HALLIBURTON

LOW CARBON SOLUTIONS | CCUS

XTR™ CS injection valve

For use in CCUS wells where reliability, high injection rates, and low pressure drops are required

FEATURES

- Depth insensitive
- Minimized leak paths
- Large flow area
- Self-cleaning design
- Full metal-to-metal body
- Metal-to-metal poppet sealing
- Low opening pressure
- Anti-chatter
- Wireline deployment

BENEFITS

- Simplifies inventory and planning; installable at any depth
- High injection rates
- Smooth flow, minimal pressure drop, reduced erosion
- Bypass ports reduce debris buildup
- Longevity and erosion protection
- Optimal sealing when closed
- Opens with minimal flow
- Patented anti-throttling keeps valve open, reduces wear
- Easy installation, repositioning, and retrieval

XTR™ CS injection valve

Overview

The XTR™ CS injection valve is a compact, spring-loaded, full metal-to-metal design engineered for CO_2 injection and CCUS wells where reliability, high injection rates, and low-pressure drops are critical.

Qualified for extreme temperature environments, the valve is deployed as part of the XTR™ CS injection system, which includes a non-elastomeric lock mandrel/landing nipple. The valve remains closed via a spring-loaded metal-to-metal poppet and seat mechanism. Upon injection, the poppet is easily displaced to allow smooth flow. As flow increases, a proprietary anti-throttling mechanism helps ensure the valve stays fully open to minimize chatter and extend service life. When injection stops, the spring returns the poppet to its seat to help prevent backflow.

The XTR CS injection system offers a robust solution for ultralow-temperature CO_2 injection, serving as a primary non-return valve, contingency insert valve, or deep-set flowback prevention device. The valve's depth-insensitive design allows installation at any point in the wellbore without adjustment to simplify planning and logistics, while also eliminating concerns about hydraulic fluid mobility at CCUS temperatures, which can impact the functionality of surface controlled wireline deployed options.

Debris and flow

Poor injection medium cleanliness is a leading cause of injection valve failure. To combat this, the XTR CS injection valve incorporates cleanout jetting ports in its main body to minimize debris buildup. Additionally, specialized materials protect key components exposed to flow, which safeguards sealing surfaces from erosional damage—especially in high-debris environments. The poppet geometry is also optimized to deflect solids away from the seal face to provide further erosion resistance during injection.

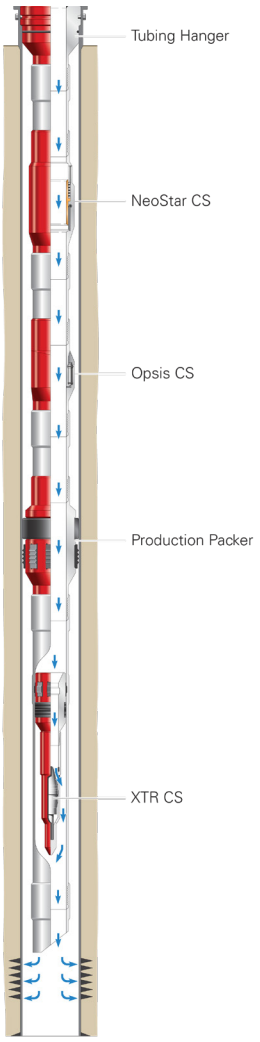
DATA SHEET

Applications

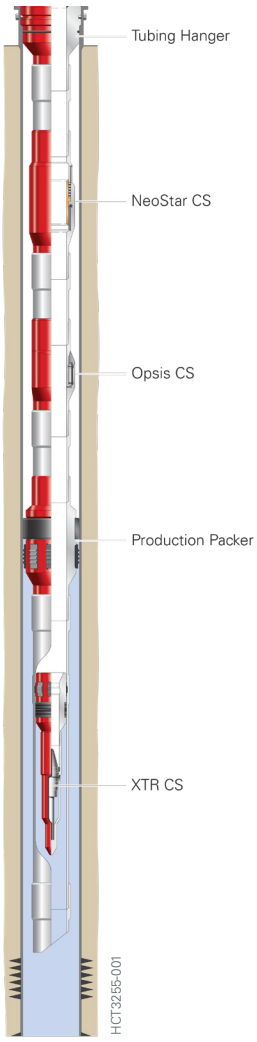
- CO_2 injection
- Gas injection
- Water injection
- Primary “non-return” valve
- Contingency insert valve
- Steam injection
- Flowback prevention

Specifications

- Operating temperature range: -31 to 350°F
- Survivability temperature rating: -109°F
- Pressure rating: up to 10,000 psi
- Flow rating: up to 2.5 MTPA
- API 14A validation grade: V3-R



XTR™ CS
injection mode



XTR™ CS flowback
prevention mode

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