VersaFlex® Breech Lock System

REACH TOTAL DEPTH IN EXTENDED-REACH AND LONG HORIZONTAL COMPLETIONS

OVERVIEW

When liner strings have to travel through tortuous well paths, including sudden elevation drops or azimuthal swings, or in short radius horizontal wells, extreme compressive force is often required for liner deployment. The VersaFlex® Breech Lock system offers an unparalleled unique design to increase the compressive load capability of the running tool. This allows operators to reach total well depth, particularly in highly deviated or long openhole horizontal wells and extended-reach drilling (ERD) wells. The system also addresses concerns associated with deployment of liner strings made up of multiple stimulation components. Excessive loads on the liner hanger are eliminated and are directed to the liner threads instead to minimize risks during liner hanger deployment and setting operations.
HOW IT WORKS
The VersaFlex® Breech Lock system utilizes the same proven running tool design as its parent VersaFlex system and with the same unmatched reliable set-and-forget redundant seals. The Breech Lock running tool works in tandem with the VersaFlex expandable liner hanger (ELH) to support liner deployment with rotational capabilities. As an integral hanger/packer system with no moving parts, this helps eliminate costly tool failures associated with conventional liner hangers. The VersaFlex Breech Lock system provides a competent gas-tight seal—without cement—on setting at high angles as compressive loads are not required to activate, set, or seal the liner-top packer. Prior to release, its rotation and reciprocation capability allows for the best possible cement placement and bond when required.

APPLICATIONS
» Cemented liners
» Unconventional reservoirs utilizing frac sleeves and isolation devices
» Multilateral liners
» Drop-off liners

FEATURES AND BENEFITS

**Breech Lock Running Tool**
» Multiple applications
» Rotational and reciprocation (deployment and cementing)
» Up to five times the compressive load capacity of a standard VersaFlex ELH hanger and tool system

**Breech Lock Hanger**
» Gas-tight seal
» Redundant sealing areas
» Immediate liner-top integrity test
» Withstands high-circulating rates
  • No external moving parts
  • Sets in any casing hardness

CAPEX
» Reduces rig time
» Eliminates remediation

### VersaFlex® Breech Lock System Specifications

<table>
<thead>
<tr>
<th>Breech Lock Running Tool</th>
<th>Set Type</th>
<th>Body Profile</th>
<th>Liner Size (in.)</th>
<th>Hanger Size (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Breech Lock (Pile Driver)</td>
<td>Ball</td>
<td>VersaFlex Standard</td>
<td>4 1/2; 5</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>VersaFlex Standard</td>
<td>5 1/2</td>
<td>7</td>
</tr>
<tr>
<td>Adjustable Pressure Set Breech Lock</td>
<td>Ball</td>
<td>VersaFlex Standard</td>
<td>4 1/2; 5</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>VersaStim®</td>
<td>4 1/2; 5</td>
<td>7</td>
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<td></td>
<td></td>
<td>SelectFlex®</td>
<td>4 1/2; 5</td>
<td>7</td>
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<tr>
<td>High-Torque Breech Lock</td>
<td>Flapper or Ball</td>
<td>VersaFlex Standard / High-Torque</td>
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<td></td>
<td>VersaFlex Drop-off</td>
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<td>VersaStim</td>
<td>7; 7 5/8</td>
<td>9 5/8; 9 7/8</td>
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