Installation

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Qualified Persons

⚠ WARNING

Only qualified persons knowledgeable in the installation, operation, and maintenance of overhead and underground electric distribution equipment, along with all associated hazards, may install, operate, and maintain the equipment covered by this publication. A qualified person is someone trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive 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 special precautionary techniques, personal protective equipment, insulated and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

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.

Read this Instruction Sheet

NOTICE

Thoroughly and carefully read this instruction sheet and all materials included in the product's instruction handbook before installing or operating the remote supervisory PME Pad-Mounted Gear. Become familiar with the Safety Information on pages 4 through 5 and Safety Precautions on page 6. The latest version of this publication is available online in PDF format at **sandc.com/en/contact-us/product-literature/**.

Retain this Instruction Sheet

This instruction sheet is a permanent part of the remote supervisory PME Pad-Mounted Gear. Designate a location where users can easily retrieve and refer to this publication.

Proper Application

⚠ WARNING

The equipment in this publication is only intended for a specific application. The application must be within the ratings furnished for the equipment. Ratings for remote supervisory PME Pad-Mounted Gear are listed in the ratings table in Specification Bulletin 666-31. The ratings are also on the nameplate affixed to the product.

Warranty

The warranty and/or obligations described in S&C's Price Sheet 150, "Standard Conditions of Sale—Immediate Purchasers in the United States," (or Price Sheet 153, "Standard Conditions of Sale—Immediate Purchasers Outside the United States"), plus any special warranty provisions, as set forth in the applicable product-line specification bulletin, are exclusive. The remedies provided in the former for breach of these warranties shall constitute the immediate purchaser's or end user's exclusive remedy and a fulfillment of the seller's entire liability. In no event shall the seller's liability to the immediate purchaser or end user exceed the price of the specific product that gives rise to the immediate purchaser's or end user's claim. All other warranties, whether express or implied or arising by operation of law, course of dealing, usage of trade or otherwise, are excluded. The only warranties are those stated in Price Sheet 150 (or Price Sheet 153), and THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY EXPRESS WARRANTY OR OTHER OBLIGATION PROVIDED IN PRICE SHEET 150 (OR PRICE SHEET 153) IS GRANTED ONLY TO THE IMMEDIATE PURCHASER AND END USER, AS DEFINED THEREIN. OTHER THAN AN END USER, NO REMOTE PURCHASER MAY RELY ON ANY AFFIRMATION OF FACT OR PROMISE THAT RELATES TO THE GOODS DESCRIBED HEREIN, ANY DESCRIPTION THAT RELATES TO THE GOODS, OR ANY REMEDIAL PROMISE INCLUDED IN PRICE SHEET 150 (OR PRICE SHEET 153).

Warranty Qualifications

The standard warranty contained in the seller's standard conditions of sale (as set forth in Price Sheet 150) does not apply to remote supervisory PME Pad-Mounted Gear where fuse units, fuse unit end-fittings, holders, refill units, or switch blades of other than S&C manufacture are used in conjunction with S&C SME Mountings. Nor does it apply to remote supervisory PME Pad-Mounted Gear where other than Fault Fiter® Electronic Power Fuses, S&C Switch Blades, or the current-limiting fuses listed in Table 2 of S&C Information Bulletin 660-50 are used in conjunction with Fault Fiter fuse mountings and S&C Holders designed therefor, or when current-limiting fuses are applied other than as set forth in the "Recommended Voltage Ratings" section of S&C Information Bulletin 660-50.

The seller's standard warranty does not apply to major components not of S&C manufacture, such as remote terminal units and communication devices, including hardware, software, resolution of protocol-related matters, and notification of upgrades or fixes for those devices.

Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the product. Become familiar with these types of messages and the importance of these various signal words:

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

Following Safety Instructions

If any portion of this instruction sheet is unclear and assistance is needed, contact the nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C's website **sandc.com**, or call the S&C Global Support and Monitoring Center at 1-888-762-1100.

NOTICE

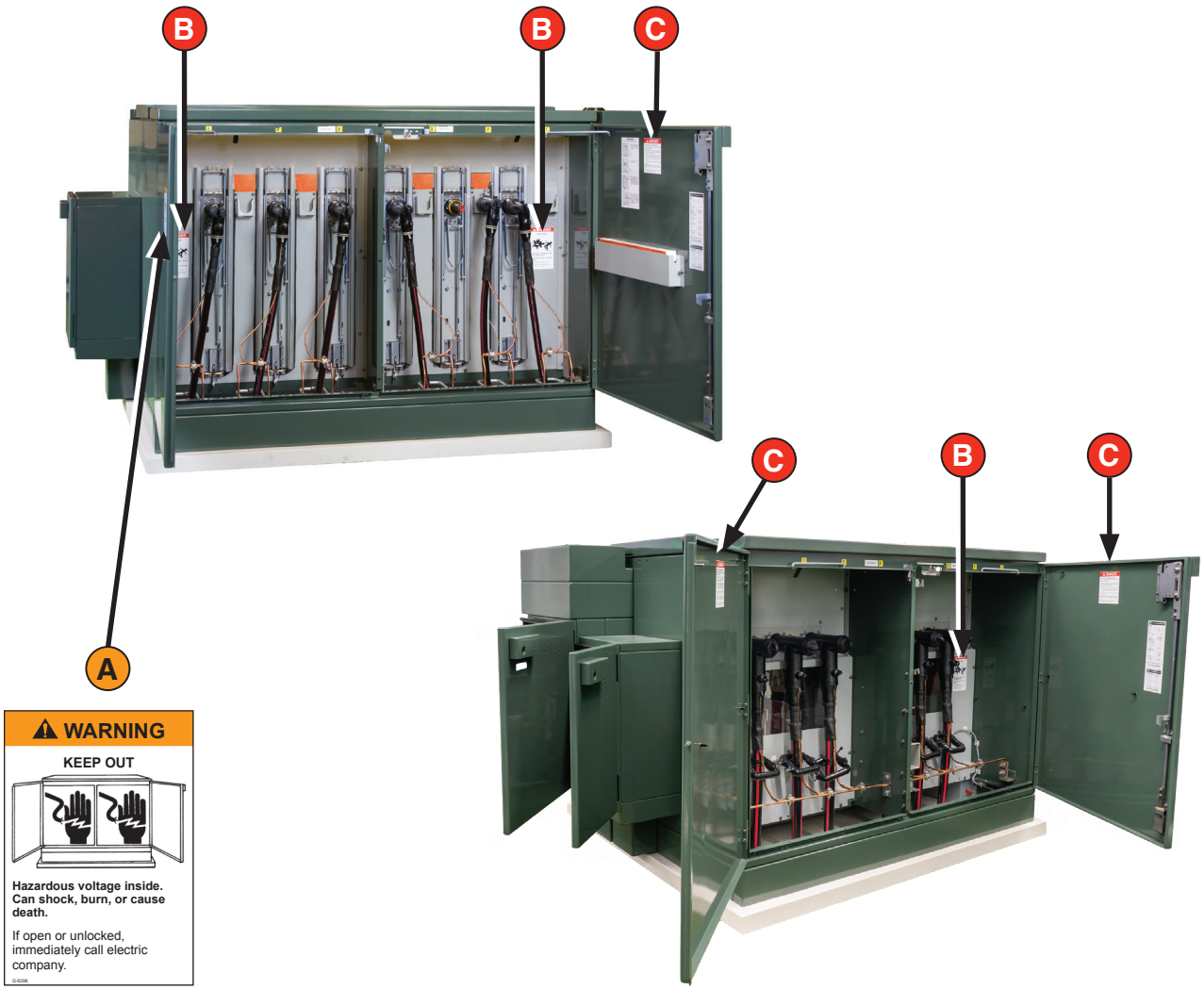
Read this instruction sheet thoroughly and carefully before installing the remote supervisory PME Pad-Mounted Gear.

Replacement Instructions and Labels

If additional copies of this instruction sheet are required, contact the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

Location of Safety Labels



Reorder Information for Safety Labels

Location	Safety Alert Message	Description	Part Number
A	⚠ WARNING	Keep Out. Hazardous voltage inside...	G-6398
B	⚠ DANGER	Keep Away. Hazardous voltage - more than 4000 Volts...	G-6500
C	⚠ DANGER	Hazardous Voltage - more than 4000 Volts...	G-6503

⚠ DANGER

Remote supervisory PME Pad-Mounted Gear operate at high voltage. Failure to observe the precautions below will result in serious personal injury or death.

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to pad-mounted gear must be restricted only to qualified persons. See the "Qualified Persons" section on page 2.
2. **SAFETY PROCEDURES.** Always follow safe operating procedures and rules.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and flash clothing in accordance with safe operating procedures and rules.
4. **SAFETY LABELS.** Do not remove or obscure any of the "CAUTION," "WARNING," or "DANGER" labels.
5. **KEY INTERLOCKS.**
   - If optional key interlocks were furnished, they must be in place.
   - Check the operating sequence of key interlocks to verify proper sequencing.
   - After the pad-mounted gear is installed, either: (1) destroy the extra set of keys or (2) make them accessible only to qualified persons. This will maintain the integrity of the key-interlock scheme.
   - Key interlocks are not security locks and are not substitutes for padlocks.
6. **HIGH-VOLTAGE ISOLATION.** Switch operators and controls are isolated from high voltage in grounded, metal-enclosed compartments. Access to these components is controlled by padlockable covers, which incorporate a nonremovable manual handle. Other low-voltage components, such as meters, selector switches, toggle switches, etc., are similarly isolated.
7. **OPENING DOORS.** Do not force doors open. Forcing a door open can damage the latching mechanism. If optional key interlocks are provided, correctly position the interlocks so the doors can be opened.
8. **CLOSING AND LOCKING DOORS.**
   - Doors must be securely closed and latched, with padlocks in place at all times unless work is being performed inside the enclosure.
   - Mini-Rupter® Switches have switch-operating-shaft access covers located on the sides of the pad-mounted gear enclosure. They must be closed and padlocked at all times unless the switches are being operated.
   - Do not close a door on a TransFuser™ Mounting in the **Open** position with a fuse in the mounting. The door will strike the fuse pull-ring, which will interfere with door closing. The door may be closed if the fuse is removed from the mounting.
9. **ENERGIZED TERMINALS.** Always assume both sets of power terminals on any Mini-Rupter Switch or fuse are energized unless proved otherwise by test, by visual evidence of open-circuit conditions on both sets of terminals, or by observing that both sets of terminals are grounded.
10. **BACKFEED.** Mini-Rupter Switches and fuses may be energized by backfeed.
11. **DE-ENERGIZING, TESTING, AND GROUNDING.** Before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments, always disconnect Mini-Rupter Switches and fuses from all power sources (including backfeed), test for voltage, and properly ground.
12. **TESTING.** Test for voltage on both sets of power terminals of any Mini-Rupter Switch or fuse using proper high-voltage test equipment before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments.

⚠ DANGER

Remote supervisory PME Pad-Mounted Gear operate at high voltage. Failure to observe the precautions below will result in serious personal injury or death.

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

13. **GROUNDING.**
    - Make sure the pad-mounted gear enclosure is properly grounded to the station or facility ground.
    - After the gear has been completely disconnected from all sources of power and tested for voltage, install suitable grounding cables in all compartments before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments.
14. **SWITCH POSITION.**
    - Always confirm the **Open/Close** position of Mini-Rupter Switches by visually observing the position of the switch blades.
    - Switches may be energized by backfeed.
    - Switches may be energized in any position.
15. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.
16. **FUSE STORAGE.**
    - Always store fuses in a clean, dry location.
    - Do not store end-fittings, holders, interrupting modules, or fuses in termination compartments unless the unit is equipped with the optional **Fuse Storage** feature.

Inspection

Examine the shipment for external evidence of damage as soon after receipt as possible, preferably before removal from the carrier's conveyance. Check the bill of lading to make sure that all listed shipping skids, crates, and containers are present.

If there is visible loss and/or damage:

1. Notify the delivering carrier immediately.
2. Ask for a carrier inspection.
3. Note condition of shipment on all copies of the delivery receipt.
4. File a claim with the carrier.

If concealed damage is discovered:

1. Notify the delivering carrier within 15 days of receipt of shipment.
2. Ask for a carrier inspection.
3. File a claim with the carrier.

Also, notify S&C Electric Company in all instances of loss and/or damage.

Packing

Remote supervisory PME Pad-Mounted Gear is fastened to a wood skid for shipment. Any components specified, such as fuses, refill units, fuse holders, end-fittings, etc., are packed separately and, insofar as practicable, are shipped within the enclosure.

At the first opportunity, remove all packing materials (cardboard, paper, foam padding, etc.) from the outside of the gear. This will prevent the finish from being damaged by rainwater absorbed by the packing materials and will also prevent wind-induced abrasion from loose cardboard.

Handling

⚠ WARNING

When handling the gear with an overhead hoist, observe standard lifting practices as well as the general instructions below. **Failure to follow these precautions can result in injury and equipment damage**.

STEP 1. Make sure the lifting tabs are securely bolted to the enclosure before lifting the gear.

STEP 2. Use 6-foot (183-cm) or longer hoist slings of equal length to prevent overstressing the enclosure during lifting. Four-foot (122-cm) hoist slings are acceptable for two-compartment pad-mounted gear models: PME-4 and PME-5.

⚠ WARNING

Depending on the number and locations of the Type PM Switch Operators and controls, the gear may tilt during lifting. **Therefore, care must be taken when lifting the gear to avoid injury and equipment damage**.

STEP 3. Arrange the hoist slings to distribute the lifting forces equally between the lifting tabs. See Figure 1.

STEP 4. Avoid sudden starts and stops.

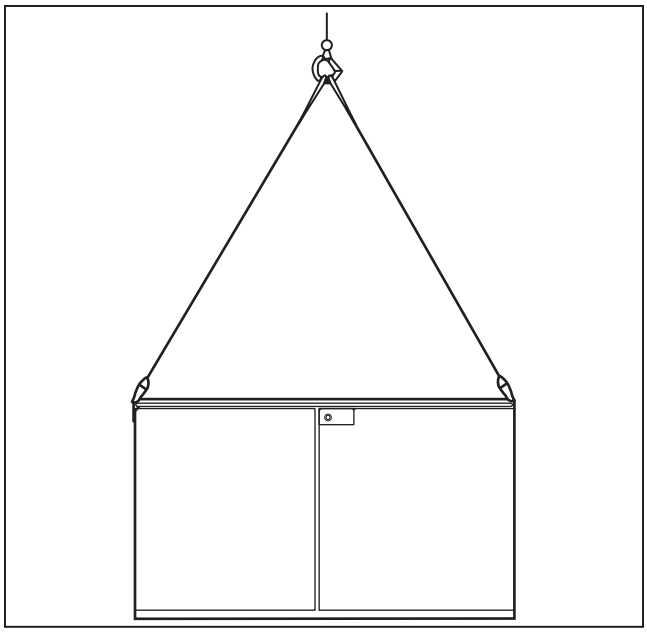


Figure 1. Hoisting arrangements.

Overview

The following instructions cover installation of remote supervisory PME Pad-Mounted Gear. These units are equipped with S&C Type PM Switch Operators for power operation of Mini-Rupter® Switches in response to remote or local pushbutton signals.

They also include a low-voltage compartment, an interconnecting-control-wiring base spacer, and a control equipment group (catalog number suffixes "-Y2" through "-Y7"), which includes a combination of sensing, power, communication, and switch-control equipment suited to the particular needs of the application.

A remote terminal unit (RTU), which is mounted in the low-voltage compartment, permits monitoring and operation of the gear by a master station computer through a landline communication channel or an optional transceiver. An S&C 6800 Series Automatic Switch Control can be used in place of an RTU. It can be sensor-powered and will supply power for the switch operator and communications equipment. It permits SCADA control and also participates in the S&C Intelli-Team® SG Automatic Restoration System.

Instructions regarding operation of the pad-mounted gear and switch operators are contained in separate instruction sheets. These instruction sheets, along with a catalog dimensional drawing showing cable-locating and anchor-bolt dimensions, are included in the Installation and Operation Information Kit provided with the gear.

Wiring diagrams for switch operators, control equipment groups, and associated options are also provided in the information kit. All personnel involved with the installation and operation of the equipment should be thoroughly familiar with the contents of the information kit.

The catalog number stamped on the nameplates affixed to the outside of the doors of the gear is suffixed with letter-number combinations. These suffixes indicate the applicable control equipment group (catalog number suffixes "-Y2" through "-Y7") and also designate the inclusion of optional features, such as key interlocks (catalog number suffix "-C1," "-C3," or "-C4").

Refer to the "Control Equipment Groups" section in S&C Specification Bulletin 666-31 for a listing of the available control equipment groups, and the "Optional Features" section in Specification Bulletin 666-31 for a complete listing of the available options for the gear.

Battery Charger and Battery Packs

Depending on the control equipment group specified, remote supervisory PME Pad-Mounted Gear may include an S&C Battery Charger and battery packs.

When furnished, the battery charger and battery packs are installed in the switch operator located on the left side of Compartment 1 for PME-5 models or in Compartment 2 for all other models.

NOTICE

Remote supervisory pad-mounted gear furnished with a battery charger and battery packs should preferably be installed and energized immediately. If the gear cannot be installed immediately, store it in a clean, cool, dry room, or remove the battery packs and store them in a cool, dry place. See S&C Instruction Sheet 669-515 for instructions on removing the battery packs. **Storing the battery packs at high temperatures will reduce their operating life.**

If the battery packs are not removed while the gear is in storage, make sure the power ON/OFF switch on the battery charger is in the **Off** position. See Figure 2. **The power will be drained from the battery packs if the switch is in the On position.**

If the gear is not placed in service by the date on the tag attached to the switch operator containing the battery packs, the battery packs must be charged as instructed in the "Charging the Battery" section on page 12. **The battery packs will be damaged if allowed to discharge completely.**

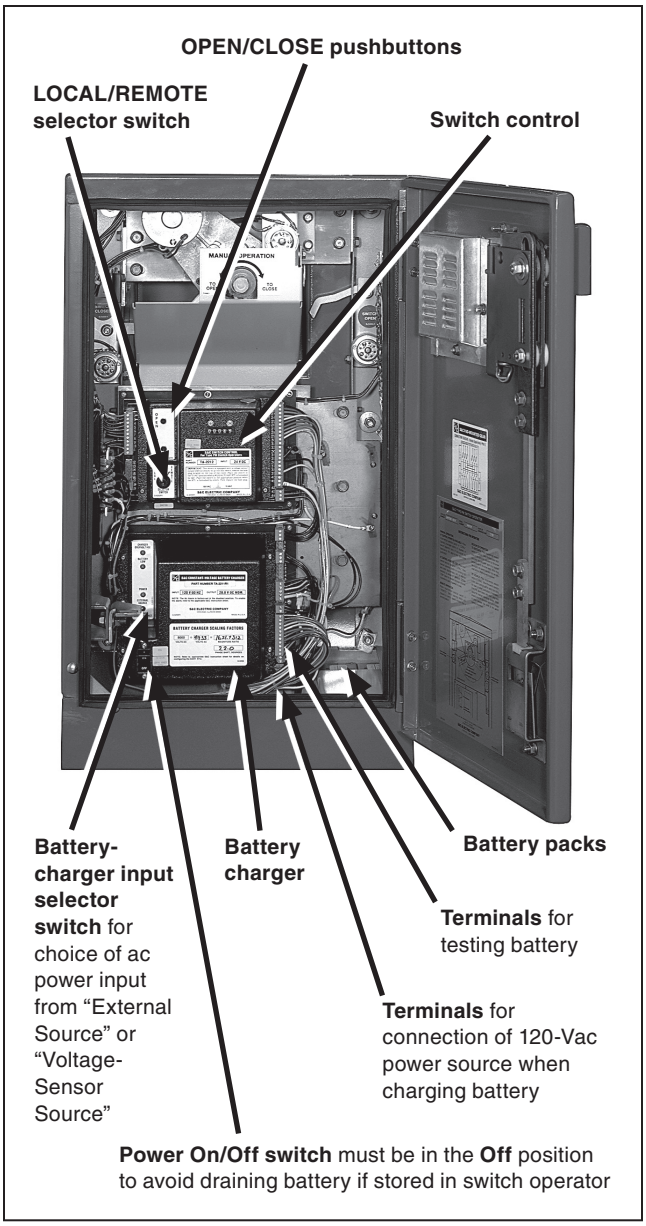


Figure 2. Interior view of Type PM Switch Operator showing battery packs and battery charger.

Charging the Battery

If the pad-mounted gear has not been placed in service by the date on the tag attached to the switch operator containing the battery, the battery charger must be connected to a transformer-isolated 120-Vac power source to charge the battery, which consists of two 12-Vdc battery packs. See Figure 2 on page 11. To connect a 120-Vac power source to the battery charger, proceed as follows:

STEP 1. Open the switch operator door as described in the "Access to Interior" section on page 13.

STEP 2. Make sure the power ON/OFF switch on the battery charger is in the **Off** position.

STEP 3. Using a voltmeter, check the open-circuit voltage of each battery pack by placing the probes on the appropriate "+" and "–" terminals on the battery charger. One set of terminals is provided for each battery pack. See Figure 2 on page 11.

(a) If the open-circuit voltage of either battery pack is less than 10 Vdc, both battery packs must be replaced. Refer to S&C Instruction Sheet 669-515 for instructions on replacing the battery packs. Then, proceed to Step 7.

(b) If the open-circuit voltage of both battery packs is 10 Vdc or greater, continue with Step 4.

STEP 4. Place the battery charger input selector switch in the **External Source** position.

STEP 5. Connect a transformer-isolated 120-Vac power source to the two terminals marked "EXT/AC" on the battery charger. Place the power ON/OFF switch on the battery charger in the **On** position and charge the batteries for 24 hours.

STEP 6. After charging the batteries, place the power ON/OFF switch on the battery charger in the **Off** position. Then disconnect the 120-Vac power source, and place the battery-charger input selector switch in the **Voltage Sensor Source** position.

STEP 7. Secure the switch operator door.

Access to Interior

NOTICE

Do not apply any undue force when attempting to open the doors. The use of undue force may damage the latching mechanism.

Access to the interior of Pad-Mounted Gear, the Type PM Switch Operators, and the low-voltage compartment is controlled by the Penta-Latch® Mechanism, which must be opened with a pentahead socket wrench or tool except when hexhead actuators (catalog number suffix "-B1" or "-B2") are specified.

The latching mechanism is coordinated with the provisions for padlocking so the mechanism can be unlatched only after the padlock has been removed, and the padlock can be installed only after the door has been securely closed and completely latched.

Opening the Front Doors

Complete the following steps to open the doors:

STEP 1. Use a pentahead socket wrench or tool (a hexhead socket wrench or tool when catalog number suffix "-B1" or "-B2" is specified) to unlatch the Penta-Latch Mechanism by rotating the actuator counterclockwise approximately 60° against spring resistance until a distinct "click" is heard and the actuator reaches its stop. See Figure 3. This single motion unlatches the mechanism and recharges the latching spring for the subsequent closing operation.

STEP 2. Pull the door open and secure it with a door holder.

NOTICE

If optional key interlocks are furnished, correctly position the interlocks so the doors can be opened.

STEP 3. ***For double-door models of pad-mounted gear:*** The left-hand door is secured closed by a rotating latch and is overlapped by the right-hand door, which is equipped with the Penta-Latch Mechanism. The left-hand door can be opened after opening the right-hand door and disengaging the rotating latch. To disengage the latch, rotate it upward. See Figure 7 on page 16.

Unlatching a Penta-Latch Mechanism with pentahead socket wrench. A distinct click indicates the mechanism is unlatched and recharged.

Opening the door.

When closing the door, firmly push the door. The mechanism latches automatically when all latching points are engaged.

Figure 3. Operating the Penta-Latch Mechanism.

The left-hand door to the low-voltage control compartment is secured closed by two captive screws and is overlapped by the right-hand door, which is equipped with the Penta-Latch Mechanism. This door can be opened after opening the door equipped with the Penta-Latch Mechanism and loosening the screws securing it in place.

Opening the Roof Section

The roof section over each cable compartment is hinged to allow easy cable-pulling during installation. To open the roof section over a cable compartment:

STEP 1. Remove the ⅜–16 standard ESNA nuts, ⅜-inch standard washers, and the ⅜-inch large washers that attach the roof sections to the PME Pad-Mounted Gear enclosure. Each roof section will have three ESNA nuts, three standard washers, and three large washers (two of each for two compartment models: PME-4 and -5). See Figure 4 for the location of the hardware.

STEP 2. After removing the roof hardware, the spring-loaded roof section will pop up slightly. See Figure 5. A mechanical interlock, furnished in each door containing a Penta-Latch Mechanism, prevents the door from closing and latching when the roof section is not secured to the enclosure.

STEP 3. Lift the roof section and latch it at both ends using the supplied retainers. See Figure 6 on page 15.

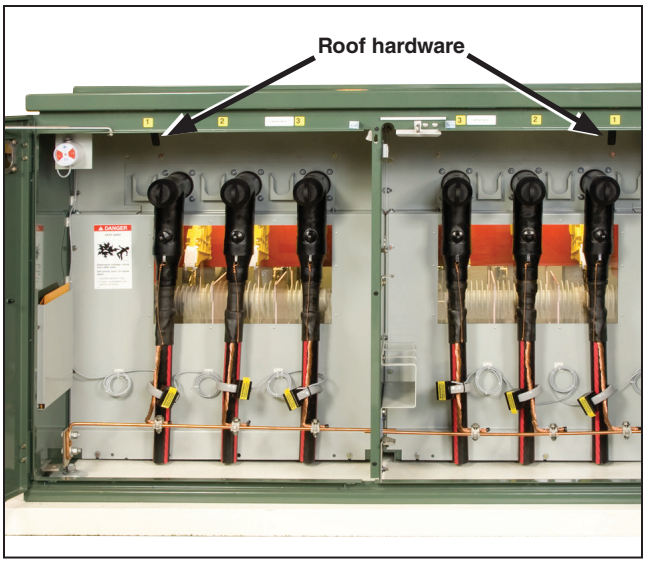


Figure 4. Location of the roof hardware.

Figure 5. The roof section disengaged from the pad-mounted gear enclosure.

Closing the Roof Section

To close the roof section, complete the following steps:

STEP 1. Remove the retainers from the roof section and place them in the horizontal position.

STEP 2. Lower the roof section.

STEP 3. While applying force to the roof section, secure the roof to the enclosure using the ⅜-inch large flat washers, ⅜-inch standard washers, and ⅜–16 ESNA nuts.

S&C recommends tightening the center hardware first. Additional roof hardware is shipped with the PME Pad-Mounted Gear.

Note: A mechanical interlock, furnished in each door containing a Penta-Latch Mechanism, prevents the door from closing and latching when the roof section is not secured to the enclosure.

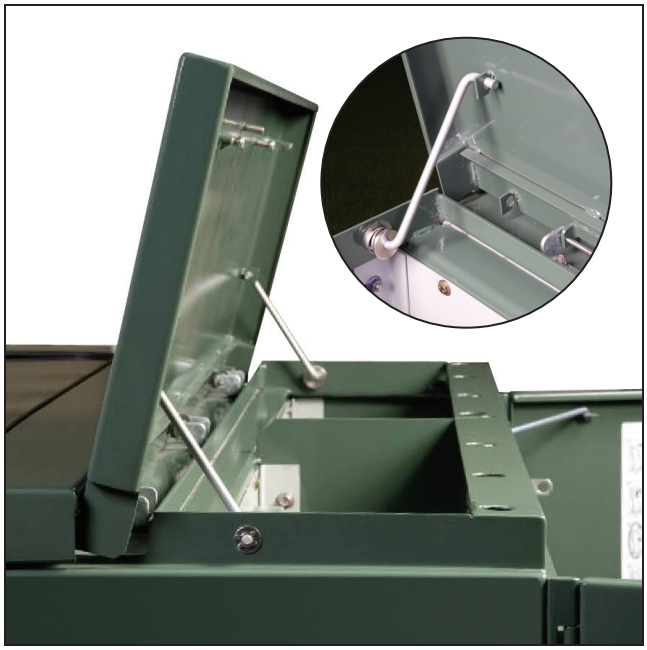


Figure 6. The roof opened and latched.

Closing the Front Doors

STEP 1. Close the left-hand door, where applicable, and secure it with the latch by rotating the latch downward over the stop on the outer edge of the door. See Figure 7. The right-hand door of pad-mounted gear double-door models and the doors of Type PM Switch Operators and the low-voltage compartment are equipped with the Penta-Latch Mechanism, which latches automatically when the door is closed.

To close a door equipped with the Penta-Latch Mechanism: Place one hand at the midpoint of the door-front near the edge and firmly push the door closed. See Figure 3 on page 13. When the latch points are positively engaged, the spring mechanism will trip to latch the door.

STEP 2. Check the roof to make sure all sections are properly secured. If the roof section is not latched to the pad-mounted gear, a mechanical interlock in the right-hand door will prevent the door from properly latching.

STEP 3. Pull outward on the cover of the Penta-Latch Mechanism to verify the door has latched securely. If it has not, use a pentahead (or hexhead, when applicable) socket wrench or tool to rotate the actuator counterclockwise until a distinct click sound is heard and the actuator reaches its stop.

If the actuator will not rotate counterclockwise, the mechanism was already charged for closing but was not closed properly. Close the door again, making sure all latch points engage completely and simultaneously.

STEP 4. Insert a padlock into the hasp when the door is securely latched.

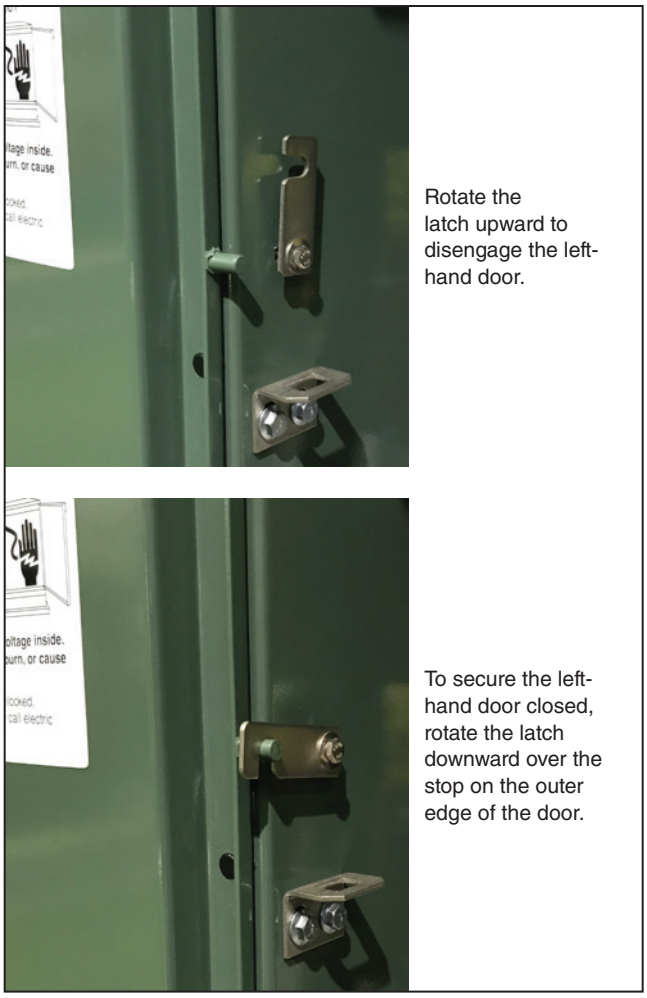


Figure 7. The left-hand door retainer.

Placing the Gear

Complete the following steps to place the gear:

STEP 1. At the installation site, remove all separately packaged components shipped within the pad-mounted gear enclosure and set them aside in a protected area.

STEP 2. Unbolt the enclosure from its skid and lift the unit onto the mounting pad, observing the precautions described in the "Shipping and Handling" section on page 8.

STEP 3. Open the doors to the interior of the gear and secure them with the door holders.

STEP 4. Refer to the catalog dimensional drawing furnished and verify the enclosure compartments are positioned correctly and the unit is properly aligned with respect to the anchor bolts (or flush anchors).

Note: If excess lengths of direct-buried cable are in place and it is desired to feed them into the termination compartments as the unit is being lowered, special attention must be paid to the cable position in the fuse termination compartments. The doors must be opened (with door holders in place) to allow any excess cable to be fed over the door stiles. Then, as the enclosure is being lowered into place, the cables for connection to the fuse terminals must be fed between the horizontal cable guides, as shown in Figure 8 and on the cable-training tag affixed to the enclosure.

Note: Cables for connection to the fuse terminals must be fed between the horizontal cable guides so they will not interfere with TransFuser™ Mounting operation. Special cable training is not required in the termination compartments for switches.

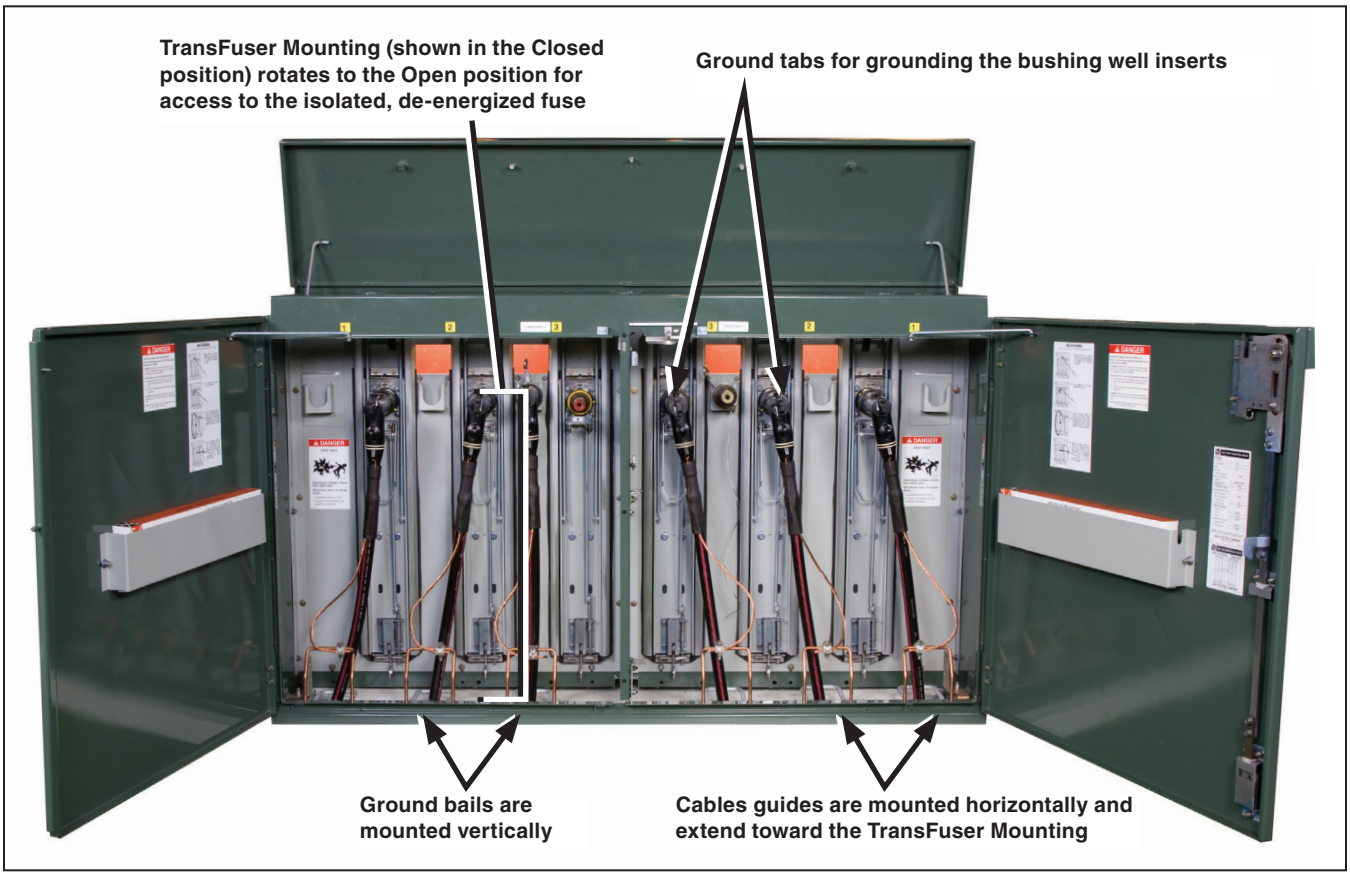


Figure 8. Cables in fuse-termination compartments must be trained between the horizontal cable guides, as shown, to prevent interference with operation of the TransFuser Mounting.

STEP 5. Level the pad-mounted gear enclosure using metal shims as required between the mounting pad and the enclosure. Shim the enclosure of four-compartment units until the tops of the compartment doors are even.

For two-compartment units: Shim the enclosure until the top of each door is parallel with the top of the gear.

STEP 6. Secure the enclosure to the pad using the anchor brackets provided (see anchor-bolt detail on the catalog dimensional drawing). Make sure all compartment doors open and latch closed without binding. Binding indicates enclosure distortion, which must be corrected by additional shimming.

Note: If the pad-mounted gear is installed on a pad with cables in conduit, the roof sections over the cable compartments can be opened to allow the cables to be pulled up through the roof opening rather than the door opening.

Cable Terminations

⚠ WARNING

Before energizing the gear, replace the shipping caps on all bushings and bushing wells with elbows or insulated protective covers or plugs. **Failure to replace the shipping caps can result in a flashover and serious personal injury or death.**

Switch terminals are equipped with 600-ampere rated bushings, and fuse terminals are equipped with 200-ampere rated bushing wells. Bushing and bushing-well interfaces conform to ANSI/IEEE Standard 386 to accept all standard separable insulated connectors (elbows) and inserts. Appropriate elbows● and inserts must be supplied and installed by the user.

Complete the following steps to terminate cables:

STEP 1. Before installing elbows and inserts, remove the shipping covers from bushings and bushing wells.

STEP 2. Ground each insert by connecting a short ground wire from the insert to the ground tab directly above the bushing well. See Figure 8 on page 17.

⚠ WARNING

When grounding inserts, minimize the length of the ground wire. **Use of a longer ground wire can result in a flashover to energized parts inside the component compartment and serious injury or death when the TransFuser Mounting is rotated to the Closed position.**

● Switch-termination compartments cannot accommodate 600-ampere elbows manufactured by Blackburn when piggybacked.

STEP 3. Verify the cables in the fuse termination compartments are correctly positioned between the cable guides. Then, terminate the cables with the elbows, following the elbow manufacturer's instructions.

NOTICE

Do not allow solvents used to clean cables prior to termination to contact the viewing windows. The solvent can permanently etch the polycarbonate material.

The 600-ampere bushings supplied in remote supervisory PME Pad-Mounted Gear are equipped with a stud as standard. Bushings are available without studs (catalog number suffix "-M1") to accommodate 600-ampere elbows that do not require a stud. See Figure 9.

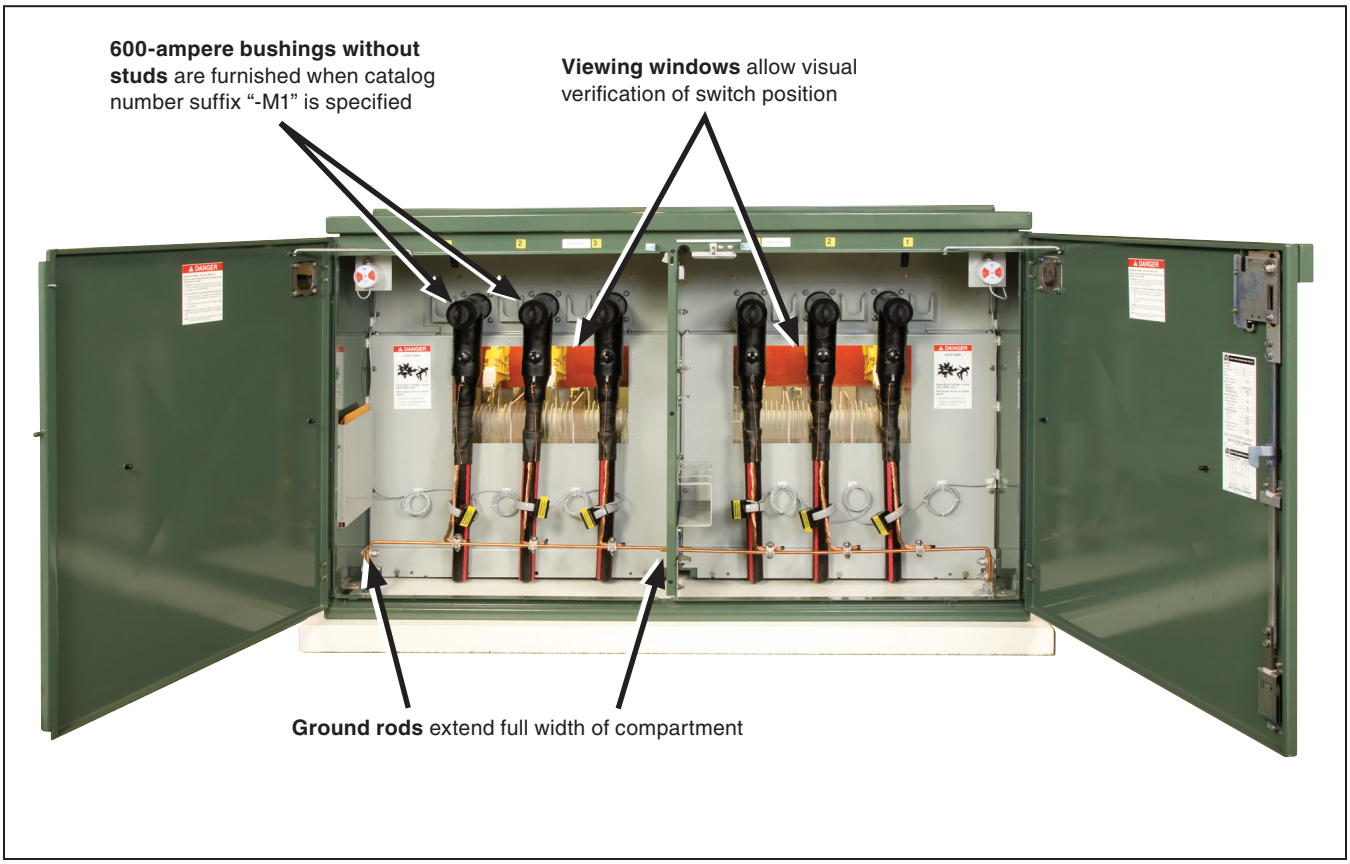


Figure 9. 600-ampere bushings, which are available with and without studs to accommodate all 600-ampere elbows.

NOTICE

Do not install vertical-type feedthrus on the parking stands of fuse-termination compartments of gear equipped with SME-20 Power Fuse Mountings or Fault Fiter Electronic Power Fuse mountings. **The eyebolt of the feedthru can damage the blown-fuse viewing window.**

STEP 4. Connect the cable concentric-neutral ground wires to the ground bails and rods provided, making sure the cables have sufficient mobility to allow the elbows to be moved from bushings to the parking stands.

NOTICE

Concentric-neutral ground wires must be positioned so they will not interfere with TransFuser Mounting operation when the elbows are on the parking stands.

STEP 5. Connect the ground pads inside the pad-mounted gear enclosure to the system ground facility in accordance with the user's standard grounding practice. Use the equivalent of 4/0 copper cable (or cable sized in accordance with the user's standard practice) in either a single or multiple connection to realize the gear's maximum momentary rating. For a multiple connection, cables smaller than 1/0 copper or equivalent should not be used.

S&C 600:5 Current Sensors

⚠ WARNING

Low-voltage wiring routed inside the pad-mounted gear enclosure must be a minimum of 6 inches (152 mm) at 14.4 kV and 7½ inches (191 mm) at 25 kV away from components that will be energized at high voltage. In addition, do not place wiring where it might fall onto a component that will be energized at high voltage, such as the bus, or where it will be in the way of the moving parts. **Failure to maintain proper clearances can result in a flashover, injury, and equipment damage.**

NOTICE

Openings made into the low-voltage control compartment must be sealed with a suitable compound to prevent the entry of moisture or rodents. **Failure to properly seal the openings can result in damage to the electronic components.**

NOTICE

Do not install the current sensors on unshielded cables or on cables where the insulation is exposed but ungrounded (for example, where dielectric tape or heat-shrink tubing is used). **These current sensors are intended for application at ground potential and can be damaged by the voltage gradient between the cable insulation and ground.**

Pad-mounted gear equipped with the communication and control equipment group, or one of the switch-control equipment groups for use with remote terminal unit supplied by others includes one set of three S&C 600:5 Current Sensors for each power-operated Mini-Rupter Switch.

Complete the following steps to install current sensors:

NOTICE

Each S&C Current Sensor has a unique magnitude ratio and phase-angle shift. These values are used to calibrate the current-sensing inputs to a user-supplied RTU or S&C 6800 Series Automatic Switch Control. The magnitude ratio and phase-angle shift of each current sensor must be recorded on the yellow card provided in accordance with the compartment and phase on which the current sensor will be installed. The magnitude ratio and phase-angle shift of each current sensor are written on a tag attached to the sensor and on the sensor.

STEP 1. Remove the current sensors, hardware, and wiring harness from the box marked "S&C CURRENT SENSORS." Connect the current sensors to the wiring harness as shown on the instructions provided with the sensors. Also refer to the interconnection wiring diagram provided with the gear.

STEP 2. Place each current sensor in front of the phase of the switch-termination compartment on which it will be installed. Note the location of the receptacle on the galvanized steel cover of the interconnecting-control-wiring base spacer.

Note: Compartment and phase numbers are located on the upper rail above the door openings of the switch compartments.

STEP 3. Record the magnitude ratio and phase-angle shift of each current sensor in the appropriate location (in accordance with the compartment and phase on which the current sensor will be installed) on the yellow card provided in the Installation and Operation Information Kit. The magnitude ratio and phase-angle shift of each current sensor are written on a tag attached to the sensor and on the sensor.

STEP 4. Remove the ¼–20 gap nut on one of the current sensors. Open the sensor and place it around the appropriate high-voltage cable. All three current sensors in a switch-termination compartment must be installed with the polarity marks facing in the same direction—preferably up so that the magnitude ratio and phase-angle shift values are visible. Then, replace and tighten the gap nut. Refer to Figure 10 and Figure 11.

STEP 5. Secure the current sensor to the high-voltage cable below the cable terminator using the plastic tie wraps furnished. Refer to Figure 10 and Figure 11. If the cable has a grounded concentric neutral, the current sensor must be secured in one of the following ways:

- It may be placed around the concentric neutral, in which case the concentric neutral must be brought back through the current sensor, as shown in Figure 10 (left).
- It may be placed above the concentric neutral, in which case the terminator drain wire must be brought through the sensor, as shown in Figure 10 (right).

STEP 6. Install the other two current sensors of the set by repeating Step 5.

STEP 7. Plug the current-sensor wiring harness into the receptacle on the galvanized steel cover of the interconnecting control wiring base spacer.

STEP 8. Cross-check the magnitude ratio and phase-angle shift of each current sensor with the information recorded on the yellow card.

STEP 9. Remove and discard the attached tags.

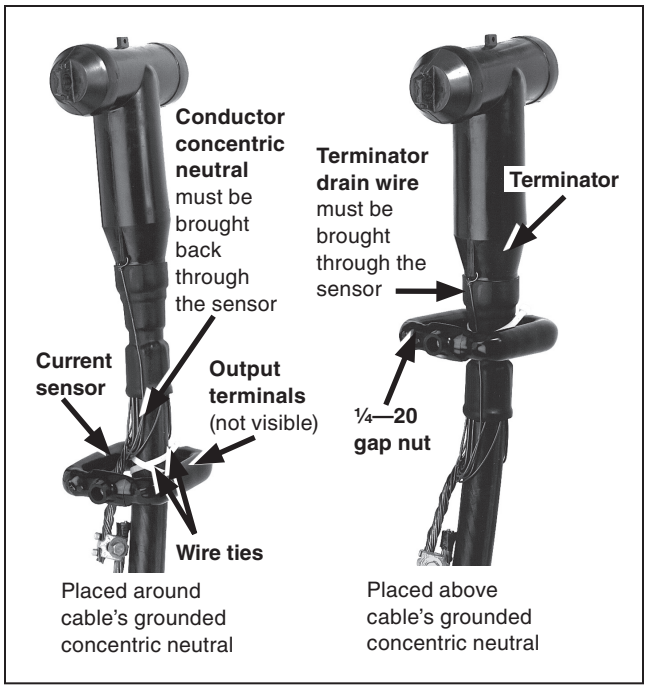


Figure 10. S&C 600:5 Current Sensors can be placed around the cable concentric neutral (left) or above the cable concentric neutral (right).

Figure 11. S&C 600:5 Current Sensor installation.

User Connections

NOTICE

Openings made into the low-voltage compartment must be sealed with a suitable compound to prevent the entry of moisture or rodents. **Failure to properly seal the openings can result in damage to the electronic components.**

User wiring is to be brought into the low-voltage compartment. Remove the conduit-entrance plate from the bottom of the low-voltage compartment and prepare a weather-tight entrance in accordance with utility practice. After replacing the plate, make all user connections in accordance with the wiring diagrams furnished.

Fault Indicators

Optional mounting provisions for fault indicators are available. Fault indicators are to be furnished by the user and installed in accordance with the manufacturer's instructions.

If mounting provisions are specified, mount the fault indicators on the mounting brackets and attach the associated sensors to the cables below the cable terminators.

Completing the Installation

Complete the following steps to complete the installation:

STEP 1. Check the functional operation of the key interlocks, if furnished.

⚠ WARNING

An extra set of keys is provided with pad-mounted gear that has optional key interlocks. These keys are for use only during installation. After installation, either (1) destroy the extra set of keys or (2) make them accessible only to authorized persons. This will maintain the integrity of the key-interlock scheme. **Failure to maintain the integrity of the key interlock scheme may lead to equipment damage, personal injury, or death.**

NOTICE

Key interlocks are not security locks and are not a substitute for padlocks.

NOTICE

Do not apply any undue force when attempting to open the doors. The use of undue force may damage the latching mechanism.

If optional key interlocks are furnished, correctly position the interlocks so the doors can be opened.

STEP 2. Make sure doors open and close without binding and the shimming of the pad-mounted gear enclosure is adequate.

STEP 3. Check for space between the enclosure gasket and the foundation. A resilient closed-cell gasket on the bottom flange of the enclosure protects the finish from being scratched during installation and isolates it from the alkalinity of a concrete foundation. This gasket also helps to seal the enclosure to the foundation to guard against entry of rodents, insects, or weeds, and to discourage tampering.

If the gasket cannot compensate for an uneven foundation, grout the bottom of the enclosure as necessary. Any grout applied should be recessed enough to permit caulking.

STEP 4. Caulk around the bottom of the enclosure with a weatherproof compound applied with a standard caulking gun. A room-temperature vulcanizing (RTV) silicon-rubber compound is recommended. Apply a suitable compound to fill the spaces between the cable and the conduit, and cap all empty conduits to prevent the entry of moisture or rodents.

STEP 5. Remove the lifting tabs and replace the bolts to plug the blind-tapped holes.

STEP 6. Check the interior of the pad-mounted gear, switch operators, and low-voltage enclosure. Remove all foreign materials and tools that may have been mislaid, and sweep the interior clear of debris.

STEP 7. Store spare SMU-20® Fuse Units, SM-4® Refill Units, or Fault Fiter fuse interrupting modules (as applicable) in the fuse-storage racks inside the fuse-compartment doors.

STEP 8. Wipe down the exterior of the enclosure with a clean, damp cloth. To preserve the integrity of the surface, refinish any scratches or abrasions with S&C touch-up finish and red-oxide primer, which are available in aerosol spray cans. See S&C Specification Bulletin 666-31 for catalog number information used for ordering. No other finish or primer is approved. The area to be touched up should be cleaned to remove all oil and grease. Sand the area, removing any traces of rust that may be present, and make sure that all edges are feathered before applying primer.

Note: Labels indicating the area around the pad-mounted gear that must be kept clear so work on the gear can be done safely are provided in the Installation and Operation Information Kit. These labels (or equivalent labels) should be affixed to the exterior of the gear. Refer to the "Location of Safety Labels" section on page 5.

When the installation is complete, refer to S&C Instruction Sheet 666-510 for operating instructions regarding the pad-mounted gear, switch operators, and control equipment groups, and fuse installation.

When high-voltage dielectric tests are to be performed on remote supervisory PME Pad-Mounted Gear, special precautions should be taken to prevent damage to the voltage sensor(s) and the voltage limiter. Refer to S&C Instruction Sheet 591-500.