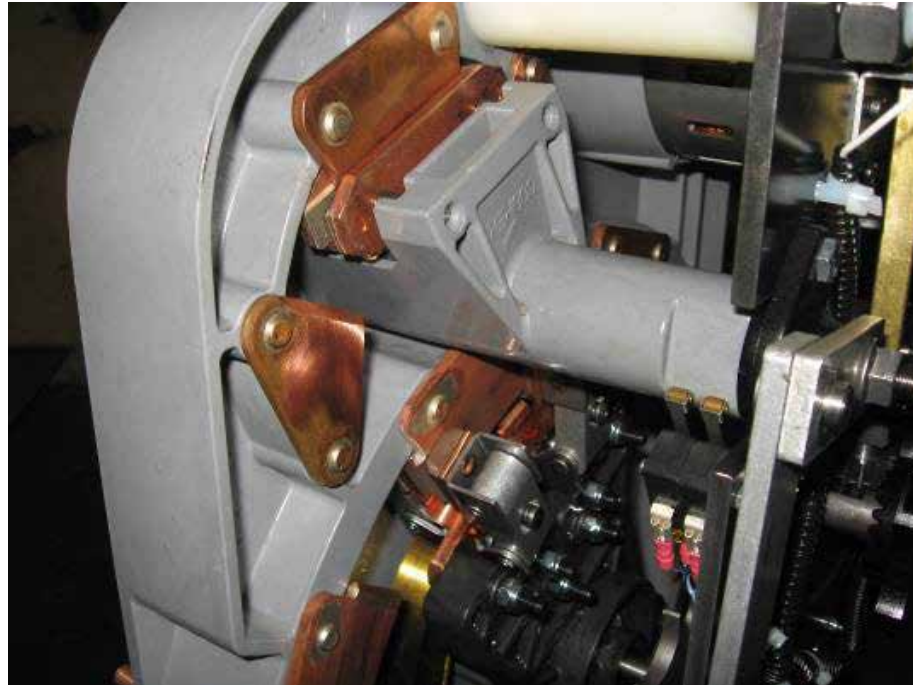


## QD5 Movable Contact Board Replacement Procedure Kit 5740785B21



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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 a hazardous situation which, if not avoided, will result in death or serious injury.

#### **WARNING**

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

#### **CAUTION**

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

#### **CAUTION**

Indicates a 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.

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#### **DANGER**

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

---

#### **WARNING**

**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.**

---

#### **WARNING**

**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**

**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.**

# QD5 Movable Contact Board Replacement Procedure Kit 5740785B21

## General

The purpose of this replacement kit is to provide the parts and installation instructions for replacing the movable contact board on a QD5 Quik-Drive Tap Changer.

## Parts supplied

Item	Part number	Description	Qty
1	5740785B21	Movable Contact Board Replacement Kit	1

## Tools Required

Description	Qty
1/2 inch Drive Ratchet Wrench	1
1/2 inch Drive - 3/4 inch Deep Well Socket	1
1/2 inch Drive - 3/4 inch Socket	1
3/8 inch Drive Ratchet Wrench	1
3/8 inch Drive - 7/16 inch Socket	1
3/8 inch Drive - 9/64 inch Hex Head Socket	1
3/8 inch Drive - 9/16 inch Socket	1
3/4 inch Open-end Wrench	1
5/8 inch Open-end Wrench	1
3/8 inch Drive 0-200 lb-in Torque Wrench	1
1/2 inch Drive 0-180 ft-lb Torque Wrench	1
Long Flat-bladed Screw Driver	1

## Product information

### Introduction

Eaton's Cooper Power series QD5 Movable Contact Board Kit and installation instructions provide guidance for replacement of the movable contact board. Replacement should be carried out during normal maintenance cycles and when contact replacement is required.

### 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 process 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 movable contact board assembly is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the movable contact board assembly 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 movable contact board assembly to minimize the possibility of damage. If the movable contact board assembly 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

## Installation procedure

### Removal

1. The QD5 tap changer should be secured to a bench before starting the replacement procedure if it has been removed from the unit.
2. The QD5 should be in the neutral position before starting the replacement procedure. The current QD5 design has a molded back panel (see Figure 1); an earlier design employs a phenolic back panel (see Figure 2). If the QD5 is not in the neutral position, turn the back of the motor shaft using a 3/8 inch socket wrench until the QD5 is in the neutral position.

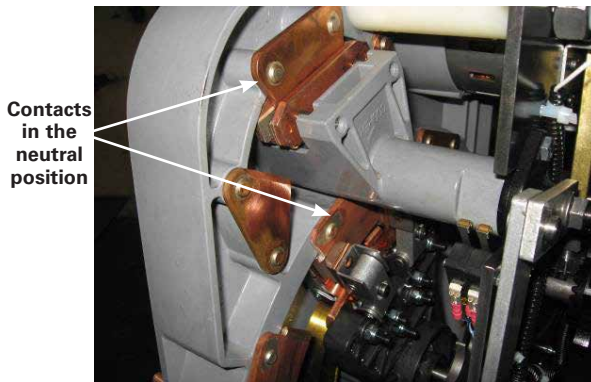


Figure 1.

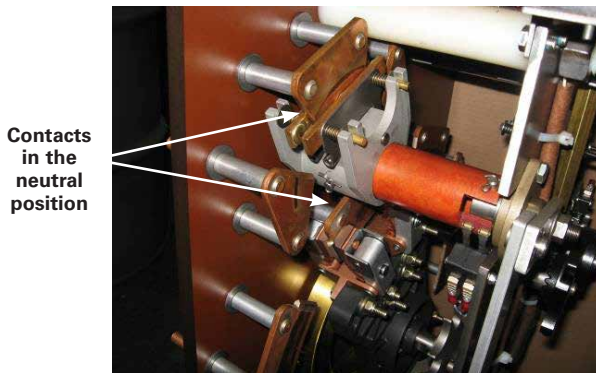


Figure 2.

3. Remove the nuts from the 1 raise stationary contact posts using a 9/16 inch deep well socket. Remove the 1 raise stationary contact lead (if tap changer is installed on unit) and jumper bar from the 1 raise stationary contact posts. Remove the 1 raise stationary contact from the phenolic panel (refer to Figure 3). Save the nuts for re-assembly.

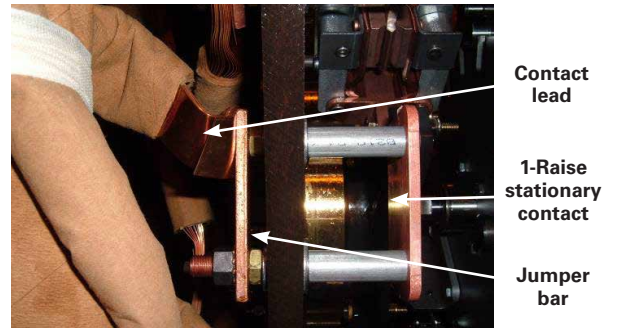


Figure 3.

4. Remove the two bolts that mount the actuator finger with a 7/16 inch socket wrench. Remove the actuator finger (refer to Figure 4). Save the bolts for re-assembly.
5. Remove the two screws holding the neutral switch subassembly with a 9/64 inch hex wrench. Refer to Figure 4.

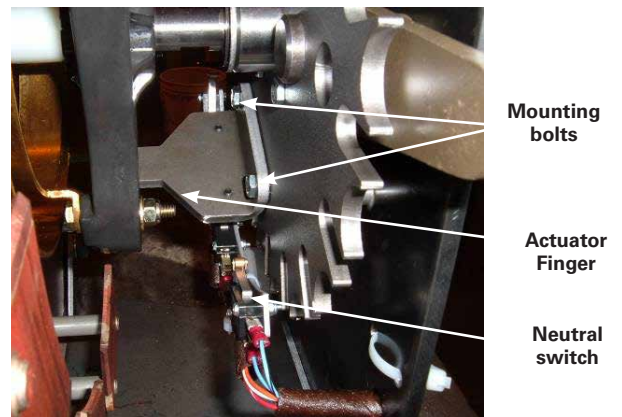


Figure 4.

6. Unscrew the main shaft polymer cap with a 3/4 inch open end wrench (refer to Figure 5).

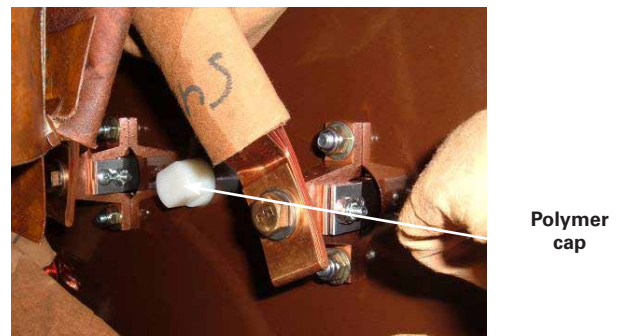
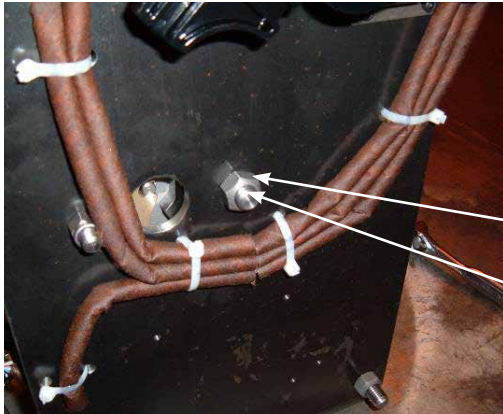


Figure 5.

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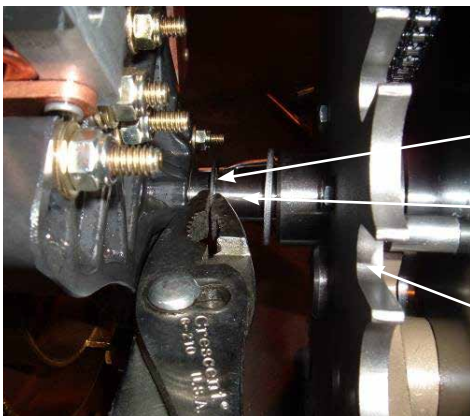
7. Remove the nut from the end of the main shaft with a 3/4 inch socket wrench. While removing the nut, prevent the shaft from turning by using a 5/8 inch open end wrench. The shaft has two flats for the wrench engagement (refer to Figure 6).



Main shaft nut  
Main shaft

Figure 6.

8. Pull the main shaft out about one inch from the phenolic panel side of the tap changer. Use a rubber mallet to tap the main shaft through the metal panel if necessary. Now remove the E-clip from the main shaft with a pliers so the main shaft can be pulled out through the phenolic panel. To prevent the washer from falling off the shaft while removing the geneva gear, slide the washer toward the movable contact board, see Figure 7. Hold the geneva gear and pull the shaft out of the geneva gear hub only as far as needed to remove the geneva gear. Remove the geneva gear. Remove the washer from the shaft and then remove the shaft completely.



E-Clip  
Washer  
Geneva Gear

Figure 7.

9. Slide the movable contacts counter clockwise off the neutral stationary contact into the open space created by the removal of the 1 raise stationary contact. Disengage the ring contacts from the rings by pulling the movable contact board toward the steel panel. Remove the movable contact board. See Figures 8 and 9.

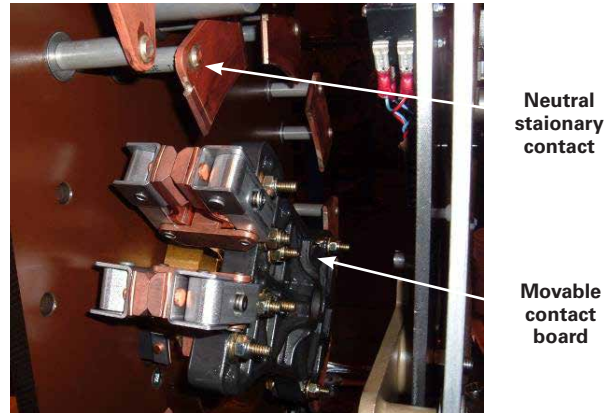


Figure 8.

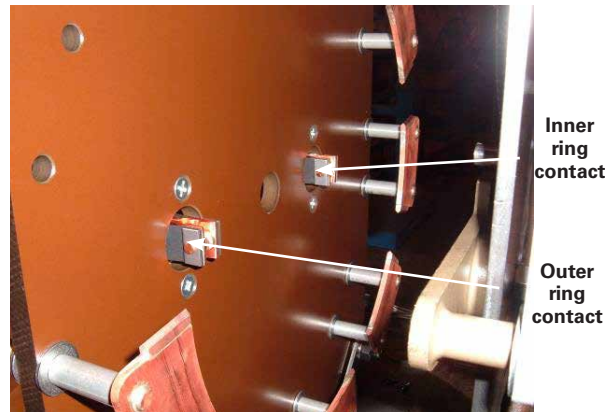


Figure 9.

10. Install the new movable contact board by holding the movable contact board so that the movable contacts are located in the space created after the 1 raise stationary contact was removed. Align the ring contacts with the rings. While holding the movable contact board in place, take a long blade screw drive and pry the buttons on one of the ring contacts apart. Push the contact onto the ring while the contact buttons are spread apart. Repeat the process on the other ring contact. Rotate the movable contact board clockwise onto the neutral stationary contact.

- To install the geneva gear, insert the steel shaft into the back of the phenolic panel and through the hole in the movable contact board. The un-machined diameter on the main shaft should be sticking out the back phenolic panel (see Figure 10).

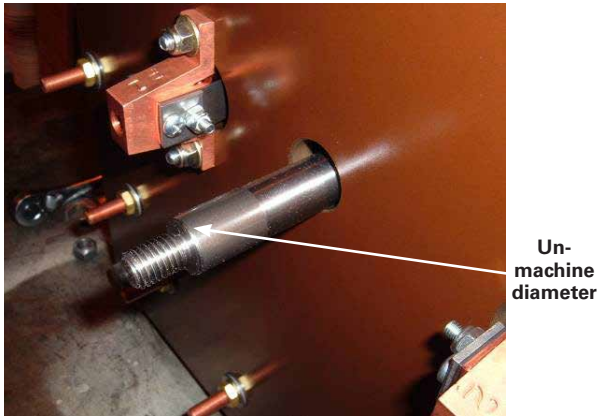


Figure 10.

- Slide the washer onto the main shaft end that was inserted through the movable contact panel (see Figure 11).

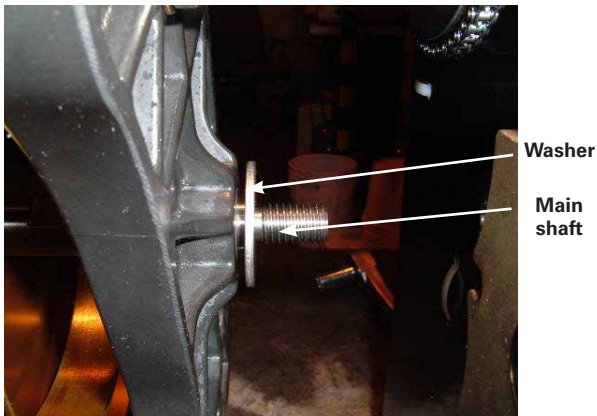


Figure 11.

- Position the geneva gear so the pin on the back of the geneva gear lines up with the slot in the reversing segment arm and the half-moon shaped groove on the outer edge of the geneva gear lines up with the half-moon shaped drive on the sprocket (see Figure 12). Push the main shaft into the center hole of the geneva gear until the shaft hits the metal panel. Push the E-clip into the E-clip slot on the main shaft (see Figure 13). Then align the main shaft through the metal panel. Secure the steel shaft to the steel panel using the nut removed in Step 7. Use a 5/8 inch open end wrench to hold the steel shaft while securing the nut on the threaded end of the shaft with a 3/4 inch socket wrench. Torque the nut to 180 to 400 lb-in. Insure the geneva pin is engaged with the reversing segment arm by checking the viewing hole in the steel panel (see Figure 14).

- Attach the polymer cap to the main shaft through the phenolic panel. Screw the cap on the shaft until the cap is bottomed out on the shaft. Do not over tighten.

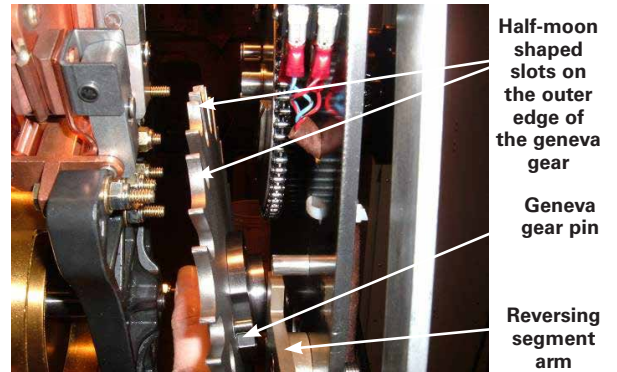


Figure 12.

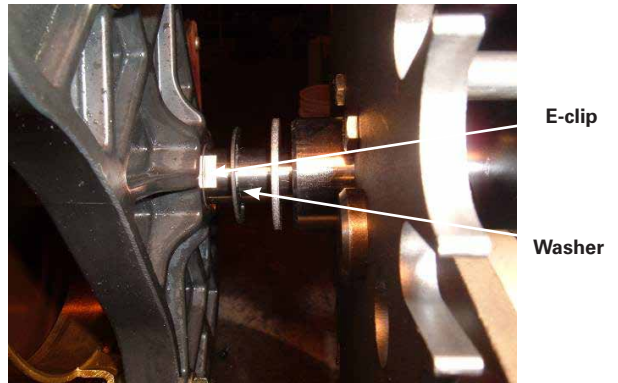


Figure 13.

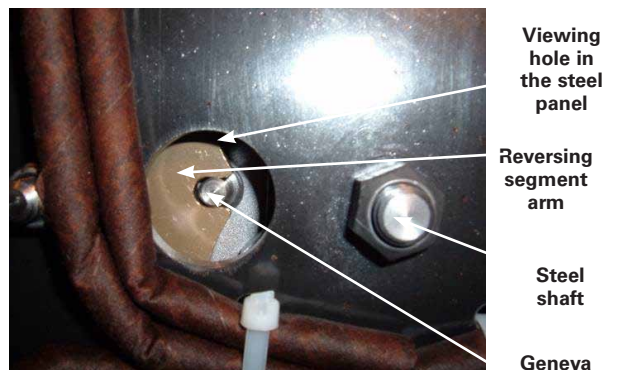


Figure 14.



## QD5 Movable Contact Board Replacement Procedure Kit 5740785B21

15. Attach the neutral switch subassembly to the metal panel. Torque the screws to 15 to 20 lb-in.
16. Reinstall the actuator finger to the geneva gear using the bolts removed in Step 4. The actuator finger should extend into the movable contact board actuator pocket. Torque the bolts to 30 to 40 lb-in.
17. Use the nuts that were removed in Step 3 to reinstall the 1 raise stationary contact and reconnect the jumper bar and contact lead. Torque the nuts for the stationary contact, jumper bar and lead to 110 to 120 lb-in.

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Publication No. MN225050EN  
May 2017  
REV01

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