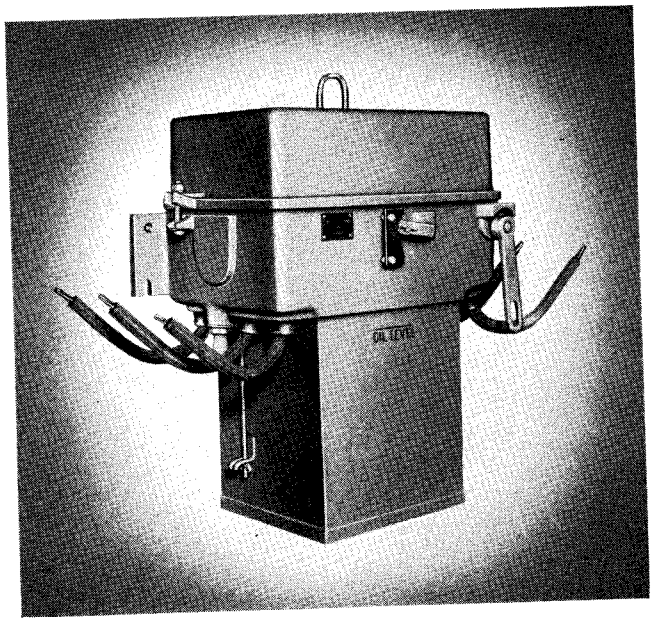
INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

Outdoor, Manually-Operated, Automatic
TYPE F-1 OIL CIRCUIT BREAKER

5 to 200 Amperes at 4160 Volts; 300 Amperes at 750 Volts • 3-Pole, Single Throw



TYPE F-1 OIL CIRCUIT BREAKER is self contained and is shipped completely assembled after test and inspection. Store the crated circuit breaker, previous to installation, in a clean dry location in an upright position. When removing the crate use care so that breaker will not be damaged. It can be lifted by the eye cast into the cover.

INSTALLATION

Bolt to a flat vertical surface. Use care to see that the box is not stressed by bolting against an uneven surface. Remove cover and tank and clean them out. Check to see that mechanism responds freely to the handle, closes without undue friction and latches in the closed position. Check to see that all contacts make at approximately the same time in closing stroke and are not binding when fully closed. Check to see that the breaker trips and falls open freely when tripped by the operating handle or when overload trip rods are raised slowly.

Connect the line to the left hand leads and the load to the right hand leads. This can be reversed, if necessary, to do a good wiring job but the reversal leaves the overload coils energized with the breaker open.

Put on cover and bolt tight. Clean tank thoroughly and flush out with insulating oil. Fill to proper level and put in place and pull up bolts tight.

Satisfactory oil circuit breaker operation depends upon the use of suitable oil; hence use only oil furnished with the breaker or recommended by the breaker manufacturer.

Care of Circuit Breaker Oil. The care of the insulating oil in circuit breakers is of the utmost importance to their successful operation. Contamination by dirt, moisture, metallic particles, lint, etc. all reduce the dielectric strength upon which the operation and current interrupting ability largely depend. Consequently, the most careful attention should be given to keeping the oil clean, not only in filling the tanks originally but also later in maintenance, or other work on the breakers which might involve opening the tanks.

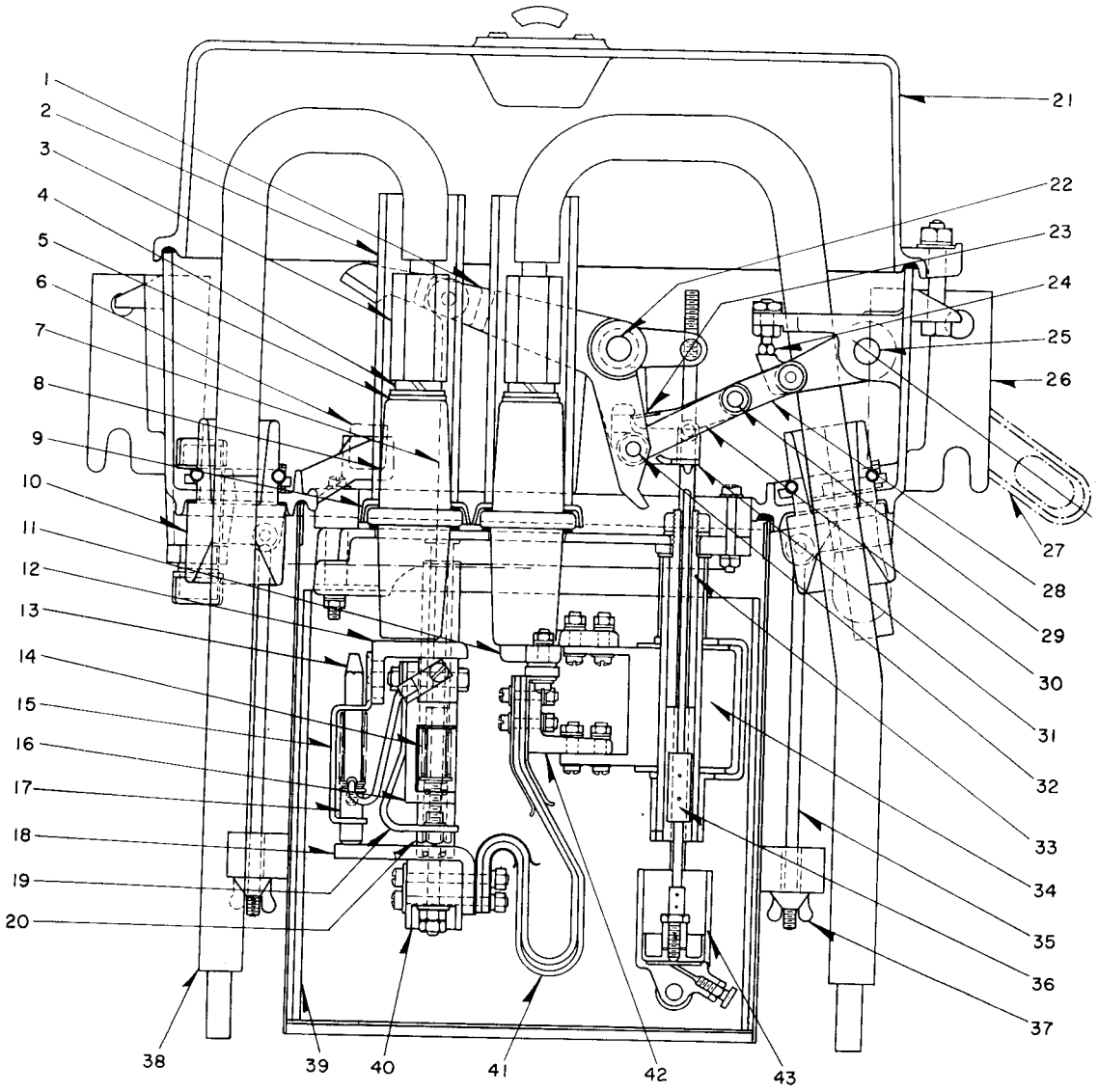
Only the highest grade oil such as Wemco C or other approved oil should be used in the breakers. The oil should be new or at least thoroughly reconditioned by means of a filter press or centrifuge. In any case, before using, it should be given a dielectric test which should show a minimum of 22,000 volts (preferably 25,000 to 30,000) measured between 1-inch diameter discs spaced 0.1 inch apart. Replace the oil if test shows below 17,000 at any time that breaker is opened for inspection or maintenance.

MAINTENANCE

The circuit breaker should be inspected from time to time, the length of the interval depending on the severity of the service. The tank should be lowered, the contacts inspected, tripping checked, and the oil tested at least once a year. This should be enough where the circuit is opened and closed daily. If load is inductive or the breaker is used to start and stop a motor, the inspections should be more frequent. Check every time the breaker opens a heavy overload or short circuit.

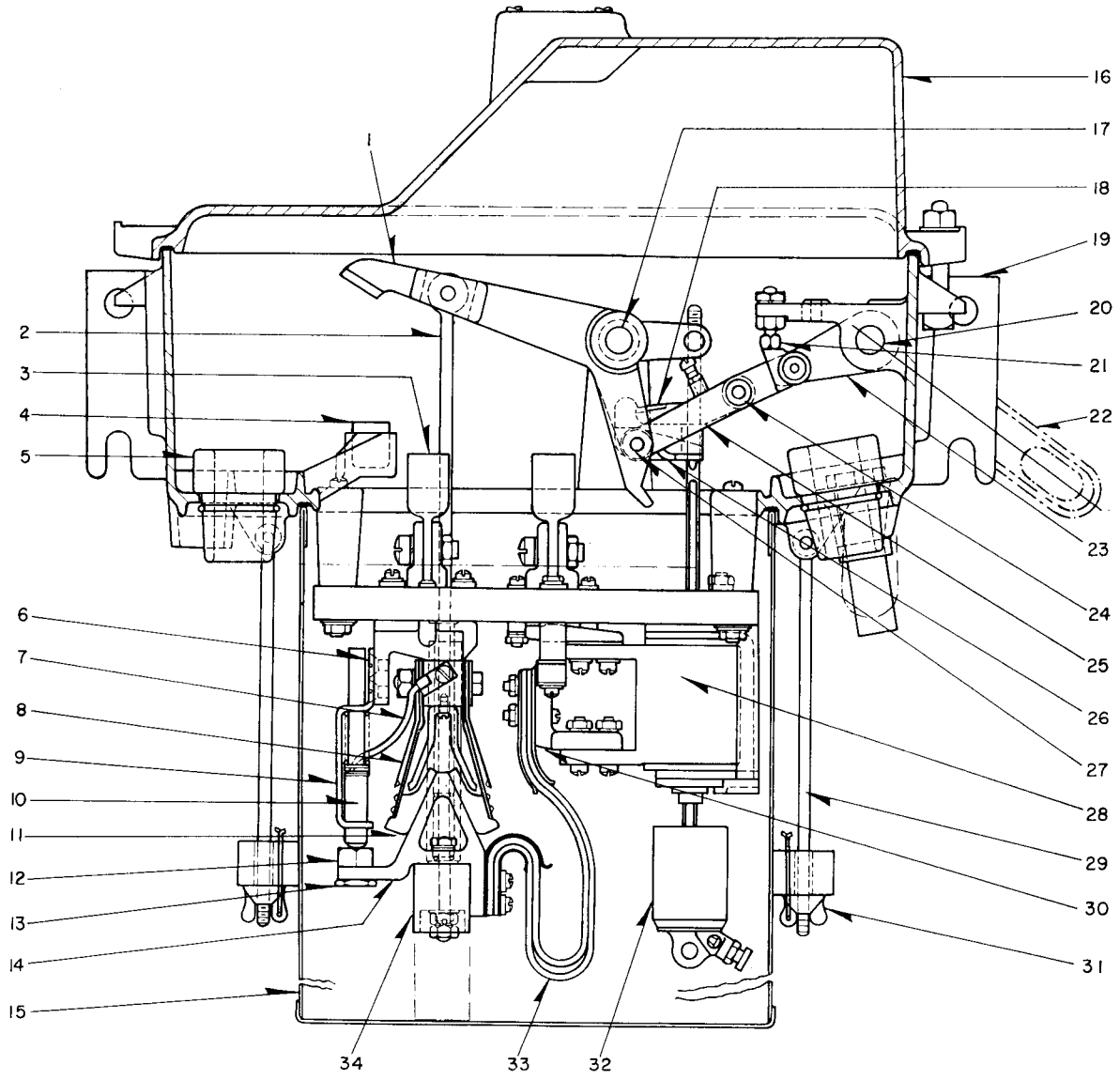
EFFECTIVE FEBRUARY, 1952

SUPERSEDES I. C. 584-B



1 MAIN LEVER
2 MICARTA TUBES
3 TERMINAL SOCKET
4 LOCK WASHER
5 WASHER
6 BUMPER
7 CONTACT LIFTING ROD
8 PORCELAIN INSULATOR
9 INSULATOR CLAMP RING
10 PORCELAIN TUBE
11 COIL SUPPORTING STUD
12 CONTACT SUPPORTING STUD
13 PLUNGER ROD
14 MAIN CONTACT SPRING
15 ARCING PLUNGER GUIDE
16 MAIN CONTACT SUPPORT
17 ARCING PLUNGER
18 MOVING CONTACT
19 MAIN CONTACT SHUNT
20 MAIN CONTACT
21 COVER
22 MAIN LEVER SHAFT
23 LATCH LEVER
24 ADJUSTING SCREW
25 HANDLE SHAFT
26 BOX
27 HANDLE
28 LEVER
29 LATCH LEVER PIN
30 TRIGGER AND LATCH LINK
31 TRIGGER
32 TRIGGER PIN
33 MAGNET CORE
34 SERIES COIL
35 TANK SUPPORTING ROD
36 MOVING CORE
37 WING NUT
38 CABLE CONNECTIONS
39 TANK LINING
40 CROSS BAR
41 FLEXIBLE SHUNT
42 SHUNT BRACKET
43 DASH POT

FIG. 1. Sectional View of 5 to 200 Ampere, 4160-Volt Type F-1 Oil Circuit Breaker



1 MAIN LEVER
2 CONTACT LIFTING ROD
3 TERMINAL SOCKET
4 BUMPER
5 PORCELAIN TUBE
6 STATIONARY CONTACT TERMINAL
7 CONTACT SHUNT
8 CONTACT SPRING
9 ARCING PLUNGER GUIDE
10 ARCING PLUNGER
11 CONTACT FINGER
12 ARCING SCREW
13 ARCING SCREW NUT
14 MOVING CONTACT
15 TANK
16 COVER
17 MAIN LEVER SHAFT
18 LATCH LEVER
19 BOX
20 HANDLE SHAFT
21 ADJUSTING SCREW
22 HANDLE
23 LEVER
24 LATCH LEVER PIN
25 TRIGGER AND LATCH LINK
26 TRIGGER
27 TRIGGER PIN
28 OVERLOAD MAGNET
29 TANK SUPPORT ROD
30 SHUNT BRACKET
31 WING NUT
32 DASH POT
33 FLEXIBLE SHUNT
34 CROSS BAR

FIG. 2. Sectional View of 5 to 300 Ampere, 750-Volt Type F-1 Oil Circuit Breaker

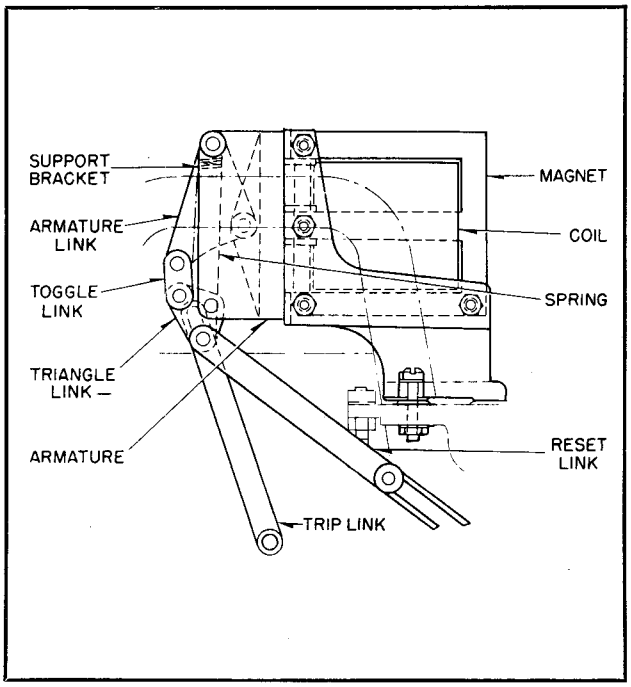


Fig. 3. Undervoltage Release

Remove burrs found on the contacts due to burns. A couple of rubs with a file is usually enough. Replace contacts if burns penetrate over 1/16 inch.

OPERATION

The overload coils are not designed for continuous operation above their minimum calibration point. The higher calibration markings provide tripping at maximum overload considered permissible. The dash pot provides a delay in tripping during overloads of short duration such as occur in starting a motor. The time interval is changed by running the screw in or out.

The breakers rated 5 to 100 amperes use the same contact parts. To change from one rating to another, change overload coils. The 150 and 200 ampere breakers use larger contact parts. The 300-ampere breakers have an insulating base in place of porcelain insulation and have wedge and finger type main contacts. When changing coils adjust length of links that support the rod on which dash pots ride so as to bring normal tripping at current rating at lowest point in calibration. All calibrating is to be done with the tank off and with dash pot clean and dry.

UNDERVOLTAGE RELEASE

The undervoltage release is shipped separate. To install, first remove cover and then bolt the release in place on mounting pads provided. Level up on three point support by using necessary washers under one corner or the other. Connect the tripping link to the trigger, connect the slotted link to the toggle pin. With the breaker open the armature should be pushed to within 1/16 or less from the magnet. Energizing the coil will pull armature against magnet. A voltage drop to between 40% to 60% of normal will release armature and springs will trip breaker. Coils may be wound for 110, 220, 440 or 550 volts, 25 or 60 cycles. These coils can be connected directly to breaker terminals if circuit voltage matches. For higher voltage circuits a separate voltage transformer is necessary to bring the circuit voltage down to the coil voltage.

An ammeter can be mounted on the breaker by means of a special cover when circuit voltage is 750 or less.

RENEWAL PARTS

When ordering renewal parts specify the name of the part wanted as shown in the illustration on this card. Also give the style number or shop order number as shown on the breaker nameplate.

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