

Chemical Industry
Pharmaceutical
Biotechnology

Monitoring for Diaphragm Seals



Diaphragm Seals

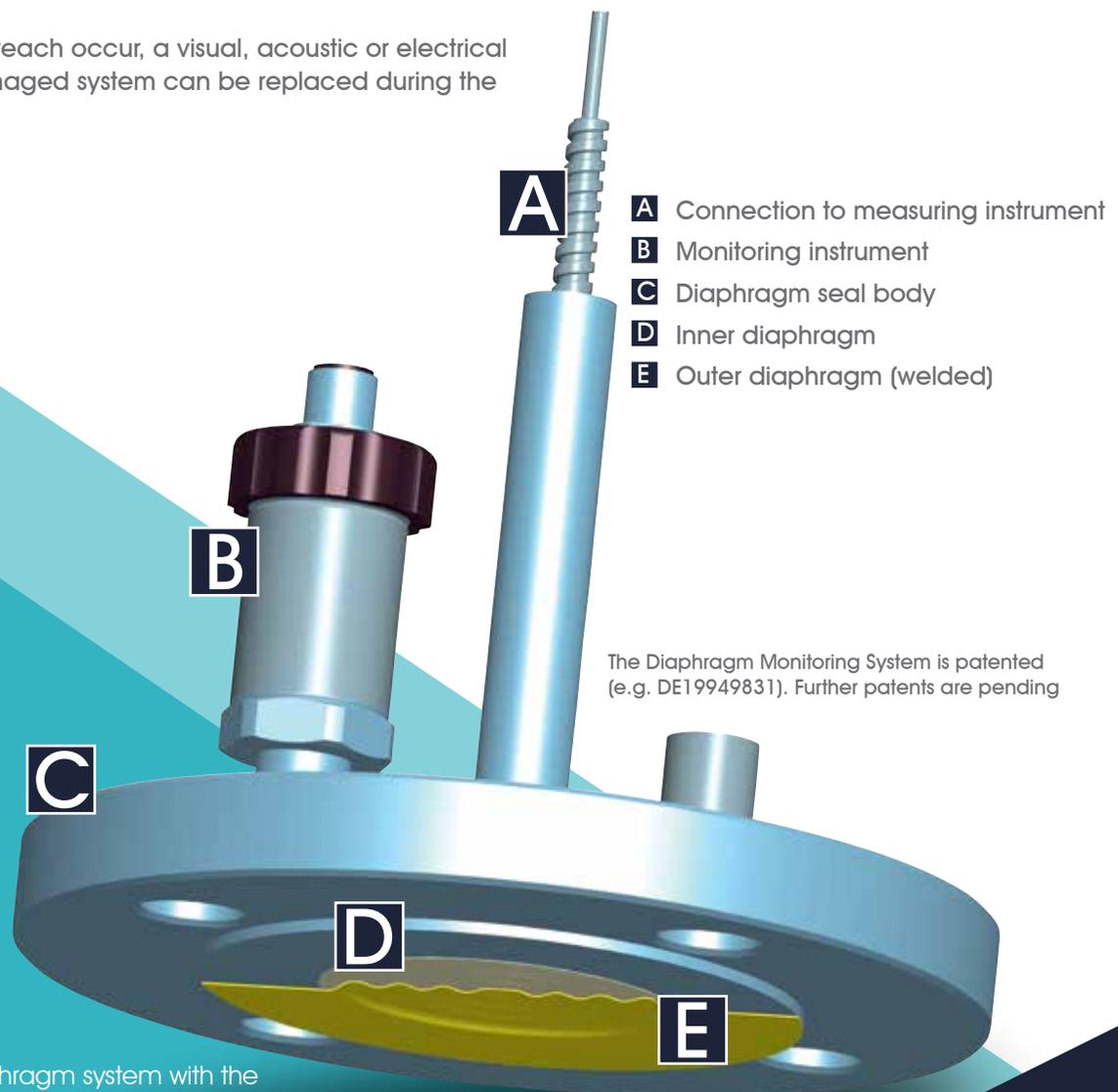
By using diaphragm seals, pressure measuring instruments can be adapted to even the harshest of conditions within the sanitary and process industries. A diaphragm made of the appropriate material separates the process medium from the pressure measuring instrument.

In this way, the pressure can be reliably measured. However, even a stainless steel diaphragm can wear over time if it is installed in a critical or aggressive application.

Diaphragm Monitoring

WIKA's patented double-diaphragm design offers a solution for critical applications where the product must not find its way into the environment, or where the fill fluid in the diaphragm seal assembly must not come in contact with the product for any reason. The space between the inner and outer diaphragms is evacuated. The resulting vacuum is monitored by a measuring device, e. g. a pressure switch, gauge or transmitter.

Should the outer diaphragm breach occur, a visual, acoustic or electrical warning will be given. The damaged system can be replaced during the next feasible shutdown.



Diaphragm seal with double-diaphragm system with the same contour; welded independently.

Solution Driven Applications

The diaphragm monitoring is available in a number of variations. There are two basic models:

- Double-diaphragm design for diaphragm seals with hygienic connections, e. g. for pharmaceutical applications.
- Double-diaphragm design for flange-type diaphragm seals with a flush diaphragm.

Pressure gauges, pressure switches or pressure transmitters are suitable as measuring instruments.

On the following page you will find guidelines on how to specify this design. Please enter specific data for your applications, e. g. measuring range, or temperature conditions.

Life Science Application Example

Small batches of boutique drugs are costly and timely to produce. This Diaphragm Monitoring system is ideal for this production process. If a diaphragm breach was to occur with a "typical" diaphragm seal pressure measuring instrument, the process media will be exposed to system fill fluid, jeopardizing the integrity of the complete batch. This dual diaphragm design prevents the system fill fluid from entering the batch, avoiding any potential contamination and loss of revenue. Also, a warning signal is generated indicating the instrument needs to be replaced prior to start of the next batch.



Example of a measuring assembly with threaded connection

Pressure gauge, 232.50 4"

Pressure gauge with reed switch, PGS23.062

Threaded type all-welded diaphragm seal, 990.34

Example of a measuring assembly with sanitary connection

Pressure transmitter, UPT-20

Pressure gauge with reed switch, PGS23.062

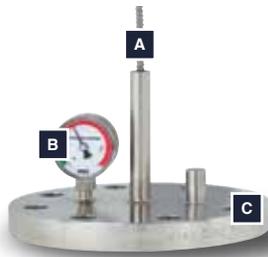
Sanitary clamp type diaphragm seal, 990.22 tri-clamp® connection



Specifying guidelines for diaphragm monitoring

Example:

Monitoring with pressure gauge



A Pressure measuring instrument

Pressure gauge

Model Nominal size

Pressure range

Alarm contact, Model*

Approvals*

B Monitoring instrument

Pressure gauge

Model Nominal size

Dial layout with scale green-red

Signal output, model*

Approvals*

C Diaphragm seal

Model

Process connection

Suitable wetted parts material

Connection

Direct mounting

Cooling tower between diaphragm seal and measuring instrument

Capillary length feet

System fill fluid

Process conditions

Process medium

Pressure limitation max. psi (Vacuum pressure ranges impossible)

*optional

Process temperature from to °F

Ambient temperature from to °F

WIKA Instrument, LP

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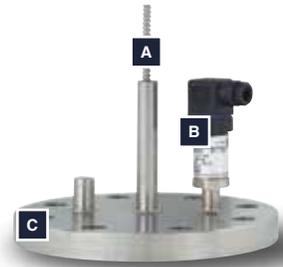
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Example:

Monitoring with pressure transmitter



Pressure transmitter

Model

Pressure range

Electrical output signal

Electrical connection

Approvals*

Pressure transmitter

Pressure switch

Model

Measuring range

Electrical output signal

Electrical connection

Approvals*

