

## MFIV-II

### Mechanically controlled isolation valve

#### APPLICATIONS

- Bidirectional barrier for well control
- Fluid loss control
- Well suspension and temporary abandonment operations
- Completion fluid placement
- Multizone and intelligent completions
- Workover operations
- Openhole and cased hole sand control operations
- Underbalanced perforating

#### BENEFITS

- Enhances well productivity by preventing formation damage and minimizing fluid loss
- Saves rig time and costs by eliminating the need to kill the well for various operations
- Increases safety by providing a downhole barrier against pressure reversals

#### FEATURES

- Ability to function in differential pressure conditions
- Bidirectional-pressure-sealing ball
- Ability to open and close multiple times
- API 19V/ISO 28781 V3 and Q1 qualified; API 19V monogram available<sup>†</sup>

The MFIV-II\* mechanically controlled isolation valve is a bidirectional barrier valve that isolates reservoir fluids in the lower completion. Based on award-winning technology for offshore safety innovation, this versatile valve enables operators to have a high level of confidence in formation isolation. The reliability of MFIV-II valve technology has also extended the valve's use to remedial workovers, where it is used to isolate the formation during operations such as removal and reinstallation of an electric submersible pump or the production tubing.

The sealing ball design is a larger version of the field-proven Schlumberger HPHT drillstem test ball valve. The MFIV-II valve has a higher differential pressure rating than a flapper-type fluid loss prevention device.

Enhanced features provide added flexibility and reliability compared with previous designs. The valve meets and exceeds API 19V/ISO 28781 V3 standards.

#### Wide range of applications

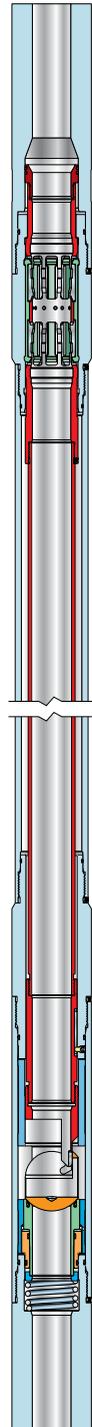
The bidirectional barrier enables operators to transition seamlessly— without intervention— from the lower completion to the upper completion. The MFIV-II valve works with all isolation requirements and applications: intelligent, multi-zone, gravel-pack, frac-pack, and stand-alone screen completions; suspension and temporary abandonment of a well; and remedial workovers.

The valve is suitable for deepwater and other harsh environments, such as those created by underbalanced perforating and openhole and cased hole sand control operations.

#### Ability to open and close multiple times

The MFIV-II valve is opened and closed mechanically with 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 ball closes or opens the valve. 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 MFIV-II valve. The service provides real-time monitoring, dynamic tool control, and verified downhole actuation.



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## Qualification

The MFIV-II valve benefits from a qualification procedure that exceeds the API 19V/ISO 28781 V3 requirements. For example, it is qualified with gas to a zero-bubble leak rate across the ball sealing mechanism from below under specified conditions. This tight acceptance criterion surpasses the requirements that must be satisfied to use the valve as a barrier for well intervention operations and for long-term suspension.

## Optional features

The MFIV-II valve can be designed with extension lengths ranging from 3 ft to 9 ft, the standard being 6 ft.

### MFIV-II Valve Specifications

Size (OD × ID), in [mm] <sup>†</sup>	Differential pressure rating (body), psi [kPa]	Differential pressure rating (ball), psi [kPa]	Max. temperature, degF [degC]
5.500 × 2.940 [139.7 × 74.68]	9,000 [62,053]	6,000 [41,369]	300 [148.9]
7.630 × 3.700 [193.8 × 93.98]	8,000 [55,158]	5,000 [34,474]	300 [148.9]
7.813 × 3.700 [198.5 × 93.98]	10,000 [68,948]	10,000 [68,948]	300 [148.8]
7.380 × 4.065 [187.5 × 103.12]	5,000 [34,474]	3,000 [20,684]	300 [148.9]
7.985 × 4.065 [202.8 × 103.25]	8,500 [58,605]	5,000 [34,474]	300 [148.9]
8.250 × 4.255 [209.6 × 108.08]	11,000 [75,842]	7,500 [51,711]	335 [168.3]
8.240 × 4.256 [209.3 × 108.10]	11,000 [75,842]	9,000 [62,053]	300 [148.9]
8.000 × 4.560 [203.2 × 115.82]	5,000 [34,474]	5,000 [34,474]	300 [148.9]
9.000 × 5.300 [228.6 × 134.62]	5,000 [34,474]	5,000 [34,474]	325 [162.8]

<sup>†</sup>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] <sup>†</sup>	Max. (Collet) OD, in [mm]	Completion Drift ID, in [mm]	ID, in [mm]
2.650 × 1.219 [67.3 × 30.96]	2.946 [74.8]	2.645 [67.2]	1.219 [30.96]
2.940 × 1.270 [74.7 × 32.26]	3.293 [83.6]	2.920 [74.2], 2.935 [74.6]	1.270 [32.26]
3.110 × 1.421 [79.0 × 36.09]	3.404 [86.5]	3.095 [78.6]	1.421 [36.09]
3.700 × 2.250 [94.0 × 57.15]	3.994 [101.5]	3.695 [93.9]	2.250 [57.15]
4.060 × 2.545 [103.1 × 64.64]	4.324 [109.8]	4.053 [103.0]	2.545 [64.64]
4.250 × 2.406 [108.0 × 61.11]	4.864 [123.6]	4.243 [107.8]	2.406 [61.11]
4.560 × 2.465 [115.8 × 62.61]	4.934 [125.3]	4.560 [115.8]	2.465 [62.61]
5.300 × 3.500 [134.6 × 88.90]	5.564 [141.3]	5.295 [134.5]	3.500 [88.90]

<sup>†</sup>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] <sup>†</sup>	Max. (Collet) OD, in [mm]	Completion Drift ID, in [mm]	ID, in [mm]
2.650 × 0.500 [67.3 × 12.70]	2.949 [74.9]	2.310 [58.7]	0.500 [12.70]
2.940 × 0.500 [74.7 × 12.70]	3.244 [82.4]	2.640 [67.1]	0.500 [12.70]
3.110 × 0.500 [79.0 × 12.70]	3.404 [86.5]	2.870 [72.9]	0.500 [12.70]
3.700 × 1.000 [94.0 × 25.40]	3.994 [101.5]	3.095 [78.6]	1.000 [25.40]
4.060 × 0.750 [103.1 × 19.05]	4.324 [109.8]	3.695 [93.9]	0.750 [19.05]
4.250 × 0.750 [108.0 × 19.05]	4.864 [123.6]	3.818 [97.0]	0.750 [19.05]
4.560 × 1.125 [115.8 × 28.57]	4.934 [125.3]	3.993 [101.4]	1.125 [28.57]
5.300 × 2.000 [134.6 × 50.80]	5.594 [142.1]	4.818 [122.4]	2.000 [50.80]

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

[slb.com/fiv](http://slb.com/fiv)

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<sup>†</sup>A small fraction of valves are pending qualification. Contact your local Schlumberger representative for details.  
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