

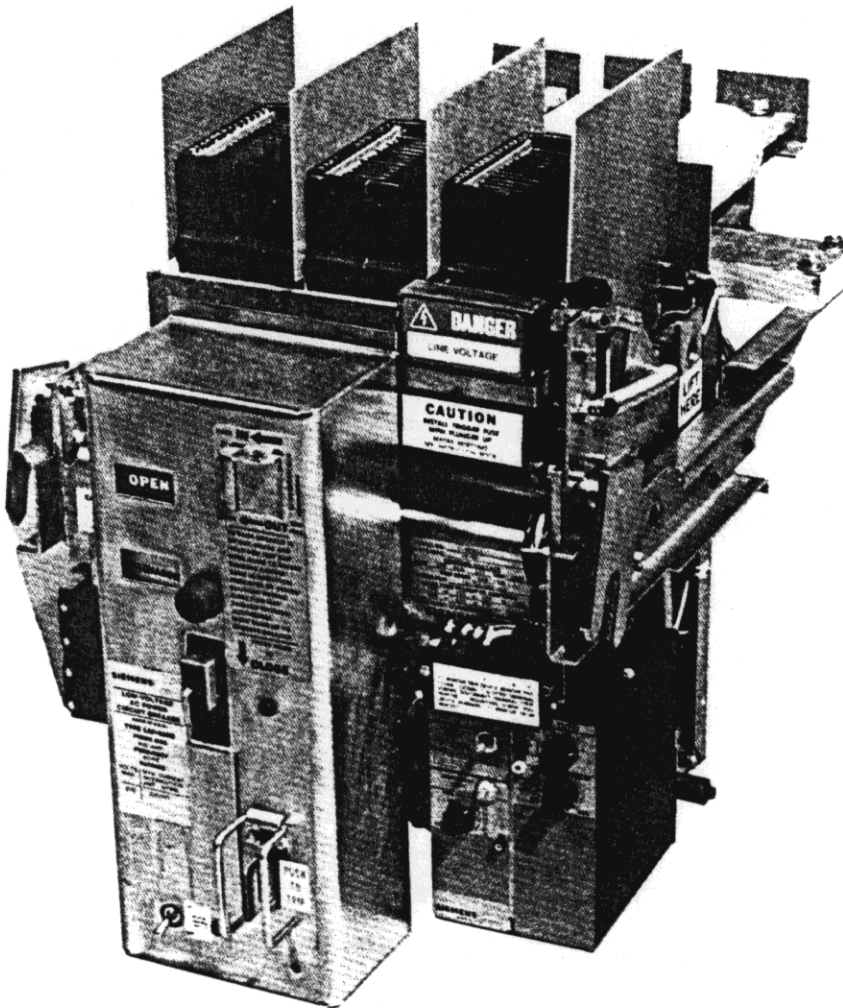
SIEMENS

JJ - LOW VOLTAGE

Low Voltage Power Circuit Breakers

Type LA-600B, LA-800A & LA-1600B

Instructions
Installation
Operation
Maintenance
Parts
SG-3028-01



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Warranty

Siemens "LA" air circuit breakers are warranted to be free of defects in material and workmanship for a period of one year from date of initial operation but not more than eighteen months from date of shipment by company. This warranty is limited to the furnishing of any part which to our satisfaction has been proven defective. Siemens will not in any case assume responsibility for allied equipment of any kind.

The information contained within is intended to assist operating personnel by providing information on the general characteristics of equipment of this type. It does not relieve the user of responsibility to use sound engineering practices in the installation, application, operation and maintenance of the particular equipment purchased.

If drawings or other supplementary instructions for specific applications are forwarded with this manual or separately, they take precedence over any conflicting or incomplete information in this manual.

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Installation

Introduction



Type "LA" Low-voltage AC Power Circuit Breakers may be furnished for mounting in any one of three ways: (1) in metal-enclosed switchgear of the drawout type; (2) in individual metal enclosures (drawout type); or (3) for stationary mounting in a customer's own enclosing case or switchboard. All "LA" circuit breakers are completely assembled, tested, and calibrated at the factory in a vertical position and must be so installed to operate properly. Customer's primary connections must be adequately braced against the effects of short circuit currents to prevent overstressing the circuit breaker terminals.

Receiving and Inspection for Damage

Immediately upon receipt of this equipment, carefully remove all packing braces. Examine parts and check them against the packing list and note any damages incurred in transit. If damage is disclosed, a carrier inspection must be arranged for by consignee within 15 days of receipt of equipment. If equipment is shipped F.O.B. Shipping Point, consignee must file a claim with the carrier. If equipment is shipped F.O.B. Destination, the consignee must obtain the original of the carrier inspection report and notify Siemens immediately.

Storage

When circuit breakers are stored, wrap or cover them with a non-absorbent material to protect them from plaster, concrete dust, moisture or other foreign matter. Do not expose circuit breakers to the action of corrosive gases or moisture. In areas of high humidity or temperature fluctuations, space heaters or the equivalent should be provided.

	 CAUTION
	<p>Do not accept the statement from any driver that the damaged equipment was not properly packaged by the shipper.</p> <p>Do not sign Bill of Lading without notation of visible damage if observed. Our equipment packaging meets the rigid requirements established by the trucking industry. You must obtain carrier inspection within 15 days of receipt on damaged equipment.</p>

Two shipping methods are used with "LA" circuit breakers:

1. Individually skidded with protective covering for domestic shipments.
2. Within a cubicle on export orders, when part of a switchgear lineup. Circuit breakers shipped in their cubicles are blocked to prevent accidental tripping during shipment. Note all caution tags, remove blocking bolts, and open circuit breaker contacts before installation.

Installation

The "LA" Low-voltage AC Power Circuit Breaker is completely adjusted, tested, and inspected before shipment. However, a careful check should be made to be certain that shipment or storage has not resulted in damage or change of adjustment. Circuit breakers and their enclosures should be installed in a clean, dry, well-ventilated area in which the atmosphere is free from destructive acid or alkali fumes. Stationary-type circuit breakers should be enclosed in ventilated housings. If not enclosed, they must be mounted high enough to prevent injury to personnel either from circuit interruption, or from moving parts during automatic opening of the circuit breaker. Allow sufficient space to permit access for cleaning and inspection, and adequate clearance to insulating barriers above the circuit breaker to prevent damage from arcing during interruption. Before installing, make certain that the circuit breaker contacts are in the open position. Be sure to lubricate primary and secondary disconnect fingers with Siemens electrical contact lubricant supplied with accessories.

Installation

Circuit Breaker

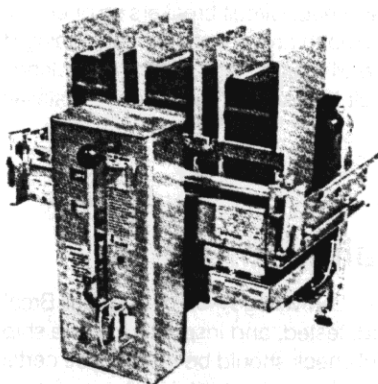
NON-INTERCHANGEABILITY OF FUSED AND NON-FUSED LOW VOLTAGE POWER CIRCUIT BREAKERS

⚠ DANGER

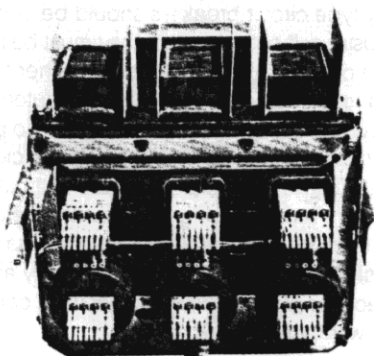


DO NOT attempt to insert a fused power circuit breaker into a compartment which was built for a non-fused power circuit breaker. To do so could result in property damage, electrical shock, burns, other serious personal injury or possible death.

LA-1600

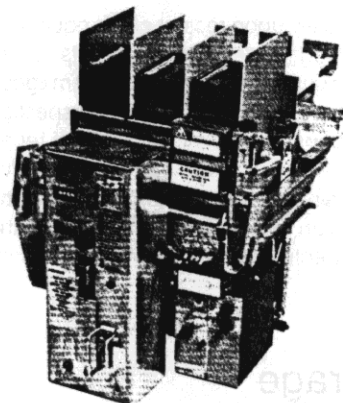


FRONT

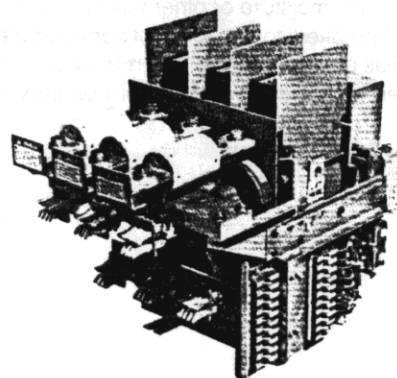


REAR

LAF-600




FRONT



REAR

Fused and Unfused Breakers with Static Trip II and LimiTrip Overcurrent Trip Devices


Installation



CAUTION

Be certain that you check points 1a through 1f below before placing circuit breaker in compartment.

1. Determine the correct switchgear compartment for each circuit breaker by checking the Three-Line Diagram furnished with the drawings. The Three-Line Diagram shows the following for each circuit breaker compartment:
 - a. Circuit breaker Type LA-600B, LAF-600B, LA-800A, etc.
 - b. Trip "XFMR" or "SENSOR" rating.
 - c. Static Trip Type TS, TIG, TSG or LimiTrip Type LTI, LTS or LTSI.
 - d. Type of operator (Manual Operator - M.O. or Electrical Operator - E.O.)
 - e. Wiring Diagram Number
 - f. Special Accessories (Undervoltage Trip, etc.)
2. On fused breaker make sure trigger fuse linkage is reset. Breaker will remain trip free as long as this linkage is tripped.
3. After the circuit breaker is placed in the compartment, rack it to the TEST position.
4. Close and trip the circuit breaker. Refer to OPERATING PROCEDURE, page 4 for manually and electrically operated circuit breakers.



DANGER

Do not work on energized equipment. Unauthorized personnel should not be permitted near energized equipment.

During the closing operation, observe that the contacts move freely without interference or rubbing between movable arcing contacts and parts of the arc chutes. Then refer to OPERATION, page 4 for a detailed description of the circuit breaker operating characteristics before placing the circuit breaker in service.

5. Trip units and accessory devices should receive a thorough check before placing the circuit breaker in service. This check makes certain that adjustments are proper and parts are not damaged. Refer to Static Trip II Instruc-

tion Book SG-3098 or to LimiTrip Book SG-3108 supplied with this equipment.

6. Circuit breakers are equipped with a drawout interlock to prevent movement of a closed circuit breaker into or out of the connected position. Circuit breaker interlock operation should be checked before it is energized. See DRAWOUT INTERLOCK, page 8, and SPRING DISCHARGE INTERLOCK, page 9, for a description of these interlocks.
7. After completing the installation inspection, check the control wiring (if any) and test the insulation.
8. Now the circuit breaker is ready to be racked into the CONNECTED position. Refer to RACKING MECHANISM, page 8.
9. The circuit breaker can now be closed to energize the circuit.

CAUTIONS TO BE OBSERVED IN INSTALLATION AND OPERATION


1. Read this Instruction Book before installing or making any changes or adjustments on the circuit breaker.
2. Stored-energy closing springs may be charged with circuit breaker contacts in either the open or closed position. **Extreme care should be taken to discharge the springs before working on the circuit breaker.**
3. When closing manually operated breakers out of this unit, the racking mechanism must be returned to the test position before closing spring can be charged.
4. When charging manually operated breakers, always hold the handle firmly until it is returned to the normal vertical position. A ratchet insures that the closing stroke must be completed once started.
5. Check current ratings, wiring diagram number, circuit breaker type and static trip type, against the Three-Line Diagram to assure that circuit breakers are located in the proper compartments within the switchgear.
6. Check the alignment of the secondary disconnect fingers. This ensures against misalignment due to possible distortion of fingers during shipment and handling.
7. Close the compartment door and secure with knurled knob prior to racking to or from the CONNECTED position. Also, prior to closing the circuit breaker when in the CONNECTED position. Once the circuit breaker is closed, keep this door closed.
8. Once the circuit breaker is energized, it should not be touched, except for the exterior controls.

Operation

Description

The continuous current ratings of the LA-600B, LA-800A and LA-1600B circuit breakers are 600, 800 and 1600 amperes respectively. The interrupting ratings are as specified in Tables 1 and 2.

The circuit breakers are also available with integrally mounted current limiting fuses. The basic circuit breakers are the same with or without fuses. The fuses mount on a bracket that is bolted to the side rails and upper studs on the back of the circuit breaker. The current limiting fuses increase the interruption rating to that of the fuses. Fused circuit breakers are identified as LAF-600B, LAF-800A and LAF-1600B.



⚠ DANGER

DO NOT attempt to insert a fused power circuit breaker into a compartment which was built for a non-fused power circuit breaker. To do so could result in property damage, electrical shock, burns, other serious personal injury or possible death.

Fused circuit breakers are also equipped with an open fuse trip device to open the circuit breaker if one or more current limiting fuses open.

The circuit breakers can also be supplied for stationary mounting in which the racking components are omitted and brackets are provided for mounting to a stationary frame.

The LA-600B, LA-800A and LA-1600B circuit breakers use the same basic closing mechanism or operator. The closing springs used vary between sizes.

A. Manual Charging

B. Electrical Charging

C. Combination Manual-Electrical Charging

The manual and electrical operators are identical except for the means of supplying energy to the closing springs.

A double-toggle, trip free mechanism is used. This means that the breaker contacts are free to open at any time if required, regardless of the position of the mechanism.

Table 1. Unfused Circuit Breaker Ratings at 60 Hertz

Voltage Ratings		Type	Frame Size Amperes	Short Circuit Rating (1) Symmetrical Amps.	Short Circuit Rating (2) & Short Time Rating Symmetrical Amps.	Cont. Current Rating, Amperes
Rated Voltage, Volts	Rated Maximum Voltage, Volts					
600	635	LA-600B LA-800A LA-1600B	600 800 1600	22,000 30,000** 50,000**	22,000 30,000 42,500 + 50KA	40-600 40-800 100-1600
480	508	LA-600B LA-800A LA-1600B	600 800 1600	30,000 30,000** 50,000**	25,000 30,000 50,000	40-600 40-800 100-1600
240 & 208	254	LA-600B LA-800A LA-1600B	600 800 1600	42,000 42,000 65,000	25,000 30,000 50,000	40-600 40-800 100-1600

* For frequencies less than 500 Hertz, the interrupting ratings at 600 volts apply.

** The LA-800A is optionally available with 42,000 short circuit rating when equipped with instantaneous overcurrent trip device.

The LA-1600B is optionally available with 65,000 short circuit rating when equipped with instantaneous overcurrent trip device.

- 1) Use when breaker is equipped with instantaneous overcurrent trip device.
- 2) Use when breaker is equipped with instantaneous overcurrent trip device.

Operation

Table 2. Fused Circuit Breaker Ratings at 60 Hertz

Voltage Ratings		Type	Frame Size Amperes	Short Circuit Rating Symmetrical Amps.	Range of Fuse Ratings Amperes	Cont. Current Rating, Amperes
Rated Voltage, Volts	Rated Maximum Voltage, Volts					
208 TO 600	600	LAF-600B LAF-800A LAF-1600B	600 800 1600	200,000 200,000 200,000	400-1200 400-1600 1200-3000	40-600 40-800 100-1600

A. MANUALLY OPERATED BREAKERS (Refer To Fig. 1 & Table 3)

Table 3. Operating Procedure
Manually Operated Circuit Breakers

Operation	Procedure
Charging Springs	Pull charging handle down all the way (approximately 120°) and return it to normal vertical position. (Engagement of pawl with ratchet teeth prevents handle reversal until the downward stroke is completed.)
Closing	Push down firmly on spring-release latch hook (8) after handle is returned to normal vertical position.
Tripping	Push in manual trip rod (48). OR If shunt trip is provided, operate remote trip control switch (CST). (See Fig. 2.)

The breaker has a center-mounted frame so many of the latches and links are arranged in pairs. For descriptive purposes, they will be referred to as single items. Detail A. shows the position of the trip latch and toggle linkage when the circuit breaker is open and the closing springs are discharged. Movement of the charging handle downward rotates closing cam (65) against roller (28), thus pivoting closing cam (19) clockwise about pin (76). This extends the closing springs through link (23) and spring hanger (17). Rotation of cam (19)

allows roller (41) in toggle linkage to be moved into position shown in Detail B. Kickoff spring (59) moves rollers away from the stop block (31). Then the toggle linkage is moved by torsion spring until latch (35) clears trip latch (13). Spring (15) causes trip latch (13) to reset under latch (35). Trip flap (14) should normally stop against the front surface of latch (35).

When the closing springs are fully charged, roller (28) engages latch (7). Charging cam (65) engages a pawl in such a manner that the charging cam must complete the charging stroke before it can return to its normal position.

With the charging handle in its normal upright position, the circuit breaker can be closed. By pressing firmly on hood (8), latch (7) will disengage roller (28). Then closing springs cause cam (19) to rotate against the toggle rollers (41), moving the toggle into its upright position, as shown in Detail C. The closing cycle can be interrupted at any point by operation of one of the tripping means. This will cause rotation of trip latch (13) to a position that releases latch (35), allowing toggle linkage to collapse to the position shown in Detail A.

To manually open the circuit breaker, press in manual trip rod (48). This bar engages the top of trip flap (14), which is, in turn, arranged to disengage the trip latch (13).

Operation

B. ELECTRICALLY OPERATED CIRCUIT BREAKER (Refer to Fig. 1 & Table 4)

Table 4. Operating Procedure
Manually Operated Circuit Breakers

Operation	Procedure
Charging Springs	Energize control circuit. Move motor control switch on front of breaker to "ON" position.
Closing	After springs are charged, actuate remote close control switch (CSC). OR Push down firmly on spring-release latch hood (8).
Tripping	Actuate remote trip control switch (CST). OR Push in manual trip rod (48).

The mechanism of the electrically operated circuit breaker is the same as the manually charged circuit breaker, except

that the manual charging handle is replaced by a motor and gear system. With power available to the control circuit, closing the motor control switch (MI) will start the automatic charging cycle. The motor gear box pinion rotates gear (86) counterclockwise. Cam follower (95) engages an arm of wind and close cam (85), which rotates the cams in the same manner as for the manually charged circuit breaker. When the wind and close cam (85) reaches its charged position, the back of the cam engages switch lever (9), rotating the lever away from the switch operator. Gear switch lever (93) will still be holding the switch in the operate position, and the motor will continue to run until the roll pins on the side of gear (86) lifts lever (93) clear. This releases the motor cut-off switch (MCO). When the MCO switch opens, the motor stops, and the closing coil circuit is set up through one side of the MCO switch.

The circuit breaker can now be closed by depressing the latch hood (8) or by energizing the closing coil (CC) through the external close control switch (CSC). When the close circuit is energized, the "Y" relay is energized and opens the "Y" contact in the motor circuit. This prevents "pumping" or repeated attempts to close the circuit breaker if a tripping signal or fault is present.

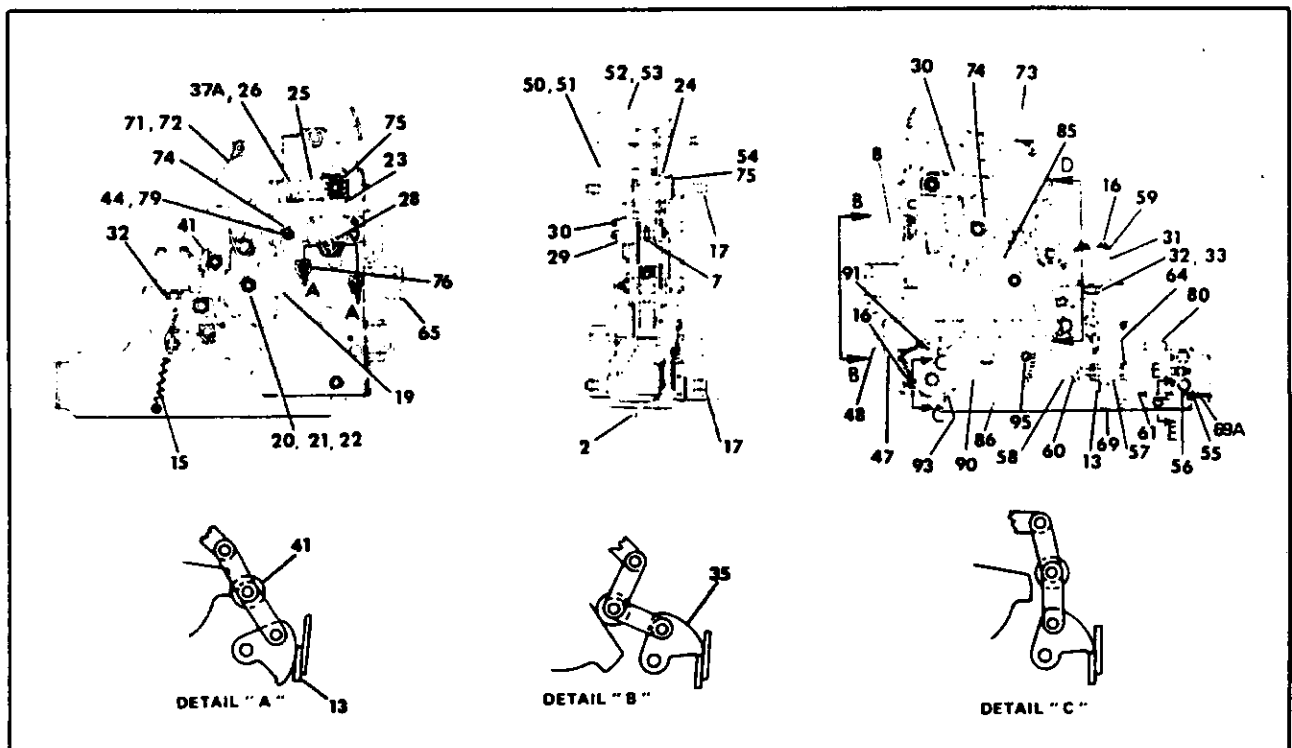


Figure 1. LAF & LA-600B, LA-800A and LA-1600B Operator

Operation

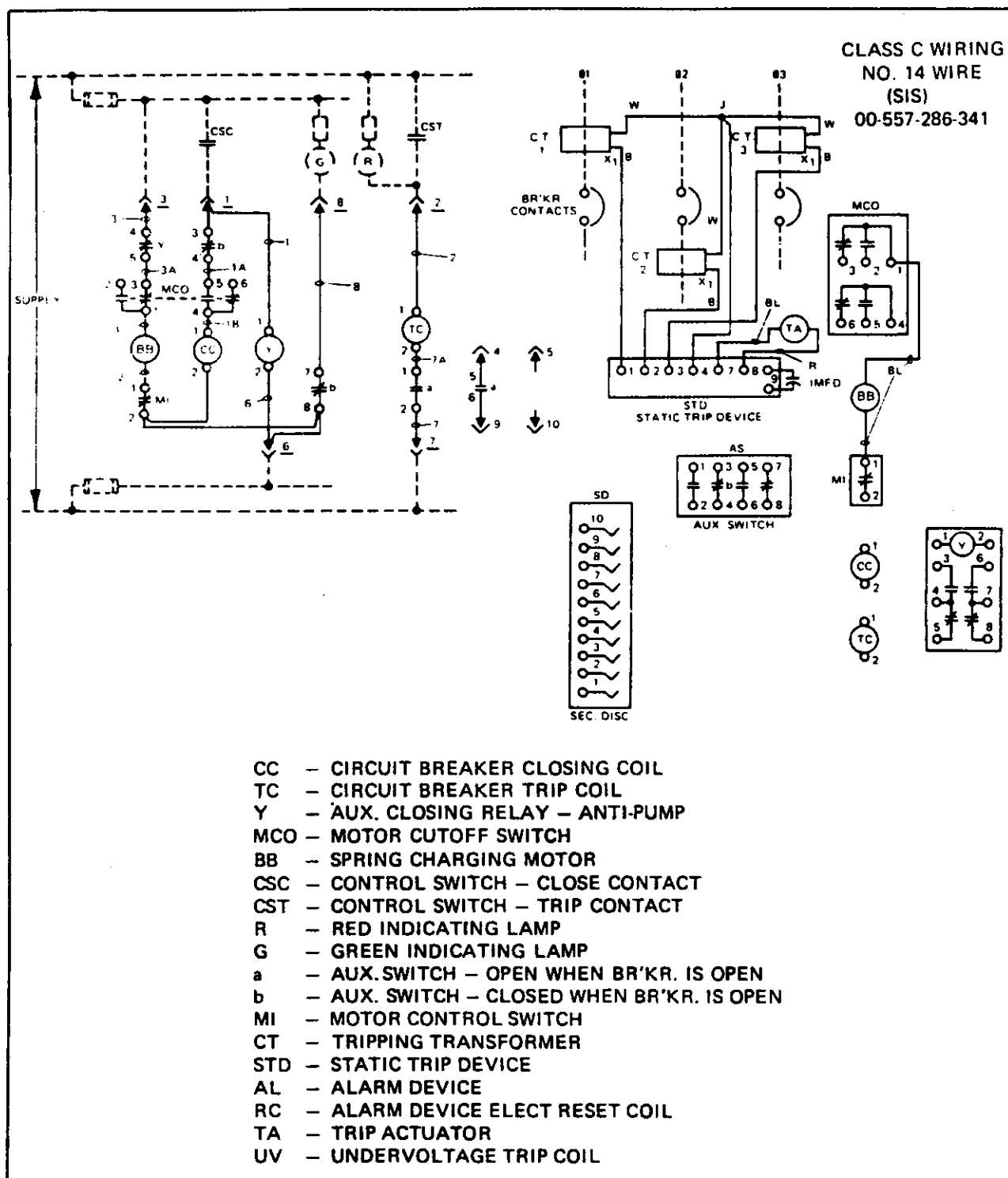


Figure 2. Typical Wiring Diagram — Electrically Operated Breakers

Operation

C. COMBINATION E.O. & M.O. OPERATED CIRCUIT BREAKER

The combination manually and electrically operated circuit breaker includes both the motor-gear charging system as well as the manual charge handle.

NOTE

Manual charging handle must be in vertical position during electrical charging.

Drawout Interlock

Integral parts of the circuit breaker mechanism include provisions to:

1. Rack the circuit breaker in or out of the cubicle compartment.
2. Interlocking to prevent racking a closed circuit breaker into or out of the connected position.
3. Interlocking to prevent closing a circuit breaker until it is fully racked to the connect position.
4. Interlocking to prevent withdrawing a circuit breaker from the cubicle while the closing springs are charged.

Racking Mechanism

Refer to Figures 3 and 3A, pages 8 and 9. With the circuit breaker resting on the cubicle rail, the following sequence should be used to rack the circuit breaker into the cubicle.



CAUTION

On electrically operated breakers, be sure the motor control switch on the front of the breaker is "OFF."

1. Push trip bar in, lower interlock slide and insert racking crank.

NOTE

Interlock slide cannot be opened unless manual trip bar is pressed in. While the trip bar is pressed in, the circuit breaker is in the TRIP-FREE position and cannot be closed.

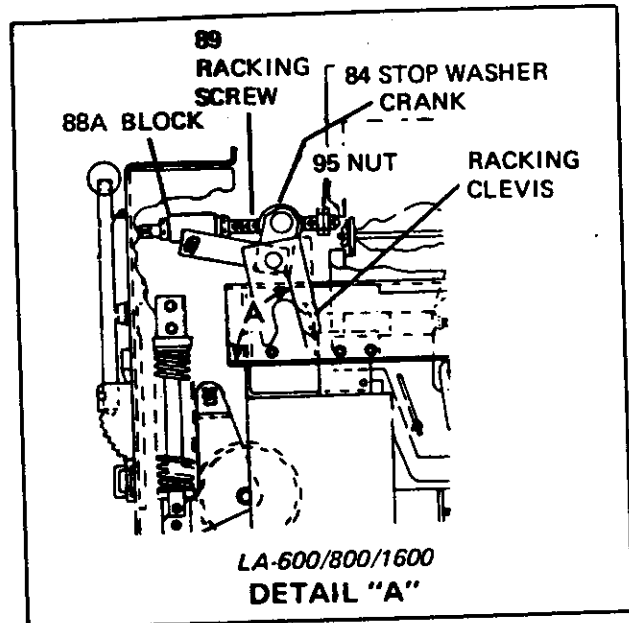


Figure 3. Detail of Typical Racking Mechanism and Drawout Interlock

2. With the racking crank, rotate the racking screw (89) until the racking shaft is in the disconnected position. The clevis can now engage the racking pins in the cubicle. The circuit breaker should now be pushed along the rail into the DISCONNECTED position. Double check that the racking clevis does engage the pins in the cubicle.
3. Counterclockwise rotation of the racking screw will rack the breaker into the TEST position. At the TEST position, the cover slide interlock can be closed, allowing the trip bar to reset and the circuit breaker can be operated. Between the TEST position and the CONNECTED position, interlock IT67 Figure 3A will engage the cubicle interlock cam IT509 Figure 3A and the circuit breaker will be held TRIP FREE and cannot be closed.

In the CONNECTED position, the interlock will clear the cubicle interlock cam and reset, allowing the circuit breaker to be closed. This prevents closing a circuit breaker which is not in the CONNECTED position.

4. To withdraw the breaker from the CONNECTED position, the procedure is the same only the racking screw rotation is clockwise.
5. Before attempting to operate the circuit breaker, the position of the device should be checked with reference to the marking in the cubicle, to be certain that it is fully con-

Operation

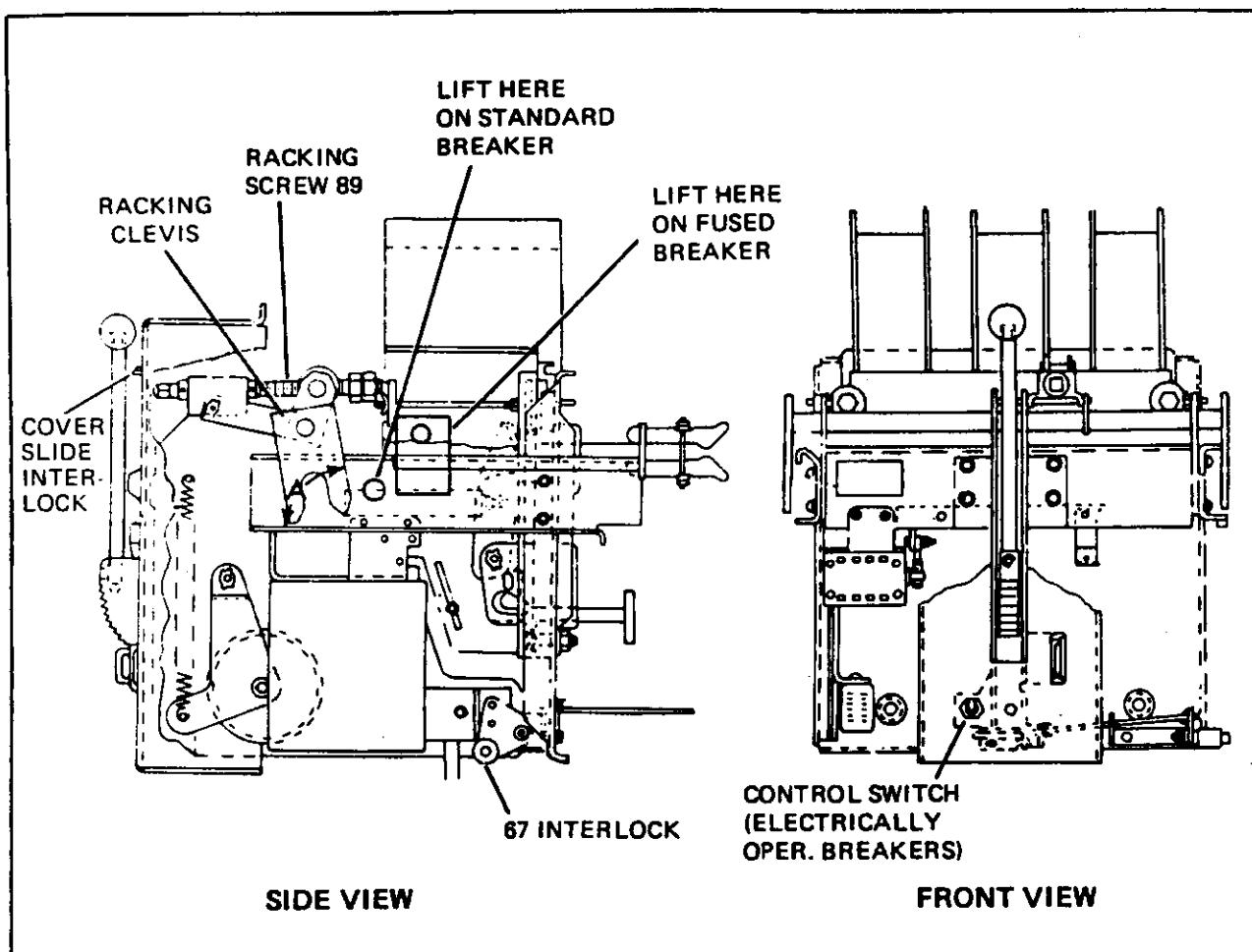



Figure 3A. Typical Racking Mechanism and Drawout Interlock.

ected. Two stop nuts are provided on the racking screw to set the connected position. These are adjusted by setting the angle of the racking clevis, as shown in Detail A, Figure 3, and by tightening the nuts against the stop washer (84), the two nuts (95), should then be locked against each other.

	CAUTION
	To avoid damage to the racking mechanism, do not rotate the racking crank in the counterclockwise direction, when in the CONNECTED position.


Spring Discharge Interlock

When racking the circuit breaker out to the DISCONNECTED position, the closing springs will automatically discharge, at or before reaching the disconnect position. The barrel nut engages the spring interlock. This, in turn, connected to the manual close hood which releases the closing springs.

	<p>⚠ CAUTION</p> <p>On manually charged breakers, the close hood is interlocked to the manual charge cam, and must be clear before racking the circuit breaker to the DISCONNECT position.</p>
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<p>NOTE</p> <p>Manual charge handle must be in the vertical position during racking. The racking mechanism must be returned to the TEST position before closing springs can be charged (either in the cubicle or when removed from the cubicle).</p>

Note also that the spring discharge interlock produces a TRIP-FREE operation in which all of the stored energy of the springs is dissipated in the mechanism. It is preferable to turn the motor control switch off in the TEST position, close and trip the circuit breaker normally in that position and then rack out in the normal manner.

	<p>⚠ CAUTION</p> <p>The slide interlock is not in place with cover removed. An open circuit breaker will close if the stored energy springs are automatically discharged while cover is removed.</p>
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Lifting Bar

The lifting bar connects as shown for the standard circuit breaker. Additional lifting lugs ITEM 424 Figures 9 and 10 are provided as part of the fused circuit breaker due to the overhand of the fuses which shifts the center of gravity.

Handling Instructions

INSERTING CIRCUIT BREAKER

1. Place circuit breaker in front of rails, checking alignment to rails.
2. Push breaker to disconnect position. Safety lock (A) prevents accidental removal of breaker from cell.
3. Use crank to rack breaker into cell.
4. Check panel shutters (B) for free movement before closing panel.

REMOVING CIRCUIT BREAKER

1. With circuit breaker in disconnect position, pull breaker out until stopped by safety lock.
2. Put on lifting bar and lift weight off rails with hoist.
3. Pull on safety lock handle to fully release breaker from cell.
4. Remove breaker from cell.

Maintenance

Maintenance

Occasional checking, cleaning and exercising of the circuit breaker will promote long and trouble-free service. A periodic inspection and servicing, normally at intervals of one year, should be included in the maintenance routine. Circuit breakers located in areas subject to acid fumes, cement dust, or other abnormal conditions, require more frequent servicing. After a severe overload interruption, the circuit breaker should be inspected. Refer to ANSI Standard C37.16, Table 5 for recommended servicing intervals.

If the circuit breaker is not operated during extended periods, it should not remain in either the closed or open position any longer than six months. Maintenance opening and closing operations should be made to ensure freedom of movement of all parts.

A suggested procedure to follow during maintenance inspections:



⚠ DANGER

Do not work on energized equipment. Unauthorized personnel should not be permitted near energized equipment.

Plan the time for maintenance with operating personnel so that the switchgear can be de-energized, and safely grounded.

1. De-energize the primary and control circuits.
2. Rack circuit breakers to the disconnected position.
3. Remove circuit breaker from cubicle.

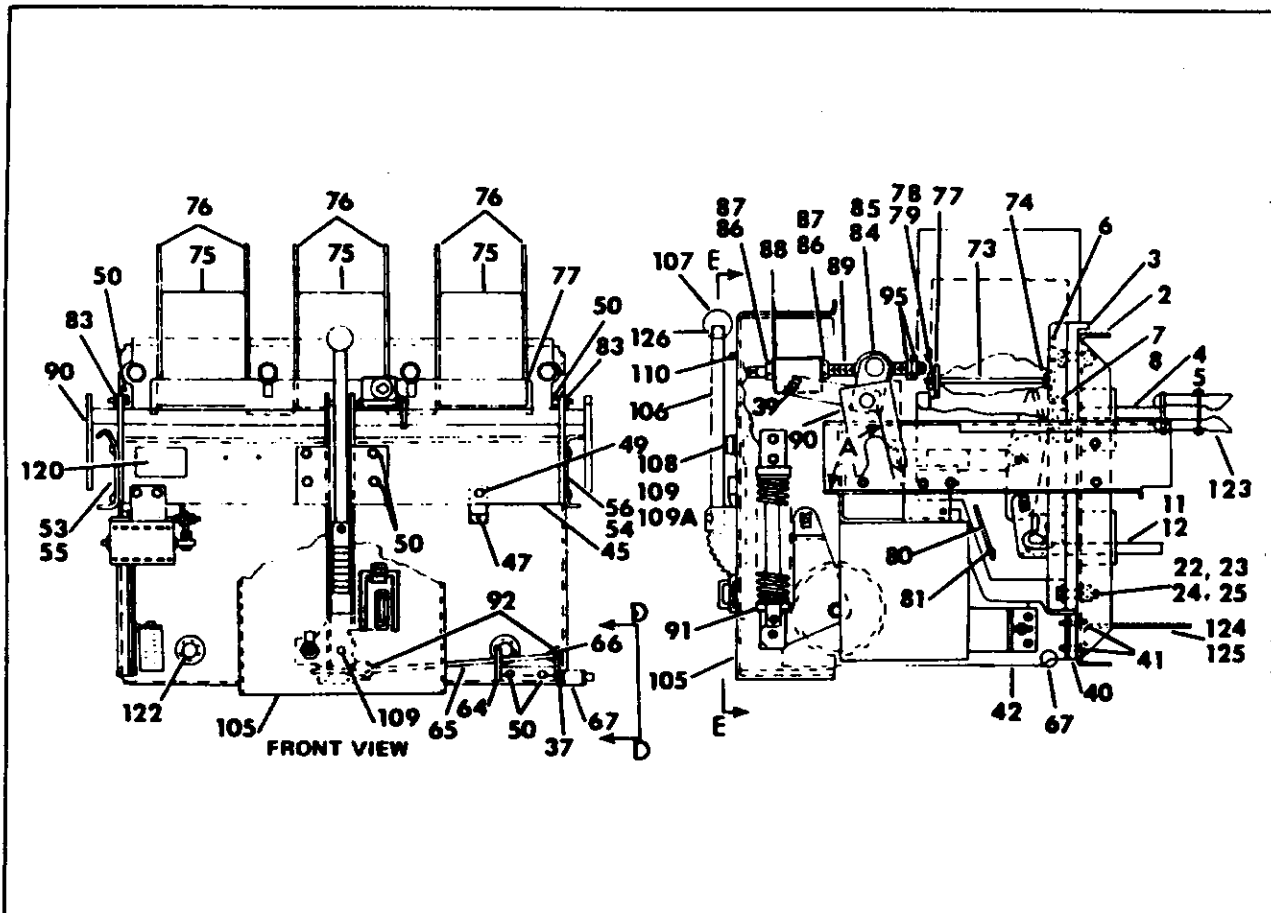


Figure 4. Typical LA-1600B Breaker Outline

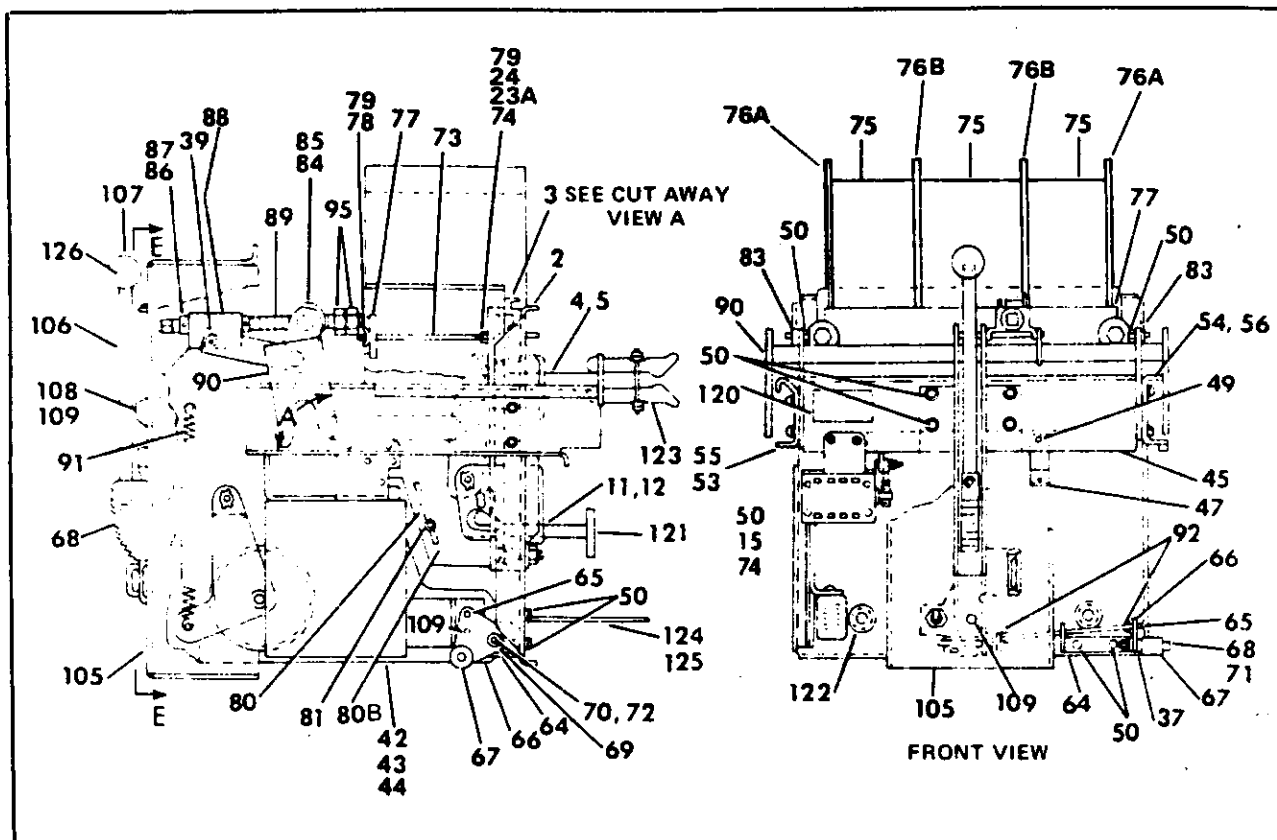


Figure 5. Typical LA-600B and LA-800A Breaker Outline

4. Remove arc chutes (Figures 4 and 5, Item 75), and examine for burned, cracked or broken parts. To remove arc chutes, proceed as follows:
 - a. Remove wing nuts from holding bar, remove bar and phase barriers.
 - b. Lift arc chutes vertically to clear arc runners.
5. Wipe the contacts with a clean cloth saturated with a non-toxic cleaning fluid.
6. Replace badly burned or pitted contacts. (See Contact Replacement, Page 16 and Lubrication Instructions, Page 29.)
7. Wipe all insulated parts with a clean cloth saturated with a non-toxic cleaning fluid.
8. Bearing pins and other sliding or rotating surfaces should be cleaned and then coated with a light film of grease. (See Lubrication Chart, Page 29.)
9. Charge the springs manually and maintenance close to check latch and linkage movement. (Rotate racking screw to the approximate TEST position to clear spring discharge interlock before attempting to charge closing springs.)
10. Check circuit breaker adjustments. (See Adjustments, Page 13.)

Lubrication

Lubrication should be a part of the servicing procedure. Old grease should be removed from bearing pins and other non-current carrying rotating or sliding surfaces. They should be wiped with a thin film of petroleum-oil-based precision-equipment grease, such as Beacon P-290 (Exxon). Grease with care to avoid getting on insulating members, since it may affect the dielectric strength. Faces of arcing contacts should not be lubricated. The rubbing surfaces of the main contact fingers and hinge contact fingers are lubricated with a coating of Siemens contact lubricant, 15-171-370-002. If dust has accumulated, disassembly is

Maintenance

necessary to clean and relubricate these points. See Contact Replacement, Page 15 and Lubrication Instructions, Page 29.

Maintenance Closing

Table 5. Maintenance Closing

Operation	Procedure
Closing Contacts	<ol style="list-style-type: none">1. Verify that racking mechanism is in TEST position.2. Pull charging handle DOWN ALL THE WAY (approximately 120°).3. Place blade of screwdriver between hood and spring release latch and hold it in DOWN position.4. Slowly return handle to vertical position. Observe contact, touch, mechanical operation, etc.
Opening Contacts	Push in manual trip rod.


NOTE

Holding the spring release latch down prevents the stored-energy springs from propping in the charged position. Thus, when the handle is slowly returned to the normal vertical position, the energy in the springs is slowly released against the closing handle assembly cam face.

During inspection prior to installation, and for routine maintenance inspections, the circuit breaker contacts may be closed slowly to check clearances, contact adjustments, and movement of links and latches.

Electrically operated breakers do not have a manual charging handle, but it is available as a maintenance item. Figure 6 shows the charging handle installed in an electrically operated breaker after removal of the front cover from the breaker. When the hole in the charging handle assembly is aligned with the holes in the operating mechanism frame, the pin which is attached to the cam is inserted. This pin holds

the assembly in place and acts as a pivot point for the cam. After insertion of the maintenance closing handle assembly on the electrically operated breaker, the actual maintenance closing operation is the same for both the electrically operated and the manually operated circuit breaker. Refer to Table 5, Figure 6.



CAUTION

The procedure in Table 5 should be used for maintenance closing only. Maintain a firm grip on the manual charging handle during the closing stroke—the circuit breaker may suddenly latch fully closed and apply unexpected force to the charging handle.

Adjustments

During maintenance inspections, the following items should be checked to ensure that the original settings are maintained:

Trip Latch Engagement

Toggle latch (35) should engage the full width of trip latch (13) when the circuit breaker is closed in the normal manner. The tension on spring (15) can be increased if required by bending spring tab on trip flap towards the front of the circuit breaker. Too much tension will interfere with the capability of the tripping actuator to move the trip flap, so over-bending should be avoided. (See Figure 7.)

Main Contact Make

Compression of contact fingers (9) must be between .093" and .125" (2.4-3.2 mm). This is the difference in the measurement from the breaker base to the tip of the finger contact surface when the breaker is open. Measure in the same place when the breaker is closed. This is checked with a normal closing operation—not maintenance closing. Adjustment is provided by positioning screws (35) after loosening nuts (36). Counterclockwise rotation of screws (35) increases compression. Care should be taken to retighten nuts (36) after adjustment. If it is desired to check contact pressure, a push-type spring scale can be used to compress contact fingers (9) with breaker open. Contact pressure should be between 20 and 30 pounds (9.1-13.6 kg) on each finger. (See Figure 8.)

Maintenance

MAINTENANCE CLOSING HANDLE ELECTRICALLY OPERATED BREAKERS

MAINTENANCE CLOSING HANDLE SEE PAGE 14

RELEASE LATCH HOOD

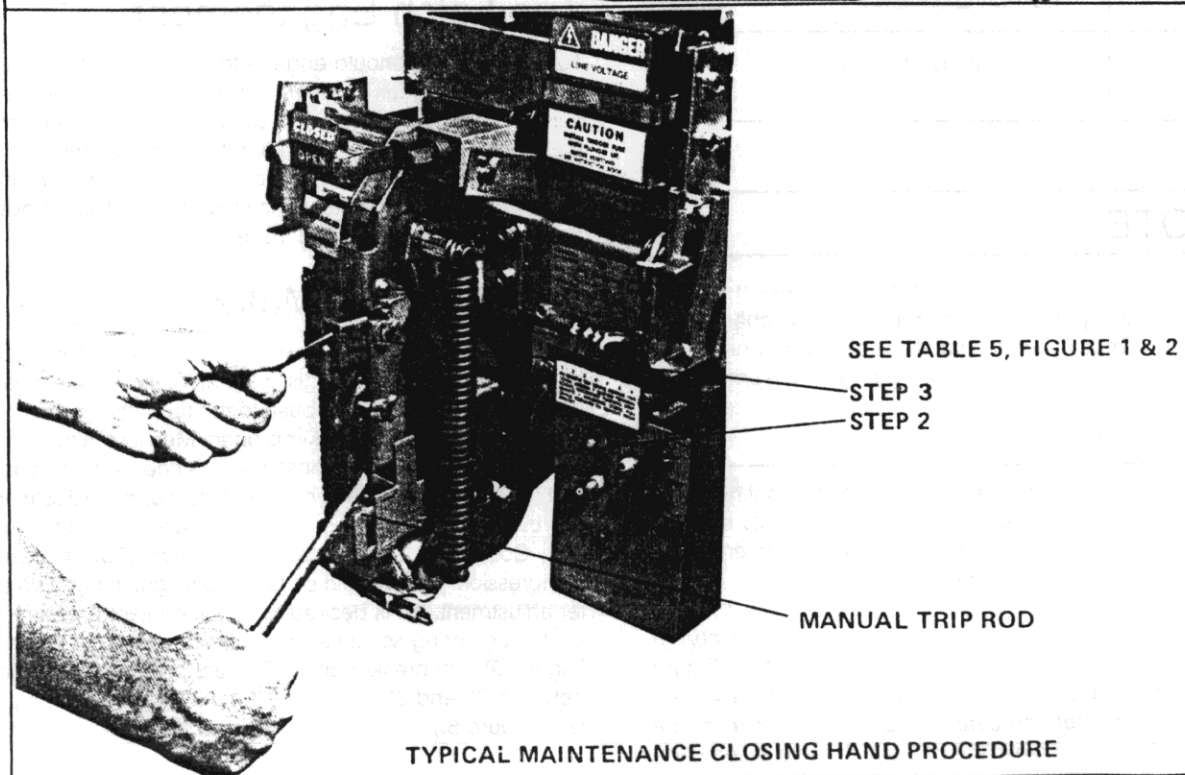


Figure 6. Maintenance Closing

Maintenance

Arcing Contact Make

With the movable arcing contact (27) in any one phase touching the mating stationary contact when the circuit breaker is closed by the maintenance closing method (see Table 5), the phase-to-phase variation should not exceed .062" (1.6 mm). Adjustment may be made by positioning screws (35) as in the previous paragraph. It is essential that the main contact compression be maintained within the tolerance listed in the previous paragraph. Arcing contact pressure should be between 30 and 40 pounds (13.6-18.2 kg)

when checked with a pull-type spring scale at the base of the arcing contact tip insert with the circuit breaker contacts closed. Measure each blade separately. (See Figure 8.)

Contact Replacement

The contact structure consists of main current carrying contacts and arcing contacts arranged so that the initial contact make and final contact break is by means of the arcing contacts. The actual contact surfaces are clad with an alloy facing which greatly reduces mechanical wear and arc erosion.

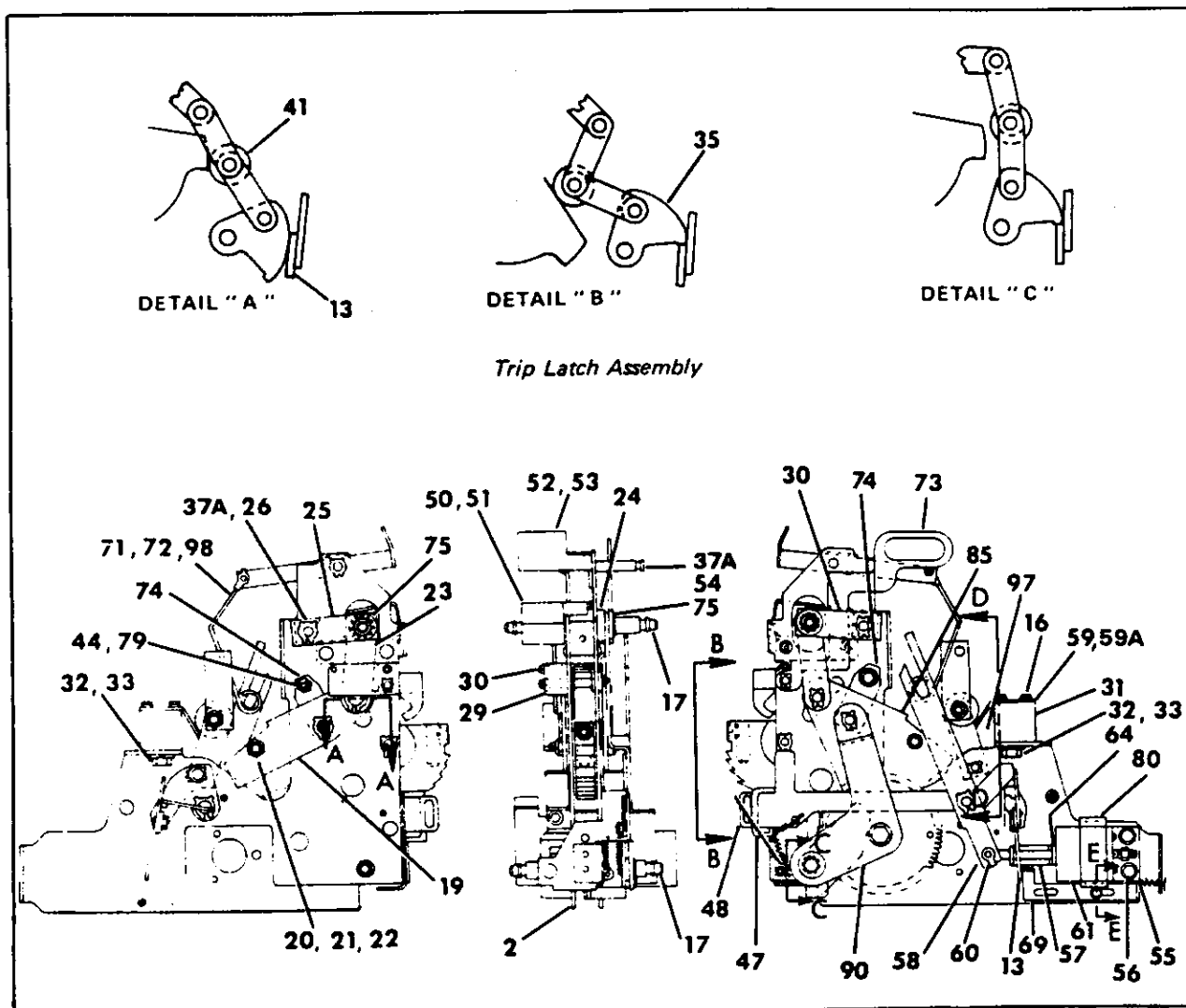


Figure 7. Typical Operator Assembly

Maintenance

When inspection of the alloy facing indicates that the contacts should be replaced, it should be noted that hinge contact fingers (20, 21) main contact fingers (9), and arcing contacts (27), are spring loaded. Therefore, care must be used in removal and installation of any of the contacts.

Main Contact Fingers

With the circuit breaker contacts open and the stored-energy springs discharged, the main contact fingers (9) may be re-

moved by loosening screws (18) enough to relieve the compression on springs (10). There are two springs behind each finger. It is important that they be positioned properly upon reinstallation. If difficulty is experienced in correctly positioning these springs, the upper and lower primary disconnects (Figure 1, Item 123), may be removed from each phase and the circuit breaker inverted to rest on the ends of connectors (4) and (11). After the contact fingers are replaced, connector (4) should be positioned in the center of the slot in the molded base to assure correct alignment of the primary disconnect fingers. (See Figure 9.)

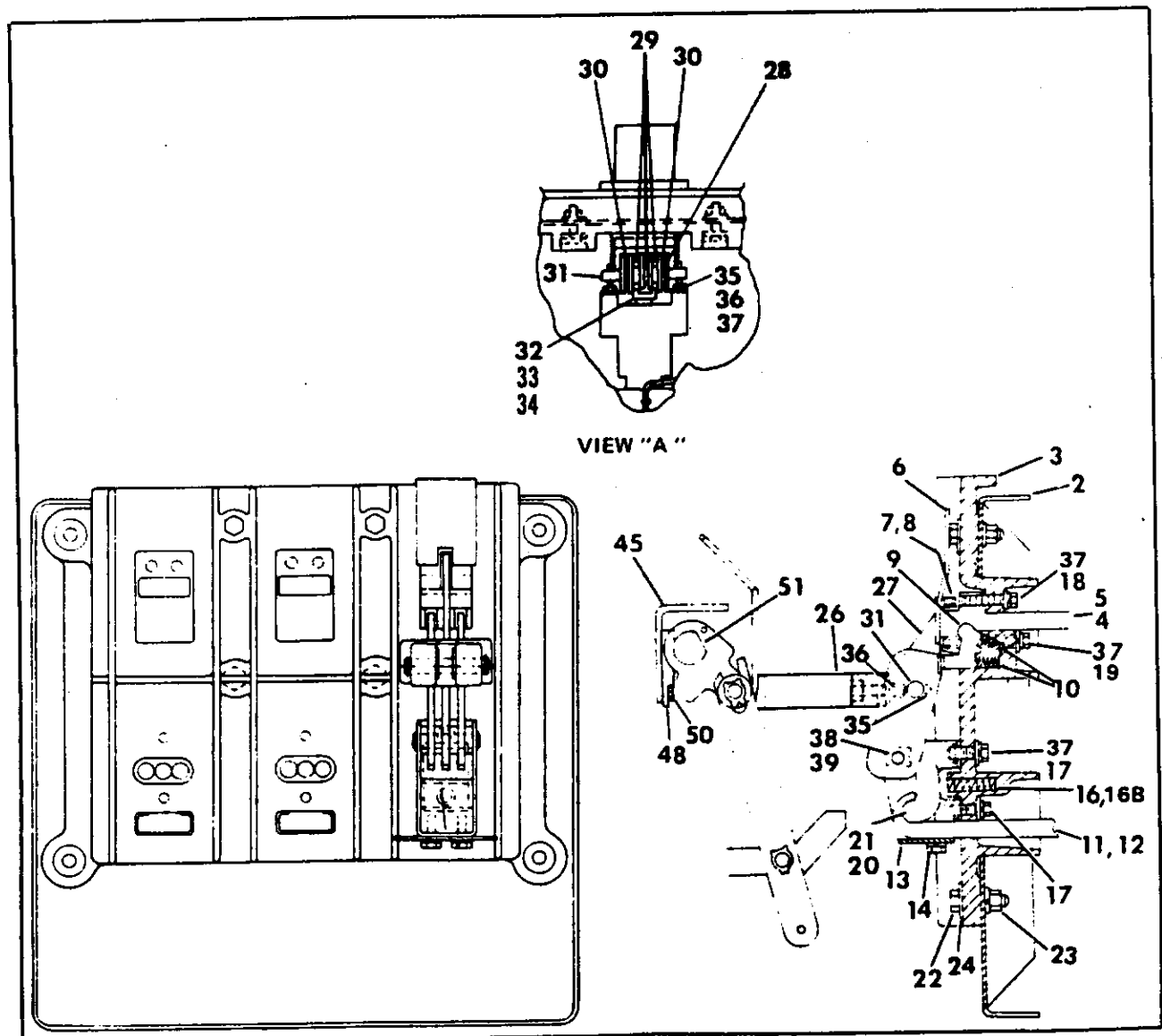


Figure 8. Contact Assembly

Maintenance

Stationary Arcing Contact

The stationary arcing contact is a part of connector (4) and may be replaced by proceeding as above. In this case, screws (18) must be removed. However, to provide clearance for removal of connector (4), first insert a 3/16" (4.7 mm) diameter rod at least 2" (50 mm) long through the opening in support (13). It may be necessary to compress contact (21) opposite arcing contact (27), in order to insert the rod. This will hold hinge contact fingers (21) in position to permit removal of pin (38). After removal of pin (38), main contact (28), and arcing contact (27) can be positioned so that connector (5) can be removed. (See Figure 8.)

Hinge Contact Fingers


Hinge contact fingers (20, 21) may be removed as follows:

Remove top screw (17) from support (13), and replace it with a 1/4-20 screw at least 1-1/2" long. Remove lower screws and then gradually back off the 1-1/2" screw to relieve the loading from springs (16). The hinge contact fingers can now be removed. To provide easier access to the hinge contact fingers, pin (38) may be removed after the loading is relieved from springs (16). (See Figure 8.)

Movable Arcing And Main Contact

Either movable arcing contact (27), or main contact (28), or both, may be removed and replaced as follows:

Remove two screws on each side of lower connector. The complete movable contact assembly may now be brought to the bench. The location of spacers should be noted, if necessary. (See Figure 8.)

	CAUTION Extreme care should be taken to hold the assembly firmly to retain spring guide (32), and spring (33, 34) upon removal of the screws.
---	---

The movable arcing contact or main contact may now be easily replaced. The reverse procedure is followed for reinstallation. Care should be taken to replace spacers correctly. Check alignment and adjustment of contacts upon reassembly.

Tripping Actuator Replacement

When the static trip device senses a circuit condition that requires the circuit breaker to open, it produces an output that is fed to the tripping actuator. This device then causes the circuit breaker contacts to open and isolate the circuit.

Mounted on the circuit breaker, the tripping actuator is held in a charged position by a permanent magnet. It contains a coil that is energized by the output of the static trip device. When energized, the coil causes the magnetic flux to shift to a new path, releasing the stored energy of a spring located inside the tripping actuator. The spring provides the energy to trip the breaker, moving the trip-flap clear of the toggle latch.

If the spring-loaded armature does not reset during trip operation, spacer washers may be added to obtain positive reset of the armature. If adding spacers does not cause the armature to be reset, the tripping actuator should be replaced (if breaker mechanism is not at fault).

NOTE

Do not attempt to disassemble the tripping actuator as this may destroy the magnetic field set up by the permanent magnet and will render the actuator latch inoperative until magnetized.

When replacing a tripping actuator, the coil leads must be connected to the terminal block of the static trip in the correct polarity relationship.

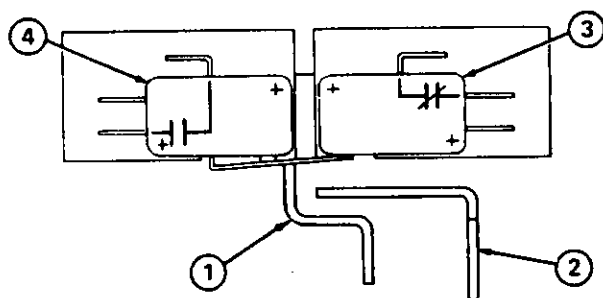
The black lead of coil must be connected to terminal 7 (negative), and the red lead of coil connected to terminal 8 (positive), of the static trip device.

When the tripping actuator has been replaced, the circuit breaker should be given a FUNCTION TEST to ensure proper operation of all components. Refer to Siemens-Allis Instruction Book covering the trip device for the test instructions.

Motor Cutoff Switches (For Electrically Operated Breakers)

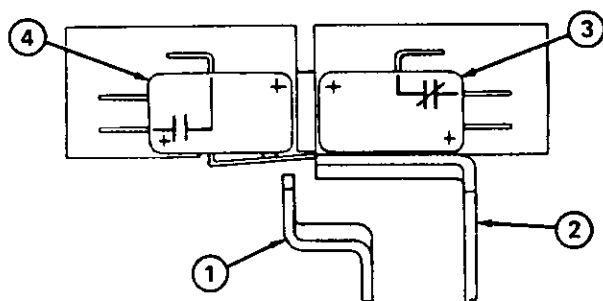
Bottom View

Position 1. Springs Discharged; Motor in Stop Position



Note that spring position lever (1) is forward actuating both switches. Motor/gear position (2) lever is retracted. Motor cutoff switch (3) is closed. Application of power at this time will cause the motor to start thereby charging the closing springs.

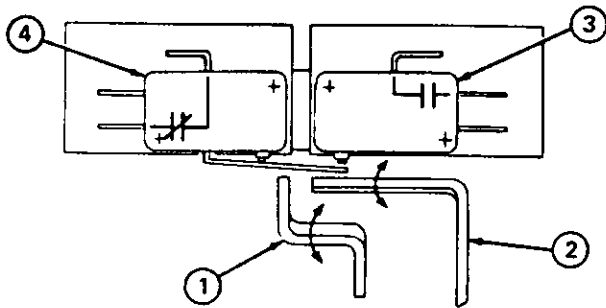
Position 2. Springs Charging; Motor Not Yet Cutoff



While the springs are charging the motor/gear position lever (2) moves forward applying pressure to the switch actuating leaf. The spring position lever (1) retracts as the springs reach full charge. The motor cutoff switch (3) is closed and the motor is running.

Maintenance

Position 3. Springs Charged; Motor Stopped



The springs have reached charged position. The motor/gear lever (2) has been retracted by roll pins on the large gear as the cam follower (95, Figure 7) on the large spur gear has disengaged from the wind and close cam (85). The motor cutoff switch (3) has opened, stopping the motor, and the closing coil switch (4) has closed. Upon application of power to the closing circuit the breaker will close. Switches then return to No. 1 position.

NOTE

In position 3 there is clearance between both levers and the switch actuating leaf. Clearance may be minimal (appx. 1/64) or up to 1/16 inch (0.4-1.6 mm). It is important to completely remove pressure from the switch actuating leaf to be sure that the switches are free to actuate. Adjustment is made by carefully bending the levers as indicated by arrows (Items 1 and 2). Do not bend the switch actuating leaf.

CAUTION



If the motor cutoff switch (3) does not open, the motor will continue to run and the cam follower (233) will re-engage wind and close cam (85, Figure 7) jamming the entire mechanism, possibly stripping gears in the gear motor, blowing the control fuse, or damaging the motor. To free a jammed mechanism it is necessary to remove the gear motor.

CAUTION



The springs will discharge and the breaker close when the gear motor pinion is disengaged from the spur gear, the manual charging handle or maintenance closing mechanism can be used to prevent this. Pull handle down to support the closing springs while motor is being removed.


Fuse Functions

Current Limiting Fuses

Current limiting (C.L.) fuses are used to increase the interruption capacity beyond that of the breaker alone or to the limited the fault "let-thru" current down stream of their installation. The C.L. fuses used with LAF-600, LAF-800 and LAF-1600 circuit breakers are special purpose fuses having NEMA Class "J" or Class "L" characteristics with a 200,000 Amps RMS Symmetrical Interrupting capacity.

When fuse replacement is required, only use fuses of the same manufacturer, type and rating as supplied with the cir-

cuit breaker. Different fuses may not properly mount on the breaker and may have different protective characteristics.



⚠ DANGER

Be sure to replace barrier, Item 463, Figure 9 and 10 before installing in cubicle. Failure to do so could result in property damage, electrical shock, burns, personal injury or possible death.

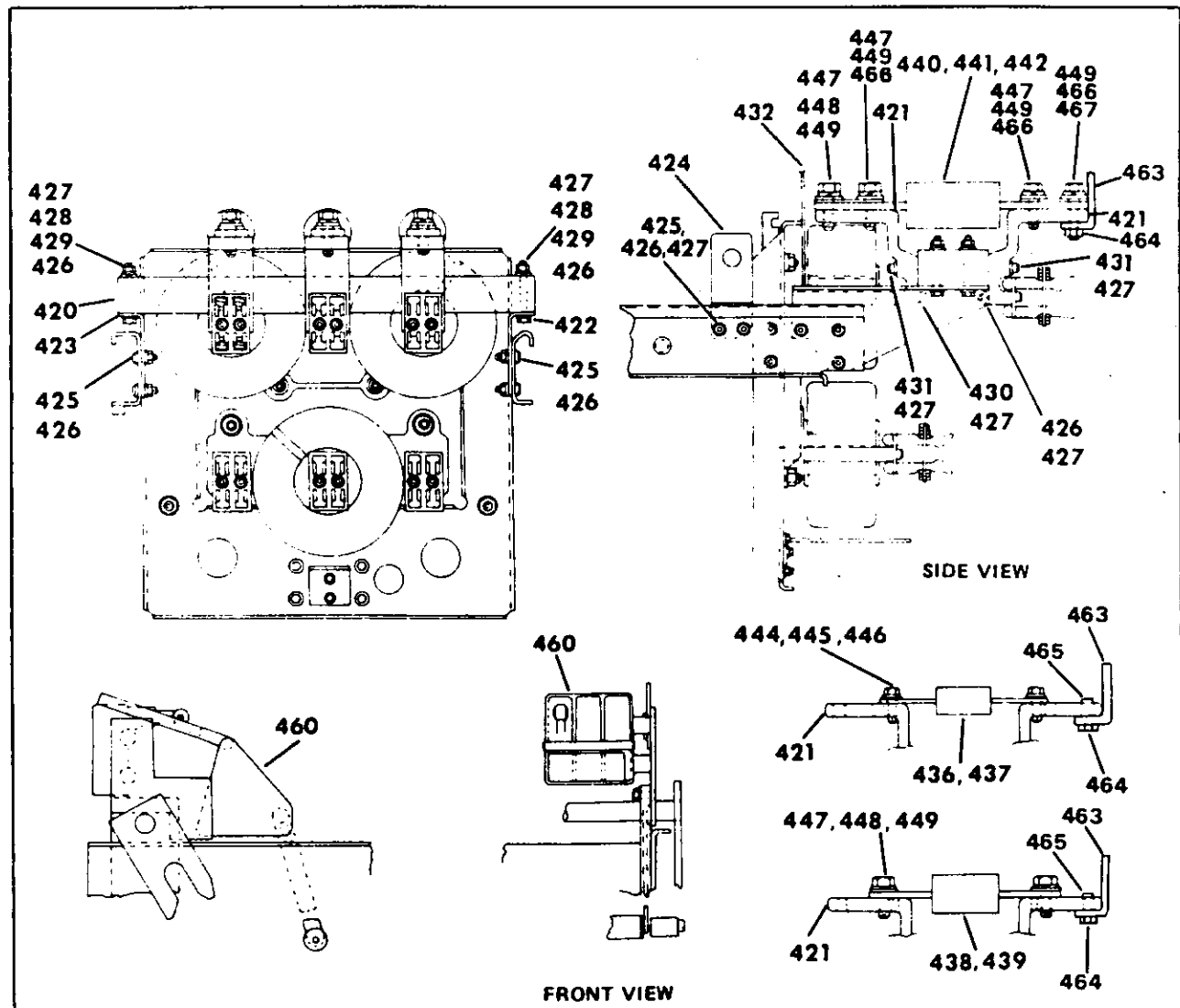


Figure 9. Fuse Attachment Group LAF-600B, LAF-800A Breakers

Fuse Functions

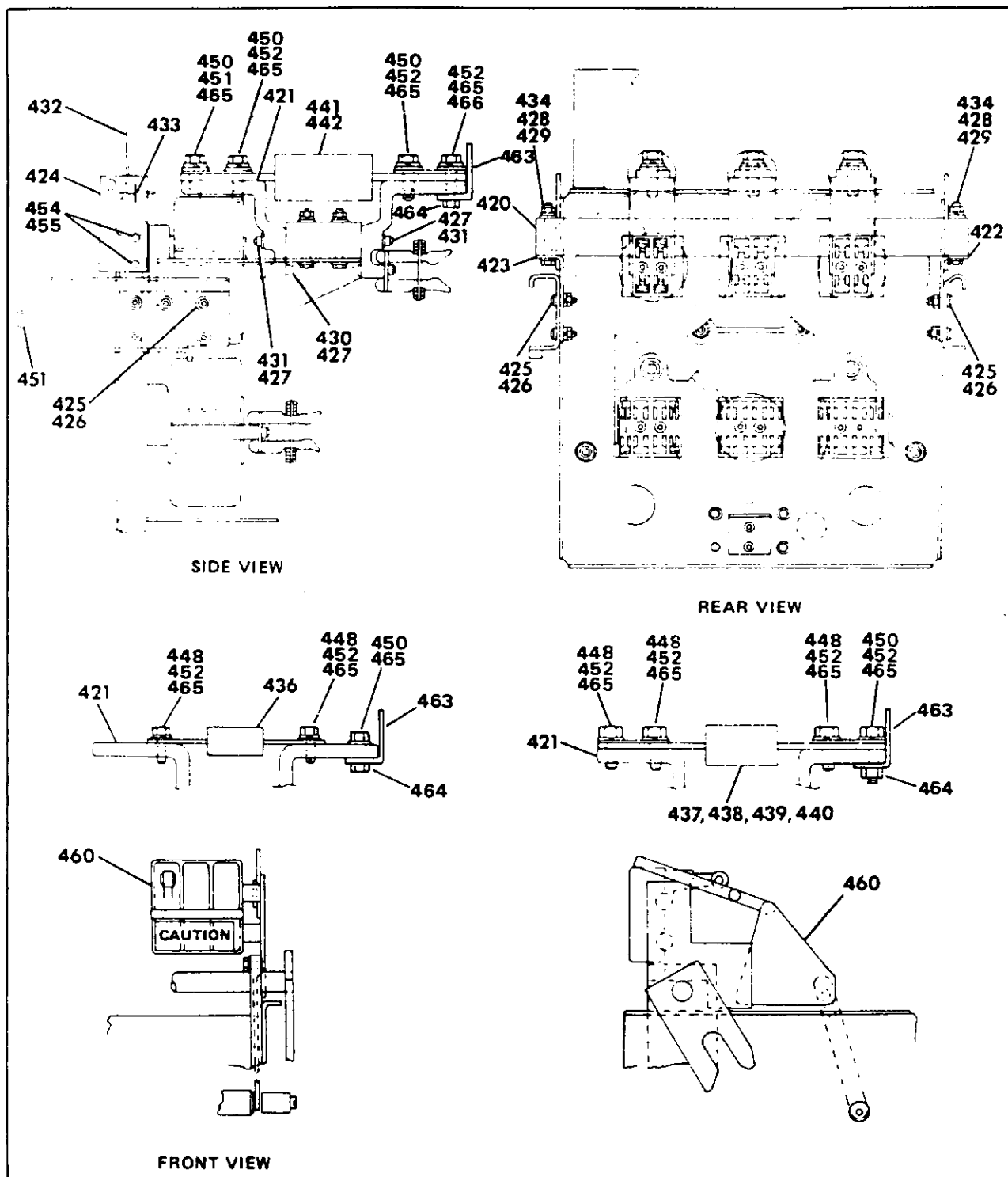



Figure 10. Fuse Attachment Group LAF-1600B Breaker

Fuse Functions

Open Fuse Trip Device



⚠ DANGER

Do not remove trigger fuse cover when breaker is in connected position. Line voltage may be available inside the trigger fuse assembly. To do so could result in property damage, electrical shock, burns, other serious personal injury or possible death.

The Open Fuse Trip mechanism has three functions. First, to trip the circuit breaker mechanically when a C.L. fuse has interrupted.

Second, to indicate which phase C.L. fuse has interrupted. The plunger on top of the trigger fuse (12), indicates visually which phase C.L. fuse has interrupted.

Third, to retain the breaker in the trip-free position until the trigger fuse is replaced.

Each trigger fuse is wired in parallel with one of the C.L. fuses. When the C.L. fuse interrupts, its associated trigger fuse also opens and releases a plunger which releases a precompressed spring contained in the trigger fuse housing.

The plunger operates arm (2), which moves the toggle, releasing the spring-loaded lever (19). This engages circuit breaker interlock through link (20). This trips the circuit breaker and holds the circuit breaker in the mechanical trip-free position.

The circuit breaker will remain trip-free (cannot be closed) until the trigger fuse has been replaced and the associated trip mechanism reset lever (17), has been manually reset (pulled down).

To remove the trigger fuse, remove strap (14), remove plastic cover (13), then the trigger fuse.

To insert the trigger fuse, reverse the above procedure.

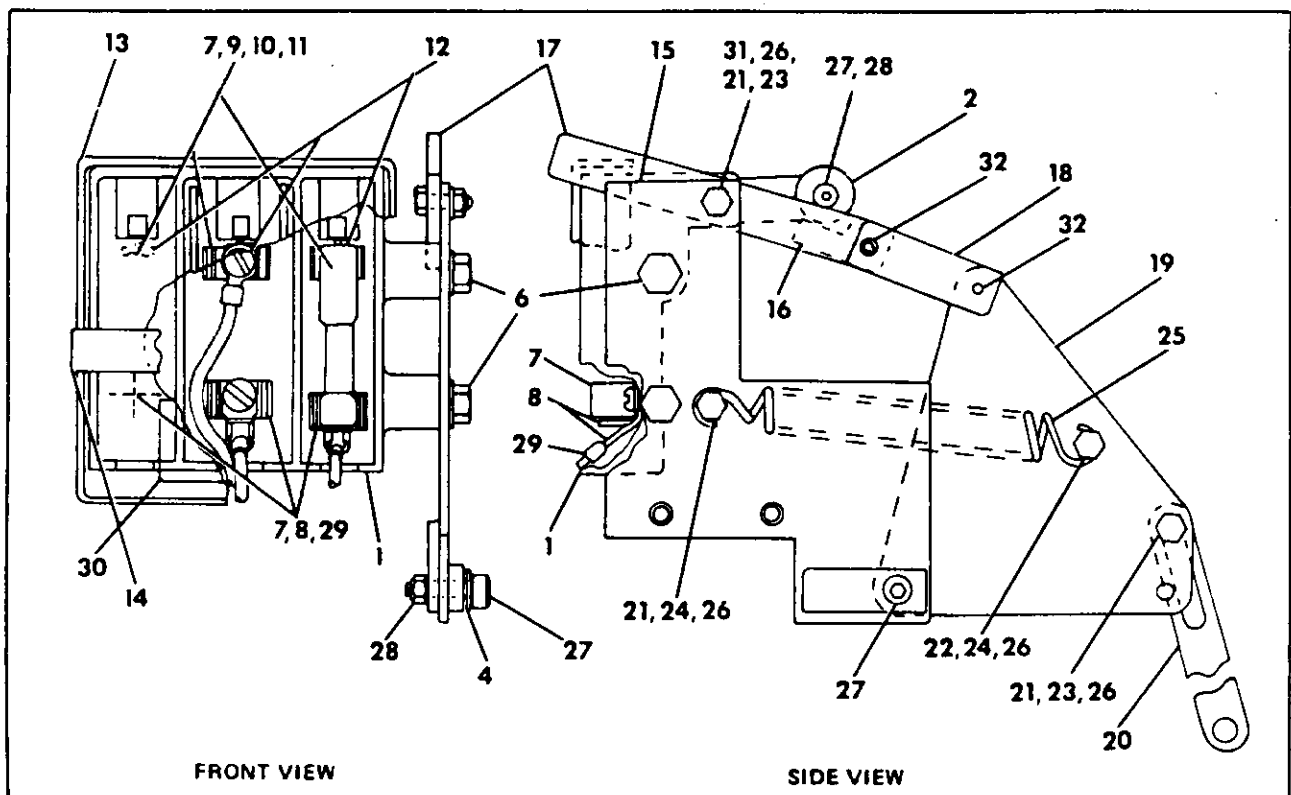


Figure 11. LAF-600B, LAF-800A and LAF-1600B Open Fuse Trip Device, Trigger Fuse Assembly

Accessories

Current Sensors— “LimiTrip”

The current sensors provided with the original LimiTrip device are integrated units containing two cores with four terminals. Proper polarity is established when the terminals face away from the panel. LimiTrip sensors should never be subjected to primary current with the LimiTrip device disconnected from the sensor. The 3 current sensors used with the LimiTrip device are always mounted on the lower connectors of the circuit breaker. The sensors can not be used with Static Trip II and Static Trip II sensors can not be used with LimiTrip.

Tripping Transformers— Static Trip II

There are several tripping transformer ratings available, each with seven calibrated pickup settings (Table 6). The tripping transformers mounted on the upper connectors of the circuit breaker are mounted with the polarity mark facing the breaker panel. The tripping transformer on the lower connector is mounted with the polarity mark facing away from the breaker panel.

Table 6. Static Trip II Trip Rating—Amperes

Breaker Type and Frame Size	Tripping XFMR Rating (Primary)	Calibrated Pick-Up Settings Long Time Element							Max. Cont. Rating	Ground Element Calibrated Pick-Up Settings			
		A	B	C	D	E	F	G		15%	25%	50%	100%
LA-600B and LA-800A	80	40	50	60	70	80	90	100	100	May not trip		40	80
	200	100	125	150	175	200	225	250	250	30	50	100	200
	400	200	250	300	350	400	450	500	500	60	100	200	400
	600	300	375	400	525	600	675	750	600*	90	150	300	600
	800*	400	500	600	700	800	900	1000	800**	120	200	400	800
*LA-600B only, 750 on LA-800A													
**LA-800A only													
Breaker Type and Frame Size	Tripping XFMR Rating (Primary)	Calibrated Pick-Up Settings Long Time Element							Max. Cont. Rating	Ground Element Calibrated Pick-Up Settings			
		A	B	C	D	E	F	G		15%	25%	50%	100%
LA-1600B	200	100	125	150	175	200	225	250	250	40	80	160	200
	400	200	250	300	350	400	450	500	500	80	160	320	400
	800	400	500	600	700	800	900	1000	1000	160	320	640	800
	1600	800	1000	1200	1400	1600	1800	2000	1600	320	640	1280	1600

Accessories

Table 7. LimiTrip Rating—Amperes

Breaker Type and Frame Size	Tripping XFMR Rating (Primary)	Long Time Element Calibrated Pickup Settings						Max. Cont. Rating
		A	B	C	D	E	F	
LA-600B and LA-800A	80	40	50	60	70	80	90	90
	200	100	125	150	175	200	225	225
	400	200	250	300	350	400	450	450
	600	300	375	450	525	600	675	600*
	800**	400	500	600	700	800	900	800**
LA-1600B	200	100	125	150	175	200	225	225
	400	200	250	300	350	400	450	450
	800	400	500	600	700	800	900	900
	1600	800	1000	1200	1400	1600	1800	1600

*LA-600B only. 675 on LA-800A

**LA-800A only

Optional Devices

Secondary Disconnect Assembly Option

The electrical attachments are wired to the terminals of a secondary disconnect assembly which is mounted on the left side of the circuit breaker. Three blocks of ten terminals each can be mounted on the breaker. The secondary disconnect assembly is accessible from the front of the circuit breaker and aligns with a stationary unit in the cubicle. The stationary contact strips should be lubricated with a light film of contact grease which is furnished with the switchgear.

Auxiliary Switch Option

This is a rotary type and functions by direct connection to the circuit breaker mechanism. The contacts are factory set—"a" (open when the breaker is open)—"b" (closed when the breaker is open) position. However, each rotor (250), may be adjusted individually in steps of 30 degrees. This adjustment is made by removing cover (257), and lifting the entire rotor assembly out of case (245)—after disconnecting arm (252) from the linkage. Cotter pin (256), and bearing (251), are removed to permit removal of rotors (250) from the shaft (249). To change rotors (250) from "a" to "b" position, the rotor should be rotated 60° in the clockwise direction after removal, and then replaced on the shaft in this new position.

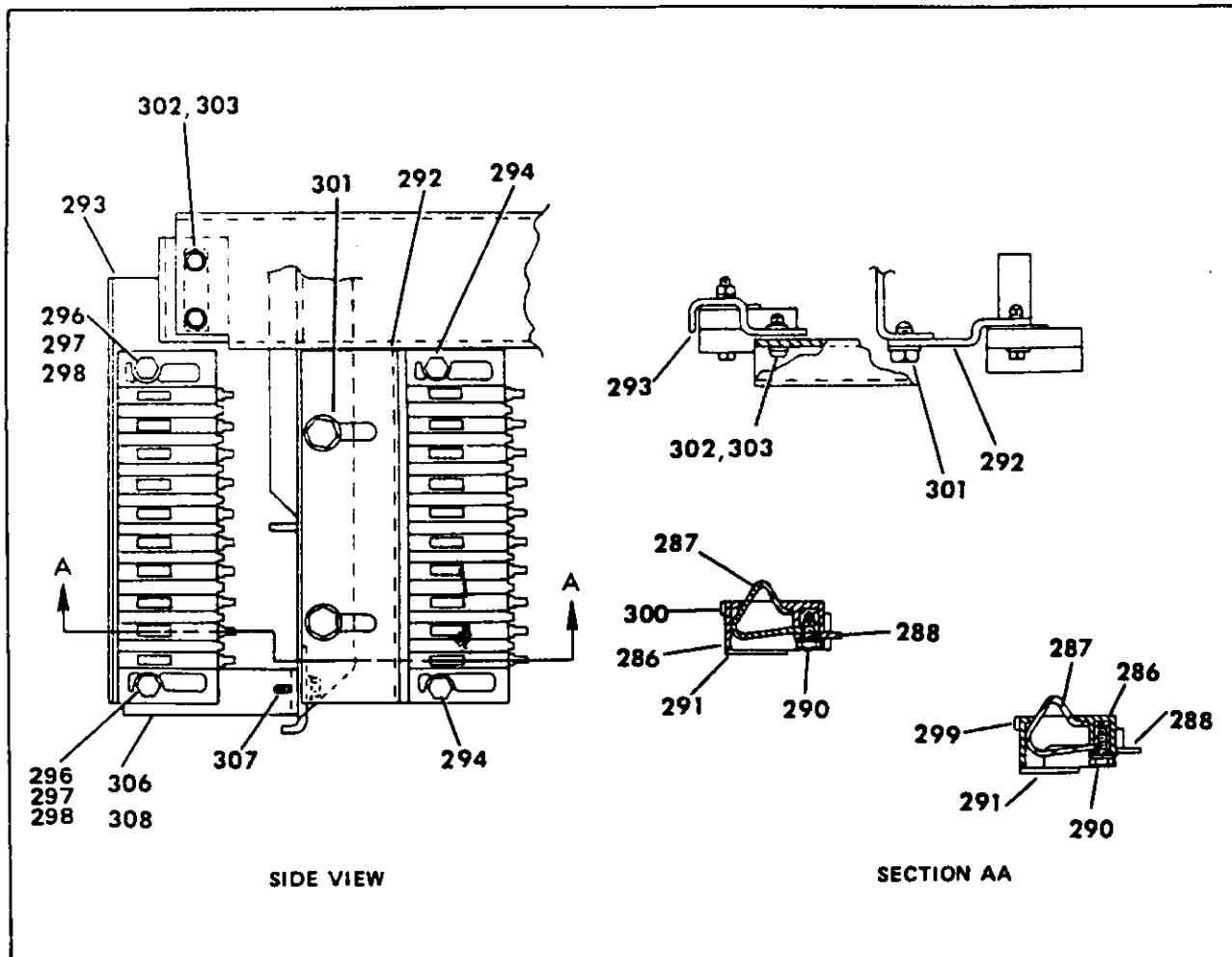


Figure 12. LA-600B, LA-800A and LA-1600B Secondary Disconnect Group

Optional Devices

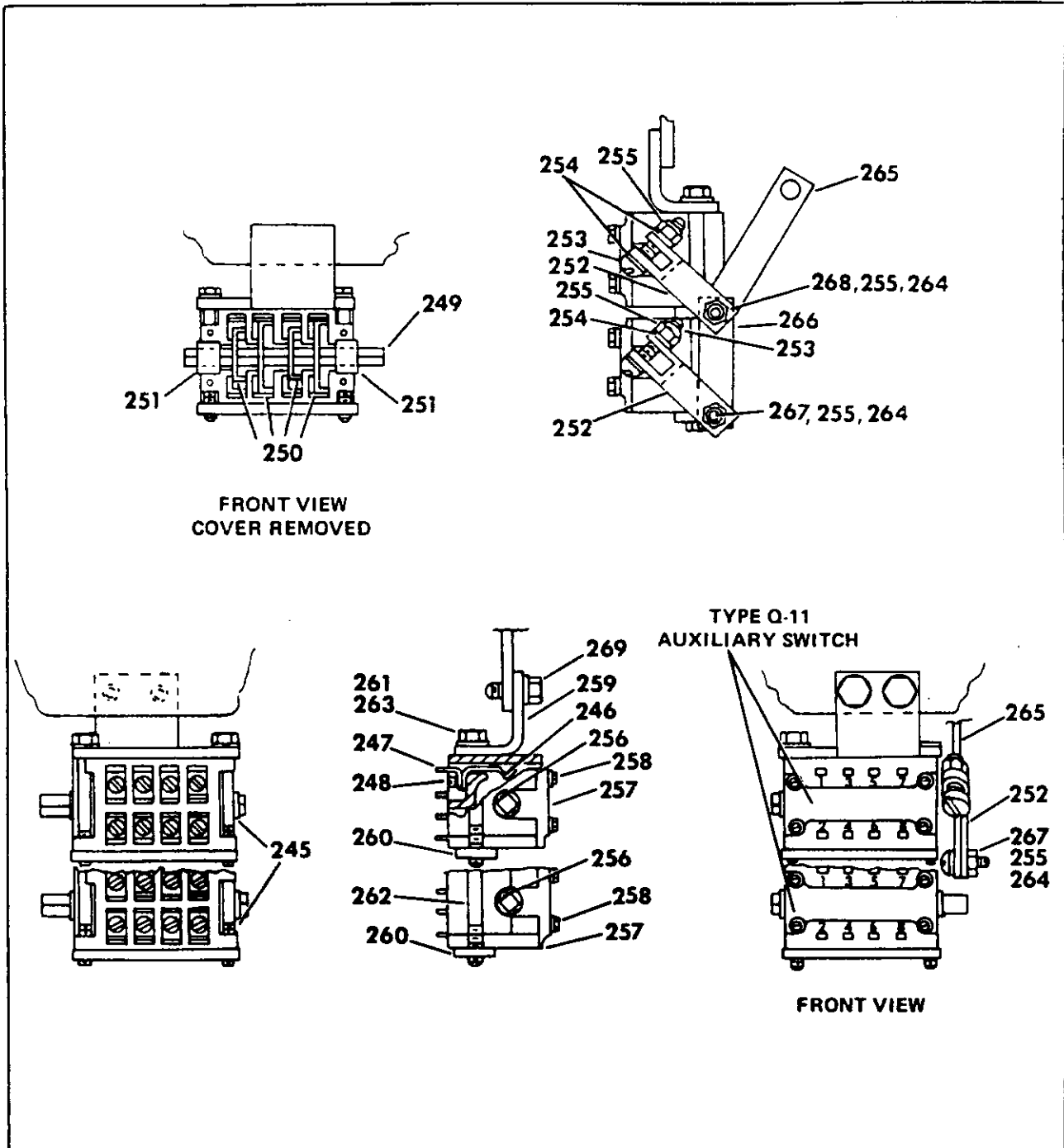


Figure 13. LA-600B, LA-800A and LA-1600B Auxiliary Switch Group

Optional Devices

Undervoltage Trip Device Option

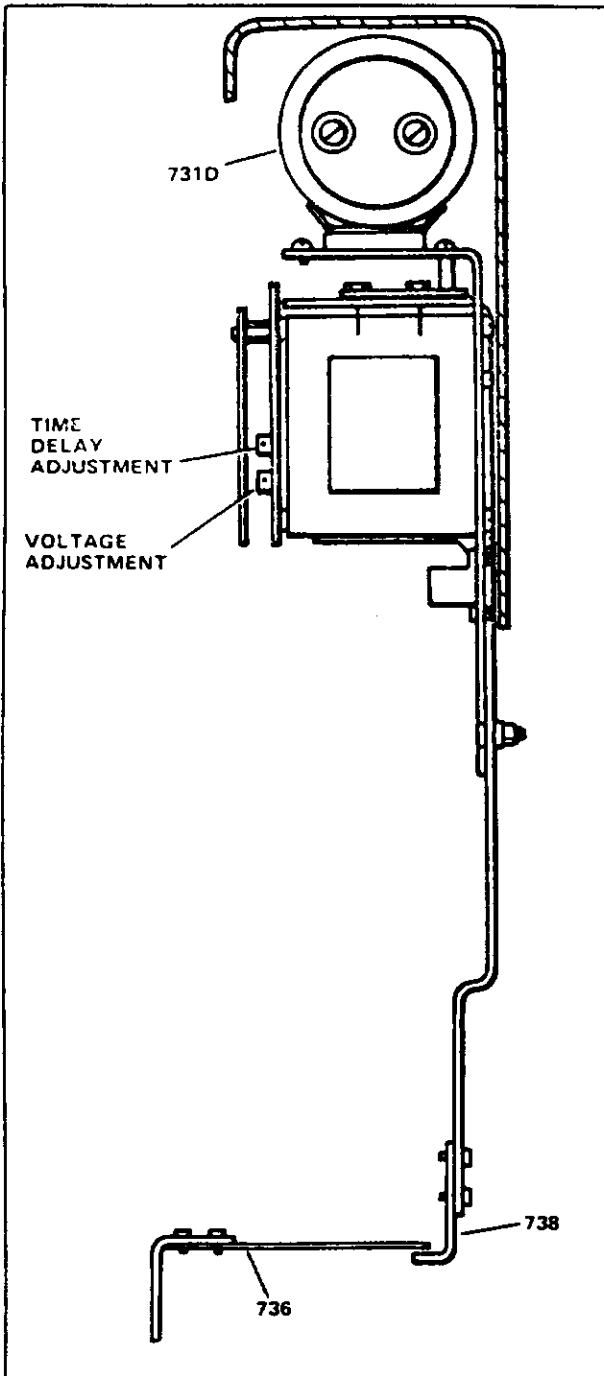


Figure 14. Undervoltage Trip with or without Time Delay

This device automatically trips the circuit breaker on loss of voltage. Either instantaneous or time-delay operation can be supplied. A .06 inches (1.5 mm) gap should be maintained between flap extension and pull link (22), when the device is energized with the pick-up and drop-out is set so that the device picks up at a voltage of 85% or less and drops out between 30 and 60% of rated value.

NOTE

Pick-up and drop-out are not individually adjustable.
Time delay is adjustable from 1/2 to 4-1/2 secs.

Shunt Trip Option

Each electrically operated circuit breaker is equipped with a shunt trip attachment for tripping from a remote location. Since the shunt trip coil is designed for a momentary duty cycle, an "a" auxiliary contact switch is used to interrupt its circuit immediately after the circuit breaker is tripped. Energization of the coil causes the armature to pick up and rotate the trip latch to trip the breaker. A compression spring (148) returns the armature to its normal position.

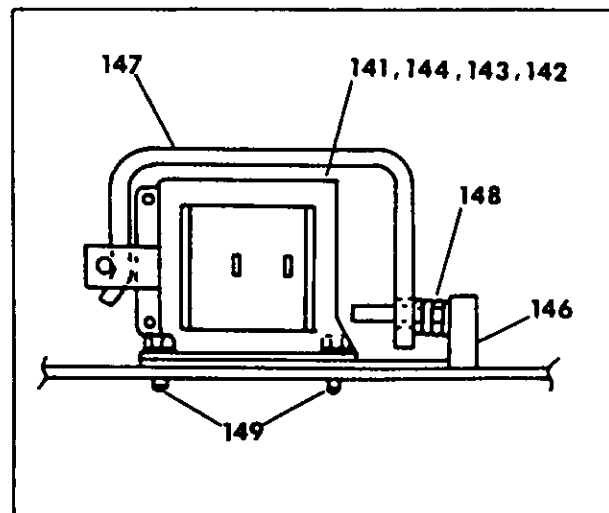


Figure 15. LA-600B, LA-800A and LA-1600B Shunt Trip Group

Optional Devices

Static Trip Option

The optional tripping devices are covered in detail under their own instruction books which are referenced on the last page. Several types are available that provide a range of tripping functions.

The Static Trip II device mounts onto a slide-type bracket on the circuit breaker. To remove trip device, the terminal block cover located above it should be removed, exposing the terminal block screws. The lower row of screws can be loosened with a screwdriver allowing the terminal block fanning strip to be removed from the terminal block. Removal of the fanning strip exposes a mounting screw. This screw can be removed, allowing the static trip device to be removed from the circuit breaker. Just pull the trip device towards the front of the circuit breaker.

The LimiTrip device mounts on the same slide type bracket on the circuit breaker as Static Trip II and can be removed in a similar manner. If complete removal from the circuit breaker is required, disconnect the red and black actuator leads by separating the disconnect plugs and disconnect the leads to the current sensors at the sensor terminals (four leads to each sensor).

Bell Alarm Switch Option

This unit functions to operate a switch. A single-pole double-throw, or a double-pole double-throw switch is available. The switch operator is connected to and operated by the tripping actuator. The switch operator remains tripped even when the actuator is reset by the circuit breaker. The switch operator must be reset either manually, or by an additional optional electrical reset solenoid.

The contacts of the bell alarm switch can be connected in series with the circuit breaker closing coil, to provide a lock-out feature to prevent reclosing after a fault.

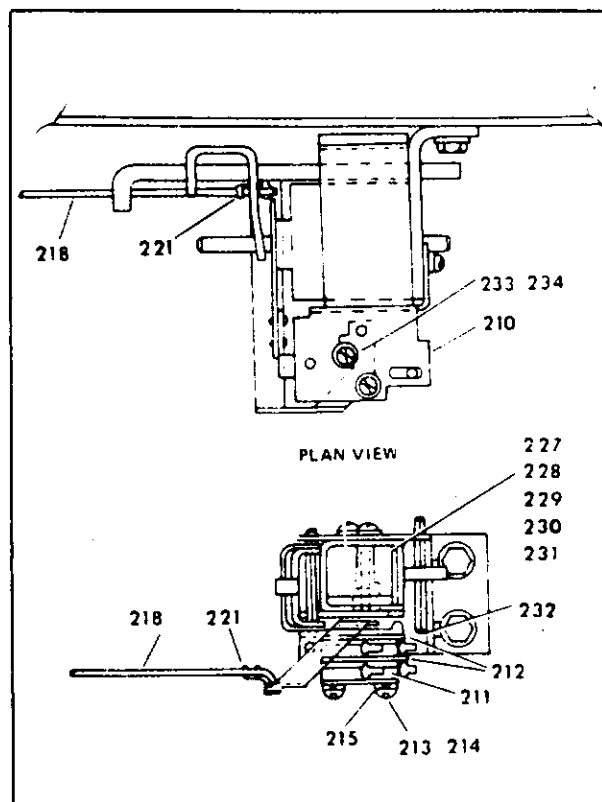


Figure 16. LA-600B, LA-800A and LA-1600B Alarm Switch Group, Bell Alarm

Lubrication

Circuit Breaker

Periodic inspection of each circuit breaker is recommended at least once a year.

More frequent inspections are recommended, if severe load conditions, dust, moisture, or other unfavorable conditions exist.

Always inspect a breaker which has interrupted a heavy fault current.

During an inspection the breaker should be checked for proper operation, adjustment and lubrication. Adjustment procedures are described in the instruction book. Recommended lubrication points are shown in adjacent chart.

The lubrication chart outlines two methods of lubrication. The first method requires no disassembly and is suggested for the prevention of problems which could be created by severe environmental or operating conditions.

The second method follows a procedure similar to that performed on the breaker at the factory and should be used only in case of a general overhaul or disassembly.

Figure 17. Lubrication Chart

Lubrication Key	Part Description	Suggested Lubrication at Every * Operations or Every Six Months	Lubrication (Requires Disassembly) Recommended Every 5 Years or any Complete Overhaul
A	Contact arm hinge assembly. Primary disconnect fingers, grounding contact. Secondary disconnect fingers.	Wipe clean and apply a film of Siemens contact lubricant 14-171-370-002 in layer 1/32" to 1/16" thick.	
B	Sliding surfaces.	Light application of *Molycote 557*.	Wipe clean and apply *Molycote 557* liberally.
C	Pivot pins, rotating parts such as drive pinion, gear.	Light application of *Molycote Penelube* 15-171-270-002.	Remove pins or bearings, clean per instructions and apply *Beacon P-290* 00-337-131-001.
D	Ground surfaces such as latches, rollers, props, etc.	Wipe clean and spray with *Molycote 557* 15-171-270-001.	Wash clean and spray with *Molycote 557* 15-171-270-001.
E	Arcing contacts.	Do not lubricate.	Do not lubricate.
F	Springs.	No lubrication required.	
G	Dry pivot points.	No lubrication required.	No lubrication required.

*Lubrication should be checked and renewed as follows:

LA-600 operations between lubrications 1750

LA-1600 operations between lubrications 500

LA-3200, LA-4000 operations between lubrications 250

Lubrication

Cleaning Bearings

Needle bearings are factory lubricated for life and should not require attention. However, the best of greases are affected by time and atmospheric conditions and may require service.

To lubricate these bearings when parts are disassembled, the following procedure is recommended: Clean in solvent,

wash in alcohol, spin in light machine oil, drain and repack with Beacon P-325 grease. *Caution: Needle bearings should not be removed from the retaining part.*

The sleeve bearings should be removed, washed in clean solvent, drained and dried thoroughly before lubricating with Beacon P-290.

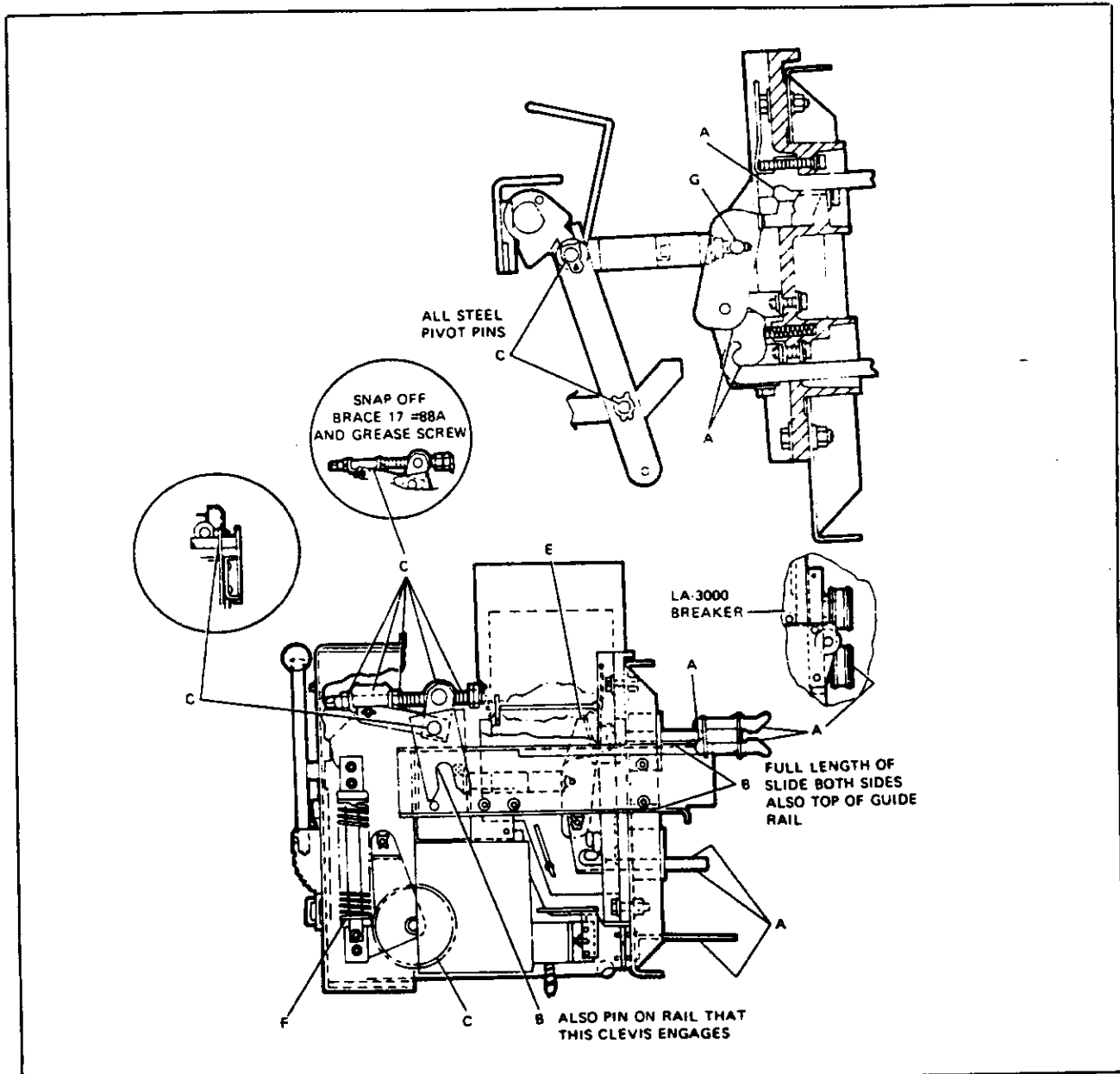


Figure 18. Lubrication Points

Parts

How To Use Your Renewal Parts Ordering Guide

1. Locate the part or parts to be replaced in one of the drawings in this manual.
2. Identify each part by item number, description and part number. Give drawing figure number in which part is shown.
3. Include breaker type, rating and breaker serial number with your order.
4. Place order with your Siemens representative.
5. When ordering relays or other electrical parts, include control voltage (see recommended spare parts list for part numbers).


Ordering Example

Type	LA-600B	Rated Amps	600	Serial Number	H-76679A-4
Mode of Operation:	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Manual			
Renewal Parts Ordering Guide	SG-3028				
Fig.	Item	Description	Part Number	Quantity	
16	4	Washer	00-651-017-135	1	
3	44	Nut	15-171-063-006	2	
2	11	Connector	71-141-786-001	1	

IF REQUIRED PART IS NOT IDENTIFIED IN THIS MANUAL—

1. Make a copy of the drawing figure in which the part would appear.
2. Indicate with arrows or other markings location of part.
3. Describe or sketch required part.
4. Include breaker type, rating and breaker serial number and control voltage with your order.
5. Place order with your Siemens representative.

Non-Interchangeability Of Fused And Non-Fused Low Voltage Power Circuit Breakers

	⚠ DANGER DO NOT attempt to insert a fused power circuit breaker into a compartment which was built for a non-fused power circuit breaker. To do so could result in property damage, electrical shock, burns, other serious personal injury or possible death.
---	---

Parts

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Usage Table

<u>Type</u>	<u>Application</u>	<u>Top Level Assembly</u>	<u>*Usage</u>
LA-600B	600 AMP	18-474-534-(501 to 515)	
LA-1600B	1600 AMP	18-474-535-(501 to 515)	
LA-800A	800 AMP	18-473-050-(501 to 509)	

*If no model or type is listed under Usage column of the following parts lists, the part is used on all assemblies listed in the figure title.



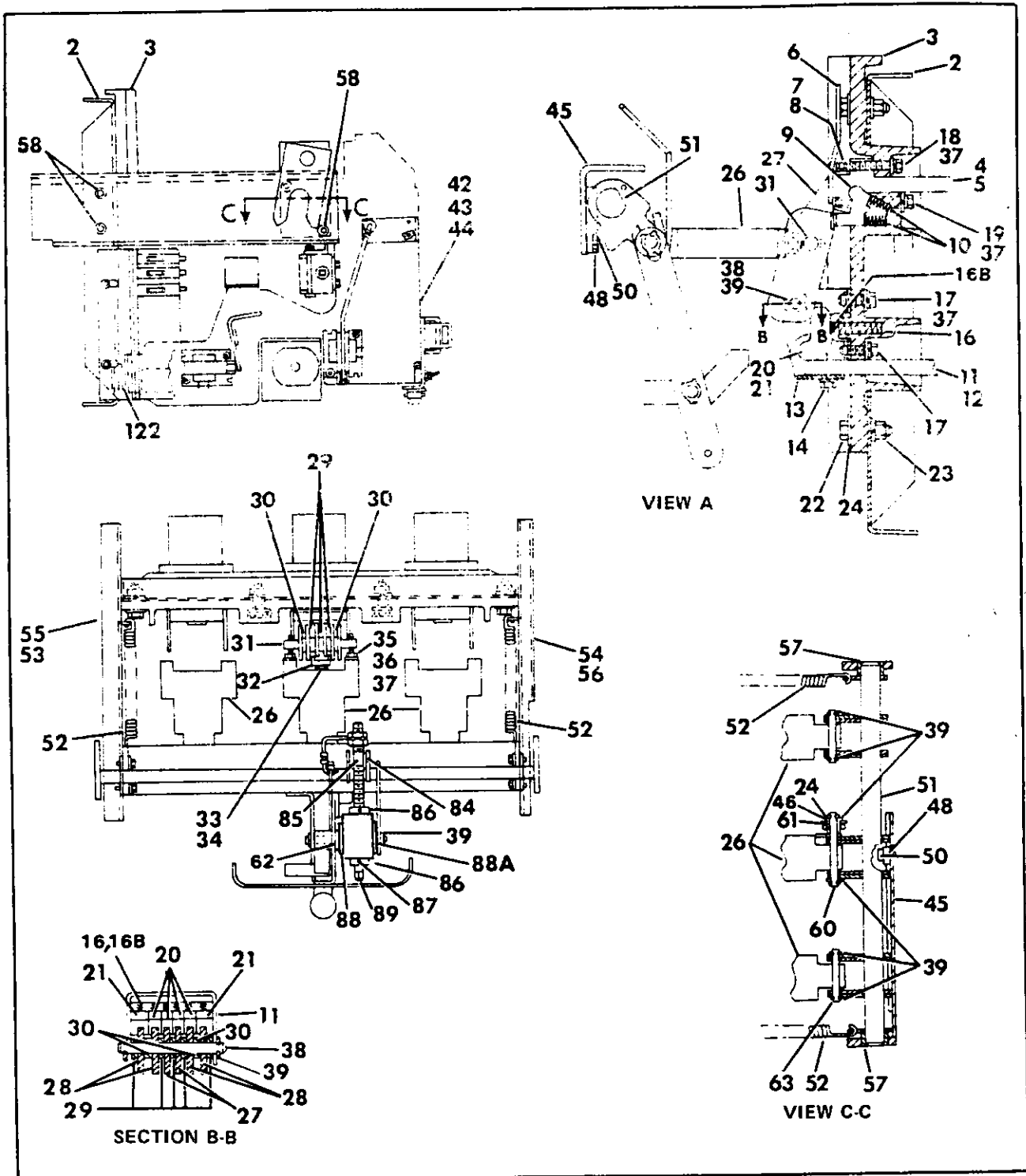


Figure 1. LA-1600B Circuit Breaker (Continued)

Parts

Item	Description	Part Number	Usage
2	Back Panel	18-390-968-001	
3	Base	71-440-119-001	
4	Connector, Upper	71-141-769-503	
5	Connector	18-731-803-502	Stationary
6*	Arc Runner	71-142-053-001	
7	Screw	00-615-124-218	
8	Lk. Washer	00-655-017-002	
9*	Contact Finger	71-141-973-501	
10*	Spring	71-141-976-001	
11	Connector, Lower	71-142-050-001	
12	Connector, Lower	18-731-801-502	Stationary
13	Support	71-142-172-502	
14	Screw	00-615-663-373	
15	Nut	00-631-171-106	
16*	Spring	18-657-765-270	
16B	Rivet	00-671-251-085	
17	Screw	15-171-399-011	
18	Screw	15-171-399-048	
19	Screw	15-171-399-045	
20*	Contact	18-727-825-001	
21*	Contact	18-727-825-002	
22	Screw	00-611-315-468	
23	Nut	15-171-063-018	
24	Washer	00-651-007-214	
25	Screw	15-171-074-007	
26	Clevis	71-240-561-001	
27*	Arcing Contact	71-141-803-501	
28*	Main Contact	71-141-805-501	
29*	Spacer	71-141-822-003	
30*	Spacer	71-141-822-004	
31	Pin	71-141-921-002	
32	Spacer (Spring Cap)	18-658-024-021	
33	Spring	71-142-123-001	
34	Spring	71-142-139-001	
35	Screw	00-615-114-390	
36	Stop Nut	15-171-063-016	
37	Washer	00-651-017-135	
38*	Pin	18-724-515-001	
39*	"X" Washer	00-659-055-250	
40	Spacer	18-657-768-373	
41	Screw	15-171-399-011	
42	Operator	18-474-536-...	See Separate List
43	Clip	18-657-854-175	
44	Trip Guard	18-729-785-001	
45	Apron	18-657-510-527	
46	Washer	00-651-007-214	
47	Clip	18-721-493-001	
48	Bearing	18-657-768-050	
49	Screw	00-611-461-375	
50	Screw	00-615-663-373	

Parts

Item	Description	Part Number	Usage
51	Shaft	18-724-496-502	
52	Spring	71-141-813-001	
53	Channel	18-726-898-001	
54	Channel	18-726-899-001	
55	Channel	71-142-333-001	Stationary
56	Channel	71-142-332-001	Stationary
57	Bearing	15-171-399-001	
58	Screw	15-615-024-007	
60	Pin	18-724-501-009	
61	Spacer	18-657-942-300	
62	Spacer	71-141-822-003	
63	Pin	18-724-501-006	
64	Bracket	18-657-781-267	Drawout Only
65	Rod	18-727-841-001	Drawout Only
66	Arm — Interlock	18-657-823-357	Drawout Only
67	Roller	71-141-870-001	Drawout Only
68	Screw	15-171-399-023	Drawout Only
69	Guide	18-657-803-018	Drawout Only
70	Nut	00-633-059-210	Drawout Only
71	Nut	00-633-057-110	Drawout Only
72	Screw	00-615-485-222	Drawout Only
73	Stud	00-619-427-031	
74	Nut	00-631-171-104	
75	Arc Chute	18-732-792-501	
76	Barrier	71-142-088-022	
77	Strap	71-142-089-002	
78	Wingnut	15-639-101-002	
79	Lk. Washer	00-655-067-140	
80	Barrier	71-142-109-002	
81	Plastic Rivet	00-671-501-070	
83	Weldnut	15-171-399-012	Drawout Only
84	Washer	00-651-007-902	Drawout Only
85	Barrel Nut	18-657-823-346	Drawout Only
86	Collar	72-140-028-002	Drawout Only
87	Roll Pin	00-671-185-901	Drawout Only
88	Brace	18-657-765-060	Drawout Only
88A	Backing Block	18-657-823-359	
89	Racking Screw	18-727-842-501	
90	Shaft	18-390-965-502	
91	Spring Assy.	18-398-297-503	
		or	
		18-399-526-503	
91A	"X" Washer	15-171-399-035	
92	Washer	00-651-007-123	Drawout Only
95	Nut	00-631-171-108	Drawout Only
104	Screw	15-171-399-025	
105	Cover	18-390-974-001	
106	Handle	18-657-768-047	Manual Charge Only
107	Knob	15-171-399-006	Manual Charge Only

Parts

Item	Description	Part Number	Usage
108	Bumper	15-171-399-007	Manual Charge Only
109	Screw	15-171-399-010	
109A	Washer	00-651-021-092	
110	Slide	18-657-783-370	
111	Perma-Nut	15-171-035-001	
112	Nut	00-633-059-210	Drawout Only
113	Pushnut	15-171-399-026	
114	Trip Label	18-657-838-287	
115	Racking Label	18-657-784-002	
116	Label Motor Sw.	18-657-784-003	
118	Cover	18-657-803-006	Non-Manual Charge Only
119	Hole Plug	00-691-865-051	Manual Charge Only
120	Label Caution	71-141-867-001	
122	Grommet	00-837-659-321	Drawout Only
123	Contact Fingers	71-240-055-511	
124	Ground Bar	18-657-781-278	Drawout Only
125	Screws	00-615-663-373	Drawout Only
126	Tolerance Ring	15-171-199-005	Manual Charge Only
131	Position Label	18-657-823-349	

•NOTE: These parts comprise Contact Kit 18-655-008-813. The kit contains sufficient parts to repair 3 phases of one breaker. Refer to Instruction Section before attempting to replace breaker contacts.

C



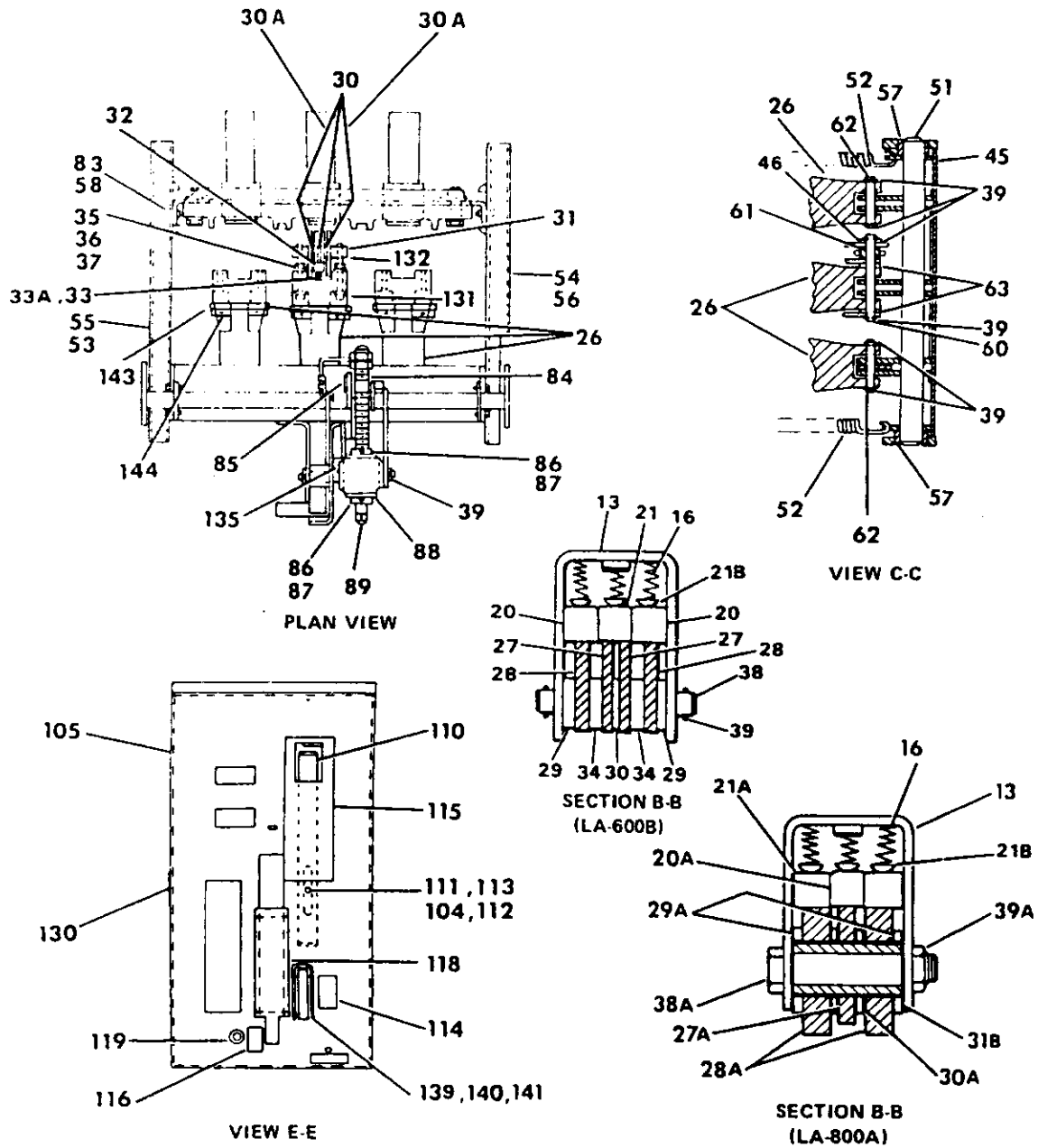


Figure 2. LA-600B and LA-800A Circuit Breaker (Continued)

Parts

Item	Description	Part Number	Usage
2	Back Panel	18-390-967-001	
3	Base	71-440-117-001	
	4Connector	71-141-769-502	Drawout Only
4A	Connector LA-800	18-657-889-527	
5	Connector, Upper LA-600	18-731-803-503	Stationary Only
5A	Connector, Upper LA-800	18-731-803-501	Stationary Only
6*	Arc Runner	71-141-983-001	
7	Screw	00-615-124-218	
8	Lk. Washer	00-655-017-022	
9*	Contact Finger	71-141-973-501	
9A	Contact Finger LA-800	18-727-833-502	
10*	Spring	71-141-976-001	
10A	Spring LA-800	18-657-903-282	
11	Connector	71-141-786-001	Drawout Only
12	Connector	18-731-801-501	Stationary Only
13	Support	71-142-172-501	
14	Screw	00-615-663-373	
16*	Spring	18-657-765-230	
17	Screw	15-171-399-011	
18	Screw	15-171-399-048	
20*	Contact, Lower Outer	18-727-825-004	
20A	Contact, Lower Center 800	18-727-825-001	
21*	Contact, Lower Center	18-727-825-002	
21A	Contact, Lower Outer 800	18-727-825-003	
21B*	Rivet	00-671-251-085	
22	Screw	00-611-315-468	
23	Nut	15-171-399-018	
23A	Nut	18-657-901-097	
24	Washer	00-651-007-214	
25	Lk. Washer	00-655-017-032	
26	Push Rod	71-240-542-002	
27*	Arc Contact	71-141-803-501	
27*	Arc Contact, LA-800	18-727-729-502	
28*	Main Contact	71-141-805-501	
28A	Main Contact, LA-800	18-727-729-501	
29*	Spacer	71-141-822-002	
29A	Spacer	18-727-839-006	
30*	Washer	00-651-017-286	
30A	Spacer	18-727-829-001	
31	Pin	71-141-921-001	
31A	Pin LA-800	18-657-901-098	
31B	Sleeve LA-800	18-657-901-099	
32	Spring Cap	18-657-901-115	
33	Spring	71-141-799-001	
33A	Spring Aux. Wound RH	18-657-765-230	
34*	Washer	00-651-017-284	
35	Screw	00-615-114-386	
36	Stop Nut	15-171-063-016	
37	Washer	00-615-017-135	

Parts

Item	Description	Part Number	Usage
37A	Washer LA-800	00-651-007-146	
38*	Pin	18-724-515-002	
38A	Screw	00-611-315-472	
39*	"X" Washer	00-659-055-250	
39A	Nut	15-171-063-007	
42	Operator	18-474-536-8--	See Separate Listing for Applicable Mark No.
45	Apron	18-657-663-562	
46	Washer	00-651-007-214	
47	Clip	18-721-493-001	
49	Screw	00-611-461-375	
50	Screw	00-615-663-373	
51	Shaft	18-724-495-502	
52	Spring	71-141-813-001	
52A	Spring LA-800	18-657-920-232	
53	Channel LH	18-726-896-001	
54	Channel RH	18-726-897-001	
54A	Channel LA-800	18-731-802-001	
55	Channel	71-142-318-001	Stationary Only
56	Channel	71-142-317-001	Stationary Only
57	Bearing	15-171-399-001	
58	Screw	15-615-024-004	
60	Pin	18-724-501-009	
61	Spacer	18-657-942-300	
62	Pin	18-724-501-004	
63	Washer	18-657-768-374	
64	Bracket	18-657-781-267	Drawout Only
65	Rod	18-724-690-001	Drawout Only
66	Plate	18-657-765-216	Drawout Only
67	Roller	71-141-870-001	Drawout Only
68	Screw	15-171-399-023	Drawout Only
69	Guide	18-657-803-018	Drawout Only
70	Nut	00-633-059-210	Drawout Only
71	Nut	00-633-057-110	Drawout Only
72	Screw	00-615-485-222	
73	Stud	00-619-427-903	
74	Nut	00-631-171-104	
75	Arc Chute	18-728-500-591	
76A	Barrier Outer	18-657-901-096	
76B	Barrier Inner	18-657-901-095	
77	Strap	18-657-901-013	
78	Wing Nut	15-639-101-002	
79	Lk. Washer	00-655-067-140	
80A	Barrier	18-657-901-092	
80B	Barrier	18-657-920-233	
81	Plastic Rivet	00-671-501-070	
83	Weldnut	15-171-399-012	
84	Washer	00-651-007-902	Drawout Only
85	Barrel Nut	18-657-823-346	Drawout Only

Parts

Item	Description	Part Number	Usage
86	Collar	72-140-028-002	Drawout Only
87	Rollpin	00-671-185-901	Drawout Only
88	Racking Block	18-657-823-359	Drawout Only
89	Racking Screw	18-727-842-501	Drawout Only
90	Racking Shaft	18-390-965-501	Drawout Only
91	Spring	71-141-836-001	Drawout Only
91A	Spring LA-800	18-398-297-502	
		or	
		18-399-526-502	
92	Washer	00-651-017-087	Drawout Only
95	Nut	00-631-171-108	Drawout Only
104	Screw	15-171-399-025	
105	Cover	18-390-975-001	
105A	Cover LA-800	18-390-975-002	
106	Handle	18-657-768-047	Manual Only
107	Knob	15-171-399-006	Manual Only
108	Bumper	15-171-399-007	Manual Only
109	Screw	15-171-399-010	Manual Only
110	Slide	18-657-783-370	
111	Perma nut	15-171-035-001	
112	Nut	00-633-059-210	
113	Pushnut	15-171-399-026	
114	Label Trip	18-657-838-287	
115	Label Racking	18-657-784-002	Drawout Only
116	Label Motor Sw.	18-657-784-003	Electrical Only
118	Cover	18-657-803-006	Non-Manual Only
119	Hole Plug	00-691-865-051	Non-Electric Only
120	Label Caution	71-141-867-001	
121	Barrier	18-657-784-015	
122	Grommet	00-837-659-321	
123	Contact Fingers	71-240-055-509	Drawout Only
124	Ground Bar	18-657-781-278	Drawout Only
125	Screws	00-615-663-373	Drawout Only
126	Tolerance Ring	15-171-399-005	Manual Only
130	Position Label	18-657-823-349	
131	Washer	00-651-007-909	
132	Washer LA-800	00-651-017-284	
133	Spring	15-171-037-002	
134	Cotter Pin	00-671-195-125	
135	Spacer	18-657-823-356	
138	Shim	18-657-769-359	
139	Clip	18-657-854-175	
140	Trip Guard	18-729-785-001	
141	Screw	15-171-074-007	
142	Washer	00-651-021-092	
143	Barrier	18-657-920-234	
144	Screw	00-615-609-072	

*NOTE: These parts comprise Contact Kit 18-655-008-812. The kit contains sufficient parts to repair 3 phases of one breaker. Refer to Instruction Section before attempting to replace breaker contacts.

Parts

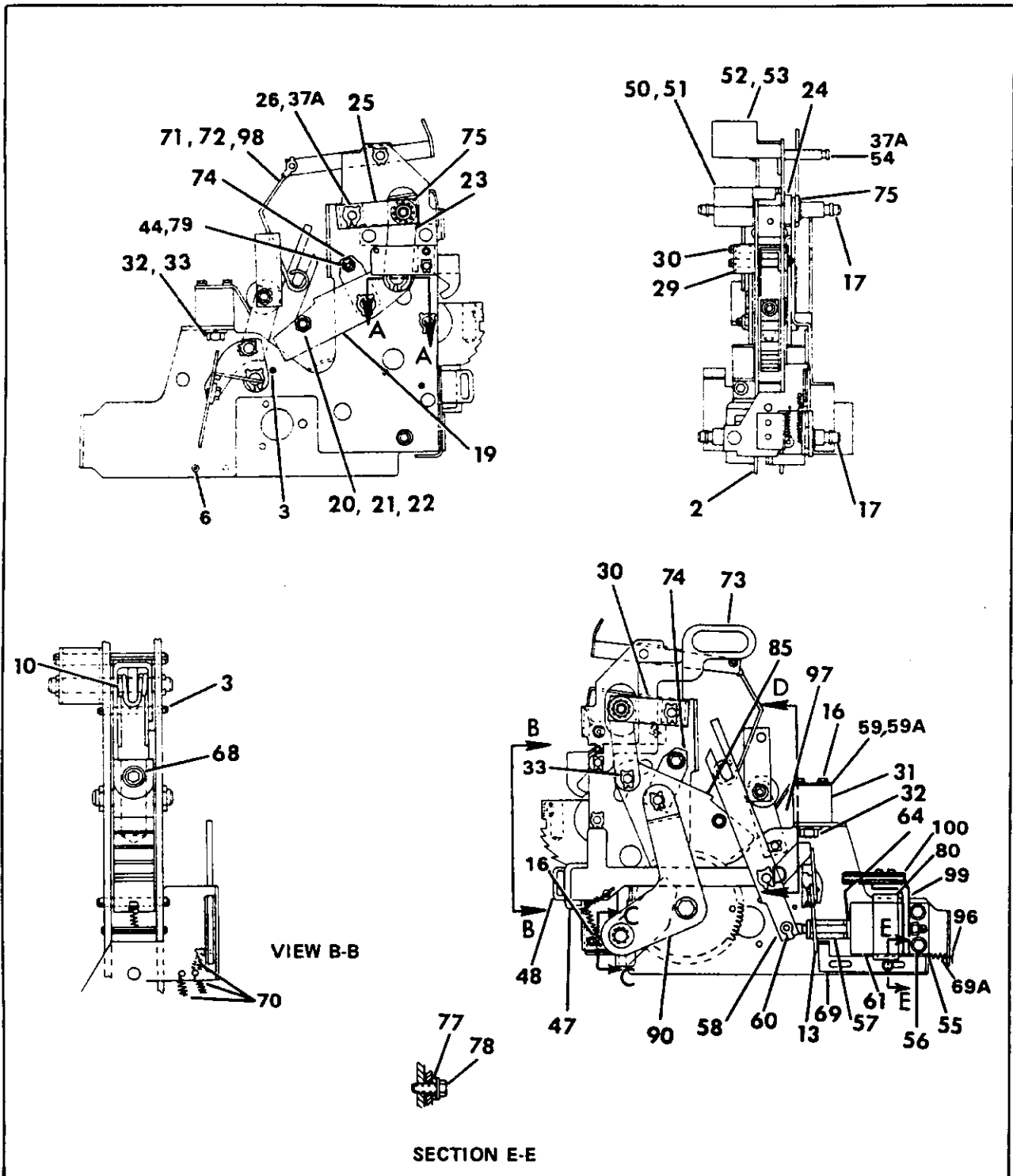


Figure 3. LAF and LA-600B, LA-800A and LA-1600B Operator

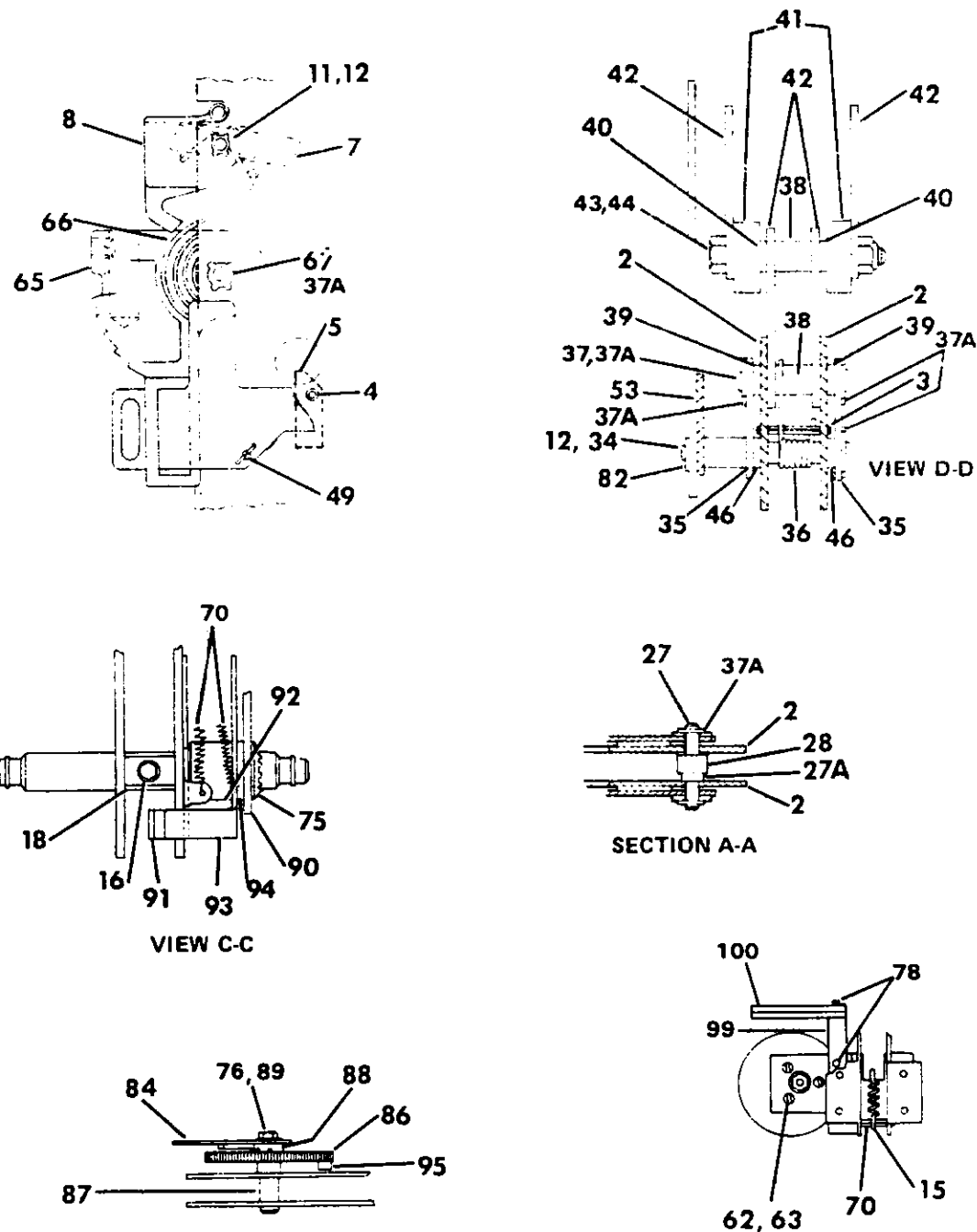


Figure 3. LAF and LA-600B, LA-800A and LA-1600B Operator (Continued)

Parts

Item	Description	Part Number	Usage
2	Frame	18-469-506-501	
3	Rollpin	00-671-176-195	
4	Rollpin	15-171-399-021	
5	Pawl	18-657-800-346	
6	Rollpin	15-171-399-020	
7	Latch	18-657-765-564	
8	Hood	18-657-882-559	
10	Spring	15-657-939-020	
11	Pin	18-657-769-367	
12	"X" Washer	00-659-055-187	
13	Trip Latch Assembly	18-727-727-502	
15	Spring	72-140-324-001	
16	Screw	15-171-074-010	
17	Spring Hanger, LA-600B	18-657-768-013	
17A	Spring Hanger	18-727-726-002	
18	Clip	18-657-768-014	
19	Cam	18-724-493-001	
20	Screw	00-611-315-476	
21	Nut	15-171-063-018	
22	Spacer	18-657-768-053	
23	Link	71-142-071-001	
24	Bumper	71-142-102-001	
25	Guide Link	18-657-768-024	
26	Pin	18-724-501-007	
27	Pin	18-724-501-006	
27A	Spacer	71-915-695-013	
28	Bearing	00-813-109-037	
29	Lever	18-657-768-020	
30	Rollpin	15-171-399-022	
31	Stop Block	18-657-763-039	
32	Screw	15-171-259-004	
33	Pin	18-724-501-004	
34	Pin	18-657-769-368	
35	Latch	71-142-070-001	
36	Spring	18-657-768-033	
37	Pin	18-724-501-002	
37A	"X" Washer	00-659-055-250	
38	Spacer	18-731-274-001	
39	Spacer	18-657-823-356	
40	Spacer	18-731-274-002	
41	Roller	71-141-789-003	
42	Link	18-657-768-025	
43	Screw	18-657-822-333	
44	Nut	15-171-063-014	
45	Nut	15-171-063-017	
46	Washer	18-657-768-374	
47	Bracket	18-726-894-501	
48	Trip Bar	18-728-500-037	
49	Cotter Pin	00-671-195-049	

Parts

Item	Description	Part Number	Usage
50	Flag	18-724-498-001	
51	Decal	18-657-800-116	
52	Flag	18-728-500-005	
53	Decal	71-141-817-001	
54	Pin	18-724-501-008	
55	Bracket	18-657-768-022	Automatic Models
56	Screw	00-615-663-373	Automatic Models
57	Reset Arm	18-657-663-575	Automatic Models
58	Lever	18-724-494-001	Automatic Models
59	Spring	18-657-768-038	
59A	Backup	18-657-765-130	
60	Clip	15-171-399-004	Automatic Models
61	Tripping Actuator	18-387-921-503	Automatic Models
62	Screw	00-615-513-220	Automatic Models
63	Washer	00-655-067-100	Automatic Models
64	Washer	72-140-000-001	Automatic Models
65	Charge Cam	18-657-346-515	Manual Charge Models
66	Spring	71-141-761-001	Manual Charge Models
67	Pin	18-724-501-001	Manual Charge Models
68	Setscrew	00-617-031-413	Manual Charge Models
69	Slide Interlock	18-657-781-269	Removed on Stationary
69A	Return Spring	15-171-037-002	
70	Spring	00-837-455-026	
71	Clip	15-171-399-029	
71A	Clip		
72	Flag Link	18-728-500-004	
73	Spring Interlock	18-724-509-001	Removed on Stationary
74	Spacer	18-657-768-372	
75	Retainer	00-673-285-063	
76	Lk. Washer	00-655-017-032	
77	Guide	18-657-803-018	Removed on Stationary
78	Screw	15-171-399-025	
79	Screw	00-615-142-428	
80	Shield	18-657-937-287	
82	"X" Washer	00-659-055-156	
85	Cam	18-724-492-001	
86	Gear	18-724-505-501	Electric Charge Models
87	Gear Pin	18-657-768-371	Electric Charge Models
88	Spacer	18-727-839-005	Electric Charge Models
89	Bolt	00-611-315-461	Electric Charge Models
90	Brace	18-724-508-001	Electric Charge Models
91	Switch Lever	18-657-768-037	Electric Charge Models
92	Bearing	18-657-768-031	Electric Charge Models
93	Switch Lever	18-657-768-032	Electric Charge Models
94	Washer	18-727-839-006	Electric Charge Models
95	Cam Follower	18-657-768-026	Electric Charge Models
96	Cotter Pin	00-671-195-125	
97	Nut	15-171-063-017	
98	Push Nut	00-673-173-018	
99	Shield Support	18-657-939-200	LA-1600B
100	Shield	18-657-940-182	LA-1600B

Parts

Operator Assembly Application

18-474-536	Used on Breaker	
MK NO. 801	LA/LAF, 600B	MO (STD)
802	LA/LAF, 600B	EO (STD)
803	LA/LAF, 600B	EOMO (STD)
804	LA/LAF, 600B	MO Non-Automatic
805	LA/LAF, 600B	EO Non-Automatic
806	LA/LAF, 600B	EOMO Non-Automatic
807	LA/LAF, 800A/1600B	MO (STD)
808	LA/LAF, 800A/1600B	EO (STD)
809	LA/LAF, 800A/1600B	EOMO (STD)
810	LA/LAF, 800A/1600B	MO Non-Automatic
811	LA/LAF, 800A/1600B	EO Non-Automatic
812	LA/LAF, 800A/1600B	EOMO Non-Automatic

Parts

Shunt Trip Group

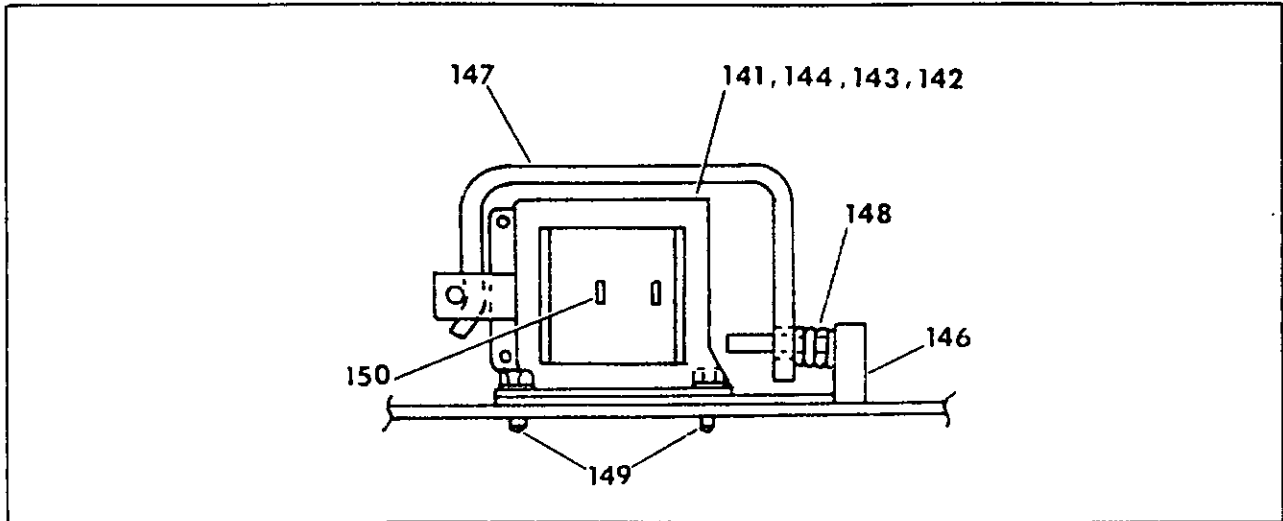


Figure 4. LA-600B, LA-800A and LA-1600B Shunt Trip Group

Item	Description	Part Number	Usage
141	Solenoid 48 VDC & 120 VAC	18-724-513-001	
142	Solenoid 240 VAC & 125 VDC	18-724-513-002	
143	Solenoid 24 VDC	18-724-513-006	
144	Solenoid 240 VDC	18-724-513-004	
146	Bracket	18-657-781-264	
147	Pushrod	18-657-768-036	
148	Spring	14-128-784-001	
149	Screw	15-171-399-010	
150	Term, Faston	15-171-399-032	

Parts

Motor Group

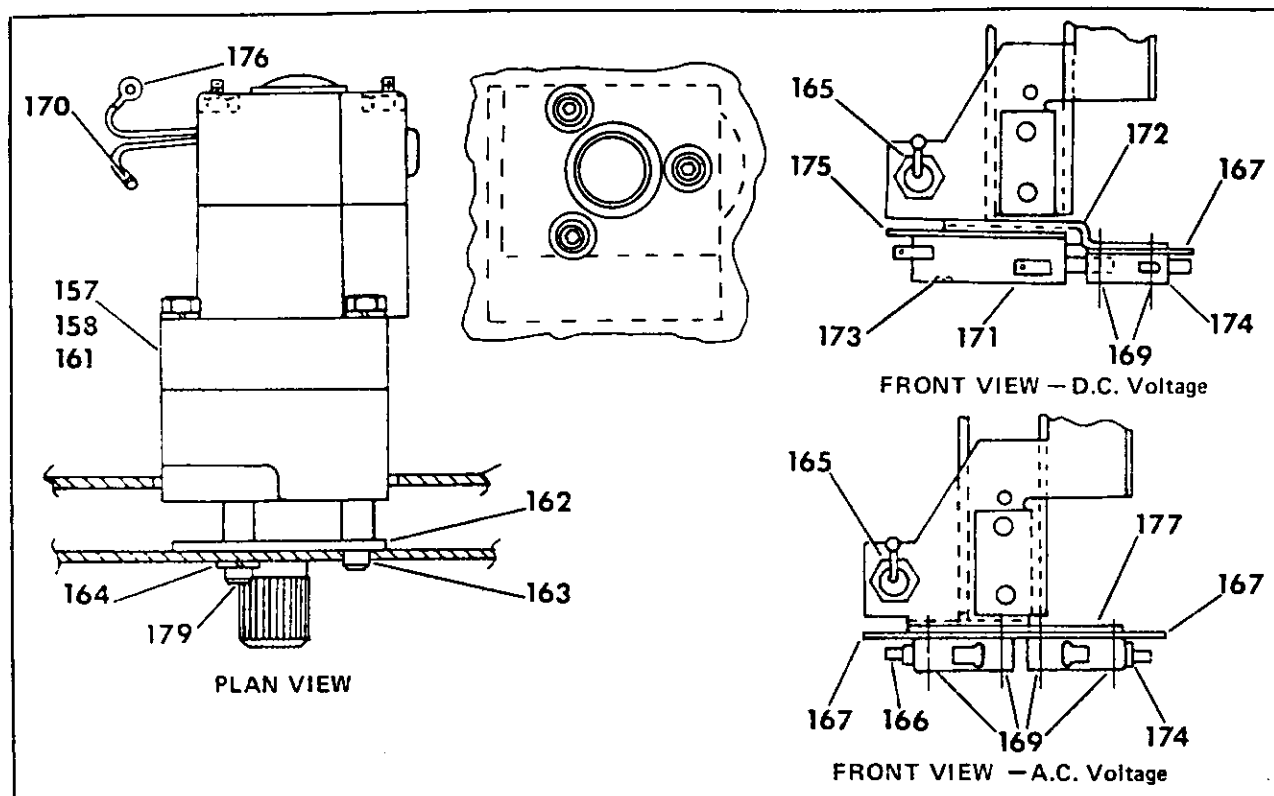


Figure 5. LA-600B, LA-800A and LA-1600B Motor Group

Item	Description	Part Number	Usage
157	Motor 120 VAC & 125 VDC	71-340-297-001	
158	Motor 240 VAC & 250 VDC	71-340-297-002	
161	Motor 48 VDC	71-340-297-005	
162	Spacer	18-657-768-030	
163	Screw	00-615-245-218	1 Req. per Motor
164	Lk. Washer	00-655-017-022	
165	Motor Control Switch	00-871-523-008	
166	Switch (A.C.)	15-171-399-013	
167	Insulator	18-657-783-362	
169	Screw	15-171-399-008	
170	Terminal	15-171-399-032	
171	Switch (D.C.)	15-171-323-003	
172	Base	18-657-782-256	
173	Screw	15-171-399-041	
174	Switch (A.C. & D.C.)	15-171-186-010	
175	Insulator	18-657-800-327	
176	Terminal	00-851-062-023	
177	Bracket	18-657-803-007	
179	Screw	00-615-124-220	2 Req. per Motor

Parts

Close Solenoid Group
Includes Anti-Pump "Y" Relay

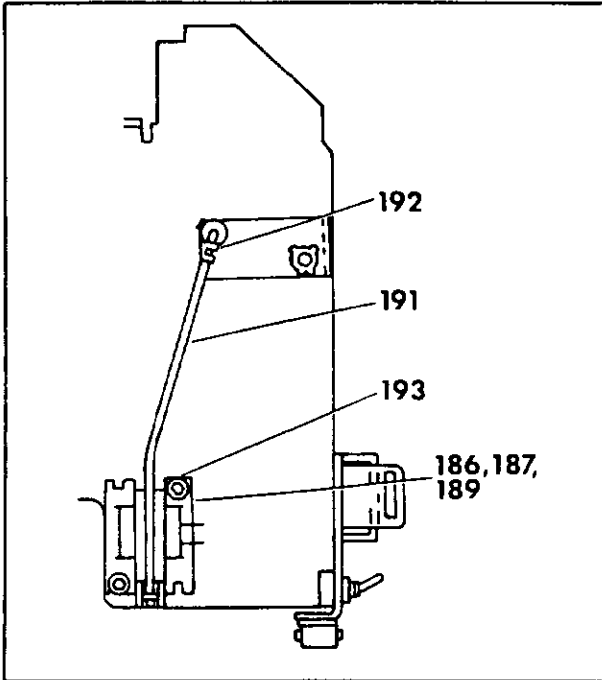


Figure 6. LA-600B, LA-800A and LA-1600B
Close Solenoid Group

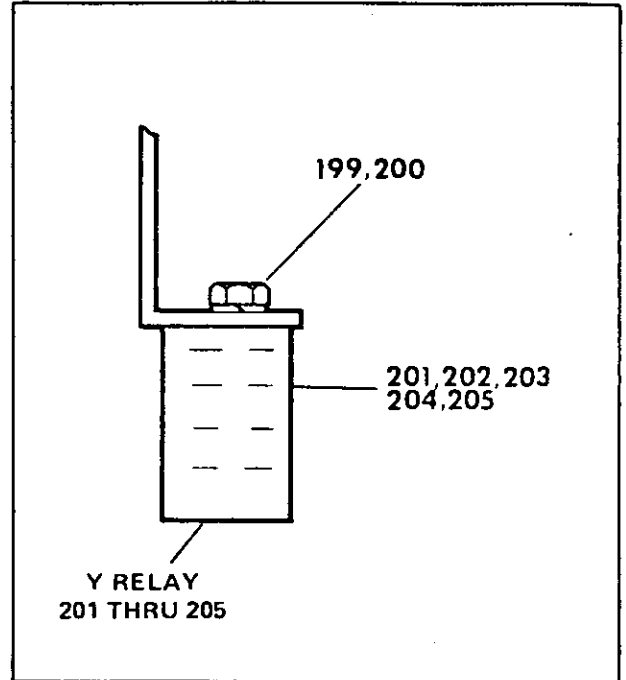


Figure 6. LA-600B, LA-800A and LA-1600B
Anti-Pump "Y" Relay

Item	Description	Part Number	Usage
186	Solenoid 48 VDC and 120 VAC	18-724-513-001	
187	Solenoid 240 VAC and 125 VDC	18-724-513-002	
189	Solenoid 250 VDC	18-724-513-004	
191	Close Linkage	18-724-511-001	
192	Clip	15-171-399-003	
193	Screw	15-171-399-010	
199	Screw	00-615-471-121	
200	Lk. Washer	00-655-047-060	
201	Relay "Y" 120 VAC	15-171-399-014	
202	Relay "Y" 240 VAC	15-171-399-015	
203	Relay "Y" 125 VDC	15-171-399-016	
204	Relay "Y" 250 VDC	15-171-399-017	Some applications require 2 of this relay
205	Relay "Y" 48 VDC	15-171-399-027	

Parts

Alarm Switch Group, Bell Alarm— Optional Attachment

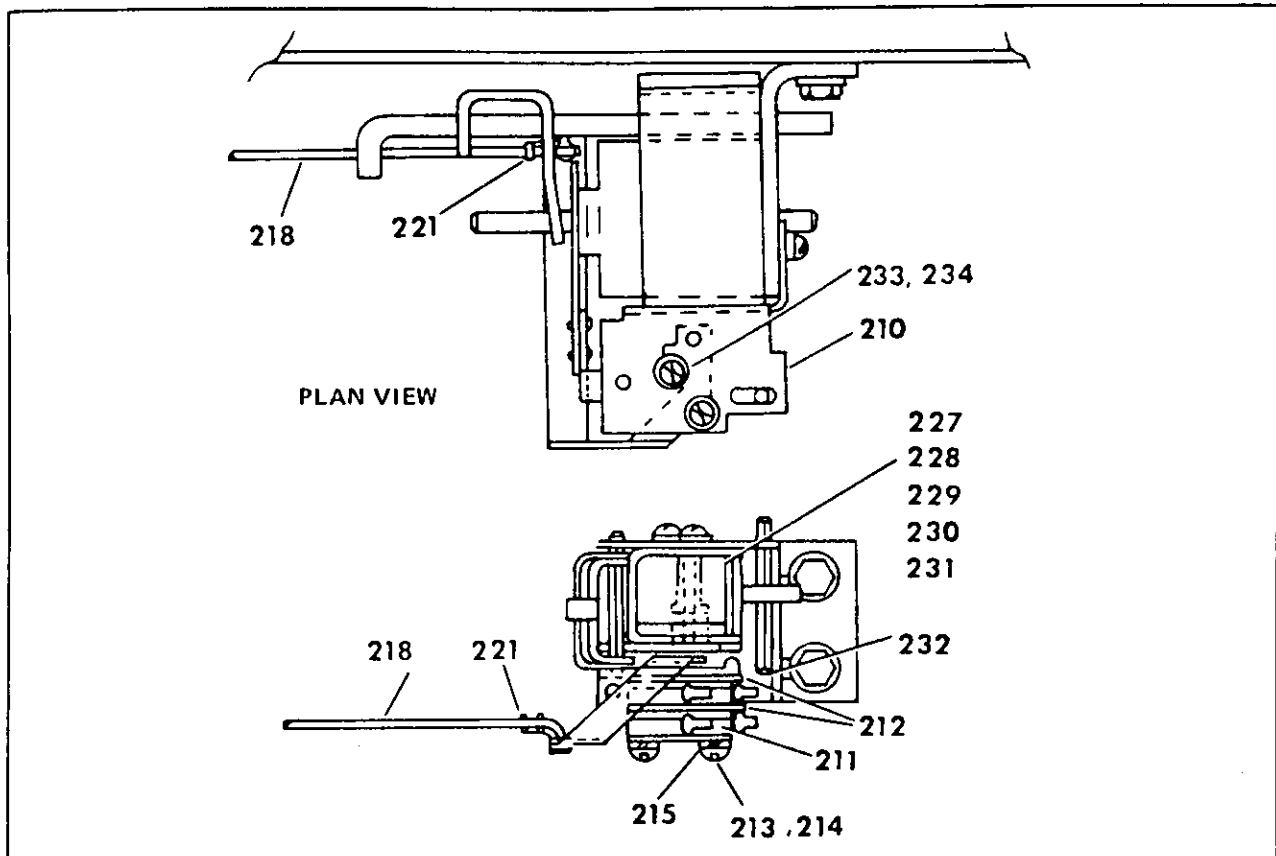


Figure 7. LA-600B and LA-800A Optional Alarm Switch Group, Bell Alarm

Item	Description	Part Number	Usage
210	Bracket Assembly	18-392-075-504	
211	Switch	15-171-186-010	
212	Insulator	18-657-783-362	
213	Screws	15-171-399-008	
214	Screws	15-171-399-028	Dual Switch Mod.
215	Lk. Washer	00-855-047-040	
218	Manual Reset Rod	18-658-024-006	
221	Clip	15-171-399-003	
223	Label	71-142-151-001	
227	Solenoid 48 VDC Int.	18-724-497-005	Electric Reset Option
228	Solenoid 120 VAC Int.	18-724-497-001	Electric Reset Option
229	Solenoid 240 VAC Int.	18-724-497-003	Electric Reset Option
230	Solenoid 125 VDC Int.	18-724-497-002	Electric Reset Option
231	Solenoid 250 VDC Int.	18-724-497-004	Electric Reset Option
232	Rollpin	15-171-233-006	Electric Reset Option
233	Screw	00-615-471-120	Electric Reset Option
234	Lk. Washer	00-655-047-060	Electric Reset Option

Parts

Auxiliary Switch Group

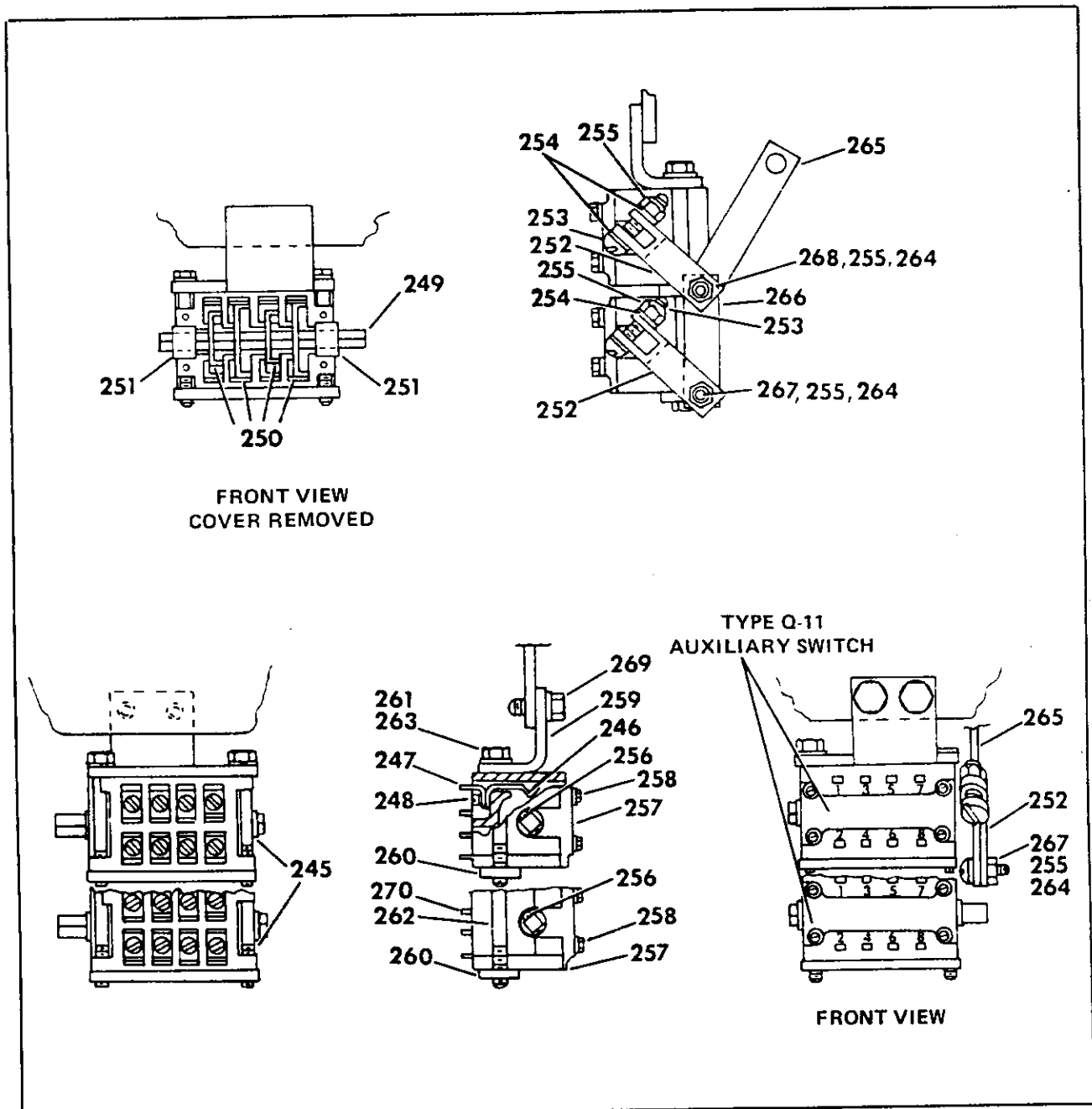


Figure 8. LA-600B, LA-800A and LA-1600B Auxiliary Switch Group

Parts

Item	Description	Part Number	Usage
245	Case	71-240-524-001	
246	Contact	71-141-994-001	
247	Terminal	00-851-609-006	
248	Screw	00-615-641-904	
249	Shaft	18-729-789-001	
250	Rotor	71-141-993-001	
251	Bearing	71-141-995-001	
252	Arm	71-141-996-001	
253	Screw	00-615-485-225	
254	Washer	00-651-007-102	
255	Nut	00-633-059-210	
256	Cotter Pin	00-671-195-049	
257	Cover	71-141-952-001	
258	Screw	15-171-074-001	
259	Bracket	72-140-315-001	
260	Strap	71-141-999-001	
261	Screw	00-611-315-388	Single Switch
262	Screw	00-611-315-400	Double Switch
263	Lk. Washer	00-655-017-026	
264	Screw	00-615-485-222	
265	Link	18-657-781-265	
266	Link	71-141-962-001	Double Switch
267	Perma Nut	15-171-035-001	
268	Perma Nut	15-171-035-002	Double Switch
269	Screw	00-615-663-373	
270	Terminal	00-851-474-907	

Parts

Secondary Disconnect Group

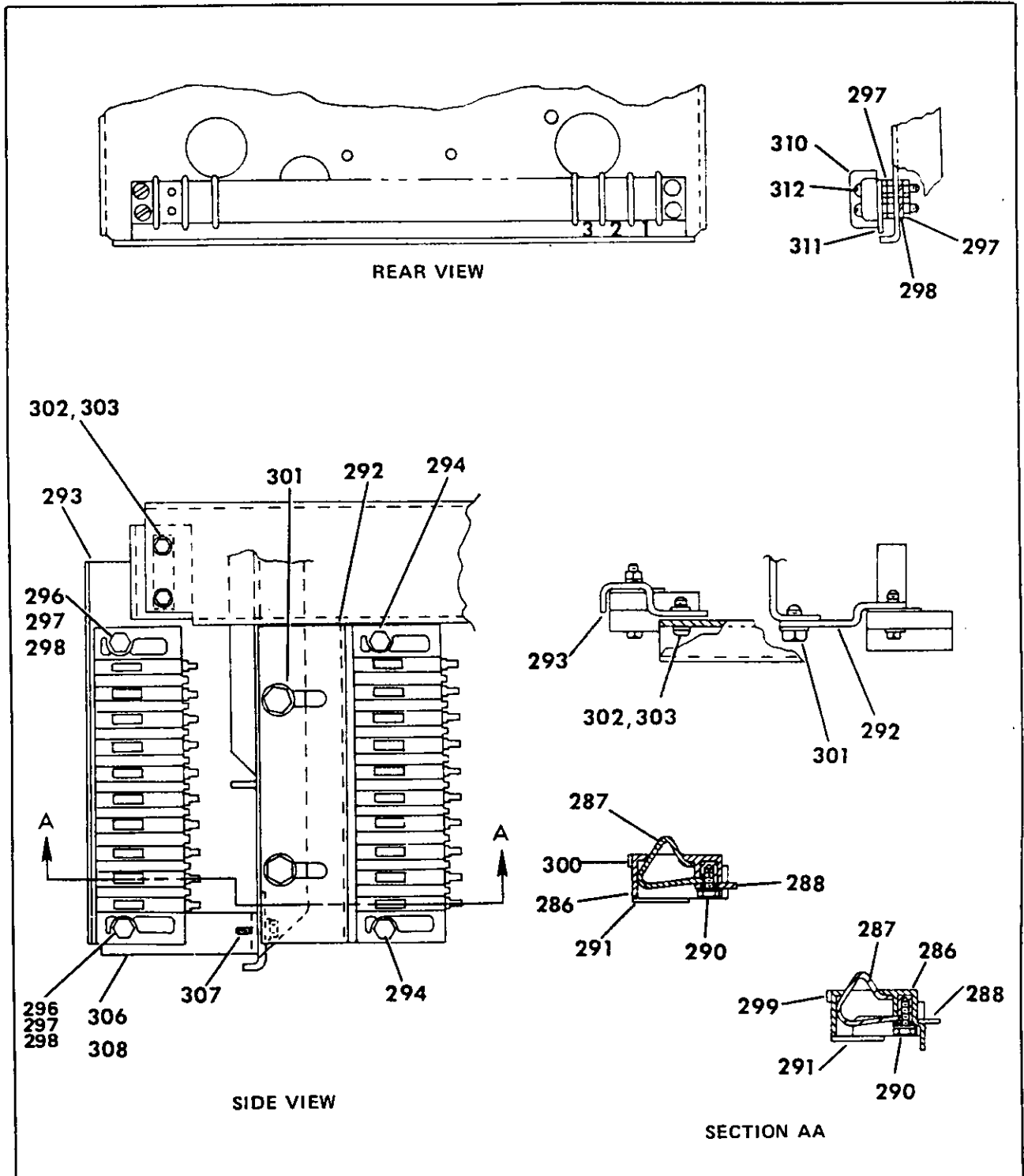


Figure 9. LA-600B, LA-800A and LA-1600B Secondary Disconnect Group

Parts

Item	Description	Part Number	Usage
286	Block	71-240-535-001	
287	Contact	71-142-169-001	
288	Terminal	00-851-609-007	
290	Screw	00-615-641-903	
291	Shield	71-141-894-002	
292	Bracket	18-657-781-276	
293	Bracket	71-142-125-001	20 Point
294	Screw	15-171-399-025	
296	Screw	00-615-485-225	20 Point
297	Nut	00-631-109-210	20 Point and Stationary
298	Lk. Washer	00-655-017-022	20 Point and Stationary
299	Marking Strip	71-141-895-001	
300	Marking Strip	71-141-895-002	20 Point
301	Screw	00-615-663-373	
302	Screw	15-615-024-005	20 Point
303	Weldnut	15-171-399-012	20 Point
305	Washer	00-651-007-160	20 Point
306	Brace	18-657-783-367	LA-1600A Only, 20 Point
307	Screw	15-171-399-010	
308	Brace	18-657-783-368	LA-600A Only, 20 Point
310	Block	15-171-051-009	Stationary
311	Marking Strip	15-857-036-002	Stationary
312	Screw	00-615-485-225	Stationary
313	Terminal, 90°	00-851-609-006	

Parts

Undervoltage Trip Group

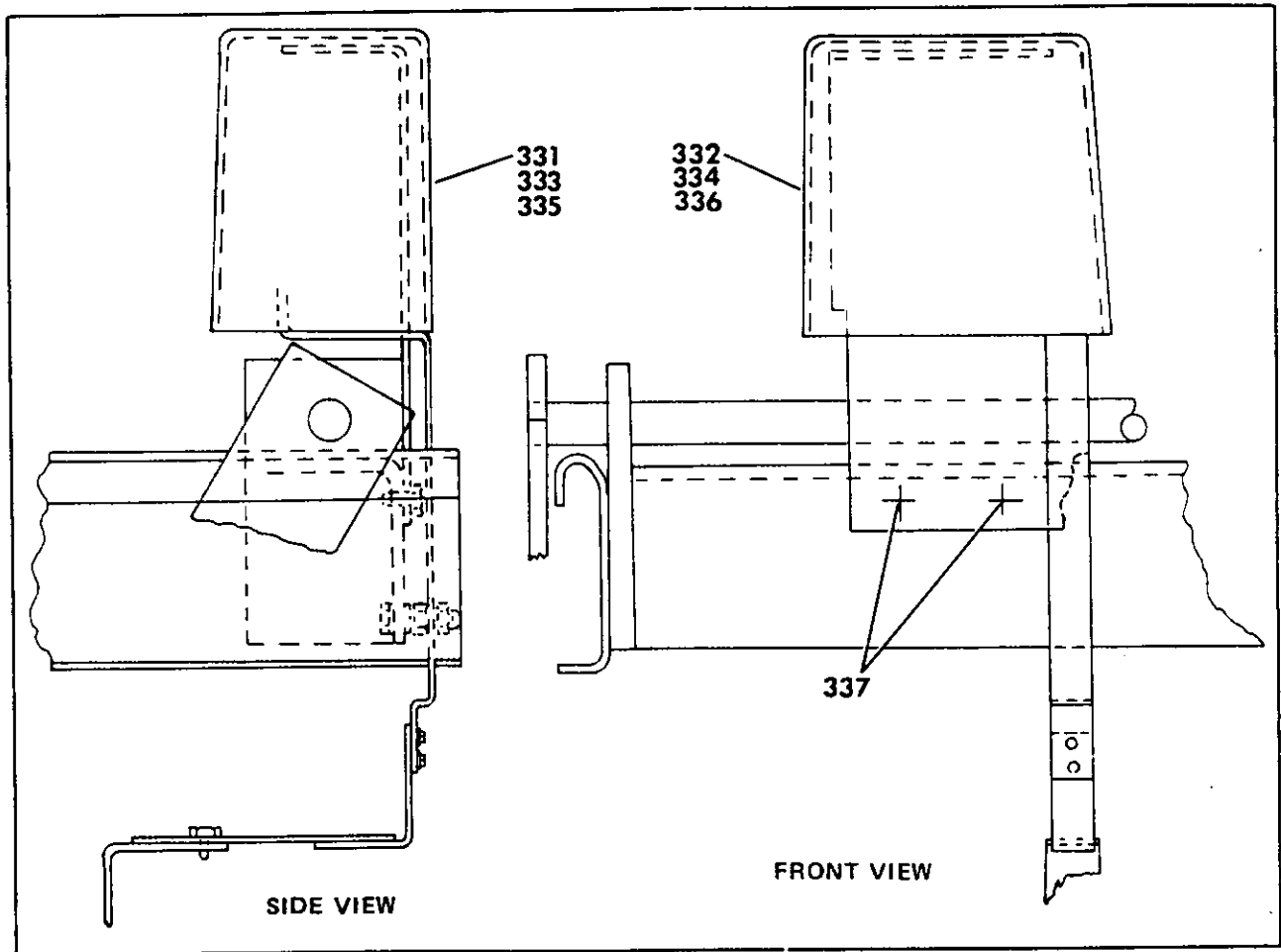
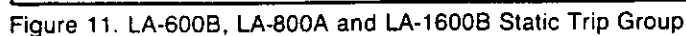


Figure 10. LA-600B, LA-800A and LA-1600B Undervoltage Trip Group

Item	Description	Part Number	Usage
331	120 VAC Inst. Undervoltage	18-394-885-801	See Fig. 17
332	240 VAC Inst. Undervoltage	18-394-885-802	See Fig. 17
333	460 VAC Inst. Undervoltage	18-394-885-803	See Fig. 17
334	120 VAC T.D. Undervoltage	18-394-886-801	See Fig. 17
335	240 VAC T.D. Undervoltage	18-394-886-802	See Fig. 17
336	460 VAC T.D. Undervoltage	18-394-886-803	See Fig. 17
337	Screw	00-615-663-373	

Static Trip Group Static Trip II



(continued on next page)

Parts

Item	Description	Part Number	Usage
373	Lk. Washer	00-655-047-060	
374	Cover	18-657-822-165	
375	Marking Strip	15-171-052-004	
376	Capacitor	15-171-029-013	
377	Terminal	00-851-062-023	
378	Washer	00-651-027-050	
379	Screw	00-615-641-903	
380	Screw	00-615-577-712	
381	Screw	00-611-461-371	LA-600B, LA-800A Only
		00-611-461-375	LA-1600B Only
382	Nut, Spacer	00-631-003-106	LA-1600B Only
383	Label	18-657-822-350	

Parts

Tripping Current Transformer Group

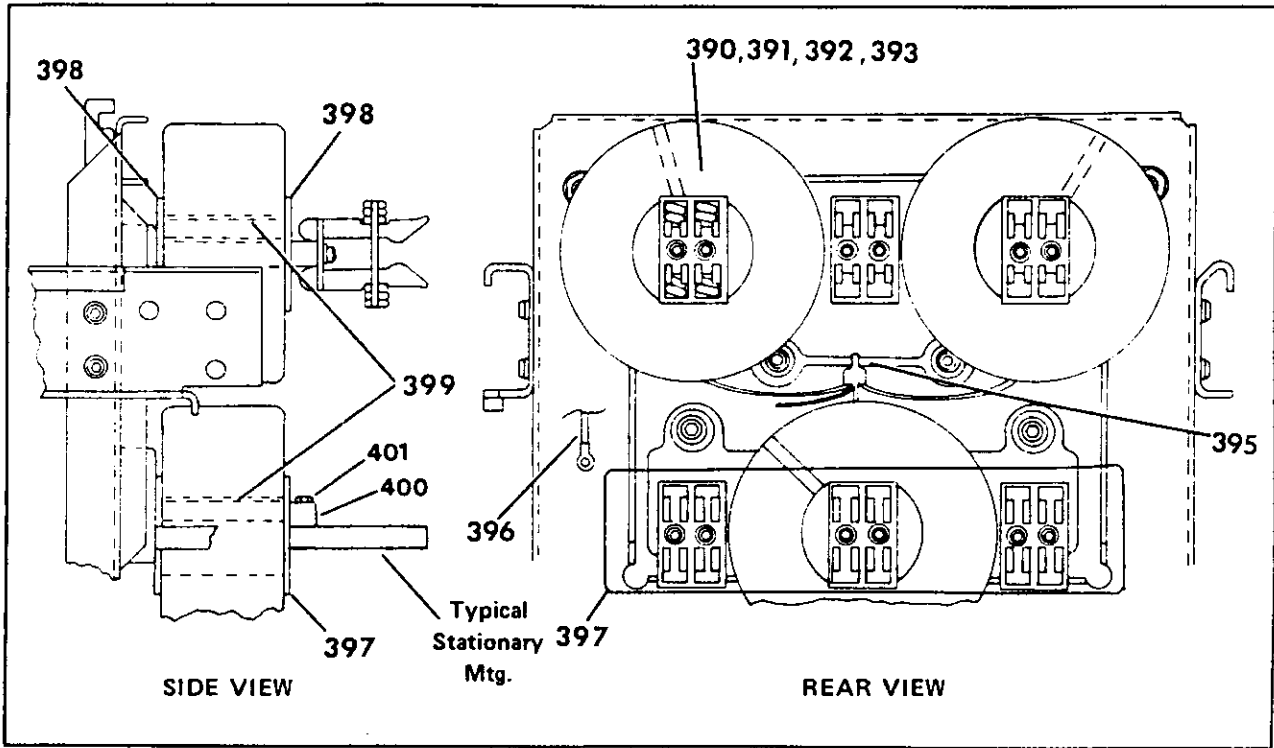


Figure 12. LA-600B and LA-800A (with Static Trip II Trip Device) Tripping Current Transformer Group

Item	Description	Part Number	Usage
390	Current Transformer 80/1	61-300-030-508	
391	Current Transformer 200/1	61-300-030-507	
392	Current Transformer 400/1	61-300-030-504	
393	Current Transformer 600/1	61-300-030-505	
393A	Current Transformer 800/1	61-300-030-509	LA-800A Only
395	Wire Splice	15-171-071-009	
396	Terminals	00-851-062-017	
397	Barrier	18-657-784-015	
398	CT Washer	71-141-915-001	
399	Support	71-141-916-001	
400	Retainer	18-657-922-377	Stationary Only
401	Screw	15-171-399-025	Stationary Only

Parts

Notes

Parts

Tripping Current Transformer Group

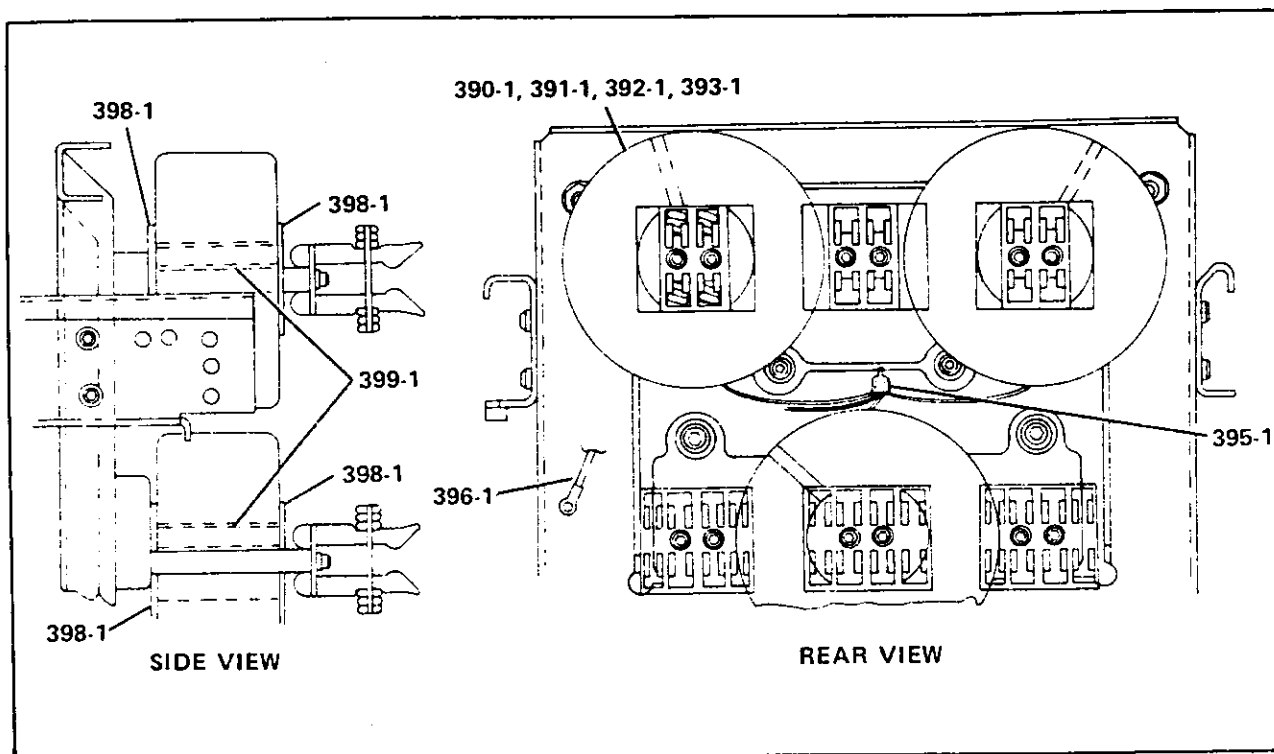


Figure 13. LA-1600B Tripping Current Transformer Group

Item	Description	Part Number	Usage
390-1	Current Transformer 200/1	61-300-031-513	
391-1	Current Transformer 400/1	61-300-031-502	
392-1	Current Transformer 800/1	61-300-031-508	
393-1	Current Transformer 1600/1	61-300-031-505	
395-1	Wire Splice	15-171-071-009	
396-1	Terminal	00-851-062-017	
398-1	CT Washer	71-142-107-001	
399-1	Support	71-142-108-001	

Parts

Fuse Attachment Group

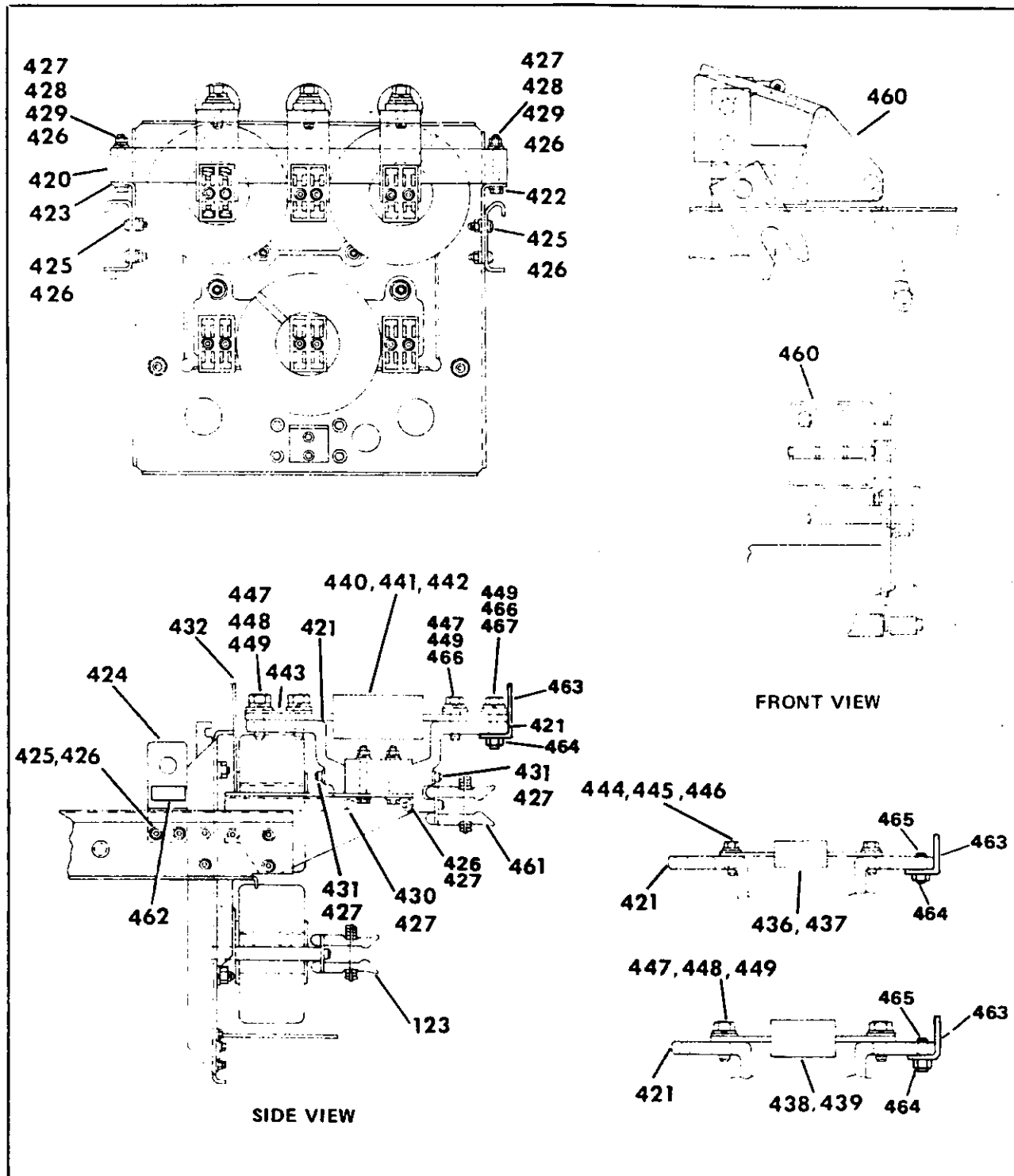


Figure 14. LAF-600B and LAF-800A Fuse Attachment Group

Parts

Item	Description	Part Number	Usage
420	Insulator	18-728-055-001	
421	Connector	18-657-802-075	
422	Bracket	71-240-593-001	
423	Bracket	71-240-593-002	
424	Lifting Bar	72-140-020-001	
425	Screws	15-615-024-004	
426	Nut	00-631-171-104	
427	Lk. Washer	00-655-017-026	
428	Screw	00-611-315-382	
429	Washer	00-651-007-160	
430	Screw	00-615-114-380	
431	Screw	00-615-114-382	
432	Barrier	18-657-784-014	
436	CL Fuse 250 Amp	71-142-200-001	
437	CL Fuse 400 Amp	71-142-200-002	
438	CL Fuse 600 Amp	71-142-200-003	
439	CL Fuse 800 Amp	71-142-200-004	
440	CL Fuse 1000 Amp	71-142-200-013	
441	CL Fuse 1200 Amp	71-142-200-005	
442	CL Fuse 1600 Amp	71-142-200-006	Not UL Approved on LA-600B
444	Screw	00-611-315-421	Under 400A Fuses
445	Washer	00-651-007-900	Under 400A Fuses
446	Lk. Washer	00-655-017-030	Under 400A Fuses
447	Screw	00-611-315-546	Above 600A Fuses
448	Washer	00-651-007-300	Above 600A Fuses
449	Lk. Washer	00-655-017-036	Above 600A Fuses
460	Trigger Fuse Assembly	18-392-070-501	See Separate List
461	Primary Finger Assembly	71-240-055-512	Upper Only, Fused
462	Label	18-657-523-014	
463	Barrier	18-657-852-571	
464	Nut	15-171-399-053	
465	Setscrew	00-611-315-550	
466	Washer	00-651-007-285	
467	Screw	00-611-315-548	

Parts

Fuse Attachment Group

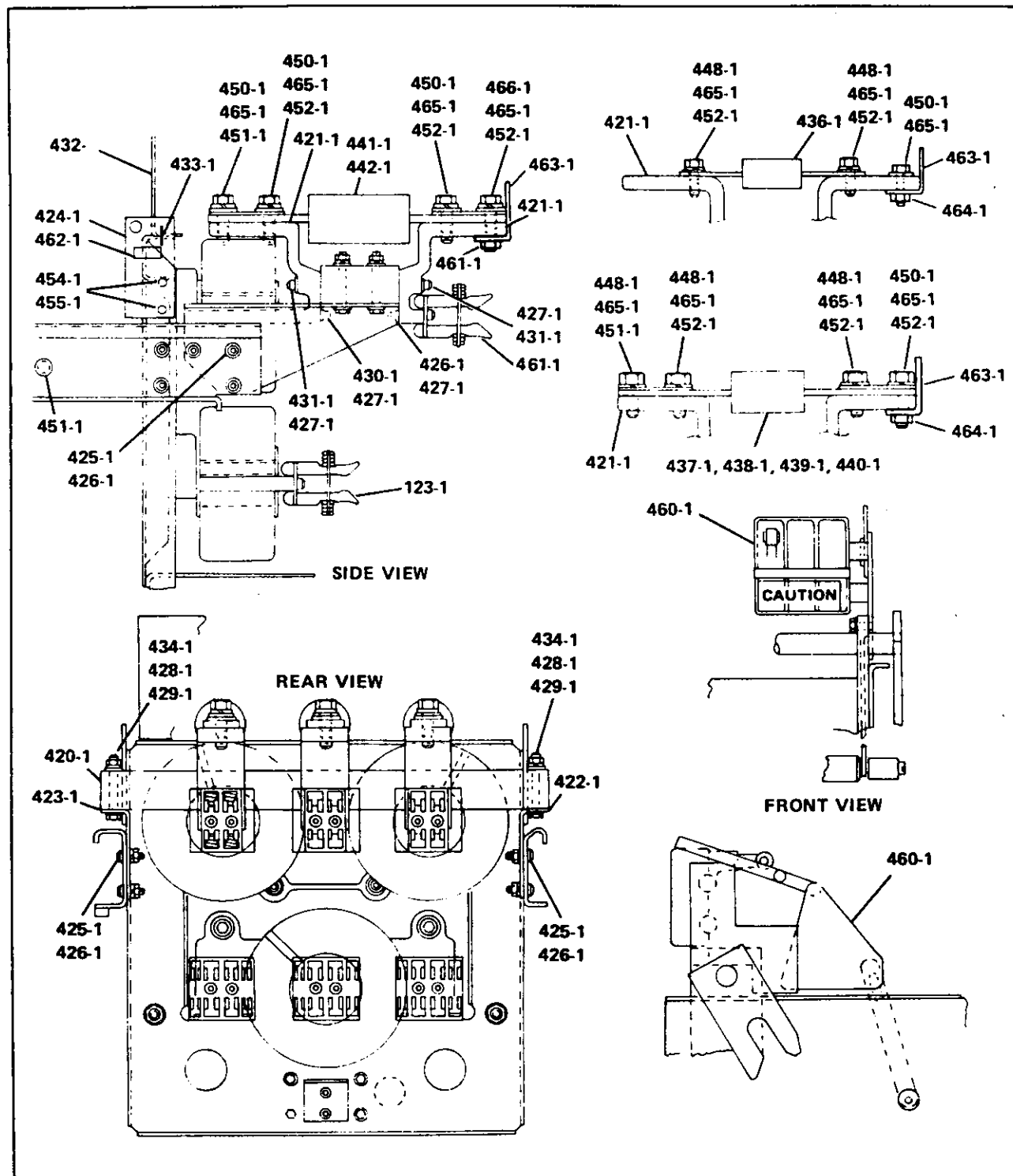


Figure 15. LAF-1600B Fuse Attachment Group

Parts

Item	Description	Part Number	Usage
420-1	Insulator	18-728-054-001	
421-1	Connector	18-726-465-001	
422-1	Bracket	71-240-594-001	
423-1	Bracket	71-240-594-002	
424-1	Lifting Bar	71-142-306-001	
425-1	Screw	15-615-024-004	
426-1	Nut	00-631-171-104	
427-1	Lk. Washer	00-655-017-026	
428-1	Screw	00-611-315-386	
429-1	Washer	00-651-007-147	
430-1	Screw	00-615-114-380	
431-1	Screw	00-611-315-380	
432-1	Barrier	71-142-180-001	
433-1	Plastic Rivet	00-671-501-070	
434-1	Nut	15-171-063-015	
435-1	Lk. Washer	00-655-017-032	
436-1	CL Fuse 800 Amp	71-142-200-004	
437-1	CL Fuse 1000 Amp	71-142-200-013	
438-1	CL Fuse 1200 Amp	71-142-200-005	
439-1	CL Fuse 1600 Amp	71-142-200-006	
440-1	CL Fuse 2000 Amp	71-142-200-007	
441-1	CL Fuse 2500 Amp	71-142-200-008	
442-1	CL Fuse 3000 Amp	71-142-200-009	
448-1	Screw	00-611-315-546	1000/1200A Fuses 800/1600/2000A Fuses 2500/3000A Fuses
450-1	Screw	00-611-315-550	
451-1	Washer	00-651-007-300	800A Fuses
452-1	Washer	00-651-007-285	
454-1	Nut	15-171-063-018	
455-1	Screw	00-611-315-465	
460-1	Trigger Fuse Assembly	18-392-070-501	See Separate List
461-1	Finger Assembly	71-240-055-513	Fused
462-1	Label	18-657-523-014	
463-1	Barrier	18-657-852-572	
464-1	Nut, Plastic	15-171-399-053	
465-1	Lk. Washer	00-655-017-036	
466-1	Screw	00-611-315-552	

Parts

Open Fuse Trip Device, Trigger Fuse Assembly

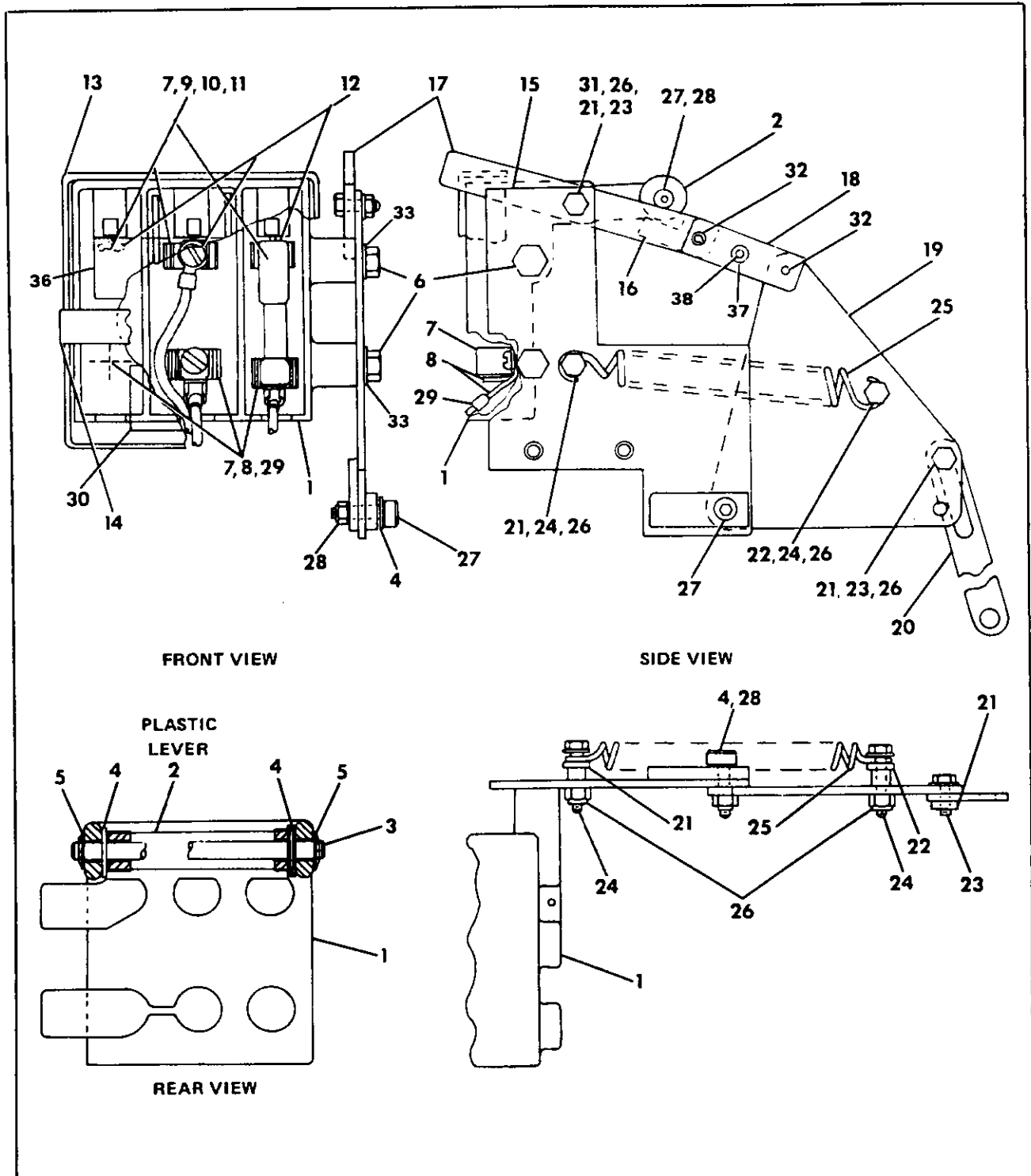


Figure 16. LAF-600B, LAF-800A and LAF-1600B Open Fuse Trip, Trigger Fuse Assembly

Parts

Item	Description	Part Number	Usage
1	Housing	71-240-600-001	
2	Lever	71-142-185-001	
3	TF Pin	71-115-468-004	
4	Washer	00-651-017-135	
5	Retainer	00-673-243-007	
6	Screw	00-611-435-371	
7	Clip	00-871-262-013	
8	Faston Tab	00-851-609-006	
9	Screw	00-615-641-904	
10	Terminal	00-851-011-046	
11	Wire	00-557-863-363	
12	Trigger Fuse	72-140-317-001	
13	Cover	71-240-599-001	
14	Clip	71-142-192-001	
15	TF Base	18-725-948-501	
16	TF Trip Link	18-657-800-328	
17	TF Toggle One	18-657-800-127	
18	TF Toggle Two	18-657-800-128	
19	TF Plate	18-657-800-129	
20	TF Link	18-657-800-130	
21	Perma Nut	15-171-035-001	
22	Perma Nut	15-171-035-002	
23	Screw	15-171-399-025	
24	Screw	15-171-399-019	
25	Spring	71-113-503-001	
26	Nut	00-633-059-210	
27	Screw	00-617-349-248	
28	Nut	00-633-057-110	
29	Faston Terminal	00-851-470-904	
30	Label	15-171-185-001	
31	Washer	00-651-017-903	
32	Rollpin	00-671-177-185	
33	Lk. Washer	00-655-059-100	
36	Sign	18-395-300-017	
37	Spacer	18-657-963-311	
38	Pop Rivet	15-171-931-001	

Parts

Undervoltage Trip With and Without Time Delay

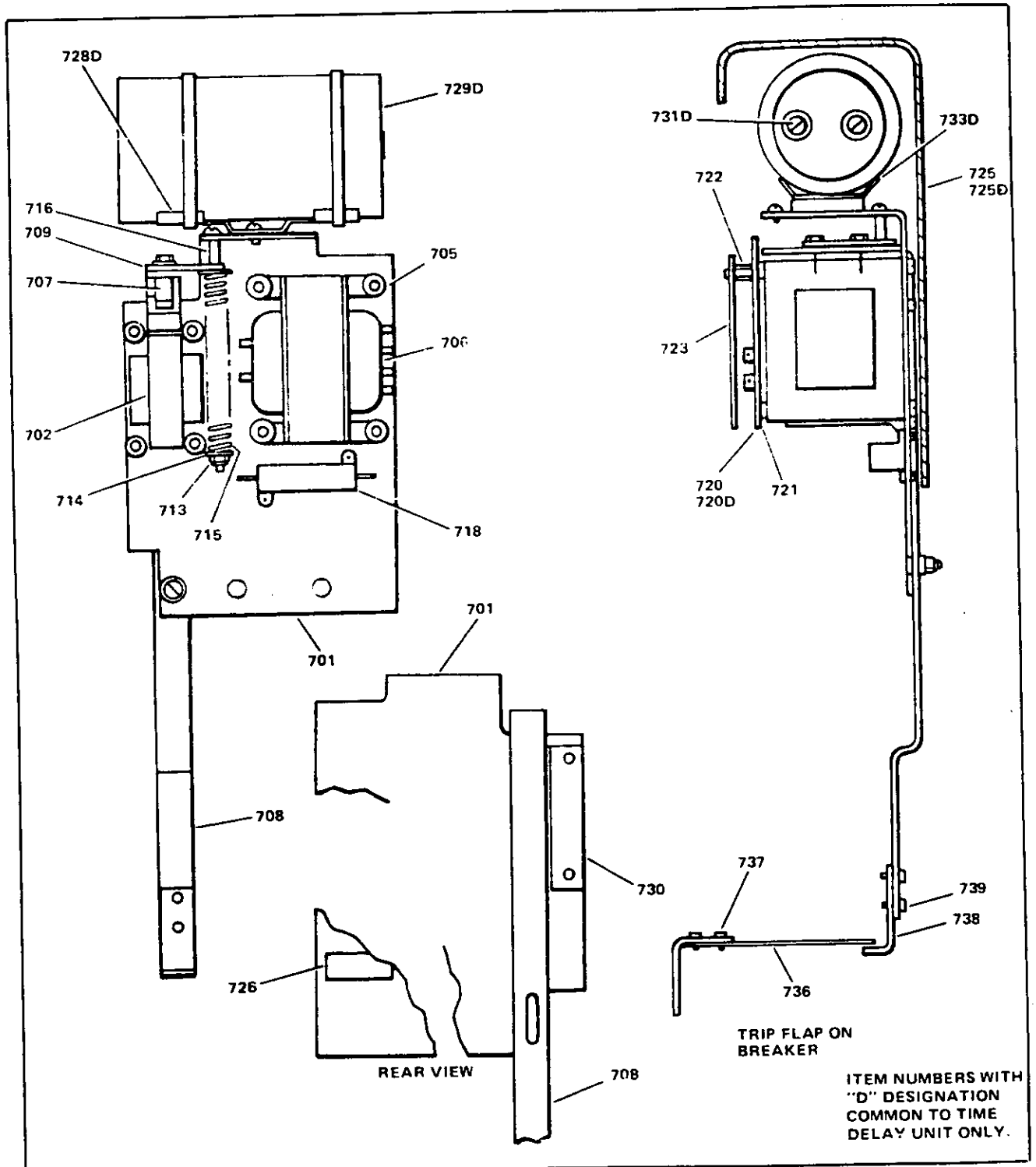


Figure 17. Undervoltage Trip With and Without Time Delay

Parts

Item	Description	Part Number	Usage
701	UV Base	18-395-032-001	
703	Solenoid	18-724-513-007	
705	Spacer	18-657-838-298	
706	Transformer	15-171-194-001	
707	Block	18-657-838-297	
708	UV Link	18-727-850-001	
709	Plate	18-657-838-296	
713	EI Stop Nut	00-633-059-210	
714	Centering Washer	14-105-442-001	
715	Spring	18-657-840-381	
716	Screw	15-171-399-038	
718	Resistor	15-171-046-015	
720	Circuit Bd.	18-395-370-502	
720D	Circuit Bd.	18-395-370-501	
721	Insulator Shield	18-657-840-380	
722	Stand Off	18-657-465-036	
723	Sub-Cover	18-657-838-295	
725	Cover	18-395-033-001	
725D	Cover	18-395-033-002	
726	Name Plate	18-657-840-382	
728D	Cap. Bracket	18-729-233-001	
729D	Capacitor	15-171-029-016	
730	Guide Plate	18-657-853-256	
731D	Screws (.25-28). 38	00-615-485-369	
733D	Insulator	18-657-854-183	
736	Flapper Extension	18-657-854-174	
737	Screw #6-32	15-171-074-007	
738	Link End	18-657-838-299	
739	Screw #10-32 (.5)	15-171-399-010	

Parts

Static Trip Group LimiTrip Device

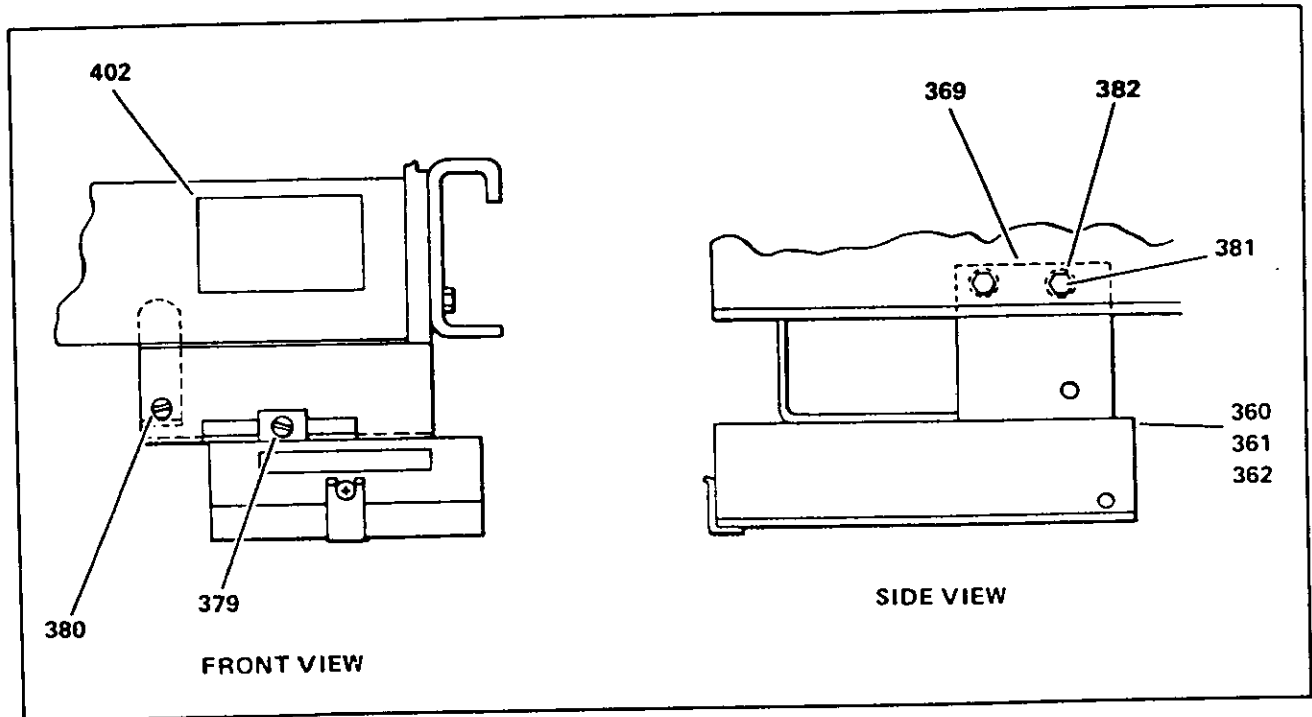


Figure 18. LA-600B, LA-800A and LA-1600B LimiTrip Group

Item	Description	Part Number	Usage
			Ordering Part Number
360	Type LTI Trip Dev.	18-396-440-501	18-733-681-501
361	Type LTS Trip Dev.	18-396-440-502	18-733-681-502
362	Type LTSI Trip Dev.	18-396-440-503	18-733-681-503
369	Bracket	18-388-433-001	
379	Screw	00-615-641-903	
380	Screw	00-615-577-172	
381	Screw	00-611-461-371	LA-600B, LA-800A
381	Screw	00-611-461-375	LA-1600B
382	Nut, Spacer	00-631-003-106	LA-1600B

Parts

Sensor Transformer Group

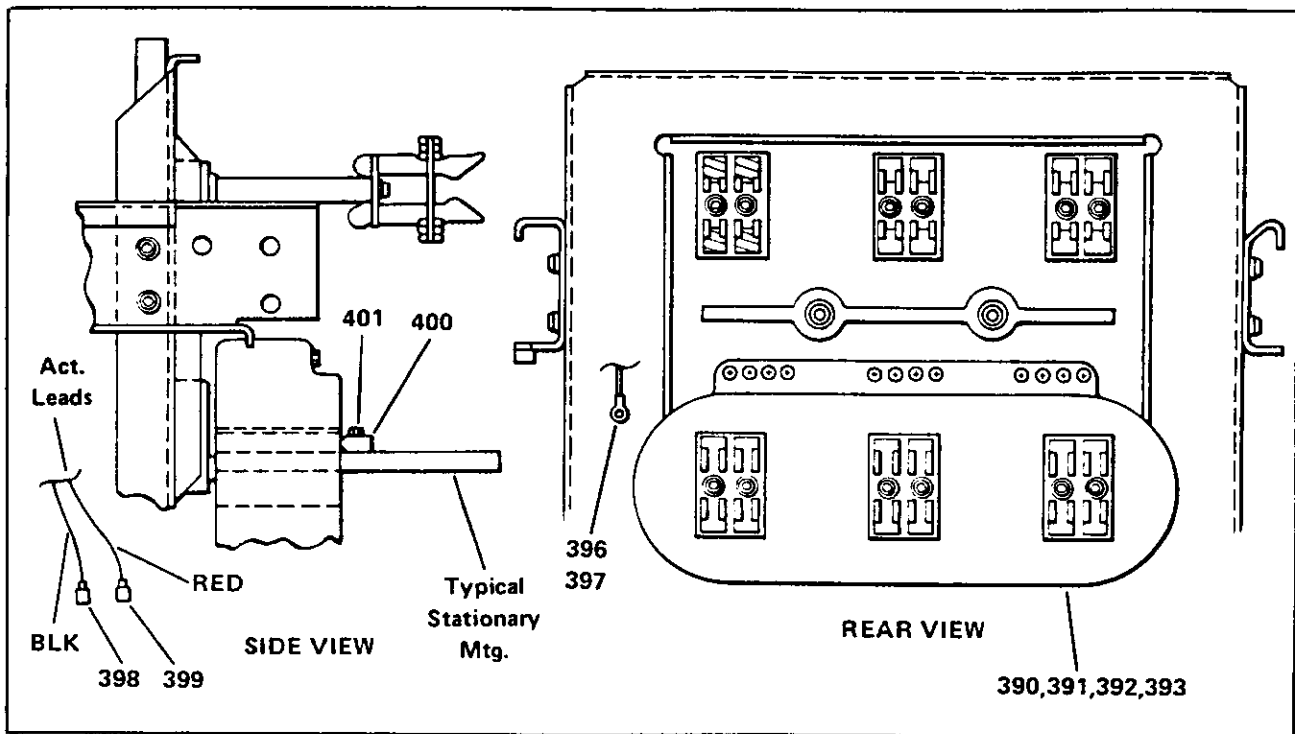


Figure 19. LA-600B and LA-800A (with LimiTrip Trip Device) Sensor Transformer Group

Item	Description	Part Number	Usage
390	Sensor, 80/1	61-300-040-501	LA-800A
391	Sensor, 200/1	61-300-040-502	
392	Sensor, 400/1	61-300-040-503	
393	Sensor, 600/1	61-300-040-504	
393A	Sensor, 800/1	61-300-040-505	
396	Terminals #6	00-851-067-026	
397	Terminals #10	00-851-067-030	
398	Faston Male	15-171-399-039	
399	Faston Female	15-171-399-040	
400	Cotter Pin	00-671-195-257	

Parts

Sensor Transformer Group

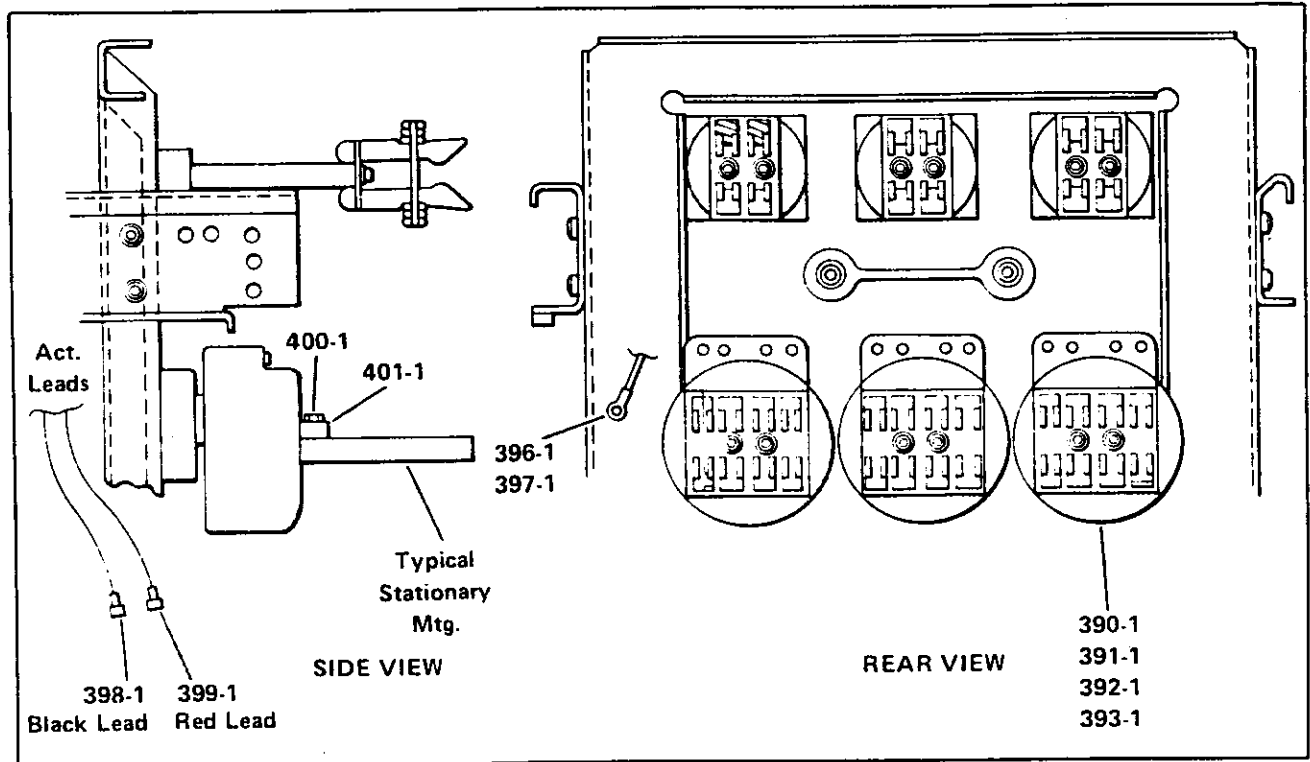


Figure 20. LA-1600B (with LimiTrip Trip Device) Sensor Transformer Group

Item	Description	Part Number	Usage
390-1	Sensor, 200/1	61-300-041-501	
391-1	Sensor, 400/1	61-300-041-502	
392-1	Sensor, 800/1	61-300-041-503	
393-1	Sensor, 1600/1	61-300-041-504	
395-1	Terminal #6	00-851-067-026	
396-1	Terminal #10	00-851-067-030	
398-1	Terminal, Male	15-171-399-039	
399-1	Terminal, Female	15-171-399-040	
400-1	Retainer	18-657-922-377	Stationary Only
401-1	Screw	15-171-399-025	Stationary Only