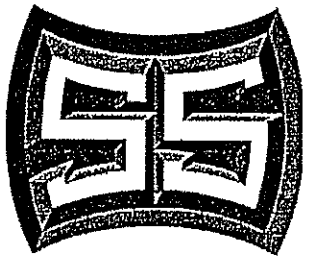


Southern States

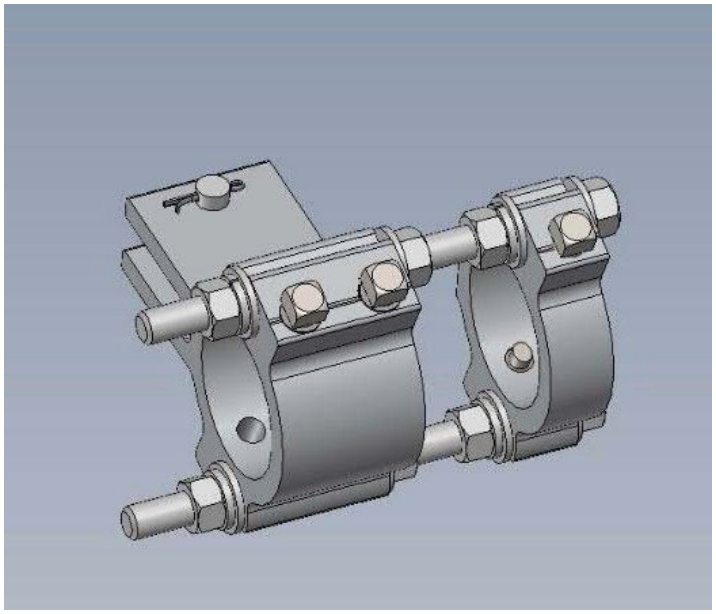
The Quality Name in High Voltage Products

Type EV (Aluminum)
Type EVB (Copper/Bronze)
Vertical Break, Disconnect Switch
Voltage: 7.2kV - 46kV
Amps: All Ratings

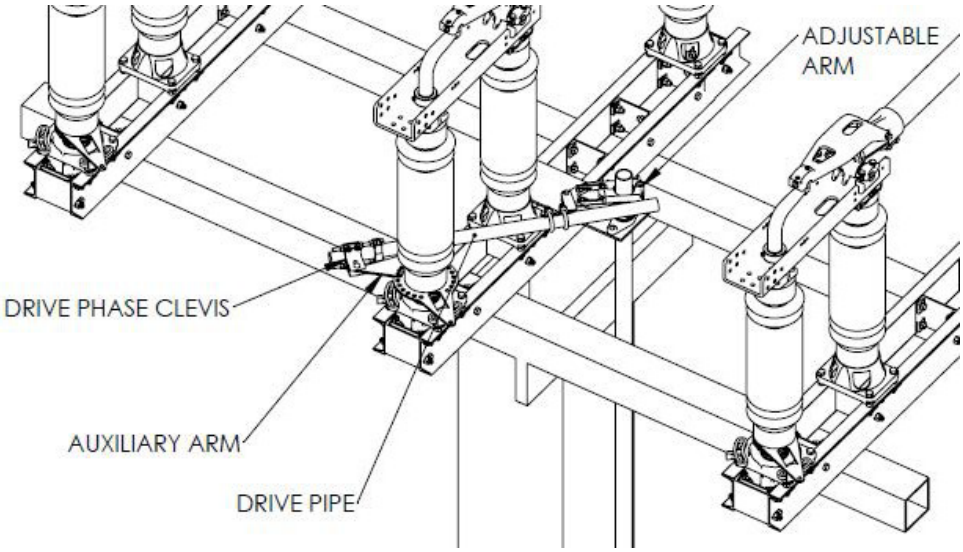
30 Georgia Ave,
Hampton, GA 30228
770-946-4562 Telephone
770-946-8106 Fax

ATTENTION:

Southern States will begin supplying a portion of new operating mechanism designs with Rapid-Set clevises for orders designed after 9/1/23. If your Operating Mechanism print calls for Rapid-Set clevises (see image below for an example), please utilize the instructions on the following pages for all linkage adjustments. If not, please adhere to the standard instructions provided.

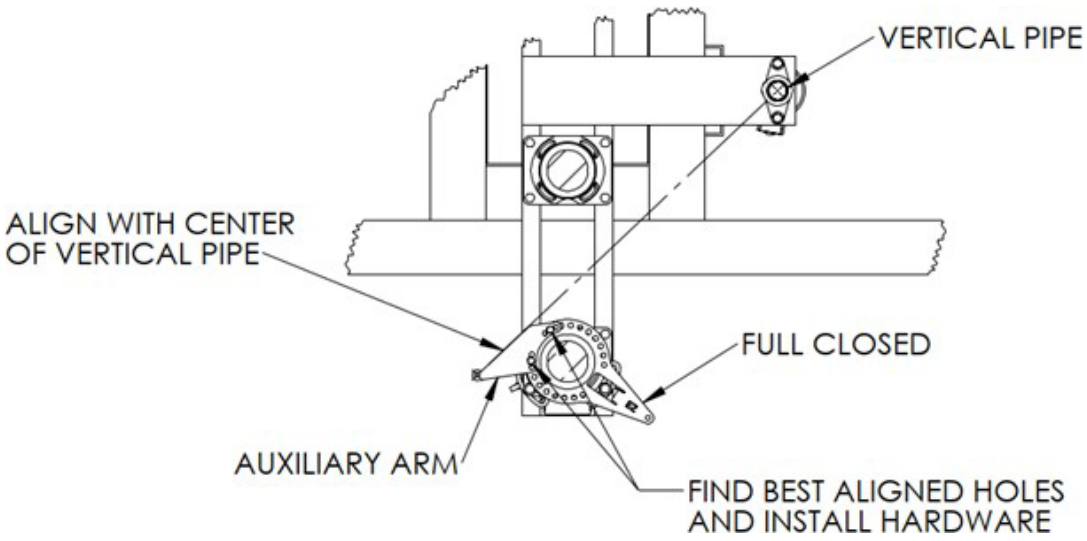


Please scan or use the link below for video instructions of Rapid-Set.
Southern States Rapid Set Instructions



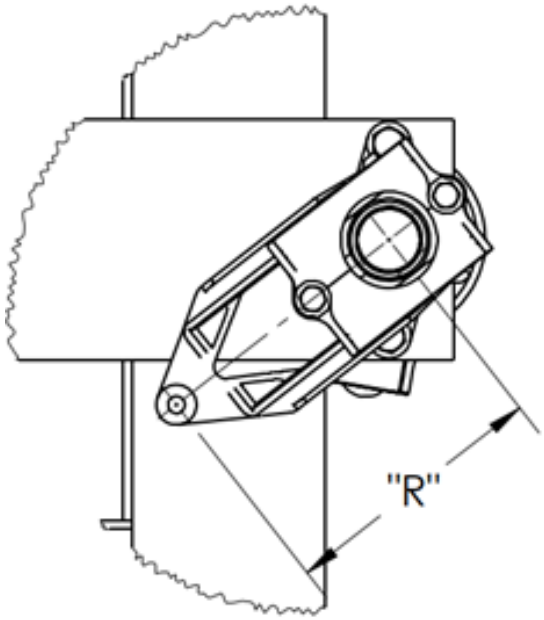
STEP 1:

Install the auxiliary arm by aligning the straight edge of the arm with the center of the vertical pipe and bolting it into place using two of the provided mounting holes. Do this with the switch phase set to the full closed position as shown below.



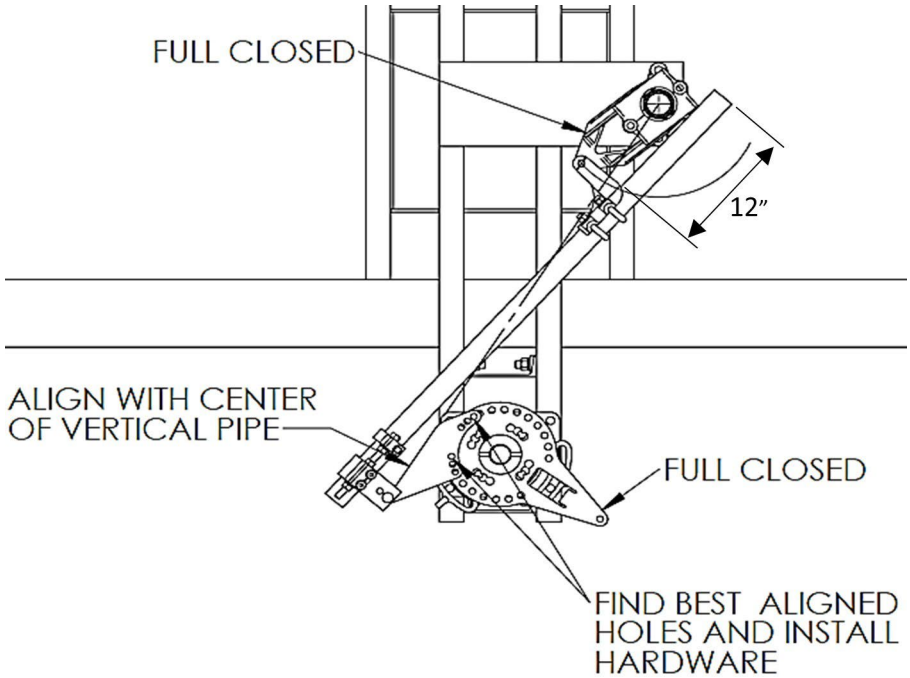
STEP 2:

Install the adjustable arm with the radius “R” set to the recommended length provided in the operating mechanism drawings.



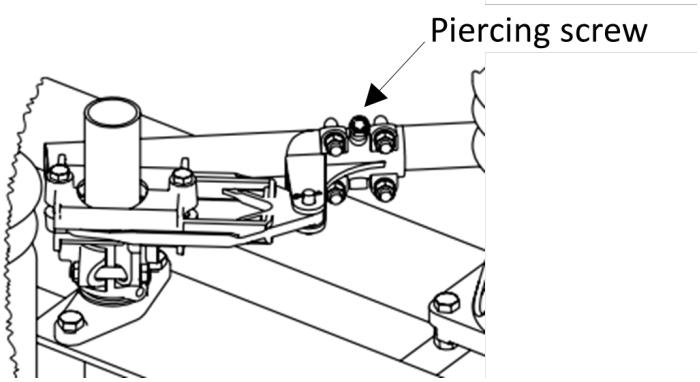
STEP 3:

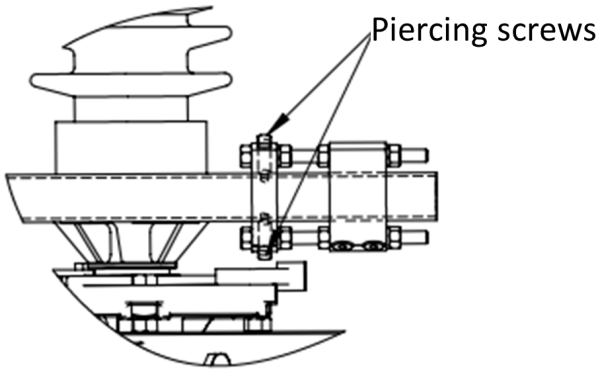
Install the auxiliary arm Rapid-Set clevis and drive pipe. Ensure that roughly 12” of pipe extends beyond the adjustable arm clevis connection so that the pipe makes contact with the adjustable arm in the position shown. This may be the open or closed position depending on the job specific drawings. The pipe should contact the adjustable arm in this position.



STEP 4:

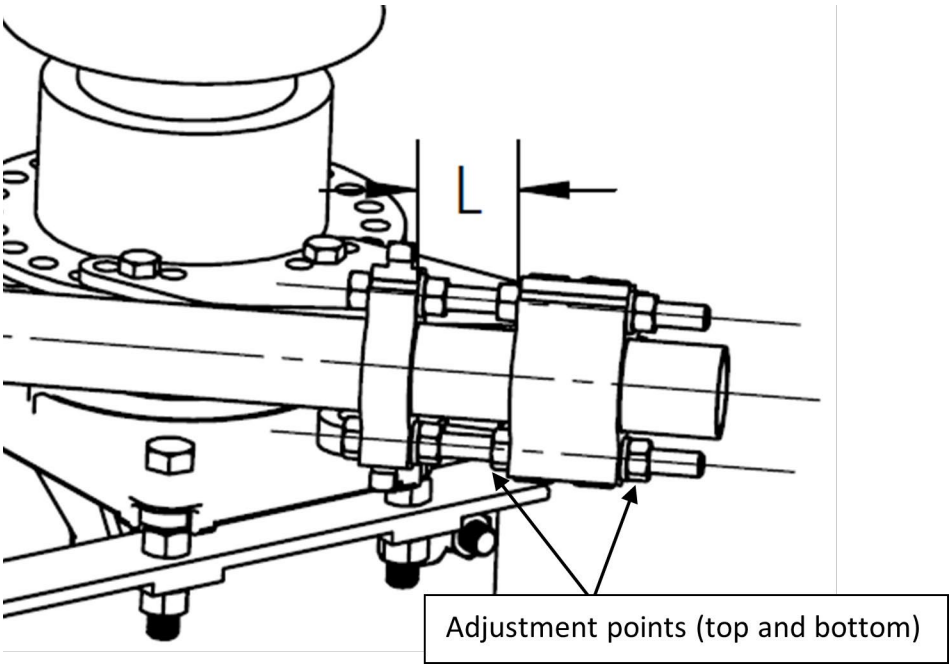
With the auxiliary arm properly aligned with the vertical pipe and the switch phase in the full closed position, pierce the pipe at both ends. **NOTE:** U-bolt style clevises require pre-drilling on all pipes thicker than SCH40. Drill guides are provided on the operating mechanism BOM when required. Pierce the adjustable arm clevis by hand tightening until it penetrates the pipe and continue until snug (note piercing screw may still have threads showing). Do not remove plastic caps from the Rapid-Set clevis at this time. To pierce the Rapid-Set clevis, tighten each piercing screw until the head contacts the aluminum extrusion. Do not over tighten.





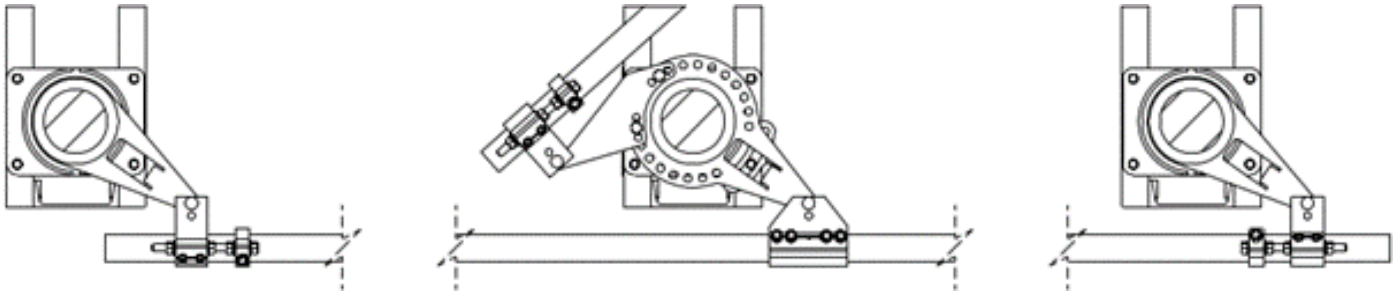
STEP 5:

Begin to manually open the phase using the operator. Observe the phase closed and open stops during operation and modify the length of the adjustable arm as needed to provide the proper amount of travel. Lengthen the arm to add travel and shorten the arm to decrease travel. The mechanism should have sufficient toggle (spring load) during closed and open position. To balance the force at closed and open positions, adjust the length “L” of the Rapid-Set clevis by adjusting the four nuts shown below. Ensure that both the top and bottom sets are adjusted in equal increments.



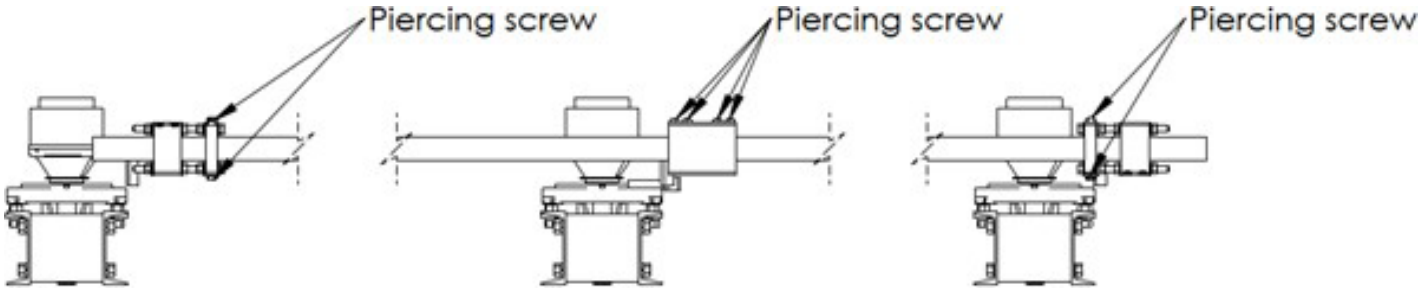
STEP 6:

After the drive phase is adjusted to operate correctly, set all phases to full closed, and install the interphase pipe following the procedure below.

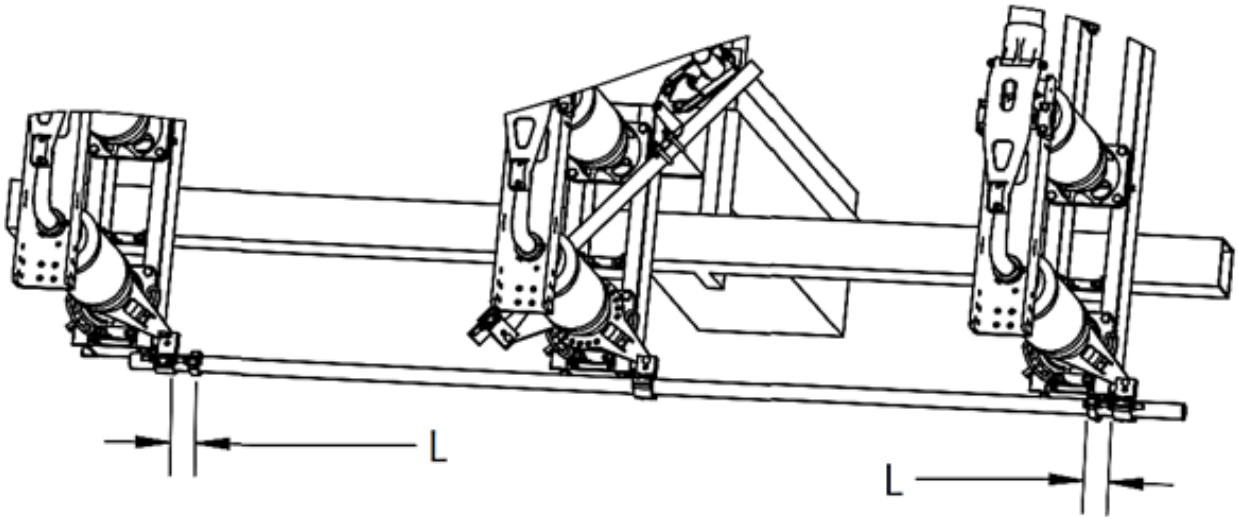


For switches driven by the center phase:

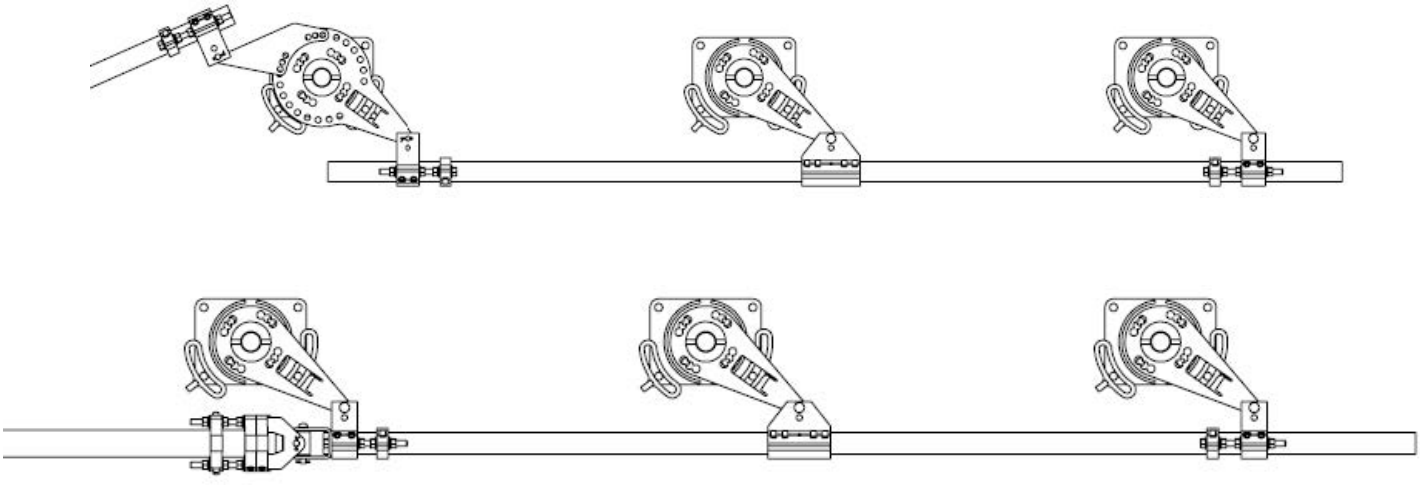
a. With the interphase pipe centered and all clevises in place, pierce the interphase pipe at the locations shown. Do not remove plastic caps at this time.



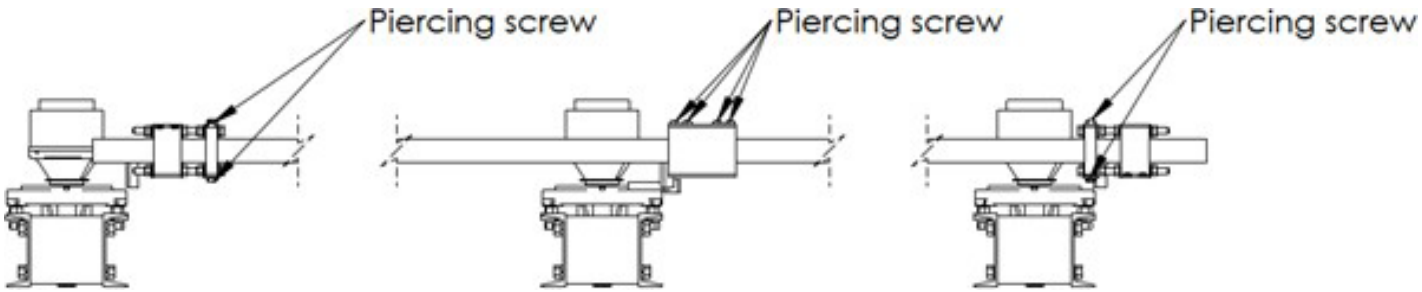
b. Adjust the timing of the two driven phases by adjusting the length “L” of each Rapid-Set clevis.



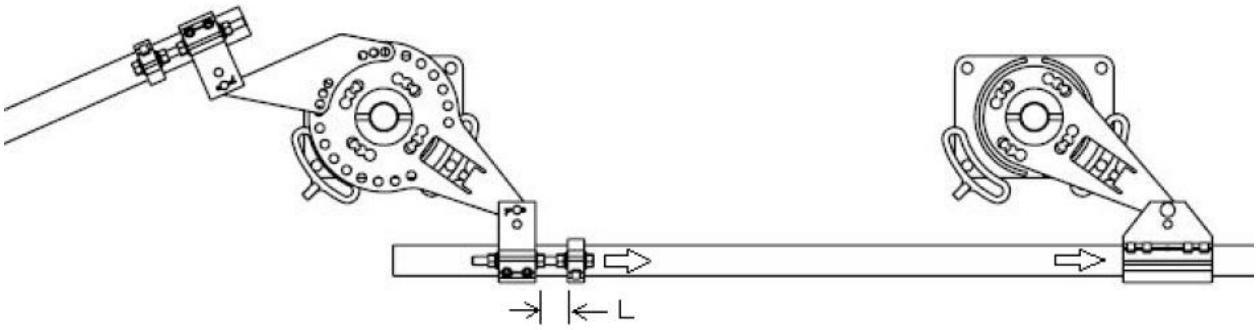
For switches driven by one of the end phases:



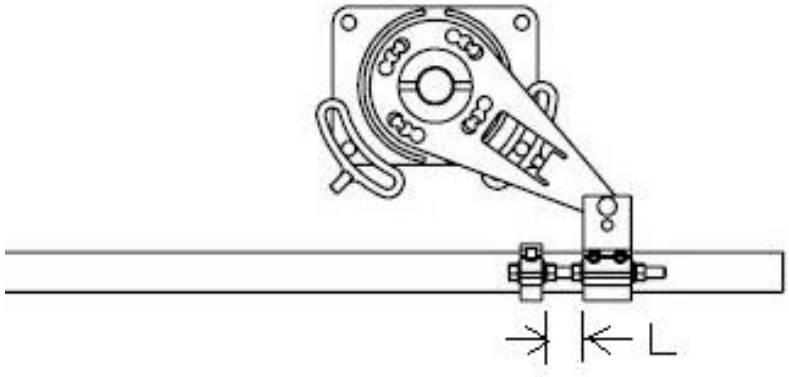
a. With the interphase pipe centered and all clevises in place, pierce the interphase pipe with at the locations shown. Do not remove plastic caps at this time.



b. Adjust the timing of the center phase by adjusting the length “L” of the Rapid-Set clevis attached to the drive phase.



c. Set the timing of the last phase by adjusting the length “L” of the Rapid-Set clevis attached to the last phase.

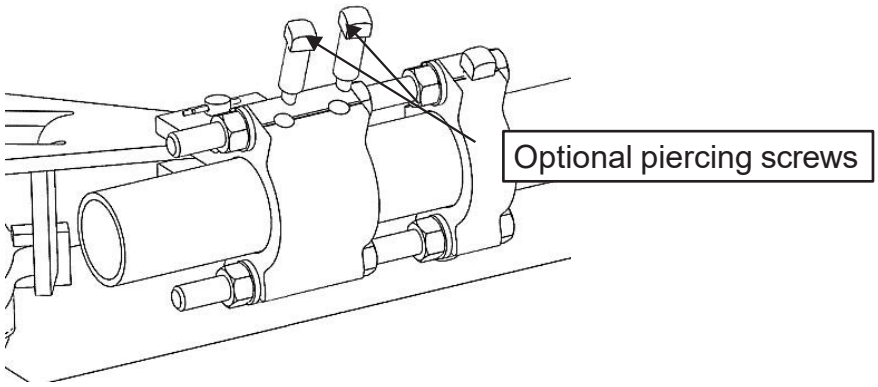


STEP 7:

With all the phases adjusted, open and close the three phase assembly and inspect for proper operation. Once adjustments are finalized, pierce all remaining connections (switch operator, adjustable arm, etc).

STEP 8:

Each Rapid-Set clevis is provided with 2 extra piercing screws. These are for optional use. To install, remove the plastic cover caps and insert the piercing as shown below. Note, adding these will restrict any additional adjustment. Remove them before making any future adjustments and then reinstall them on the bottom side of the clevis.



Safety Information

DANGER

IMPROPER HANDLING, INSTALLATION, OPERATION OR MAINTENANCE OF THIS EQUIPMENT MAY CAUSE IMMEDIATE HAZARDS WHICH WILL LIKELY RESULT IN SERIOUS PERSONNEL INJURY OR DEATH.

WARNING

The equipment covered by this publication must be handled, installed, operated and maintained by qualified persons who have direct knowledge and experience dealing with the hazards involved and are thoroughly trained in the handling, installation, operation and maintenance of high voltage transmission and distribution equipment. These instructions are meant for only such **Qualified Persons**. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

A **Qualified Person** is one who is trained in and has skills necessary:

- to read and comprehend this instruction book – understanding that these instructions are general in nature
- to accept personal responsibility to prepare and maintain an intrinsically safe work environment and maintain control of the work site to safeguard all persons present
- to develop and implement a proper rigging, lifting, and installation plan along with all safety precautions required to insure safe and proper lifting and installation of the equipment.
- to distinguish between energized and non energized parts
- to determine proper approach distances to energized parts
- to properly work with and around energized or de-energized equipment that may be pressurized with gas
- for proper use of personal protective equipment, insulating and shielding materials, insulated tools for working near energized and /or pressurized electrical equipment
- to recognize and take necessary precautions for the unique and dynamic conditions of site and specialized equipment to maintain a safe work environment during handling, installation, operation, and maintenance of high voltage switching equipment

The instructions in this manual are general guidelines for this type of equipment and not specific to the equipment supplied. Portions of it may not be applicable or may not have complete instructions for your specific equipment.

If you do not understand any part of these instructions or need assistance, contact Southern States Service Division at 770-946-4562 during normal business hours (EST) or 770-946-4565 after normal business hours.

Southern States

The Quality Name in High Voltage Switching

LIMITED WARRANTY

SSLLC warrants only to the Warranty Holder (hereinafter defined as the “End User” or the “Immediate Purchaser”, as applicable, pursuant to the terms and conditions of this Limited Warranty as set forth below), that the Product identified below will, upon shipment, be free of defects in workmanship and material for the applicable Warranty Period. The “Warranty Period” is that period of time during which this Limited Warranty is effective, and such period begins on the invoice date issued by SSLLC for the Product, and continues until the earlier to occur of (1) 12 months from the date of installation, (2) 18 months from the date of invoice by SSLLC, or (3) as otherwise specified on the Southern States Proposal. “Installation” shall be defined as the Product being assembled in the intended service location and does not require energization to be complete. If the Product is both purchased and installed within the United States or Canada, this Limited Warranty is granted to each end user of the Product who acquired the Product for its own use during the Warranty Period (“End User”). In all other situations, this Limited Warranty is granted only to the first purchaser of the Product (“Immediate Purchaser”) from SSLLC. No primary or remote purchaser or owner of the Product who is not a Warranty Holder may claim any benefit under this Limited Warranty, or any remedial promise included in this Limited Warranty. SSLLC shall, upon prompt written notice from the Warranty Holder, correct a nonconforming Product by repair or replacement at the sole discretion of SSLLC of the nonconforming Product or any part or component of a nonconforming Product necessary in SSLLC’s discretion to make such Product conforming. Any transportation charges, labor for removing, reinstalling the Product or part, and/or costs related to providing access to the Product shall be the responsibility of the Warranty Holder. Correction in this manner will constitute the Warranty Holder’s exclusive remedy and fulfillment of all SSLLC’s liabilities and responsibilities hereunder. SSLLC’s duty to perform under this limited warranty may be delayed, at SSLLC’s sole option, until SSLLC has been paid in full for all products purchased by the Warranty Holder. No such delay will extend the Warranty Period. If SSLLC does not make such repair or replacement, SSLLC’s liability for damages on account of any claimed nonconformity will in no event exceed the purchase price of the Product in question. This Limited Warranty does not apply to any Product that has been disassembled, repaired, or altered by anyone other than SSLLC. This Limited Warranty will not apply to any Product that has been subjected to improper or abnormal use of the Product. SSLLC has no responsibility to repair or replace any Product or component thereof manufactured by another party, but SSLLC will assign, to the extent assignable, to the Warranty Holder any manufacturers’ warranty that applies to products and components not manufactured by SSLLC.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES. THERE ARE NO OTHER EXPRESS, IMPLIED, OR STATUTORY WARRANTIES. ALL IMPLIED WARRANTIES WHICH MAY ARISE BY IMPLICATION OF LAW, OR APPLICATION OF COURSE OF DEALING OR USAGE OF TRADE, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR OTHERWISE ARE EXPRESSLY EXCLUDED. SSLLC SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY, SPECIAL, OR PUNITIVE DAMAGES, EVEN IF SSLLC HAS BEEN ADVISED OF THE POSSIBILITY OF SAME. THE WARRANTY HOLDER IS SOLELY RESPONSIBLE FOR THE SUITABILITY OF THE PRODUCT FOR ANY PARTICULAR APPLICATION.

Southern States, LLC

Equipment Receipt, Installation, Use, Operation and Maintenance Terms

("Terms of Use")

The purchaser ("Purchaser") of certain Equipment (the "Equipment") identified in the Instruction Manual accompanying these Terms of Use sold by Southern States, LLC ("Southern States"), by Purchaser's acceptance or Use of Equipment in any way, agrees to the Terms of Use set forth below (the word "Use" herein means receipt, testing, inspection, installation, operation, maintenance and otherwise handling the Equipment):

- Purchaser represents and warrants that it is fully qualified to Use the Equipment, and that it is a sophisticated user of the Equipment with a high level of expertise in the Use of the Equipment and Purchaser knows that Southern State is relying on Purchaser's sophistication and expertise with respect to the Equipment.

- The Purchaser will, within seven (7) days after receipt of the Equipment, inspect the Equipment and identify and notify Southern States in writing of any missing parts, damage or defects observed in the Equipment.

- The Purchaser will Use the Equipment, only in conformity with all manuals, data sheets and instructions provided by Southern States, and in keeping with sound engineering, utility and safety practice. Purchaser will at its own expense, provide all necessary labor, supplies, and facilities required to Use the Equipment.

    - The Purchaser may use its own personnel or engage a third party to Use the Equipment. The Purchaser shall insure that it only utilizes personnel who are fully qualified or certified by a reputable certification agency to Use the Equipment. In the event that Purchaser cannot find such qualified personnel, the Purchaser will notify Southern States and seek its advice to determine a mutually agreeable solution.

    - By separate agreement, Southern States may provide such services and the personnel to conduct such services in connection with the installation of the Equipment. In the event Southern States agrees to provide personnel to install, maintain, and operate the Equipment, such personnel will function only in an advisory capacity and shall have no responsibility for the supervision, or the quality or workmanship of such installation, maintenance, or operate of the Equipment.

- The Purchaser shall not install and operate the Equipment in a way such that a single point of Equipment failure leads to a cascading event or consequential damage to any person or property. Purchaser shall ensure redundancy in its system at all times. Purchaser acknowledges and agrees that electric service is by nature subject to interruptions due to Equipment failures and shall not agree to provide service free from the effects of Equipment failures

- The Equipment will be maintained and inspected as provided by this instruction manual and in compliance with best industry practices, but in no event will the Equipment be inspected and tested less frequently than once in every 6 months.

- The Purchaser shall not repair, dismantle, or alter any of the Equipment without Southern States' written consent.
- Any failure of Equipment either in service, testing or inspection will be promptly reported in writing to Southern States within 24 hours of the failure so that adequate evidence can be collected, appropriate diagnostic tests can be conducted, and analysis of the failure can be determined.

- Southern States will have no liability for any direct, indirect, consequential or remote damage or injury, whether or not foreseen or foreseeable, to the Purchaser or any third party or person for any damages or injury to person or property caused by Purchaser's or any third party's actions, whether or not negligent, in the Use of the Equipment. Purchaser shall indemnify and hold Southern States and its employees, officers and directors against any damage or injury caused in whole or part by Purchaser's or any third party's action whether or not negligent, resulting from the Use of the Equipment. Southern States expressly rejects any liability to third parties. The Purchaser expressly waives any claim against Southern States, its employees, officers, directors and affiliates, for injury or damage to person or property resulting from Use of the Equipment not directly and solely caused by Southern States' negligence. For the purposes of clarity, Southern States shall not be liable, and be fully indemnified by the Purchaser, for the following related to the Equipment: normal wear and tear, excessive use and loading, improper interference or maintenance on the part of the Purchaser or third parties, incomplete or false information given by the Purchaser, inappropriate or improper Use, faulty operation, installation or start-up, faulty or careless handling, improper maintenance, use of unsuitable operating materials/substitute materials, defective construction work, hazardous ambient conditions unknown to the Purchaser, chemical, electro-chemical or electrical influences, changes to the subject of delivery made without Southern States consent.

- In the event that Southern States is found by a court of competent jurisdiction or a properly empaneled arbitral body to be liable to the Purchaser for any reason, Southern States shall be entitled to a reduction in the liability by taking into account the exceptions provided by statute, law, and any counterclaims Southern States may have against Purchaser.

- The failure of Purchaser to comply with these Terms of Use herein shall void any and all warranties related to the Equipment. These Terms of Use shall be deemed to be part of the binding contractual agreements between Purchaser and Southern States related to the Equipment and shall govern over any inconsistent term or provision in such other contractual agreements.

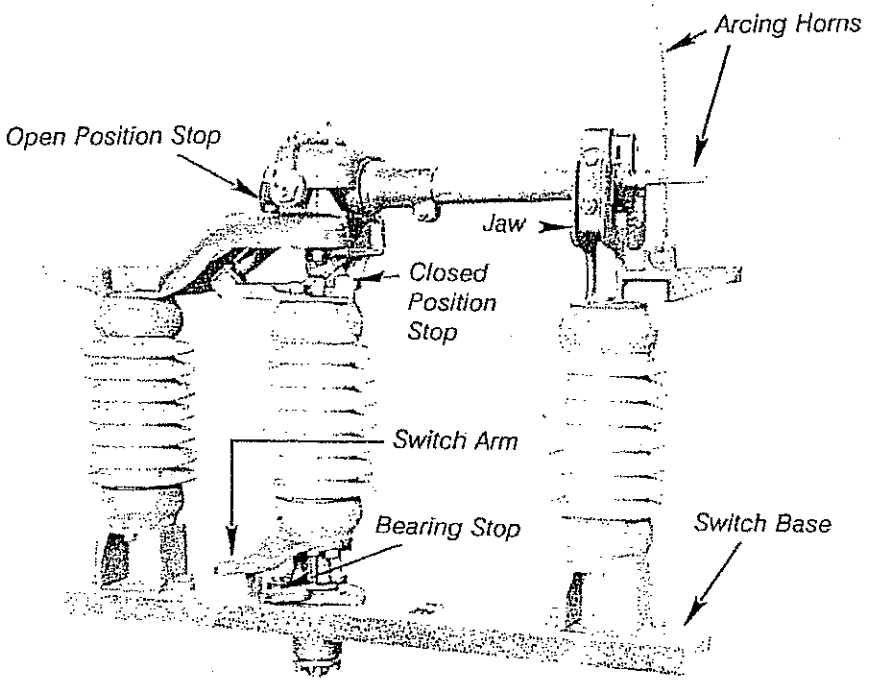


Figure 1: Identification of parts (EV 34.5 kV shown)

1. Uncrate all switch poles, remove the shipping ties and check for damage in transit. If any damage is noted, file a claim with the carrier immediately, and notify the factory.
2. Study the operating mechanism drawing supplied with each switch: there may be differences in switch poles that require their mounting in specific locations.
3. Check the mounting structure for proper elevation and levelness. If the mounting surface is not level, shims should be used to level the switch base.
4. Mount each pole in its proper location, using the bolts specified on the operating mechanism drawing. When lifting, attach slings to the SWITCH BASE, ONLY (Figure 2).

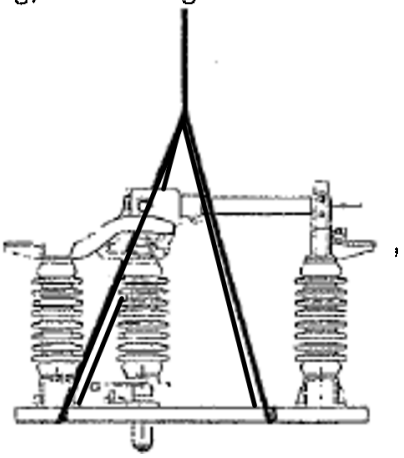


Figure 2: Recommended sling attachment

5. If applicable, attach the arcing horns as shown on the unit assembly drawing. Arcing horns should touch lightly throughout their length when the switch is being opened and closed, and not bind or rub together hard enough to cause difficult operation. Bend the stationary horn as required.

6. Manually operate each pole to check for proper contact alignment (See Figure 3). The switch is making proper contact when:

A. the blade comes down into the jaw exactly in the middle, without dragging on either side;
B. the blade tip is centered in the contacts fore and aft;
C. the jaw contact leaves make full linear contact along both surfaces of the blade tip;
D. and the blade tip stops rotating when horizontal.

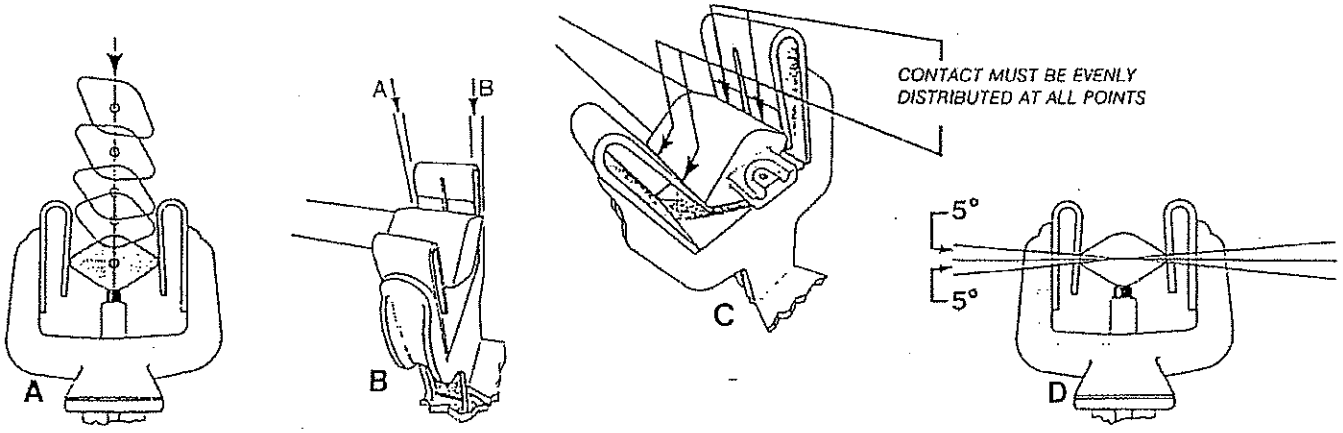


Figure 3: A - Proper blade motion. B - Lengthwise contact alignment (A must equal B). C - Axial alignment. Evenly distributed contact at all points, on both sides. D - Blade tip horizontal in switch jaw.

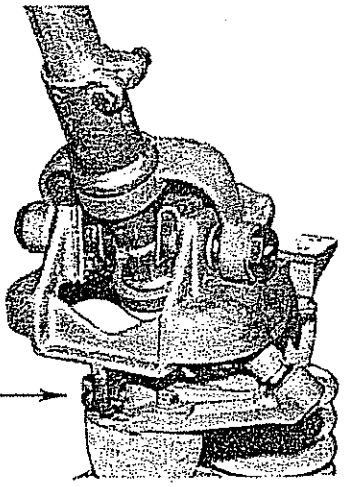


Figure 4: Closed position stop ⟶

ADJUSTMENTS: The bolt holes in the base that mount the jaw insulator are slotted longitudinally, and the bolt holes in the other end of the base are slotted transversely. to adjust "A" or "B" above, loosen the appropriate bolts and shift the insulator(s) as required.

To adjust for condition "C", loosen the bolts that mount the jaw to the insulator top and rotate the jaw against the bolt hole tolerances.

The closed position stop bolt (Figure 4) controls the blade rotation. Adjust it, and the bearing stop bolt on the base as necessary.

IMPORTANT: Be sure to check for "A", "B" and "C" <u>after</u> conductors are installed. Conductor loads can cause contact misalignments.

GENERAL INSTALLATION NOTE: The live part open and closed position stops are properly adjusted when touching lightly. The bearing stops should not touch, but have between 1/16" and 1/8" clearance.

7. The switch is shipped with the standard blade openings shown in Figure 5. However, for vertical and underhung switches, the blade open angles are easily adjustable with the open position stop. Any adjustment to the live part stops will require resetting the bearing stops.

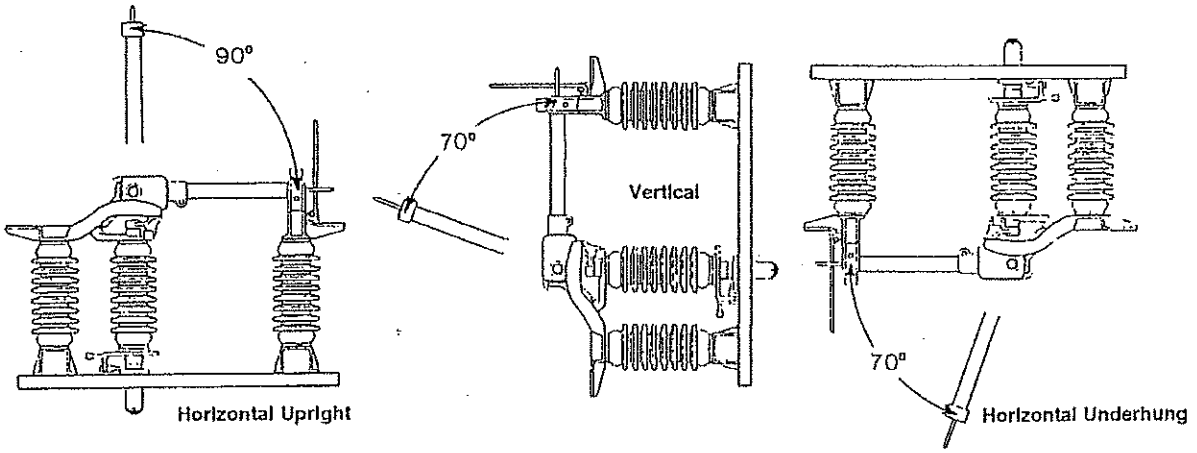


Figure 5: Blade open angles

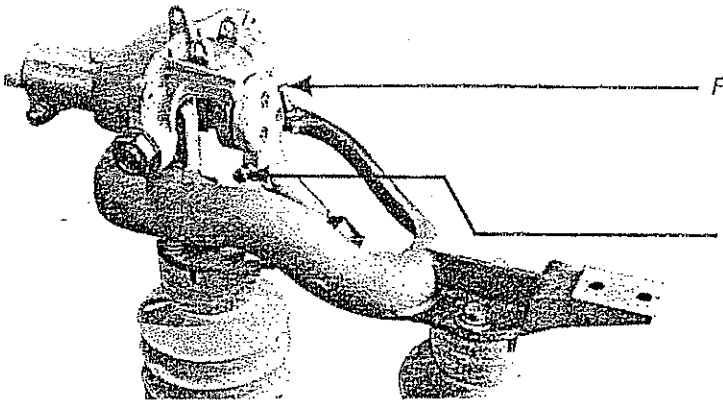


Figure 6: Open position stop

Figure 7: "Kickoff bolt"

8. The "kickoff bolt" is an operating setting made and pinned at the factory. It should not be tampered with.
9. Unpack and lay out all operating mechanism components--pipes, brackets, clevises, bearing, adjustable arm, etc.--and check these items against the bill of material on the operating mechanism drawing.
10. Install and adjust the operating mechanism as directed on the following pages.

OPERATING MECHANISM INSTALLATION

Manual and Motor Operated

The same general method is used to operate all types of switches, the only difference being in relatively minor details made necessary by different types of structures, different requirements for vertical pipe rotations, clearances, etc.

Figure 8 shows a 34.5 kV switch, and can be used as an example of operating mechanisms for all vertical break switches, regardless of mounting positions. The operating pipes may be arranged in any of four basic ways (Figure 9); however, the operating principle remains the same, and the method of installation and adjustment is identical.

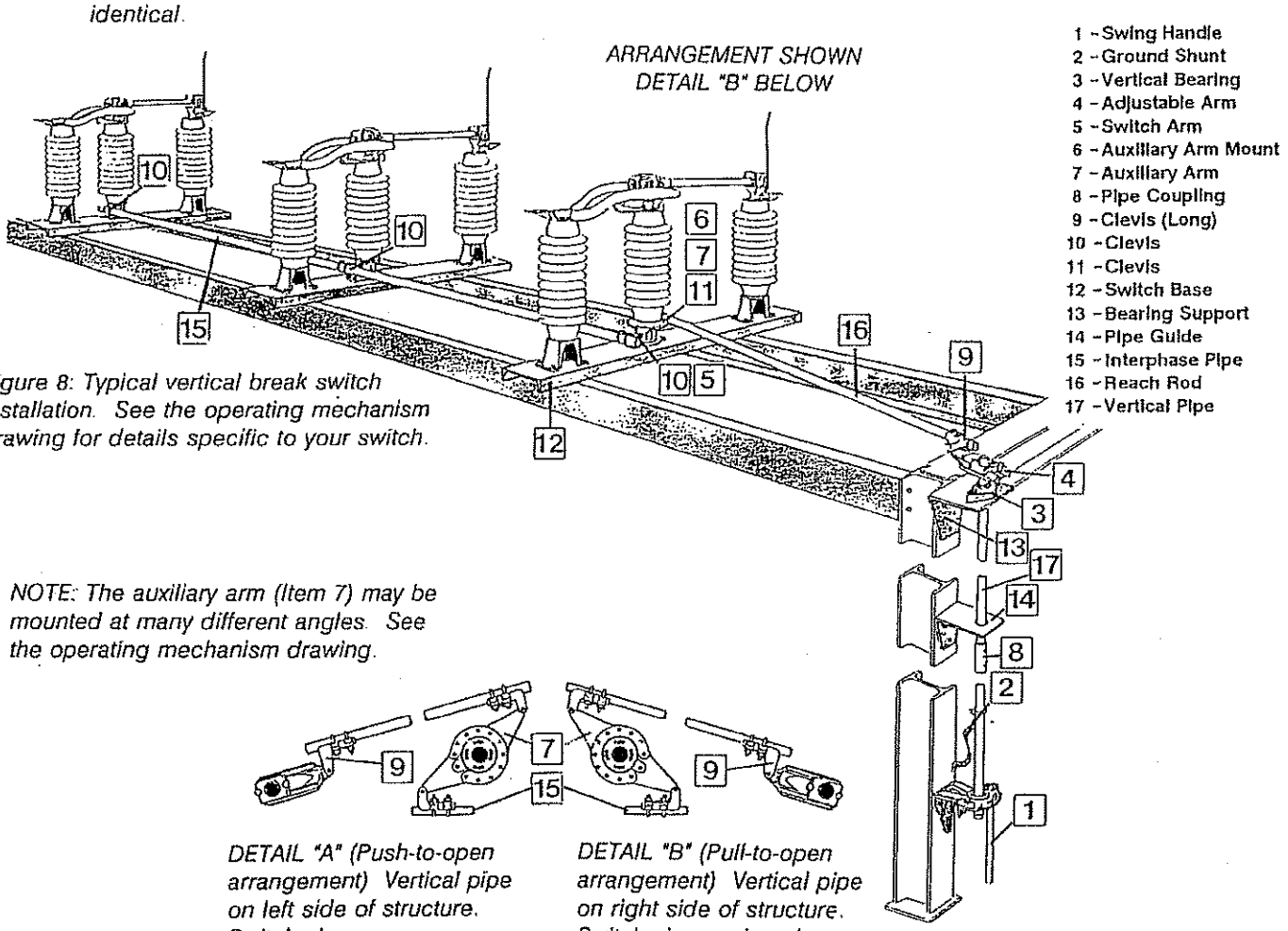


Figure 8: Typical vertical break switch installation. See the operating mechanism drawing for details specific to your switch.

NOTE: The auxiliary arm (Item 7) may be mounted at many different angles. See the operating mechanism drawing.

DETAIL "A" (Push-to-open arrangement) Vertical pipe on left side of structure. Switch shown open

DETAIL "B" (Pull-to-open arrangement) Vertical pipe on right side of structure. Switch shown closed.

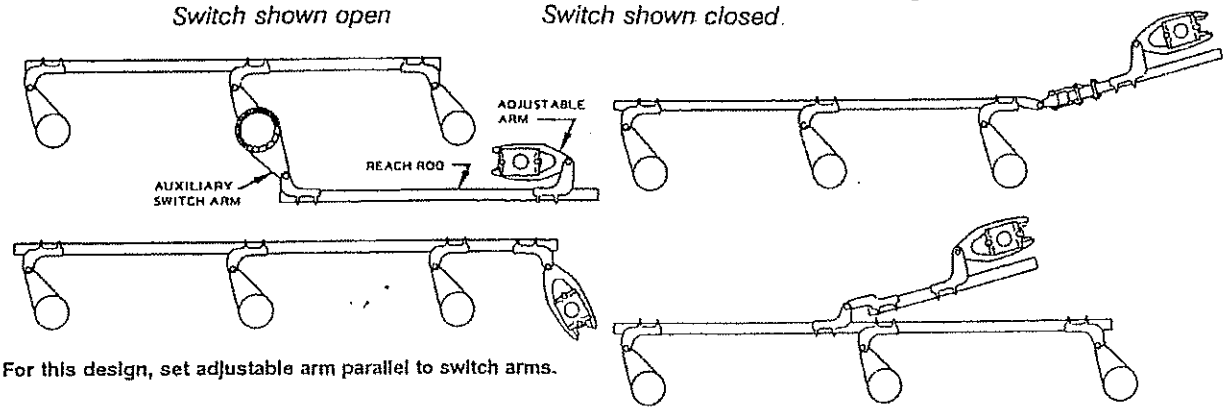


Figure 9: Alternate operating schemes that may be used.

Refer to the Operating Mechanism Drawing provided with your switch, and follow these steps:

1. Have all switch poles completely closed. Install all components shown on Operating Mechanism Drawing, including interphase pipe, vertical pipe, all brackets, bushings, etc., and the adjustable crank arm.

   IMPORTANT: The weight of the vertical pipe must be supported entirely by the pipe collar above the vertical bearing. The housing of neither the manual gear operator nor the motor operator was designed to support this weight. Additionally, if the vertical pipe is not suspended at the length shown on the drawing, the decoupler mechanism will jam.

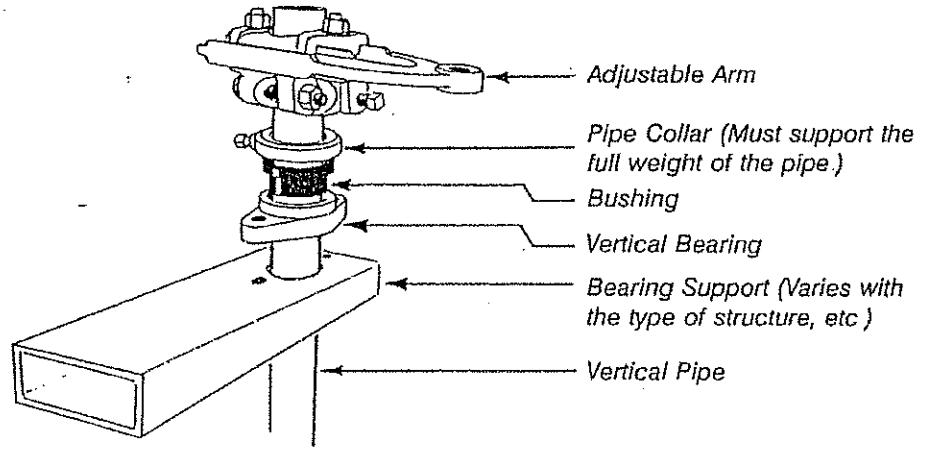


Figure 10: The pipe collar must support the full weight of the pipe.

   GENERAL INSTALLATION NOTE: When a switch uses an auxiliary switch arm, installation will be easier if this pole is adjusted before installing the interphase pipe. This will eliminate trying to coordinate and adjust all three poles at once.

   GENERAL INSTALLATION NOTE: If there are self-piercing set screws, tighten them only enough to grip the pipe (match mark to check for slippage), and drive them in only after adjustments are completed.

2. When all components are installed, if a motor operator is used, at this point refer to its installation instructions for mounting, checkout procedure, and trial operations.

OPERATING MECHANISM ADJUSTMENT

If a motor operator is used, DO NOT operate electrically until the following adjustments are complete.

The one factor most important to smooth, synchronized operation of all three switch poles, the length of the adjustable arm shown on the Operating Mechanism Drawing, is by necessity a calculated dimension. Most likely, this setting will require minor adjustment. To adjust precisely:

1. Although there may be *occasional* exceptions, the adjustable arm should travel 180° from toggle closed to toggle open. Manually test operate.
2. If the switch does not fully open, the radius of the arm is too short. To correct:
   A. Check first to see that nothing has slipped.
   B. Return the switch to the closed position.
   C. Loosen the adjustable arm and clevis bolts as shown below.
   D. Lengthen the radius of the adjustable arm about ¼" and allow the clevis to reposition itself the same distance (shortening the pipe).
   E. Test operate again, and adjust as necessary.

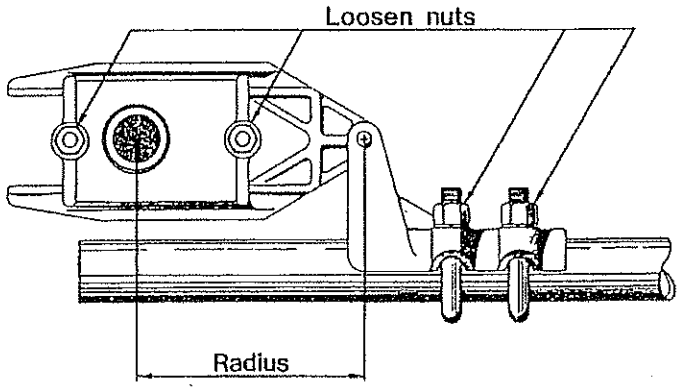


Figure 11: Changing the radius of the adjustable arm

3. If the switch is fully open before the full 180° travel of the arm, the radius of the adjustable arm too long. To correct:
   A. Check first to see that nothing has slipped.
   B. Return the switch to the closed position.
   C. Loosen the adjustable arm and clevis bolts as show above.
   D. Shorten the radius of the adjustable arm about ¼" and allow the clevis to reposition itself the same distance (lengthening the pipe).
   E. Test operate again, and adjust as necessary.

   All three poles of the switch should operate simultaneously. Slight shifting of the clevises along the length of the interphase pipe may be necessary to coordinate all three poles.

4. When the switch is completely adjusted, securely tighten all bolts, and tighten all set screws until the pipe walls are pierced. (For heavy wall pipe, drill the set screw holes, using the threaded drill guides supplied, and a ¼" drill.)

This concludes the installation and adjustment of the line switch. For installing grounding switches or other equipment, refer to their individual instructions. If you require further information on this equipment, please get in touch with your local Southern States representative, or the factory.

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INSTALLING DIRECT OPERATING MECHANISMS

The direct operating mechanism is sometimes used on lower rated switches (usually 69 kV and below). It is a much simpler method of switch operation, since the vertical operating pipe is attached directly to a bearing shaft that extends below the base of one of the switch poles.

IMPORTANT: Be sure to make a final check of the contact alignment shown on page 2 after installing conductors to both ends of the switch.

1. Put all the poles in the fully closed position.
2. Install the operating components as shown on the operating mechanism drawing. This will include the interphase pipe, universal coupling, vertical pipe guide(s), vertical pipe and swing handle or gear operator. (For a motor operator, at this point refer to the motor operator instructions.) Match mark attachment points that might slip during trial operations, but do not drive in self-piercing set screws, yet.

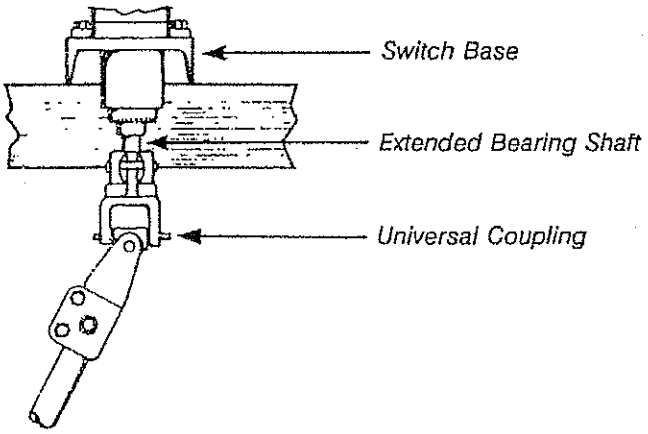


Figure 12: Vertical pipe attachment to the universal coupling

3. Manually test operate. The rotation required to open and close the switch should match the rotation between the stops of the operator. These stops are factory set, but can be reset as required.
4. The clevises on the interphase pipe may have to be shifted slightly to synchronize all three switch poles.
5. When the switch is completely adjusted, tighten all set screws until the pipe walls are pierced. (For heavy wall pipe, drill the set screw holes, using the threaded drill guides supplied, and a ¼" bit.)

This concludes the installation and adjustment of the line switch For installing grounding switches or other equipment, refer to their individual instructions. If you require further information on this equipment, please get in touch with your local Southern States representative, or the factory.

MAINTENANCE

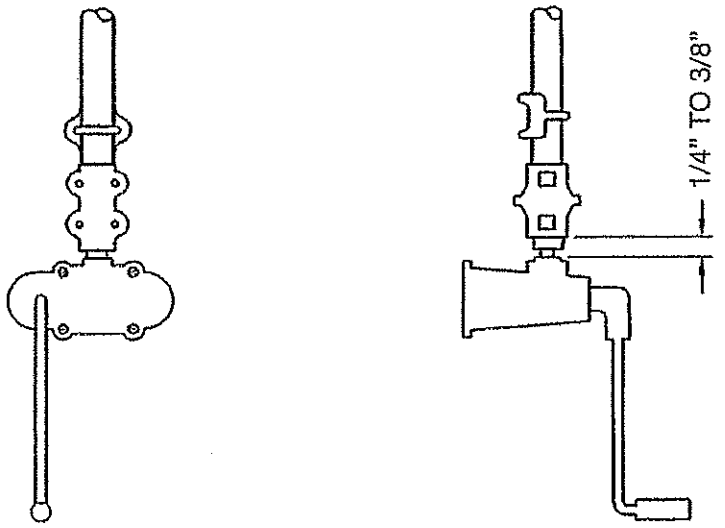
It is suggested that maintenance on this equipment be performed in accordance with ANSI STANDARDS C37.35-1976.

Southern States

Installation & Adjustment Procedures

If a Manual Geared Operator is furnished:

- Operator Handle is factory set to rotate either clockwise or counter-clockwise to open the switch.
- Operator Handle should hang vertically and free in both the open and closed positions – This will permit insertion of a customer furnished padlock.



Type HOGO Geared Operator Installation

- Position the Floating Coupling approximately 1/4-Inch to 3/8-Inch above the operator.
- The Pipe Collar above the Vertical Bearing must support the entire weight of the Vertical Operating Pipe. Do not allow the manual or electrical motor operator housing to bear any weight.
- The maintenance-free operator is filled with grease and sealed at the factory.

If an Electrical Motor Operator is furnished, refer to separate Instruction Manual.

Place all switch poles in the fully closed position

Caution: If furnished with a Motor Operator, **do not** use electrical operation until all switch adjustments are complete.

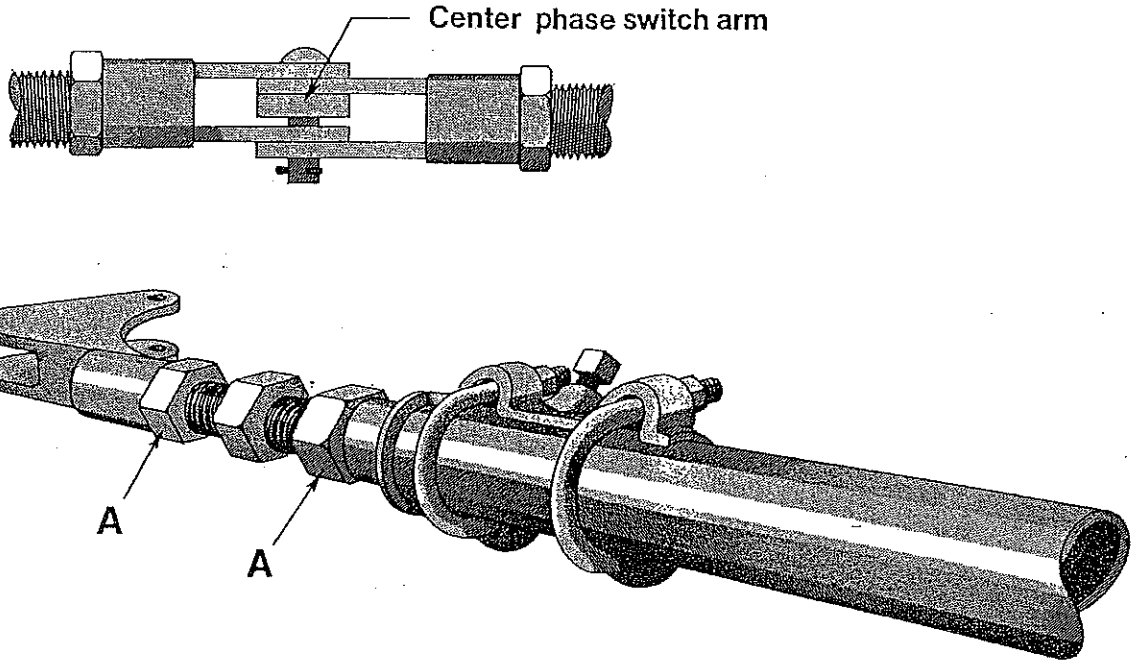
The Adjustable Arm setting indicated on the Operating Mechanism Drawing is a calculated dimension. Adjust as required for exact setting.

Manually test operate

General instructions for threaded clevises

Southern States

When threaded clevises are specified, one is generally attached to the adjustable arm, and two more to the center phase switch arm (Refer to the plan view of the operating mechanism drawing, and the illustration below).

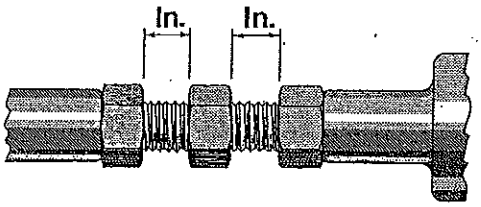


Operating mechanism adjustments consist mainly of incremental lengthenings and/or shortenings of the pipes that connect the switch arms together. To make these adjustments, simply loosen both jam nuts "A" and screw the stud in or out as required. Be sure to retighten both jam nuts securely.

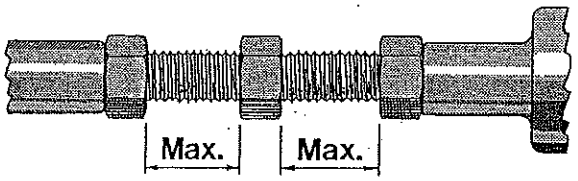
CAUTION! DANGER: Do not screw the stud out of the clevises. This could cause the pipe to fall, resulting in serious injury to personnel below.

Be sure the initial setting is correct, and do not adjust beyond the maximum allowable dimension. If adjustment beyond the maximum allowable dimension is needed, loosen the U-bolts on the outboard phase clevis and reposition the pipe toward the center phase.

Initial dimension for 3/4" stud is 11/16";
1" stud is 1/2".



Maximum allowable for 3/4" stud is 1-3/16".
Maximum allowable for 1" stud is 1".



Revised April, 1989

Recommended Inspection Maintenance

Southern States' disconnect switches are designed to operate with minimum maintenance. While disconnecting switches are not readily serviced at frequent intervals, *periodic inspection is important for satisfactory operation and maximized overall life*. Frequency of inspection and maintenance depends on the installation site, weather, atmospheric conditions, experience of operating personnel, and any special operation requirements.

During operational testing, the switch should be opened and closed several times, if possible, to clean the contacts and free the moving parts. A visual inspection, when the switch is wet, or temperature scanning detector may indicate hot spots that could serve as potential sources of trouble. Directional microphones or ultrasonic detectors can be used to locate local corona sources on the switches which can be eliminated during normal switch maintenance.

NOTE

It is recommended that maintenance on these switches be performed in accordance with ANSI STANDARDS **C37.30.1-2011**. In addition, well-established live-line servicing and maintenance procedures may be used in accordance with user practices and local and OSHA regulations.

Table: Recommended Installation and Maintenance Table

		Installation Tests	Patrolling Inspection 6-months	Routine 5 Year *	Periodic 10 Year *
Insulators	Contamination	X	X	X	X
	Damage	X	X	X	X
Cabinet (if motor operator supplied)	Any loose parts on the floor of the cabinet?	X	X	X	X
	Wiring Secure	X	X	X	X
	Links Secure	X	X	X	X
	Inspect Mechanism for loose parts	X	X	X	X
	Heaters Energized	X	X	X	X
	Door Seal	X	X	X	X
Mechanical	Operational Tests	X		X	X
Electrical	Contact Resistance	X		X	X
Liveparts Inspection	Inspect Contacts	X		X	X
	Inspect Arcing Horns	X		X	X

***NOTE:** Inspection/maintenance is suggested to be performed every two (2) years when installed in harsh environments with excessive airborne contaminants such as salt spray and industrial pollutants.

Southern States

Recommended Inspection Maintenance

Patrolling Inspection (6 Months)

The patrolling inspection is a largely visual inspection on an energized unit in service. The frequency of the inspection is determined by the local conditions and policies of the owner of the equipment.

- Inspect the insulators for breaks, cracks, burns, or cement deterioration. Clean insulators particularly where abnormal conditions such as salt deposits, cement dust, or acid fumes exist to minimize possibility of a flashover.
- If an accompanying motor operator is supplied, check the cabinet for loose parts and ensure that all wiring is secure, the heater is energized, and the door is sealed.

Routine Inspection and Maintenance (5 year)

⚠ DANGER	The disconnect switch must be de-energized, disconnecting from all electrical power sources before servicing.

- Perform patrolling inspection (above), checking insulators and cabinet
- Once the disconnect switch is de-energized, test operate the switch multiple times.
- Check the switch for alignment, contact pressure, eroded contacts, corrosion, and mechanical malfunction, replacing damaged or eroded components if necessary. If contact pitting is minor, smooth the surface with a clean, fine sandpaper. It is recommended to clean and reapply C5-A grease during any operation or maintenance cycle, as exposed surfaces *(such as contacts)* are vulnerable to environmental conditions and contaminants that can decrease the effectiveness of the grease over time. During reapplication, clean and wipe down the contact surfaces with a green Scotchbrite pad, reapply C5-A grease, and remove any excess grease until an evenly coated, thin film is present.
- Inspect arcing horns for signs of excessive arc damage and replace if necessary.
- Check blade lock or latch for adjustment.
- Inspect all live parts for scarring, gouging, or sharp points that could contribute to excessive radio noise and corona. Check corona balls and rings for damage that could impair effectiveness.
- Inspect interphase linkages, operating rods, levers, bearings, etc. to assure that adjustments are correct, all joins are tight, and pipes are not bent.
- Check for simultaneous closing of all blades and for proper seating in the closed position.
- Inspect and check all safety interlocks while testing for proper operation.

Periodic Inspection and Maintenance (10 year)

⚠ DANGER	The disconnect switch must be de-energized, disconnecting from all electrical power sources before servicing.

- Follow instructions for 5-year Routine Inspection and Maintenance

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