

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

FIELD AND DEPOT MAINTENANCE MANUAL
SHOP EQUIPMENT, CONTACT MAINTENANCE, TRUCK
MOUNTED, SET NUMBER 3 (SOUTHWEST MODEL SECM)
SERIAL NO. S-3-628 THROUGH S-3-730 AND
(DAVEY MODEL CMU-5) SERIAL NO. 33343
THROUGH 33343-234
FSN 4940-294-9518

HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 1963

SAFETY PRECAUTIONS

Do not connect an external power source or operate the generator-welder until it has been properly grounded. Electrical faults in the generator-welder, load lines, or equipment can cause death by electrocution from contact with an ungrounded system.

When filling the fuel tank, do not smoke or use an open flame in the vicinity. Maintain a metal-to-metal contact between the filling container and the tank to prevent sparks from being generated as fuel flows over the metallic surfaces.

Lifting equipment must have a capacity of at least 5 tons.

Do not overload shop set with additional personnel, equipment, or parts. Failure to observe this warning will result in an overloaded condition dangerous to personnel and equipment.

The voltage of the shop set is dangerous to persons coming into contact with any part of the electrical system during operation. Severe, possibly fatal, shock may result. This is especially true when the ground is damp. In case of accident, shut off the power immediately. If this is not possible, free the victim from electrical contact, using a nonconductor such as a dry board or dry rope. Avoid contact with the victim. If the victim is unconscious, apply artificial respiration and send for medical assistance.

Do not permit an energized electrode holder or electrode to touch the skin or damp clothing of the operator or nearby personnel. When operating in an inclosed area, the exhaust gases must be piped to the outside. The exhaust gases contain carbon monoxide, which is a colorless, odorless, and poisonous gas.

To prevent eye burns, it is necessary that the eyes of the operator or the arc welder, as well as the eyes of personnel nearby, be shielded from the intense light of the electric arc. Ordinary sun glasses or gas welding goggles do NOT provide sufficient protection.

TECHNICAL MANUAL }
 No. 5-4940-200-35 }

HEADQUARTERS,
 DEPARTMENT OF THE ARMY
 WASHINGTON, D. C., 16 September 1963

FIELD AND DEPOT MAINTENANCE EQUIPMENT
SHOP EQUIPMENT, CONTACT MAINTENANCE, TRUCK MOUNTED, SET NUMBER 3
(SOUTHWEST MODEL SECM) SERIAL NO. S-3-628 THROUGH S-3-720 AND
(DAVEY MODEL CMU-5) SERIAL NO. 33343 THROUGH 33343-234
FSN 4940-294-9518

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* This manual supersedes TM 5-4940-200-35, 19 December 1961.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the use of the field and depot maintenance personnel maintaining the Southwest Truck Body Company, Model SECM, and Davey Compressor Company, Model CMU-5, Truck Mounted Shop Equipment Set Number 3. They provide information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel, or supplies normally available to using organizations.

b. Appendix I contains a list of publications applicable to this manual. The maintenance allocation chart is located in the operator and organizational maintenance manual TM 54940-200-12. Field and depot maintenance repair parts are listed in TM 5-4940-200-35P.

c. Numbers in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

d. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form

2628 Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8, or 9) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOMS-MM, P. O. Box 119, Columbus, Ohio 43216. One information copy will be provided to the individual's immediate supervisor (e.g., officer, noncommissioned officer, supervisor, etc.).

e. Report all equipment improvement recommendations as prescribed by TM 38-750.

2. Record and Report Forms

For record and report forms applicable to field and depot maintenance, refer to TM 38750.

Note

Applicable forms, excluding Standard Form 46, (United States Government Motor Vehicle Operator's Identification Card), which is carried by the operator, will be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. Description

A general description of the shop set, the location and description of the identification plates, and information on the difference in models are contained in TM 5-4940-200-12. A more detailed description of the components is contained in TM 5-4940-200-12. The repair and maintenance instructions are described in appropriate sections of this manual.

4. Tabulated Data

a. *Motor-Generator Classification and Rating.*

Rating7.5 kw (kilowatt)
Voltage208 v (volts)
Amperes38 amp (amperes)
Phase3
Frequency.....50/60 cycles
CoolingFan
Lubrication.....Sealed bearings

Duty classificationContinuous
 Degree of inclosure.....Full
 DrivePulley and 4 V-belts
 TypeSynchronous
b. Exciter Classification and Rating.
 Rating0.99 kw
 Voltage.....110 v, de (volts, direct current)
 Amperes9 amp
 Rated speed.....1,450 rpm (revolutions per minute)
 Field windingShunt
 CoolingFan
 Duty classificationContinuous
 Degree of inclosureFull
 Mounting.....Integral
c. Welder Classification and Rating.
 Voltage.....40 v, dc
 Amperes200 amp
 Rated speed.....1,800 rpm
 Field windingShunt
 Duty classification60 percent duty cycle
 Degree of inclosure.....Full
 Mounting.....Integral

d. Motor-Generator Repair and Replacement Standards.

Revolving field:
 Number of coils.....4
 Turns per coil.....600
 Turns per layerRandom wound
 Wire sizeNo. 18 AWG (American Wire Gage)
 Type of wire.....Copper magnet wire, heavy eze.
 Coil connectionSeries
 Insulating materialsTop revolving pole piece insulator (1 qr). Bottom revolving pole piece insulator (1 qr). Insulation wrapper 0.015 x 2 1/16 x 25 3/4 in. (inch) (1 qr).
 Dipping compoundsVarnish, Type AN, Grade CB, MIL-V-1137A.
 Dipping and baking procedures.....First, dip 3 min (minutes), drain 10 min, bake 1 1/2 hr (hours). Second, dip 3 min, drain 10 min, bake hr. All baking temperatures 320°F. (Fahrenheit).

Fungus treatment ...Spray with MIL-V-173 varnish.

Stator:

Number of poles4
 Number of slots54
 Number of coils.....54
 Coil span2 1/4 in.
 Turns per coil 7.....7
 Wire size.....No. 15 AWG
 Type of wire.....Copper magnet wire, heavy synthetic resin covered.
 Insulating materialsSlot insulators, slot No. 11 x 4 core (36 qr). Slot insulation 9 in. x 13 in. x 54 in. No. 38 slot (54 qr). Core wedge, No. 38 slot, 4 3/16 in, long (54 qr).
 Dipping compoundsVarnish, Type AN, Grade CB, MIL-V-1137A.

Dipping and baking procedures.First, preheat for 1 hr at 320°F., dip for 10 min, drain 10 min, bake 1 1/2 hr. Second, dip for 3 min, drain 10 min, bake 4 hr, spray with T-613 varnish, and bake 1/2 hr. All baking temperatures 320°F.

Fungus treatmentSpray with MIL-V-173 varnish.

e. Exciter Repair and Replacement Standards.

Exciter armature:

Number of coils43
 Turns per coil6
 Number of slots43
 Number of coils per slot.
 Coil pitch.....1 to 11
 Commutator pitch1 to 43
 Number of commutator bars85
 Wire size.....No. 17 AWG
 Type of wire.....Round, dead, soft, copper magnet wire, heavy synthetic resin covered.

Type of winding.....Wave
 ConnectionClockwise 11 bars

Exciter shunt field:

Number of coils4
 Number of turns per.....1,400 coil.
 Turns per layerRandom wound
 Wire size.....No. 21 AWG

Type of wire.....Round copper magnet wire, plain, enamel covered.
 Insulating materialsField insulation (2 rqr). Field insulation, 3 3/4 in. lg (long) (2 rqr). Pole piece wrapping (4 rqr).
 Procedures.....One dip, drain 10 min. bake 1 1/2 hr at 320°F.
 Fungus treatmentSpray with MIL-V-173 varnish after baking.

f. Generator-Welder Repair and Replacement

Standards.

Armature:

Number of coils33
 Number of coils per slot3
 Number of slots33
 Turns per coil 1.....
 Coil pitch1 to 9
 Commutator pitch -1 to 50
 Number of commutator bars.....99
 Type of windingWave
 Insulating materialsCore winding insulating (2 rqr). Core slot wedge, 1/2 in. lg (43 rqr). Cuffed core insulation (33 rqr). Fiber disk, 6 in. (2 rqr). Insulator flange, 4 5/16 in. (2 rqr.) Insulating tube (1 rqr). Supplementary mica segment (as rqr). Commutator insulator (1 rqr). Round commutator insulator (2 rqr). Slipspring separator (3 rqr).
 Dipping compoundsVarnish, Type AN, Grads CB, MIL-V-1137A.
 Dipping and baking procedures.....First, dip 3 min, drain 10 min, bake 1 1/2 hr. Second, dip for 3 min, drain 10 min, bake 4 hr. All baking temperatures 320°F.
 Fungus treatmentSpray with MIL-V-173 varnish after final baking.
 Wire size0.050 x 3/8 in.
 Type of wireBare, copper magnet wire
 Type of windingWave
 Coil connectionClockwise 12 bars
 Insulating material.....Between coils insulation (33 rqr). Mica ring (2 rqr). Mica segment (99 rqr). Core wedge, 1 3/4 in. lg (99 rqr). Generator disk, 8 in. (2 rqr).

Dipping compoundsVarnish, Type AN, Grade CB, MIL-V-1137A.

Dipping and baking procedures.....First, dip 3 min, drain 10 min, bake 1 1/2 hr. Second, dip 3 min, drain 10 min, bake 4 hr. All baking temperatures 320°F.

Fungus treatment.....Spray with MIL-V-173 varnish.

Interpoles or commutating poles:

Number of coils4
 Turns per coil16
 Turns per layer1
 Wire size.....1/6 x Y2 in.
 Type of wireBare, soft-drawn strip copper (round edge).
 Coil connectionSeries
 Insulating materialsInterpole coil separator (115 rqr), 1/2 in. cotton loom (15 in. rqr).
 Dipping compoundsVarnish, Type AN, Grade CB, MIL-V-1137A.

Dipping and baking proceduresDip in and out, drain 10 min, bake 1 hr at 320°F.

Fungus treatment.....Spray with MIL-V-173 varnish.

Generator-welder compound fields:

Shunt section:

Turns per coil.....1,300
 Turns per layerRandom wound
 wire sizeNo. 19 AWG
 Type of wireRound, copper magnet wire, plain enamel covered.

Series section:

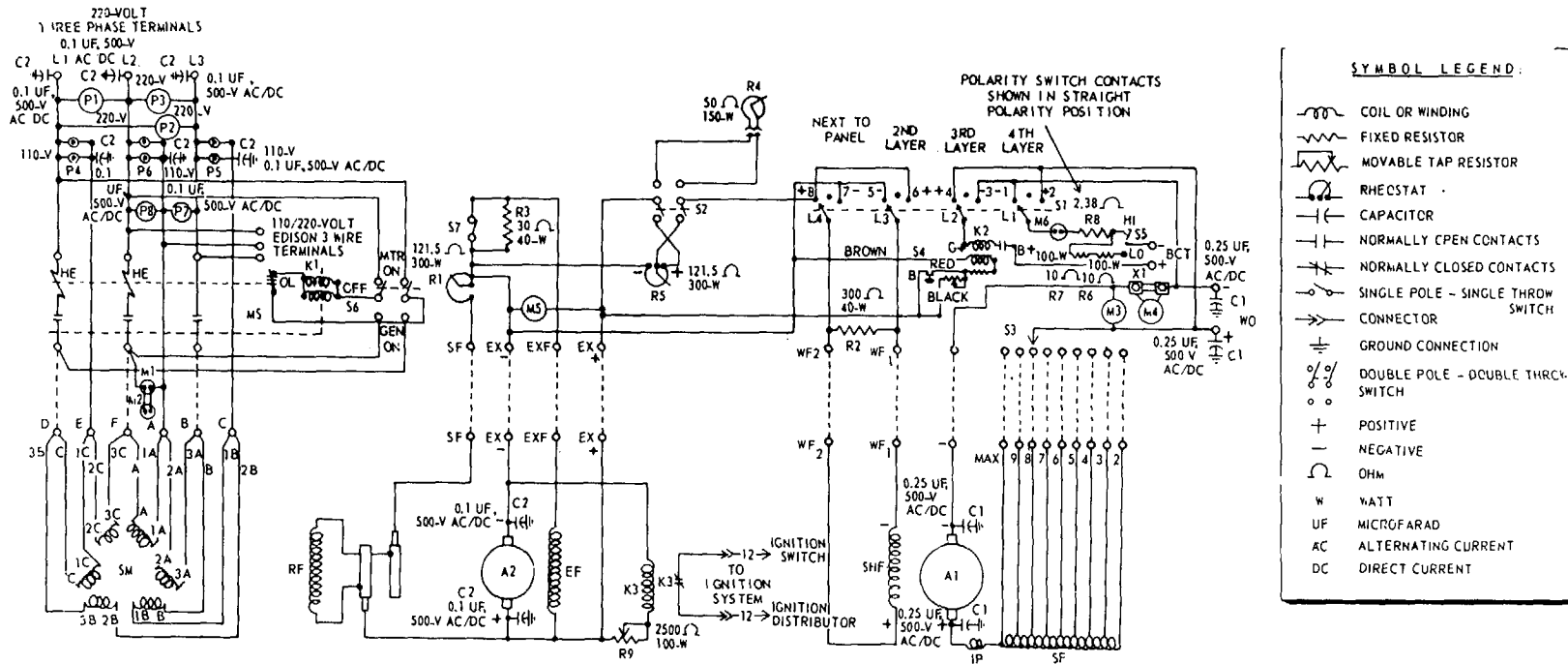
Compounds No. 1 and No. 2:
 Turns per coil.....5
 Size of wire.....1/16 X 3/8 in.
 Type of wire.....Bare, copper strip and double cotton covered.

Compounds No. 3 and No. 4:

Turns per coil.....6
 Wire size3/32 x 3/8 in.
 Type of wire.....Double cotton-covered strip copper.

Compound No. 5:

Number of turns11
 Wire size.....3/32 x 1/4 in.
 Type of wire.....Double cotton-covered strip copper.



DEVICE LEGEND

- A1 WELDER ARMATURE
- A2 EXCITER ARMATURE
- BCT BATTERY-CHARGING TERMINALS
- C1 CAPACITOR
- C2 CAPACITOR
- EF EXCITER FIELDS
- HE OVERLOAD SWITCH HEAT ELEMENT (45 AMPERE)
- IP INTERPOLE WINDING
- K1 NO VOLTAGE RELEASE COIL
- NT REVERSE CURRENT RELAY

- K3 OVERSPEED RELAY SWITCH
- OL OVERLOAD RESET SWITCH
- M1 AC VOLTMETER
- M2 FREQUENCY METER
- M3 DC VOLTMETER
- M4 DC AMMETER
- M5 HOUR METER
- M6 BATTERY-CHARGING AMMETER
- MS CIRCUIT BREAKER
- P1 220-VOLT RECEPTACLE CONNECTOR
- P2 220-VOLT RECEPTACLE CONNECTOR
- PT 220-VOLT RECEPTACLE CONNECTOR
- P4 110-VOLT RECEPTACLE CONNECTOR

- PS 110-VOLT RECEPTACLE CONNECTOR
- P6 110-VOLT RECEPTACLE CONNECTOR
- P7 110-VOLT BODY OUTLET RECEPTACLE CONNECTOR
- P8 110-VOLT BODY OUTLET RECEPTACLE CONNECTOR
- R1 MOTOR OPERATION RHEOSTAT
- R2 FIELD DISCHARGE RESISTOR, 300-OHM, 40-WATT
- R3 60 CYCLE OPERATION RHEOSTAT, -OHM, 40-WATT
- R4 WELDING RHEOSTAT
- RS ENGINE STARTING CONTROL RHEOSTAT
- R6 BATTERY-CHARGING RESISTOR, 100 WATT, 10 OHM
- R7 BATTERY-CHARGING RESISTOR, 100 WATT, 10 OHM
- R8 BATTERY-CHARGING BALLAST RESISTOR, 2.38-OHM
- R9 OVERSPEED RESISTOR, 100T-WATT, 2,500-OHM

- RF REVOLVING FIELD
- S1 WELDING POLARITY CONTROL SWITCH
- S2 WELD-OFF-ENGINE START SWITCH
- S3 TEN-RANGE SWITCH
- S4 REVERSE CURRENT RESET SWITCH
- SS BATTERY-CHARGING RATE SELECTOR
- S6 MOTOR-GENERATOR SWITCH
- S7 50-60 CYCLE SELECTOR SWITCH
- SM MOTOR-GENERATOR STATOR
- SHF SHUNT FIELD
- SF WELDER SERIES FIELD
- WO WELDING ELECTRODE TERMINALS
- X1 AMMETER SHUNT

Figure 1. Schematic wiring diagram, model SECM.

Compound No. 6:
 Number of turns. 19
 Wire size 1/16 x 1/4 in.
 Type of wire...Double cotton-covered strip copper.

Compounds No. 7 and No. 8:
 Number of turns. 21

Series section-Continued
 Compounds No. 7 and No. 8-Continued
 Wire size 1/16 x 1/4 in.
 Type of wire - Double cotton-covered strip copper.

Dipping compounds Varnish, Type AN, Grade CB, MIL-V-1137A.

Dipping and baking
 Number of coils. 2 assemblies
 Coil connection. Series
 Insulating materials. 150A insulator (2 rqr). BW insulation (2 rqr). BW compound insulation (2 rqr). Pole piece wrapper (as rqr). 4 1/2 in. pole piece toe insulation (as rqr). Flux ring insulation (as rqr). Class B interpole wrapper (as rqr). Lower compound lead insulation (1 rqr).

Dipping compound. Varnish, Type AN, Grade CB, MIL-V-1137A.

Dipping and baking. Dip in and out, drain 10 min, bake 1 1/2 hr at 320°F.

Fungus treatment. Spray with MIL-V-173 varnish.

g. *Schematic Wiring Diagrams.*
 (1) Refer to figure 1 for a schematic wiring diagram for moder SECM shop set.
 (2) Refer to figure 2 for a schematic wiring diagram for model CMU-5 shop set.

Figure 2. Schematic wiring diagram, model CMU-5.

(Located in back of Manual)

h. *Time Standards.* Table I lists the number of man-hours required under normal conditions for various operations in the maintenance and repair of the generator set. The man-hours listed are not intended to be rigid standards. Under adverse conditions, the operations will take considerably longer; whereas, under ideal conditions with highly skilled mechanics, most of the operations can be accomplished in considerably less time.

Table I. Time Standards

	Hours
(1) <i>Lubrication and service.</i>	
03 FUEL SYSTEM	
0308 Engine Speed Governor Governor assembly (change oil)	0.5
17 BODY; CAB; HOOD; HULL	
1712 Special Purpose Bodies Body, assembly, special purpose (clean)	1.0
44 WELDING	
4406 Ventilating, Cooling System Filter, air (clean with air).....	0.1

Table I. Time Standards-Continued

		Hours
(1)	<i>Lubrication and service-Continued.</i>	
	50 PNEUMATIC EQUIPMENT	
	5008 Air Intake	
	Pad, filter	
	(clean).....	0.1
(2)	<i>Remove and replace.</i>	
	03 FUEL SYSTEM	
	0306 Tanks, Lines, Fittings	
	Tube, filler	0.5
	0308 Engine Speed Governor.	
	Governor assembly, engine	
	(includes adjustment)	1.1
	Rod assembly, throttle	0.6
	Adapter, governor drive	0.5
	0308 Engine Speed Governor-Continued	
	Pulley, adapter drive	0.2
	Cable, flexible, governor drive.....	0.2
	Belt "V" drive	
	(includes removal and installation of guard, power divider and propeller	
	shafts) includes adjustment)	4.6
	0312 Accelerator, Throttle or choke controls	
	Cable control, hand throttle	0.5
	Bracket, throttle linkage-	0.4
	Spring, throttle return	0.1
	06 ELECTRICAL SYSTEM	
	0606 Engine Safety Controls	
	Relay assembly, overspeed.....	1.2
	0606 Engine Safety Controls-Continued	
	Harness, wiring, overspeed relay to engine.....	0.2
	Harness, wiring, overspeed relay to generator welder	
	(includes removal and installation of panel guard and generator welder cover)	1.5
	0608 Miscellaneous Items	
	Switch, brake lock	0.1
	Brake lock, electric	
	(includes bleeding brake system)	1.0
	Wiring harness, brake lock	0.6
	Control, directional signal light, automotive	0.5
	0609 Lights	
	Lamp assembly, turn signal	0.5
	Lamp, incandescent	0.2
	Wiring harness, turn signal	1.0
	0611 Horn	
	Bracket, horn	0.1
	0613 Hull or Chassis Wiring Harness	
	Bracket, receptacle, trailer	1.0
	08 POWER TRANSFER	
	0802 Clutch and Clutch Controls	
	Declutcher assembly, transfer case	
	(includes removal and installation of propeller shaft)	
	(includes adjustment).....	3.2

Table I. Time Standards-Continued

		Hours
(2)	Remove and replace- continued.	
0803	Gearshift Controls	
	Shift lever assembly, declutcher.....	0.5
	Bracket, shift bar	
	(includes adjustment)	0.6
0803	Gearshift Controls-Continued	
	Shifter and shoe assembly, declutcher	
	(includes removal and installation of declutcher shifter bracket assembly).....	0.5
09 PROPELLER SHAFT		
0900	Propeller Shafts	
	Universal joint and shaft assembly, slip	
	(short) (includes removal and installation or companion flange,	
	yoke and brakedrum hub)	2.0
	Shaft, assembly, drive.....	1.0
	Spider, universal joint	
	(short shaft removed).....	1.5
15 FRAME		
1501	Frame Assembly	
	Extension, frame	
	(includes raising and blocking at body)	9.0
	Base, Generator	
	(includes removal and installation or electrical leads and drive belts)	3.5
	Member, frame extension and body support	5.0
17 BODY; CAB; HOOD; HULL		
1708	Straps	
	Clips, tool (1 ea)-.....	0.1
	Loop, footmen (1 ea).....	0.2
	Spring, pail `.....	0.1
	Straps, mounting (1 ea)	0.1
1712	Special Purpose Bodies	
	Body assembly	
	(includes removal and installation of generator, control panel,	
	power divider and throttle controls)	11.0
	Door assembly.....	1.5
	Tailgate assembly.....	1.5
	Latch assembly	0.5
	Receptacle, 110 v	0.2
	Chain.....	0.2
	Wiring, body (ea)	0.5
	Panel assembly, roof	
	(includes removal and installation of top rear door assembly) -.....	1.0
	Floor assembly	
	(includes removal and installation of generator, welder belts, short	
	propeller shaft, generator welder and power divider assembly).....	20.0
	Compartment assembly, body, right and left side .-	12.0
	Shelf, flange (ea).....	1.5
	Panel assembly, head	
	(body removed) (includes removal and installation of front channel)	4.6
20 POWER TAKEOFF		
2004	Power Takeoff Assembly	
	Power takeoff assembly	3.0

Table I. Time Standards-Continued

		Hours
(2)	<i>Remove and replace-Continued.</i>	
2004	Power Takeoff Assembly-Continued	
	Box assembly, power takeoff support (power divider removed)	6.0
	Linkage assembly, lower	1.5
	Fort, shifter clutch	3.5
	Bracket assembly, clutch operating.....	1.6
	Linkage assembly, upper	1.0
	Shaft, power takeoff (power divider assembly removed)	2.5
	Block, pillow (ea) (power divider assembly removed)	0.5
	Bearing, ball, annular (power divider assembly removed).....	3.0
	Clutch assembly (power divider assembly removed) (includes adjustment)	2.1
	Plate, drive (power divider assembly removed).....	1.0
	Plate, hub, back (power divider assembly removed).....	2.0
	Pulley, power takeoff (power divider assembly removed).....	2.5
22	MISCELLANEOUS BODY, CHASSIS OR HULL, AND ACCESSORY ITEMS	
2202	Accessory Items	
	Reflectors, indicating clearance.....	0.1
2210	Data Plates and Instruction Holders	
	Plates, data and instruction.....	0.1
	Plates, C.O.E-	0.1
40	ELECTRIC MOTORS	
4000	Motor Assembly	
	Motor, electric, air compressor drive (includes removal and installation of compressor)	3.0
	Plate, motor base (ea).....	0.1
	Bumper, rubber, motor base (ea)	0.1
4006	Starting and Protective Devices	
	Switch, air compressor	0.2
42	ELECTRICAL EQUIPMENT	
4216	Miscellaneous Wiring, Fittings, Formed Cable Assemblies	
	Cord w/plug, electric motor.....	0.5
	Receptacle assembly, slave	0.5
	Cable assembly, slave.....	0.2
44	WELDING	
4400	Are Welders	
	Generator, welder assembly (includes removal and installation of guard, power divider, and drive belts)	3.0
	Eye, lifting	0.1

Table I. Time Standards-Continued

		Hour
(2)	<i>Remove and replace-Continued.</i>	
4401	Rotor Assembly	
	Armature assembly (generator removed) (includes removal and installation of pulley assembly and housing end)	3.0
	Ring, electrical contact (generator removed)	4.5
4402	Stator Assembly	
	Stator, generator (generator removed) (includes removal and installation of armature and brushes).....	4.5
4403	Brush Holder Assembly	
	Holder assembly (generator removed)	1.5
	Brush, electrical contact (includes seating brushes).....	1.0
4404	Drive Components	
	Belts, "V" (includes adjustment) (includes removal and installation of power divider assembly).....	3.7
	Pulley, generator drive includes readjustment of drive belts)	1.5
4450	Frame Support, Housing, Carrier	
	Housing, generator (ea) (generator removed) (includes removal and installation of armature, exciter field coils, brush rings and stator).....	15.0
	Cap, bearing.....	0.5
	Wrappers, generator (ea)	0.1
	Bearing, ball, annular (generator removed)	0.5
	Washer, nonmetallic (cap, bearings removed)	0.1
4406	Ventilating, Cooling System	
	Fan, generator cooling (generator removed) (includes removal and installation of ac, dc, armature and fields).....	20.0
	Guard assembly, fan	0.1
	Filter, air, generator.....	0.1
4407	Control Panels, Housings, Cubicles	
	Panel assembly, control (includes removal and installation of guard screen, wiring and leads)	1.5
	Meters (ea) (generator removed) -.....	0.5
4407	Control Panels, Housings, Cubicles-Continued	
	Wiring harness (generator removed).....	9.0
4408	Connecting Devices	
	Connector, receptacle, electrical	0.1
	Board, terminal	0.5
	Block, terminal.....	0.5
4409	Protective Devices, Electrical	
	Fuse, cartridge.....	0.1

Table I. Time Standards-Continued

		Hours
(2)	<i>Remove and replace-Continued.</i>	
4410	Switching, Timing and Speed Control	
	Switch, rotary	
	(control panel removed).....	1.0
	Relay assembly	
	(control panel removed).....	1.0
4410	Switching, Timing and Speed Control-Continued	
	Switch, toggle	
	(control panel removed).....	0.5
4411	Resistor Components	
	Resistors, fixed and adjustable	
	(includes removal and installation of screen guard)	0.5
	Resistors, variable	
	(includes removal and installation of screen guard)	1.0
4414	Radio Interference Suppression	
	Capacitor	
	(includes removal and installation of guard screen,	
	air filter and wrapper)	0.3
	Strap, ground	0.3
47	Gages (Nonelectrical) : Weighing and Measuring Devices	
4703	Time Meter	
	Meter, time totalizing	
	(control panel removed).....	0.5
50	PNEUMATIC EQUIPMENT	
5000	Air Compressor Assembly	
	Compressor, reciprocating, power drive.....	3.0
5001	Crankcase, Block, Cylinder Head	
	Head, compressor	
	(includes removal and installation of inlet valve, valve plate	
	assembly and gasket)	1.0
	Housing, compressor	
	(includes removal and installation of head, piston, eccentric	
	bearing cover, bearing and motor).....	2.5
	Handle, compressor lifting	0.1
5002	Crankshaft	
	Eccentric, piston, driving	
	(includes removal and installation of head, housing, piston,	
	bearing, outboard bearing and bearing cover).....	2.5
	Bearing, ball, annular	
5004	Pistons, Connecting Rods, and Rotors	
	Piston, compressor	
	(includes removal and installation of head, housing, eccentric,	
	outboard bearing and cover bearing).....	2.5
	Seal, plain	
	(includes removal and installation of cylinder head).....	0.5
	Bearing, sleeve, piston to eccentric	
	(includes removal and installation of head, housing, piston,	
	eccentric, crankshaft, outboard bearing and cover bearing)	2.5
5006	Valves, Camshaft and Timing Mechanism	
	Plate assembly, valve	
	(includes removal and installation of head and air seal).....	1.0

Table I. Time Standards-Continued

		Hours
(2)	<i>Remove and replace-Continued.</i>	
5005	Valves, Camshaft and Timing Mechanism-Continued Valve, inlet (head removed)	0.1
6008	Air Intake Pad, filter	0.1
76	FIRE FIGHTING EQUIPMENT	
7603	Fire Extinguisher Extinguisher, fire	0.1

**CHAPTER 2
GENERAL MAINTENANCE INSTRUCTIONS**

Section I. SPECIAL TOOLS AND EQUIPMENT

5. Special Tools and Equipment

illustrated in TM 5-4940-200-35P.

No special tools or equipment are required for the maintenance of this shop set.

6. Field and Depot Maintenance Repair

Field and depot maintenance repair parts are listed and

7. Specially Designed Tools and Equipment

No specially designed tools or equipment are required for the maintenance of this shop set.

Section II. TROUBLESHOOTING

8. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the shop set and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause.

9. Engine Speed Fluctuates

<i>Probable cause</i>	<i>Possible remedy</i>
Governor defective	Repair or replace the governor (par. 26).
Governor adapter drive..... defective	Repair or replace the governor adapter drive (par. 27).

10. Generator-Welder Will Not Start or Come Up To Speed

<i>Probable cause</i>	<i>Possible remedy</i>
Power takeoff damaged	Repair or replace the power takeoff (par. 38).

11. Generator-Welder Does Not Deliver Output

<i>Probable cause</i>	<i>Possible remedy</i>
Cycle selector switch..... switch defective	Replace cycle selector (par. 45).
Field rheostat defective	Replace a defective rheostat (par. 46).
Ten-range switch defective.	Repair or replace the ten-range switch (par. 46).
Field circuit open.....	Inspect the field rheostat and connections to rheostat. Repair or replace a defective rheostat (par. 46).
Generator-welder defective.	Test and repair generator-welder (pars. 42 and 43).
Circuit breaker defective-.....	Repair or replace a defective circuit breaker (par. 47).
Welding polarity control switch defective	Replace a defective welding polarity control switch (par. 45).

12. Circuit Breaker Lacks Current When On

<i>Probable cause</i>	<i>Possible remedy</i>
Circuit breaker defective.....	Repair or replace a defective circuit breaker (par. 47).

13. Circuit Breaker Will Not Stay Closed

<i>Probable cause</i>	<i>Possible remedy</i>
Overload trip assembly defective.	Replace overload trip assembly (par. 47).
Circuit breaker defective.....	Replace circuit breaker (par. 47).

14. Polarity Fails To Reverse

<i>Probable cause</i>	<i>Possible remedy</i>
Polarity control switch jumper defective.	Replace jumper wires as necessary (par. 45).
Polarity control switch defective.	Replace polarity control switch (par. 45).

15. Direct Current Ammeter or Voltmeter Fails To Register

<i>Probable cause</i>	<i>Possible remedy</i>
Direct current ammeter or voltmeter defective.	Replace direct current meter or voltmeter (par. 45).
Ammeter shunt defective-.....	Replace ammeter shunt (par. 45). Repair or replace electrical lead.

16. Alternating Current Voltmeter Fails To Register

<i>Probable cause</i>	<i>Possible remedy</i>
Alternating current voltmeter defective.	Replace alternating current voltmeter (par. 45).

17. Battery-Charging Ammeter Fails To Register

<i>Probable cause</i>	<i>Possible remedy</i>
Battery-charging resistor defective.	Inspect the battery-resistors. Replace defective resistors (par. 49).
Battery-charging ammeter defective.	Replace battery-charging ammeter (par. 45).

18. Frequency Meter Fails To Register

<i>Probable cause</i>	<i>Possible remedy</i>
Frequency meter defective	Replace the frequency meter (par. 45).

19. Welding Arc Breaks Down and Cannot Be Maintained

<i>Probable cause</i>	<i>Possible remedy</i>
Commutator rough or worn.	Reface the commutator (par. 43).

20. Power Takeoff Noisy

<i>Probable case</i>	<i>Possible remedy</i>
Bearings defective	Replace the bearings (par. 38).
One or more gears chipped or broken.	Replace defective gears (par. 38).

Section III. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS

21. Power Takeoff

a. Removal.

- (1) Refer to TM 5-4940-200-12 and remove the power takeoff guard.
- (2) Refer to TM 5-4940-200-12 and adjust the generator-welder drive belts to full loose. Remove the belts from the generator-welder pulley.
- (3) Refer to TM 5-4940-200-12 and remove the governor adapter drive V-belt from the governor adapter drive pulley.

- (4) Refer to TM 5-4940-200-12 and disconnect the lower linkage from the clutch linkage bracket assembly.
- (5) Refer to paragraph 36 and remove the power takeoff universal joint and shaft assembly.
- (6) Refer to figure 3 and remove the power takeoff.

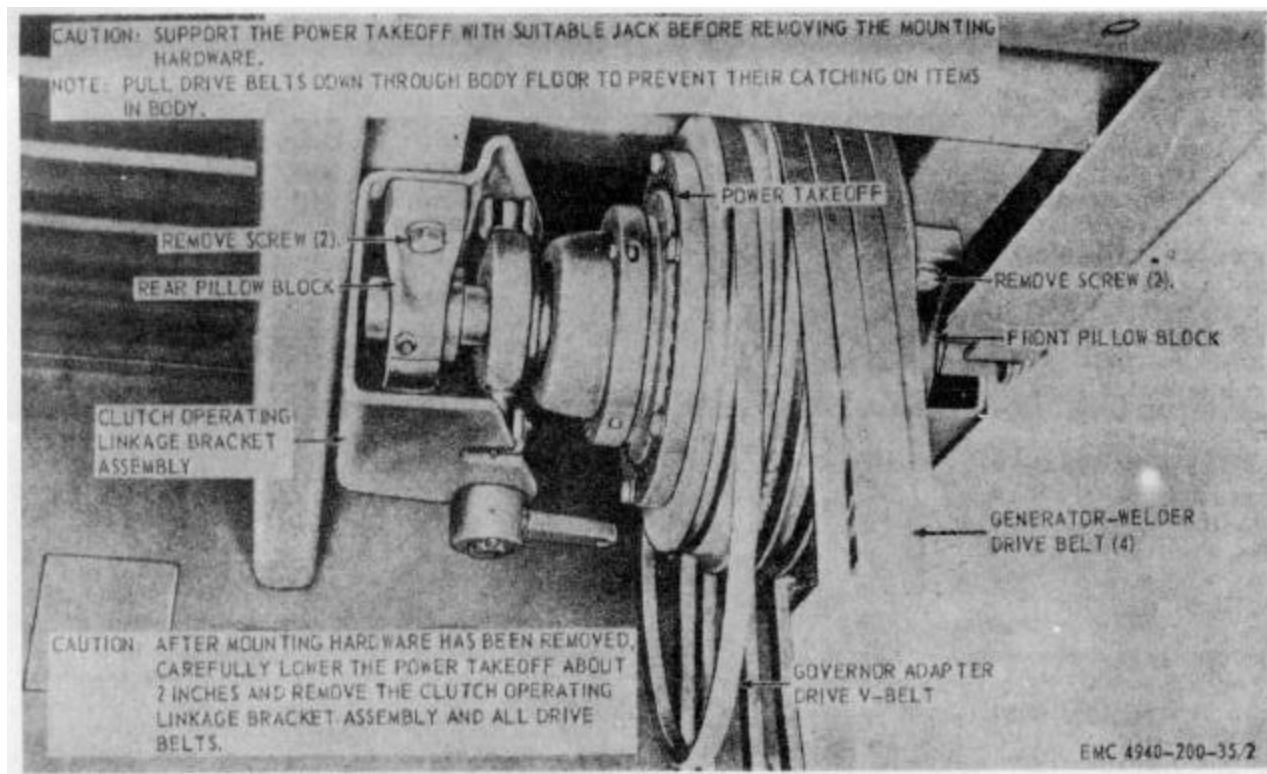


Figure 3. Power takeoff, removal and installation.

b. Installation.

- (1) Refer to figure 3 and install the power takeoff.

Note

Support the power takeoff with a suitable jack and be sure to reinstall the clutch operating linkage bracket assembly before installing the mounting hardware.

- (2) Refer to paragraph 36 and install the power takeoff universal joint and shaft assembly.
- (3) Refer to TX 5-4940-200-12 and connect the lower linkage to the clutch operating linkage bracket assembly.
- (4) Refer to TM 5-4940-200-12 and install the governor adapter drive V-belt on the governor adapter drive pulley.
- (5) Install the generator-welder drive belts on the generator-welder pulley. Refer to TM 5-4940-200-12 and adjust the generator-welder drive belts.

- (6) Refer to TM 5-4940-200-12 and install the power takeoff guard.

22. Generator-Welder and Generator Welder Base

a. Removal

- (1) Refer to TM 5-4940-200-12 and remove the lifting eye and generator welder top cover. On model CMU-5 shop sets, remove the engine overspeed relay resistor and switches from the generator-welder.
- (2) Refer to figure 4 and remove the model SECM generator-welder and generator-welder base. Remove model CMU-5 generator-welder and generator welder base in a similar manner.

b. Installation.

- (1) Refer to figure 4 and install the model SECM generator-welder and genera

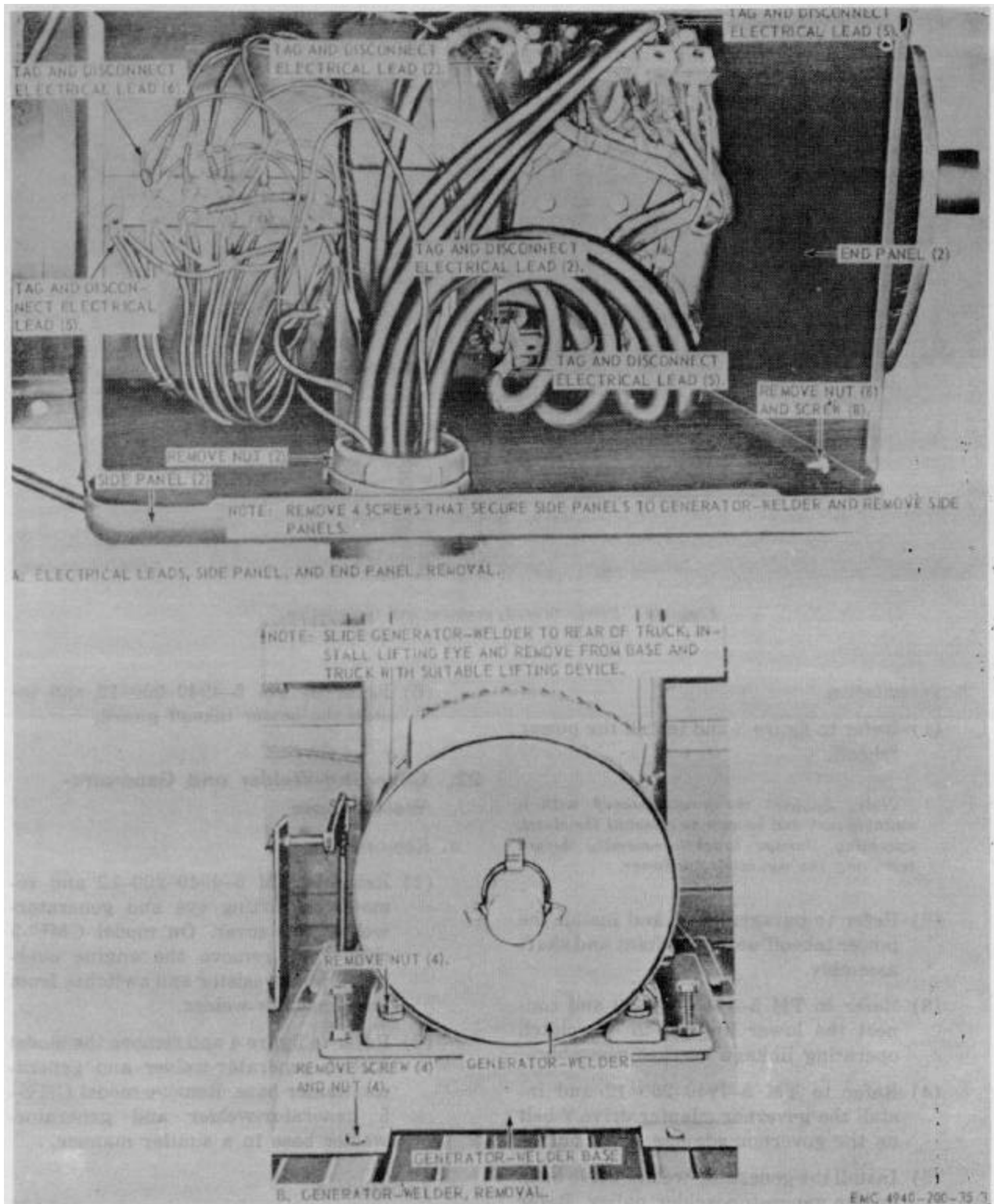


Figure 4. Generator-welder and generator-welder base, model SECM, removal and installation.

tor-welder base. Install model CMU-5 generator-welder and generator-welder base in a similar manner.

- (2) Refer to TM 5-4940-200-12 and install the lifting eye and the generator welder to cover. On model CMU-5 shop sets, install the engine overspeed relay resistor and switches to the generator-welder.

23. Control Panel

a. Removal.

- (1) Refer to TM 5-4940-200-12 and remove the control panel screen.
- (2) Refer to figure 5 and remove the control panel, model SECM.

- (3) Refer to figure 5 and remove the control panel, model CMU-5, in a similar manner.

Note

Remove the two screws that secure the reverse current relay mounting bracket to the control panel and hold the reverse current relay while removing the panel.

b. Installation.

- (1) Refer to figure 5 and install the control panel, model SECM.
- (2) Refer to figure 5 and install the control, model CMU-5, in a similar manner.
- (3) Refer to TM 5-4940-200-12 and install the control panel screen.

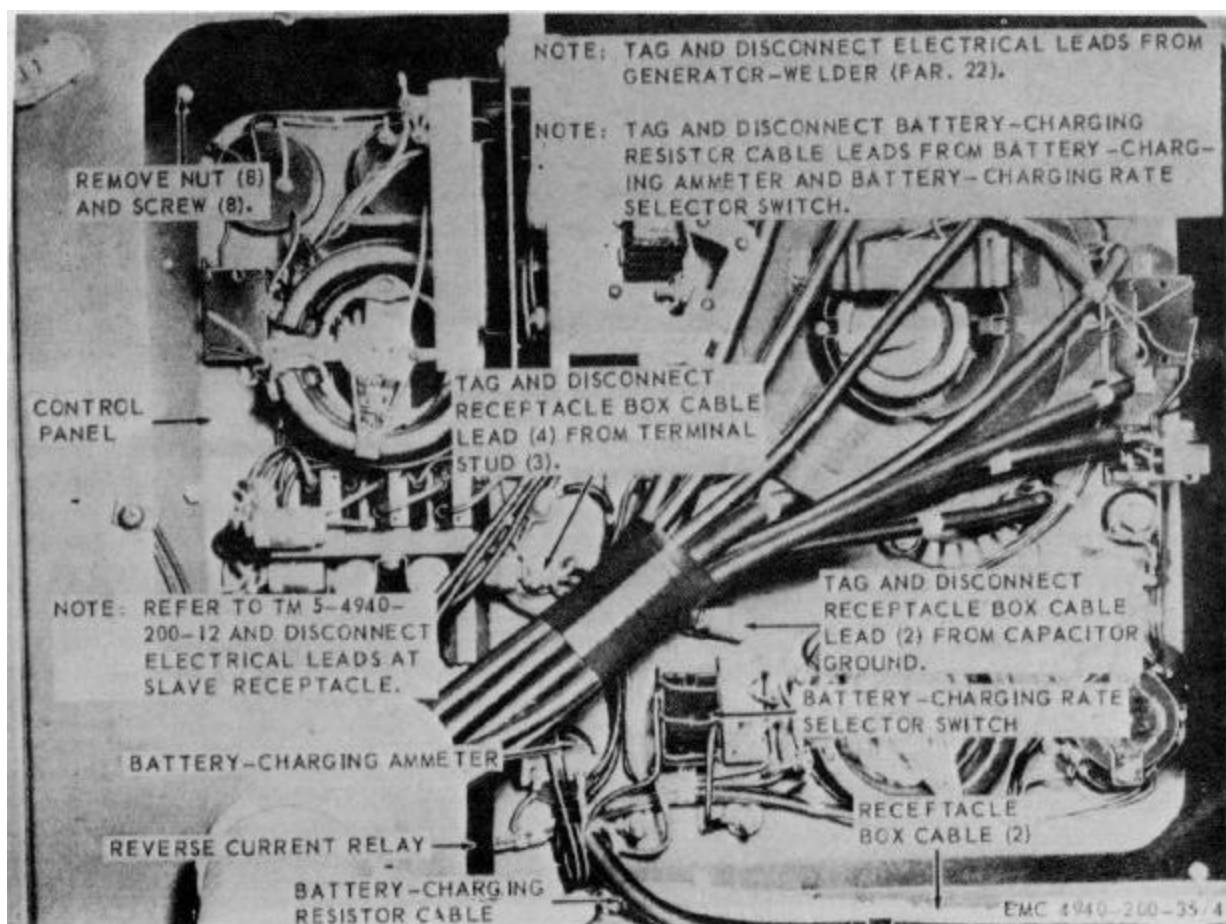
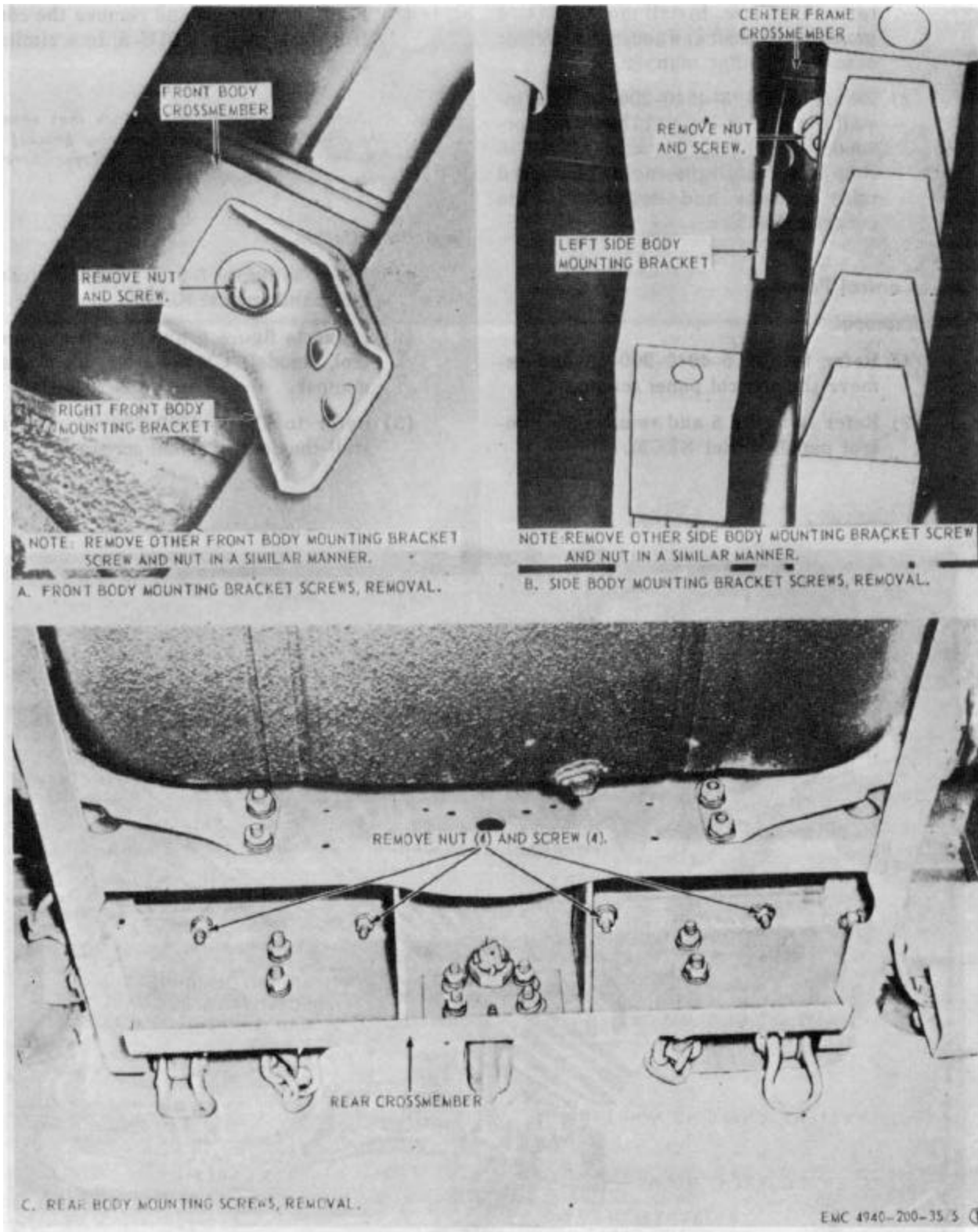


Figure 5. Control panel, model SECM, removal and installation.



References A through C
Figure 6. Shop set body, removal and installation.

24. Shop Set Body

a. Removal.

- (1) Remove all tools and accessories from the compartments. Store the various components in containers marked to identify the locations in order to facilitate replacement in the proper compartments.
- (2) Refer to paragraph 36 and remove the power takeoff universal joint and shaft assembly.
- (3) Refer to TM 5-4940-200-12 and disconnect the governor drive cable at the governor adapter drive.
- (4) Refer to TM 5-4940-200-12 and disconnect the overspeed relay wiring harness from the engine ignition switch and free the relay wiring harness from the truck.
- (5) Refer to figure 6 and remove the shop set body from the carrier.

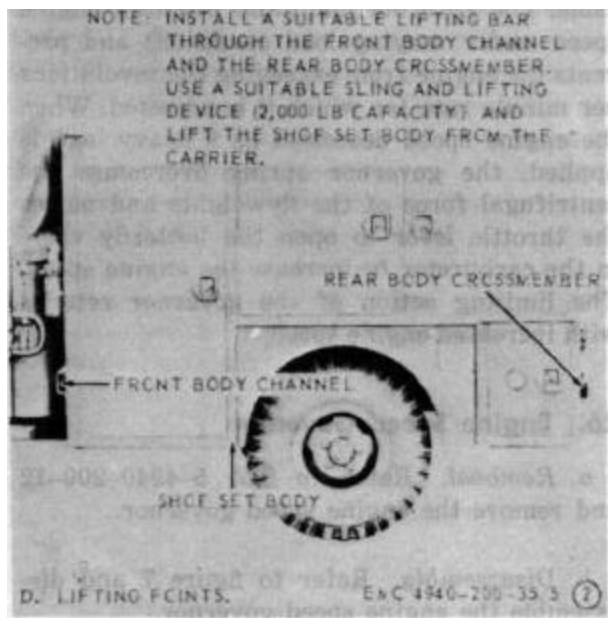
Caution

Be sure to provide suitable support for the shop set body after removal from the carrier; otherwise, damage to the power takeoff guard or power takeoff may result.

b. Installation.

- (1) Refer to figure 6 and install the shop set body.
- (2) Refer to TM 5-4940-200-12 and re connect the overspeed relay wiring harness to the engine ignition switch.

- (3) Refer to TM 5-4940-200-12 and reconnect the governor drive cable.
- (4) Refer to paragraph 36 and install the power takeoff universal joint and shaft assembly.
- (5) Install all tools and accessories in the compartment from which they were removed. (Refer to TM 5-4940-200-12 for location.)



*Reference D
Figure 6-Continued.*

CHAPTER 3

SHOP SET MAINTENANCE INSTRUCTIONS

Section I. ENGINE SPEED GOVERNOR AND GOVERNOR ADAPTER DRIVE

25. General

The centrifugal flyweight-type governor is bracket-mounted on the cylinder head of the truck engine. The governor is driven by the generator-welder power takeoff by means of a V-belt, governor adapter drive, and flexible cable. The governor maintains constant engine speed under varying load conditions and prevents the engine from exceeding the revolutions per minute rate for which it is adjusted. When the engine speed decreases as a heavy load is applied, the governor spring overcomes the centrifugal force of the flyweights and moves the throttle lever to open the butterfly valve in the carburetor to increase the engine speed. The limiting action of the governor returns with increased engine speed.

26. Engine Speed Governor

a. Removal. Refer to TM 5-4940-200-12 and remove the engine speed governor.

b. Disassembly. Refer to figure 7 and disassemble the engine speed governor.

c. Cleaning, Inspection, and Repair.

- (1) Clean all metal parts, except ball bearings, in an approved cleaning solvent and dry thoroughly.
- (2) Place the ball bearings in an approved cleaning solvent until all grease and sludge is loosened. After cleaning, allow bearing to drain dry.
- (3) Dip the bearings in clean light oil, rotate a few times, and drain excess oil.

(4) Inspect the bearings for rusted balls or races, fractured races, and galled or scored surfaces. Replace a defective bearing.

(5) Inspect all the components for cracks, breaks, or other defects. Replace all defective parts.

d. Reassembly. Refer to figure 7 and reassemble the engine speed governor.

e. Installation and Adjustment. Refer to TM 5-4940-200-12 and install and adjust the engine speed governor.

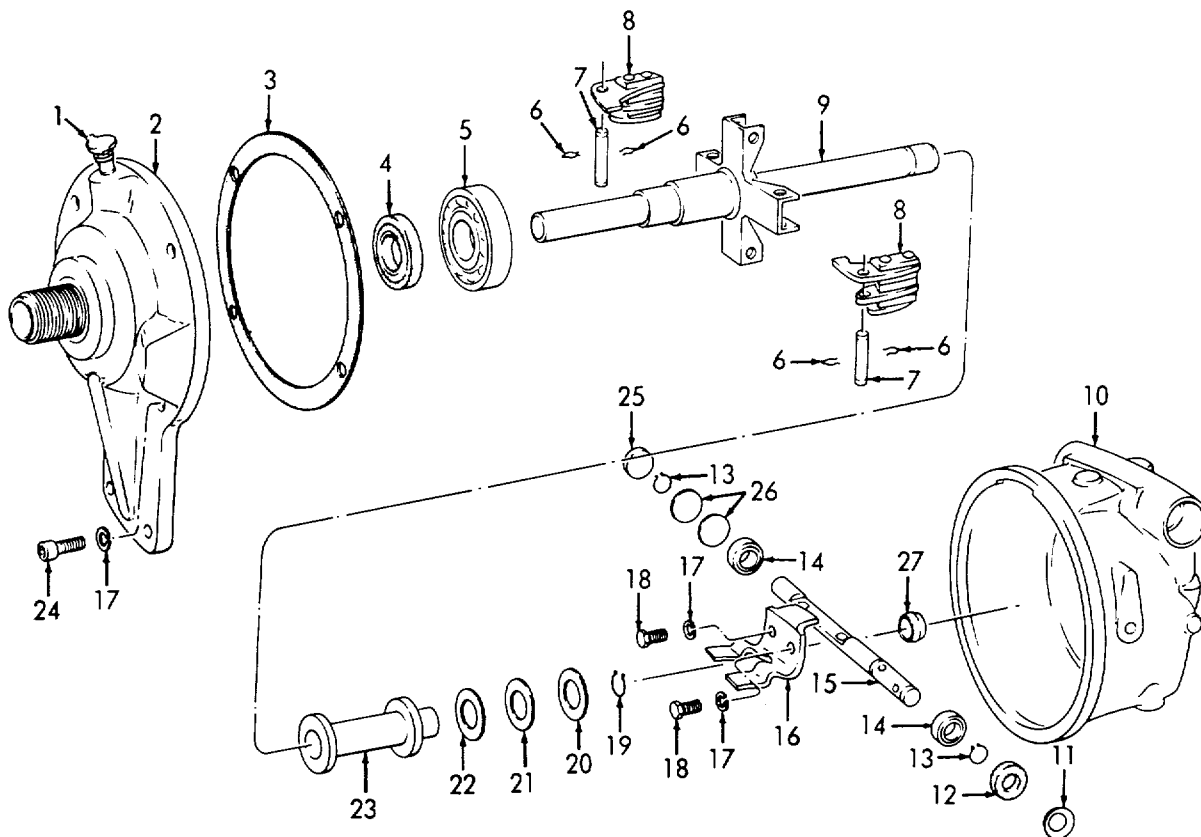
27. Governor Adapter Drive

a. Removal. Refer to TM 5-4940-200-12 and remove the governor adapter drive and drive pulley.

b. Disassembly. Refer to figure 8 and disassemble the governor adapter drive.

c. Cleaning, Inspection, and Repair.

- (1) Clean all metal parts, except ball bearings, in an approved cleaning solvent and dry thoroughly.
- (2) Clean and inspect the ball bearings as instructed in paragraph 26.
- (3) Inspect the governor drive bracket for cracks and breaks.
- (4) Inspect the drive shaft for excessive wear, burs, and nicks. File smooth all minor burs and nicks.



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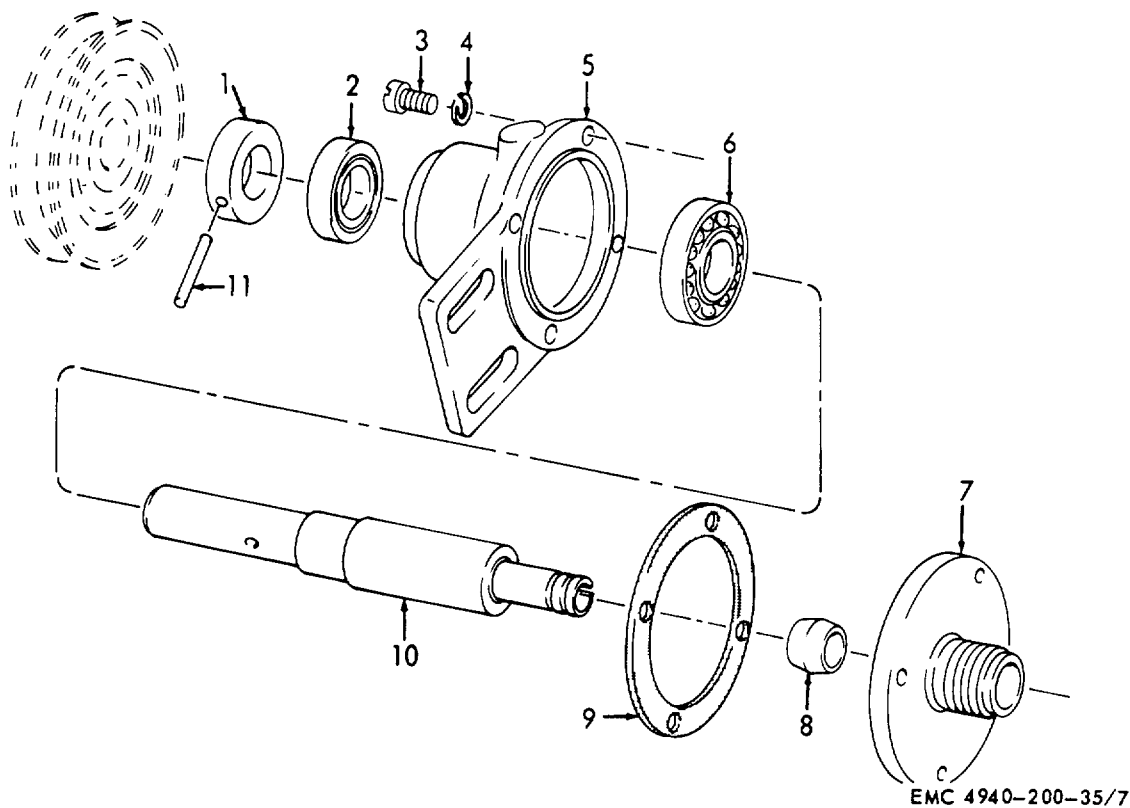
- | | | | |
|----|--|----|---|
| 1 | Lubricating oilcup | 16 | Rocker shaft yoke |
| 2 | Governor flange | 17 | Washer, lock, No. 10 (rqr) |
| 3 | Gasket | 18 | Bolt, machine, hex-hd, No. 10-32 x 7/16 in. (2 rqr) |
| 4 | Oil seal | 19 | Retaining ring |
| 5 | Ball bearing | 20 | Washer, thrust, 1/2 in. id, 2/32 in. od, 3/32 in. thk (2 rqr) |
| 6 | Hairpin clip (4 rqr) | 21 | Thrust bearing |
| 7 | Headless grooved pin (2 rqr) | 22 | Washer, thrust, 1/2 in. id, 21/32, in. od, 1/32 in. thk |
| 8 | Governor control weight assembly (2 rqr) | 23 | Thrust sleeve |
| 9 | Shaft and spider | 24 | Screw, machine, No. 10-24 x 3/4 in. (4 rqr) |
| 10 | Governor housing | 25 | Expansion plug |
| 11 | Packing retainer | 26 | Spacer (spec) (2 rqr) |
| 12 | Oil seal | 27 | Bushing |
| 13 | Retaining ring (2 rqr) | | |
| 14 | Ball bearing (2 rqr) | | |
| 15 | Rocker arm shaft | | |

Figure 7. Engine speed governor, disassembly and reassembly.

- (5) Inspect the drive cover for breaks and cracks.
- (6) Inspect all hardware for worn or damaged threads.
- (7) Replace all defective parts.

d. *Reassembly.* Refer to figure 8 and reassemble the governor adapter drive.

e. *Installation.* Refer to TM 5-4940-200-12 and install the governor adapter and drive pulley.



- | | | | |
|---|---|----|--------------------------------|
| 1 | Shaft collar, 5/8 id, 1 3/8 od, 1/4 in. thk | 6 | Ball bearing |
| 2 | Plain encased oil seal | 7 | Drive cover |
| 3 | Screw, machine, No. 10-24 x 5/8 in. (4 rqr) | 8 | Sleeve bushing |
| 4 | Washer, lock, No. 10 (4 rqr) | 9 | Gasket |
| 5 | Governor drive bracket | 10 | Drive shaft |
| | | 11 | Pin, headless, 1/8 x 1 1/4 in. |

Figure 8. Governor adapter drive, disassembly and reassembly.

Section II. ENGINE OVERSPEED RELAY

28. General

The engine overspeed relay is a safety device that is controlled by the speed of the generator welder armature. The exciter voltage is increased as the speed of the armature is increased. On model SECM shop sets the relay solenoid is adjusted so that excessive exciter voltage will cause it to actuate. The solenoid plunger trips a microswitch that is connected in series with the engine ignition switch. When the microswitch is tripped, the engine ignition circuit is interrupted, causing

the engine to stop. On model CMU-5 shop sets overspeed is sensed by the resistor which trips the relay switches, causing the engine to stop.

29. Engine Overspeed Relay, Model SECM

a. *Removal.* Components of the overspeed relay can be removed while the box is in place; however, for convenience in component removal, refer to TM 5-4940-200-12 to remove the engine overspeed relay from the shop set body.

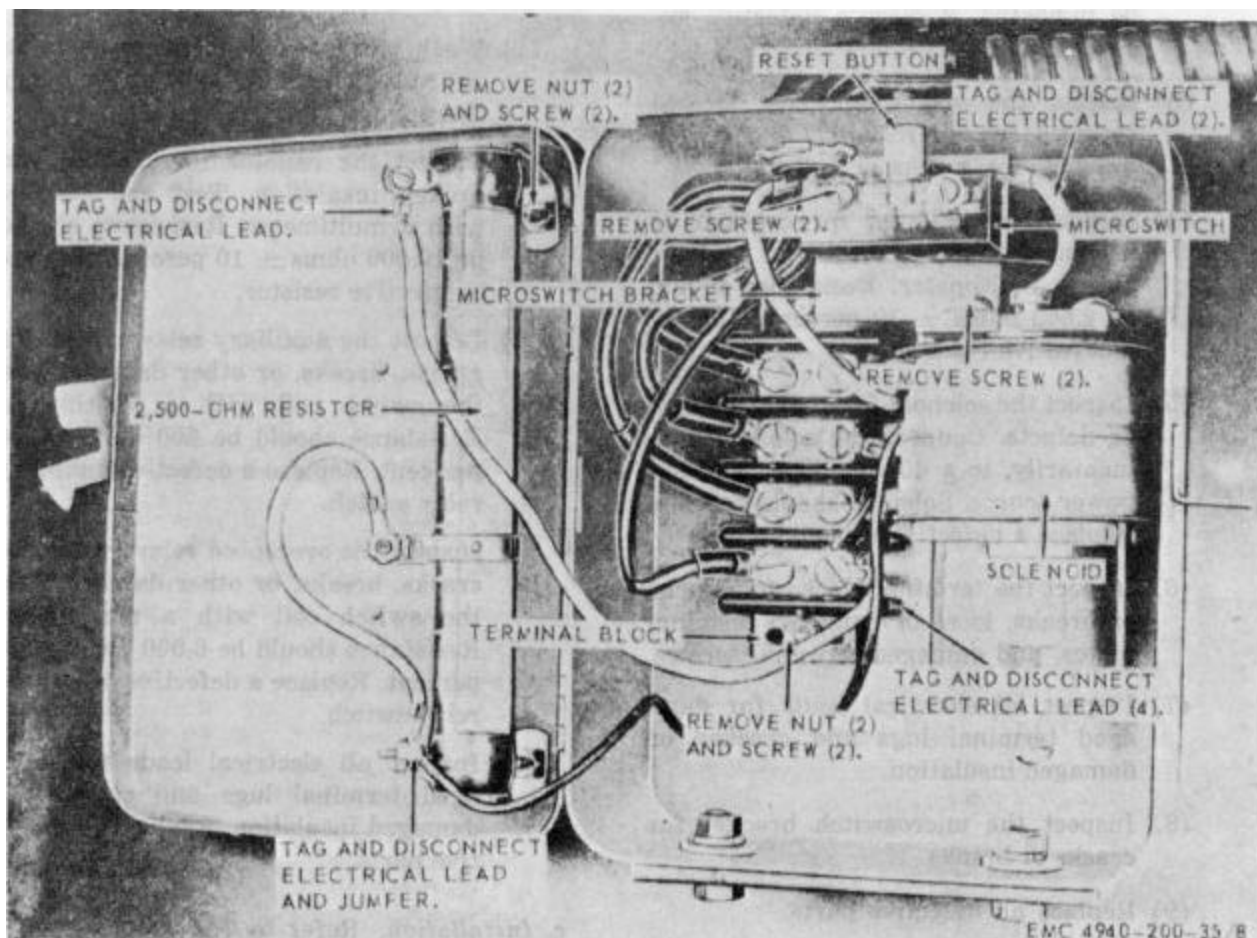


Figure 9. Engine overspeed relay resistor, microswitch, solenoid, and terminal block, model SECM, removal and installation.

b. *Removal of Components.* Refer to figure 9 and remove the engine overspeed relay resistor, microswitch, solenoid, and terminal block.

c. *Cleaning, Inspection, and Testing.*

- (1) Wash nonelectrical metal parts in an approved cleaning solvent and dry thoroughly.
- (2) Inspect the microswitch for cracks and faulty operation. Test the continuity of the switch by placing the leads of a multimeter at the switch terminal C and terminal NC. When the reset button is depressed, continuity should not be indicated. When the circuit is open, continuity should not be indicated. Replace a defective microswitch.
- (3) Inspect the insulation plate, located between the microswitch and switch bracket, for cracks or breaks.
- (4) Inspect the resistor for cracked or broken insulation. Test the resistor with a multimeter. Resistance should be 2,500 ohms \pm 10 percent. Replace a defective resistor.
- (5) Inspect the solenoid for visible damage or defects. Connect the solenoid, momentarily, to a 40-volt direct current power source. Solenoid should operate. Replace a defective solenoid.
- (6) Inspect the terminal blocks for cracks or breaks, loose or damaged terminal plates, and damaged terminal screws.
- (7) Inspect all electrical leads for damaged terminal lugs and cracked or damaged insulation.
- (8) Inspect the microswitch bracket for cracks or breaks.
- (9) Replace all defective parts.
- (10) Inspect the overspeed relay box for breaks, cracks, or other damage.

d. *Installation of Components.* Refer to figure 9 and install the engine overspeed relay resistor, microswitch, solenoid, and terminal block.

e. *Installation.* If the engine overspeed relay is removed from the shop set body, refer to TM 5-4940-200-12 and install it.

f. *Adjustment.* Refer to figure 10 and adjust the engine overspeed relay.

30. Engine Overspeed Relay, Model CMU-5

a. *Removal.* Refer to TM 5-4940-200-12 and remove the engine overspeed relay resistor and switches.

b. *Cleaning, Inspection, and Testing.*

- (1) Wash nonelectrical metal parts in an approved cleaning solvent and dry thoroughly.
- (2) Inspect the resistor for cracked and broken insulation. Test the resistor with a multimeter. Resistance should be 10,000 ohms \pm 10 percent. Replace a defective resistor.
- (3) Inspect the auxiliary relay switch for cracks, breaks, or other damage. Test the switch coil with a multimeter. Resistance should be 500 ohms \pm 10 percent. Replace a defective auxiliary relay switch.
- (4) Inspect the overspeed relay switch for cracks, breaks, or other damage. Test the switch coil with a multimeter. Resistance should be 6,000 ohms \pm 10 percent. Replace a defective overspeed relay switch.
- (5) Inspect all electrical leads for damaged terminal lugs and cracked or damaged insulation. Replace all defective parts.

c. *Installation.* Refer to TM 5-4940-200-12 and install the engine overspeed relay resistor and switches.

d. *Adjustment.* Refer to figure 11 and adjust the engine overspeed relay.

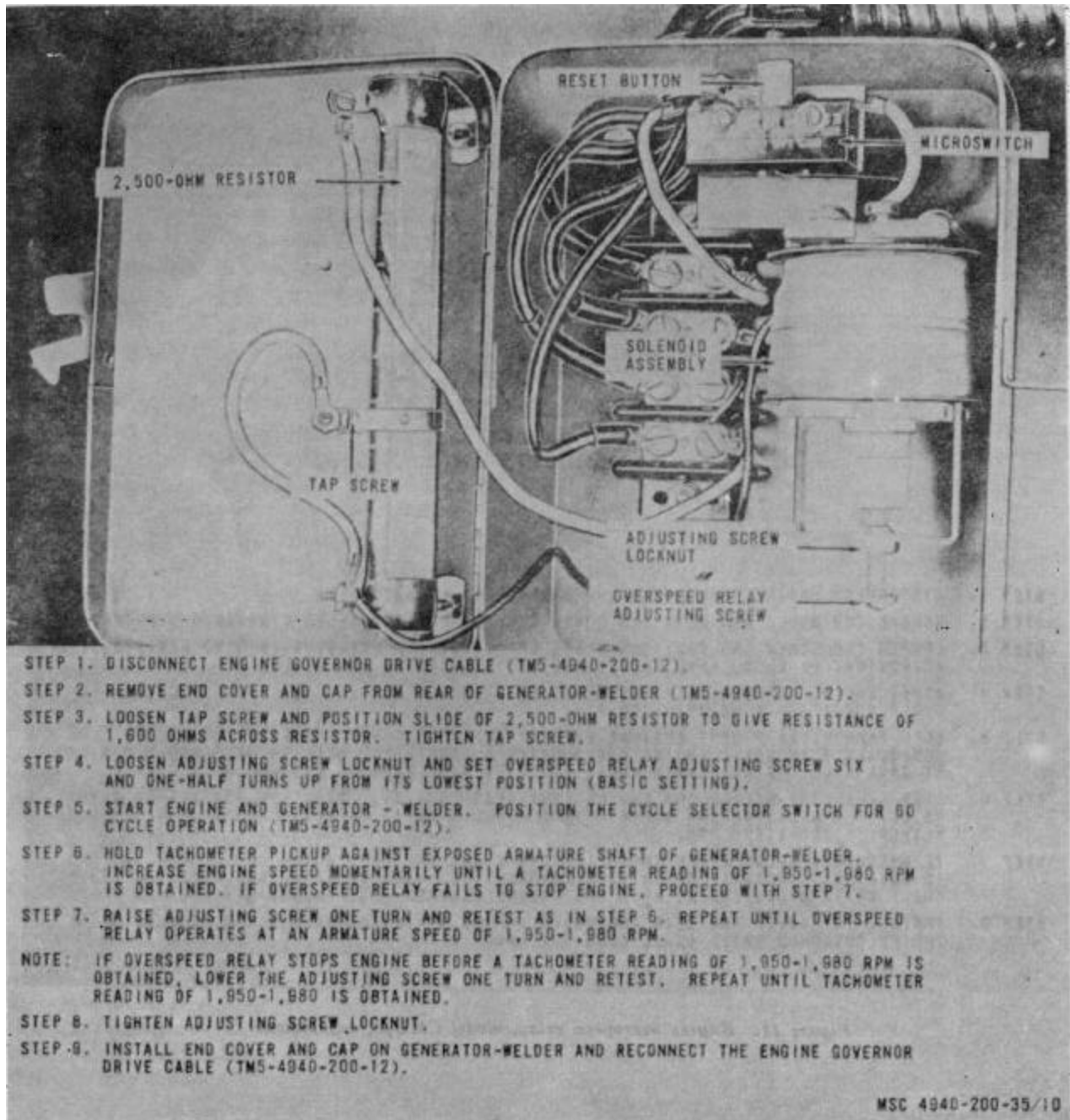


Figure 10. Engine overspeed relay, model SECM, adjustment.

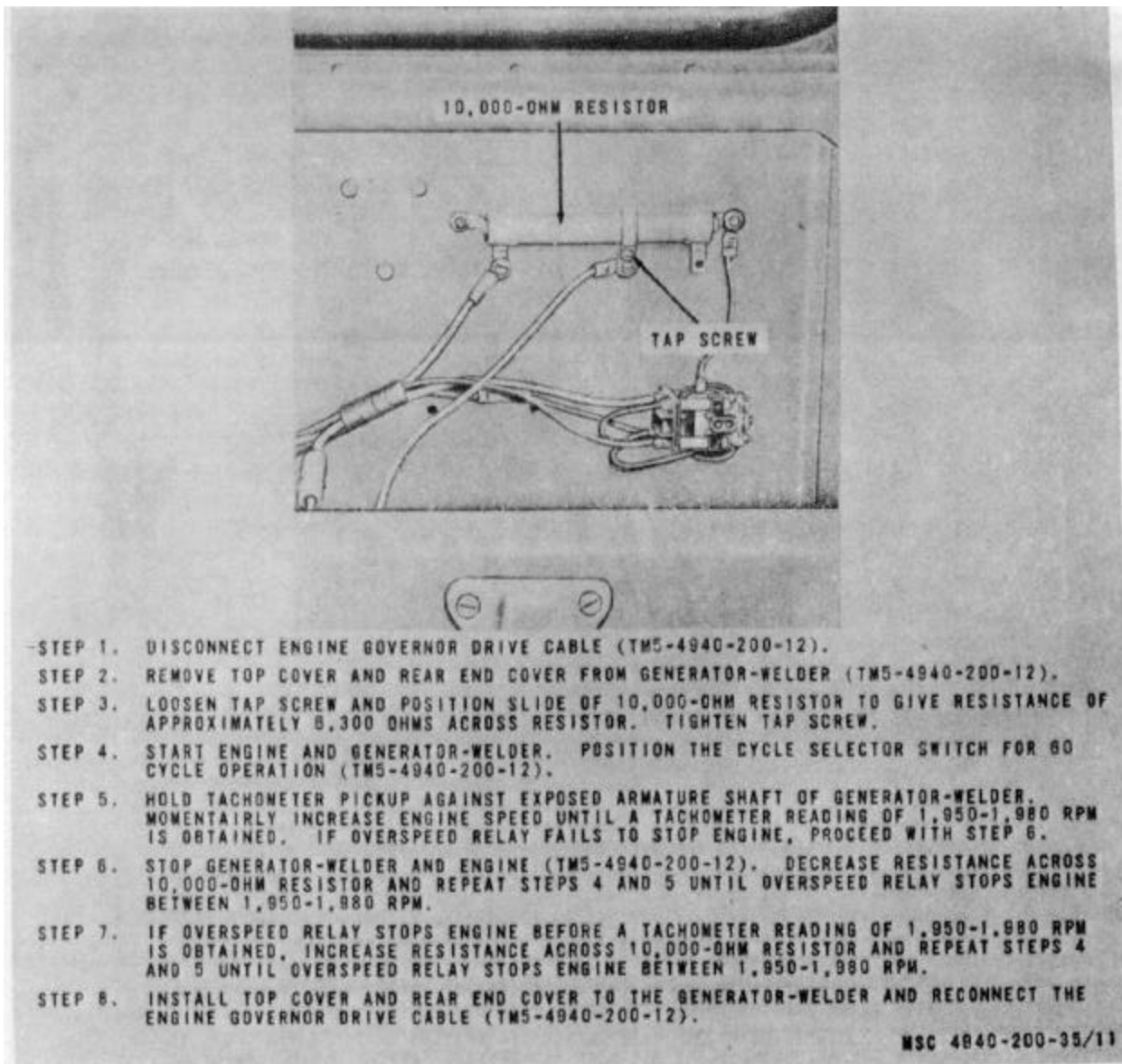


Figure 11. Engine overspeed relay, model CMU-5, adjustment.

Section III. ELECTRIC BRAKE LOCK

31. General

The electric brake lock is installed in the hydraulic brake system to lock the rear wheels of the truck. It is mounted on the inside of the right frame member near the center body bracket and is actuated by an electrical switch located on the dash of the truck. The brake lock maintains enough pressure on the hydraulic brake system of the rear wheels to prevent the truck from moving while the generator-welder is in operation.

32. Electric Brake Lock

a. *Removal.* Refer to figure 12 and remove the electric brake lock.

b. *Cleaning and Inspection.*

- (1) Clean the brake lock with a stiff brush to remove any heavy dirt; then wipe with a cloth dampened with an approved cleaning solvent. Dry with a stream of clean, dry, compressed air.

Note

Be careful not to allow foreign matter to enter the brake lock. Damage to the brake lock or hydraulic system may result.

- (2) Inspect the brake lock for breaks, cracks, or other damage and defects.
- (3) Inspect the clamp loop and mounting screw for damage and defects.
- (4) Replace a defective brake lock, mounting screw, or clamp loop.

c. *Installation.*

- (1) Refer to figure 12 and install the electric brake lock.

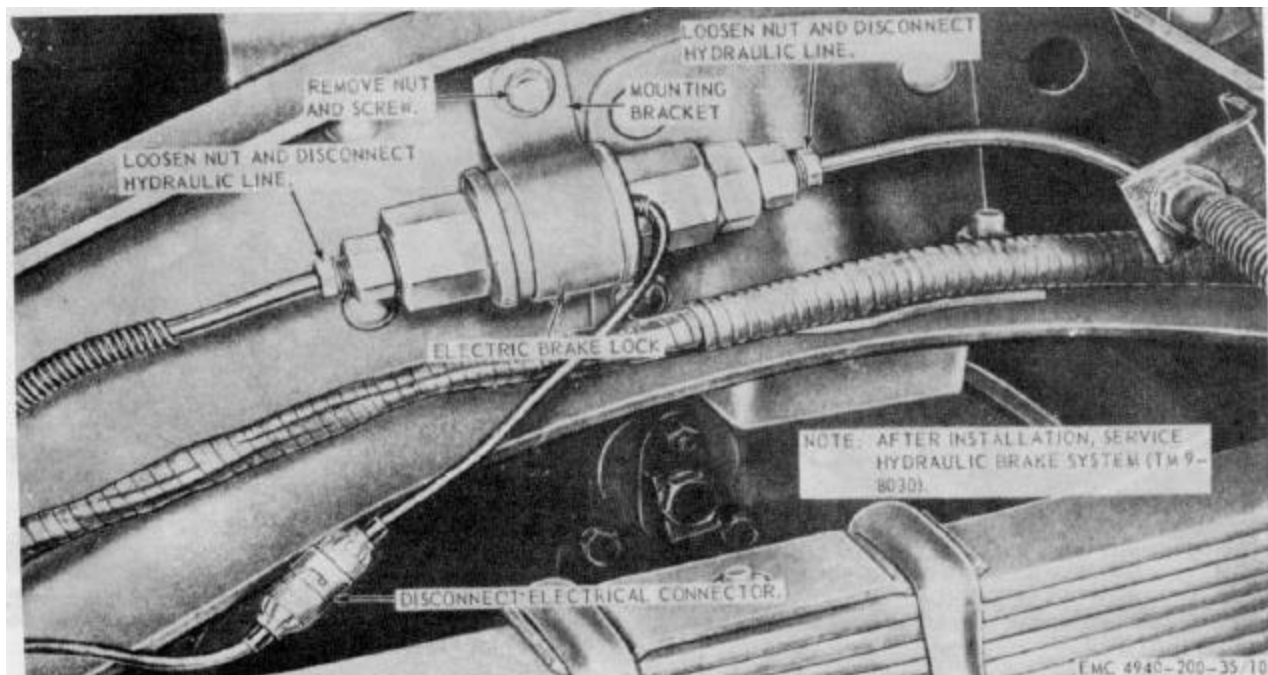


Figure 12. Electric brake lock, removal and installation.

Note

Be sure the electric brake lock is installed in such a manner that the output side is toward the rear.

(2) Refer to TM 5-4940-200-12 and set the brake lock. Inspect lines for leaking connections. Tighten leaking connections. If the brakes fail to hold the truck in position, the electric brake lock is defective and must be replaced.

Section IV. DECLUTCHER, PROPELLER SHAFT, AND POWER TAKEOFF UNIVERSAL JOINT AND SHAFT ASSEMBLY

33. General

a. The declutcher is located between the truck transfer case and the propeller shaft. It provides a means of disconnecting the power from the transfer case to the rear wheels in order that the truck transmission may be placed in gear to provide power takeoff for driving the generator-welder.

b. The propeller shaft of the truck has been shortened to provide space for introduction of the

declutcher into the power train; otherwise it remains in its normal position.

c. The power takeoff universal joint and shaft assembly is mounted to the emergency brakedrum by means of a yoke; it provides driving power to the power takeoff.

34. Declutcher and Coupling Flange

a. *Removal.* Refer to figure 13 and remove the declutcher and coupling flange.

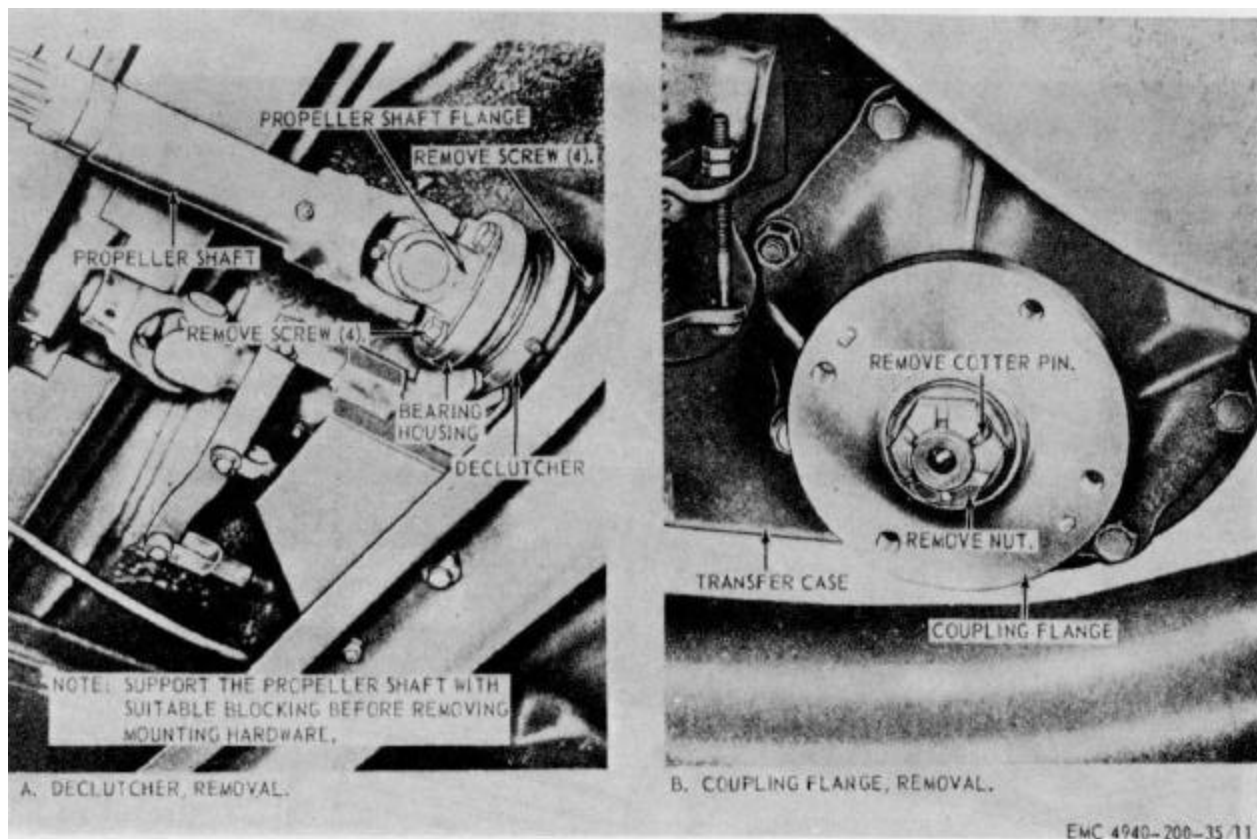


Figure 13. Declutcher and coupling flange, removal and installation.

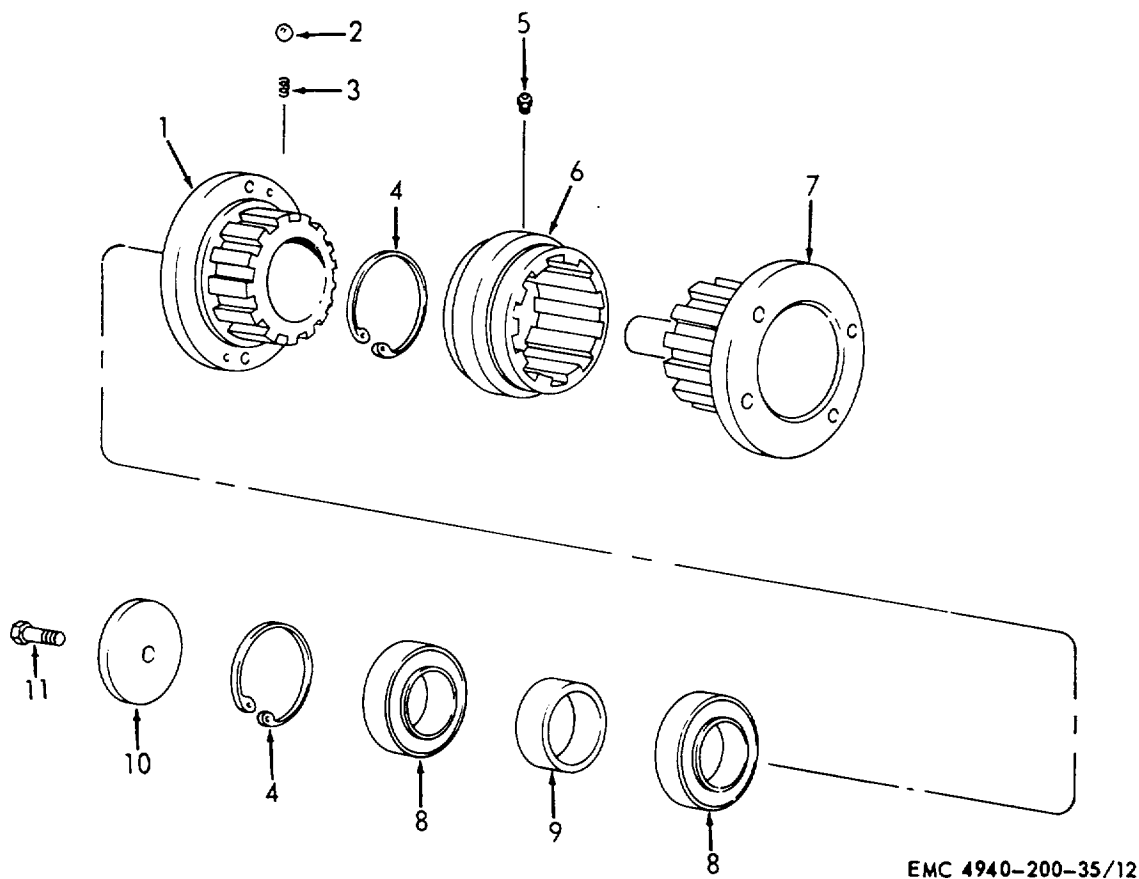
Note

Match mark the propeller shaft and the declutcher bearing housing, and the declutcher drive gear and the coupling flange before removal so that identical positions are maintained on installation.

b. *Disassembly.* Refer to figure 14 and disassemble the declutcher.

c. *Cleaning, Inspection, and Repair.*

- (1) Clean all metal parts, except bearings, in an approved cleaning solvent and dry thoroughly.
- (2) Clean the bearings as described in paragraph 26.
- (3) Inspect the drive gear, bearing housing, and sliding gear splines for excessive wear, burs, scores, nicks, or other damage.
- (4) Inspect the bearings for wear, rust, or rough spots.
- (5) Inspect all metal parts for cracks and nicks.



- | | |
|------------------------------------|--|
| 1 Bearing housing | 8 Ball bearing (2 rqr) |
| 2 Steel locking ball, 1/4 in. dia. | 9 Bearing spacer |
| 3 Helical compression spring | 10 Washer, flat, 13/32 in. id,
1 1/4 in. od, 3/32 in. thk |
| 4 Retaining ring (2 rqr) | 11 Screw, cap, hex-hd, 3/8-24 x
3/4 in. |
| 5 Lubrication fitting | |
| 6 Slide gear | |
| 7 Drive gear | |

Figure 14. Declutcher, disassembly and reassembly.

- (6) File minor burs and nicks smooth.
- (7) Replace all damaged parts and hardware.

d. *Reassembly.* Refer to figure 14 and reassemble the declutcher.

e. *Inspection.* Inspect the coupling flange (Fig. 13) for cracks or breaks. Replace a defective coupling flange.

f. *Installation.* Refer to figure 13 and install the coupling flange and declutcher.

35. Propeller Shaft

a. *Removal.*

- (1) Refer to paragraph 34 and disconnect the propeller shaft flange from the declutcher.
- (2) Refer to figure 15 and remove the propeller shaft.

b. *Disassembly.* Refer to figure 16 and disassemble the propeller shaft.

c. *Cleaning, Inspection, and Repair.*

- (1) Clean all metal parts with an approved cleaning solvent and dry thoroughly.
- (2) Inspect the propeller shaft splines for excessive wear, burs, scores, nicks, or other damage.
- (3) File off all burs and smooth nicks with a file.
- (4) Inspect the hub yoke for burred, nicked, or scored splines and for cracks, damaged threads, and other defects.
- (5) File burs and nicks from the splines. Replace a damaged hub yoke.
- (6) Inspect the shaft assembly for cracks or breaks. Replace a cracked or broken shaft assembly.
- (7) Clean the bearings as described in paragraph 26.



Figure 15. Propeller shaft, removal and installation.

- (8) Inspect the bearings for wear, rust, galls, or rough spots.
- (9) Replace a defective bearing by replacing the universal joint cross.

d. *Reassembly.* Refer to figure 16 and reassemble the propeller shaft.

e. *Installation.*

- (1) Refer to figure 15 and install the propeller shaft.
- (2) Refer to paragraph 34 and reconnect the propeller shaft flange to the declutcher.

36. Power Takeoff Universal Joint and Shaft Assembly

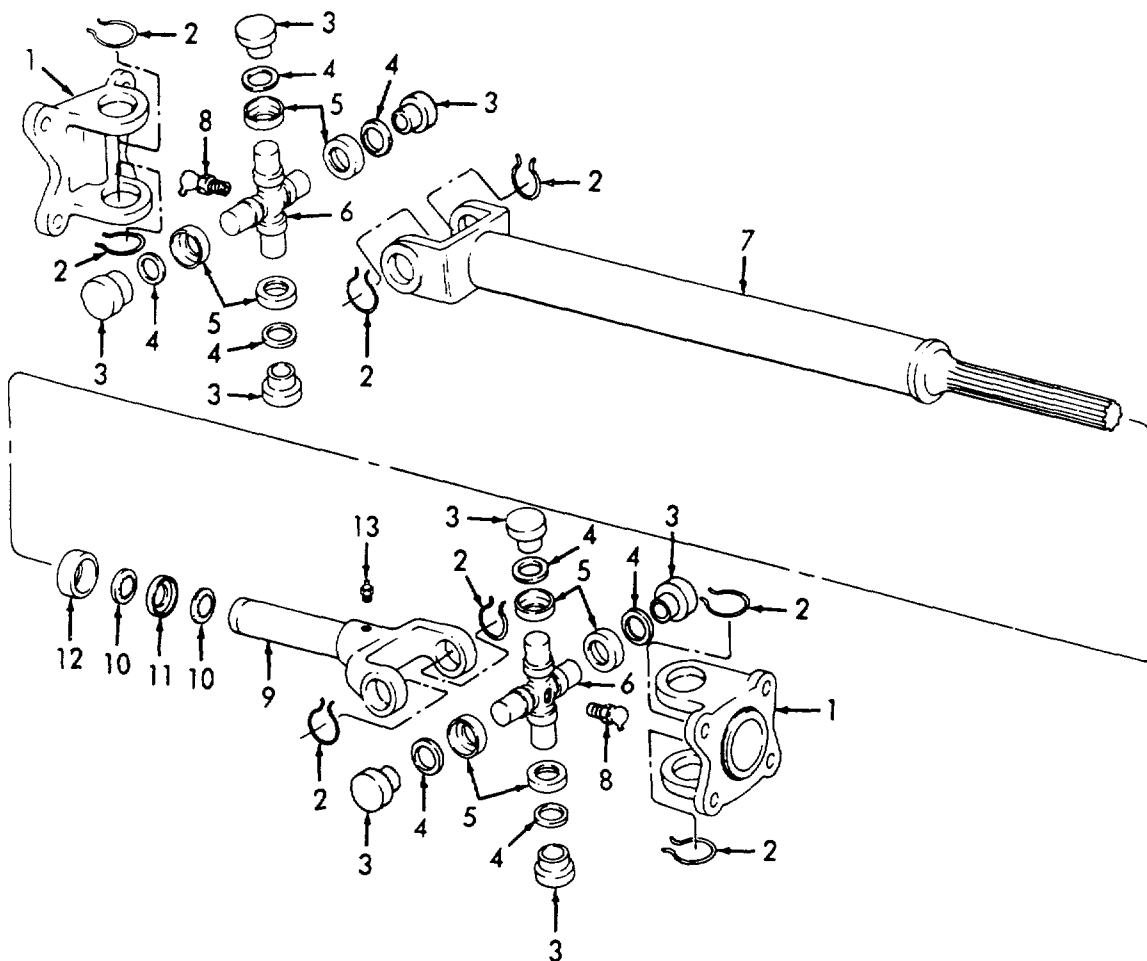
a. *Removal.* Refer to figure 17 and remove the power takeoff universal joint and shaft assembly.

b. *Disassembly.* Refer to figure 18 and disassemble the power takeoff universal joint and shaft.

c. *Cleaning, Inspection, and Repair.* Clean, inspect, and repair the power takeoff universal joint and shaft as described in paragraph 35.

d. *Reassembly.* Refer to figure 18 and reassemble the power takeoff universal joint and shaft.

e. *Installation.* Refer to figure 17 and install the power takeoff universal joint and shaft assembly.



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- | | |
|---------------------------------|--|
| 1 Flange yoke (2 rqr) | 8 Lubrication fittings, 67 1/2°,
1/8-27 in. (2 rqr) |
| 2 Retaining ring (8 rqr) | 9 Splined sleeve yoke |
| 3 Needle roller bearing (8 rqr) | 10 Seal washer (2 rqr) |
| 4 Cork seal (8 rqr) | 11 Felt seal |
| 5 Bearing seal retainer (8 rqr) | 12 Seal retainer |
| 6 Universal joint cross (2 rqr) | 13 Straight lubrication fitting
1/8-27 in. |
| 7 Propeller shaft | |

Figure 16. Propeller shaft, disassembly and reassembly.

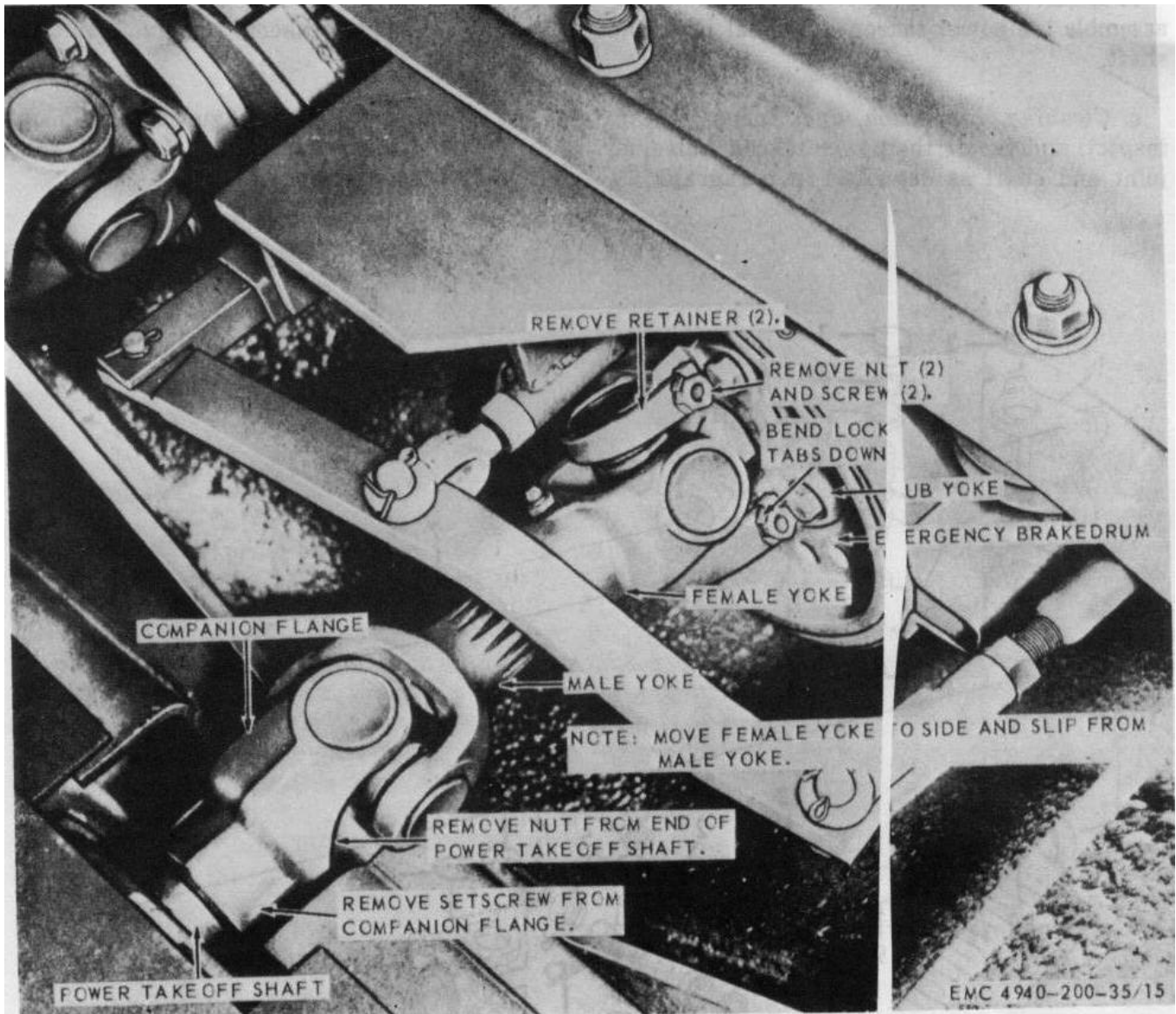
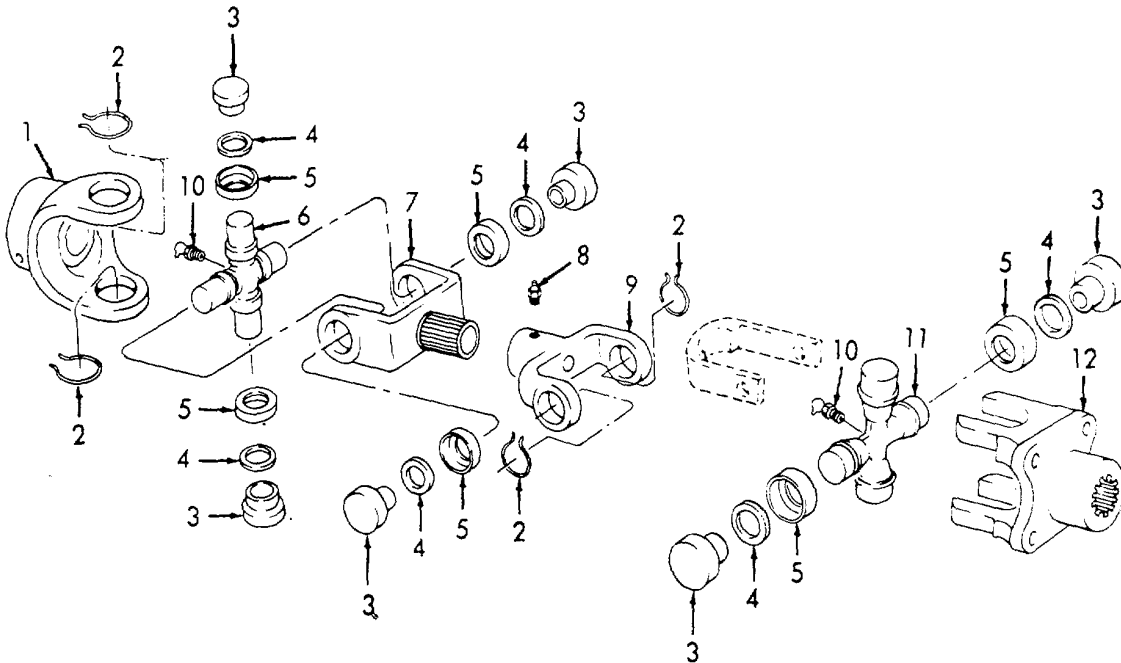


Figure 17. Power takeoff universal joint and shaft assembly, removal and installation.



EMC 4940-200-35/16

- | | |
|---------------------------------|---|
| 1 Companion flange | 8 Straight lubrication fitting,
1/8-27 in. |
| 2 Retaining ring (8 rqr) | 9 Female yoke |
| 3 Needle roller bearing (8 rqr) | 10 Lubricating fitting 67°, 1/8-27
in. (2 rqr) |
| 4 Cork seal (8 rqr) | 11 Universal joint spider (2 rqr) |
| 5 Retainer seal (8 rqr) | 12 Hub yoke |
| 6 Universal joint cross (2 rqr) | |
| 7 Male yoke | |

Figure 18. Power takeoff universal joint and shaft, disassembly and reassembly.

Section V. POWER TAKEOFF AND POWER TAKEOFF CONTROLS

37. General

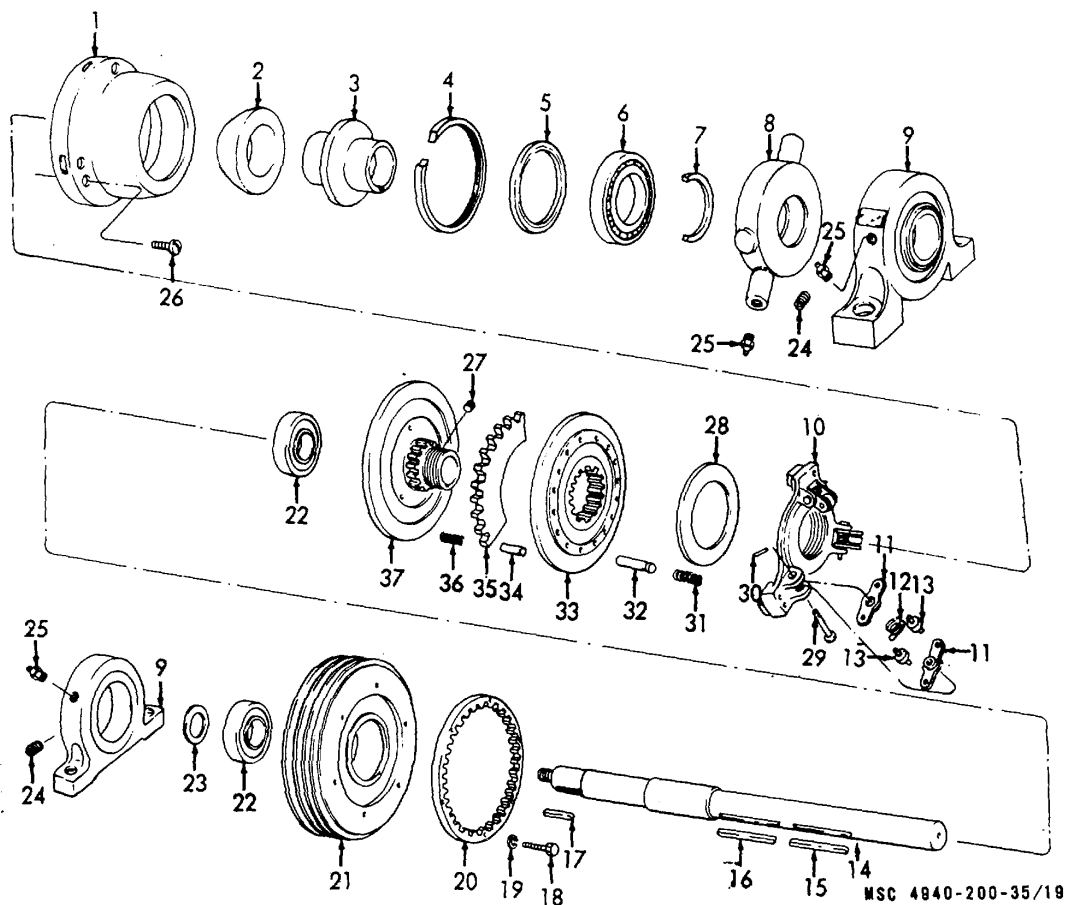
The power takeoff, located at the front of the body below the floor, is mounted on crossmembers through pillow blocks. Power is transmitted from the truck engine to the power takeoff and from the power takeoff through drive belts to the generator-welder. The power takeoff has a clutch which, through a linkage system, can be disengaged to shut off power to the generator-welder. It is protected from road dirt and water by a shield.

38. Power Takeoff

a. *Removal.* Refer to paragraph 21 and remove the power takeoff.

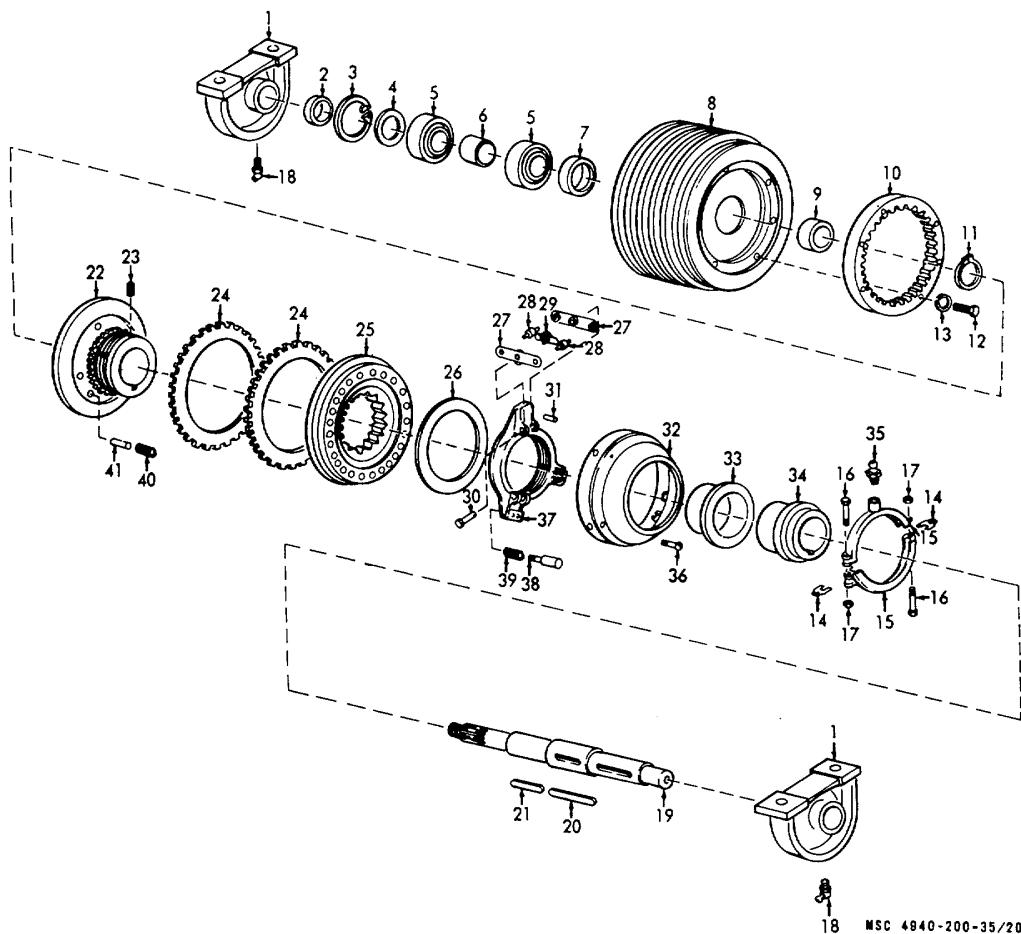
b. *Disassembly.*

- (1) Refer to figure 19 and disassemble the Model SECM power takeoff.
- (2) Refer to figure 20 and disassemble the Model CMU-5 power takeoff.



- | | | | |
|----|---|----|---|
| 1 | Clutch cover | 21 | Pulley |
| 2 | Clutch cone ring | 22 | Ball bearing (2 rqr) |
| 3 | Cone sleeve | 23 | Spacer, 13/8 in. id x 1 3/4 in. od x 1.108 in. thk |
| 4 | Snapping | 24 | Setscrew, socket-hd, 5/16-24 x 1/2 in. (2 rqr) |
| 5 | Flat washer (spec) | 25 | Lubrication fitting, 1/8-27 in. (3 rqr) |
| 6 | Ball bearing | 26 | Screw, machine, rd-hd, 1/4-20 x 1/2 in. (3 rqr) |
| 7 | Snapping | 27 | Setscrew, socket-hd, half dog point, 3/8-16 x 7/16, in. |
| 8 | Cone collar | 28 | Roller clutch disk |
| 9 | Pillow block (2 rqr) | 29 | Pin (spec) (3 rqr) |
| 10 | Adjusting yoke | 30 | Pin, roll, 1/8 in. x 5/6 in. (3 rqr) |
| 11 | Shifter clutch lever (6 rqr) | 31 | Pin spring |
| 12 | Lever roller spring (3 rqr) | 32 | Clutch lockpin |
| 13 | Lever roller (6 rqr) | 33 | Floating clutch plate |
| 14 | Power takeoff shaft | 34 | Pin, roll, 5/32 in. x 13/16 in. (4 rqr) |
| 15 | Key, machine, 7/32 x 1/4 x 2 3/4 in. | 35 | Drive plate (3 section) |
| 16 | Key, machine, 5/16 x 5/16 x 2 in. | 36 | Clutch release spring (4 rqr) |
| 17 | Key, machine, 1/4 x 1/4 x 1 1/4 in. | 37 | Hub back plate |
| 18 | Bolt, machine, 5A6-18 x 1 1/4 in. (6 rqr) | | |
| 19 | Washer, lock, 5/16 in. (6 rqr) | | |
| 20 | Interval gear | | |

Figure 19. Power takeoff, Model SECM, disassembly and reassembly.



- | | | | |
|----|---|----|---|
| 1 | Pillow block | 21 | Square key |
| 2 | Spacer | 22 | Hub and back plate |
| 3 | Retaining ring | 23 | Setscrew, 3/8-16 x 7/8 in. lg. |
| 4 | Bearing baffle | 24 | Driving plate (2 rqr) |
| 5 | Ball bearing (2 rqr) | 25 | Floating clutch plate |
| 6 | Spacer | 26 | Roller disk |
| 7 | Oil seal | 27 | Lever (6 rqr) |
| 8 | Pulley | 28 | Roller (6 rqr) |
| 9 | Spacer | 29 | Lever spring (3 rqr) |
| 10 | Interval gear | 30 | Lever pin (3 rqr) |
| 11 | Snapping | 31 | Pin, roll, 0.125 in. dia. 0.625 in. lg, 0.028 in. thk. (3 rqr) |
| 12 | Bolt, machine, 5/16-18 x 1 1/2 in. (6 rqr) | 32 | Cover |
| 13 | Washer, lock, 0.319 in. id, 0.519 in. od, 0.078 in. thk (6 rqr) | 33 | Cone ring |
| 14 | Shim (2 rqr) | 34 | Cone sleeve |
| 15 | Split cone collar | 35 | Lubrication fitting, 1/8-27 |
| 16 | Screw, cap, hex-hd, 3/8-24 x 2 1/4 in. (2 rqr) | 36 | Screw, machine, 1/4-20 x 1/2 in. (3 rqr) |
| 17 | Nut, plain, hex, 3/8-24 (2 rqr) | 37 | Adjusting yoke |
| 18 | Lubrication fitting, 45 degrees, 1/4-28 (2 rqr) | 38 | Lock pin |
| 19 | Shaft | 39 | Pin spring |
| 20 | Key | 40 | Release spring (4 rqr) |
| | | 41 | Pin, spring, release, 5/32 in. dia, 13/16 in. lg, 0.032 in. thk (4 rqr) |

Figure 20. Power takeoff, Model CMU-5, disassembly and reassembly.

c. Cleaning, Inspection, and Repair.

- (1) Clean all metal parts, except bearings, in an approved cleaning solvent and dry thoroughly.
- (2) Clean and inspect the bearings as described in paragraph 26.
- (3) Inspect all metal parts for cracks or breaks.
- (4) Inspect the pulley for nicks, wear, burs, or cracks. Smooth all burs and minor nicks with a file. Replace a defective pulley.
- (5) Inspect the hub and back plate, floating plate, and roller disk for cracks, breaks, galled bearing surfaces, rough bearing surfaces, and excessive wear. Replace a defective hub and back plate, floating plate, or roller disk.
- (6) Inspect all gears for excessive wear, nicks, and cracks. Replace a damaged gear.
- (7) Inspect the adjusting yoke, lever pin, lever, roller, and lever spring for cracks, breaks, excessive wear, or other damage. Replace if defective.
- (8) Inspect the clutch cover for cracks, breaks, or dents.
- (9) Hammer out dents in the clutch cover. Discard a cracked or broken clutch cover.
- (10) Inspect the cone sleeve for burs, nicks, galls, and excessive wear. Replace a damaged cone ring or cone sleeve.
- (11) Inspect the cone collar for excessive wear, cracks, or breaks. Replace a defective cone collar.
- (12) Inspect the pillow blocks for excessive wear, cracks, or breaks. Replace a defective pillow block.
- (13) Inspect all V-belts for wear, cracks, and fraying. Replace defective V-belts.

d. Reassembly.

- (1) Refer to figure 19 and reassemble the model SECM power takeoff.
- (2) Refer to figure 20 and reassemble the model CMU-5 power takeoff.

e. Installation. Refer to paragraph 21 and install the power takeoff.

f. Adjustment. Refer to TM 5-4940-200-12 and adjust the power takeoff clutch.

39. Clutch Operating Linkage Bracket Assembly

a. Removal. Refer to paragraph 21 and remove the clutch operating linkage bracket assembly.

b. Disassembly. Refer to figure 21 and disassemble the clutch operating linkage bracket assembly.

c. Cleaning, Inspection, and Repair.

- (1) Clean all parts in an approved cleaning solvent and dry thoroughly.
- (2) Inspect all parts for cracks, breaks, or excessive wear.
- (3) Replace all worn or defective parts.

d. Reassembly. Refer to figure 21 and reassemble the clutch operating linkage bracket assembly.

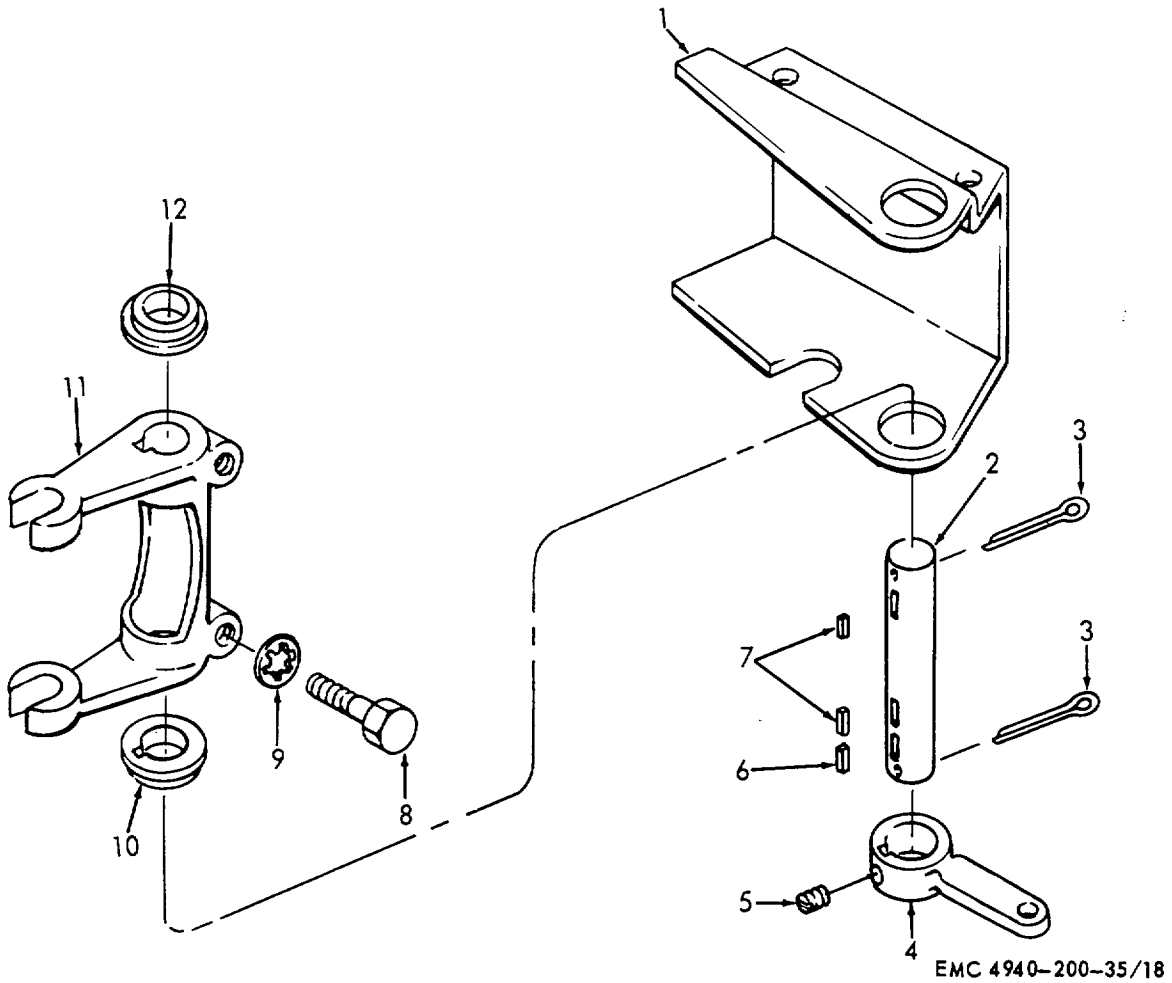
e. Installation. Refer to paragraph 21 and install the clutch operating linkage bracket assembly.

40. Power Takeoff Upper Linkage

a. Removal. Refer to TM 5-4940-200-12 and remove the model SECM or model CMU-5 power takeoff upper linkage.

b. Disassembly.

- (1) Refer to figure 22 and disassemble the power takeoff upper linkage, model SECM.



- | | | | |
|---|--|----|---|
| 1 | Lower linkage bracket | 7 | Key, machine, 1/4 x 1/4 x 1 in. |
| 2 | Takeoff arm shaft | 8 | Screw, cap, hex-hd, 3/8-16
x 1 1/2 in. (2 rqr) |
| 3 | Pin, cotter, 1/8 x 2 in. (2 rqr) | 9 | Washer, lock, IT, 3/8 in.
(2 rqr) |
| 4 | Operating arm | 10 | Lower bushing |
| 5 | Setscrew, socket-hd, 1/4-20 x
1/4 in. | 11 | Clutch shifter fork |
| 6 | Key, machine, 1/4 x 1/4 x
3/4 in. | 12 | Upper bushing |

Figure 21. Clutch operating linkage bracket assembly, disassembly and reassembly.

- (2) Refer to figure 23 and disassemble the power takeoff upper linkage, model CMU-5.

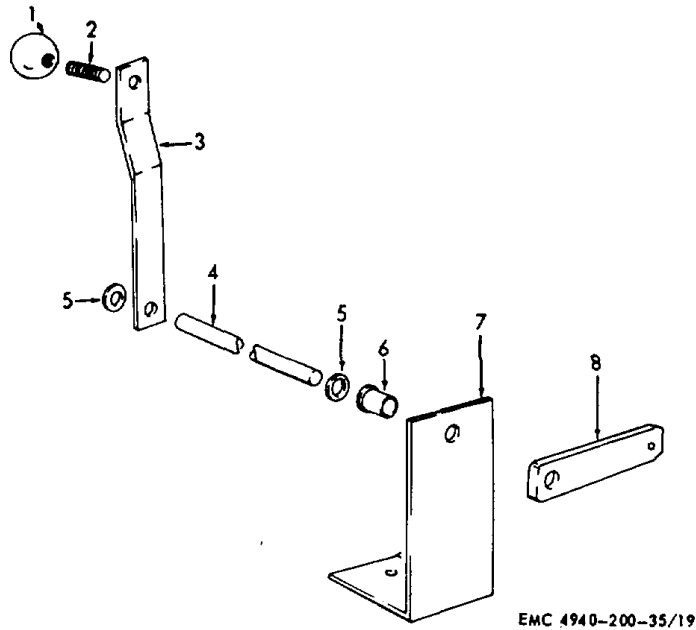
c. *Cleaning, Inspection, and Repair.*

- (1) Clean the upper linkage in an approved cleaning solvent.
- (2) Inspect all parts for cracks, breaks and other damage.
- (3) Weld cracks and minor breaks.
- (4) Replace all defective parts.

d. *Reassembly.*

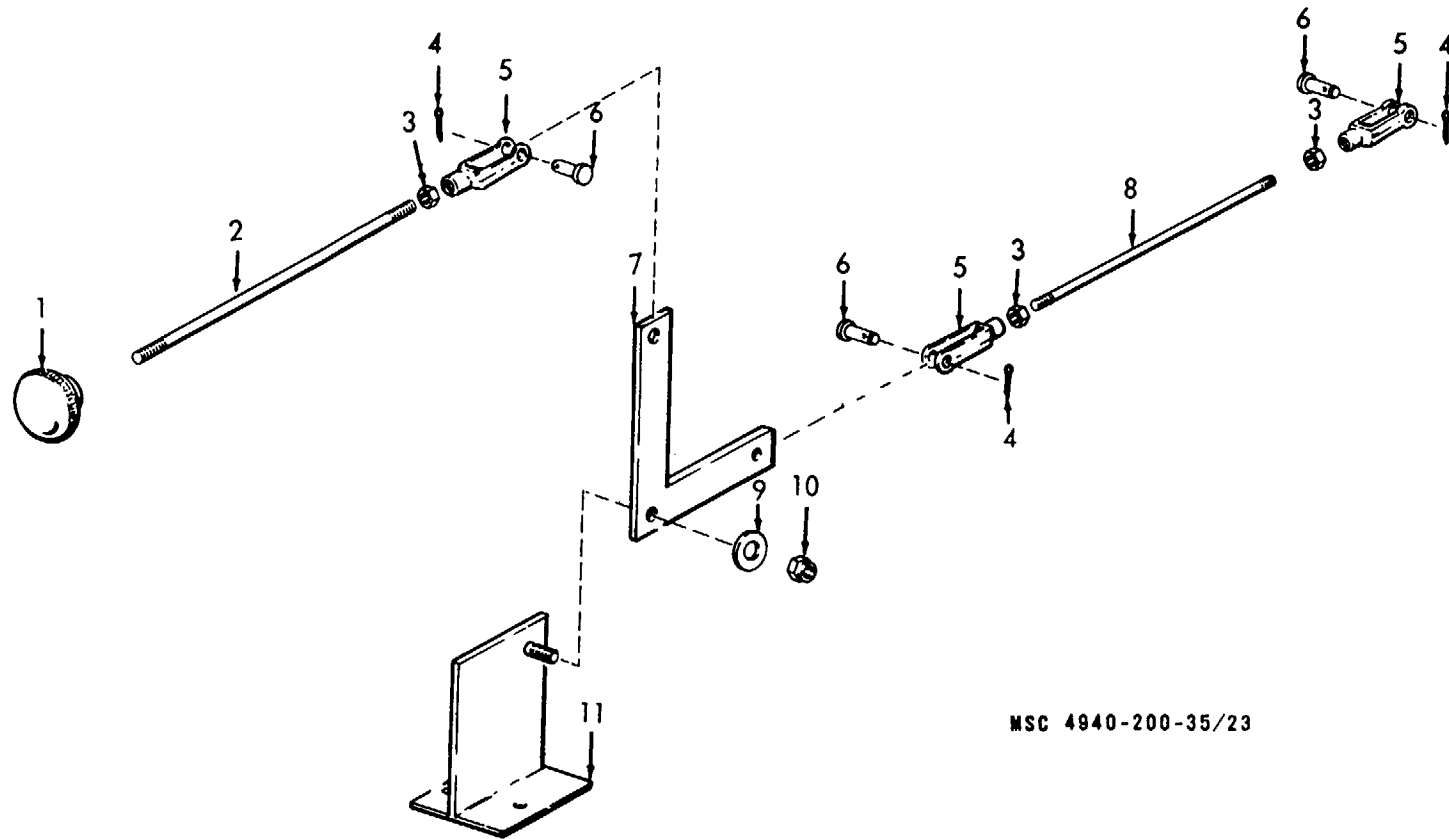
- (1) Refer to figure 22 and reassemble the power takeoff upper linkage, model SECM.
- (2) Refer to figure 23 and reassemble the power takeoff upper linkage, model CMU-5.

e. *Installation.* Refer to TM 5-4940-200-12 and install the model SECM or model CMU-5 power takeoff upper linkage.



- | | |
|-------------------|--|
| 1 Knob | 5 Washer, flat, 1 3/16 in. id, 2 in. od, 0.177 in. thk (2 rqr) |
| 2 Stud (spec) | 6 Sleeve bearing (2 rqr) |
| 3 Operating lever | 7 Upper linkage bracket |
| 4 Lever shaft | 8 Operating link |

Figure 22. Power takeoff upper linkage, model SECM, disassembly and reassembly.



MSC 4940-200-35/23

- | | |
|---|---|
| 1 Knob | 6 Clevis pin, 3/8 in. dia,
1 in. lg (3 rqr) |
| 2 Shift rod | 7 Bellcrank |
| 3 Nut, plain, hex, 3/8-24
(3 rqr) | 8 Clutch rod |
| 4 Pin, cotter, 1/8 in. dia,
1 in. lg (3 rqr) | 9 Washer, plain, flat, 1/2 in. id,
1 3/8 in. od, 1/8 in. thk |
| 5 Clevis (3 rqr) | 10 Nut, shoulder, hex (spec) |
| | 11 Bracket |

Figure 23. Power takeoff upper linkage, model CMU-5, disassembly and reassembly.

Section VI. GENERATOR-WELDER

41. General

The generator-welder is a multi-purpose machine capable of generating direct current for welding, battery charging, or furnishing power to start equipment with low or defective batteries. It will generate 120-volt, single-phase, or 200-volt, 3-phase current and has an integrated 220-volt, 3-phase electric motor which can be used to drive the direct current generator portion when an outside electrical power source is available. The truck engine is the basic source of power for operation of the machine. Power from the truck engine is delivered through flange and brakedrum, universal joint and shaft assembly, power takeoff pulleys, and belts to the armature shaft.

42. On-Equipment Testing

a. Exciter Armature. Refer to TM 5-764 for armature testing procedures.

b. Revolving Field.

- (1) Refer to TM 5-4940-200-12 and lift the brushes from the electrical contact rings.
- (2) Using a multimeter, test between the two electrical contact rings. A reading of more than 19.95 ohms or less than 18.05 ohms indicates defective wiring or electrical contact rings; the armature must be removed for further testing.
- (3) Refer to TM 5-764 for procedures to be used in testing between the armature shaft and the electrical contact rings.

c. Generator-welder Armature. Refer to TM 5-764 for armature testing procedures.

d. Motor Stator. Refer to TM 5-764 for motor stator testing procedures.

e. Exciter Field Group.

- (1) Disconnect the exciter leads marked EXF and EX + at the terminal board on the generator-welder. Refer to figure 1 or 2.

- (2) Refer to TM 5-4940-200-12 and lift the brushes from the sliprings and from the exciter commutator.
- (3) Refer to TM 5-4940-200-12 and remove the capacitor from the positive brush group.
- (4) Using a multimeter, test between leads. A reading of more than 63 ohms or less than 57 ohms indicates a faulty field coil or interconnections; the stator assembly must be removed for additional testing.
- (5) Test between the field and one of the exciter leads marked EXF or EX + as described in TM 5-764. A reading of less than 0.5 megohm indicates faulty insulation; the stator assembly must be removed for additional testing.

f. Shunt Field. Refer to TM 5-764 for shunt field testing procedures. A reading of less than 0.5 megohm indicates faulty insulation; the field frame must be removed for additional testing.

g. Welding Generator Series Field Group. Refer to TM 5-764 for series field group testing

h. Welding Generator Interpole Group. Refer to TM 5-764 for interpole group testing procedures.

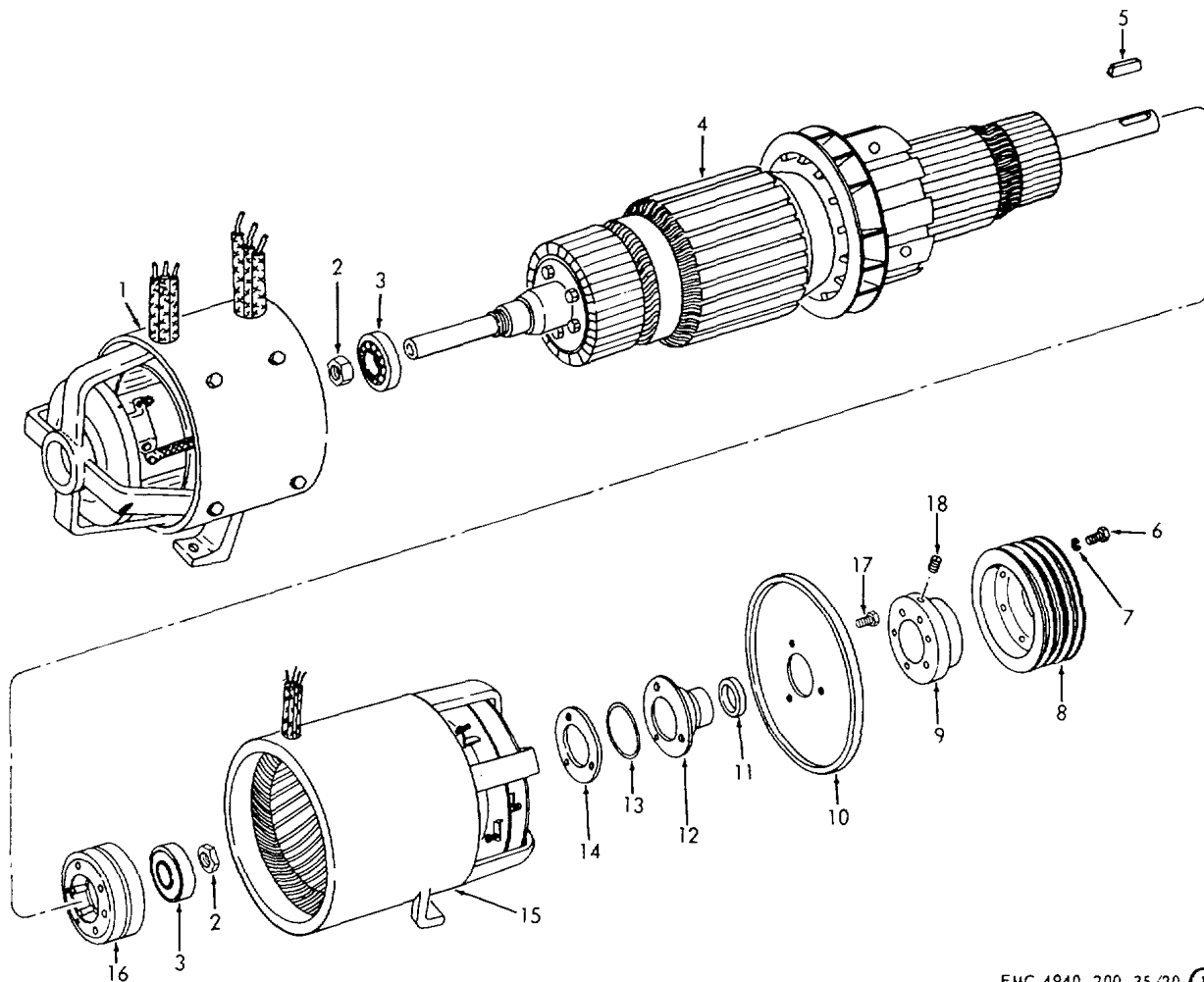
43. Generator-Welder

a. Removal. Refer to paragraph 22 and remove the generator-welder.

b. Testing During or After Disassembly. Refer to TM 5-764 and test each component of the generator-welder at the appropriate time during disassembly.

c. Disassembly.

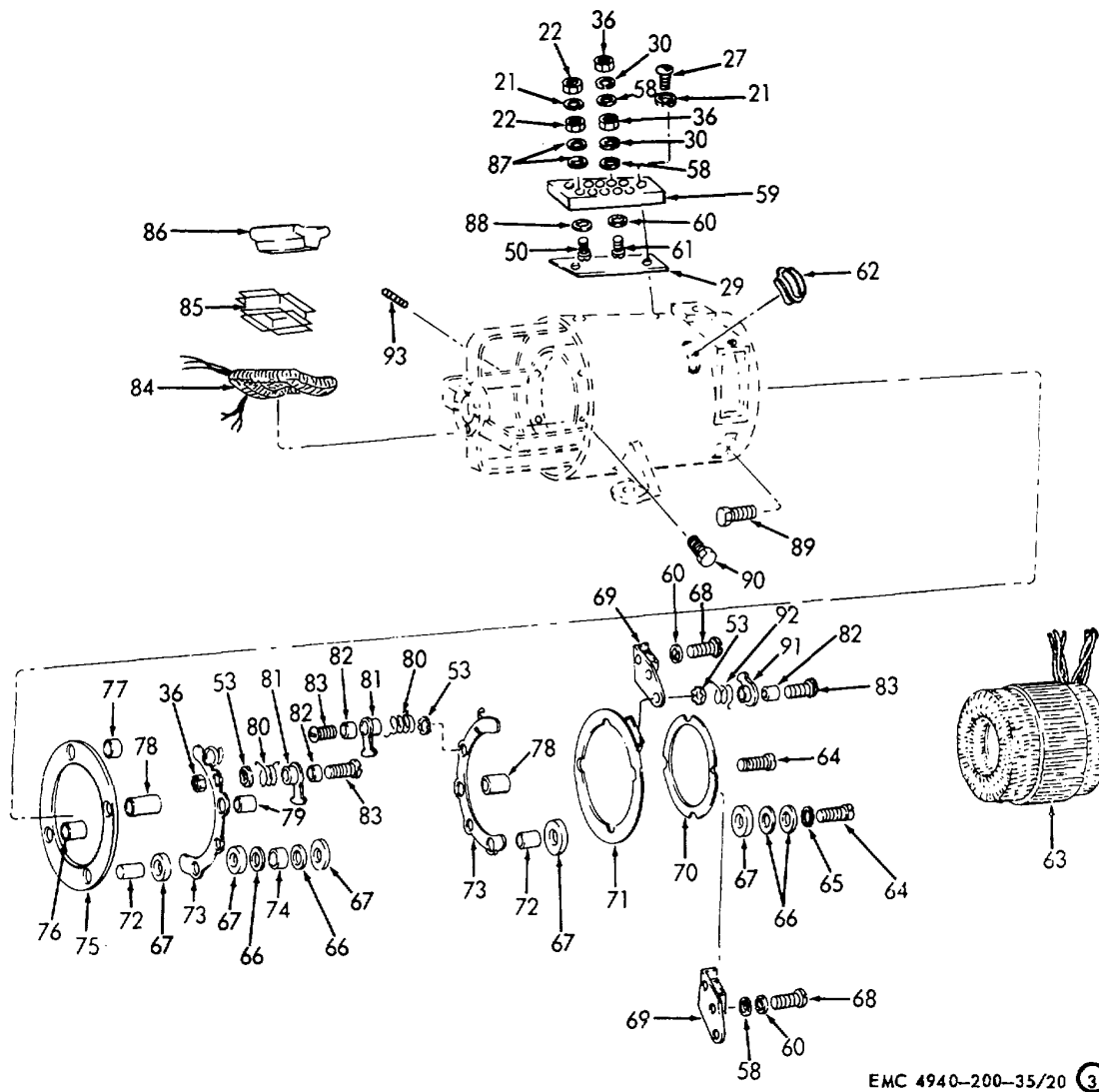
- (1) Refer to TM 5-4940-200-12 and remove the air filters, and wrappers, rear shaft guard, and end cover.
- (2) Refer to figure 24 and disassemble the generator-welder.



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- | | | | |
|---|---|----|---|
| 1 | Welder stator assembly | 10 | End cover |
| 2 | Nut, hex, 1 9/16-14 (2 rqr) | 11 | Felt washer (2 rqr) |
| 3 | Ball bearing (2 rqr) | 12 | Bearing cap (2 rqr) |
| 4 | Armature assembly | 13 | Bearing shim |
| 5 | Key, machine, 3/8 x 2 1/2 in. | 14 | Gasket |
| 6 | Bolt, machine, hex-hd, 5/16-18
x 2 in. (6 rqr) | 15 | Exciter stator assembly |
| 7 | Washer, lock, 5/16 in. (6 rqr) | 16 | Electrical contact ring assembly |
| 8 | Pulley | 17 | Bolt, machine, hex-hd, 5/16-18
x 3/4 in. (3 rqr) |
| 9 | Pulley hub | 18 | Setscrew, socket-hd, 1/4-20 x 3/8 in. |

Figure 24. Generator-welder, disassembly and reassembly.



EMC 4940-200-35/20 ③

- | | | | | | |
|----|--|----|-------------------------------------|----|--|
| 58 | Washer, flat, 1/4 in. (12 rqr) | 70 | Exciter commutator inner brush ring | 83 | Screw, machine, rd-hd, 1/4-20 x 7/8 in. (6 rqr) |
| 59 | Terminal board | 71 | Exciter commutator outer brush ring | 84 | Shunt winding (4 rqr) |
| 60 | Washer, lock, IT, 1/4 IN. (14 rqr) | 72 | Brush holder stud insulator (4 rqr) | 85 | Winding wrapper (4 rqr) |
| 61 | Screw, machine, rd-hd, 1/4-20 x 1 1/4 in. (6 rqr) | 73 | Brush holder ring (2 rqr) | 86 | Pole piece (4 rqr) |
| 62 | Rubber bushing | 74 | Brush ring sleeve bearing | 87 | Washer, flat, 7/32 in. id, 1/2 in. od, 0.049 in. thk -(12 rqr) |
| 63 | Motor end stator | 75 | Brush holder mounting ring | 88 | Washer, lock, IT, No. 10 (6 rqr) |
| 64 | Screw, cap, hex-hd, 3/8-16 x 2 1/2 in. (4 rqr) | 76 | Brush ring sleeve bearing | 89 | Screw, cap, hex-hd, 3/8-16 x 1 3/8 in. (4 rqr) |
| 65 | Washer, lock, 3/8 in. (4 rqr) | 77 | Brush ring sleeve bearing (2 rqr) | 90 | Screw, cap, hex-hd, 3/8-16 x 1 1/4 in. (4 rqr) |
| 66 | Washer, flat, 3/8 in. (13 rqr) | 78 | Brush ring sleeve bearing (2 rqr) | 91 | Brush arm (4 rqr) |
| 67 | Washer, nonmetallic, 33/64 in. id, 1 1/8 in. od (14 rqr) | 79 | Insulator bushing | 92 | Brush spring (4 rqr) |
| 68 | Screw, machine, rd-hd, 1/4-20 x 3/8 in. (8 rqr) | 80 | Brush spring (2 rqr) | 93 | Setscrew, 3/8-16 x 7/8 in. (4 rqr) |
| 69 | Brush holder (4 rqr) | 81 | Brush arm (2 rqr) | | |
| | | 82 | Brush spring bushing (6 rqr) | | |

Figure 24-Continued.

d. Cleaning, Inspection, and Repair.

- (1) Clean all metal parts with an approved cleaning solvent and dry thoroughly.
- (2) Inspect the brush holders, brush holder rings, plates, and brush spring assemblies for breaks, cracks, or other damage. Replace all parts found to be defective.
- (3) Clean a slightly dirty or discolored commutator with No. 00 sandpaper. Blow sand, dust, and dirt from the armature with clean, dry, compressed air.

Caution

Do not use emery paper or emery cloth on any commutator.

- (4) Inspect the armature shaft bearing surface for wear or damage. Examine the bearing for wear, galling, roughness, or other damage. Replace a damaged bearing.
- (5) Inspect the electrical contact ring assembly for roughness, wear, and roundness. If defects cannot be corrected, replace the electrical contact ring assembly.
- (6) Inspect the welder commutator and the generator commutator for roughness, wear, or eccentricity. Measure the commutator runout with a dial indicator. Place the armature assembly in a lathe and turn a commutator that is 0.003 inch or more out-of-round. Make light cuts until the commutator is cleaned.
- (7) Undercut the mica separators in the commutator to a depth of one thirty

second inch below the commutator bars, either by hand or by machine.

- (8) Inspect all stator assemblies and field coils for defective insulation, broken leads, or other defects. Replace defective windings, leads, or insulation.
- (9) Inspect the terminal boards for cracks, breaks, defective terminals or terminal components. Replace a defective terminal board or components.
- (10) Inspect each frame member for cracks or breaks. Weld minor cracks and replace a damaged frame.
- (11) Inspect each panel of the generator box for cracks, dents, and defective mounting hardware. Straighten dents, weld cracks, and replace defective mounting hardware. Replace a badly; damaged panel.
- (12) Inspect the conduit assembly for cracks and breaks. Replace a damaged conduit assembly.
- (13) Inspect the generator-welder base for cracks, breaks, and damaged mounting hardware. Weld cracks and minor breaks. Replace damaged mounting hardware.

e. Reassembly.

- (1) Refer to figure 24 and reassemble the generator-welder.
- (2) Refer to TM 5-4940-200-12 and install the end cover, rear shaft guard, end wrappers, and air filters.

f. Installation. Refer to paragraph 22 and install the generator-welder.

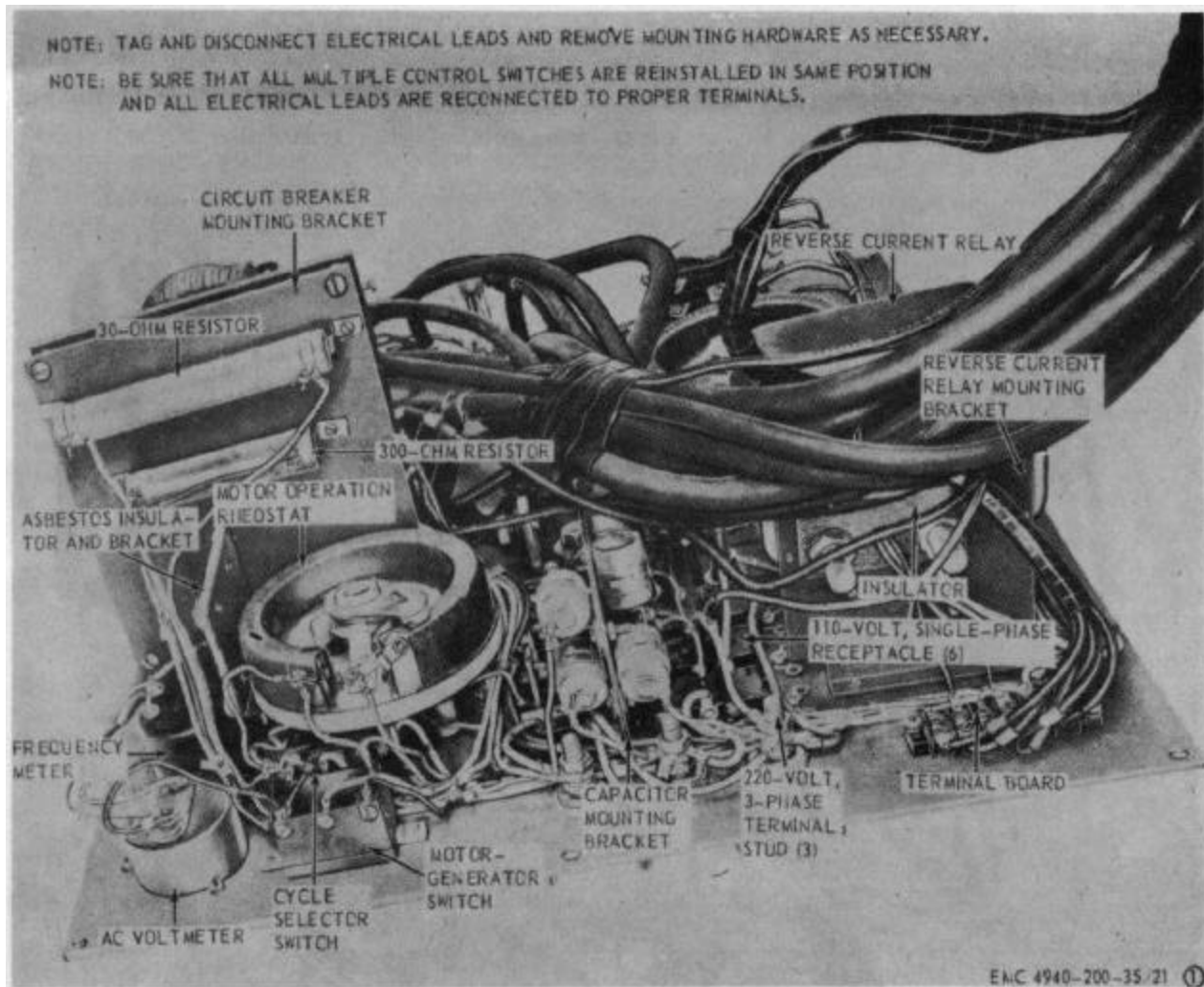
Section VII. CONTROLS AND INSTRUMENTS**44. General**

The control panel for the generator-welder is located in the front compartment of the left side of the shop set body. It contains all the instruments necessary to operate the generator-welder as an arc welder, a battery-charging generator, an alternating current

generator, and as a source of direct current for engine starting.

45. Controls and Instruments*a. Removal.*

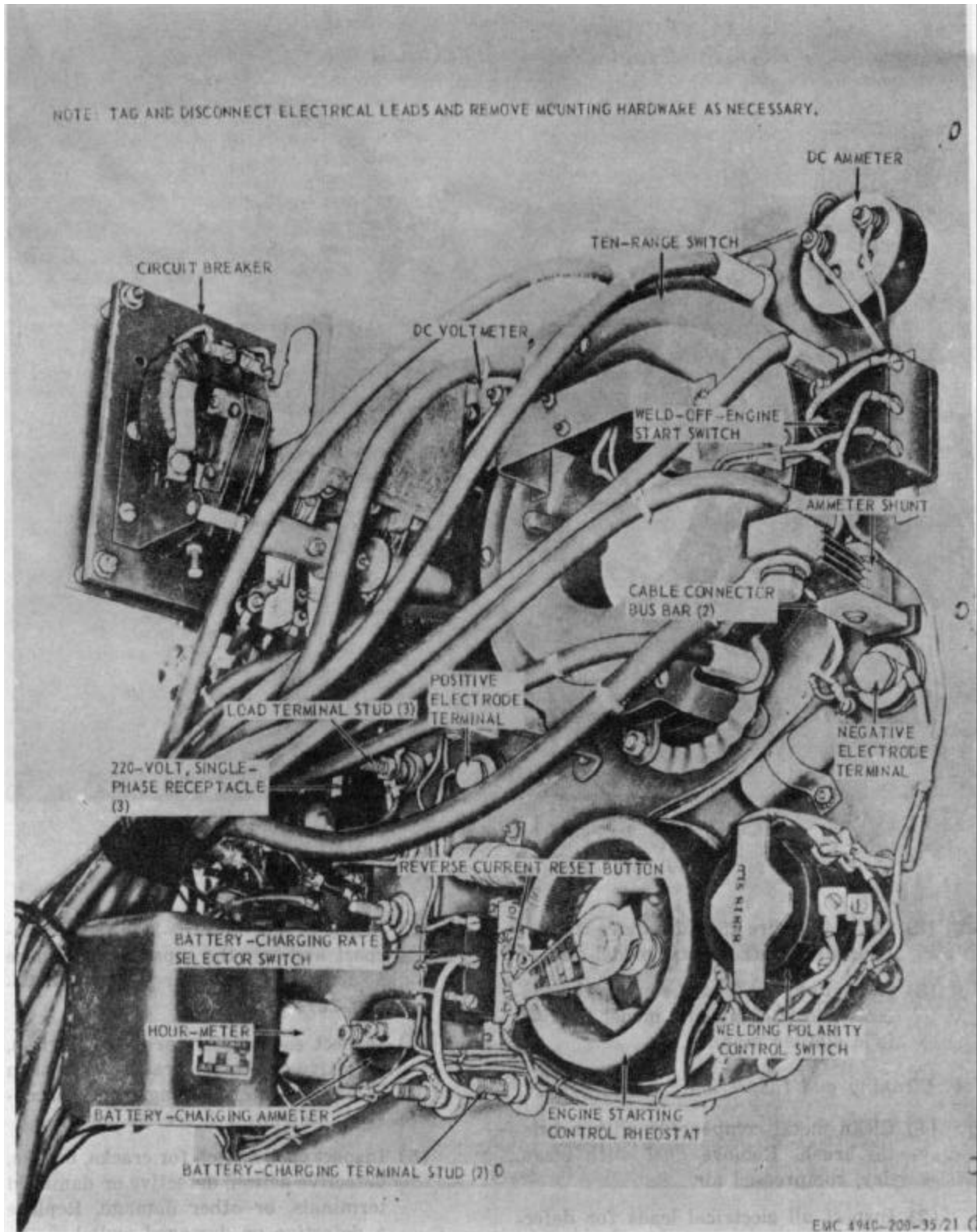
- (1) Refer to paragraph 23 and remove the control panel.



1 Real view

Figure 25. Controls and instruments, model SECM, removal and installation.

- (2) Refer to figure 25 and remove the controls and instruments, model SECM.
 - (3) Refer to figure 25 and remove the controls and instruments, model CMU-5, in a similar manner.
 - (4) Inspect each meter for cracked glass, defective terminals, cracked or broken cases, incorrect readings, and inaccuracy. Replace a defective meter.
 - (5) Inspect each switch for cracks, breaks, defective action, defective or damaged terminals, or other damage. Replace a defective or damaged switch.
 - (6) Inspect the 110-volt and 220-volt receptacles for defective terminals, defective contacts, and cracked or broken
- b. *Cleaning and Inspection.*
- (1) Clean metal components with a bristle brush. Remove dust with clean, dry, compressed air.
 - (2) Inspect all electrical leads for defective insulation, broken lugs, frayed wires, or other defects. Repair or replace all defective electrical leads.
 - (3) Refer to TM 5-4940-200-12 and inspect and test the capacitors. Replace a defective capacitor (TM 5-4940-200-12).



2 Detail of rear view.

Figure 25-Continued.

insulation. Replace a defective receptacle.

- (7) Inspect each terminal stud for damaged threads, insulation, or wingnuts. Replace a damaged terminal.
- (8) Inspect each rheostat for broken or worn contacts, cracked or broken insulators, defective resistor wire, damaged or defective terminals, and damaged mounting hardware. Use a multimeter to test the resistor for continuity and resistance. Repair or replace a damaged or defective rheostat.

c. Installation.

- (1) Refer to figure 25 and install the controls and instruments, model SECM.
- (2) Refer to figure 25 and install the controls and instruments, model CMU-5, in a similar manner.
- (3) Refer to paragraph 23 and install the control panel.

46. Ten-Range Switch and Field Rheostat

a. Removal and Disassembly.

- (1) Remove the ten-range switch and field rheostat (par. 45).

Note

Match mark inside housing, control contact ring, front disk, and dial plate before disassembly to insure identical location on reassembly.

- (2) Remove the field rheostat from the ten-range switch.
- (3) Remove the setscrew (24, fig. 26) that secures the handwheel (23) to the variable resistor (31) and remove the handwheel.
- (4) Remove the four screws (25) that secure the case (27) to the springs (30) and remove the case. Remove dial (26) from the case.
- (5) Remove the two screws (28) and washers (29) and remove the springs (30) from the variable resistor (31).

- (6) Remove the six screws (16), lockwashers (15), and three brackets (14) and handwheel (19) from the front disk (12).

- (7) Remove the three screws (13) and separate the handwheel from the brackets (14).

- (8) Remove the four screws (32), lockwashers (33) and inside housing (4) from the control contact ring (11). Place control contact ring (and assembled part) aside for later disassembly.

- (9) Remove the two screws (1), lockwashers (2) and bracket (3) from the inside housing (4).

- (10) Remove the screw (5), washers (6 and 7), and clip (8) from the inside housing (4).

- (11) Remove screw (38), nut (36) and resistance element (37) from the contact control ring (11).

- (12) Remove the front disk (12), and attached parts from the contact control ring (11).

- (13) Remove two screws (20), washers (21), insulators (40), four washers (22), and insulator block (39) from the front disk (12).

- (14) Remove the five drive screws (18) and dial plate (17) from the front disk.

- (15) Remove the two insulation plates (10) from the contact rings (9).

- (16) Remove the four spring clips (35) from the control contact ring (11) and the two contact rings (9). Remove the contact rings (9) and electrical contacts (34) from the control contact ring.

b. Cleaning, Inspection, and Repair.

- (1) Remove dirt and grease from all non-metallic parts with a clean, dry, lint-free cloth. Clean metal parts in approved cleaning solvent and dry thoroughly.

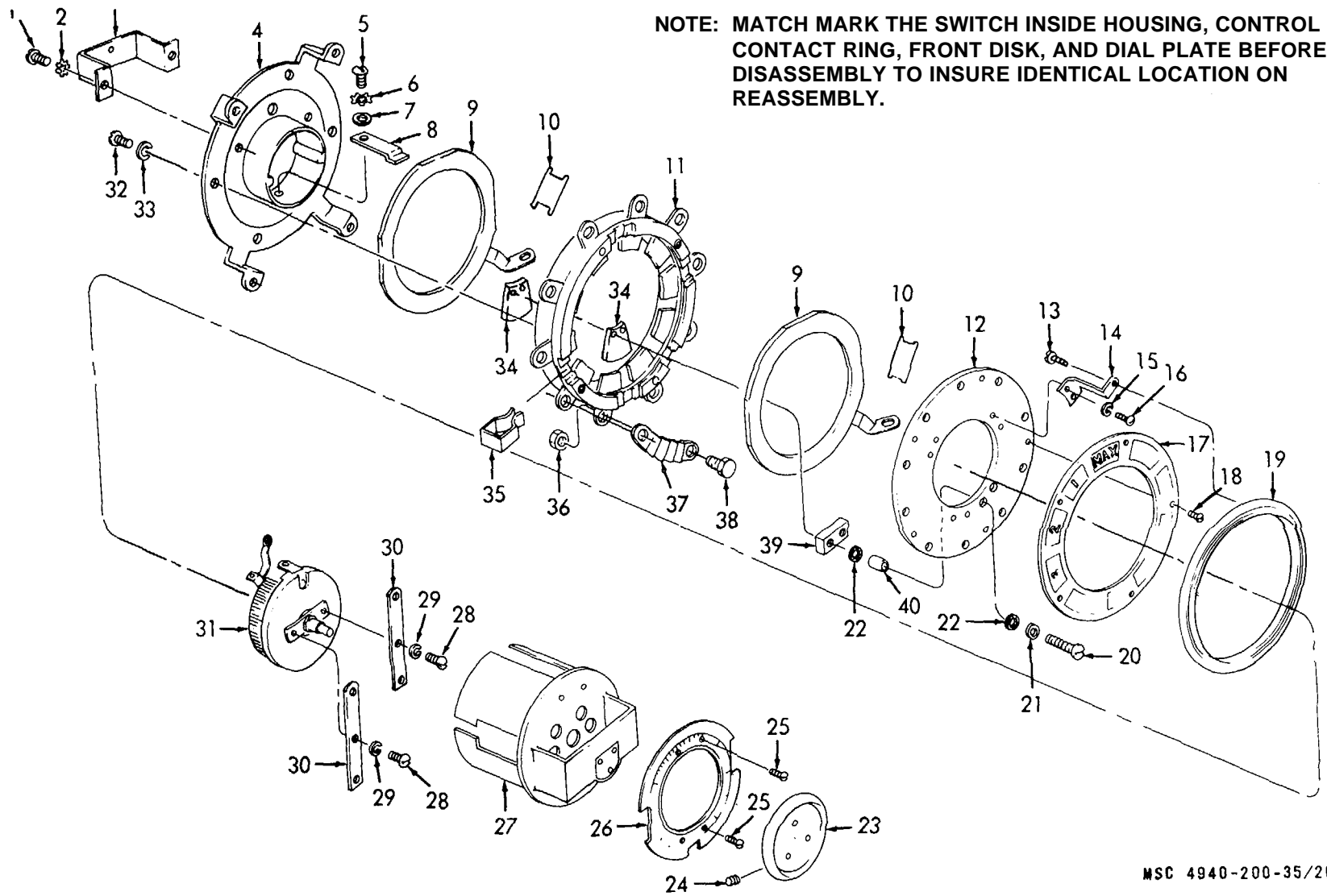
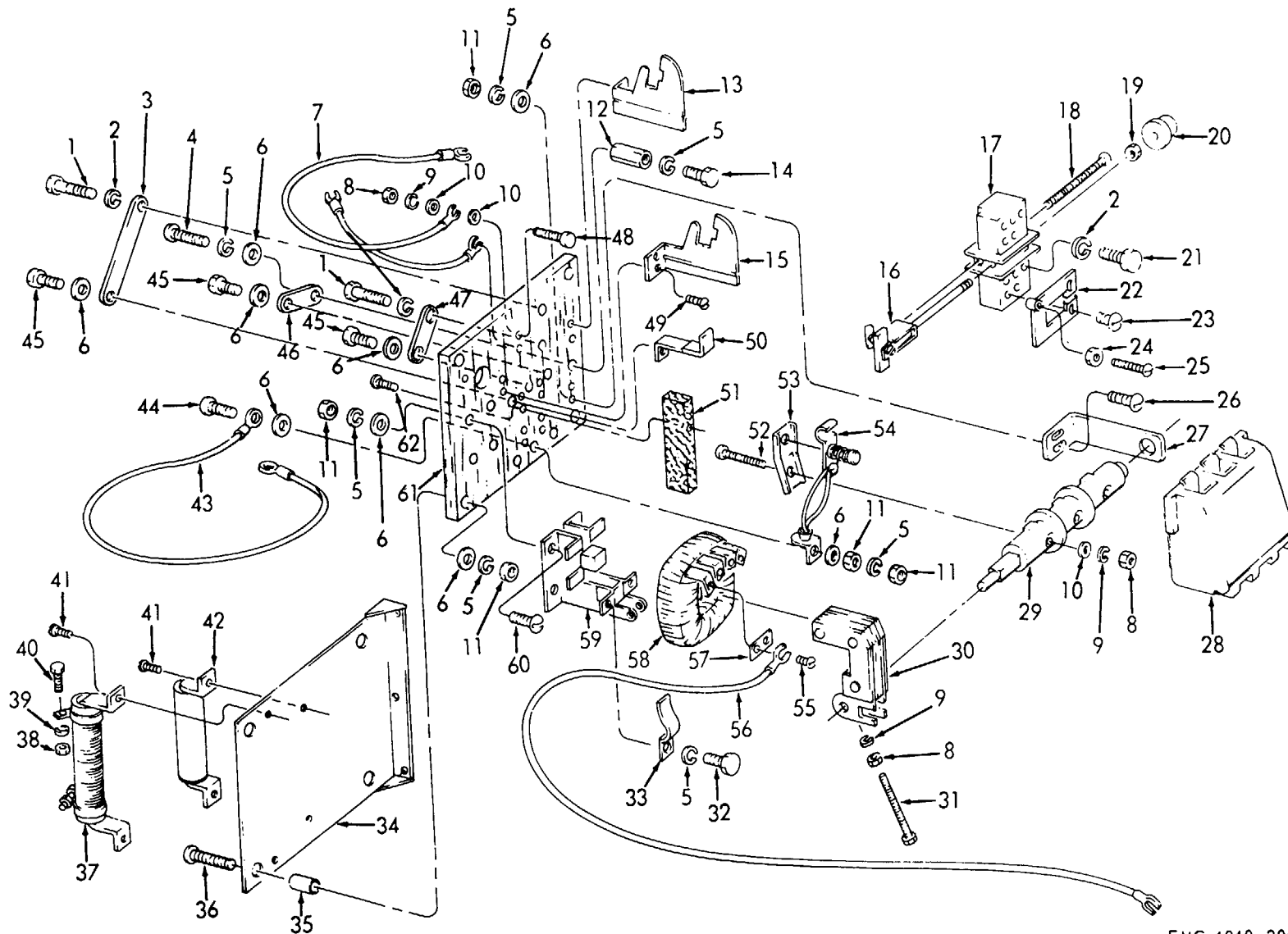


Figure 26. Ten-range switch and field rheostat, disassembly and reassembly.

1	Screw, machine, 1/4-20 x 3/8 in. (2 rqr)	21	Washer, flat, 1/4 in. id, 5/8 in. od, 1/16 in. thk (2 rqr)
2	Washer, lock, IET, 1/4 x 1/8 in. (2 rqr)	22	Washer, nonmetallic, 25/64 in. id, 5/8 in. od, 1/8 in. thk (4 rqr)
3	Plug mounting bracket	23	Rheostat handwheel
4	Switch inside housing	24	Setscrew, 1/4-20 x 3/8 in.
5	Screw, machine, No. 10-24 x 3/8	25	Screw, machine, No. 8-32 x 3/8 in. (4 rqr)
6	Washer, lock, IET, No. 10	26	Field rheostat dial
7	Washer, flat, brass. No. 10	27	Field rheostat case
8	Field rheostat catch	28	Screw, machine, No. 10-32 x 1/4 in. (2 rqr)
9	Contact ring (2 rqr)	29	Washer, lock, No. 10 (2 rqr)
10	Insulation plate (2 rqr)	30	Rheostat mounting spring (2 rqr)
11	Control contact ring	31	Variable resistor
12	Front disk	32	Screw, machine, 1/4-20 x 3/8 in. (4 rqr)
13	Screw, self-threading, No. 8-15 x 3/8 in. (3 rqr)	33	Washer, lock, 1/4 in.
14	Handwheel mounting bracket (3 rqr)	34	Movable contact
15	Washer, lock, No. 10 (6 rqr)	35	Clip spring (4 rqr)
16	Screw, machine, No. 10-24 x 3/8 in. (6 rqr)	36	Nut, plain, hex, 3/8-16
17	Dial plate	37	Resistance element
18	Screw, drive, No. 6 x 1/4 in. (5 rqr)	38	Screw, cap, hex-hd, 3/8-16 x 1/2 in.
19	Handwheel	39	Electrical contact
20	Screw, machine, 1/4-20 x 1 1/2 in. (2 rqr)	40	Contact bushing (2 rqr)

Figure 26-Continued.



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Figure 27. Circuit breaker, disassembly and reassembly.

- | | | | |
|----|---|----|--|
| 1 | Screw, hex-hd, brass, 5/16-18 x 1 3/4 in. (2 rqr) | 32 | Screw, cap, hex-hd, 1/4-20 x 1/2 in. (2 rqr) |
| 2 | Washer, lock, 5/16 in. (2 rqr) | 33 | Coil holddown bracket (2 rqr) |
| 3 | Bus bar, left hand | 34 | Switch mounting bracket |
| 4 | Screw, machine, rd-hd, 14-20 x 1 1/4 in. (3 rqr) | 35 | Spacer, 1/4 in. id, 13/32 in. od, 3/4 in. lg (4 rqr) |
| 5 | Washer, lock, 1/4 in. (18 rqr) | 36 | Screw, machine, rd-hd, 1/4-20 x 1 3/4 in. (4 rqr) |
| 6 | Washer, flat, 1/4 in. (14 rqr) | 37 | Resistor, 30-ohm |
| 7 | Electrical lead | 38 | Nut, hex, No. 6-32 (2 rqr) |
| 8 | Nut, hex, No. 10-24 (6 rqr) | 39 | Washer, lock, No. 6 (2 rqr) |
| 9 | Washer, lock, No. 10 (6 rqr) | 40 | Screw, machine, rd-hd, No. 6-32 x 1/2 in. (2 rqr) |
| 10 | Washer, flat, brass, No. 10 (7 rqr) | 41 | Screw, pan-hd, No. 8-32 x 1/4 in. (4 rqr) |
| 11 | Nut plain, hex, 1/4-20 (15 rqr) | 42 | Resistor, 300-ohm |
| 12 | Nut, 1/4-20 (spec) | 43 | Electrical lead |
| 13 | Arc shield holder, rh | 44 | Screw, machine, rd-hd, 1/4-20 x 1 3/4 in. (3 rqr) |
| 14 | Screw, machine, hex-hd, 1/4-20 x 5/8 in. | 45 | Screw, machine, hex-hd, 1/4-20 x 1 in. (3 rqr) |
| 15 | Arc shield holder, lh | 46 | Bus bar, short link |
| 16 | Overload trip assembly | 47 | Bus bar, center |
| 17 | Trip assembly block | 48 | Contact assembly screw (2 rqr) |
| 18 | Screw, machine, rd-hd, No. 6-32 x 1 3/4 in. | 49 | Screw, self-tapping, No. 8-32 x 1/2 in. (4 rqr) |
| 19 | Nut, lock No. 10-32 | 50 | Fixed contact (3 rqr) |
| 20 | Overload reset button | 51 | Arc shield baffle (2 rqr) |
| 21 | Screw, machine, hex-rd, 5/16-18 x 3/4 in. (2 rqr) | 52 | Screw, machine, rd-hd, No. 10-24 x 1 1/2 in. (3 rqr) |
| 22 | Heat element (2 rqr) | 53 | Contact mount (3 rqr) |
| 23 | Screw, machine, rd-hd, 1/4-20 x 3/8 in. (4 rqr) | 54 | Movable contact (3 rqr) |
| 24 | Nut, lock, No. 6-32 | 55 | Screw, machine, rd-hd, No. 6-32 x 1/4 in. (4 rqr) |
| 25 | Screw, machine, rd-hd, No. 6-32 x 3/4 in. (2 rqr) | 56 | Electrical lead |
| 26 | Screw, machine, rd-hd, 1/4-20 x 7/8 in. (2 rqr) | 57 | Strap electrical connector |
| 27 | Armature support | 58 | Relay coil |
| 28 | Arc shield | 59 | Fixed yoke |
| 29 | Armature shaft assembly | 60 | Screw, machine, rd-hd, 1/4-20 x 7/8 in. (4 rqr) |
| 30 | Movable yoke | 61 | Mounting panel |
| 31 | Screw, machine, hex-hd, No. 10-24 x 2 in. | 62 | Screw, thread-forming, No. 8-18 x 3/4 in. |

Figure 27-Continued.

- (2) Inspect parts for cracks, breaks, chips, bends, or other damage. Repair or replace all defective parts.

c. *Reassembly and Installation.*

- (1) Position the dial plate (17, fig. 26) on the front disk (12) and secure by installing the five drive screws (18).
- (2) Install the two insulators (40), insulator block (39), four washers (22), two washers (21) and screws (20) on the front disk (12). Set this subassembly aside.

Note

Lubricate electrical contacts upon reassembly to assure proper operation. Use approved lubricant.

- (3) Position the electrical contacts (34) and contact rings (9) in the control contact ring (11) and secure by installing the four spring clips (35).
- (4) Install the insulation plates (10) on the contact rings (9).
- (5) Position the resistance element (37) on the contact ring (11) and secure with screw (38) and nut (36).
- (6) Install the front disk (12), with attached parts, in the control contact ring (11). Set this subassembly aside.
- (7) Position the clip (8) in the inside housing (4) and secure with screw (5) and washers (6 and 7).
- (8) Secure the bracket (3) to the inside housing (4) with the two screws (1) and washers (2).
- (9) Secure the three brackets (14) to the handwheel (19) with the three screws (13).
- (10) Insert the inside housing, with attached parts, in the control contact ring subassembly and secure with four screws (32) and washers (33).
- (11) Secure the three handwheel mounting brackets (14) to the front disk (12) with the six screws (16) and washers (15).

- (12) Secure the two springs (30) to the variable resistor (31) with the two screws (28) and washers (29).
- (13) Position the dial (26) on the case (27) and secure dial and case to the springs (30) with the four screws (25).
- (14) Place the handwheel (23) on the variable resistor (31) and secure with the setscrew (24).
- (15) Install the field rheostat in the tenrange switch.
- (16) Install the ten-range switch and field rheostat on the control panel (par. 45). (Refer to wiring diagram, fig. 1 or fig. 2).

47. Circuit Breaker

a. *Removal.* Refer to paragraph 45 and remove the circuit breaker and bracket.

b. *Disassembly.* Refer to figure 27 and disassemble the circuit breaker.

Caution

Be very careful when handling the arc shield. It is extremely fragile.

c. *Cleaning, Inspection, and Repair.*

- (1) Clean with a stiff brush and blow clean with dry, compressed air.
- (2) Inspect the arc shield for cracks; breaks, or chips. Replace a defective arc shield.
- (3) Inspect the armature shaft assembly for defective insulation or evidence of shorting of electrical current. Replace a defective armature shaft.
- (4) Inspect the fixed and movable contacts for excessive wear, pits, or corrosion. Remove corrosion with No. 00 sandpaper. Replace a badly pitted contact.
- (5) Inspect the yokes for wear or damage. Repair or replace a worn or damaged yoke.

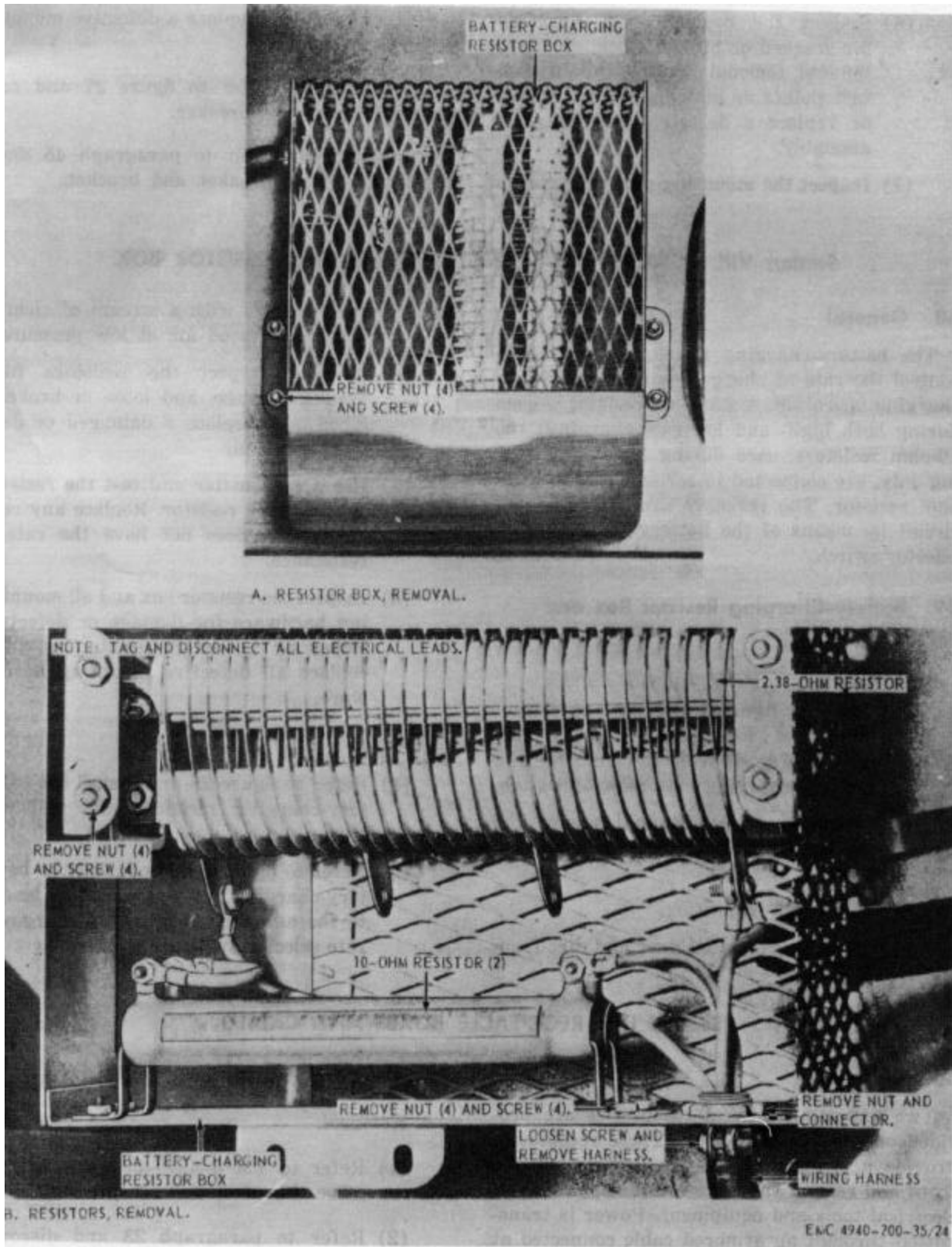


Figure 28. Battery-charging resistor box and resistors, removal and installation.

- (6) Inspect the overlaid trip assembly for cracked or broken block, damaged bimetal thermal bracket, pitted contact points or maladjustment. Repair or replace a defective overload trip assembly.
- (7) Inspect the mounting panel for cracks or breaks. Replace a defective mounting panel.

d. *Reassembly.* Refer to figure 27 and reassemble the circuit breaker.

e. *Installation.* Refer to paragraph 45 and install the circuit breaker and bracket.

Section VIII. BATTERY-CHARGING RESISTORS AND RESISTOR BOX

48. General

The battery-charging resistors are used to control the rate of charge during any battery-charging operation. A 2.38-ohm resistor is used during both high-and low-rate charging; the 10-ohm resistors, used during low-rate charging only, are connected in series with the 2.38-ohm resistor. The resistors are placed in the circuit by means of the battery-charging rate selector switch.

49. Battery-Charging Resistor Box and Resistors

a. *Removal.*

- (1) Refer to figure 5 and tag and disconnect the battery-charging resistor electrical leads from the ammeter and battery-charging rate selector switch.
- (2) Refer to figure 28 and remove the battery-charging resistor box and resistors.

b. *Cleaning and Inspection.*

- (1) Blow accumulated dust and dirt from the resistors with a stream of clean, dry, compressed air at low pressure.

- (2) Visually inspect the resistors for breaks, damage, and loose or broken terminals. Replace a damaged or defective resistor.
- (3) Use a multimeter and test the resistance of each resistor. Replace any resistor that does not have the rated resistance.
- (4) Inspect the resistor box and all mounting hardware for damage or defects. Repair or replace the resistor box and replace all defective mounting hardware.

c. *Installation.*

- (1) Refer to figure 28 and install the battery-charging resistors and resistor box.
- (2) Refer to figure 5 and connect the battery-charging resistor electrical leads to the ammeter and battery-charging rate selector switch.

Section IX. RECEPTACLE BOXES AND CABLES

50. General

Two 110-volt electrical receptacles are provided on the shop set body. These receptacles provide a convenient source of power at the front and rear of the body for the operation of electrical tools and equipment. Power is transmitted through an armored cable connected at the rear of the 110-volt load terminals on the control panel.

51. Receptacle Boxes and Cables

a. *Removal.*

- (1) Refer to TM 5-4940-200-12 and remove the cover and receptacle.
- (2) Refer to paragraph 23 and disconnect the receptacle box cable leads at the control panel.

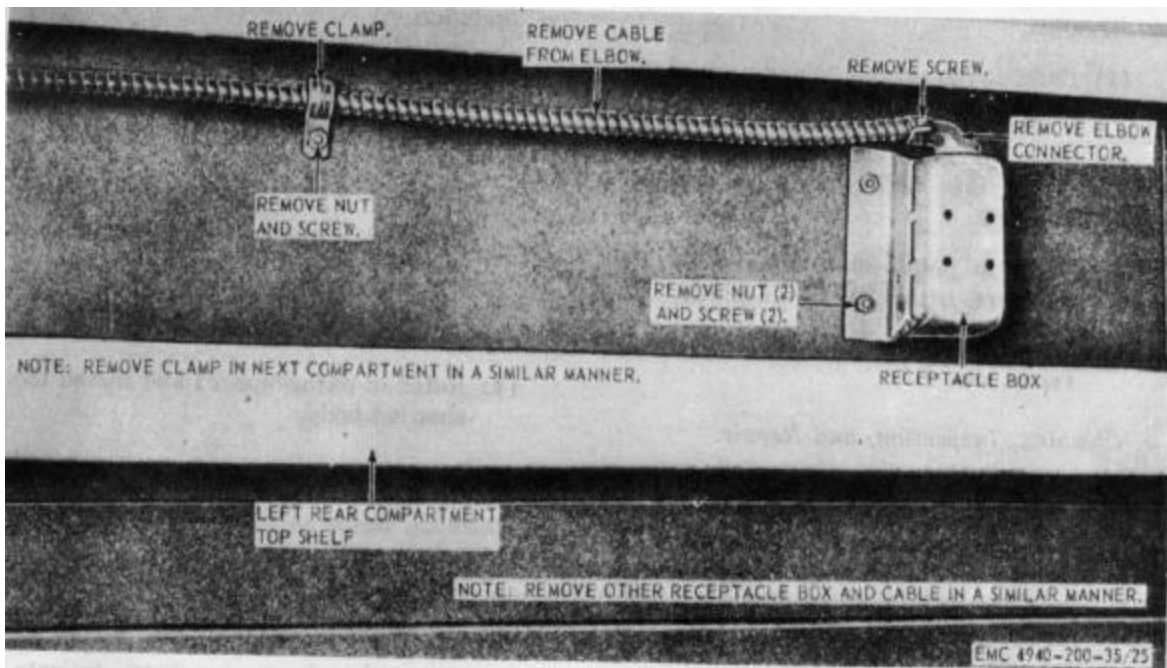


Figure 29. Receptacle boxes and cables, removal and installation.

- (3) Refer to figure 29 and remove the receptacle box and cable.

b. Cleaning and Inspection.

- (1) Clean the receptacle box with an approved cleaning solvent. Clean the armored cable with a stiff brush.
- (2) Inspect the receptacle box for cracks or breaks. Replace a damaged receptacle box.
- (3) Inspect the armored cable for cracks or breaks or other damage. Replace a damaged or defective cable.

c. Installation.

- (1) Refer to figure 29 and install the receptacle box and cable.
- (2) Refer to paragraph 23 and reconnect the receptacle box cable leads at the control panel.
- (3) Refer to TM 5-4940-200-12 and install the receptacle and cover.

Section X. VEHICLE FRAME EXTENSION AND SHOP SET BODY

52. General

The shop set body is mounted on a 3/4-ton 4 by 4, modified truck frame. The body is constructed of aluminum with riveted joints. It has weathertight compartments on each side for storing tools and equipment. The compartments are designed to accommodate specific items so that the load is balanced. A generator-welder is mounted inside the body and can be operated by an integrated power

takeoff or an outside electrical power source.

53. Frame Assembly

a. General. The frame assembly is a rear extension welded to the truck frame to provide support to the shop set body that is longer than the standard 3/4-ton truck body.

b. Removal.

- (1) Refer to paragraph 24 and remove the shop set body.
- (2) Refer to TM 5-4940-200-12 and remove the taillights and taillight brackets.
- (3) Refer to TM 9-8030 and remove the bumpers, lifting eyes, and pintle.
- (4) Refer to figure 30 and remove the frame assembly.

c. Cleaning, Inspection, and Repair.

- (1) Clean with a steam cleaner.
- (2) Inspect the frame for cracks and breaks or other damage. Repair cracks and breaks by welding. Replace a bent or sprung frame.
- (3) If it becomes necessary to remove a component of the frame, replace it with a new part.

d. Installation.

- (1) Refer to figure 30 and install the frame assembly.

Note

Align and clamp each component in place before welding.

- (2) Refer to TM 5-4940-200-12 and install the taillight brackets, and taillights.
- (3) Refer to TM 9-8030 and install the bumpers, lifting eyes, and pintle.
- (4) Refer to paragraph 24 and install the shop set body.

54. Shop Set Body

a. Removal. Refer to paragraph 24 and remove the shop set body.

b. Disassembly.

- (1) Refer to TM 5-4940-200-12 and remove the doors, brackets, tailgate, tailgate chain, tailgate latch, access plates, door guides, cable hanger

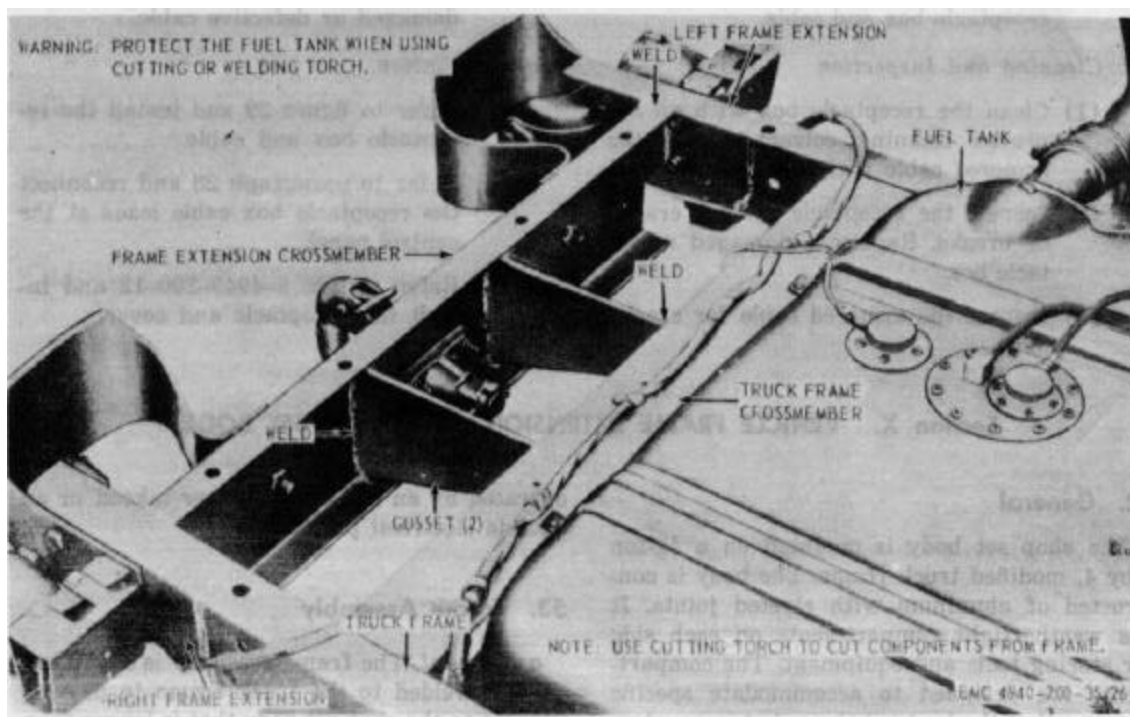


Figure 30. Frame assembly, removal and installation.

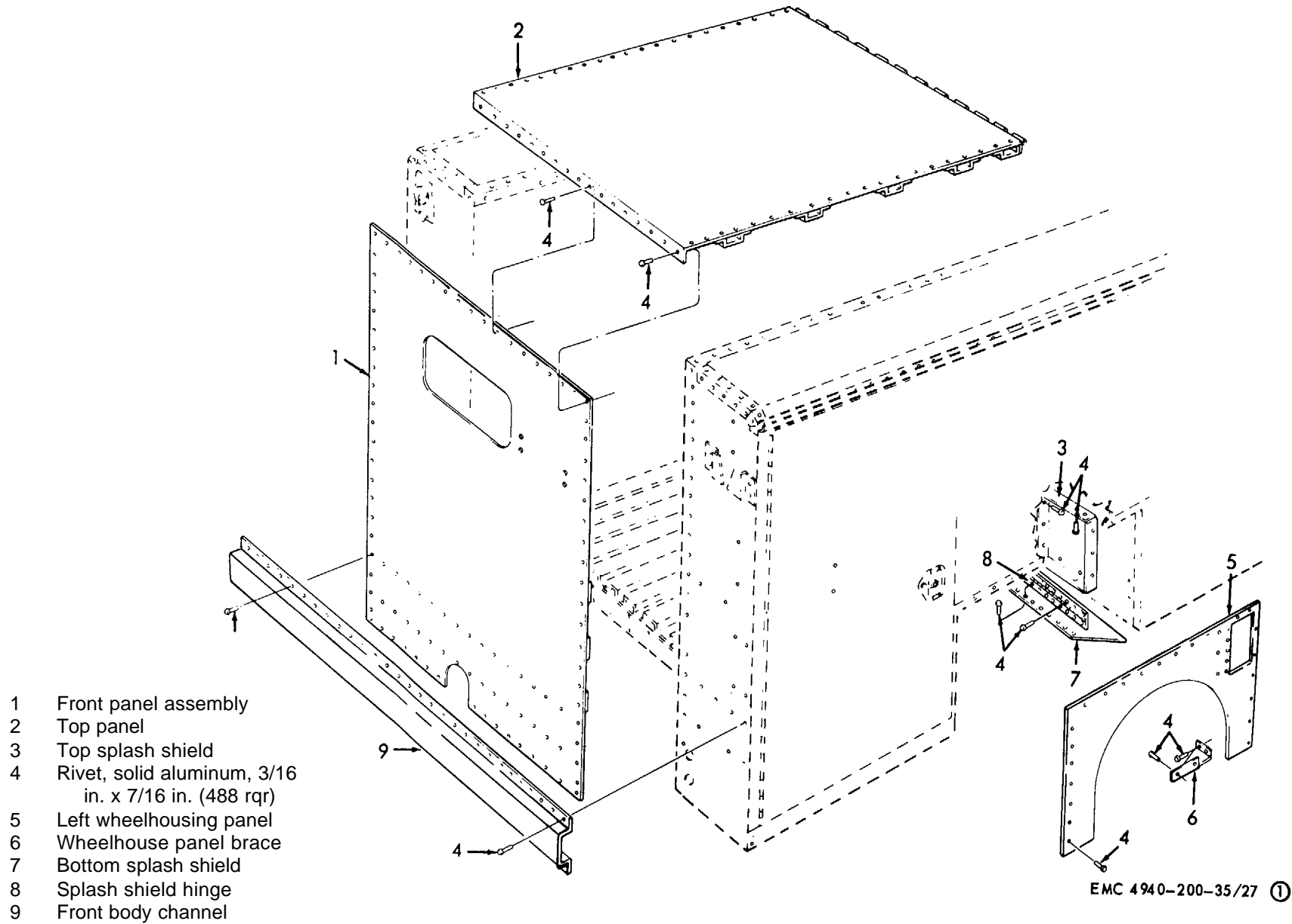
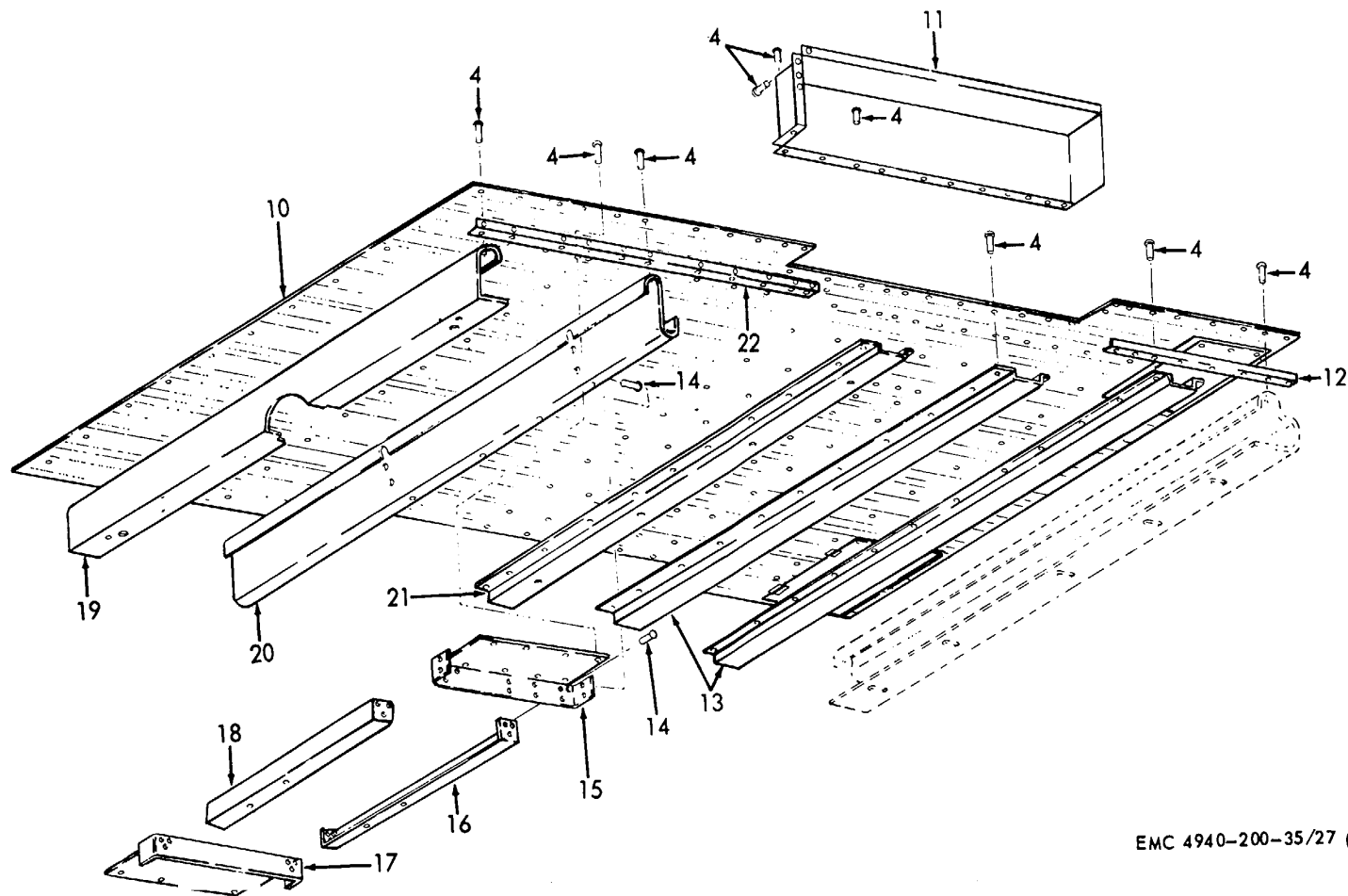


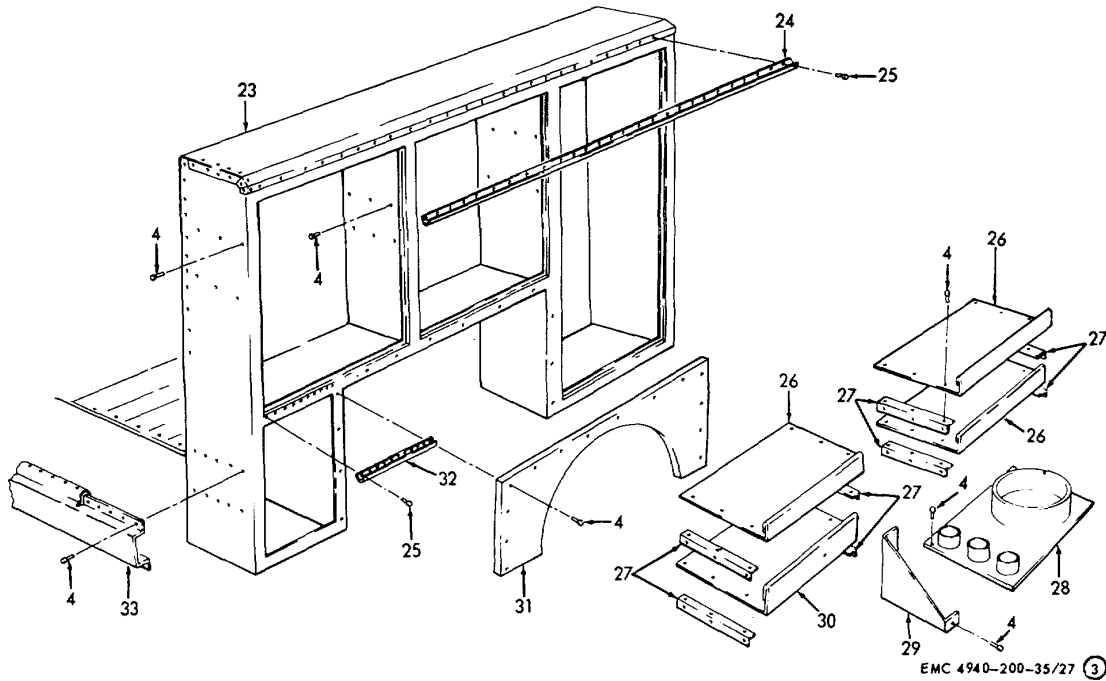
Figure 31. Shop set body, model SECM, disassembly and reassembly.



EMC 4940-200-35/27 (2)

- | | | | |
|---|---|--|------------------------------------|
| 10 Floor | 14 Rivet, solid, aluminum, 1/4 in. x 7/8 in. (97 rqr) | 17 Power takeoff box right rail | 20 Front intermediate cross-member |
| 11 Wheelwell (2 rqr) | 15 Power takeoff box left rail | 18 Power takeoff box front crossmember | 21 Wheelhouse crossmember |
| 12 Short floor support | 16 Power takeoff box rear cross-member | 19 Front crossmember | 22 Long floor support |
| 13 Rear intermediate cross-member (2 rqr) | | | |

Figure 31--Continued.



- | | | | |
|----|--|----|-------------------------------------|
| 23 | Right side compartment assembly | 29 | Shelf divider (2 rqr) |
| 24 | Drip ledge (2 rqr) | 30 | Lower shelf, right rear compartment |
| 25 | Rivet, aluminum, 1/8 IN. x 5/16 in. (56 rqr) | 31 | Right wheelhousing panel |
| 26 | Shelf (6 rqr) | 32 | Short drip ledge (2 rqr) |
| 27 | Shelf support (18 rqr) | 33 | Rear body crossmember |
| 28 | Tank retainer | | |

Figure 31-Continued.

brackets, cylinder rack assembly, striker plates, door moulding and seal, gage compartment door, hose bracket, control panel screen, cylinder guide, and hinged roof panel.

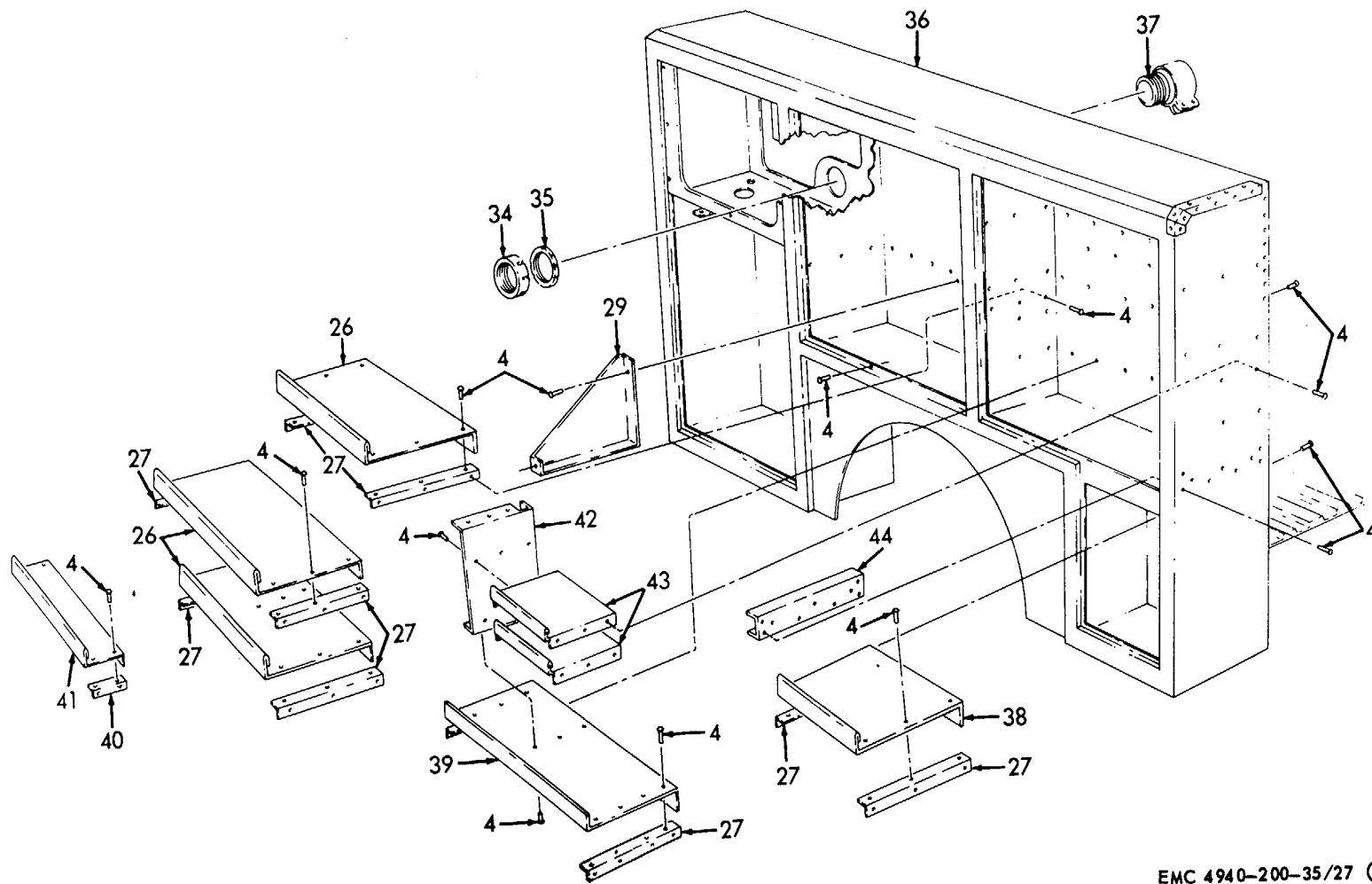
- (2) Refer to paragraph 23 and remove the control panel.
- (3) Refer to paragraph 21 and remove the power takeoff.
- (4) Refer to paragraph 22 and remove the generator-welder.
- (5) Refer to paragraph 49 and remove the battery-charging resistor box and resistors.
- (6) Refer to paragraph 51 and remove the electrical receptacle boxes and cables.

(7) Refer to paragraph 29 and remove the engine overspeed relay (model SECM).

(8) Refer to figure 31 and disassemble the model SECM shop set body. Disassemble the model CMU-5 shop set body in a similar manner.

c. Cleaning, Inspection, and Repair.

- (1) Clean the shop set body with a steam cleaner to remove all dirt, oil, and dust.
- (2) Inspect each compartment for loose rivets, dents, cracks, holes, or other damage.
- (3) Repeen or replace all loose rivets, straighten dents, weld cracks or breaks, and patch and weld holes.



EMC 4940-200-35/27 ④

- | | | | | | | | |
|----|--------------------------------|----|--------------------------------------|----|------------------------|----|--------------------------------|
| 34 | Conduit capnut | 37 | Box connector | 49 | Shelf support (short) | 43 | Gage compartment shelf (2 rqr) |
| 35 | Conduit nut | 38 | Shelf (short) | 41 | Shelf (narrow) (2 rqr) | 44 | Tailgate channel (2 rqr) |
| 36 | Left side compartment assembly | 39 | Bottom shelf (left rear compartment) | 42 | Gage compartment side | | |

Figure 31-Continued.

- (4) Inspect the floor, head panel, and top panel for dents, cracks, holes, or other damage.
- (5) Straighten dents, weld cracks and breaks, and patch holes. Replace a badly damaged floor, head panel, or top panel.

d. *Reassembly.*

- (1) Refer to figure 31 and reassemble the model SECM shop set body. Reassemble the model CMU-5 shop set body in a similar manner.
- (2) Refer to paragraph 29 and install the engine overspeed relay (model SECM).
- (3) Refer to paragraph 51 and install the receptacle boxes and cables.
- (4) Refer to paragraph 49 and install the battery-charging resistor box and resistors.

- (5) Refer to paragraph 22 and install the generator-welder.
- (6) Refer to paragraph 21 and install the power takeoff.
- (7) Refer to paragraph 23 and install the control panel.
- (8) Refer to TM 5-4940-200-12 and install the doors, brackets, tailgate, tailgate chain, tailgate latch, access plates, door guides, cable hanger brackets, cylinder rack assembly, striker plates, door moulding and seal, gage compartment door, hose bracket, control panel screen, cylinder guide, and hinged roof panel.

e. *Installation.* Refer to paragraph 24 and install the shop set body.

APPENDIX I
REFERENCES

1. Dictionaries of Terms and Abbreviations

- AR 320-5 Dictionary of United States Army Terms.
AR 320-50 Authorized Abbreviations and Brevity Codes.

2. Field Maintenance

- TM 5-764 Electric Motor and Generator Repair.

3. Fire Protection

- TM 5-687 Repairs and Utilities: Fire Protection Equipment and Appliances; Inspections, Operations, and Preventive Maintenance.
TM 9-1799 Ordnance Maintenance: Fire Extinguishers.

4. Lubrication

- LO 5-4940-200-12 Shop Equipment, Contact Maintenance, Truck Mounted: Set No. 3 (Southwest Truck Body Co. Model SECM).

5. Operator and Organizational Maintenance

- TM 5-4940-200-12 Operator and Organizational Maintenance Manual, Shop Equipment, Contact Maintenance, Truck Mounted, Set No. 3 (Southwest Model SECM) Serial No. S-3-628 through S-3-720 and (Davey Model CMU-5) Serial No. 33343 through 33343-234 FSN 4940-294-9518.
TM 9-8030 Operation and Organizational Maintenance, 3/4-Ton 4 x 4 Cargo Truck M37, 3/4-Ton 4 x 4 Command Truck M42, 3/4-Ton 4 x 4 Ambulance Truck M43, and 3/4-Ton 4 x 4 Telephone Installation Light Maintenance and Cable Splicing Truck V-41/GT.

6. Painting and Preservation

- TB ENG 60 Preservation and Painting of Serviceable Corps of Engineer Equipment.

7. Preventive Maintenance

AR 750-5	Organization, Policies, and Responsibilities for Maintenance Operations.
TB 9-1870-1/1	Care and Maintenance of Pneumatic Tires; New Type Valve Assemblies for Inner Tubes.
TM 9-1870-1	Care and Maintenance of Pneumatic Tires.
TM 5-505	Maintenance of Engineer Equipment.
TM 9-2852	Welding, Theory and Application.
TM 9-6140-200-15	Storage Batteries: Lead-Acid Type.
TM 38-750	The Army Equipment Record System and Procedures.

8. Publication Indexes

DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides and Phono-Recordings.
DA Pam 310-1	Index of Administrative Publications.
DA Pam 310-2	Index of Blank Forms.
DA Pam 310-3	Index of Training Publications.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310-5	Index of Graphic Training Aids and Devices.
DA Pam 310-25	Index of Supply Manuals-Corps of Engineers.

9. Supply Publications

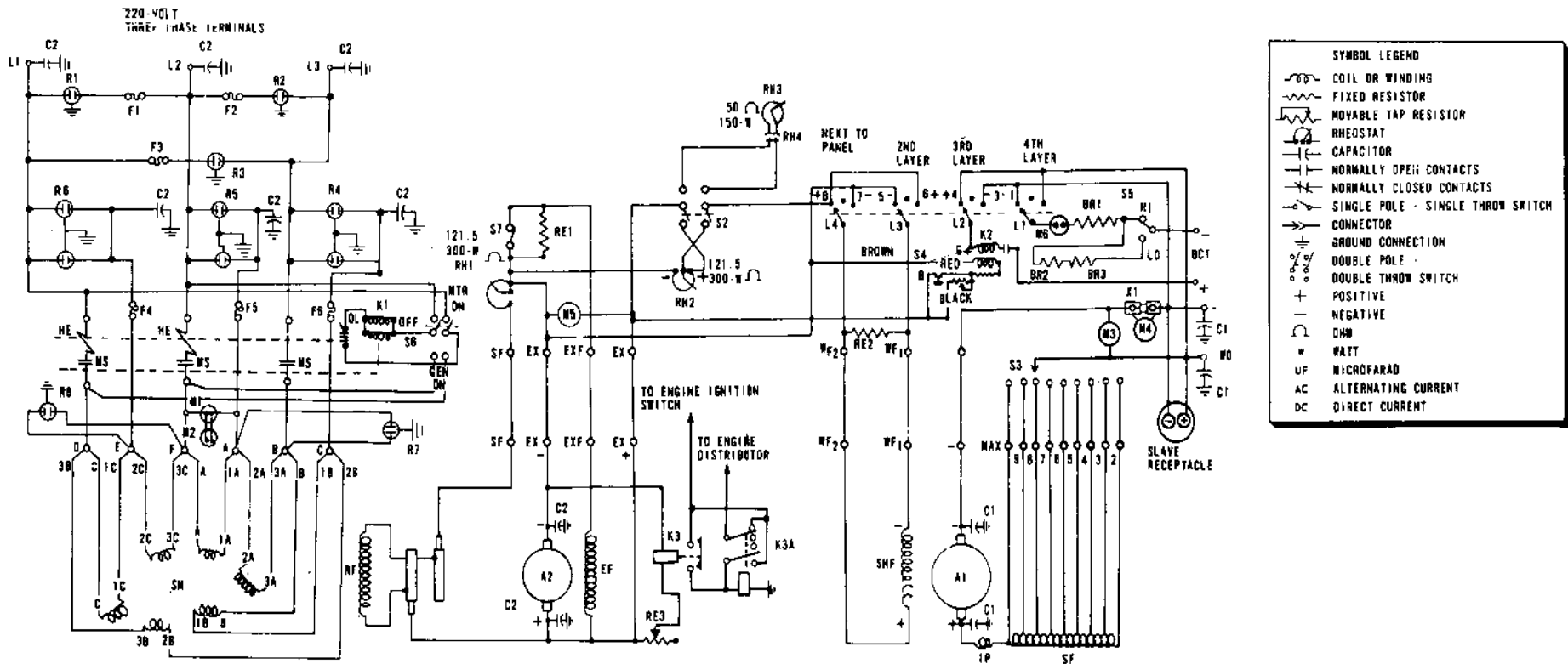
TM 5-4940-200-20P	Organizational Maintenance Repair Parts and Special Tool Lists. Shop Equipment, Contact Maintenance, Truck Mounted: Set No. 3 (Southwest Model SECM) Serial No. S-3-628 through S-3-720 and (Davey Model CMU-5) Serial No. 33343 through 33343-234 FSN 4940-294-9518.
TM 5-4940-200-35P	Field and Depot Maintenance Repair Parts and Special Tool Lists. Shop Equipment, Contact Maintenance, Truck Mounted: Set No. 3 (Southwest Model SECM) Serial No. S-3-628 through S-3-720 and (Davey Model CMU-5) Serial No. 33343 through 33343-234 FSN 4940-294-9518.

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DEVICE LEGEND:	
A1	WELDER ARMATURE
A2	EXCITER ARMATURE
BCT	BATTERY-CHARGING TERMINALS
BR1	BATTERY-CHARGING BALLAST RESISTOR, 2.38-OHM
BR2	BATTERY-CHARGING RESISTOR, 100 WATT, 10 OHM
BR3	BATTERY-CHARGING RESISTOR, 100 WATT, 10 OHM
C1	CAPACITOR (0.25 UF.500V/AC/DC)
C2	CAPACITOR (0.10 UF.500V/AC/DC)
EF	EXCITER FIELDS
F1, F2, F3	FUSES, 10 AMPERE
F4, F5, F6	FUSES, 30 AMPERE
HE	OVERLOAD SWITCH HEAT ELEMENT (45 AMPERE)
IP	INTERPOLE WINDING
K1	NO VOLTAGE RELEASE COIL
K2	REVERSE CURRENT RELAY
K3	OVERSPEED RELAY SWITCH
K3A	AUXILIARY OVERSPEED RELAY SWITCH
M1	AC VOLTMETER
M2	FREQUENCY METER
M3	DC VOLTMETER
M4	DC AMMETER
M5	HOUR METER
M6	BATTERY-CHARGING AMMETER
MS	CIRCUIT BREAKER
OL	OVERLOAD RESET SWITCH
R1	220-VOLT RECEPTACLE CONNECTOR
R2	220-VOLT RECEPTACLE CONNECTOR
R3	220-VOLT RECEPTACLE CONNECTOR
R4	110-VOLT RECEPTACLE CONNECTOR
R5	110-VOLT RECEPTACLE CONNECTOR
R6	110-VOLT RECEPTACLE CONNECTOR
R7	110-VOLT BODY OUTLET RECEPTACLE CONNECTOR (FRONT)
R8	110-VOLT BODY OUTLET RECEPTACLE CONNECTOR (REAR)
RE1	60 CYCLE OPERATION RESISTOR. 30 OHM. 40 WATT
RE2	FIELD DISCHARGE RESISTOR. 300 OHM. 100 WATT
RE3	OVERSPEED RESISTOR. 10.000 OHM. 50 WATT
RF	REVOLVING FIELD
RH1	MOTOR OPERATION RHEOSTAT
RH2	ENGINE STARTING CONTROL RHEOSTAT
RH3	WELDING RHEOSTAT
S1	WELDING POLARITY CONTROL SWITCH
S2	WELD-OFF-ENGINE START SWITCH
S3	TEN-RANGE SWITCH
S4	REVERSE CURRENT RESET SWITCH
S5	BATTERY-CHARGING RATE SELECTOR
S6	MOTOR-GENERATOR SWITCH
S7	50-60 CYCLE SELECTOR SWITCH
SF	WELDER SERIES FIELD
SHF	SHUNT FIELD
SM	ROTOR-GENERATOR STATOR
WO	WELDING ELECTRODE TERMINALS
X1	AMMETER SHUNT

Figure 2. Schematic wiring diagram, model CMU-5.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General United States Army,
Chief of Staff.

Official:

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

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