

**TM 5-4940-225-34**

**DEPARTMENT OF THE ARMY TECHNICAL MANUAL**

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**TECHNICAL MANUAL**

**DIRECT AND GENERAL SUPPORT  
AND DEPOT 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**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**JANUARY 1972**

## **WARNING**

**Before performing any maintenance procedures on the electrical system, see that all external power is disconnected from the shop set and stop the truck engine.**

**Do not operate the equipment until it has been properly grounded.**

TECHNICAL MANUAL  
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DEPARTMENT OF THE ARMY  
WASHINGTON, D.C. 5 January 1972

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## CHAPTER 1

### INTRODUCTION

#### Section I. GENERAL

##### 1-1. Scope

The following instructions are provided for the use of direct and general support and depot maintenance personnel. They contain information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel or supplies normally available to organizational maintenance facilities.

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

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

##### 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 the 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

A complete description of the shop set and components is given in TM 5-4940-225-12.

##### 1-5. Difference in Models

The difference in models is given in TM 5-4940-225-12.

##### 1-6. Tabulated Data

###### *a. Dynamotor- Welder.*

Manufacturer . . . . . Hobart Brothers Co.  
Model . . . . . SMR-300

###### *(1) DC generator.*

Volts . . . . . 40  
Kilowatts . . . . . 12  
Amperes . . . . . 300  
Rpm (revolutions per  
minute) . . . . . 1500/1800  
Duty cycle . . . . . 60percent

###### *(2) AC generator.*

Voltage . . . . . 220  
Amperes . . . . . 56  
Kilowatts . . . . . 12  
Power factor . . . . . 0.8  
Phase . . . . . 3  
Cycle . . . . . 50/60  
Rpm . . . . . 1500/ 1800  
Duty cycle . . . . . 100 percent

###### *(3) Motor*

Voltage . . . . . 240  
Amperes . . . . . 56  
Phase . . . . . 3  
Cycle . . . . . 50/60  
Rpm . . . . . 1500/ 1800  
Horsepower . . . . . 25

###### *b. Dynamotor-Welder Repair and Overhaul Data.*

###### *(1) DC (direct current) welder armature winding.*

Number of coils . . . . . 33  
Number of slots . . . . . 33  
Number of turns per  
coil . . . . . 1  
Coil pitch . . . . . 1 to 9  
Commutator pitch . . . . . 1 to 50  
Number of commutator  
bars . . . . . 99  
Wire size . . . . . 3/32 in. (inch) X 3/8 in.  
Wire type . . . . . Copper, Type T, heavy  
synthetic resin-coated per  
Military Specification  
MIL-W-583A  
Winding type . . . . . Wave

###### *(2) Motor-alternator revolving field winding.*

Number of coils . . . . . 4  
Turns per coil . . . . . 520  
Turns parlayer . . . . . 36  
Wire size . . . . . No. 1.5 AWG (American  
Wire Gage)  
Type of wire Copper. Type T. heavy  
synthetic resin-coated per  
Military Specification  
MIL-W-783A

###### *(3) DC exciter armature winding.*

Number of coils . . . . . 43  
Number of slots . . . . . 43  
Turns percoil . . . . . 6  
Coil pitch . . . . . 1 to 11  
Commutator pitch . . . . . 1 10 43  
Number of commutator  
bars . . . . . 85

Wire size . . . . . No. 17 AWG  
 Wire type . . . . . Copper, Type T, heavy  
 synthetic resin-coated per  
 Military Specification  
 MIL-W-683A  
 Winding type . . . . . Wave

(4) *Treatment schedule of armature.* The following baking treatment should be accomplished in a recirculating, forced-exhaust type bake oven. Baking times and temperatures may vary depending on the recommendations of the manufacturer of the varnish being used.

(a) *Preparation.* Mask both commutators, the sliprings, and the shaft with a suitable masking tape to prevent adherence of varnish to these parts.

(h) *Dipping and draining.* Immerse the armature in varnish, Military Specification MIL-V-1137A, Type AN, grade CB, for 3 minutes. Remove and drain for 10 minutes. Rotate armature to prevent puddling of varnish.

(c) *Wiping.* Remove masking tape. Wipe previously masked surfaces with cloth dampened with an approved cleaning solvent to clean these surfaces of any trace of varnish.

(d) *Baking.* Bake for 1 ½ hours at 320° F.

(e) *Second treatment.* Remove from oven and allow armature to cool to approximately 140° F. Repeat (a) through (c) above, but with a baking time of 4 hours at 320° F.

(f) *Fungicidal treatment.* Allow armature to cool to ambient temperature. Repeat (a) above. Immerse in a fungicidal varnish which meets Military Specification MIL-V-173. Repeat

(c) above and allow armature to air-dry for 15 minutes at a temperature of 70° F.

(5) *DC welder commutation winding.*

Number of coils . . . . . 4  
 Turns per coil . . . . . 15  
 Type of wire . . . . . Copper, Type T, heavy  
 synthetic resin-coated per  
 Military Specification  
 MIL-W-583A  
 Type of winding . . . . . Edge Wound

(6) *Treatment schedule for interpole winding.* The following baking treatment should be accomplished in a recirculating, forced-exhaust type bake oven. Baking times and temperatures may vary depending on the recommendations of the manufacturer of the varnish being used.

(a) *Dipping and draining.* Dip the coil in and out of the varnish which meets Military Specification MIL-V-1137A, Type AN, grade CB. Drain for 10 minutes. Rotate the coil to prevent puddling of the varnish.

(b) *Baking.* Bake the coil for 1 ½ hours at a temperature of 320° F.

(c) *Furtgicidal treatment.* Allow coil to cool to ambient temperature. Immerse in a fungicidal

varnish which meets Military Specification MIL-V-173. Allow coil to air-dry at a temperature of 70° F, for 15 minutes.

(7) *DC welder excitation field windings.*

Number of coils . . . . . 2  
 Turns per coil . . . . . 1500  
 Wire size . . . . . No. 17 AWG  
 Type of winding . . . . . Random

**NOTE:** If field is larger because of random condition, a maximum of 40 turns may be removed.

Resistance per coil . . . . . 13.67 ohms

(8) *DC exciter shunt field winding.*

Number of coils . . . . . 4  
 Turns per coil . . . . . 1400  
 Resistance per coil . . . . . 16.31 ohms  
 Type of winding . . . . . Random  
 Wire size . . . . . No. 21 AWG  
 Type of wire . . . . . Copper . . . . . Type T, heavy  
 synthetic resin-coated per  
 Military Specification  
 MIL-W-583A

(9) *Treatment schedule for the DC welder excitation field and the DC exciter shunt field.* The following baking treatment should be accomplished in a recirculating, forced-exhaust type bake oven. Baking times and temperatures may vary with the recommendations of the manufacture of the varnish being used.

(a) *Dipping and draining.* Immerse the coil in varnish which meets Military Specification MIL-V-1137A, Type AN, grade CB for 3 minutes. Remove and drain for 10 minutes. Rotate coil during drainage to prevent varnish from puddling.

(b) *Baking.* Bake the coil for 1 ½ hours at a temperature of 320° F.

(c) *Fungicidal treatment.* Allow the coil to cool to ambient temperature. Immerse in a fungicidal varnish which meets Military Specification MI L-V-1 73. Allow coil to air-dry at a temperature of 70° F, for 15 minutes.

(10) *Motor-alternator stator windings.*

Number of poles . . . . . 4  
 Number of slots . . . . . 48  
 Number of coils . . . . . 48  
 Coil span . . . . . 1-12  
 Turns per coil . . . . . 10  
 Wire size . . . . . No. 15 AWG  
 Type of wire . . . . . HNF(heavy, nylon, flat  
 band metallic armor)

(11) *Treatment schedule for the motor-alternator windings.* The following baking treatment should be accomplished in a recirculating, forced-exhaust type bake oven. Baking times and temperatures may vary with the recommendations of the manufacturer of the varnish being used.

(a) *Preheating.* Preheat stator assembly for 1 hour at a temperature of 140° F.

(b) *Dipping and draining.* Immerse stator in varnish which meets Military Specification MI L-V-1137A, Type AN, grade CB, for a period of 10 minutes. Drain for 10 minutes. Rotate the stator to prevent the varnish from puddling.

(c) *Wiping.* Wipe the machine metallic surfaces clear of varnish with a cloth moistened in a suitable solvent.

(d) *Baking.* Bake the stator for 1 ½ hours at a temperature of 320° F. Remove from oven and allow stator to cool to 140° F.

(e) *Second treatment.* Repeat (b) above

for 3-minute duration. Repeat (c) above. Repeat (d) above, but for a baking time of 4 hours.

(f) *Fungicidal treatment.* Allow stator to cool to ambient temperature. Immerse stator in varnish which meets Military Specification MIL-V-173. Remove stator and wipe metallic surfaces clear of varnish with a cloth moistened with a suitable solvent. Allow stator to air-dry for 15 minutes at a temperature of 70° F.

c. *Air Compressor Repair and Replacement Standards.* Refer to table 1-1 for a list of manufacturer's tolerance, desired clearances, and maximum allowable wear and clearance.

**Table 1-1. Air Compressor Repair and Replacement Standards**

Component	Manufacturer's dimensions and tolerances		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Minimum	Maximum	Minimum	Maximum		
Cylinders:						
L. P. (low pressure):						
Bore	3.375	3.377			0.002	
Taper		0.001				
Out-of-round		0.0005				
H. P. (high pressure):						
Bore	1.8760	1.8769			0.002	
Taper		.0005				
Out-of-round		.0005				
Crankcase:						
Bearing bore	2.717	2.718			± 0.0000	
Crankshaft:						
Journal:						
Size	1.3755	1.3765			0.0000	
Note. Inner cone of tapered roller bearing press fitted to crankshaft. Bearing adjustment is made by removing or adding shims at small crankcase end plate.						
Taper		0.0005				
Out-of-round		0.0005				
Throw:						
Outside diameter	1.3750	1.3755			0.001	
Length	1.510	1.515				
Taper		0.0002				
Out-of-round		0.0001				
Pistons, Pins, and Rings:						
Note. Pistons are cam ground: (Not round) .008" dia less across pin boss.						
L. P. Piston:						
Size at top	3.356	3.360				
Size at bottom	3.372	3.373			0.003	
H. P. Piston:						
Size at top	1.858	1.862				
Size at bottom	1.874	1.875			0.0025	
L. P. Piston Pin:						
Diameter	.8749	0.8751	0.0001	0.0003	0.0000	0.0003
Length	3.115	3.135				
H. P. Piston pin:						
Diameter	.8749	0.8751	0.0001	0.0003	0.0000	0.0003
Length	1.584	1.604				
L. P. Piston rings:						
Side clearance:						
Compression			0.002	0.004		
Oil			0.0015	0.003		
Gap clearance			0.004	0.014		
H. P. Piston rings:						
Side clearance:						
Compression			0.002	0.004		
Oil			0.002	0.004		
Gap clearance			0.003	0.010		

**Table 1-1. Air Compressor Repair and Replacement Standard.~—Continued.**

Component	Manufacturer's dimensions and tolerances		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Minimum	Maximum	Minimum	Maximum		
Connecting Rods and Bearings:						
L. P. Connecting rod:						
Pin bearing id. . . . .	0.8750	0.8755	0.0001	.0006	.0009	.0015
Rod bearing id . . . . .	1.3753	1.3763	.0002	.0013		
Rod bearing length . . . . .	1.495	1.500	0.010	0.020		
Rod twist . . . . .		0.001 TIR (Total Indirect Reading)				
Rod bend . . . . .		0.0003TIR				
H. P. Connecting rod:						
Pin bearing id . . . . .	0.8750	0.8755	0.0001	.0006	.0009	.0015
Rod bearing id . . . . .	1.3753	1.3763	.0002	.0013		
Rod bearing length . . . . .	1.495	1.500	0.010	0.020		
Rod twist . . . . .		0.001 TIR				
Rod bend . . . . .		0.003 TIR				

**d. Wiring Diagrams. For 24-volt and 110-volt schematic wiring diagrams, refer to TM 5-4940 - 225-12**

**Figure 1-1. Schematic wiring diagram (dynamotor-welder).**  
(Located in back of manual)

**Figure 1-2. Schematic wiring diagram (dynamotor-welder).**  
(Located in back of manual)

**e. Compressor Torque Data.**

Connecting rod bolts . . . . .14 to 16 ft-lb (foot-pounds)

Cylinder head bolts. . . . . 24 to 26 ft-lb  
Main bearing plate bolts 24 to 26 ft-lb



## GENERAL MAINTENANCE INSTRUCTIONS

## Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

## 2-1. Special Tools and Equipment

No special tools or equipment are required by direct support, general support, or depot maintenance personnel.

## 2-2. Direct Support, General Support, and Depot Maintenance Repair Parts

Direct support, general support, and depot

maintenance repair parts are listed in TM 5-4940 - 225-34P (when published).

## 2-3. Specially Designed Tools and Equipment

No specially designed tools or equipment are required for maintenance of the shop set by direct support, general support, or depot maintenance personnel.

## Section II. TROUBLESHOOTING

## 2-4. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the shop set, or any of its components. Each malfunction stated is followed by a list of

probable causes of trouble. The corrective action recommended is described opposite the probable cause.

## 2-5. Troubleshooting

Refer to table 2-1 for troubleshooting.

Table 2-1. Troubleshooting

Malfunction		Corrective Action
1. Dynamotor-welder noisy.	Bearings defective.	Replace bearings (para 3.14)
2. Dynamotor-welder does not develop welding current.	a. Interpole coils defective.	a. Repair or replace interpole coils (para 3.15).
	b. Compound coils defective.	b. Replace compound coils ( para 3-15).
	c. Welder brushes burned or badly worn.	c. Adjust brush spring tension or replace brushes. TM 5-4940-225 - 12.
	d. Brush tension improper.	d. Adjust tension TM 5-4940-225-12.
	e. Field coils defective.	e. Repair or replace coils (para 3-15).
	f. Commutator dirty.	f. Clean commutator (para 3-15).
	g. DC resistance element defective.	g. Replace element (para 3-1.5).
	h. No excitation voltage to field coil (105 to 115 Volts).	h. Repair or replace exciter field coils (para 3-1 5). Adjust exciter brush tension or replace brushes TM 5-4940-225-12.
3. Dynamotor-welder does not furnish alternating current.	i. Armature defective,	i. Replace armature (para 3-14).
	a.. No excitation voltage to rotating field coils.	a. Repair or replace exciter coils (para 3-15 ). Adjust exciter brush tension or replace exciter brushes TM 5-4940-225-12. Adjust DC brush tension or replace DC brushes. Replace armature (para 3-14).
	b. Rotating field defective.	b. Repair or replace rotating field coils ( para 3-1 5).
4. Dynamotor-welder will not function as a motor (external power).	c. Stator coils defective.	c. Repair or replace coils para 3-15 ).
	a. Stator coils defective.	a. Repair or replace coils (para 3-15).
	b. Armature defective.	b. Replace armature ( para 3.14).
	c. Main contactor switch defective.	c. Repair or replace switch (para 3-17).

**Table 2-1. Troubleshooting—Continued**

Malfunction	Probable Cause	Corrective Action
5. Dynamotor-welder exciter does not furnish excitation voltage or voltage is below required level.	a. Field coils defective. b. Brushes burned or badly worn.	a. Repair or replace coils ( para 3-15). b. Adjust brush spring tension or replace brushes TM 5-4940-225-12.
6. Abnormal fluctuation of dynamotor-welder output current.	c. Armature defective d. Commutator dirty. a. Brushes worn.	c. Replace armature (para 3-14). d. Clean commutator (para 3-15). a. Replace brushes TM 5-4940 -225-12.
7. Compressor overheats.	b. Too little pressure of brushes on commutator. c. Rheostat contact dirty.	b. Increase brush tension TM 5-4940-225-12 c. Clean rheostat.
8. Compressor knocks.	a. Main or connecting rod bearings defective. b. Internal leakage. c. Cylinder head gasket defective. a. (crankshaft bearings worn). b. Piston pin and bearing worn.	a. Replace bearings.  b. Replace defective parts or gaskets. c. Replace gasket (para 3-25). a. Replace bearing (para 3-1) . b. Replace pin and bearing (para 3-1).
9. Compressor fails to deliver full capacity.	c. Valve plates loose or broken. d. Connecting rod bearings worn.	c. Tighten or replace valve plates (para 3-1). d. Replace connecting rod bearings (para 3-1).
10. Compressor oil consumption excessive.	a. Cylinder head gasket defective. b. Piston and piston rings worn. c. Valve plates defective.	a. Replace gasket (para 3-1). b. Replace piston or rings (para 3-1). c. Replace waive plates (para 3-1).
11. Intercooler pop-off valve opens while running under load.	a. Piston rings worn. b. Cylinder worn.	a. Replace piston rings (para 3-1). b. Replace cylinder (para 3-1).
12. Intercooler pop-off valve opens while running unloaded.	High pressure suction or discharge valve defective. a. Low pressure unloader valve stuck in loaded position. b. Defective high pressure discharge valve.	Replace defective part. a. Clean unloader valve (para 3-1). b. Replace defective valve (para 3-1).
13. Side doors do not operate properly.	a. Side lifting hydraulic pump defective. b. Door hinge broken. c. Cylinder defective.	a. Repair side lifting hydraulic pump (para 3-38). b. Replace hinge para 3-36). c. Repair cylinder (para 3-37).
14. Personnel heater fails to ignite.	See TM .5-4520 -209-15.	See TM 5-4520-209-15.

### Section III. RADIO INTERFERENCE SUPPRESSION

#### 2-6. General Methods Used to Attain Proper Suppression

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

#### 2-7. Interference Suppression Components

a. *Primary Suppression Components.* The primary suppression components are those whose primary function is to suppress radio interference. These components are described and located in figure 2-1.

b. *Secondary Suppression Components.* These

components have radio interference suppression functions which are incidental or secondary to their primary function.

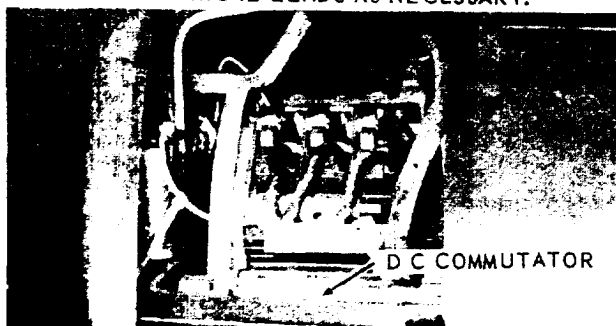
#### 2-8. Replacement of Suppression Components

Refer to figure 2-1 and replace the radio interference suppression components.

#### 2-9. Testing of Radio Interference Suppression Components

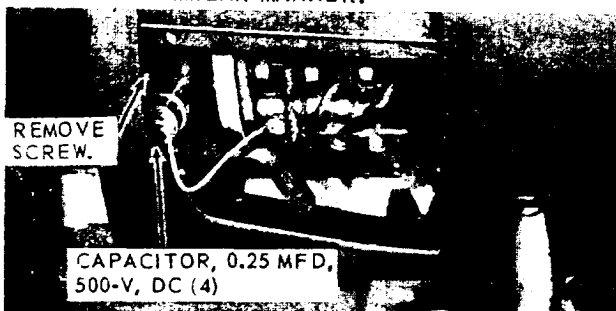
Test the capacitors for leaks and shorts on a capacitor tester; replace defective capacitors. If test equipment is not available, and interference is indicated, isolate the cause of interference by the trial and error method of replacing each capacitor in turn until the cause of interference is located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

NOTE: REMOVE WELDER END WRAPPER (TM 5-4940-225-12). TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.



DC COMMUTATOR

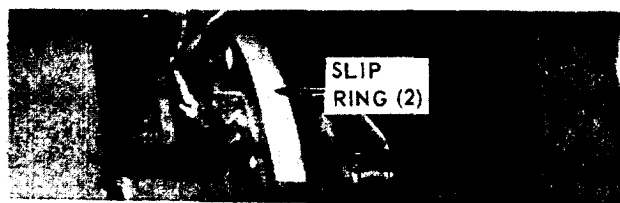
NOTE: REMOVE REMAINING THREE CAPACITORS IN A SIMILAR MANNER.



REMOVE SCREW.

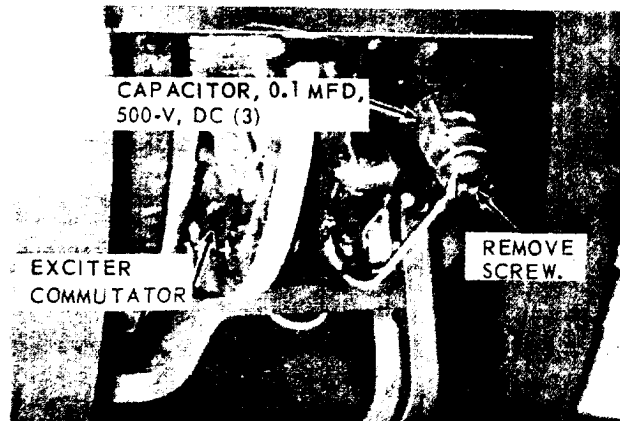
CAPACITOR, 0.25 MFD, 500-V, DC (4)

A. DC COMMUTATOR CAPACITORS.



SLIP RING (2)

NOTE: REMOVE MOTOR END WRAPPER (TM 5-4940-225-12). TAG AND DISCONNECT ELECTRICAL LEADS AS NECESSARY.



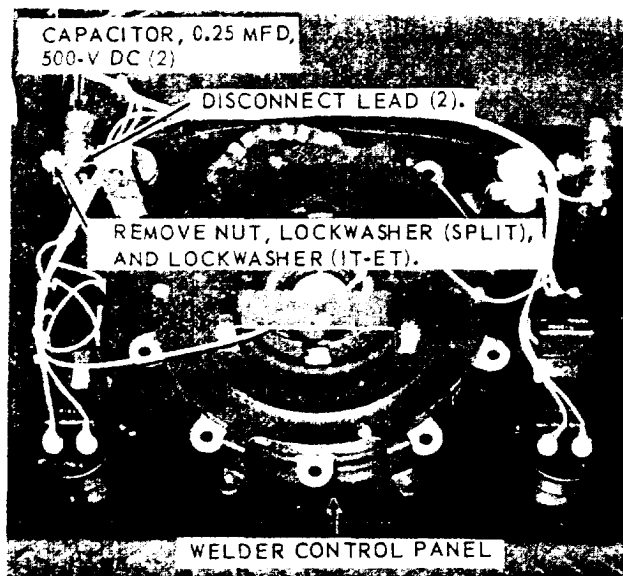
CAPACITOR, 0.1 MFD, 500-V, DC (3)

EXCITER COMMUTATOR

REMOVE SCREW.

NOTE: REMOVE REMAINING TWO CAPACITORS IN A SIMILAR MANNER.

B. EXCITER COMMUTATOR SLIP RING CAPACITORS.



CAPACITOR, 0.25 MFD, 500-V DC (2)

DISCONNECT LEAD (2).

REMOVE NUT, LOCKWASHER (SPLIT), AND LOCKWASHER (IT-ET).

WELDER CONTROL PANEL

NOTE: REMOVE REMAINING CAPACITORS IN A SIMILAR MANNER.

C. WELDER CONTROL PANEL CAPACITORS.

ME 4940-225-35/2-1 ①

Figure 2-1. Interface suppression components, removal and installation (Sheet 1 of 2).



*Figure 2-1. Interference suppression components. removal and installation (sheet 2 of 2).*

#### Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS

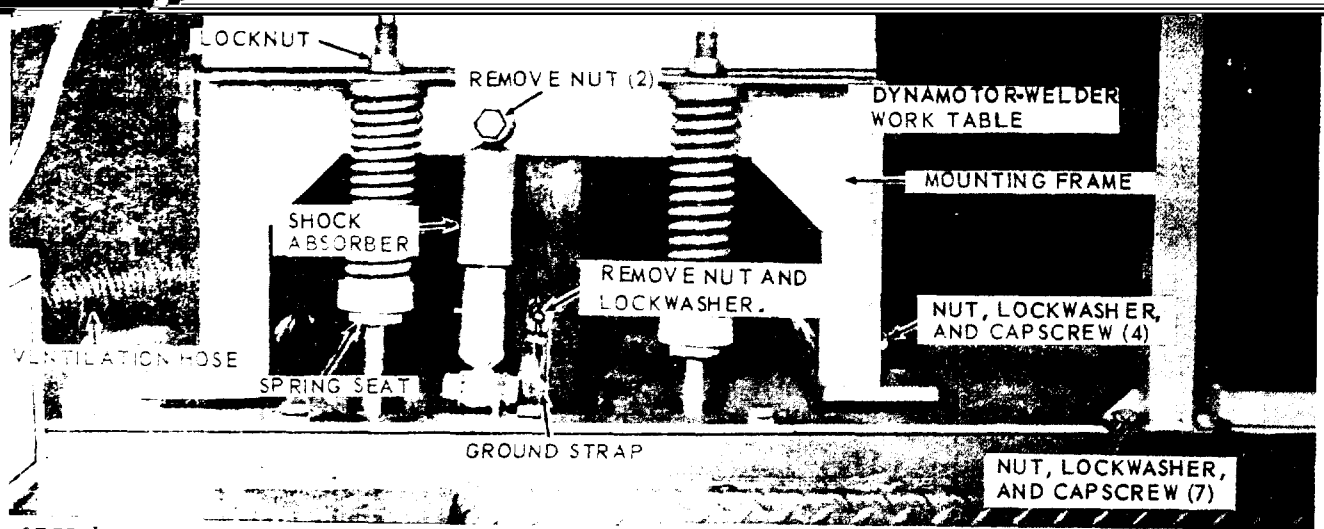
##### 2-10. Dynamotor-Welder

###### a. Removal

- (1) Remove the personnel heater (para 3-38).
- (2) Remove the dynamotor-welder work table (para 3-10).

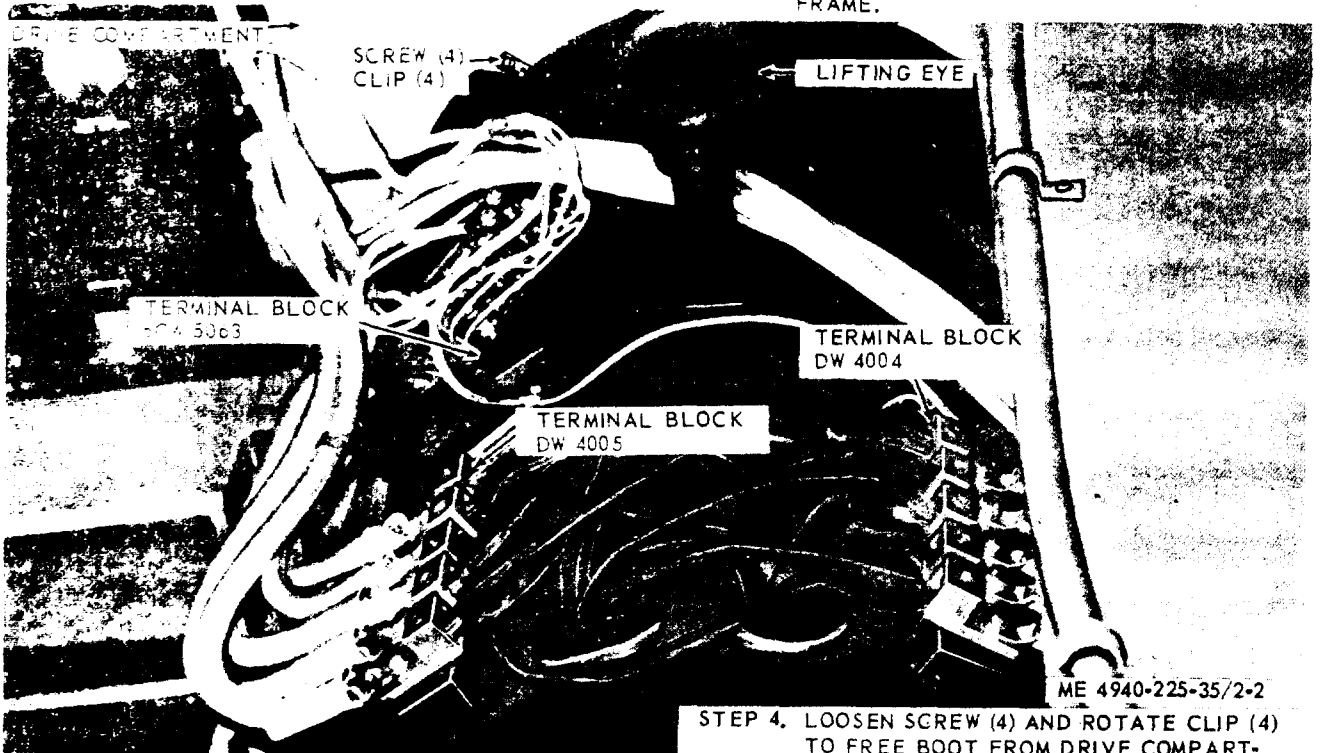
(3) Remove the dynamotor-welder drive belts (para 3-11).

(4) Remove the dynamotor-welder as illustrated in figure 2-2.



STEP 1. DISCONNECT GROUND STRAP AND VENTILATION HOSE.

STEP 2. REMOVE NUT, LOCKWASHER, AND CAPSCREW (4) THAT SECURE DYNAMOTOR-WELDER TO MOUNTING FRAME.



STEP 3. TAG AND DISCONNECT NECESSARY ELECTRICAL LEADS AT TERMINAL BLOCKS DW 4004, DW 4005, AND DW 4003.

STEP 4. LOOSEN SCREW (4) AND ROTATE CLIP (4) TO FREE BOOT FROM DRIVE COMPARTMENT.

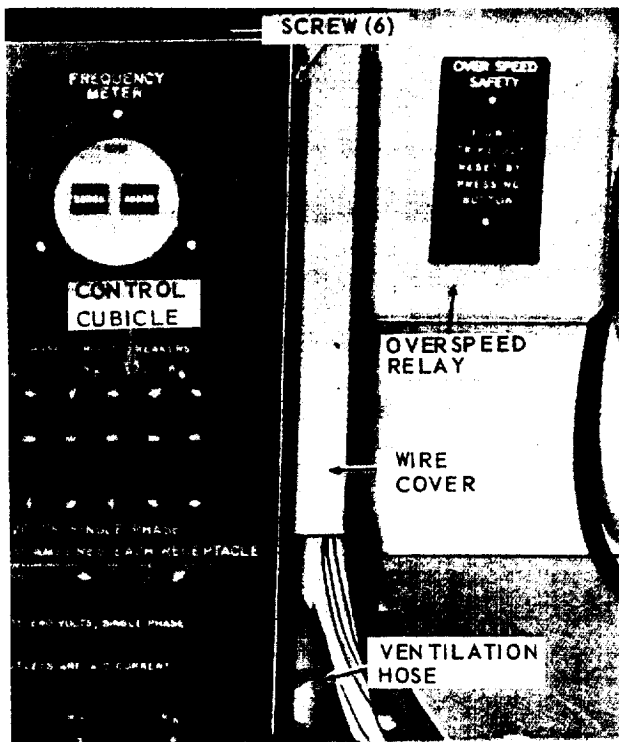
STEP 5. INSTALL LIFTING EYE AND REMOVE DYNAMOTOR-WELDER

Figure 2-2. Dynamotor-welder, removal and installation.

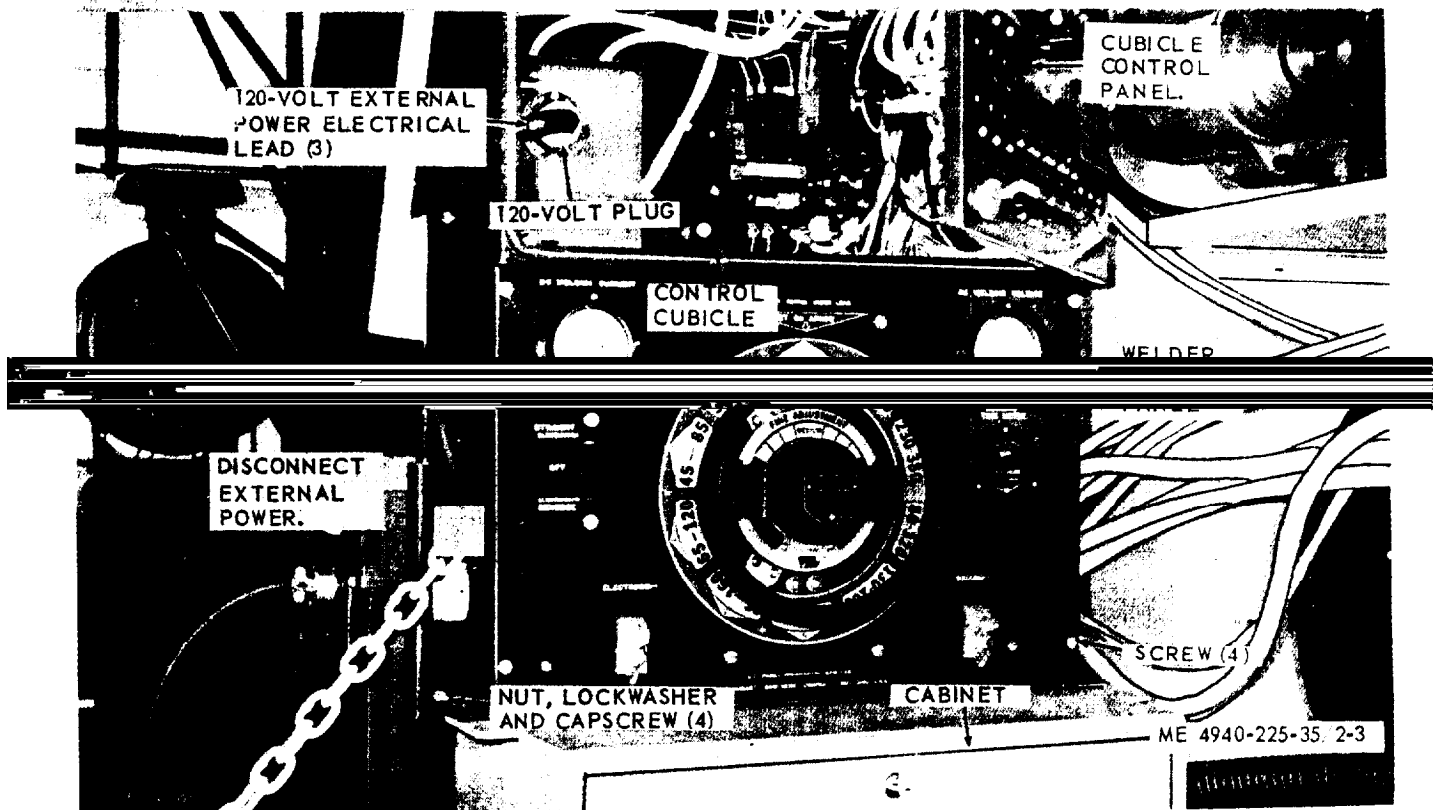
## 2-11. Control Cubicle Assembly

*a. Removal.* Remove the control cubicle assembly as illustrated in figure 2-3.

*b. Installation.* Install the control cubicle as illustrated in figure 2-3.



- STEP 1. DISCONNECT VENTILATION HOSE FROM CONTROL CUBICLE.
- STEP 2. REMOVE SCREW (6) AND REMOVE WIRE COVER.
- STEP 3. DISCONNECT 120-VOLT PLUG FROM EMERGENCY POWER PANEL. DISASSEMBLE PLUG AND TAG AND DISCONNECT 120-VOLT EXTERNAL POWER ELECTRICAL LEAD (3).
- STEP 4. DISCONNECT OVERSPEED RELAY.
- STEP 5. REMOVE SCREW (4) AND REMOVE THE WELDER CONTROL PANEL.
- STEP 6. OPEN THE CUBICLE CONTROL PANEL.
- STEP 7. TAG AND DISCONNECT ALL ELECTRICAL LEADS WHICH EXTEND THRU OPENING IN CONTROL CUBICLE AND CONNECT TO WELDER CONTROL PANEL COMPONENTS.
- STEP 8. WITHDRAW ALL TAGGED LEADS FROM OPENINGS IN CONTROL CUBICLE.
- STEP 9. REMOVE NUT, LOCKWASHER, AND CAPSCREW (4) THAT SECURE CONTROL CUBICLE TO TOP OF CABINET, REMOVE CONTROL CUBICLE.



*Figure 2-3. Control cubicle, removal and installation*

## 2-12. Van Body

### a. Removal.

(1) Tag and disconnect electrical leads (8) from 24-volt wiring harness located under van body at left rear of truck frame.

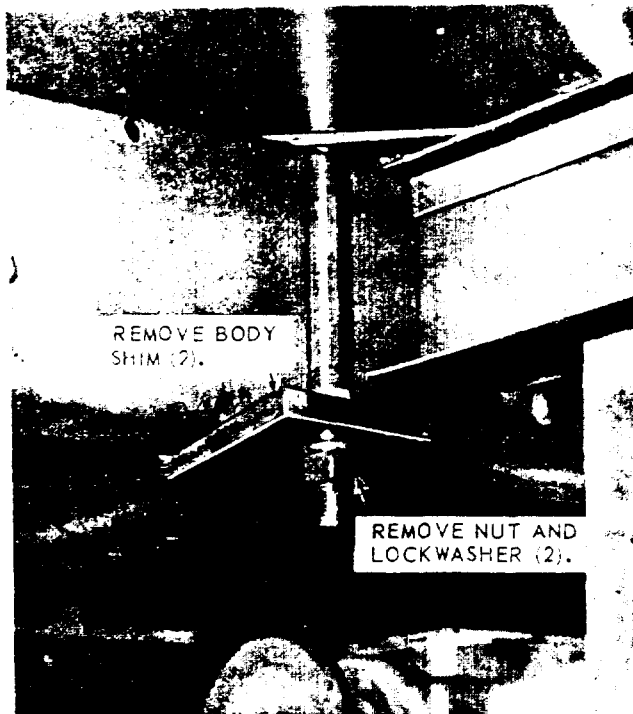
(2) Disconnect overspeed safety switch electrical lead to engine.

(3) Disconnect heater fuel line at fuel tank.

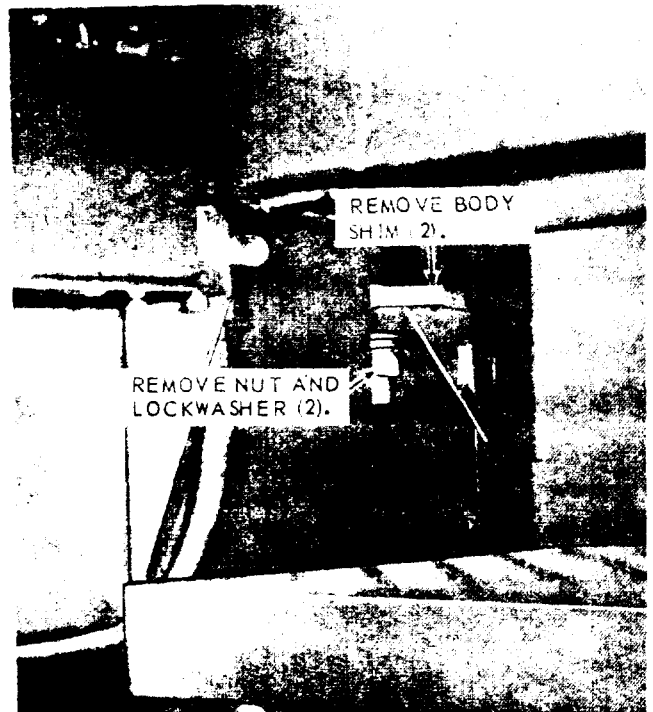
(4) Remove dynamotor-welder drive belts (para 3-11).

(5) Remove the van body as illustrated in figure 2-4.

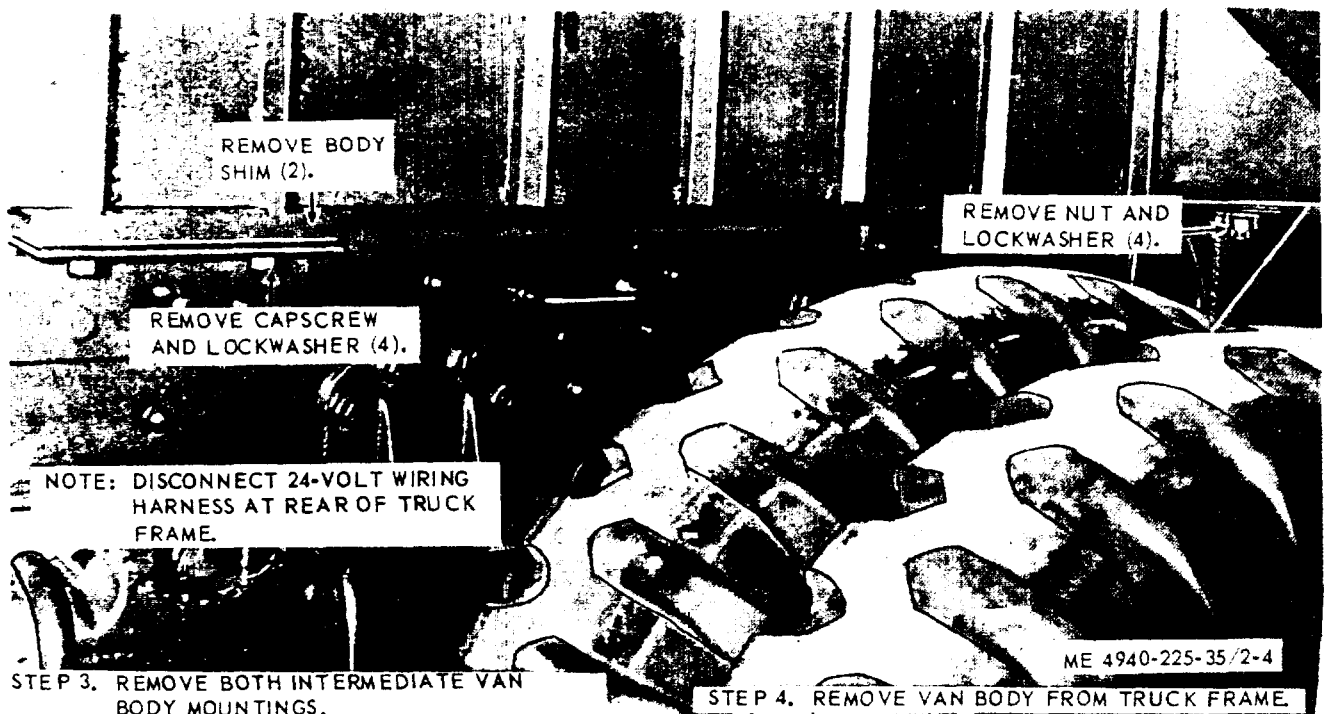
b. Installation. Install in reverse order of a above.



STEP 1. REMOVE BOTH REAR VAN BODY MOUNTINGS.



STEP 2. REMOVE BOTH FRONT VAN BODY MOUNTINGS.



STEP 3. REMOVE BOTH INTERMEDIATE VAN BODY MOUNTINGS.

STEP 4. REMOVE VAN BODY FROM TRUCK FRAME.

Figure 2-4. Van body, removal and installation.





Section I. AIR COMPRESSOR AND RELATED PARTS

**3-1. Air Compressor**

a. *General.* This section covers repair instructions for the air compressor, drive motor, starter, and pressure switch. The motor is rated at 2 horsepower and operates from a power source of 220-volt, 60 cycle, 3-phase alternating current. The starter provides a means of opening or closing the circuit between the motor and control cubicle and trips automatically to open the circuit in the event

of an overload. The pressure switch automatically starts the motor when the air pressure drops *to* 125 psi and stops the motor when the air pressure reaches 150 psi.

b. *Removal.* Refer to TM 5-4940.225-12 for removal of the air compressor.

c. *Disassembly.* Disassemble the air compressor as illustrated in figure 3-1.

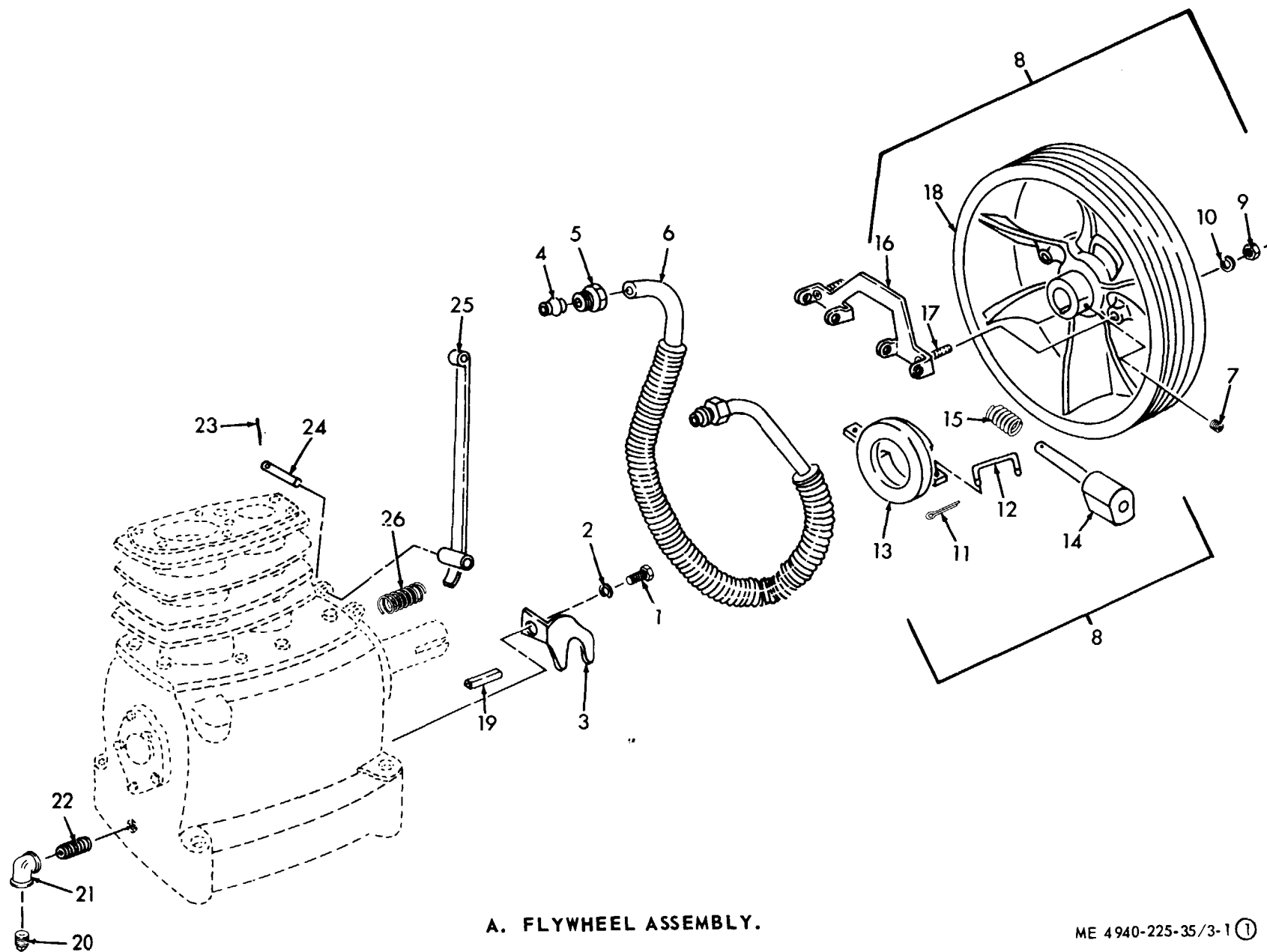


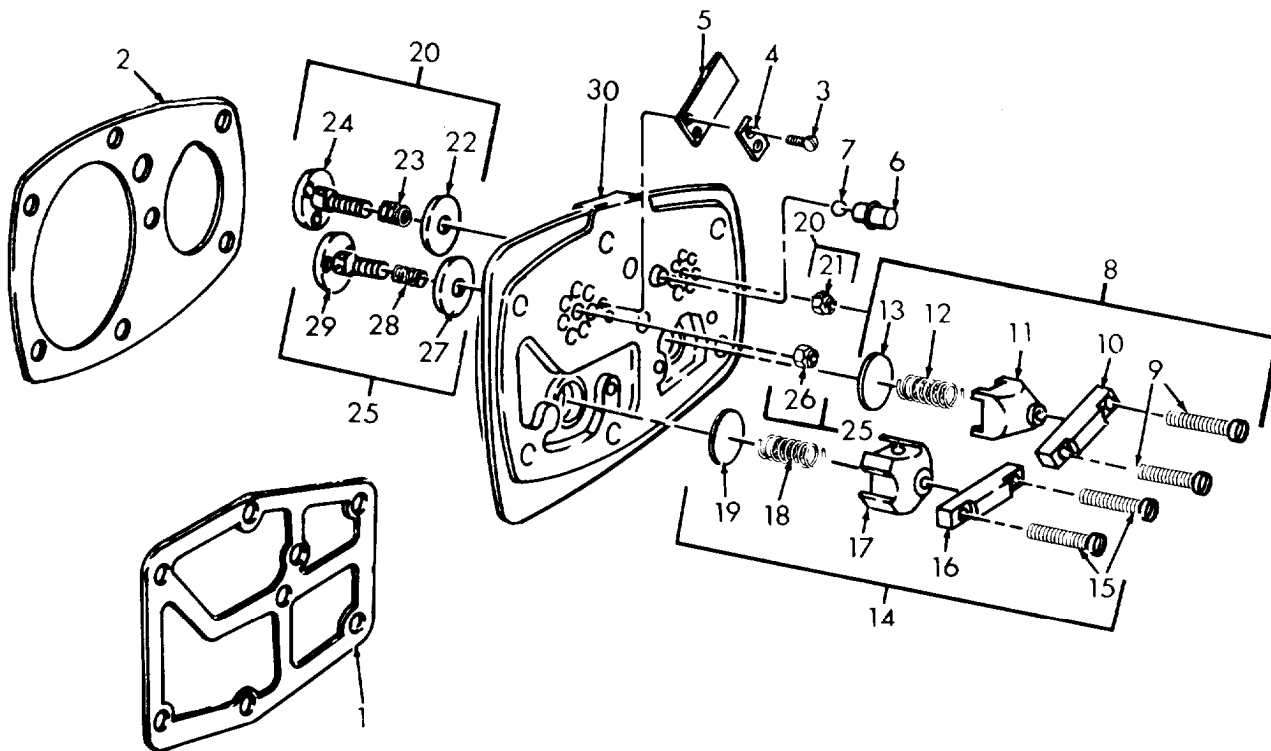
Figure 3-1. Air compressor, disassembly and reassembly (sheet 1 of 4).

KEY to Figure 3-1 (1)

- |                     |                |
|---------------------|----------------|
| 1 Screw             | 14 Weight      |
| 2 Washer            | 15 Spring      |
| 3 Support           | 16 Frame       |
| 4 Sleeve            | 17 Stud        |
| 5 Nut               | 18 Flywheel    |
| 6 Intercooler       | 19 Key         |
| 7 Setscrew          | 20 Plug        |
| 8 Flywheel assembly | 21 Elbow       |
| 9 Nut               | 22 Nipple      |
| 10 Washer           | 23 Pin, cotter |
| 11 Pin, cotter      | 24 Pin         |
| 12 Link             | 25 Lever       |
| 13 Collar           | 26 Spring      |

KEY to Figure 3-1 (2)

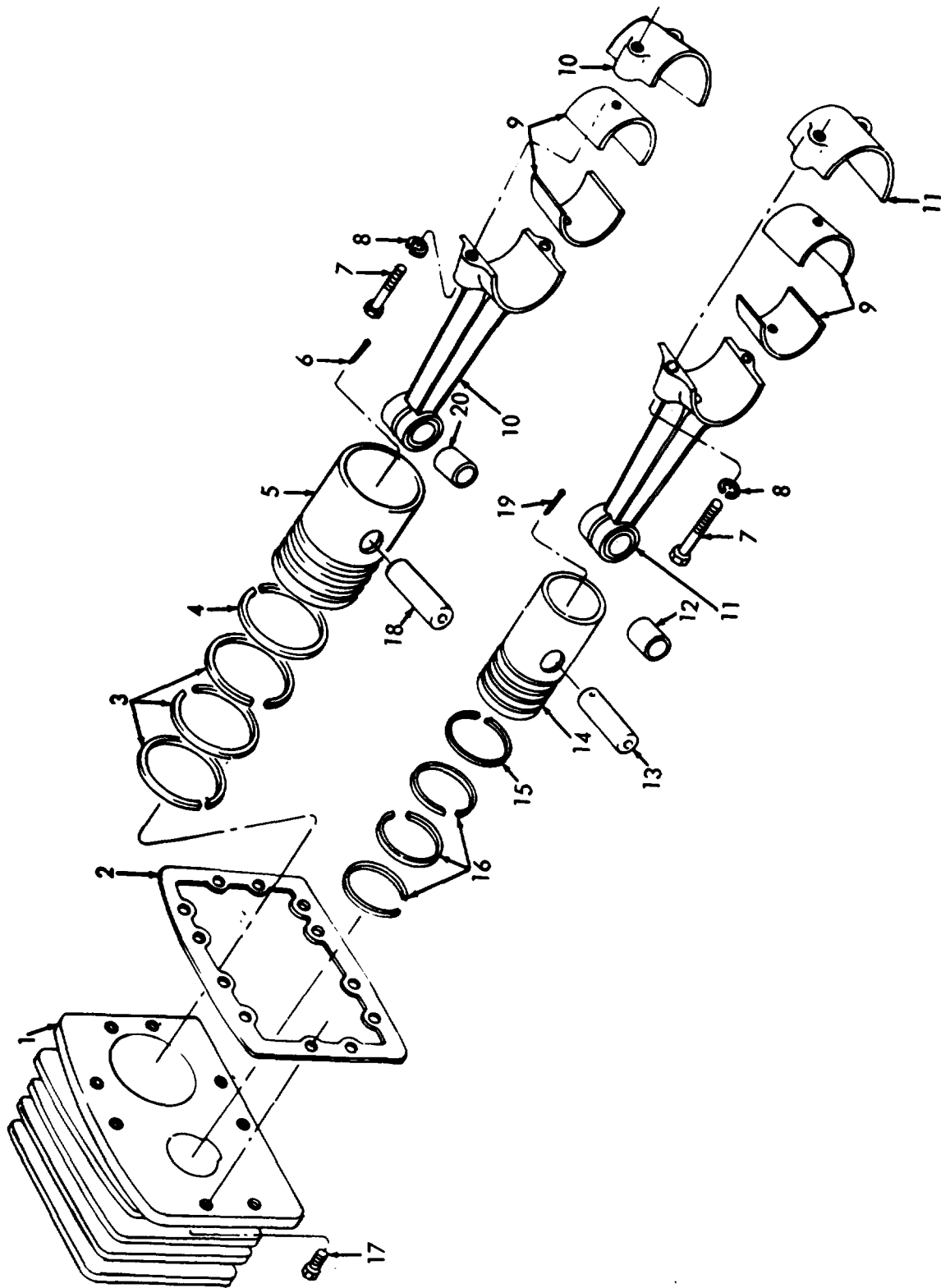
- |             |             |
|-------------|-------------|
| 1 Gasket    | 16 Bar      |
| 2 Gasket    | 17 Retainer |
| 3 Screw     | 18 Spring   |
| 4 Stiffener | 19 Disc     |
| 5 Valve     | 20 Valve    |
| 6 Seat      | 21 Nut      |
| 7 Ball      | 22 Disc     |
| 8 Valve     | 23 Spring   |
| 9 Screw     | 24 Guide    |
| 10 Bar      | 25 Valve    |
| 11 Retainer | 26 Nut      |
| 12 Spring   | 27 Disc     |
| 13 Disc     | 28 Spring   |
| 14 Valve    | 29 Guide    |
| 15 Screw    | 30 Plate    |



B. VALVE PLATE ASSEMBLY

ME 4940-225-35/3-1 (2)

Figure 3-1. Air compressor, disassembly and reassembly (sheet 2 of 4).



ME 4940-225-35/3-1 (3)

### C. CYLINDER AND PISTONS.

Figure 3-1. Air compressor, disassembly and reassembly (sheet 3 of 4).

### KEY to Figure 3-1 (3)

- |                        |                          |
|------------------------|--------------------------|
| 1 Cylinder             | 11 Rod assembly          |
| 2 Gasket               | 12 Bearing, sleeve       |
| 3 Ring                 | 13 Pin, piston           |
| 4 Ring                 | 14 Piston, high pressure |
| 5 Piston, low pressure | 15 Ring                  |
| 6 Pin, cotter          | 16 Ring                  |
| 7 Screw                | 17 Screw                 |
| 8 Lockwasher           | 18 Pin, piston           |
| 9 Bearing, half        | 19 Pin, cotter           |
| 10 Rod assembly        | 20 Bearing, sleeve       |

### KEY to Figure 3-1 (4)

- |                |                   |
|----------------|-------------------|
| 1 Screw        | 8 Crankshaft      |
| 2 End plate    | 9 Ring            |
| 3 Shim         | 10 Gasket         |
| 4 Cup, bearing | 11 End plate      |
| 5 Gasket       | 12 Screw          |
| 6 Crankcase    | 13 Baffle, side   |
| 7 Bearing      | 14 Baffle, center |
|                | 15 Pin, cotter    |

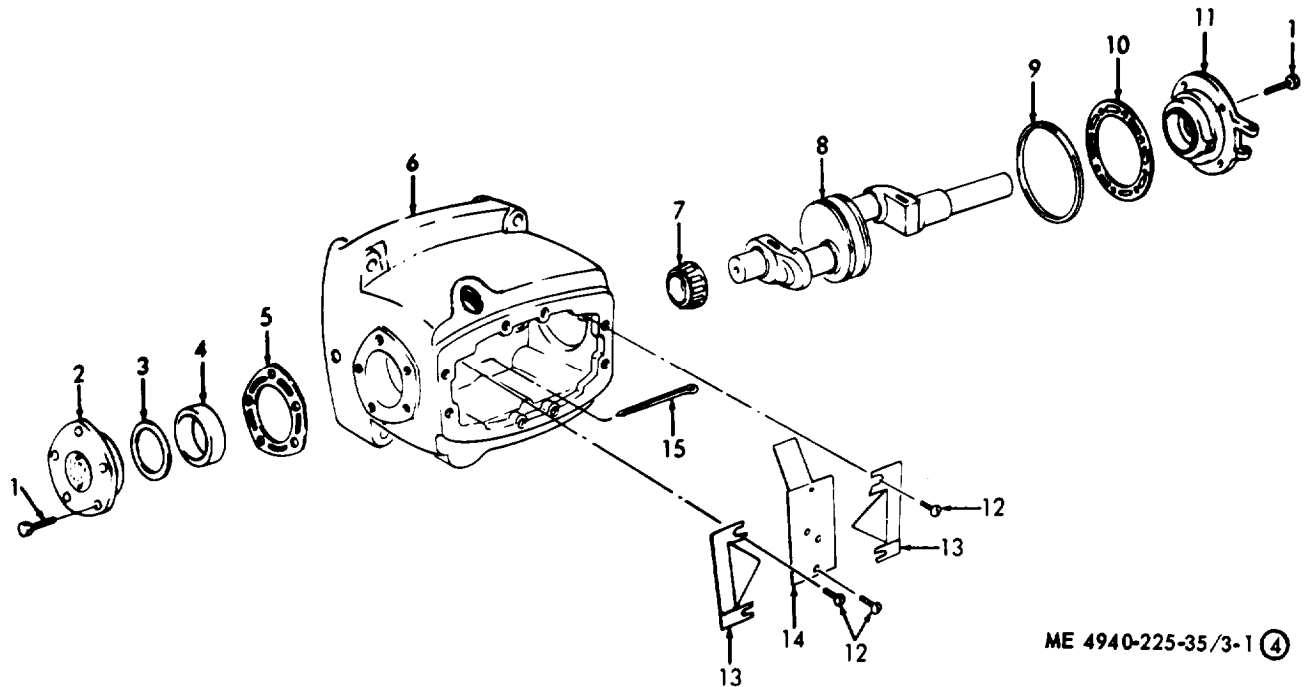


Figure 3-1. Air compressor, disassembly and reassembly (sheet 4 of 4).

#### d. Cleaning, Inspection and Repair.

(1) Clean all parts with approved cleaning solvent and dry thoroughly. Refer to table 1-1 for tolerances.

(2) Inspect the intercooler for cracks, breaks, and damaged fins.

(3) Inspect the cylinders and crankshaft bearings for cracks, breaks, scoring, wear, warpage, and other damage or defects.

(4) Inspect the cylinder head for cracks, breaks, warpage, and other damage.

(5) Inspect the valve plate and valves for wear and defects.

(6) Inspect the crankcase for cracks, breaks, and damaged threads.

(7) Inspect the pistons, rings, and pins for damage and defects.

(8) Replace all unserviceable parts as necessary. Weld minor breaks and cracks.

#### e. Reassembly.

(1) Reassemble the air compressor as illustrated in figure 3-1.

(2) Use a piston ring compressor to install the pistons in the cylinder head.

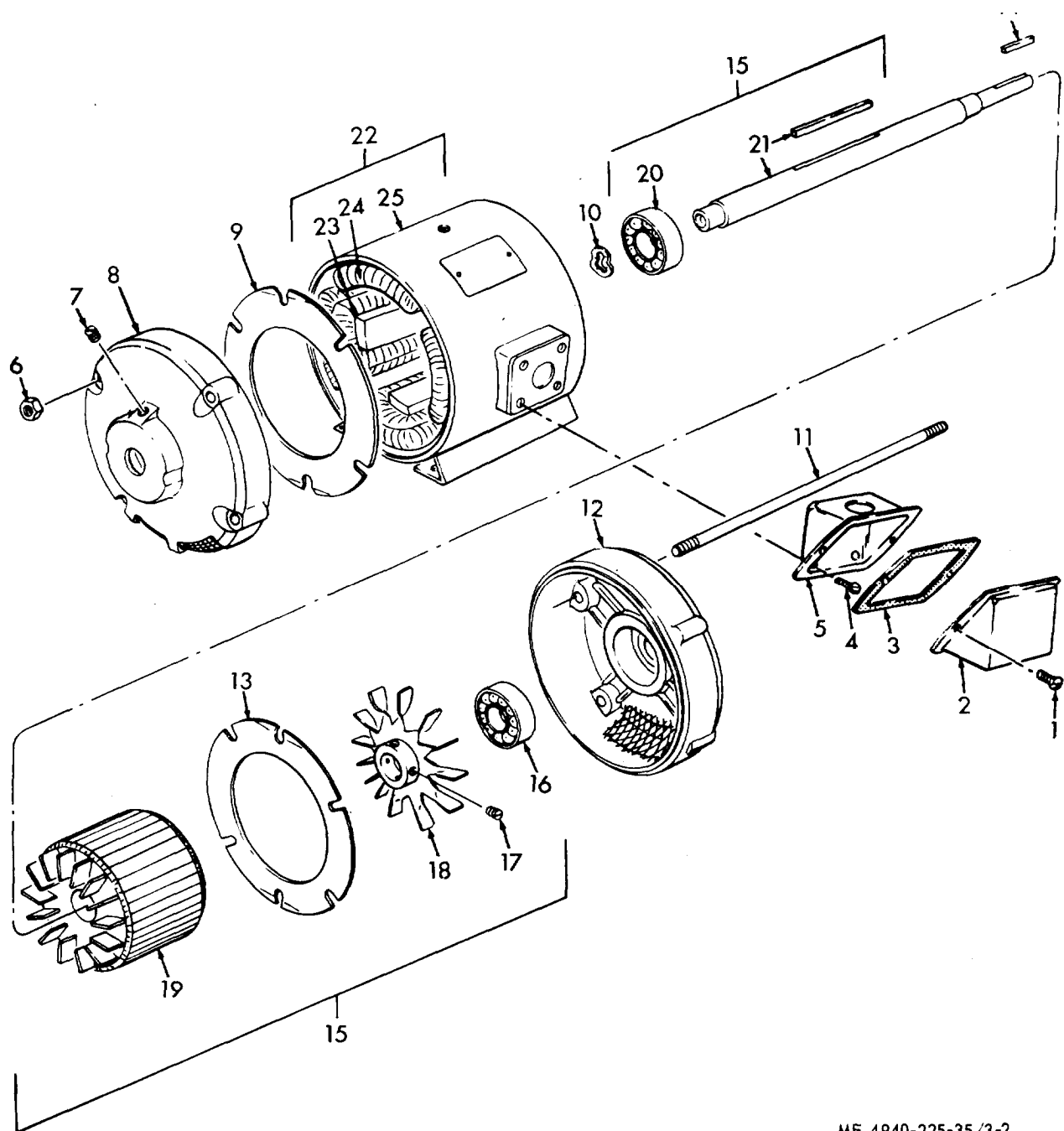
(3) The crankshaft bearing adjustment is made by removing or adding shims at the small crankcase end plate (table 1-1 ).

f. Installation. Install the air compressor (TM 5-4940-225-12).

### 3-2. Air Compressor Drive Motor

a. Removal. Remove the drive motor (TM 5-4940-225-12).

b. Disassembly. Disassemble the drive motor as illustrated in figure 3-2.



ME 4940-225-35/3-2

- |          |            |                   |               |                    |
|----------|------------|-------------------|---------------|--------------------|
| 1 Screw  | 6 Nut      | 11 Stud           | 16 Bearing    | 21 Shaft           |
| 2 Cover  | 7 Plug     | 12 End bell       | 17 Setscrew   | 22 Body assembly   |
| 3 Gasket | 8 End bell | 13 Baffle         | 18 Fan        | 23 Stator assembly |
| 4 Screw  | 9 Baffle   | 14 Key            | 19 Rotor core | 24 Winding         |
| 5 Box    | 10 Spring  | 15 Rotor assembly | 20 Bearing    | 25 Frame assembly  |

Figure 3-2. Air compressor drive motor, disassembly and reassembly.

*c. Cleaning, Inspection, and Repair.*

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

(2) Inspect for cracks, pitting, burning, excessive wear, and other damage.

(3) Replace defective parts or a defective motor that is damaged beyond repair.

*d. Testing After Disassembly.* Test the motor for open or shorted circuits, and for insulation resistance (TM 5-764).

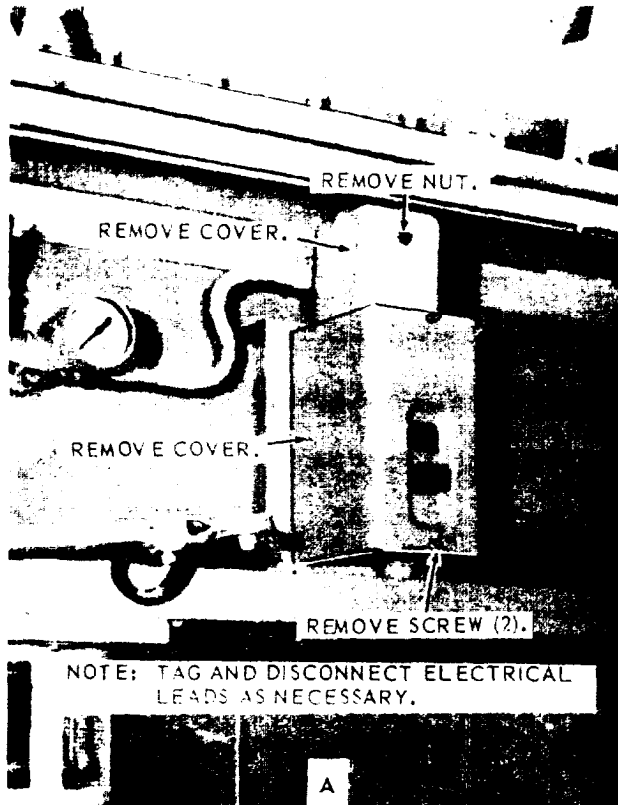
e. *Reassembly.* Reassemble the drive motor as illustrated in figure 3-2.

f. *Installation.* Install the motor (TM 5-4940-225-12).

### 3-3 Pressure Switch

#### a. Removal.

(1) Remove screw and remove cover on pressure switch (fig. 3-3).



(2) Disconnect air line to pressure gage (fig. 3-3).

(3) Tag and disconnect electrical leads from pressure switch.

(4) Remove two conduit locknuts and remove pressure switch from the starter box.

b. *Installation.* Install in reverse order of a above.

c. *Adjustment.* Refer to TM 5-4940-225-12 for adjustment.

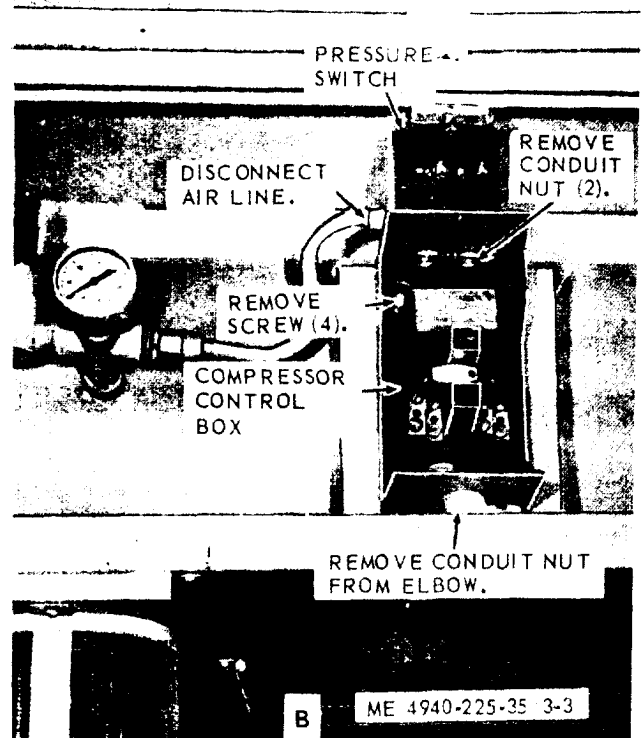


Figure 3-3. Air compressor pressure and starter control box, removal and installation.

### 3-4. Air Compressor Starter Control Box

#### a. Removal.

(1) Remove pressure switch (para 3-3).

(2) Tag and disconnect electrical leads (fig. 3-3).

(3) Remove conduit nut from elbow.

(4) Remove four screws and remove starter control box from bracket.

b. *Installation.* Install in reverse order of a above.

## Section II. DYNAMOTOR-WELDER

### 3-5. General

On-equipment electrical test procedures (para 3-9) determine the necessity and extent of electrical repair of the dynamotor-welder. When making on-equipment tests, refer to the practical wiring diagram in figure 1 and figure 2. Note that the direct current welder generator, commutator, and brushes are located at the non-drive end of the

dynamotor-welder. The exciter, its commutator and brushes, and the alternator, with its sliprings and brushes, are located at the drive end.

**Warning:** Before performing any maintenance procedures on the electrical system, see that all external power is disconnected from the shop set and stop the truck engine.

### 3-6. Overspeed Linkage (Model SEORL Only)

a. *General.* The truck engine provides mechanical power for driving the dynamotor-welder, and the operating speed is 1000 or 1200 rpm to furnish 50 or 60 cycle alternating current.

The overspeed linkage which prevents engine overspeed after the power take-off lever is engaged, is accessible by removing the truck cab center floorboard.

b. *Removal.* Refer to figure 3-4 and remove overspeed linkage.

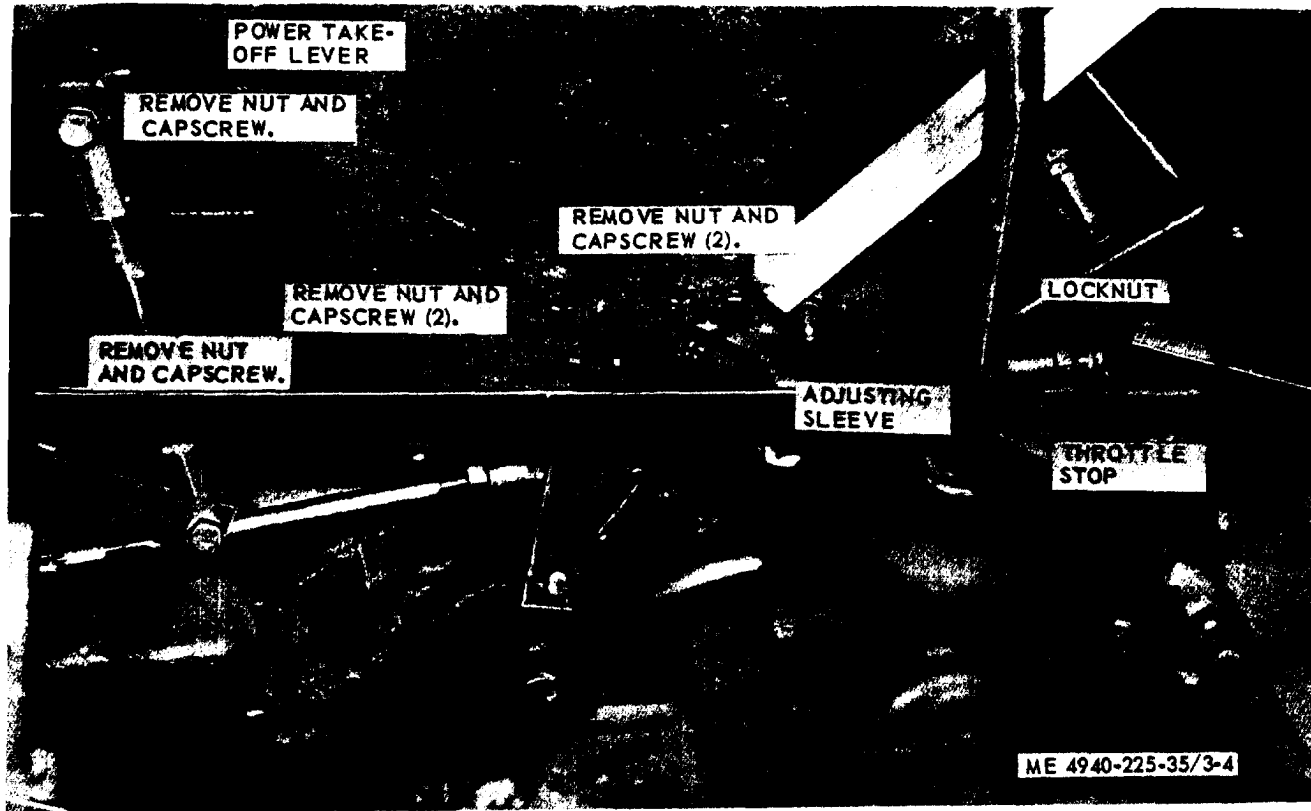


Figure 3-4. Overspeed linkage. removal and installation. (Model SEORL Only)

c. *Adjustment.*

(1) Start engine and engage power take-off (TM 5-4940-225-121.

(2) With transmission in fifth gear position, slowly depress accelerator until accelerator linkage makes contact with throttle stop.

(3) At full throttle tachometer reading should be 1200 rpm for 60 cycle and 1000 rpm for 50 cycle electricity.

(4) To adjust engine speed, loosen locknut and turn throttle stop in or out of adjusting sleeve. Turn throttle stop clockwise to increase speed and counterclockwise to decrease speed.

(5) After proper engine speed is obtained, tighten locknut against adjusting sleeve.

*Note.* If further adjustment is required, loosen the locknuts on both ends of the adjusting sleeve and change position of the sleeve as required.

d. *Installation.* Install in reverse order of b above.

### 3-7. Overspeed Safety Switch (Model SEORLT Only)

a. *On-Equipment Testing.*

(1) Tag and disconnect all electrical leads at the resistor and the solenoid coil lead at the terminal strip.

(2) Use a multimeter and test the resistor for smooth increments in resistance from 0 to 1,000 ohms. Replace a defective resistor.

(3) Use a multimeter to measure the resistance of the 300 ohm coil. If the variance is greater than plus or minus 2 percent, replace the coil.

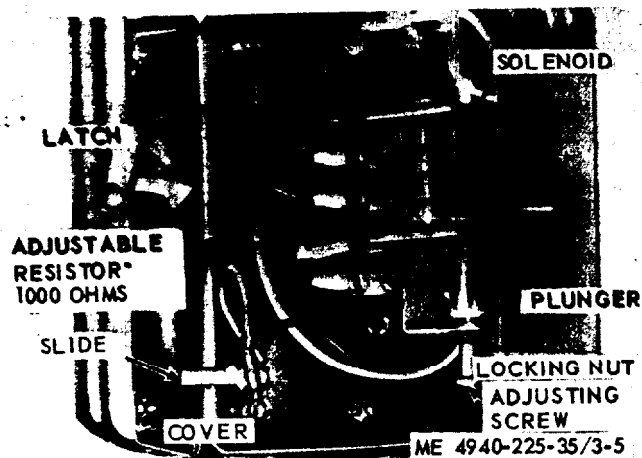
(4) Connect a multimeter to circuits 115 and 116: continuity should not be indicated. Activate the overspeed switch by hand: if continuity is not indicated, replace the microswitch.

(5) Connect previously tagged leads as necessary.

b. *Adjustment.* Refer to figure 3-5 and adjust the overspeed safety switch assembly.



**NOTE: PULL LATCH TO OPEN COVER OF OVERSPEED SAFETY SWITCH ASSEMBLY.**



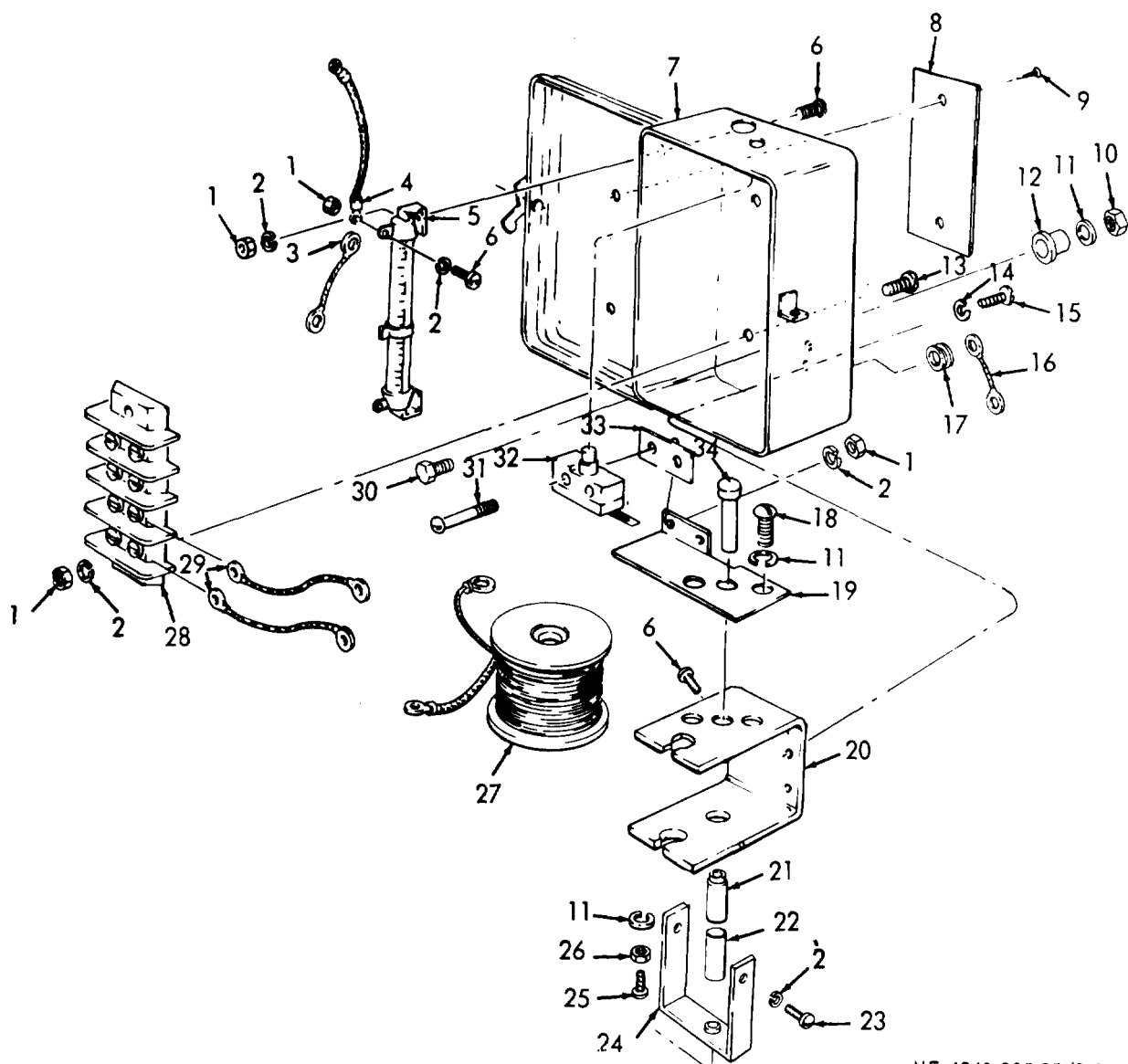
- STEP 1.** USE OHMMETER TO SET SLIDE OF ADJUSTABLE RESISTOR TO GIVE RESISTANCE OF 900 OHMS.
- STEP 2.** LOOSEN LOCKING NUT. TURN ADJUSTING SCREW COUNTERCLOCKWISE UNTIL SOLENOID PLUNGER BOTTOMS. TIGHTEN LOCKING NUT.
- STEP 3.** START AND WARM UP THE ENGINE.
- STEP 4.** START THE DYNAMOTOR-WELDER (TMS-4940-225-12).
- STEP 5.** INCREASE ENGINE SPEED UNTIL TACHOMETER READS 1350 RPM. OVERSPEED SAFETY SWITCH SHOULD SHUT ENGINE DOWN. IF IT FAILS TO DO SO LOOSEN LOCKING NUT. TURN ADJUSTING SCREW CLOCKWISE UNTIL ENGINE STOPS. TIGHTEN LOCKING NUT.
- STEP 6.** CLOSE AND LATCH OVERSPEED SAFETY SWITCH COVER.
- STEP 7.** STOP THE DYNAMOTOR-WELDER.

*Figure 3-5. Overspeed safety switch, Adjustment.*

*c. Removal.*

- (1) Tag and disconnect the electrical leads.
- (2) Remove attaching hardware and remove the switch and box.

*d. Disassembly.* Refer to figure 3-6 and disassemble the overspeed safety switch assembly.



ME 4940-225-35/3-6

- 1 Nut
- 2 Washer
- 3 Lead
- 4 Lead
- 5 Resistor
- 6 Screw
- 7 Box, relay
- 8 Name plate
- 9 Screw
- 10 Nut
- 11 Washer
- 12 Spacer
- 13 Screw
- 14 Washer
- 15 Screw
- 16 Lead
- 17 Grommet

- 18 Screw
- 19 Bracket
- 20 Frame
- 21 Plunger
- 22 Stop
- 23 Screw
- 24 Core
- 25 Screw
- 26 Nut
- 27 Coil
- 28 Block
- 29 Lead
- 30 Screw
- 31 Sc.rew
- 32 Switch
- 33 Insulation
- 34 Pin

**Figure 3-6. Ovvespeed safety switch. disassembly and reassembly.**

*e. Cleaning and Inspection.*

(1) Clean all electrical components with a clean, dry brush.

(2) Clean all metal parts in an approved cleaning solvent and dry thoroughly.

(3) Inspect all parts for excessive wear. Check the coil for continuity, the solenoid for free movement and the microswitch for no continuity until switched by hand, then continuity should be indicated.

(1) Replace all defective parts.

*f. Reassembly and Installation.*

(1) Reassemble in reverse order of *d*, above.

(2) Install safety switch in reverse order of *c*, above.

(3) Adjust the switch after installation as in *b* above.

### 3-8. Governor (SEORLT Only)

*a. Removal.* Remove governor as illustrated in figure 3-7.

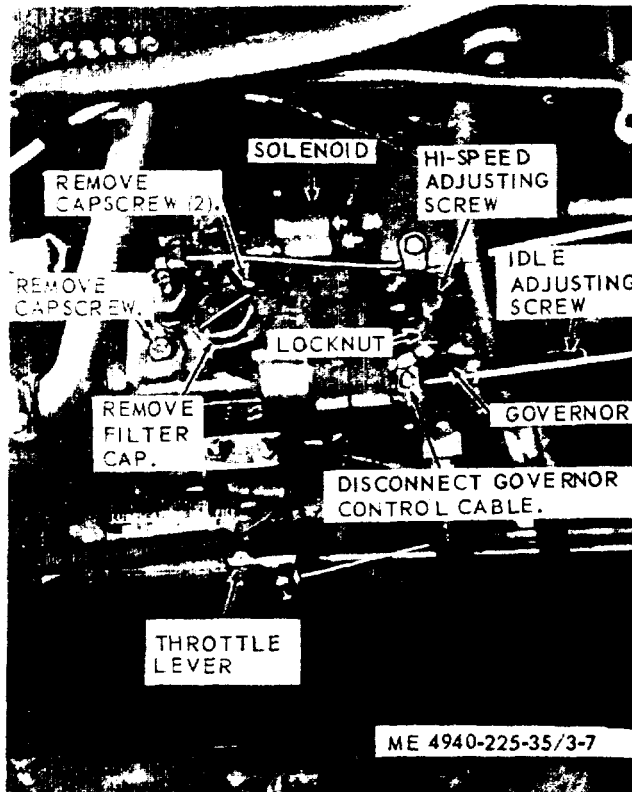


Figure 3-7. Governor, removal and installation.

*b. Adjustment.*

(1) Loosen locknut and turn Hi-speed adjusting screw counterclockwise all the way.

(2) Open throttle lever to a maximum position.

(3) Turn Hi-speed adjusting screw clockwise until rpm is reduced slightly. tighten locknut.

(4) Place throttle lever in idle position.

(5) Loosen locknut on idle adjusting screw.

(6) Turn idle adjusting screw clockwise until engine rpm increases, then back off one-half turn.

(7) Tighten locknut.

Note. For hydraulic test stand calibration adjust to 176 psi @ 340 on flow meter at 2100 rpm.

*c. Installation.* Install in reverse order of *a* above.

### 3-9. On-Equipment Electrical Tests

*a. Alternating Current Stator.*

(1) Tag and disconnect motor leads at terminal board 5CW5063 (fig. 2-2).

(2) Use a multimeter to test between stator leads B and 1B, 2B and 3B, A and 1A, 2A and 3A, C and 1C, 2C and 3C. If continuity is not indicated, the alternating current stator must be replaced.

(3) Use a multimeter to test insulation resistance between the dynamotor-welder frame and motor leads A and 2A, B and 2B, C and 2C. If any reading of the multimeter is less than 0.5 megohm, faulty insulation is indicated and the dynamotor-welder must be removed for further testing.

(4) Use a multimeter to test insulation resistance between stator lead 1B and leads 3B, C, 2C. A, 2A; between stator lead 3B and leads C, 2C, A, 2A; between stator lead C and leads 2C, A, 2A; between stator lead 2C and leads A, 2A; between stator leads A and 2A. A reading of less than 0.5 megohm indicates faulty insulation and the dynamotor-welder must be removed for further testing.

*b. Revolving Fields.*

(1) Remove the revolving field brushes from the sliprings.

(2) Use a multimeter to test resistance between the two sliprings. A resistance greater than 10 percent above or below 45 ohms indicates faulty winding and the rotor must be removed for further testing.

(3) Use a multimeter to test resistance between either slipring and the rotor shaft. A resistance reading of less than 0.5 megohm indicates faulty insulation and the rotor must be removed for further testing.

*c. Exciter Armature.*

(1) Remove the exciter brushes from the exciter armature.

(2) Use a multimeter to test insulation resistance between the rotor shaft and one of the exciter commutator bars; repeat this, using at least two other bars around the commutator. If any reading is less than 0.5 megohm, faulty insulation is indicated and the dynamotor-welder must be removed for further testing.

*d. Exciter Field.*

(1) Tag and disconnect exciter field leads at terminal board 5CW5063 (fig. 2-2).

(2) Raise the brushes from both sliprings and the exciter commutator.

(3) Use a multimeter to test the resistance between exciter leads 104 and 105. If the resistance is greater than 10 percent above or below 65 ohms, the field winding is faulty and the field frame must be removed for further testing.

(4) Use a multimeter to test insulation resistance between the field and any one of the field leads. A resistance reading of less than 0.5 megohm indicates faulty insulation and the field frame must be removed for further testing.

*e. Shunt Field (Welder Generator).*

(1) Tag and disconnect shunt field lead, at terminal boards DW 4004 and DW 4005 (fig. 2-2).

(2) Use a multimeter to test resistance between leads 101 and 102. A resistance reading of more than 5 percent above 27.5 ohms indicates a faulty winding and the field frame must be removed for further testing.

(3) Use a multimeter to test insulation resistance between the field frame and any one of the field leads. A resistance reading of less than 0.5 megohm indicates faulty insulation and the field frame must be removed for further testing.

### 3-10. Dynamotor-Welder Work Table

*a. Removal.* Remove nut, lockwasher and nut (7) (fig. 2-2), that secures work table to lathe table and van body.

*b. Installation.* Install in reverse order of a above.

### 3-11. Drive Belts and Shock Absorber

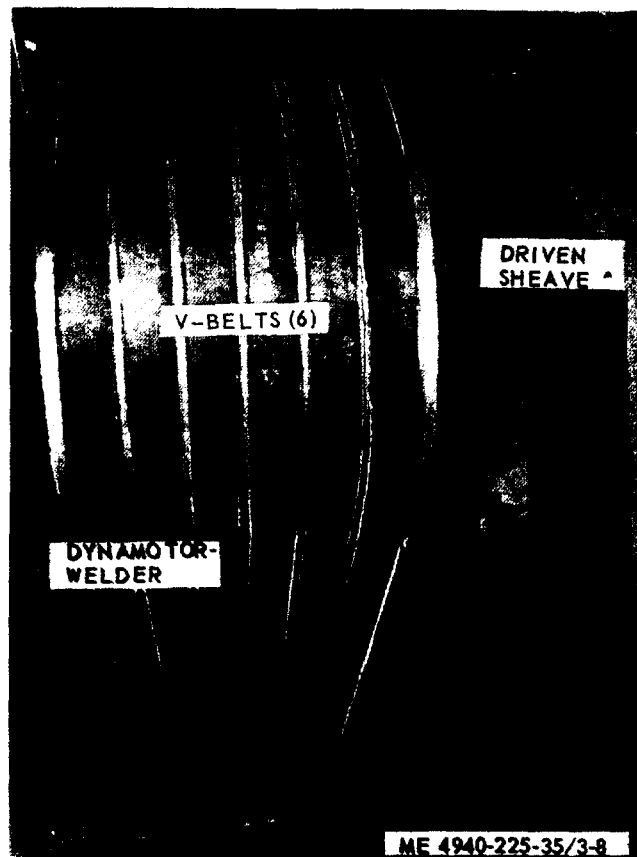
*a. Removal*

(1) Remove four screws from the milling and grinding attachment base and remove cover base (TM 5-4940-225-12).

(2) Remove the two nuts that secure the shock absorber (fig. 2-2) and remove the shock absorber.

(3) Loosen locknut (fig. 2-2) and turn adjusting screw counterclockwise while holding spring seat in position, and lower the welder.

(4) Remove drive belts from welder and power take-off sheaves as shown in figure 3-8.



*Figure 3-8. Drive belts, removal and installation.*

*b. Installation.* Install in reverse order of a above.

*c. Adjustmemt.*

(1) Loosen locknut (fig. 2-2).

(2) Hold spring seat in position and turn adjusting screw clockwise to raise welder.

(3) Proper belt adjustment is 1 inch deflection midway between sheaves.

(4) Tighten locknut.

### 3-12. Drive Sheave

*a. Removal.* Remove drive sheave as illustrated in figure 3-9.

*b. Alignment.* Use a straight edge to align driven sheave with drive sheave.

*c. Installation.* Install drive sheave as illustrated in figure 3-9.

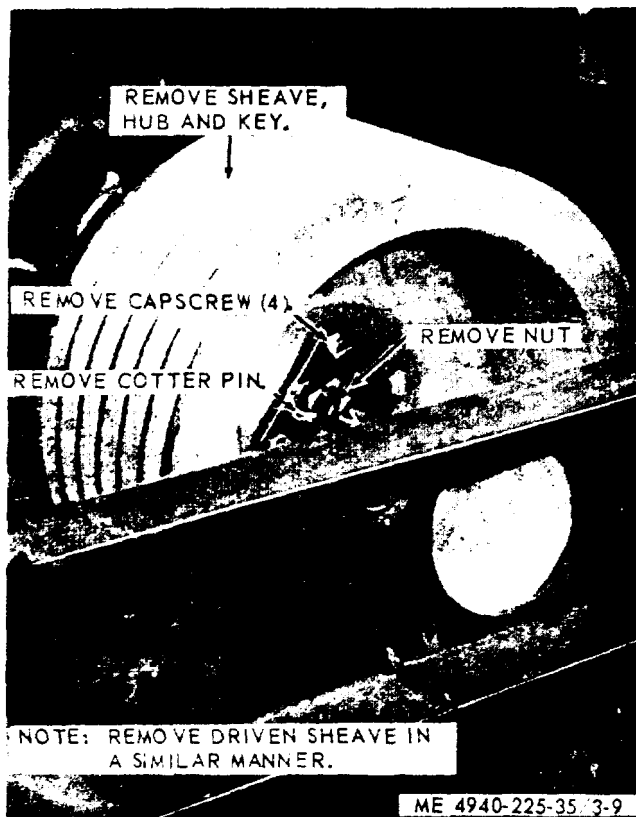


Figure 3-9. Drive sheave, removal and installation.

### 3-13. End Cover and Bearing Cap

#### a. Removal.

- (1) Remove dynamotor-welder end wrappers (TM 5-4940-225-12).
- (2) Remove end cover and bearing cap as illustrated in figure 3-10.

#### b. Installation.

- (1) Install the end cover and bearing cap as illustrated in figure 3-10.
- (2) Install dynamotor-welder end wrappers (TM 5-4940-225-12).

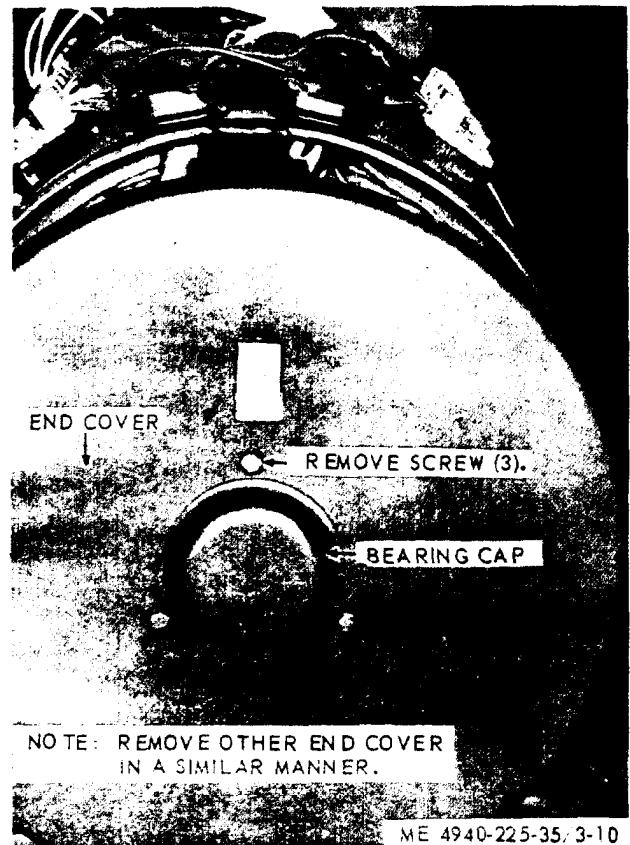


Figure 3-10. End cover and bearing cap, removal and installation.

### 3-14. Armature and Bearings

#### a. Removal.

- (1) Remove dynamotor-welder brushes (TM 5-4940-225-12).
- (2) Remove the armature as illustrated in figure 3-11.

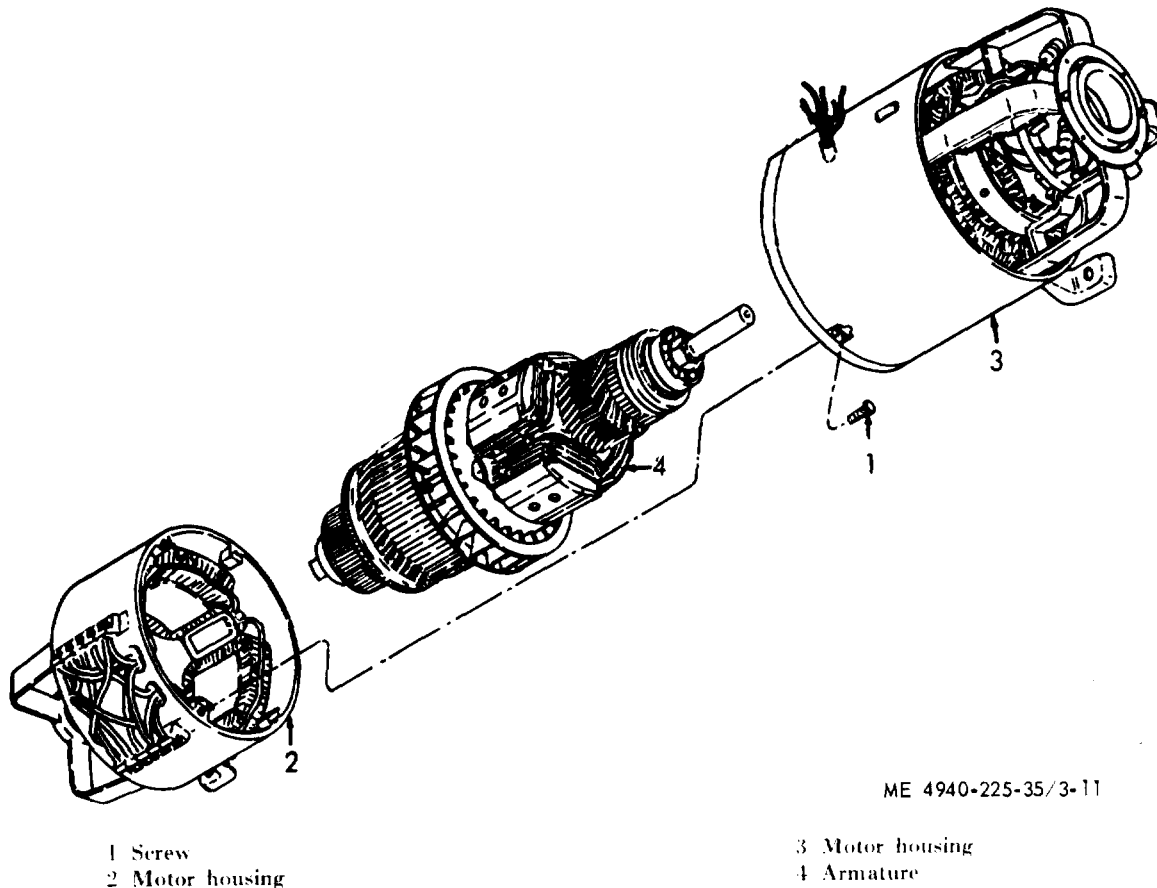
#### b. Testing.

- (1) Test the windings of the exciter and direct current welder portions of the armature for in-

sulation resistance, open circuits, and short circuits, as directed in TM 5-764. Resistance between any two commutator bars of either exciter or welder portion should be 0.25 ohm.

(2) Tag and disconnect the wiring leads from

the armature sliprings and test the windings of the alternator portion of the armature for insulation resistance of 10 ohms, plus or minus 10 percent, open circuits, and short circuits, as directed in TM 5-764.

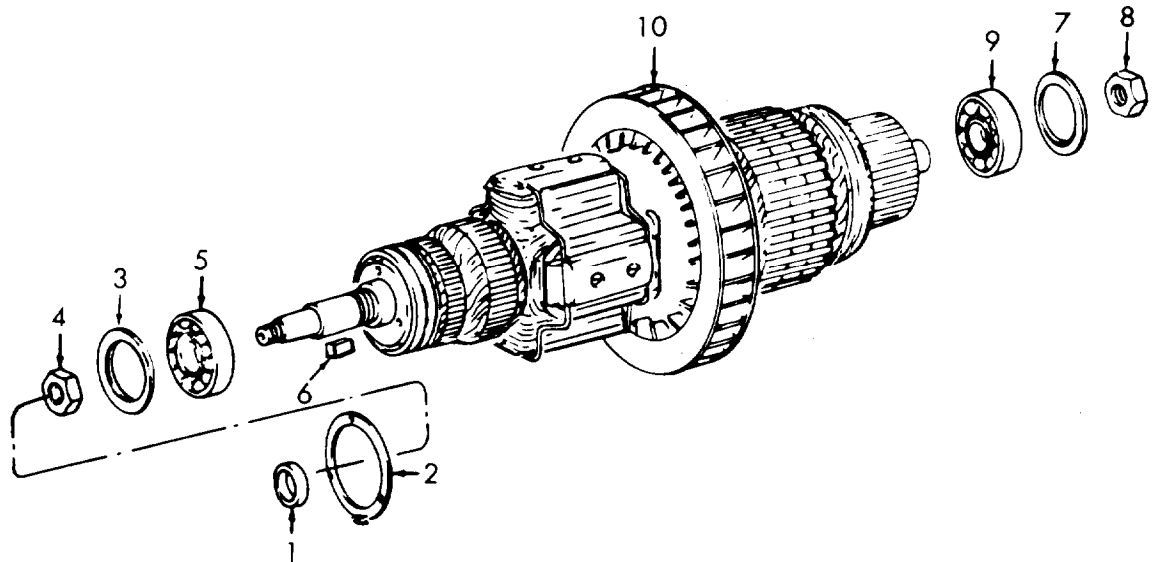


**Figure 3-11. Dynamotor armature, removal and installation.**

*c. Disassembly.* Refer to figure 3-12 and disassemble armature in numerical sequence.

*d. Reassembly.* Refer to figure 3-12 and reassemble armature in reverse numerical sequence

and manner. Before reassembly, clean and repack bearings with grease, automotive and artillery (Military Symbol GAA).



ME 4940-225-35/3-12

- 1 Washer
- 2 Gasket
- 3 Gasket
- 4 Nut
- 5 Bearing

- 6 Key
- 7 Gasket
- 8 Nut
- 9 Bearing
- 10 Armature

Figure 3-12. Dynamotor-welder armature, disassembly and reassembly.

### 3-15. Field Coils, Pole Shoes, Brush Holders, and Mounting Rings

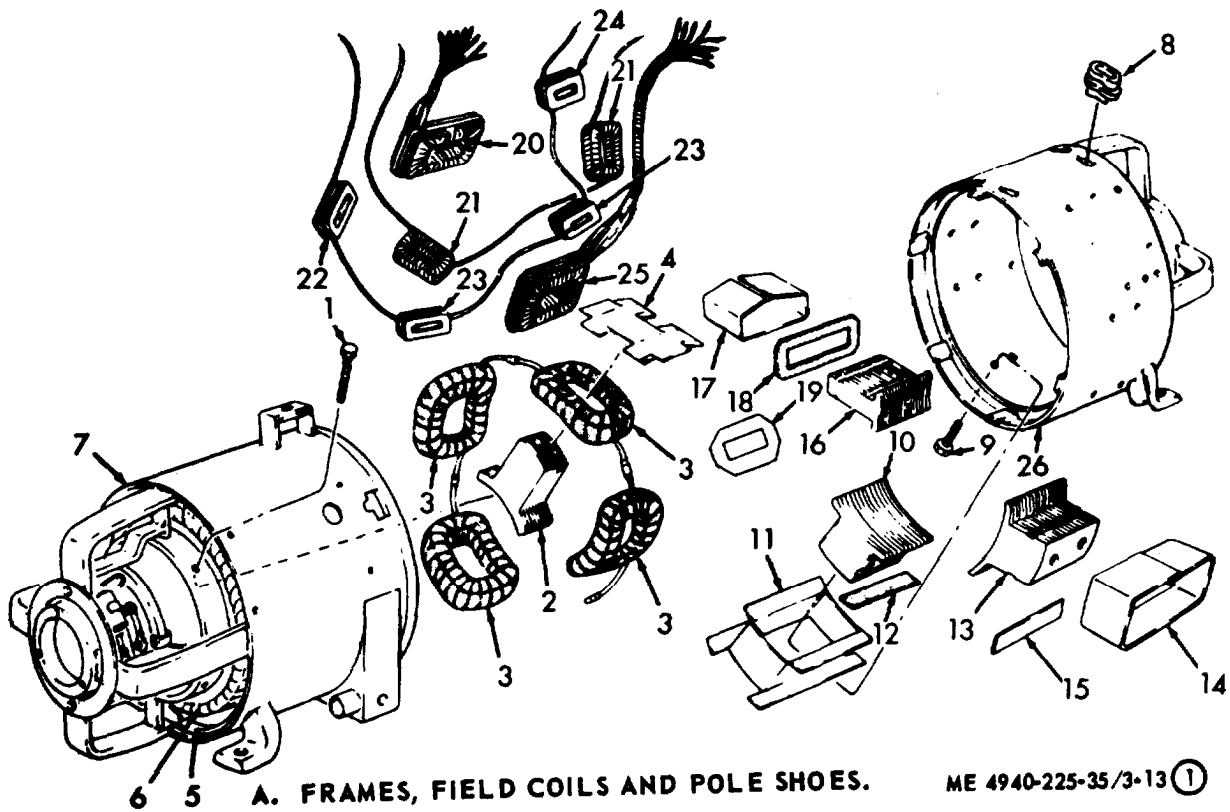
*a. Testing.* Test the exciter field coils, alternator and direct current field and interpole coils as directed in TM 5-764.

*b. Removal and Installation, Disassembly and Reassembly.*

(1) Refer to paragraph 3-14 for removal and installation of the dynamotor-welder armature.

(2) Refer to figure 3-13 and disassemble dynamotor-welder frames, field coils, pole shoes, brush holders, and mounting rings in numerical sequence.

(3) Refer to figure 3-13 and reassemble dynamotor-welder frames, field coils, pole shoes, brush holders, and mounting rings in reverse numerical sequence and manner.

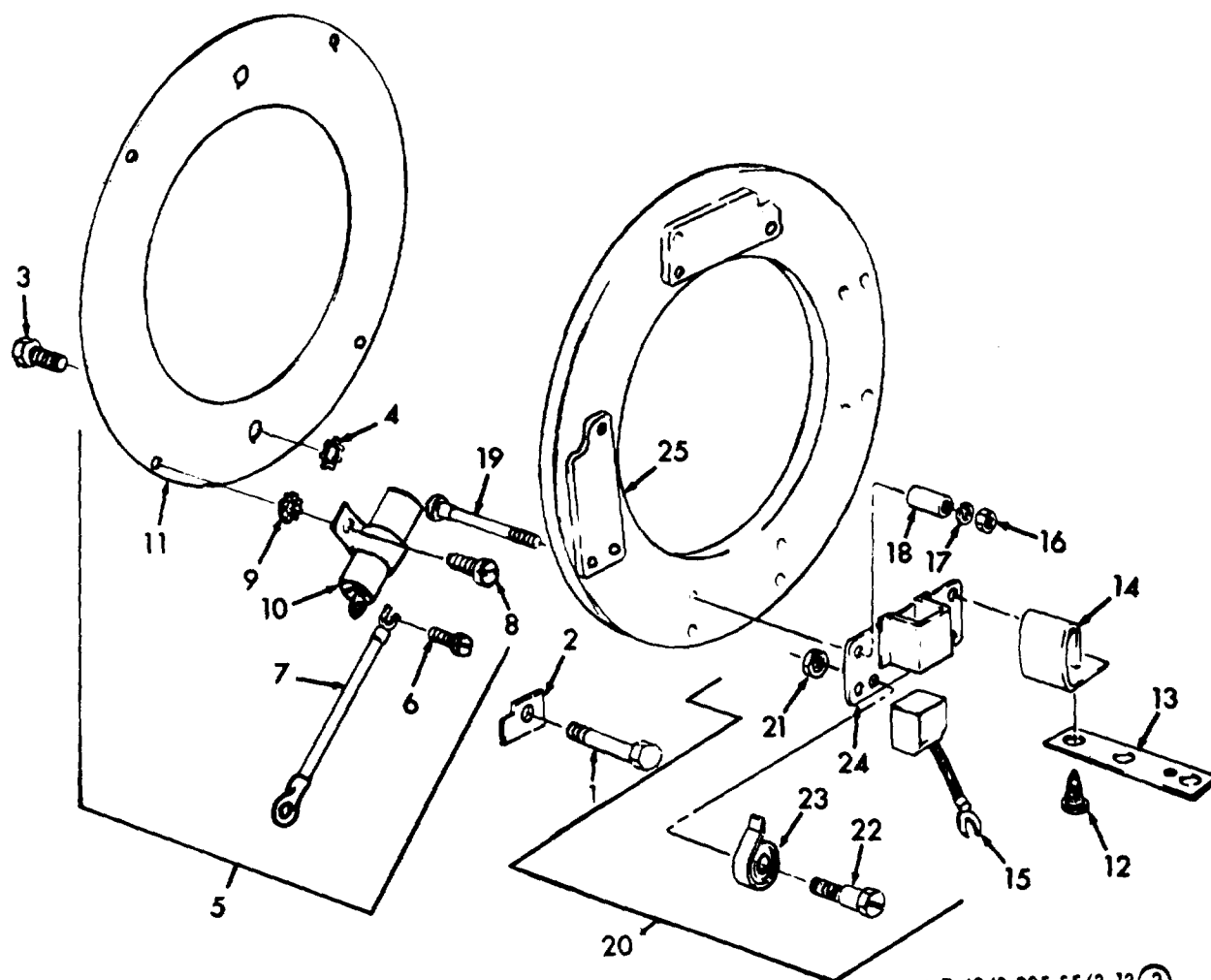


- 1 Screw
- 2 Pole piece
- 3 Winding
- 4 Insulator
- 5 Core
- 6 Winding
- 7 Housing, motor
- 8 Grommet
- 9 Screw
- 10 Pole piece
- 11 Insulation
- 12 Insulation
- 13 Pole piece

- 14 Wrapper
- 15 Insulation
- 16 Pole piece
- 17 Insulator
- 18 Collar
- 19 Collar
- 20 Compound
- 21 Winding
- 22 Coil, top
- 23 Coil, right
- 24 Coil, left
- 25 Compound
- 26 Housing, generator

**Figure 3-13, Dynamotor-welder frames, field coils, pole shoes, brush holders, and mounting rings, removal and installation, disassembly and reassembly (sheet 1 of 3).**





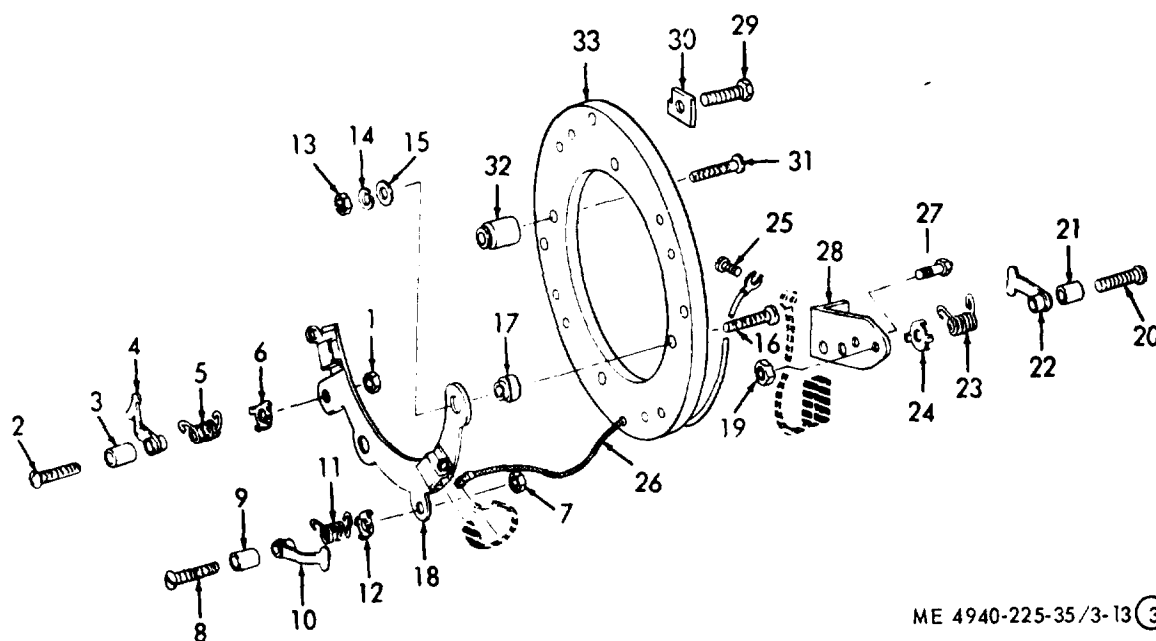
ME 4940-225-35/3-13 (2)

### B. DIRECT CURRENT BRUSH HOLDERS AND MOUNTING RING.

- 1 Screw
- 2 Clamp
- 3 Screw
- 4 Washer
- 5 Shield assembly
- 6 Screw
- 7 Lead
- 8 Screw
- 9 Washer
- 10 Capacitor
- 11 Ring
- 12 Screw
- 13 Bus bar

- 14 Spacer
- 15 Brush
- 16 Nut
- 17 Washer
- 18 Spacer
- 19 Bolt
- 20 Plate assembly
- 21 Nut
- 22 Adapter
- 23 Spring
- 24 Plate
- 25 Ring mounting

Figure 3-13. Dynamotor-welder frames, field coils, pole shoes, brush holders, and mounting rings, removal and installation, disassembly and reassembly (sheet 2 of 3).



ME 4940-225-35/3-13 (3)

### C. EXCITER COMMUTATOR AND ALTERNATOR SLIPRING BRUSH HOLDERS AND MOUNTING RING.

- |           |                   |                  |
|-----------|-------------------|------------------|
| 1 Nut     | 12 Washer         | 23 Spring        |
| 2 Screw   | 13 Nut            | 24 Washer        |
| 3 Bushing | 14 Washer         | 25 Screw         |
| 4 Arm     | 15 Washer         | 26 Lead          |
| 5 Spring  | 16 Screw          | 27 Screw         |
| 6 Washer  | 17 Spacer (shorn) | 28 Holder        |
| 7 Nut     | 18 Holder         | 29 Screw         |
| 8 Screw   | 19 Nut            | 30 Clamp         |
| 9 Bushing | 20 Screw          | 31 Screw         |
| 10 Arm    | 21 Bushing        | 32 Spacer (long) |
| 11 Spring | 22 Arm            | 33 Ring          |

Figure 3-13, L) yrramotor-welder frames, field coils, pole shoes, brush holders. and mounting rings. removal and installation, disassembly and reassembly (sheet 3 of 3).

#### 3-16. Rotary Switch (10-Range)

##### a. Removal.

(1) Remove four screws (fig. 2-3) and remove welder control panel.

(2) Tag and disconnect electrical leads as necessary.

(3) Remove four screws and lockwashers and remove rotary switch.

##### KEY to figure 3-14.

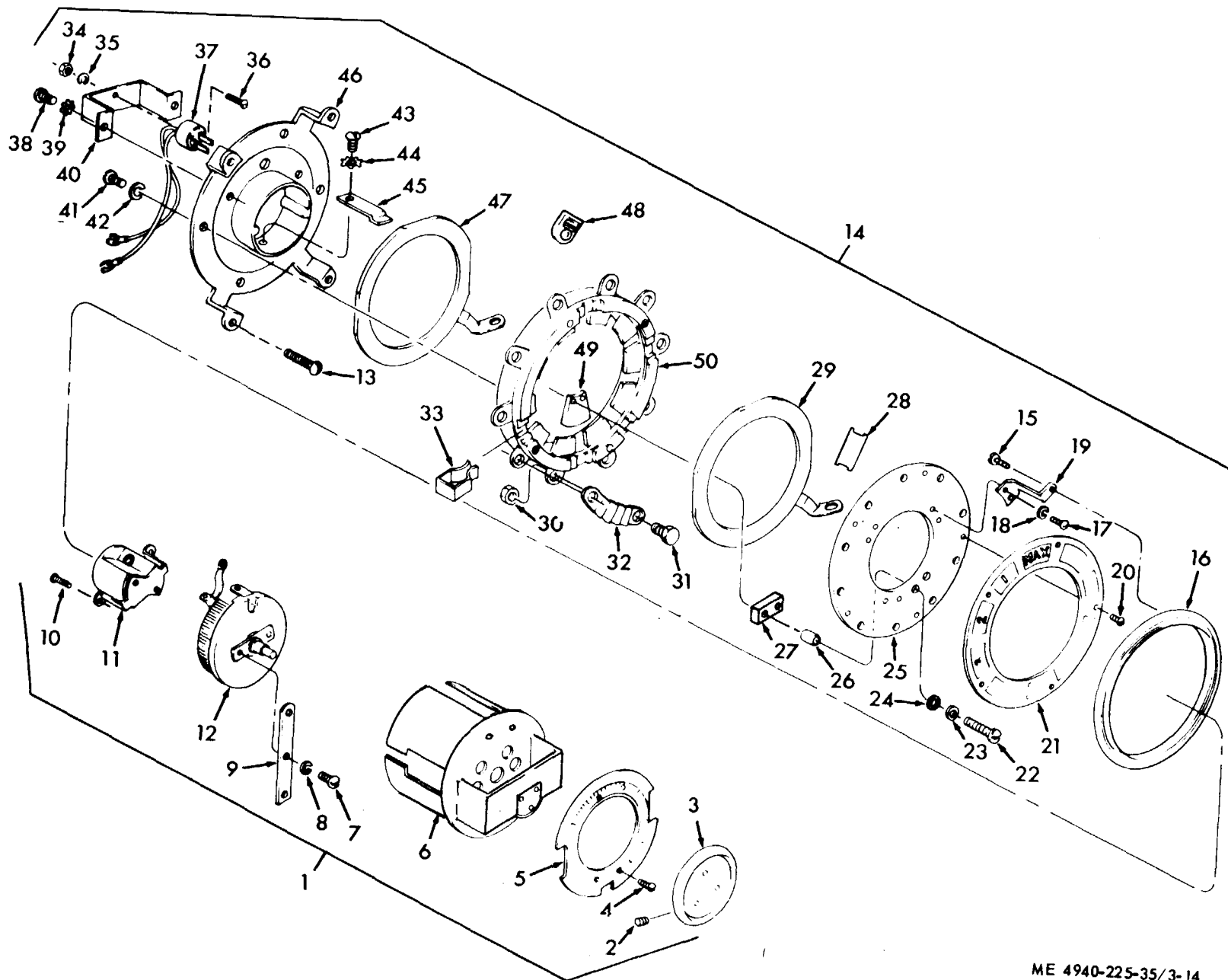
- |                     |                    |
|---------------------|--------------------|
| 1 Rheostat assembly | 13 Screw           |
| 2 Setscrew          | 14 Switch assembly |
| 3 Handle            | 15 Screw           |
| 4 Screw             | 16 Hand wheel      |
| 5 Dial              | 17 Screw           |
| 6 Case              | 18 Washer          |
| 7 Screw             | 19 Bracket         |
| 8 Washer            | 20 Screw           |
| 9 Spring            | 21 Dial assembly   |
| 10 Screw            | 22 Screw           |
| 11 Receptacle       | 23 Washer          |
| 12 Rheostat         | 24 Washer          |
|                     | 25 Disc            |

b. Disassembly. Refer to figure 3-14 and disassemble rotary switch.

c. Reassembly. Refer to figure 3-14 and reassemble rotary switch.

d. Installation. Install in reverse order of a above.

- |              |            |
|--------------|------------|
| 26 Bushing   | 39 Washer  |
| 27 Contact   | 40 Bracket |
| 28 Insulator | 41 Screw   |
| 29 Ring      | 42 Washer  |
| 30 Nut       | 43 Screw   |
| 31 Screw     | 44 Washer  |
| 32 Link      | 45 Clip    |
| 33 Spring    | 46 Housing |
| 34 Nut       | 47 Ring    |
| 35 Washer    | 48 Pigtail |
| 36 Screw     | 49 Finger  |
| 37 Plug      | 50 Ring    |
| 38 Screw     |            |



ME 4940-225-35/3-14

Figure 3-14. Rotary switch (10-Range), disassembly and reassembly.

### 3-17. Generator Output Contactor

a. *Removal.* Remove generator output contactor as illustrated in figure 3-15.

b. *Disassembly.* Refer to figure 3-16 and disassemble generator output contactor.

c. *Reassembly.* Refer to figure 3-16 and reassemble generator output contactor.

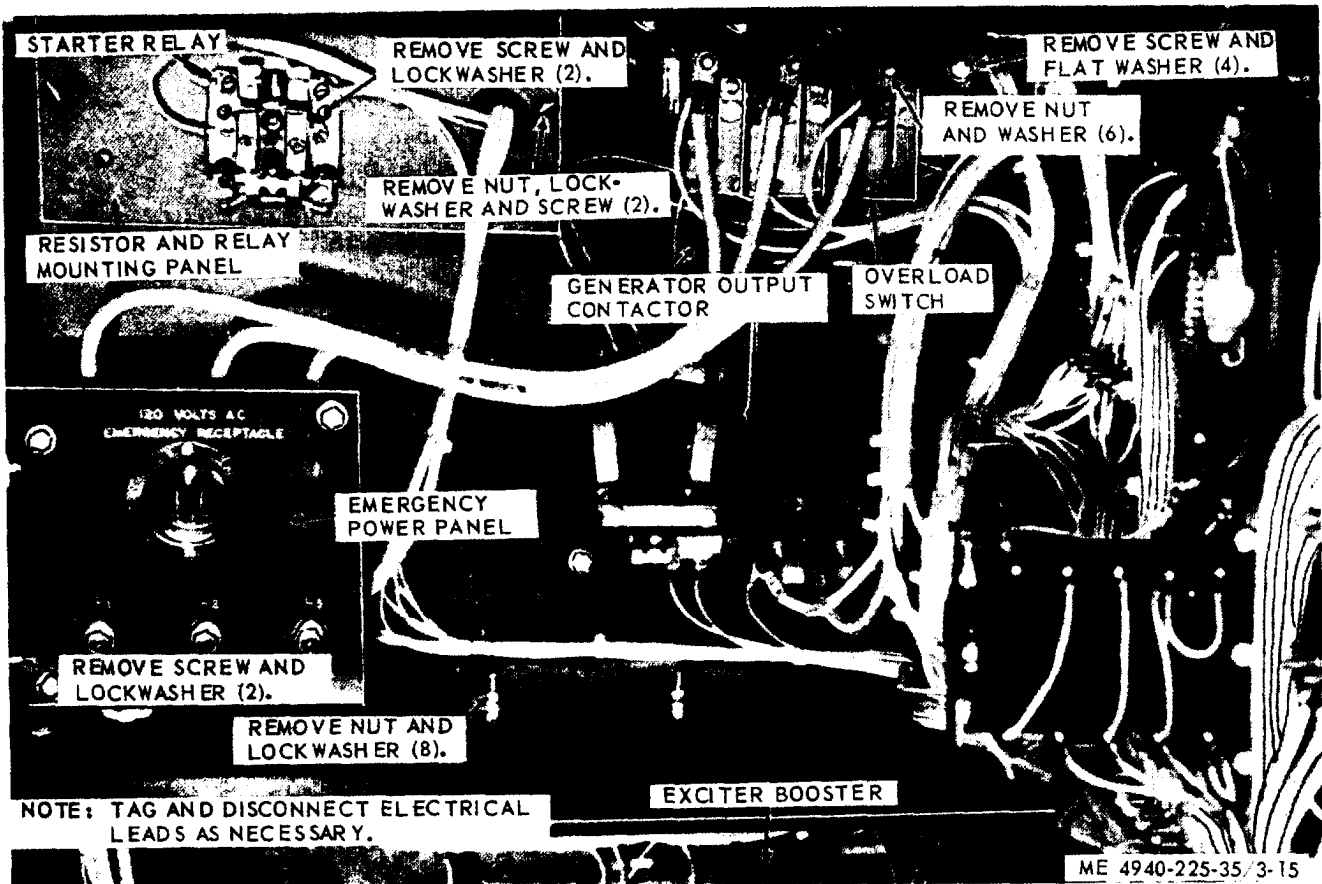
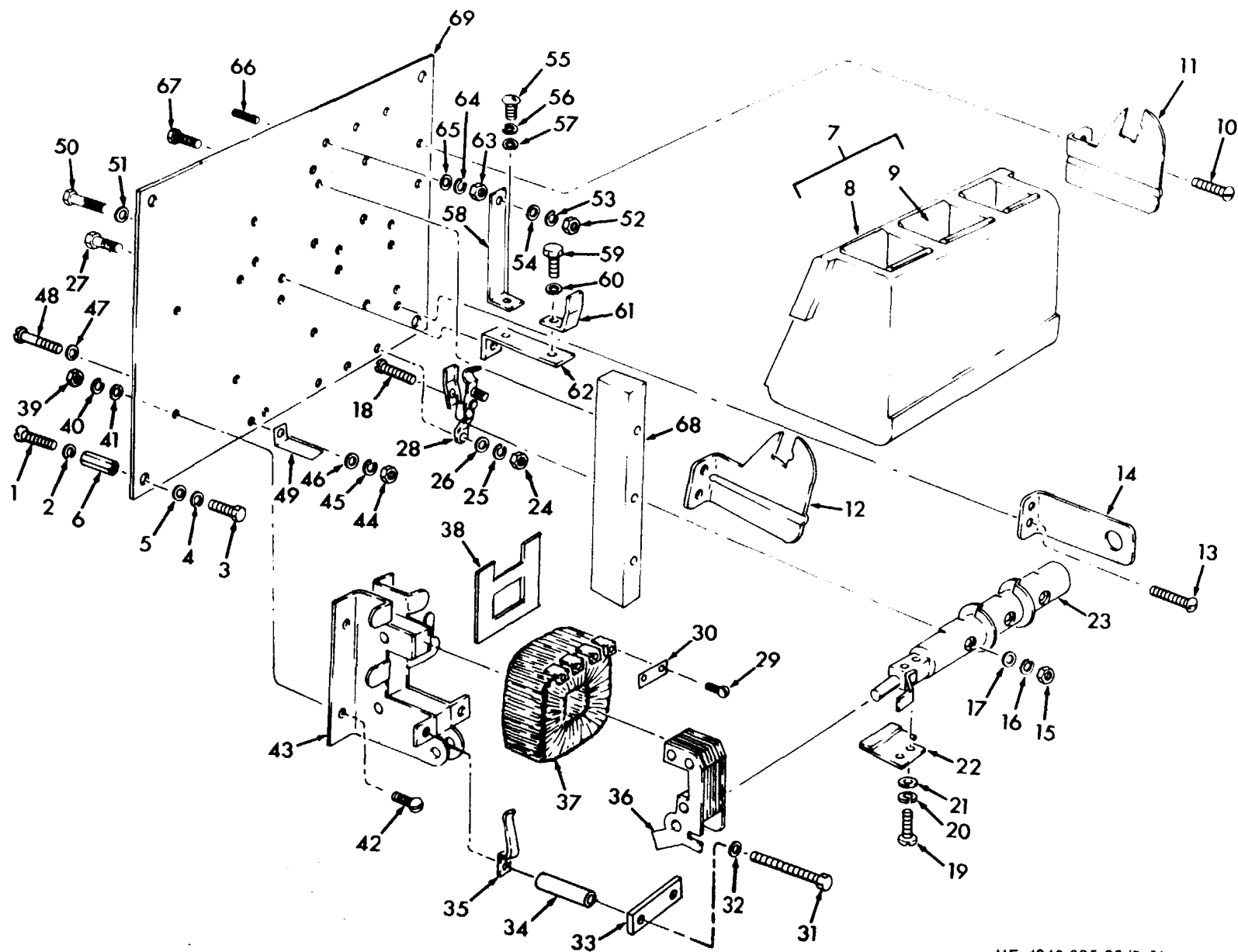


Figure 3-15. Cubicle control components, removal and installation.

d. *Installation.* Install the generator output contactor as illustrated in figure 3-15.

KEY to Figure 3-16.

1 Screw	24 Nut	47 Washer
2 Washer	2.5 Washer	48 Screw
3 Screw	26 Washer	49 Contact auxiliary
4 Washer	27 Screw	50 Screw
5 Washer	28 Contact	51 Washer
6 Spacer	29 Screw	52 Nut
7 Shield assembly	30 Link	53 Washer
8 Shield	31 Screw	54 Washer
9 Shield	32 Washer	5.5 Screw
10 Screw	33 Bar	56 Washer
11 Holder	34 Spacer	57 Washer
12 Holder	35 Bracket	58 Contact assembly
13 Screw	36 Yoke	59 Screw
14 Support	37 Coil	60 Washer
15 Nut	38 Spacer	61 Finger
16 Washer	39 Nut	62 Mount
17 Washer	40 Washer	63 Nut
18 Screw	41 Washer	64 Washer
19 Screw	42 Screw	65 Washer
20 Washer	43 Yoke	66 Rod
21 Washer	44 Not	67 Screw
22 Contact	4.3 Washer	68 Baffle
23 Shaft	46 Washer	69 Panel



ME 4940-225-35/3-16

Figure 3-16. Generator output contactor, disassembly and reassembly.

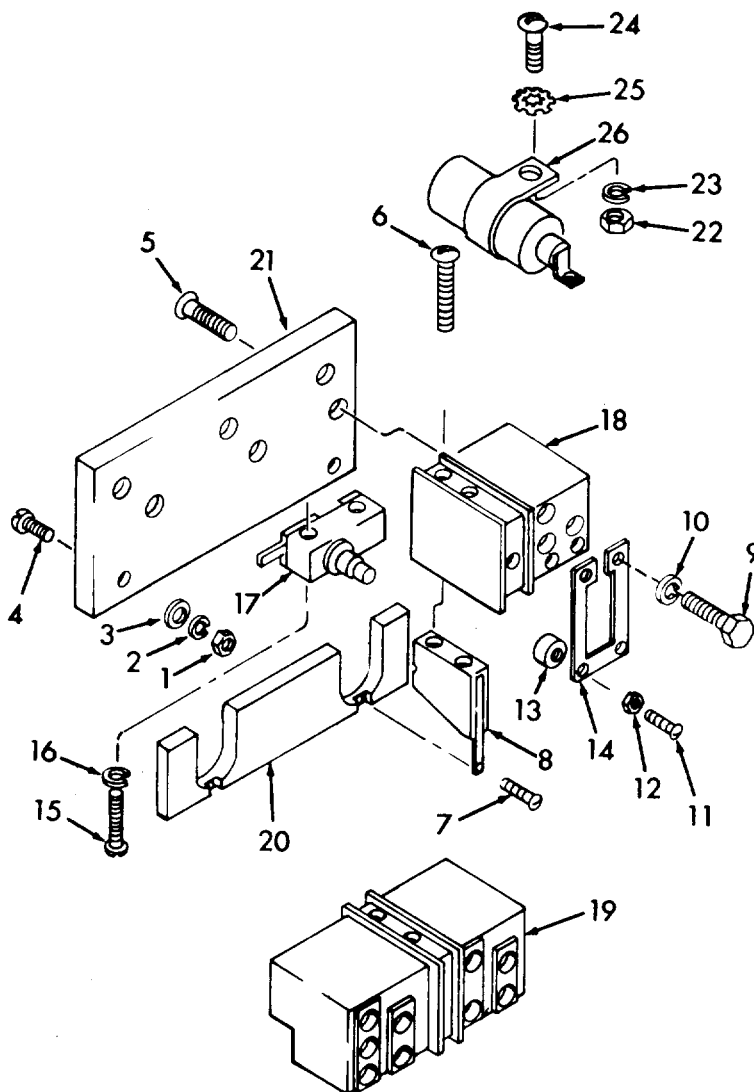
### 3-18. Overload Switch

a. *Removal.* Remove overload switch as illustrated in figure 3-15.

b. *Disassembly.* Refer to figure 3-17 and disassemble the overload switch.

c. *Reassembly.* Refer to figure 3-17 and reassemble the overload switch.

d. *Installation.* Install the overload switch as illustrated in figure 3-15.



ME 4940-225-35/3-17

- 1 Nut
- 2 Washer
- 3 Washer
- 4 Screw
- 5 Screw
- 6 Screw
- 7 Screw
- 8 Contact, movable
- 9 Screw
- 10 Washer
- 11 Screw
- 12 Nut
- 13 Nut

- 14 Element
- 15 Screw
- 16 Washer
- 17 Switch
- 18 Block
- 19 Block
- 20 Mount
- 21 Base
- 22 Nut
- 23 Washer
- 24 Screw
- 25 Washer
- 26 Capacitor

Figure 3-17. Overload switch, disassembly and reassembly.

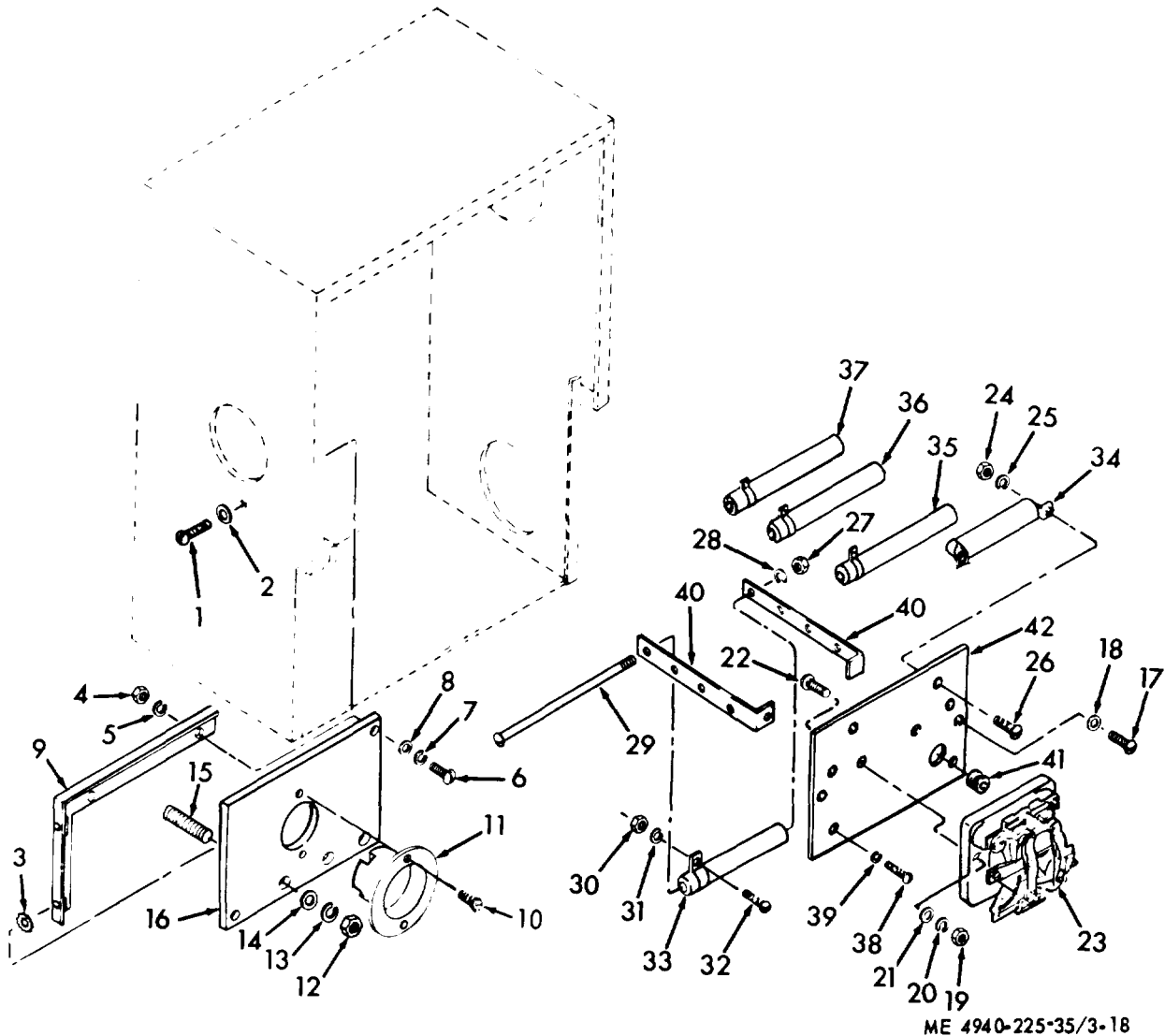
### 3-19. Resistor and Relay Mounting Panel, and Emergency Power Panel

a. *Removal.* Remove resistor and relay mounting panel and emergency power panel as illustrated in figure 3-15.

b. *Disassembly.* Disassemble the resistor and relay mounting panel and emergency power panel as illustrated in figure 3-18.

c. *Reassembly.* Reassemble the resistor and relay mounting panel and emergency power panel as illustrated in figure 3-18.

d. *Installation.* Install the resistor and relay mounting panel and emergency power panel as illustrated in figure 3-15.



1 Screw  
2 Washer  
3 Washer  
4 Nut  
5 Washer  
6 Screw  
7 Washer  
8 Washer  
9 Bracket  
10 Screw  
11 Receptacle  
12 Nut  
13 Washer  
14 Washer

15 Stud  
16 Panel  
17 Screw  
18 Washer  
19 Nut  
20 Washer  
21 Washer  
22 Screw  
23 Relay  
24 Nut  
25 Washer  
26 Screw  
27 Nut  
28 Washer

29 Screw  
30 Nut  
31 Washer  
32 Screw  
33 Resistor  
34 Resistor  
35 Resistor  
36 Resistor  
37 Resistor  
38 Screw  
39 Washer  
40 Bracket  
41 Grommet  
42 Plate

Figure 3-18. Resistor and relay mounting panel, and emergency power panel disassembly and reassembly

### 3-20. Exciter Booster

*a. Removal.* Remove exciter booster as illustrated in figure 3-15.

*b. Installation.* Install the exciter booster as illustrated in figure 3-15.

### 3-21. Power Selector Switch

*a. On-Equipment Test.*

(1) Tag and disconnect all leads and jumper wires from the power selector switch.

(2) Use a multimeter and test for continuity as outlined in (3) thru (5) below. If continuity is not as indicated, replace the power selector switch.

(3) Turn the power selector switch to the

“**GENERATOR**” position. Continuity should be indicated between terminals 1 and 4, 5 and 8, 9 and 12, 13 and 16, 17 and 20, and 21 and 24.

(4) Turn the power selector switch to the “**CITY**” position. Continuity should be indicated between terminals 1 and 3, 5 and 7, 9 and 11, 13 and 15, 17 and 19, and 21 and 23.

(5) Turn the power selector switch to the “**EMERGENCY**” position. Continuity should be indicated between terminals 1 and 2, 5 and 6, 9 and 10, 13 and 14, 17 and 18, and 21 and 22.

*b. Removal and Installation.* Refer to figure 3-19 for removal and installation of the power switch.



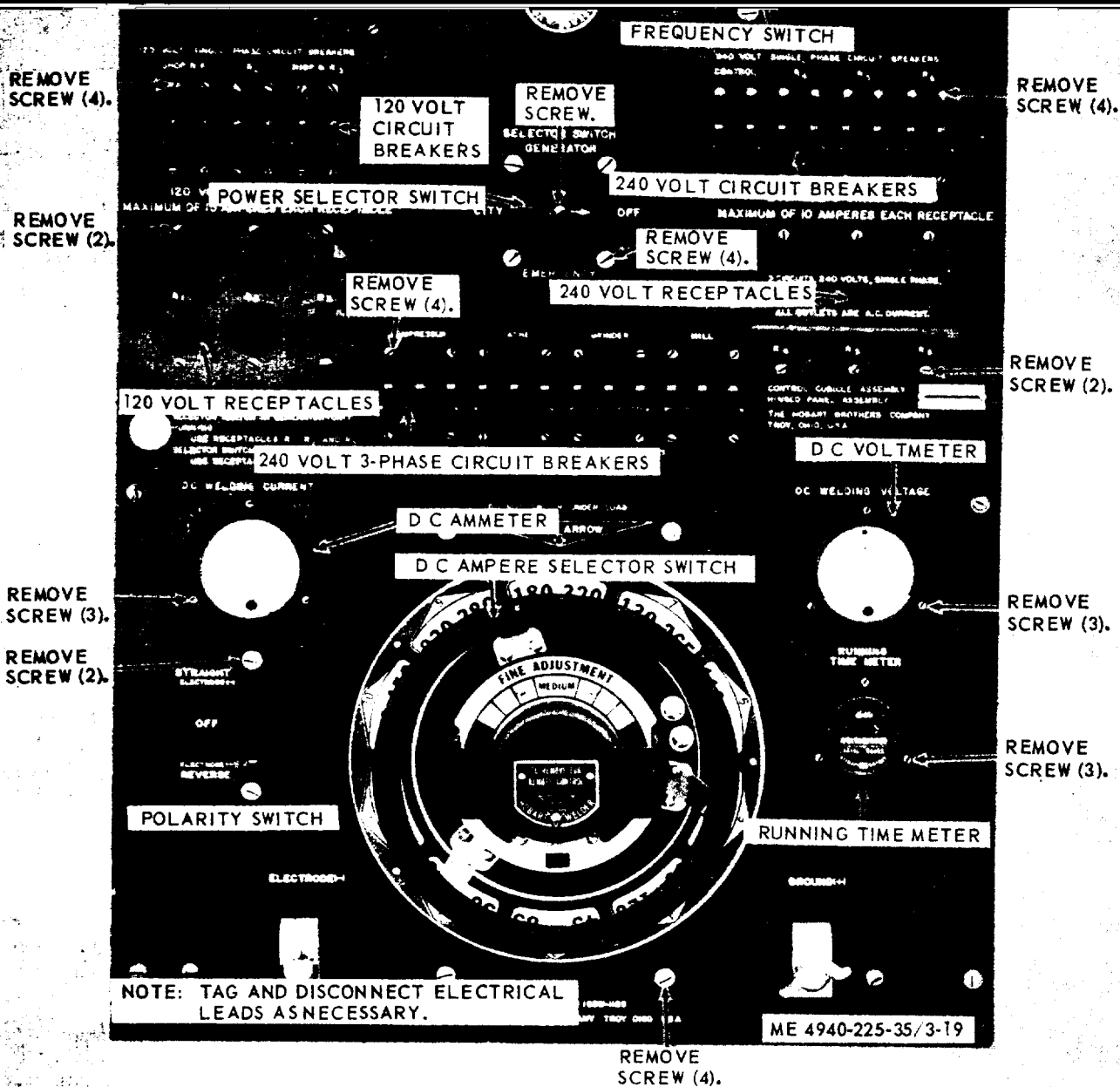


Figure 3-19. Dynamotor-welder control panel.

### 3-22. Wiring (control cubicle)

a. *General.* When disconnecting wires for maintenance, testing, repair, or replacement, always tag each wire or terminal for ready identification. The control cubicle wiring can be

systematically checked out by reference to the wiring diagrams (fig. 1-1 and 1-2).

*Warning:* Before performing any maintenance procedures on the electrical system, see that all external power is discon-

netted from the shop set and stop the truck engine.

*b. Testing.* Disconnect both ends of the wire under test. Touch the probes of a multimeter to each end of the wire. If the multimeter reading indicates an open circuit, replace the wire. Always use wire of at least equal size.

### **3-23. A. C. Voltmeter**

*a. Removal.* Remove the A. C. voltmeter as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

(1) Clean the A. C. voltmeter with a clean, lint-free cloth.

(2) Inspect for broken glass, loose terminals, and other damage.

(3) Replace a defective A. C. voltmeter.

*c. Installation.* Install the A. C. voltmeter as illustrated in figure 3-19.

### **3-24. Dynamotor Switch**

*a. On-Equipment Testing.*

(1) Tag and disconnect the leads from the switch.

(2) With the *start* button depressed, use a low-voltage test lamp circuit to test between the switch terminals. Continuity should be indicated between the top two terminals only.

(3) Press the *stop* button. Continuity should not be indicated between the bottom terminals only.

(4) Replace a defective switch.

*b. Removal.* Remove the dynamotor switch as illustrated in figure 3-19.

*c. Cleaning and Inspection.*

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

(2) Inspect for cracks, and defects, and replace a defective switch.

*d. Installation.* Install the dynamotor switch as illustrated in figure 3-19.

### **3-25. D. C. Ampere Adjusting Rheostat**

*a. Removal.* Remove the D. C. ampere adjusting rheostat as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

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

(2) Inspect for broken insulation, burnt wiring, and defects and loose terminals. Replace a defective rheostat. Test with a multimeter; graduated continuity should be indicated.

*c. Installation.* Install the D. C. ampere adjusting rheostat as illustrated in figure 3-19.

### **3-26. Frequency Meter**

*a. Removal* Remove the frequency meter as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

(1) Clean the frequency meter with a clean, lint-free cloth.

(2) Inspect for damage and for loose terminals. Replace a defective frequency meter.

*c. Installation.* Install the frequency meter as illustrated in figure 3-19.

### **3-27. Frequency Switch**

*a. On-Equipment Testing.*

(1) Tag and disconnect electrical leads from the frequency switch.

(2) Place switch in the 50-cycle position.

(3) Use a low-voltage test lamp circuit or multimeter and test between the right upper terminal and its corresponding center terminal. Continuity should be indicated. Test between center and lower terminals. Continuity should not be indicated. Repeat this test on the upper left terminal.

(4) Place switch in the 60-cycle position and repeat the test in (3) above, testing between the bottom and center terminals for continuity.

*b. Removal.* Remove the frequency switch as illustrated in figure 3-19.

*c. Cleaning and Inspection.*

(1) Clean the switch with a clean, lint-free cloth.

(2) Inspect for defects and loose terminals and replace a defective frequency switch.

*d. Installation.* Install the frequency switch as illustrated in figure 3-19.

### **3-28. Circuit Breakers (120 and 240-volt)**

*a. Removal.* Remove the circuit breakers as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

(1) Clean circuit breakers with a clean, lint-free cloth.

(2) Inspect circuit breakers for cracks, loose terminals, and test for continuity across the terminals. Continuity should be indicated with the breaker ON, and not indicated with the breaker OFF.

*c. Installation.* Install the circuit breakers as illustrated in figure 3-19.

### **3-29. Receptacles**

*a. Removal.* Remove the 120 and 240-volt receptacles as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

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

(2) Inspect for loose terminals and damage and replace a defective receptacle.

*c. Installation.* Install the receptacles as illustrated in figure 3-19.

### **3-30. D. C. Voltmeter**

*a. Removal.* Remove the D. C. voltmeter as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

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

(2) Inspect voltmeter for damage and loose terminals and replace a defective voltmeter.

*c. Installation.* Install the D. C. voltmeter as illustrated in figure 3-19.

### **3-31. Running Time Meter**

*a. Removal.* Remove the running time meter as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

(1) Clean the running time meter with a clean, lint-free cloth.

(2) Inspect for damage and loose terminals and replace a defective running time meter.

*c. Installation.* Install the running time meter as illustrated in figure 3-19.

### **3-32. Polarity Switch**

*a. On-Equipment Testing.*

(1) Tag leads and note position of jumpers on polarity switch.

(2) Disconnect leads and jumpers from switch.

(3) Place switch in OFF position.

(4) Use a multimeter and test for continuity between each center terminal and all other terminals. No continuity should be indicated.

(5) Place the switch in the STRAIGHT position..

(6) Use a multimeter and test between each center terminal and its corresponding lower terminal. Continuity should be indicated. Then, test between each center terminal and its corresponding upper terminal. No continuity should be indicated.

(7) Place the switch in REVERSE position.

(8) Repeat tests as in (6) above. Continuity should not be indicated between the center and lower terminals and continuity *should* be indicated between the center and upper terminals.

(9) Replace a defective switch.

*b. Removal.* Remove the polarity switch as illustrated in figure 3-19.

*c. Cleaning and Inspection.*

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

(2) Inspect for damage and loose terminals and replace a defective polarity switch.

*d. Installation.* Install the polarity switch as illustrated in figure 3-19.

### **3-33. D. C. Ammeter**

*a. Removal.* Remove the D. C. ammeter as illustrated in figure 3-19.

*b. Cleaning and Inspection.*

(1) Clean the direct current ammeter with a clean, lint-free cloth.

(2) Inspect for damage and loose terminals and replace a defective ammeter.

*c. Installation.* Install the D. C. ammeter as illustrated in figure 3-19.

### **3-34. A. C. Voltage Adjusting Rheostat**

*a. Removal.* Remove the rheostat as illustrated in figure 3-19.

*b. Testing.* Use a multimeter and test the rheostat and the direct current resistance element for smooth operation throughout the range. Test the rheostat for resistance of 121.5 plus or minus 5 percent and replace a defective rheostat.

*c. Installation.* Install the rheostat as illustrated in figure 3-19. Refer to wiring diagrams (fig. 1-1 and 1-21).

## **Section III. SHOP BODY**

### **3-35. Wiring**

*a. General.* Check insulation for cracks and frayed places. Pay particular attention to places where wires pass through holes in the frame or over sharp metal edges. If any wiring is found to be defective, replace it following its respective wiring diagram (TM 5-4940-225-12). Solder all terminal connections to insure good electrical contact. If the defective wire is part of a rubber molded wiring harness, and cannot be replaced without disassembly, replace the harness.

*b. Testing 110-Volt Wiring.* Test the electrical leads for continuity. Disconnect each end of the wire from the components to which it is connected (refer to wiring diagram). Check for continuity and replace any defective wire with the same size wire at removed. Reinstall the circuit tag number.

*c. Testing 24-Volt Wiring Harness.* Refer to the appropriate wiring diagram and test the harness for continuity in the same manner as described in *b* above.

*d. Replacement*

(1) Tag and disconnect all electrical leads as necessary.

(2) To replace a wire that is not part of a wiring harness, disconnect it at each end and install a new wire of the same identification number as the one removed.

(3) If a defective wire is part of a wiring harness or cable assembly that cannot be reassembled, replace the entire harness or cable assembly.

(4) Connect lead as tagged in (1), above.

### 3-36. Doors and Hinges

a. *General.* The side and rear doors should not be removed unless absolutely necessary. In most cases, repairs can be made with the doors installed.

b. *Removal.* Support the door to prevent damage prior to removing hardware. Remove mounting hardware.

c. *Cleaning, Inspection, and Repair.*

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

(2) Inspect doors for cracks, breaks, dents, rust, and other damage or defects.

(3) Break rivets if necessary to make repairs, straighten bends, weld cracks and breaks. Replace defective hinges.

d. *Installation.* Install in reverse of b above.

### 3-37. Side Lifting Cylinder 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.* Remove the side lifting cylinder (TM 5-4940-22.5-12).

c. *Disassembly.* Refer to figure 3-20 and disassemble the side lifting cylinder.

d. *Cleaning, Inspection, and Repair.*

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

(2) Inspect all parts for cracks, breaks, wear and other defects. Inspect the interior surface of the cylinder for pits, roughness, and scored condition.

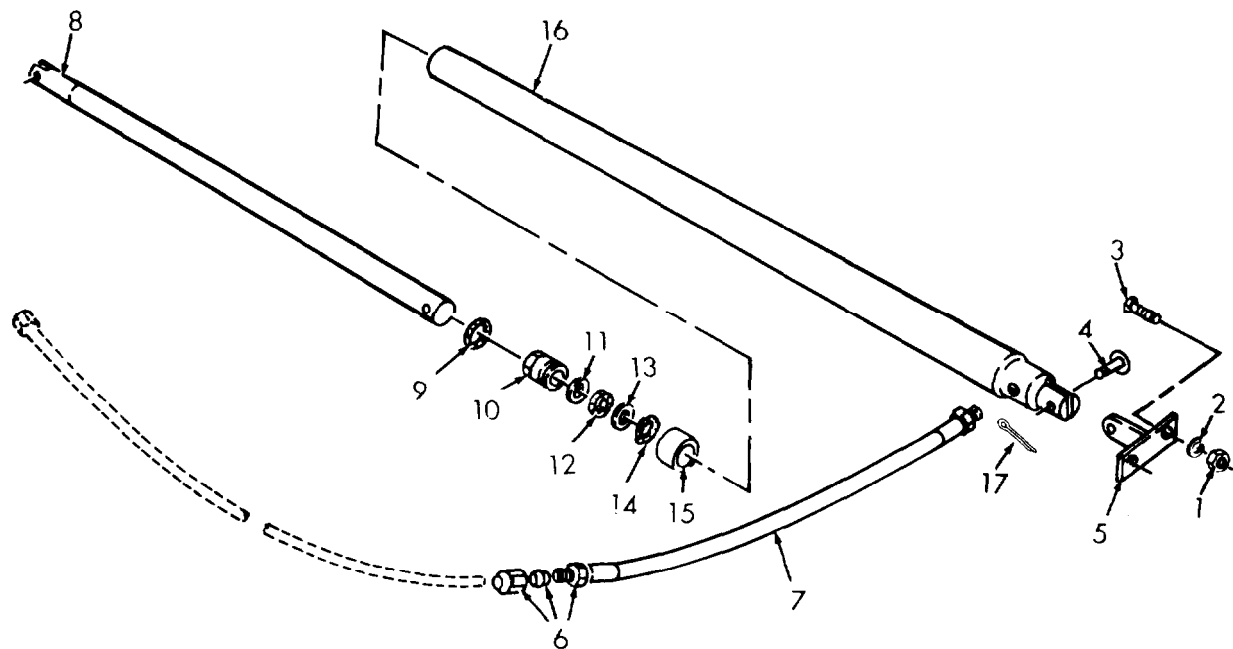
(3) Install new packing kit, which includes the wiper, O-rings, and backup washers.

(4) Replace a damaged or defective side lifting cylinder or related parts.

e. *Reassembly and Installation.*

(1) Reassemble in reverse order of c, above.

(2) Install the side lifting cylinder (TM 5-4940-225-12).



ME 4940-225-35/3-20

1 Nut  
2 Washer  
3 Screw  
4 Pin  
5 Bracket  
6 Connector  
7 Hose assembly  
8 Rod  
9 Wiper

10 Gland  
11 Washer  
12 O-Ring  
13 Washer  
14 O-Ring  
15 Piston  
16 Butt and tube assembly  
17 Pin

Figure 3-20. Side lifting cylinder. disassembly and reassembly.

### **3-38. Side Lifting Hydraulic Pump**

*a. Removal.* Remove the side lifting hydraulic Pump (TM 5-4940-225-12).

*b. Disassembly.* Disassemble the side lifting hydraulic pump as illustrated in figure 3-21.

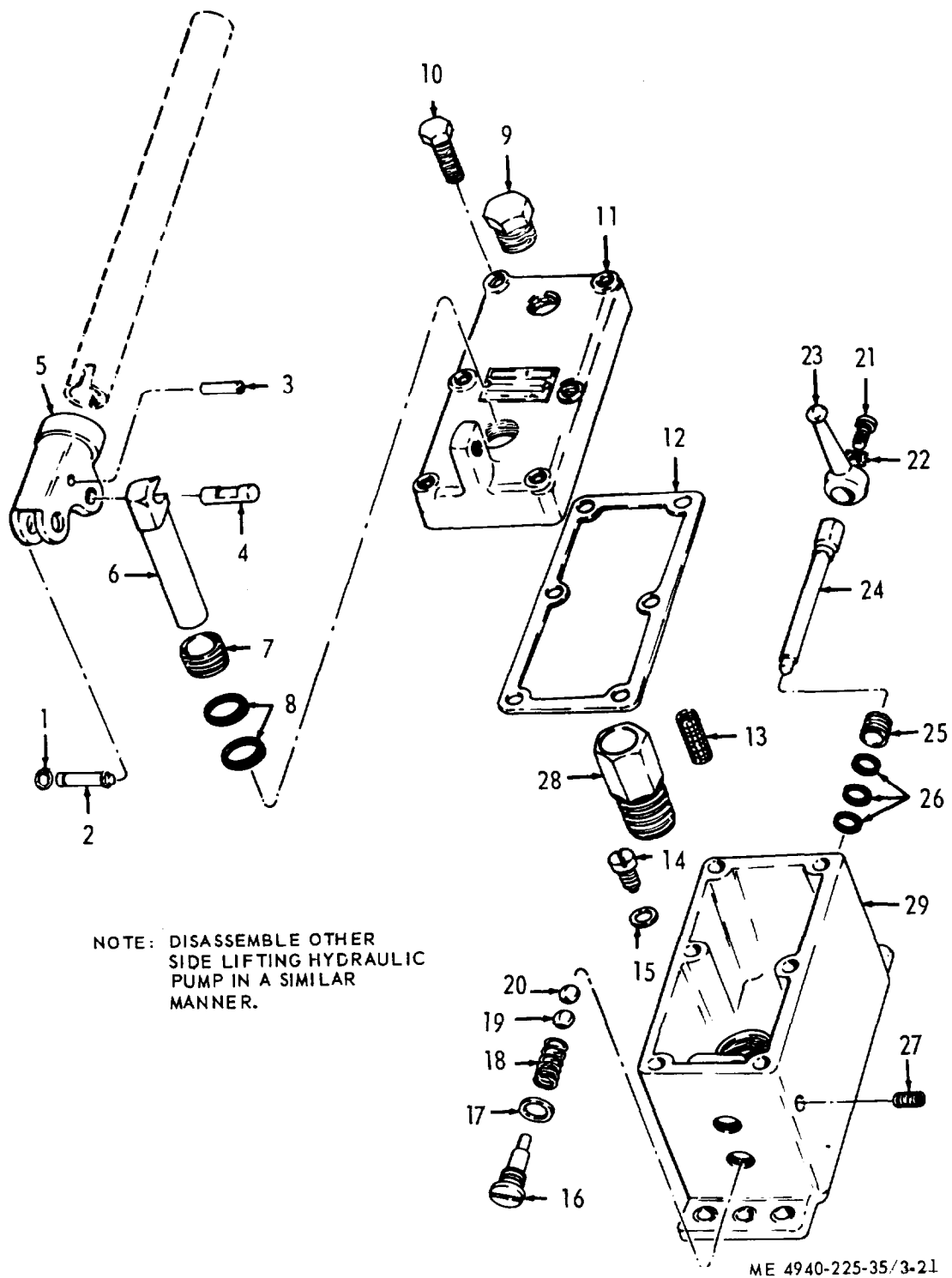
*c. Cleaning, Inspection, and Repair.*

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

(2) Inspect all metal parts for breaks, cracks, nicks, burs, weak spring tension, damaged threads, or other damage.

(3) Remove small nicks and burs and replace all damaged parts. Replace all packing and gaskets included in repair kit.

*d. Reassembly and Installation.* Reassemble and install in reverse order of *a* and *b*, above.



- 1 Ring
- 2 Pin
- 3 Pin
- 4 Pin
- 5 Adapter
- 6 Ram
- 7 Nut
- 8 O-Ring
- 9 Plug
- 10 Screw

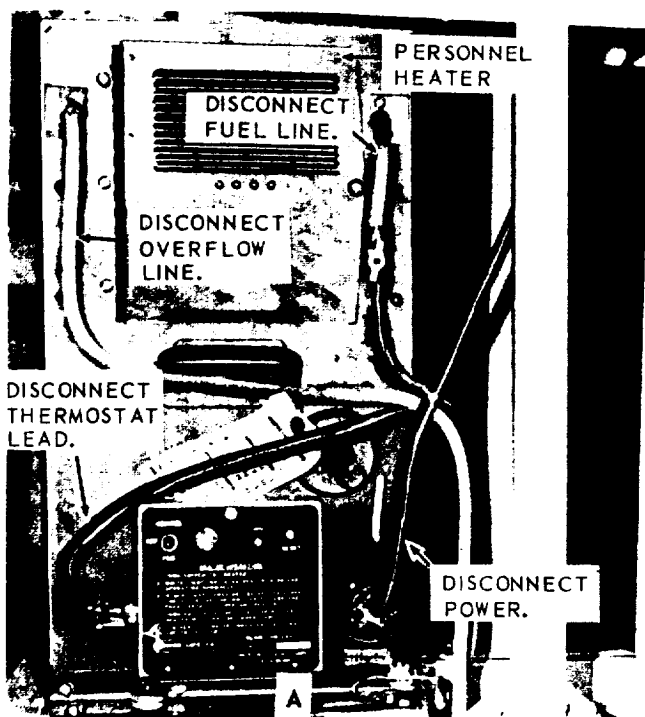
- 11 Cover
- 12 Gasket
- 13 Screen
- 14 Screw
- 15 Washer
- 16 Plug
- 17 Washer
- 18 Spring
- 19 Ball

- 20 Ball
- 21 Screw
- 22 Washer
- 23 Lever
- 24 Valve
- 25 Nut
- 26 O-Ring
- 27 Plug
- 28 Guide
- 29 Housing

**Figure 3-21. Hydraulic pump, disassembly and reassembly.**

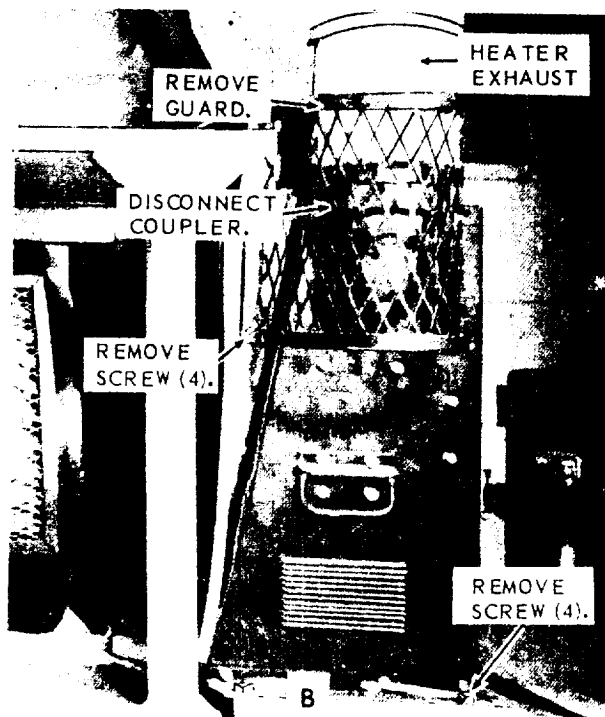
### 3-39. Personnel Heater

*a. Removal.* Remove heater as illustrated in figure 3-22.



*b. Repair.* Refer to TM 5-4520-209-15.

*c. Installation.* Install the heater as illustrated in figure 3-22.



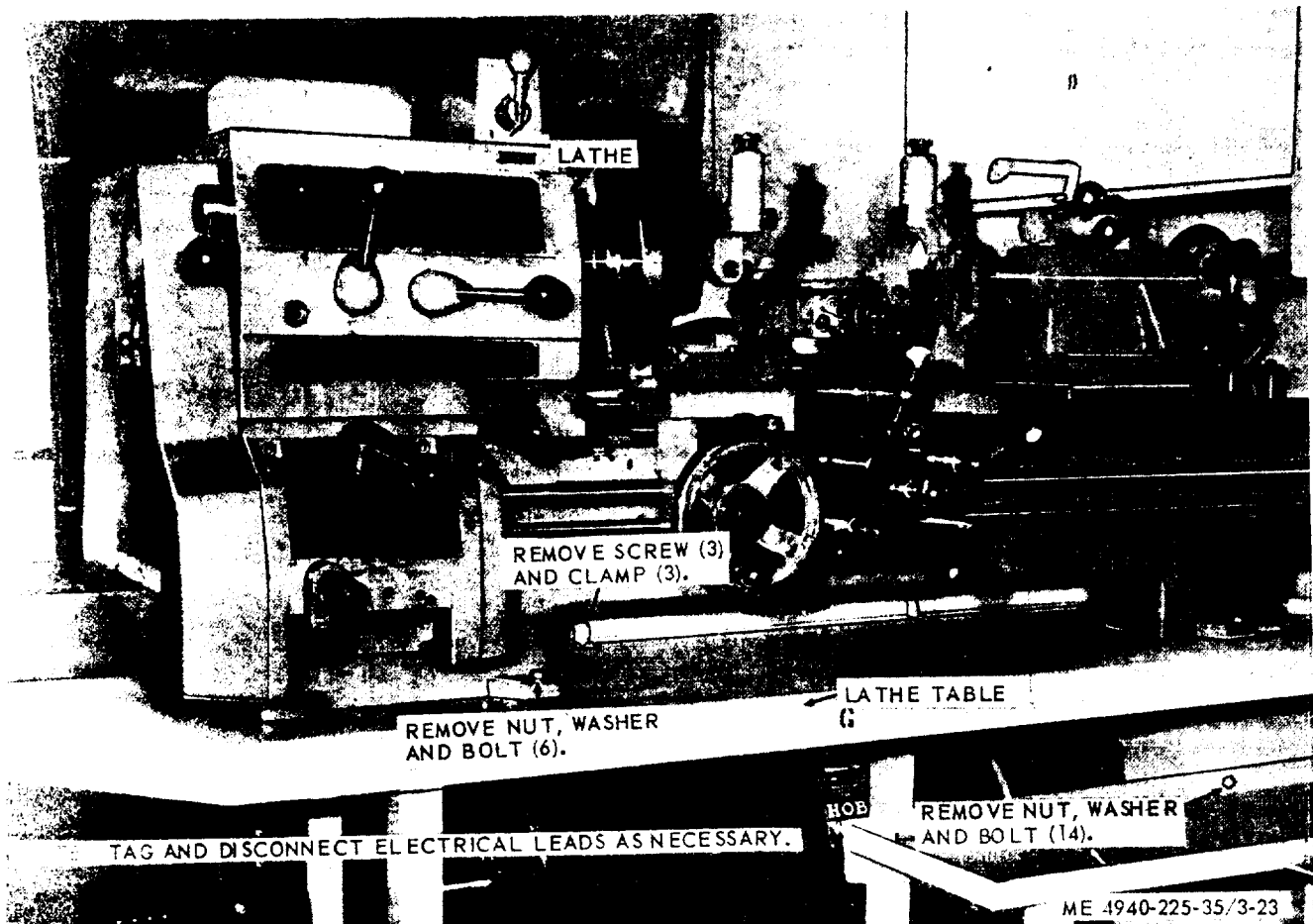
ME 4940-225-35 3-22

**Figure 3-22. Personnel heater, removal and installation.**

### 3-40. Lathe and Lathe Table

*a. Removal.* Remove the lathe and lathe table as illustrated in figure 3-23.

*b. Installation.* Install the lathe and lathe table as illustrated in figure 3-23.



*Figure 3-23. Lathe and lathe table. removal and installation.*



## APPENDIX A

### REFERENCES

---

#### **A-1. Fire Protection**

TB 5-4200-200-10

Hand Portable Fire Extinguishers Approved For Army Users

#### **A-2. Lubrication**

C9100-IL

Identification List for Fuels, Lubricants, Oils and Waxes

LO 5-4940-225-12

Lubrication Order for Shop Equipment Organizational Repair

#### **A-3. Painting**

TM 9-213

Painting Instructions for Field Use

#### **A-4. Radio Suppression**

TM 11-483

Radio Interference Suppression

#### **A-5. Maintenance**

TM 9-1870-1

Care and Maintenance of Pneumatic Tires

TM 750-651

Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems

TM 38-750

The Army Maintenance Management Systems

TM 5-4940-225-12

Operator's and Organizational Maintenance Manual

TM 3-4940-225-20P (when printed)

Organizational Maintenance Repair Parts and Special Tools Lists

TM 3-4940-225-34P (when printed)

Direct Support and General Support Maintenance Repair Parts and Special Tools Lists

TM 9-6140--200-15

Operation and Organizational, Field, and Depot Maintenance: Storage Batteries, Lead Acid Type

TM 5-764

Electric Motor and Generator Repair

TM 5-4920-200-15

Operator, Organizational, Field and Depot Maintenance Manual: Engine Analyzer: Gas

Turbine

#### **A-6. Shipment and Storage**

TM 740-97-2

Preservation of USAMEC Mechanical Equipment for Shipment and Storage

TM 740-90-1

Administrative Storage of Equipment

#### **A-7. Destruction to Prevent Enemy Use**

TM 750-244-3

Procedures for Destruction of Equipment To Prevent Enemy Use



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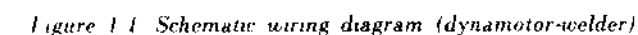


Figure 1-1

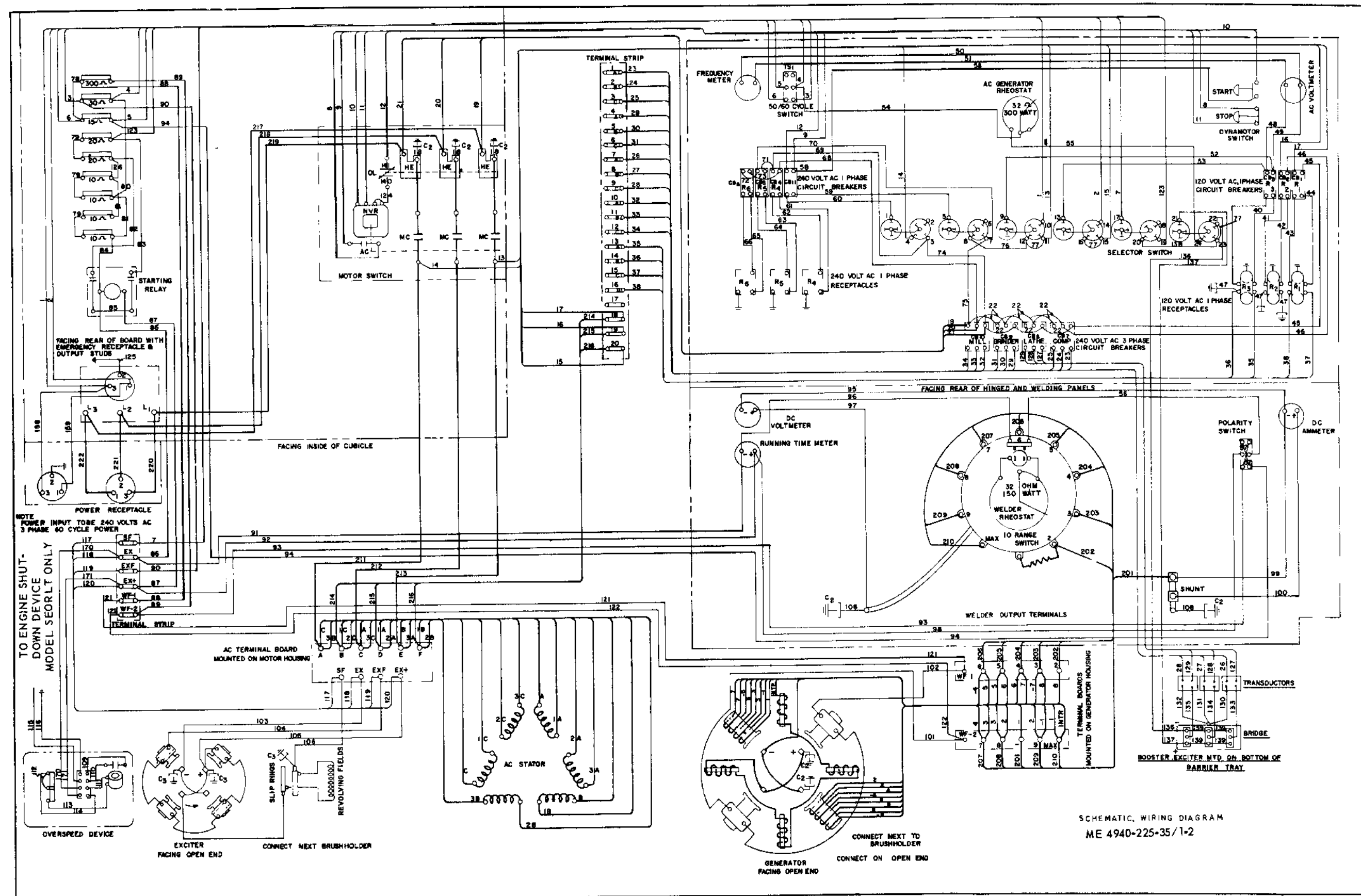


Figure 1-2 Schematic wiring diagram (dynamotor welder)

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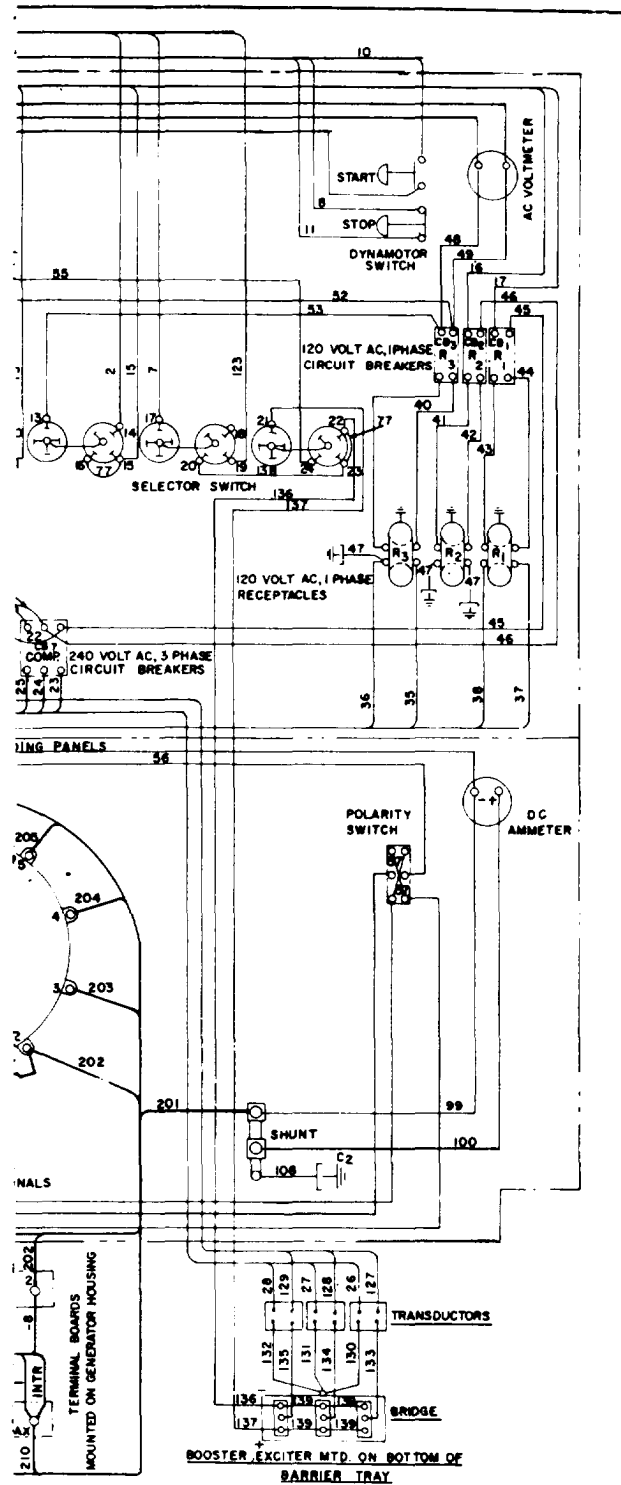
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SCHEMATIC, WIRING DIAGRAM  
ME 4940-225-35/1-2

am (dynamotor-welder)

Figure 1-2





**TM 5-4940-225-34 SHOP EQUIPMENT, TRUCK MOUNTED-1972**

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