

BERMAD

SEPARATION VALVES

SEPARATION VALVES TYPE TOR

- Installation
- Operation
- Maintenance



SEPARATION VALVES – TOR, **Installation, Operation, Maintenance**

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Safety First

BERMAD believes that the safety of personnel working with and around our equipment is the most important consideration. Please read all safety information below, as well as from any other relevant source, before attempting to perform any maintenance function. Be sure to comply with all approved and established precautions for working with your type of equipment and/or environment.

All maintenance tasks should be performed by authorized personnel.

Before attempting to perform any maintenance or operational procedures, carefully read all instructions to the end and make sure they are understood. If there is anything that is not clear, ask the appropriate authority.

When performing any procedure, be sure to follow all the steps as indicated in the instructions, in the proper sequence and without omission.

Important:

1. In areas where freezing temperatures may occur a heating device for the separation valve and exposed piping is essential.
2. If the stored product has a high viscosity (heavy oil, crude oil etc.) it should be heated, the contents of the TOR separation valve should also be heated using a heating jacket or similar (not provided by BERMAD).

SEPARATION VALVES – TOR, Installation, Operation, Maintenance

1. Type TOR

1.1 Installation

1.1.1 Description

The BERMAD TOR Separation valve is a specific gravity sensitive valve, which closes upon sensing a lighter fluid. It is used as a safeguard and alarm against spillage as a result of product ingress into the floating roof drainage system of storage tanks.

1.1.2 Basic Installation

(see Figure 2):

For all installations, be sure to install the Separation Valve:

- In the vertical position (to be performed using a level measuring device to ensure accuracy)
- Firmly positioned and held securely
- As close to the storage tank as possible
- Drainage from the "S" tube is to the ground. If the drainage is to be channelled by a pipe to a drain, ensure that there is an air gap between the end of the "S" tube and the drainpipe.
- A By-Pass Valve (3), (not provided) must be installed.

1.2 Operation

1.2.1 General

The Type TOR Separation Valve is Normally Open.

Caution: In cases where rainfall might exceed the flow rate capacity of one Separation Valve, additional Separation Valves may be grouped in a manifold arrangement.

Flow-rate while draining, is approximately 55000 l/h (14500 gal/h) with a 13 meter (43 ft) inlet head (see flow chart, Figure 1).

1.2.2 Setting and Resetting the TOR

Setting or resetting is done prior to first use, or following a TOR valve shut-off due to the presence of product in the roof draining tube (Figure 2, Item 9):

1. Drain the trapped product from the entire roof draining tube and Separation Valve using the By-Pass Valve (Figure 2, Item 3) - not provided.
2. Remove the Air Eliminator Assembly (Figure 4, Item 48A) by releasing the Nuts (Figure 4, Item 12)
3. Remove the Float (Figure 3, Item 6A).
4. Fill the Separation Valve up to the brim with water.

Note: Before installing the Air Eliminator Assembly, ensure the integrity of the Cover Seals (Detail C, fig. 4) and their correct positioning.

5. Return the Float (Figure 3 Item 6A) to its place floating within the Guide, (Figure 3, Item 5), and the Air Eliminator Assembly (Figure 4, Item 48A).
6. Tighten Nut (Figure 4, Item 12)

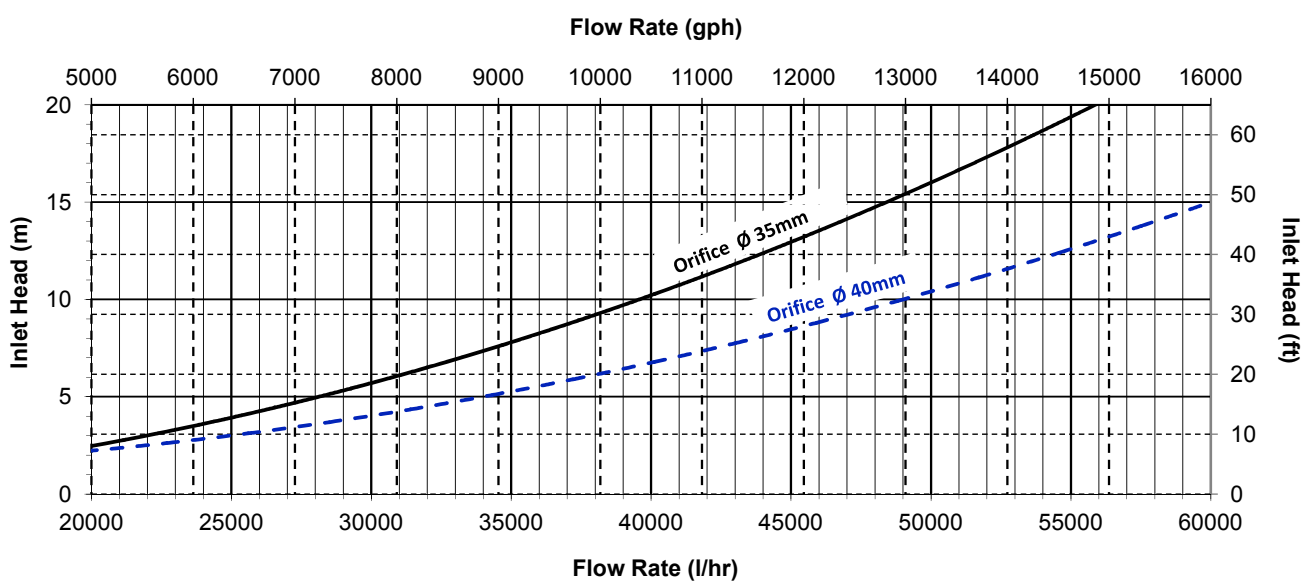
The Separation Valve is now reset and ready for operation.

2.3 Maintenance

2.3.1 General

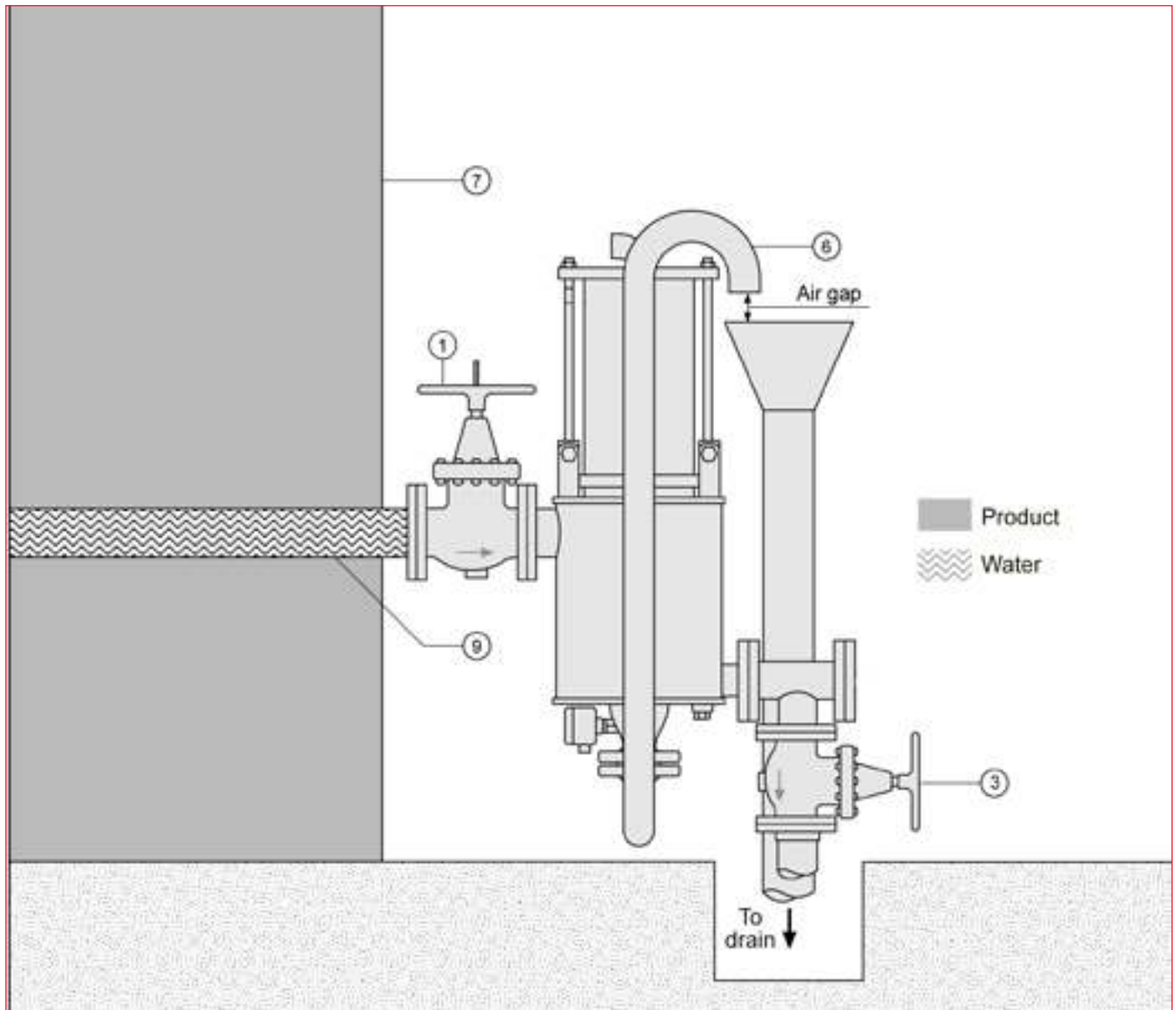
In most cases, a Type TOR Separation Valve will require minimal maintenance. Nevertheless, it is recommended that the Separation Valve be inspected annually for integrity, both internally and externally. Furthermore, it is recommended to periodically pour about 50 liters of water into the roof drain, in order to verify that water flows out of the "S" tube (Figure 2, Item 6).

Figure 1



TOR Installed

Figure 2 – Installed TOR

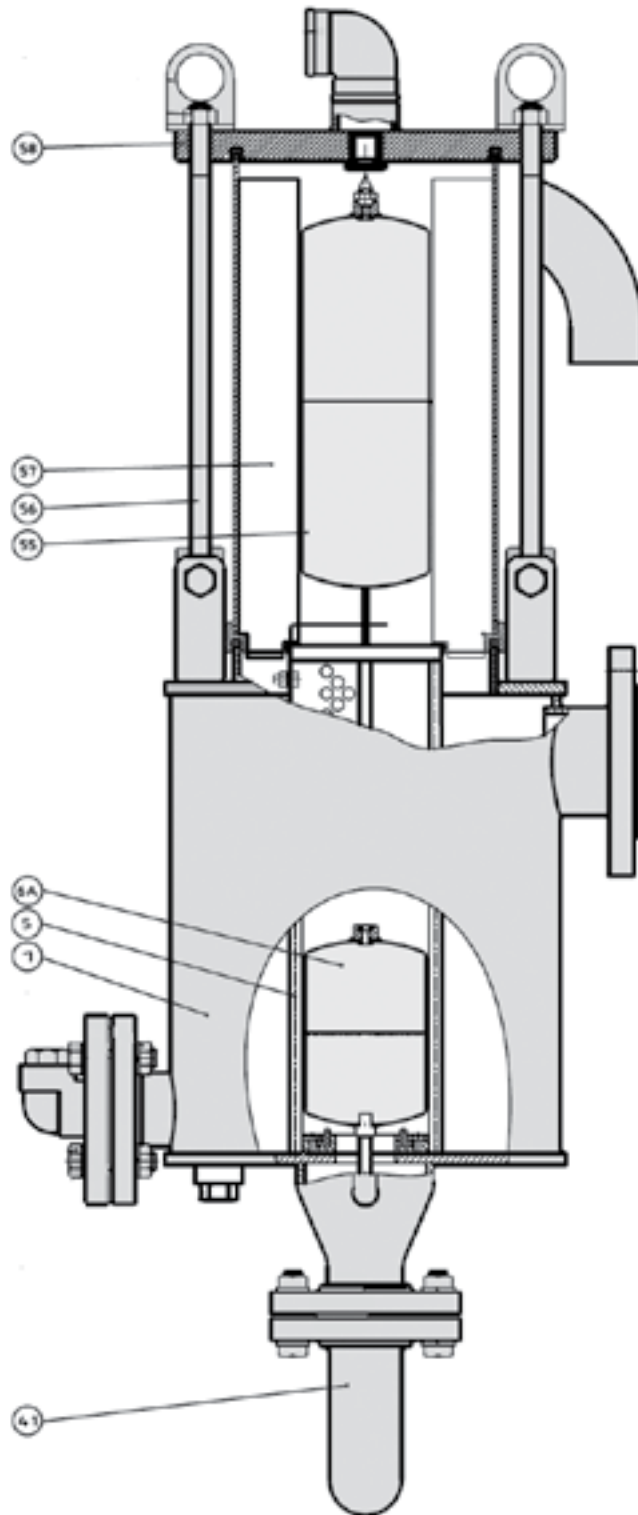


Items List

- ① Main Drain Valve
- ③ By-pass Valve
- ⑥ "S" Tube
- ⑦ Storage Tank
- ⑨ Roof Draining Tube

TOR Cutaway

Figure 3

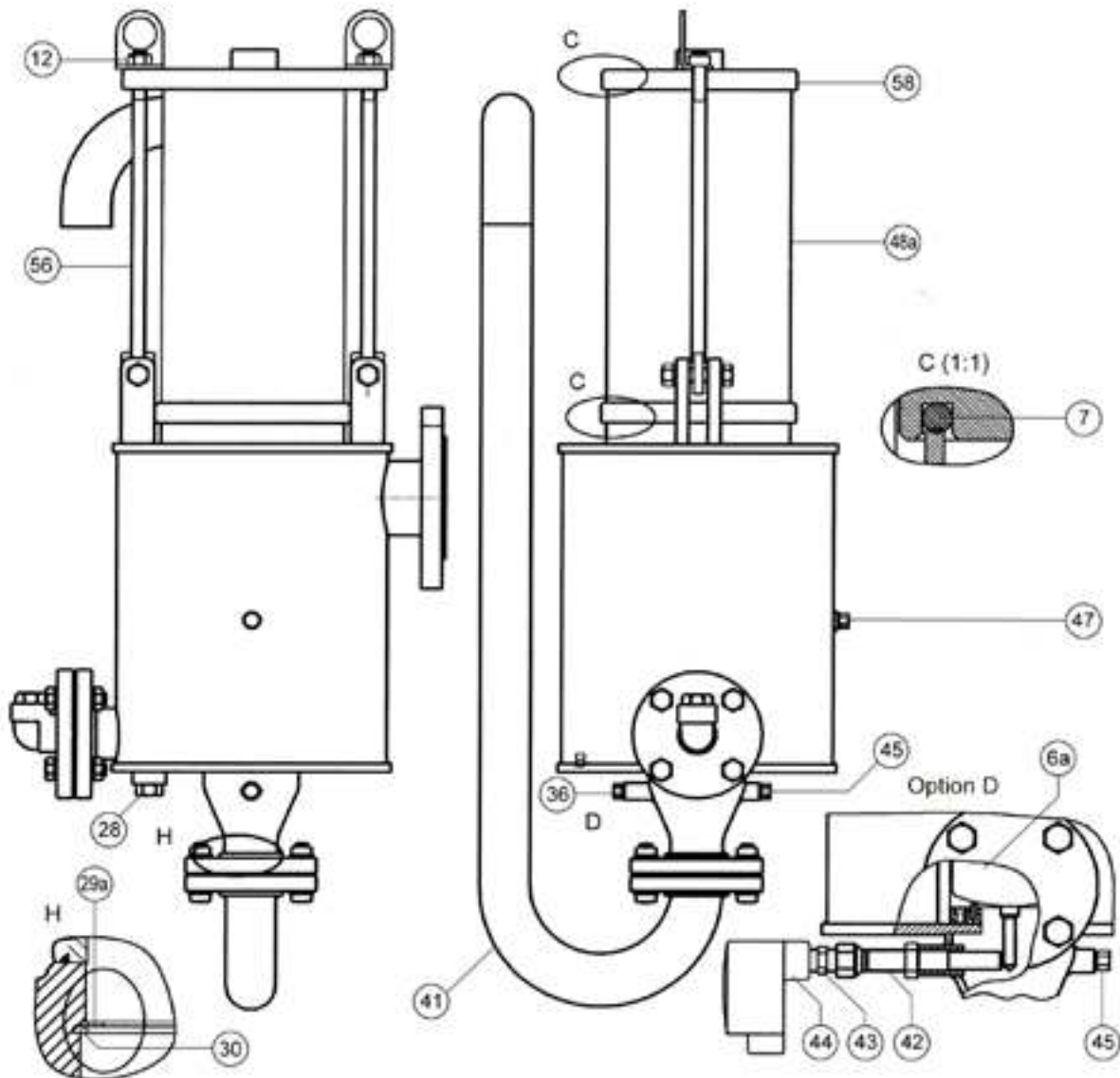


Item List

- ① Body
- ⑤ Guide
- ⑥A Float (limit switch compatible)
- ④1 "S" Tube
- ⑤5 Long Float (for air eliminator)
- ⑤6 Connection Rod Assembly
- ⑤7 Body Assembly
- ⑤8 Universal Cover

Model TOR and Optional Accessories

Figure 4



Item List for Model TOR and Optional Accessories

- | | | |
|-------------|------------------|-----------------|
| 6a Float | 30 Retainer Ring | 44 Junction Box |
| 7 O-Ring | 36 Plug | 45 Plug |
| 12 Nut | 41 "S" Tube | 47 Plug |
| 28 Plug | 42 Limit Switch | 56 Rod |
| 29a Orifice | 43 Nipple | 58 Cover |

Notes

A large section of the page is filled with horizontal dotted lines for taking notes.

A photograph of an industrial facility, possibly a refinery or chemical plant, at sunset. The sky is filled with orange and red clouds, and the facility's structures are illuminated from within, creating a warm glow. The left side of the image is overlaid with a solid red gradient.

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