Tendeka’s FloSure Bypass Valve (BPV) is a technology for treatment of the completion annulus and near wellbore on wells completed with Inflow Control technologies.

Inflow Control Devices can provide great improvements in inflow performance in horizontal wells. Their check valve functionality is beneficial during deployment to enable effective circulation of well fluids, and during production to prevent cross-flow between zones. To enable the AICD to be bypassed if chemical treatment of the annulus or near wellbore is required, the FloSure BPV can be deployed to allow higher rate treatments to be performed.

The FloSure BPV is deployed within the AICD housing to enable treatment of the screen and annulus. The devices can be run per joint, per zone, or in multiples within a single joint dependent on the rate or placement requirements. The FloSure Bypass Valve is designed for use with a wide range of fluids including acids and gas, making it very adaptable for well control.

### Features
- Based on field proven AICD design and materials
- Bias closed with an adjustable spring force, the BPV is further activated by AICD pressure drop during production.

### Benefits
- Improved well performance
- Adaptable for well control
- Interchangeable with AICD for field flexibility
- Allows bypass of the AICD for chemical treatments
### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nozzle size equivalent</strong></td>
<td>10mm</td>
<td></td>
</tr>
<tr>
<td><strong>Design Conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute pressure</td>
<td>No design limit</td>
<td></td>
</tr>
<tr>
<td>Differential pressure</td>
<td>725psi</td>
<td></td>
</tr>
<tr>
<td>Differential opening pressure</td>
<td>40-450psi</td>
<td></td>
</tr>
<tr>
<td>Maximum liquid rate</td>
<td>6.5 gpm/BPV</td>
<td></td>
</tr>
<tr>
<td>Maximum gas lift rate</td>
<td>35 mmscf/day</td>
<td></td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>Alloy 718</td>
<td></td>
</tr>
<tr>
<td>Seal area</td>
<td>Tungsten carbide</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**FloSure Bypass Valve-GP**

**Inflow-enabled gravel pack**

Our FloSure Bypass Valve-GP enables standard gravel packing operations to be performed with inflow control devices in the completion without significant additional cost, complexity or compromise. Dissolvable magnesium is utilised with a spring-loaded valve located within the ICD housing to provide a high flow area path from the annulus to the tubing during completion operations.

Following completion of gravel packing operations, the magnesium element is dissolved, allowing the spring-loaded valve to close and all production inflow to pass through the ICD.

### Physical dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max OD</td>
<td>1.76”</td>
<td>Interchange-able with FloSure</td>
</tr>
<tr>
<td>Height</td>
<td>0.356”</td>
<td>Above basepipe OD</td>
</tr>
<tr>
<td>Thread</td>
<td>M33 x 2.0</td>
<td></td>
</tr>
<tr>
<td>Min flow area</td>
<td>79m³/h</td>
<td>Equivalent to 10mm diameter</td>
</tr>
</tbody>
</table>

### Materials

- Production wetted: Alloy 718/TC
- Spring: 17/7 PH SS
- Elastomers: Viton
  - Static o-ring seal on valve housing

### Design conditions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td></td>
<td>Seal or spring limited</td>
</tr>
<tr>
<td>Diff. pressure</td>
<td>725psi</td>
<td>Max AICD operating pressure</td>
</tr>
<tr>
<td>Diff. opening pressure</td>
<td>70-435psi</td>
<td>Spring adjustable</td>
</tr>
<tr>
<td>Leak rate</td>
<td>0.02kg/hr</td>
<td>At max differential pressure</td>
</tr>
<tr>
<td>Design life</td>
<td>20 years</td>
<td></td>
</tr>
<tr>
<td>Number of cycles</td>
<td>40</td>
<td>2 treatments per year</td>
</tr>
<tr>
<td>Max liquid rate</td>
<td>0.158bpm</td>
<td></td>
</tr>
<tr>
<td>Total fluid</td>
<td>1,500Bbl</td>
<td>4 hours injection at 225bpd/device</td>
</tr>
</tbody>
</table>