Schlumberger

AFIV

Annulus-controlled shrouded isolation valve

APPLICATIONS

- Fluid loss control
- Underbalanced perforating
- Multizone completions
- Intelligent completions
- HPHT environments
- Well suspension and temporary abandonment operations†

BENEFITS

- Improves well productivity
- Minimizes interventions
- Reduces intervention costs
- Minimizes fluid loss

FEATURES

- One-time opening using pressure cycles
- Ability to open and close multiple times mechanically before actuation of Trip Saver* one-time remote-opening mechanism
- Bidirectional-pressure-sealing barrier sleeve
- Completion fluid placement after sleeve closure

The AFIV* annulus-controlled shrouded isolation valve is used in selective multizone intelligent completions to separate production from the upper and lower zones. The upper zone is produced through the AFIV valve's internal annulus. A sleeve-type barrier, not a ball, isolates the tubing from this annulus.

Suitable for HPHT environments, the AFIV valve protects formations from damage resulting from fluid loss during completion operations. A second isolation valve serves as a barrier to isolate reservoir fluids from the lower zone within the lower completion while production tubing is being run. By separating the upper and lower zones, the AFIV valve enhances production, simplifies completion operations, and increases wellbore safety. This fit-for-purpose valve has developed a remarkable record for robust and reliable service and has become a key component in intelligent multizone completions

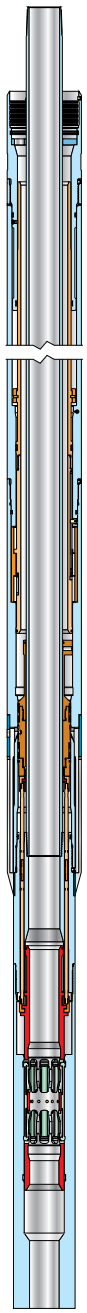
Based on award-winning technology for offshore safety innovation, this versatile valve system enables operators to have a high level of confidence in formation protection.

Operation

The Trip Saver one-time remote-opening mechanism enables the valve to open once without conventional intervention techniques. Cycles of tubing pressure, in a number predetermined by an integral indexing mechanism, are applied against the closed valve. When the indexing mechanism reaches the opening cycle, the Trip Saver mechanism actuates, opening the valve. The valve opens when the applied tubing pressure is bled off. The Trip Saver mechanism allows the operator to pressure test the tubing, set and test the packer, and test the tubing hanger before reestablishing communication with the reservoir. A 10- or 15-cycle Trip Saver mechanism can be used, the 15-cycle version providing greater flexibility in completion operations.

Before the Trip Saver mechanism is actuated, the AFIV valve can be opened and closed mechanically multiple times using a shifting tool run at the end of washpipe, a perforating string, or coiled tubing. When the shifting tool passes through the valve, it engages the shifting profile and the barrier sleeve either opens or closes. Subsequently the shifting tool unlatches from the latch collet of the valve and is retrieved together with the washpipe. Two tools are available. The STC-6 shifting tool has an optimized ID for maximum flow rate through the tool, while the STR-6 tool has a smaller OD to enable it to pass through restrictions in the completion string. An emergency release is also available.

In addition, the ReSOLVE* instrumented wireline intervention service features shifting tools that can be used to open and close the AFIV valve. The service provides real-time monitoring, dynamic tool control, and verified downhole actuation.



AFIV annulus-controlled shrouded isolation valve.

AFIV

Qualification

All AFIV valves are qualified and tested at assembly to meet stringent acceptance requirements.

Optional features

The AFIV valve is available with an optional permanent lockout feature. The lockout is activated after the Trip Saver mechanism is actuated and permanently locks the mechanical section of the valve in the open position, preventing inadvertent valve closure.

AFIV Valve Specifications

Size (OD × ID), in [mm]†	Differential pressure rating (body), psi [kPa]	Differential pressure rating (sleeve), psi [kPa]	Max. temperature, degF [degC]
8.180 × 2.931 [207.7 x 74.45]	5,000 [34,474]	5,000 [34,474]	200 [93.3]
9.340 × 3.700 [237.2 x 93.98]	5,000 [34,474]	5,000 [34,474]	250 [121.1]

†Other sizes and temperature and pressure ratings available on request. Contact your local Schlumberger representative.

STC-6 Isolation Valve Shifting Tool Specifications

Size, in [mm]†	Max. (Collet) OD, in [mm]	Completion Drift ID, in [mm]	ID, in [mm]
2.940 × 1.270 [74.7 × 32.26]	3.293 [83.6]	2.920 [74.2], 2.935 [74.6]	1.270 [32.26]
3.700 × 2.250 [94.0 × 57.15]	3.994 [101.5]	3.695 [93.9]	2.250 [57.15]

†Other sizes and temperature and pressure ratings available on request. Contact your local Schlumberger representative.

STR-6 Isolation Valve Shifting Tool Specifications

Size, in [mm]†	Max. (Collet) OD, in [mm]	Completion Drift ID, in [mm]	ID, in [mm]
2.940 × 0.500 [74.7 × 12.70]	3.244 [82.4]	2.640 [67.1]	0.500 [12.70]
3.700 × 1.000 [94.0 × 25.40]	3.994 [101.5]	3.095 [78.6]	1.000 [25.40]

†Other sizes and temperature and pressure ratings available on request. Contact your local Schlumberger representative.

slb.com/fiv

Schlumberger