

# Enardo 850 and Enardo 950 Series Pressure/ Vacuum Relief Valve (ATEX Approved)



Figure 1. Models Enardo 850 and Enardo 950 Pressure/  
Vacuum Relief Valve

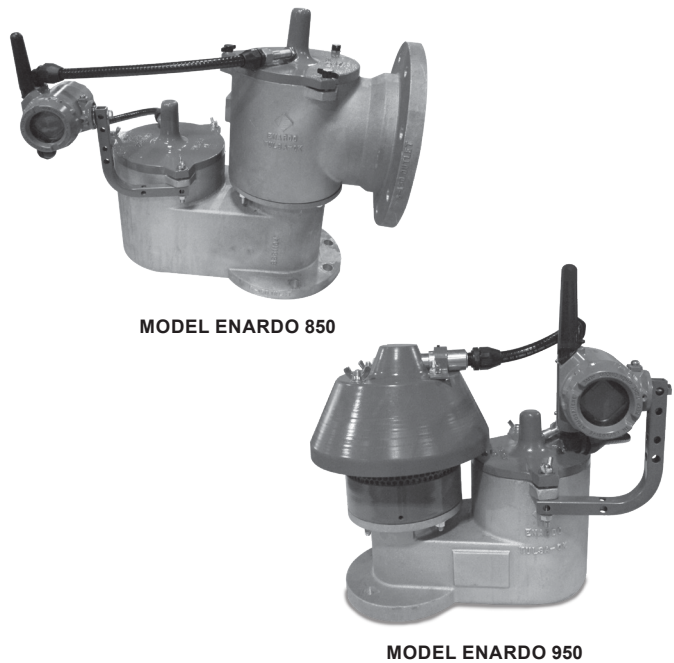


Figure 2. Models Enardo 850 and Enardo 950 with  
Smart Wireless Option

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## 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™ pressure/vacuum relief valve 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 (Emerson) instructions.

# Enardo 850 and Enardo 950 Series

## Specifications

The Specifications section on this page provides specifications for the Enardo 850 and Enardo 950 Series pressure/vacuum relief valve. Specification is stamped on the nameplate attached to the relief valve. Refer to Product Identification and Marking section for the nameplate details.

### Available Construction

See Figures 3 and 4

### Inlet Connection Sizes

2 through 12 in. / 50 through 300 mm

### Pressure Ranges<sup>(1)(2)</sup>

0.4 to 32 oz./sq.in.  
1.0 to 55.0 in. w.c.  
1.72 to 138 mbar  
17.6 to 1406 mm w.c.

### Vacuum Pressure Ranges<sup>(1)(2)</sup>

0.4 to 32.0 oz/sq. in.  
1.0 to 55.0 in. w.c.  
1.72 to 138 mbar  
17.6 to 1406 mm w.c.

### Construction Materials

**Housing:** Aluminum, Ductile iron, Stainless steel or Carbon steel

**Seat / Pallet:** Polyphenylene Sulfide (PPS) or 316 Stainless steel

**Pallet Seal:** Buna-N, FEP Teflon® or Viton®

**Hardware:** Zinc-plated Carbon steel or Stainless steel

**Weights:** Zinc-plated Carbon steel, Stainless steel or Lead

**Gaskets:** Buna-N, Teflon® or Viton®

### Certification

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.
2. Pressure or vacuum setting has an increment of 0.5 oz./sq.in., 0.5 in. w.c. or 2.2 mbar.

Model	Inlet Size	Outlet Size	Housing Material	Pallet and Seat Material	Pallet Seal Material	Body/Seat/Lid Seal Material
Enardo 850	2 to 12 in.	3 to 14 in.	1 = Aluminum 2 = Ductile Iron 4 = 316SST 5 = Carbon Steel	1 = PPS Polyphenylene Sulfide 2 = 316SST	1 = FEP 2 = Nitrile (NBR) 3 = Fluorocarbon (FKM)	1 = PTFE Body and FEP Seat/Lid 2 = Nitrile (NBR) 3 = Fluorocarbon (FKM)

Pressure Units	Pressure Setting	Vacuum Units	Vacuum Setting	Weight Material	Options
z = oz./sq.in. n = in. w.c. mm = mm w.c. mb = mbar	0.5 to 32.0 oz./sq.in. 0.86 to 55.0 in. w.c. 22 to 1406 mm w.c. 2.2 to 138 mbar	z = oz./sq.in. n = in. w.c. mm = mm w.c. mb = mbar	0.5 to 32.0 oz./sq.in. 0.86 to 55.0 in. w.c. 22 to 1406 mm w.c. 2.2 to 138 mbar	C = CS ZP S = SST L = Lead	0 = No Options F = Flat Face Flange (standard for Aluminum) R = Raised Face Flange (standard for CS, DI, SS) X = Epoxy Coating W1 = Wireless Pressure and Vacuum Monitoring W2 = Wireless Pressure Monitoring Only W3 = Wireless Vacuum Monitoring Only W4 = Wired Pressure and Vacuum Monitoring W5 = Wired Pressure Monitoring Only W6 = Wired Vacuum Monitoring Only

### MODEL ENARDO 850 PRESSURE/VACUUM RELIEF VALVE MODEL NUMBER

Model	Inlet Size	Housing Material	Pallet and Seat Material	Pallet Seal Material	Body/Seat/Lid Seal Material
Enardo 950	2 to 12 in.	1 = Aluminum 2 = Ductile Iron 4 = 316SST 5 = Carbon Steel	1 = PPS Polyphenylene Sulfide 2 = 316SST	1 = FEP 2 = Nitrile (NBR) 3 = Fluorocarbon (FKM)	1 = PTFE Body and FEP Seat/Lid 2 = Nitrile (NBR) 3 = Fluorocarbon (FKM)

Pressure Units	Pressure Setting	Vacuum Units	Vacuum Setting	Weight Material	Options
z = oz./sq.in. n = in. w.c. mm = mm w.c. mb = mbar	0.5 to 32.0 oz./sq.in. 0.86 to 55.0 in. w.c. 22 to 1406 mm w.c. 2.2 to 138 mbar	z = oz./sq.in. n = in. w.c. mm = mm w.c. mb = mbar	0.5 to 32.0 oz./sq.in. 0.86 to 55.0 in. w.c. 22 to 1406 mm w.c. 2.2 to 138 mbar	C = CS ZP S = SST L = Lead	0 = No Options F = Flat Face Flange (standard for Aluminum) R = Raised Face Flange (standard for CS, DI, SS) X = Epoxy Coating W1 = Wireless Pressure and Vacuum Monitoring W2 = Wireless Pressure Monitoring Only W3 = Wireless Vacuum Monitoring Only W4 = Wired Pressure and Vacuum Monitoring W5 = Wired Pressure Monitoring Only W6 = Wired Vacuum Monitoring Only

### MODEL ENARDO 950 PRESSURE/VACUUM RELIEF VALVE MODEL NUMBER

Figure 3. Pressure/Vacuum Relief Valve Model Number

Teflon® and Viton® are marks owned by E. I. du Pont de Nemours and Company.

# Enardo 850 and Enardo 950 Series

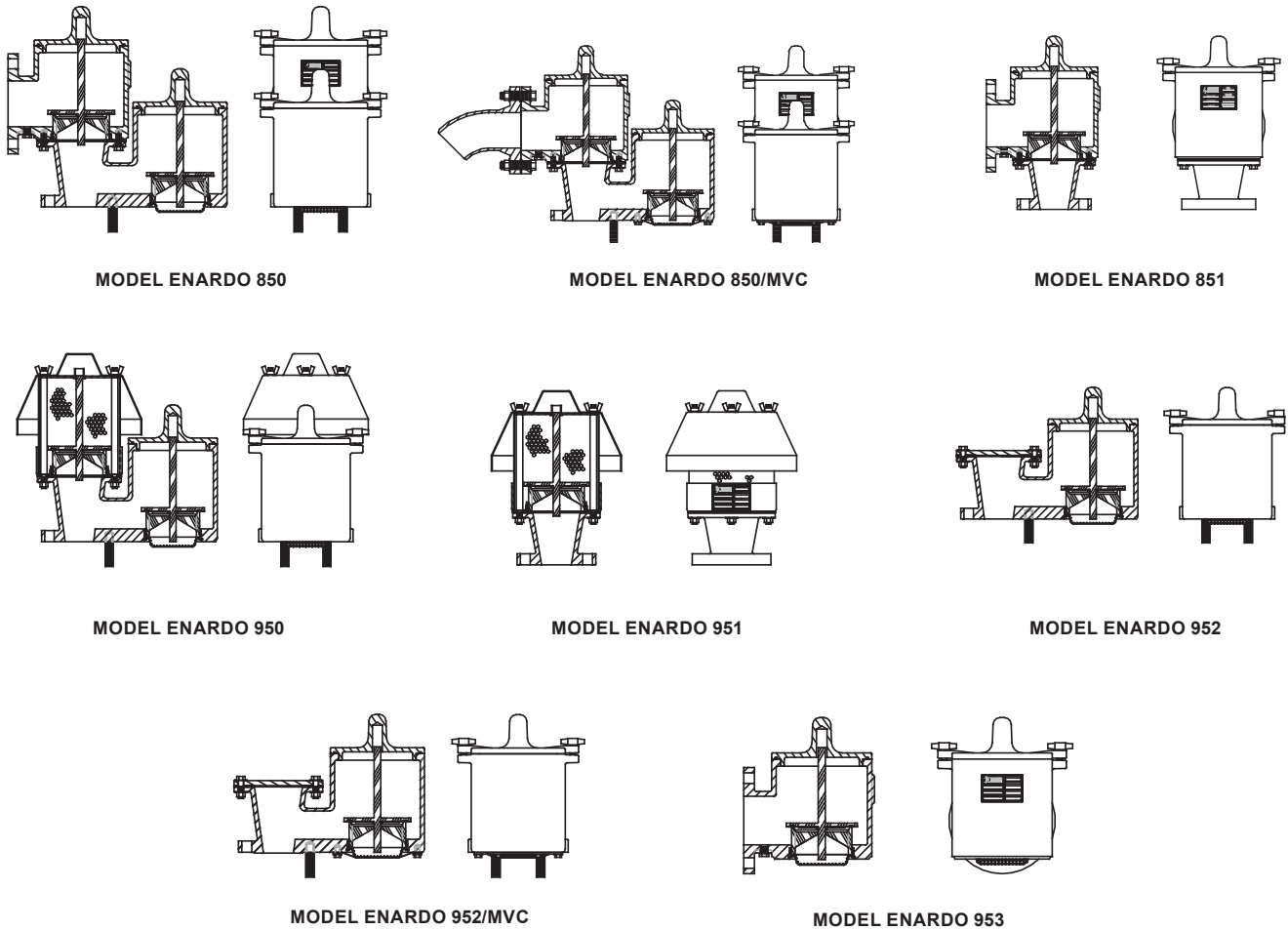


Figure 4. Enardo 850 and Enardo 950 Series Pressure/Vacuum Relief Valve Available Models

**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 pressure/vacuum relief valve.**

## Introduction

### Scope of the Manual

This Instruction Manual provides instructions for installation, maintenance and parts ordering information for the Enardo 850 and Enardo 950 Series pressure/vacuum relief valve (PVRV).

## Product Description

### Enardo 850 and Enardo 950 Series

The Enardo 850 and Enardo 950 Series pressure/vacuum relief valves provide protection against positive or vacuum overpressure and prevent air intake and evaporative losses of product while helping to contain odorous and potentially explosive vapors.

The Enardo 850 Series provides pressure and vacuum relief in applications that require hazardous vapors to be piped away rather than released into the atmosphere.

The Enardo 950 Series valve provides pressure and vacuum relief for normal venting requirements while maintaining a safe internal working pressure to prevent the routine expulsion of waste gas to the atmosphere.

# Enardo 850 and Enardo 950 Series

- **Model Enardo 850:** Pressure/Vacuum Relief Valve — Pipe-Away
- **Model Enardo 850/MVC:** Marine Vapor Control System Pressure/Vacuum Relief Valve. This product is fitted with spark screens on the inlet and outlet ports in accordance with 33 CFR Part 154
- **Model Enardo 851:** Top Mount Pressure or Side Mount Vacuum Relief Valve — Pipe-Away
- **Model Enardo 950:** Pressure/Vacuum Relief Valve — Vent-to-Atmosphere
- **Model Enardo 951:** Pressure Relief Valve — Vent-to-Atmosphere
- **Model Enardo 952:** Top Mount Vacuum Relief Valve — End-of-Line
- **Model Enardo 952/MVC:** Marine Vapor Control System Vacuum Relief Valve
- **Model Enardo 953:** Side Mount Vacuum Relief Valve

## Smart Wireless Monitoring Option

The Smart Wireless Monitoring Option is available with PVRV Models Enardo 850 (Pipe-away) and Enardo 950 (Vent-to-atmosphere). This option allows the remote sensing and “OPEN/CLOSED” value transmission of the open or closed status of the pressure vent, the vacuum vent or both. Use Option Code WP for pressure vent monitoring, Option Code WV for vacuum vent monitoring or WPV for the monitoring of both at the end of the model string. Knowing whether a PVRV is open or closed can enable immediate response to prevent problems related to safety, emissions and quality of the tank contents.

The following are a few specific examples of how this added visibility can help prevent problems:

### Example #1 – Redundant PVRVs

Redundant PVRVs are commonly used for added safety. If the primary PVRV fails closed or partially-closed, then the backup PVRV automatically takes over. This is achieved by establishing a pressure set point that is slightly higher for the backup device. In this way, if the primary PVRV fails, the tank remains protected. But redundancy is lost and should be addressed as soon as possible. But how will you know if this has occurred? Monitoring the open/closed position of the backup PVRV can provide quick identification of this issue, for either the pressure or vacuum side. Under normal conditions, the backup PVRV remains closed. If the backup PVRV is open, this points to either the primary PVRV not functioning as expected or a separate pressure control

problem in the tank system that is causing both PVRVs to be open. Ideally, the wireless monitoring of both primary and backup devices is preferred in order to gain the most insight. Further troubleshooting can then be performed and the problem can be detected and addressed.

### Example #2 – Tank Blanketing

Tank blanketing is sometimes used in order to inert the vapor space in a tank for added safety. A tank blanketing regulator controls the inflow of nitrogen or another blanketing gas by responding to a low pressure set point. In this scenario, a PVRV (vacuum side) generally acts as a backup to the blanketing regulator. If the blanketing system fails for some reason, the PVRV automatically takes over, as its set point is slightly higher than that of the regulator. But once again, how is one to know that this has occurred? A wireless-monitored PVRV would indicate that the vacuum side is open. Under normal operation, it should be closed.

### Example #3 – Emergency Vent

A storage tank’s emergency vent should remain closed, except in abnormal conditions. If an emergency vent is also remotely monitored, and found to be open, then there may be a pressure control issue somewhere in the system. In this scenario, the PVRV should also be open. If it is not, it could be part of the issue. Again, a wireless-monitored PVRV can readily provide this information.

## Product Identification and Marking

### Hazardous Locations

Fisher™ pressure/vacuum relief valves are available with outer housings of carbon steel, stainless steel or aluminum, as indicated in Figure 5.

### Nameplate

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

- **Model Number** – Ex. 950-8-5211
- **Size** – Ex. 8 in.
- **Serial Number**
- **Tag Number** (Optional)
- **Notified Body Number** – Ex. 2460
- **Cat. No. (Category Number)**
  - Category 1 – Stainless steel, Carbon steel or Coated aluminum vents
  - Category 2 – Uncoated aluminum vents

II 1 G Ex h IIC T6 Ga

OUTER HOUSING OF STAINLESS STEEL,  
CARBON STEEL OR COATED ALUMINUM

II 2 G Ex h IIC T6 Gb

OUTER HOUSING OF UNCOATED ALUMINUM

Figure 5. Product Identification and Marking

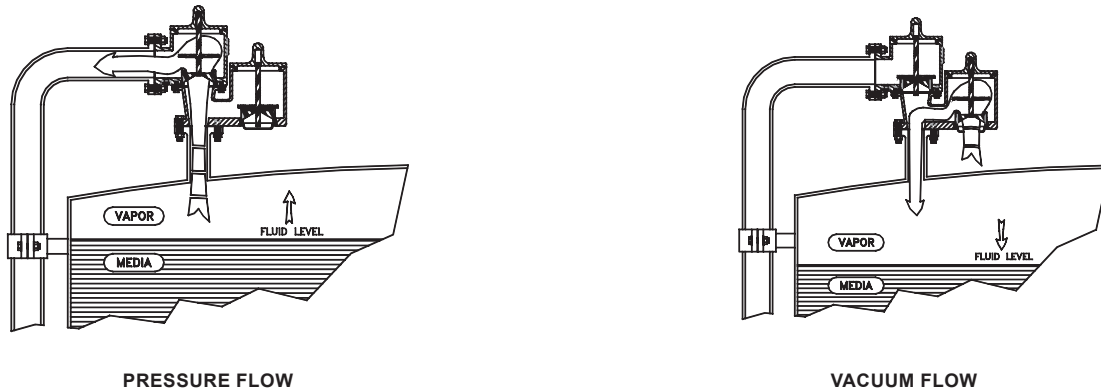


Figure 6. Pressure and Vacuum Flow

- **Date** – Date of Manufacture
- **Certificate** – Ex. PRESAFE 17 ATEX 10273X
- **Pressure Setting and Flow Rate**
  - Setting – Ex. Z4.0
  - Flow Rate SCFH (Air) – Ex. 00000
- **Vacuum Setting and Flow Rate**
  - Setting – Ex. Z0.5
  - Flow Rate SCFH (Air) – Ex. 00000

## Principle of Operation

### Enardo 850 and Enardo 950 Series

The Enardo 850 and Enardo 950 Series pressure/vacuum relief valves maintain a tight seal until system pressure or vacuum exceeds the set pressure of the valve. Set pressure is determined by stacking a series of weights onto the valve pallet unless the pressure and vacuum set points have been specified for the minimum settings. When overpressure occurs, the weighted pallet lifts, breaking the seal between the seat and pallet. This allows vapors to pass through the valve orifice and relieve pressure buildup. The valve reseals upon relief and remains sealed.

It is important to know that relieving vapors near the set pressure in a continuous manner may cause the pallet to flutter or oscillate inside the valve chamber.

This is common to products of this type. Operating the valve with flutter or oscillation may cause premature valve damage or wear over time. Fisher™ pressure/vacuum relief valve flow charts and sizing program results designate the “flutter zone” to assist with correct valve sizing. Contact your local Sales Office with any questions or additional assistance.

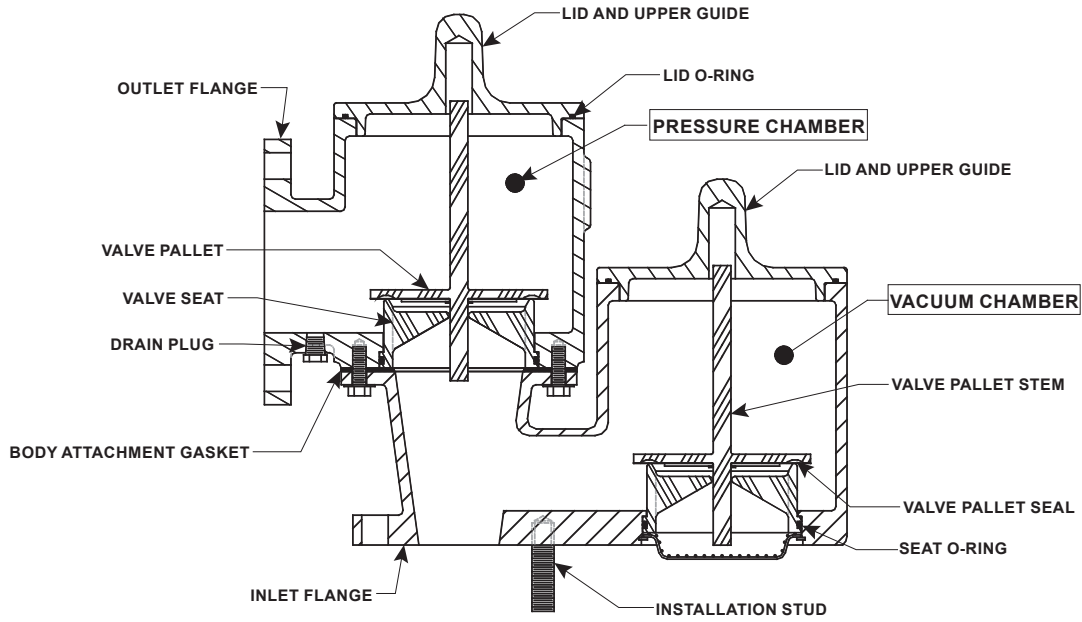
### Smart Wireless Monitoring Operation

The Smart Wireless Monitored PVRV design consists of the PVRV, proximity sensors and a wireless transmitter. The built-in proximity sensors detect the open or closed position of the valve stem and send these signals to the transmitter. These signals received by the transmitter can then be sent to a control room via a WirelessHART® Gateway.

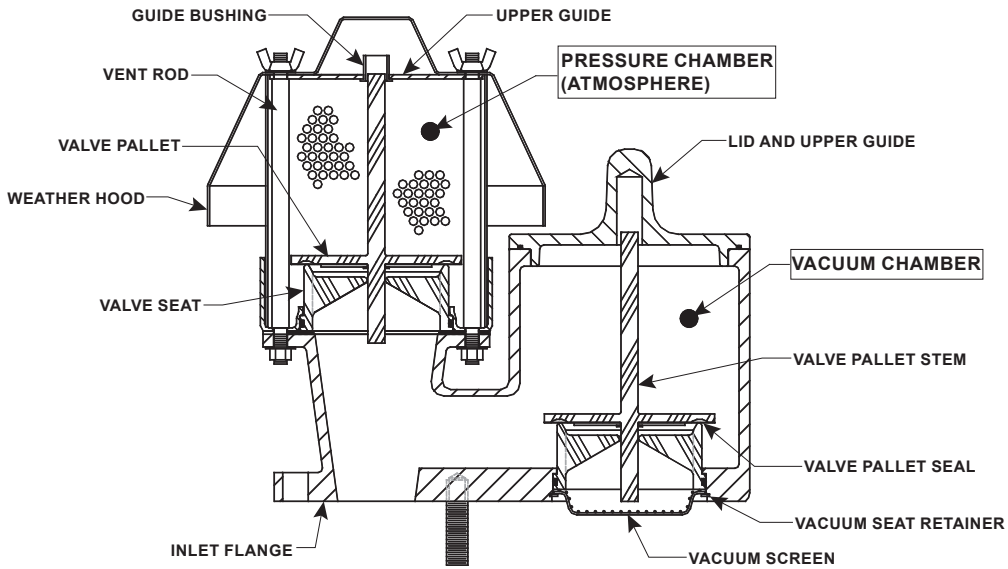
WirelessHART® is a wireless sensor networking technology that is based on the Highway Addressable Remote Transducer (HART) protocol. It was developed as a multi-vendor, interoperable wireless standard for process field device networks. It is the most widely used standard today and, for this reason, the PVRV described herein was designed to integrate within it. As long as the wireless gateway is WirelessHART®, it will receive the signal from the device. The WirelessHART® gateway will then send the information to a control room which makes use of any number of software integration packages.

WirelessHART® is a mark owned by HART Communications Foundation.

# Enardo 850 and Enardo 950 Series



MODEL ENARDO 850 PIPE-AWAY PRESSURE/VACUUM RELIEF VALVE



MODEL ENARDO 950 VENT-TO-ATMOSPHERE PRESSURE/VACUUM RELIEF VALVE

Figure 7. Models Enardo 850 and Enardo 950 Pressure/Vacuum Relief Valve Assembly

Outside North America Only



# Enardo 850 and Enardo 950 Series

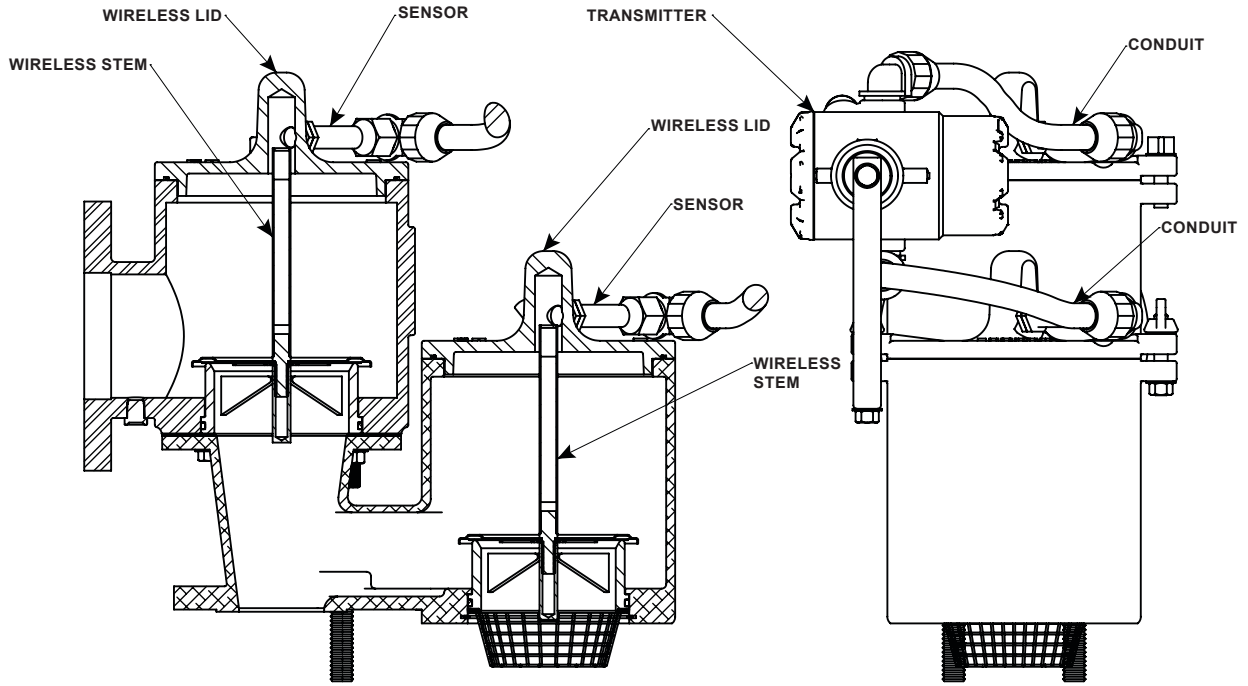


Figure 8. Model Enardo 850 with Smart Wireless Option

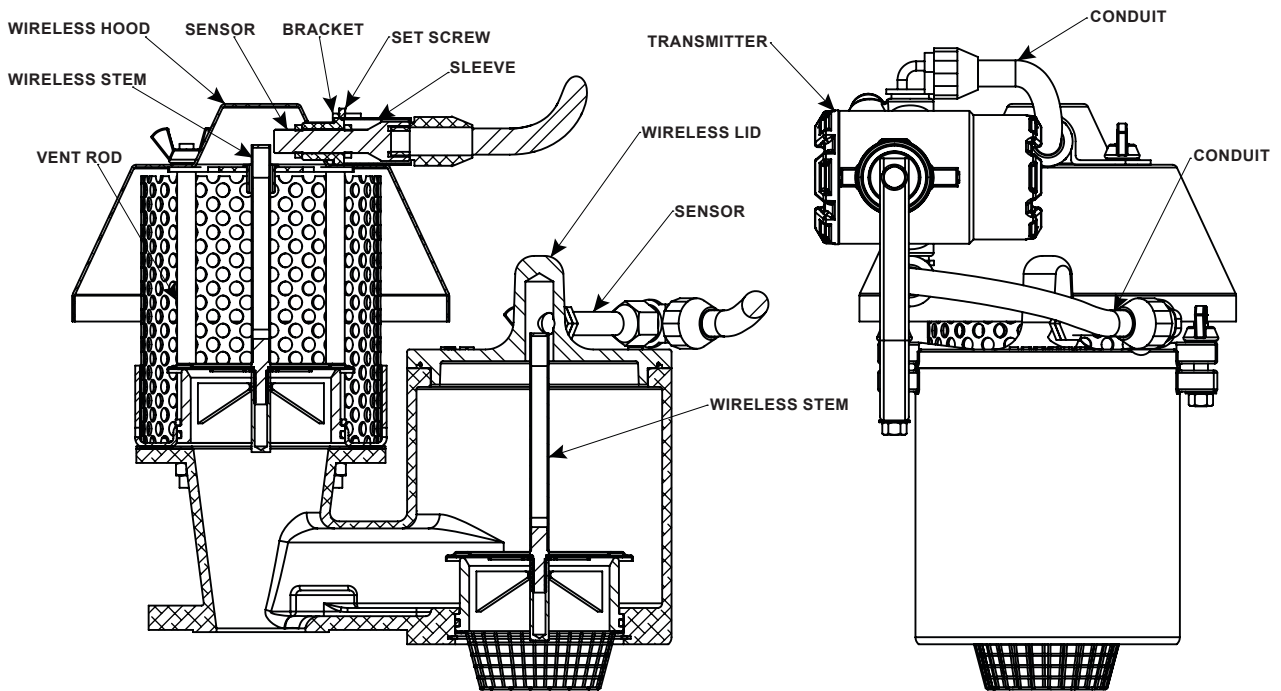


Figure 9. Model Enardo 950 with Smart Wireless Option

# Enardo 850 and Enardo 950 Series

## Installation

### Enardo 850 and Enardo 950 Series

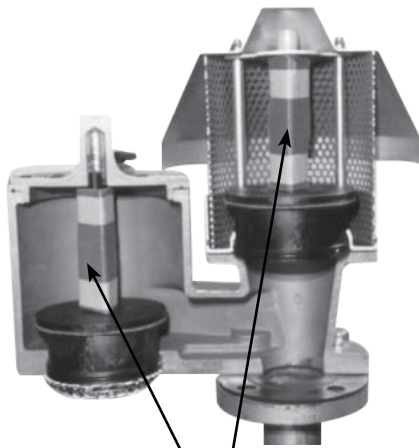
#### WARNING

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, drink 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.

#### WARNING

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

1. Loosen fasteners on top of the valve and remove the lid, hood or guide.



Cardboards  
Remove cardboard from pallet stems



Cardboard  
Remove cardboard from pallet stems

#### Note

All product configurations use similar packing methods.

2. Remove valve pallets from the unit. Separate the protective cardboard coverings from the pallet stems and seals. Be careful not to damage the pallet seal surface.



3. Reinsert uncovered valve pallets back into the unit. Make sure that the lower stem on the pallet is centered into the valve seat. If the pallet appears to be off-center to the valve chamber, or if there is difficulty positioning the lid or guide, carefully inspect the pallet to ensure it is inserted properly.
4. Remove any protective flange covers.

#### Note

For more detail on using weights to adjust the pallet setting, read the Adjustments section.



5. Reinstall pressure and/or vacuum pallet assemblies into their respective openings. Install the setting



weights (if required) by engaging the hole in the weight on the appropriate pallet assembly stem.

- 5.1. The weights are marked with their pressure equivalents and are shipped outside of the valve chamber. Verify that the appropriate weights are being installed to provide the specified pressure and/or vacuum setting. Refer to the nameplate data to verify the specified factory settings.
- 5.2. To adjust valve settings higher than minimum, use the weights to increase the pressure setting. Weights are packed separately within the unit shipping package and are labelled "PRESSURE" and/or "VACUUM". If weights are shipped with the unit, they should be installed onto the pallets in the valve chamber in which they are labelled. Gently slide the weights onto the pallet stem and down on top of the valve pallet.

### Note

**Make sure that the pallet assembly stem positively engages the stem guide hole in the hood or cover. Each pallet assembly must be free to move upwards, with the pallet stem travelling into the stem guide.**

6. Replace the covers and/or hood.
7. Replace wing nuts or nuts and tighten to secure covers/hoods in position.
8. Attach the valve to the appropriate mating flange using appropriate flange gasket which is compatible with process conditions (customer provided). To ensure proper function, install the valve to a level surface, not greater than 1° off horizontal so the pallet will move vertically. Valves that are tilted during usage may suffer premature damage or wear.

For proper bolt torquing of the valve connecting flange to the piping, please refer to Tables 1 to 3.



Figure 10. Model Enardo 850, Installation of Weights

## Smart Wireless Monitoring

Units with Smart Wireless are shipped as self-contained and already connected. The only connection required is installation of the transmitter battery which is intrinsically safe and does not require a hot-work permit.

1. Install valves with the Smart Wireless monitoring option in a similar manner to the standard PVRVs. Remove any cardboard or other packaging from the inner chambers. Remove the lid(s) and/or hood to allow insertion of the appropriate weights during installation.
2. Remove any lid with the sensing equipment threaded into it as a single unit. The sensor should remain engaged with the lid during this process. Position all sensors within 0.100 in. of the pallet stem. Maintain this critical distance. If the sensor location within a lid is altered, re-test the unit to ensure proper functioning of the sensor and transmitter. If this is the case, re-apply thread sealant to mitigate any leakage of the sensor/lid interface.



### WARNING

**Do not thread wireless sensor too far into lid. Sensor may contact pallet stem and prevent valve from opening properly. This condition may result in equipment damage or personal injury.**

# Enardo 850 and Enardo 950 Series

**Table 1. Torque Specifications - Raised Face Flange, Steel Only**

NOMINAL PIPE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER, IN.	TORQUE, FT-LBS
1	4	0.50	9
1-1/4	4	0.50	13
1-1/2	4	0.50	18
2	4	0.63	35
2-1/2	4	0.63	41
3	4	0.63	60
3-1/2	8	0.63	34
4	8	0.63	43
6	8	0.75	80
8	8	0.75	109
10	12	0.88	101
12	12	0.88	135
14	12	1.00	168
16	16	1.00	159
18	16	1.13	244
20	20	1.13	214
24	24	1.25	253

Assumptions: Use of SAE grade 5 bolts or studs or stronger. No lubricant. Compressed mineral fiber material or similar.

Notes: If lubricant is used on bolts, apply torque reduction factor listed in Table 3. For best results, hardened steel washers should be used on all cast flange bolted connections.

**Table 2. Torque Specifications - Flat Face Flange, Steel or Aluminum**

NOMINAL PIPE DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER, IN.	TORQUE, FT-LBS
1	4	0.50	14
1-1/4	4	0.50	16
1-1/2	4	0.50	18
2	4	0.63	32
2-1/2	4	0.63	43
3	4	0.63	47
3-1/2	8	0.63	26
4	8	0.63	32
6	8	0.75	49
8	8	0.75	68
10	12	0.88	69
12	12	0.88	98
14	12	1.00	138
16	16	1.00	125
18	16	1.13	142
20	20	1.13	135
24	24	1.25	156
8 API	16	0.50	20
20 API	16	0.63	75
24 API	20	0.63	75

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 Table 3. For best results, hardened steel washers should be used on all cast flange bolted connections.

**Table 3. Torque Reduction Factors 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

Outside North America Only

# Enardo 850 and Enardo 950 Series

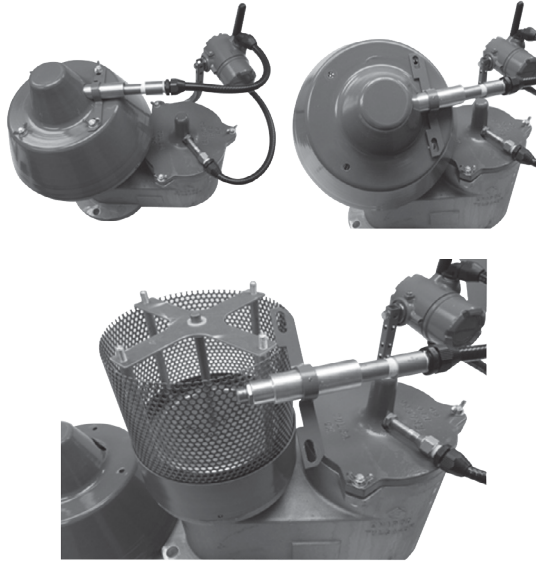


Figure 11. Model Enardo 950, Installation of Weights

3. For the Model Enardo 950 PVRVs containing hoods, the sensor is located at a proper distance away from the stem by using a sleeve, bracket and set screw. The sensor is held within the sleeve using two jam nuts. Fasten the sleeve to the hood using a bracket. Using a set screw, mate the bracket and sleeve to ensure that the sensor is in the proper location and cannot be adjusted. When installing weights, lift the hood and sensor/bracket/sleeve off the vent rods as one. Remove the sensor/bracket/sleeve from the hood and install the weights. Reverse the process to reassemble the hood and sensor.

## Maintenance

### Enardo 850 and Enardo 950 Series



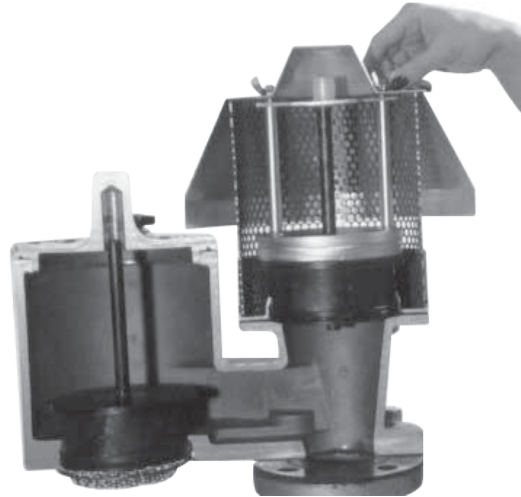
#### WARNING

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

**Observe all applicable safety requirements. Only qualified and trained personnel shall perform maintenance functions in hazardous locations.**

**Valves should be removed from the location having a potentially explosive atmosphere and taken to a safe location for repair and maintenance.**

For preventive maintenance of the Fisher™ pressure/vacuum relief valve, refer to the following instructions.



1. Loosen the fasteners on top of the valve and remove the lid, hood or guide.



2. Remove any valve pallets and weights from the unit. Keep in mind that these will be reinstalled, so keep track of the chamber from which they were removed.

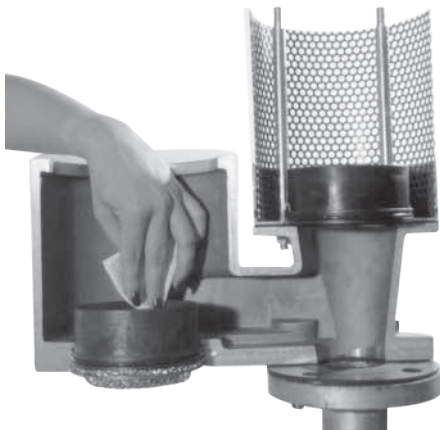
# Enardo 850 and Enardo 950 Series



3. Inspect the pallets for any damage or buildup that may affect its sealing characteristics or its ability to move properly inside the valve. If necessary, gently clean the pallet and seal with a suitable solvent and nonabrasive cloth.



4. Clear away any buildup on the weights or on the housing.



5. Inspect the valve seats installed in the unit. The sealing surfaces should be smooth and free of nicks or buildup. Check the guides for anything that may keep the valve pallet from moving properly inside the valve. If necessary, gently clean the seats with a suitable solvent and nonabrasive cloth.

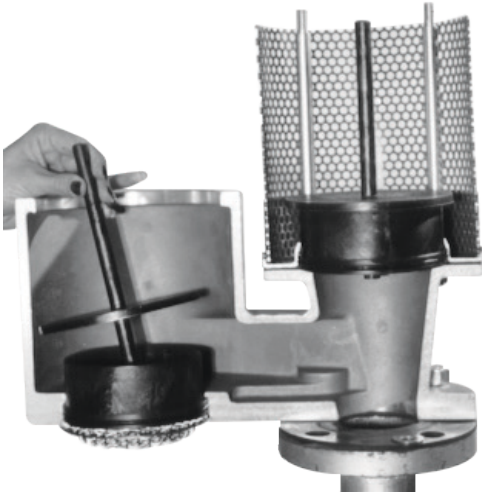


6. If the valve has a lid, clean any buildup that may exist in or around the guide hole located in the center of the part.

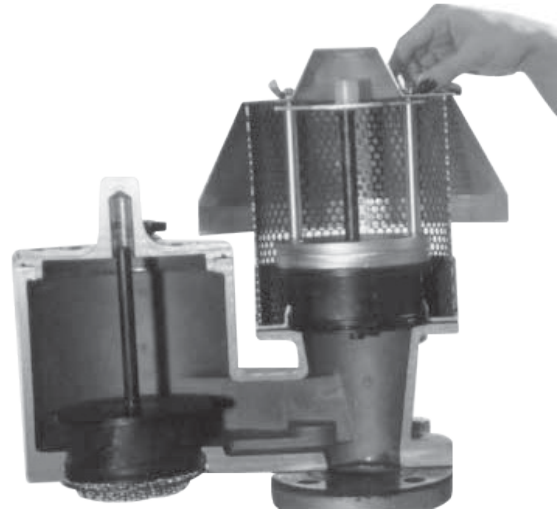


7. If the valve is fitted with a screen of some type, clear away any blockage that may impede proper flow.

# Enardo 850 and Enardo 950 Series



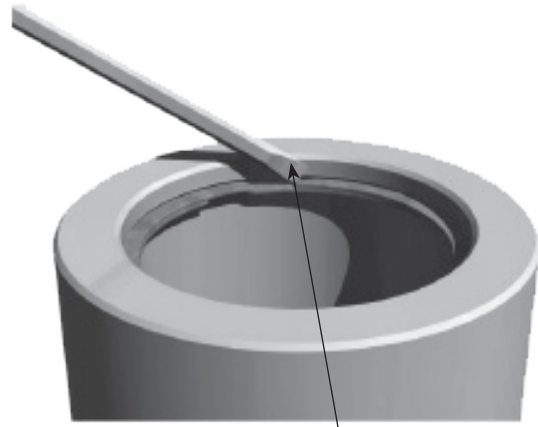
8. Reinstall valve pallets and weights into their proper chambers. Make sure the lower stem on the pallet is centered into the valve seat. If the pallet appears to be off-center to the valve chamber, or if there is difficulty positioning the lid or guide, the pallet may be inserted improperly.



10. Replace any lid, hood or guide that was previously removed and fasten securely. When tightening down lids, make sure the O-ring in each lid has full contact with the sealing surface.



9. Reinstall weights onto their appropriate valve pallets.



Remove ring using a flat-bladed screwdriver

11. For seat removal, see Figure 7 for the valve configuration drawings. The valve seats are installed in machined bores in both the upper body (pressure) and in the lower body (vacuum) and are fitted with O-ring seals. Remove the upper body seat by removing the upper body casting (Model Enardo 850) or the Vent Hood assembly (Model Enardo 950). Then remove the seat from the bore. The lower seat (vacuum) is retained by a Spirolox® retaining ring. Remove this ring with a flat-bladed screwdriver as shown above.



# Enardo 850 and Enardo 950 Series

12. For seat replacement, the seats are installed in the reverse order of the removal. Make sure the bores are clean and that the O-ring seals are not damaged. If necessary, use a light lubricant in replacing seats.

## Smart Wireless Monitoring Maintenance

1. Maintain Wireless Models Enardo 850 and Enardo 950 PVRVs in the same way as all standard Models Enardo 850 and Enardo 950 PVRVs. Clean the pallet and seat sealing surfaces, remove any buildup of residue on the weights and ensure screens are not blocked.
2. Take certain precautions when cleaning the transmitter. The surface resistivity of the antenna assembly when the optional transmitter is installed is greater than 1 GΩ. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or dry cloth.

The overall ATEX rating for all Wireless Models Enardo 850 and Enardo 950 valves are listed below:

Zone 0:  II 1 G Ex h ia IIC T5 Ga

Zone 1:  II 2 G Ex h ia IIC T5 Gb

## Adjustments

The Fisher™ pressure/vacuum relief valves have wide range of pressure and vacuum settings in units of ounces per square inch (oz./sq.in.) or inches of water column (in. w.c.) as indicated in the specification section of this instruction manual. Standard Fisher valve pallets assemblies are marked with a minimum equivalent pressure value in the specified units. Installed alone has minimum settings of 1/2 oz./sq.in. or 1 in. w.c. The pallets are calibrated by the seal support located on the bottom side of the pallet. The pallet's setting of 1/2 oz./sq.in. or 1 in. w.c. is etched into the support. When a valve requires a setting higher than the 1/2 oz./sq.in. or 1 in. w.c. standard pallet setting, use weights to increase the pallet's setting up to the required setting.

Additional calibration weights are marked with their equivalent pressure value and should be added as necessary to achieve the specified setting.



Figure 12. Weights on Pallet

Fisher weights also come in units of ounces per square inch (oz./sq.in.) or inches of water column (in. w.c.). The individual setting of each weight is either etched or imprinted into the weight. Emerson offers several different sizes of pressure/vacuum relief valves. To ensure that the right weight is placed on the right pallet, take note that the weights and pallets that go together will have the same outside diameter. Standard Fisher weights allow the user to stack in increments of 1/2 oz./sq.in. or 1/2 in. w.c.

Pressure/vacuum relief valve is shipped with prepackaged weight kits to set the valve pressure properly. The package labelled “pressure” is for the pallet in the pressure chamber, while the package labelled “vacuum” is for the pallet in the vacuum chamber. All weights in these packages should be installed. If one or neither of these packages is included with your order, then they are not needed.



# Enardo 850 and Enardo 950 Series

**Table 4. Valve Maintenance**

PART	REPLACEMENT
Pallet Seals	Simple replacement. Provided with gasket repair kit along with other gaskets. The pallet seals are fragile and should be handled carefully to avoid damage. They must never be folded or creased. Never use abrasive cleaners on a pallet seal.
Pallet Assemblies	Drop-in replacement. Requires removal of lid and replacement of gasket. Again, care must be taken not to damage the seals.
Body Gaskets	Requires disassembly. Provided with gasket repair kit
Seats	Requires gasket to be replaced as well.
Weights	Requires removal of lid and replacement of O-ring on Model Enardo 850 Pipe-Away valves. The customer must be careful to install the proper weights in the right location.

If the pressure and vacuum weights are mixed together, sort and reorganize the weights.

When installing weights for the Fisher pressure/vacuum relief valve, check the required settings on the tag attached to the valve. Add weights to the pallet to achieve the required setting. If the relief valve's setting is 6 oz./sq.in., add weights with the total setting of 5-1/2 oz./sq.in. to the valve since the pallet's setting alone is 1/2 oz./sq.in. Hence, the valve pressure setting is the sum of the settings of the pallet and the weights. The relief pressure or vacuum setting is equal to the sum of the pallet assembly and individual calibration weight equivalent pressure value.

## Valve Repair



### WARNING

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

**Observe all applicable safety requirements. Only qualified and trained personnel shall perform maintenance functions in hazardous locations.**

**All replacement parts must be provided by Emerson.**

Remove the valve from the tank before attempting any repairs beyond pallet assembly and weight maintenance as described on Maintenance section.

Most repairs will consist of replacing pallet seals, lid gaskets and in some cases, the body gaskets. The seats are also replaceable if the need arises. These repairs are relatively simple and can normally be handled by plant maintenance personnel using common hand tools.

Most valve maintenance can be performed by the customer or by a valve repair facility. See Table 4 for the proper maintenance of the relief valve parts.

In most cases, it is not necessary to return the valves to the factory. If the valve needs to be tested and certified at a specified pressure and/or vacuum, return it to the factory or send it to a qualified valve repair facility that is capable of performing the necessary tests in accordance with API Bulletin 2521 recommendations.

Contact your local Sales Office with any questions or additional assistance needed for repairing your valve.

# Enardo 850 and Enardo 950 Series

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