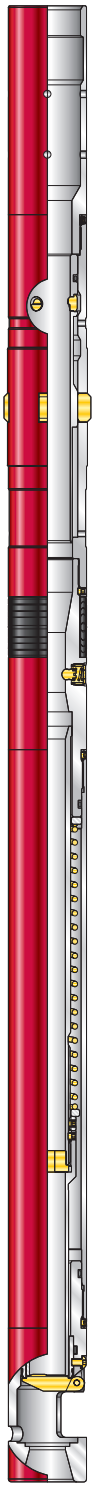
Weatherford®

Safety Systems

Optimax™ Series Wireline-Retrievable Subsurface-Controlled Subsurface Safety Valve

Model WWV-10



Weatherford's *Optimax* series wireline-retrievable subsurface-controlled subsurface safety valve, model WWV-10, is a flapper velocity safety valve designed to shut in a well during an uncontrolled flow caused by equipment failure or damage. The valve has a similar design and many of the same parts as Weatherford's *Optimax* series wireline-retrievable surface-controlled subsurface safety valve. When the valve is exposed to a pre-determined flow rate, it closes to seal off the well and acts as a barrier to flow.

The valve usually remains open in the well for production to flow to the surface. If well control is compromised, the increased flow rate causes a pressure drop across the orifice. The orifice and spring are sized so that, at a specified flow rate, the orifice and flow tube move upward, compressing the power spring. The tube then frees the flapper to swing closed, sealing the well. The closure protects property, personnel, and the environment. A probe, run on wireline, unseats the equalizing dart in the equalizing subassembly when the valve is to be re-opened or retrieved.

The valve has no setting depth limitation, and is installed and retrieved on slickline. The standard *Optimax* OQXSV safety valve lock is a large-bore version of Weatherford's PETROLINE® QX lock.

Applications

- Fluid and gas environments
- Production and injection applications

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Features, Advantages and Benefits

- The design, material, manufacturing, assembly, and test documentation retention according to API Q1 and API 14A quality programs ensure design and manufacturing integrity and conformance to industry standards.
- Several features of the model maximize reliability:
  - The reduction in the number of seals minimizes potential leak paths and simplifies redressing.
  - The elastomeric flapper soft seat reinforces the primary metal-to-metal seat for low-pressure seal integrity.
  - The orifice is manufactured from INCONEL® 718 material heat treated to a maximum of 40 Rockwell hardness C scale to avoid the effects of erosion.
- The chevron packing can be totally replaced without disassembling or disturbing the valve internals, saving time.
- Minimizing the number of threaded connections minimizes leak paths and reduces the potential for galling damage during redress.
- The robust, field-proven equalizing feature provides a simple, safe operation, and retrieval.

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Specifications

Size* (in./*mm*)	**3-1/2** ***88.9***	**4-1/2** ***114.3***
Maximum valve OD (in./*mm*)	2.70 *68.58*	3.60 *91.44*
Minimum bore	Depends on the selected orifice size	
Overall length (in./*mm*)	40 *1,016*	
Standard safety valve lock	*Optimax* OQXSV	
Working pressure (psi/*MPa*)	10,000 *69*	
Test pressure (psi/*MPa*)	15,000 *103*	
Rated working temperature (°F/°*C*)	30 to 300 *–1 to 149*	
Standard flapper soft seal	Proprietary Viton® seal material to provide a reliable low-pressure seal	
Standard O-ring and packing seal material	*Viton* material. Specified based on environmental compatibility.	
Metallic materials	As required for environmental considerations with an 80,000-psi (*552-MPa*) minimum yield	

*Contact the product-line manager for availability.

Options

- A wide choice of designs and materials are available to ensure fluid compatibility and to configure the valve to specific requirements.
- A spreadsheet program is available to ensure that the correct orifice size and spring and spring-spacer combination are specified for any required closure condition.
- A robust, field-proven, through-the-flapper, self-equalizing subassembly is available to keep flow within the tube. The subassembly has a simple operation.
- The safety valve can be configured to accept any manufacturer's lock.

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