Instructional Leaflet **IL2C13769**

Effective December 2021
Supersedes June 2009

Standard motor operator in Magnum low voltage circuit breakers

⚠ WARNING

(1) ONLY QUALIFIED ELECTRICAL PERSONNEL SHOULD BE PERMITTED TO WORK ON THE EQUIPMENT

(2) ALWAYS DE-ENERGIZE PRIMARY AND SECONDARY CIRCUITS IF A CIRCUIT BREAKER CANNOT BE REMOVED TO A SAFE WORK LOCATION

(3) DRAWOUT CIRCUIT BREAKERS SHOULD BE LEVERED (RACKED) OUT TO THE DISCONNECT POSITION.

(4) ALL CIRCUIT BREAKERS SHOULD BE SWITCHED TO THE OFF POSITION AND MECHANISM SPRINGS DISCHARGED.

FAILURE TO FOLLOW THESE STEPS FOR ALL PROCEDURES DESCRIBED IN THIS INSTRUCTION LEAFLET COULD RESULT IN DEATH, BODILY INJURY, OR PROPERTY DAMAGE.

⚠ WARNING

THE INSTRUCTIONS CONTAINED IN THIS IL AND ON PRODUCT LABELS MUST BE FOLLOWED. OBSERVE THE FIVE SAFETY RULES.

- **DISCONNECTING;**
- **ENSURE THAT DEVICES CANNOT BE ACCIDENTALLY RESTARTED;**
- **VERIFY ISOLATION FROM THE SUPPLY;**
- **EARTHING AND SHORT-CIRCUITING; AND;**
- **COVERING OR PROVIDING BARRIERS TO ADJACENT LIVE PARTS.**

Section 1: General information

A motor operator is an electric motor assembly internally mounted in the circuit breaker. It charges the closing springs electrically for remote or local operation. The motor operator can be factory or site installed.

This product is intended for use in Magnum circuit breakers with PXR or Digitrip trip units.

Note: The standard motor operator is for use with standard and double frame Magnum breakers only (not MDN, MDSL, SBN, SPN, MWN, MPN, and MDSX).

Note: All images show a Magnum circuit breaker with a PXR trip unit unless stated otherwise. Some components, such as the trip unit, not shown for clarity.

Required tools

- 1/4-inch drive socket wrench (with torque measuring capabilities)
- 10 mm socket
- 7/16-inch combination wrench
- 3/16-inch straight-blade screwdriver (eight inches long)

Kit parts identification

Refer to **Figure 1** for visual identification of the parts listed below:

(A) Plate inside bracket (one)

(B) Motor operator (one)

(C) Support pin (two)

(D) M6 x 20 mm hex bolt (one)

(E) M6 helical lock washer (two)

(F) M6 x 10 mm thread-forming screw (two)

(G) 8–32 x 3/8 large flat-head screw (two)

(H) Thread-locking adhesive

(I) Cable tie (four)

(J) Accessory labels

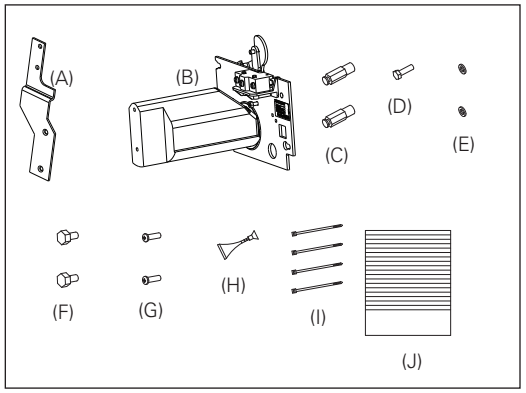

Figure 1. Contents of kit.

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Section 2: Installation of standard motor operator

Proceed with the following steps:

Step 1: Remove the front cover by unscrewing the hex-head captive bolts (four for three-pole, six for four-pole) that join the cover to the breaker housing using a 10 mm 1/4-inch drive socket. Then hold the charge handle down approximately 45 degrees to pull off the cover.

Step 2: Place the appropriate label **(J)** on the front cover nameplate space located under "Accessories."

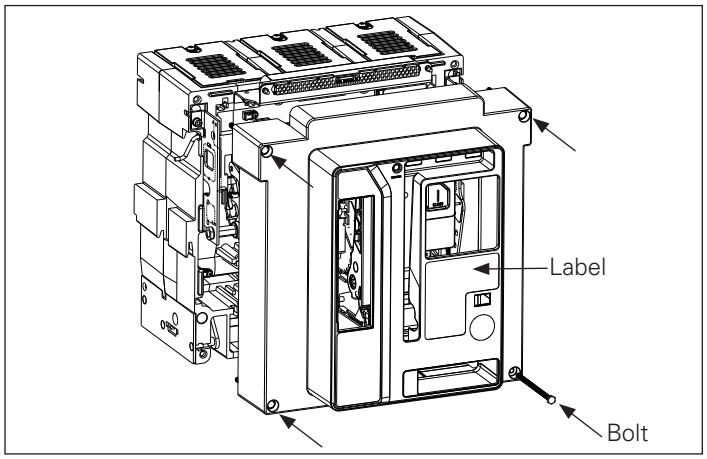

Figure 2. Step 1 and 2.

Step 3: Apply thread-locking adhesive **(H)** to the threads of and install two support pins **(C)** on the breaker as shown. Torque to 75–85 in-lbs (8.5–9.6 Nm).

⚠ IMPORTANT

VERIFY THAT ALL WIRES ARE CLEAR FROM MOTOR OPERATOR MOUNTING POINTS AND PATH TO INSTALL TO ENSURE NO DAMAGE TO WIRES. REPOSITION WIRES AS NEEDED.

Step 4: The motor operator **(B)** is now ready to be installed.

Note: Magnum breakers with PXR trip units have less space, so additional instructions are included for installing motor operators on these breakers.

Step 4a: Using the straight-blade screwdriver, rotate and hold the pawl back with the spring extended. Do not release the pawl until instructed.

Step 4b: For PXR equipped breakers, orient the motor operator with the front angled down 45 degrees and angled 45 degrees to the right with the front end being closer to the breaker mechanism.

Step 4c: Move the motor operator toward the gears without engaging the support pins. Ensure the levering interlock switch is in the proper position to avoid interference.

Note: Do not bend the levering interlock switch.

Step 4d: For PXR equipped breakers, when the upper switch clears the PXR trip unit, orient the motor operator plate to be parallel with the mechanism side plate.

Step 4e: Align and engage the front support pin with the front slot of the motor operator plate, ensuring the two back support pins are aligned with their respective slots.

Step 4f: Once the motor operator plate is engaged with the pins, slide the assembly all the way into the fixed position.

Step 4g: Release the pawl and ensure engagement of the gear.

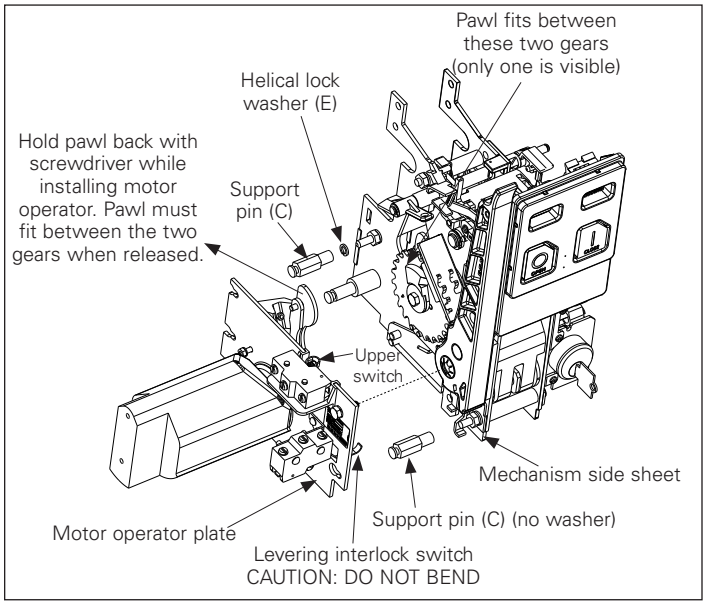

Figure 3. Step 3 and 4.

Step 5: Fasten the assembly with M6 x 20 mm bolt **(D)** and M6 helical lock washer **(E)**. Torque to 75–85 in-lbs (8.5–9.6 Nm).

If the breaker is equipped with a levering device, verify that the levering interlock switch (if equipped) is centered on the levering device door tab. The switch should be closed when the levering device door is closed. The switch must be open when the door is open to access the levering drive socket.

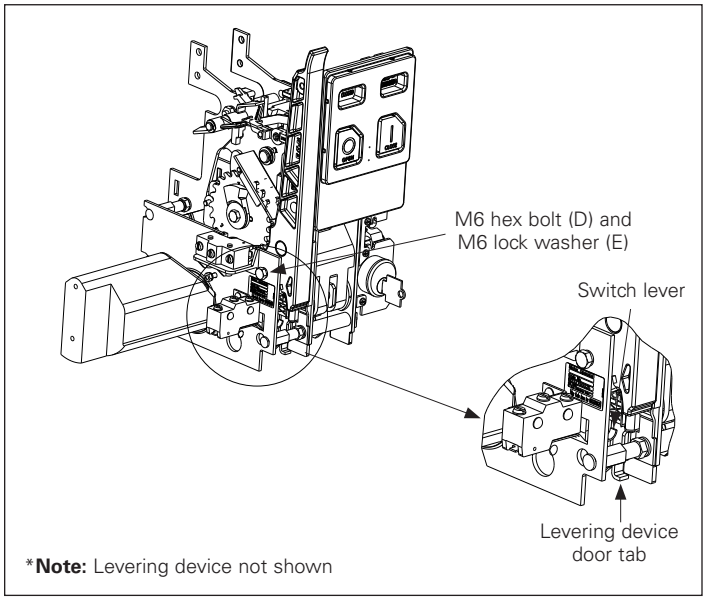

Figure 4. Step 5.

Step 6: First, mount plate inside bracket **(A)** to motor with two 8–32 x 3/8 large flat-head screws **(G)**. Apply thread-locking adhesive **(H)** to threads. Torque to 75–85 in-lbs (8.5–9.6 Nm).

Step 7: Mount plate inside bracket **(A)** on breaker with two M6 x 10 mm thread-forming screws **(F)**. Torque to 75–85 in-lbs (8.5–9.6 Nm).

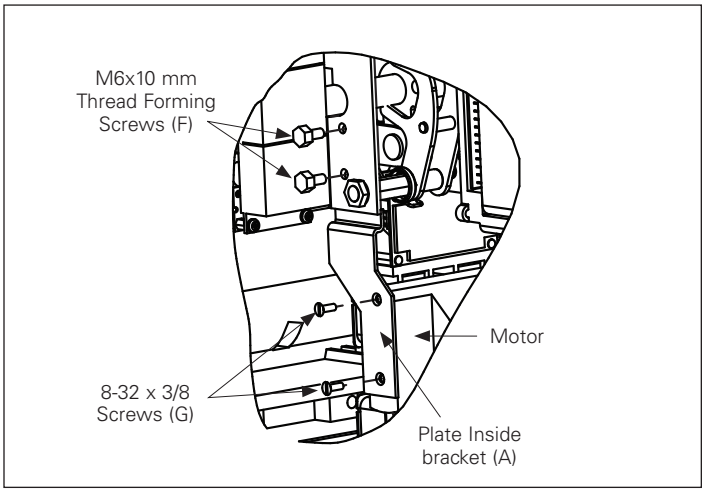

Figure 5. Step 6 and 7.

Step 8: Connect the wires from the motor operator to the secondary connector, referencing Table 1, in keeping with the wiring markings. Terminal maps for the secondary connections are located on top of the secondary connectors. Route and secure leads as shown.

Table 1. Secondary connector motor operator positions

Trip unit	Black negative wire	Gray positive wire	Gray spring charged wire
Digitrip (Fig. 6)	B14	B15	A16
PXR (Fig. 7)	C55	C54	C9

If the breaker is a drawout breaker, proceed to Step 9 after completing Step 8. If the breaker is not a drawout breaker, proceed to Step 10 after completing Step 8.

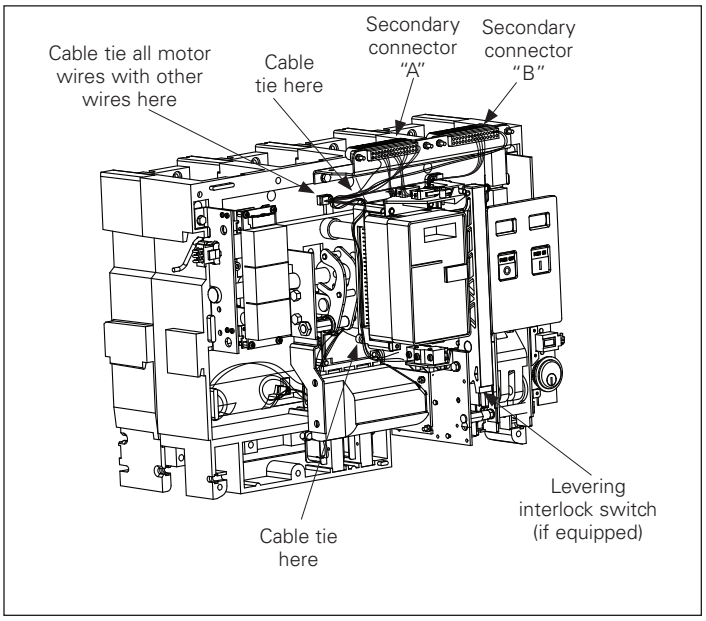

Figure 6. Step 8 Magnum 4 pole with Digitrip.

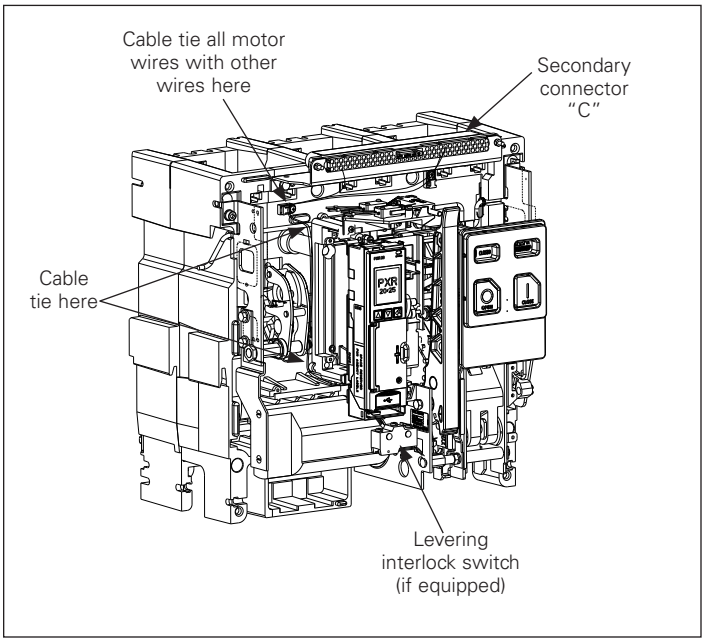

Figure 7. Step 8 Magnum 3 pole with PXR.

Step 9: For drawout breaker only, check the levering interlock switch to verify that it opens when the levering access door is raised to a 0.4-inch gap. The switch must close when the door is lowered to a 0.1-inch gap.

Step 10: Reinstall front cover removed in Step 1.

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