Installation

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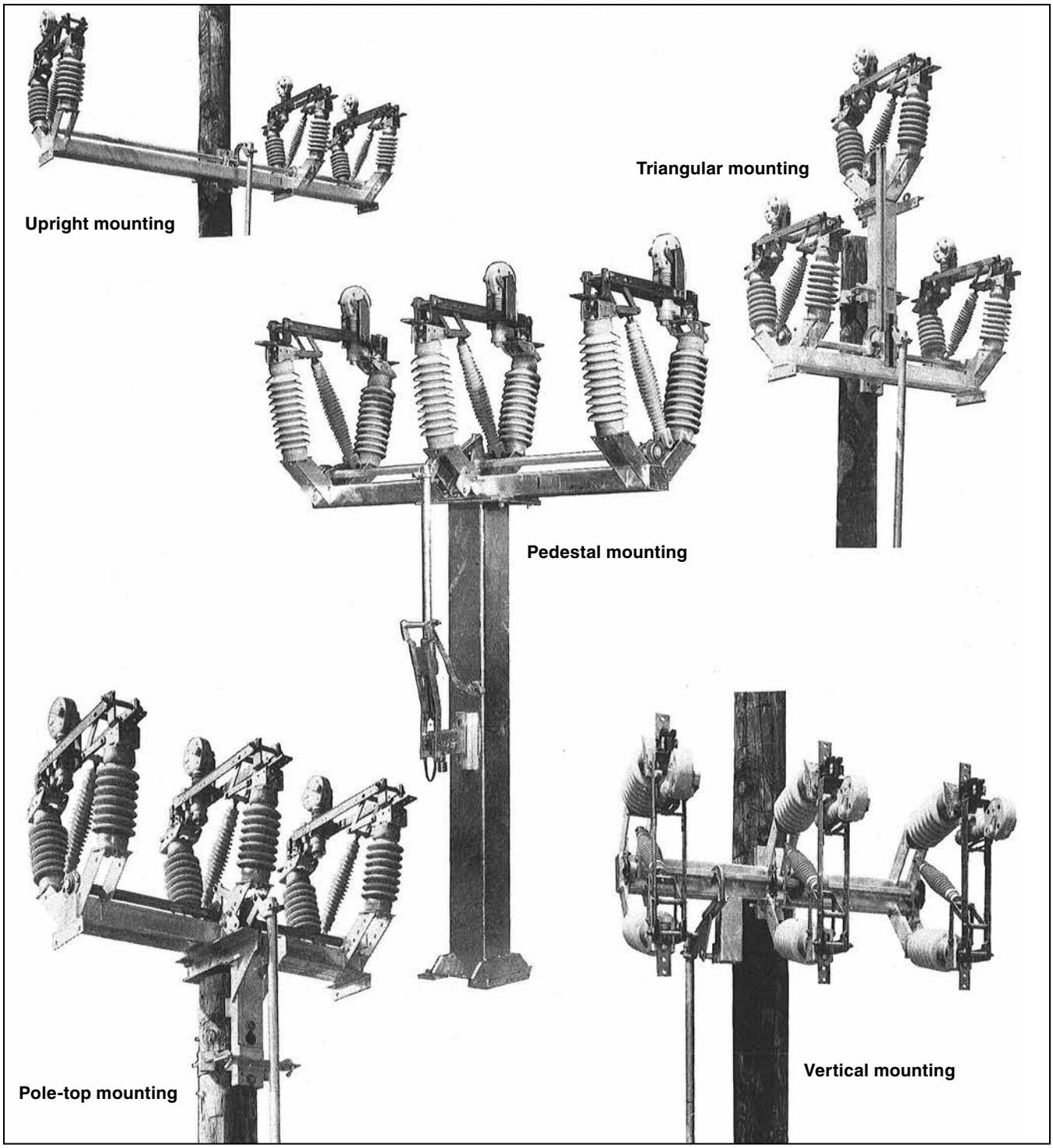


Figure 1. The five mounting configurations included within the scope of these instructions.

Qualified Persons

⚠ WARNING

Only qualified persons who are 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 who is 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 your Alduti-Rupter Switch. Familiarize yourself with the Safety Information and Safety Precautions on pages 5 through 7. The latest version of this publication is available online in PDF format at **sandc.com/en/support/product-literature/**.

Retain this Instruction Sheet

This instruction sheet is a permanent part of your S&C Alduti-Rupter Switch. Designate a location where you 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 and other application information are noted in Specification Bulletin 761-31.

In most applications, Alduti-Rupter Switches are capable of switching rated continuous load currents at full voltage. The ratings for the particular switch are listed on nameplates attached to the operating handle and the switch. See Figure 2.

These interrupter switches are not intended for breaking fault currents.

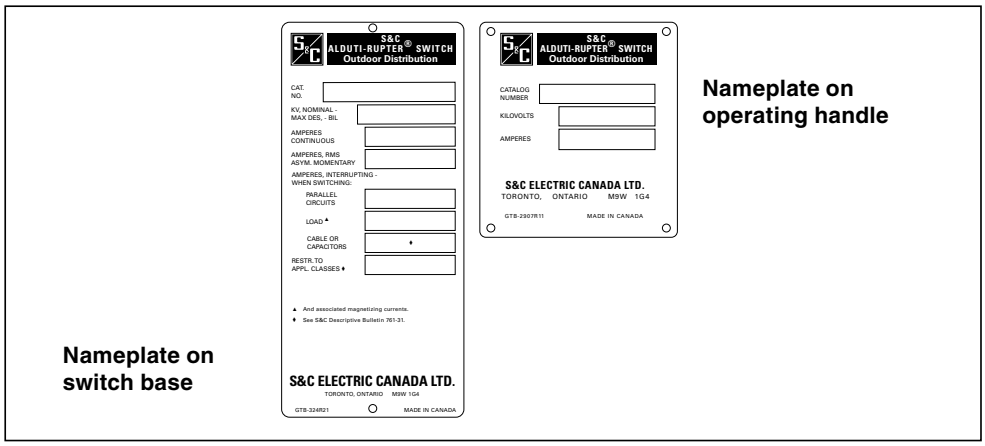


Figure 2. Switch nameplates with ratings.

Operating Considerations

Circuit-making and circuit-breaking are involved in the normal operation of these interrupter switches, and partial or precautionary opening or closing of the switch should not be attempted. If the switch is covered in ice or snow, do not "chop" the switch between the Open and Closed positions to dislodge the ice.

To operate the switch, swing the handle through its full stroke without hesitation. Do not assume the operating handle position indicates the **Open** and **Closed** position of the interrupter switch blades. After opening or closing the switch, always make a visual check of the blade position to ensure the switch blades are in the intended position. Then, tag or padlock the operating handle in accordance with standard system operating practices. In all cases, make sure the operating handle is locked before "walking away" from the switch.

Note: These interrupter switches are not intended for breaking currents. They do, however, have a one-time duty-cycle fault-closing rating, when operated by an S&C Type AS-10 Switch Operator, or a one-time duty-cycle fault closing capability, when manually operated vigorously through their full travel without hesitation at any point, as indicated on the nameplate.

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 is applicable to the Alduti-Rupter Switch detailed in this instruction sheet except when it is power operated using a switch operator of other than S&C manufacture.

Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to your S&C Alduti-Rupter Switch. Familiarize yourself 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 you do not understand any portion of this instruction sheet and need assistance, contact your 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

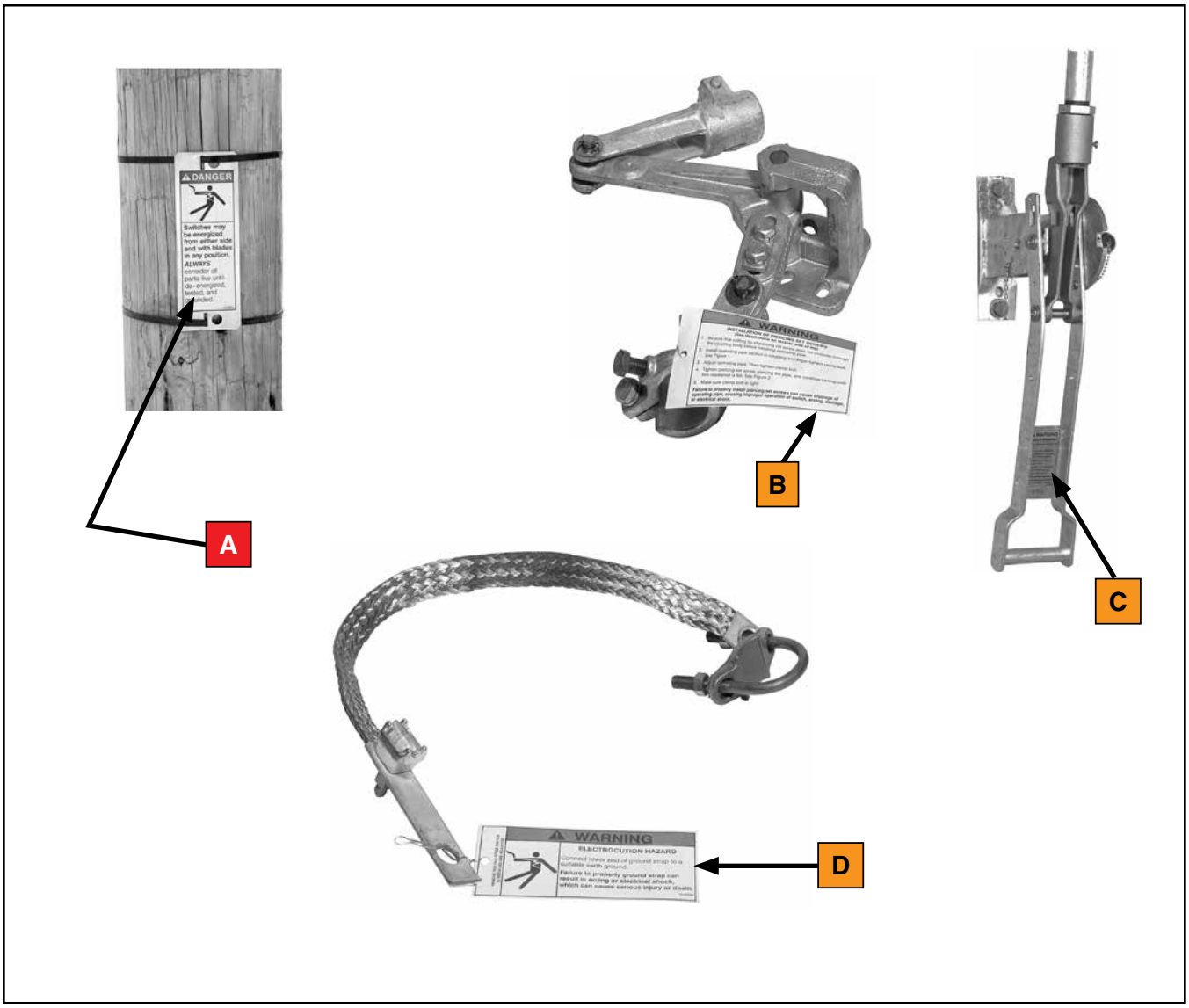
Read this instruction sheet thoroughly and carefully before installing your Alduti-Rupter Switch.	

Replacement Instructions and Labels

If additional copies of this instruction sheet are needed, contact your 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 your 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	⚠ DANGER	Electrocution Hazard	G-6580
B	⚠ WARNING	Piercing Set Screws	G-3176R1●
C	⚠ WARNING	Handle Operation	G-4400R5
D	⚠ WARNING	Electrocution Hazard—Grounding Strap	G-6596●

● This part is a tag to be removed and discarded after the switch is installed and adjusted.

⚠ DANGER

Alduti-Rupter Switches 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 company operating procedures and rules. Where a discrepancy exists, users should follow their company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to switches and controls 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 AND TAGS.** Do not remove or obscure any of the "DANGER," "WARNING," "CAUTION," or "*NOTICE*" labels and tags. Remove tags ONLY if instructed to do so.
5. **ENERGIZED COMPONENTS.** Always consider all parts live until de-energized, tested, and grounded.
6. **LOAD-INTERRUPTER SWITCH POSITION.** Always confirm the **Open/Close** position of load-interrupter switches by visually observing the position of the blades. Switches may be energized from either side and with the blades in any position.
7. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.
8. **OPERATION**. Circuit-making and circuit-breaking are involved in the normal operation of this interrupter switch and, as a result, "partway" opening or closing is undesirable. To operate, swing the operating handle through its full travel vigorously and without hesitation. See the "Operation" section on page 20.

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 the 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

Study the erection drawing carefully and check the bill of materials to be sure all parts are at hand. When a standard mounting arrangement is specified, the shipment includes:

- Three switch poles
- Operating-pipe sections for interphase, horizontal-connecting, and vertical sections (The switch may be furnished "less operating pipe," if specified.)
- Operating-mechanism components, such as handle, guide bearings, outboard bearing,and couplings—each tagged and keyed to the bill of material for ready identification
- The erection drawing that indicates the standard minor modifications available for the standard mounting arrangement

The components included with these modifications are shown on the erection drawing bill of material under the specified "-SX" suffix. They include:

-S1 One tubular fiberglass insulating section in vertical operating shaft

-S2 One Cypoxy™ Insulator unit in vertical operating shaft

-S6 Key interlock—single lock for a "locked-open" application

-S6L Provision for key interlock—allows future addition of single lock for "locked-open" application

-S7 Auxiliary contact switch with 4 N/O and 4 N/C contacts (600 Vac, 20 A)

-S8 Provision for power operation of pole-mounted switches by S&C Switch Operator—Type AS-1A

-S9 Provision for power operation of steel-structure or pedestal-mounted switches by S&C Switch Operator—Type AS-1A

-S16 Provision for power operation of pole-mounted switches by S&C 6801M Automatic Switch Operator

"-V1" or "-V2" adds (one or two respectively) extra 6-foot 10-inch (208-cm) lengths of pipe and includes the appropriate number of extra couplings and guides.

Drawing RD-10005, detailing the various modifications, is included in addition to the erection drawing.

Power Operation: If suffix "-S8"or "-S9" is specified, S&C Instruction Sheets 769-500 and 769-501, *"S&C Switch Operators—Type AS-1A*," are included with the switch operator shipment. Instruction Sheets 769-500 and 769-501 cover installation, operation, and adjustment of the appropriate switch operator and should be used in conjunction with this instruction sheet where applicable. If suffix "-S16" is specified, associated S&C Instruction Sheets for the 6801M Automatic Switch Operator are included with the switch operator shipment. Not all mounting arrangements are suitable for power operation; consult the nearest S&C Sales Office for details.

Handling

The crate the switch pole-units are packed in is designed to be moved and lifted using a lift truck. Raised slots in the bottom of the crate are provided for a lift truck's forks.

NOTICE

To minimize time-consuming final adjustments after installation, make sure the switch poles are in their fully **Closed** position during installation of the interphase and vertical operating pipe sections. S&C recommends tying the switch blades to their jaw contacts with wire or a cable tie.

⚠ WARNING

DO NOT lift the switch pole-units by rigging on the "live parts" or subject these parts to undue stress from slings or fall lines.

Lifting the switch by the live parts will damage the switch. Rough handling may cause damage to the blades and contacts.

Failure to lift the switch properly can result in switch damage, causing improper operation, arcing or electrical shock.

Operating Pipe Preparation

If desired, the vertical operating pipe can be cut to length (if not precut at the factory) before proceeding to the job site. Cutting dimensions are shown on the erection drawing. One of the pipe sections furnished is threaded at one end to accommodate the operating handle assembly.

Mounting to Wood

When mounting the switch and its operating mechanism to a wood pole, S&C recommends suitably sized square washers be placed under the nuts. The use of spring-type washers between the square washers and nuts is also recommended to compensate for wood pole shrinkage and thus maintain fastener tightness. See Figure 3.

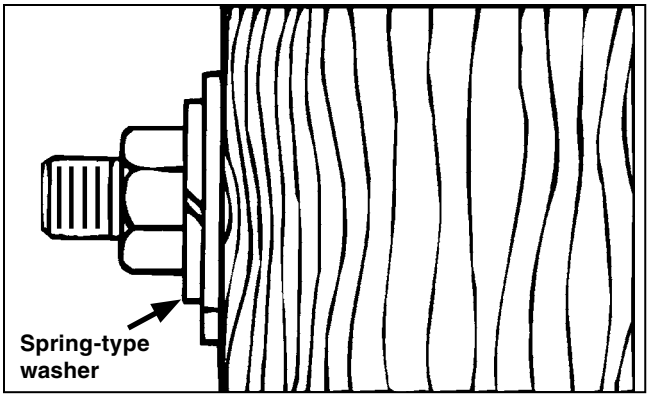


Figure 3. Applying the spring washer.

Mounting the Switch Assembly

NOTICE

To minimize time-consuming final adjustments after installation, make sure the switch poles are in their fully **Closed** position during installation of the interphase and vertical operating pipe sections. S&C recommends tying the switch blades to their jaw contacts with wire or a cable tie.

Follow these steps to mount the switch assembly:

For Pole-Top Mounting Configuration:

STEP 1. Drill two 11⁄16-inch diameter holes in the utility pole for attachment of the pole-top switch-mounting bracket. For optimum support the bracket should be positioned so that it is in contact (at some point) with the top surface of the utility pole. See the erection drawing.

STEP 2. Insert two 5⁄8-inch diameter through-bolts (not furnished) in the holes drilled in Step 1 and secure loosely with the necessary square washers, flat washers, and nuts so the heads of the bolts project about three inches from the face of the pole.

STEP 3. Hoist and position the switch-mounting bracket so the through-bolts projecting from the utility pole slip into the holes in the bracket. (The bracket is provided with a keyhole and an open slotted hole for this purpose.) Lower the bracket so it bears on the through-bolts and the top surface of the utility pole. Fully tighten the through-bolts.

Secure the pole band (furnished) to the anchor holes on the switch-mounting bracket using the J-bolts furnished. See Detail G on the erection drawing. Two ¼ × 1 × 3-inch stiffening blocks (furnished) are to be used under the nuts securing the J-bolts. See Figure 4. Then, lag the pole-band to the utility pole through the hole provided, using a ⅝-inch diameter lag screw (not furnished).

⚠ WARNING

DO NOT lift the switch pole-units by rigging on the "live parts" or subject these parts to undue stress from slings or fall lines.

Lifting the switch by the live parts will damage the switch. Rough handling may cause damage to the blades and contacts.

Failure to lift the switch properly can result in switch damage, causing improper operation, arcing or electrical shock.

Hoist the switch assembly (with the switch fully closed) using the two lifting angles attached to the switch base, and bolt it to the switch-mounting bracket with the four ⅝—11 × 1¾-inch galvanized bolts, nuts, flat washers, and lockwashers furnished. See Figure 4. Remove the two lifting angles.

Proceed to the "Installing Pipe Couplings with Piercing Set Screws" section on page 13.

For Upright and Vertical Mounting Configurations:

STEP 4. Drill two 11/16-inch (17-mm) diameter holes in the utility pole at the desired height for mounting the switch. See the erection drawing.

STEP 5. Insert two ⅝-inch diameter through-bolts (not furnished) in the holes drilled in Step 6 and secure loosely with the necessary square washers and nuts in such a manner the heads of the bolts project about 3 inches (76 mm) from the face of the pole.

⚠ WARNING

DO NOT lift the switch pole-units by rigging on the "live parts" or subject these parts to undue stress from slings or fall lines.

Lifting the switch by the live parts will damage the switch. Rough handling may cause damage to the blades and contacts.

Failure to lift the switch properly can result in switch damage, causing improper operation, arcing or electrical shock.

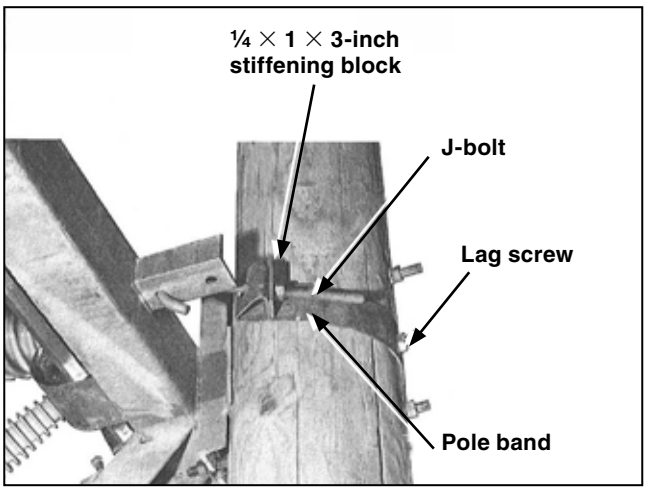


Figure 4. Pole-band attachment detail (typical).

Note: Vertical mounting configuration switch will roll somewhat more than 90 degrees as it clears the shipping skid.

STEP 6. Hoist the switch assembly (with the switch fully closed), using the two lifting angles attached to the switch base.

When the switch assembly is hoisted to its mounting level, guide the assembly so the through-bolts projecting from the utility pole slip into the holes in the switch's pole-mounting bracket. (The pole-mounting bracket is provided with a keyhole and an open-slotted hole for this purpose.) Lower the switch slightly so it bears on the through-bolts. Fully tighten the through-bolts.

Secure the pole band (furnished) to the anchor brackets on the switch base using the J-bolts furnished. See Section K-K (for upright switches) or Section H-H (for vertical switches) on the erection drawing. Two ¼ × 1 × 3-inch stiffening blocks (furnished) are to be used under the nuts securing the J-bolts. See Figure 4 on page 10. Then, lag the pole band to the pole through the hole provided, using a ⅝-inch diameter lag screw (not furnished). Remove the two lifting angles.

STEP 7. Crossarm braces (supplied by others) are recommended for switches in the vertical mounting configuration. Vertical and upright mounting configuration switches include provisions for attachment of crossarm braces to the switch base at the locations shown on the erection drawing.

Proceed to the "Installing Pipe Couplings with Piercing Set Screws" section on page 13.

For Pedestal Mounting Configuration:

STEP 8. Install the mounting pedestal as indicated on the erection drawing.

⚠ WARNING

DO NOT lift the switch pole-units by rigging on the "live parts" or subject these parts to undue stress from slings or fall lines.

Lifting the switch by the live parts will damage the switch. Rough handling may cause damage to the blades and contacts.

Failure to lift the switch properly can result in switch damage, causing improper operation, arcing or electrical shock.

STEP 9. Hoist the switch assembly (with the switch fully closed) using the two lifting angles attached to the switch base, and bolt it to the mounting pedestal with the four ⅝-inch—11 × 2½-inch galvanized bolts, nuts, flat washers and lockwashers furnished. Remove the two lifting angles.

Proceed to the "Installing Pipe Couplings with Piercing Set Screws" section on page 13.

***For Triangular Mounting Configuration*:**

STEP 10. Drill two 11⁄16-inch (17-mm) diameter holes in the utility pole at the desired height for mounting the switch. See the erection drawing.

STEP 11. Insert two ⅝-inch diameter through-bolts (not furnished) in the holes drilled in Step 13 and secure loosely with the necessary square washers and nuts in such a manner that the heads of the bolts project about three inches from the face of the pole.

STEP 12. For shipment, the center switch pole is disassembled from the base structure and bolted to the shipping skid. Assemble this switch pole to the switch base as directed in reference drawing RD-3197, furnished with the erection drawing.

⚠ WARNING

DO NOT lift the switch pole-units by rigging on the "live parts" or subject these parts to undue stress from slings or fall lines.

Lifting the switch by the live parts will damage the switch. Rough handling may cause damage to the blades and contacts.

Failure to lift the switch properly can result in switch damage, causing improper operation, arcing, or electrical shock.

STEP 13. Hoist the switch assembly (with the switch fully closed), using the two lifting eyebolts provided. When the switch assembly is hoisted to its mounting level, guide the assembly so the through-bolts projecting from the utility pole slip into the holes in the switch base. (The switch base is provided with a keyhole and an open slotted hole for this purpose.) Lower the switch slightly so it bears on the through-bolts. Fully tighten the through-bolts.

STEP 14. Secure the two pole bands (furnished) to the anchor brackets on the switch base using the J-bolts furnished. See Section J-J on the erection drawing. Four ¼ × 1 × 3-inch stiffening blocks (furnished) are to be used under the nuts securing the J-bolts. See Figure 4 on page 10. Then, lag the pole bands to the pole through the holes provided, using ⅝-inch diameter lag screws (not furnished). Remove the two lifting eyebolts.

Installing Pipe Couplings with Piercing Set Screws

⚠ WARNING

Failure to properly install pipe couplings with piercing set screws can cause slippage of operating pipe, resulting in improper operation of the switch, arcing, equipment damage, or electrical shock.

STEP 15. To properly install piercing set screws:

(a) Make sure the cutting tip of the piercing set screw does not protrude through the body of the clamp.

(b) Insert the operating-pipe section into the coupling and finger-tighten the clamp bolt(s).

(c) Adjust the operating pipe to the correct length. Then, tighten the clamp bolt(s) to final tightness.

(d) Tighten the piercing set screw, piercing the pipe, and continue turning until a firm resistance is felt.

(e) Make sure the clamp bolt(s) are tight. See Figure 5.

Installing the Vertical Operating Pipe

Follow these steps to install the vertical operating pipe:

STEP 16. One of the pipe sections furnished is threaded at one end to accommodate the operating-handle assembly. See Figure 6. Install this section of pipe last, with the threads at the lower end.

If only one vertical operating-pipe section is required, or for pedestal mounting-configuration switches, proceed to Step 22.

STEP 17. Mount the rod guide(s) with the arm pointing upward as shown in Figure 7. When an adjustable rod guide is included mount it nearest the switch.

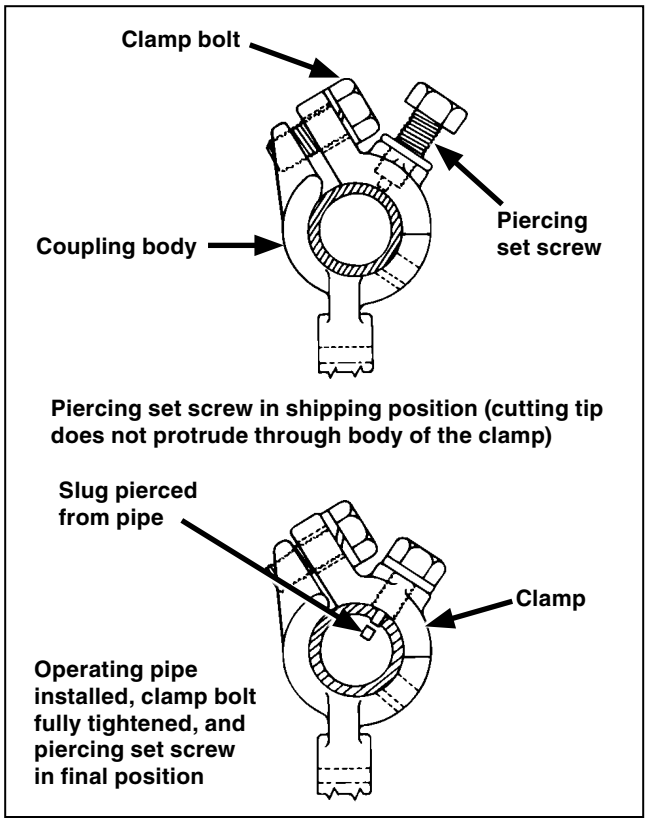


Figure 5. Installing the pipe couplings with piercing set screws.

Figure 6. A threaded vertical operating pipe.

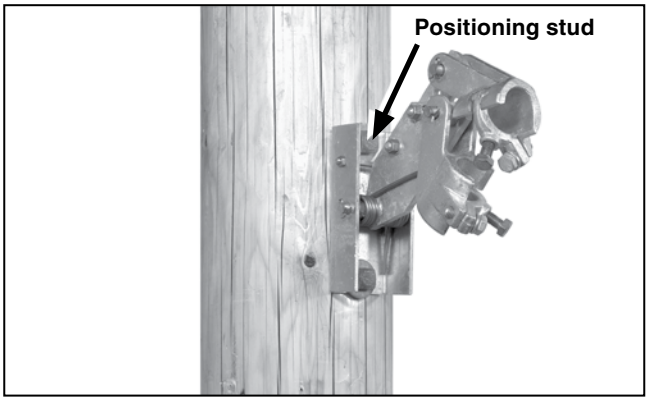


Figure 7. Attaching the rod guide.

STEP 18. Install the upper section of vertical operating pipe between the switch drive lever and the uppermost rod guide, with the rod-guide arm pointing upward at a 45-degree angle. See Figure 8. (A positioning stud is furnished that holds the rod guide at 45 degrees.) Follow the directions in the "Installing Pipe Couplings with Piercing Set Screws" section on page 13.

If more than one rod guide is used, install vertical operating-pipe sections between rod guides in the same manner.

Installing the Operating Handle

Follow these steps to install the operating handle:

For pedestal mounting configurations: Mount the operating-handle assembly and handle support channel on the pedestal as shown on the erection drawing, using the two ⅝-11 × 3-inch galvanized steel bolts and galvanized lockwashers furnished.

For pole-top, upright, vertical, and triangular mounting configurations: Mount the operating-handle assembly as shown on the erection drawing. At the same time, use one of the operating-handle mounting bolts to attach one end of the grounding strap (the end with the grounding connector attached) to the handle mounting plate. See Figure 9.

STEP 19. Install the lowest vertical operating-pipe section by threading one end of the pipe into the coupling on the operating-handle assembly. Approximately ¼-inch (6 mm) of thread should extend through the coupling. Tighten the locknut. See Figure 10.

STEP 20. Insert the upper end of this pipe section in the lowest rod-guide coupling or—if only one vertical operating-pipe section is used—the coupling attached to the switch drive lever. While holding the operating handle at a point approximately 20 degrees from the **Closed** position, torque the rod-guide coupling (or switch drive-lever coupling) clamp bolt. See Figure 11 on page 15.

NOTICE

Do not tighten the piercing set screw at the top of the lowest section of vertical operating pipe until satisfactory operating-handle adjustment is attained in the "Checking Alignment" section on pages 15 and 16.

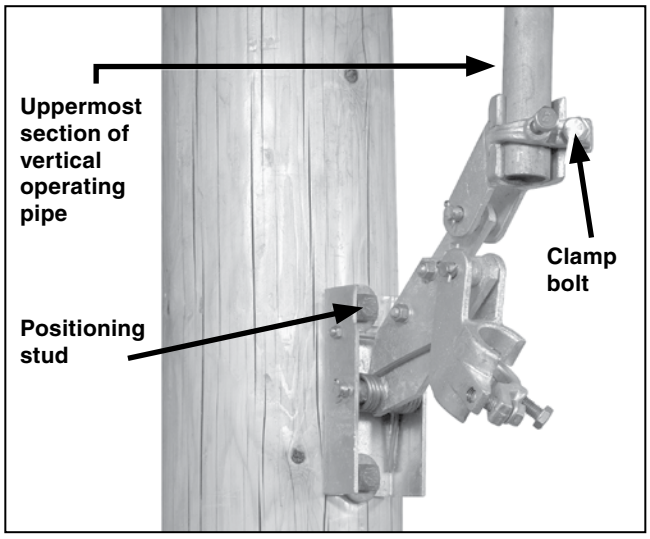


Figure 8. Installing the upper operating pipe section into the rod guide.

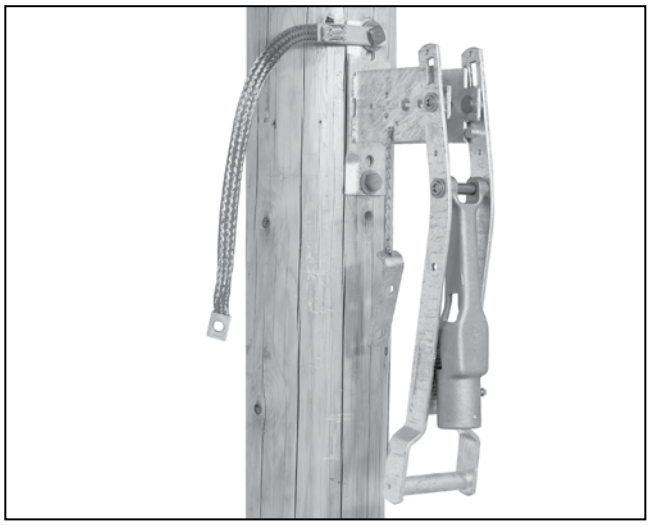


Figure 9. Mounting the operating handle.

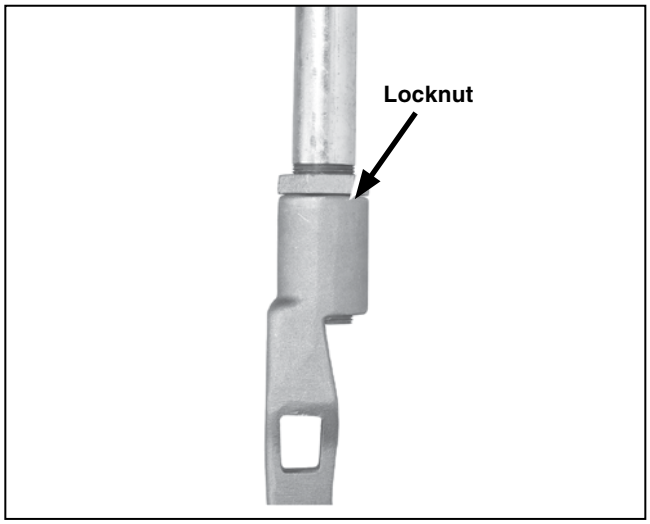


Figure 10. Installing the lowest operating pipe section into the operating handle assembly.

STEP 21. ***For pedestal mounting configurations***: Attach the grounding strap to the operating pipe a few inches above the operating-handle assembly with the U-bolt connector provided for this purpose and to the adjacent angle welded to the pedestal. A separate grounding connection near the base of the pedestal, on the side opposite the operating handle, is provided for the user's earth ground.●

For pole-top, upright, vertical, and triangular mounting configurations: Fasten the free end of the grounding strap to the lowest vertical operating-pipe section a few inches above the operating-handle assembly with the U-bolt connector provided for this purpose. Then, connect the lower end of the strap to a suitable earth ground using the grounding connector provided at the end of the strap.●

● The grounding recommendations in this document may differ from the standard operating and safety procedures of certain electric utility companies. Where a discrepancy exists, the operating procedures of the electric utility apply.

Checking Alignment

Follow these steps when checking alignment:

STEP 22. Remove the ties holding the switch blades to their stationary main-contact assemblies. See Figure 12.

If applicable, remove the 45-degree positioning stud from each rod guide. See Figure 7 on page 13.

Open and close the switch *slowly* to ensure no operational difficulties are encountered caused by undetected damage in shipping.

⚠ WARNING

Open and close the switch slowly ONLY when checking operation or making adjustments to the de-energized switch.

When opening or closing an energized switch, swing the handle vigorously through its full travel without hesitation.

Arcing and damage to the switch will occur if the energized switch is operated slowly or left in the partially **Open** or **Closed** position.

Move the operating handle slowly to the **Closed** position. See Figure 13. A definite resistance should be felt at the end of the stroke, indicating all slack in the operating linkage has been taken up.

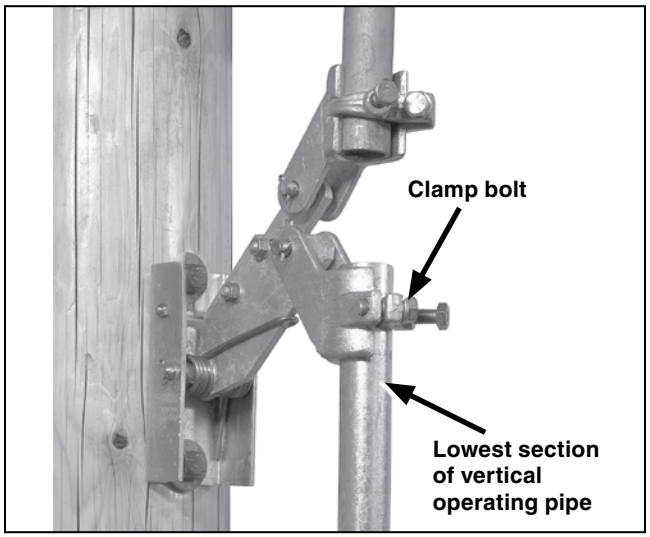


Figure 11. Installing the upper operating pipe section into the rod guide.

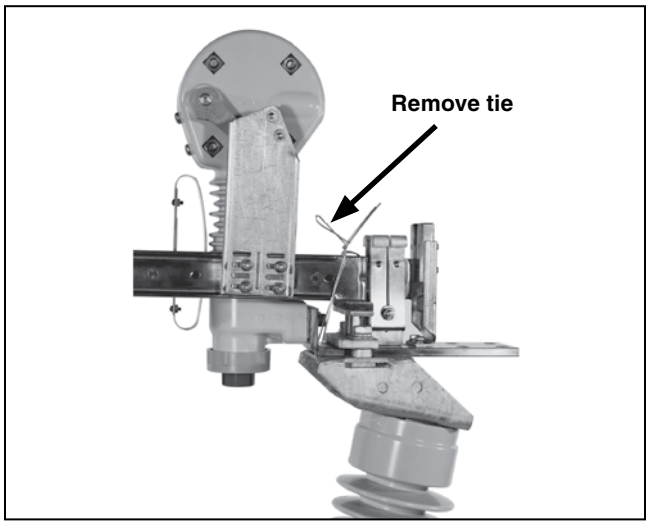


Figure 12. Removing the tie at the stationary main contact assembly.

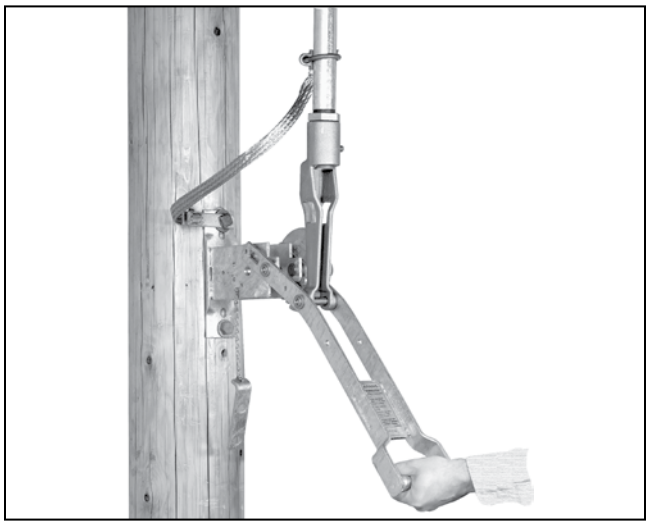


Figure 13. Verifying the slack has been taken up in the operating linkage.

STEP 23. If there is still slack, loosen the clamp bolt on the lowest rod-guide (or switch drive-lever) coupling, and move the operating handle to a position more than 20 degrees from the **Closed** position. Then, torque the clamp bolt on the lowest rod-guide (or switch drive-lever) coupling. See Figure 14.

Conversely, if considerable force is needed to move the handle to the fully **Closed** position, or the handle does not swing 180 degrees to the fully **Open** position, loosen the clamp bolt on the lowest rod-guide (or switch drive-lever) coupling, and move the handle to a position less than 20 degrees from the **Closed** position. Then, torque the clamp bolt on the lowest rod-guide (or switch drive-lever) coupling. See Figure 14. Proper "resistance" in the operating linkage during a closing operation is essential to ensure positive switch closure.

STEP 24. When satisfactory operating-handle adjustment is attained, make sure the clamp bolt on the lowest rod-guide (or switch drive-lever) coupling has been torqued to final tightness. Then, tighten the associated piercing set screw, piercing the pipe, and continue turning until a firm resistance is felt.

If a key interlock is used (suffix "-S6" or "-S6L"), proceed to Step 29. Otherwise, proceed to the "Checking Operation" section.

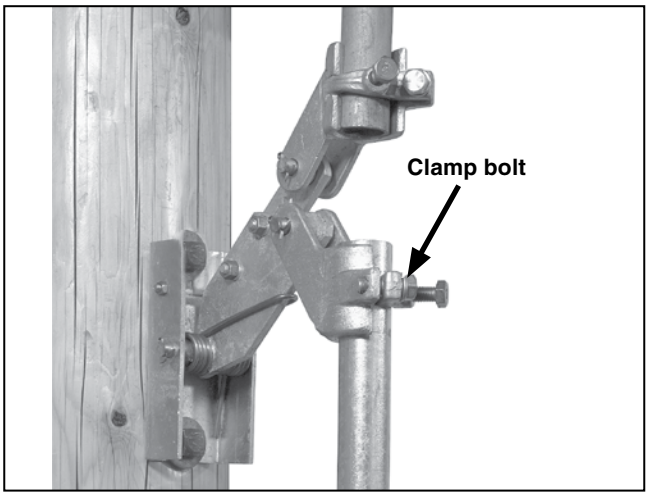


Figure 14. Torquing the clamp bolt at the lowest rod guide (or interphase drive lever) coupling.

Installing the Key Interlock

Follow these steps when installing the key interlock:

STEP 25. The interlock group includes a Superior Type B4003-1 Mk II single- or multiple-key interlock (or equivalent), with zero bolt projection and ¾-inch (19 mm) bolt travel, locking disc, and interlock bracket. If "provision only" is specified, the interlock is not included.

Attach the key interlock to the interlock bracket so the interlock bolt, when extended, engages a slot in the locking disc on the operating handle. See Figure 15.

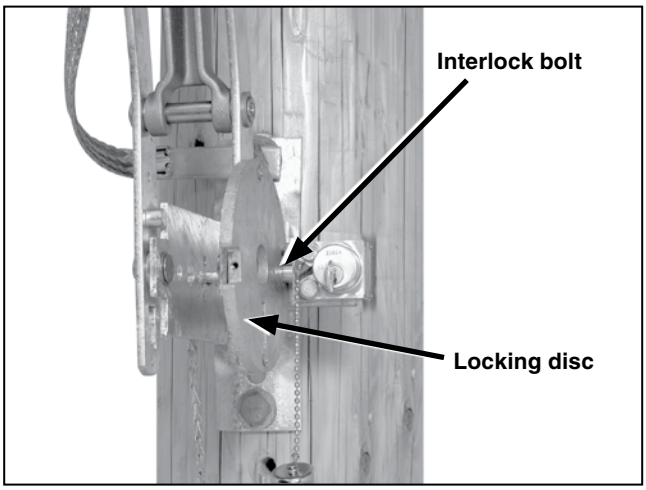


Figure 15. Attaching the key interlock to the interlock bracket.

STEP 26. Block one of the two slots in the locking disc with the blocking screw provided. (The slot to be blocked depends on whether a locked-open or locked-closed arrangement is required.) See Figure 16.

NOTICE

Key interlocks are intended for proper sequencing of switch operations; they are not intended to provide security. The operating handle assembly included a locking bar for padlocking the switch in the **Open** or **Closed** position.

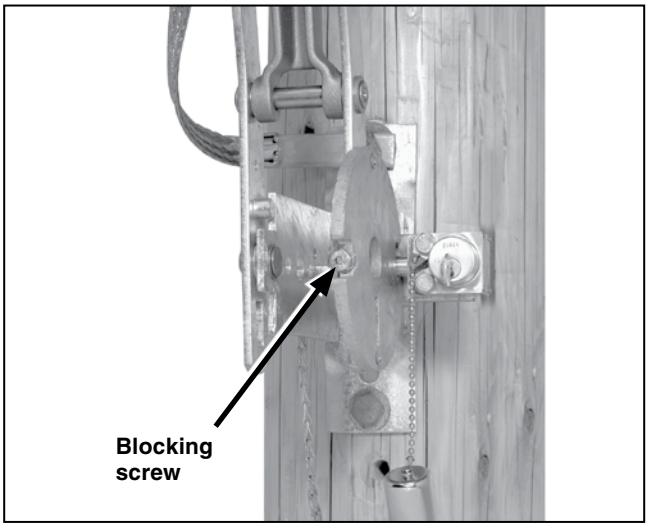


Figure 16. The blocking slot in the locking disc.

Checking Operation

Follow these steps to check operation:

STEP 27. Open and close the switch by swinging the handle slowly through its full travel.

> **⚠ WARNING**
>
> Open and close the switch slowly ONLY when checking operation or making adjustments to the de-energized switch.
>
> When opening or closing an energized switch, swing the handle vigorously through its full travel without hesitation.
>
> Arcing and damage to the switch will occur if the energized switch is operated slowly or left in the partially **Open** or **Closed** position.

Make sure the following conditions exist:

- With the operating handle as far as it will go in the closing direction, all main contacts of the switch are fully closed with the blades against their blade stops. See Figure 17.
- With the operating handle as far as it will go in the opening direction, the switch blades are 90 degrees from the **Closed** position.

If none of the switch poles are fully closed, increase the effective length of the vertical operating pipe as follows:

For pedestal mounting-configuration switches and switches using a single length of vertical pipe: If the conditions above cannot be met, damage was likely sustained during shipping or storage. Contact the nearest S&C Sales Office for assistance.

For switches that use multiple lengths of vertical pipe: Move the operating handle to its mid-position to take the strain off the operating-pipe linkage. Secure the handle in that position by inserting a ⅜-inch bolt or metal pin into the hole provided.

Loosen the upper clamp bolt on the adjustable rod-guide assembly. Shorten the drive lever one step (11⁄32 inch) and retighten the bolts. (Shortening the lever increases the amount of switch blade travel.) Remove the bolt and readjust for full operating-handle and switch-blade travel as described above. Repeat this procedure, shortening the drive lever in one-step increments until full switch-blade travel is attained. See Figure 18.

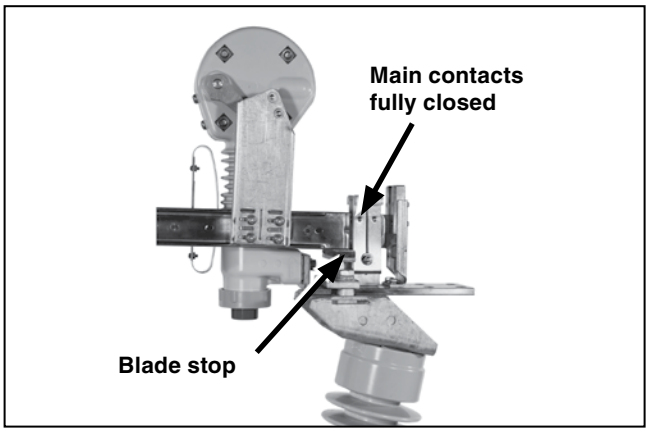


Figure 17. Check that the blade is fully closed.

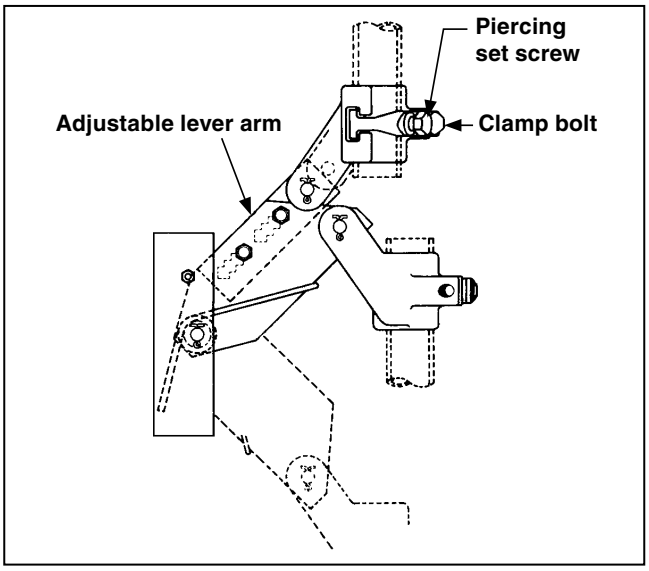


Figure 18. Shortening the adjustable drive lever on the uppermost rod guide assembly.

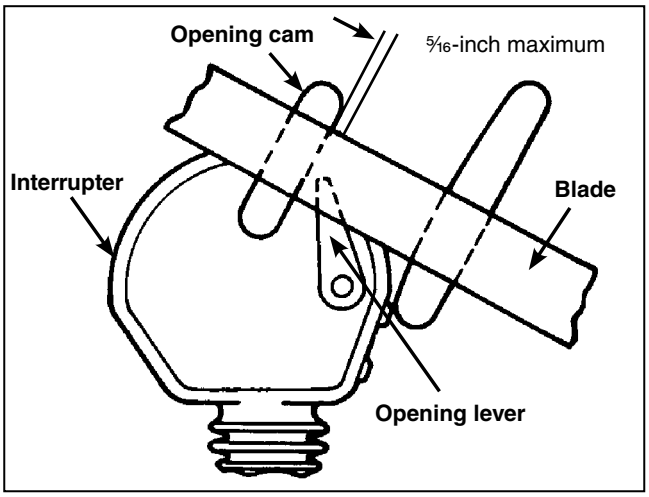


Figure 19. Blade assembly moving in the closing direction.

STEP 28. Open and close the switch slowly several times and check the operation of each pole. The following conditions must be met:

> **⚠ WARNING**
>
> Open and close the switch slowly ONLY when checking operation or making adjustments to the de-energized switch.
>
> When opening or closing an energized switch, swing the handle vigorously through its full travel without hesitation.
>
> Arcing and damage to the switch will occur if the energized switch is operated slowly or left in the partially **Open** or **Closed** position.

- As the blade moves in the closing direction, clearance between the blade-opening cam and the interrupter-opening lever must be within the limit shown. See Figure 19 on page 17.
- As the blade assembly moves in the closing direction, each blade-closing cam must make positive engagement with its respective interrupter-closing lever. See Figure 20.
- When the blade is in the fully **Closed** position, each blade-closing cam must overlap its respective interrupter-closing lever to prevent inadvertent opening of the interrupter, and clearance between the blade-closing cam and its respective interrupter-closing lever must be within the limit shown. See Figure 21.
- The interrupter must lie in a plane parallel to the sweep of the blades, and the blades must pass over the interrupter with approximately equal clearance on both sides. See Figure 22.
- With the switch in the fully **Closed** position, verify the minimum clearances between the blade-shunt contact and the interrupter, measured to the interrupter housing as well as the interrupter skirts. See Figure 23 on page 19.
- As the blade moves in the opening direction, the blade-shunt contact must firmly engage either or both of the interrupter contact rivets before the blade disengages from the jaw contact. (The shunt contact may be bent as required to conform to these conditions.)

If any of the conditions described in this step cannot be achieved, contact the nearest S&C Sales Office because damage likely occurred during shipping.

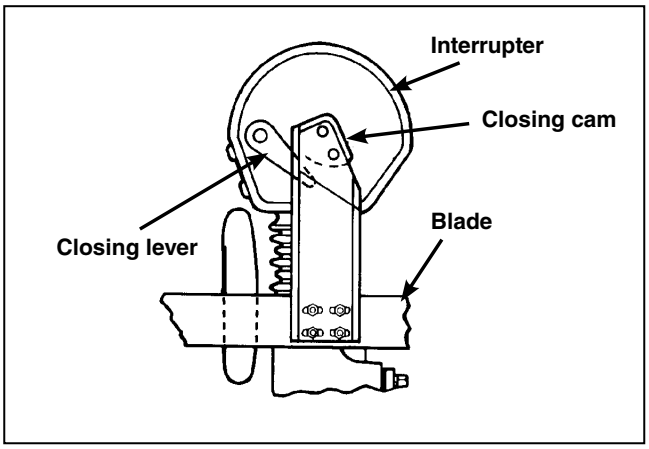


Figure 20. Blade assembly moving in closing direction.

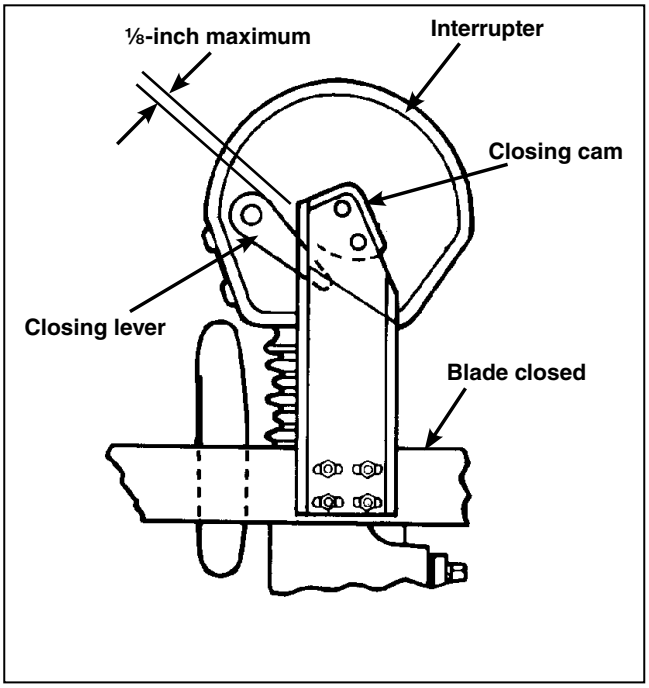


Figure 21. Blade assembly in the fully closed position.

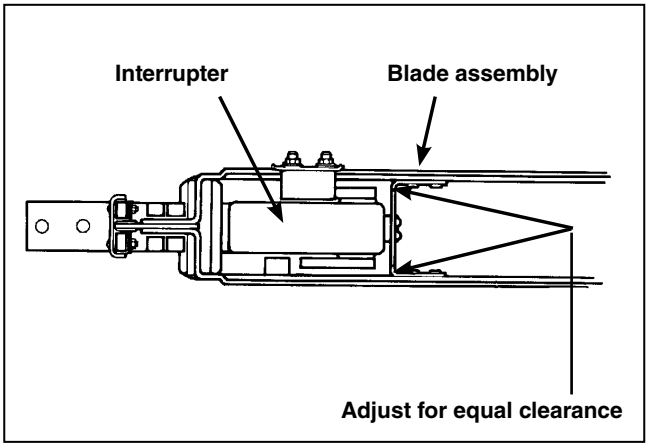


Figure 22. Blade assembly in the fully closed position.

Connecting High-Voltage Conductors

When high-voltage conductors are to be connected using aluminum-alloy body connectors● the following procedures should be employed:

(a) Thoroughly wire-brush the current-transfer surfaces of each connector and immediately apply a liberal coating of Penetrox® A to the brushed surfaces.

(b) Wire-brush each terminal pad of the interrupter switch and apply a coating of Penetrox A. Then, bolt the connectors to the terminal pads.

(c) Prepare the conductors using established procedures and clamp them in their respective connectors.

● "Mass anode"-type connectors, such as the catalog number 6300 series offered by S&C, which have been designated by the connector manufacturer as being suitable for direct attachment to copper bearing alloy terminal pads.

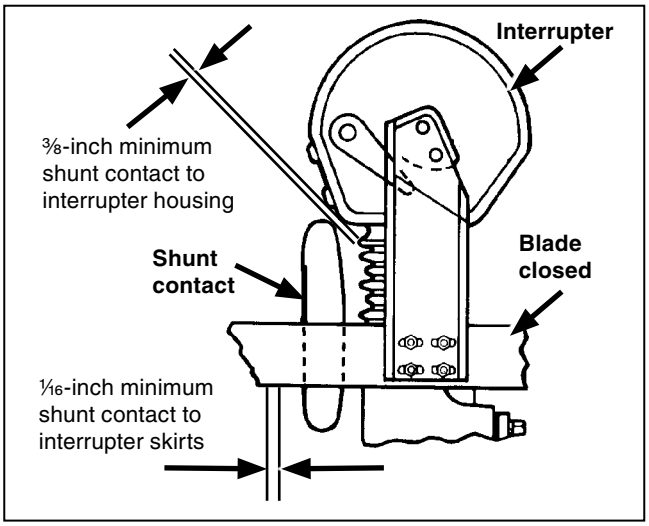


Figure 23. Withdrawing locking bar and disengaging key interlock bolt.

Opening and Closing the Switch

⚠ DANGER

The blades and terminal pads of the Alduti-Rupter Switch may be energized from either side of the switch with the blades in any position. Before inspecting, servicing, or repairing this switch or working on the conductors on either side of the switch, test for voltage using proper high-voltage test equipment. Afterward, install suitable grounding equipment at all six terminals. Failure to observe these precautions may result in serious injury or death.

NOTICE

This interrupter switch is not intended for breaking fault currents.

STEP 29. To operate the Alduti-Rupter Switch:

(a) Remove the padlock(s) from the locking bar on the operating-handle assembly. See Figure 24.

(b) If the operating handle assembly is furnished with a key interlock, disengage the interlock bolt.

(c) Swing the handle quickly and firmly to the fully Open or fully **Closed** position. DO NOT slow down or stop part way. See Figure 25.

(d) Check that all three poles are fully open or fully closed.

(e) Replace the locking bar and the padlock. Engage the key interlock, if applicable.

⚠ WARNING

When in service, swing the operating handle vigorously through its full travel without hesitation at any point. Arcing and damage to the switch can occur if the switch is partially open or partially closed.

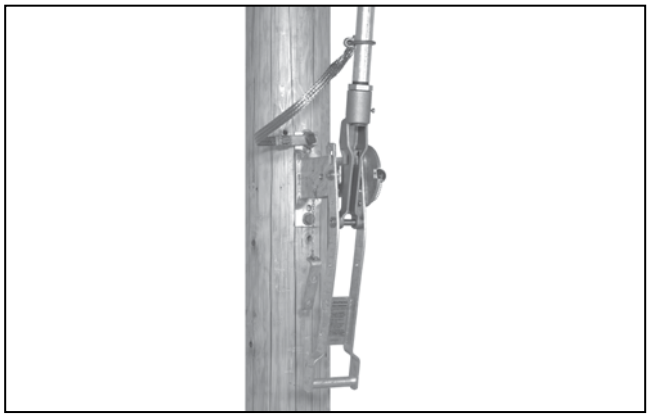


Figure 24. Withdrawing locking bar and disengaging key interlock bolt.

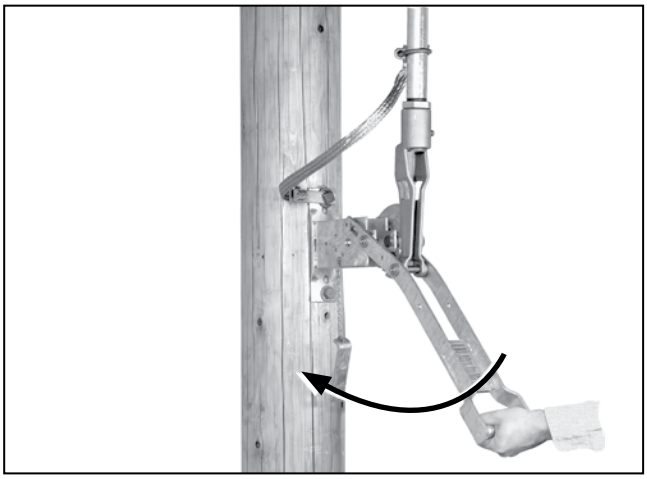


Figure 25. Swing the operating handle rapidly.