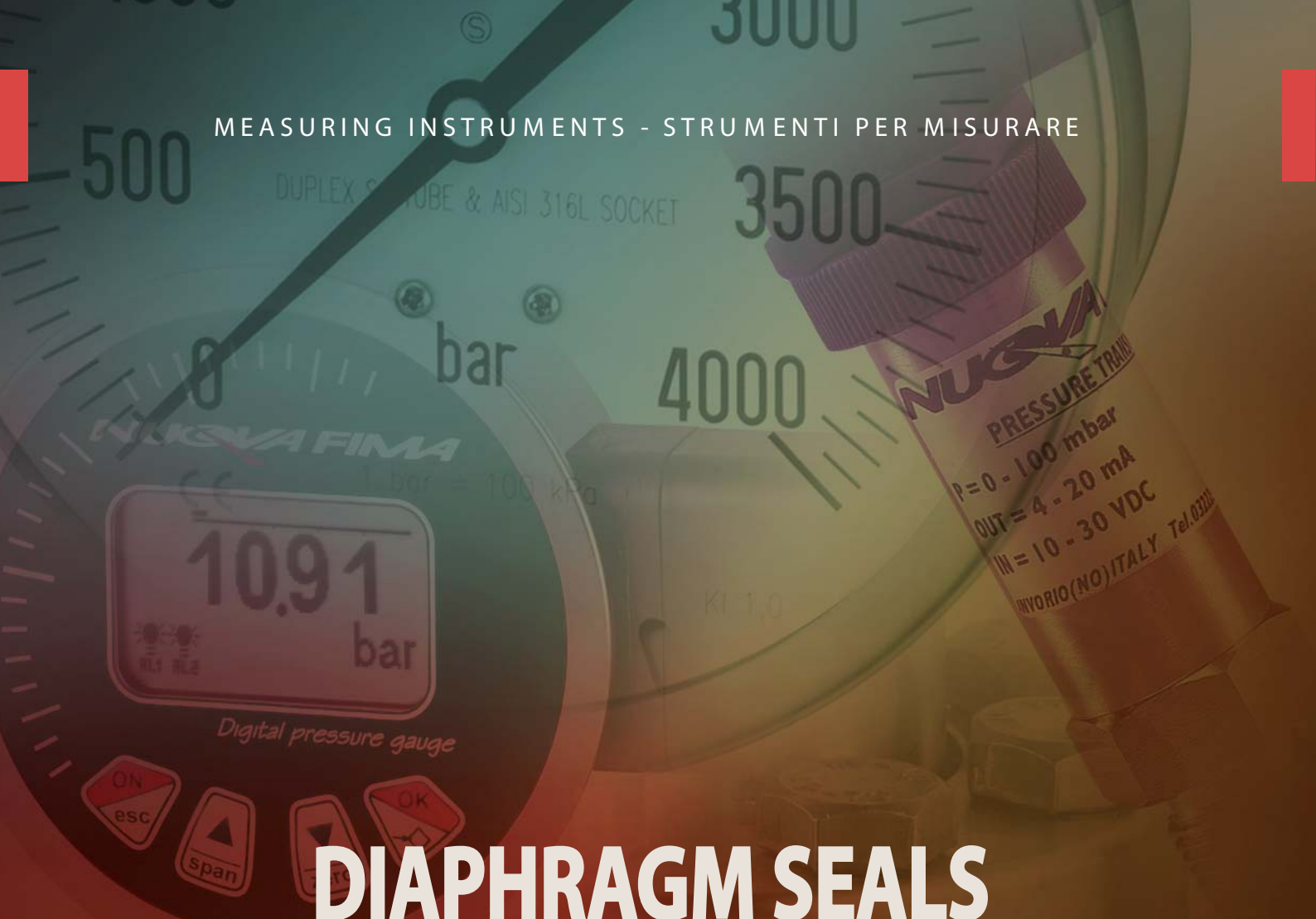


MEASURING INSTRUMENTS - STRUMENTI PER MISURARE



DIAPHRAGM SEALS

NUOVA FIMA

introduction to diaphragm seals

MGS9

MGS9



The diaphragm seal is designed to measure the process fluid pressure when the process fluid temperature is non-compatible to the instrument sensing element; when the process fluid may corrode the inner parts of the measuring instrument in contact with the fluid; when the fluid is highly viscous or it contains solid suspensions; when it solidifies at temperature changes. It is also used for long-distance pressure fluid transmission and measurement allowing to isolate dangerous fluids from the operating areas. It can be directly connected to the indicating instrument or through a capillary.

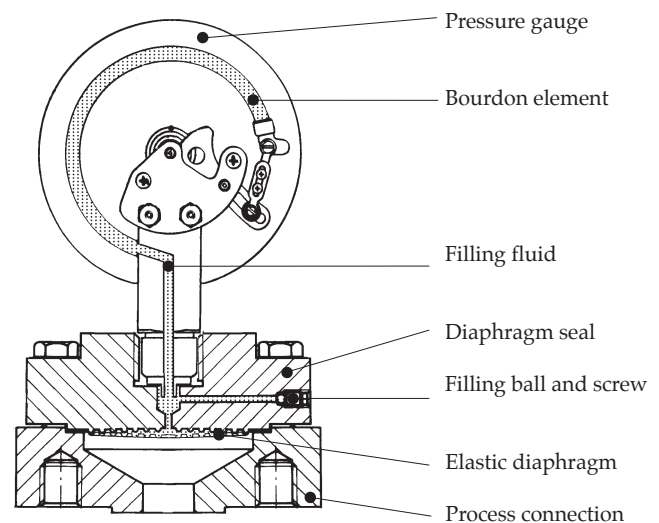
OPERATING PRINCIPLE

The diaphragm seal operating principle is based on the fluids non-compressibility (see drawing at right). The separation from the process fluid is obtained from an elastic diaphragm sealed to the diaphragm seal body. The inner chamber between the diaphragm and the Bourdon tube is at first evacuated than filled with properly degased fill-fluid. At this point the system is able to transmit the mechanical stress produced by the process fluid on the diaphragm to the Bourdon tube. Any air bubble in the circuit must be avoided as it could affect the right system operation.

RECOMMENDATIONS

The diaphragm and the body are in contact with the process fluid, therefore they must withstand the temperature and the possible fluid chemical aggression. A guide to the choice of the materials to use depending on the process medium is available under section "CORROSION/MATERIALS".

The filling fluid must be selected depending on the pressure fluid nature and temperature as well since any diaphragm fail may contaminate the process fluid and damage the whole process plant. A guide for a filling-fluid selection is available under section "FILLING FLUID".



FUNCTIONAL CHARACTERISTICS

Accuracy: at 20°C ±0,5...1%, depending on the diaphragm seal type. This accuracy value must be added to the pressure gauge accuracy.

Process fluid temperature: minimum -45°C, maximum 340°C, depending on the filling fluid, on the diaphragm material and on the process connection. For temperature higher than the indicated limits please contact the Technical Service Department.

TEMPERATURE INFLUENCE

The complete seal system composed by the diaphragm seal (with or without capillary) and the measuring instrument, is filled with a fixed amount of liquid at a fixed room temperature (generally +20°C ±2°C), called temperature of reference. Any ambient or fluid process temperature change produces a proportional variation of the filling fluid volume causing an inner pressure change that makes a zero off at the indicating instrument. In order to minimize such an error it is necessary to compensate the volume modified by temperature variations.

Diaphragm of small diameter can compensate only little volume changes (see Fig.1). It is recommended to use, in line with process requirements, diaphragm seals with large size diameter. In order to prevent the effects of temperature conduction between the diaphragm seal and the instrument, when the process temperature exceeds 100°C, it is required to fit the instrument with:

- Cooling element
- Capillary mounting

COOLING TOWER

The purpose of the cooling element is to protect the instrument from high temperatures. It reduces the filling fluid temperature inside the instrument to approximately the room temperature. The cooling element is recommended for instruments direct mounting when the process temperature is exceeding +100°C but is not higher than +250°C.

When a diaphragm seal provided with cooling element is installed on an insulated pipe, it is fundamental that the insulating coat is not covering the element radiant surface in order to assure the system proper working.

REMOTE MOUNTING (with capillary)

The capillary allows the instrument reading when it is far from the process connection. The capillary avoids the fluid process temperature effect on the instrument accuracy.

A 500mm capillary is generally long enough to reduce the indicating instrument temperature to the ambient temperature.

The capillary length must be as short as possible and it should not exceed 6mt because any ambient temperature variation could affect the instrument accuracy and response time (see fig.2).

The remote mounting requires instruments for wall or panel mounting.

If the level difference is known, it must be indicated in order. If not a field adjustment of the micromatic pointer in order to compensate the effect of extreme temperature variation, will be necessary.

Tab. 1 - FILLING LIQUIDS

| Liquid type | Limits of process temperature |
|-----------------------|-------------------------------|
| Silicone oil type "A" | -45 ... +150 °C |
| Silicone oil type "B" | -20 ... +250 °C |
| Silicone oil type "C" | +20 ... +340 °C |
| "Fluorolube" | -60 ... +150 °C |
| Food oil | -20 ... + 200 °C |

Glycerine or silicone should not be used with highly oxidizing agents such as oxygen, chlorine, nitric acid or hydrogen peroxide, because of spontaneous chemical reaction, inflammability or explosion. The use of fluorinates fluid is recommended in these cases.

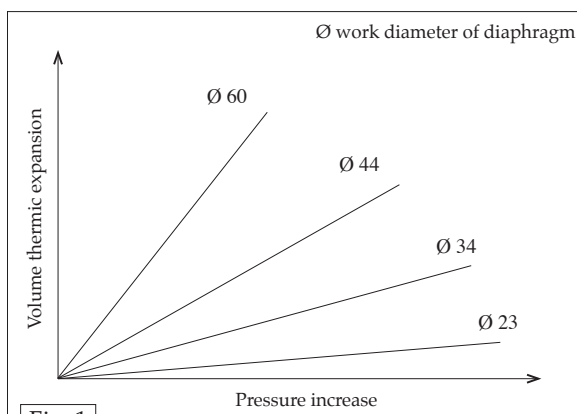


Fig. 1

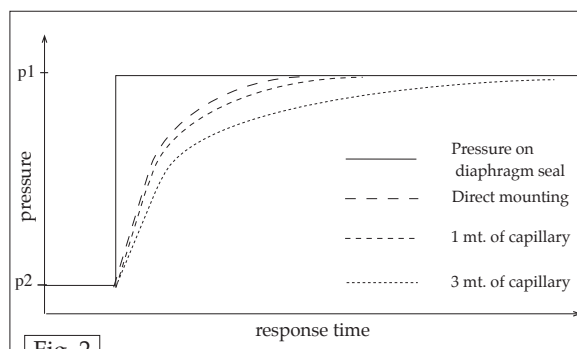


Fig. 2

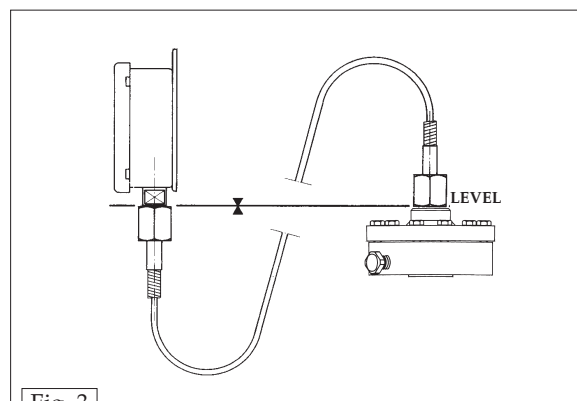


Fig. 3

Tab.2 - DIAPHRAGM SEAL CHOICE

An improper use of the instrument may be dangerous to the diaphragm seal, may cause failure and potential injury to the staff and plant.

Caution: all diaphragm seals must be chosen considering the process fluid and the working conditions in order to prevent inaccurate installations.

For material choice please see recommendations quoted on sheet 5...8.

For process fluids not listed in our guide (the material's life depends on temperature and process fluid concentration as well as for other working conditions) please contact our Technical Department.

In case of incomplete knowledge of the process fluid behaviour, it is suggested to install the diaphragm seal with a solid front pressure gauge.

In case of tube failure this instrument prevents that dangerous process fluid may hit the workers.

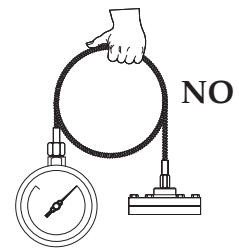
| Type MGS9 | Ø diaphragm (inches - mm) | Facing diaphragm | Welded diaphragm | Thread connection | Flanged connection |
|-----------|---------------------------|------------------|------------------|-------------------|--------------------|
| 1B0 | 73,5 | | ◆ | ◆ | |
| 1BS | 44 | | | ◆ | |
| 1A0-1AS | 44 | | | ◆ | |
| 111 | 38 | | ◆ | ◆ | |
| 6W | 63 | | ◆ | ◆ | ◆ |
| MINI/A | 34 | | ◆ | ◆ | |
| MINI/B | 57 | | ◆ | ◆ | |
| 2B | 63 | | ◆ | ◆ | |
| SA | 23,5 ... 44 | ◆ | ◆ | ◆ | |
| AL | 34 ... 63 | ◆ | ◆ | | ◆ |
| R | 38 | ◆ | ◆ | | ◆ |
| 367 | 23,5 | ◆ | ◆ | ◆ | |
| 3A | 44 | | | | ◆ |
| 3B | 73,5 | | ◆ | | ◆ |
| 6 | 73,5 | | ◆ | | ◆ |
| 5 | 38...63 | ◆ | ◆ | | ◆ |
| 4 | 34...57 | | ◆ [1] | | ◆ |
| WAF | 50...65 | ◆ | ◆ | | ◆ |
| P | 34...57 | | | ◆ | |

[1] Not welded when PTFE coated

DIAPHRAGM SEAL INSTALLATION

The whole system (the pressure gauges with their diaphragm seal) must be kept packaged until installation time in order to protect all the components. Particular care must be taken to prevent damages to the diaphragm during installation of the system on the process. Scratches on the diaphragm surface are the starting point for chemical corrosion action while crush of concentric waves of the diaphragm surface may compromise the system operation.

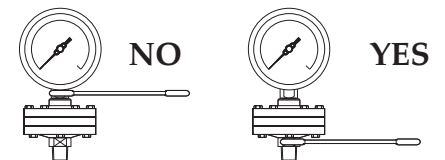
The capillary and its welded joints to the body must not be bended or twisted. Capillary must not be used as handle for transportation of the system. Bends or extreme bending radius of capillary may cause throttling of the inner hole, may increase the response time or cause capillary breaking compromising the regular instrument operation. The capillary may bend with a minimum of 150mm. bending radius.



Extreme care must be taken to the sealing gasket mounting between diaphragm seal and process side to cover the diaphragm preventing damages or process fluid leakage.



On models with threaded process connection, the mounting must be made through the key flat of the diaphragm seal body and not through the pressure range key flat: this may cause disassemble of the gauge/diaphragm system with eventually leakage of filling fluid.



DIAPHRAGM SEAL FASTENING

All diaphragm seals are coupled and fastened to the instruments (except 63mm.) through a label seal. The tampering of the label seal or of the diaphragm seal/instrument coupling compromises their operation and warranty.

DO NOT REMOVE

| | | |
|---|--|--|
| DIAPHRAGM MATERIAL <input type="checkbox"/> AISI 316 L <input type="checkbox"/> HASTELLOY B <input type="checkbox"/> HASTELLOY C | <input type="checkbox"/> MONEL <input type="checkbox"/> PTFE <input type="checkbox"/> TANTALUM | FILLING A B C <input type="checkbox"/> SILICON OIL <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> FOOD OIL <input type="checkbox"/> FLUOROLUBE |
|---|--|--|

USE OF THE DIAPHRAGM SEAL

The working temperature must not exceed the limit of the material in use.

Working pressure: the maximum working pressure must be $\leq 75\%$ of the range of the instrument coupled with the diaphragm seal. For flanged diaphragm seal the maximum working pressure must also be within the flange rating pressure. The maximum admitted pressure on the diaphragm seal decreases when the temperature increases. To this subject please see table 5 where the connection between pressure/temperature for flange made with different materials are listed.

Temperature: the working temperature must be that of the instrument calibration and must be compatible with the chosen materials. For temperature exceeding 100°C diaphragm seals with capillary or with cooling system are recommended.

Oxygen and other oxidizing agents: glycerine and silicone should not be used with highly oxidizing agents such as oxygen, chlorine, nitric acid or hydrogen peroxide because of danger of spontaneous chemical reactions, inflammability or explosion. In these cases the use of fluorinates is recommended.(see tab.1)

MAINTENANCE

Periodically it may be necessary to remove sediments from the diaphragm and to check the corrosion or wear conditions of the entire system. This operation must be carried out by specially trained staff. The diaphragm seal and its pressure gauge must be removed from process and inspected than the diaphragm must be cleaned without using any tool that could damage it but with a solvent properly chosen according to the sediment to be removed.

Tab.3 - Material available C=Connection M=Diaphragm seal

| Type MGS9 | C.st. | AISI 316 st.st. | C.st. + PTFE | AISI 316 st.st. + PTFE | AISI 316 L st.st. | Monel 400 | Hast. C276 | Hast. B2 | Titanium | Nickel | Tantalium | Incolloy 825 | Inconel 600 |
|-----------|-------|-----------------|--------------|------------------------|-------------------|-----------|------------|----------|----------|--------|-----------|--------------|-------------|
| 1B0 | | | | C | CM | CM | CM | | | | M | M | M |
| 1BS | C | | | CM | CM | | M (1) | | M | | M (1) | | |
| 1A0-1AS | | C | | | CM | M | M | | | | | | |
| 111 | | C | | | M | M | M | | | | | | |
| 6W | | C | | | CM | CM | CM | CM | | | M | | |
| MINI/A-B | | C | | | M | | | | | | | | |
| 2B | | | | | CM | CM | CM | | | | M | M | M |
| SA-AL-367 | | C | | | M | | | | | | | | |
| R | | C | | | CM | | M | | | | | | |
| 3A | | C | | | CM | M | M | M | M | | M | | |
| 6 | | C | | CM | CM | M | M | | M | | M | | |
| 3B | | C | | CM | CM | M | M | | M | | M | | |
| 5 | | C | | | CM | CM | CM | | | | CM | | |
| 4 | | C | | CM | CM | CM | CM | CM | CM | CM | CM | M | M |
| WAF | | C | | C | M | | CM | M | | | M | | |
| P | C | | M | | | | | | | | | | |

(1) PTFE coating

Tab.4 - Ranges available

| Type (1) | -1...0 | 0...1 | 0...1,6 | 0...2,5 | 0...4 | 0...6 | 0...10 | 0...16 | 0...25 | 0...40 | 0...60 | 0...100 | 0...160 | 0...250 | 0...400 | 0...600 |
|------------------|--------|-------|---------|---------|-------|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| 1B0-1BS | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| 1A0 | | | | | | | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | |
| 1AS | | | | | | | | | | | | | | | ♦ | ♦ |
| 111 | | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | |
| 6W | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | |
| MINI/A | | | | | ♦ (2) | ♦ (2) | ♦ (2) | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | |
| MINI/B | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | |
| 2B | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | |
| SA DN25 | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| SA 1" 1/2 - DN40 | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| SA 2" - DN50 | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| AL 1" 1/2 | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| AL 2" | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| AL 2" 1/2 | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| R | | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | |
| 367 | | | | | | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | |
| 3A | | | | | | | | | | | ♦ | ♦ | ♦ | ♦ | | |
| 3B | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| 6 | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| 5 | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | |
| 4 | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | |
| WAF | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | |
| P | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | | | | | | |

(1) Ranges are indicated in bar and they are related to the DS of the instrument installed as well as the flange rating. For further information see the concerning catalogue sheet - (2) for DN63 only

PRESSURE/TEMPERATURE RATING
(in according to standard ANSI/ASME B16.5 - ISO 7005)

Tab. 5 - Class 150 (PN 290 psi - PN 20 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 285 | 275 | 275 | 230 | 230 | 290 | 290 |
| 200 | 93 | 260 | 230 | 235 | 195 | 200 | 260 | 260 |
| 300 | 149 | 230 | 205 | 215 | 175 | 190 | 230 | 230 |
| 400 | 204 | 200 | 190 | 195 | 160 | 185 | 200 | 200 |
| 500 | 260 | 170 | 170 | 170 | 145 | 170 | 170 | 170 |
| 600 | 316 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| 650 | 343 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| 700 | 371 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| 750 | 399 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| 800 | 427 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |

Tab. 6 - Class 300 (PN 750 psi - PN 50 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 740 | 720 | 720 | 600 | 600 | 750 | 750 |
| 200 | 93 | 675 | 600 | 620 | 505 | 530 | 750 | 750 |
| 300 | 149 | 655 | 540 | 560 | 455 | 495 | 730 | 730 |
| 400 | 204 | 635 | 495 | 515 | 415 | 480 | 705 | 705 |
| 500 | 260 | 600 | 465 | 480 | 380 | 475 | 665 | 665 |
| 600 | 316 | 550 | 435 | 450 | 360 | 475 | 605 | 605 |
| 650 | 343 | 535 | 430 | 445 | 350 | 475 | 590 | 590 |
| 700 | 371 | 535 | 425 | 430 | 345 | 475 | 570 | 570 |
| 750 | 399 | 505 | 415 | 425 | 335 | 470 | 530 | 530 |
| 800 | 427 | 410 | 405 | 420 | 330 | 460 | 510 | 510 |

Tab. 7 - Class 600 (PN 1500 psi - PN 110 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 1480 | 1440 | 1440 | 1200 | 1200 | 1500 | 1500 |
| 200 | 93 | 1350 | 1200 | 1240 | 1015 | 1055 | 1500 | 1500 |
| 300 | 149 | 1315 | 1080 | 1120 | 910 | 990 | 1455 | 1455 |
| 400 | 204 | 1270 | 995 | 1025 | 825 | 955 | 1410 | 1410 |
| 500 | 260 | 1200 | 930 | 955 | 765 | 950 | 1330 | 1330 |
| 600 | 316 | 1095 | 875 | 900 | 720 | 950 | 1210 | 1210 |
| 650 | 343 | 1075 | 860 | 890 | 700 | 950 | 1175 | 1175 |
| 700 | 371 | 1065 | 850 | 870 | 685 | 950 | 1135 | 1135 |
| 750 | 399 | 1010 | 830 | 855 | 670 | 935 | 1065 | 1065 |
| 800 | 427 | 825 | 805 | 845 | 660 | 915 | 1015 | 1015 |

Tab. 8 - Class 900 (PN 2250 psi - PN 150 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 2220 | 2160 | 2160 | 1800 | 1800 | 2250 | 2250 |
| 200 | 93 | 2025 | 1800 | 1860 | 1520 | 1585 | 2250 | 2250 |
| 300 | 149 | 1970 | 1620 | 1680 | 1360 | 1485 | 2185 | 2185 |
| 400 | 204 | 1900 | 1490 | 1540 | 1240 | 1435 | 2115 | 2115 |
| 500 | 260 | 1795 | 1395 | 1435 | 1145 | 1435 | 1995 | 1995 |
| 600 | 316 | 1640 | 1310 | 1355 | 1080 | 1435 | 1815 | 1815 |
| 650 | 343 | 1610 | 1290 | 1330 | 1050 | 1435 | 1765 | 1765 |
| 700 | 371 | 1600 | 1275 | 1305 | 1030 | 1435 | 1705 | 1705 |
| 750 | 399 | 1510 | 1245 | 1280 | 1010 | 1405 | 1595 | 1595 |
| 800 | 427 | 1235 | 1210 | 1265 | 985 | 1375 | 1520 | 1520 |

Tab. 9 - Class 1500 (PN 3750 psi - PN 260 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 3705 | 3600 | 3600 | 3000 | 3000 | 3750 | 3750 |
| 200 | 93 | 3375 | 3000 | 3095 | 2530 | 2640 | 3750 | 3750 |
| 300 | 149 | 3280 | 2700 | 2795 | 2270 | 2470 | 3640 | 3640 |
| 400 | 204 | 3170 | 2485 | 2570 | 2065 | 2390 | 3530 | 3530 |
| 500 | 260 | 2995 | 2330 | 2390 | 1910 | 2375 | 3325 | 3325 |
| 600 | 316 | 2735 | 2185 | 2255 | 1800 | 2375 | 3025 | 3025 |
| 650 | 343 | 2685 | 2150 | 2220 | 1750 | 2375 | 2940 | 2940 |
| 700 | 371 | 2665 | 2125 | 2170 | 1715 | 2375 | 2840 | 2840 |
| 750 | 399 | 2520 | 2075 | 2135 | 1680 | 2340 | 2660 | 2660 |
| 800 | 427 | 2060 | 2015 | 2110 | 1645 | 2290 | 2540 | 2540 |

Tab. 10 - Class 2500 (PN 6250 psi - PN 420 bar)

| Temperature | | Pressure (psi) | | | | | | |
|-------------|--------|----------------|----------|----------|-----------|-------|---------|---------|
| °F | °C | C.st. | AISI 304 | AISI 316 | AISI 316L | Monel | Hast. B | Hast. C |
| -20÷100 | -29÷38 | 6170 | 6000 | 6000 | 5000 | 5000 | 6250 | 6250 |
| 200 | 93 | 5625 | 5000 | 5160 | 4220 | 4400 | 6250 | 6250 |
| 300 | 149 | 5470 | 4500 | 4660 | 3780 | 4120 | 6070 | 6070 |
| 400 | 204 | 5280 | 4140 | 4280 | 3440 | 3980 | 5880 | 5880 |
| 500 | 260 | 4990 | 3880 | 3980 | 3180 | 3960 | 5540 | 5540 |
| 600 | 316 | 4560 | 3640 | 3760 | 3000 | 3960 | 5040 | 5040 |
| 650 | 343 | 4475 | 3580 | 3700 | 2920 | 3960 | 4905 | 4905 |
| 700 | 371 | 4440 | 3540 | 3620 | 2860 | 3960 | 4730 | 4730 |
| 750 | 399 | 4200 | 3460 | 3560 | 2800 | 3900 | 4430 | 4430 |
| 800 | 427 | 3430 | 3360 | 3520 | 2740 | 3820 | 4230 | 4230 |

Tab. 11 - CORROSION vs. MATERIAL

| Corrosive Substance | Temp. °F | Temp. °C | Concentration | C.Steel | AISI 304 st.st. | AISI 316 st.st. | Bronze | Brass | Monel 400 | Nickel | Hastelloy B | Hastelloy C | Tantalum | PVC | Halar | Teflon | VITON | FluoroIube |
|---------------------------------|----------|----------|---------------|---------|-----------------|-----------------|--------|-------|-----------|--------|-------------|-------------|----------|-----|-------|--------|-------|------------|
| Acetic Acid | 200 | 93.3 | All | D | C | B | C | D | C | D | C | A | A | C | A | A | C | |
| Acetic Anhydride | 175 | 79.4 | All | D | D | B | D | D | C | C | B | A | A | D | A | A | C | |
| Acetone | 100 | 37.8 | All | B | B | B | A | A | A | A | A | A | A | D | A | A | C | |
| Acetylene, Dry | 400 | 204.4 | 100 | A | A | A | D | D | B | B | A | A | A | A | A | A | A | |
| Alcohols | 212 | 100 | All | B | B | A | A | A | A | A | A | A | A | A | A | A | A | |
| Alkali Cleaners | 212 | 100 | All | C | B | A | B | D | A | A | A | B | B | A | A | A | A | |
| Aluminium Chloride | 212 | 100 | All | D | D | D | D | D | D | D | A | B | A | A | A | A | A | |
| Aluminium Hydroxide | 212 | 100 | All | B | B | B | B | B | B | B | C | B | A | A | A | A | B | |
| Aluminium Sulphate | 212 | 100 | All | D | D | A | C | D | D | D | A | A | A | A | A | A | A | |
| Amil Acetate | 250 | 121.1 | All | B | B | A | A | A | A | A | A | A | A | D | C | A | C | |
| Ammonium Chloride | 212 | 100 | <40 | D | D | C | C | D | B | B | B | A | A | A | A | A | A | |
| Ammonium, Dry | 600 | 315.6 | 100 | A | A | A | D | D | A | A | A | C | A | A | A | A | C | |
| Ammonium Hydroxide | 212 | 100 | All | B | B | B | D | D | D | D | B | B | D | A | A | A | B | |
| Ammonium Nitrate | 212 | 100 | All | D | C | B | D | D | D | D | C | B | A | A | A | A | C | |
| Ammonium Sulphate | 212 | 100 | <50 | D | D | B | C | D | B | B | C | B | A | A | A | A | C | |
| Aniline | 250 | 121.1 | 100 | A | A | A | D | D | B | B | B | B | A | D | C | A | C | |
| Argon | 300 | 148.9 | 100 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Asphalt | 250 | 121.1 | | B | B | A | B | B | A | A | B | A | A | B | A | A | A | |
| Atmosphere, Ind. & Marine | | | | B | A | A | A | B | A | A | A | A | A | A | A | A | A | |
| Atmosphere, Rural | | | | B | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Bauxite & Water | 212 | 100 | All | B | B | A | B | B | B | B | B | B | A | A | A | A | A | |
| Benzene | 212 | 100 | All | B | B | B | A | B | A | A | B | B | A | C | C | A | B | |
| Benzidine | | | | B | B | B | B | B | B | B | B | B | A | C | A | A | B | |
| Benzoic Acid | | | | D | D | B | C | C | B | B | A | A | A | A | A | A | A | |
| Bier | 70 | 21.1 | | C | C | A | A | B | A | A | A | A | A | A | A | A | A | |
| Borax (sodium borate) | 212 | 100 | <50 | B | B | C | A | A | A | A | A | B | A | A | A | A | A | |
| Boric Acid | 212 | 100 | All | D | D | B | B | B | B | B | A | A | A | A | A | A | A | |
| Bromine, Dry | 125 | 51.7 | 100 | D | D | D | D | D | A | A | A | A | A | D | A | A | A | |
| Bromobenzene | 212 | 100 | 100 | C | B | B | B | B | B | B | B | B | A | C | B | A | B | |
| Butane | 212 | 100 | | A | A | A | A | A | A | A | A | A | A | B | A | A | A | |
| Butyl Alcohol | 212 | 100 | | B | A | A | A | A | A | A | A | A | A | B | A | A | A | |
| Butyric Acid | 212 | 100 | All | D | C | B | C | D | B | C | B | A | A | C | A | A | C | |
| Calcium Bisulphite | 212 | 100 | All | D | C | B | D | D | D | D | D | C | A | A | A | A | A | |
| Calcium Chloride | 212 | 100 | All | C | C | C | B | C | B | A | B | A | A | A | A | A | A | |
| Calcium Hydroxide | 212 | 100 | 10 | B | B | B | B | B | B | B | B | A | C | A | A | A | A | |
| Calcium Hypochlorite | 212 | 100 | All | D | D | D | C | C | D | D | C | B | A | A | A | A | B | |
| Carbon Dioxide, Dry | 100 | 37.8 | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Carbon Sulphide | 125 | 51.7 | | B | B | A | B | A | B | B | A | A | A | D | A | A | A | |
| Carbon Tetrachloride, Dry | 212 | 100 | 100 | C | A | A | A | C | A | A | D | B | A | D | C | A | A | |
| Carbon Tetrachloride, Moist | 212 | 100 | | D | D | C | D | D | A | A | D | B | A | D | C | A | A | |
| Carbonated Water | 212 | 100 | All | D | A | B | B | D | C | C | A | A | A | A | A | A | A | |
| Carbonic Oxide | 300 | 148.9 | | A | A | A | A | B | A | A | A | A | A | A | A | A | A | |
| Caustic Potassium | 212 | 100 | <50 | D | B | B | D | D | A | A | B | C | D | A | A | A | C | |
| Caustic Soda | 212 | 100 | All | C | C | C | D | D | B | B | B | C | D | A | A | A | C | |
| Caustic Soda | 212 | 100 | <40 | C | B | A | B | D | A | A | A | B | D | A | A | A | C | |
| Cement Slurry | 212 | 100 | All | B | A | A | B | B | B | B | B | B | C | A | A | A | C | |
| Chloride | 500 | 260 | | B | A | A | D | D | B | C | B | A | A | A | A | A | C | |
| Chlorine Dioxide | 150 | 65.6 | | D | D | D | D | D | D | D | B | B | A | D | B | A | B | |
| Chlorine, Dry | 200 | 93.3 | 100 | B | B | C | B | C | B | B | C | A | A | C | A | A | A | |
| Chlorine, Moist | 200 | 93.3 | All | D | D | D | D | D | D | D | D | A | A | C | A | A | A | |
| Chloroacetic Acid | 212 | 100 | All | D | D | D | D | D | C | C | B | A | A | C | A | A | C | |
| Chlorobenzene | 150 | 65.6 | 100 | C | B | B | B | C | B | B | B | B | A | D | B | A | A | |
| Chloroform, Dry | 150 | 65.6 | 100 | A | B | C | B | B | A | A | B | B | A | C | B | A | A | |
| Chromic Acid | 212 | 100 | All | C | D | D | D | D | D | D | D | D | A | C | A | A | A | |
| Chromium Plating Solution | 212 | 100 | All | C | D | D | D | D | D | D | D | D | A | C | A | A | A | |
| Citric Acid | 212 | 100 | All | D | C | A | C | D | C | C | A | A | A | A | A | A | A | |
| Coffee | 212 | 100 | All | D | B | A | A | C | B | B | B | A | A | A | A | A | A | |
| Copper Chloride | 212 | 100 | All | D | D | D | C | D | D | D | D | D | A | A | A | A | A | |
| Copper Nitrate | 212 | 100 | All | D | B | B | D | D | D | D | D | D | A | A | A | A | A | |
| Copper Plating Solutions (Acid) | 212 | 100 | All | D | C | B | D | D | B | B | C | C | A | A | A | A | A | |

A = Recommended Best service life Attack < 0,05 mm/year
 B = Suitable Good service life Attack 0,05...0,5 mm/year
 C = Not recommended Fair service life Attack 0,5...1,27 mm/year
 D = Unsuitable No service life Attack > 1,27 mm/year

This tab is a guide. The purchaser will directly choose the most suitable material for the process conditions. (The diaphragm thickness goes from 0,05 mm to 0,15mm according to the material and the diaphragm type chosen.) For further information please contact our Service Technical Department.

Tab. 11 - CORROSION/MATERIAL

| Corrosive substance | Temp. °F | Temp. °C | Concentration | C.Steel | AISI 304 st.st. | AISI 316 st.st. | Bronze | Brass | Monel 400 | Nickel | Hastelloy B | Hastelloy C | Tantalum | PVC | Halar | Teflon | VITON | Fluorolube |
|------------------------------------|----------|----------|---------------|---------|-----------------|-----------------|--------|-------|-----------|--------|-------------|-------------|----------|-----|-------|--------|-------|------------|
| Copper Plating Solutions (cyanide) | 212 | 100 | All | B | A | A | D | D | B | B | B | A | A | A | A | A | A | A |
| Copper Sulphate | 212 | 100 | <40 | D | C | B | C | D | D | D | C | A | A | A | A | A | A | A |
| Corn Oil | 500 | 260 | All | D | B | A | A | C | B | B | A | A | A | A | A | A | A | A |
| Creosol | 212 | 100 | All | B | A | A | B | C | B | B | B | A | A | D | A | A | A | A |
| Creosote | 212 | 100 | | B | B | B | B | C | B | B | B | A | A | D | A | A | A | A |
| Crude Oil | 300 | 148.9 | All | B | B | B | B | C | A | B | B | C | A | B | A | A | A | A |
| Ethanol | 212 | 100 | All | B | A | A | A | A | A | A | A | B | A | A | A | A | A | A |
| Ethyl Acetate | 212 | 100 | 100 | D | B | B | B | B | B | C | C | B | A | D | C | A | C | C |
| Ethyl Chloride, Dry | 212 | 100 | | B | C | A | A | A | B | A | B | B | A | D | A | A | A | A |
| Ethylene Glycol | 212 | 100 | All | C | B | B | B | B | B | B | A | A | A | A | A | A | A | A |
| Ethylene Oxide | 75 | 23.9 | 100 | B | A | B | D | D | B | B | A | A | A | C | B | A | C | C |
| Fatty Acids | 500 | 260 | 100 | D | C | A | C | C | B | A | A | A | A | A | A | A | A | A |
| Ferric Chloride | 150 | 65.6 | <50 | D | D | D | D | D | D | D | D | B | A | A | A | A | A | A |
| Ferric Sulphate | 150 | 65.6 | 10 | D | B | A | D | D | D | B | B | A | A | A | A | A | A | A |
| Ferrous Chloride | 212 | 100 | <50 | D | D | D | C | D | D | D | B | B | A | A | A | A | A | A |
| Ferrous Sulphate | 212 | 100 | All | D | C | B | C | D | C | D | B | B | A | A | A | A | A | A |
| Fluorine, Gas | 300 | 148.9 | 100 | D | A | A | C | C | A | A | C | B | D | B | A | A | C | C |
| Fluorine, Liquid | 75 | 23.9 | 100 | D | A | A | B | C | A | A | C | B | C | B | B | A | C | C |
| Fluorosilicic Acid | 75 | 23.9 | 10 | D | B | B | C | C | A | B | B | B | A | C | A | A | A | B |
| Formaldehyde | 212 | 100 | <50 | D | B | A | B | B | B | B | B | A | A | B | B | A | B | B |
| Formic Acid | 212 | 100 | All | D | B | D | B | C | B | B | A | A | A | B | A | A | A | A |
| Gasoline | 200 | 93.3 | | A | A | A | A | A | C | A | A | A | A | B | A | A | A | A |
| Glucose | 300 | 148.9 | All | B | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Glue | 300 | 148.9 | All | C | A | A | A | B | A | A | A | A | A | A | A | A | A | A |
| Glycerine | 212 | 100 | All | B | A | A | B | B | A | A | A | A | A | A | A | A | A | A |
| Hexane, Dry | 212 | 100 | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Hydrobromic Acid | 212 | 100 | All | D | D | D | D | D | D | D | B | D | A | B | A | A | A | A |
| Hydrochloridric Acid | 212 | 100 | All | D | D | D | D | D | D | D | B | C | A | B | A | A | A | A |
| Hydrofluoric Acid | 212 | 100 | All | D | D | D | C | D | B | D | B | B | D | C | A | A | C | C |
| Hydrogen | 500 | 260 | | B | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Hydrogen Chloride | 400 | 204.4 | | D | C | C | D | D | A | A | A | A | A | A | A | A | A | A |
| Hydrogen Fluoride, Dry | 200 | 93.3 | 100 | C | B | B | C | C | B | B | C | B | C | A | A | A | C | C |
| Hydrogen Peroxide | 212 | 100 | 30 | D | C | B | D | D | C | C | C | C | A | A | A | A | A | A |
| Hydrogen Peroxide | 212 | 100 | 100 | D | C | C | D | D | C | C | D | C | A | A | A | A | A | A |
| Kerosene | 300 | 148.9 | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Lacquers & Thinners | 200 | 93.3 | All | B | A | A | A | B | A | A | A | A | D | C | A | C | A | C |
| Lactic Acid | 212 | 100 | All | D | C | B | D | D | D | D | B | B | A | A | C | A | A | A |
| Lime | 212 | 100 | All | B | B | B | B | B | B | B | B | A | A | A | A | A | A | A |
| Linseed Oil | 75 | 23.9 | | A | A | A | B | C | B | B | B | B | A | A | A | A | A | A |
| Magnesium Chloride | 212 | 100 | <40 | D | D | C | B | C | B | A | A | A | B | A | A | A | A | A |
| Magnesium Oxide | 212 | 100 | All | B | B | B | A | B | B | A | B | B | D | A | A | A | A | A |
| Magnesium Sulphate | 212 | 100 | <50 | B | A | A | A | B | A | A | C | A | A | A | A | A | A | A |
| Mercuric Chloride | 75 | 23.9 | 10 | D | D | D | D | D | D | C | C | B | A | A | A | A | A | A |
| Mercury | | | | A | A | A | D | D | C | B | B | B | A | A | A | A | A | A |
| Methyl Chloride, Dry | 212 | 100 | 100 | A | B | A | A | B | B | B | B | B | A | D | A | A | A | A |
| Methylene Chloride | 212 | 100 | 100 | C | C | C | C | B | B | C | A | A | A | D | C | A | B | B |
| Milk | | | | D | A | A | B | C | C | A | B | B | A | A | A | A | A | A |
| Naphta | 75 | 23.9 | 100 | B | A | A | A | A | A | A | B | A | A | B | A | A | A | A |
| Naphtaline | 212 | 100 | 100 | A | A | A | B | B | B | B | B | B | A | C | A | A | A | A |
| Nickel Chloride | 212 | 100 | <40 | D | D | C | D | D | B | C | A | B | A | A | A | A | A | A |
| Nickel Sulphate | 212 | 100 | | D | C | B | B | C | B | B | B | B | A | A | A | A | A | A |
| Nitric Acid | 75 | 23.9 | All | D | A | A | D | D | D | D | D | B | A | A | A | A | A | A |
| Nitric Acid | 212 | 100 | All | D | C | C | D | D | D | D | D | D | A | C | B | A | C | C |
| Oxalic Acid | 212 | 100 | All | D | D | D | B | C | B | C | B | B | A | A | A | A | A | A |
| Oxygen | 300 | 148.9 | All | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Perchloric Acid | 120 | 48.9 | All | D | D | D | D | D | D | D | C | D | A | D | A | A | A | A |
| Phenol | 175 | 79.4 | 100 | B | B | A | A | B | A | A | A | A | A | C | A | A | A | A |
| Phosphoric Acid | 212 | 100 | All | D | C | C | D | D | D | D | B | C | A | A | A | A | A | A |
| Phthalic Anhydride | 250 | 121.1 | 100 | B | A | A | C | C | A | A | B | A | A | C | B | A | B | B |
| Picric Acid | 212 | 100 | All | D | B | B | D | D | D | D | D | B | A | C | A | A | A | A |

A = Recommended Best service life Attack < 0,05 mm/year
 B = Suitable Good service life Attack 0,05...0,5 mm/year
 C = Not recommended Fair service life Attack 0,5...1,27 mm/year
 D = Unsuitable No service life Attack > 1,27 mm/year

This tab is a guide. The purchaser will directly choose the most suitable material for the process conditions. (The diaphragm thickness goes from 0,05 mm to 0,15mm according to the material and the diaphragm type chosen.) For further information please contact our Service Technical Department.

Tab. 11 - CORROSION/MATERIALS

| Corrosive substances | Temp. °F | Temp. °C | Concentrations | Carbon steel | AISI 304 st.st. | AISI 316 st.st. | Bronze | Brass | Monel 400 | Nickel | Hastelloy B | Hastelloy C | Tantalum | PVC | Halar | Teflon | VITON | FluoroIube |
|-----------------------------|----------|----------|----------------|--------------|-----------------|-----------------|--------|-------|-----------|--------|-------------|-------------|----------|-----|-------|--------|-------|------------|
| | | | | | | | | | | | | | | | | | | |
| Propan | 300 | 148,9 | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Quinine | 212 | 100 | 100 | D | B | B | B | B | B | B | B | B | A | A | A | A | A | A |
| Resin Solution | 150 | 65,6 | All | D | B | A | B | B | B | B | B | A | A | D | A | A | C | |
| Rochelle Salt | 212 | 100 | 100 | D | B | B | B | C | B | B | B | B | A | A | A | A | A | |
| Rosin | 700 | 371,1 | 100 | D | B | B | B | B | A | A | B | A | A | A | A | A | A | |
| Sea Water | 75 | 23,9 | | D | C | C | D | C | A | A | A | A | A | A | A | A | A | |
| Silicate Solutions | 212 | 100 | All | B | A | A | B | B | A | A | A | A | A | A | A | A | A | |
| Silicone Fluids | 212 | 100 | 100 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Silver Nitrate | 212 | 100 | <60 | D | B | B | D | D | D | D | B | C | A | A | A | A | A | * |
| Soap & Detergents | 212 | 100 | All | B | A | A | A | B | A | A | A | A | A | A | A | A | A | |
| Sodium Bicarbonate | 212 | 100 | 20 | B | A | A | B | B | A | A | B | B | A | A | A | A | A | |
| Sodium Bisulphate | 212 | 100 | <10 | D | B | B | B | D | B | B | B | B | A | A | A | A | A | |
| Sodium Bisulphite | 212 | 100 | <40 | D | D | C | C | C | B | C | C | B | A | A | A | A | A | |
| Sodium Carbonate | 212 | 100 | <40 | B | B | B | B | C | B | B | B | B | A | A | A | A | A | |
| Sodium Chloride | 212 | 100 | <40 | C | C | C | B | B | B | B | B | B | A | A | A | A | A | |
| Sodium Cyanide | 212 | 100 | 10 | B | A | A | D | D | D | D | B | C | A | A | A | A | A | |
| Sodium Hydroxide | 180 | 82,2 | <60 | C | B | A | B | C | A | A | A | B | D | A | A | A | C | |
| Sodium Hypochlorite | 75 | 23,9 | 10 | D | D | D | D | D | D | D | C | A | A | A | A | A | A | * |
| Sodium Nitrate | 212 | 100 | <50 | B | A | A | C | C | B | B | C | B | A | A | A | A | B | * |
| Sodium Nitrate | 212 | 100 | 60 | B | C | B | B | B | B | B | B | B | A | A | A | A | B | * |
| Sodium Peroxide | 212 | 100 | 10 | B | B | B | C | D | B | B | B | B | A | A | A | A | A | * |
| Sodium Phosphate (Tribasic) | 212 | 100 | All | B | A | A | B | B | B | B | A | B | A | A | A | A | A | |
| Sodium Silicate | 212 | 100 | All | B | A | A | B | B | B | B | B | B | A | A | A | A | A | |
| Sodium Sulphate | 212 | 100 | <50 | B | B | B | B | B | B | B | B | B | A | A | A | A | A | |
| Sodium Sulphate | 212 | 100 | 10 | D | A | A | C | D | B | B | C | B | A | A | A | A | A | |
| Sodium Sulphide | 175 | 79,4 | 20 | D | A | A | D | D | B | B | B | B | D | A | A | A | A | |
| Steam | 800 | 426,7 | | A | A | A | D | D | B | B | B | B | A | C | A | A | B | |
| Sulphur Chloride, Dry | 212 | 100 | 100 | D | B | C | C | C | C | B | C | B | A | A | A | A | A | |
| Sulphur Dioxide, Dry | 500 | 260 | 100 | B | B | B | C | D | B | B | B | B | A | A | A | A | C | |
| Sulphur Trioxide, Dry | 300 | 148,9 | | B | B | B | C | C | B | B | A | B | D | A | A | A | A | |
| Sulphuric Acid | 212 | 100 | 10 | D | D | D | D | D | D | D | C | B | A | A | A | A | A | |
| Sulphuric Acid | 212 | 100 | <30 | D | D | D | D | D | D | D | B | C | A | B | A | A | A | |
| Sulphuric Acid | 212 | 100 | 100 | D | D | D | D | D | D | D | B | B | A | C | A | A | A | |
| Sulphuric Acid, Fuming | 175 | 79,4 | 100 | D | A | B | D | D | D | D | B | B | C | C | A | A | B | |
| Sulphurous Acid | 212 | 100 | All | D | C | C | C | C | C | C | C | B | B | A | A | A | A | |
| Tannic Acid | 212 | 100 | All | C | B | B | B | C | B | B | B | B | A | A | A | A | A | |
| Tartaric Acid | 212 | 100 | | D | A | A | B | C | B | B | B | B | A | A | A | A | A | |
| Tin Chloride | 125 | 51,7 | All | D | D | D | D | D | D | D | B | B | A | A | A | A | A | |
| Titanium Tetrachloride, Dry | 75 | 23,9 | 100 | A | B | B | D | D | B | B | B | B | A | A | A | A | A | |
| Toluene | 212 | 100 | | A | A | A | A | A | A | A | A | A | A | D | A | A | B | |
| Trichloroacetic Acid | 212 | 100 | All | D | D | D | D | D | B | C | B | B | A | D | C | A | C | |
| Trichloroethane, Dry | 125 | 51,7 | | A | A | A | A | A | A | A | A | A | A | D | C | A | B | |
| Trichloroethylene, Dry | 300 | 148,9 | | B | B | B | B | B | A | A | B | A | A | D | D | A | A | |
| Turpentine | 75 | 23,9 | 100 | B | A | A | A | B | A | B | A | A | A | C | A | A | A | |
| Urea | 100 | 37,8 | 50 | C | A | A | B | B | B | B | B | B | A | A | A | A | A | |
| Varnish | 250 | 121,1 | | A | A | A | B | B | A | A | A | A | A | D | A | A | A | |
| Vynil Chloride | 150 | 65,6 | 100 | C | B | B | C | C | A | A | B | A | A | D | A | A | A | |
| Water (demineralized) | 212 | 100 | | C | A | A | A | B | A | A | A | A | A | A | A | A | A | |
| Whiskey (hot mash) | 212 | 100 | | C | A | A | B | B | A | A | B | A | A | B | A | A | A | |
| Zinc Chloride | 212 | 100 | <40 | D | D | D | C | D | B | B | B | B | A | A | A | A | A | |
| Zinc Sulphate | 212 | 100 | <30 | D | A | A | B | D | B | B | B | B | A | A | A | A | A | |

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 B = Suitable Good service life Attack 0,05...0,5 mm/year
 C = Not recommended Fair service life Attack 0,5...1,27 mm/year
 D = Unsuitable No service life Attack > 1,27 mm/year

This tab is a guide. The purchaser will directly choose the most suitable material for the process conditions. (The diaphragm thickness goes from 0,05 mm to 0,15 mm according to the material and the diaphragm type chosen) For further information please contact our Service Technical Department.

(1) For this application Nuova Fima developed special diaphragm seals in special materials that have been subjected to a corrosion test.
 For further information please contact our Service Technical Department.

diaphragm seal with threaded connection

MGS9/1B



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm, welded for model 1B0 and mechanically clamped between the upper housing and intermediate ring for model 1BS, is leak proof tested to guarantee full fluid separation from process fluid. This diaphragm seal can be cleaned by removing the lower housing. This construction feature and its compact design suits to many applications requiring frequent maintenance.

4.1B0 - MGS9/1B0 - without intermediate ring

Available ranges (see table below): from 0...40 INWC to 0...580 psi (from 0...0,1 to 0...40 bar).

Max working pressure: 0...870 psi (60 bar) (3).

Process temperature: -49...+302°F (-45°C...+150°C).

Accuracy (1): (add to instrument accuracy) ±0,5% for direct mounting, ±1% for capillary mounting.

Instrument connection: AISI 304 st.st.

Diaphragm material:

- 4 - AISI 316L st.st.,
- 6 - Monel 400,
- 9 - Hastelloy C 276,
- B - Tantalum,
- J - Alloy 600,
- I - Alloy 825;
- U - 25.22.2.

Gaskets: PTFE up to +482°F (+250°C); graphite over +482°F (+250°C)

Process connection:

- 5 - AISI 316L st.st.
- N - AISI 316L st.st. PTFE coated (2),
- 6 - Monel 400
- 9 - Hastelloy C 276.

Clamp nuts and bolts: AISI 304 st.st.

Filling liquids: Silicon oil.

4.1BS - MGS9/1BS - with intermediate ring

Available ranges (see table below): from -30...0 INHG to 0...580 psi (from -1...0 to 0...40 bar).

Max working pressure: 0...870 psi (60 bar) (3).

Process temperature: -49...+302°F (-45°C...+150°C).

Accuracy (1): (add to instrument accuracy) ±0,5% for direct mounting, ±1% for capillary mounting.

Instrument connection: AISI 304 st.st..

Diaphragm material:

- 4 - AISI 316L st.st.
- 8 - AISI 316L st.st. PTFE coated,(2)
- E - Hastelloy C276 PTFE coated,(2)
- C - Tantalum PTFE coated,(2)
- 2 - Titanium.

Gaskets: PTFE up to +482°F (+250°C); graphite over +482°F (+250°C)

Process connection and intermediate ring:

- 5 - AISI 316L st.st.
- N - AISI 316L st.st.,PTFE coated,(2)
- F - Polipropylene,
- V - PVC.

Clamp bolts: AISI 304 st.st.

Filling liquids: Silicon oil.

(1) at 68°F (20 °C) process temperature (or state temperature when ordering)

(2) Max temperature +302°F (+150°C), with PTFE coating - G 1/2 A only

(3) In case of order on demand of "continuous duty" model or in case of accidental overpressure, please see our catalogue MGS9/2B

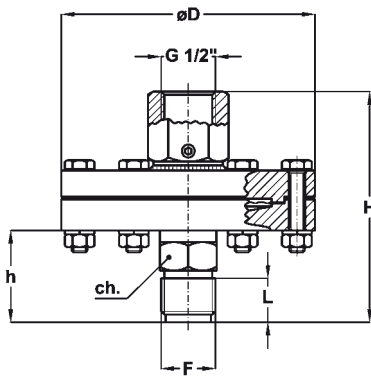
Ranges

| Instrument type | Minimum range | Maximum range | Notes |
|--|---|--------------------------|-------------------------------------|
| Bourdon tube, DS 4", 6" (100...150 mm) | 0...10 psi (0...0,6 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Diaphragm differential pressure gauges | 0...100 InH ₂ O (0...250 mbar) | 0...360 psi (0...25 bar) | Max static pressure 60 bar |
| Diaphragm pressure switches | 0...15 psi (0...15 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Pressure transmitters | 0...40 InH ₂ O (0...100 mbar) | 0...580 psi (0...40 bar) | Max static pressure 60 bar |

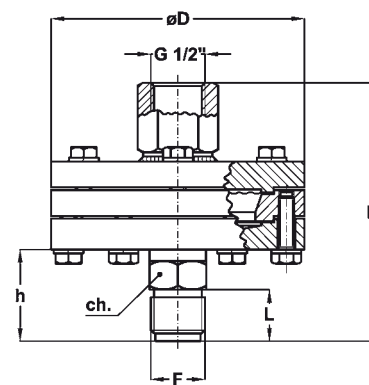
diaphragm seal with threaded connection

MGS9/1B

MGS9/1B0



MGS9/1BS



| F | ø D | ch | H | h | L | Weight |
|--------------|-------|-------|-------|--------|-------|------------|
| 41M-G 1/2 B | 3.85" | 0.87" | 3.50" | 1.40" | 0.78" | 3.13 lbs |
| 43M-1/2 NPT* | (98) | (22) | (89) | (35,5) | (20) | (1,300 kg) |

dimensions : inches (mm)

| F | D | ch | H | h | L | Weight |
|--------------|-------|-------|-------|--------|-------|------------|
| 41M-G 1/2 B | 3.85" | 0.87" | 3.94" | 1.40" | 0.78" | 3.90 lbs |
| 43M-1/2 NPT* | (98) | (22) | (100) | (35,5) | (20) | (1,770 kg) |

dimensions : inches (mm)

*Not available with PTFE coated process connections.

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| |
|--|
| D - Direct |
| T - Cooling extension - T.e. $\geq 212^{\circ}\text{F}$ - (100°C) |
| 1 - Capillary AISI304 st.st., 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., covered with AISI304 st.st. armour, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., covered with AISI316 st.st. armour, 236" max (6 mt max) |

OPTIONS

| Description | MGS9/1B0 | MGS9/1BS |
|--|----------|----------|
| B - Silicon liquid "B" for process fluid temperature from -40°F to $+482^{\circ}\text{F}$ (from -40°C to $+250^{\circ}\text{C}$) | ◆ | ◆ |
| C - Silicon liquid "C" for process fluid temperature from -14°F to $+662^{\circ}\text{F}$ (from -10°C to $+340^{\circ}\text{C}$) | ◆ | ◆ |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to $+302^{\circ}\text{F}$ (from -40°C to $+150^{\circ}\text{C}$) | ◆ | ◆ |
| C05 - Helium Test | ◆ | ◆ |
| E30 - Nace version MR0103/MR0175 (ISO 15156) (1) | ◆ | ◆ |
| TS5 - Washing plug - 1/4" NPT (4) | ◆ | ◆ |
| P04 - Dye penetrant test | ◆ | ◆ |
| P02 - Oxygen degreasing(2) | ◆ | ◆ |
| MPP -PTFE diaphragm protection, for temperature up to 302°F (150°C) (3) | ◆ | ◆ |
| Special process connections (4) : 1/4" NPTF; 1/2" NPTF; 3/4" NPTF; 3/4" NPTM | ◆ | ◆ |

- (1) Stainless steel process connection and Monel 400 or Hastelloy C276 diaphragm
- (2) To be ordered together with fluorinated liquid filling
- (3) Except for pressure gauges and vacuum gauges
- (4) Stainless steel process connection only

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options

| | | | | | | | |
|---|-----|---------|---------|-----|---------------|---------|---------|
| 4 | 1B0 | 5, N, 6 | 4, 6, 9 | 41M | 41F - G 1/2 F | D, T | B...MPP |
| | 1BS | 9, F, V | B, J, I | 43M | | 1, 9, 6 | |
| | | | U, 8, E | 43F | | | |
| | | | C, 2 | | | | |

back side diaphragm seal for high pressure, with threaded connection

MGS9/1A



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is mechanically clamped between the upper housing and intermediate ring and is leak proof tested to guarantee fill fluid separation from process fluid. Model MGS9/1A0 is cleaned by removing the lower housing from the intermediate ring. Both models are without sealing gaskets. This construction feature and its compact design suits many application that require frequent maintenance, for model MGS9/1A0.

4.1AS - MGS9/1AS

Working pressure: from 0...6000 to 0...8000 psi; (from 0...400 bar to 0...600 bar).

Working temperature: -49...+302 °F (-45°C...+150°C).

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ±1% for capillary mounting.

Instrument connection: AISI 316 st. st.

Diaphragm: metallic seal,

4 - AISI 316L st.st.,

9 - Hastelloy C276,

6 - Monel 400.

Process connection:

4 - AISI 316 st.st.,

5 - AISI 316 L st.st.

Clamp bolts: high tensile carbon steel.

Filling liquid: silicon oil.

4.1A0 - MGS9/1A0

Working pressure: from 0...1000 to 0...6000 psi; (from 0...60 bar to 0...400 bar).

Working temperature: -49...+302 °F (-45°C...+150°C).

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ±1% for capillary mounting.

Instrument connection: AISI 316 st. st.

Diaphragm: metallic seal,

4 - AISI 316L st.st.,

9 - Hastelloy C276,

6 - Monel 400.

Intermediate ring: AISI 316 st.st.

Process connection:

4 - AISI 316 st.st.,

5 - AISI 316 L st.st.

Clamp bolts: stainless steel.

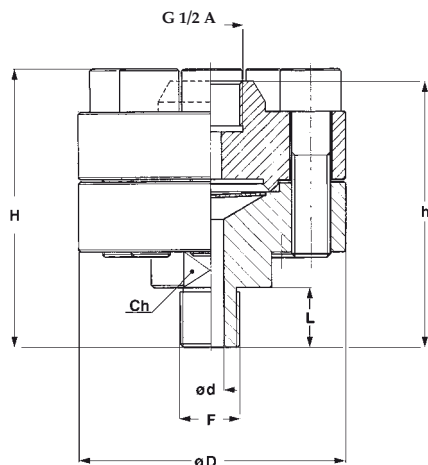
Filling liquid: silicon oil.

* at 68°F (20 °C) process temperature (or state temperature when ordering)

back side diaphragm seal for high pressure, with threaded connection

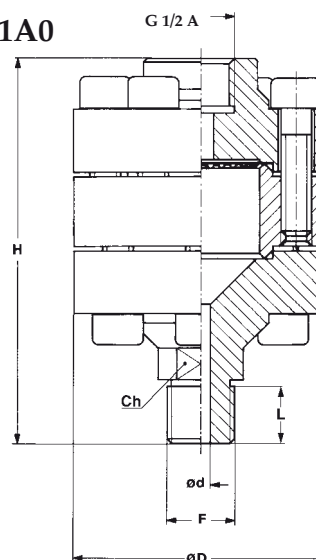
MGS9/1A

MGS9/1AS



| F | d | H | h | L | D | Ch |
|----------------------|-------|-------|-------|-------|-------|-------|
| 41M - G 1/2 B | 0.27" | 3.66" | 3.50" | 0.78" | 3.50" | 1.41" |
| 43M - 1/2 NPT | (7) | (93) | (89) | (20) | (89) | (36) |

MGS9/1A0



| F | d | H | L | D | Ch |
|----------------------|-------|---------|-------|-------|-------|
| 41M - G 1/2 B | 0.23" | 4.78" | 0.78" | 3.14" | 0.86" |
| 43M - 1/2 NPT | (6) | (121,5) | (20) | (80) | (22) |

dimensions : inches (mm)

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| |
|--|
| D - Direct |
| T - Cooling extension |
| 1 - Capillary AISI304 st.st., 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., covered with AISI304 st.st. armour, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., covered with AISI316 st.st. armour, 236" max (6 mt max) |

OPTIONS

| Model |
|---|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from -10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C to +150°C) |
| R20 - Adaptor G 1/2 A M/F |
| R22 - Adaptor G 1/2 A M x 1/2 - 14 NPT F |
| R21 - Adaptor G 1/2 A M x 1/4 - 18 NPT F |
| T11 - Washing plug |
| C05 - Helium Test |
| E30 - Nace version MR0103 (1) - MR0175 (ISO 15156) (2) |

(1) Stainless steel process connection and Monel 400 or Hastelloy C276 diaphragm. (2) Wetted parts hastelloy C276

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options

4 **1AS** 4 **4, 9, 6** **41M** **41F - G 1/2 F** **D, T** **B...E30**
 1A0 5 **43M** **1, 9, 6**

back side diaphragm seals, with threaded connection

MGS9/111



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the top housing and leak proof tested, to guarantee a separation between process fluid and fill transmission fluid. The upper part is detachable from the lower process side for cleaning. This construction feature and its compact design suits many application that require frequent maintenance.

4.111 - MGS9/111

Working pressure: *from 0...100 to 3000 psi (from 0...6 bar to 0...250 bar).*

Working temperature: *-49...+302°F (-45°C...+150°C.)*

Accuracy*: (add to instrument accuracy) $\pm 0,5\%$ for direct mounting; $\pm 1\%$ for capillary mounting.

Instrument connection: AISI 316 st.st.

Diaphragm: welded,

4 - AISI 316L st.st.,

9 - Hastelloy C276,

6 - Monel 400.

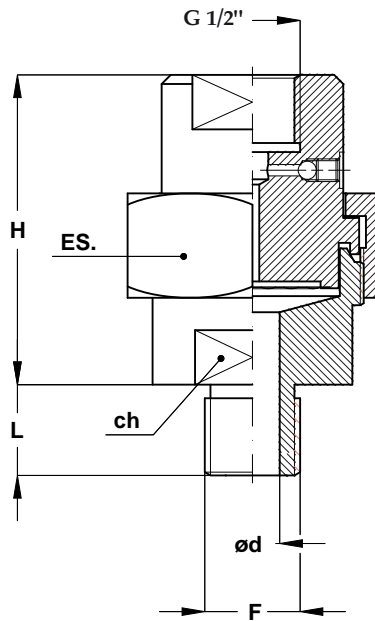
Hexagonal nut: AISI 304 st.st.

Process connection:

4 - AISI 316 st.st.

Filling liquid: silicon oil.

* at 68°F (20 °C) process temperature (or state temperature when ordering)



| F | d | H | L | ES. | Ch |
|----------------------------|---------------|---------------|---------------|---------------|---------------|
| 41M G 1/2 A | 0.47" (12) | 2.67" (68) | 0.78" (20) | 2.16" (55) | 1.41" (36) |
| 43M 1/2-14 NPT | 0.47" (12) | 2.67" (68) | 0.78" (20) | 2.16" (55) | 1.41" (36) |
| 43F 1/2-14 NPT F | | 2.67" (68) | | 2.16" (55) | 1.41" (36) |
| 53F 3/4-14 NPT F | | 2.67" (68) | | 2.16" (55) | 1.41" (36) |

dimensions : inches (mm)

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| |
|--|
| D - Direct |
| T - Cooling extension |
| 1 - Nude capillary AISI304, 36.37" max (6 mt max) |
| 9 - Capillary AISI304 st.st., covered with AISI304 armour, 36.37" max (6 mt max) |
| 6 - Capillary AISI316 st.st., covered with AISI316 st.st. armour, 36.37" max (6 mt max) |

OPTIONS

| |
|---|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from -10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C to +150°C) |
| C05 - Helium Test |
| E30 - Nace version MR 01.03 (1) |
| P02 - Oxygen degreasing (2) |
| P04 - Dye penetrant test |

- (1) Stainless steel process connection and Monel 400 or Hastelloy C276 diaphragm
(2) To be ordered together with fluorinated liquid filling

"HOW TO ORDER" SEQUENCE

| Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options |
|--|
| 4 111 4 4, 6, 9 41M 41F - G 1/2 F D, T B...P04 |
| 43M 1, 9, 6 |
| 43F |
| 53F |

“continuous duty” diaphragm seal, welded, with threaded connection

MGS9/2B



- ✓ - Special overpressure max 210 bar
- ✓ - Welded diaphragm
- ✓ - Filling plug
- ✓ - Washing plug

Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and / or with a high temperature. In case of accidental removal of the instrument or of liquid filling leak the diaphragm will place on the upper cup preventing any damage and any process liquid leak. Thanks to an exclusive calibration system the pressure gauge should stand an overpressure of 210bar without the help of any pressure control switch .

4.2B0 - MGS9/2B

Design: ASME B40.2

Working pressure: from -30...0 INHG to 0...2320 psi (from -1...0 to 0...160 bar).

“Continuous duty”: 3000 psi (210 bar) as per ASME B40.2.

Process temperature: -49...+302°F (-45°C...+150°C.)

Accuracy (1): (add to instrument accuracy) ±0,5% for direct mounting, ±1% for capillary mounting.

Instrument connection: AISI 304 st.st.

Diaphragm material:

4 - AISI 316L st.st.,

6 - Monel 400,

9 - Hastelloy C 276,

B - Tantalum,

J - Alloy 600;

I - Alloy 825;

U - 25.22.2.

Gaskets: PTFE up to +482°F (+250°C).

Process connection:

5 - AISI 316L st.st.

6 - Monel 400

9 - Hastelloy C 276.

Clamp nuts and bolts: high resistance steel.

Filling liquids: Silicon oil.

Special overpressure: 3000 psi for 1 hour (210 bar) (2) (3).

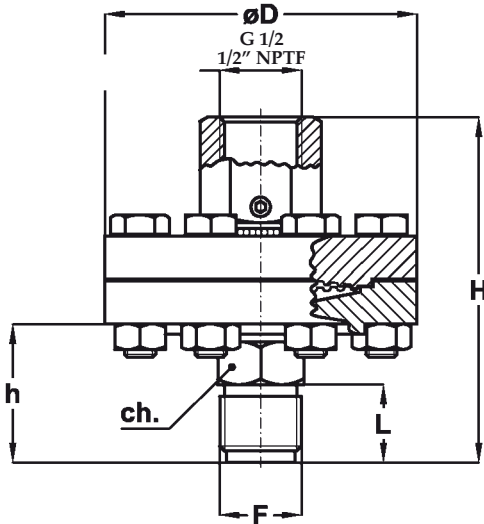
(1) at 68°F (20 °C) process temperature (or state temperature when ordering)

(2) on request only, pressure gauge / pressure switch assembling only

(3) Vacuum and compound gauges excluded

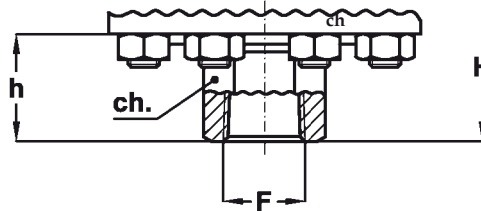
**"continuous duty" diaphragm seal
welded, with threaded connection**

MGS9/2B



| F | D | ch | H | h | L | Weight |
|----------------------|-------|-------|-------|--------|-------|------------|
| 41M - G 1/2 B | 3.15" | 0.87" | 3.54" | 2.79" | 0.79" | 2.36 lbs |
| 43M - 1/2 NPT | (80) | (22) | (90) | (35,5) | (20) | (1,070 kg) |

dimensions : inches (mm)



| F | D | ch | H | h | Weight |
|-------------------------|-------|-------|-------|--------|------------|
| 43F 1/2 NPT F | 3.15" | 1.06" | 3.23" | 1.08" | 2.34 lbs |
| | (80) | (27) | (82) | (27,5) | (1,060 kg) |

dimensions : inches (mm)

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| |
|--|
| D - Direct |
| T - Cooling extension - T.e. $\geq 212^{\circ}\text{F}$ - (100°C) |
| 1 - Capillary AISI304 st.st., 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., covered with AISI304 st.st. armour, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., covered with AISI316 st.st. armour, 236" max (6 mt max) |

OPTIONS

| |
|--|
| B - Silicon liquid "B" for process fluid temperature from -40°F to $+482^{\circ}\text{F}$ (from -40°C to $+250^{\circ}\text{C}$) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to $+662^{\circ}\text{F}$ (from -10°C to $+350^{\circ}\text{C}$) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to $+302^{\circ}\text{F}$ (from -40°C to $+150^{\circ}\text{C}$) |
| C05 - Helium Test (1) |
| E30 - Nace version MR0103/MR0175 (ISO 15156) (2) |
| TS5 - AISI316L stainless steel washing plug, 1/4" NPT |
| P04 - Dye penetrant test |
| BAI - Stainless steel fixing bolts (5) |
| S40 - Max overpressure 3000 psi (210 bar) (3) (4) |
| MPP - PTFE diaphragm protection, for temperature up to 302°F (150°C) (3) |
| Special process connections (1) : 1/4" NPTF; 3/4" NPTF; 3/4 NPTM |

(1) on models with AISI316L process connection only

(2) Stainless steel process connection and Monel 400 or Hastelloy C276 diaphragm

(3) Except for vacuum and compound gauges

(4) for pressure gauge/pressure switch assembling only
(5) max 100 bar

"HOW TO ORDER" SEQUENCE

| Section | Model | Connection material | Diaphragm material | Process Connection | Instrument connection | Assembling | Options |
|---------|-------|---------------------|--------------------|--------------------|-----------------------|------------|---------|
| 4 | 2B0 | 5 | 4, 6, 9 | 41M | 41F - G 1/2 F | D, T | B...MPP |
| | | 6 | B, J, I | 43M | 43F - 1/2NPT F | 1, 9, 6 | |
| | | 9 | U | 43F | | | |



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids that may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the body, to ensure separation of the filling fluid from the process medium. The threaded connection make it easy to use on all applications where the reduced size of the system is important and also where gauges of 2.5" (63 mm) diameter are required.

4.MIA - MGS9/MINI/A

Working pressure: up to 0...6000 psi (up to 0...400 bar), as from RANGES table.

Working temperature: -49...302 °F (-45...+150°C).

Accuracy(1): (add to instrument accuracy) ±1,0 % for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 316 L st.st.

Diaphragm: welded,

4 - AISI 316 L st.st.

Process connection:

5 - AISI 316 L st.st.

Filling liquid: silicon oil.

4.MIB - MGS9/MINI/B

Working pressure: up to 0...1000 psi (up to 0...60 bar), as from RANGES table.

Other features: as model MGS9/MIA.

RANGES

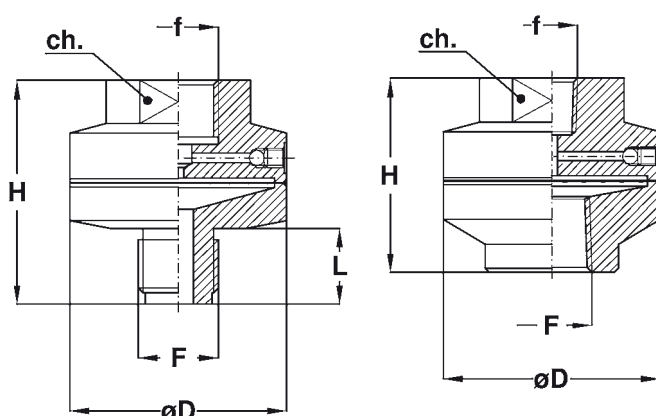
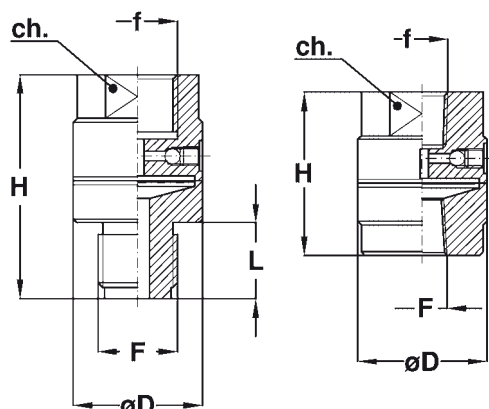
| Gauge DS | MGS9/MIA | MGS9/MIB |
|----------------------------|--|---|
| 2.5" (63 mm) | 0...60/0...6000 psi (0...4/0...400 bar) | -30...0 InHG /0...1000 psi (-1...0/0...60 bar) |
| 4" ...6" (100...150 mm) | 0...200/0...6000 psi (0...16/0...400 bar) | |

(1) at 68°F (20 °C) process temperature (or state temperature when ordering)

MGS9/MIA

MGS9/MIB

| f |
|------------------|
| 41F - G 1/2 |
| 21F - G 1/4 |
| 23F - 1/4-18 NPT |



| F (1) | D | H | Ch | L |
|----------------------------|---------------|---------------|---------------|---------------|
| 23F 1/4-18 NPT F | 1.33" (34) | 1.69" (43) | 1.06" (27) | - |
| 43M 1/2-14 NPT M | 1.33" (34) | 2.32" (59) | 1.06" (27) | 0.78" (20) |
| 43F 1/2-14 NPT F | 1.33" (34) | 1.69" (43) | 1.06" (27) | - |
| 41M G 1/2 B | 1.33" (34) | 2.32" (59) | 1.06" (27) | 0.78" (20) |

(1)other threads available on request
dimensions : inches (mm)

| F (1) | D | H | Ch | L |
|----------------------------|---------------|---------------|---------------|---------------|
| 23F 1/4-18 NPT F | 2.24" (57) | 2" (51) | 1.25" (32) | - |
| 43M 1/2-14 NPT M | 2.24" (57) | 2.32" (59) | 1.25" (32) | 0.78" (20) |
| 43F 1/2-14 NPT F | 2.24" (57) | 2" (51) | 1.25" (32) | - |
| 41M G 1/2 B | 2.24" (57) | 2.32" (59) | 1.25" (32) | 0.78" (20) |

(1)other threads available on request
dimensions : inches (mm)

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label.

OPTIONS

| |
|---------------------------------|
| G - Mineral oil filling |
| P04 - Dye penetrant test |

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options

4 **MIA** 5 4 **41M** **21F** **D** **G**
 MIB **43M** **23F** **P04**
 23F **41F**
 43F

**sanitary diaphragm seal
threaded process connection
DIN, SMS, RJT/APV, IDF/ISS**

MGS9/SA



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the upper body, to ensure separation of filling fluid from process medium. Designed in accordance with food and pharmaceutical standards to permit easy removal from the plant whilst maintains the hygienic feature during frequent cleaning.

4.SAN - MGS9/SA

Working pressure: from 0...30 to 0...600 psi (from 0...1 to 0...40 bar). Minimum working pressure as from MINIMUM RANGES table .

Process temperature: -4...+248°F (-20°C...+120°C).

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting.

Instrument connection: AISI 316 st.st..

Diaphragm: welded,

4 - AISI 316 L st.st.

Filling liquid: mineral oil (FDA approved) for food industry.

Process connection: AISI 316 (Cod. 4)st.st. as per:

-DIN 11851;

-SMS 681;

-RJT / APV;

-IDF / ISS;

see "MINIMUM RANGES" table for dimensions.

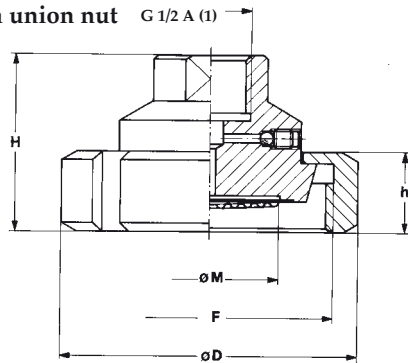
Union nut: AISI 304 st.st.

MINIMUM RANGES

| Process connection | | Female with union nut | | Male | |
|--------------------|--------|------------------------|--------------------------|-------------------------|--------------------------|
| | | DS 2.5" (63mm) | DS 4" (100mm) | DS 2.5" (63mm) | DS 4" (100mm) |
| DIN 11851 | 25 | 0...60 psi (0...4 bar) | 0...60 psi (0...4 bar) | 0...100 psi (0...6 bar) | |
| | 32 | | 0...60 psi (0...4 bar) | | 0...60 psi (0...4 bar) |
| | 40 | | 0...30 psi (0...1,6 bar) | | 0...60 psi (0...4 bar) |
| | 50 | | 0...15 psi (0...1 bar) | | 0...30 psi (0...1,6 bar) |
| SMS 681 | 1" 1/2 | | 0...60 psi (0...4 bar) | | 0...60 psi (0...4 bar) |
| | 2" | | 0...30 psi (0...1,6 bar) | | 0...30 psi (0...1,6 bar) |
| RJT/APV | 1" 1/2 | | 0...60 psi (0...4 bar) | | 0...60 psi (0...4 bar) |
| | 2" | | 0...30 psi (0...1,6 bar) | | 0...30 psi (0...1,6 bar) |
| IDF/ISS | 1" 1/2 | | 0...60 psi (0...4 bar) | | 0...60 psi (0...4 bar) |
| | 2" | | 0...30 psi (0...1,6 bar) | | 0...30 psi (0...1,6 bar) |

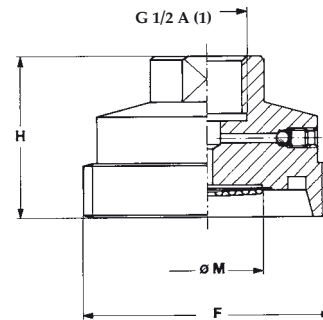
* at 68°F (20 °C) process temperature (or state temperature when ordering)

Female with union nut



(1) DN 25 = G 1/2 A, G 1/4 A; 1" = G 1/4 A

Male



(1) DN 25 and 1" = G 1/4 A

DIN 11851 - (example draw below)

| DN | Code | H | h | D | M | F (DIN 405) |
|----|------------|-----------------|---------------|---------------|---------------|-------------|
| 25 | QHF | *1.81" (*46) | 0.82" (21) | 2.48" (63) | 1.18" (30) | Rd 52 x 1/6 |
| 32 | RHF | 1.81" (46) | 0.82" (21) | 2.75" (70) | 1.18" (30) | Rd 58 x 1/6 |
| 40 | SHF | 1.81" (46) | 0.82" (21) | 3.07" (78) | 1.57" (40) | Rd 65 x 1/6 |
| 50 | THF | 1.85" (47) | 0.86" (22) | 3.62" (92) | 1.96" (50) | Rd 78 x 1/6 |

(*) G 1/4 A: 1.63" (41,5 mm)

dimensions : inches (mm)

DIN 11851 - (example draw below)

| DN | Code | H | M | F (DIN 405) |
|----|------------|---------------|---------------|-------------|
| 25 | QHM | 1.45" (37) | 0.78" (20) | Rd 52 x 1/6 |
| 32 | RHM | 1.65" (42) | 1.18" (30) | Rd 58 x 1/6 |
| 40 | SHM | 1.65" (42) | 1.18" (30) | Rd 65 x 1/6 |
| 50 | THM | 1.65" (42) | 1.57" (40) | Rd 78 x 1/6 |

SMS

| DN | Code | H | h | D | M | F (DIN 405) |
|--------|------------|-------|-------|-------|-------|-------------|
| 1" 1/2 | AIF | 1.94" | 0.98" | 2.91" | 1.18" | Rd 60 x 1/6 |
| 2" | BIF | 1.98" | 1.02" | 3.30" | 1.57" | Rd 70 x 1/6 |

SMS

| DN | Code | H | M | F (DIN 405) |
|--------|------------|-------|-------|-------------|
| 1" 1/2 | AIM | 1.69" | 1.18" | Rd 60 x 1/6 |
| 2" | BIM | 1.69" | 1.57" | Rd 70 x 1/6 |

RJT/APV

| DN | Code | H | h | D | M | F (Withworth) |
|--------|------------|-------|-------|-----------|-------|---------------|
| 1" 1/2 | ALF | 1.94" | 0.86" | Ex. 2.55" | 1.18" | 2" 5/16 x 8 |
| 2" | BLF | 1.94" | 0.86" | Ex. 3.11" | 1.57" | 2" 7/8 x 6 |

RJT/APV

| DN | Code | H | M | F (Withworth) |
|--------|------------|-------|-------|---------------|
| 1" 1/2 | ALM | 1.83" | 1.18" | 2" 5/16 x 8 |
| 2" | BLM | 1.83" | 1.57" | 2" 7/8 x 6 |

IDF/ISS

| DN | Code | H | h | D | M | F (ACME) |
|--------|------------|-------|-------|-------|-------|-------------|
| 1" 1/2 | AMF | 2.14" | 1.18" | 2.51" | 1.18" | 2" 1/32 x 8 |
| 2" | BMF | 2.14" | 1.18" | 3.03" | 1.57" | 2" 9/16 x 8 |

IDF/ISS

| DN | Code | H | M | F (ACME) |
|--------|------------|-------|-------|-------------|
| 1" 1/2 | AMM | 1.75" | 1.18" | 2" 1/32 x 8 |
| 2" | BMM | 1.75" | 1.57" | 2" 9/16 x 8 |

dimensions : inches

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label.

| |
|------------------------------|
| D - Direct |
| T - Cooling extension |

OPTIONS

| |
|---------------------------------|
| C05 - Helium Test |
| P04 - Dye penetrant test |

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options
4 SAN 4 4 QHF...THM 41F - G 1/2 F D, T C05, P04
AIF...BIM
ALF...BLM
AMF...BMM

clamp connection diaphragm seal



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids that may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the upper body, to ensure separation of the filling fluid from the process medium. Faced diaphragm position enables deep cleaning of the surface while the quick-connection Clamp enables frequent removal from the process during sterilization and cleaning operations, a common requirement in the food processing industry.

4.ALI.4.---- - MGS9/AL

Working pressure: from 0...15 to 0...600 psi (from 0...1 to 0...40 bar), as from RANGE table .

Process temperature: -4...+212°F (-20°C...+100°C);
Max 284°F (140 °C) for 30 minutes during cleaning stage (C.I.P.)¹ and sterilization (S.I.P.)².

Accuracy³: (add to instrument accuracy) ±0,5% max for direct mounting.

Diaphragm: welded,

4 - AISI 316L st.st.

Process connection :

4 - AISI 316 st.st. with finishing Ra ≤0,76 µm (welded parts included), as per ASME BPE SF3.

Filling liquid: mineral oil (FDA approved)for food industry.

4.ALI.4.TA3- - MGS9/AL - 150°C

Process temperature: -4...+302°F (-20°C...+150°C)

Other features: as Standard Model.

1) C.I.P. = Cleaned In Place

2) S.I.P. = Steamed In Place - available for ranges > 1bar when steam pressure does not exceed the max admissible pressure on the connected instrument

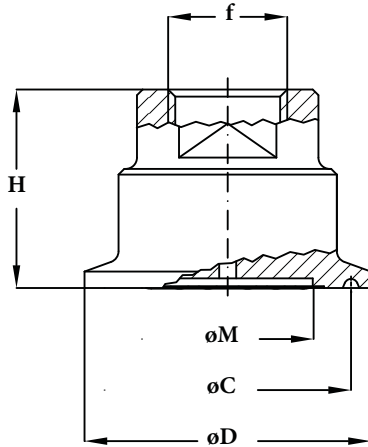
3) at +68°F (20 °C) process fluid temperature, or state temperature when ordering.

RANGES (1)

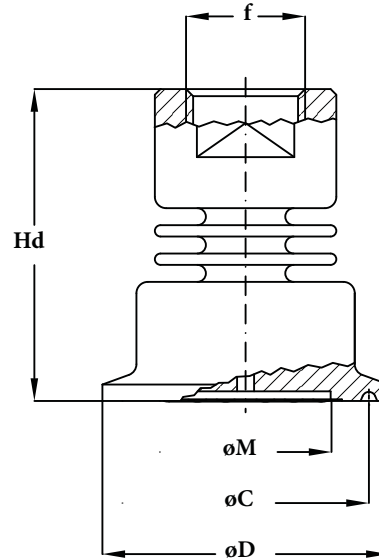
| Pressure gauges DS | 1" Clamp | 1" 1/2 Clamp | 2" Clamp | 2" 1/2 Clamp | 3" Clamp |
|--------------------|---|---|--|--|--|
| 2.5" (63mm) | 0...100/0...600 psi (0...6/0...40 bar) | 0...60/0...600 psi (0...4/0...40 bar) | | | |
| 4" (100mm) | | 0...60/0...600 psi (0...4/0...40 bar) | 0...30/0...600 psi (0...1,6/0...40 bar) | 0...15/0...600 psi (0...1/0...40 bar) | 0...15/0...400 psi (0...1/0...25 bar) |
| 6" (150mm) | | 0...100/0...600 psi (0...6/0...40 bar) | 0...30/0...600 psi (0...2,5/0...40 bar) | 0...30/0...600 psi (0...1,6/0...40 bar) | 0...30/0...400 psi (0...1,6/0...25 bar) |

(1) Vacuum and compound are available upon request

MGS9/AL - STD
cod. ----



MGS9/AL - 150°C
cod. TA3-



| DN Clamp | Code | C | H | Hd | D | f | M |
|----------|------------|-------|-------|-------|-------|--|-------|
| 1" | 6T- | 1,71" | 1,18" | 1,18" | 1,98" | 21F - G 1/4 A | 0,78" |
| 1" 1/2 | AT- | 1,71" | 1,37" | 1,37" | 1,98" | 21F - G 1/4 A 41F - G 1/2 A | 1,18" |
| 2" | BT- | 2,22" | 1,37" | 1,37" | 2,51" | 41F - G 1/2 A | 1,57" |
| 2" 1/2 | DT- | 2,77" | 1,37" | 1,37" | 3,05" | 41F - G 1/2 A | 1,96" |
| 3" | ET- | 3,29" | 1,37" | 1,37" | 3,58" | 41F - G 1/2 A | 2,56" |

dimensions : inches

ASSEMBLING

D - All diaphragm seals are mounted directly on the instruments.
All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label.

FINISHING

| | |
|--|-----|
| 0 - Ra ≤ 0,51 µm, as per ASME BPE SF1 | (1) |
| A - Ra ≤ 0,51 µm, as per ASME BPE SF1 | (1) |
| B - Ra ≤ 0,38 µm, as per ASME BPE SF4 - electropolished | (1) |

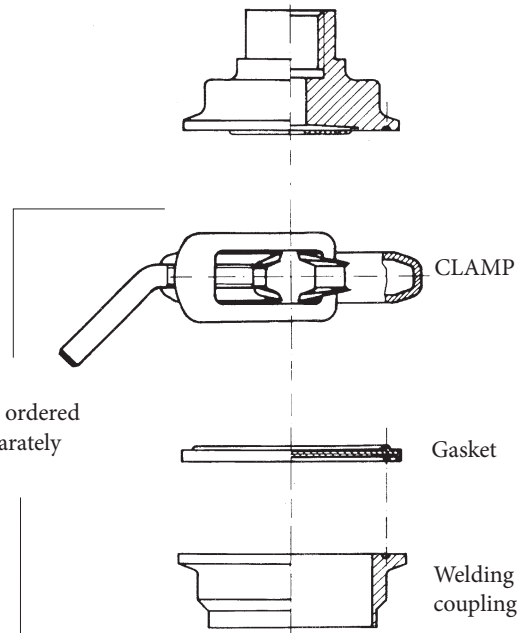
(1) welded parts included

OPTIONS

| |
|---------------------------------|
| C05 - Helium Test |
| P04 - Dye penetrant test |

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Version/Diaphragm material/Process Connection/Finishing/Instrument connection/Assembling/Options
4 ALI 4 ---- 4 6T-...ET- 0 21F - G 1/4 F D C05...P04
TA3- 41F - G 1/2 F B



**diaphragm seal for
DS 2.5" (63mm) pressure gauges,
with threaded connection**

MGS9/367



Diaphragm seals are designed to isolate the sensing element of pressure gauges DS 63 and electronic transmitter from process fluids which may be corrosive, viscous, sedimentous and /or with a high temperature. The diaphragm is welded to the top housing and leak proof tested, to guarantee a separation between process fluid and fill transmission fluid. This construction feature and its compact design suits many application that require frequent maintenance.

4.367 - MGS9/367

Working pressure : *from 0...600 to 0...6000 psi (from 0...40 to 0...400 bar).*

Process temperature: *-49...+302°F (-45°C...+150°C).*

Accuracy*: (add to instrument accuracy) $\pm 1\%$ for direct mounting only.

Diaphragm: welded,

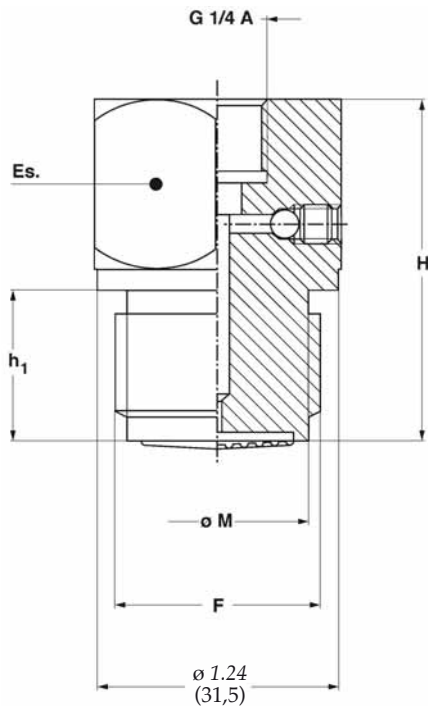
4 - AISI 316 L st.st.

Process connection:

4 - AISI 316 st.st.

Filling liquid: silicone oil.

* at 68°F (20 °C) process temperature (or state temperature when ordering)



| F | M | h ₁ | H | Es. |
|----------------|--------|----------------|--------|-------|
| 51M | 0.92" | 0.62" | 1.43" | 1.25" |
| G 3/4 M | (23,5) | (16) | (36,5) | (32) |

dimensions : inches (mm)

ASSEMBLING

D - All diaphragm seals are mounted directly on the instruments.

OPTIONS

| | |
|--------------|--|
| B - | Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -20°C to +250°C) |
| C - | Silicon liquid "C" for process fluid temperature from +14°F to +662°F (from -10°C to +350°C) |
| E - | Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C to +150°C) |
| C05 - | Helium Test |
| P04 - | Dye penetrant test |

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options
4 367 4 4 51M 21F - G 1/4 F D B...P04

back side diaphragm seals, with flanged connection

MGS9/3A



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature and pressure. An elastic diaphragm, mechanically clamped, fitted to a leak proof check, guarantees the separation of the process fluid from the transmission fill fluid. The mechanical sealing of the diaphragm guarantees the application of the system at high process fluid temperature avoiding the problems caused by gaskets.

4.3A0 - MGS9/3A

Working pressure: from 0...1000 to 3000 psi (from 0...60 bar to 0...250 bar).

Working temperature: -49...+302°F (-45°C...+150°C.)

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 316 st.st.

Diaphragm: welded, AISI 316L st.st. (cod. **4**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**), Hastelloy B2 (cod. **1**), Tantalum (cod. **B**), Titanium (cod. **2**).

Threaded process connection: in AISI 316 st.st. (cod. **4**), AISI 316L st.st. (cod. **5**).

* at +68°F (20 °C) process temperature (or state when ordering)

Dimensions : DN 15...25 and PN 25...100 EN 1092 step seal; 1/2"...1 1/2 class 600...2500 RF as per ASME B16.5.

EN 1092 flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 μm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 μm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.

Fixing bolts: AISI 304 st.st.

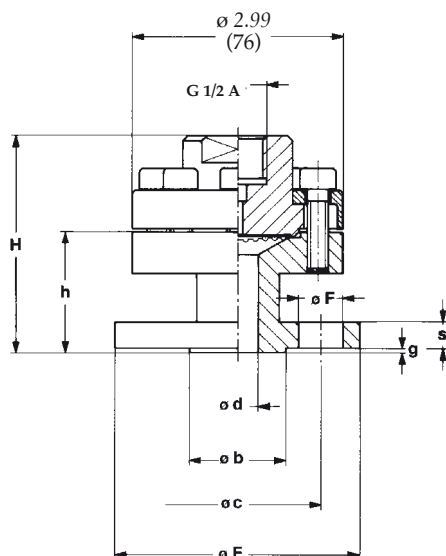
ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (6 mt). (For use and installation, see data sheet "4")

| | |
|---|---|
| D - Direct | 9 - Capillary AISI304 st.st., AISI304 st.st. armoured, 236" max (6 mt max) |
| T - Cooling extension | 6 - Capillary AISI316 st.st., AISI316 st.st. armoured, 236" max (6 mt max) |
| 1 - Capillary AISI304 st.st. 236" max (6 mt max) | |

OPTIONS

| |
|---|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from +10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -60°F to +302°F (from -40°C to +150°C) |
| R20 - Adaptor G 1/2 A M/F with filling screw |
| R21 - Adaptor G 1/2 A M x 1/4 - 18 NPT F with filling screw |
| E30 - Nace MR0103 version, with Monel 400 or Hastelloy C diaphragm. |



EN 1092 STANDARD

dimensions : mm

| DN | PN-bar | Code | h | H | E | b | d | g | c | s | F | N (1) |
|----|----------|------|----|------|-----|----|----|---|-----|----|----|-------|
| 15 | 25...40 | OS0 | 47 | 82,5 | 95 | 45 | 15 | 2 | 65 | 14 | 14 | 4 |
| 15 | 63...100 | OU0 | 51 | 86,5 | 105 | 45 | 15 | 2 | 75 | 18 | 14 | 4 |
| 20 | 25...40 | PS0 | 49 | 84,5 | 105 | 58 | 20 | 2 | 75 | 16 | 14 | 4 |
| 20 | 63...100 | PU0 | 57 | 92,5 | 130 | 58 | 20 | 2 | 90 | 20 | 18 | 4 |
| 25 | 25...40 | QS0 | 49 | 84,5 | 115 | 68 | 25 | 2 | 85 | 16 | 14 | 4 |
| 25 | 63...100 | QU0 | 59 | 94,5 | 140 | 68 | 25 | 2 | 100 | 22 | 18 | 4 |

1) N°holes.

ASME STANDARDS

dimensions : inches

| DN | Classe | Code | h | H | E | b | d | g | c | s | F | N (1) |
|--------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1/2" | 600 | 4DA | 2,11" | 3,51" | 3,74" | 1,37" | 0,59" | 0,24" | 2,62" | 0,57" | 0,62" | 4 |
| 1/2" | 900...1500 | 4FA | 2,70" | 4,10" | 4,74" | 1,37" | 0,59" | 0,24" | 3,24" | 0,88" | 0,86" | 4 |
| 3/4" | 600 | 5DA | 2,33" | 3,73" | 4,62" | 1,68" | 0,78" | 0,24" | 3,24" | 0,62" | 0,74" | 4 |
| 3/4" | 900...1500 | 5FA | 2,82" | 4,22" | 5,11" | 1,68" | 0,78" | 0,24" | 3,5" | 1,04" | 0,86" | 4 |
| 3/4" | 2500 | 5GA | 3,08" | 4,48" | 5,49" | 1,68" | 0,78" | 0,24" | 3,74" | 1,25" | 0,86" | 4 |
| 1" | 600 | 6DA | 2,39" | 3,79" | 4,88" | 2" | 0,98" | 0,24" | 3,5" | 0,68" | 0,74" | 4 |
| 1" | 900...1500 | 6FA | 3,10" | 4,5" | 5,86" | 2" | 0,98" | 0,24" | 4" | 1,12" | 1,02" | 4 |
| 1" | 2500 | 6GA | 3,35" | 4,75" | 6,24" | 2" | 0,98" | 0,24" | 4,24" | 1,37" | 1,02" | 4 |
| 1" 1/2 | 600 | ADA | 1,72" | 3,12" | 6,12" | 2,87" | 1,57" | 0,24" | 4,5" | 0,88" | 0,86" | 4 |
| 1" 1/2 | 900...1500 | AFA | 2,09" | 3,49" | 7" | 2,87" | 1,57" | 0,24" | 4,87" | 1,25" | 1,14" | 4 |
| 1" 1/2 | 2500 | AGA | 2,59" | 3,98" | 7,99" | 2,87" | 1,57" | 0,24" | 5,74" | 1,75" | 1,25" | 4 |

1) N°holes.

"HOW TO ORDER" SEQUENCE

| | | | | | | | | |
|---------|------------------|-----------------------|------------------------|------------------------|--------------------|-------------------------|-----------------|----------------------|
| Section | / Model material | / Connection material | / Diaphragm connection | / Process | / Flange finishing | / Instrument connection | / Assembling | / Options |
| 4 | 3A0 | 4, 5 | 4, 6, 9 2, B, 1 | OS0...QU0 4DA...AGA | RF3...RF8 | 41F - G 1/2 F | D, T 1, 9, 6 | B, C, E R20...E30 |

back side diaphragm seals, with flanged connection

MGS9/3B



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature and pressure. An elastic diaphragm, mechanically clamped, fitted to a leak proof check, guarantees the separation of the process fluid from the transmission fill fluid.

4.3B0 - MGS9/3B

| Instrument type | Minimum range | Maximum range | Notes |
|--|---|--------------------------|-------------------------------------|
| Bourdon tube, DS 4", 6" (100...150 mm) | 0...10 psi (0...0,6 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Diaphragm differential pressure gauges | 0...100 InH ₂ O (0...250 mbar) | 0...360 psi (0...25 bar) | Max static pressure 60 bar |
| Diaphragm pressure switches | 0...15 psi (0...15 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Pressure transmitters | 0...40 InH ₂ O (0...100 mbar) | 0...580 psi (0...40 bar) | Max static pressure 60 bar |

Working temperature: -49...+302°F (-45°C...+150°C.)

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 304 st.st.

Diaphragm: AISI 316L st.st. (cod. **4**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**), Tantalum (cod. **B**), Titanium (cod. **2**) and AISI 316L st.st. PTFE coated (cod. **8**)**.

Gaskets: PTFE (max. 250°C).

Threaded process connection: in AISI 316 st.st. (cod. **4**), AISI 316L st.st. (cod. **5**), AISI 316L st.st. PTFE coated (cod. **N**)**.

Dimensions : DN 15...50 and PN 6...40 EN 1092 step seal; 1/2"...2" class 150...600 RF as per ASME B16.5.

* at +68°F (20 °C) process temperature (or state when ordering)

EN 1092 flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 µm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 µm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**). **EN 1092 flanges finishing:** type B1 (PN 2,5...40) = Ra 3,2...12,5 µm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 µm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.

Fixing bolts: AISI 304 st.st.

** max temperature +328°F (+150°C), with PTFE coating

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: shoul diaphragm seal and instrument not be at the same level, instrument adjustment is required. (6 mt). (For use and installation, see data sheet "4")

| |
|---|
| D - Direct |
| T - Cooling extension |
| 1 - Nude capillary AISI304, 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., AISI304 st.st. armoured, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., AISI316 st.st. armoured, 236" max max (6 mt max) |

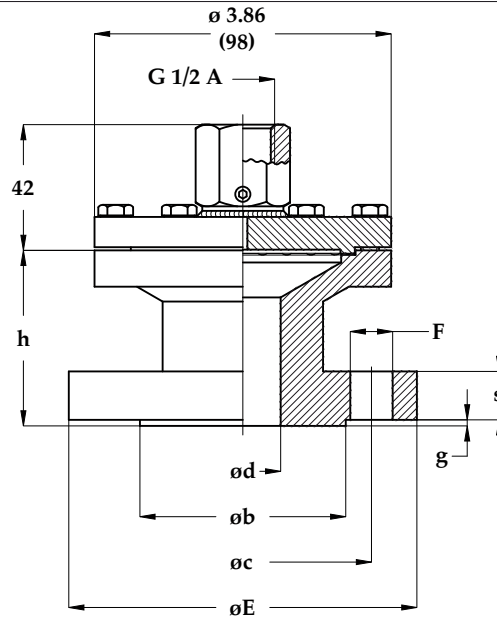
OPTIONS

| |
|--|
| B - Silicon liquid "B", process fluid temp. -40°F...+482°F (-40°C...+250°C) |
| C - Silicon liquid "C", process fluid temp. -14°F...+662°F (-10°C...+350°C) |
| E - Fluorinated liquid "E", process fluid temp. -40°F...+302°F (-40°C...+150°C) |
| C05 - Helium Test (1) |
| TS4 - Washing plug (1) |
| E30 - Nace version bMR0103 (2) - MR0175 (ISO 15156) (3) |

(1) available only on some executions: contact our Technical Department.

(2) Monel 400 or Hastelloy C diaphragm.

(3) Hastelloy C process connection and diaphragm.



EN 1092 STANDARD
dimensions : mm

| DN (1) | PN-bar | Code | h | E | b | d | g | c | s | F | N (2) |
|--------|--------|------|----|-----|-----|----|---|-----|----|----|-------|
| 15 | 6 | OO0 | 48 | 80 | 40 | 15 | 2 | 55 | 12 | 11 | 4 |
| 15 | 10+16 | OQ0 | 52 | 95 | 45 | 15 | 2 | 65 | 14 | 14 | 4 |
| 15 | 25+40 | OS0 | 52 | 95 | 45 | 15 | 2 | 65 | 14 | 14 | 4 |
| 25 | 6 | QO0 | 50 | 100 | 60 | 25 | 2 | 75 | 14 | 11 | 4 |
| 25 | 10+16 | QQ0 | 54 | 115 | 68 | 25 | 2 | 85 | 16 | 14 | 4 |
| 25 | 25+40 | QS0 | 54 | 115 | 68 | 25 | 2 | 85 | 16 | 14 | 4 |
| 50 | 6 | TO0 | 54 | 140 | 90 | 50 | 2 | 110 | 16 | 14 | 4 |
| 50 | 10+16 | TQ0 | 61 | 165 | 102 | 50 | 2 | 125 | 19 | 18 | 4 |
| 50 | 25+40 | TS0 | 62 | 165 | 102 | 50 | 2 | 125 | 20 | 18 | 4 |

1) DN 20, 40 and over are available

2) N°holes.

ASME STANDARDS

dimensions : inches

| DN (1) | Classe | Code | h | E | b | d | g | c | s | F | N (2) |
|--------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1/2" | 150 | 4AA | 1.89" | 3.54" | 1.37" | 0.59" | 0.08" | 2.37" | 0.38" | 0.63" | 4 |
| 1/2" | 300 | 4BA | 2.11" | 3.74" | 1.37" | 0.59" | 0.08" | 2.62" | 0.50" | 0.63" | 4 |
| 1/2" | 600 | 4DA | 2.37" | 3.74" | 1.37" | 0.59" | 0.27" | 2.62" | 0.56" | 0.63" | 4 |
| 1" | 150 | 6AA | 2.01" | 4.33" | 2" | 0.98" | 0.08" | 3.12" | 0.50" | 0.63" | 4 |
| 1" | 300 | 6BA | 2.38" | 4.88" | 2" | 0.98" | 0.08" | 3.5" | 0.62" | 0.75" | 4 |
| 1" | 600 | 6DA | 2.64" | 4.88" | 2" | 0.98" | 0.27" | 3.5" | 0.69" | 0.75" | 4 |
| 2" | 150 | BAA | 2.20" | 6" | 3.62" | 1.96" | 0.08" | 4.75" | 0.69" | 0.75" | 4 |
| 2" | 300 | BBA | 2.37" | 6.49" | 3.62" | 1.96" | 0.08" | 5" | 0.81" | 0.75" | 8 |
| 2" | 600 | BDA | 2.75" | 6.49" | 3.62" | 1.96" | 0.27" | 5" | 1" | 0.75" | 8 |

1) 3/4", 1"1/2 and over are available

2) N°holes.

"HOW TO ORDER" SEQUENCE

| Section | Model material | Connection material | Diaphragm | Process connection | Flange finishing | Instrument connection | Assembling | Options |
|---------|----------------|---------------------|--------------------|------------------------|------------------|-----------------------|-----------------|---------|
| 4 | 3B0 | 4, 5, N | 4, 6, 9 B, 2, 8 | OO0...TS0 4AA...BDA | RF3...RF8 | 41F - G 1/2 F | D, T 1, 9, 6 | B...E30 |

back side diaphragm seals, with flanged connection

MGS9/6



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is leak proof tested to guarantee fill fluid separation from process fluid. Process side are ASME/EN 1092 flanged to suit application in chemical, petrochemical, water treatment and paper industries.

4.600 - MGS9/6

| Instrument type | Minimum range | Maximum range | Notes |
|--|---|--------------------------|-------------------------------------|
| Bourdon tube, DS 4", 6" (100...150 mm) | 0...10 psi (0...0,6 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Diaphragm differential pressure gauges | 0...100 InH ₂ O (0...250 mbar) | 0...360 psi (0...25 bar) | Max static pressure 60 bar |
| Diaphragm pressure switches | 0...15 psi (0...15 bar) | 0...580 psi (0...40 bar) | Vacuum and compound gauges included |
| Pressure transmitters | 0...40 InH ₂ O (0...100 mbar) | 0...580 psi (0...40 bar) | Max static pressure 60 bar |

Working temperature: -49...+302°F (-45°C...+150°C.)

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 316 st.st.

Diaphragm: AISI 316L st.st. (cod. **4**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**), Tantalum (cod. **B**), Titanium (cod. **2**) and AISI 316L st.st. PTFE coated (cod. **8**)**.

Gaskets: PTFE (max. 250°C).

Flanged process connection: in AISI 316 st.st. (cod. **4**), AISI 316L st.st. (cod. **5**), AISI 316L st.st. PTFE coated (cod. **N**)**.

Dimensions: DN 15...50, PN 6...40 EN 1092 step seal; 1/2"...2" class 150...600 RF as per ASME B16.5.

EN 1092 flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 μm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 μm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.

Studs, nuts: AISI 304 st.st.

* at +68°F (20 °C) process temperature (or state when ordering)

** max. temperature 328°F (150 °C), with PTFE coating.

ASSEMBLING - All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| | |
|--|---|
| D - Direct | 9 - Armour covered AISI304 st.st. capillary, 236" max (6 mt max) |
| T - Cooling extension - T.e. ≥ 212°F - (100°C) | 6 - Armour covered AISI316 st.st. capillary, 236" max (6 mt max) |
| 1 - Capillary AISI304 st.st., 236" max (6 mt max) | 5 - |

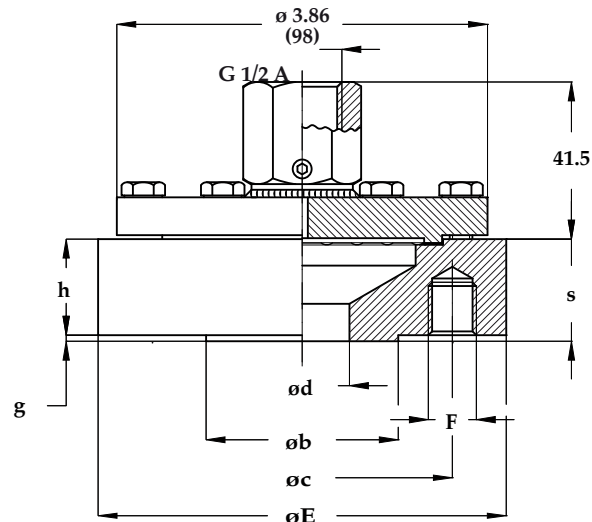
OPTIONS

| | |
|--|--|
| Silicon liquid "A", process fluid temp. -49°F...+302°F (-45°C...+150°C) | C05 - Helium Test (1) |
| B - Silicon liquid "B", process fluid temp. -40°F...+482°F (-40°C...+250°C) | E30 - Nace version bMR0103 (2) - MR0175 (ISO 15156) (3) |
| C - Silicon liquid "C", process fluid temp. -14°F...+662°F (-10°C...+350°C) | P15 - Studs, nuts and washers |
| E - Fluorinated liquid "E", process fluid temp. -40°F...+302°F (-40°C...+150°C) | TS4 - Washing plug (1) |

(1) available only on some executions: contact our Technical Department.

(2) Monel 400 or Hastelloy C diaphragm.

(3) Hastelloy C process connection and diaphragm.



EN 1092 STANDARD

dimensions : mm

| DN (1) | PN | Code | E | h | b | d | g | c | s | F | N (1) |
|--------|---------|------|-----|------|-----|----|---|-----|------|-----|-------|
| 15 | 10...16 | QQ0 | 95 | 24,5 | 45 | 15 | 2 | 65 | 26,5 | M12 | 4 |
| | 25...40 | OS0 | | | | | | | | | |
| 20 | 10...16 | PQ0 | 105 | 22,5 | 58 | 20 | 2 | 75 | 24,5 | M12 | 4 |
| | 25...40 | PS0 | | | | | | | | | |
| 25 | 10...16 | QQ0 | 115 | 20,5 | 68 | 25 | 2 | 85 | 22,5 | M12 | 4 |
| | 25...40 | QS0 | | | | | | | | | |
| 40 | 10...16 | SQ0 | 150 | 18 | 88 | 40 | 3 | 110 | 21 | M16 | 4 |
| | 25...40 | SS0 | | | | | | | | | |
| 50 | 10...16 | TQ0 | 165 | 18 | 102 | 50 | 3 | 125 | 21 | M16 | 4 |
| | 25...40 | TS0 | | | | | | | | | |

1) DN20 and over DN50 are available

2) N° holes

ASME STANDARDS

dimensions : inches

| DN (1) | Class | Code | h | E | b | d | g | c | s | N (1) | F |
|--------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------------|
| 1/2" | 150 | 4AA | 1.06" | 3.54" | 1.37" | 0.59" | 0.08" | 2.37" | 1.14" | 4 | 1/2"-13UNC |
| 1/2" | 300 | 4BA | 1" | 3.74" | 1.37" | 0.59" | 0.08" | 2.63" | 1.08" | 4 | 1/2"-13UNC |
| 1/2" | 600 | 4DA | 1" | 3.74" | 1.37" | 0.59" | 0.27" | 2.63" | 1.28" | 4 | 1/2"-13UNC |
| 3/4" | 150 | 5AA | 0.98" | 3.94" | 1.69" | 0.79" | 0.08" | 2.75" | 1.14" | 4 | 1/2"-13UNC |
| 3/4" | 300 | 5BA | 1.34" | 4.53" | 1.69" | 0.79" | 0.08" | 2.63" | 1.06" | 4 | 5/8"-11UNC |
| 3/4" | 600 | 5DA | 1.34" | 4.53" | 1.69" | 0.79" | 0.27" | 3.25" | 1.61" | 4 | 5/8"-11UNC |
| 1" | 150 | 6AA | 0.9" | 4.33" | 2" | 0.98" | 0.08" | 3.25" | 0.98" | 4 | 1/2"-13UNC |
| 1" | 300 | 6BA | 1.34" | 4.92" | 2" | 0.98" | 0.08" | 3.5" | 1.42" | 4 | 5/8"-11UNC |
| 1" | 600 | 6DA | 1.34" | 4.92" | 2" | 0.98" | 0.27" | 3.5" | 1.61" | 4 | 5/8"-11UNC |
| 1 1/2" | 150 | AAA | 0.69" | 4.92" | 2.87" | 1.57" | 0.08" | 3.87" | 0.77" | 4 | 1/2"-13UNC |
| 1 1/2" | 300 | ABA | 0.83" | 6.1" | 2.87" | 1.57" | 0.08" | 4.5" | 0.9" | 4 | 3/4"-10UNC |
| 1 1/2" | 600 | ADA | 0.88" | 6.1" | 2.87" | 1.57" | 0.27" | 4.5" | 1.17" | 4 | 3/4"-10UNC |
| 2" | 150 | BAA | 0.69" | 5.9" | 3.63" | 1.97" | 0.08" | 4.75" | 0.77" | 4 | 5/8"-11UNC |
| 2" | 300 | BBA | 0.81" | 6.5" | 3.63" | 1.97" | 0.08" | 5" | 0.89" | 8 | 5/8"-11UNC |
| 2" | 600 | BDA | 1" | 6.5" | 3.63" | 1.97" | 0.27" | 5" | 1.28" | 8 | 5/8"-11UNC |

1) 3/4" is available

2) Nr. holes

"HOW TO ORDER" SEQUENCE

| Section | Model material | Connection material | Diaphragm connection | Process | Flange finishing | Instrument connection | Assembling | Options |
|---------|----------------|---------------------|----------------------|------------------------|------------------|-----------------------|-----------------|---------|
| 4 | 600 | 4, 5, N | 4, 6, 9 B, 2, 8 | OO0...TS0 4AA...BDA | RF3...RF8 | 41F - G 1/2 F | D, T 1, 9, 6 | B...TS4 |

"continuous duty" diaphragm seal, welded, with flanged connection

MGS9/7



- ✓ - Special calibration for pressure gauges max overpressure of 3000 psi (210 bar)
- ✓ - Welded diaphragm
- ✓ - Filling plug
- ✓ - Washing plug

Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. "Continuous duty" version as per ASME B40.2 : in case of accidental removal of the instrument or of liquid filling leak the diaphragm will place on the upper cup preventing any damage and any process liquid leak. Thanks to an exclusive calibration system the pressure gauge should stand an overpressure of 210 bar without the help of any pressure control switch. Process side are ASME/EN 1092 flanged to suit application in chemical, petrochemical, water treatment and paper industries.

4.700 - MGS9/7

Pressure gauge ranges: from -30...0 INHG to 0...2320 psi (from -1...0 to 0...160 bar) ⁽¹⁾.

Filling liquid: silicon oil (see "Options" table).

Process fluid max temperature: as per filling liquid (see "Options" table).

Accuracy: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting ⁽²⁾.

Instrument connection: AISI 304 st.st .

Membrana saldata in: AISI 316L st.st. (code **4**), Monel 400 (code **6**), Hastelloy C276 (code **9**), Tantalum (code **B**), Alloy 600 (code **J**), Alloy 825 (code **I**), 25.22.2 (code **U**).

Gasket: PTFE (max. +482°F; +250°C);

Flanged process connection: AISI 316L st.st (cod. **4**), AISI 316L

st.st (cod. **5**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**), Hastelloy B2 (cod. **1**); other materials available on request.

Dimensions ⁽³⁾: DN 15...50, PN 10...160 EN 1092-1 type B; 1/2"...2" class 150...1500 RF as per ASME B16.5.

Finishing: EN B1 type: Ra 3,2...12,5 ASME RF type: Ra 125...250 AARH (code **RF3**).

Bolts: AISI304 st.st., for flange PN ≤ 100 or class ≤ 600; high resistance steel for flange PN > 100 or class > 600.

- (1) Working pressure must be less or equal to the flange rating
- (2) at 68°F (20 °C) process temperature (or state temperature when ordering)
- (3) other dimensions and finishing are available on request

ASSEMBLING - All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required. (For use and installation, see data sheet "MGS9")

| | |
|--|---|
| D - Direct | 9 - Armour covered AISI304 st.st. capillary, 236" max (6 mt max) |
| T - Cooling extension - T.e. ≥ 212...≤ 482°F (-100...250°C) | 6 - Armour covered AISI316 st.st. capillary, 236" max (6 mt max) |
| 1 - AISI304 st.st. capillary, 236" max (6 mt max) | 5 - PVC covered AISI304 st.st. capillary, 236" max (6 mt max) |

OPTIONS

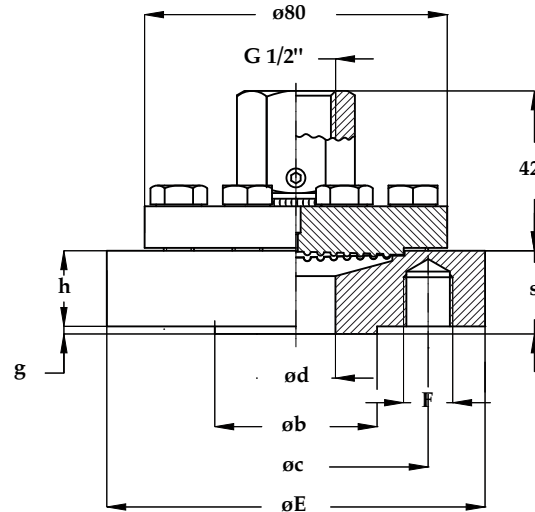
| | |
|---|--|
| Standard silicon oil, process temperature -40...+302°F (-45...+250°C) | TS5 - AISI316L stainless steel washing plug, 1/4" NPT ⁽¹⁾ |
| B - Silicon oil "B", process temperature -40...+482°F (-40...+250°C) | P04 - Dye penetrant test |
| C - Silicon oil "C", process temperature -14...+662°F (-10...+350°C) | S40 - Special calibration for pressure gauges overpressure ⁽³⁾ ⁽⁴⁾ ⁽⁵⁾ |
| E - Fluorinated oil "E", process temperature -40...+302°F (-40...+150°C) | MPP - PTFE diaphragm protection, for temperature up to 302 °F (150 °C) ⁽³⁾ |
| C05 - Helium Test | P15 - ASTM A193/B7 - A194/2H studs, nuts and washers |
| E30 - Nace version MR0103/MR0175 (ISO 15156) ⁽²⁾ | |

- (1) on models with AISI316L process connection only
- (2) Stainless steel process connection and Monel 400 or Hastelloy C276 diaphragm

- (3) Except for vacuum and compound gauges
- (4) Overpressure equal to flange rating, max 3000 psi (210 bar)
- (5) To be ordered with silicon oil "B" only

"continuous duty" diaphragm seal welded, with flanged connection

MGS9/7



EN 1092-1:2007 STANDARD

dimensions : mm

| DN | PN-bar | Code | h | E | b | d | g | c | s | N (1) | F |
|----|-------------|------|----|-----|-----|----|---|-----|----|-------|-----|
| 15 | 10-16-25-40 | OSO | 20 | 95 | 45 | 15 | 2 | 65 | 22 | 4 | M12 |
| 15 | 63...160 | OZO | 18 | 105 | 45 | 15 | 2 | 75 | 20 | 4 | M12 |
| 20 | 10-16-25-40 | PSO | 16 | 105 | 58 | 20 | 2 | 75 | 18 | 4 | M12 |
| 20 | 63...100 | PUO | 20 | 130 | 58 | 20 | 2 | 90 | 22 | 4 | M16 |
| 25 | 10-16-25-40 | QSO | 16 | 115 | 68 | 25 | 2 | 85 | 18 | 4 | M12 |
| 25 | 63...160 | QZO | 22 | 140 | 68 | 25 | 2 | 100 | 24 | 4 | M16 |
| 40 | 10-16-25-40 | SSO | 18 | 150 | 88 | 40 | 3 | 110 | 21 | 4 | M16 |
| 40 | 63...100 | SUO | 23 | 170 | 88 | 40 | 3 | 125 | 26 | 4 | ø22 |
| 40 | 160 | SZO | 25 | 170 | 88 | 40 | 3 | 125 | 28 | 4 | ø22 |
| 50 | 10-16-25-40 | TSO | 17 | 165 | 102 | 50 | 3 | 125 | 20 | 4 | ø18 |
| 50 | 63 | TTO | 23 | 180 | 102 | 50 | 3 | 135 | 26 | 4 | ø22 |
| 50 | 100 | TUO | 25 | 195 | 102 | 50 | 3 | 145 | 28 | 4 | ø26 |
| 50 | 160 | TZO | 27 | 195 | 102 | 50 | 3 | 145 | 30 | 4 | ø26 |

1) N° threaded or free holes

ASME B16-5:2003 STANDARD

dimensions : inches

| DN | Classe (2) | Code | h | E | b | d | g | c | s | N (1) | F |
|--------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|------------|
| 1/2" | 150 | 4AA | 0.87" | 3.54" | 1.37" | 0.59" | 0.08" | 2.37" | 0.94" | 4 | 1/2"-13UNC |
| 1/2" | 300 | 4BA | 0.81" | 3.74" | 1.37" | 0.59" | 0.08" | 2.63" | 0.89" | 4 | 1/2"-13UNC |
| 1/2" | 600 | 4DA | 0.81" | 3.74" | 1.37" | 0.59" | 0.28" | 2.63" | 1.08" | 4 | 1/2"-13UNC |
| 1/2" | 900...1500 | 4FA | 0.89" | 4.72" | 1.61" | 0.59" | 0.28" | 3.25" | 1.16" | 4 | 3/4"-10UNC |
| 3/4" | 150 | 5AA | 0.79" | 3.94" | 1.69" | 0.79" | 0.08" | 2.75" | 0.87" | 4 | 1/2"-13UNC |
| 3/4" | 300 | 5BA | 0.71" | 4.53" | 1.69" | 0.79" | 0.08" | 3.25" | 0.79" | 4 | 5/8"-11UNC |
| 3/4" | 600 | 5DA | 0.71" | 4.53" | 1.69" | 0.79" | 0.28" | 3.25" | 0.98" | 4 | 5/8"-11UNC |
| 3/4" | 900...1500 | 5FA | 1" | 5.12" | 1.69" | 0.79" | 0.28" | 3.5" | 1.30" | 4 | 3/4"-10UNC |
| 1" | 150 | 6AA | 0.63" | 4.33" | 2" | 0.98" | 0.08" | 3.13" | 0.71" | 4 | 1/2"-13UNC |
| 1" | 300 | 6BA | 0.71" | 4.92" | 2" | 0.98" | 0.08" | 3.5" | 0.79" | 4 | 5/8"-11UNC |
| 1" | 600 | 6DA | 0.71" | 4.92" | 2" | 0.98" | 0.28" | 3.5" | 0.98" | 4 | 5/8"-11UNC |
| 1" | 900...1500 | 6FA | 1.14" | 5.9" | 2" | 0.98" | 0.28" | 4" | 1.42" | 4 | 7/8"-9UNC |
| 1 1/2" | 150 | AAA | 0.63" | 4.92" | 2.87" | 1.57" | 0.08" | 3.87" | 0.71" | 4 | 1/2"-13UNC |
| 1 1/2" | 300 | ABA | 0.81" | 6.1" | 2.87" | 1.57" | 0.08" | 4.5" | 0.89" | 4 | 3/4"-10UNC |
| 1 1/2" | 600 | ADA | 0.89" | 6.1" | 2.87" | 1.57" | 0.28" | 4.5" | 1.16" | 4 | 3/4"-10UNC |
| 1 1/2" | 900...1500 | AFA | 1.26" | 7.09" | 2.87" | 1.57" | 0.28" | 4.87" | 1.56" | 4 | 1"-8UNC |
| 2" | 150 | BAA | 0.69" | 5.9" | 3.63" | 1.97" | 0.08" | 4.75" | 0.77" | 4 | ø 19 |
| 2" | 300 | BBA | 0.83" | 6.5" | 3.63" | 1.97" | 0.08" | 5" | 0.91" | 8 | ø 19 |
| 2" | 600 | BDA | 1" | 6.5" | 3.63" | 1.97" | 0.28" | 5" | 1.28" | 8 | ø 19 |
| 2" | 900...1500 | BFA | 1.52" | 8.46" | 3.63" | 1.97" | 0.28" | 6.51" | 1.79" | 8 | ø 26 |

1) N° threaded or free holes

2) class 150 : PN 20 bar; class 300 : PN 50 bar; class 600 : PN 100 bar; class 900...1500 : PN 150...250 bar

"HOW TO ORDER" SEQUENCE

| Section | Model / material | Connection material | Diaphragm connection | Process | Flange finishing | Instrument connection | Assembling | Options |
|---------|------------------|---------------------|-------------------------|------------------------|------------------|-----------------------|--------------------|----------------------|
| 4 | 700 | 4, 5, 6 9, 1 | 4, 6, 9 B, J, I U | OS0...TZ0 4AA...BFA | RF3...RF7 | 41F | D, T 1, 9, 6, 5 | B, C, E C05...P15 |

"In line" diaphragm seal, with flanged connection

MGS9/4



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitters from process liquids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm welded to the upper body and leak proof tested, ensure separation of filling fluid from process medium. Diaphragm position permit an accurate and deeper cleaning. Process sizes are ASME/UNI/DIN flanged to suit application in chemical, petrochemical, water treatment and paper industries.

4.400 - MGS9/4

Working pressure: from 0...15 to 0...600 psi (from 0...1 to 0...40 bar).

Working temperature: -49...+302°F (-45°C...+150°C).

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 316 st.st.

Diaphragm: AISI 316L st.st (cod. **4**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**), Hastelloy B2 (cod. **1**), Tantalum (cod. **B**), Titanium (cod. **2**), Nickel (cod. **7**), AISI 316 L st.st. PTFE coated** (cod. **8**), Incoloy 825 (cod. **I**), Inconel 600 (cod. **J**).

Flanged process connection: AISI 316 st.st. (cod. **4**), AISI316 L st.st. (cod. **5**), Monel 400 (cod. **6**), Hastelloy C276 (cod. **9**),

* at +68°F (20 °C) process temperature (or state when ordering)

Hastelloy B2 (cod. **1**), Tantalum (cod. **B**), Titanium (cod. **2**), Nickel (cod. **7**), AISI 316 st.st. PTFE** coated (cod. **N**), ASTM A182 gr. F51 (cod. **S**).

Dimensions : DN 15...50 e PN 10...40 UNI-DIN step seal; 1/2" ...2" class 150...600 RF as per ASME B16.5.

UNI-DIN flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 μm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 μm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.

** max. temperature 328°F (150 °C), with PTFE coating.

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required: max 36.37" (6 mt). (For use and installation, see data sheet "4")

| | |
|--|---|
| D - Direct | 9 - Capillary AISI304 st.st., AISI304 st.st. armoured, 236" max (6 mt max) |
| T - Cooling extension | 6 - Capillary AISI316 st.st., AISI316 st.st. armoured, 236" max (6 mt max) |
| 1 - Nude capillary AISI304, 236" max (6 mt max) | |

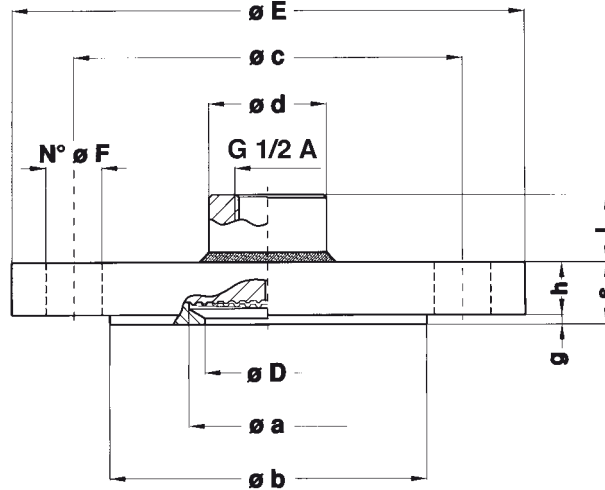
OPTIONS

| |
|--|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from -10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C +150°C) |
| R20 - Adaptor G 1/2 A M/F with filling screw |
| R21 - Adaptor G 1/2 A M x 1/4 - 18 NPT F with filling screw |
| C05 - Helium Test (1) |
| E30 - NACE version MR0103 (2) - MR0175 (ISO 15156) (3) |
| P04 - Die penetrant test (1) |

(1) Available for some executions pls. consult our technical dep. to check their feasibility.

(2) With Monel 400 or Hastelloy C diaphragm only.

(3) Hastelloy C276 wetted parts



UNI-DIN STANDARDS

dimensions : mm

| DN | PN-bar | Code | D | E | c | b | a | d | g | h | s | L | N (1) | F | Ranges (2) |
|----|---------|------------|----|-----|-----|-----|----|----|---|----|----|------|-------|----|------------|
| 15 | 10...40 | OK0 | 15 | 95 | 65 | 45 | 40 | 28 | 2 | 17 | 19 | 16,5 | 4 | 14 | 2,5...40 |
| 20 | 10...40 | PK0 | 20 | 105 | 75 | 58 | 40 | 28 | 2 | 17 | 19 | 16,5 | 4 | 14 | 2,5...40 |
| 25 | 10...40 | QK0 | 25 | 115 | 85 | 68 | 50 | 38 | 2 | 17 | 19 | 24,5 | 4 | 14 | 1...40 |
| 40 | 10...40 | SK0 | 40 | 150 | 110 | 88 | 50 | 38 | 3 | 16 | 19 | 24,5 | 4 | 18 | 1...40 |
| 50 | 10...40 | TK0 | 50 | 165 | 125 | 102 | 50 | 38 | 3 | 17 | 20 | 23,5 | 4 | 18 | 1...40 |

(1) N° holes .

(2) bar ranges, for instruments with dial size $\geq 4''$ (100mm).

ASME STANDARDS

dimensions : inches

| DN | Class | Code | D | E | c | b | a | d | g | h | s | L | N (1) | F | Ranges (3) |
|--------|-------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| 1/2" | 150 | 4AA | 0.59" | 3.5" | 2.37" | 1.37" | 1.18" | 1.02" | 0.06" | 0.66" | 0.72" | 0.64" | 4 | 0.62" | 100...290 (4) |
| 1/2" | 300 | 4BA | 0.59" | 3.74" | 2.62" | 1.37" | 1.18" | 1.02" | 0.06" | 0.66" | 0.72" | 0.64" | 4 | 0.62" | 100...580 |
| 1/2" | 600 | 4DA | 0.59" | 3.74" | 2.62" | 1.37" | 1.18" | 1.02" | 0.25" | 0.66" | 0.95" | 0.64" | 4 | 0.62" | 100...580 |
| 3/4" | 150 | 5AA | 0.78" | 3.87" | 2.74" | 1.68" | 1.57" | 1.10" | 0.06" | 0.66" | 0.72" | 0.64" | 4 | 0.62" | 60...290 |
| 3/4" | 300 | 5BA | 0.78" | 4.62" | 3.24" | 1.68" | 1.57" | 1.10" | 0.06" | 0.66" | 0.72" | 0.64" | 4 | 0.74" | 60...580 |
| 3/4" | 600 | 5DA | 0.78" | 4.62" | 3.24" | 1.68" | 1.57" | 1.10" | 0.25" | 0.66" | 0.95" | 0.64" | 4 | 0.74" | 60...580 |
| 1" | 150 | 6AA | 0.98" | 4.25" | 3.12" | 2" | 1.57" | 1.10" | 0.06" | 0.7" | 0.76" | 0.64" | 4 | 0.62" | 60...290 |
| 1" | 300 | 6BA | 0.98" | 4.88" | 3.5" | 2" | 1.96" | 1.49" | 0.06" | 0.7" | 0.76" | 0.96" | 4 | 0.74" | 15...580 |
| 1" | 600 | 6DA | 0.98" | 4.88" | 3.5" | 2" | 1.96" | 1.49" | 0.25" | 0.7" | 0.96" | 0.96" | 4 | 0.74" | 15...580 |
| 1 1/2" | 150 | AAA | 1.57" | 5" | 3.87" | 2.87" | 1.96" | 1.49" | 0.06" | 0.7" | 0.76" | 0.96" | 4 | 0.62" | 15...290 |
| 1 1/2" | 300 | ABA | 1.57" | 6.12" | 4.5" | 2.87" | 1.96" | 1.49" | 0.06" | 0.80" | 0.86" | 0.86" | 4 | 0.86" | 15...580 |
| 1 1/2" | 600 | ADA | 1.57" | 6.12" | 4.5" | 2.87" | 1.96" | 1.49" | 0.25" | 0.88" | 1.14" | 0.59" | 4 | 0.86" | 15...580 |
| 2" | 150 | BAA | 1.96" | 6" | 4.74" | 3.62" | 1.96" | 1.49" | 0.06" | 0.74" | 0.80" | 0.92" | 4 | 0.74" | 15...290 |
| 2" | 300 | BBA | 1.96" | 6.49" | 5" | 3.62" | 1.96" | 1.49" | 0.06" | 0.88" | 0.94" | 0.78" | 8 | 0.74" | 15...580 |
| 2" | 600 | BDA | 1.96" | 6.49" | 5" | 3.62" | 1.96" | 1.49" | 0.25" | 1.04" | 1.25" | 0.47" | 8 | 0.74" | 15...580 |

(1) N° holes .

(2) bar ranges, for instruments with dial size $\geq 4''$ (100mm).

(3) psi ranges, for instruments with dial size $\geq 4''$ (100mm).

(4) not available, when PTFE coated.

"HOW TO ORDER" SEQUENCE

| Section | Model material | Connection material | Diaphragm connection | Process | Flange finishing | Instrument connection | Assembling | Options |
|---------|----------------|----------------------------------|----------------------------------|-----------------------|------------------|-----------------------|-----------------|---------------------|
| 4 | 400 | 4, 5, 6 9, 1, B 2, 7, N, S | 4, 6, 9 1, B, 2 7, 8, I, J | OK0..TK0 4AA...BDA | RF3...RF8 | 41F - G 1/2 F | D, T 1, 9, 6 | B, C, E R20, R21 |



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the upper body, to ensure separation of filling fluid from process medium. Diaphragm faced position permit an accurate and deeper cleaning. Process sizes are ASME/EN 1092 flanged to suit application in chemical, petrochemical, water treatment, paper industries.

4.500 - MGS9/5

Working pressure: from 0...15 to 0...6000 psi (from 0...1 to 0...400 bar).

Working temperature: -49...+302°F (-45°C...+150°C.)

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Diaphragm, welded to process connection:

AISI 316 L st.st (cod. **4**); Monel 400 (cod. **6**); Hastelloy C276 (cod. **9**).

Flanged process connection: AISI 316 st.s. (cod. **4**); AISI 316L st.s. (cod. **5**); Hastelloy C276 (cod. **9**).

Full-cover version: wetted parts covered with

* at +68°F (20 °C) process temperature (or state when ordering)

Monel 400 (cod. **6FC**); Hastelloy C (cod. **9FC**); Tantalum (cod. **BFC**).

Dimensions : DN 25...80 e PN 2,5...100 EN 1092-1 step seal type B; 1"...3" class 150...1500 as per ASME B16.5 type RF.

UNI-DIN flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 μm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 μm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required). (For use and installation, see data sheet "4")

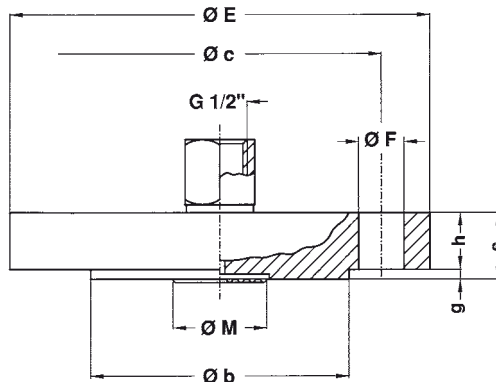
| | |
|--|---|
| D - Direct | 9 - Capillary AISI304 st.st., AISI304 st.st. armoured, 36.37" max (6 mt max) |
| T - Cooling extension (O.t. ≥ 100°C) | 6 - Capillary AISI316 st.st., AISI316 st.st. armoured, 36.37" max (6 mt max) |
| 1 - Nude capillary AISI304, 36.37" max (6 mt max) | |

OPTIONS

| |
|--|
| B - Silicon liquid "B", process fluid temp. -40°F...+482°F (-40°C...+250°C) |
| C - Silicon liquid "C", process fluid temp. -14°F...+662°F (-10°C...+350°C) |
| E - Fluorinated liquid for process fluid temp. from -40°F to +302°F (from -40°C +150°C) |
| G - Mineral food liquid for process fluid temp. -4°F to +392°F (from -20°C +392°C) |
| C05 - Helium Test (1) |
| E30 - NACE MR0103/MR0175 (ISO 15156) (2) |
| P04 - Dye penetrant test (1) |

(1) Available for some excutions pls. consult our technical dep. to check their feasibility.

(2) With Monel 400 or Hastelloy C diaphragm only.



EN 1092 STANDARD

dimensions : mm

| DN (1) | PN-bar (1) | Code | E | c | b | g | h | s | N (2) | F | M | Ranges (3) |
|--------|-----------------|---------|-----|-----|-----|---|----|----|-------|----|----|------------|
| 25 | 10...16/25...40 | QQ0/QS0 | 115 | 85 | 68 | 2 | 16 | 18 | 4 | 14 | 30 | 0...6 |
| 25 | 63...100 | QT0/QU0 | 140 | 100 | 68 | 2 | 22 | 24 | 4 | 18 | 30 | 0...6 |
| 40 | 10...16/25...40 | SQ0/SS0 | 150 | 110 | 88 | 2 | 16 | 18 | 4 | 18 | 40 | 0...2,5 |
| 40 | 63...100 | ST0/SU0 | 170 | 125 | 88 | 2 | 24 | 26 | 4 | 22 | 40 | 0...2,5 |
| 50 | 10...16 | TQ0 | 165 | 125 | 102 | 2 | 16 | 18 | 4 | 18 | 50 | 0...1 |
| 50 | 25...40 | TS0 | 165 | 125 | 102 | 2 | 18 | 20 | 4 | 18 | 50 | 0...1 |
| 50 | 63 | TT0 | 180 | 135 | 102 | 2 | 24 | 26 | 4 | 22 | 50 | 0...1 |
| 50 | 100 | TU0 | 195 | 145 | 102 | 2 | 26 | 28 | 4 | 26 | 50 | 0...1 |
| 80 | 10...16 | VP0/VQ0 | 200 | 160 | 138 | 2 | 18 | 20 | 8 | 18 | 65 | 0...1 |
| 80 | 25...40 | VS0 | 200 | 160 | 138 | 2 | 22 | 24 | 8 | 18 | 65 | 0...1 |
| 80 | 100 | VU0 | 230 | 180 | 138 | 2 | 30 | 32 | 8 | 26 | 65 | 0...1 |

ASME STANDARDS

dimensions : inches

| DN (1) | Class (1) | Code | E | c | b | g | h | s | N (2) | F | M | Ranges (3) |
|--------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------|
| 1" | 150 | 6AA | 4,33" | 3,13" | 2" | 0,08" | 0,50" | 0,58" | 4 | 0,63" | 1,18" | 0...6 |
| 1" | 300 | 6BA | 4,92" | 3,5" | 2" | 0,08" | 0,63" | 0,7" | 4 | 0,75" | 1,18" | 0...6 |
| 1" | 600 | 6DA | 4,92" | 3,5" | 2" | 0,28" | 0,69" | 0,96" | 4 | 0,75" | 1,18" | 0...6 |
| 1" | 900...1500 | 6FA | 5,91" | 4" | 2" | 0,28" | 1,13" | 1,4" | 4 | 1" | 1,18" | 0...6 |
| 1" 1/2 | 150 | AAA | 4,92" | 3,87" | 2,87" | 0,08" | 0,63" | 0,7" | 4 | 0,63" | 1,57" | 0...2,5 |
| 1" 1/2 | 300 | ABA | 6,1" | 4,5" | 2,87" | 0,08" | 0,75" | 0,83" | 4 | 0,87" | 1,57" | 0...2,5 |
| 1" 1/2 | 600 | ADA | 6,1" | 4,5" | 2,87" | 0,28" | 0,88" | 1,15" | 4 | 0,87" | 1,57" | 0...2,5 |
| 1" 1/2 | 900...1500 | AFA | 7,09" | 4,87" | 2,87" | 0,28" | 1,25" | 1,53" | 4 | 1,12" | 1,57" | 0...2,5 |
| 2" | 150 | BAA | 5,91" | 4,75" | 3,63" | 0,08" | 0,69" | 0,77" | 4 | 0,75" | 1,97" | 0...1 |
| 2" | 300 | BBA | 6,5" | 5" | 3,63" | 0,08" | 0,81" | 0,89" | 8 | 0,75" | 1,97" | 0...1 |
| 2" | 600 | BDA | 6,5" | 5" | 3,63" | 0,28" | 1" | 1,28" | 8 | 0,75" | 1,97" | 0...1 |
| 2" | 900...1500 | BFA | 8,46" | 6,5" | 3,63" | 0,28" | 1,5" | 1,78" | 8 | 1" | 1,97" | 0...1 |
| 3" | 150 | EAA | 7,48" | 6" | 5" | 0,08" | 0,88" | 0,96" | 4 | 0,75" | 2,56" | 0...1 |
| 3" | 300 | EBA | 8,27" | 6,63" | 5" | 0,08" | 1,06" | 1,14" | 8 | 0,87" | 2,56" | 0...1 |
| 3" | 600 | EDA | 8,27" | 6,63" | 5" | 0,28" | 1,25" | 1,53" | 8 | 0,87" | 2,56" | 0...1 |
| 3" | 900 | EEA | 9,45" | 7,5" | 5" | 0,28" | 1,5" | 1,78" | 8 | 1" | 2,56" | 0...1 |
| 3" | 1500 | EFA | 9,45" | 8" | 5" | 0,28" | 1,88" | 2,15" | 8 | 1,26" | 2,56" | 0...1 |

(1) Other dimensions available on request: pls. refer to Technical Service.

(2) N° holes .

(3) Minimum range available in bar of DS 4...6" (DN 100...150mm) instrument.

"HOW TO ORDER" SEQUENCE

| Section | Model material | Connection material | Diaphragm connection | Process | Flange finishing | Instrument connection | Assembling | Options |
|---------|----------------|---------------------|----------------------|------------------------|------------------|-----------------------|-----------------|----------------------|
| 4 | 500 | 4, 6, 9 | 4, 5, 9 6FC...BFC | QQ0...VU0 6AA...EFA | RF3...RF8 | 41F - G 1/2 F | D, T 1, 9, 6 | B, C, E C05...P04 |



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitters from process liquids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm welded to the upper body and leak proof tested, ensure separation of filling fluid from process medium. Diaphragm faced position permit an accurate and deeper cleaning. Process sizes are ASME - EN 1092 flanged to suit application in chemical, petrochemical, water treatment, paper.

4.WAF - MGS9/WAFER

Working pressure: from 0...40 INWC to 0...2000 psi (da 0...100 mbar a 0...160 bar), depending on flange type.

Process temperature: -49...+302°F (-45°C...+150°C.)

Instrument connection: AISI 304 st.st. capillary, to be welded on the transmitter.

Diaphragm: AISI 316L st.st. (cod. **4**), Hastelloy C276 (cod. **9**), Hastelloy B2 (cod. **1**), Tantalum (cod. **B**).

Process connection: AISI 316 st.st. (cod. **4**), AISI 316L st.st. (cod. **5**), Hastelloy C276 (cod. **9**).

AISI 316 st.st flanged connection:

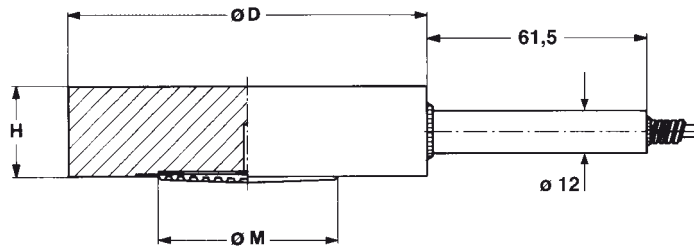
-ASME B16.5 standards: 2" - 3"; class 150...2500 form RF;

-EN 1092 standard: DN 50 - 80 ; PN 16...160 step seal.

EN 1092 flanges finishing: type B1 (PN 2,5...40) = Ra 3,2...12,5 μm (cod. **RF7**); type B2 (PN 63...100) = Ra 0,8...3,2 μm (cod. **RF8**).

ASME flanges finishing: type RF = Ra 125...250 AARH (cod. **RF3**).

Filling liquid: silicon oil.



FLANGED CONNECTION AS PER EN 1092

| DN | PN-bar | Code | D | M | H |
|----|----------|------------|----------------|---------------|---------------|
| 50 | 16...160 | TX0 | 4.01" (102) | 1.96" (50) | 0.78" (20) |
| 80 | 16...160 | VX0 | 5.43" (138) | 2.55" (65) | |

dimensions : inches (mm)

FLANGED CONNECTION AS PER ASME B16.5

| DN | Class | Code | D | M | H |
|----|------------|------------|-------|-------|-------|
| 2" | 150...2500 | BJA | 3,62" | 1,96" | 0,78" |
| 3" | 150...2500 | EJA | 5" | 2,55" | 0,78" |

dimensions : inches

ASSEMBLING

Should diaphragm seal and instrument not be at a same level, instrument on installation is required.

| |
|---|
| 1 - Capillary AISI304 st.st. 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., AISI304 st.st. armoured, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., AISI316 st.st. armoured, 236" max (6 mt max) |

OPTIONS

| |
|---|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from -10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C to +150°C) |
| G - Mineral food liquid "G" for process fluid temperature -4°F to +392°F (from -20°C to +200°C) |
| R21 - Adaptor G 1/2 A M x 1/2 - 14 NPT F with filling screw |

"HOW TO ORDER" SEQUENCE

| Section | Model material | Connection material | Diaphragm connection | Process | Flange finishing | Instrument connection | Assembling | Options |
|---------|----------------|---------------------|----------------------------|--------------------------------------|--|--|-------------------------------|----------------------------|
| 4 | WAF | 4, 5, 9 | 4, 9 1, B | TX0...VX0 BJA...EJA | RF3 RF7 RF8 | 23M - 1/4 NPT M 41F - G 1/2 F | D, T 1, 9, 6 | B...G R21 |



Diaphragm seals are designed to isolate the sensing element of pressure gauges and pressure switches from process fluids which may be corrosive, viscous, sedimentous and/or with a high temperature. The diaphragm is welded to the upper body, to ensure separation of filling fluid from process medium. The "in-line" diaphragm position enables deep cleaning of their surfaces. Flange clamping with metallic sealing guarantees the system against leakage at high process fluid temperatures and pressures.

4.R00 - MGS9/R

Working pressure: from 0...100 to 0...3000 psi (from 0...6 to 0...250 bar).

Process temperature: -49...+302°F (-45°C...+150°C.)

Accuracy*: (add to instrument accuracy) ±0,5% for direct mounting; ± 1% for capillary mounting.

Instrument connection: AISI 316 st.st.

Bolts and lock ring: AISI 304 st.st.

Diaphragm: welded to process connection,

4 - AISI 316 L st.st,

9 - Hastelloy C276.

Process connection:

4 - AISI 316 st.st.,

5 - AISI 316L st.st.

Process connection, welded type:

7RC - saddle, for pipe size DN 2"...4";

7MS - "in line", for pipe size 1/2"...1";

7MT - "in line", for pipe size 1" 1/2"...4".

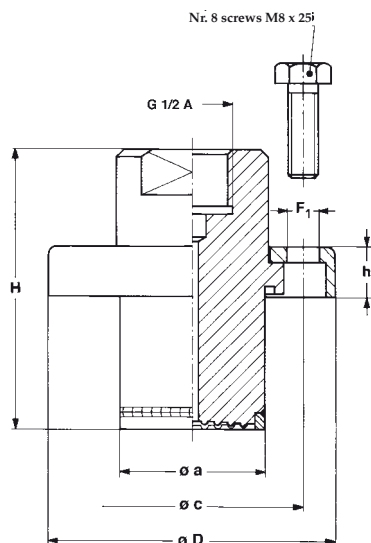
Process connection, flanged type: (Mod. 7FL)

- "in line", for flange size 1" 1/2 - 2" ; 150...900 RF;

- "in line", for flange size DN 40...50, PN 10...100 step seal.

Filling liquid: silicon oil.

* at 68°F (20 °C) process temperature (or state temperature when ordering)



| h | H | a | c | D | F ₁ |
|-------|-------|-------|-------|-------|----------------|
| 0.51" | 2.91" | 1.49" | 2.28" | 2.95" | 0.33" |
| (13) | (74) | (38) | (58) | (75) | (8,5) |

dimensions : inches (mm)

ASSEMBLING

All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label. For applications with capillary: should diaphragm seal and instrument not be at the same level, instrument adjustment is required.

| |
|--|
| D - Direct |
| T - Cooling extension |
| 1 - Nude capillary AISI304, 236" max (6 mt max) |
| 9 - Capillary AISI304 st.st., covered with AISI304 armour, 236" max (6 mt max) |
| 6 - Capillary AISI316 st.st., covered with AISI316 st.st. armour, 236" max (6 mt max) |

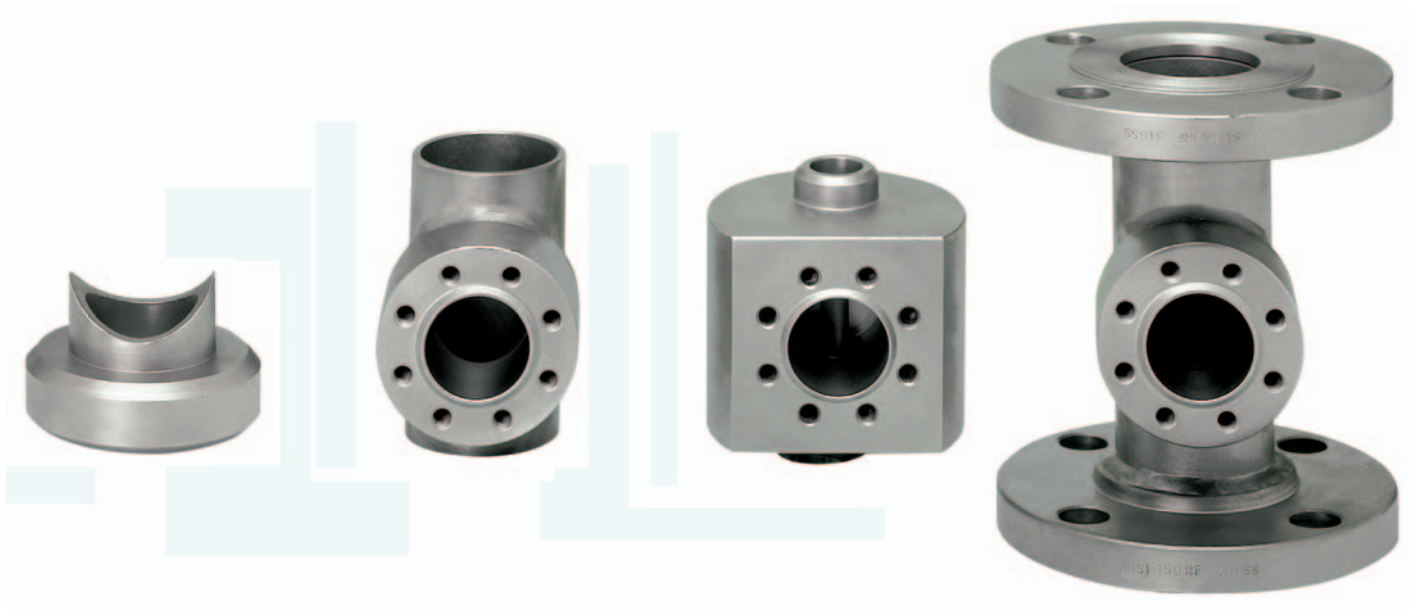
OPTIONS

| |
|---|
| B - Silicon liquid "B" for process fluid temperature from -40°F to +482°F (from -40°C to +250°C) |
| C - Silicon liquid "C" for process fluid temperature from -14°F to +662°F (from -10°C to +350°C) |
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C to +150°C) |
| C05 - Helium Test |
| P04 - Dye penetrant test |

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Diaphragm material/Process Connection/Instrument connection/Assembling/Options

4 R00 4,5 4,9 --- 41F - G 1/2 F D, T B, C, E
1, 9, 6 C05, P04



5.7RC - saddle welded for pipes DN 2"..."4".

Working pressure: max permitted 250 bar, in accordance with used pipe schedule.

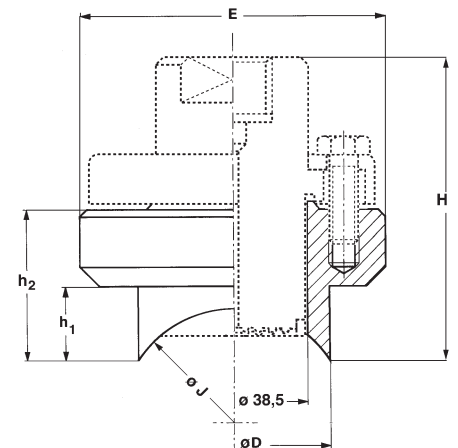
Process connection: shaped, suitable for outside pipe welding, DN 2" - 3" - 4".

Body: AISI 316 st.st. (code 4)

Dimensions (mm)

| DN | Code | h ₁ | h ₂ | H | D | E | J* |
|----------|------------|----------------|----------------|------|----|----|-------|
| 2" (50) | L00 | 28,5 | 48,5 | 87,5 | 55 | 80 | 60,3 |
| 3" (80) | I00 | 23,5 | 43,5 | 82,5 | 65 | 80 | 88,9 |
| 4" (100) | H00 | 23 | 43 | 82 | 75 | 80 | 114,3 |

*tube SCH 40S dimensions, as per ASME B31.1



5.7MS - "in-line" welded for pipes DN 1/2"..."1".

Working pressure: max. permitted 250 bar, and in accordance with used pipe schedule.

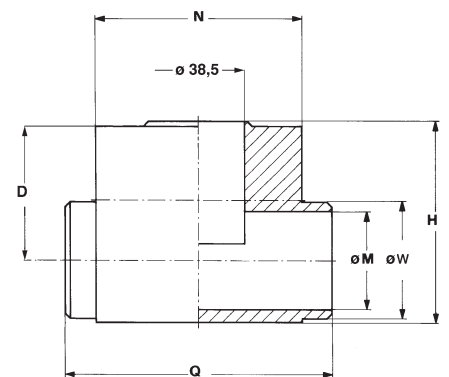
Process connection: "head" welded, for pipes DN 1/2" - 3/4" - 1".

Body: AISI 316 st.st. (code 4)

Dimensions (mm)

| DS | Code | H | Q | N | D | M* | W* |
|-----------|------------|----|-----|----|------|------|------|
| 1/2" (15) | 400 | 83 | 110 | 85 | 43 | 15,8 | 21,4 |
| 3/4" (20) | 500 | 83 | 110 | 85 | 45,5 | 20,9 | 26,7 |
| 1" (25) | 700 | 83 | 110 | 85 | 48,5 | 26,6 | 33,4 |

*tube SCH 40S dimensions, as per ASME B31.1



piping welded connections, for "in-line" diaphragm seal MGS9/R

7MT - 7FL

882-06/08

5.7MT - "in-line" welded for pipes DN 1" 1/2...4".

Working pressure: max. permitted 250 bar, and in accordance with used pipe schedule.

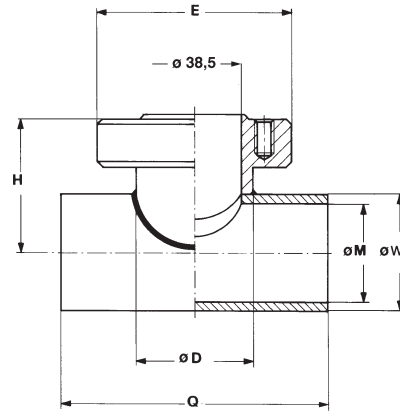
Process connection: "head" welded, for pipes DN 1" 1/2 - 2" -3" -4".

Body: AISI 316 st.st. (code **4**)

Dimensions (mm)

| DN | Code | H | Q | E | D | M* | W* |
|-------------|------------|------|-----|----|----|-------|-------|
| 1" 1/2 (40) | A00 | 55,5 | 110 | 80 | 48 | 40,9 | 48,3 |
| 2" (50) | B00 | 61 | 110 | 80 | 55 | 52,5 | 60,3 |
| 3" (80) | E00 | 74 | 110 | 80 | 65 | 77,9 | 88,9 |
| 4" (100) | F00 | 86 | 110 | 80 | 75 | 102,3 | 114,3 |

*tube SCH 40S dimensions, as per ANSI B31.1



5.7FL - flanged side to be in line mounted.

Working pressure: max. permitted 100 bar, and in accordance with used pipe schedule.

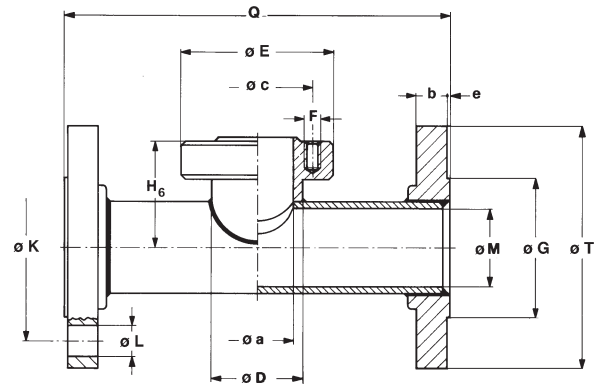
Flanged process connection:

- DN 40...50, PN 10...100 UNI-DIN step seal;
- 1" 1/2...2", 150...900 RF ANSI B16.5.

Body, tube and flanges: AISI 316 st.st. (code **4**)

Dimensions (mm)*

| E | c | a | F (n° 8 holes) |
|----|----|------|----------------|
| 80 | 58 | 38,5 | M8 |



FLANGED CONNECTION AS PER EN : DIMENSIONS (mm)

| DN | PN-bar (1) | Code | T | G | M(2) | K | L | b | e | H | D | N (1) | Q |
|----|-----------------|------------|-----|-----|------|-----|----|----|---|------|----|-------|-----|
| 40 | 10...16/25...40 | SS0 | 150 | 88 | 40,9 | 110 | 18 | 16 | 2 | 55,5 | 48 | 4 | 230 |
| 40 | 63...100 | SU0 | 170 | 88 | 38,1 | 125 | 22 | 24 | 2 | 55,5 | 48 | 4 | 260 |
| 50 | 10...16 | TQ0 | 165 | 102 | 52,5 | 125 | 18 | 16 | 2 | 61 | 55 | 4 | 230 |
| 50 | 25...40 | TS0 | 165 | 102 | 52,5 | 125 | 18 | 18 | 2 | 61 | 55 | 4 | 230 |
| 50 | 63 | TT0 | 180 | 102 | 49,3 | 135 | 22 | 24 | 2 | 61 | 55 | 4 | 260 |
| 50 | 100 | TU0 | 195 | 102 | 49,3 | 145 | 26 | 26 | 2 | 61 | 55 | 4 | 260 |

FLANGED CONNECTION AS PER ASME : DIMENSIONS (mm)

| DN | PN-psi (1) | Code | T | G | M(2) | K | L | b | e | H | D | N (1) | Q |
|--------|------------|------------|-----|------|------|-------|----|------|---|------|----|-------|-----|
| 1" 1/2 | 150 | AAA | 125 | 73 | 40,9 | 98,4 | 16 | 16 | 2 | 55,5 | 48 | 4 | 230 |
| 1" 1/2 | 300 | ABA | 155 | 73 | 40,9 | 114,3 | 22 | 19 | 2 | 55,5 | 48 | 4 | 230 |
| 1" 1/2 | 600 | ADA | 155 | 73 | 40,9 | 114,3 | 22 | 22,5 | 7 | 55,5 | 48 | 4 | 260 |
| 2" | 150 | BAA | 150 | 92,1 | 52,5 | 120,6 | 19 | 17,5 | 2 | 61 | 55 | 4 | 230 |
| 2" | 300 | BBA | 165 | 92,1 | 52,5 | 127 | 19 | 21 | 2 | 61 | 55 | 8 | 230 |
| 2" | 600 | BDA | 165 | 92,1 | 52,5 | 127 | 19 | 25,5 | 7 | 61 | 55 | 8 | 260 |

1) N° threaded holes.

2) tube SCH 40S dimensions, as per ASME B31.1.

"HOW TO ORDER" SEQUENCE

Section/Model/Connection material/Process Connection

5 **7RC** 4 **L00...H00**
 7MS **400...700**
 7MT **A00...F00**
 7FL **SS0...BDA**

plastic diaphragm seal, with threaded connection

MGS9/P



Diaphragm seals are designed to isolate the sensing element of pressure gauges, pressure switches and electronic pressure transmitter from process fluids which may be corrosive, viscous, sedimentous. An elastic diaphragm, mechanically clamped, fitted to a leak proof check, guarantees the separation of the process fluid from the transmission fill fluid. The corrosion is prevented by the assembling without bolts and nuts. Typical applications are: galvanic and water treatments, irrigation, electronic boards production.

4.P10 - MGS9/P10 - for pressure gauges \geq DN 4" (100mm)

Working pressure and temperature: see table below.

Accuracy (1): (add to instrument accuracy) $\pm 1,0\%$ for direct mounting.

Instrument connection: G 1/2.

Process connection: G 1/2, 1/2" NPT F.

Body Material :

V - PVC.

Diaphragm material :

A - PTFE.

Filling liquid: silicon oil.

4.P63 - MGS9/P63 - for pressure gauges DN 2.5" (63mm)

Working pressure and temperature: see table below.

Accuracy (1): (add to instrument accuracy) $\pm 1,0\%$ for direct mounting.

Instrument connection: G 1/4.

Process connection: G 1/4, 1/4" NPT F.

Body Material :

V - PVC.

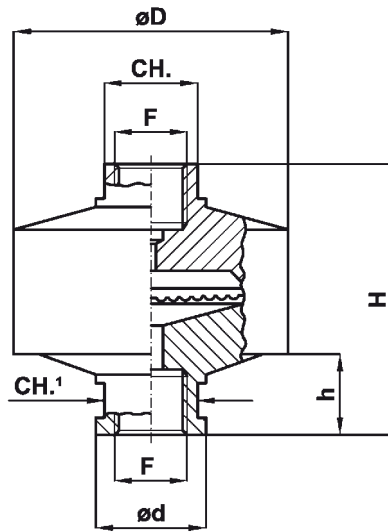
Diaphragm material :

A - PTFE.

Filling liquid: silicon oil.

| Process fluid temperature | | |
|---------------------------|-------------------|-------------------|
| 68 °F (20 °C) | 104 °F (40 °C) | 140 °F (60 °C) |
| 150 psi (10 bar) | 75 psi (5 bar) | 15 psi (1 bar) |

(1) at 68°F (20 °C) process temperature (or state temperature when ordering)



| Model | F | D | d | H | h | CH ₁ | CH |
|-------|--------------------|-------------|-----------|-------------|-------------|-----------------|-----------|
| P10 | 41F - G 1/2 | 3.13 (79,5) | 1.26 (32) | 3.09 (78,5) | 0.93 (23,5) | 1.06 (27) | 1.06 (27) |
| | 43F - 1/2-14 NPT F | | | | | | |
| P63 | 21F - G 1/4 | 2.34 (59,5) | 0.98 (25) | 2.54 (64,5) | 0.77 (19,5) | 0.87 (22) | 0.67 (17) |
| | 23F - 1/4-18 NPT F | | | | | | |

dimensions : inches (mm)

ASSEMBLING

D - Direct to instrument. All diaphragm seals are mounted on the instruments and fixed by an aluminium protection label.

OPTIONS

| Model | MGS9/P10 | MGS9/P63 |
|--|----------|----------|
| E - Fluorinated liquid "E" for process fluid temperature from -40°F to +302°F (from -40°C +150°C) | ◆ | ◆ |
| G - Food oil "G" for process fluid temperature from -4°F to +392°F (-20°C a + 200°C) | ◆ | ◆ |

"HOW TO ORDER" SEQUENCE

| Section/Model/Connection material/Diaphragm material/Process | Connection/Instrument connection/Assembling/Options |
|--|---|
| 4 P10 V A | 41F 41F - G 1/2 F D E, G |
| P63 | 43F 21F - G 1/4 F |
| | 21F |
| | 23F |



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