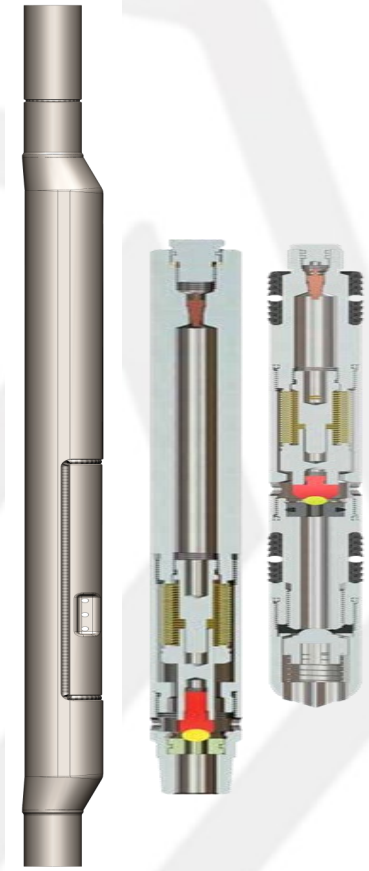
SAZ

Enhancing Well Completions



SAZ Oilfield Services

Gas Lift System

Gas Lift System

SAZ Oilfield Services offers a complete portfolio of Gas Lift Valves & Mandrels in different metallurgy and configuration to cater to a wide range of well conditions. Gas Lift is a widely used method of Artificial Lift due to the versatility in its application and cost effectiveness. In terms of production rate range, depth of lift, and suitability over a wide range of well conditions. Ability to change the Gas Lift Valves via simple well intervention, allows operator to optimize production over life of the well. Highly deviated wells, with high formation Gas to Liquid Ratio and solids production are good candidates for Gas Lift.

SAZ provides both conventional & retrievable gas lift system for continuous and intermittent flow conditions. The most common valves are Injection-Pressure-Operated (IPO) and Production-Pressure-Operated (PPO) gas lift valves.
We also offer Pilot Operated gas lift valves and Single Point Injection Orifice valves.

Orion™ and **Sirius**™ family of gas lift valves and mandrels are based on field proven design and have an extensive track record globally over a wide range of downhole conditions and production scenarios.

Orion Conventional Gas Lift Valves and **Tubing Retrievable Mandrels** offer cost effective solution to customers. They are widely used on land wells where workover is frequent and economical.

Sirius Retrievable Gas Lift Valves and **Side Pocket Mandrels** provide customer flexibility to deploy various valves type over the life of the well. They are widely used on offshore wells where workover is not cost effective.

Ursa™ **Water Injection Valves** and **Side Pocket Mandrels** offer reliable option for customer's Water Flood requirements as these are manufactured with high corrosion resistance materials. Along with valves and mandrels, SAZ Oil offers various accessories such as Dummy Valves, Check Valves, Latches, Running Tools and Pulling Tools.

Our valves and mandrels are manufactured in accordance with API Q1 and are monogrammed with API 19G-1 for Gas Lift Valves and API 19 G-2 for Gas Lift Mandrels.

Orion Conventional Valves and Mandrels

- **Orion GM** Conventional Gas Lift Mandrel
- **Orion GV** Conventional Gas lift Valve (IPO)
- **Orion CI** Conventional Chemical Injection Valve
- **Orion PO** Conventional Pilot Operated Valve
- **Orion CV** Conventional Check Valve

Sirius Retrievable Valves and Mandrels

- **Sirius GM** Side Pocket Mandrel
- **Sirius GV** Retrievable Gas Lift Valve (IPO)
- **Sirius OV** Retrievable Orifice Valve
- **Sirius PO** Wireline Retrievable Pilot Operated Valve
- **Sirius DV** Retrievable Dummy Valve

Ursa Water Injection Valves and Mandrels

- **Ursa IM** Water Flood Injection Mandrel
- **Ursa IV** Water Flood Injection Valve
- **Ursa CV** Water Flood Check Valve

Accessories

- **SBK**, **SRK** Wireline Retrievable Latches
- **SRT** Running Tool
- **SJD** Pulling Tool
- **SKT** Kickover Tool

Orion Gas Lift Valve

SAZ Orion GV Conventional Injection Pressure Operated (IPO) gas lift valves are available in 1.0" and 1.5" diameter. The valve is controlled by injection gas pressure (casing pressure). The valve is installed on a conventional mandrel which is deployed on production tubing. The valve has bellows assembly that contains a nitrogen charge over damping fluid. The dome charge provides the closing force for the valve. When injection gas pressure exceeds the closing force, the bellows compress, lifting the valve stem off the seat, and allowing gas in the casing to be injected through the valve into the tubing.

Features

- Body material in stainless steel SS304/SS 316L, 17-4PH and Monel.
- Three-ply Monel bellows.
- Mechanical stop prevents bellows over stroke.
- Viscous fluid shear dampening prevents bellow fatigue and stem chattering.
- Tungsten Carbide ball and ball stem assembly.
- Replaceable floating Monel seat (also available in Tungsten Carbide material)
- Silver brazed bellows connections

Valve Type & Size	Effective Bellow Area (in^2)	Port Size (in)	Port Area (in^2)	Ap/Ab	1-Ap/Ab	*Rtef - (Ap/Ab)/ (1-Ap/Ab)
IPO 1.0	0.31	3/16	0.029	0.094	0.906	0.103
		1/4	0.051	0.165	0.835	0.197
		5/16	0.079	0.255	0.745	0.342
IPO 1.5	0.77	3/16	0.029	0.038	0.962	0.039
		1/4	0.051	0.066	0.934	0.071
		5/16	0.079	0.103	0.897	0.114

A_b = total effective bellows area, in^2
A_p = valve port area (ball/seat line contact area for sharp-edged seat), in^2
Rtef = Tubing Effective Factor