HAWKEYE INDUSTRIES INC.
PROUDLY CANADIAN

INSTALLATION, OPERATION AND MAINTENANCE GUIDE

SERIES 5000 EPRV (16, 20 & 24")

This document contains the recommended procedures for installing, operating and maintaining the Series 5000 EPRV in 16, 20 & 24" Manway Sizes. Read and understand this document prior to installation, operation or maintenance of the EPRV.

NOTE: INFORMATION REQUIRED FOR SUCCESSFUL INSTALLATION

CAUTION: INFORMATION IF NOT FOLLOWED MAY RESULT IN DAMAGE OR INSTALLATION FAILURE

WARNING: INFORMATION IF NOT FOLLOWED MAY RESULT IN INJURY OR DEATH

PART A: INSTALLING SERIES 5000 EPRV

TOOLS

- 9/16 Wrench to remove packaging bolts.
- Pair of 3/4 Box and Deep Socket Wrench for weight attachment.
- Pair of box and/or socket wrench for flange bolting (torque wrench preferred). See below for sizes:

WRENCH SIZES

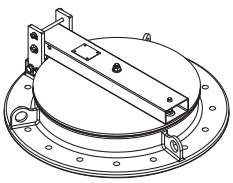
CONNECTION	SIZE	REC. TORQUE†
16" ANSI 150#	1-1/2	64 FT-LB
20" API 650	15/16	59 FT-LB
24" API 650		55 FT-LB
20" ANSI 150#	1-11/16	86 FT-LB
24" ANSI 150#	1-7/8	121 FT-LB

† *Values above based on achieving a 4-psi bubble tight seal using full-face chloroprene gasket on smooth and clean surfaces. Filler flanges are available for adapting the full-face flange to a raised-face flange.*

CAUTION: INSTALLING WITH FASTENER TORQUES HIGHER THAN SUGGESTED MAY REDUCE LONG-TERM SEALING PERFORMANCE, AND USER DOES SO AT OWN RISK.

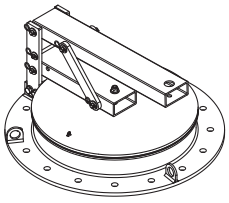
NOTE: THE 16, 20 AND 24" EPRV COME IN A SINGLE- AND COMPOUND-LEVER ARM DESIGN. ALL SET PRESSURES AT OR BELOW 16 OZSI ARE ACCOMODATED BY THE SINGLE-LEVER ARM VARIANT. BEFORE PROCEEDING MAKE SURE YOU KNOW WHAT VARIANT YOU ARE INSTALLING, AND FOLLOW THE VARIANT-SPECIFIC STEPS FOR INSTALLATION, ACCESS AND MAINTENANCE.

SINGLE-LEVER ARM



16 OZSI OR LOWER
16, 20 & 24" SIZES

COMPOUND-LEVER ARM



17 OZSI OR HIGHER
16, 20 & 24" SIZES

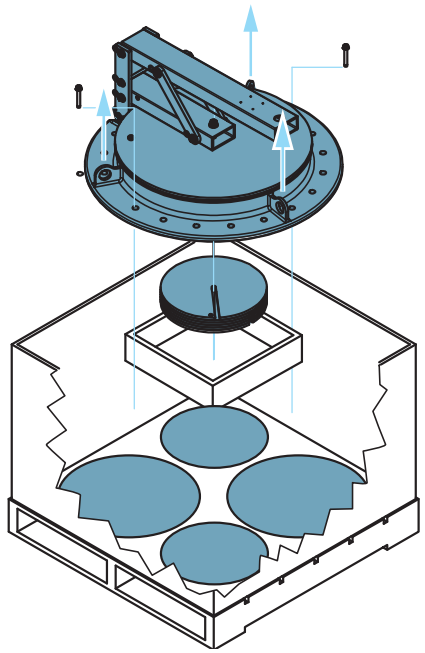
PARTS REQUIRED

- 1× Series 5000 EPRV (16, 20 or 24")
- 1× Base Gasket (*)
- 1× Bolt Kit sized for connection (*)

* Matched to EPRV connection size.

1 Remove 2 lag bolts holding EPRV to crate and use lifting lugs to remove from packaging.

NOTE: SOME CONFIGURATIONS WILL HAVE WEIGHTS SHIPPED UNDER THE VENT IN PLACE OF OR IN ADDITION TO THE WEIGHTS IN THE SMALL CRATE.



CAUTION: HEAVY! DO NOT LIFT THE ASSEMBLED EPRV BY HAND OR WITH ANY WEIGHT PLATES INSTALLED.

16 UNLADEN WEIGHTS (16 OZSI AND LOWER)

SIZE	WEIGHT
16" ANSI 150#	44 LB [20.0 kg]

16 UNLADEN WEIGHTS (17 OZSI AND HIGHER)

SIZE	WEIGHT
16" ANSI 150#	70 LB [31.8 kg]

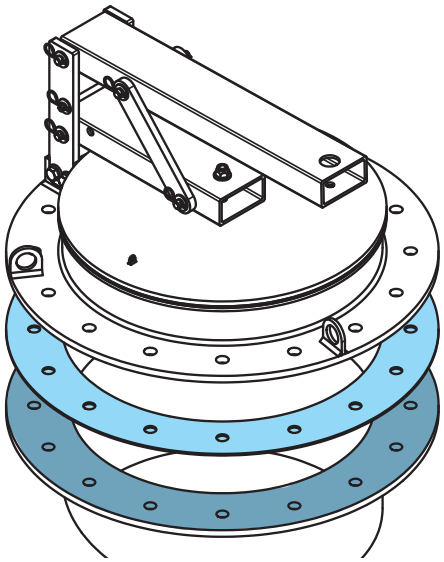
20 & 24 UNLADEN WEIGHTS (16 OZSI AND LOWER)

SIZE	WEIGHT
20" API 650	58 LB [25.8 kg]
24" API 650	75 LB [32.2 kg]
20" ANSI 150#	57 LB [26.3 kg]
24" ANSI 150#	74 LB [31.8 kg]

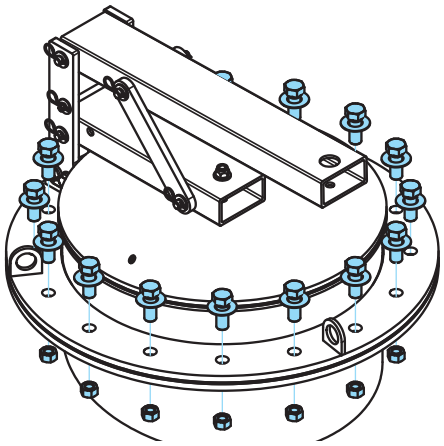
20 & 24 UNLADEN WEIGHTS (17 OZSI AND HIGHER)

SIZE	WEIGHT
20" API 650	111 LB [50.2 kg]
24" API 650	149 LB [67.4 kg]
20" ANSI 150#	112 LB [50.7 kg]
24" ANSI 150#	153 LB [69.2 kg]

2 Place tank gasket and EPRV on the Flange and align holes.



3 Secure EPRV in place with bolts and nuts supplied in the bolt kit. Use washers on the EPRV side of the bolted connection. Install hand-tight, then torque to 50% of the recommended value using sequence shown in Section C4. Inspect the flange and gasket to ensure they are sitting correctly and there is even compression. Tighten all fasteners to 100% of recommended torque in the same sequence.

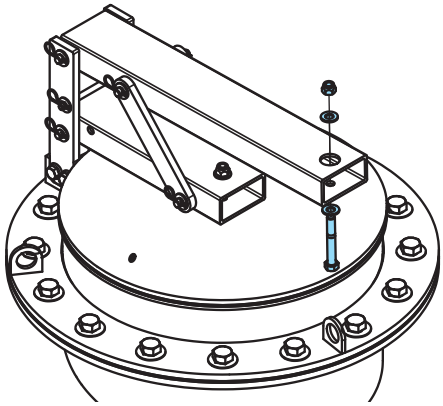


NOTE: SOME EPRV BOLT PATTERNS HAVE THREADED INSTEAD OF THROUGH HOLES. INSTALL THESE BOLTS FROM THE UNDERSIDE OF THE FLANGE.

NOTE: FOR COMPOUND LEVER FOLLOW STEPS 4 - 6
- **16" EPRV & SET PRESSURE ≥ 17 OZSI; OR,**
- **20 & 24 EPRV & SET PRESSURE ≥ 17 OZSI**

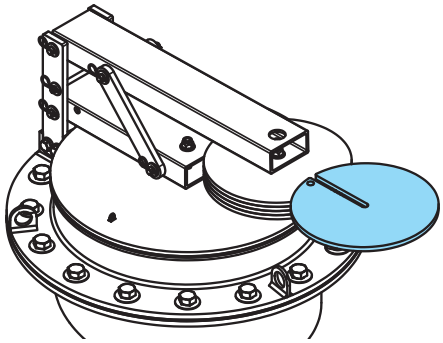
NOTE: FOR SINGLE LEVER FOLLOW STEPS 7 - 9
- **16" EPRV & SET PRESSURE ≤ 16 OZSI; OR,**
- **20 & 24 EPRV & SET PRESSURE ≤ 16 OZSI**

4 Install weight hanger bolt and tighten lock washer hand tight.

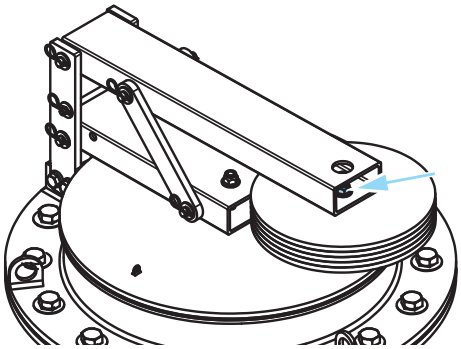


5 Install supplied weight plates onto hanger bolt. Stagger the slot position of each plate.

NOTE: THE RELIEF SETTING OF A COMPOUND ARM EPRV WITH NO WEIGHTS IS 4 OZSI.

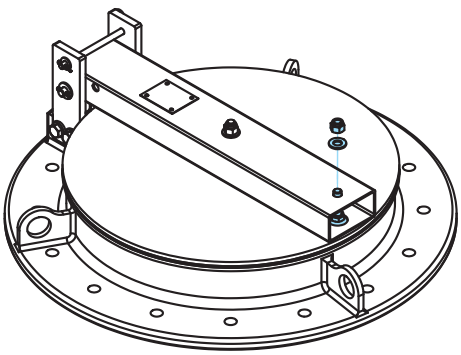


6 Tighten the hanger bolt to 68 ft-lb with 3/4 socket and wrench.



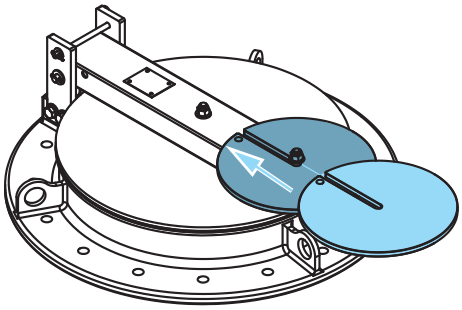
INSTALLATION COMPLETE (COMPOUND-ARM LEVER).

7 Install weight hanger bolt hand tight (until the nylon lock engages).

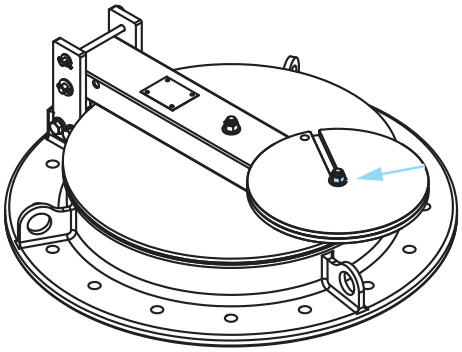


NOTE: THE RELIEF SETTING OF A SINGLE ARM EPRV WITH NO WEIGHTS IS 1 OZSI.

8 Install weight plates to achieve desired opening pressure. Stagger the slot position of each plate. The base set pressure with no weight plates is 1 ozsi. Each weight plate increases the set pressure by the value makred on the weight. The single-lever EPRV has maximum set pressure of 16 ozsi, and the compound lever EPRV has a maximum set pressure of 32 ozsi.



9 Tighten the weight hanger bolt to 68 ft-lbs to secure plates in place.



INSTALLATION COMPLETE (SINGLE-ARM LEVER)

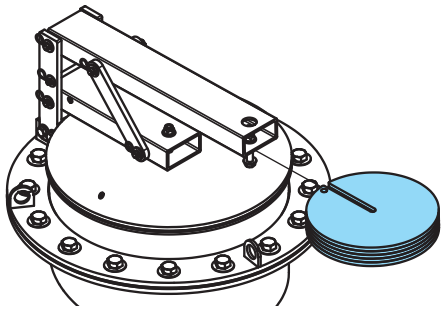
PART B
OPERATING SERIES 5000 EPRV

B1 MANWAY ACCESS

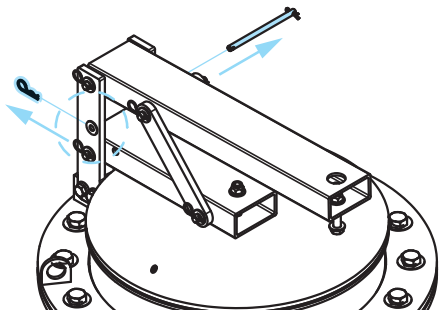
NOTE: FOR AN EPRV WITH A SET PRESSURE OF 17 OZSI OR HIGHER FOLLOW STEPS 1 TO 3.

FOR AN EPRV WITH A SET PRESSURE OF 16 OZSI OR LESS FOLLOW STEPS 4 TO 6.

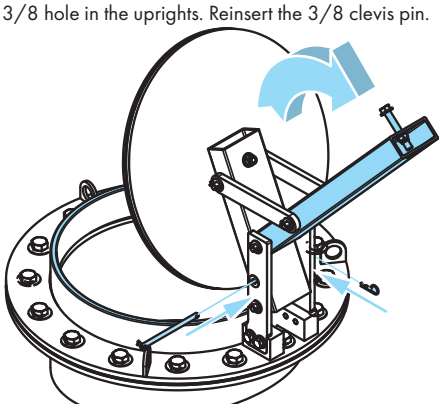
1 Remove all weight plates.



2 Remove 3/8 Clevis Pin

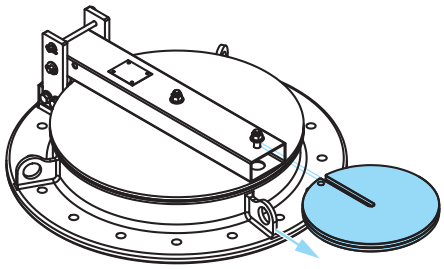


3 Lift pallet by pulling up on the upper weight arm until the 3/8 hole in the lower pallet arm lines up to the 3/8 hole in the uprights. Reinsert the 3/8 clevis pin.

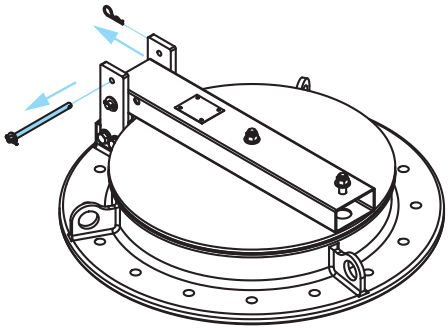


ACCESS COMPLETE (COMPOUND-ARM LEVER).

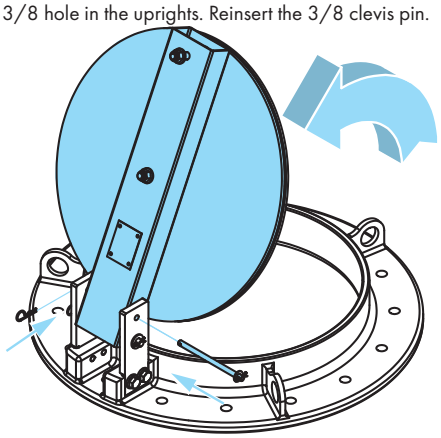
4 Remove all weight plates.



5 Remove 3/8 Clevis Pin



6 Lift pallet by pulling up on the upper weight arm until the 3/8 hole in the lower pallet arm lines up to the 3/8 hole in the uprights. Reinsert the 3/8 clevis pin.

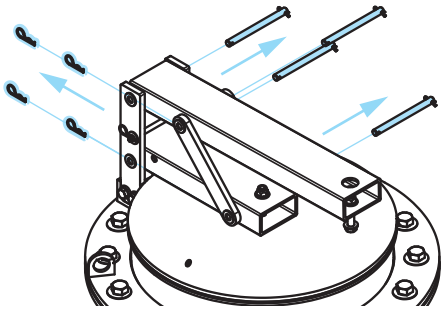


ACCESS COMPLETE (SINGLE-ARM LEVER).

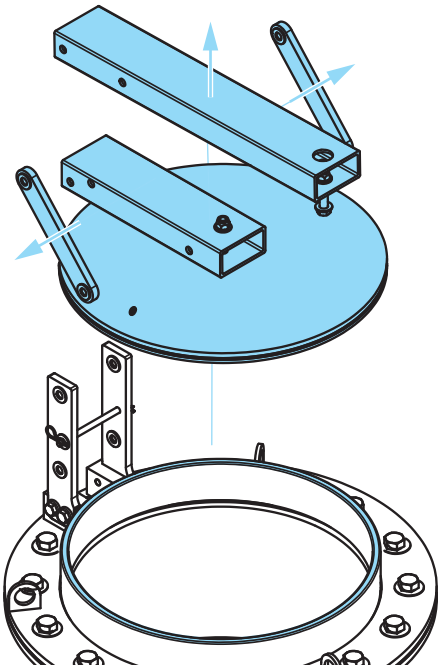
B2 FULL THROAT MANWAY ACCESS

NOTE: FOR COMPOUND LEVER FOLLOW STEPS 1 - 3
- **SET PRESSURE ≥ 17 OZSINOTE: FOR SINGLE LEVER FOLLOW STEPS 4 - 6 FOR SINGLE LEVER**
- **SET PRESSURE ≤ 16 OZSI.**

1. Remove all weight plates, per B1 Step 1.
2. Remove the compound lever mechanism and pallet by removing all 1/2" clevis pins.



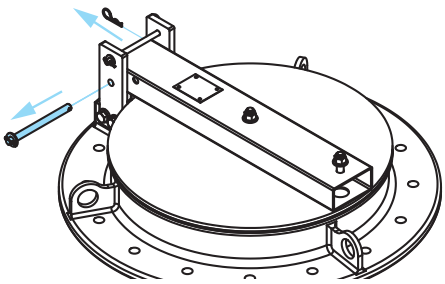
3. Remove lever mechanism and pallet and set aside.



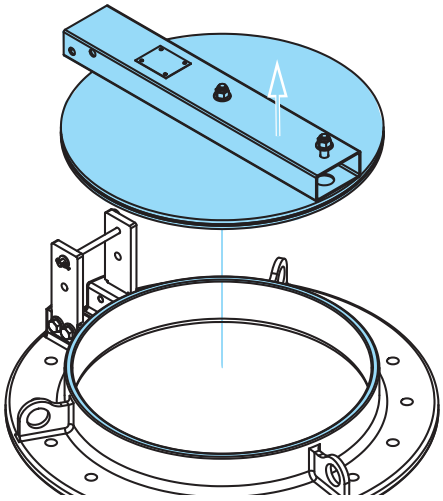
CAUTION: TAKE CARE TO NOT DAMAGE, MAR OR EMBED DEBRIS INTO THE GASKET OR SEALING SURFACES.

FULL THROAT ACCESS COMPLETE (COMPOUND-ARM LEVER)

4. Remove all weight plates, per B1 Step 4.
5. Remove the lever and pallet by removing the 1/2" clevis pin.



6. Remove lever and pallet and set aside.



CAUTION: TAKE CARE TO NOT DAMAGE, MAR OR EMBED DEBRIS INTO THE GASKET OR SEALING SURFACES.

FULL THROAT ACCESS COMPLETE (SINGLE-ARM LEVER).

B3 CHANGING SET PRESSURE

The set pressure of the EPRV can be changed by adding or removing weight plates.

NOTICE: WHEN THE SET PRESSURE IS CHANGED FROM THE FACTORY SETTING, THE PRODUCT TAG MUST BE CHANGED TO REFLECT THE NEW SET PRESSURE, RATED RELIEVING PRESSURE AND FLOW CAPACITY.

TOOLS

- 2× 3/4 Box and/or Socket Wrench (torque wrench preferred)
- 1× Flat head screw driver
- 1× Pliers
- 1× Small Hammer to drive rivets

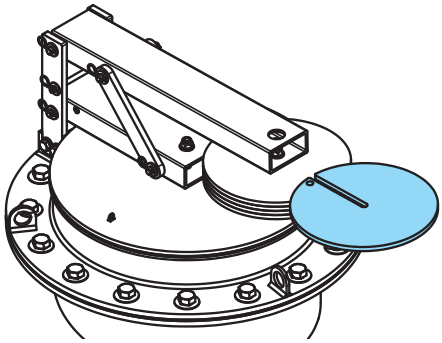
PARTS REQUIRED

- 1× Installed EPRV
- 1× EPRV Weight Change Kit (*)

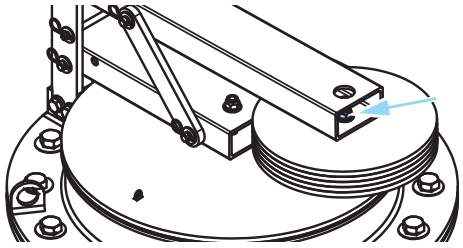
(*) sized per application. Call for more information.

1. Remove the weights and replace the weight hanger bolt if the weight change kit includes a new one.
2. Add or remove weight plates as required to achieve desired set pressure. Each weight plate is stamped with the additional relief setting it provides.

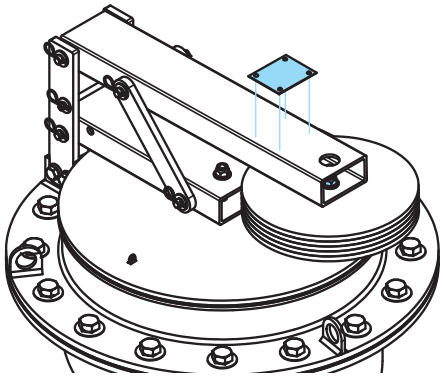
NOTE THE RELIEF SETTING OF A 16, 20 OR 24" COMPOUND-ARM LEVER EPRV WITHOUT ANY WEIGHTS IS 4 OZSI. A SINGLE-ARM LEVEL IS 1 OZSI.



3. Tighten the weight hanger bolt to 68 ft-lbs using the 3/4 socket and wrench.



4. Remove the product tag and drive rivets with the flat head screw driver and pliers. Replace with the new product tag and rivets included in the weight change kit.



PART C
MAINTAINING SERIES 5000 EPRV

Generally, the more active the vent action of the EPRV, the more frequent re-lubrication should be performed. Re-lubrication requirements are application specific, and influenced by the following variables:

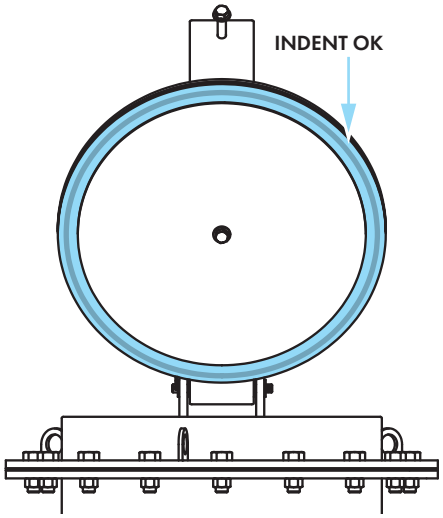
- Chemical Exposure
- Presence of Contaminants
- Elevated Pressure
- High Flow Velocity
- Elevated Temperature
- Utilization

NOTE: 4561 SEVERE SERVICE GREASE IS FACTORY-APPLIED AT THE TIME OF ASSEMBLY. RE-LUBRICATION USING THE SAME PRODUCT IS STRONGLY RECOMMENDED FOR FIELD RE-LUBRICATION.

C1 INSPECTION AND RELUBRICATION

1. Follow the manway access procedure per B1.
2. Inspect the seal. A ring shaped indentation from the pallet seat in the seal is normal and improves the sealing performance of the valve. If seal replacement is required, proceed to part C2. The seal should be replaced if there are any signs of

- cracking,
- erosion,
- swelling,
- multiple intersecting indentations.



3 If the seal does not require replacing, clean all contaminants and old grease off of the seal.

4 Re-lubricate by applying an even coating of 4561 Severe Service Grease to the sealing surface. Retrurn the EPRV to its seated position by following B1 in reverse.

C2 REPLACING PRESSURE SEAL

TOOLS

» 2× 3/4 Box and/or Socket Wrench (torque wrench preferred)

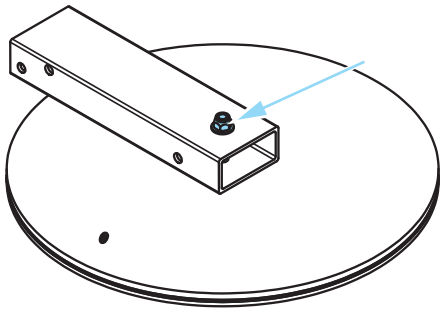
PARTS REQUIRED

» 1× Replacement Gasket

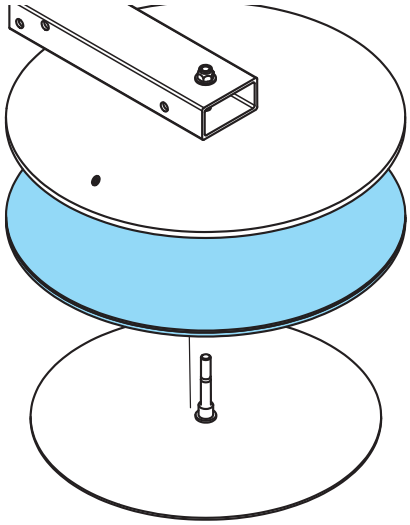
» 1× Hawkeye Severe Service Grease

1 Follow the full-throat manway access procedure per B2.

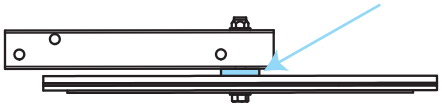
2 Remove the gasket retaining bolt on the pallet.



3 Replace the composite gasket.



4 Tighten the gasket retaining bolt until the rubber mount has been compressed from 1/2" to 3/8" thick..



5 Lubricate the gasket per step 4 in Section C1.

6 Reassembly the lever mechanism by following Section B2 in reverse.

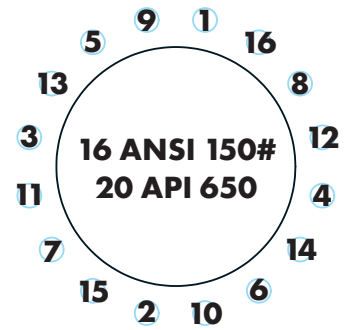
7 Reinstall the weighs per steps 5 and 6 in Section 8 and return the EPRV to service.

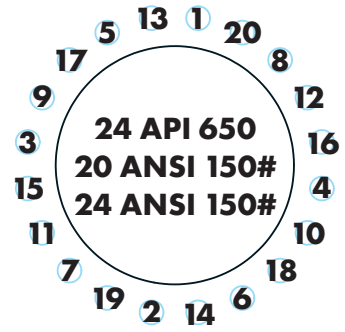
C3 TROUBLESHOOTING

PROBLEM: Vent is Leaking or Frequently Opening	
Symptom Of	*Solution*
Unlubricated Pressure Seal	Perform the inspection and re-lubrication procedures detailed in C1.
Worn or Damaged Pressure Seal	
Set pressure set too close to operating pressure	Ensure that the set pressure of the Series 5000 EPRV is sufficiently above the operating pressure of the tank.

PROBLEM: Vent is not opening	
Symptom Of	*Solution*
Set pressure set too far from operating pressure	Ensure that the set pressure of the Series 5000 EPRV is sufficiently below the desired relieving pressure and the design pressure of the tank.

C4 BOLTING SEQUENCE





C5 WEIGHT PART NUMBER REFERENCE

WEIGHT PART NUMBER REFERENCE (16")		
Relief Setting	*≤16 ozsi (Single lever)*	*≥17 ozsi (Compound Lever)*
1.0 ozsi	225.316.040	225.316.030
2.0 ozsi	225.316.050	225.316.040

WEIGHT PART NUMBER REFERENCE (20")		
Relief Setting	*≤16 ozsi (Single lever)*	*≥17 ozsi (Compound Lever)*
1.0 ozsi	225.320.920	225.320.910
2.0 ozsi	225.320.940	225.320.920

WEIGHT PART NUMBER REFERENCE (24")		
Relief Setting	*≤16 ozsi (Single lever)*	*≥17 ozsi (Compound Lever)*
1.0 ozsi	225.324.920	225.324.910
2.0 ozsi	225.324.940	225.324.920

NOTE: THE UNLADEN (NO WEIGHT) RELIEF SETTING OF A SINGLE-ARM UNIT IS 1 OZSI, AND THE UNLADEN RELIEF SETTING OF A COMPOUND ARM UNIT IS 4 OZSI.

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