

IB-4207-51A

PRELIMINARY

**A-C LOW VOLTAGE
POWER CIRCUIT BREAKERS**

INSTRUCTIONS

**TYPE K-3000 AND K-4000
CIRCUIT BREAKERS**

**STATIONARY SWITCHBOARD MOUNTED
AND
DRAWOUT MOUNTED**



I-T-E CIRCUIT BREAKER COMPANY

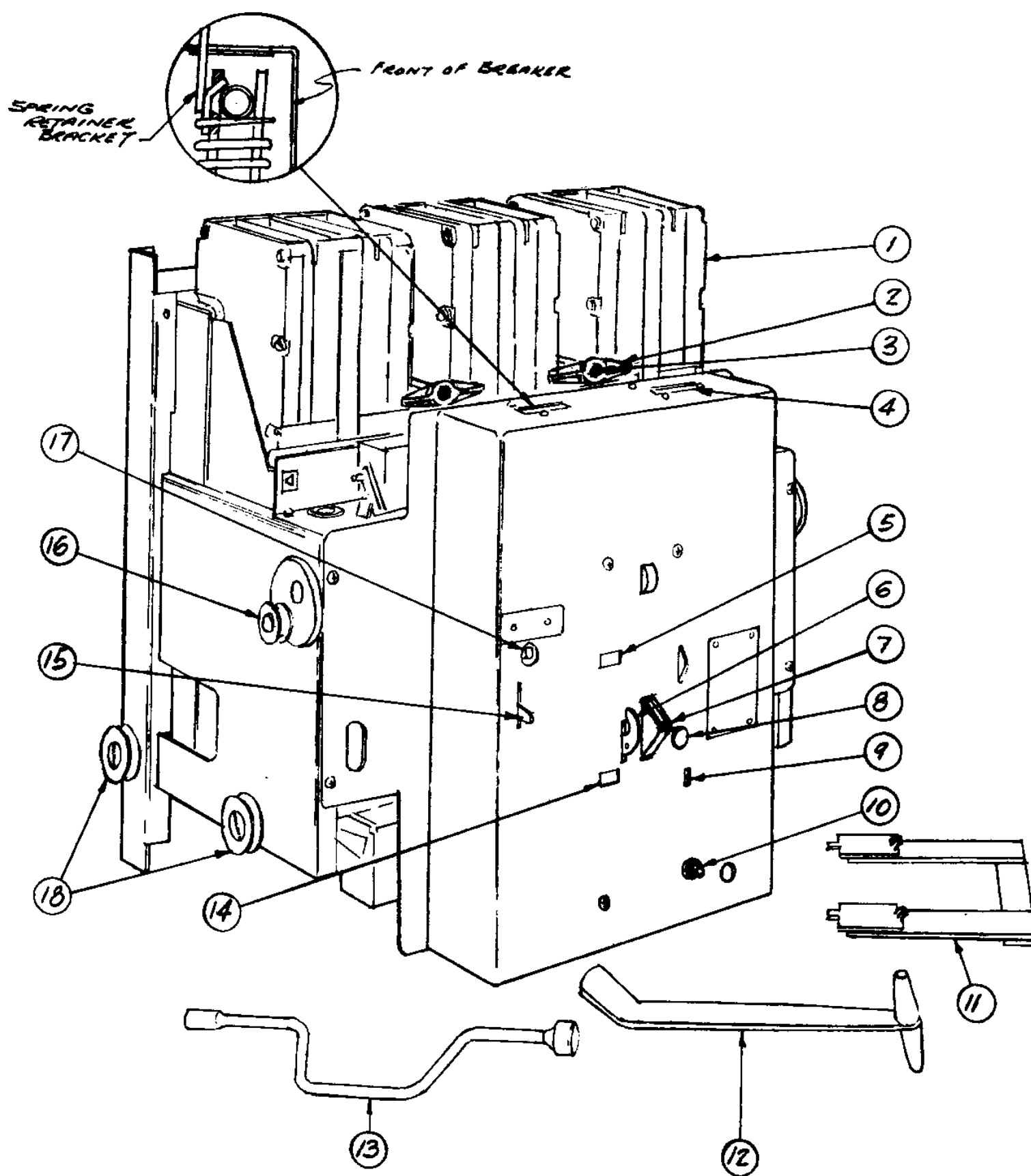


Fig. 1 - K-3000 and K-4000 Circuit Breakers
3 Pole - Electrically Operated - Drawout Type



**INSTRUCTIONS FOR
TYPE K-3000 AND K-4000 CIRCUIT BREAKERS
STATIONARY AND DRAWOUT MOUNTED**

NOTE: READ THESE INSTRUCTIONS THOROUGHLY AND CAREFULLY BEFORE INSTALLING OR ATTEMPTING TO OPERATE THE POWER CIRCUIT BREAKERS. BY FOLLOWING THESE INSTRUCTIONS, AN OPERATOR CAN PROLONG THE LIFE AND USEFULNESS OF THIS EQUIPMENT.

GENERAL

The following instructions should be observed prior to installing the circuit breaker into the compartment.

CAUTION: To assure closing springs are discharged and circuit breaker is in the open position:

(See Fig. 1)

1. Turn charging power switch (10) "OFF".
2. Pull the manual close lever (6).
3. Push the manual trip button (8).

INSTALLATION INSPECTION

Before installing the circuit breaker for the first time, inspect the breaker for condition of the arc chutes, all contacts and electrical connections. If damage is evident, do not attempt to use breaker. Contact carrier and nearest sales office of the I-T-E Circuit Breaker Company.

REMOVING ARC CHUTES

- a. Remove two arc chute mounting screws (3, Fig. 1) and retainer moldings (2).
- b. Lift arc chute (1) up and draw out.

ARC CHUTE EXAMINATION

Inspect arc chutes for the following:

- a. Breakage to side moldings, center moldings, arc plates and liner plates.
- b. Check for presence of foreign particles such as chips of moldings and metal.

CLEANING

- a. Remove any foreign bodies or objects.
- b. Wipe all insulated parts with cloth saturated with an oil free solvent to remove any oil vapor film.

MANUAL SLOW CLOSE TO CHECK CONTACT PRESSURE

(See Fig. 1)

- a. If the circuit breaker closing springs are discharged as seen by the spring charged indicator (14), engage the manual charge handle (12) with the charging lever (7). Pump charging lever until the circuit breaker closing springs are heard to snap into the charged position.
- b. If the circuit breaker closing springs are charged, as seen by the spring indicator (14), shift the shutter (4) to the left and insert the spring retainer bracket (11) so that its tips fit into the closing springs and its flanges fit into the holes in the closing spring guides.
NOTE: On drawout breakers, shutter (4) cannot be opened unless breaker drawout mechanism is in the "DISCONNECT", "TEST" or "CONNECTED" position. The drawout lever (15) cannot be operated if shutter (4) is open.
- c. While holding the spring retainer bracket (11) toward the front of the breaker, pull the manual close lever (6) to discharge the closing springs. (This will partially close contacts.)
- d. Insert the manual charge handle (12) into the charging lever socket and pump to slow close the circuit breaker contacts.
- e. Push the manual trip button (8), to trip the circuit breaker.
- f. To remove spring retainer bracket (11), continue pumping until closing springs are again heard to snap, then remove spring retainer bracket.
- g. The circuit breaker is now charged and ready to be closed.
- h. To discharge closing springs, pull the manual close lever (6), and push manual trip button (8).
- j. Put arc chutes (1) back on.

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.

**INSTALLATION - DRAWOUT TYPE**

WARNING: FOR INITIAL INSTALLATION, DE-ENERGIZE THE PRIMARY AND CONTROL CIRCUITS BEFORE INSERTING THE CIRCUIT BREAKER INTO COMPARTMENT.

(See Fig. 1)

The circuit breaker must be in the "OPEN" position, the racking crank (13) when inserted in opening (17) fully rotated counterclockwise against its stop, and charging power switch (10) for electrically operated circuit breakers in the "OFF" position.

Open compartment door and lower the right and left hand tracks to fully extended position.

Use lifting yoke (which is attached to holes in the upper rear frame) and lower circuit breaker wheels (18) on to track extensions.

Push circuit breaker into compartment until racking cam rollers (16) stop against their guides.

CAUTION: RAISE TRACK EXTENSION INTO COMPARTMENT BEFORE RACKING.

Insert racking crank (13) into opening (17) and depress drawout lever (15). Turn crank clockwise until automatically stopped. Breaker is now in "DISCONNECT" position.

Again depress drawout lever (15) and turn crank clockwise until automatically stopped. Breaker is now in "TEST" position.

CHECKING CIRCUIT BREAKER OPERATION IN "TEST" POSITION (Electrically Operated)

(See Fig. 1)

- Manually reset automatic trip indicator (9) if required.
 - Turn charging power switch (10) to "ON" position and closing springs will automatically charge.
 - Close circuit breaker by local close button and trip by local trip button.
- NOTE:** All breakers have a manual trip button. The local close button for electrical breakers is standard. The local trip button for electrical breakers is optional.
- Close and trip circuit breaker by means of remote control switch.
 - Check each auxiliary device for proper operation.

CHECKING CIRCUIT BREAKER OPERATION IN "TEST" POSITION (Manually Operated)

(See Fig. 1)

- Manually reset automatic trip indicator (9) if required.
- Charge circuit breaker with manual closing handle (12), and close with manual close lever (6). Trip by manual "TRIP" button (8).
- Check each auxiliary device for proper operation.

After completing check procedures in "TEST" position, continue as follows:

With circuit breaker in "OPEN" position and charging power switch (10) in "OFF" position, insert racking crank (13) in opening (17) and press down drawout lever (15). Rotate racking crank clockwise until automatically stopped. Breaker is now in "CONNECTED" position.

MANUAL CLOSING OPERATION

The following manual closing procedures are recommended:

(See Fig. 1)

- Observe circuit breaker conditions on control escutcheon.
- To completely uncharge circuit breaker, manually charge closing springs by means of the manual charge lever (12) then pull the manual close lever (6) by a lanyard from a safe distance.
- For charged springs, pull the manual close lever (6) by means of a lanyard from a safe distance.
- For partially charged closing springs, should closing not occur upon pulling the manual close lever, continue charging until closing springs are completely charged (heard to snap) and by visual indicator (14) then pull manual close lever (6) by means of a lanyard from a safe distance.

CIRCUIT BREAKER REMOVAL

(See Fig. 1)

- Trip circuit breaker by any tripping means.
- Open front compartment door.
- Engage racking crank (13) in opening (17) and push drawout lever (15) down. Rotate racking crank counterclockwise until racking mechanism automatically stops at "TEST" position. Lower track extensions.
- Repeat Step "C" to rack circuit breaker to "DISCONNECT" position.
- Depress drawout lever (15) and continue cranking counterclockwise as far as stops will allow. (Do not force beyond stops.)
- Pull circuit breaker forward to fully extended position. (Should the circuit breaker be charged, closing springs will automatically be discharged at this point.)
- Remove circuit breaker from tracks with lifting yoke, then raise tracks into compartment and close door.

MAINTENANCE**GENERAL**

It is recommended that a maintenance program be established for inspecting the circuit breaker at least once every six months and as soon as possible after a short circuit current interruption.

An inspection should be made to determine the condition of the contacts, arc chutes, barriers and

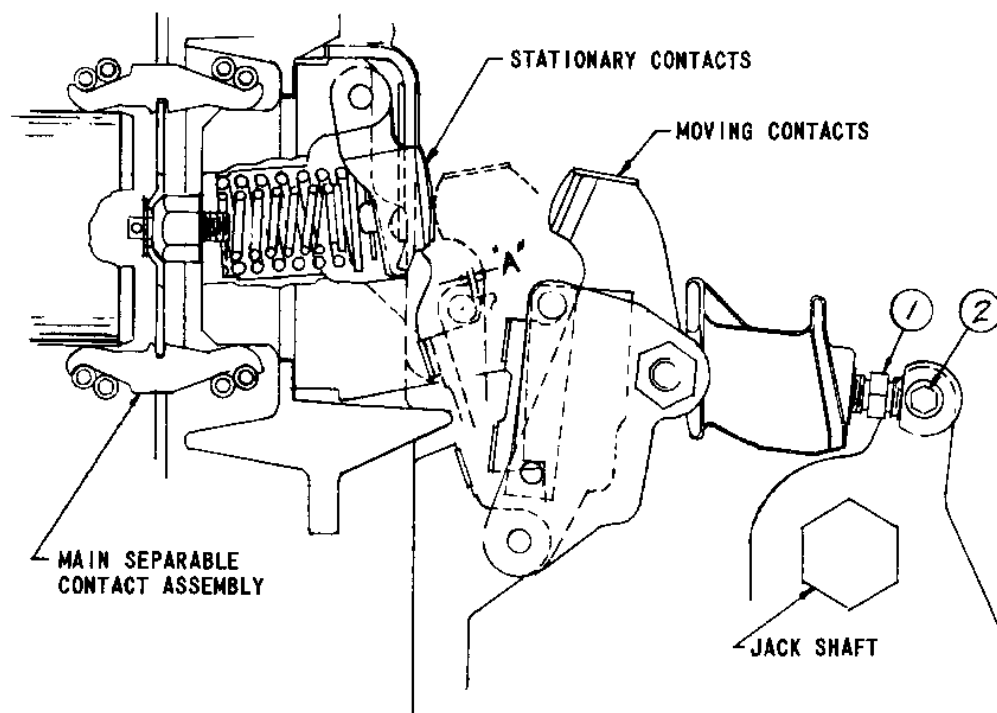


Fig. 2 - Contact Structure for
K-3000 and K-4000 Circuit Breakers

electrical connections. (See section for Arc Chute Removal, Page 3.)

INSULATION STRUCTURE

Insulated parts should be cleaned with a cloth saturated with an oil free solvent during each maintenance inspection.

CONTACTS

- a. Remove dirt or grease on contacts with a cloth saturated with an oil free solvent.
- b. Discoloration of the main contacts does not necessarily indicate damage. However, this condition may be removed by opening and closing the circuit breaker under no-load conditions. Should the main contacts show slight pitting, check the contact pressure by referring to Contact Adjustment Section, below. For Manual Slow Close to Check Contact Pressure, refer to Section on Page 3.
- c. A moderate amount of pitting will not interfere with the operation of the arcing contacts. Should it be necessary to dress the arcing contacts to remove small burrs, cover the mechanism with a cloth. Follow the contour of the contacts with light wipes of a fine file and do not attempt to eliminate pitting entirely. When finished, remove cloth and wipe off any remaining dirt or filings.

OPERATING MECHANISM

- a. The mechanism is lifetime lubricated at the factory. No additional lubrication should be applied.

ADJUSTMENTS

GENERAL

These circuit breakers are adjusted, tested and inspected before leaving the factory. Rough handling during transit or abnormal usage after installation may upon inspection indicate some changes required in the contact adjustment or mechanism adjustments.

It is recommended that drawout circuit breakers installed in compartments be withdrawn and moved to a suitable test area.

WARNING: STATIONARY BREAKERS SHOULD NOT BE TOUCHED UNTIL THE POWER SOURCE IS DISCONNECTED.

CONTACTS

Refer to Method of Manual Slow Close to Check Contact Pressure Section, Page 3, and Fig. 2.

There should be a minimum gap of .094 inch at Point "A" (Fig. 2) when the circuit breaker is fully closed.

If gap at Point "A" is less than .094 on any pole, adjust contact pressure as follows:

- a. Trip circuit breaker, loosen set screw (2) and turn adjusting stud (1) clockwise. Close circuit breaker and check gap at "A". Repeat until all poles show gap of .094 at Point "A".
- b. Slow close circuit breaker until contact on any pole touches. Adjust remaining poles so that all contacts make simultaneously within 1/32 of an inch.
- c. Securely lock adjusting stud (1) by tightening set screw (2) after making adjustments.

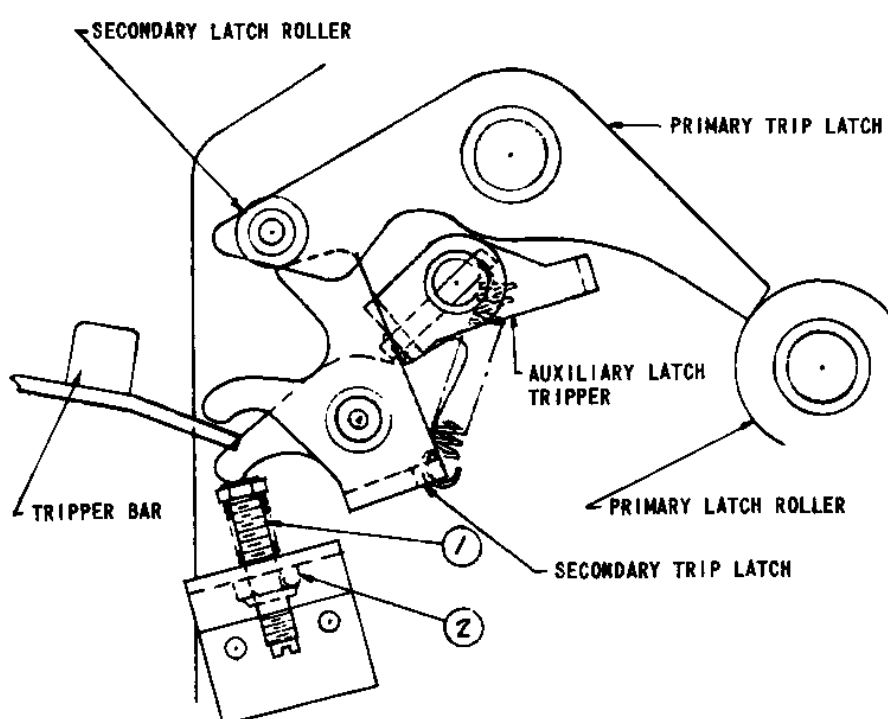


Fig. 3 - Primary Trip Latch Adjustment
for K-3000 and K-4000 Circuit Breakers

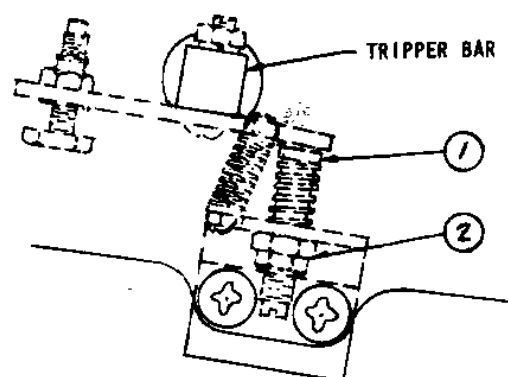


Fig. 4 - Tripper Bar Tripper Adjustment
for K-3000 and K-4000 Circuit Breakers

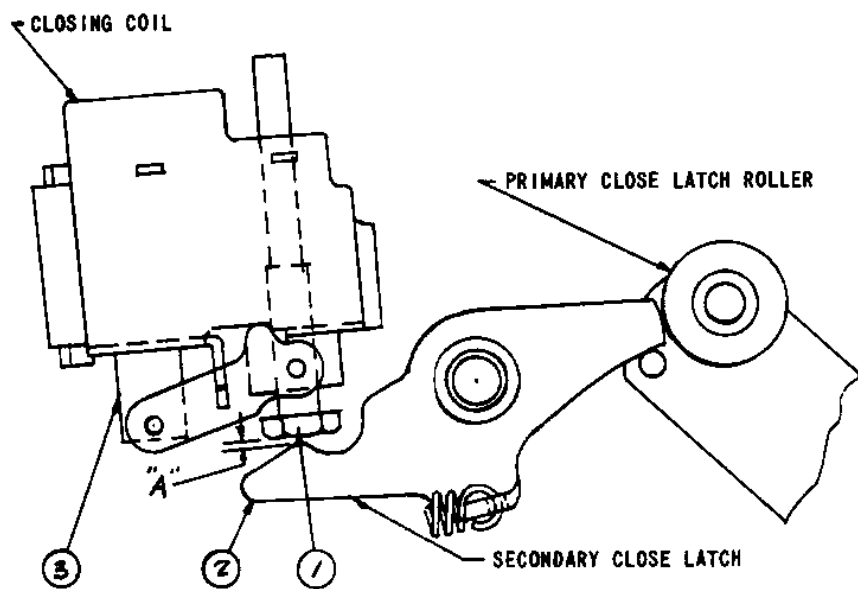


Fig. 5 - Primary Close Latch Adjustment
for K-3000 and K-4000 Circuit Breakers

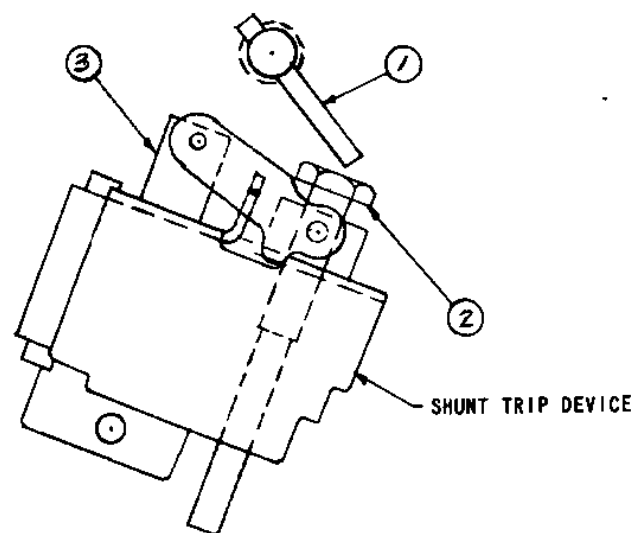


Fig. 6 - Shunt Trip Device Adjustment
for K-3000 and K-4000 Circuit Breakers

S-16259
S-16258

S-16260
S-16261

**OPERATING MECHANISM**

The circuit breaker operating mechanism is adjusted at the factory for correct operation and should not be disturbed unless necessary.

Adjustments as required are for the following conditions:

PRIMARY TRIP LATCH

(See Fig. 3)

- a. Adjust screw (1) using an open end wrench for the hex head of screw and self locking nut (2) until circuit breaker trips.
- b. Back off screw (1) 1-1/2 turns.

TRIPPER BAR ADJUSTMENT

(See Fig. 4)

- a. Adjust screw (1) using an open end wrench for the hex head of screw and self locking nut (2) until circuit breaker trips.
- b. Back off screw (1) two turns.

PRIMARY CLOSE LATCH

(See Fig. 5)

- a. With the circuit breaker closing springs charged and breaker contacts opened, the closing coil

plunger (3) in de-energized position (held down), there should be 1/16 inch air gap between the plunger rod (1) and secondary latch (2) at Point "A".

SHUNT TRIP DEVICE

(See Fig. 6)

- a. Turn trip rod (2) down until circuit breaker does not trip with plunger (3) held up.
- b. Close circuit breaker.
- c. Push plunger (3) down as far as possible and hold in this position while turning up trip rod (2) until circuit breaker just trips.
- d. Turn rod (2) up 2-1/2 to 3 turns.

RENEWAL PARTS

It is recommended that sufficient renewal parts be stocked to facilitate proper maintenance and replacement of parts. The quantity of parts and assemblies carried in stock should be based on the number of circuit breakers in service.

When ordering renewal parts, address the nearest sales office of the I-T-E Circuit Breaker Company. Specify the type and serial number of the circuit breaker, description of part and quantity required.

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