

INTRODUCTION TO **DIAPHRAGM SEALS**

A diaphragm seal is an instrument that is designed to isolate and/or protect a pressure measuring instrument from corrosive, viscous, contaminated or very high temperature process media. The pressure measuring element, of the measuring device, and the instrument connection port are filled with a suitable liquid, utilizing state of the art vacuum filling technology, making pressure measurement a direct and simple process. Pressure, when applied to the surface area of the diaphragm causes a pressure increase in the fill fluid and from there is transferred to the attached pressure gauge, transducer, switch or any pressure measuring device for measurement indication.

Each unit, once assembled and filled, is calibrated as a complete system and marked with an anti-separation paint, colored specifically to the system fill fluid. The marking is to ensure that the integrity of the system has been maintained. Any separation of the measuring instrument from the diaphragm seal results in a loss of fill fluid creating the potential for measuring errors.

When applying a diaphragm seal to a pressure gauge the accuracy rating is decreased by 0.5% above the standard ANSI specification to compensate for tolerances in the elasticity of the diaphragm material and changes in volume of the system fill fluid caused by thermal expansion and compression.

When choosing a NOSHOK diaphragm seal consideration must be given to the following factors during the selection process to ensure safe and proper operation within the selected application:

Process Media:

The pressure media is going to be the primary determining factor for all other aspects of the selection process. The customer needs to have full knowledge of the media composition, ambient and operating temperature and maximum working pressure in able to accurately select the materials and fill fluid necessary for safe operation of the diaphragm seal system. NOSHOK cannot guarantee compatibility of materials and process media, the customer is responsible for final material selection.

Upper Housing:

The upper housing may serve as a support structure for the pressure measuring instrument and the upper portion of the diaphragm. This portion of the seal does not come into direct contact with the process media and is available in a variety of metallic materials such as carbon steel and 316SS.

Temperature:

The ambient and operating temperature should be indicated when selecting the appropriate materials and fill fluid. For process temperature over 212 °F a capillary is recommended.

Fill Fluid:

When choosing the appropriate fill fluid, make certain that it is compatible with the process media. A fill fluid such as glycerine may become volatile in the event that it comes into contact with a strong oxidizing agent such as chlorine, forms of oxygen or peroxide and nitric acids. NOSHOK offers a variety of fill fluids to suit most application needs. If uncertain please consult the factory for fluid compatibility.

Diaphragm:

The diaphragm serves as the isolating device between the process media and pressure measuring element. Based upon the process being measured and pressure rating, NOSHOK offers a vast array of metallic and non metallic materials to fit most demanding applications.

Lower Housing:

The lower housing comes into direct contact with the process media and therefore must be compatible with such. NOSHOK offers a variety of metallic, non metallic and field replaceable lower housings.

Other Remaining Factors:

Consideration must be given to maximum pressure ratings, O-ring and gasket materials, bolting materials for flanged connections and more. **NOSHOK has the capability to provide you with technical assistance in selecting the diaphragm seal that is right for your application. If it's not in our catalog, call us, we are confident that we can satisfy your needs.**

Compatible Instruments:

NOSHOK diaphragm seals are suitable for use with most pressure gauges, transmitters, transducers and pressure switches. Please consult factory for product specifications and compatibility.

