Run Times
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API plan 32 flush systems are pretty simple, right? Just connect the seal with a flush supply that is at a higher pressure than in the seal chamber and you're all set…or maybe not. This month we look at a common problem with the application of this simple flush system and how to avoid it.

Dale B. Andrews

Dale B. Andrews – Editor

Below is an API plan 32 flush schematic[1]. API plan 32 systems are used to supply a continuous flow of clean compatible flush fluid into the seal chamber with the objective of keeping solids away from seal faces while keeping the faces cooled and lubricated. The seal chamber is open to the process side of the pump and the injected flush fluid is ultimately pumped with the process fluid.

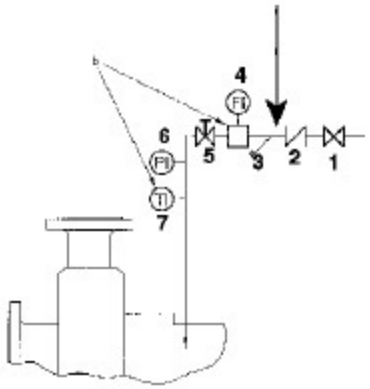
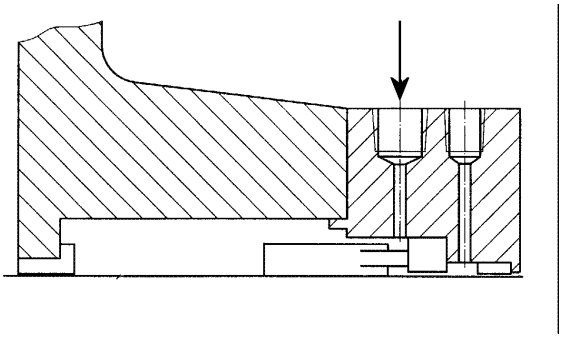


Figure 1:
1. Block valve
2. Check valve
3. Y-strainer
4. Flow indicator
5. Adjustable valve
6. Pressure indicator
7. Temperature indicator



A problem occurs when too much reliance is placed on flush pressure as an indicator of adequate flush flow. A change in suction or discharge pressure will cause a directly proportional pressure change in the seal chamber. Seal chamber pressure will also increase as an exponential function of sealing ring wear. Each of these conditions may cause the seal chamber pressure to increase sufficiently to reduce or terminate flush flow. As the throat bushing wears, an increased flush flow is required to maintain the flow velocity necessary to keep solid particles out of the seal chamber.

Although API standards specify the flow indicator as optional, many installations would be improved by monitoring and controlling flush flow rate instead of pressure. Alternately, another pressure indicator may be installed at a secondary port to monitor seal chamber pressure directly. Differential pressure may then be used to control the flush. However, flush flow monitoring is still recommended for this case.

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[1] ANSI /API Standard 682 third edition, September 2004