CHAMP® IV Non-Rotational Restricted-Set Retrievable Packer

The CHAMP® IV non-rotational restricted-set packer is ideal for deepwater extended reach applications on floating vessels, where vessel heave and obtaining sufficient torque down hole to manipulate the toolstring can be a major challenge. This packer has the same basic features as the standard CHAMP IV packer with the added feature that it does not require rotation to set and can be re-set for a predetermined number of times.

The CHAMP IV non-rotational packer is a hookwall retrievable packer with a concentric bypass and a continuous indexing J-slot which incorporates a lock-out mechanism. The packer can cycle from the run-in-hole (RIH) position to the set and pull-out-of-hole (POOH) position simply by lifting or lowering the workstring in the wellbore. After the packer has been set the required amount of times, the packer can be mechanically locked out to prevent any further setting operations as the toolstring is recovered from the wellbore.

Each assembly includes an indexing lock-out J-slot mechanism, mechanical slips, packer elements, hydraulic slips, and a concentric bypass. Round, hydraulic piston-type slips in the hydraulic holddown mechanism prevent the packer from being pumped up hole.

A J-slot position locking mechanism keeps the packer in the RIH configuration until the desired depth is reached and the locking mechanism is deactivated. The position locking mechanism is deactivated by the use of a rupture disk, which is set to rupture at a pressure that is predetermined during the job calculations. The deactivation pressure can be either wellbore hydrostatic at a predetermined depth or pump pressure applied to the wellbore at surface. The locking mechanism allows the packer to be run without cycling through the positions in the J-slot as each joint of pipe is being made up at the surface.

The J-slot lock-out mechanism prevents the packer from setting after the operation is complete and allows the string to move freely even in significant heave situations on floating vessels.

**Features and Benefits**

- Easily operated in extended reach or highly deviated wellbores
- Requires no rotation to set packer—picking the packer straight up (no torque required) opens the bypass
- Will not set until the hydrostatic at a predetermined depth is reached or annulus pressure is applied
- Can be easily relocated to multiple zones during a single trip for treating, testing, or squeezing
- Can be set up to eight times continuously before locking out
- Can be "locked out" mechanically to allow recovery from the wellbore in significant heave
- Concentric bypass allows a larger bypass flow area with positive circulation below packer and tailpipe
- 400°F (204.4°C) temperature rating
- Service environment—immersion in various well fluids including hydrocarbons dilute HCL, sour gas, salt water, and CO₂
**Operation**

Run the packer to the desired setting depth. Burst the rupture disk with wellbore hydrostatic pressure or applied annulus pressure. This disengages the locking mechanism and allows the packer assembly to cycle through the different positions in the J-slot.

Pick up one to two ft at the tool to cycle the lugs through the J-slot from the RIH / SET / POOH position.

Lower the workstring back down to set the packer. The downward movement cycles the lugs from the POOH position to the set position in the J-slot. Continue to travel downward to set weight as needed to seal the elements, permitting a minimum of two minutes before applying pressure differential across the elements.

To unset the packer, relieve any surface pressure and simply pick up the workstring to open the bypass valve. This equalizes pressure across the packer elements and allows them to relax. Once pressure is equalized, continue to lift the workstring to completely unset the packer assembly.

The above procedure can be carried out for the predetermined amount of sets, up to eight, as per operational requirements; on completion of this sequence, the packer is mechanically locked out to prevent further setting and can be recovered from the wellbore.

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**CHAMP® IV Non-Rotational Restricted Set Retrievable Packer Specifications**

<table>
<thead>
<tr>
<th>Casing Size in.</th>
<th>Packer OD in. (cm)</th>
<th>Packer ID in. (cm)</th>
<th>End Connections</th>
<th>Nominal Casing Weight lb/ft</th>
<th>Minimum Casing ID in. (cm)</th>
<th>Maximum Casing ID in. (cm)</th>
<th>Length in. (cm)</th>
<th>Tensile Rating* lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>5.75 (14.60)</td>
<td>2.30 (5.84)</td>
<td>3 7/8 CAS</td>
<td>26 - 35</td>
<td>6.004 (15.25)</td>
<td>6.276 (15.94)</td>
<td>158.64</td>
<td>131,915 (59.835)</td>
</tr>
</tbody>
</table>

**Specifications (Cont.)**

<table>
<thead>
<tr>
<th>Working Pressure* psi (MPa)</th>
<th>Burst Pressure* psi (MPa)</th>
<th>Collapse Rating* psi (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 (68.95)</td>
<td>10,503 (72.42)</td>
<td>12,782 (88.13)</td>
</tr>
</tbody>
</table>

For more information on the CHAMP® IV non-rotational restricted-set retrievable packer, please call your local Halliburton representative or email us at service.tools@halliburton.com.

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