DATA SHEET

Slim Pump Safety Valve (SPSV)

The SP Safety Valve is a retrofittable safety valve intended for deployment with a range of artificial lift methods. The valve requires no existing or additional control lines or nipple profiles to work, as it uses ESP or jet pump pressure to operate. The patent pending design also facilitates bi-directional sealing and unloading at full working pressure. It is surface testable and operates as a fluid loss valve (FLV).

Applications:

- Retrofitting of safety valve in any well.
- Rigless cable-deployed ESP systems.
- Jet pumps and velocity strings.
- Coil tubing deployed ESPs.

Features & Benefits:

- Patent pending design allows bi-directional sealing up to 5,000 psi. Well pressure or surface test pressure boosts valve shut.
- FLV operation prevents backspin of ESP.
- Metal to metal valve seat and poppet design for reliability.
- Precision burst disc for pump-thru/ equalisation.
- Standalone unit can be adapted to suit a variety of deployment scenarios.
- Subsurface controlled design requiring no hydraulic or electrical power to operate.
- Does not rely on existing completion components such as control line or seal bore integrity.
- Low operating pressure, does not restrict ESP operation or capability.

Optional Equipment:

- SP Latch – facilitates positive location of the SPSV into a packer seal bore and prevents pump out.
- SP Packer – Designed specifically for the SPSV for simplified deployment.

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Deployment and Retrieval:

- The SPSV can be run on cable or wireline independently, as part of the ESP assembly or as part of the packer assembly.
- If deployed as part of the ESP assembly, with suitable packer seal bore and P-latch assembly, the SPSV can be inspected/ rebuilt/ replaced at the same time as the ESP.
- If deployed with the packer, the SP Packer should be used for reduced deployment and retrieval runs.
- The SPSV can be run with an unloader sub to facilitate retrieval. However an integral, surface pressure activated, equalizing precision burst disc is an option.

Operating Principle:

- Once deployed, the SPSV is failsafe shut and is unaffected by pressure from below.
- Operation of the ESP causes the SPSV to open.
- Once the valve has opened, ESP output will not be affected by the valve.
- Switching off the ESP will cause the valve to shut by means of a biasing spring.
- Whilst its recommended to equalize before opening, an ESP differential of 500 psi can open the valve even with 5,000 psi well pressure differential.

Specifications:

Working pressure rating	5000 psi / 345 bar		
Model	SP217	SP263	SP319
Make up length *	4ft / 1m	4ft/ 1.2m	54” / 1.4m
Outside diameter	2.17” 55.1mm	2.625” 66.7mm	3.19” 81.9mm
Inside diameter	0.650”	1.000”	1.425”
Weight	19lbs 9kg	40lbs 18kg	75lbs 34kg
Design setting depth	Limited only by ESP design depth		
Design temperature rating	Standard: 150°C / 302°F High Temp: 170°C / 338°F		
Flow Area	0.33 in^2	0.78 in^2	1.59 in^2
Design flow rates	TBC	<2000 bbl/day	<5,000 bbl/day
Connections	Customer specified		
Available metallurgies	Customer specified – 4140, 13Cr, Inconel 625 etc		

* Makeup length will vary dependent on end connections specified, and if optional equipment is required.

Valve API 14A V3 Annex B Qualified at SwRI.

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