RFID Opti-Barrier Valve

Weatherford's radio frequency identification (RFID)-operated opti-barrier valve (OBV) is a multicycle ball valve that can be remotely opened and closed from the surface or by using a shifting tool on a washpipe. Available with up to 10,000-psi (68.9-MPa) pressure ratings, the OBV is suited to most applications. The assembly is modular, and the ball section can be run without the hydraulic power unit (HPU) where no remote functionality is required. When run with the HPU, the ball valve can be operated remotely.

The HPU section of the assembly is operated by using a unique frequency-modulated pressure signature sent down the tubing from surface, by pumping an RFID tag to deliver the command downhole, or by timer. Remote open or close operations can be repeated for the duration of the battery life.

The International Organization for Standardization (ISO) 28781 V2-qualified OBV can be mechanically operated for the life of the well. During installation, if the tool does not remotely open, the override tool can be deployed. The override tool enables the OBV to function when the batteries within the device are no longer operable, making the OBV ideally suited for many applications and not merely as a formation-saver valve.

One of the most important benefits of this device is that the operating system does not rely on minimum pressures at the tool to operate. The OBV simply needs to recognize a change in pressure and the tool functions, making this robustly constructed valve very debris tolerant.

Applications

The OBV lends itself to the following applications where a large-bore barrier is required:

- As a fluid-loss device, the OBV is run in either a sand-face or intermediate completion and prevents potentially reservoir-damaging fluids from entering the formation. The OBV is a fully testable mechanical barrier against reservoir inflow or outflow, enabling the free change-out of upper well fluids or under balancing, as required, in a controlled environment.

RFID Opti-Barrier Valve

Applications *(continued)*

- When a tag has been attached to the bottom of a tubing-conveyed perforation (TCP) bottomhole assembly (BHA), the OBV can be used as a lubricator valve. The tag opens the ball as the BHA passes the HPU. On retrieval of the BHA, as the tag passes the HPU on the way up the wellbore, the HPU closes the OBV, restoring the bidirectional barrier. Typically, lubricator valves are control-line operated from the surface. The OBV is remotely operated, requiring no additional wellhead/hanger penetrations.
- As a barrier valve, the OBV can be run open below a production packer. At various depths, if required, the ball valve can be closed simply by circulating a tag through the OBV, enabling the completion tubing to be pressure-tested at various depths. When the completion is on depth, a tag can again be circulated to close the ball to test the tubing and provide a barrier against which the production packer can be set. When the OBV is ready to open, the ball is remotely opened from surface by unique pressure signature.

Features, Advantages and Benefits

- Remote interventionless operation eliminates the need for intervention services and crew, improving health, safety, and environmental (HSE) concerns while saving operating costs.
- The OBV can be opened or closed mechanically for the life of the well after battery power has expired, providing long-term operational flexibility.
- Simple, user-friendly, transferable operation provides simple, flexible, programmable operating logic, providing operational efficiency.
- Standard, built-in onboard clean hydraulic reservoir is debris tolerant, providing operational flexibility.
- The OBV is millable to full-bore ID, improving operational efficiency.

Specifications

Size (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Burst and Collapse Rating (psi/*MPa*)	Ball Pressure Rating (psi/*MPa*)	Absolute Pressure Rating (psi/*MPa*)	Temperature (°F/°*C*)	RFID Tag Flow Rate (bpm,*m³/min*)	Recommended Maximum Time to Close (Days)	Recommended Maximum Time to Reopen (Days)
4.50 *114.30*	7.75 *196.90*	3.750 *95.30*	10,000 *69.90*	7,500 *51.70*	15,000 *103.40*	39 to 302 *4 to 150*	3.00 to 10.00 *0.47 to 1.50*	30	90
5.50 *139.70*	8.00 *203.20*	4.625 *117.50*	10,000 *69.90*	7,500 *51.70*	15,000 *103.40*	39 to 302 *4 to 150*	3.00 to 10.00 *0.47 to 1.50*	30	90

Note: Client-specific specification variants are available on request.