LFV

Lockable Float Valve

JOIDES Resolution Science Operator

Scientific Application

The Lockable Float Valve (LFV) is a flapper-type valve used in the Advanced Piston Corer/Extended Core Barrel (APC/XCB) Bottom-Hole assembly (BHA) when logging is anticipated following coring. This tool allows the crew to continue to core in the same hole or move to a new hole after logging without tripping the pipe; thus, more cruise time is available to acquire core.

The LFV is located just above the core bit and seals the throat (flapper flips up) of the BHA when not coring or logging to prevent or reduce backflow (U-tubing) of mud, sand, and drill cutting debris into the bore of the BHA. The backflow could prevent the Inner Core Barrel from landing properly, plug the bottom of the drill string, or contaminate the core.

The LFV showing the flapper in the locked-open position.

Operation

During coring, the core barrel pushes the flapper valve open and extends down through. During logging, the LFV flapper is forced down and latched open by the logging tools to deploy the tools through the APC/XCB BHA and bit without releasing the bit. This leaves an unobstructed bore. The LFV is held open by a latch until the logging tools are retrieved, at which time the latch releases and the flapper closes. The LFV prevents entrapment of the logging tool and wireline, which can happen when using a standard spring-loaded (non-latching) flapper valve. The LFV can be used with the Rotary Core Barrel (RCB) BHA, but a more economical disposable spring-loaded flapper valve is commonly used instead because the RCB bit has to be released to log the hole (the bit ID is too small for the logging tool to pass through).

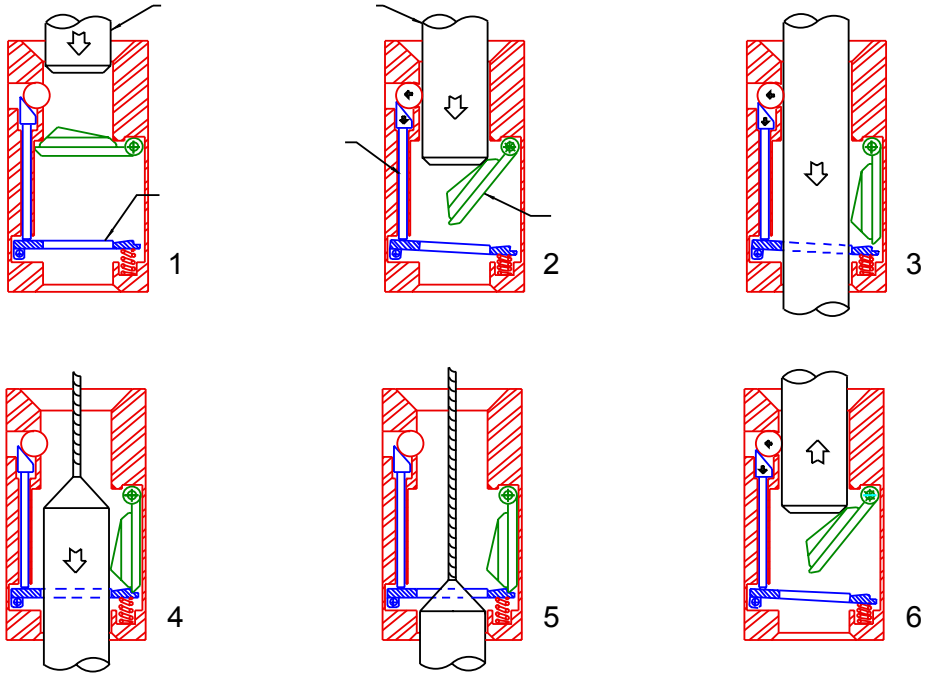
Features

Compatibility

The LFV can be used with all tools that are compatible with the APC/XCB BHA (i.e., tool diameter is less than 3.75 in.). The LFV allows a float valve to still be run in the APC/XCB BHA when logging is planned.

Time Savings

The LFV allows continued coring after logging. This can save a pipe round trip when multiple APC/XCB holes are planned for a site.



The operational steps of the LFV.

Specifications

Minimum Bore Diameter

3.80 in.

Outside Diameter

6.985 in.

Length:

15 $^{11}/_{16}$ in.

Operating Range

Formation

All formation types

Depth Range

All depths

Limitations

The LFV is activated by a 3.70 in. diameter x 24 in. long profile (a short tool will not activate the LFV). Not all logging tools have this activation profile so the preferred method is to attach an aluminum Go-Devil to actuate the LFV. This Go-Devil can also be dropped; however, this will leave aluminum junk in the hole, which must be drilled if further coring is planned.