

Pump-Through Flapper Safety Valve

Fully opening downhole safety valve

APPLICATIONS

- Reservoir testing
- Downhole testing
- Deviated and deepwater wells
- HPHT wells
- Completion operations

BENEFITS

- Tubing leak protection above the packer
- Well-killing ability after valve closure

FEATURES

- Reliable flapper valve design
- Pump-through capability

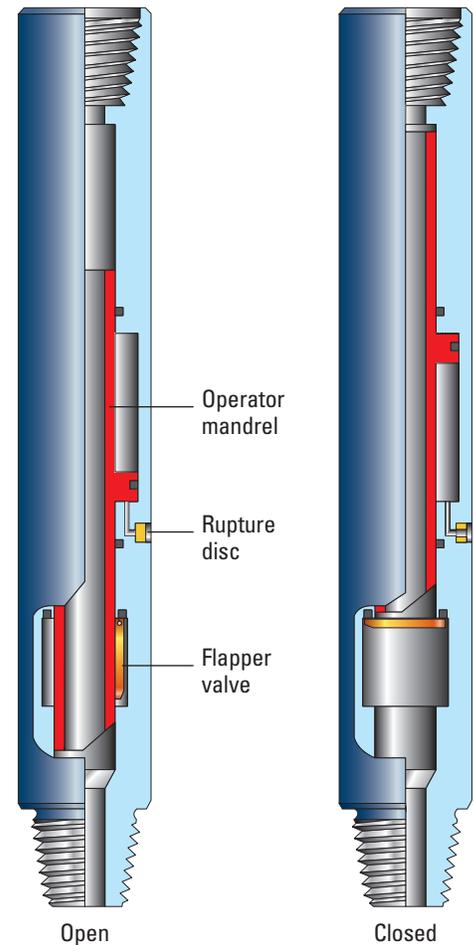
The pump-through flapper safety valve (PFSV) automatically shuts in the well in case of a sudden increase in annulus pressure resulting from a tubing leak. When placed above the recorder carrier, it also acts as a backup shut-in tool for the final shut-in, minimizing wellbore storage during final pressure buildup. It also has the ability to pump into the formation, irrespective of tubing or annulus pressure integrity above the valve.

The PFSV is a fully opening downhole safety valve. It is open when run in the hole and closed permanently when annulus pressure rises above the rupture disc rating. The operator mandrel is biased to internal pressure and locked in the open position to prevent premature closure. Upon bursting the rupture disc, hydrostatic pressure moves the operator mandrel up against an atmospheric chamber, uncovering the spring-loaded flapper. Pumping down the tubing lifts the flapper off its seat and permits killing the well.

The PFSV-F is the standard 5-in OD by 2.25-in fullbore ID tool. The slimhole version, PFSV-G, has a 3.125-in OD and a 1.125-in ID and is suitable for downhole testing applications where the casing is smaller than 7 in.

The PFSV-J is part of the J-string developed for ultrahigh-pressure wells with bottomhole temperatures greater than 425 degF [218 degC]. New seal technology has enabled successful testing of the PFSV-J to 500 degF [260 degC] at its maximum pressure rating.

The PFSV-K is part the new-generation hostile K-string developed for ultrahigh-pressure wells with bottomhole pressures up to 30,000 psi. Seal options used in the tool make it suitable for both standard and ultrahigh-temperature environments as well as hostile drilling and completion fluids. The PFSV-K is qualified to the API 14A slam closure test.



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Specifications

Model	PFSV-FFB	PFSV-FEA/FEB	PFSV-GAA/GAB	PFSV-J	PFSV-K
Max. OD, in [mm]	5 [127]	5 [127]	3.125 [79]	5 [127]	5 [127]
Tool ID, in [mm]	2.25 [57]	2.25 [57]	1.125 [29]	2.25 [57]	2.25 [57]
Pressure ratings					
Differential across housing, psi [MPa]	17,500 [121]	15,000 [103]	15,000 [103]	17,500 [121]	17,500 [121]
Differential across flapper, psi [MPa]	15,000 [103]	15,000 [103]	15,000 [103]	17,500 [121]	15,000 [103]
Max. annular, psi [MPa]	25,000 [172]	25,000 [172]	20,000 [138]	25,000 [172]	30,000 [207]
Max. tubing, psi [MPa]	29,000 [200]	29,000 [200]	20,000 [138]	29,000 [200]	30,000 [207]
Temperature rating, degF [degC]	425 [218]	425 [218]	425 [218]	500 [260]	500 [260]
Length, ft [m]	6.17 [1.88]	6.17 [1.88]	4.81 [1.47]	5.73 [1.75]	6.78 [2.07]
Weight, lbm [kg]	325 [147]	325 [147]	130 [59]	289 [131]	337 [153]
Service (NACE International MR-0175)	H ₂ S, acid				
Tensile strength at min. yield, lbf [kN]	350,000 [1,557]	350,000 [1,557]	160,000 [712]	400,000 [1,779]	417,000 [1,855]
Connection	3½ PH-6	3½ IF or PH-6	2¾ Reg or PH-6	3½ PH-6	3½ PH-6

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