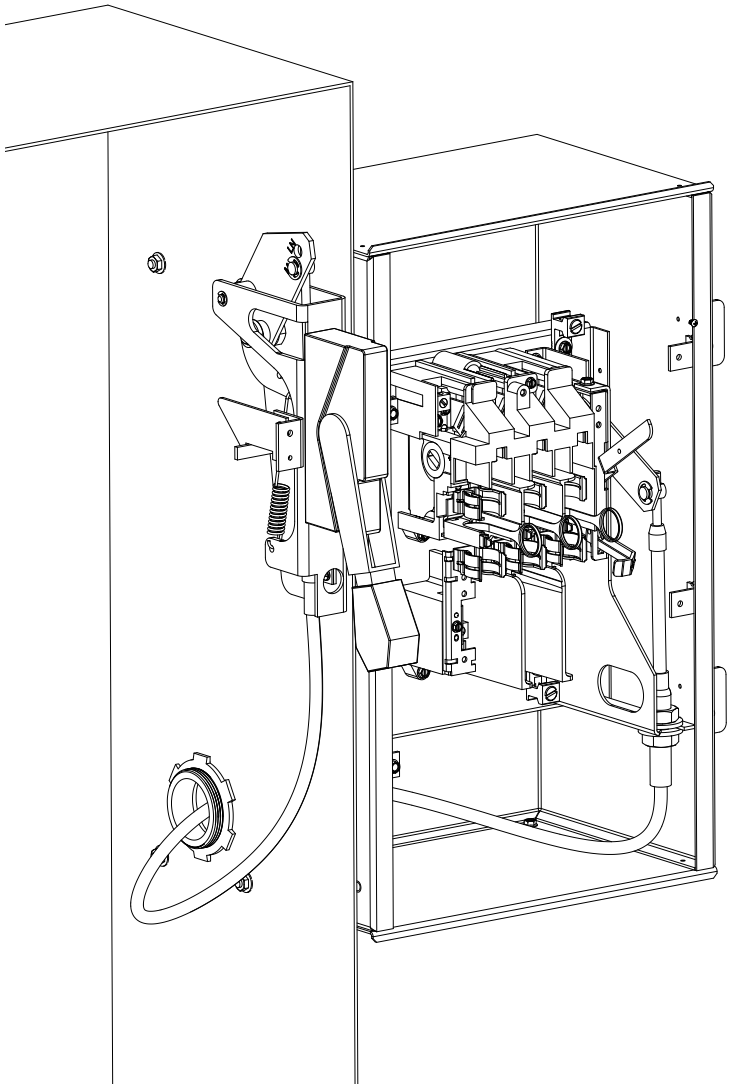
Instruction Leaflet **IL008019EN**

Effective September 2019
Supersedes December 2018

Instructions for Installing OLI Disconnect and Flex Shaft™ Handle Mechanism



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⚠ WARNING

DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. SEVERE PERSONAL INJURY, DEATH, OR SUBSTANTIAL PROPERTY DAMAGE CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH THE TASK, AND ALWAYS FOLLOW GENERALLY ACCEPTED SAFETY PROCEDURES.

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The recommendations and information contained herein are based on Eaton's experience and judgment, but should not be considered to be all-inclusive or covering every application or circumstance which may arise. If any questions arise, contact Eaton for further information or instructions.

General Information

The OLI (OEM Line Isolation) Switch provides an externally mounted disconnecting means for a customer control panel. This external disconnect allows users to access their control panel while being isolated from line side voltage. The switch can be used with NEMA 1, 3R, 12, 4 and 4X enclosure applications, depending on the unit selected. An operating handle, flexible shaft, and mechanism ship with each unit, and are required to operate the switch. The customer control panel enclosure must be a Disconnect Enclosure style, including a flange and a cutout for the Eaton C371 flex shaft operating handle. The OLI is Underwriters Laboratories, Inc listed under UL Files E222859 and E478865. The flex shaft assembly is listed under UL File E64983.

⚠ WARNING

WHEN INSTALLING A NEW HANDLE MECHANISM, OR NEW DISCONNECT AND HANDLE MECHANISM IN AN EXISTING ELECTRICAL SYSTEM, MAKE SURE THERE IS NO VOLTAGE PRESENT WHERE WORK IS TO BE PERFORMED. SPECIAL ATTENTION SHOULD BE PAID TO REVERSE FEED APPLICATIONS TO ENSURE NO VOLTAGE IS PRESENT. THE VOLTAGE IN ENERGIZED EQUIPMENT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY.

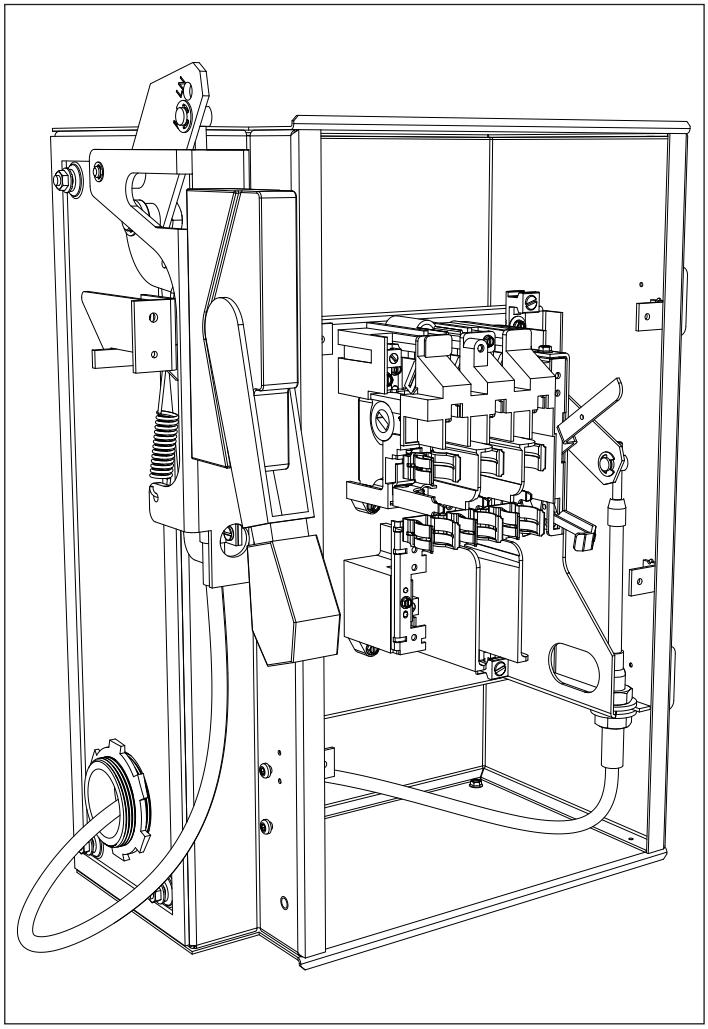


Figure 1. Final Assembly (Customer Enclosure Not Shown).

OLI Enclosure Installation

1. Secure the mounting template supplied with the OLI to control panel enclosure. The mounting template mimics the side of the OLI that will mount to the enclosure and shows location of mounting holes. The template should be mounted to the wall of the enclosure where the OLI will be mounted, typically on the right hand side (as you face the enclosure) close to the enclosure flange.

2. On the template, locate the center points of the mounting holes and drill clearance holes for ¼" diameter hardware. Remove template.

   Note: You may choose to create the opening detailed in Step 4 at this time, prior to mounting the OLI to the control panel enclosure. The opening would be located and created in the OLI enclosure only, prior to proceeding to Step 3. The opening in the control panel enclosure would be created in Step 4, and still lined with a chase bushing between the two enclosures.

3. Lift and align OLI enclosure to control panel enclosure. Install one ¼" diameter fastener (supplied by others) per mounting hole. Follow the instructions detailed in Figure 2. Tightening the fasteners will compress the gasket material on the side wall of the OLI between the two enclosures.

   Note: A copy of Figure 2 (PUB53025) is located on the inside cover of the OLI Switch.

4. Using appropriate tooling (either punch and die knockout, or hole saw) create an opening in which the load side power conductors, and the flex operator cable, can pass through both enclosures. Recommended area for locating the opening is shown on Figure 2. The opening is to be lined with a chase bushing or equal (supplied by others), per bushing manufacturer's instructions.

Flex Shaft Handle and Operator Installation

1. Remove the two ¼-20 x 5/8" (15.87 mm) screws and lockwashers from the outer handle mechanism. Place each screw and lockwasher through the pivot bracket assembly. Thread the retaining washers enclosed in the parts kit onto the 1/4-20 x 5/8" (15.87 mm) screws (see Figure 3).

2. Connect the actuator link from the outer handle mechanism on the pivot bracket assembly. Mount the pivot bracket assembly to the enclosure and outer handle mechanism by securing the mounting hardware. Attach the E-Ring supplied in the parts kit to the actuator link (see Figure 3).

3. Remove the line shield installed on the OLI switch by removing the line shield hardware. The line shield must be removed to connect the end of the flex shaft operator, to the switch operating mechanism. Feed the end of the flex shaft operator through the opening created in Step 4 of the OLI Enclosure Installation.

4. Mount the end of the flex shaft operator to the Switch Mechanism Bracket. To do so, thread the two Bulk Head Nuts to create a gap, and slide the gap into the Switch Mechanism Bracket. One Bulk Head Nut will be above the bracket, and one below (see Figure 5). The Bulk Head Nuts should be located low on their thread ends.

5. Insert the Cylinder Connector into the switch mechanism and secure with E-Ring (see Figure 5). Cylinder Connector should be threaded down such that approximately 4 or 5 threads are visible from the top.

6. With the OLI cover open, press down on the Switch Cover Defeater (see Figure 5) and actuate the Outer Handle Mechanism (ON, OFF) which is mounted on the customer enclosure. Ensure that OLI switch turns ON and OFF properly with handle throws. If minor adjustments are necessary, refer to the following adjustment checklist. Tighten the Bulk Head Nuts to secure the end to the bracket.

7. Re-install line shield.

8. Install appropriate door hardware (supplied); as referenced on Figure 3. Door hardware should ensure interlocking with handle operator, and customer enclosure door. Proper installation will not allow opening of customer enclosure door when handle is in the ON position.

9. Cover screws must be secured with door closed before throwing switch handle to the ON position.

Table 1. Torque Wire Pressure Screws

	Slotted Head Screws		Socket Head Screws	
	Wire Size	**Torque lb-in.**	**Socket Size Across Flats**	**Torque lb-in.**
30-100 Amp Switches	14-10 AWG	35	1/8	45
	8 AWG	40	5/32	100
	6-4 AWG	45	3/16	120
	3-1/0 AWG	50	7/32	150
200 Amp Switches	14-10 AWG	35	1/8	45
	8 AWG	40	5/32	100
	6-4 AWG	45	3/16	120
	3-1/0 AWG	50	7/32	150
			1/4	200
			5/16	275
			3/8	375
400 Amp Switches			1/4	200
			5/16	275
			3/8	500
			1/2	500
600-1200 Amp Switches			1/4	200
			5/16	275
			3/8	375
			1/2	500

Adjustment Checklist

Situation:

Switch closes when handle ON, but does not open when handle OFF.

Adjustment:

Remove the E-Ring from the Cylinder Connector, slide connector out of switch mechanism, and thread down the Cylinder Connector 1-2 rotations. Insert the Cylinder Connector back into the switch mechanism, and replace the E-Ring. Re-check the ON and OFF operation of the handle and switch. If not successful, repeat procedure. If still not successful, and the Cylinder Connector is bottomed out onto the shaft, loosen the Bulk Head Nuts, and shift the cable towards bottom of the OLI enclosure. Re-tighten the Bulk Head Nuts. Re-check the ON and OFF operation of the handle and switch. If not successful, repeat these steps.

Insure that there is at least 10 degrees of handle travel from where the switch opens to where the handle rests in the OFF position.

Situation:

Switch opens when handle OFF, but does not close when handle ON.

Adjustment:

Remove the E-Ring from the Cylinder Connector, slide connector out of switch mechanism, and thread up the Cylinder Connector 1-2 rotations. Insert the Cylinder Connector back into the switch mechanism, and replace the E-Ring. Re-check the ON and OFF operation of the handle and switch. If not successful, repeat these steps.

Situation:

Handle does not travel all the way down when thrown in OFF position to allow for padlocking.

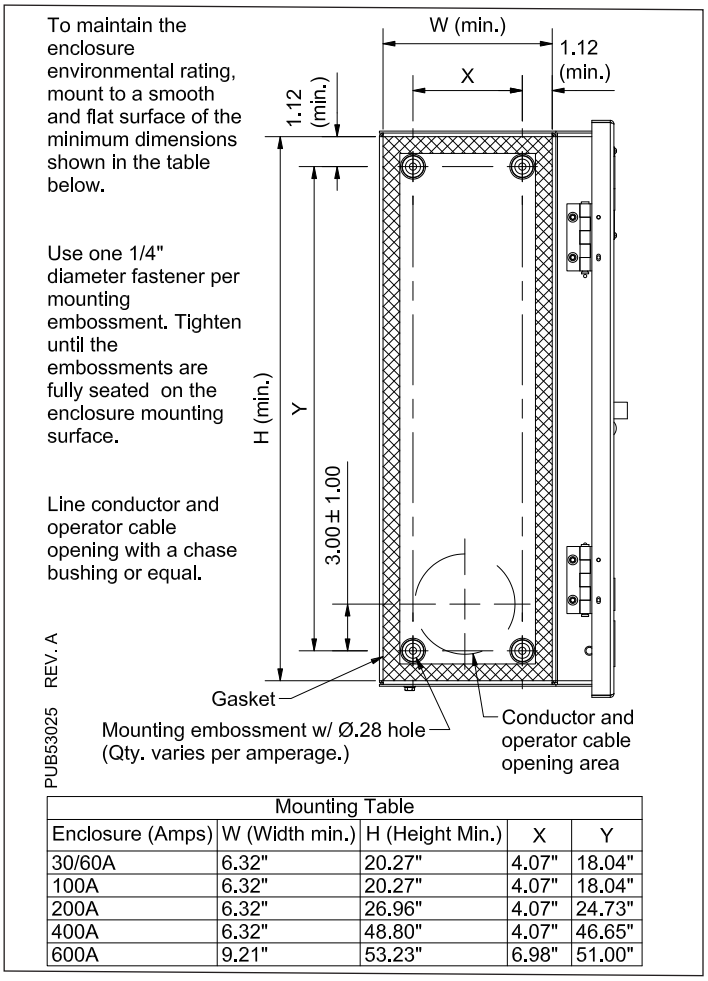
Adjustment:

Remove the E-Ring from the Cylinder Connector that is found on the Pivot Bracket Assembly/Toggle Mechanism Bell Crank (see Figure 3). The Cylinder Connector should be moved from the hole marked "LN" to the hole marked "M". Do not attempt to thread this Cylinder Connector up or down its shaft. Replace the E-Ring. Verify handle travel. If necessary, make switch end cable adjustments per descriptions above.

Important Mounting Note:

In order to maintain necessary length of cable to properly operate the OLI switch mechanism, mount the OLI enclosure relatively flush with the front of the control panel enclosure. Also ensure the height of the OLI enclosure is such that the center of the enclosure is in close proximity to the center of the flange handle on the control cabinet.

Amp	Max Cable Length	Est. Length of Cable Length "Play"
30 A - 200 A	60"	6"
400 A	72"	6"



Mounting Table				
Enclosure (Amps)	W (Width min.)	H (Height Min.)	X	Y
30/60A	6.32"	20.27"	4.07"	18.04"
100A	6.32"	20.27"	4.07"	18.04"
200A	6.32"	26.96"	4.07"	24.73"
400A	6.32"	48.80"	4.07"	46.65"
600A	9.21"	53.23"	6.98"	51.00"

Figure 2. Enclosure Mounting.

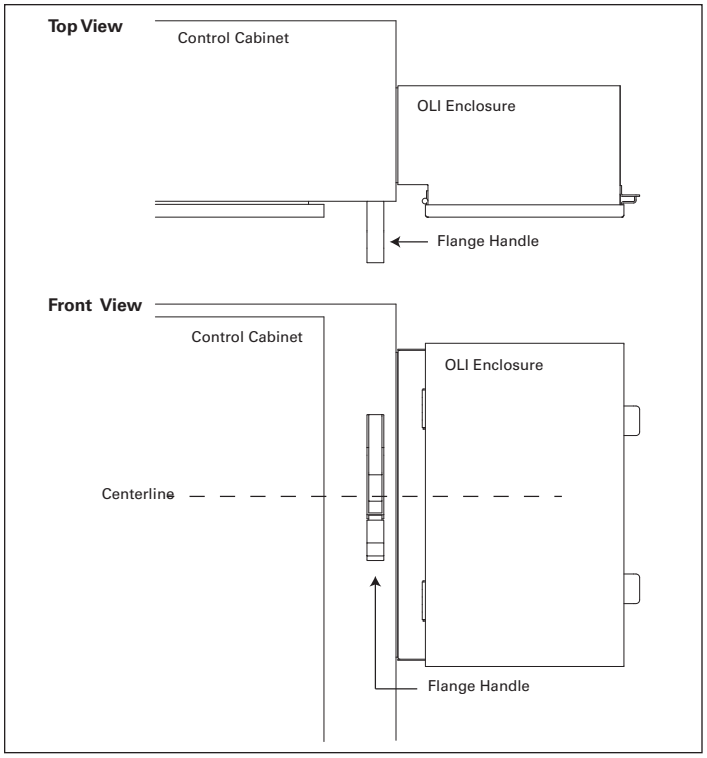


Figure 3. Top and Front View.

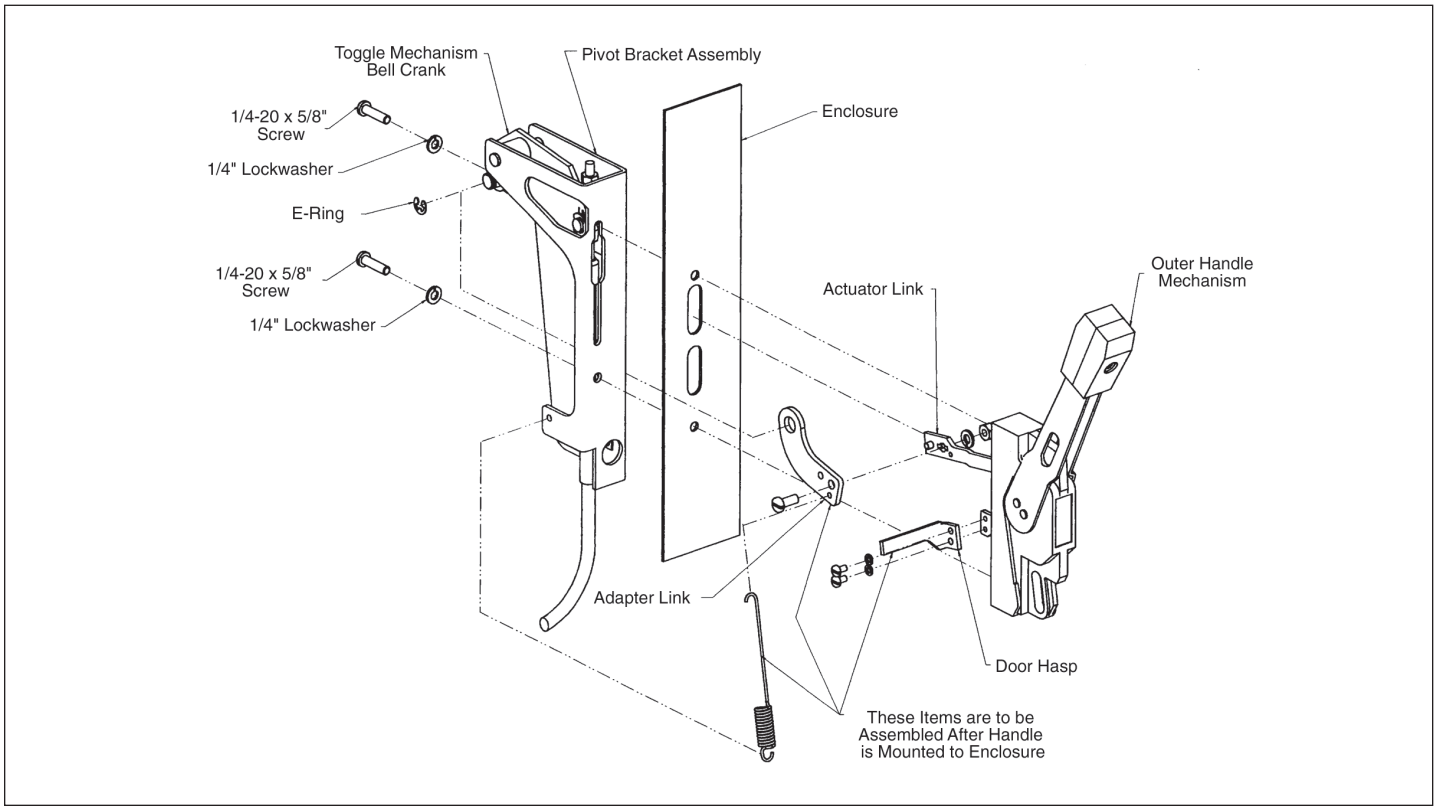


Figure 4. Pivot Bracket and Outer Handle Mechanism Assembly.

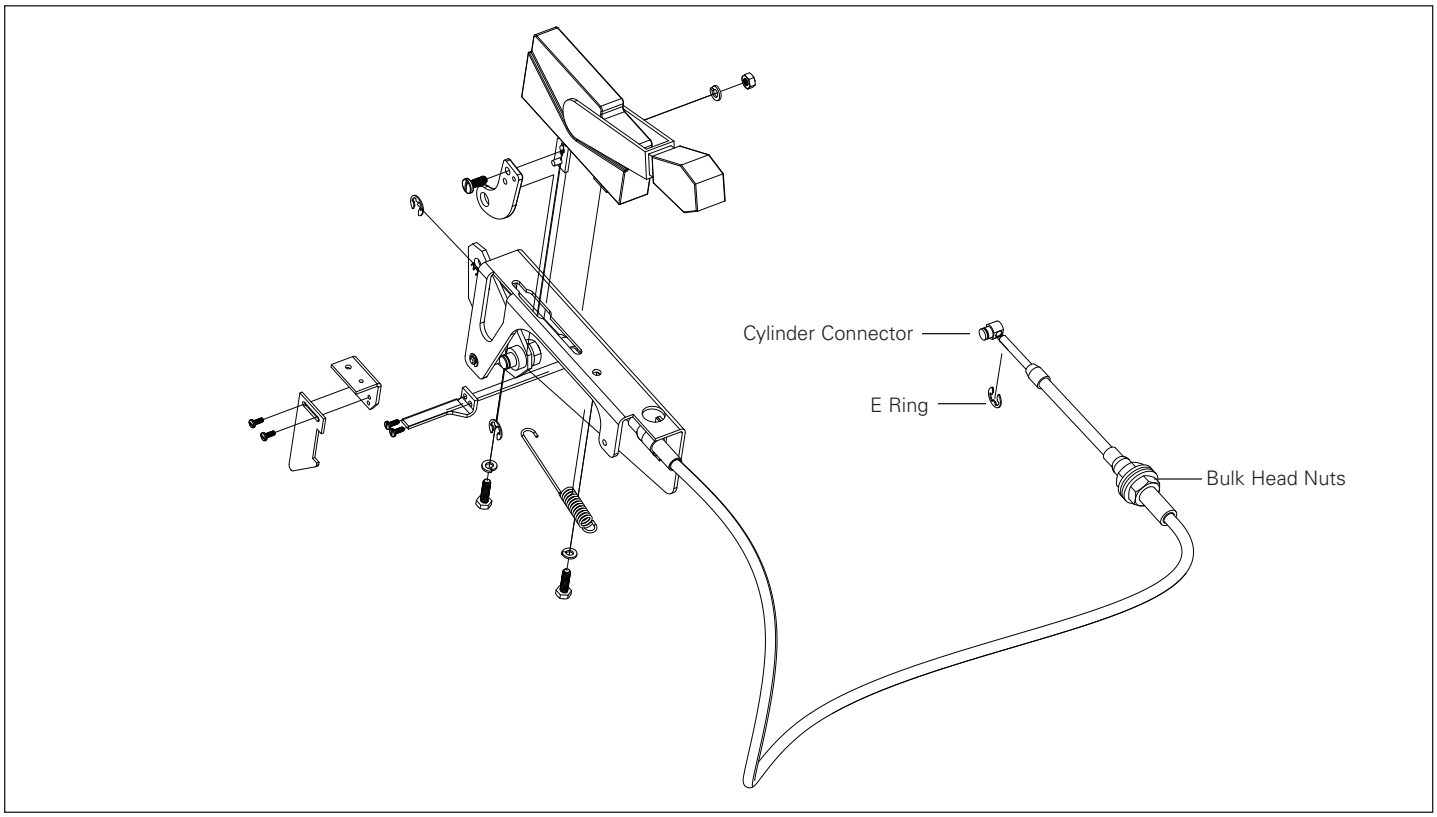


Figure 5. Assembly Exploded View.

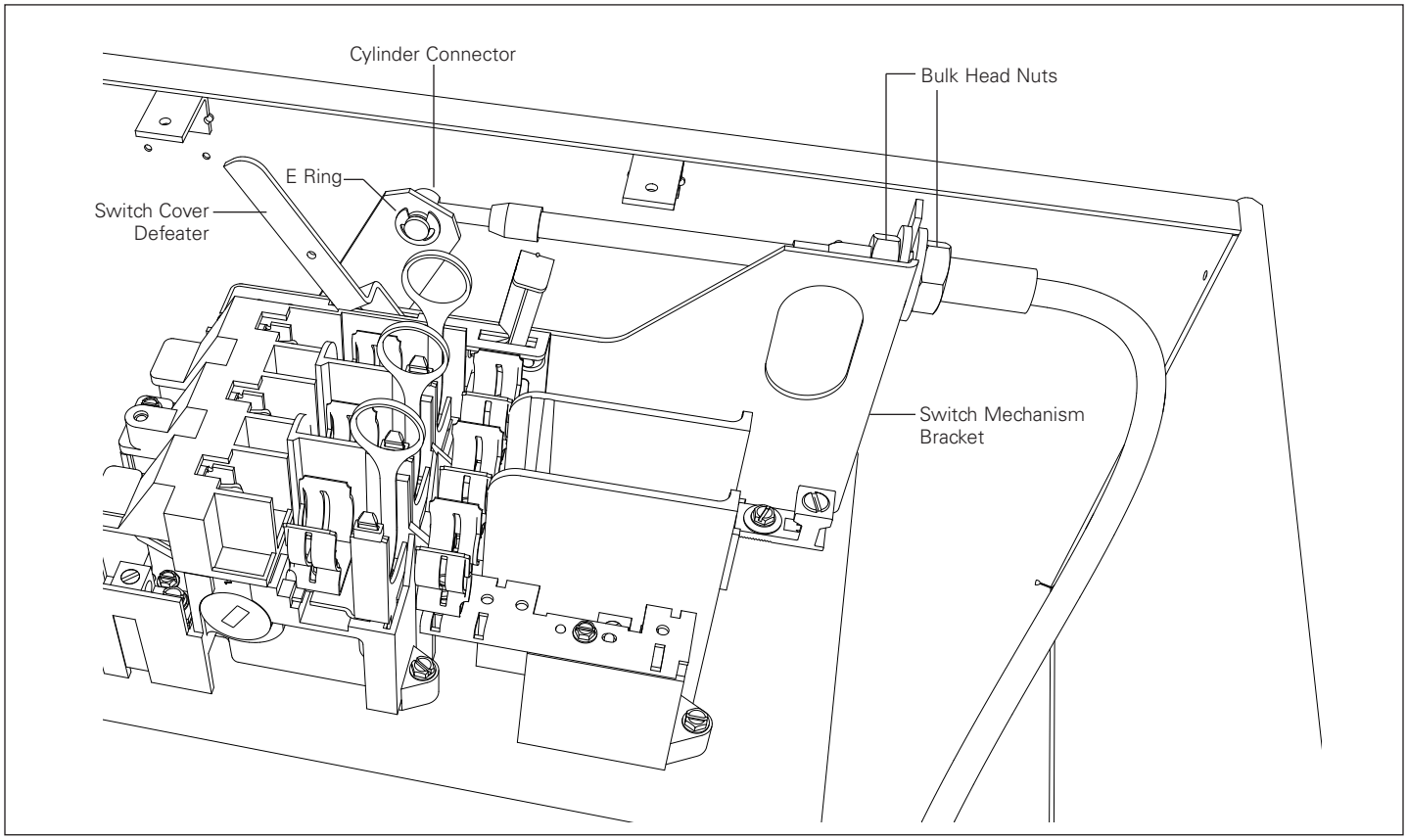


Figure 6. Mechanism Assembly.

Handle Mechanisms (Dimensions in Inches) Outline and Drilling Plans for Enclosure Door Interlock Assembly

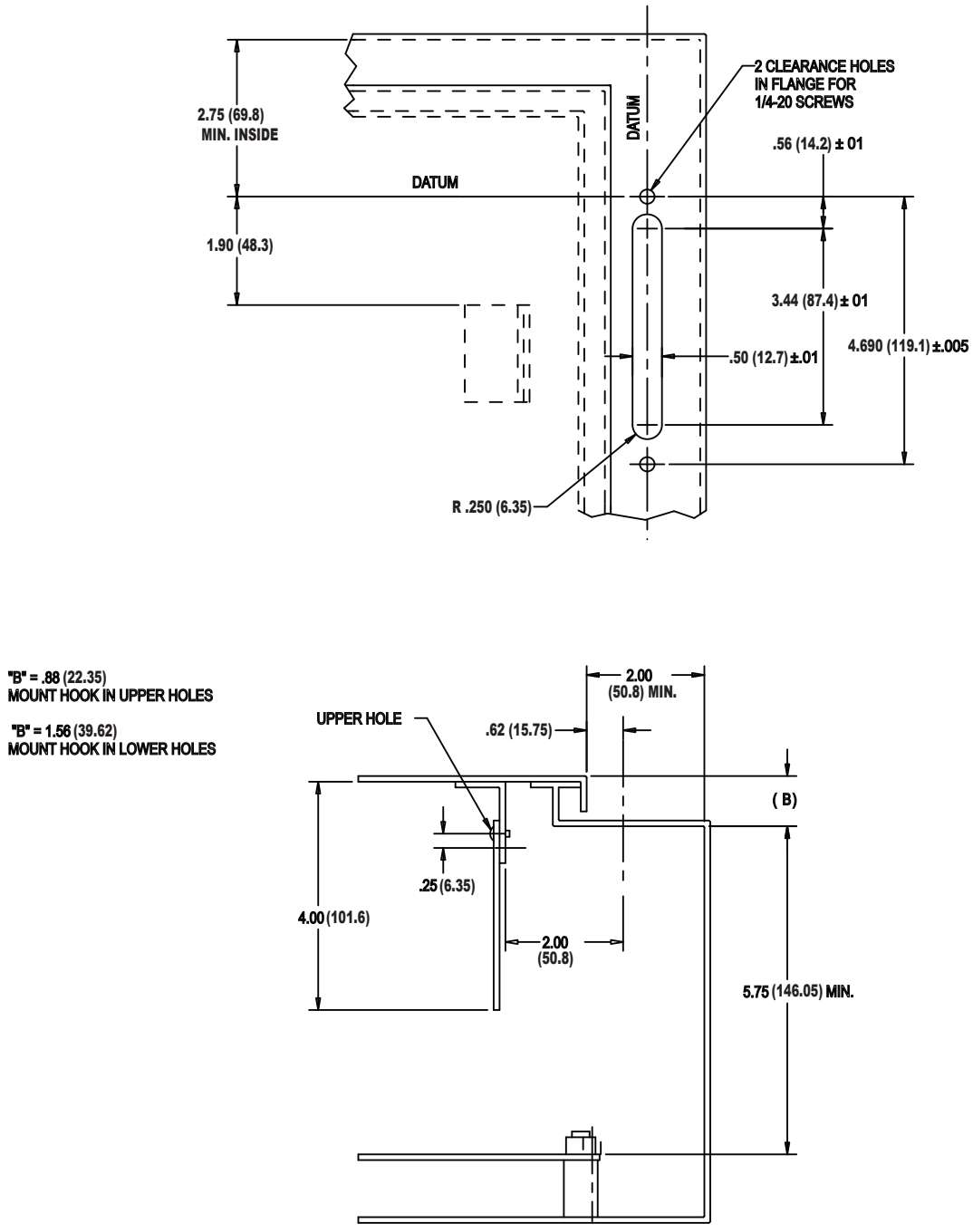


Figure 7. Flange Drilling Plan for Handle and Interlock Blade Mounting Dimensions.

Table 2. OLI Post Installation Check List

Prior to operating the OLI switch for functional testing with doors open be sure to defeat interlock levers in OLI cabinet and Control Cabinet	
Verify correct cable length installed	60" cable included for 30A -200A
	72" cable included for 400A -600A
Installation Location - Front of Control Cabinet	OLI should be installed near flush front of control cabinet
Installation Location - Vertical Alignment	Center of OLI should line up with control cabinet handle mechanism
Switch Mechanism	
Confirm Door Interlock Functionality	With operating handle in the on position confirm that OLI door will not open
Number of Threads Showing on Cylinder Connector	Confirm 4-5 threads showing on cylinder connector
Bulk Head Nut Adjustment	Confirm bulk head nuts are located low on their thread ends
Bulk Head Nut Tightness	Confirm bulk head nuts are tight
E-Ring Installation on Cylinder Connector	Confirm e-ring is installed on cylinder connector
Switching Base	
Switch Base Functional (Handle OFF Position)	Confirm that switch opens with 10 degrees of travel from opening to rest position
Switch Base Functional (Handle ON Position)	Confirm that switch closes and switch blades make contact on all poles
Fuse Base Condition	Confirm fuse bases and installed fuses are tight (N/A if non-fusible OLI)
Line and Load Side Lugs and Conductors Tight	Confirm lugs tight on switch / fuse base and confirm proper torque on conductors
Voltage Indicator Ring and Terminal Blocks Tight	If voltage indicators are installed confirm ring terminal and terminal block connections
Line Shield Installation	Confirm clear line shield is installed
Control Cabinet Door Handle Hardware	
Control Cabinet Door Interlock Functionality	With operating handle in on position confirm that cabinet door will not open
Pivot Bracket Attachment Screw Tightness	Confirm that screws attaching pivot bracket to control cabinet are tight
Pivot Bracket Cable Installation Threads Showing	Confirm threads above cable connection on pivot bracket (factory set adjustment)
Adapter Link Rivet Installation	Confirm rivet between actuator line and adapter link is installed
Adapter Link Screw, Washer, Nut Tightness	Confirm screw, washer, and nut connecting adapter link to actuator link tightness
E-Ring Installation	Confirm e-ring is installed on pivot bracket assembly
Actuator Link Spring Installation	Confirm spring is installed on adapter link
Door Hasp Screw Installation	Confirm two screws installed on door hasp
Prior to final operational checks ensure that the OLI door is screwed closed and the control cabinet door is closed	
Overall Operating Condition / Normal Handle Pressure	Verify smooth handle operation(on and off) requiring 8-12 lbs of handle pressure
Confirm Switch Operates Open and Closed	Confirm OLI switch opens and closes with handle operation to on and off position

For additional details on functional testing and verification of proper installation please reference Eaton OLI Installation Verification Instruction Booklet IB008001EN.

Notes:

Instructions for Installing OLI Disconnect and Flex Shaft™ Handle Mechanism

The instructions for installation, testing, maintenance, or repair herein are provided for the use of the product in general commercial applications and may not be appropriate for use in nuclear applications. Additional instructions may be available upon specific request to replace, amend, or supplement these instructions to qualify them for use with the product in safety-related applications in a nuclear facility.

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