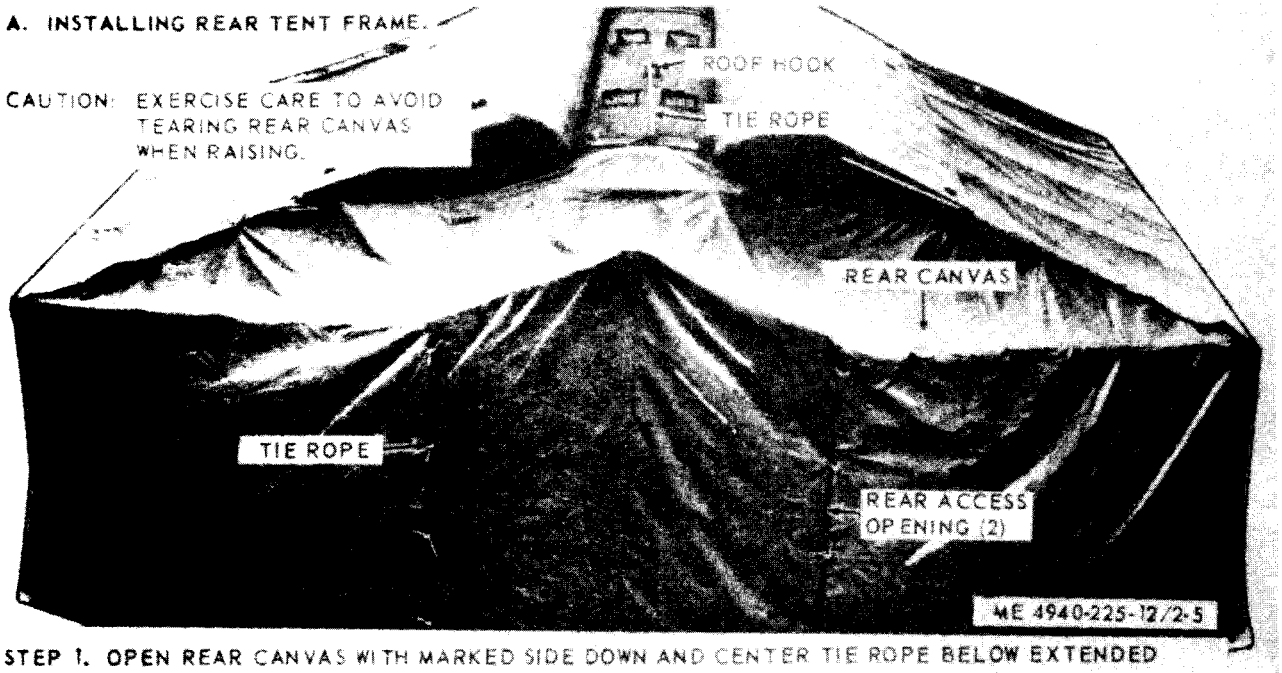
STEP 1. RAISE REAR PANEL ASSEMBLY.

STEP 2. ATTACH REAR DIAGONAL BRACE TO LOWER PART OF THE END POST AND SECURE WITH LOCKING PIN.

STEP 3. ATTACH THE LOOSE BRACE TO THE STUD ON TOP OF REAR END POST AND SECURE WITH WING NUT.

STEP 4. ATTACH THE OTHER END OF THE LOOSE BRACE TO REAR PANEL AND SECURE WITH WING NUT.

A. INSTALLING REAR TENT FRAME.



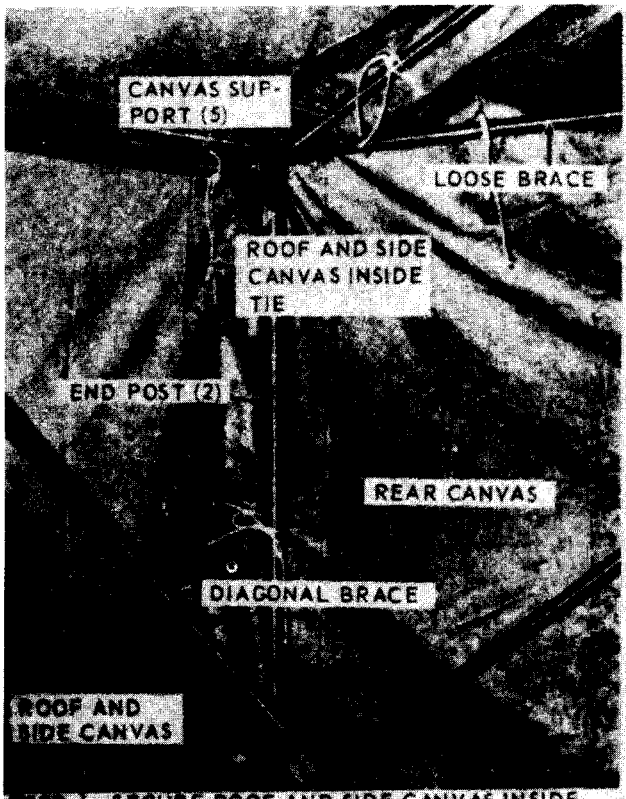
STEP 1. OPEN REAR CANVAS WITH MARKED SIDE DOWN AND CENTER TIE ROPE BELOW EXTENDED HOIST TRACK.

STEP 2. RAISE REAR CANVAS UP AND OVER HOIST TRACK AND TRIANGULAR PANEL. FASTEN TIE ROPE TO ROOF HOOK.

STEP 3. INSTALL REAR CANVAS ON SIDE DOOR (2) AND END POST (2). SECURE REAR CANVAS TO ROOF AND SIDE CANVAS (2) AND CLOSE REAR ACCESS OPENING (2).

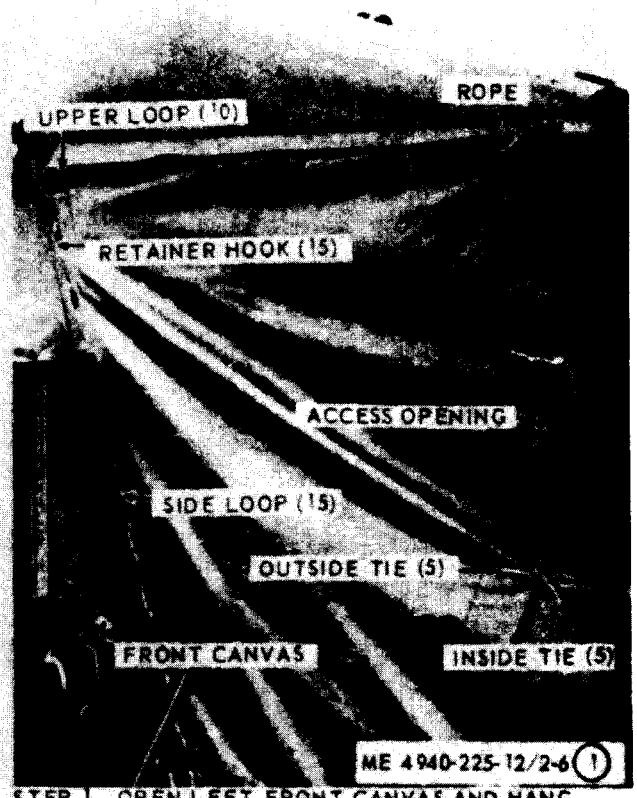
B. INSTALLING REAR CANVAS.

Figure 2-5. Installing rear tent frame and canvas.



STEP 1. SECURE ROOF AND SIDE CANVAS INSIDE TIES TO CANVAS SUPPORT POLE (5), AND TO END POST (2).

A. SECURING ROOF AND SIDE CANVAS INSIDE TIES.*



STEP 1. OPEN LEFT FRONT CANVAS AND HANG MARKED SIDE INWARD BY INSTALLING UPPER LOOP (10) ON FRONT HOOK (10) OF SIDE DOOR. INSTALL SIDE LOOP (15) ON RETAINER HOOK (15).

STEP 2. REMOVE WING NUT FROM STUD AT TOP OF FRONT END POST, AND INSTALL THE FRONT PANEL CORNER GROMMET ON THE STUD ON TOP OF THE END POST AND SECURE LOOSELY WITH WINGNUT. PULL ROOF AND SIDE DUPLEX TIES THROUGH MATING FRONT GROMMET AND SECURE WITH KNOT. PULL END FLAP OVER TIES AND END POST AND SECURE BY PULLING FRONT DUPLEX TIES THROUGH FLAP GROMMETS AND KNOTTING.

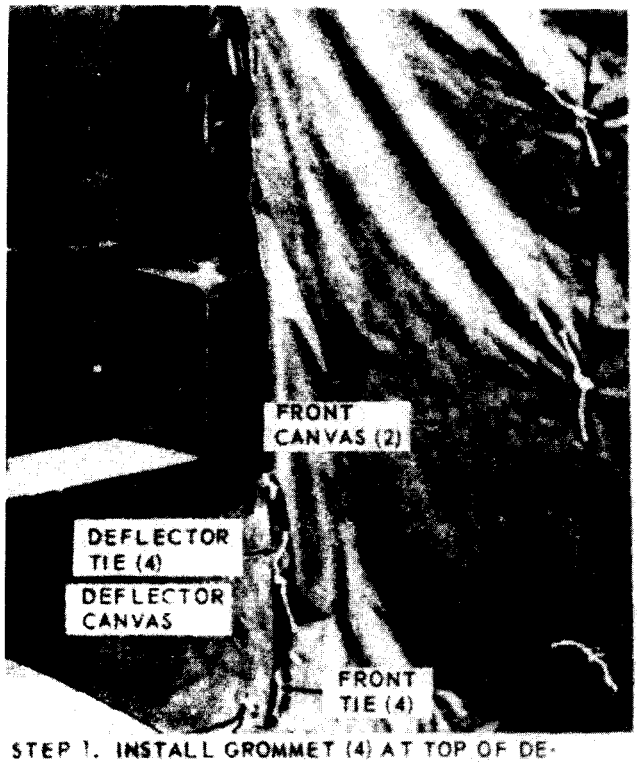
STEP 3. SECURE END FLAP TO FRONT CANVAS WITH ROPE.

STEP 4. FASTEN INSIDE TIE (5) AND OUTSIDE TIE (5) AT ACCESS OPENING TO CLOSE THE OPENING.

NOTE: ACCESS OPENING HAS A FLAP FOR BLACKOUT USE. FASTEN BOTH INSIDE AND OUTSIDE TIES.

B. INSTALLING FRONT CANVAS.

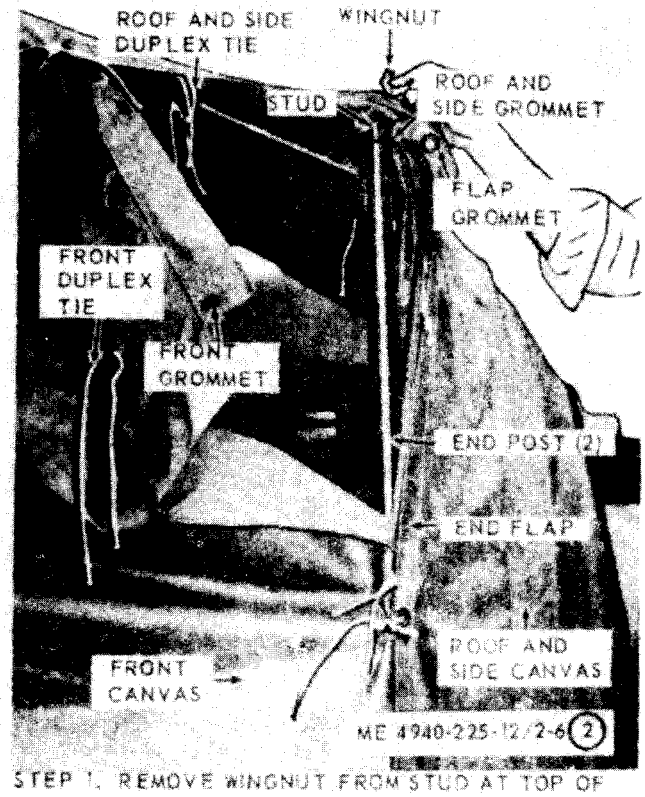
Figure 2-6. Installing front and deflector canvas (sheet 1 of 2).



STEP 1. INSTALL GROMMET (4) AT TOP OF DEFLECTOR CANVAS ON HOOKS WELDED TO UNDERSIDE OF BODY.

STEP 2. SECURE DEFLECTOR CANVAS TO FRONT CANVAS (2) BY SECURING FRONT TIE (4) TO DEFLECTOR TIE (4).

A. INSTALLING DEFLECTOR CANVAS.



STEP 1. REMOVE WINGNUT FROM STUD AT TOP OF END POST, FOLD BACK END FLAP OF ROOF AND SIDE CANVAS, AND INSTALL ROOF AND SIDE GROMMET ON STUD.

STEP 2. INSTALL TIE FRONT CANVAS GROMMET AND SECURE WITH WINGNUT.

B. SECURING ROOF AND SIDE CANVAS TO END POST (2).

Figure 2-6. Installing front and deflector canvas (sheet 2 of 2).

e. External Power Connection. Connect external power of 240-volt, 3-phase, 60-cycle input whenever it is available, as illustrated in figure 2-7.

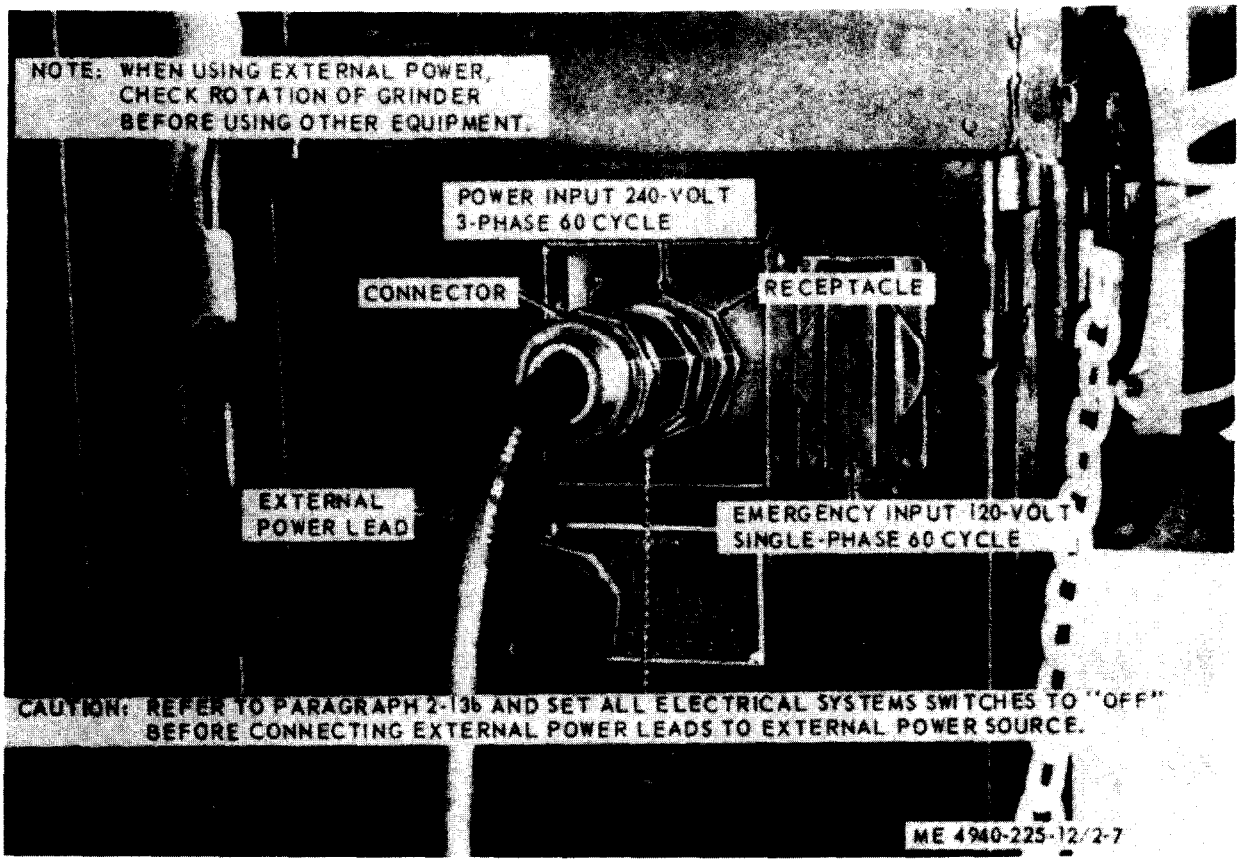


Figure 2-7. External power supply. disconnection and reconnection.

f. Grounding Shop Set. Drive a metal ground rod into the ground adjacent to the shop set. Attach a No. 6 bare copper wire between the shop set ground terminal (fig. 2-9) and the ground rod.

WARNING

Static electricity and leakage currents from electric equipment can build up in the chop set and cause injury or death to personnel unless the equipment is properly grounded.

2-3. Equipment Conversation

The d ynamotor-welder can be driven by the truck's engine through the power take off or by a 240-volt AC external power source. If an external power source is to be used, connect the power source and set the frequency switch (fig. 2-8) to match the frequency of the incoming current, as shown by the frequency meter, either 50 or 60 cycles, and set the power selector switch on CITY. Conversion to shop set generated power is accomplished by stopping all shop set functions, turning switches to OFF and by removal of the external power source, setting the frequency switch to desired frequency output, either 50 or 60 cycles, and the power selector switch to GENERATOR. The output from the receptacles on the control panel is either 120-volt, single-phase, at a maximum of 15 amperes, or 240-volts, single-phase, at a maximum of 10 amperes. To use either 120 or 240-volts from either GENERATOR or CITY power source, select the appropriate output receptacle or receptacles and the applicable power selector switch and frequency switch setting as indicated in figure 2-8.

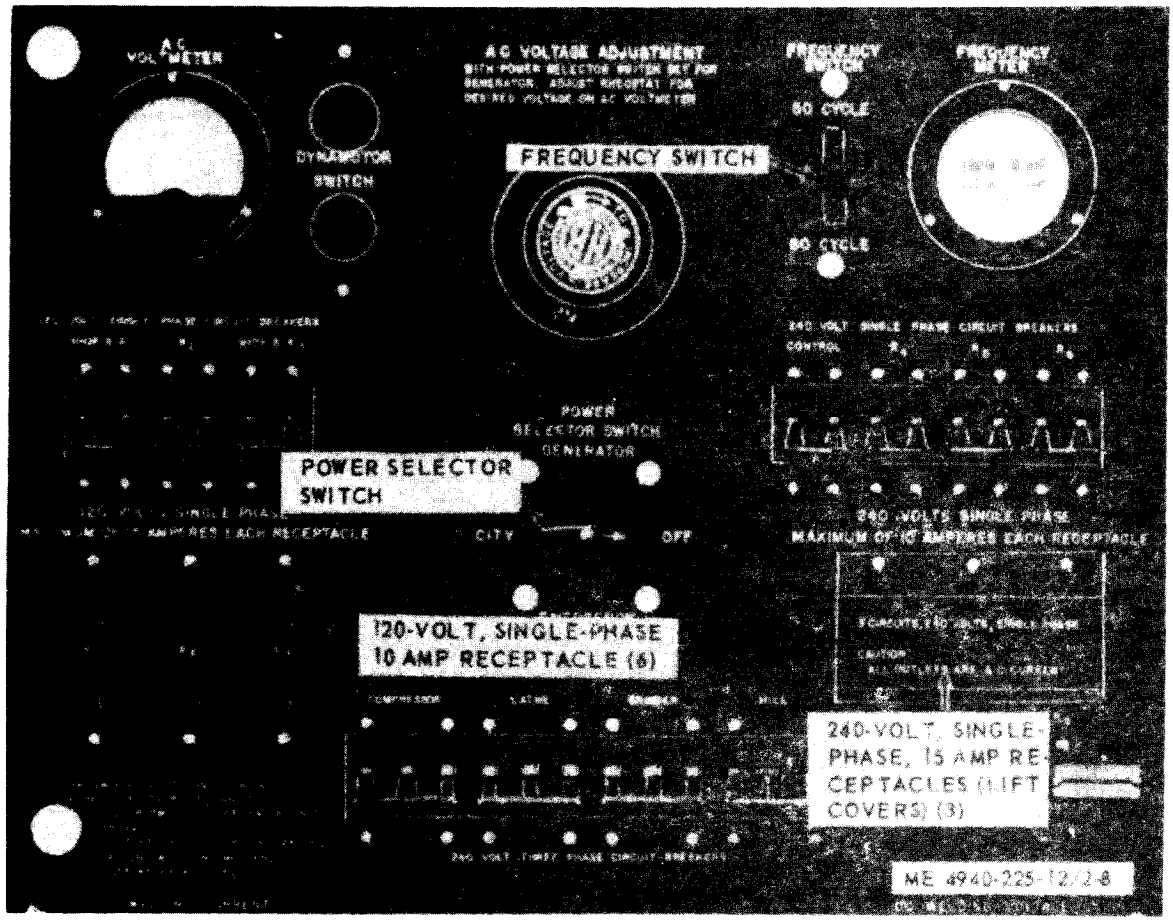


Figure 2-8. Voltage and frequency conversion.

Section II. MOVEMENT TO A NEW WORK SITE

2-4. Dismantling for Movement

a. **Disconnect the external power source.**

b. Dismantle the canvas tenting (fig. 2-3, 2-4, 2-5 and 2-6).

c. Disconnect welding cables and stow in the proper comnartments.

d. Secure all portable equipment in the proper pIace and latch all drawers.

NOTE
Do not change loading plan.

e. Close the shop set (fig. 2-1 and 2-2),

f. Remove the ground rod.

2-5. Reinstallation After Movement

Refer to paragraph 2-2 and setup the shop set.

Section iii. CONTROLS AND INSTRUMENTS

2-6. General

This section describes the various controls and instruments and provides the operator or crew sufficient information required to operate the shop act.

2-7. Controls and Instrument

The purpose of the controls and instruments and the normal and maximum readings of the instruments are listed in the following subparagraphs and illustrated in figures 2-9 through 2-13.

a. Hydraulic **Systems. The two hydraulic systems that raise and lower the top doors are each controlled by a manually operated hydraulic pump (fig. 2-9). Insert the handle in the lever on top of the pump to operate the pump. Turn the control valve clockwise to raise the doors and counterclockwise to lower the doors.**

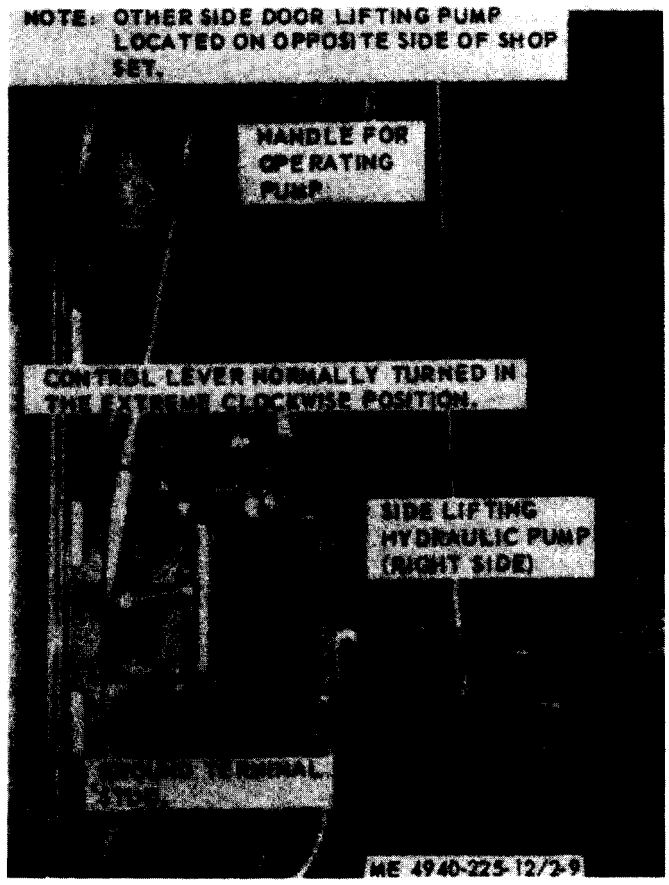
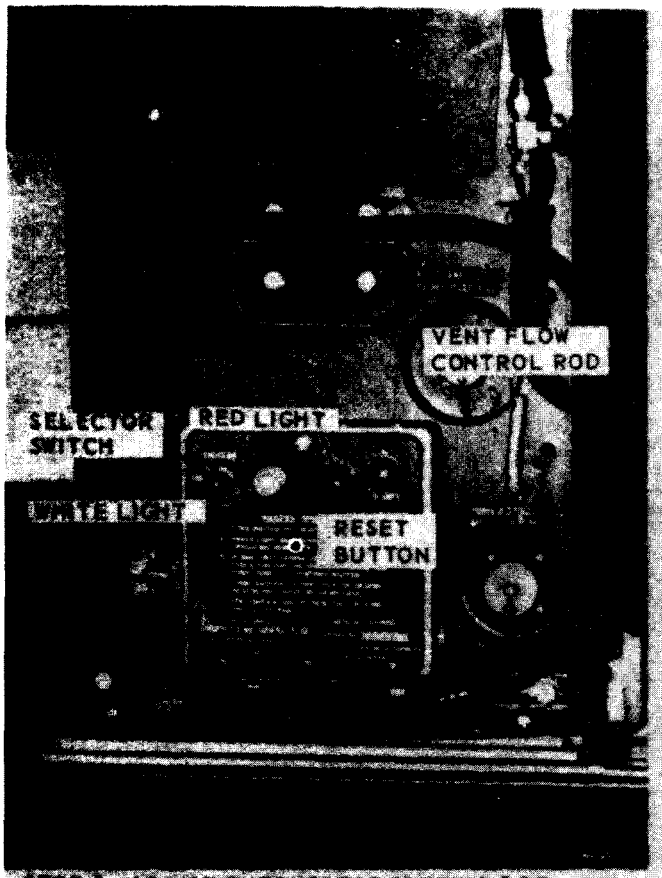


Figure 2-9. Hydraulic systems controls.



STEP 1. ADJUST THERMOSTAT SETTING 5 DEGREES ABOVE AMBIENT TEMPERATURE

STEP 2. PLACE SELECTOR SWITCH AT HEATER.

NOTE: WHITE LIGHT INDICATES HEATER IS ON AND OPERATING NORMALLY. IF RED LIGHT COMES ON AND HEATER STOPS, CHECK FOR FUEL OR IGNITION FAILURE.

STEP 3. SHOULD HEATER STOP BECAUSE OF FUEL DEFICIENCIES OR MALFUNCTIONING, CORRECT DEFICIENCIES AND PUSH RESET BUTTON TO RESTART.

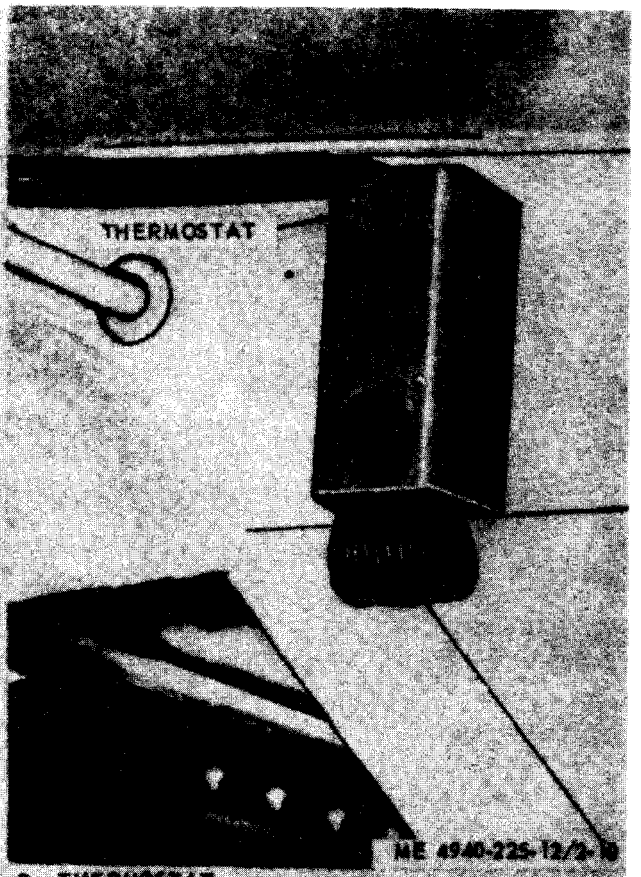
STEP 4. ADJUST THERMOSTAT SETTING TO TEMPERATURE IT IS DESIRED TO MAINTAIN

STEP 5. SET VENT FLOW CONTROL ROD IN POSITION FOR DESIRED FLOW OF HEAT.

STEP 6. TO STOP HEATER, SET SELECTOR SWITCH TO "OFF".

NOTE: FOR AIR CIRCULATION WITHOUT HEATING, SET SELECTOR SWITCH AT "FAN" AND ADJUST VENT FLOW CONTROL ROD FOR FLOW OF AIR.

A. HEATER CONTROL PANEL



B. THERMOSTAT.

Figure 2-10. Personnel heater controls and operation.

b. Air Pressure **Gage. The gage (fig. 2-11) shows the amount of air pressure in the shop set air system. During normal operation, it should read between 125 psi and 150 psi.**

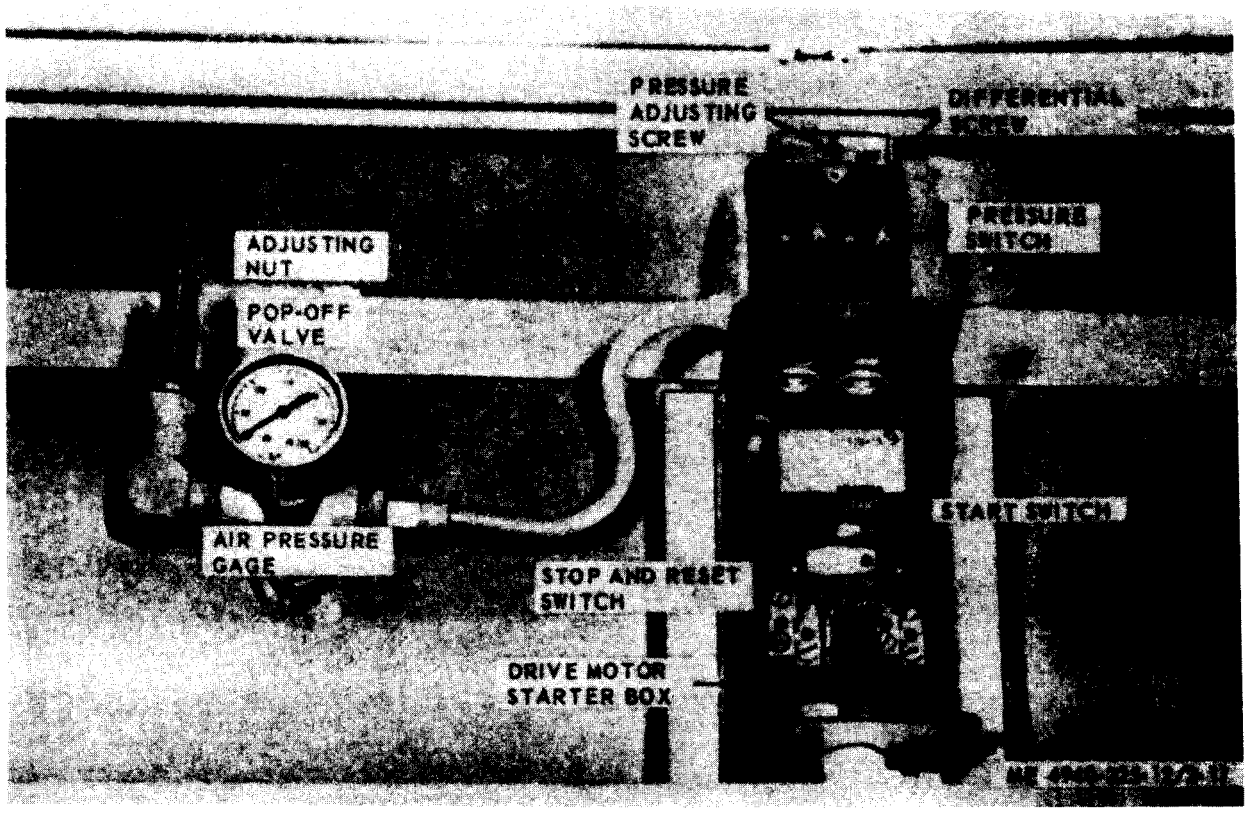


Figure 2-11. Air compressor drive motor controls and air receiver tank pressure **gage.**

c. Pressure Switch. **The switch (fig. 2-11) is a pressure-operated electric switch that automatically starts and stops the air compressor to maintain a minimum of 125 psi and a maximum of 150 psi.**

d. Start, Stop, and Reset Switch. The **switch` (fig. 2-11) is used to start and stop the air compressor system. The reset switch will automatically disengage when a mechanical or electrical malfunction occurs in the air system that causes the electrical circuit to be overloaded.**

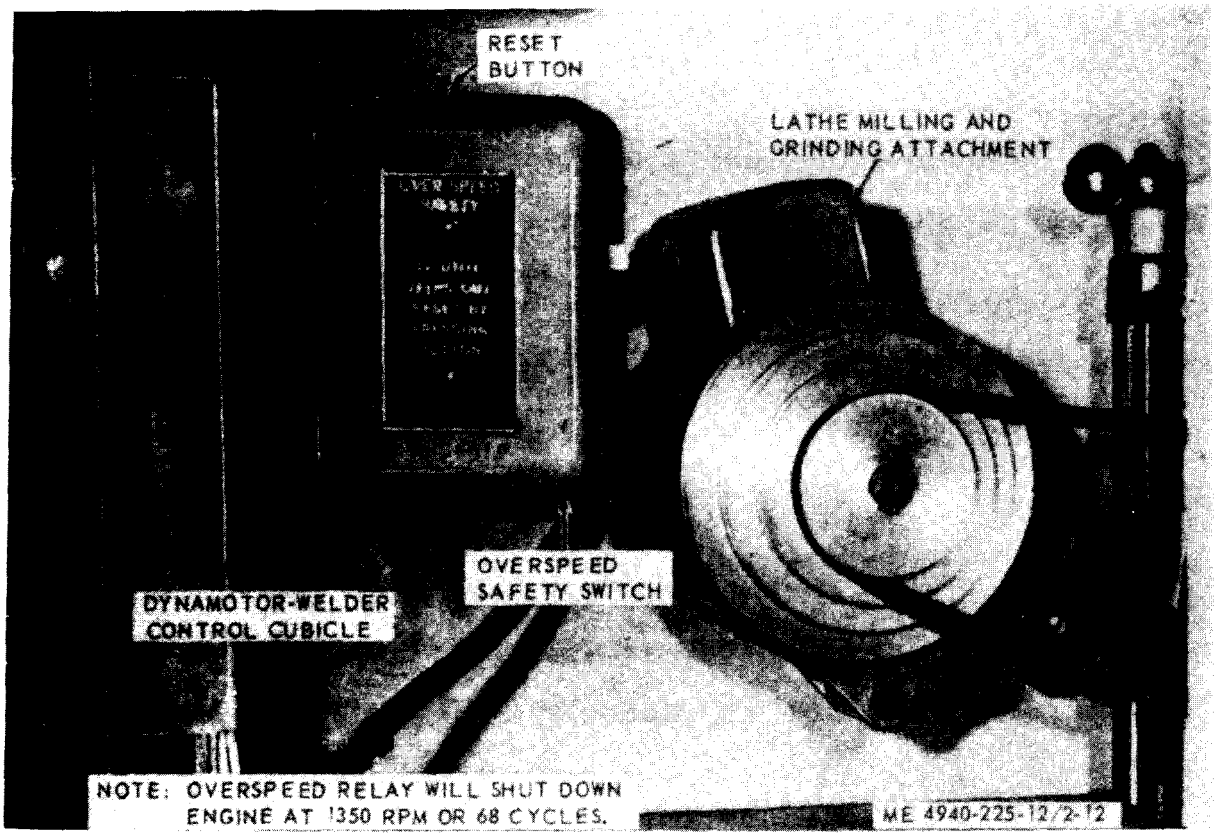


Figure 2-12. Overspeed safety switch.

e. A.C. Vohmeter. **The A. C. voltmeter (fig. 2-13) indicates the A.C. voltage output of the generator portion of the dynamotor-welder, when the dynamotor-welder is driven by the truck engine. The output voltage is regulated by the A.C. voltage adjusting rheostat, and the A.C. voltmeter indicates the adjusted voltage, which will normally be 240 volts. The same A..C voltmeter will indicate only the incoming voltage when an external source of electrical power is used to run the dynamotor-welder; or for the emergency circuits, normally 240 volts for the dynamotor-welder and 120 volts for the emergency circuits.**

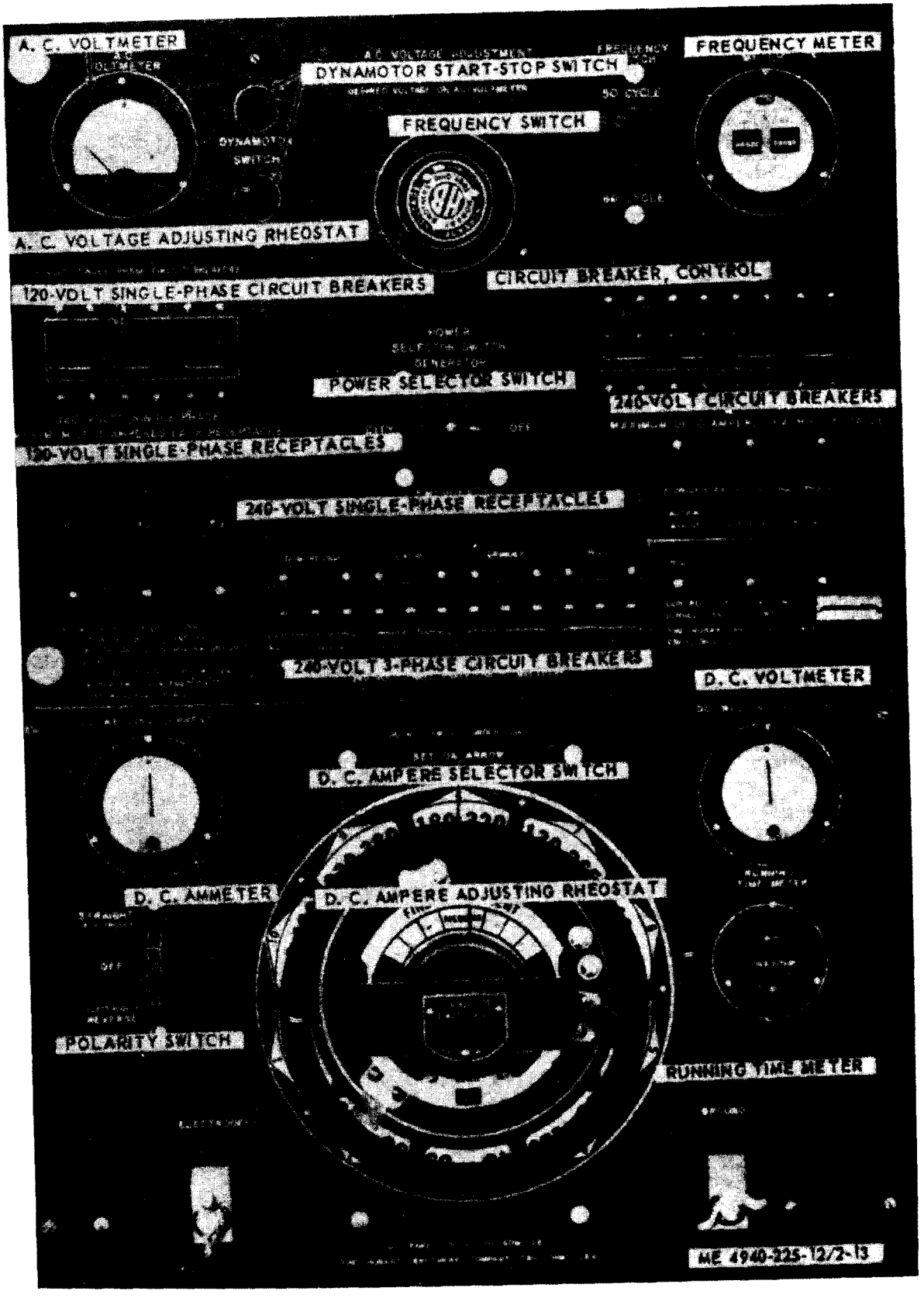


Figure 2-13. Electrical system control panels.

f. Dynamotor Start-Stop Switch. The switch (fig. 2-13) is used to start and stop the dynamotor-welder when an external electrical power source is used, and also to close the contactor to provide A.C. *power* when the dynamotor-welder is driven by the truck engine. To operate the switch, press the button momentarily to stop or start.

g. A.C. Voltage Adjusting Rheostat. The rheostat (fig. 2-13) regulates only the output A.C. voltage of the generator portion of the dynamotor-welder, from the minimum to the maximum. Turn handle clock wise to increase and counterclockwise to decrease A.C. voltage.

h. Frequency Switch. The frequency switch (fig. 2-13) should be set on 60 cycles if 60-cycle external power is used to run the dynamotor-welder; or, if the engine governor is adjusted so that the truck engine will run at 1,200 rpm to cause the dynamo: or-welder to develop 60-cycle A.C. current. The switch should be set on 50 cycle if 50-cycle external power is used, or is the engine governor is adjusted at 1,000 rpm for 50-cycle A.C. current

i. Frequency Meter. The frequency meter (fig. 2-13) indicates the cycles of incoming power when an external electrical power source is used, and indicates the cycles of output power when the dynamotor-welder is driven by the truck engine. Normal reading is 60 cycles when the engine is driving the dynamotor-welder at 1,200 rpm, and 50 cycles at 1,000 rpm.

j. 120-Volt, Single-Phase Circuit Breakers. The circuit breakers (fig. 2-13) protect these circuits against overloading which could be connected to the 120-yolt, single-phase receptacles. These circuit breakers are rated at 30 amperes each.

k. 120-Volt, Single-Phase Receptacles. 120-volt, single-phase power is available at the three receptacles (fig. 2-13), R 1, R2, and R3, when the dynamotor-welder is powered by the truck engine, or by an external power source. Only the R3 receptacle wilI transmit 120-volt, single-phase power, when using only 120-volt emergency power.

l. Power Selector Switch. The power selector switch (fig. 2-13) sets the control panel for the source of power that will be used to run the dynamotor-welder and/ or the shop set,

(1) In GENERATOR position, the dynamotor-welder is driven by the truck engine. The generator portion of the dynamotor-welder will produce A.C. current regulated by the A.C. voltage adjusting rheostat. Power is available at all terminals and receptacles. D.C. current up to 300 amperes and 40 volts is available for welding.

(2) In CITY position, an external source of 240-volts A.C. 3-phase power is connected to the input receptacle. The generator portion of the dynamotor-welder is now used as a 25 H.P. synchronous motor to drive the welder portion. A.C. power is available at all terminals and receptacles, as well as D.C. power for welding.

(3) In EMERGENCY position, an external source of 120-volt A.C. single-phase power is connected to the shop set. The shop set lights and R3 receptacle on the control panel can be used.

(4) In OFF position, all A.C. circuits are de-energized. When the engine is running at 1,200 rpm, the welding studs are energized for normal welding operations.

m. Circuit Breaker, Control. The function of the control circuit breaker (fig. 2-13) is to protect the motor-starting contactor circuit from overloading. This circuit breaker is rated at 3 amperes.

n. 240-Volt Circuit Breakers. These 3 circuit breakers (fig, 2-13) protect the three 240-volt, single-phase receptacle circuits, R4, R5, and R6 from overloading in excess of 10 amperes for each receptacle.

o. 240-Volt, Single-Phase Receptacles. These receptacles (fig. 2-13) are twist-lock type and will transmit a maximum 0f 10 amperes of electric current when the generator portion of the dynamotor-welder is driven by the engine or an external source of electrical power. Electrical power is also available when the external power source is connected to the shop set and the dynamotor-welder is stopped.

p. 240-Volt, 3-Phase Circuit Breakers. These 4 circuit breakers (fig. 2-13) protect the air compressor and lathe electrical circuits from overloading in excess of 30 amperes each. They also protect the milling attachment circuit from overloading in excess of 15 amperes.

q. D.C, Ammeter. The ammeter (fig. 2-13) indicates the amperage of D.C. welding current only when welding is actually being accomplished. The normal reading will vary with the amperage range selected at the D.C. ampere selector switch and the fine adjustment made at the D.C. ampere adjusting rheostat.

r. Polarity Switch. The polarity switch (fig. 2-13) is used to direct the flow of D.C. welding amperes from the welding rod to the material (straight polarity) or to direct the flow of amperes from the material to the welding rod (reverse polarity). The norm al position of this switch could be different for each welding job based on many elements that only experience will predict. The switch must be OFF when welding is not being performed to prevent possible damage.

s. D.C. Ampere Selector Switch. The switch (fig. 2-13) is used to select the welding ampere range required for all welding to be accomplished. Amperes lower than 30 are available for special

application and up to 300 amperes for general welding. Each welding ampere range shown on the switch shows a minimum and a maximum for the range selected, that should be further adjusted with the D.C. ampere adjusting rheostat.

t. *D. C. Ampere Adjusting Rheostat.* The rheostat (fig. 2-13) regulates the D.C. welding amperage within the ampere range selected at the D.C. ampere selector switch. This rheostat may be removed from the control panel and moved to the welding site for remote fine adjustment of D.C. amperage by using a suitable electrical cable to connect between the rheostat and the receptacle that the rheostat was originally plugged into. Turn the adjusting rheostat clockwise to increase welding amperage and counterclockwise to decrease amperage.

u. D.C. Voltmeter. The D. C. voltmeter (fig. 2-13) indicates the 13.C. voltage output of the welder and will show a maximum of 40 volts.

U. *Overspeed Safety Switch.* (Model SEORLT only). Overspeed relay will shut down engine at 1,350 rpm or 68 cycles (fig. 2-12).

Section IV. OPERATION UNDER USUAL CONDITIONS

2-8. General

a. The instructions in this section are for the information and guidance of personnel responsible for operation of the shop set.

b. The operator must know how to perform every operation of which the shop set is capable. This section contains instructions on starting and stopping the shop set, *on* operation of the shop set, and on coordinating the basic motions to perform the specific tasks for which the equipment is designed. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

2-9. Starting Model SEORLT

a. Preparation for Starting

(1) Perform the necessary daily preventive maintenance checks and services (para 3-4).

(2) Set power selector switch (fig. 2-13) in "OFF" position.

(3) Set frequency switch to the desired frequency for the area the vehicle is being operated.

(4) Depress reset button on the overspeed safety switch (fig. 2-12).

(5) Set hand brake (fig. 2-14).

(6) Depress clutch and shift transmission lever to neutral position.

(7) With clutch depressed, shift transfer case lever to neutral position, pin lever and release clutch.

(8) Turn governor control knob counterclockwise to unlock, and depress detent button in the center of knob. Pull the governor control knob to a full "OUT" position and turn the governor control knob clockwise to lock.

b. Starting (fig. 2-14).

(1) Energize battery switch and start engine.

(2) Operate engine in accordance with manufactors recommendation, until ambient conditions are reached.

(3) Depress clutch, shift transmission lever to fourth gear, and while slipping clutch, pull upward without undue force, on the power take-off lever.

NOTE

Engagement of power take-off maybe noted as similar, to normal engagement of the transmission into *gear.*

(4) With power take-off engaged, depress clutch, unlock the governor control knob and push in to dash, pull hand throttle to a full "OUT" position and lock.

(5) Depress detent button and pull governor control out a slight amount to increase engine rpm and release clutch slowly.

(6) The governor control knob may now be pulled out slowly until the desired rpm 1,000 or 1,200 rpm is indicated on the tachometer.

(7) Lock governor control knob.

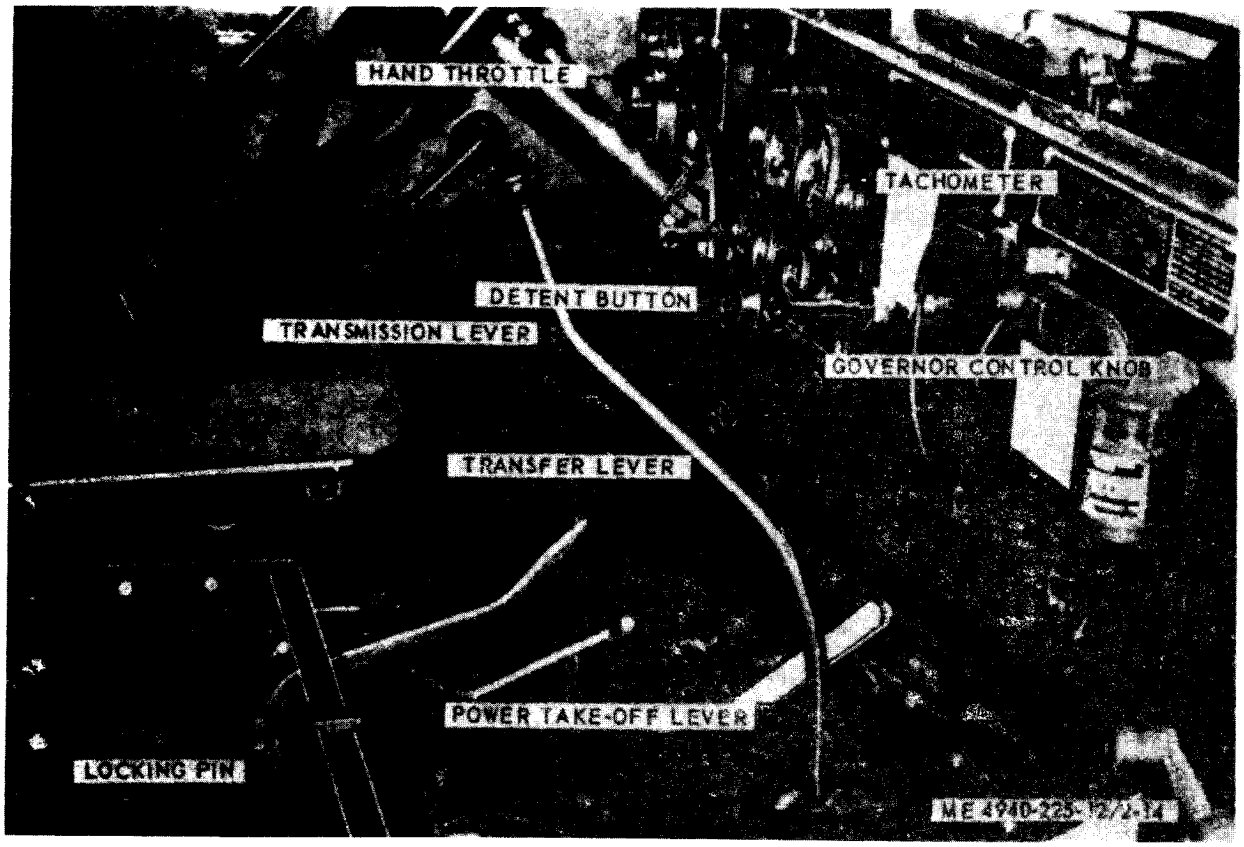


*Figure 2-14. Operation of power take-off for**dynamotor-toelder Model SEORLT.***

(8) **The frequency meter (vibrating reed type) will indicate the frequency (cycles) of the generated power. If actual rpm is too low, the reeds will not show any displacement. Gradually increase the rpm to obtain the necessary frequency.**

NOTE

The overspeed relay will shut down the engine at 1,350 rpm or *68 cycle.* Should this occur, de-energize the battery switch and return all levers and controls to original position.

2-10. Starting (Model SEORL)

a. Preparation for Starting

(1) **Perform the necessary daily preventive maintenance checks and services (para 3-4).**

(2) Set power selector switch (fig. 2-13) in "OFF" position.

(3) Set frequency switch to the desired frequency for the area the vehicle is being operated.

(4) Set hand brake (1, fig. 2-15).

(5) Depress clutch and shift transmission lever (4) to neutral position.

(6) Depress clutch and shift transfer lever (7) to neutral position and secure with pin (6).

b. Starting

(1) **Energize battery switch and start engine.**

(2) operate engine in accordance with manufactors recommendation, until ambient conditions are reached.

(3) Depress clutch, shift transmission lever (4) to fifth gear, and while slipping clutch, pull upward without undue force, on the power take-off lever (8).

NOTE

Engagement of power take-off may be noted as similar to normal engagement of the transmission into gear.

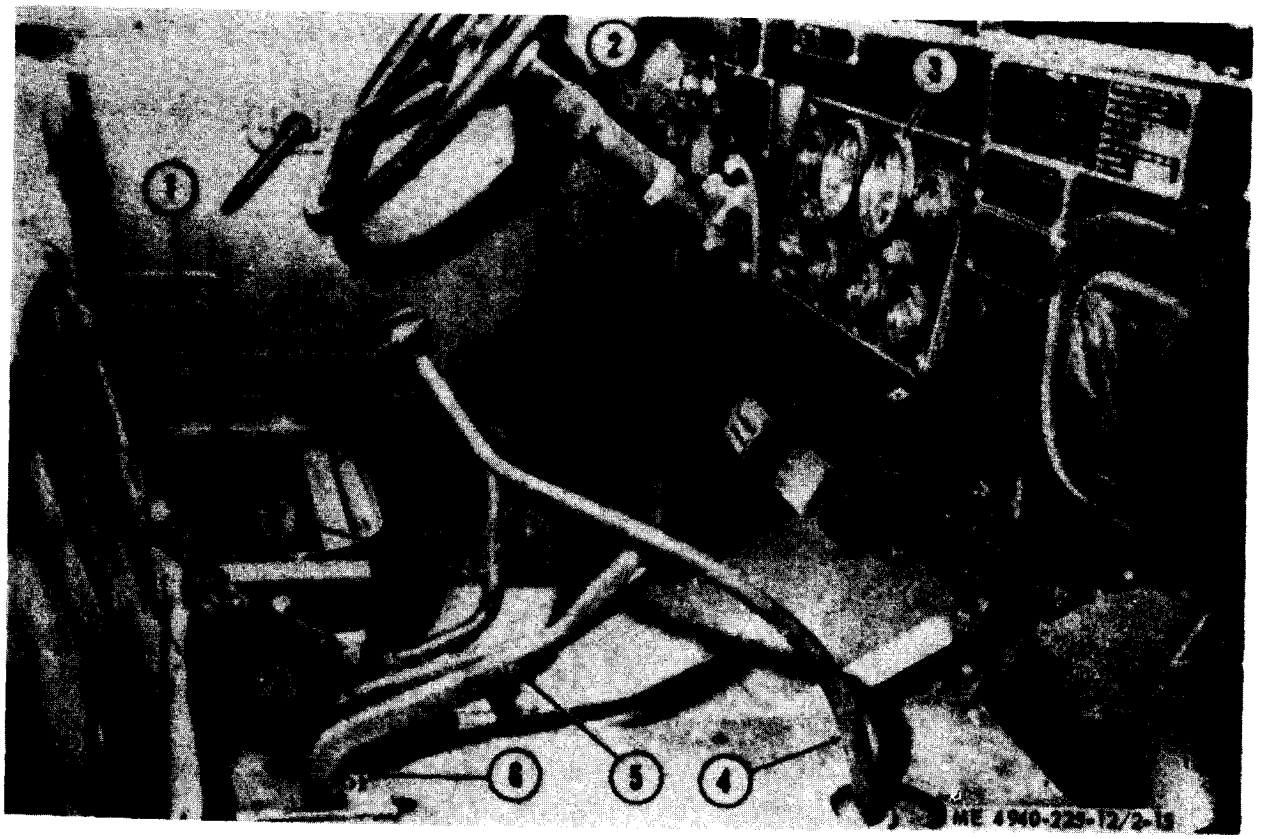
(4) Depress accelerator until the desired rpm is indicated 1,000 or 1,200 rpm on the tachometer (3). Pull hand throttle (2) until definite pressure against further travel is observed.

(5) Adjust the hand throttle to give 1,000 or 1,200 rpm for the desired frequency for the area the shop set is located.

(6) The frequency meter (vibrating reed type) will indicate the frequency (cycles) of the generated power. If actual rpm is too low, the reeds will not show any displacement. Gradually increase the rpm to obtain. the necessary frequency.

NOTE

Engine governor will maintain adjusted speed under various conditions.



1. Hand brake
2. Hand throttle
3. Tachometer
4. Transmission shift lever
5. Winch lever
6. Locking pin
7. Transfer lever
8. Power take-off lever

Figure 2-15. Operation of power take-off for dynantotor-welder Model SEOIRL.

2-11. Stopping (Model SEORLT)

Release governor control knob and push in to dash and lock.

b. Unlock hand throttle and push in to dash.

c. Depress clutch, shift transmission lever to neutral position.

d. Disengage power take-off by placing power take-off lever fully down. Remove pin from transfer case lever and position lever in desired gear range.

CAUTION

To prevent damage to components, make certain levers are positioned as above, before movement of vehicle.

2-12. Stopping (Model SEORL)

Push hand throttle (2, fig. 2-1 S) in, reducing engine speed to idle.

b. Depres clutch, and shift transmission to neutral position.

c. Disengage power take-off by placing lever (8) fully down.

d. Remove pin (6) from transfer lever (7) and ptmition in desired gear range.

CAUTION

To prevent damage of components, make certain levers are positioned as above, before movement of vehicle.

2-13. Operation of Equipment

8. Operation on Internal Power (Shop set Equipment).

(1) Place all circuit breakers and switches on the control panel in the OFF position.

(2) Start the engine. Refer to paragraph 2-8 for Model SEORLT, or paragraph 2-9 for Model SEORL.

(3) For 60-cycle A.C. Output, adjust speed control to give tachometer reading of 1,200 rpm,

(4) For 50-cycle A.C. Output, adjust speed control to give tachometer reading of 1,000 rpm.

(5) Set power selector switch to GENERATOR and the frequency switch to desired frequency; either 50 or 60 cycle, but, compatible with the speed adjustment.

(6) Place the control circuit breaker (fig. 2-1 3) to ON position, and press the dynamotor start

switch, momentarily, to energize the A.C. generator portion of the dynamotor-welder.

NOTE

With selector switch in GENERATOR position, the welder is driven in the proper rotation. All sequences of operation duplicate CITY position except 240-V EXTERNAL power receptacle which is now output rather than input.

NOTE

A.C. output voltage adjustments maybe made with the A.C. voltage adjusting rheostat (fig. 2-13). D.C. output adjustments may be made with the D.C. ampere selector switch and D.C. ampere adjusting rheostat (fig. 2-13).

(7) After performing steps 1 through 6 above, the synchronous motor becomes an A.C. generator. Power is available at all terminals and receptacles. The dynamotor-welder provides power for welding.

b. Operation on External (CITY) Power.

(1) Place all switches and circuit breakers in the OFF position.

(2) Set the frequency switch to match the rating of the incoming power; either 50 or 60 cycles, and place the power selector switch in the CITY position.

(3) Install the power cable into the receptacle (fig. 2-7) and then connect terminal end wires to 240-volt, 3-phase power supply.

CAUTION

Do not install an energized power cable as arching will damage the terminal pins of the receptacle and may also damage terminals inside the cubicle

NOTE

With the selector switch in the (CITY) position, connect outside source of 3-phase, 240-volt A.C. power to power receptacle. 240-volt single-phase power can now be used from R4, R 5, and R6 receptacle. Also the air compressor, lathe, and mill may be operated. Place the control circuit breaker (fig. 2-13) in the ON position and press the dynamotor-welder start switch momentarily. The generator portion of the dynamotor-welder is now functioning as 25 hp. motor to drive the welder portion.

(4) Rotation is clockwise from driving end. observe the fan blade rotation through slot in the cubicle side of dynamotor-welder. Correct rotation of fan as viewed through the slot is downward. To correct the rotation, interchange any two of the incoming leads.

(5) Check the reading of the frequency meter which indicates the correct frequency of the incoming power. If it is not compatible with the frequency switch setting, set switch correctly. The A.C. voltmeter will indicate input voltage. Power is now available from all terminals and receptacles. The welder is driven by the synchronous motor.

c. *Operating on EMERGENCY Power.*

(1) General. When neither internal nor 3. phase, 240-volt A.C. external power is available, it is impossible to operate the dynamotor-welder or to provide current to the shop set contents. Under these conditions, an external 120-volt, single-phase 50-60 cycle current may, if available, be used to furnish power for limited operation of the shop set components.

(2) Operational *procedure.*

(a) Make sure all switches throughout the shop set are in the OFF position and that no equipment or appliance is plugged into the 120-volt shop set receptacles.

(b) Place the power selector switch in the EMERGENCY position.

(c) Refer to (fig. 2-16) and connect the em erg en c y power source.

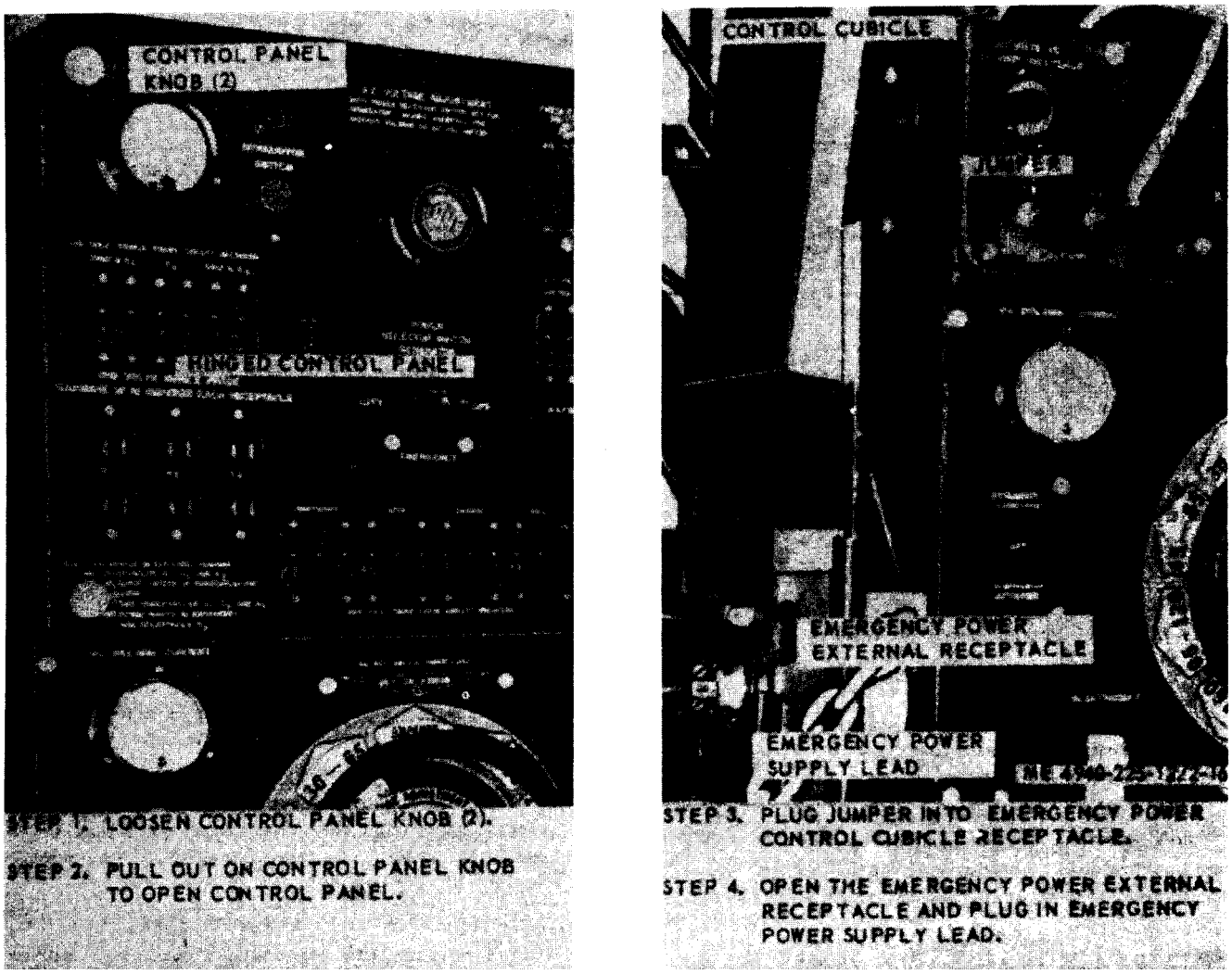


Figure 2.16. Connecting the emergency power supply.

(d) Observe the frequency meter and set the frequency switch to either 50 or 60 cycles as indicated by the meter.

(e) Place R3 circuit breaker in the ON position.

(f) 120-V power is available from R3 duplex receptacles ONLY. Shop set lights are also operational.

d. Operation with Power Selector Switch in OFF Position.

(1) **To develop D.C. current for welding, when A. C, current for operating shop set is not desired, turn the power selector switch (fig. 2-13) OFF. Start the engine and accelerate to 1,200 rpm.**

(2) The required D.C. current is now available at the positive and negative welding terminals. Turn the D.C. ampere selector switch (fig. 2-13) to the desired ampere range and adjust the amperage within the selected range with the D.C. ampere adjusting rheostat. The voltage and amperage will be indicated on the D.C. meters.

NOTE

The dynamotor start switch should not be energized. Under these operating conditions, all A.C. circuits are de-energized.

e. Welder Operation. **Refer to TM 9-237 for welding techniques.)**

(1) Refer to paragraph a above, and energize the system with internal power; refer to paragraph *b* above, and energize the system with external power, or, refer to paragraph *d* above.

(2) Connect electrode and ground cable to dynamotor-welder output terminals (positive electrode and negative ground).

(3) Place the polarity switch in the desired position.

(4) Turn the D.C. ampere selector switch (fig. 2-13) so that the desired amperes (welding) range is directly under the arrow at the top of the selector switch. The D.C. ampere fine adjustment rheostat located in the center of the selector switch can now be adjusted to the desired amperes within the range shown at the top of the range selector switch. For remote fine adjustment at the welding area, remove the fine adjustment rheostat assembly, pressing upward on the latch under the handle of the rheostat and pulling outward. Install appropriate cable between rheostat and outlet.

NOTE

Experience alone will enable the operator to determine the correct D.C. ampere and polarity required for the particular welding to be accomplished.

CAUTION

Do not change the setting of the D.C. ampere range selector switch, or the fine adjustment while welding is being performed.

WARNING

When the dynamotor-welder is rigged for remote fine adjustment of D,C. amperes, the rheostat assembly must be protected from elements that are a conductor of electricity such as water, mud, etc.

(5) Place the polarity switch in the OFF position when welding is not being performed, to prevent possible damage to the circuit. To stop the dynamotor-welder from developing D.C. current, the rotation of the dynamotor-welder must be stopped.

(a) When the truck engine is the power source and you have been operating with the power selector switch (fig. 2-13) in OFF position, reduce engine speed and disengage power take-off.

(b) When the truck engine is the power source, and you have been operating with the power selector switch in GENERATOR position, press the dynamotor stop switch (fig. 2-13) and reduce engine speed and disengage power take-off.

(c) When external power source is used, momentarily press the dynamotor stop switch.

f. Air Compressor Operation.

(1) Energize the electrical system as explained in *a or b* above.

(2) Switch air compressor circuit breaker (fig. 2-13) ON.

(3) Open air receiver drain cock and drain condensation from tank.

(4) Press start switch (fig. 2-11) to start.

(5) To stop compressor, push stop reset button and place the air compressor circuit breaker OFF.

(6) The air compressor pressure switch (fig. 2-11) will automatically shut down the compressor when pressure reaches 150 psi; and will re-start the compresser as soon as pressure falls below 125 psi.

g. *Lathe Operation.*

(1) Energize the electrical system, as explained in *a* or *b* above.

(2) Move the lathe reversing lever to the OFF position.

(3) Switch lathe circuit breaker on the welder control panel ON.

(4) Lathe may now be operated from its installed position.

h. Mill Operation.

(1) Energize the electrical system for either internal or external power.

(2) Switch the mill circuit breaker ON.

(3) Remove hardware that secures the milling attachment in its stored position, and install on the lathe cross slide in place of the compound slide.

(4) Operate the mill from installed position.

NOTE

Experience alone will enable the operator to install the milling attachment on the lathe in the position that will produce the beet results.

i. 120-Volt, Single-Phase Receptacles.

(1) Energize the electrical system for either internal or external power.

(2) Switch the R 1, R2, and R3 circuit breaker ON. This will energize the R 1, R2, R3, and other 120-volt, single-phase receptacles.

NOTE

On emergency power, only receptacle R3 may be utilized,

j. 240-Volt, Single-Phase Receptacles.

(1) Energize the electrical system for either internal or external power.

(2) Switch the R4, R5, and R6 circuit breakers ON. This energizes the R4, R5, R6, and other 240-volt, single-phase receptacles.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

2-14. Operation in Extreme Cold

a. *Air Compressor. Refer* to current lubrication order for cold weather lubrication instructions.

b. Dynamotor-welder. When the dynamotor-welder is driven by the truck engine during extremely cold operating conditions, allow a warming-up period to allow the engine to reach normal operating temperature range before operating the dynamotor-welder.

c. *Wiring.* Do not attempt to service or move the

wiring during extremely cold temperatures. Bending a wire under these conditions will cause cracks and breaks in the insulation and the wiring.

d. Fuel System. Fuel tank should be kept as full as possible at all times to reduce the possibility of moisture forming in the tank. Keep the fuel tank filler cap and screen free from ice and moisture.

2-15. Operation in Extreme Heat

a. *Lubrication.* Refer to current lubrication order and lubricate with specified lubricants only.

b. Dynamotor-Welder. Check the dynamotor-welder air filters frequently. Clean, ventilating air filters are necessary to maintain maximum ventilation through the dynamotor-welder at all times.

2-16. Operation in Dusty or Sandy Areas

a. General. Dust and dirt can cause premature mechanical failure of the shop set components. Locate the shop set in a well protected area, whenever possible. Keep the shop set as clean as possible, paying particular attention to the screens, grilles, and filters. Use compressed air to clean, for best results.

b. Lubrication. Strainers and filters will have to be replaced more often than usual. Take care to clean dust and dirt from the lubrication points before applying lubricant. Clean the area around the oil filler cap and oil level gage before checking oil level' or adding oil.

c. *Fuel* System. Take all precautions to keep the fueI and fuel system free from dust and foreign particles. Inspect the filter bowls more frequently than under normal circumstances.

d. Dynamotor-welder. Inspect the dynamotor-welder filter screens frequently to keep dust and dirt to a minimum.

2-17. Operation Under Rainy or Humid Conditions

a. General. Provide adequate ventilation and shelter to protect the shop set from rain and humidity. Remove any coverings during dry periods to aid in drying out the shop set and components.

b. Fuel System. Keep fuel tank full to avoid condensation in the tank.

c. *Dynamotor-Welder. Do* not attempt to weld in the direct presence of rain or when condensate is forming on metal parts in an extremely humid atmosphere.

2-18. Operation in Salt Water Areas

a. General. Wipe the exposed surfaces of the body interior and exterior, as well as all component surfaces, with clean, fresh water. Be careful not to containinate the fuel system or damage the electrical system with the water.

b. Protection. Remove all rust and corrosion immediately. Coat exposed metal surfaces with rust-proofing material and apply paint or oil as required.

2-19. Operation at High Altitudes

Operating difficulties at high altitudes result largely from the reduced density of the atmosphere. This affects the shop set primarily in regards to the ventilation and cooling of components. The dynamotor-welder A.C. and D.C. output are both rated at 12 K W at altitudes up to 5,000 feet, and 9.8 KW at 8,000 feet. To calculate either A.C. or D.C. output above 8,000 feet elevation, use the following formula: (Round off to closest tenth.)

FORMULA:

$$6\% \times \frac{\text{actual altitude} - 5{,}000}{1{,}000} \text{ 5,000 ft rating} = \text{derating factor.}$$

EXAMPLE SOLUTION FOR 11,000 FT.

$$0.06 \quad \frac{11{,}000 - 5{,}000}{1{,}000} \text{ 12 KW} = 4.32 \text{ derating factor}$$

12KW —4-3 KW = 7.7 K W output at 11,000 ft. altitude.

Section VI. OPERATION OF MATERIEL USED IN CONJUNCTION WITH THE SHOP SET

2-20. Personnel Heater

For starting and stopping instructions, refer to figure 2-10.

CHAPTER 3

OPERATOR/ CREW MAINTENANCE INSTRUCTIONS

Section I. BASIC ISSUE ITEMS

3-1. Basic Issue Tools and Equipment

Tools, equipment, and repair parts issued with or authorized for the Model SEORL and Model SEORLT shop set are listed in the basic issue items list, Appendix C.

Section II. LUBRICATION INSTRUCTIONS

3-2. General Lubrication Information

Ref to LO 5-4940-225-12 for complete lubrication instructions.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (DAILY AND WEEKLY)

3-3. General

To insure that the shop set is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are listed as described in paragraphs 3-4 and 3-5. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would dam age the equipment if operation were continued. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

3-4. Daily Preventive Maintenance Checks and Services

This paragraph contains an illustrated tabulated listing of preventive maintenance checks and services which must be performed by the operator. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to table 3-1 for the daily preventive main-ten ante checks and services.

3-5. Quarterly Preventive Maintenance Checks and Services

a. This paragraph contains an illustrated tabulated listing of preventive maintenance checks and services which must be performed by organizational maintenance personnel at quarterly intervals. A quarterly interval is equal to three (3) calendar months, or 250 hours of operation, whichever comes first.

b. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to table 4-1 for the quarterly preventive maintenance checks and services.

Table 3-1. Preventive Maintenance Checks and **Services**

B- **Before** Operation A- After Operation M - Monthly
D- During Operation W- weekly **Q-Quarterly**

Item number	Interval: Operator: Daily B	Operator: Daily D	Operator: Daily A	Operator: Daily W	Org. M	Org. Q	Items to be Inspected	Procedure	Reference
1	X		**X**				**AIR RECEIVER:**	**Drain condensate. Tighten loose mounting and connections.**	
2	**X**	X	X				**L I G H T S & REFLECTORS:**	**Replace burned out lamps. Replace cracked lenses.**	
		X					**AIR PRESSURE GAGE:**	**Check for normal gage reading of 125-150 Ibs.**	
4	X						**HYDRAULIC PUMPS:**	**Add oil as required. Refer to current L.O.**	
5	X	X					**f) DYNAMOTOR-WELDER:**	**Inspect for damage and loose mounting.**	
6		**X**					**W E L D E R I N - STRUMENTS:**	**Normal Readings; 240 volts. 50-60 cycles**	
							AC Voltmeter		
							Frequency Meter		
							DC Ammeter:	**Indicates applied load current not to exceed 300 amps.**	
							DC Voltmeter	**Terminal voltage.**	
7	X						**COMPRESSOR DIPSTICK:**	**Add oil as indicated. Refer to current L.O.**	

Section IV. TROUBLESHOOTING

3-6. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the shop set and its components. Malfunctions which may occur are listed in table 3-2. Each malfunction stated is followed by a list of probable causes of the trouble. The corrective action recommended is described opposite the probable cause.

Table 3-2. Troubleshooting

Malfunction	Probable Cause	Corrective Action
1. Engine stops suddenly.	Dynamotor-welder overspeed safety switch trips. (Model SEORLT)	Reset switch (para 2-7 *v*).
2. Dynamotor-welder noisy.	Loose mounting hardware.	Tighten or replace hardware.
3. Dynamotor-welder will not start when external power source is used.	a. Dynamotor switch not properly actuated.	a. Actuate switch properly. (para 2-13b).
	b. Power selector switch in wrong position.	*b.* Set selector switch to CITY position (para 2-13 *b*).
	c. Power cable disconnected.	*c.* Install power cable (para 2-2e).
4. Air compressor will not function.	a. Circuit breaker tripped.	a. Reset circuit breaker (para 2-13/).
	b. Overload circuit in starter box tripped.	*b.* Push reset button (para 2-7d).
5. Air corn presser overheats.	Oil level low.	Service in accordance with L. O. 5-4940-225-12.
6. Air compressor fails to build up in receiver tank.	a. Air hoses, lines or fittings leaking.	a. Tighten or replace hoses couplings, or fittings.
	b. Air cleaner clogged.	*b.* Clean air cleaner (para 3-8).
	c. Receiver tank drain cock open.	c. Close draincock (para 2-13f).
7.Side lifting hydraulic system does not operate properly.	a. Control valve in wrong position.	a. Place control valve in proper position (para 2-7a).
	b. Hydraulic oil supply low.	b. Fill hydraulic oil pump in accordance with L. O. 5-4940-225-12.

Section V. MAINTENANCE OF SHOP SET

3-7. General

The instructions in this section are published for the information and guidance of the operator to maintain the shop set.

3-8. Compressor Air Cleaner

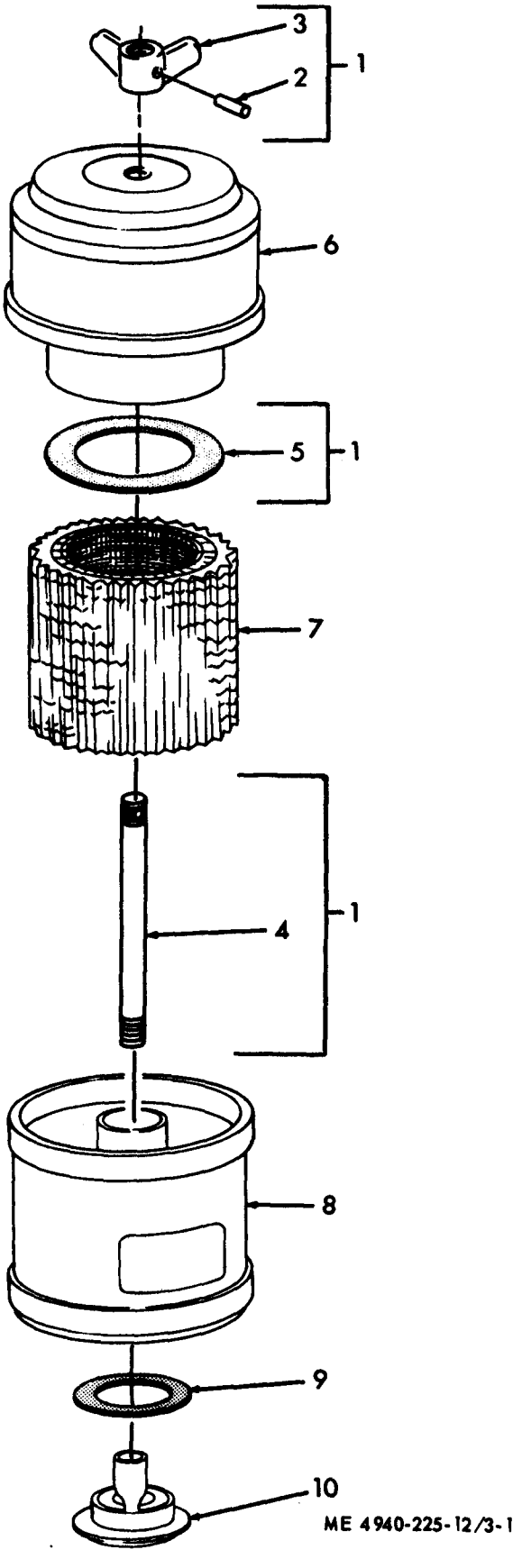
a. General The air cleaner should be serviced after every 50 hours of operations.

b. Filter Element Removal and Disassembly. Refer to figure 3-1 and remove the filter element.

c. *Cleaning and Inspection.*

(1) Clean air cleaner and element with cleaning solvent and dry thoroughly.

(2) Inspect for rust or corrosion and that air flows freely through the filter element.



1. Top assembly
2. Pin
3. Nut
4. Stud
5. Gasket
6. Top
7. Element
8. Bowl
9. Gasket
10. Base

Figure 3-1. Air cleaner, removal and service.

d. Reassembly and Installation. Reassemble and install the air cleaner as illustrated in figure 3-1. Refer to LO 5-4940-225-12 for lubrication.

3-9. Hydraulic Pump

a. *General* Each side door of the shop set is raised and lowered by a hydraulic pump and cylinder. A flow control valve in the system provides a metered flow rate and controls the lowering speed of the cylinder when the control valve lever is placed in the open or return position.

b. Adjustment. Adjust the flow control valve as illustrated in figure 4-9.

c. *Cleaning and Inspection.*

(1) Clean external surface of the pump with a cloth dampened in cleaning solvent and wipe dry.

(2) Inspect for cracks, breaks, signs of leakage, and other damage.

(3) Remove the filler cap (fig. 4-9) from the top of the pump and add fluid as necessary in accordance with the LO 5-4940-225-12. Install and tighten filler cap.

3-10. Canvas Walls, Roofing, and Deflector

a. General. The tent canvas provides a weather-protected work area when installed on the shop set.

b. Removal. Remove tent canvas from the shop set.

c. *Cleaning and Inspection.*

(1) Clean all parts with warm water and soap and dry thoroughly.

(2) Inspect the canvases for tears, open seams, and loose grommets and straps. Repair a defective canvas in accordance with TM 10-269.

d. Installation. Fold and stow the tent canvas in the shop set.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

4-1. Servicing of Equipment

Refer to paragraph 2-1 for complete instructions for servicing of equipment.

Section II. MOVEMENT TO A NEW WORKSITE

4-2. Instructions for Movement

Refer to paragraph 2-4 for complete instruction for movement to a new worksite.

Section III. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

4-3. Basic Issue Tools and Equipment

Tools, equipment, and repair parts issued with or authorized for the shop set are listed in the basic issue items list, appendix C.

4-4. Special Tools and Equipment

No special tools and equipment are required by organizational maintenance on the shop set.

4-5. Maintenance Repair Parts

Organizational maintenance repair parts will be listed and illustrated in TM 5-4940-225-20P.

Section IV. LUBRICATION INSTRUCTIONS

4-6. General Lubrication Information

Refer to LO 5-4940-219-12 for complete lubrication instructions.

Section V. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (MONTHLY AND QUARTERLY)

4-7. General

To insure that the shop set is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are Iisted and described in paragraphs 4-8 and 4-9. The item numbers indicate the sequence of minim urn inspection requirements. Defects 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 deficiency is noted during operation which would damage the equipment if operations were continued. All deficiencies and short comings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

4-8. Daily Preventive Maintenance Checks and Services

This paragraph contains an illustrated tabulated listing of preventive maintenance checks and services which must be performed by the operator. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to Table 3-1 for the daily preventive maintenance checks and services.

4-9. Quarterly Preventive Maintenance Checks and Services

a. This paragraph contains an illustrated tabulated listing of preventive maintenance checks and services which must be performed by Organizational Maintenance Personnel at quarterly intervals. A quarterly interval is equal to three (3) calendar months, or 250 hours of operation, whichever comes first.

b.The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to Table 4-1 for the quarterly preventive maintenance checks and services.

Table 4-1 Preventive Maintenance Checks and Services

	Interval						B- Before Operation D-During Operation	A- After Operation W-weekly	M–Monthly Q-Quarterly
	Operator				Org.				
Item number	Daily				M	Q	Item to be inspected	Procedure	Reference
	B	D	A	W					
1		X				X	AIR PRESSURE GAGE	Check for normal gage reading of 125-150 Ibs. Clean safety relief valve and adjust to pop-off at 175 psi as necessary.	
2						X	LATHE MOTOR V BELT	Check for worn, frayed, or cracked belt. Adjust belt to 1/2 inch deflection between motor and lathe pulleys. Replace worn or defective belt.	
3						X	INTERCOOLER	Clean dirt from fins. Straighten bent fins.	
4						X	DYNAMOTOR-W ELDER Ventilating ALl Filter:	Clean or replace dirty or defective air filters.	
5	X					X	HYDRAULIC PUMPS	Replace leaking or defective pumps.	
6	X		X			X	FIRE EXTIN-GUISHER	Check for broken seal.	

Section VI. TROUBLESHOOTING

4-10. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the shop set and its components. Malfunctions which may occur are listed in table 4-2. Each malfunction stated is followed by a list of probable causes of the trouble. The corrective action recommended is described opposite the probable cause.

Table 4-2. Troubleshooting

Malfunction	*Probable Cause*	Corrective Action
1. Dynamotor-welder will not start when internal power is used.	a. Power selector switch in OFF position	a. Place power selector switch to GEN (para 2-13a).
	b. RPM too low.	b. Increase RPM (para 2-13a).
2. Dynamotor-welder rotates in wrong direction when external power is used.	External power lines connected wrong.	Interchange any two incoming power leads. (para 2-13 b).
3. Air compressor air pressure low.	a. Air cleaner clogged.	a. Clean air cleaner (para 3-8).
	h. Electric pressure switch defective or out of adjustment.	*b.* Adjust or replace switch (para 4-32).
4. Air compressor air pressure too high.	Electric pressure switch defective or out of adjustment.	Adjust or replace switch (para 4-32).
5. Side lifting hydraulic system does not operate properly.	a. Air in hydraulic system.	a. Bleed system (para 4-26).
	b. Side lifting cylinder defective.	*b.* Replace cylinder (para 4-27).
	c. Side lifting hydraulic pump defective.	c. Replace pump (para 4-26).
6. Sides lower too quickly or too slowly.	Side lifting hydraulic pump flow control valve not adjusted properly or defective.	Adjust or replace flow control valve (para 4-25).

Section VII. MAINTENANCE OF ELECTRICAL SYSTEMS

4-11. General

The shop set contains three electrical systems: A 24-volt D. C. system, an alternating current system, both 120- and 240- volts, and a D.C. welding system. The 24-volt system, powered by the batteries, is comprised of the driving lights and the. internal emergency lights. The alternating current system includes all shop set lights, switches, and receptacles for 120- and 240-volts. Refer to figures 1-4, 1-5, and 1-6, for the wiring diagrams.

4-12. Service and Blackout Clearance Lights

a. Removal. Remove the service and blackout clearance lights as illustrated in figure 4-1.

b. Cleaning and Inspection.

(1) Clean all parts with approved cleaning solvent and dry thoroughly.

(2) Inspect all parts for damaged threads, bends, cracks, breaks and other damage. Inspect for a defective lamp and any corrosion. Replace any defective parts.

c. *Installation.* Install the service and blackout clearance lights as illustrated in figure 4-1.

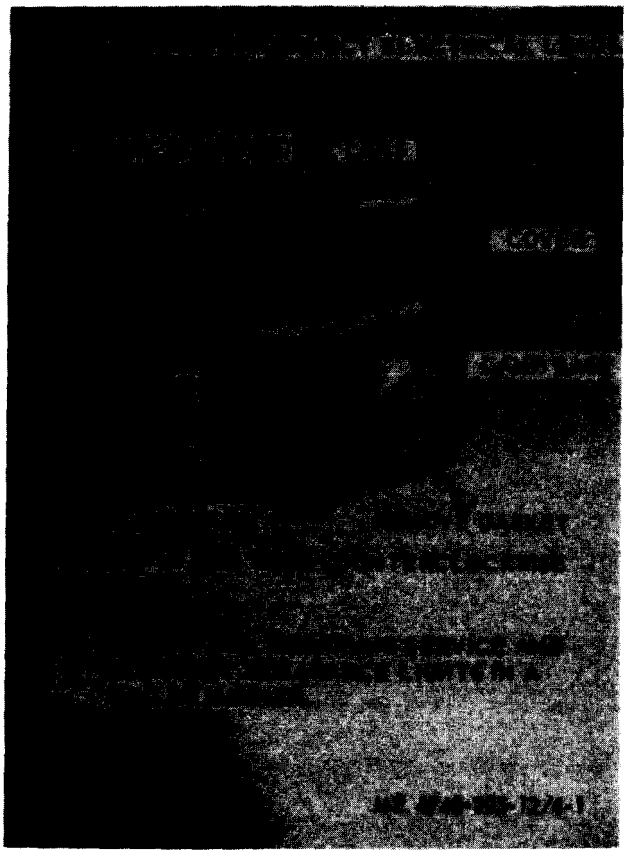


Figure 1-1. Service and blackout clearance lights, removal and installation.

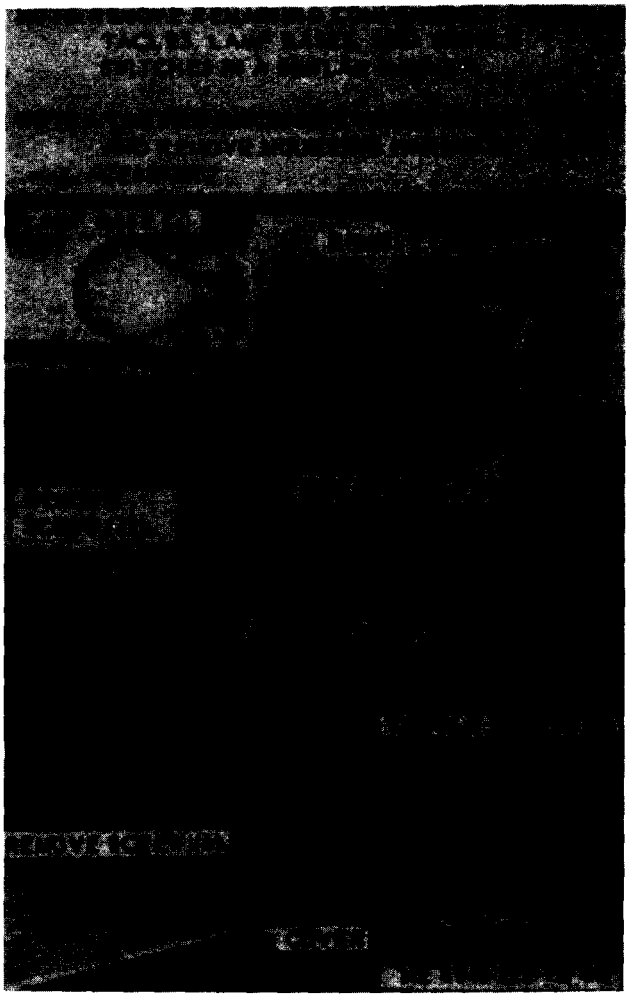


Figure 1-2. Convenience reptacles. lamp bases. and toggle switches.

4-13. Convenience Receptacles, Lamp Bases, and Toggle Switches

a. Removal.

(1) Switch all circuit breakers on the control panel (fig. 2-13) to OFF and disconnect electrical power source.

(2) Remove convenience receptacles, lamp bases, and toggle switches, as illustrated in figure 4-2.

b. Cleaning and Inspection.

(1) Clean all metal parts with cleaning solvent and dry thoroughly.

(2) Inspect all parts for cracks, dents, or other dam age. Replace defective parts.

(3) Inspect for defective hardware and loose connections. Replace defective hardware and be sure all electrical connections are clean and secure.

(4) Inspect the wiring for breaks or damaged insulation. Repair or replace damaged wiring.

c. *Installation.* Install the convenience receptacle, lamp bases, and toggle switches, as illustrated in figure 4-2.

4-14. Floodlights

a. *Removal.* Remove the floodlight as illustrated in figure 4-3.

b. Cleaning and Inspection.

(1) Clean all parts with a cloth dampened in cleaning solvent and dry thoroughly.

(2) Inspect all parts for cracks, corrosion, and other defects and replace a defective floodlight.

c. *Installation.* Install the floodlights as illustrated in figure 4-3.

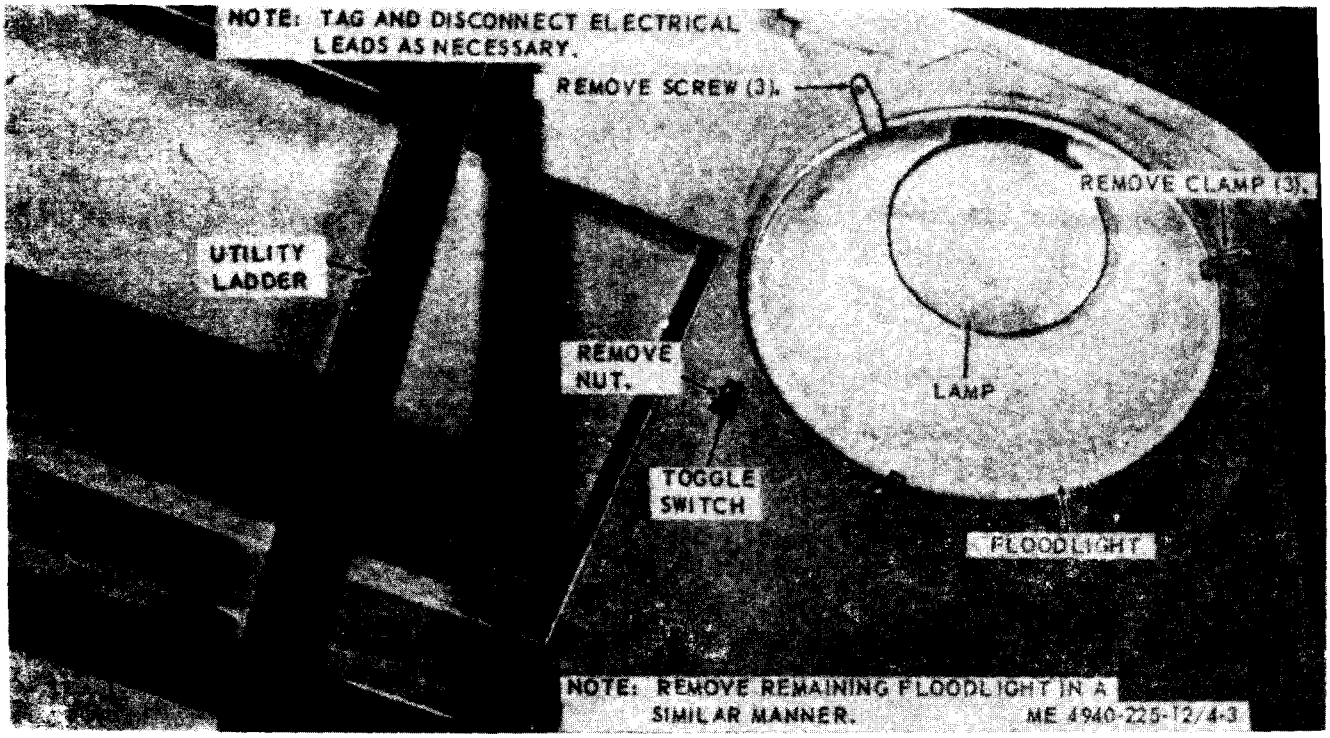


Figure 4-3. Floodlights, removal and installation.

4-15. Ceiling and Blackout Light

a. Incandescent Lamp Replacement.

(1) **Remove screw (8) and separate the assembled door from the body as shown in figure 4-4.**

(2) Remove the lamp (2) from the lamp holder (2) by pressing in and rotating the lamp one-quarter turn.

(3) Install new lamp (2), position assembled door on the body and secure with screw (8).

b. Removal and Installation.

(1) **Disconnect electrical lead.**

(2) Remove screw (4) and remove the light assembly,

(3) Position the light assembly against the panel and secure with screw (4).

(4) Connect electrical lead.

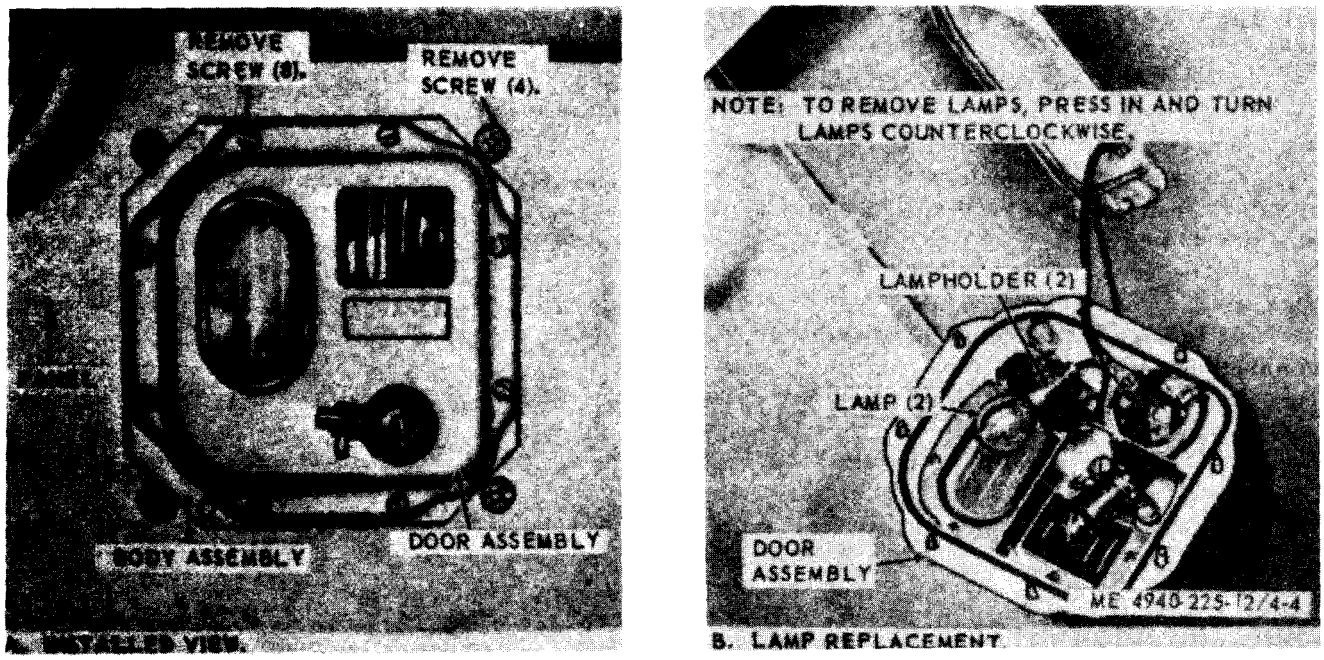


Figure 4-4. Ceiling and blackout light.

4-16. Front Ventilator Fan Assembly

a. ***Removal.***

(1) Refer to figure 4-5 and remove the *2* screws that secure the guard. Remove the guard.

(2) Remove the 4 screws that secure the bracket and remove the bracket.

(3) Tag and disconnect the electrical leads; remove the *2* nuts that secure the front ventilator fan assembly, and remove front ventilator fan assembly.

b. ***Cleaning and Inspection.***

(1) **Clean parts with cleaning solvent and dry thoroughly.**

(2) Inspect for defective bracket, guard, fan, and for defective or missing hardware. Replace as necessary.

c. ***Installation.***

(1) **Refer to figure 4-5 and install the front ventilator fan and secure with *2* nuts. Connect electrical leads.**

(2) Install the bracket and secure with 4 screws.

(3) Install the guard and secure with 2 screws,

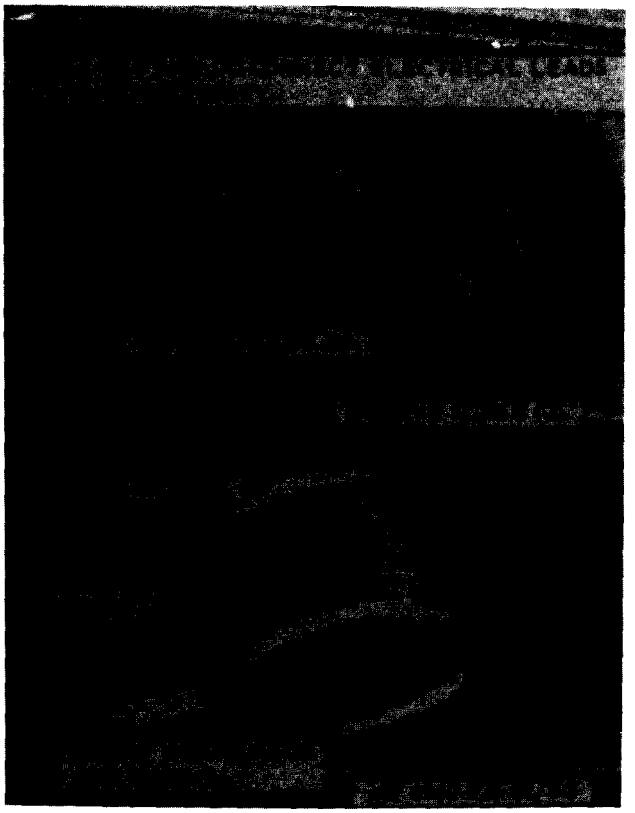


Figure 4-5 Front ventilator fan assembly, removal and **installation.**

4-17. Rear Ventilator Fan Assembly

a. ***Removal.*** **Remove the rear ventilator fan assembly as illustrated in figure 4-6.**

b. Disassembly. **Refer to figure 4-7 and disassemble the rear ventilator in numerical sequence.**

c. Cleaning and Inspection.

(1) **Clean with cleaning solvent and dry thoroughly.**

(2) Inspect for defective and missing parts or hardware, and replace as necessary.

d. ***Reassembly.*** **Refer to figure 4-7 and reassemble the rear ventilator.**

e. ***Installation.*** **Install the rear ventilator fan assembly as illustrated in figure 4.6.**

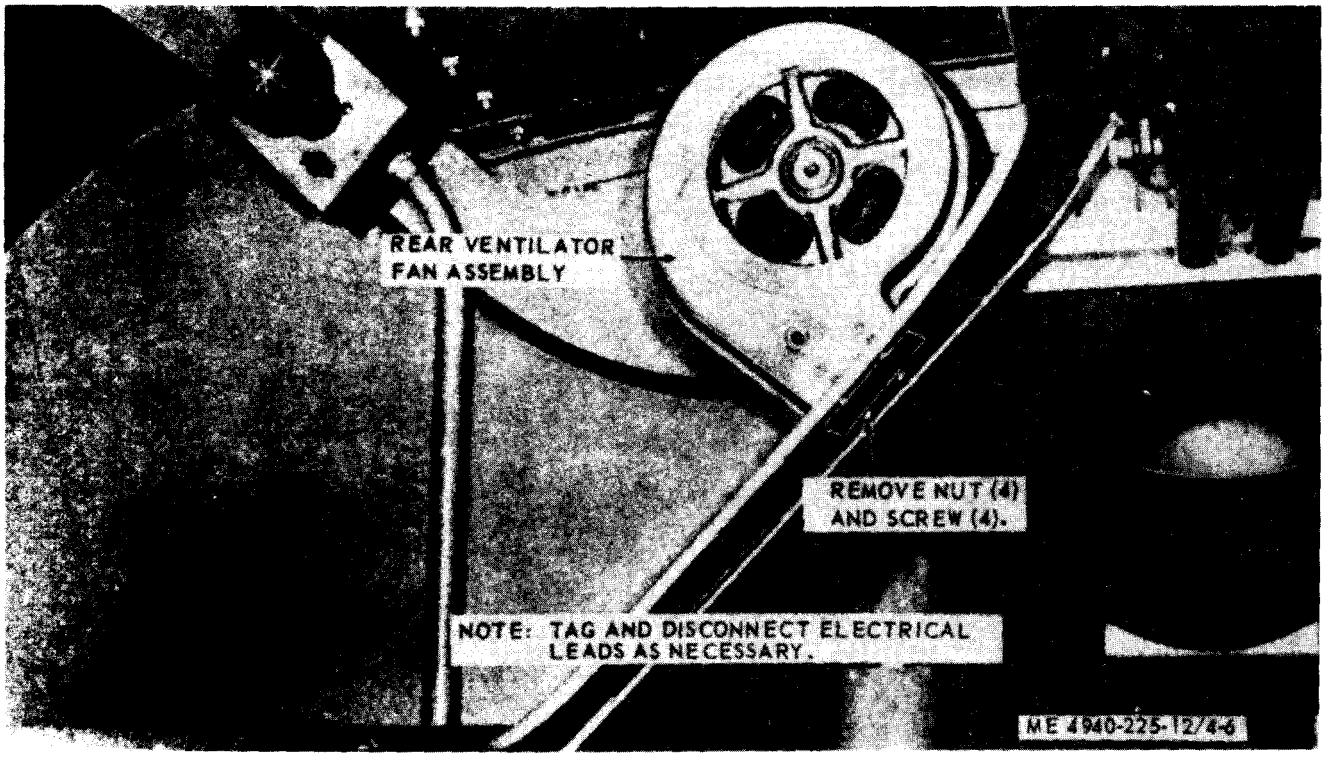
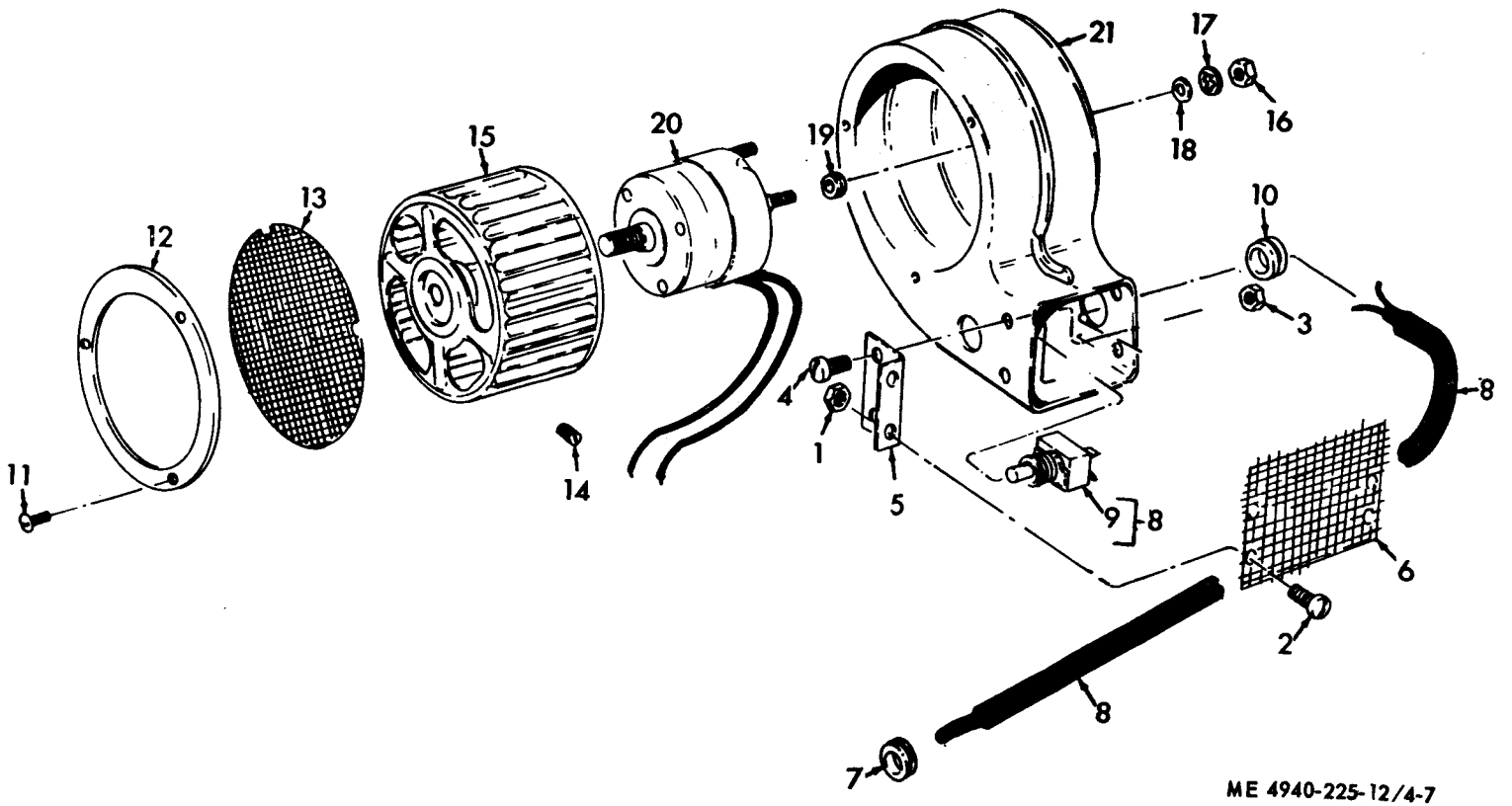


Figure 4-6. Rear ventilator fan assembly, removal and installation.



1. Nut
2. Screw
3. Nut
4. Screw
5. Angle
6. Screen
7. Grommet
8. Harness
9. Switch
10. Grommet
11. Screw
12. Ring
13. Screen
14. Setscrew
15. Impeller
16. Nut
17. Washer
18. Washer
19. Grommet
20. Motor assembly

Figure 4-7. Rear ventilators, disassembly and reassembly.

4-18. Emergency Power Receptacle

a. Removal. Remove the emergency power receptacle as illustrated in figure 4-8.

b. Cleaning and Inspection.

(1) Clean metal p-arts with cleaning solvent **and** dry thoroughly.

(2) Inspect for defective or missing hardware **and** loose electrical connections.

(3) Replace defective or missing hardware and parts as necessary and be sure all electrical connections are clean and secure.

(4) Inspect jumper cable for damage and broken or cracked insulation. Replace a defective cable that cannot be repaired.

c. *Installation.* Install the emergency power receptacle as illustrated in figure 4-8.

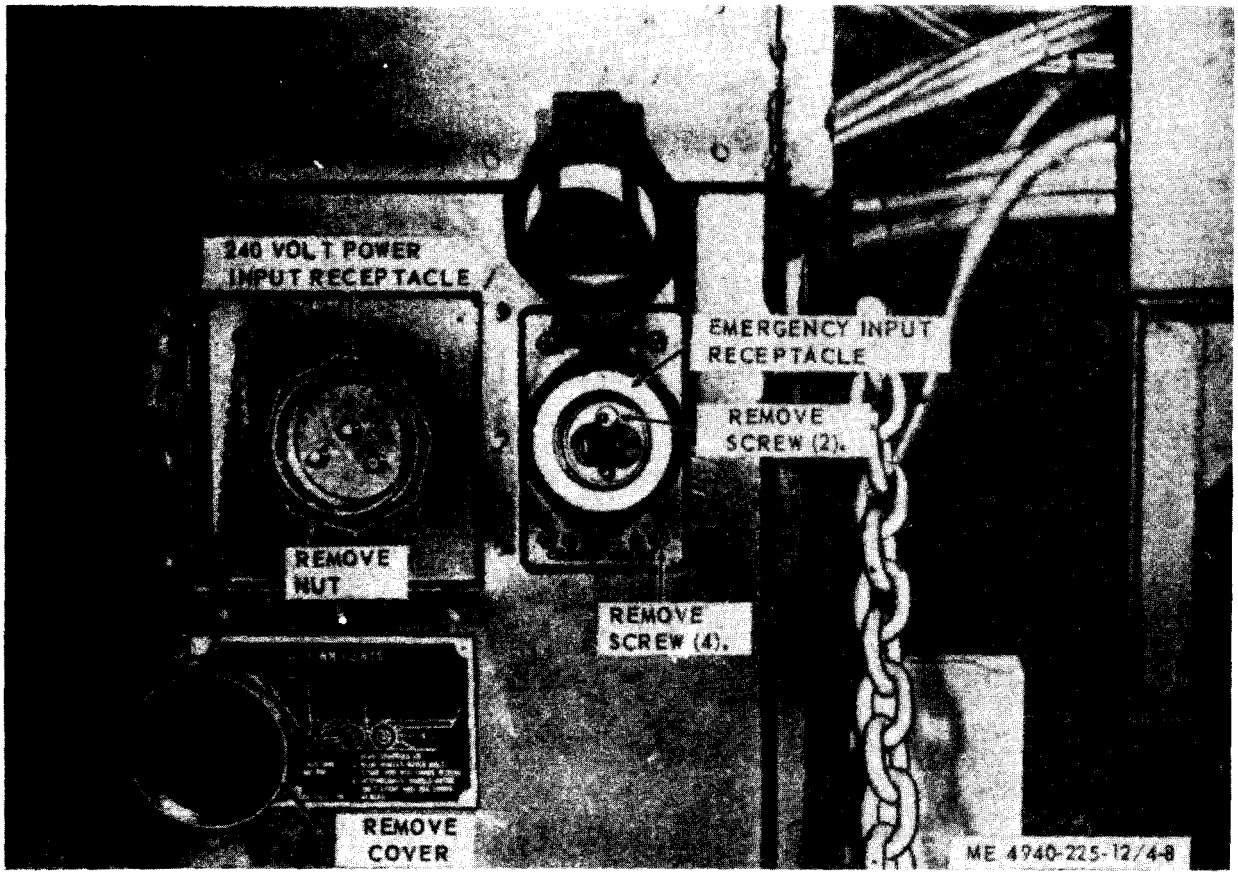


Figure 4-8. Emergency and external power receptacle. removal and installation.

4-19. External Power Receptacle

a. Removal.

(1) Remove the large nut that retains the receptacle in the side panel, then remove the receptacle out through rear of the side panel (fig. 4-8).

(2) To replace a defective receptacle, unsolder the electrical leads and resolder them to the new receptacle.

(3) To remove the receptacle for other purposes, unscrew the knurled knobs that retain the **dynamotor hinged** control panel in closed position **and** open control panel. Remove the three electrical **leads** marked with circuit No. 220, 221, and 222, from the back of terminals Ll, L2, and L3, below the emergency receptacle. Then remove the external power receptacle and electrical leads as an assembly.

b. Cleaning and Inspection.

(1) Clean parts with a cloth dampened in clean in g solvent.

(2) Inspect for defective or missing hardware and loose electrical connections. Replace loose or missing parts and be sure electrical connections are secure.

(3) Inspect wiring for breaks or damaged insulation and repair or replace wiring as necessary.

c. Installation. Install the external power receptacle in reverse order of paragraph *a* above.

Section VIII. MAINTENANCE OF BODY ENCLOSURE COMPONENTS

4-20. General

The enclosure components include a large, hydraulically-operated door on each side of the body, that opens to form an extended roof. Two lower doors, on each side, manually open downward to level position for use as extended floor area and as work benches. There is a personnel door at the rear of the body. The entire rear panel assembly is latched at the bottom and opens upwards to horizontal position so that the tent frames and enclosure canvas may be used.

4-21. Tent Frame

a. *Removal.* Loosen straps that secure the tent frames to the roof of the van body and remove the frame.

b. Cleaning, Inspection, and Repair.

[1) Clean all parts with cleaning solvent and dry thoroughly.

(2) Inspect all parts for bends, cracks, and other defects.

(3) Weld cracks. If a bent pipe in the tent frame cannot be straightened, cut bent section out and weld in a piece of pipe of the same length and diameter.

c. *Installation.* Install the tent frames in their stowed position on top of the van body and secure with the eight retaining straps.

4-22. Utility ladders

a. Removal. Remove the two ladders from their stowed positions, inside the shop set on both sides at the rear.

b. Cleaning and Inspection.

(1) Clean ladders with cleaning solvent and dry thoroughly.

(2) Inspect for damage or defects and replace a defective ladder.

c. *Installation.* Install the utility ladders in their respective stowed positions, as removed. Secure the two ladders with their retaining straps so they will remain in place while in transit.

4-23. Door Seals

a. Cleaning and Inspection.Inspect all door seals for cracks, tears, deterioration, and water or dust leakage. Clean seals with soapy water and dry thoroughly. Wipe the seals with a silicone compound.

b. Testing. If water or dust leakage occurs around seals, darken the interior of the van body to test for light leaks. Manipulate the seals to prevent light leakage. Use cellular rubber (sponge) blocks under the lip of any seal that has become depressed and permits light.

Section IX. MAINTENANCE OF SIDE LIFTING HYDRAULIC SYSTEM

4-24. General

Each side of the mobile shop set is raised and lowered by an independent hydraulic pump and cylinder. Each hydraulic pump supplies oil under pressure to the side lifting cylinder. The cylinder is lowered by releasing the control valve lever on the hydraulic pump. A flow control valve in the system provides a metered flow rate and controls the lowering speed of the cylinder when the control valve lever is placed in the open or return position.

4-25. Flow Control Valve

a. Adjustment. Adjust the flow control valve as illustrated in figure 4-9.

b. Removal. Remove flow control valve (para 4-26).

c. *Cleaning and Inspection.*

(1) Clean all parts in cleaning solvent and dry thoroughly.

(2) Inspect for damage or defects and replace a defective flow control valve.

d. Installation. Install the flow control valve. (para 4-26).

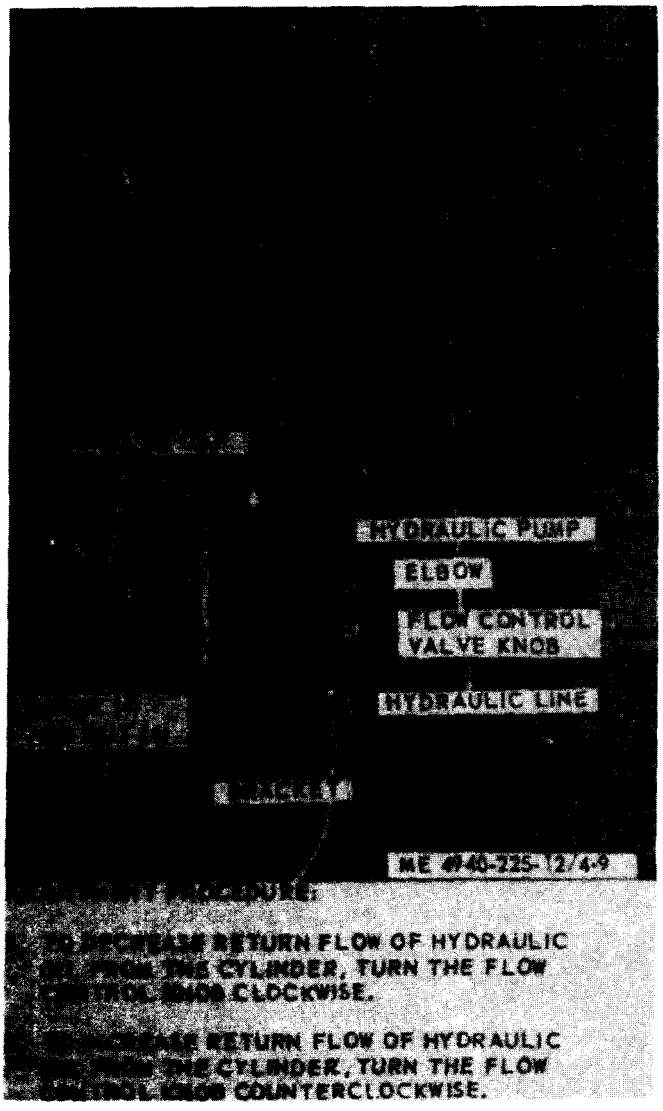


Figure 4-9. Hydraulic pump. removal and installation.

4-26. Side Lifting Hydraulic Pumps

a. *General.* The side lifting hydraulic pumps are mounted on the front of the shop set body; one on each side. Each pump is manually operated by a handle stored on the front of the body adjacent to each pump. The pumps are secured to permanent mounting brackets welded to the shop set body.

b. Removal.

(1) Disconnect the hydraulic line (fig. 4-9) from the flow control valve.

(2) Remove four screws, nuts and washers, and remove the hydraulic pump from the bracket.

(3) Remove the flow control valve from the elbow and remove the elbow from the hydraulic pump.

c. *Cleaning and Inspection.*

(1) Clean external surface of the pump with a cloth dampened in cleaning solvent and wipe dry.

(2) Inspect for cracks, breaks, signs of leakage, and other damage.

(3) Replace a defective side lifting hydraulic pump.

d. Installation.

(1) Install the flow control valve in the elbow and install the elbow in the cylinder pump (fig. 4-9).

(2) Install the hydraulic pump in the bracket. and secure with screws, nuts, and washers. Connect line to flow control valve.

e. *Bleeding Side Lifting Hydraulic System.*

NOTE

See that all leaks are corrected before bleeding the side lifting hydraulic system.

(1) Remove the filler cap (fig. 4-9) from the top of the pump and add fluid as necessary in accordance with the LO 5-4940-225-12. Install and tighten filler cap.

(2) Pressurize the system and raise the side. When the cylinder assembly reaches one-third its extended position, any air in the system can be bled by loosening the hydraulic line connection, at the flow control valve, just enough that air in the line can escape. When hydraulic fluid begins to appear, tighten the connection. Refill the hydraulic pump after bleeding and while side door is closed.

4-27. Side Lifting Cylinders and Hydraulic Lines

a. General. A side lifting cylinder is located on each side of the shop set body. The upper end of each cylinder is attached to a rib in its respective side door, The lower end of each is connected to a removable bracket secured to the shop set floor. Hydraulic oil flows into and out of the cylinders through a flexible line connected at the bottom of each cylinder.

b. Removal.

(1) Raise the side door on which the side lifting cylinder is to be removed and secure in the raised position.

(2) Remove the side lifting cylinder and hydraulic lines as illustrated in figure 4-10.

c. *Cleaning, Inspection, and Repair.*

(1) Clean all parts with cleaning solvent and dry thoroughly.

(2) Inspect all parts for cracks, breaks, wear, and other defects.

(3) Replace a defective side lifting cylinder or related parts and lines that cannot be repaired.

d. Installation.

(1) Install the side lifting cylinder and lines as illustrated in figure 4-10.

(2) Lower the side door.

(3) Bleed the side lifting cylinder and lifting door hydraulic system as described in paragraph 4-22.

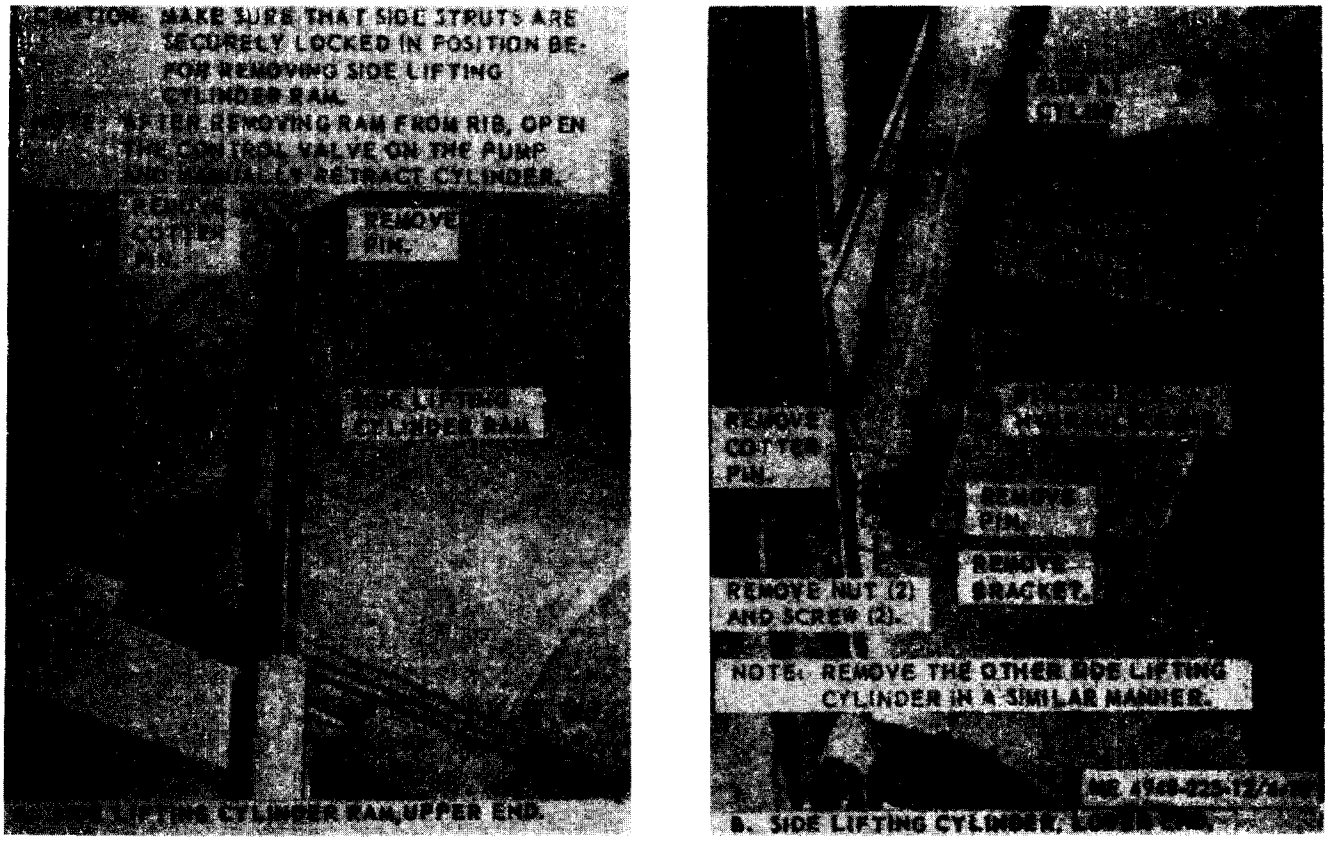


Figure 4-10. **Side** *lifting cylinder and hydraulic hose. removal and installation.*

Section X. MAINTENANCE OF AIR COMPRESSOR AND RELATED PARTS

4-28. General

The two-stage air compressor is driven by a 2-horsepower motor. The two items comprise a self-contained unit delivering an adequate volume of air to the air receiver tank to maintain an air pressure differential of 125 to 150 psi. The air receiver tank is an integral part of the shop set roof.

The air receiver tank pressure gage indicates, at all times, the output of the system and the pressure in the tank. A pop-off valve set at 175 psi prevents the system from becoming over-loaded. A draincock beneath the tank provides a means of draining the condensation out of the system before usage. This should be done daily, before the air compressor is put into use.

4-29. Air Compressor

a. *Removal.* Remove the air compressor and drive motor assembly as illustrated in figure 4-11.

b. Installation. Install the air compressor and drive motor assembly as illustrated in figure 4-11.

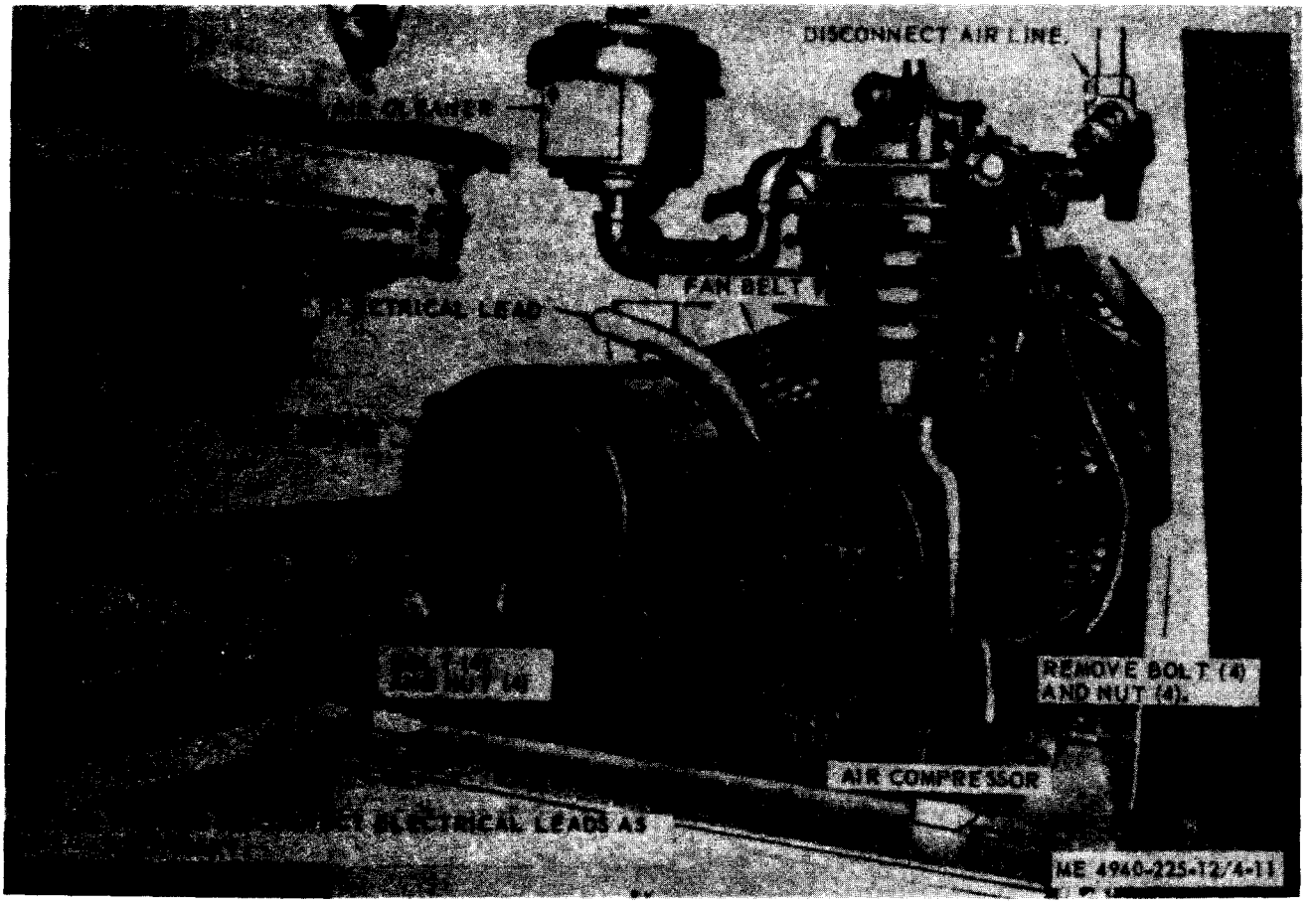


Figure 4-11. Air compressor and drive motor assembly, removal and installation.

4-30. Air Compressor Drive Motor Assembly

d. Removal. Tag and disconnect electrical lead (fig. 4-11). Remove bolt (4) and nut (4) and remove drive motor assembly.

b. *Installation.* Install the drive motor on the compressor base and secure with bolt (4) and nut (4) .

c. Belt *Adjustment.* Loosen the drive motor holdown bolts (4) and slide the motor on the base to give the belt a 1-/2 inch deflection between pulleys. Tighten the motor holddown bolts (4).

4-31. Drive Motor Sheeve

a. Removal. Loosen setscrew and remove sheeve.

b. Installation.Place sheeve on drive motor shaft and tighten setscrew finger-tight.

c. Alignment. Place a straight edge on the air compressor pulley and align the drive motor sheeve to the straight edge and tighten the setscrew.

4-32. Air Compressor Pressure Switch

a. To raise CUT-IN and CUT-OUT pressure, turn pressure adjusting screw clockwise (fig. 2-11).

b. To lower DIFFERENTIAL (namely, the difference between cut-in and cut-out pressure), turn differential screw at edge counterclockwise. When adjusting this screw, do not turn it farther than it will turn easily.

c. To increase DIFFERENTIAL and maintain same CUT-OUT pressure, turn differential screw at edge clockwise and at the same time turn center screw counterclockwise.

CAUTION

If differential is increased only by turning screw at edge clockwise, the cut-in pressure changes only slightly and the cut-out pressure rises.

4-33. Air Compressor Unloader

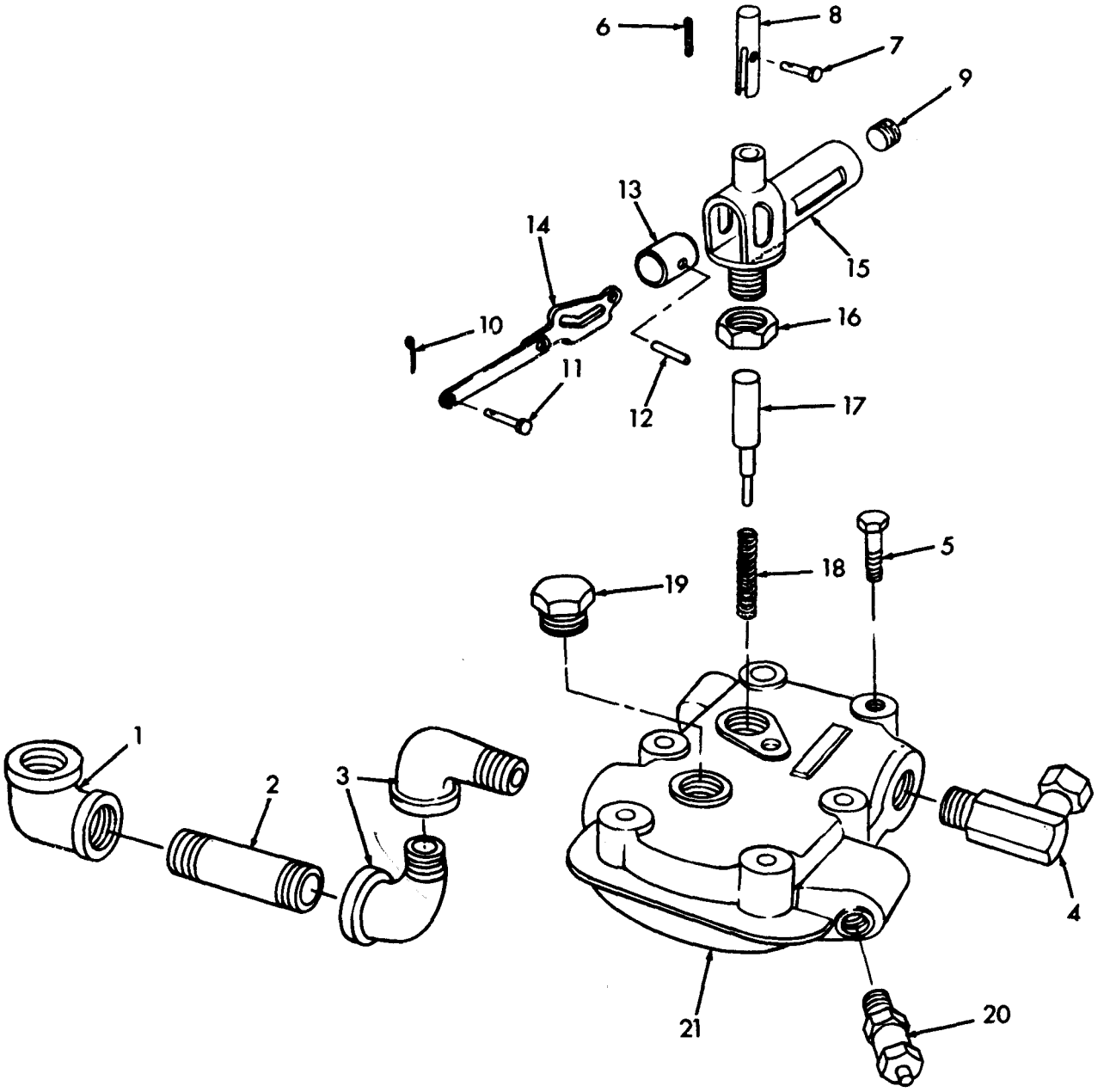
a. Removal and Disassembly. Refer to figure 4-12 and remove and disassemble the unloader.

b. Cleaning and Inspection.

(1) Clean parts with cleaning solvent and dry thoroughly.

(2) Inspect for rust or corrosion that could cause improper fit and function of the unloader.

c. *Reassembly and Installation.* Reassemble and install the unloader as illustrated in figure 4-12.



1. Elbow
2. Nipple
3. Elbow
4. Elbow
5. Screw
6. Pin, cotter
7. Pin, clevis
8. Plunger
9. Valve
10. Pin, cotter
11. Pin, clevis
12. Pin
13. Piston
14. Lever
15. Cylinder
16. Locknut
17. Pin
18. Spring
19. Cap
20. Valve
21. Head, cylinder

Figure 4-12. Centrifugal unloader and intercooler pop-off valve, disassembly and reassembly.

4-34. Valve

a. Removal. Remove the pop-off valve as illustrated in figure 4-12.

b. Cleaning and Inspection.

dry thoroughly.

(2) Inspect for defective parts and replace a defective pop-off valve or intercooler as necessary.

CAUTION

The intercooler pop-off valve is permanently set at 70 psi and should never be tampered with, nor the setting changed. The popping of this valve generally indicates improper functioning of either the suction or discharge valve in the high-pressure position.

c. ***Installation.*** **Install the intercooler pop-off valve as illustrated in figure 4-12.**

4-35. Air Receiver Tank Pop-off Valve

a. Removal Remove the air receiver tank pop-off valve as illustrated in figure 4-13.

NOTE

No further disassembly is required for cleaning.

b. Cleaning and Inspection.

(1) **Clean all parts with cleaning solvent and dry thoroughly.**

(2) .Inspect for defects and replace a defective pop-off valve, as necessary.

c. ***Installation.*** **Install the air receiver tank pop-off valve as illustrated in figure 4-13.**

d. ***Adjustment.*** **Turn valve clockwise to raise pop-off valve pressure and counterclockwise to lower pop-off valve pressure.**

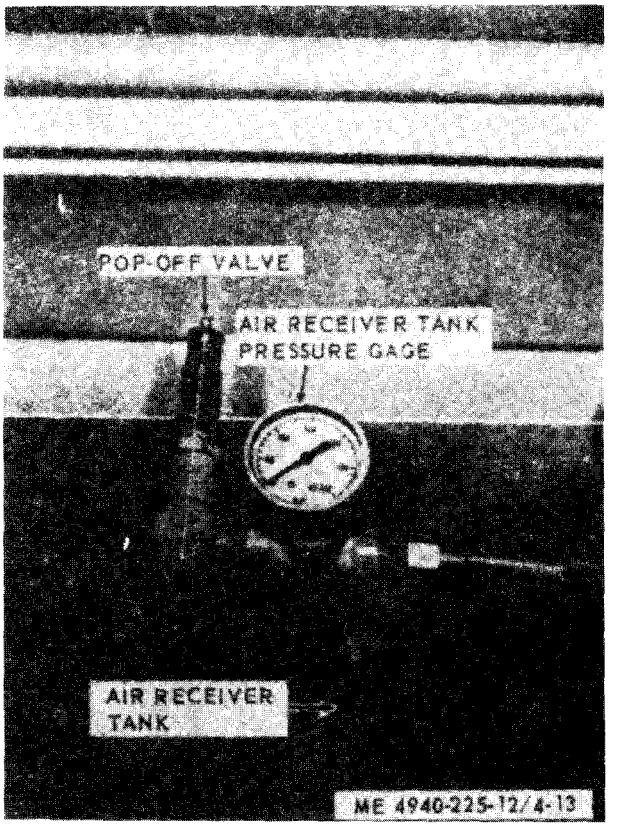


Figure 4-13. Air receiver tank pop-off valve. removal and installation.

Section XI. MAINTENANCE OF DYNAMOTOR-WELDER

4-36. General

The dynamotor-welder and control cubicle comprise a unit capable of producing 12 KW of power for D.C. welding; and producing 12 KW of A.C. 3-phase, 60-cycle, power at 0.8 power factor when driven by either the shop set engine or energized by external power. All power received by the various components and outlets of the shop set, with the exception of the 24-volt D.C. system, is received from, and controlled by, the control cubicle.

4-37. Ventilating Air Filters

a. Remoual **Remove the ventilating air filters as illustrated in figure 4-14.**

b. Cleaning and Inspection.

(1) **Clean the air filters with cleaning solvent and blow dry with low-pressure compressed air.**

(2) Inspect filters for breaks, holes, cracks, and other defects and replace a defective filter.

(3) Inspect filter gasket for defects and replace if defective.

c. ***Installation.*** **Install the ventilating air filters as illustrated in figure 4-14.**

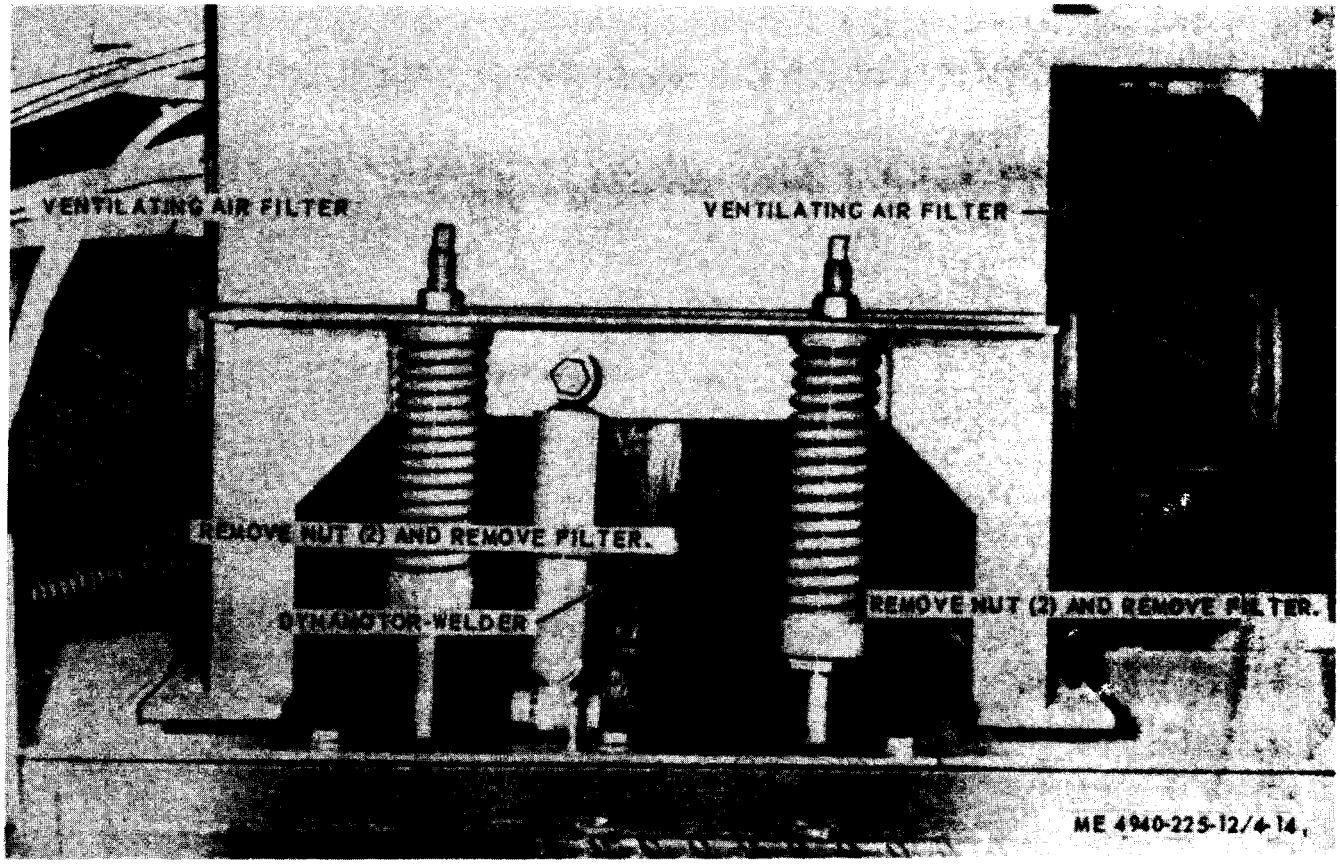


Figure 4-14. Ventilating air filters, removal and installation.

4-38. End Wrappers

a. Removal. **Remove the end wrappers as illustrated in figure 4-15.**

b. Cleaning and Inspection.

(1) Clean end wrappers in cleaning solvent and dry thoroughly.

(2) Inspect for defects and damage and for loose or defective hardware, and replace defective parts as necessary.

c. Installation. **Install the end wrappers as illustrated in figure 4-15.**

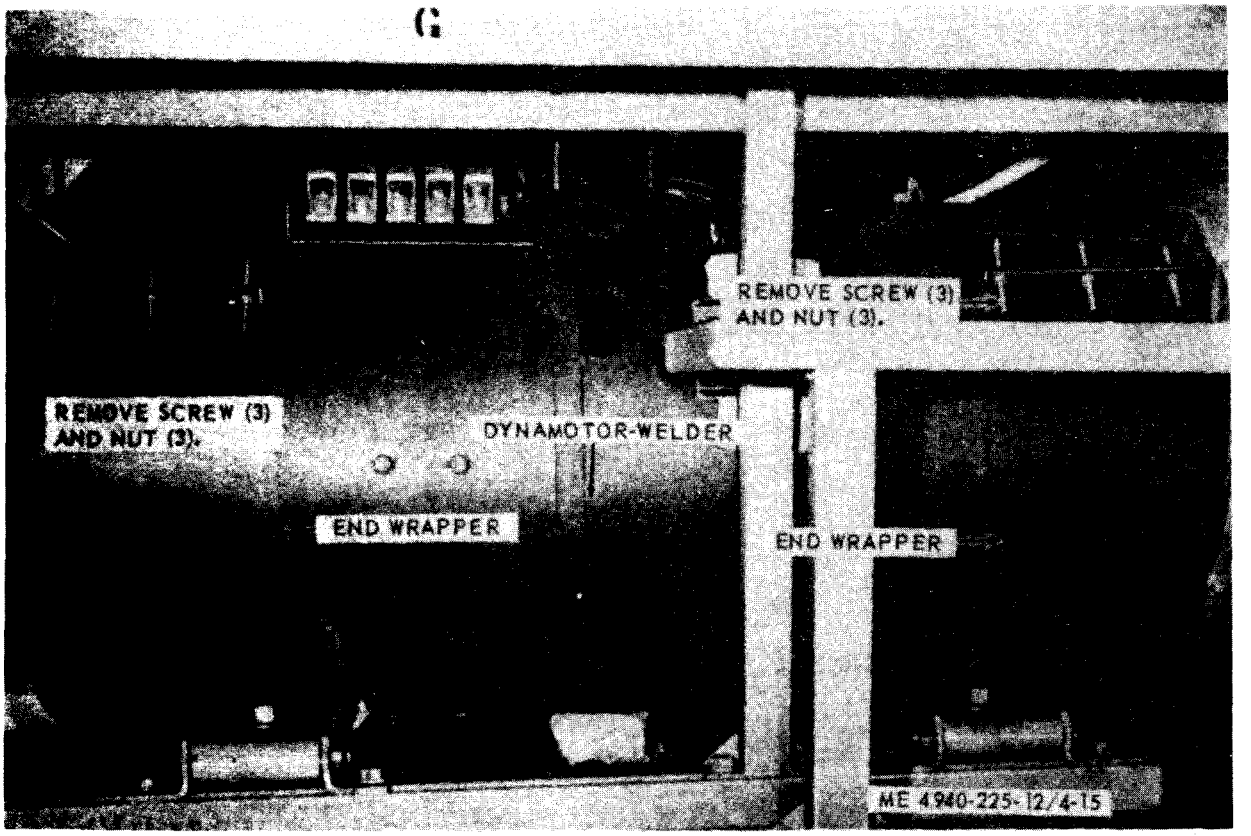


Figure 4-15. Dynamotor-welder end wrappers, removal and installation.

4-39. Dynamotor-Welder Brush Replacement

a. Replacement..Replace and adjust brushes as illustrated in figure 4-16.

b. Cleaning and Inspection,

(1) Clean brushes with a clean, dry, lint-free cloth .

(2) Inspect for cracks, chips, and excessive wear. Replace brushes that are worn to less than 3/4 inch.

c. ***Installation.*** Install the brushes and adjust spring tension as illustrated in figure 4-16.

d. Seating Brushes. All brushes must be properly seated on the rotating surfaces to insure maximum operating efficiency of the dynamotor-welder. The following contouring procedure applies to all dynamotor-welder brushes:

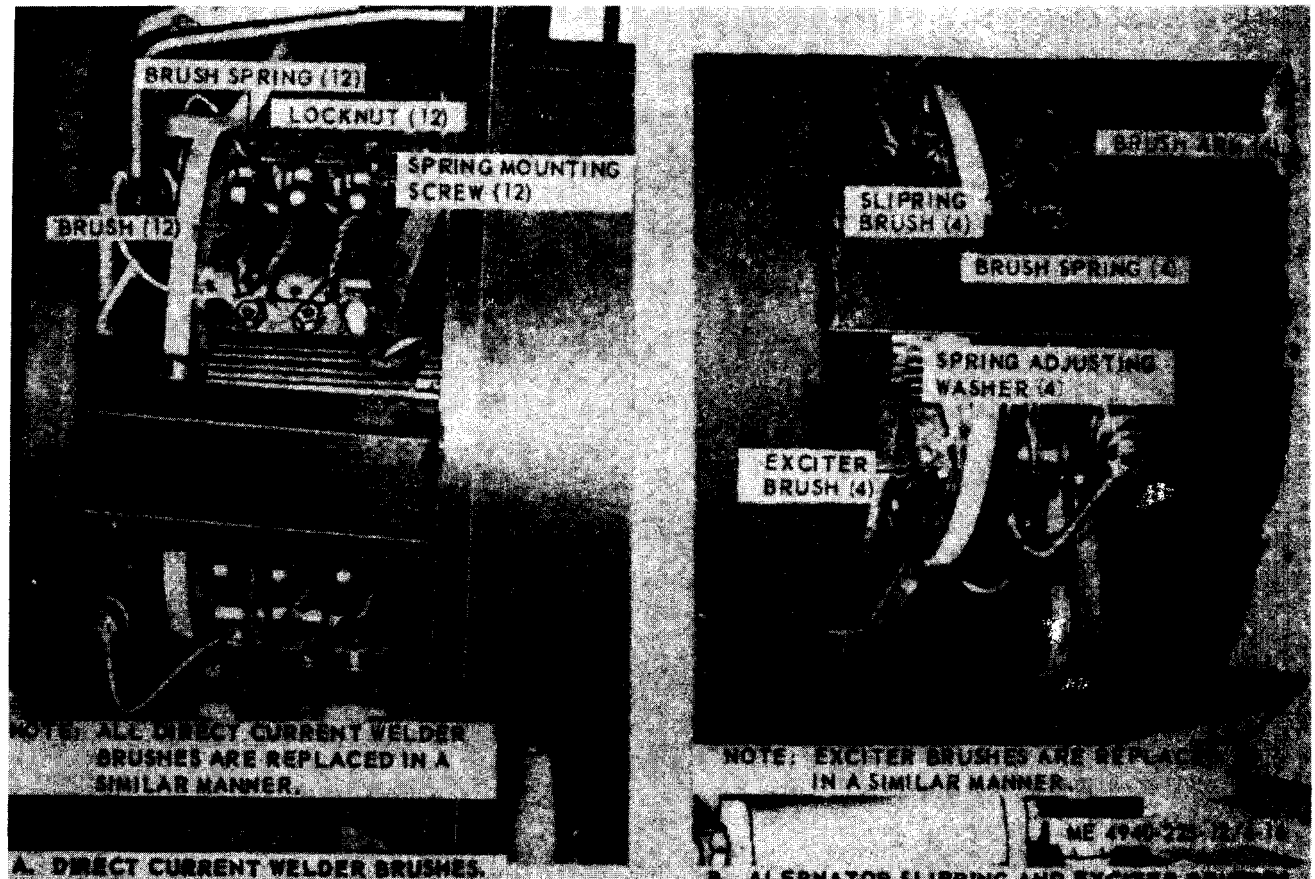
(1) Place a commutator-wide strip of No.00 sand paper (under the brush, abrasive side outward.

CAUTION

Do not use emery cloth when seating brushes as this will short circuit the commutator.

(2) With the brush in place, press down on the brush and draw the sand paper back and forth until the brush has the same contour as the commutator. Repeat for each brush.

(3) Test the brush seat by operating the dynamotor-welder for a few minutes, stopping it. and examining the brush seat. The seat area should show at least 80 percent highly polished by contact with the rotating surface.



A. DIRECT CURRENT WELDER BRUSHES.

STEP 1. TAG AND DISCONNECT BRUSH AND ELECTRICAL LEADS AS NECESSARY.

STEP 2. LIFT BRUSH SPRING AND REMOVE BRUSH FROM HOLDER. REPLACE BRUSHES THAT ARE WORN TO LESS THAN ONE-HALF THE ORIGINAL LENGTH.

STEP 3. LIFT BRUSH SPRING AND PLACE BRUSH IN HOLDER.

STEP 4. CONNECT AND SECURE TAGGED BRUSH AND ELECTRICAL LEADS.

STEP 5. SEAT BRUSHES AS PRESCRIBED IN PARAGRAPH 4-39d.

STEP 6. MEASURE BRUSH SPRING TENSION AT FREE END OF BRUSH SPRING. PROPER BRUSH SPRING TENSION IS 24 TO 32 OUNCES. ADJUST BRUSH SPRING TENSION BY LOOSENING LOCKNUT AND TURNING SPRING MOUNTING SCREW. AFTER PROPER BRUSH TENSION IS OBTAINED, TIGHTEN LOCKNUT.

B. ALERNATOR SLIPRING AND EXCITER

STEP 1. TAG AND DISCONNECT BRUSH AND ELECTRICAL LEADS AS NECESSARY.

STEP 2. LIFT BRUSH SPRING AND REMOVE BRUSH FROM HOLDER. REPLACE BRUSHES THAT ARE WORN TO LESS THAN ONE-HALF THE ORIGINAL LENGTH.

STEP 3. LIFT BRUSH SPRING AND PLACE BRUSH IN HOLDER.

STEP 4. CONNECT AND SECURE TAGGED BRUSH AND ELECTRICAL LEADS.

STEP 5. SEAT BRUSHES AS PRESCRIBED IN PARAGRAPH 4-39d.

STEP 6. MEASURE BRUSH SPRING TENSION AT FREE END OF BRUSH ARM. PROPER EXCITER BRUSH SPRING TENSION IS 8 TO 12 OUNCES. ADJUST BRUSH SPRING TENSION BY MOVING FREE END OF BRUSH SPRING FROM NOTCH TO NOTCH OF SPRING ADJUSTING WASHER.

Figure 4-l6. Dynamotor-welder brush replacement and tension adjustment.

Section XII. MAINTENANCE OF BODY COMPONENTS

4-40. General

The shop set components are of two general types; portable, and fixed. The portable contents are stowed in drawers, cabinets, and other areas of the shop set while the fixed contents are bolted or otherwise secured to the cabinets, walls and floor. This section provides removal and installation procedures for the fixed components.

4-41. Grinder

a. Removal. Remove the grinder as illustrated in figure 4-17.

b. Installation. Install the grinder as illustrated in figure 4-17.

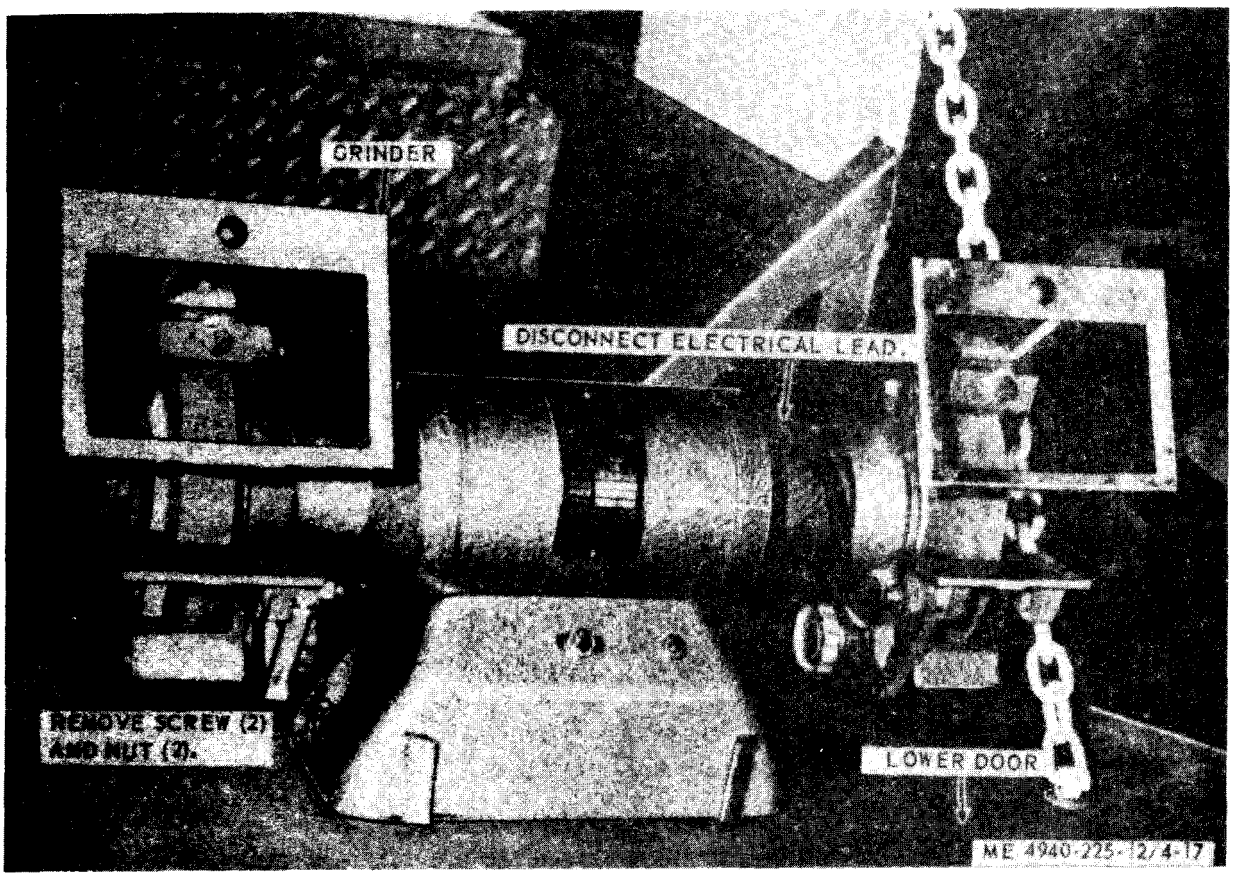


Figure 4-17. Grinder. removal and installation.

4-42. Milling and Grinding Attachment

a. Removal.

(1) Remove screw (4) and remove milling and grinding attachment complete with panel.

(2) Remove nut (2) and bolt (2) and remove milling and grinding attachment from panel.

b. Installation.

(1) Place the milling and grinding attachment on the panel and secure with bolt (2) and nut (2).

(2) Place milling and grinding attachment with panel as shown in figure 4-18, and secure with screw (4).

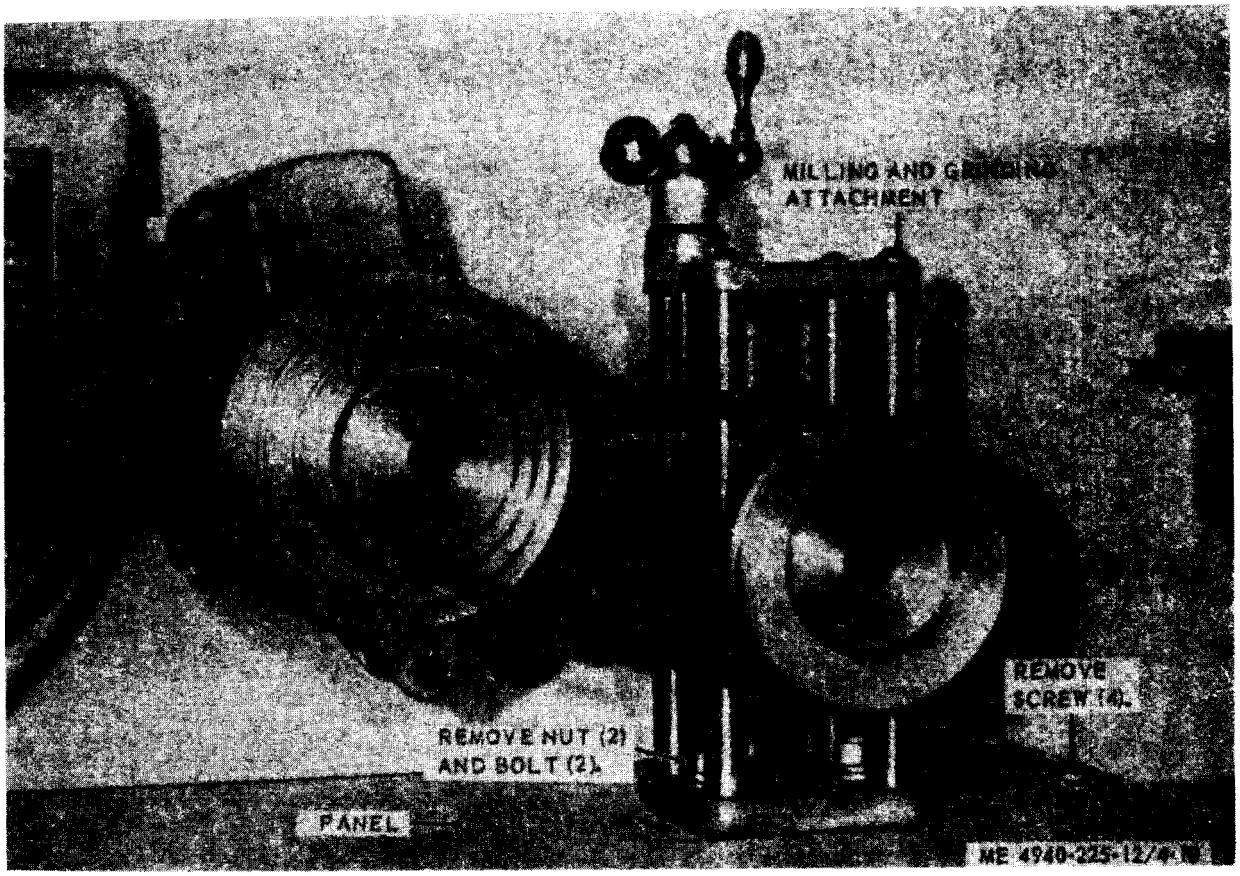


Figure 4-18. Milling and grinding attachment, removal and installation.

4-43. Valve Refacer

a. Removal. Remove **valve refacer as illustrated in figure 4-19.**

b. Installation. **Install the valve refacer as illustrated in figure 4-19.**

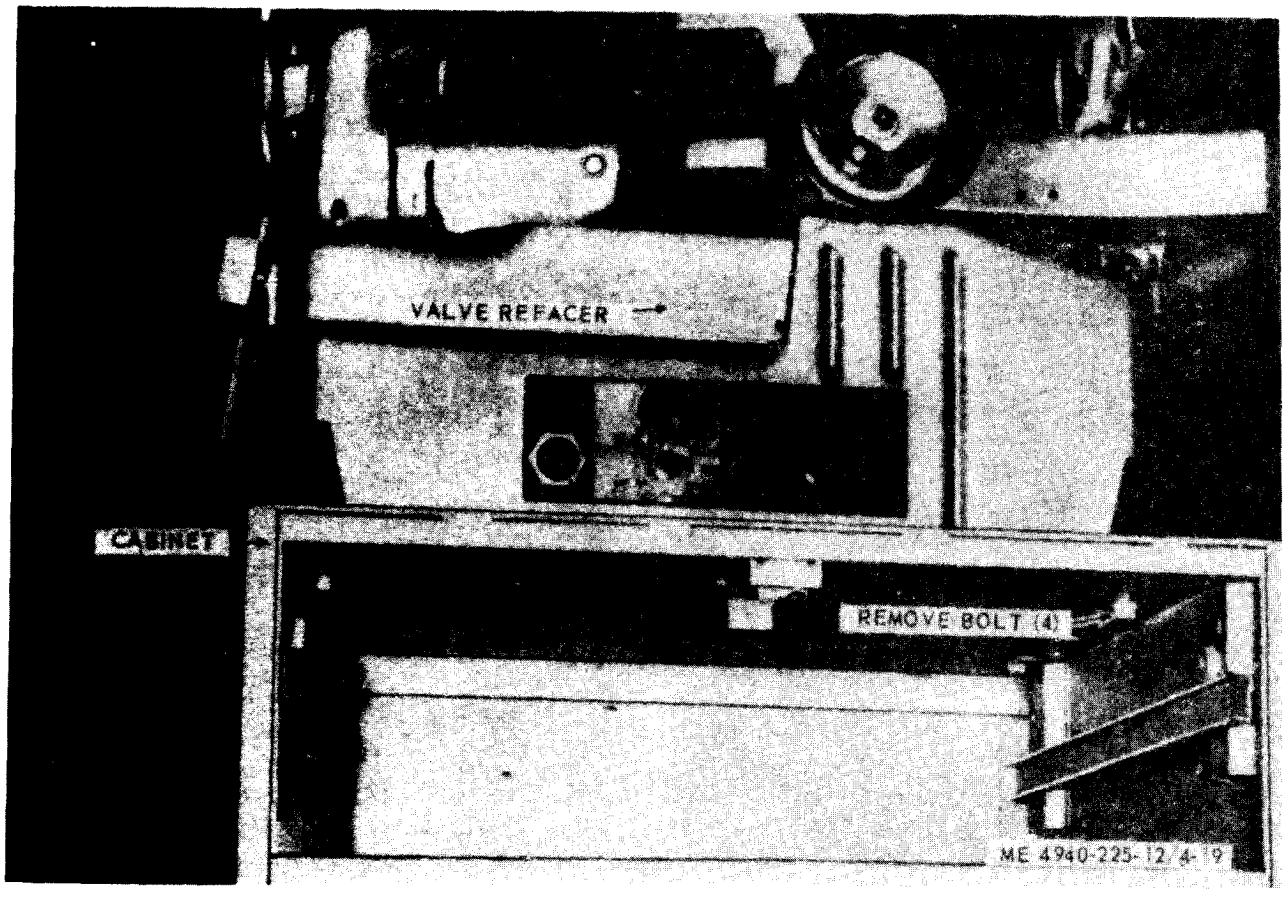


Figure 4-19. Valve refacer. removal and installation.

4-44. 17 1/2 -Ton Press Frame

a. *Removal*. Remove the press frame as illustrated in figure 4-20.

***b. Installation*. Install the press frame as illustrated in figure 4-20.**

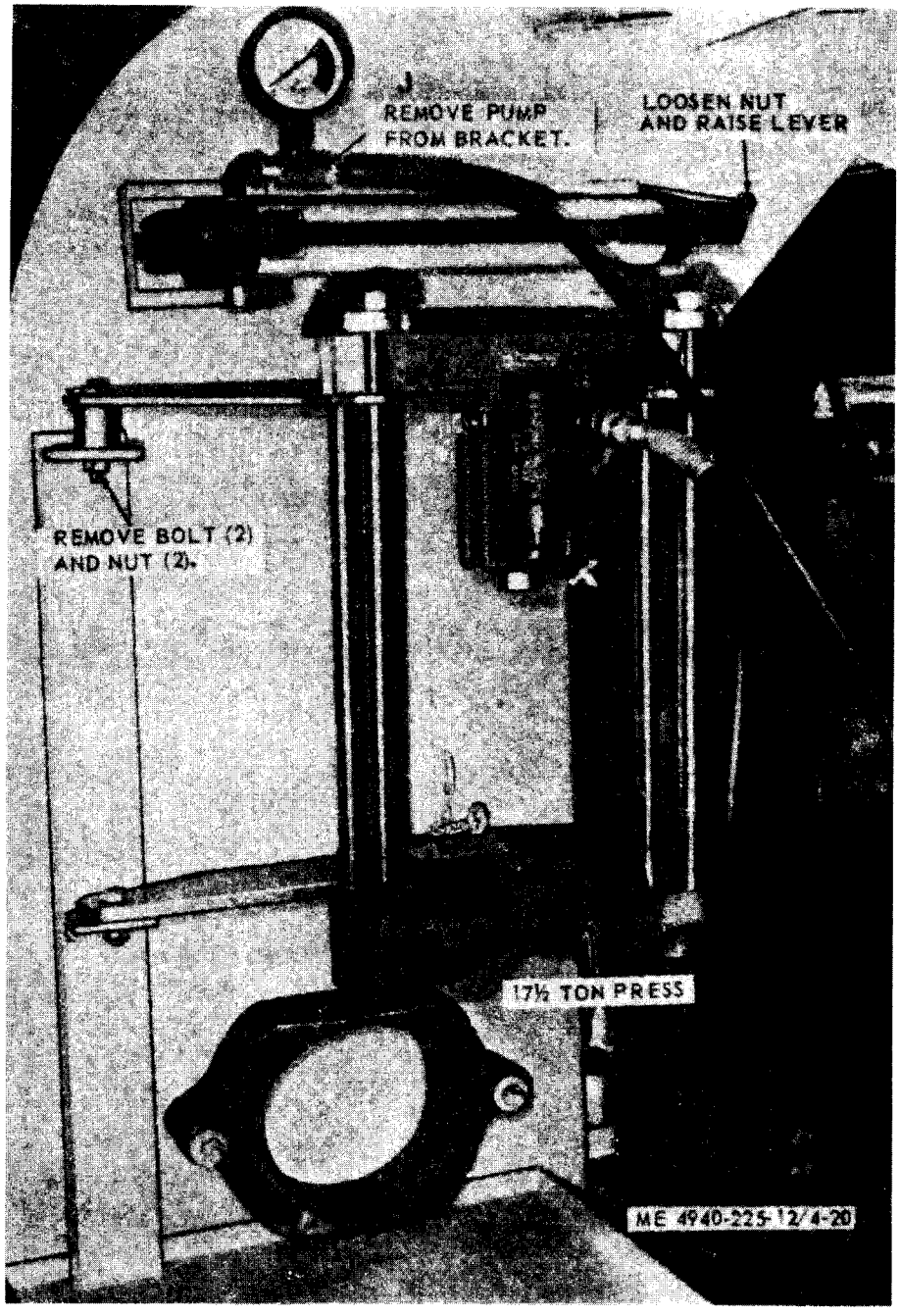


Figure 4-20. 171/2- ton press frame. removal and installation.

4-45. Drilling Machine

a. ***Removal.*** **Remove the drilling machine as illustrated in figure 4-21.**

b. Installation. **Install the drilling machine as illustrated in figure** 4-21.

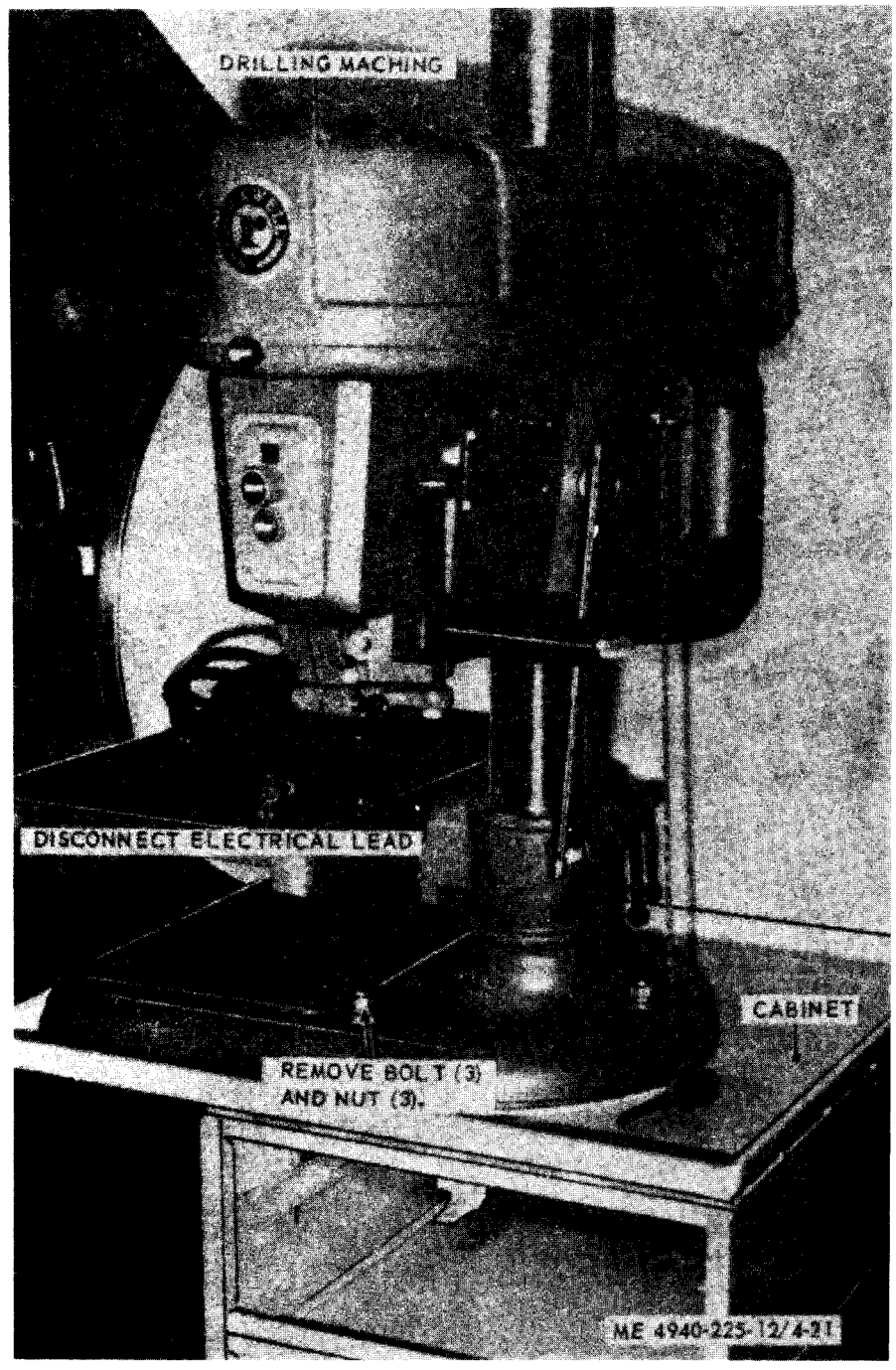


Figure 4-21. Drilling machine, removal and installation.

4-46. Spark Plug Cleaner

a. ***Removal.*** **Remove the spark plug cleaner as illustrated in figure 4-22.**

b. Installation. **Install the spark plug cleaner as illustrated in figure 4-22.**

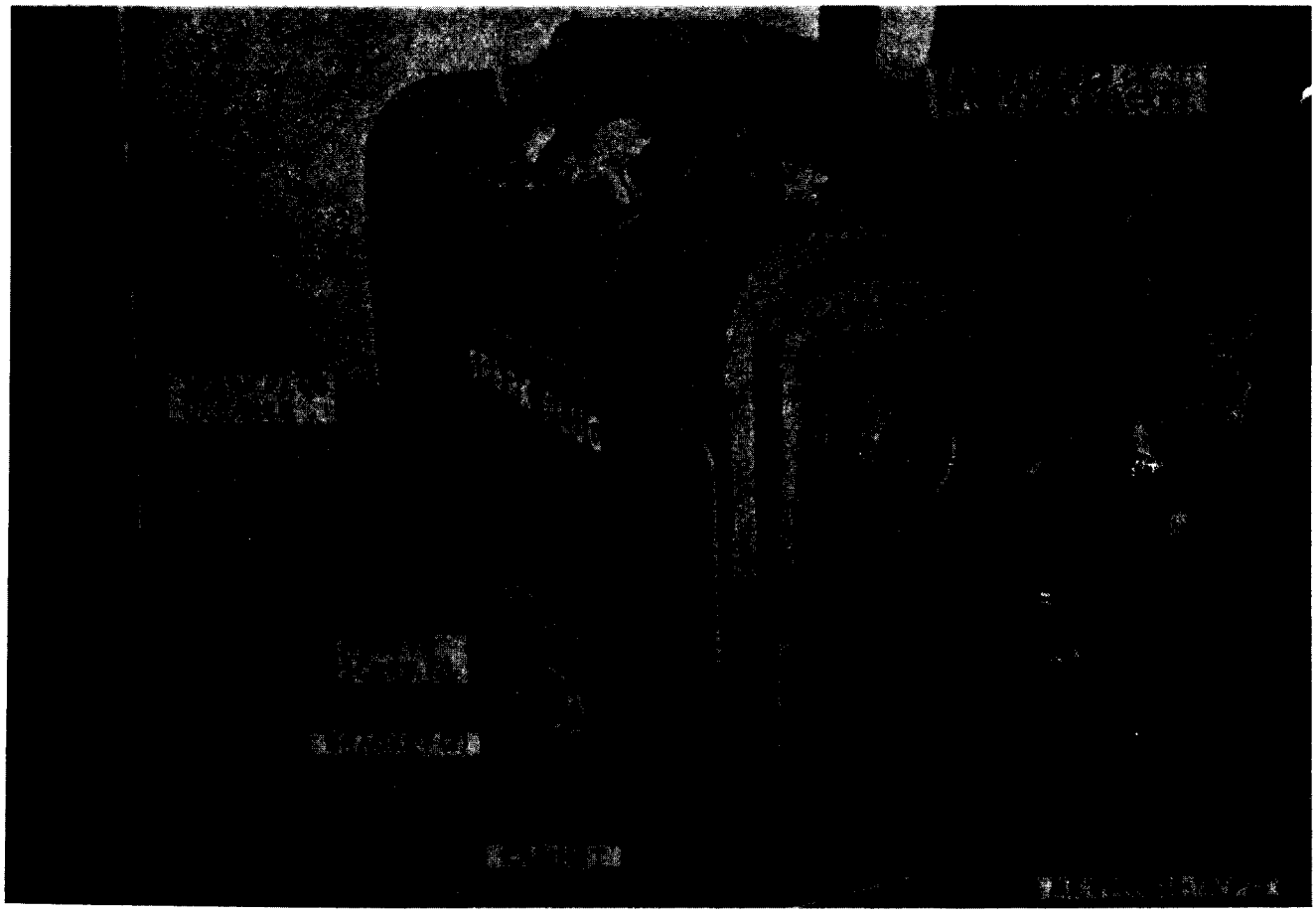


Figure 4-22. Spark plug cleaner, removal and installation.

4-47. Vise

a. Removal. **Remove the vis as illustrated in figure 4-23.**

b. Installation. **Install the vise as illustrated in figure 4-23.**

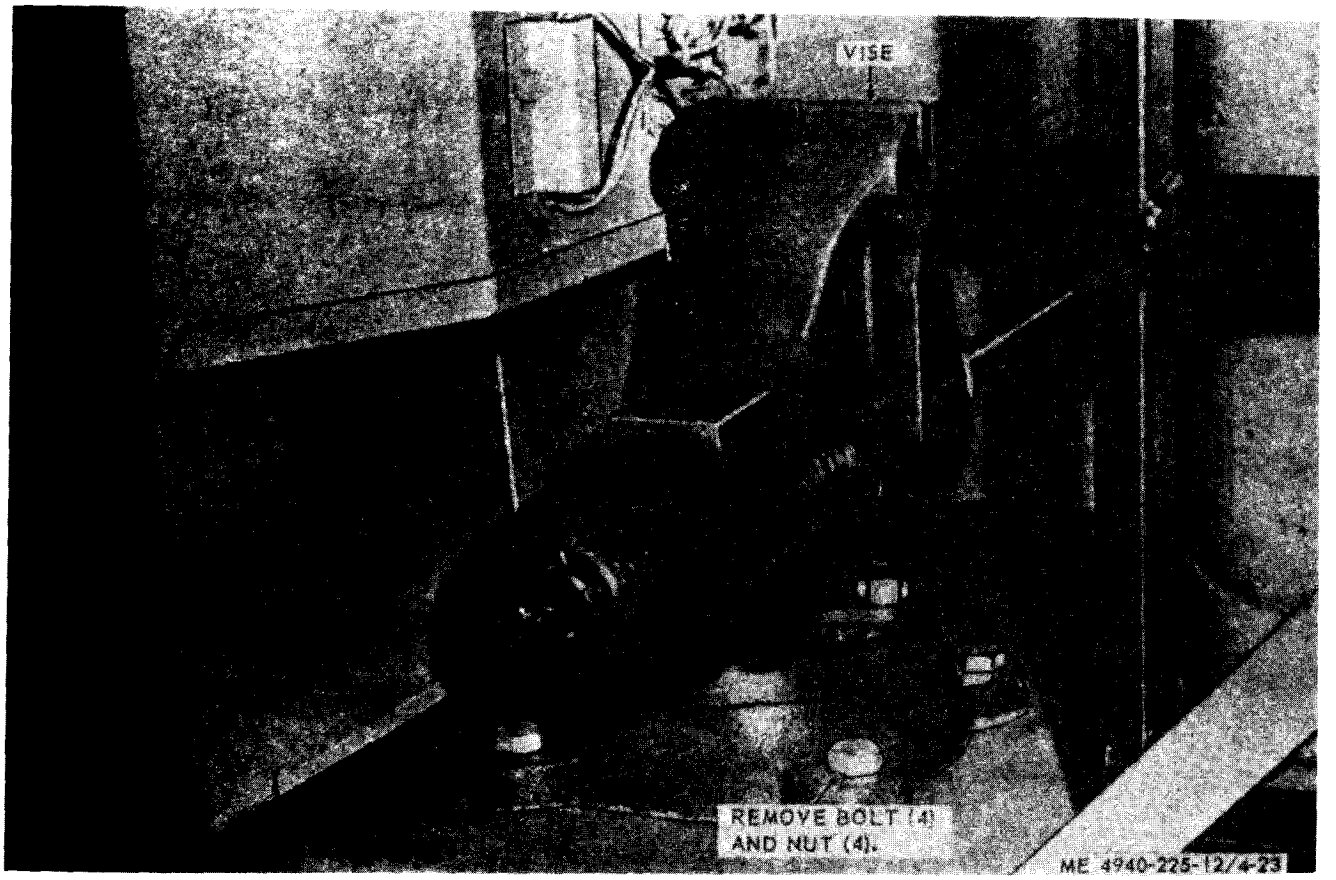


Figure 4-23. Vise. removal and installation.

4-48. Spare Tire

a. Removal. **Remove the spare tire as illustrated in figure 4-24.**

b. **lnstallation. Install the spare tire as illustrated in figure 4-24.**

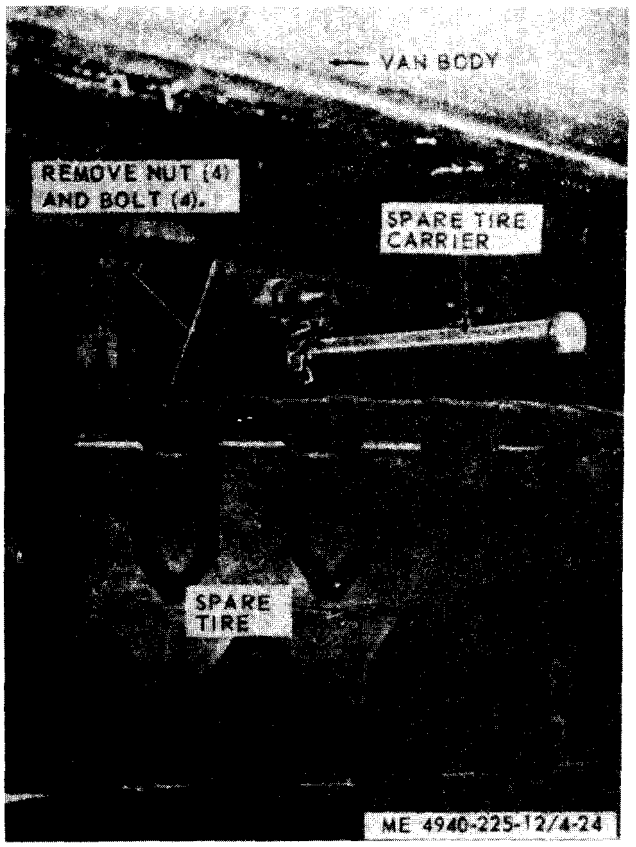


Figure 4-24. Spare tire, removal and installation.

4-49. Wheel Chock

a. Removal. **Remove the wheel chocks as illustrated in figure 4-25.**

b. Cleaning and Inspection.

(1) **Clean parts with cleaning solvent and dry thoroughly.**

(2) Inspect for rot, rust, cracks, missing hardware and other defects. Replace missing parts and defective parts as necessary.

c. Installation. Install the wheel chocks as illustrated in figure 4-25.

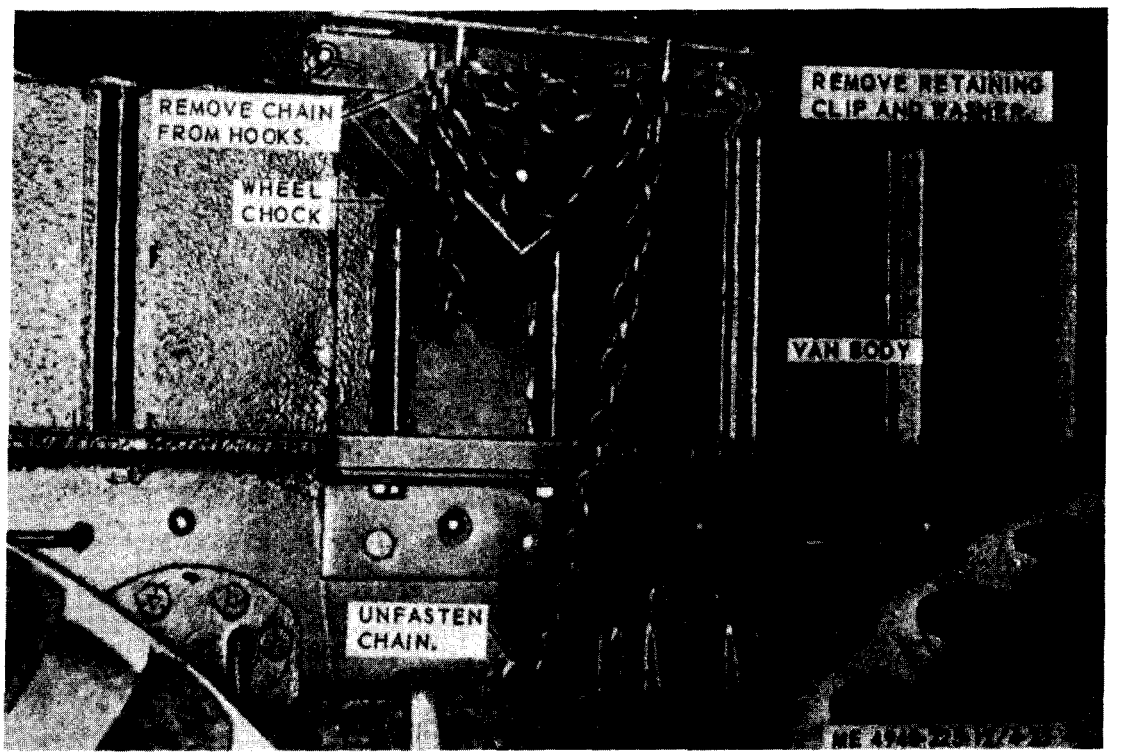


Figure 4-25. Wheel chocks, removal and installation.

4-50. Lathe Belt

a. Removal.

(1) Loosen the knob on the gear box door and open door.

(2) Loosen bolt (4) and remove belt.

b. Installtion. **Install the lathe belt as illustrated in figure 4-26.**

c. ***Belt Adjustment.*** **Apply downward pressure on the motor to give belt a % inch defection midway between the pulleys and tighten bolt (4).**

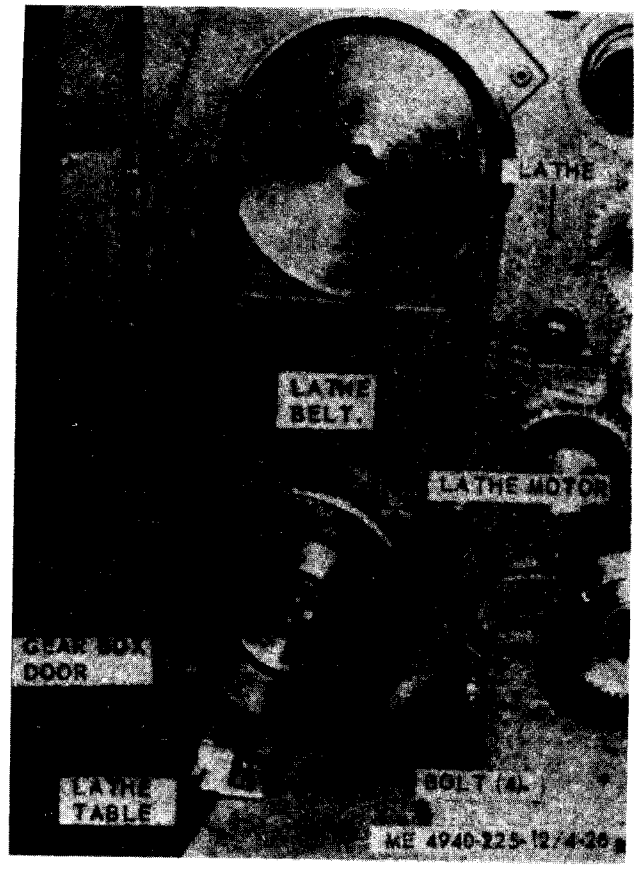


Figure 4-26. Lathe belt, removal and installation.

APPENDIX A

REFERENCES

A-1. Fire Protection

TB 5-4200-200-10	Hand Portable Fire Extinguishers For Army Users

A-2. Lubrication

C910O-IL	Fuels.Lubricants, Oils, and Waxes
LO 5-4940-225-12	Lubrication Order for Shop Equipment, Organizational Repair

A-3. Maintenance

TB ORD 651	Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling System
TM 9-6140-200-15	Operator, Organizational, DS, GS and Depot Maintenance: Storage Batteries, Lead Acid Type
TM 9-237	Operator's Manual: Welding Theory and Applicat ion
TM 9-1870-1	Care and Maintenance of Pneumatic Tires
TM 9-1871	Repair and Rebuild of Pneumatic Tires
TM 10-269	General Repair for Canvas and Webbing
TM 38-750	Army Equipment Record Procedures

A-4. Painting

TM 9-213	Painting Instructions for Field Use

A-5. Radio Interference Suppression

TM 11-483	Radio Interference Suppression

A-6. Shipment and Storage

TB 740-97-2	Preservation of USAMECOM Mechanical Equipment for Shipment and Storage
TM 740-90-1	Administrative Storage of Equipment

A-7. Destruction to Prevent Enemy Use

TM 740-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-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 perform ante of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.**

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions, explanatory notes and / or illustrations required for a particular maintenance function.

B-2. Explanation of Columns in Section H

a. *Group Number, Column (l).* **The assembly group is a numerical group assigned to each assembly in a top down breakdown sequence. The applicable assembly groups are listed on the MAC in disassembly sequence beginning with the first assembly removed in a top down disassembly sequence.**

b. Assembly Group, Column (2). **This column contains a brief description of the components of each assembly group.**

c. *Maintenance Functions, Column* **(3). This column lists the various maintenance functions (A through K) and indicates the lowest maintenance category authorized to perform these functions. The symbol designations for the various maintenance categories are as follows:**

C-Operator or crew
O-Organizational maintenance
F—Direct support maintenance
H—General support maintenance
D-Depot maintenance

The maintenance functions are defined as follows:

A—INSPECT: To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B-TEST: To verify serviceability and to detect electrical or mechanical failure by use of tast equipment.

C-SERVICE: To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it it desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

D-ADJUST: To rectify to the extent neceesary to bring into proper operating range.

E-ALIGN. To adjust specified variable elements of an item to bring to optimum performance.

F—CALIBRATE: To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the 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 with the certified standard.

G—INSTALL: To set up for use in an operational environment such as an emplacement, site. or vehicle.

H—REPLACE: To replace unserviceable items with serviceable like items.

I—REPAIR: Those maintenance operations necessary to restore an item to serviceable condition through correction of material damage of a specific failure. Repair may be accomplished at each category of maintenance.

J–OVERHAUL: Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

K—REBUILD: The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

d. Tools and Equipment, Column **(4). This column is provided for referencing by code the special tools and test equipment, (sec. III) required to perform the maintenance functions (sec. II).**

e. *Remarks, Column (5).* **This column is provided for referencing by code the remarks (sec. IV) pertinent to the maintenance functions.**

B-3. Explanation of Columns in Section III

a. Reference Code. **This column consists of a number and a letter separated by a dash. The number references the T&TE requirements column on the MAC. The letter represents the specific maintenance function the item is to be used with. The letter is representative of columns A through K on the MAC.**

b. Maintenance Category. **This column shows the lowest level of Maintenance authorized to use the special tool or test equipment.**

c. Nomenclature. This column lists the name or identification of the tool or test equipment.

d. Tool Number. This column lists the manufacturer's code and part number, or Federal Stock Number of tools and test equipment.

B-4. Explanation of Columns in Section IV

a. Reference Code. This column consists of two letters separated by a dash, both of which are references to section II. The first letter references column 5 and the second letter references a maintenance function, column 3, A through K.

b. Remarks. This column lists information pertinent to the maintenance function being performed, as indicated on the MAC, section II.

Section ii. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	Adjust	Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
01	FRAME TRUCK AND ATTACHMENTS													
	Fuel Tank Mounting	O					..	H	H					
	Spare Wheel Carrier Assy	C						..	O	O				
	Chock and Chain Assembly, Wheel	C						C	O	O				
02	BODY ASSEMBLY SHOP EQUIPMENT													
	Body Assembly Van	O		..					H	O	D			
	Door Assembly, Canopy	O							F	O	H			
	Door Assembly, Lower	O	..	..				..	F	O	H			
	Seals Doors	O	O						O					
	Fan Assembly Ventilating	O							O	O				
	Cabinet Assemblies	O	..	..					H	O				
	Tank Air Receiver	F	H	C										
	Door and Panel Assembly Rear	O	..	..				..	F	O	H			
	Monorail and Trolley	O	F	C				F	F	F				
	Table, Hinged	O						C	O	O				
	Table, Lathe	O						..	F					
	Ladder Assemblies	O						C	O	O				
	Frame Assembly Tent	O		..				C	O	O				
	Canvas Assemblies and Straps	O		C			..	C	O	O				
03	ELECTRICAL SYSTEM													
	Electrical System 24V	O	O						F	O				
	Light Assemblies	C	O						O	O				
	Switches	C	O						O					
	Receptacles	C	O						O					
	Wiring Harnesses and Connectors	O	O					..	F	O				
	Junction Blocks and Boxes	O					.		F					
04	BODY ELECTRICAL SYSTEM 120 VAC													
	Light Assemblies	C	O	..			..	..	O	O				
	Switches	C	O					..	O					
	Receptacles	C	O					..	O					
	Wiring Harnesses and Connectors	O	O	..				..	F	O				
	Junction Blocks	O	O					..	F					
	Starters, Magnetic Assemblies	F	F	..				..	F					
	Cable Assembly Electrical	O	F	..			.	C	O	F				
05	BODY ELECTRICAL SYSTEM 240 VOLTS AC													
	Electrical System 240 Volts ac	F	F				..		F	F				
	Switches	F	F				..		F					
	Receptacles	F	F				..		F					
	Wiring Harnesses and Connectors	F	F				..	..	F	F				
	Cable Assembly Electrical	F	F				..	C	F	F				
	Junction Blocks	F					..		F					
	Starters, Magnetic, Assemblies	F	F				.	..	F					
	Switch Pressure	F	F				.		F					

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	Adjus	E Alter	Cal	Install	H Replace	I Repair	J Overhaul	K Rebuild		
06	CUBICLE CONTROL													
	Box Assembly	F	F			..			H	F	H			
	Wiring Harnesses Assembly	F	F						F	F				
	Lead Assy Electrical	F	F	..					F	F				
	Junction Blocks	F	F						F					
	Switches Toggle	F	F						F					
	Switches Rotary	F	F						F	F				
	Receptacles	F	..						F					
	Circuit Breakers	F	.						F					
	Contractor Assembly	F	F						F	F				
	Resistor and Relay Assembly	F	F						F	F				
	Switch, 10 Range Rheostat Assembly	F	F			..			F	F				
	Meters, Gages and Instruments	F	F						F					
	Terminals, D. C. Welding	F	.	..					F	F				
	Relay, Overspeed Assembly	F	F						F	F				
	Capacitors	F	F						F					
	Box Cubicle	F							H	F				
	Door Assembly Cubicle	F	..			..			F	F				
	Gasket, Door	F	.	.					F	F				
	Panel Assembly Emergency Power	F							F	F				
07	DYNAMOTOR WELDER	F	F						F	F	D			
	Wiring Harness Assy	F	F						H	F				
	Lead Assembly Electrical	F	F						H	F				
	Junction Blocks and Boxes	F							F	F				
	Housing Assy, Motor End	F	..						H	H	D			
	Stator Assy, with Winding	H	H						H	H				
	Pole Piece Exciter	H	H			..			H					
	Exciter Assy, with Winding	H	H			..			H					
	Brush Holder Assembly	F	F			F			F	F				
	Brushes DC and AC	O		..		O			O					
	Filter Assembly Air	O		O		..			O					
	Housing Assy, Gen End	F							H	H	D			
	Stator Assy, Gen End	H	.	..		..			H	H				
	Brush Holder Assy	F	F	..		F			F	F				
	Brush Generator	O	.						O					
	Armature Assembly	F	H						H	H	D			
	Bearings Armature	H							H					
	Wrapper Assy, End	O				.			O					
	Sheave, Driver	F				F			F					
	Sheave, Driving	F				F			F					
	Belts, Driving	O				F			F					
	Guard Belt	O							O	O				
08	PNEUMATIC SYSTEM													
	Air Compressor Assy	C		C					O	?	?			
	Cylinder Head	O		F					?					
	Valve Plate Assy	F		F					?	?				
	Valve Plate Assy	F		F					?	?				
	Valve Assy Suction	F		F					?	?				
	Valve Assy Discharge	F		F					?	?				
	Valve Plate	F		F					?					
	Valve Breather	F		F					?					
	Cylinder	F		.		.			?					
	Pistons	F		F		F			?					
	Rod Assy, Connecting	F							?					
	Piston Pin Bushing	F							?					
	Bearings, Connecting Rod	F							?					
	Crankcase Assembly	?	..	C	.	.	.		F					

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
08	PNEUMATIC SYSTEM—Continued													
	End Plate Assy and Crankshaft													
	Bearings	F			F				F					
	Crankshaft	F							F					
	Flywheel Assy	F							F					
	Pilot Valve Assy (Dash-Pot)	O	O						O					
	Intercooler Assembly Valve, Safety, (Pop-Off)	O	O						O					
	Motor Electric Drive	O							O		H			
	Housing Assy	F							F					
	Stator Assy	F	F						F					
	Rotor Assy	F	F						F					
	Bearings	F							F					
	Sheave Driving	O							O					
	Belts Driving	O			O				O					
	Guard Belt	O							O					
	Filter Assy, Air	C		C					C					
	Base Compressor Mtd	O							O					
	Discharge lines	O							O					
	Valve, Safety, Reservoir	O			O				O					
	Gage Air Pressure	C							O					
	Condensation Valve and Line Assembly Drain	C							O					
09	HYDRAULIC SYSTEM													
	Pump Assy, Hydraulic	C		C					O					
	Valve Assy Regulating	O			O				O					
	Hose, Lines, Fittings Assembly	O							O					
	Cylinder Assy, Hydraulic	O							O					
10	ENGINE SPEED CONTROL													
	Governor Assy	O	O		O				O		F			
	Levers, Linkage, Cable Assy	O			O				O					
11	RADIO INTERFERENCE													
	Suppression—Capacitors	F	F						F					
12	DATA PLATES													
	Plates, Instruction	O							O					
	Plates Identification	O							O					
	Plates Shop Set ID	O							O					
13	HEATER SYSTEM PERSONNEL													
	Heater Assy	F							F					
	Deflector Assy	O							F					
	Intake Assy, Air	O		O					F					
	Exhaust System Heater	O							F					
	Thermostat, Temp Control	O			O				O					
	Fuel System	O							F					
	Fuel Pump Heater	O	O						O					
	Lines and Valves	C							O					
	Engine Fuel Sheet Off Device	O	O		F				F					

APPENDIX C

BASIC ISSUE ITEM LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

Section I. INTRODUCTION

C-1. Scope

This appendix lists basic issue items, items troop installed or authorized which accompany the shop set, and required by the crew/operator for operation, installation, or operator's maintenance.

C-2. General

This basic issue items, items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List-Section II. A list, in alphabetical sequence, of items which are furnished with and which must be turned in with the end item.

b. Items Troop Installed or Authorized List—Section III. A list, in alphabetical sequence of items which at the discretion of the unit commander may accompany the end item, but are NOT subject to be turned in with the end item.

C-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basic Issue Items List, section II, and Items Troop Installed or Authorized, section III.

a. Source, Maintenance, and Recoverability Code(s) (SMR):

(1) Source code, indicates the source for the listed item. Source codes are:

Code	*Explanation*
P	Repair parts, special tools and test equipment supplied from GSA/DSA or Army supply system and authorized for use at indicated maintenance levels.
P2	Repair parts, special tools and test equipment which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.

(2) Maintenance code, indicates the lowest level of maintenance authorized to install the listed item. The maintenance level code is:

Code	*Explanation*
C	Crew / Operator

(3) Recoverability code, indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are nonrecoverable. Recoverability codes are:

Code	*Explanation*
R	Applied to repair parts (assemblies and components), special tools and test equipment which are considered economically reparable at direct and general support maintenance levels.
S	Repair parts, special tools, test equipment and assemblies which are economically reparable at DSU and GSU activities and which normally are furnished by supply on an exchange basis.

b. Federal Stock Number. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. *Description. This* column indicates the Federal item name and any additional description of the item required.

d. Unit of Measure (U/M). A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. *Quantity Furnished With Equipment (BIIL only).* This column indicates the quantity of an item furnished with the equipment.

f. Quantity Authorized (Items Troop Installed or Authorized Only). This column indicates the quantity of the item authorized to be used with the equipment.

g. *Illustration (BIIL only). This column is* divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item number.* Indicates the callout number used to reference the item in the illustration.

Section II. BASIC ISSUE ITEMS

(1) SMR code	(2) Federal stock number	(3) Description Ref No. & Mfr Code / Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) Qty furn equip	(7) Illustration (A) Fig No.	(7) Illustration (B) Item No.
PC	7510-889-3494	Binder, Log Book	ea		1		
PC	7520-559-9619	Case, Maintenance & Operating Manual	ea		1		
PC		DA Technical Manual TM 5-4940-225-12	ea		1		
PC		DA Lubrication Order LO 5-4940-225-12	ea		1		

APPENDIX D

SHOP EQUIPMENT TOOL LOCATION LISTING

Location	Item	FSN	Description	Qty
O-1	2A	5935-081-8025	ADAPTER, CONNECTOR	2 EA
J-2	3	9120.224-9219	ADAPTER, SOCKET WRENCH: 3/8 in. male, 1/4 in. female	1 EA
K-1	4	5130-293-2330	ADAPTER, SPINDLE, PORTABLE SANDER: 5/8 in. 11 NC, rh	1 EA
L	5	4910-348-7600	ADAPTER SET, ENGINE ELECTRICAL TEST: 24 v testing	1 EA
K-2	6	5120-293-0595	ADJUSTING TOOL, VALVE TAPPET: 1/2 in. sq drive; 1/2, 9/16, 5/8 in. socket	1 EA
N-4	7	8415-250-2531	APRON, WELDER'S	2 EA
0-1	9	5330-233-5840	ASBESTOS SHEET, COMPRESSED: 1 / 16 in. thk	I SH
L	8	5330-641-1192	ASBESTOS SHEET, COMPRESSED: 1 / 32 in. thk	1 SH
L	10	5120-808-6191	BENDER, TUBE, HAND: 1/4, 5/ 16, 3/8, 1/2, 5/8, 3/4 in. od tubing accommodated	1 EA
J-2	11	5110-244-5958	BLADE, HAND HACKSAW: 18 teeth per in.	2 BN
J-2	12	5110-237-8107	BLADE, HAND HACKSAW: 24 teeth per in.	2 BD
L	13	5120-222-1371	BLOWTORCH, GASOLINE : 1 qt	1 EA
Mtd		2510-790-1003	BODY, MAINTENANCE TRUCK: mtg on ORD M63A2 chassis	1 EA
D	15A	5306-225-9093	BOLT, MACHINE: 5 / 16 in.-24 NF; 1 1/2 in. Ig	25 EA
D	14A	5306-225-8502	BOLT, MACHINE: 5/ 16 in.-l8 NC or UNC, l 1/2 in. Ig	12 EA
M	16A	7610-664-0436	BOOK SET: Machinists, Welder and Electrical Repair Consisting of the following components:	1 SE
M	16	7610-233-9600	American Electricians Handbook	1 EA
M	17	7610-250-6629	Machine Tool Operation	1 EA
M	18	7610-577-5888	Modern Refrigeration and Air Conditioning	1 EA
M	19	7610-059-6718	The New American Machinist Handbook	1 EA
M	20	7610-141-5891	Welding Encyclopedia	1 EA
L	21	3433-255-8953	BRAZING AND SOLDERING SET: Acetylene gas;	1 EA
J-2	22	7920-224-7987	BRUSH, FILE CLEANER: 9 in. Ig	1 EA
J-2	23	8020-260-1304	BRUSH, VARNISH: 2 1/2 in. exposed lg	1 EA
N-4	24	5130-293-2858	BRUSH, WIRE, ROTARY CUP: 5/8 in. arbor; 5 in. od	3 EA
N-4	25	5130-63-4435	BRUSH, WIRE, ROTARY WHEEL: 7/8 in. arbor; 10 in. od	1 EA
A	26	6150-366-2358	CABLE ASSEMBLY, POWER, ELECTRICAL: 50 ft. lg	2 EA
E	27	5210-229-3026	CALIPER, HERMAPHRODITE: firm joint; 6 in. Ig	1 EA
E	28	5210.189-9639	CALIPER, INSIDE: Firm joint; 10 in lg	1 EA
E	29	5210-229-3076	CALIPER, INSIDE: Spring joint; 3 in Ig	1 EA
E	30	5210-229-3051	CALIPER, INSIDE: Spring joint; 6 in Ig	1 EA
E	31	5210-221.1921	CALIPER, MICROMETER, INSIDE: 2 thru 12 in.	1 EA
E	32	5210-540-2973	CALIPER, MICROMETER, OUTSIDE: O thru 1 in.	1 EA
E	33	5210-243-2933	CALIPER, MICROMETER, OUTSIDE: 1 thru 2 in.	1 EA
E	34	5210-221-1945	CALIPER, MICROMETER, OUTSIDE: 2 thru 3 in.	1 EA
E	3 5	5210-221-1934	CALIPER, MICROMETER, OUTSIDE: 3 thru 4 in.	1 EA
E	36	5210-255-7564	CALIPER, MICROMETER, OUTSIDE: 4 thru 5 in.	1 EA
E	37	5210-221-1948	CALIPER, MICROMETER, OUTSIDE: 5 thru 6 in.	1 EA
E	437	5210-229-3047	CALIPER, OUTSIDE: Spring joint; 4 in lg	1 EA
E	39	5210-229-3048	CALIPER, OUTSIDE: Spring joint; 6 in.	1 EA
E	40	5210-221-2091	CALIPER, SLIDE: 5 in. lg	1 EA
P	41	6850-695-9268	CARBONIZING COMPOUND: paste; 5 gal drum	1 DR
o	42	4010-176-7930	CHAIN ASSEMBLY, SINGLE LEG: steel; 3 ft	1 EA
N	43	6130-669-6659	CHARGER, BATTERY: 6 to 24 v charging	1 EA
	GFE	2320-285-3757	CHASSIS, TRUCK: 5 ton, 6 x 6; w / multi-fuel engine	1 EA
0	44	5110-223-1079	CHISEL, DIAMOND POINT, HAND: 3/8 in cut	1 EA
K-1	45	5120-180-0905	CLAMP, C: Light service; 1 /34 in. deep throat; 2 in.	2 EA
K-1	46	5120-222-1613	CLAMP, C: Medium service; Cast frame; 2 1/2 in. deep throat; 8 in.	2 EA
J-2	47	5120-222-1612	CLAMP, C: Medium service; forged frame; 2% in. deep throat; 4 in.	2 EA
O-1	48	5975-258-0126	CLAMP, ELECTRICAL: Copper; 13/4 in. jaw opening	1 EA

Location	Item	FSN	Description	Qty
	49A	5975-913-0883	CLAMP. ELECTRICAL: Bronze: 3/4 in din	1 EA
K-1	50	4730-289-5909	CLAMP, HOSE: 3/8 in. to 1 in. id	3 EA
J-2	51 A	4730-908-6292	CLAMP, HOSE: 2.563 to 3 1/2 in. id	6 EA
O-4	52	5120,494-1895	CLAMP, PLIER: 2 5/8 in. w; 9 in.	3 EA
K-1	238	5120-799-3398	CLEANER, PISTON RING GROOVE	1 EA
O	53	4910-261-5868	CLEANER AND TESTER, SPARK PLUG	1 EA
J-2	54	4030-243-4438	CLIP, WIRE ROPE: 5/ 16 in dia wire rope	3 EA
O-1	55	4030-243-4440	CLIP, WIRE ROPE: 1/2 in dia wire rope	9 EA
J-2	56	4030-243-4441	CLIP, WIRE ROPE: 5/8 in dia wire rope	3 EA
N-4	57	5350-192-5047	CLOTH, ABRASIVE: Aluminum oxide, grade 1 / O	5 PG
N-4	58	5350-192-5051	CLOTH, ABRASIVE: Aluminum oxide grade 5 / O	1 Sv
N	59	5120-322-6223	COMPRESSOR, PISTON RING: 1 1/2 to 3 in dia	1 EA
O	60	5120-250-6055	COMPRESSOR, PISTON RING: 2 1/8 in to 5 in dia	1 EA
0-1	61	5120-223-8848	COMPRESSOR, PISTON RING: 3 1/2 to 7 in dia	1 EA
0-4	62	5120-894-0753	COMPRESSOR, PISTON RING: Ratchet: 4 take-up bands; 3 1/2 to 7 in. dia.	1 EA
		5935-060-8611	CONNECTOR, PLUG, ELECTRICAL: brass	1 EA
L	64	9535-232-2293	COPPER STRIP: 12 in. w, 36 in. Ig	4 SP
L	65	5330-233-5844	CORK SHEET: 36 in. lg, 12 in. w, 1/2 in. thk	2 SH
J-2	66	5330-291-1685	CORK SHEET: 36 in. lg, 12 in. w, 1 /32 in. thk	4 SH
	67	5330-171-9134	CORK SHEET: 36 in. lg, 12 in. w, 3 / 16 in. thk	2 SH
J-2	68	5330-223-2665	CORK SHEET: 36 in. lg, 12 in. w, 1 / 16 in. thk	2 SH
E	69	5133-239-0785	COUNTERSINK: 1/4 in. dia. 7 / 8 in. lg; 3/8 in. dia body	1 EA
E	70	5133-224-1965	COUNTERSINK AND DRILL: 1/8 in. dia drill, 5/ 16 in. dia body, 2 1/8 in. lg	2 EA
J-2	71	4730-289-8194	COUPLING HALF, QUICK DISCONNECT: Brass; for 5/ 16 in. id hose	1 EA
J-2	72	4730-203-0173	COUPLING HALF, QUICK DISCONNECT: Fluid end 3/8 in.- 18 NPT external thd; male	1 EA
J-2	73	4730-289-8192	COUPLING HALF, QUICK DISCONNECT: Fluid end 3/8 in.-NPT internal thd; female	1 EA
O	74	7510-223-6708	CRAYON, MARKING :	12EA
M	75	4910-251-6981	CREEPER, MECHANIC'S:	1 EA
L	76	5120-240-6040	CROWBAR: 1 in. dia, 47 to 49 in. lg	1 EA
J-2	76A	5120-184-8400	CROW FOOT ATTACHMENT, SOCKET WRENCH:	1 EA
Mtd	77	5110-224-7057	CUTTER, BOLT: 16 in. lg	1 EA
O	78	5110-595-8278	CUTTER, GLASS: 2 to 24 in.	1 EA
0	79	5110-222-4401	CUTTER, GLASS: Line cutting; wheel turret	1 EA
K-1	80	5180-596-1038	CUTTER AND FLARING TOOL KIT, TUBE HAND: 1/8 to 1 in. od cutting range	1 EA
J-2	81	3455-203-4390	CUTTER BIT, TOOL HOLDER: 5 in. lg., 5/8 in. w, 3 /32 in. thk	2 EA
J-2	82A	3455-272-9782	CUTTER BIT, TOOL HOLDER: 2 1/2 in. lg, 3 / 16 in. w, 3/ 16 in. thk	12EA
J-2	83	3455-272-9783	CUTTER BIT, TOOL HOLDER: 2 1/2 in. lg,1 /4 in. w, 1/4 in. thk	18 EA
0	84	9150-231-6699	CUTTING OIL: 1 pt can	1 PT
E	85	5210-263.0378	DIVIDERS, MECHANIC'S: 6 in. lg	1 EA
O	86A	5120-223-9952	DRESSER, ABRASIVE WHEEL, HAND: 1 1/4 in. dia	1 EA
L	88	5130-841-0209	DRILL, ELECTRIC, PORTABLE: 1/4 in.	1 EA
B	89A	5130-293-0960	DRILL, ELECTRIC, PORTABLE: 1/2 in.	1 EA
K-1	90	5133-275-5006	DRILL, TWIST: 1/4 in. dia. 1 1/2 in. lg	1 EA
M	90A	5133-596-8088	DRILL SET, TWIST: 33/ 64 thru 3/4 in. by 64ths	1 SE
M	90B	5133-293-1161	DRILL SET, TWIST: 49/ 64 thru l in. by 64ths	1 SE
M	91	5133-542-4001	DRILL SET, TWIST: 11 /32 thru 1 1/4 in. by 32nds	1 SE
M	92	5133-293-0983	DRILL SET, TWIST: 1 /16 thru 1/2 in. by 64ths	2 SE
K-l	93	5311-449-6775	DRILL SET, TWIST: no. 1 thru 60	1 SE
K	634	3413-529-0809	DRILLING MACHINE, UPRIGHT	1 EA
N	486	3439.262-2639	ELECTRODE, WELDING: 3 / 16 in. dia., reverse polarity	50 LB
N-4	94	3439-270-9873	ELECTRODE, WELDING: Nickel alloy, 1/8 in. dia	20 LB
N	96	3439-262-2671	ELECTRODE, WELDING: Steel; dc, reverse polarity; 5 /32 in. dia	150 LB
Mtd	97	4210-202.7858	EXTINGUISHER, FIRE, CARBON DIOXIDE :	1 EA
S / B	98	9530-257-3505	EXTRA-HIGH LEADED BRASS ROD: 1/2 in. dia	48 FT
S / B	99	9530-230-3476	EXTRA-HIGH LEADED BRASS ROD: 1 in. dia	55 FT
E	100	5120.540.1416	EXTRACTOR SET, SCREW :	1 SE
J-2	101	5120-540-4273	FACE, HAMMER, INSERTED: 2 in. dia. hard plastic	1 EA

Location	Item	FSN	Description	Qty
J-2	102	5120-540-4275	FACE, HAMMER, INSERTED: 2 in. dia, medium plastic	1 EA
J-2	103	5120-293-2997	FACE, HAMMER, INSERTED: 2 in. dia tough plastic	2 EA
O-2	104	5110-234-6539	FILE, HAND: flat; double bastard outfaces; 12 in.	1 EA
O-2	105	5110-203-5463	FILE, HAND: flat; double bastard outfaces; 16 in.	1 EA
O-2	106	51 10-203-4855	FILE, HAND: flat; double second cut 12 in.	1 EA
O-2	107	5110-203-4935	FILE, HAND: flat; double smooth cut 8 in.	1 EA
0-2	108	5110-203-4936	FILE. HAND: flat; double smooth cut 12 in.	1 EA
0-2	109	5110-252-4015	FILE, HAND: half rd; double bastard cut 12 in.	1 EA
0-2	110	5110-203-4941	FILE, HAND: half rd; double second cut 12 in.	1 EA
0-2	111	5110-241-9156	FILE. HAND: half rd; double smooth cut flat face; 12 in.	1 EA
0-2	112	5110-234-6557	FILE, HAND: rd; double bastard cut 1/2 in. dia.	1 EA
0-2	113	5110-239-6898	FILE, HAND: rd; double bastard cut 3/4, in. dia; 16 in.	1 EA
0-2	114	5110-234-6559	FILE, HAND: rd; single smooth cut 1/2 in. din; 12 in.	1 EA
0-2	115	5110-238-9664	FILE, HAND: square; Double bastard cut 12 in.	1 EA
0-2	116	5110-203-9804	FILE, HAND: Double second cut; 10 in.	1 EA
M	416 GFE	6545-922-1200	FIRST AID KIT, GENERAL PURPOSE	2 EA
M	117	4730-203-0398	FITTING KIT, TUBE-PIPE	1 EA
O	118A	5120-965-0603	FLINT TIP, FRICTION, IGNITER	2 BX
B	119	6230-815-5022	FLOODLIGHT, ELECTRIC	1 EA
O-1	120	3439-255-4566	FLUX, SOLDERING: paste; tin-lead 1/4 lb can	3 CN
O-1	121	3439-255-4577	FLUX, WELDING: powder; copper alloys 1 lb	2 CN
J	122	3442-690-8076	FRAME, HYDRAULIC PRESS: 17 1/2 ton	1 EA
E	123	5210-222-4000	GAGE, CENTER: 14 to 32 thds per in.	1 EA
E	124	5210-221-1902	GAGE, DEPTH, RULE	1 EA
E	125	5210-221-2072	GAGE, DRILL POINT	1 EA
E	126	5210-293-1872	GAGE, SCREW PITCH	1 EA
E	127	5210-517-8097	GAGE, THICKNESS	1 EA
O	128	4910-541-9740	GAGE, TIRE PRESSURE : 10 to 50 lb	1 EA
E	129	5210-221-1894	GAGE, TWIST DRILL AND TAP	1 EA
E	130A	5210-473-9350	GAGE SET, TELESCOPING :	1 SE
J-2	131A	8030-247-2525	GASKET FORMING COMPOUND: Hard setting; 8 oz tube	2 TU
J-2	132A	8030-252-3391	GASKET FORMING COMPOUND: Nonhardening; 8 oz	1 EA
J-2	134	4240-203-3810	GOGGLES, INDUSTRIAL: worn over personal spectacles	2 PR
0-4	135	4240-203-3804	GOGGLES, INDUSTRIAL: Welder's	2 PR
M	136	4910-473-6437	GRINDING KIT, VALVE SEAT, ELECTRIC	1 EA
Mtd	137	3415-174-9177	GRINDING MACHINE UTILITY	1 EA
Mtd	138	4910-540-4679	GRINDING MACHINE, VALVE FACE	1 EA
o	139A	4940-255-8677	GUN, AIR BLOW: 3/8-18 NPT	1 EA
N-4	140	5120-900-6103	HAMMER, HAND: Blacksmith's; 3 lb	1 EA
Mtd	141	5120-900-6098	HAMMER, HAND: Blacksmith's, sledge; 12 lb	1 EA
N-4	142	5120-061-8543	HAMMER, HAND: Machinist's, 1 lb	1 EA
N-4	143	5120-900-6111	HAMMER, HAND: Machinist's, 3 lb	1 EA
	144	5120-585-2383	HAMMER, HAND: Welder's; 14 oz	2 EA
N-4	145	5110-263-0349	HANDLE, FILE, WOOD: 4 1/2 in. lg	2 EA
J-2	146	5110-263-0341	HANDLE, FILE, WOOD: 5 1/2 in. Ig	2 EA
o	151	5110-254-6620	HANDLE, HATCHET: 14 in.	2 EA
K-2	152	5110-228-3161	HATCHET, HALF: 1 lb 1002	1 EA
N-4	153	4240-540-0623	HELMET, WELDER'S	1 EA
0-1	154	9530-224-6795	HIGH-LEADED TIN BRONZE CAST BAR: 1 1/2 in. dia.	1 EA
M	155	3950-235-4235	HOIST, CHAIN: 3/4, ton; 10 ft lift	1 EA
J-1	156	3439-238-1638	HOLDER, ELECTRODE, WELDING	1 EA
0-1	158	5130-595-8355	HONING UNIT SET, CYLINDRICAL, PORTABLE	1 EA
B	159	4720-278-4887	HOSE, RUBBER: 5/ 16 in. id	50 FT
0-2	160	5210-277-8840	INDICATOR DIAL	1 EA
0-2	161	4910-204-2644	INFLATOR GAGE, PNEUMATIC TIRE: 10 to 120 lb	1 EA
o	162A	5970-644-3167	INSULATION TAPE, ELECTRICAL:	1 RL
L	163	6850-664-0355	ISOLATING PASTE: 1 gal can	2 CN
Mtd	164	5120-293-0554	JACK, HYDRAULIC, HAND: 30 ton	1 EA
Mtd	165	5120-224-73-30	JACK, HYDRAULIC, HAND: 12 ton	2 EA
c	166	5935-570-1060	KIT, REPAIR: waterproof elec connector	1 EA
0	167	5110-240-5943	KNIFE, POCKET	2 EA
J-l	168	3240-155-8634	LAMP, INCANDESCENT: 115 v, 50 w	10EA
A	169	6240-553-1881	LAMP, INCANDESCENT: 120 v, 300 w	4 EA
0-4	170	5120-289-0502	LAPPER, POPPET VALVE, HAND POWERED	1 EA
0	171	5350-221-0692	LAPPING AND GRINDING COMPOUND	1 CN

Location	Item	FSN	Description	Qty
Mtd	172	3416-826-3890	LATHE, ENGINE	1-EA
0-4	173A	6150-242-3715	LEAD, ELECTRICAL: no. 10 AWG, 18 in lg	5 EA
	174	6150-665-9799	LEAD, ELECTRICAL: no. O AWG, 60 ft lg	2 EA
J-1	175	6850-598-7311	LEAK PREVENTIVE COMPOUND, RADIATOR: 12 oz can	1 CN
0-1	176	4240-262-7892	LENS, GOGGLES, INDUSTRIAL: clear	6 PR
J-1	177	4240-262-7093	LENS, GOGGLES, INDUSTRIAL: CO-bs shade 1 / 7	2 PR
E	178	5210-277-2430	LEVEL AND PLUMB	1 EA
L	180	5120-239-8686	LIFTER, VALVE SPRING: Depth adjustment; 9 3/4 to 10 1/4 in. deep	1 EA
K-2	179	5120-542-3485	LIFTER, VALVE SPRING: One straight jaw; 4 3/4 to 5 3-4 in. deep	1 EA
C	181	6230-240-3759	LIGHT, EXTENSION	2 EA
c	182	4910-500-2135	LIGHT, IGNITION TIMING	1 EA
Mtd	183	6230-299-7701	LIGHT, POWER TOOL	4 EA
Mtd	184	3460-821-5908	MILLING-GRINDING-DRILLING.-SLOTTING AT. TACHMENT	1 EA
	528	3439-440-0090	MOISTURE STABILIZER, WELDING ELECTRODE	1 EA
C	417	6635-553-0142	MULTIMETER : TS-252-B / U	1 EA
0	185	5110-555-2640	NIPPERS, END CUTTING	1 EA
0	191	5310-021-4267	NUT, PLAIN, HEXAGON: 1/2 in. 20 UNF or NF	25 EA
0	186	5310-022-0071	NUT, PLAIN, HEXAGON: 3/8 in.-16NC or UNC	1 HD
0	187	5310-022-5831	NUT, PLAIN, HEXAGON: 3/8 in. 24 NF or UNF	1 HD
0	197	5310-763-8901	NUT, PLAIN, HEXAGON : 3/4 in. 16 NF	50 EA
	189	5310-880-7745	NUT, PLAIN, HEXAGON: 7/16 in. 20 UNF	25 EA
0	188	5310.880-8189	NUT, PLAIN, HEXAGON: 7/ 16 in. 14 UNC	12EA
0	190	5310-176-8170	NUT, PLAIN, HEXAGON: 1/2 in. 13 NC	50 EA
0	193	5310-763-8911	NUT, PLAIN, HEXAGON: 9/ 16 in.-l8 UNF	25 EA
0	192	5310-763-8913	NUT, PLAIN, HEXAGON: 9 / 16 in.-l2 UNC	12EA
0	195	5310-763-8905	NUT. PLAIN, HEXAGON: 5/8 in.-l8 UNF	50 EA
0	194	5310-616-3757	NUT. PLAIN, HEXAGON: 5/8 in.-11 UNC or NC	12EA
0	196	5310-763-8921	NUT, PLAIN, HEXAGON: 3/4 in.-lO UNC	12EA
0	196A	5310-221-4677	NUT, PLAIN, SQUARE: 5/ 16 in.-l8 UNC	1 HD
B	198	5310-297-3751	NUT ASSORTMENT:	1 AT
B	199	6625-335-2958	OHMMETER	1 EA
L	199A	4930.554.6778	OILER, HAND	3 EA
O-2	201	5330-247-0510	PACKING MATERIAL: metal foil; 1 lb roll	1 RL
M	202	7240-160-0455	PAIL, METAL: 31/2 gal	2 EA
K-3	203	5350-598-6105	PAPER, ABRASIVE: Flint, grade 1/2 to 1	1 HD
K-3	204	5350.598-5537	PAPER, ABRASIVE: Flint, grade 2/O or 1 / 0	1 SV
M	205	5330-618-3903	PAPER, GASKET: 36. w, 1 / 16 in. thk	15FT
K-1	206	20,0.255.9349"	PATCH, INNERTUBE REPAIR: 31/4 in. x 13 / 16 in.	25 EA
	207	2640-052-0828	PATCH, INNERTUBE REPAIR: Rd, 2 3/8 in. dia.	25 EA
J-1	208	5315-017-9252	PIN, COTTER: 1 / 16 in. dia, 1 in. lg	5 HD
J-1	209	5315-816-1794	PIN, COTTER: 3/32 in. dia. 1 in. lg	5 HD
J-1	210	5315-012-0123	PIN, COTTER: 1/8 in. dia. 1 1/4 in. lg	5 HD
J-1	211	5315-293-1499	PIN, COTTER: 1/8 in. dia. 2 in. lg	3 HD
	212	5315-018-7988	PIN, COTTER: 3/ 16 in. dia, l 1/4 in. lg	3 HD
J-1	213	5315-849-9854	PIN, COTTER: 3 / 16 in. dia, 2 in. lg	5 HD
J-1	214	5120-227-7093	PLIERS: Flat narrow nose; 7 in.	1 EA
	215	5120-263-3579	PLIERS: Lg rd nose; 6 in.	2 EA
J-1	216	5120-239-8251	PLIERS: Lineman's; side cutter; 8 in.	1 EA
	217	5120-239-8250	PLIERS: Rd needle nose; curved; 6 in.	1 EA
J-1	218	5120-528-2265	PLIERS, BRAKE REPAIR	1 EA
J-1	219	5120-789-0492"	PLIERS, SNAP RING	1 EA
c	220	4910-273-3660	PLUG SET, RADIATOR TEST	1 SE
E	221	8010-247-8706	PRUSSIAN BLUE PASTE: 2 oz. tube	1 TU
E	222	5120-293-1429	PULLER, MECHANICAL: Gear and bearing: three jaw external	1 EA
J-1	223	5120-371-9622	PULLER, MECHANICAL: Track, master pin plug assaembly	1 EA
J-1	224	5120-371.9623	PULLER, MECHANICAL: For Caterpillar D7 and D8	1 EA
N1,2,3, &0225		5180-701-8046	PULLER KIT, UNIVERSAL: 17 1/2 and 30 ton capacity	1 EA

Location	Item	FSN	Description	Qty
E	226	5120-089-3660	PULLER SET, BUSHING	1 SE
L	414	4320-055-2639	PUMP, HYDRAULIC: air operated	1 EA
K-2	228	5120-595-9485	PUNCH, ALIGNING: 5/32 in. dia point	1 EA
O	229	5120-529-3833	PUNCH, ALIGNING: 3/16 in. dia point	1 EA
J-1	230	5120-240-8894	PUNCH, ALIGNING: 5/ 16 in. dia point	1 EA
O	227	5120.242.0764	PUNCH, ALIGNING: 3/8 in. dia point	1 EA
E	231	5120.240-6082	PUNCH, DRIVE PIN: 1 / 16 in. dia	1 EA
E	232	5120.242-3435	PUNCH, DRIVE PIN: 3/32 in. dia	1 EA
E	233	5120-224-7446	PUNCH, PRICK: 3/8 in. dia	1 EA
J-1	234	5110-449-7313	PUNCH SET, HOLLOW	1 SE
O-2	235A	5110-237-8598	REAMER, CYLINDER RIDGE: 29 / 16 in. to 5 in. cutting range	1 EA
L	235	51,0-086.7744	REAMER, CYLINDER RIDGE: 4 7/8 to 8 in. cutting range	1 SE
L	236	5110-222-9040	REAMER, HAND: 1/8 to 2 in. pipe size	1 EA
L	237A	5110-293-0020	REAMER SET, HAND	1 SE
Mtd	239	5975 -234-685.5	ROD, GROUND	1 EA
o	240	3439-244-4541	ROD, WELDING: Brass, 3 / 16 dia	30 LB
N-4	241	3439-247-2980	ROD, WELDING: Cast iron; 3 / 16 in. dia	20 LB
o	242	3439-246-0568	ROD, WELDING: Steel; 3 / 16 in. dia	20 LB
L	243A	5130-857-8526	SANDER, DISK, ELECTRIC, PORTABLE	1 EA
D	279	5305-068-0502	SCREW, CAP, HEXAGON HEAD: Steel; 1/4 in.-2O UNC	12EA
D	279B	5305-269-2818	SCREW, CAP, HEXAGON HEAD: Steel; 3/8 in.-24 UNF	25 EA
D	279C	5305-964-0064	SCREW, CAP, HEXAGON HEAD: Steel 7 / 8 in.-9 NC or UNC	6 EA
D	279D	5305-958-8463	SCREW, CAP, HEXAGON HEAD: Steel 7 / 8 in.-l4 NF or UNF	12EA
D	279E	5305-939-7061	SCREW, CAP, HEXAGON HEAD: Steel 1 in.-l2 NF or UNF	12EA
D	279F	5305-724-6834	SCREW, CAP, HEXAGON HEAD: Steel: 9/ 16 in.-l8 UNF	25 EA
D	279G	5305-716-7221	SCREW, CAP, HEXAGON HEAD: Steel: 9/ 16-12 UNC	12EA
D	279H	5305-716-7713	SCREW, CAP, HEXAGON HEAD: Steel 9/16 in.-l2 UNC	25 EA
D	279J	5305-724-6838	SCREW. CAP, HEXAGON HEAD: Steel 9/16 in.-l8 NF or UNF	25 EA
D	279K	5305-724-6841	SCREW, CAP, HEXAGON HEAD: Steel 9/16 in.-l8 NF or UNF	25 EA
D	279L	5305-716-8197	SCREW, CAP, HEXAGON HEAD: Steel 9/ 16 in.-l2 UNC or NC	12 EA
D	279M	5305-724-5914	SCREW, CAP, HEXAGON HEAD: Steel 5/8 in.-ll NC or UNC	25 EA
D	279N	5305-724-6758	SCREW, CAP, HEXAGON HEAD: Steel 5/8 in.-l 1 NC or UNC	12 EA
D	279-O	5305-725-4133	SCREW, CAP, HEXAGON HEAD: Steel 5/8 in.-l8 NF or UNF	25 EA
D	279P	5305-725-4168	SCREW, CAP, HEXAGON HEAD: Steel 5/8 in.-l8 UNF	25 EA
D	279Q	5305-725-4145	SCREW, CAP, HEXAGON HEAD: Steel 5/8 in.-l8 UNF	25 EA
D	279R	5305-939-7063	SCREW, CAP, HEXAGON HEAD: Steel 3/4-10	6 EA
D	279S	5305-940-8071	SCREW, CAP, HEXAGON HEAD: Steel 3/4 in.-l0 NC or UNC	12 EA
D	279T	5305-728.0214	SCREW, CAP, HEXAGON HEAD: Steel 3/4 in.-l6 NF or UNC	20 EA
D	279U	5305-082-6766	SCREW, CAP, HEXAGON HEAD: Steel 3/4 in.-l0 NC or UNC	6 EA
D	279V	5305-728-0215	SCREW, CAP, HEXAGON HEAD: Steel 3/4 in.-l6 NF or UNF	12 EA
D	279W	5305-728.0216	SCREW, CAP, HEXAGON HEAD: Steel 3/4 in.-l6 NF or UNF	20 EA
D	279X	5305-269-3211	SCREW, CAP, HEXAGON HEAD: Steel 3/8 in.-l6 NC or UNC	1 HD
D	279Y	5305-042-9477	SCREW, CAP, HEXAGON HEAD: 7 / 16 in.-l4 NC or UNC	50 EA
D	2792	5305-710-4196	SCREW, CAP, HEXAGON HEAD: 7 / 16 in.-2O NF or UNF	50 EA
D	279AA	5305-069-5583	SCREW, CAP, HEXAGON HEAD: 7 / 16 in.-l4 NC or UNC	50 EA
D	279AB	5305-710-4205	SCREW, CAP, HEXAGON HEAD: 7/ 16 in.-2O UNF	50 EA

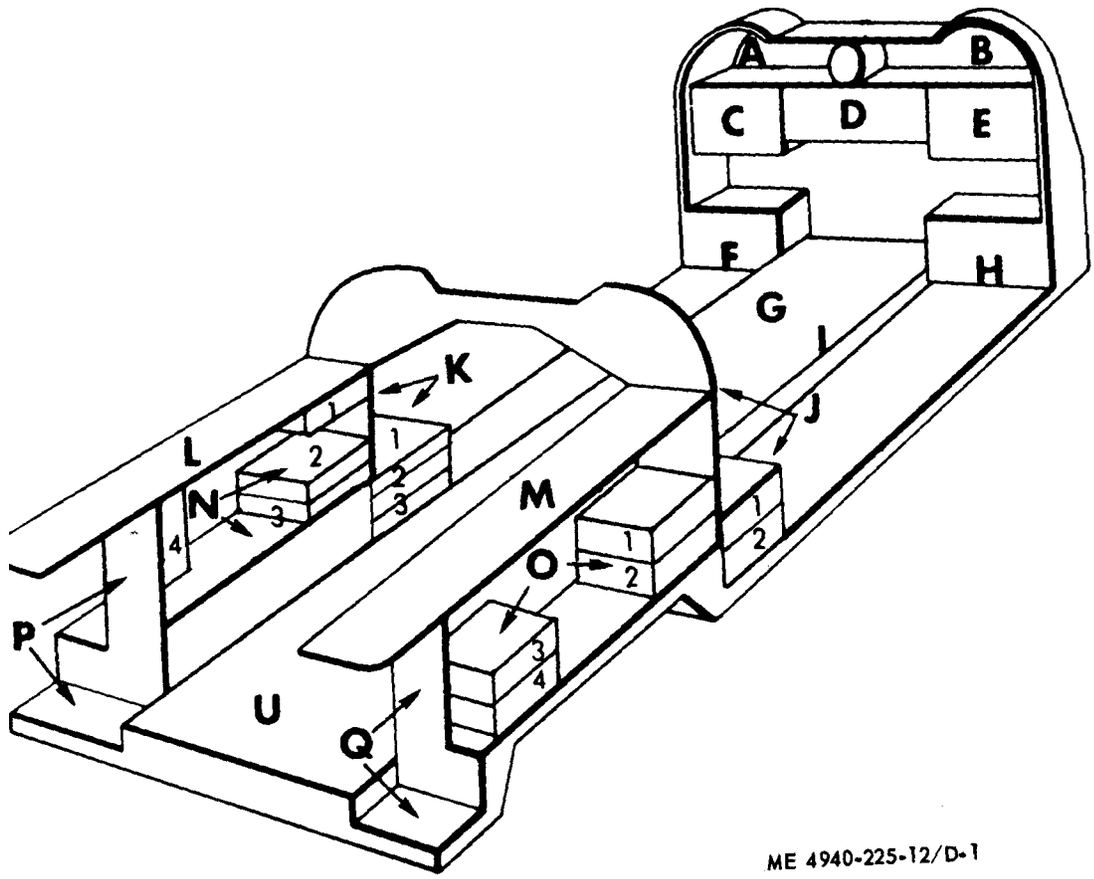
Location	Item	FSN	Description	Qty
D	279AC	5305-071-1772	SCREW, CAP, HEXAGON HEAD: 1/2 in.-13 NC or UNC	50 EA
D	279AD	5305-071-1776	SCREW, CAP, HEXAGON HEAD: 1/2 in.-l3 NC or UNC	12EA
D	279AE	5305-716-8180	SCREW, CAP, HEXAGON HEAD: 1/2 in.-20 NF or UNF	50 EA
D	279AF	5305-716-8165	SCREW, CAP, HEXAGON HEAD: 1/2 in.-20 NF or UNF	25 EA
B	279AG	5305-071-1780	SCREW, CAP, HEXAGON HEAD: 1/2 in.-l3 UNC	100 EA
D	279AH	5305-068-0506	SCREW, CAP, HEXAGON HEAD: 1/4 in.-28 NF or UNF	100 EA
D	279AI	5305-269.3216	SCREW, CAP, HEXAGON HEAD: 3/8 in.-16 NC or UNC	100 EA
D	279AJ	5305-269-3224	SCREW, CAP, HEXAGON HEAD: 3/8 in.-l6 NC or UNC	12EA
D	279AK	5305-269-2809	SCREW, CAP, HEXAGON HEAD: 3/8 in.-24 NF or UNF	25 EA
D	279AL	5305-269-2803	SCREW, CAP, HEXAGON HEAD: 3/8 in.-24 NF or UNF	25 EA
D	279A	5305-071-1769	SCREW, CAP, HEXAGON HEAD: 1/2 in.-l3 UNC	12EA
D	279AM	5305-266-7768	SCREW, CAP, HEXAGON HEAD: 1/2 in.-2O NF or UNF	25 EA
D	279AN	5305-724-5938	SCREW, CAP, HEXAGON HEAD: 5/8 in.-l1 NC or UNC	12EA
D	285A	5305.984-5676	SCREW, MACHINE: 5/16 in.-l8 UNC	1 HD
D	284	5305-988-1727	SCREW, MACHINE: 1/4 in.-2O NC	1 HD
K-2	286	5110-293-0089	SHEARS, METAL CUTTING, HAND	1 EA
O-2	287	5130-540-1825	SOCKET SET, SOCKET WRENCH: 5/8 in. sq drive; 6 point	1 SE
K-2	288	5120-596-8622	SOCKET SET, SOCKET WRENCH: 12 point; in sq drive	1 SE
O-1	289	3439-189-8960	SOLDER, LEAD ALLOY: Acid-cored; 1 lb spool	1 EA
O-2	290	3439-247-6967	SOLDER, LEAD ALLOY: Solid; 5 lb spool	1 SL
O-1	291	3439-222-1632	SOLDERING IRON, ELECTRIC:	1 EA
O-1		34392-224-7509	SOLDERING IRON, NONELECTRIC:	1 EA
K-2	293	5210-221-2050	SPLITTING TOOL, BUSHING BAND	1-EA
B	294	5210-221-2050	SQUARE, CARPENTER'S	1 EA
O-4	295A	5210-078-8949	SQUARE, COMBINATION: 1 / 100, 1 / 64, 1 / 50, ● nd 1 /32 in. graduations	1 EA
0.2	296	5210-241-3599	SQUARE, COMBINATION: 1 / 16, 1/8 in. graduations	1 EA
s / B	297	9520-288-1106	STEEL ANGLE: 1 /16 in. thk, 1 in. legs	5FT
S / B	298	9520-254-5666	STEEL ANGLE: 1/4 in. thk, 3 in. Iegs	3FT
S / B	299	9510-229-4776	STEEL BAR, CARBON: FIat; 1/4 x1/2 in.	5FT
S / B	300	9510-229-4785	STEEL BAR, CARBON: Flat 3/8 x1 1/2 in	5FT
S / B	301	9510-229-4816	STEEL BAR, CARBON : Rd; 1/4 in. dia	5FT
S / B	302	9510-229-4818	STEEL BAR, CARBON: Rd; 3/8 in. dia	5FT
S / B	303	9510-229-4820	STEEL BAR, CARBON: Rd; 1/2 in. dia	5FT
S / B	304	9510-229-4824	STEEL BAR, CARBON: Rd; 3/4 in. dia	5FT
S / B	305	9510-229-4827	STEEL BAR, CARBON: Rd; 1 in. dia	5FT
S / B	306	9510-229-4830	STEEL BAR, CARBON : Rd; 1 1/2 in. dia	5FT
S / B	307	9510-229-4835	STEEL BAR, CARBON: Rd; 2 in. dia	5FT
S / B	308	9510-229-4838	STEEL BAR, CARBON: Rd; 3 in. dia	5FT
S / B	309	9510-229-4847	STEEL BAR. CARBON: Sq; 3/ 16 in.	5FT
S / B	310	9510-229-4848	STEEL BAR, CARBON: Sq; 1/4 in.	5FT
S / B	311	9510-229-4850	STEEL BAR, CARBON: Sq; 3/8 in.	5FT
M	312	9515-243-1872	STEEL SHIM STOCK, LAMINATED	1 SH
o	313	5345-161.9695	STONE, SHARPENING	1 EA
0.2	314	6680-171-4584	TACHOMETER MECHANICAL, HAND HELD	1 EA
O-2	316	5315-271-4128	TAPERED PIN ASSORTMENT	1 EA
L	315	5136-596-1205	TAP SET, THREAD CUTTING	1 SE
0.2	413	5136.596-1521	TAP SET, THREAD CUTTING	1 EA
0	576	6685-226-8150	TEMPERATURE INDICATING COMPOUND	12 EA
0	577	6685-269-4892	TEMPERATURE INDICATING COMPOUND	12EA
N	317	4910.300-1305	TEST SET: ignition coil	1 EA
L	318	6625-224-5173	TEST SET, BATTERY:	1 EA
L	319	4910-270.3780	TEST SET, GENERATOR AND VOLTAGE REGULATOR, AUTOMOTIVE	1 EA
M	320	4910-788.8549	TEST SET, TACHOMETER-DWELL	1 EA
	321	6630.247-2968	TESTER, ANTIFREEZE SOLUTIONS	1 EA
M	322	6630-171-5126	TESTER, BATTERY, ELECTROLYTE SOLUTION	1 EA
M	323	4910-808-4300	TESTER, CYLINDER COMPRESSION	1 EA
B	324	4910-250.2423	TESTER, CYLINDER COMPRESSION : Direct for gasoline engines	1 EA
Q	325	4910-255-8673	TESTER, INTERNAL COMBUSTION ENGINE	1 EA
L	326	5136-596-1227	THREAD CUTTER, DIE HEAD HAND: ratcheting	1 SE
	327	5180-317-8263	THREADING SET, SCREW: NC-NF; rd rh split dies	1 SE
L	328	5180-698-7972	THREADING SET, SCREW: NC-NF; rd rh split dies	1 SE
0-1	329	5180-293-2896	THREADING SET, SCREW : NC-NF ; rd rh split dies	1 SE

Location	Item	FSN	Description	Qty
K-2	330	5180-45-1349	THREADING SET, SCREW: NS; rd rh split dies	1 SE
E	331	5140-319-50,79	TOOL Box, PORTABLE	1 EA
0	332	5140-315-2758	TOOL BOX, PORTABLE	1 EA
P	333	5140-289-8910	TOOL BOX, PORTABLE	1 EA
N	333A	5140-388-3416	TOOL BOX, PORTABLE	1 EA
K-2	335	5180-212-4731	TOOL KIT, BATTERY SERVICE	1 SE
N	336	5180-699-5273	TOOL KIT, MASTER MECHANIC'S	1 SE
S / B	337	9510-251 -3784	TOOL STEEL, CARBON: Bar, hex; 3/8 in.	60 FT
S / B	338	9510-596-6275	TOOL STEEL, CARBON : 3/4 in.	25 FT
M	418	5120-574-9318	TORQUE MULTIPLIER, SOCKET	1 EA
S / B	339	471O-289-41d8	TUBE, STEEL: 1/8 in. od	5 FT
S / B	340	4710-289-4109	TUBE STEEL: 1/4 in. od	5 FT
S / B	341	4710-289-4106	TUBE, STEEL 5/ 16 in. od	5 FT
S / B	342	4710-289-4107	TUBE, STEEL: 3/8 in. od	5 FT
S / B	343	4710-289-4104	TUBE, STEEL: 1/2 in. od	5 FT
Mtd	344A	5120-243~9072	VISE, BENCH AND PIPE	1 EA
0-4	345	3460-277-3504	VISE, MACHINE TABLE	1 EA
M	347	4910-243-3130	VULCANIZER, HOT PATCH	1 EA
o	349A	5310-685-8308	"WASHER, FLAT: .250 in. bolt size	600 EA
0	349	5310-515-8205	WASHER, FLAT: 1/4 in. bolt size	600 EA
0	350	5310-087-7493	WASHER, FLAT: 5/ 16 in. bolt size	1 HD
0	351	5310-809-4061	WASHER, FLAT: 3/8 in. bolt size	2 HD
0	352	5310-809-5997	WASHER, FLAT: 7 / 16 in. bolt size	2 HD
0	353	5310-809-3079	WASHER, FLAT 1/2 in. bolt size	5 LB
0	354	531O-I87-4099	WASHER, FLAT: 9/16 in. bolt size	5 LB
0	355	5310-951-7209	WASHER, FLAT: 5/8 in. bolt size	1 HD
0	356	5310-809-8536	WASHER, FLAT:3/4 in. bolt size	70 EA
0	357	5310-982-6584	WASHER, FLAT: 7 / 8 in. bolt size	50 EA
0	358	5310-982-6562	WASHER, FLAT: 1 in. bolt size	1 LB
B	359	5310-514-6524	WASHER ASSORTMENT	1 AT
0-2	360	5130-049-7912	WHEEL. ABRASIVE: aluminum oxide, 24 gr	3 EA
0-4	361	3460-542-2921	WHEEL. ABRASIVE: silicon carbide, 60 gr	1 EA
A	362	6145-643-0956	WIRE. ELECTRICAL: Bare; copper; no. 6 AWG	2 LB
A	363A	6145-823-2285	WIRE. ELECTRICAL: ignition cable; no. 16 AWG	25 FT
K-3	364A	6145-805~3354	WIRE, ELECTRICAL: 30 v; copper conductor no. 2 AWG	6 FT
J-2	365	6145-772-2204	WIRE, ELECTRICAL: Primary automotive no. 16 AWG	25 FT
	367	9505-198-9104	WIRE. STEEL, CARBON: 5 lb coil "	1 CL
N-4	368	5120-224-3136	WRENCH, BOX: 1/2 and 9/ 16 in.	1 EA
J-2	369	5120-288-9302	WRENCH, BOX: 5/8 and 3/4 in.	1 EA
M	370	5130-596.9821	WRENCH, IMPACT, ELECTRIC: 5/8 in. sq drive	1 EA
o	371	5120-240-5328	WRENCH, OPEN, END, ADJUSTABLE: 8 in.	2 EA
0-2	372	5120-264.3796	WRENCH, OPEN END, ADJUSTABLE: 12 in.	1 EA
o	373	5120-277-6471	WRENCH, OPEN END, ADJUSTABLE : 24 in.	1 EA
0	374	5120-277-6470	WRENCH, OPEN END ADJUSTABLE : 36 in.	1 EA
J-2	375	5120-224-3102	WRENCH, OPEN END, FIXED: 5/8 and % in.	1 EA
J-2	376	5120-277-1228	WRENCH, OPEN END, FIXED: 19/ 32 and 11/ 16 in.	1 EA
J-2	377	5120-277-7025	WRENCH, OPEN END, FIXED: 15/ 16 and 1 in	1 EA
K-3	378	5120-277-1479	WRENCH, PIPE: 18 in. lg	1 EA
L	379	5120-277-1480	WRENCH,' PIPE: 24 in. lg	1 EA
L	380	5120-293-1455	WRENCH, SPANNER: 1 1/2 to 4 in.	1 EA
c	381	5120-936-0013	WRENCH. SPECIAL.: 3/8 in. sq drive	1 EA
Mtd	382	5120-542-5577	WRENCH, TORQUE: 3/4 in. sq male drive	1 EA
0-2	383	5120-542-4489	WRENCH, TORQUE: Micrometer adjustable 1/4 in. sq male drive	1 EA
L	384	5120-221-7950	WRENCH, TORQUE: Visual indicating 1/2 in. sq male drive	1 EA
L	385	5130-529-1147	WRENCH KIT: for impact wrench	1 EA
0-1	386	5120-596-1238	WRENCH SET, COMBINATION BOX AND OPEN END	1 SET
Mtd	415	5120-961-9814	WRENCH SET, IMPACT: hand	1 SE
0	387	5120-203-5384	WRENCH SET, 'OPEN END, FIXED	1 SE
E	388	5120-081-2302	WRENCH SET, OPEN END, FIXED	1 SE
M	389	5120-640-6702	WRENCH SET SOCKET: 3/4 in. sq drive	1 SE
			Oxacetylene Welding and Cutting Equipment	
P&Q	GFE	6830-264-6751	ACETYLENE, TECHNICAL	2 CY
o	392	8120-695-3867	ADAPTER, COMPRESSED GAS: Inlet, 0.628-20, NGO; outlet, 0.885-14, NGO	1 EA
0	393	8120-695-6001	ADAPTER, COMPRESSED GAS: Inlet, 0.628-20, NGO; outlet, 0.895-18, NGO	1 EA

Location	Item	FSN	Description	Qty
	394	8120-695-6044	ADAPTER, COMPRESSED GAS: Inlet, 0.880-14, NGO: outlet, 0.628-20, NGO	1 EA
O	395	8120-695-5983	ADAPTER, COMPRESSED GAS: Inlet, 0.899-18, NGO; outlet, 0.885-14, NGO	1 EA
N-4	396	4730-289-5911	CLAMP, HOSE: 3/4 in. id	8 EA
o	397	3439-383-3634	CLEANER SET, WELDING AND CUTTING TIP: 12 tip cleaners	1 EA
0	398	3439-262-7556	CLEANER SET, WELDING AND CUTTING TIP: Drill, 9 cleaners	1 EA
0	399	4720-223-7381	DUPLEX HOSE, RUBBER: 9/ 16 in.-l8 NF; 75 ft lg	2 EA
J-2	400A	8415-278-7859	GLOVES, LEATHER	2 PR
O-2	402	5120-965-0326	IGNITER, FRICTION	1 EA
J-1	403	4240-276-8938	LENS, HELMET, WELDER'S: glass, 4 1/4 in. lg. 2 in. w.	12EA
0-1	405	4240-276-8940	LENS, HELMET, WELDER'S: Filter lens, shade 10 glass, 4 1/4 in. lg, 2 in. w	12EA
J-1	406	4730-224-7324	NIPPLE, HOSE: 9/ 16 in.-l8 NF	1 EA
P&Q	GFE	6830-292-0129	OXYGEN, TECHNICAL	3 CY
c	407	6685-281-8190	REGULATOR, FLUID, PRESSURE: Acetylene; double stage	1 EA
C	408	6685-641-3519	REGULATOR, FLUID PRESSURE: oxygen; double stage	1 EA
N-4	409	3433-278-1229	TORCH, CUTTING: 75 deg angle	1 EA
O-4	410	3433-542-0948	TORCH, WELDING: hand operation	1 EA
J-2	411	5120-277-8299	WRENCH, OPEN END, FIXED: 11/ 16 and 3/4	1 EA
J-2	412	5120-494-1929	WRENCH, TORCH AND REGULATOR: 7/ 16, 11/ 16, 3/4 &. 1 1/8 in. openings	1 EA
I			50 FT POWER CABLE	1 EA
BODY MTD		5340-682-1505	PADLOCKS	1 SE
		7510-889-3494	LOG BINDER	1 EA
		7520-559-9618	COTTON CASE	1 EA
P&Q			LADDERS	2 EA
L&M			CURTAIN, CANVAS	1 SE
I		4520-115-1055	HEATER	1 EA
I			BATTERY, ACID	
A			TENT PEGS	36 EA
BODY MTD		13217E0971	FRAME. CURTAIN	1 EA
F		Sub-Item #137	COMPONENT PARTS OF/ GRINDING MACHINE UTILITY	
H		Sub-Item# 172	COMPONENT PARTS FOR / LATHE, ENGINE	

APPENDIX D

SHOP SET TOOL LOCATION LOADING AND PACKING LIST



TOOL LOCATION

D-1. Shop set tool location.

INDEX

By Order of the Secretary of the Army:

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

Official:

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

Distribution:

To be distributed in accordance with DA Form 12-25A (qty rqr Block No. 257), Operator requirements for Shop Equipment Sets, Maintenance, Set No. 2, Organizational.

* u.s.GOVERNMENT PRINTING OFFICE : 1994 0 - 300-421 (12)

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

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

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

TEAR ALONG PERFORATED LINE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .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 = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

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

PIN: 006021-000