March 2015

660 Series Spring-Loaded Hatch

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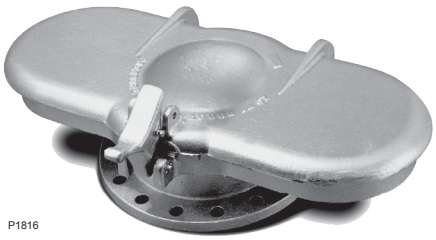
WARNING

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.

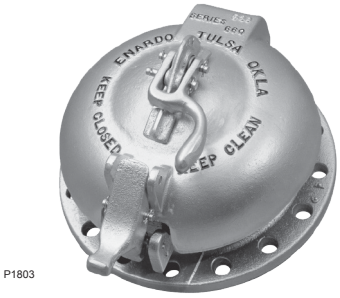
Enardo spring-loaded hatch must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies Tulsa, LLC (Emerson™) instructions.

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 spring-loaded hatch.

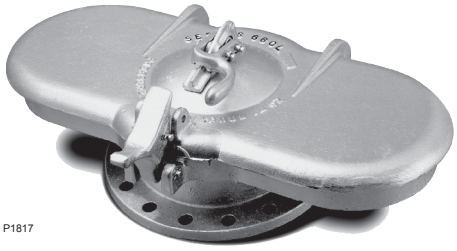
MODEL 660



MODEL 660-L



MODEL 660-B



MODEL 660-LB

Figure 1. *660 Series Spring-loaded Hatch*

D103837X012

Specifications

The Specifications table lists the specifications for the 660 Series spring-loaded hatch. Specification is stamped on the nameplate attached to the hatch.

Available Constructions

See product description

Bolt Pattern

8 in. API

Pressure Setting Range[1]

2, 4, 6, 8, 12, 16, 24 and 32 oz./sq. in.

Vacuum Setting Range[1]

0.4, 0.9 and 3.5 oz./sq. in.

Construction Material

Aluminum castings (non-sparking)

Optional Equipment

Plastic Trim (PT), Base Gasket,

Bolt Set, Non-Corrosive Coating

Approximate Shipping Weight

Model 660 : 25 lbs / 11.3 kg

Model 660-B: 28 lbs / 12.7 kg

Model 660-L/LB: 45 lbs / 20.4 kg

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

Introduction

Scope of the Manual

This Instruction Manual provides instructions for installation, startup, maintenance and parts ordering information for the 660 Series spring-loaded hatch.

Product Description

The 660 Series is a premium hatch designed and is intended for use in applications where tight sealing is critical such as sour crude/gas or where strict environmental emissions standards are enforced. Enardo gauge hatches are designed to provide trouble free operation with a minimum maintenance. These hatches vary in design, but their primary function is to prevent the loss of vapors in a closed storage system and provide pressure and vacuum relief.

660 Series Spring-Loaded Hatch Models (See Figure 1):

- **Model 660:** a spring-loaded thief hatch designed with a round base and cover. It is intended for use on steel and fiberglass tanks which require a tighter seal for reduced vapor loss.
- **Model 660-L:** a spring-loaded thief hatch designed with a long basin and cover. The long basin serves as a thief shelf. The design also includes an inclining base to keep the basin level.
- **Model 660-B:** a spring-loaded thief hatch designed with a round base and cover. This hatch is provided with a bleeder attachment making it possible to relieve tank pressure before opening the hatch. This bleeder prevents a spray from discharging when the hatch cover is raised. This hatch is designed for storage applications that require a tighter seal for reduced vapor loss.
- **Model 660-LB:** a spring-loaded thief hatch designed with a long basin and cover with an inclining base.

Principle of Operation

Enardo gauge hatches are designed to control evaporation losses and protect tanks against excessive pressure or vacuum. When the tank pressure is above the setpoint of the hatch, the cover opens to relieve excess pressure. When the overpressure has dissipated, the cover reseats onto the base to provide tight seal.

Installation

⚠ WARNING

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

1. Install the spring-loaded thief hatch on a mating API flange bolting circle of 16 bolt holes on a 10 - 3/8 in. circle for a normal 8 in. opening.
2. Place the base gasket on the bottom of the base and insert the 16 bolts from the bottom up by reaching inside through the opening in the deck.
3. Attach each nut to the bolt from the outside. Tighten all nuts in a circular manner and make sure the hatch is fastened securely.

Maintenance

Perform a scheduled maintenance every three (3) months and more frequently in corrosive or dusty atmospheres. To perform normal maintenance, inspect the pressure gaskets and vacuum gaskets. Under average operating conditions, replace the pressure and vacuum gaskets once a year. Replace the base gasket only when a leak is noticed at the bolting area or if the hatch is removed, breaking the seal. If the hatch is continually relieving, the user should be alerted that there is a problem; at that time a close inspection should be made to determine the cause.

To ensure efficient operation of all hatches, wipe off carefully the pressure and vacuum seats and gaskets every time the hatch is opened. This prevents accumulation of residue that can deteriorate the performance of the valves.

Note

For parts information refer to the catalog data sheet on each model.

Gasket and Spring Replacement

Vacuum Assembly

1. The vacuum gasket is located between the vacuum disk and seat on the underside of the center assembly. Remove the center assembly, depress the assembly inward and turn one quarter rotation to the right or left.
2. Remove the cotter pin and the conical shaped vacuum spring from the disk stem. Pull the disk out from the bottom side of the center assembly.
3. Remove and replace the vacuum gasket (Part No. 74-G) from the grooved area of the vacuum disk.
4. Reassemble the disk, spring and cotter key.

Pressure Assembly

1. Remove the center assembly, depress the assembly inward and turn one quarter rotation to the right or left. The pressure gasket or pressure spring can be removed and replaced simply. The pressure spring is available when the center assembly is removed; it can be removed and replaced.
2. The pressure gasket is enveloped around the edge of the center (Part No.70-H). Stretch the old gasket off and fit the new one around the circular lip. When the center is assembled, replace the center assembly into the lid by reversing the removal instructions.
3. The springs can be tested for tension by replacing the pressure spring and center assembly into the lid and closing the lid on the base. If the tension seems too soft, replace the springs. Perform this test every year. Springs under average conditions should be replaced every two (2) years.

Plastic Trim (PT) Option Models

The “PT” option designates that the hatch valve is designed for use in atmospheres that require corrosive resistant springs, gaskets and seating surfaces. The “PT” option changes the springs from standard galvanized wire to Inconel® wire. The part designation would be, for example, Model 660-PS-4I using the “I” to designate Inconel®. The gaskets would change from standard Buna-N material to Viton®. The Buna-N gaskets are black and the Viton® gaskets are color coded blue. The part designation would be, for example, 70-HV using the “V” to designate Viton®. On the vacuum side of the valve, a plastic Phenolic seat is added to prevent corrosion of the seating surface. This would be designated as 72-SAI-PT to indicate plastic trimmed surfaces. When ordering repair parts for these models, use the appropriate designations or mention the “PT” options.

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