INSTRUCTIONS

KEY-INTERLOCKS

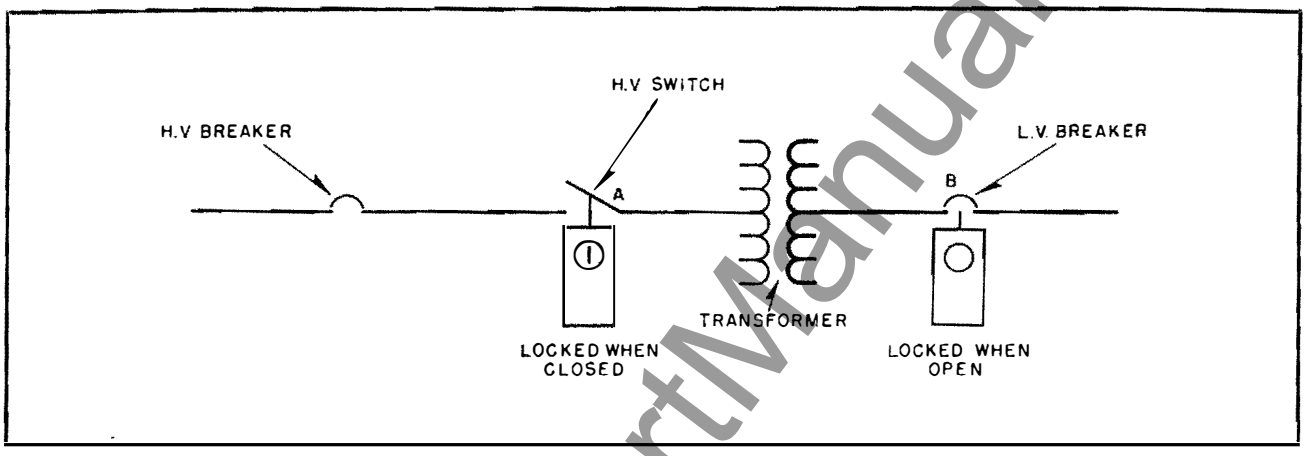

FIG. 1. Two Key-Interlocks Used on Mag Break* Switch.

The sketch above shows the interlocking system normally used to interlock low voltage breaker and high voltage switch. When the switch is closed the interlock A can be locked and key removed. Then interlock B can be unlocked and breaker closed. Key is then retained. High voltage switch cannot be operated.

To operate high voltage switch:

1. Open low voltage breaker.

2. Turn key in interlock B to lock breaker in open position and remove key.

3. Insert key in interlock A, turn key to unlock switch.

4. Move switch to open position. Key is then retained in interlock A.

The above covers a magnetizing-current breaking switch. If a disconnect switch is supplied, a third interlock is installed on the high voltage breaker per schematic diagram in Fig. 2.

This system prevents operating the high voltage switch unless breakers "A" and "B" are both open.

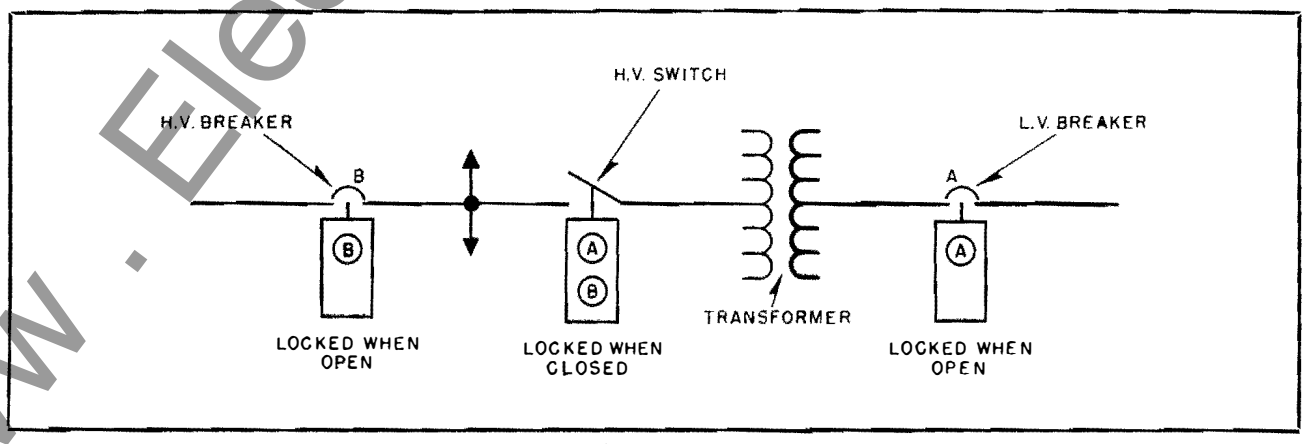

FIG. 2. Three Key-Interlocks Used on Disconnect Switch.

SUPERSEDES I.L. 46-723-17

*Magnetizing-Current Breaking

NOVEMBER, 1952

To operate high voltage switch:

1. Open breakers "A" and "B".

2. Turn keys in interlock to lock breakers in open position and remove keys.

3. Insert both keys in high voltage switch interlock and turn both keys to unlock switch.

4. Move high voltage switch to open position; keys are then retained.

Other and more complicated arrangements of interlocks are used to accomplish a particular system of interlocking. These are usually extensions of the true lock system and are designed to suit each installation.

Each interlock is furnished with a key and in systems involving more than one pair of interlocks the keys and locks are identified with an interchange number.

After installation the extra keys should be removed from the system and retained by a designated responsible person.

In cases where locks are installed with mounting bolts exposed, the bolts are furnished with drilled heads. A meter seal should be installed through these bolt heads to indicate any possible tampering with the locks.

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INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

LOAD BREAK AIR SWITCH

Type LCB for Power Centers

THE WESTINGHOUSE TYPE LCB SWITCH for power center transformers is a three pole, group operated, air insulated, single throw link type switch. Selector service may be obtained by the tandem use of two switches tied to a common transformer bus. When used with air cooled or liquid filled transformers the switch is mounted in a separate free standing compartment which is bolted to the power center transformer either directly or through a transition compartment. Switches of suitable voltage ratings are rated to interrupt 60 cycle load currents of 600 amperes at 5 KV and below, 200 amperes 7.5 KV, and 100 amperes at 15 KV.

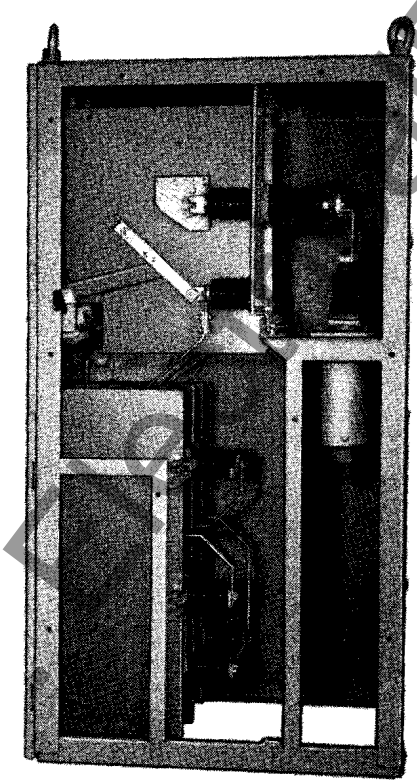

FIG. 1. Switch in Open Position

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The switch blades are of the divided jaw type with silver to silver contact surfaces. The face of the switch blades are serrated at the jaw end to 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 and then locked by castellated nuts.

The switch blades are mounted on separate post type insulators with a Micarta ® operating link connecting each of the switch blades to a common steel operating shaft for gang operation.

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 switch tongue bushing.

The switch operating mechanism includes a detachable handle mounted inside the operating door on the front of the switch case. The door latch has a lock on it to prevent unauthorized operation of the switch.

In special cases these switches may be equipped with electrical or mechanical key type interlocks arranged in conjunction with circuit breakers on the secondary side of the power center to prevent opening the switch when a load is on the transformer.

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 as to the parallel operation of all three blades.

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.

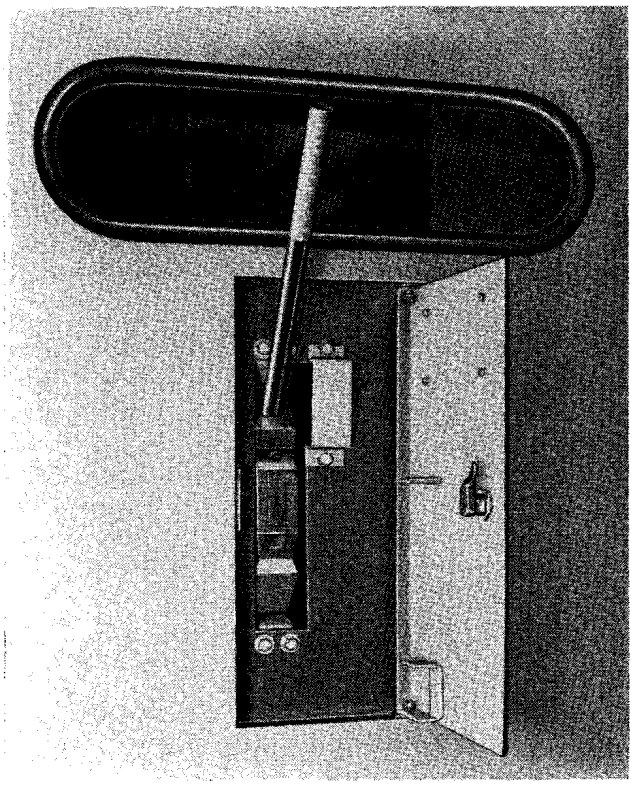

FIG. 2. Switch Operating Mechanism

OPERATION

The door to the switch operating mechanism must be unlocked and the handle withdrawn from the clip on the back of the door. Insert the handle into the socket on the operating rod and move the switch to the desired position. The switch should be operated in a snappy, positive manner.

Caution: This switch should be operated in a snappy positive manner so as to completely close or open the switch with one motion.

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

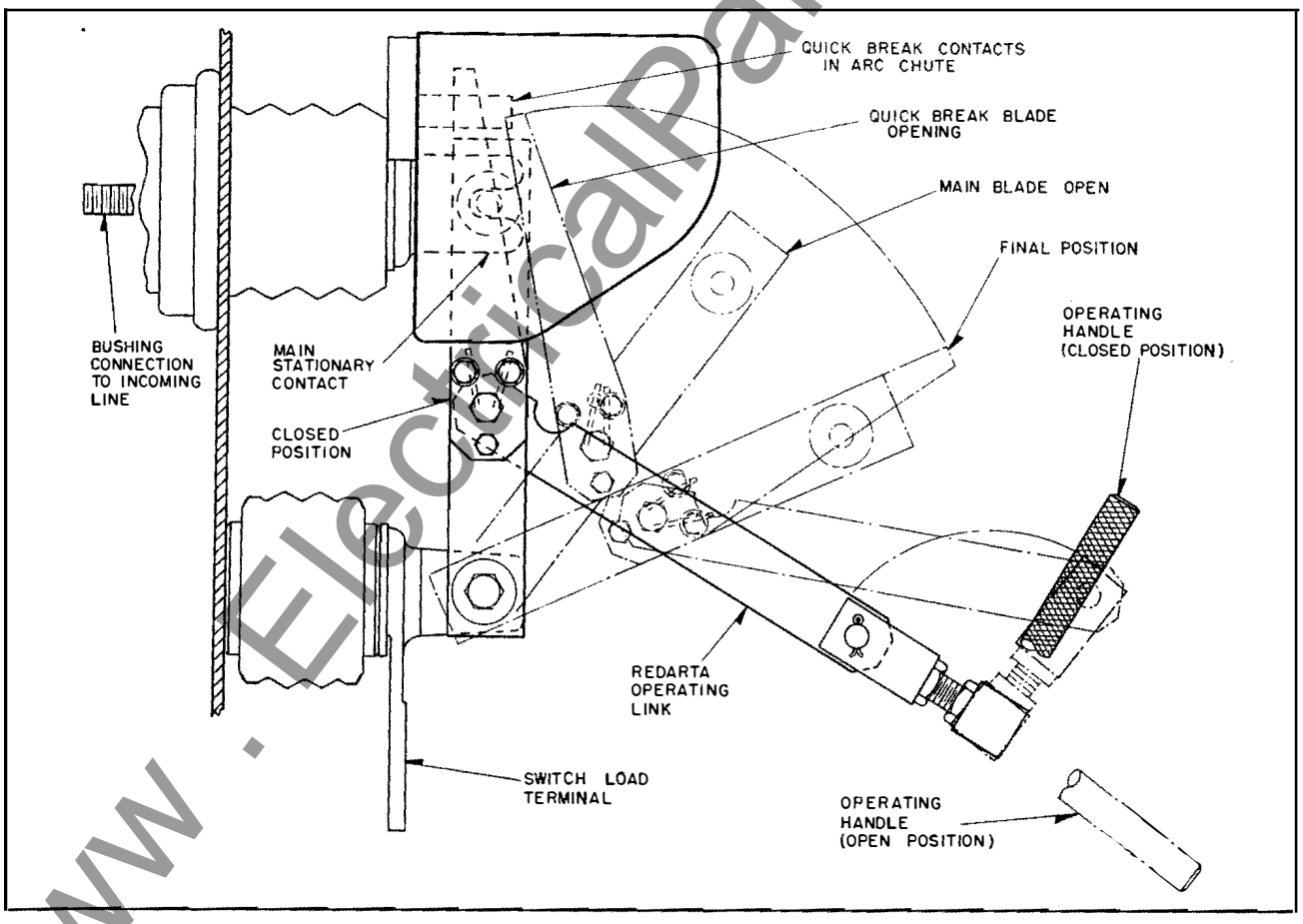

FIG. 3. Quick-Break Mechanism Operation

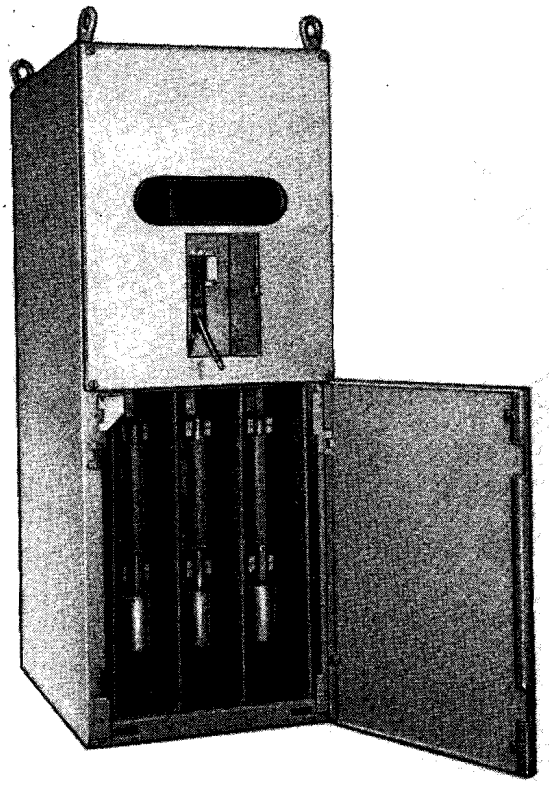

FIG. 4. Front View of an LCB Switch

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.

If the switch has fuses, it will be mechanically interlocked to prevent opening the fuse access door, until the switch has been placed in the open position. The switch, as long as the fuse access door is open, will also prevent closing the mechanical interlock.

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 5 KV and below, 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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