

operator can be mounted (Figure 2-2). Start by removing the spanner nut on each bolt from the already removed breaker. Substitute the longer bolts and reassemble with the nuts.

- f. Remove the four front motor operator cover screws, lockwashers and flat washers. The front cover can now be carefully removed, exposing the inside of the motor operator (Figure 2-2).

NOTE: THE CORRECT MOUNTING POSITION FOR THE MOTOR OPERATOR IS WITH THE END CONTAINING THE MOTOR BEING LOCATED AT THE LINE END OF THE CIRCUIT BREAKER.

- g. After installation of the breaker, position the motor operator over the handle extension. The handle extension should go between two rollers in the carriage assembly. Line up the four mounting holes (two at the top and two at the bottom) in the back plate of the motor operator with the four special mounting bolts in the circuit breaker. Secure the motor operator to the breaker using the supplied 5/8" long .250-20 pan head screws and lock washers. Torque the pan head screws to 65 in-lb.

- h. Connect the grounding strap to electrical ground.

- i. Perform the following motor operator adjustment checks:

1. Manually reset and close the circuit breaker using the handle extension.
2. The OFF limit switch operating plunger should be free to move (change state) (Figure 2-2).
3. The ON limit switch and relay control limit switch plungers should be in a depressed position when the breaker is closed (Figure 2-2).
4. Manually open the circuit breaker using the handle extension.
5. The ON limit switch and relay control limit switch plungers should now be extended.

- 6. The OFF limit switch plunger should be depressed with the circuit breaker open (Figure 2-2).

- 7. Although adjustments to the length of the pins in the switch actuator assemblies should not be required, a screw locking compound (Mil-S-22473 Grade C) should be used to lock any pin that is adjusted.

- j. Connect power and control wiring to the motor operator terminal block, including the "b" contact, in keeping with Figure 2-3.

NOTE: THE MOTOR OPERATOR IS SHIPPED FROM THE FACTORY WITH THE SLIDING HANDLE BARRIERS TAPED TO THE INSIDE OF THE MOTOR OPERATOR COVER.

- k. Check to be sure the two micarta sliding barriers are in place in the motor operator cover. The barrier with the large rectangular hole is mounted in the cover utilizing the "Z" brackets. The second barrier with the smaller rectangular hole is placed over the handle extension.

- l. Install the motor operator cover with the ON position towards the line end of the circuit breaker. Secure the cover in position using the four screws, lockwashers and flat washers supplied.

- m. Manually open the circuit breaker before applying control power to the motor operator, to close the circuit breaker.

- n. Refer to Figure 2-4 for circuit breaker and motor operator combination outline dimensions.

PART 3. MOTOR OPERATOR IDENTIFICATION

- a. 115 Vac Motor Operator: 6590C87G01
- b. 450/115 Vac Motor Operator: 6590C87G02 (using supplied externally mounted step-down transformer)

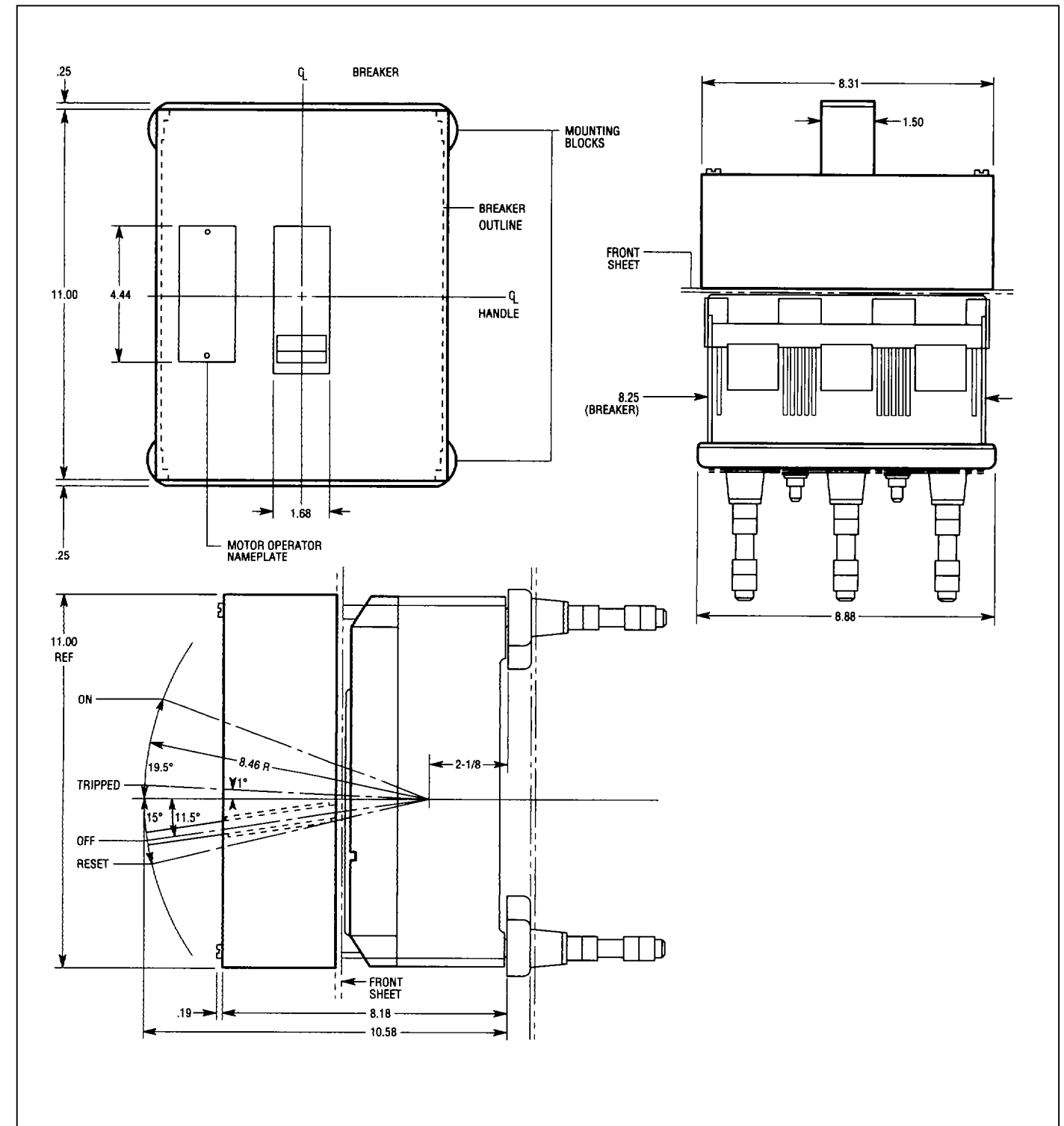


Fig. 2-4. AQB-A250 or NQB-A250 Circuit Breaker and Motor Operator Outline Dimensions

NOTES

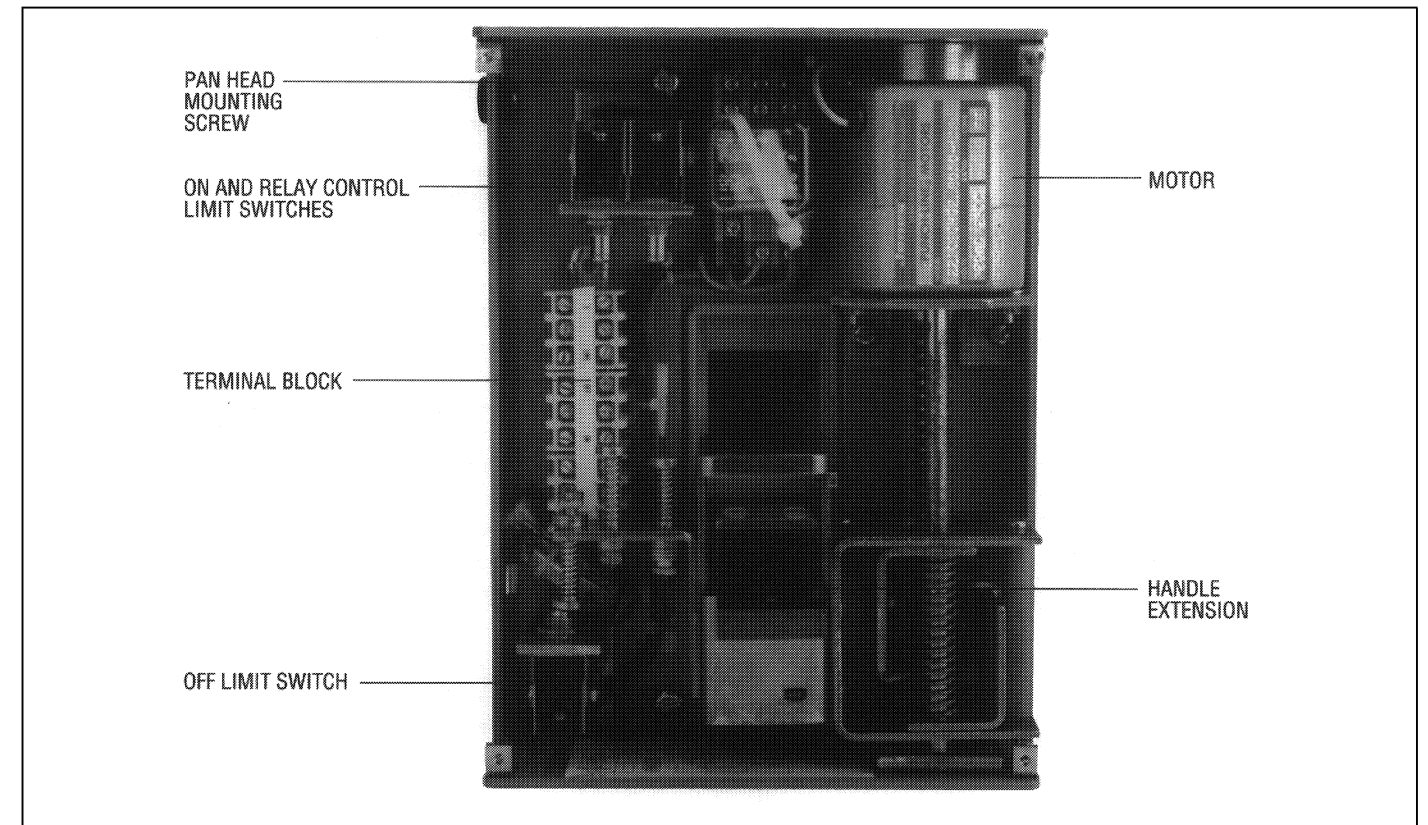


Fig. 2-2. Motor Operator Installed with Front Cover Removed

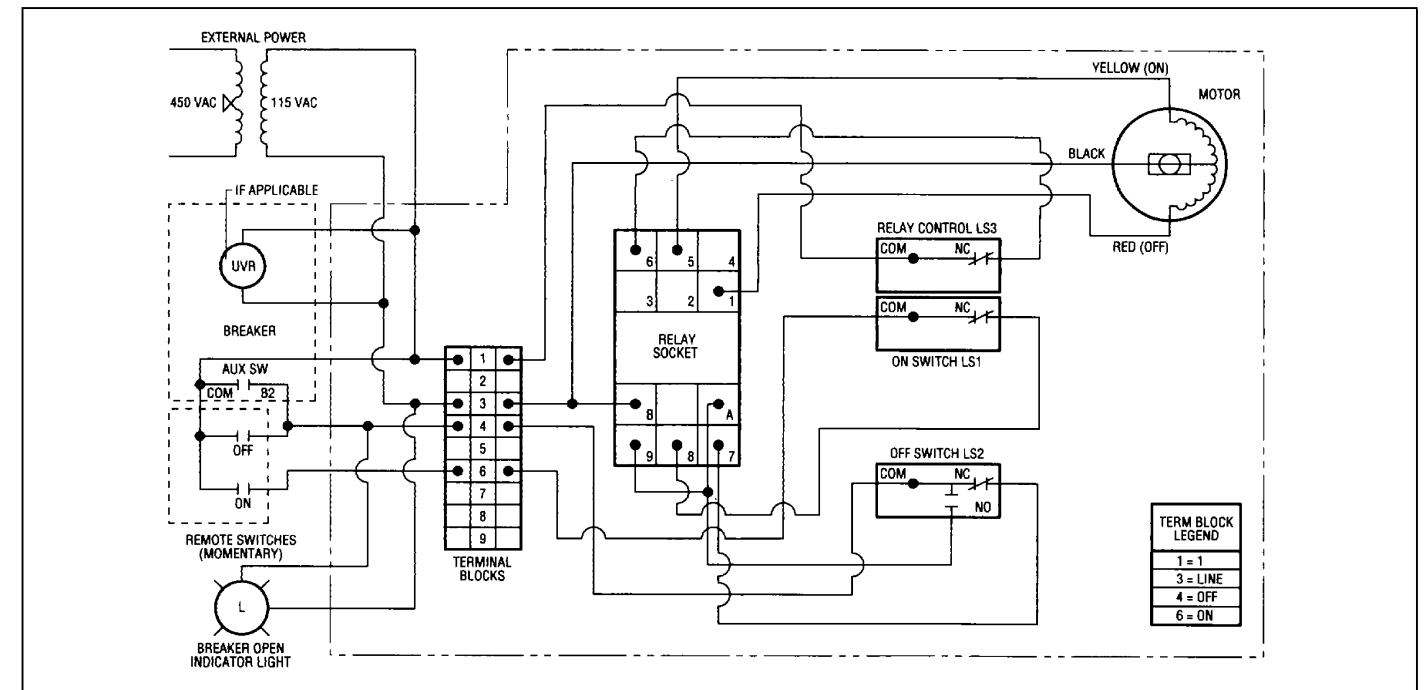


Fig. 2-3. Motor Operator Wiring Diagram

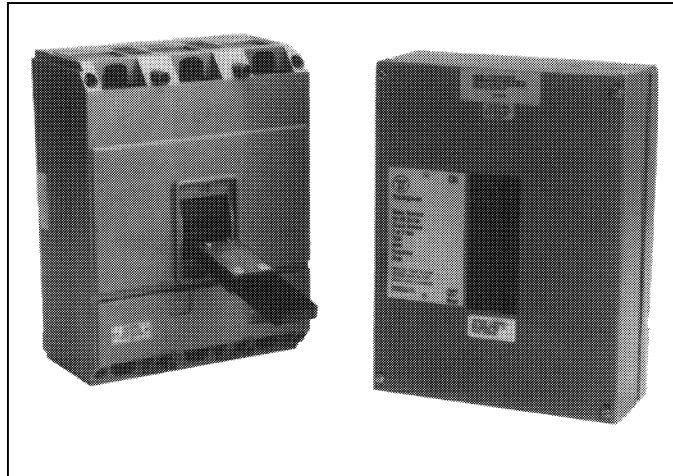


Fig. 1-2. AQB-A250 on Left with Handle Extension and Unmounted Motor Operator on Right



WARNING

THERE ARE RAPIDLY MOVING PARTS AND HIGH VOLTAGES PRESENT WHEN A MOTOR OPERATOR IS ENERGIZED. MAKE SURE THERE IS NO VOLTAGE PRESENT WHEN INSTALLING THE MOTOR OPERATOR ON THE CIRCUIT BREAKER. THE MOTOR OPERATOR COVER MUST BE INSTALLED BEFORE APPLYING CONTROL POWER. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.



CAUTION

THE MOTOR OPERATOR HAS BEEN ADJUSTED AT THE FACTORY. TO MAINTAIN THE FACTORY ADJUSTMENT, THE MOTOR OPERATOR MUST BE MOUNTED ON THE CIRCUIT BREAKER BEFORE BEING OPERATED. OPERATING THE MOTOR OPERATOR WITHOUT BEING INSTALLED ON A CIRCUIT BREAKER WILL RESULT IN EQUIPMENT DAMAGE.

NOTE: IF A MOTOR OPERATOR WAS SHIPPED FROM THE FACTORY MOUNTED TO THE CIRCUIT BREAKER, IT MUST FIRST BE REMOVED FROM THE CIRCUIT BREAKER, AND THE NUT AND WIDE WASHER AT THE BACK OF EACH CIRCUIT BREAKER CAPTIVE STACKING SCREW (USED FOR SHIPPING) DISCARDED.



Fig. 2-1. AQB-A250 Circuit Breaker with Handle Extension Installed

- a. Turn off all power.
- b. If the motor operator is not installed on the circuit breaker, push the circuit breaker handle down to open the circuit breaker. If the motor operator is installed on the circuit breaker, push the motor operator handle extension down to open the circuit breaker.
- c. A circuit breaker handle extension is shipped from the factory in the same box as the motor operator. Use the handle extension as a template to mark the location of the two .203 inch diameter mounting holes that must be drilled in the operating handle of the circuit breaker. Once the holes are drilled, mount the handle extension using the supplied bolts, lockwashers and nuts. (Figure 2-1).
- d. Install the "b" contact auxiliary switch in the left pole of the breaker. This is accomplished by removing the cover and mounting the auxiliary switch to the trip unit. The "b" contact makes when the main breaker contacts are open. Route the wire leads through the side of the breaker and re-cover.
- e. If the circuit breaker was already installed and a motor operator is just being added, four special circuit breaker mounting screws, which are longer than those installed in the circuit breaker, will have to replace the existing screws before the motor

NOTES

Instructions for Operation and Installation of Electrical Motor Operator on Navy Type AQB-A250 and NQB-A250 Molded Case Circuit Breakers

WARNING

DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH, SEVERE PERSONAL INJURY, OR SUBSTANTIAL PROPERTY DAMAGE CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH THE TASK, AND ALWAYS FOLLOW GENERALLY ACCEPTED SAFETY PROCEDURES.

EATON IS NOT LIABLE FOR THE MISAPPLICATION OR MISINSTALLATION OF ITS PRODUCTS.

The user is cautioned to observe all recommendations, warnings, and cautions as well as all general and local health and safety laws, codes, and procedures.

The recommendations and information contained herein are based on Eaton experience and judgement, but should not be considered to be all-inclusive or covering every application or circumstance which may arise. If any questions arise, contact Eaton for further information or instructions.

PART 1. INTRODUCTION

General Information

The motor operator shown in Figure 1-1 is a mechanism for remote circuit breaker ON and OFF switching. The motor operator is mounted to the circuit breaker and provides high speed switching with operating times of approximately 14 cycles (235 milli-seconds).

Motor operators for use on the AQB-A250 and NQB-A250 circuit breakers are rated at 450/115 Vac or 115 Vac., 60 Hz., and require a 1 KVA power source. In addition, all motor operators are equipped with an Auto-Reset feature as standard.

Functional Description

The motor operator is designed to remotely switch a circuit breaker to its ON, OFF and relatch positions. The



Fig. 1-1. Motor Operator Installed on AQB-A250 Circuit Breaker

relatch (Auto-Reset) function will occur automatically after a circuit breaker trip operation. The motor operator is self contained and assembled in its own mounting frame which mounts on the front of the circuit breaker (Figure 1-2). When the ON or OFF remote control button is pressed, current flows to the electric motor which turns a ball bearing and screw assembly driving the carrier and roller assembly. Two rollers fit over the circuit breaker handle and move with the handle through its range of movement. Limit switches control the travel of the carrier assembly. A terminal block is provided in the mounting frame for control connections. A "b" contact auxiliary switch is provided for installation in the breaker for the Auto-Reset function.

PART 2. INSTALLATION/OPERATION

The electrical operator is normally supplied as a separate item for mounting on an uninstalled circuit breaker. An installed circuit breaker must be removed before the electrical operator can be mounted.

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