Remote-Opening Barrier Valve

Provides an on-demand, multicycle gas-tight seal without mechanical intervention

Applications

- Remote opening/closing of any deep or shallow-set well barriers
- Temporary well barrier for packer setting operations
- Well barrier for temporary well suspension or abandonment
- Remote flow control device for well testing or zonal isolation
- Eliminate requirement for ball-drop devices in deviated and horizontal wells
- Barrier in perforating and stimulation operations
- Liner deployment “toe” barrier

Features and Benefits

- Qualified to API 11D1 V0 up to 10000 psi (68.9 MPa) and capable of opening at up to 6500 psi (44.8 MPa) to provide reliable isolation and actuation in almost any well
- Extensive battery life, suitable for long-term downhole installation of up to 20 months or 1,500 hours while maintaining full functionality and P/T data logging for easy download and analysis upon retrieval
- Provides a remote-controlled solution to open and close well barriers multiple times with no intervention needed
- Reduces number of personnel involved in comparison to deploying conventional barriers, reducing risk and carbon footprint
- Pre-programmed onboard computer provides flexible activation methods to suit any operation with pressure signature detection or timer-based functions for both onshore and offshore
- Saves rig time and associated cost by removing intervention trips during well operations
- Can be pre-installed in the completion tubing prior to running for remote and intervention-less barrier activation
- Primary seal is maintained by a hard-wearing mechanical ball valve which provides a metal-to-metal seal
- Debris-tolerant design with the actuation sleeve located below the valve, in clean fluid, and isolated from debris during long-term suspensions

The Weatherford MROP provides remote control and multi-function capability to well barriers without the need for mechanical intervention.

Weatherford®

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Tool Description

The Weatherford remote-opening barrier valve (ROBV) provides a gas-tight seal that holds pressure from above and below. The ROBV is capable of activating multiple times through a unique pressure-signature detection or timer, eliminating the need for slickline, wireline, or coiled tubing intervention.

The ROBV is designed to be run below a retrievable bridge plug/packer, conventional lock mandrel, or directly onto the tubing string. Within the device itself, a mechanical ball valve which, when closed, acts as the primary pressure seal across the device in accordance with API 11D1. When open, pressure and flow communication is established across the device while no physical intervention access through the valve is possible.

The battery-powered, onboard computer can be pre-programmed prior to deployment to recognize commands. These commands can take several forms such as an applied-pressure signature, a hydrostatic-pressure signature, or a simple timer. Commands can be combined, run in series, or run in parallel to build up the desired operational sequences and allow the device to open and close multiple times as required. Once a command has been recognized by the device, the valve mechanism is either opened or closed. Depending on how the device has been programmed, it will then wait for the next command, automatically move on to its next pre-programmed operation, or complete its functional cycle and shut down.

If the device is exposed to any pressure events which do not match its pre-programmed commands, they will be ignored. This ensures that operations such as packer setting or tubing tests can be performed without risk of the device inadvertently functioning. In addition, naturally occurring pressure events such as a fluctuating reservoir pressure or pressure changes due to temperature can be recognized and ignored. The ROBV monitors and records well pressure and temperature data while in the well which can then be downloaded upon retrieval.

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Specifications

Size	3-1/2 in.
Maximum OD	3.480 in. (88.392 mm)
Minimum ID	1.380 in. (35.052 mm)
Overall length	99.2 in. (2,519.6 mm)
Maximum working pressure	10,000 psi (68.9 MPa)
Maximum equalization pressure*	6,500 psi (44.8 MPa)
Maximum absolute pressure	12,500 psi (86.2 (MPa)
Flow area	1.5 in2 (9.6 cm2)
Maximum flow rate	Up to 11 bpm (1,748 lpm)
Temperature range	32-302°F (0-150°C)
Battery life	Up to 20 months
Upper thread	3.000 in.-8 Stub Acme-2G

*Available on request. Standard applications are limited to 5,000 psi.