



DESCRIPTION • INSTALLATION • OPERATION INSTRUCTIONS

TYPE LCB SWITCHES For Power Center Transformers

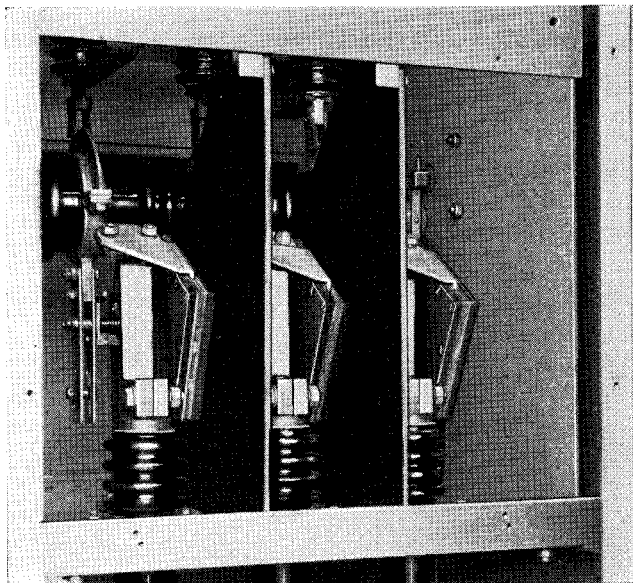


FIG. 1. Switch in Open Position

WESTINGHOUSE TYPE LCB SWITCHES FOR POWER CENTER TRANSFORMERS

are three-pole, group operated, air insulated units and may be single-throw for single feeder disconnect service or double-throw for two feeder selector service. When used with air-cooled transformers the switch is usually mounted in a compartment of the power center transformer case. When used with liquid-filled transformers the switch is usually mounted in a separate case which is throat-connected to the transformer. Switches of suitable voltage rating are rated to interrupt 60 cycle load currents of 400 amperes at 5 KV, 200 amperes at 7.5 KV, or 100 amperes at 15 KV.

The switch blades are of the divided jaw type with silver to silver contact surfaces. The multiple line contacts on the blade at the jaw end produce a series of "knife-edge" or high pressure line contacts. Action of the switch keeps these contact lines clean and reduces maintenance. Contact pressure is maintained by beryllium copper

spring washers which are factory-adjusted, then locked by castellated nuts.

The switch blades are mounted on a porcelain insulating tube keyed to the operating shaft. Mounted on this porcelain tube with the blades is a segment of a disk for each phase. This disk segment slides in a stationary contact which is connected to the transformer winding. The disk segment makes contact with the wedge contact through the entire range of travel of the shaft.

Quick-break blades are mounted on the main blades and held in position by means of coil springs. A "De-ion" arc chamber with auxiliary contact is mounted on the stationary insulator with the main contact.

The switch operating mechanism consists of a handle mounted on the end of the switch shaft which extends through the case and a suitable latching mechanism operated by means of a push button. The latching mechanism holds the switch in any normal operating position and provides a

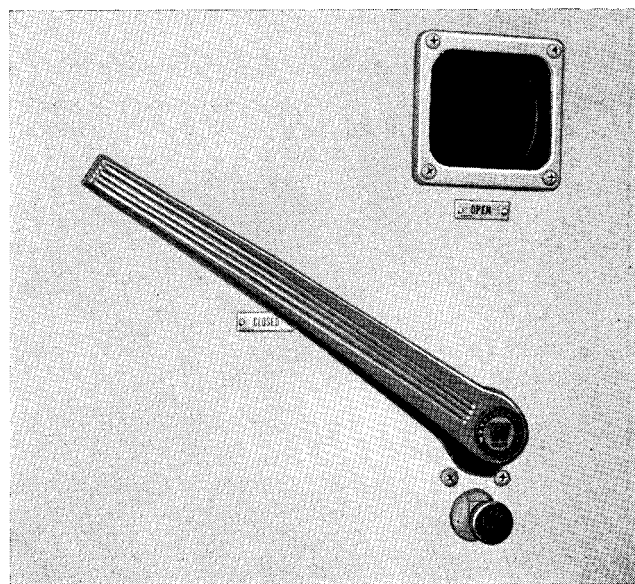


FIG. 2. Switch Operating Mechanism

TYPE LCB SWITCHES

means by which the customer may padlock the switch to prevent unauthorized operation.

In special cases these switches may be provided with electrical or key type mechanical interlocks arranged in conjunction with circuit breakers on the secondary side of the power center to prevent opening the switch when a low voltage circuit breaker is in the closed position.

INSTALLATION

When making the installation it is advisable to check the switch by operating it a few times to be sure that all parts move freely. Check particularly the operation of the quick-break blades and the push button latching mechanism.

If an electrical interlock is supplied, any necessary connections to the low voltage breaker and source of supply should be made and the operation of the interlock should be checked. If a key type interlock is supplied, check to be sure that switch and breaker interlocks are keyed alike. The extra key should be removed from the power center and

retained by a responsible person for use only in cases of emergency.

OPERATION

The switch is unlatched by pressing the push button mounted near the operating handle. The switch handle should then be moved to the desired position in a single positive movement.

In a closed position most of the current flows through the main blade. A very small proportion of the current flows through the quick-break blade in the arc chute. On opening the switch, as the contacts on the main blade separate, all current is transferred momentarily to the quick-break blade which is maintained in the circuit by means of high pressure fingers within the arc chute. As the main blade continues to open the angle of the quick-break arm continues to widen until a stop prevents further movement. At this point the quick-break blade is pulled from the pressure contacts within the arc chute and, aided by a torsional spring at the pivot point, snaps open at high speed regard-

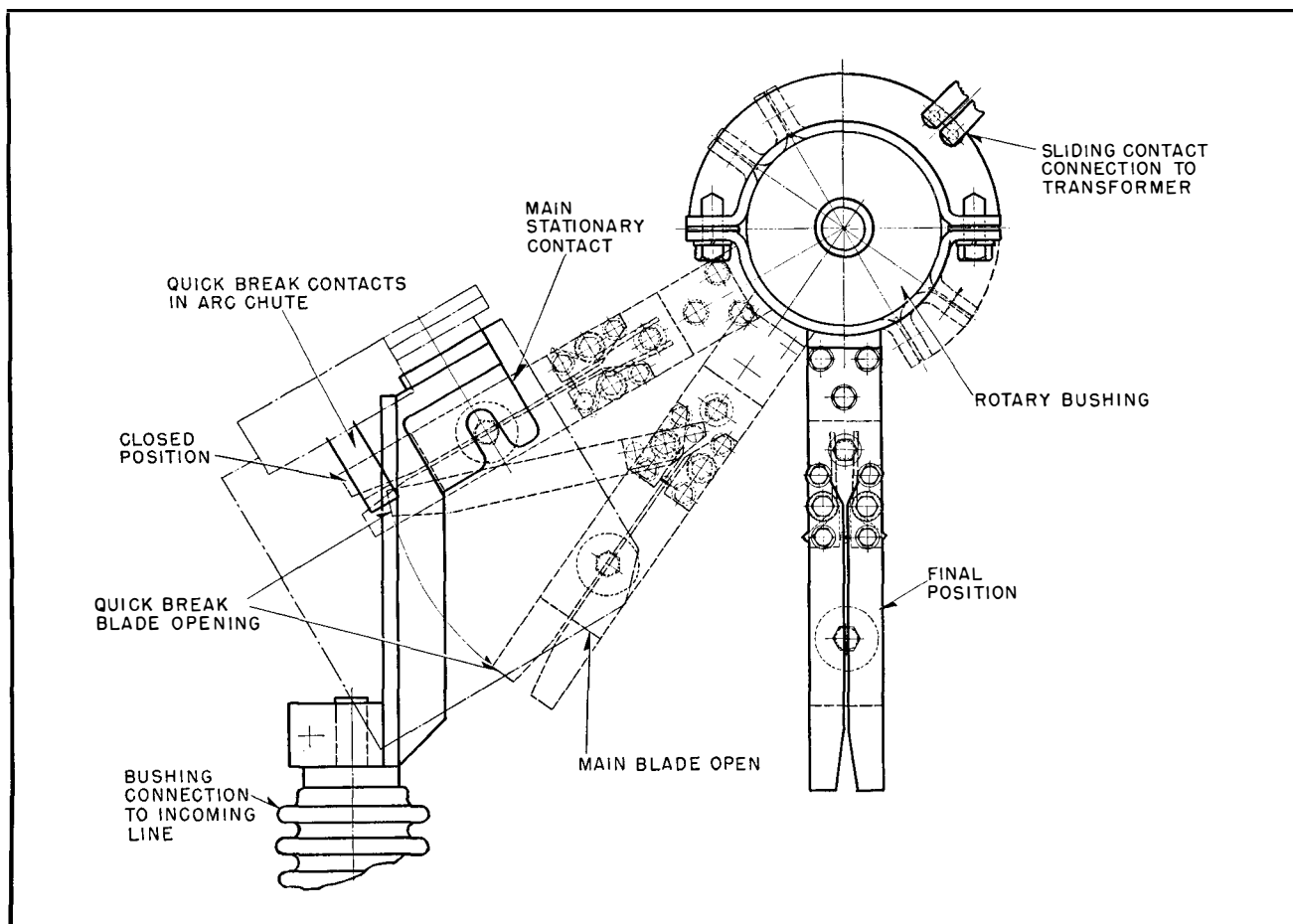


FIG. 3. Quick Break Mechanism Operation

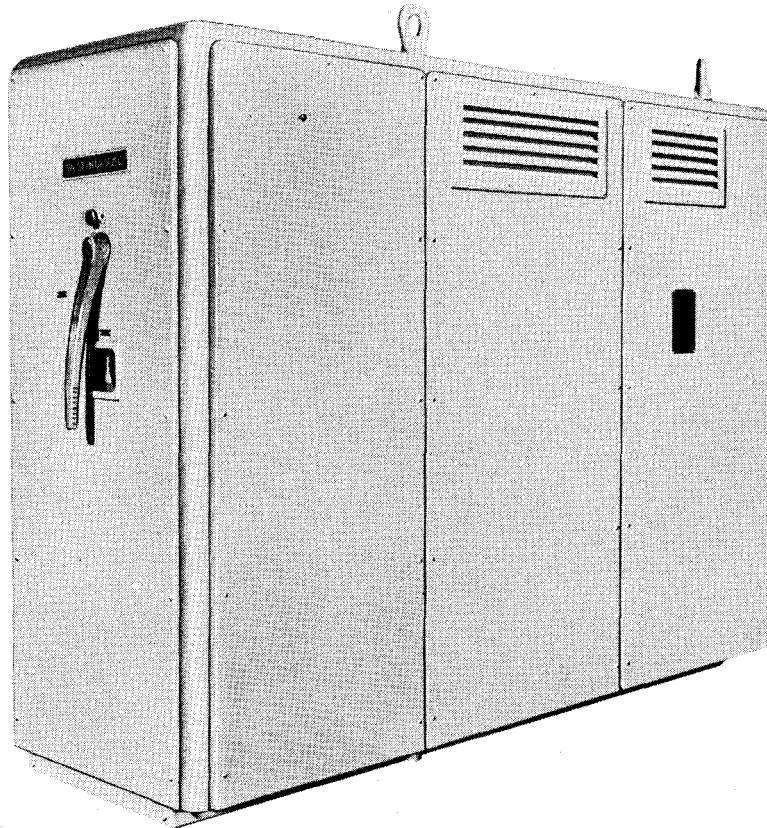


FIG. 4. Typical Installation of an LCB Switch

less of the speed at which the switch handle is operated.

The heat of the arc, meanwhile, releases a blast of non-ionized gases from the lining of the arc chamber. This combination of quick-break and "De-ion" action quickly snuffs out the arc and the circuit is safely disconnected.

MAINTENANCE

Periodic examination should be made at least once a year to keep the switch in first-class operating condition and to assure trouble free operation. Any badly eroded arc chutes or defective contact parts should be replaced.

Under normal conditions of operation approximately 500 operations of the switch may be expected when breaking load current of 100 amperes at 15 KV, 200 amperes at 7.5 KV, or 400 amperes at 2.4 KV before replacement of current interrupting parts is required.

RENEWAL PARTS

If renewal parts are required, order from the nearest Westinghouse Sales Office, giving description of parts wanted, with transformer serial number and rating as stamped on transformer instruction plate.



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DESCRIPTION • INSTALLATION • OPERATION

INSTRUCTIONS

LOAD BREAK AIR SWITCH TYPE RLB FOR POWER CENTERS

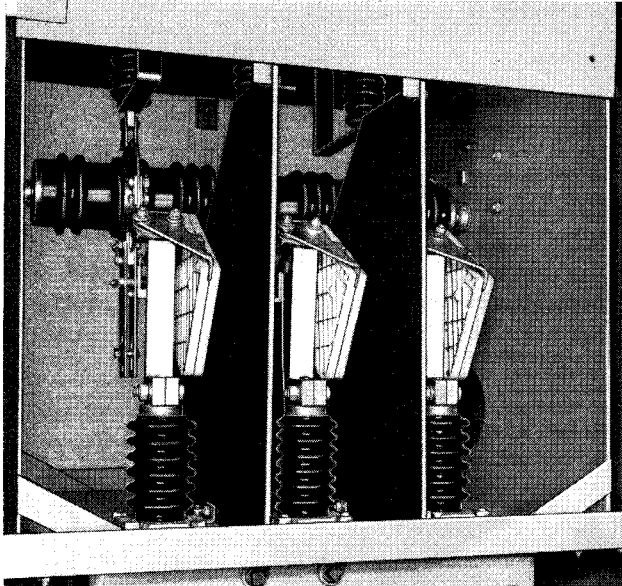


FIG. 1. Switch in Open Position

WESTINGHOUSE TYPE RLB SWITCHES FOR POWER CENTER TRANSFORMERS are three-pole, group operated, air insulated units and may be single-throw for single feeder disconnect service or double-throw for two feeder selector service. When used with air-cooled transformers the switch is usually mounted in a compartment of the power center transformer case. When used with liquid-filled transformers the switch is usually mounted in a separate case which is throat-connected to the transformer. Switches of suitable voltage rating are rated to interrupt 60 cycle load currents of 600 amperes at 5 KV, 200 amperes at 7.5 KV, or 100 amperes at 15 KV.

The switch blades are of the divided jaw type with silver to silver contact surfaces. The multiple line contacts on the blade at the jaw end produce a series of "knife-edge" or high pressure line contacts. Action of the switch keeps these contact lines clean and reduces maintenance. Contact pressure is maintained by beryllium copper spring washers which are factory-adjusted, then locked by castelated nuts.

The switch blades are mounted on a band which is babbitted to a porcelain insulating tube keyed to the operating shaft. Also babbitted to this porcelain tube with the blades is a segment of a disk for each phase. This disk segment slides in a stationary contact which is connected to the transformer winding. The disk segment makes contact with the wedge contact through the entire range of travel of the shaft.

Quick-break blades are mounted on the main blades and held in position by means of coil springs. A "De-ion" arc chamber with auxiliary contact is mounted on the stationary insulator with the main contact.

The switch operating mechanism consists of a handle mounted on the end of the switch shaft which extends through the case and a suitable latching mechanism operated by means of a push button. The latching mechanism holds the switch in any normal operating position and provides a means by which the customer may padlock the switch to prevent unauthorized operation.

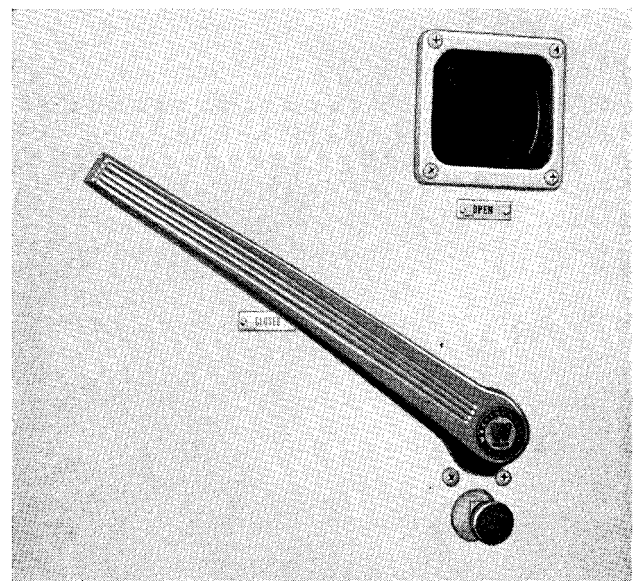


FIG. 2. Switch Operating Mechanism

TYPE RLB SWITCHES

In special cases these switches may be provided with electrical or key type mechanical interlocks arranged in conjunction with circuit breakers on the secondary side of the power center to prevent opening the switch when a low voltage circuit breaker is in the closed position.

INSTALLATION

When making the installation it is advisable to check the switch by operating it a few times to be sure that all parts move freely. Check particularly the operation of the quick-break blades and the push button latching mechanism.

If an electrical interlock is supplied, any necessary connections to the low voltage breaker and source of supply should be made and the operation of the interlock should be checked. If a key type interlock is supplied, check to be sure that switch and breaker interlocks are keyed alike. The extra key should be removed from the power center and retained by a responsible person for use only in cases of emergency.

OPERATION

The switch is unlatched by pressing the push button mounted near the operating handle. The switch handle should then be moved to the desired position in a single positive movement.

Caution: When closing the switch the operator should make certain that the switch is completely closed. This is necessary to insure proper seating of the quick-break blades in the arc chute contacts.

In a closed position most of the current flows through the main blade. A very small proportion of the current flows through the quick-break blade in the arc chute. On opening the switch, as the contacts on the main blade separate, all current is transferred momentarily to the quick-break blade which is maintained in the circuit by means of high pressure fingers within the arc chute. As the main blade continues to open the angle of the quick-break arm continues to widen until a stop prevents further movement. At this point the quick-break blade is

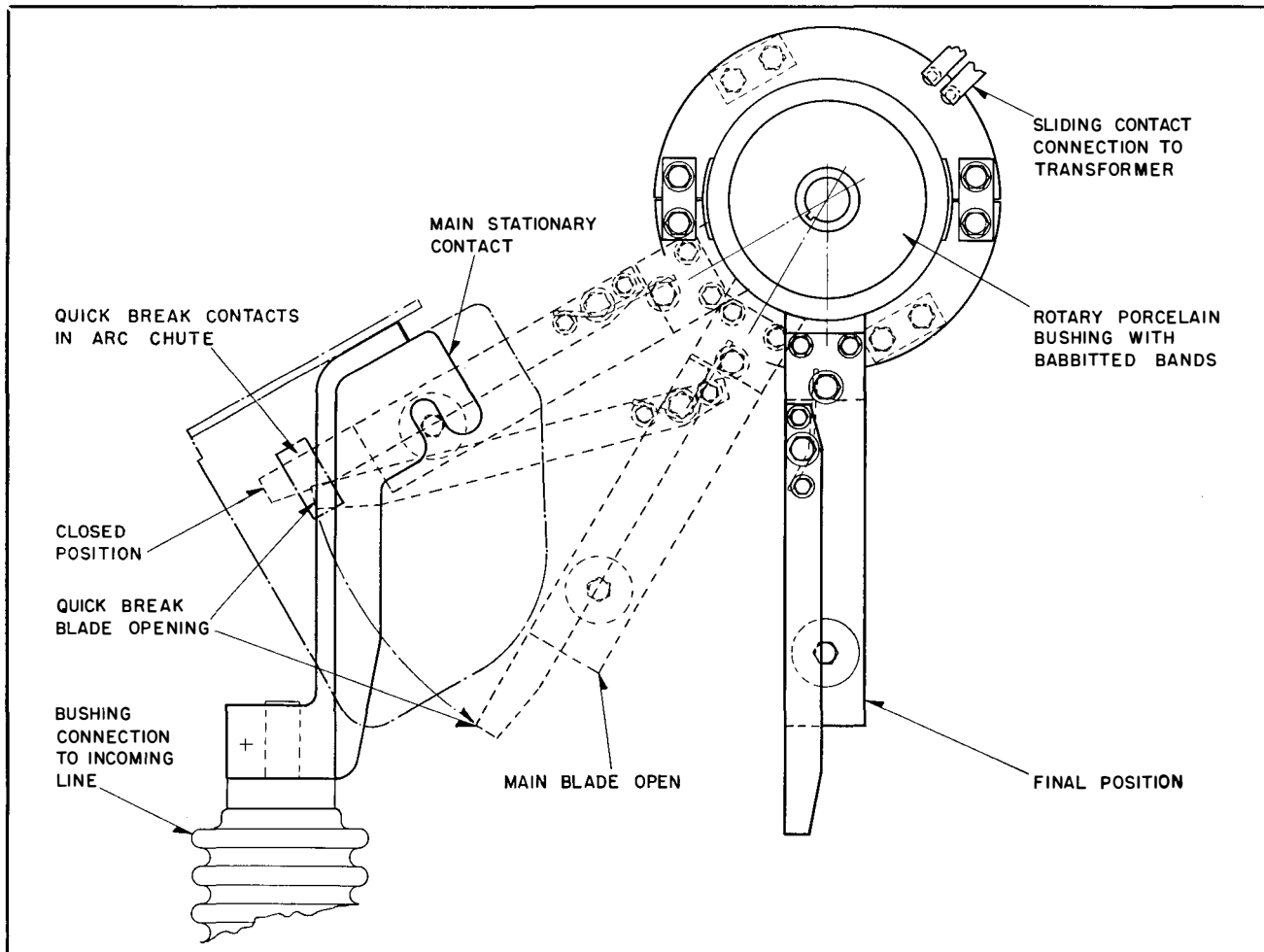


FIG. 3. Quick Break Mechanism Operation

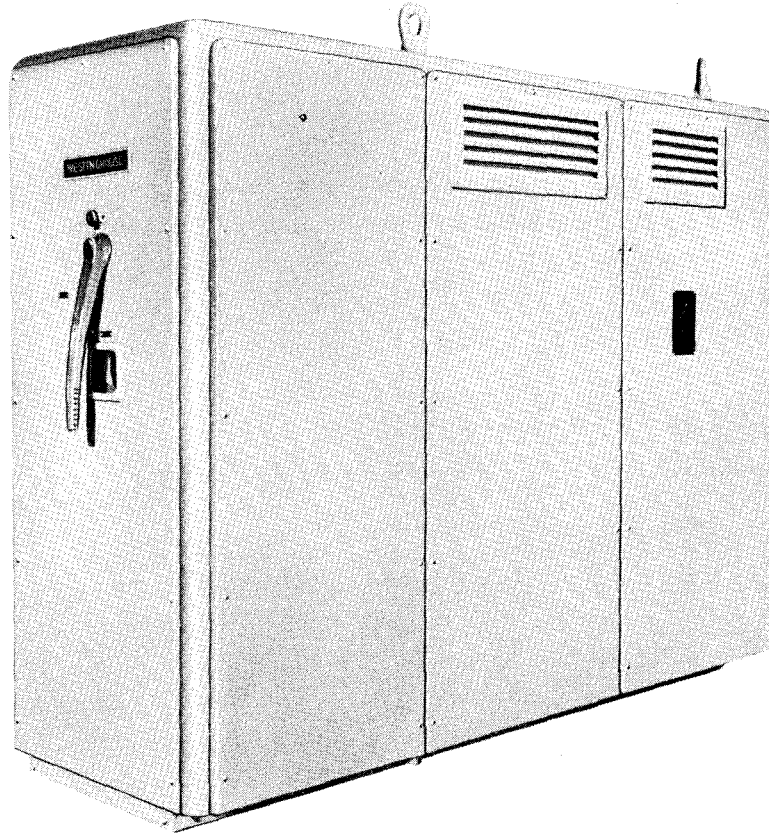


FIG. 4. Typical Installation of an RLB Switch

pulled from the pressure contacts within the arc chute and, aided by a torsional spring at the pivot point, snaps open at high speed regardless of the speed at which the switch handle is operated.

The heat of the arc, meanwhile, releases a blast of non-ionized gases from the lining of the arc chamber. This combination of quick-break and "De-ion" action quickly snuffs out the arc and the circuit is safely disconnected.

MAINTENANCE

Periodic examination should be made at least once a year to keep the switch in first-class operating condition and to assure trouble free operation.

Any badly eroded arc chutes or defective contact parts should be replaced.

Under normal conditions of operation approximately 500 operations of the switch may be expected when breaking load current of 100 amperes at 15 KV, 200 amperes at 7.5 KV, or 600 amperes at 2.4 KV before replacement of current interrupting parts is required.

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