

Replacement  
Instructions



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# Ratchet Assembly

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AKR 30/50

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## GENERAL

### Tools Required for AKR-30/50 Ratchet Assembly Replacement

#### TOOLS SUPPLIED WITH KIT

1. Drift Pin, Part No. 192A7573P295.
2. Eleven inch magnetic screwdriver, Part No. 193A184P1, with detachable bit, for lower motor mounting bolt removal (Allen head bolt). On new model breakers, screw driver not needed because of hex head bolt in place of Allen head bolt.
3. Detachable Bit, Part No. 193A1848P2

#### TOOLS NOT SUPPLIED

1. Maintenance Handle, Part No. 568B386G1.
2. Racking Handle, Part No. 673D500SH636G5.
3. 1/2 inch wrench, or ratchet and 1/2 inch socket, for removal of upper motor mounting bolts.
4. Large Phillips screwdriver for removal of escutcheon.
5. 1/2 inch and 9/16 inch open end wrenches.

## APPLICATION INFORMATION

### Replacing the Ratchet Assembly

1. Prior to removal of the escutcheon, support the breaker by placing a 2" x 4" x 6" piece of wood under each of the two front rail stud supports. See figure 1. Do not rest the breaker on an overcurrent programmer unit at any time.
2. Unscrew the escutcheon and set aside.
3. If the breaker is electrically operated, close the breaker by using the maintenance handle.



FIG. 1

4. Block the breaker from opening by using maintenance handle under the left flywheel and the top of the buffer nut. See figure 2.

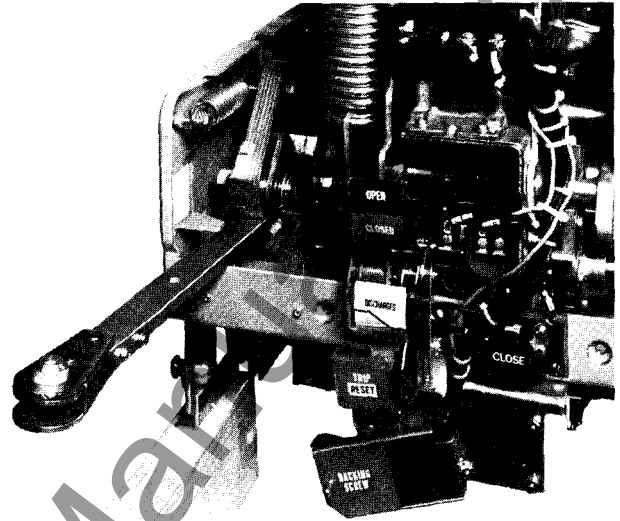


FIG. 2

To remove or assemble bottom mounting hardware of the motor, see figures 2A and 2B.

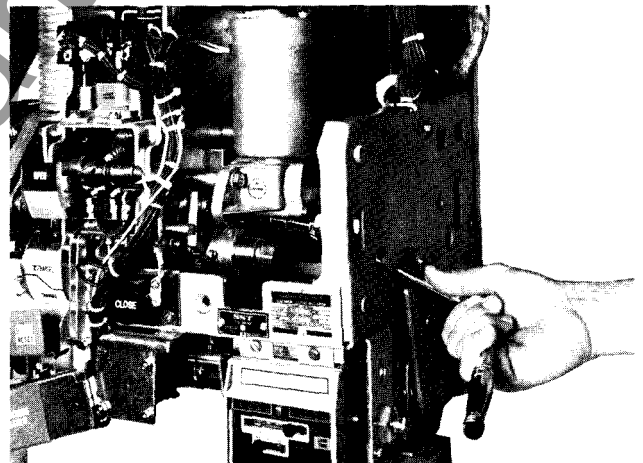


FIG. 2A

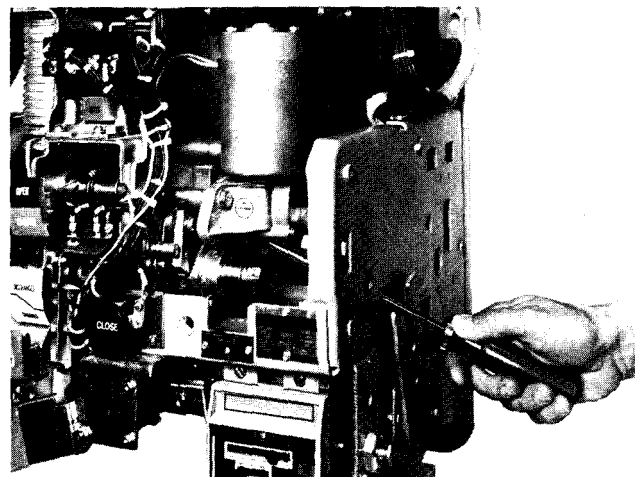


FIG. 2B

5. Remove the remaining two mounting bolts of the motor and all spacers. Lift and place the motor aside, see figure 3. Do not disconnect any wires.

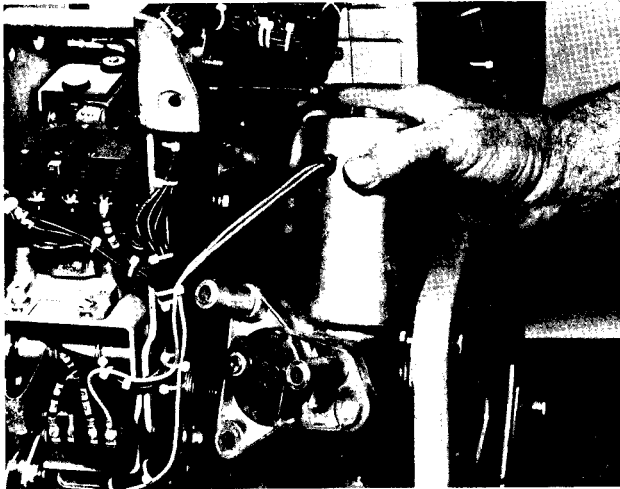


FIG. 3

6. For ease of roll pin removal, crank the crankshaft with the maintenance handle and advance the ratchet assembly two teeth. This will sound like two clicks. Use a 5" to 8" long, .228" diameter drill rod and a hammer to drive the roll pin out of the ratchet and crankshaft assembly, see figure 4.

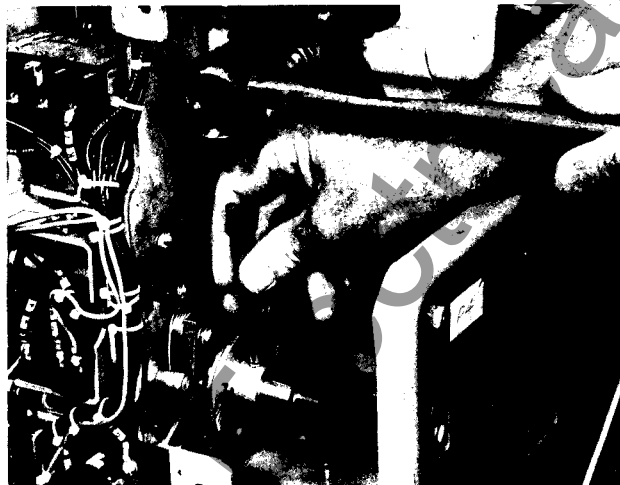


FIG. 4

7. Remove the ratchet assembly from the crankshaft.
8. Slide the new ratchet assembly onto the crankshaft. **Note** that the position of the cam-follower must be behind the centerline of the crankshaft, and on the side of the ratchet assembly nearest the mechanism, see figure-5.

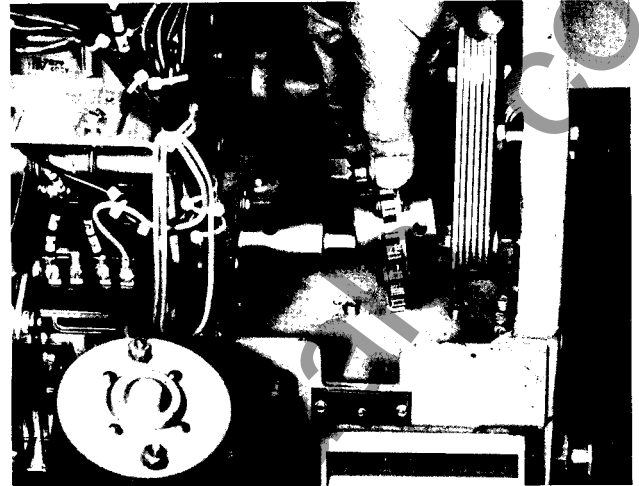


FIG. 5

9. In assembling the new ratchet assembly be sure to orient the holding pawl so that its torsion spring loads it against the ratchet, see figure 6.

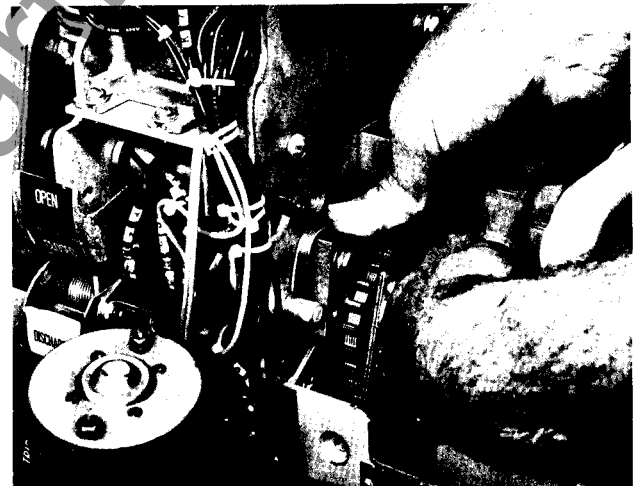


FIG. 6

10. To reinstall the  $\frac{1}{4}$ " roll pin, drive the roll pin into the ratchet hub until it bottoms against the crankshaft. Then rotate the ratchet assembly relative to the shaft until the roll pin can be driven all the way.
11. Place the motor in the breaker with its driving pawl facing the front of the breaker (between the ratchet assembly and the pawl stop) see figure 7. Mount the motor by hand tightening the bottom allen head screw with the short spacer in position. Tighten the top two mounting bolts and spacers with the smaller diameter shoulders of the spacers properly seated in the countersunk sections of their mounting holes.

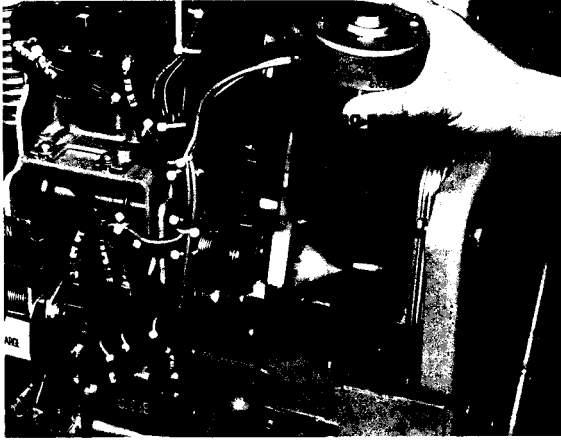


FIG. 7

12. Close the breaker. Reassemble motor, see figures 3 and 4. See figure 3. Verify that the screwdriver bit is not left in the breaker with Allen screw. Trip the breaker so that it is open and discharged.

13. Reassemble the escutcheon to the breaker. Should the racking screw cover dislocate, line up the labels, push forward, and release gently. See figure 8. Screw the escutcheon to the breaker.

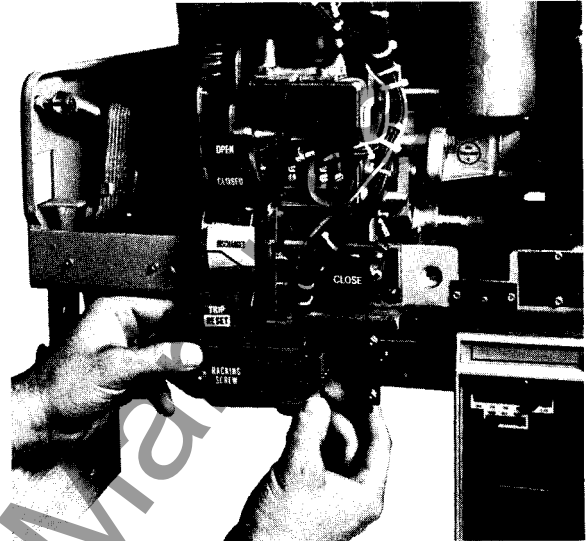


FIG. 8

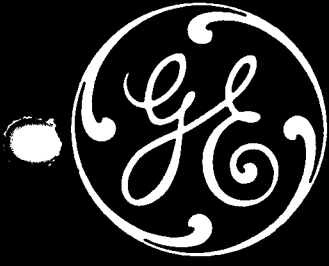


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**GENERAL**  **ELECTRIC**



**AKR 30**

**Closing Spring Assembly  
Replacement Instructions**

## "AKR 30" Closing Spring Identification

Examine the breaker closing spring assembly. Any closing spring having a 3" long lower anchor plate must be replaced with a closing spring assembly having a 4" long lower anchor plate and a  $\frac{1}{4}$ " diameter identification hole located at the top of that plate. When the closing spring assembly is replaced, any 5.63" long spring pin must be replaced with a spring pin having a 6.38" length. See figure 1 for a comparison of the old and new closing spring assembly and spring pin. Figures 2 and 3 show the new closing spring assembly and spring pin completely assembled on the breaker.

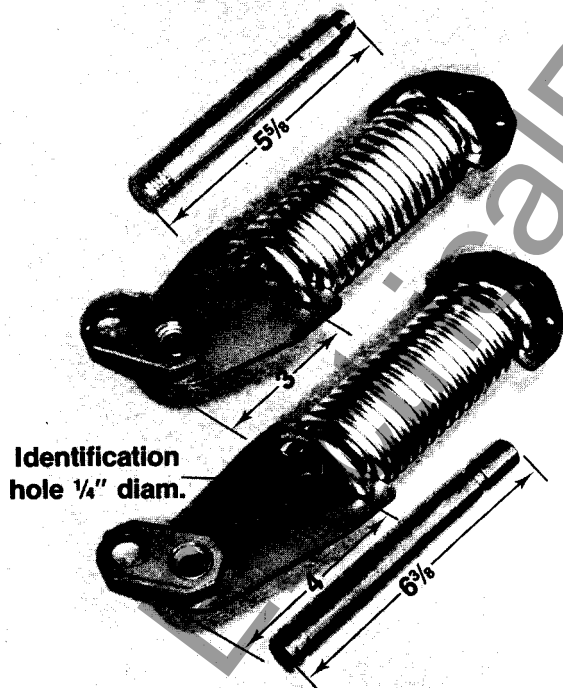


FIG. 1

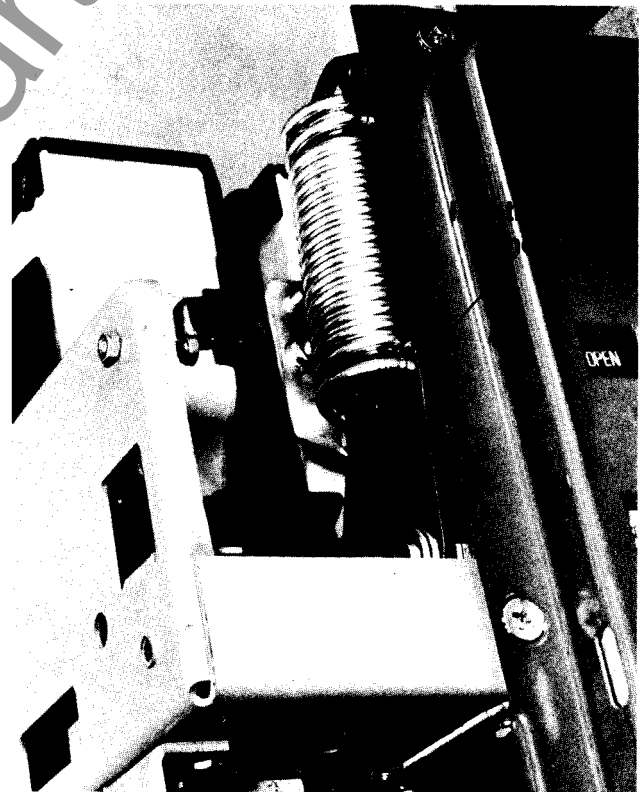
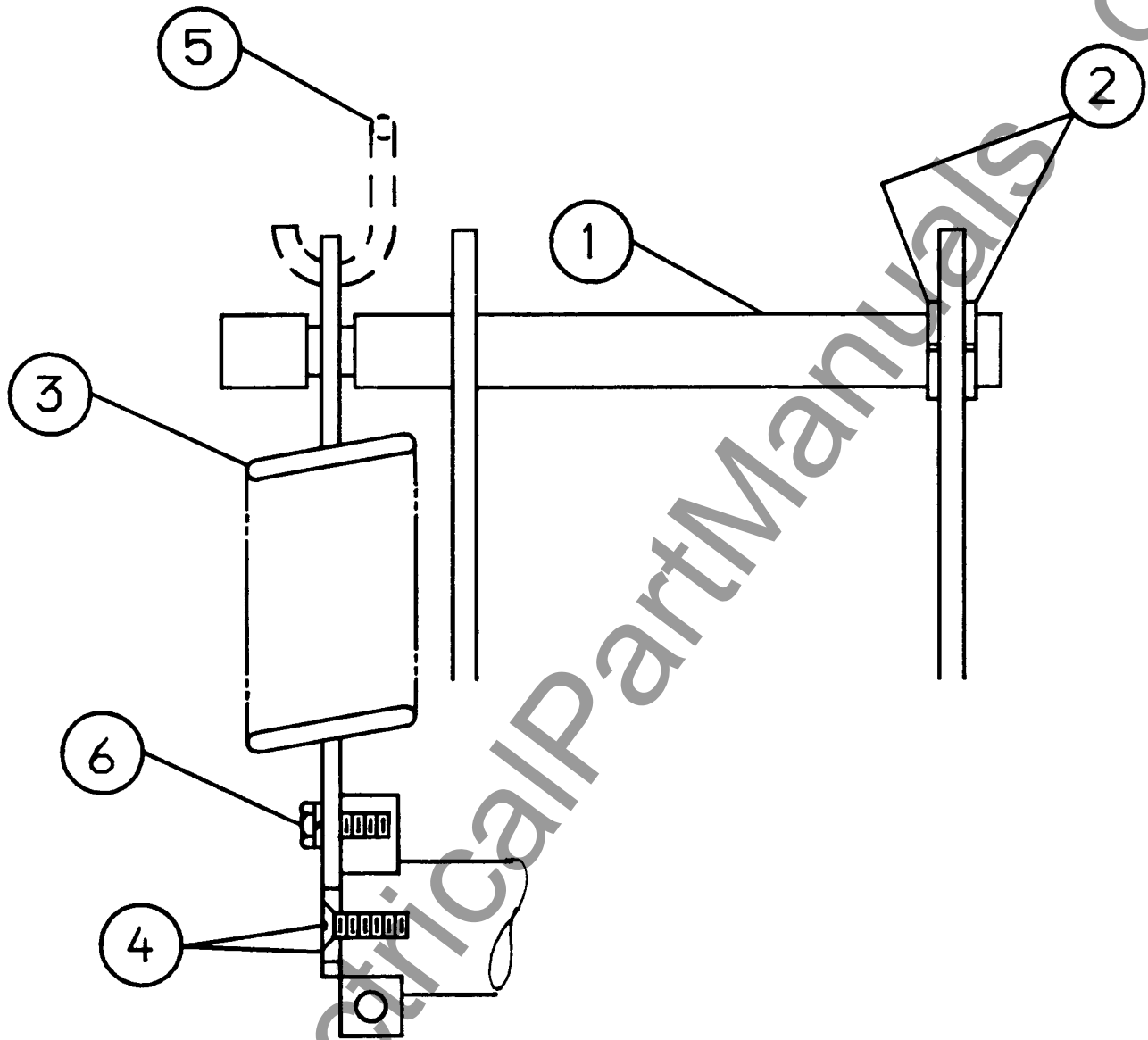


FIG. 2



- 1. Spring Pin
- 2. Squeeze Rings
- 3. Spring Assembly
- 4. Flat Head Screw and Countersunk Washer
- 5. Double Hook
- 6. Hex Head Bolt

FIG. 3

### **Tools Required for AKR-30 Closing Spring Replacement**

- 1.\* Double hook, 193A1816P1, for lifting the closing spring.
2. Maintenance handle 568B386G1.
3. Racking handle 673D500SH636G5.
4. Six inch long screwdriver for removing the flat head screw.
5. Eight inch blade screwdriver or larger for use as lever in removing closing spring.
6. Slip-joint pliers.
7. Thin bladed screwdriver for wedging squeeze rings out of groove.
8. 9/16 box wrench.

\*supplied with kit



### **“AKR 30” Closing Spring Replacement Procedures**

1. Remove the breaker from the switchgear cubicle and drawout rails.
2. Crank the racking mechanism to the “connected position” (clockwise to the end of travel).
3. Charge the breaker with a maintenance handle, then close and trip the breaker. This orients the main shaft in the best position for subsequent work.
4. Using a screwdriver and a pair of pliers remove and discard two squeeze rings from the spring pin as shown in figures 4, 5, and 6.

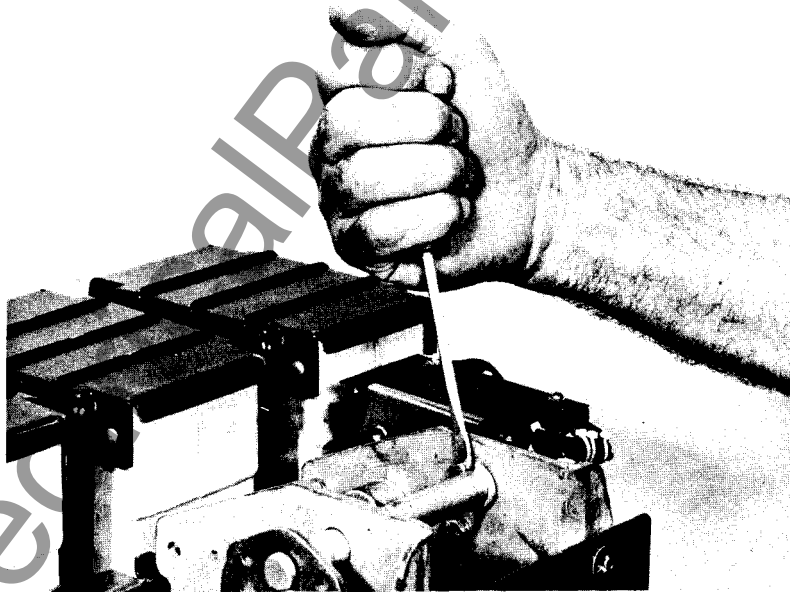


FIG. 4

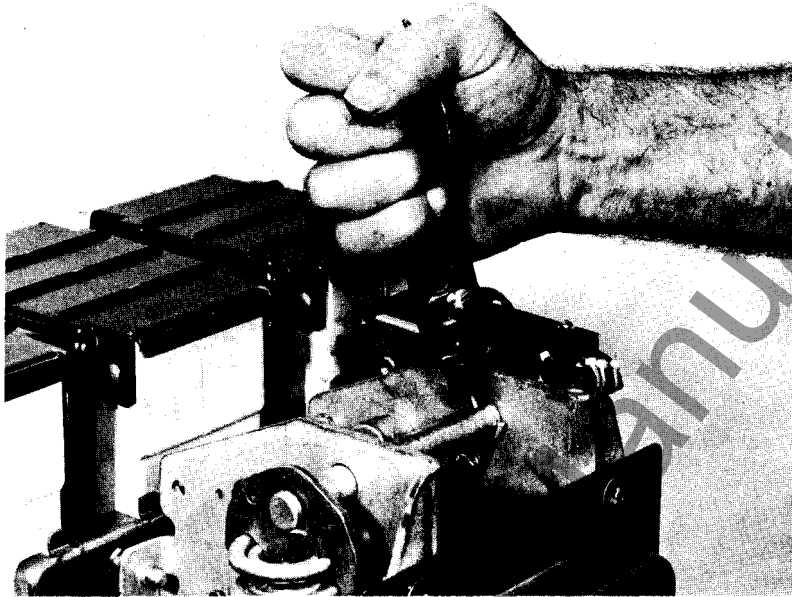


FIG. 5

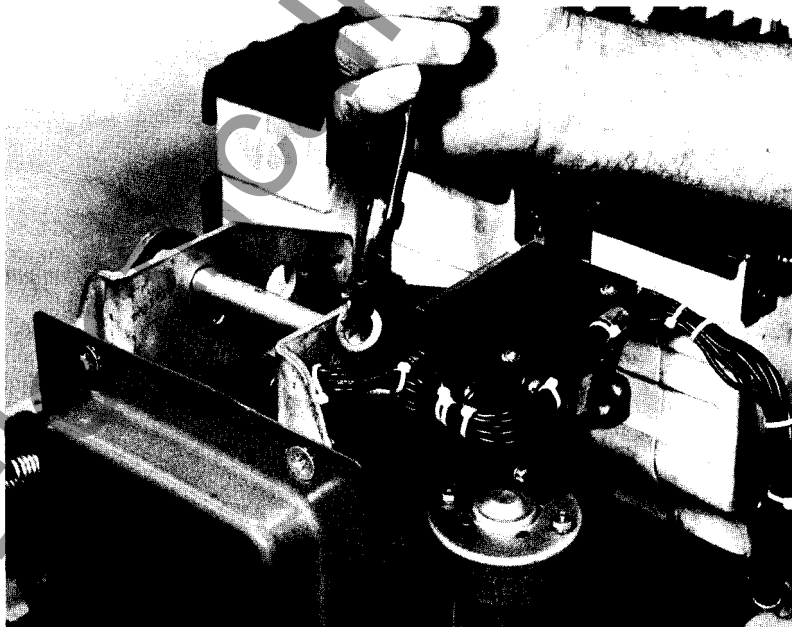


FIG. 6

5. To remove the closing spring assembly from the spring pin, place the ends of the double hook into the holes of the upper anchor plate. Insert a screwdriver or other levering device into the loop of the hook as shown in figure 7. Extend the closing spring and disengage the spring pin by drifting it to the right.

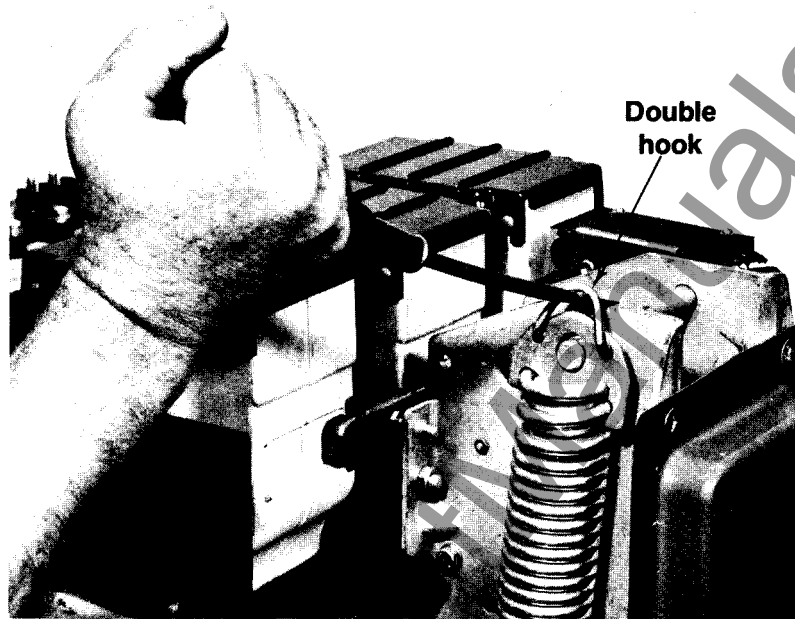


FIG. 7

6. Remove the spring pin from the breaker by sliding it to the left as shown in figure 8. Discard the pin.

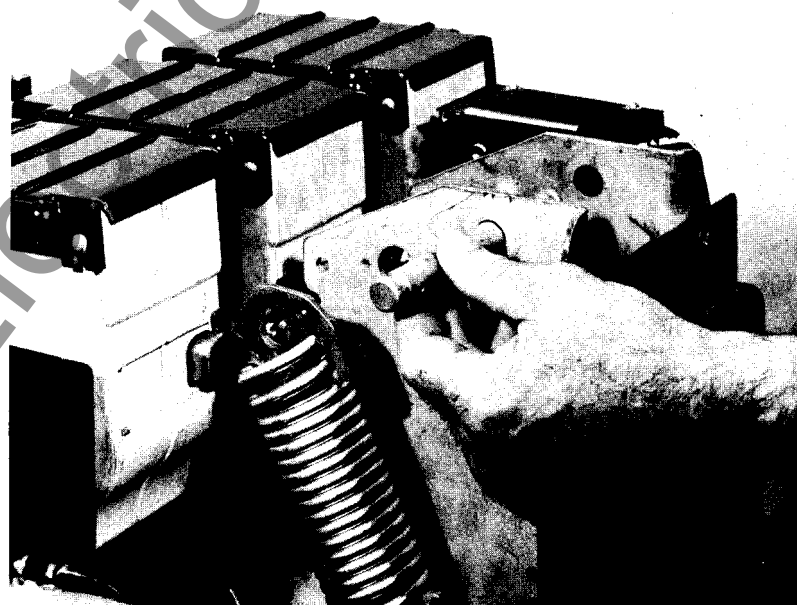


FIG. 8

7. Unscrew and discard the flat head screw, which has been secured with locktite, by using a large screwdriver through the access hole provided, (see figure 9). It may be necessary to turn the breaker on its side and use a pair of pliers with the screwdriver to unscrew the flat headscrew, (see figure 10). If this attempt fails, warm up the screw with a large soldering iron or hot air gun to soften the locktite for screw removal.

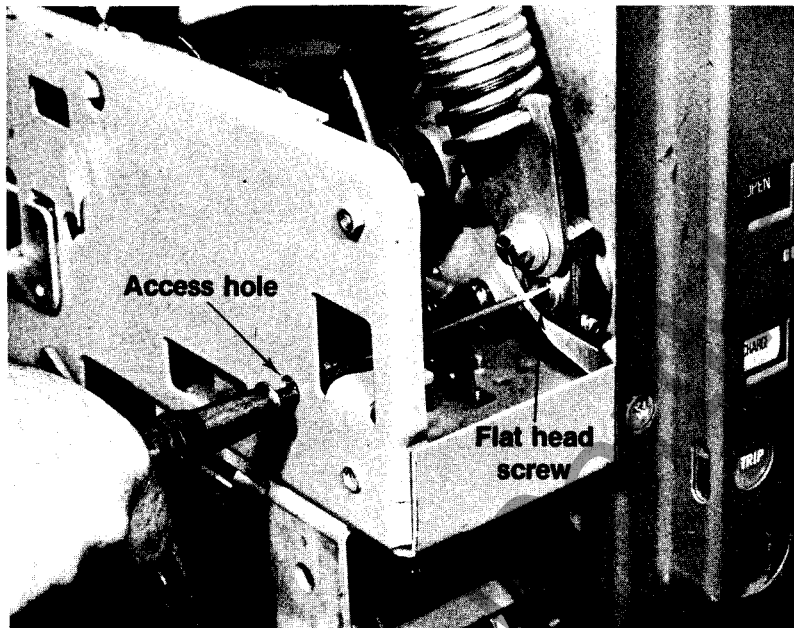


FIG. 9

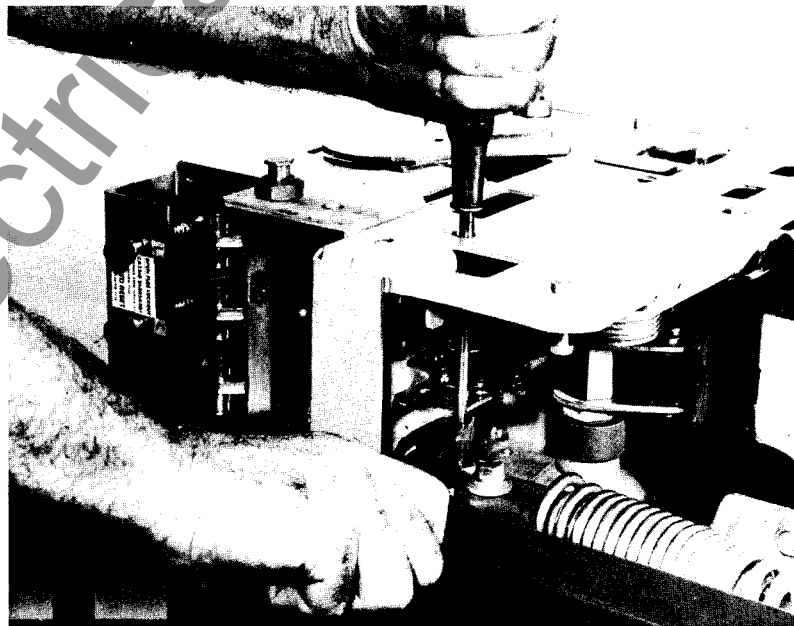


FIG. 10

8. Remove the  $\frac{3}{8}$ -16 bolt and lockwasher on the crank shaft, (see figure 11) and lift the old spring assembly out of the breaker.

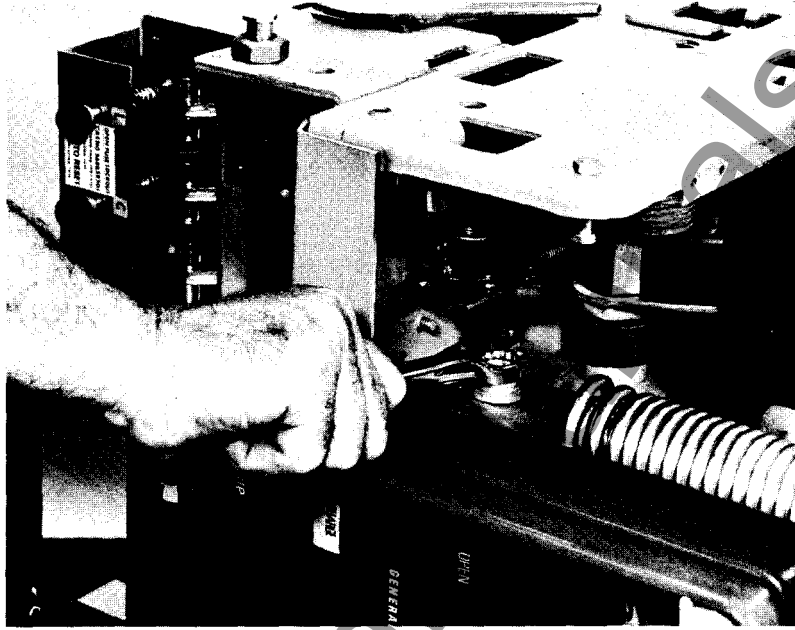


FIG. 11

9. Slide a new spring pin through the left hole of the mechanism frame, and slip a new squeeze ring on the pin, (see figure 12). Continue to slide the pin through the right hole.

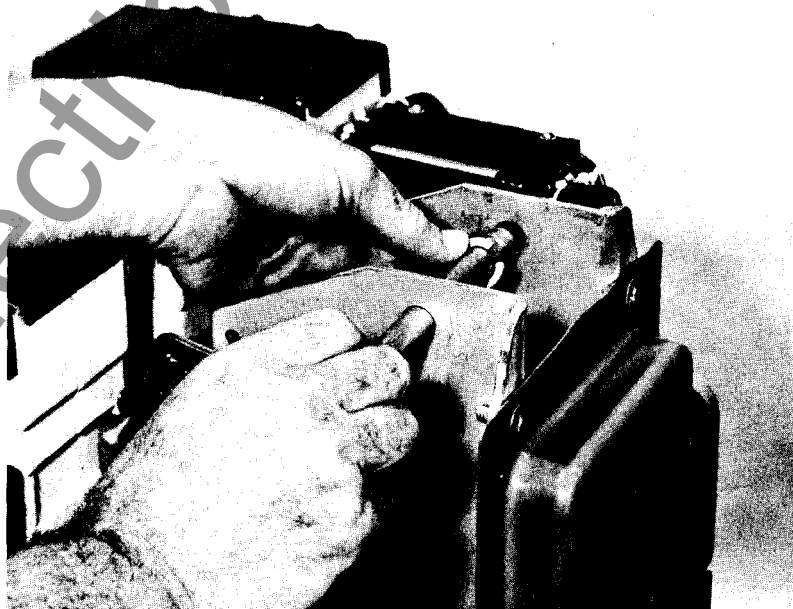


FIG. 12

10. Position the new spring assembly into the breaker.
11. Put the large countersunk washer on the new flat head screw and coat the threads of the screw with locktite. Tighten the screw until secure but do not tighten all the way at this time.
12. Use the double hook to extend and seat the closing spring assembly upper anchor plate into the groove of the spring pin, (see figure 13).

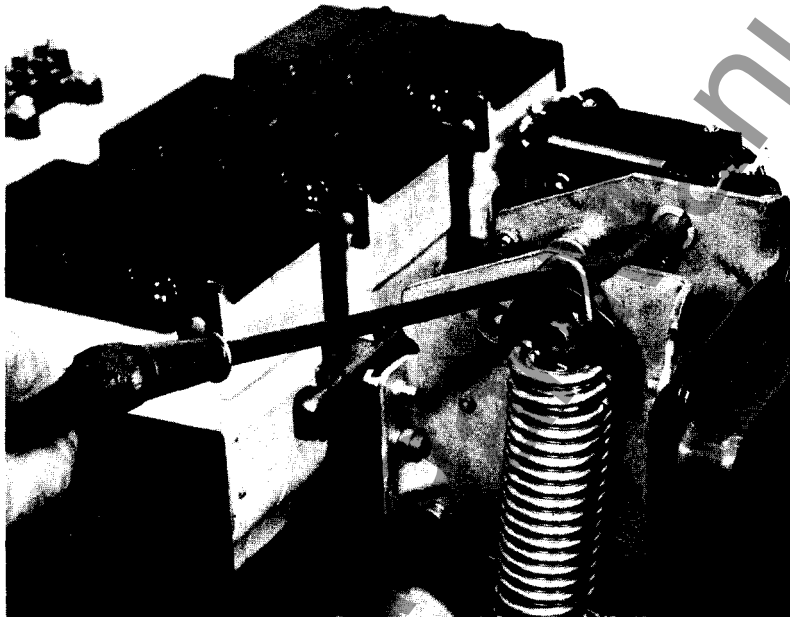


FIG. 13

13. To replace the hex head bolt and washer, rotate the crankshaft with a maintenance handle to align the holes of the lower spring anchor and the crankshaft. If the crankshaft rotation is stopped by the closing spring prop, release the closing spring prop from the roller of the ratchet assembly by pulling the armature of the closing solenoid forward. See figure 14. Manually trip the breaker, continue to rotate the crankshaft until the holes of the lower anchor plate and crankshaft are aligned. Assemble the hex head bolt to the breaker.

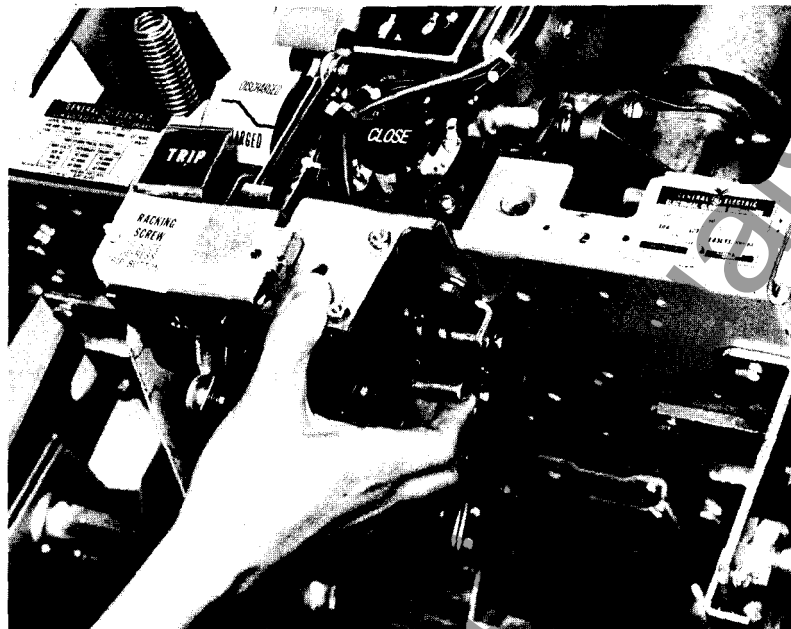


FIG. 14

14. After the closing assembly upper anchor plate is seated on the spring pin and the hex head bolt applied, tighten the flat head screw. Verify that the hex head bolt is tight.
15. Secure the spring pin with the two squeeze rings, (see figure 15).
16. Readjust contact wipe per instruction book GEI-86134A.

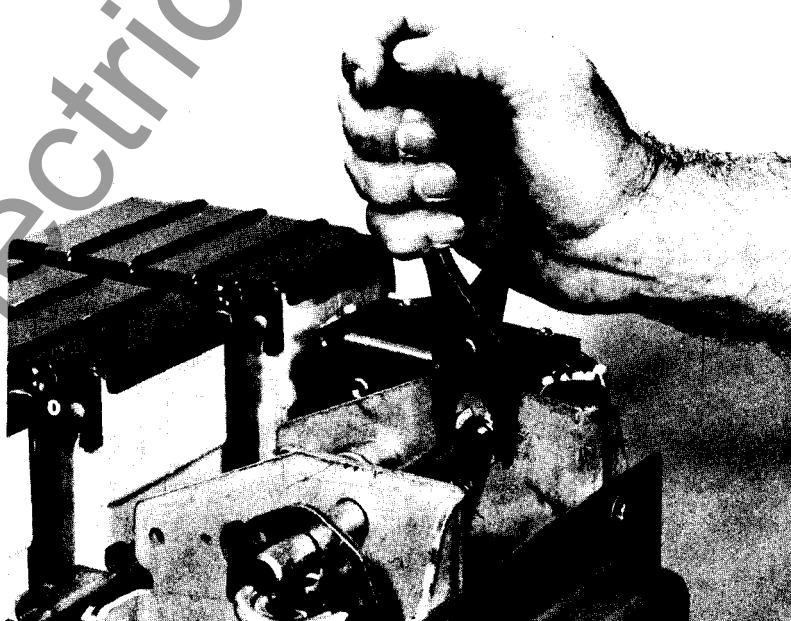


FIG. 15

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