

THE EVOLUTION OF MARINE FUEL TANK PRESSURE MANAGEMENT.

More than half of the marine industry has already made the switch. Ask us how.



**NO MAINTENANCE
NO ENGINE CHOKING
NO FUEL SPIT BACK
FASTER REFUELING
100% TANK FILL
NO MORE CARBON CANISTER
EPA APPROVED**

CLEANER. CHEAPER. SMARTER.



KEEP IT SIMPLE.



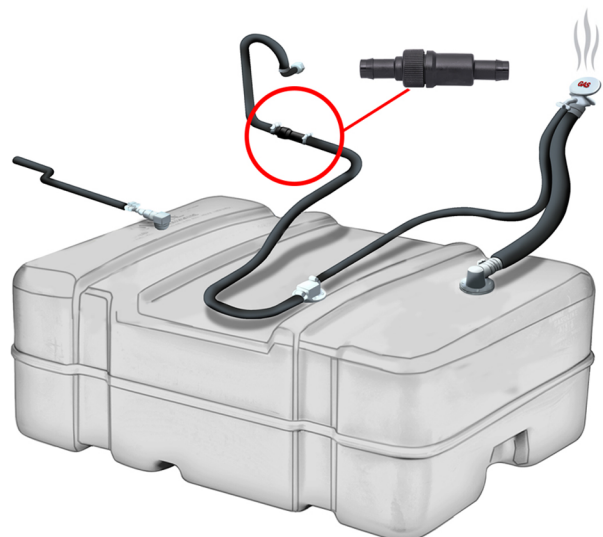
Keep it simple with your EPA compliant fuel system upgrade and ditch the out-dated carbon canister.

Superior vapor mitigation during storage

Whitecap's Diurnal Pressure Relief Valve offers a more reliable, low-maintenance, and cost-effective solution compared to Carbon Canisters. The simplicity of our PRV, combined with their superior environmental resilience, reduced maintenance needs, and better user experience, makes them the ideal choice for fuel system designs that prioritize long-term performance and reliability. In marine environments, where exposure to water, salt, and other contaminants is constant, the failure modes associated with carbon canisters present a significant challenge. In contrast, PRVs are robust, resistant to these environmental factors, and require minimal intervention during the boat's lifecycle. Boat manufacturers seeking a reliable, user-friendly, and cost-effective solution for vapor management should strongly consider Pressure Relief Valves as the preferred method over carbon canisters, ensuring compliance with both U.S. Coast Guard and EPA regulations while delivering a superior operational experience for end users.



Carbon Canister



Pressure Relief Valve

Carbon Canister Failure Modes

Carbon canisters are designed to absorb hydrocarbon vapors, preventing their release into the environment, but are notoriously prone to several failure modes.



- 1. Water Ingress:** Exposure to moisture, especially in marine environments, can compromise the performance of carbon canisters. Water ingress can cause the activated carbon to clump, reducing its vapor absorption capacity.
- 2. Fuel Ingress:** Overfilling or improper fueling can cause liquid fuel to enter the canister, saturating the carbon bed and rendering it ineffective.
- 3. Salt Accumulation:** Boats operated in coastal environments are exposed to salt air, which can accumulate in the canister, clogging the system and reducing vapor flow.
- 4. Granular Degradation (Dusting):** Over time, the carbon granules degrade into fine dust, reducing the canister's ability to absorb vapors.
- 5. Granular Coalescence (Bricking):** Carbon granules may coalesce, forming a solid block that impairs airflow and absorption.
- 6. Insect Infestation:** Insects can invade the canister, creating blockages that affect the system's performance.
- 7. Ageing Maturation:** Carbon canisters degrade over time, especially when exposed to environmental elements, requiring periodic replacement.
- 8. Tank Overfilling:** Overfilling during refueling can lead to fuel ingress, compromising the carbon bed and requiring canister replacement.

Associated operational issues include:

- Slow Refueling:** The canister system can slow down refueling, as it restricts vapor flow out of the tank.
- Fuel Spit-back:** Canister blockages or slow vapor venting can cause fuel spit-back during refueling, creating safety hazards.
- Engine Issues:** Poor vapor flow can lead to engine starvation in small engines or lean-out conditions in larger engines.
- Unsafe Workarounds:** Owners unfamiliar with the system may modify or bypass the carbon canister, leading to safety and environmental risks.
- Maintenance Requirements:** Carbon canisters are maintenance items and may need replacement during the boat's lifecycle, adding operational cost.



Whitecap's Diurnal Pressure Relief Valve is a part of our family of INTEGRATED FUEL SYSTEM components.

A complete EPA fuel system solution utilizing components for both pressure management fuel systems and non pressure systems including..

**PATENTED ULAGE AND FLUID LEVEL CONTROL VALVES
INLINE FUEL DEMAND VALVES
VENT VALVES
PRESSURE RELIEF VALVES
EPA APPROVED VENTED DECK FILLS
EPA APPROVED DIRECT TANK FILLS**



**CERTIFIED EPA/CARB COMPLIANT
FLIP TOP VENTED DECK FILLS**



For use in either pressurized or canister systems, Whitecap EPA Compliant Deck Fills use elastomeric valves and for over a decade have proven to be more reliable than traditional ball and spring type valve systems. When used with canister systems, the valves inside the deck fill merely act as a secondary pressure relief backup. Designed to fit in all existing deck fill locations on OEM boats, Whitecap deck fills are proven to be reliable in a full range of temperatures and weather conditions. Available in a multiple configurations.

