



SteadyState™ Continuous Flow System

The Weatherford SteadyState continuous flow system (CFS) improves drilling performance and safety by maintaining constant circulation of drilling fluid to the wellbore while adding or removing drillpipe stands. The technology enables greater control of downhole pressures and minimizes the settling of cuttings around the bottomhole assembly. SteadyState CFS significantly reduces the likelihood of kicks, mud losses, and stuck-pipe events.



The SteadyState CFS ensures constant bottomhole pressure (CBHP) throughout the drilling process, which is critical when operating within narrow drilling margins. The technique reduces nonproductive time (NPT) and enables the use of fewer and deeper casing strings in narrow pore-pressure and fracture-gradient windows. By maintaining steady drilling fluid circulation, the SteadyState CFS mitigates fluctuations in equivalent circulation densities (ECD) and downhole pressure spikes, which enables operators to achieve CBHP and continuous pressure along the entire wellbore.



Applications

- Offshore/deepwater
- HTHP
- Exploration
- Extended reach drilling
- Tight pore-pressure/fracture-gradient windows
- Surge and swab
- Managed pressure drilling (MPD)
- Mature fields
- Liner drilling

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Features, Advantages, and Benefits

- SteadyState CFS technology mitigates hazards of wellbore pressure drilling even while mud pumps are cycled off and on during connections. Unregulated, these cycles can cause ECD fluctuations and downhole pressure spikes.
- The system ensures constant bottomhole pressure. This variant of MPD can save expensive downtime, reduce safety issues, and enable safe drilling in otherwise undrillable wells.
- The automated controls allow flow switching without rig-floor personnel, which increases operational safety.
- Implementation of the SteadyState CFS is simple and uses a minimal rig-floor footprint.
- The high temperature and pressure ratings of the SteadyState CFS enable operation in challenging wells.
- The SteadyState CFS mitigates wellbore ballooning and breathing.
- The system decreases nonproductive time by providing continuous circulation, which improves hole cleaning and maintains ECD.

Specifications

CONTINUOUS FLOW SUB								
Drillpipe Size (in.)	Circulating Sub Length (in., mm)	Tool OD (in., mm)	Tool ID (in., mm)	Maximum Flow Rate (gal/min, L/min)	Maximum Flow Rate Through Side Port (gal/min, L/min)	Temperature Rating (°F, °C)	Working Pressure Rating (psi, MPa)	Standard Connection Type
6 5/8	48.0 1,219.2	8.5 215.9	4.00 101.6	2,000 7,570.8	1,200 4,542.5	350 176.7	7,500 51.7	6-5/8 FH
5 7/8	46.2 1,173.5	7.0 177.8	2.75 69.9	1,500 5678.1	1,000 3,785.4	350 176.7	7,500 51.7	XT57
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CFS subs are flexible in design. Connections can be scaled to client specifications.