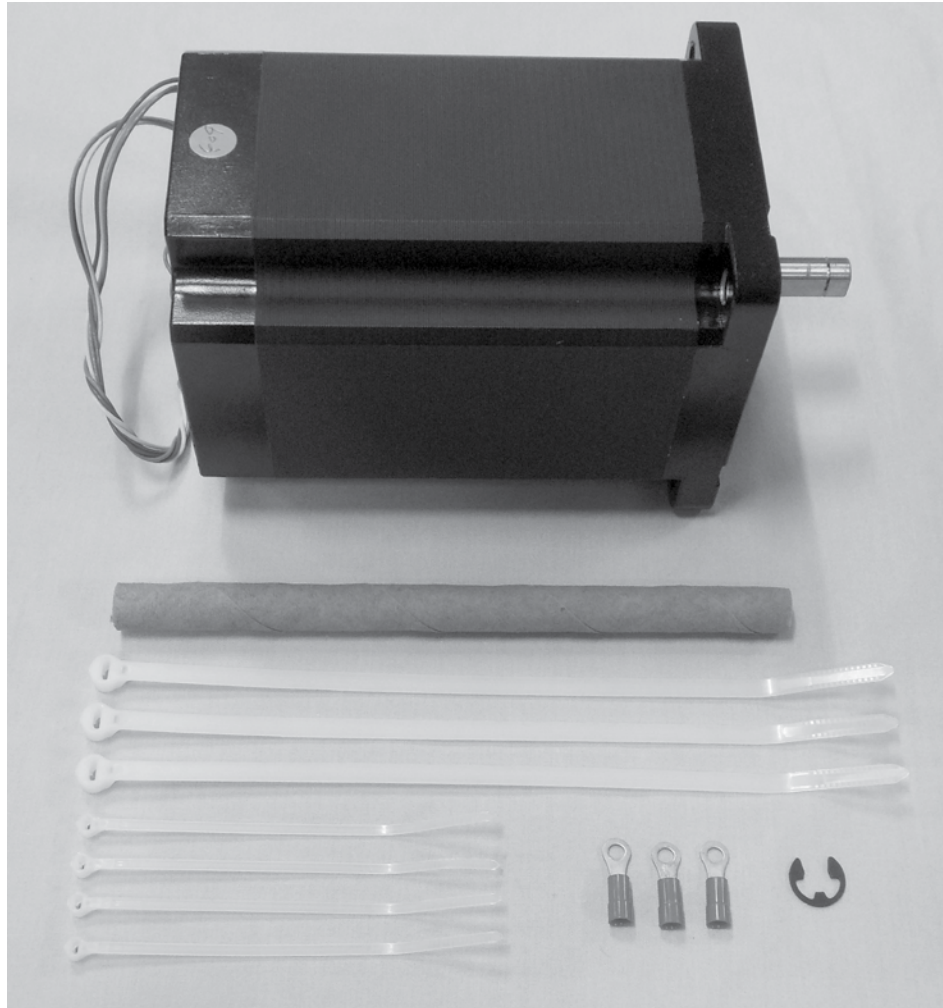


**QD3 Motor Replacement Kit**  
Number 57A63675100B



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## Safety for life



Eaton's Cooper Power series products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high-voltage lines and equipment and support our "Safety For Life" mission.

## Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians, who are familiar with this equipment should install, operate and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

### Hazard Statement Definitions

This manual may contain four types of hazard statements:

#### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

#### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

#### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

#### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

### Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

---

#### **DANGER**

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**Hazardous voltage. Contact with high voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.**

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#### **WARNING**

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**Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.**

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#### **WARNING**

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**This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply may result in death, severe personal injury and equipment damage.**

---

#### **WARNING**

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**Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.**

# QD3 Motor Replacement Kit Number 57A63675100B

## Product information

### Introduction

This document provides the installation instruction for the replacement of the motor on the QD3 Quik-Drive Tap Changer for an Eaton Cooper Power series voltage regulator.

### Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

### Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or processes described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton's Cooper Power series product representative.

### Acceptance and initial inspection

Each motor kit is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the motor kit and inspect it thoroughly for damage incurred during shipment. If damaged is discovered, file a claim with the carrier immediately.

### Handling and storage

Be careful during handling and storage of the motor kit to minimize the possibility of damage. If the motor kit is to be stored for any length of time prior to installation, provide a clean, dry storage area.

### Standards

ISO 9001 Certified Quality Management System

### Parts supplied

| Item | Part Number  | Description           | Qty      |
|------|--------------|-----------------------|----------|
| 1    | TAA114651003 | Ring Terminal         | 3        |
| 2    | TAA136263002 | Cable Tie             | 3        |
| 3    | TAA136263001 | Cable Tie             | 4        |
| 4    | 0692044A060  | Crepe Insulation Tube | 6 inches |
| 5    | 0800073199Z  | E-clip                | 1        |
| 6    | 2291846A01   | Motor                 | 1        |

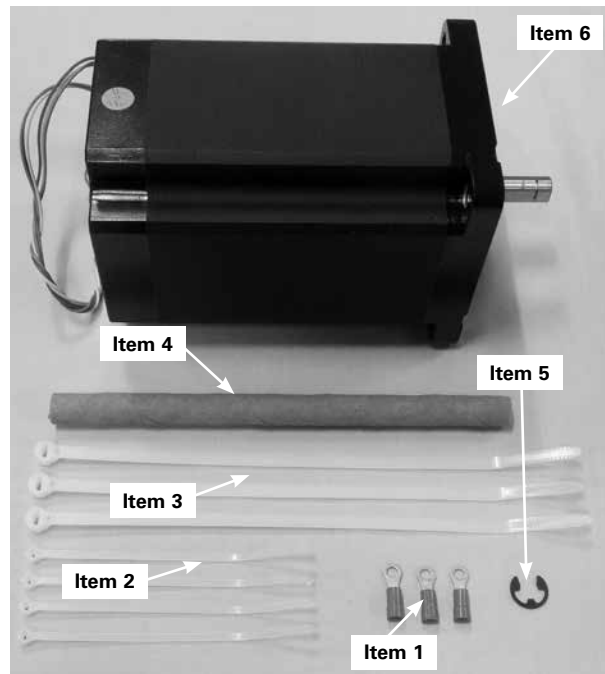


Figure 1. Kit parts

### Tools required

| Description            | Qty |
|------------------------|-----|
| Crimper                | 1   |
| Wire Cutters           | 1   |
| Phillips Screw Driver  | 1   |
| Standard Screw Driver  | 1   |
| Allen Wrench 1/8 inch  | 1   |
| Allen Wrench 5/32 inch | 1   |
| Allen Wrench 3/16 inch | 1   |
| 9/16 Socket            | 1   |
| Ratchet                | 1   |
| Needle Nose Pliers     | 1   |
| Loctite® 243™          | 1   |

### Motor removal instructions

1. Pull the internal position indicator flex shaft from the position-indicator drive tube. See Figure 2.

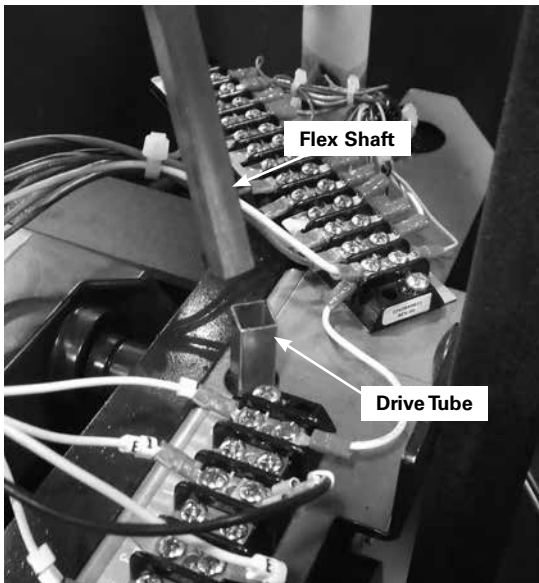


Figure 2. Internal flex shaft

2. Use a pair of wire cutters to cut and remove the cable tie from the control winding hard insulation tube and tap changer top bracket assembly. See Figure 3.

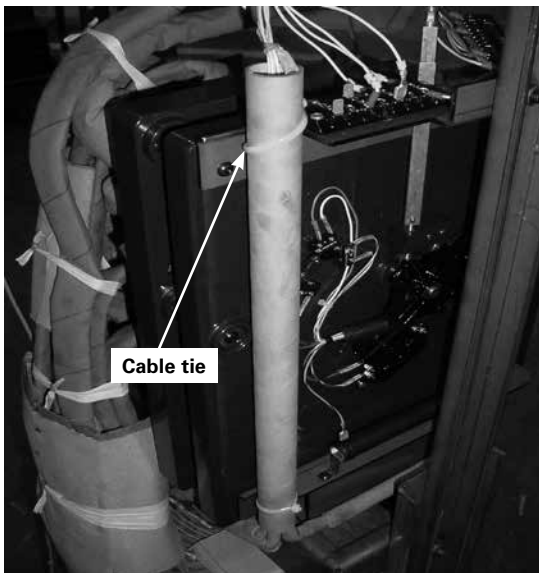


Figure 3. Control cable fastening

3. Use a 9/16" socket and ratchet to loosen and remove the nut and carriage bolt fastening the tap changer bracket to the regulator side channel. See Figure 4.

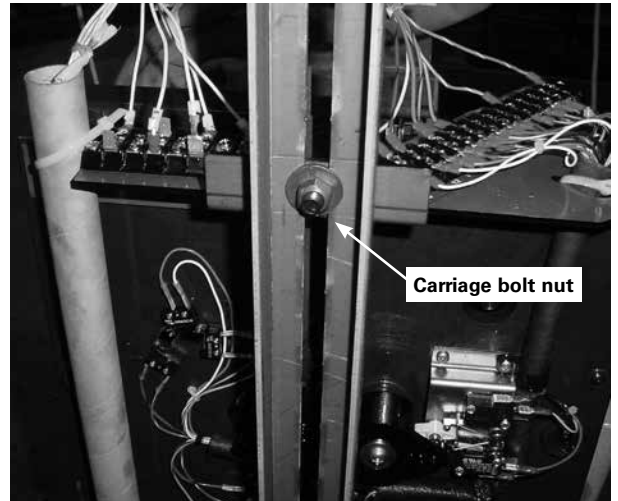


Figure 4. Tap changer and side channel fastener

4. Using a 1/8" Allen wrench, remove the three screws fastening the motor bracket to the tap changer assembly. See Figure 5.

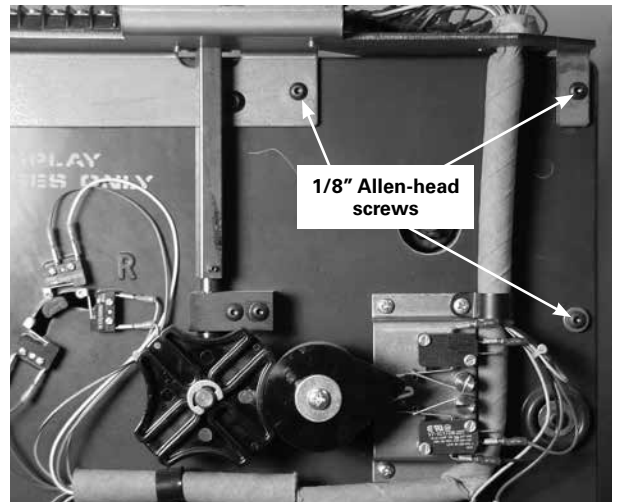
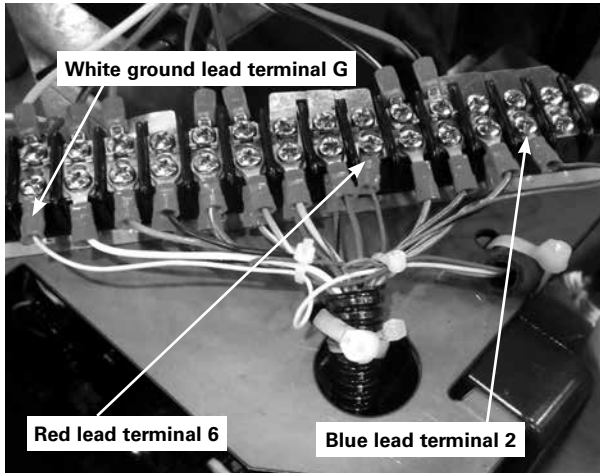


Figure 5. Motor bracket fasteners

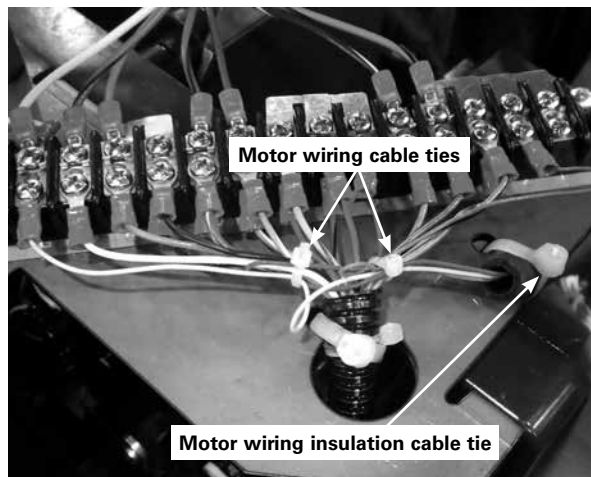
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- Using a Phillips screwdriver, loosen and remove the motor leads from the tap changer terminal board: blue from terminal 2, red from terminal 6, and the white ground lead from terminal G. See Figure 6.



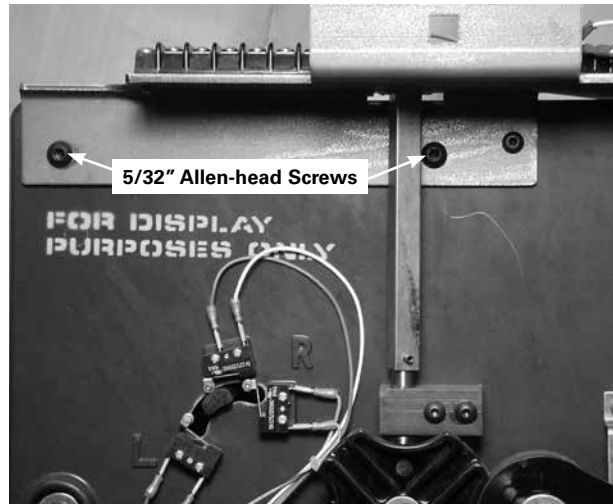
**Figure 6. Motor wiring to terminal board**

- Using a pair of wire cutters, cut and remove the two cable ties fastening the motor wires to the main harness. See Figure 7.
- Using a pair of wire cutters, cut and remove the cable tie fastening the motor harness to the tap changer terminal board. See Figure 7.



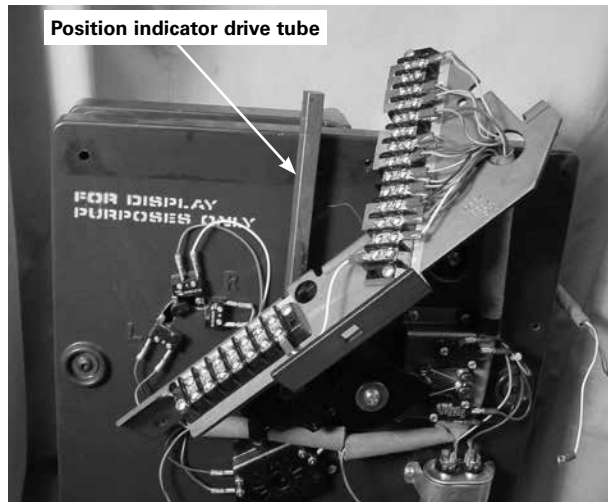
**Figure 7. Motor wiring cable ties**

- Use a 5/32" Allen wrench to remove the two screws mounting the top tap changer bracket to the tap changer. See Figure 8.



**Figure 8. Tap changer bracket fastening**

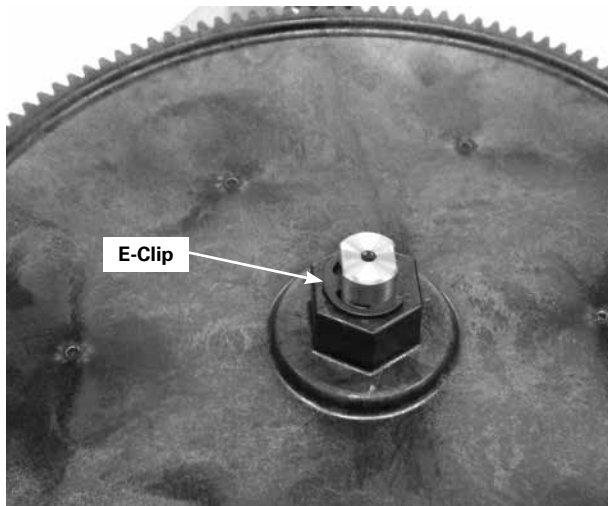
- Lift the top bracket clearing the position indicator tube. See Figure 9.



**Figure 9. Tap changer top bracket**

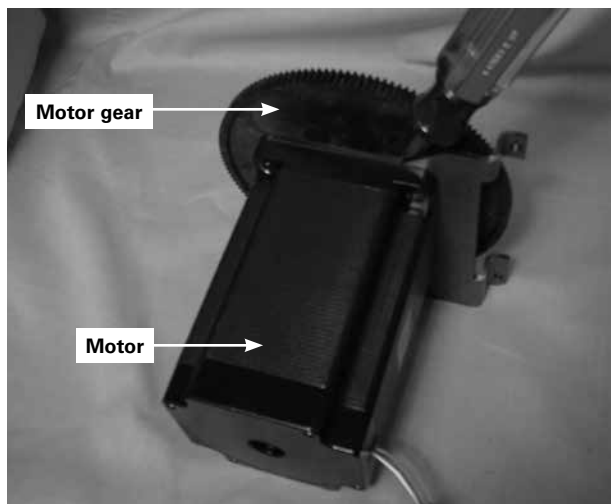
- Tilt back and lift the motor and gear assembly out of the tap changer assembly and place on a work surface.

11. Use a pair of needle-nose pliers and remove the E-clip fastening the motor gear to the motor shaft. See Figure 10.



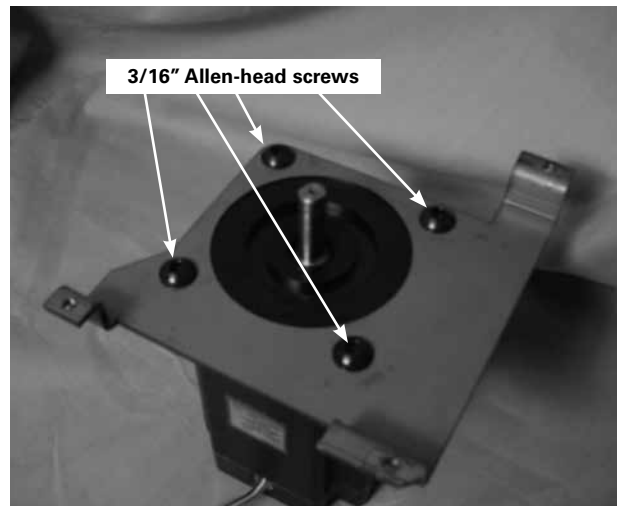
**Figure 10. Motor gears and retaining clip**

12. To remove the gear from the motor, use a standard screw driver placed between the gear and motor to carefully pry the gear off of the motor shaft. See Figure 11.



**Figure 11. Motor and gear**

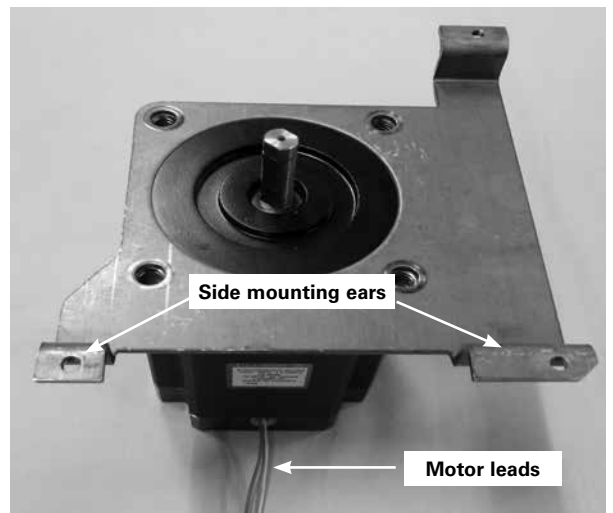
13. Using a 3/16" Allen-wrench, loosen and remove the screws fastening the bracket to the motor. See Figure 12.



**Figure 12. Motor bracket**

### Motor installation

14. Position the motor bracket onto the motor. Be sure to orient the bracket with wires facing in the direction of the right-side mounting ears as show in Figure 13.

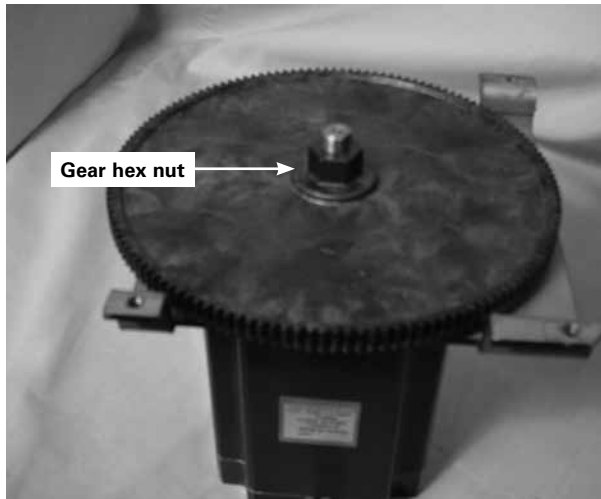


**Figure 13. Motor bracket alignment**



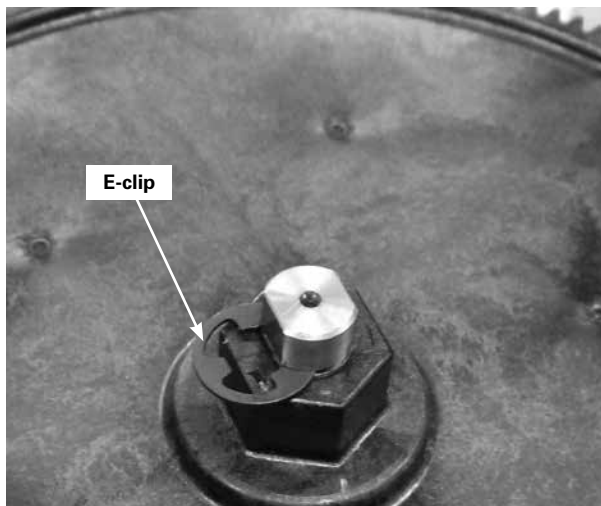
## QD3 Motor Replacement Kit Number 57A63675100B

15. Install and tighten the 3/16" Allen-head screws to a torque of 100-110 in-lbs. (11.3-12.4 N-m).
16. Place the motor gear onto the motor shaft with the hex nut to the outside. See Figure 14.



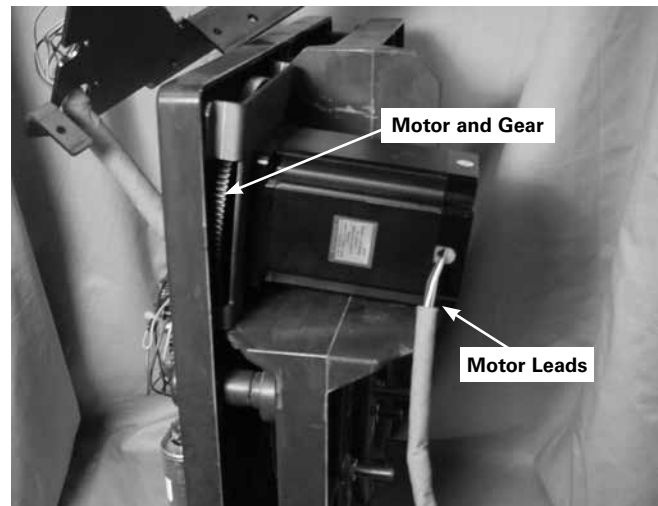
**Figure 14. Motor gear placement**

17. Using a pair of needle-nose pliers, press the E-clip (item 5) over the motor shaft groove. The center E-clip point must be on one of the flat surfaces of the motor shaft when installed. See Figure 15.



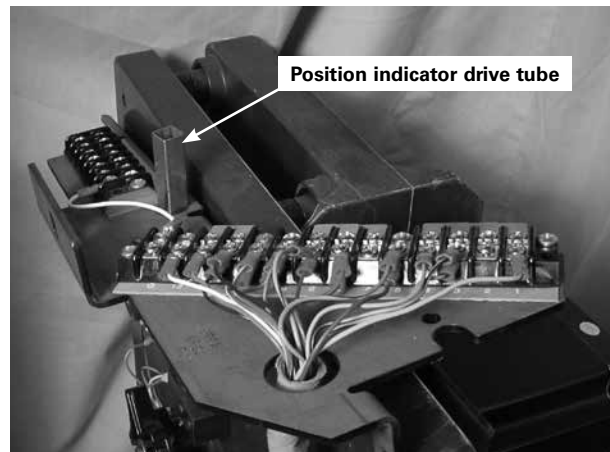
**Figure 15. E-clip placed to be pressed on**

18. With the motor leads to the outside, tilt the motor back and install it with the gear inserted between the front and back sections. See Figure 16.



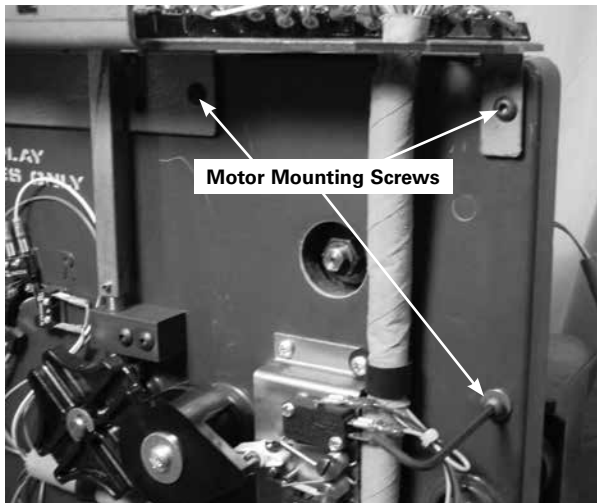
**Figure 16. Motor replacement**

19. Place a drop of Loctite onto the threads of each motor-mounting Allen-head screws
20. Position the top bracket so that the position indicator drive tube is through the bracket hole. Align the bracket and motor mounting holes. See Figure 17.



**Figure 17. Terminal board bracket alignment**

21. Replace the Allen-head screws as shown in figure 19 to secure the motor. Note that the bottom screw requires the use of a flat washer. Tighten the screws to 22-28 in.-lbs. (2.5-3.2 N-m).



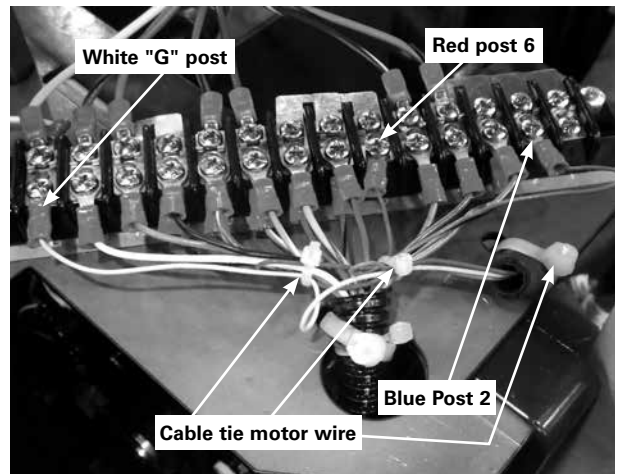
**Figure 18. Motor bracket screws**

22. Replace the screws in the top bracket and front plate, tightening with a 5/32" Allen wrench to a torque of 50-60 in.-lbs. (5.6-6.8 N-m). See Figure 19.



**Figure 19. Terminal board bracket fastening**

23. Cut the three motor wires to a length of 13 inches.
24. Install the crepe tube (item 4) over the motor wires and then crimp a ring terminal (item 1) onto each wire.
25. Connect the blue motor wire to terminal 2, the red wire to terminal 6, and the white wire to the ground terminal G. See Figure 20.



**Figure 20. Terminal board wiring**

26. Use two cable ties (item 2), to fasten the motor leads to the main wiring harness as shown in figure 20.
27. Place the insulation crepe tube with motor wires in the bracket slot and secure with a cable tie (item 3) as shown in Figure 20.
28. Place the carriage bolt into the square hole of the tap changer top bracket. Place the 9/16" nut with washer onto the bolt through the side channel and tighten with the socket and ratchet. See Figure 4.
29. Place the control winding hard tubing insulation against the tap changer top bracket and bundle snugly with a cable tie (item 3). See Figure 3.

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