

AgitatorZP System

Superior reliability. Maximum drilling performance. Zero pressure.

Downhole Technologies



Zero Pressure is the new standard.

The Agitator™ZP System offers the same friction reduction benefits as our premium Agitator systems, with ZERO pressure drop across the tool.

It is specifically designed for premium applications where standpipe pressure (SPP) limitations are a challenge. NOV's new zero-pressure Agitator technology maximizes weight transfer and improves directional control, particularly in long lateral sections where other friction reduction technologies simply cannot be run due to pressure or flow rate limitations.

This innovative zero-pressure technology provides necessary friction reduction in drilling applications with high SPP demands or in applications requiring dual friction reduction tools to reach complex targets while maintaining the highest rates of penetration (ROP). The new AgitatorZP System is the optimal technology to improve drilling performance in operations where system pressure is critical, such as smaller pump capacity rigs or those running smaller drill pipe sizes.

Benefits

- Greater flexibility in extended-reach operations, 2+ mile laterals, and dual friction reduction tool applications
- Maximize motor differential in long laterals where flow rates are reduced due to pressure limitations
- Maximize weight transfer in the most demanding applications
- Improve drilling efficiency when rotating and sliding
- Reduce stick-slip and torsional vibration with rotary steerable system bottomhole assemblies
- Maintain ROP in extended reach/lateral sections
- Drill farther and drill faster
- Improved MWD signal decoding compared to competitors

Applications

- 2+ mile lateral sections
- Dual Agitator System strings
- SPP-constrained applications
- Rigs with no available SPP for Agitators
- Applications with a high risk of loss circulation

Technical Data

OD	5 1/4 in.	6 1/2 in.
Length	23 ft	30 ft
Weight	1,267 lb	2,693 lb
Flow rate	200 - 450 gpm	450 - 750 gpm
Pressure drop	zero	zero
Drilling fluid loss to annulus*	6-7%	5-7%
Temperature rating	320° F	320° F
Operating frequency	8-12 Hz	8-12 Hz
Maximum opening travel	2.5 in.	2.4 in.
Maximum closing travel	2 in.	2.8 in.
Tensile yield	395,000 lb	790,000 lb
Torsional yield	31,500 ft-lb	59,000 ft-lb
Connections	XT39, XT43, 4" FH, Delta™ 425, GPDS40, GPDS42, CET40, CET43	4 1/2" IF, XT50, XT57, Delta494, Delta527, Delta544, GPDS50, GPDS55, CET50, CET54, PTEch55, TSDS50, HLST54

*The AgitatorZP system will release 5-7% of the drilling fluid to the annulus.



Best performance for your well. Best performance for the environment.

At zero pressure drop, the AgitatorZP reduces fuel and energy consumption on the rig, contributing to a cleaner environment and lower carbon footprint.



The AgitatorZP System offers the best friction reduction benefits with ZERO added pressure drop.

- Generator power requirement reduced by 5-6%*
- 6-7 gal/hr of diesel savings**

*@standard operational flow rate & 0 psi pressure drop
 **@100% generator load

The above figures are for the application of 5.25" friction reduction tool set up at 500 psi pressure drop, and a flow rate of 360 gpm. Deviations from the above are expected for different applications with different tool sizes and parameters.

CO2 emissions / Gallon of diesel = 10,180 g

Source: Federal Register (2010). Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule, page 25,330 (PDF) (407 pp, 5.7MB, About PDF).

IPCC (2006). 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2 (Energy). Intergovernmental Panel on Climate Change, Geneva, Switzerland.

AgitatorZP Gallons of Diesel/hr saved	g CO2 Emission/Gal	AgitatorZP Total g of CO2 Emissions/hr Saved	Agitator ZP Total Tonnes of CO2 Emissions Saved on 6 day run
7	10,180	71,260	10 Tonnes

In the preamble to the joint EPA/Department of Transportation rule making on May 7, 2010 that established the initial National Program fuel economy standards for model years 2012-2016, the agencies stated that they had agreed to use a common conversion factor of 10,180 grams of CO2 emissions per gallon of diesel consumed (Federal Register 2010). For reference, to obtain the number of grams of CO2 emitted per gallon of diesel combusted, the heat content of the fuel per gallon can be multiplied by the kg CO2 per heat content of the fuel.

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