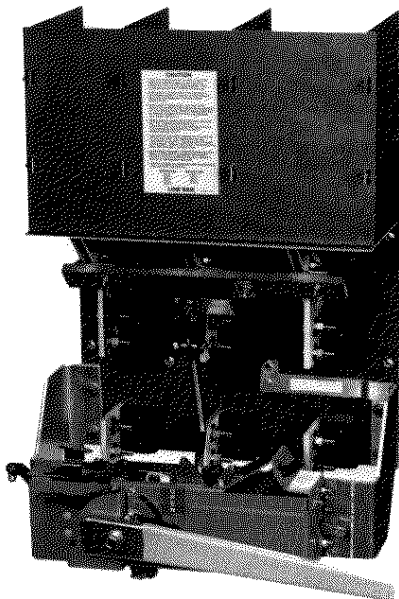




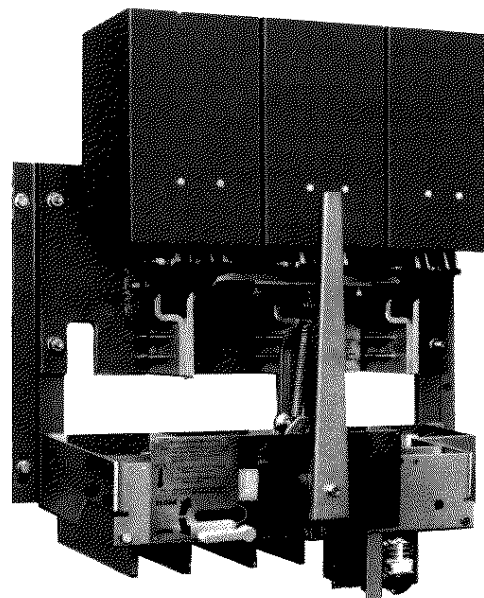
Instruction & Maintenance Manual

BOLT-LOC Type BP Switches

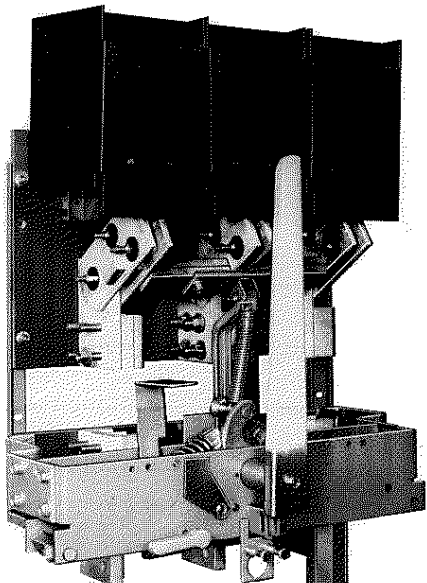
Series 2



800-2000 Amperes



4000 Amperes



2500-3000 Amperes

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WARNING INSTRUCTIONS

TURN OFF SWITCH before removing or installing fuses.
TURN OFF POWER ahead of switch before doing work inside.
Replace all parts per instruction manual and close door before turning power ON.

General (800-4000 Amperes)

Type BP switches provide a reliable method for making a high current connection by using the bolted pressure technique. The Type BP switch does this with the use of a quick-make, quick-break stored energy mechanism. This Square D feature assures anti-tease operation by moving the switch blades at high speeds during the opening and closing of the switch, regardless of the speed with which the operating handle is moved.

This spring operated mechanism is so designed that both springs must be charged before the switch is closed by manual means. Once the closing spring has been discharged (the switch closed), the mechanism is immediately in a condition to be opened manually or electrically, if equipped with the electric trip option.

Type BP switches are designed to meet all requirements of Underwriters Laboratories Standard UL977: Fused Power Circuit Devices. These switches, with Class L fuses installed, are UL listed for use on circuits capable of delivering not more than 200,000 RMS symmetrical amperes at 600VAC maximum.

The basic switch is capable of interrupting 12 times its continuous ampere rating at 240, 480 and 600VAC.

Cable Connections

It is important that adequate support is provided for line and load cables. Lack of support could alter the function of the switch.

SQUARE D COMPANY

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WARNING INSTRUCTIONS

TURN OFF SWITCH before removing or installing fuses.
TURN OFF POWER ahead of switch before doing work inside.
Replace all parts per instruction manual and close door before turning power ON.

Maintenance (800-4000 Amperes)

Lubrication Instructions

Before lubricating, the switch must be open and both the opening and closing springs discharged. (See operating instructions on pages 5, 6 and 7).

The Type BP switch as received from the factory, has been properly lubricated. Periodic cleaning and lubrication of the switch will be required. The maintenance interval between lubrications will be dependent upon the amount of usage, ambient conditions, etc. The maximum maintenance intervals should not exceed one year for current carrying parts or five years for the operating mechanism.

A. Current Carrying parts

The blade/hinge contact area is lubricated before the switch leaves the factory. When required, wipe grease from the blade hinge contact area and apply a thin coat of Mobilth #21 grease. **DO NOT** disassemble the blade from the hinge.

When required, the contact area of the blades and the line side terminals should be thoroughly cleaned with CRC type CO contact cleaner #02016 (or equivalent) and wiped clean with a dry cloth. Apply a thin coating of Mobilth #21 grease to the blade assemblies and line side terminal contact area (Figure 14. 800-2000 Amperes, Figure 15. 2500-4000 Amperes). Wipe off excess grease with a clean cloth. Mobilth #21 grease is available from the Mobil Oil Corporation or Square D Company.

B. Operating Mechanism

For the 800-2000 Ampere switches the mechanisms require a general relubrication a minimum of once every 5 years using molybdenum disulfide impregnated grease.

For 2500-4000 Ampere switches the following should be relubricated at least once every 5 years using a molybdenum disulfide impregnated grease: the front cam (not shown), clutch pin (Figure 2), contact area of the spring crank (Figure 2), and the roller and pivot point of the closing latch (Figure 1).

For 2500-4000 Ampere switches, the lubrication on other bearing surfaces may be restored by the sparing use of a #20 weight oil on an infrequent basis depending on ambient conditions. These surfaces are: front latch pin (Figure 3, both sides), the needle bearing in the operator plate assembly (Figure 2), and any other bearing surface or pivot as required.

C. Arc Tips, Arc Suppressors

Check blade and stationary arc tips and arc suppressors for excessive wear and looseness. See Figure's 14 & 15. Contact Square D Technical Service Division if replacement or inspection is required.

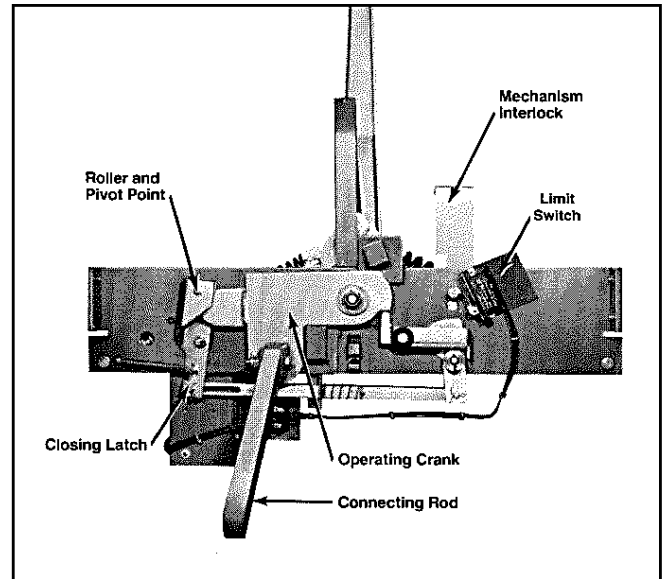


FIGURE 1
Rear View
(2500-4000 Ampere)

Exercising Operating Mechanism

The operating mechanism should be periodically exercised to ensure operation. This period should not exceed one year.

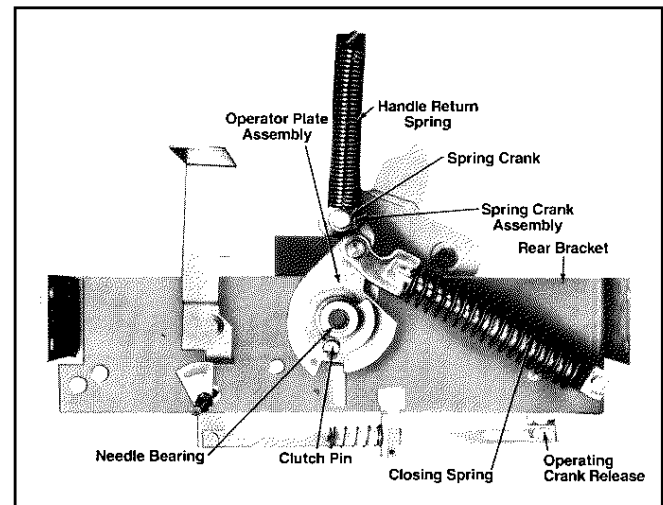


FIGURE 2
Front View
(Front Bracket Removed)
(2500-4000 Ampere)



Operation (800-2000 Ampere)

Manual Operating Mechanism

To Close

1. Fuse access door must be closed and fastened securely with door screws before switch can be operated (see photo 1).
2. Rotate large handle in the counterclockwise direction from the horizontal position (see photo 2) to the vertical position until the handle stops (see photo 3).
3. Rotate large handle clockwise from the vertical position (photo 3) to the horizontal position until switch closes (photo 4).

Note: Resistance will be felt at about 15 degrees from horizontal (see photo 5). Rotate handle beyond this point to close switch.

CAUTION: Damage may occur to mechanism unless handle is operated according to the following instructions.

To Open

1. Fuse access door must be closed and fastened securely with door screws before switch can be operated (see photo 1).
2. Rotate small handle in the clockwise direction until the switch opens (see photo 6).

Note: Photos illustrate an upright switch. For inverted switches the direction of operation is the same but the handle will be on the opposite side of the switch.

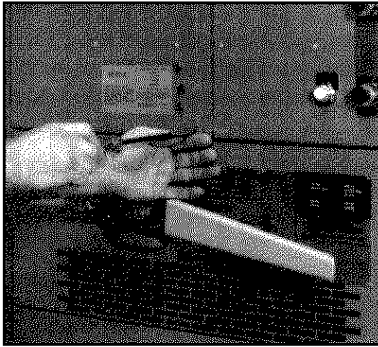


PHOTO 1

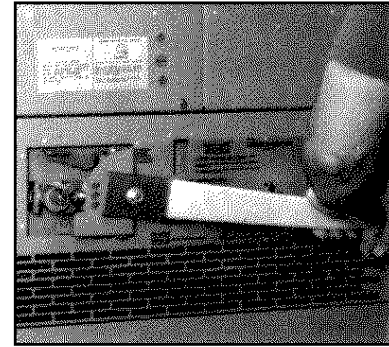


PHOTO 4

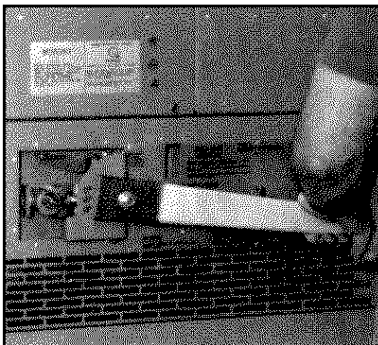


PHOTO 2

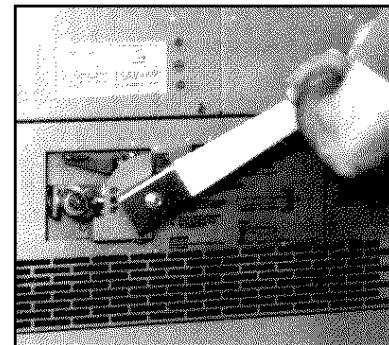


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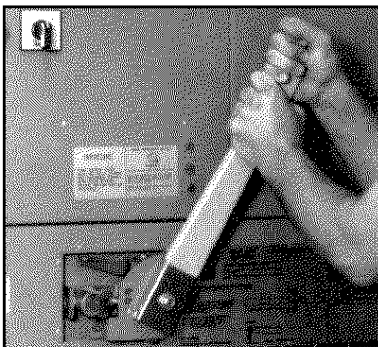


PHOTO 3

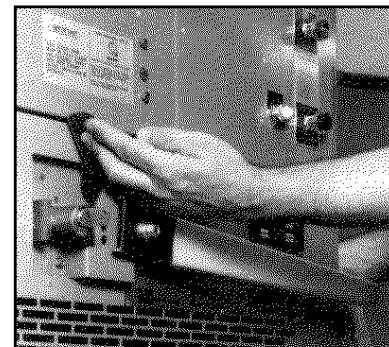


PHOTO 6



Operation (2500-4000 Amperes)

Manual Operating Mechanism

The operation of the stored energy mechanism (Figure 3) is restricted to a close-open cycle only and is mechanically interlocked to prevent any operating sequence other than close-open. To operate this mechanism it is necessary to charge both the opening and closing operating mechanism springs and either the door must be closed or the mechanism interlock must be defeated.

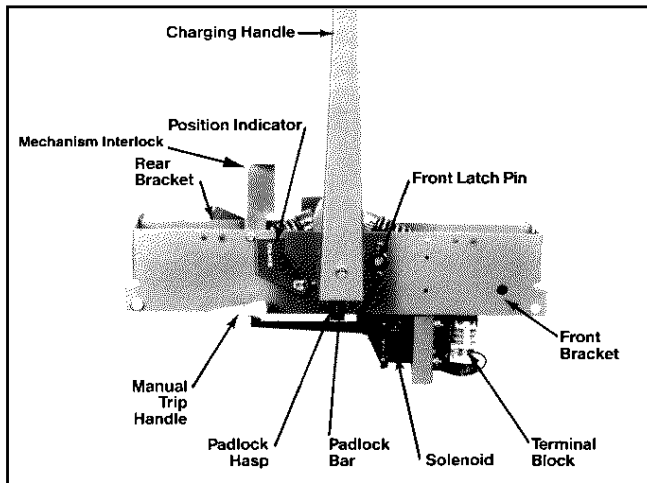


FIGURE 3
Front View
(2500-4000 Amperes)

Note: Figure 3 illustrates an upright switch. For inverted switches the direction of operation is the same but the handle will be pointed in a downward direction.

To **charge** operating mechanism springs (Figure 3):

1. Rotate the charging (large) handle counterclockwise approximately 90 degrees, until the opening spring is latched.
2. Rotate the charging (large) handle clockwise approximately 180 degrees, until the closing spring is latched.
3. The charging handle will be returned to a vertical position by the handle return spring. The handle must be in the vertical position when the switch is operated.

With the spring charging operation accomplished, the switch can be closed by manually rotating the manual trip handle (see Figure 3) clockwise until the closing spring is released. The release of the energy stored in the closing spring causes the switch operating mechanism to rotate and **close** the switch.

To **open** the switch manually, rotate the manual trip handle (see Figure 3), counterclockwise until the opening spring is released. The release of the energy stored in the opening spring causes the switch operating mechanism to rotate and open the switch.

Operation (800-4000 Amperes)

Electric Trip Operating Mechanism

If the switch is equipped with the electric trip option, opening of the switch can be accomplished by manual or electrical means.

When the switch is equipped with the electric trip option, the stored energy in the opening spring can be released electrically by energizing the electric trip solenoid (Figure 4: 800-2000 Amperes, Figure 6: 2500-4000 Amperes). This can be accomplished by a manual push button, a blown main fuse detector, or by the output signal from a ground fault detector system. As long as any one or more of these result in supplying the necessary power to the electric trip solenoid coil, the switch will open. This power can only be applied when the Type BP switch is closed since the limit switch (Figure 4: 800-2000 Amperes, Figure 1: 2500-4000 Amperes), which is in series with the applied signal and the solenoid coil, is only closed when the Type BP switch is in the closed position. See Schematic Diagram - Page 16.

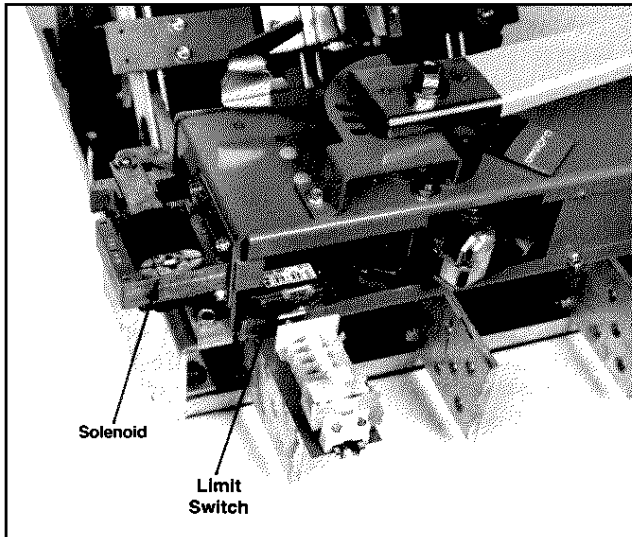


FIGURE 4
Electric Trip Mechanism

Position Indicator

The switch position indicator (Figure 5: 800-2000 Amperes, Figure 6: 2500-4000 Amperes) is located on the front of the operating mechanism and can be observed through an opening in the switch cover. This visual indicator will either read "CLOSED" or "OPEN". The position indicator shows a function of the driving mechanism. It moves to indicate the switch position through the cover opening when the current carrying parts move to the corresponding "CLOSED" or "OPEN" position.

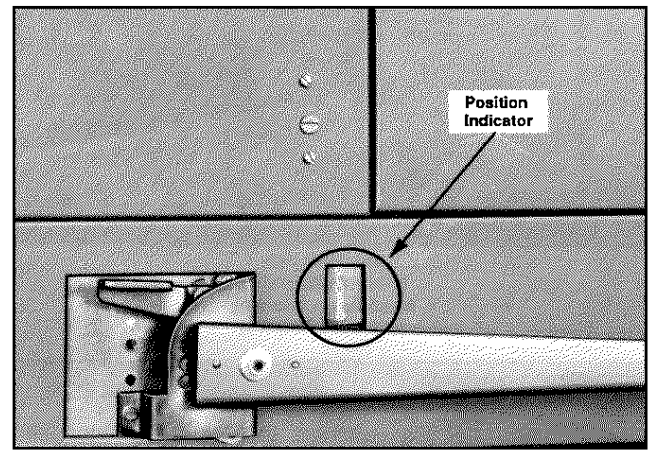


FIGURE 5
Switch Position Indicator
(800-2000 Ampere)

Mechanism Interlock

The mechanism interlock has been designed to mechanically lock the operating mechanism whenever the fuse door is opened. This locking is accomplished by preventing rotation of the manual trip handle when the fuse door is open (Figure 7: 800-2000 Amperes, Figure 6: 2500-4000 Amperes).

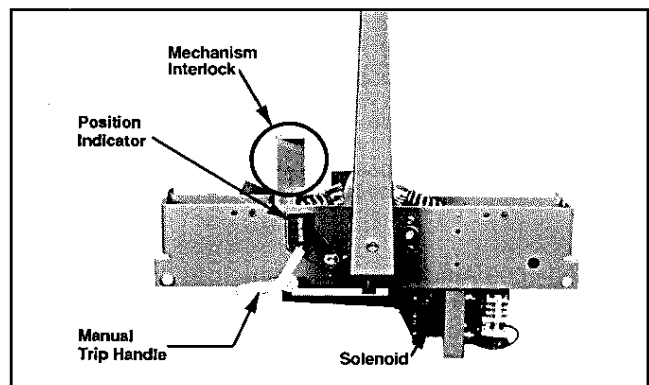


FIGURE 6
Electric Trip Mechanism, Position Indicator and Solenoid
(2500-4000 Ampere)

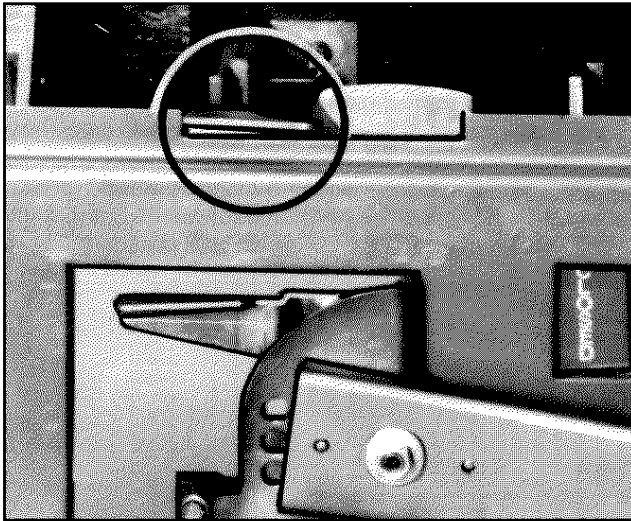


FIGURE 7
Mechanism Interlock
(800-2000 Ampere)

Fuse Door Interlock

For 800-2000 Ampere switches, the fuse door interlock is designed to prevent opening the fuse door when the switch is in the closed position. It can be manually overridden to permit access to the switch for inspection purposes. Opening of the fuse door with the switch closed, will require purposely bypassing, by qualified personnel, the interlock by inserting a screwdriver in the interlock bypass screw and turning clockwise (see Figure 8).

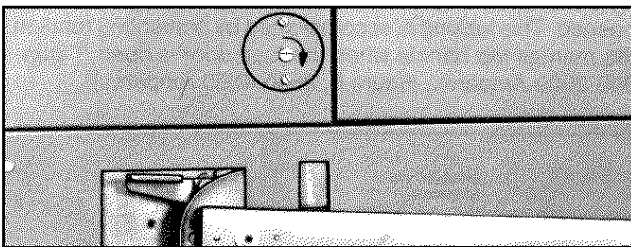


FIGURE 8
Fuse Door Interlock Defeat
(800-2000 Ampere)

For 2500-4000 Ampere switches, the fuse door interlock is designed to prevent opening the fuse door when the switch is in the open or closed position. It can be manually overridden to permit access to the switch for inspection purposes. Opening of the fuse door will require the removal of the charging handle and purposely bypassing, by qualified personnel, the interlock by inserting a screwdriver in the door interlock defeat screw and turning counterclockwise (see Figure 9).

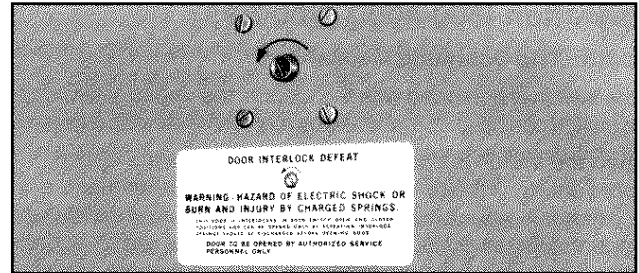


FIGURE 9
Fuse Door Interlock Defeat
(2500-4000 Ampere)

Adjustments (800-4000 Amperes)

The operating mechanism has been designed so that adjustments are not required.

The switch blade components have been designed and assembled so as not to require adjustment under normal operating conditions. The mechanism as received from the factory will perform satisfactorily without the need for field adjustments.

The open gap is set at the factory; there is no field adjustment. Contact pressure is controlled by the switch design. If adjustments are required contact Square D Technical Services.

Padlocking Instructions (800-4000 Amperes)

Padlocking can be accomplished only when the switch is in the OPEN position. It has been designed to accommodate three (3) 3/8" dia. shackle padlocks. (See Figures 10A & 10B).

1. Trip the switch to the open position by following the operation instructions outlined on pages 5 and 6. For 800-2000 Ampere switches, slide padlock through holes and secure. For 2500-4000 Ampere switches, push in padlock bar and secure. (See Figure 10B).
2. When 3/8" dia. padlocks are inserted into the padlock feature, the switch is inoperative.

Key Interlock Instructions (800-2000 Amperes)

The 800-2000 Ampere switches can also be locked open with an optional key interlock, Catalog Number BPKIP20. The key interlock assembly is mounted adjacent to the charging handle. (See Figure 11A).

1. With the switch operating mechanism in the uncharged (open) condition, turn the key to extend the lock bolt. With the lock bolt extended, the switch mechanism is inoperative.



Key Interlock Instructions (2500-4000 Ampere)

The 2500-4000 Ampere switches can also be locked open with an optional key interlock, Catalog Number BPKIP40. The key interlock assembly is mounted to the switch just below the padlocking bar. (see Figure 11B).

1. With the switch operating mechanism in the uncharged (open) condition, push the padlock bar and turn the key to extend the lock bolt. With the lock bolt extended and the padlock bar in the depressed position, the switch mechanism is inoperative.

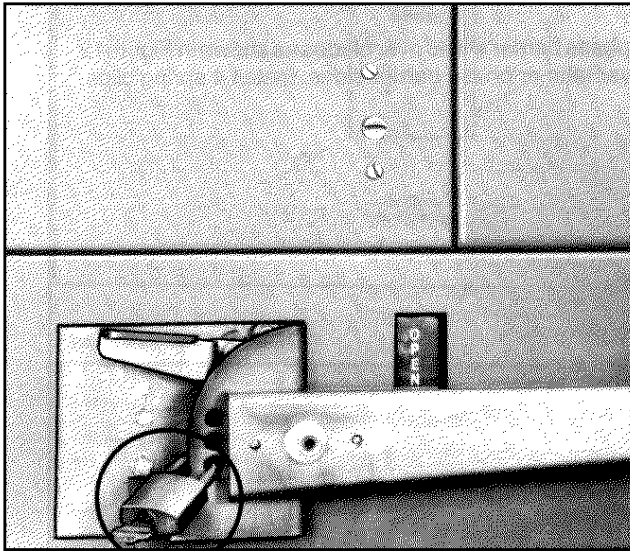


FIGURE 10A
Padlock Provisions
(800-2000 Ampere)

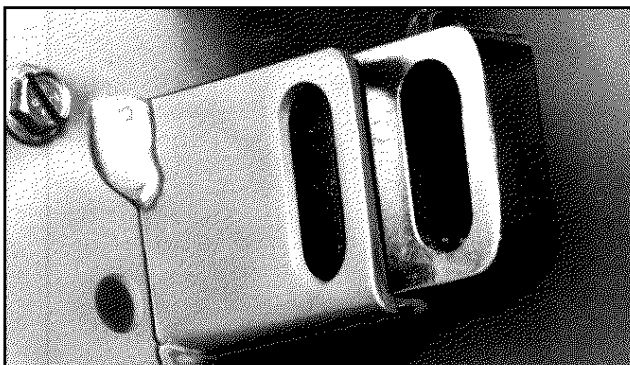


FIGURE 10B
Padlock Bar
(2500-4000 Ampere)

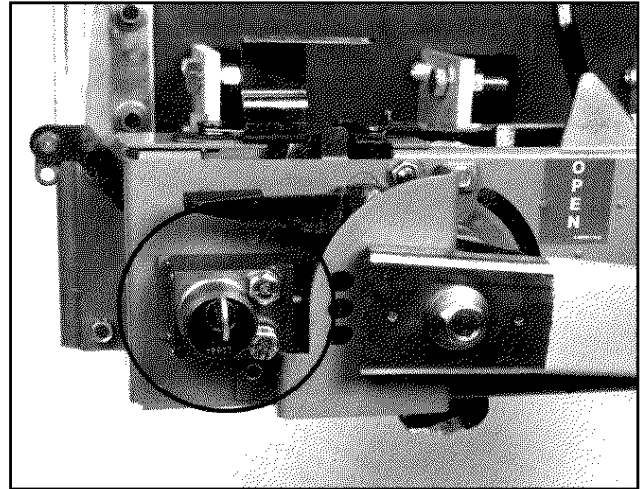


FIGURE 11A
Key Interlock
(800-2000 Ampere)

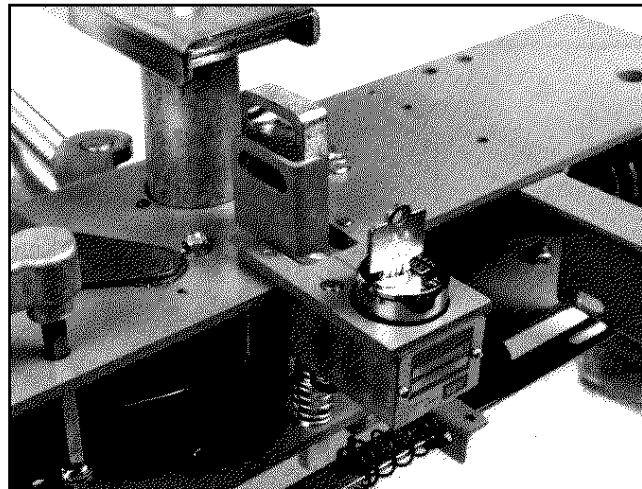


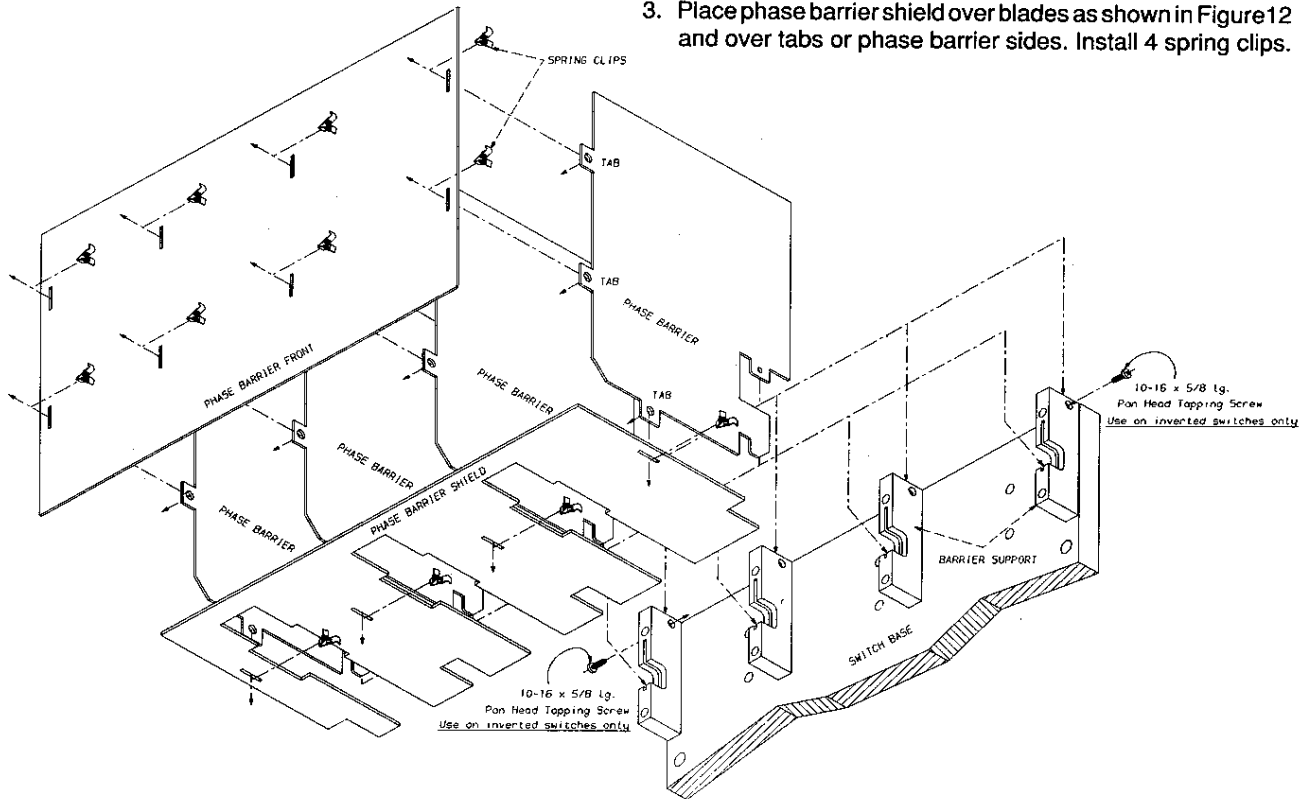
FIGURE 11B
Key Interlock
(2500-4000 Ampere)

Phase Barrier – Removal and Installation

(800-2000 Amperes)

Phase Barrier - Installation (800-2000 Amperes)

1. To install, slide individual phase barriers into the barrier supports mounted on switch base as shown in Figure 12.
2. Notch in phase barriers should be seated against barrier supports.
3. Place phase barrier front on phase barriers. Align slots in phase barrier front with phase barrier tabs on all four phase barriers as shown in the figure below. Install 8 spring clips.
4. Place phase barrier shield over blades as shown in Figure 12 and over tabs or phase barrier sides. Install 4 spring clips.



Phase Barrier - Removal

1. Remove 4 spring clips securing phase barrier shield and lift over tabs on phase barriers.
2. Remove 8 spring clips securing phase barrier front and lift over tabs on phase barriers.
3. Lift up on individual phase barriers to remove from barrier supports mounted on switch base.

FIGURE 12



Phase Barriers (2500-4000 Amperes)

Removal

To remove phase barriers, remove two 1/4-20 screws from each phase barrier and lift up and out as shown in Figure 13.

Installation

To install phase barriers, position tabs on the phase barriers into the slots in the base and align the holes in the phase barrier with the holes in the arc suppressor. Install two 1/4-20 screws and torque to 25 to 30 in-lbs. Repeat on all phases.

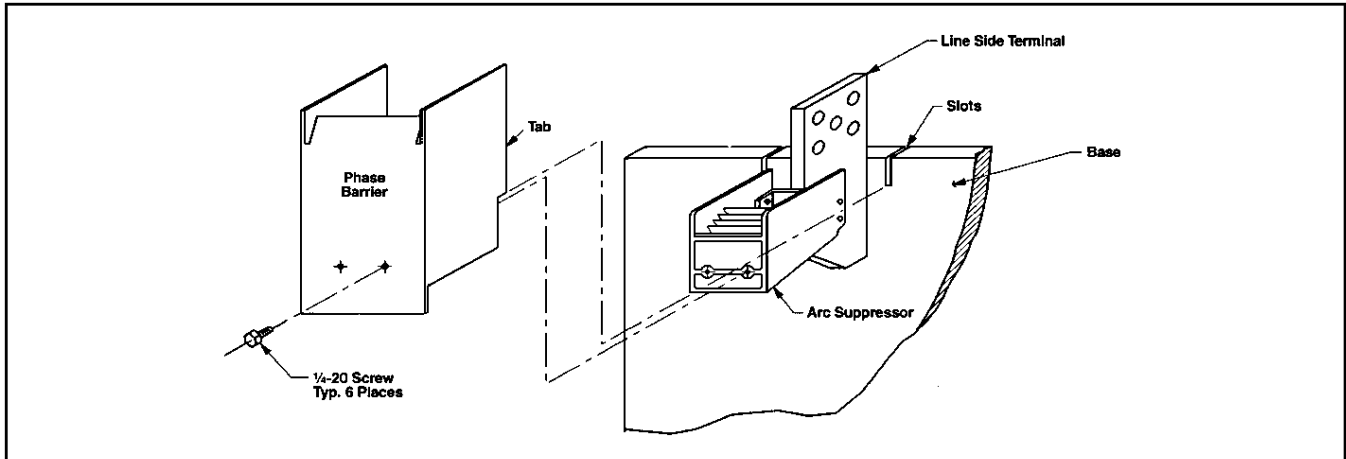


FIGURE 13

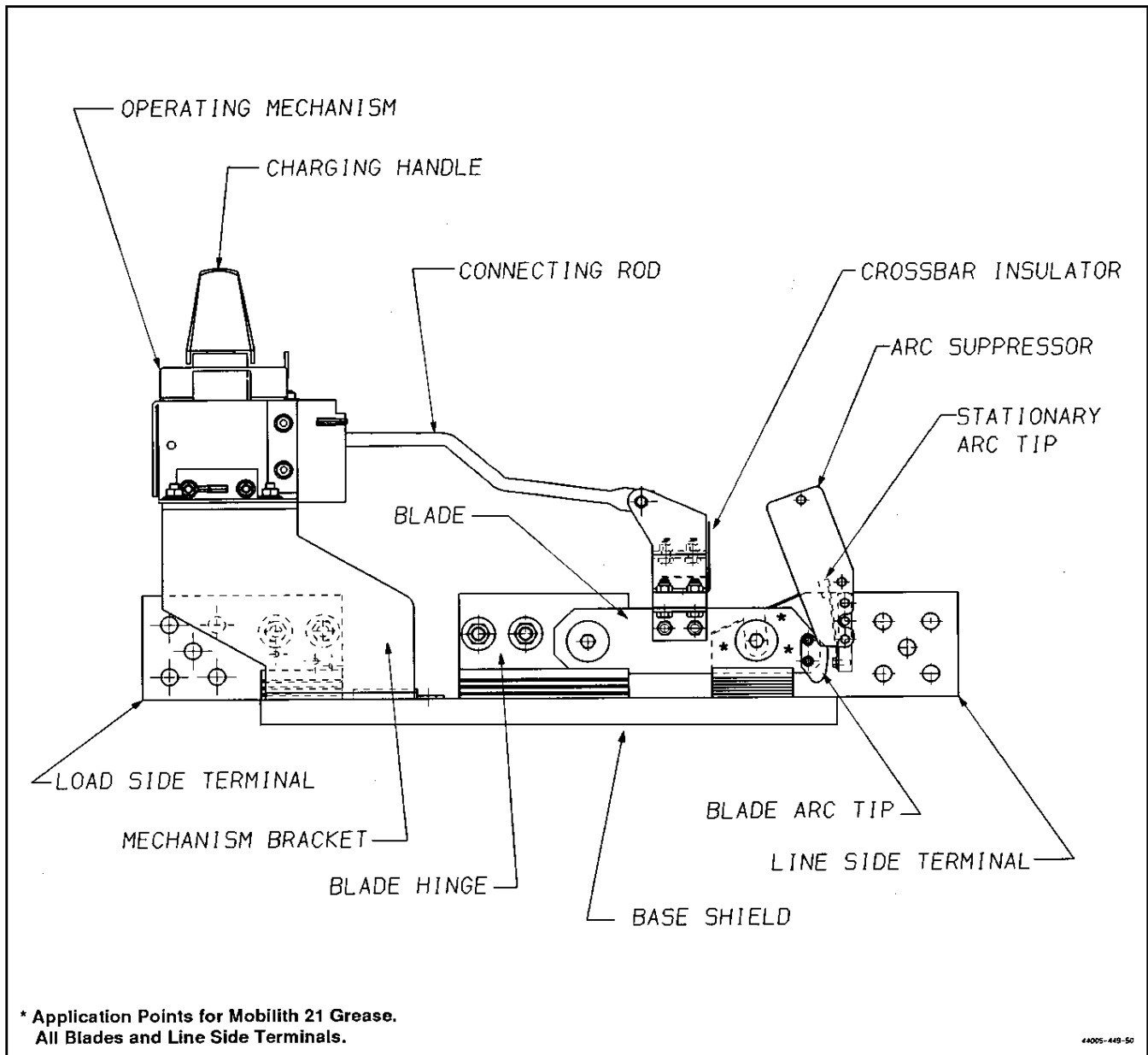


FIGURE 14
Switch Side View
(800-2000 Ampere)



BOLT-LOC® SWITCHES TYPE BP

CLASS
9810

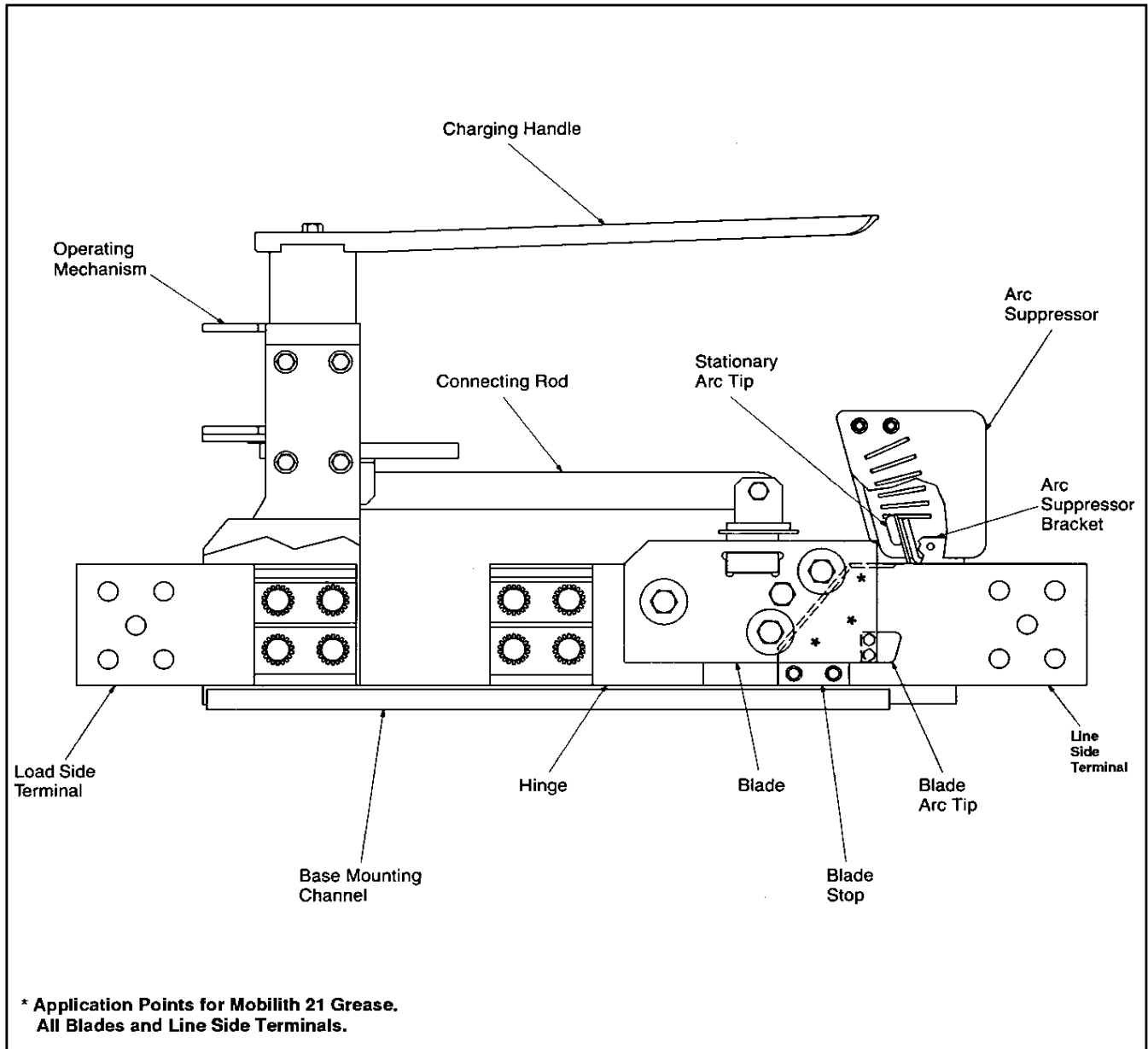


FIGURE 15
Switch Side View
(2500-4000 Ampere)



ACCESSORIES AND REPLACEMENT PARTS 800 – 2000 AMPERES

Description	Part Number
1. Electric Trip Kit 800A-2000A	BPET20
2. Charging Handle - 800A-2000A	40556-063-01
3. Solenoid - (Specify 120 VAC or 240 VAC)	
800A-2000A	44003-125-01
4. Limit Switch 800A -2000A	40556-129-50
5. Door Interlock Assembly 800A-2000A	40556-124-50
6. Key Interlock Bracket Kit	BPKIP20
7. Auxilliary switch Kit 800A-2000A	BPAS20
8. Inverted Switch Barrier Kit	
800A-2000A	BPINV20
9. Position Indicator Nameplate	
800A-2000A	(upright) 40274-796-01
.....	(inverted) 40274-797-01
10. Blown Main Fuse Detector	BPBMFD

Table 1

ACCESSORIES AND REPLACEMENT PARTS 2500 - 4000 AMPERES

Description	Part Number
1. Electric trip Kit - 2500A-4000A	BPET40
2. Solenoid - (specify 120 VAC or 240 VAC)	
2500A-4000A	44003-125-01
3. Limit Switch	4090016
4. Door Interlock Kit	B44003-312-50
5. Charging Handle - 2500A-4000A	44005-077-01
6. Postiiion Indicator Nameplate	
2500A-4000A	(Upright) 44005-031-01
.....	(Inverted) 44005-032-01
7. Key Interlock Provision Kit	BPKIP40
8. Auxiliary switch Kit 2500A-4000A	BPAS40
9. Inverted Switch Barrier Kit 2500A-3000A	BPINV30
10. Blown Main Fuse Detector	BPBMFD

Table 2

ORDERING INSTRUCTIONS

When ordering replacement parts, provide part descriptions and complete nameplate data of the switch for which parts are required. The nameplate is located on the front cover of the switch.

Example: CLASS _____
 TYPE _____
 MANUFACTURING NUMBER: _____
 OPTIONS _____



**BOLT-LOC® SWITCHES
TYPE BP**

Options – Field or Factory Installed

TABLE - 3

Description	Field Installable Kit Catalog Number	
	800-2000A	2500-4000
1. Key Interlock Provisions (order keyed interlock separately)	BPKIP20	BPKIP40
2. Auxiliary Switch	BPAS20	BPAS40
3. Blown Main Fuse Detector	BPBMFD	BPBMFD

Operation and installation instructions, when applicable are included with each option.

Options — Factory Installed Only

TABLE - 4 (800-4000 Ampere)

Factory Installed Options
1. Electric Trip
2. Ground Fault Protection
3. Capacitor Trip Unit
4. Phase Failure Relay
5. Ammeter/Voltmeter
6. Ammeter and Switch
7. Control Power Transformer
8. Potential Transformers for Voltmeters
9. Current Transformers for Ammeters
10. Grounded B Phase
11. Tie Switch

Operation and installation instructions, when applicable are included with each option.

Replacement Parts

When ordering replacement parts, contact your local distributor.

Ordering Instructions

When ordering field installable options, provide option catalog number and complete nameplate data of switch, including series number and other pertinent information for which parts are required. The nameplate is located on the front cover of the switch.

Example: Accessory Catalog No. _____
 Device Catalog No. _____
 Amps. _____
 Volts _____
 MFG. No. _____
 Series No. _____

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TECHNICAL SERVICE DIVISION

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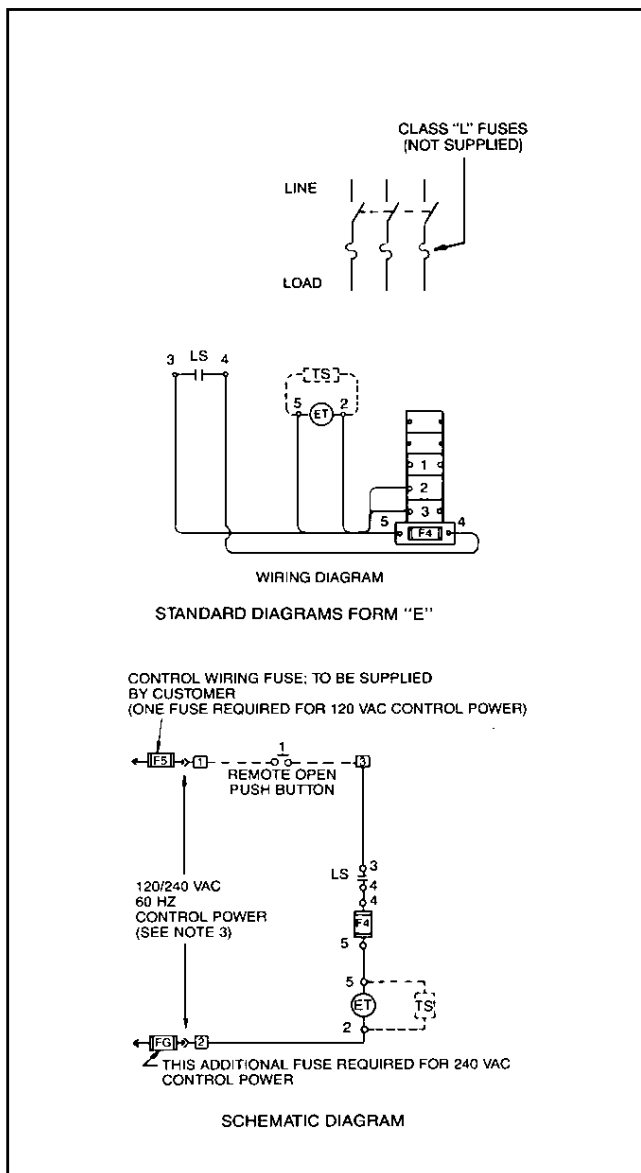


FIGURE 16

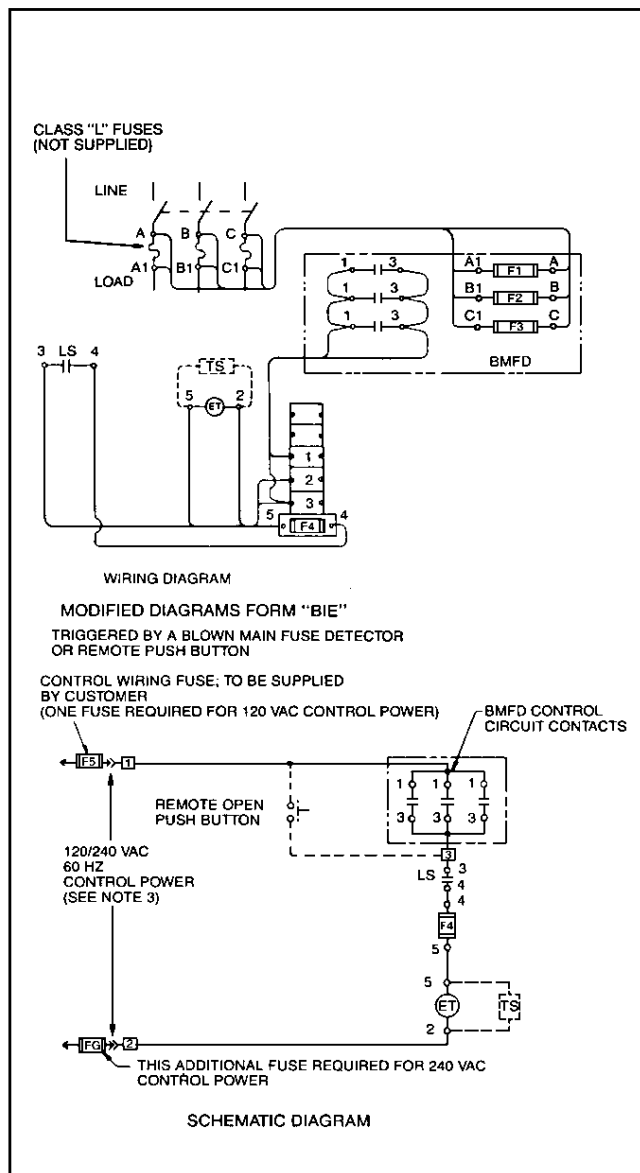


FIGURE 17

LEGEND

- EXTERNAL CONNECTION POWER
- ELECTRIC TRIP COIL
- LIMIT SWITCH CONTACT, CLOSED WHEN THE SWITCH IS CLOSED
- BPBMFD** BLOWN MAIN FUSE DETECTOR (OPTION)
- A CLASS 8501 TYPE GG TRANSIENT SUPPRESSOR IS REQUIRED WHENEVER A CLASS 6840 TYPE GP-MP1 MONITOR PANEL IS USED WITH A BMFD OR REMOTE PUSH BUTTON. (USE ONLY ON 120 VAC TRIP COIL)

--- CUSTOMER WIRING

- REMOTE OPEN PUSH BUTTON

B/L SWITCH RATING	SOLENOID VOLTAGE	SOLENOID INRUSH CURRENT	SOLENOID SEALED CURRENT	FUSE F4
800-4000	120 VAC	46 AMPS.	22 AMPS.	FNM-10
800-4000	240 VAC	26 AMPS.	16 AMPS.	FNM-3

F1 }
F2 } BUSSMAN TYPE KAZ ACTUATOR

F4 }
F5 } 15 AMP FUSE TYPE JKS-15

NOTES:

1. USED ON SINGLE OPERATOR ELECTRIC-TRIP.
2. ELECTRIC TRIP COIL RATED 120/240 VAC 60 HZ SINGLE PHASE. (INTERMITTENT)
3. MINIMUM CONTROL POWER TRANSFORMER OF 1 KVA REQUIRED TO OPERATE ELECTRIC TRIP COIL WHEN 120 VAC COIL IS USED.
4. MINIMUM OPERATING VOLTAGE OF ELECTRIC TRIP COIL IS 55% OF RATED VOLTAGE.



Fuse Installation (2500-3000 Ampere)

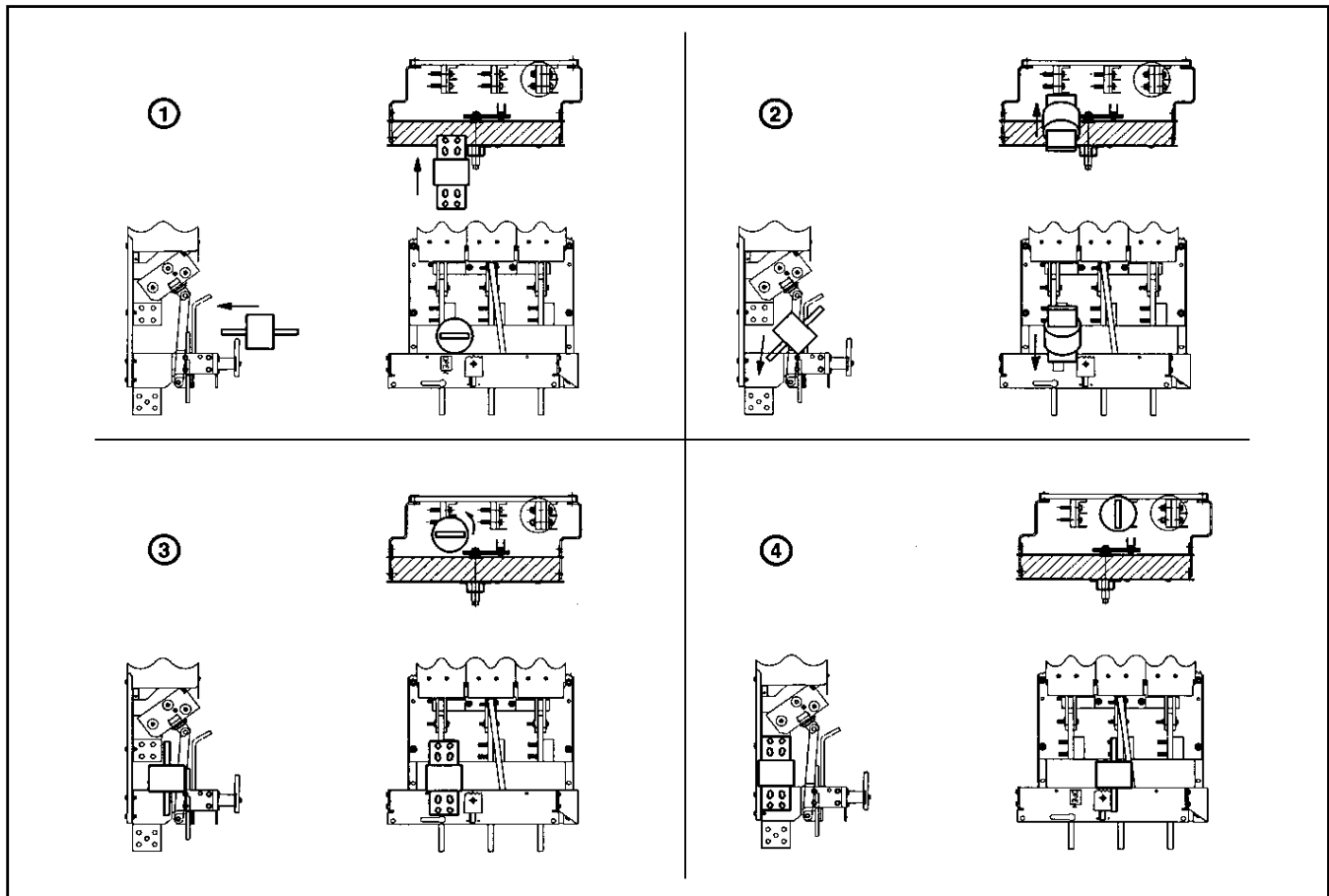


FIGURE 18

IMPORTANT

INSTRUCTIONS FOR FUSE REMOVAL AND INSTALLATION

TURN OFF SWITCH BEFORE REMOVING OR INSTALLING FUSES.

IF FUSES ARE ABOVE MECHANISM:

REMOVE FUSE TO THE LEFT OF THE CENTER FUSE PRIOR TO REMOVING THE CENTER FUSE.

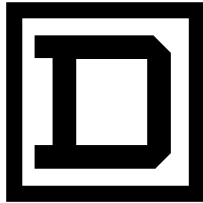
INSTALL CENTER FUSE PRIOR TO INSTALLING FUSE TO THE LEFT OF THE CENTER FUSE.

IF FUSES ARE BELOW MECHANISM:

REMOVE FUSE TO THE RIGHT OF THE CENTER FUSE PRIOR TO REMOVING THE CENTER FUSE.

INSTALL CENTER FUSE PRIOR TO INSTALLING FUSE TO THE RIGHT OF THE CENTER FUSE.

B-40270-400-01



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