

Cleaning Flooded Gear

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Introduction

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 manual PME Pad-Mounted Gear. Become familiar with the Safety Information on page 4 and Safety Precautions on page 5. 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 manual 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 manual PME Pad-Mounted Gear are listed in the ratings table in S&C Specification Bulletin 665-31. 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 manual 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 manual 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 Electronic Power Fuse mountings and S&C Holders designed therefore, or when current-limiting fuses are applied other than as set forth under the "Recommended Voltage Ratings of Current-Limiting Fuses for Use in S&C Pad-Mounted Gear" section of S&C Specification Bulletin 665-31.

Safety Information

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 cleaning manual S&C 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.

⚠ DANGER



Manual S&C PME Pad-Mounted Gear operates 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. **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.
7. **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.
8. **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.
9. **BACKFEED.** Mini-Rupter Switches and fuses may be energized by backfeed.
10. **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.
11. **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.
12. **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.
13. **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.
14. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.
15. **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.

Overview

This publication provides cleaning recommendations for manual S&C PME Pad-Mounted Gear that has been flooded. Before the gear can be returned to service, contaminants must be removed; insulators, bushings, bus, and barriers must be cleaned; and moving contacts and switch quick-make, quick-break mechanisms must be lubricated. **Equipment and cables must be de-energized and grounded in each compartment prior to starting work.**

Applicable instruction sheets, drawings, and wiring diagrams can be found in an envelope labeled “Installation and Operation Information Kit” located in Compartment 1.

If cleaning or maintenance is required beyond the scope of this publication, or if replacement parts and lubricants are needed, contact the nearest S&C Sales Office. Have the complete catalog number of the gear and date of shipment (as shown in the nameplate) available for reference.

Complete the following steps to clean manual PME Pad-Mounted Gear affected by a flood. This procedure must be followed in the order indicated:

- STEP 1.** Remove the roof.
- STEP 2.** Remove the barriers from the inner compartment.
- STEP 3.** Remove the front cover from each switch compartment.
- STEP 4.** Remove and discard the screened vents or vent plugs from the bottom of the inner compartments.
- STEP 5.** Remove and discard arc compressors from each Mini-Rupter Switch.
- STEP 6.** Thoroughly rinse the roof, front covers, and interior of the enclosure with clean water. Do not use a pressure washer.
- STEP 7.** Clean the bus, bus support Cypoxy® Insulators and bushings, and barriers as follows:
 - (a) Wash with phosphate-free mild soap and water.

NOTICE

Do not use industrial-strength cleaning solutions such as Formula 409® or Simple Green®, which contain solvents. Solvent vapors can attack arc compressor components, resulting in reduced interrupting performance or weakened parts.

- (b) Rinse thoroughly with clean water.
 - (c) Dry with compressed air.
- STEP 8.** Use compressed air to thoroughly dry the inner compartment to avoid trapping moisture inside the gear.

STEP 9. Lubricate each Mini-Rupter Switch quick-make, quick-break mechanism with WD-40® or similar penetrating oil. Do not get the penetrating oil on the insulators or bushing.

STEP 10. Lubricate each Mini-Rupter Switch contact with Nye Rheolube™ or similar grease.

NOTICE

Do not use lubricants that contain solvents. Solvent vapors can attack arc compressor components, resulting in reduced interrupting performance or weakened parts.

STEP 11. Install new arc compressors on each Mini-Rupter Switch.

STEP 12. Install replacement vent plugs in the bottom of the inner compartment. Six vent plugs are required for two-compartment gear. Twelve vent plugs are required for four-compartment gear.

STEP 13. Reinstall the barriers.

STEP 14. Use compressed air to thoroughly dry the roof to avoid trapping moisture inside the gear.

STEP 15. Remove and discard the roof gasket on top of the inner compartment. Install a new roof gasket.

STEP 16. Reinstall the roof.

STEP 17. Reinstall the front cover on each switch compartment.

STEP 18. Replace the fault indicators, if present.

STEP 19. Follow the surge arrester manufacturer's recommendations with respect to cleaning and reuse of surge arresters.

Cleaning Procedure

STEP 20. Follow the elbow manufacturer's recommendations with respect to cleaning and reuse of elbows.

STEP 21. Unlatch and pivot each TransFuser Mounting and remove the fuse.

For each SME-20 Power Fuse, do the following:

- (a) Remove the end-fittings and S&C Silencer. Wash them with phosphate-free mild soap and water.

NOTICE

Do not use industrial-strength cleaning solutions such as Formula 409 or Simple Green, which contain solvents.

- (b) Thoroughly rinse the end-fittings and silencer with clean water.
- (c) Dry the end-fittings and silencer with compressed air.
- (d) Make sure the latch on the lower end-fitting pivots freely. If not, replace the end fittings.
- (e) Apply No-Ox-Id "A" or similar electrically conductive grease to the contact rod assembly and its mating contact. Do not get the grease on the latch.
- (f) Discard the SMU-20® Fuse Unit. Also discard all spare fuse units.
- (g) Lubricate the TransFuser roller tracks with Nye Rheolube or similar electrically conductive grease and check for free movement. Do not use lubricants that contain solvents.

For each SME-4Z Power Fuse, do the following:

- (a) Remove the silencer. Wash it with phosphate-free mild soap and water.

NOTICE

Do not use industrial-strength cleaning solutions such as Formula 409 or Simple Green, which contain solvents.

- (b) Thoroughly rinse the silencer with clean water.
- (c) Dry the silencer with compressed air.
- (d) Discard the SME-4Z Holder and SM-4® Refill Unit. Also discard all spare refill units.
- (e) Lubricate the TransFuser Mounting roller tracks with Nye Rheolube or similar electrically conductive grease and check for free movement. Do not use lubricants that contain solvents.

For each Fault Fiter Electronic Power Fuse, do the following:

- (a) Remove the holder. Wash it with phosphate-free mild soap and water.

NOTICE

Do not use industrial-strength cleaning solutions such as Formula 409 or Simple Green, which contain solvents.

- (b) Thoroughly rinse the holder with clean water.
- (c) Dry the holder with compressed air.
- (d) Make sure the latch on the holder pivots freely. If not, replace the holder.
- (e) Apply No-Ox-Id "A" or similar electrically conductive grease to the contact rod assembly and its mating contact. Do not get grease on the latch.
- (f) Discard the interrupting module and control module. Also discard all spare interrupting and control modules.
- (g) Lubricate the TransFuser Mounting roller tracks with Nye Rheolube or similar electrically conductive grease and check for free movement. Do not use lubricants that contain solvents.

STEP 22. Perform a 60-Hz dielectric test on the pad-mounted gear unit using the test values shown in S&C Instruction Sheet 665-505.

Table 1. Replacement Parts and Lubricants

S&C Part Number	Description
9999-044	Nye Rheolube, ¼-ounce tube
9999-130	Nye Rheolube, 7-pound can
0352-006	No-Ox-Id "A", 5-gallon can
SA-40726	Mini-Rupter Switch arc compressor replacement kit
3093	SME-20 Fuse-Unit end-fittings
90362	SME-4Z Holder, 14.4 kV
90363	SME-4Z Holder, 25 kV
3132	Fault Fiter fuse holder, 13.8 kV
3133	Fault Fiter fuse holder, 25 kV
5533-018	Vent plug
5599-003	Roof gasket