Benefits - Agitator and AgitatorPLUS Systems

- Increases sliding and rotary ROP
- Increases the length for extended reach drilling
- Reduces downhole friction and stick-slip
- Improves weight transfer and toolface control
- Prevents weight stacking and drillstring buckling
- Extends bit life

The compression and friction forces that affect your drillstring downhole limit weight-on-bit, reduce ROP, and can cause premature bit failure.

With the largest fleet and the most experience, our Agitator™ and Agitator™PLUS systems have provided unparalleled friction reduction through axial oscillation. These solutions have been proven by operators around the world in nearly 50,000 runs, and we provide support at 45 global service facilities. With an Agitator™ system in your drillstring, you can drill faster and drill farther.

Proven Applications
- Directional drilling
- Wellbore intervention
- Fishing operations

Agitator™ System

The Agitator system reduces friction and improves weight transfer by gently oscillating your drillstring. It also reduces fluctuations in weight transfer to the bit. The result is enhanced toolface control, reduced stick-slip, extended reach, and improved efficiency in all modes of drilling, including rotary applications.

Since the oscillations are low magnitude and only affect the longitudinal axes of your drillstring, the Agitator system does not cause the harmful lateral vibrations that can damage downhole tools. The Agitator system is compatible with all MWD systems.

Proven Applications
- Operations with limited pump capacity
- Extended reach drilling
- Tortuous well profile

Agitator™PLUS System

The AgitatorPLUS system combines our Agitator oscillation tool with a special low pressure shock tool. Optimized to function as a unified system, we have configured the AgitatorPLUS system with an overall pressure drop of 300–400 psi. This allows you to maintain higher flow rates, run the AgitatorPLUS system on rigs with limited pump pressure capacity, and run two Agitator systems simultaneously in your BHA.

Proven Applications
- Operations with limited pump capacity
- Extended reach drilling
- Tortuous well profile
Unconventional Essential

- **Agitator™ PLUS system** increased sliding ROP by 18%.
  - Location: Russia

- **Agitator™ PLUS system** successfully drilled 7,437 ft curve and lateral with an overall ROP of 143 ft/hr.
  - Location: Eagle Ford

- **Agitator™ system** increased ROP by 57% and up to 48% less NPT.
  - Location: Venezuela

- **Agitator™ system** enabled drilling twice as far and twice as fast, saving four days.
  - Location: Africa

- **Agitator™ PLUS system** retrieved 253 m of tubing in 45 minutes without having to jar, minimizing casing damage.
  - Location: Norway

- **Agitator™ PLUS system** helped mitigate stick-slip to extend bit and motor life with 152% faster ROP.
  - Location: China

- **Agitator™ system** and **Bowen™ super fishing jar** freed a 7,348 ft RSS BHA that had been stuck for four days.
  - Location: Saudi Arabia

- **Agitator™ system** achieved equal performance as an RSS tool in horizontal drilling.
  - Location: Argentina

- **Agitator™ PLUS system** combined with a FluidHammer tool outperforms a previous run with RSS, increasing ROP by 222%.
  - Location: Mexico

- **Agitator™ PLUS system** drilled lateral with RSS 16% faster than RSS alone and 45% faster than motor alone.
  - Location: Alaska

- **Agitator™ PLUS system** drilled an entire curve and lateral in one run, saving 20.5 hours.
  - Location: Marcellus

- **Agitator™ system** and **Hammer** saved the customer $12.8k in the lateral section by increasing the sliding ROP by 22%, and total ROP by 25%.
  - Location: Canada
Technical Specifications

**Agitator™ System**

<table>
<thead>
<tr>
<th>Tool Size (OD)</th>
<th>4 3/4 in</th>
<th>5 in</th>
<th>6 1/2 in (High Flow)</th>
<th>6 3/4 in (High Flow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>22.7 ft (LPST)*</td>
<td>23.9 ft (LPST)*</td>
<td>28.8 ft (LPST)*</td>
<td>25.8 ft (LPST)*</td>
</tr>
<tr>
<td>Weight</td>
<td>760 lbs</td>
<td>850 lbs</td>
<td>1,850 lbs</td>
<td>2,100 lbs</td>
</tr>
<tr>
<td>Recommended Flow range</td>
<td>150-270 gpm</td>
<td>150-270 gpm</td>
<td>375-475 gpm</td>
<td>400-600 gpm</td>
</tr>
<tr>
<td>Operating Frequency</td>
<td>18-19 Hz @ 250 gpm</td>
<td>18-19 Hz @ 250 gpm</td>
<td>15 Hz @ 400 gpm</td>
<td>16-17 Hz @ 500 gpm</td>
</tr>
<tr>
<td>Max Pull</td>
<td>260,000 lbs</td>
<td>500,000 lbs</td>
<td>570,000 lbs</td>
<td>570,000 lbs</td>
</tr>
<tr>
<td>Connections</td>
<td>3.5 in IF pin/box, 4 in GRANT PRIDECO, XT39 pin/box</td>
<td>4.5 in XH, 4 in IF pin/box, NC-46 pin/box</td>
<td>4.5 in IF pin/box</td>
<td>6.625 in REG pin/box, NC-56 pin/box</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tool Size (OD)</th>
<th>8 in</th>
<th>9 5/8 in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>10.25 ft / 15.7 ft (ST)*</td>
<td>11.5 ft / 20 ft (ST)*</td>
</tr>
<tr>
<td>Weight</td>
<td>240 lbs / 340 lbs (ST)*</td>
<td>310 lbs / 690 lbs (ST)*</td>
</tr>
<tr>
<td>Recommended Flow range</td>
<td>90-140 gpm</td>
<td>150-270 gpm</td>
</tr>
<tr>
<td>Operating Frequency</td>
<td>26 Hz @ 120 gpm</td>
<td>18-19 Hz @ 250 gpm</td>
</tr>
<tr>
<td>Max Pull</td>
<td>250,000 lb / 195,000 lbs (ST)*</td>
<td>260,000 lbs / 300,000 lbs (ST)*</td>
</tr>
<tr>
<td>Connections</td>
<td>2.375 in IF, 2.875 in IF, 2.875 in AMOH, 2.875 in Reg pin/box</td>
<td>3.5 in IF pin/box, 4 in GRANT PRIDECO, XT39 pin/box</td>
</tr>
</tbody>
</table>

Regardless of what they say, no one else has an **Agitator™ System**

With the most experience and more than 150 locations worldwide, we deliver the highest quality products, equipment, and support to meet the needs of your operation.

Each Agitator system from NOV includes tool and engineering support specific to your job requirements, as well as continuous monitoring and improvements. Everything we do is geared toward providing reliability and improving the efficiency of your operation.

When our solutions arrive at your drill site, we want to deliver performance - so you can.