

# 2100 Series Emergency Pressure Relief Vent and Manhole Cover

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Figure 1. 2100 Series

**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.

Enardo emergency pressure relief vent 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 shall install or service the emergency pressure relief vent.

## Introduction

### Scope of the Manual

This Instruction Manual provides instructions for installation, maintenance and parts ordering information for the 2100 Series Emergency Pressure Relief Vent .

### Product Description

The 2100 Series Emergency Pressure Relief Vent is designed to provide simple, reliable operation as an emergency vent, while providing efficient access to your tank, and maintaining the industry leading sealing standards (1 SCFH at 90% set point). It also provides trouble free operation with a minimum maintenance. There are two available configurations for 2100 Series: tethered and restrained (see Figure 3).

North America Only

# 2100 Series

## Specifications

The Specifications section lists the specifications for the 2100 Series. The following information is stamped on the nameplate attached to the relief vent: model number, connection size, date of manufacture, serial number, pressure setting and flow rate.

<b>Connection Sizes Available</b>	<b>Construction Materials</b>
16, 20 and 24 in. / 387, 489 and 591 mm	<i>Base:</i> Carbon steel, 304 Stainless steel and 316 Stainless steel
<b>Pressure Ranges<sup>(1)</sup></b>	<i>Lid and Seal Support:</i> Aluminum, 304 Stainless steel and 316 Stainless steel
0.7 to 8.0 oz./sq. in. and 1.2 to 14.0 in. w.c.	<i>Seal:</i> Buna-N, FEP Teflon® and Viton®

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

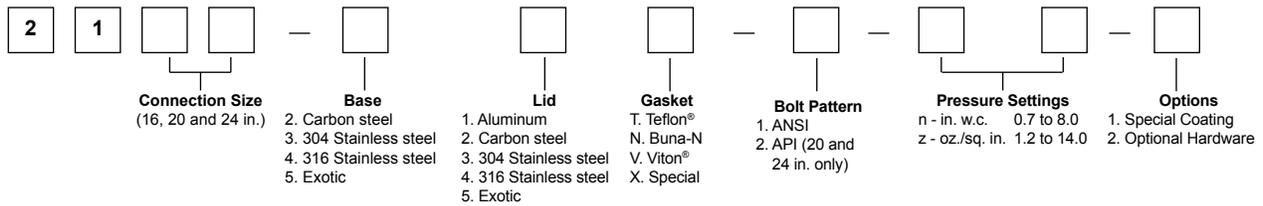


Figure 2. 2100 Series Model Number Identification

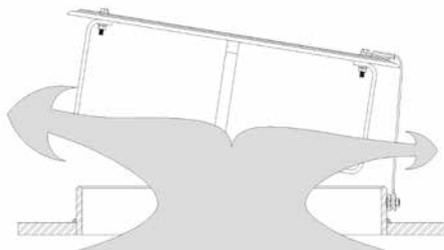


TETHERED

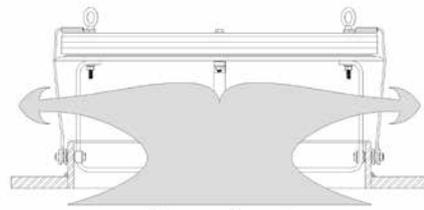


RESTRAINED

Figure 3. 2100 Series Product Configurations



TETHERED CONFIGURATION



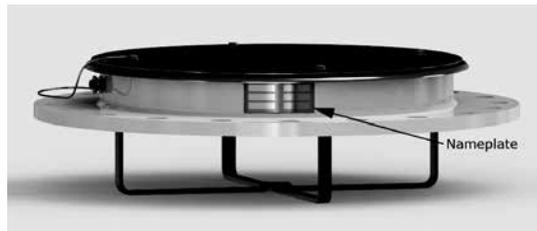
RESTRAINED CONFIGURATION

Figure 4. Operational Schematics

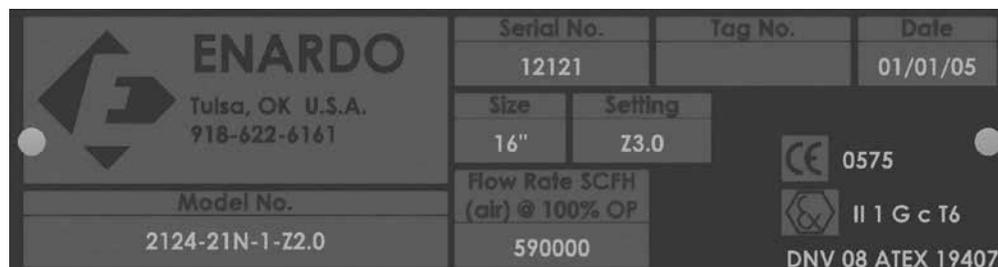
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**II 1 G c T6** OUTER HOUSING OF STAINLESS STEEL,  
CARBON STEEL OR COATED ALUMINUM


**II 2 G c T6** OUTER HOUSING OF UNCOATED ALUMINUM  
HAZARDOUS LOCATION



NAMEPLATE LOCATION



NAMEPLATE

Figure 5. Product Identification and Marking

## Product Identification and Marking

### Hazardous Locations

Enardo Emergency Pressure Relief Vents are available with outer housings of Carbon steel, stainless steel or aluminum, as indicated in Figure 5.

### Tagging Information

The nameplate is located on the unit's base, above the connection flange (see Figure 5).

The nameplate contains the model number, connection size, date of manufacture, serial number, and pressure setting. Actual layout of nameplate may vary.

## Principle of Operation

The 2100 Series maintains a tight seal until system pressure exceeds the set pressure of the vent. To adjust the set pressure, a series of weights may be stacked onto the lid assembly. When excessive overpressure occurs the weighted lid assembly lifts, breaking the seal between the seat and seal portion of the lid assembly. This allows vapors to pass through the vent orifice and relieve pressure buildup. The vent reseals upon relief and remains sealed; tethered lids may blow completely off in a catastrophic pressure event (see Figure 4).

It is important to know that relieving vapors near the set pressure in a continuous manner may cause the lid assembly to flutter or oscillate. This is a common occurrence in products of this type in the industry. Operating the vent with flutter or oscillation over time may cause premature vent damage or wear. Please feel free to contact your local Sales Office with any questions or for information on proper tank venting.

# 2100 Series

## Installation

### **WARNING**

The 2100 Series is shipped with its lid held partially open. The lid assembly has attached weights and is heavy. Use caution when removing the shipping blocks and metal bands to avoid injury to fingers and hands.

Prior to installation, remove the unit from its crate and discard any protective coverings. Follow the recommended instructions for the installation of the 2100 Series.

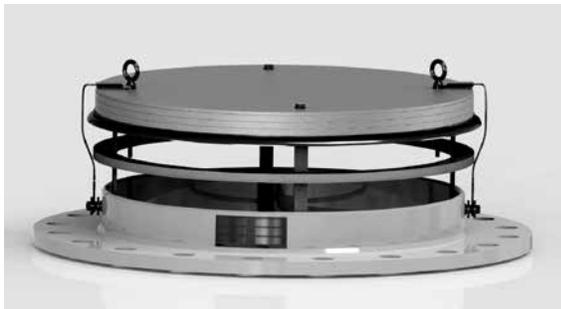


Figure 6. Recommended Seal Protection

1. Carefully remove the 2100 Series from its crating.

#### Note

The seal portion of the vent can be damaged through improper handling, protect this surface with a padding material while transporting the unit if possible.

### **WARNING**

Failure to use spreader bar in lifting the unit may result in personal injury, damage to the unit and damage to the equipment.

There should be no tension on the lanyards if the unit is to be hoisted in position, failure to do so may result in damage to the unit.

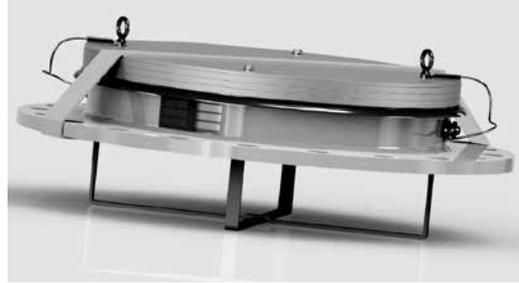


Figure 7. Recommended Lifting Configuration

2. Use an appropriate spreader bar when lifting the unit by the installed eyebolts. If the complete unit is to be hoisted into position using installed eyebolts, first secure the base to the lid so that there is no tension on the lanyards. Lanyards are load-rated to 350 lbs / 160 kg each; damage to other components may occur.

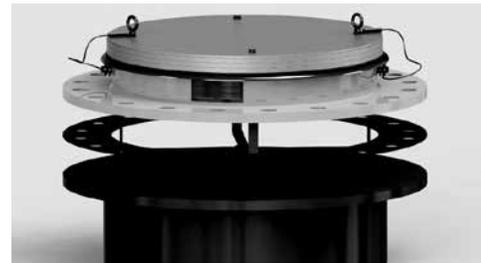


Figure 8. Installation Configuration

3. Install the 2100 Series on flange bolt patterns that match that of the vent itself. If a matching pattern is not available, please contact your local Sales Office for an adapter. The attachment flange base must be a level surface. Use an appropriate gasket placed between the 2100 Series flange and the attachment flange, center the vent into place.



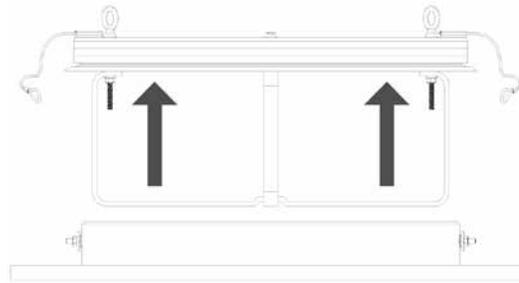
Figure 9. Final Installation

4. Insert the appropriate number of bolts and make sure the vent is fastened securely. Installed bolts should be clear of the lid assembly when it is in the full open position. Remove any spacer or seal protection and inspect the now installed unit for items that would keep it from working properly. The sealing area should be free of any debris or damage that would cause leakage.

## Startup

### WARNING

Ensure the tank is at atmospheric pressure before opening. A pressure buildup inside the tank can cause a spray to be emitted from the vent if opened under pressure.



2. Grip lid firmly and lift straight up until the bottom of guide assembly clears the base or attach shackles to the eyebolts and use a crane or hoist to lift.

#### Note

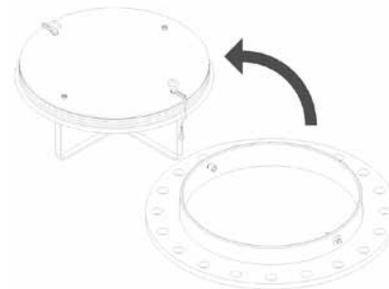
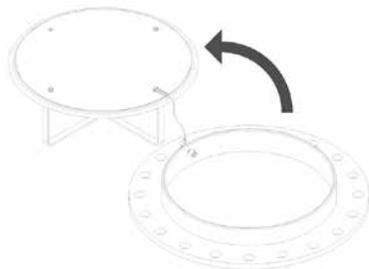
Be careful to keep the guide from denting or scratching the sealing surface as this can cause leaks.

## Tethered Configuration

1. Grip lid firmly and lift straight up until the bottom of guide assembly clears the base.

#### Note

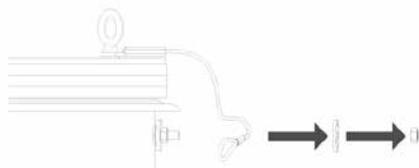
Be careful to keep the guide from denting or scratching the sealing surface as this can cause leaks.



3. Move the lid away from the opening set it down. The guide assembly is designed to hold the cover assembly even at the maximum 8 oz./sq. in. setting.

2. Move the lid away from the opening and set it down on the guide assembly. The guide assembly is designed to hold the cover assembly even at the maximum 8 oz./sq. in. setting.

## Restrained Configuration



1. Remove the nylock nut and outer fender washer. The loop slides off the lanyard attachment assembly.

## Maintenance

### Sealing Surface Protector

#### WARNING

The sealing surface protector must be removed before the 2100 Series is returned to service. The vent will not seal with the protector in place.

The following instructions are applicable only if the sealing surface protector was also purchased for your unit. This guard is available to prevent damage to the sealing surface when the 2100 Series is being used for tank access or for running air or weld leads into the tank.

# 2100 Series



Figure 10. Surface Protector Installation

Remove the sealing surface protector from its bag. Place one end of the protector over the machined surface with the legs pointing down and the flat side up. Firmly press the protector over the sealing surface. Move around the sealing surface making sure the protector is snugly attached.

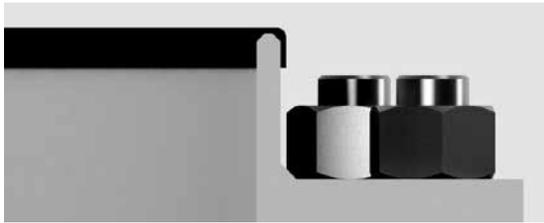


Figure 11. Surface Protector Cross-section

## Seal Replacement Procedure

### Tools and Supplies Needed:

- 2 standard 7/16 in. wrenches
- Torque wrench (recommended)
- 1 screwdriver, any type (for eyebolt units only)
- Adhesive tape (recommended for eyebolt units)
- 2100 Series seal
- 4 1/4 in. stat-o-seals (recommended)

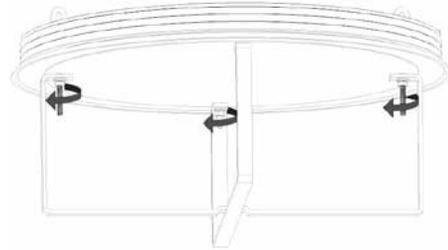
### Replacement Procedure:



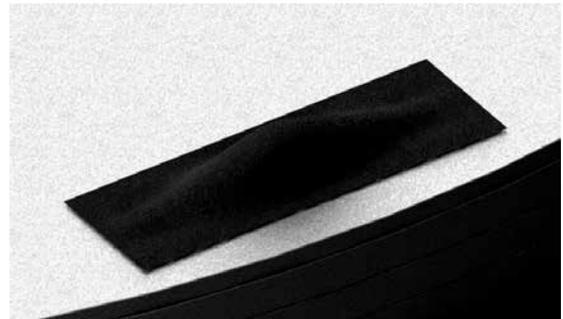
## WARNING

Ensure the tank is at atmospheric pressure before opening. A pressure buildup inside the tank can cause a spray to be emitted from the vent if opened under pressure.

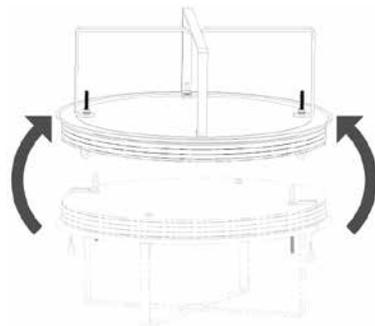
1. Remove the nylock nut and outer fender washer. The loop slides off the lanyard attachment assembly. Remove the lid assembly from the base and place on a level surface.



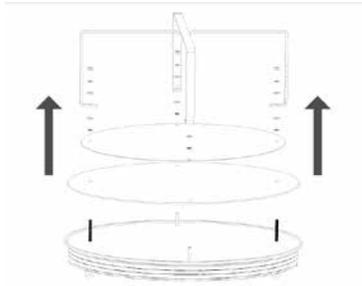
2. Loosen the 4 hex nuts on the bottom of the lid assembly. If the unit is equipped with eyebolts, insert the screwdriver through the eye to provide leverage.



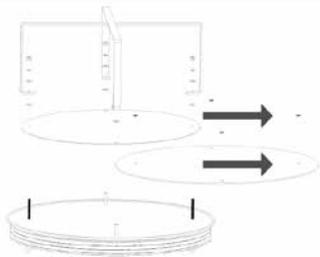
3. If the unit is equipped with eyebolts, place a piece of adhesive tape over the hex bolt heads to prevent them from falling out. This is not required, but makes seal replacement much easier.



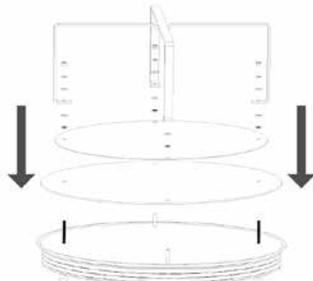
4. Flip the lid assembly over so that the guide assembly is facing up.



5. Remove the hex nuts, washers, guide assembly, stat-o-seals, seal support and seal. Take note of the order in which the components are removed.



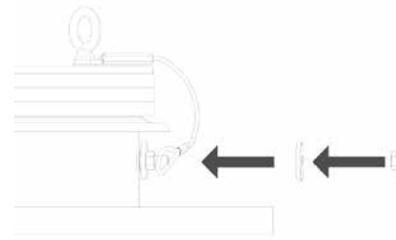
6. Discard seal. If replacement stat-o-seals were ordered, discard old stat-o-seals.



7. Reassemble the lower lid components in the reverse order of disassembly.



8. Before tightening hex nuts, ensure that the eyelet on the lanyard(s) is pointing **away** from the center of the lid. **Failure to do this may result in damage to the tank** by preventing the unit from opening fully in a pressure event. Tighten each nut to 1 turn after snug.



9. Flip the lid assembly over so that the guide assembly is facing down. Reinsert the lid into the base and reattach the lanyard(s). Do not tighten the hex nut and the nylock nut greater than 12 ft•lbf.

## Parts Ordering

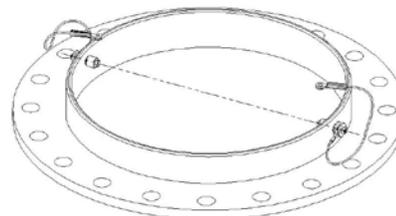
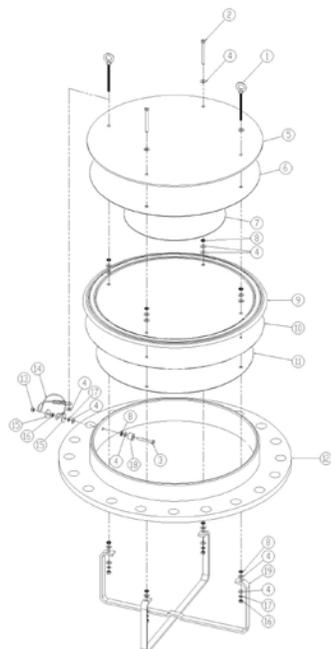
When corresponding with your local Sales Office about this equipment, always reference the equipment serial number stamped on the nameplate.

When ordering replacement parts, specify the complete 7-character part number found in Table 1.

## Parts List

Key	Description
1	Eyebolt, 1/4 in. - 20 x 3 in., 316 Stainless steel
2	Hex Bolt, 1/4 in. - 20 x 3 in., 316 Stainless steel
3	Hex Bolt, 1/4 in. - 20 x 2 in., 316 Stainless steel
4	Flat Washer, 1/4 in., 316 Stainless steel
5	Weight, oz./sq. in. or in. w.c., Zinc-Plated Carbon steel and 316 Stainless steel
6	Shield, Aluminum, Zinc-Plated Carbon steel, 304 Stainless steel and 316 Stainless steel
7	Weight, "Makes", Zinc-Plated Carbon steel
8	Stat-O-Seal, 1/4 in. Fluorocarbon, Stainless steel and Viton®
9	Cover, Aluminum, Zinc-Plated Carbon steel, 304 Stainless steel and 316 Stainless steel
10	Seal, Buna-N, Teflon® and Viton®
11	Seal Support, Aluminum, Zinc-Plated Carbon steel, 304 Stainless steel and 316 Stainless steel
12	Base, Zinc-Plated Carbon steel, 304 Stainless steel and 316 Stainless steel
13	Nylock Hex Nut, 1/4 in. - 20, 316 Stainless steel and Nylon
14	Lanyard, Tether or Restraint, 316 Stainless steel
15	Fender Washer, 1/4 x 1 in. O.D., 316 Stainless steel
16	Hex Nut, 1/4 in. - 20, 316 Stainless steel
17	Lock Washer, 1/4 in., 316 Stainless steel
18	Roller, Zinc-Plated Carbon steel, 316 Stainless steel
19	Guide, Aluminum, Zinc-Plated Carbon steel, 304 Stainless steel and 316 Stainless steel

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RESTRAINED BASE (COVER ASSEMBLY NOT SHOWN)

**Figure 12. 2100 Series Assembly Drawing**

**Table 1. 2100 Series Seal Options**

MATERIAL	GASKET AND SEAL OPTIONS		
	Part Number		
	16 in.	20 in.	24 in.
Buna-N	3043037	3043040	3043043
Teflon®	3043038	3043041	3043044
Viton®	3043039	3043042	3043045

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