

# WRDP-2 Series Safety Valves

General service, self-equalizing, rod piston, flapper valves with working pressures to 7,500 psi [51,713 kPa]

## APPLICATION

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

## BENEFITS

- Provides versatile and reliable operation.
- 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 wells.

## FEATURES

- Internal equalization and adjustable closing pressures
- Designed in accordance with API and ISO criteria
- Rod piston with a premium sealing system and 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
- Engineered for setting depths to 2,500 ft [762 m]

The versatile Camco® WRDP-2 slickline-retrievable subsurface safety valves are engineered to provide industry-leading reliability. The WRDP-2 series valves feature rod-piston operation, with the rugged Camco flapper and seat design, and an internal equalizing system that can be disabled by plugging the equalization ports prior to installation. This design maximizes long-term performance and reduces potential leak paths.

The versatile WRDP-2 series valves are available in a range of sizes and are designed to accept any 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.

These valves are operated by a rod-piston, 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.

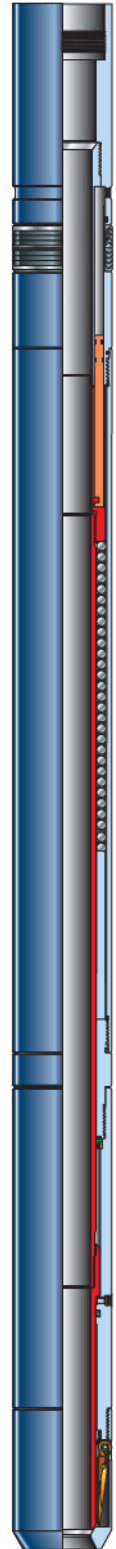
The WRDP-2 series safety valves are suitable for setting depths of approximately 2,500 ft [762 m] and are applicable to a wide range of wells, with working pressures to 7,500 psi [51,713 kPa].

## VALVE VARIATIONS

WRDP-2-SSA-BAL and WRDP-2-SSA-BAL-S valves feature chemical injection capabilities. SSA in the valve 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 WRDP-2 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.



WRDP-2 safety valve.

# WRDP-2 Series Safety Valves

## VALVE OPERATION

The WRDP-2 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 force 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

To open the WRDP-2 series safety valve with pressure below the flapper, the application of pressure in the tubing above the flapper is preferred until the pressure difference across the flapper is minimal. Then hydraulic pressure is applied to the actuating piston. When the tubing pressure is equalized, the flow tube moves down to the fully open position and shields the closure mechanism.

If equalization is not possible by increasing wellbore pressure, then the safety valve may be completely equalized through the equalizing system. To equalize the valve with the equalizing feature disabled, pressure is applied to the tubing above the valve until the pressure equalizes across the flapper.

### Engineering Data for WRDP-2 Series Safety Valves

Tubing size <sup>†</sup> (in [mm])	Valve Type	Valve Packaging OD (in [mm])	Min. OD (in [mm])	Working Pressure (psi [kPa])
4.500 [114.3]	WRDP-2-SSA	3.812 [96.8]	2.125 [54.0]	5,000 [34,475]
5.500 [139.7]		4.562 [115.9]	2.562 [65.1]	
		4.625 [117.5]		
7.000 [117.8]	WRDP-2	5.937 [150.8]	3.610 [91.7]	7,500 [51,713]
	WRDP-2MP-NS		3.562 [90.5]	

<sup>†</sup> 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.

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