

Flow Control Valve TRFC-IZ and Multidrop Module

IntelliZone Compact II system components

TRFC-IZ FLOW CONTROL VALVE



Rated to 5,000 psi
[34 MPa]



Rated to 250 degF
[121 degC]

ADVANTAGES

- Optional absolute position sensing of valve choke
- Protector sleeve that prevents damage to choke seals
- Balanced piston operation for extended setting depths
- Option to deploy as a stand-alone valve
- Compatibility with oil- and water-based control line fluids
- Compatibility with multidrop module
- Number of control lines determined by using WellBuilder* completion system design software when multidrop module is used

MULTIDROP MODULE



Rated to 10,000 psi
[69 MPa]



Rated to 250 degF
[121 degC]

ADVANTAGES

- Control of more zones with fewer hydraulic lines and hence fewer packer and tubing hanger penetrations
- Selective application of pressure to open or close chosen flow control valve
- Compatibility with oil- and water-based control line fluids

IntelliZone Compact II* modular multizonal management system incorporates a TRFC-IZ flow control valve (FCV) and an optional hydraulic multidrop module.

Surface-actuated downhole control

TRFC-IZ enables downhole control of zonal production. It is actuated from surface by applying differential hydraulic pressure across a balanced piston. The balanced piston design eliminates the need to counteract control line hydrostatic head during operation, extending the valve setting depth. Manufactured in a choice of materials, the valve is suitable for a wide range of production applications.

Reliable flow control mechanism

TRFC-IZ is an annular-type valve available in two versions: on-off or four position. For the multiposition valve, various choke bean sizes are available. When the valve is fully open, there is no restriction to fullbore flow. An internal collet mechanism secures the choke in the desired position, preventing accidental movement due to vibration or imbalance in the hydraulic lines.

A protective sleeve prevents exposure of the choke seals to flow, avoiding damage by erosive fluids at high differential pressures. In the event of a contingency, the TRFC-IZ can be shifted easily and quickly by means of an integral shifting profile.

More zones, less installation complexity

A single-zone well requires two hydraulic control lines. For multizone wells with multiple IntelliZone Compact II systems and no multidrop module, each FCV has a dedicated "open" line while the single "close" line is shared by all (i.e., $n+1$ lines for n zones).

The optional hydraulic multidrop module enables selective control of more FCVs with fewer hydraulic lines. In a four-zone well, for example, it can reduce the number of control lines from five to two. The number of lines is determined by WellBuilder software and depends on the configuration of on-off and multiposition valves used. The module directs the required pressure to the appropriate side of the valve piston to actuate the valve of interest.

Real-time monitoring

TRFC-IZ deployment with the IntelliZone Compact II system enables monitoring the choke position at surface in real time via the absolute position sensor embedded in the valve. A manual count of pressure cycles at surface is not required.



When multiple IntelliZone Compact II systems are deployed together with the hydraulic multidrop module, the number of hydraulic control lines required for the FCVs is determined by using WellBuilder software.

Flow Control Valve TRFC-IZ and Multidrop Module

TRFC-IZ Flow Control Valve Specifications

Size	2 ⁷ / ₈ in	3 ¹ / ₂ in
Type	On-off or four position	On-off or four position
Max. OD, in [mm]	4.595 [116.713]	5.905 [149.987]
Min. ID, in [mm]	2.315 [58.801]	2.815 [71.501]
Drift ID, in [mm]	2.305 [58.547]	2.810 [71.374]
Max. flow rate, bbl/d [m ³ /d]	17,000 [2,703]	44,000 [6,996]
Recommended min. casing size, in [mm] and weight, lbm/ft [kg/m]	5 ¹ / ₂ [139.7] and 20 [29.8]	7 [177.8] and 32 [47.6]
Metallurgy options	13Cr	4140 or 13Cr
Actuator principle	Balanced piston	Balanced piston
Position sensor	Absolute	Absolute
Contingency option	Integral BB shifting profile	Integral BB shifting profile
Materials		
Material specification	NACE MR0175	NACE MR0175
Control line fluid compatibility	Oil or water based	Oil or water based
Operating data		
Working differential pressure, psi [kPa]	5,000 [34,474]	5,000 [34,474]
Max. actuation pressure, psi [kPa]	10,000 [68,946]	10,000 [68,946]
Max. equalization differential pressure, psi [kPa]	1,000 [6,894]	1,000 [6,894]
Operating temperature range, degF [degC]	68–250 [20–121]	68–250 [20–121]

Hydraulic Multidrop Module Specifications

Max. control line pressure, psi [kPa]	10,000 [68,946]
Min. control line pressure, psi [kPa]	7,500 [51,710]
Min. reset pressure, psi [kPa]	4,000 [27,579]
Hydraulic control line fluid compatibility	Oil or water based
Operating temperature range, degF [degC]	68–250 [20–121]

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