

Installation

Table of Contents

| Section | Page | Section | Page |
|---|------|--|------|
| Introduction | | Installation | |
| Qualified Persons | 2 | Operating Pipe Preparation | 10 |
| Read this Instruction Sheet | 2 | Mounting to Wood. | 10 |
| Retain this Instruction Sheet. | 2 | Uncrating the Switch. | 10 |
| Proper Application | 3 | Attaching Couplings to Switch Poles | 10 |
| Operating Considerations. | 4 | Attaching the Bell-Crank Assembly | 11 |
| Warranty | 4 | Attaching Couplings | |
| Warranty Qualifications | 4 | to the Bell-Crank Assembly | 11 |
| Safety Information | | Lifting the Switch | 11 |
| Understanding Safety-Alert Messages. | 5 | Installing Pipe Couplings | |
| Following Safety Instructions | 5 | with Piercing Set Screws | 13 |
| Replacement Instructions and Labels | 5 | Installing the Interphase Pipe | 13 |
| Location of Safety Labels. | 6 | Installing the Vertical Operating Pipe | 14 |
| Safety Precautions | 7 | Installing the Operating Handle | 15 |
| Shipping and Handling | | Checking Alignment | 17 |
| Inspection | 8 | Installing the Key Interlock | 18 |
| Packing | 8 | Checking Operation | 19 |
| Handling | 9 | Connecting the High-Voltage Conductors | 23 |
| | | Operation | |
| | | Opening and Closing the Switch | 24 |



Introduction

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 S&C 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 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 can be found 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 1.

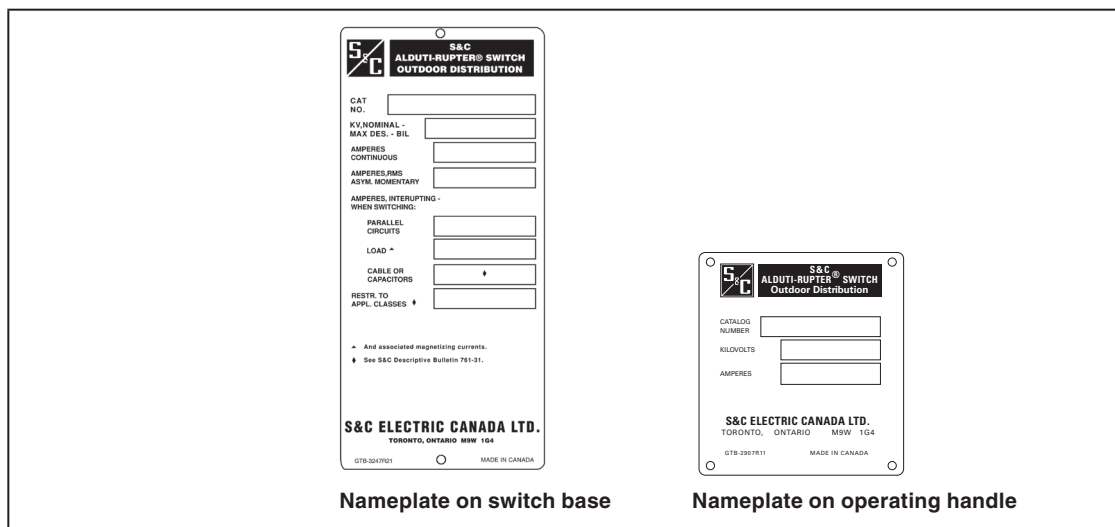


Figure 1. Switch nameplates with ratings.

Introduction

These interrupter switches are not intended for breaking fault currents.

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** positions of the interrupter switch blades. After opening or closing the switch, always make a visual check of the blade position to determine 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.

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 the 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 the Alduti-Rupter Switch. |  |

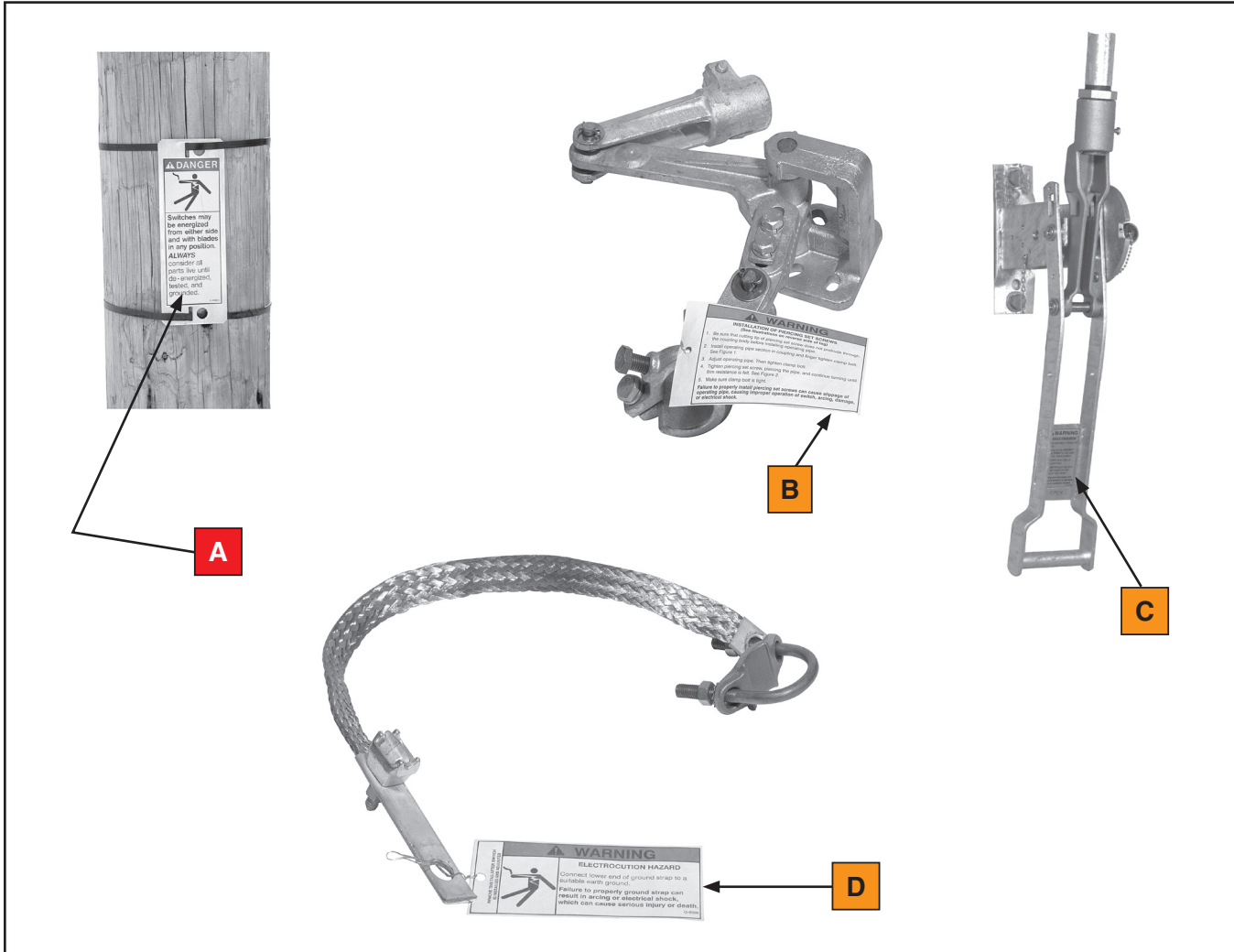
Replacement Instructions and Labels

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.

Safety Information

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.

Shipping and Handling

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 material to make sure all parts are at hand. When a standard mounting arrangement is specified, the shipment will include:

- Three switch poles
- Operating-pipe sections for interphase, horizontal connecting, and vertical sections●
- Operating-mechanism components, such as rod guides, bell-crank assembly, operating handle assembly, etc.—each tagged and keyed to the bill of material for ready identification
- The erection drawing indicating 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:

- Not furnished with switches ordered “less operating pipe.”

- S1 One tubular fiberglass insulating section in vertical operating shaft
- S2 One Cypoxy™ Insulator unit in vertical operating shaft
- S3 Insulated interphase sections and one fiberglass insulating section in vertical shaft
- S4 Insulated interphase sections and one Cypoxy Insulator unit in a vertical operating shaft
- S6 Key interlock—single lock for “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, 125 Vdc/1 A, 48 Vdc/1 A)
- S8 Provision for power operation of pole-mounted switches by a Type AS-10 Switch Operator
- S9 Provision for power operation of pedestal mounted switches by a Type AS-10 Switch Operator
- S16 Provision for power operation by a 6801M Automatic Switch Operator

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

Drawing RD-10015, 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 769-510 and 769-511, “S&C Switch Operators—Type AS-10,” are included with the switch shipment. Instruction Sheets 769-510 and 769-511 cover installation, operation, and adjustment of the 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.

Note: 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.

Installation

Operating Pipe Preparation

If desired, the operating pipes can be cut to length (if not pre-cut 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.

Users supplying their own operating pipe should determine which section of operating pipe is to be the lowest and thread one end of it for installation of the operating handle. Provide sufficient thread to allow the pipe to extend approximately 1/4-inch (6-mm) below the handle coupling.

Mounting to Wood

When mounting the switch and its operating mechanism to a wood structure or wood pole, S&C recommends suitably sized square washers be placed under the nuts. S&C also recommends using spring-type washers between the square washers and nuts to compensate for wood shrinkage and thus maintain fastener tightness. See Figure 2.

Uncrating the Switch

STEP 1. Remove the switch poles and bell-crank base(s) or bracket(s), if applicable, from their crates and arrange them on the ground in the same order in which they will be mounted on the structure. Protect the bearings from contamination by dirt, mud, oil, etc. If necessary, use blocks to keep the bearings clear of the ground.

Attaching Couplings to Switch Poles

NOTICE

An adjustable pipe coupling is included for each interphase pipe section. Typically, these adjustable couplings are attached to the center switch pole except for tiered-upright mounting configurations.

STEP 2. Attach pipe couplings to the operating lever of each switch pole. Each pipe coupling includes 1/4-inch (6-mm) and 3/8-inch (10-mm) spacers. Position the spacers, included with each coupling, as shown in the section views on the erection drawing. See Figures 3 and 4.

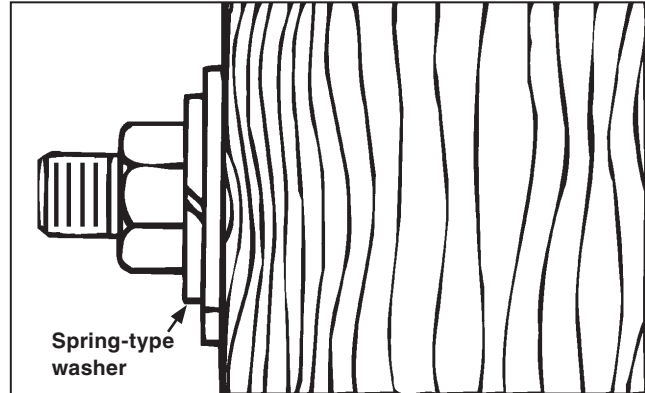


Figure 2. Applying the spring washer.

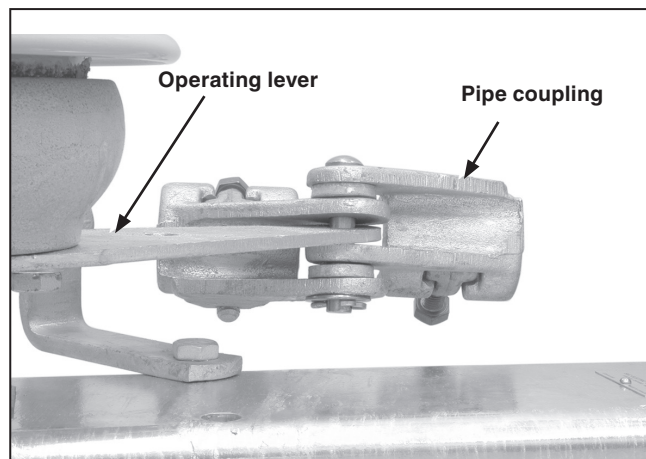


Figure 3. Assembling the pipe coupling to the operating lever—interphase pipe on both sides of the operating lever.

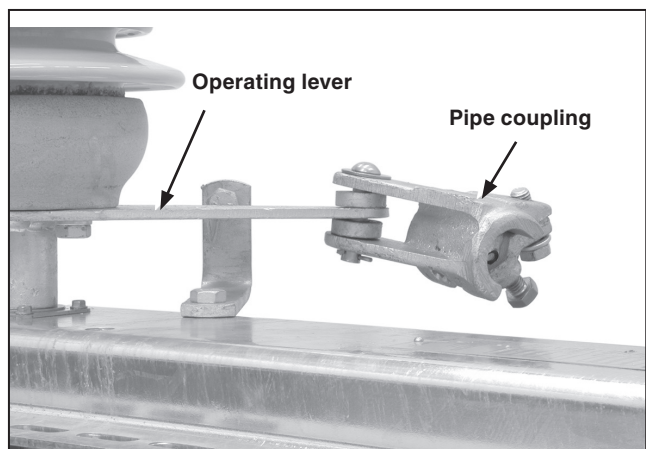


Figure 4. Assembling the pipe coupling to the operating lever—interphase pipe on one side of the operating lever.

Attaching the Bell-Crank Assembly

STEP 3. Attach the bell-crank assembly to its base or bracket (pole-mounted arrangements only). See Figure 5.

Attaching Couplings to the Bell-Crank Assembly

STEP 4. If a bell-crank assembly is mounted between switch poles, the bell crank will be connected to the interphase pipe by a drag-link pipe section and an offset coupling. Attach one end of the drag-link pipe section to the driven arm of the bell crank. Then, attach the specified offset coupling to the other end of the drag-link pipe section. See Figure 6.

Lifting the Switch

NOTICE

Do not lift the switch poles by rigging on the “live parts” or subject these parts to undue stress from slings or fall lines. Misalignment of the contacts and the interrupters may result.

STEP 5. Hoist the individual switch poles and bolt them into position on the pole or structure as shown on the erection drawing. See Figure 7.

NOTICE

Make sure the surfaces on which the switch pole bases are mounted are flat and true. Mounting to an uneven surface can cause the bases to twist, placing undue strain on the insulators and throwing the blades out of alignment, resulting in difficulties operating the switch. Use shims as required.

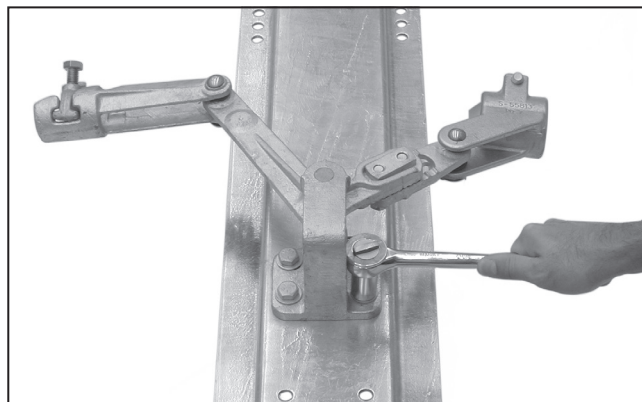


Figure 5. Attaching the bell-crank assembly.

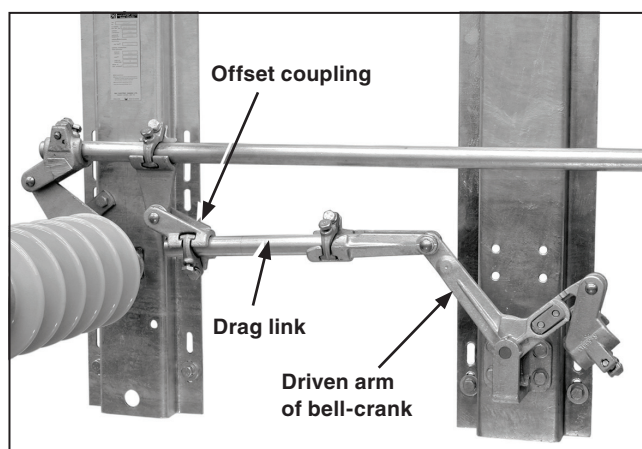


Figure 6. Typical outboard bearing configuration, vertically mounted *between* switch poles.

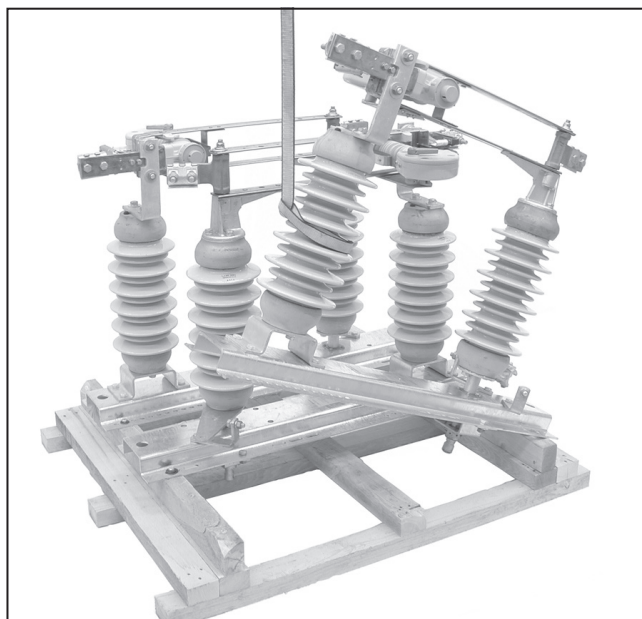


Figure 7. Hoisting the switch pole into position.

Installation

- STEP 6.** Hoist the bell-crank assembly, including base or bracket, and bolt it into position as shown on the erection drawing. See Figure 8.
- STEP 7.** To minimize time-consuming final adjustments make sure the switch is fully closed. Tie the switch blades to their stationary main contacts. See Figure 9.
- STEP 8.** Make sure the bell-crank is held in the 45-degree position. The bell-crank and bell-crank bearing have indexing ridges to facilitate alignment. See Figure 10.



Figure 8. Hoisting the bell-crank into position.

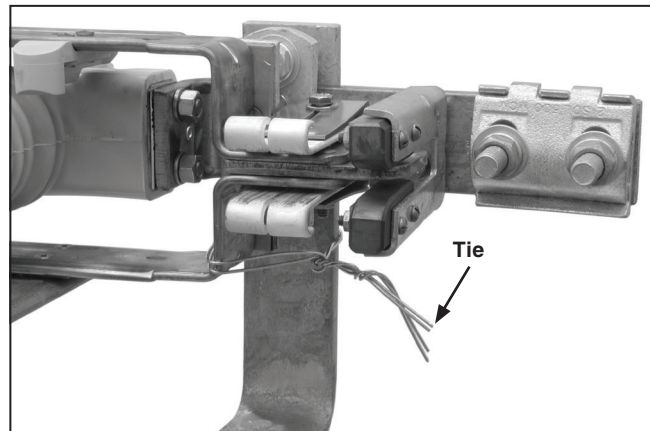


Figure 9. Tying the switch blade to the main contacts.

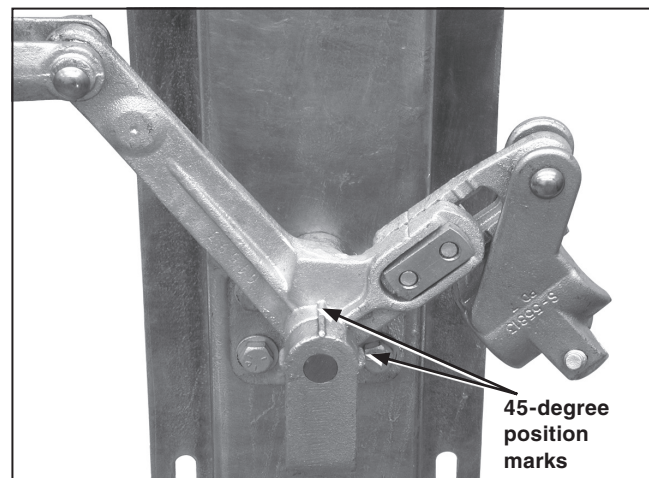


Figure 10. A bell-crank in the 45-degree position.

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 9.** To properly install piercing set screws:
- Make sure the cutting tip of the piercing set screw does not protrude through the body of the clamp.
 - Insert the operating pipe section into the coupling and finger-tighten the clamp bolt(s).
 - Adjust the operating pipe to the correct length. Then, tighten the clamp bolt(s) to final tightness.
 - Tighten the piercing set screw, piercing the pipe, and continue turning until a firm resistance is felt.
 - Make sure the clamp bolt(s) are tight. See Figure 11.

Installing the Interphase Pipe

- STEP 10.** Install the horizontal pipe sections connecting the switch poles and the bell-crank assembly. See Figure 12. Follow the directions in the “Installing Pipe Couplings with Piercing Set Screws” section.

Torque the clamp bolt of each pipe-coupling clamp to final tightness, but do not tighten the associated set screw until the mechanism has been adjusted to attain full closure of all three poles.

- STEP 11.** Make sure the bell-crank is held in the 45-degree position. The bell-crank and bell-crank bearing have indexing ridges to facilitate this alignment. See Figure 10 on page 12.

NOTICE

The bell-crank arms should be within 5 degrees of the 45-degree position for the most favorable mechanical advantage when the switch is in both the **Open** and **Closed** positions.

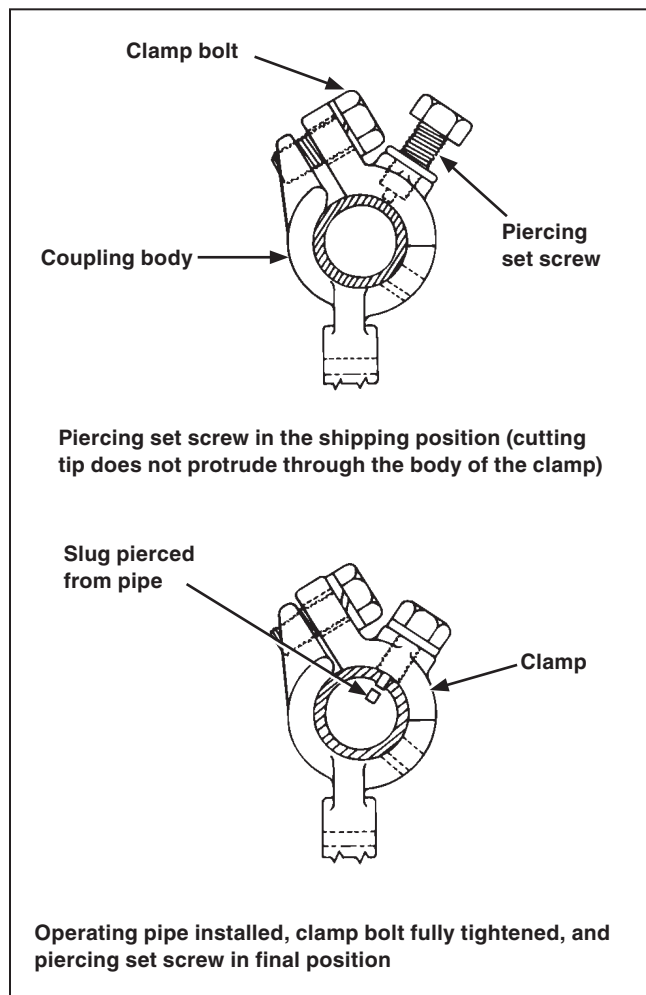


Figure 11. Installing the pipe couplings.

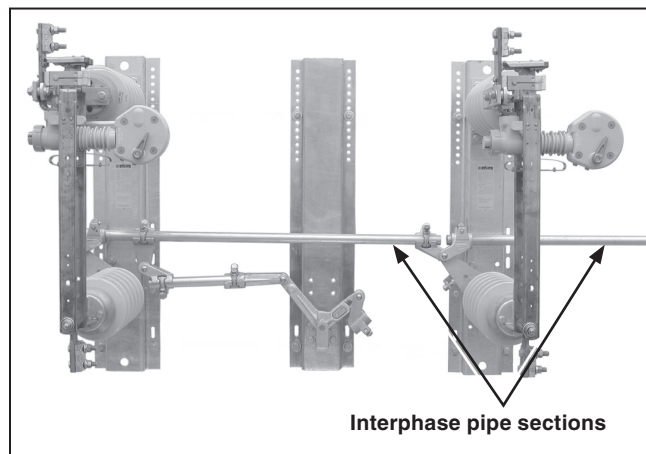


Figure 12. Pipe connecting the switch poles.

Installation

STEP 12. *If the bell-crank assembly is mounted outboard of the switch poles:* Install the pipe section connecting the driven arm of the bell-crank to the nearest switch pole. See Figure 13. Follow the directions in the “Installing Pipe Couplings with Piercing Set Screws” section on page 13.

Torque the clamp bolt of each pipe-coupling clamp to final tightness, and continue turning until a firm resistance is felt.

If the bell-crank assembly is mounted between switch poles: Connect the drag link to the interphase pipe using the offset coupling previously attached to the drag link in Step 4 on page 11. See Figure 14. Follow the direction in the “Installing Pipe Couplings with Piercing Set Screws” section on page 13.

Torque the clamp bolt of each pipe-coupling clamp to final tightness, and continue turning until a firm resistance is felt.

Installing the Vertical Operating Pipe

S&C recommends making up each coupling connection as work progresses from the top down.

STEP 13. One of the pipe sections furnished is threaded at one end to accommodate the operating-handle assembly. See Figure 15. Install this section of pipe last, with the threads at the lower end.

If only one vertical operating-pipe section is required, proceed to Step 16 on page 15.

Note: 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.

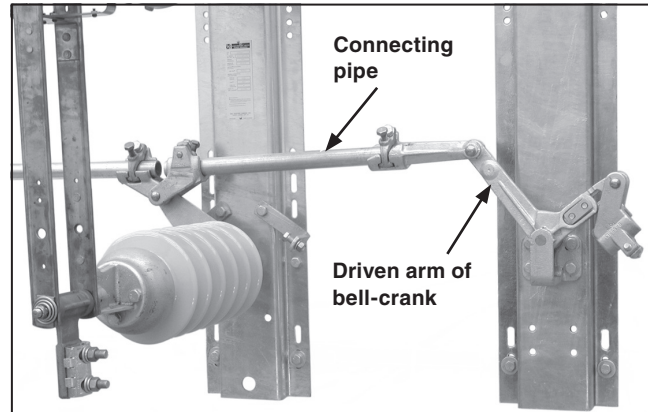


Figure 13. Pipe connecting the bell-crank.

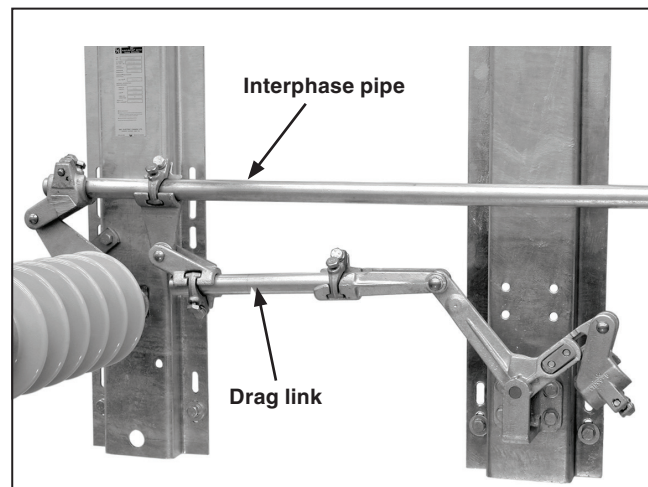


Figure 14. Connecting the drag link to the interphase pipe.



Figure 15. A threaded vertical operating pipe.

STEP 14. Mount the rod guide(s) with the arm upward on the pole or structure in accordance with the dimension shown on the erection drawing. See Figure 16. A positioning stud is furnished which holds the rod guide arm at 45 degrees. When an adjustable rod guide is included (for the tiered-outboard switch mounting configuration only), it should be mounted nearest the switch.

STEP 15. Install the upper section of operating pipe between the bell crank and the uppermost rod guide with the rod guide arm pointing upward at a 45-degree angle. See Figure 17. Follow the directions in “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 the rod guides in the same manner.

Installing the Operating Handle●

STEP 16. Mount the operating handle 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 18.■

● If suffix “-S8” or “-S9” is specified, refer instead to S&C Instruction Sheet 769-510, “S&C Switch Operators - Type AS-10.” If suffix “-S16” is specified, refer instead to S&C Instruction Sheet 1045M-510, “6801M Automatic Switch Operators, Reciprocating and Rotating Switch Operation: *Installation.*”

■ The grounding recommendations described 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.



Figure 16. Attaching the rod guide.

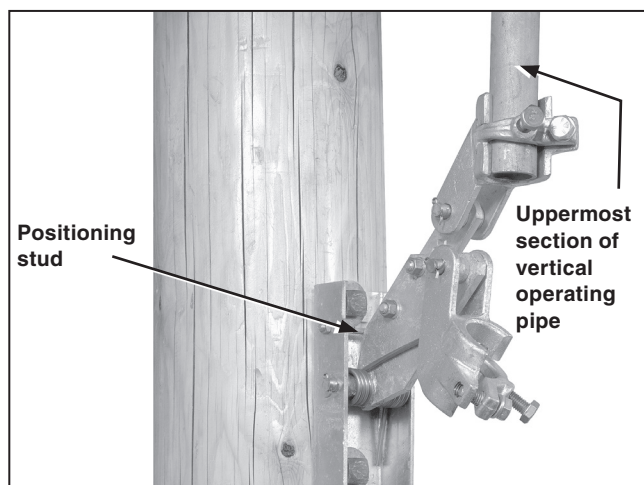


Figure 17. Installing the upper operating pipe section into the rod guide.

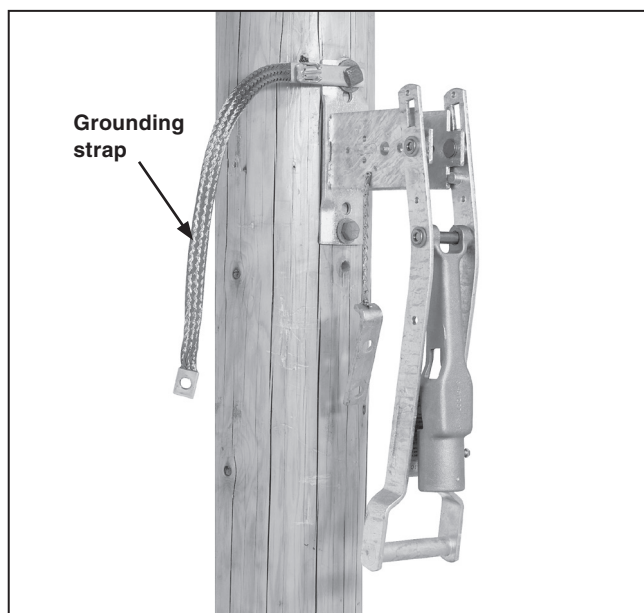


Figure 18. Mounting the operating handle.

Installation

STEP 17. Install the lowest vertical operating-pipe section by threading one end of the pipe into the coupling on the operating handle. Approximately ¼-inch (6 mm) of thread should extend through the coupling. Tighten the locknut. See Figure 19.

STEP 18. Insert the upper end of this pipe section in the lowest rod-guide coupling (or, if only one vertical pipe section is used, the bell-crank coupling) and, while holding the operating handle at a point approximately 20 degrees from the **Closed** position, tighten the rod-guide (or bell-crank) clamp bolt. See Figure 20.

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.

STEP 19. 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. See Figure 21. Then, connect the lower end of the strap to a suitable earth ground, using the grounding connector provided at that end of the strap. ●

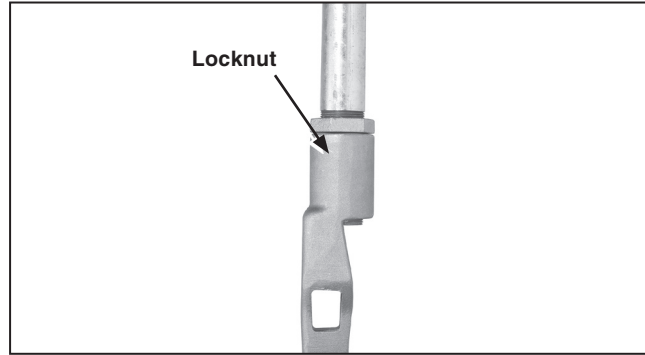


Figure 19. Installing the lowest operating pipe section into the operating handle assembly.

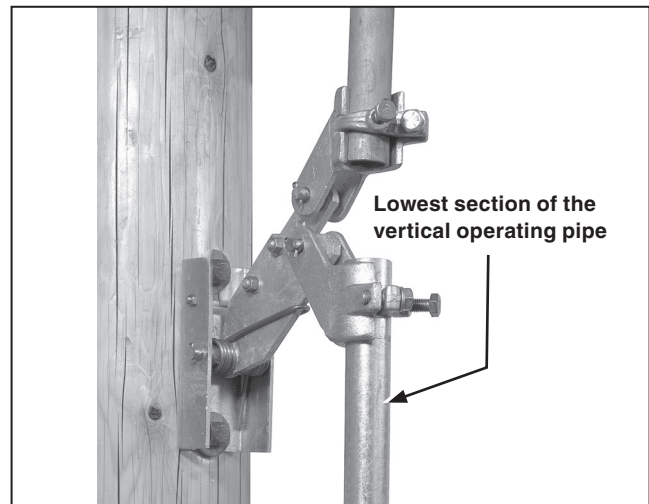


Figure 20. Installing the lowest operating pipe section into the rod guide.

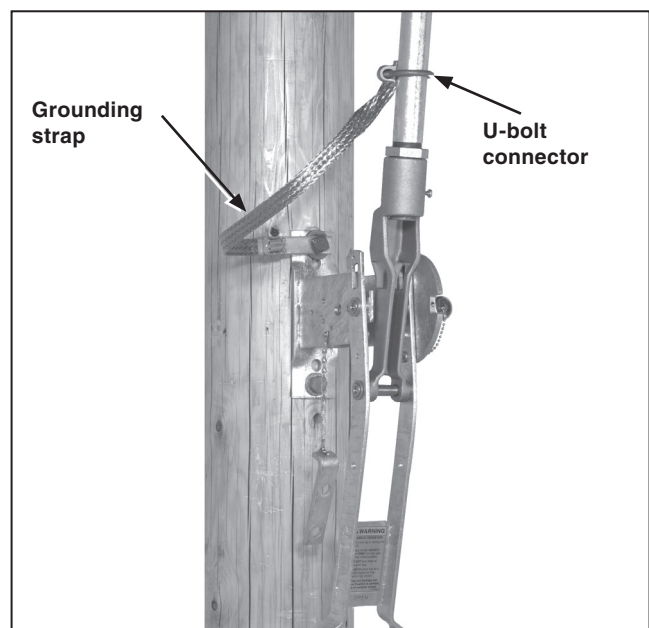


Figure 21. Attaching the grounding strap.

● If suffix “-S8” or “-S9” is specified, refer instead to S&C Instruction Sheet 769-510, “S&C Switch Operators - Type AS-10.” If suffix “-S16” is specified, refer instead to S&C Instruction Sheet 1045M-510, “6801M Automatic Switch Operators, Reciprocating and Rotating Switch Operation: *Installation*.”

Checking Alignment

- STEP 20.** Remove the ties holding the switch blades to their stationary main contact assemblies. See Figure 22.
- STEP 21.** Remove the 45-degree positioning stud from each rod guide. See Figure 17 on page 15.
- STEP 22.** Open and close the switch slowly to ensure no operational difficulties are encountered due to undetected damage in shipping.

⚠ WARNING

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

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

Failure to operate the switch properly can result in arcing, switch damage, serious injury, or death.

- STEP 23.** Move the operating handle slowly to the **Closed** position. See Figure 23. A definite resistance should be felt at the end of the stroke, indicating all slack in the operating linkage has been taken up.
- STEP 24.** If there is still slack, repeat the procedure in Step 18 but move the operating handle more than 20 degrees in the opening direction before torquing the clamp bolt on the lowest rod guide (or bell-crank) coupling. See Figure 24.

Conversely, if considerable force is needed to move the handle to the fully **Closed** position, or if the handle does not swing 180 degrees to the fully **Open** position, loosen the clamp bolt on the lowest rod guide (or bell-crank) 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 bell-crank) coupling. Proper “resistance” in the operating linkage is essential to ensure positive switch closure.

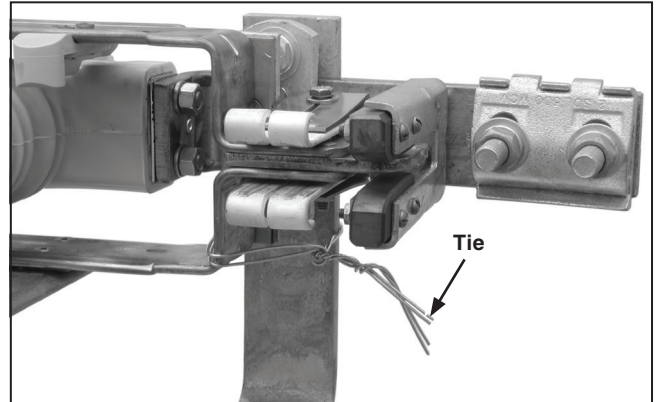


Figure 22. Removing the tie at the stationary main contact assembly.



Figure 23. Verifying the stack has been taken up in the operating linkage.

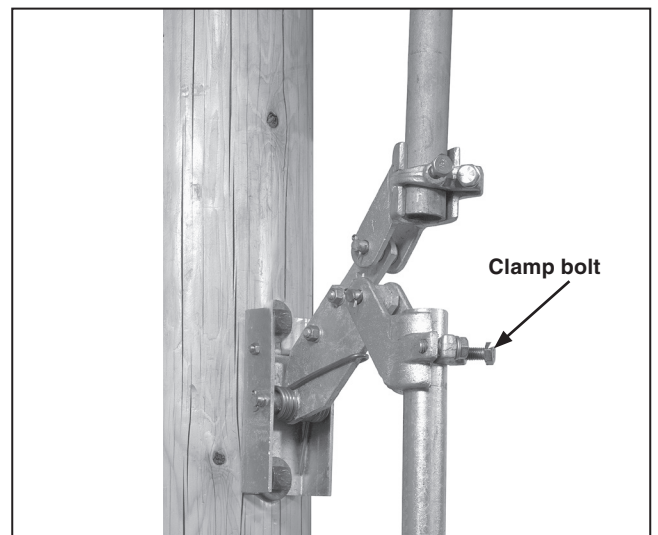


Figure 24. Torquing the clamp bolt at the lowest rod guide (or bell-crank) coupling.

Installation

If a key interlock is used (standard minor modification suffix “-S6” or “-S6L”), proceed to Step 25. Otherwise, proceed to Step 27 on page 19.

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 $\frac{3}{4}$ -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 25.

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 26.

NOTICE

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

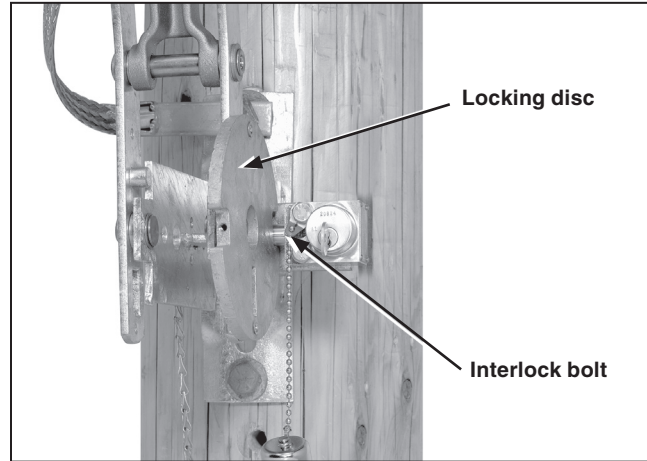


Figure 25. Attaching the key interlock to the interlock bracket.

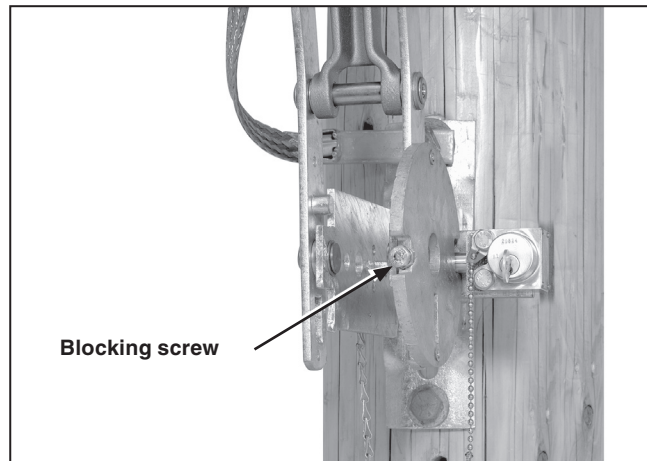


Figure 26. The blocking screw in the interlock disc.

Checking Operation

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

⚠ WARNING

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

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

Failure to operate the switch properly can result in arcing, switch damage, serious injury, or death.

Make sure the following conditions exist:

- (a) With the operating handle as far as it will go in the closing direction, all main contacts of the interrupter switch are fully closed with the blades against their blade stops. See Figure 27.
- (b) Each switch-pole operating lever should lie against its closed stop. See Figure 28.

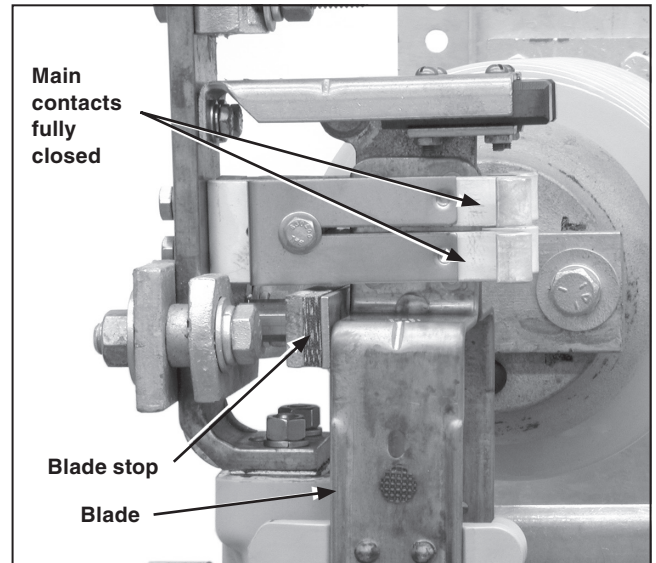


Figure 27. Checking that the main contacts are fully closed.

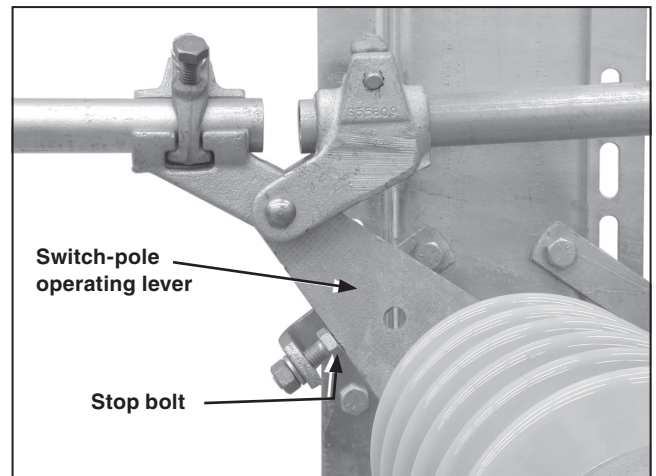


Figure 28. Verifying the switch-pole operating lever is within $\frac{1}{16}$ -inch (2 mm) of the closed stop bolt.

Installation

If none of the switch poles are fully closed, the effective length of the vertical operating pipe may need to be increased. Loosen the vertical operating-pipe clamp bolt on the lowest rod-guide (or bell-crank) coupling. See Figure 29. Move the operating handle approximately 20 degrees from the **Closed** position and then torque the rod-guide (or bell-crank) coupling clamp bolt. Then, move the operating handle to the fully **Closed** position and recheck for adherence to the conditions described above.

In the unlikely event that only one or two switch poles are fully closed, loosen the clamp bolt(s) on the interphase pipe coupling(s) at the affected switch-pole operating lever and reposition the pipe coupling to increase or decrease the effective length of the interphase operating pipe. Torque the clamp bolt of each pipe-coupling clamp to final tightness. Tighten the associated piercing set screws, piercing the pipe, and continue turning until a firm resistance is felt. See Figure 30.

- (c) With the operating handle as far as it will go in the opening direction, the switch blades are 90 degrees from the **Closed** position. See Figure 31.

In the unlikely event the above-described condition is not met, more switch blade travel is required. 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 $\frac{3}{8}$ -inch bolt or metal pin into the hole provided.

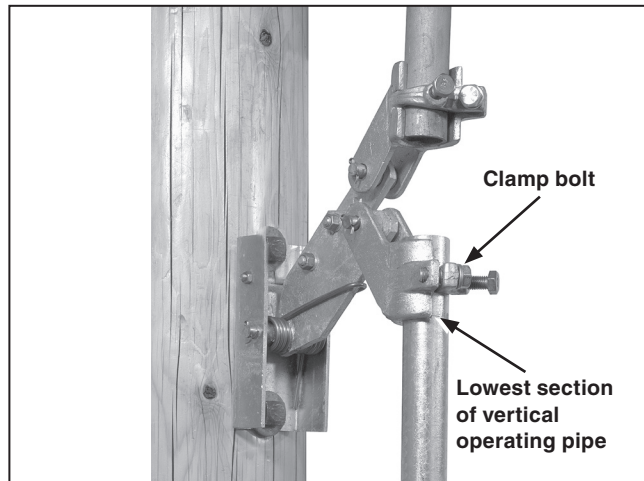


Figure 29. Increasing the effective length of vertical operating pipe.

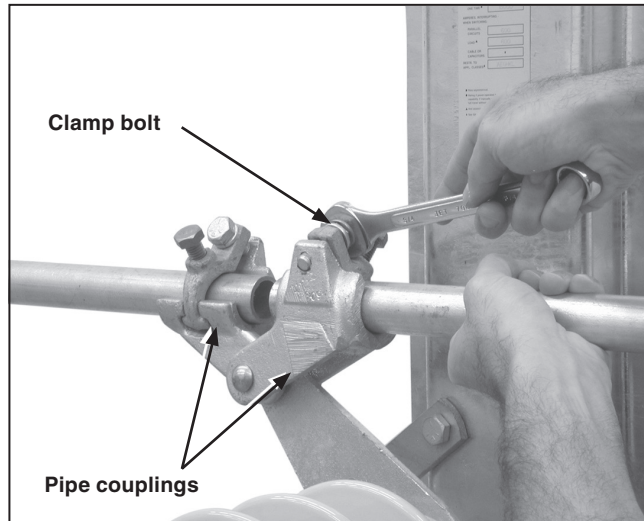


Figure 30. Readjusting the interphase pipe.

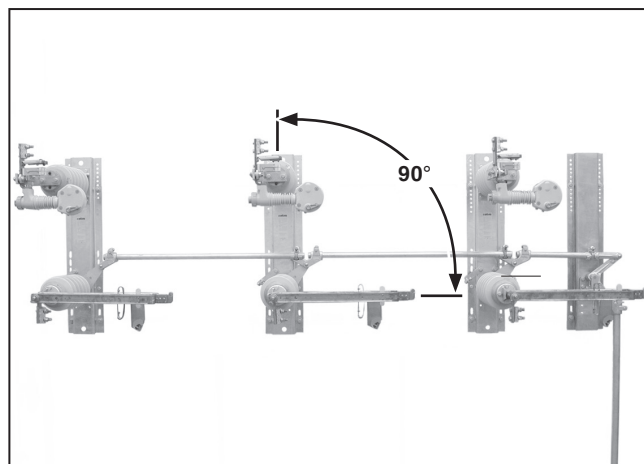


Figure 31. Checking the switch blades are 90 degrees from the Closed position.

Loosen the two clamp bolts on the drive arm of the adjustable bell crank.● See Figure 32. Shorten the drive arm of the adjustable bell crank one step [$\frac{1}{8}$ -inch (3.2 mm)] and retighten the bolts. Shortening the drive arm increases switch blade travel. Then, readjust for full operating-handle travel as described in Steps 23 and 24 on page 17.

Repeat this procedure—shortening the driving arm of the adjustable bell crank in one-step increments and readjusting for full operating handle travel—until full switch-blade travel is attained.

When satisfactory travel adjustment of the operating handle and switch have been attained, torque the bolts on the driving arm of the adjustable bell crank to final tightness.

NOTICE

After readjusting, retighten the locknut on each adjustable pipe-coupling take-up screw, the clamp bolt and piercing set screw on the pipe coupling at the rod guide (or bell crank) immediately above the operating handle, and the clamp bolts on the adjustable lever arm of the bell crank.

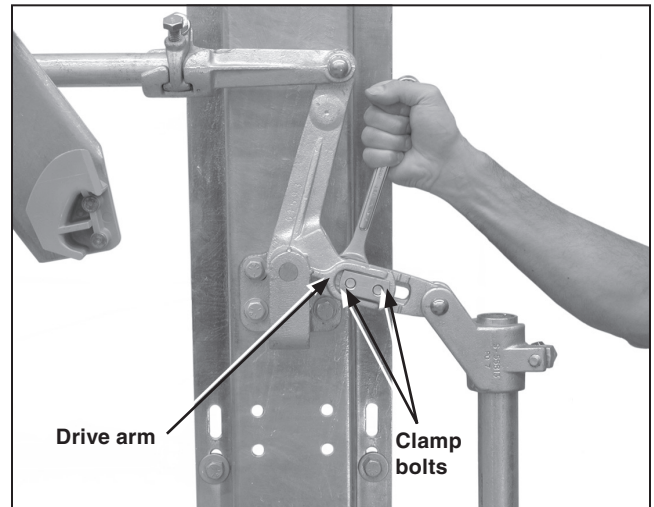


Figure 32. Shortening the drive arm of the adjustable bell crank.

- For the tiered-outboard switch mounting configuration, no bell-crank is used. In that case, switch-travel adjustment may be accomplished at the adjustable (upper) rod guide. (Lengthening the driven arm increases the amount of switch travel.) Then, readjust for full operating-handle and switch-blade travel as described in Steps 23 and 24 on page 17.

Installation

STEP 28. Open and close the switch slowly several times.

⚠ WARNING

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

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

Failure to operate the switch properly can result in arcing, switch damage, serious injury, or death.

Check the operation of each switch pole. The following conditions must be met on each phase:

- 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 in Figure 33, View A-A.

- In the fully **Closed** position, clearance between the blade-closing cam and the interrupter-closing lever must be within the limit shown in Figure 33. Also, the clearance between the blade shunt contact and the interrupter housing must be as shown in Figure 33.
- As the blade moves in the opening direction, the blade shunt contact must firmly engage the interrupter housing before the blade disengages from the jaw contact. (The shunt contact may be bent as required to conform to these conditions.)

If adjustment is required, loosen the bolts that fasten the interrupter to the jaw-contact casting and reposition the interrupter. It also may necessary to loosen the bolts that fasten the jaw-contact casting to its mounting bracket and to slightly rotate the casting in order to achieve the necessary clearances. Retighten the bolts, making sure the blade engages the stationary contact on-center.

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

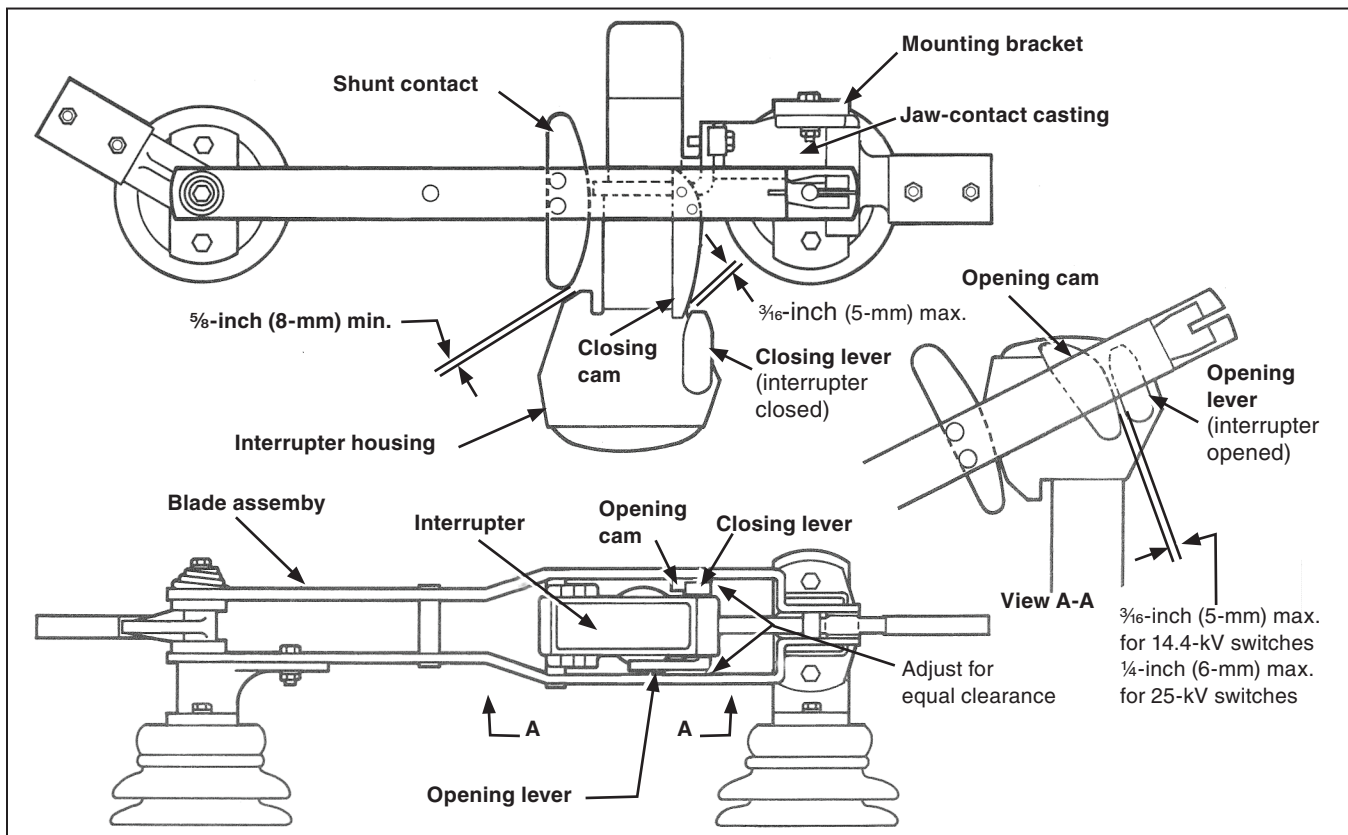


Figure 33. Operating checkpoints.

Connecting the High-Voltage Conductors

STEP 29. When high-voltage conductors are to be connected using aluminum-alloy body connectors● the following procedures should be used:

- (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 5300 series offered by S&C, designated by the connector manufacturer as being suitable for direct attachment to copper bearing alloy terminal pads.

Opening and Closing the Switch

⚠ DANGER

The interrupters and terminal pads of the Alduti-Rupter Switch may be energized with the interrupters 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. Then, install suitable grounding equipment.

Failure to observe these precautions may result in serious injury or death.

NOTICE

This interrupter switch is not intended for breaking fault currents.

STEP 30. Remove the padlock from the locking bar on the operating handle assembly. Withdraw the locking bar. See Figure 34.

- (a) If the operating handle assembly is furnished with a key interlock, disengage the interlock bolt.
- (b) Rapidly swing the handle to the fully **Open** or fully **Closed** position. See Figure 35.
- (c) Always check that all three poles are fully open or fully closed.
- (d) Replace the locking bar and the padlock. Engage the key interlock, if applicable.

⚠ WARNING

When opening or closing the switch, do not slow down or stop part way.

When opening or closing the switch, swing the operating handle vigorously through its full travel without hesitation at any point.

Failure to operate the switch properly can result in arcing, switch damage, serious injury, or death.

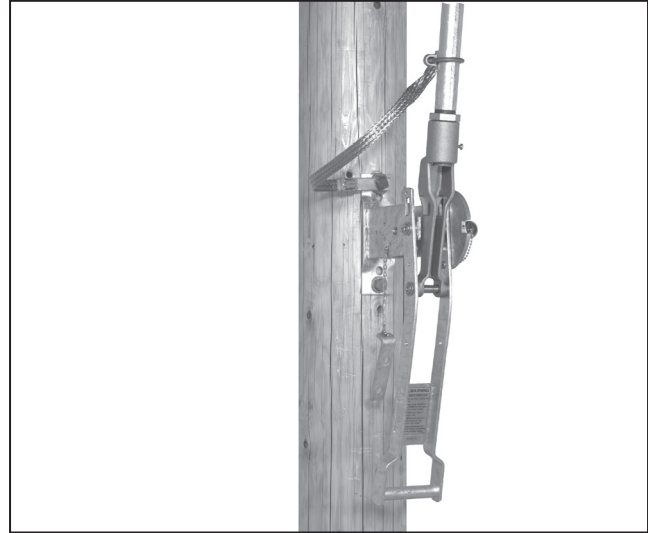


Figure 34. Withdrawing the locking bar and disengaging the key interlock bolt.

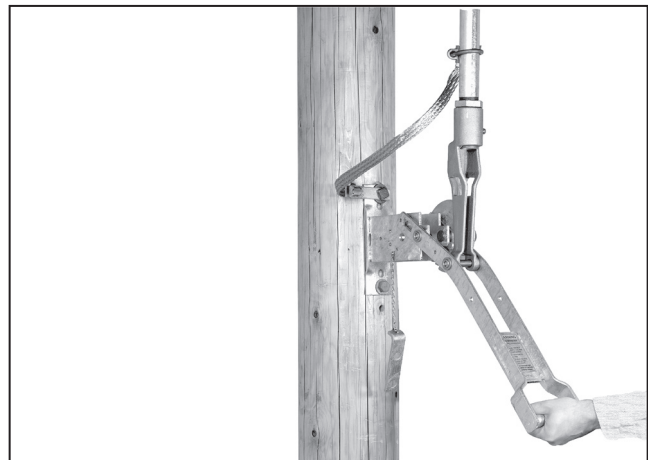


Figure 35. Rapidly swing the operating handle.