

# Differential Valve

## Applications

- Low-fluid-level wells or wells which cannot support a full column of water
- Most gas wells
- Wells with formations sensitive to water
- Sweet and sour service (H<sub>2</sub>S)

## Benefits and features

- Prevents uncontrolled flow of fluids from the coiled tubing
- Reduces the exposure of sensitive formation to pumping fluids
- Significantly reduces required amount of expensive treatment fluids for gas wells

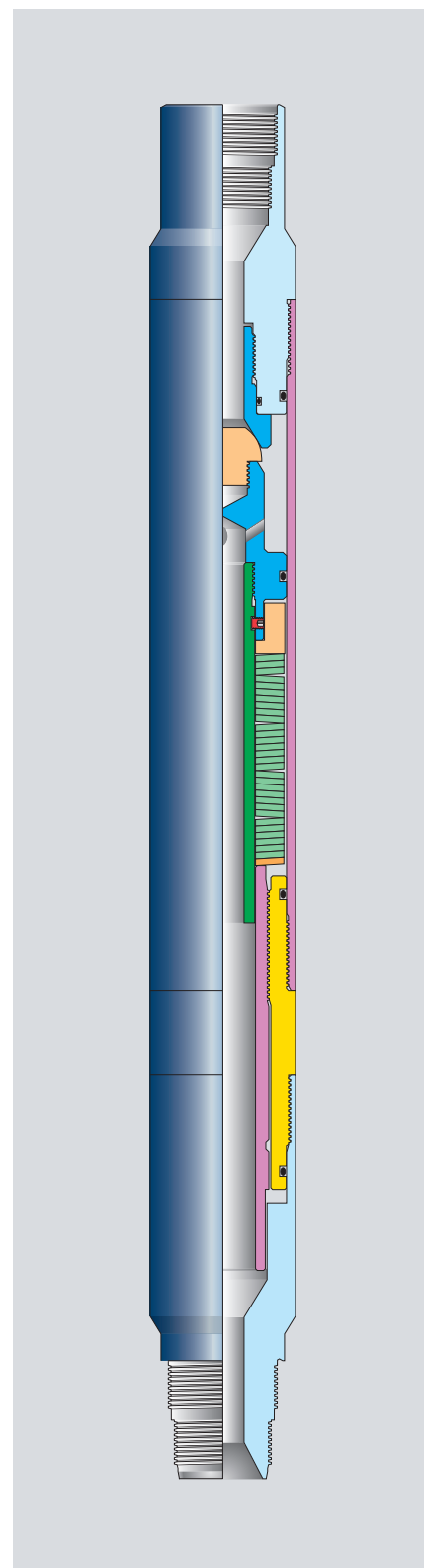
Low-fluid-level wells can present extreme difficulties to the operator trying to gain control of hydrostatic pressure balances while performing well stimulation or packer work. Often it is impossible to manipulate the well pressure or fluid levels to prevent the tubing fluids from *U-tubing* into the annulus. In gas wells, the introduction of pumping fluids to the formation often has a detrimental effect.

The differential valve is normally run above flow- or pressure-activated tools, such as hydraulic release retrieval tools, etc, which cannot be operated in a controlled manner in a subhydrostatic well.

Operations on high-pressure gas wells often require the CT operator to apply internal backpressure to protect the coiled tubing against collapse. Without a differential valve, this would require constant pumping of fluids into a well, which does not support the fluid column.

To control these types of well conditions, the differential valve has been designed to support a hydrostatic head above. The amount of hydrostatic overbalance, or pressure differential, that the valve will support is adjustable. The differential valve is available in two basic versions: one is adjustable from 0 to 3000 psi, the other from 0 to 5000 psi.

The differential valve supports a variable amount of differential pressure above it before it opens and permits flow through the valve. The amount of differential pressure is simply adjusted by varying the spring force acting against the face seal.



## Differential Valve

OD (in.)	ID <sup>†</sup> (in.)	Length <sup>‡</sup> (in.)	Pressure Range (psi)
2.188	0.625	33.625	0–3000
2.188	0.625	49.438	0–5000
1.688	0.750	29.250	0–3000
1.688	0.750	35.750	0–5000
2.125	1.125	47.625	0–3000
2.125	1.125	66.000	0–5000

<sup>†</sup> Ball seat ID tool cannot be drifted.

<sup>‡</sup> Includes CS Hydril thread