

COMPLETION SOLUTIONS | INTELLIGENT COMPLETIONS

eMotion®-LV remotely operated isolation barrier valve

Eliminates interventions during completion deployment

FEATURES

- Remotely operated time-after-time
- Long battery life
- Run open or closed
- Full-bore
- Bi-directional sealing mechanism

BENEFITS

- Eliminates multiple wireline runs during completion placement operations - saving time, money and helping reduce risk
- Operational for at least 10 months -for use in temporary abandonment operations or as a flow control device
- Provides flexible deployment options and well control
- Provides maximum production or injection flow rates
- Provides a fully testable downhole barrier



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Overview

The eMotion®-LV valve is a computer-controlled, isolation barrier valve that can be repeatedly opened or closed by remote command. It is permanently deployed as part of the tubing where it is used as a full-bore, testable barrier during completion deployment operations.

It is actuated without the need for any surface control lines (saving tubing hanger penetrations) or interventions. Each time it is operated, an intervention is eliminated from the operation, dramatically reducing rig-time, costs and associated risks.

How it works

The eMotion-LV valve consists of two existing devices: the eMotion® downhole control unit and the LV isolation barrier valve. The eMotion unit is directly connected to the hydraulic ports on the LV valve, providing surface communication and the motive force to operate it; while the LV valve provides a field-proven barrier rated up to 10,000 psi.

The eMotion®-LV valve has integrated pressure and temperature sensors, which it uses to monitor the well conditions and is programmed to either open or close whenever a specified condition (known as a trigger) is detected.

The triggers use a variety of well parameters including ambient pressure, temperature, time or surface applied pressure. Each time a trigger condition is detected, the eMotion-LV valve will either open or close as per its instructions. This process can be repeated time-and-time again without any form of intervention.

Controlling the eMotion-LV valve remotely

By applying a defined pressure for a defined time at surface, the operator can activate the pressure window trigger. This allows direct communication to the eMotion-LV valve so it can be remotely operated. For example, applying between 1,000 - 1,500 psi for 10 minutes could instruct it to open.

Any pressure applied outside the defined values will be ignored by the eMotion-LV valve. This means that pressure can be applied to the tubing (for tubing integrity tests or packer setting, etc.) without any risk of inadvertent activation.

Onboard data analysis allows the eMotion-LV valve to distinguish its own commands from other external factors such as naturally fluctuating hydrostatic or reservoir pressure. This enables the valve to behave as planned, even if the downhole conditions change unexpectedly.

eMotion-LV valve autonomous operation

A range of other triggers consisting of ambient well pressure, ambient well temperature and a timer are also available. These triggers are used to provide a pre-programmed sequence for the eMotion-LV valve to follow without any input from the surface.

Each trigger can be used independently or combined to build more elaborate instructions. For example, the eMotion-LV valve could be set to close when it detects pressure below 2,000 psi, but only after 100 days downhole.

In addition, the pressure window trigger can be used to manually cancel or override any trigger or permanently lock the eMotion-LV valve in its current position.

Application

The eMotion-LV valve is particularly suited for use during completion deployment. To gain the greatest benefit and flexibility, two eMotion-LV valves are used.

The first is positioned in the lowest part of the completion below the production packer. It is deployed in the open position allowing the completion to self-fill and for well fluids to be circulated. It can be instructed to close at any time using one of the triggers. When closed, the tubing can be pressure tested and the production packer hydraulically set against it.

The second eMotion-LV valve is positioned just below the tubing hanger. This too is deployed in the open position and can be closed using any of the triggers, although the pressure window trigger (applying pressure at surface) provides the greatest flexibility. Once the upper eMotion-LV valve is closed, it provides a second testable barrier so the BOP can be removed and the wellhead installed and safely tested.

Both eMotion-LV valves can subsequently be remotely reopened, even without the rig on location. They are permanently left downhole in the open position, with the full-bore providing the maximum flow rates for production or injection.

Using the eMotion-LV valves instead of conventional barriers allows the entire operation to be carried out without any form of intervention - providing substantial cost savings and helping to reduce risk.

DATA SHEET

SPECIFICATIONS

Available sizes (to suit thread size) 3.5" 4.5" 5.5"

Maximum differential across ball 5,000 psi (345 bar)

Temperature range 4 - 140°C (39 - 284°F)

Maximum differential pressure while opening 2,000 psi (138 bar)

The eMotion-LV valve is available in a range of sizes and specifications. Due to the high number of design variables, the information given above is for guidance only.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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