

## COMPLETION SOLUTIONS | INTELLIGENT COMPLETIONS

# Direct hydraulics downhole control system

Remotely actuate downhole flow control devices using direct hydraulic control lines from surface

## FEATURES

- Can be used to control all Halliburton hydraulic flow control equipment
- Provides all-hydraulic control
- Networking option reduces number of control lines required
- Operates as a closed-loop system
- Requires no setting depth

## BENEFITS

- Control reservoir intervals without costly intervention
- Helps eliminate dependence on mechanical or pneumatic spring return mechanism to open and close ICV
- Can be used in onshore, platform, or subsea applications

## Overview

The Direct Hydraulics downhole control system, uses direct hydraulic control lines from the surface to remotely actuate downhole flow control devices such as interval control valves (ICVs). ROC™ permanent downhole gauges and Venturi flowmeters and densitometers can also be used in conjunction with the Direct Hydraulics system for measuring downhole pressure, temperature and flow rate.

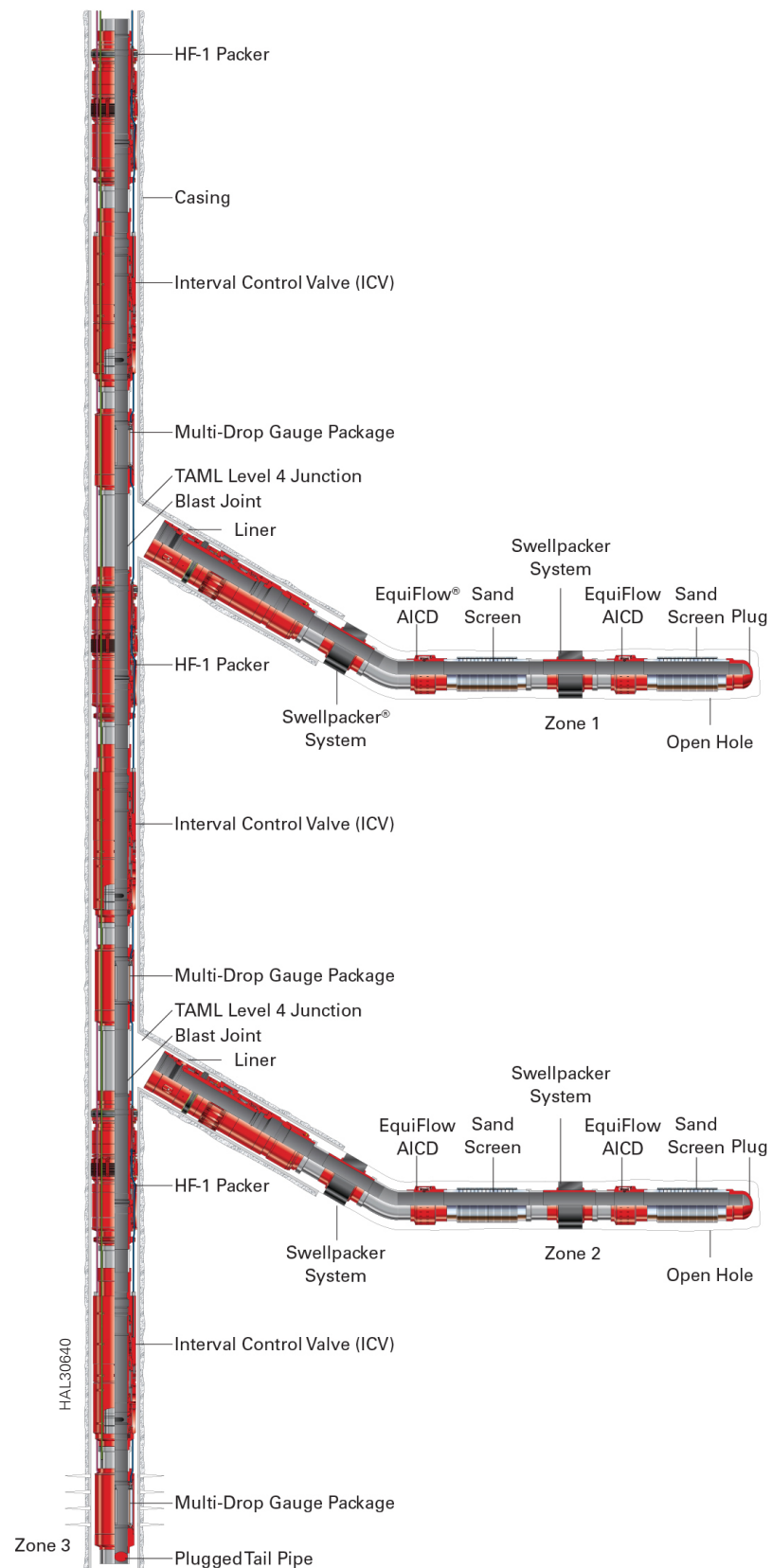
The Direct Hydraulics system provides on/off or variable control of flow into or out of reservoir intervals, and can be used in onshore, platform, or subsea applications.

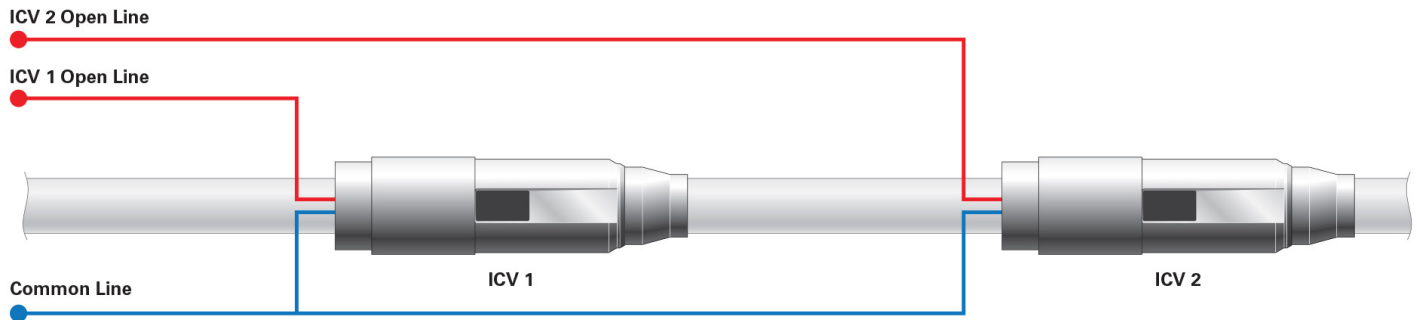
## How direct hydraulics systems work

All Halliburton intelligent hydraulic flow control equipment can be controlled by the Direct Hydraulics system, bringing simple and reliable zonal control to even the most complex intelligent well.

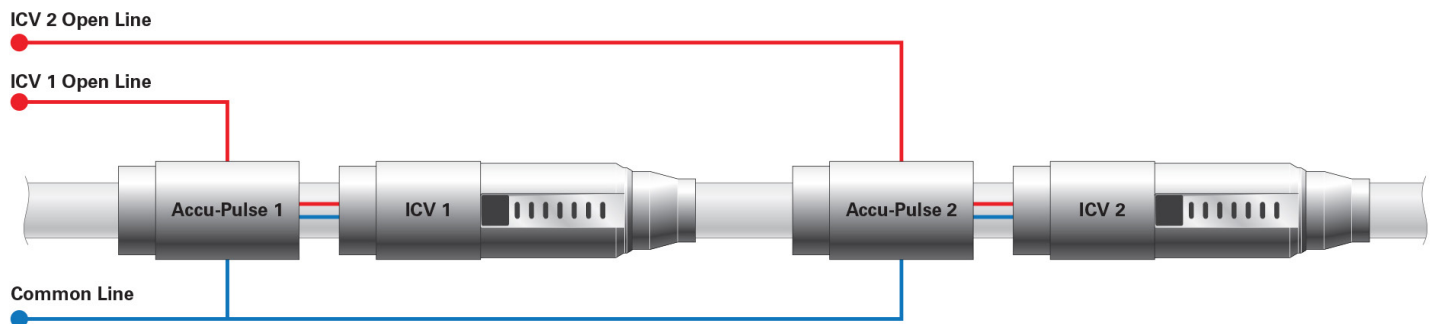
A typical Direct Hydraulics system includes an ICV, an Accu-Pulse™ hydraulic positioning module, and a zonal isolation packer, such as the HF-1 packer. For control of a single ICV, two control lines are run from surface with one attached to the open side of the piston and the other attached to the close side. Pressure applied to one line, rather than the other, drives the piston to the corresponding position. Because the piston is rigidly attached to the ICV opening mechanism, piston movement operates the valve. This feature can dramatically improve the ability to shift a sleeve that is stuck due to scale buildup.







Direct hydraulics with on/off valves



Direct hydraulics with multi-position valves

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