

## PV VALVES & AIR VENTS – EASY TO CHECK, SIMPLE TO MAINTAIN

Structural damage as a result of excessive pressure in ships’ tanks during loading and discharging operations is a common cause for claims. Both P/V Valve and Air vents allow a tank to “breathe” and prevent overpressure or vacuum in the tank when liquid is pumped in or out. If these systems are defective or poorly maintained, then serious damages may be caused to the vessel requiring extensive and costly repairs or even off-hire periods.

### **Pressure Vacuum (P/V) Valve**

A pressure vacuum (P/V) valve is designed to release and/or let in pressure to protect the cargo tank from exploding or imploding due to too high or too low pressure in the tank.

### **Air vents**

The purpose of the air vent head (*as defined by IACS UR P3.2.6*) is to prevent the free entry of water into the tanks, to allow the passage of air or liquid to prevent excessive pressure or vacuum coming into the tank. A vent head should be of an approved type by a recognized body (e.g. Class Society) before being used on board a ship.

**Prevention at Sea has prepared two case studies to highlight common issues encountered during inspections and which are related with Air vents and P/V Valves. Suggested inspection and maintenance procedures relevant to each case are described below;**

#### Case Study #1 – Bulk carrier air vents

A **bulk carrier** faced difficulties during a Port State Control Inspection, when ten (10) in total air vent heads (mostly from ballast tanks) were found to be defective, which could result in a severe damage of the vessel’s Ballast & Cargo Holds. The Port State Control Officer requested from the Master of the vessel to repair them prior departure.



Photo - Air vent head with broken ball float

#### Air Vents – Inspection & Maintenance

The ship’s Planned Maintenance System should include procedures for regular **inspection** and **maintenance** of air vents and their automatic closing devices;

- ❑ Regular inspections of air vents and closing devices should be carried out to identify operational condition (e.g. visible rust signs, dirt or damages etc.);
- ❑ Particular attention should be paid to air pipes located in the fore deck due to their exposure depending on the ship’s movements and the impact from heavy seas;
- ❑ During tank inspections, the automatic closing devices should be dismantled and opened up at regular time intervals for a more detailed inspection; and
- ❑ The malfunctioning air pipe automatic closing devices should be replaced only with devices of an approved type (e.g. classification society etc.).



## Case Study #2 – Tanker vessel P/V Valves

## P/V Valve – Inspection & Maintenance

During a recent Cargo Audit on board a **tanker vessel**, the ‘PaSea Marine Risk’ Inspector noticed that loading operation was about to commence and the P/V valves were not in open position. This could result to an extensive damage of the tank or in the worst case scenario to an explosion. The PaSea Inspector discussed with the crew the importance of the P/V Valves use during loading/unloading operations and the ship continued her cargo loading.



Photo – P/V Valve



Photo – P/V Breaker



Photo– P/V Valve in open position

**In order to ensure the proper functioning of P/V valves the following should be ensured;**

- P/V valves should be serviced and calibrated according to classification society requirements;
- Prior loading and discharging, P/V valves should be checked to ensure they function, as designed;
- During cargo operations the correct functioning of P/V valves should be monitored; and
- Pressure sensors fitted as the secondary system, as a back up to the primary vent system, should be checked to ensure that they function as designed and where provided, that the alarms are correctly set

**Correct maintenance of the P/V Valves is essential to the safe operation of the vessel;**

- ❑ When in dry-dock, all P/V valves should be overhauled and tested according to maker’s guidelines. A relevant certificate should be issued by a competent authority;
- ❑ For each type fitted spare P/V valve should be carried onboard;
- ❑ Each P/V valve should be dismantled over a 12 month period interchanging with the spare valve. This should be done during a ballast voyage with a tank open to the atmosphere and all supply valves within the tank shut. The maintenance should be performed as per maker’s instructions. On re-assembly, valve tightness it is recommended to be tested using water mixed with soap; and
- ❑ Each P/V valve should have a unique identification number. Relevant records for valves maintenance should be properly filled within the Planned Maintenance System.

**Don’t cure, prevent! For more information, please do not hesitate to contact us!**



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