

COMPLETION SOLUTIONS | INTELLIGENT COMPLETIONS

eMotion[®] - remotely operated downhole control unit

Provides interventionless remote control of an integrated slave valve

FEATURES

- Downhole pump
- Remotely operated time-after-time
- Long battery life
- No dedicated personnel required

BENEFITS

- Provides hydraulic power to operate a slave device by remote control - without the need for surface control lines or any form of intervention
- Removes multiple wireline runs from operations – saving time, money and helping remove risk
- Operational for at least 10 months - for use in temporary abandonment operations or connected to a flow control valve
- Reduces the number of operations personnel – saving costs and helping reduce risk



Overview

The eMotion[®] unit is a computer-controlled, downhole hydraulic power unit. When connected to our LV isolation barrier valves or HS circulating valves, the resulting eRED[®]-LV and eRED[®]-HS valves are then permanently deployed as part of the completion.

The eMotion unit allows these "slave" valves to be operated by remote command without the need for any surface control lines (and associated tubing hanger penetrations) or interventions, saving time, costs and helping to reduce risk.

How the eMotion unit works

The eMotion unit is connected directly to the hydraulic open and close ports on the slave valve. It has integrated pressure and temperature sensors which it uses to monitor the well conditions and is programmed to pump hydraulic fluid down the relevant control line to either open or close the valve whenever a specific well 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 unit will react by either opening or closing the slave valve as per its instructions. This process can be repeated time-and-time again without any form of intervention.

Controlling the eMotion unit remotely

No surface connections or interventions are required to operate or communicate with the eMotion® unit. Instead, 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 unit so it can be remotely operated. For example, applying between 1,000 - 1,500 psi for 10 minutes could instruct it to open the slave valve. Any pressure applied outside the defined values will be ignored by the eMotion unit. This means that pressure can be applied to the tubing (for tubing integrity tests or packer setting, etc.) without risk of inadvertent activation.

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

eMotion unit 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 unit to follow without any input from the surface.

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

Applications

In principle, interventionless control of any hydraulically operated tool can be achieved remotely with the integration of eMotion unit. The application of the eMotion unit therefore varies depending on the type of slave valve that is fitted and its planned position within the well.

For example, the eRED®-LV valve is particularly suited to completion deployment operations. Here, the valve is run-in-hole in the open position allowing the completion to self-fill and for well fluids to be circulated. At any time the valve can be remotely closed by instructing the eMotion to do so from surface. With the valve closed, the tubing can be pressure tested and the production packer hydraulically set against it. The valve can be reopened at any time by sending the appropriate command to the eMotion unit.

The eRED®-HS valve provides a method of circulating the well fluids above a set packer, again without the need for any interventions.

In all cases, the eMotion unit can be operated without any surface control lines and can reduce (or in some cases eliminate) the need for repeated intervention operations, saving on rig-time and the associated costs and helping to reduce risk.



Close-up of the eMotion® USB programming port

SPECIFICATIONS

Available sizes (to suit thread size)	3.5", 4.5", 5.5"
Outside diameter	8.200" (208.28 mm)
Inside diameter	4.562" (115.87 mm)
Overall length	109.55" (2782 mm)
Max output pressure (supply to slave valve)	5,000 psi (345 bar)
Temperature range	4 - 140°C (39 - 284°F)

The eMotion® unit 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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