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Conventional Full Closure System (CFCS)

Allow On-Site Conversion of a Conventional System to Full Closure Capability Through MITP™ Component Technology
Only Halliburton Offers the Conventional Full Closure System (CFCS) as a Standard Part of Your Rig Site Tool Box.

A full closure system is an ideal solution, not only for soft, sandy, unconsolidated formations, but for problematic applications such as gravely, fractured, or under-gauge cores that conventional spring catchers can’t handle. A full closure system ensures a capture and a high recovery rate. And it can now be a standard part of every coring tool box. With conventional coring companies, if you are surprised by problematic formations, you may wait months for a complete closure system. Or you may be required to provision extra tools and complicated stand-alone closure systems. Only Halliburton offers you this standard at the rig site. Moreover, this unique technology runs on a conventional barrel. To maximize your reservoir assets and high production rates, trust Halliburton, a solutions leader in the most challenging formation environments.

The Full Closure System
Can now be a standard part of your rig site tool box.

Recovery Rates
Are maximized with a full closure system ready on the job, ideal for problematic and under-gauge cores, as well as unconsolidated formations.

Increases Options
At the rig site.
A conventional core barrel is converted into a full closure system in minutes, not hours in the typical system, by simply installing the Modified Inner Tube Plug (MITP™) component technology at the rig site. Unlike the past, there is no waiting months for special equipment if you identify unconsolidated formations.

MITP™ Component Technology is simple and works in a conventional core barrel.
Hydraulically Activated

The Conventional Full Closure System is hydraulically activated which minimizes mechanical parts and increases reliability for a broad range of applications. Our goal is to provide you 100% recovery rates with the most efficient operation.

The Conventional Full Closure System is receiving the core.

Heavy Duty Thread Form (patented) allows running long barrels and offers greater reliability in horizontal and other high stress applications.

Saves Rig Time

Conventional Full Closure System kit is installed in minutes not hours.
Hydraulic pressure collapses the sleeve to totally enclose the core.

Combined with a spring core catcher, the system is suitable for all types of formations.

Ports allow hydraulic pressure to collapse inner sleeve.

Hydraulic section is restricted when inner assembly strokes down, increasing annulus pressure to collapse the catching sleeve.

No Delays

waiting for special closure equipment to arrive if you encounter soft formations.
## Full Closure System Technical Specifications

### 6-3/4” X 4” 8” X 5-1/4”

<table>
<thead>
<tr>
<th>SYSTEM (BARREL X CORE SIZE)</th>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hole Size Compatibility</td>
<td>8 to 9 in.</td>
<td>203 to 229 mm</td>
</tr>
<tr>
<td>Maximum Flow Rate While Coring</td>
<td>300 gpm</td>
<td>1,363 lpm</td>
</tr>
<tr>
<td>Core Size</td>
<td>4 in.</td>
<td>101.6 mm</td>
</tr>
<tr>
<td>Minimum Unit Length*</td>
<td>30 ft.</td>
<td>9.14 m</td>
</tr>
<tr>
<td>Core Barrel Type</td>
<td>HDT 6-3/4</td>
<td>HDT 6-3/4</td>
</tr>
</tbody>
</table>

### OUTER ASSEMBLY

<table>
<thead>
<tr>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Connection (Box-API)</td>
<td>4-1/2 IF</td>
</tr>
<tr>
<td>Minimum Unit Length</td>
<td>30 ft.</td>
</tr>
<tr>
<td>Outer Barrel (OD x ID)</td>
<td>6-3/4 x 5-3/8 in.</td>
</tr>
<tr>
<td>Pulling Capacity **</td>
<td>506,000 lbs.</td>
</tr>
<tr>
<td>Maximum Torque ***</td>
<td>39,000 FtLbs.</td>
</tr>
<tr>
<td>Make-Up Torque ****</td>
<td>25,800 FtLbs.</td>
</tr>
</tbody>
</table>

### INNER TUBE ASSEMBLY

<table>
<thead>
<tr>
<th>IMPERIAL</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Unit Length</td>
<td>30 ft.</td>
</tr>
<tr>
<td>Maximum OD</td>
<td>4-3/4 in.</td>
</tr>
<tr>
<td>Ball Size (1st and 2nd)</td>
<td>1-1/4 in. and 1-5/8 in.</td>
</tr>
<tr>
<td>Steel Inner Tube (OD x ID)</td>
<td>4-3/4 x 4-1/4 in.</td>
</tr>
<tr>
<td>Slick Alum. Inner Tube (1st and 2nd)</td>
<td>4-3/4 x 4-1/4 in.</td>
</tr>
<tr>
<td>Sleeve Collapse Pressure</td>
<td>406 psi</td>
</tr>
<tr>
<td>Fluted Alum. Inner Tube (OD x ID)</td>
<td>4-3/4 x 4-1/8 in.</td>
</tr>
</tbody>
</table>

(*) Maximum Unit Length will depend on BHT and space out capabilities but can be as much as 54 m barrel
(**) P.C. calculated with tensile stress = 80% of the yield strength
(***) Maximum Torque is about 80% of the yield torque
(****) M.U.T. is based on torque test performed in Halliburton lab facilities
Operating Parameters

Halliburton recommends staying on the lower side of the band to reduce the risk of washing the core in very soft rock. For example, for an 8-1/2” hole, you could start coring around 160-200 GPM, and consider reducing the flow rate further when more WOB is added. This should ensure corehead contact with the formation and reduce the risk of washing the core. In very unconsolidated sands, the flow rate might be as low as 80 GPM, but should be raised when encountering shale stringers.

Appropriate levels of WOB can reduce the chance of milling which can occur when forcing the core into the barrel too quickly. We recommend the lower end of the color band. If you start in shale, the black line indicates the appropriate level.