

# Type M93X.D1 All-Welded System (AWS)

WIKA Datasheet M93X.D1

Type M93X.D1 all-welded gauge/diaphragm seal systems are a drop-in retrofit for existing gauges. This assembly eliminates all potential leak paths and has a tamper-resistant construction. The all-welded system is ideal for installations where tightly controlled fugitive emissions and safety are a concern. The M93X.D1 is well-suited for applications in the chemical, petrochemical and process industries.

## Design

This all-welded gauge assembly is constructed using WIKA gauge model number 23X.34 and diaphragm seal model number L990.34. The diaphragm is recessed within the all-welded seal body. The pressure gauge is back-welded to the seal upper housing to eliminate another potential leak path. The threaded seal fill port has been removed to ensure a tamper resistant design. Additional process wetted materials, process connections, system fill fluids and accessories are available to meet the rigorous demands of most applications.

## Standard Features

### Construction

All-welded design

### Pressure Rating, Maximum

1,500 psi and 5,000 psi

### Ranges

Vacuum, compound and positive pressure up to 5000 psi  
(See selection table for detail)

### Operating Temperature

0 to 300°F (-18°C to 149°C)

### Ambient Temperature

-40°F to 140°F (-40°C to 60°C)



Type M93X.D1 AWS

## Gauge Features

### Dial Size

4½" process gauge

### Process Connection

¼" NPT & ½" NPT male or female

### Process Wetted Materials

316L stainless steel

### Case Material

Fiberglass reinforced thermoplastic (Pocan®)

### Case Fill

Glycerin (optional)

### Window

Acrylic

### Dial

White aluminum with black lettering

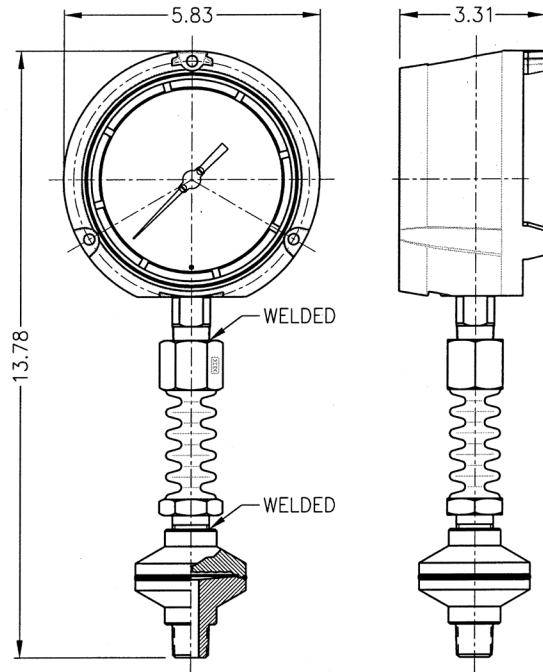
**Pointer**  
Black aluminum

**Accuracy**  
±0.5% of span

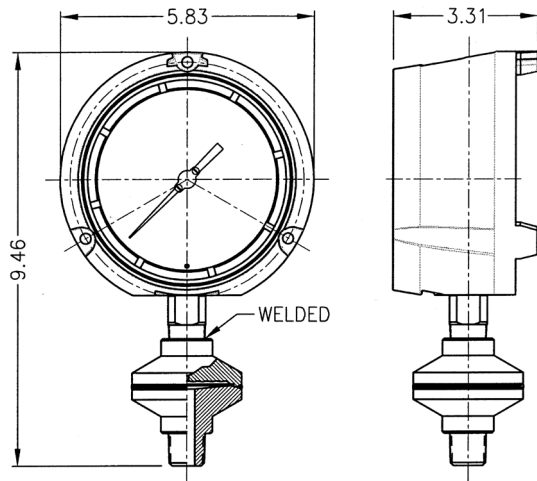
**Temperature effect**  
Process and ambient change, see Technical Data, page 2

**System Fill Fluid**  
Silicone oil, KN68 - DC200-10cSt.  
Identification: Engraved on upper seal housing

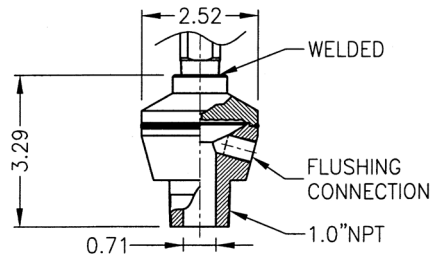
**4" Cooling Element installed**



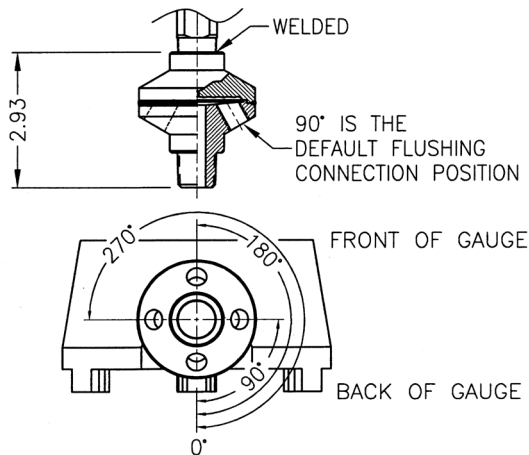
**Standard Configuration**



**Ethanol Configuration**



**Flushing Port Location**



**Technical Data**

Overall weight: No case fill: 3.50 lbs. Case filled: 4.60 lbs.

Temperature effect<sup>2)</sup>

Fill fluid	KN68	KN7	KN2	KN59	KN21	KN3.2 <sup>1)</sup>	PSI per 10°F change
Ambient	0.21	0.10	0.21	0.20	0.18	0.16	
Process	0.04	0.02	0.04	0.03	0.03	0.04	

<sup>1)</sup> Values including 4" cooling element  
<sup>2)</sup> Units filled at 70°F (base temperature)

**M93X.D1 Selection Guide - Page 1**

Field no.	Code	Description	Field no.	Code	Description
<b>1</b>	<b>Nominal Pressure Range</b>		<b>4</b>	<b>Upper Housing Material</b>	
	V000	-30inHg ... 0 Vacuum		SS	Stainless steel 316L (1.4435)
	C015	-30inHg ... 15 psi Compound range		MO	Monel® 400 (2.4360)
	C030	-30inHg ... 30 psi Compound range		HC	Hastelloy® C276 (2.4819)
	C060	-30inHg ... 60 psi Compound range		DP	Duplex 2205 (1.4462)
	C100	-30inHg ... 100 psi Compound range		XX	Other - consult factory
	C160	-30inHg ... 160 psi Compound range		<b>Lower Housing Material</b>	
	P015	0 psi ... 15 psi Gauge pressure range		SS	Stainless steel 316L (1.4435)
	P030	0 psi ... 30 psi Gauge pressure range		HC	Hastelloy® C276 (2.4819)
	P060	0 psi ... 60 psi Gauge pressure range		MO	Monel® 400 (2.4360)
	P100	0 psi ... 100 psi Gauge pressure range	IN	Inconel® 600 (2.4816)	
	P160	0 psi ... 160 psi Gauge pressure range	IC	Incoloy 825 (2.4858)	
	P200	0 psi ... 200 psi Gauge pressure range	CA	Carpenter 20 (2.4660)	
	P300	0 psi ... 300 psi Gauge pressure range	DP	Duplex 2205 (1.4462)	
	P400	0 psi ... 400 psi Gauge pressure range	NI	Nickel 200 (2.4066)	
	P600	0 psi ... 600 psi Gauge pressure range	S4	Stainless steel 304L (1.4304)	
	P800	0 psi ... 800 psi Gauge pressure range	XX	Other - consult factory	
	P10C	0 psi ... 1000 psi Gauge pressure range	<b>Lower Housing Flushing Connection</b> (see note 1)		
	P15C	0 psi ... 1500 psi Gauge pressure range	-0	Without	
	P20C	0 psi ... 2000 psi Gauge pressure range	-1	1 X 1/8 NPT	
P30C	0 psi ... 3000 psi Gauge pressure range	-2	1 X 1/4 NPT		
P50C	0 psi ... 5000 psi Gauge pressure range	-3	2 x 1/8 NPT		
<b>2</b>	<b>Pressure Units</b>		<b>6</b>	-4	2 x 1/4 NPT
	PX	PSI - Single scale		<b>Diaphragm Material</b>	
	CX	KG/CM <sup>2</sup> - Single scale		SS	Stainless steel 316L (1.4435)
	KX	KPA - Single scale		HB	Hastelloy® B3 (2.4600)
	BX	BAR - Single scale	HC	Hastelloy® C276 (2.4819)	
	PC	PSI outside/KG/CM <sup>2</sup> inside in red	MO	Monel® 400 (2.4360)	
	PK	PSI outside/KPA inside in red	IN	Inconel® 600 (2.4816)	
	PB	PSI outside/BAR inside in red	IC	Incoloy 825 (2.4858)	
	SP	Special scale - consult factory	NI	Nickel 200 (2.4066)	
	<b>3</b>	<b>Process Connection</b>		<b>7</b>	CA
N2F		1/4" NPT female	DP		Duplex 2205 (1.4462)
N4F		1/2" NPT female	S4		Stainless steel 304L (1.4304)
N6F		3/4 NPT female	XX		Other - consult factory
N8F		1" NPT female	<b>System Fill</b>		
N4		1/2" NPT male	68		KN68 - Silicone DC200-10cSt
N6		3/4" NPT male	02		KN2 - Silicone DC200-50cSt
N8		1" NPT male	32		KN32 - Silicone DC704
XX		Other - consult factory	21		KN21 - Halocarbon 6.3
			07		KN7 - Glycerin 99.7% USP (1000cSt) (see note 3)
		92	KN92 - Medicinal white mineral oil (23cSt)		
		XX	Other - consult factory		

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Field no.	Code	Description
<b>Options - (see note 4)</b>		
	FG1	Glycerin, 99.7% case fill - change model # to M933.D1
	FS1	Silicone 1000cSt case fill - change model # to M933.D1
	LSG	Laminated safety glass window
	XMT	Material Certificate 3.1 EN10204 (metal only)
	XNC	Wetted Parts NACE (MR0175/MR0103 Year 2009) compliant
	WSS	Instrument tag, stainless steel
	LBM	Lower back mount gauge connector
	RS3	Super restrictor, 0.3 mm orifice
	PDP	Drag pointer, removable key
	CE4	4" Cooling element - (see note 5)
	CE8	8" Cooling element - (see note 5)
<b>9</b>	PLG	Provide flushing port plugs

**Notes:**

- 1) Plugs are not supplied with flushing ports as standard.
- 2) Diaphragm material should match the lower housing material. Please contact the factory for exceptions.
- 3) Glycerin (07) is not available for vacuum & compound pressure measurement ranges. Consult factory for exceptions.
- 4) List options in alphabetical order at the end of the configuration code.
- 5) Cooling element are only offered with 316L stainless steel upper housings.

**Order Sample**

	MODEL	PRESSURE RANGE	PRESSURE UNIT	PROCESS CONNECTION	UPPER HOUSING MATERIAL	LOWER HOUSING MATERIAL	FLUSHING CONNECTION	DIAPHRAGM MATERIAL	SYSTEM FILL	OPTIONS
<b>M933.D1</b>	<b>P200</b>	<b>PX</b>	<b>N4</b>	<b>SS</b>	<b>SS</b>	<b>-0</b>	<b>SS</b>	<b>68</b>	<b>FG1</b>	
Field no.	1	2	3	4	5	6	7	8	9	

