



Chemical & petrochemical industries

# Diaphragm monitoring for diaphragm seals



Smart in sensing

# DIAPHRAGM MONITORING SYSTEM

The WIKA combination of diaphragm seal, pressure measuring instrument and monitoring element is ideally suited for the harshest measuring tasks. The systems can withstand aggressive, contaminated media and they ensure a secure connection between

the medium and the diaphragm monitoring system. In this way the pressure can be determined reliably, and the diaphragm condition can be monitored.

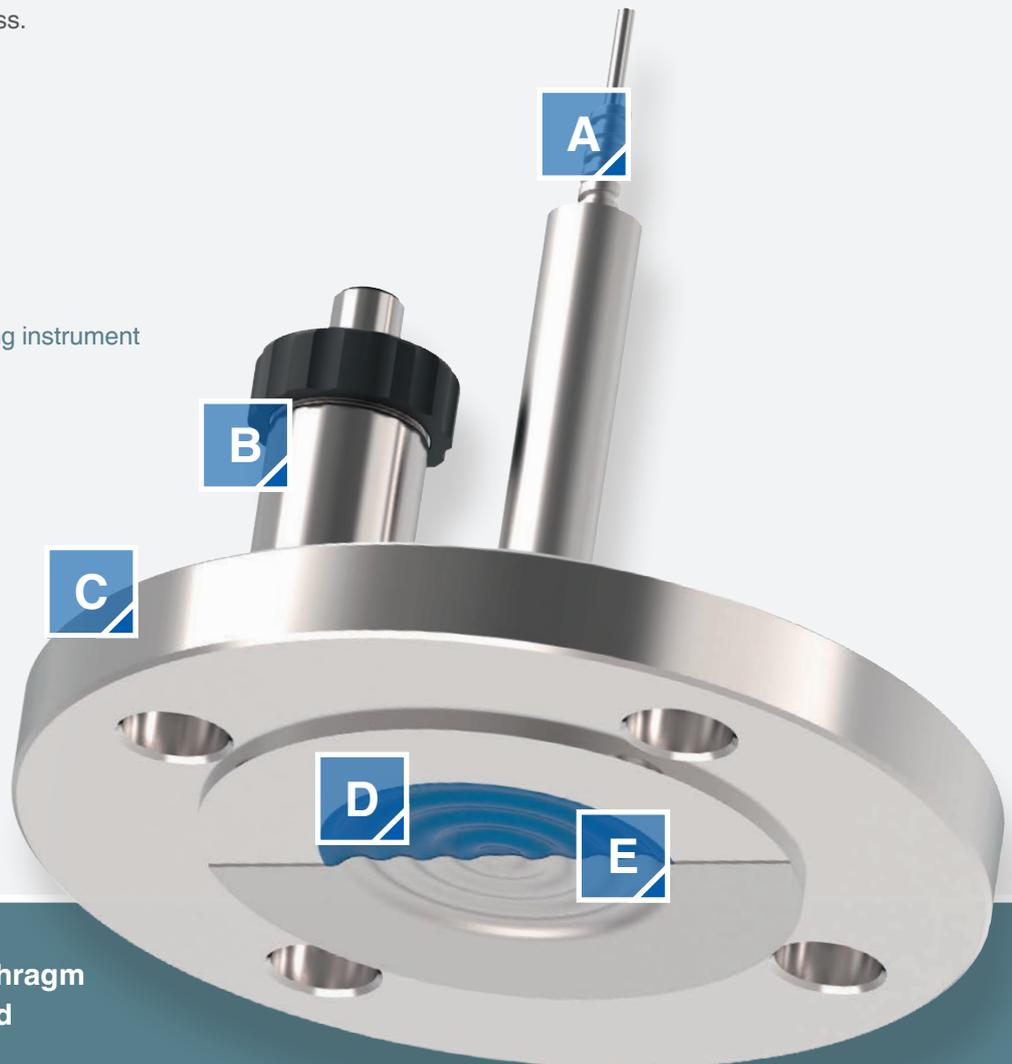
WIKA's patented double-diaphragm design is the solution for critical processes where neither the medium should find its way into the environment, nor should the system fill fluid find its way into the product (patent no. Germany: DE102016015447, China: CN108240885, Netherlands: NL2019251, USA: US2018180505).

In the event of a diaphragm rupture, a second diaphragm in the diaphragm seal system ensures the reliable separation of the environment and the process.

The measuring task can still be performed.

Time to act – without any risk for the process.

- A** Connection to the pressure measuring instrument
- B** Monitoring element
- C** Diaphragm seal
- D** Internal diaphragm
- E** Outer diaphragm



Diaphragm seal with double-diaphragm system of the same shape; welded independently of each other.

# VARIABILITY

The diaphragm monitoring can be realised on a number of instrument variants. You can choose between three basic models:

- Double-diaphragm system with flange connection and all welded, flush diaphragm
- Double-diaphragm system with threaded connection and internal, all welded diaphragm

## Diaphragm monitoring system with threaded connection



## Diaphragm monitoring system with flange connection

Pressure measuring instrument: Model IPT-20



Monitoring element:  
Pressure sensor  
model IS-3

Diaphragm seal: Model 990.27

Pressure gauges, pressure sensors, pressure switches or process transmitters are suitable as measuring and/or monitoring elements.

The monitoring element is mainly used for electrical signal transmission of the diaphragm condition. In addition, the diaphragm condition can be displayed on-site on a dial with red/green areas.

## DMS27

### Diaphragm monitoring system



Process connection	Flange connection
Application	For the chemical and petrochemical industries, oil and gas
Material	Hastelloy C276 2.4819, UNS N10276
Data sheet	DS 95.23

## DMS34

### Diaphragm monitoring system



Process connection	Threaded connection
Application	For the chemical and petrochemical industries
Material	Monel 400 2.4360, UNS 04400, other materials on request!
Data sheet	DS 95.18

# FUNCTIONAL DESCRIPTION

## Normal operation

In normal operation, the pressure measurement and the diaphragm monitoring operate without limitations within the performance limits of the overall system. The space between the two diaphragms is evacuated. With the monitoring element, this vacuum is measured and the condition signalled in the green area. No alarm signal will be output.

## Diaphragm rupture

In the event of a diaphragm rupture, the pressure monitored in the intermediate space increases. As soon as the display of the monitoring element exceeds the preset switching value, an electrical/optical alarm signal will be output. This signals the diaphragm rupture.

## Safety

The measuring technology of the monitoring element withstands the process pressure despite the diaphragm rupture. The measuring function of the overall system is maintained without limitations. The process safety is guaranteed because the materials used for the two diaphragms are the same as those of the wetted parts of the diaphragm seal. The overall system is, nevertheless, damaged and must be replaced immediately.



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