



# Chemical Diaphragm Seal



[www.azaransanjesh.com](http://www.azaransanjesh.com)



[info@azaransanjesh.com](mailto:info@azaransanjesh.com)

## Introduction:

Diaphragm seal systems protect gauges from hot, viscous, contaminated or corrosive media. This added layer of protection ensures that the media doesn't reach the gauge, helping to prevent gauge failure that can cause safety issues for operations and personnel.

## Diaphragm Seals:

- Prevent clogging, corrosion or contamination of your pressure instruments
- Extend the service life of the pressure instrument
- Reduce or eliminate maintenance costs

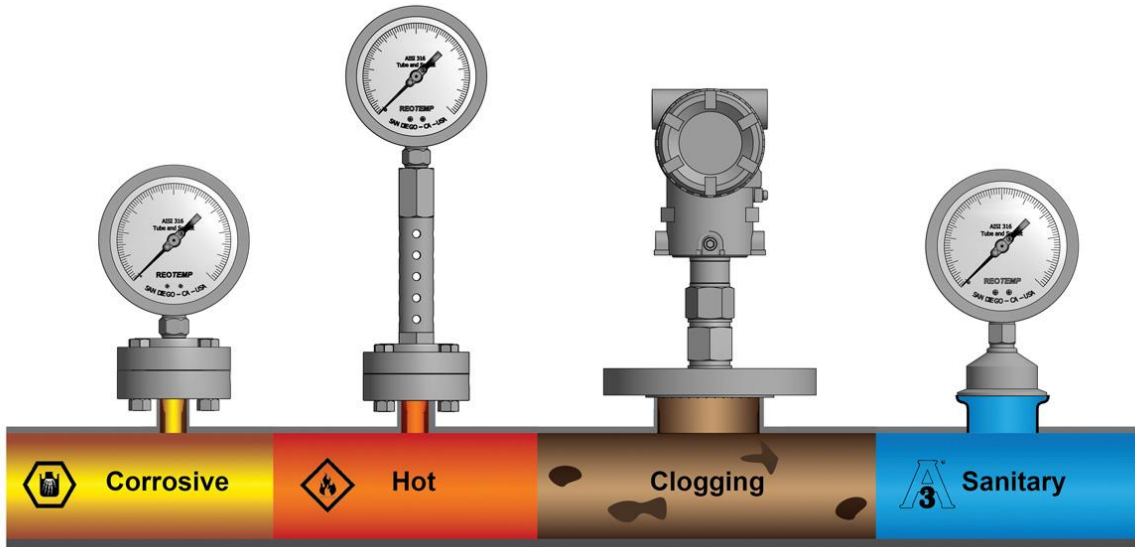


Figure 1: Diaphragm Seal Applications

## Operating Principle:

A diaphragm seal is connected to the measuring instrument via a direct connection or capillary. The instrument side of the seal is separated from the process media by a flexible diaphragm. The chamber between the diaphragm and the instrument contains system fill fluid (normally with glycerin or silicon oil) which transfers the pressure of the process media. When fluctuations in pressure of the process media occur, the change is transmitted across the flexible diaphragm through the system fill fluid, which is hydraulically connected to the measuring instrument.

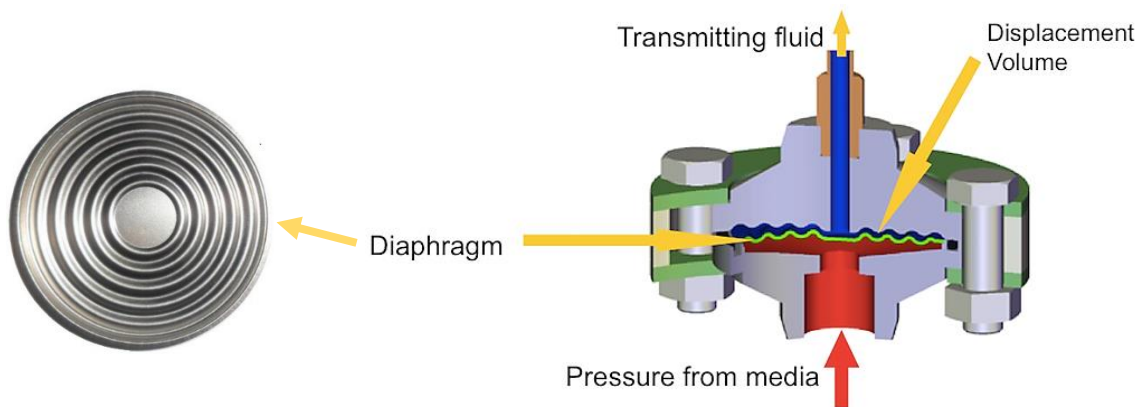


Figure 2: Diaphragm Seal Details

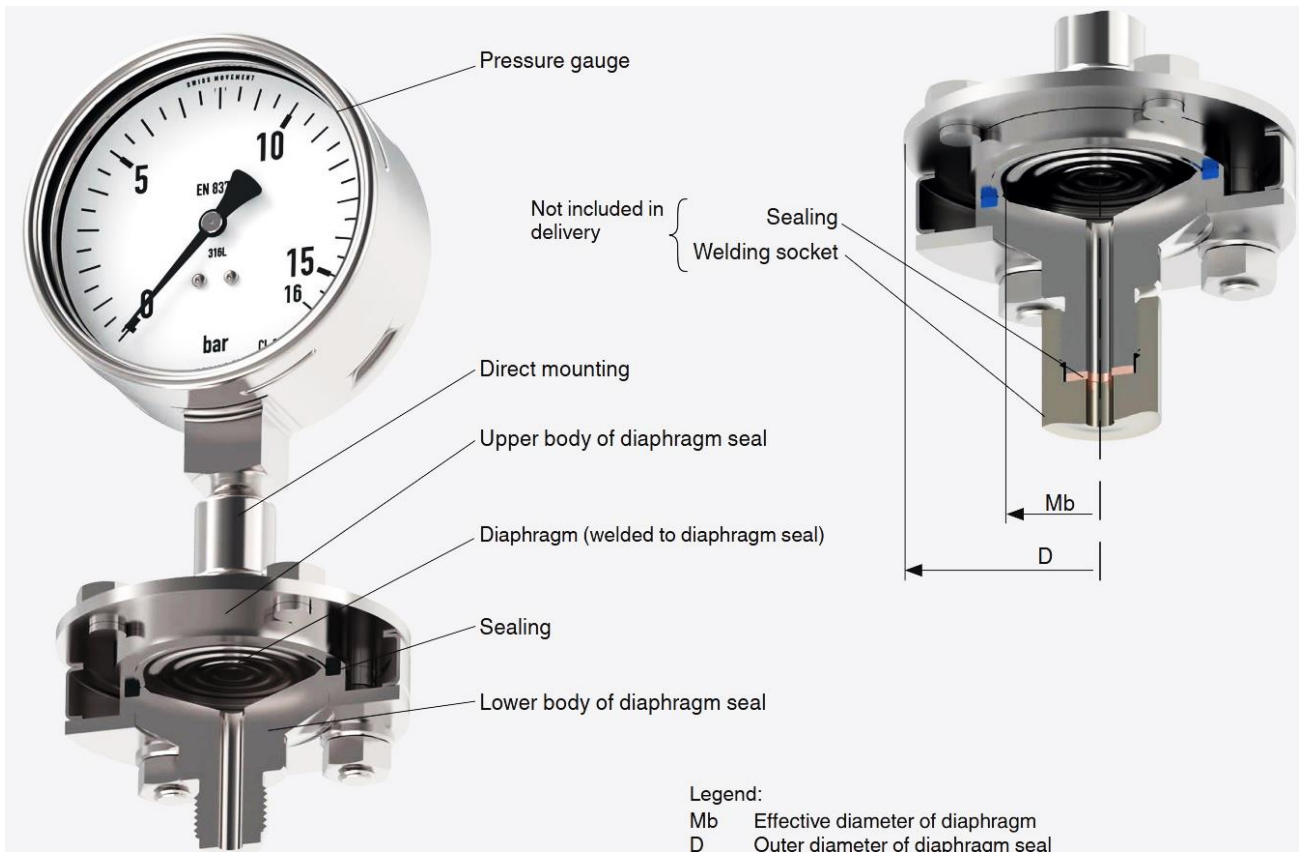


Figure 3: Coupled Diaphragm Seal Details

### Performance Consideration:

Mounting a Diaphragm Seal to a pressure instrument changes the performance of the instrument. The diaphragm seal system will have additional temperature effects and response time depending on the system configuration. The performance of the entire diaphragm seal system needs to be evaluated when specifying a new application to ensure satisfactory performance when mounted in process.

For this reason, our engineering team calibrate the pressure instrument after coupling with diaphragm seal by an approved calibration laboratory to ensure measuring amounts have acceptable accuracy and precision.

### Fill fluid characteristics:

Each fill fluid has its own characteristics, such as density, viscosity, thermal expansion, and vapor pressure. These characteristics are influenced by the systems pressure and temperature and determine the performance of the Diaphragm Seal System. The selection of the fill fluid depends on factors such as temperature, pressure, volume to be displaced (response time) and process safety. Most used fill fluids are **silicone oil**, **glycerin**, or **vegetable oils**. Also special inert fill fluids, such as Halocarbon® for chloride and oxygen applications and other special filling fluids for high temperatures (up to 410 °C) are used.

Ordering information's		
Model	Suffix Code	Description
Chemical Diaphragm Seal	CDS-M	Full Metal Diaphragm Seal
	CDS-S	Semi-PTFE Diaphragm Seal
	CDS-P	Full PTFE Diaphragm Seal
Process Connection	A	1/4" NPT Male
	B	1/2" NPT Male
	C	1/4" NPT Female
	D	1/2" NPT Female
	O	Optional
Nominal Pressure Rating	R1	0 – 10 bar
	R2	0 – 16 bar
	R3	0 – 25 bar
	RX	Optional – Contact us please for other pressure rating
Upper Housing Material	CS	Carbon Steel
	S4	Stainless Steel 304L
	S6	Stainless Steel 316L
	PT	PTFE
	XX	Other
Diaphragm Material	D1	Stainless Steel 304L
	D2	Stainless Steel 316L
	D3	Hastelloy C276
	D4	Monel 400
	D5	Inconel 625
	D6	Titanium
	D7	PTFE
	DX	Other
Lower Housing Material	CS	Carbon Steel
	S4	Stainless Steel 304L
	S6	Stainless Steel 316L
	PT	PTFE
	XX	Other
Gasket	G	NBR – max. Temp. 100 °C
	H	Viton(PFA) – max. Temp. 200 °C
	K	Teflon(PTFE) – 250 °C
	L	Metal Seal from C, SST – max Temp. 380 °C
	X	Other

Please Continue Coding:

Connection to Pressure instrument	5	1/4" NPT Female
	6	1/2" NPT Female
	7	Axial Weld-in Connection
	8	Other
System Fill port	W	Without
	N	Filler hole M6, set screw (standard)
Options, Certificates	P1	Calibration Certificates
	Q1	Material Certificates
	Z1	None



**ASPECO**

**Azaran Sanjesh  
Petro Equipment**

شرکت پترو تجهیزات آذران سنجش (سهامی خاص)

### Contact us:

Add: Unit 406, 4<sup>th</sup> Floor, No. 378, After Mirzaye Shirazi Int, Shahid Motahari Ave,  
Tehran, Iran - Postal Code: 15866-94945

Website: [www.azaransanjesh.com](http://www.azaransanjesh.com)

Email: [info@azaransanjesh.com](mailto:info@azaransanjesh.com)

Phone No.: +98 21 88 31 00 81-2

Mobile No.: +98 912 432 1814

Fax No.: +98 21 888 33 944

Whatsapp: +98 912 432 1814



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