

# Pressure & Level Measurement Solutions



Pressure Gauges  
Dial Indicating  
Differential  
Sanitary  
Digital

Pressure & Level  
Transducers &  
Transmitters  
Industrial  
OEM  
Hazardous Location  
Sanitary



Pressure Switches

Options & Accessories

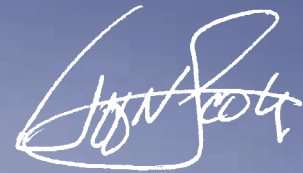


**A**t NOSHOK, we pride ourselves on being innovators in the industry by continually offering the latest technology and measurement solutions, and providing the best customer support in the marketplace.

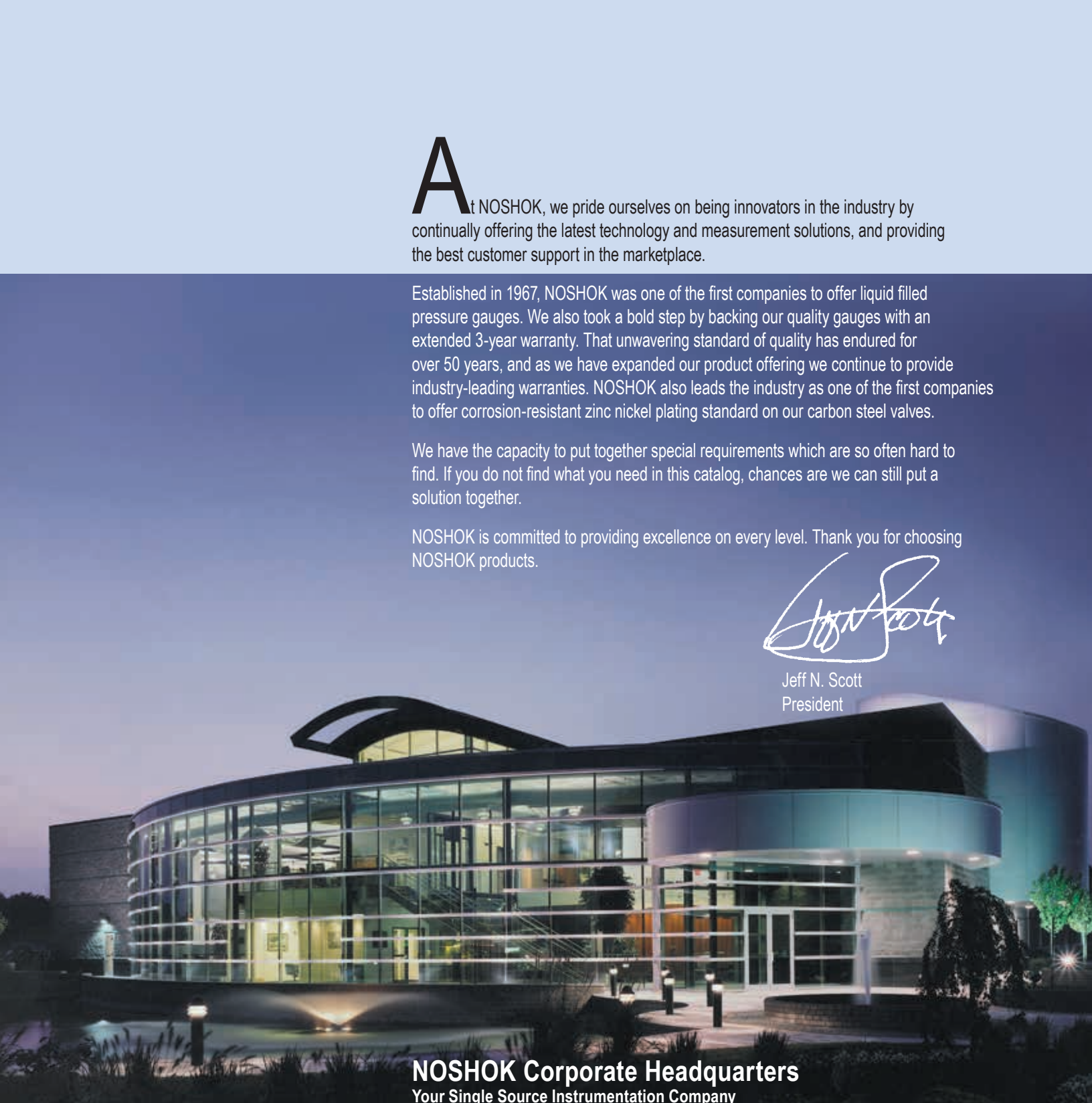
Established in 1967, NOSHOK was one of the first companies to offer liquid filled pressure gauges. We also took a bold step by backing our quality gauges with an extended 3-year warranty. That unwavering standard of quality has endured for over 50 years, and as we have expanded our product offering we continue to provide industry-leading warranties. NOSHOK also leads the industry as one of the first companies to offer corrosion-resistant zinc nickel plating standard on our carbon steel valves.

We have the capacity to put together special requirements which are so often hard to find. If you do not find what you need in this catalog, chances are we can still put a solution together.

NOSHOK is committed to providing excellence on every level. Thank you for choosing NOSHOK products.



Jeff N. Scott  
President



**NOSHOK Corporate Headquarters**  
Your Single Source Instrumentation Company

**NOSHOK is a member and actively supports:**



**NOSHOK is an ISO 9001:2015 registered company.**

## WARRANTY INFORMATION

NOSHOK's **Five Year Warranty** applies to our 1000 and 1100 Series differential gauges.

Our **Three Year Warranty** applies to our 300, 500, 502, 660, 760, and 900 Series liquid filled gauges; 10 Series liquid filled sanitary gauges; 1000 Series digital gauge; 100, 200, 300, 611, 612, 613, 615/616, 621/622, 623/624, 625/626, 627, 640, 650, 660 and 800 Series transmitters & transducers; 11, 20, 25 and 30 Series sanitary transmitters, and 500, 800 Series electronic switch products.

Our **One Year Warranty** applies to our 100, 200, 400, 402, 640, 740, and 800 Series dry gauges; 10 Series dry sanitary gauges; 100, 200, 300 and 400 Series mechanical switch products, and 628 Series intrinsically safe hammer union transmitter.

**NOSHOK guarantees all products** to be free from defects in material and workmanship, to remain within catalogued accuracy specifications, and to operate within the catalogued performance specifications. These products must be operated within the catalogued environmental and application parameters. Determination of failure will be made by NOSHOK, Inc.'s equipment and personnel or a certified test facility specializing in this type of evaluation. Instrument failures determined to be caused by over-range, incompatibility with environment or product media and abuse will not be considered under this warranty. NOSHOK, Inc. will, at its discretion, repair or replace the instrument without cost to the customer.

**Limitations which apply are:** Bourdon tube pressure gauges must be used within their calibrated maximum range to prevent damage. Pressure gauges must be operated within the following working pressure limits: Dynamic pressure application, 60% of the dial range; Static pressure applications, where no sharp fluctuations occur, 90% of the dial range. The gauges must be operated within specified ambient temperature ranges.

### CAUTION:

Operating conditions including, but not limited to, system pressure, media compatibility and ambient conditions must be considered when selecting gauges and accessories, improper selections and use of gauges could possibly cause gauge failure and lead to possible property damage or personal injury. Refer to the American National Standard ASME B40.1 for the correct selection and use of dial indicating gauges.

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# T A B L E O F C O N T E N T S

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# ABS & Steel Case, Dry



## 100 SERIES

- General purpose non-fillable dry gauge
- Vacuum and compound ranges through 0 psi to 15,000 psi
- 1-1/2", 2", 2-1/2" and 4" gauge sizes
- Standard impact-resistant ABS & Steel case
- Copper alloy and Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range

### APPLICATIONS

- Hydraulics & pneumatics
- Medical
- Pumps & compressors
- Refrigeration controls
- Utilities
- Water management

	SERIES	SPECIFICATIONS
Pressure ranges	100 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
Accuracy	15-100, 15-110, 15-120, 20-100, 20-110, 20-120, 20-148, 25-100, 25-110, 25-120	±2.5% full scale
	40-100	±1.6% full scale
Temperature ranges*	100 Series (all)	Media -4 °F to 140 °F (-20 °C to 60 °C) Ambient -40 °F to 140 °F (-40 °C to 60 °C)
Measuring element	100 Series (all)	Copper alloy Bourdon tube
Connection	15-100, 15-110, 15-120, 20-100, 20-110	1/8" NPT, Brass
	20-148	1/8" NPT/10-32 Female, Brass
	20-100, 20-110, 20-120, 25-100, 25-110, 25-120, 40-100	1/4" NPT Brass SAE J1926-3:7/16-20
Case	15-100, 15-110, 20-100, 20-110, 20-148, 25-100, 40-100	ABS (Acryl Nitril Butadien Styrol)
	15-120, 20-120, 25-120	Black painted Steel with chrome triangular bezel and U-clamp
Bezel	15-110, 20-110, 25-110	Built-in bezel, molded as an integral part of the case for ease of panel mounting.
	15-120, 20-120, 25-120	Chrome-plated Steel triangular bezel
Lens	100 Series (all)	Acrylic
Pointer	100 Series (all)	Molded plastic
Dial	100 Series (all)	White background with black primary scale & red secondary scale. UV resistant.
Movement	100 Series (all)	Brass & nylon, or all-Brass with highly polished bearing surfaces

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.



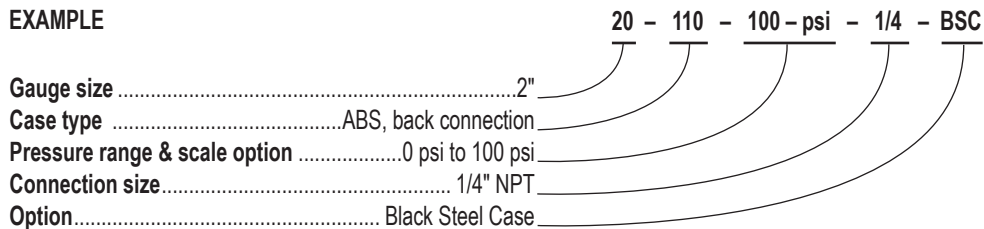
ORDERING INFORMATION							
<b>GAUGE SIZES</b>	<b>15</b> 1-1/2"	<b>20</b> 2"	<b>25</b> 2-1/2"	<b>40</b> 4"			
<b>CASE TYPES</b>	<b>100</b> ABS, bottom connection	<b>120</b> Steel case panel mount					
	<b>110</b> ABS, back connection	<b>148</b> Square ABS, panel mount (2" only)					
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg vacuum to 0 psi	<b>30/300</b> -30 inHg to 0 to 300 psi	<b>200</b> 0 psi to 200 psi	<b>2000</b> 0 psi to 2,000 psi			
	<b>30/15</b> -30 inHg to 0 to 15 psi	<b>15</b> 0 psi to 15 psi	<b>300</b> 0 psi to 300 psi	<b>3000</b> 0 psi to 3,000 psi			
	<b>30/30</b> -30 inHg to 0 to 30 psi	<b>30</b> 0 psi to 30 psi	<b>400</b> 0 psi to 400 psi	<b>5000</b> 0 psi to 5,000 psi			
	<b>30/60</b> -30 inHg to 0 to 60 psi	<b>60</b> 0 psi to 60 psi	<b>600</b> 0 psi to 600 psi	<b>6000</b> 0 psi to 6,000 psi			
	<b>30/100</b> -30 inHg to 0 to 100 psi	<b>100</b> 0 psi to 100 psi	<b>1000</b> 0 psi to 1,000 psi	<b>10000</b> 0 psi to 10,000 psi			
	<b>30/160</b> -30 inHg to 0 to 160 psi	<b>160</b> 0 psi to 160 psi	<b>1500</b> 0 psi to 1,500 psi	<b>15000</b> 0 psi to 15,000 psi			
	<b>30/200</b> -30 inHg to 0 to 200 psi	Other ranges available on request					
<b>SCALE OPTIONS***</b>	<b>psi</b> psi single scale	<b>psi/kPa</b> psi/kPa dual scale	<b>psi/kg/cm<sup>2</sup></b> psi/kg/cm <sup>2</sup> dual scale	<b>psi/bar</b> psi/bar dual scale			
<b>CONNECTION SIZES</b>	<b>1/8</b> 1/8" NPT	<b>SST</b> SAE J1926-3:7/16-20 Adjustable	<b>1/4</b> 1/4" NPT				
<b>OPTIONS</b>	<b>PMC</b> Panel Mount Clamp	<b>SSC</b> Stainless Steel Case	<b>LL</b> Polycarbonate Lens	<b>ST</b> Stainless Steel Tagging			
	<b>SSB</b> Polished Stainless Steel Bezel	<b>CRC</b> Chrome Case	<b>GL</b> Glass Lens*	<b>CPO</b> Brass Sintered Orifice 20 Micron			
	<b>BLRF</b> Black Rear Flange	<b>FAC</b> Flat Sided ABS Case	<b>SG</b> Safety Glass Lens*	<b>BP1</b> Brass Press Fit Orifice 0.1 mm			
	<b>BLFF</b> Black Front Flange – ABS Case	<b>BCR</b> Black Cover Ring**	<b>HL</b> Homalite Lens*	<b>BP3</b> Brass Press Fit Orifice 0.3 mm			
	<b>CFF</b> Chrome Front Flange – ABS Case	<b>SSCR</b> Stainless Steel Cover Ring**	<b>SP</b> Red Set Pointer**	<b>BP8</b> Brass Press Fit Orifice 0.8 mm			
	<b>SBFF</b> Black Front Flange – Steel Case	<b>CCR</b> Chrome Cover Ring**	<b>MIP</b> Maximum Indicating Pointer				
	<b>SCFF</b> Chrome Front Flange – Steel Case	<b>PCCR</b> Polished Chrome Cover Ring**	<b>SDM</b> Silicone Dampened Movement				
	<b>BSC</b> Black Steel Case	<b>CAR</b> Chrome Adapter Ring*	<b>LM</b> Laser Marking				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

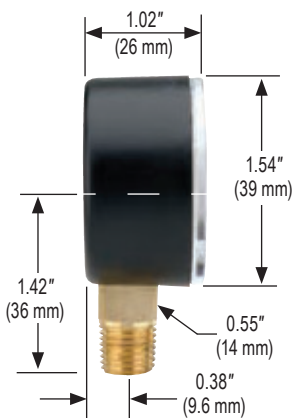
**NOTE:** Refer to 100 Series options & accessories chart on page 50 for availability by part number.

- \* A Steel, Stainless or chrome case & cover ring must be additionally ordered when lenses other than acrylic are utilized on all 100 Series.
- \*\* Only 110 Series require a Steel, Stainless or chrome case & cover ring to be additionally ordered when utilizing a set pointer or cover ring. Please consult factory when a set pointer is to be utilized on a 120 Series.
- \*\*\* Other scales available on request

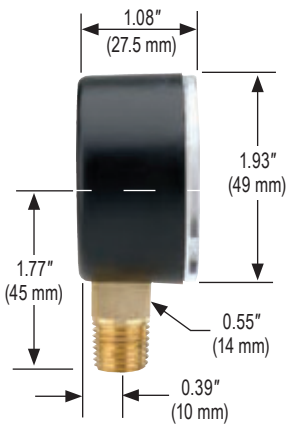
**EXAMPLE**



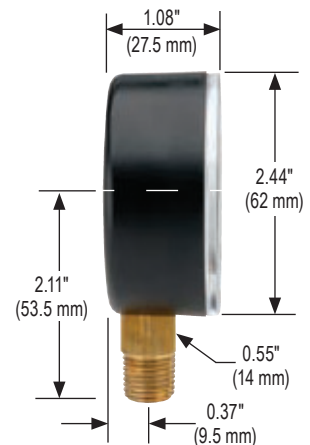
**15-100**



**20-100**

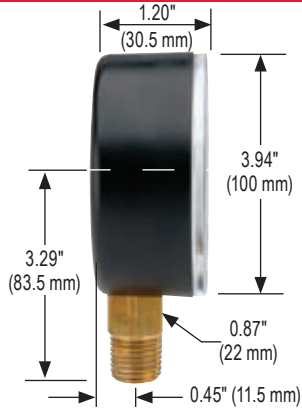


**25-100**

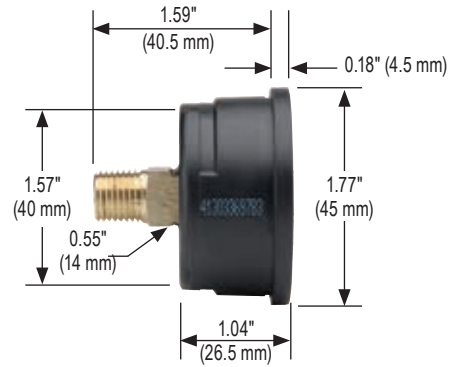


# Dimensions

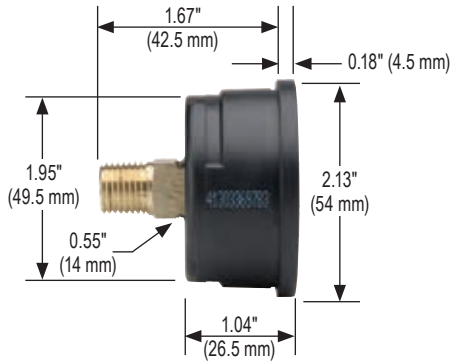
**40-100**



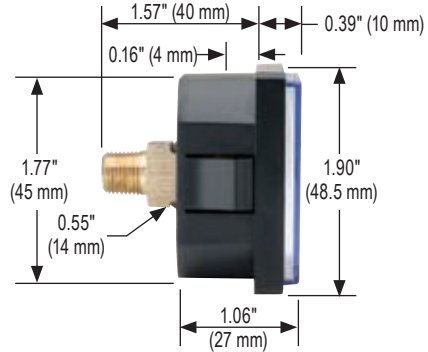
**15-110**



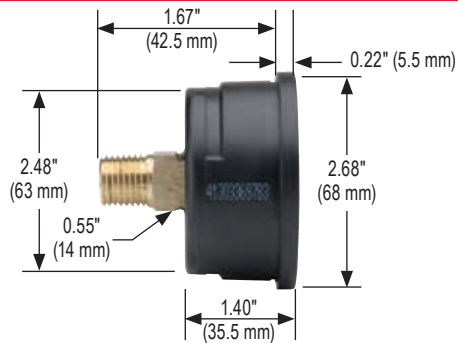
**20-110**



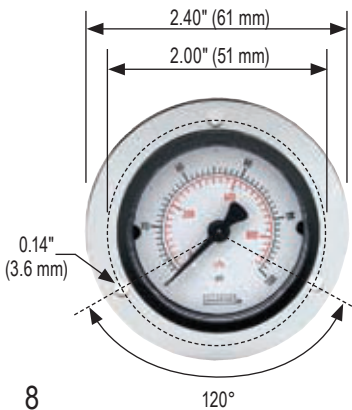
**20-148**



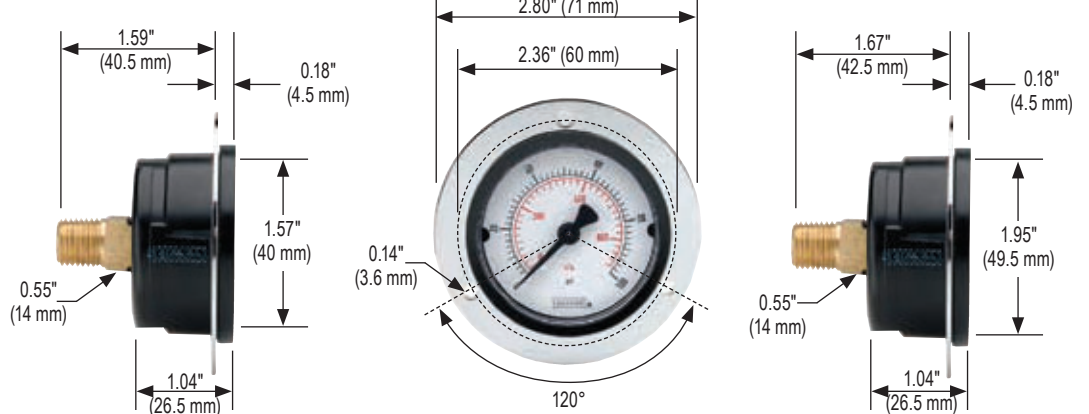
**25-110**



**15-110 Front Flange**

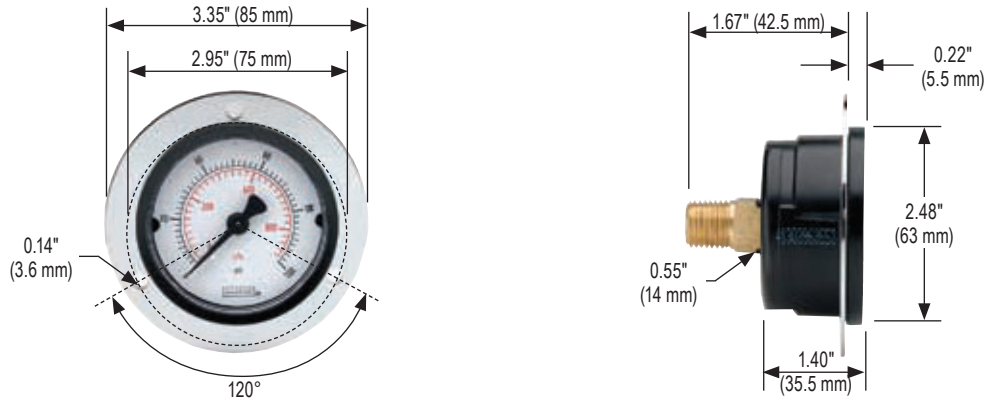


**20-110 Front Flange**

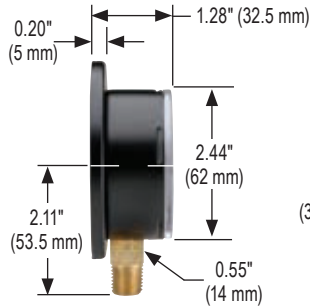
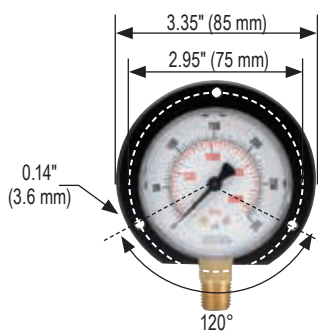




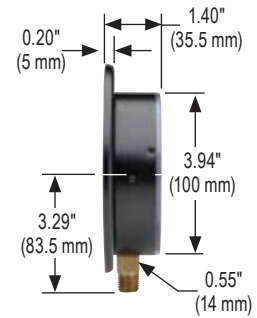
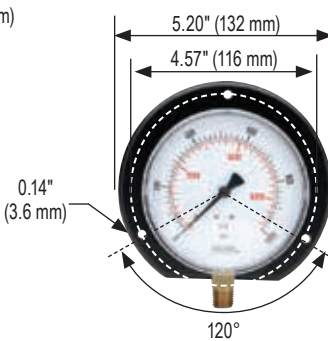
## 25-110 Front Flange



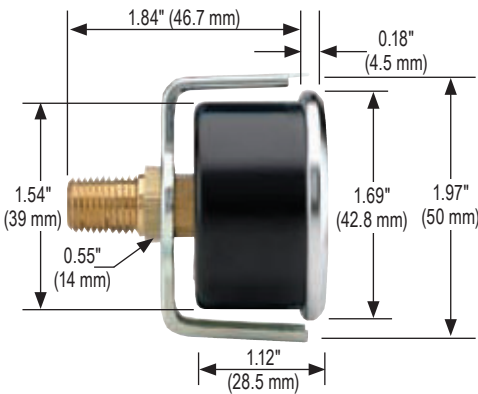
## 25-100 Rear Flange



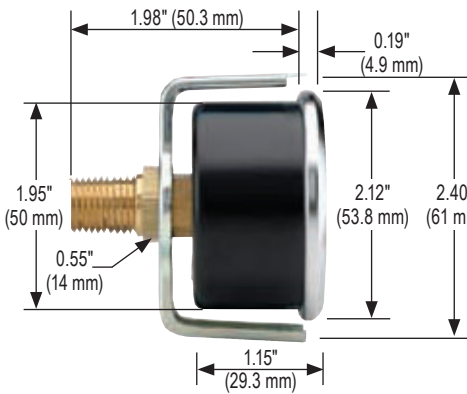
## 40-100 Rear Flange



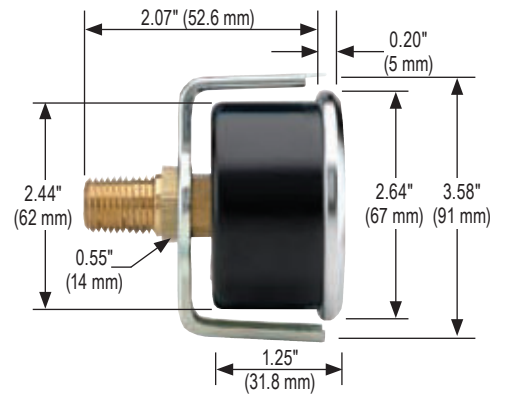
## 15-120 Chrome Bezel With U-Clamp



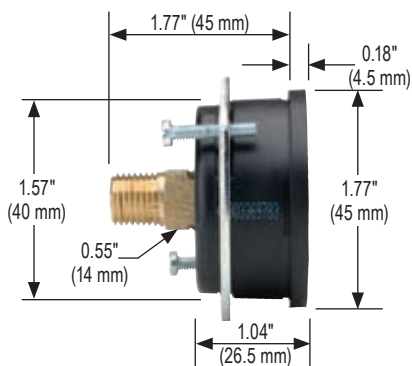
## 20-120 Chrome Bezel With U-Clamp



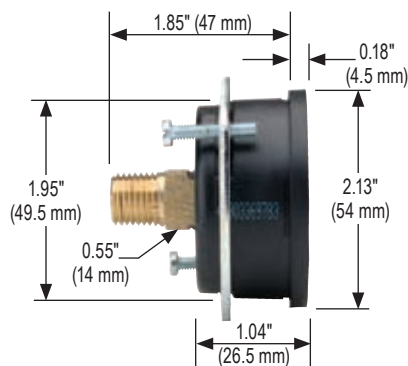
## 25-120 Chrome Bezel With U-Clamp



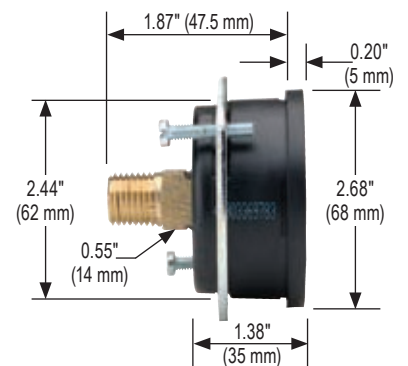
## 15-110 Panel Mount Clamp



## 20-110 Panel Mount Clamp



## 25-110 Panel Mount Clamp



# Low Pressure Diaphragm



## 200 SERIES

- Sensitive capsule-type, non-fillable dry gauge
- Vacuum ranges through 0 psi to 10 psi
- 2-1/2" and 4" gauge sizes
- Black painted Steel, Stainless Steel and impact-resistant ABS case
- Copper alloy and Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range

### APPLICATIONS

- Filter monitoring
- Gas distribution
- HVAC
- Leak detection
- Level indication
- Medical

	SERIES	SPECIFICATIONS
Pressure ranges	200 Series (all)	Extreme low pressure vacuum ranges through 0 psi to 10 psi
Accuracy	25-200, 25-210, 25-224	±1.6% full scale
	25-206, 25-216	±2.5% full scale
	40-200	±1.6% full scale
Temperature ranges*	200 Series (all)	Media -4 °F to 176 °F (-20 °C to 80 °C) Ambient -4 °F to 140 °F (-20 °C to 60 °C)
Measuring element	25-200, 25-210, 25-224, 40-200	Copper alloy diaphragm capsule
Connection	200 Series (all)	1/4" NPT, Brass
Case	25-200, 25-210	Black painted Steel
	25-206, 25-216, 25-224	Black ABS (Acryl Nitril Butadien Styrol) with 25-224 includes zinc-plated Steel panel mount clamp
	40-200	304 Stainless Steel
Bezel	40-200	304 Stainless Steel
Lens	25-200, 25-206, 25-210, 25-216, 25-224	Acrylic
	40-200	Instrument glass
Pointer	200 Series (all)	Black finished Aluminum
Dial	200 Series (all)	Aluminum, white background with black scale. UV resistant.
Movement	25-200, 25-210, 25-224, 40-200	Brass and Nickel-silver with highly polished bearing surfaces
	25-206, 25-216	Cu-Alloy

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.

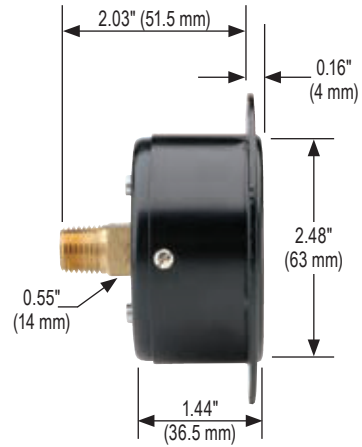
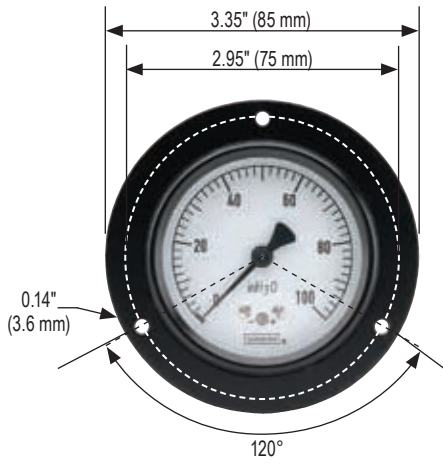


**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

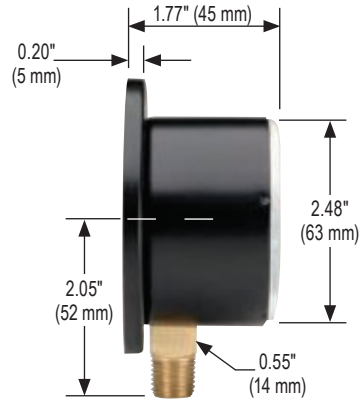
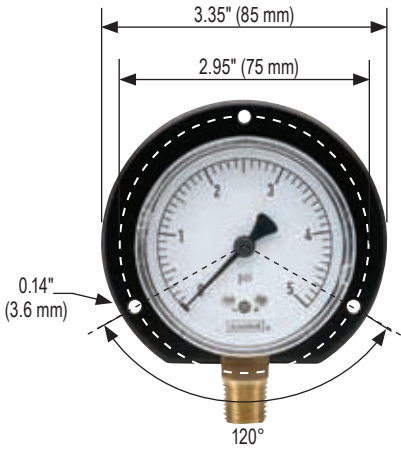


# Dimensions

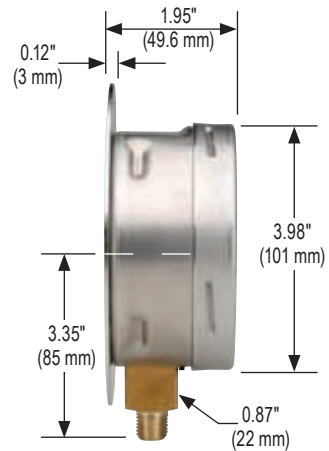
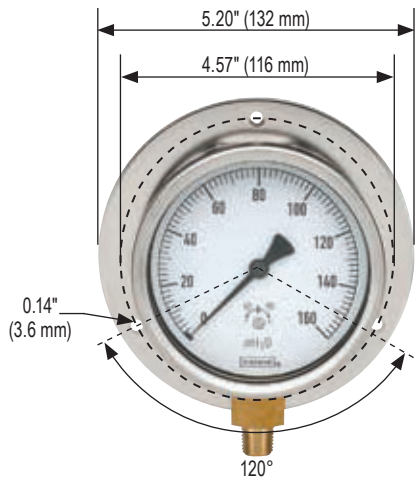
## 25-210 Front Flange



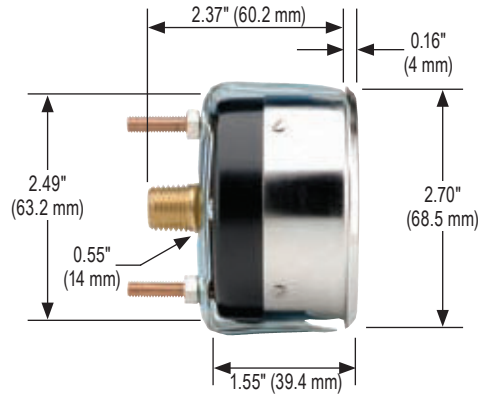
## 25-200 Rear Flange



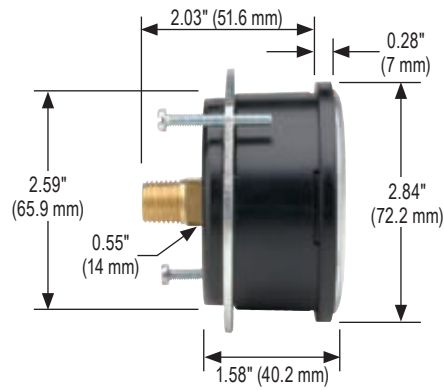
## 40-200 Rear Flange



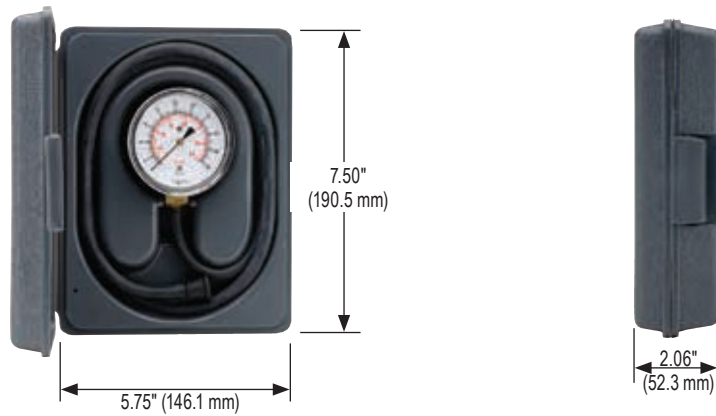
**25-210 Triangular Bezel w/U-Clamp**



**25-224 with Panel Mount Clamp**



**25-234**



# Brass Case, Liquid Filled



## 300 SERIES

- High quality, heavy-duty liquid filled gauge
- Vacuum and compound ranges through 0 psi to 15,000 psi
- 2-1/2" and 4" gauge sizes
- Die cast Brass case with natural Brass finish
- Copper alloy or 316 Stainless Steel and Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range.

### APPLICATIONS

- Automotive
- Construction
- Hydraulics & pneumatics
- Mining
- Stamping & forming presses
- Transportation

	SERIES	SPECIFICATIONS
Pressure ranges	300 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
Accuracy	25-300, 25-310	±1.6% full scale
	40-300, 40-310	± 1% full scale
Temperature ranges*	300 Series (all)	Media -4 °F to 140 °F (-20 °C to 60 °C) Ambient 0 °F to 160 °F (-18 °C to 71 °C) Optional temperature ratings available from -40 °F to 212 °F (-40 °C to 100 °C)
Measuring element	25-300, 25-310 (≤ 600 psi)	Copper alloy "C" tube
	25-300, 25-310 (800 psi to 6,000 psi)	Copper alloy coiled safety tube
	25-300, 25-310 (7,500 psi to 15,000 psi)	316 Stainless Steel coiled safety tube
	40-300, 40-310 (≤ 1,000 psi)	Copper alloy "C" tube
	40-300, 40-310 (15,000 psi)	316 Stainless Steel coiled safety tube
Connection	25-300, 25-310	1/4" NPT die-cast Brass with the case. 7/16" – 20 SAE adjustable type straight thread with FKM O-ring is also available as a stock option on many ranges (-4 SAE).
	40-300, 40-310	1/4" NPT die-cast Brass with the case. 1/2" NPT is available on certain 40-300 ranges as a stock option, and on all other 40-300 and 40-310's as a non-stock option.
Case	300 Series (all)	Die cast Brass (natural Brass finish) with safety relief plug
Cover ring	300 Series (all)	Polished Brass
Lens	300 Series (all)	Acrylic with o-ring seal
Pointer	300 Series (all)	Balanced Aluminum, black finish
Dial	300 Series (all)	Aluminum, white background with black scale. UV resistant.
Movement	300 Series (all)	Brass and Nickel-silver with highly polished bearing surfaces
Fill liquid**	300 Series (all)	Glycerin

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

\*\* See page 51 for gauge fill options.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.



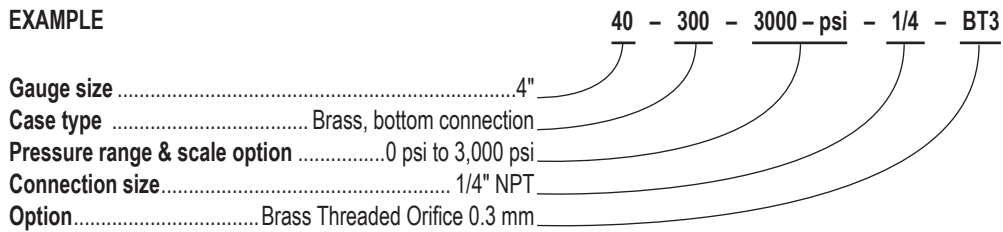
**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION								
<b>GAUGE SIZES</b>	25 2-1/2"		40 4"					
<b>CASE TYPES</b>	300 Brass, bottom connection		310 Brass, back connection					
<b>PRESSURE RANGES</b>	30vac	-30 inHg to 0 psi	30/300	-30 inHg to 0 to 300 psi	300	0 psi to 3,000 psi	3000	0 psi to 3,000 psi
	30/15	-30 inHg to 0 to 15 psi	15	0 psi to 15 psi	400	0 psi to 400 psi	5000	0 psi to 5,000 psi
	30/30	-30 inHg to 0 to 30 psi	30	0 psi to 30 psi	600	0 psi to 600 psi	6000	0 psi to 6,000 psi
	30/60	-30 inHg to 0 to 60 psi	60	0 psi to 60 psi	800	0 psi to 800 psi	7500	0 psi to 7,500 psi
	30/100	-30 inHg to 0 to 100 psi	100	0 psi to 100 psi	1000	0 psi to 1,000 psi	10000	0 psi to 10,000 psi
	30/160	-30 inHg to 0 to 160 psi	160	0 psi to 160 psi	1500	0 psi to 1,500 psi	15000	0 psi to 15,000 psi
	30/200	-30 inHg to 0 to 200 psi	200	0 psi to 200 psi	2000	0 psi to 2,000 psi		
<b>SCALE OPTIONS</b>	psi	psi single scale	psi/kPa	psi/kPa dual scale	psi/kg/cm <sup>2</sup>	psi/kg/cm <sup>2</sup> dual scale	psi/bar	psi/bar dual scale
<b>CONNECTION SIZES</b>	1/4	1/4" NPT	1/2	1/2" NPT	SST	SAE J1926-3.7/16-20 Adjustable		
<b>OPTIONS</b>	CFF	Chrome Front Flange	RF	Rear Flange	GLO	Glass Lens Overlay	ST	Stainless Steel Tagging
	CFFN	Chrome Front Flange w/o holes	CCR	Chrome Cover Ring	SGO	Safety Glass Overlay	BT3	Brass Threaded Orifice 0.3 mm
	BFF	Brass Front Flange	CBU	Chrome Bezel & U-Clamp	AR	Adapter Ring	BT4	Brass Threaded Orifice 0.4 mm
	BLFF	Black Front Flange	MIP	Maximum Indicating Pointer	LM	Laser Marking	BT8	Brass Threaded Orifice 0.8 mm
	SSRF	304SS Rear Flange	LL	Polycarbonate Lens				

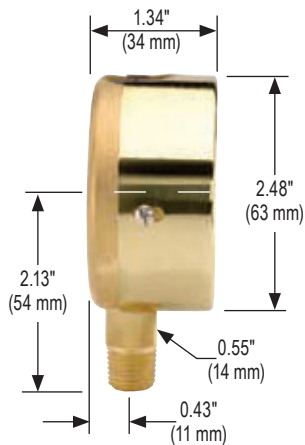
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

NOTE: Refer to 300 Series Options & Accessories chart on page 51 for availability by part number.

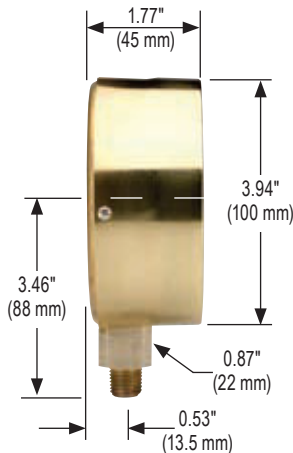
### EXAMPLE



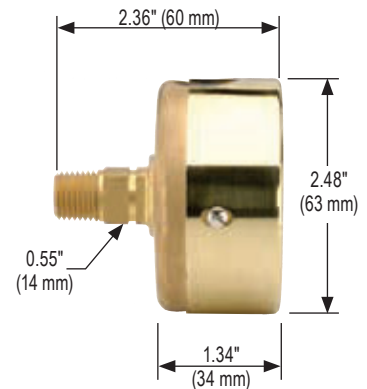
**25-300**



**40-300**



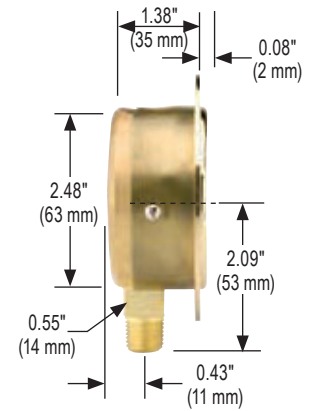
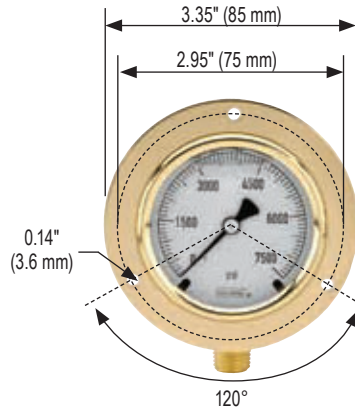
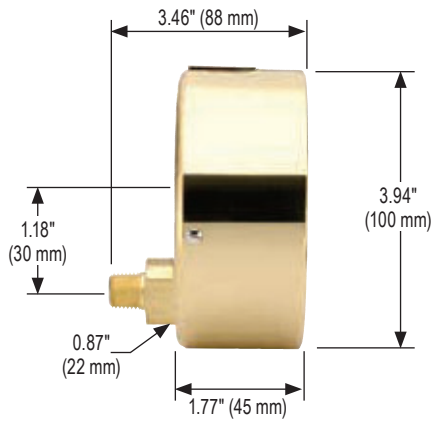
**25-310**



# Dimensions

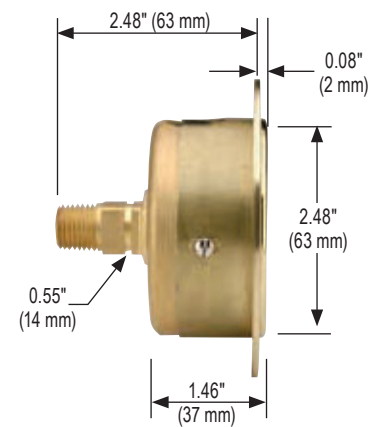
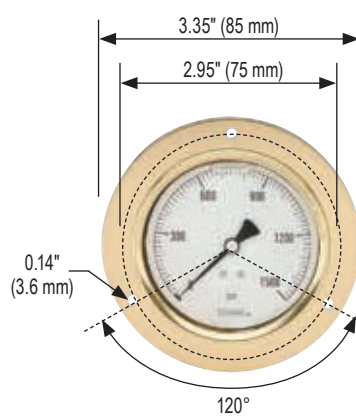
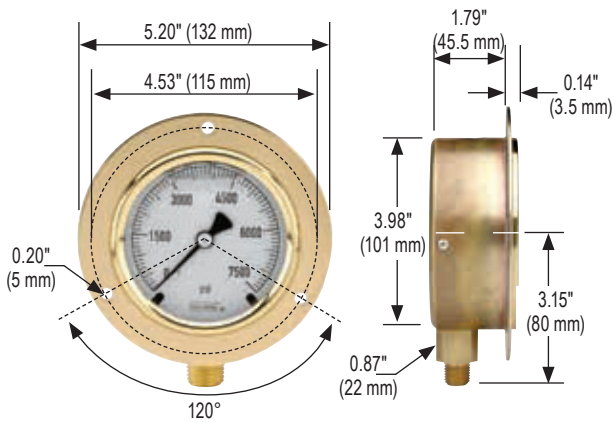
40-310

25-300 Front Flange



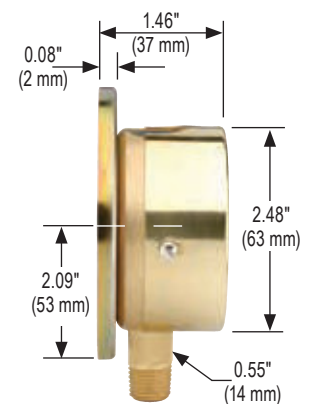
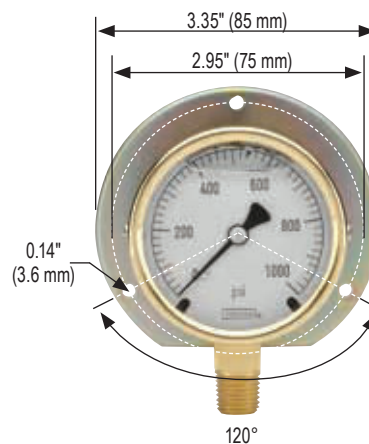
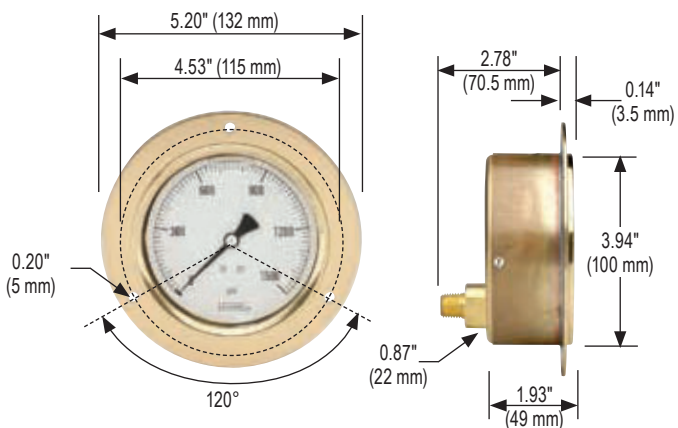
40-300 Front Flange

25-310 Front Flange



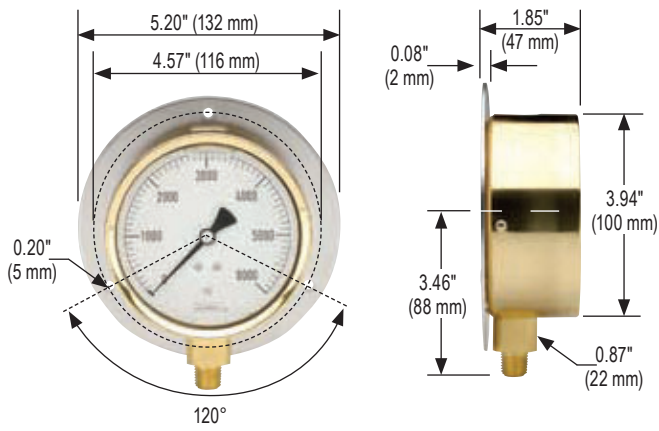
40-310 Front Flange

25-300 Rear Flange

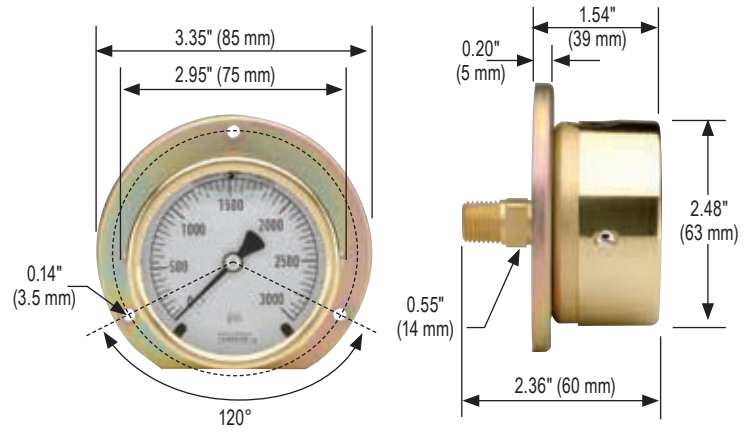




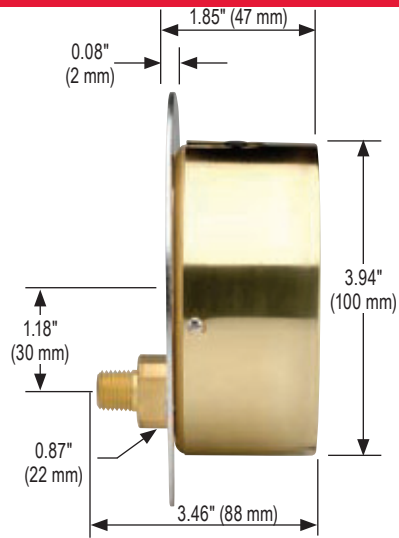
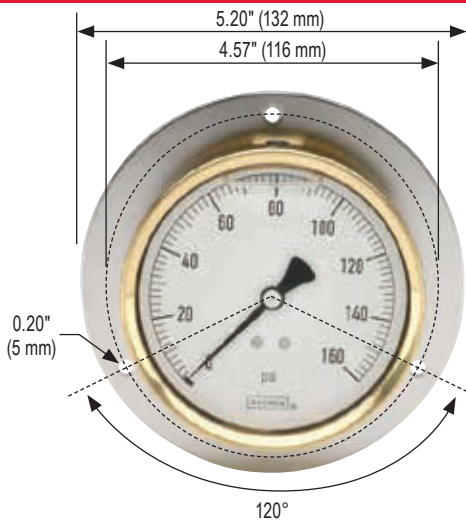
**40-300 Rear Flange**



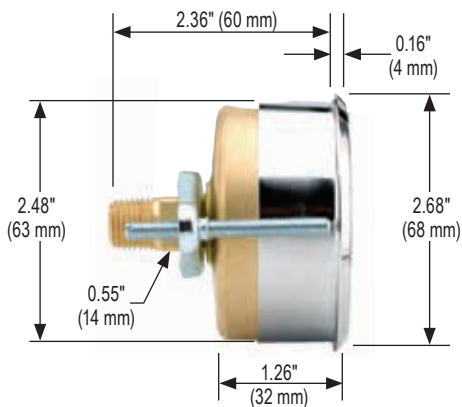
**25-310 Rear Flange**



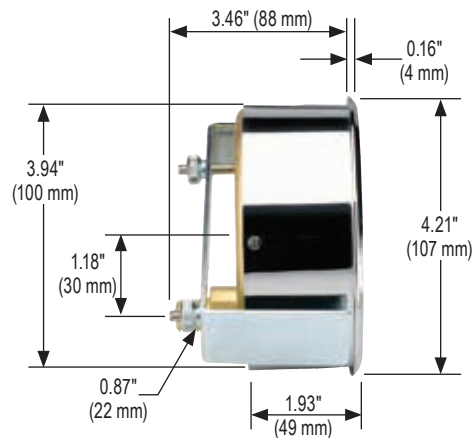
**40-310 Rear Flange**



**25-310 Chrome Triangular Bezel with U-Clamp**



**40-310 Chrome Triangular Bezel with U-Clamp**



# All Stainless Steel, Dry & Liquid Filled



## 400/500 SERIES

- Corrosion-resistant fillable dry or liquid-filled gauge
- Vacuum and compound ranges through 0 psi to 20,000 psi
- 1-1/2", 2-1/2", 4 and 6" gauge sizes
- Stainless Steel case
- 316 Stainless Steel wetted parts
- ECE-R110 Certification for CNG/LNG Pressure Gauge Component (Part number 25-410-300-psi/bar only)

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to:  
 ≤15,000 psi: 90% of the dial range  
 >15,000 psi: 75% of the dial range

### APPLICATIONS

- Chemical processing
- Oil field & offshore
- Paper mills
- Agriculture plants
- Marine
- Water & wastewater

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

\*\* See page 51 for gauge fill options.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.

	SERIES	SPECIFICATIONS
Pressure ranges	400/500 Series (all)	Vacuum and compound ranges through 0 psi to 20,000 psi
Accuracy	15-401, 15-411	±2.5% full scale
	25-400, 25-410, 25-500, 25-510	±1.6% full scale
	40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, 60-510	±1% full scale
Temperature ranges*	15-401, 15-411	Media -40 °F to 212 °F (-40 °C to 100 °C) Ambient -40 °F to 140 °F (-40 °C to 60 °C)
	25-400, 25-410, 40-400, 40-410, 60-400, 60-410	Media -40 °F to 392 °F (-40 °C to 200 °C) Ambient -40 °F to 140 °F (-40 °C to 60 °C)
	500 Series (all)	Media -4 °F to 212 °F (-20 °C to 100 °C) Glycerin fill -40 °F to 212 °F (-40 °C to 100 °C) Special fill Ambient -4 °F to 140 °F (-20 °C to 60 °C) Glycerin fill -40 °F to 140 °F (-40 °C to 60 °C) Special fill
Measuring element	15-401, 15-411, 25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, 60-510 (up to 600 psi)	316 Stainless Steel C-Type Bourdon tube
	25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, 60-510 (greater than 600 psi)	Coiled safety tube
Connection	15-401, 15-411	1/8" NPT, 316 Stainless Steel
	25-400, 25-410, 25-500, 25-510	1/4" NPT, 316 Stainless Steel
Case	40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, 60-510	1/2" NPT, 316 Stainless Steel. 9/16" – 18 high pressure connections are standard on 0 - 30,000 psi and higher
	15-401, 15-411, 40-400, 40-410, 60-400, 60-410, 60-500, 60-510	304 Stainless Steel with safety relief plug
Cover ring	25-400, 25-410, 25-500, 25-510, 40-500, 40-510	Polished 304 Stainless Steel with safety relief plug
	15-401, 15-411, 25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510	Polished 304 Stainless Steel
Lens	60-400, 60-410, 60-500, 60-510	Polished 304 Stainless Steel bayonet ring
	15-401, 15-411, 40-400, 40-410, 40-500, 40-510	Instrument glass
Pointer	25-400, 25-410, 25-500, 25-510	Trogamide
	60-400, 60-410, 60-500, 60-510	Laminated safety glass
	115-401, 15-411	Black finished Aluminum
Dial	25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510	Balanced Aluminum, black finish
	60-400, 60-410, 60-500, 60-510	Balanced micro-adjustable Aluminum, black finish
	15-401, 15-411	Aluminum, white background with black scale. Single scale psi. UV resistant
Movement	25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, 60-510	Aluminum, white background with black scale. UV resistant.
	15-401, 15-411, 25-400, 25-410, 25-500, 25-510	Stainless Steel with highly polished bearing surfaces
	40-400, 40-410, 40-500, 40-510	All Stainless Steel with internal zero stop and highly polished bearing surfaces
Fill liquid**	60-400, 60-410, 60-500, 60-510	Stainless Steel with highly polished bearing surfaces An internal zero stop is standard
	25-500, 25-510, 40-500, 40-510, 60-500, 60-510	Glycerin



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION			
GAUGE SIZE	15 1-1/2"	25 2-1/2"	40 4" *
<b>CASE TYPES</b>	<b>400</b> All SS, dry/fillable, bottom connection <b>401</b> All SS, dry, bottom connection <b>402</b> SS case, solid front, dry, bottom connection	<b>410</b> All SS, dry/fillable, back connection <b>411</b> All SS, dry, back connection <b>500</b> SS case, liquid filled, bottom connection	<b>502</b> SS case, solid front, liquid filled, bottom connection <b>510</b> SS case, liquid filled, back connection
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg to 0 psi *** <b>30/15</b> -30 inHg to 0 psi to 15 psi *** <b>30/30</b> -30 inHg to 0 psi to 30 psi *** <b>30/60</b> -30 inHg to 0 psi to 60 psi *** <b>30/100</b> -30 inHg to 0 psi to 100 psi *** <b>30/160</b> -30 inHg to 0 psi to 160 psi *** <b>30/200</b> -30 inHg to 0 psi to 200 psi *** <b>30/300</b> -30 inHg to 0 psi to 300 psi *** <b>15</b> 0 psi to 15 psi	<b>30</b> 0 psi to 30 psi <b>60</b> 0 psi to 60 psi <b>100</b> 0 psi to 100 psi <b>160</b> 0 psi to 160 psi <b>200</b> 0 psi to 200 psi <b>300</b> 0 psi to 300 psi <b>400</b> 0 psi to 400 psi <b>600</b> 0 psi to 600 psi <b>800</b> 0 psi to 800 psi	<b>1000</b> 0 psi to 1,000 psi <b>1500</b> 0 psi to 1,500 psi <b>2000</b> 0 psi to 2,000 psi <b>3000</b> 0 psi to 3,000 psi <b>5000</b> 0 psi to 5,000 psi <b>6000</b> 0 psi to 6,000 psi <b>10000</b> 0 psi to 10,000 psi <b>15000</b> 0 psi to 15,000 psi <b>20000</b> 0 psi to 20,000 psi **
<b>SCALE OPTIONS</b>	<b>psi</b> psi single scale <b>psi/kPa</b> psi/kPa dual scale	<b>psi/kg/cm<sup>2</sup></b> psi/kg/cm <sup>2</sup> dual scale <b>psi/bar</b> psi/bar dual scale	
<b>CONNECTION SIZES</b>	<b>1/8</b> 1/8" NPT <b>1/4</b> 1/4" NPT	<b>1/2</b> 1/2" NPT <b>9/16-18</b> 9/16"-18 UNF 2B high pressure cone	<b>SST</b> SAE J1926-3:7/16-20 Adjustable
<b>OPTIONS</b>	<b>SSFF</b> 304SS Front Flange <b>SSRF</b> 304SS Rear Flange <b>SSBU</b> Stainless Steel Bezel & U-Clamp <b>SPMC</b> 304SS Panel Mount Clamp <b>PMC</b> Steel Panel Mount Clamp	<b>SSFR</b> 304SS Flange Ring <b>AP</b> Adjustable Pointer <b>SG</b> Safety Glass Lens <b>MIP</b> Maximum Indicating Pointer <b>SP</b> Red Set Pointer	<b>LM</b> Laser Marking <b>ST</b> Stainless Steel Tagging <b>ST5</b> Stainless Steel Threaded Orifice 0.5 mm <b>ST8</b> Stainless Steel Threaded Orifice 0.8 mm

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

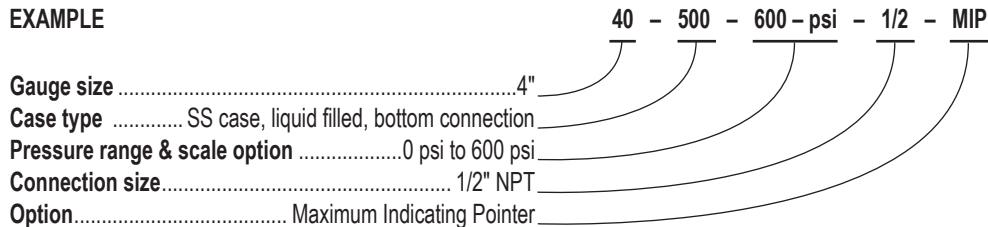
**NOTE:** Refer to 400/500 Series options & Accessories chart on page 52 for availability by part number.

\* On 40-400, 40-410, 40-500, 40-510, 60-400, 60-410, 60-500, and 60-510 models with 20,000 psi, the accuracy is ±1.5% or 1.6%

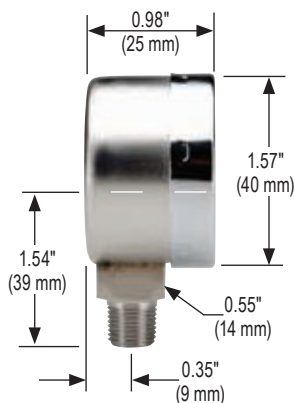
\*\* 4" model only available with solid front case types

\*\*\* Ammonia gauges are available in these ranges. To order, add " – AMMONIA" at the end of the part number.

**EXAMPLE**



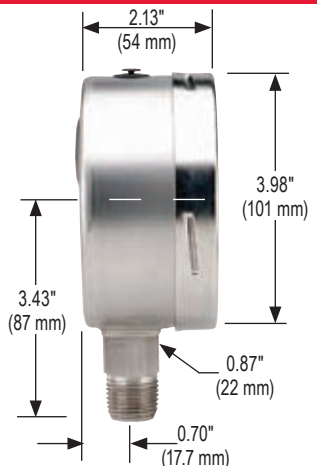
**15-401**



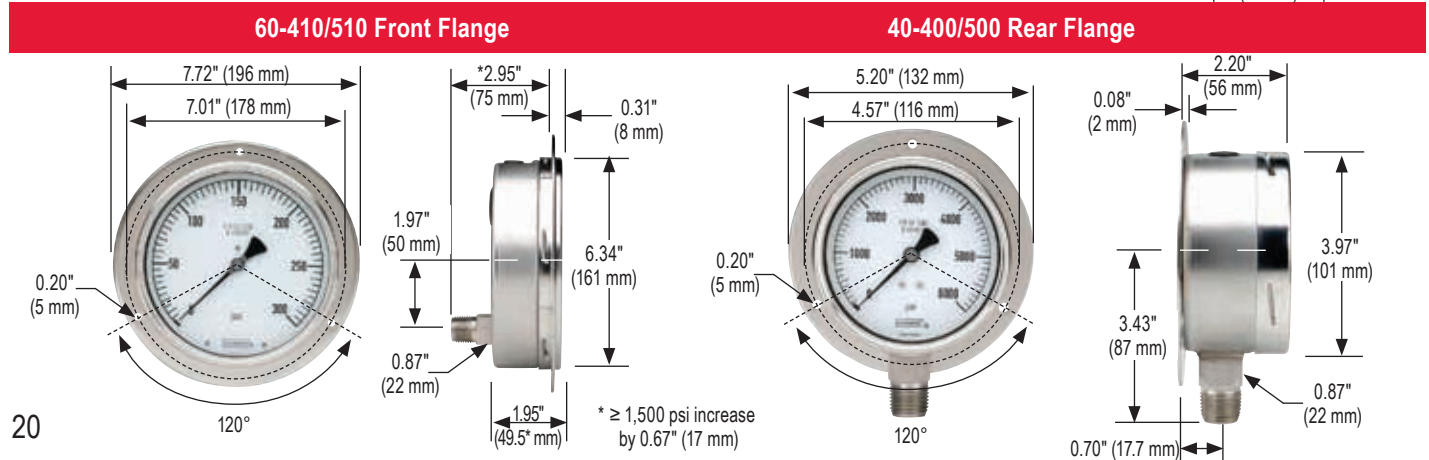
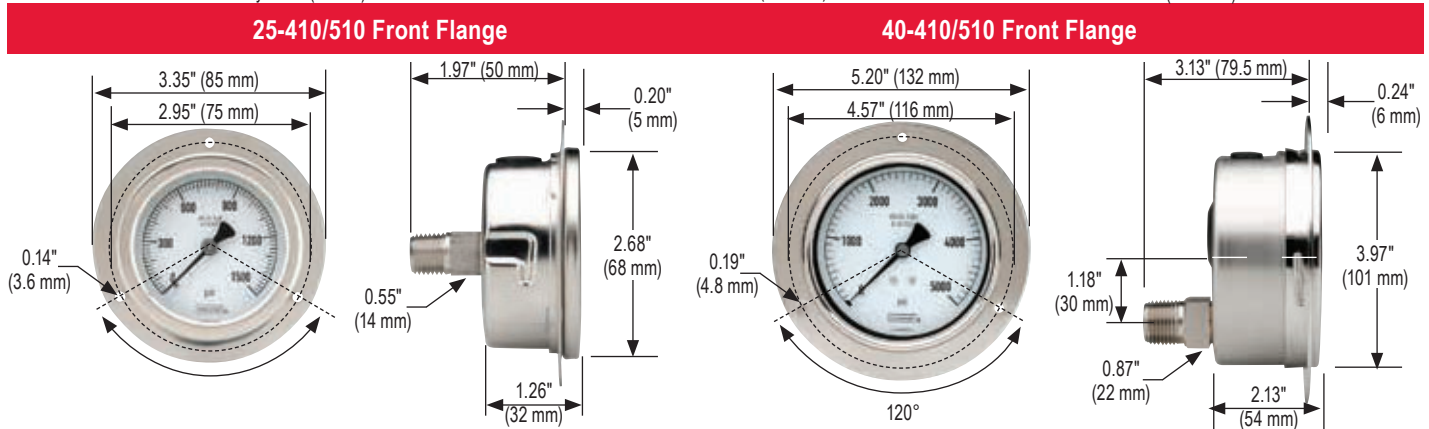
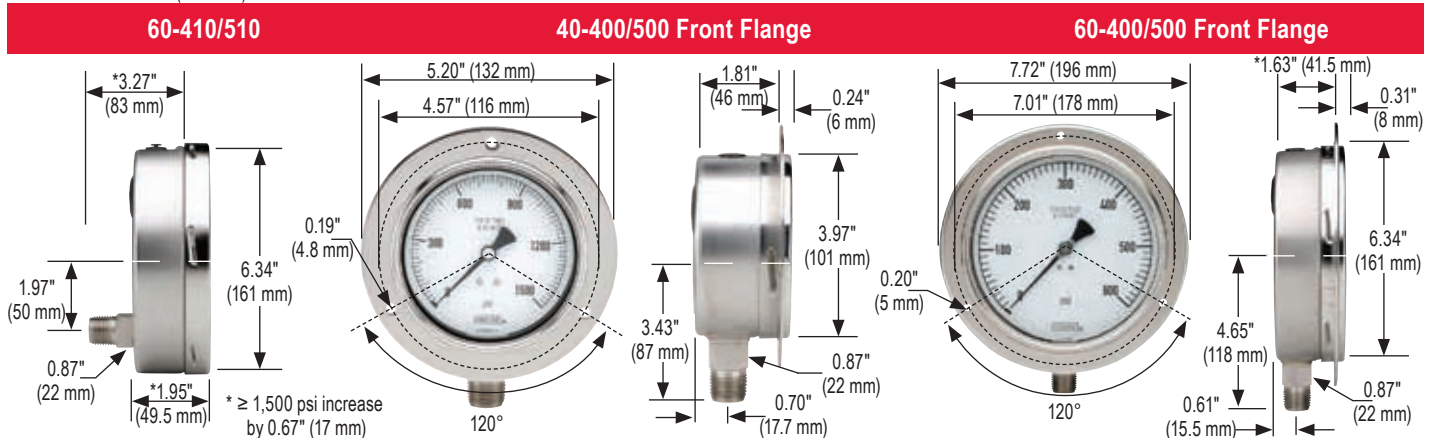
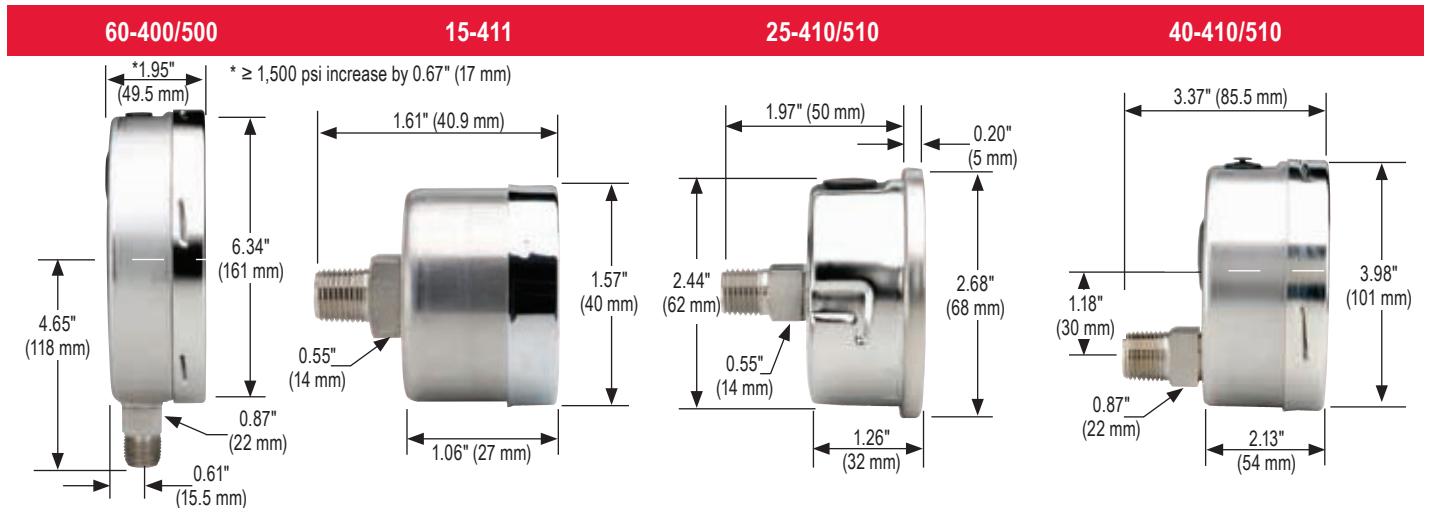
**25-400/500**



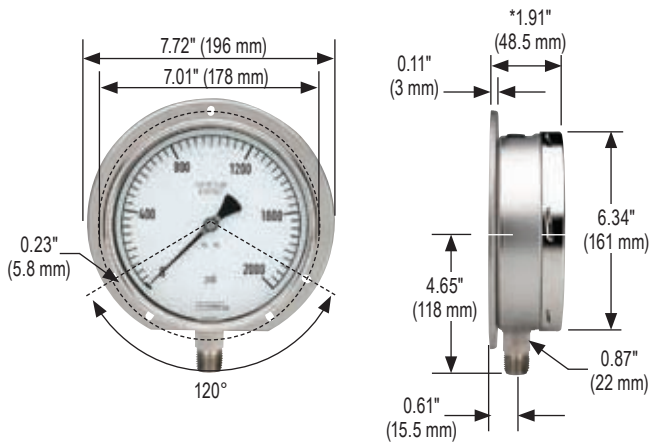
**40-400/500**



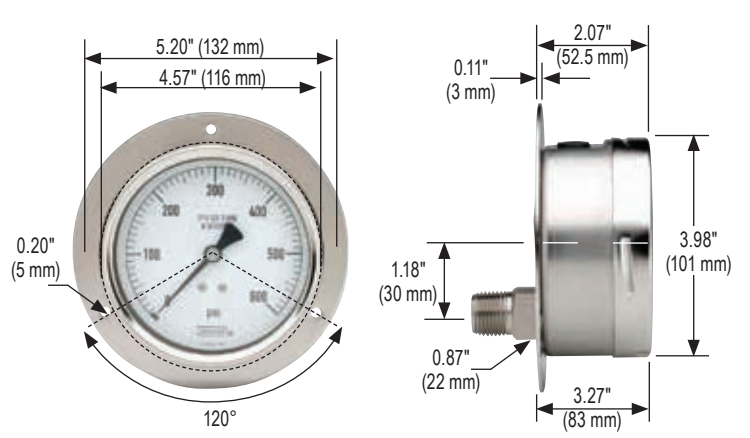
# Dimensions



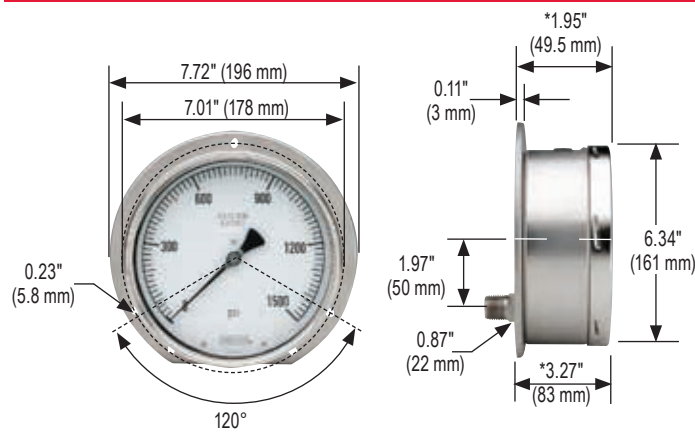
## 60-400/500 Rear Flange



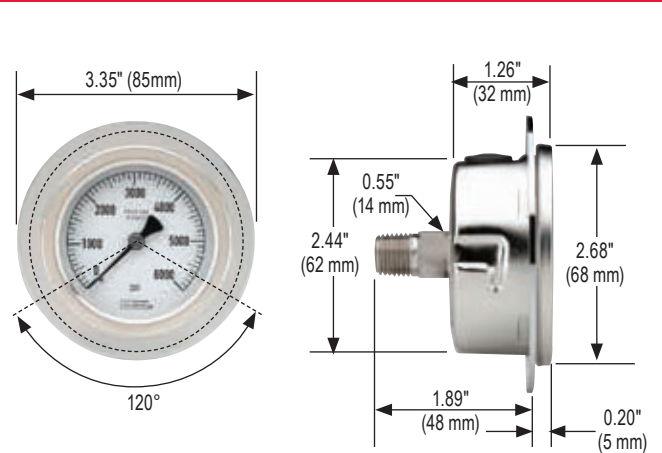
## 40-410/510 Rear Flange



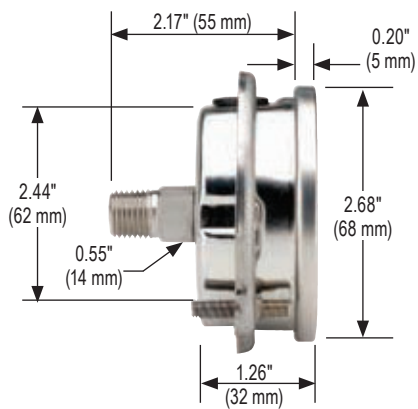
## 60-410/510 Rear Flange



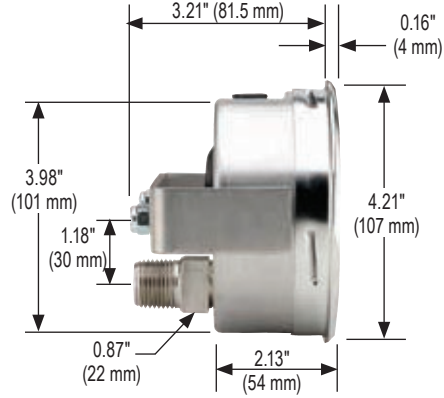
## 25-410/510 Flange Ring



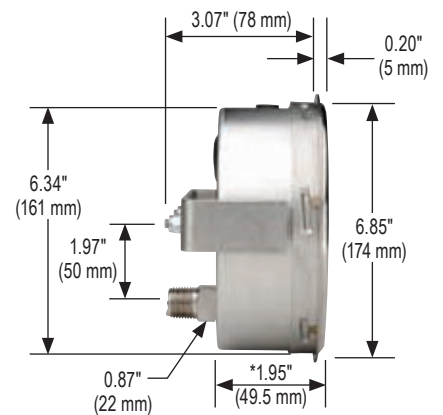
## 25-410/510 Panel Mount Clamp



## 40-410/510 SS Narrow Bezel w/U-Clamp



## 60-410/510 SS Narrow Bezel w/U-Clamp



\* Dimension will be 0.67" (17 mm) for pressure ranges above 1,500 psi.

# All Stainless Steel, Dry & Liquid Filled, Extreme High Pressure

## 402/502 SERIES



- Corrosion-resistant dry or liquid-filled gauge for high pressure applications
- Ranges from 0 psi to 30,000 psi through 0 psi to 85,000 psi
- 4" and 6" gauge sizes
- Solid front design with a blow out back in accordance to EN 837, S3 Safety Pattern
- Stainless Steel case
- NiFe alloy/316L Stainless Steel wetted parts
- DIN 16001 compliant

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 65% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 75% of the dial range

### APPLICATIONS

- Pumps & compressors
- High pressure processing
- Test equipment & systems
- Water jet cutting

	SERIES	SPECIFICATIONS
Pressure ranges	402, 412 & 500 Series	0 psi to 30,000 psi through 0 psi to 85,000 psi
Accuracy	≤40,000 psi	±1.6% full scale (optional 1% increased accuracy)
	≥50,000 psi	±1% full scale (85,000 psi is ±1.6% accuracy)
Temperature ranges*	402 & 412 Series	Media -40 °F to 392 °F (-40 °C to 200 °C) Ambient -40 °F to 140 °F (-40 °C to 60 °C)
	502 Series	Media -4 °F to 212 °F (-20 °C to 100 °C) Glycerin fill Ambient -4 °F to 140 °F (-20 °C to 60 °C) Glycerin fill
Measuring element	402/502 Series (all)	NiFe alloy
Connection	402/502 Series (all)	316L Stainless Steel
Case	402/502 Series (all)	Stainless Steel, solid front with blowout back
Cover ring	402/502 Series (all)	Stainless Steel bayonet ring
Lens	402/502 Series (all)	Laminated safety glass
Pointer	402/502 Series (all)	Black finished Aluminum
Dial	402/502 Series (all)	Aluminum, white background with black scale. UV resistant.
Movement	402/502 Series (all)	Stainless Steel with highly polished bearing surfaces
Fill liquids	502 Series (Bottom connected only)	Glycerin

\* For every 68 °F (20 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.



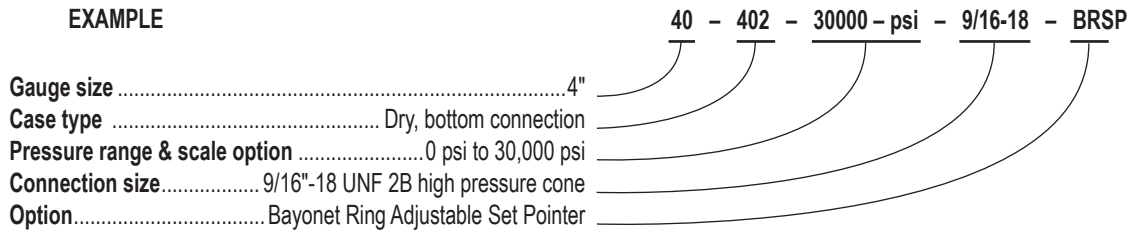
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION			
<b>GAUGE SIZE</b>	40 4"	60 6" *	
<b>CASE TYPES</b>	402 Dry, bottom connection	412 Dry, lower back connection	502 Liquid filled, bottom connection
<b>PRESSURE RANGES</b>	30000 0 psi to 30,000 psi 40000 0 psi to 40,000 psi	50000 0 psi to 50,000 psi 60000 0 psi to 60,000 psi	75000 0 psi to 75,000 psi 85000 0 psi to 85,000 psi **
<b>SCALE OPTIONS</b>	psi psi single scale psi/kPa psi/kPa dual scale	psi/kg/cm <sup>2</sup> psi/kg/cm <sup>2</sup> dual scale psi/bar psi/bar dual scale	
<b>CONNECTION SIZES ***</b>	9/16-18 9/16"-18 UNF 2B high pressure cone - Female		9/16-HPM 9/16"-18 UNF 2A left hand thread - Male
<b>OPTIONS</b>	BRSP Bayonet Ring Adjustable Set Pointer LM Laser Marking MIP Maximum Indicating Pointer	SL Silicone Fill SP Red Set Pointer SSFF 304SS Front Flange	ST Stainless Steel Tagging IA Increased Accuracy

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

- \* Bottom connection only.
- \*\* Only available on 60-402 and 60-502 models, with ±1.6% accuracy.
- \*\*\* Additional process connection sizes available, consult factory.

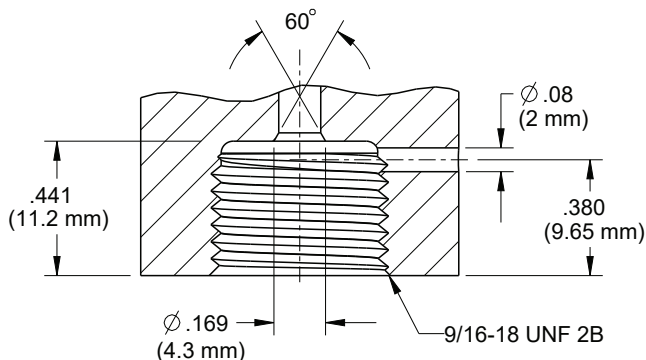
### EXAMPLE



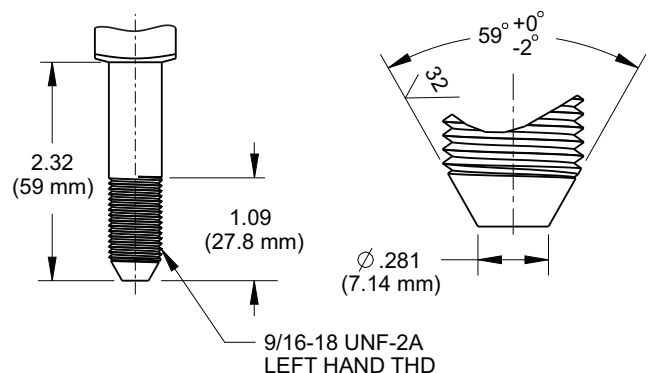
### 9/16"-18 UNF 2B High Pressure Cone Connection

### 9/16"-18 UNF 2A left hand thread

#### Female

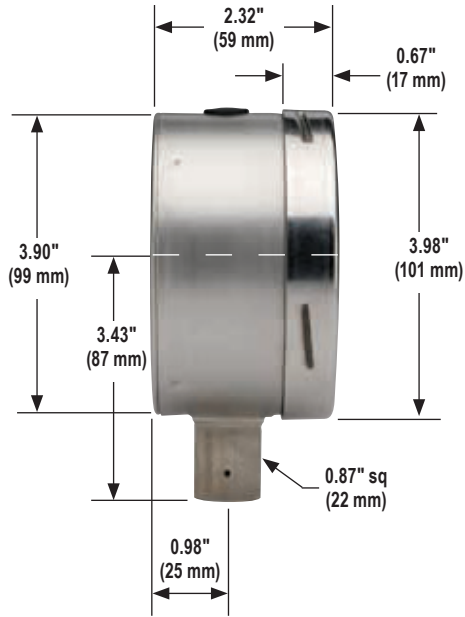


#### Male

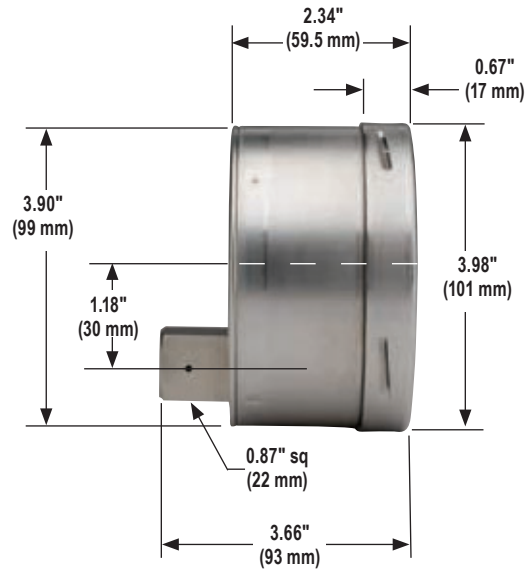


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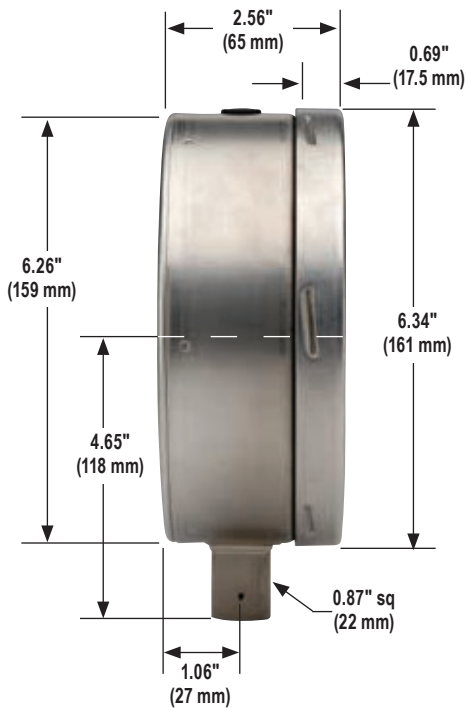
40-402/502



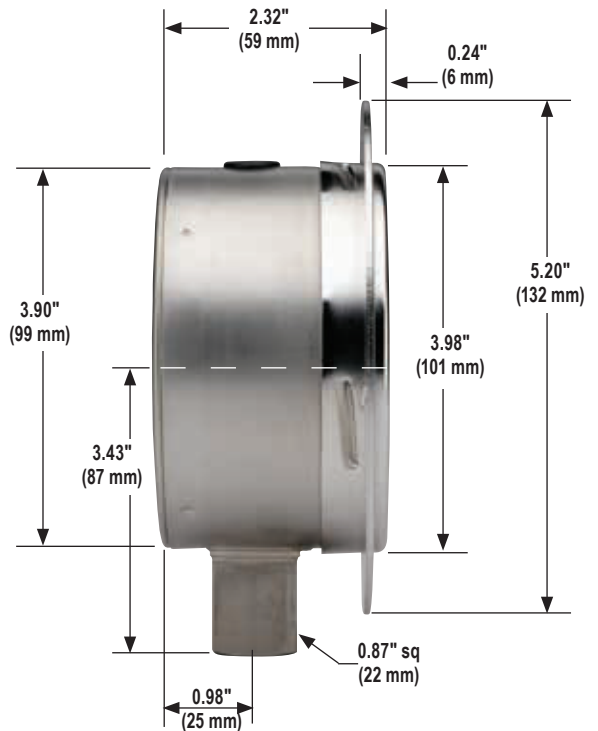
40-412



60-402/502

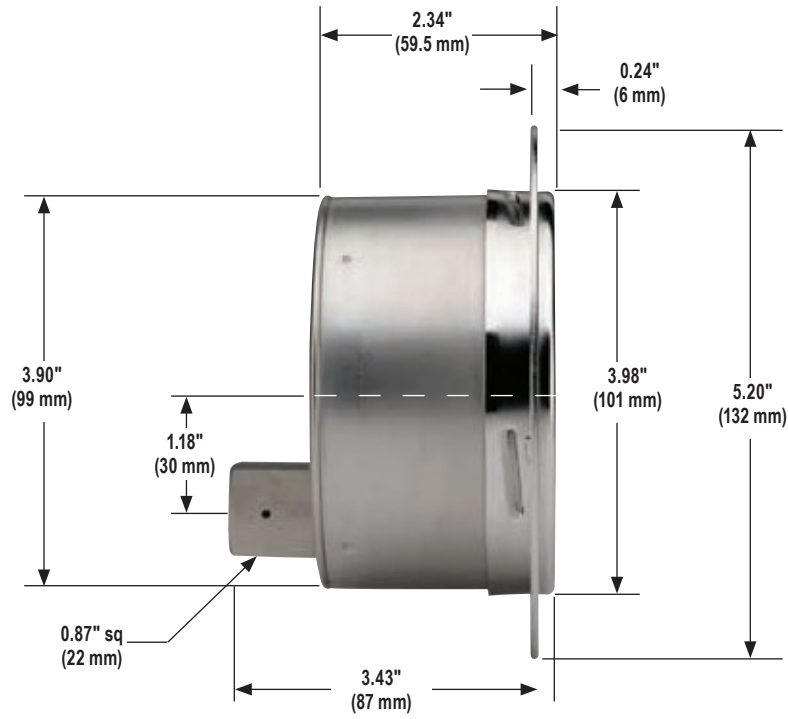


40-402/502 Front Flange

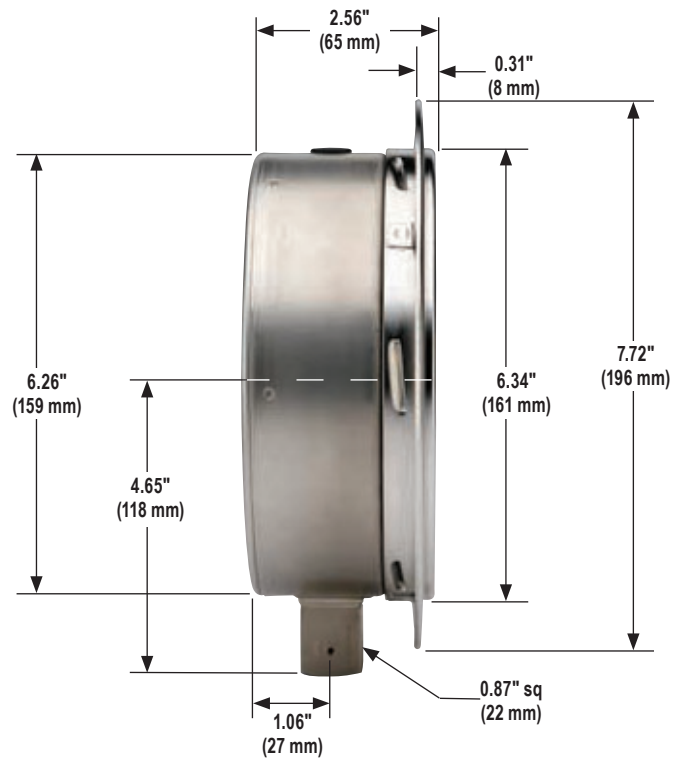




## 40-412 Front Flange



## 60-402/502 Front Flange



# Process



## 600/700 SERIES

- Turret style dry or liquid-filled gauge
- Vacuum and compound ranges through 0 psi to 15,000 psi
- 4-1/2" gauge sizes
- Black Polypropylene safety case with solid front and blow-out back
- Phosphor bronze, 316 stainless steel and brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range

### APPLICATIONS

- Injection molding machines
- Laboratory & test equipment
- Power generation
- Oil field & offshore
- Utilities
- Water & wastewater

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

\*\* See page 51 for gauge fill options.

For details on accuracy/standard dial configuration and dial layouts, see pages 52-56.

	SERIES	SPECIFICATIONS
Pressure ranges	600/700 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
Accuracy	600/700 Series (all)	±0.5% full scale
Temperature ranges*	45-640	Media -4 °F to 150 °F (-20 °C to 65 °C) Ambient -40 °F to 150 °F (-40 °C to 65 °C)
	45-740	Media -40 °F to 212 °F (-40 °C to 100 °C) 500 °F (260 °C) Maximum for short term/intermittent Ambient -40 °F to 150 °F (-40 °C to 65 °C)
	45-660	Media -4 °F to 150 °F (-20 °C to 65 °C) Glycerin fill -40 °F to 150 °F (-40 °C to 65 °C) Special fill Ambient -4 °F to 150 °F (-20 °C to 65 °C) Glycerin fill -40 °F to 150 °F (-40 °C to 65 °C) Special fill
	45-760	Media -4 °F to 212 °F (-20 °C to 100 °C) Glycerin fill -40 °F to 212 °F (-40 °C to 100 °C) Special fill 250 °F (130 °C) Maximum for short term/intermittent Ambient -4 °F to 150 °F (-20 °C to 65 °C) Glycerin fill -40 °F to 150 °F (-40 °C to 65 °C) Special fill
Case	600/700 Series (all)	Turret style black Polypropylene case. Solid front, safety case with blow-out back
Bayonet ring	600/700 Series (all)	Threaded black PBT
Lens	600/700 Series (all)	Acrylic
Measuring Element	45-640, 45-660 (≤ 600 psi)	Copper alloy C-Type Bourdon tube
	45-740, 45-760 (≤ 600 psi)	316 stainless steel C-Type Bourdon tube
	600/700 Series (all) (>600 psi)	316 stainless steel coiled safety Bourdon tube
Connection	45-640, 45-660	1/4" NPT, brass
	45-740, 45-760	1/4" NPT or 1/2" NPT, 316 stainless steel
Movement	45-640, 45-660	Brass and nickel-silver with highly polished bearing surfaces. An internal zero stop is standard.
	45-740, 45-760	Stainless steel with highly polished bearing surfaces. An internal zero stop is standard.
Pointer	600/700 Series (all)	Balanced micro-adjustable aluminum, black finish
Dial	600/700 Series (all)	Aluminum, white background with black scale. UV resistant.
Fill liquid **	45-660, 45-760	Glycerin

NOSHOK 600 Series Gauges:



**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

NOSHOK 700 Series Gauges:



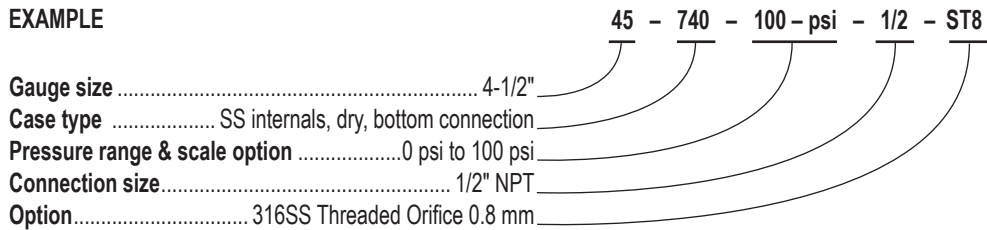
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION						
<b>GAUGE SIZES</b>	45 4-1/2"					
<b>CASE TYPES</b>	640	Brass, dry, bottom connection	660	Brass, liquid filled, bottom connection		
	740	SS, dry, bottom connection	760	SS, liquid filled, bottom connection		
<b>PRESSURE RANGES</b>	30vac	-30 inHg to 0 psi	30/300	-30 inHg to 0 to 300 psi	300 0 psi to 300 psi	
	30/15	-30 inHg to 0 to 15 psi	15	0 psi to 15 psi	400 0 psi to 400 psi	
	30/30	-30 inHg to 0 to 30 psi	30	0 psi to 30 psi	600 0 psi to 600 psi	
	30/60	-30 inHg to 0 to 60 psi	60	0 psi to 60 psi	800 0 psi to 800 psi	
	30/100	-30 inHg to 0 to 100 psi	100	0 psi to 100 psi	1000 0 psi to 1,000 psi	
	30/160	-30 inHg to 0 to 160 psi	160	0 psi to 160 psi	1500 0 psi to 1,500 psi	
	30/200	-30 inHg to 0 to 200 psi	200	0 psi to 200 psi	2000 0 psi to 2,000 psi	
<b>SCALE OPTIONS</b>	psi	psi single scale	psi/kg/cm <sup>2</sup>	psi/kg/cm <sup>2</sup> dual scale	psi/bar psi/bar dual scale	
<b>CONNECTION SIZES</b>	1/4	1/4" NPT	1/2	1/2" NPT		
<b>OPTIONS</b>	SG	Safety Glass Lens	CPMR	Uninstalled Chrome Panel Mount Ring	BP3	Brass Press Fit Orifice 0.3 mm
	GL	Glass Lens	OS	Overload Stop	BT3	Brass Threaded Orifice 0.3 mm
	MIP	Maximum Indicating Pointer	LM	Laser Marking	ST8	316SS Threaded Orifice 0.8 mm
	BPMR	Uninstalled Black Panel Mount Ring	ST	Stainless Steel Tagging		

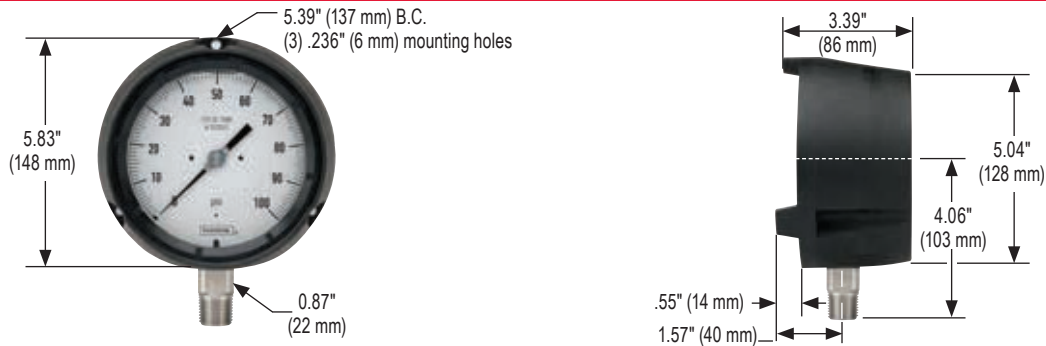
**Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.**

**NOTE:** Refer to 600/700 Series Options & Accessories chart on page 52 for availability by part number.

**EXAMPLE**



### 45-640/660 & 45-740/760



### 45-640/660 & 45-740/760 Panel Mount Ring



# Precision Test



## 800 SERIES

- Highly accurate dry gauge
- Vacuum and compound ranges through 0 psi to 6,000 psi
- 6" gauge size
- Stainless Steel case
- Beryllium copper, 316 Stainless Steel, and Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 100% of the dial range.

**NOTE:** 800 Series Precision Test gauges are not intended for dynamic applications.

### APPLICATIONS

- Aerospace equipment
- Gauge repair facilities
- Laboratory & test equipment
- Precision measurement

	SERIES	SPECIFICATIONS
Pressure ranges	60-800	Vacuum and compound ranges through 0 psi to 6,000 psi
Accuracy	60-800	±0.25% full scale
Temperature ranges*	60-800	Media -40 °F to 180 °F (-40 °C to 80 °C) Ambient -40 °F to 140 °F (-40 °C to 60 °C)
Measuring element	60-800	Beryllium copper Bourdon tube to 1,000 psi 316 SS Bourdon tube 1,500 psi to 6,000 psi
Connection	60-800	1/4" NPT bottom connection, Brass
Case	60-800	304 Stainless Steel
Cover ring	60-800	304 Stainless Steel
Lens	60-800	Instrument glass
Pointer	60-800	Adjustable knife-edge pointer
Dial	60-800	Aluminum, white mirrored background with black scale.
Movement	60-800	Brass with jeweled bearings Nickel-silver pinion gear and shafts

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.



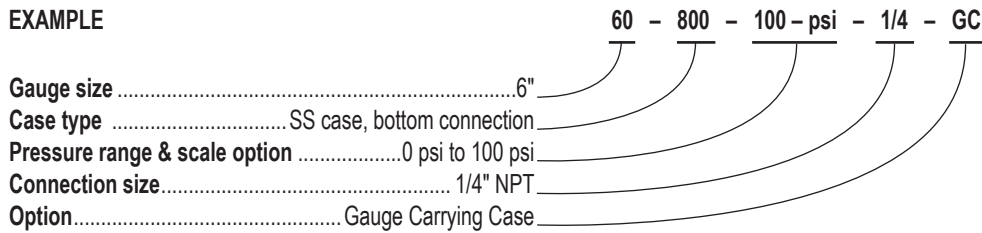
**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION									
<b>GAUGE SIZE</b>	60 6"								
<b>CASE TYPE</b>	800 SS Case, bottom connection								
<b>PRESSURE RANGES</b>	30vac	-30 inHg to 0 psi	30/300	-30 inHg to 0 to 300 psi	300	0 psi to 300 psi	5000	0 psi to 5,000 psi	
	30/15	-30 inHg to 0 to 15 psi	15	0 psi to 15 psi	400	0 psi to 400 psi	6000	0 psi to 6,000 psi	
	30/30	-30 inHg to 0 to 30 psi	30	0 psi to 30 psi	600	0 psi to 600 psi			
	30/60	-30 inHg to 0 to 60 psi	60	0 psi to 60 psi	1000	0 psi to 1,000 psi			
	30/100	-30 inHg to 0 to 100 psi	100	0 psi to 100 psi	1500	0 psi to 1,500 psi			
	30/160	-30 inHg to 0 to 160 psi	160	0 psi to 160 psi	2000	0 psi to 2,000 psi			
	30/200	-30 inHg to 0 to 200 psi	200	0 psi to 200 psi	3000	0 psi to 3,000 psi			
<b>SCALE OPTION</b>	psi psi single scale								
<b>CONNECTION SIZES</b>	1/4	1/4" NPT	1/2	1/2" NPT	SST	SAE J1926-3: 7/16-20 Adjustable			
<b>OPTIONS</b>	SSFF	304SS Front Flange		ST	Stainless Steel Tagging				
	SSRF	304SS Rear Flange		BP3	Brass Press Fit Orifice 0.3 mm				
	GC	Gauge Carrying Case				BT8	Brass Threaded Orifice 0.8 mm		
	LM	Laser Marking							

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

NOTE: Refer to 800 Series Options & Accessories chart on page 52 for availability by part number.

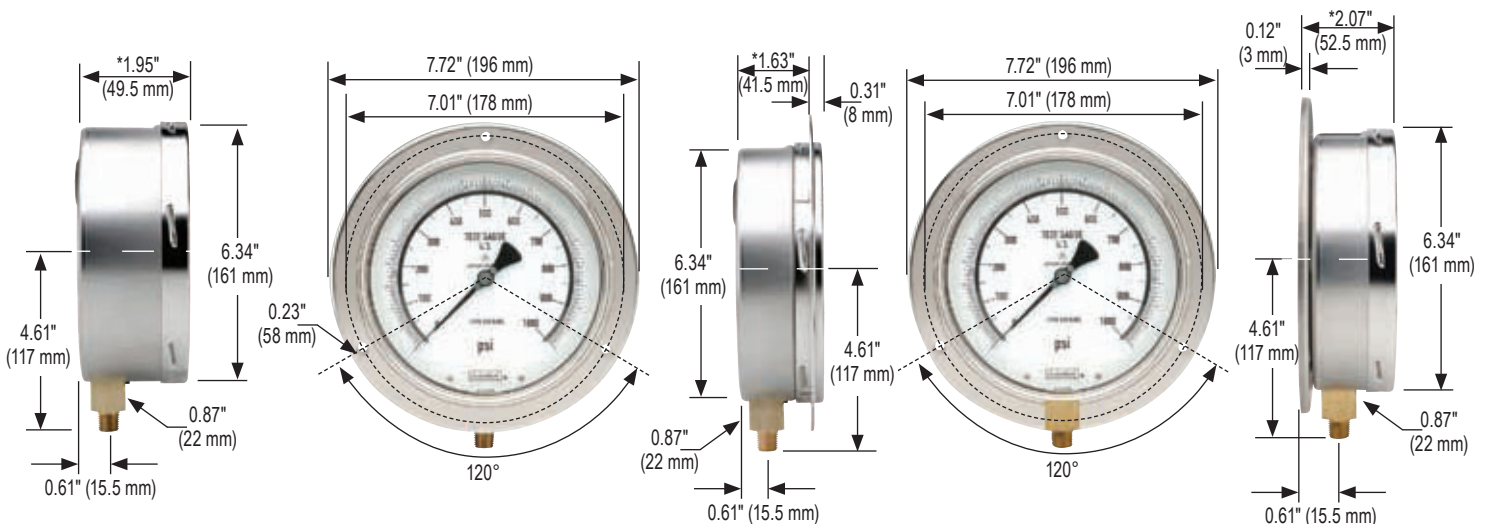
**EXAMPLE**



**60-800\***

**60-800 Front Flange**

**60-800 Rear Flange**



\*For ranges ≤60 psi and ≥1,500 psi, increase by 0.63" (16 mm)

# ABS & Stainless Steel Case, Liquid Filled



## 900 SERIES

- High quality liquid filled gauge
- Vacuum and compound ranges through 0 psi to 15,000 psi
- 1-1/2", 2", 2-1/2" and 4" gauge sizes
- Impact-resistant ABS and Stainless Steel case
- Copper alloy and Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range

### APPLICATIONS

- Automotive
- Construction
- Hydraulics & pneumatics
- Power generation
- Transportation
- Water management

	SERIES	SPECIFICATIONS
Pressure ranges	900 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
Accuracy	15-910	±2.5% full scale
	25-900, 25-910, 25-901, 25-911	±1.6% full scale
	40-901, 40-911	±1% full scale
Temperature ranges*	900 Series (all)	Media -4 °F to 140 °F (-20 °C to 60 °C) Glycerin fill -40 °F to 140 °F (-40 °C to 60 °C) Special fill Ambient -4 °F to 140 °F (-20 °C to 60 °C) Glycerin fill -40 °F to 140 °F (-40 °C to 60 °C) Special fill
Measuring element	900 Series (up to 600 psi)	Copper alloy C-Type Bourdon tube
	900 Series (> 600 psi)	Coiled safety tube
Connection	15-910	1/8" NPT, Brass
	25-900, 25-910, 25-901, 25-911	1/4" NPT or 7/16"-20 adjustable, Brass
	40-901, 40-911	1/4" NPT, Brass 1/2" NPT, Brass
Case	15-910, 25-900, 25-910	ABS with safety relief plug
	25-901, 25-911, 40-901, 40-911	304 Stainless Steel
Bezel	25-901, 25-911, 40-901, 40-911	304 Stainless Steel
Lens	15-910, 25-900, 25-910	Acrylic; ultrasonically welded to the case
	25-901, 25-911, 40-901	Polycarbonate
Pointer	15-910, 25-900, 25-910, 25-901, 25-911	Molded plastic
	40-901, 40-911	Balanced Aluminum, black finish
Dial	15-910, 25-900, 25-910, 25-901, 25-911	Molded plastic, white background with black primary scale & red secondary scale. UV resistant
	40-901, 40-911	Aluminum, white background with black primary scale & red secondary scale. UV resistant.
Movement	15-910, 25-900, 25-910, 25-901, 25-911	Brass and nylon with highly polished bearing surfaces
Fill liquid**	15-910	86.5/13.5 Glycerin:H <sub>2</sub> O

\* For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to ±0.4% additional error.

\*\* See page 51 for gauge fill options.

For details on accuracy/standard dial configuration and dial layouts, see pages 56-61.



**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

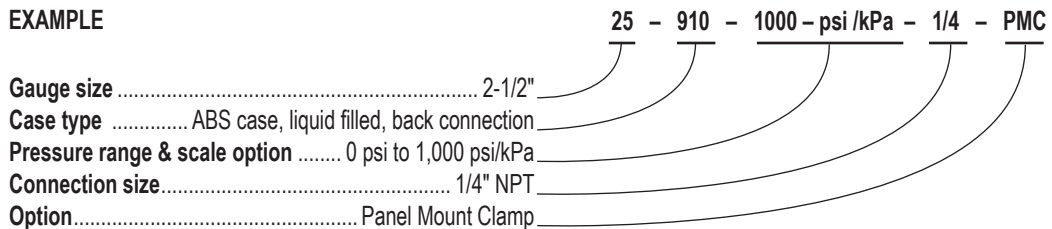
ORDERING INFORMATION					
<b>GAUGE SIZES</b>	<b>15</b> 1-1/2"	<b>20</b> 2"	<b>25</b> 2-1/2"	<b>40</b> 4"	
<b>CASE TYPES</b>	<b>900</b> ABS Case, bottom connection		<b>910</b> ABS Case, back connection		
	<b>901</b> SS Case, bottom connection		<b>911</b> SS Case, back connection		
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg to 0 psi	<b>100</b> 0 psi to 100 psi	<b>5000</b> 0 psi to 5,000 psi	<b>10</b> 0 bar to 10 bar	
	<b>30/15</b> -30 inHg to 0 to 15 psi	<b>160</b> 0 psi to 160 psi	<b>6000</b> 0 psi to 6,000 psi	<b>16</b> 0 bar to 16 bar	
	<b>30/30</b> -30 inHg to 0 to 30 psi	<b>200</b> 0 psi to 200 psi	<b>7500</b> 0 psi to 7,500 psi	<b>25</b> 0 bar to 25 bar	
	<b>30/60</b> -30 inHg to 0 to 60 psi	<b>300</b> 0 psi to 300 psi	<b>10000</b> 0 psi to 10,000 psi	<b>40</b> 0 bar to 40 bar	
	<b>30/100</b> -30 inHg to 0 to 100 psi	<b>400</b> 0 psi to 400 psi	<b>15000</b> 0 psi to 15,000 psi	<b>60</b> 0 bar to 60 bar	
	<b>30/160</b> -30 inHg to 0 to 160 psi	<b>600</b> 0 psi to 600 psi	<b>-1</b> -1 bar to 0 bar	<b>100</b> 0 bar to 100 bar	
	<b>30/200</b> -30 inHg to 0 to 200 psi	<b>800</b> 0 psi to 800 psi	<b>1</b> 0 bar to 1 bar	<b>160</b> 0 bar to 160 bar	
	<b>30/300</b> -30 inHg to 0 to 300 psi	<b>1000</b> 0 psi to 1,000 psi	<b>1.6</b> 0 bar to 1.6 bar	<b>250</b> 0 bar to 250 bar	
	<b>15</b> 0 psi to 15 psi	<b>1500</b> 0 psi to 1,500 psi	<b>2.5</b> 0 bar to 2.5 bar	<b>400</b> 0 bar to 400 bar	
	<b>30</b> 0 psi to 30 psi	<b>2000</b> 0 psi to 2,000 psi	<b>4</b> 0 bar to 4 bar	<b>600</b> 0 bar to 600 bar	
	<b>60</b> 0 psi to 60 psi	<b>3000</b> 0 psi to 3,000 psi	<b>6</b> 0 bar to 6 bar	<b>1000</b> 0 bar to 1,000 bar	
<b>SCALE OPTIONS</b>	<b>psi</b> psi single scale	<b>psi/kg/cm<sup>2</sup></b> psi/kg/cm <sup>2</sup> dual scale	<b>bar/psi</b> bar/psi dual scale	<b>psi/kPa</b> psi/kPa dual scale	
	<b>psi/bar</b> psi/bar dual scale				
<b>CONNECTION SIZES</b>	<b>1/8</b> 1/8" NPT	<b>1/4</b> 1/4" NPT	<b>1/2</b> 1/2" NPT	<b>SST</b> SAE J1926-3:7/16-20 Adjustable *	
<b>OPTIONS</b>	<b>PMC</b> Steel Panel Mount Clamp	<b>AP</b> Adjustable Pointer	<b>SSFF</b> 304SS Front Flange	<b>BP3</b> Brass Press Fit Orifice 0.3 mm	
	<b>SPMC</b> 304SS Panel Mount Clamp	<b>MIP</b> Maximum Indicating Pointer	<b>SSRF</b> 304SS Rear Flange	<b>BT5</b> Brass Threaded Orifice 0.5 mm	
	<b>SSBU</b> Stainless Steel Bezel & U-clamp	<b>SP</b> Red Set Pointer	<b>LM</b> Laser Marking	<b>BT8</b> Brass Threaded Orifice 0.8 mm	
	<b>SSB</b> Stainless Steel Bezel	<b>SG</b> Safety Glass Lens	<b>ST</b> Stainless Steel Tagging		
	<b>SSCR</b> 304SS Cover Ring	<b>BLFF</b> Black Front Flange			

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

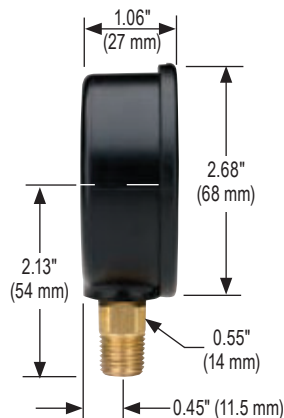
NOTE: Refer to 900 Series Options & Accessories chart on page 53 for availability by series number.

\* Includes FKM o-ring

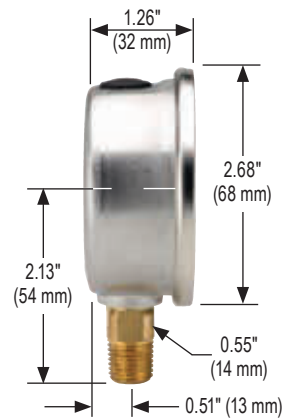
**EXAMPLE**



**25-900**

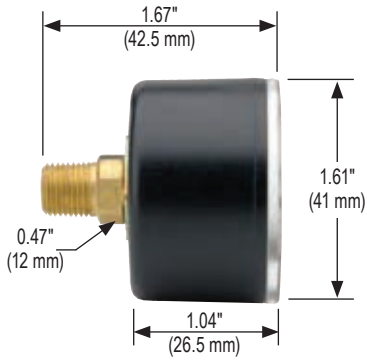


**25-901**

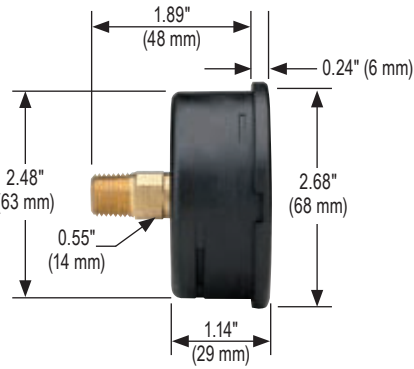


# Dimensions

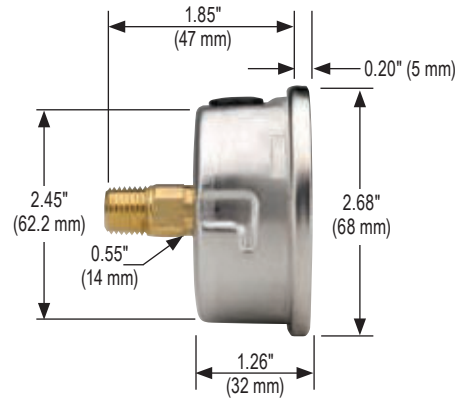
15-910



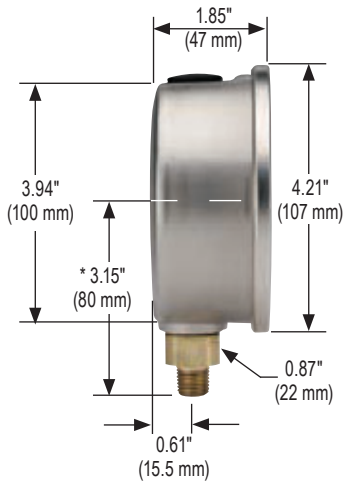
25-910



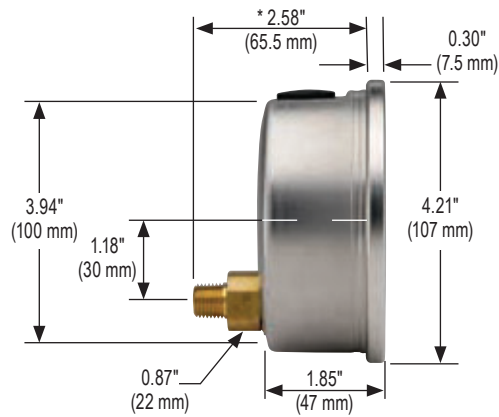
25-911



40-901

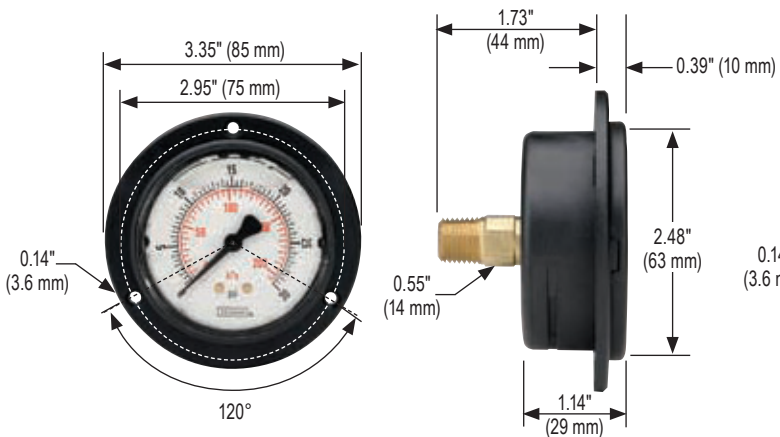


40-911

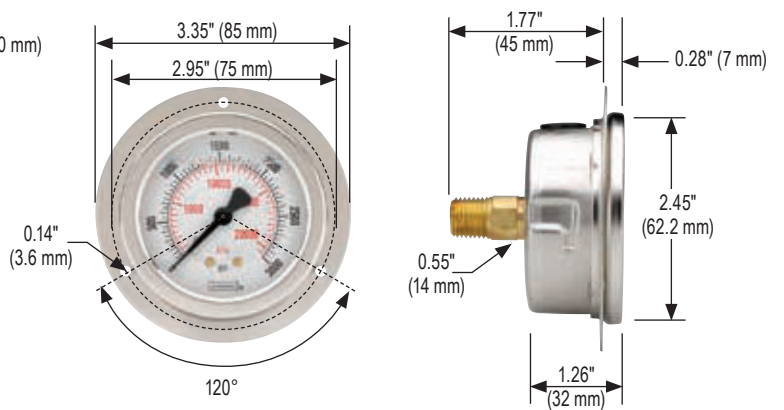


\* 1/4" NPT shown  
Add 6 mm for 1/2" NPT

25-910 Front Flange

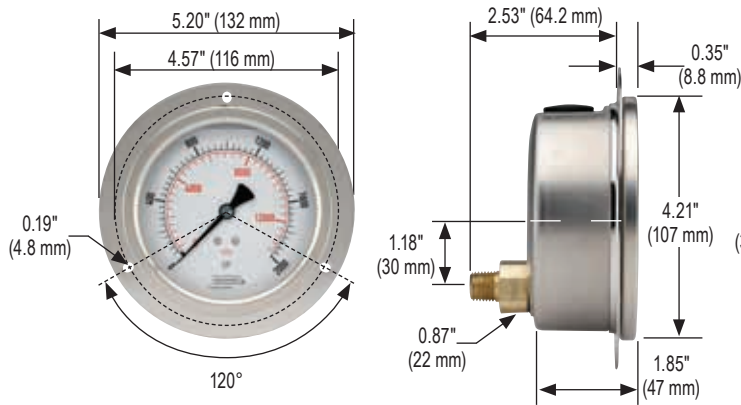


25-911 Front Flange

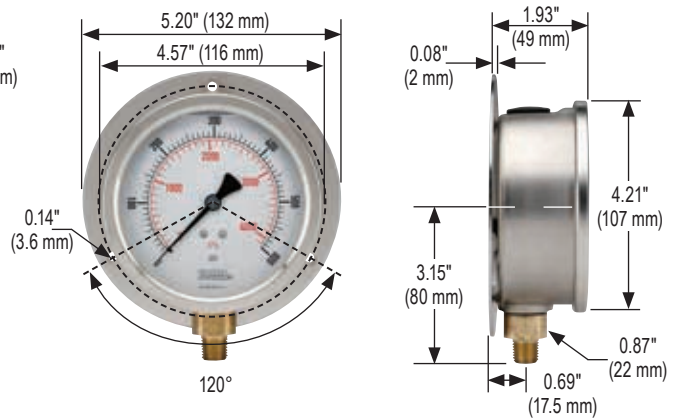




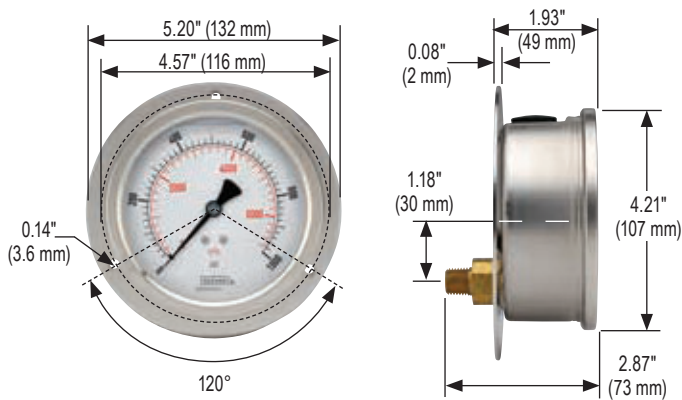
**40-911 Front Flange**



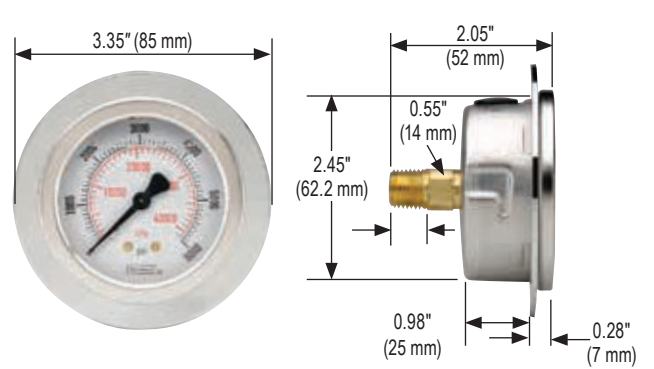
**40-901 Rear Flange**



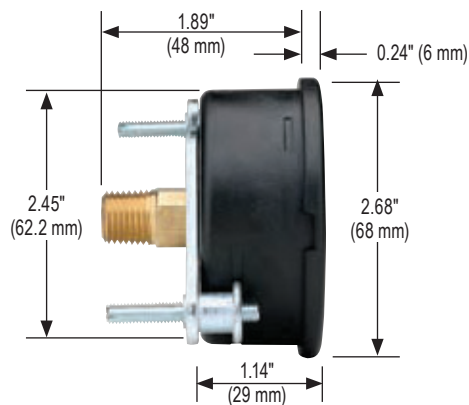
**40-911 Rear Flange**



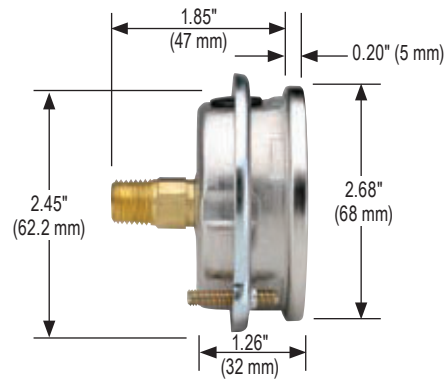
**25-911 Flange Ring**



**25-910 Panel Mount Clamp**



**25-911 Panel Mount Clamp**





## 1000 SERIES

- Simple, rugged, compact differential pressure gauge
- Ranges from 0 psid to 5 psid through 0 psid to 110 psid
- 2-1/2", 4-1/2" and 6" gauge sizes
- Engineered plastic gauge case
- Clear anodized Aluminum and 316 Stainless Steel wetted parts

### APPLICATIONS

- Heat exchangers
- Filter monitoring
- Flow indication
- Level indication

### SPECIFICATIONS

<b>Pressure ranges</b>	0 psid to 5 psid through 0 psid to 110 psid
<b>Max. working static pressure</b>	Aluminum 3,000 psig; Stainless Steel 6,000 psig
<b>Accuracy</b>	±3/2/3% of full scale on rising pressure
<b>Temperature ranges (Including switch option)</b>	Media -40 °F to 200 °F (-40 °C to 93 °C) Ambient -40 °F to 200 °F (-40 °C to 93 °C) Storage -40 °F to 200 °F (-40 °C to 93 °C)
<b>Temperature ranges (4-20 mA transmitter option)</b>	Ambient -20 °F to 150 °F (-29 °C to 66 °C)
<b>Measuring element</b>	316 Stainless Steel and ceramic piston/magnet
<b>O-ring &amp; diaphragm material</b>	NBR
<b>Connection</b>	1/4" NPT female, back connection
<b>Sensor housing material</b>	Clear anodized Aluminum
<b>Case</b>	Engineered plastic
<b>Bezel</b>	Engineered plastic
<b>Lens</b>	Shatter-resistant acrylic
<b>Pointer</b>	Balanced Aluminum, black finish
<b>Dial</b>	Aluminum, white background with black scale
<b>Movement</b>	Magnetic
<b>Optional switch rating</b>	SPDT, 3W, 0.25 Amp, 125 Vac/Vdc (standard) (switch adjustable range of 15-95%). Other options available, consult factory.

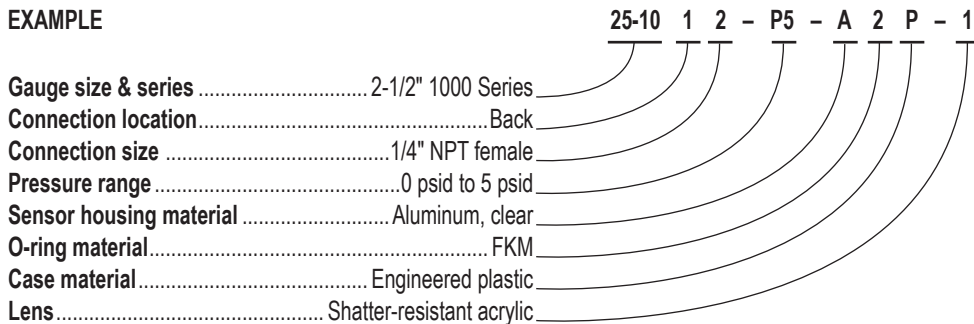


ORDERING INFORMATION			
<b>GAUGE SIZES &amp; SERIES</b>	25 - 10 2-1/2"	45 - 10 4-1/2"	60 - 10 6"
<b>CONNECTION LOCATIONS</b>	0 Bottom	1 Back	2 Side
<b>CONNECTION SIZE</b>	2 1/4" NPT female	9 7/16-20 female (Back only)	
<b>PRESSURE RANGES *</b>	P5 0 psid to 5 psid	P20 0 psid to 20 psid	P50 0 psid to 50 psid      P100 0 psid to 100 psid
	P10 0 psid to 10 psid	P25 0 psid to 25 psid	P60 0 psid to 60 psid      P110 0 psid to 110 psid
	P15 0 psid to 15 psid	P30 0 psid to 30 psid	P75 0 psid to 75 psid
<b>SENSOR HOUSING MATERIALS</b>	A Aluminum (3,000 max working pressure)		S 316L Stainless Steel (6,000 max working pressure)
<b>O-RING &amp; DIAPHRAGM MATERIALS</b>	1 PTFE	3 NBR	
	2 FKM	4 EPDM	
<b>CASE MATERIALS</b>	A Aluminum (4-1/2" only)	P Engineered plastic	
<b>LENSES</b>	1 Shatter-resistant acrylic	2 Safety glass **	3 Maximum indicating pointer (MIP) ***
<b>FILL FLUID (optional)</b>	GY Glycerin	SL Silicone †	
<b>SWITCH OR TRANSMITTER TYPE &amp; HOUSING</b>	1 Single switch, flying leads with grommet wire seal	5 Single switch with Hirschman electrical connection	
	2 Dual switch, flying leads with grommet wire seal	6 Dual switch with Hirschman electrical connection	
	3 Single switch, flying leads with 1/4" female NPT, NEMA 4X	7 4-20 mA transmitter in NEMA 4x IP65 plastic enclosure with terminal strip (1/2" female NPT conduit connection)	
	4 Dual switch, flying leads with 1/4" female NPT, NEMA 4X		
<b>OPTIONS</b>	MH (2) 1/4-20 Mounting Holes	RP Reversed Ports	
	MK5-CS Pipe Mounting Kit, Steel	ST Stainless Steel Tagging	
	MK5-SS Pipe Mounting Kit, Stainless Steel	WMK Wall Mounting Kit	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

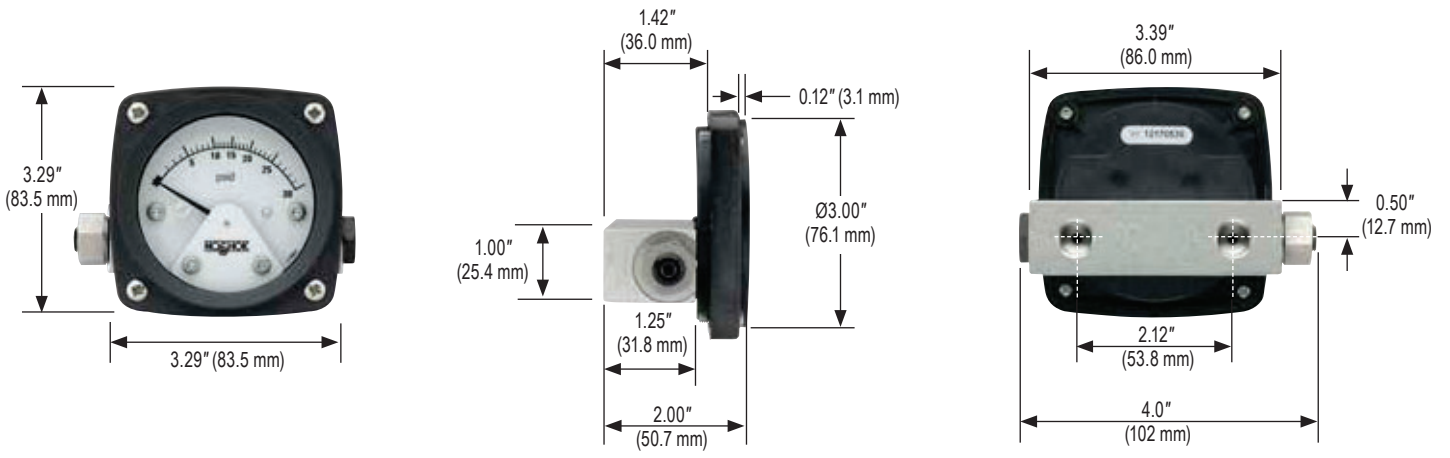
\* Other ranges and scales available on request.  
 \*\* Only available with dry, 4-1/2" gauge size with Aluminum case.  
 \*\*\* Available with dry gauge only, 2-1/2" and 4-1/2" gauge sizes only.  
 † Optional Silicone filling available with 2-1/2" and 6" gauge case sizes, and 4-1/2" gauge case size with Aluminum case and standard shatter-resistant acrylic lens only.

**EXAMPLE**

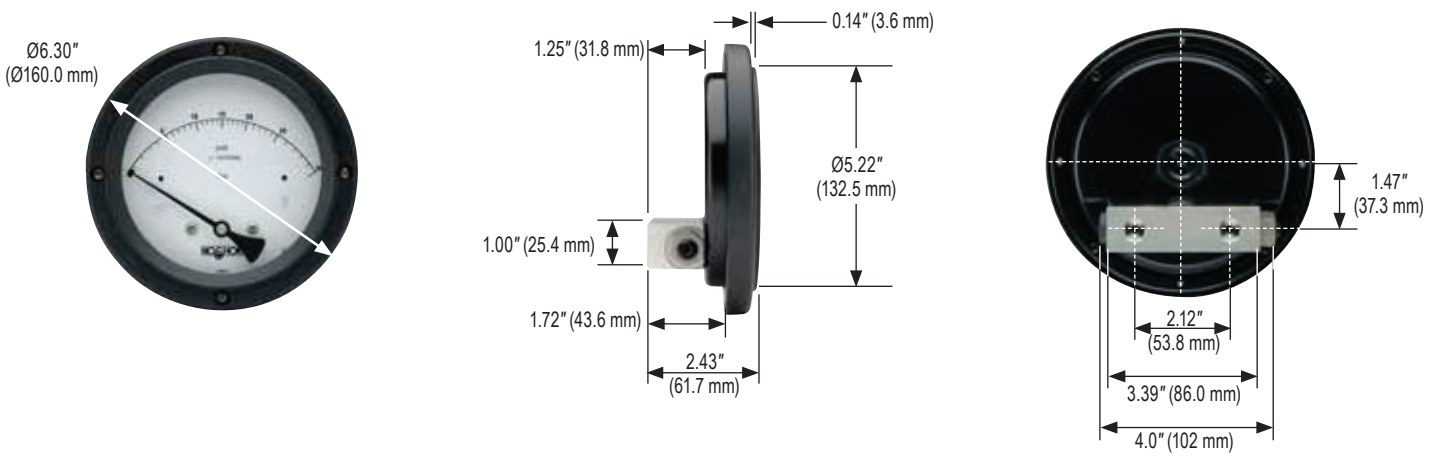


# Dimensions

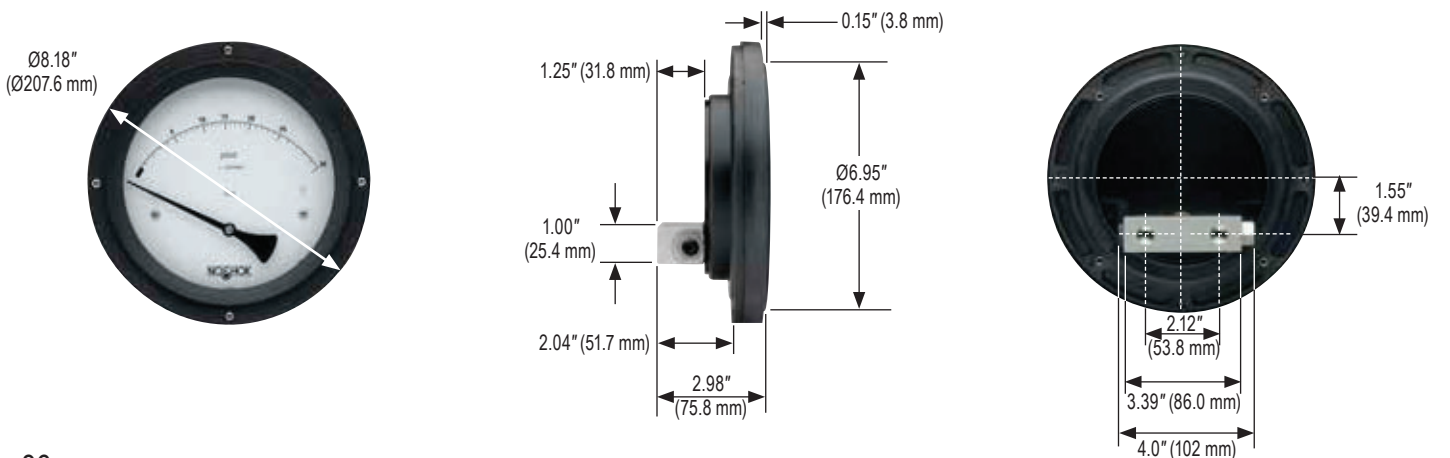
## 2-1/2" Gauge



## 4-1/2" Gauge

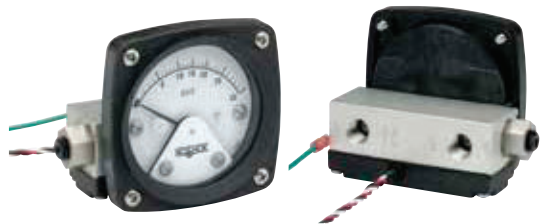


## 6" Gauge

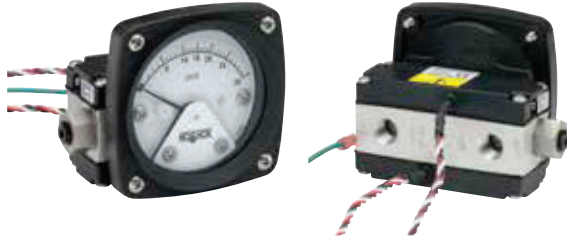


# 1000 SERIES

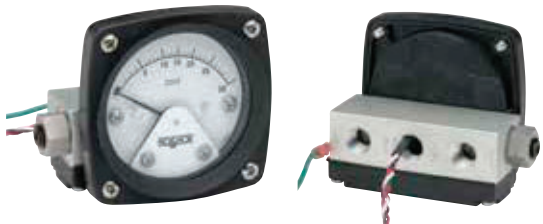
Single switch, flying leads with grommet wire seal



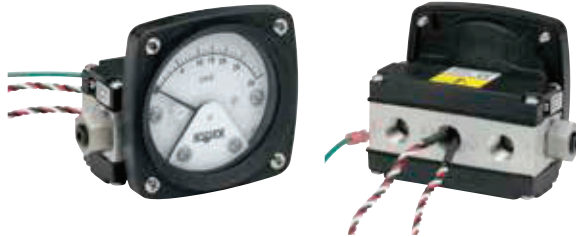
Dual switch, flying leads with grommet wire seal



Single switch, flying leads with 1/4" female NPT, NEMA 4X



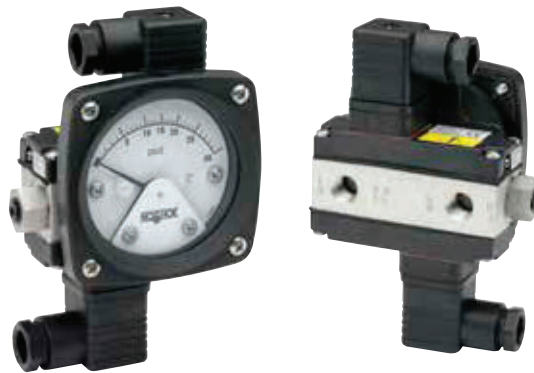
Dual switch, flying leads with 1/4" female NPT, NEMA 4X



Single switch with Hirschman electrical connection



Dual switch with Hirschman electrical connection



4-20 mA transmitter in NEMA 4x IP65 plastic enclosure with terminal strip (1/2" female NPT conduit connection)





## 1100 SERIES

- Simple, rugged, compact differential pressure gauge
- Ranges from 0 inH<sub>2</sub>O to 20 inH<sub>2</sub>O through 0 psid to 100 psid
- 2-1/2", 4-1/2" and 6" gauge sizes
- Engineered plastic gauge case
- Black anodized Aluminum and 316 Stainless Steel wetted parts

### APPLICATIONS

- Heat exchangers
- Filter monitoring
- Flow indication
- Level indication

### SPECIFICATIONS

<b>Pressure ranges</b>	0 inH <sub>2</sub> O to 20 inH <sub>2</sub> O through 0 psid to 100 psid
<b>Max. working static pressure</b>	Aluminum & Stainless Steel 3,000 psig; Brass 1,500 psig
<b>Accuracy</b>	±3/2/3% of full scale on rising pressure
<b>Temperature ranges (Including switch option)</b>	Media -40 °F to 200 °F (-40 °C to 93 °C) Ambient -40 °F to 200 °F (-40 °C to 93 °C) Storage -40 °F to 200 °F (-40 °C to 93 °C)
<b>Temperature ranges (4-20 mA transmitter option)</b>	Ambient -20 °F to 150 °F (-29 °C to 66 °C)
<b>Measuring element</b>	316 Stainless Steel and ceramic magnet
<b>O-ring &amp; diaphragm material</b>	NBR
<b>Connection</b>	1/4" NPT female, back connection
<b>Sensor housing material</b>	Black anodized Aluminum
<b>Case</b>	Engineered plastic
<b>Bezel</b>	Engineered plastic
<b>Lens</b>	Shatter-resistant acrylic
<b>Pointer</b>	Balanced Aluminum, black finish
<b>Dial</b>	Aluminum, white background with black scale
<b>Movement</b>	Magnetic
<b>Optional switch rating</b>	SPDT, 3W, 0.25 Amp, 125 Vac/Vdc (standard) (switch adjustable range of 15-95%). Other options available, consult factory.

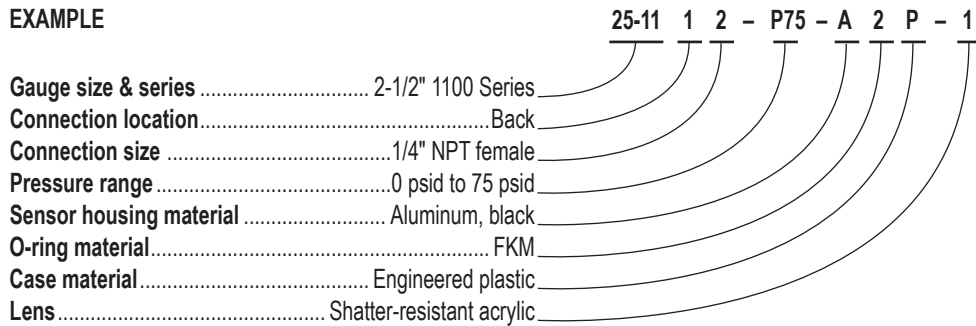


ORDERING INFORMATION								
GAUGE SIZES & SERIES	25 - 11	2-1/2"	45 - 11	4-1/2"	60 - 11	6"		
CONNECTION LOCATIONS	0	Dual top & bottom ***	1	Back	2	Side	3	Bottom
CONNECTION SIZE	2	1/4" NPT female	9	7/16-20 female (Back or side only)				
PRESSURE RANGES*	<b>W20</b>	0 inH <sub>2</sub> O to 20 inH <sub>2</sub> O	<b>W75</b>	0 inH <sub>2</sub> O to 75 inH <sub>2</sub> O	<b>W400</b>	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	<b>P30</b>	0 psid to 30 psid
	<b>W25</b>	0 inH <sub>2</sub> O to 25 inH <sub>2</sub> O	<b>W100</b>	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	<b>P5</b>	0 psid to 5 psid	<b>P50</b>	0 psid to 50 psid
	<b>W30</b>	0 inH <sub>2</sub> O to 30 inH <sub>2</sub> O	<b>W135</b>	0 inH <sub>2</sub> O to 135 inH <sub>2</sub> O	<b>P10</b>	0 psid to 10 psid	<b>P60</b>	0 psid to 60 psid
	<b>W40</b>	0 inH <sub>2</sub> O to 40 inH <sub>2</sub> O	<b>W150</b>	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	<b>P15</b>	0 psid to 15 psid	<b>P75</b>	0 psid to 75 psid
	<b>W50</b>	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	<b>W200</b>	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	<b>P20</b>	0 psid to 20 psid	<b>P100</b>	0 psid to 100 psid
	<b>W60</b>	0 inH <sub>2</sub> O to 60 inH <sub>2</sub> O	<b>W300</b>	0 inH <sub>2</sub> O to 300 inH <sub>2</sub> O	<b>P25</b>	0 psid to 25 psid		
SENSOR HOUSING MATERIALS	<b>A</b>	Aluminum, black	<b>B</b>	Brass	<b>S</b>	316L Stainless Steel		
O-RING & DIAPHRAGM MATERIALS	2	FKM	3	NBR	4	EPDM		
CASE MATERIAL	<b>A</b>	Aluminum (4-1/2" only)	<b>P</b>	Engineered plastic				
LENSES	1	Shatter-resistant acrylic	2	Safety glass**		3	Maximum indicating pointer (MIP) †	
FILL FLUIDS (optional)	<b>GY</b>	Glycerin	<b>SL</b>	Silicone ††				
SWITCH OR TRANSMITTER TYPE & HOUSING (OPTIONAL)	3	Single switch, NEMA 4X	4	Dual switch, NEMA 4X		7	4-20 mA transmitter in NEMA 4x IP65 plastic enclosure with terminal strip (1/2" female NPT conduit connection).	
OPTIONS	<b>MH</b>	(2) 1/4-20 Mounting Holes	<b>RP</b>	Reversed Ports				
	<b>MK5-CS</b>	Pipe Mounting Kit, Steel	<b>ST</b>	Stainless Steel Tagging				
	<b>MK5-SS</b>	Pipe Mounting Kit, Stainless Steel	<b>WMK</b>	Wall Mounting Kit				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

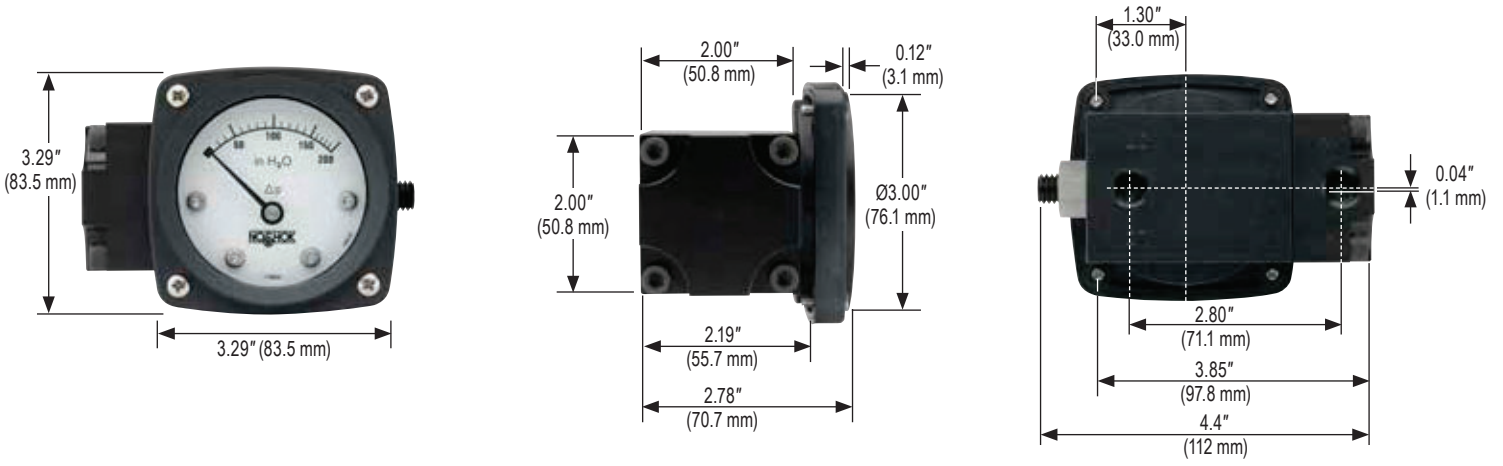
\* Other ranges and scales available on request.  
 \*\* Only available with dry, 4-1/2" gauge size with Aluminum case.  
 \*\*\* Not available with switch or transmitter option.  
 † Available with dry gauge only, 2-1/2" and 4-1/2" gauge sizes only.  
 †† Optional Silicone filling available with 2-1/2" and 6" gauge case sizes, and 4-1/2" gauge case size with Aluminum case and standard shatter-resistant acrylic lens only.

**EXAMPLE**

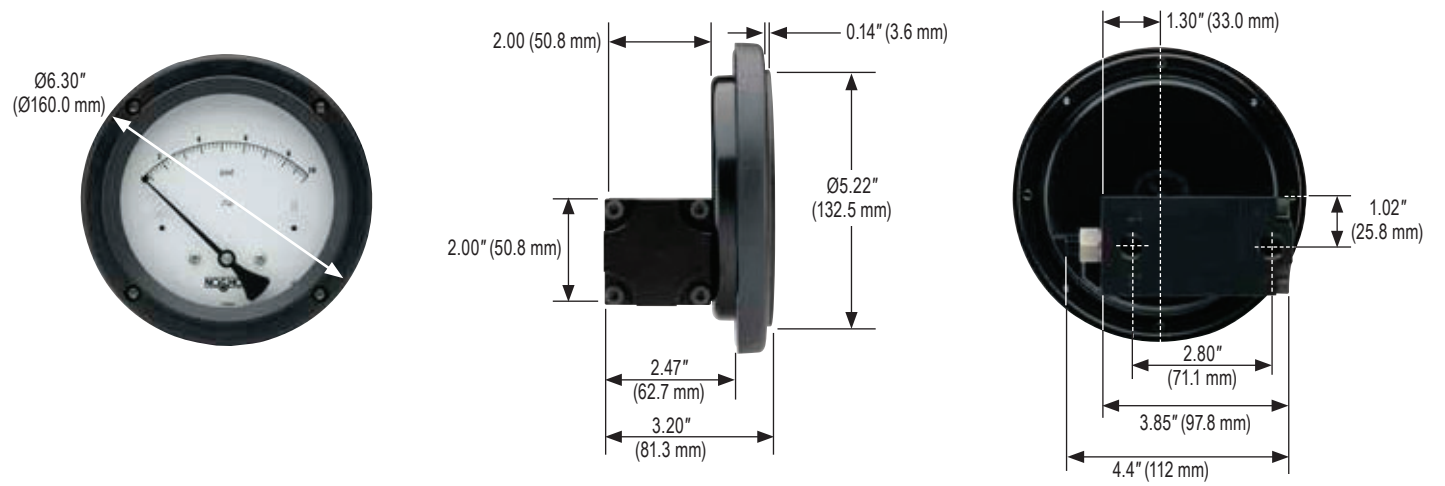


# Dimensions

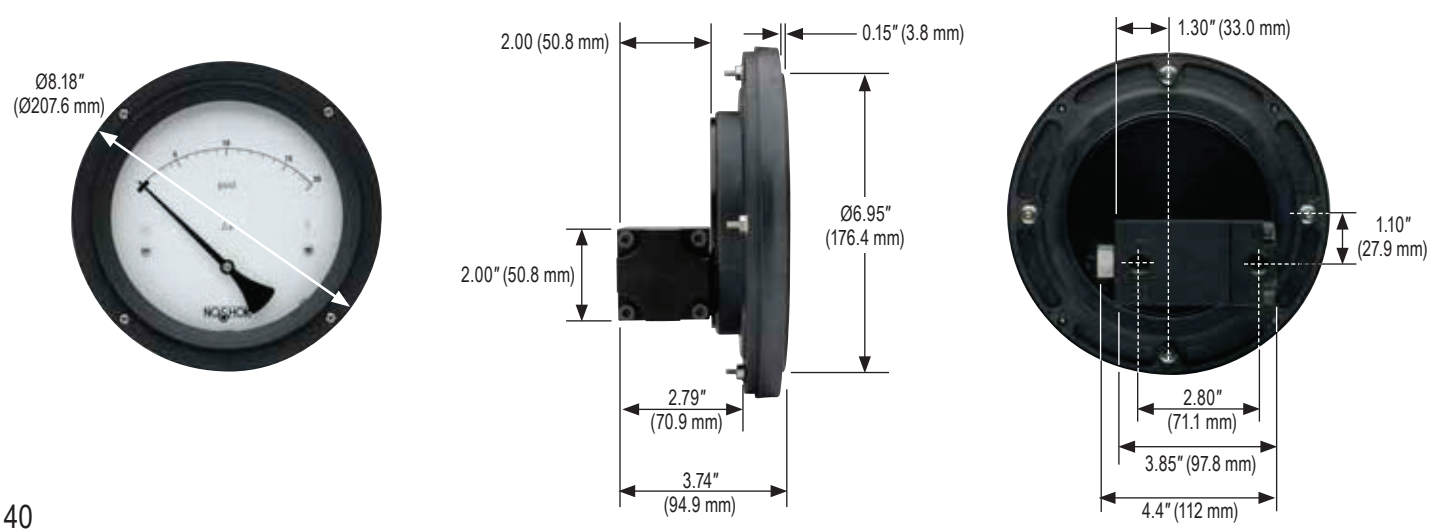
## 2-1/2" Gauge (<25 psid)



## 4-1/2" Gauge (<25 psid)

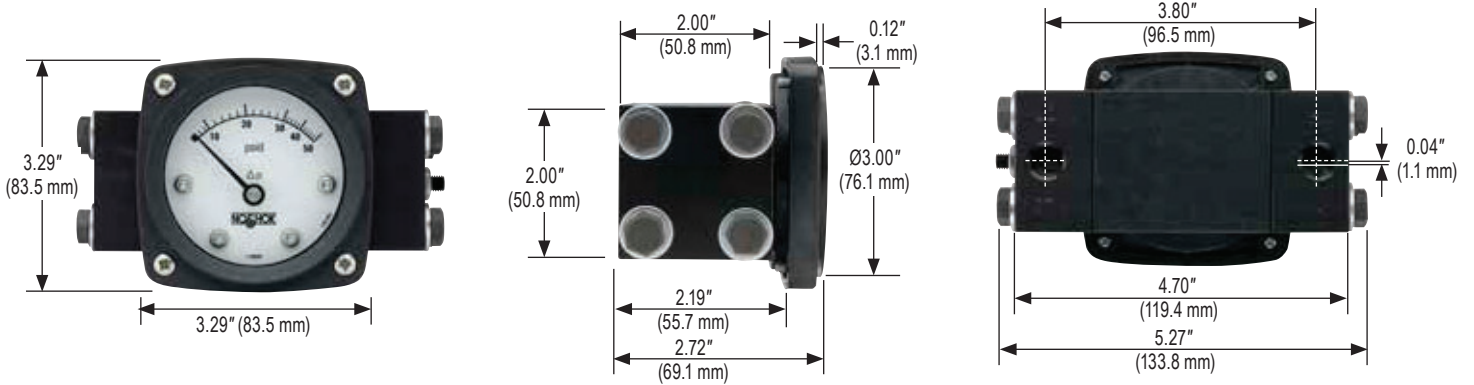


## 6" Gauge (<25 psid)

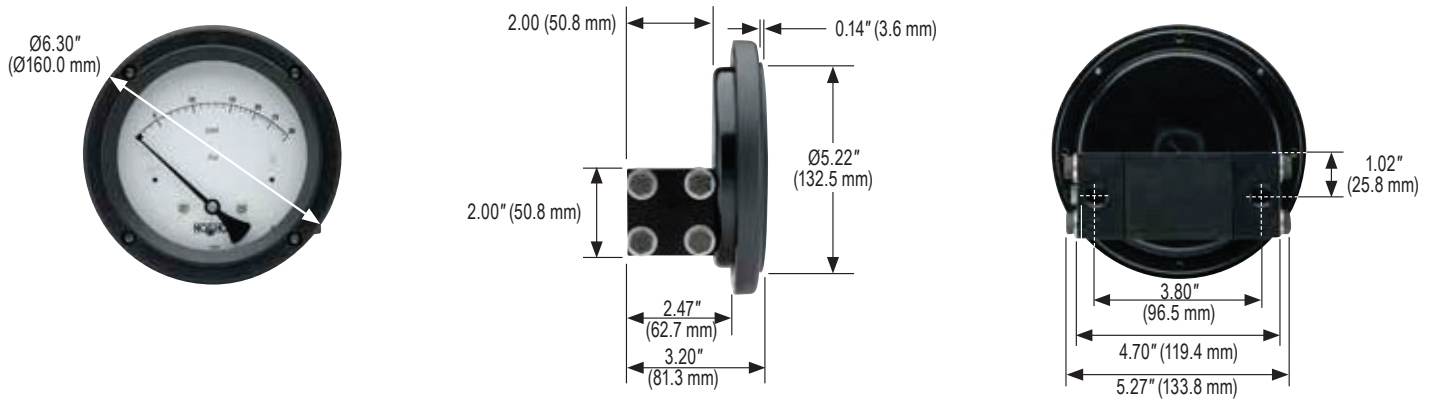




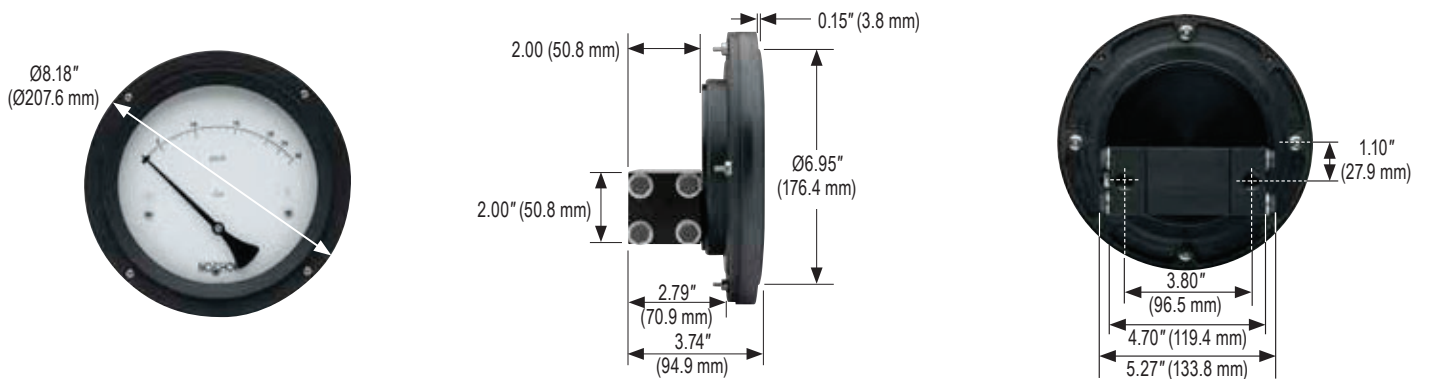
## 2-1/2" Gauge (≥25 psid)



## 4-1/2" Gauge (≥25 psid)



## 6" Gauge (≥25 psid)



## 4-20 mA Transmitter in NEMA 4x Enclosure



## Single Switch in NEMA 4x Enclosure





## 10 SERIES

- 3/4" clamp, dry gauge
- Ranges from 0 psig to 30 psig through 0 psig to 600 psig
- 2" gauge size
- Electropolished Stainless Steel case
- 316 Stainless Steel wetted parts
- Meets current standards for 3A
- C.I.P, S.I.P and Autoclave (only dry gauges are recommended for Autoclave)

### APPLICATIONS

- Food & beverage processing
- Pasteurization systems
- Pharmaceutical
- Medical

### SPECIFICATIONS

<b>Pressure ranges</b>	0 psig to 30 psig through 0 psig to 600 psig
<b>Accuracy</b>	±2.5% full scale
<b>Temperature ranges</b>	Media -40 °F to 300 °F (-40 °C to 150 °C) Ambient 25 °F to 140 °F (-4 °C to 60 °C) Storage 25 °F to 140 °F (-4 °C to 60 °C)
<b>Measuring element</b>	316 Stainless Steel Bourdon tube
<b>Connection</b>	3/4" Sanitary Clamp, 316L Stainless Steel Diaphragm 316L Stainless Steel, electropolished to 32 µin Ra or better
<b>Case</b>	2" Electropolished 304 Stainless Steel
<b>Cover ring</b>	Electropolished 304 Stainless Steel
<b>Lens*</b>	Polycarbonate
<b>Pointer</b>	Balanced Aluminum, black finish
<b>Dial</b>	Aluminum, white background, black print
<b>Movement</b>	Stainless Steel
<b>Fill liquid</b>	Glycerin, USP Grade

\*Note: Autoclave requires the addition of optional laminated safety glass lens

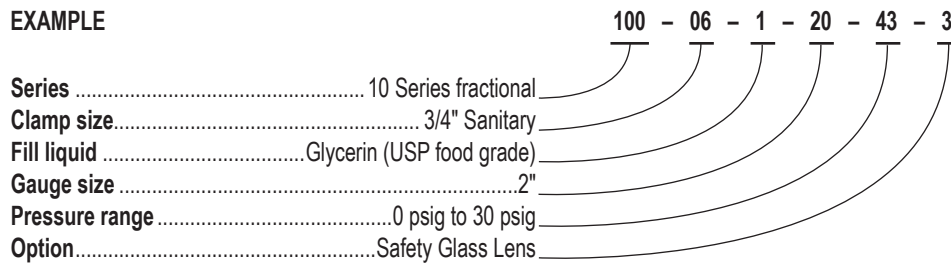
Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.



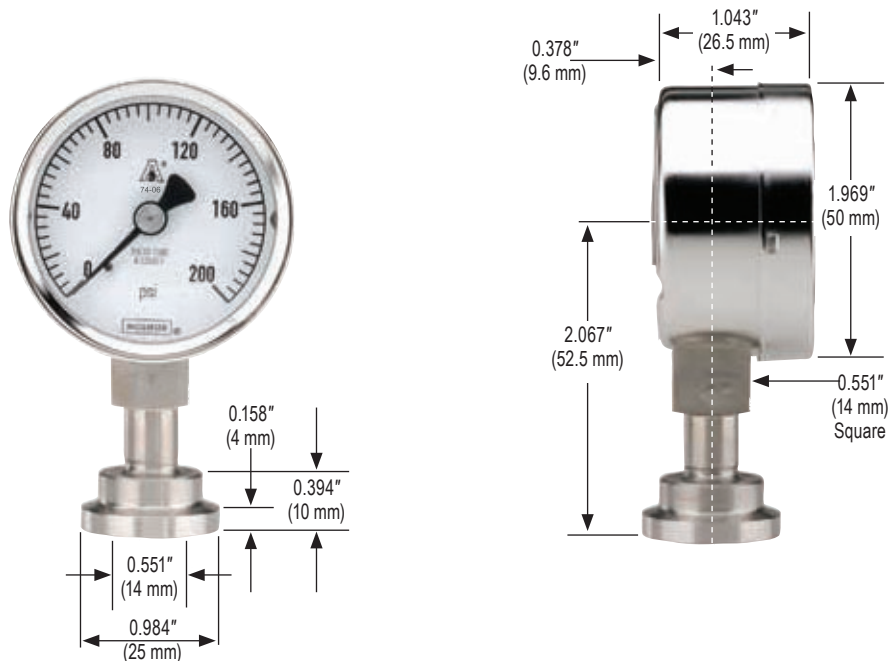
ORDERING INFORMATION			
SERIES	100	10 Series fractional	
CLAMP SIZE	06	3/4"	
FILL LIQUID	1	Glycerin	Other food grade quality fill fluids available – please consult factory
GAUGE SIZE	20	2"	
PRESSURE RANGES	43	0 psig to 30 psig	55 0 psig to 160 psig
	46	0 psig to 60 psig	58 0 psig to 200 psig
	49	0 psig to 100 psig	61 0 psig to 300 psig
OPTIONS	0	None	3 Safety Glass Lens (Required for Autoclave applications)

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



**2" Gauge with 3/4" ASME-BPE Sanitary Clamp Connection**





## 10 SERIES

- 1-1/2" and 2" clamp, fillable dry or liquid-filled gauge
- Ranges from -30 inHg to 0 psig through 0 psig to 600 psig
- 2-1/2" and 4" gauge sizes
- Electropolished Stainless Steel case
- 316 Stainless Steel wetted parts
- Meets current standards for 3A
- C.I.P, S.I.P and Autoclave (only dry gauges are recommended for Autoclave)

### APPLICATIONS

- Food & beverage processing
- Pasteurization systems
- Pharmaceutical
- Medical

### SPECIFICATIONS

<b>Pressure ranges</b>	-30 inHg to 0 psig through 0 to 600 psig
<b>Accuracy</b>	2-1/2" gauge $\pm 1.6\%$ full scale 4" gauge $\pm 1.0\%$ full scale
<b>Temperature ranges</b>	Media -40 °F to 300 °F (-40 °C to 150 °C) Ambient 25 °F to 140 °F (-4 °C to 60 °C) Storage 25 °F to 140 °F (-4 °C to 60 °C)
<b>Measuring element</b>	316 Stainless Steel "C" tube
<b>Connection</b>	1-1/2" or 2" ASME-BPE Sanitary Clamp, 316L Stainless Steel Diaphragm 316L Stainless Steel, electropolished to 32 $\mu\text{m}$ Ra or better
<b>Case</b>	Electropolished 304 Stainless Steel
<b>Bayonet ring</b>	Electropolished 304 Stainless Steel
<b>Lens</b>	Safety glass
<b>Pointer</b>	Balanced Aluminum, black finish
<b>Dial</b>	Aluminum, white background, black print
<b>Movement</b>	Stainless Steel
<b>Fill liquid</b>	Glycerin, USP Grade

\*Note: Autoclave requires the addition of optional laminated safety glass lens

Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.



ORDERING INFORMATION					
<b>SERIES</b>	100	10 Series heavy-duty, bottom connected	101	10 Series heavy-duty, back connected	
<b>CLAMP SIZES</b>	12	1-1/2"	16	2"	
<b>FILL LIQUID</b>	1	Glycerin	Other food grade quality fill fluids available – please consult factory		
<b>GAUGE SIZES</b>	25	2-1/2"	40	4"	
<b>PRESSURE RANGES</b>	01	-30 inHg to 0 psig *	16	-30 inHg to 160 psig	
	04	-30 inHg to 15 psig	19	-30 inHg to 200 psig	
	07	-30 inHg to 30 psig	22	-30 inHg to 300 psig	
	10	-30 inHg to 60 psig	40	0 psig to 15 psig *	
	13	-30 inHg to 100 psig	43	0 psig to 30 psig	
	46	0 psig to 60 psig	64	0 psig to 400 psig	
	49	0 psig to 100 psig	70	0 psig to 600 psig	
	55	0 psig to 160 psig			
	58	0 psig to 200 psig			
	61	0 psig to 300 psig			
<b>GAUGE FILLS</b>	0	None	1	Glycerin	
		(All food grade quality fill fluids)		2	Silicone
				3	Mineral oil
<b>GAUGE OPTIONS</b>	0	None	1	Max. Indicating Pointer	
			2	Adjustable Pointer **	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Not available on 4" gauge and 1-1/2" ASME-BPE Sanitary Clamp

\*\* Not available on 2-1/2" gauge

**EXAMPLE**

100 - 12 - 1 - 25 - 55 - 1 - 1

Series ..... 10 Series heavy-duty

Clamp size ..... 1-1/2" ASME-BPE Sanitary

Fill liquid ..... Glycerin (USP food grade)

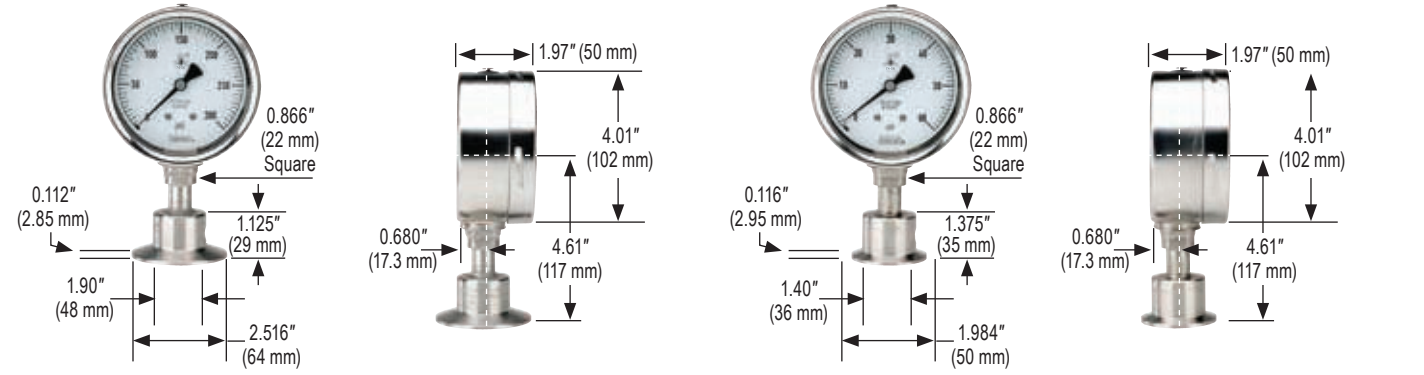
Gauge size ..... 2-1/2"

Pressure range ..... 0 psig to 160 psig

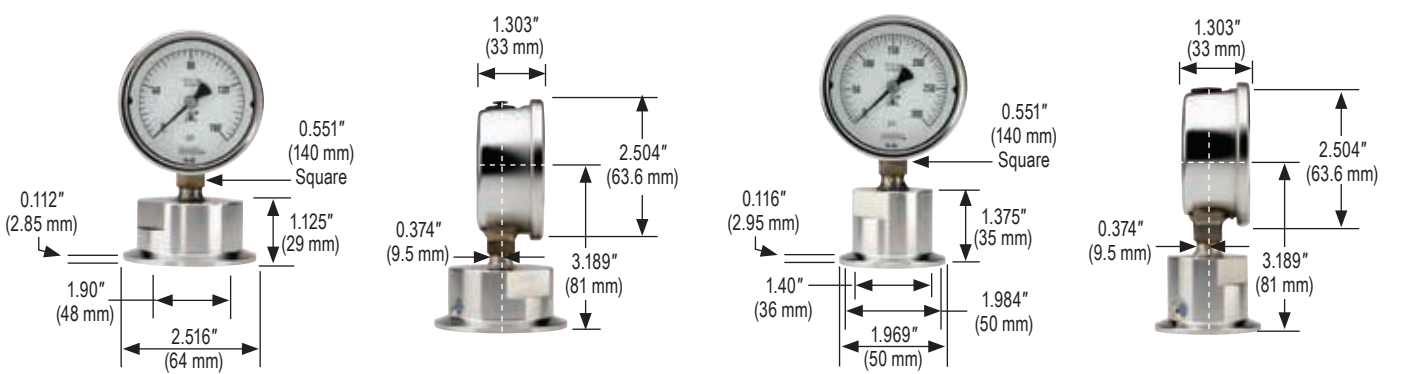
Gauge fill ..... Glycerin

Option ..... Maximum Indicating Pointer

**4" Gauge with 2" ASME-BPE Sanitary Clamp Connection      4" Gauge with 1-1/2" ASME-BPE Sanitary Clamp Connection**



**2-1/2" Gauge with 2" ASME-BPE Sanitary Clamp Connection      2-1/2" Gauge with 1-1/2" ASME-BPE Sanitary Clamp Connection**



# Dial Indicating Gauge Options & Accessories

## PANEL MOUNTING FLANGES

- Many panel mounting options are available and can be installed in the field
- Options include:
  - Brass Front Flanges (BFF)
  - Black Painted Steel Front Flanges (BLFF)
  - Chrome Front Flanges (CFF)
  - Stainless Steel Front Flanges (SSFF)
  - Chrome Triangular Bezel with U-Clamp (CBU)
  - Black Painted Steel Triangular Bezels with U-Clamp (BBU-Clamp)
  - Stainless Steel Narrow Bezel Front Flanges (SSBU)
  - Panel Mount Clamps (PMC)
- Chrome-plated Steel Adapter Rings (AR) are available in conjunction with several of these flanges to adapt to oversized panel cut outs, including:
  - Stainless Steel Flange Rings (SSFR)
  - Chrome-Plated Steel Flange Rings (CFR)
  - Black or Chrome Panel Mount Rings (BPMR & CPMR)
- Rear Flanges (RF) for front of panel mounting are also available as a factory installed option on some series



Panel Mount Clamp  
20-110 PMC



Chrome Triangular Bezel  
with U-Clamp

## CASES & COVER RINGS

- The following cases and cover rings are available on many NOSHOK gauges as production options:
  - Black painted Steel (BCR)
  - Chrome-plated Steel (CCR)
  - 304 Stainless Steel (SSCR)
- Some NOSHOK gauges are also available with a solid front, safety case

## LENSES

- A variety of lens options are available on many NOSHOK gauges as a production option:
  - Instrument glass lenses
  - Laminated safety glass lenses
  - Acrylic lenses
  - Homalite lenses (resistant to many industrial solvents)
  - A Steel or Stainless case and cover ring may be required when other than acrylic lenses are utilized



Cases and Cover Rings

## MAXIMUM INDICATING POINTERS (MIP)

- An invaluable tool for identifying pressure spikes in a system
- Extremely helpful during system start up and troubleshooting
- MIPs add an additional  $\pm 1\%$  error to the gauge because of the increased load on the Bourdon tube
- On ranges of 60 psi and lower, MIPs may double the allowed error of the gauge



Maximum Indicating Pointer

See the Gauges Accessories & Options Charts on pgs. 50-53 for availability on specific gauges

### SET POINTERS (SP)

- Used to identify an operating minimum or maximum pressure or vacuum value
- Set pointers are available on many NOSHOK gauges

### RUBBER CASE PROTECTORS (RCP)

- Ideal for gauges that are subjected to direct physical shock
- 2-1/2" covers are blue and 4" covers are black

### ORIFICES

- Press-fit or threaded orifices in Brass or 316 Stainless Steel are available on all NOSHOK pressure gauges
- Available with I.D.'s from 0.004" to 0.032" depending on the specific NOSHOK gauge
- Used in a gauge to restrict the flow of rapidly increasing and decreasing pressures, reducing the immediate effect of pulsations and pressure spikes
- Recommended for all dynamic applications

### RECALIBRATORS & ADJUSTABLE POINTERS

- This option gives the user the capability of resetting the pointer by an adjustment screw accessible through the dial, or by a gear located on the pointer

### OVERPRESSURE PROTECTION

- Overpressure protection of 3 times up to 10 times of the dial range is available on some NOSHOK gauges as a production option

### AMMONIA REFRIGERATION GAUGES

- Ammonia and refrigeration gauges with dials reading in both pressure and temperature are available in 400/500 Series 2-1/2" and 4" sizes
- Refrigeration gauges with dials reading in pressure and temperature are available in 300, 400 and 500 Series for R-12 and R-22

### LIQUID FILLING OPTIONS

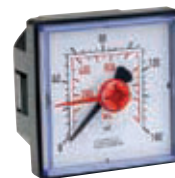
- Many NOSHOK gauges are available with liquid filling options
- Standard fill is Glycerin
- Optional fill liquids include Dow Corning 200® Silicone and Halocarbon®

### SPECIAL CONNECTIONS

- Available on most NOSHOK gauges
- Some examples include:
  - Metric threads
  - Female threads
  - Straight threads (flare or swivel type)
  - Special o-ring connections
- Please contact us with your requirements for prices, availability and minimum quantities

### REID VAPOR TEST GAUGES

- Configuration includes a handle, special dial and special pressure port
- Available in 600/700 Series gauges with pressure ranges of 0 to 5 psi, 0 to 15 psi and 0 to 30 psi



Set Pointers



Rubber Case Protectors

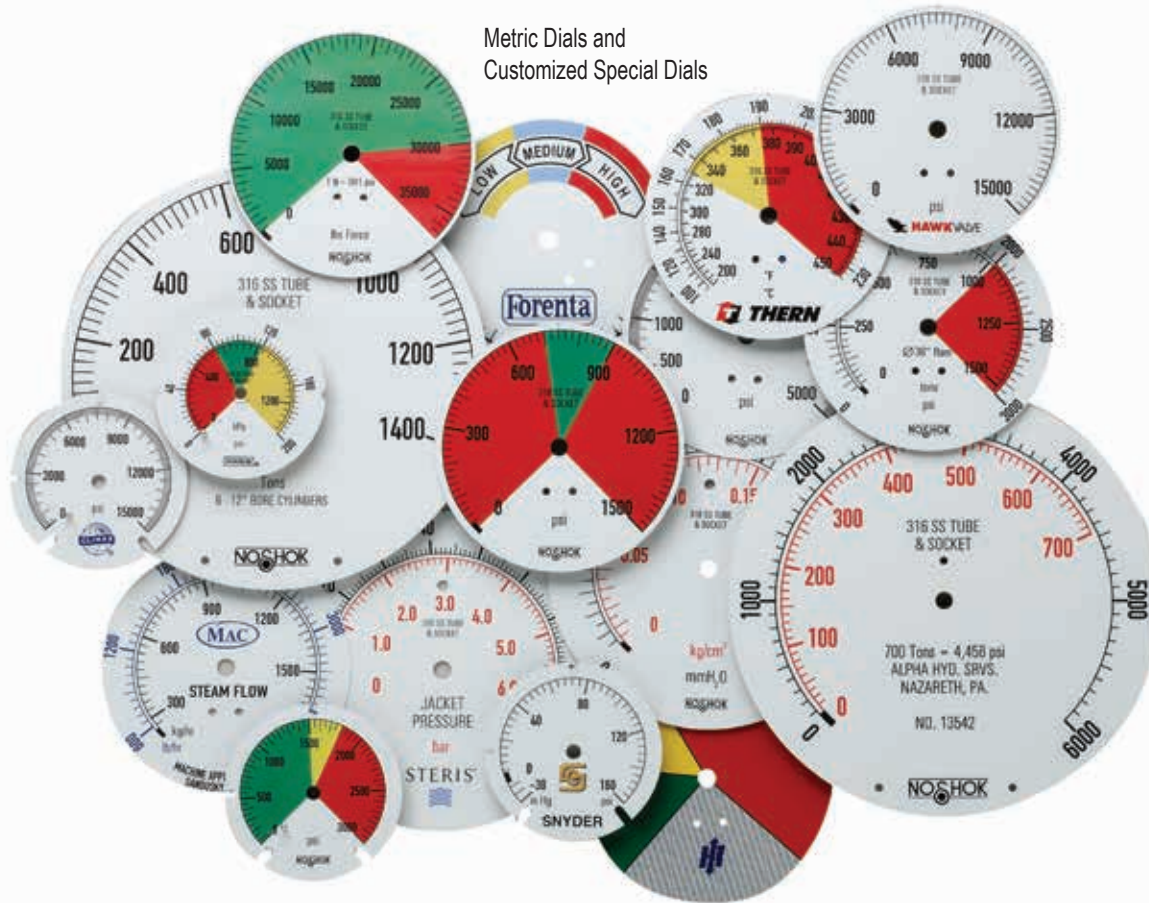


Ammonia Gauges

# Dial Indicating Gauge Options & Accessories

## METRIC DIALS & CUSTOMIZED SPECIAL DIALS

- Dual scale metric dials in psi/bar, psi/kPa and psi/kg/cm<sup>2</sup> are available on many NOSHOK gauges
- Other scales are available for specific sizes and ranges, such as single scale bar and kPa, refrigerant scales and altitude scales
- Please consult the factory for availability
- Customized special dials such as non-standard metric scale, tons of ram, lbs. of force, etc. are available in small quantities (as few as one piece) on some NOSHOK gauges



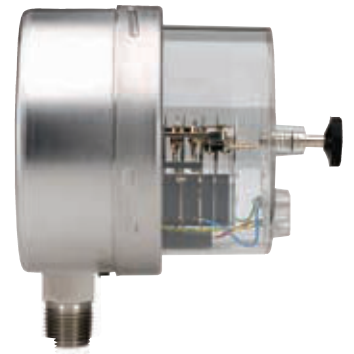
## CERTIFIED CALIBRATION

- Available on all NOSHOK gauges
- Certified calibration provides the user with a serial numbered gauge along with a calibration sheet against a primary pressure standard
- Traceable to the National Institute of Standards and Technology



### MAGNETIC SPRING CONTACT SWITCH (MSCS)

- An excellent choice when an accurate pressure switch is required in addition to a reliable pressure gauge
- Fully adjustable by the user
- These switches are actuated by the pressure gauge pointer to provide accurate field adjustment
- A removable adjustment key makes them tamper-proof
- They operate with an extremely broad power supply, AC or DC up to 250V max. (30W 50 VA), allowing them to be used virtually anywhere in the world in addition to very remote applications with only DC battery pack power available
- Standard units consist of (2) two magnetic spring switches; either one or both switches may be used:
  - Switch (1) one is normally closed
  - Switch (2) two is normally open with operation referenced on clockwise pointer motion
- Magnetic spring contact switches are available as a factory installed option on 40-400 Series and 40-410 Series
- The lowest full scale pressure range this switch may be used on is 0 psi to 60 psi because of the increased load on the pointer and Bourdon tube
- A mating 4-pin connector with 5' of 4-wire and color coded shielded cable is standard



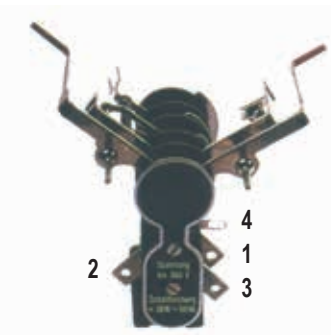
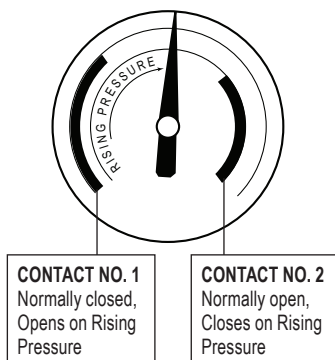
40-400 Series Gauge with Magnetic Spring Contact Switch

### APPLICATIONS

- Air compressors
- Gas compressors
- Hydraulic and pneumatic circuitry
- Die-cast machinery
- Plastic injection molding machinery

### SPECIFICATIONS

Type of power	A.C. or D.C. 24 to 250V max
Maximum amps	1.0 A
Maximum switching capacity	30 W/50 VA
Gauge accuracy	Add an additional $\pm 2\%$
Minimum magnet holding force	1g
Contact pin material	Silver Tungsten
Ambient temperature limitation	0 °F to 140 °F (-18 °C to 61 °C)
Minimum full scale pressure range	0-60 psi



### WIRING AND TERMINAL LOCATION

1. Contact Switch No. 1; Red or Black
2. Contact Switch No. 2; Blue
3. Power; Green or Brown
4. Ground; Yellow/Green Stripe












# Options & Accessories by Gauge Series

## 100 SERIES ABS & Steel CASE, DRY PRESSURE GAUGE ACCESSORIES

— = Option/accessory is available

C = Consult factory for availability

STD = Standard stock series specification

MODEL NO.	15-100	15-110	15-120	20-100	20-110	20-120	20-148	25-100	25-110	25-120	40-100
CONNECTION											
Black Steel Case (BSC)	C		STD	C	C	STD	—			STD	
Chrome Case (CRC)	C		—	C	C	—	—			—	—
Flat Sided ABS Case (FAC)	—		—	—		—	—	—		—	—
Stainless Steel Case (SSC)	C		—	C	C	—	—			—	—
Silicone Dampened Movement (SDM)	C	C	C	C	C	C	C	C	C	C	C
Glass Lens (GL)*	C	N/C		C	N/C		—	N/C	N/C		N/C
Homalite Lens (HL)*	—	—		—	—		—	—	—		—
Polycarbonate Lens (LL)*	—	—	—	—	—	—	—			—	—
Maximum Indicating Pointer (MIP)	—	—	—	—	—	—	—	C	C	—	—
Red Set Pointer (SP)**		C	C	C		C				C	—
Safety Glass Lens (SG)*	—	—	—	—	—	—	—			—	
Black Front Flange (BLFF) ABS Case	—		—	—		—	—	—		—	—
Chrome Front Flange (CFF) ABS Case	—		—	—		—	—	—		—	—
Chrome Front Flange (SCFF) Steel Case	C	C	—	C	C	—	—			—	
Black Front Flange (SBFF) Steel Case	C	C	—	C	C	—	—			—	
Black Rear Flange (BLRF)	—	—	—	—	—	—	—		—	—	
Black Cover Ring (BCR)**	C		—	C	C	—	—			—	
Stainless Steel Cover Ring (SSCR)**	C		—	C	C	—	—			—	—
Chrome Cover Ring (CCR)**	C		—	C	C	—	—			—	
Polished Stainless Steel Bezel (SSB)	—		STD	—		STD	—	—		STD	—
Chrome Adaptor Ring (AR)	—			—			—	—			—
Panel Mount Clamp (PMC)	—		STD	—		STD	—	—		STD	—
Rubber Case Protectors (RCP)	—	—	—	—	—	—	—			—	
10-32-UNF-2B (10-32)											
Orifice - Brass Press Fit Sintered, 20 Micron (CPO)											
Orifice - Brass Press Fit 0.1mm (BP1)											
Orifice - Brass Press Fit 0.3mm (BP3)											
Orifice - Brass Press Fit 0.8mm (BP8)											
Laser Marking (LM)											
Stainless Steel Tagging (ST)											

STANDARD ORIFICE FOR 100 SERIES GAUGE IS 0.3 MM PRESS FIT, UNLESS OTHERWISE SPECIFIED.





\* A Steel, Stainless or chrome case & cover ring must be additionally ordered when lenses other than acrylic are utilized on all 100 Series.

\*\* Only 110 Series require a Steel, Stainless or chrome case & cover ring to be additionally ordered when utilizing a set pointer or cover ring. Please consult factory when a set pointer is to be utilized on a 120 Series.

Consult factory for additional non-stock and special accessory availability.

## 200 SERIES LOW PRESSURE DIAPHRAGM GAUGE ACCESSORIES

- = Option/accessory is available
- C = Consult factory for availability
- STD = Standard stock series specification

MODEL NO.	25-200	25-210	25-224	40-200
CONNECTION				
Stainless Steel Case (SSC)			—	STD
Glass Lens (GL)*			—	STD
Safety Glass Lens (SG)*			—	
Plexiglass Lens (PL)			—	
Recalibrator Lens (RL)			—	—
Red Set Pointer (SP)				
Maximum Indicating Pointer (MIP)				C
Black Front Flange (BLFF)	—		—	
304SS Front Flange (SSFF)	—	—	—	
Chrome Front Flange (CFF)	—		—	—
Black Rear Flange (BLRF)		—	—	—
304SS Rear Flange (SSRF)	—	—	—	
Black Cover Ring (BCR)			—	—
Stainless Steel Cover Ring (SSCR)			—	STD
Chrome Cover Ring (CCR)			—	—
Black Bezel w/U-Clamp (BBU)	—		—	—
SS Bezel w/U-Clamp (SSBU)	—		—	—
Rubber Case Protectors (RCP)			—	
10-32-UNF-2B (10-32)				
Orifice - Brass Press Fit 0.3mm (BP3)	—			
Orifice - Brass Threaded 0.3mm (BT3)				
Laser Marking (LM)				
Stainless Steel Tagging (ST)				





STANDARD ORIFICE FOR 200 SERIES GAUGE IS 0.3 MM PRESS FIT, UNLESS OTHERWISE SPECIFIED.

\* A Steel, Stainless or chrome cover ring must be additionally ordered when lenses other than acrylic are utilized on all 2-1/2" 200 Series.

Consult factory for additional non-stock and special accessory availability.

## 300 SERIES Brass CASE LIQUID-FILLED GAUGE ACCESSORIES

- = Option/accessory is available

MODEL NO.	25-300	25-310	40-300	40-310
CONNECTION				
Maximum Indicating Pointer (MIP)			—	—
Polycarbonate Lens (LL)	—	—		
Glass Lens Overlay (GLO)			—	—
Safety Glass Overlay (SGO)			—	—
Safety Glass (SG)	—	—		
Chrome Front Flange (CFF)				
Chrome Front Flange w/o Holes (CFFN)				
Brass Front Flange (BFF)				
Black Front Flange (BLFF)	—	—		
304SS Rear Flange (SSRF)	—	—		
Rear Flange (RF)			—	—
Chrome Cover Ring (CCR)				—
Chrome Bezel w/U-Clamp (CBU)	—		—	
Adaptor Ring (AR)	—		—	—
Increased Accuracy from 1.5% to 1.0% (IA)			—	—
Increased Accuracy from 1.0% to 0.5% (IA)	—	—		
SAE J1926-3:7/16-20 Adjustable Connection (SST)*				
10-32-UNF-2B (10-32)				
Orifice - Brass Threaded 0.3mm (BT3)				
Orifice - Brass Threaded 0.4mm (BT4)				
Orifice - Brass Threaded 0.8mm (BT8)				
Rubber Case Protectors (RCP)				
Laser Marking (LM)				
Stainless Steel Tagging (ST)				

STANDARD ORIFICE FOR 300 SERIES GAUGE IS 0.8 MM THREADED, UNLESS OTHERWISE SPECIFIED.

\* Includes FKM o-ring. Consult factory for availability.

Consult factory for additional non-stock and special accessory availability.









# Options & Accessories by Gauge Series

## 400/500 SERIES ALL Stainless Steel PRESSURE GAUGES DRY, LIQUID & AMMONIA GAUGE ACCESSORIES

— = Option/accessory is available

C = Consult factory for availability

STD = Standard stock series specification





MODEL NO.	15-401	15-411	25-400	25-410	40-400	40-410	60-400	60-410
			25-500	25-510	40-500	40-510	60-500	60-510
CONNECTION								
Adjustable Pointer (AP)	—	—	—	—			STD	STD
Safety Glass Lens (SG)	—	—					STD	STD
Maximum Indicating Pointer (MIP)	—	—						
Red Set Pointer (SP)	—	—						
Magnetic Spring Contact, 4" 400 & 410 (MSCS)	—	—	—	—			—	—
304 SS Front Flange (SSFF)	—	—	—					
304 SS Rear Flange (SSRF)	—	—	C	C				
SS Bezel w/U-Clamp (SSBU)	—	—	—	—	—		—	
Flange Ring 304SS (SSFR)	—	—	—		—	—	—	—
304SS Panel Mount Clamp (SPMC)	—	—	—		—	—	—	—
Steel Panel Mount Clamp (PMC)	—	—	—		—	—	—	—
Increased Accuracy from 1.5% to 1.0% (IA)	—	—						
Increased Accuracy from 1.0% to 0.5% (IA)	—	—						
10-32-UNF-2B (10-32)								
Orifice - 316SS Threaded 0.8mm (ST8)								
Orifice - 316SS Threaded 0.5mm (ST5)								
Rubber Case Protectors (RCP)	—	—					—	—
Laser Marking (LM)								
Stainless Steel Tagging (ST)								

STANDARD ORIFICE FOR 400/500 SERIES GAUGE IS 0.8 MM THREADED, UNLESS OTHERWISE SPECIFIED.

Consult factory for additional non-stock and special accessory availability.

## 600/700 SERIES PROCESS GAUGE ACCESSORIES

— = Option/accessory is available


MODEL NO.	45-640	45-740	45-660	45-760
CONNECTION				
Safety Glass Lens (SG)				
Glass Lens (GL)				
Maximum Indicating Pointer (MIP)				
Overload Stop (OS)				
10-32-UNF-2B (10-32)				
Orifice - Brass Press Fit 0.3mm (BP3)		—		—
Orifice - Brass Threaded 0.8mm (BT8)		—		—
Orifice - 316SS Threaded 0.8mm (ST8)	—		—	
Laser Marking (LM)				
Stainless Steel Tagging (ST)				

STANDARD ORIFICE FOR 600/700 SERIES GAUGE IS 0.8 MM THREADED, UNLESS OTHERWISE SPECIFIED.

Consult factory for additional non-stock and special accessory availability.

## 800 SERIES PRECISION TEST GAUGE ACCESSORIES

— = Option/accessory is available

MODEL NO.	60-800
CONNECTION	
304 SS Front Flange (SSFF)	
304 SS Rear Flange (SSRF)	
10-32-UNF-2B (10-32)	
Orifice - Brass Press Fit 0.3mm (BP3)	
Orifice - Brass Threaded 0.8mm (BT8)	
Laser Marking (LM)	
Stainless Steel Tagging (ST)	
Carrying Case (GC)	

STANDARD ORIFICE FOR 800 SERIES GAUGE IS 0.8 MM THREADED, UNLESS OTHERWISE SPECIFIED.








Consult factory for additional non-stock and special accessory availability.

## 900 SERIES ABS & Stainless Steel LIQUID FILLED PRESSURE GAUGE ACCESSORIES

— = Option/accessory is available

C = Consult factory for availability

STD = Standard stock series specification

MODEL NO.	15-910	25-900	25-910	25-901	25-911	40-901	40-911
CONNECTION							
Adjustable Pointer (AP)	—	—	—	—	—		
Maximum Indicating Pointer (MIP)	—	—	—				
Red Set Pointer (SP)	—	—	—				
Safety Glass Lens (SG)	—	—	—				
Magnetic Spring Contact Switch 4" 901 & 911 Dry (MSCS)	—	—	—	—	—		
Black Front Flange (BLFF)	—	—		—	—	—	—
304 SS Front Flange (SSFF)	—	—	—	—			
304 SS Rear Flange (SSRF)	—	—	—	—	—		
304 SS Polished Flange Ring (SSFR)	—	—	—	—		—	—
SS Bezel w/U-Clamp (SSBU)	—	—	—	—	—	—	
304SS Panel Mount Clamp (SPMC)	—	—	—	—		—	—
Steel Panel Mount Clamp (PMC)	—	—		—		—	—
Increased Accuracy from 1.5% to 1.0% (IA)	—	—	—			—	—
Increased Accuracy from 1.0% to 0.5% (IA)	—	—	—	—	—		
SAE J1926-3:7/16-20 Adjustable Connection (SST)* †	—						
1/4" NPT x G1/4 Adaptor (1/4-NPT-MXG1/4-F-BR)							
G1/4 Sealing Washer (G1/4-SEALING-WASHER)							
10-32-UNF-2B (10-32)							
Orifice - Brass Press Fit 0.3mm (BP3)							
Orifice - Brass Threaded 0.5mm (BT5)						—	—
Orifice - Brass Threaded 0.8mm (BT8)	—	—	—	—	—		
Rubber Case Protectors (RCP)	—	—	—				
Dry Out Charge (DRY)	—	—	—				
Laser Marking (LM)							
Stainless Steel Tagging (ST)							

STANDARD ORIFICE FOR 900 SERIES GAUGE IS 0.3 MM PRESS FIT, UNLESS OTHERWISE SPECIFIED.

\* Includes FKM o-ring. Consult factory for availability.

\*\* For ranges 60 psi and above.

Consult factory for additional non-stock and special accessory availability.

### GAUGE FILL OPTIONS

SERIES NO.	VOLUME	SILICONE	HALOCARBON®	-40° SERVICE	MINERAL OIL
300 SERIES	OZ	D.C. 200	4.2 OIL	86.5 : 13.5 GLYCERIN: H2O (d)	LIGHT VISCOSITY
25-300/25-310	2.0	—	—	—	—
40-300/40-310	6.5	—	—	—	—
500 SERIES					
25-500/25-510	2.0	—	—	—	—
40-500/40-510	8.5	—	—	—	—
60-500/60-510	31.0	—	—	—	—
600/700 SERIES					
45-660/45-760	14.0	—	—	—	—
900 SERIES					
25-900/25-910	2.0	C	C	—	C
25-901/25-911	2.0	C	C	—	C
40-901/40-011	8.5	—	—	—	—

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:

300 Series Gauges: 4"

400/500 Series Gauges: 4" and 6"

900 Series Gauges: 4"

ACCURACY: $\pm 1.0\%$ full scale											
Primary Scale			Secondary Scales								
Dial Range	Figure	Graduation	kPa	Figure	Graduation	kg/cm <sup>2</sup>	Figure	Graduation	bar	Figure	Graduation
-30 inHg to 0 psi	-5 inHg	-0.5 inHg	-100 kPa to 0 kPa	-20 kPa	-2 kPa	-1.02 kg/cm <sup>2</sup> to 0 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-0.02 kg/cm <sup>2</sup>	-1 bar to 0 bar	-0.2 bar	-0.02 bar
-30 inHg to 15 psi	-10 inHg	-1 inHg	-100 kPa to 100 kPa	-50 kPa	-5 kPa	-1 kg/cm <sup>2</sup> to 1.05 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup>	-1 bar to 1 bar	-0.5 bar	-0.05 bar
-30 inHg to 30 psi	-10 inHg	-1 inHg	-100 kPa to 205 kPa	-50 kPa	-5 kPa	-1 kg/cm <sup>2</sup> to 2.10 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup>	-1 bar to 2.05 bar	-0.5 bar	-0.05 bar
-30 inHg to 60 psi	-30 inHg	-2 inHg	-100 kPa to 410 kPa	-100 kPa	-10 kPa	-1 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup>	-1 bar to 4.1 bar	-1 bar	.01 bar
-30 inHg to 100 psi	-30 inHg	-5 inHg	-100 kPa to 680 kPa	-100 kPa	-20 kPa	-1 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-1 bar to 6.8 bar	-1 bar	-0.2 bar
-30 inHg to 160 psi	-30 inHg	-5 inHg	-100 kPa to 1,100 kPa	-100 kPa	-20 kPa	-1 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-1 bar to 11 bar	-1 bar	-0.2 bar
-30 inHg to 200 psi	-30 inHg	-5 inHg	-100 kPa to 1,360 kPa	-100 kPa	-20 kPa	-1 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-1 bar to 13.6 bar	-1 bar	-0.2 bar
-30 inHg to 300 psi	-30 inHg	-10 inHg	-100 kPa to 2,050 kPa	-100 kPa	-50 kPa	-1 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup>	-1 bar to 20.5 bar	-1 bar	-0.5 bar
0 psi to 15 psi	3 psi	0.2 psi	0 kPa to 102 kPa	30 kPa	2 kPa	0 kg/cm <sup>2</sup> to 1.04 kg/cm <sup>2</sup>	0.3 kg/cm <sup>2</sup>	0.04 kg/cm <sup>2</sup>	0 bar to 1.02 bar	0.3 bar	0.02 bar
0 psi to 30 psi	5 psi	0.5 psi	0 kPa to 205 kPa	50 kPa	5 kPa	0 kg/cm <sup>2</sup> to 2.1 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 2.05 bar	0.5 bar	0.05 bar
0 psi to 60 psi	10 psi	1 psi	0 kPa to 410 kPa	100 kPa	10 kPa	0 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 4.1 bar	1 bar	0.1 bar
0 psi to 100 psi	20 psi	2 psi	0 kPa to 680 kPa	200 kPa	20 kPa	0 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 6.8 bar	2 bar	0.2 bar
0 psi to 160 psi	20 psi	2 psi	0 kPa to 1,100 kPa	200 kPa	20 kPa	0 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 11 bar	2 bar	0.2 bar
0 psi to 200 psi	40 psi	4 psi	0 kPa to 1,360 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 13.6 bar	4 bar	0.4 bar
0 psi to 300 psi	50 psi	5 psi	0 kPa to 2,050 kPa	500 kPa	50 kPa	0 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0 bar to 20.5 bar	5 bar	0.5 bar
0 psi to 400 psi	50 psi	5 psi	0 kPa to 2,750 kPa	500 kPa	50 kPa	0 kg/cm <sup>2</sup> to 28 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0 bar to 27.5 bar	5 bar	0.5 bar
0 psi to 600 psi	100 psi	10 psi	0 kPa to 4,100 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 42 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 41 bar	10 bar	1 bar
0 psi to 1,000 psi	200 psi	20 psi	0 kPa to 6,800 kPa	2,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 70 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 68 bar	20 bar	2 bar
0 psi to 1,500 psi	300 psi	20 psi	0 kPa to 10,200 kPa	3,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 104 kg/cm <sup>2</sup>	30 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 102 bar	30 bar	2 bar
0 psi to 2,000 psi	400 psi	40 psi	0 kPa to 13,600 kPa	4,000 kPa	400 kPa	0 kg/cm <sup>2</sup> to 140 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0 bar to 136 bar	40 bar	4 bar
0 psi to 3,000 psi	500 psi	50 psi	0 kPa to 20,500 kPa	5,000 kPa	500 kPa	0 kg/cm <sup>2</sup> to 210 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0 bar to 205 bar	50 bar	5 bar
0 psi to 5,000 psi	1,000 psi	100 psi	0 kPa to 34,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 350 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 340 bar	100 bar	10 bar
0 psi to 6,000 psi	1,000 psi	100 psi	0 kPa to 41,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 420 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 410 bar	100 bar	10 bar
0 psi to 7,500 psi	1,500 psi	100 psi	0 kPa to 51,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 520 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 510 bar	100 bar	10 bar
0 psi to 10,000 psi	2,000 psi	200 psi	0 kPa to 68,000 kPa	20,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 700 kg/cm <sup>2</sup>	200 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 680 bar	200 bar	20 bar
0 psi to 15,000 psi	3,000 psi	200 psi	0 kPa to 102,000 kPa	30,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 1,040 kg/cm <sup>2</sup>	300 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 1,030 bar	300 bar	20 bar
0 psi to 20,000 psi	4,000 psi	400 psi	0 kPa to 136,000 kPa	40,000 kPa	4,000 kPa	0 kg/cm <sup>2</sup> to 1,400 kg/cm <sup>2</sup>	400 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	0 bar to 1,360 bar	400 bar	40 bar
0 psi to 30,000 psi	5,000 psi	500 psi	0 kPa to 205,000 kPa	50,000 kPa	5,000 kPa	0 kg/cm <sup>2</sup> to 2,100 kg/cm <sup>2</sup>	500 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	0 bar to 2,050 bar	500 bar	50 bar
0 psi to 40,000 psi	5,000 psi	500 psi	0 kPa to 275,000 kPa	50,000 kPa	5,000 kPa	0 kg/cm <sup>2</sup> to 2,800 kg/cm <sup>2</sup>	500 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	0 bar to 2,750 bar	500 bar	50 bar
0 psi to 50,000 psi	10,000 psi	1000 psi	0 kPa to 340,000 kPa	100,000 kPa	10,000 kPa	0 kg/cm <sup>2</sup> to 3,500 kg/cm <sup>2</sup>	1,000 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	0 bar to 3,400 bar	1,000 bar	100 bar
0 psi to 60,000 psi	10,000 psi	1000 psi	0 kPa to 410,000 kPa	100,000 kPa	10,000 kPa	0 kg/cm <sup>2</sup> to 4,200 kg/cm <sup>2</sup>	1,000 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	0 bar to 4,100 bar	1,000 bar	100 bar
0 psi to 75,000 psi	15,000 psi	1000 psi	0 kPa to 510,000 kPa	100,000 kPa	10,000 kPa	0 kg/cm <sup>2</sup> to 5,200 kg/cm <sup>2</sup>	1,000 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	0 bar to 5,100 bar	1,000 bar	100 bar
0 psi to 100,000 psi	20,000 psi	2000 psi	0 kPa to 680,000 kPa	200,000 kPa	20,000 kPa	0 kg/cm <sup>2</sup> to 7,000 kg/cm <sup>2</sup>	2,000 kg/cm <sup>2</sup>	200 kg/cm <sup>2</sup>	0 bar to 6,800 bar	2,000 bar	200 bar

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:

200 Series Gauges: 2-1/2" and 4"

700 Series Gauges (Low Pressure): 4-1/2"

ACCURACY: $\pm 1.0\%$ full scale					
Standard Dial Configurations					
Dial Range	Figure Interval	Graduation Intervals	Dial Range	Figure Interval	Graduation Intervals
-15 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	-3 inH <sub>2</sub> O	-0.2 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 10 oz/in <sup>2</sup>	2 oz/in <sup>2</sup>	0.2 oz/in <sup>2</sup>
-30 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	-5 inH <sub>2</sub> O	-0.5 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 15 oz/in <sup>2</sup>	3 oz/in <sup>2</sup>	0.2 oz/in <sup>2</sup>
-60 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	-10 inH <sub>2</sub> O	-1 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 30 oz/in <sup>2</sup>	5 oz/in <sup>2</sup>	0.5 oz/in <sup>2</sup>
-100 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	-20 inH <sub>2</sub> O	-2 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 35 oz/in <sup>2</sup>	5 oz/in <sup>2</sup>	0.5 oz/in <sup>2</sup>
-60 inH <sub>2</sub> O to 60 inH <sub>2</sub> O	-10 inH <sub>2</sub> O   10 inH <sub>2</sub> O	-1 inH <sub>2</sub> O   1 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 60 oz/in <sup>2</sup>	10 oz/in <sup>2</sup>	1 oz/in <sup>2</sup>
0 inH <sub>2</sub> O to 10 inH <sub>2</sub> O	2 inH <sub>2</sub> O	0.2 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 100 oz/in <sup>2</sup>	20 oz/in <sup>2</sup>	2 oz/in <sup>2</sup>
0 inH <sub>2</sub> O to 15 inH <sub>2</sub> O	3 inH <sub>2</sub> O	0.2 inH <sub>2</sub> O	0 oz/in <sup>2</sup> to 160 oz/in <sup>2</sup> **	40 oz/in <sup>2</sup>	4 oz/in <sup>2</sup>
0 inH <sub>2</sub> O to 30 inH <sub>2</sub> O	5 inH <sub>2</sub> O	0.5 inH <sub>2</sub> O	0 oz/in <sup>2</sup> inH <sub>2</sub> O to 20 oz/in <sup>2</sup> inH <sub>2</sub> O	4 oz/in <sup>2</sup> - 10 inH <sub>2</sub> O	0.4 oz/in <sup>2</sup> - 1 inH <sub>2</sub> O
0 inH <sub>2</sub> O to 60 inH <sub>2</sub> O	10 inH <sub>2</sub> O	1 inH <sub>2</sub> O	0 oz/in <sup>2</sup> inH <sub>2</sub> O to 32 oz/in <sup>2</sup> inH <sub>2</sub> O	4 oz/in <sup>2</sup> - 10 inH <sub>2</sub> O	0.5 oz/in <sup>2</sup> - 1 inH <sub>2</sub> O
0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	20 inH <sub>2</sub> O	2 inH <sub>2</sub> O	0 psi to 3 psi	0.5 psi	0.05 psi
0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O*	40 inH <sub>2</sub> O	4 inH <sub>2</sub> O	0 psi to 5 psi	1 psi	0.1 psi
0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	40 inH <sub>2</sub> O	4 inH <sub>2</sub> O	0 psi to 10 psi	2 psi	0.2 psi

\* The values in the table are for 2-1/2". On 4" & 4-1/2" 0 inH<sub>2</sub>O to 160 inH<sub>2</sub>O gauges, the Figure is 20 inH<sub>2</sub>O, and the Graduation is 2 inH<sub>2</sub>O.

\*\* The values in the table are for 2-1/2". On 4" & 4-1/2" 0 oz/in<sup>2</sup> to 160 oz/in<sup>2</sup> gauges, the Figure is 20 oz/in<sup>2</sup>, and the Graduation is 2 oz/in<sup>2</sup>.

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:

100 Series Gauges: 4"

300 Series Gauges: 2-1/2"

400/500 Series Gauges: 2-1/2"

900 Series Gauges: 2-1/2"

ACCURACY: ±1.6% full scale											
Primary Scale			Secondary Scales								
Dial Range	Figure	Graduation	kPa	Figure	Graduation	kg/cm <sup>2</sup>	Figure	Graduation	bar	Figure	Graduation
-30 inHg to 0 psi	-5 inHg	-0.5 inHg	-100 kPa to 0 kPa	-20 kPa	-2 kPa	-1.02 kg/cm <sup>2</sup> to 0 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-0.02 kg/cm <sup>2</sup>	-1 bar to 0 bar	-0.2 bar	-0.02 bar
-30 inHg to 15 psi	-10 inHg 5 psi	-1 inHg 0.5 psi	-100 kPa to 100 kPa	-50 kPa 50 kPa	-5 kPa 5 kPa	-1 kg/cm <sup>2</sup> to 1.05 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.5 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup> 0.05 kg/cm <sup>2</sup>	-1 bar to 1 bar	-0.5 bar 0.5 bar	-0.05 bar 0.05 bar
-30 inHg to 30 psi	-30 inHg 10 psi	-2 inHg 1 psi	-100 kPa to 205 kPa	-100 kPa 100 kPa	-10 kPa 10 kPa	-1 kg/cm <sup>2</sup> to 2.10 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup> 0.1 kg/cm <sup>2</sup>	-1 bar to 2 bar	-1 bar 1 bar	-0.1 bar 0.1 bar
-30 inHg to 60 psi	-30 inHg 20 psi	-5 inHg 2 psi	-100 kPa to 400 kPa	-100 kPa 200 kPa	-20 kPa 20 kPa	-1 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-1 bar to 4 bar	-1 bar 2 bar	-0.2 bar 0.2 bar
-30 inHg to 100 psi	-30 inHg 20 psi	-5 inHg 2 psi	-100 kPa to 680 kPa	-100 kPa 200 kPa	-20 kPa 20 kPa	-1 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-1 bar to 6.8 bar	-1 bar 2 bar	-0.2 bar 0.2 bar
-30 inHg to 160 psi	-30 inHg 40 psi	-10 inHg 4 psi	-100 kPa to 1,080 kPa	-100 kPa 400 kPa	-50 kPa 40 kPa	-1 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.4 kg/cm <sup>2</sup>	-1 bar to 11 bar	-1 bar 4 bar	-0.5 bar 0.4 bar
-30 inHg to 200 psi	-30 inHg 40 psi	-10 inHg 4 psi	-100 kPa to 1,360 kPa	-100 kPa 400 kPa	-50 kPa 40 kPa	-1 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.4 kg/cm <sup>2</sup>	-1 bar to 13.6 bar	-1 bar 4 bar	-0.5 bar 0.4 bar
-30 inHg to 300 psi	-30 inHg 50 psi	-10 inHg 5 psi	-100 kPa to 2,050 kPa	-100 kPa 500 kPa	-50 kPa 50 kPa	-1 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 5 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.5 kg/cm <sup>2</sup>	-1 bar to 20.5 bar	-1 bar 5 bar	-0.5 bar 0.5 bar
0 psi to 15 psi	3 psi	0.2 psi	0 kPa to 102 kPa	30 kPa	2 kPa	0 kg/cm <sup>2</sup> to 1.04 kg/cm <sup>2</sup>	0.3 kg/cm <sup>2</sup>	0.02 kg/cm <sup>2</sup>	0 bar to 1.02 bar	0.3 bar	0.02 bar
0 psi to 30 psi	5 psi	0.5 psi	0 kPa to 205 kPa	50 kPa	5 kPa	0 kg/cm <sup>2</sup> to 2.1 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0.05 kg/cm <sup>2</sup>	0 bar to 2.05 bar	0.5 bar	0.05 bar
0 psi to 60 psi	10 psi	1 psi	0 kPa to 410 kPa	100 kPa	10 kPa	0 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 4.10 bar	1 bar	0.1 bar
0 psi to 100 psi	20 psi	2 psi	0 kPa to 680 kPa	200 kPa	20 kPa	0 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 6.8 bar	2 bar	0.2 bar
0 psi to 160 psi	40 psi	4 psi	0 kPa to 1,080 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 11 bar	4 bar	0.4 bar
0 psi to 200 psi	40 psi	4 psi	0 kPa to 1,360 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 13.6 bar	4 bar	0.4 bar
0 psi to 300 psi	50 psi	5 psi	0 kPa to 2,050 kPa	500 kPa	50 kPa	0 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0 bar to 20.5 bar	5 bar	0.5 bar
0 psi to 400 psi	100 psi	10 psi	0 kPa to 2,700 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 28 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 27 bar	10 bar	1 bar
0 psi to 600 psi	100 psi	10 psi	0 kPa to 4,100 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 42 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 41 bar	10 bar	1 bar
0 psi to 1,000 psi	200 psi	20 psi	0 kPa to 6,800 kPa	2,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 70 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 68 bar	20 bar	2 bar
0 psi to 1,500 psi	300 psi	20 psi	0 kPa to 10,200 kPa	3,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 104 kg/cm <sup>2</sup>	30 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 102 bar	30 bar	2 bar
0 psi to 2,000 psi	400 psi	40 psi	0 kPa to 13,600 kPa	4,000 kPa	400 kPa	0 kg/cm <sup>2</sup> to 140 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0 bar to 136 bar	40 bar	4 bar
0 psi to 3,000 psi	500 psi	50 psi	0 kPa to 20,500 kPa	5,000 kPa	500 kPa	0 kg/cm <sup>2</sup> to 210 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0 bar to 205 bar	50 bar	5 bar
0 psi to 5,000 psi	1,000 psi	100 psi	0 kPa to 34,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 350 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 340 bar	100 bar	10 bar
0 psi to 6,000 psi	1,000 psi	100 psi	0 kPa to 41,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 420 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 410 bar	100 bar	10 bar
0 psi to 7,500 psi	1,500 psi	100 psi	0 kPa to 51,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 520 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 510 bar	100 bar	10 bar
0 psi to 10,000 psi	2,000 psi	200 psi	0 kPa to 68,000 kPa	20,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 700 kg/cm <sup>2</sup>	200 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 680 bar	200 bar	20 bar
0 psi to 15,000 psi	3,000 psi	200 psi	0 kPa to 102,000 kPa	30,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 1,040 kg/cm <sup>2</sup>	300 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 1,020 bar	300 bar	20 bar



## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:  
600/700 Series Gauges: 4-1/2"

**ACCURACY: ±0.5% full scale**

Primary Scale			Secondary Scales								
Dial Range	Figure	Graduation	kPa	Figure	Graduation	kg/cm <sup>2</sup>	Figure	Graduation	bar	Figure	Graduation
-30 inHg to 0 psi	-5 inHg	-0.2 inHg	-101 kPa to 0 kPa	-20 kPa	-1 kPa	-1.03 kg/cm <sup>2</sup> to 0 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-0.01 kg/cm <sup>2</sup>	-1.01 bar to 0 bar	-0.2 bar	-0.01 bar
-30 inHg to 15 psi	-5 inHg 3 psi	-0.5 inHg 0.2 psi	-100 kPa to 102 kPa	-20 kPa 20 kPa	-2 kPa 2 kPa	-1 kg/cm <sup>2</sup> to 1.04 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-0.02 kg/cm <sup>2</sup> 0.02 kg/cm <sup>2</sup>	-1 bar to 1.02 bar	-0.2 bar 0.2 bar	-0.02 bar 0.02 bar
-30 inHg to 30 psi	-10 inHg 5 psi	-1 inHg 0.5 psi	-100 kPa to 205 kPa	-50 kPa 50 kPa	-5 kPa 5 kPa	-1 kg/cm <sup>2</sup> to 2.10 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.5 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup> 0.05 kg/cm <sup>2</sup>	-1 bar to 2.05 bar	-0.5 bar 0.5 bar	-0.05 bar 0.05 bar
-30 inHg to 60 psi	-10 inHg 10 psi	-1 inHg 0.4 psi	-100 kPa to 412 kPa	-50 kPa 100 kPa	-5 kPa 4 kPa	-1 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 1 kg/cm <sup>2</sup>	-0.01 kg/cm <sup>2</sup> 0.04 kg/cm <sup>2</sup>	-1 bar to 4.12 bar	-0.5 bar 1 bar	-0.01 bar 0.04 bar
-30 inHg to 100 psi	-30 inHg 10 psi	-2 inHg 1 psi	-100 kPa to 680 kPa	-100 kPa 100 kPa	-10 kPa 10 kPa	-1 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup> 0.1 kg/cm <sup>2</sup>	-1 bar to 6.8 bar	-1 bar 1 bar	-0.1 bar 0.1 bar
-30 inHg to 160 psi	-30 inHg 20 psi	-5 inHg 2 psi	-100 kPa to 1,100 kPa	-100 kPa 200 kPa	-20 kPa 20 kPa	-1 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-1 bar to 11 bar	-1 bar 2 bar	-0.2 bar 0.2 bar
-30 inHg to 200 psi	-30 inHg 20 psi	-5 inHg 2 psi	-100 kPa to 1,360 kPa	-100 kPa 200 kPa	-20 kPa 20 kPa	-1 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-1 bar to 13.6 bar	-1 bar 2 bar	-0.2 bar 0.2 bar
0 psi to 15 psi	3 psi	0.1 psi	0 kPa to 103 kPa	30 kPa	1 kPa	0 kg/cm <sup>2</sup> to 1.05 kg/cm <sup>2</sup>	0.3 kg/cm <sup>2</sup>	0.01 kg/cm <sup>2</sup>	0 bar to 1.03 bar	0.3 bar	0.01 bar
0 psi to 30 psi	5 psi	0.2 psi	0 kPa to 206 kPa	50 kPa	2 kPa	0 kg/cm <sup>2</sup> to 2.1 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0.02 kg/cm <sup>2</sup>	0 bar to 2.06 bar	0.5 bar	0.02 bar
0 psi to 60 psi	10 psi	0.4 psi	0 kPa to 412 kPa	100 kPa	4 kPa	0 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0.04 kg/cm <sup>2</sup>	0 bar to 4.12 bar	1 bar	0.04 bar
0 psi to 100 psi	10 psi	1 psi	0 kPa to 680 kPa	100 kPa	10 kPa	0 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 6.8 bar	1 bar	0.1 bar
0 psi to 160 psi	20 psi	1 psi	0 kPa to 1,100 kPa	200 kPa	10 kPa	0 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 11 bar	2 bar	0.1 bar
0 psi to 200 psi	20 psi	2 psi	0 kPa to 1,360 kPa	200 kPa	20 kPa	0 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 13.6 bar	2 bar	0.2 bar
0 psi to 300 psi	50 psi	2 psi	0 kPa to 2,060 kPa	500 kPa	20 kPa	0 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 20.6 bar	5 bar	0.2 bar
0 psi to 400 psi	40 psi	4 psi	0 kPa to 2,720 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 28 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 27.2 bar	4 bar	0.4 bar
0 psi to 600 psi	100 psi	4 psi	0 kPa to 4,120 kPa	1,000 kPa	40 kPa	0 kg/cm <sup>2</sup> to 42 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 41.2 bar	10 bar	0.4 bar
0 psi to 1,000 psi	100 psi	10 psi	0 kPa to 6,800 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 70 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 68 bar	10 bar	1 bar
0 psi to 1,500 psi	300 psi	10 psi	0 kPa to 10,300 kPa	3,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 105 kg/cm <sup>2</sup>	30 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 103 bar	30 bar	1 bar
0 psi to 2,000 psi	200 psi	20 psi	0 kPa to 13,600 kPa	2,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 140 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 136 bar	20 bar	2 bar
0 psi to 3,000 psi	500 psi	20 psi	0 kPa to 20,600 kPa	5,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 210 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 206 bar	50 bar	2 bar
0 psi to 5,000 psi	500 psi	50 psi	0 kPa to 34,000 kPa	5,000 kPa	500 kPa	0 kg/cm <sup>2</sup> to 350 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0 bar to 340 bar	50 bar	5 bar
0 psi to 6,000 psi	1,000 psi	40 psi	0 kPa to 41,200 kPa	10,000 kPa	400 kPa	0 kg/cm <sup>2</sup> to 420 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0 bar to 412 bar	100 bar	4 bar
0 psi to 10,000 psi	1,000 psi	100 psi	0 kPa to 68,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 700 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 680 bar	100 bar	10 bar
0 psi to 15,000 psi	3,000 psi	100 psi	0 kPa to 103,000 kPa	30,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 1,050 kg/cm <sup>2</sup>	300 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 1,030 bar	300 bar	10 bar
0 psi to 20,000 psi	2,000 psi	200 psi	0 kPa to 136,000 kPa	20,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 1,400 kg/cm <sup>2</sup>	200 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 1,360 bar	200 bar	20 bar
0 psi to 30,000 psi	5,000 psi	200 psi	0 kPa to 206,000 kPa	50,000 kPa	2,000 kPa	0 kg/cm <sup>2</sup> to 2,100 kg/cm <sup>2</sup>	500 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	0 bar to 2,060 bar	500 bar	20 bar
0 psi to 40,000 psi	4,000 psi	400 psi	0 kPa to 272,000 kPa	40,000 kPa	4,000 kPa	0 kg/cm <sup>2</sup> to 2,800 kg/cm <sup>2</sup>	400 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	0 bar to 2,720 bar	400 bar	40 bar
0 psi to 50,000 psi	5,000 psi	500 psi	0 kPa to 340,000 kPa	50,000 kPa	5,000 kPa	0 kg/cm <sup>2</sup> to 3,500 kg/cm <sup>2</sup>	500 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	0 bar to 3,400 bar	500 bar	50 bar
0 psi to 60,000 psi	10,000 psi	400 psi	0 kPa to 412,000 kPa	100,000 kPa	4,000 kPa	0 kg/cm <sup>2</sup> to 4,200 kg/cm <sup>2</sup>	1,000 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	0 bar to 4,120 bar	1,000 bar	40 bar

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:

100 Series Gauges: 1-1/2", 2" and 2-1/2"

400 Series Gauges: 1-1/2"

900 Series Gauges: 1-1/2" and 2"

ACCURACY: $\pm 2.5\%$ full scale											
Primary Scale			Secondary Scales								
Dial Range	Figure	Graduation	kPa	Figure	Graduation	kg/cm <sup>2</sup>	Figure	Graduation	bar	Figure	Graduation
-30 inHg to 0 psi	-5 inHg	-0.5 inHg	-100 kPa to 0 kPa	-20 kPa	-5 kPa	-1 kg/cm <sup>2</sup> to 0 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup>	-1 bar to 0 bar	-0.2 bar	-0.05 bar
-30 inHg to 15 psi	-10 inHg 5 psi	-1 inHg 0.5 psi	-100 kPa to 100 kPa	-50 kPa 50 kPa	-5 kPa 5 kPa	-1 kg/cm <sup>2</sup> to 1.05 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.5 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup> 0.05 kg/cm <sup>2</sup>	-1 bar to 1 bar	-0.5 bar 0.5 bar	-0.05 bar 0.05 bar
-30 inHg to 30 psi	-30 inHg 10 psi	-2 inHg 1 psi	-100 kPa to 200 kPa	-100 kPa 100 kPa	-10 kPa 10 kPa	-1 kg/cm <sup>2</sup> to 2.10 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup> 0.1 kg/cm <sup>2</sup>	-1 bar to 2 bar	-1 bar 1 bar	-0.1 bar 0.1 bar
-30 inHg to 60 psi	-30 inHg 20 psi	-5 inHg 2 psi	-100 kPa to 400 kPa	-100 kPa 200 kPa	-20 kPa 20 kPa	-1 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup>	-1 bar to 4 bar	-1 bar 2 bar	-0.2 bar 0.2 bar
-30 inHg to 100 psi	-30 inHg 20 psi	-10 inHg 5 psi	-100 kPa to 680 kPa	-100 kPa 200 kPa	-50 kPa 50 kPa	-1 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 2 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.5 kg/cm <sup>2</sup>	-1 bar to 6.8 bar	-1 bar 2 bar	-0.5 bar 0.5 bar
-30 inHg to 160 psi	-30 inHg 40 psi	-10 inHg 4 psi	-100 kPa to 1,100 kPa	-100 kPa 400 kPa	-50 kPa 40 kPa	-1 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.4 kg/cm <sup>2</sup>	-1 bar to 11 bar	-1 bar 4 bar	-0.5 bar 0.4 bar
-30 inHg to 200 psi	-30 inHg 40 psi	-10 inHg 4 psi	-100 kPa to 1,360 kPa	-100 kPa 400 kPa	-50 kPa 40 kPa	-1 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> 0.4 kg/cm <sup>2</sup>	-1 bar to 13.6 bar	-1 bar 4 bar	-0.5 bar 0.4 bar
-30 inHg to 300 psi	-30 inHg 100 psi	-30 inHg 10 psi	-100 kPa to 2,050 kPa	-100 kPa 1,000 kPa	-100 kPa 100 kPa	-1 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 10 kg/cm <sup>2</sup>	-1 kg/cm <sup>2</sup> 1 kg/cm <sup>2</sup>	-1 bar to 20.5 bar	-1 bar 10 bar	-1 bar 1 bar
0 psi to 15 psi	3 psi	0.5 psi	0 kPa to 100 kPa	30 kPa	5 kPa	0 kg/cm <sup>2</sup> to 1.05 kg/cm <sup>2</sup>	0.3 kg/cm <sup>2</sup>	0.05 kg/cm <sup>2</sup>	0 bar to 1 bar	0.3 bar	0.05 bar
0 psi to 30 psi	5 psi	0.5 psi	0 kPa to 205 kPa	50 kPa	5 kPa	0 kg/cm <sup>2</sup> to 2.1 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0.05 kg/cm <sup>2</sup>	0 bar to 2.05 bar	0.5 bar	0.05 bar
0 psi to 60 psi	10 psi	1 psi	0 kPa to 410 kPa	100 kPa	10 kPa	0 kg/cm <sup>2</sup> to 4.2 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0.1 kg/cm <sup>2</sup>	0 bar to 4.1 bar	1 bar	0.1 bar
0 psi to 100 psi	20 psi	2 psi	0 kPa to 680 kPa	200 kPa	20 kPa	0 kg/cm <sup>2</sup> to 7 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0.2 kg/cm <sup>2</sup>	0 bar to 6.8 bar	2 bar	0.2 bar
0 psi to 160 psi	40 psi	4 psi	0 kPa to 1,100 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 11.2 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 11 bar	4 bar	0.4 bar
0 psi to 200 psi	40 psi	4 psi	0 kPa to 1,360 kPa	400 kPa	40 kPa	0 kg/cm <sup>2</sup> to 14 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0.4 kg/cm <sup>2</sup>	0 bar to 13.6 bar	4 bar	0.4 bar
0 psi to 300 psi	50 psi	5 psi	0 kPa to 2,050 kPa	500 kPa	50 kPa	0 kg/cm <sup>2</sup> to 21 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0.5 kg/cm <sup>2</sup>	0 bar to 20.5 bar	5 bar	0.5 bar
0 psi to 400 psi	100 psi	10 psi	0 kPa to 2,700 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 28 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 27 bar	10 bar	1 bar
0 psi to 600 psi	100 psi	10 psi	0 kPa to 4,100 kPa	1,000 kPa	100 kPa	0 kg/cm <sup>2</sup> to 42 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	1 kg/cm <sup>2</sup>	0 bar to 41 bar	10 bar	1 bar
0 psi to 1,000 psi	200 psi	20 psi	0 kPa to 6,800 kPa	2,000 kPa	200 kPa	0 kg/cm <sup>2</sup> to 70 kg/cm <sup>2</sup>	20 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	0 bar to 68 bar	20 bar	2 bar
0 psi to 1,500 psi	300 psi	50 psi	0 kPa to 10,000 kPa	3,000 kPa	500 kPa	0 kg/cm <sup>2</sup> to 105 kg/cm <sup>2</sup>	30 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0 bar to 100 bar	30 bar	5 bar
0 psi to 2,000 psi	400 psi	40 psi	0 kPa to 13,600 kPa	4,000 kPa	400 kPa	0 kg/cm <sup>2</sup> to 140 kg/cm <sup>2</sup>	40 kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	0 bar to 136 bar	40 bar	4 bar
0 psi to 3,000 psi	500 psi	50 psi	0 kPa to 20,500 kPa	5,000 kPa	500 kPa	0 kg/cm <sup>2</sup> to 210 kg/cm <sup>2</sup>	50 kg/cm <sup>2</sup>	5 kg/cm <sup>2</sup>	0 bar to 205 bar	50 bar	5 bar
0 psi to 5,000 psi	1000 psi	100 psi	0 kPa to 34,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 350 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 340 bar	100 bar	10 bar
0 psi to 6,000 psi	1000 psi	100 psi	0 kPa to 41,000 kPa	10,000 kPa	1,000 kPa	0 kg/cm <sup>2</sup> to 420 kg/cm <sup>2</sup>	100 kg/cm <sup>2</sup>	10 kg/cm <sup>2</sup>	0 bar to 410 bar	100 bar	10 bar

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:  
800 Series Gauges

ACCURACY: ±0.25% full scale					
Primary Scale			Primary Scale		
Dial Range	Figure	Graduation	Dial Range	Figure	Graduation
0 psi to 30 psi	2 psi	0.1 psi	0 psi to 1,500 psi	100 psi	5 psi
0 psi to 60 psi	5 psi	0.2 psi	0 psi to 2,000 psi	200 psi	10 psi
0 psi to 100 psi	10 psi	0.5 psi	0 psi to 3,000 psi	250 psi	10 psi
0 psi to 160 psi	20 psi	0.8 psi	0 psi to 5,000 psi	500 psi	20 psi
0 psi to 200 psi	20 psi	1 psi	0 psi to 6,000 psi	500 psi	20 psi
0 psi to 300 psi	25 psi	1 psi			
0 psi to 400 psi	50 psi	2 psi			
0 psi to 600 psi	50 psi	2 psi			
0 psi to 1,000 psi	100 psi	5 psi			

### PRESSURE & VACUUM CONVERSIONS

Pounds per Square Inch	bar	Kilopascals	Kilograms per Square Centimeter	Ounces per Square Inch	Inches of Mercury	Millimeters of Mercury	Inches of Water
psi	bar	kPa	kg/cm <sup>2</sup>	oz-in <sup>2</sup>	inHg	mmHg*	inH <sub>2</sub> O
1	.0689476	6.89476	.0703069	16	2.03602	51.71485	27.6807
14.5038	1	100	1.019716	232.0608	29.530	750.0626	401.8596
.145038	.01	1	.0101972	2.320608	.295299	7.500610	401.8596
14.2233	.9806649	98.06649	1	227.5739	28.95901	735.5588	393.7118
.0625	.0043092	.4309223	.0043942	1	.1272513	3.23218	1.73004
.4911542	.0338639	3.386389	.0345316	7.85847	1	25.4	13.59548
.0193368	.0013332	.1333225	.0013595	.3093888	.0393701	1	.535255
.0361263	.0024908	.2490819	.0025422	.578020	.0735539	1.868268	1

\* 1 kPa = 1 kN/m<sup>2</sup>, 1 mmHg = 1 Torr, 1Kg/cm<sup>2</sup> = 1 kp/cm<sup>2</sup>  
(Conversions of: H<sub>2</sub>O are at 39.2 °F (4 °C); Hg are at 32 °F (0 °C))

### CONVERSIONS FOR HYDRAULIC RAM CAPACITY

$$\text{psi} \times \text{AREA} = (\text{LBS.}) \text{ FORCE} \qquad \text{TONS} = \frac{\text{psi} \times .7854 \times D^2}{2000} \qquad \text{psi} = \frac{\text{TONS}}{D^2 \times .0003927}$$

For further assistance with conversions please consult the factory.



Shown with enhanced software.

## 1000 SERIES

- Rugged, electronic gauge
- Compound and standard ranges through 0 psig to 10,000 psig
- 3.31" gauge size
- Stainless Steel case
- Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Hydraulics & pneumatics
- Laboratory & test equipment
- Leak detection
- Power generation
- Water management

### OPTIONAL ENHANCED SOFTWARE FEATURES

- Tare function
- Password protection
- Min./max. memory
- Internal lighting
- 300° rotatable base



Optional Gauge Carrying Case

### SPECIFICATIONS

<b>Pressure ranges</b>	0 psig to 72 psig through 0 psig to 10,000 psig Compound ranges available
<b>Accuracy</b>	±0.25% full scale (BFSL); ±0.5% terminal point ±1 digit
<b>Temperature ranges</b>	Compensated 32 °F to 140 °F (0 °C to 60 °C) Effect ±0.15% per 10K at zero and span Span effect is ±0.005% full scale/ °F Media -22 °F to 185 °F (-30 °C to 85 °C) Ambient 14 °F to 140 °F (-10 °C to 60 °C) Storage -4 °F to 158 °F (-20 °C to 70 °C)
<b>Measuring element</b>	Stainless Steel, thin-film measuring element
<b>Connection</b>	1/4" NPT Male, 316 Stainless Steel
<b>Case</b>	Stainless Steel
<b>Bezel</b>	Stainless Steel triangular
<b>Display</b>	Liquid Crystal Display with 0.43" digits 4 digits up to 9999 with bar graph
<b>Power requirement*</b>	2 x 1.5V "AA" battery 4,000 hrs ("AA" 2000 mAh)
<b>Response time</b>	200 ms
<b>Proof pressure</b>	2 times full scale range, maximum 15,000 psi
<b>Programmable functions</b>	Adjustable through front key pad
<b>Measuring units</b>	bar, psi, MPa
<b>Peak memory</b>	min/max, display, hold
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Weight</b>	0.88 lb.

\* Unregulated



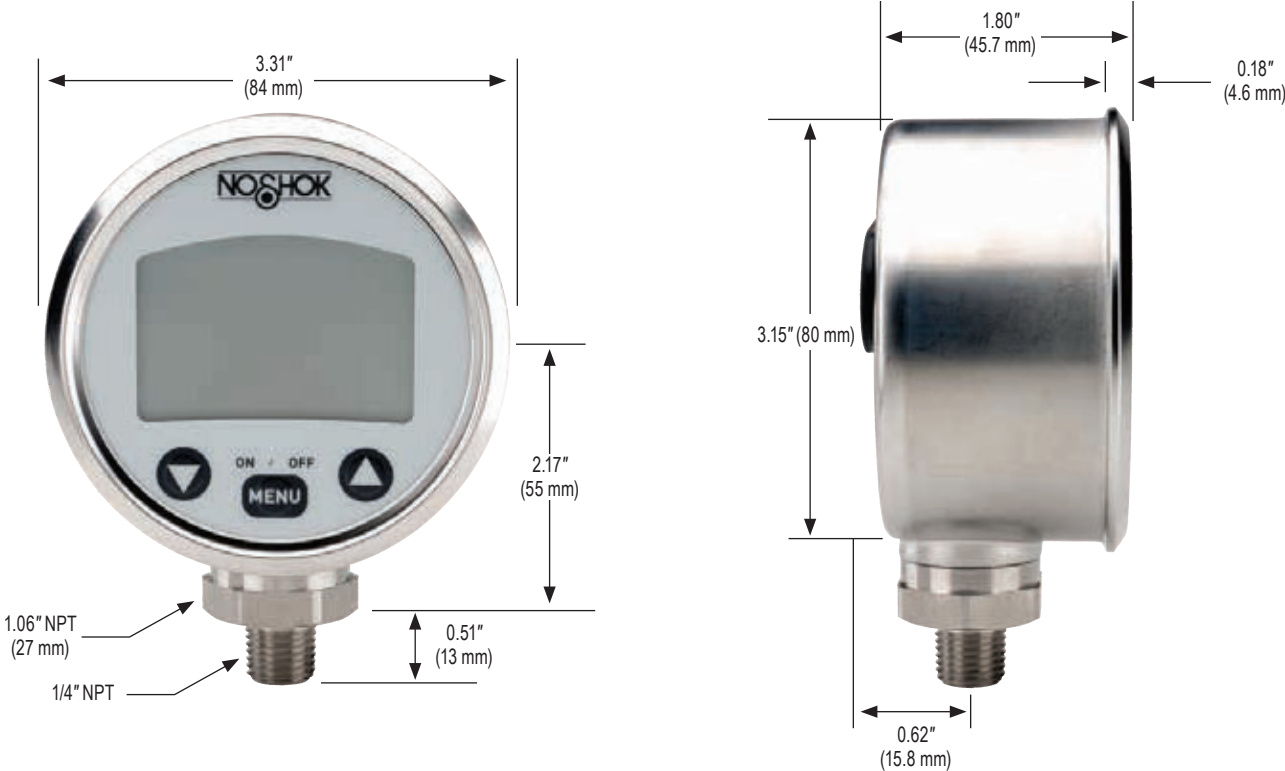
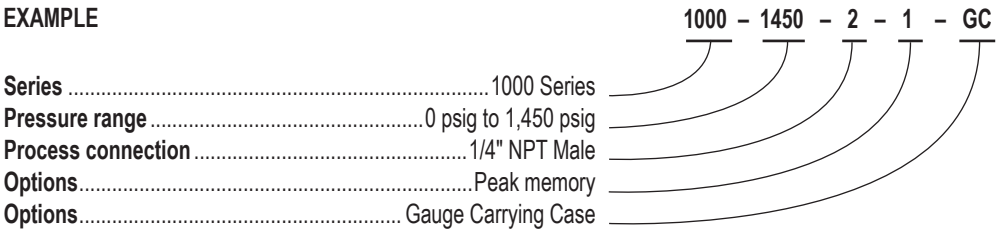
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION				
<b>SERIES</b>	<b>1000</b>			
<b>PRESSURE RANGES</b>	<b>30/72</b> -30 inHg to 0 to 72 psig	<b>300</b> 0 psig to 300 psig	<b>2000</b> 0 psig to 2,000 psig	<b>6000</b> 0 psig to 6,000 psig
	<b>30/145</b> -30 inHg to 0 to 145 psig	<b>600</b> 0 psig to 600 psig	<b>3000</b> 0 psig to 3,000 psig	<b>7500</b> 0 psig to 7,500 psig
	<b>145</b> 0 psig to 145 psig psig = gauge pressure	<b>1450</b> 0 psig to 1,450 psig Other ranges available on request	<b>5000</b> 0 psig to 5,000 psig	<b>10000</b> 0 psig to 10,000 psig *
<b>PROCESS CONNECTION</b>	<b>2</b> 1/4" NPT male			
<b>OPTIONS</b>	<b>1</b> Peak memory - standard	<b>GC</b> Gauge Carrying Case	<b>RCP</b> Rubber Case Protector	
	<b>6</b> Enhanced software	<b>ST8</b> Threaded Orifice		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Standard model will only display 9999 psig.

**EXAMPLE**





## 100 SERIES

- Vacuum and compound ranges through 0 psig to 15,000 psig
- Current output
- 316 and 17-4PH Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- HVAC
- Hydraulics & pneumatics
- Injection molding machines
- Railroad equipment
- Stamping & forming presses

### SPECIFICATIONS

<b>Output signal</b>	4 mA to 20 mA, 2-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	±0.5% full scale (BFSL); optional ±0.25% full scale (BFSL); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Adjustment</b>	≤ ±10% full scale for zero and span
<b>Response time</b>	≤ 1 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Effect ±0.017% full scale/ °F for zero and span Media -22 °F to 212 °F (-30 °C to 100 °C) Ambient -40 °F to 185 °F (-40 °C to 85 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
<b>Load limitations</b>	≤ (Vpower supply -10)/0.020 Amp
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 1.75 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 to 15,000 psi
<b>Burst pressure</b>	3.8 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	316 Stainless Steel for vacuum through 300 psi; 17-4PH Stainless Steel for ≥500 psi
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protection
<b>Shock</b>	1000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 3.5 oz.

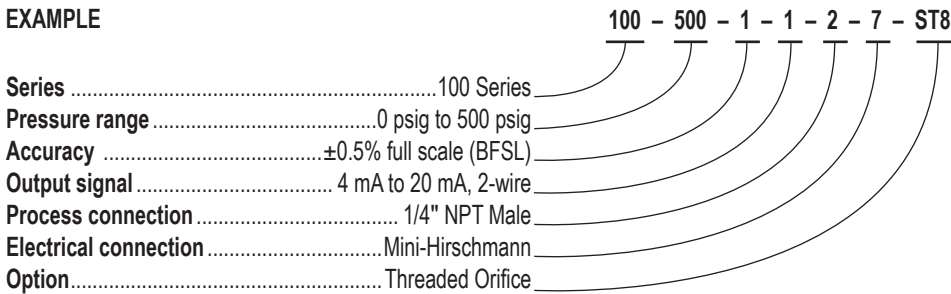
\* Unregulated



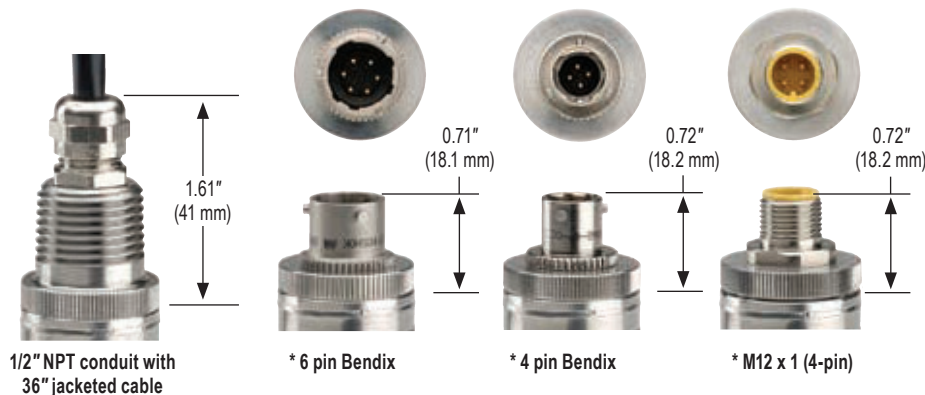
ORDERING INFORMATION					
<b>SERIES</b>	<b>100</b>				
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg to 0 psig	<b>5</b> 0 psig to 5 psig	<b>200</b> 0 psig to 200 psig	<b>3000</b> 0 psig to 3,000 psig	<b>15A</b> 0 psia to 15 psia
	<b>30/15</b> -30 inHg to 15 psig	<b>10</b> 0 psig to 10 psig	<b>300</b> 0 psig to 300 psig	<b>4000</b> 0 psig to 4,000 psig	<b>30A</b> 0 psia to 30 psia
	<b>30/30</b> -30 inHg to 30 psig	<b>15</b> 0 psig to 15 psig	<b>500</b> 0 psig to 500 psig	<b>5000</b> 0 psig to 5,000 psig	<b>60A</b> 0 psia to 60 psia
	<b>30/45</b> -30 inHg to 45 psig	<b>25</b> 0 psig to 25 psig	<b>600</b> 0 psig to 600 psig	<b>6000</b> 0 psig to 6,000 psig	<b>100A</b> 0 psia to 100 psia
	<b>30/100</b> -30 inHg to 100 psig	<b>30</b> 0 psig to 30 psig	<b>750</b> 0 psig to 750 psig	<b>7500</b> 0 psig to 7,500 psig	<b>150A</b> 0 psia to 150 psia
	<b>30/150</b> -30 inHg to 150 psig	<b>60</b> 0 psig to 60 psig	<b>1000</b> 0 psig to 1,000 psig	<b>10000</b> 0 psig to 10,000 psig	<b>200A</b> 0 psia to 200 psia
	<b>30/200</b> -30 inHg to 200 psig	<b>100</b> 0 psig to 100 psig	<b>1500</b> 0 psig to 1,500 psig	<b>15000</b> 0 psig to 15,000 psig	<b>300A</b> 0 psia to 300 psia
	<b>30/300</b> -30 inHg to 300 psig	<b>150</b> 0 psig to 150 psig	<b>2000</b> 0 psig to 2,000 psig		
		psig = gauge pressure	psia = absolute pressure	Other ranges available on request	
<b>ACCURACIES</b>	<b>1</b> ±0.5% full scale (BFSL)	<b>2</b> ±0.25% full scale (BFSL)			
<b>OUTPUT SIGNAL</b>	<b>1</b> 4 mA to 20 mA, 2-wire				
<b>PROCESS CONNECTIONS</b>	<b>1</b> 1/8" NPT male	<b>3</b> SAE J1926-3-7/16-20 Adjustable	<b>9</b> SAE J1926-1-7/16-20		
	<b>2</b> 1/4" NPT male	<b>4</b> 1/8" NPT female	<b>10</b> G1/4 male		
<b>ELECTRICAL CONNECTIONS</b>	<b>1</b> 36" cable (connected to option 7)	<b>6</b> 1/2" NPT conduit ( with 36" cable)		<b>25</b> M12 x 1 (4-pin)	
	<b>2</b> 4-pin Bendix	<b>7</b> Mini-Hirschmann (DIN EN 175301-803 Form C)		<b>36</b> Integral cable 36"	
	<b>3</b> 6-pin Bendix				
<b>OPTION</b>	<b>ST8</b> Threaded Orifice				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



Load Limitations 4 mA to 20 mA output	
Vmin	= 10V + (.020 x RL)
RL	= Loop resistance (Ω) RL = RS + RW
RS	= Sensor resistance (Ω)
RW	Wire resistance (Ω)



WIRING				
Wire	Bendix 4-pin or 6-pin	Mini-Hirschmann	Cable	M12 x 1
+ Supply	pin A	pin 1	Red	pin 1
+ Output	pin B	pin 2	Black	pin 3

\* Note: Mate supplied separately or customer supplied.



## 200 SERIES

- Ranges from vacuum to 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Voltage output
- 316 and 17-4PH Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### SPECIFICATIONS

<b>Output signals</b>	0 Vdc to 5 Vdc, 3-wire; 0 Vdc to 10 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire; 1 Vdc to 6 Vdc, 3-wire; 1 Vdc to 11 Vdc, 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	±0.5% full scale (BFSL); optional ±0.25% full scale (BFSL); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale per year, non-accumulating
<b>Adjustment</b>	±10% full scale for zero and span
<b>Response time</b>	≤ 1 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Effect ±0.017% full scale/ °F for zero and span Media -22 °F to 212 °F (-30 °C to 100 °C) Ambient -40 °F to 185 °F (-40 °C to 85 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (0 Vdc to 5 Vdc, 3-wire, 1 Vdc to 5 Vdc, 3-wire, 1 Vdc to 6 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire, 1 Vdc to 11 Vdc, 3-wire)
<b>Load limitations</b>	≥ 5,000 Ω for 0 Vdc to 5 Vdc, 1 Vdc to 5 Vdc, and 1 Vdc to 6 Vdc outputs; ≥ 10,000 Ω for 0 Vdc to 10 Vdc and 1 Vdc to 11 Vdc outputs. Current consumption 8 mA
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 1.75 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi
<b>Burst pressure</b>	3.8 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	316 Stainless Steel for vacuum through 300 psi; 17-4PH Stainless Steel for ≥500 psi
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protection
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 3.5 oz.

\* Unregulated

### APPLICATIONS

- HVAC
- Hydraulics & pneumatics
- Injection molding machines
- Railroad equipment
- Stamping & forming presses

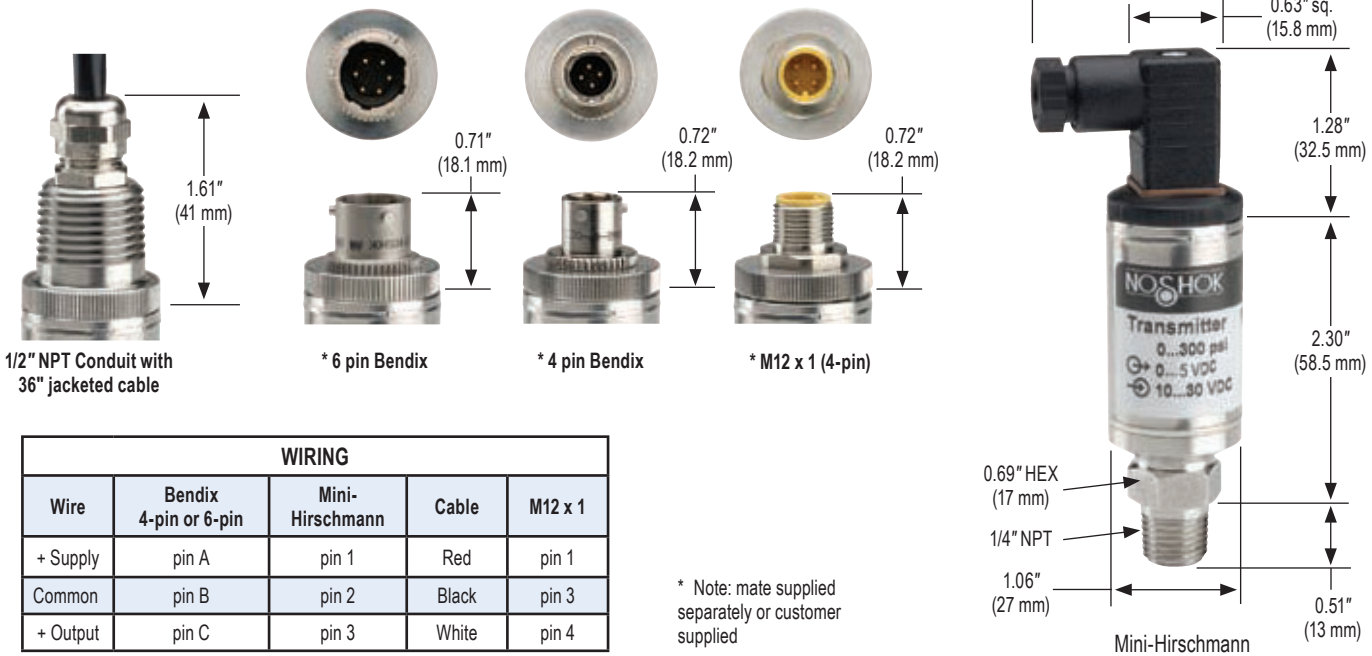
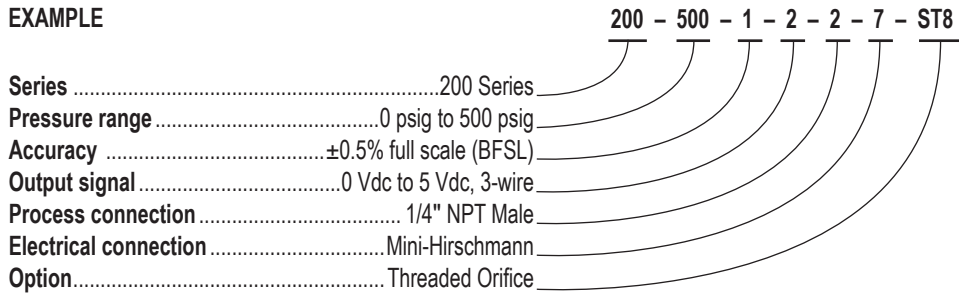




ORDERING INFORMATION						
<b>SERIES</b>	200					
<b>PRESSURE RANGES</b>	30vac -30 inHg to 0 psig	30/300 -30 inHg to 300 psig	200 0 psig to 200 psig	3000 0 psig to 3,000 psig	15A 0 psia to 15 psia	
	30/15 -30 inHg to 15 psig	5 0 psig to 5 psig	300 0 psig to 300 psig	4000 0 psig to 4,000 psig	30A 0 psia to 30 psia	
	30/30 -30 inHg to 30 psig	10 0 psig to 10 psig	500 0 psig to 500 psig	5000 0 psig to 5,000 psig	60A 0 psia to 60 psia	
	30/45 -30 inHg to 45 psig	15 0 psig to 15 psig	600 0 psig to 600 psig	6000 0 psig to 6,000 psig	100A 0 psia to 100 psia	
	30/60 -30 inHg to 60 psig	30 0 psig to 30 psig	750 0 psig to 750 psig	7500 0 psig to 7,500 psig	150A 0 psia to 150 psia	
	30/100 -30 inHg to 100 psig	60 0 psig to 60 psig	1000 0 psig to 1,000 psig	10000 0 psig to 10,000 psig	200A 0 psia to 200 psia	
	30/150 -30 inHg to 150 psig	100 0 psig to 100 psig	1500 0 psig to 1,500 psig	15000 0 psig to 15,000 psig	300A 0 psia to 300 psia	
	30/200 -30 inHg to 200 psig	150 0 psig to 150 psig	2000 0 psig to 2,000 psig			
		psig = gauge pressure	psia = absolute pressure	Other ranges available on request		
<b>ACCURACIES</b>	1 ±0.5% full scale (BFSL)		2 ±0.25% full scale (BFSL)			
<b>OUTPUT SIGNALS</b>	2 0 Vdc to 5 Vdc, 3-wire	3 1 Vdc to 5 Vdc, 3-wire	4 1 Vdc to 6 Vdc, 3-wire	5 0 Vdc to 10 Vdc, 3-wire	6 1 Vdc to 11 Vdc, 3-wire	
<b>PROCESS CONNECTIONS</b>	1 1/8" NPT male	3 SAE J1926-3:7/16-20 adjustable			9 SAE J1926-1:7/16-20	
	2 1/4" NPT male	4 1/8" NPT female			10 G1/4 male	
<b>ELECTRICAL CONNECTION</b>	1 36" cable (connected to option 7)		6 1/2" NPT conduit ( with 36" cable)		25 M12 x 1 (4-pin)	
	2 4-pin Bendix		7 Mini-Hirschmann (DIN EN 175301-803 form C)		36 Integral cable 36"	
	3 6-pin Bendix					
	NOTE: 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc outputs are also available in 4-wire configurations for use with other electrical systems.					
<b>OPTION</b>	ST8 Threaded Orifice					

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



WIRING				
Wire	Bendix 4-pin or 6-pin	Mini- Hirschmann	Cable	M12 x 1
+ Supply	pin A	pin 1	Red	pin 1
Common	pin B	pin 2	Black	pin 3
+ Output	pin C	pin 3	White	pin 4

\* Note: mate supplied separately or customer supplied

# Small Diameter Submersible



Shown with optional NPT conduit and optional FEP cable

## 611 SERIES

- Hydrostatic level measurement for use in applications including bore holes and wells with small diameters (outer diameter 0.87")
- Low power output signals for battery-powered applications, and optional temperature output available
- 5:1 turndown using optional HART® signal
- 316L Stainless Steel, PVDF and polyurethane wetted parts
- CE compliant to suppress RFI, EMI and ESD
- Certifications pending:
  - ATEX
  - CSA
  - IECEx

### APPLICATIONS

- Well head measurement
- Groundwater monitoring
- Level measurement in open bodies of water
- Sewage lift and pumping stations
- Setting ponds and rainwater basins

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire 4 mA to 20 mA + HART®, 2-wire 4 mA to 20 mA x 2 (pressure and temperature)* 0.1 Vdc to 2.5 Vdc, 3-wire 0.1 Vdc to 2.5 Vdc x 2 (pressure and temperature)*
<b>Pressure ranges**</b>	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psig to 100 psig
<b>Accuracy</b>	± 1.0% of span (± 0.5% of span optional) Includes non-linearity, hysteresis, zero offset and end value deviation per IEC 61298-2 Accuracy after turndown via HART®, ≤ ±1.25% of scaled span (0.75% optional) Temperature sensor 14 °F to 176 °F (-10 °C to 80 °C): ≤ ± 3.3 °F
<b>Stability</b>	≤ ± 0.1% of span per year
<b>Switch on time</b>	Output signals without HART®: ≤150 ms Output signals with HART®: ≤250 ms
<b>Settling time</b>	Output signals without HART®: ≤100 ms Output signals with HART®: ≤250 ms
<b>Durability</b>	> 100,000,000 full scale cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Effect ± 0.01%/ °F for zero and span Standard Media 14 °F to 122°F (-10 °C to 50 °C) Optional Media -40 °F to 176 °F (-40 °C to 80 °C) Storage -40 °F to 176 °F (-40 °C to 80 °C)
<b>Power requirement***</b>	4mA to 20 mA: 8 Vdc to 36 Vdc 4 mA to 20 mA and HART®: 12-36 Vdc 0.1 to 2.5 Vdc: 3.6 - 36 Vdc
<b>Load limitations</b>	4 mA to 20 mA: ≤ (Vpower - 8 V) / 0.022 A 4 mA to 20 mA and HART®: ≤ (Vpower - 9.6 V) / 0.022 A
<b>Proof pressure</b>	5 times range
<b>Measuring element</b>	Cap: PVDF Sensor: 316 stainless steel, optional Hastelloy C-276 Cable: Polyurethane, optional FEP
<b>Connection</b>	316 stainless steel
<b>Housing material</b>	316 stainless steel, 318 LN optional
<b>Environmental rating</b>	IP68
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity protection, short circuit and resistance to overvoltage :DC 40V and increased overvoltage for lightning protection. Normal discharge current ≥10 kA, Rise time 8/20 μs
<b>Max. submersion depth</b>	325 ft./100 meters
<b>Vibration</b>	4 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 10.6 oz. with standard nosecone - cable .5 lb per 10 ft.

\* Temperature measurement is based on the media temperature range

\*\* Other ranges and measuring units available including bar, mbar, MPa, kPa, and mH<sub>2</sub>O

\*\*\* Unregulated



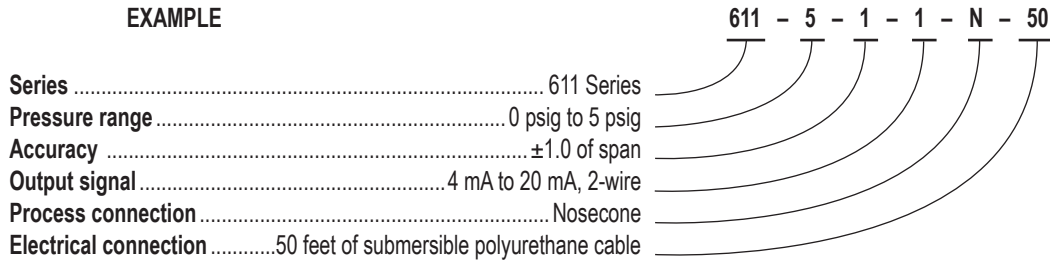
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION					
<b>SERIES</b>	<b>611</b>		<b>611H 318LN/Hastelloy C-276</b>		
<b>PRESSURE RANGES</b>	<b>50 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O <b>100 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O <b>150 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O <b>250 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 250 inH <sub>2</sub> O	<b>5</b> 0 psig to 5 psig (11.5 ftH <sub>2</sub> O) <b>10</b> 0 psig to 10 psig (23.1 ftH <sub>2</sub> O) <b>15</b> 0 psig to 15 psig (34.6 ftH <sub>2</sub> O) <b>25</b> 0 psig to 25 psig (57.7 ftH <sub>2</sub> O)	<b>50</b> 0 psig to 50 psig (115 ftH <sub>2</sub> O) <b>100</b> 0 psig to 100 psig (230.8 ftH <sub>2</sub> O) <b>25A</b> 0 psia to 25 psia <b>50A</b> 0 psia to 50 psia	<b>100A</b> 0 psia to 100 psia	
psig = gauge pressure    psia = absolute pressure    Other ranges and measuring units available on request					
<b>ACCURACIES</b>	<b>1</b> ±1.0 of span		<b>2</b> ±0.5% of span		
<b>OUTPUT SIGNALS</b>	<b>1</b> 4 mA to 20 mA, 2-wire <b>43</b> 4 mA to 20 mA, 2-wire and HART® signal <b>47</b> 4 mA to 20 mA x 2 (pressure and temperature)*		<b>48</b> 0.1 Vdc to 2.5 Vdc, 3 wire** <b>49</b> 0.1 Vdc to 2.5 Vdc x 2 (pressure and temperature) *, **		
<b>PROCESS CONNECTIONS</b>	<b>N</b> Nosecone		<b>W</b> Weighted nosecone		
<b>ELECTRICAL CONNECTIONS</b>	<b>XX</b> Standard polyurethane (PUR) cable <b>38-XX</b> Optional FEP cable <b>NOTE: XX = length of cable in feet</b>		<b>62-XX</b> Polyurethane (PUR) cable with 1/2" NPT conduit connection <b>63-XX</b> FEP cable with 1/2" NPT conduit connection		
<b>OPTIONS</b>	<b>CBC</b> Cable Clamp	<b>LP</b> Lightning Protection	<b>JB</b> Cable Junction Box (NEMA 4X)	<b>HT</b> Increased media temperature (-40 °F to 176 °F)	

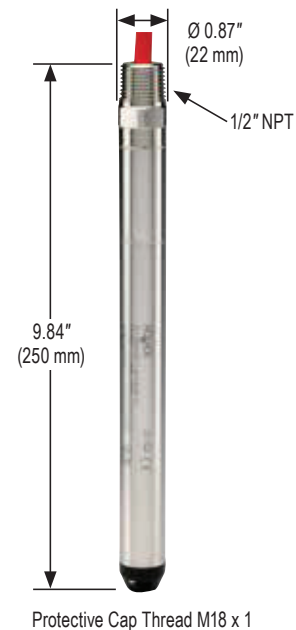
**Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.**

\* Temperature measurement is based on the media temperature range  
 \*\* Low power is optimized for battery operation

### EXAMPLE



### With protective cap



### WIRING CODE SCHEMATICS

	Wiring	Cable
<b>4 mA to 20 mA &amp; 4 mA to 20 mA, 2-wire and Hart signal®</b>	+ Supply	Brown
	- Supply	Blue
	Shield	Grey
<b>4 mA to 20 mA x 2 (pressure and temperature)</b>	+ Supply (pressure sensor)	Brown
	- Supply (pressure sensor)	Blue
	+ Supply (temperature sensor)	Green
	- Supply (temperature sensor)	White
	Shield	Grey
<b>0.1 Vdc to 2.5 Vdc, 3 wire</b>	+ Supply	Brown
	- Supply	Blue
	Analog output	Black
	Shield	Grey
<b>0.1 Vdc to 2.5 Vdc x 2 (pressure and temperature)</b>	+ Supply	Brown
	- Supply	Blue
	Analog output (pressure sensor)	Black
	Analog output (temperature sensor)	Green
	Shield	Grey



## 612 SERIES

- Ranges from 0 inH<sub>2</sub>O to 50 inH<sub>2</sub>O through 0 psig to 1,000 psig
- Current and voltage outputs available
- 316 Stainless Steel, polyamide and polyurethane wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Irrigation
- Tank monitoring
- Water & wastewater
- Well head measurement

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; 0.5 Vdc to 2.5 Vdc, 3-wire
<b>Pressure ranges</b>	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psig to 1,000 psig
<b>Accuracy</b>	± 0.25% full scale (BFSL); optional ± 0.125% full scale (BFSL); (includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ± 0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	≤ 1 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 122 °F/0 °C to 50 °C Effect ± 0.01%/ °F for zero and span Media 14 °F to 122 °F / -10 °C to 50 °C Storage -22 °F to 175 °F/-30 °C to 80 °C
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire) 5 Vdc to 30 Vdc (0.5 Vdc to 2.5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	2 times range
<b>Burst pressure</b>	4 times range
<b>Measuring element</b>	Cap: Polyamide, 316 Stainless Steel with weighted nosecone Cable: Polyurethane, optional FEP or PVC with double water block
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP68
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity protection, short circuit and optional lightning protection per EN 6100-4-5; 1.5J
<b>Shock</b>	100 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 7 oz. with standard nosecone - cable extra

\* Unregulated

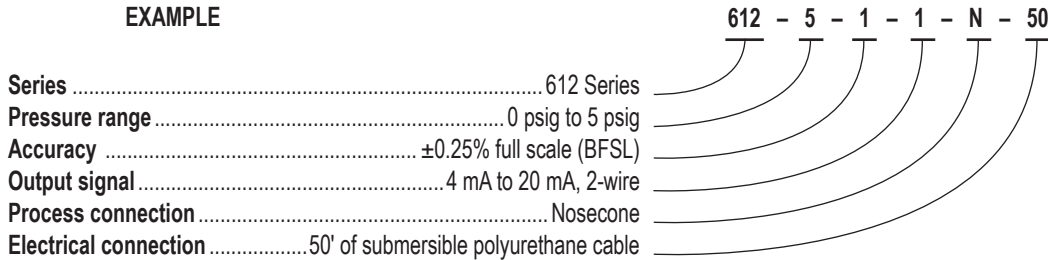


ORDERING INFORMATION								
<b>SERIES</b>	612							
<b>PRESSURE RANGES</b>	50 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	2	0 psig to 2 psig (4.6 ftH <sub>2</sub> O)	20	0 psig to 20 psig (46.2 ftH <sub>2</sub> O)	200	0 psig to 200 psig (461.3 ftH <sub>2</sub> O)
	100 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	3	0 psig to 3 psig (6.9 ftH <sub>2</sub> O)	25	0 psig to 25 psig (57.7 ftH <sub>2</sub> O)	300	0 psig to 300 psig (692.5 ftH <sub>2</sub> O)
	150 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	5	0 psig to 5 psig (11.5 ftH <sub>2</sub> O)	30	0 psig to 30 psig (69.2 ftH <sub>2</sub> O)	350	0 psig to 350 psig (807.9 ftH <sub>2</sub> O)
	200 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	10	0 psig to 10 psig (23.1 ftH <sub>2</sub> O)	60	0 psig to 60 psig (138.5 ftH <sub>2</sub> O)	500	0 psig to 500 psig (1154.2 ftH <sub>2</sub> O)
	400 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	15	0 psig to 15 psig (34.6 ftH <sub>2</sub> O)	100	0 psig to 100 psig (230.8 ftH <sub>2</sub> O)	750	0 psig to 750 psig (1733.3 ftH <sub>2</sub> O)
	psig = gauge pressure    Other ranges available on request				150	0 psig to 150 psig (346.3 ftH <sub>2</sub> O)	1000	0 psig to 1,000 psig (2311.0 ftH <sub>2</sub> O)
<b>ACCURACIES</b>	1	±0.25% full scale (BFSL)	2	±0.125% full scale (BFSL)				
<b>OUTPUT SIGNALS</b>	1	4 mA to 20 mA, 2-wire			5	0 Vdc to 10 Vdc, 3-wire		
	2	0 Vdc to 5 Vdc, 3-wire			11	0.5 Vdc to 2.5 Vdc, 3-wire		
<b>PROCESS CONNECTIONS</b>	N	Nosecone			W	Nosecone w/added weight (1.1 lb.)		
<b>ELECTRICAL CONNECTIONS</b>	XX	Standard polyurethane (PUR) cable			38-XX	Optional FEP cable		
	22-XX	Optional water-blocked PVC cable (200+ psi only)						
	NOTE: XX = length of cable in feet.							
<b>OPTIONS</b>	PT1	PT100 RTD *	CBC	Cable Clamp	FE	Filter Element		
	DC	Desiccant Cartridge	LP	Lightning Protection *	JB	Cable Junction Box		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

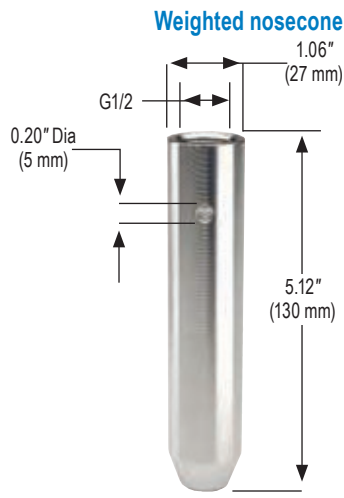
\* Not available for PVC cable

**EXAMPLE**



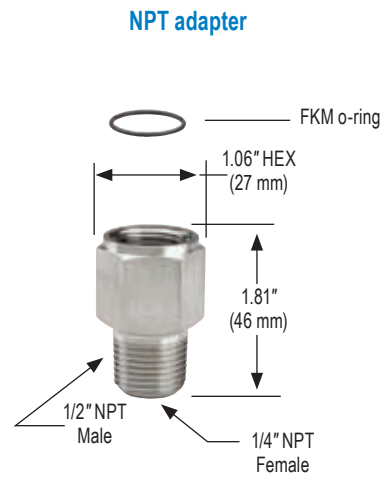
**2-WIRE WIRING**

Wiring	Cable
+ Supply	Red
+ Output	Black



**3-WIRE WIRING**

Wiring	Cable
+ Supply	Red
Common	Black
+ Output	White



## Cage-Protected Submersible



## 613 SERIES

- Ranges from 0 psi to 5 psi through 0 psi to 300 psi
- Current & voltage outputs available
- 316 Stainless Steel and polyurethane wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Lift stations
- Sewage
- Slurry tanks
- Storm canals
- Water & wastewater
- Wet wells

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; 0.5 Vdc to 2.5 Vdc, 3-wire
<b>Pressure ranges</b>	0 psi to 5 psi through 0 psi to 300 psi
<b>Accuracy</b>	± 0.25% full scale (BFSL); optional ± 0.125% full scale (BFSL); (includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ± 0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	≤ 1 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 full scale cycles
<b>Temperature measurement</b>	Optional PT100, 4-wire per IEC 60751
<b>Temperature ranges</b>	Compensated 32 °F to 122 °F/0 °C to 50 °C Effect ± 0.01%/ °F for zero and span Media 14 °F to 122 °F / -10 °C to 50 °C Storage -22 °F to 175 °F/ -30 °C to 80 °C
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire) 5 Vdc to 30 Vdc (0.5 Vdc to 2.5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	2 times range
<b>Burst pressure</b>	4 times range
<b>Measuring element</b>	Cage seal: All 316 Stainless Steel Cable: Polyurethane, optional FEP
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP68
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity protection, short circuit and optional lightning protection per EN 6100-4-5; 1.5J
<b>Shock</b>	100 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 3.2 lb. - cable extra

\* Unregulated



ORDERING INFORMATION					
<b>SERIES</b>	613				
<b>PRESSURE RANGES</b>	5	0 psi to 5 psi (11.55 ft/H <sub>2</sub> O)	20	0 psi to 20 psi (46.20 ft/H <sub>2</sub> O)	
	10	0 psi to 10 psi (23.10 ft/H <sub>2</sub> O)	30	0 psi to 30 psi (69.30 ft/H <sub>2</sub> O)	
	15	0 psi to 15 psi (34.65 ft/H <sub>2</sub> O)	50	0 psi to 50 psi (115.50 ft/H <sub>2</sub> O)	
<b>ACCURACIES</b>	1	±0.25% full scale (BFSL)	2	±0.125% full scale (BFSL)	
	<b>OUTPUT SIGNALS</b>		5	0 Vdc to 10 Vdc, 3-wire	
<b>ELECTRICAL CONNECTIONS</b>	2	0 Vdc to 5 Vdc, 3-wire	11	0.5 Vdc to 2.5 Vdc, 3-wire	
	XX	Standard polyurethane (PUR) cable	38-XX	Optional FEP cable	
<b>OPTIONS</b>	NOTE: XX = length of cable in feet.				
	CBC	Cable Clamp	FE	Filter Element	
	DC	Desiccant Cartridge	LP	Lightning Protection *	
		JB	Cable Junction Box	PT1	PT100 RTD *
			LR	Lifting Ring	

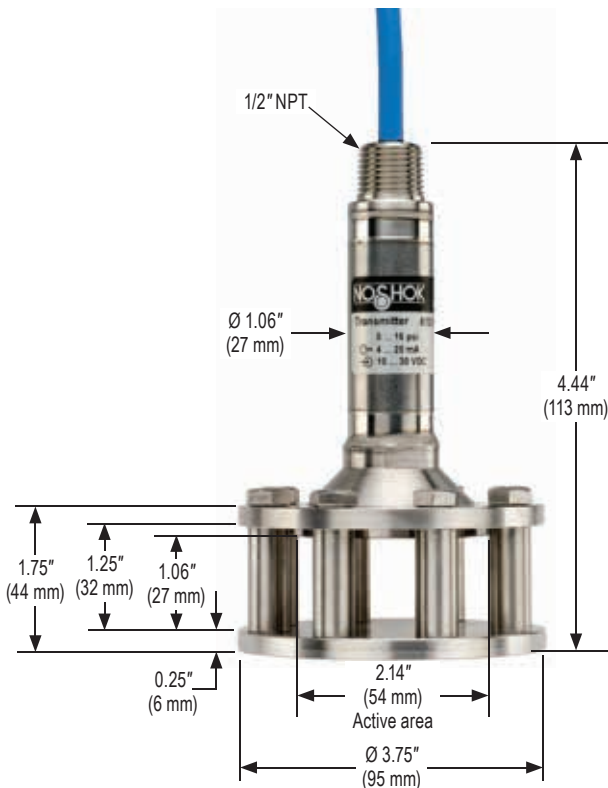
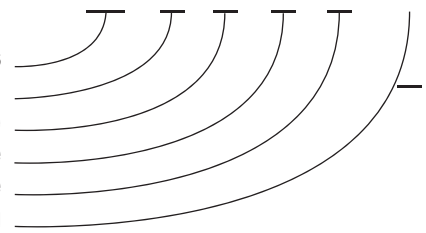
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Only available with PUR cable

**EXAMPLE**

Series .....613 Series  
 Pressure range .....0 psi to 5 psi  
 Accuracy .....±0.25% full scale (BFSL)  
 Output signal .....4 mA to 20 mA, 2-wire  
 Electrical connection .....50' of submersible polyurethane cable  
 Option.....Lifting Ring

613 - 5 - 1 - 1 - 50' - LR



Optional Cable Clamp



Optional Cable Junction Box



Optional Desiccant Cartridge



Optional Filter Element



Optional Lifting Ring



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# High Accuracy Heavy-Duty



High pressure model

## APPLICATIONS

- Construction
- Hydraulics & pneumatics
- Laboratory & test equipment
- Power generation
- Stamping & forming presses
- Transportation



Also available with our 1800 Series Attachable Loop Indicator. Visit [www.noshok.com](http://www.noshok.com) for more information.

# 615/616 SERIES

- Vacuum ranges through 0 psig to 145,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Current and voltage outputs available
- 316 and 17-4PH Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

## SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc, 0 Vdc to 10 Vdc, 1 Vdc to 5 Vdc, 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 145,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	± 0.25% full scale (BFSL); optional ± 0.125% full scale (BFSL); (includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Adjustment</b>	± 10% full scale for zero and span
<b>Response time</b>	Less than 1 ms (between 10% and 90% full scale)
<b>Service life</b>	>100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 175 °F (0 °C to 80 °C) Effect ± 0.01%/ °F for zero and span Media -20 °F to 212 °F (-30 °C to 100 °C) Ambient -15 °F to 175 °F (-10 °C to 80 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 1 Vdc to 5 Vdc, 3-wire, 1 Vdc to 6 Vdc, 3-wire, 0 Vdc to 5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire, 1 Vdc to 11 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 2 psi through 0 psi to 200 psi 1.75 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi 1.2 times full scale for ranges 0 psi to 20,000 psi through 0 psi to 145,000 psi
<b>Burst pressure</b>	3.8 times full scale for ranges 0 psi to 2 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi 1.5 times full scale for ranges 0 psi to 20,000 psi through 0 psi to 145,000 psi
<b>Measuring element</b>	316 Stainless Steel for vacuum through 300 psi; 17-4PH Stainless Steel for ≥500 psi
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, overvoltage and short circuit protection
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 7.2 oz.

\* Unregulated



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

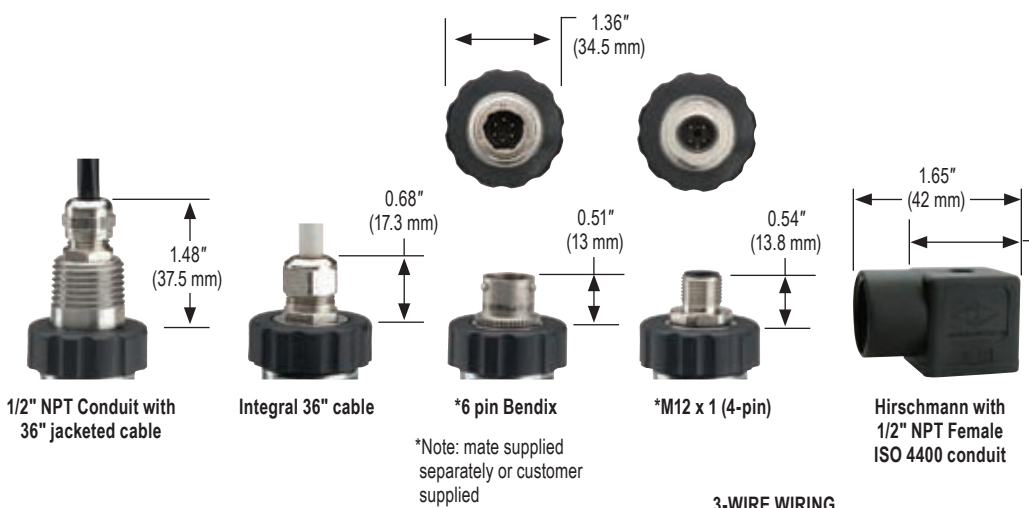
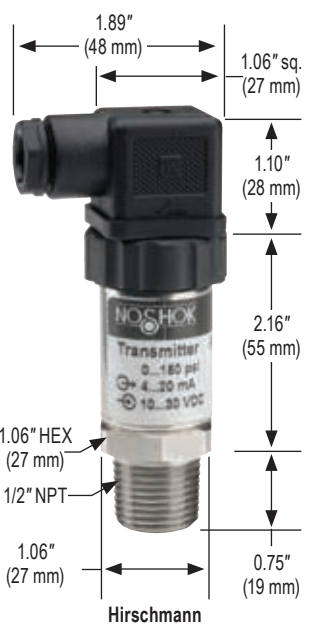
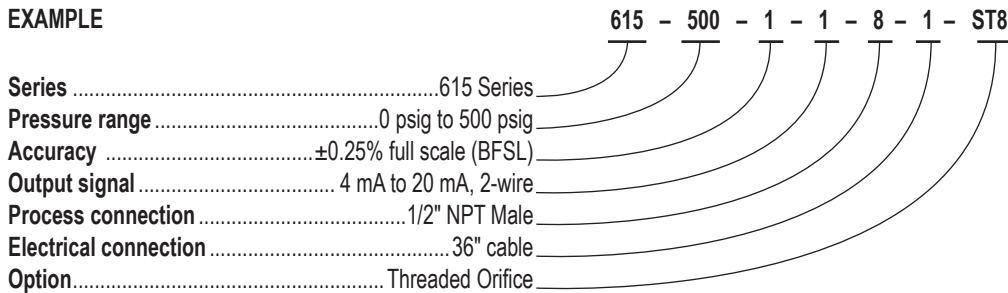


ORDERING INFORMATION												
SERIES	615 (Internal diaphragm)	616 (Front flush diaphragm)										
PRESSURE RANGES	30vac	-30 inHg to 0 psig	2	0 psig to 2 psig	150	0 psig to 150 psig	2000	0 psig to 2,000 psig	20000	0 psig to 20,000 psig *	145000	0 psig to 145,000 psig
	30/15	-30 inHg to 15 psig	3	0 psig to 3 psig	200	0 psig to 200 psig	3000	0 psig to 3,000 psig	30000	0 psig to 30,000 psig	15A	0 psia to 15 psia
	30/30	-30 inHg to 30 psig	5	0 psig to 5 psig	300	0 psig to 300 psig	4000	0 psig to 4,000 psig	36000	0 psig to 36,000 psig	30A	0 psia to 30 psia
	30/60	-30 inHg to 60 psig	10	0 psig to 10 psig	500	0 psig to 500 psig	5000	0 psig to 5,000 psig	58000	0 psig to 58,000 psig	60A	0 psia to 60 psia
	30/100	-30 inHg to 100 psig	15	0 psig to 15 psig	600	0 psig to 600 psig	6000	0 psig to 6,000 psig	72000	0 psig to 72,000 psig	100A	0 psia to 100 psia
	30/150	-30 inHg to 150 psig	30	0 psig to 30 psig	750	0 psig to 750 psig	7500	0 psig to 7,500 psig	87000	0 psig to 87,000 psig	150A	0 psia to 150 psia
	30/200	-30 inHg to 200 psig	60	0 psig to 60 psig	1000	0 psig to 1,000 psig	10000	0 psig to 10,000 psig	100000	0 psig to 100,000 psig	200A	0 psia to 200 psia
	30/300	-30 inHg to 300 psig	100	0 psig to 100 psig	1500	0 psig to 1,500 psig	15000	0 psig to 15,000 psig	115000	0 psig to 115,000 psig	300A	0 psia to 300 psia
psig = gauge pressure    psia = absolute pressure    Other ranges available on request <b>Note:</b> 616 Series is available for pressure ranges up to 0 psig to 8,000 psig												
ACCURACIES	1	±0.25% full scale (BFSL)	2	±0.125% full scale (BFSL)								
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire	3	1 Vdc to 5 Vdc, 3-wire	<b>NOTE:</b> 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc outputs are also available in 4-wire configurations for use with other electrical systems.							
	2	0 Vdc to 5 Vdc, 3-wire	5	0 Vdc to 10 Vdc, 3-wire								
PROCESS CONNECTIONS	615:	2	1/4" NPT male	6	9/16" -18 UNF 2B high pressure cone ** (Standard on 30,000 to 120,000 psig)	8	1/2" NPT male					
	616:	11	G 1/2 B (Pressure ranges ≥ 0 psig to 30 psig)	13	G 1 B (Pressure ranges ≤ 0 psig to 30 psig)	Other connections available upon request						
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 8)	8	Hirschmann (DIN EN 175301-803 Form A)	25	M12 x 1 (4-pin)						
	3	6-pin Bendix	14	Hirschmann type with 1/2" NPT female conduit	36	Integral 36" cable						
	6	1/2" NPT conduit w/ 36" cable										
OPTIONS	ST8	SS Threaded Orifice	G1	G 1 Weld-on adapter (616 only)	G½	G 1/2 Weld-on adapter (616 only)						

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Not available with 1/4" NPT  
 \*\* Equivalent to F250C Parker Autoclave

### EXAMPLE



**2-WIRE WIRING**

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
+ Output	2	Black	3	B

**3-WIRE WIRING**

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
Common	2	Black	3	B
+ Output	3	White	4	C

**NOTE**  
 See 621/622 Series for G1/2B and G1B Front Flush Process Connection Dimensions pg. 85



## 640 SERIES

- Vacuum ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Standard 4 mA to 20 mA output
- 316 and 17-4PH Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 15,000 psig Absolute from 0 to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	±0.05% full scale (BFSL); optional ±0.025% full scale (BFSL); (includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.1% full scale; 5 psi ±0.2% full scale per year
<b>Response time</b>	< 300 ms (between 10% to 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 160 °F (0 °C to 70 °C) Effect: ±0.005% / °F (32 °F to 50 °F) to zero point and pressure range no effect (50 °F to 104 °F) for zero and span ±0.005% / °F (104 °F to 158 °F) to zero point and pressure range Media - 5 °F to 160 °F (-20 °C to 70 °C) Ambient 32 °F to 160 °F (0 °C to 70 °C) Storage -5 °F to 160 °F (-20 °C to 70 °C)
<b>Power requirement*</b>	9 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire) Voltage supply via RS232 interface (RS232)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 2 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi
<b>Burst pressure</b>	4 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	316 Stainless Steel for vacuum through 300 psi; 17-4PH Stainless Steel for ≥500 psi
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, overvoltage and short circuit protection
<b>Shock</b>	100 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 11 oz.

\* Unregulated

### APPLICATIONS

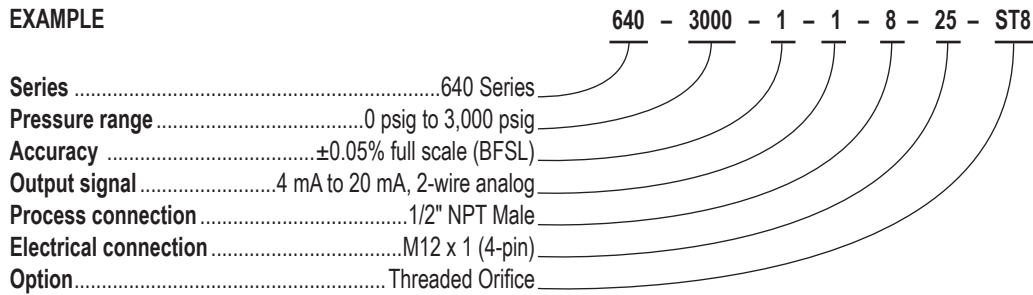
- Aerospace equipment
- Laboratory & test equipment
- Precision measurement



ORDERING INFORMATION											
<b>SERIES</b>	<b>640</b>										
<b>PRESSURE RANGES</b>	<b>30vac</b>	-30 inHg to 0 psig	<b>30/300</b>	-30 inHg to 300 psig	<b>150</b>	0 psig to 150 psig	<b>3000</b>	0 psig to 3,000 psig	<b>30A</b>	0 psia to 30 psia	
	<b>30/15</b>	-30 inHg to 15 psig	<b>5</b>	0 psig to 5 psig	<b>200</b>	0 psig to 200 psig	<b>5000</b>	0 psig to 5,000 psig	<b>60A</b>	0 psia to 60 psia	
	<b>30/30</b>	-30 inHg to 30 psig	<b>10</b>	0 psig to 10 psig	<b>300</b>	0 psig to 300 psig	<b>6000</b>	0 psig to 6,000 psig	<b>100A</b>	0 psia to 100 psia	
	<b>30/60</b>	-30 inHg to 60 psig	<b>15</b>	0 psig to 15 psig	<b>500</b>	0 psig to 500 psig	<b>7500</b>	0 psia to 7,500 psig	<b>150A</b>	0 psia to 150 psia	
	<b>30/100</b>	-30 inHg to 100 psig	<b>30</b>	0 psig to 30 psig	<b>750</b>	0 psig to 750 psig	<b>10000</b>	0 psia to 10,000 psig	<b>200A</b>	0 psia to 200 psia	
	<b>30/150</b>	-30 inHg to 150 psig	<b>60</b>	0 psig to 60 psig	<b>1000</b>	0 psig to 1,000 psig	<b>15000</b>	0 psia to 15,000 psig	<b>300A</b>	0 psia to 300 psia	
	<b>30/200</b>	-30 inHg to 200 psig	<b>100</b>	0 psig to 100 psig	<b>2000</b>	0 psig to 2,000 psig	<b>15A</b>	0 psia to 15 psia			
	psig = gauge pressure    psia = absolute pressure    Other ranges available on request										
<b>ACCURACIES</b>	<b>1</b>	±0.05% full scale (BFSL)			<b>2</b>	±0.025% full scale (BFSL)					
<b>OUTPUT SIGNALS</b>	<b>1</b>	4 mA to 20 mA, 2-wire analog				<b>5</b>	0 Vdc to 10 Vdc, 3-wire analog				
	<b>2</b>	0 Vdc to 5 Vdc, 3-wire analog									
<b>PROCESS CONNECTIONS</b>	<b>2</b>	1/4" NPT male			<b>8</b>	1/2" NPT male; other connections available upon request					
<b>ELECTRICAL CONNECTIONS</b>	<b>1</b>	5/4" Integral cable			<b>25</b>	M12 x 1 (4-pin)					
<b>OPTION</b>	<b>ST8</b>	Threaded Orifice									

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



**2-WIRE WIRING**

Wiring	M12	Cable
+ Supply	1	Brown
+ Output	3	Blue

**3-WIRE WIRING**

Wiring	M12	Cable
+ Supply	1	Brown
Common	3	Blue
+ Output	4	Black



## 660 SERIES

- Ranges from 0 psig to 200 through 0 psig to 15,000 psig
- Current & voltage outputs available
- Stainless Steel wetted parts
- 1.0 mm standard orifice size for improved performance in dynamic applications
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Hydraulics & pneumatics
- Mobile hydraulics
- Power generation
- Pumps & compressors
- Refrigeration controls

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA 2-wire, 1 Vdc to 5 Vdc 3-wire; 0.1 Vdc to 10 Vdc, 3-wire
<b>Pressure ranges</b>	0 psig to 200 psig through 0 psig to 15,000 psig
<b>Accuracy</b>	±0.25% full scale (BFSL); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±2% full scale for 1 year, non-accumulating
<b>Response time</b>	<2 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated -4 °F to 185 °F (-20 °C to 85 °C) Zero effect ±0.01% full scale/ °F Span effect ±0.01% full scale/ °F Media -13 °F to 185 °F (-40 °C to 100 °C); -40 °F to 257 °F (-40 °C to 125 °C) available on request Ambient -4 °F to 185 °F (-25 °C to 85 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 36 Vdc (4 mA to 20 mA, 2-wire) 8 Vdc to 36 Vdc (1 Vdc to 5 Vdc, 3-wire) 14 Vdc to 36 Vdc (0.1 Vdc to 10 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 1 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 1 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	2 times full scale for ranges 0 psi to 200 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi range
<b>Burst pressure</b>	9 times full scale for 0 psi to 200 psi through 0 psi to 1,000 psi 3 times full scale for ranges 0 to 3,000 psi through 0 psi to 15,000 psi
<b>Measuring element</b>	17-4PH Stainless Steel
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65; IP67 M12x1 electrical connection for pressure ranges 0 psig to 1,500 psig or higher
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protection
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 1.75 oz.

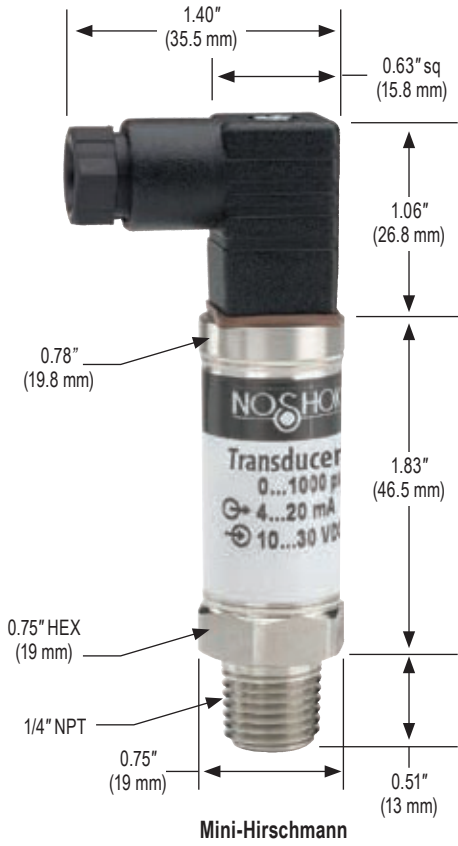
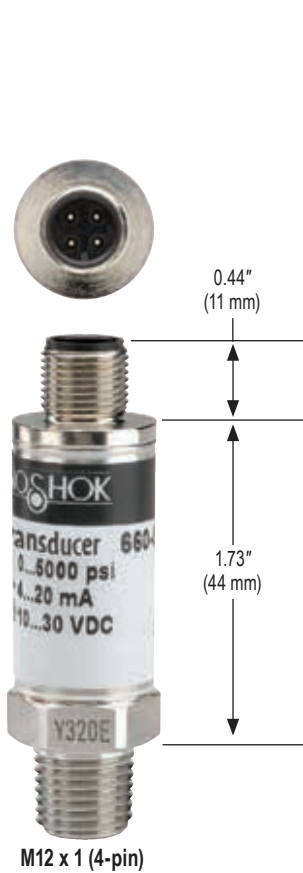
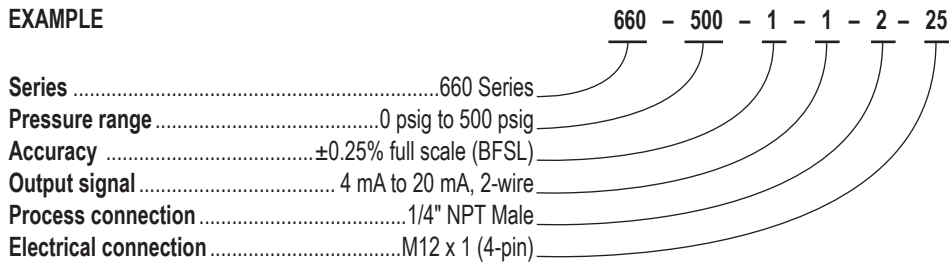
\* Unregulated



ORDERING INFORMATION				
SERIES	660			
PRESSURE RANGES	200	0 psig to 200 psig	500	0 psig to 500 psig
	300	0 psig to 300 psig	1000	0 psig to 1,000 psig
			3000	0 psig to 3,000 psig
			5000	0 psig to 5,000 psig
			10000	0 psig to 10,000 psig
			15000	0 psig to 15,000 psig
	psig = gauge pressure Other ranges available on request			
ACCURACY	1	±0.25% full scale (BFSL)		
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire	3	1 Vdc to 5 Vdc, 3-wire
			27	0.1 Vdc to 10 Vdc, 3-wire
PROCESS CONNECTIONS	2 1/4" NPT male			
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 7)	7	Mini-Hirschmann (DIN EN 175301-803 Form C)
			25	M12 x 1 (4-pin)

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



**2-WIRE WIRING**

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
+ Output	3	2	Black

**3-WIRE WIRING**

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
Common	3	2	Black
+ Output	4	3	White

## 800 SERIES



- Compound and standard ranges from 0 psig to 10 psig through 0 psig to 7,500 psig
- 316L Stainless steel wetted parts
- Current and voltage outputs available
- 7 different output configurations available
- Display and electrical connection can be rotated independently
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

- Hydraulics & pneumatics
- Power generation
- Pumps & compressors
- Stamping & forming presses
- Water & wastewater

### SPECIFICATIONS

<b>Pressure ranges</b>	Compound and standard ranges from 0 psig to 10 psig through 0 psig to 7,500 psig
<b>Switching parameters</b>	Individually adjustable via external control keys
Number	1 or 2 (PNP or NPN)
Function	N.O., N.C., window, hysteresis (freely adjustable)
Contact rating	250 mA max.
Response time	≤5 ms
Accuracy	≤ 0.5 % of span
Switch point	.25 to 100% of full scale
Hysteresis	Fully adjustable
<b>Transmitter parameters</b>	
Output signal	4 mA to 20 mA or 0 Vdc to 10 Vdc; programmable and freely adjustable
Accuracy	±0.5% of span including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2)
Non-repeatability	< 0.1% of span (IEC 61298-2)
Adjustment	Freely scalable within the range of 5:1
<b>Service life</b>	100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Media -4 °F to 185 °F (-20 °C to 85 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -4 °F to 158 °F (-20 °C to 70 °C)
<b>Display</b>	14 segment-LED, red 4-digit, height 0.35"
<b>Power requirement*</b>	15 - 35 Vdc
<b>Current consumption</b>	Max. 45 mA for versions without 4-20 mA output signal, Max. 70 mA for versions with 4-20 mA output signal, Total consumption max. 600 mA including switching current
<b>Proof pressure</b>	2 times full scale
<b>Measuring element</b>	<150 psi: 316L Stainless steel ≥150 psi: 316L, PH grade Stainless steel
<b>Housing material</b>	304 Stainless steel
<b>Connection</b>	316 stainless steel
<b>Environmental rating</b>	IP65 and IP67 per IEC 60529
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Protected against reverse polarity, over-voltage and short circuit
<b>Shock</b>	> 50 g's according to IEC 60068-2-27
<b>Vibration</b>	> 20 g's according to IEC 60068-2-6
<b>Weight</b>	Approx 0.49 lb.

\* Unregulated



ORDERING INFORMATION				
<b>SERIES</b>	800 304 Stainless steel housing			
<b>SWITCH FUNCTIONS</b>	1 2 N.O. or N.C. (PNP or NPN)	5 2 N.O. or N.C. switch (PNP/NPN) with 0 Vdc to 10 Vdc 3-wire output *		
	2 1 N.O. or N.C. (PNP or NPN) with 4 mA to 20 mA 3-wire analog output	6 1 N.O. or N.C. switch (PNP/NPN) with 4 mA to 20 mA/0 Vdc to 10 Vdc 3-wire output 2 **		
	3 1 N.O. or N.C. (PNP or NPN) with 0 Vdc to 10 Vdc 3-wire output	7 2 N.O. or N.C. switch (PNP/NPN) with 4 mA to 20 mA/0 Vdc to 10 Vdc 3-wire output * **		
	4 2 N.O. or N.C. (PNP or NPN) with 4 mA to 20 mA analog output*			
<b>PROCESS CONNECTIONS</b>	2 1/4" NPT male	10 G 1/4 B male	45 7/16-20 SAE J514 FIG 34B (Non-Adjustable)	
	8 1/2" NPT male	11 G 1/2 B male		
<b>ADJUSTABLE RANGES (Max. working pressure)</b>	14.5vac -14.5 psig to 0 psig	15 0 psig to 15 psig	1000 0 psig to 1,000 psig	30A 0 psia to 30 psia
	14.5/15 -14.5 psig to 15 psig	25 0 psig to 25 psig	1500 0 psig to 1,500 psig	50A 0 psia to 50 psia
	14.5/30 -14.5 psig to 30 psig	30 0 psig to 30 psig	2000 0 psig to 2,000 psig	100A 0 psia to 100 psia
	14.5/50 -14.5 psig to 50 psig	50 0 psig to 50 psig	3000 0 psig to 3,000 psig	160A 0 psia to 160 psia
	14.5/100 -14.5 psig to 100 psig	100 0 psig to 100 psig	5000 0 psig to 5,000 psig	200A 0 psia to 200 psia
	14.5/160 -14.5 psig to 160 psig	160 0 psig to 160 psig	7500 0 psig to 7,500 psig	300A 0 psia to 300 psia
	14.5/200 -14.5 psig to 200 psig	200 0 psig to 200 psig	10A 0 psia to 10 psia	
	14.5/300 -14.5 psig to 300 psig	300 0 psig to 300 psig	15A 0 psia to 15 psia	
	10 0 psig to 10 psig	500 0 psig to 500 psig	25A 0 psia to 25 psia	
<b>ELECTRICAL CONNECTIONS</b>	2 M12 x 1 (4-pin)		3 M12 x 1 (5-pin), 2 switch and analog output	
<b>OPTIONS</b>	ST8 Threaded Orifice			

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

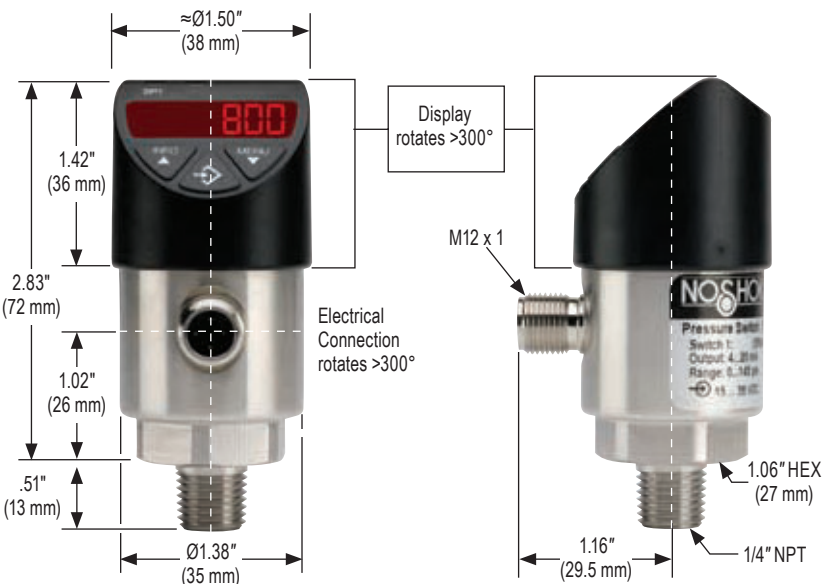
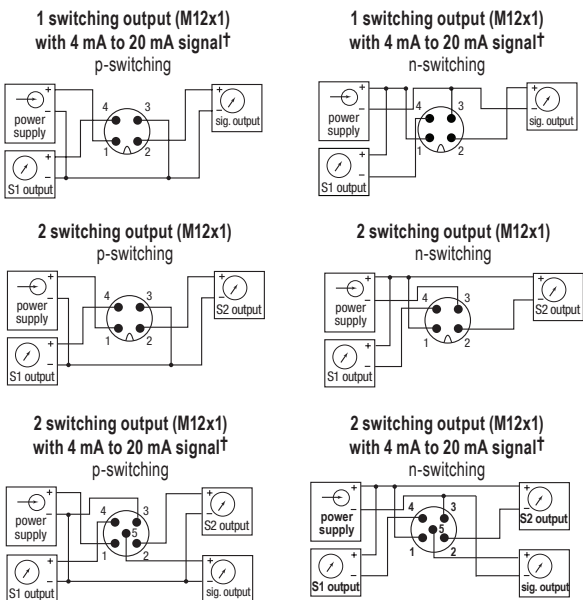
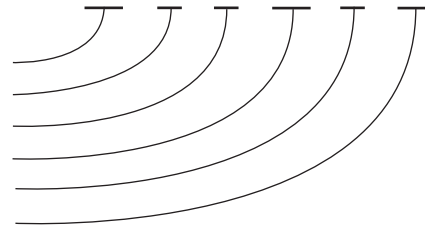
\* Available only with a M12 x 1 (5-pin) connector

\*\* Can switch between 4 mA to 20 mA / 0 Vdc to 10 Vdc

**EXAMPLE**

Series ..... 800 Series  
 Switch function..... 2 N.O. or N.C. (PNP or NPN)  
 Process connection ..... 1/4" NPT Male  
 Adjustable range ..... 0 psig to 160 psig  
 Electrical connection ..... M12 x 1 (4-pin)  
 Option..... Threaded Orifice

800 - 1 - 2 - 160 - 2 - ST8



† Also applies to 0 Vdc to 10 Vdc output



# 300 SERIES

- Ranges from 0 psig to 15 through 0 psig to 10,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Current and voltage outputs available
- 316 and 13-8PH Stainless Steel wetted parts
- RoHS compliant
- CE compliant to suppress RFI, EMI and ESD

## APPLICATIONS

- HVAC
- Hydraulics & pneumatics
- Injection molding machines
- Railroad equipment
- Stamping & forming presses

## SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire; 0 Vdc to 10 Vdc, 3-wire; 0.5 Vdc to 4.5 Vdc ratiometric, 3-wire
<b>Pressure ranges</b>	0 psig to 15 psig through 0 psig to 10,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	±0.5% full scale (BFSL), (includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale per year, non-accumulating
<b>Response time</b>	≤ 4 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Media 32 °F to 176 °F (0 °C to 80 °C) Ambient 32 °F to 176 °F (0 °C to 80 °C) Storage -4 °F to 176 °F (0 °C to 80 °C)
<b>Power requirement*</b>	8 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire, 1 Vdc to 5 Vdc, 3-wire, 0.5 Vdc to 4.5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire) 5 Vdc ± 10% (0.5 Vdc to 4.5 Vdc ratiometric, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA output ≤ 5,000 Ω for 1 Vdc to 5 Vdc output ≤ 10,000 Ω for 0 Vdc to 10 Vdc output ≤ 4,500 Ω for 0.5 Vdc to 4.5 Vdc output
<b>Proof pressure</b>	2 times full scale
<b>Burst pressure</b>	6 times full scale
<b>Measuring element</b>	316 Stainless Steel for absolute through 150 psi 13-8PH Stainless Steel for ≥150 psi
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65 to IP67 depending on electrical connection
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protection
<b>Shock</b>	500 g's according to IEC 60068-2-27
<b>Vibration</b>	10 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 2.8 oz.

\* Unregulated

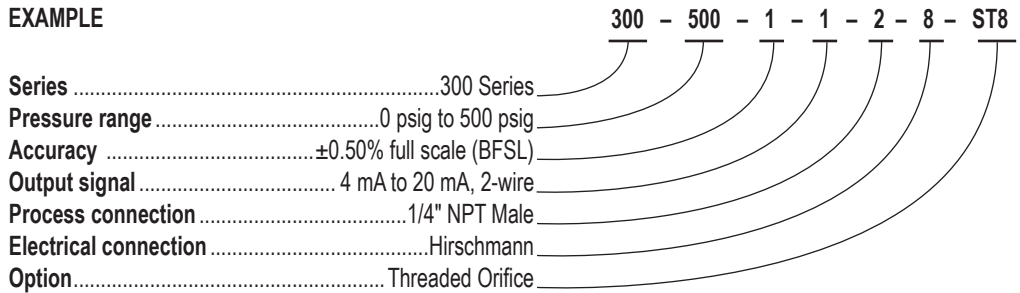




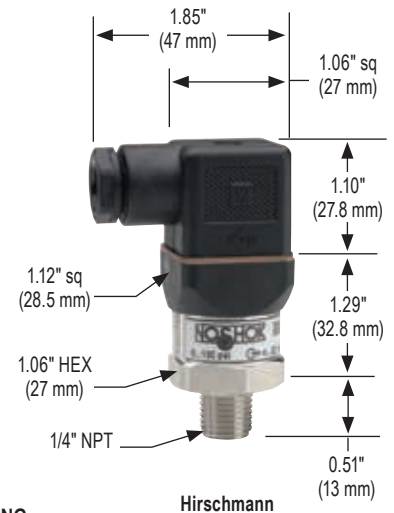
ORDERING INFORMATION						
SERIES	300					
<b>PRESSURE RANGES</b>	30inH <sub>2</sub> O-vac	-30 inH <sub>2</sub> O to 0 psig	1 0 psig to 1 psig	500 0 psig to 500 psig	10000 0 psig to 10,000 psig	
	30vac	-30 inHg to 0 psig	5 0 psig to 5 psig	750 0 psig to 750 psig	15A 0 psia to 15 psia	
	30/15	30 inHg to 15 psig	15 0 psig to 15 psig	1000 0 psig to 1,000 psig	30A 0 psia to 30 psia	
	30/30	30 inHg to 30 psig	30 0 psig to 30 psig	1500 0 psig to 1,500 psig	60A 0 psia to 60 psia	
	30/60	30 inHg to 60 psig	60 0 psig to 60 psig	2000 0 psig to 2,000 psig	100A 0 psia to 100 psia	
	30/100	30 inHg to 100 psig	100 0 psig to 100 psig	3000 0 psig to 3,000 psig	150A 0 psia to 150 psia	
	30/160	30 inHg to 160 psig	150 0 psig to 150 psig	5000 0 psig to 5,000 psig	200A 0 psia to 200 psia	
	30/200	30 inHg to 200 psig	200 0 psig to 200 psig	6000 0 psig to 6,000 psig	300A 0 psia to 300 psia	
	30/300	30 inHg to 300 psig	300 0 psig to 300 psig	7500 0 psig to 7,500 psig		
psig = gauge pressure    psia = absolute pressure    Other ranges available upon request.						
<b>ACCURACIES</b>	1 ±0.5% full scale (BFSL)					
<b>OUTPUT SIGNALS</b>	1 4 mA to 20 mA, 2-wire		5 0 Vdc to 10 Vdc, 3-wire			
	2 0 Vdc to 5 Vdc, 3-wire		13 0.5 Vdc to 4.5 Vdc, 3-wire (ratiometric)			
<b>PROCESS CONNECTIONS</b>	2 1/4" NPT male		10 G 1/4 B		45 7/16-20 SAE J514 FIG 34B (Non-Adjustable)	
	8 1/2" NPT male		11 G 1/2 B			
<b>ELECTRICAL CONNECTIONS</b>	1 36" cable (connected to option 8)			8 Hirschmann (DIN EN 175301-803 form A)		25 M12 x 1 (4-pin)
	7 Mini-Hirschmann (DIN EN 175301-803 form C)			14 Hirschmann type with 1/2" NPT female conduit		36 6' Integral cable
<b>OPTION</b>	ST8 Threaded Orifice (0.3 mm)					

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



\* Note: (mate supplied separately)



**2-WIRE WIRING**

Wiring	M12	Hirschmann	Cable
+ Supply	1	1	Brown
+ Output	3	2	Blue

**3-WIRE WIRING**

Wiring	M12	Hirschmann	Cable
+ Supply	1	1	Brown
Common	3	2	Blue
+ Output	4	3	White



## 650 SERIES

- Ranges from 0 psig to 100 psig through 0 psig to 8,000 psig
- Current and voltage outputs available
- Stainless Steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Hydraulics & pneumatics
- Mobile hydraulics
- Pumps & compressors
- Refrigeration controls
- Transportation

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA 2-wire, or 1 Vdc to 5 Vdc 3-wire
<b>Pressure ranges</b>	0 psig to 100 psig through 0 psig to 8,000 psig
<b>Accuracy</b>	±0.50% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	±0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	< 5 ms (between 10% and 90% full scale); restrictor port I.D. to dampen pulsations
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect ±0.008% full scale/ °F Span effect ±0.008% full scale/ °F Media -40 °F to 257 °F (-40 °C to 125 °C) Ambient -40 °F to 212 °F (-40 °C to 100 °C) Storage -40 °F to 248 °F (-40 °C to 120 °C)
<b>Power requirement*</b>	8 Vdc to 36 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire, 1 Vdc to 5 Vdc, 3-wire, 0.5 Vdc to 4.5 Vdc, 3-wire) 14 Vdc to 36 Vdc (0 Vdc to 10 Vdc, 3-wire) 5 Vdc ± 10% (0.5 Vdc to 4.5 Vdc ratiometric, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 amp for 4 mA to 20 mA output ≤ 5,000 Ω for 1 Vdc to 5 Vdc output ≤ 10,000 Ω for 0 Vdc to 10 Vdc output ≤ 4,500 Ω for 0.5 Vdc to 4.5 Vdc output
<b>Proof pressure</b>	2 times full scale
<b>Burst pressure</b>	8 times full scale for ranges 0 psi to 100 psi through 0 psi to 1,500 psi 4 times full scale for ranges 0 psi to 2,000 psi through 0 psi to 8,000 psi
<b>Measuring element</b>	17-4PH Stainless Steel
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	PBT - fiber reinforced plastic
<b>Environmental rating</b>	IP67 for M12x1 (4-pin) electrical connection and Metri-Pack connection; IP69K (steam jet cleaning) for cable connection
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protection
<b>Shock</b>	500 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 2.5 oz.

\* Unregulated



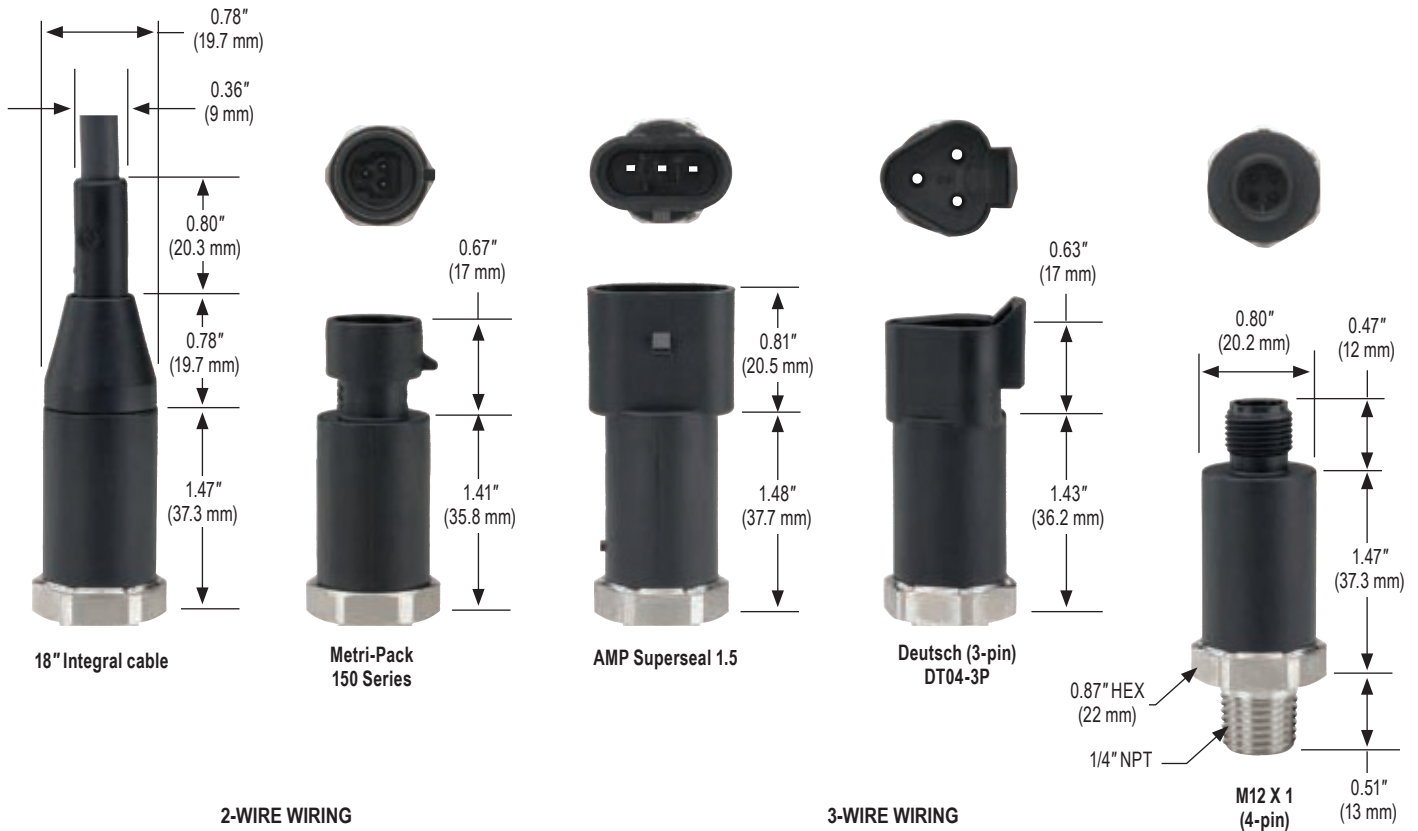
ORDERING INFORMATION						
<b>SERIES</b>	<b>650</b>					
<b>PRESSURE RANGES</b>	<b>100</b>	0 psig to 100 psig	<b>300</b>	0 psig to 300 psig	<b>600</b>	0 psig to 600 psig
	<b>150</b>	0 psig to 150 psig	<b>400</b>	0 psig to 400 psig	<b>750</b>	0 psig to 750 psig
	<b>200</b>	0 psig to 200 psig	<b>500</b>	0 psig to 500 psig	<b>1000</b>	0 psig to 1,000 psig
	psig = gauge pressure		Other ranges available on request			
<b>ACCURACY</b>	<b>1</b>	±0.5% full scale (BFSL)				
<b>OUTPUT SIGNALS</b>	<b>1</b>	4 mA to 20 mA, 2-wire	<b>3</b>	1 Vdc to 5 Vdc, 3-wire	<b>5</b>	0 Vdc to 10 Vdc, 3-wire
<b>PROCESS CONNECTIONS</b>	<b>2</b>	1/4" NPT male	<b>24</b>	7/16-20 2B Schrader	<b>45</b>	7/16-20 SAE J514 FIG 34B (Non-Adjustable)
<b>ELECTRICAL CONNECTIONS</b>	<b>10</b>	G1/4B male	<b>35</b>	7/16-20 with 45° flare		
	<b>25</b>	M12 x 1 (4-pin)	<b>36</b>	18" Integral cable IP67	<b>45</b>	AMP Superseal 1.5
	<b>34</b>	Metri-Pack 150 series	<b>39</b>	18" Integral cable IP69K	<b>46</b>	Deutsch (3-pin) DT04-3P

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for minimum quantity requirements and delivery information.

### EXAMPLE

Series .....650 Series  
 Pressure range .....0 psig to 500 psig  
 Accuracy .....±0.5% full scale  
 Output signal .....4 mA to 20 mA, 2-wire  
 Process connection .....1/4" NPT Male  
 Electrical connection .....M12 x 1 (4-pin)

650 - 500 - 1 - 1 - 2 - 25



#### 2-WIRE WIRING

Wiring	Cable	M12	Metri-Pack	AMP Superseal	Deutsch DT04-3P
+ Supply	Brown	1	B	3	A
+ Output	Black	3	A	1	B

#### 3-WIRE WIRING

Wiring	Cable	M12	Metri-Pack	AMP Superseal	Deutsch DT04-3P
+ Supply	Brown	1	B	3	A
Common	Green	3	A	1	B
+ Output	White	4	C	2	C



## 621/622 SERIES

- Vacuum and compound ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 100 psia
- Current and voltage outputs available
- 316 Stainless Steel and Elgiloy wetted parts
- CE compliant to suppress RFI, EMI and ESD
- NACE MR0175/ISO 15156 compliant
- NSI/ISA-12.27.01-2003 approved single seal

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc, 3-wire; 0.5 Vdc to 4.5 Vdc, 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psi to 15,000 psi Absolute from 0 psia to 15 psia through 0 psia to 100 psia
<b>Accuracy</b>	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤±0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	≤1 ms (between 10% and 90% full scale)
<b>Service life</b>	>100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect ±0.011% full scale/ °F Span effect ±0.011% full scale/ °F Media T6: -40 °F to 131 °F (-40 °C to 55 °C) T5: -40 °F to 158 °F (-40 °C to 70 °C) T4: -40 °F to 212 °F (-40 °C to 100 °C) Ambient T6: -40 °F to 140 °F (-40 °C to 60 °C) T5: -40 °F to 167 °F (-40 °C to 75 °C) T4: -40 °F to 221 °F (-40 °C to 105 °C) Storage -40 °F to 221 °F (-40 °C to 105 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire) 6 Vdc to 30 Vdc (1 Vdc to 5 Vdc, 3-wire, 0.5 Vdc to 4.5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 1.75 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi
<b>Burst pressure</b>	3.8 times full scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	621 Series is 316 Stainless Steel for ranges up through 0 psi to 300 psi, 316 Stainless Steel with Elgiloy ranges 0 psig to 500 psig and higher; 622 Series is 316 Stainless Steel with NBR o-ring; (FKM o-ring optional)
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP67
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protected
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 12 oz.

\* Unregulated

### APPLICATIONS

- Chemical processing
- Gas pressure measurement
- Oil field & offshore
- Mining
- Well head measurement

**NOSHOK 621 and 622 Series transmitters are Factory Mutual and Canadian Standards Association approved for use in hazardous location applications as follows:**

Explosion-proof with entity approved for: Class I, Division 1, Groups A, B, C and D. Dust Ignition-proof with entity approval for class II/III, Division 1, Groups E, F and G. Maximum electrical ratings 30V, 20 mA.

CE compliant with pressure equipment directive 2014/68/EU.

ANSI/ISA-12.27.01, Approved single seal.



ORDERING INFORMATION				
<b>SERIES</b>	<b>621</b> Stainless Steel threaded connection	<b>622</b> 316 Stainless Steel flush diaphragm	<b>622H</b> Hastelloy C flush diaphragm	
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg to 0 psig	<b>5</b> 0 psig to 5 psig	<b>300</b> 0 psig to 300 psig	<b>6000</b> 0 psig to 6,000 psig
	<b>30/30</b> -30 inHg to 30 psig	<b>10</b> 0 psig to 10 psig	<b>500</b> 0 psig to 500 psig	<b>8000</b> 0 psig to 8,000 psig
	<b>30/60</b> -30 inHg to 60 psig	<b>15</b> 0 psig to 15 psig	<b>1000</b> 0 psig to 1,000 psig	<b>10000</b> 0 psig to 10,000 psig
	<b>30/100</b> -30 inHg to 100 psig	<b>30</b> 0 psig to 30 psig	<b>1500</b> 0 psig to 1,500 psig	<b>15000</b> 0 psig to 15,000 psig
	<b>30/160</b> -30 inHg to 160 psig	<b>60</b> 0 psig to 60 psig	<b>2000</b> 0 psig to 2,000 psig	<b>15A</b> 0 psia to 15 psia
	<b>30/200</b> -30 inHg to 200 psig	<b>100</b> 0 psig to 100 psig	<b>3000</b> 0 psig to 3,000 psig	<b>100A</b> 0 psia to 100 psia
	<b>30/300</b> -30 inHg to 300 psig	<b>200</b> 0 psig to 200 psig	<b>5000</b> 0 psig to 5,000 psig	
	psig = gauge pressure    psia = absolute pressure    Other ranges available on request		<b>Note:</b> 622 Series is available for pressure ranges up to 0 psig to 8,000 psig	
<b>ACCURACY</b>	<b>1</b> ±0.25% full scale (BFSL)			
<b>OUTPUT SIGNALS</b>	<b>1</b> 4 mA to 20 mA, 2-wire	<b>3</b> 1 Vdc to 5 Vdc, 3-wire, low power	<b>31</b> 0.5 Vdc to 4.5 Vdc 3-wire, low power	
	<b>2</b> 0 Vdc to 5 Vdc, 3-wire	<b>5</b> 0 Vdc to 10 Vdc, 3-wire		
<b>PROCESS CONNECTIONS</b>	<b>2</b> 1/4" NPT male	<b>11</b> G 1/2 B *		
	<b>8</b> 1/2" NPT male	<b>13</b> G 1 B (622 Series only, <30 psig)		
<b>ELECTRICAL CONNECTIONS</b>	<b>6</b> 1/2" NPT male conduit with 6' integral cable		<b>37</b> 1/2" NPT male conduit with 6' flying leads with epoxy seal	
<b>OPTIONS</b>	<b>ST8</b> Threaded Orifice (621 Series only)	<b>20</b> 20' Cable/lead (attached to electrical connection 6 or 37)	<b>30</b> 30' Cable/lead (attached to electrical connection 6 or 37)	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* 622 Series only, G 1/2 B Flush (≥ 30 psig).

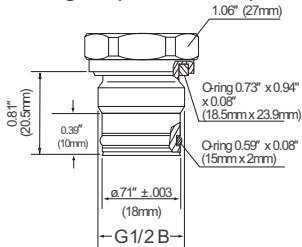
### EXAMPLE

Series ..... 621 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.25% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... 1/2" NPT Male  
 Electrical connection ..... 1/2" NPT Male conduit with 6' integral cable  
 Option ..... Threaded Orifice

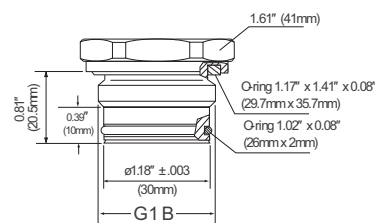
621 - 500 - 1 - 1 - 8 - 6 - ST8

### Front flush process connections

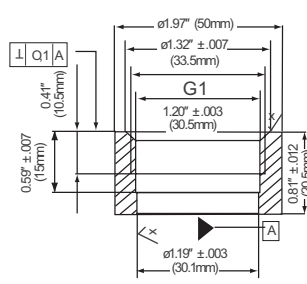
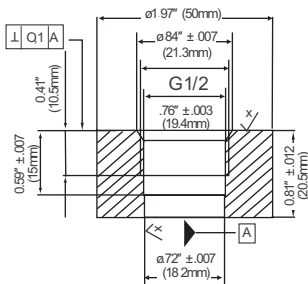
For ranges 0 psi to 30 psi through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



### Flush corresponding port weld-on adapters



### 2-WIRE WIRING

+ Supply	Red
+ Output	Black
Ground	Gray

### 3-WIRE WIRING

+ Supply	Red
Common	Black
+ Output	Brown
Ground	Gray

# Non-Incendive Pressure Transmitters



## 623/624 SERIES

- Vacuum and compound ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 100 psia
- Current and voltage outputs available
- 316 Stainless Steel and Elgiloy wetted parts
- Factory Mutual and Canadian Standards Association approved
- CE compliant to suppress RFI, EMI and ESD
- NACE MR0175/ISO 15156 compliant
- NSI/ISA-12.27.01 approved single seal

### APPLICATIONS

- Chemical processing
- Gas pressure measurement
- Oil field & offshore
- Mining
- Well head measurement

**NOSHOK 623 and 624 Series transmitters are Factory Mutual and Canadian Standards Association approved for use in hazardous location applications as follows:**

Non-Incendive for: Class I, Division 2, Groups A, B, C and D.I.P.; Class II, Division 1, Groups E, F and G Maximum ratings 30 Vdc, 20 mA.

CE compliant with pressure equipment directive 2014/68/EU. ANSI/ISA-12.27.01, Approved single seal.

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc low power, 3-wire; 0.5 Vdc to 4.5 Vdc low power, 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 15,000 psig Absolute through 0 psia to 100 psia
<b>Accuracy</b>	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	≤1 ms (between 10% and 90% full scale)
<b>Service life</b>	>100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect is ±0.011% full scale/ °F within compensated range Span effect is ±0.011% full scale/ °F within compensated range Media -40 °F to 212 °F (-40 to 100 °C) Ambient -22 °F to 176 °F (-30 °C to 80 °C) Storage -22 °F to 212 °F (-30 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire) 6 Vdc to 30 Vdc (1 Vdc to 5 Vdc, 3-wire, 0.5 Vdc to 4.5 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA; ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire
<b>Proof pressure</b>	3 times full scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 1.75 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi range
<b>Burst pressure</b>	3.8 times full scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	623 Series is 316 Stainless Steel for ranges up through 0 psi to 300 psi, 316 Stainless Steel and Elgiloy for ranges 0 psig to 500 psig and higher; 624 Series is 316 Stainless Steel with NBR o-ring; FKM o-ring optional
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65 to IP67 dependent upon electrical connection
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protected
<b>Shock</b>	1000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 12 oz.

\* Unregulated



ORDERING INFORMATION					
<b>SERIES</b>	<b>623</b> Stainless Steel threaded connection	<b>624</b> 316 Stainless Steel flush diaphragm *			
<b>PRESSURE RANGES</b>	<b>30vac</b> -30 inHg to 0 psig	<b>30</b> 0 psig to 30 psig	<b>500</b> 0 psig to 500 psig	<b>6000</b> 0 psig to 6,000 psig	
	<b>30/30</b> -30 inHg to 30 psig	<b>60</b> 0 psig to 60 psig	<b>1000</b> 0 psig to 1,000 psig	<b>8000</b> 0 psig to 8,000 psig	
	<b>30/60</b> -30 inHg to 60 psig	<b>100</b> 0 psig to 100 psig	<b>1500</b> 0 psig to 1,500 psig	<b>10000</b> 0 psig to 10,000 psig	
	<b>30/100</b> -30 inHg to 100 psig	<b>200</b> 0 psig to 200 psig	<b>2000</b> 0 psig to 2,000 psig	<b>15000</b> 0 psig to 15,000 psig	
	<b>15</b> 0 psig to 15 psig	<b>300</b> 0 psig to 300 psig	<b>3000</b> 0 psig to 3,000 psig	<b>15A</b> 0 psia to 15 psia	
	<b>5000</b> 0 psig to 5,000 psig	<b>100A</b> 0 psia to 100 psia			
	psig = gauge pressure    psia = absolute pressure    Other ranges available on request		Note: 624 Series is available for pressure ranges up to 0 psig to 8,000 psig		
<b>ACCURACY</b>	1 ±0.25% full scale (BFSL)				
<b>OUTPUT SIGNALS</b>	1 4 mA to 20 mA, 2-wire		3 1 Vdc to 5 Vdc, 3-wire, low power		
<b>PROCESS CONNECTIONS</b>	2 1/4" NPT male		11 G 1/2 B **		
	8 1/2" NPT male		13 G 1 B (624 Series only, <30 psig)		
<b>ELECTRICAL CONNECTION</b>	6 1/2" NPT male conduit with 6' integral cable				
<b>OPTION</b>	ST8 Threaded Orifice (623 Series only)				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Hastelloy flush diaphragm available upon request.

\*\* 624 Series only, G 1/2 B Flush (≥ 30 psig).

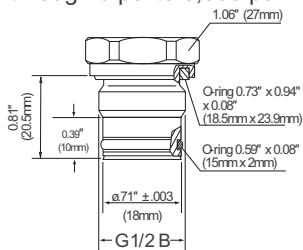
### EXAMPLE

Series ..... 623 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.25% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... 1/2" NPT Male  
 Electrical connection ..... 1/2" NPT Male conduit with 6' integral cable  
 Option ..... Threaded Orifice

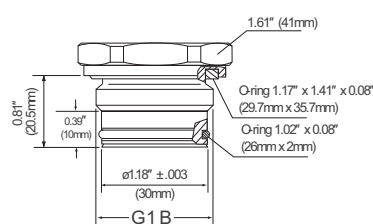
623 - 500 - 1 - 1 - 8 - 6 - ST8

### Front flush process connections

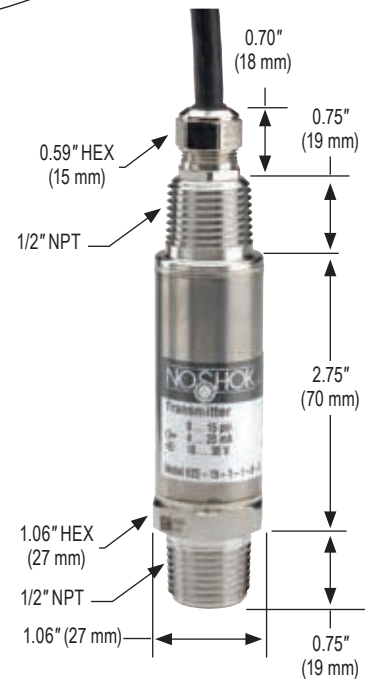
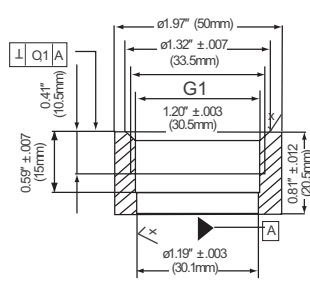
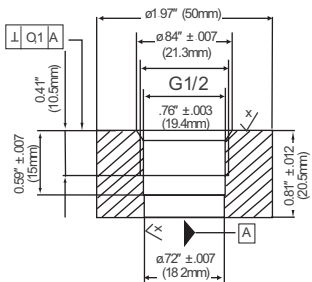
For ranges 0 psi to 30 psi through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



### Flush corresponding port weld-on adapters



### 2-WIRE WIRING

+ Supply	Brown
+ Output	Green

### 3-WIRE WIRING

+ Supply	Brown
Common	Green
+ Output	White



# 625/626 SERIES

- Low pressure ranges for vapor recovery applications, vacuum and compound ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Current output
- 316 and 14-4PH Stainless Steel wetted parts
- Factory Mutual and Canadian Standards Association approved
- CE compliant to suppress RFI, EMI and ESD
- NSI/ISA-12.27.01 approved single seal

## APPLICATIONS

- Chemical processing
- Gas pressure measurement
- Oil field & offshore
- Mining
- Vapory recovery systems
- Well head measurement

**NOSHOK 625 and 626 Series transmitters are Factory Mutual and Canadian Standards Association approved for use in hazardous location applications as follows:**

Intrinsically Safe, entity approval for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; and Class I, Zone 0 Aex ia IIC Dust Ignition-proof for Class II and III, Division 2, Groups F and G Non-incendive for Class I, Division 2, Groups A, B, C and D. CE compliant with pressure equipment directive 2014/68/EU. ANSI/ISA-12.27.01, Approved single seal.

## SPECIFICATIONS

<b>Output signal</b>	4 mA to 20 mA, 2-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
<b>Accuracy</b>	±0.25% full scale (BFSL); optional ±0.125% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Adjustment</b>	± 10% full scale for zero and span
<b>Response time</b>	≤ 1 ms (between 10% and 90% full scale)
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect is ±0.011% full scale/ °F Span effect is ±0.011% full scale/ °F Media -4 °F to 185 °F (-20 °C to 85 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -22 °F to 221 °F (-30 °C to 105 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp
<b>Proof pressure</b>	3.5 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 2 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 1.5 times full scale for 0 psi to 15,000 psi
<b>Burst pressure</b>	4 times full scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times full scale for ranges 0 psi to 300 psi through 0 psi to 10,000 psi 3 times full scale for 0 psi to 15,000 psi
<b>Measuring element</b>	625 Series is 316 Stainless Steel for ranges up through 0 psi to 300 psi, 316 Stainless Steel with 17-4PH Stainless Steel for ≥300 psi; 626 Series is 316 Stainless Steel with NBR o-ring
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65 to IP67 depending upon electrical connection
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protected
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	20 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 7 oz.

\* Unregulated





ORDERING INFORMATION						
SERIES	625	Stainless Steel threaded connection	626 316 Stainless Steel flush diaphragm	626H Hastelloy flush diaphragm		
PRESSURE RANGES	4/12 oz/in <sup>2</sup>	-4 oz/in <sup>2</sup> to 12 oz/in <sup>2</sup>	30/100 -30 inHg to 100 psig	150 0 psig to 150 psig	5000 0 psig to 5,000 psig	100A 0 psia to 100 psia
	12 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 12 oz/in <sup>2</sup>	30/150 -30 inHg to 150 psig	200 0 psig to 200 psig	6000 0 psig to 6,000 psig	150A 0 psia to 150 psia
	16 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 16 oz/in <sup>2</sup>	30/200 -30 inHg to 200 psig	300 0 psig to 300 psig	7500 0 psig to 7,500 psig	200A 0 psia to 200 psia
	50 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	3 0 psig to 3 psig	500 0 psig to 500 psig	8000 0 psig to 8,000 psig	250A 0 psia to 250 psia
	100 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	5 0 psig to 5 psig	750 0 psig to 750 psig	10000 0 psig to 10,000 psig	
	30vac	-30 inHg to 0 psig	15 0 psig to 15 psig	1000 0 psig to 1,000 psig	15000 0 psig to 15,000 psig	
	30/15	-30 inHg to 15 psig	30 0 psig to 30 psig	1500 0 psig to 1,500 psig	15A 0 psia to 15 psia	
	30/30	-30 inHg to 30 psig	60 0 psig to 60 psig	2000 0 psig to 2,000 psig	30A 0 psia to 30 psia	
30/60	-30 inHg to 60 psig	100 0 psig to 100 psig	3000 0 psig to 3,000 psig	60A 0 psia to 60 psia		
	psig = gauge pressure    psia = absolute pressure    Other ranges available on request			Note: 626 Series is available for pressure ranges up to 0 psig to 8,000 psig		
ACCURACY	1	±0.25% full scale (BFSL)	2	±0.125% full scale (BFSL)		
OUTPUT SIGNAL	1	4 mA to 20 mA, 2-wire				
PROCESS CONNECTIONS	2	1/4" NPT male	13	G 1 B (626 Series only, <30 psig)		
	8	1/2" NPT male	45	7/16-20 SAE J514 FIG 34B (Non-Adjustable)		
	11	G 1/2 B *				
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 8)	14	Hirschmann connector 1/2" NPT conduit - IP65		
	3	6-pin Bendix - IP65	25	M12x1 (4-pin) IP67		
	8	Hirschmann (DIN EN 175301-803 Form A)	36	Integral cable 36" - IP67		
OPTION	ST8	Threaded Orifice (625 Series only)				

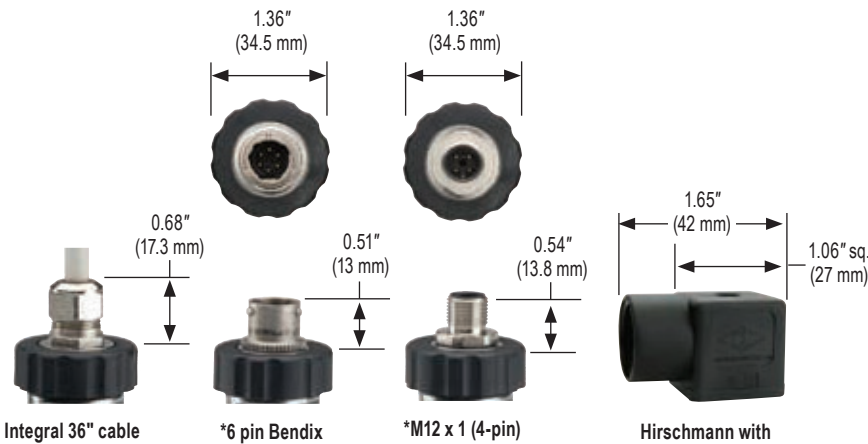
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* 626 Series only, G 1/2 B Flush (≥ 30 psig).

### EXAMPLE

Series ..... 625 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.25% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... 1/2" NPT Male  
 Electrical connection ..... Hirschmann (DIN EN 175301-803 Form A)  
 Option ..... Threaded Orifice

625 - 500 - 1 - 1 - 8 - 8 - ST8



\*Note: mate supplied separately

### 2-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red/Brown	1	A
+ Output	2	Black/Green	3	B

**NOTE**  
 See 621/622 Series for G1/2B and G1B Front Flush Process Connection Dimensions pg. 85



# Intrinsically Safe Submersible



## 627 SERIES

- Ranges from 0 inH<sub>2</sub>O to 50 inH<sub>2</sub>O through 0 psig to 350 psig
- Current output
- 316 Stainless and 17-4PH Steel wetted parts
- Canadian Standards Association approved
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Irrigation
- Tank monitoring
- Water & wastewater
- Well head measurement

### SPECIFICATIONS

<b>Output signal</b>	4 mA to 20 mA, 2-wire
<b>Pressure ranges</b>	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psig to 350 psig
<b>Accuracy</b>	±0.25 % full scale (BFSL); optional ±0.125% full scale (BFSL), for ranges ≥ 150 inH <sub>2</sub> O (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	≤1 ms (between 10% and 90% full scale)
<b>Service life</b>	>100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 122 °F (0 °C to 50 °C) Zero effect is ±0.011% full scale/ °F within compensated range Span effect is ±0.011% full scale/ °F within compensated range Media 15 °F to 175 °F (-10 °C to 60 °C) Ambient 15 °F to 122 °F (-10 °C to 50 °C) Storage -30 °F to 175 °F (-34 °C to 60 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp-(0.043 Ω x length of cable in feet)
<b>Proof pressure</b>	2 times range
<b>Burst pressure</b>	3 times range
<b>Measuring element</b>	Diaphragm and cap: 316 Stainless Steel 17-4PH Stainless Steel for 0 psig to 350 psig Cable: Polyurethane, optional FEP
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP68
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protected
<b>Weight</b>	Approximately 7 oz. with standard nosecone - cable extra

\* Unregulated

**NOSHOK 627 Series transmitters are Canadian Standards Association approved for use in hazardous location applications as follows:**

Intrinsically Safe, entity approval for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; and Class I, Zone 0 Aex ia IIC  
Dust ignition-proof for Class II and III, Division 1, Groups E, F and G  
Non-incendive for Class I, Division 2, Groups A, B, C and D  
FMRC 3600, 3610, 3611, 3810 (including supplement #1),  
ISA-S12.0. 01, IEC 60529 (including amendment #1).  
CE compliant with pressure equipment directive 2014/68/EU.

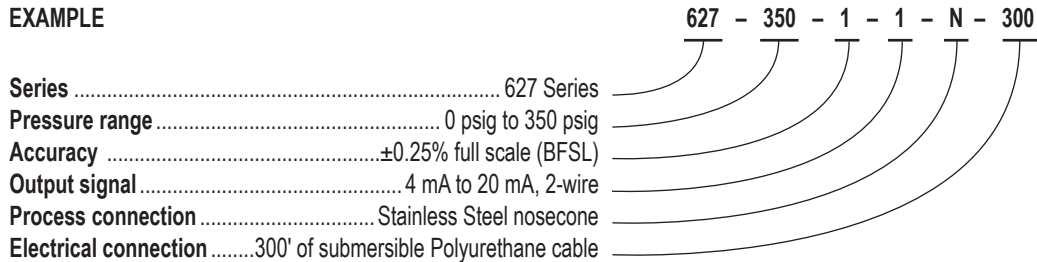


**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

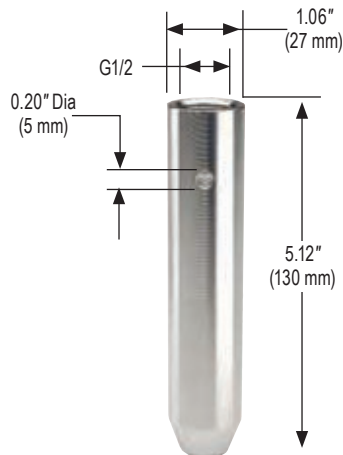
ORDERING INFORMATION			
<b>SERIES</b>	627		
<b>PRESSURE RANGES</b>	50inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	5 0 psig to 5 psig (11.5 ftH <sub>2</sub> O)
	100inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	10 0 psig to 10 psig (23.1 ftH <sub>2</sub> O)
	150inH <sub>2</sub> O	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	15 0 psig to 15 psig (34.6 ftH <sub>2</sub> O)
	250inH <sub>2</sub> O	0 inH <sub>2</sub> O to 250 inH <sub>2</sub> O	25 0 psig to 25 psig (57.7 ftH <sub>2</sub> O)
	400inH <sub>2</sub> O	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	30 0 psig to 30 psig (69.2 ftH <sub>2</sub> O)
			60 0 psig to 60 psig (138.4 ftH <sub>2</sub> O)
	psig = gauge pressure	inH <sub>2</sub> O = inches of water	ftH <sub>2</sub> O = feet of water Other ranges available on request.
<b>ACCURACIES</b>	1	±0.25% full scale (BFSL)	2 ±0.125% full scale (BFSL) on ≥ 150 inH <sub>2</sub> O
<b>OUTPUT SIGNAL</b>	1	4 mA to 20 mA, 2-wire	
<b>PROCESS CONNECTIONS</b>	N	Stainless Steel nosecone	W Stainless Steel weighted nosecone (1.1 lb.)
	T	G 1/2 B x 1/2" NPT male with 1/4" NPT female	
<b>ELECTRICAL CONNECTIONS</b>	XX	Standard Polyurethane cable	
	38-XX	Optional FEP cable	<b>NOTE: XX = length of cable in feet</b>
<b>OPTIONS</b>	CBC	Cable Clamp	FE Filter Element
	DC	Desiccant Cartridge	JB Cable Junction Box

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

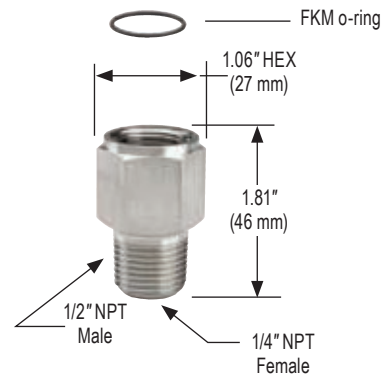
**EXAMPLE**



**Weighted Nosecone**



**NPT Adapter**



**2-WIRE WIRING**

+ Supply	Brown
+ Output	Green

# Intrinsically Safe Hammer Union



## 628 SERIES

- Ranges from 0 psig to 5,000 psig through 0 psig to 20,000 psig
- Current output
- Inconel X-750 wetted parts
- Canadian Standards Association approved
- Every sensor comes with a Certificate of Calibration
- Certifications pending:
  - Factory Mutual
  - ATEX
  - CE



Shown with optional Electrical Connector Cage

### APPLICATIONS

- Acidizing
- Choke & kill manifold
- Fracturing & cementing
- Mud logging & mud pumps
- Oil field & offshore
- Well head measurement

NOSHOK 628 Series transmitters are Canadian Standards Association approved for use in hazardous location applications as follows:

Intrinsically Safe Class I, DIV 1, Groups A,B,C,D,  
-40°C,Tamb<+85°C T4, Class II, DIV 1, Groups E,F,G, Class III,  
Class I, Zone 0 AEx/Ex ic IIC T4.

Non-Incendive Class I, DIV 2, Groups A,B,C,D,  
-40°C,Tamb<+85°C T4, Class II, DIV 2, Groups F,G, Class III,  
Class I, Zone 2 AEx/Ex ic IIC T4.

### SPECIFICATIONS

<b>Output signal</b>	4 mA to 20 mA, 2-wire
<b>Pressure ranges</b>	0 psig to 5,000 psig through 0 psig to 20,000 psig
<b>Accuracy</b>	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	≤ ±0.2% full scale for 1 year, non-accumulating
<b>Response time</b>	< 2 m/s
<b>Service life</b>	> 10,000,000 load cycles
<b>Temperature ranges</b>	Compensated 40 °F to 140 °F (5 °C to 60 °C) Zero effect is ±0.01% full scale/ °F Span effect is ±0.01% full scale/ °F Media -40 °F to 185 °F (-40 °C to 85 °C) Ambient -40 °F to 185 °F (-40 °C to 85 °C) Storage -40 °F to 185 °F (-40 °C to 85 °C)
<b>Power requirement*</b>	10 Vdc to 28 Vdc
<b>Load limitations</b>	≤ (VPower-10)/0.020 Amp
<b>Proof pressure</b>	1.5 times full scale (22,500 psi maximum)
<b>Burst pressure</b>	3 times full scale (22,500 psi maximum)
<b>Measuring element</b>	Inconel X-750
<b>Connection</b>	Inconel X-750
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP67 depending upon electrical connection
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, over-voltage and short circuit protected
<b>Shock</b>	100 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 6 lb.

\* Unregulated



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)





## 11 SERIES

- Ranges from vacuum through 0 psig to 400 psig
- Current and voltage outputs available
- 316 Stainless Steel wetted parts
- Can be cleaned-in-place (CIP) or steamed-in-place (SIP)
- Meets 3A requirements for the food and beverage, dairy, pharmaceutical and biotechnology industries
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Food & beverage processing
- Pasteurization systems
- Pharmaceutical
- Medical

### SPECIFICATIONS

<b>Output signals</b>	4 mA to 20 mA 2-wire, 0 Vdc to 5 Vdc 3-wire, 1 Vdc to 5 Vdc 3-wire, 1 Vdc to 6 Vdc 3-wire, 0 Vdc to 10 Vdc, 3-wire, 1 Vdc to 11 Vdc 3-wire
<b>Pressure ranges</b>	Vacuum through 0 psig to 400 psig
<b>Accuracy</b>	±0.25% full scale (BFSL); Optional ±0.125% full scale (BFSL); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
<b>Stability</b>	±0.2% full scale for 1 year, non-accumulating
<b>Adjustment</b>	±10% full scale for zero and span
<b>Response time</b>	< 10 ms
<b>Service life</b>	> 100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 175 °F (0 °C to 80 °C) Effect ±0.01%/°F for zero and span Media -40 °F to 300 °F (-40 °C to 150 °C) Ambient -40 °F to 176 °F (-40 °C to 80 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
<b>Power requirement*</b>	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire, 0 Vdc to 5 Vdc, 3-wire, 1 Vdc to 5 Vdc, 3-wire, 1 Vdc to 6 Vdc, 3-wire) 14 Vdc to 30 Vdc (0 Vdc to 10 Vdc, 3-wire, Vdc to 11 Vdc, 3-wire)
<b>Load limitations</b>	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA output ≤ 5,000 Ω for 1 Vdc to 5 Vdc output ≤ 10,000 Ω for 0 Vdc to 10 Vdc output ≤ 4,500 Ω for 0.5 Vdc to 4.5 Vdc output
<b>Proof pressure</b>	3 times full scale for 0 psig to 2 psig through 0 psig to 200 psig 1.75 times full scale for 0 psig to 300 psig through 0 psig to 400 psig
<b>Burst pressure</b>	3.8 times full scale for 0 psig to 2 psig through 0 psig to 200 psig 4 times full scale for 0 psig to 300 psig through 0 psig to 400 psig
<b>Measuring element</b>	316 Stainless Steel
<b>Connection</b>	316 Stainless Steel
<b>Housing material</b>	316 Stainless Steel
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Reverse polarity, overvoltage and short circuit protection
<b>Shock</b>	1,000 g's according to IEC 60068-2-27
<b>Vibration</b>	15 g's according to IEC 60068-2-6
<b>Weight</b>	Approximately 1.1 lb.

\* Unregulated

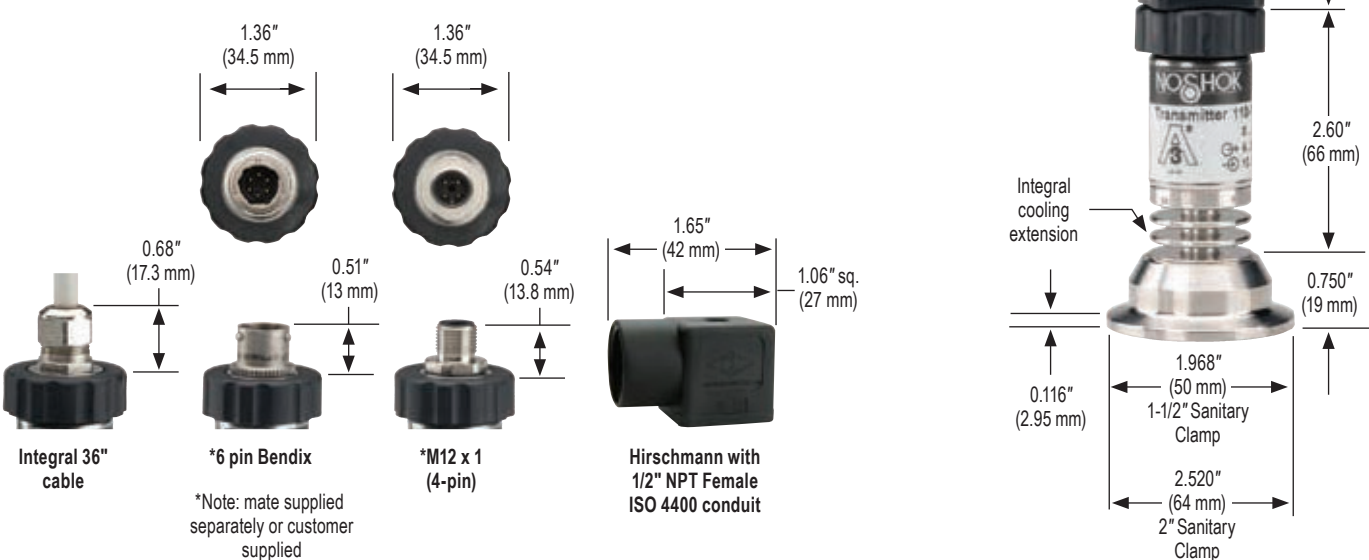
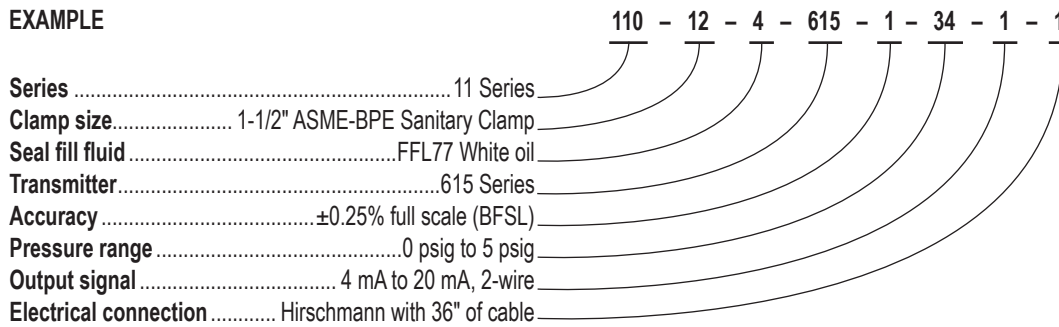
Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.



ORDERING INFORMATION				
SERIES	110			
CLAMP SIZES	12 1-1/2"	16 2"		
SEAL FILL FLUID	4 FFL77 White oil    Other food grade quality fill fluids available — please consult factory			
TRANSDUCER	615 615 Series transducer			
ACCURACIES	1 ±0.25% full scale (BFSL)	2 ±0.125% full scale		
PRESSURE RANGES	01 -30 inHg to 0 psig	16 -30 inHg to 150 psig	37 0 psig to 10 psig	55 0 psig to 160 psig
	04 -30 inHg to 15 psig	19 -30 inHg to 200 psig	40 0 psig to 15 psig	58 0 psig to 200 psig
	07 -30 inHg to 30 psig	22 -30 inHg to 300 psig	43 0 psig to 30 psig	61 0 psig to 300 psig
	10 -30 inHg to 60 psig	31 0 psig to 100 inH <sub>2</sub> O	46 0 psig to 60 psig	64 0 psig to 400 psig
	13 -30 inHg to 100 psig	34 0 psig to 5 psig	49 0 psig to 100 psig	
OUTPUT SIGNALS	1 4 mA to 20 mA, 2-wire	3 1 Vdc to 5 Vdc, 3-wire	5 0 Vdc to 10 Vdc, 3-wire	
	2 0 Vdc to 5 Vdc, 3-wire	4 1 Vdc to 6 Vdc, 3-wire	6 1 Vdc to 11 Vdc, 3-wire	
ELECTRICAL CONNECTIONS	1 36" Cable attached to Hirschmann	14 Hirschmann connection with ISO 4400 1/2" NPT conduit		
	3 6-pin Bendix	25 M12 X 1 (4-pin)		
	8 Hirschmann (DIN EN 175301-803 form A)	36 Integral 36" cable		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

### EXAMPLE



### 3-WIRE WIRING

2-WIRE WIRING				
	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
+ Output	2	Black	3	B

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
Common	2	Black	3	B
+ Output	3	White	4	C



## 20 SERIES

- Ranges from 16 inH<sub>2</sub>O to 58 psig (1,600 inH<sub>2</sub>O)
- Hart® protocol output available
- 316 Stainless Steel wetted parts
- Strong flush diaphragm with minimal fill volume
- Can be cleaned-in-place (CIP) or steamed-in-place (SIP)
- Meets 3A requirements



### APPLICATIONS

- Food & beverage
- Dairy
- Chemical processing
- Pharmaceutical

### FEATURES & BENEFITS

- All Stainless Steel housing
- Easy programming and range adjustment without test pressure via on-board display
- Accuracy 0.1% of adjusted span
- 10:1 turn down
- Active temperature compensation
- Hart® protocol optional
- 360° rotatable display

### SPECIFICATIONS

Output signals	4 mA to 20 mA 2-wire, 4 mA to 20 mA 2-wire and Hart® signal
Pressure ranges	16 inH <sub>2</sub> O to 58 psig (1,600 inH <sub>2</sub> O)
Accuracy	0.1% of adjusted span
Stability	<0.1%/year
Adjustment	By 3 push buttons on display or optional Hart® signal
Response time	<150 ms
Service life	>10 years
Temperature ranges	-4 °F to 212 °F (-20 °C to 100 °C); 293 °F (145 °C) for 45 min.
Power requirement*	12 Vdc to 36 Vdc
Measuring element	316 Stainless Steel (Hastelloy C, Tantalum or Goldplated optional)
Connection	316 Stainless Steel
Housing material	304 Stainless Steel
Environmental rating	IP66 (IP68 optional)
Electrical protection	IP66 (NEMA 4X), IP68 (NEMA 6) optional
Weight	Approximately 3.3 lb. (Depending on process connection)

\* Unregulated



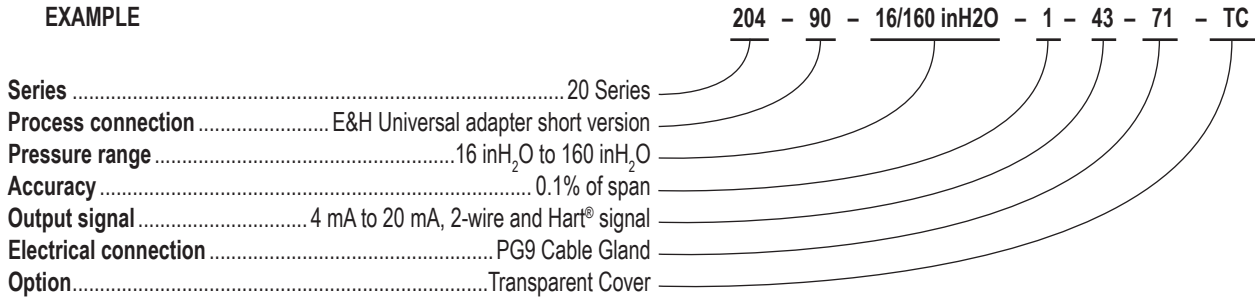


ORDERING INFORMATION			
<b>SERIES</b>	204		
<b>PROCESS CONNECTIONS</b>	90 E&H Universal adapter short version	95 King Gage Standard - 6"	
	91 E&H Universal adapter long version	96 King Gage Long - 8"	
	92 Anderson Negele Type SL Short	97 Rosemount Tank Spud - 2"	
	93 Anderson Negele Type SL Long - 6"	98 Rosemount Tank Spud - 6"	
	94 King Gage Short	99 Tank Mate Medium - 6"	
<b>PRESSURE RANGES (Adjustable)*</b>	16/160 inH <sub>2</sub> O 16 inH <sub>2</sub> O to 160 inH <sub>2</sub> O (.06 psig to 6 psig)	6/58 psig 6 psig to 58 psig (160 inH <sub>2</sub> O to 1,600 inH <sub>2</sub> O)	47/470 inH <sub>2</sub> O 47 inH <sub>2</sub> O to 470 inH <sub>2</sub> O (1.7 psig to 17 psig)
<b>ACCURACIES</b>	1 0.1% of adjusted span		
<b>OUTPUT SIGNALS</b>	1 4 mA to 20 mA, 2-wire	43 4 mA to 20 mA, 2-wire and Hart® signal	
<b>ELECTRICAL CONNECTIONS</b>	25 M12 x 1 (4-pin)	71 PG9 Cable Gland	
<b>OPTIONS</b>	28 1/2" NPT Female		
	TC Transparent Cover (for display)		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

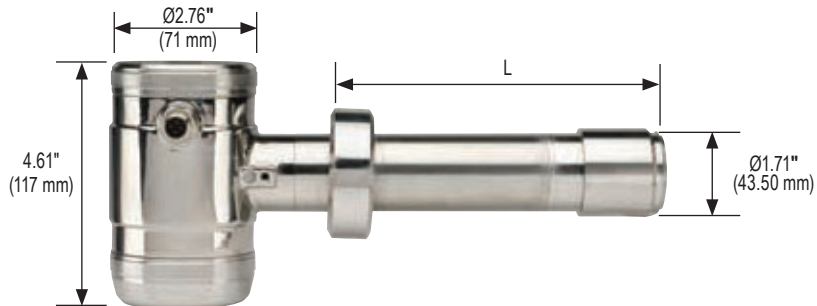
\*Other ranges available, consult factory

**EXAMPLE**



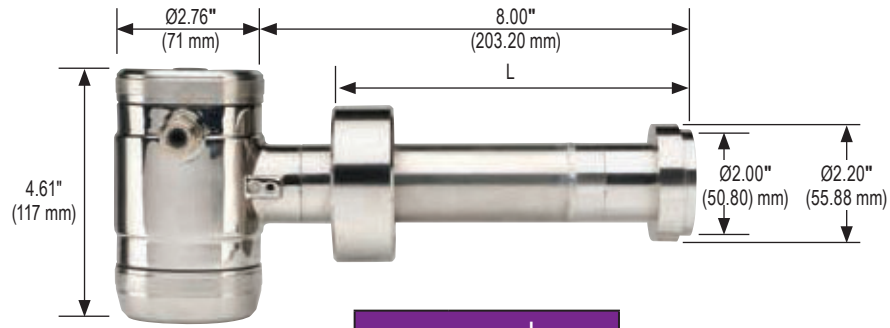
# Dimensions

## 204-91 (E&H Universal adapter)



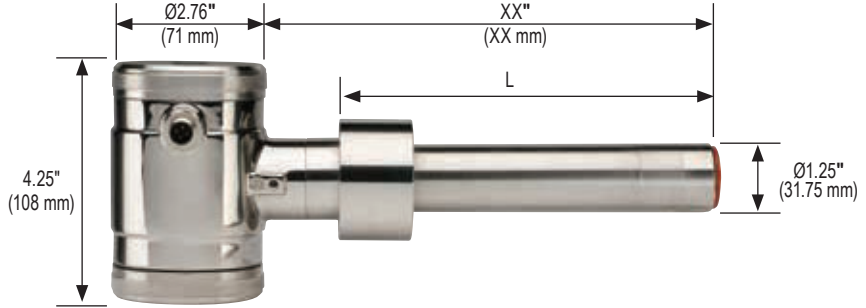
L	
Short	2.16" (54.86 mm)
Long	5.93" (150.50 mm)

## 204-93 (Anderson Negele Type SL)



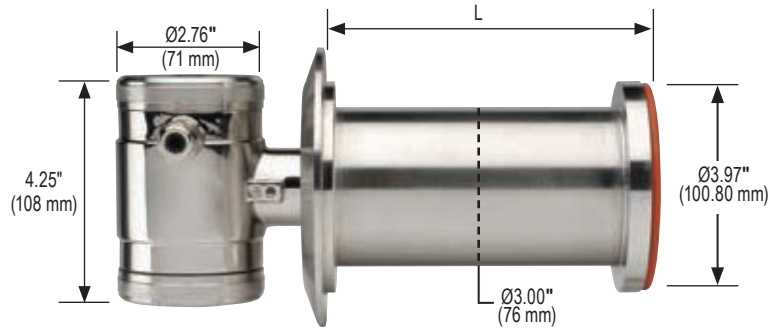
L	
Short	2.05" (52.0 mm)
Long	6.36" (161.50 mm)

## 204-95 (King Gage)



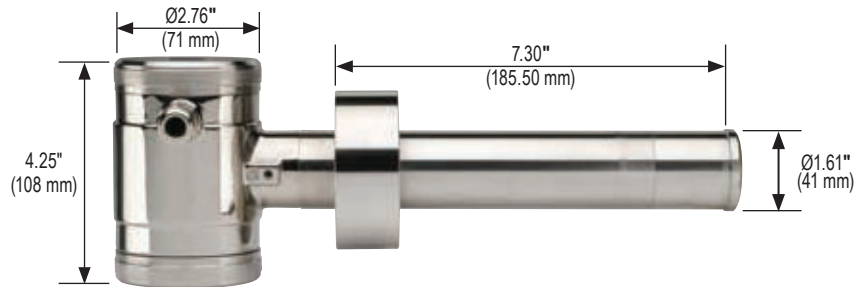
L	
Short	2.19" (55.63 mm)
Standard	6.62" (168.15 mm)
Long	8.81" (223.77 mm)

**204-98 (Rosemount Tank Spud)**



L	
Short	2.11" (53.58 mm)
Long	6.11" (155.19 mm)

**204-99 (Tank Mate)**





## 25 SERIES

- Ranges from -160 inH<sub>2</sub>O vac to 1,160 psig
- Hart® protocol output available
- 316 Stainless Steel wetted parts
- Strong flush diaphragm with minimal fill volume
- Can be cleaned-in-place (CIP) or steamed-in-place (SIP)
- Meets 3A requirements



### APPLICATIONS

- Food & dairy
- Chemical processing
- Pharmaceutical

### FEATURES & BENEFITS

- All Stainless Steel housing
- Easy programming and range adjustment without test pressure via on-board display
- Accuracy 0.2% of adjusted span
- 4:1 turn down
- Active temperature compensation
- Hart® protocol optional

### SPECIFICATIONS

Output signals	4 mA to 20 mA 2-wire, 4 mA to 20 mA 2-wire and Hart® signal
Pressure ranges	-160 inH <sub>2</sub> O vac to 1,160 psig
Accuracy	0.2% of adjusted span
Stability	<0.1%/year
Adjustment	By 3 push buttons on display or optional Hart® signal
Response time	<100 ms
Service life	>10 years
Temperature ranges	-4 °F to 212 °F (-20 °C to 100 °C); 293 °F (145 °C) for 45 min.
Power requirement*	12 Vdc to 36 Vdc
Measuring element	316 Stainless Steel (Hastelloy C or Tantalum optional)
Connection	316 Stainless Steel
Housing material	304 Stainless Steel (316 Stainless Steel optional)
Environmental rating	IP66 (IP68 optional)
Electrical protection	IP66 (NEMA 4X), IP68 (NEMA 6) optional
Weight	Approximately 2.20 lb. (Depending on process connection)

\* Unregulated

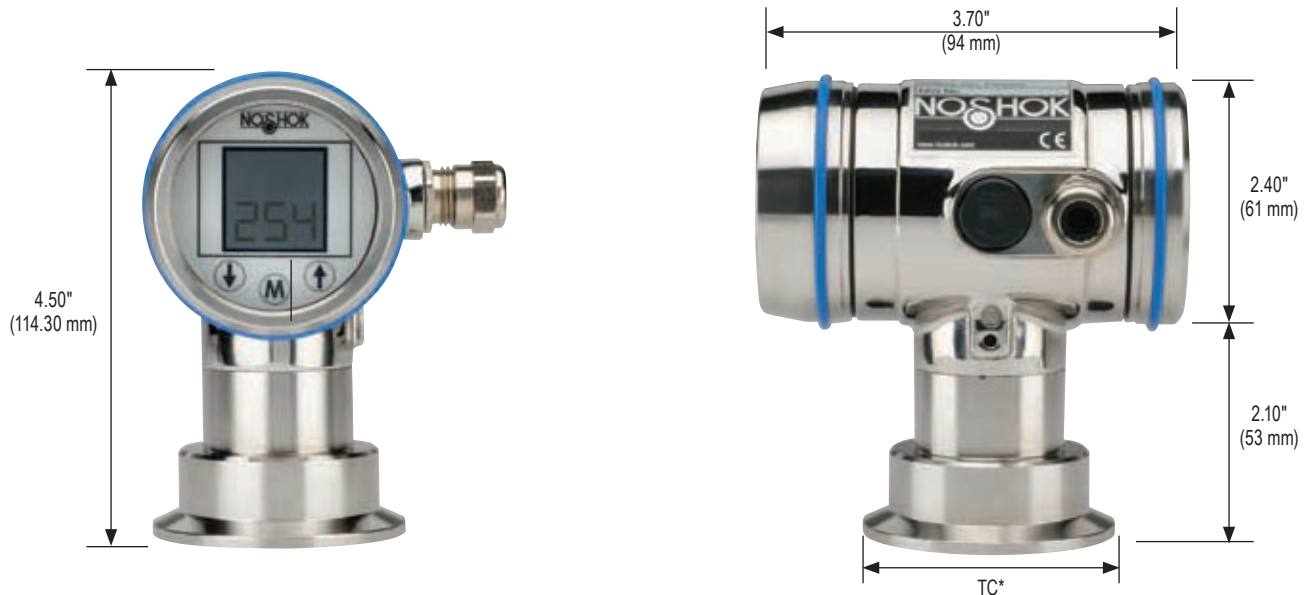
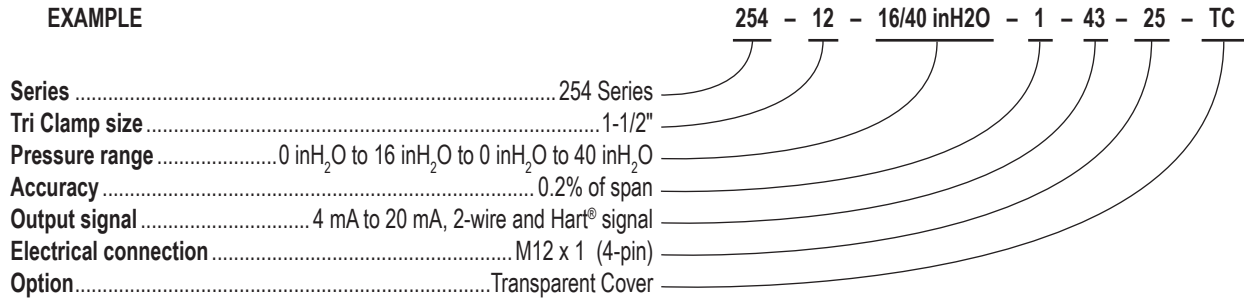


ORDERING INFORMATION			
SERIES	254		
TRI-CLAMP SIZE	12 1-1/2"	24 3"	
	16 2"		
PRESSURE RANGES (Adjustable)	40inH <sub>2</sub> O-vac -40 inH <sub>2</sub> O to 0 inH <sub>2</sub> O*	16/40 inH <sub>2</sub> O 0 inH <sub>2</sub> O to 16 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 40 inH <sub>2</sub> O (.6 psig to 1.45 psig)	
	160inH <sub>2</sub> O-vac -160inH <sub>2</sub> O to 0 inH <sub>2</sub> O	40/160 inH <sub>2</sub> O 0 inH <sub>2</sub> O to 40 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O (1.45 psig to 5.8 psig)	
	14.7/43-vac -14.7 psig to 43 psig	160/637 inH <sub>2</sub> O 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 637 inH <sub>2</sub> O (5.8 psig to 23 psig)	
	14.7/130-vac -14.7 psig to 130 psig	14.5/58 14.5 psig to 58 psig (0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 1,607 inH <sub>2</sub> O)	
	14.7/335-vac -14.7 to 335 psig	29/145 29 psig to 145 psig (0 inH <sub>2</sub> O to 803 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 4,017 inH <sub>2</sub> O)	
	14.7/1145-vac -14.7 psig to 1,145 psig	87/350 87 psig to 350 psig (0 inH <sub>2</sub> O to 2,410 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 9,697 inH <sub>2</sub> O)	
		290/1160 290 psig to 1,160 psig (0 inH <sub>2</sub> O to 8,035 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 32,140 inH <sub>2</sub> O)	
ACCURACIES	1 0.2% of adjusted span		
OUTPUT SIGNALS	1 4 mA to 20 mA, 2-wire	43 4 mA to 20 mA, 2-wire and Hart® signal	
ELECTRICAL CONNECTIONS	25 M12 x 1 (4-pin)	71 PG9 Cable Gland	
	28 1/2" NPT Female		
OPTIONS	TC Transparent Cover (for display)		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Not available in 1-1/2" Tri-Clamp

**EXAMPLE**



\*1-1/2", 2" and 3" Tri-Clamp connections available

**“SNORKEL” Pressure & Level Transmitter**

304 Series shown  
with transparent cover

**APPLICATIONS**

- Tank level measurement
- Food & beverage
- Dairy
- Breweries
- Chemical processing
- Pharmaceutical

**FEATURES & BENEFITS****300/301 Series**

- Cable connection only (no housing)
- Active temperature compensation
- Fixed range (300 Series)
- Range adjustment with Hart® (301 Series)

**302 Series**

- All polished Stainless Steel housing
- Active temperature compensation
- Zero/span adjustable
- 4:1 Turn down

**304 Series**

- All polished Stainless Steel housing
- Active temperature compensation
- Accuracy 0.1% of adjusted span
- 10:1 Turn down
- Easy programming and range adjustment without test pressure via on-board display
- Hart® protocol available

**30 SERIES**

- 300 Series: ranges from 40 inH<sub>2</sub>O to 60 psig
- 301 Series: adjustable ranges from 16 inH<sub>2</sub>O to 1,450 psig via Hart®
- 302 Series: adjustable ranges from 40 inH<sub>2</sub>O to 1,160 psig
- 304 Series: adjustable ranges from 16 inH<sub>2</sub>O to 1,450 psig
- Hart® signal output available on 301 & 304 Series Transmitters
- 316 Stainless Steel wetted parts
- Strong flush diaphragm with minimal fill volume
- Can be cleaned-in-place (CIP) or steamed-in-place (SIP)
- Meets 3A requirements



	SERIES	SPECIFICATIONS
Output signals	All	4 mA to 20 mA 2-wire, 4 mA to 20 mA 2-wire and Hart® signal (301 & 304 Series only)
Pressure ranges	300 Series	Ranges from 40 inH <sub>2</sub> O to 60 psig
	302 Series	Adjustable ranges from 40 inH <sub>2</sub> O to 1,160 psig
	301/304 Series	Adjustable ranges from 16 inH <sub>2</sub> O to 1,450 psig
Accuracy	300/301/302 Series	0.2% of adjusted span
	304 Series	0.1% of adjusted span
Stability	All	<0.1%/year
Adjustment	301 Series	Hart® signal
	302 Series	Zero and span internally
	304 Series	By 3 push buttons on display or optional Hart® signal
Response time	All	<150 ms
Service life	All	>10 years
Temperature ranges	300/301 Series	14 °F to 158 °F (-10 °C to 70 °C)
	302/304 Series	-4 °F to 212 °F (-20 °C to 100 °C) ; 293 °F (145 °C) for 45 min.
Power requirement*	All	12 Vdc to 36 Vdc
Measuring element	All	316L Stainless Steel (Hastelloy C, Tantalum or Gold plated optional)
Connection	All	316 Stainless Steel
Housing material	All	304 Stainless Steel (316 Stainless Steel optional)
Environmental rating	300/301 Series	IP68
	302/304 Series	IP66 (IP68 optional)
Electrical protection	All	IP66 (NEMA 4X), IP68 (NEMA 6) optional
Weight		Weight is dependent on model and cable length

\* Unregulated



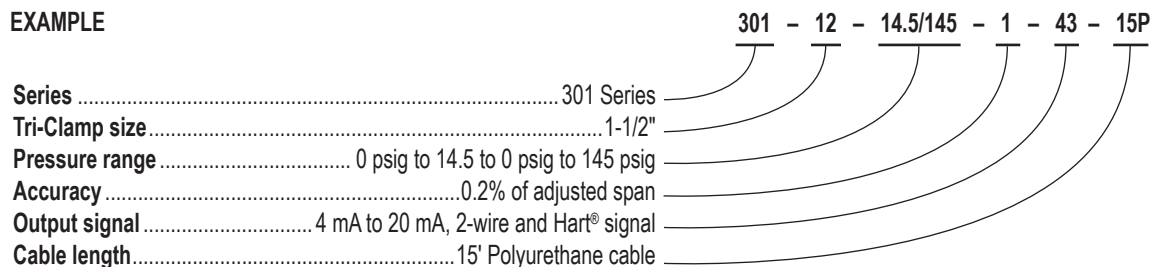
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

ORDERING INFORMATION				
<b>SERIES</b>	<b>300</b> Fixed range transmitter	<b>302</b> Adjustable transmitter	<b>301</b> Adjustable transmitter with Hart® signal	<b>304</b> Intelligent transmitter
<b>TRI-CLAMP SIZE</b>	<b>12</b> 1-1/2"	<b>24</b> 3"	<b>16</b> 2"	
<b>300 SERIES PRESSURE RANGES (Fixed)</b>	<b>40 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 40 inH <sub>2</sub> O	<b>120 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 120 inH <sub>2</sub> O	<b>5</b> 0 psig to 5 psig	<b>15</b> 0 psig to 15 psig
	<b>60 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 60 inH <sub>2</sub> O		<b>10</b> 0 psig to 10 psig	<b>30</b> 0 psig to 30 psig
	<b>80 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 80 inH <sub>2</sub> O			<b>60</b> 0 psig to 60 psig
<b>301 SERIES PRESSURE RANGES (Adjustable with Hart®)</b>	<b>16/160 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 16 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O	<b>14.5/145</b> 0 psig to 14.5 to 0 psig to 145 psig		<b>290/1450</b> 0 psig to 290 psig to 0 psig to 1,450 psig
	<b>47/470 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 47 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 470 inH <sub>2</sub> O	<b>72.5/435</b> 0 psig to 72.5 psig to 0 psig to 435 psig		
<b>302 SERIES PRESSURE RANGES (Adjustable)</b>	<b>40/160 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 40 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O	<b>14.5/58</b> 0 psig to 14.5 to 0 to 58 psig		<b>232/725</b> 0 psig to 232 psig to 0 psig to 725 psig
	<b>160/277 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 277 inH <sub>2</sub> O	<b>36/145</b> 0 psig to 36 psig to 0 psig to 145 psig		<b>580/1160</b> 0 psig to 580 psig to 0 psig to 1,160 psig
	<b>277/609 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 277 to 0 inH <sub>2</sub> O to 609 inH <sub>2</sub> O	<b>100/232</b> 0 psig to 100 psig to 0 psig to 232 psig		
<b>304 SERIES PRESSURE RANGES (Intelligent)</b>	<b>16/160 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 16 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O	<b>14.5/145</b> 0 psig to 14.5 to 0 psig to 145 psig		<b>290/1450</b> 0 psig to 290 psig to 0 psig to 1,450 psig
	<b>47/470 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 47 inH <sub>2</sub> O to 0 inH <sub>2</sub> O to 470 inH <sub>2</sub> O	<b>72.5/435</b> 0 psig to 72.5 psig to 0 psig to 435 psig		
<b>ACCURACIES</b>	<b>1</b> 0.2% of adjusted span*			
<b>OUTPUT SIGNALS</b>	<b>1</b> 4 mA to 20 mA, 2-wire	<b>43</b> 4 mA to 20 mA, 2-wire and Hart® signal**		
<b>ELECTRICAL CONNECTIONS †</b>	<b>25</b> M12 x 1 (4-pin)	<b>71</b> PG9 Cable Gland		
	<b>28</b> 1/2" NPT Female			
<b>CABLE LENGTHS † †</b>	<b>15P</b> 15' Polyurethane cable	<b>30P</b> 30' Polyurethane cable		
<b>OPTIONS</b>	<b>JB</b> Cable Junction Box	<b>TC</b> Transparent Cover (for display)***		

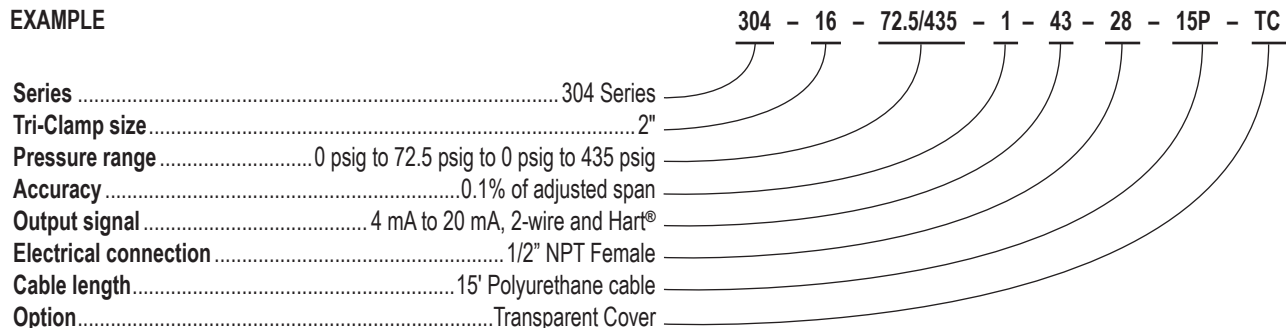
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

- \* Standard accuracy on the 304 Series is ±0.1% of adjusted span
- \*\* Required for the 301 Series, optional for the 304 Series
- \*\*\* Available for the 304 Series only
- † Available for the 302 and 304 Series only
- † † Additional cable lengths available, consult factory

**EXAMPLE**

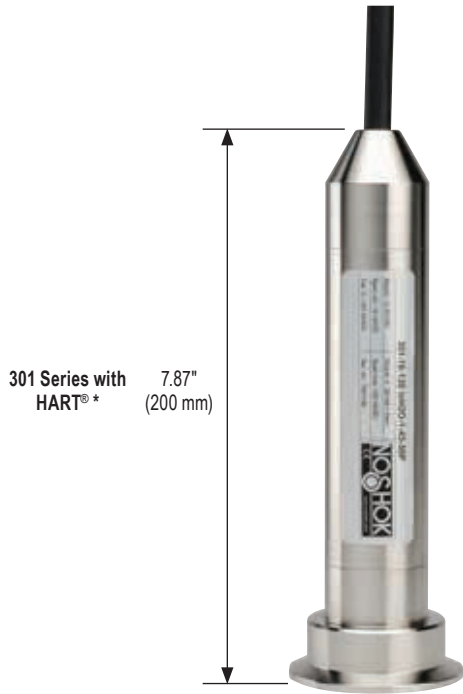


**EXAMPLE**



# Dimensions

## 300/301 Series



301 Series with HART® \* 7.87" (200 mm)

\* 300 Series fixed range is 6.22" (158 mm)

## 302 Series



\*1-1/2", 2" and 3" Tri-Clamp connections available



**304 Series**



\*1-1/2", 2" and 3" Tri-Clamp connections available

# Mechanical Miniature Low Pressure



## 100 SERIES

- Switch adjustment ranges from 5 psig to 30 psig through 15 psig to 150 psig
- Standard Brass with NBR diaphragm wetted parts
- 1 SPST N.O. or N.C. contact

### APPLICATIONS

- Hydraulics & pneumatics
- Pumps & compressors
- Tank monitoring
- Leak detection
- Water management

### SPECIFICATIONS

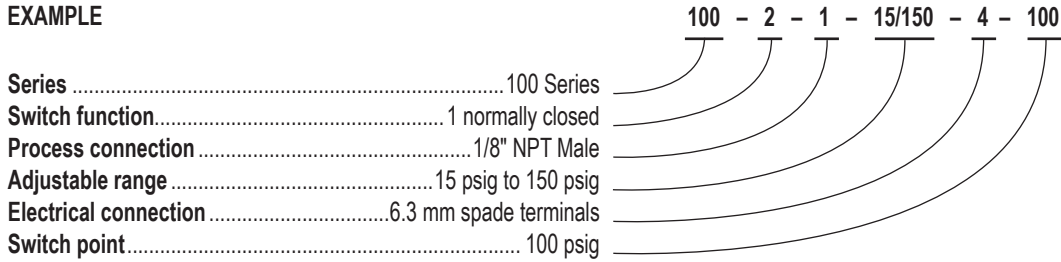
<b>Switching parameters</b>	
Number	1
Function	SPST N.O. or N.C. contact
Contact rating	Up to 42 Vdc 2A
Non-repeatability	5% of the adjusted value
Contact material	Silver-plated, optional gold-plated
Frequency	Max. 100 cycles/min
<b>Pressure ranges</b>	
Pressure ranges	5 psig to 30 psig through 15 psig to 150 psig
<b>Switch adjustment</b>	
Switch point	Full scale
Hysteresis	< 10% of the adjusted value
<b>Service life</b>	
Service life	>1,000,000 load cycles
<b>Temperature ranges</b>	
Media	-13 °F to 185 °F (-25 °C to 85 °C)
Ambient	-13 °F to 185 °F (-25 °C to 85 °C)
Storage	-13 °F to 185 °F (-25 °C to 85 °C)
<b>Proof pressure</b>	
Proof pressure	Full scale
<b>Measuring element</b>	
Measuring element	NBR diaphragm 1/8" NPT Male Brass
<b>Housing material</b>	
Housing material	Brass, optional Stainless Steel
<b>Environmental rating</b>	
Environmental rating	IP65
<b>Weight</b>	
Weight	Approximately 0.07 lb



ORDERING INFORMATION				
SERIES	100			
SWITCH FUNCTIONS	1	1 Normally open	2	1 Normally closed
PROCESS CONNECTION	1	1/8" NPT male		
SWITCH ADJUSTMENT RANGES	5/30	5 psig to 30 psig	15/150	15 psig to 150 psig
ELECTRICAL CONNECTION	4	6.3 mm spade terminals		
SWITCH POINT (if required)	Specify pressure			

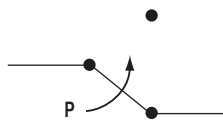
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

### EXAMPLE

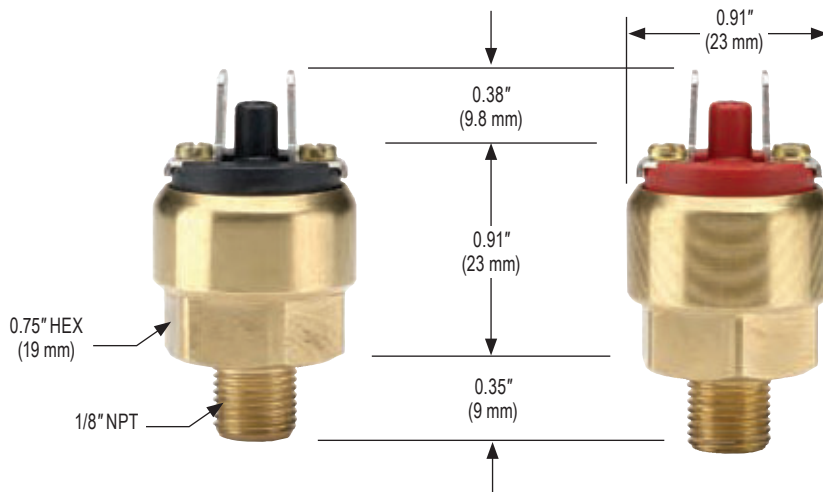
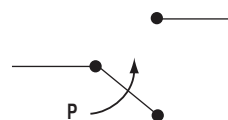


### Switching Output Schematic

#### Normally Closed



#### Normally Open





## 200 SERIES

- Switch adjustment ranges from 3 psig to 30 psig through 450 psig to 4,600 psig
- Zinc-nickel plated Steel with NBR diaphragm (< 225 psig); Steel piston with NBR seal (> 225 psig) wetted parts
- SPDT snap-action micro switch with solid Silver contacts
- RoHS compliant

### APPLICATIONS

- Hydraulics & pneumatics
- Pumps & compressors
- Tank monitoring
- Leak detection
- Water management

### SPECIFICATIONS

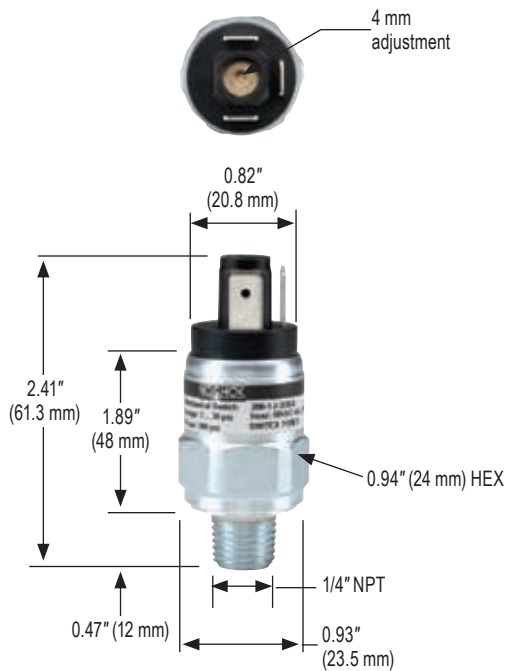
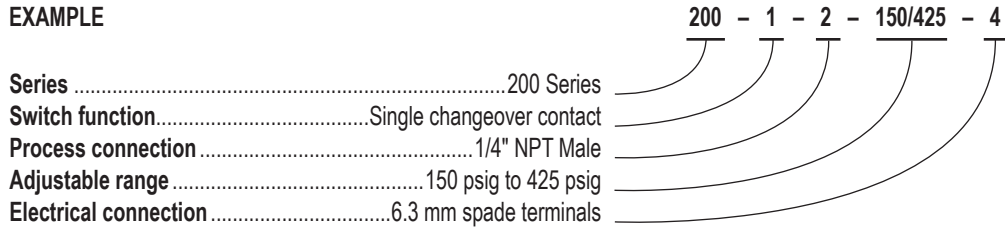
<b>Switching parameters</b>	
Number	1
Function	SPDT snap-action micro switch with solid silver contacts, gold-plated contacts available on request
Contact rating	Up to 28 Vdc 2A Up to 50 Vac 4A
Non-repeatability	±2% of full scale adjustment range
Contact material	Solid Silver, self-cleaning, optional gold-plated
Frequency	Max. 100 cycles/min
Media	Diaphragm type, compressed air or not corrosive liquids Piston type, self lubricating fluids such as hydraulic oil or grease
<b>Pressure ranges</b>	
	3 psig to 30 psig through 450 psig to 4,600 psig Diaphragm type: 870 psi max.; piston type: 5,000 psi max.
<b>Switch adjustment</b>	
Switch point	Full scale
Hysteresis	Diaphragm type, ≤ 10% of full scale adjustment range, minimum 100 psig, Piston type, maximum 15% of full scale adjustment range
Service life	>1,000,000 load cycles
<b>Temperature ranges</b>	
	Media -4 °F to 176 °F (-20 °C to 80 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -4 °F to 176 °F (-20 °C to 80 °C)
Proof pressure	870 psig or 5,000 psig depending on adjustment range
Measuring element	NBR diaphragm < 225 psig; Steel piston with NBR seal > 225 psig 1/4" NPT zinc-plated Steel
Housing material	Zinc-nickel plated Steel
<b>Environmental rating</b>	
	Spade terminals IP00 Cable connection IP67
Weight	Approximately 0.2 lb.



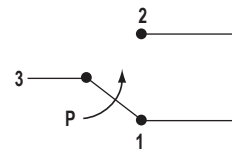
ORDERING INFORMATION					
SERIES	200				
SWITCH FUNCTION	1	Single changeover contact (SPDT)			
PROCESS CONNECTION	2	1/4" NPT male			
SWITCH ADJUSTMENT RANGES (Max. working pressure)	3/30	3 psig to 30 psig (870 psig)	150/1700	150 psig to 1,700 psig (5,000 psig)	
	7/115	7 psig to 115 psig (870 psig)	150/2300	150 psig to 2,300 psig (5,000 psig)	
	15/225	15 psig to 225 psig (870 psig)	300/2900	300 psig to 2,900 psig (5,000 psig)	
	150/425	150 psig to 425 psig (5,000 psig)	300/3600	300 psig to 3,600 psig (5,000 psig)	
	150/1150	150 psig to 1,150 psig (5,000 psig)	450/4600	450 psig to 4,600 psig (5,000 psig)	
ELECTRICAL CONNECTIONS	4	6.3 mm Spade terminals	36	18" Integral cable	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

**EXAMPLE**



**Switching Output Schematic**



## Mechanical Compact SPDT with Adjustable Hysteresis



## 300 SERIES

- Switch adjustment ranges from 3 psig to 30 psig through 450 psig to 4,600 psig
- Standard zinc-plated Steel with NBR diaphragm (< 225 psig); Steel piston with NBR seal (> 225 psig) wetted parts
- SPDT snap-action micro switch
- RoHS compliant

### APPLICATIONS

- Hydraulics & pneumatics
- Pumps & compressors
- Tank monitoring
- Leak detection
- Water management

### SPECIFICATIONS

#### Switching parameters

<b>Number</b>	1
<b>Function</b>	SPDT snap-action micro switch
<b>Contact rating</b>	Up to 28 Vdc 2A Up to 125 Vac 4A Up to 250 Vac 4A
<b>Non-repeatability</b>	±2% of full scale adjustment range
<b>Contact material</b>	Solid Silver, self-cleaning
<b>Frequency</b>	Max. 100 cycles/min
<b>Media</b>	Diaphragm type, compressed air or not corrosive liquids Piston type, self lubricating fluids such as hydraulic oil or grease

<b>Pressure ranges</b>	3 psig to 30 psig through 450 psig to 4,600 psig Diaphragm type: 870 psi max.; Piston type: 5,000 psi max.
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#### Switch adjustment

<b>Switch point</b>	Full scale
<b>Hysteresis</b>	Adjustable, see charts below

<b>Service life</b>	>1,000,000 load cycles
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<b>Temperature ranges</b>	Media -4 °F to 176 °F (-20 °C to 80 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -4 °F to 176 °F (-20 °C to 80 °C)
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<b>Proof pressure</b>	870 psig or 5,000 psig depending on adjustment range
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<b>Measuring element</b>	NBR diaphragm < 225 psig; Steel piston with NBR seal > 225 psig 1/4" NPT zinc-plated Steel standard connection, others available on request
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<b>Housing material</b>	Zinc-nickel plated Steel
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<b>Environmental rating</b>	IP65
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<b>Weight</b>	Approximately 0.2 lb.
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ORDERING INFORMATION			
SERIES	300		
SWITCH FUNCTION	1 Single changeover contact, SPDT		
PROCESS CONNECTION	2 1/4" NPT male		
SWITCH ADJUSTMENT RANGES (Max. working pressure)	3/30 3 psig to 30 psig (870 psig)	150/1700 150 psig to 1,700 psig (5,000 psig)	
	7/115 7 psig to 115 psig (870 psig)	150/2300 150 psig to 2,300 psig (5,000 psig)	
	15/225 15 psig to 225 psig (870 psig)	300/2900 300 psig to 2,900 psig (5,000 psig)	
	150/425 150 psig to 425 psig (5,000 psig)	300/3600 300 psig to 3,600 psig (5,000 psig)	
	150/1150 150 psig to 1,150 psig (5,000 psig)	450/4600 450 psig to 4,600 psig (5,000 psig)	
ELECTRICAL CONNECTIONS	1 36" Cable (connected to option 8)	8 Hirschmann (DIN EN 175301-803 form A)	

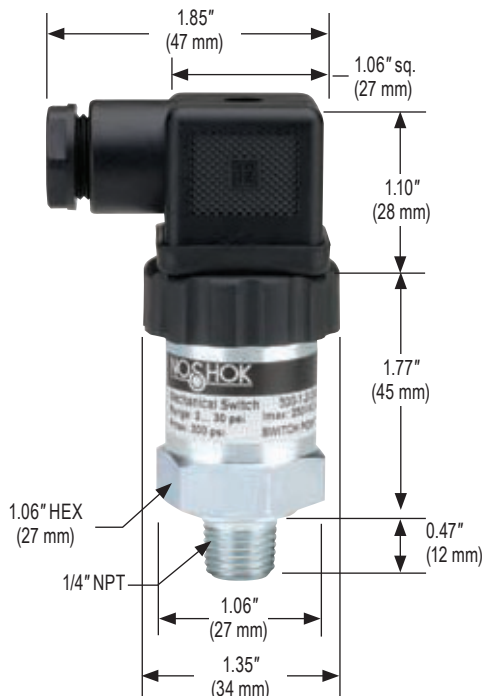
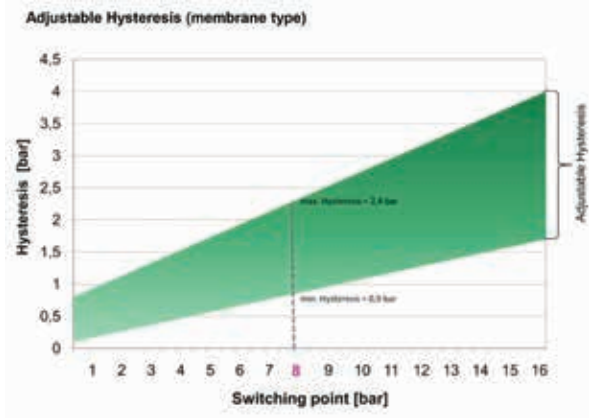
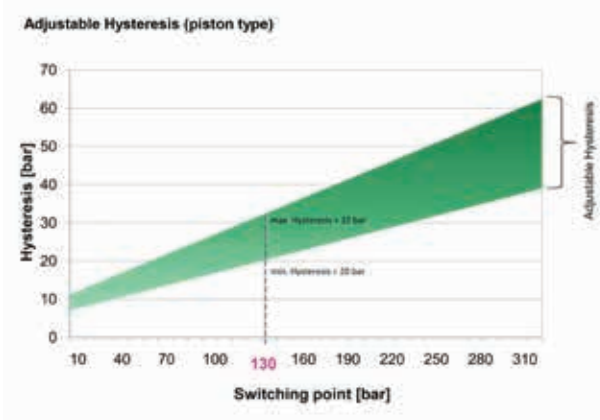
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

### EXAMPLE

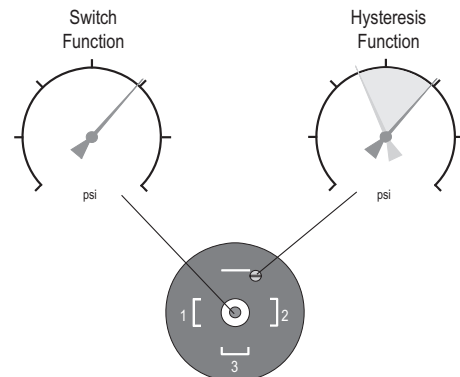
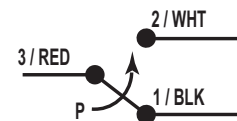
Series .....300 Series  
 Switch function.....Single changeover contact  
 Process connection .....1/4" NPT Male  
 Adjustable range .....15 psig to 225 psig  
 Electrical connection .....Hirschmann

300 - 1 - 2 - 15/225 - 8

Additional Ordering Information  
Switch Set Point(s) (please specify)



### Switching Output Schematic





## 400 SERIES

- Switch adjustment ranges from 0 to 300 psig through 0 to 5,000 psig
- Standard zinc-plated Steel with NBR diaphragm (< 225 psig); Steel piston with NBR seal (> 225 psig) wetted parts
- SPDT snap-action micro switch
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

- Hydraulics & pneumatics
- Mobile hydraulics
- Power generation
- Pumps & compressors
- Tank monitoring
- Water management

### SPECIFICATIONS

<b>Switching parameters</b>	
Number	1
Function	SPDT snap-action micro switch
Contact rating	Up to 24 Vdc Max 3A Up to 250 Vac Max 6A
Non-repeatability	±2% of full scale of adjustment range
Contact material	Solid Silver, self-cleaning
Frequency	Max. 200 cycles/min.
Media	Diaphragm type, compressed air or non-corrosive liquids Piston type, self-lubricating fluids such as hydraulic oil or grease
<b>Pressure ranges</b>	
	0 psig to 300 psig through 0 psig to 5,000 psig Adjustment knob from 3 psig to 4,600 psig dependent on full scale range
<b>Switch adjustment</b>	
Switch point	Full scale
Hysteresis	Diaphragm type, 1% to 11% of adjustment range full scale Piston type, 2% to 8% of adjustment range full scale
<b>Service life</b>	
	>1,000,000 load cycles
<b>Temperature ranges</b>	
	Media -4 °F to 176 °F (-20 °C to 80 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -13 °F to 185 °F (-25 °C to 85 °C)
<b>Proof pressure</b>	
	300 psi or 5,000 psi depending on adjustment range
<b>Measuring element</b>	
	NBR diaphragm ≤ 230 psig Stainless Steel piston with NBR seal ≥ 500 psig 1/4" NPT and 7/16-20 SAE zinc-plated Steel connections standard, others available on request
<b>Housing material</b>	
	Zinc die-cast
<b>Environmental rating</b>	
	IP65 for Hirschmann IP67 for M12 x 1
<b>Electromagnetic rating</b>	
	CE compliant to EU Standard 73/23/EWG RFI, EMI and ESD protection
<b>Shock</b>	
	30 g's according to IEC 60068-2-27
<b>Vibration</b>	
	10 g's according to IEC 60068-2-6
<b>Weight</b>	
	Approximately 0.66 lb.





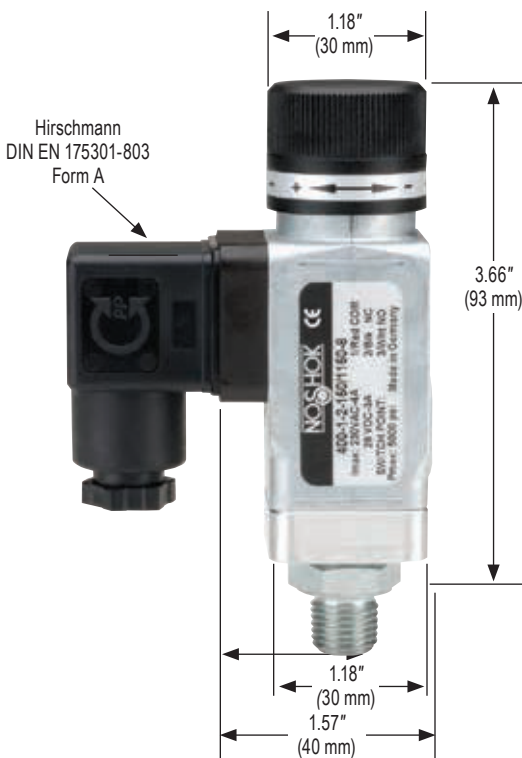
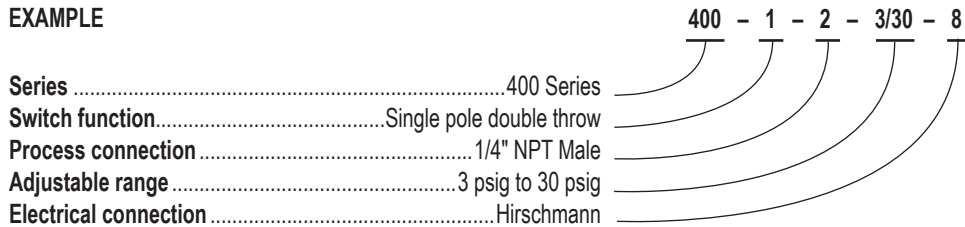
ORDERING INFORMATION			
SERIES	400		
SWITCH FUNCTION	1 Single Pole Double Throw (SPDT)		
PROCESS CONNECTIONS *	2	1/4" NPT male	19 G 1/4 B female
	5	1/4" NPT female	45 SAE J514 FIG 34B
	10	G 1/4 B male	
SWITCH ADJUSTMENT RANGES ** (Max. working pressure)	3/30	3 psig to 30 psig (300 psig)	150/1700 150 psig to 1,700 psig (5,000 psig)
	7/115	7 psig to 115 psig (300 psig)	150/2300 150 psig to 2,300 psig (5,000 psig)
	15/225	15 psig to 225 psig (300 psig)	300/2900 300 psig to 2,900 psig (5,000 psig)
	150/425	150 psig to 425 psig (5,000 psig)	300/3600 300 psig to 3,600 psig (5,000 psig)
	150/1150	150 psig to 1,150 psig (5,000 psig)	450/4600 450 psig to 4,600 psig (5,000 psig)
ELECTRICAL CONNECTIONS	1	36" Cable (connected to option 8)	8 DIN EN 175301-803 Form A
	2	M12 x 1 (4-pin)	46 Hirschmann with LED status indicator

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

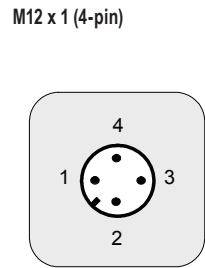
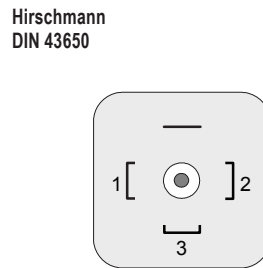
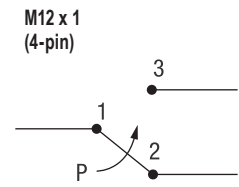
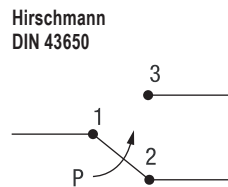
\* Note: Stainless Steel connection available, consult factory

\*\* Please specify switch set point(s), rising or falling pressing, and switch hysteresis (if applicable)

**EXAMPLE**



**Switching Output Schematic**





## 800 SERIES

- Compound and standard ranges from 0 psig to 10 psig through 0 psig to 7,500 psig
- 316L Stainless steel wetted parts
- Current and voltage outputs available
- 7 different output configurations available
- Display and electrical connection can be rotated independently
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

- Hydraulics & pneumatics
- Power generation
- Pumps & compressors
- Stamping & forming presses
- Water & wastewater

### SPECIFICATIONS

<b>Pressure ranges</b>	Compound and standard ranges from 0 psig to 10 psig through 0 psig to 7,500 psig
<b>Switching parameters</b>	Individually adjustable via external control keys
Number	1 or 2 (PNP or NPN)
Function	N.O., N.C., window, hysteresis (freely adjustable)
Contact rating	250 mA max.
Response time	≤5 ms
Accuracy	≤ 0.5 % of span
Switch point	.25 to 100% of full scale
Hysteresis	Fully adjustable
<b>Transmitter parameters</b>	
Output signal	4 mA to 20 mA or 0 Vdc to 10 Vdc; programmable and freely adjustable
Accuracy	±0.5% of span including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2)
Non-repeatability	< 0.1% of span (IEC 61298-2)
Adjustment	Freely scalable within the range of 5:1
<b>Service life</b>	100,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Media -4 °F to 185 °F (-20 °C to 185 °C) Ambient -4 °F to 176 °F (-20 °C to 80 °C) Storage -4 °F to 158 °F (-20 °C to 70 °C)
<b>Display</b>	14 segment-LED, red 4-digit, height 0.35"
<b>Power requirement*</b>	15 - 35 Vdc
<b>Current consumption</b>	Max. 45 mA for versions without 4-20 mA output signal, Max. 70 mA for versions with 4-20 mA output signal, Total consumption max. 600 mA including switching current
<b>Proof pressure</b>	2 times full scale
<b>Measuring element</b>	<150 psi: 316L Stainless steel ≥150 psi: 316L, PH grade Stainless steel
<b>Housing material</b>	304 Stainless steel
<b>Connection</b>	316 stainless steel
<b>Environmental rating</b>	IP65 and IP67 per IEC 60529
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:2014/A1:1998 RFI, EMI and ESD protection
<b>Electrical protection</b>	Protected against reverse polarity, over-voltage and short circuit
<b>Shock</b>	> 50 g's according to IEC 60068-2-27
<b>Vibration</b>	> 20 g's according to IEC 60068-2-6
<b>Weight</b>	Approx 0.49 lb.

\* Unregulated

ORDERING INFORMATION					
<b>SERIES</b>	800 304 Stainless steel housing				
<b>SWITCH FUNCTIONS</b>	1 2 N.O. or N.C. (PNP or NPN)	5 2 N.O. or N.C. switch (PNP/NPN) with 0 Vdc to 10 Vdc 3-wire output *	2 1 N.O. or N.C. (PNP or NPN) with 4 mA to 20 mA 3-wire analog output	6 1 N.O. or N.C. switch (PNP/NPN) with 4 mA to 20 mA/0 Vdc to 10 Vdc 3-wire output 2 **	7 2 N.O. or N.C. switch (PNP/NPN) with 4 mA to 20 mA/0 Vdc to 10 Vdc 3-wire output * **
<b>PROCESS CONNECTIONS</b>	2 1/4" NPT male	10 G 1/4 B male	45 7/16-20 SAE J514 FIG 34B (Non-Adjustable)	8 1/2" NPT male	11 G 1/2 B male
<b>ADJUSTABLE RANGES (Max. working pressure)</b>	14.5vac -14.5 psig to 0 psig	15 0 psig to 15 psig	1000 0 psig to 1,000 psig	30A 0 psia to 30 psia	14.5/15 -14.5 psig to 15 psig
	14.5/30 -14.5 psig to 30 psig	25 0 psig to 25 psig	1500 0 psig to 1,500 psig	50A 0 psia to 50 psia	14.5/50 -14.5 psig to 50 psig
	14.5/100 -14.5 psig to 100 psig	30 0 psig to 30 psig	2000 0 psig to 2,000 psig	100A 0 psia to 100 psia	14.5/160 -14.5 psig to 160 psig
	14.5/200 -14.5 psig to 200 psig	50 0 psig to 50 psig	3000 0 psig to 3,000 psig	160A 0 psia to 160 psia	14.5/300 -14.5 psig to 300 psig
	10 0 psig to 10 psig	100 0 psig to 100 psig	5000 0 psig to 5,000 psig	200A 0 psia to 200 psia	
		160 0 psig to 160 psig	7500 0 psig to 7,500 psig	300A 0 psia to 300 psia	
		200 0 psig to 200 psig	10A 0 psia to 10 psia		
		300 0 psig to 300 psig	15A 0 psia to 15 psia		
		500 0 psig to 500 psig	25A 0 psia to 25 psia		
<b>ELECTRICAL CONNECTIONS</b>	2 M12 x 1 (4-pin)	3 M12 x 1 (5-pin), 2 switch and analog output			
<b>OPTIONS</b>	ST8 Threaded Orifice				

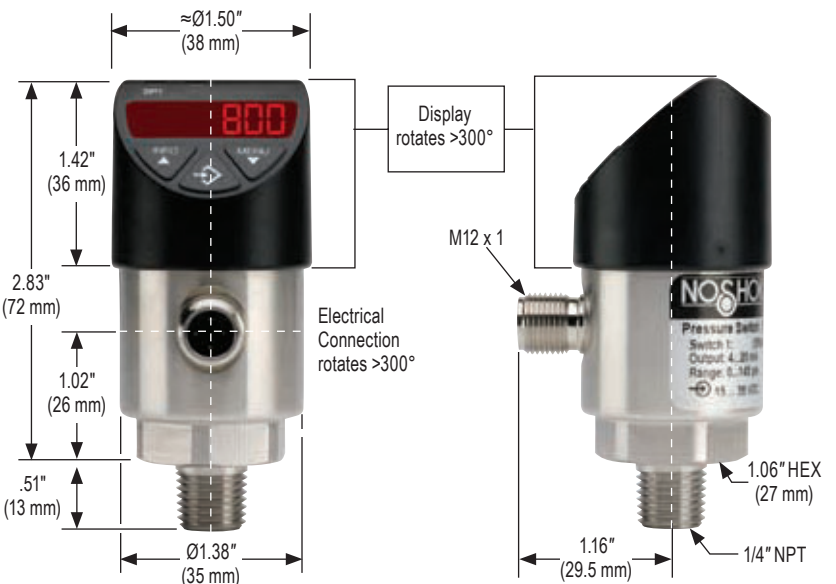
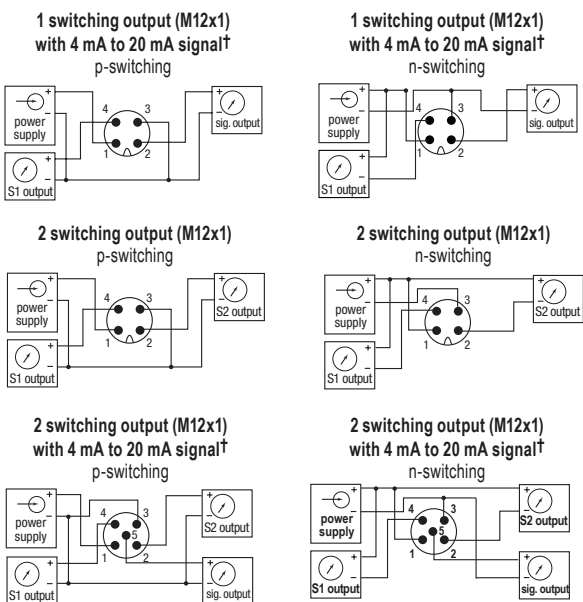
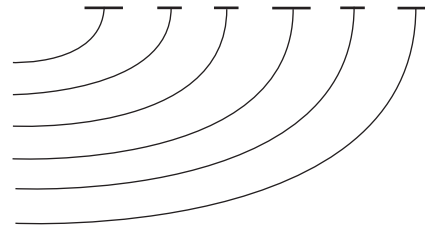
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Available only with a M12 x 1 (5-pin) connector  
 \*\* Can switch between 4 mA to 20 mA / 0 Vdc to 10 Vdc

**EXAMPLE**

Series ..... 800 Series  
 Switch function..... 2 N.O. or N.C. (PNP or NPN)  
 Process connection ..... 1/4" NPT Male  
 Adjustable range ..... 0 psig to 160 psig  
 Electrical connection ..... M12 x 1 (4-pin)  
 Option..... Threaded Orifice

800 - 1 - 2 - 160 - 2 - ST8



† Also applies to 0 Vdc to 10 Vdc output

# All Pressure Measurement Instrumentation Options & Accessories

## PISTON-TYPE SNUBBERS

- Resist clogging and are self cleaning
- Five different sized pistons included with each snubber to ensure the correct amount of snubbing for virtually every application
- Available in Brass and 316 Stainless Steel in 1/4" NPT, 1/2" NPT or SAE J1926-3: 7/16-20
- Weight approximately 0.2 lb. for 1/4" & 7/16", and approximately 0.4 lb. for 1/2"

### Options & Accessories

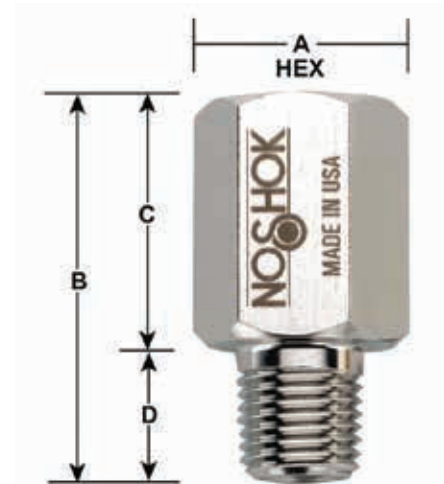
Piston-Type Snubbers Specifications

PART NO.	SIZE	MATERIAL	PRESSURE RATING
1325	1/4" NPT	Brass	6,000 psi
1335	SAE J1926-3:7/16-20	Brass	5,000 psi
1350	1/2" NPT	Brass	6,000 psi
5025	1/4" NPT	316 Stainless Steel	15,000 psi
5035	SAE J1926-3:7/16-20	316 Stainless Steel	8,000 psi
5050	1/2" NPT	316 Stainless Steel	15,000 psi



Piston-Type Snubbers

DIMENSIONS		1/4" NPT	1/2" NPT	SAE J1926-3: 7/16-20
A	IN	0.812	1.125	0.812
	MM	20.6	28.6	20.6
B	IN	1.60	1.875	1.60
	MM	40.6	47.6	40.6
C	IN	1.04	1.25	1.24
	MM	26.4	31.8	31.5
D	IN	0.56	0.625	0.36
	MM	14.2	15.9	9.1



PISTON	SUGGESTED USE
A, B*	Gases
B, C	Water
C, D	Light Oil
E	Heavy Oil

\* Snubber assembled and shipped with the B piston installed

For products shown that are composed of Brass or Carbon Steel:



**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

For products shown that are composed of Stainless Steel:



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## SINTERED SNUBBERS

- Cost effective solution to protect expensive instrumentation
- Increases gauge readability by smoothing out pressure surges, pulsations and spikes
- 5 basic elements available for each snubber to accommodate specific application needs
- Snubbing action achieved by utilizing a corrosion resistant 316 Stainless Steel sintered porous element
- Exotic materials or intermediate disc grades available
- Provides long service life with no moving parts to wear out
- Weight approximately 0.2 lb. for 1/4" & 7/16", and approximately 0.4 lb. for 1/2"



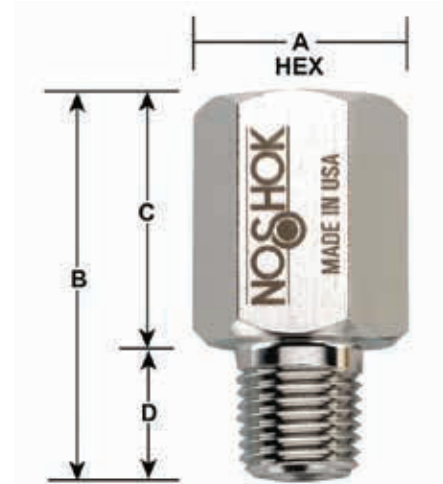
Sintered Snubbers

### Options & Accessories Sintered Snubbers Specifications

PART NO.	SIZE	MATERIAL	PRESSURE RATING
1125-X	1/4" NPT	Brass	6,000 psi
1135-X	SAE J1926-3:7/16-20	Brass	5,000 psi
1150-X	1/2" NPT	Brass	6,000 psi
5125-X	1/4" NPT	316 Stainless Steel	15,000 psi
5150-X	1/2" NPT	316 Stainless Steel	15,000 psi

Note: The "X" in the part number denotes the Disc option (example: 1135-C).  
See chart below for Disc options.

DIMENSIONS		1/4" NPT	1/2" NPT	SAE J1926-3 :7/16-20
A	IN	0.812	1.125	0.812
	MM	20.6	28.6	20.6
B	IN	1.60	1.875	1.60
	MM	40.6	47.6	40.6
C	IN	1.04	1.25	1.24
	MM	26.4	31.8	31.5
D	IN	0.56	0.625	0.36
	MM	14.2	15.9	9.1



### Sintered Snubbers Replacement Disc Options

DISC GRADE	PART NO.	AVERAGE AIR FLOW ESTIMATE	MICRON GRADE (reference)	SUGGESTED USE
A	PD8-A-SS1	0.25 L/MIN @ 1 psi	2	Gases
B	PD8-B-SS1	0.63 L/MIN @ 1 psi	10	Gases, Water
C	PD8-C-SS1	1.46 L/MIN @ 1 psi	20	Water, Light Oil
D	PD8-D-SS1	2.79 L/MIN @ 1 psi	40	Light Oil
E	PD8-E-SS1	3.14 L/MIN @ 1 psi	60	Heavy Oil



Sintered Snubbers Replacement Discs

# All Pressure Measurement Instrumentation Options & Accessories

## PIGTAIL STEAM SYPHONS

- Protect the instrument from the damaging effects of high temperature steam
- Recommended for use in steam applications and systems that contain superheated vapor
- Available in 1/4" and 1/2" NPT sizes in welded Steel, welded 316 Stainless Steel or seamless 316 Stainless Steel with ratings to 3,800 psi @ 850 °F

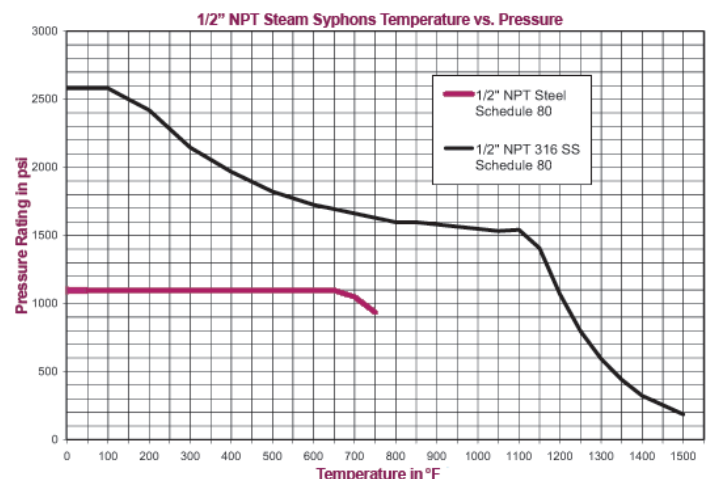
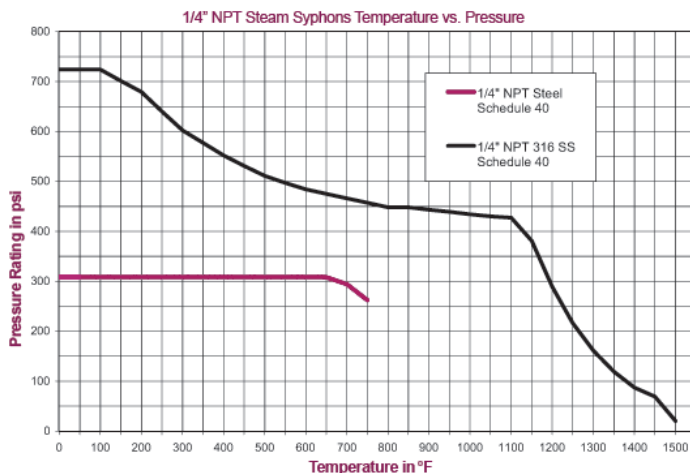


### Product Specifications

PART NO.	COIL STYLE	SIZE	MATERIAL
1225	90°	1/4" NPT	Welded Steel, schedule 40
1250		1/2" NPT	Welded Steel, schedule 80
2225		1/4" NPT	Welded 316SS, schedule 40
2250		1/2" NPT	Seamless 316SS, schedule 80
1025	180°	1/4" NPT	Welded Steel, schedule 40
1050		1/2" NPT	Welded Steel, schedule 80
2025		1/4" NPT	Welded 316SS, schedule 40
2050		1/2" NPT	Seamless 316SS, schedule 80
1425	270°	1/4" NPT	Welded Steel, schedule 40
1450		1/2" NPT	Welded Steel, schedule 80
2325		1/4" NPT	Welded 316SS, schedule 40
2350		1/2" NPT	Seamless 316SS, schedule 80
1525	360°	1/4" NPT	Welded Steel, schedule 40
1550		1/2" NPT	Welded Steel, schedule 80
2525		1/4" NPT	Welded 316SS, schedule 40
2550		1/2" NPT	Seamless 316SS, schedule 80



Pigtail Steam Syphons



For products shown that are composed of Brass or Carbon Steel:

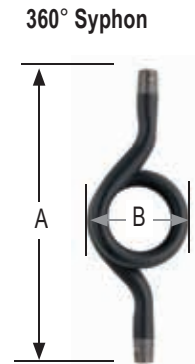
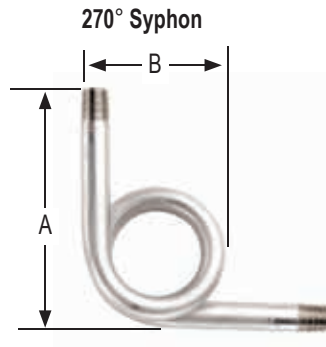
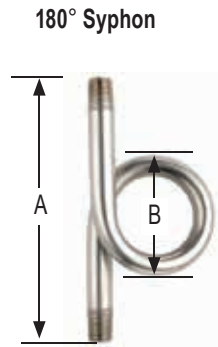
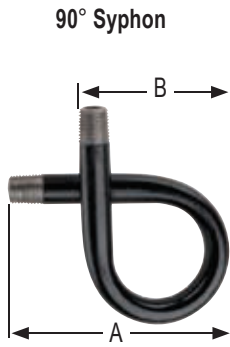


**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

For products shown that are composed of Stainless Steel:



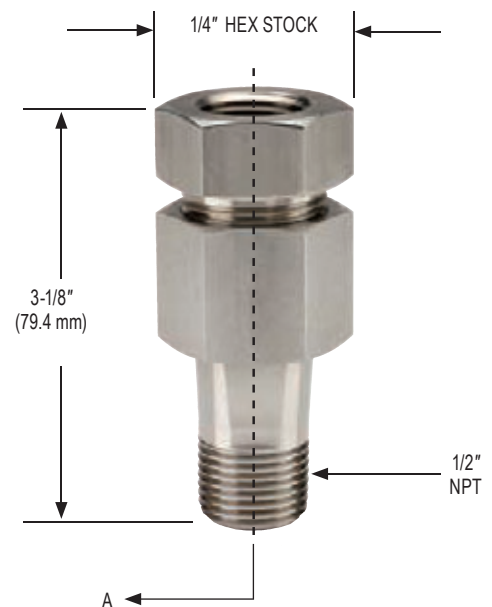
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



CONNECTION SIZE			1/4" NPT	1/2" NPT
90°	A	IN MM	4.25 107.95	6.5 165.1
	B	IN MM	2.625 66.675	4.0 101.6
180°	A	IN MM	5.5 139.7	8.875 225.425
	B	IN MM	2.5 63.5	4.0 101.6
270°	A	IN MM	4.5 114.3	7.5 190.5
	B	IN MM	2.625 66.675	4.0 101.6
360°	A	IN MM	7.25 184.15	12.0 304.8
	B	IN MM	2.625 66.675	4.125 104.775

### SWIVEL ADAPTORS

- Temperature ratings: 15,000 psi @ 200 °F and 3,000 psi @ 1,000 °F
- Used with gauges and gauge valves to adjust the line of sight
- Rotates 360° to allow the connected instrument to be positioned in the desired direction
- The pressure connection is achieved with a tapered cone style compression fitting simply by tightening the swivel hex nut
- All 316 Stainless Steel construction
- Standard with 1/2" NPT male process – 1/2" NPT female instrument connections
- Also available with 1/4" NPT connections, same specifications apply
- Weight approximately 0.8 lb.



**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Gauge Configurations for High Temperature Applications

140 °F is the maximum recommended ambient media temperature for NOSHOK pressure gauges with Brass wetted parts, and 212 °F for gauges with Stainless Steel wetted parts. For applications in which media reaches temperatures above 212 °F, NOSHOK offers several accessories designed to prevent damage to the gauge, and maintain maximum performance and accuracy.

Recommended gauge configurations are listed below. Please note that these guidelines are intended to be general recommendations. Many conditions may affect the amount of temperature reduction; including ambient temperature, media type, and process configuration.

- **Up to 140 °F:** All NOSHOK pressure gauges will provide peak performance in this range
- **Up to 212 °F:** A gauge with Stainless Steel wetted parts is required, such as the NOSHOK 400 and 740 Series. Do NOT use a gauge with Brass wetted parts.
- **Up to 287 °F:** Accessories must be used to maintain gauge integrity and accuracy. Options include:
  - o **Pigtail Steam Syphon:** For use with a Stainless Steel wetted parts gauge. Should be used in steam applications and systems that contain superheated vapor. The pigtail buffers the instrument from the damaging effects of high temperature steam by holding system fluid in the coil to provide a steam trap for the fluid to condensate and dissipate the heat. Reduces temperature by 75° F/ft. on average. Multiple configurations are available.
  - o **Armored Capillary Tube:** For use with a Stainless Steel wetted parts gauge. Average temperature reduction is 75 °F/ft. Two feet of capillary tube can increase the media temperature range to 362 °F. Standard length is five feet, provided with thread connections; other lengths available on request. Gauge must be separated from the process with a mounting bracket or flange, and the extra capillary length can be rolled up if necessary. Recommended for use with clean media or gases.
  - o **Long Pipe:** 1/2" in diameter or greater in either Steel or Stainless Steel construction with a Stainless Steel wetted parts gauge. Average temperature reduction is 75 °F/ft. Pipes can be cut and threaded for custom applications.
  - o **Cooling Element:** For use with a Stainless Steel wetted parts gauge. Average temperature reduction is 75 °F/4" element. Use with other accessories for additional temperature decrease (long pipe, syphon, diaphragm seal).
  - o **Cooling Tower:** For use with a Stainless Steel wetted parts gauge. Approved usage up to temperatures of 312 °F. Average temperature reduction is 100 °F/8" cooling tower. Recommended for use with clean media or gases.
- **Up to 300 °F:** A high temperature system fill is required, such as silicone D.C 550, and a diaphragm seal is recommended on a Stainless Steel wetted parts gauge.

For more information, contact NOSHOK at 440.243.0888



## Process Conditions That Affect Pressure Gauge Accuracy & Performance

The technology used in today's pressure gauges has been around since the mid-eighteen hundreds, and the pressure gauge is still one of the most common methods of measuring pressure today. The majority of pressure gauges today still incorporate the Bourdon tube, socket, and geared movement; along with a pointer and dial to indicate process pressure.

Since the pressure gauge is a purely mechanical device, attention to three process conditions is necessary. The three factors that can adversely affect accuracy and performance are **Temperature, Vibration and Pulsation**.

### **Temperature Influence:**

For every 18 °F (10 °C) shift in temperature from which the gauge is calibrated, the user can experience up to a  $\pm 0.4\%$  additional error. The cause is the change in the elasticity or spring rate of the Bourdon tube element with temperature. While it is difficult to circumvent the influence of ambient temperature, we can address the influence of process temperature. In steam service, the common practice is to install coil syphons or pigtail syphons to dissipate process heat. Another common practice is to install a diaphragm seal with capillary to separate the gauge from the high heat source. There are many options available with fill fluid in the seal and capillary system to withstand temperatures up to 600 °F. In severe cold ambient conditions, many users elect to heat trace their instrumentation via electric or steam trace. Process and ambient temperature is an important consideration when selecting and applying pressure gauges.

### **Vibration Influence:**

Vibration due to pumps, motors, and other rotating equipment can cause excess wear and possible premature failure of internal working parts of a pressure gauge, which include the Bourdon tube and the movement or gear mechanism. Vibration also causes difficulty in accurate reading of the gauge, due to pointer oscillation. One of the most common causes of pressure gauge failure is exposure to continuous vibration. The most widely accepted remedy is to utilize a liquid filled pressure gauge. The fill fluid of choice is either Glycerin or Silicone. Liquid filled gauges address not only pointer oscillation, but also serve to protect and lubricate the internal geared movement.

### **Pulsation Influence:**

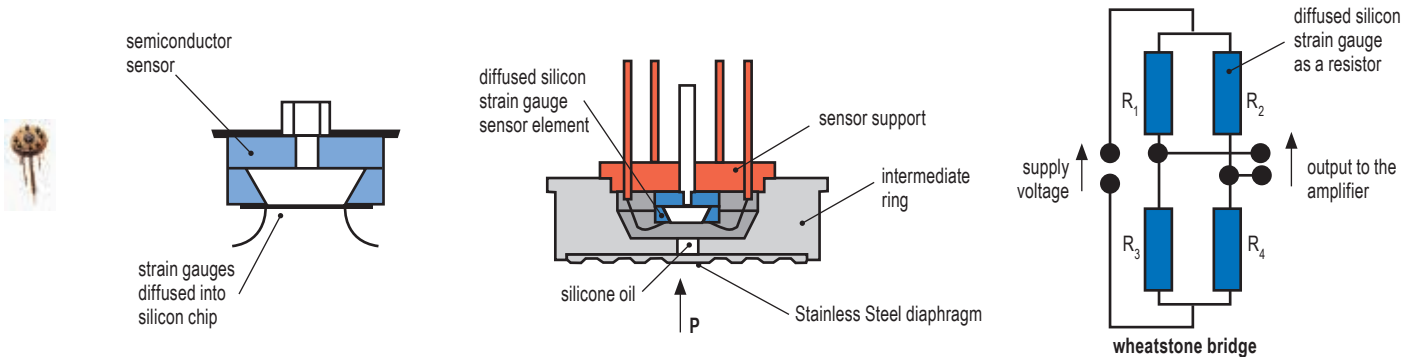
Process pulsation can occur around the discharge of pumps as well as quick operating valves. Many users assume that liquid filling a pressure gauge will fully address pulsation. Although a liquid filled gauge helps to dampen the effects of pulsation, it often does not fully address this process condition. Pulsation dampeners are installed upstream of the gauge socket and they can be a piston-type snubber, a sintered metal snubber, or a threaded in-flow restrictor in the socket of the gauge. A needle valve installed upstream of the gauge that is "pinched down" or slightly opened, is another common practice to address pulsation. It is not recommended to rely solely on a needle valve to address pulsation, due to the fact that the user could inadvertently open the valve, and thereby negate flow restriction. In clean fluids (gases or clean low viscosity liquids) a threaded orifice/flow restrictor or a sintered metal snubber is the least costly way to address pulsation. In dirtier and higher viscosity fluids a piston snubber is usually installed.

### **Summary:**

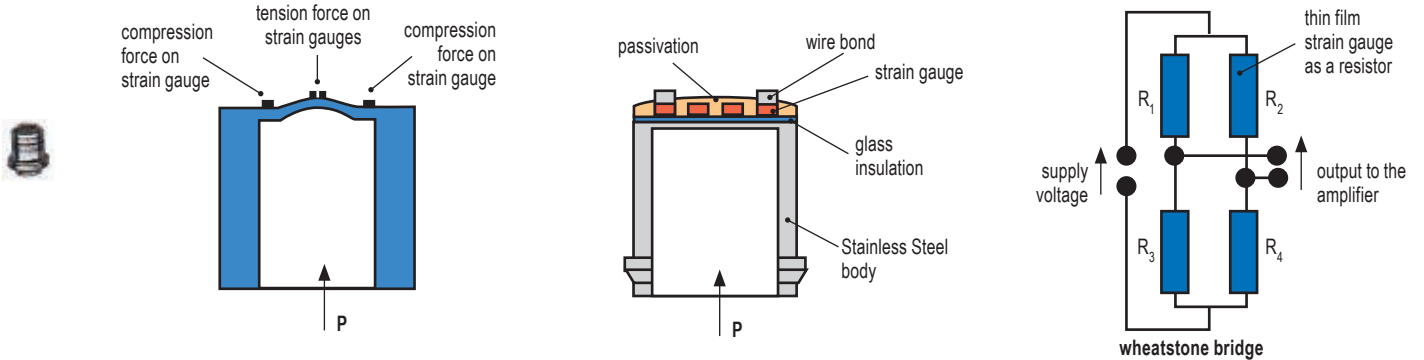
Temperature, vibration and pulsation are three process conditions that adversely affect a pressure gauge. Being aware of these three process conditions, and taking the necessary steps to address them, can help minimize accuracy errors and add to the service life of the pressure gauge.

## NOSHOK Transducer and Transmitter Pressure Sensing Technologies

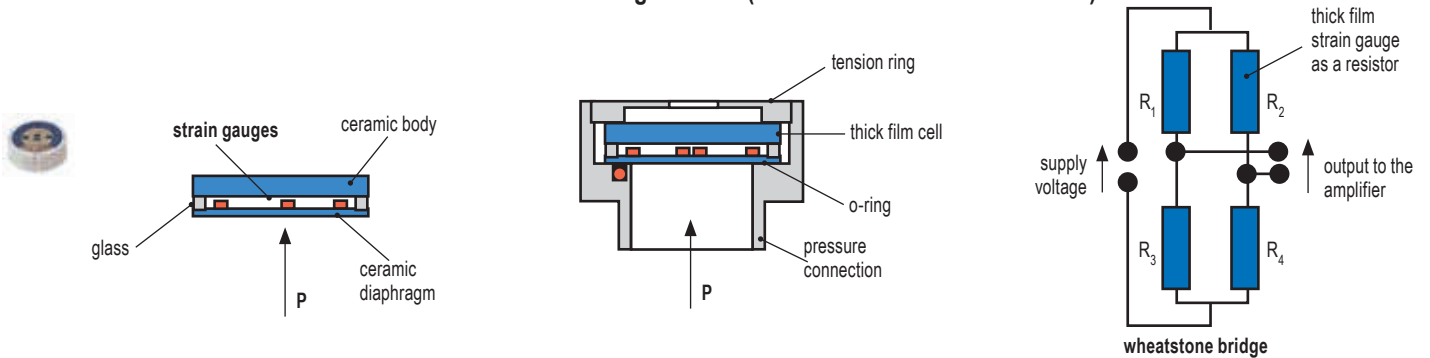
**Diffused Silicon Semiconductor Strain Gauge Sensor (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640 and 650 Series - ranges up to 0 psi to 300 psi)**



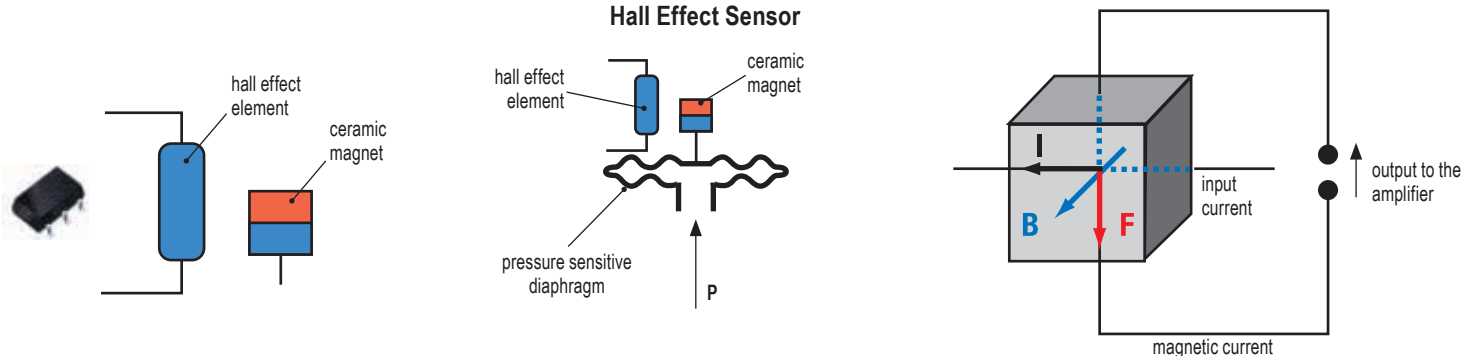
**Sputtered Thin Film Strain Gauge Sensor (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640, 650, 660, 800/810 Series - ranges 0 psi to 500 psi and higher)**

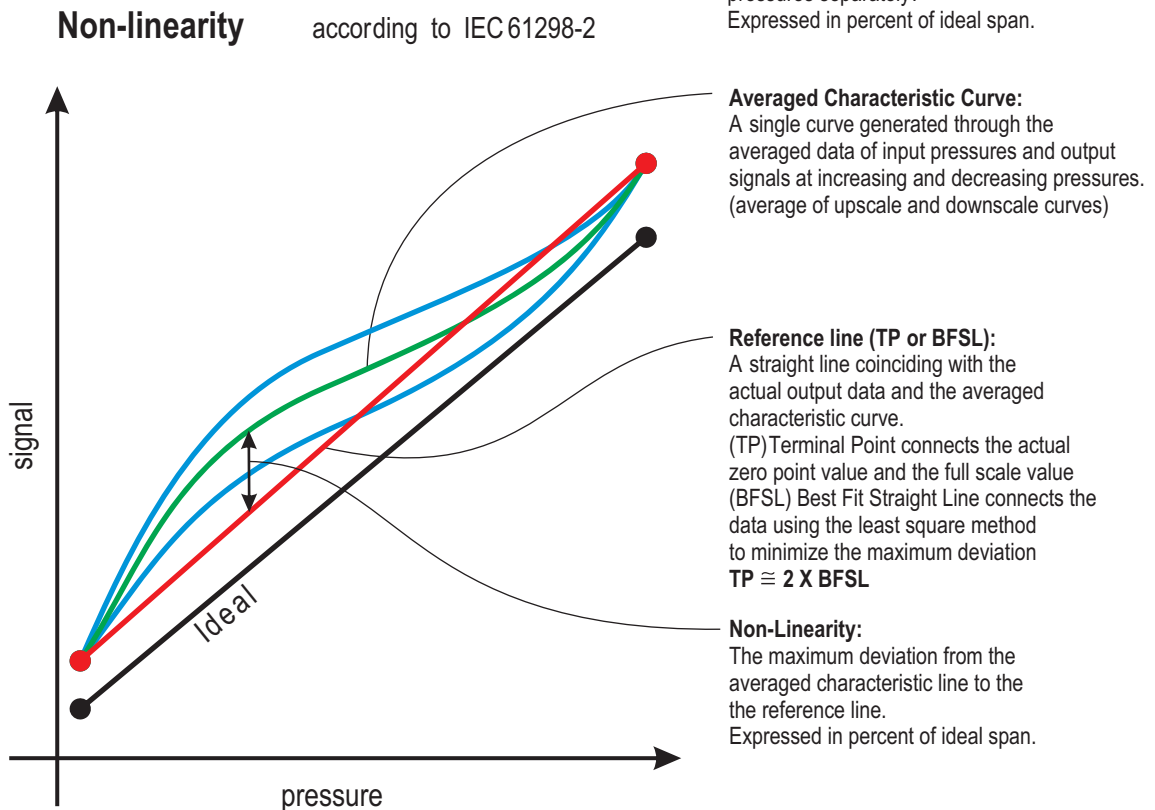
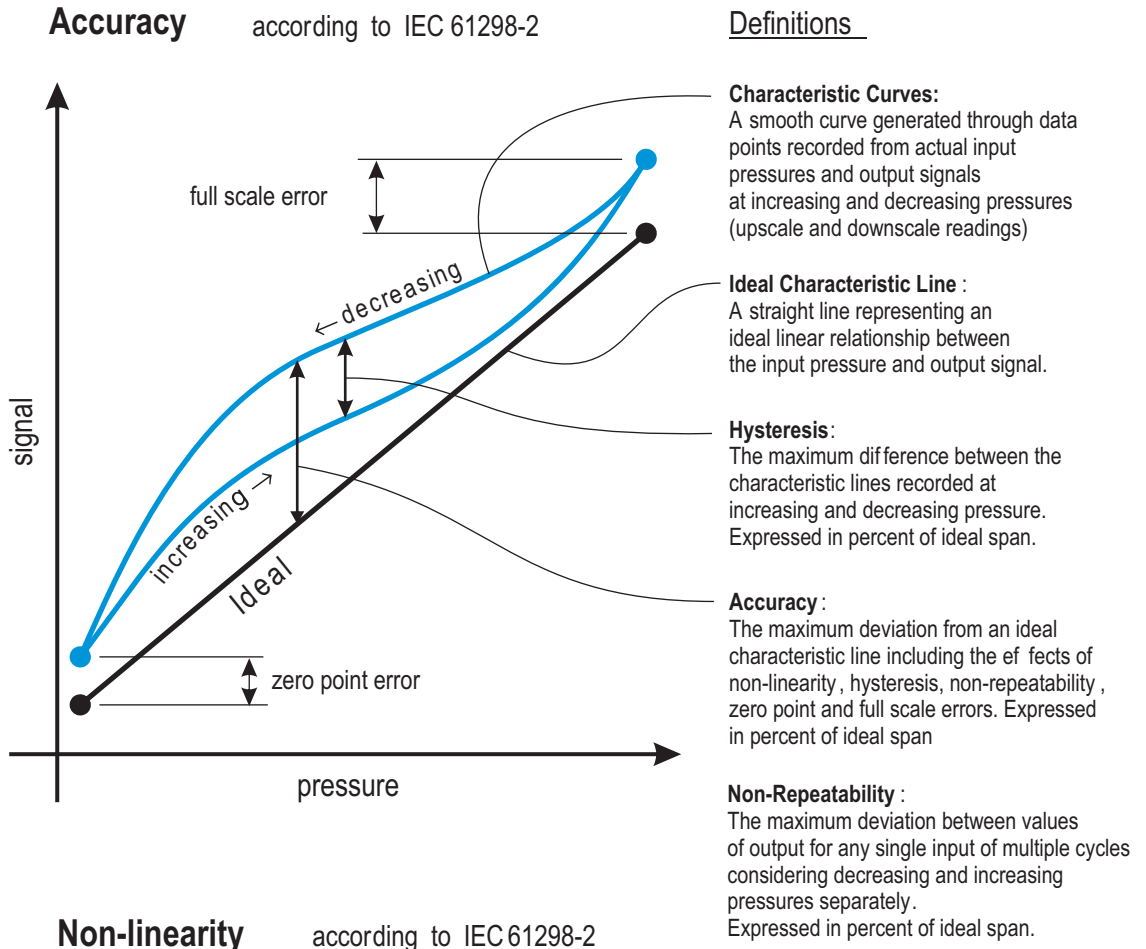


**Ceramic Thick Film Strain Gauge Sensor (used in 800/810 and 1000 Series)**

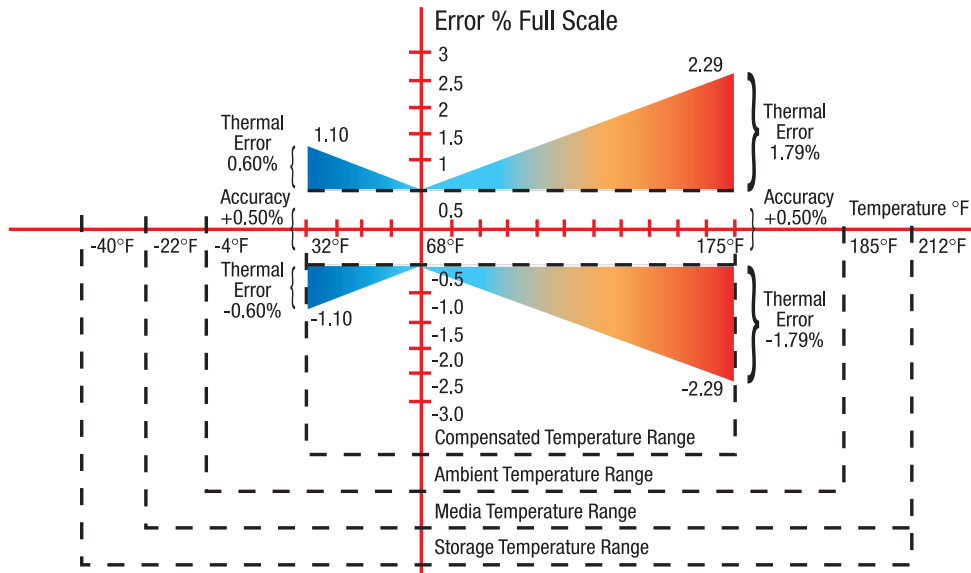


### Hall Effect Sensor





## Thermal Performance of NOSHOK Pressure Transducers



**Temperature Performance 100 Series Pressure Transmitter**

The above diagram illustrates transducer performance related to the temperature of the environment and media being measured.

The graph shows the worst case performance of the series 100 pressure transmitter as an example (other series follow the same pattern). The thermal specification as indicated in the 100 series specifications is given in a worst case coefficient for the combined effects on zero and span. The definitions are as follows.

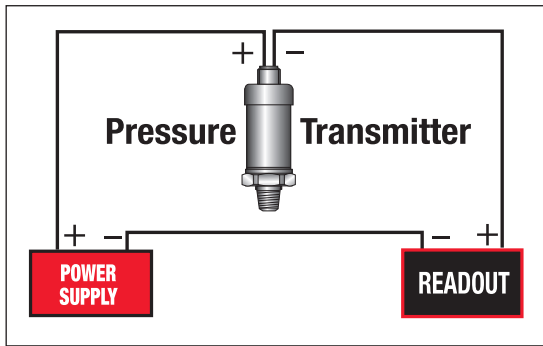
The **Compensated Temperature Range** is the thermal band over which the effect specification is guaranteed. For the 100 series, the coefficient is  $\pm 0.0167\%$  full scale per  $^{\circ}\text{F}$ . This means that over the compensated temperature range the thermal boundaries are straight lines as shown. This is sometimes called a “bow-tie effect” or “butterfly effect”.

The **Ambient Temperature Range** is the maximum and minimum ratings over which the transducer will output a correct signal.

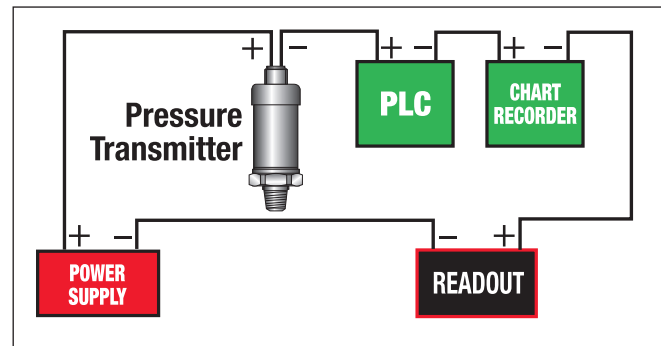
The **Media Temperature Range** is the maximum and minimum ratings of the media at the process connection.

The **Storage Temperature Range** is the maximum and minimum ratings for no damage on the shelf.

## The Minimum Power Supply Voltage Required For A 2-Wire 4 mA to 20 mA Loop



Single instrument 2 wire current loop



Single instrument 2 wire current loop

For the single instrument 2 wire current loop, the minimum power supply voltage is equal to the required voltage across the transmitter plus the voltage drop across the instrumentation plus the voltage drop caused by the resistance of the wiring.

As an example, for a 100 series (4 mA to 20 mA output) pressure transmitter,  $V_{transmitter} = 10 \text{ Vdc}$

$V_{wiring} = \text{Resistance of the wiring (handbook data)} \times 20 \text{ mA maximum current flow in the circuit}$ . If the instrumentation has an input resistance of  $250 \Omega$  and if the resistance of the wiring is minimal (100 ft of 24 AWG leadwire has less than  $0.6 \Omega$  (negligible) of resistance), then the calculation including the leadwire is as follows:

$$V_{min} = 10 \text{ Vdc} + (250 \Omega) \times .020 \text{ Amp} + (0.6 \Omega) \times .020 \text{ Amp} = 15.012 \text{ Vdc}$$

The power supply must provide at least this voltage with the current consumption of .020 Amp.

In a multiple instrument 2 wire current loop, if the second instrument also has an input resistance of  $250 \Omega$ , then a second component on the right side of the equation must be included. In this case, the  $V_{min} = 20.012 \text{ Vdc}$ . A power supply of 24 Vdc, 1 Amp would be a typical choice.

If there is more than 1 transmitter loop operating off of the same power supply then the current (.020 Amp) must be multiplied by the number of loops. It is recommended that the power supply provide 20% to 30% higher excitation voltage than that calculated above.

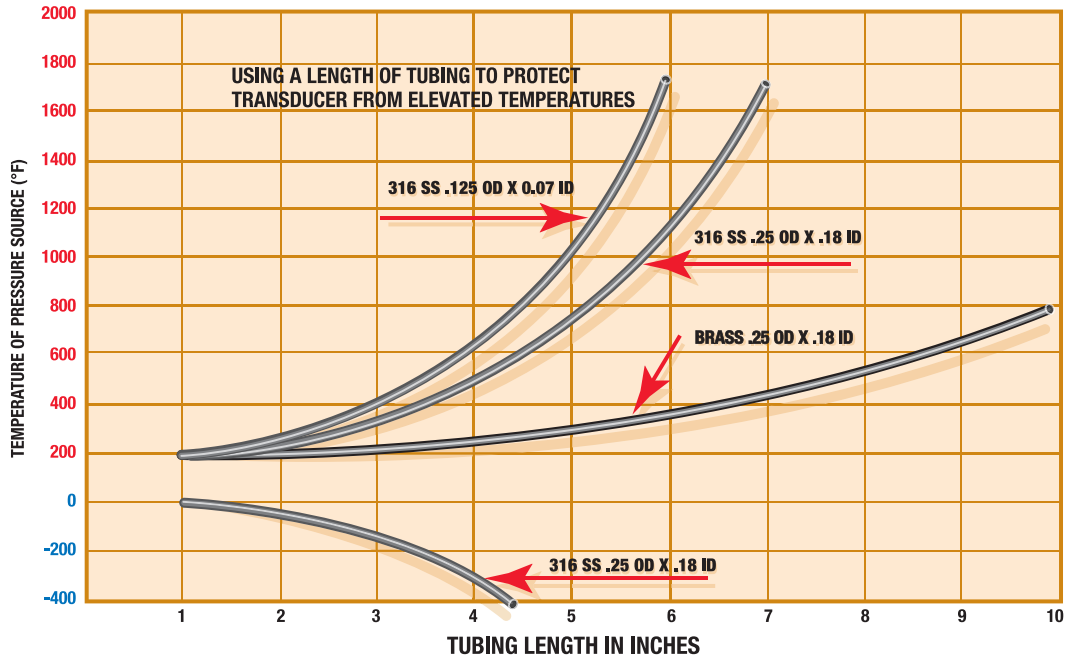
Load Limitations 4 mA to 20 mA output
$V_{min} = 10V + (.020 \times R_L)$
$R_L = \text{Loop resistance } (\Omega)$
$R_L = R_S + R_W$
$R_S = \text{Sensor resistance } (\Omega)$
$R_W = \text{Wire Resistance } (\Omega)$

## Measuring The Pressure Of High Temperature Media

In many applications the medium that the transducer or transmitter will contact may be at an elevated temperature beyond the operational limit of the measuring instrument. Selecting an instrument with a high temperature rating or using diaphragm seals to provide isolation from the medium may not be feasible from a design or economic standpoint.

One way to address this situation is to mount the instrument with a short length of tubing away from the hot area where the measurement needs to be made. With a dead ended pressure chamber, the tubing will effectively dissipate much of the heat and bring the medium in contact with the measuring instrument down to a lower temperature that is within its safe and accurate limit.

The following chart provides the basic information needed to determine the size and material of the tubing needed.



These curves are based upon the following assumptions:

1. The pressure vessel is insulated to limit radiant heat transfer to the transducer – the major source of thermal input is via the connecting tube.
2. The pressure medium has a coefficient of thermal conductivity less than  $.4 \text{btu} / \text{hr} / \text{ft}^2 / \text{ft} / ^\circ\text{F}$ . This figure encompasses a wide range of liquids and gases.
3. The ambient temperature  $T_A$  around the transducer is  $100 ^\circ\text{F}$ .
4. The heat transfer rate (convection) from the tubing to still air is  $1.44 \text{btu} / \text{ft}^2 / \text{hr} / ^\circ\text{F}$ .

## Environmental Ratings

### IP Environmental Protection Codes

#### **First Numeral - Protection from Particles**

- 0 No protection
- 1 Particles >50 mm
- 2 Particles >12 mm
- 3 Particles >2.5 mm
- 4 Particles >1 mm
- 5 Dust protected - limited ingress, no deposits  
ingress permitted
- 6 Dust tight - totally protected

#### **Second Numeral - Protection from Water**

- 0 No protection
- 1 Vertical falling water
- 2 Direct sprays up to 15° from vertical
- 3 Direct sprays up to 60° from vertical
- 4 Direct sprays from all directions - limited ingress permitted
- 5 Low pressure jets of water from all directions - limited
- 6 Strong jets of water from all directions
- 7 Immersion in water from 15 cm to 1 m
- 8 Immersion in water under pressure for long periods of time
- 9 High pressure steam jet up to 100 bar

IP (first numeral, second numeral), for example IP67

**Environmental ratings on NOSHOK transducers are indicated with the individual specifications throughout this catalog. The following ratings are used and this is how they are defined.**

- IP65** Totally protected from dust as well as protection from low pressure jets of water from all directions - limited ingress permitted (no effect on performance)
- IP67** Dust tight and capable of immersion in water from 15 cm to 1 m
- IP68** Capable of immersion in water for long periods of time.
- IP69K** Capable of steam jet washdown.

Since IP65, NEMA 4 and NEMA 4X are related, the differences are in the standards used in qualification. Here they are:

	IP65	NEMA 4
Method	Stream of water	Stream of water
Nozzle Size	1/2 "	1 "
Distance	10 ft	10 ft
Duration	15 minutes	5 minutes
Direction	All angles	All angles
Pressure/Flow	10 m of water	65 gallons/min.

In order to meet the standard, the IP65 test results allow some ingress of water as long as it does not affect the performance of the instrument. In order to meet the standard, the NEMA 4 test results do not allow any ingress of water. NEMA 4X includes the NEMA 4 standard requirements plus corrosion resistance.

## Hazardous Location Classifications (NEC)

**Class I:** *Areas in which flammable gases or vapors may be present in the air in sufficient quantities to be explosive*

**Group A:** Atmospheres containing acetylene

**Group B:** Atmospheres such as butadiene, ethylene oxide, propylene oxide, acrolein, or hydrogen (gases or vapors equivalent in hazard to hydrogen, such as manufactured gas)

**Group C:** Atmospheres such as cyclopropane, ethyl ether, ethylene, gas or vapors of equivalent hazard

**Group D:** Atmospheres such as acetone, alcohol, ammonia, benzene, benzol, butane, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, or gas or vapors of equivalent hazard

**Class II:** *Areas made hazardous by the presence of combustible dust*

**Group E:** Atmospheres containing combustible metal dusts, regardless of resistivity; dust of similarly hazardous characteristics having a resistivity of less than 100 K $\Omega$ -cm; electrically conductive dusts

**Group F:** Atmospheres containing combustible carbon black, charcoal, or coke dusts having more than 8% total volatile material; dusts so sensitized that they present an explosion hazard, and dusts having a resistivity of greater than 100  $\Omega$ -cm but less than or equal to 1x10<sup>8</sup>  $\Omega$ -cm

**Group G:** Atmospheres containing combustible dust having resistivity equal to or greater than 100K  $\Omega$ -cm; electrically nonconductive dusts

**Class III:** *Areas made hazardous by the presence of easily ignitable fibers or dust, but which are not likely to be in suspension in the air in quantities that are sufficient to ignite*

**Division 1:** Atmospheres where hazardous concentrations exist continuously, intermittently or periodically under normal operating conditions

**Division 2:** Atmospheres where hazardous concentrations exist only in case of accidental rupture or breakdown of equipment

## Hazardous Location Pressure Measurement with NOSHOK Pressure Transmitters

NOSHOK has solutions to your applications in areas with flammable gases and liquids. Let's start with the definitions related to equipment used in hazardous environments:

### Intrinsic Safety Protection

Protection in which the measurement system contains only transmitters and associated equipment that are incapable of causing ignition of the surrounding flammable atmosphere. Normally an intrinsic safety barrier is employed between the transmitter which is located in the hazardous area and the downstream receiving equipment. This barrier contains an electrical network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous location under specified fault conditions. NOSHOK 625, 626 and 627 Series are Factory Mutual and Canadian Standards Association approved as intrinsically safe.

### Non-Incendive Protection

Protection in which the measurement may contain arcing or sparking equipment but is still incapable, under specified test conditions, of igniting the flammable gas, vapor or dust-air mixture. This applies only in Division 2 environments. An intrinsic safety barrier is not required in this measurement system. No special wiring is required. NOSHOK 623 and 624 Series are Factory Mutual and Canadian Standards Association approved as non-incendive.

### Explosion-Proof Protection

Protection in which the enclosure of the transmitter is capable of withstanding an explosion of the specified gas or vapor that may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited. Explosion-proof installation techniques are required including special electrical conduit and junction boxes. NOSHOK 621 and 622 Series are Factory Mutual approved as explosion-proof.



## Why NOSHOK Is The Best Choice

- Stable sensing technologies mean that there is no need for periodic recalibration. NOSHOK transducers do not have glues, epoxies or adhesives in the transduction portion of the sensor module because such organic agents cause calibration drift with temperature and pressure cycling, and over time in some applications, cause complete failure.
- Broad product offering results in best fit of product configuration to customer application requirements.
- CE compliance and an environmentally hardened design mean maximum performance and reliability in difficult real world applications. Products are manufactured in an ISO 9001 certified facility.
- All product specifications are conservatively stated in the literature so that product performance exceeds customer expectations.
- No specsmanship or games are ever employed, only honest information.
- The calibration of every product is verified in NOSHOK's modern facility with the best available pressure controllers and computerized readout equipment that are at least 4 times the accuracy of the product being checked.
- Highly automated production minimizing the variations in product caused by human labor mean more consistency from unit to unit resulting in interchangeability and consistent performance.
- Simple and proven dc electronics improves reliability and longer mean time between failure (MTBF) characteristics.
- While field failures are few, NOSHOK backs it's electronic products with a 3-year warranty that is the best in the market.
- Products provide significant performance and application flexibility at competitive prices addressing the needs of the OEM and the user alike.
- As a privately owned and run business, NOSHOK employees focus on continually improving customer satisfaction.

### **Specsmanship - What to Look for in Comparing Other Transducers and Transmitters to NOSHOK Products**

- Be on the lookout for suppliers specifying "high accuracy" with a low price. In many cases you will find indications of zero offsets and span offsets of up to 2% each. The specified accuracy of NOSHOK transducers includes any offsets and is a true accuracy upon which you can depend.
- If the competitors do not specify a long term stability specification, then this bears out our contention that many of these other sensing technologies do not yield an attractive stability specification otherwise it would be printed in the literature.
- Look out for the "typical" nomenclature or the Root-Sum-Square (RSS) designation. While these methods provide a statistical probability of how most of the products will perform, it means that if a quantity of units is considered then a percentage of the products will not meet the listed specification. NOSHOK specifications are worst case, so all the transducers meet that specification.

# NOSHOK Transmitters/Transducers Wiring Diagrams & Electrical Connections for 100, 200, 300, 612, 615/616, 640, 660 and 800 Series

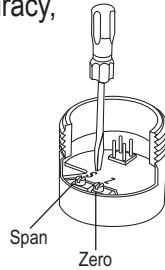
**Installation:** NOSHOK pressure transmitters/transducers may be mounted in any plane with negligible effect on performance. Although these units are designed and manufactured to withstand substantial shock and vibration, it is recommended that they be mounted in an area of minimal vibration. Always use a wrench on the wrench flats when installing. NEVER use a pipe wrench on the housing or in the area of the electrical connection.

**Maintenance/Calibration:** NOSHOK pressure transmitters/transducers require no maintenance. Recalibration is dependent on the users Quality Assurance Program. If no program is in place, NOSHOK recommends a 1 year cycle.

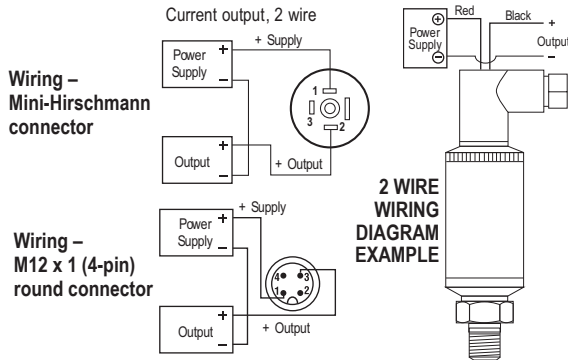
## Alignment Procedure

Using a pressure source and meter with adequate accuracy, perform the following steps:

- Open sensor
- With no pressure applied, adjust the "Z" potentiometer for the correct Zero output
- Apply the correct full scale pressure to the unit
- Adjust the "S" potentiometer for the correct Span output



### SERIES 100

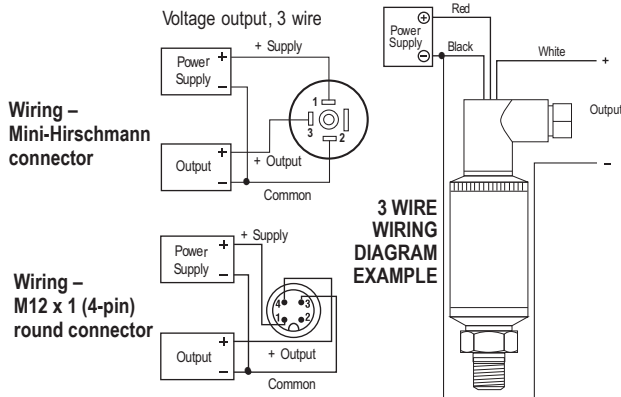


**Load Limitations**  
4 mA to 20 mA Output Only  
 $V_{min} = 10V + (.020 \times R_L)$   
 $R_L = R_S + R_W$   
 $R_L$  = Loop Resistance ( $\Omega$ s)  
 $R_S$  = Sense Resistance ( $\Omega$ s)  
 $R_W$  = Wire Resistance ( $\Omega$ s)

Series 100	4 mA to 20 mA 2-wire
+ Supply	Red/1/A/1/Brown
+Output	Black/2/B/3/Blue

Example: Red/1/A/1 = Applicable color wire/din plug number/Bendix pin/M12 x 1 pin number/M12 integral cable color wire

### SERIES 200

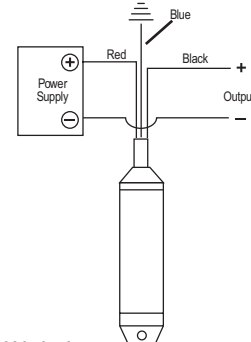


Series 200	0-5, 1-6, -10 1 Vdc to 11 Vdc 3-WIRE
+ Supply	Red/1/A/1/Brown
Common	Black/2/B/3/Blue
+Output	White/3/C/4/Black

Example: Red/1/A/1 = Applicable color wire/din plug number/Bendix pin/M12 x 1 pin number/M12 integral cable color wire

### SERIES 612 & 613

#### 2 WIRE WIRING DIAGRAM EXAMPLE



**Load Limitations**

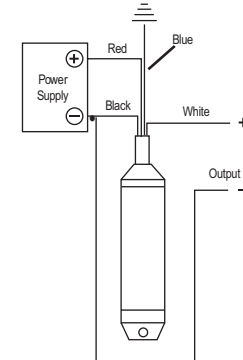
4 mA to 20 mA Output Only

$$V_{min} = [10V + (.020 \times R_L)] - 0.04352 \frac{\Omega}{Fl.} \times \text{cable length}$$

$R_L = R_S + R_W$   
 $R_L$  = Loop Resistance ( $\Omega$ s)  
 $R_S$  = Sense Resistance ( $\Omega$ s)  
 $R_W$  = Wire Resistance ( $\Omega$ s)

Series 612	4 mA to 20 mA 2-wire
+ Supply	Red
+Output	Black
Case ground	Blue

#### 3 WIRE WIRING DIAGRAM EXAMPLE



**Load Limitations**

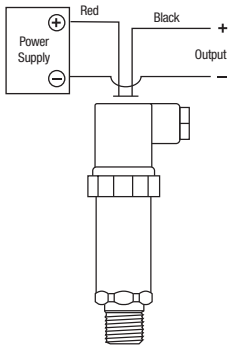
4 mA to 20 mA Output Only

$$V_{min} = [10V + (.020 \times R_L)] - 0.04354 \frac{\Omega}{Fl.} \times \text{cable length}$$

$R_L = R_S + R_W$   
 $R_L$  = Loop Resistance ( $\Omega$ s)  
 $R_S$  = Sense Resistance ( $\Omega$ s)  
 $R_W$  = Wire Resistance ( $\Omega$ s)

Series 612	Voltage Output
+ Supply	Red
Common	Black
+Output	White
Case ground	Blue

## SERIES 615/616



2 WIRE WIRING  
DIAGRAM EXAMPLE

### Load Limitations 4 mA to 20 mA Output Only

$$V_{min} = 10V + (.020 \times R_L)$$

$$R_L = R_S + R_W$$

$$R_L = \text{Loop Resistance } (\Omega s)$$

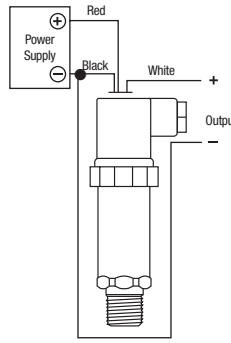
$$R_S = \text{Sense Resistance } (\Omega s)$$

$$R_W = \text{Wire Resistance } (\Omega s)$$

Series 615/616	4 mA to 20 mA 2-wire
+ Supply	Red/1/A/1/1/Brown
+Output	Black/2/B/2/3/Blue

Series 615/616	Voltage Output
+ Supply	Red/1/A/1/1/Brown
Common	Black/2/B/2/3/Blue
+Output	White/3/C/3/4/Black

Example: Red/1/A/1/1 = Applicable color wire/  
din plug number/Bendix pin/junction  
box pin/M12 x 1 pin number/M12 integral  
cable color wire

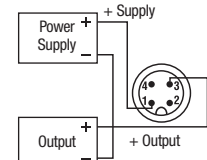


3 WIRE WIRING  
DIAGRAM EXAMPLE

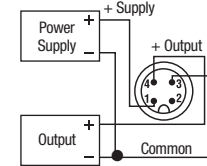
## SERIES 640

### Wiring - M12 x 1 (4-pin) round connector

Current output, 2 wire



Voltage output, 3 wire



### Load Limitations

#### 4 mA to 20 mA Output Only

$$V_{min} = 10V + (.020 \times R_L)$$

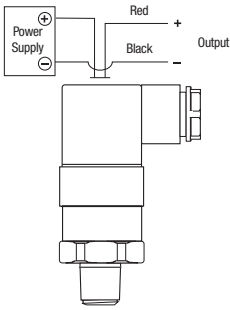
$$R_L = R_S + R_W$$

$$R_L = \text{Loop Resistance } (\Omega s)$$

$$R_S = \text{Sense Resistance } (\Omega s)$$

$$R_W = \text{Wire Resistance } (\Omega s)$$

## SERIES 300



2 WIRE WIRING  
DIAGRAM EXAMPLE

### Load Limitations 4 mA to 20 mA Output Only

$$V_{min} = 10V + (.020 \times R_L)$$

$$R_L = R_S + R_W$$

$$R_L = \text{Loop Resistance } (\Omega s)$$

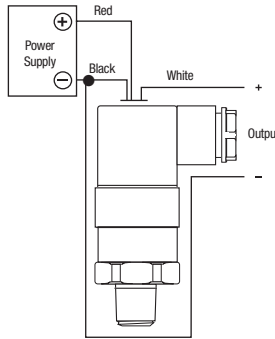
$$R_S = \text{Sense Resistance } (\Omega s)$$

$$R_W = \text{Wire Resistance } (\Omega s)$$

Series 300	4 mA to 20 mA 2-wire
+ Supply	Red/1/1/1/Brown
+Output	Black/2/2/3/Blue

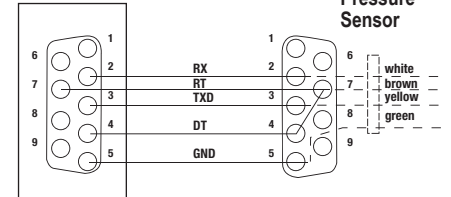
Series 300	Voltage Output
+ Supply	Red/1/A/1/1/Brown
Common	Black/2/2/3/Blue
+Output	White/3/3/4/Black

Example: Red/1/1/1 = Applicable color wire/  
din plug number/junction box pin/  
M12 x 1 pin number/M12 integral  
cable color wire



3 WIRE WIRING  
DIAGRAM EXAMPLE

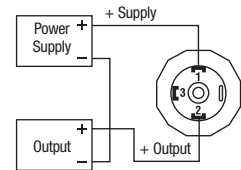
### RS 232 Interface



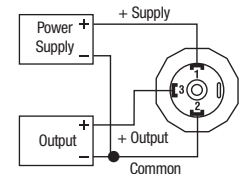
### Pressure Sensor

## SERIES 800

4 mA to 20 mA, 2 wire



0 Vdc to 10 Vdc, 3 wire



### Load Limitations

#### 4 mA to 20 mA Output Only

$$V_{min} = 10V + (.020 \times R_L)$$

$$R_L = R_S + R_W$$

$$R_L = \text{Loop Resistance } (\Omega s)$$

$$R_S = \text{Sense Resistance } (\Omega s)$$

$$R_W = \text{Wire Resistance } (\Omega s)$$

Series 800	4 mA to 20 mA 2-wire
+ Supply	Red/1
+Output	Black/2

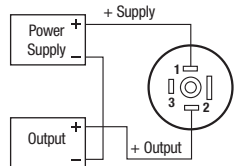
Series 800	Voltage Output
+ Supply	Red/1
Common	Black/2
+Output	White/3

Example: Red/1 = Applicable color wire/  
din plug number.

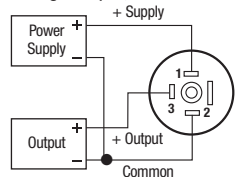
## SERIES 660

### Wiring - Mini-Hirschmann connector

Current output, 2 wire



Voltage output, 3 wire



### Load Limitations 4 mA to 20 mA Output Only

$$V_{min} = 10V + (.020 \times R_L)$$

$$R_L = R_S + R_W$$

$$R_L = \text{Loop Resistance } (\Omega s)$$

$$R_S = \text{Sense Resistance } (\Omega s)$$

$$R_W = \text{Wire Resistance } (\Omega s)$$

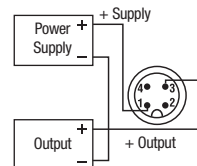
Series 660	4 mA to 20 mA 2-wire
+ Supply	Brown/1/1/Brown
+Output	Green/2/3/Blue

Series 660	Voltage Output
+ Supply	Brown/1/1/Brown
Common	Green/2/3/Blue
+Output	White/3/4/Black

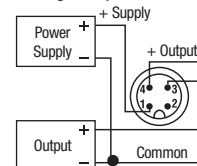
Example: Brown/1/1 = Applicable color wire/  
din plug number M12 x 1 pin number/M12  
integral cable color wire

### Wiring - M12 x 1 (4-pin) round connector

Current output, 2 wire



Voltage output, 3 wire



**Q: What is the purpose of the ventable & non-ventable fill plug/relief plug?**

**A:** A fill plug seals the fill hole in a pressure gauge case. On liquid filled pressure gauges, a ventable fill plug is used to relieve internal case pressures that occur due to thermal expansion of the fill fluid. In non-filled dry gauges, a non-ventable fill plug is used to occasionally drain the interior of the case from condensate or relieve internal case pressures. Ventable fill plugs incorporate a vent pin to open and close a hole for relieving internal case pressures and do not have to be removed from the case hole like non-ventable fill plugs.

**Q: What are the designed overpressure ratings for NOSHOK gauges?**

**A:** Overpressure ratings are specific to the gauge type, pressure range and accuracy ratings of the gauge. Normal overpressure protection can range from 1.1X to 1.3X depending on the gauge selected. NOSHOK gauges comply to the EN-837-1 and ASME B40.1 standards in regards to overpressure protection. When selecting a pressure gauge, it is recommended that the normal system pressure be maintained around half of the full range of the gauge as to avoid overpressure conditions. Overpressure protection of 3 times up to 10 times of the dial range is available on some series as a production option.

**Q: How is the accuracy of a gauge affected by a Maximum Indicating Pointer?**

**A:** A Maximum Indicating Pointer (MIP), also commonly referred to as a Tell Tale Pointer, adds an additional  $\pm 1\%$  error to the pressure gauge due to the increase load on the Bourdon tube.

**Q: What is a Certified Calibration?**

**A:** Certified Calibrations provide the user with a serial numbered gauge along with a calibration certificate that it has been certified in accordance to the pressure gauge standard with instruments that are traceable to NIST with accuracies of at least 4 to 1.

**Q: What is a Certificate of Conformance?**

**A:** A Certificate of Conformance is a formal statement on company letterhead stating that an instrument complies with a particular standard. It contains the signatures of the required personnel. These Certificates are often needed to show industry inspectors that a system and its components are in compliance.

**Q: How often does a gauge need to be calibrated?**

**A:** NOSHOK pressure gauges require little or no calibration within the Warranty period. Some applications may be more aggressive than others, resulting in an increased frequency in the need for calibration. The environmental limitations for the pressure gauge series should be observed in all cases. Gauges used in situations outside these requirements may result in inaccuracies, premature wear and/or failure of the gauge and would require additional maintenance. The frequency of calibration, therefore, is up to the user to judge.

**Q: When is it recommended to use an orifice?**

**A:** Orifices are a type of snubber. On pressure systems that have rapidly increasing or decreasing pressure spikes, orifices lessen the effects of these energy pulses by blocking the wave energy using restricted flow. They are recommended in dynamic pressure applications with mild pressure spikes.

**Q: When is a diaphragm seal used, and when would you apply a diaphragm seal and capillary?**

**A:** A diaphragm is used to isolate and protect the instrument from the process media. Damaging process media may include corrosives, particulates, temperatures, or any state that is not suitable for direct contact with the measuring element. Diaphragms indirectly transmit system pressures by segregating the process pressure with a thin flexible membrane that in turn transfers the pressure through a fill fluid to the instrument. Diaphragms are often used in conjunction with capillaries to further distance the instrument from the process media. Capillary tubes transmit the diaphragm fill fluid to the instrument. Capillary tubes come in several lengths and provide the user a means to measure in a remote location and may also act as heat dissipaters in high temperature applications.

**Q: What is the purpose of liquid filling a gauge, and in what applications would a liquid filled gauge be used?**

**A:** Primarily, in applications that have vibrations or pulsations, liquid filling enables reading the dial pointer by dampening the movement. Liquid filling should be considered in any system that has high dynamic operating conditions. In general, liquid filling helps extend the life of a gauge. It reduces damaging resonance induced fracturing, reduces frictional wear, prevents aggressive ambient air from entering, prevents condensation formation, and improves reliability.

**Q: How does temperature affect the accuracy of a pressure gauge?**

**A:** Temperature changes affect the stiffness of a Bourdon tube. The stiffness change is produced by a combination of changes in the elastic (Young's) modulus and a change in linear dimensions due to linear expansion and contraction. The error caused by temperature change will follow the approximate formula:  $\pm 0.04 \times (t_2 - t_1)$  % of the span.

**Q: How do you select a pressure gauge relative to process pressures, normal operating pressures, and maximum pressures in the process? (Dynamic or static process pressures)**

**A:** The pressure range of a gauge should be 10% over the maximum working pressure in static conditions (no pressure fluctuations). In dynamic conditions, the gauge range should be 40% over the maximum working pressure. Ideally, the pressure gauge range should be selected for a midscale reading during normal operating pressures.

**Q: What applications require the various lens materials, and to what maximum temperature can each be subjected?**

**A:** Lens materials include Instrument Glass, Laminated Safety Glass, Tempered Glass, and plastic. Glass lenses are used for abrasion, chemical and wear resistant properties. Laminated Safety Glass reduces the possibility of shattering if the Bourdon tube ruptures. Tempered Glass is 2 to 5 times stronger than Instrument Glass. Plastic lenses are used for impact, corrosion and chemical resistance. Special attention should be paid to the temperature and corrosive environments. Polycarbonate is selected for its superior impact resistance, acrylic for its clarity and scratch resistance and Homalite for its superior chemical resistance. In general, gauges with plastic lenses should remain below 140° F.

**Q: In what situation would a pigtail syphon be used?**

**A:** Pigtail syphons should be used in steam applications and systems that contain superheated vapor. The pigtail buffers the instrument from the damaging effects high temperature steam by holding system fluid in the coil to provide a steam trap for the fluid to condensate and dissipate the heat.

**Q: What is the application for a gauge cleaned for O2 service?**

**A:** Oxygen (O<sub>2</sub>) cleaning is performed on gauges that are used on oxygen service applications. The cleaning removes all hydrocarbons (oil and grease are common hydrocarbons) that can react violently, resulting in explosions, fire, and injury to personnel and property. Oxygen clean gauges can be used in any application that requires the cleanliness level associated with oxygen clean gauge. Glycerin fill gauge cannot be used on oxygen systems.

**Q: What fill fluids options are available, and in what applications would each be used?**

**A:** Glycerin is the most common fill fluid. Because of its unique fluid properties, Glycerin has become the standard for liquid filled gauges (see "What is the purpose of liquid filling a gauge?"). Glycerin's clarity, viscosity, stability, cost, solubility, low toxicity make Glycerin an ideal fluid for many applications. Mineral oils and silicon fluids are used when temperature extremes, chemical compatibility or viscosity fall outside of Glycerin use. Halocarbon<sup>®</sup> is an inert fluid that is compatible with chlorine, oxygen service, and some high temperature applications. Keep in mind that Glycerin is not compatible with strong oxidizers such as oxygen, chlorine, hydrogen peroxide, or nitric acid. Glycerin & Silicon are explosive in contact with chlorine. Halocarbon<sup>®</sup> is explosive in contact with Aluminum and magnesium.

**Q: What is the difference between the ASME B40.1 and EN 837-1 specification?**

**A:** The American National Standards Institute (ANSI) approves American National Standards which include the American Society of Mechanical Engineers (ASME) standard ASME B40.100. This Standard (B40.100) is confined to analog, dial-type gauges, which, utilizing elastic elements, mechanically sense pressure and indicate it by means of a pointer moving over a graduated scale. The European Committee for Standardization (CEN) is the officially recognized European standards body that develops European Standards (ENs) which include EN 837-1. The EN 837-1 includes mandatory dimensions, metrology, and testing requirement for sale in the European Union. ASME B40.100 includes similar requirements in a mandatory appendix.

**Q: What is the purpose of throttle devices such as throttle plugs and screws?**

**A:** Throttle devices limit the flow to the pressure instrument. They are a type of snubber.

**Q: What is the purpose of an over and under load stop in a pressure gauge?**

**A:** The tip motion of a Bourdon tube is translated to rotary motion of a pointer by a linkage and sector gear acting on the pointer pinion gear. Stop pins limit the movement of the Bourdon tube, sector or pointer rotation in over and under pressure conditions that would otherwise move the pointer pinion off the sector gear which would damage the gauge.

## Frequently Asked Questions - Electronics

- Q. What is the difference between a transducer and transmitter?**
- A. When these terms originated there was a distinctive difference between the two. A transmitter was referred to as an instrument with a current output signal (i.e. 4 mA to 20 mA) and a transducer was referred to as an instrument with a voltage signal (i.e. 3 mV/V, 0 Vdc to 10 Vdc etc.). As time has progressed these terms are now commonly interchanged for reference to current, voltage and digital output signals.
- Q. What is the difference between the proof pressure and burst pressure specifications?**
- A. Proof pressure which is higher than the full scale pressure point is the limit that you can go to without affecting the performance and calibration of the transducer. The burst pressure on the other hand is the limit that you can go before there is pressure chamber rupture and damage. An overload limit specification used sometimes means that proof and burst ratings are identical.
- Q. Will the series 1800 Attachable Loop Indicator work with transmitters not made by NOSHOK?**
- A. The series 1800 indicator will work with any brand that has the same pin connections and style Hirschmann connector and sufficient power supply voltage to drive all instruments in the loop. The series 1800 will use 3 Vdc to operate.
- Q. What does RFI, EMI and ESD mean related to pressure transducers and transmitter?**
- A. Radio Frequency Interference and Electromagnetic Interference refer to the effects electrical noise can have on instruments. RFI frequently comes from hand held walkie-talkies and EMI comes from AC motors in the vicinity of the instrument. ESD (Electrostatic Discharge) comes from many sources including the application itself. CE compliant transmitters and transducers incorporate protection techniques and components to minimize most of the interference.
- Q. Can traditional diaphragm seals or gauge protectors be used with pressure transducers and transmitters?**
- A. Most diaphragm seals can be used with pressure transducers and transmitters. The real key is to assemble and fill the seal properly, being careful not to entrap air in the fill fluid.
- Q. Are pigtail steam syphons used in transmitter applications?**
- A. The steam syphon is necessary in steam pressure applications. It is important to isolate the transmitter sensing diaphragm from the high temperature encountered with steam pressure applications.
- Q. Can orifices and snubbers be used and why would they be needed?**
- A. As with other pressure measurement instruments including gauges, pressure pulsations and spikes, are issues with pressure transmitters. Whenever the pressure of an incompressible fluid is measured, there is the potential for pulsations and spikes, which can damage pressure transmitters. An orifice installed in the pressure connection by NOSHOK can protect the transmitter from damage. Where there is the possibility of clogging the small orifice, an attachable piston snubber is recommended.
- Q. What is the reason for the vent tube in the cable of the 612 and 627 Series submersible level transmitters?**
- A. All pressure measurements are inherently differential in theory. Gauge pressure is referenced to ambient atmospheric, absolute pressure is referenced to vacuum contained in an evacuated chamber within the transmitter. The level measurement is also a differential measurement, with its reference to ambient atmospheric pressure. In order for the submersible level measurement to be referenced to atmospheric, the cable contains a vent tube which runs the complete length of the cable and "vents" into the atmospheric pressure at the junction box connection which is out of the liquid.
- Q. How does the series 612 and 627 submersible level transmitter measure level?**
- A. The transmitter measures the hydrostatic pressure produced by the liquid level higher than the point where the instrument is located. The higher the liquid, the higher the pressure.
- Q. NOSHOK transducers and transmitters are normally 2 wire or 3 wire in output configuration. Is a 4 wire transducer available?**
- A. Voltage output transducers are available with a 4th connection which is electrically the same as the power supply common to connect to wiring configurations that require it.

## Canadian Registration Numbers

*CRN documents are available at [www.noshok.com](http://www.noshok.com).*

Category:	F. Measuring Devices
Type of Fitting:	Including pressure gauges, level gauges, sight glasses, level or pressure transmitters
Alberta	0F15217.52
British Columbia	0F15217.51
Manitoba	0F15217.54
New Brunswick	0F15217.57
Newfoundland & Labrador	0F15217.50
Northwest Territories	0F15217.5T
Nova Scotia	0F15217.58
Nunavut	0F15217.5N
Ontario	0F15217.5
Prince Edward Island	0F15217.59
Quebec	CSA-0F15217.56
Saskatchewan	CSA-0F15217.56
Yukon Territory	0F15217.5Y









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# Quality Policy

NOSHOK is committed to providing a high degree of value and continually improving processes to enhance customer satisfaction by focusing on customer requirements for the design, manufacture and distribution of pressure, level, temperature, and force measurement instrumentation, needle, manifold valves, custom manifold systems for industrial applications and compressed air filters.

All from world class technology.

Combined with real-world stamina.

The highest value with the industry's best warranty.

And all from a company with a 50+ year record of customer satisfaction.

All from your Single Source Instrumentation Company.



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