# The 330 Series Diaphragm Seals

**Performance Data**

This series of seal utilizes a diaphragm that is welded to the upper housing. An important feature is that the upper housing can be separated from the lower housing without loss of fill fluid. The construction conforms to methods as described in the ASME standard B40.2 section 2.3. The standard upper housing is classified as Continuous Duty (see para. 2.3.2.1, ASME B40.2).

Consideration should be given to gasket compatibility with process fluids and temperature. Table 330.1 lists applicable safe working temperatures.

Diaphragms with a diameter of 3.0" (76.20mm) are utilized in this series. See Table 330.2 for displacement curves and nominal ratings.

Table 330.3 indicates the volume of fill fluid within the body cavity based on 1/2" engagement of the fitting in the instrument connection. This data is provided for error calculation attributed to expansion and contraction of fill fluids under varying temperature conditions.

The filling method for this series is as defined in ASME B40.2 section 2.9.3.1.

**Table 330.1 Flat Gaskets**

| Material | Temperature Range |
|---|---|
| Buna-N | -10 to +300°F (-23 to 149°C) |
| Teflon-TFE | 0 to +140°F (-17 to 60°C) |
| Viton | -30 to +350°F (-34 to 176°C) |
| Grafoil | -30 to +500°F (-34 to 260°C) |
| CGR2750 * ( Standard ) | -60 to +700°F (-51 to 371°C) |

**Table 330.3 Internal Volume**

| Instrument Connection NPT** | Cubic Inches |
|---|---|
| 1/4" 330A/330B | 0.182 |
| 1/2" 330A/330B | 0.241 |
| 1/4" AMINCO | 0.147 |

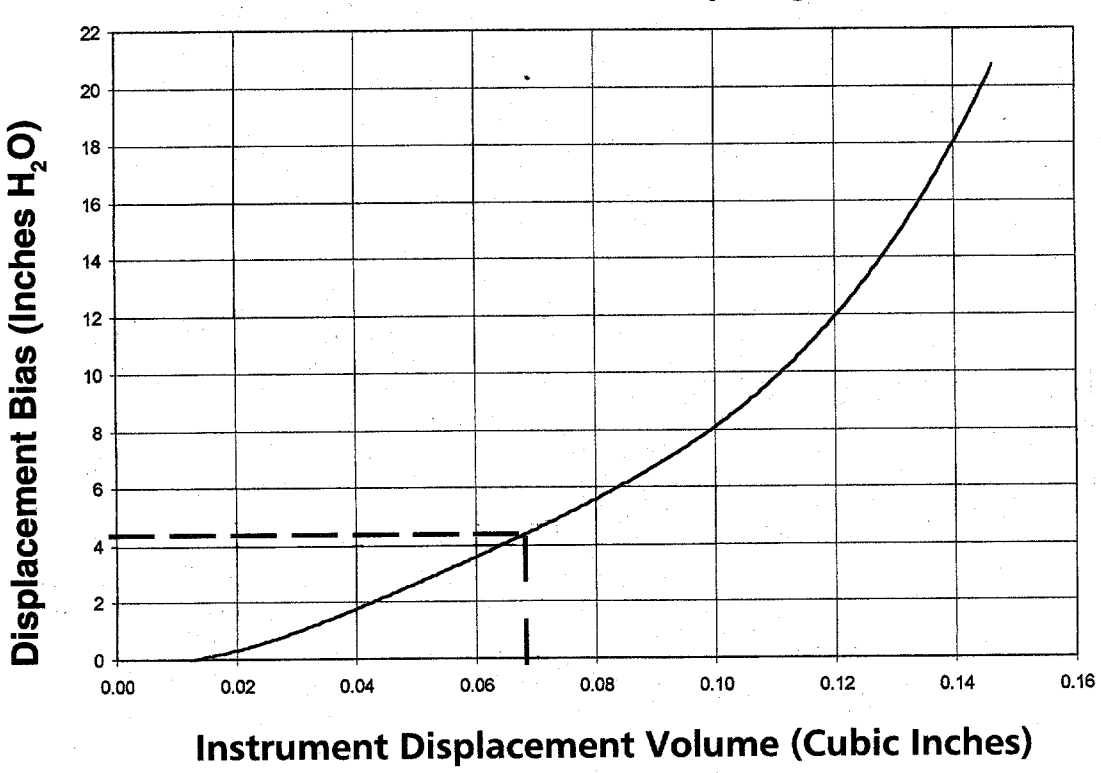
* See Note 1.
** See Note 2.

**Notes:**

1. CGR2750 is an organic fiber with a Nitrile binder. Standardly supplied unless other material is specified.
2. NPTF - as noted in subsequent sections refers to the American National Standard Dryseal Pipe Threads (ASME/ ANSI B1.20.3) and applies to both internal and external threads. Although this type of pipe thread is theoretically designed to seal without the use of a sealant/lubricant, the use of one is necessary to achieve a truly leak free joint in practical applications.
3. Graph Interpretation (Displacement Bias vs. Displacement Volume): Displacement Bias versus displacement volume graphs are provided to aid the user in the selection of a diaphragm seal having minimal full span displacement bias effects. (Refer to thermal Bias Calculation Section for additional information). **Note - This graph is not a representation of the maximum full span capability of the user's instrument.**

**Table 330.2 (Note 3)**

**Displacement Bias vs. Displacement Volume**
**3.00" Diameter Diaphragm**




As indicated by the graph, the displacement bias associated with the diaphragm spring rate is proportional to the instrument's required volumetric displacement. Instruments requiring less displacement will have a lower displacement bias. The maximum displacement capability of the diaphragm seal is specified for each series (i.e., 330A) in subsequent sections of the catalog. The required volumetric displacement of the user's instruments should be below the stated maximum.

Example:
An instrument has a maximum full span displacement of 0.07 cubic inches. What is the full span displacement bias associated with the diaphragm spring rate, in inches of water, for a 3.00" diameter diaphragm?

From the graph in Table 330.2:
An instrument with a full span displacement of 0.07 cubic inches has a maximum displacement bias of ±4.5 psi.