INSTRUCTIONS FOR TYPE LG CIRCUIT BREAKERS

I-T-E CIRCUIT BREAKER COMPANY
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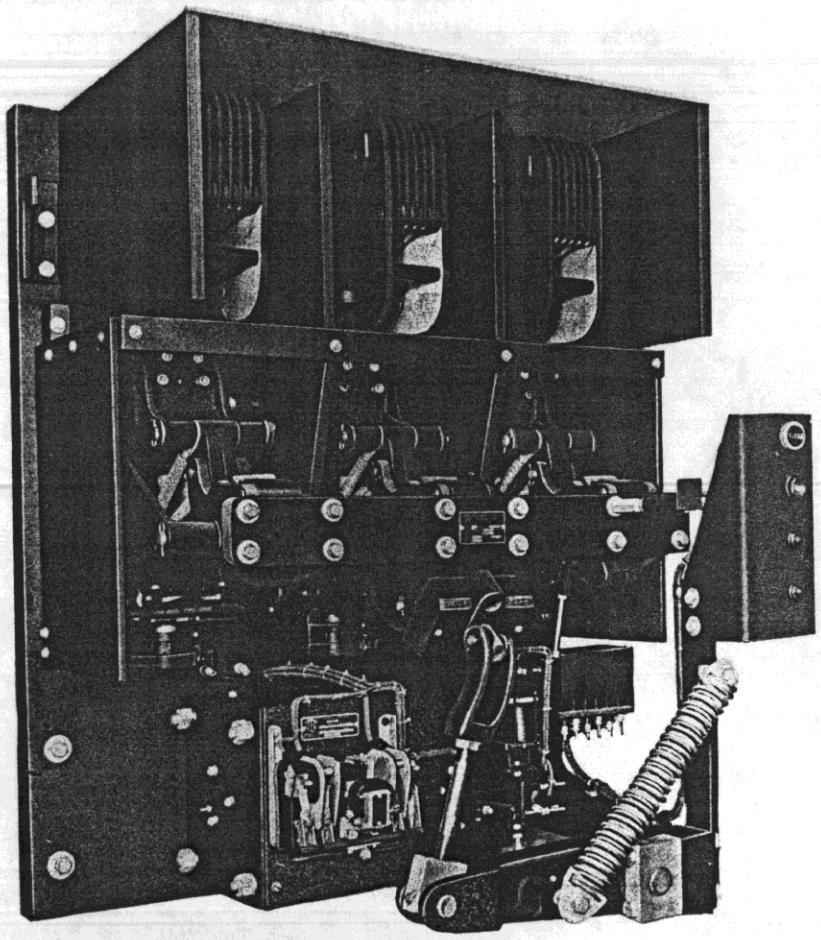


TYPE LG 2000-3000 AMPERE CIRCUIT BREAKER FOR DRAWOUT MOUNTING, SHOWING ARRANGEMENT OF STANDARD DEVICES

12251-R

INTRODUCTION

The recipient of this instruction bulletin should carefully read and follow its contents as to the operation and maintenance of the type LG circuit breakers. It is suggested that this bulletin be filed in a convenient place to keep all the information relative to the circuit breakers. By carefully following these instructions, the life and usefulness of the equipment will be prolonged.

The type LG circuit breaker was designed for heavy duty service in which the number of operations are relatively few and where high interrupting ability is needed without great operating speed. The type LG is most apt to be used as a main breaker, as a bus tie or exceptionally large feeder breaker. In such service the breaker must carry full load continuously for long periods of time with low temperature rise.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the I-T-E Circuit Breaker Company.

INSTRUCTIONS FOR OPERATION AND MAINTENANCE OF TYPE LG CIRCUIT BREAKERS

GENERAL CONSTRUCTION

Basically each pole consists of a main current carrying solid bridge, protected by secondary and arcing contacts. The bridge is removable and replaceable. The complete pole, mounted in an individual frame or housing, is operated through a double toggle system from either a manual operating handle or solenoid. The frame or housing encloses a direct-acting series trip device which can be adjusted easily and accurately.

Multi-pole circuit breakers, in which Fig. 1 shows a section view, have the closing arms of all poles rigidly tied together by a horizontal insulated bar so that the poles move in unison. The tripping movement of any pole is communicated from the overcurrent trip coils to the latch mechanism through a horizontal insulated bar. A single latch with trip-free mechanism is mounted in the pole unit which carries the operating arm or handle. A buffer is mounted in the upper part of the operating arm to absorb the momentum of the mechanism at the end of the opening movement. This device combines friction with spring action and provides shock absorbing effect in direct proportion to the speed of opening. The buffer completely eliminates the possibility of bouncing and reestablishing the arc.

The solenoid assembly is mounted on the lower portion of the circuit breaker panel. This assembly consists of a horizontal solenoid unit and several auxiliary devices. A shunt trip device for electrical remote tripping of the circuit breaker operates through an auxiliary switch. A control relay energizes the solenoid closing coil, and a "b b" switch operates the control relay.

SAFETY PRECAUTIONS

Before making any adjustments or replacements, make certain that all control circuits have been *de-energized*. If circuit breaker is drawout type mounted in a switchboard, withdraw breaker completely or to test position. If breaker is rigidly mounted, *de-energize* bus and disconnect cables from leads if there is a power source on the load side. Avoid injury that may be caused by unexpected operation. The heavy mechanical members operated by strong springs are restrained by sensitive latches.

MAIN CONTACTS

The main contacts, Fig. 1, consist of solid copper bars to which silver alloy inserts are brazed. Two bars, together with their associate springs and travel limiting pins are assembled in a bracket to form a complete contact unit. One or more contact units may be attached to each bridge arm and are brought in contact with the upper and lower terminals by a force multiplying system of toggles.

Adjustments. During the final closing of the breaker, the main contacts should bear against the terminal blocks so that the contact springs are compressed 3/32 of an inch in addition to their initial compression.

To determine the compression of the contact springs, slowly close the breaker until the main contacts touch then measure the distance from the bridge arm to the panel. Complete the closing operation and check the measurement of the bridge arm away from the panel. (This measurement should be taken at a point midway between the upper and lower contact blocks.) If the contact pressure is light, remove the contact unit bolts and insert a thin shim at point "a," Fig. 1. Tighten all bolts after making any adjustments.

Maintenance. The main contacts should not show any serious burning. If they do, the arcing and secondary contacts are probably in bad condition, or the circuit breaker is opening at currents beyond its interrupting capacity. A very slight burning or "pitting" does no harm. It is caused by the current path through the main contacts having a lower resistance than that through the secondary or arcing contacts.

The dark brown tarnish that often appears is silver sulphide, caused by coal smoke or gas in the air. Silver polish may be used if the surface is very dirty. We do not recommend the use of file or sandpaper on these contacts.

Overheating. The standards for circuit breakers permit a temperature rise at the terminals of 30°C. above an ambient or room temperature of 40°C. An additional 15°C. is permitted in enclosed switchgear.

On the Fahrenheit scale, a temperature rise of 54°F. above an ambient or room temperature of 104°F. is permitted.

Overheating is often caused by a loose connection between the circuit breaker and the bus, or a loose bolted or soldered joint at a cable terminal.

It is important not to let loose joints feed heat into a breaker. One way to detect a possible source of overheating is to take the millivolt drop between the contacts. Pointed terminals carrying a low voltage direct current are applied on each side of the contacts and the drop in thousands of a volt is read on a millivoltmeter. This drop should not be more than ten millivolts.

SECONDARY CONTACTS

The secondary contacts (Fig. 1) in type LG circuit breakers provide a secondary path for the current and are of a blow-on construction. Secondary contacts should always open after the main contacts, but before the arcing contacts.

Maintenance. Slight burning of the secondary contacts is not harmful. Any slight burns may be removed by careful use of a fine file. When fine-filing secondary contacts, their overlap must be maintained, that is, they must still open well after and close before the main contacts. If not, their usefulness is lost. Be careful not to let any filings get into the bearings or other parts of the breaker. Place a piece of cloth under the contacts and catch the filings in this cloth. If possible, blow out the breaker with dry air from an air hose after the work is done.

If the secondary contacts are badly burned away, the contacts should be replaced, and the sequence of contact to "make" and "break" carefully checked.

ARCING CONTACTS

The arcing contacts (Fig. 1) are also of blow-on construction and have a wiping action. Arcing contacts should always open last and close first when the breaker is opened or closed. If the arcing contacts make after the secondary contacts, excessive burning of the main and secondary may result. In addition to opening last, the arcing contacts on all poles of the breaker should open about the same instant.

Maintenance. It is seldom advisable to file or otherwise smooth down arcing contacts. A moderate amount of burning is to be expected, and does not interfere with proper performance. Badly burned arcing contacts should be replaced and sequence of contacts carefully checked.

ARC CHUTES

The arc chute (Fig. 1) used on type LG circuit breakers is an efficient form of the magnetic blow-out structure. In this structure, magnetic vanes, mounted outside insulating barriers on each side of the contacts, are magnetized upon opening of the arcing contacts, and the field set up by the current forces the arc into an extinguishing chamber. Thick plates in the chamber cool the arc and create a turbulent gas condition which forces a cooling draft across the arc core. Arcing time is shortened; the arc is confined; pressure of gases created by the arc is reduced, and heavy currents are safely handled in small space.

On steel enclosed breakers, a hooded barrier assembly covers the entire top and sides of the arc chute assembly.

It will be necessary to remove arc chutes to reach the arcing contacts. Before putting back the arc chutes, inspect them for any loose, broken or burned parts. Liners and side plates burn away in severe service, particularly on d-c circuits, and may need replacing. When the arc chutes are installed, be sure that they are firmly attached to the circuit breaker panel by their attaching studs.

OPERATING MECHANISM

The operating mechanism (Fig. 1) of the breaker is a system of links forming two toggles in series to provide a high contact pressure with relatively small operating force. The bridge arm is pivoted near the panel in the housing and carries a short toggle link which is also connected through a pair of horizontal links to the upper part of the housing.

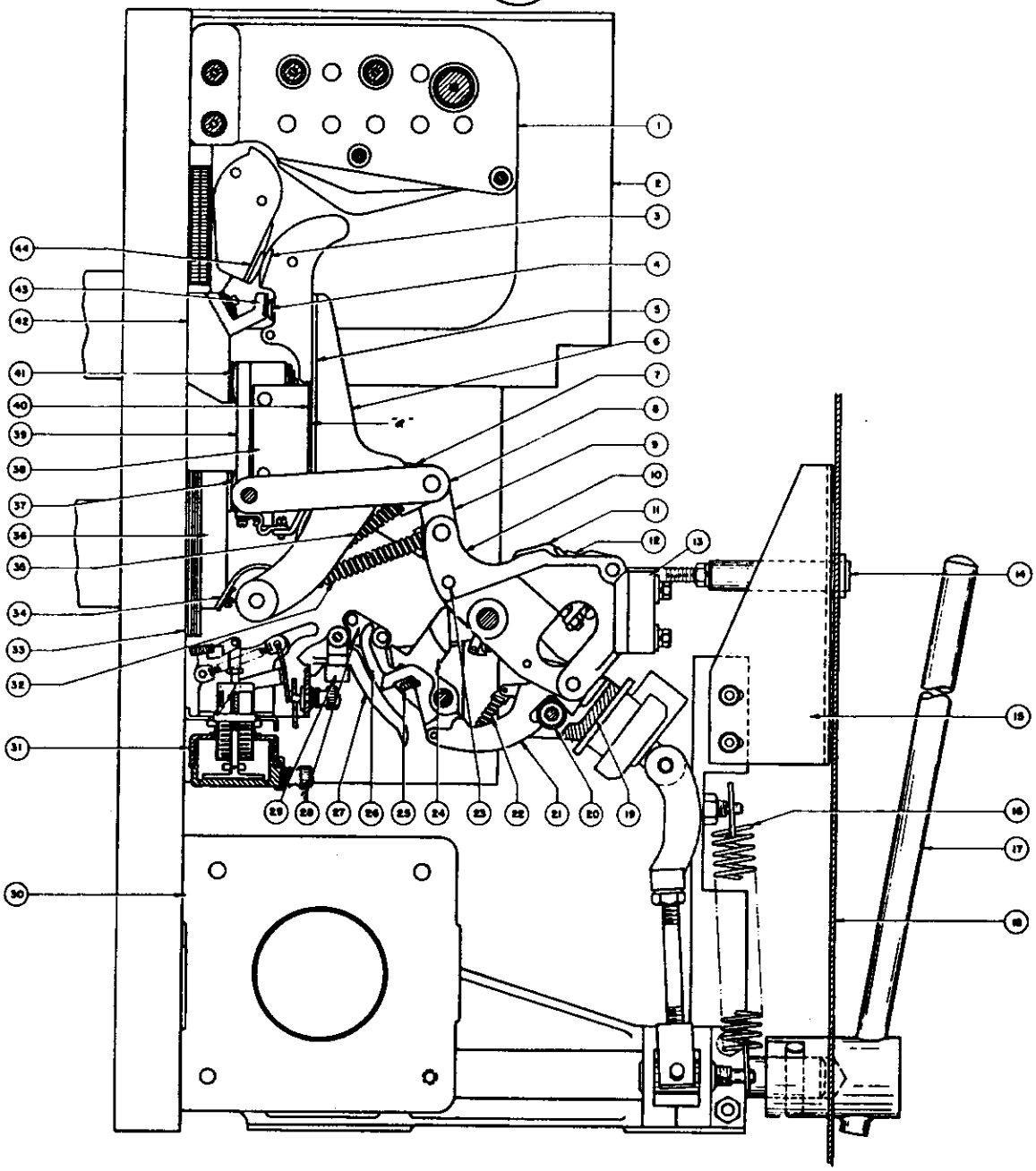
A second system of toggles is made up of a second short link pivoted on the pin common to the two other links and the inner end of the operating arm. Both systems of toggles approach center when the breaker is closed. Springs, from the operating arm toggle pin to the bridge arm pivot pin, assist the spring of the contacts in opening the breaker quickly.

A single latch mechanism may be used for all poles. A tripper bar is provided to transmit the movement of any protective device to the main latch to trip the breaker.

Trip Free Construction. The breaker operating arm and the throw-in arm are connected by a compound latch which may be released by any tripping device at any time during closing (that the contacts are touching).

A roller on the throw-in arm is engaged by the main latch pivoted on the operating arm. The angle of the latch surface forces it away from the roller. This action is normally prevented by the auxiliary latch pivoted to the main latch, which engages a latch plate secured to lugs on the throw-in arm.

This plate must be so positioned that, when the throat of the main latch is against the roller, there is approximately 0.020 inch between the surface of the auxiliary latch and plate. The springs assist in engaging the latches, and stops are provided for limiting their movement. The circuit breaker is normally held in the closed position by the hook trigger, pivoted on the throw-in arm. The hook trigger engages a latch plate which is bolted to the right hand housing. This hook is released during the opening of the breaker, when the kick-off stud on the operating arm strikes the cam surface of the trigger.



INDEX	DESCRIPTION
1	ARC CHUTE
2	BARRIER
3	ARCING CONTACT (Moving)
4	SECONDARY CONTACT (Moving)
5	BRIDGE CONDUCTING STRIP
6	BRIDGE ARM
7	BRIDGE ARM TOGGLE LINK
8	OPERATING LINK
9	OPERATING ARM TOGGLE LINK
10	OPERATING ARM
11	BUFFER SHOE
12	BUFFER SLIDE
13	CONNECTOR BAR
14	MANUAL TRIP BUTTON
15	TRIP BUTTON & CLOSE SWITCH BRACKET
16	CLOSING ARM RETURN SPRING
17	MANUAL CLOSING SHAFT
18	DEAD FRONT SHEET
19	THROW-IN ARM
20	MAIN LATCH ROLLER
21	MAIN LATCH
22	MAIN LATCH SPRING

INDEX	DESCRIPTION
23	KICK-OFF STUD
24	HOOK TRIGGER
25	AUXILIARY LATCH PLATE
26	AUXILIARY LATCH
27	TRIGGER TRIPPER
28	HOOK TRIGGER LATCH PLATE
29	TRIPPER BAR
30	COIL POT SUPPORT
31	DUAL MAGNETIC OVERCURRENT TRIP
32	OPERATING SPRING (Center)
33	MAGNET
34	BRIDGE CONDUCTING TAIL
35	OPERATING SPRING (Outside)
36	LOWER TERMINAL
37	LOWER BRIDGE CONTACT
38	BRIDGE CONTACT BRACKET
39	BRIDGE
40	BRIDGE SHIM
41	UPPER BRIDGE CONTACT
42	UPPER TERMINAL
43	SECONDARY CONTACT (Stationary)
44	ARCING CONTACT (Stationary)

Fig. 1--TYPE LG CIRCUIT BREAKER
Side Section View

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The latch tripper is pivoted to the housing, and carries the tripper bar which extends between the breaker poles and is actuated by the tripping devices. The operation of any protective device therefore moves the tripper bar. Movement of the tripper therefore will disengage the latch during closing or when closed.

The tripping action is therefore as follows: (A) the tripper bar moves the tripper against the auxiliary latch and disengages it from the latch plate, (B) this causes the main latch to slip off the roller and the breaker opens, (C) the stud on the operating arm releases the hook trigger and allows the throw-in arm to be lifted to re-engage the latches.

MANUAL CLOSING

Side Rotating Handle. Grasp the handle, then rotate left with enough force and speed so that the contacts close smartly without having the parts slam against their stops.

Maintenance Bar or Spade Handle. Lift the bar or handle until the latches engage, then press down until contacts close.

MANUAL TRIPPING

To manually trip the circuit breaker, push the trip button below the "close" button as shown in Fig. 2.

ELECTRICAL CLOSING

The direct current solenoid assembly as shown in Fig. 2 is located and mounted directly to the lower area of the circuit breaker panel. Such devices as a control relay, shunt trip, auxiliary switch, and a "bb" switch are attached to the solenoid housing and its support. The electrical connections for these devices can be found in Fig. 3.

The complete solenoid has been assembled so as to provide a direct electrical closing by mechanical linkage to the circuit breaker.

To Close Electrically, push the "close" button as shown in Fig. 2. Upon depressing this button switch, the "b b" switch opens, breaking the pick-up coil circuit of the control relay, which in turn energizes the solenoid operating coil.

To Trip Electrically, the shunt trip as shown in Figs. 2 and 4 provide a direct electrical means of tripping the breaker from some remote tripping point. Further description of this device can be found in section headed SHUNT TRIP.

Coil Replacement. Refer to SAFETY PRECAUTIONS before attempting any replacement operation. Disconnect coil leads from binding posts. Remove end plate with plunger tube plug by removing four nuts from pole piece studs. Remove gasket, leaving tube and plunger in place. Allow six inches from end plate for removal clearance of coil. Care must be taken when removing coil to prevent damage to guide tube.

After removing the coil, inspect the guide tube, removing any accumulation of dirt or oil. Lubricate plunger with a light oil and wipe clean. Grease all pins, replace coil, attach coil leads, washer and gasket. Align guide tube plug with tube. Replace end plate, and four nuts with their lockwashers, and tighten securely.

After replacing coil, check the wiring for shorts, grounds or wrong connections before operating electrically. Refer to diagram of connections, Fig. 3.

OPERATION OF DC SOLENOIDS FROM AC SOURCE

The dry plate rectifiers used for conversion of alternating current to direct current consist of a series of alternate treated copper and lead washers assembled on an insulated bolt.

It is characteristic of this type of rectifier that, for a definite load, the d-c voltage will decrease slightly with age. This aging gradually disappears so that the output finally becomes nearly constant. To compensate for this change it is customary to include in the circuit an adjustable resistance that may be reduced when necessary.

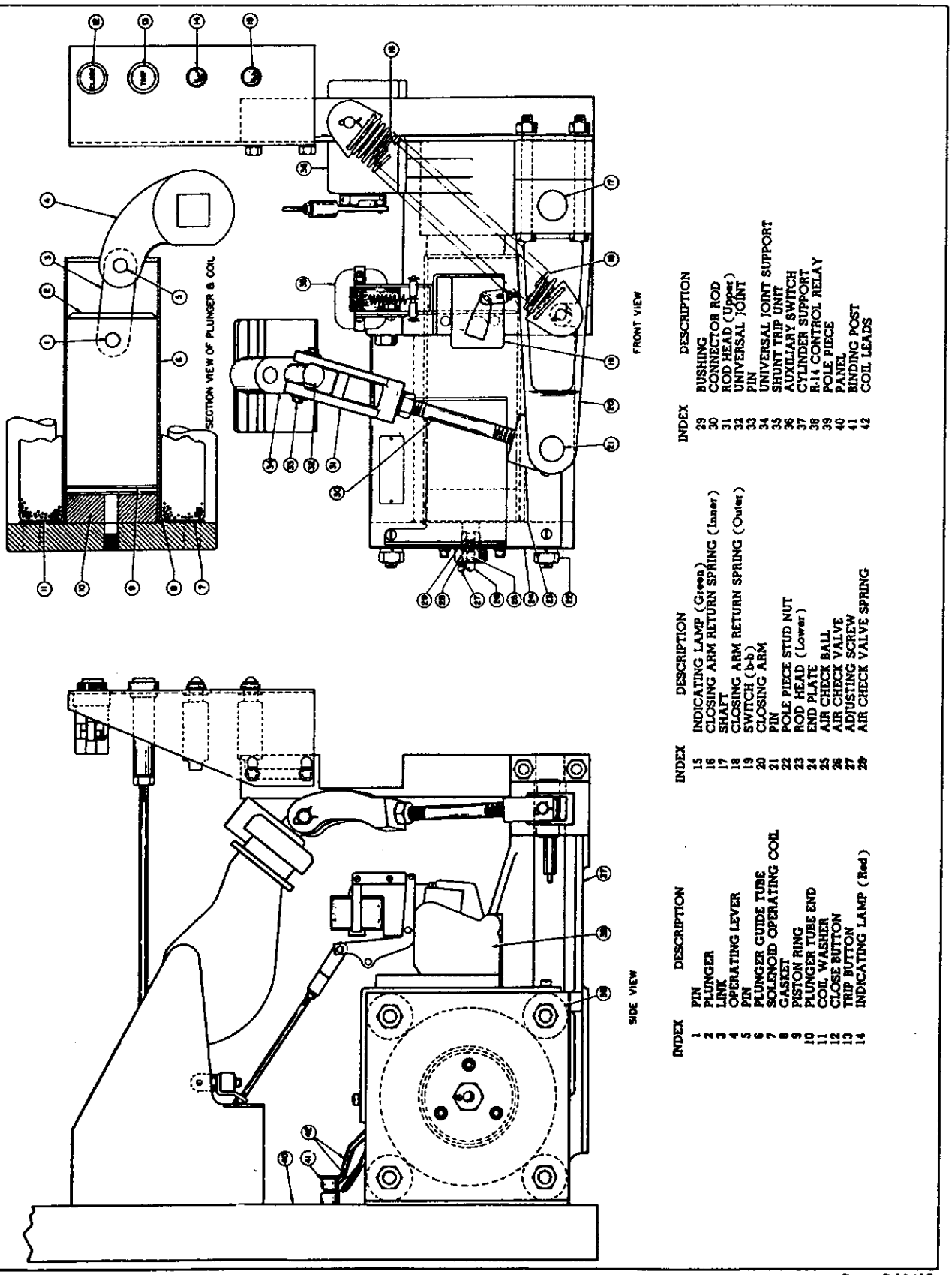
For higher control voltages, the series resistor provides a means of compensating for aging and reduces the a-c voltage to the rating of the rectifier. On voltages above 220 volts some resistance must be kept in the circuit to prevent damage to the rectifier.

In case of a failure or excessive heating of any unit of the rectifier, the whole group must be replaced, because a new unit and an old unit have different characteristics and an unbalanced loading will occur.

Rectifier aging should never cause failure on full control voltage. It will, however, increase the minimum voltage on which the circuit breaker will close. A small adjustment of the resistance should compensate for this condition.

CONTROL RELAY

The non-repeat control relay as shown in Fig. 2 has heavy duty contacts which are generally required to control the relatively large circuit drawn by the closing coil. Standard control switch contacts are not designed to handle the currents required for closing.



INDEX	DESCRIPTION
1	PIN
2	PLUNGER
3	LINK
4	OPERATING LEVER
5	PIN
6	PLUNGER GUIDE TUBE
7	SOLENOID OPERATING COIL
8	GASKET
9	PISTON RING
10	PLUNGER TUBE END
11	COIL WASHER
12	CLOSE BUTTON
13	TRIP BUTTON
14	INDICATING LAMP (Red)
15	INDICATING LAMP (Green)
16	CLOSING ARM RETURN SPRING (Inner)
17	SHAFT
18	CLOSING ARM RETURN SPRING (Outer)
19	SWITCH (b-b)
20	CLOSING ARM
21	PIN
22	POLE PIECE STUD NUT
23	ROD HEAD (Lower)
24	END PLATE
25	AIR CHECK BALL
26	AIR CHECK VALVE
27	ADJUSTING SCREW
28	AIR CHECK VALVE SPRING
29	BUSHING
30	CONNECTOR ROD
31	ROD HEAD (Upper)
32	UNIVERSAL JOINT
33	PIN
34	UNIVERSAL JOINT SUPPORT
35	SHUNT TRIP UNIT
36	AUXILIARY SWITCH
37	CYLINDER SUPPORT
38	R-14 CONTROL RELAY
39	POLE PIECE
40	PANEL
41	BINDING POST
42	COIL LEADS

Fig. 2—SOLENOID FOR TYPE LG CIRCUIT BREAKER

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Inasmuch as this circuit breaker is electrically trip free, the breaker contacts may be tripped to full open position at any point in the closing stroke of the solenoid. As long as the solenoid coil remains energized, the solenoid plunger will continue its motion to fully operated position regardless of whether circuit breaker contacts have been tripped open or not.

Further information for this control relay can be found in Bulletin 46813 on request.

SHUNT TRIP

The shunt trip device shown in Fig. 4 is used to trip the circuit breaker electrically from a remote control point without regard to the load conditions of the circuit.

A U-shaped magnet is energized by a coil of fine wire. An armature is pivoted on one of the magnet poles, and is attracted to the other pole to trip the circuit breaker latch. A spring normally holds the armature against a stop, providing a fixed air gap from the magnet. During its final movement, the armature moves a trip link which disengages the latch.

An insulated auxiliary switch is in series with the shunt trip coil. This switch is closed when the circuit breaker is closed and breaks the circuit when the breaker opens. The circuit may be energized for any source of suitable voltage. A normally open push button is connected in series with the coil for remote tripping.

Coil Replacement. Refer to SAFETY PRECAUTIONS before attempting any replacement operation. The coil may be removed by withdrawing the armature pin and taking out the armature. An insulating coil retainer and washer hold the coil in position.

DUAL MAGNETIC OVERCURRENT TRIP

The dual overcurrent trip device shown in Fig. 5 is a combination of the instantaneous and time delay overcurrent trip features, providing moderate overload protection with instantaneous short circuit protection.

The device is mounted on the circuit breaker panel directly beneath the pole to whose current it responds. Since all poles are rigidly connected for opening and closing response of the tripping device on one pole affects the action of all poles.

On continuous overloads, an armature fastened to a pivoted arm is attracted to a magnet. After a predetermined time delay, adhesive disc separates from the adhesive surface of cup, allowing the armature, to which the disc connected by plunger post, to move upward and trip the circuit breaker. The standard range of overcurrent tripping value is from 100 percent to 200 percent of the continuous ampere rating of the circuit breaker.

Calibration Adjustments. The air gap between armature and magnet is a maintained gap set at the factory. The range in calibration is obtained by varying the pull of springs when knob slides in slot of plate. To adjust the overcurrent trip value, loosen knob and slide to right or left until pointer is opposite desired current setting on calibration plate and tighten knob.

If the circuit breaker trips under starting loads, an increase in time delay setting is preferable to an increase in overcurrent setting. Time delay setting is governed by the amount of surface area in contact between the adhesive disc and bottom of cup.

The lowest setting that will permit the circuit breaker to remain closed under normal conditions should be used. Zero gives instantaneous tripping and 3 indicates maximum time delay.

An instantaneous trip spring is compressed to allow armature to trip the circuit breaker without the delaying action of the adhesive discs. At current approximately 12 times circuit breaker current rating a-c and 8 times d-c, spring is compressed by pull of armature. The armature may then move upward to trip the circuit breaker. Adjustment for instantaneous trip is made at the factory and should not be changed.

TRANSFORMER OVERCURRENT TRIP

The transformer overcurrent trip device shown in Fig. 6 may be either instantaneous, or dual trip types. This device is standard on a-c breakers above 3000 ampere capacity and is actuated by the secondaries of current transformers usually installed on the load side rear of the circuit breaker. These devices are used for direct tripping of circuit breaker where relatively small power is required, or where a spring trip is used to disengage the circuit breaker latch. An adjustment is provided for changing the armature air gap so that the tripping currents may be varied over a 100 to 200 percent range. The armature is provided with an adjustable device for delaying the tripping action on momentary overcurrents.

The Dual Overcurrent Trip as shown in Fig. 6 (b) consists of a horizontal magnet core extending from its panel and is surrounded by a coil which is connected to a current transformer located back of the breaker panel.

At each end of the magnet core, pole pieces extending downward to two armatures, one straddling the other. Springs lift the inside armature at its pivot to prevent vibration on a-c currents. The outer end of the armature is adjustably supported and a calibration plate is marked in tripping currents.

The outside armature will trip the breaker instantaneously on approximately 12 times the full load current or on short-circuit. This armature pivots about its own pin and is independent of the time delay device.

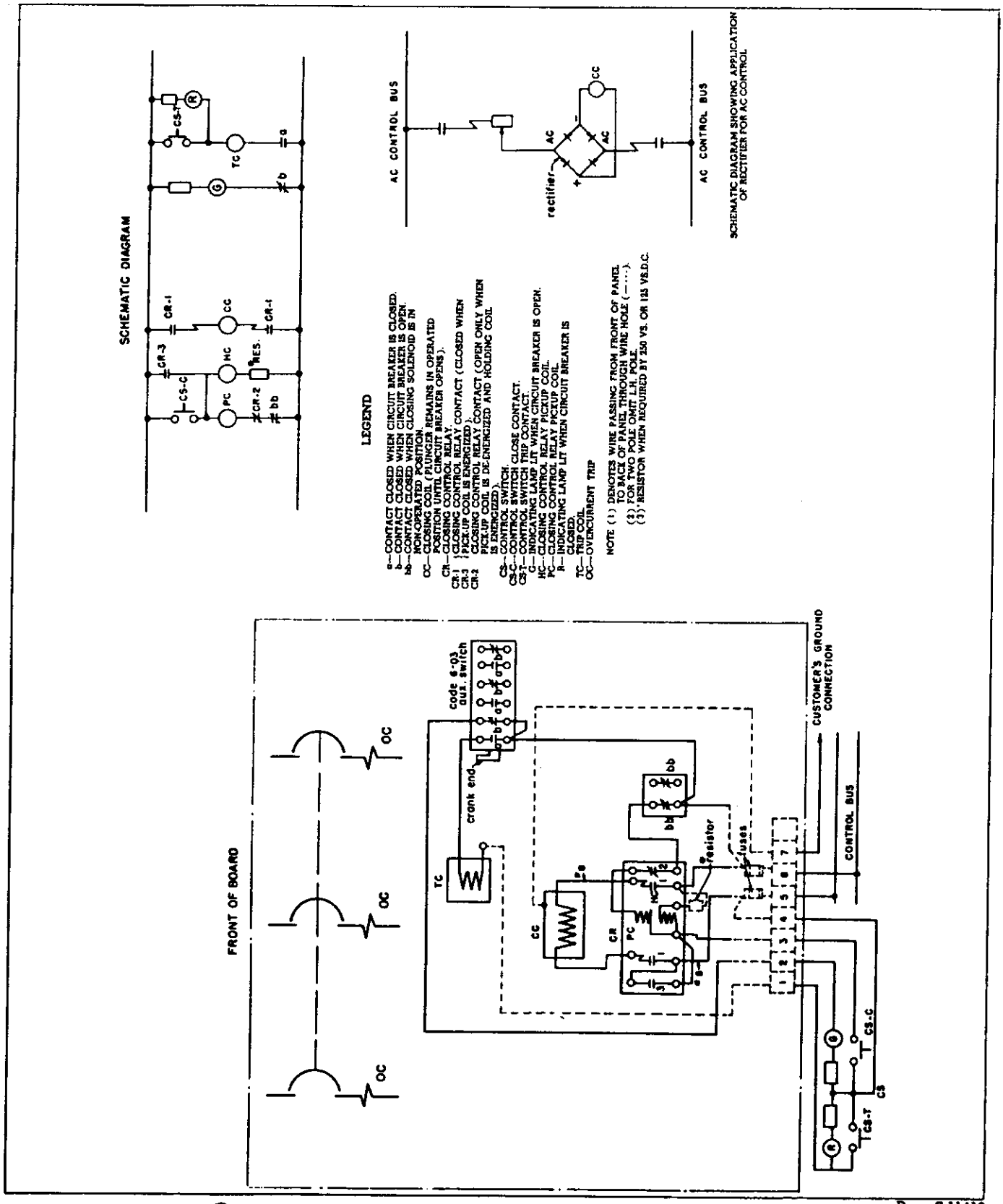

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Fig. 3—DIAGRAM OF CONNECTIONS FOR TYPE LG SOLENOID OPERATED CIRCUIT BREAKERS

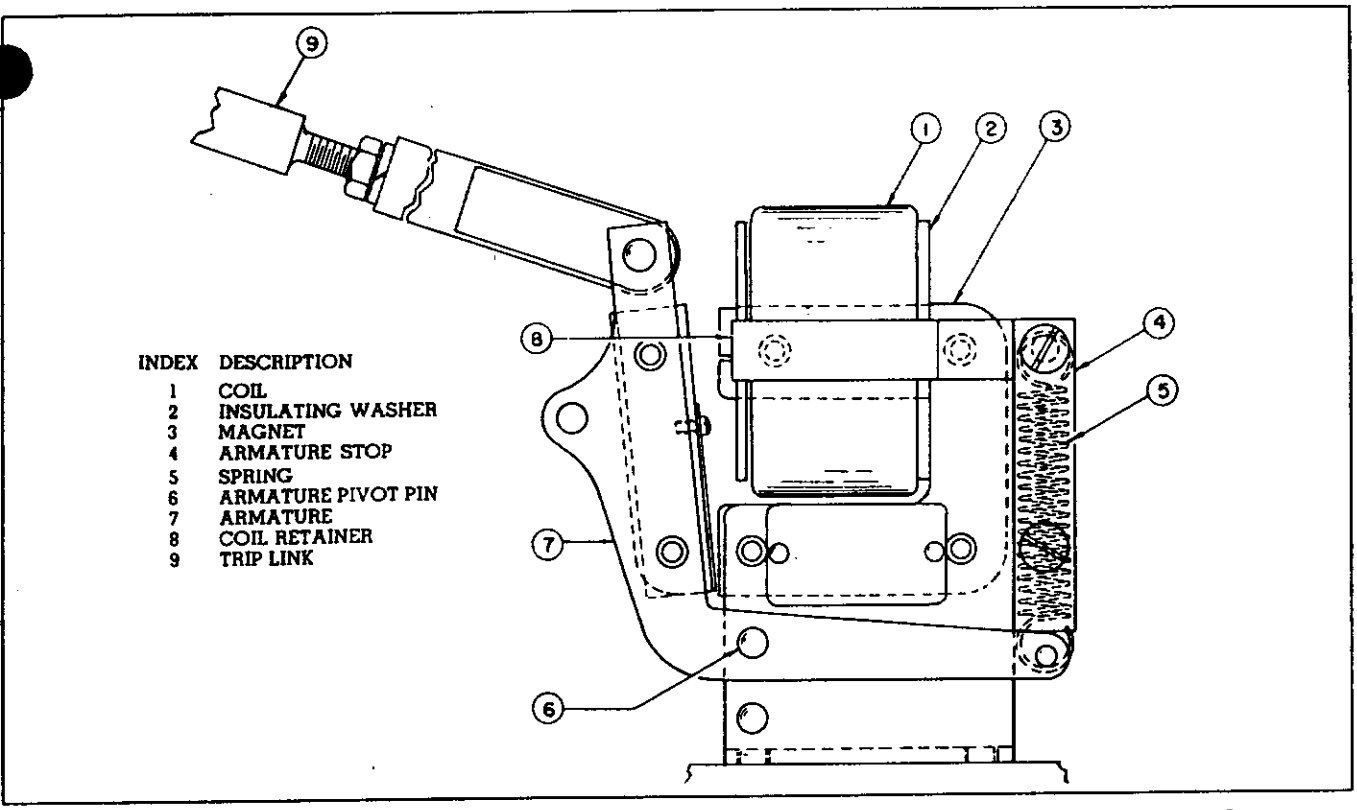

Fig. 4—SHUNT TRIP FOR TYPE LG CIRCUIT BREAKERS

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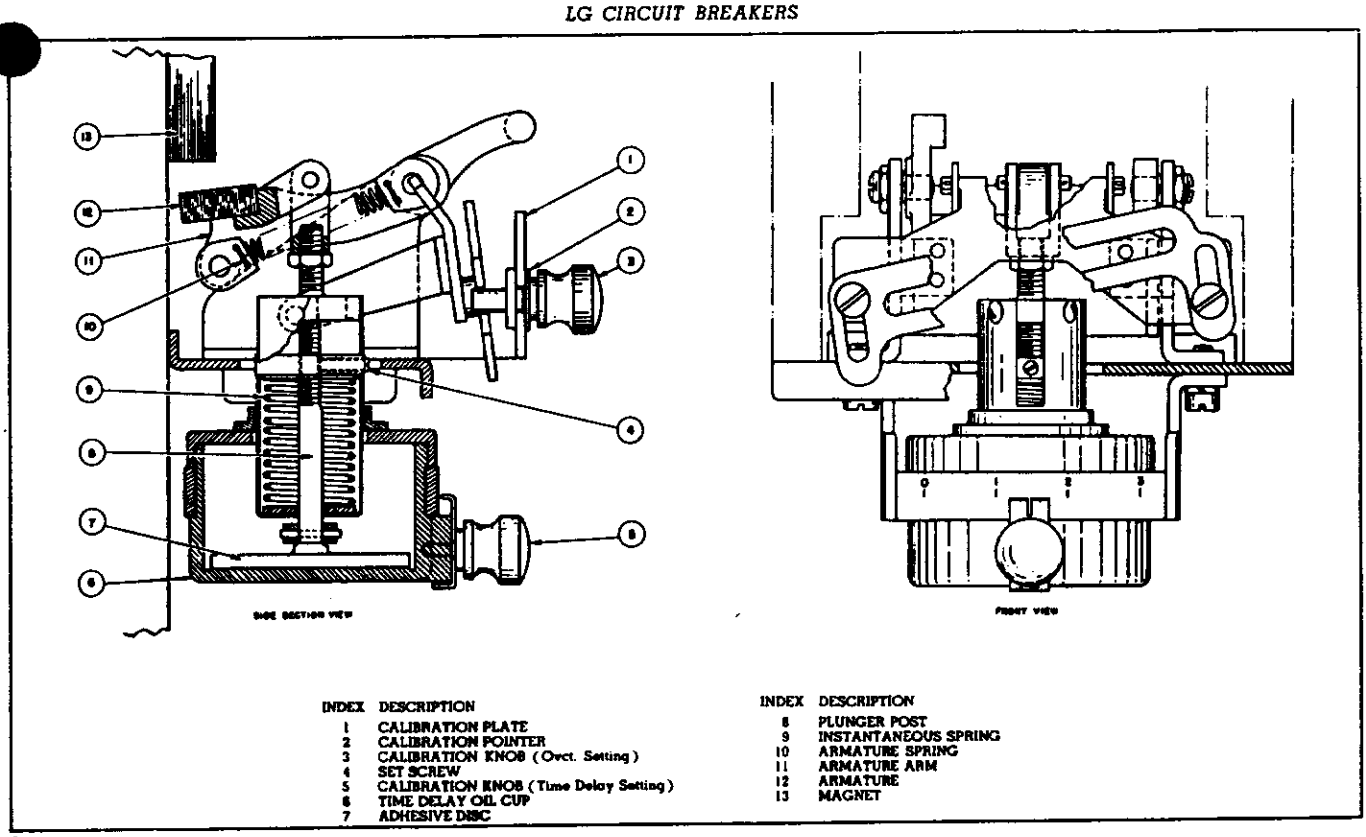

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Fig. 5—DUAL MAGNETIC OVERCURRENT TRIP FOR TYPE LG CIRCUIT BREAKERS

The inside armature pivots about its pin and is connected by linkage to the upper adhesive disc in the oil cup. The armature is restrained by the action of the time delay device, and therefore the breaker remains closed during the starting period of an overload. If the overload continues beyond a safe point, the oil film will rupture, allowing the inside armature to strike a pin, and trip the breaker. Note the time delay setting is calibrated at the factory and is not adjustable in the field.

A vertical pin common to both armatures slides in a slot in the outer pole piece transmits the final armature movement to the auxiliary tripper. The auxiliary tripper bar, rotating clockwise (viewed from the right) releases a latch which being under spring tension forces a connecting stud downward to cause a rotation of the tripper bar.

The latch tripping mechanism is reset by spring linkage from the operating arm of the circuit breaker upon closing.

Latch Trip Adjustments. With the circuit breaker closed, adjust screw (3) Fig. 6 (a) so that the breaker just trips, then back out screw 1¼ turns.

Adjust stop screw (4) so that there is approximately 1/32 latch clearance at point "a". Adjust nut (5) so that when the circuit breaker is eased open there will be 1/16 inch clearance at point "b".

With the breaker closed, trip latch lever (2) allowing it to stop against stop screw (4). Adjust trip rod (1), so that breaker just trips, then take up one turn more and lock.

Set trip screw (7) Fig. 6 (b) so that breaker will trip with 0.015 inch feeler and not trip with 0.025 inch feeler at point "c" for instantaneous armature overtravel. After making instantaneous trip adjustments check tripping travel of push pin for time delay.

Operating spring (6) Fig. 6 (a) must be used as supplied and should not be altered.

Maintenance-Time Delay. The oil cups should be removed every six months and the cup and suction disc cleaned with carbon tetrachloride. Replace the cups and refill them with fresh oil. They should be filled until the suction disc is just covered or ½ ounce is specified. Too little oil will result in the device having no time delay action. Too much oil will cause erratic time delay and oil will be thrown out through the plunger opening in the cover.

If possible, always use oil furnished or recommended by the manufacturer. When fresh oil is needed, send breaker name plate data with order to factory.

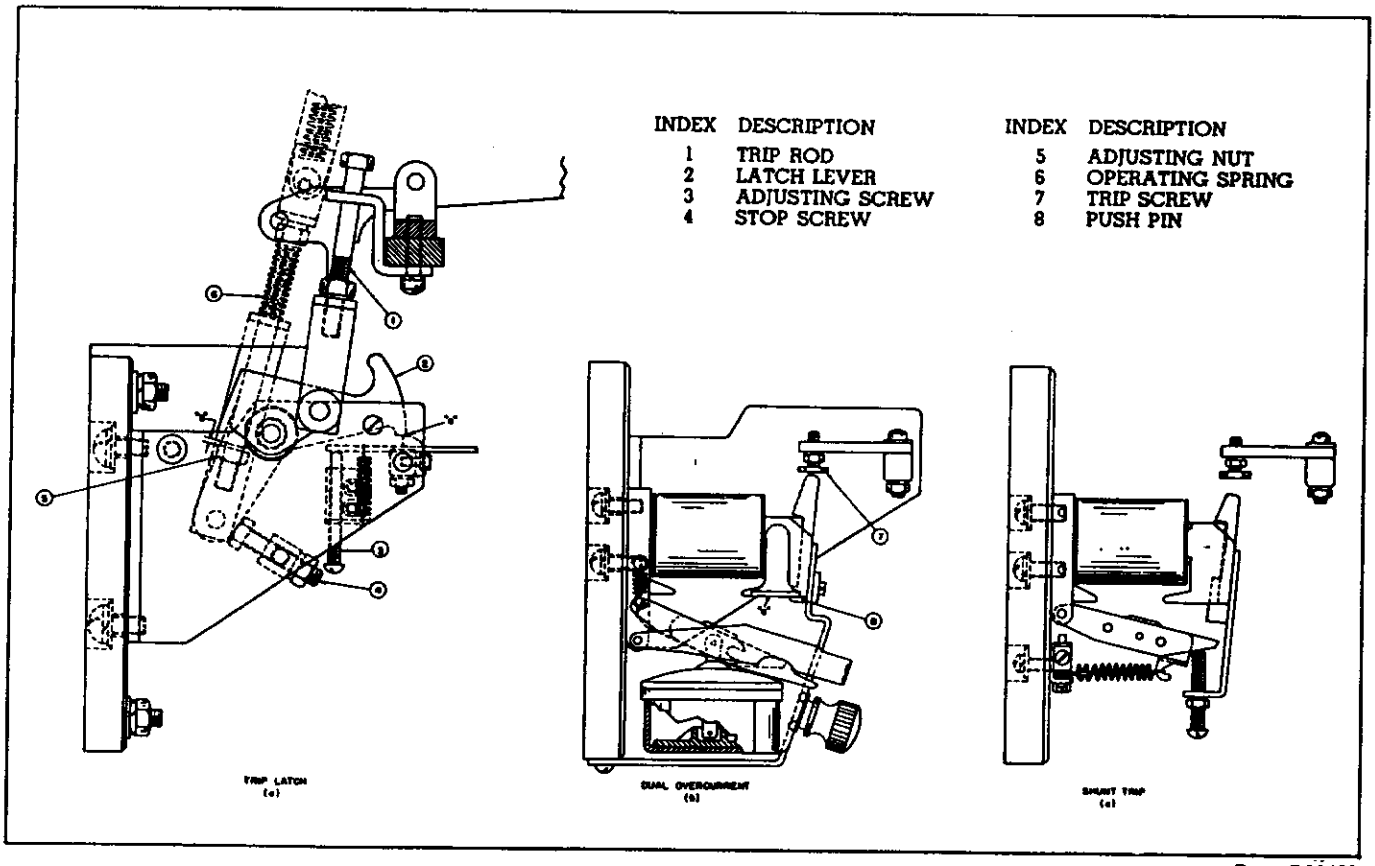

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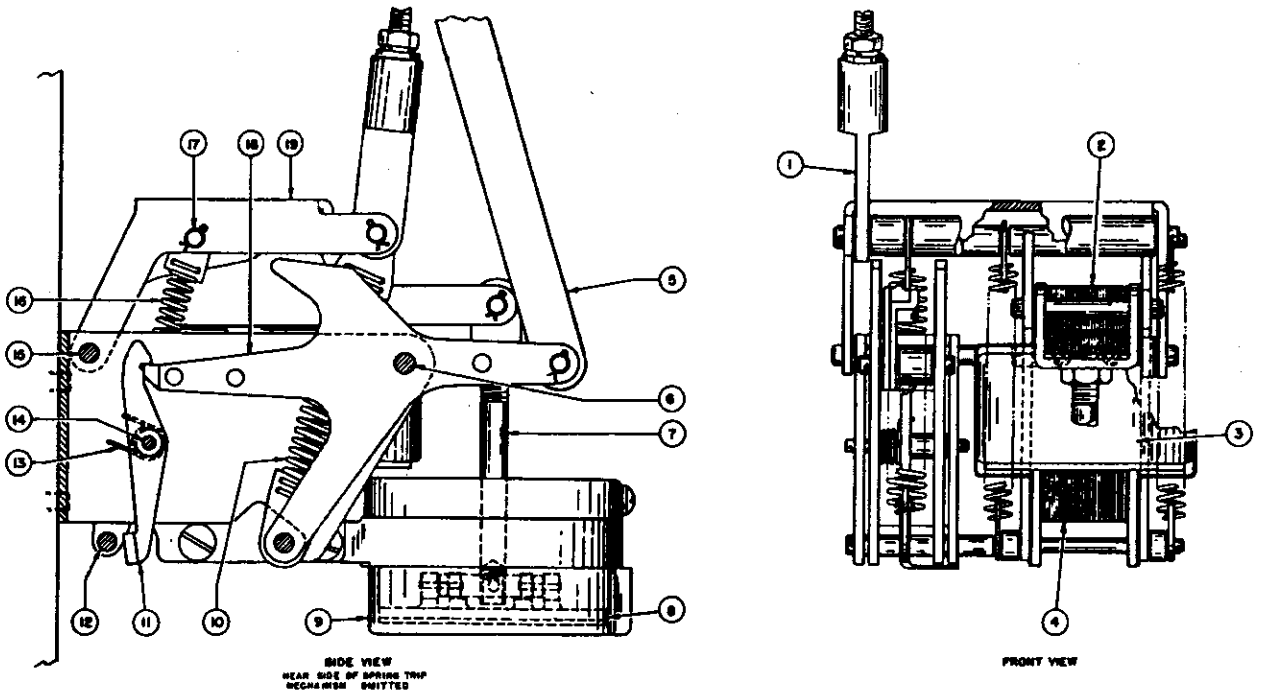
Fig. 6—TRANSFORMER OVERCURRENT TRIP FOR TYPE LG CIRCUIT BREAKERS



INDEX	DESCRIPTION	INDEX	DESCRIPTION	INDEX	DESCRIPTION
1	OPERATING LINK	8	TIME DELAY ADHESIVE DISC	15	SPRING ARM HINGE PIN
2	ARMATURE	9	TIME DELAY CYLINDER CUP	16	RESET SPRING
3	COIL	10	LATCH SPRING	17	RESET SPRING LINK (Upper)
4	MAGNET	11	LATCH	18	LATCH LEVER
5	RESET LINK	12	RESET SPRING LINK (Lower)	19	SPRING ARM
6	LATCH LEVER PIN	13	TRIP SPRING		
7	TIME DELAY PLUNGER POST	14	LATCH PIN		

Fig. 7—UNDERVOLTAGE TRIP AC & DC FOR TYPE LG CIRCUIT BREAKERS

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UNDERVOLTAGE TRIP (AC AND DC)

The undervoltage trip device as in Fig. 7 is a combination of an undervoltage unit and a spring trip mechanism.

The device consists basically of the following component parts: a U-type magnet, armature spring arm, two spring assemblies, voltage coil.

The time delay assembly as shown consists of an oil cup, which includes an adhesive disc connected by linkage to the armature.

The spring trip mechanism is located and attached to the left side of the undervoltage unit and is linked to the circuit breaker by a reset and an operating link.

Under ordinary operating conditions the armature is sealed against the magnet pole faces. When the operating voltage drops to approximately 60%-30% of normal the magnet releases the armature.

The armature pivots about its pin and moves counter-clockwise by a force generated by two springs, which have an initial tension when the breaker is opened. Further tension is applied by the rotation of the spring arm about its pin when the circuit breaker is closed.

The spring trip is reset by linkage from the breaker operating link. Upon a voltage drop, the armature is released and opens under spring tension. A pin on the lower arm of the armature strikes against a latch which in turn pivots about its pin to release the latch lever. The latch lever being under spring tension forces down a tripping link which in turn rotates the tripper bar thus opening the circuit breaker.

The time delay cup, when used, takes care of momentary voltage dips, gives an approximate delay of 7 seconds.

Coil Replacement. Refer to SAFETY PRECAUTIONS before attempting any replacement operation. To remove the coil, it is necessary to disconnect the operating and reset link and time delay plunger post head. (Time delay if used.) Pull the pivot pins to remove the spring arm and armature. Remove the coil support screws and remove coil support. After disconnecting coil leads, remove coil from magnet core.

SPARE PARTS

It is recommended that sufficient spare parts be carried in stock to enable the operators of circuit breakers to promptly replace any worn, broken or damaged parts. Should renewal parts be required, refer to Bulletin RP-1102-LG. The figure indexes in this bulletin are for instruction description only.