RE-INSTALLATION OF SWITCH BARRIERS IN TYPE PSE DEAD-FRONT PAD-MOUNTED SWITCHGEAR

NOTE: These are general operational procedures for re-installation of switch barriers in dead-front (PSE) pad-mounted switchgear from Federal Pacific.

Consult the factory for specific information, such as the length of gasket material needed and any other specific issues. The factory will require the serial number of the switchgear unit in order to provide this information.

If you do not understand any portion of this instruction bulletin and need assistance, contact Federal Pacific at 276-466-8200.

Qualified Persons

⚠ WARNING

The equipment covered by this publication must be selected for a specific application and it must be operated and maintained by **Qualified Persons** who are thoroughly trained and knowledgeable in the installation, operation, and maintenance of underground power distribution equipment along with the associated hazards that may be involved. This publication is written only for such qualified persons and is not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment. Proper installation is the responsibility of the operating and construction personnel and the utility performing and authorizing the work. Completion of these instructions implies no further warranty by the manufacturer.

A **Qualified Person** is defined in the National Electrical Code (NEC/NFPA-70) as:

One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

The specific electrical safety training requirements to be considered a qualified person are detailed in **NFPA-70E, Article 110.1(D), Employee Training**. Some of the requirements from the 2012 edition are shown in the adjacent column. For the specific detailed training requirements for a Qualified Person make certain to refer to the most recent applicable edition.

These training requirements would include, but are not limited, to the following key points:

- The skills and techniques necessary to distinguish exposed energized parts from other parts of electrical equipment.
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed.
- The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment.
- Tasks performed less often than once per year have additional training requirements.

These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment. Additionally, the recommendations in this instruction bulletin are not intended to supersede or to take the place of established utility safety guidelines and established practices. If there is any question, consult with your foreman or supervisor, as appropriate.

Please refer to OSHA 29 CFR 1910.399 and NFPA 70E Articles 100 and 110.

SAFETY INFORMATION

Understanding Safety-Alert Messages

There are several types of safety-alert messages which may appear throughout this instruction bulletin as well as on labels attached to the pad-mounted switchgear. Familiarize yourself with these types of messages and the importance of the various signal words, as explained below.

⚠ DANGER

"DANGER" identifies the most serious and immediate hazards which will likely result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ WARNING

"WARNING" identifies hazards or unsafe practices which can result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ CAUTION

"CAUTION" identifies hazards or unsafe practices which can result in minor personal injury or product or property damage if instructions, including recommended precautions, are not followed.

⚠ NOTICE

"NOTICE" identifies important procedures or requirements that, if not followed, can result in product or property damage if instructions are not followed.

SAFETY PRECAUTION

⚠ DANGER

Federal Pacific Fuse Mountings in conjunction with appropriate fuses are designed to protect equipment and to disconnect faulted equipment from the system. The fuses cannot protect personnel from injury or electrocution if contact is made with energized circuits or hardware.

Following Safety Instructions

⚠ NOTICE

Thoroughly and carefully read this instruction bulletin before installation of the pad-mounted switchgear, before switching or operating the switches or fuse mountings in this equipment, and before performing any maintenance on the equipment.

If you do not understand any portion of this instruction bulletin and need assistance, contact Federal Pacific at 276-466-8200.

Replacement Instructions & Labels

If you need additional copies of this instruction bulletin, contact Federal Pacific at 276-466-8200.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting Federal Pacific.

Recommended Tools and Material

- 1/2" ratchet or box wrench
- 9/16" ratchet or box wrench
- 9/16" Socket and driver (deep-well socket and electric driver/ drill recommended)
- Extension bar for socket driver (12" min, universal joint or wobble attachment recommend)
- Two (2) Pry Bars ("Wonder bar" or equivalent suggested)
- 2" x 4" boards (one or two to slide the roof off).

  15kV - 8' or longer (8' Std. min.)
  25kV - 9' or longer (10' Std)
- Masking tape or blue painter's tape

Replacement Gasket Material

(Gasket, 1/2 x 1-1/2 will be needed)

- Quantity (as required, U/M - Ft) Part Number 410100006
- 15kV PSE (4 compartment) 24 ft. (typical, verify with factory for specific amount)
- 25kV PSE (4 compartment) 28 ft. (typical, verify with factory for specific amount)

Touch-up Paint

- Touch-up paint (if needed), supply the switchgear serial number to the factory.

⚠ DANGER

The following procedure must be performed with the unit completely de-energized, grounded, and isolated from voltage in accordance with applicable work practices and safety rules. Any attempt to perform this procedure with the unit energized may result in electrical arc flash that can cause equipment damage, personal injury or death.

Before working on the switchgear, ensure that the switchgear and incoming and outgoing cables are de-energized, tested for voltage, and grounded in accordance with appropriate user's safety and operational procedures.

⚠ CAUTION

Wear appropriate personal protection equipment (PPE), in accordance with applicable user's safety and operating procedures, when removing, repositioning , and installing the roof.

1. Disconnect, isolate, test for voltage and ground all connections to the unit in accordance with user's standard operating procedures and safety practice.
2. Remove the enclosure roof in accordance with the procedures set forth in Federal Pacific Instruction Bulletin IB-2A-810. See Figure 1.
3. Open all fuse panels, following standard practices and procedures set forth in Federal Pacific Instruction Bulletin IB-2A-210. Opening all the fuse panels will provide additional space to allow an individual to enter the isolated medium-voltage compartment and access any barrier that has been dislodged. See Figure 2.

Figure 1. Dead-front Pad-mounted PSE Switchgear Unit, with doors open and secured with wind-braces.

4. Do not enter the medium-voltage compartment if there is any chance that debris or moisture from clothing or footwear may be left on any interior component.
5. When entering the enclosure, DO NOT step on (even momentarily) any interior component such as bus, insulators, bushings or bushing wells. Otherwise, damage may occur that is not immediately observed or obvious. So, make certain that foot placement is to the galvanized-steel floor plate.
6. Using 2-inch wide masking (or blue) tape, secure all the switch inner-phase and end barriers (except the displaced barrier) in relative position on the switch by placing one end of the tape on the top flange of the enclosure and by placing the other end of the tape along the edge of the barrier, overlapping the tape onto the sides of each barrier.

Figure 2. Open fuse panels to provide additional space to allow entry into the interior of the high-voltage compartment.

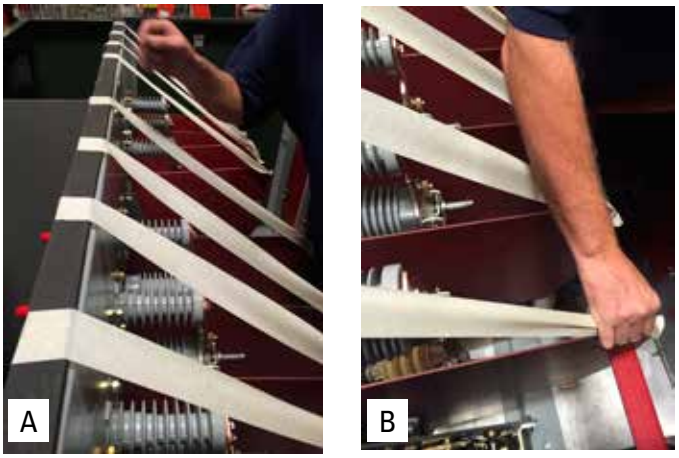

Figure 3. Secure each switch barrier in place by applying 2" masking tape from the top flange of the enclosure (see Figure 3A) to the edge of the barrier, overlapping the tape on the sides of each barrier (see Figure 3B).

7. Note the position and location of the switch barriers in the slots on the switch frame and along the fiberglass barrier-support angle. See Figure 4. At both ends of the slotted barrier-support angle, loosen (to the extent possible, but do not remove) the hardware (using the 1/2" and 9/16" ratchet or box wrenches) that secures the fiberglass angle to its barrier-support bracket. See Figure 5. DO NOT loosen the hardware that secures the bracket to the stud on the enclosure side wall.
8. With the switch barriers taped in position and the barrier-guide support angle adequately loosened, remove the displaced barrier. If still necessary to gain additional flexibility, the hardware may be removed and retained.
9. Re-install the barrier that was displaced and, if desired, apply tape (as was done for the other barriers) to secure it in position, making certain to install the barrier with the tab on the top-front edge of the barrier into the top slot on the switch frame; the tab on the bottom-front edge of the barrier into the appropriate slot on the bottom angle of the switch frame; and the slot on the top-rear edge of the barrier into the slot on the fiberglass barrier-support angle. Refer to an adjacent switch barrier that is already installed to establish appropriate installation and positioning of the switch barrier into the switch frame and barrier-support angle. See Figure 6.

Figure 4. Note how the tab, corner and edge of each switch barrier nests in the appropriate slots in the switch frame and fiberglass barrier support angle.

Figure 5. Loosen the hardware that secures the fiberglass angle to the barrier support bracket at each end.

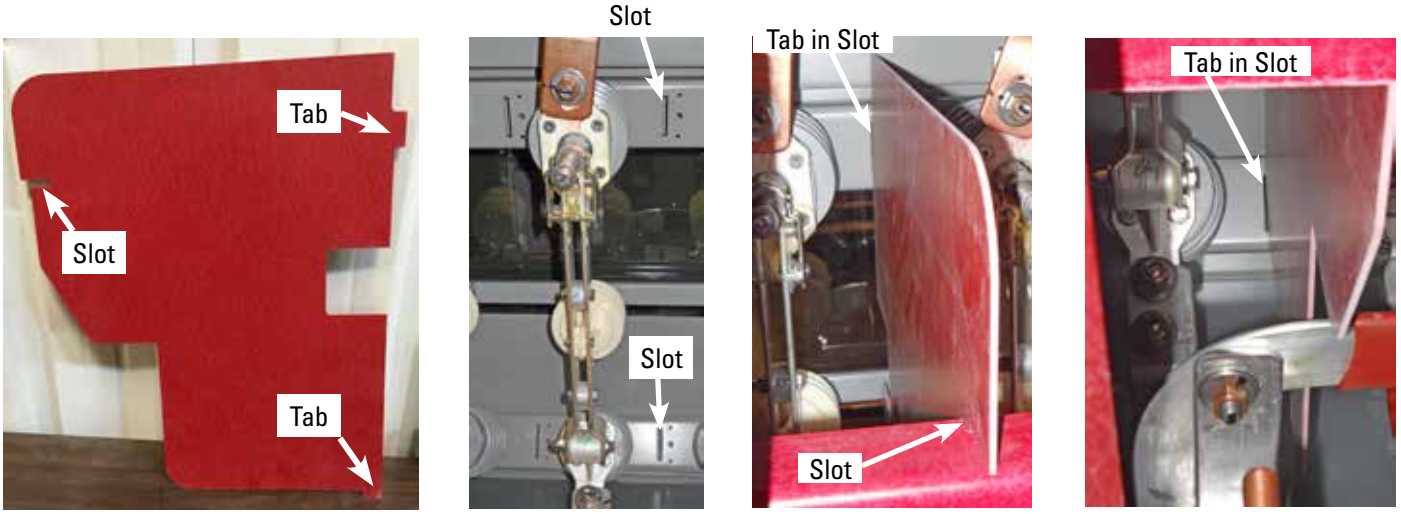

Figure 6. Insert the two tabs on the switch barrier into corresponding slots in the switch frame and insert the slot in the switch barrier into the slot on the fiberglass barrier support angle.

10. Starting with the barrier on one side, make certain that every switch barrier is properly installed in its appropriate slots.
11. With all switch barriers correctly positioned, re-install any hardware that was removed and retighten the hardware to secure the fiberglass barrier-support angle to its mounting-support brackets.
12. Remove the masking tape from all barriers. Do not leave any pieces of the tape (or the adhesive) on the barriers. Make certain to remove any debris that may have inadvertently entered the medium-voltage compartment.
13. Replace any gasket around the top of the enclosure that may have been damaged when the roof was removed. It is important that the roof gasket adequately seal to the roof at all locations to avoid entry of any airborne contaminants or moisture.
14. Re-install the roof as described in IB-2A-810.

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