

Series ALVN Manhole Cover User Maintenance and Testing Manual

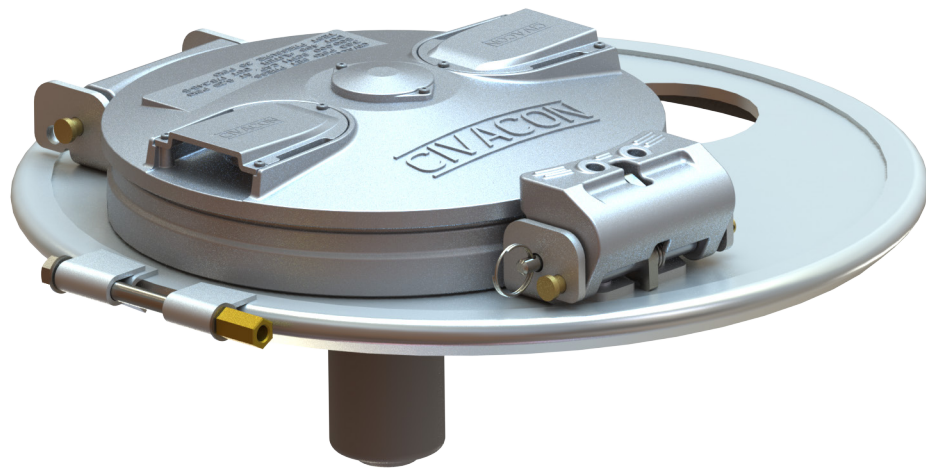


Table of Contents

Section I: Product Description and Identification

Section II: Latching and Unlatching the Fill Opening

Section III: Inspection, Testing Schedule, and Product Maintenance

Section IV: Adjusting the 7700N Series PAF Vent Pressure Setting

Section V: Troubleshooting

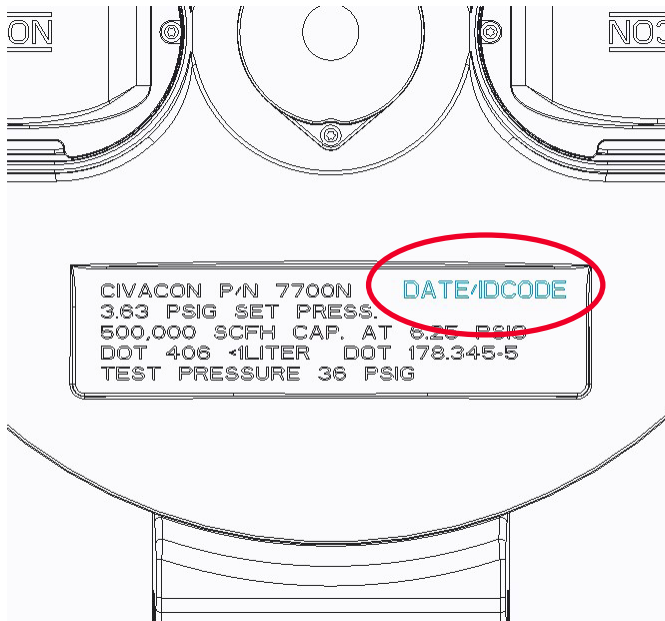
Section I

Product Description

The Civacon ALVN Series Manhole Cover is designed for use on Petroleum Cargo Tanks that must meet U.S. Department of Transportation 49 CFR 178.345-10 and 178.346-3 requirements for DOT 406 emergency venting and 49 CFR 178.345-5 for manhole strength requirements.

Product Identification

The Civacon ALVN Series Manhole Cover with the 7700N Series PAF Vent may be identified as follows:



DATE CODE AND ASSEMBLY CODE
WILL BE PERMANENTLY MARKED
IN THIS AREA.

NOTE:

This Maintenance Manual applies only to the Civacon ALVN Series Manhole with the 7700N Series PAF Vent. If the manhole does not have the above-mentioned markings, this manual may not be used. Please contact Civacon for information on other maintenance manuals available for earlier products.

Section II

Latching and Unlatching Fill Opening



Step 1: Remove the Retain Pin from the Safety Pin

Step 2: Remove the Safety Pin from the Latch

Step 3: Unlatch the Latch. Note - The Safety Pin can be inserted into one of the two holes on top of the Latch to apply leverage to assist with Latching and Unlatching the Fill Opening

Step 4: Pull back the Secondary Latch Hook and lift the Fill Opening

Section III

Inspecting, Testing Schedule, and Product Maintenance

US DOT Information: The DOT regulations described in this manual are provided for reference only. Review current Code of Federal Regulations to ensure requirements are met.

Inspection & Test	Interval Period	CFR Section
External Visual Inspection	1 Year	49CFR180.407(d)
Leakage Test	1 Year	49CFR180.407(h)
Pressure Retest	5 Year	49CFR180.407(g)

The maintenance schedule for the Civacon ALVN Series Manhole with the 7700N Series Vent is as follows:

	An external inspection must be performed annually (See page 6). NOTE: Civacon advises visual external inspection to be completed monthly.
NOTE:	In severe applications, (corrosive environments, wet or cold environments, etc.) the interval between inspections may need to be shortened, depending upon application. If the Manhole cover is covered by snow or ice, the cover must be cleaned and dry prior to inspection.

IMPORTANT

This manhole must be maintained on a regular basis to ensure proper operation. Failure to perform the scheduled maintenance covered in this bulletin may shorten the life of the product.

EXTERNAL INSPECTION PROCEDURES

WARNING! ALL INTERNAL TANK PRESSURE OF VACUUM MUST BE RELIEVED PRIOR TO SERVICING.

	Being part of the annual visual inspection, 49CFR180.407(d) mandates that all pressure relief devices, be visually inspected for any corrosion or damage which may prevent the device from operating. If the tank is used to transport product which is harmful or corrosive to the relief device, the device must be removed from the tank for inspection and bench testing.
1.	Pull Safety Pin and unlatch the Latch.
2.	Open the Fill Opening.
3.	Inspect Sealing Surface of the base cover for signs of damage, or any other conditions that may impair sealing performance.
4.	Inspect the Frame Fill Opening Gasket for signs of damage, wear, or any other conditions that may impair sealing performance.
5.	Inspect Cover Poppet Gasket for signs of damage, wear, or any other conditions that may impair sealing performance. NOTE: Removal of Poppet may be required to fully inspect. See Section III Product Maintenance – for 7700N Series PAF Vent Disassembly Procedures.
6.	Inspect Normal Vent assembly for cleanliness and gasket integrity.



LEAKAGE TEST

WARNING! ALL INTERNAL TANK PRESSURE OF VACUUM MUST BE RELIEVED PRIOR TO SERVICING.

	Annual leakage test is covered by 49CFR180.407(h) which requires tanks to be tested annually at 80% of the tank design pressure or MAWP, whichever is listed on the tank specification or certification plate. Every component must remain in place for the duration of this test, except any re-closing pressure relief device with a set pressure less than the leakage test pressure must be removed or made inoperative during this test. All Normal Vents, consequently, need to be removed and plugged.
1.	Remove ANY Normal Vent/s from manhole cover and plug hole/s with Civacon Plug P/N 5980 (1 5/8–12 Threaded plug) and Gasket P/N 3455.
2.	Apply test pressure in accordance to 49CFR108.407(h).
3.	Check all gasket junctions on 7700N Series PAF Vent and Manhole Cover for leaks. If the PAF Vent leaks, determine the leak location. If leakage is present from the Pop-pet Gasket, pressure setting adjustment may be required. Refer to Section IV of this manual for procedures on Adjusting Pressure Setting. If leakage is present from the Fill Opening Gasket or other areas, See Section III Product Maintenance – for more information on possible causes. Replacement of worn or damaged gaskets may also be needed. Retest as needed.

PRESSURE RETEST

WARNING! ALL INTERNAL TANK PRESSURE OF VACUUM MUST BE RELIEVED PRIOR TO SERVICING.

CAUTION! CIVAICON RECOMMENDS THAT THE ALVN SERIES COVER BE BENCH-TESTED EVERY 12-18 MONTHS.

	Pressure retest is covered by 49CFR180.407(g)(1)(ii)(A) and requires that all pressure relief devices be removed from the tank for inspection and bench testing to verify the relief device is operating correctly. The pressure retest and the relief device bench test must be performed at least every 5 years. Refer to FIG 1.
1.	49CFR180.407(g)(1)(vii) requires all closures except pressure relief devices be in place for the duration of the test.
2.	Manhole Cover must remain in place during pressure test.
3.	Unlatch and open the 10" Fill Opening.
4.	Insert Civacon Retest Fixture (Part No. 13177) to seal the opening. See FIG 1.
5.	All Civacon Vapor Recovery Valves are to remain in place for the test. NOTE: If vapor recovery valves from other manufacturers are installed, refer to their manufacturer's instructions to see if they must be removed.

6.	After preparing the rest of the tank, perform the pressure test in accordance to the regulations. Inspect all parts of the Manhole for leakage. Replace or repair parts as needed.
7.	Remove all clamps or plugs from relief valves, or reinstall valves, immediately after test is concluded.

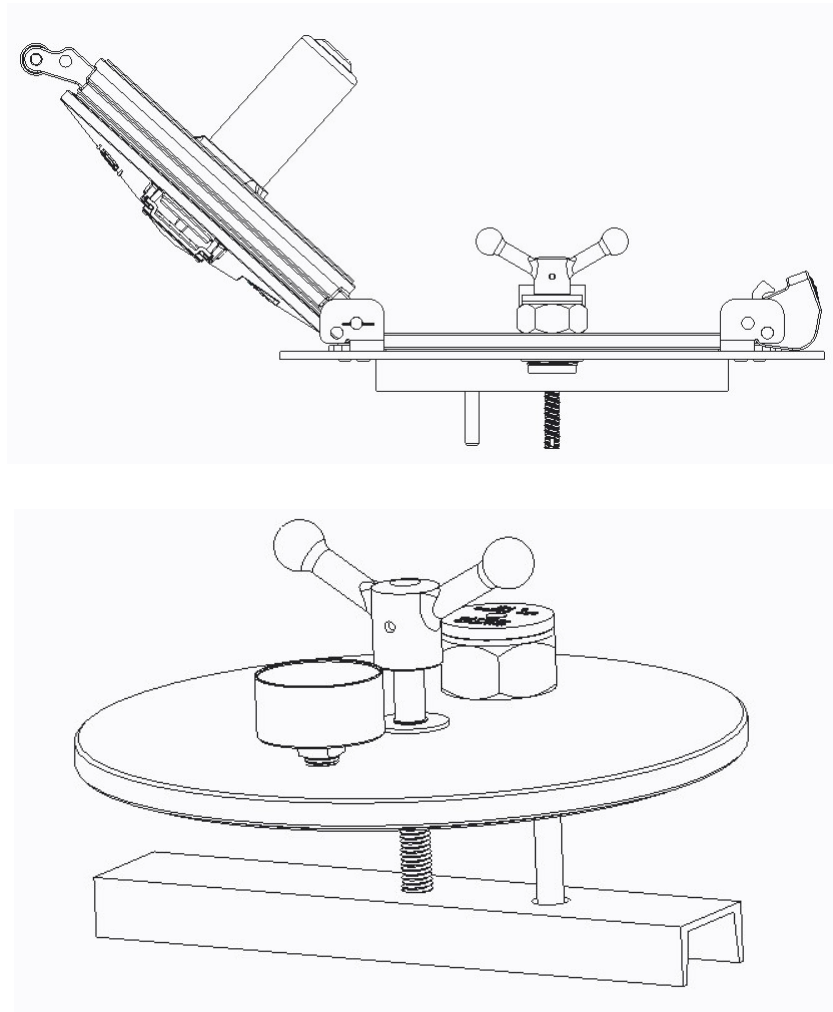


Figure 1

Civacon PN 13177 - ALVN Manlid Retest Fixture

BENCH TEST PROCEDURE

1.	Remove the complete Manhole Assembly from the tank.
2.	Remove ANY Normal Vent/s from manhole cover and plug hole/s with Civacon Plug P/N 5980 (1 5/8–12 Threaded plug) and Gasket P/N 3455.
3.	Attach the Manhole Assembly to an appropriate Bench Pressure Test Fixture such as Civacon Bench Test Fixture P/N 5428A. See Fig. 2
4.	Gradually apply pressure to the tank and observe the pressure gauge for point of relieving pressure. Per 49CFR178.346-3(c) the set pressure must not be less than 3.63 psig and not more than 4.55 psig for a tank with a MAWP of 3.3 psig.
5.	Lock air supply in the Test Fixture and observe the pressure gauge for when the pressure quits dropping. Pressure must not drop below 3.3 psig.
6.	Replace or adjust relief valve that fails the set pressure test requirements. Refer to Section IV of this manual for procedures on adjusting pressure setting.
7.	For Normal Vent Test Procedure, Refer to Civacon Technical Bulletin TB 02-10.

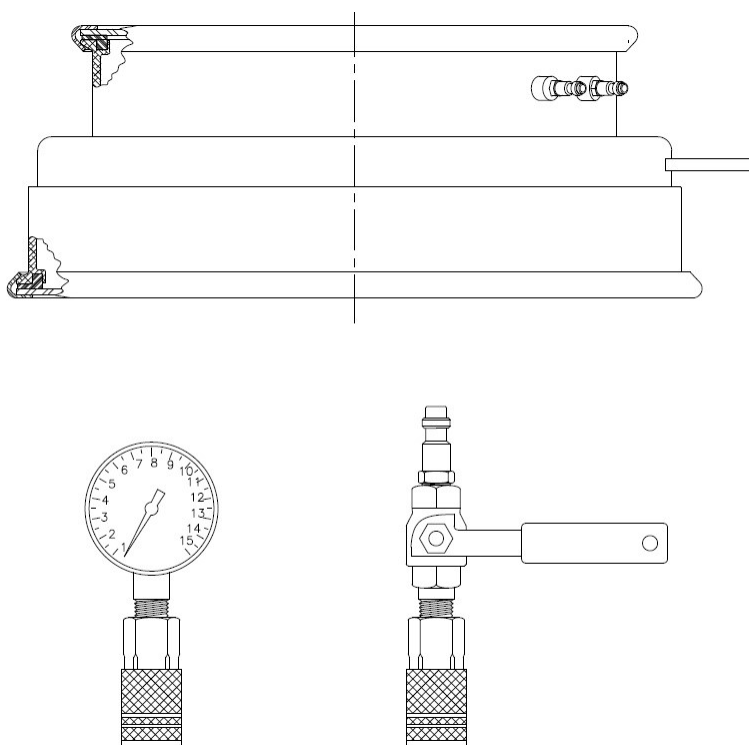


Figure 2

Civacon PN 5428A - Bench Test Fixture

PRODUCT MAINTENANCE

The following material and tools will be required to complete the maintenance procedures covered in this section:



1.

2.

3.

4.

5.

6.

1. 1/4" Drive Ratchet Wrench with 5/16" Deep Well Socket
2. Snap Ring Pliers
3. Dikes or Needle Nose Pliers
4. Pass Through Type Ratchet Wrench with 11/16" Socket
5. Driver with T-10 Bit
6. Loctite Brand 242 (Blue) Thread Locker

DISASSEMBLING THE 7700N SERIES PAF VENT

Reference Page 19 Assembly Drawing

WARNING!

DO NOT ATTEMPT TO DISSASSEMBLE THE 7700N SERIES PAF VENT IF FLUID IS FOUND LEAKING FROM THE MOTION CONTROL OR THE MOTION CONTROL HOUSING CAN BE MOVED UP AND DOWN, OR PULLED OFF.

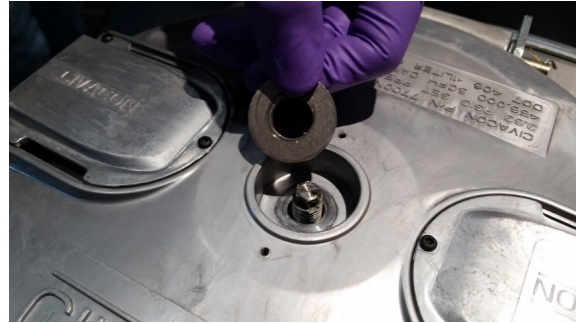
If any one of these conditions are found, contact Civacon Customer Service for replacement PAF P/N 7700N.

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|----|--|
| 1. | Remove the ALVN Manhole Cover assembly from the Tank before performing any disassembly to the 7700N Series PAF Vent. |
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WARNING! ALL INTERNAL TANK PRESSURE OF VACUUM MUST BE RELIEVED PRIOR TO SERVICING.



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| 2. | Remove two screws (11) from the set pressure adjustment access hatch (6) using a T-10 bit and drive and remove adjustment access hatch (6) |
| 3. | Remove cotter pin (16) from the motion control (8) set pressure adjustment shaft. |



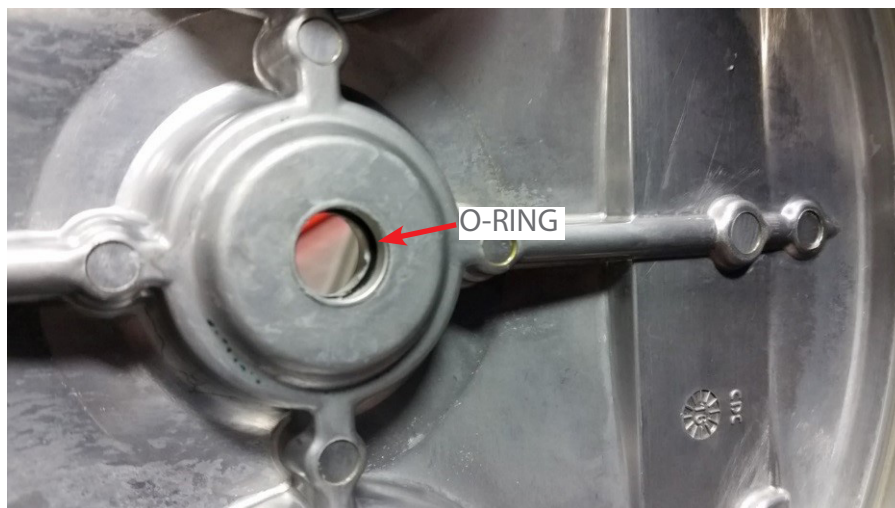
4.	Using the pass through type ratchet wrench with 11/16" socket along with the ratchet with 5/16" deep well socket, remove nut (13) from the motion control (8) set pressure adjustment shaft. Use the ratchet with 5/16" deep well socket to keep the set pressure adjustment shaft from spinning while loosening the nut with the pass through type ratchet wrench with 11/16" socket. THE SET PRESSURE ADJUSTMENT SHAFT MUST NOT SPIN DURING NUT LOOSENING.
5.	Remove washer (12) from the motion control (8) adjustment shaft.



6.	Remove cover poppet (3) from the motion control (8) set pressure adjustment shaft.
7.	SAFETY STEP: Reinstall nut (13) onto the motion control (8) set pressure alignment shaft before removing from the frame as a safety precaution. Reinstalling this nut is to prevent possible injury due to motion control housing compressed spring retain failure.
8.	Remove retaining ring (9) that is securing the motion control (8) to the frame(4).



9.	Remove normal vent from cover poppet (3) using slip joint pliers.
10.	Remove poppet gasket (2) from cover poppet (3) using care to not scratch internal sealing surfaces of the gasket groove.



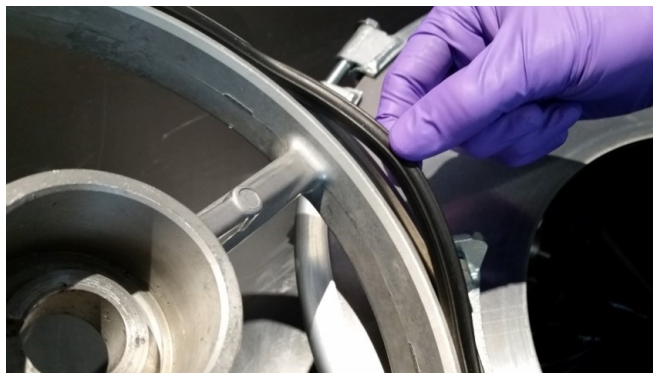
11.	Remove o-ring seal (7) from center bore hole of cover poppet (3) using care to not scratch internal sealing surfaces of the o-ring groove.
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| 12. | Remove motion control (8) from frame (4). |
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CAUTION

THE MOTION CONTROL IS NON SERVICEABLE - DO NOT DISASSEMBLE - CONTAINS COMPRESSED SPRING THAT CAN CAUSE INJURY IF DISASSEMBLY IS ATTEMPTED. **DISCARD AND REPLACE ONLY**



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| 13. | Remove the frame fill opening gasket (15) from the frame (4) using care to not scratch internal sealing surfaces of the gasket groove. |
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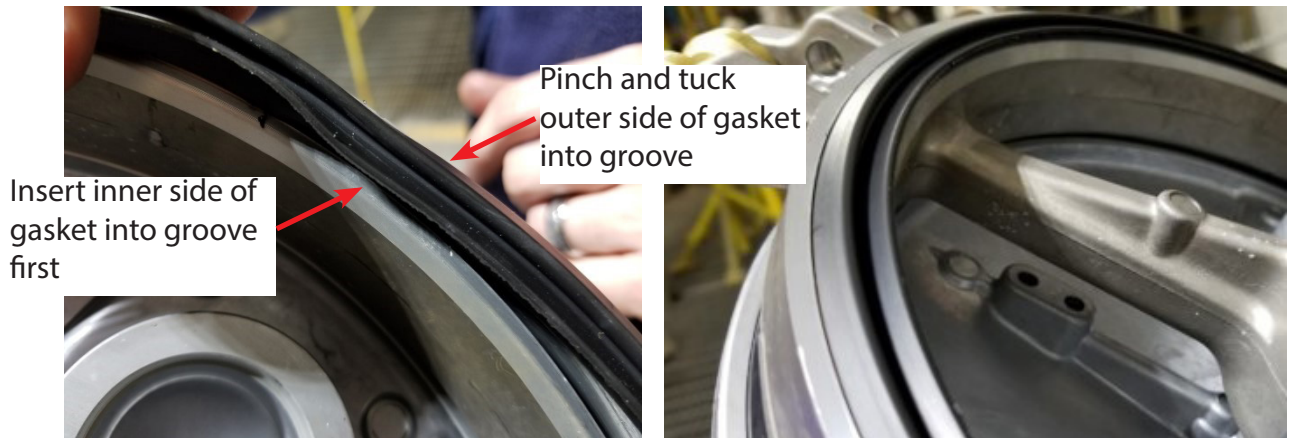
- ◆ Inspect all seals and seal grooves for signs of damage, wear, or any other conditions that may impair sealing performance.
- ◆ To ensure sealing performance, all gaskets and seals should be replaced using Civacon OEM components.
- ◆ For more information contact Civacon on available repair kits and other replacement components.

1-888-526-5657

Or visit www.civacon.com

ASSEMBLING THE 7700N SERIES PAF VENT

Reference Page 19 Assembly Drawing



- | | |
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| 1. | Install frame fill opening gasket (15) by hand into the frame (4). Pinch and tuck gasket into the gasket groove all around until entire gasket is completely installed. |
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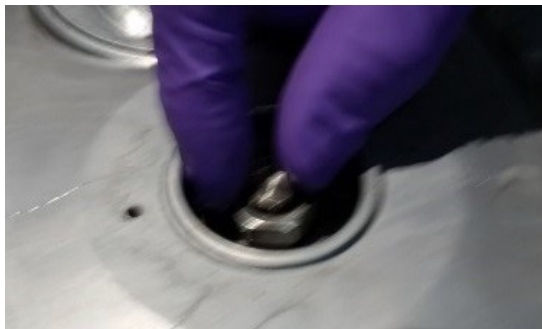
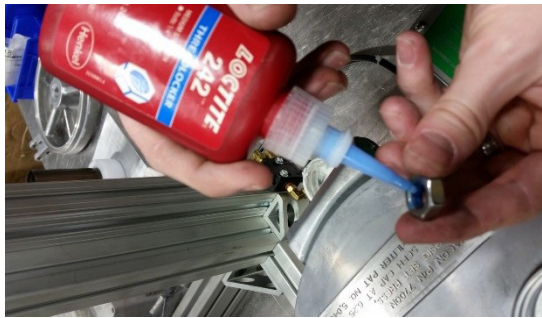
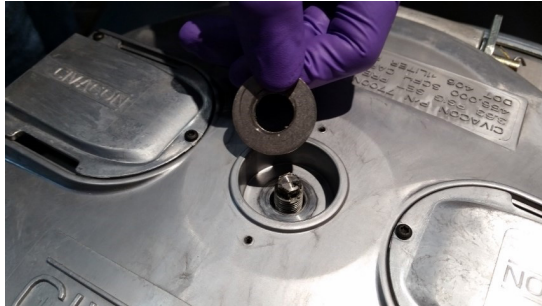
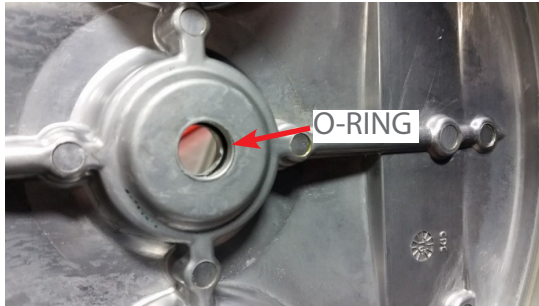
- | | |
|----|---|
| 2. | Install poppet gasket (2) by hand into the cover poppet (3). Pinch and tuck gasket into the gasket groove all around until entire gasket is completely installed. |
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3. Install motion control (8) into the frame (4). The motion control alignment pin needs to align with the alignment pin groove in the frame for the motion control to become fully seated.



4. Install retaining ring (9) into the motion control (8) retain ring groove to secure it into the frame (4).
5. Remove nut (13) from the motion control (8) set pressure alignment shaft and set aside for step 9.



6.	Install o-ring seal (7) into center bore hole of cover poppet (3).
7.	Install cover poppet (3) onto the motion control (8) set pressure adjustment shaft. CIVACON LOGO ALIGNED WITH THE LATCH ROLLER.
8.	Install washer (12) onto the motion control (8) set pressure adjustment shaft.
9.	Apply Loctite Blue 242 to threads of nut (13).
10.	Install nut (13) onto the motion control (8) set pressure adjustment shaft and hand thread down until the flats of the 5/16" hex on the motion control set pressure adjustment shaft are accessible for a 5/16" deep well socket.



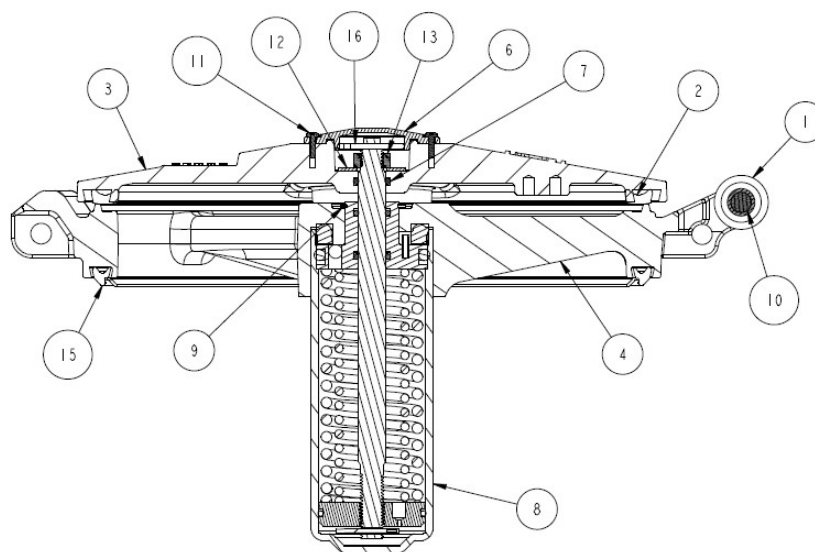
11. Using the pass through type ratchet wrench with 11/16" socket along with the ratchet with 5/16" deep well socket, tighten nut (13) onto the motion control (8) adjustment shaft. Use the ratchet with 5/16" deep well socket to keep the set pressure adjustment shaft from spinning while tightening the nut with the pass through type ratchet wrench with 11/16" socket. Nut (13) should be snug tightened.

THE SET PRESSURE ADJUSTMENT SHAFT MUST NOT SPIN DURING NUT TIGHTENING.



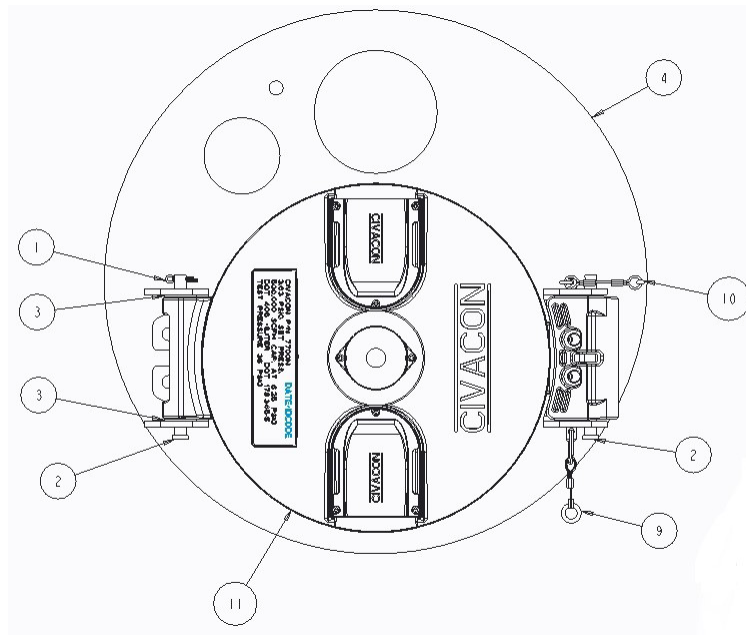
12. Install cotter pin (16) into the motion control (8) set pressure adjustment shaft.
13. Install the set pressure adjustment access hatch (6) on to the cover poppet (3). Secure in place with two screws (11) using a T-10 bit and drive.

7700N Series PAF Vent



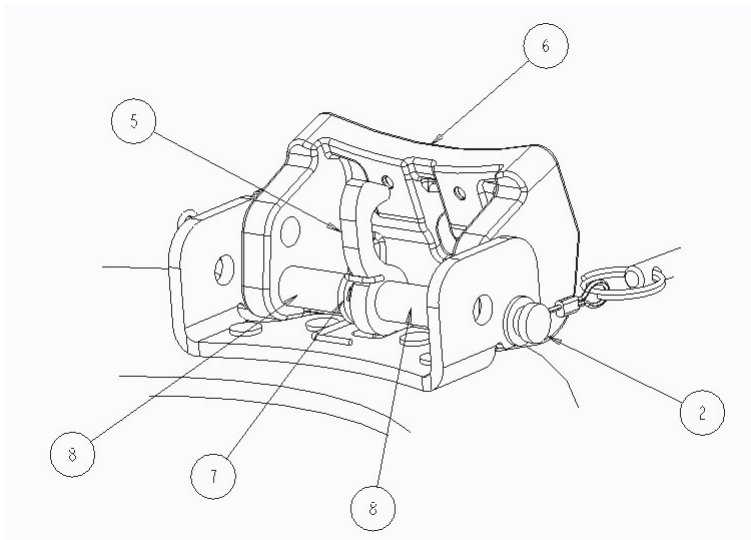
1.	11730	Latch Roller
2.	12022	Poppet Gasket (Buna-N or Viton) PN Shown for Buna-N Gskt
3.	12834	Cover Poppet
4.	12836	Frame
6.	13007	Set Pressure Adjustment Access Hatch
7.	13018	O-Ring 2-112 Viton
8.	13020	Motion Control
9.	13021	External Retaining Ring
10.	13025	Roller Pin
11.	13149	Screw, 4-40 x 3/8 Thread Forming
12.	11693	Washer
13.	13031	Nut, 7/16-20
15.	13226	Frame Fill Opening Gasket
16.	13274	Cotter Pin

ALVN Manhole Cover



1.	1045	Cotter Pin
2.	5951	Clevis Pin
3.	11693	Washer
4.	7700N	Cover Assembly
9.	13033	Latch Safety Pin
10.	13035	Retain Pin
11.	NV4000	PAF Vent

ALVN Manhole Cover Latch



2.	5951	Clevis Pin
5.	12825	Secondary Latch Hook Catch
6.	12838	Latch
7.	12946	Torsion Spring
8.	13024	Spacer

Section IV

Adjusting the 7700N Series PAF Vent Pressure Setting



Step 1:



Remove two screws from pressure setting adjustment access hatch using a T-10 bit and drive.

Step 3:

Reinstall the adjustment access hatch and two screws using a T-10 bit and drive.

Step 2:



Using 5/16 socket and drive, rotate the shaft clockwise to increase set pressure or counter clockwise to decrease set pressure. Rotate one 360° revolution of the shaft then pressure test. Repeat until desired pressure setting is achieved.

NOTE: Nut rotates with the shaft.

Section V

Troubleshooting

- 7700N PAF Vent is not relieving between 3.63 psig and 4.55 psig or does not reseal above 3.3 psig.
 1. See Section IV Adjusting the 7700N Series PAF Vent Pressure Setting
 2. Inspect the poppet gasket and gasket groove in the poppet cover for signs of damage, wear, or any other conditions that may impair sealing performance. Replace as necessary, see Section III Product Maintenance.
 3. Replace the motion control, see Section III Product Maintenance. **Note:** Replacement of the motion control should be uncommon and should only be considered if all other attempts to adjust or repair have failed.
- Leak between the Cover and 7700N PAF vent. The fill opening gasket is not sealing the 7700N PAF Vent to the Cover properly. **Note: There is no adjustment on the ALVN Manhole assembly to resolve this issue.**
 1. Remove the ALVN Manhole Cover from the tank and perform a bench pressure test to see if the issue exists on the bench pressure test fixture. If the issue is present on the bench pressure test fixture, follow the remaining steps to further diagnose. If the issue is not present on the bench pressure test fixture, go directly to step 4.
 2. Inspect the fill opening gasket and gasket groove in the frame for signs of damage, wear, or any other conditions that may impair sealing performance. Replace as necessary, see Section III Product Maintenance.
 3. Inspect the mating sealing surface on the cover for signs of damage or any other conditions that may impair sealing performance. If minor damage such as scratches are found to be the cause of leaking, rubbing them out with a scotchbrite pad may be attempted to repair. Replace as necessary.
 4. Inspect the weld collar for flatness. It is recommended that the weld collar flatness be +/- 1/16" and no greater than 1/8" out of flat. Any weld collar warping beyond 1/8" could cause sealing failure between the PAF vent and Cover. Repair weld collar as necessary.
- Red hydraulic leaking from the Motion Control or the Motion Control Housing is loose (can move up or down).
 1. The Motion Control Housing has had a compressed spring retain failure. **SPRINGS ARE UNDER COMPRESSION - DO NOT ATTEMPT TO DISSASSEMBLE THE 7700N SERIES PAF VENT IF ONE OF THOSE CONDITIONS ARE FOUND!!!** Contact Civacon Customer Service for an RMA replacement PAF P/N 7700N.

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WARNING!!

CIVACON products should be used in compliance with the applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations, compatibility with the environment, and the material being handled.

CIVACON MAKES NO WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

TECHNICAL ASSISTANCE

If at any time during the installation a question arises that is not covered in this manual or with any other applicable documents feel free to call the Customer Service Department or visit our website at www.civacon.com.

In the U.S., call 1-888-526-5657

In all other countries, call your local agent.