

## OVERVIEW

The VantagePRO™ multi-stage fracturing system can perform a nearly unlimited number of pinpoint fracture stimulations quickly and cost-effectively. The VantagePRO™ system is composed of multiple mechanically shifted re-closable valves run in the completion string, that are actuated using a specially designed coiled tubing bottomhole assembly (BHA) that remains in place for zonal isolation. The stimulation treatment is then pumped down either the liner/coiled tubing annulus, or the coiled tubing.

The VantagePRO™ BHA consists of the ACTS actuating device, the ACTS compression packer, the ACTS abrasive jet perforator and an optional mechanical casing collar locator (MCCL) and memory gauge packages. Since the BHA always has the ability to locate valves downhole (whether open or closed), operators often choose not to run the MCCL. The abrasive jet perforator is run as a contingency cutting device and can perform multiple perforations as required, and is used to re-establish circulation if screenouts during the frac were to occur.



*VantagePRO™ re-closable valve*

## HOW IT WORKS

The VantagePRO™ actuating device contains mechanical dogs which engage with an internal piston of the downhole valves to mechanically shift the valve open or closed. The actuating tool is engineered to automatically engage and open or close a valve and automatically disengage after the valve is functioned. The actuating tool can pass through a valve without shifting the valve by initiating coiled tubing circulation, which retracts the actuating tool's shifting keys. This functionality allows for efficient operations while performing the fracture stimulation and minimizing time between stages. The tool has also been specifically designed to function reliably in severe proppant-laden environments, incorporating radial jets which clean the immediate exterior area of the tool, as well as the geometries of the valves.

## Applications

- Horizontal Multi-stage Completions
- Conventional and Unconventional Reservoirs
- Open Hole and Cemented Completions
- Hybrid Completions
- Frac down the coil or annulus

## VantagePRO™ BHA Features and Benefits

- Designed to function properly in severe proppant-laden environments incorporating radial self-cleaning jets
- Ability to depth correlate to valves whether open or closed
- Single tool configuration with ability to frac in any sequence
- Quick recovery from screenouts via the coiled tubing and abrasive perforator
- High rate, High Pressure Fracs

## VantagePRO™ Re-closable Valve Features and Benefits

- Compact Valve Design – no pup joints and can be torqued through
- Shift-up to open design removes risk of accidental opening during cementing operation and removes the need for a toe port on bottom stage
- Reliable resealability upon reclosing through use of non-elastomeric V-seal stacks
- Full bore system requires no milling

## VantagePRO™ Multi-stage Fracturing System

The VantagePRO™ re-closable valves are delivered to the wellsite where they are run as part of the completion string. The compact design of the valve does not require pup joints to make up and permits torque to be transferred through, saving valuable time during installation over competing systems. Isolation between the valves is either accomplished by using open-hole packers or cementing the liner string in place. The valve's internal components have been specifically designed to function reliably after cased hole cementing operations and incorporate a uniquely engineered cement-inhibiting grease, eliminating any concerns of valve lock-up.

Once the coiled tubing and stimulation equipment is in place, the valves are opened and high flow circumferential ports permit continuous communication to the reservoir for high pressure stimulation operations and production. To ensure reliable sealing performance in severe wellbore environments after multiple shift open and close cycles, the valve incorporates durable non-elastomeric v-seals. The VantagePRO™ valves are also designed to match the performance properties of the host casing and have no ID restrictions, permitting full-bore access without the need for milling operations.

The VantagePRO™ system allows for the operator to have maximum flexibility for their application. Regardless whether the operator chooses to leave a valve open after stimulation or to immediately close a valve to allow for formation healing, no additional tools for the BHA are required. The functionality of the system allows the operator to perform the fracture stimulation in any sequence.

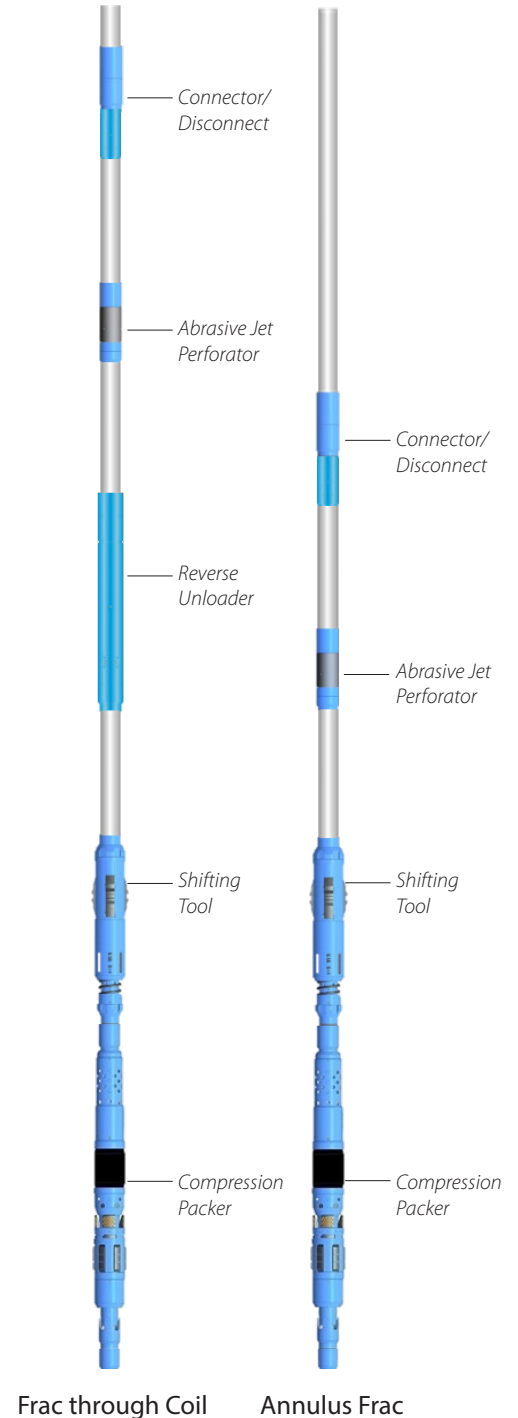
### One tool, one configuration, maximum flexibility.



### SYSTEM SPECIFICATIONS

Casing Size		Casing Weight	
in.	mm	lb/ft	kg/m
4 ½	114.30	11.60-13.50	17.26-20.09
4 ½	114.30	15.10	22.47
5 ½	139.70	15.50-17.00	23.07-25.50

Compression Packer rated to 6,000 psi (41.37 MPa) or 10,000 psi (68.95 MPa) differential pressure.



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