

January 21, 2013

To: General Distribution

Re: Gaskets for High Pressure Oval Manways

Temperature	400F or greater
Application	Oval manway.
Media	Steam, typical
Pressure	1000 psig or greater

Recommended gasket is an MCR 304/304/FG x .175" thick, a Flexseal spiral wound with a 304 SS inner ring and windings. The inner ring will preferably be ¼" to 1/2" wide x 1/8" thick and windings 5/8" wide or greater and .175" thick. The internal pressure must be specified when the gasket is ordered, since the windings and filler will change as the internal pressure increases. The use of an inner ring will ensure the inner wraps of the windings are compressed in the flanges and are not exposed and uncompressed at the ID. This problem with exposed inner windings occurs because the door typically has a raised edge to position the gasket, but there is always clearance between the raised edge and the opening of the manway. Without an inner ring, the windings start right at the raised edge of the door but fall inside the opening in the manway.

Bolt torque: Torques can be calculated based on the size and quantity of bolts. However, in almost all cases, the maximum torque is limited by the design of the hardware, and is far lower than the calculated torque based on the desired assembly stress on the gasket. In assemblies with "yokes" across the opening, the limiting factor is usually the strength of the yokes, or it can be the method of attaching the bolts to the door.

Other manways have flat plates across the opening through which the bolts pass, with nuts outside the plates. Either way, the manway manufacturer specifies the max allowable torque.

One special situation involves ROUND (circular) internal manways. Because the opening is round, and the gasket must pass thru an opening that is smaller than the gasket, the installers will bend the spiral to flatten them to fit through the opening. The gaskets are then stretched to reshape them into a round gasket. Since we recommend inner rings for spirals in all manways, the inner ring will need to be two-piece, with a dovetail. Either way, we do not ENDORSE this practice, but it is probably the only

option. It is not possible to do this with a kamm; a kamm could potentially be bent sideways but that will probably damage the facing material.

Bolt retorquing: Internal manways and handholes almost always lose bolt load when the system is pressurized. The internal pressure often creates more compressive load than the bolting assemblies, so additional gasket compression will often occur. This leaves the bolts loose and can lead to leaks on restarts.

Any retorquing must be done with the system de-energized: no pressure, empty vessel, with all applicable lock-out/tag-out systems in place.

Please feel free to contact Applications Engineering should you require anything further.

Sincerely,



Dave Burgess
Applications Engineering
Industrial Gasketing

cc: J Crandall C Hicks C Yoder

file: g/ingasket/applications/customer info