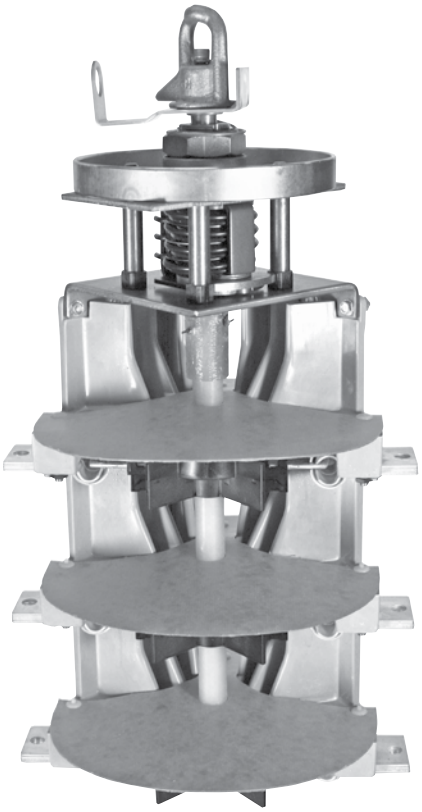
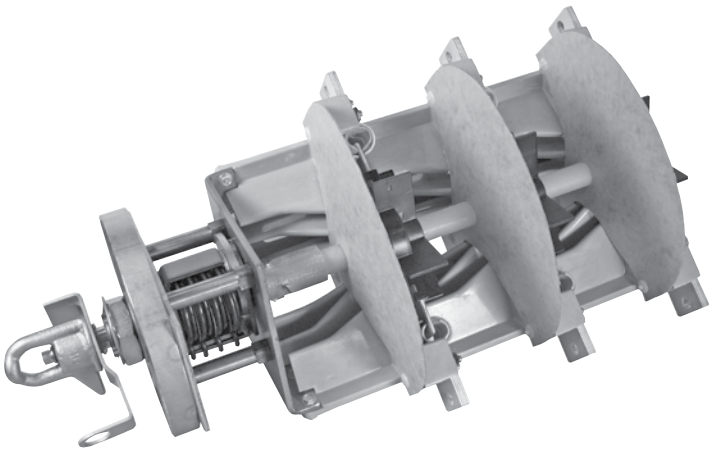
OEM Equipment
MN800002EN

Effective March 2016
Supersedes June 2015

COOPER POWER SERIES

Sectionalizing switch installation instructions





Powering Business Worldwide

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

The information, recommendations, descriptions and safety notations in this document are based on Eaton Corporation's ("Eaton") experience and judgment and may not cover all contingencies. If further information is required, an Eaton sales office should be consulted. Sale of the product shown in this literature is subject to the terms and conditions outlined in appropriate Eaton selling policies or other contractual agreement between Eaton and the purchaser.

THERE ARE NO UNDERSTANDINGS, AGREEMENTS, WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, OTHER THAN THOSE SPECIFICALLY SET OUT IN ANY EXISTING CONTRACT BETWEEN THE PARTIES. ANY SUCH CONTRACT STATES THE ENTIRE OBLIGATION OF EATON. THE CONTENTS OF THIS DOCUMENT SHALL NOT BECOME PART OF OR MODIFY ANY CONTRACT BETWEEN THE PARTIES.

In no event will Eaton be responsible to the purchaser or user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of power, additional expenses in the use of existing power facilities, or claims against the purchaser or user by its customers resulting from the use of the information, recommendations and descriptions contained herein. The information contained in this manual is subject to change without notice.

Contents

Safety for life

Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment, and support our "Safety For Life" mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment. G103.3

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage. G101.0

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage. G102.1

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage. G122.3

Product information

Introduction

Eaton's Cooper Power™ series four-position sectionalizing loadbreak switch is designed for use in transformer oil, Envirotemp™ FR3™ fluid, or an approved equivalent-filled pad-mounted transformers or distribution switchgear. The switches meet the full requirements of the latest revision of both IEEE® and IEC standards.

Sectionalizing switches can be used on single- and three-phase grounded wye or delta systems. They are used in underground residential applications with loop feed, and in three-phase commercial industrial installations where the ability to use an alternative source of power is necessary. They can also be used to switch on and off a primary cable tap on a transformer.

The under-oil switch can be installed near the transformer core/coil assembly, thus minimizing cable capacitance. With cable capacitance minimized and all three phases switched simultaneously, the likelihood of ferroresonance is greatly reduced. All switches are hotstick operable (with recommended leverage base) and available in several different blade configurations (Refer to Table 8).

Sectionalizing loadbreak switches rotate 360° in either direction for alternate source selection. An externally installed limiting plate prevents rotation to positions other than the one desired. A spring-loaded activating mechanism ensures quick loadbreak action and positive contact engagement through all positions.

The Make-Before-Break (MBB) switches provide uninterrupted power during switching.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your Eaton representative.

Acceptance and initial inspection

Each sectionalizing switch is inspected and tested at the factory. It is in good condition when accepted by the carrier for shipment. Upon receipt of a sectionalizing switch, inspect it thoroughly for damage and loss of parts incurred during shipment. If damage or loss is discovered, file a claim with the carrier immediately.

Handling and storage

If the sectionalizing switch is to be stored for an appreciable time before installation, provide a clean, dry storage area.

Quality standards

ISO 9001 Certified Quality Management System

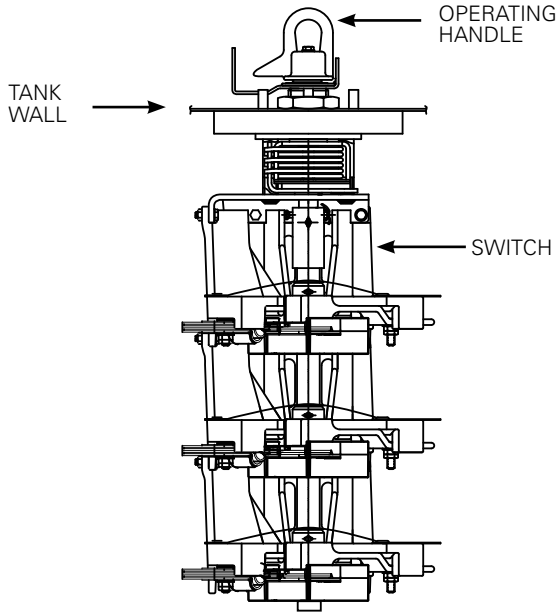


Figure 1. Line illustration of sectionalizing switch with "Ring-Mount System."

Electrical ratings

Table 1. Ratings and Characteristics per IEEE Std C37.71™-2001 standard

	Units	12.5 kA Rated Switches To IEEE Std C37.71™ - 2001 standard		
Rated Voltage				
Maximum rating phase-to-phase	kV	15.5	27.8	38
Maximum rating phase-to-ground	kV	9	17.2	21.9
Power Frequency	Hz	60	60	60
Current Rating (Continuous)	A	630	300	200
Loadbreak Capability @ 0.75 Power Factor				
Factor	A	630	300	200
First peak min.	kV	4	7.6	13
Time-to-peak max.	µs	180	290	424
Magnetizing	A	22	10.5	7
Cable Charging	A	10	25	40
Fault Withstand Current (Momentary)				
10 cycle symmetric rms	kA	12.5	12.5	12.5
10 cycle asymmetric rms	kA	18.6	18.6	18.6
10 cycle peak	kA	32.5	32.5	32.5
Fault Withstand (Short-time)				
1s rms	kA	12.5	12.5	12.5
2s rms	kA	12.5	12.5	12.5
Fault Close and Latch				
10 cycle symmetric rms	kA	12.5	12.5	12.5
10 cycle asymmetric rms	kA	18.6	18.6	18.6
10 cycle peak	kA	32.5	32.5	32.5
Impulse Withstand Voltage (1.2/50µs)				
To ground and between phases	kV	95	125	150
Across open contacts	kV	95	125	150
Power Frequency (1 minute)				
To ground and between phases	kV	35	60	70
Across open contacts	kV	35	60	70
DC Withstand (15 minutes)				
To ground and between phases	kV	53	78	103
Across open contacts	kV	53	78	103
Corona (Extinction)	kV	26	26	26
Temperature Maximum at 630 A	°C	75	75	75
Temp. Rise Above Ambient Air at 630 A (Max.)	°K	35	35	35
Mechanical Life (Minimum Operations):		5,000	5,000	5,000

Table 2. Ratings and Characteristics per IEC 60265-1 – 1998

	Units	16 kA Rated Switches To IEC 60265-1 - 1998		
Switch Rating	**kV**	**15**	**24**	**36**
Rating Voltage				
Maximum rating phase-to-phase	kV	15.5	24.9	38
Maximum rating phase-to-earth	kV	9	14.4	21.9
Power Frequency	Hz	50/60	50/60	50/60
Current Rating (Continuous)	A	630	400	200
Mainly Active Load Breaking Current	A	630	400	200
First peak min.	kV	25.7	41	65.1
Time-to-peak max.	µs	72	88	108
Closed Loop Breaking Current	A	630	400	200
No-Load Transformer Breaking Current	A	6.3	4	2
Line Charging Current	A	1	1.5	2
Cable Charging Current	A	10	17	25
Earth Fault Switching Current	A	1	10	8
Cable and Line Charging Under Earth Fault	A	17.5	17	26
Short-time Withstand Current				
1s rms	kA	20	20	20
2s rms	kA	16	16	16
3s rms	kA	13	13	13
Short-circuit Making Current				
12 cycle symmetric rms (min.)	kA	16	16	16
12 cycle asymmetric rms (min.)	kA	24.8	24.8	24.8
12 cycle max. peak (min.)	kA	41.6	41.6	41.6
Impulse Withstand Voltage (1.2/50µs)				
To earth and between phases	kV	170	170	170
Across open contacts (isolating distance)	kV	195	195	195
Power Frequency (1 minute)				
To earth and between phases	kV	70	70	70
Across open contacts (isolating distance)	kV	80	80	80
Corona (Extinction)	kV	26	26	26
Temperature Maximum at 630 A	°C	90	90	90
Temp. Rise Above Ambient Air at 630 A (Max.)	°K	50	50	50
Mechanical Life (Minimum Operations):		5,000	5,000	5,000

Table 3. Dimensional Information for Figures 2 and 3 (inches/mm)

No. of Decks/ Phases	kV Ratings & Blade Type	A		B	C	D		E		F	
		Horizontal Mount	Vertical Mount			Horizontal Mount	Vertical Mount	Horizontal Mount	Vertical Mount	Horizontal Mount	Vertical Mount
1	All	8.05" 204 mm	13.30" 338 mm	–	–	7.16" 182 mm	12.41" 315 mm	0.75" 19 mm	6.00" 152 mm	8.46" 215 mm	13.71" 348 mm
2	All	12.14" 308 mm	17.39" 442 mm	4.09" 104	–	7.16" 182 mm	12.41" 315 mm	0.75" 19 mm	6.00" 152 mm	12.46" 316 mm	17.71" 450 mm
3	12 kA T Blade 12 & 16 kA Selector, Straight, & V Blade	16.23" 412 mm	21.48" 546 mm	4.09" 104 mm	4.09" 104 mm	7.16" 182 mm	12.41" 315 mm	0.75" 19 mm	6.00" 152 mm	16.46" 418 mm	21.71" 551 mm
3	16 kA T Blade Only	16.63" 422 mm	–	4.09" 104 mm	4.09" 104 mm	7.56" 192 mm	–	0.75" 19 mm	–	16.86" 428 mm	–

Dimensional information

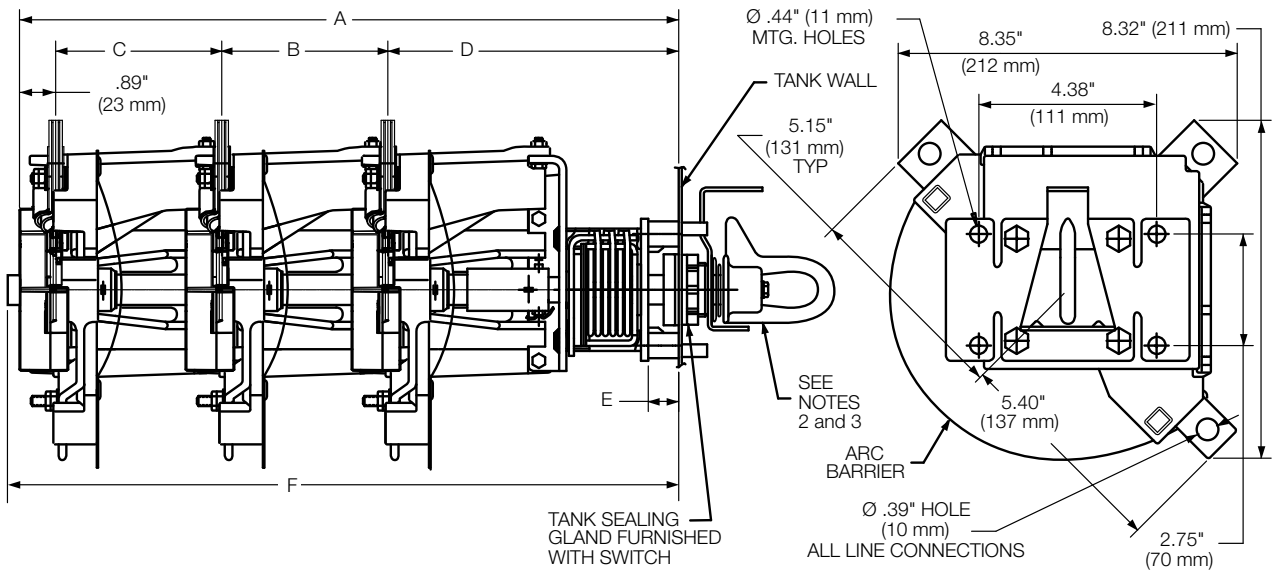


Figure 2. Line illustration with dimensions of sectionalizing switch with "Bolt-In System."

Notes:
1. Dimensions given in Figure 2 and Table 3 are for reference only.
2. Handle can be used on 14 gauge .075 inch (1.9 mm) to .25 inch (6.4 mm) thick frontplate. 14 gauge shown.
3. Optional padlock handle is available. See catalog section CA800005EN, Table 6 and Figure 6.
4. See catalog section CA800005EN for switch types, number of phases, and catalog numbers.

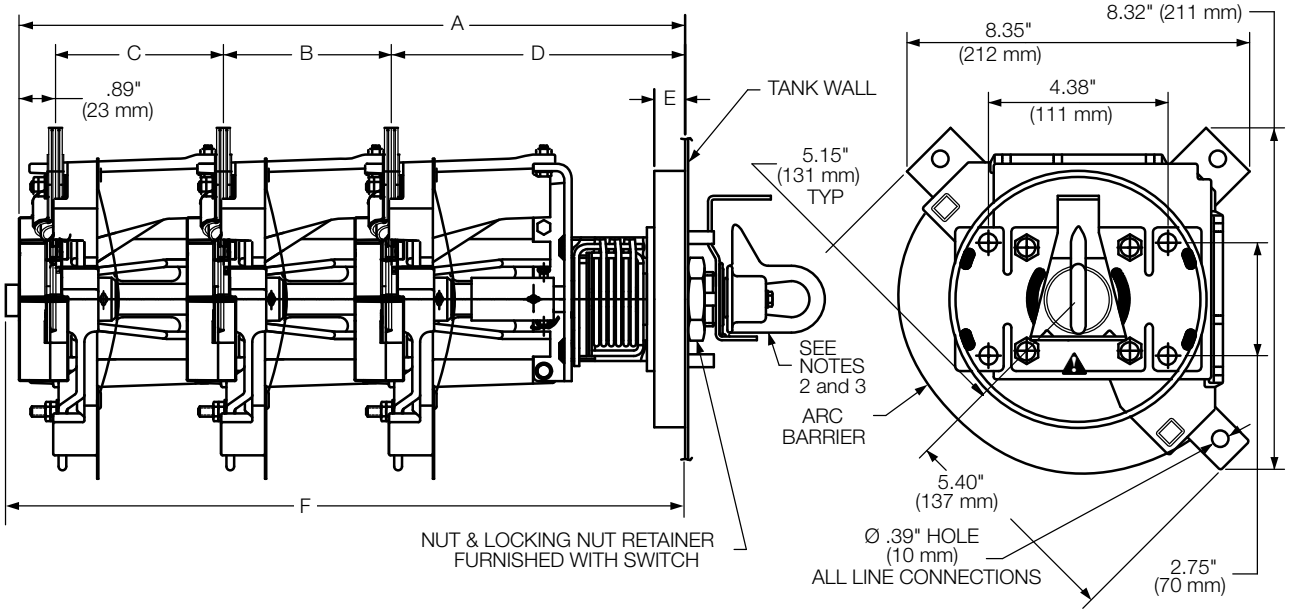


Figure 3. Line illustration with dimensions of sectionalizing switch with "Ring-Mount System."

Notes:
1. Dimensions given in Figure 3 and Table 3 are for reference only.
2. Handle can be used on 14 gauge .075 inch (1.9 mm) to .25 inch (6.4 mm) thick frontplate. 14 gauge shown.
3. Optional padlock handle is available. See catalog section CA800005EN, Table 6 and Figure 6.
4. See catalog section CA800005EN for switch types, number of phases, and catalog numbers.

Installation procedure

All parts should be inspected for damage before using. If there is evidence of physical damage, the unit should not be installed unless approved by your Eaton representative.

⚠ CAUTION

The areas around the mechanisms and contacts do not contain user adjustable parts and should not be altered during installation.

Bolt-in assembly

Note: The tank wall should have a 1.325 (34 mm) diameter hole with an anti-rotation key, (refer to Figure 8). Switch should be located to ensure recommended clearances in Figure 6 are maintained.

1. Switch should be mounted to four (4) couplings on the inside of the tank wall (refer to Figure 6 for coupling pattern) using 3/8" x .75" (10M x 19 mm, if metric couplings are being used) long bolts with lock washers, (not supplied).
2. Install the gasket over the switch shaft sealing gland and insert the switch assembly through the tank hole. Position the switch with the open sides of the switch block facing down and to a side.
3. Align the switch mounting plate holes with welded bosses and install the 3/8" x .75" (10M x 19 mm) long bolts with lock washers. Tighten bolts to the recommended torque, (refer to Table 4).
4. Install Plastic Mounting Nut over the externally protruding threaded sealing gland and tighten plastic mounting nut (refer to Table 5). (Sealing is accomplished with O-rings on the operating shaft and gasketed sealing gland secured on the outside of the tank with locking nut).
5. (Optional) install spring (small end toward end of shaft) and limit plate over the shaft.
6. Install handle onto the switch shaft with the stainless steel hex socket cap screw and lock washer supplied and tighten to recommended torque in Table 4.

⚠ CAUTION

Bolt-In Assembly switches are dependent on proper location and use of couplings welded to the inside of tank. A reliable system of fixturing and gauging is essential to successful mounting of switch.

Table 4. Recommended Torque (BOLT-IN)

Part	Torque Level
Mounting Bolts [3/8" Dia.(10 mm)]	60-100 in-lbs (7-11 Nm)
Plastic Mounting Nut	60-120 in-lbs (7-14 Nm)
Switch Handle Bolt	40-60 in-lbs (5-7 Nm)

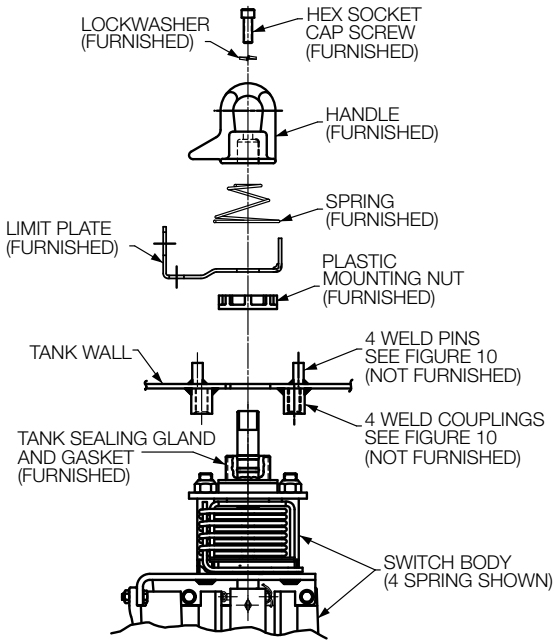


Figure 4. Four-Position Bolt-Mount loadbreak switch (top/side view).

Ring-mount assembly (LS4R--- and LS4E---)

Note: The tank wall should have a 1.325" (34 mm) diameter hole with an anti-rotation key (refer to Figure 8). Switch should be located to ensure recommended clearances in Figure 6 are maintained.

Note: Recommended socket for securing the locking nut is a 6 point, 1 3/4" socket with a minimum socket depth of 1 1/2" (38 mm).

1. Install the gasket over the threaded switch boss (with integral sealing gland) and insert through the tank hole. (Note: make sure gasket's sealing surface is clean and the gasket properly seated.)
2. Position the switch with the open sides of the switch block on the bottom and on the side.
3. Assemble and tighten furnished locking hex nut to the recommended torque in Table 7.
4. (Optional) install spring (small end out) and index (limit) plate over the shaft.
5. Install handle onto the switch shaft with the stainless steel hex socket cap screw and lock washer supplied and tighten to recommended torque in Table 5.

Table 5. Recommended Torque (Ring-Mount)

Part	Torque Level
Locking Nut	40-60 ft-lbs (54-82 Nm)
Switch Handle Screw	40-60 in-lbs (5-7 Nm)

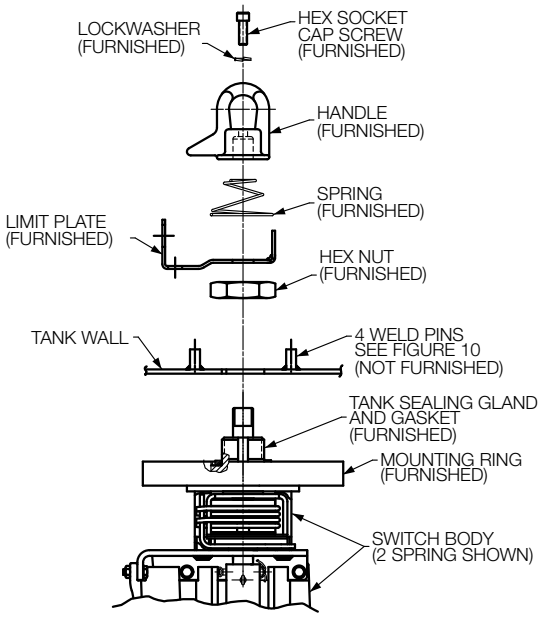


Figure 5. Four-Position Ring-Mount loadbreak switch (top/side view).

Connect internal leads

1. **Connect internal leads** to the switch contacts with 3/8" or (10 mm) hardware, (not supplied). (Max. cable connections 500 MCM or 240 mm^2). Use torque values recommended by fastener manufacturers. Apply torque to the fasteners, not to the switch terminals. See Table 6 for recommended wiring schematics.

⚠ WARNING

All leads, connections and contact blades must remain under oil. Failure to do so could cause arcing which may result in component failure, property damage or possible severe personal injury.

Recommended clearances

Mechanical

- External handle must be clear of obstruction. Clearances are also required for hook-stick operation.

Dielectric (under-oil)

- It is not recommended that other components be located above the switch, since clouds of gas rise during switch operation. If such an arrangement cannot be avoided, the components should, at a minimum, be located outside the arc clearance zone and have an insulated barrier between them and the switch. This barrier will deflect any gas bubbles generated by the switch operation.

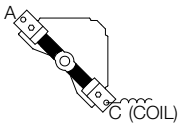
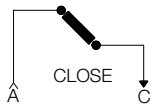
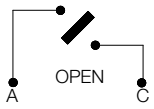
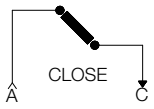
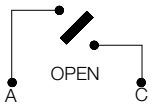
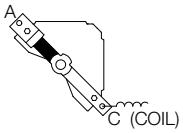
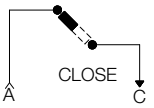
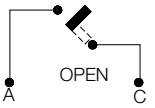
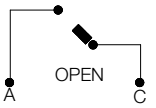
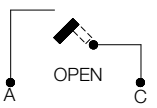
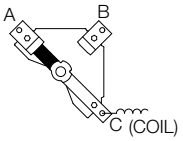
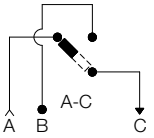
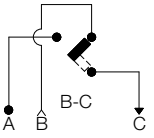
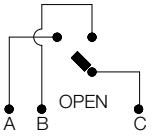
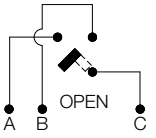
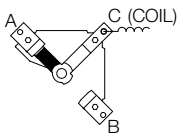
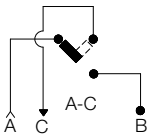
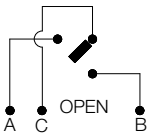
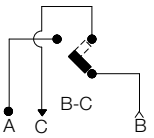
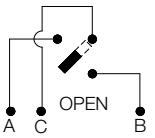
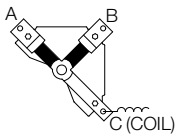
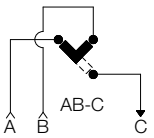
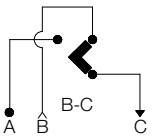
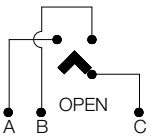
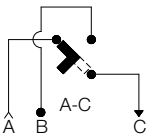
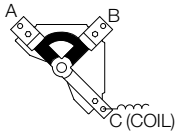
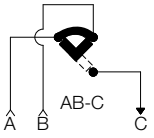
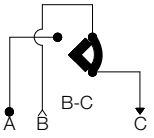
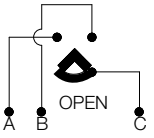
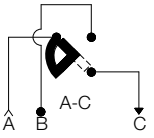
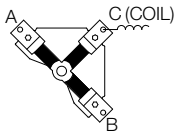
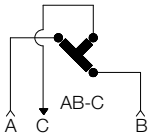
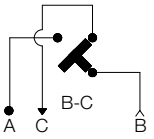
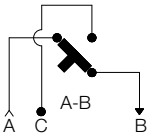
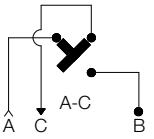
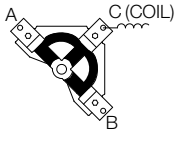
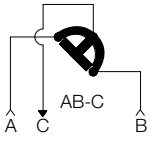
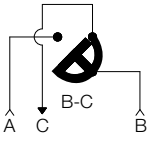
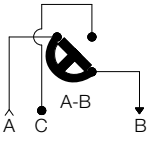
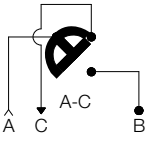
The outline drawing shown in Figure 6 describes the switch and its application to oil-filled apparatus. This information should be used only by trained personnel familiar with the design requirements for oil-filled apparatus. This information is not intended as a substitute for adequate training and experience in such design. Should clarification or further information be required for the user's purposes, contact your Eaton representative.

All energized parts of the switch must be under oil and spaced away from other energized parts or ground with sufficient distance to withstand all operating and test voltages. In order for proper switch operation to occur, an arc clearance zone is required around the switch. This zone should be under oil and free of all foreign materials. See Figure 6.

⚠ WARNING

Recommended (minimum) under-oil clearances must be followed to avoid internal arcing which could result in component failure, property damage or possible severe personal injury.

Table 6. Wiring Schematics

SWITCH TYPE	TYPICAL DECAL STENCIL LAYOUT	VIEW OF CONTACTS FROM FRONT (HANDLE) END OF SWITCH	POSITION 1 FRONT SCHEMATIC AS SHIPPED AND AS SHOWN AT LEFT	POSITION 2 SCHEMATIC SWITCH HANDLE ROTATED 90 CLOCKWISE FROM POSITION 1	POSITION 3 SCHEMATIC SWITCH HANDLE ROTATED 90 CLOCKWISE FROM POSITION 2	POSITION 4 SCHEMATIC SWITCH HANDLE ROTATED 90 CLOCKWISE FROM POSITION 3
STRAIGHT BLADE	CLOSE OPEN OPEN CLOSE					
SELECTOR BLADE ON-OFF	CLOSE OPEN OPEN OPEN					
SELECTOR BLADE 1 BLADE SIDE	LINE A TO C OPEN LINE B TO C OPEN					
SELECTOR BLADE 1 BLADE CENTER	LINE A TO C OPEN OPEN LINE B TO C					
V-BLADE BREAK BEFORE MAKE	LINES A & B TO C LINE A ONLY TO C LINE B ONLY TO C OPEN (ALL)					
V-BLADE MAKE BEFORE BREAK	LINES A & B TO C LINE A ONLY TO C LINE B ONLY TO C OPEN (ALL)					
T-BLADE BREAK BEFORE MAKE	LINES A & B TO C LINE A ONLY TO C LINE B ONLY TO C LINES A TO B C OPEN					
T-BLADE MAKE BEFORE BREAK	LINES A & B TO C LINE A ONLY TO C LINE B ONLY TO C LINES A TO B C OPEN					

Note:

1. Switch center is pivot point. Black segments of blade rotate. White outlined segments are stationary.
2. Other position sequences available - consult factory for details.

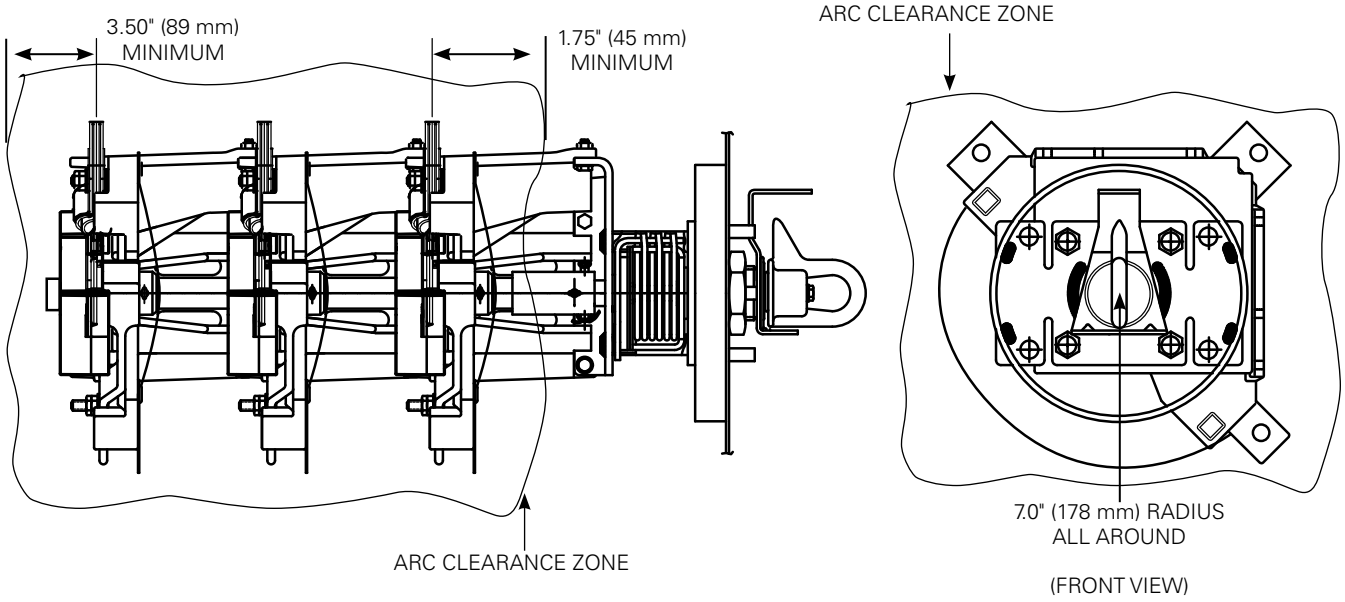


Figure 6. Arc clearance zone.

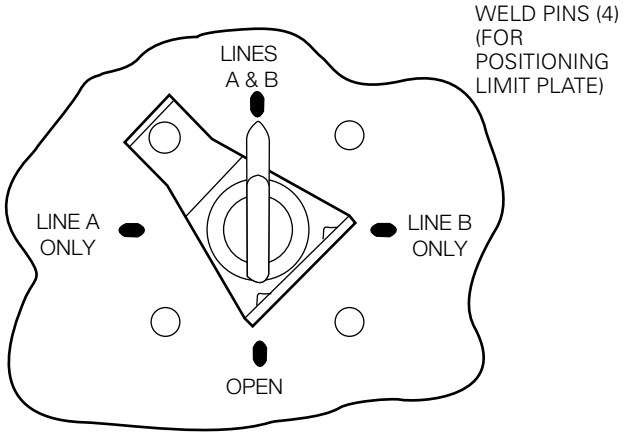


Figure 7. View of tank front with optional limit plate positioned over pin.

Note:
With limit plate positioned securely as shown, switch can be operated only counterclockwise to "line A only" position and no further.

⚠ CAUTION

This illustrated decal in Figure 7 is typical of some V-blade switches only. See Table 6 for other switch layouts and schematics.

Lead training

- Cantilever Strength of Assembly: Sufficient to support one 500 MCM or 240 mm^2 Cu lead per contact.
- Switch contacts are pre-gauged at factory and will have some rotation in same plane as switch blade. Leads attached to switch contacts must not restrict this rotation. The nuts holding the contacts should not be tightened. Leads can be bolted to rear of contact and care should be taken to minimize mechanical stress on the contacts. Standard dielectric dimensions for lead separation should be followed. Tight lead training may cause excess cantilever force and difficulty in switch operation.

⚠ CAUTION

Enclosed decal (P/N 1109699A) should be displayed at or near operating handle of switch as a warning to service personnel. Failure to do so will constitute a waiver of all warranty and indemnity obligations which may be attributable to Eaton's Cooper Power Systems Division.

⚠ WARNING

Enclosed "Warning" decal (P/N 1139596B02) must be displayed at or near operating handle of switch as a warning to service personnel. Failure to do so will constitute a waiver of all warranty and indemnity obligations which may be attributable to Eaton's Cooper Power Systems Division.

⚠ WARNING

The misapplication of the switch constitutes a potential hazard to life and property. Accordingly, the user must exercise due care in utilizing these instructions to assure that the switch is properly applied.

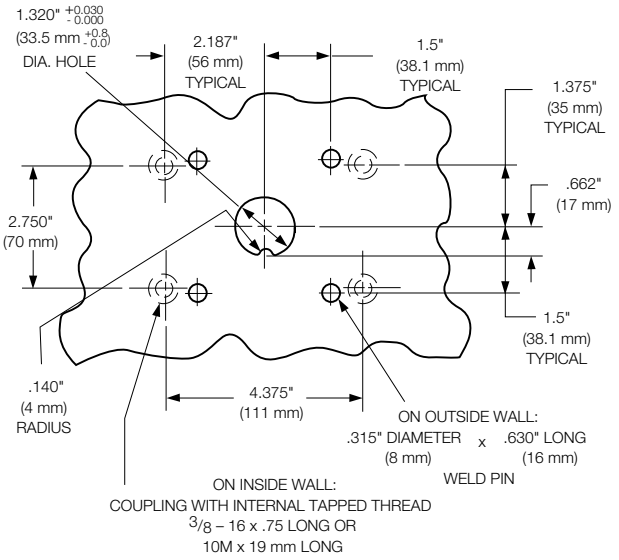


Figure 8. Hole and coupling placement detail (required for Bolt-In design).

Notes:

Hole and coupling placement detail. Couplings not included with switch.

Pre-Welded coupling plates available. Order P/N 2037424C02M.

All couplings and pins to be welded flat within an angularity tolerance of ± one half degree. Weld pins should not be used with optional pad-lockable handle.

Operation

The operating torque is less than 35 ft-lbs (47 Nm). During transformer assembly, it is recommended to operate the switch one complete cycle (in each direction), after fluid fill.

Sectionalizing loadbreak switches rotate 360° in either direction for alternate source selection. An externally-installed index plate prevents rotation to positions other than the one desired. The switch cannot be switched more than one position without resetting the index plate.

A spring-loaded activating mechanism ensures quick loadbreak action and positive contact engagement trough all positions. Switching can be accomplished in less than one cycle, and should be performed with a hotstick.

Using a clampstick leverage tool (P/N CS125UFLTOOL) with an Eaton's Cooper Power series Fit-On™ head clampstick provides operators with increased level of mechanical advantage when performing switching operations.

When switching (with hotstick) from one position to the next, (for example: in Figure 7 "line A & B" to position "line A only"), the limit plate should be located on the pin between the origin and the destination.

Turn hotstick handle, in a rapid motion, until switch has fully indexed into the next position. If for any reason, the switching operation cannot be completed with a single motion, it is acceptable to relax, regrip the hotstick and complete the operation by moving the switch handle in the **same direction** as the original effort.

Note: Do not reverse the direction of the switching operation before completing the rotation to the next position. Reversing direction prior to completing the rotation to the next position could jam the mechanism, making the switch inoperable.

If the handle stops (jams) in a position between the designated (marked) positions, stop switching operation and consult the factory prior to reattempting operation of the switch.

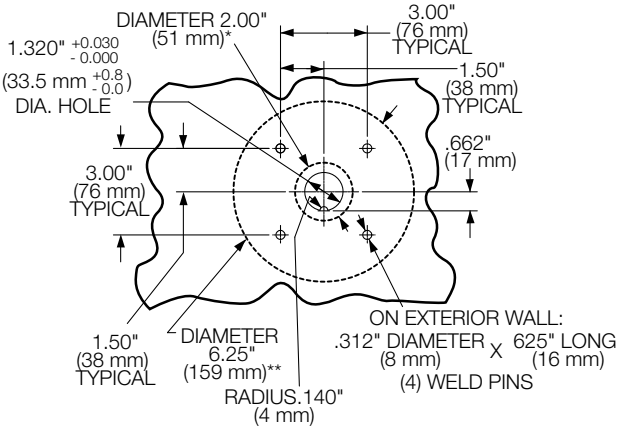


Figure 9. Hole and weld pin placement detail (Ring-Mount design only).

Notes:

Pre-fabricated conversion plates available. Order P/N 2037424C04M.

Weld pins should not be used with optional pad-lockable handle.

* Exterior mounting surface must be flat within .010" (0.25 mm) over entire area.

** Interior mounting surface must be clear of obstructions.

⚠ WARNING

Hazardous voltage.

- **Do not operate loadbreak equipment if a fault condition is suspected. Doing so can cause an explosion or fire.**
- **Use a hotstick to operate transformer loadbreak equipment.**
- **After operating transformer loadbreak equipment, check that voltages at transformer terminals are the expected values. Checking voltages verifies that loadbreak equipment operated properly and the electrical circuit conditions are as expected.**
- **Before servicing transformer secondary connected equipment, verify that all transformer secondary terminals have zero voltage and ground the transformer secondary terminals following industry accepted safe grounding practices. Grounding secondary terminals protects against situations such as a standby generator energizing transformer from the secondary circuit.**
- **Follow industry accepted safety practices. Utilize protective clothing and equipment when working with loadbreak equipment.**
- **These recommendations are in addition to any utility, end user, federal, state, local, or municipal regulations which may apply.**
- **Failure to follow this warning could result in component failure, property damage, severe injury, or death.**

⚠ WARNING

Transformers use conventional transformer oil or Envirotemp™ FR3™ fluid for an insulating liquid. When the insulating liquid temperature is less than -20 °C (-4 °F) for conventional transformer oil or less than -10 °C (14 °F) for Envirotemp™ FR3™ fluid, the increase in fluid viscosity may reduce make and break capabilities of loadbreak devices. Below these temperatures, under-oil loadbreak accessories should not be used to make or break a load. Instead, de-energize transformer from a remote upstream source before operating under-oil loadbreak devices. Failure to follow this warning could result in equipment damage, severe injury, or death.

This page is intentionally left blank.

This page is intentionally left blank.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

Printed in USA
Publication No. MN800002EN Rev 01
(Supersedes MN800002EN Rev 00)

For Eaton's Cooper Power series product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.

Powering Business Worldwide