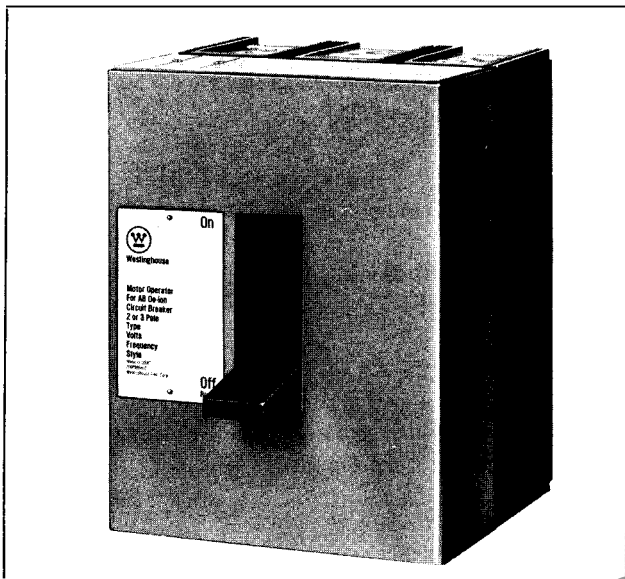


# Instructions for Motor Operator for Use with Types LA and HLA AB De-ion® Circuit Breakers



I.L. 14908  
File 29-000



**Fig. 1 Motor Operator with Type LA AB De-ion Circuit Breaker**

The motor operator mechanism, Fig. 1, is a device designed to remotely control and operate a breaker to its "ON", "OFF" or "RESET" position. It is also possible to manually operate the breaker direct.

Basically, the mechanism, Fig. 2, consists of a reversible motor (1), a ball bearing screw (2), a bracket assembly (3), overtravel springs (4) and limit switches (15), (16) which are adjusted by screws (6) and nuts (7).

To operate the breaker "ON" or "OFF", the motor (1) turns the ball-bearing screw (2) approximately 15 revolutions, which in turn drives the bracket assembly (3). Travel is controlled by two limit switches (15), (16). The breaker handle arm (8) is operated "ON" or "OFF" in less than 0.2 seconds.

Handle arm (8) and bracket assembly (3) travel are always factory adjusted and tested to facilitate operator installation.

**WARNING:** Power to motor operator must be "OFF" before motor operator cover (9) is removed.

If Maintain Control Switches are used the motor operator will return the breaker to the "ON" position if it is manually opened, also, if the breaker is "OFF" it will return to the "OFF" position if it is manually closed.

Maintain "ON" Control Switch must not be used if auto-reset is used, since the motor operator will reclose the breaker automatically if it tripped from an overload or a short circuit.

Relays are used inside the motor operator so only a momentary contact is required to close or open the breaker. Once an operation is started, the relays seal in the contacts and the motor operator will complete its full travel. Also, the control switches do not have to carry the motor current.

**Table I - Available Motor Operator Ratings and Operating Conditions**

Rated Voltage	Operating Voltage Range	Motor** In-Rush Current	① Style Number
115 VAC	95-125	8 Amp	2607D97G01
125 VDC	90-130	8 Amp	2607D97G05
208 VAC	172-226	5 Amp	2607D97G04
230 VAC	190-250	4 Amp	2607D97G02
*460 VAC	380-500	-----	2607D97G03

\*Operator application on supply of 460 VAC utilizes a 460/115 VAC transformer.

\*\*Operator is an intermittent duty device, and the safe duty cycle, i.e., "OFF" to "ON" to "OFF", should not exceed four per minute.

A Endurance Test - Motor operators have operated breaker at duty cycle noted above for the same number of operations required of breaker.

B Operating Time - (a) To turn breaker ON - 12 cycles.  
(b) To turn breaker OFF - 12 cycles.

C Motor Operating Temperature - Class "A" temperature limits apply.

① Changed since previous issue.

## Installation – Mounting

Refer to Fig. 2.

1. Breaker must be mounted with special studs (12) supplied with motor operator. (At least one of the studs must be grounded to insure that the motor operator is grounded.)
2. This operator uses a special handle extension (8) which is bolted to a breaker handle. Remove standard handle from breaker and replace with handle assembly supplied with motor operator.
3. Remove cover (9) from motor operator.
4. Wire breaker line and load terminals.
5. Assemble breaker cover and mount plate (10) with screws (13) supplied with motor operator.
6. Assemble motor operator to breaker with screws (14).
7. Handle extension (8) must be between rollers of bracket assembly (3).

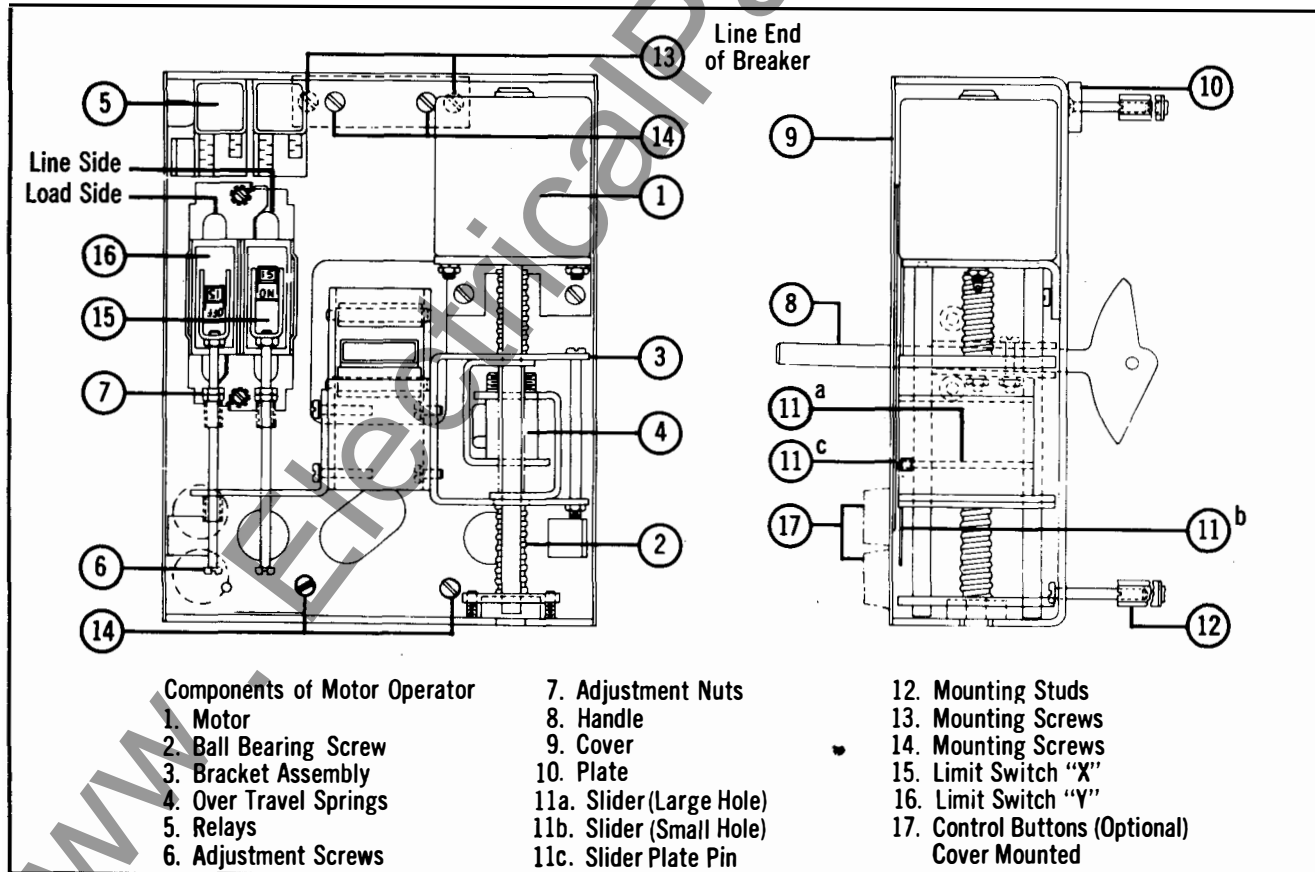
**NOTE:** Motor must be over line end of breaker. Cover (9) must be assembled with "ON" towards line end.

## Adjustment Check

1. Manually reset and close the breaker.
2. Limit switch (15) should go to its "ON" position when the breaker goes "ON".
3. Limit switch (16) should go to its "OFF" position just before the breaker goes "ON".
4. Limit switch (15) should go to its "OFF" position when the breaker handle is in the extreme reset position.
5. Limit switch (16) should go to its "ON" position when the breaker goes "OFF".

These adjustments are made at the factory on a test breaker. If the limit switches do not operate as described above, adjust screws (6) and nuts (7) for proper operation. Nuts must then be locked in place with solder, Loctite, or similar product.

After checking adjustment, place slider plates (11) over extension handle (8) and assemble motor operator cover to operator. Slider plate (11B) with small hole must be



**Fig. 2 Motor Operator Mechanism** ①

① Changed since last issue.

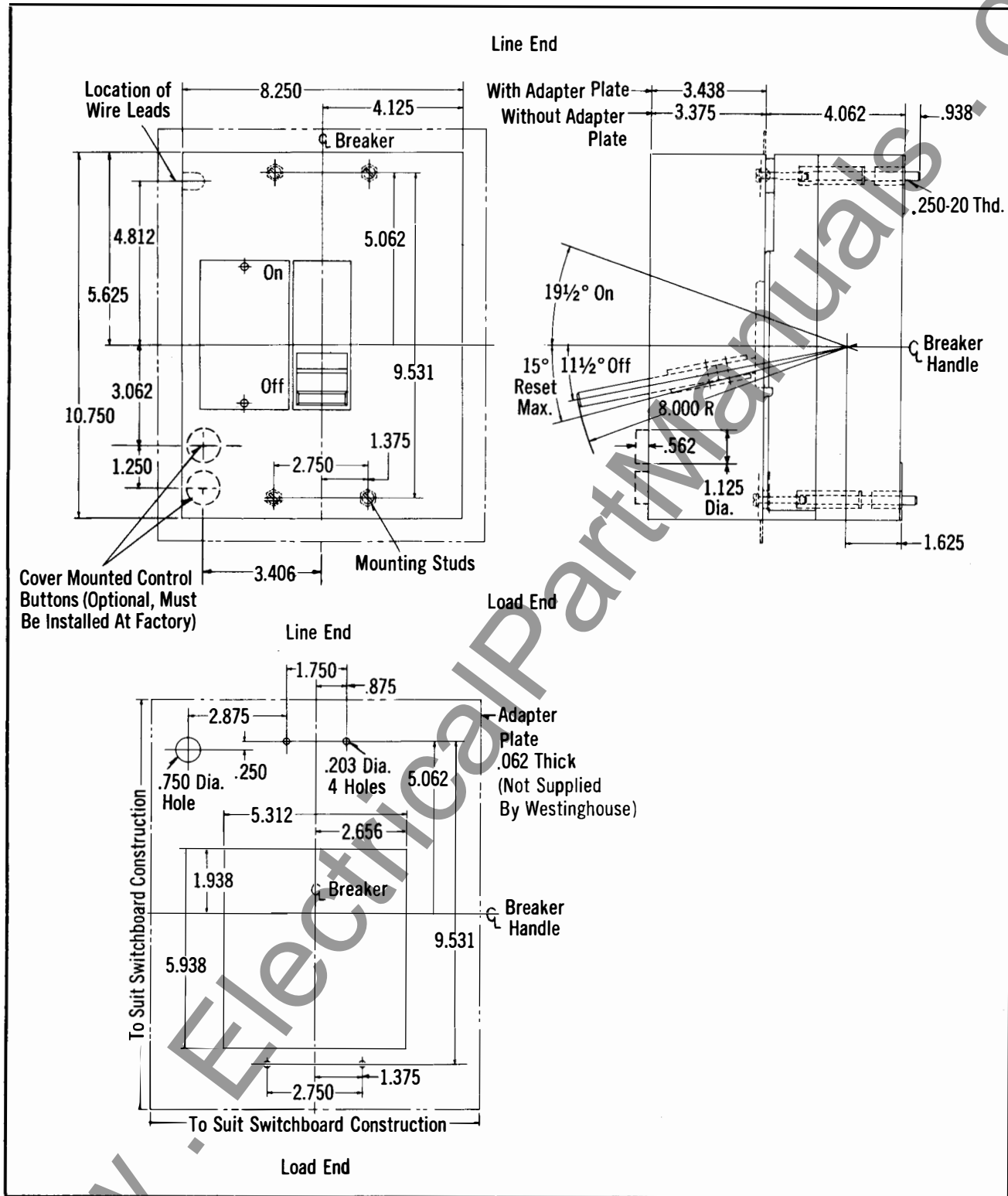


Fig. 4 Outline of Motor Operator

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placed over handle first. Slider plate (11A) with larger hole and pins (11C) down as shown must next be placed over handle.

**WARNING:** Slider plates (11) must be in place.

### Operation

Refer to Fig. 3.

A momentary contact on the pushbutton will cause the breaker to go to its "ON" or "OFF" position. Should the breaker "trip", energizing the "OFF", motor circuit will "reset" the breaker.

Motor operator does not permit a breaker handle to indicate its "trip" position. If desirable that trip position be indicated, either of the following two methods may be incorporated:

1. Breaker may be equipped with bell alarm contacts which "make" or "break" upon an automatic trip operation. Contacts may be wired to an external light or other indicating device to then indicate trip.

2. See "Automatic Reset" below for alternate method. This will move the handle to the "Reset" position or mid-position as described.

### Cover Mounted Control Buttons

These buttons can be used for electrical operation right at the breaker location. The buttons operate a switch which

in turn operates the relays. Remote pushbuttons can be used together with these local control buttons.

### Automatic Reset (Not Supplied Unless Ordered)

The auto reset circuit of the wiring diagram, Fig. 3, indicates utilization of the automatic reset. When using this means for "Reset", controlling device must consist of momentary pushbuttons. When the breaker trips, an internally mounted auxiliary switch closes contacts across the "OFF" circuit. Thus, the motor is energized and throws the breaker handle to "Reset". To reclose the breaker only the "ON" circuit must be energized.

If the breaker trips from a thermal overload the breaker will not "Reset" until the bimetals have cooled off. When this happens the breaker handle goes to a mid-position, and the breaker cannot be closed until the bimetal cools off. If the "ON" control is energized while the bimetals are hot the motor operator will cycle "ON" to "OFF" as long as the "ON" pushbutton is held closed.

When the breaker has tripped thermally from an overload and the bimetals cooled off, the motor operator will first try to close the breaker when the "ON" is energized. The auto reset will then function to reset the breaker and then the "ON" control will then cause the motor operator to close the breaker.

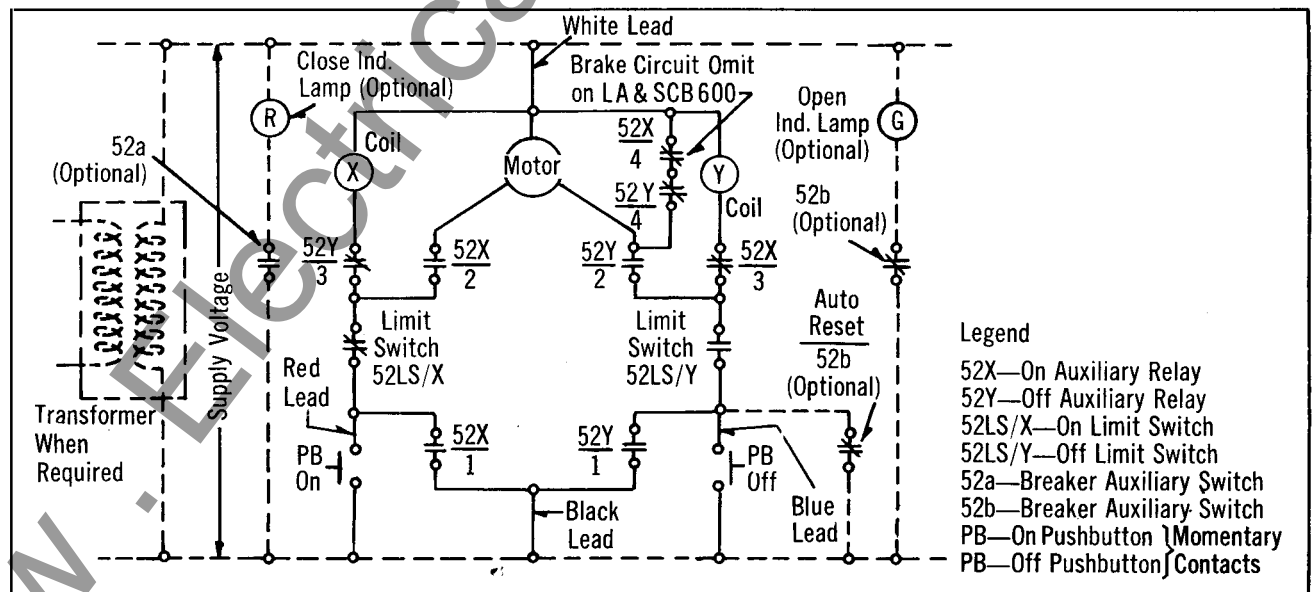


Fig. 3 Wiring Diagram