

## QD8 Quik-Drive™ Tap Changer with Phenolic Contact Board Reversing Movable Contact Replacement Instructions



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## Safety for life



Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. 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 arc 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

**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.**

G103.3

#### 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.**

G101.0

#### 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 can result in death, severe personal injury and equipment damage.**

G102.1

#### 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.**

G122.3

# QD8 Quik-Drive Tap Changer with Phenolic Contact Board Reversing Movable Contact

## Product information

### Introduction

Eaton's Cooper Power series QD8 Quik-Drive™ Tap Changer with phenolic contact board reversing movable contact and installation instructions provide guidance for replacement of the tap changer reversing movable contact. Replacement should be carried out during normal maintenance cycles and when contact erosion has occurred which necessitates replacement.

### Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before connecting 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 Eaton's Cooper Power series product representative.

### Acceptance and initial inspection

Each tap changer reversing movable contact assembly is in good condition when accepted by the carrier for shipment.

Upon receipt, inspect the shipping container for signs of damage. Unpack the tap changer reversing movable contact assembly and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

### Handling and storage

Be careful during handling and storage of the tap changer reversing movable contact assembly to minimize the possibility of damage. If the tap changer reversing movable contact assembly is to be stored for any length of time prior to installation, provide a clean, dry storage area.

### Quality standards

ISO 9001 Certified Quality Management System

### Description

The purpose of this replacement kit is to provide the parts and installation instructions for replacing the tap changer reversing movable contact on a QD8 Quik-Drive Tap Changer with phenolic contact board.

Item	Description	Quantity
1	Reversing movable contact assembly with cotter pin p/n 5740785B02	1



Figure 1. Kit contents

Item	Description	Quantity
1	3/4 inch socket	1
2	Ratchet wrench	1
3	3/4 inch open-end or closed-end wrench	1
4	Adjustable wrench	1
5	1-5/16 inch wrench	1
6	1-1/8 inch wrench	1
7	Diagonal wire cutters	1
8	Pliers	1

## Installation procedure

### Contact removal

**Note:** It might not be possible to perform this work without removing the tap changer from the voltage regulator. If the tap changer must be removed from the regulator, take careful notes and photos to enable proper reassembly of the voltage regulator and connections after the work is complete.

1. Make sure the tap changer is in the neutral position.
2. Refer to Figure 2. Using a 3/4 inch wrench:
  - A. Loosen nearly completely, but do not remove, the two nuts holding the steel tap changer plate to the base.

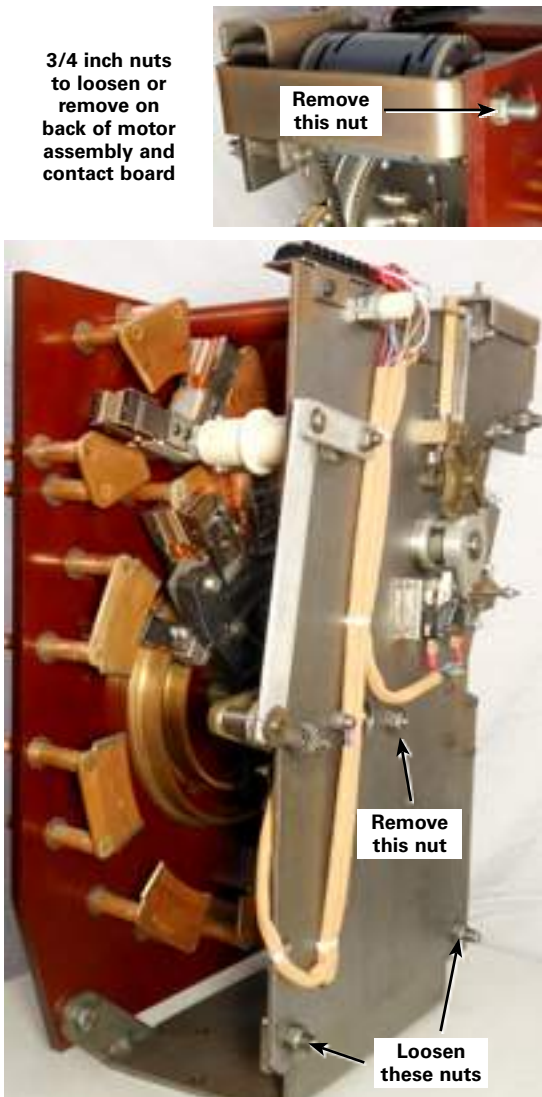


Figure 2. Nuts to loosen or remove

- B. Loosen and remove the nut and bolt holding the bracket behind the motor. Make sure to save and retain the fiber washer located between the bracket and phenolic contact board.
- C. Loosen and remove the nut from the main shaft. It will be necessary to hold the back of the shaft using an adjustable wrench. See Figure 3.

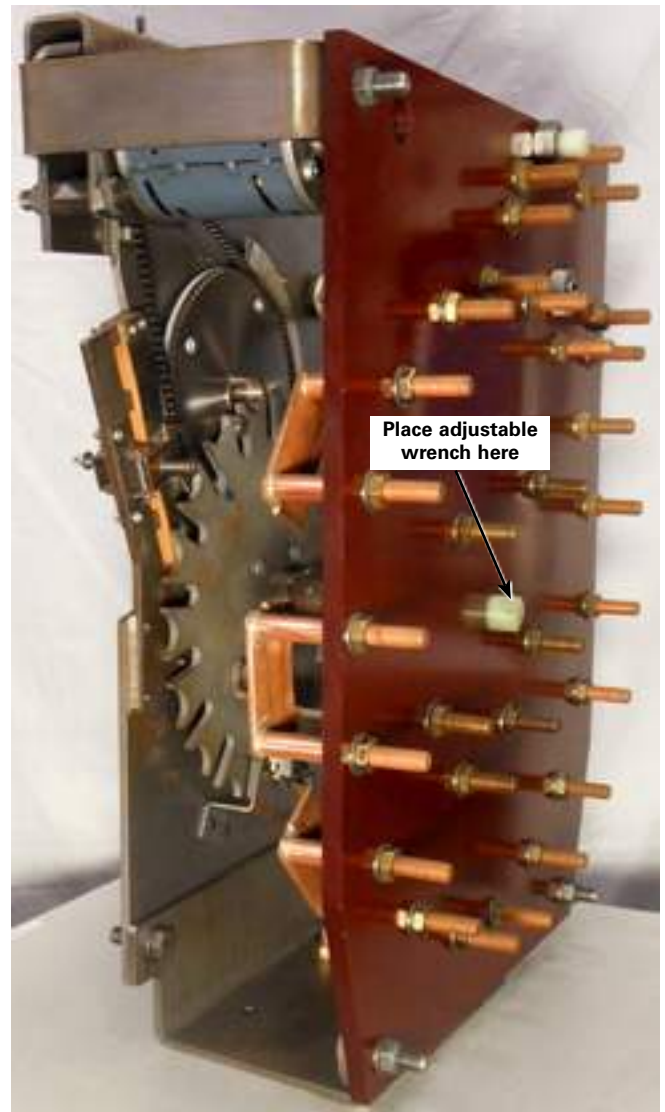
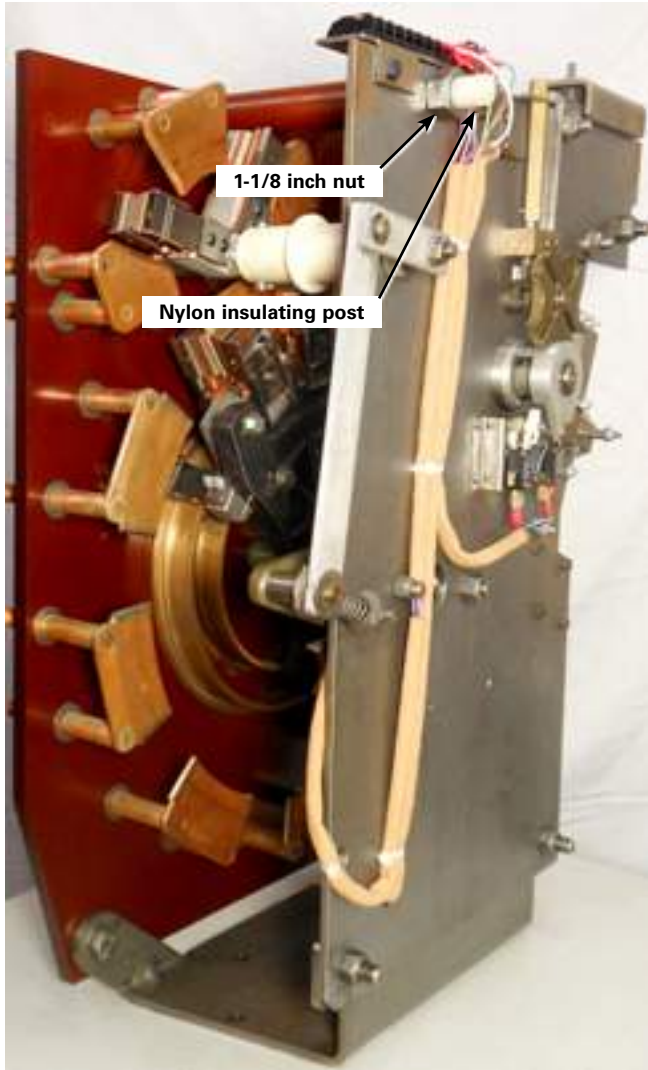


Figure 3. Back view of the contact board showing rear of main shaft

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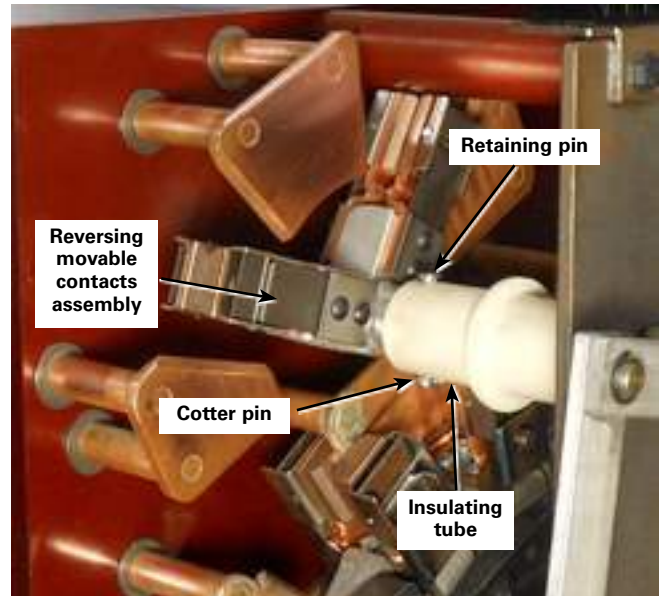
- Using the 1-1/8 inch wrench, remove the nut on the nylon insulator between the front drive assembly and the contact panel board. See Figure 4.



**Figure 4. Remove nut on nylon insulator**

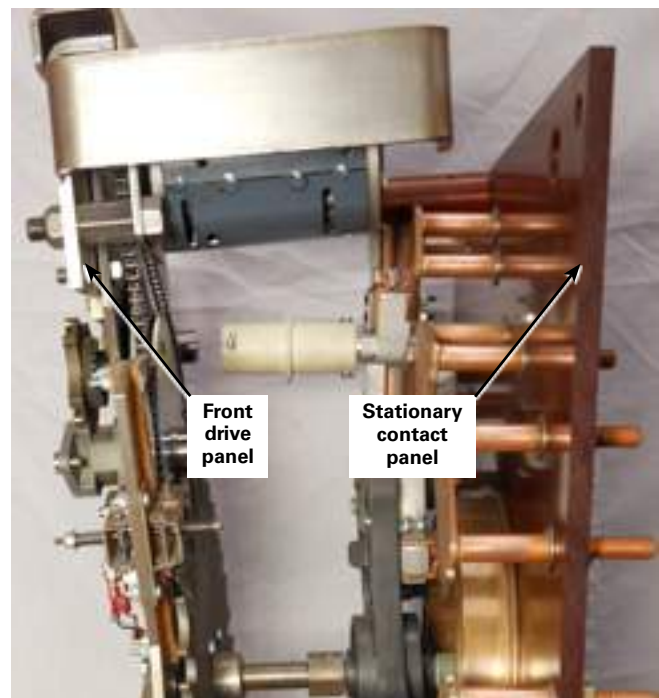
- Using a pair of pliers, remove the cotter pin from the metal retaining pin that secures the reversing movable contact assembly to the insulating tube as shown in Figure 5.

**Note:** You might encounter nylon and phenolic versions of the insulating tube.



**Figure 5. Reversing switch**

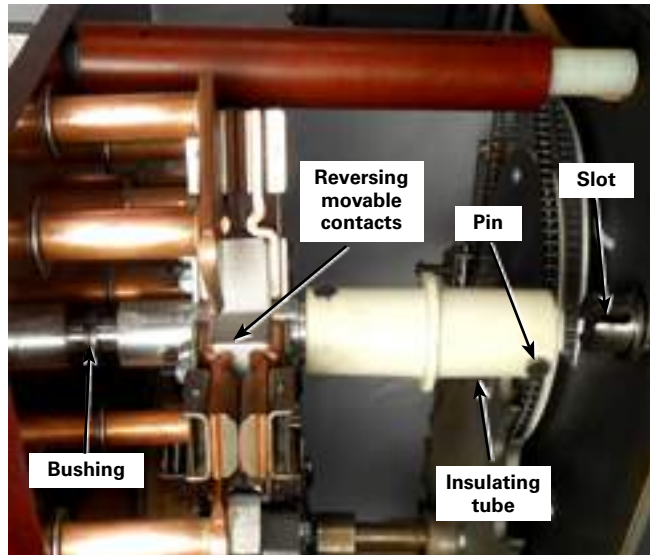
- Pull the front drive assembly panel away from the stationary contact insulating panel. Separate the two assemblies as far as the hardware has been loosened and/or removed in step 2. If needed, loosen the hardware further to allow clearance to remove the reversing movable contact. See Figure 6.



**Figure 6. Front assembly and contact panel separated**

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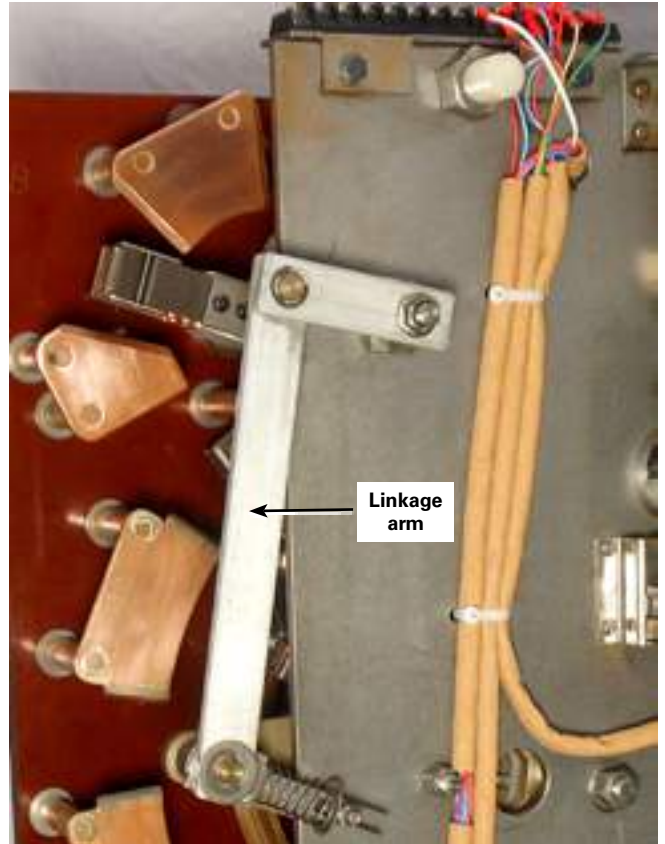
6. After separating the front and back assemblies, remove the insulating tube from the reversing movable contact assembly. See Figure 5.
7. Remove the reversing movable contact assembly by sliding it from the bushing. See Figure 7.
8. Remove the retaining pin and separate the insulating tube from the reversing movable contact assembly.



**Figure 7. Reversing movable contacts, bushing, and insulating tube shown with contact post partially inserted into bushing**

### Installing the reversing movable contact assembly

1. Slide the new reversing movable contact assembly onto the bushing on the back stationary contact panel. See Figure 7.
2. Place the insulating tube back on the new reversing movable contact assembly and insert the retaining pin to attach the insulating tube to the shaft of the reversing contact assembly. Insert the new cotter pin into the insulating retaining pin and bend over the new cotter pin to secure. See Figure 5.
3. Move the front drive assembly plate and contact insulating board back together. Align the following parts as the sides are brought together:
  - A. Align the pin in the insulating tube with the slot on the spacer on the front drive plate. See Figure 7. To align the slot and the pin, pull down and move the linkage arms until alignment and engagement is made. See Figure 8.



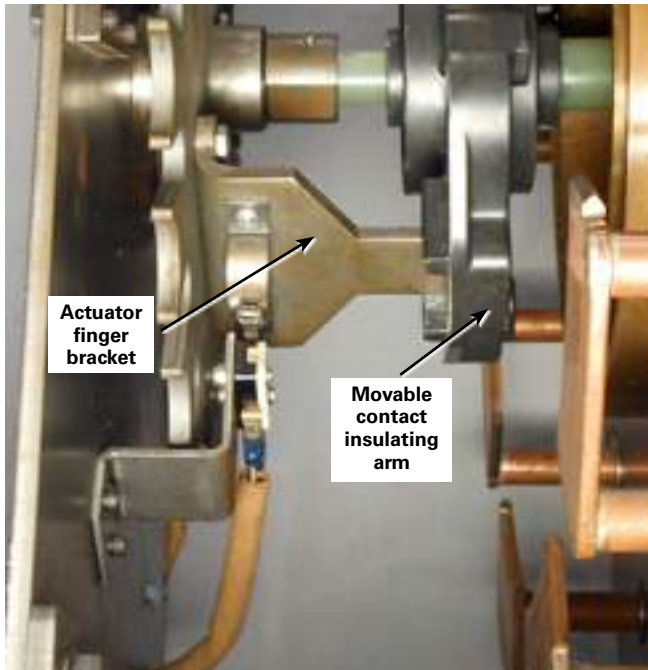
**Figure 8. Reversing movable contact linkage arm**

- B. Engage the actuator finger bracket in the recess of the main movable contact insulating arm. See Figure 9.

**Note:** There are phenolic and polymer versions of the movable contact insulating arm.

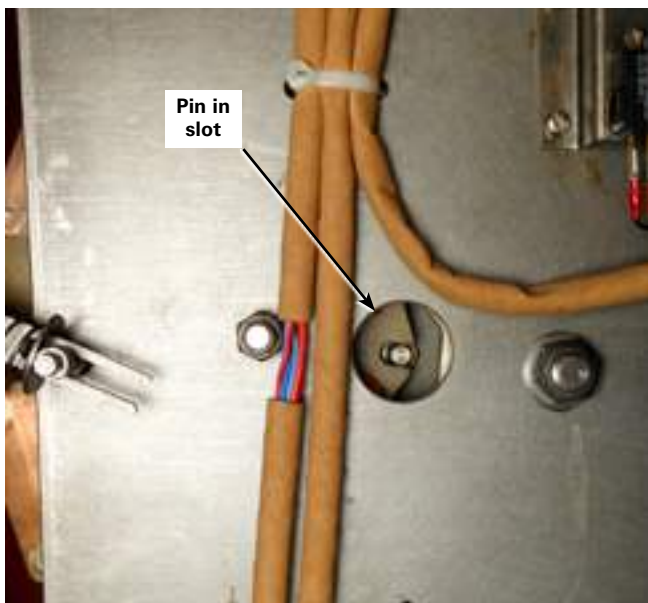


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**Figure 9. Actuator finger shown in the recess area of the movable contact insulating arm.**

- C. Make sure the pin on the main Geneva gear is in the slot on the Reversing Segment actuator. This can be seen through the hole in the steel front plate as shown in Figure 10.



**Figure 10. Geneva pin in slot of reversing segment actuator**

4. Replace the nut, bolt, and fiber washer located on the bracket behind the motor assembly and tighten with a 3/4 inch wrench. See Figure 2.
5. Using a 3/4 inch wrench, tighten the two nuts at the bottom of the front drive plate assembly. See Figure 2.
6. Place an adjustable wrench on the back end of the nylon post in the center of the contact board. See Figure 3. Replace the nut on the front end of the main shaft and tighten using a 3/4 inch wrench. See Figure 2.
7. Replace the nut on the nylon insulating post on the front drive assembly. Using a 1-1/8 inch wrench tighten the nuts on the nylon insulating post. See Figure 4.
8. After completing the installation, ensure that the tap changer is in the neutral position. See the next section for indications that the tap changer is in the neutral position and instructions for placing the tap changer in neutral.

### Placing the tap changer in neutral

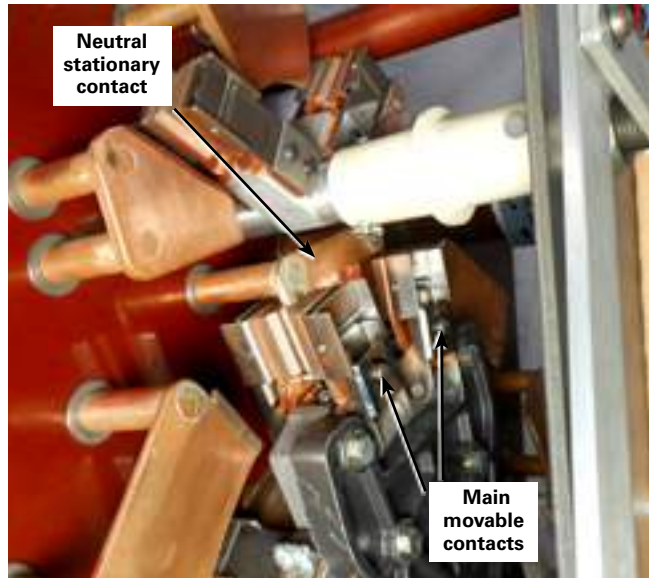
1. Using a socket (1/4 inch or 3/8 inch as required) with extension and ratchet on the output shaft of the motor, rotate the motor until the contacts and other components are aligned in the neutral position. See Figure 11.



**Figure 11. Rotating the motor shaft**

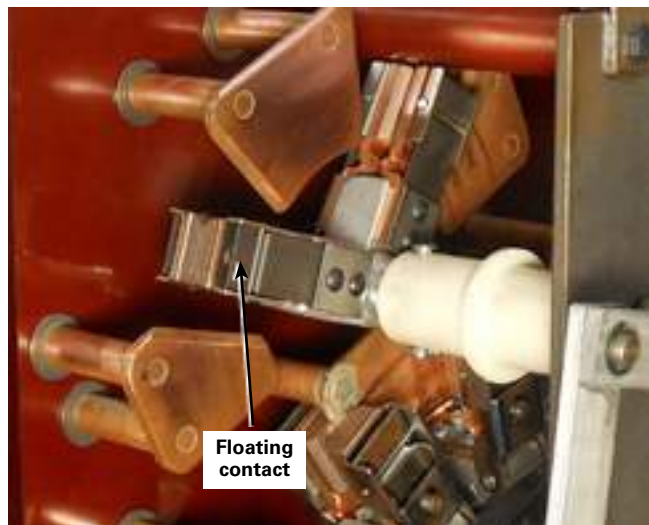
## QD8 Quik-Drive Tap Changer with Phenolic Contact Board Reversing Movable Contact

2. Confirm that the regulator is in the neutral position using the following indications:
  - A. Main movable contacts are located on the neutral stationary contact, which is located at the 11 o'clock position. See Figure 12.



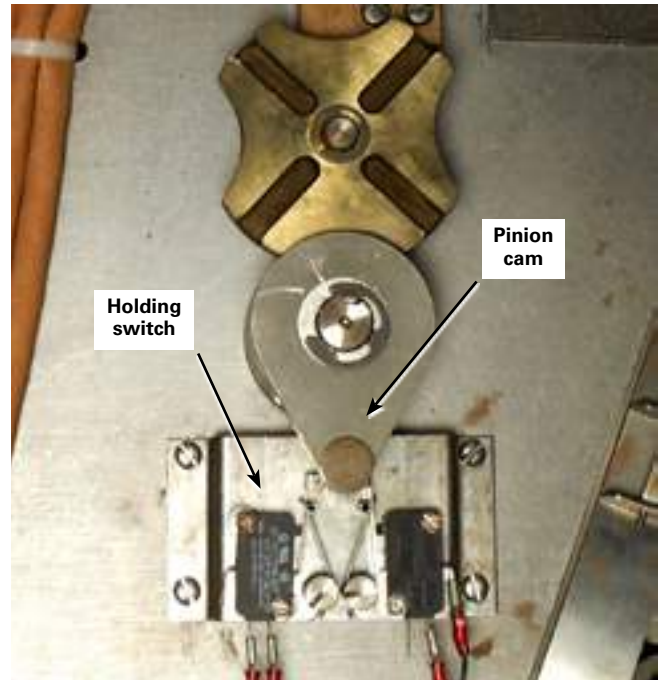
**Figure 12. Main movable contacts on the neutral stationary contact at 11 o'clock**

- B. The reversing movable contact is floating. See Figure 13.



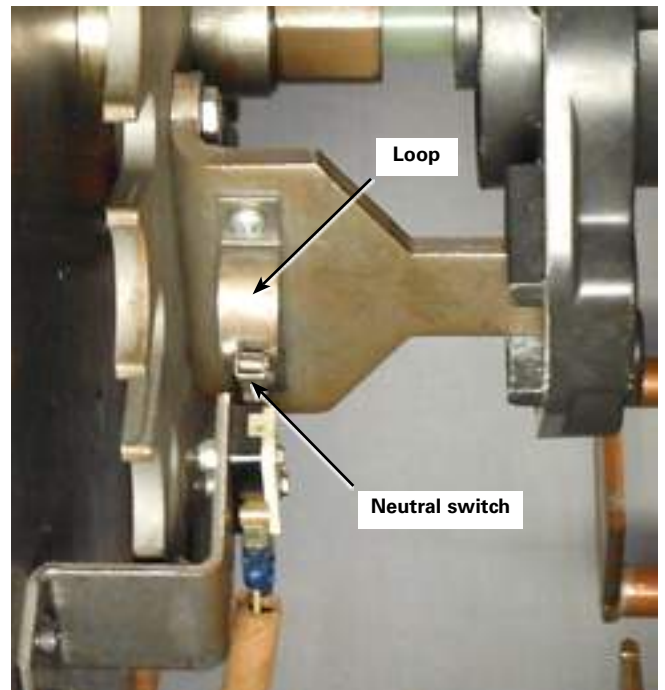
**Figure 13. Reversing movable contacts floating**

- C. The pinion cam is pointing down over the holding switch actuator. See Figure 14.



**Figure 14. Pinion cam pointing down over the holding switch**

- D. The neutral switch will be depressed by the loop attached to the Actuator Finger Bracket. See Figure 15.



**Figure 15. Neutral switch depressed**

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