

Conventional One-Inch Long Dome Valve

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Weatherford has made a significant improvement recently to the most popular gas lift valve in the Permian Basin; the one-inch diameter conventional IPO gas lift valve. This valve is the most prevalent valve used in the Permian Basin due to its compatibility with five and a half inch casing applications with two and seven-eighths inch production tubing. This valve's upgraded design features a lower load rate, enhancing performance by allowing greater gas passage, which ultimately improves production efficiency.

Weatherford's in-house tests, adhering to API Spec. 19G15 validation, have shown a load rate reduction of approximately thirty percent. This has proven that doubling the dome volume of the one-inch valve significantly reduces the load rate, improves pressure management, stabilizes gas injection, and decreases sensitivity to pressure and temperature fluctuations. The long dome one-inch conventional valve effectively reduces the risk of multi-pointing issues and enhances production efficiency by enabling lower pressure differentials deeper in the well without reducing tubing size.

When compared to the one-and-a-half-inch conventional IPO valve, the one-inch valve has a higher load rate, which is critical for predicting flow performance. Higher load rates increase the probability of multi-pointing and limit the valve's ability to fully open. The long dome one-inch conventional valve was engineered to reduce the load rate while accommodating larger tubing sizes within smaller casing sizes.

Reducing the likelihood of multi-pointing and prolonging single-point injection decreases the risk of slugging and enhances compressor efficiency, reducing CO₂ emissions, and lowering operating costs. The technology is a cost-effective solution to improve flow performance and overall well productivity.

The long dome one-inch conventional IPO valve has gained widespread acceptance, with over five hundred valves being installed by Permian-based operators. Due to the added benefits this new technology offers, Permian operators have begun standardizing the long dome as valve of choice for the majority of their conventional gas lift applications.