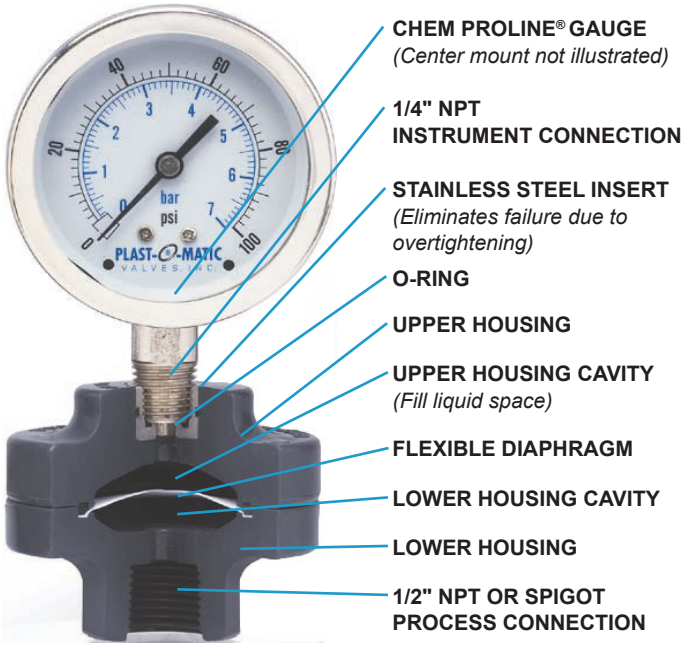
CHEM PROLINE® CHEMICAL GAUGE GUARD

FEATURES:

- Stainless steel hex insert eliminates breakage due to overtightening
- Highest pressure rating
- Offers an inexpensive initial investment
- Reduces instrument failures
- Reduces system down time
- Eliminates the expense and extended delivery of special alloy instruments
- Offers a choice of select plastic materials to assure maximum chemical and temperature compatibility
- 20mm spigot connection



PVC model shown for reference

APPLICATIONS:

These chemical gauge guards should be utilized to isolate and protect pressure or vacuum instruments used on ultra-pure or highly corrosive fluid lines. They can be confidently used with liquids such as demineralized water, sulphuric acid, hydrochloric acid, and caustics. Utilization of Chem Proline® gauge guards offers the added advantage of protection against clogging of instruments caused by suspended solids or highly viscous fluids. Chem Proline® gauge guards are available with or without gauges.

OPERATION:

A Chem Proline® gauge guard assembled with a pressure or vacuum instrument must be solidly filled with a suitable fill liquid. The gauge guard diaphragm is a flexible barrier that prevents the process fluid from entering the instrument. Pressure on the process side of the diaphragm flexes it against the fill liquid transmitting the pressure to the instrument. Conversely, vacuum causes the diaphragm to flex in the opposite direction creating an equal vacuum in the fill liquid which actuates the instrument.

SAMPLE SPECIFICATIONS:

Gauge guard housings are molded Advanced PE resin. PTFE diaphragms are standard with all assemblies using gauges of 0 - 30psi and greater. For special order, 0 - 15psi and vacuum gauges FKM elastomer diaphragms are used. Non-wetted parts: O-ring seals are Buna-N, fasteners and 1/4” instrument connections are stainless steel. Standard gauges have 304 stainless steel cases. Dials are steel with black markings on white backgrounds.

Threaded connections are stainless steel, pointers aluminum, and lenses heavy flat glass. Sensing elements are stainless steel bourdon tubes.

Liquid used to solidly fill all gauge guards and instruments is a highly refined temperature stable mineral oil that complies with FDA regulations 21 CFR 172.878, 178.3620, and 573.680.

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DESIGN:

Each gauge guard features a durable and flexible diaphragm which serves as a protective barrier between the process fluid and instrument. The internal space on the instrument side of the diaphragm must be solidly filled with a suitable liquid in order to accurately transmit the process pressure to the instrument. Excellent flexing characteristics and a large sensing area (2.07 square inches) result in exceptional diaphragm response to low changes in pressure or vacuum. While PTFE diaphragms are standard, elastomer diaphragms are also available. This latter type is more sensitive and is used for vacuum or low pressure (0 - 15psi) applications. Another design feature is the volumetric capacity (1.03 cubic inch) of the fill liquid side of diaphragm. This capacity, combined with flexible diaphragm, enables gauge guard to tolerate minor filling errors and minute air bubbles without loss of measuring accuracy. These chemical gauge guards are designed for a maximum working pressure of 150psi. Additionally, if an instrument were to fracture or be accidentally removed from the upper housing and cause the loss of fill liquid, the diaphragm is strong enough to prevent leakage for a short time, of the process fluid up to the diaphragm's rupture point of approximately 400psi. If this situation should occur, immediately remove all process pressure from the gauge guard and replace the diaphragm as it has been exposed to abnormal stretching. *Caution: If this safety feature is important (as with dangerous fluids such as acids) then a minimum of a four times safety factor should be adhered to and the process fluid pressure kept to 100psi or lower.*

A design is also available whereby the upper assembly consisting of the instrument, fill liquid, and upper housing may be removed as a unit for the purpose of cleaning the process fluid side of the diaphragm and lower housing cavity without having to refill or recalibrate the instrument. See "Removable Housing Design" section for details. The Chem Proline® gauge guard is not designed with a fill-bleed port since it is not necessary with its flexible diaphragm design. See "Filling Information" section.

INSTALLATION:

When Chem Proline® gauge guards are purchased with a gauge, install the assembly by simply connecting it to the process piping or valve using butt or socket fusion. When assembling a gauge or other instrument make sure to only tighten the 1/4" NPT connection until it is snug against the O-ring seal, DO NOT exceed 30 in-lbs, and follow the installation method in the previous paragraph. In applications where it is necessary to remotely mount the gauge guard from the instrument, a capillary tube must be used. If the tube's inside diameter is 1/4" or larger and is not longer than five feet, it may be filled with the instrument as an assembly. Please consult "Filling Information" section. If the tube's inside diameter is smaller than 1/4" or if its length is greater than five feet, consult factory for filling instructions.

REMOVABLE HOUSING DESIGN:

The removable housing design is recommended for applications where it is desirable to periodically clean the diaphragm of particulate or chemicals that might clog and prevent proper operation. It allows cleaning of the diaphragm and bottom housing without refilling or recalibrating the protected gauge or instrument. The cleaning process is possible only when there is no pressure or vacuum in the process line. While this removable housing design may be utilized with either lower or center back mounted gauges. The gauge or instrument, fill liquid, diaphragm, and the upper housing to which they are attached can be removed without disconnecting the bottom housing from the process piping. This is achieved by loosening the six fasteners that hold the assembly together. Then remove the top housing by simply pulling it away from the lower housing. Since the six screws are threaded into the center retaining ring the diaphragm and fill liquid will remain captured. When replacing the upper housing, care should be taken not to misalign the O-ring seal located in the lower housing, otherwise leakage will result.

FACTORY-INSTALLED "SNUBBER" INSERT:

This optional feature reduces pressure pulsations, provides more accurate readings and reduces damage from excessive needle fluctuations, thereby extending the life of the gauge.

www.asahi-america.com • asahi@asahi-america.com • Tel: 800-343-3618 • 781-321-5409 • Fax: 800-426-7058

CHEM PROLINE® CHEMICAL GAUGE GUARD

FILLING INFORMATION:

Chem Proline® gauge guards purchased with Chem Proline® gauges are factory filled. When purchased without a gauge, the installer must ensure that the upper gauge cavity and the gauge or instrument to be used must be solidly filled in order to accurately transmit the process line pressure or vacuum to the instrument. Air left in the fill liquid can give inaccurate readings; however, the volumetric capacity of 1.03 cubic inches, in conjunction with the flexible diaphragm, enables the assembly to tolerate minor filling errors without loss of pressure measurement accuracy. Excellent flexing characteristics of the Chem Proline® diaphragm allows for a simple filling method when the gauge guard is used with a Chem Proline® or similar gauge. This is achieved by pouring the fill liquid into the upper housing cavity to the top of the threads. By tilting the housing in several positions the air should be worked up and out of the housing. The same procedure can be used on the gauge although a small probe may be necessary to help evacuate the air bubbles. Because of the O-ring seal, thread sealant is not required on the instrument connection before it is threaded into the 1/4" NPT stainless steel insert in the upper gauge guard housing. The fill liquid that is displaced by the pipe threads during mounting may deflect the diaphragm and thus cause an initial reading on the gauge. If a slight reading is present on the gauge or instrument after assembly it can be zeroed out by simply bleeding off a small amount of the fill liquid. To do this, partially unscrew the instrument and push a blunt rod against the diaphragm. This will cause the fill liquid to bleed out of the threads. Allow only a small amount of bleeding to take place and re-tighten the instrument. If a very sensitive instrument is to be protected by a Chem Proline® chemical gauge guard the instrument should be filled by a vacuum evacuation method. DO NOT fill the gauge guard by evacuation as vacuum will cause too much deflection of the diaphragm creating abnormal stretching.

The instrument should have a small enough orifice to retain the fill liquid when it is faced downward to be threaded into the gauge guard. If not, it may be necessary to tap the instrument's orifice and screw in a reducing bushing with a small orifice. This bushing should be removed before filling the instrument and replaced after filling.

ACCESSORY GAUGE GUARD FILL LIQUID:

Chem Proline® accessory fill liquid, available in four ounce bottles, is a highly refined mineral oil that complies with FDA regulations 21 CFR 172.878, 178.3620, and 573.680. It is temperature stable throughout our recommended temperature range, thus it will not cause errors in pressure measurement due to temperature differentials. It will remain stable indefinitely, and will not support anaerobic bacterial growth or react with the materials of the gauge guards or instruments. Chem Proline® fill liquid is recommended because its stability makes it more suitable that the other liquids for our range of applications, unless the mineral oil would have a dangerous reaction to the system fluid in the event of a diaphragm failure.

Standard gauge guards are designed with 1/4" NPT for instrument connection and 1/2" NPT for the system connection. Other combinations are available optionally.

OPTIONAL GAUGE FACE FILL:

Factory filled gauges can be filled with an FDA approved mineral oil or USP food/pharmacy grade glycerin.

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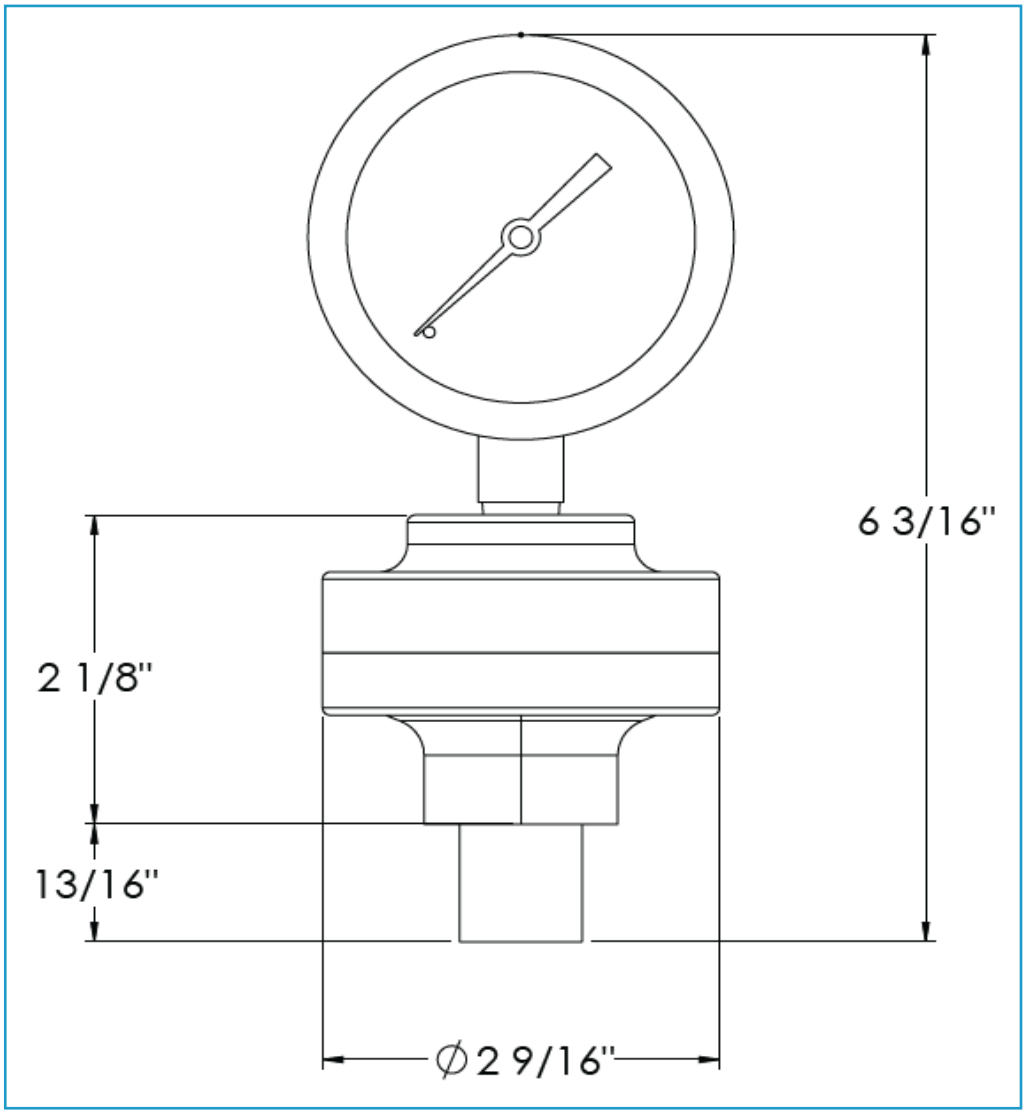
DIMENSIONS:



GAUGE GUARDS & PART NUMBERS

TYPE OF SERVICE	AVAILABLE GAUGE RANGES		DIAPHRAGM MATERIALS	GAUGE GUARD MODEL NUMBERS
	AS SHOWN	BARS		
Pressure or Vacuum	Without Gauge		PTFE	589940005
Pressure	0 - 60 PSI	0 - 4.14	PTFE	5899405060
Pressure	0 - 100 PSI	0 - 6.90	PTFE	5899405100
Pressure	0 - 160 PSI	0 - 11.04	PTFE	5899405160

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