

WRP-1A and -1AH Series Safety Valves

Deepset, rod piston, flapper valves with working pressures to 10,000 psi [68,950 kPa]

APPLICATION

- Sweet to moderately corrosive applications from 40 degF to 300 degF [4 degC to 149 degC]

BENEFITS

- Design is cost effective and easy to run.
- Allows fewer potential leak paths.
- Reduces problems associated with solids and scale deposition.
- Applies to a wide range of subsurface environments.

FEATURES

- Designed in accordance with API and ISO criteria
- Design incorporates a rod piston with a premium sealing system and a field-proven Inconel® 718 flapper and seat with metal-to-metal sealing
- Compact design
- Minimum number of seals
- Optimal geometry and clearance between sliding components
- Cost-effective, spacer-adjustable power spring
- Engineered for setting depths to approximately 6,500 ft [1,981 m]

The Camco* WRP-1A and -1AH slickline-retrievable subsurface safety valves are engineered to provide industry-leading reliability. The WRP-1A and -1AH series valves feature rod-piston operation with the rugged Camco flapper and seat design. This design maximizes long-term performance and reduces potential leak paths.

The WRP-1A and -1AH series valves are available in a range of sizes and are designed to accept lock assemblies for convenient use as a secondary valve in a disabled tubing-retrievable valve. These valves can also be used as a primary valve in applications where a value-engineered slickline valve is desired. Valves in this series come complete with lock assemblies.

The WRP-1A and -1AH series are operated by a rod piston with a premium sealing system. The premium flapper mechanism also has full, metal-to-metal sealing plus a secondary soft seat, and it meets a leakage-acceptance criterion that is substantially more stringent than API and ISO specifications.

The WRP-1A and -1AH series safety valves are suitable for setting depths to approximately 6,500 ft [1981 m] and are applicable to a wide range of wells, with working pressures to 10,000 psi [68,950 kPa].

VALVE VARIATIONS

SSA in the nomenclature indicates spring spacer adjustability, which allows the closing pressures to be varied during assembly by substituting spacers of different lengths instead of changing the power spring.

VALVE INSTALLATION

To install a WRP-1A or -1AH series safety valve, the valve is lowered and locked into the hydraulic landing nipple or disabled tubing-retrievable valve using the appropriate running tool and prong for the lock mandrel attached to the valve.

Spacer bars are often used between the lock and insert valve during installation into a disabled tubing-retrievable valve to ensure complete isolation of the disabled valve.



WRP-1A safety valve.

WRP-1A and -1AH Series Safety Valves

VALVE OPERATION

The WRP-1A and 1AH series safety valves are normally closed. They are opened by applying hydraulic pressure through a control line that extends from the hydraulic landing nipple, or disabled tubing-retrievable valve, through the wellhead to the control panel. Hydraulic pressure applied from the surface control panel pushes the rod piston and the flow tube down. This downward movement compresses the power spring, moves the flapper off seat, and continues until the valve is in the fully open position. When the hydraulic control line pressure is released, the power spring lifts the flow tube and the rod piston. This upward movement permits the torsion spring on the hinged flapper to move the flapper into the flow stream, close against the flapper seat, and shut in flow from the well.

EQUALIZING OPERATION

The WRP-1A and -1AH series safety valves feature a nonequalizing design. To open the safety valve with pressure below the flapper, the application of increased wellbore pressure from above is required until the valve is equalized. To open the valve after equalization, the required amount of hydraulic control line pressure is applied.

Engineering Data for WRP-1A and WRP-1AH Series Safety Valves

Tubing size [†] (in [mm])	Valve Type	Valve Packaging OD (in [mm])	Min. OD (in [mm])	Working Pressure (psi [kPa])
2.375 [60.3]	WRP-1AH [‡]	1.875 [47.6]	0.734 [18.6]	10,000 [68,950]
	WRP-1AH-NS-R [‡]			
	WRP-1AH-SSA-NS-R	2.188 [55.6]		
2.875 [73.0]	WRP-1A-SSA [‡]	2.312 [58.7]	1.125 [28.6]	6,000 [41,370]
	WRP-1AMP-SSA [‡]			
3.500 [88.9]	WRP-1A-SSA [‡]	2.812 [71.4]	1.562 [39.7]	10,000 [68,950]
	WRP-1AH-SSA-NS-R [‡]		1.250 [31.8]	
4.500 [114.3]	WRP-1AMP-SSA	3.812 [96.8]	1.937 [49.2]	7,500 [51,713]
5.500 [139.7]		4.125 [104.8]	2.437 [61.9]	

[†] The engineering data provided illustrate the scope of this product offering and are not all inclusive.

Additional sizes and pressure ratings are available upon request.

[‡] Lock is included in the valve assembly.

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