TRFC-HDM

Modular flow control valve

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

Applications:

- Multizone intelligent completions
- Water injectors
- Well environments with scale deposition, severe erosion, or high-temperature conditions

Benefits:

- Enables cost-effective optimization of well performance by reducing unwanted water and gas production
- Enhances dynamic reservoir characterization through periodic zonal tests without need for interventions
- Improves production or injection sweep through zonal control
- Eliminates costs and risks of well interventions by using surface-controlled chokes
- Enables accurate production allocation in conjunction with PT gauges via precise, repeatable flow choke characterization

Features:

- J-slot mechanical indexer
- Metal-to-metal dynamic seals able to withstand differential pressures up to 7,500 psi [52 MPa] per ISO 23936-2
- Choke with up to 10 positions
- Optional electrohydraulic actuation

Annular valve with common close line

Shrouded inline valve with lower gauge port

Both annular and shrouded inline valve types are available.

How it improves performance

The surface-actuated tubing-retrievable flow control (TRFC) hydraulic dual-line modular (HDM) valve controls oil and gas production and injection for intelligent completion systems. This enables modular intelligent completion designs to accommodate a variety of well conditions.

- The mechanical indexer or electrohydraulic actuation driver provides **flexibility for accelerated completion design alterations** when development drilling encounters subsurface features that diverge from the plan.
- The **choke is resilient to erosive forces** and customizable with different port sizes to accommodate a wide range of flow rates.
- Assembly and testing can be done together with other completion tools in the workshop or at the wellsite off the critical path—**reducing rig flat time**.
- 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**.
- 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 valve cycling. They require conventional n+1 hydraulic lines for n valves. An indexer has been deployed which enables **independent on-off control of two valves using only two hydraulic lines when tubing hanger penetrations are limited.**

An optional electrohydraulic module for valve actuation is available; it integrates single or dual pressure and temperature gauges in a single compact assembly. Modular flow control valves equipped with this module require just two hydraulic control lines and one electric line for multidrop installation.

Additional information

Both annular and inline shrouded valve types are available. The annular valve controls flow between the annulus and tubing. By monitoring pressure and temperature downhole with the complementary technology of a Metris™ permanent monitoring system, operators can better understand the reservoir to more precisely control the production or injection rate in near-real time with up to 10 choke positions.

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TRFC-HDM

TRFC-HDM Specifications

Specifications	TRFC-HDM 2 7/8	TRFC-HDM 3 1/2	TRFC-HDM 4 1/2
Tubing size	2.875 in [73 mm]	3.5 in [89 mm]	4.5 in [114 mm]
Max. temperature	130 degF [54 degC]	300 degF [149 degC]	260 degF [127 degC]
Max. equalization pressure	3000 psi [20.7 MPa]	3000 psi [20.7 MPa]	3000 psi [20.7 MPa]
Max. flowing differential pressure	1500 psi [10.3 MPa]	1500 psi [10.3 MPa]	3000 psi [20.7 MPa]
Max. flow rate	17000 bbl/d	35000 bbl/d	60000 bbl/d
Max. choke positions	8	10	10
Actuation	Hydraulic, electrohydraulic	Hydraulic, electrohydraulic	Hydraulic, electrohydraulic

All specifications are subject to change without notice.

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