Optimax™ Series Tubing-Retrievable Surface-Controlled Subsurface Safety Valve Models WSP(E)-5, WSP(E)-7.5, and WSP(E)-10

Shuts in a well to prevent uncontrolled flow

Applications

- Fluid and gas environments
- High-pressure production and injection applications

Features and Benefits

- Curved flapper technology enables a smaller OD, which eases running and accommodates bypass lines.
- The field-proven, nonelastomeric dynamic seal avoids explosive-decompression and fluid-compatibility issues to enhance safety.
- The safety valve contains a premium piston mechanism for demanding gas or high-pressure applications.
- Metal-to-metal premium housing connections are standard.
- Accessories can be deployed on slickline, which avoids complex operational requirements.

Tool Description

The Weatherford Optimax series WSP(E) tubing-retrievable surface-controlled subsurface safety valves are rod-piston, curved-flapper type safety valves. These valves are installed to shut-in wells in the event of uncontrolled flow caused by equipment failure or damage. An integral part of the completion string, each model is controlled by a single hydraulic control line. Control-line pressure keeps the valve in the open position; when pressure is bled off, the valve closes to prevent uncontrolled flow. In the unlikely event the safety valve malfunctions, the Weatherford Optimax WLT lockout tool and Optimax WCT control-line communication tool can be deployed to adapt the valve to accept a Weatherford WIT wireline-insert safety valve, which minimizes disruption to production operations.

Options

An internal through-the-flapper, self-equalizing feature simplifies safety valve operation for improved reliability.

Available Accessories

- Optimax WLT lockout tool
- Optimax WCT control-line communication tool
- Optimax WET exercise tool
- Optimax WIT wireline-insert safety valve

An Optimax tubing-retrievable and surface-controlled safety valve shuts in a well when control-line pressure bleeds off.

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Optimax™ Series Tubing-Retrievable Surface-Controlled Safety Valve

Specifications

Size	5-1/2 in. (139.7 mm)			Large Bore 5-1/2 in. (139.7 mm)	7 in. (177.8 mm)		
Overall length	92 in. (234 cm)			84 in. (213 cm)	99 in. (251 cm)		
Standard sealbore (minimum bore)	4.578 in. (116.281mm)			4.750 in. (120.650 mm)	6.000 and 5.963[a] in. (152.400 and 151.460 mm)		
Weatherford housing threads	6.937 and 5.500 in. (176.200 and 139.700 mm)			7.125 and 5.600 in. (180.975 and 142.240 mm)	8.465 and 7.088 in. (215.011 and 180.035 mm)		
Test pressure	7,500 psi (52 MPa)	11,250 psi (78 MPa)	15,000 psi (103 MPa)	7,500 psi (52 MPa)	7,500 psi (52 MPa)	11,250 psi (78 MPa)	15,000 psi (103 MPa)
Working pressure	5,000 psi (34 MPa)	7,500 psi (52 MPa)	10,000 psi (69 MPa)	5,000 psi (34 MPa)	5,000 psi (34 MPa)	7,500 psi (52 MPa)	10,000 psi (69 MPa)
Maximum OD	7.700 in. (195.580 mm)	7.760 in. (197.104 mm)	8.100 in. (205.740 mm)	7.700 in. (195.580 mm)	9.200 in. (233.680 mm)	9.288 in. (235.915 mm)	9.430 in. (239.522 mm)
Standard nipple profile	Petroline® QN profile[b]						
Control-line connection	Industry-standard metal-seal compression fitting for 1/4-in. (6.35-mm) control line						
Rated working temperature	30° to 300°F (–1° to 149°C)						
Failsafe setting depth	2,000 ft (610 m)						
Operating pressure, full open[c]	2,000 psi (14 MPa)						
Operating pressure, full closed[c]	1,000 psi (7 MPa)						
Dynamic seal system	Proprietary design nonelastomeric rod-piston seal stack, verified in tests to 10,000-psi (69-MPa) gas differential pressure at 300ºF (149ºC)						

[a] Staggered sealbore.
[b] Other manufacturer's profiles available upon request.
[c] Values shown are estimates, subject to verification.
[D] P feature safety valve also contains a non-elastomeric piston stop seal, which isolates the dynamic seals at the full-open and full-closed positions.

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Standard Metallic Materials

Housing and internal components	9 chrome, 1 moly or 13% minimum chrome; 80,000-psi (552-MPa) minimum yield
Flapper and seat	INCONEL® 718
Piston rod and power spring	MP 35 N
Tubing thread connection	As requested
Design and manufacturing compliance	API Q1 and API 14A
Class of service	API 14A 3S2

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