

Ask the Expert

The Ask The Expert column will give readers the opportunity to have their valve concerns addressed, find out the answers to their pressing valve challenges and ask for feedback on application issues. If you have a questions that you need answered, please feel free to contact s.bradley@kci-world.com with the email subject: Ask The Expert.

If you are an individual with extensive valve expertise that you believe the Valve World readership could benefit from, please contact our Editor-in-Chief to become a future featured Expert.

This month our Experts are Rodney Roth, Strategic Account Manager/ Stationary Equipment – A.W. Chesterton & Foster Voelker, Project Manager – Stationary Equipment – A.W. Chesterton.



Q What is the scope of API 6D and what are some of the key characteristics defining compliant designs?

A API 6D is a design specification for the manufacture of various valve types for pipeline applications in the petroleum and natural gas industries. The specification contains design criteria as well as testing and documentation requirements for gate, check, ball, and plug valves. There are many aspects of API 6D compliant designs that are unique. Example: API 6D defines an unobstructed minimum bore clearance for full opening valve configurations. This requirement allows various designs to perform better in applications requiring pigging.

Q How do API 6D gate valves differ from the API 600 gate valves more commonly found in the refining sector?

A There are two common API 6D gate valve designs: the through conduit or slab gate and the expanding gate. Both types are available in soft or metal seated variations. The slab gate is a position seated valve while the expanding gate is a torque or mechanically seated valve. The through conduit designs have a circular bore in the obturator with a minimum diameter defined by the specification allowing a sphere to pass through unobstructed. In short, if one was to look down the bore of an open valve of this type, it would resemble the ID of the pipe. Whereas API 600 gate valves are typically metal to metal seals and torque seated. Commonly, there is a reduction in bore diameter at the seat ring. Thus, API 6D gate valves are a better choice for piping that will require pigging. Another key difference is many API 6D gate valve designs offer of double block and bleed function, which leads to our next question.

Q What does the term double block and bleed (DBB) mean?

A The double block and bleed definition per API 6D is "a single valve with two seating surfaces that, in the closed position, provide a seal against pressure from both ends of the valve with a means of venting/bleed-

ing the cavity between the seating surfaces." To be clear, this definition is as defined by API. The Occupational Safety and Health Administration (OSHA) define DBB differently. OSHA defines DBB as "the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves." Needless to say, the differing definitions have caused much confusion in the industry. In simpler terms, double block and bleed valves per API allow the cavity pressure to be vented while pressure is maintained on both sides of the valve. This allows the integrity of both seats to be checked simultaneously. API also makes note that DBB valves do not provide positive double isolation when pressure is only applied on one side. DBB valves typically have self-relieving seats. As a result, if pressure is applied to only one side of the valve and the integrity of that seat on the pressurized side is compromised, allowing pressure to build up in the cavity of the valve, the unpressurized seat can self-relieve releasing media to the unpressurized side of the valve. Thus, this valve design does not provide two sealing surfaces when pressurized from one side or as stated by API "does not provide positive double isolation". The OSHA definition requires two valves in series with a means of venting the pressure between the two valves. This setup provides a higher level of isolation than the API definition.

Q What does the term double isolation and bleed (DIB) mean?

A The double isolation and bleed definition per API 6D is "a single valve with two seating surfaces, each of which, in the closed position, provides a seal against pressure from a single source, with the means of venting/bleeding the cavity between the seating surfaces." Unlike the typical DBB valve, DIB valves have at least one seat that is not self-relieving. In the scenario previously stated, if a DIB valve is pressurized from only one side with a compromised seat, allowing pressure to build up in the cavity, the unpressurized seat will not relieve and will contain the cavity pressure. Thus, this design provides two positive seals. DIB valves are offered in both unidirectional and bidirectional designs. Unidirectional designs typically have a self-relieving seat on the upstream side and a non-self-relieving seat on the downstream side. Bidirectional designs do not have a self-relieving cavity and

may require some external method to vent any cavity pressure build up.

Q What are the benefits of DBB/DIB valves?

A DBB/DIB valves can provide users with many benefits. Most importantly, with the proper arrangement and proper decommissioning procedure, users can check the integrity of seat seals providing true positive isolation which drastically increases safety and ease of maintenance.

Q What type of testing is outlined in the specification?

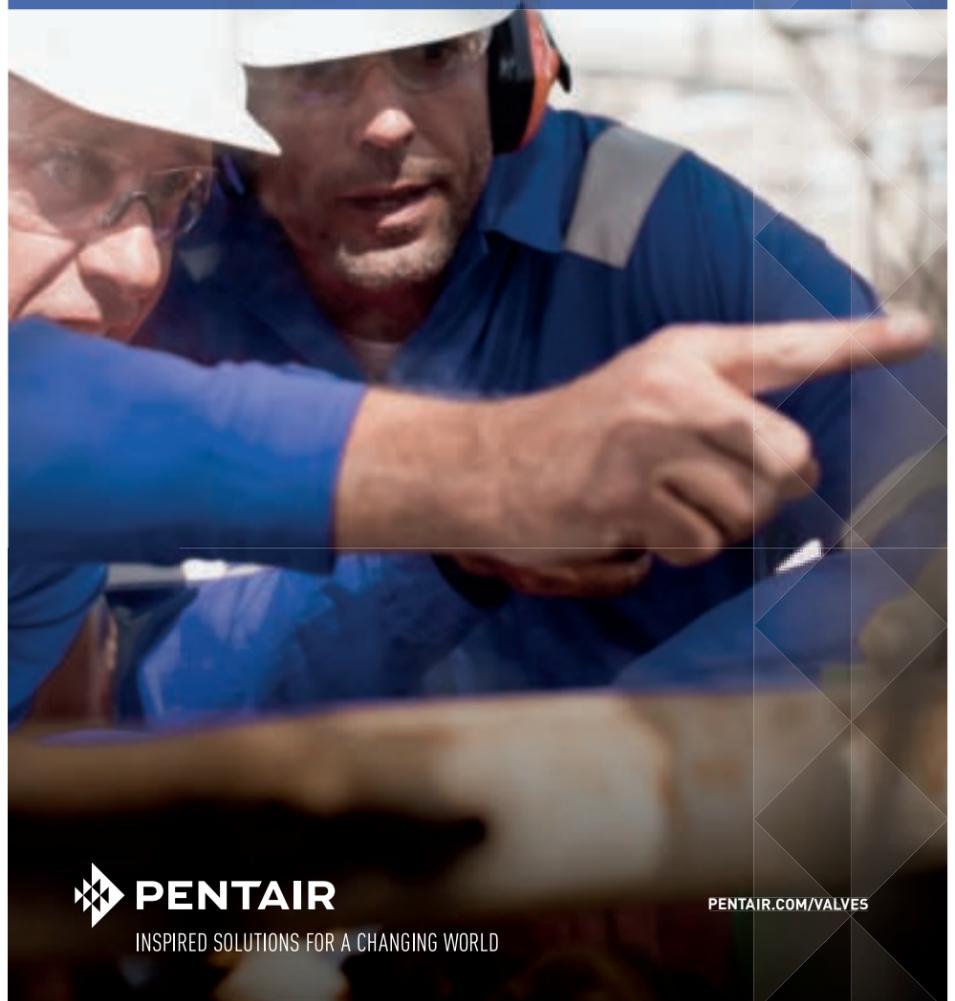
A Contrary to many of the design specifications found in the refining sector, which rely on external testing specifications, API 6D includes numerous test protocols. Mandatory hydrostatic testing requirements and acceptance criteria can be found in the body of the document. API 6D also offers several supplementary test options for users to specify in a normative annex. The supplementary testing includes two low pressure gas seat tests, high pressure gas shell test, high pressure gas seat test, anti-static test, torque/thrust functional test, drive train strength test, cavity relief test, DBB and DIB test. The optional supplementary tests offer users the opportunity to require valves be subjected to a higher level of scrutiny via additional and/or more stringent testing.

ANDERSON GREENWOOD CLARKSON CROSBY FCT KEYSTONE KTM SEMPELL VANESSA YARWAY

WE ARE THE PEOPLE TO TAKE YOUR BUSINESS FORWARD

As the people behind these world famous brands, Pentair is not just one of the biggest names in the global valve market but a key partner to industries worldwide. We produce valves and controls that consistently set the standard for performance and reliability. So when it comes to improving the efficiency of your business, go forward with Pentair.

For more information on Pentair Valves & Controls visit www.pentair.com/valves



PENTAIR

INSPIRED SOLUTIONS FOR A CHANGING WORLD

PENTAIR.COM/VALVES