Shifting Tools for RapidShift® Sleeve Systems

OVERVIEW
RapidShift® stimulation and production sleeve systems allow selective multi-zone stimulation treatment through the production string – cemented or open hole. This versatile sleeve can be operated by either a surface ball-drop system for increased completion efficiency or by one of two hydraulic shifting tool options – RapidShift Hydraulic or High-Expansion shifting tools.

Run as part of a bottomhole assembly, shifting tools are operated by creating differential pressure in the workstring to allow the shifting keys to expand outward. The workstring is then moved up or down to locate the sleeve shifting profile. Depending on the shifting direction of the targeted RapidShift sleeve, additional pull or slack-off force is applied to shift the sleeve to the open or closed position.

RapidShift sleeves are available with a Halliburton proprietary profile or a industry standard “B” type profile. Our hydraulic-shifting tool can handle both by just changing the shifting keys. Selective keys are available that will not auto-release in the event that over-push/pull indication is desired.

RAPIDSHIFT® HYDRAULIC SHIFTING TOOL
The hydraulic shifting tool is used to manipulate the inner sleeve of a RapidShift sleeve system, allowing the sleeves to be either open or closed before, after, or during stimulation. The shifting tool features bi-directional auto-release shifting keys and is designed to be deployed on either coiled tubing or jointed pipe.

FEATURES
» Bi-directional keys
» Auto-release mechanism
» Low activation pressure
» Common connections
» Sandy environment designs available

BENEFITS
» Simple and reliable deployment and operation
» Positive indication of full sleeve shift (open or closed)
» Selective testing, stimulation, production and water shutoff with the RapidShift sleeve system

RapidShift® Hydraulic Shifting Tool Specifications

<table>
<thead>
<tr>
<th>Total Size in.</th>
<th>Part Number</th>
<th>Max Tool OD with keys Retracted in. (mm)</th>
<th>Max Tool OD with keys Expanded in. (mm)</th>
<th>Top Thread in.</th>
<th>Maximum Temperature °F (°C)</th>
<th>Minimum Key Expansion Pressure psi (MPa)</th>
<th>Maximum Operating Pressure psi (MPa)</th>
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<td>3.5</td>
<td>102388750</td>
<td>2.67 (67.82)</td>
<td>3.201 (81.31)</td>
<td>1 1/2 AMMT</td>
<td>350 (177)</td>
<td>600 (4.14)</td>
<td>10,000 (68.95)</td>
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<td>3.61 (91.69)</td>
<td>4.158 (105.61)</td>
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<td>350 (177)</td>
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*Key expansion is limited when in operation by the internal diameter of the tubing/casing.

HAL44591
RAPIDSHIFT® HIGH-EXPANSION SHIFTING TOOL

Designed for the ball-drop RapidShift sleeve system, the High-Expansion shifting tool allows sleeves to be manipulated without the need for milling baffles. It is designed to be run with the RapidBall™ line of dissolving balls, so that no restrictions are present in the well when the shifting occurs. The tool allows RapidShift sleeves to be either opened or closed before or after stimulation. The shifting tool features a slimline OD with high-expansion shifting keys and is designed to be deployed on either coiled tubing or jointed pipe.

The High Expansion shifting tool uses the existing baffle in the ball-drop RapidShift system as the shift profile. The shifter is selective and will shear-release in the event that enough over pull is produced to activate the shear release function. In the event the sleeve does not reach the fully shifted position, the keys can be retracted by stopping the pumps and allowing the pressure to equalize around the tool.

FEATURES

» Ultra slim OD
» Shear release mechanism
» Low activation pressure
» Common 1.0 in. coiled tubing connection

BENEFITS

» No milling of baffels required for shifting
» Simple and reliable deployment and operation
» Positive indication of full sleeve shift (open or closed)
» Selective testing, stimulation, production and water shutoff with the RapidShift sleeve system

RapidShift® High-Expansion Shifting Tool Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Max Tool OD with Shifting Arms Retracted in. (mm)</th>
<th>Max Tool OD with Shifting Arms Expanded in. (mm)</th>
<th>Minimum Tool OD with Shifting Arms Expanded in. (mm)</th>
<th>Maximum Temperature °F (°C)</th>
<th>Minimum Shifting Arm Expansion Pressure psi (MPa)</th>
<th>Minimum Operating Pressure psi (MPa)</th>
<th>Maximum Operating Pressure psi (MPa)</th>
<th>Tensile Rating</th>
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For more information about the Shifting Tools for RapidShift® sleeve systems, contact your local Halliburton representative or email completions@halliburton.com

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