Two-way rod interlock kit for Magnum drawout circuit breaker

**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.

**Section 1: General information**

A family of mechanical interlocks are available to interlock the closing of two or three Magnum® circuit breakers. A lever assembly is mounted on each breaker that interfaces with the pole shaft and the tripper bar. The lever assemblies in this instance are interconnected with rods. Rods can be used only when the circuit breakers to be interlocked are vertically stacked. This mechanical interlock connects two breakers so that only one can be closed at any time. Closing one breaker holds the other breaker in a tripped condition.

**Required tools**

- 10 mm socket and drive
- Phillips head screwdriver (#2 recommended)
- Utility knife
- Pliers
- Round hand file

**Kit parts identification**

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

- (A) M6 x 12 mm hex bolt (six)
- (B) M6 x 25 mm flat-head screw (two)
- (C) M6 lock washer (six)
- (D) Drive arm (two)
- (E) M6 x 16 thread-forming screws (four)
- (F) Interlock assembly (two)
- (G) Centering button (four) (may be pre-installed on cassette)
- (H) Driven coupling (two) ®
- (I) Drive coupling (two) ®
- (J) M6 jam nut (four) ®
- (K) M6 threaded rod (two) ®

® This part provided in Kit 2A11859G01.

**Figure 1. Contents of Kit**
Two-way rod interlock kit for Magnum drawout circuit breaker

Section 2: Installation of two-way rod cable interlock

Proceed with the following 11 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: Remove the knockout from the right side of the front cover using pliers to break out the U-shaped tab. Carefully file any excess material from broken edge.

Step 3: Install the drive arm (D) to the right end of the pole shaft with the drive arm lever extending downward as shown. Use a M6 x 25 mm flat-head screw (B) to make the connection and torque to 65–85 in-lbs (7.3–9.6 Nm).

Notes:
1. If the end of the pole shaft is not machined as shown, contact Eaton for instructions.
2. If an M6 square nut is not located in the slot as shown, remove the bracket’s top bolt and loosen the two bottom bolts seven turns. While holding the trip lever in the position shown, slide the top part of the bracket away from the breaker, and insert a square nut (J) into the slot with the flat face toward the outside. Refasten all three bolts.

Step 4: Reinstall front cover removed in Step 1.

Step 5: Attach the interlock lever assembly (F) to the right side of the cassette using three M6 x 12 hex bolts (A) and lock washers (C). Torque to 40–50 in-lbs (4.5–5.6 Nm).

---

Figure 2. Step 1

Figure 3. Step 2

Figure 4. Step 3

Figure 5. Steps 4 and 5
Two-way rod interlock kit for
Magnum drawout circuit breaker

**Step 6:** The centering buttons (G) are now installed in the cassette, unless they were previously installed. Remove the rearmost hold-down bracket mounting screws and discard. Replace the discarded hardware with M6 x 16 mm thread-forming screws (E) on both sides of the cassette. Then thread the centering buttons onto the protruding length of the self-threading screws on the inside of the cassette on both sides.

---

**Step 7:** The threaded rods (K) are cut in this step. Measure the vertical distance (H) between the bottoms of the cassettes. Cut one threaded rod 1.68 inches (43.0 mm) less than the measured distance. Cut the second threaded rod 7.06 inches (180.0 mm) less than the measured distance.

---

**Step 8:** The driven couplings (H) and the drive couplings (I) are attached to the threaded rods in this step. After the threaded rods are cut to the appropriate lengths, thread one jam nut (J) and one driven coupling onto one end of each threaded rod. Thread the remaining jam nuts and the drive couplings onto the other end of the threaded rods. The rods should be threaded into each of the couplings approximately 1.00 inch (25.0 mm).

---

**Figure 6. Step 6**

**Figure 7. Step 7—Dimension in Inches (mm)**

**Figure 8. Step 8**
Step 9: Connection and adjustment of the rods are described in this step. Connect the rods between the interlock assemblies. Connect the drive coupling end first by removing the locknut and spring, and then inserting through swivel fitting on drive lever assembly. Then replace the removed spring and locknut.

Connect the other end to the driven lever assembly by removing the nut, and then inserting through swivel fitting. Then replace the removed nut.

With both breakers OPEN, adjust the length of both drive rods by threading into or out of the couplings until the locknut just touches the driven swivel fitting surface. Tighten all jam nuts against the couplings.

Step 10: At this point in the process, check the functioning of the lever assemblies by performing the two following checks in conjunction with provided graphics:

Check 1: With the breaker OPEN, check the adjustment of the lower drive lever. The gap between the lower right-hand corner of the drive lever and the mounting bracket flange should be from 0.0 to 2.0 mm (see Figure 10, Breaker OPEN). Now CLOSE the breaker. The drive lever should rotate approximately 60 degrees counterclockwise. There should be a minimum gap of 1.0 mm and a maximum gap of 4.0 mm between the lower left-hand corner of the lever and the mounting bracket flange (see Figure 10, Breaker CLOSED). If either of these gaps are out of specification, the installation should not continue. Consult Eaton for additional instructions.

Check 2: Now check the function of the upper driven lever and tripper bar. With the breaker OPEN, the upper left-hand corner of the driven lever should be held in contact with the mounting bracket flange by the return spring, and the inner arm that operates the tripper bar should protrude a few millimeters beyond the right edge of the mounting bracket. With the breaker CLOSED, grasp and slowly rotate the driven (upper) lever counterclockwise. At approximately 30 degrees of rotation (with the lever approximately horizontal), the breaker should trip. If the breaker does not trip before the upper right-hand corner of the driven lever is within 3.0 mm of the mounting bracket flange (see Figure 10, Breaker OPEN), the driven lever and/or tripper lever are out of specification. Do not continue the installation. Consult Eaton for additional instructions.

Figure 9. Step 9

Figure 10. Step 10
Step 11: The final step is to test the completed assembly.

1. CHARGE and CLOSE Breaker A. Inspect the driven lever on Breaker B. It should be rotated against its stop (the mounting bracket). CHARGE Breaker B and attempt to CLOSE it. It should not respond to the CLOSE attempt (no noise, no spring discharge, no contact motion). If the breaker does not respond as described, review Steps 7 through 10.

2. OPEN Breaker A. The interlock should release. CLOSE Breaker B. Verify that it closes with the OPEN/CLOSED indicator. Breaker A should now be held in the OPEN condition. Repeat the above checks on Breaker B (lever position, attempt to CLOSE).

The mechanical interlock is now properly installed and adjusted.

Figure 11. Step 11
Two-way rod interlock kit for Magnum drawout circuit breaker
Two-way rod interlock kit for
Magnum drawout circuit breaker
Disclaimer of warranties and limitation of liability

The information, recommendations, descriptions, and safety notations in this document are based on Eaton’s (“Eaton”) experience and judgment, and may not cover all contingencies. If further information is required, an Eaton sales office should be consulted.

Sale of the product shown in this literature is subject to the terms and conditions outlined in appropriate Eaton selling policies or other contractual agreement between Eaton and the purchaser.

THERE ARE NO UNDERSTANDINGS, AGREEMENTS, WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, OTHER THAN THOSE SPECIFICALLY SET OUT IN ANY EXISTING CONTRACT BETWEEN THE PARTIES. ANY SUCH CONTRACT STATES THE ENTIRE OBLIGATION OF EATON. THE CONTENTS OF THIS DOCUMENT SHALL NOT BECOME PART OF OR MODIFY ANY CONTRACT BETWEEN THE PARTIES.

In no event will Eaton be responsible to the purchaser or user in contract, in tort (including negligence), strict liability, or otherwise for any special, indirect, incidental, or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of power, additional expenses in the use of existing power facilities, or claims against the purchaser or user by its customers resulting from the use of the information, recommendations, and descriptions contained herein.

The information contained in this manual is subject to change without notice.