



FP SERIES

Diaphragm seals

Diaphragm seal consists of an elastic element that insulates the process fluid from the sensing element, transmitting pressure through the compression of a liquid in a separation chamber.

It is necessary to adapt this device where there are particular physical and chemical characteristics incompatible with the sensing element. This way the instrument is no more subject to drawbacks caused by particularly aggressive fluids or by highly viscous, crystallizable or solidifiable process fluid.

The diaphragm seal is an integral part of the instrument, so there is no possibility of disassembling.

Diaphragm seals shown below are suitable for SP 200 and SP 300 series (Bourdon tube pressure gauges), for DP series (differential pressure gauges), for TR series (pressure gauges with integrated transmitter) and SE series (transmitters or pressure switches).

Our equipped shop and the filling sophisticated equipments, allow us to also apply the seals to all the electronic field process instrumentations supplied by clients.

TECHNICAL FEATURES

• Mounting

- direct;
(identification R)
- remote by flexible capillary
(identification S followed by the number indicating the capillary length in meters)
note: the remote mounting requires seal and pressure gauge set at the same level to avoid false calibration.

• Capillary material

- AISI 316L stainless steel with flexible armour of AISI 316;
- AISI 316L stainless steel with flexible armour of AISI 316 and PVC protection (option V79).

• Element (see special materials)

- o diaphragm:
 - AISI 316L st. st.
 - AISI 316L st. st. with P.T.F.E. coating;
 - special materials (Monel 400, Hastelloy C276, titanium, tantalum).
 - AISI 316L st. st. 40 micron gold plating.
- o bellows:
 - AISI 304 stainless steel (FP 344).

note: as indicated in the specific models, the separation chamber has a shaped upper part, that allows the diaphragm to stop without damages, in presence of over-pressures.

• Body material (see specific models)

- o upper part (where scheduled):
 - AISI 304 or AISI 316L stainless steel.
- o pressure connection:
 - AISI 316L stainless steel;
 - AISI 316L stainless steel with P.T.F.E. coating;
 - galvanized carbon steel (FP344);
 - exotic materials (Monel 400, Hastelloy C276, titanium, tantalum).

• Pressure connection (see specific models)

- threaded;
- flanged;
- sanitary.

• Diaphragm position (see specific models)

- facing;
- back side.

• Filling fluid (see specific models)

- silicone fluid suitable for temperatures $-30 \div +200$ °C (this fluid is food compliant);
- diathermic fluid suitable for temperatures $> +200 \div +400$ °C;
- fluorinated fluid suitable for oxygen service and temperatures $-30 \div +150$ °C.

• Thermal drift

diaphragm seal can affect instrument accuracy according with the service conditions because of the pressure/temperature ratio.

OPTIONS

• Integrated over-pressure protector

this device allows the diaphragm to withstand overpressure temporarily high, according with the units of the used diaphragm seal; the device is available for models FP 337, FP 338 and all flanged models with welded diaphragm.
(identification V28)

• Fluorinated fluid filling (identification V29)

• Flushing ring

AISI 316L stainless steel, for diaphragm inspection,

with double cleaning hole, available for model FP 337.
(identification V62)

• FPM (Viton) gaskets

for models FP 337/437/338/341/441/342/343.
(identification V74)

• PVC protection

PVC coating of capillary flexible armour.
(identification V79)

• Cooling tower

(identification V89)





Table FP 1

Model of available diaphragm seal according with flange size - as per EN 1092

DN \ PN	6	10	16	25	40	64	100	160
15	FP 341 FP 342	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...
20	FP 341 FP 342	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...
25	FP 341 FP 342	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...
40	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341	FP 339 FP 340 FP 341	FP 339 FP 340
50	FP 339 FP 340 FP 341 FP 343	FP 339 FP 340 FP 343 FP 350	FP 339 FP 340 FP 343 FP 350	FP 339 FP 340 FP 343 FP 350	FP 339 FP 340 FP 343 FP 350	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340
80	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340

Table FP 2

Model of available diaphragm seal according with flange size - as per ASME standards

DN \ CLASS	150	300	600	900	1500	2500		
1/2"	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...	...	...
3/4"	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...	...	...
1"	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342 FP 350	FP 341 FP 342	FP 341 FP 342	...	...	...
1" 1/2	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 341	FP 339 FP 340 FP 341	FP 339 FP 340	...	...
2"	FP 339 FP 340 FP 341 FP 342 FP 350	FP 339 FP 340 FP 342 FP 343 FP 350	FP 339 FP 340 FP 342 FP 343 FP 350	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340	...	...
2" 1/2	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340	...	...
3"	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340 FP 343	FP 339 FP 340	...	...

note: above models makes reference to Bourdon tube pressure gauges



FP 345

Diaphragm seal for paper industry

- **Mounting**

- direct;
- remote.

- **Element**

- facing welded diaphragm in AISI 316L st. st..

note: the separation chamber has a shaped upper part, that allows the diaphragm to stop without damages, in presence of over-pressures, according with the limit of diaphragm seal.

- **Body**

- AISI 316L stainless steel.

- **Connection fixing**

- AISI 304 stainless steel flange.

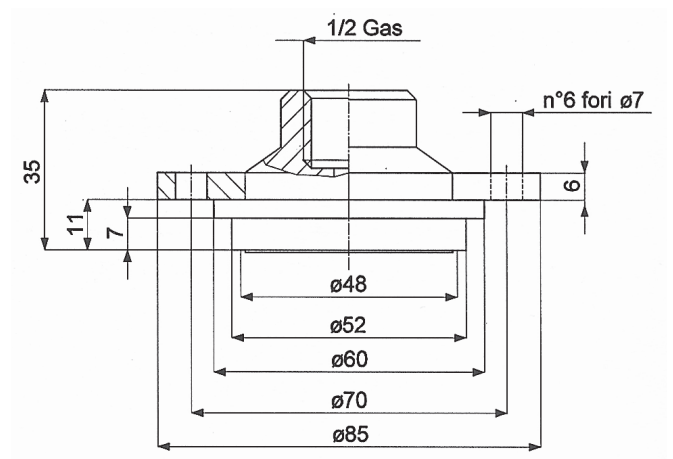
- **Filling liquid**

- silicone fluid.

- **Service conditions**

- pressure 2,5 ÷ 16 bar;
- temperature +10 ÷ +100 °C.

FP 345



Weight ~ kg 0,53

note: informations shown in this series may be changed at any time without prior notice.



FP 346/347/348

Diaphragm seals for food and pharmaceutical industries

Mounting

- direct;
- remote.

Element

- facing welded diaphragm in AISI 316L st. st.
- note:** the separation chamber has a shaped upper part, that allows the diaphragm to stop without damages, in presence of over-pressures, according with the limit of diaphragm seal.

Body

- AISI 316L stainless steel.

Pressure connection

(Sanitary process connection)

- o FP 346:
 - nut as per DIN 11851 - DN 32, 40 e 50 (DN 25 on request only);
 - nut as per SMS - DN 38 (1 1/2") e 51 (2");
 - nut as per other international standards (RJT-BS, ISS-IDF) on request only.
- o FP 347:
 - fixed connection as per DIN 11851 - DN 32, 40 e 50 (DN 25 on request only);
 - fixed connection as per SMS - DN 38 (1 1/2") e 51 (2");
 - fixed connection as per other international standards (RJT-BS, ISS-IDF) on request only.
- o FP 348:
 - Clamp - DN 1 1/2", 2" e 2 1/2" connection.

Filling liquid

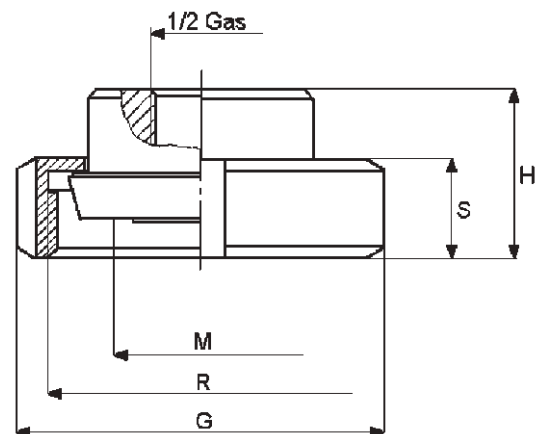
- food compatible fluid.

Service conditions

- pressure 2,5 ÷ 40 bar (2,5 ÷ 16 bar for FP 348);
- temperature - 20 ÷ +120 °C.

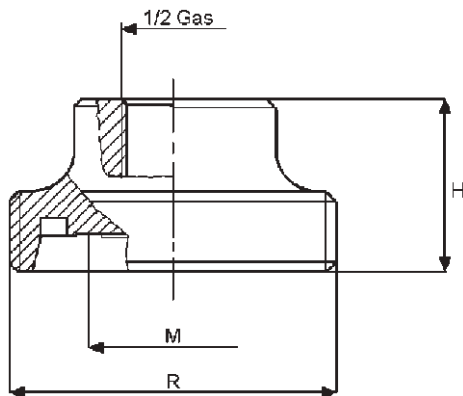
note: sterilization cycle doesn't affect the good performance of the instrument.

FP 346

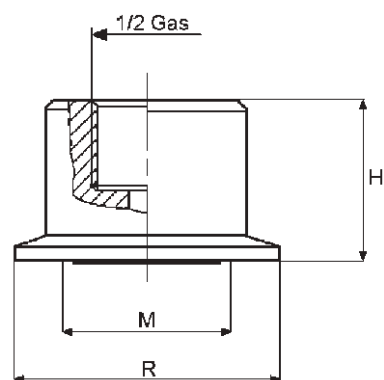




FP 347



FP 348



Model	DN	Range min bar	M	R	G	S	H	Weight ~ kg
FP 346 DIN 11851	32	0 ÷ 4	30	Rd 58x1/6	70	21	35	0,48
	40	0 ÷ 2,5	36	Rd 65x1/6	78	21	38	0,62
	50	0 ÷ 2,5	48	Rd 78x1/6	92	22	39	0,82
FP 346 SMS	38 (1 1/2")	0 ÷ 2,5	36	Rd 60x1/6	74	25	38	0,60
	51 (2")	0 ÷ 2,5	48	Rd 70x1/6	84	26	39	0,70
FP 347 DIN 11851	32	0 ÷ 4	30	Rd 58x1/6	-	-	34	0,25
	40	0 ÷ 2,5	36	Rd 65x1/6	-	-	34	0,38
	50	0 ÷ 2,5	48	Rd 78x1/6	-	-	34	0,45
FP 347 SMS	38 (1 1/2")	0 ÷ 2,5	36	Rd 60x1/6	-	-	36	0,40
	51 (2")	0 ÷ 2,5	48	Rd 70x1/6	-	-	36	0,50
FP 348 CLAMP	1 1/2"	0 ÷ 4	30	50,5	-	-	30	0,25
	2"	0 ÷ 2,5	36	64	-	-	30	0,48
	2 1/2"	0 ÷ 2,5	48	77,5	-	-	30	0,63

note: informations shown in this series may be changed at any time without prior notice.



FP 333

Facing diaphragm seal with saddle connection

- **Mounting**

- direct;
- remote.

- **Element**

- facing welded diaphragm in AISI 316L st. st.
- note:** the separation chamber has a shaped upper part, that allows the diaphragm to stop without damages, in presence of over-pressures, according with the limit of diaphragm seal.

- **Body**

- AISI 316L stainless steel.

- **Saddle connection to be welded**

- on pipe 2" ÷ 16".

- **Filling liquid**

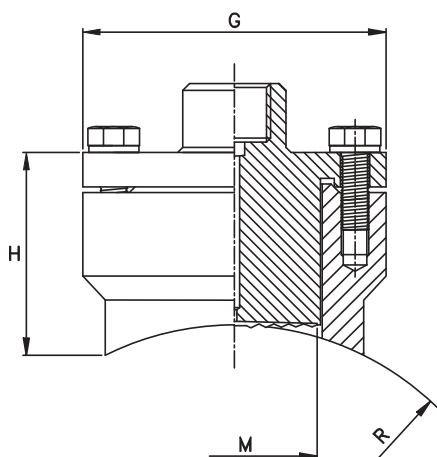
- silicone fluid for operating temperature included between
- 30 and +200 °C;
- diathermic fluid for operating temperature > +200 °C.

- **Service conditions**

- pressure 6 ÷ 250 bar;
- temperature -30 ÷ +350 °C.



FP 333



DN	M	R	G	H	PESO - Kg
2"	36	30.2	76	65	1.800
3"	48	44.5	88	70	2.400
4"	48	57.2	88	65	2.400
6"	48	84.2	88	60	2.400
8"	48	109.6	88	58	2.400
10"	48	136.6	88	56	2.400
12"	48	162	88	56	2.400
14"	48	177.9	88	55	2.400
16"	48	203.2	88	55	2.400

note: informations shown in this series may be changed at any time without prior notice.