

QD5 Quik-Drive tap-changer reversing movable contact assembly kit 5740785B72ER installation 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

Product information

Introduction

Eaton's Cooper Power™ series QD5 Quik-Drive tap-changer reversing movable contact assembly kit and installation instructions gives customers the ability and guidance to replace the reversing movable contact during maintenance cycles when contact erosion has occurred to the point of needing replacement.

Refer to *Service Information MN225003EN CL-7 Series Control Installation, Operation, and Maintenance Instructions* for information on the CL-7 voltage regulator control. Refer to *Service Information MN225016EN CL-6 Series Control Installation, Operation, and Maintenance Instructions* for information on the CL-6 voltage regulator control. Refer to *Service Information MN225008EN VR-32 Voltage Regulator with Quik-Drive Tap-Changer Installation, Operation, and Maintenance Instructions* for information on Eaton's voltage regulator with Quik-Drive tap-changer.

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 representative.

Acceptance and initial inspection

Each reversing movable contact is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the reversing movable contact 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 reversing neutral contacts to minimize the possibility of damage. If the movable contact 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	0740785B72	Reversing Movable Contact	1

Tools required

- Ratchet Wrench
- 3/8 inch Socket
- 7/16 inch Socket
- 9/16 inch Deep-well Socket
- 1/4 inch Wrench
- Small Flat-blade Screwdriver or 5/32 inch Allen Wrench
- Standard 8-inch Long Flat-blade Screwdriver
- Torque Wrench in-lbs
- Loctite® 243™ Threadlocker



Figure 1. Kit parts.

Installation procedure

Removal

1. Hold the reversing movable contact assembly to prevent the assembly from moving. Using a 9/16" wrench loosen and remove the reversing actuator arm nut. See Figure 2.

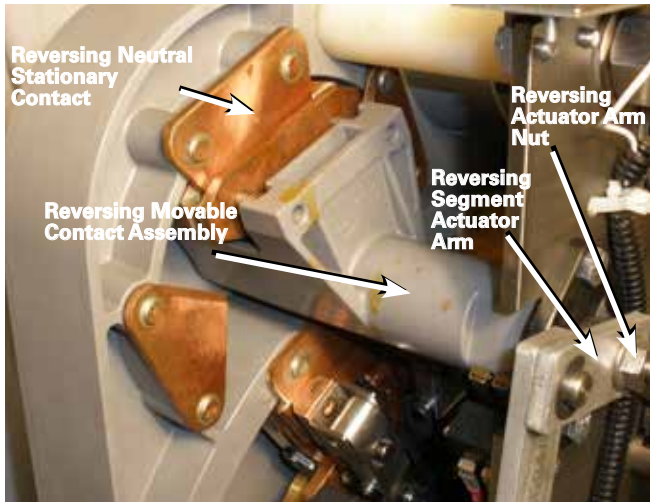


Figure 2. Actuator arm and hardware.

2. Lift outward on the reversing actuator arm and remove it from the reversing movable contact bushing. The reversing actuator shaft may be tapped in to allow clearance to remove the arm. See Figures 3 and 4.

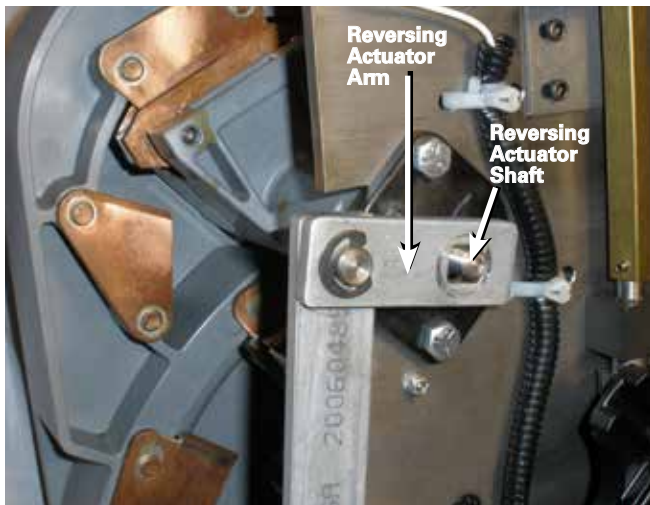


Figure 3. Removal of actuator arm.

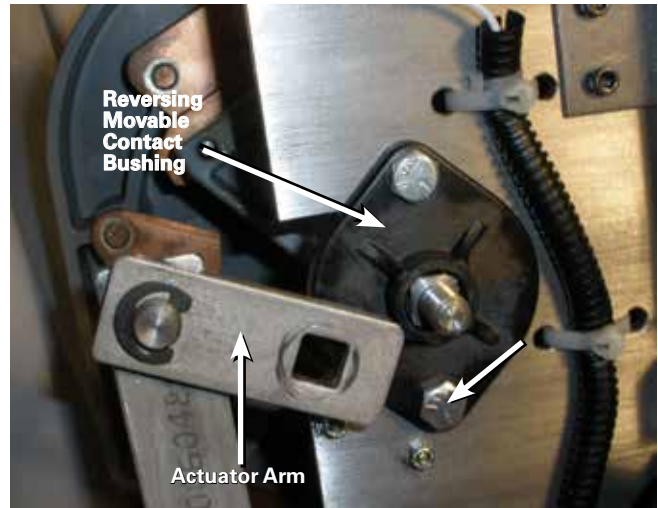


Figure 4. Bushing.

3. Using a 7/16" wrench, loosen and remove both bushing-mounting bolts. See Figure 5.
4. Remove the bushing from the reversing movable contact shaft. See Figure 5.

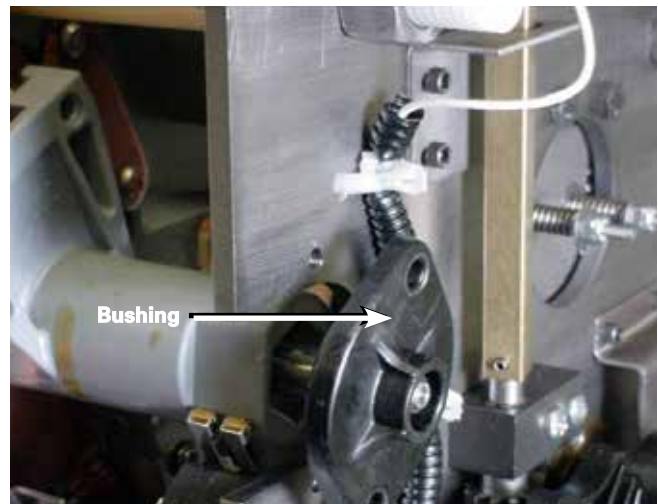


Figure 5. Removal of bushing.

5. Use a small screw driver (or 5/32" Allen wrench) and a 1/4" wrench to loosen and remove the self-locking nuts and reversing logic switch mounting screws. See Figures 6 and 7.

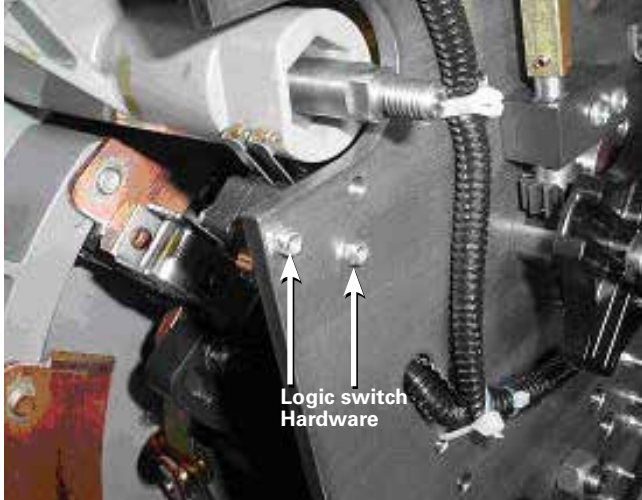


Figure 6. Reversing logic hardware.

6. After removing the reversing logic switch mounting screws the switch will drop away from the reversing movable switch tube. See Figure 8.



Figure 8. Loose logic switches.

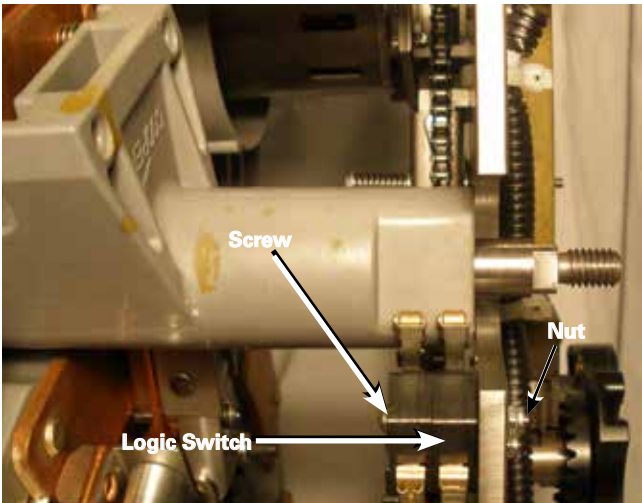


Figure 7. Removal of logic switch.

7. Use a 9/16" wrench to loosen and remove the nuts and flat washers from both of the reversing neutral stationary contacts on the back of the tap-changer contact panel. See Figure 9.

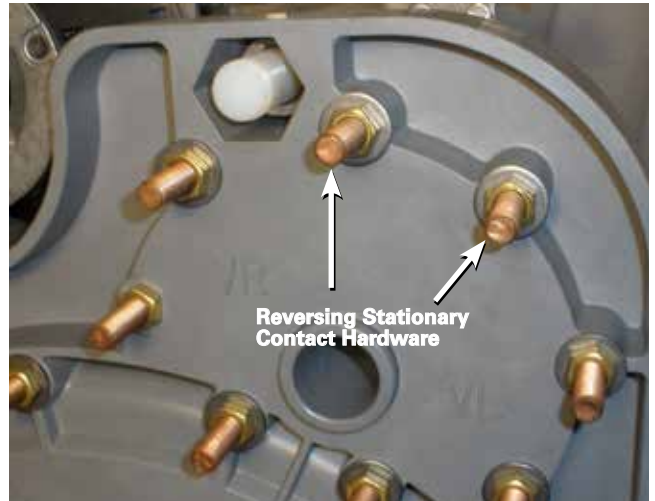


Figure 9. Reversing neutral stationary contact.

- Pull the reversing movable contact assembly and the reversing neutral stationary contact forward toward the steel front panel as far as possible. See Figure 10.

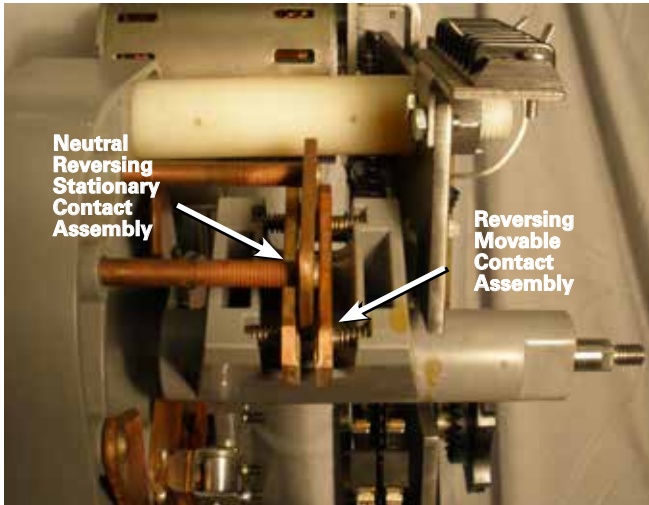


Figure 10. Reversing movable and stationary contacts.

- Rotate the reversing movable contact counter clockwise until the movable contact assembly disengages from the reversing neutral stationary contact and remove it from the tap-changer. See Figure 11.

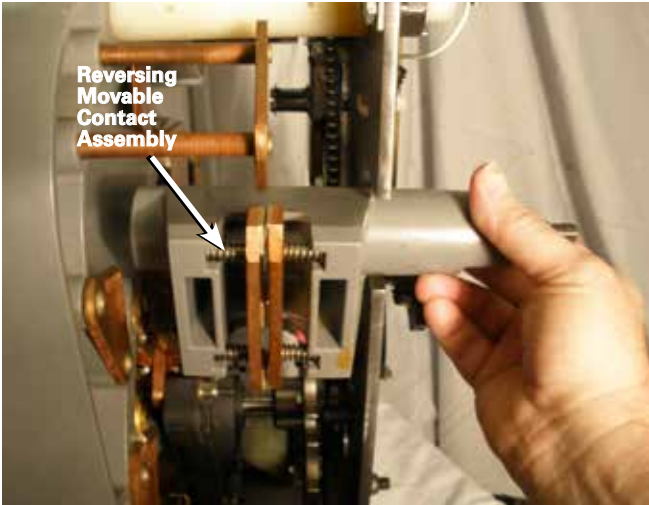


Figure 11. Rotating of reversing movable contact.

- Remove the reversing neutral stationary contact assembly from the tap-changer contact panel.

- Remove the reversing actuator shaft from the reversing movable contact assembly and retain for use in the new contact assembly. See Figure 12.



Figure 12. The actuator shaft removed from the reversing movable contact assembly.

Reassembly

- Insert the reversing actuator shaft into the new reversing movable contact assembly. See Figure 12.
- Place the reversing movable contact into the mounting slot in the tap-changer front panel, aligning the movable contact assembly with the reversing neutral stationary contact. The reversing neutral stationary contact should be inserted far enough into the contact board so that the blade lines up with the center of the reversing movable contacts. See Figure 13.

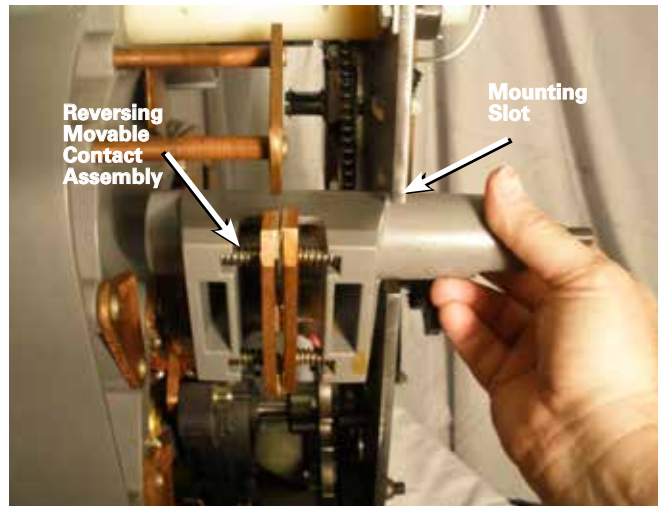


Figure 13. Reinstalling reversing movable contact.

14. Insert a standard flat screwdriver between the middle and top button contacts on the reversing movable contact assembly and twist to separate. Line up the movable and stationary contacts and rotate the reversing movable contact assembly clockwise over the reversing stationary contact. See Figure 14.



Figure 14. Positioning reversing movable contacts.

16. Slide the stationary and movable contact assembly toward the contact panel. Align the movable contact assembly so that the reversing movable tube aligns with and goes through the hole in the contact panel. At this point the stationary contact and movable contact should be fully engaged with the contact panel. See Figure 16.

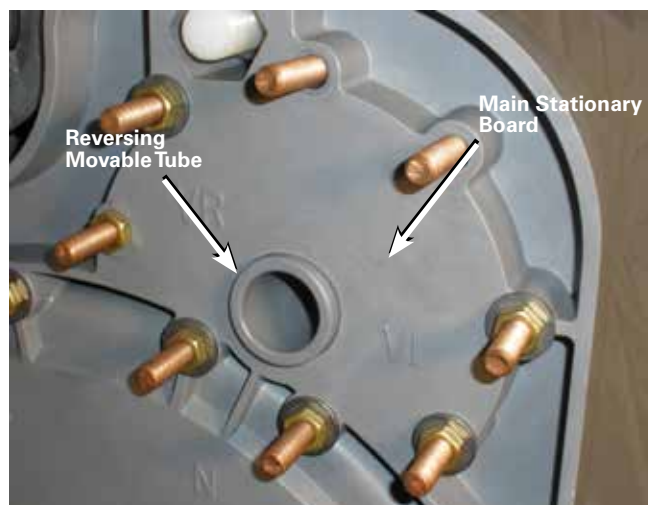


Figure 16. Aligning with main contact board.

15. Continue to reposition the screwdriver, separate the button contacts and rotate the reversing movable contact assembly until the middle button contact is fully engaged in the center of the reversing stationary contact blade. See Figure 15.

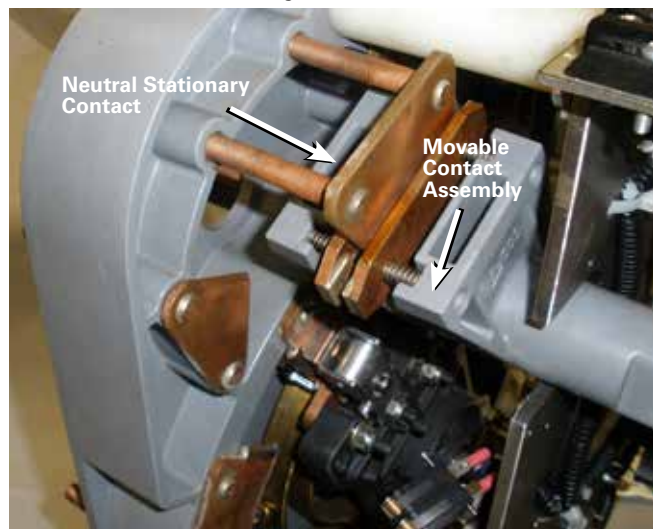


Figure 15. Engaging contacts.

17. Place a flat washer and nut over each of the reversing neutral stationary contact studs. Tighten to a torque of 80–90 in-lbs (9.0–10.2 Nm). See Figure 17.

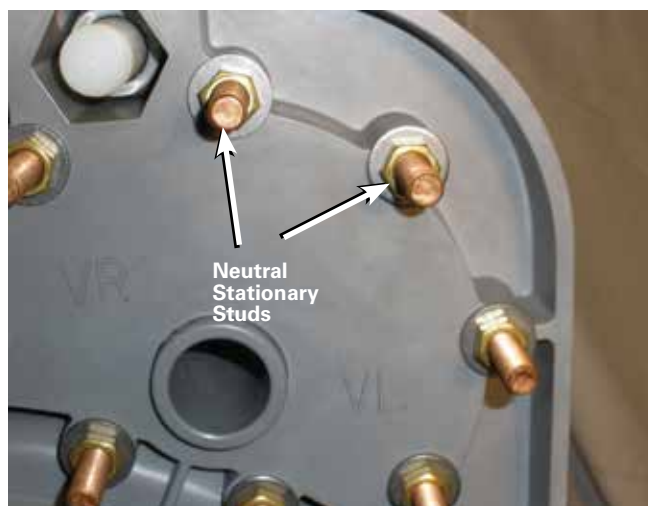


Figure 17. Reinstalling neutral stationary and hardware.

- Place the mounting hardware onto the reversing logic switches and fasten to the tap-changer front plate. While holding a small screwdriver (or 5/32" Allen wrench), tighten the nuts to a torque of 4–5 in-lbs (0.5–0.6 Nm). See Figure 18.

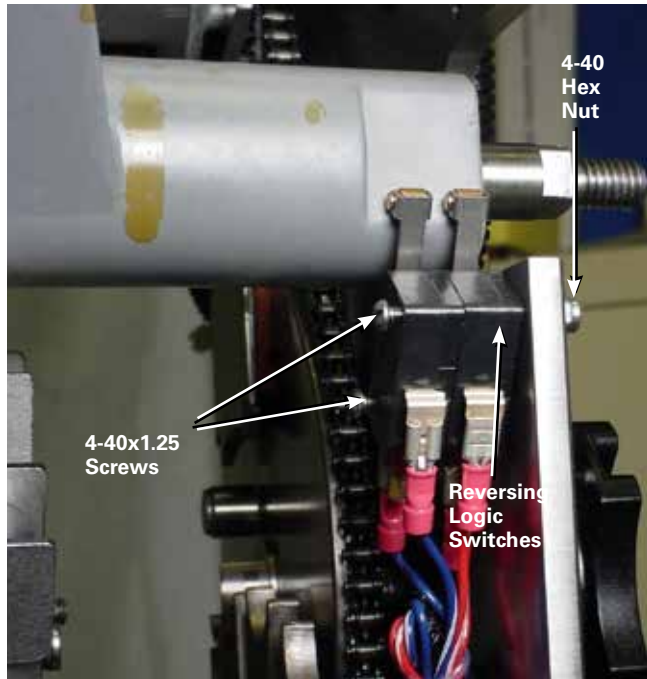


Figure 18. Reinstalling logic switches.

- If none is present on the threads, apply Loctite® 243™ threadlocker to the two 1/4-28 bolts. Using the bolts and a 7/16" wrench, fasten the reversing movable bushing to the front of the tap-changer. Tighten the bolts to a torque of 30–40 in-lbs (3.4–4.5 Nm). See Figure 19.

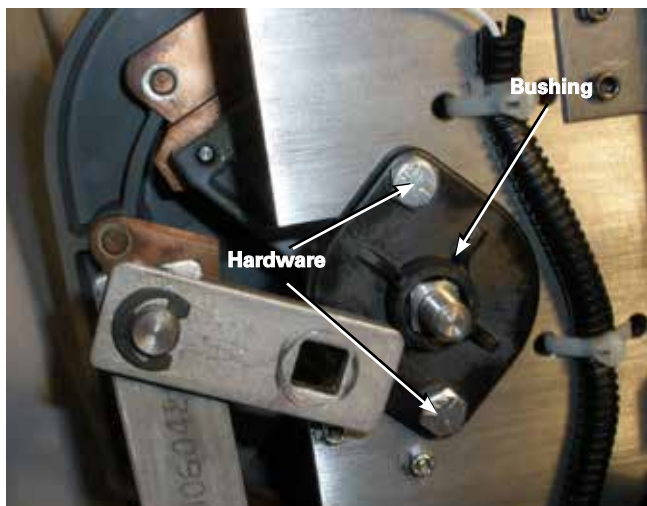


Figure 19. Reinstalling bushing.

- Place the reversing segment arm onto the reversing actuator shaft. Align the square portion of the shaft with the square hole in the arm. If needed, place a screwdriver through the movable contact tube and push the shaft forward while seating the arm over the shaft. It may be necessary to rotate the movable contact assembly slightly to align the shaft and hole. See Figures 20 and 21.

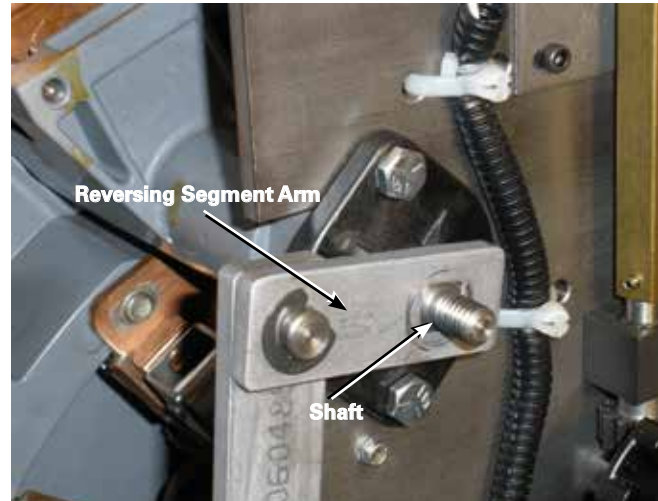


Figure 20. Installing reversing segment arm.



Figure 21. Positioning the reversing movable with the bushing.

21. Place the self-locking nut onto the reversing segment shaft and then tighten with a 9/16" wrench, while holding the reversing switch assembly to prevent it from moving. The nut should be tightened to a torque of 180 to 192 lb-ins (20.3 to 21.6 Nm). See Figure 22.



Figure 22. Fastening reversing segment.

22. Once the work has been completed place the tap-changer in the neutral position.

Placing tap-changer into neutral

1. Place a 3/8" socket and ratchet on the output shaft of the motor; rotate the motor so that the contacts and other components are aligned in the neutral position
2. Confirm that the regulator is in the neutral position:
 - A. Main movable contacts are located on the neutral stationary contact, which is located at the 11 o'clock position and under the reversing switch movable contact assembly. See Figure 23.

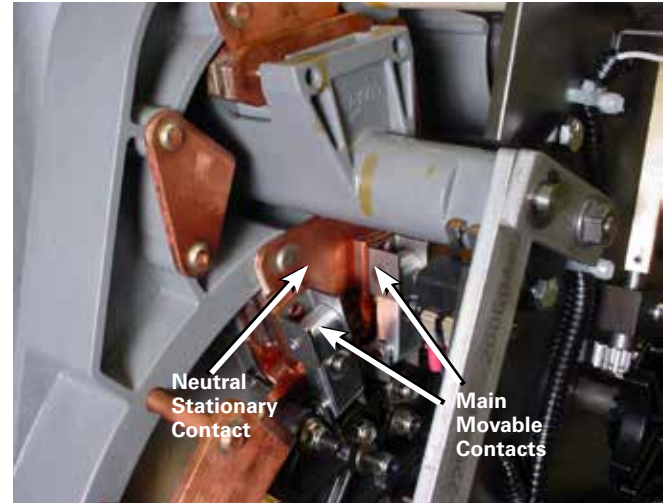


Figure 23. Neutral stationary contact position for main movable contacts.

- B. The reversing movable contact is located on the reversing neutral stationary contact. See Figure 24.

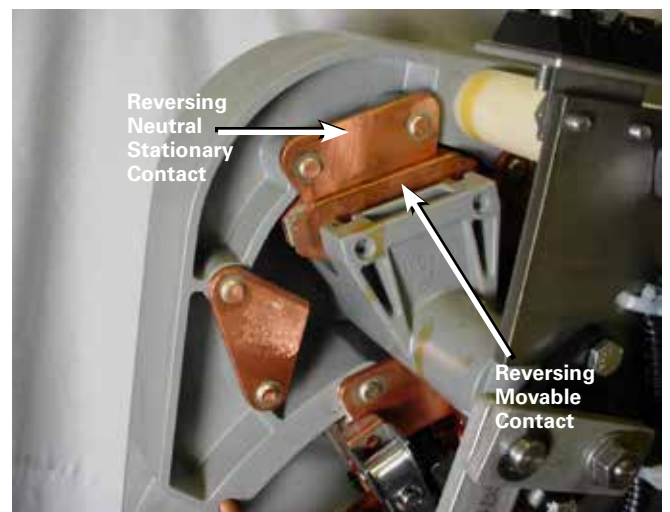


Figure 24. Neutral position for reversing movable.

C. The pinion cam is pointing to the right over the holding switch actuator. See Figure 25.

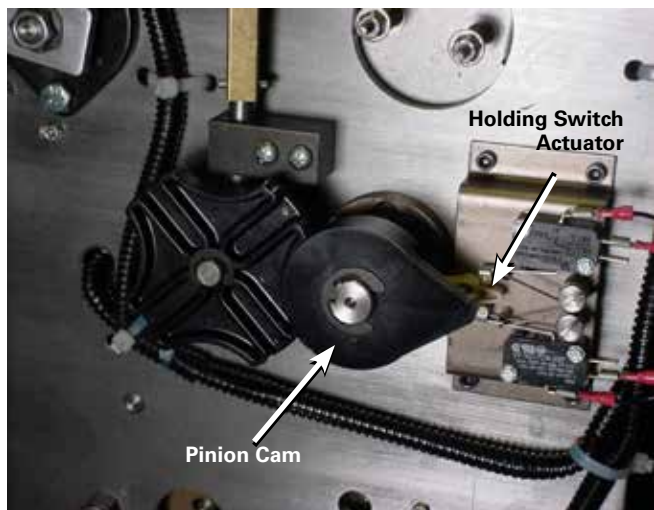


Figure 25. Neutral position for position indicator pinion cam and holding switch.



Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

**Eaton's Cooper Power Systems
Division**
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

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