

Testing – Pressure test on diaphragm seals

Description

A pressure test is performed to determine the product integrity and fabrication quality of the product. This test is performed as a part of the production process to ensure the safety and quality standards. These standards are internal quality standards as well as international standards such as ISO, PED, ASME, EN, and API.

Diaphragm seal testing

Standard testing

All diaphragm seal applications are tested. The purpose of this test is to check the mechanical integrity, leakages on fill holes and gaskets in case of upper and lower part assemblies. In case of DP applications the balance of the filling is checked to limit the zero shift.

The test pressure value is calculated based PED test pressure calculations. In some cases this test pressure cannot be met due to the limits of the transmitter or the maximum allowed operation pressure of the application the test pressure is decreased to not damage the application. The pressure limits taken into account are the maximum working pressure of the pressure instrument and the maximum operating pressure of the assembly based on fill fluid and capillary length. When the PED test pressure is exceeding these maximum pressures the lowest pressure is taken.

Optional testing

Optionally a deviating test pressure can be requested, however test pressure above the MWP of the pressure transmitter or diaphragm seal application is not possible. Typical pressure values are 1.5x the flange rating or the specific design pressure of the process.

Sample testing

Sample tests on products and construction are done as quality assurance so the individual parts can withstand all pressures prescribed by PED or ASME. Results of the pressure tests are proprietary and will not be disclosed.

Flush assemblies

Standard testing

In line with the EN 12266-1 each sealing point will be 100% tested with leak detection fluid under standard test pressure. The test medium is a gas. At leaking point, after application of the leak detection fluid, bubbles become visible. This bubble detection method can detect leak rates of approximately 1×10^{-3} mbar l/s. Assemblies of flush ring and flush flanges with plugs or valves are leak tested by this method. During the leak test all fittings and welds are tested at 6 bar for 30 seconds after application of the leak detection fluid.

Optional test method

Additionally to the standard method the assemblies of flush rings and flush flanges combined with plugs or valves can be tested at customer determined pressure values with a maximum of 150% of the MWP. The 6 bar of air in the standard method will be changed to the customer value of 150% of the MWP. Above 150 bar the test medium will be changed from gas to liquid.

Test Equipment

The equipment used for testing varies per product type and pressure range. There are several types of fixtures used to assemble the unit under test to ensure a safe and proper construction. Pressure generators such as compressors, boosters and pumps are used to create the elevated pressure.

Test media

The test medium of the pressure tests is compressed air up to 150 bar. Above 150 bar up to 1034 bar the media will change to potable water. All test media are monitored by the quality department to ensure the correct values to prevent corrosion. When water is used we ensure that the values are below the 30 ppm chloride content and a PH value between 6.5 and 7.5 as mentioned to comply with EN, ASME, NORSOK and MSS standards.

Holland – Romania – India – Thailand – Dubai – USA

To our knowledge, the information contained herein is accurate as of the date of this document. However neither Badotherm, nor its affiliates makes any warranty, express or limited, or accepts any liability in connection with this information or its use. This information is for technical skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other product. The user alone finally determines suitability of any information or material in contemplated use, the manner of use and whether any patents are infringed. This information gives typical properties only. Badotherm reserves the right to make changes to the specifications any materials without prior notice. The latest version of the datasheet can be found on www.badotherm.com.

© 2015 Badotherm, all rights reserved. Trademarks and/or other products referenced herein are either trademarks or registered trademarks of Badotherm.

GIN 7001
20th of April 2020