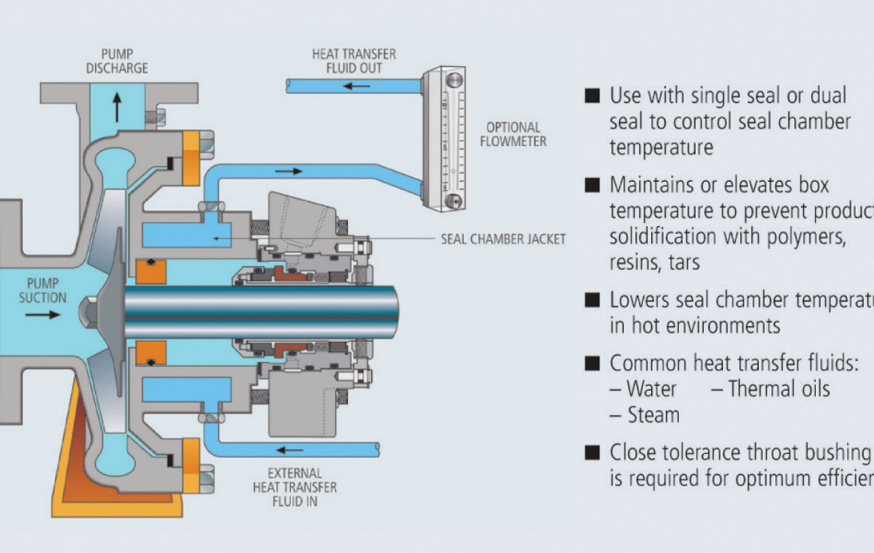
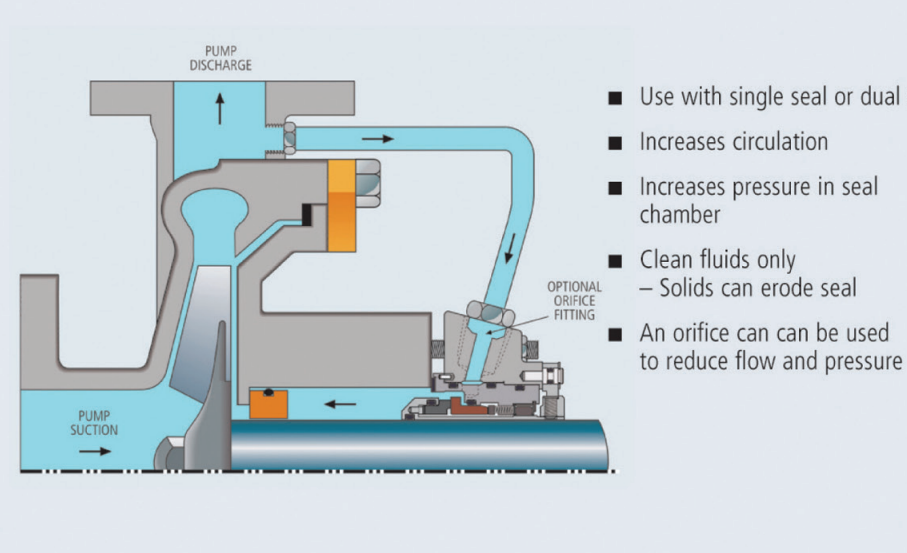
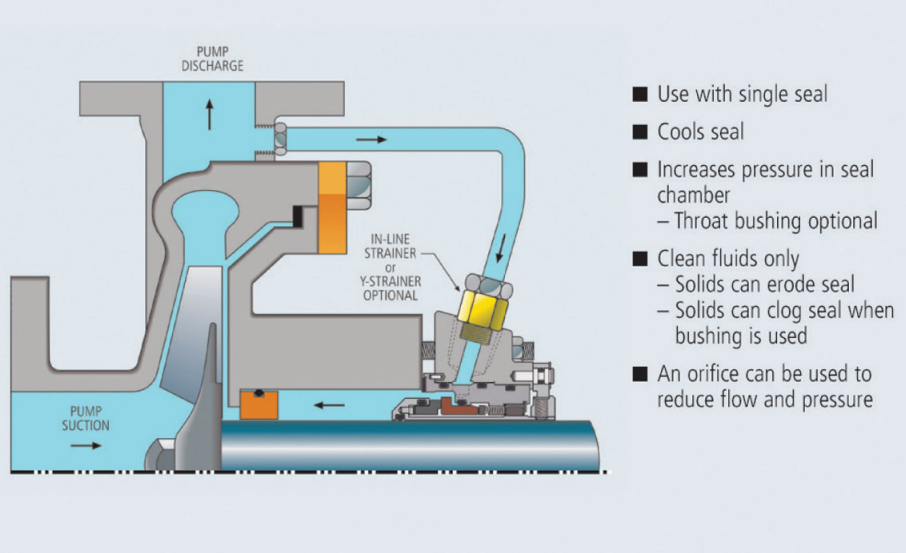
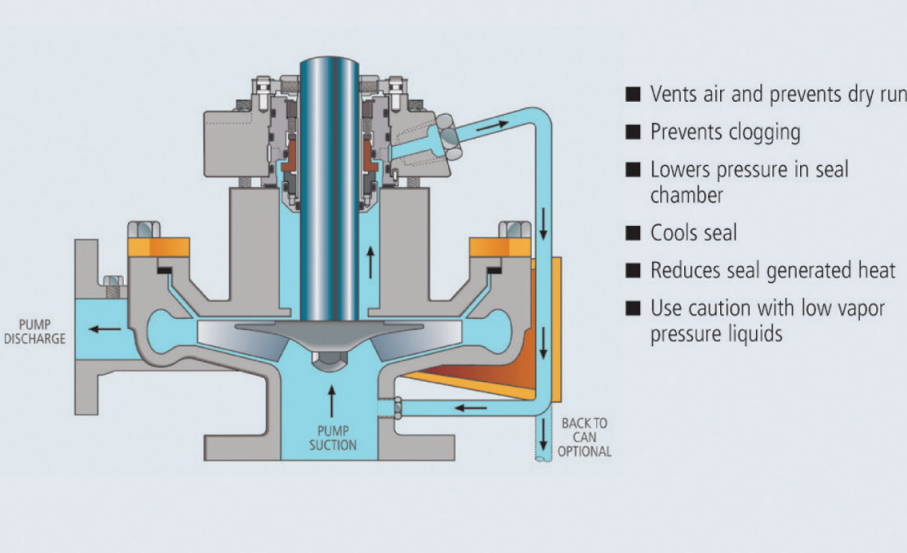
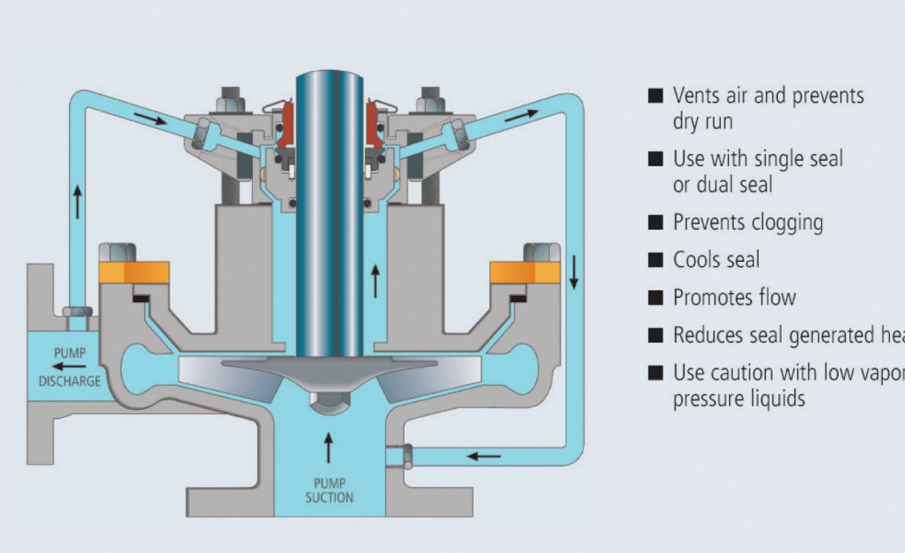
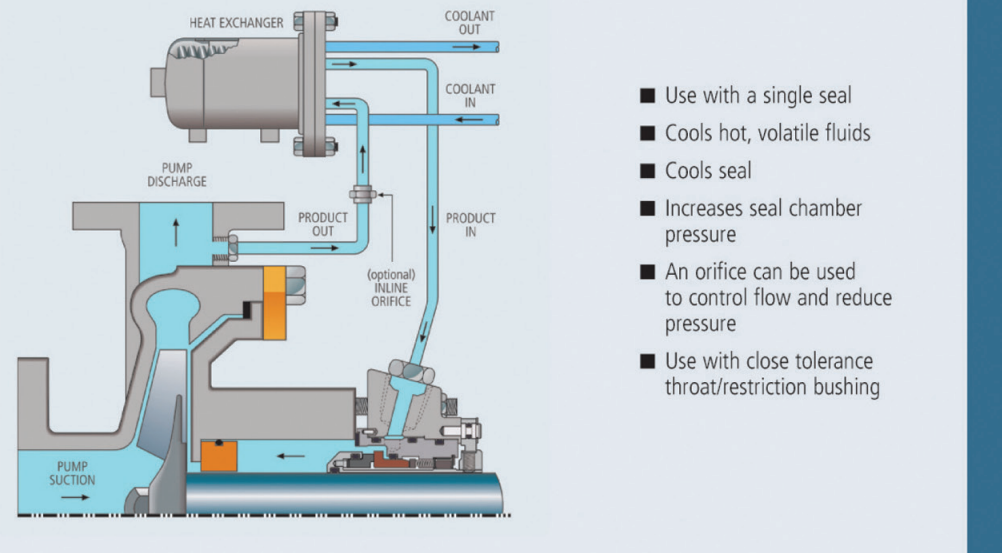
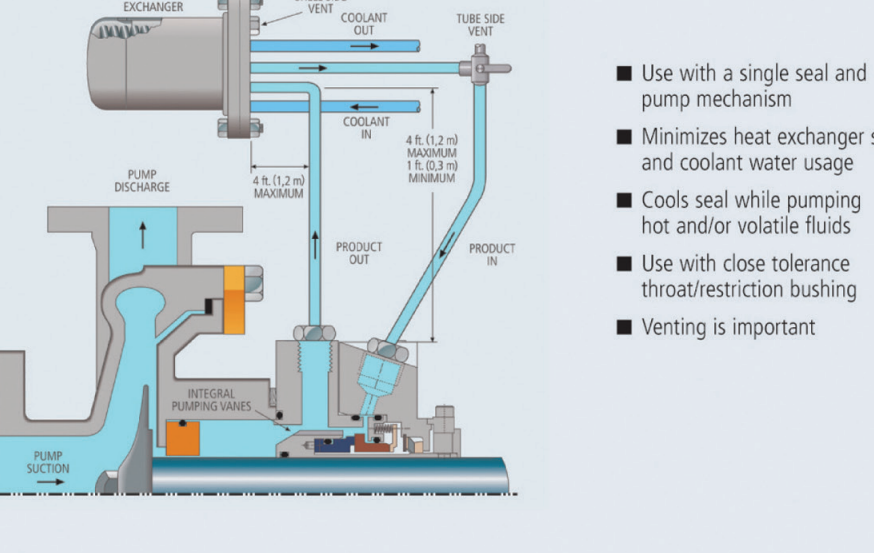
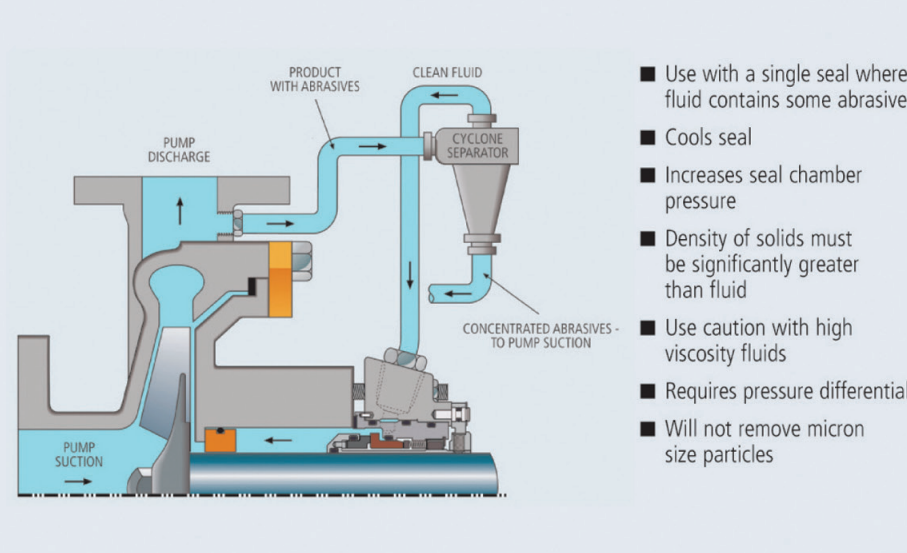
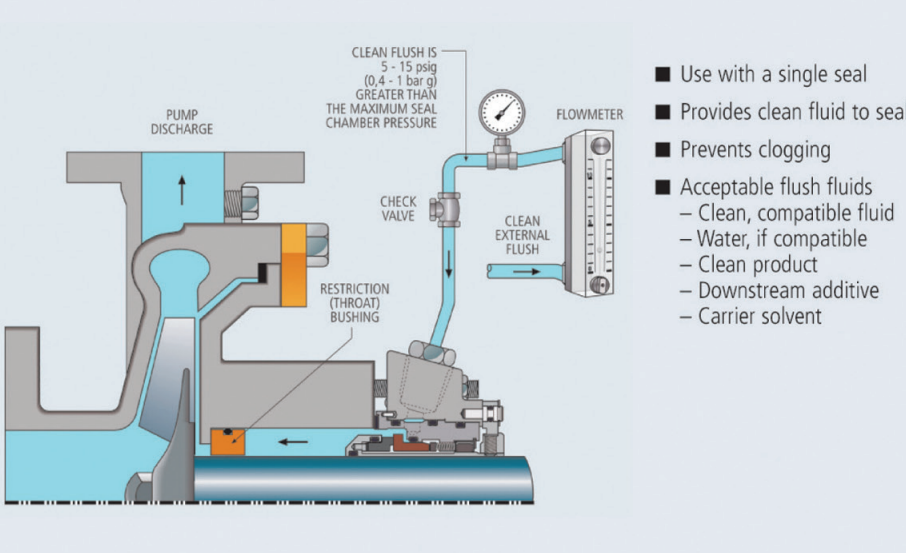
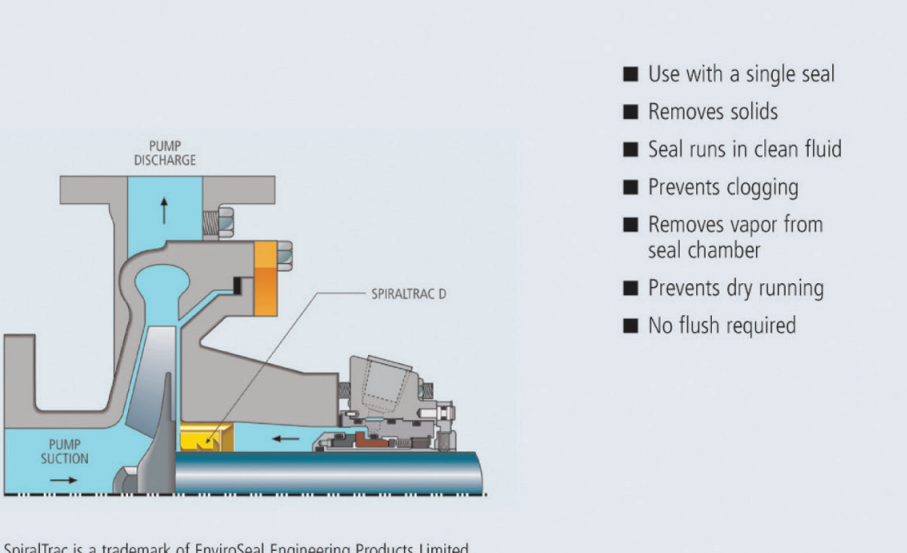
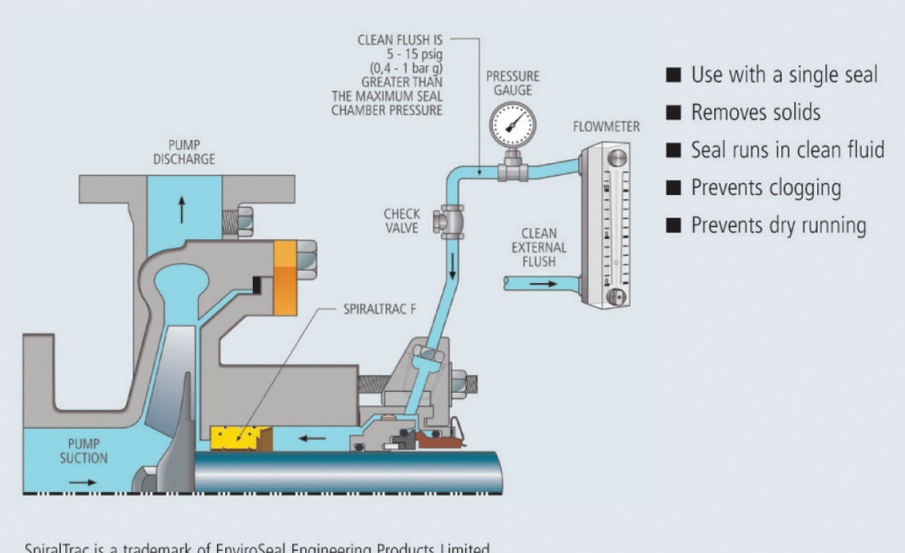
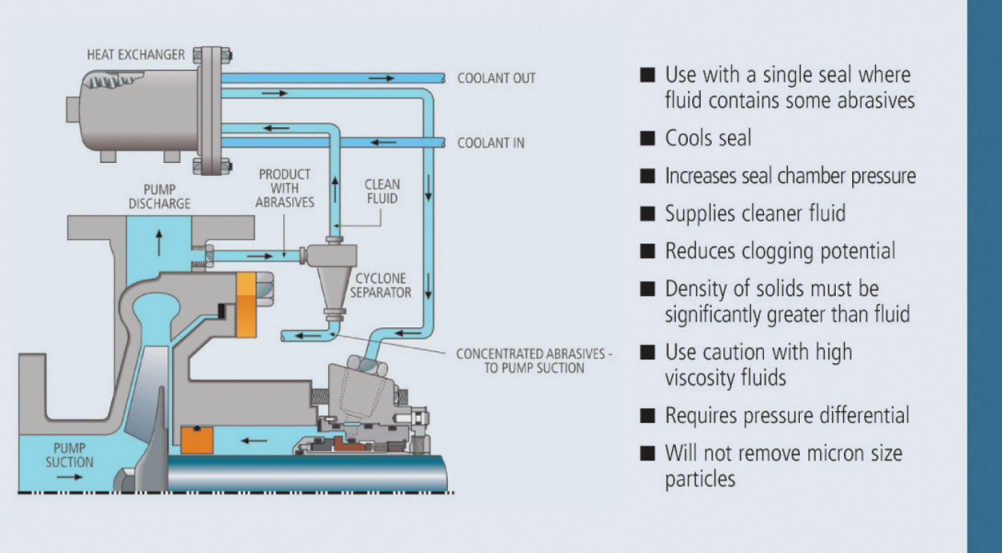
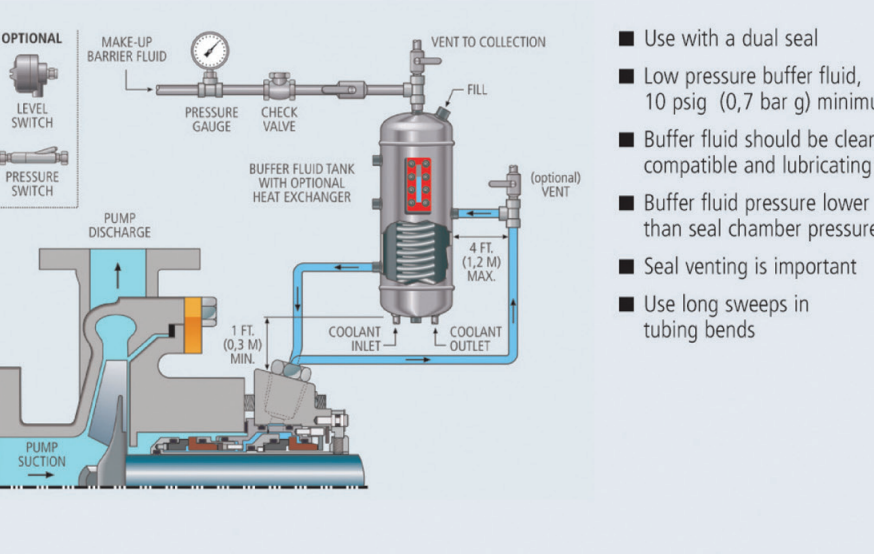
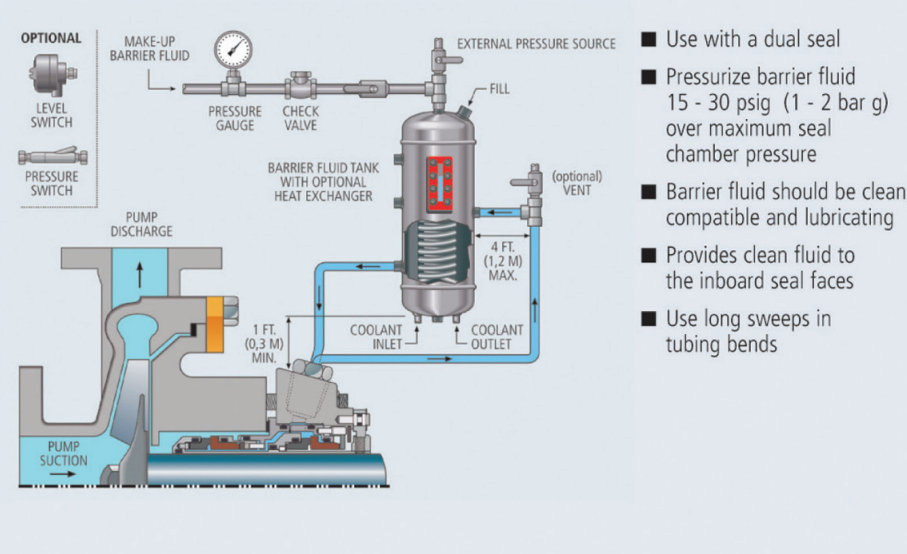
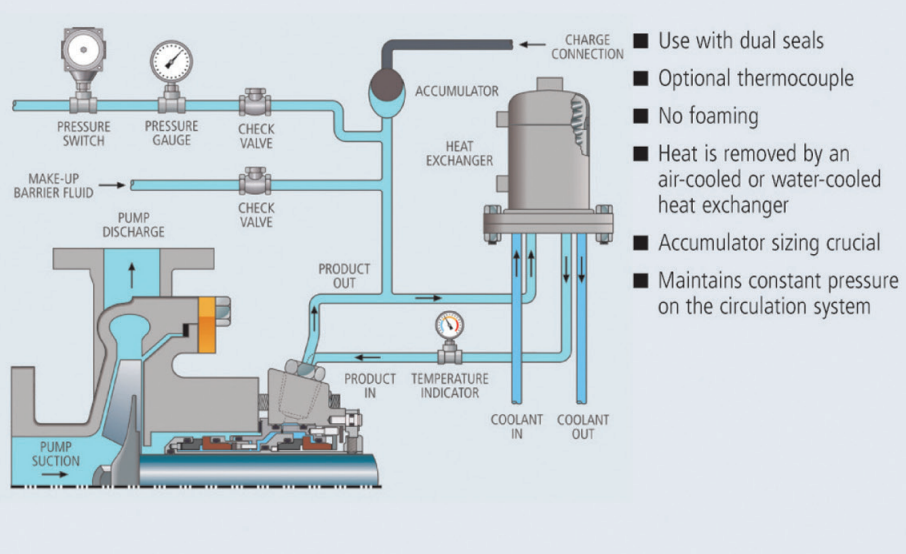
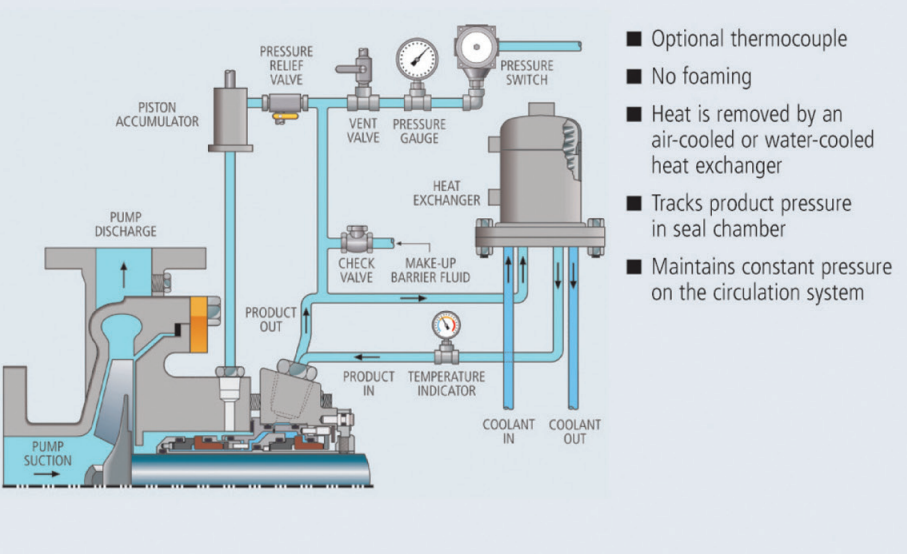
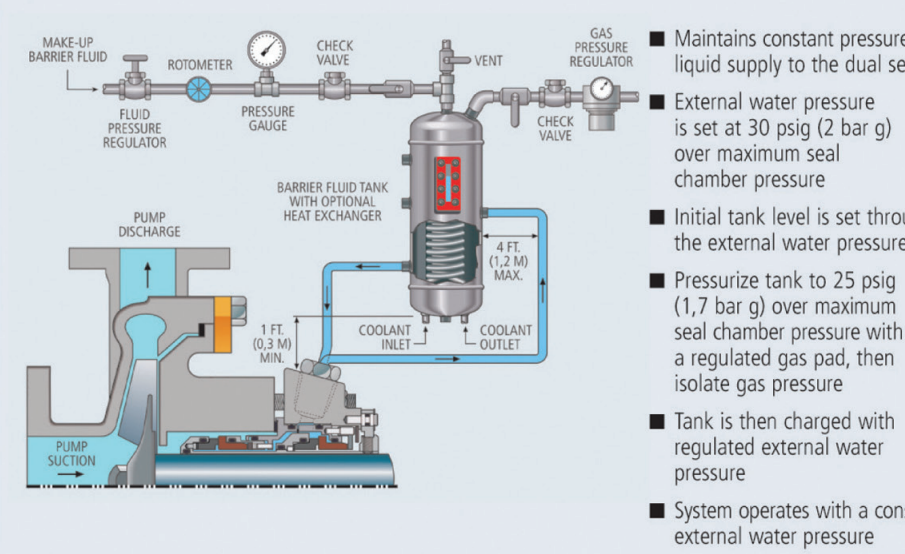
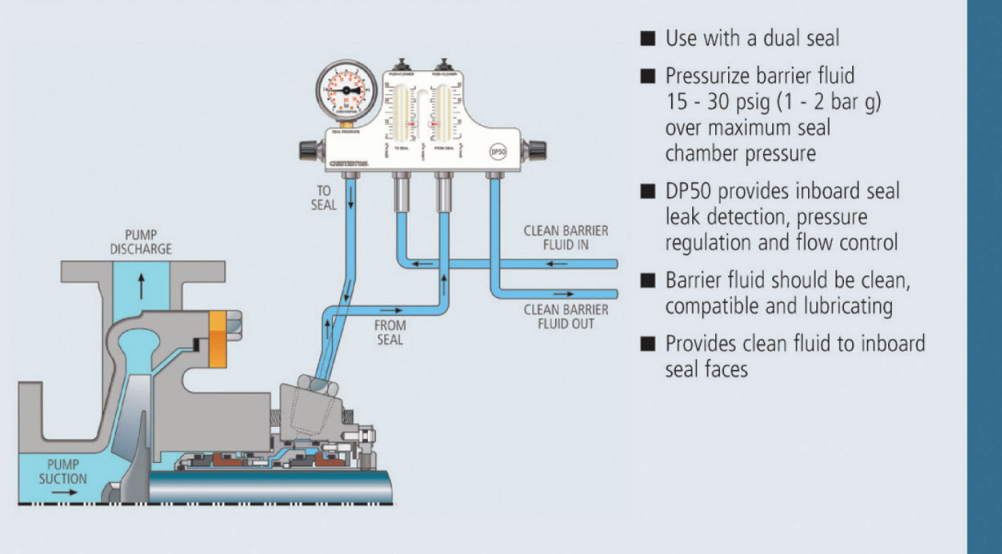
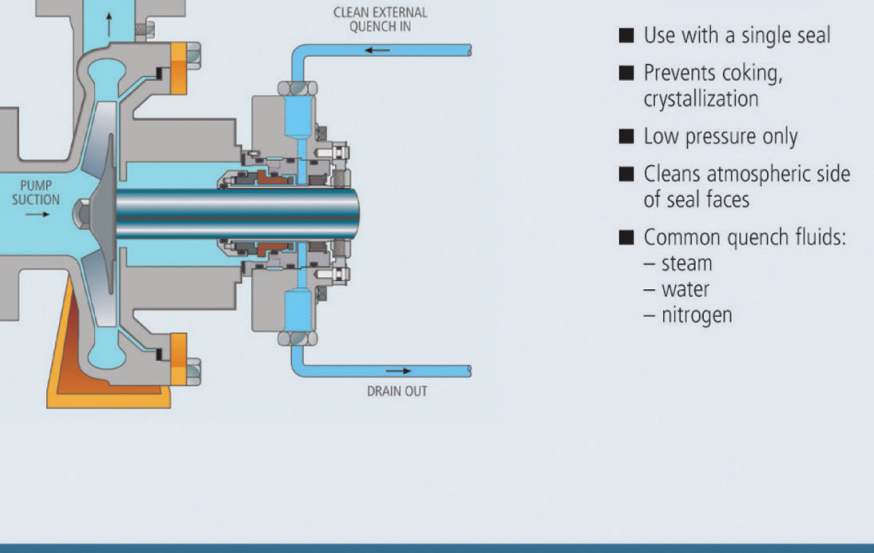
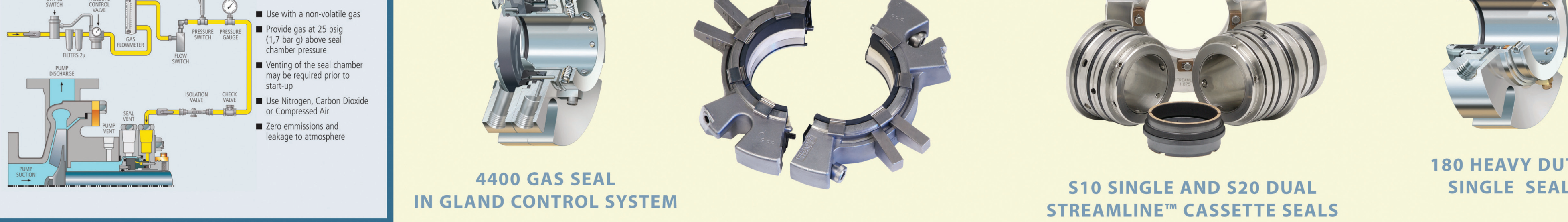
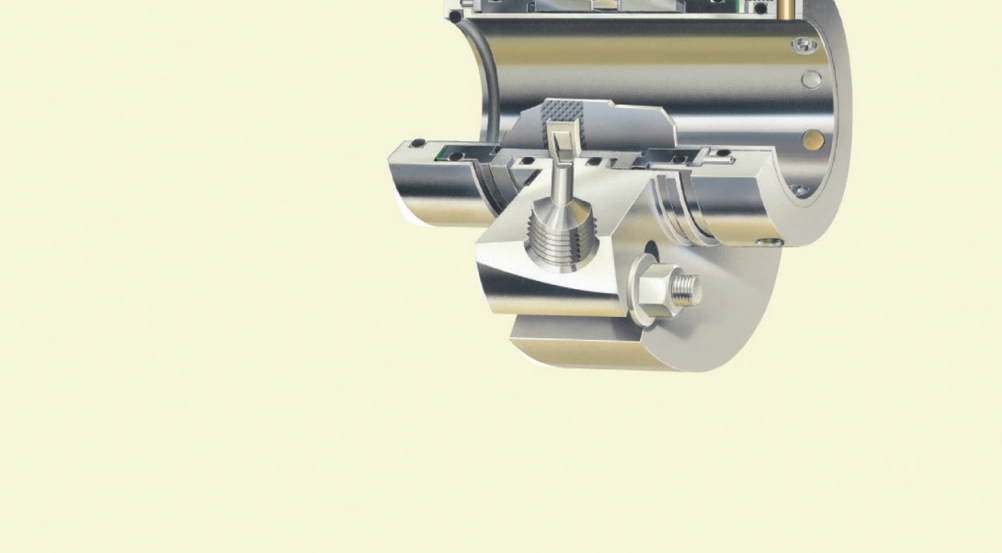
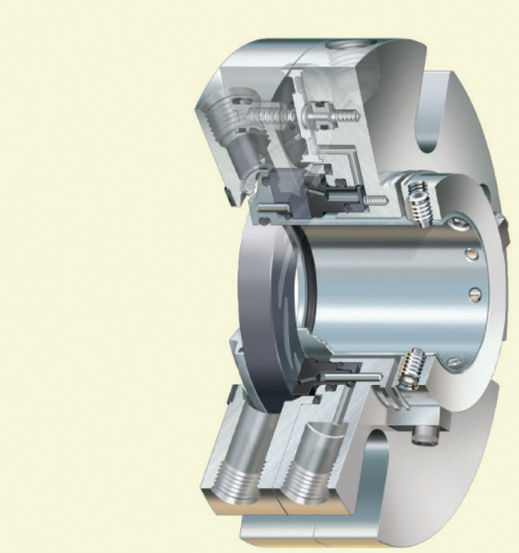
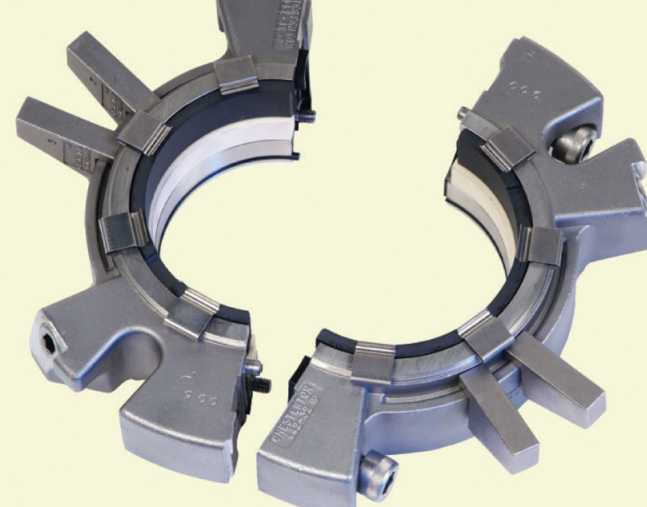



<p><b>SINGLE SEAL</b></p> <p><b>PIPING PLAN 2</b> Pump Jacket</p>  <ul style="list-style-type: none"> <li>Use with single seal or dual seal to control seal chamber temperature</li> <li>Maintains or elevates box temperature to prevent product solidification with polymers, resins, tars</li> <li>Lowers seal chamber temperature in hot environments</li> <li>Common heat transfer fluids:             <ul style="list-style-type: none"> <li>Water</li> <li>Thermal oils</li> <li>Steam</li> </ul> </li> <li>Close tolerance throat bushing is required for optimum efficiency</li> </ul>	<p><b>PIPING PLAN 11</b> Discharge Recirculation</p>  <ul style="list-style-type: none"> <li>Use with single seal or dual seal</li> <li>Increases circulation</li> <li>Increases pressure in seal chamber</li> <li>Clean fluids only             <ul style="list-style-type: none"> <li>Solids can erode seal</li> </ul> </li> <li>An orifice can be used to reduce flow and pressure</li> </ul>	<p><b>PIPING PLAN 12</b> Discharge Recirculation with Strainer</p>  <ul style="list-style-type: none"> <li>Use with single seal</li> <li>Cools seal</li> <li>Increases pressure in seal chamber             <ul style="list-style-type: none"> <li>Throat bushing optional</li> </ul> </li> <li>Clean fluids only             <ul style="list-style-type: none"> <li>Solids can erode seal</li> <li>Solids can clog seal when bushing is used</li> </ul> </li> <li>An orifice can be used to reduce flow and pressure</li> </ul>	<p><b>PIPING PLAN 13</b> Suction Recirculation</p>  <ul style="list-style-type: none"> <li>Vents air and prevents dry run</li> <li>Prevents clogging</li> <li>Lowers pressure in seal chamber</li> <li>Cools seal</li> <li>Reduces seal generated heat</li> <li>Use caution with low vapor pressure liquids</li> <li>No flush required</li> </ul>	<p><b>PIPING PLAN 14</b> Suction and Discharge Recirculation (Vertical)</p>  <ul style="list-style-type: none"> <li>Vents air and prevents dry run</li> <li>Use with single seal or dual seal</li> <li>Prevents clogging</li> <li>Cools seal</li> <li>Promotes flow</li> <li>Reduces seal generated heat</li> <li>Use caution with low vapor pressure liquids</li> </ul>	<p><b>PIPING PLAN 21</b> Cooled Discharge Recirculation</p>  <ul style="list-style-type: none"> <li>Use with a single seal</li> <li>Cools hot, volatile fluids</li> <li>Cools seal</li> <li>Increases seal chamber pressure</li> <li>An orifice can be used to control flow and reduce pressure</li> <li>Use with close tolerance throat/restriction bushing</li> </ul>						
<p><b>PIPING PLAN 23</b> Cooled Seal Recirculation</p>  <ul style="list-style-type: none"> <li>Use with a single seal and pump mechanism</li> <li>Minimizes heat exchanger size and coolant water usage</li> <li>Cools seal while pumping hot and/or volatile fluids</li> <li>Use with close tolerance throat/restriction bushing</li> <li>Venting is important</li> </ul>	<p><b>PIPING PLAN 31</b> Discharge Recirculation with Cyclone Separator</p>  <ul style="list-style-type: none"> <li>Use with a single seal where fluid contains some abrasives</li> <li>Cools seal</li> <li>Increases seal chamber pressure</li> <li>Density of solids must be significantly greater than fluid</li> <li>Use caution with high viscosity fluids</li> <li>Requires pressure differential</li> <li>Will not remove micron size particles</li> </ul>	<p><b>PIPING PLAN 32</b> Clean Flush</p>  <ul style="list-style-type: none"> <li>Use with a single seal</li> <li>Provides clean fluid to seal</li> <li>Prevents clogging</li> <li>Acceptable flush fluids             <ul style="list-style-type: none"> <li>Clean, compatible fluid</li> <li>Water, if compatible</li> <li>Clean product</li> <li>Downstream additive</li> <li>Carrier solvent</li> </ul> </li> <li>No flush required</li> </ul>	<p><b>PIPING PLAN 33H</b> SpiralTrac™ Version D Type I</p>  <ul style="list-style-type: none"> <li>Use with a single seal</li> <li>Removes solids</li> <li>Seal runs in clean fluid</li> <li>Prevents clogging</li> <li>Removes vapor from seal chamber</li> <li>Prevents dry running</li> <li>No flush required</li> </ul>	<p><b>PIPING PLAN 33S</b> SpiralTrac™ Version F Type S</p>  <ul style="list-style-type: none"> <li>Use with a single seal</li> <li>Removes solids</li> <li>Seal runs in clean fluid</li> <li>Prevents clogging</li> <li>Prevents dry running</li> </ul>	<p><b>PIPING PLAN 41</b> Cooled Discharge Recirculation with Cyclone Separator</p>  <ul style="list-style-type: none"> <li>Use with a single seal where fluid contains some abrasives</li> <li>Cools seal</li> <li>Increases seal chamber pressure</li> <li>Supplies cleaner fluid</li> <li>Reduces clogging potential</li> <li>Density of solids must be significantly greater than fluid</li> <li>Use caution with high viscosity fluids</li> <li>Requires pressure differential</li> <li>Will not remove micron size particles</li> </ul>						
<p><b>DUAL SEAL</b></p>						<p><b>PIPING PLAN 52</b> Circulation with External Buffer Fluid Tank</p>  <ul style="list-style-type: none"> <li>Use with a dual seal</li> <li>Low pressure buffer fluid, 10 psig (0.7 bar g) minimum</li> <li>Buffer fluid should be clean, compatible and lubricating</li> <li>Buffer fluid pressure lower than seal chamber pressure</li> <li>Seal venting is important</li> <li>Use long sweeps in tubing bends</li> </ul>	<p><b>PIPING PLAN 53A</b> Circulation with Pressurized External Barrier Fluid Tank</p>  <ul style="list-style-type: none"> <li>Use with a dual seal</li> <li>Pressurize barrier fluid 15 - 30 psig (1 - 2 bar g) over maximum seal chamber pressure</li> <li>Barrier fluid should be clean, compatible and lubricating</li> <li>Provides clean fluid to the inboard seal faces</li> <li>Use long sweeps in tubing bends</li> </ul>	<p><b>PIPING PLAN 53B</b> Closed Loop with Heat Exchanger and Accumulator</p>  <ul style="list-style-type: none"> <li>Use with dual seals</li> <li>Optional thermocouple</li> <li>No foaming</li> <li>Heat is removed by an air-cooled or water-cooled heat exchanger</li> <li>Accumulator sizing crucial</li> <li>Maintains constant pressure on the circulation system</li> </ul>	<p><b>PIPING PLAN 53C</b> Heat Exchanger and Piston Accumulator</p>  <ul style="list-style-type: none"> <li>Optional thermocouple</li> <li>No foaming</li> <li>Heat is removed by an air-cooled or water-cooled heat exchanger</li> <li>Tracks product pressure in seal chamber</li> <li>Maintains constant pressure on the circulation system</li> </ul>	<p><b>PIPING PLAN 53P</b> Circulation with Pressurized External Barrier Fluid Tank</p>  <ul style="list-style-type: none"> <li>Maintains constant pressure and liquid supply to the dual seal</li> <li>External water pressure is set at 30 psig (2 bar g) over maximum seal chamber pressure</li> <li>Initial tank level is set through the external water pressure line</li> <li>Pressure tank to 25 psig (1.7 bar g) over maximum seal chamber pressure with a regulated gas pad, then isolate gas pressure</li> <li>Tank is then charged with regulated external water pressure</li> <li>System operates with a constant external water pressure</li> </ul>	<p><b>PIPING PLAN 54DM</b> Circulation with Pressurized External Barrier Fluid Source and Flow Guardian™ DP50</p>  <ul style="list-style-type: none"> <li>Use with a dual seal</li> <li>Pressurize barrier fluid 15 - 30 psig (1 - 2 bar g) over maximum seal chamber pressure</li> <li>DP50 provides inboard seal leak detection, pressure regulation and flow control</li> <li>Barrier fluid should be clean, compatible and lubricating</li> <li>Provides clean fluid to inboard seal faces</li> </ul>
<p><b>QUENCH</b></p>						<p><b>PIPING PLAN 62</b> Quench</p>  <ul style="list-style-type: none"> <li>Use with a single seal</li> <li>Prevents coking, crystallization</li> <li>Low pressure only</li> <li>Cleans atmospheric side of seal faces</li> <li>Common quench fluids:             <ul style="list-style-type: none"> <li>steam</li> <li>water</li> <li>nitrogen</li> </ul> </li> </ul>	<p><b>GAS</b></p> <p><b>PIPING PLAN 74</b> Externally Supplied Barrier Gas</p>  <ul style="list-style-type: none"> <li>Use with a non-volatile gas</li> <li>Provide gas at 25 psig (1.7 bar g) above seal chamber pressure</li> <li>Venting of the seal chamber may be required prior to start-up</li> <li>Use Nitrogen, Carbon Dioxide or Compressed Air</li> <li>Zero emissions and leakage to atmosphere</li> </ul>				<p><b>280 HEAVY DUTY DUAL SEAL</b></p> 
<p><b>4400 GAS SEAL IN GLAND CONTROL SYSTEM</b></p> 						<p><b>442 SPLIT MECHANICAL SEAL</b></p> 		<p><b>S10 SINGLE AND S20 DUAL STREAMLINE™ CASSETTE SEALS</b></p> 		<p><b>180 HEAVY DUTY SINGLE SEAL</b></p> 