Enardo Rim Vent Pressure Relief Valve

Table of Contents

WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Fisher™ rim vents must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations, and Emerson Process Management Regulator Technologies Tulsa, LLC instructions.

Failure to correct trouble could result in a hazardous condition. Call a qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person must install or service the pressure relief valve.

Introduction

Scope of the Manual

This Instruction Manual provides instructions for installation and maintenance for the enardo rim vent pressure relief valve.

Figure 1. *Enardo Rim Vent Pressure Relief Valve*

Product Description

Rim vents (top mount) prevent the loss of vapors in a closed storage system and relieve pressure in atmospheric and low pressure storage tanks and floating roof tanks such as those defined in API 12F, API 12B, API 650 and EN 14015. Rim vents can also be used for emergency venting on small atmospheric and low pressure tanks.

The enardo rim vent is a pressure-only relief vent that can be installed on a mating CL150 flat faced flange. A 6 in. CL150 flange has a bolting circle with 8 - 0.88 in. bolt holes on a 9 - 1/2 in. bolt hole diameter.

Principle of Operation

Rim vents are installed on floating roofs or cone roofs of storage tanks with direct communication to the vapor space. In floating roof tanks, rim vents provide pressure relief to the roof and seals when the tank is empty, the roof is landed and the tank is being filled.

Pressure relief to the seals can be achieved when the roof is floating and if product evaporation occurs. As the pressure in the vapor space increases above the set point, the weight-loaded pallet lifts vertically to relieve pressure. As the pressure in the vapor space drops back below the rim vent set point, the pallet lowers and closes. The rim vent set point is adjustable by adding to or removing weights from the pallet.

Enardo Rim Vent

Specifications

The Specifications section lists the specifications for the enardo rim vent pressure relief valve. The following information is stamped on the nameplate attached to the base of the enardo rim vent: pressure setting and the flow rate at 100% overpressure in SCFH.

Available Constructions
See Figure 2
Connection Size
6 in. / 150 mm
Pressure setting[1]
See Table 1
Materials of Construction
See Table 2

Flow Rate
See Table 3
Assembly Weights
See Table 1
Certifications
EN IEC 60079-0:2018
EN IEC 60079-11:2012
EN ISO 80079-36:2016
EN ISO 80079-37:2016

1. The pressure limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

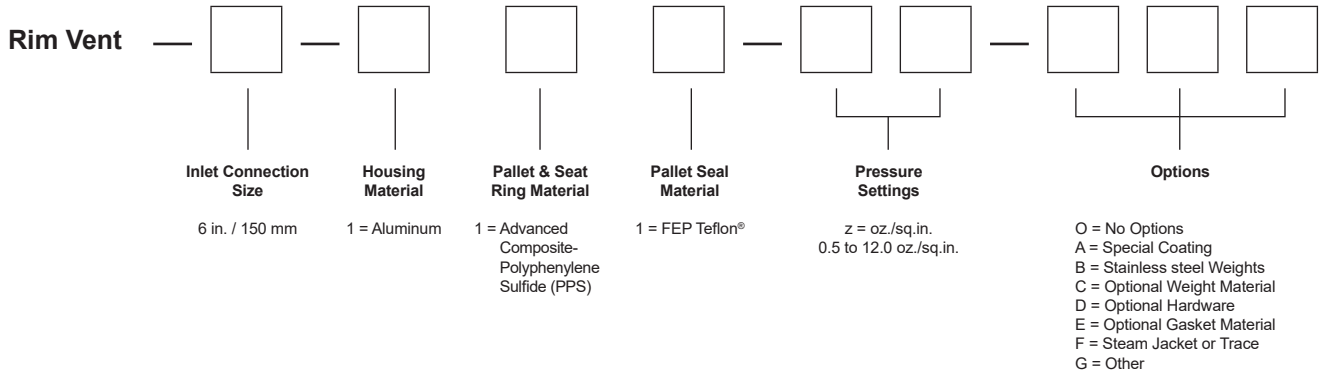

Figure 2. *Enardo Rim Vent Available Constructions and Model Numbering System*

Table 1. *Enardo Rim Vent Pressure Relief Valve Pressure Settings and Assembly Weights*

PRESSURE SETTING			ASSEMBLY WEIGHT	
oz./sq. in.	In. w.c.	mbar	Lbs.	kg
0.5	0.9	2.2	14	6
1	1.7	4.3	15	7
2	3.5	8.6	17	8
4	6.9	17.2	22	10
8	13.8	34.5	31	14
12	20.8	51.7	40	18

Table 2. *Materials of Construction*

BODY	HOOD	SCREEN	PALLET	WEIGHTS	GASKET	RODS
Cast Aluminum (Alloy 319-F)	Aluminum (Alloy 3003-H14)	Aluminum (Alloy 3003-H14)	Polyphenylene Sulfide (PPS)	Zinc Plated Carbon Steel	Teflon®	Aluminum (Alloy 6061-T6)

Table 3. *Flow Rate in SCFH at 100% Overpressure*

PRESSURE SETTING			FLOW RATE AT 100% OVERPRESSURE (SCFH)
oz./sq. in.	In. w.c.	mbar	
0.5	0.9	2.2	14,899
1	1.7	4.3	21,128
2	3.5	8.6	31,059
4	6.9	17.2	46,463
8	13.8	34.5	63,313
12	20.8	51.7	72,211

Teflon® is a mark owned by E. I. du Pont de Nemours and Company.

Product Identification and Marking

Hazardous Locations

Rim Vents are available in aluminum as indicated in Figure 3.

Nameplate

A nameplate is attached to the vent and contains the following information:

- Model Number – Ex. RIM VENT-6-111
- Connection Flange Size – 6”
- Serial Number
- Tag Number (Optional)
- Notified Body Number – Ex 2460
- Cat. No. (Category Number) – Category 2 – uncoated aluminum vents
- Date – date of manufacture
- Certificate – Ex. PRESAFE 17 ATEX 10273X
- Pressure Setting and Flow Rate
  - Setting – Ex. Z4.0
  - Flow Rate SCFH (Air) – Ex. 46,463

WARNING

Make sure line is free of hazardoius vapors before installing or servicing the valve.

Installation

CAUTION

Ensure the rim space or tank is at atmospheric pressure before opening. A pressure build-up inside the rim space or tank can cause a spray to be emitted from the rim vent if opened under pressure.

PPE Warning

WARNING

Wear protective gloves and clothing to prevent skin contact when handling lead weights. Wear eye protection. Avoid breathing dust/fumes/mist/vapors/spray. Do not eat, dring or smoke while using the product. Avoid release to the environment. Wash hands with soap and water after handling. Keep away from excessive heat and open flames.

Installation to a Flanged Pipe with a 6 in. CL150 Flat Faced Flange

1. Place the base gasket on the flanged pipe.

Figure 3. *Product Identification and Marking*

2. Line up bolt holes, and place the rim vent on top of the base gasket.
3. Install nuts and bolts and tighten in a star pattern. Ensure rim vent is fastened securely.

Note

For proper bolt torquing of the vent connecting flange to the piping, please refer to Tables 4 and 5.

Installation Directly to a Tank Roof

1. The tank requires a 6 in. ANSI bolt pattern on the roof.
2. Place the base gasket on the bottom of the rim vent flange and place the assembly on tank roof with holes lined up.
3. Insert eight bolts from the bottom up by reaching inside the tank, through the hatch and opening on the tank roof.
4. Attach each nut to the bolt from the outside. Tighten all nuts in a star pattern and ensure the rim vent is fastened securely.

Note

For proper bolt torquing of the vent connecting flange to the piping, please refer to Tables 4 and 5.

Removal of Packing Materials

Prior to operation, remove packing material inside the rim vent.

1. Remove the four wing nuts on the hood and remove the hood. Lift the upper guide off of the two vent rods that support it.
2. Pull the pallet assembly out of the rim vent and remove the cardboard gasket protector and the roll of packaging from the upper stem.
3. Inspect the sealing surface of the rim vent and the gasket on the pallet assembly for any signs of wear or damage.
4. Place pallet assembly back in the rim vent. Ensure that the bottom stem is retained by the lower guide hole on the rim vent base.
5. Place the upper guide back on the two vent rods, and place the hood back on the four vent rods. Install the four wing nuts and tighten snugly.

Table 4. *Torque Specifications - Flat Face Flange, Steel or Aluminum*

NOMINAL PIPE DIAMETER	# BOLTS	BOLT DIAMETER	TORQUE
6	8	0.75 in.	49 ft·lbs

Assumptions:
Use of SAE grade 5 bolts or studs or stronger
No lubricant
Elastomer <70 Durometer Shore A

Notes:
Flat faced flanges should never be mated to a raised face flange for installation.
If lubricant is used on bolts, apply torque reduction factor listed in Lubricant Table.
For best results hardened steel washers should be used on all cast flange bolted connections.

Table 5. *Torque Reduction Factor per Lubricant*

DESCRIPTION	COEFFICIENT OF FRICTION	MULTIPLY TORQUE VALUE IN TABLE BY
Machine Oil	f = 0.15	0.75
API SA2 Grease	f = 0.12	0.60
Nickel-based Lubricant	f = 0.11	0.55
Copper-based Lubricant	f = 0.10	0.50
Heavy-duty Lubricating Paste	f = 0.06	0.30

Maintenance

1. Perform scheduled maintenance at least once a year or more frequently in corrosive or dusty atmospheres or if conditions warrant.
2. During normal maintenance, inspect the pressure gasket and sealing surfaces for signs of wear or corrosion that could cause increased leakage.
3. To ensure efficient operation of the rim vent, carefully wipe the pressure seat and gasket with a clean, non-abrasive and lint-free cloth or paper towel every time the rim vent is opened and during scheduled maintenance. This prevents accumulation of residue that can deteriorate the performance of the rim vent.

Webadmin.Regulators@emerson.com
Enardo.com
Facebook.com/EmersonAutomationSolutions
LinkedIn.com/company/emerson-automation-solutions
Twitter.com/emr_automation

Emerson Automation Solutions

Americas
McKinney, Texas 75070 USA
T +1 800 558 5853
+1 972 548 3574
Tulsa, OK 74146 USA
T +1 918 662 6161

Europe
Bologna 40013, Italy
T +39 051 419 0611

Asia Pacific
Singapore 128461, Singapore
T +65 6777 8211

Middle East and Africa
Dubai, United Arab Emirates
T +971 4 811 8100

EMERSON™