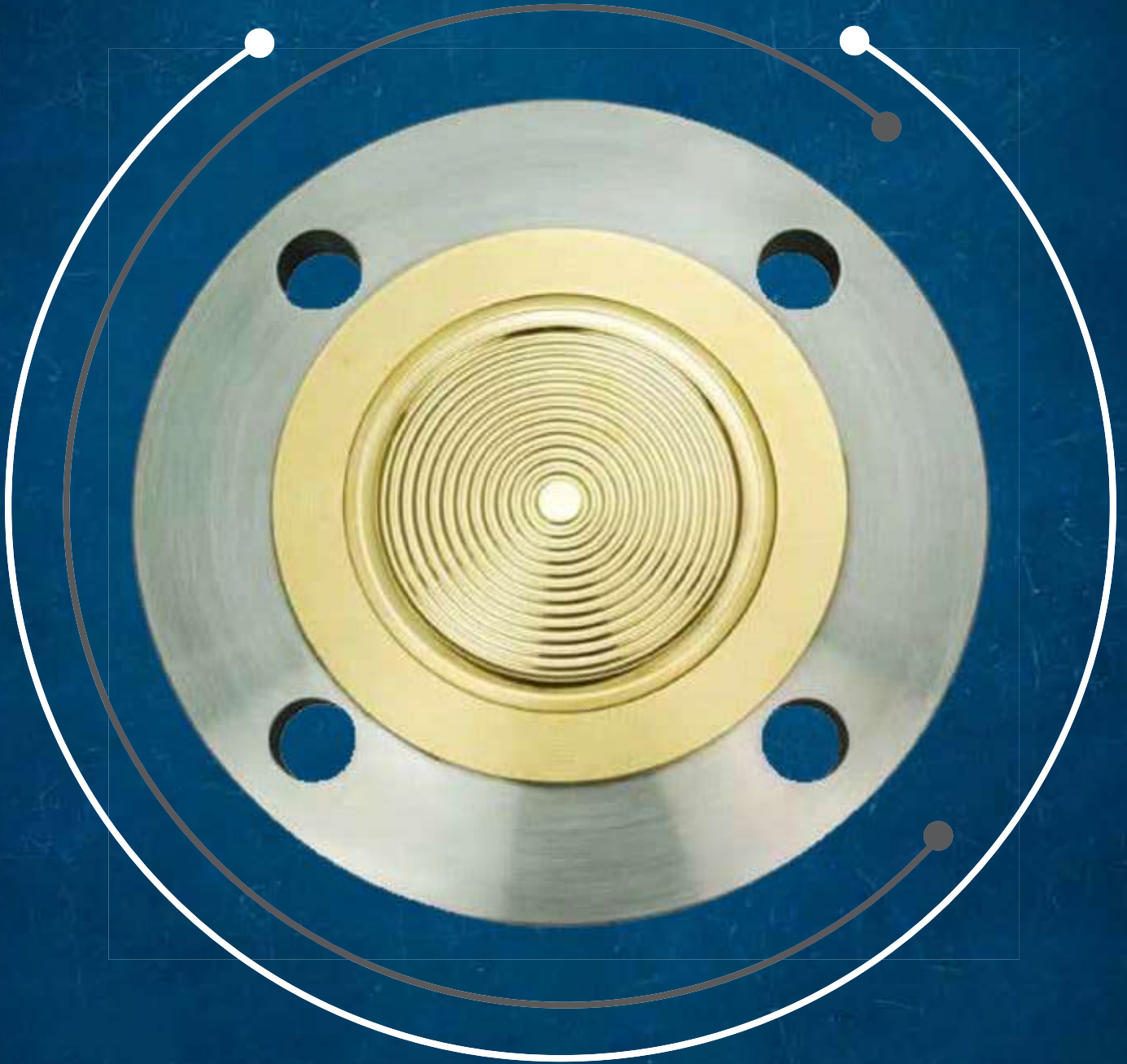


UNDER PRESSURE



DIAPHRAGM SEAL SYSTEMS

About Us

Shridhan manufactures Field Instrumentation for highly critical applications along with the necessary Product and System Approvals to support most global applications in Oil & Gas, Onshore, Power, Steel, Pharmaceutical, Chemical, Food & Beverages, Marine & Mining industries.

Our Global Sales and Marketing reach covers Middle East, USA, Northern Europe & Far East with Diverse Sales & Representative Offices.

Having a team of Qualified Engineers, Technicians & Highly Experienced Employees – We form a superior solution provider to your application needs.

Shridhan firmly believes that continuous pursuit of Customer Satisfaction starts with the close analysis of our customer requirement and continuous Innovation that is consistently performing in the market with an excellent product range and support.

An essential part of our activities in the last decade has been expanding our global reach with our subsidiary in the Middle East and gradual implementation of expanding our product manufacturing facilities globally which lead to enlarging our customer base around the world.

In coming years, we strive to be one of the most reputed brands in Field Instrumentation worldwide.

Our diaphragm seals manufacturing is in collaboration with **PCI Instruments**, with **over 40 years** of experience with process instrumentation. PCI is a leading **British manufacturer** of process instrumentation for the Pharmaceutical, Food Processing, Dairy, Chemical, Petrochemical and Nuclear industries. The PCI brand stands for products that live up to the demands of the industry in terms of reliability and accurate measurement.

With PCI we are committed to deliver high-quality instrumentation, with competitive pricing and provide a fast and efficient service. We are continually investing in new technologies to expand our product range and to improve quality.

BANGALORE, INDIA



SHARJAH, UAE



Index



Introduction to Diaphragm Seals



Fill fluids and Capillaries



Advantages of Diaphragm Seals



Types of Diaphragm Seals



Diaphragm Seal Integration with
Pressure Instruments



Accessories

When to use Diaphragm Seals?

A diaphragm seal is a flexible membrane that seals and isolates an enclosure. The flexible nature of this seal allows pressure effects to cross the barrier but not the material being contained. Common uses for diaphragm seals are to protect pressure sensors from the process fluid whose pressure is being measured.

A Diaphragm seal can be mounted to almost all pressure instruments. They are mostly used in combination with pressure (gauge or differential) transmitters, but also in combination with pressure gauges and pressure switches.



Protect the Instrument and Process Medium



Corrosive



Extremely hot



Viscous or contains solid particles



Sterile (Important to eliminate formation of bacteria)

Fill Fluids

Most liquids naturally contain microscopic amounts of dissolved gases. These gases expand or contract with ambient and process temperatures, which affects the fill fluids volume.

The fluctuation of the fill fluid volume inside a filled system can be detrimental to the accuracy of a pressure instrument. The instrument's sensing element misinterprets it as a pressure change. Resulting in measurement errors.



Fill Fluids

Usage of Capillary Lines

The diaphragm seals and the pressure instrument can be connected by means of a stainless-steel capillary with a flexible armor. The length of capillary should be carefully selected for best results and to ensure a balanced system.



DP Transmitters with
Capillary and Remote Seals

Diaphragm Seal Advantages

- **Laser welded seals**
- **Low volume capacity** : Reduced fill fluid capacity prevents measurement errors caused by temperature, minimises potential process contamination.
- **Backup diaphragm convolution** : Helps diaphragm maintain original form. Protects the diaphragm against rupture.
- **Recessed diaphragm** : Protects diaphragm from installation damage. Minimises chances of gasket induced errors. We use a convoluted base on our seals which mirrors the diaphragm to add strength and reduce the risk of rupture should a serious pressure overload take place within the process system.

Types of Diaphragm Seals

There are various types of Diaphragm seals, such as threaded and flanged executions, with connections for hygienic requirements. Typically diaphragm seals are made of stainless-steel Construction; however, we also specialize in exotic metal diaphragm seals. These are required for aggressive applications within the Nuclear, Oil + Gas and Chemical Industries and are the most common material that typically requires refurbishment.



Gauge Pressure Transmitters with Chemical Seal



DP Transmitter with Single Seal



DP Transmitter with Extended Seals



Calibration System



Flanged
Diaphragm Seal



Hygienic Seal



HYGEIA-RJT
RJT Hygienic Diaphragm Seal



HYGEIA-DIN-MALE
DIN MALE Hygienic Diaphragm Seal



Low Pressure Seal
with Internal
Diaphragm



Tetroseal
Flanged Diaphragm Seals



CELL
Pancake Seals



HYGEIA-SMS-MALE
SMS MALE Hygienic Diaphragm Seal



TankSpud
Diaphragm Seal



Tetroseal-FSE
Flanged Seals Extended Type



HYGEIA-TRI-CLAMP
TRI CLAMP Hygienic
Diaphragm Seal



2W
All Welded Chemical Seal



PANCAKE TYPE
Seal-Cell



TRI CLAMP SEAL



Flanged-Internal
Diaphragm Seal



TETROSEAL-SF
Slip On Flanged Seal



BCS-PTFE
PTFE Bolted Chemical Seal



IL
Hygienic Inline Seals



TE1000B
Bolted Chemical Seal



P2
Plug Seals



BCS
Bolted Chemical Seal



HYGEIA-DIN
DIN Hygienic Diaphragm Seal



HYGEIA-SMS
SMS Hygienic diaphragm seal



HYGEIA-IDF
IDF Hygienic Diaphragm Seal



Extended Flange
Diaphragm Seal



P2W
High Pressure Seal



OPTIMUS
Low Pressure Chemical Seal
with Internal Diaphragm



HYGEIA-VARIVENT
VARIVENT Hygienic
Diaphragm Seal



PAP
Pulp and Paper Seal



PLASTO
PVC Seal

Diaphragm Seal integration with Pressure Instruments

Turbo boost filling technology - state-of-the-art manufacturing

A diaphragm seal can be mounted to almost all pressure instruments. Mostly they are used in combination with pressure transmitters – differential or gauge types. They can also be used in combination with Pressure Gauges and pressure switches. The use of diaphragm seals is recommended when the process medium is:

- Corrosive
- Extremely high or low temperature
- Viscous or contains solid particles
- Sterile (Important to eliminate formation of bacteria) – sanitary connections

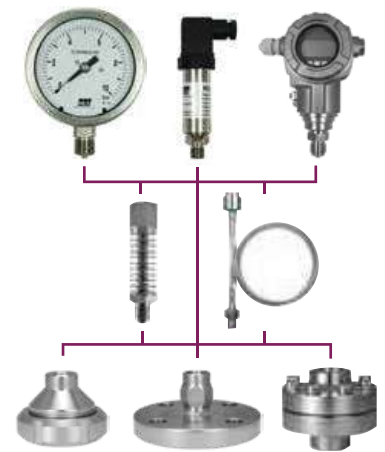
Diaphragm seals can also be used when in the process where there are chances of H⁺ ions being present, that can permeate the diaphragm. In these cases, a diaphragm seal with GOLD COATING is provided to protect the transmitter from Hydrogen permeation.

Shridhan utilizes a highly accurate turbo-boost filling technology, which allows an optimal degassing (de-vacuuming) of the fill fluids, thus providing a negligible influence on the accuracy of the instrument.

The pressure instrument is direct mounted or through a capillary line to the diaphragm seal. The complete volume of the diaphragm seal, the capillary and the measuring system, is filled under high vacuum with the appropriate fill fluid.

The seals are filled with fluids, such as silicone based, inert and FDA approved oils (for hygienic seals). Filling fluids that we use can withstand various temperature ranges between -105 °C up to 410 °C.

The mounting and filling is done professionally according to stringent International standards and procedures. We have our own calibration test systems / equipment in place to attain a high accuracy and communication protocols are readily available – HART, FOUNDATION FIELDBUS, D/E, etc.



Fit and Fill Service to all
Transmitter OEM'S



Calibration Station



Turbo Filling Station

Accessories

Flush Rings and Flush Flanges

Flushing rings are used with flanged chemical seal systems for flushing or venting the space immediately in front of the diaphragm. They are simply mounted between the flanged process connection and the diaphragm seal. The two flushing ports allow washing out of particles accumulated in front of the membrane and the pressure space can be vented or drained according to requirement.



Flush rings & Flush flanges

Valves and other Accessories



CT
Cooling Tower



SY
Syphons



CAP
Armoured Capillary



M1-I1-E1
Electric Alarm Contacts



MAX-DRAG-POINTER
Max / Drag Pointer



NNV4-NRPV-NGSV
Needle Valve



M3VS-M3VM-M3VMN-M3-
VA-M3VF-M3VD-M3VP
3 VALVE MANIFOLDS



M5VA-M5VG-M5-
VD-M5VQ-M5VV-M5VR
5 VALVE MANIFOLDS



MF5V
Manifold 5 valve to suit BP400

Industry Verticals



Oil & Gas



Petroleum



Chemical & Petrochemical



Power Generation



Pharma



Food & Beverages

HQ and Manufacturing - 1

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