

Application

Process industry diaphragm seal to combine bourdon tube pressure gauges. Intended for corrosive, contaminated, hot or viscous pressure media.

Design

The diaphragm is welded to the upper housing which allows the replacement of the lower housing without jeopardizing the integrity of the system fill fluid and installed instrument. The upper and lower housing are bolted together and sealed by use of an O-ring. Process wetted components can be manufactured with solid metallic and nonmetallic materials.

Process Connection

Threaded connections ¼ NPT to 1" NPT

Instrument Connection

Capillary, ½" or ¼" NPT-female

Pressure Rating

1,500 PSI @ 250F 4 – bolt design
3,625 PSI @ 250F 8 – bolt design

Operating Temperature

-130F to 752F (-90C to 400C)

Volumetric Data

Displacement typically for 2.1" SS diaphragm
 $\Delta V = 1.37\text{cm}^3$ (0.083 in³)
Cavity Volume $V_o = 2.4\text{cm}^3$ (0.146in³)

Suitable Pressure Ranges (MWP 1500 PSI @250°F)

See page 5 for detail

Available Options (connections, materials, etc.)

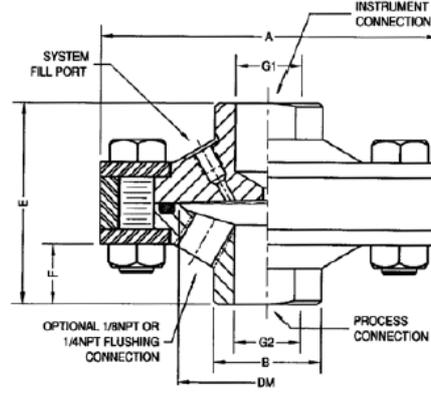
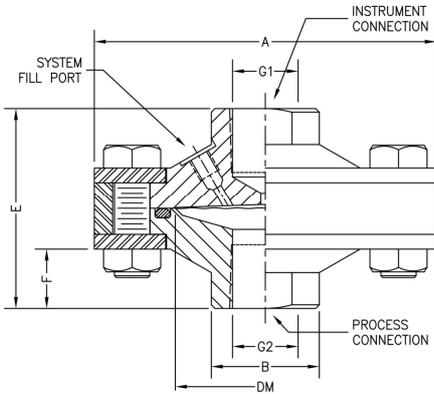
See Selection Guide on page 3 - 4



L990.10 Diaphragm Seal



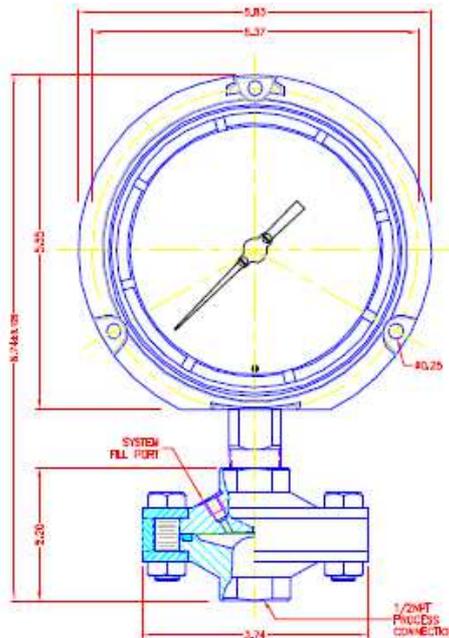
Diaphragm Seal
 Threaded Diaphragm Seal
 Model L990.10



Dimensions table - L990.10

G1 Instrument	G2 Process	A	B	DM*	E	F	Weight
		In (mm)	In (mm)	In (mm)	In (mm)	In (mm)	lbs
1/4" NPT Or 1/2" NPT	1/4" NPT	3.74 (95)	1.18 (30)	2.10 (53.4)	2.20 (55.9)	0.63 (16.0)	3.0
	1/2" NPT		1.41 (35.8)		2.35 (59.7)	0.79 (20.1)	3.4
	1" NPT		1.77 (45.0)		2.36 (59.9)	1.89 (48.0)	3.6

*) DM: Effective Diaphragm Diameter
 All dimensions in inches (in brackets mm) (unless other-wise noted)



L990.10 Diaphragm Seal assembled to process gauge

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L990.10 Selection Guide – Standard Options

Field #	Code	Description	Field #	Code	Description	
1		Instrument Connection			Clamp Material	
	N4F	½" NPT-Female		CS	Retainer flange and bolts in galvanized steel max. 500oF	
	N2F	¾" NPT-Female		SS	Retainer flange and bolts in stainless steel max. 500oF	
	CPL	Capillary (Axial welded in) connection – see note 1		HS	Retainer flange stainless steel and high tensile bolts - max. 752oF (see note 5)	
2		Process Connection	6		Diaphragm Material	
	N2F	1/4" NPT female		SS	Stainless steel 316L (1.4435)	
	N4F	1/2" NPT female		HC	Hastelloy C276 (2.4819)	
	N6F	3/4" NPT female		MO	Monel 400 (2.4360)	
	N8F	1" NPT female		IN	Inconel 600 (2.4816)	
	N2	1/4" NPT male		IC	Incoloy 825 (2.4858)	
	N4	1/24" NPT male		TA	Tantalum	
	N6	3/4" NPT male		NI	Nickel 200 (2.4066)	
	N8	1" NPT male		TI	Titanium Grade 2 (3.7035)	
	XX	Other – Consult factory		CA	Carpenter 20 (2.4660)	
3		Upper Housing Material	7	DP	Duplex 2205 (1.4462)	
	CS	Carbon Steel 1018, Nickel plated		S4	Stainless steel 304L (1.4304)	
	SS	Stainless Steel 316L (1.4435)		PF	Stainless steel 316L with Teflon Spray Coating (see note 3)	
	TI	Titanium Grade 2 (3.7035) (see note 2)		TF	Stainless steel 316L with Teflon Spray Coating (see note 3)	
	MO	Monel 400 (2.4360)		SW	Stainless steel (316L) with virgin PTFE-foil (Tmax 300°F)	
	HC	Hastelloy C276 (2.4819)		AU	Stainless steel (316L) with Gold Lining 10 µin	
	DP	Duplex 2205 (1.4462)		XX	Other – Consult factory	
	XX	Other – Consult factory			Gasket Material (see note 7)	
4		Lower Housing Material	8	BN	BUNA-N (NBR) max. 212oF	
	CS	Carbon steel 1018, Nickel plated		VI	Viton® (FPM) max. 400oF	
	SS	Stainless steel 316L (1.4435)		TF	Teflon® (PTFE) max. 500oF	
	HC	Hastelloy C276 (2.4819)		AS	Metal Seal Form C, Inconel / Silver plated - max 752oF	
	HB	Hastelloy B2 (2.4819)		NA	None - for PTFE lower (see note 8)	
	MO	Monel 400 (2.4360)		XX	Other – Consult factory	
	IN	Inconel 600 (2.4816)			Pressure Rating @ 250 F	
	IC	Incoloy 825 (2.4858)		200	200PSI MWP for plastic lower (8 bolts @N/C)	
	NI	Nickel 200 (2.4066)		1500	1500PSI MWP (Standard 4 bolts) not for high temp bolts and rings;	
	TI	Titanium Grade 2 (3.7035)		3625	3625 PSI MWP (8 bolt design)	
	CA	Carpenter 20 (2.4660)			Options - (see note 5)	
	DP	Duplex 2205 (1.4462)		9	XMT	Material Certificate 3.1 EN10204 (metal only)
	S4	Stainless steel 304L (1.4304)			XNC	Wetted parts NACE (MR0175/MR0103 Year 2009) compliant
	PVC	Polyvinyl chloride - (see note 3)			CE4	4" Cooling element - (see note 1, 10)
	PVDF	PVDF (Kynar) - (see note 3)			PLG	Provide flushing plugs
	TF	Solid virgin Teflon - (see note 3)				
XX	Other – Consult factory					
5		Flushing Connection Lower Housing (see note 4)	10			
	-0	Without				
	-1	1 x 1/8" NPT female				
	-2	1 x 1/4" NPT female				
	-3	2 x 1/8" NPT female				
	-4	2 x 1/4" NPT female				
	-5	1 x 1/2" NPT female				
-6	2 x 1/2" NPT female					

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Notes:

- 1) Axial weld-in connections and cooling elements are only available on 316L stainless steel upper housings.
- 2) Titanium upper housings and diaphragms are only offered together for this model
- 3) Maximum working pressure (MWP) is 200 PSI at 200 F (8 bolts)
1/4" and 1/2" NPT female connections only are available
- 4) Plugs are not supplied with flushing ports as standard
- 5) For use with silver plated metal gasket (AS) and 8 bolt configuration (3,625 PSI) for process media temperature up to 752 F
- 6) Teflon coating (PF) is not intended for full corrosion protection. It is applied as non-stick coating only
- 7) Viton (VI) gaskets are standard for 316L (SS) and carbon steel (CS) wetted parts. Teflon (TF) gaskets are standard for all other wetted parts configurations.
- 8) Only the design of the PTFE lower housing (TF) does not require a gasket. See note 7 for all other lower housings
- 9) List options in alphabetical order at the end of the configuration code
- 10) Cooling elements are welded to the diaphragm seal.

Diaphragm Seal Order Sample:

Field:	1		2		3		4		5		6		7		8		9		10	
L990.10.	N4F	X	N4F	.	SS	.	SS	.	-0	.	SS	.	SS	.	VI	.	1500	.	XXX	

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Process Gauges: Model 232.34

232.34.45-P200PX-N4LM – Example model code

Field:	1		2		3		4		5		6		7	
	232.34	.	45	-	P200		PX	-	N4		LM			

232.34 Selection Guide (most common configurations, compatible with L99010)

Field #	Code	Description	Field #	Code	Description
		Gauge base model			Pressure Scale
1	212.34	Dry case - copper alloy wetted parts		PX	PSI - single scale
	213.34	Liquid-filled case - copper alloy wetted parts		PB	PSI outside, BAR inside in red
	232.34	Dry case - stainless steel wetted parts		PC	PSI outside, KGCM2 inside in red
	233.34	Liquid-filled case - stainless steel wetted parts		PK	PSI outside, KPA inside in red
		Pressure Ranges			
3	V000	30 inHg Vacuum	4	XX	Other scales on inquiry
	C015	-30 inHg/15 psi			
	C100	-30 inHg/100 psi	5	N4	1/2" NPT Male
	P015	15 psi		N2	1/4" NPT Male
	P030	30 psi			Options¹⁾
	P060	60 psi	7	FGL	Glycerine, 99.7% (Model 233.34)
	P100	100 psi		FGW ¹⁾	Glycerine/Water, 86/14% (233.34 only)
	P160	160 psi		FS1	Silicone fill, 1000cst (233.34 only)
	P200	200 psi		LSG	Safety glass window
	P300	300 psi		MDP	Silicone dampened movement
	P400	400 psi		PDP	Drag pointer, red (standard)
	P10C	1000 psi		XNI	NIST Certificate of Calibration, ±3/2/3% to ±0.5% accuracy
	P15C	1500 psi			
	P30C	3000 psi			

Gauge datasheet: <http://www.wika.us/upload/DS_PM_23X_34_en_uS_15712.pdf> 1) for pressure ranges V000; C015; P015; P030

¹⁾ **System Fill Options: mandatory selection with gauge and diaphragm seal**

KN2 - DC200 SILICONE OIL (50cSt)	KN7 - GLYCERINE 99.7% USP (1000cSt)	KN21 - HALOCARBON FLUID 6.3
KN68 - DC200 SILICONE OIL (10cSt)	KN59 - NEOBEE M20	KN8 - FLUOROLUBE FS-5
KN17 - SILICONE OIL PD5 (4cSt)	KN92 - MINERAL OIL Lubepharm (23cSt)	KN32 - DC704 SILICONE OIL (38.0 cSt)

Order Code Example: Process Gauge with Diaphragm Seal and System Fill
232.34.45-P200PX-N4LM // L990.10.N4FXN4F.SS.SS-0.SS.SS.VI.1500 // KN68²⁾

²⁾ WIKA will assign unique 8 digit part number for the assembly in case of order

¹⁾ Additional configuration options are available, please consult factory!

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WIKA reserves the right to make design changes without prior notice.

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