



DIURNAL TANK MOUNTED VALVES

Fill Limit Valve (FLV) Fill Limit Vent Valve (FLVV)
Now in 30% Glass Filled Nylon - EPA/CARB Diurnal Compliance Hardware

One valve family. Two jobs. Zero corrosion.

Tank-top hardware that sets the ~5% ullage space, stops refueling spit-back, and manages diurnal venting.
Engineered in 30% glass filled nylon as a cost sensitive alternative to our corrosion-proof anodized aluminum



FLV90 - FILL LIMIT VALVE
90° 1-1/2" HOSE BARB

- Replaces the standard tank fill fitting
No separate float or dip tube hardware
- Automatically shuts off fill at target level, preserving ~5% vapor (ullage) space
- Regulates refueling spit-back and tank well-back per EPA requirements
- Internal float assembly suspended below tank top flange



FLVV90 - FILL LIMIT VENT VALVE
90° 5/8" HOSE BARB
SINGLE / DOUBLE VENT

- Combines fill-limit and vent functions at the tank vent location
- Closes at fill limit to signal shutoff; reopens for diurnal pressure management
- Single or double vent configurations for tank geometry and H-24 layouts
- Pairs with grade level valves for slope/trailer attitude venting (ABYC H-24)

GLASS FILLED NYLON

Mounts to standard Whitecap 5-bolt location on any marine fuel tank

Attribute	30% Glass-Filled Nylon (PA6/PA6G GF30)
Corrosion	Immune to salt spray, galvanic attack & pitting - no coatings, anodize or passivation
Galvanic Isolation	Non-conductive - no dissimilar metal couples with SS clamps
Weight	~50% lighter (SG ~1.36 vs 2.70)
Fuel Compatibility	Proven service in E10 gasoline & diesel; low permeation as molded
Manufacturing	Net-shape injection molding - repeatable geometry molded in barbs & flange, lower unit cost at volume
Impact & Vibration	High notched toughness; damps vibration at the tank top



LIQUID LEVEL SENDING UNIT

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ONE FITTING. TWO FUNCTIONS. LESS HOLES IN THE TANK.

Combined Fuel Level Sending Unit + Fuel Fill Limit Vent Valve

The electric liquid level sending units are widely used in marine, on-road, off-road, generator set and industrial applications. The electric liquid level sending unit utilizes reed switch and magnetic field technology. The advantage of reed switch type level sender over thick-film swing arm type level sender is the reed switch's durability and reliability. Additionally, in reed switch level senders the float is the only moving part of the sender, thereby minimizing potential mechanical failures.

THE PROBLEM

Today's compliant marine fuel system needs three separate tank-mounted components: a fill limit vent valve, a fill limit valve, and a fuel level sending unit. That means three penetrations in the tank top three fittings to install, three gaskets to seal, three potential leak and permeation paths – and multiple access panels the boat builder has to design in, cut, and finish just to reach them for service.

THE SOLUTION

One integrated assembly covers: fuel level sensing and fill-limit venting in a single tank-top fitting. A sealed sensor rod reads fuel level from empty to full. The same float that drives the gauge rises to seal the vent at the fill limit – shutting off the nozzle and preserving the EPA-required vapor expansion space automatically. Eliminating a minimum of 1 set of leak points and deck hardware.

AT A GLANCE

Function	Fuel level sending unit + fuel fill limit vent valve in one tank-top assembly
Level Sensing	Sealed reed-switch / resistor ladder inside a hollow sensor rod; magnet-equipped float provides potentiometric (resistive) output E, 1/4, 1/2, 3/4, F as standard; other increments available
Gauge Compatibility	Drives conventional marine fuel gauges – analog needle, digital, or LED display resistance curve configurable to tank shape (full = high or low resistance)
Vent / Fill Limit	Float seals the vent at the fill limit, tripping nozzle shutoff and preserving ≥5% vapor expansion space (ullage)
Ullage Adjustment	Custom Floats (or/and Cut-to-length tubular spacer) sets ullage distance per tank – one assembly platform fits tanks of different depths and shapes
Float Material	Fuel-resistant, non-swelling closed-cell elastomer floats; magnets fully embedded – no exposed surfaces to foul or corrode
Rod / Hardware	Marine-grade, fuel-resistant, non-corrosive metals (aluminum, stainless, and composite nylon)
Mounting	Single tank-top fitting: threaded, compression, or welded connection; rod length matched to interior tank height.



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HOW IT WORKS

1. A typical stainless steel hollow sensor rod, sized to the interior height of the tank, mounts through a single tank-top fitting.
2. A fuel-resistant float with embedded magnets rides the rod, switching a sealed reed-switch/resistor ladder inside – sending a standard resistive fuel-level signal (E through F) to the helm gauge.
3. During fueling, displaced air vents through the valve body. When fuel reaches the fill limit, the same float rises into the valve seat and seals the vent – backing fuel up the fill hose and tripping the nozzle's automatic shutoff.
4. The sealed vent preserves the required vapor expansion space, so the tank is full, legal, and spill-free every fill, at any reasonable boat attitude.



WHO IT'S FOR

Tank manufacturers – roto molded or aluminum – who want to ship tanks with fewer fittings, fewer weld/spin-weld operations, and a cleaner compliance story.

Boat builders who want simpler fuel-system rigging, a single access panel, and one part number that covers multiple hull/tank combinations.

OEM fuel system engineers looking to reduce leak paths and warranty exposure on federally regulated fuel systems.



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WHY BUILDERS SHOULD CARE

Fewer holes in the tank. Every penetration is a leak path, a permeation path, and a labor operation.

This design consolidates level sensing and fill-limit venting into one tank-top fitting.

Two access panels, not three. Boat builders can design in less service access point instead of hunting for room over multiple components – simpler deck layouts, faster rigging, easier service down the road.

One platform, many tanks. A custom float sets the ullage distance for each tank. Cover belly tanks, saddle tanks, and everything in between from one assembly platform instead of being forced to use a limited choice of float valve for multiple tank geometry.

Built for compliance. Automatic nozzle shutoff at the fill limit with no spit-back, and the vapor expansion space ($\geq 5\%$ ullage) is preserved by design – supporting EPA fill-control and ullage requirements for marine fuel tanks.

Fewer parts, fewer failure modes. No separate sender to wire and calibrate, no separate vent valve to seal. Magnets are fully embedded in the float, so there's nothing exposed to gum up in fuel.

Drop-in gauge output. Standard resistive signal drives the analog or digital fuel gauges builders already use – no special instrumentation at the helm.

THE BOTTOM LINE

Marine fuel tanks come in more shapes, sizes, and mounting angles than any automotive application but until now they've carried over automotive-style multi-component fill and sensing hardware.

This patented design replaces two tank-mounted components with one, cuts installation and service cost, and makes EPA-compliant fill control something the tank does automatically rather than something the builder engineers around. LET'S TALK ABOUT YOUR NEXT TANK PROGRAM

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