OVERVIEW
This tool combines the functionality of the Halliburton’s Select Tester® valve and OMNI™ circulating valve and is designed to operate via the RezConnect® Well Testing system and/or with low-pressure annulus telemetry commands.

FEATURES
» Pressure telemetry control method operates tool based on annulus pressure changes.
» Pressure telemetry is independent of hydrostatic pressure, so multizone or underbalanced testing can be accomplished in a single trip.
» The RezConnect system adds the capability of operating with an acoustic telemetry system.
» Ability to switch from acoustic telemetry to pressure telemetry without pulling the string or making any changes to the ProPhase valve.
» Modular plug-and-play electronic assembly provides the ability to completely isolate electronics from large-scale mechanical assembly quickly to help ensure optimization of rig time.
» Mechanical design helps reduce the effect of debris fallout on top of closed ball, increasing debris tolerance.
» Low-pressure profile operation enables tool to be operated in deeper (high hydrostatic) environments.
» Secondary slot within carrier body enables a gauge to be run with a pressure tap below the tester ball valve.
» Tool can be completely disabled downhole to a “pipe” condition via a rupture disc override.
» Mechanical design prevents the circulating ports and ball valve from being open at the same time.

BENEFITS
» Simple to operate and maintain. Both mechanical assembly and electronics controller assembly can be completely serviced and function tested independent of each other. (Mechanical assembly can be function tested without electronics.)
» Industry-leading circulating rates, enabling for up to 30 bbl/min (4.8 m³/min) of clear fluid to minimize rig time
» If required, both mechanical and electrical controller assembly can be maintained at rig site.
» Simplified job planning
When using the RezConnect system:
» Acoustic telemetry control method minimizes need for applied annulus pressure.
» Real-time verification to the surface of operational status and valve position after acoustic command is sent.
» Minimal annulus pressure is required when flowing the well for Quick Close functionality.

OPERATIONS
The ProPhase valve has two methods of activation. It can be activated with the RezConnect system by the push of a button, or it can be activated with pressure telemetry by sending a unique annulus pressure “address,” which ends at a “base” pressure. When the base pressure is reached, multiple tool functions can be executed.
With pressure telemetry, most tool operations require a minimum amount of applied annulus pressure, while with the RezConnect system applied annulus pressure is only required for one particular operation. All operational modes are available with both activation methods.

**Operational modes include:**

- **Flow with Quick Close Function Enabled**
  - Circulating ports are closed, and ball valve is open.
  - If applied annulus pressure is released, the ball valve will automatically close.
  - With the RezConnect system applied, annulus pressure is required to provide this safety functionality.
  - This mode is designed for unplanned job events.

- **Shut-In**
  - Circulating ports are closed, and ball valve is closed.

- **Circulate**
  - Circulating ports are open, and ball valve is closed.

- **Cushion Circulate**
  - There is no need to re-address after cushion fluid is pumped into place.
  - This mode is specifically designed for nitrogen cushion operations.

- **Underbalanced Circulate**
  - Circulating ports are opened only after applied annulus pressure is reduced to a preset level.
  - Ball valve is closed.

- **Flow with Quick Close Function Disabled**
  - After sending the flow command, the Quick Close feature can be disabled if annulus pressure is increased above base pressure.
  - This mode enables pulling out of hole with ball valve in the open position.

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**Equipment Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer Diameter in. (cm)</td>
<td>5.25 (13.3)</td>
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<tr>
<td>Inner Diameter in. (cm)</td>
<td>2.25 (5.7)</td>
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<tr>
<td>Makeup Length ft. (m)</td>
<td>33.95 (1035)</td>
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<tr>
<td>End Connections</td>
<td>3 7/8 CAS</td>
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<tr>
<td>Absolute Pressure¹ psi (bar)</td>
<td>25,000 (1724)</td>
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<tr>
<td>Differential Pressure² psi (bar)</td>
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<tr>
<td>Tensile Load lb³ (kg)³</td>
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<tr>
<td>Service Temperature °F (°C)</td>
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<tr>
<td>Circulating Flow Area in.² (cm²)</td>
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<tr>
<td>Valve Operating Range psi (bar)⁴</td>
<td>2,000 – 25,000</td>
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<tr>
<td>Static Differential Across Ball from Above psi (bar)</td>
<td>15,000 (1034)</td>
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<tr>
<td>Opening Differential Across Ball from Above psi (bar)</td>
<td>1,000 (69)</td>
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<tr>
<td>Static Differential Across Ball from Below psi (bar)</td>
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<tr>
<td>Opening Differential Across Ball from Below psi (bar)</td>
<td>5000 (345)</td>
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<tr>
<td>Static Differential Across Seal from Inside psi (bar)</td>
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<td>Opening Differential Across Seal from Inside psi (bar)</td>
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<tr>
<td>Static Differential Across Seal from Outside psi (bar)</td>
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<td>Opening Differential Across Seal from Outside psi (bar)</td>
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<tr>
<td>Number of Movements</td>
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<tr>
<td>Minimum Battery Autonomy</td>
<td>15 days at 320°F (160°C); 20 days at 300°F (149°C)</td>
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<tr>
<td></td>
<td>30 days at 320°F (160°C); with double battery pack</td>
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</table>

**Notes:**

1 Absolute pressure is the total of hydrostatic plus applied pressure.
2 The difference in pressure is the difference between the casing annulus and the tool ID.
3 The values of tensile, burst, and collapse strength are calculated with new tool conditions. Lamé formulas with von Mises’ Distortion Energy Theory for burst and collapse strength, and stress area calculations for tensile strength.
4 Contingent that differential pressure rating is not exceeded.
5 Meets NACE MR0175 requirements (>175°F / 79°C).

These ratings are guidelines only. Refer to the equipment data book for individual equipment specifications.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com