

Voltage Regulators

QD8 Tap Changer Motor Replacement Procedure Kit 57A63675100A

S225-50-16

Contents

General	1
Parts Supplied	1
Tools Required	1
Product Information	1
Safety Information	2
Installation Procedure	3

GENERAL

The purpose of this replacement kit is to provide the parts and installation instructions for replacing the tap changer motor on a QD8 Quik-Drive Tap Changer.

PARTS SUPPLIED

Item	Part Number	Description	Qty
1	57A63675100A	Tap Changer Motor Replacement Kit	1

TOOLS REQUIRED

Description	Qty
3/8 inch Drive Ratchet Wrench	1
3/8 inch Drive - 1/4 inch Socket	1
3/8 inch Drive - 9/16 inch Socket	1
3/8 inch Drive - 3/8 inch Socket	1
3/8 inch Drive - 3/4 inch Socket	1
7/16 inch Combination Wrench	1
3/4 inch Combination Wrench	1
0-200 lb-in (0-25 Nm) Torque Wrench with a 3/8 inch Drive	1
Phillips Screw Driver #2	1
Blade Screw Driver	1
Diagonal Cutters	1
Snap Ring Pliers	1
Crimping Tool	1
Loctite #243	1

PRODUCT INFORMATION

Introduction

Cooper Power Systems QD8 Tap Changer Motor Kit and installation instructions provide guidance for replacement of the tap changer motor. Replacement would occur when the existing motor becomes inoperable.



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 representative.

Acceptance and Initial Inspection

Each tap changer motor 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 motor 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 tap changer motor to minimize the possibility of damage. If the tap changer motor is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

ISO 9001:2008 Certified Quality Management System



SAFETY FOR LIFE



Cooper Power Systems 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 Cooper Power Systems 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, hotstick, clampstick, 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, could result in minor or moderate injury.

CAUTION: Indicates a hazardous situation which, if not avoided, could 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 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.

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.

INSTALLATION PROCEDURE

1. If the QD8 has been removed from the unit, secure it to a bench before starting the procedure.
2. The QD8 should be in the neutral position before starting the replacement procedure. Refer to Figure 1. If the QD8 is not in the neutral position, turn the hex-shaped end of the motor shaft using a 3/8 (9 mm) socket on a ratchet until the QD8 is in the neutral position.

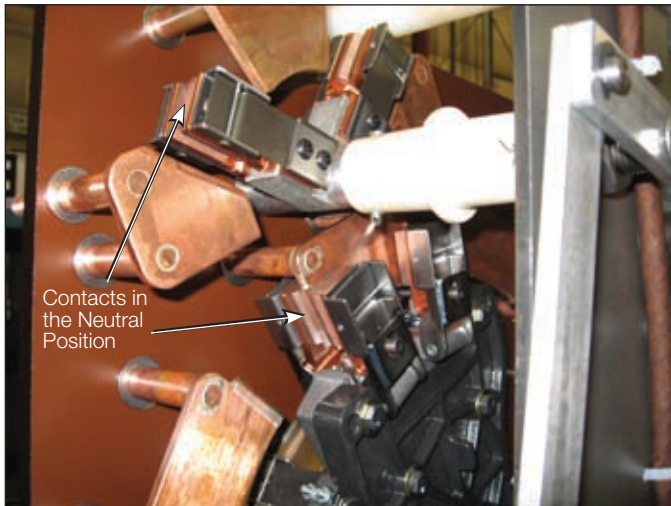


Figure 1.

3. Use diagonal cutters to cut the wire ties from the motor wires. Refer to Figure 2.



Figure 2.

4. Use a Phillips screw drive to disconnect the white motor wire located on terminal "G", the red motor wire located on terminal #4 and the blue motor wire located on terminal #2. Refer to Figure 3.

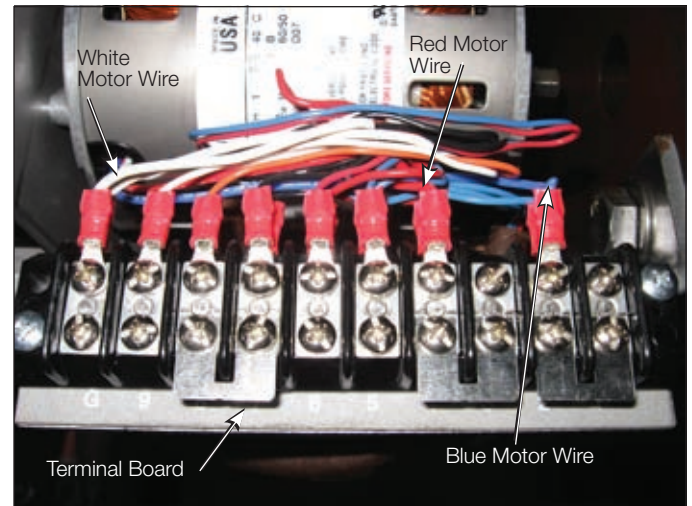


Figure 3.

5. Loosen the jam nut on the chain tension screw with a 7/16 inch (11 mm) wrench. Loosen the chain tension screw with a blade screw driver until the rubber bumper is against the motor mounting bracket. Refer to Figure 4.

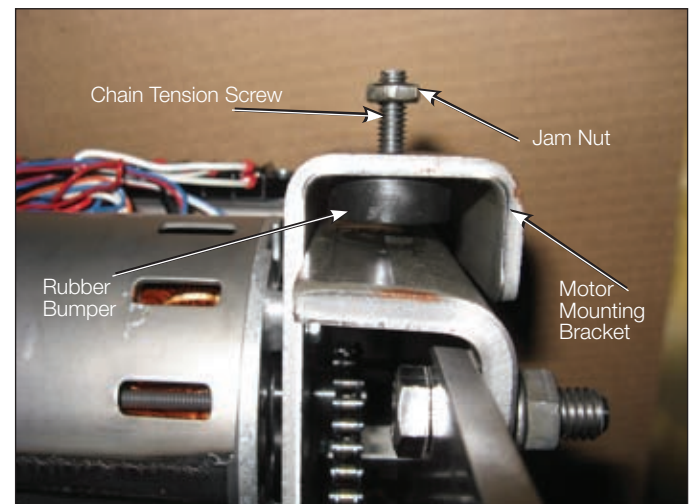


Figure 4.

- 6a. If the QD8 has a motor pivot design with a lock nut as shown in Figure 5, remove the motor pivot stud lock nut with a 9/16 inch (14 mm) socket on a ratchet. Pull the motor off of the motor pivot stud (make sure the Belleville washer stays on the motor pivot stud) by tilting the back of the motor up and moving the motor toward the reversing contact assembly. Remove the chain from the motor sprocket.

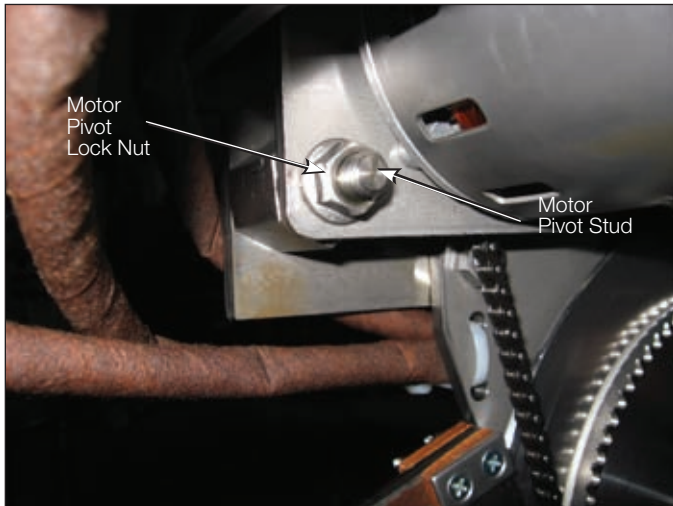


Figure 5.

- 6b. If the QD8 has a motor pivot bolt design as shown in Figure 6, remove the motor pivot bolt with a 3/4 inch (19 mm) socket on a ratchet (make sure the fiber washer does not fall off the motor pivot bolt). Remove the chain from the motor sprocket.



Figure 6.

7. Remove the four screws securing the motor to the motor mounting plate using a 1/4 inch socket on a ratchet. Remove the motor mounting plate from the old motor. Refer to Figure 7.

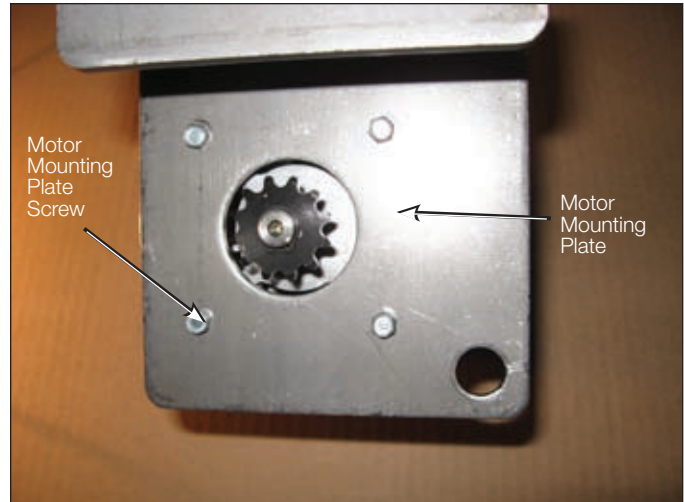


Figure 7.

8. The new motor kit (Part 57A63675100A) has a 12 tooth sprocket for the QD8 and an 11 tooth sprocket for the QD5. The motor shaft has two snap ring grooves and a woodruff keyway. Install one of the supplied snap rings, with a snap ring pliers, into the snap ring groove located behind the woodruff keyway. Install the woodruff key into the keyway with the woodruff key tilted down towards the end of the motor shaft. Refer to Figure 8.

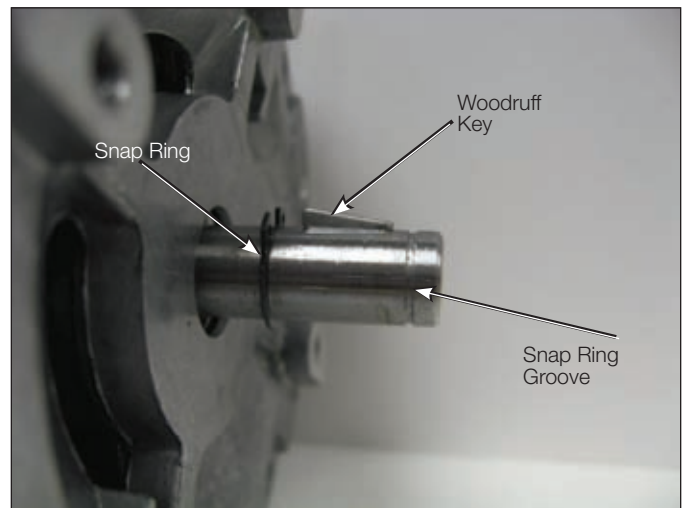


Figure 8.

- With the sprocket hub facing the motor and the sprocket keyway aligned with the woodruff key on the motor shaft, slide the sprocket onto the motor shaft until the hub is against the snap ring. Install the second snap ring into the outer snap ring groove on the motor shaft using a snap ring pliers. Refer to Figure 9.

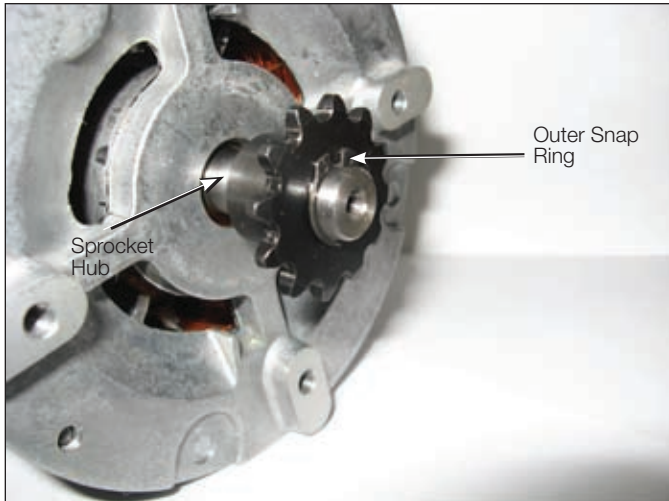


Figure 9.

- Use a 1/4 socket on a ratchet to attach the motor mounting plate to the new motor using the new motor mounting plate screws provided in the motor replacement kit. Do not fully tighten. Make sure the motor wires are extending out of the top right of the motor when looking at the motor from the sprocket end. Refer to Figure 10. Using a torque wrench, tighten the motor plate mounting screws to 19-20 lb-in (2.14-2.3 Nm).

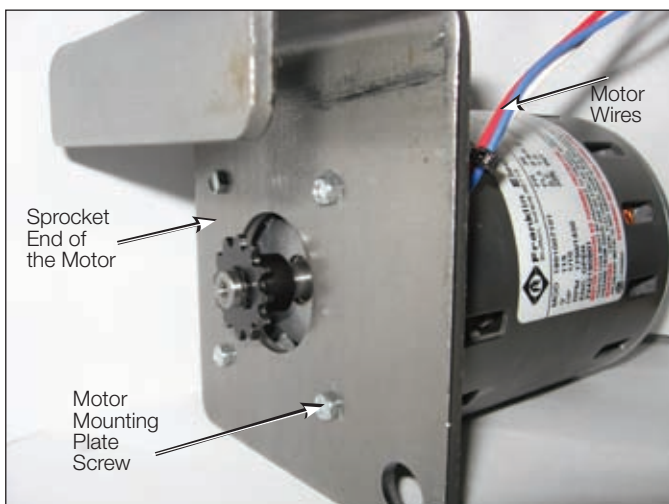


Figure 10.

Note: If you have the motor pivot stud design as shown in Figure 5, follow step 11. If you have the motor pivot bolt design as shown in Figure 6, follow step 12.

- Hold the motor near the final motor position and put the chain on the motor sprocket. Move the motor assembly into position with the motor chain adjustment screw bumper located on top of the adjustment bracket and the motor pivot stud inserted through the mounting hole in the motor mounting plate. Secure the motor mounting plate to the motor pivot stud with the locknut removed in step 6a. Refer to Figures 11 & 12. Using a torque wrench with a 9/16 inch (14mm) socket, tighten the motor pivot stud locknut to 180-192 lb-in (20.3-21.7 Nm). Proceed to Step 13.

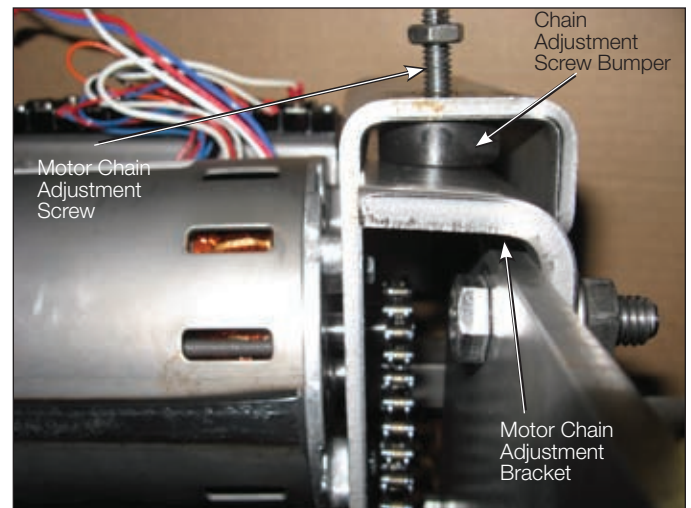


Figure 11.

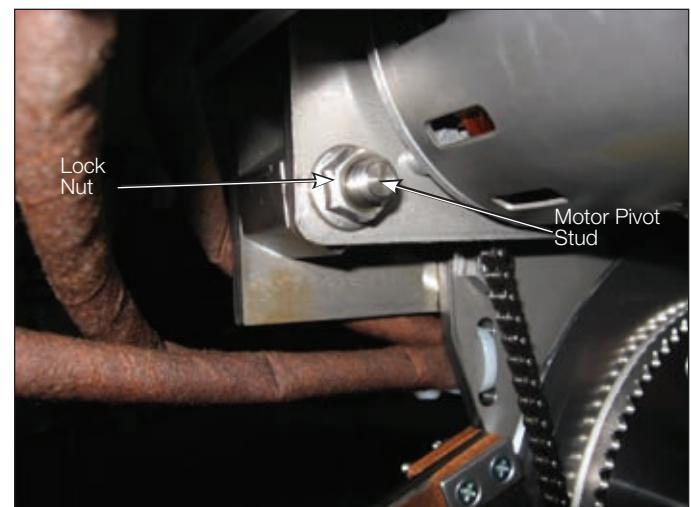


Figure 12.

12. Apply Loctite 243 on the threads of the motor pivot bolt and verify the fiber washer is still located on the motor pivot bolt shoulder. Refer to Figure 13. Hold the motor near the final motor position and put the chain on the motor sprocket. Move the motor assembly into position with the motor chain adjustment screw bumper located on top of the adjustment bracket. Refer to Figure 11. Align the hole in the motor mounting plate with the hex spacer hole. Insert the motor pivot bolt through the motor mounting plate and hand tighten into the hex spacer. Refer to Figure 14. Using a torque wrench with a 3/4 inch (19mm) socket, tighten the motor pivot bolt to 45-55 lb-in (5.1-6.2 Nm).

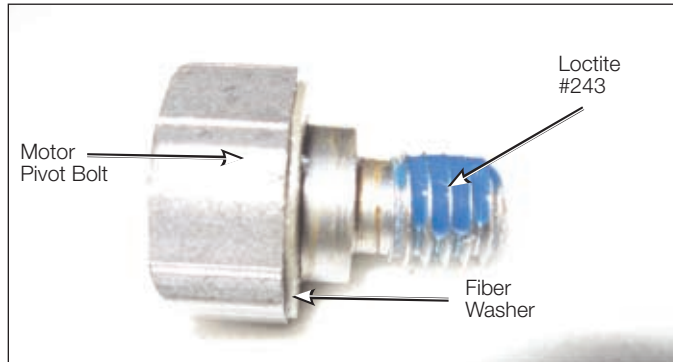


Figure 13.

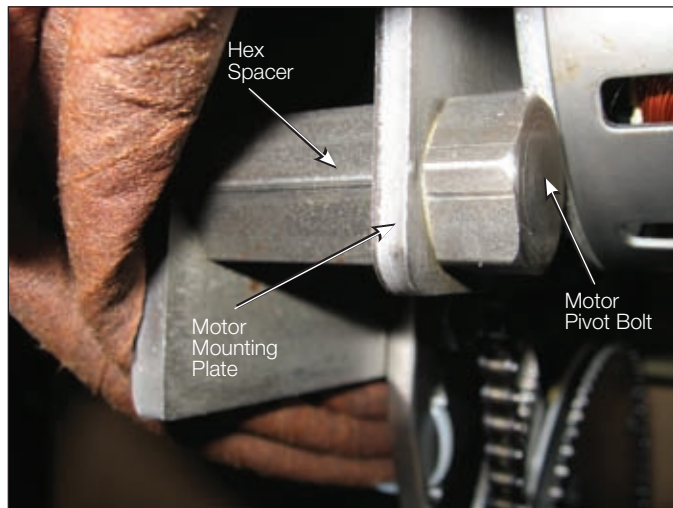


Figure 14.

13. Adjust the chain tension by turning the motor bumper screw with a blade screw driver. Adjust the motor mount bumper screw until 1/4" deflection exists when exerting pressure on the chain. Secure the motor mount bumper screw in place by tightening the jam nut using a 7/16 inch (11mm) wrench. See Figure 15.



Figure 15.

14. The motor wire connection points are as follows: the white wire connects to terminal "G", the red wire connects to terminal #4 and the blue wire connects to terminal #2. Trim the motor wires with a diagonal cutter, allowing an extra two inches of wire between the motor and the connection points. Strip 1/4 inch (7mm) of wire insulation from the end of each wire. Crimp a supplied ring tongue connector to the end of each wire, making sure the wire is fully inserted into the ring tongue connector. The wire should not stick out of the connector by more than 1/16 (1.5mm) of an inch. Attach the ring tongues to the motor connection points on the terminal board as described above. See Figure 16.

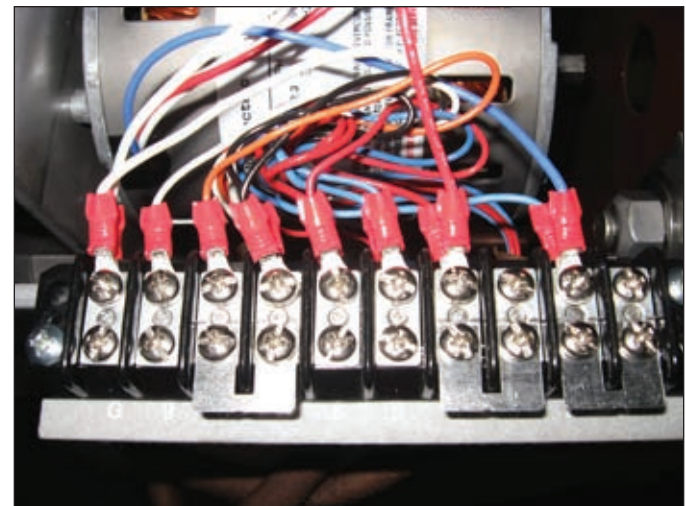


Figure 16.

15. Use the wire ties provided in the motor replacement kit to bundle all the wires near the terminal board to complete the motor replacement procedure. See Figure 17.



Figure 17.




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