



The Importance of Emergency Shut-Off Valves for Marine Vessels

Introduction

Emergency Shut-Off or Emergency Quick Close Valves (QCVs) are actuated valves designed to provide protection against the harm of critical equipment, the environment, and most importantly vessel crew. The valves are designed to stop the flow of flammable fluid in the detection of a dangerous event, while being actuated from a safe location.

Product Overview

QCVs are flanged globe or angle globe style spring loaded fuel shut-off valves with either cast steel or ductile iron bodies and 304SS trim. There are multiple modes of operation that include: hydraulic, pneumatic or manual wire pull operation. As a last resort and critical safety feature, the release cylinders also come with an integral melt ring inside the cylinder that will melt at 178°C. This ring will melt in the event of a fire and a strong internal spring will automatically actuate the release cylinder, closing the valve.

Application

Most common is the hydraulic application. This is a stand-alone totally enclosed system, with no outside hydraulic fluid required from the ship systems. The hydraulic impulse levers used to operate the valves during an emergency have a built-in hydraulic reservoir that holds all fluid needed to safely operate the valves. These levers are placed in a safe location outside the engine room or valve location.

Other applications such as pneumatic are normally used for more complex applications if wanting to use pneumatic air for multiple valves. This application per ABS requires a stand-alone pneumatic cabinet to be charged by the ships air system and in case of emergency can operate all valves a minimum of 2 times. Many customers looking for simple operation on small vessels sometimes choose to go with the manual pull option. This option allows the valve release cylinder to be connected via a pulley system. In the case of emergency, the pulley handle mounted in an outside space can simply be pulled manually closing the valve.

Per ABS Marine Vessel Rules 2020, Part 4, Chapter 6, Section 4 - 13.5.3(a) "Every fuel oil pipe emanating from any oil tank, which, if damaged, would allow fuel oil to escape from the tank, is to be provided with a positive closing valve. The valve is to be secured directly on the tank. A short length of extra strong pipe (sch. 80) connecting the valve to the tank is also acceptable. The valve is not to be of



cast iron, although the use of nodular cast iron is permissible. The positive closing valve is to be provided with the means of closure both locally and from a readily accessible and safe position outside of the space. In the event that the capacity of the tank is less than 500 liters (132 US gallon), this remote means of closure may be omitted.”

For US flagged vessels emergency shut-off valves are required to be installed in piping connections subject to head pressure on hydraulic oil, lube oil, or fuel tanks. 46 CFR 56.50-60 requires “Valves installed on the outside of the oil tanks must be made of steel, ductile cast iron ASTM A395, or a ductile nonferrous alloy having a melting point above 1,700 deg F and must be arranged with a means of manual control locally at the valve and remotely from a readily accessible and safe location outside of the compartment in which the valves are located.”

Product Attributes:

- 1.) The Meson QCV system allows for up to 6 valves to be operated off a single hydraulic impulse lever. This allows a wide range of flexibility based on each customer’s specific application.
- 2.) Ease of installation. Once the system specifications are identified and the correct number of QCVs are installed, 316SS tubing can be easily run from each valve location to the release handle cabinet in an outside safe space for operation.
- 3.) Emergency shut-off valves are installed opposite of standard globe valves. The fluid direction comes in over the disc and seat allowing the tank head pressure to further assist the sealing of the valve in the event of an emergency.
- 4.) The spring loaded QCVs can be easily loaded to the open position during the set-up phase for operation. During tight installation constraints the bonnet of the valve can be rotated in 90-degree intervals to place the release cylinder in the ideal orientation for the specific application.
- 5.) Meson Emergency shut-off valves carry the full line of approvals for ABS, DNV-GL and Lloyd’s Register.

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