

**PIC stocks, fills and calibrates complete diaphragm seal assemblies. We can supply materials of construction, connection types and sizes, and fill fluids suitable for almost any application you run into! We can typically assemble, fill and test standard gauges and diaphragm seal assemblies from our stock in 1-2 days. Please call with your inquiry.**

Diaphragm Seals are designed for use in applications where chemical compatibility, trash or sludge in process or sanitary requirements prevent the use of a standard pressure gauge or gauge only installation.

Diaphragm Seals consist mainly of an upper housing, lower housing and a separating diaphragm. These components can be selected and made of different type materials for better compatibility with the end process.

Diaphragm seal assemblies can be made and selected with different types of Pressure instruments, instrument connections, process connections or types of seals. It is important to know as much about the application as possible so that the correct specifications are used when selecting the diaphragm seal assembly.

Below you will find some of the information you will need to know to properly select a diaphragm seal assembly.



When specifying, ordering or requesting quotes for diaphragm seals – Be ready to answer the following questions;

### About the application

What type of instrument is required? (Pressure Gauge, Transmitter or Transducer, Pressure Switch or other)

What is the process in contact with the seal?

What else is important for this application?

### About the diaphragm seal

What materials of construction are required for;

Upper Housing?

Diaphragm? (Wetted Parts A)

Lower Housing? (Wetted Parts B)

Gaskets or O-rings (If applicable)?

Bolting or Plugs (If applicable)?

What type of connections is required for;

Instrument Connection?

Process Connection?

Flushing Connection (If applicable)?

What size (and rating) connections are required?

Are there any special requirements for this application?

(Flushing Connection, Clean-out Ring, All Welded Design, Sanitary or Special Cleaning, Capillary System or Other)

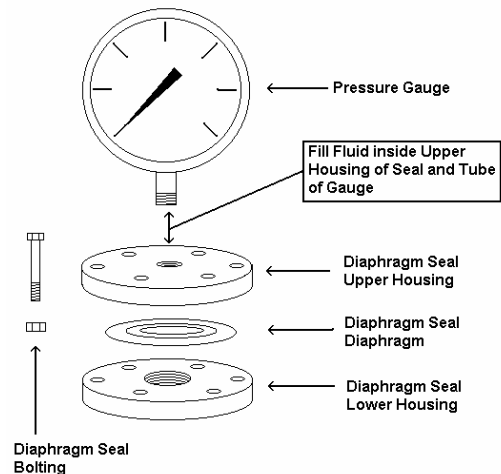
### About the Fill Fluid

What fluid is compatible with your process?

(Fill Fluid needs to be compatible with process as a safety concern in case the diaphragm ruptures)

What Special Conditions will the fill fluid be subjected to?

(High Temperatures, Low Temperatures, Wide Range of Temperatures, Long Capillary Lengths, Etc.)



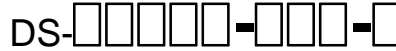
**Mini Diaphragm Seals:** All welded design, Standard pressure rating: 2000 PSI (5000 PSI rated available). Female threaded standard (Male process connection threaded available)

**M3500 SERIES**

1 1/2" Dial through 3 1/2" Dial sizes  
Pressure transducers and transmitters  
or other small displacement instruments.

**M4500 SERIES**

All Gauges through 4 1/2" Dial Size  
Pressure Transducers and Transmitters  
Most Pressure Switches  
or other small to medium displacement instruments



**Model Number:**

M35 M3500 SERIES  
M45 M4500 SERIES

**Instrument Connection**

1 = 1/4" FNPT  
2 = 1/2" FNPT

**Process Connection**

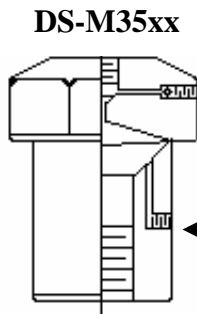
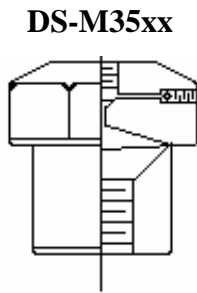
1 = 1/4" FNPT  
2 = 1/2" FNPT  
3 = 3/4" FNPT  
4 = 1" FNPT

**Flushing Connections**

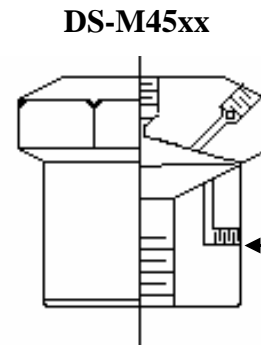
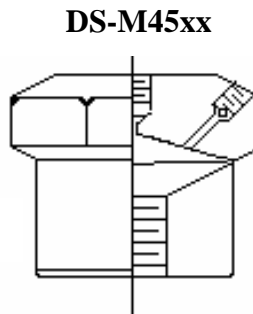
0 = No Flushing Connection  
F = with Flushing Connection  
HP = High Pressure Seal

**Material of Const.**

316 = 316SS  
HTC = Hastalloy 'C'  
MNL = Monel  
TAN = Tantalum



FLUSHING CONNECTION



FLUSHING CONNECTION

**Large Volume Diaphragm Seals**



**Product:**

DS = Diaphragm Seal

**Upper Housing:**

S = Carbon Steel  
J = Stainless Steel

**Instrument Connection:**

1 = 1/4" FNPT  
2 = 1/2" FNPT

**Diaphragm Material:**

**Lower Housing Material:**

S = Carbon Steel  
G = 304 Stainless Steel  
J = 316 Stainless Steel  
K = Tantalum  
M = Monel  
T = Teflon  
X = Other

**Flushing Connection**

F = Flushing Connection

**Seal / Connection Rating**

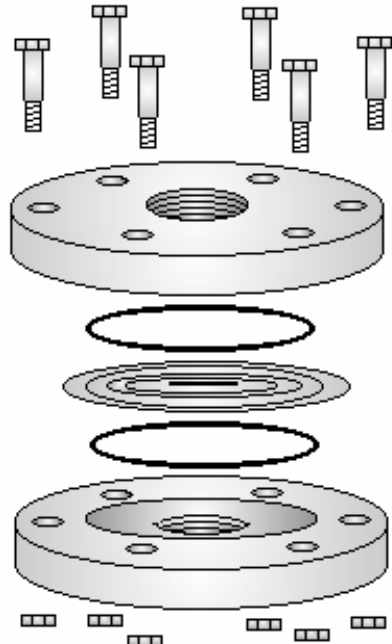
A = 2000 PSI  
B = 5000 PSI  
I = 2500 PSI  
E = 150 # (Flange)  
F = 300 # (Flange)

**Process Connection Size**

1 = 1/4"  
2 = 1/2"  
3 = 3/4"  
4 = 1"

**Connection Type**

T = Threaded  
F = Flanged  
S = Sanitary



# DIAPHRAGM SEALS

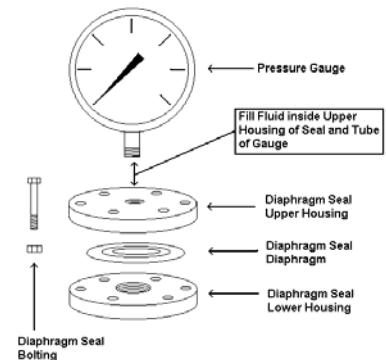
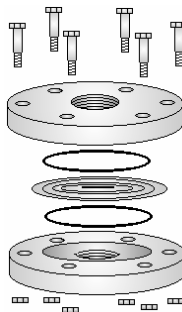
Precision Instrument Company is a full line Diaphragm Seal Manufacturer. We Manufacture all sizes, connections and materials, Stocking the most commonly used types. We also attach instruments and Fill Systems giving us many options with quick deliveries.



Mini Seals	Medium Seals	Low Pressure	Full Size
Best low cost for small instruments	Best low cost for medium to large instruments	Large area diaphragm for low pressures and Vacuum Applications	Most Versatile for all applications



Flanged Connection	Tri-Clamp Sanitary	Flow Through	Saddle Mount
Raised Face or Flat Face Pressure from 150# to 2500#	Food and Pharmaceutical Designed for Easy Cleaning	Tri-Clamp, Flanged or Threaded Straight Through flow designs eliminate dead zones in piping	Weld-in Saddle Mount



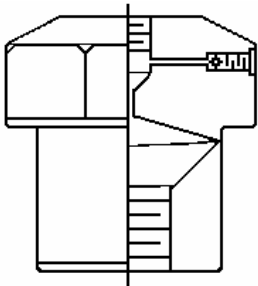
Special Seals	Components & Accessories	Filling / Calibrating
Male NPT – Plug Type, Flush Diaphragm, Button Type or other custom designs	Upper & Lower Housings, Diaphragms, Gaskets or O-Rings, Bolting, etc. SS armored Capillary Made to Length with connections matching gauges & seals	Using any fill fluid suitable for the application. (See separate page for available fills)

All welded design, Standard pressure rating: 2000 PSI (5000 PSI rated available).  
 Female threaded standard (Male process connection threaded available)

## M3500 SERIES

1 1/2" Dial through 3 1/2" Dial sizes  
 Pressure transducers and transmitters  
 or other small displacement  
 instruments.  
 For Pressures 60 psi Through 2500 PSI

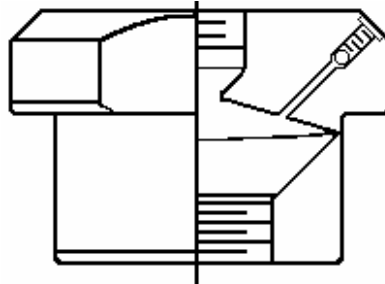
### DS-M35



## M4500 SERIES

All Gauges through 4 1/2" Dial Size  
 Pressure Transducers and Transmitters  
 Most Pressure Switches  
 or other small to medium displacement instruments  
 30 PSI Through 2500 PSI

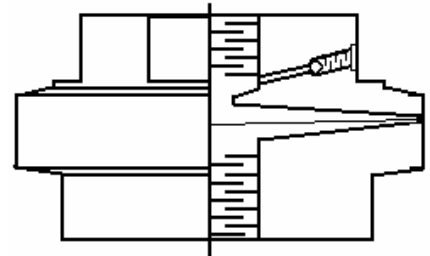
### DS-M45



## M3500-LP SERIES

1 1/2" Dial through 3 1/2" Dial sizes  
 Pressure transducers and transmitters  
 or other small displacement instruments.  
 For Vacuum or Pressures up to 2500 PSI

### DS-M35 (LP)



## Model Numbers:

DS-□□□□□-□□□□-□

### Model Number:

M35 M3500 SERIES  
 M45 M4500 SERIES

### Instrument Connection

1 = 1/4" FNPT  
 2 = 1/2" FNPT

### Process Connection

1 = 1/4" FNPT  
 2 = 1/2" FNPT  
 3 = 3/4" FNPT  
 4 = 1" FNPT

### Material of Const.

316 = 316SS  
 HTC = Hastalloy 'C'  
 MNL = Monel  
 TAN = Tantalum

### Flushing Connection

0 = No Flushing Connection  
 F = with Flushing Connection  
 HP = High Pressure Seal  
 LP = Low Pressure Seal

## Standard Fills (Others available by request):

Fill	Temp Range	Fill	Temp Range
Pure Glycerine (Food Grade)	+30 to + 300°F	Mineral Oil	Information TBA
Silicone DC200-1000cs	- 35 to + 450°F	Fluorolube FS-5	- 40 to + 500°F
Silicone DC 550	- 40 to + 600°F	Halocarbon Oil 6.3	- 40 to + 400°F
Ethylene Glycol (Anti-Freeze)	- 30 to + 300°F	Syltherm 800	- 40 to + 450°F

## General Specifications

- Diaphragm welded to upper housing housings
- available w/replaceable diaphragm gasketed between upper & lower housings
- Instrument Connection: 1/4" or 1/2" NPT (Others available)
- Process Connection 1/4", 1/2", 3/4" or 1" NPT (Others Available)
- Chrome Plated Carbon Steel or Stainless Steel Upper Housing
- Grade 8 Galvanized Steel or Stainless Steel Bolts
- Standard Pressure Rating = 2500 psi
- High Pressure model = 10,000 psi

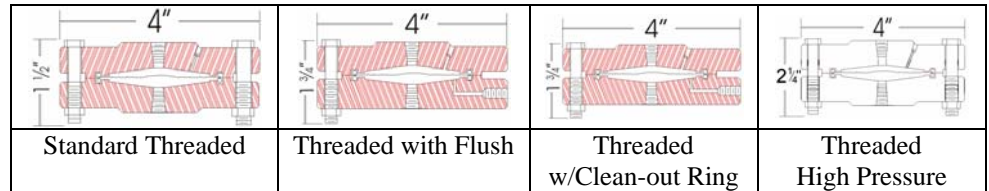
## Optional Wetted Materials

- Chrome Plated Carbon Steel
- 316SS, 304SS, 316L-SS, 304L-SS
- Hastelloy C276, B2
- Inconel 600, 625
- Tantalum (Diaphragm Only)
- Nickel
- Monel 400
- Titanium
- Carpenter 20
- Teflon
- PVC
- Kynar
- Others upon Request



## Gaskets

- Buna N
- Viton
- Teflon
- Grafoil
- Others upon Request



## Part Number System

### Product:

DS = Diaphragm Seal

### Upper Housing:

S = Carbon Steel  
J = Stainless Steel

### Instrument Connection:

1 = 1/4" FNPT  
2 = 1/2" FNPT

### Diaphragm Material:

### Lower Housing Material:

S = Carbon Steel  
G = 304 Stainless Steel  
J = 316 Stainless Steel  
K = Tantalum  
M = Monel  
T = Teflon  
X = Other

### Flushing Connection

F = Flushing Connection

### Seal / Connection Rating

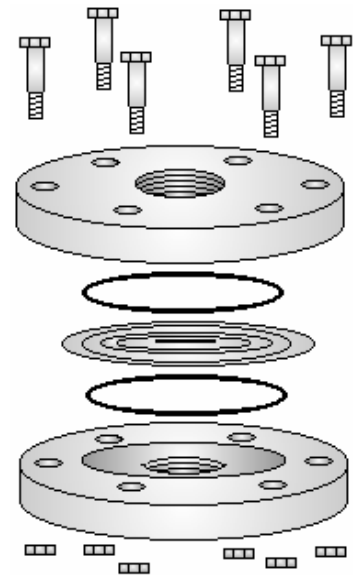
A = 2000 PSI (Clamped Diaph.)  
B = 5000 PSI  
I = 2500 PSI (Welded Diaph.)  
E = 150 # (Flange)  
F = 300 # (Flange)

### Process Connection Size

1 = 1/4"  
2 = 1/2"  
3 = 3/4"  
4 = 1"

### Connection Type

T = Threaded  
F = Flanged  
S = Sanitary  
I = Inline Welded  
W = Saddle Weld



**General:**

- Standard: Clamped Type Diaphragm with Upper & Lower Housing Gaskets  
Option: Available with Diaphragm Welded to Upper Housing  
(Note: Model Number changes to '200') \*
- Instrument Connection: 1/4" or 1/2" NPT \*
- Process Connection: 1/2", 3/4", 1" 1 1/2" RF Flanged \*
- Pressure Rating: per ANSI B16.5 - 150 # or 300 # Standard \*
- Upper Housing: Chrome Plated Carbon Steel Standard – Stainless Steel Available \*
- Bolting: Grade 8 Galvanized Steel Standard – Stainless Steel Available \*
- RTJ Connection Also Available

\* (Others Available upon Request)

**Wetted Materials Available(Includes Diaphragm and Lower Housing):**

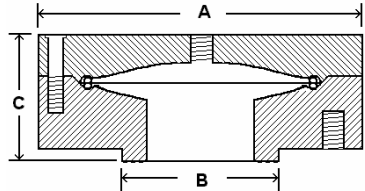
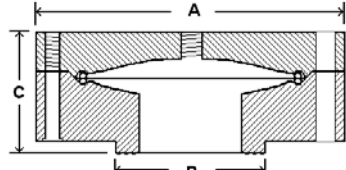
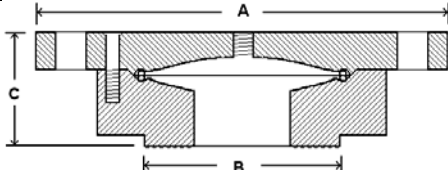
316 SS, 304 SS, 316L SS, 304L SS, Hastelloy C276, B2, Inconel 600, 625, Tantalum (Diaphragm Only), Nickel, Monel 40, Titanium, Carpenter 20, Teflon, PVC, Kynar, Others upon Request

**Gasket Materials:**

Buna N, Viton, Teflon, Grafoil, Others upon request

**Fill Fluids Available:**

Glycerine (standard), Silicone (various Grades and viscosities), Glycol, Halocarbon, Slytherm, Others Upon Request

100-FL-1				 <p style="text-align: center;">1/2" or 3/4" Flanged Off Line</p>
Process Connection		A	B	
1/2"	150 #	3 1/2"	1 3/8"	
3/4"		3 3/4"	1 11/16"	
1/2"	300 #	3 3/4"	1 3/8"	
3/4"		4 5/8"	1 11/16"	
100-FL-2				 <p style="text-align: center;">1" Flanged Off Line</p>
Process Connection		A	B	
1"	150 #	4 1/4"	1 3/8"	
1"	300 #	4 7/8"	1 9/16"	
100-FL-3				 <p style="text-align: center;">1 1/2" or Larger Flanged Off Line</p>
Process Connection		A	B	
All Dimensions According to Size and Rating.				

# 'DS-M3A' TRI-CLAMP SANITARY DIAPHRAGM SEALS

Diaphragm seals are designed for use in applications where sanitary conditions and cleanliness, trash or sludge in process prevent the use of a threaded pressure gauge or diaphragm seal installation. These seals are designed for quick removal, cleaning and re-installation without the use of tools.

These diaphragm seals consist mainly of an upper housing, and a separating diaphragm. This type of seal is available in 316ss in sizes from 1/2" through 2" tri-clamp connections.

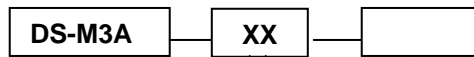
Diaphragm seal assemblies can be mated with different types of pressure instruments. Due to the type of clamp used pressure ratings are limited so it is important to know as much about the application as possible so that the correct specifications are used when selecting the diaphragm seal assembly.



## NOTES:

1. The Series 'DS-M3A' are designed for Gauges Dial Sizes 1.5" and larger and are also acceptable for pressure transducer/transmitters or other small displacement instruments.
2. Standard Material of Construction: All 316 Stainless Steel (Others Available).
3. Pressure Rating is based on the clamp and gasket used with the assembly.
4. Specify thread size for instrument and Clamp Size for process connection.

## Part Number System:



### Model #

DS-M3A Sanitary Tri-Clamp Diaphragm Seal

### Special Options


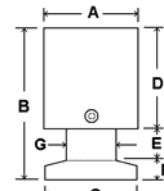

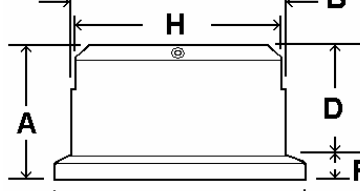
Specify Uncoded Options

### Instrument Connection

1 = 1/4" NPT  
2 = 1/2" NPT

### Tri-Clamp Size

2 = 1/2" Tri-Clamp  
3 = 3/4" Tri-Clamp  
4 = 1" Tri-Clamp  
6 = 1 1/2" Tri-Clamp  
8 = 2" Tri-Clamp

		1/2" and 3/4" Tri-Clamp			1", 1 1/2" and 2" Tri-Clamp				
									
		A	B	C	D	E	F	G	H
1/2"	Inches	1.12"	1.48"	.99"	.93"	.30"	.24"	.54"	
	mm	28.4	37.7	25	23.8	7.73	6.11	13.8	
3/4"	Inches	1.12"	1.48"	1.13"	.93"	.34"	.19"	.75"	
	mm	28.4	37.7	28.7	23.8	8.86	4.85	19.25	
1"	Inches								
	mm								
1 1/2"	Inches	1.27"	1.68"	1.98"	1.09"		.18"		1.55"
	mm	32.3	42.55	50.5	27.7		4.6		39.42
2"	Inches	1.29"	1.93"	2.49"	1.10"		.25"		1.79"
	mm	32.8	48.95	63.44	28.1		6.34		45.5

- Dial:** 2 1/2" or 4" Diameter
- Case:** Stainless Steel  
Hermetically sealed & Liquid Fillable Standard
- Lens:** Laminated Safety Glass
- Pointer:** Micrometer Adjustable
- Bourdon Tube:** AISI 316 Stainless Steel
- Socket:** AISI 316 Stainless
- Accuracy:** 4" Dial = 0.5 % Full Scale  
2 1/2" Dial = 1.0 % Full Scale
- Movement:** Heavy Duty 300 series SS

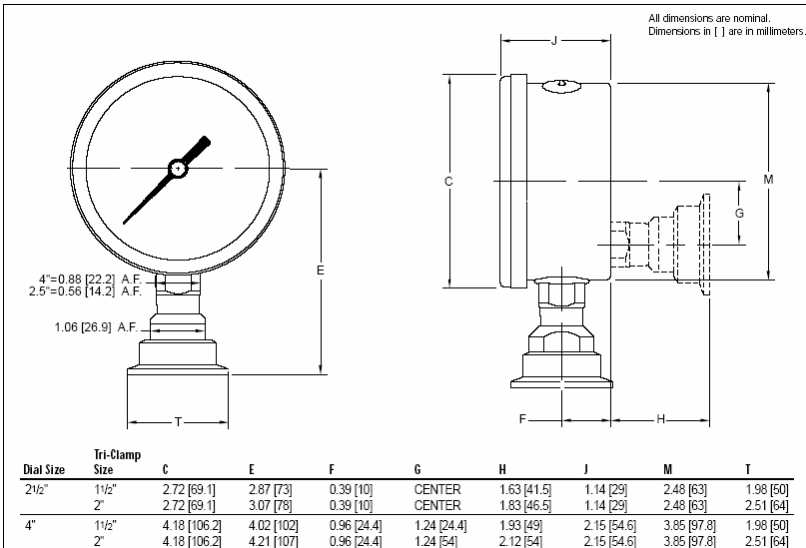
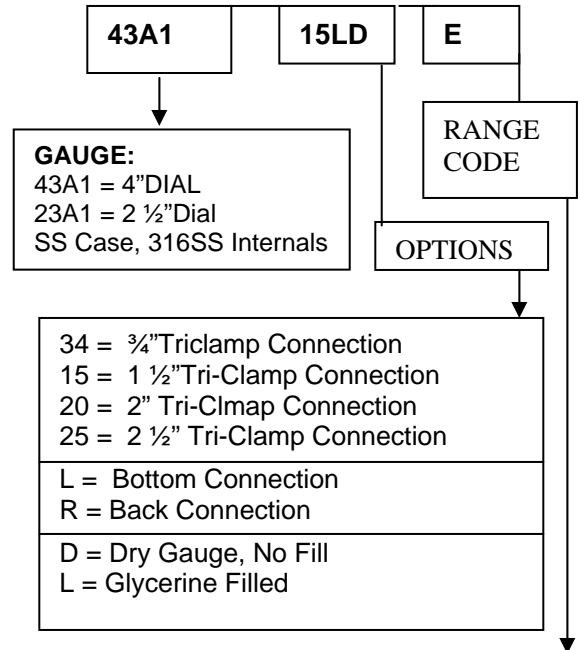
## STANDARD FEATURES

- Overload and Underload Stops
- Laminated Safety Glass Lens
- Hermetically Sealed/Weather Proof
- Liquid Fillable Out of The Box / No Kit Required
- Original Product • Best Product • Best Value



43A1

## PART NUMBERING SYSTEM:



These gauges have been designed to meet 3A requirements for the dairy and food processing industries.

Currently we do not have 3A certification for our standard stock products.

If 3A certification or stamp is required for your application, please specify that you require 3A rating when requesting your quote.

These gauges conform to ANSI B40.1

Code	Range
A	30"Hg-0
CB	30"Hg-0-15 psi
CC	30"Hg-0-30 psi
CD	30"Hg-0-60 psi
CE	30"Hg-0-100 psi
CF	30"Hg-0-150 psi
CH	30"Hg-0-300 psi
B	0-15
C	0-30
D	0-60
E	0-100
F	0-160
G	0-200
H	0-300



# MOLDED GAUGE & SEAL ASSEMBLY

This innovative new product was developed to solve many common problems associated with polymer type diaphragms seals. Due to the all molded design the gauge cannot be removed from the seal, preventing loss of fill – And There is no chance of cracking the upper housing by over tightening the gauge. This product is also molded of a harder blend of polymers – making them more resistant to cracking or breaking during installation.

## Specifications:

Case & Body:	<b>Molded Polypropylene (Black) or Molded PVDF (White)</b>
Dial Size:	<b>2 ½" Diameter</b>
Process Conn:	<b>1/4" or ½" FNPT</b>
Diaphragm:	<b>Viton or EPDM</b>
Bourdon Tube:	<b>316SS or Brass</b>
Internals:	<b>Stainless or Brass</b>
Fill Fluid:	<b>Glycerine or Silicone Standard</b> Others Available upon Request
Lens:	<b>Heavy Duty Glass</b>
Case Style:	<b>Dry but Fillable</b>
Dial:	<b>Dual Scale PSI / Bar / x 100 = kPa</b> Others Available upon Request
Max Pressure:	<b>15 PSI to 400 PSI</b>
Max Temp:	<b>-4°F to 140°F / -20°C to + 60°C</b>
Accuracy:	<b>1.5 % Full Scale</b>



## Dimensions:

	Inches	MM
A	2.89"	73.44
B	.62"	15.80
C	1.04"	26.47
D	2.61"	66.36
E	.50"	12.82
F	1.19"	30.36
G	.43"	10.99
H	1.23"	31.28
I	2.29"	58.29

