Rupture Disc Tubing String Testing Valve

DESIGNED FOR THE MOST CHALLENGING APPLICATIONS, THE XHP SERIES TOOLS HANDLE ENVIRONMENTS OVER 30,000 PSI AND UP TO 450°F

OVERVIEW

Halliburton developed the XHP Series of Test Tools to meet the industry’s demand for ultra-high pressure and temperature rated tools. The XHP Series is designed and tested to operate under temperature conditions of up to 450°F (232°C) and hydrostatic pressures of up to 30,000 psi (2068 bar).

The Rupture Disc (RD) Tubing String Testing (TST) Valve, XHP Series is a full opening valve used to pressure test the workstring while running in the hole. While tripping into the hole, a very small differential pressure will move the flapper valve off its seat, enabling the tubing to automatically fill. Pressurizing the tubing on the surface is possible as the flapper valve will be on seat. To deactivate the tool, annulus pressure is applied, bursting a RD. This enables a mandrel to move up, locking the flapper open. This operation permanently disables the flapper valve for the remainder of operations.

The TST valve consists of:

» Flapper valve and spring
» RD
» Locking dogs

FEATURES AND BENEFITS

» Flapper valve requires only 4 psi (0.3 bar) to open.
» Workstring can be pressure tested as many times as required as it is run in the hole.
» Valve deactivating pressure is predetermined by the RD.
» Tool can be setup to deactivate while running in the hole.

OPERATION

The RD TST valve is normally set to operate at a pressure around 1,000 psi (69 bar) above well hydrostatic at tool depth. This enables the tool to be run in and deactivated when pressuring up on the first applied annulus pressure cycle. When the RD TST valve is deactivated, the flapper valve is held open, enabling fluid to move in either direction through the tool. The workstring can be pressure tested as many times as required as it is run in the hole.

While the workstring is stationary, a spring keeps the flapper valve closed. Prior to pressure testing or tool operation, it is recommended to reverse through the string to move any debris off of the top of the flapper. After the work-string pressure tests are completed, the tool is deactivated when annulus pressure is applied to rupture the disc moving the mandrel up and pushing the flapper open. Locking dogs engage the mandrel, locking it in place to ensure the flapper valve is deactivated. The tool remains fully open for the duration of the job.
## Rupture Disc (RD) Tubing String Testing (TST) Valve, XHP Series Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Tool Size</td>
<td>5</td>
</tr>
<tr>
<td>Maximum OD in. (cm)</td>
<td>5.03 (12.78)</td>
</tr>
<tr>
<td>Minimum ID in. (cm)</td>
<td>2.25 (5.72)</td>
</tr>
<tr>
<td>Thread Connections</td>
<td>3 7/8 CAS</td>
</tr>
<tr>
<td>Service Temperature°F (°C)</td>
<td>450 (232)</td>
</tr>
<tr>
<td>Makeup Length in. (cm)</td>
<td>63.00 (160.02)</td>
</tr>
<tr>
<td>Tensile Rating lb (kg)</td>
<td>445,037 (201 865)</td>
</tr>
<tr>
<td>Differential Pressure psi (bar)</td>
<td>15,000 (1034)</td>
</tr>
<tr>
<td>Minimum Required Hydrostatic Pressure psi (bar)</td>
<td>15,000 (1034)</td>
</tr>
<tr>
<td>Absolute Pressure psi (bar)</td>
<td>35,000 (2413)</td>
</tr>
</tbody>
</table>

### Notes:
1. Service temperature up to 450°F (232°C) (dressed with Chemraz® O-rings and VICTREX® PEEK backup seals)
2. The values of tensile, burst, and collapse strength are calculated with new tool conditions, Lame’s formulas with von Mises’ Distortion Energy Theory for burst and collapse strength, and stress area calculations for tensile strength.
3. Pressure rating is defined as the differential pressure at the tool. (Differential pressure is the difference in pressure between the casing annulus and the tool ID.)
4. Absolute pressure rating is hydrostatic pressure plus applied surface pressure.

Meets NACE-0175 requirements for temperatures above 175°F (79°C).

These ratings are guidelines only. For more information, consult your local Halliburton representative.

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