



AN ISO 9001 COMPANY

## INSTALLATION AND OPERATIONS MANUAL

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## IMPORTANT! READ CAREFULLY

The Pivotal Edge® is simple to operate. However, as with any powered equipment, it must be operated properly to be safe. Before using the Pivotal Edge®, read this Operator's Manual carefully. It contains valuable information that is necessary for safe operation. Observe all safety rules and become completely familiar with the controls.

For warranty service, parts and repairs or to answer any questions you may have contact us at:

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## SAFETY AND WARNINGS

**Note: Improper operation of powered equipment can cause serious injury or death.**

Pictured below are operations and actions that require attention by the Pivotal Edge<sup>®</sup> operator. Please read and understand the manual to avoid injuries.



### Warning – Rotating Equipment Hazard

The operator should be aware that the Pivotal Edge<sup>®</sup> is designed to rotate when opening and closing. Under no circumstances should a person be near the manhole when it is being opening or closing.



### Warning – Pinch Point Present

During the opening and closing of the manhole cover, pinch points exist near the actuator and cover of the Pivotal Edge<sup>®</sup>. The operator must make sure that no one is near the manhole during operation.



### Warning – Contents Under Pressure

All persons working near the Pivotal Edge<sup>®</sup> should be aware that opening the cover while contents are under pressure will cause a sudden release of pressure. Tank must be depressurized before opening.



### Warning – Fall/Trip Hazard

Care should be taken when servicing the Pivotal Edge<sup>®</sup> that appropriate fall protection in place.



### Warning – Read Operator's Manual

Before operating the Pivotal Edge<sup>®</sup>, read and understand the safety and operating instructions.



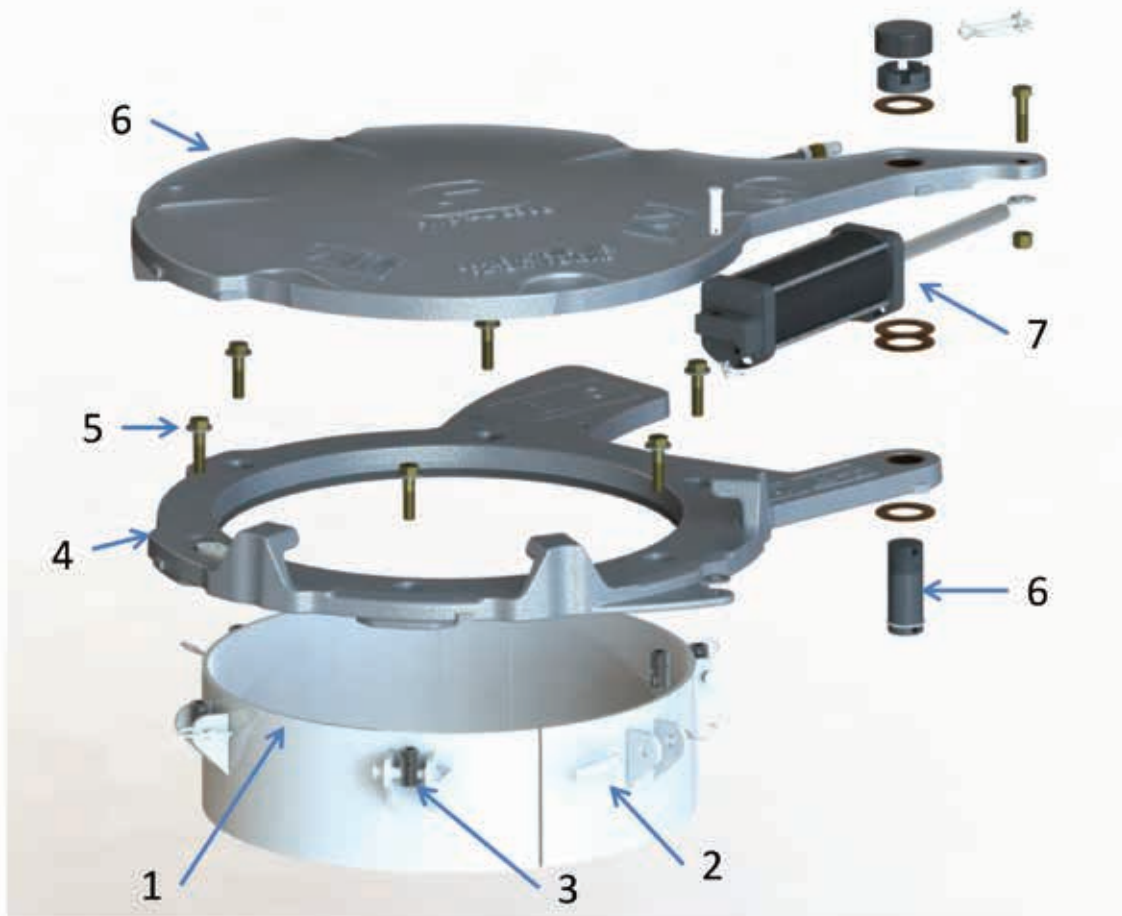
### Warning – Remote Operation

All persons working near the Pivotal Edge<sup>®</sup> should be aware that operation is controlled remotely. Under no circumstances should the operator activate the manhole when someone is on top of the trailer.

## INSTALLATION/ASSEMBLY OVERVIEW

### **INSTALLATION OVERVIEW**

1. MANWAY PREPARATION
2. CROSS PIN MEASUREMENT AND BOLT SELECTION
3. CLEVIS NUT INSTALLATION
4. FLANGE POSITIONING
5. FLANGE BOLT TIGHTENING
6. COVER PLACEMENT AND PIVOT PIN INSTALL
7. ACTUATOR CYLINDER INSTALLATION
8. CONTROL BOX MOUNTING
9. AIRLINE ROUTING
10. SYSTEM TEST



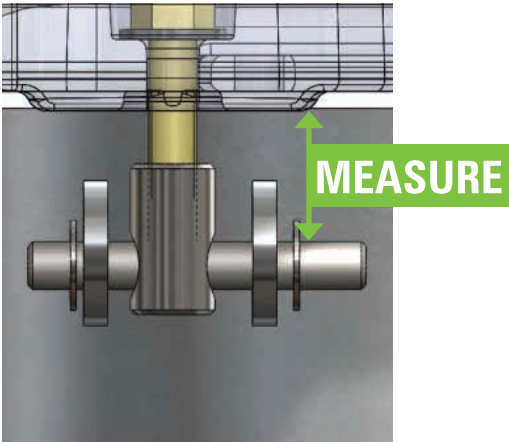
## INSTALLATION GUIDE

### RETRO FITTING PREPARATION

- Remove existing cover
- Remove existing latch and hardware.
- Clean top mating surface (ring)



Refer to picture below and measure distance from top of pin to top of ring to determine if the 2" bolts supplied will work or if a different length is needed. The bolts are 1/2" - 20 fine thread. Make sure the pin is raised up to the top of the tab holes when measuring.



### BOLT LENGTH APPLICATION

**PROPER BOLT LENGTH IS CRITICAL FOR PROPER INSTALLATION!**

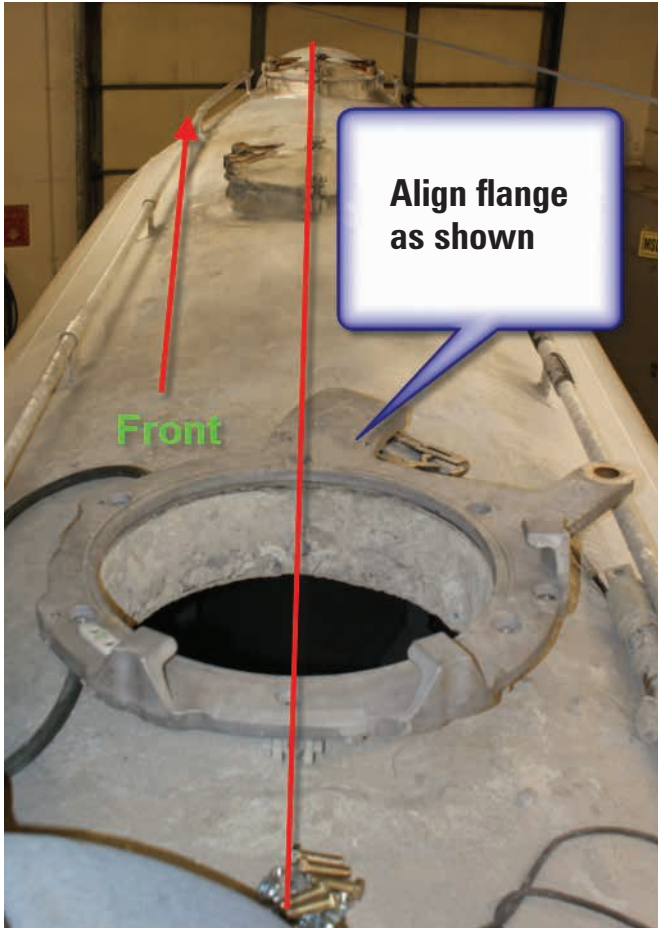
**Step 1. Measure as shown in image to the left.**

If your measurement (in inches) is...	Then use....
<1 1/2 to 1 1/2	2" bolt and 2 washers
>1 1/2 to 1 3/4	2" bolt and 1 washer (supplied)
>1 3/4 to 2	2 1/4" and 2 washers
>2 to 2 1/4	2 1/4" and 1 washer
>2 1/4 to 2 1/2	2 1/2" and 2 washers
>2 1/2 to 2 3/4	2 1/2" and 1 washer
>2 3/4 to 3	2-3/4" and 2 washers
>3 to 3 1/4	2-3/4" and 1 washer
>3 1/4 to 3 1/2	3" and 2 washers
>3 1/2 to 3 3/4	3" and 1 washer
>3 3/4 to 4	3-1/4" and 2 washers



## INSTALLATION GUIDE

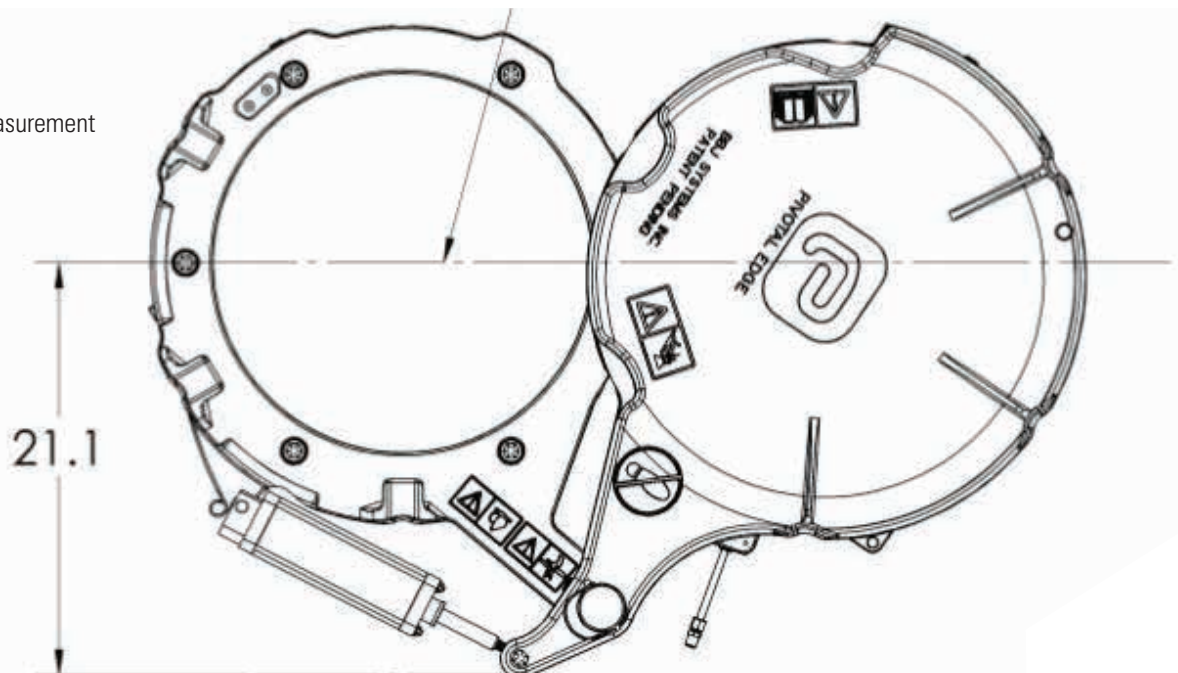
## FLANGE POSITION



## BASE FLANGE AND COVER

- Align hole 3 to the front of trailer, centering flange over the ring.
- Install clevis nut, cross pin and hair pin.

**Note: Once hardware is properly tightened, rotating the pins SHOULD NOT BE POSSIBLE.**

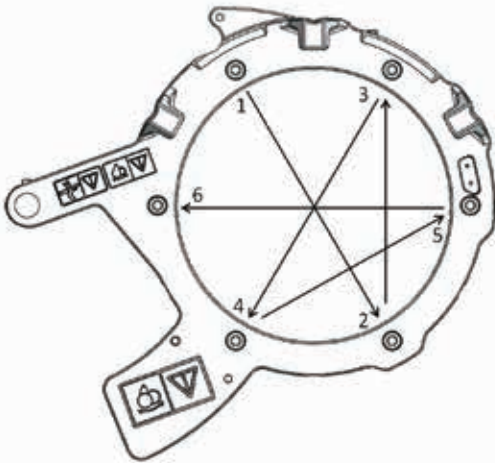


## INSTALLATION GUIDE

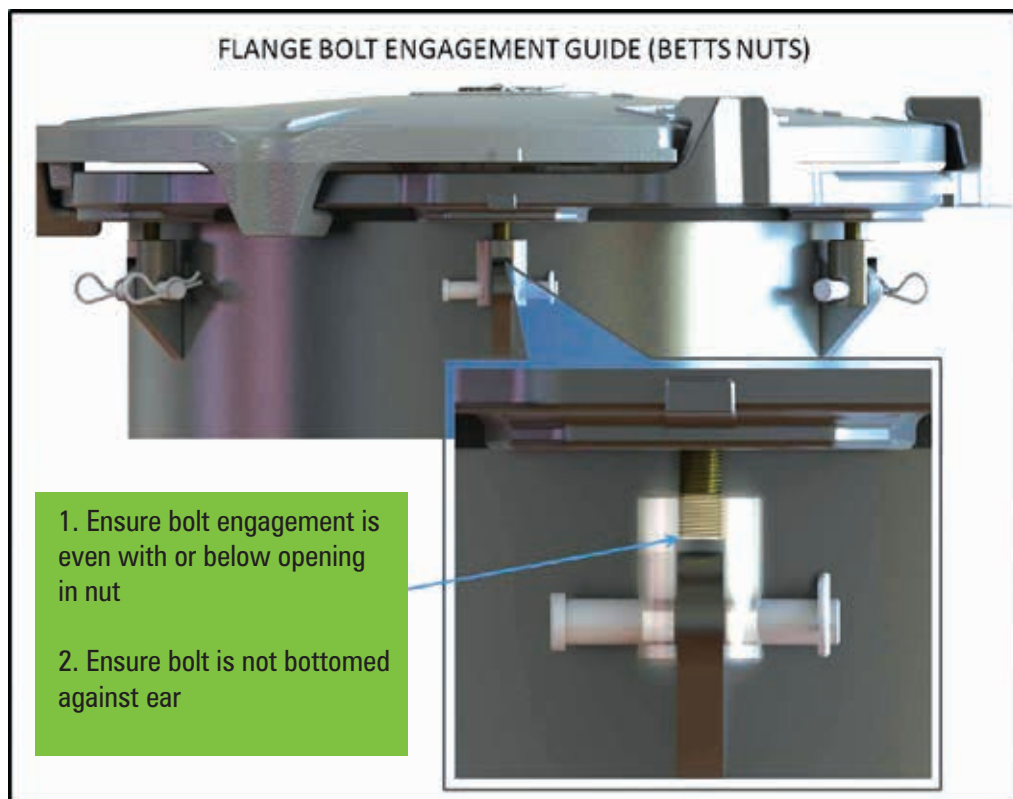
- Using a torque wrench, tighten the bolts beginning with 5 ft/lbs or 6.77Nm.
- Increase by increments of 5 ft/lbs or 6.7Nm until a final torque setting of 15 ft/lbs or 20.33Nm is achieved. When tightening the hardware, always use a “star” pattern sequence (*Fig. 2*).
- Typically the inside edge of the gasket will be flush with the inside of the flange opening.

**Note:** Check that bolts are not bottomed out against the clevis pins.

*Fig. 2*

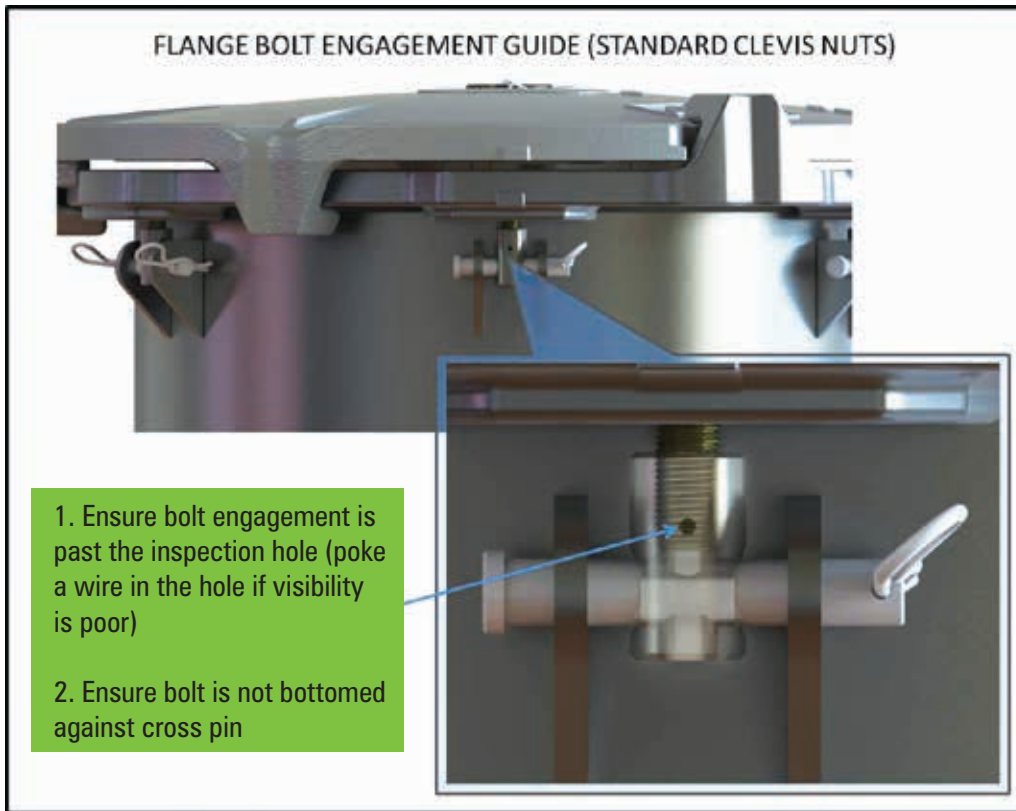


*Fig. 3*





## INSTALLATION GUIDE



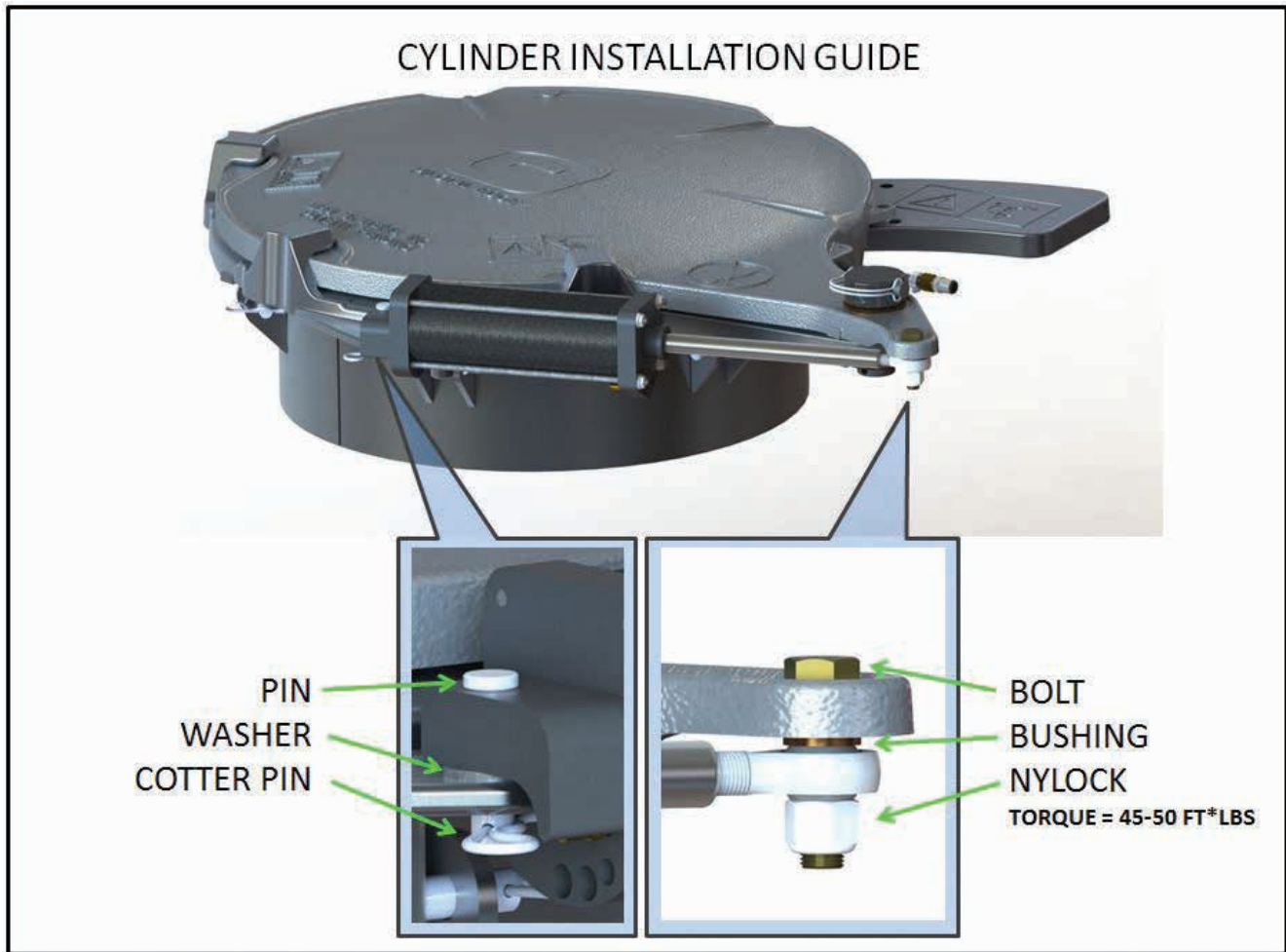
## HINGE PIN CONNECTION

Fit the cover to the flange and move into the closed position. Insert the hinge-pin with one thrust washer on the bottom, two washers between the flange and cover and one on the top of the cover. Apply anti-seize on the threads of the hinge-pin. Hand tighten the castle nut and insert the lock pin. (If necessary loosen to the first available hole.) Check the cover for smooth operation.



## INSTALLATION GUIDE

### CYLINDER INSTALLATION



## INSTALLATION GUIDE

### AIR-LINE ROUTING

Connect air supply from trailer to the supply on the control box using two ports of the tank and one DOT 3-way, 1-1/4npt - 3/8 fitting (supplied) (*Fig. 8*). We recommend a trailer protection valve be used. Run 3/8" air from the supply tank to the control box, a DOT approved 3-way Tee has been provided. Typical connection is after the trailer protection valve. There must be constant air to the control box for proper operation of seal and air knife.



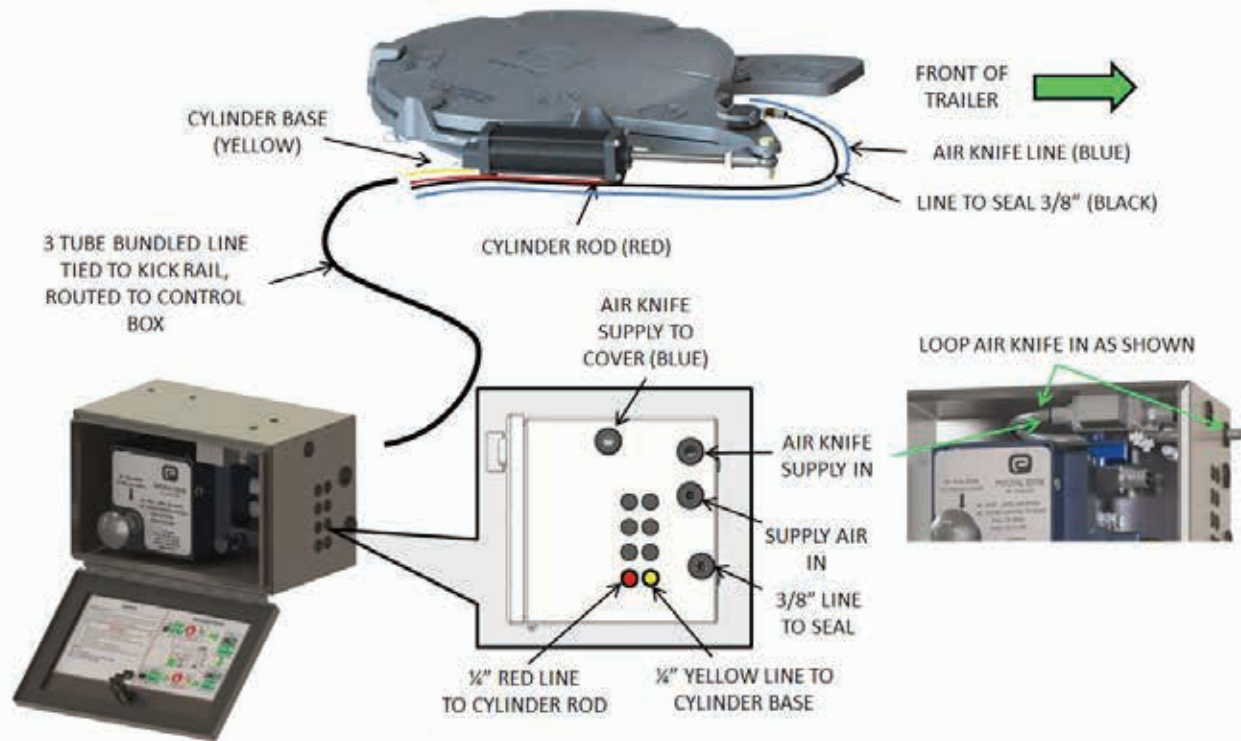
*Fig. 8*



## INSTALLATION GUIDE

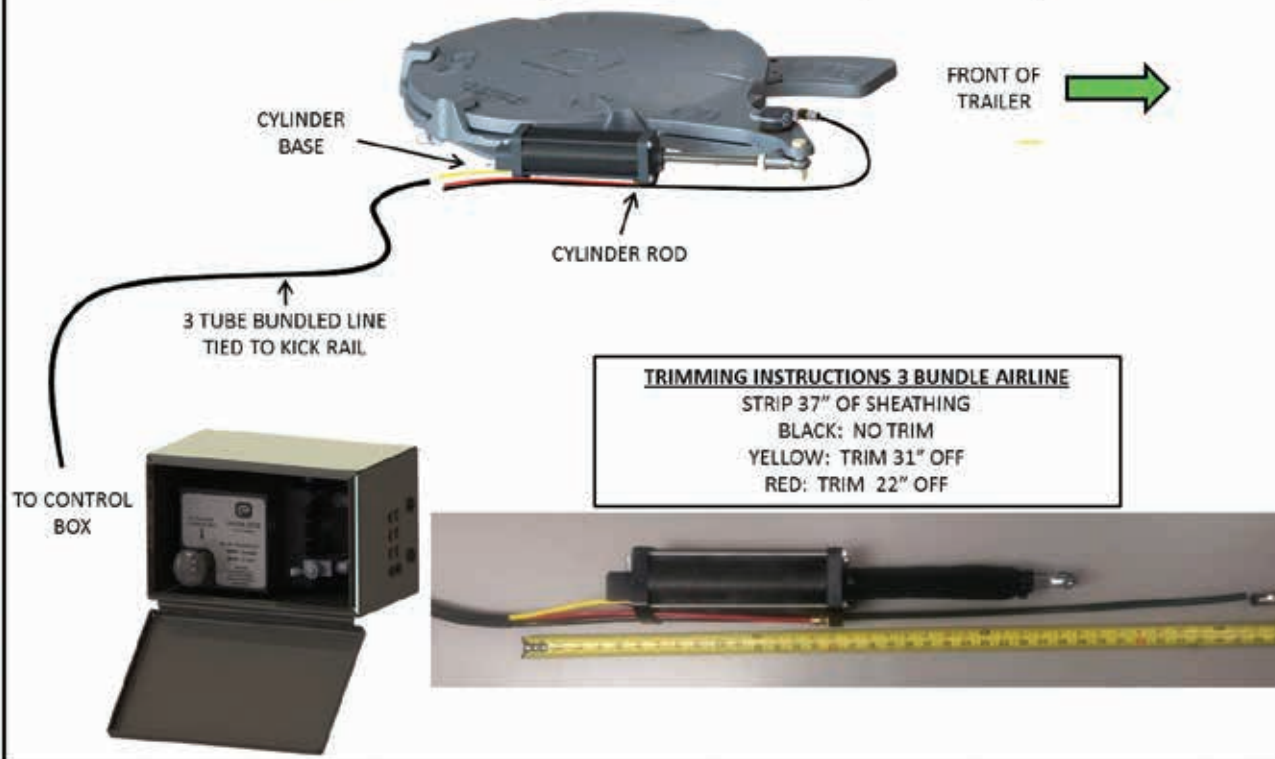
### PLUMBING SCHEMATIC (SINGLE COVER INSTALL, W/ AIR KNIFE)

PN: 103885



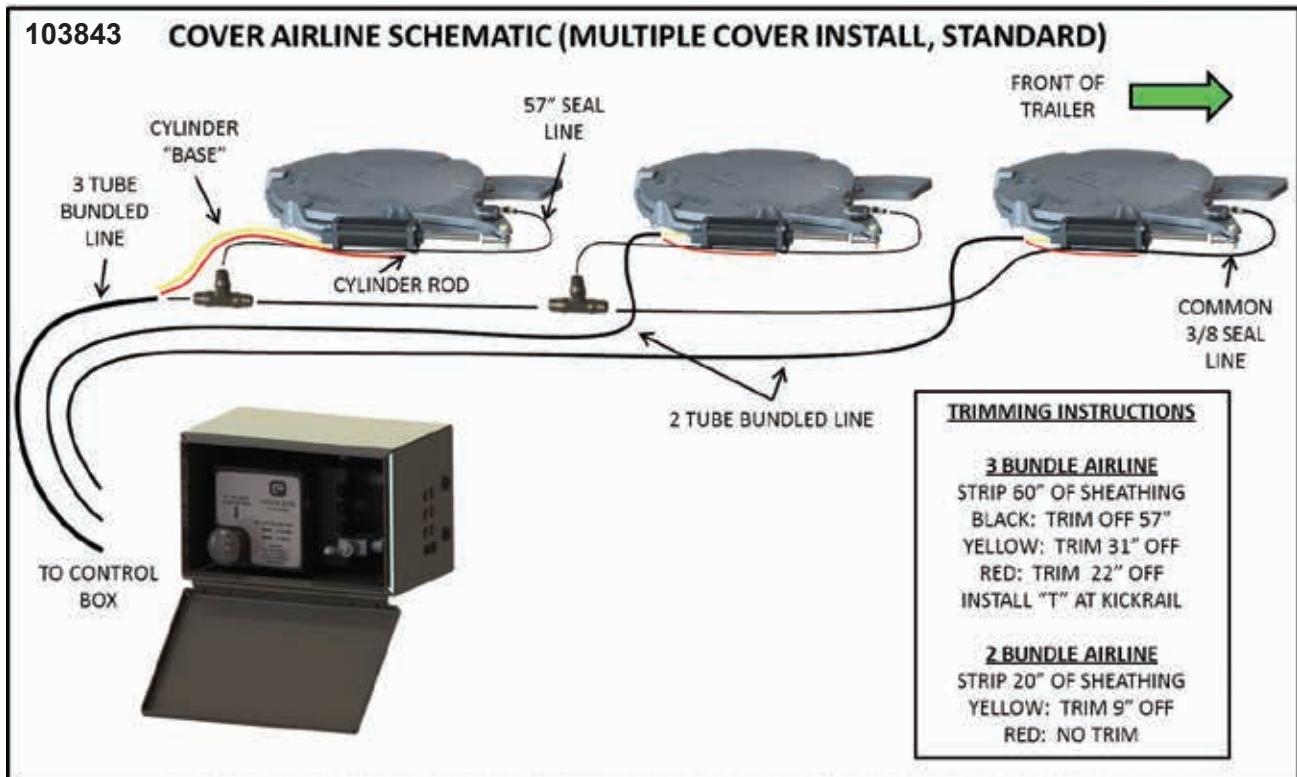
103843

### AIRLINE SCHEMATIC (SINGLE COVER INSTALL, STANDARD)





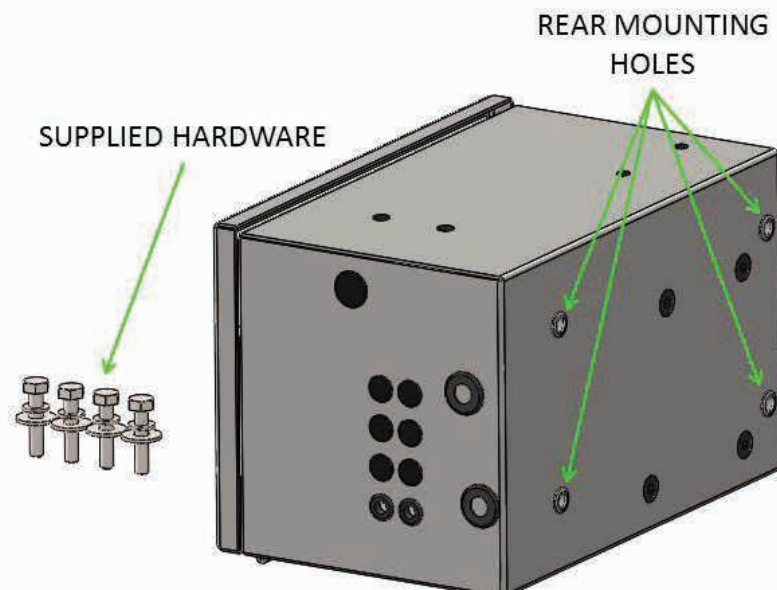
## INSTALLATION GUIDE



## CONTROL BOX MOUNTING

The control box has 4 holes with 1/4-20 thread in the rear of the box.

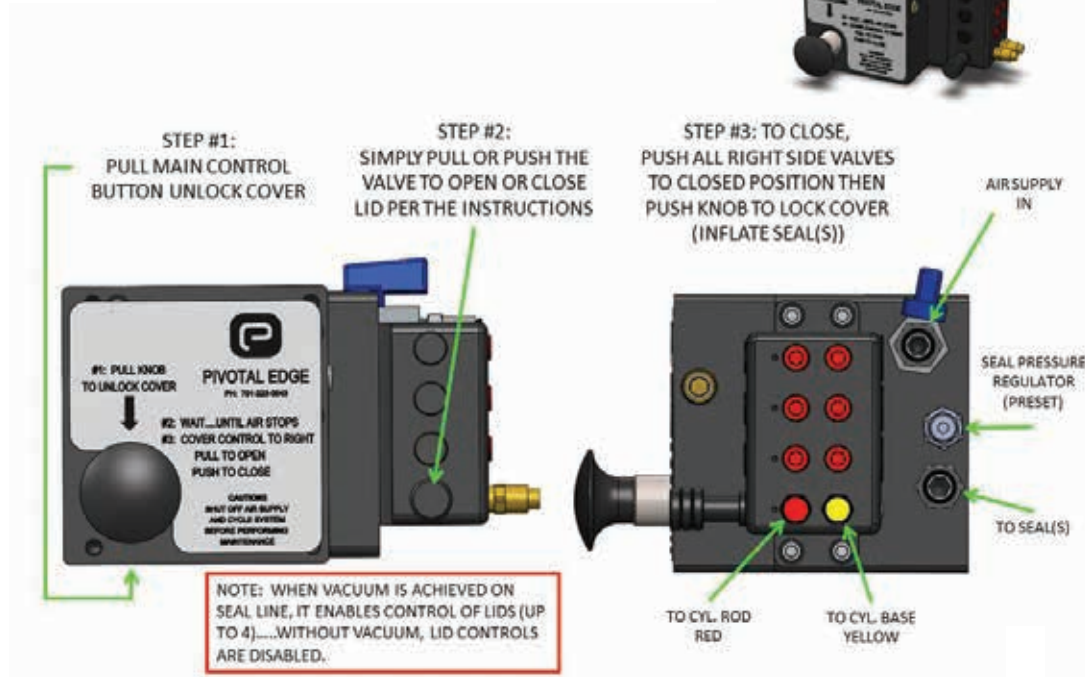
### MOUNTING



# INSTALLATION GUIDE

## DRIVER TRAINING

### PIVOTAL EDGE VALVE AND OPERATION



### FLANGE CLEANING VIA AIR PURGE

#### PERFORM EVERY TIME AFTER UNLOADING!

A FAST AND EASY WAY TO KEEP YOUR LID OPERATING WELL DAY IN AND OUT

#### INSTRUCTIONS:

1. AFTER UNLOAD IS COMPLETE, DECREASE TANK PRESSURE TO 2-3 psi
2. PULL PIVOTAL EDGE CONTROL BOX KNOB TO DEFLATE SEAL  
THIS WILL ALLOW THE PRESSURE TO PURGE BETWEEN THE COVER AND THE FLANGE CLEARING EXCESS MATERIAL FROM THE OPENING
3. OPEN TRAILER SAFETY BLOW DOWN VALVE
4. RESEAL COVER BY PUSHING IN THE PIVOTAL EDGE CONTROL KNOB



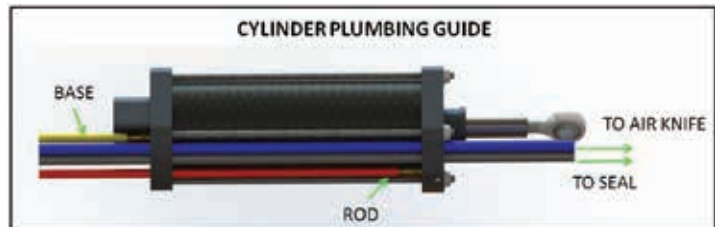


## INSTALLATION GUIDE

### AIRLINE COLOR CODING

Red=Rod-end of cylinder

Yellow (or green for metric)=Base-end of cylinder  
3/8" or 10mm black is supply and seal.



## INNER BOX DECAL/VALVE OPERATING INSTRUCTIONS

### NOTES

#### OPERATION NOTES:

1. UNLOCKING COVER INITIATES VACUUM IN SEAL (AIR WILL FLOW)
2. ONCE VACUUM IS ACHIEVED COVER CAN BE OPENED OR CLOSED
3. ENSURE COVER IS CLOSED PRIOR TO LOCKING



#### CAUTION!!



- SHUT OFF AIR SUPPLY (BLUE HANDLE VALVE) AND CYCLE SYSTEM BEFORE PERFORMING MAINTENANCE
- ADD NO OIL OR ALCOHOL TO THE AIR SYSTEM.....THESE WILL HARM THE VALVE
- SEAL PRESSURE NOT TO EXCEED 50 PSI
- USE FALL PROTECTION WHEN SERVICING COVER

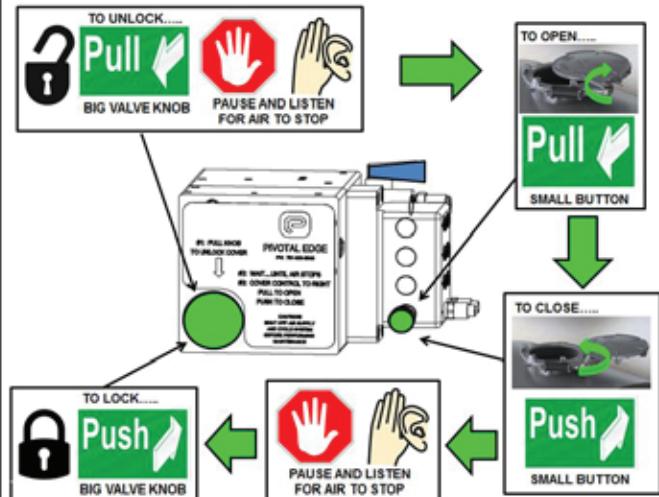
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### INSTRUCTIONS



## GENERAL MAINTENANCE

### SERVICING THE PIVOTAL EDGE COVER

Turn off the supply line valve. Pull the inflatable seal knob and flip the cover switch to de-energize the cylinder. Disconnect the yellow and red ¼" lines from either the control box or the cylinder. The cover should now move freely to allow for servicing. When done servicing manually close the cover, make sure the control valve switch is in the closed position, push in the control box knob and turn on the supply line to the control valve. Cycle the cover a couple times to test the system before returning to service.

### TROUBLESHOOTING

1. The operation of the cover should be smooth and easy.
  - a. If not clean buildup on and around the flange and cover. Pay attention to under the ears also.
2. Leaks when starting to pressurize the tank.
  - a. Deflate the seal by pulling the control valve knob to deflate the seal, thereby purging the tank pressure, wait a few seconds and push the knob back in to inflate the seal – no more than 4psi.
  - b. Reduce unloading pressure. Check seal integrity when possible.

3. Tanker Operating Pressure	Required Seal Operating Pressure
2.0 Bar (29.0 PSI)	3.3 Bar or (48 PSI)
2.5 Bar (36.3 PSI)	3.7 Bar (54 PSI)

### CLEANING

Moisture will result in product bonding between the cover and flange. Purging will not remove this hardened material and it will continue to build up over time. We recommend opening the lid and inspecting the entire surface of the flange for product buildup that needs to be scraped away. This should be done weekly at first. Then adjust accordingly to what is necessary based on your loading conditions. An air operated needle scaler is the best tool to use for cleaning product buildup.

## PREVENTIVE MAINTENANCE

### PIVOTAL EDGE – PNEUMATIC HATCH (Assembly #103885)

Part No. / Task Description	Frequency			
	Pre-trip	Bi-weekly	First at 6 months	Thereafter every 12 months
Air lines and control box Check operation	X			
Cover build-up/cleanliness Conditional		X		
Remove and inspect cover			X	X

### TOOLS AND MATERIALS THAT MAY BE REQUIRED

2 x Channel lock pliers, rubber or plastic hammer, anti-seize, dry lubricant, wire brush, emery cloth, small pry bar, 3/4" socket, scraper (putty knife), needle scaler.

### MAINTENANCE PROCEDURE – REMOVE & INSPECT COVER

- Close the supply air ball valve and deflate the seal by pulling the control box button out. Cycle the switches several times to relieve all accumulated pressure on the system.
- Disconnect the airline at the control box for the rod, and base line.
- Disconnect the seal airline at the quick-connect by the cover.
- Remove the nut at the rod end of the cylinder (two 3/4" wrenches).
- Remove the hinge pin D ring, plastic cover and 1.5" castle nut.
- Lift the cover up using equal pressure.
- Remove the 3/8" fitting and hose clamp on the end of the seal inflation tube.
- Remove the seal.
- Clean all surfaces, check and replace any visibly worn parts paying attention to the seal groove.
- Reassemble: the seal (see note 1) and connections, hinge pin, use anti-seize on threads, set tension hand tight loosen to closest hole if necessary, check for smooth operation prior to connecting actuator.
- Connect airline and check for clearance.
- Connect the cylinder.
- Open and close the cover by hand checking for smooth operation.
- Connect the airlines, turn on air supply and cycle the cover.

**NOTE 1 Seal installation:** The ring that the seal seats into needs to be clean. It is helpful to use an air powered needle scaler. Start by feeding the inflation tube through the hole, a small amount of soapy water on the tube and seal will help this process. Press the seal into the groove at four equal points around the seal. Work the seal into the groove using your fingers and thrust washer. Upon completion the seal should be flush or slightly recessed with the cover edge.

## PREVENTIVE MAINTENANCE

### REPLACEMENT PARTS LIST

#### Preventive Maintenance Parts Recommendations

Part No.	Description	Recommended Action
103755	Hinge pin cap	Replace every 12 months
103731	Cover Bushing	Replace every 12 months
103730	Flange Bushing	Replace every 12 months
103679	Hinge Pin	Visually assess and replace if necessary
103678	Thrust washers	Replace every 12 months
102665	Cover Slider	Visually assess and replace if necessary
102664	Flange Slider	Visually assess and replace if necessary
102419	Inflatable seal	Visually assess and replace if necessary
103933	Nylon sleeve	Replace as needed



## OPTIONS AND SUPPLIMENTS

**MULTI COVER OPERATION**

**18" RING ADAPTOR**

**24" RING ADAPTOR**

## SETUP AND PRESSURE TEST PROCEDURE

Covers are visually inspected for shipping damage.

The hinge pin bushing and slide are installed. The lower flange is bolted to the test stand following the star pattern. The flange is mounted to the test stand and the mounting bolts are torqued in 5lbs increments to a torque of 15ft/lbs.

### Cover setup

The seal retainer is installed and the hinge pin bushing is installed. The cover slider is mounted. The inflatable seal is installed and condition of the seal groove and seal are checked. The cover is mated to the lower flange on the test stand and hinge pin is installed.

### Operation check

The cover is checked for smooth operation and clearance. Actuation is installed and connections are made to the control box. A minimum of 15 cycles are run. The cover is closed with the seal inflated to a pressure of 65 psi. Pressure is applied to the test chamber to 50 psi and the supply line is shut off.

The cover is disassembled and stamped with a serial number and put into inventory or prepared for shipping.

**If you have any questions our website**

**[www.thepivotaledge.com](http://www.thepivotaledge.com)**

**will generally provide your answer.**

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