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PART NUMBERS (Including, but not inclusive)

6234AL	6234AL277
6234ALB	6234ALFS
6234ALP	6234ALTS






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1.0 General Maintenance Manual Guidelines

- 1.1 It is strongly recommended that this entire manual be read prior to any operation, disassembly, or assembly of this equipment.
- 1.2 Betts Industries, Inc. provides this manual as a guideline for reference only and assumes no responsibility for personal injury or property damage that may occur in conjunction with this manual. Betts Industries, Inc. cannot be held responsible for incorrect installation, operation or maintenance of this equipment. Use only genuine Betts replacement parts. Substitute parts will void all warranties and could impair the proper function making this equipment unsafe.
- 1.3 Betts Industries, Inc. recommends all equipment be placed on a regular maintenance schedule that includes the routine replacement of seals and gaskets and visual inspection for leaks and corrosion. The end user must make their own determination and set their own schedule based upon use and environment. In some cases, regulations may dictate the minimum testing frequency of items. Make sure operators are aware of all applicable codes.
- 1.4 Only trained and qualified personnel should perform maintenance on this equipment.
- 1.5 As with any maintenance work, proper safety gear must be utilized and approved procedures must be followed at all times. Examples of safety gear may include but are not limited to gloves, safety goggles, face shields, protective suits and respirators. It is the responsibility of the person/company working on this equipment to identify the hazardous products that the equipment has been exposed to and designate specific and appropriate protective gear and safety procedures.
- 1.6 Safety alert symbols are used to alert operator to potential personal injury hazards. These symbols are per ANSI Z535.5 and are listed below. Operator **MUST** obey all instructions that follow a safety symbol. Alerts will be used to indicate known safety concerns.

	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

A list of hazards may include but are not limited to fall hazards, pressure hazards, loaded springs, corrosive material, flammable product, pinch points. Additional concerns are possible and should be identified and avoided by the operator.

- 1.7 Product Warranty shall be void if equipment is subject to misapplication, misuse, neglect, alteration, or damage.
- 1.8 Specific design details described in this document are for reference only and are subject to change without notice. See Betts Industries, Inc. web page for the most recent revision to this document. www.bettsind.com
- 1.9  **WARNING:** This product can expose you to chemicals including Chromium (hexavalent compounds), which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov
- 1.10 For additional questions or more detailed technical assistance, contact the Betts Industries, Inc. Customer Service, Sales or Engineering Department at (814) 723-1250.



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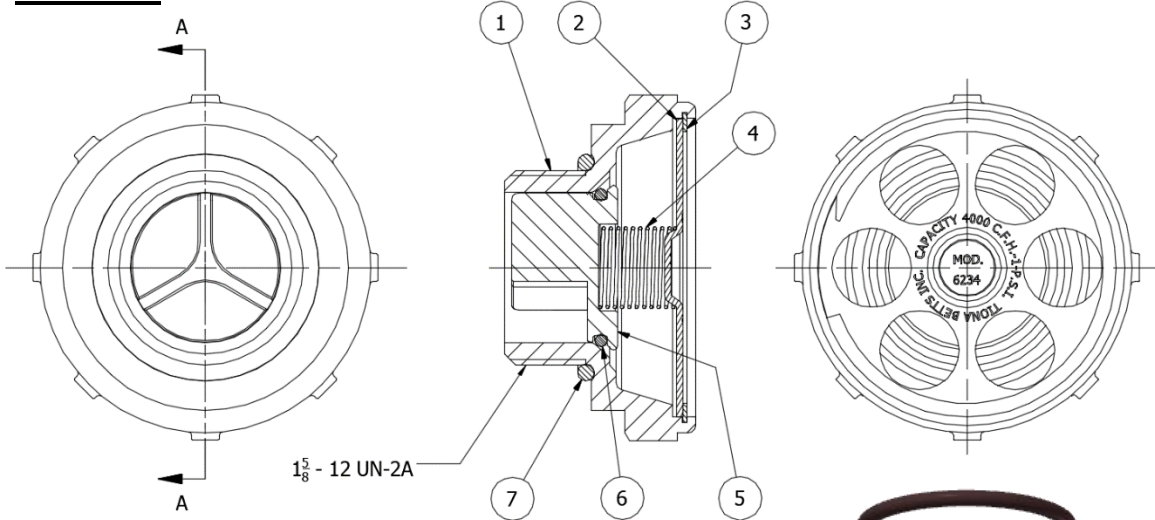
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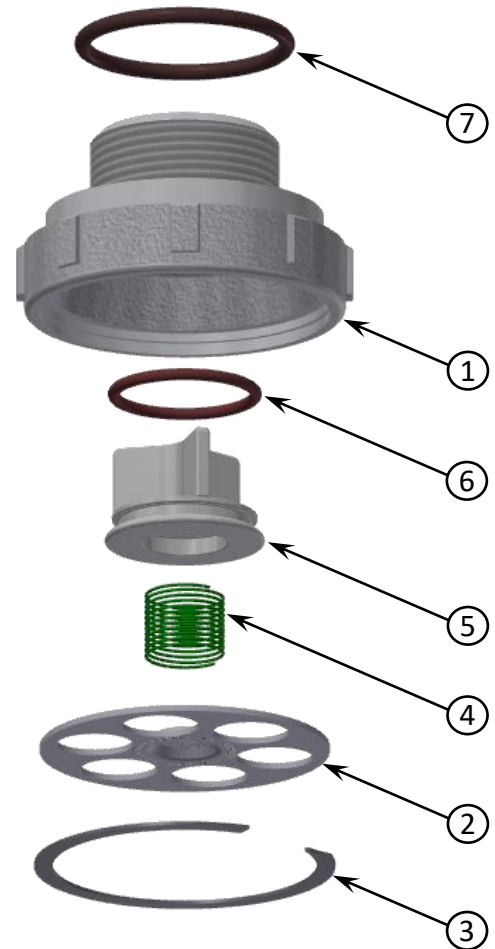
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2.0 Parts List - 6234



No.	Description	Material	Part No.
1	Vent Body	Aluminum	3639AL
2	Retainer Plate	Aluminum	3479AL
3	Retainer Ring	Stainless Steel	9Q4987
4	Spring	Stainless Steel	3574SL
5	Poppet	Aluminum	3632AL
6	Seat O-ring	FKM Type A	3357VT
		Nitrile (Buna-N)	3357BN
		Fluorosilicone	3357FS
		EPDM (white)	3357WE
		Tef-Sil	3357TS
7	Mounting O-ring	FKM Type A	17211VT
		Nitrile (Buna-N)	17211BN
		Fluorosilicone	17211 FS
		EPDM (black)	17211EP
		PTFE	17211TF



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3.0 Description and Intended Use

The 6234 is a single purpose in-breathing spring-loaded re-closing vacuum vent. This vacuum vent is designed to be stand alone or used as a supplement to the normal vent to provide additional in-breathing capacity when required. This vent may be used by itself or in multiples according to requirements.

The vacuum vent meets requirements of 49CFR§178.345-10, 178.346-3(c)(2), and 178.346-3(d)(2) but is limited by the maximum unload rate of cargo tank. As required by code “each vacuum relief system must have sufficient capacity to limit the vacuum to 1 psig”. Venting capacity is marked on the vent and it must be verified that total vacuum capacity satisfies this requirement.

Note: While this vent does provide additional in-breathing capacity, it is recommended that positive opening vapor recovery vents, which open when the emergency valves open, be provided when discharging product when the manhole closed.

Vacuum Set: .25 psig (1.7 kPa) to .375 psig (2.6 kPa)

Vacuum Venting Capacity: 4,000 SCFH @ 1psig







Part Numbers:

- 6234AL – Aluminum body with FKM Type A seals
- 6234ALB – Aluminum body with Nitrile (Buna-N™) seals
- 6234ALFS – Aluminum body with fluorosilicone seals
- 6234ALP – Aluminum body with EPDM seals
- 6234ALTS – Aluminum body with FEP encapsulated silicone and PTFE seals


Note: Add suffix “277” to end of part number for vent with 30x30x.012 screen.

4.0 Installation

- 4.1 The 6234 Vacuum Vent installs on the interior of the tank.
- 4.2 The vent is typically installed into the vent port of a 10” PAF Cover but can be installed in any 1⁵/₈–12 UN threaded port with a flat seating surface.

 WARNING		Fall Hazard – Climbing on top of a cargo tank is dangerous and should be avoided without proper safety equipment. Falling can result in death or serious injury.
 WARNING		Pressure Hazard – Hydraulic system contains high pressure which, if suddenly and unexpectedly released, could result in death or serious injury.
 WARNING		Flammable Product – Cargo tank may contain product that could present a risk of fire, explosion, asphyxiation or other hazards resulting in death or serious injury.

- 4.3 Inspect sealing surface to ensure there are no scratches, pitting or debris.
- 4.4 Apply anti-seize compound to the external threads of the vent.
- 4.5 Carefully hand thread the vent in a clockwise direction into the mounting location.
- 4.6 Tighten with wrench to secure. Do not over tighten.

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5.0 Inspection and Testing

5.1 Visual Inspection

- 5.1.1 Examine vacuum vent for corrosion pitting or damage. Replace if needed.
- 5.1.2 Examine Retaining Ring **(3)** to make sure it is fully installed in the groove.
- 5.1.3 Visually examine the Spring **(4)** to ensure it is seated properly in the interior chamber.
- 5.1.4 Push down on the Poppet **(5)** and check for free movement and smooth operation. Inspect for corrosion or damage to the Vent Body **(1)** bore. Replace if necessary.
- 5.1.5 Push down on the Poppet **(5)** and inspect the Seat O-ring **(6)** on opposite side to ensure it is fully seated in the O-ring groove. Inspect the seat of the Vent Body **(1)** for corrosion in the area it contacts the Seat O-ring **(6)**. Replace if necessary.
- 5.1.6 Inspect the Mounting O-ring **(7)** for wear or damage. Replace if necessary.

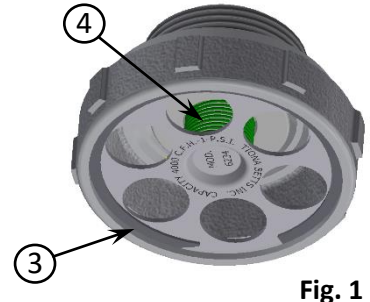


Fig. 1

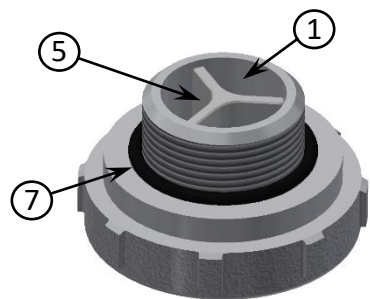


Fig. 2

5.2 DOT Compliance Testing

- 5.2.1 49CFR§180.407 requires inspection and testing of cargo tanks. Verify the frequency and requirement for your specific cargo tank specification.
- 5.2.2 Per §180.407(g)(1)(ii), all self-closing pressure relief valves, including emergency relief vents, and normal vents, must be removed from the cargo tank for inspection and testing.

5.3 Pressure tightness test:

- 5.3.1 Install vent as shown in figure 3 into test tank.
- 5.3.2 It is imperative the pressure gauge is a calibrated, high quality, high precision with low pressure capabilities.
- 5.3.3 Apply soapy water to the internal bore of the Vent Body **(1)**
- 5.3.4 Apply 1.0 psig air pressure to the test tank.
- 5.3.5 The vent must not leak.

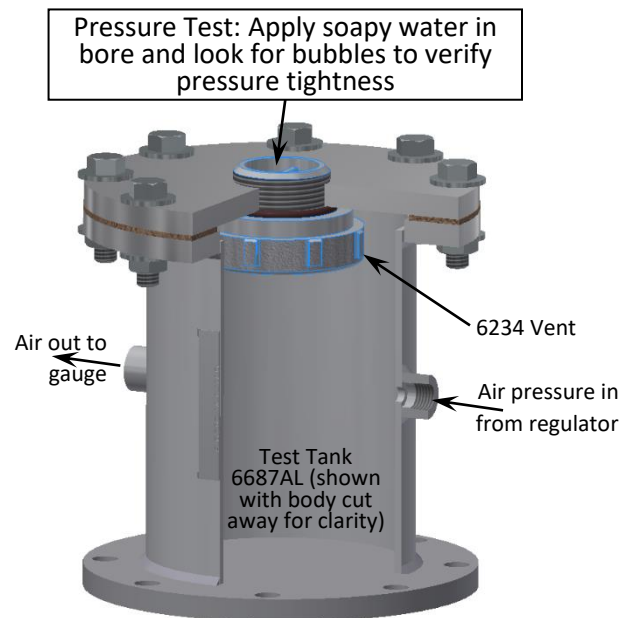



Fig. 3

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- 5.4 Vacuum relief test:
- 5.4.1 Install vent as shown in figure 4 into test tank.
 - 5.4.2 Apply soapy water to the area around the Seat O-ring **(6)**
 - 5.4.3 Slowly apply air pressure to the test tank and note at what pressure bubbles appear.
 - 5.4.4 49CFR§178.346-3(b)(2) states, for DOT 406 each vacuum relief device must be set to open at no more than 6 ounces (.375 psig) vacuum.
 - 5.4.5 The 6234 shall relieve between 0.25 psig to 0.375 psig.
 - 5.4.6 This simulates vacuum in the tank.

Apply soapy water in seat area. Vent should bubble between 0.25 psig to 0.375 psig.

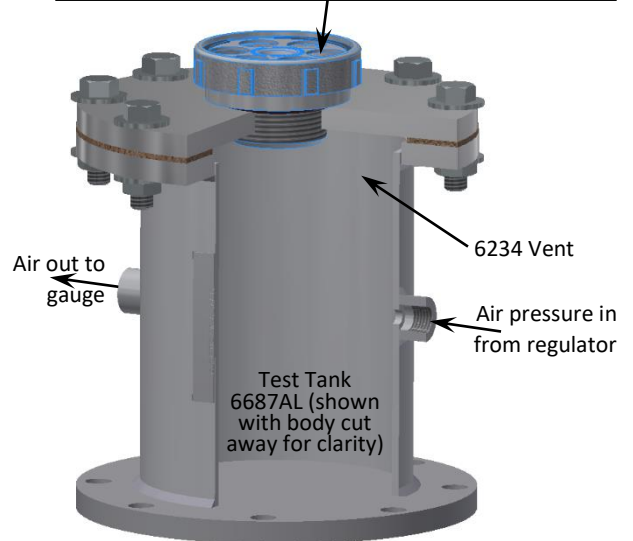


Fig. 4

- 5.5 Rinse and thoroughly dry the entire valve after test is complete.

6.0 Disassembly and Rebuild Instructions

- 6.1 Remove the Retaining Ring **(3)** using a flat head screwdriver. See figure 5.
- 6.2 Remove the Retainer Plate **(2)**.
- 6.3 Remove the Spring **(4)**.
- 6.4 Remove the Poppet **(5)**.
- 6.5 Using a non-marring pick, remove Seat O-ring **(6)** from the Poppet **(5)** and discard.
- 6.6 Using a non-marring pick, remove Mounting O-ring **(7)** and discard.
- 6.7 Inspect the O-ring groove of the Poppet **(5)** for pitting, scratches or product build-up. Replace the Poppet **(5)** if needed.
- 6.8 Inspect the seat of the Vent Body **(1)** for pitting, scratches or product build-up. Replace Vent Body **(1)** if needed.
- 6.9 Inspect the mounting seat area of the Vent Body **(1)** for pitting, scratches or product build-up. Replace Vent Body **(1)** if needed.
- 6.10 All parts should be clean prior to rebuild.

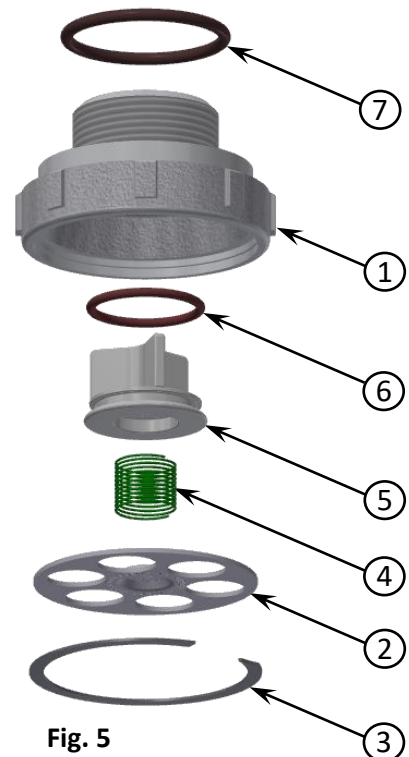



Fig. 5

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6.11 Lubricate and carefully install* new Seat O-ring **(6)** onto the Poppet **(5)**.

* If the O-ring is a PTFE encapsulated silicone O-ring, exercise great care during install as to not kink, scratch or damage in any way. PTFE encapsulated O-rings are not resilient to damage and must be free of any debris such as dirt, sand or rust particles.

6.12 Lubricate the interior bore of the Vent Body **(1)** and install the Poppet **(5)** into the Vent Body **(1)**.

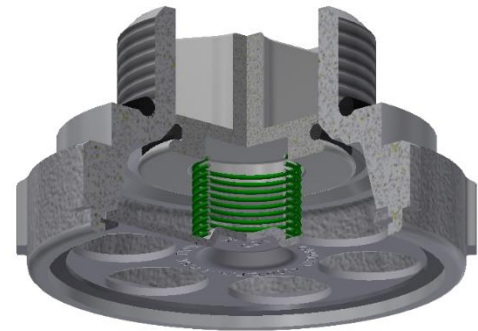
6.13 Install the Spring **(4)** and Retainer Plate **(2)**.


6.14 Push down on the Retainer Plate **(2)** to compress the Spring **(4)** and install the Retaining Ring **(3)**.

6.15 Make sure the Retaining Ring **(3)** is seated completely in the groove of the Vent Body **(1)**.

6.16 Lubricate and install the Mounting O-ring **(7)** onto the top of the Vent Body **(1)**.

6.17 Fully test the vent per section 5 prior to placing in service.



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7.0 Trouble Shooting Guide

Problem	Potential Cause	Potential Solution
Air leak past mounting threads	Loose Vent	Tighten vent in a clockwise direction
	Damaged or worn Mounting O-ring (7)	Replace Mounting O-ring (7)
	Damaged or pitted sealing surface	Replace Vent Body (1) Repair or replace mating mounting surface.
Pressure leaks past Poppet Seat O-ring	Damaged or worn Seat O-ring (6)	Replace Seat O-ring (6)
	Damaged or pitted sealing surfaces	Replace Vent Body (1) Replace Poppet (5)
	Spring weak or damaged	Replace Spring (4) Slightly stretch Spring (4) and verify vacuum relief falls within acceptable range.
Vent set vacuum is under acceptable limit.	Damaged or worn Seat O-ring (6)	Replace Seat O-ring (6)
	Damaged or pitted sealing surfaces	Replace Vent Body (1) Replace Poppet (5)
	Spring weak or damaged	Replace Spring (4) Slightly stretch Spring (4) and verify vacuum relief falls within acceptable range.
Vent set vacuum is over acceptable limit.	Corrosion between bore of Vent Body (1) and Poppet (5)	Clean and lubricate bore of Vent Body (1) Replace Vent Body (1) and Poppet (5)
	Spring too stiff or damaged	Replace Spring (4)