

## TRFC-HDM Modular Flow Control Valve

Provides modular, surface-actuated downhole control of oil and gas production and injection



**Pressure:**  
Up to 7,500 psi [51.7 MPa]



**Flow:**  
Up to 60,000 bbl/d [9,539 m<sup>3</sup>/d]



**Temperature:**  
260 degF [126.7 degC]

### Where it is used

- Multizone intelligent completions
- Commingled flow completions
- Auto (natural) gas-lift wells
- Conventional wells with benign well conditions
- Well environments with scale deposition, severe erosion, or high-temperature conditions

### How it improves wells

The TRFC-HDM modular flow control valve provides surface-actuated downhole control of oil and gas production and injection for intelligent completion systems. This allows modular intelligent completions designs to accommodate a variety of well conditions and improves delivery lead times. The mechanical indexer or electrohydraulic actuation driver provides flexibility for last-minute completion design alterations without the long time associated with such changes.

The choke is customizable with different port sizes to accommodate a wide range of flow rates. A shorter length allows other tools to be rigged up and tested simultaneously before running in hole. Using multiple modular flow

control valves provides a reliable completion system for independent contribution control from multiple zones. TRFC-HDM valves are manufactured in a variety of materials to suit a wide range of oil, water, and gas applications, including high-flow-rate production and injection wells with multizone or commingled-flow completions and natural gas-lift completions. The rugged design makes the valve suitable for severe environments with scale deposits, erosion, and other demanding conditions.

### How it works

The modular flow control valves use a J-slot mechanical indexer to control the valve cycling steps. It requires conventional  $n+1$  number of hydraulic lines ( $n$  = number of valves in well).

Modular flow control valves can alternately be equipped with an electrohydraulic driver using the conventional two hydraulic control lines of the multizone intelligent completion to operate from the surface the subsurface flow control valves. This simple, reliable design has no hydrostatic head in the control line to consider or counteract.

### What else I should know

Two types of the modular flow control valve are available: the annular valve and the inline shrouded valve. The annular valve controls flow between the annulus and tubing. The inline shrouded valve controls flow from a lower zone within the same tubing string.

Metris\* permanent monitoring systems can be used in conjunction with the modular flow control valves to monitor downhole pressure and temperature and to provide a better understanding and more precise control of the reservoir in real time.

Downhole pressure and temperature data measured using Metris systems transmit to surface, enabling data-driven decisions to cycle the modular flow control valves. WellWatcher Advisor\* real-time intelligent completion software helps the production and reservoir engineers to tune contribution from their asset to improve recovery.

