

GasVault™ Float Valves

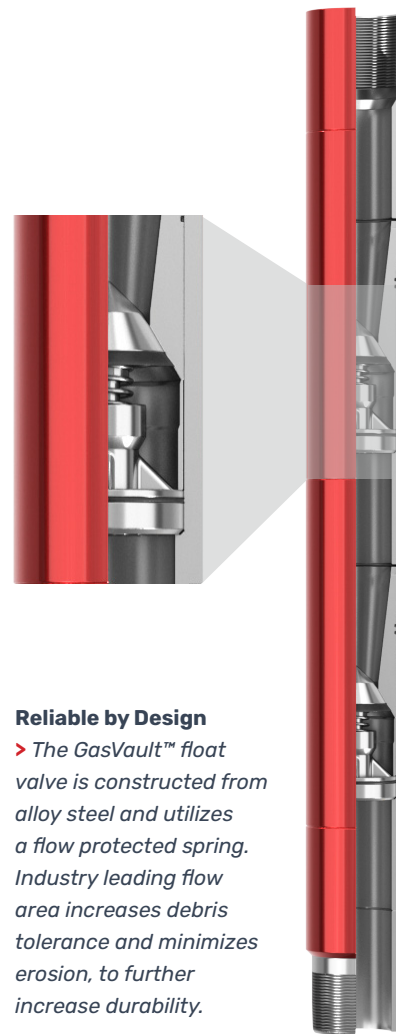
GAS TIGHT MECHANICAL BARRIER DESIGNED FOR A SAFER WET-SHOE TRACK

OVERVIEW

Intentional and unintentional uncemented shoe tracks, referred to as wet-shoes, are a common occurrence when cementing the production string on unconventional wells. Reasons for a wet-shoe can vary. Intentional wet-shoes are the creation of a desired flow path through the casing shoe as a cost effective way to prep the well for hydraulic fracturing. Unintentional wet-shoes occur when cement is over displaced from the shoe track, leaving only displacement fluid or contaminated cement behind. In these occurrences, the shoe track may no longer qualify as a reliable barrier due to a lack of cement or contaminated cement inside the casing. These scenarios create the need for a mechanical barrier at the casing shoe to prevent formation fluid or gas from entering the casing and reaching the surface. The GasVault™ float valve is an improved float equipment barrier that allows operators with a wet-shoe track to safely rig-down drilling equipment and efficiently move to the next pad as soon as the cement job is complete.

Designed and tested beyond the “Standard”

The GasVault float valve features decades of Halliburton float equipment design and experience. The alloy steel construction utilizes a flow protected spring, which reduces premature wear and loss of strength. GasVault float collars and float shoes are enhanced by an energized double seal that restores a reliable gas tight barrier within the uncemented shoe track. The industry leading 5.93-sq.in. flow area contributes to reduced pumping pressures and jetting actions, which minimizes erosion, to further increase durability. On highly extended horizontal production strings the 0.63-in. Critical Flow Path Dimension (CFP-D) ensures that the valve has a higher debris tolerance, which addresses the challenge of solids accumulation as cementing wiper plugs wipe the casing across ever increasing lengths. This float valve is gas tested to 5,500 psi and fluid tested to 15,000 psi at 300°F after enduring 48 hours of direct flow at 10 bbl/min with sand-laden water-based mud.



Reliable by Design

> The GasVault™ float valve is constructed from alloy steel and utilizes a flow protected spring. Industry leading flow area increases debris tolerance and minimizes erosion, to further increase durability.

FEATURES AND BENEFITS

- 5,500 psi gas tested at 300°F
- 15,000 psi fluid tested at 300°F
- Extended flow endurance and higher debris tolerance
- Mechanically retained double seal
- Legacy poppet design with flow protected spring
- Modular valve design allows tailored configurations
- Industry leading 5.93-sq.in. flow area

Gas tight mechanical barrier designed for a safer wet-shoe track

Typical float valves are designed to endure direct circulation and hold back pressure after a cement job to prevent back flow of the cement slurry. The GasVault float valve not only sustains extended flow and prevents back flow of the cement slurry, but the tool also prevents the back flow of hydrocarbons in the form of gas. With or without the presence of competent cement in the shoe track, the presence of GasVault float equipment provides a safe, reliable, high-performance seal against all formation fluids in onshore and offshore production casings.



Wet shoe applications

> The GasVault™ float valve is available for use with the IsoLatch™ multiple plug cementing system to provide a gas tight barrier in wet-shoe applications.

API specification 10F testing for float equipment

Equipment	Duration (hours)	Flow Rate (bbl/min)	Temperature (°F)	Pressure (ksi)	Auto-Fill (hours)
GasVault™ Float Valve	36	10	300	7.5*	0

*7,500 psi is the maximum fluid rating according to API Spec 10F; however, fluid testing to 15,000 psi and gas testing to 5,500 psi after 48 hours circulation has been performed.

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