

A.C. ELECTRIC MOTOR, GEAR BOXES, AND MAIN SWITCH

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A.C. ELECTRIC MOTOR, GEAR BOXES, AND MAIN SWITCH

A.C. ELECTRIC MOTOR

The A.C. electric motors used on the equipment are induction type motors, all of the three phase 120 cycle, high slip type. These motors have been designed especially to handle various operations peculiar to the equipment.

These motors are instantly reversible in operation. Each direction of rotation is controlled by a separate main switch, which are controlled by a single control switch. Direction of rotation may be reversed by reversing two of the three main leads to the motor. This reversal is made in the wiring of the main switches.

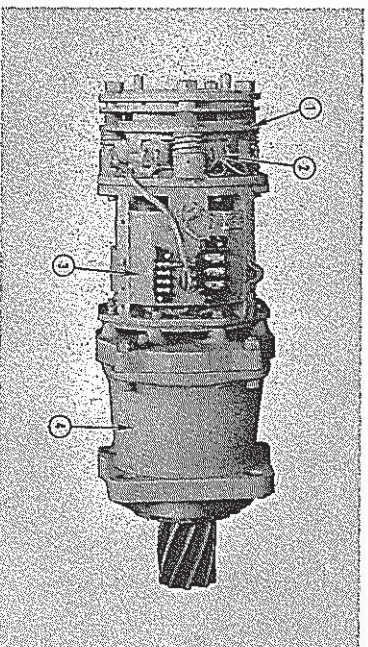


FIGURE J-1. A.C. MOTOR AND GEAR BOX

1. Motor Brake
2. Brake Coils
3. Motor Stator
4. Gear Box

The electric motor is made up of the following major assemblies.

1. Stator — the outside or stationary member which is bolted to the gear reduction box.
2. Rotor — the inner or rotating member, which is attached to the pinion shaft and drives the gears in the gear reduction box.
3. Brake — a spring loaded, disc type, electromagnetic unit which is automatically released when the electric motor is operated.

Removal

Position the component operated by the A. C. motor so there will be no movement when the braking action of the motor is removed.

Remove the capscrows securing the motor cover to the stator. Remove the cover.

Disconnect all wires leading to the motor terminal strip and mark for easy reconnection.

Before separating motor and gear box, remove drain plug and drain lubricant from gear box.

Place sling around rotor. Enough tension must be maintained to prevent mounting capscrows from binding as they are removed. Remove the mounting capscrows (Fig. J-2).

Pull motor straight away from the gear box until motor pinion clears the gear box bore. Take care not to damage the oil seal in the gear box bore, if equipped, or the motor pinion.

Place on bench for further disassembly. Cover opening in gear box to prevent entrance of foreign material.

magnetic unit which is automatically released when the electric motor is operated.

Each A.C. electric motor is equipped with an electrically operated disc brake. This brake is held in the engaged position by strong coil springs when the motor is inoperative. It is disengaged automatically by the electromagnets which are energized as the electric motor is operated. The instant the flow of current to the motor is shut off, the electromagnets are de-energized and the brake springs reengage the brake.

The electric motor brake is simple in construction, and includes the following assemblies:

1. Adjusting Ring—an externally threaded ring which is used to adjust the motor brake air gap. A clockwise turn decreases the air gap and a counterclockwise turn increases it.
2. Brake Discs (two types) — (1) steel discs or stationary plates held in position by these brake studs, and (2) internally splined friction discs. Spring pressure forces the discs together until released by action of the electromagnets.
3. Coils — six electromagnetic coils pull the brake into the released position when energized by the current which at the same time flows to the motor.

4. Springs — powerful coil springs which force the brake discs together braking the rotor. The brake springs are manufactured with several different compression ratings. The brakes supporting the heavier loads are equipped with springs having higher compression ratings.

The nameplate for the A.C. motor is attached to the motor stator and includes; size, number of teeth on pinion, voltage, cycles, RPM, motor number and part number of the motor.

It will be necessary to remove the steering motor and gear box as a unit (refer to Section "Y"). Follow the above instructions for separating the motor and gear box.

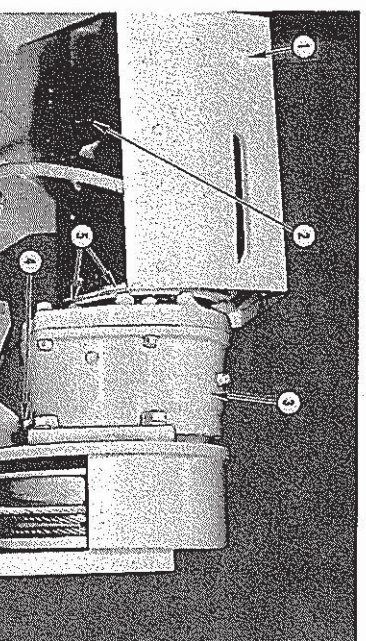


FIGURE J-2. A.C. MOTOR AND COVER

1. Cover
2. Motor
3. Gear Box
4. Drain Plug
5. Motor Mounting Capscrows

Disassembly

Remove the end bell capscrews, disconnect the brake coil leads at the terminal strip, and using sling or chain hoist, lift brake assembly, end bell and rotor as a unit from the stator (Fig. J-3).

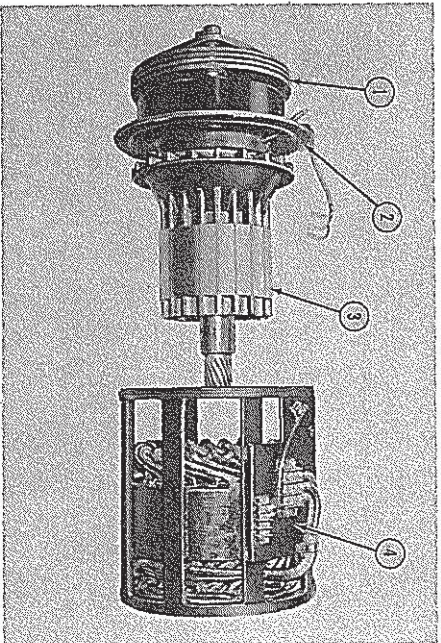


FIGURE J-3. ROTOR AND BRAKE REMOVED

1. Brake
2. End Bell
3. Rotor
4. Stator

Remove cotter from brake hub nut and loosen nut.

Loosen the nut on the lockbolt which locks the adjusting plate in position and remove adjusting plate.

Remove the three stud nuts and lockwashers, then the brake plate, stationary plates, and the brake discs (Fig. J-4).

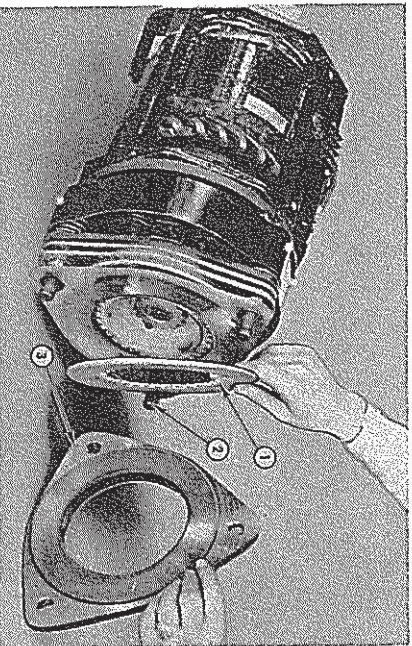


FIGURE J-4. REMOVING BRAKE PLATE AND DISCS

1. Discs
2. Stud
3. Brake Plate

Remove the brake hub locking nut, brake hub, floating plate and coil springs (Fig. J-5 and J-6).

Remove the bearing retainer capscrews and lift off the end bell from rotor.

Remove cover band from around the brake coils. If coils are damaged, or should for some reason need to be removed, remove hold-down screws clamping the coils to the top end bell and remove the brake coils. See Figure J-7.

Remove the bearing retainer locknut. The bearing retainer nut may be locked in position by a pin

inserted in a hole drilled parallel to the rotor shaft, half in the nut and the other half in the rotor shaft. Using the special wrench provided with the machine, remove the retainer nut. Pull outer and inner seal rings, bearing and retainer from rotor shaft.

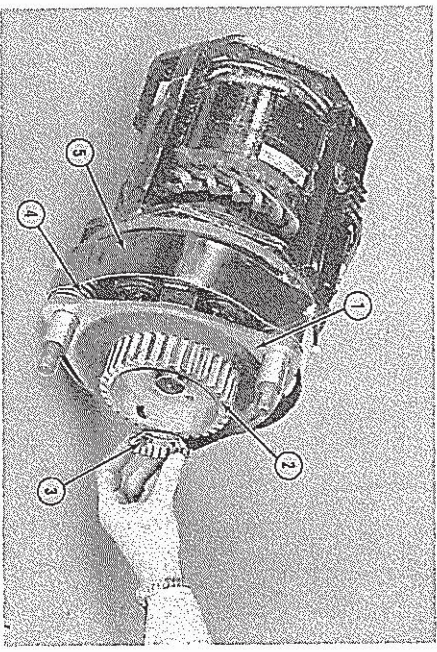


FIGURE J-5. REMOVING BRAKE HUB LOCKNUT

1. Floating Plate
2. Brake Hub
3. Locknut
4. Spring
5. Cover Band

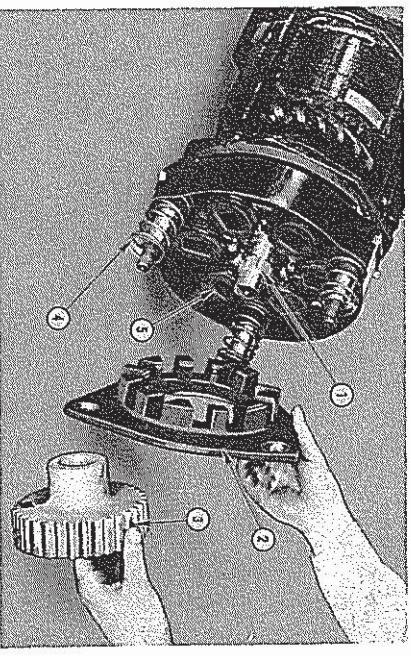


FIGURE J-6. HUB AND FLOATING PLATE, REMOVED

1. Rotor Shaft
2. Floating Plate
3. Hub
4. Spring
5. Brake Coil

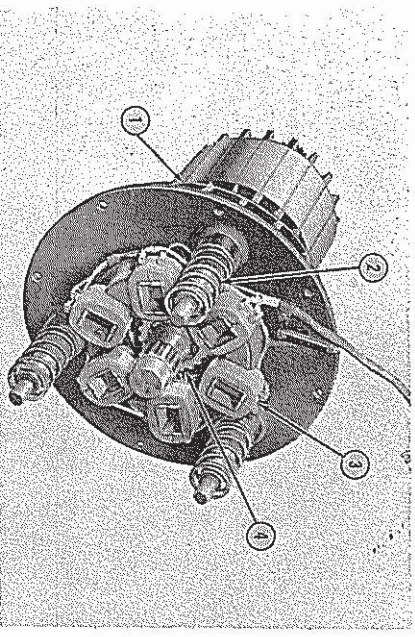


FIGURE J-7. TOP END BELL

1. End Bell
2. Spring
3. Brake Coil
4. Locknut

Reassembly

Replace inner and outer seal rings, oil seal, bearing retainer and bearing.

Place seal and bearing retainer locknut and torque locknut to 300 ft. lbs. for #1 motor, or 350 ft. lbs. for #2 motor.

Install lockpin in hole drilled in the locknut and rotor shaft (if equipped).

Replace end bell and install bearing retainer capscrews.

Replace coil springs on the three studs and place floating plate over rotor shaft, aligning the holes over the studs.

Replace hub and hub locknut, torque nut to 75

ft. lbs. for #1 motor, or 300 ft. lbs. for #2 motor.

Install disc, stationary plate, disc, stationary plate, and brake plate, over the brake hub, then the adjusting plate, in that order.

Replace washers and nuts on studs.

Adjust brake as described in the following paragraphs and tighten lockbolts. Replace brake cover band.

Reassemble motor to gear reduction box and secure with mounting capscrews.

Reconnect electrical wiring to motor terminal strips.

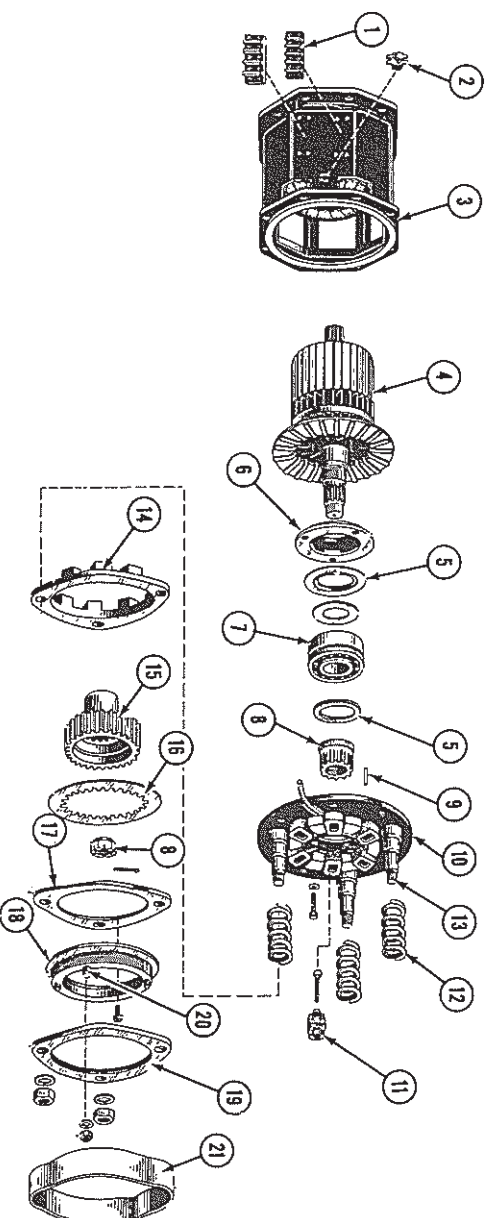


FIGURE J-8. A.C. MOTOR, EXPLODED

1. Terminal Strip
2. Heat Switch
3. Stator
4. Rotor
5. Seal Ring
6. Bearing Retainer
7. Bearing
8. Retainer Nut

9. Lock Pin
10. Top End Bell
11. Brake Coil
12. Spring
13. Stud
14. Floating Plate
15. Brake Hub
16. Disc
17. Stationary Plate
18. Adjusting Plate
19. Brake Plate
20. Lock Bolt

21. Cover Band

Brake Adjustment

Loosen the nut on the tapered bolt locking the adjusting plate in position.

Insert a bar between the adjusting lugs on the adjusting ring and turn either clockwise or counterclockwise until the air space between the floating plate and the end bell is $1/32$ " for single disc brakes or $1/16$ " for double disc brakes. Clockwise rotation decreases the space, counterclockwise rotation increases the space.

After the proper adjustment is obtained, tighten the nut on the end of the tapered bolt, locking the ring in position.

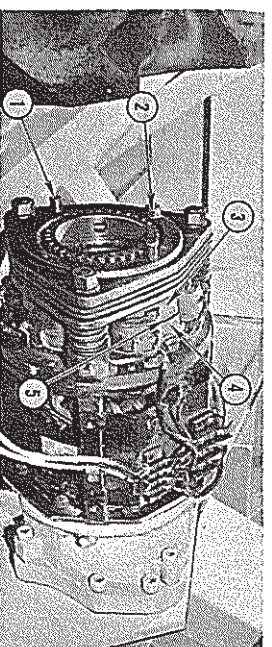


FIGURE J-9. MOTOR BRAKE ADJUSTMENT

1. Adjusting Ring
2. Lock Bolt
3. Floating Plate
4. Top End Bell
5. Air Space

GEAR BOX Removal

Remove the steering motor and gear box as described in Section "Y" of this manual.

If motor and gear box are connected to a cable drum, separate in the following manner.

Unwind the cable from the cable drum. Remove the setscrew from the cable dead end in the cable

drum and remove cable.

Remove the setscrew from the cable drum locknut and back nut from gear box output shaft. Pull drum free of shaft.

Drain lubricant from gear box.

Disconnect the leads from the electric motor ter-

mincl strip and release electric cable from any clamps on the motor stator or cover. Fasten a rope sling about the motor and gear box to relieve the

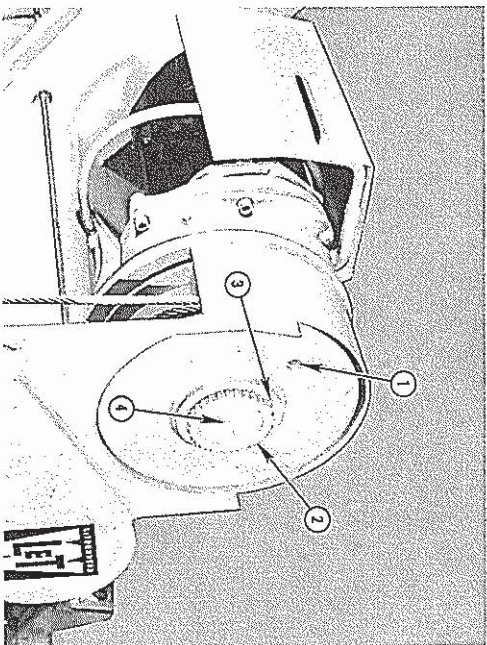


FIGURE J-10. GEAR BOX AND CABLE DRUM
1. Cable Dead End
2. Locknut
3. Setscrew
4. Output Shaft

NO. 1 GEAR BOX Disassembly

Place the gear box on its side so that the output shaft parallels the work bench.

Remove the socket head capscrews securing the retainer to the gear box (Fig. J-12). Remove the retainer and oil seal.

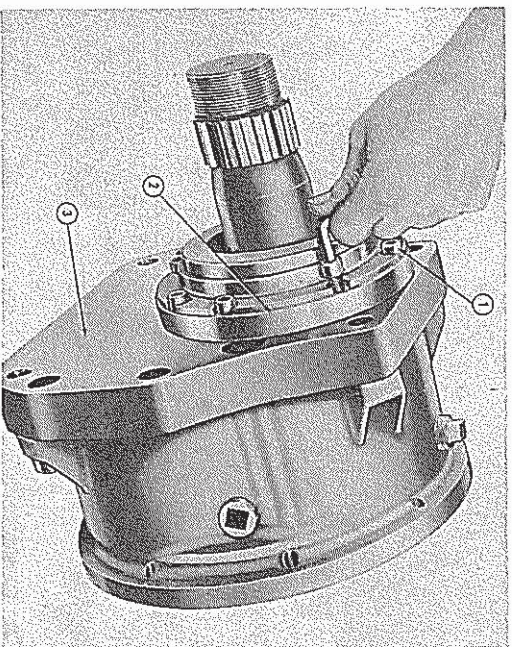


FIGURE J-12. REMOVING CAPSCREWS
1. Capscrews
2. Retainer
3. Gear Box

Take a soft hammer and tap the oil seal out of the retainer (Fig. J-13).

Remove two dowel bolts used to keep face plate and case in alignment.

Remove two socket head capscrews securing face plate to the case (Fig. J-14).

Separate the face plate and case. The gears will remain with the face plate assembly (Fig. J-15).

Remove the first reduction gear and the second

tension on the mounting capscrews. Remove capscrews and lower unit to floor.
Separate motor and gear box as previously described.

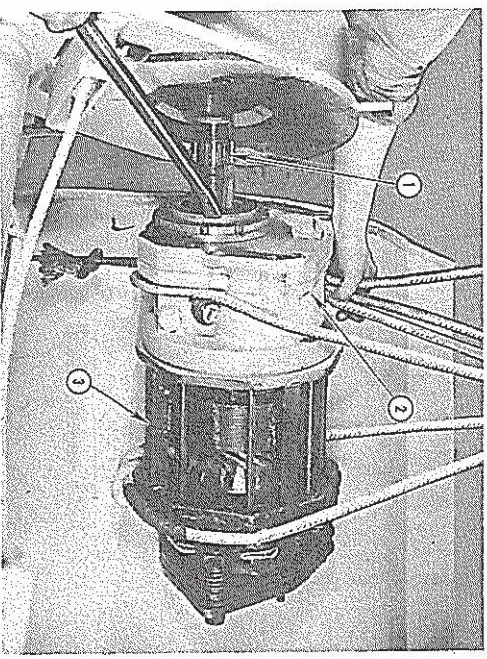


FIGURE J-11. REMOVING MOTOR AND GEAR BOX
1. Output Shaft
2. Gear Box
3. Motor

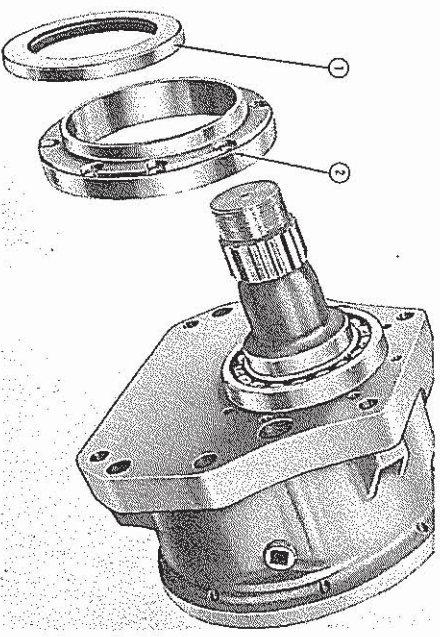


FIGURE J-13. OIL SEAL AND RETAINER, REMOVED
1. Oil Seal
2. Retainer

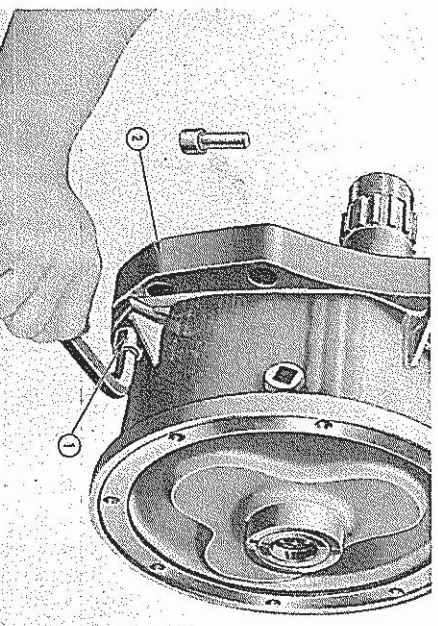


FIGURE J-14. REMOVING CAPSCREWS
1. Capscrew
2. Backing Plate

reduction gear. These gears may be removed by tapping lightly with soft hammer.

Using an expansion type bearing puller, remove the four bearings in the case and the two bearings in the face plate.

Remove locking setscrew from splined locknut (Fig. J-16).

Place a special wrench and extension bar on splined locknut and remove locknut. (This locknut has 1000 ft. lbs. of torque applied.)

Pull the output shaft. Tap out output shaft bearing with soft hammer (Fig. J-17).

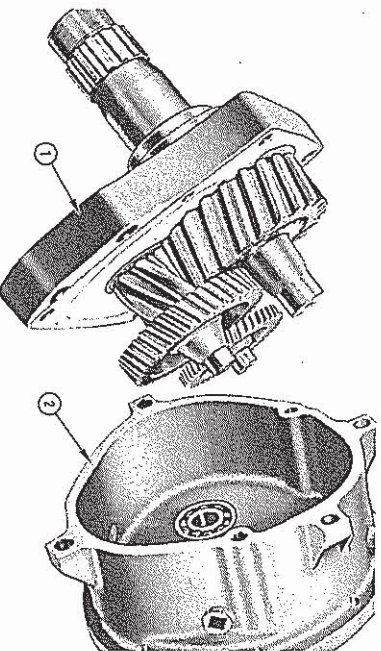


FIGURE J-15. BACKING PLATE, REMOVED
1. Backing Plate 2. Case

Carefully check all gear teeth for damage. Wash and check all bearings and replace those damaged. Clean gear box and all parts before reassembly.

Tap output shaft bearing into face plate with soft hammer. Place output shaft through bearing. Position output gear shaft (with collar of gear toward outside of face plate) and replace locknut.

Tighten locknut to 1000 ft. lbs. torque and install locking setscrew.

Replace bearings in face plate and gear box case. Install second reduction gear then first reduction gear.

Position new gasket on face plate and place gear box case over gears into face plate. Secure with socket head capscrews.

Replace dowel bolts through face plate and into

NO. 2 GEAR BOX

Disassembly

Remove the five capscrews, lockwashers and nuts securing the face plate to the gear box case.

Remove face plate and gasket. Note the bearings in face plate (Fig. J-18). Use puller to remove bearings. Remove rotor shaft, oil seal and bearing at the same time.

Drive out roll pins (if so equipped) and remove the capscrews securing the output shaft bearing retainer to the gear box and remove the retainer and gasket (Fig. J-19). Bearing retainer may be

J-6

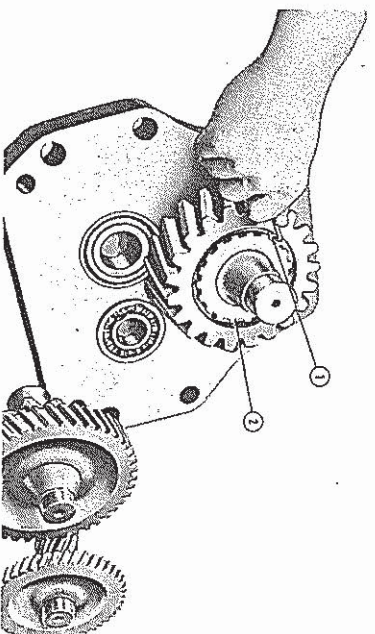


FIGURE J-16. REMOVING SETSCREW
1. Setscrew 2. Locking Nut

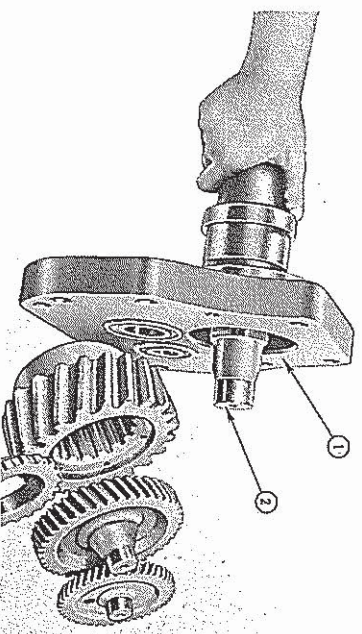


FIGURE J-17. REMOVING OUTPUT SHAFT
1. Backing Plate 2. Output Shaft

Reassembly

case.

Replace output bearing retainer, secure with capscrews, torque to approximately 75 ft. lbs. Install oil seal.

When replacing oil seal in the retainer, use special care to prevent damage to the oil seal.

When reassembling reduction gears, check carefully to be sure there is clearance between the second reduction gear and the output gear shaft. Also, when replacing the bearing retainer, be sure to tighten the socket head capscrews evenly to keep bearing from binding.

Secure motor to gear box. Install on machine and fill gear box with required amount and type of lubricant (see Section "K").

Disassembly

equipped with "O" ring.

Remove the setscrews from first and second reduction gear bearing caps. With special wrench, remove bearing caps (Fig. J-20). Remove locking setscrews from locknuts and remove locknuts (Fig. J-21).

Pull first and second reduction gears from the gear box case. Remove locking setscrew from output shaft locknut and remove locknut. Remove outer bearing cones and bearing cups from the bores in

the case and press bearing cones from shafts.

Drive out the output shaft, using a soft hammer. Outer roller bearing will come out with the shaft. Press bearing and oil seal from shaft and remove

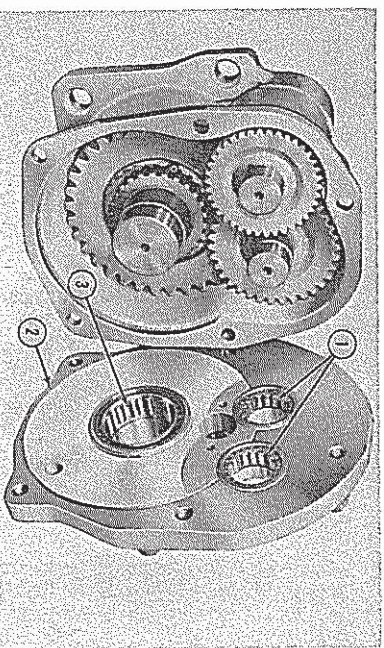


FIGURE J-18. FACE PLATE REMOVED

1. Bearing
2. Face Plate
3. Output Shaft Bearing and Seal

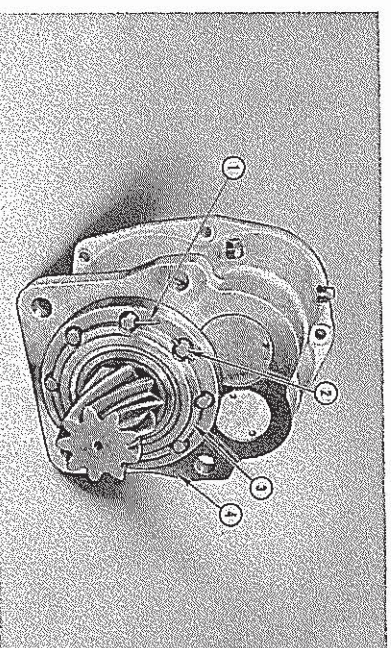


FIGURE J-19. BEARING RETAINER AND CAPSCREWS

1. Roll Pin
2. Capscrew
3. Retainer
4. Case

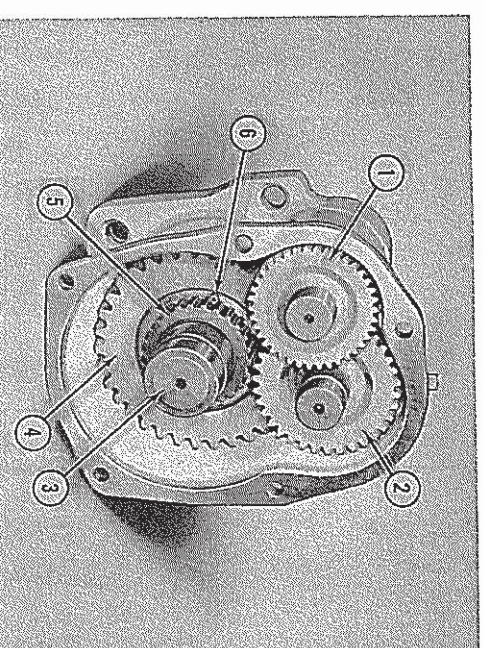


FIGURE J-22. GEAR BOX REDUCTION GEARS

1. First Reduction Gear
2. Second Reduction Gear
3. Output Shaft
4. Output Gear
5. Locknut
6. Setscrew

locking ring. Remove output gear from case.
NOTE: Steering gear box may have an oil seal ring in addition to the oil seal.

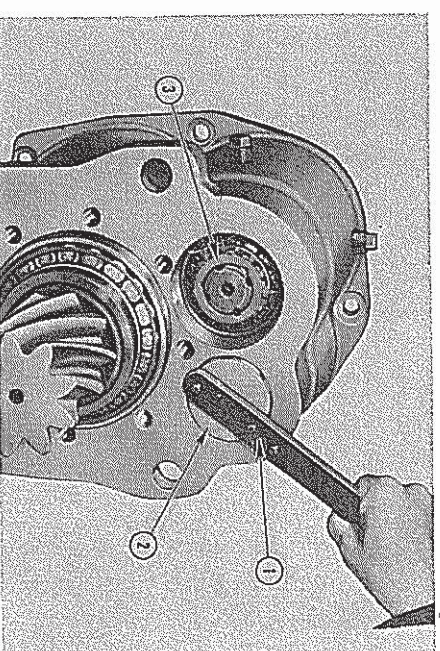


FIGURE J-20. REMOVING BEARING CAP

1. Wrench
2. Bearing Cap
3. Locknut

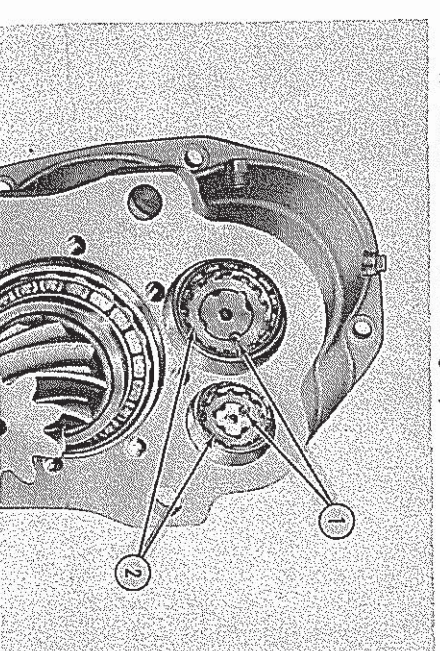


FIGURE J-21. LOCKNUTS AND SETSCREWS

1. Setscrew
2. Locknut

Reassembly

Carefully check all gear teeth for damage. Wash and check all bearings and replace those damaged. Clean gear box and all parts thoroughly before reassembling.

Check oil seals for dryness, hardness, or excessive wear. Replace if damaged or if condition of seal is such that it will leak.

Install bearing on output shaft. Press oil seal into retainer. Install bearing and oil seal in face plate. Install shaft in case by pressing bearing into large bore in case. Position output gear over the splines on shaft, thread locknut on shaft and tighten with 2000 ft. lbs. torque. Install locking setscrew in face of gear and between splines on the locknut. Press bearings into blind bores in the face plate. Press the bearing cones on first and second reduction gear shafts. Press bearing cup into the bores in case. Install second reduction gear, then first reduction gear into case.

Slide spacers on gear hubs, install the bearing cones, thread bearing locknuts onto gear hubs and

tighten locknuts. Tighten first reduction gear locknut with 100 ft. lbs. torque and second reduction gear locknut with 200 ft. lbs. torque.

Position the face plate on the case, inserting the gasket between the face plate and the case and secure with capscrews, lockwashers and nuts.

Install and tighten bearing retainer plugs in

NO. 3 GEAR BOX Disassembly

Remove capscrews and lockwashers securing the face plate to the case and remove the face plate and gasket. The bearings (Fig. J-23) in the face plate must be removed with an expansion type puller. Remove rotor shaft oil seal and bearing at the same time.

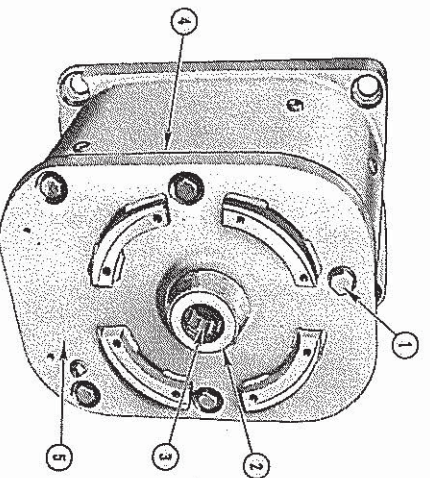


FIGURE J-23. GEAR BOX FACEPLATE

1. Capscrew
2. Oil Seal
3. Bearing
4. Gasket
5. Faceplate

Drive out roll pins (if so equipped) and remove capscrews securing the output shaft bearing retainer to the case. Remove retainer, gasket and oil seal (Fig. J-24). (Bearing retainer may be equipped with an "O" ring.)

Remove setscrews from first and second reduction gear bearing caps. With special wrench re-

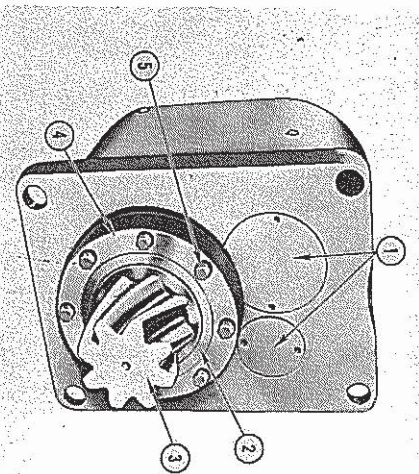


FIGURE J-24. BEARING RETAINER PLUGS

1. Plug
2. Oil Seal
3. Pinion
4. Retainer
5. Capscrew

bore in case. Replace "O" ring into bearing retainer (if so equipped). Install bearing retainer, seal and gasket. Secure with capscrews and copper washers, torque to approximately 75 ft. lbs. Secure motor to gear box. Install on machine and fill gear box with the required amount and type of lubricant (see Section "X").

move bearing caps (Fig. J-25). Remove locking setscrews from reduction gear shafts and remove locknuts. Remove the first and second reduction gears from the case.

Remove setscrew from output shaft locknut and remove locknut. Now drive out the shaft, using a soft hammer. Drive out the output shaft bearing from the inside of the case.

Remove the output gear from the case. Remove oil seal from output shaft.

Tap the first and second reduction gear bearings out of their respective bores in the case.

NOTE: Steering gear box is equipped with an oil seal ring in addition to the oil seal.

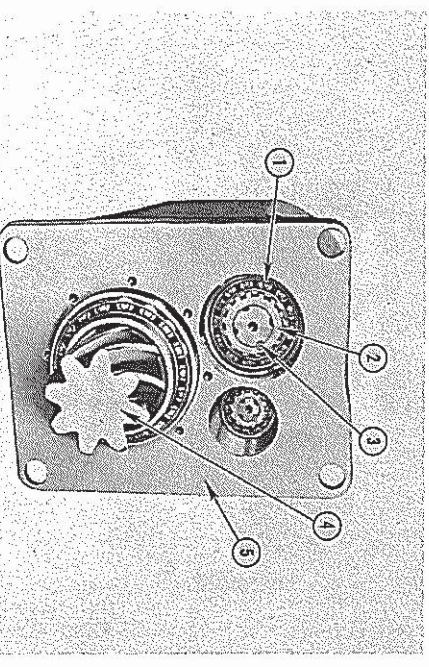


FIGURE J-25. RETAINER REMOVED

1. Bearing
2. Locknut
3. Setscrew
4. Pinion
5. Case

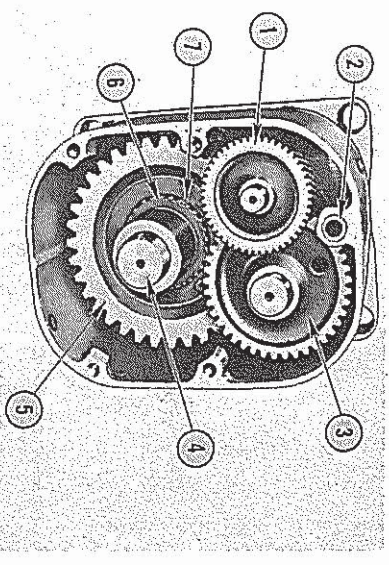


FIGURE J-26. REMOVING GEARS

1. 1st Reduction Gear
2. Dowel
3. 2nd Reduction Gear
4. Output Shaft
5. Output Gear
6. Locknut
7. Setscrew

Reassembly

Carefully check all gear teeth for damage. Wash and check all bearings and replace those damaged. Clean gear box and all parts before reassembly.

Check oil seal for dryness, hardness, or excessive wear. Replace if damaged or if condition of seal is such that it will leak.

Replace oil seal on output shaft.

Install bearings in gear box case and face plate. Set output gear into case and install output shaft through bearing and into gear. Drive shaft into splines in gear.

Replace locknut and torque to 2000 ft. lbs. Install setscrew.

Install first and second reduction gears into case. Replace locknuts on first and second reduction gear shafts and torque to 100 and 200 ft. lbs. respectively.

Replace gasket and face plate. Install capscrews to secure face plate to case. Replace bearing retainer plugs over first and second reduction gear locknuts.

Replace oil seal, gasket and retainer over output shaft. Replace hex head capscrews to secure retainer to case, torque to approximately 75 ft. lbs.

Secure motor to gear box. Install on machine and fill gear box with required amount and type of lubricant (see Section "K").

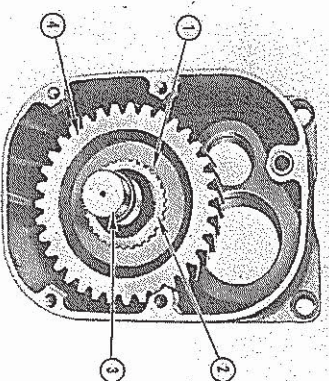


FIGURE J-27. OUTPUT GEAR

1. Setscrew
2. Locknut
3. Output Shaft
4. Output Gear

CONTROL, LIMIT AND HEAT CONTROL SWITCHES

The main switches which operate the A.C. electric motors are remote controlled by finger-tip switches on the instrument panel.

Each finger-tip control has two individual switches mounted to its frame. The switches are operated by the lever arm which protrudes through the instrument panel.

A finger-tip control switch in the released position does not have current flowing through it. When a switch is closed, the control circuit energizing the holding coil of the corresponding main switch is closed. The main switch then closes and the A.C. motor will operate.

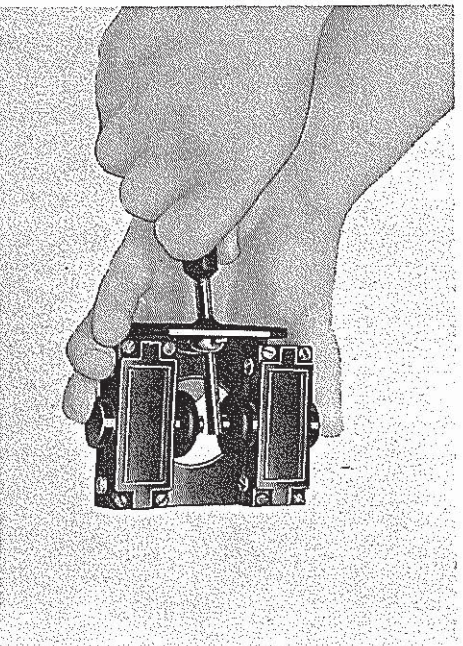


FIGURE J-28. FINGERTIP CONTROL SWITCH

The control circuit also includes limit switches and heat control switches. Both are safety devices which prevent damage to the machine from improper operation.

The limit switches are operated by the action of a stop plate against an actuator arm. The action of the actuator will cut off the flow of current to the motor, thus preventing any damage to the equipment.

To adjust a limit switch, first remove the cover and loosen the jam nut on the adjusting screw. Back out adjusting screw until spring pulls actuator against switch, and the switch makes a "clicking" sound. Turn adjusting screw in until switch again makes the "clicking" sound. Tighten jam nut.

Install switch on machine. Loosen the two capscrews and nuts clamping the actuator arm to the actuator shaft. Move the component, governed by the limit switch to the limit of travel desired. Place actuator arm against the stop block on moving component and open the limit switch by hand (pulling against the spring). Holding the switch open, tighten the two capscrews and nuts clamping



FIGURE J-29. LIMIT SWITCH

the actuating arm to the actuator, being sure the actuating arm is against the stop block.

When correct adjustment has been obtained, replace gasket and cover.

The heat control switch is operated by temperature changes. This safety switch has an element constructed of two metals having different rates of

expansion and contraction. When subjected to an increased temperature, the metals expand and "bow up" away from the contact points, opening the motor control circuit and stopping the A.C. motor. When the metals cool they contract, returning to their normal position, closing the control circuit.

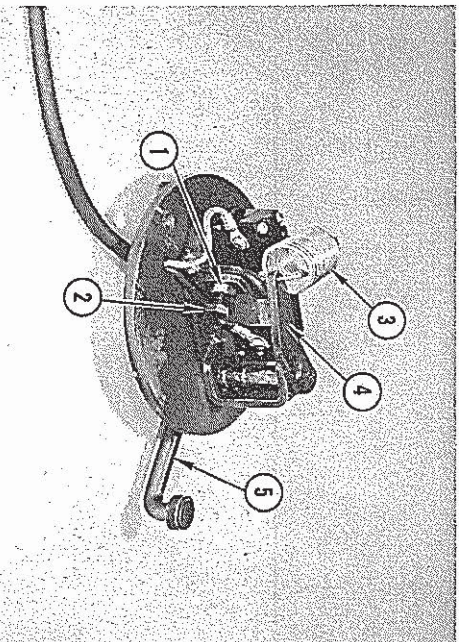


FIGURE J-30. LIMIT SWITCH ADJUSTMENT

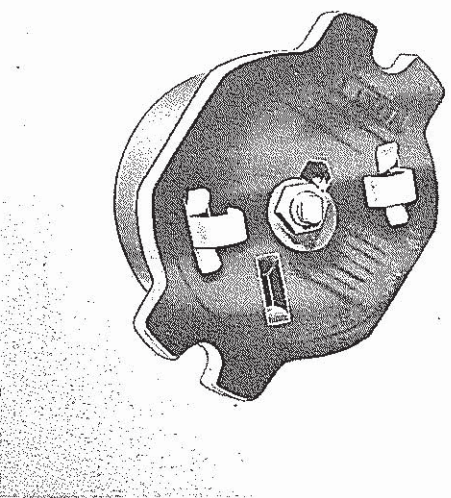
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|--------------------|-------------|------------------|
| 1. Jam Nut | 3. Spring | 5. Arm Structure |
| 2. Adjusting Screw | 4. Actuator | |

MAIN SWITCH

Main switches, inserted in the circuit between the generator and the motor, control the flow of current to the motor. When the contacts within the switch are closed, the A.C. electric motors will operate.

Heavy current flows through these switches when the A.C. motor is in operation, and large con-

FIGURE J-31. HEAT CONTROL SWITCH



tact points of special material are used to carry the heavy load.

Main switches are operated by electromagnets which are called holding coils. These coils are energized by a separate circuit known as the control circuit, see Section "L".

Disassembly

contact, rotate 90 degrees and remove. Stationary points can be removed by removing the screw securing it to the base and lifting out point.

Remove screws securing coil and magnet structure to contactor base structure and lift magnet and coil out of mounting bracket. Remove cap-

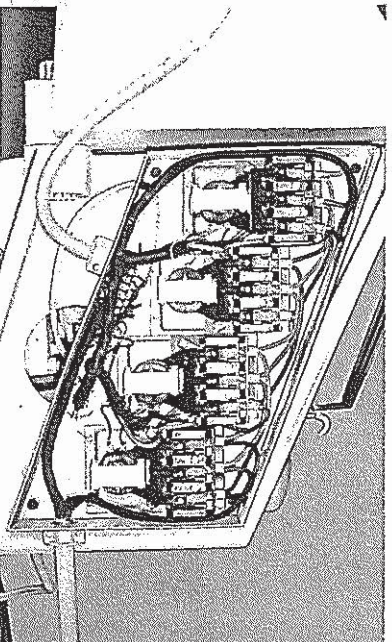


FIGURE J-32. MAIN SWITCH BOX

Remove switch box cover and disconnect leads from switch and holding coil.

Remove screw and washer securing the moving contact point to arm structure and lift out point, holder, spring and shims (if present). Remove spring from holder (Fig. J-33).

NOTE: For point replacement only the moving points can be removed by lifting up on the moving

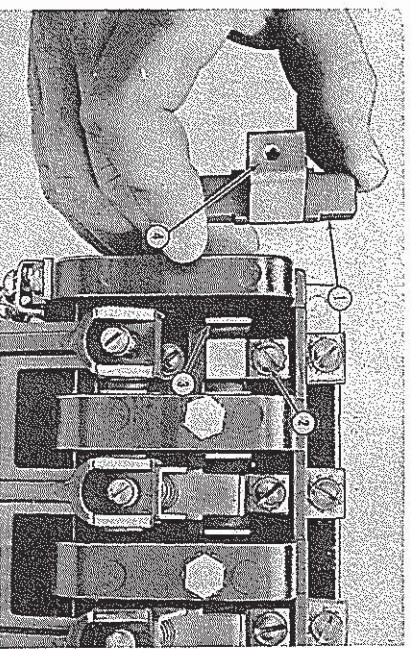


FIGURE J-33. MOVING POINT, REMOVED

- | | |
|------------------|-----------------|
| 1. Moving Point | 3. Arc Snuffer |
| 2. Machine Screw | 4. Point Holder |

screws, nut and lockwasher securing coil to magnet structure and separate the two units (Fig. J-34). Press down on the magnet and arm structure and remove the key (Fig. J-35). Lift out arm structure and remove the arm support spring (Fig. J-36).

Remove the two capscrews securing the base to contactor base plate structure and lift off the base. Remove stationary point structure, arc snuffers, and terminal strips from top and bottom of contactor base.

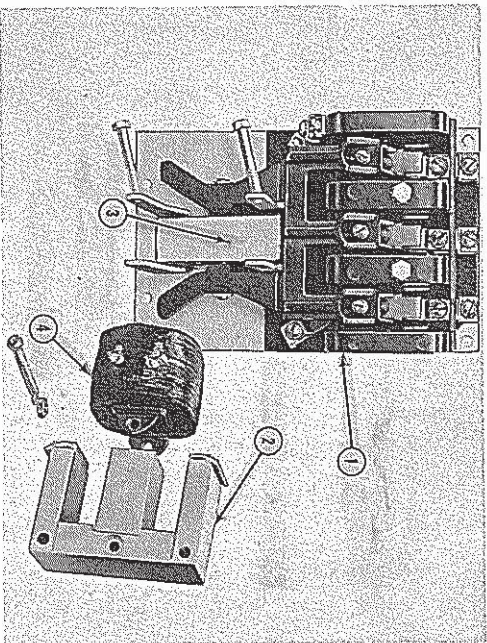


FIGURE J-34. REMOVING MAGNET

1. Base
2. Magnet
3. Bar Magnet and Arm
4. Coil

Reassembly

Replace terminal strips, arc snuffers and stationary contactor points in contactor base.

Position contactor base on base plate and secure with capscrews.

Place arm support spring on stud on contactor base and replace arm structure over spring.

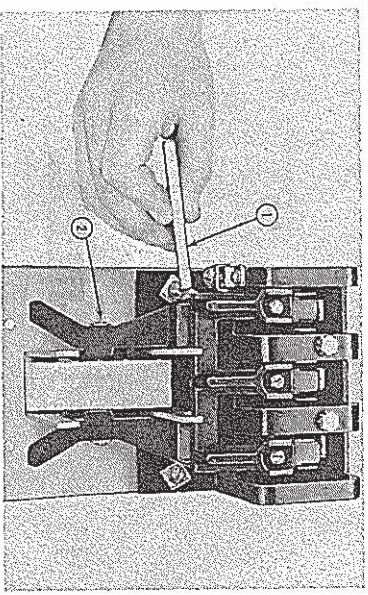


FIGURE J-35. REMOVING KEY

1. Key
2. Bar Magnet and Arm

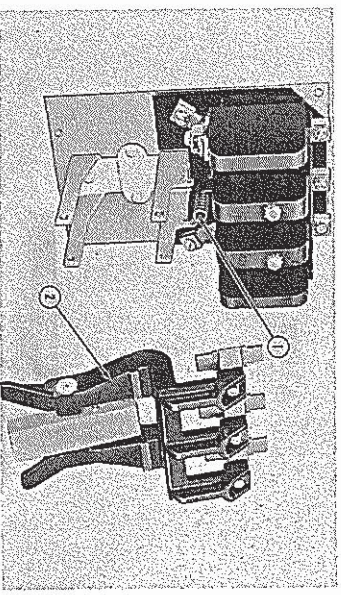


FIGURE J-36. MAGNET AND ARM, REMOVED

1. Spring
2. Bar Magnet and Arm

Replace key holding arm structure to contactor base.

Reassemble coil to magnet structure and replace in bracket on arm structure. Replace moving contact points, holders and springs. Complete reassembly and installation of unit.

Adjustment

To avoid excessive wear and arcing of the main switch points, all three points must make contact at the same time with a maximum of 0.015" variation between any two points. This also means that the top and bottom portions of each individual moving contact point must contact the mating stationary point at the same time, within the 0.015" limit.

When installing a new magnet and arm assembly,

ably, moving or stationary contact points, or replacing a complete main switch assembly, shimming between the arm and moving contact holders may be necessary to keep within the specified limits. Incorrect angle will cause the top or bottom of the contact points to engage first. If such is the case, replacement of the holder will be necessary.

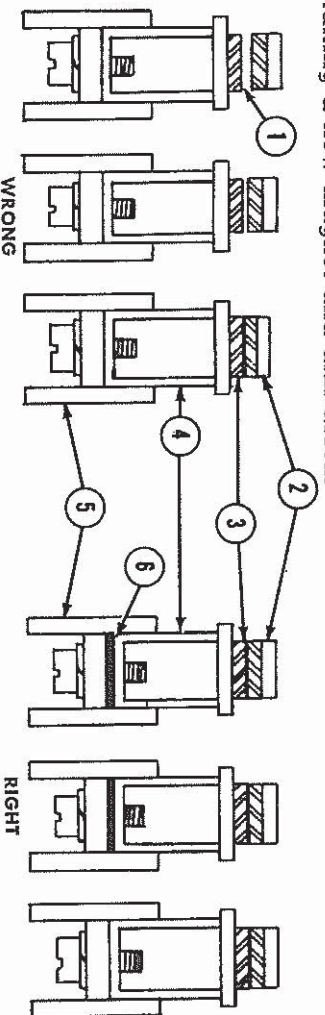
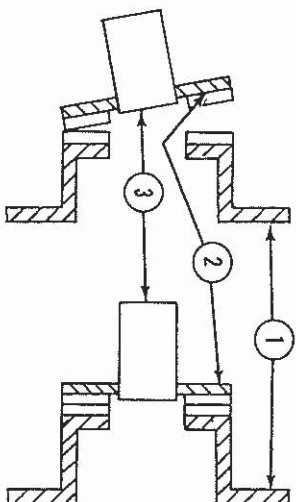


FIGURE J-37. SHIMMING BETWEEN ARM AND MOVING CONTACT HOLDER

1. Gap
2. Stationary Points
3. Moving Points
4. Point Holder
5. Magnet and Arm
6. Shims



WRONG

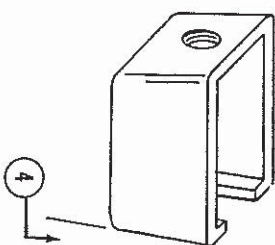
RIGHT

1. Stationary Points

FIGURE J-38. MOVING CONTACT HOLDER ANGLE

2. Moving Points

3. Holder



4. Point Holder Angle

MAINTENANCE AND LUBRICATION

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MAINTENANCE AND LUBRICATION

Proper maintenance, lubrication, and lubricants are essential for successful operation with a minimum of unproductive down time.

Use care in lubricating the machine. Use only the recommended lubricants obtained from a reputable supplier.

Clean all grease fittings and filler plugs before lubricating. Any foreign material in the fittings or plugs may be forced into the machine and cause faster wearing of the moving parts.

Do not over lubricate. Too much lubricant may

rupture the oil seals.

The lubrication intervals specified by shifts of operation are based on an average work period of approximately 10 hours per shift. The intervals may vary somewhat, depending upon climate and working conditions.

Extreme Pressure (E.P.) gear oils specified must meet U.S. Army Specification MIL-L-2105. Engine oils must meet U.S. Army Specification MIL-L-2104A.

MAINTENANCE

A.C. Electric Motors

Every 100 shifts remove motor cover and blow the dust and dirt from around the windings, rotor and brake assembly with an air hose.

Inspect all electrical connections every 10 shifts, making sure they are tight and free from grease and dirt.

Check brake clearance every 10 shifts. Excessive clearance at the brake magnets will cause improper brake release, over-heating the motor, and warping of the plates thus causing them to wear out prematurely. Insufficient brake clearance will also prevent proper brake release.

Adjust the brake as follows: Loosen the nut on

the tapered bolt locking the adjusting plate in position. Tap bolt down to release tension.

Insert a bar between the adjusting lugs on the adjusting ring and turn either clockwise or counterclockwise until the air space between the floating plate and the end bell is $1/32$ " for single disc brakes or $1/16$ " for double disc brakes. Clockwise rotation decreases the space, counterclockwise rotation increases the space.

After the proper adjustment is obtained, tighten the nut on the end of the tapered bolt, locking the ring in position.

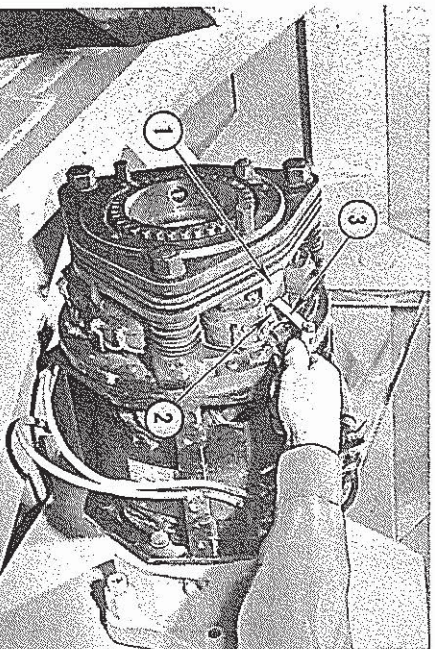


FIGURE K-1. CHECKING BRAKE CLEARANCE

1. Flooding Plate
2. End Bell
3. Feeler Gauge

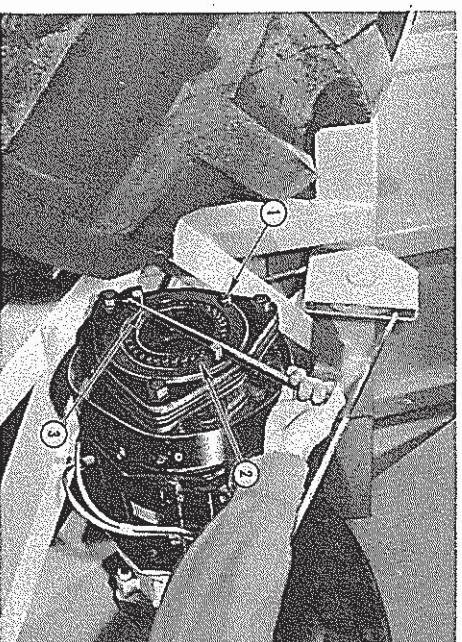


FIGURE K-2. ADJUSTING MOTOR BRAKE

1. Locknut
2. Adjusting Ring
3. Bar

A.C. Generator

Inspect the generator at 50 shift intervals for any large accumulation of oil and dirt on the stator. Any excessive amount of waste material will prevent proper cooling of the generator. Make sure that drains in the bottom of the engine compartment are open and the waste materials are draining away. The drains sometimes plug up with mud and allow the dirt and water to build up to the level of the generator stator.

Inspect the stator windings. Remove accumulation of grease and dirt with a low pressure siphon hose and a cleaning fluid, such as carbon tetra-

chloride. After the windings have been washed down with the cleaning fluid, blow off the surplus fluid with air.

Make sure the leads connected to the transformer and generator terminals are tight. Remove any accumulation of grease or dirt found on the terminal strips with cleaning fluid.

The generator brushes should be inspected for wear whenever the generator is disassembled. The brushes are $3/8$ " thick when new and should be discarded when one half of the brush has worn away.