

# 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
<b>Pressure ranges</b>	100 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
<b>Accuracy</b>	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
<b>Temperature ranges*</b>	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)
<b>Measuring element</b>	100 Series (all)	Copper alloy Bourdon tube
<b>Connection</b>	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
<b>Case</b>	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
<b>Bezel</b>	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
<b>Lens</b>	100 Series (all)	Acrylic
<b>Pointer</b>	100 Series (all)	Molded plastic
<b>Dial</b>	100 Series (all)	White background with black primary scale & red secondary scale. UV resistant.
<b>Movement</b>	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.



**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)

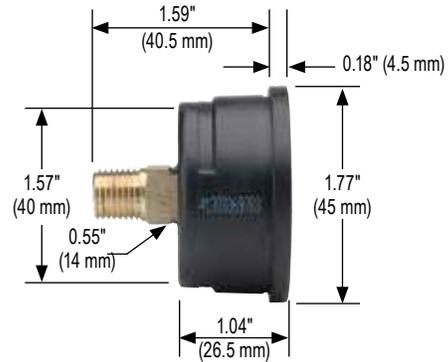


# Dimensions

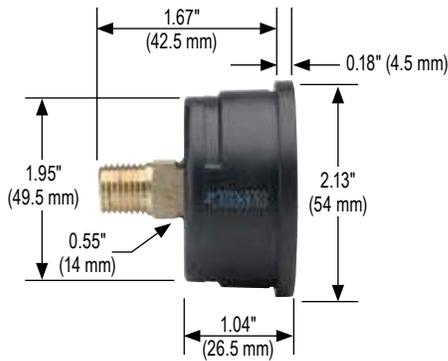
**40-100**



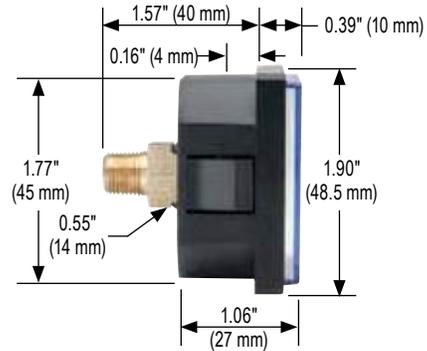
**15-110**



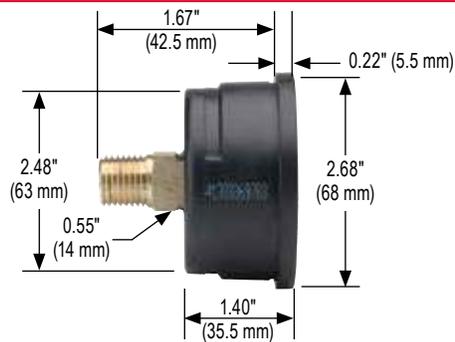
**20-110**



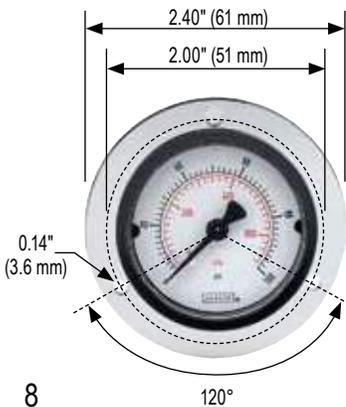
**20-148**



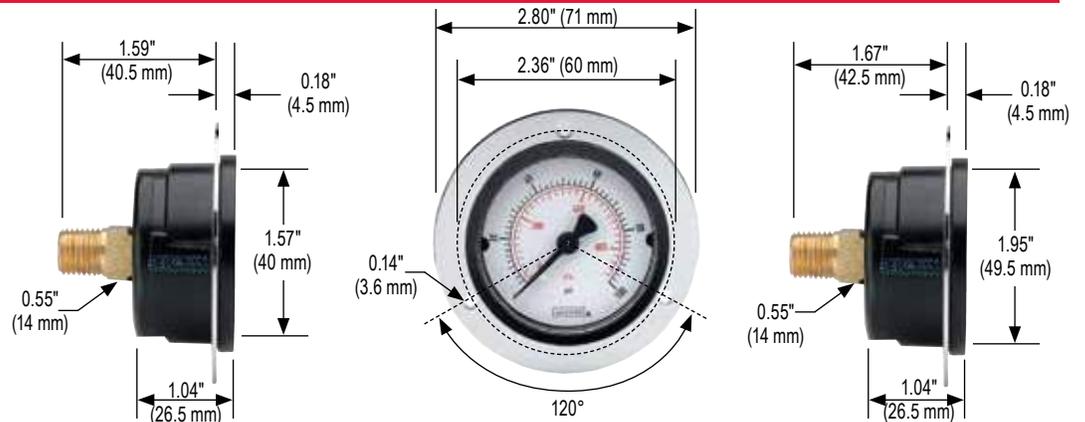
**25-110**



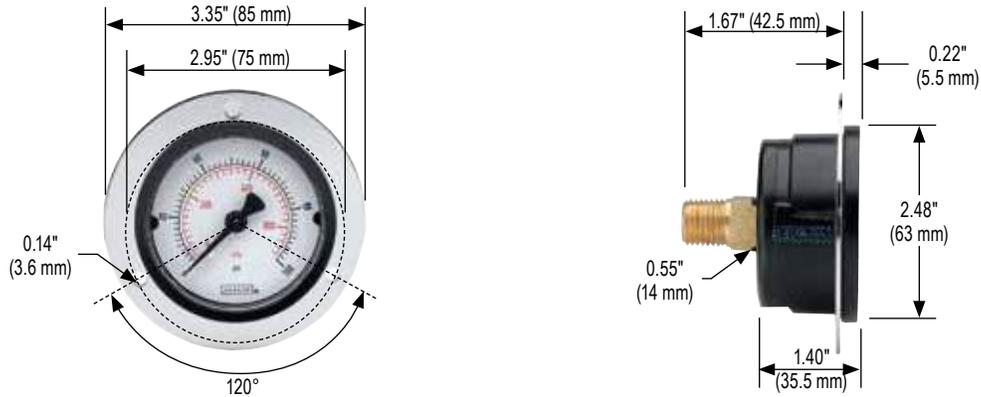
**15-110 Front Flange**



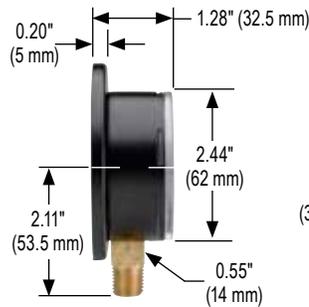
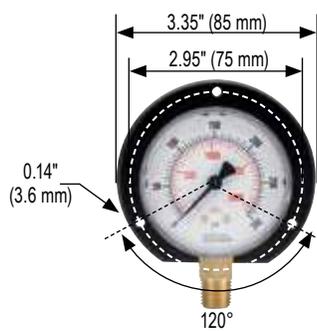
**20-110 Front Flange**



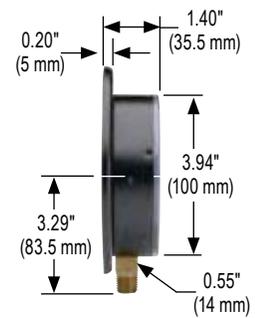
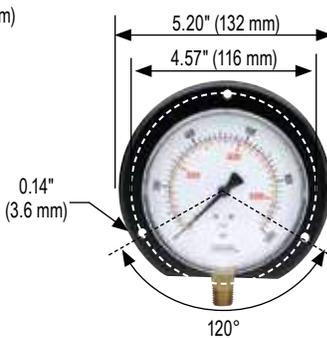
## 25-110 Front Flange



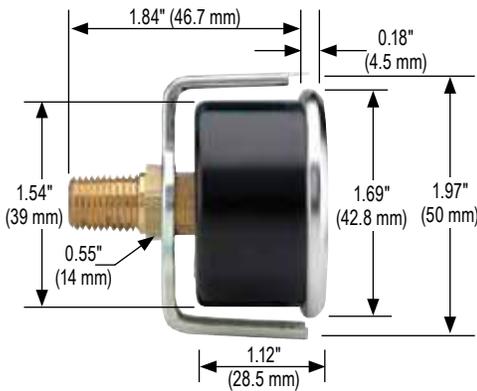
## 25-100 Rear Flange



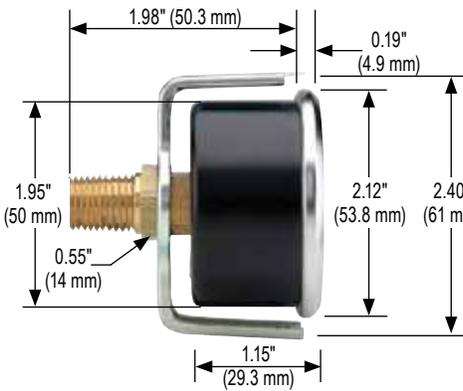
## 40-100 Rear Flange



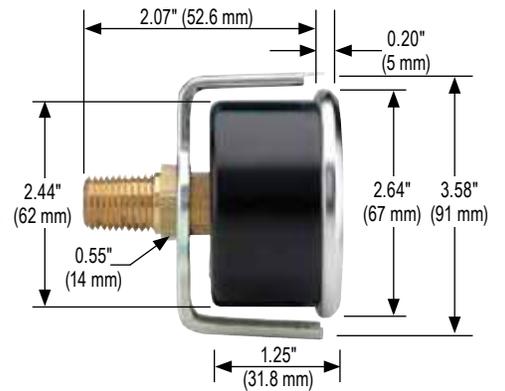
## 15-120 Chrome Bezel With U-Clamp



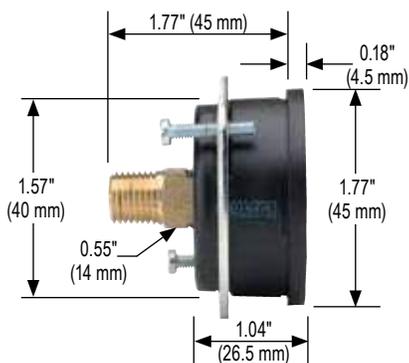
## 20-120 Chrome Bezel With U-Clamp



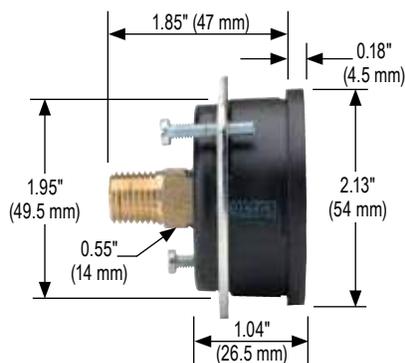
## 25-120 Chrome Bezel With U-Clamp



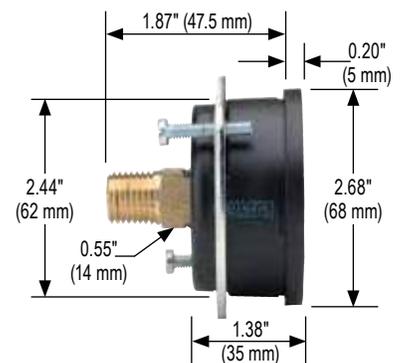
## 15-110 Panel Mount Clamp



## 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
<b>Pressure ranges</b>	200 Series (all)	Extreme low pressure vacuum ranges through 0 psi to 10 psi
<b>Accuracy</b>	25-200, 25-210, 25-224	±1.6% full scale
	25-206, 25-216	±2.5% full scale
	40-200	±1.6% full scale
<b>Temperature ranges*</b>	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)
<b>Measuring element</b>	25-200, 25-210, 25-224, 40-200	Copper alloy diaphragm capsule
<b>Connection</b>	200 Series (all)	1/4" NPT, Brass
<b>Case</b>	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
<b>Bezel</b>	40-200	304 Stainless Steel
<b>Lens</b>	25-200, 25-206, 25-210, 25-216, 25-224	Acrylic
	40-200	Instrument glass
<b>Pointer</b>	200 Series (all)	Black finished Aluminum
<b>Dial</b>	200 Series (all)	Aluminum, white background with black scale. UV resistant.
<b>Movement</b>	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.

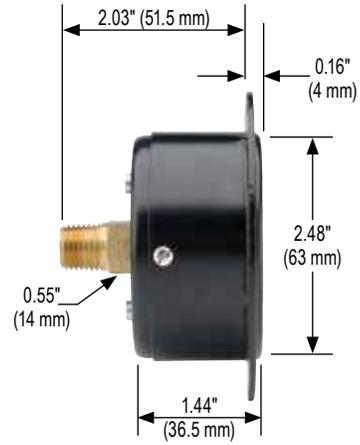
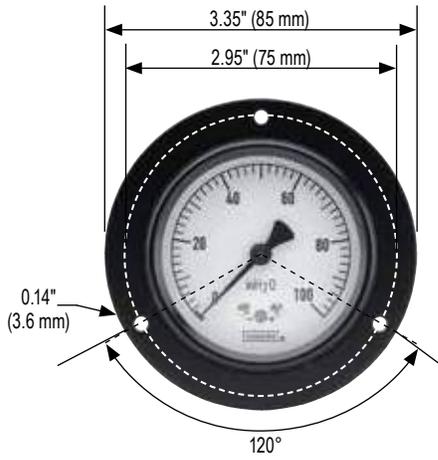


**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

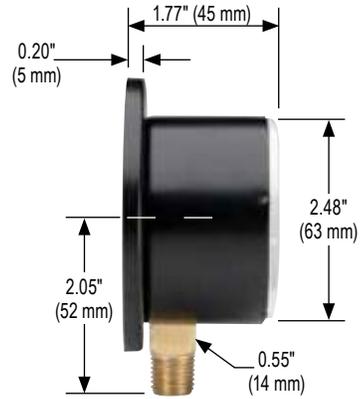
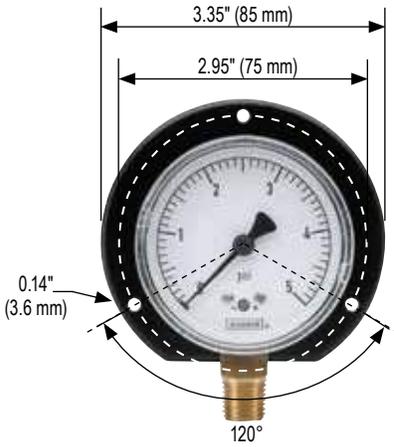


# Dimensions

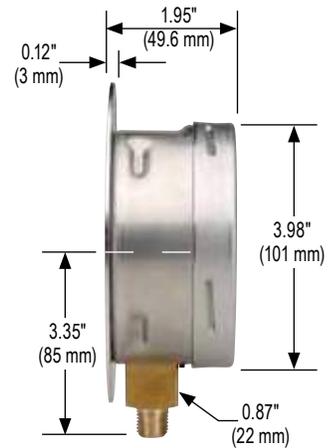
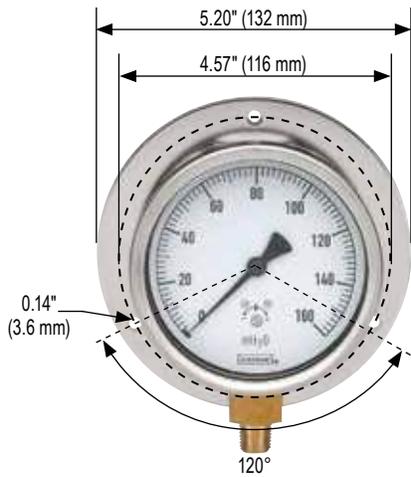
## 25-210 Front Flange



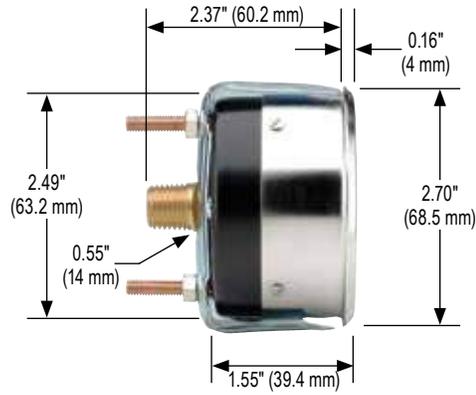
## 25-200 Rear Flange



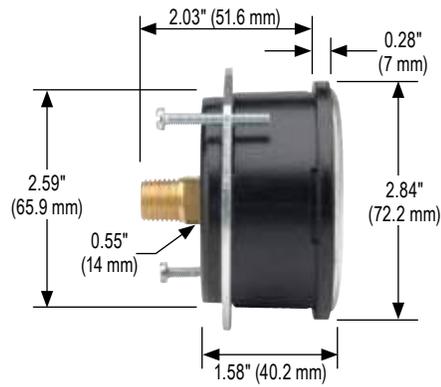
## 40-200 Rear Flange



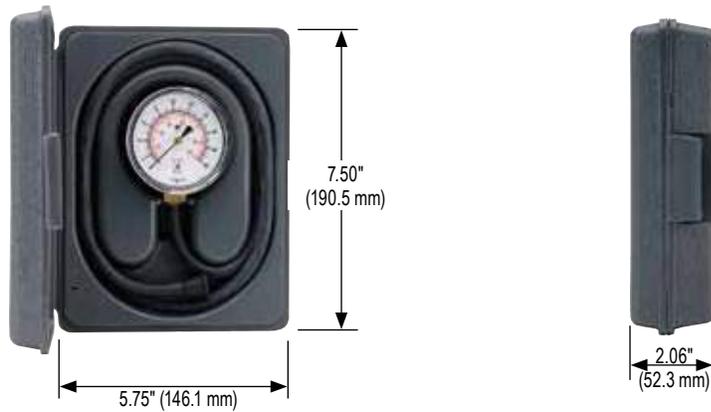
**25-210 Triangular Bezel w/U-Clamp**



**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
<b>Pressure ranges</b>	300 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
<b>Accuracy</b>	25-300, 25-310	±1.6% full scale
	40-300, 40-310	± 1% full scale
<b>Temperature ranges*</b>	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)
<b>Measuring element</b>	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
<b>Connection</b>	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.
<b>Case</b>	300 Series (all)	Die cast Brass (natural Brass finish) with safety relief plug
<b>Cover ring</b>	300 Series (all)	Polished Brass
<b>Lens</b>	300 Series (all)	Acrylic with o-ring seal
<b>Pointer</b>	300 Series (all)	Balanced Aluminum, black finish
<b>Dial</b>	300 Series (all)	Aluminum, white background with black scale. UV resistant.
<b>Movement</b>	300 Series (all)	Brass and Nickel-silver with highly polished bearing surfaces
<b>Fill liquid**</b>	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.



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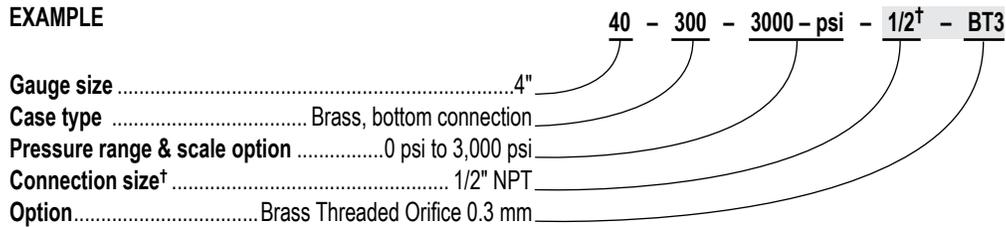
ORDERING INFORMATION								
<b>GAUGE SIZES</b>	25 2-1/2"		40 4"					
<b>CASE TYPES</b>	300 Brass, bottom connection		310 Brass, back connection					
<b>PRESSURE RANGES</b>	30vac	-30 inHg to 0 psi	30/300	-30 inHg to 0 to 300 psi	300	0 psi to 300 psi	3000	0 psi to 3,000 psi
	30/15	-30 inHg to 0 to 15 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	BT3	Brass Threaded Orifice 0.3 mm
	CFFN	Chrome Front Flange w/o holes	CCR	Chrome Cover Ring	SGO	Safety Glass Overlay	BT4	Brass Threaded Orifice 0.4 mm
	BFF	Brass Front Flange	CBU	Chrome Bezel & U-Clamp	AR	Adapter Ring	BT8	Brass Threaded Orifice 0.8 mm
	BLFF	Black Front Flange	MIP	Maximum Indicating Pointer*	LM	Laser Marking	RCP	Rubber Case Protector
	SSRF	304SS Rear Flange	LL	Polycarbonate Lens	ST	Stainless Steel Tagging		

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

**NOTES:** Refer to 300 Series Options & Accessories chart on page 51 for availability by part number.  
Cleaning for Oxygen Service (O2) is available only for dry or HL filled gauges

\* GY40 fill is standard for liquid filled gauges

**EXAMPLE**

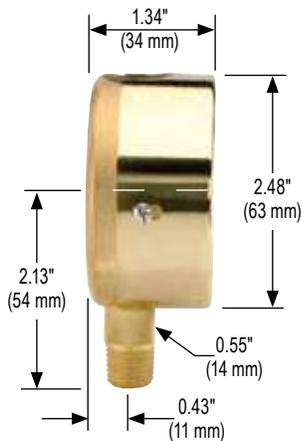


<sup>†</sup> Only include in part number if non-standard connection size is ordered.

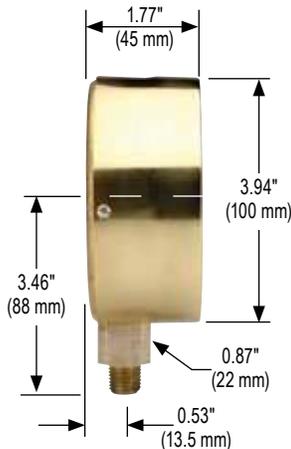
**NOTES:** See standard connection sizes chart on page 49.

Shaded portions of this part number example are not required unless a non-standard connection size or an option is needed.

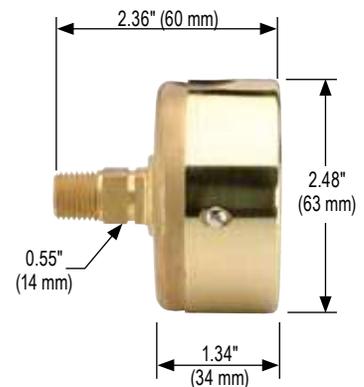
**25-300**



**40-300**



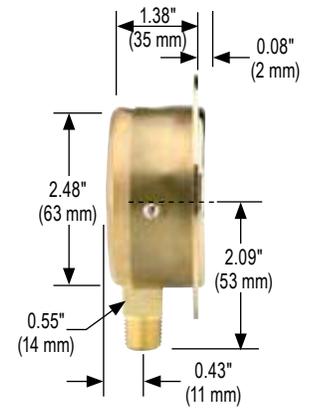
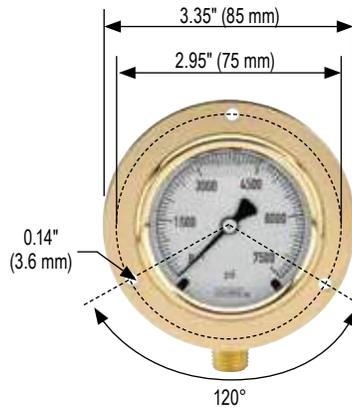
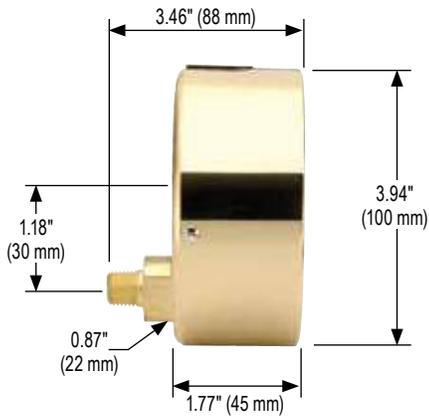
**25-310**



# Dimensions

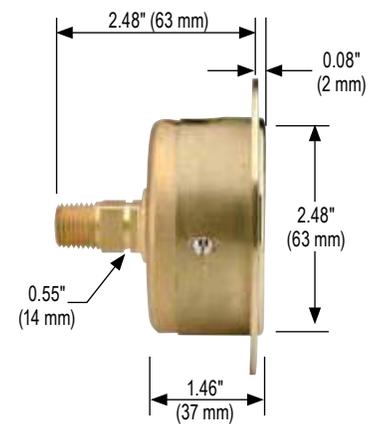
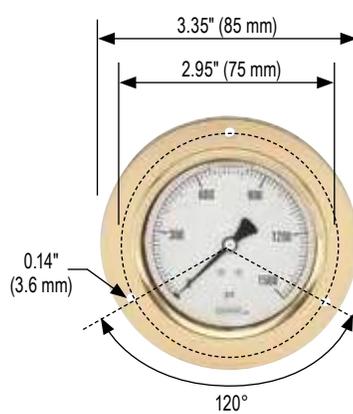
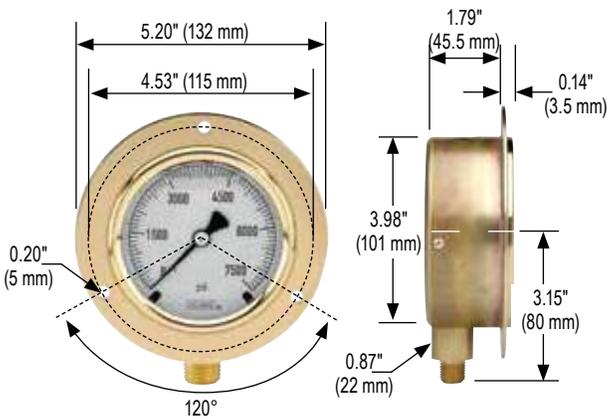
**40-310**

**25-300 Front Flange**



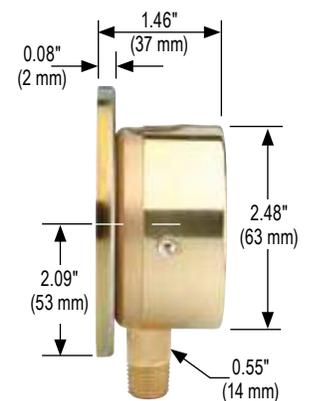
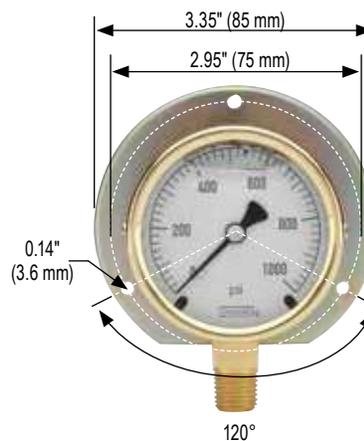
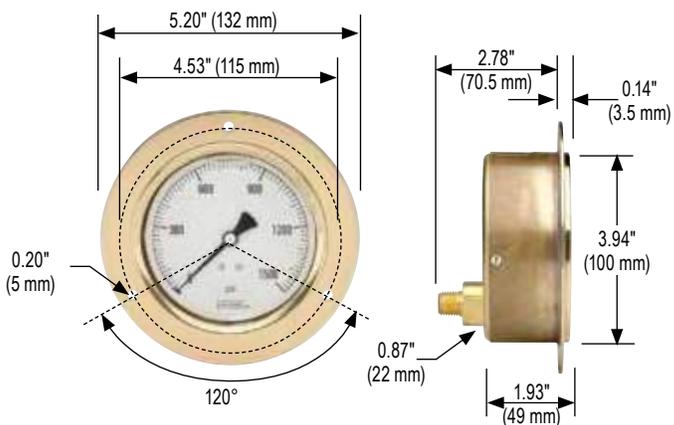
**40-300 Front Flange**

**25-310 Front Flange**

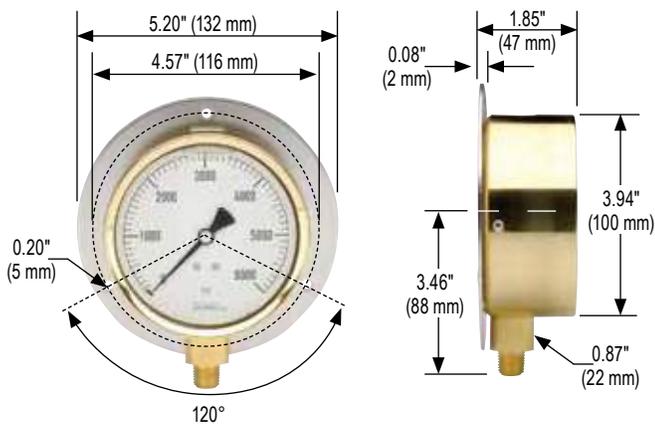


**40-310 Front Flange**

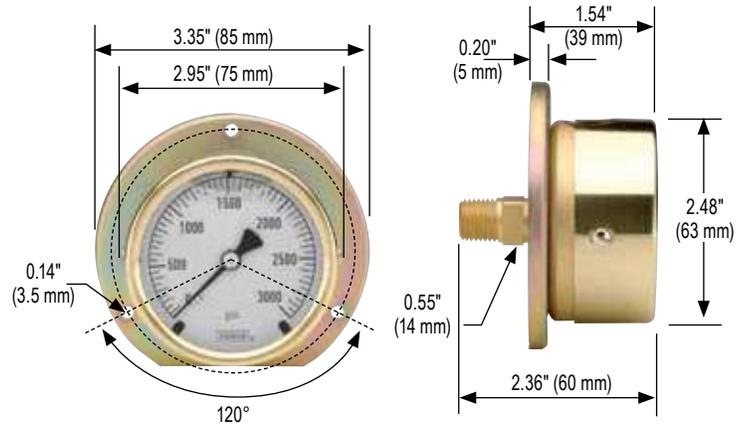
**25-300 Rear Flange**



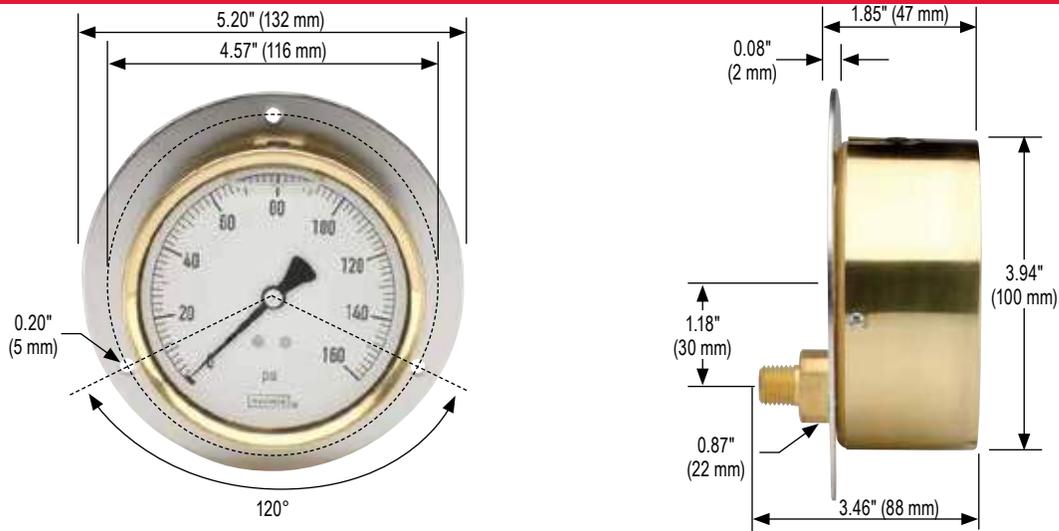
**40-300 Rear Flange**



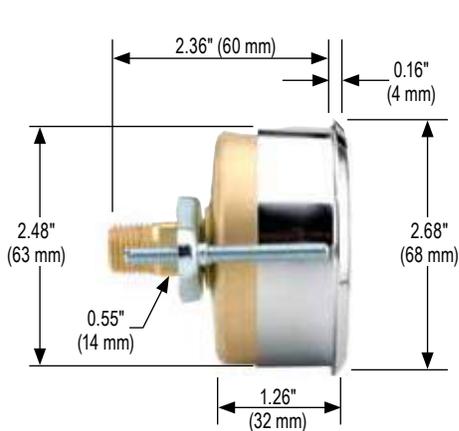
**25-310 Rear Flange**



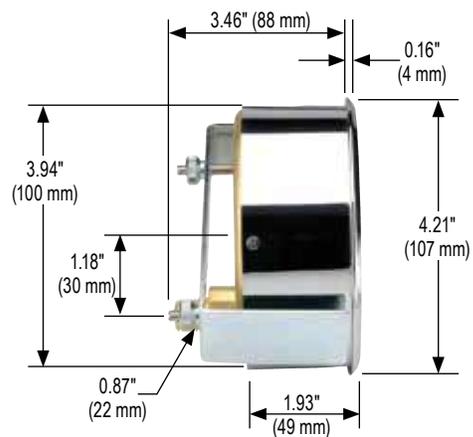
**40-310 Rear Flange**



**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

### 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
	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
Case	15-401, 15-411, 40-400, 40-410, 60-400, 60-410, 60-500, 60-510	304 Stainless Steel with safety relief plug
	25-400, 25-410, 25-500, 25-510, 40-500, 40-510	Polished 304 Stainless Steel with safety relief plug
Cover ring	15-401, 15-411, 25-400, 25-410, 25-500, 25-510, 40-400, 40-410, 40-500, 40-510	Polished 304 Stainless Steel
	60-400, 60-410, 60-500, 60-510	Polished 304 Stainless Steel bayonet ring
Lens	15-401, 15-411, 40-400, 40-410, 40-500, 40-510	Instrument glass
	25-400, 25-410, 25-500, 25-510	Trogamide
	60-400, 60-410, 60-500, 60-510	Laminated safety glass
Pointer	115-401, 15-411	Black finished Aluminum
	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
Dial	15-401, 15-411	Aluminum, white background with black scale. Single scale psi. UV resistant
	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.
Movement	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
	60-400, 60-410, 60-500, 60-510	Stainless Steel with highly polished bearing surfaces An internal zero stop is standard
Fill liquid**	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" *	60 6" *
<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.

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

Cleaning for Oxygen Service (O2) is available only for dry or HL filled gauges

\* 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.

† GY40 fill is standard for liquid filled gauges

**EXAMPLE**

Gauge size ..... 4"  
 Case type ..... SS case, liquid filled, bottom connection  
 Pressure range & scale option ..... 0 psi to 600 psi  
 Connection size<sup>††</sup> ..... 1/4" NPT  
 Option ..... Maximum Indicating Pointer

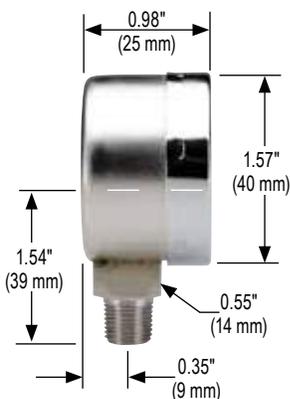
40 - 500 - 600 - psi - 1/4<sup>††</sup> - MIP

<sup>††</sup> Only include in part number if non-standard connection size is ordered.

**NOTES:** See standard connection sizes chart on page 49.

Shaded portions of this part number example are not required unless a non-standard connection size or an option is needed.

**15-401**



**25-400/500**

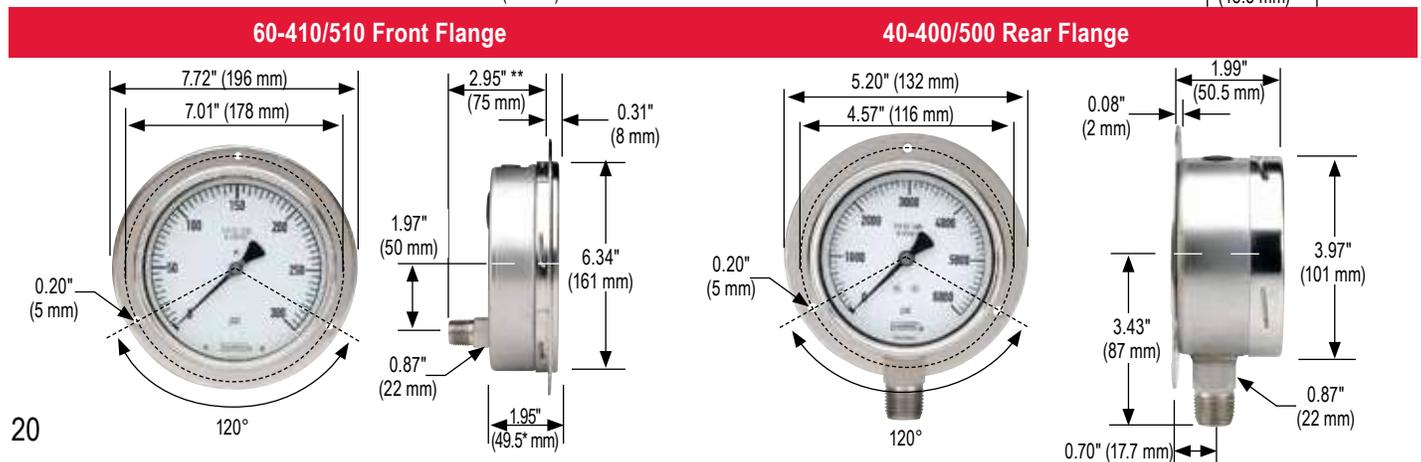
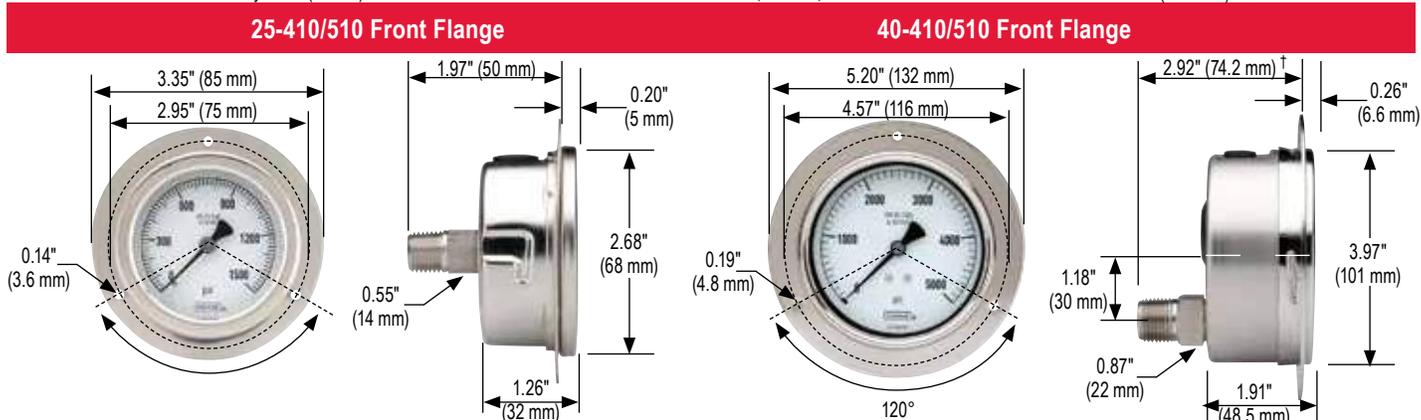
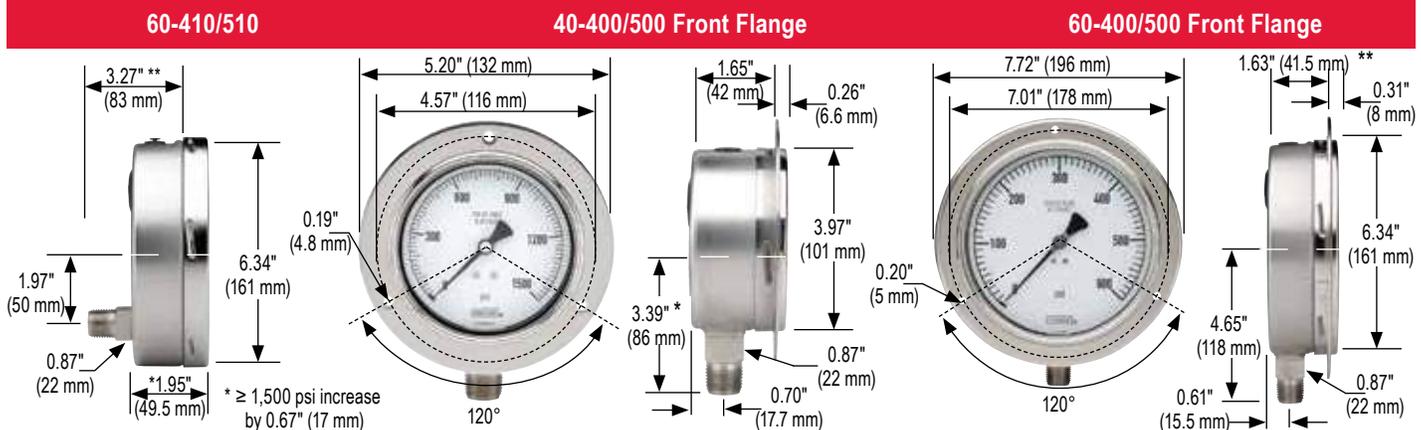
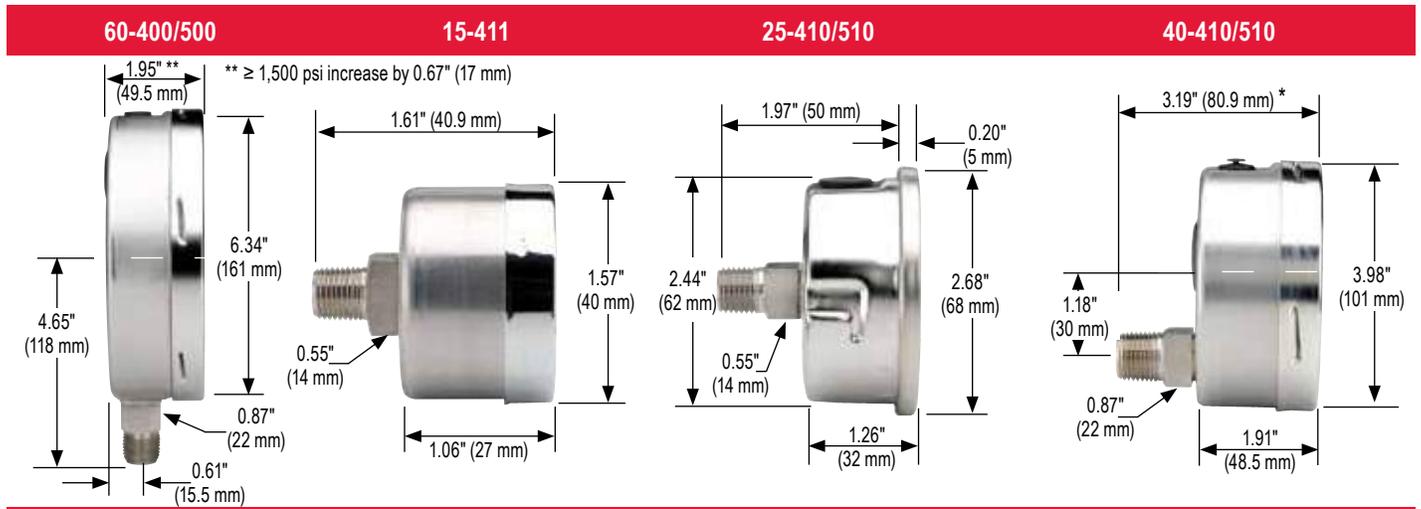


**40-400/500**

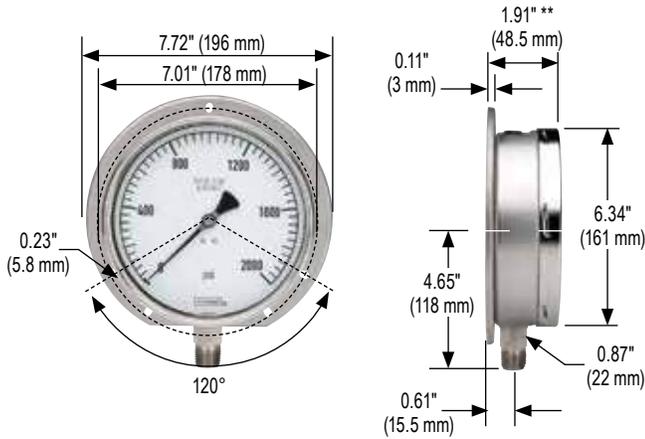


\* Dimension is for 1/2" process connection.  
 1/4" process connection = 3.15" (80 mm)

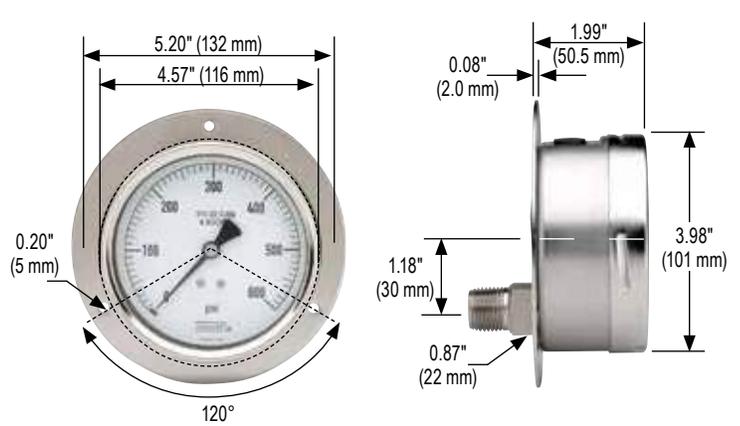
# Dimensions



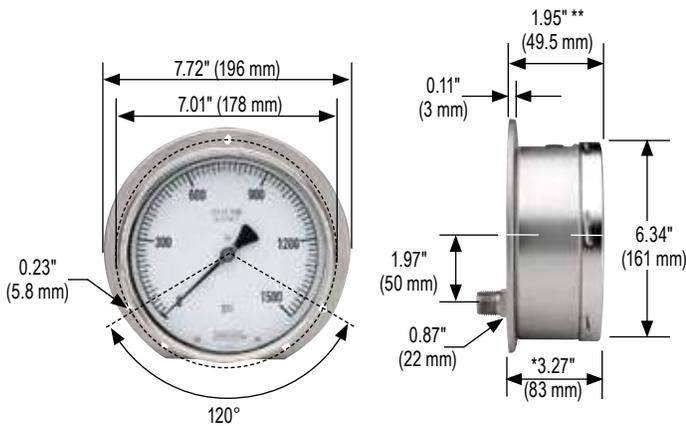
## 60-400/500 Rear Flange



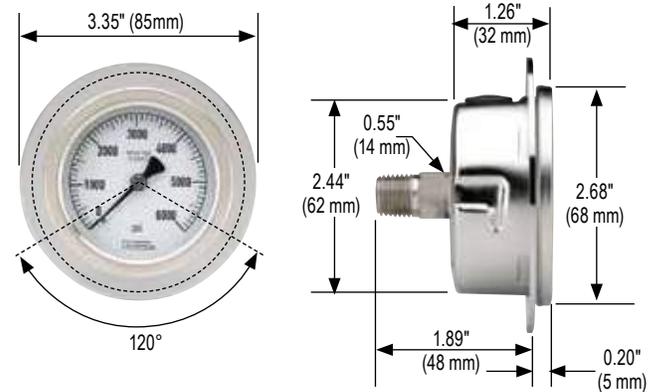
## 40-410/510 Rear Flange



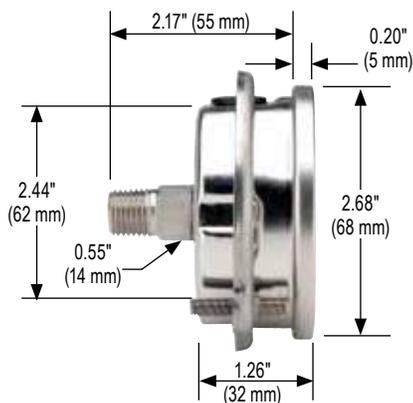
## 60-410/510 Rear Flange



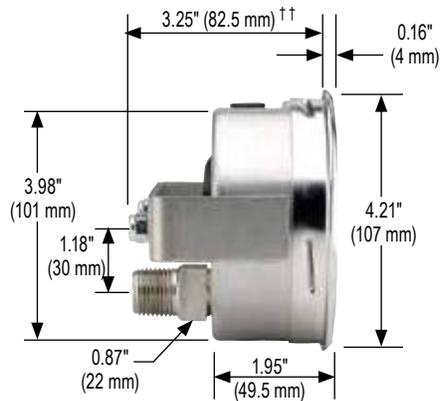
## 25-410/510 Flange Ring



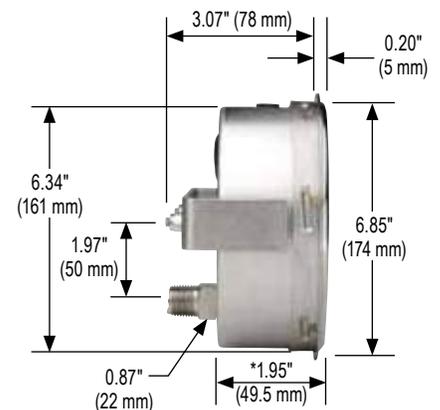
## 25-410/510 Panel Mount Clamp



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



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



\* Dimension is for 1/2" process connection, 1/4" process connection = 3.15" (80 mm)

† Dimension is for 1/2" process connection, 1/4" process connection = 2.91" (74 mm)

\*\* ≥ 1,500 psi increase by 0.67" (17 mm)

†† Dimension is for 1/2" process connection, 1/4" process connection = 2.99" (76 mm)

# 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)

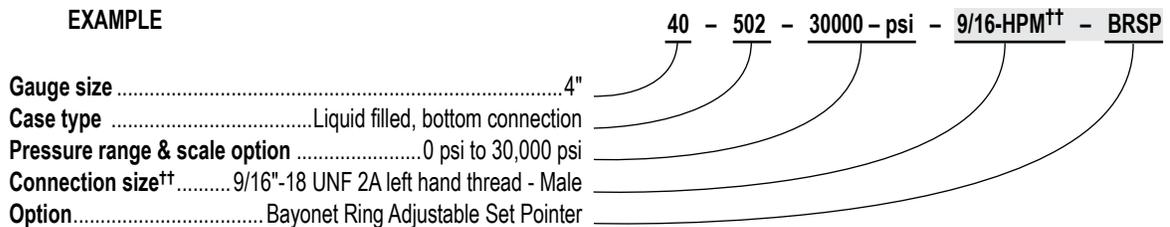
ORDERING INFORMATION			
<b>GAUGE SIZE</b>	<b>40</b> 4"	<b>60</b> 6" *	
<b>CASE TYPES</b>	<b>402</b> Dry, bottom connection	<b>412</b> Dry, lower back connection	<b>502</b> Liquid filled, bottom connection
<b>PRESSURE RANGES</b>	<b>30000</b> 0 psi to 30,000 psi <b>40000</b> 0 psi to 40,000 psi	<b>50000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

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

**NOTE:** Cleaning for Oxygen Service (O2) is available only for dry or HL filled gauges

- \* Bottom connection only.
- \*\* Only available on 60-402 and 60-502 models, with ±1.6% accuracy.
- \*\*\* Additional process connection sizes available, consult factory.
- † GY40 fill is standard for liquid filled gauges

**EXAMPLE**



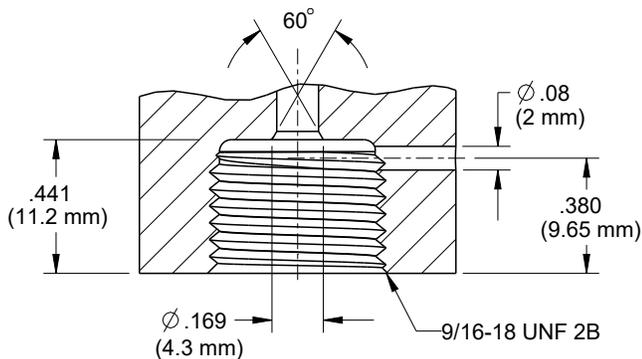
† † Only include in part number if non-standard connection size is ordered.

**NOTES:** See standard connection sizes chart on page 49.  
 Shaded portions of this part number example are not required unless a non-standard connection size or an option is needed.

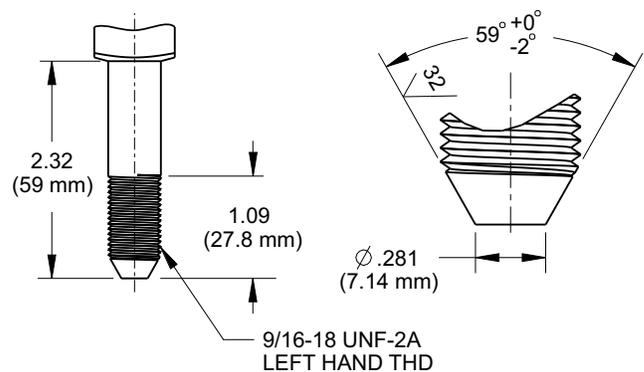
9/16"-18 UNF 2B High Pressure Cone Connection

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

**Female**

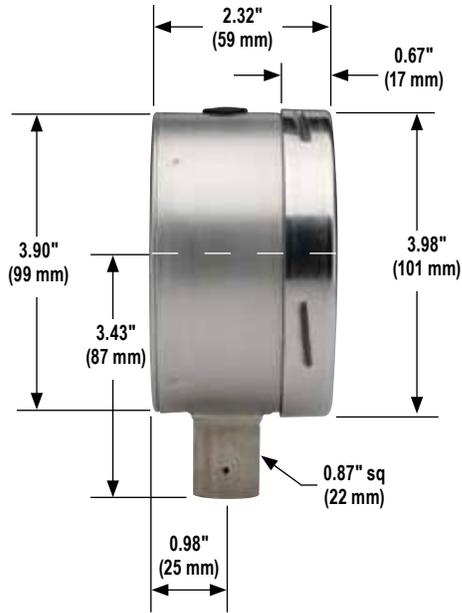


**Male**

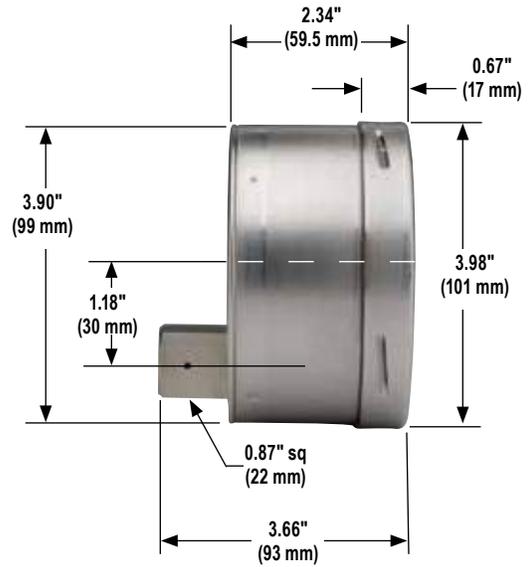


# Dimensions

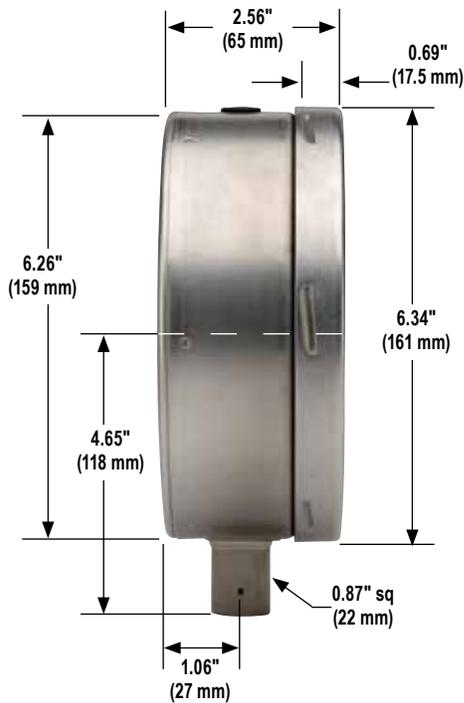
40-402/502



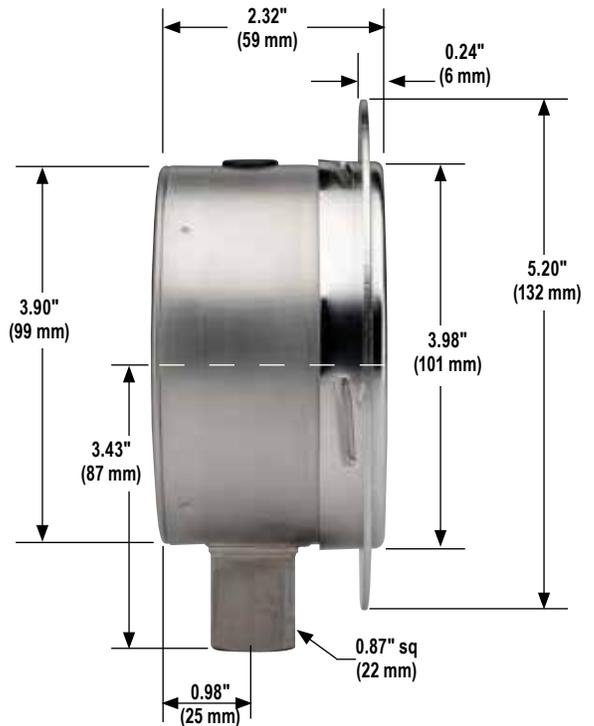
40-412



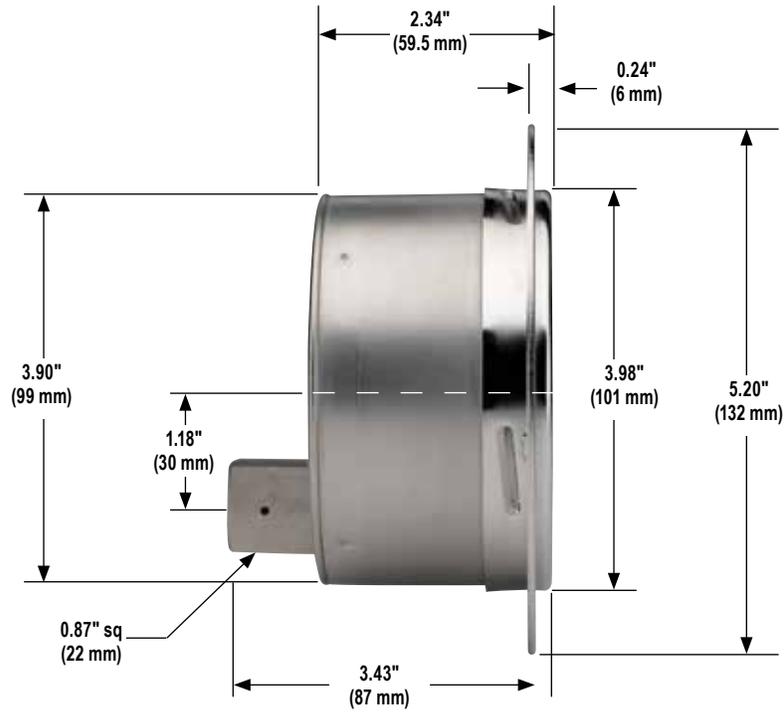
60-402/502



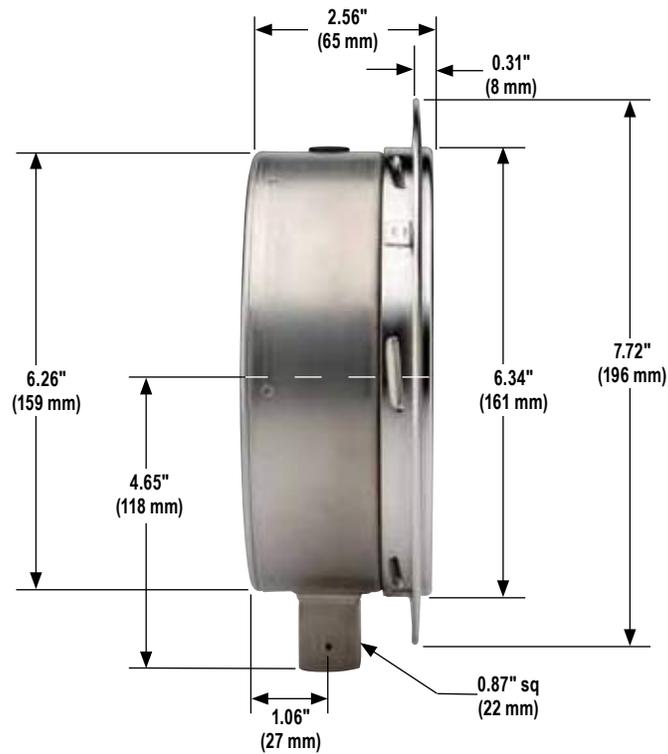
40-402/502 Front Flange



## 40-412 Front Flange



## 60-402/502 Front Flange



# Process



## 600/700 SERIES

- Turret style dry (field fillable) and liquid filled process gauges
- 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
- 316 Stainless Steel or Brass wetted parts

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

The working pressure should be limited to 60% of the dial range.  
Max. 0.9x full scale.

##### b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% of the dial range.  
Max. 1x full scale.

##### c. Short term max. 1.5x full scale (<10,000 psi).

### 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
<b>Pressure ranges</b>	600/700 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
<b>Accuracy</b>	600/700 Series (all)	±0.5% full scale
<b>Temperature ranges*</b>	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
<b>Case</b>	600/700 Series (all)	Turret style black Polypropylene case, Solid front, safety case with blow-out back
<b>Bayonet ring</b>	600/700 Series (all)	Threaded black PBT
<b>Lens</b>	600/700 Series (all)	Acrylic
<b>Measuring Element</b>	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
<b>Connection</b>	45-640, 45-660	1/4" NPT, brass
	45-740, 45-760	1/4" NPT or 1/2" NPT, 316 Stainless Steel
<b>Movement</b>	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.
<b>Pointer</b>	600/700 Series (all)	Balanced micro-adjustable aluminum, black finish
<b>Dial</b>	600/700 Series (all)	Aluminum, white background with black scale. UV resistant.
<b>Fill liquid **</b>	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	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	10000	0 psi to 10,000 psi
	30/100	-30 inHg to 0 to 100 psi	100	0 psi to 100 psi	1000	0 psi to 1,000 psi	15000	0 psi to 15,000 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	BT3	Brass Threaded Orifice 0.3 mm		
	GL	Glass Lens	OS	Overload Stop	BT8	Brass Threaded Orifice 0.8 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				

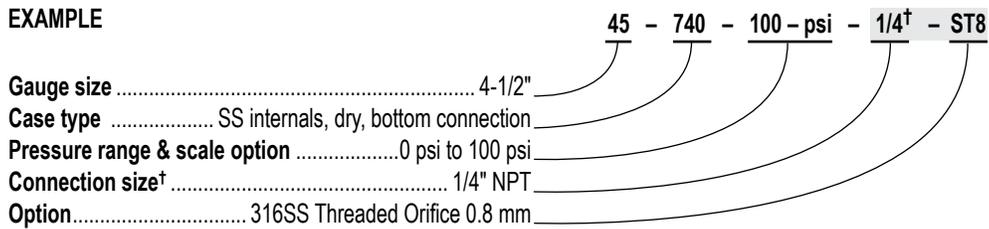
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

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

Cleaning for Oxygen Service (O2) is available only for dry or HL filled gauges

\* GY40 fill is standard for liquid filled gauges

### EXAMPLE



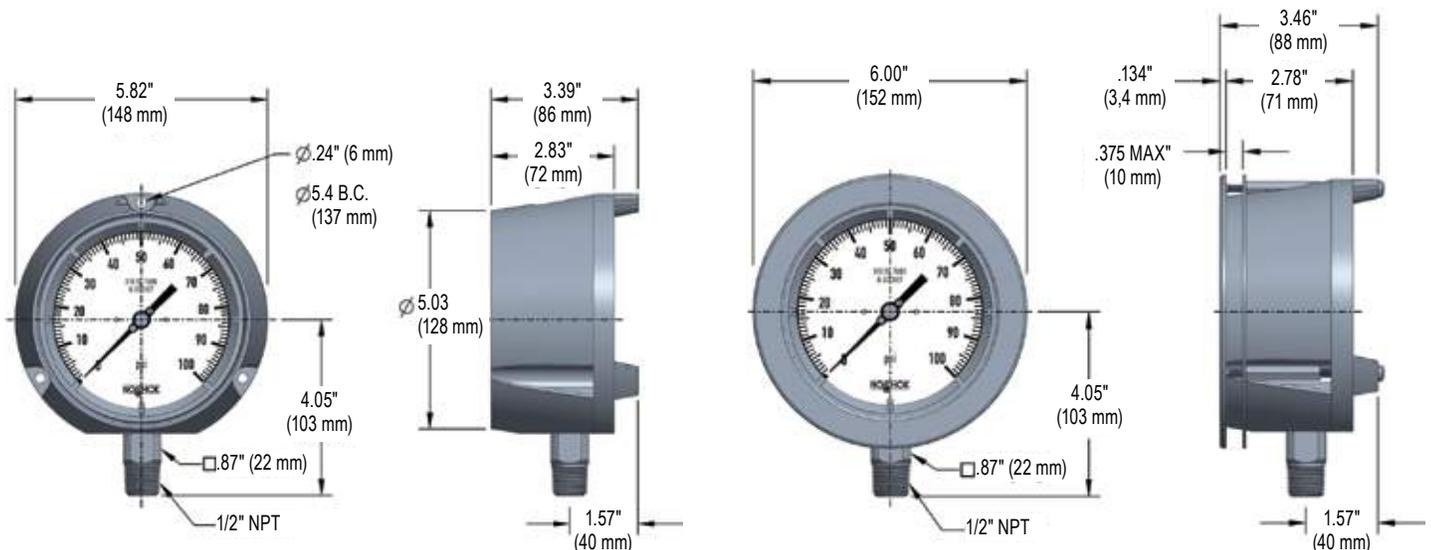
<sup>†</sup> Only include in part number if non-standard connection size is ordered.

NOTES: See standard connection sizes chart on page 49.

Shaded portions of this part number example are not required unless a non-standard connection size or an option is needed.

### 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)



# 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
<b>Pressure ranges</b>	900 Series (all)	Vacuum and compound ranges through 0 psi to 15,000 psi
<b>Accuracy</b>	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
<b>Temperature ranges*</b>	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
<b>Measuring element</b>	900 Series (up to 600 psi)	Copper alloy C-Type Bourdon tube
	900 Series (> 600 psi)	Coiled safety tube
<b>Connection</b>	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
<b>Case</b>	15-910, 25-900, 25-910	ABS with safety relief plug
	25-901, 25-911, 40-901, 40-911	304 Stainless Steel
<b>Bezel</b>	25-901, 25-911, 40-901, 40-911	304 Stainless Steel
<b>Lens</b>	15-910, 25-900, 25-910	Acrylic; ultrasonically welded to the case
	25-901, 25-911, 40-901	Polycarbonate
<b>Pointer</b>	15-910, 25-900, 25-910, 25-901, 25-911	Molded plastic
	40-901, 40-911	Balanced Aluminum, black finish
<b>Dial</b>	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.
<b>Movement</b>	15-910, 25-900, 25-910, 25-901, 25-911	Brass and nylon with highly polished bearing surfaces
<b>Fill liquid**</b>	15-910	86.5/13.5 Glycerin:H <sub>2</sub> O
	25-900, 25-910, 25-901, 25-911, 40-901, 40-911	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.



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

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

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

Cleaning for Oxygen Service (O2) is available only for dry or HL filled gauges

\* Includes FKM o-ring

\*\* GY40 fill is standard for liquid filled gauges

\*\*\* Black Front Flange is only available for 25-910 gauges

† Stainless Steel Front Flange is not available for the 901 case type

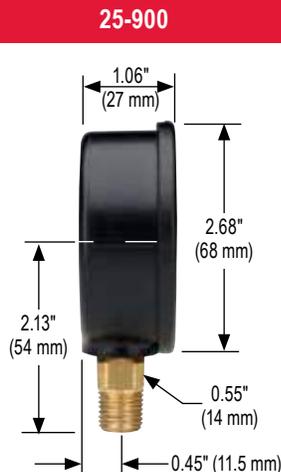
**EXAMPLE**

**25 - 910 - 1000 - psi /kPa - 1/8<sup>††</sup> - PMC**

Gauge size ..... 2-1/2"  
 Case type ..... ABS case, liquid filled, back connection  
 Pressure range & scale option ..... 0 psi to 1,000 psi/kPa  
 Connection size<sup>†</sup> ..... 1/8" NPT  
 Option ..... Panel Mount Clamp

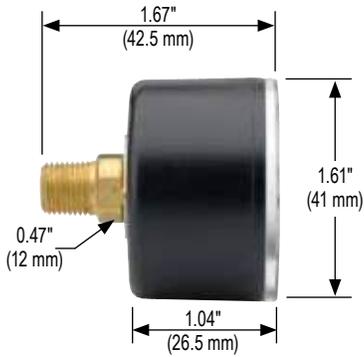
† † Only include in part number if non-standard connection size is ordered.

**NOTES:** See standard connection sizes chart on page 49.  
 Shaded portions of this part number example are not required unless a non-standard connection size or an option is needed.

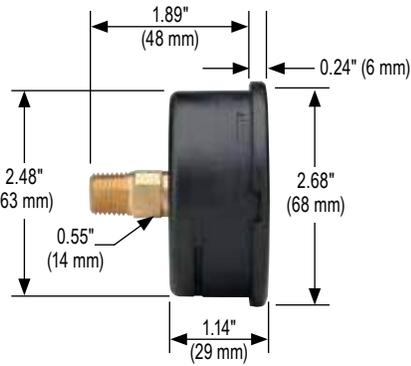


# Dimensions

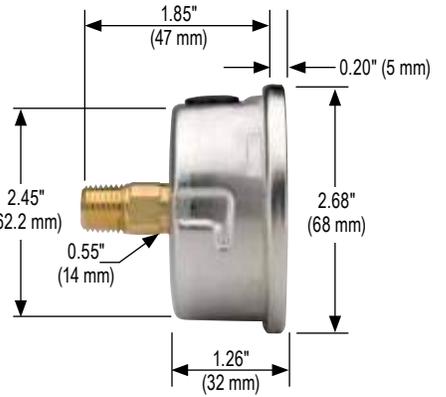
15-910



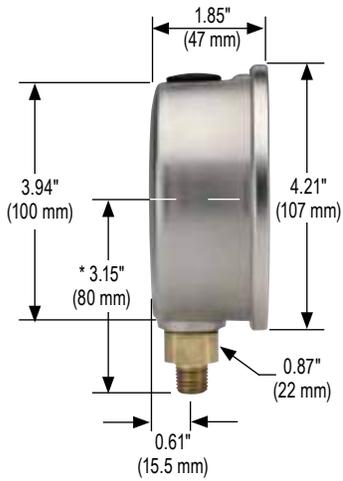
25-910



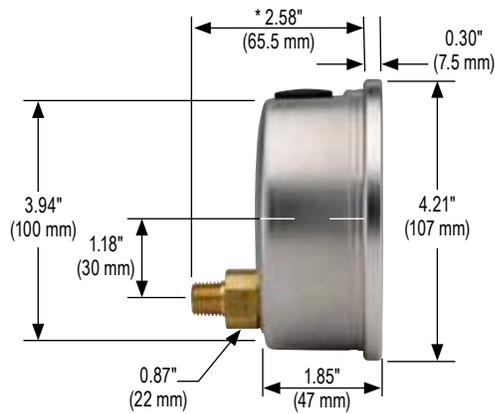
25-911



40-901

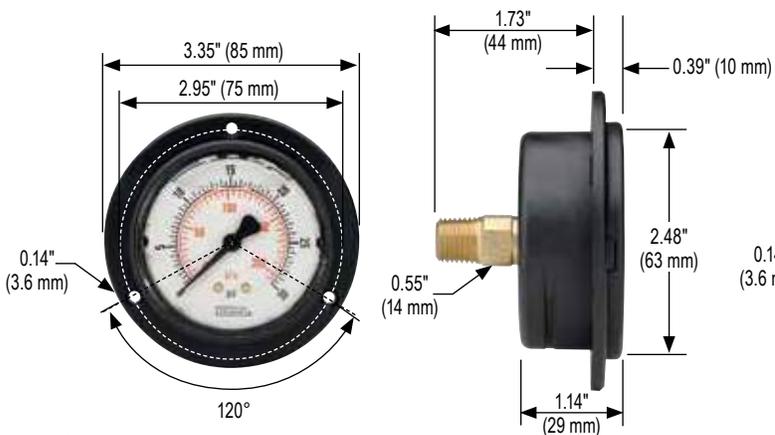


40-911

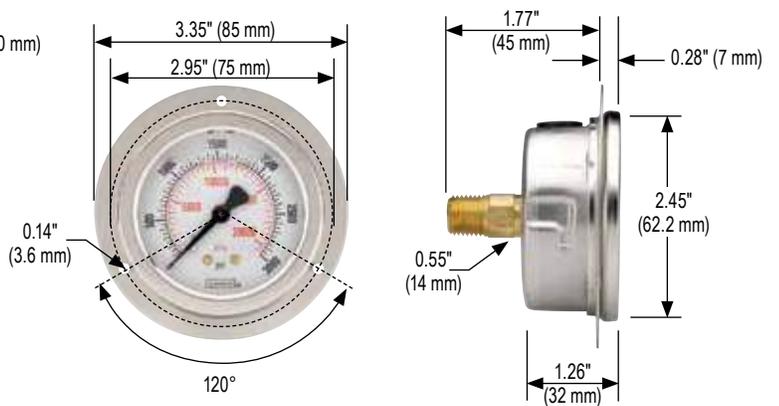


\* 1/4" NPT shown  
Add 6 mm for 1/2" NPT

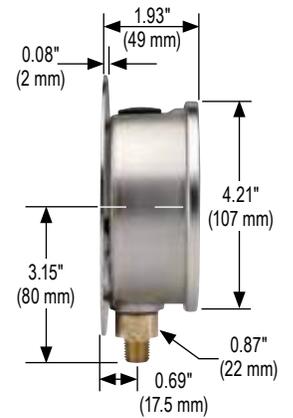
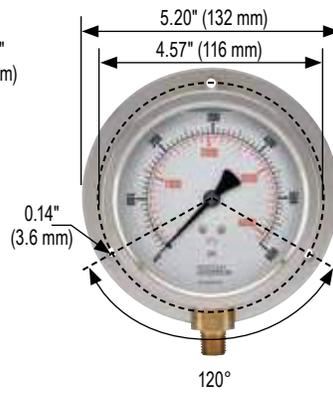
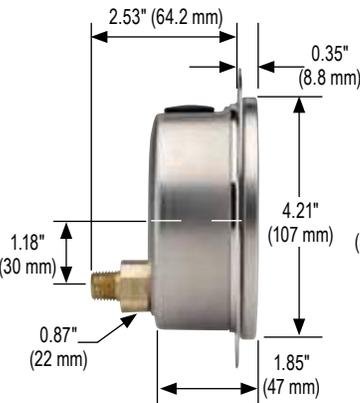
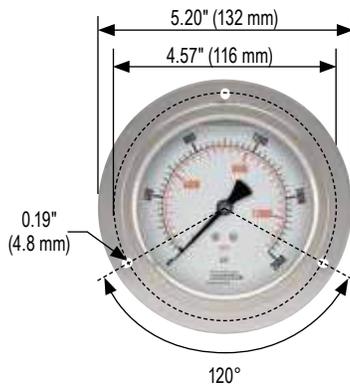
25-910 Front Flange



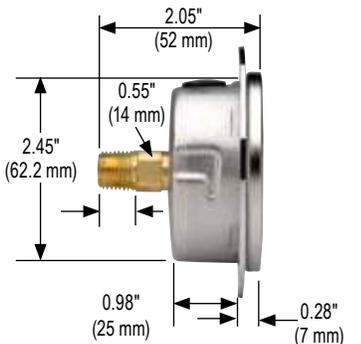
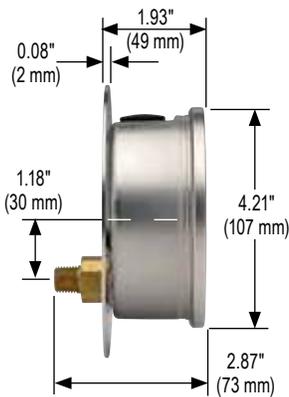
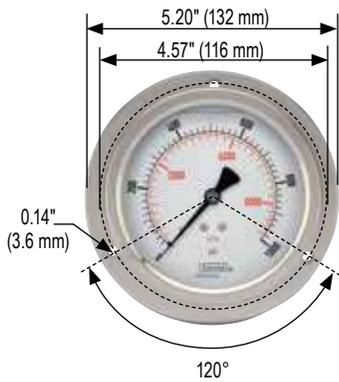
25-911 Front Flange



### 40-911 Front Flange

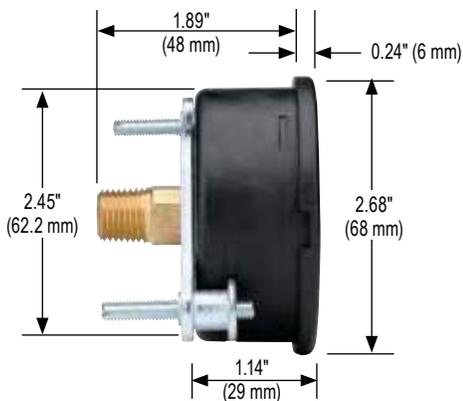


### 40-911 Rear Flange

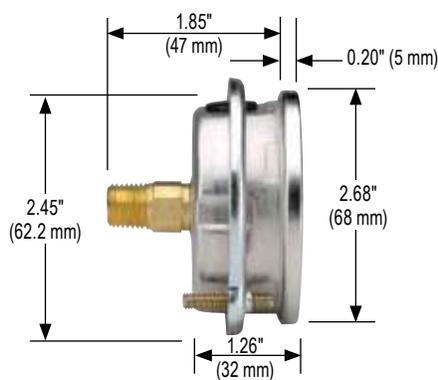


### 25-911 Flange Ring

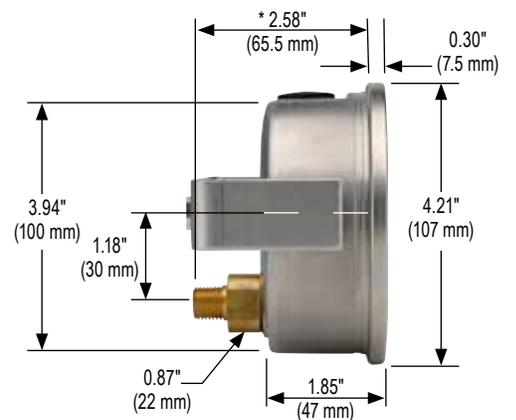
### 25-910 Panel Mount Clamp



### 25-911 Panel Mount Clamp



### 40-911 SS Narrow Bezel w/U-Clamp



\* 1/4" NPT shown. Add 6 mm for 1/2" NPT. 33



# 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.

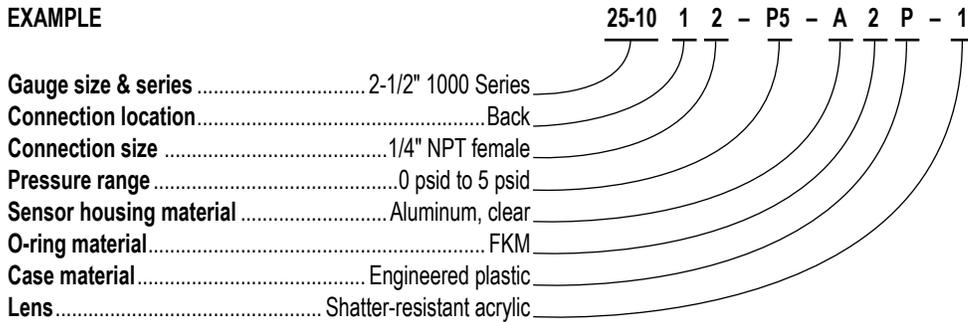


ORDERING INFORMATION			
<b>GAUGE SIZES &amp; SERIES</b>	25 - 10 2-1/2"	45 - 10 4-1/2"	60 - 10 6"
<b>CONNECTION LOCATIONS</b>	0 Bottom	1 Back	2 Side
<b>CONNECTION SIZE</b>	2 1/4" NPT female	9 7/16-20 female (Back only)	
<b>PRESSURE RANGES *</b>	P5 0 psid to 5 psid P10 0 psid to 10 psid P15 0 psid to 15 psid	P20 0 psid to 20 psid P25 0 psid to 25 psid P30 0 psid to 30 psid	P50 0 psid to 50 psid P60 0 psid to 60 psid P75 0 psid to 75 psid P100 0 psid to 100 psid P110 0 psid to 110 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 2 FKM	3 NBR 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 2 Dual switch, flying leads with grommet wire seal 3 Single switch, flying leads with 1/4" female NPT, NEMA 4X 4 Dual switch, flying leads with 1/4" female NPT, NEMA 4X		5 Single switch with Hirschman electrical connection 6 Dual switch with Hirschman electrical connection 7 4-20 mA transmitter in NEMA 4x IP65 plastic enclosure with terminal strip (1/2" female NPT conduit connection)
<b>OPTIONS</b>	MH (2) 1/4-20 Mounting Holes MK5-CS Pipe Mounting Kit, Steel MK5-SS Pipe Mounting Kit, Stainless Steel		RP Reversed Ports ST Stainless Steel Tagging WMK Wall Mounting Kit

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

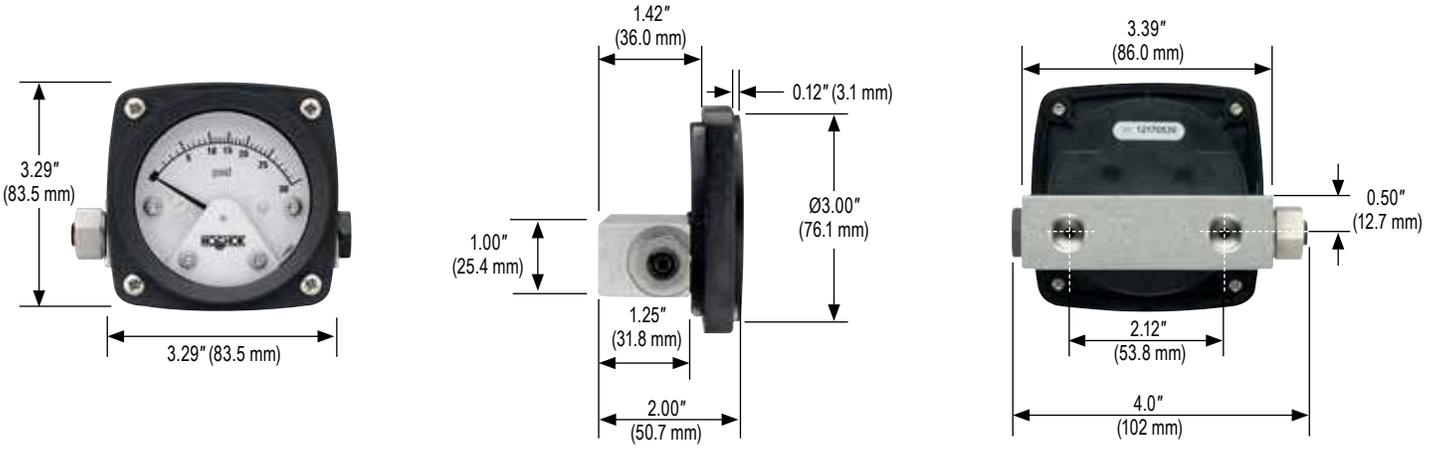
\* Other ranges and scales available on request.  
 \*\* Only available with dry, 4-1/2" gauge size with Aluminum case.  
 \*\*\* Available with dry gauge only, 2-1/2" and 4-1/2" gauge sizes only.  
 † Optional Silicone filling available with 2-1/2" and 6" gauge case sizes, and 4-1/2" gauge case size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

**EXAMPLE**

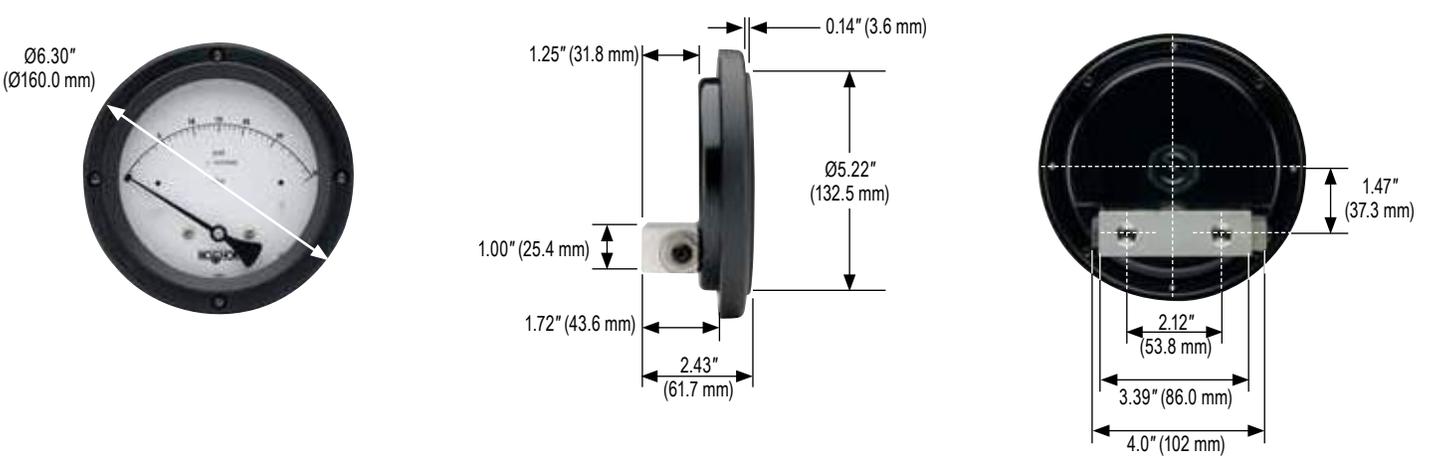


# Dimensions

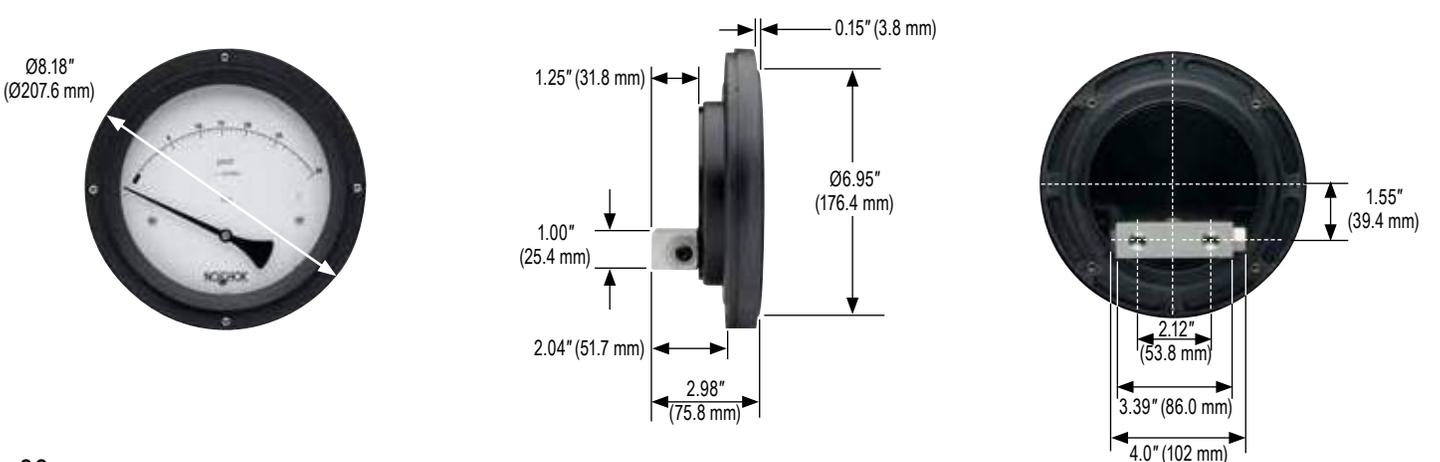
## 2-1/2" Gauge



## 4-1/2" Gauge



## 6" Gauge



# 1000 SERIES

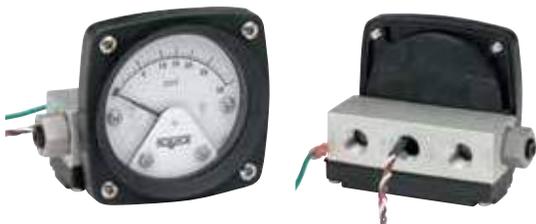
Single switch, flying leads with grommet wire seal



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 housing, 316 Stainless Steel optional

### 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, PTFE 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.

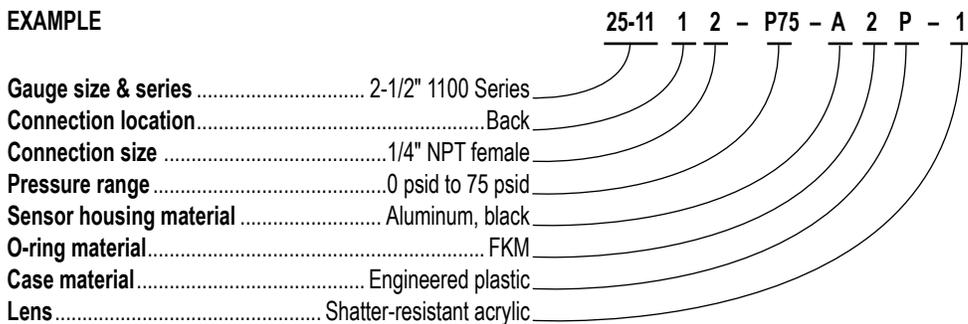
\*\* Only available with dry, 4-1/2" gauge size with Aluminum case.

\*\*\* Not available with switch or transmitter option.

† Available with dry gauge only, 2-1/2" and 4-1/2" gauge sizes only.

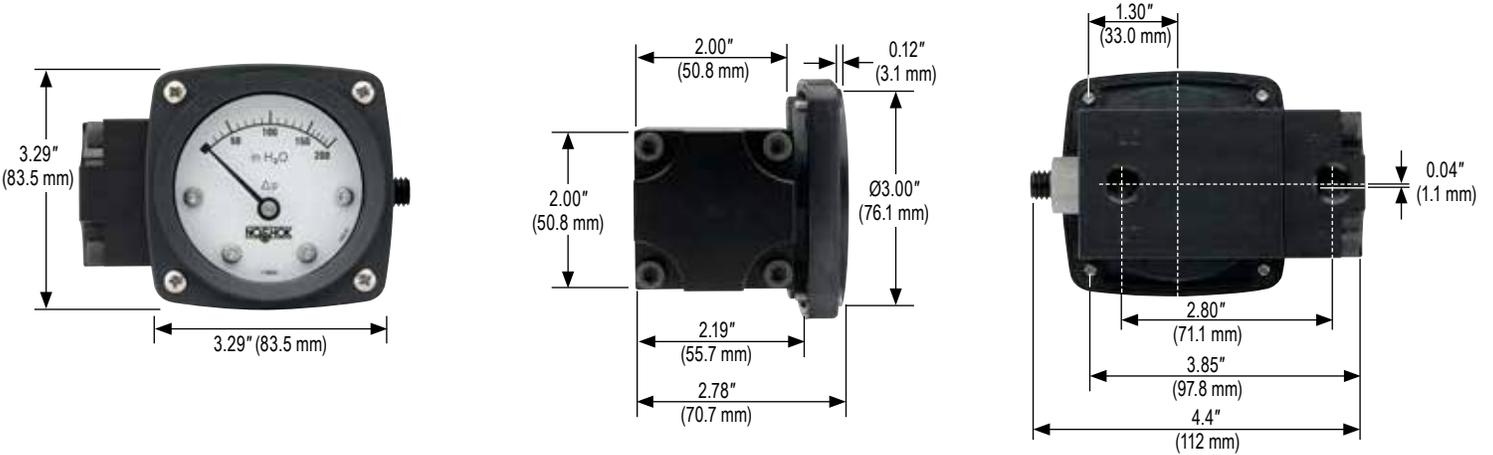
†† Optional Silicone filling available with 2-1/2" and 6" gauge case sizes, and 4-1/2" gauge case size with Aluminum case and standard shatter-resistant acrylic lens only.

**EXAMPLE**

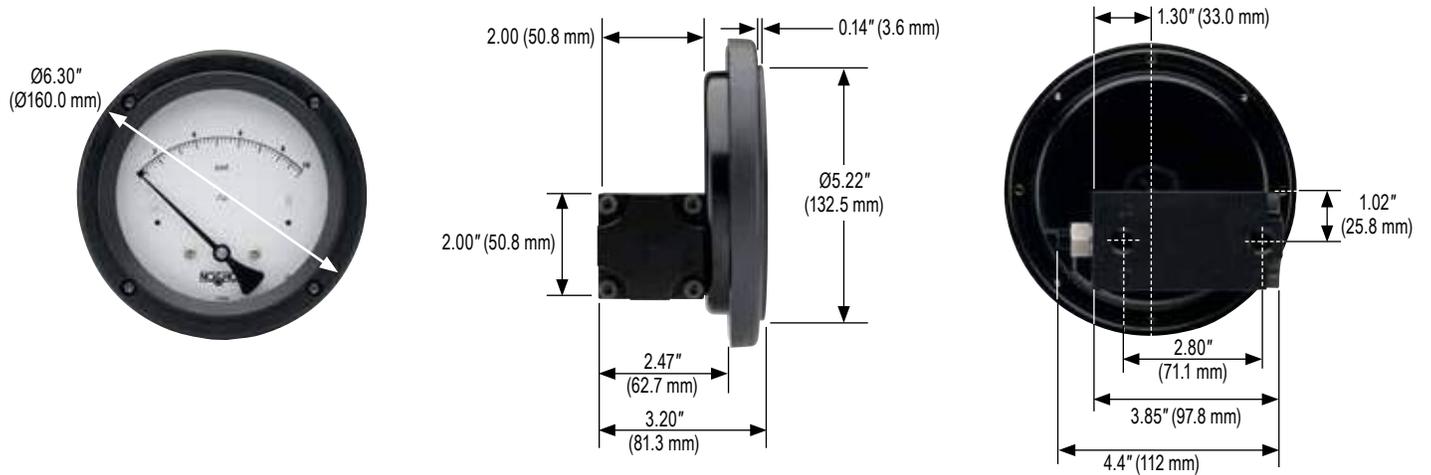


# Dimensions

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



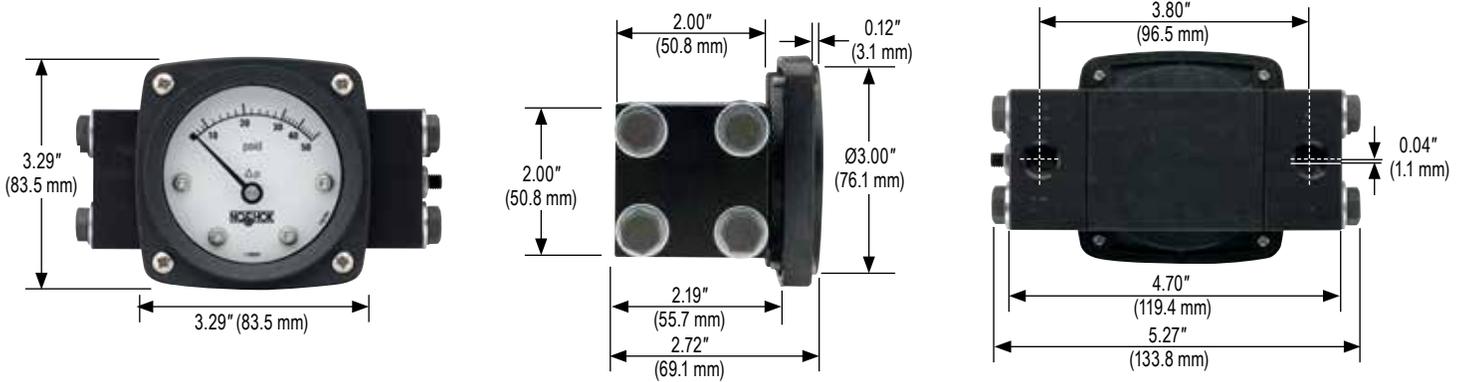
## 4-1/2" Gauge (<25 psid)



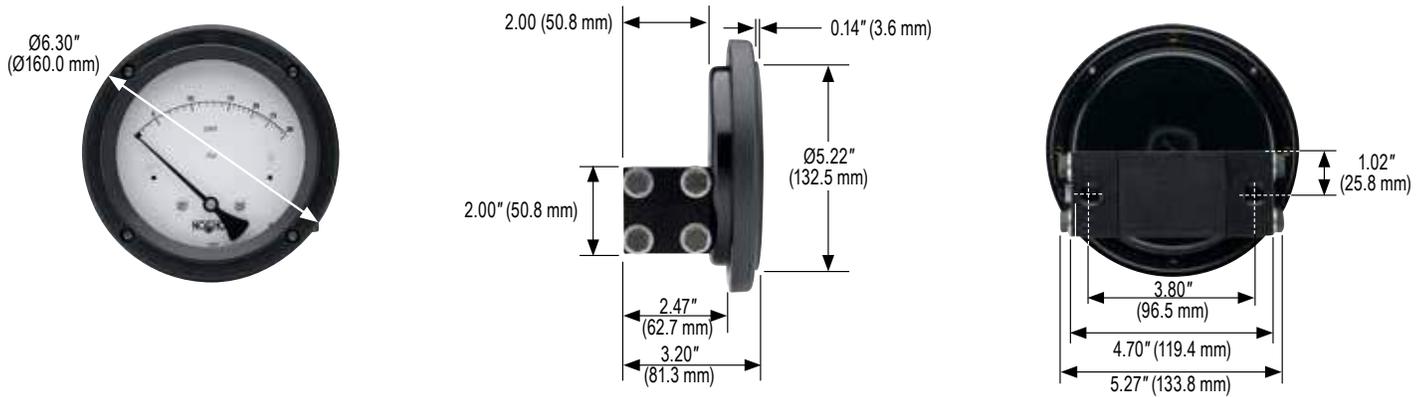
## 6" Gauge (<25 psid)



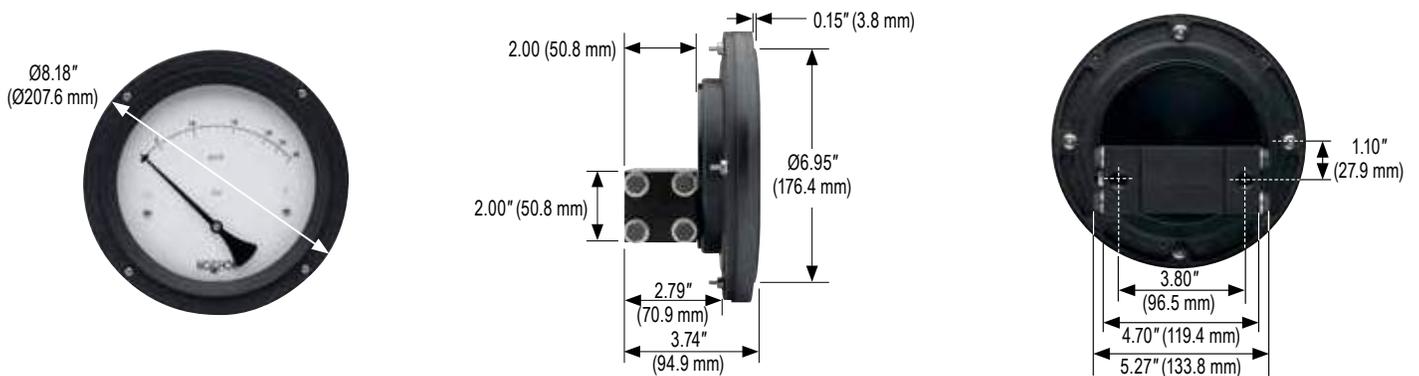
## 2-1/2" Gauge (≥25 psid)



## 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
- 3A certified
- 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>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

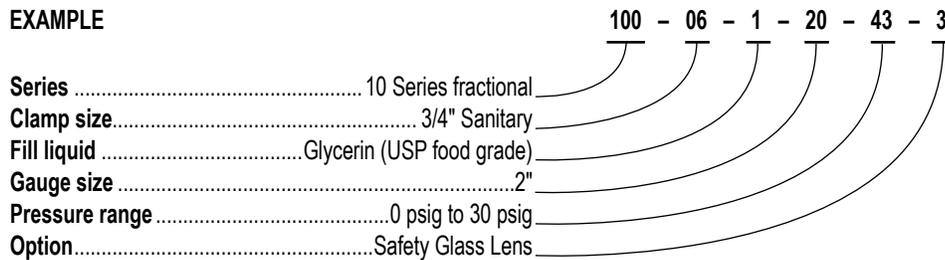
Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.



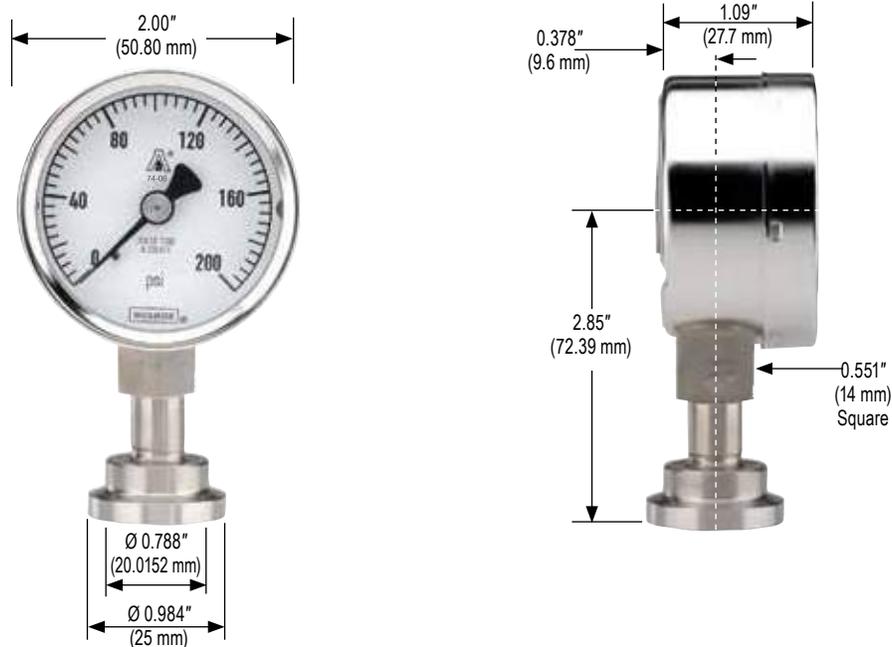
ORDERING INFORMATION			
SERIES	100	10 Series fractional	
CLAMP SIZE	06	3/4"	
FILL LIQUID	1	Glycerin	Other food grade quality fill fluids available – please consult factory
GAUGE SIZE	20	2"	
PRESSURE RANGES	43	0 psig to 30 psig	55 0 psig to 160 psig
	46	0 psig to 60 psig	58 0 psig to 200 psig
	49	0 psig 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
- 3A certified
- 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 $\mu\text{in Ra}$ 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.



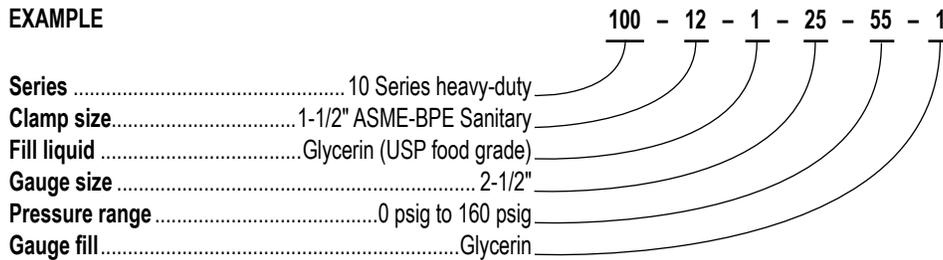
ORDERING INFORMATION				
<b>SERIES</b>	<b>100</b>	10 Series heavy-duty, bottom connected	<b>101</b>	10 Series heavy-duty, back connected
<b>CLAMP SIZES</b>	<b>12</b>	1-1/2"	<b>16</b>	2"
<b>FILL LIQUID</b>	<b>1</b>	Glycerin	Other food grade quality fill fluids available – please consult factory	
<b>GAUGE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

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

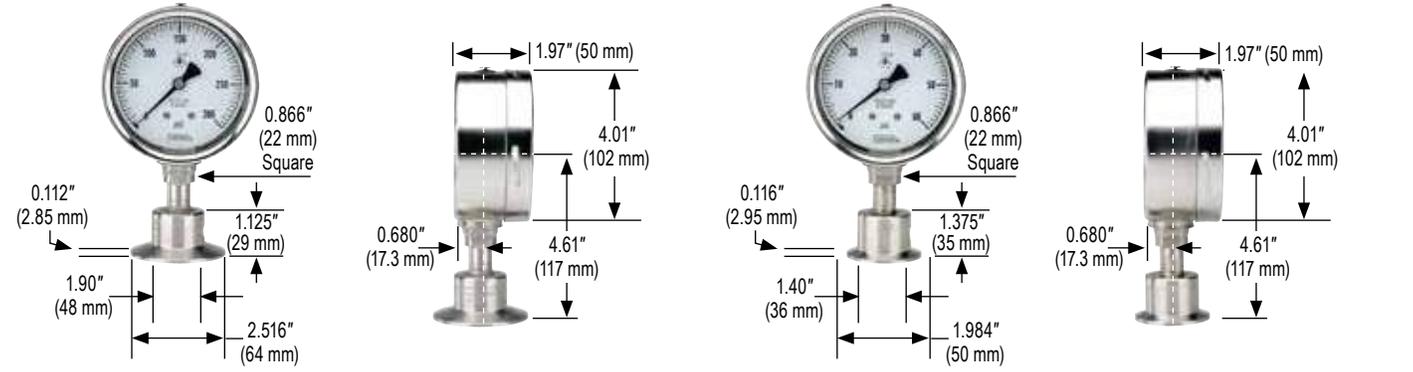
\* Not available on 4" gauge and 1-1/2" ASME-BPE Sanitary Clamp

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

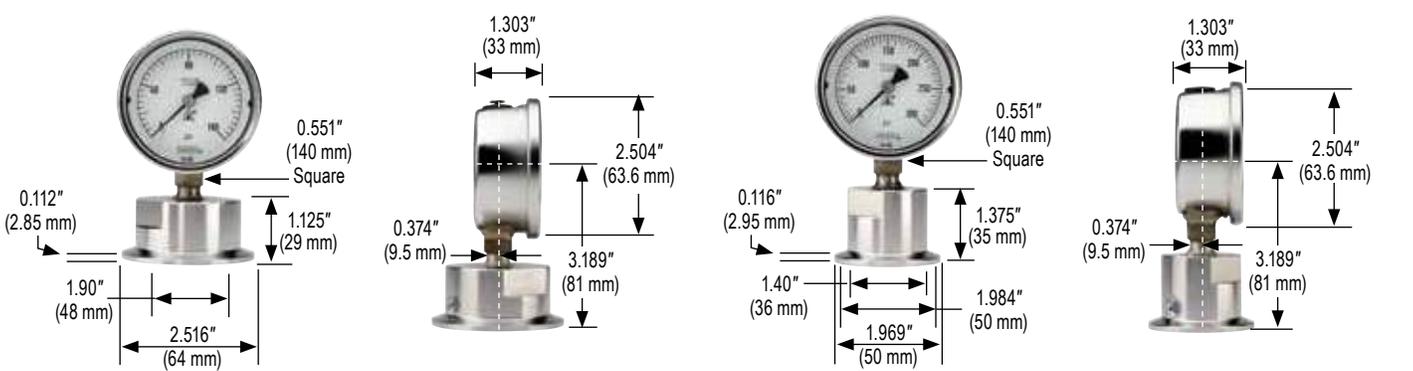
**EXAMPLE**



**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



Metric Dials and Customized Special Dials

## CERTIFIED CALIBRATION

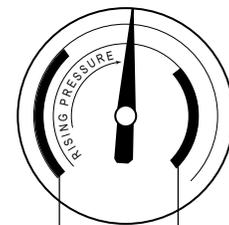
- Available on all NOSHOK gauges
- Certified calibration provides the user with a serial numbered gauge along with a calibration sheet against a primary pressure standard
- Traceable to the National Institute of Standards and Technology

## 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



**CONTACT NO. 1**  
Normally closed,  
Opens on Rising  
Pressure

**CONTACT NO. 2**  
Normally open,  
Closes on Rising  
Pressure

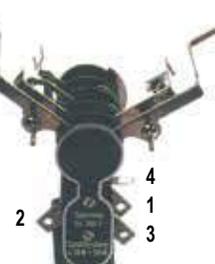
SPECIFICATIONS	
Type of power	A.C. or D.C. 24 to 250V max
Maximum amps	1.0 A
Maximum switching capacity	30 W/50 VA
Gauge accuracy	Add an additional $\pm 2\%$
Minimum magnet holding force	1g
Contact pin material	Silver Tungsten
Ambient temperature limitation	0 °F to 140 °F (-18 °C to 61 °C)
Minimum full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

## APPLICATIONS

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

## 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



## DIAL INDICATING PRESSURE GAUGES STANDARD CONNECTION SIZES

100 Series		200 Series		300 Series		400/500 Series Ammonia		400 Series		500 Series	
<b>15-100</b>	1/8" NPT	<b>25-200</b>	1/4" NPT	<b>25-300</b>	1/4" NPT	<b>25-400</b>	1/4" NPT	<b>15-401</b>	1/8" NPT	<b>25-500</b>	1/4" NPT
<b>15-110</b>	1/8" NPT	<b>25-210</b>	1/4" NPT	<b>25-310</b>	1/4" NPT	<b>25-410</b>	1/4" NPT	<b>15-411</b>	1/8" NPT	<b>25-510</b>	1/4" NPT
<b>15-120</b>	1/8" NPT	<b>25-224</b>	1/4" NPT	<b>40-300</b>	1/4" NPT	<b>40-400</b>	1/2" NPT	<b>25-400</b>	1/4" NPT	<b>40-500</b>	1/2" NPT
<b>20-100</b>	1/4" NPT	<b>40-200</b>	1/4" NPT	<b>40-310</b>	1/4" NPT	<b>40-410</b>	1/2" NPT	<b>25-410</b>	1/4" NPT	<b>40-510</b>	1/2" NPT
<b>20-110</b>	1/4" NPT					<b>25-500</b>	1/4" NPT	<b>40-400</b>	1/2" NPT	<b>60-500</b>	1/2" NPT
<b>20-120</b>	1/4" NPT					<b>25-510</b>	1/4" NPT	<b>40-410</b>	1/2" NPT	<b>60-510</b>	1/2" NPT
<b>20-148</b>	1/8" 10-32 NPT					<b>40-500</b>	1/2" NPT	<b>60-400</b>	1/2" NPT		
<b>25-100</b>	1/4" NPT					<b>40-510</b>	1/2" NPT	<b>60-410</b>	1/2" NPT		
<b>25-110</b>	1/4" NPT										
<b>25-120</b>	1/4" NPT										
<b>40-100</b>	1/4" NPT										

402/502 Series		600/700 Series		800 Series		900 Series	
<b>40-402</b>	9/16-18 UNF 2B High Pressure	<b>45-640</b>	1/4" NPT	<b>60-800</b>	1/4" NPT	<b>15-910</b>	1/8" NPT
<b>40-412</b>	9/16-18 UNF 2B High Pressure	<b>45-740</b>	1/2" NPT			<b>25-900</b>	1/4" NPT
<b>60-402</b>	9/16-18 UNF 2B High Pressure	<b>45-660</b>	1/4" NPT			<b>25-910</b>	1/4" NPT
<b>40-502</b>	9/16-18 UNF 2B High Pressure	<b>45-760</b>	1/2" NPT			<b>25-901</b>	1/4" NPT
<b>60-502</b>	9/16-18 UNF 2B High Pressure					<b>25-911</b>	1/4" NPT
						<b>40-901</b>	1/4" NPT
						<b>40-911</b>	1/4" NPT

# 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

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

Applies to:  
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





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>	±0.5% 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

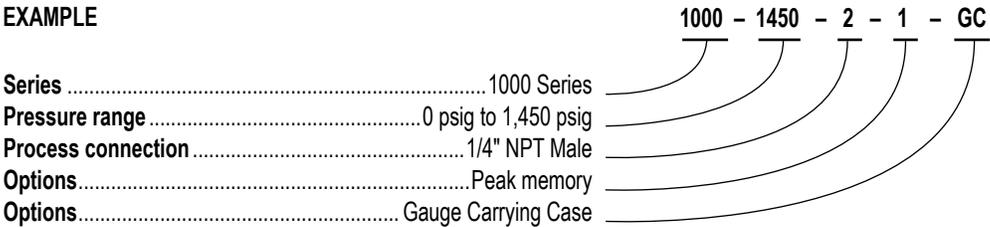


ORDERING INFORMATION				
<b>SERIES</b>	<b>1000</b>			
<b>PRESSURE RANGES</b>	<b>30/72</b> -30 inHg to 0 to 72 psig	<b>300</b> 0 psig to 300 psig	<b>2000</b> 0 psig to 2,000 psig	<b>6000</b> 0 psig to 6,000 psig
	<b>30/145</b> -30 inHg to 0 to 145 psig	<b>600</b> 0 psig to 600 psig	<b>3000</b> 0 psig 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>10</b> G1/4 male	
	<b>2</b> 1/4" NPT male	<b>9</b> SAE J1926-1:7/16-20			
<b>ELECTRICAL CONNECTIONS</b>	<b>1</b> DIN EN 175301-803 Form C w/ 36" cable	<b>6</b> 1/2" NPT conduit ( with 36" cable)		<b>25</b> M12 x 1 (4-pin)	
	<b>2</b> 4-pin Bayonet	<b>7</b> DIN EN 175301-803 Form C		<b>36</b> Integral cable 36"	
	<b>3</b> 6-pin Bayonet				
<b>OPTION</b>	<b>ST8</b> Threaded Orifice				

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

**EXAMPLE**

**100 - 500 - 1 - 1 - 2 - 7 - ST8**

Series ..... 100 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.5% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... 1/4" NPT Male  
 Electrical connection ..... DIN EN 175301-803 Form C  
 Option ..... Threaded Orifice



\* Note: Mate supplied separately or customer supplied.



100 Series Wiring	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black
4 or 6-Pin Bayonet (2 or 3)	A	B
1/2" NPT Conduit w/ Cable (6)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Red	Black

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



## 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

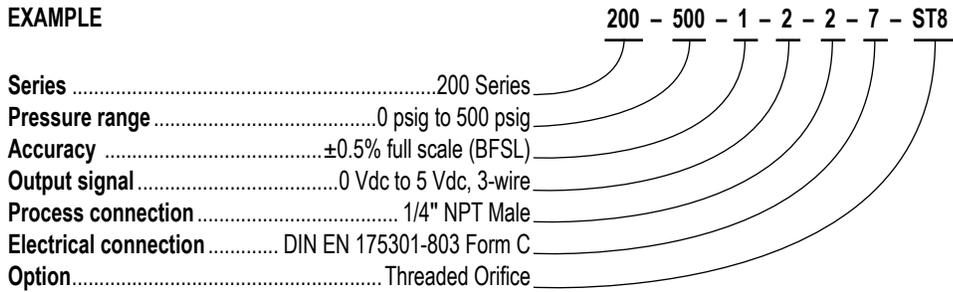
- HVAC
- Hydraulics & pneumatics
- Injection molding machines
- Railroad equipment
- Stamping & forming presses



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			10 G1/4 male	
	2 1/4" NPT male	9 SAE J1926-1:7/16-20				
<b>ELECTRICAL CONNECTION</b>	1 DIN EN 175301-803 Form C w/ 36" Cable		6 1/2" NPT conduit ( with 36" cable)		25 M12 x 1 (4-pin)	
	2 4-pin Bayonet		7 DIN EN 175301-803 Form C		36 Integral cable 36"	
	3 6-pin Bayonet					
	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**



200 Series Wiring	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black	White
4 or 6-Pin Bayonet (2 or 3)	A	B	C
1/2" NPT Conduit w/ Cable (6)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Red	Black	White

\* 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



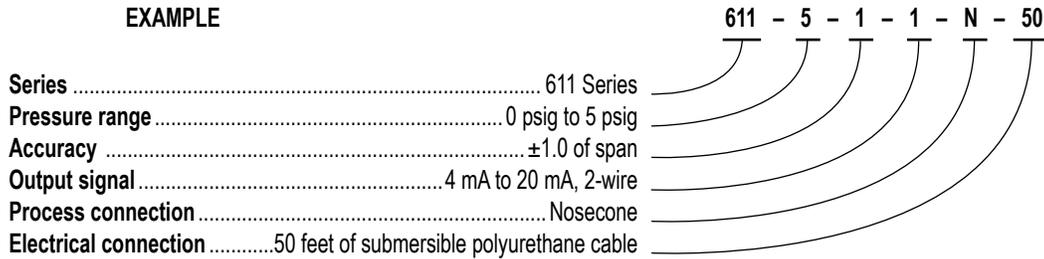
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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>5</b> 0 psig to 5 psig (11.5 ftH <sub>2</sub> O)	<b>50</b> 0 psig to 50 psig (115 ftH <sub>2</sub> O)	<b>100A</b> 0 psia to 100 psia	
	<b>100 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	<b>10</b> 0 psig to 10 psig (23.1 ftH <sub>2</sub> O)	<b>100</b> 0 psig to 100 psig (230.8 ftH <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>15</b> 0 psig to 15 psig (34.6 ftH <sub>2</sub> O)	<b>25A</b> 0 psia to 25 psia		
	<b>250 inH<sub>2</sub>O</b> 0 inH <sub>2</sub> O to 250 inH <sub>2</sub> O	<b>25</b> 0 psig to 25 psig (57.7 ftH <sub>2</sub> O)	<b>50A</b> 0 psia to 50 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>48</b> 0.1 Vdc to 2.5 Vdc, 3 wire**	
	<b>43</b> 4 mA to 20 mA, 2-wire and HART® signal			<b>49</b> 0.1 Vdc to 2.5 Vdc x 2 (pressure and temperature) *, **	
	<b>47</b> 4 mA to 20 mA 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>62-XX</b> Polyurethane (PUR) cable with 1/2" NPT conduit connection		
	<b>38-XX</b> Optional FEP cable		<b>63-XX</b> FEP cable with 1/2" NPT conduit connection		
	<b>NOTE: XX = length of cable in feet</b>				
<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)	

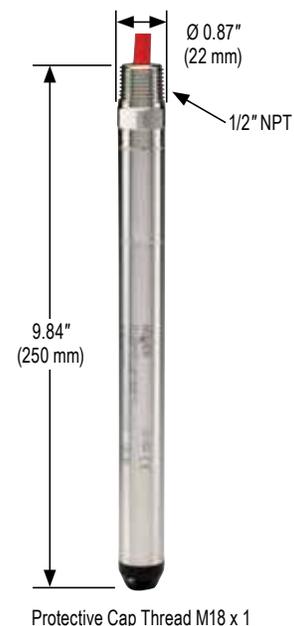
**Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.**

\* 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
4 mA to 20 mA & 4 mA to 20 mA, 2-wire and Hart signal®	V+	Brown
	V-	Blue
	Case Ground	Grey
4 mA to 20 mA x 2 (pressure and temperature)	V+ (pressure sensor)	Brown
	V- (pressure sensor)	Blue
	V+ (temperature sensor)	Green
	V- (temperature sensor)	White
	Case Ground	Grey
0.1 Vdc to 2.5 Vdc, 3 wire	V+	Brown
	Common	Blue
	Output	Black
	Case Ground	Grey
0.1 Vdc to 2.5 Vdc x 2 (pressure and temperature)	V+	Brown
	V-	Blue
	Output (pressure sensor)	Black
	Output (temperature sensor)	Green
	Case Ground	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



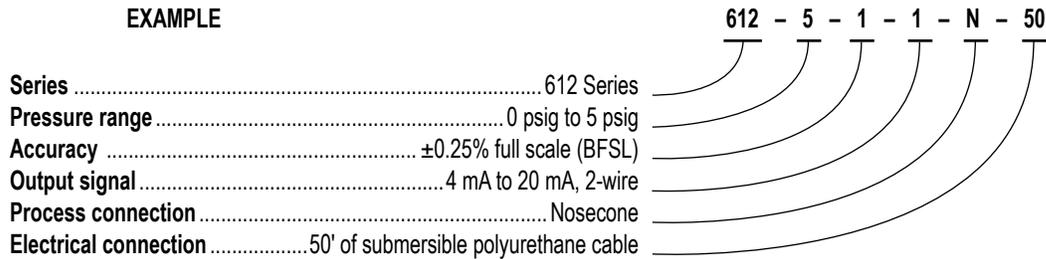
ORDERING INFORMATION					
<b>SERIES</b>	612				
<b>PRESSURE RANGES</b>	50 inH <sub>2</sub> O 0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	2 0 psig to 2 psig (4.6 ftH <sub>2</sub> O)	20 0 psig to 20 psig (46.2 ftH <sub>2</sub> O)	200 0 psig to 200 psig (461.3 ftH <sub>2</sub> O)	1000 0 psig to 1,000 psig (2311.0 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)	750 0 psig to 750 psig (1733.3 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.)		
	T G 1/2 B x 1/2" NPT male with 1/4" NPT female				
<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.**

\* Only available with 4-20 mA output

\*\* Not available for FEP/PVC cable or Water-Block PVC cable

### EXAMPLE



612 Series Wiring	4 mA to 20 mA		
CONNECTION TYPE (CODE)	V+	V-	CASE GROUND
PUR Cable	Brown	Green	Gray
FEP Cable	Brown	White	Blue

612 Series Wiring	0-5 Vdc, 0-10 Vdc, 0.5 to 2.5 Vdc			
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT	CASE GROUND
PUR Cable	Brown	Green	White	Gray
FEP Cable	Brown	Green	White	Gray

Load Limitations 4 mA to 20 mA output	
V <sub>min</sub>	= [10V + (.020 x RL)] - RC
RL	= RS + RW
RL	= Loop resistance (Ω)
RS	= Sensor resistance (Ω)
RW	= Wire resistance (Ω)
RC	= 0.0435 x cable length (ft.)

## 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>	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>ELECTRICAL CONNECTIONS</b>	XX	Standard polyurethane (PUR) cable		38-XX	Optional FEP cable	
<b>OPTIONS</b>	CBC	Cable Clamp	FE	Filter Element	LP	Lightning Protection *
	DC	Desiccant Cartridge	JB	Cable Junction Box	LR	Lifting Ring
					PT1	PT100 RTD *

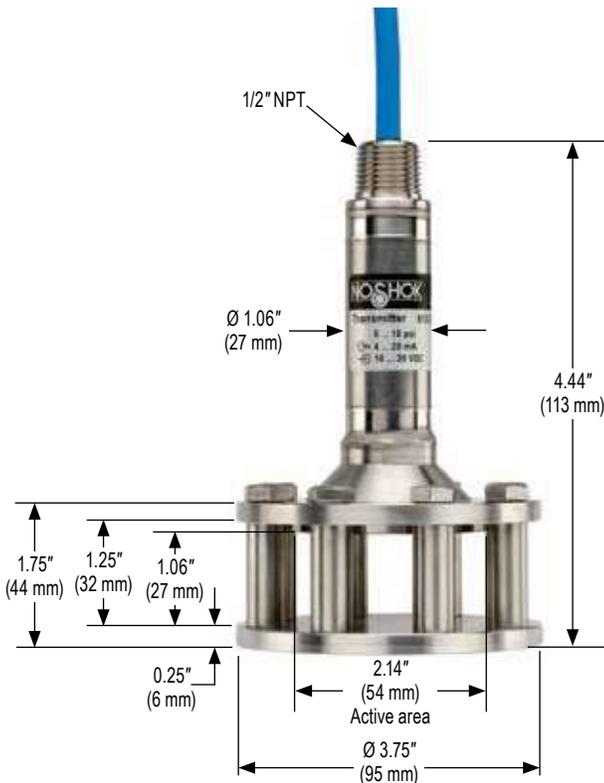
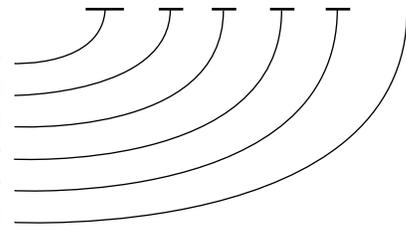
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* 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

613 Series Wiring	4 mA to 20 mA		
CONNECTION TYPE (CODE)	V+	V-	CASE GROUND
PUR Cable	Brown	Green	Gray
FEP Cable	Brown	White	Blue

613 Series Wiring	0-5 Vdc, 0-10 Vdc, 0.5 to 2.5 Vdc			
	CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
PUR Cable	Brown	Green	White	Gray
FEP Cable	Brown	Green	White	Gray

Load Limitations 4 mA to 20 mA output	
V <sub>min</sub>	= [10V + (.020 x RL)] - RC
RL	= RS + RW
RL	= Loop resistance (Ω)
RS	= Sensor resistance (Ω)
RW	= Wire resistance (Ω)
RC	= 0.0435 $\frac{\Omega}{ft}$ x cable length (ft.)



**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	DIN EN 175301-803 Form A w/ 36" Cable	8	DIN EN 175301-803 Form A	25	M12 x 1 (4-pin)						
	3	6-pin Bayonet	14	DIN EN 175301-803 Form A 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.

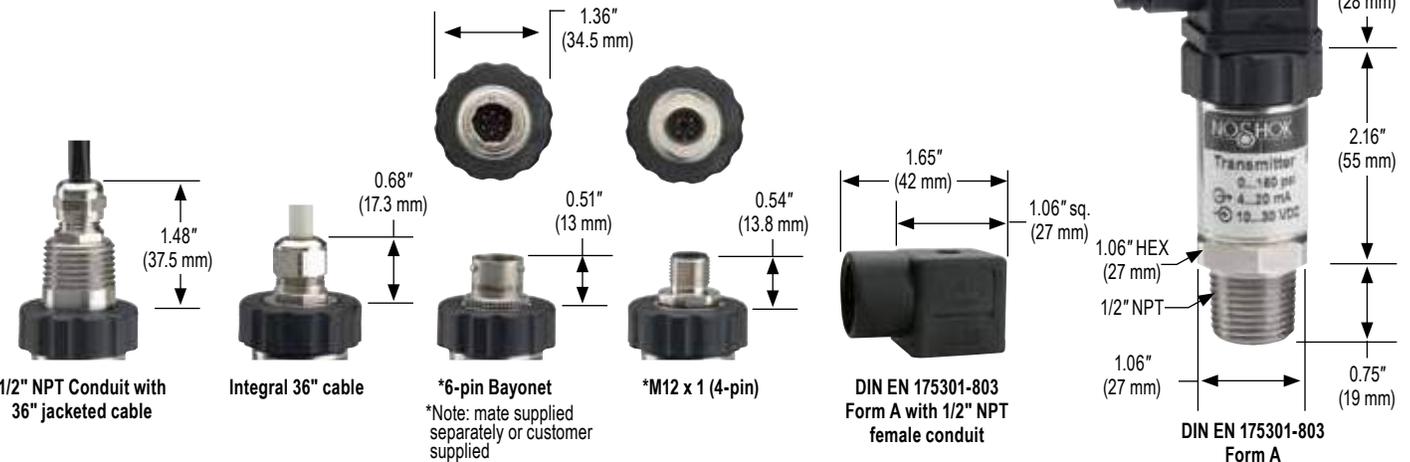
\* Not available with 1/4" NPT  
\*\* Equivalent to F250C Parker Autoclave

### EXAMPLE

Series ..... 615 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 ..... DIN EN 175301-803 Form A w/ 36" Cable  
 Option ..... Threaded Orifice

615 - 500 - 1 - 1 - 8 - 1 - ST8

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



615/616 Series Wiring	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form A (8 or 14)	1	2
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black
6-Pin Bayonet (3)	A	B
1/2" NPT Conduit w/ Cable (6)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Red	Black

615/616 Series Wiring	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form A (8 or 14)	1	2	3
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black	White
6-Pin Bayonet (3)	A	B	C
1/2" NPT Conduit w/ Cable (6)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Red	Black	White

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)



## 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

### APPLICATIONS

- Aerospace equipment
- Laboratory & test equipment
- Precision 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
<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.

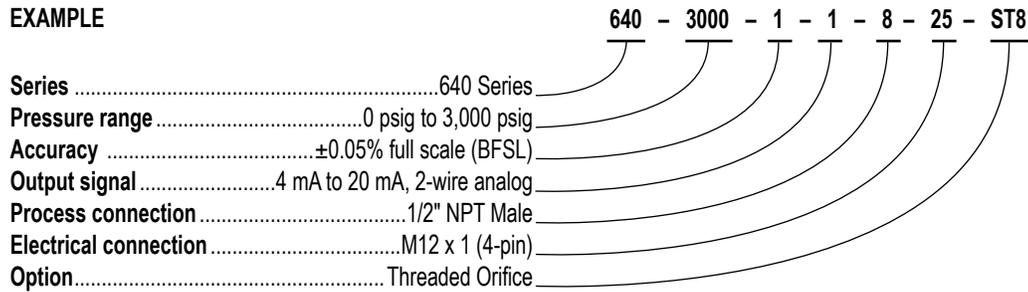
\* Unregulated



ORDERING INFORMATION											
SERIES	640										
<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**



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

640 Series Wiring	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
M12 x 1, 4-Pin (25)	1	3
Integral Cable (1)	Brown	Blue

640 Series Wiring	0-5 Vdc, 0-10 Vdc, 0-20 mA		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (1)	Brown	Blue	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.

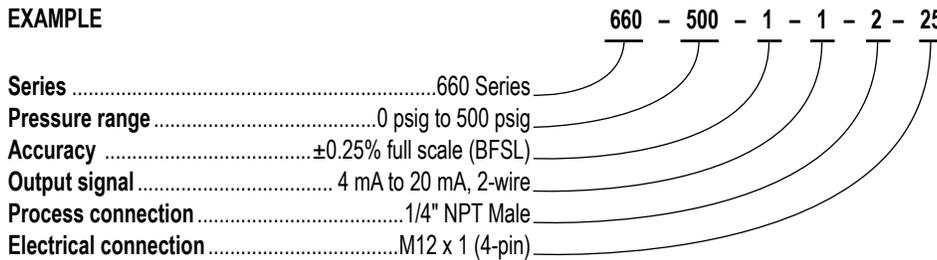
\* Unregulated



ORDERING INFORMATION				
<b>SERIES</b>	<b>660</b>			
<b>PRESSURE RANGES</b>	<b>200</b> 0 psig to 200 psig	<b>500</b> 0 psig to 500 psig	<b>3000</b> 0 psig to 3,000 psig	<b>10000</b> 0 psig to 10,000 psig
	<b>300</b> 0 psig to 300 psig	<b>1000</b> 0 psig to 1,000 psig	<b>5000</b> 0 psig to 5,000 psig	<b>15000</b> 0 psig to 15,000 psig
	psig = gauge pressure    Other ranges available on request			
<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	<b>27</b> 0.1 Vdc to 10 Vdc, 3-wire	
<b>PROCESS CONNECTIONS</b>	<b>2</b> 1/4" NPT male			
<b>ELECTRICAL CONNECTIONS</b>	<b>1</b> DIN EN 175301-803 Form C w/ 36" Cable	<b>7</b> DIN EN 175301-803 Form C	<b>25</b> M12 x 1 (4-pin)	

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

**EXAMPLE**



660 Series Wiring	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Brown	Green

660 Series Wiring	1-5 Vdc, 0.1-10 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Brown	Green	White

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)

## 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 *	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 * **	
	2 1 N.O. or N.C. (PNP or NPN) with 4 mA to 20 mA 3-wire analog output				
	3 1 N.O. or N.C. (PNP or NPN) with 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.

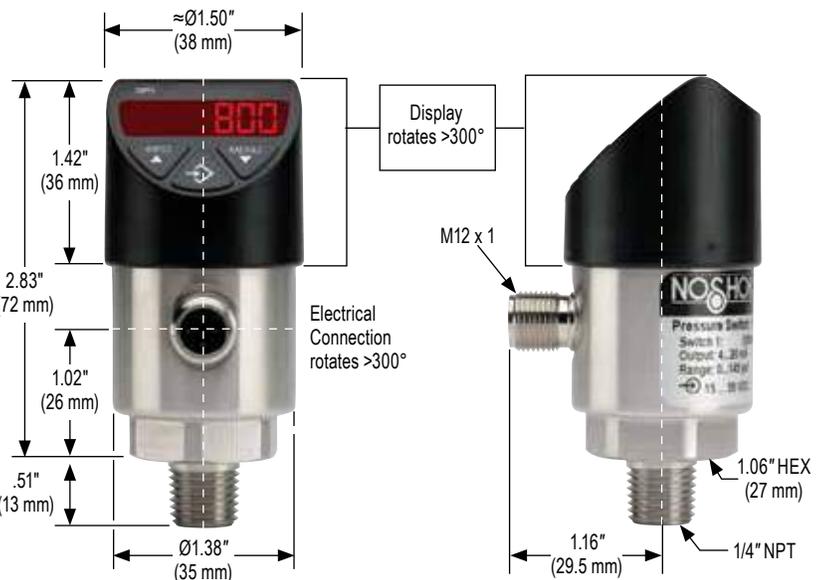
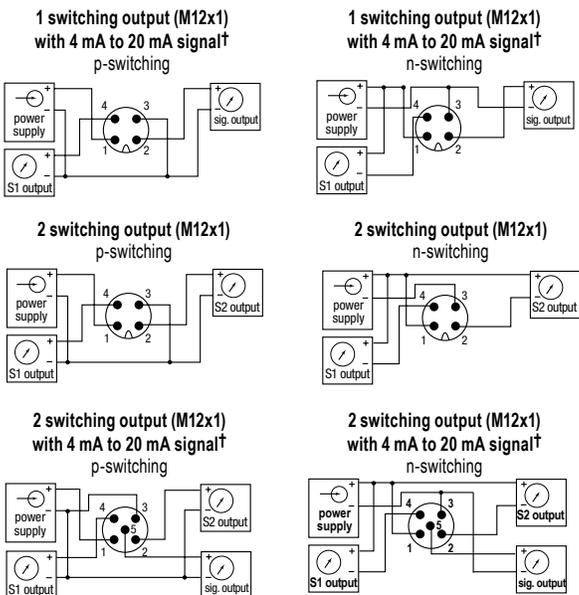
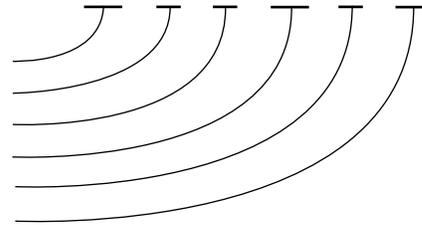
\* Available only with a M12 x 1 (5-pin) connector

\*\* 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.

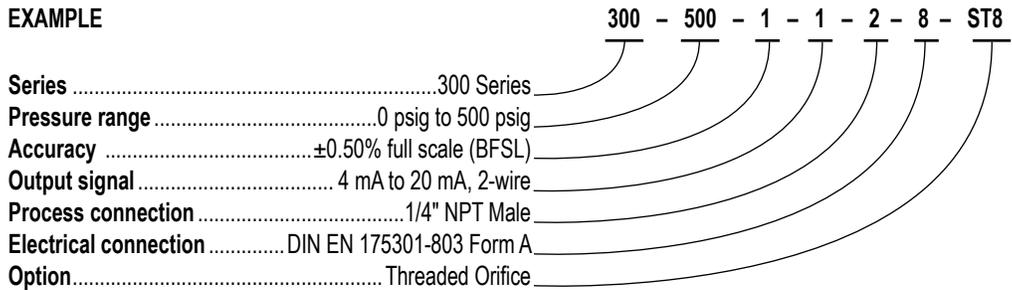
\* Unregulated



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 DIN EN 175301-803 Form A w/ 36" Cable			8 DIN EN 175301-803 Form A		25 M12 x 1 (4-pin)
	7 DIN EN 175301-803 Form C			14 DIN EN 175301-803 Form A with 1/2" NPT female conduit		36 6' Integral cable
<b>OPTION</b>	ST8 Threaded Orifice (0.8 mm)					

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

**EXAMPLE**



Integral cable

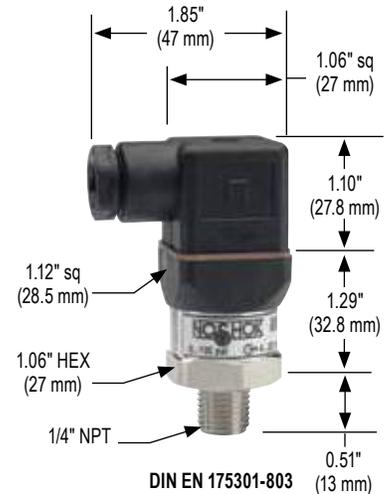


DIN EN 175301-803 Form C



\*M12 x 1 (4-pin)

\* Note: (mate supplied separately)

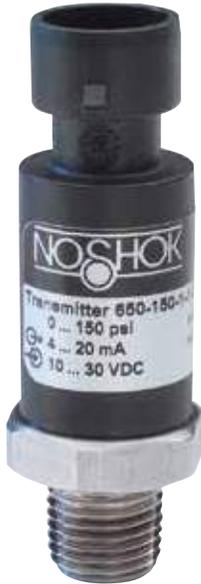


DIN EN 175301-803 Form A

300 Series Wiring	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form A (8 or 14), DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable, Unshielded (36)	Brown	Blue

300 Series Wiring	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form A (8 or 14), DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable, Unshielded (36)	Brown	Blue	Black

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



## 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

**650 - 500 - 1 - 1 - 2 - 25**

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)





## 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

### 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.

### 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



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>30/30</b> -30 inHg to 30 psig <b>30/60</b> -30 inHg to 60 psig <b>30/100</b> -30 inHg to 100 psig <b>30/160</b> -30 inHg to 160 psig <b>30/200</b> -30 inHg to 200 psig <b>30/300</b> -30 inHg to 300 psig psig = gauge pressure    psia = absolute pressure    Other ranges available on request	<b>5</b> 0 psig to 5 psig <b>10</b> 0 psig to 10 psig <b>15</b> 0 psig to 15 psig <b>30</b> 0 psig to 30 psig <b>60</b> 0 psig to 60 psig <b>100</b> 0 psig to 100 psig <b>200</b> 0 psig to 200 psig	<b>300</b> 0 psig to 300 psig <b>500</b> 0 psig to 500 psig <b>1000</b> 0 psig to 1,000 psig <b>1500</b> 0 psig to 1,500 psig <b>2000</b> 0 psig to 2,000 psig <b>3000</b> 0 psig to 3,000 psig <b>5000</b> 0 psig to 5,000 psig	<b>6000</b> 0 psig to 6,000 psig <b>8000</b> 0 psig to 8,000 psig <b>10000</b> 0 psig to 10,000 psig <b>15000</b> 0 psig to 15,000 psig <b>15A</b> 0 psia to 15 psia <b>100A</b> 0 psia to 100 psia Note: 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>2</b> 0 Vdc to 5 Vdc, 3-wire	<b>3</b> 1 Vdc to 5 Vdc, 3-wire, low power <b>5</b> 0 Vdc to 10 Vdc, 3-wire	<b>31</b> 0.5 Vdc to 4.5 Vdc 3-wire, low power	
<b>PROCESS CONNECTIONS</b>	<b>2</b> 1/4" NPT male <b>8</b> 1/2" NPT male	<b>11</b> G 1/2 B * <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).

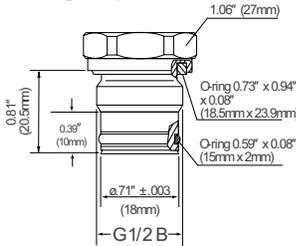
### EXAMPLE

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

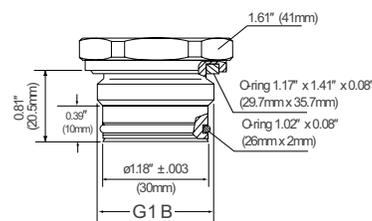
621 - 500 - 1 - 1 - 8 - 6 - ST8

### Front flush process connections

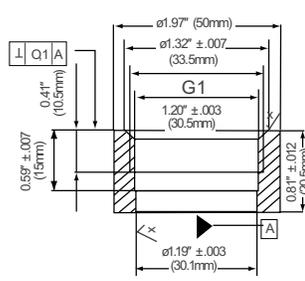
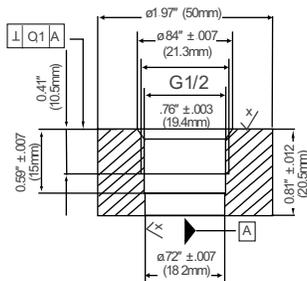
For ranges 0 psi to 30 psi through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



### Flush corresponding port weld-on adapters



### 2-WIRE WIRING

V+	Red
V-	Black
Ground	Gray

### 3-WIRE WIRING

V+	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



**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>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>	<b>1</b> ±0.25% full scale (BFSL)			
<b>OUTPUT SIGNALS</b>	<b>1</b> 4 mA to 20 mA, 2-wire		<b>31</b> 0.5 Vdc to 4.5 Vdc, 3-wire, low power	
<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 (624 Series only, <30 psig)	
<b>ELECTRICAL CONNECTION</b>	<b>6</b> 1/2" NPT male conduit with 6' integral cable			
<b>OPTION</b>	<b>ST8</b> Threaded Orifice (623 Series only)			

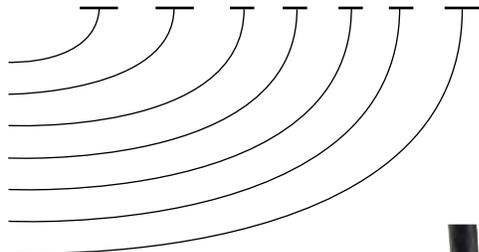
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Hastelloy flush diaphragm available upon request.  
 \*\* 624 Series only, G 1/2 B Flush (≥ 30 psig).

### EXAMPLE

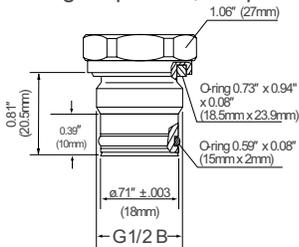
Series ..... 623 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.25% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... 1/2" NPT Male  
 Electrical connection ..... 1/2" NPT Male conduit with 6' integral cable  
 Option ..... Threaded Orifice

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

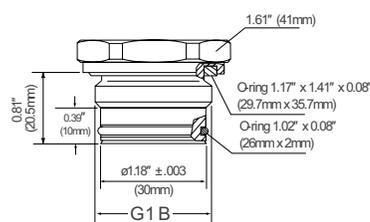


### Front flush process connections

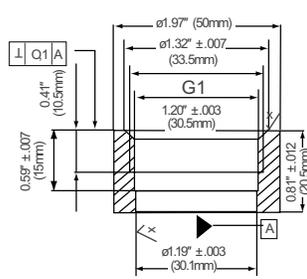
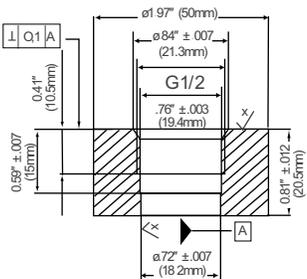
For ranges 0 psi to 30 psi through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



### Flush corresponding port weld-on adapters



### 2-WIRE WIRING

V+	Brown
V-	Green

### 3-WIRE WIRING

V+	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	DIN EN 175301-803 Form A w/ 36" Cable	14	DIN EN 175301-803 Form A with 1/2" NPT female conduit – IP65						
	3	6-pin Bayonet - IP65	25	M12x1 (4-pin) IP67						
	8	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 ..... DIN EN 175301-803 Form A  
 Option ..... Threaded Orifice

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



\*Note: mate supplied separately

### 2-WIRE WIRING

	DIN EN 175301-803 Form A	Cable	M12	Bayonet
V+	1	Red/Brown	1	A
V-	2	Black/Green	3	B

DIN EN 175301-803 Form A with 1/2" NPT female conduit

**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 14 °F to 140 °F (-10 °C to 60 °C) Ambient 14 °F to 140 °F (-10 °C to 60 °C) Storage 14 °F to 140 °F (-10 °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.

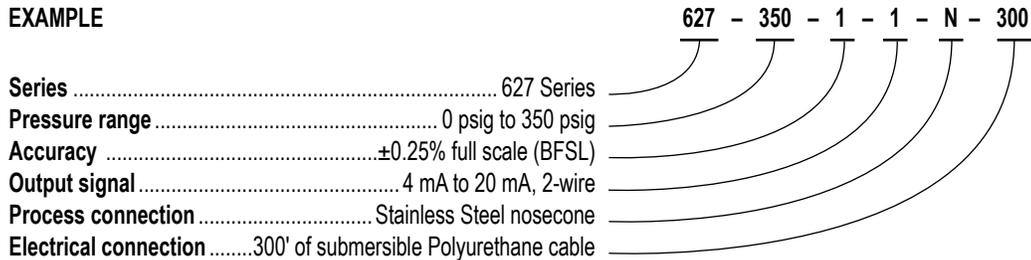


**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

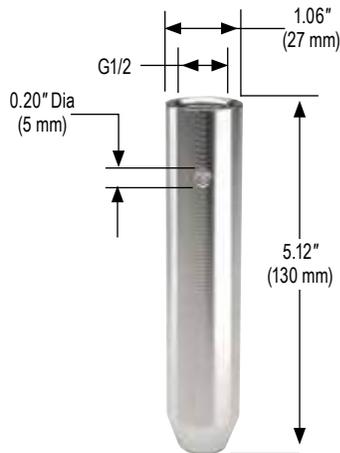
ORDERING INFORMATION			
<b>SERIES</b>	627		
<b>PRESSURE RANGES</b>	50inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	5 0 psig to 5 psig (11.5 ftH <sub>2</sub> O)
	100inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	10 0 psig to 10 psig (23.1 ftH <sub>2</sub> O)
	150inH <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)
	300inH <sub>2</sub> O	0 inH <sub>2</sub> O to 300 inH <sub>2</sub> O	30 0 psig to 30 psig (69.2 ftH <sub>2</sub> O)
	400inH <sub>2</sub> O	0 inH <sub>2</sub> O to 400 inH <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.

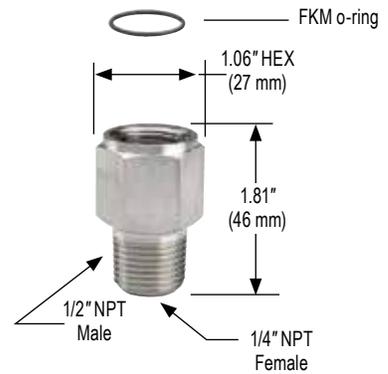
**EXAMPLE**



**Weighted Nosecone**



**NPT Adapter**



**2-WIRE WIRING**

V+	Brown
V-	Green
Shield	Gray

# 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 ia 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% reading/ °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)
- 3A certified
- 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

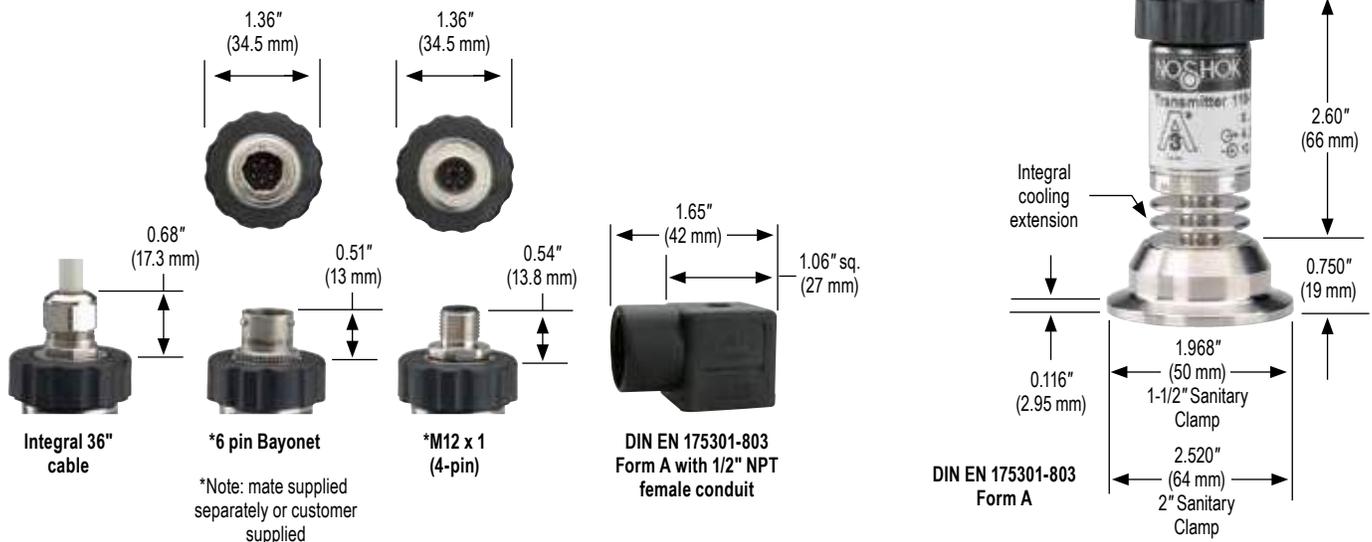
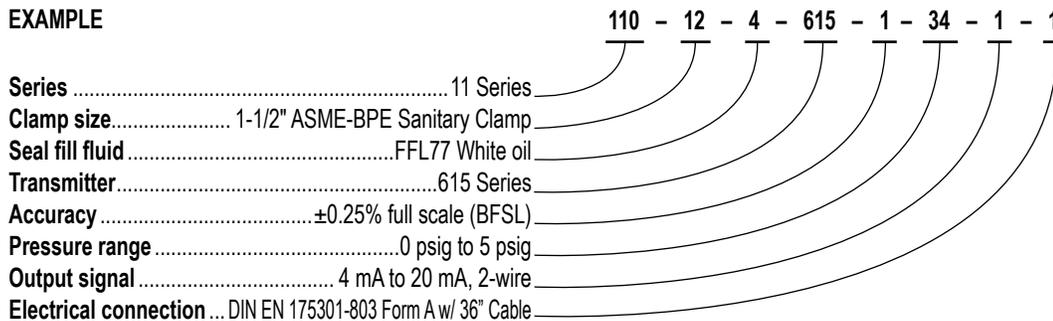
Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.



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 DIN EN 175301-803 Form A w/ 36" Cable	14 DIN EN 175301-803 Form A with 1/2" NPT female conduit		
	3 6-pin Bayonet	25 M12 X 1 (4-pin)		
	8 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



#### 2-WIRE WIRING

	DIN EN 175301-803 Form A	Cable	M12	Bayonet
V+	1	Red	1	A
V-	2	Black	3	B

#### 3-WIRE WIRING

	DIN EN 175301-803 Form A	Cable	M12	Bayonet
V+	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)
- 3A certified



### 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

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

\* Unregulated

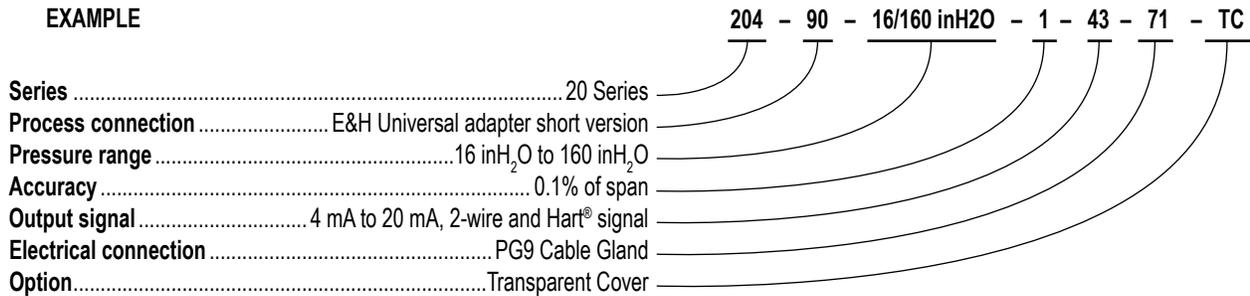


ORDERING INFORMATION			
<b>SERIES</b>	204		
<b>PROCESS CONNECTIONS</b>	90 E&H Universal adapter short version	95 King Gage Standard - 6"	
	91 E&H Universal adapter long version	96 King Gage Long - 8"	
	92 Anderson Negele Type SL Short	97 Rosemount Tank Spud - 2"	
	93 Anderson Negele Type SL Long - 6"	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.

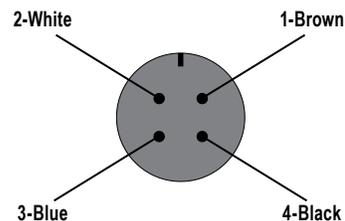
\*Other ranges available, consult factory

**EXAMPLE**



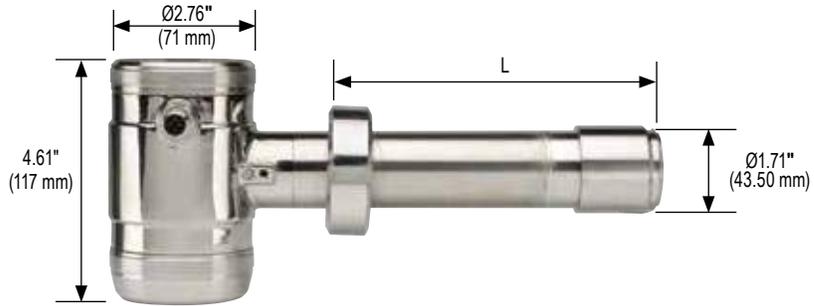
**M12 x 1 (4-PIN) WIRING**

1	Brown	V+
2	White	V-
3	Blue	Not used
4	Black	Not used



# Dimensions

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



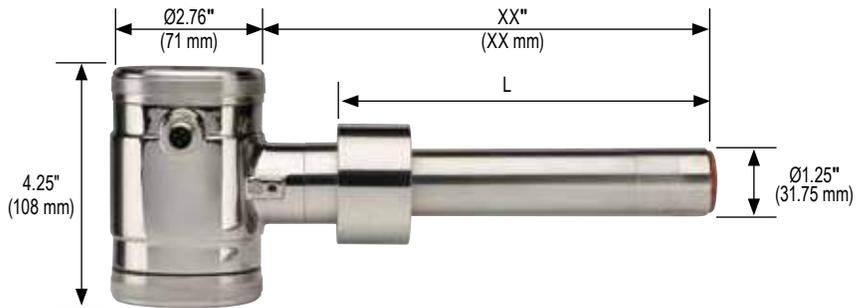
L	
Short	2.16" (54.86 mm)
Long	5.93" (150.50 mm)

## 204-93 (Anderson Negele Type SL)



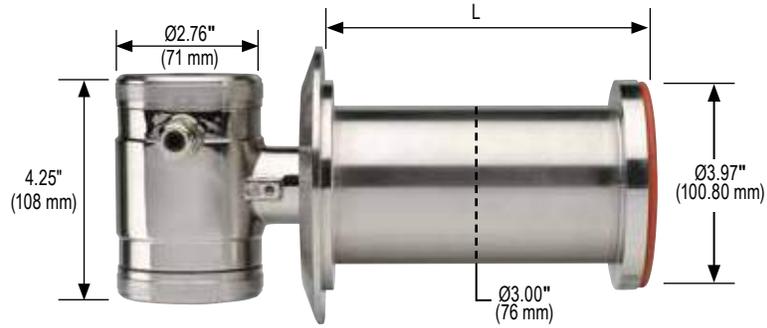
L	
Short	2.05" (52.0 mm)
Long	6.36" (161.50 mm)

## 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)
- 3A certified



### 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

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

\* Unregulated

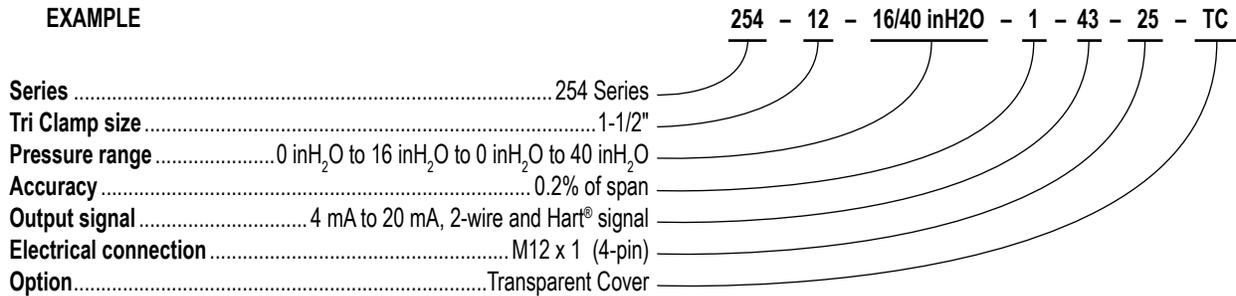


ORDERING INFORMATION		
<b>SERIES</b>	254	
<b>TRI-CLAMP SIZE</b>	12 1-1/2" 16 2"	24 3"
<b>PRESSURE RANGES (Adjustable)</b>	<b>40inH<sub>2</sub>O-vac</b> -40 inH <sub>2</sub> O to 0 inH <sub>2</sub> O* <b>160inH<sub>2</sub>O-vac</b> -160inH <sub>2</sub> O to 0 inH <sub>2</sub> O <b>14.7/43-vac</b> -14.7 psig to 43 psig <b>14.7/130-vac</b> -14.7 psig to 130 psig <b>14.7/335-vac</b> -14.7 to 335 psig <b>14.7/1145-vac</b> -14.7 psig to 1,145 psig	<b>16/40 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 40 inH <sub>2</sub> O (.6 psig to 1.45 psig) <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 (1.45 psig to 5.8 psig) <b>160/637 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 637 inH <sub>2</sub> O (5.8 psig to 23 psig) <b>14.5/58</b> 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) <b>29/145</b> 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) <b>87/350</b> 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) <b>290/1160</b> 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)
<b>ACCURACIES</b>	1 0.2% 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) 28 1/2" NPT Female	71 PG9 Cable Gland
<b>OPTIONS</b>	TC Transparent Cover (for display)	

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

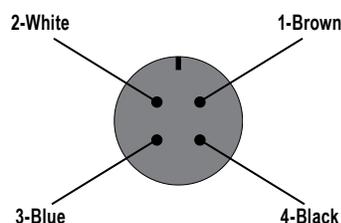
\* Not available in 1-1/2" Tri-Clamp

**EXAMPLE**



**M12 x 1 (4-PIN) WIRING**

1	Brown	V+
2	White	V-
3	Blue	Not used
4	Black	Not used



\*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)
- 10:1 Turn down (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)
- 3A certified



	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//302 Series	0.2% of adjusted span
	301/304 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



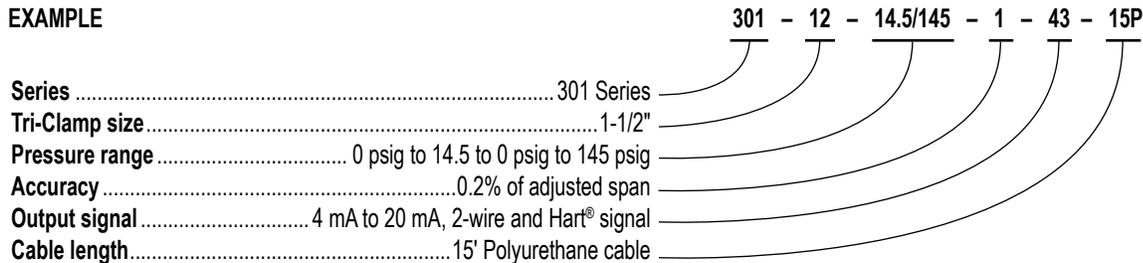
**WARNING:** This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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>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>5</b> 0 psig to 5 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>10</b> 0 psig to 10 psig	<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)***		

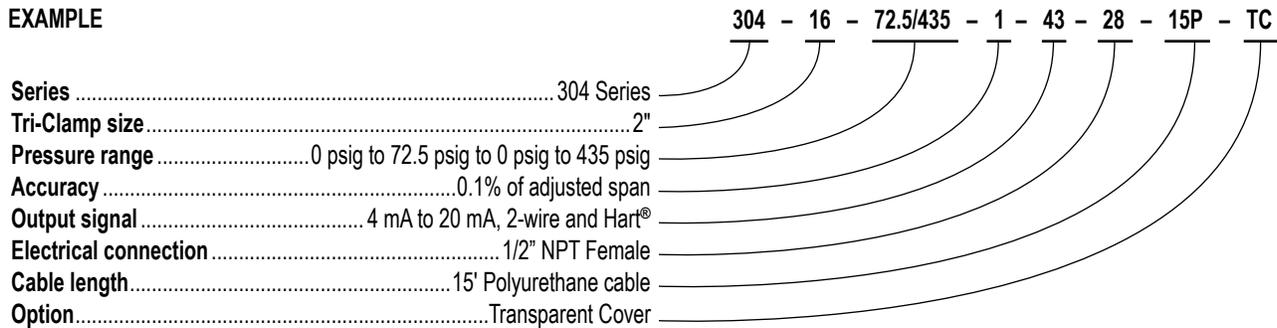
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

- \* 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**

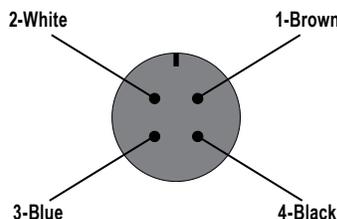


**EXAMPLE**



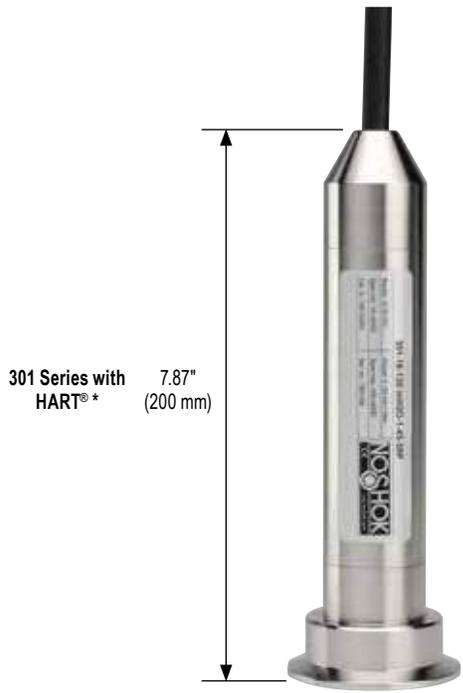
**M12 x 1 (4-PIN) WIRING**

1	Brown	V+
2	White	V-
3	Blue	Not used
4	Black	Not used



# Dimensions

## 300/301 Series



\* 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



## 100 SERIES

- Switch adjustment ranges from vacuum through 6,000 psi depending on model
- 100V: Standard Brass with NBR diaphragm wetted parts, 100L: Standard Brass with Polyimide diaphragm wetted parts, 100H: Standard Zinc-nickel with NBR diaphragm wetted parts
- SPST creep action switch with Silver-plated contacts
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

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

### SPECIFICATIONS

#### Switching parameters

<b>Function</b>	SPST N.O. or N.C. contact
<b>Contact rating</b>	100 VA Max Voltage 42 Vdc
<b>Repeatability</b>	See Chart on page 107
<b>Hysteresis</b>	<10% of setpoint
<b>Contact material</b>	Silver-plated, optional gold-plated
<b>Frequency</b>	Max. 60 cycles/min
<b>Switch type</b>	Creep action
<b>Pressure ranges</b>	Vacuum through 6,000 psig
<b>Service life</b>	>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>	100V: 350 psi 100L: 500 psi 100H: 9,000 psi
<b>Measuring element</b>	100V: Brass, NBR diaphragm 100L: Brass, Polyimide diaphragm 100H: Zinc-nickel plated Steel, NBR diaphragm
<b>Housing material</b>	100V & 100L: Brass, optional Stainless Steel 100H: Plated Steel, optional Stainless Steel
<b>Environmental rating</b>	IP00 - Exposed Terminals IP69 - Flying Leads & Deutsch Integral
<b>Weight</b>	Approximately 0.2 lb.



ORDERING INFORMATION			
<b>SERIES</b>	<b>100V</b> 100 Vacuum Series <b>100L</b> 100 Low Pressure Series	<b>100H</b> 100 High Pressure Series	
<b>SWITCH FUNCTIONS</b>	<b>1</b> SPST, Normally open	<b>2</b> SPST, Normally closed	
<b>PROCESS CONNECTION</b>	<b>1</b> 1/8" NPT male <b>2</b> 1/4" NPT male <b>10</b> G 1/4B	<b>31</b> 9/16-18 SAE Male, Non-Adjustable <b>33</b> G 1/8B <b>45</b> 7/16-20 SAE Male, Non-Adjustable	
<b>100V VACUUM PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>3/25-vac</b> -3 inHg to -25 inHg (350 psig)		
<b>100L LOW PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>2/20</b> 2 psig to 20 psig (350 psig) <b>15/100</b> 15 psig to 100 psig (350 psig)	<b>50/150</b> 50 psig to 150 psig (350 psig)	
<b>100H HIGH PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>2/30</b> 2 psig to 30 psig (9,000 psig) <b>15/200</b> 15 psig to 200 psig (9,000 psig) <b>125/600</b> 125 psig to 600 psig (9,000 psig)	<b>300/2500</b> 300 psig to 2,500 psig (9,000 psig) <b>500/3500</b> 500 psig to 3,500 psig (9,000 psig) <b>3000/6000</b> 3,000 psig to 6,000 psig (9,000 psig)	
<b>ELECTRICAL CONNECTIONS†</b>	<b>4</b> Spade Terminals (1/4 x 1/32) <b>66</b> Deutsch Integral 2-Pin (DT04-2P) <b>77</b> 18" Flying Leads <b>78</b> 6-32 Terminal Screws <b>96</b> Weatherpack Tower, 2-Pin Female*	<b>97</b> Weatherpack Tower, 2-Pin Male* <b>98</b> Weatherpack Shroud, 2-Pin Female* <b>99</b> Weatherpack Shroud, 2-Pin Male* <b>100</b> Deutsch 2-Pin Male (DT04-2P)* <b>103</b> Deutsch 2-Pin Female Socket (DT06-2S)*	
<b>OPTIONS**</b>	<b>AU</b> Gold Plated Contacts <b>EP</b> EPDM Diaphragm (-10/250 °F) <b>HNBR</b> Low Temp Nitrile Diaphragm (-40/110 °F)	<b>VT</b> FKM Diaphragm (0/250 °F) <b>SS</b> 316 SS Wetted Materials	

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

\* Options attached to Flying Leads

\*\* Not all options are available for all ranges, consult factory

† Other electrical connections available, consult factory

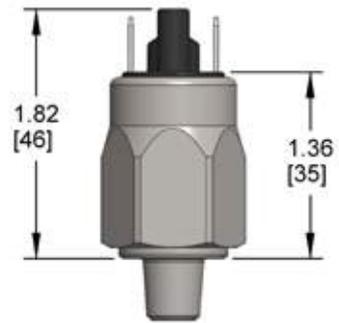
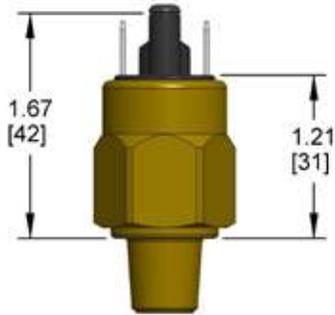
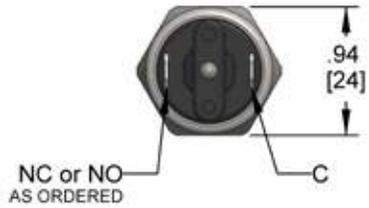
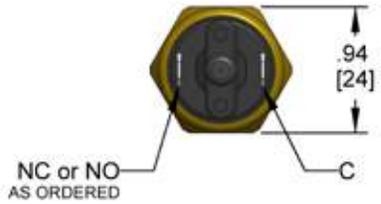
### EXAMPLE

	<b>100H - 2 - 1 - 2/30 - 4 - AU</b>
Series .....	100 High Pressure Series
Switch function.....	SPST, normally closed
Process connection .....	1/8" NPT Male
Switch adjustment range.....	2 psig to 30 psig (9,000 psig)
Electrical connection .....	Spade Terminals (1/4 x 1/32)
Option.....	Gold plated contacts

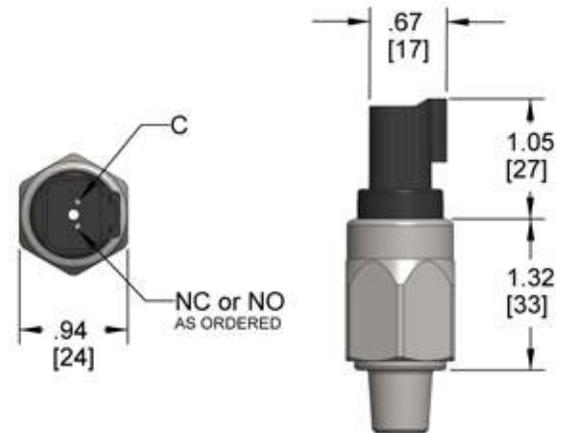
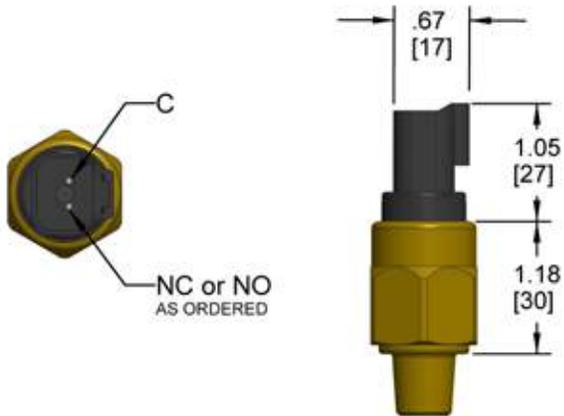
Series	Range	Repeatability
100V	3 - 25 inHg	1 psi or 5% of setpoint
100L	2 - 20 15 - 100 50 - 150	3% of full setpoint range
100H	2 - 30 15 - 200 125 - 600 300 - 2,500 500 - 3,500 3,000 - 6,000	3% of full setpoint range

# Dimensions

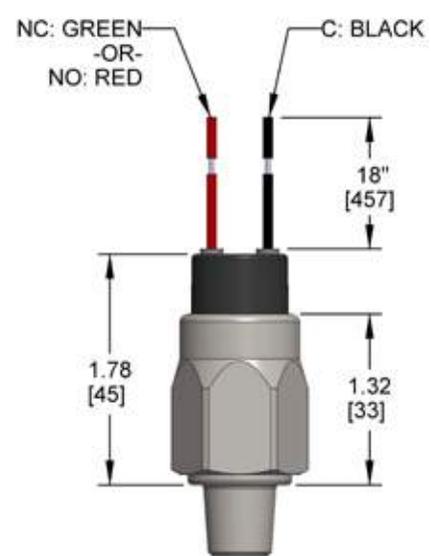
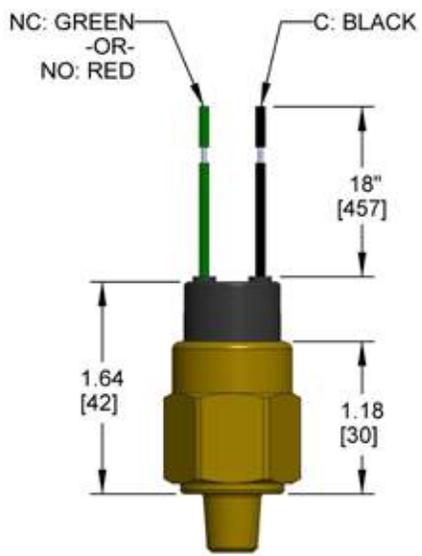
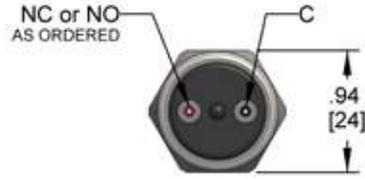
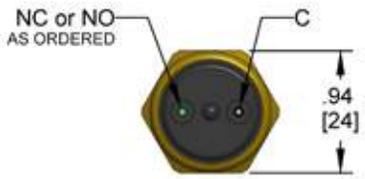
**100V & 100L Spade Terminals      100H Spade Terminals**



**100V & 100L Deutsch 2-Pin      100H Deutsch 2-Pin**



**100V & 100L 18" Flying Leads** **100H 18" Flying Leads**





## 200 SERIES

- Switch adjustment ranges from vacuum through 6,000 psig depending on model
- 200V & 200L: Standard Brass with NBR diaphragm wetted parts, 200H: Standard Zinc-nickel with NBR diaphragm wetted parts
- SPST or SPDT snap-action switch with solid Silver contacts
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

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

### SPECIFICATIONS

<b>Switching parameters</b>	
Function	SPST or SPDT
Contact rating*	5A @ 125/250 Vac 5A @ 12/24 Vdc
Repeatability	See Chart 1 on page 111
Hysteresis	See Chart 2 on page 111
Contact material	Solid Silver, self-cleaning, optional gold-plated
Frequency	Max. 100 cycles/min
Switch type	Snap action
Pressure ranges	-5 inHg to -28 inHg (350 psig) through 1000 psig to 6,000 psig (9,000 psig)
Service life	>1,000,000 load cycles
Temperature ranges	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	Static = 9000 psi (620 bar) Dynamic = 7500 psi (517 bar)
Measuring element	200V: Brass, NBR diaphragm 200L: Brass, NBR diaphragm 200H: Zinc-nickel, NBR diaphragm
Housing material	Zinc-nickel plated Steel
Environmental rating	IP00 - Exposed Terminals IP65 - DIN EN 175301-803 Form A IP69 - M12, Flying Leads & Deutsch Integral
Weight	Approximately 0.2 lb.

\* Gold contacts may be required for less than 12 VDC and 20 milliamps



ORDERING INFORMATION			
<b>SERIES</b>	<b>200V</b> 200 Vacuum Series	<b>200H</b> 200 High Pressure Series	
	<b>200L</b> 200 Low Pressure Series		
<b>SWITCH FUNCTIONS</b>	<b>1</b> SPST, Normally open	<b>3</b> SPDT	
	<b>2</b> SPST, Normally closed		
<b>PROCESS CONNECTIONS</b>	<b>1</b> 1/8" NPT male	<b>31</b> 9/16-18 SAE Male, Non-Adjustable	
	<b>2</b> 1/4" NPT male	<b>33</b> G 1/8B	
	<b>10</b> G 1/4B	<b>45</b> 7/16-20 SAE Male, Non-Adjustable	
<b>200V VACUUM PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>5/25-vac</b> -5 inHg to -25 inHg (350 psig)		
<b>200L LOW PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>3/15</b> 3 psig to 15 psig (350 psig)	<b>15/75</b> 15 psig to 75 psig (350 psig)	
	<b>5/30</b> 5 psig to 30 psig (350 psig)	<b>50/150</b> 50 psig to 150 psig (350 psig)	
<b>200H HIGH PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>10/85</b> 10 psig to 85 psig (9,000 psig)	<b>500/2500</b> 500 psig to 2,500 psig (9,000 psig)	
	<b>65/300</b> 65 psig to 300 psig (9,000 psig)	<b>500/3500</b> 500 psig to 3,500 psig (9,000 psig)	
	<b>125/600</b> 125 psig to 600 psig (9,000 psig)	<b>1000/6000</b> 1,000 psig to 6,000 psig (9,000 psig)	
<b>ELECTRICAL CONNECTIONS†</b>	<b>4</b> Spade Terminals (1/4 x 1/32)	<b>98</b> Weatherpack Shroud, 2-Pin Female**, **	
	<b>8</b> DIN EN 175301-803 Form A	<b>99</b> Weatherpack Shroud, 2-Pin Male**, **	
	<b>34</b> Packard 3-Pin	<b>100</b> Deutsch 2-Pin Male (DT04-2P)*, **	
	<b>46</b> Deutsch Integral 3-Pin (DT04-3P)	<b>101</b> Deutsch 3-Pin Male (DT04-3P)*	
	<b>66</b> Deutsch Integral 2-Pin (DT04-2P)**	<b>103</b> Deutsch 2-Pin Female Socket (DT06-2S)*, **	
	<b>69</b> M12 x 1 3-Pin	<b>104</b> Deutsch 3-Pin Female Socket (DT06-3S)*	
	<b>77</b> 18" Flying Leads	<b>110</b> Weatherpack Tower, 3-Pin Female*	
	<b>78</b> 6-32 Terminal Screws	<b>111</b> Weatherpack Tower, 3-Pin Male*	
	<b>96</b> Weatherpack Tower, 2-Pin Female**, **	<b>112</b> Weatherpack Shroud, 3-Pin Female*	
	<b>97</b> Weatherpack Tower, 2-Pin Male**, **	<b>113</b> Weatherpack Shroud, 3-Pin Male*	
<b>OPTIONS***</b>	<b>AU</b> Gold Plated Contacts	<b>VT</b> FKM Diaphragm (0/250 °F)	
	<b>EP</b> EPDM Diaphragm (-10/250 °F)	<b>KP</b> Polyimide Diaphragm (-40/230 °F)	
	<b>HNBR</b> Low Temp Nitrile Diaphragm (-40/110 °F)	<b>SS</b> 316 SS Wetted Materials	

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

\* Options attached to Flying Leads

\*\* For SPST only

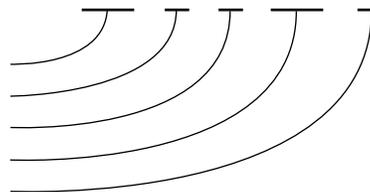
\*\*\* Not all options are available for all ranges, consult factory

† Other electrical connections available, consult the factory

### EXAMPLE

Series .....200 Low Pressure Series  
 Switch function..... SPST, normally open  
 Process connection ..... 1/4" NPT Male  
 Adjustable range ..... 5 psig to 30 psig (350 psig)  
 Electrical connection ..... DIN EN 175301-803 Form A

200L - 1 - 2 - 5/30 - 8



### Chart 1

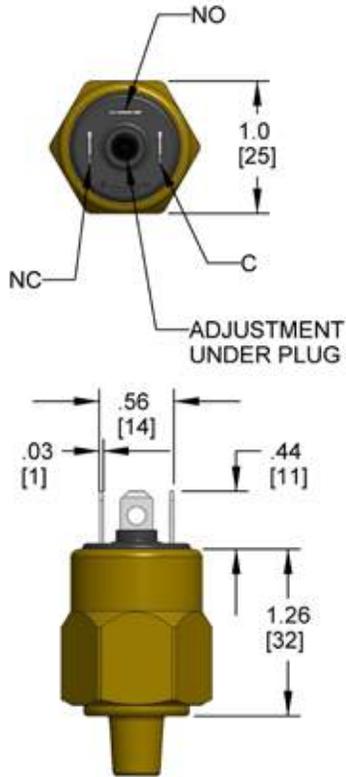
Series	Range	Repeatability
200V	5 - 25 inHg	1 psi or 5% of setpoint
200L	3 - 15	1 psi or 5% of setpoint
	5 - 30	
	15 - 75	
	50 - 150	
200H	10 - 85	2% of full setpoint range
	65 - 300	
	125 - 600	
	500 - 2,500	
	500 - 3,500	
	1,000 - 6,000	

### Chart 2

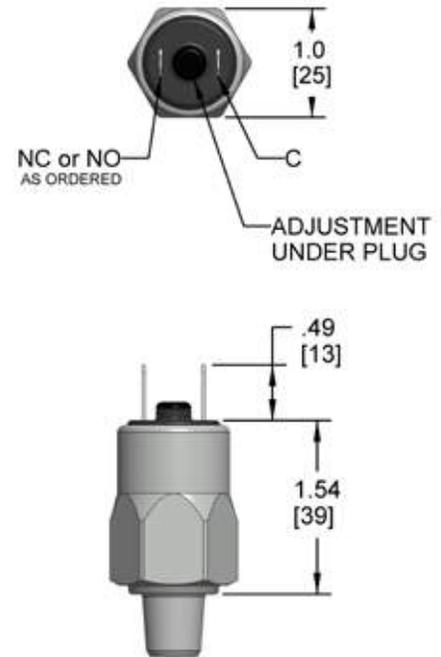
Series	Range	Hysteresis
200V	5 - 25 inHg	4-6 inHg
200L	3 - 15	2-5 psi
	5 - 30	3-7 psi
	15 - 75	4-7 psi
	50 - 150	7-15 psi
200H	10 - 85	1-10 psi
	65 - 300	8-30 psi
	125 - 600	20-80 psi
	500 - 2500	70-300 psi
	500 - 3500	75-300 psi
	1000 - 6000	150-600 psi

# Dimensions

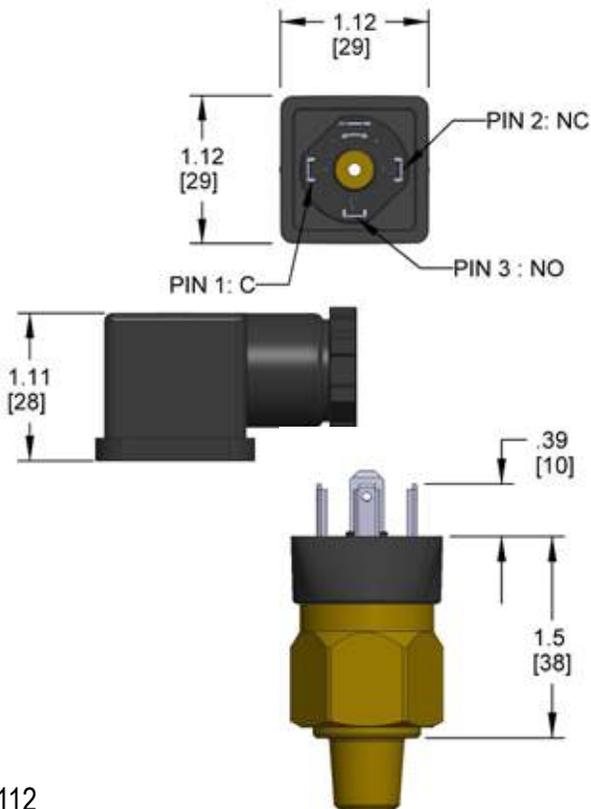
## 200V & 200L Spade Terminals



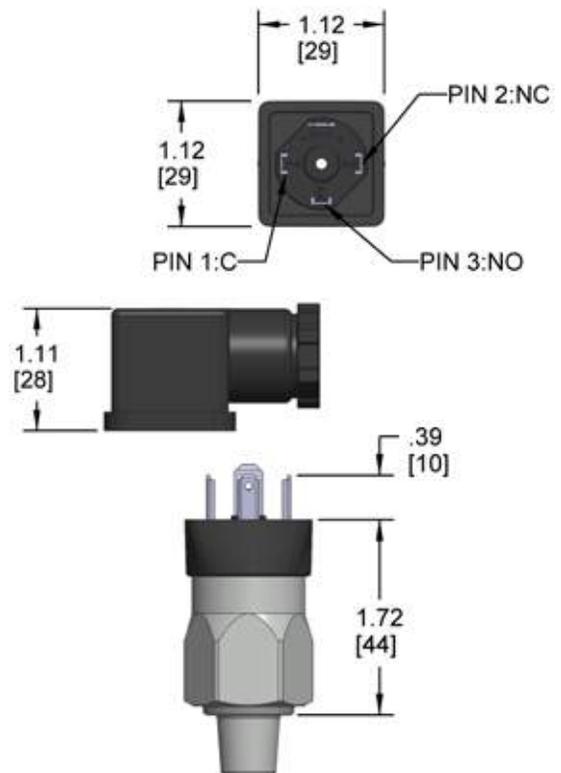
## 200H Spade Terminals



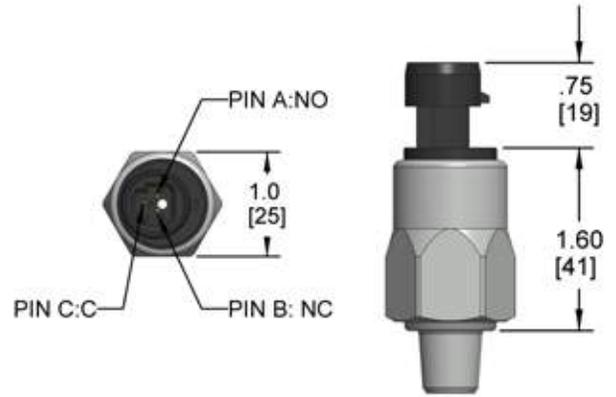
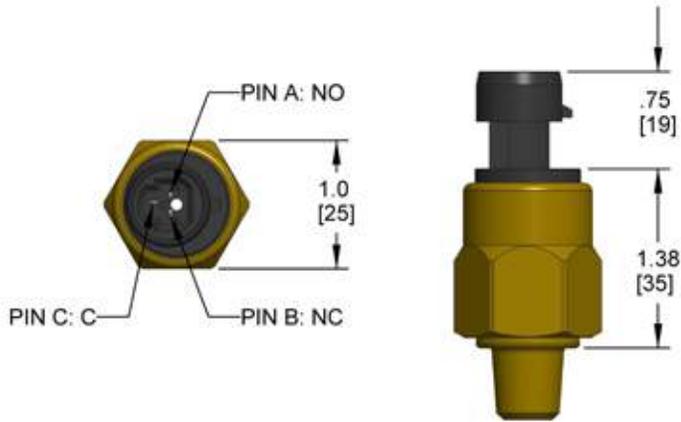
## To 200V & 200L DIN EN 175301-803 Form A



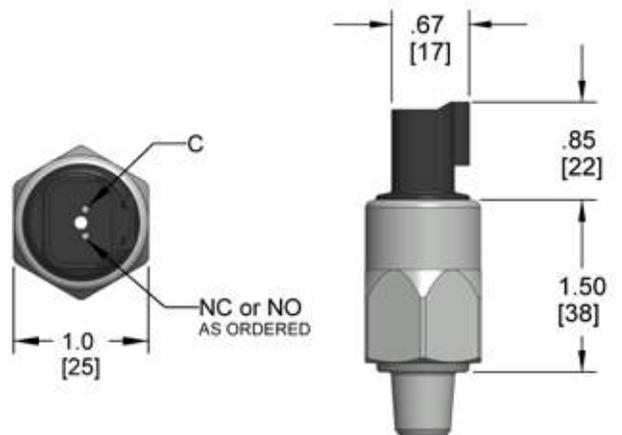
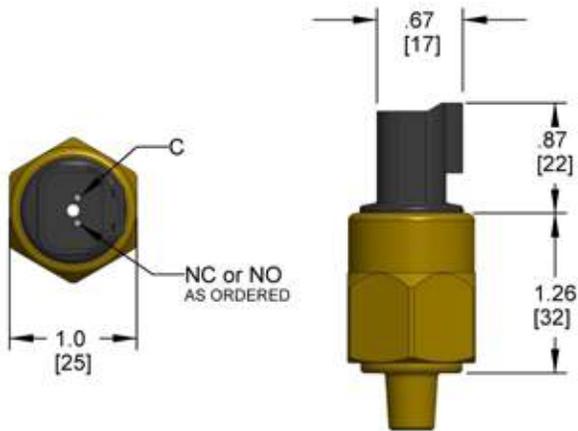
## 200H DIN EN 175301-803 Form A



**200V & 200L Packard 3-Pin      200H Packard 3-Pin**

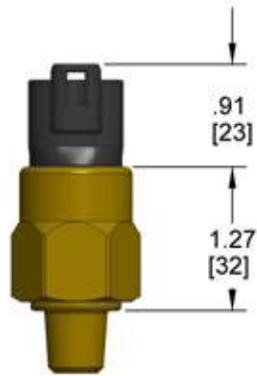
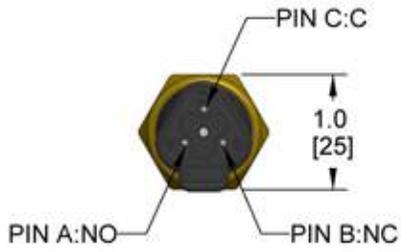


**200V & 200L 2-Pin Deutsch      200H 2-Pin Deutsch**

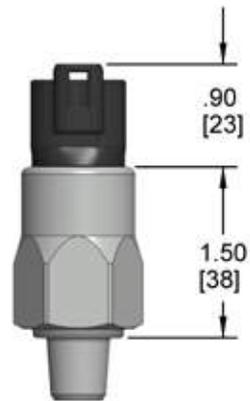
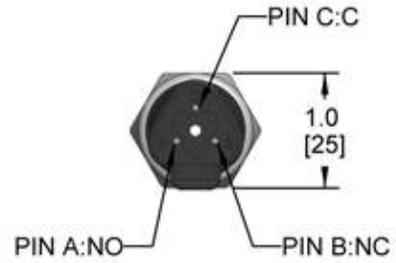


# Dimensions

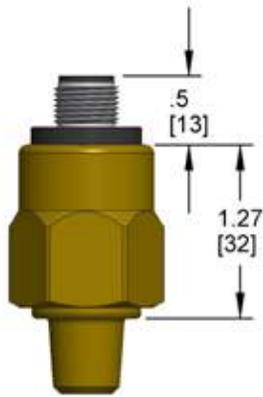
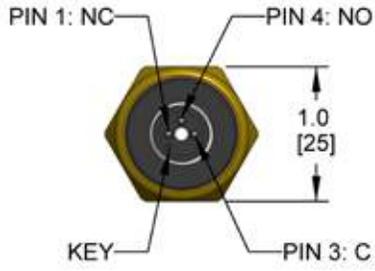
200V & 200L 3-Pin Deutsch



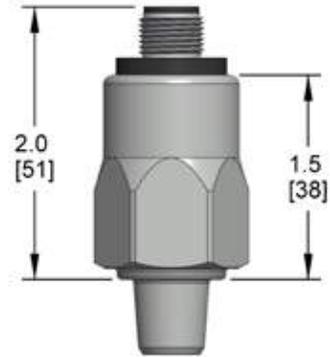
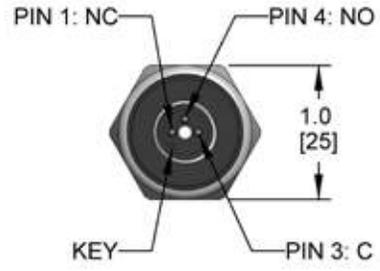
200H 3-Pin Deutsch



200V & 200L M12 x 1 (3-Pin)

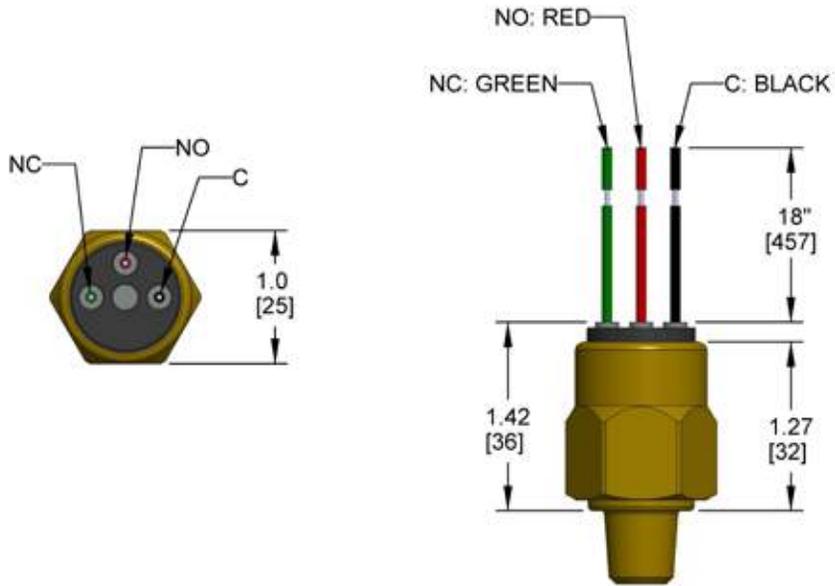


200H M12 x 1 (3-Pin)

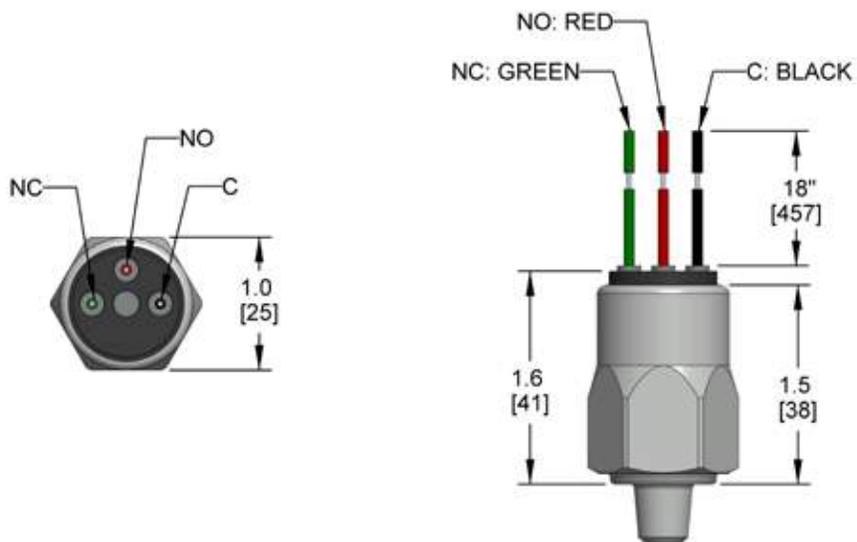


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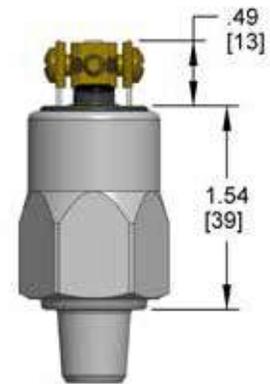
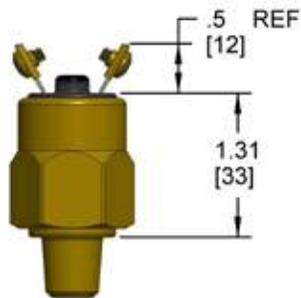
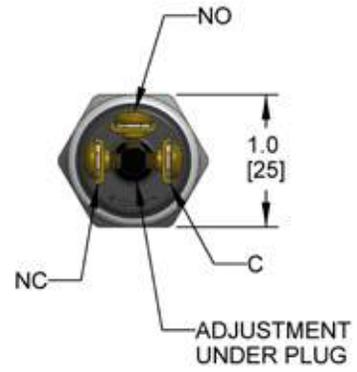
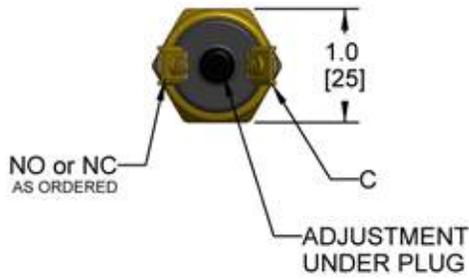
## 200V & 200L 18" Flying Leads



## 200H 18" Flying Leads



**200V & 200 L Terminal Screws** **200H Terminal Screws**





## 300 SERIES

- Switch adjustment ranges from vacuum through 4,600 psig depending on model
- Standard Zinc-nickel with NBR diaphragm wetted parts
- SPST or SPDT snap-action switch with solid Silver contacts
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

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

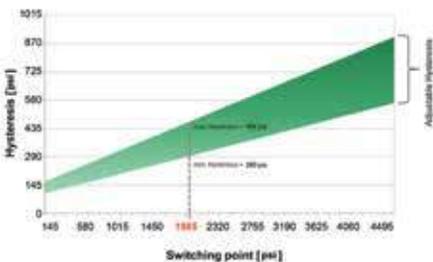
### SPECIFICATIONS

#### Switching parameters

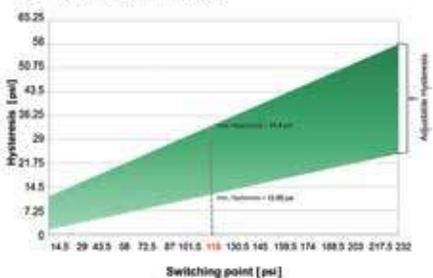
Function	SPST or SPDT
Contact rating	6A @ 125/250 Vac 6A @ 12/24 Vdc
Repeatability	2% of full set point range at 70 °F
Hysteresis	Adjustable, see charts below
Contact material	Solid Silver, self-cleaning
Frequency	Max. 100 cycles/min

Switch type	Snap action with adjustable hysteresis
Pressure ranges	-5 inHg to -28 inHg (350 psig) through 450 psig to 4,600 psig (5,000 psig)
Service life	>1,000,000 load cycles
Temperature ranges	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
Housing material	Zinc-nickel plated Steel
Environmental rating	IP65 - DIN EN 175301-803 Form A IP67 - All others
Weight	Approximately 0.2 lb.

Adjustable Hysteresis (piston type)



Adjustable Hysteresis (membrane type)



ORDERING INFORMATION			
<b>SERIES</b>	<b>300V</b> 300 Vacuum Series <b>300L</b> 300 Low Pressure Series	<b>300H</b> 300 High Pressure Series	
<b>SWITCH FUNCTIONS</b>	<b>1</b> SPST, Normally open <b>2</b> SPST, Normally closed	<b>3</b> SPDT	
<b>PROCESS CONNECTIONS</b>	<b>1</b> 1/8" NPT male <b>2</b> 1/4" NPT male <b>10</b> G 1/4B	<b>33</b> G 1/8B <b>45</b> 7/16-20 SAE Male, Non-Adjustable	
<b>300V VACUUM PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>5/28-vac</b> -5 inHg to -28 inHg (350 psig)		
<b>300L LOW PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>3/7</b> 3 psig to 7 psig (870 psig) <b>3/15</b> 3 psig to 15 psig (870 psig) <b>3/30</b> 3 psig to 30 psig (870 psig) <b>7/70</b> 7 psig to 70 psig (870 psig)	<b>7/120</b> 7 psig to 120 psig (870 psig) <b>15/200</b> 15 psig to 200 psig (870 psig) <b>15/230</b> 15 psig to 230 psig (870 psig) <b>30/290</b> 30 psig to 290 psig (870 psig)	
<b>300H HIGH PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	<b>100/220</b> 100 psig to 220 psig (5,000 psig) <b>145/435</b> 145 psig to 435 psig (5,000 psig) <b>145/1160</b> 145 psig to 1,160 psig (5,000 psig) <b>145/1750</b> 145 psig to 1,750 psig (5,000 psig)	<b>145/2320</b> 145 psig to 2,320 psig (5,000 psig) <b>300/2900</b> 300 psig to 2,900 psig (5,000 psig) <b>300/3600</b> 300 psig to 3,600 psig (5,000 psig) <b>450/4600</b> 450 psig to 4,600 psig (5,000 psig)	
<b>ELECTRICAL CONNECTIONS†</b>	<b>1</b> 36" Cable attached to option 8 <b>8</b> DIN EN 175301-803 Form A <b>25</b> M12 x 1 4-Pin <b>36</b> 3' Integral Cable <b>66</b> Deutsch Integral 2-Pin (DT04-2P)** <b>96</b> Weatherpack Tower, 2-Pin Female*, ** <b>97</b> Weatherpack Tower, 2-Pin Male*, ** <b>98</b> Weatherpack Shroud, 2-Pin Female*, ** <b>99</b> Weatherpack Shroud, 2-Pin Male*, **	<b>100</b> Deutsch 2-Pin Male (DT04-2P)*, ** <b>101</b> Deutsch 3-Pin Male (DT04-3P)* <b>103</b> Deutsch 2-Pin Female Socket (DT06-2S)*, ** <b>104</b> Deutsch 3-Pin Female Socket (DT06-3S)* <b>110</b> Weatherpack Tower, 3-Pin Female* <b>111</b> Weatherpack Tower, 3-Pin Male* <b>112</b> Weatherpack Shroud, 3-Pin Female* <b>113</b> Weatherpack Shroud, 3-Pin Male*	
<b>OPTIONS***</b>	<b>EP</b> EPDM Diaphragm (-10/250 °F) <b>HNBR</b> Low Temp Nitrile Diaphragm (-40/110 °F)	<b>VT</b> FKM Diaphragm (0/250 °F) <b>SS</b> 316 SS Wetted Materials	

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

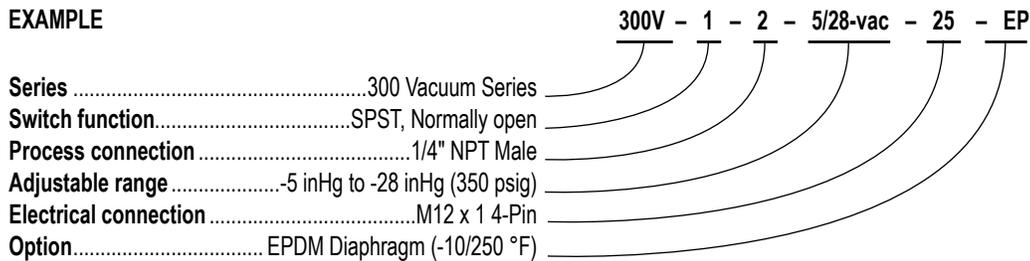
\* Options attached to 18" cable

\*\* For SPST only

\*\*\* Not all options are available for all ranges, consult factory

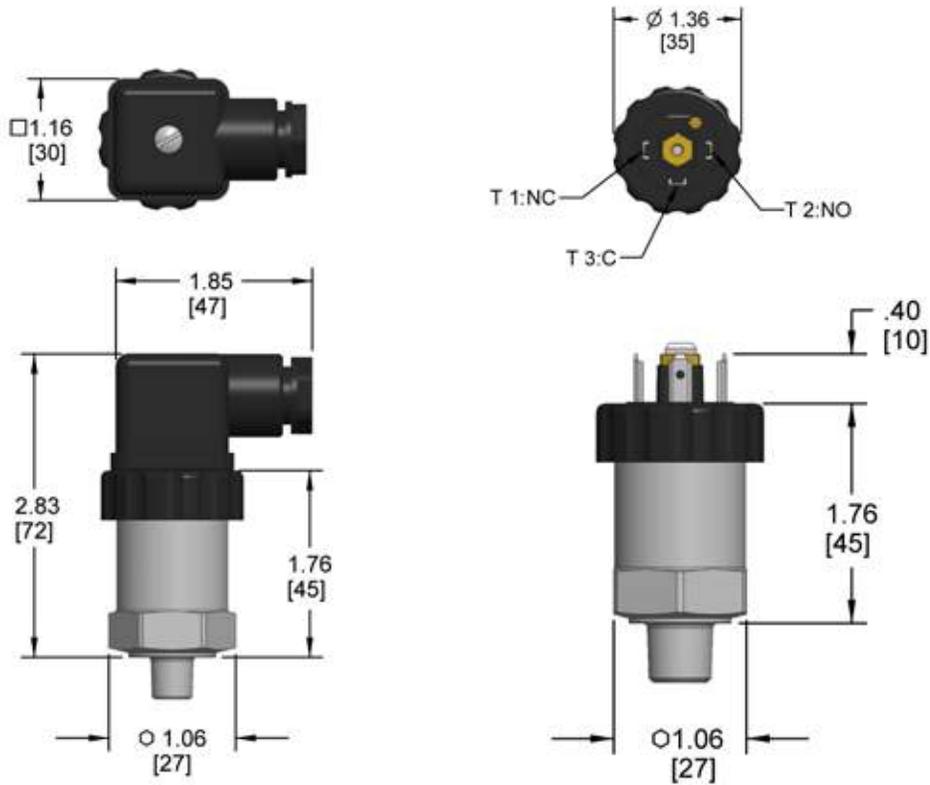
† Other electrical connections available, consult the factory

**EXAMPLE**

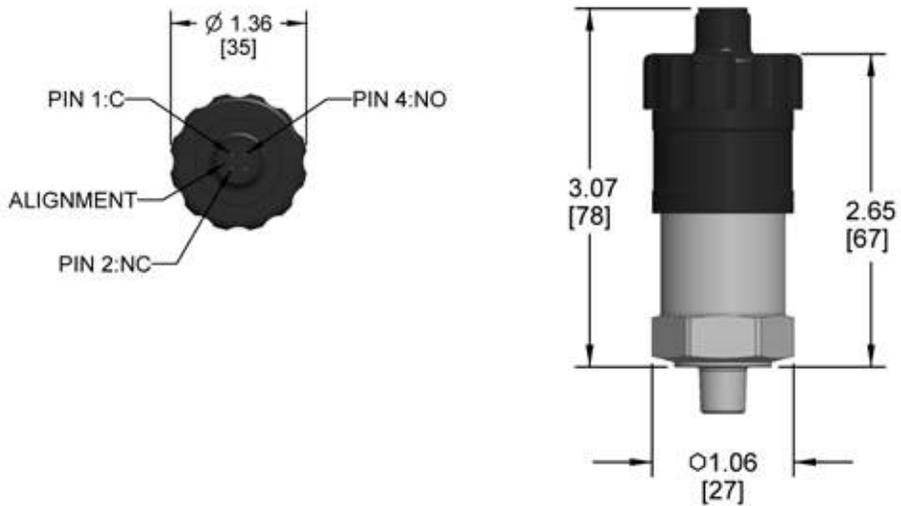


# Dimensions

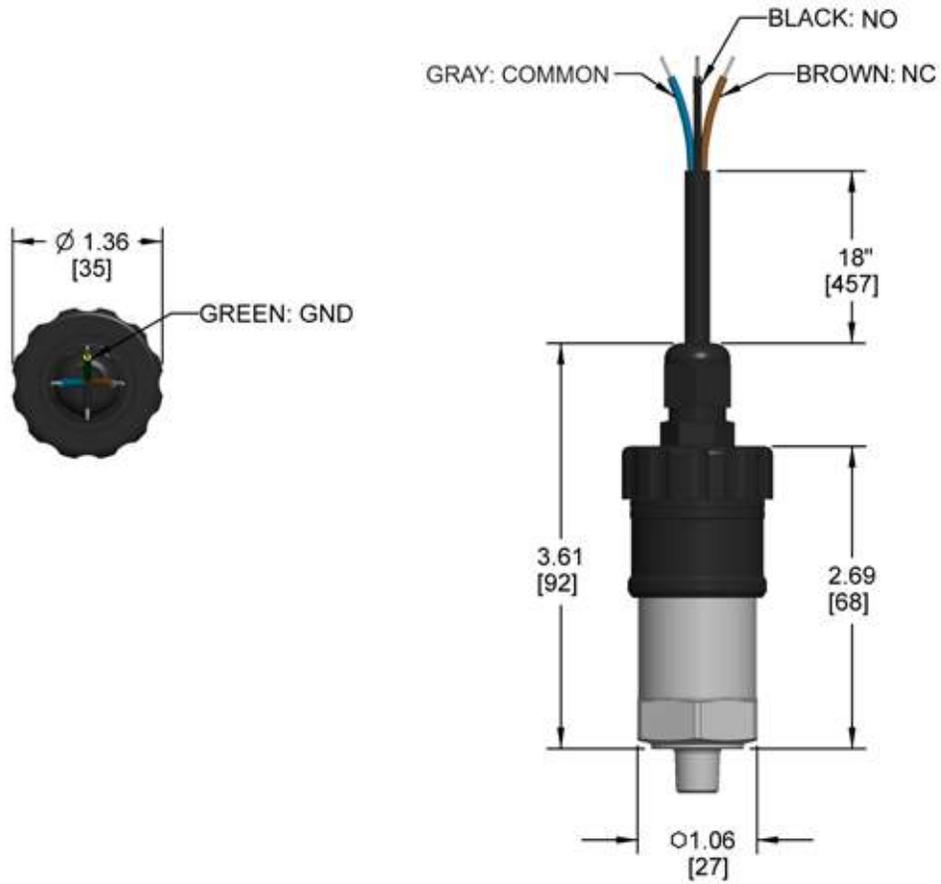
## DIN EN 175301-803 Form A



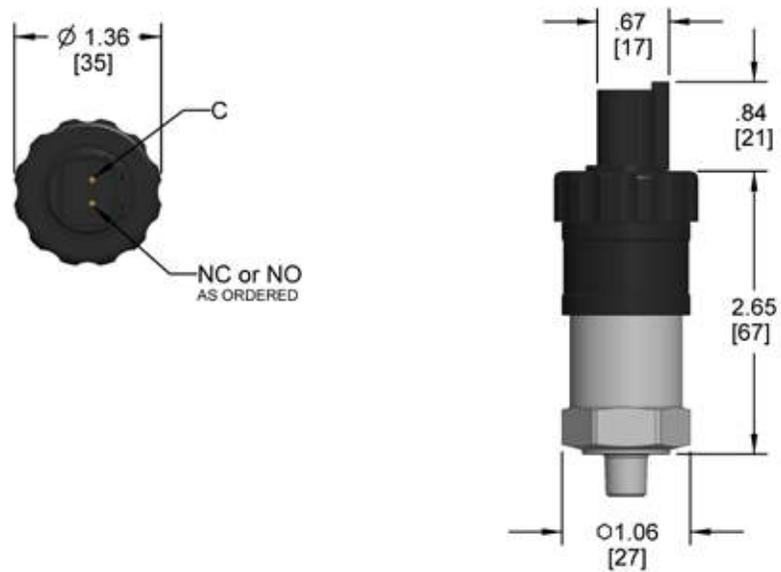
## M12 x 1 4-Pin



**300H 3' Integral Cable**



**300H Deutsch Integral 2-Pin (DT04-2P)**





## 400 SERIES

- Switch adjustment ranges from vacuum through 4,600 psig depending on model
- Standard zinc-plated Steel with NBR diaphragm (< 225 psig); Steel piston with NBR seal (> 225 psig) wetted parts
- SPDT snap-action switch
- CE compliant to suppress RFI, EMI and ESD
- RoHS compliant

### APPLICATIONS

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

### SPECIFICATIONS

<b>Switching parameters</b>	
Function	SPST or SPDT snap-action micro switch
Contact rating	6A @ 125/250 Vac 6A @ 12/24 Vdc
Repeatability	±2% of full scale of adjustment range
Hysteresis	Diaphragm type, 1% to 11% of adjustment range full scale Piston type, 2% to 8% of adjustment range full scale
Contact material	Solid Silver, self-cleaning
Frequency	Max. 200 cycles/min.
Pressure ranges	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
Service life	>1,000,000 load cycles
Temperature ranges	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)
Proof pressure	300 psi or 5,000 psi depending on adjustment range
Measuring element	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
Housing material	Zinc die-cast
Environmental rating	IP65 for DIN EN 175301-803 Form A IP67 for M12 x 1
Electromagnetic rating	CE compliant to EU Standard 73/23/EWG RFI, EMI and ESD protection
Shock	30 g's according to IEC 60068-2-27
Vibration	10 g's according to IEC 60068-2-6
Weight	Approximately 0.66 lb.



ORDERING INFORMATION			
<b>SERIES</b>	<b>400V</b> 400 Vacuum Series	<b>400H</b> 400 High Pressure Series	
	<b>400L</b> 400 Low Pressure Series		
<b>SWITCH FUNCTION</b>	3 Single Pole Double Throw (SPDT)		
<b>PROCESS CONNECTIONS</b>	2 1/4" NPT male	19 G 1/4 B female	
	5 1/4" NPT female	45 7/16-20 SAE Male, Non-Adjustable	
	10 G 1/4 B male		
<b>400V VACUUM PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	5/28-vac -5 inHg to -28 inHg (350 psig)		
<b>400L LOW PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	3/30 3 psig to 30 psig (870 psig)	15/230 15 psig to 230 psig (870 psig)	
	7/120 7 psig to 120 psig (870 psig)		
<b>400H HIGH PRESSURE SWITCH ADJUSTMENT RANGES (Max. working pressure)</b>	145/435 145 psig to 435 psig (5,000 psig)	300/2900 300 psig to 2,900 psig (5,000 psig)	
	145/1160 145 psig to 1,160 psig (5,000 psig)	300/3600 300 psig to 3,600 psig (5,000 psig)	
	145/1750 145 psig to 1,750 psig (5,000 psig)	450/4600 450 psig to 4,600 psig (5,000 psig)	
	145/2320 145 psig to 2,320 psig (5,000 psig)		
<b>ELECTRICAL CONNECTIONS†</b>	1 DIN EN 175301-803 Form A w/ 36" Cable	25 M12 x 1 4-Pin*	
	8 DIN EN 175301-803 Form A	46 DIN EN 175301-803 Form A with LED Status Indicator	
<b>OPTIONS</b>	EP EPDM Diaphragm (-40/212 °F)	VT FKM Diaphragm (0/212 °F)	
	HNBR Low Temp NBR Diaphragm (-40/176 °F)		

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

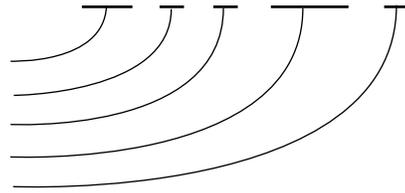
\* Available in adjustment ranges to 225 psig

† Other electrical connections available, consult factory

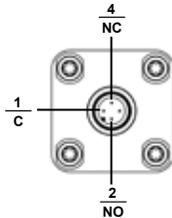
**EXAMPLE**

Series .....400 Vacuum Series  
 Switch function.....Single pole double throw  
 Process connection ..... 1/4" NPT Male  
 Adjustable range .....-5 inHg to -28 inHg (350psig)  
 Electrical connection ..... DIN EN 175301-803 Form A

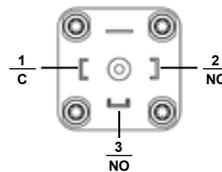
**400V - 3 - 2 - 5/28-vac - 8**



**Switch Wiring Diagrams**



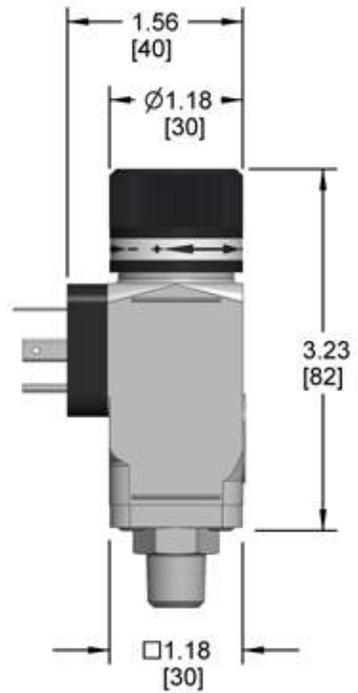
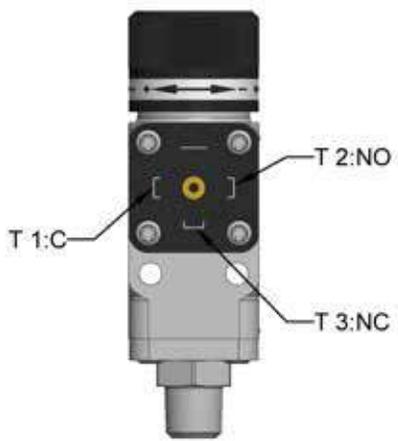
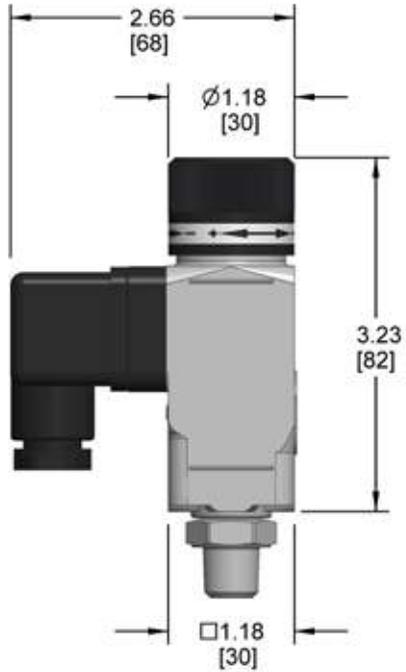
**M12x1 (4-Pin)**



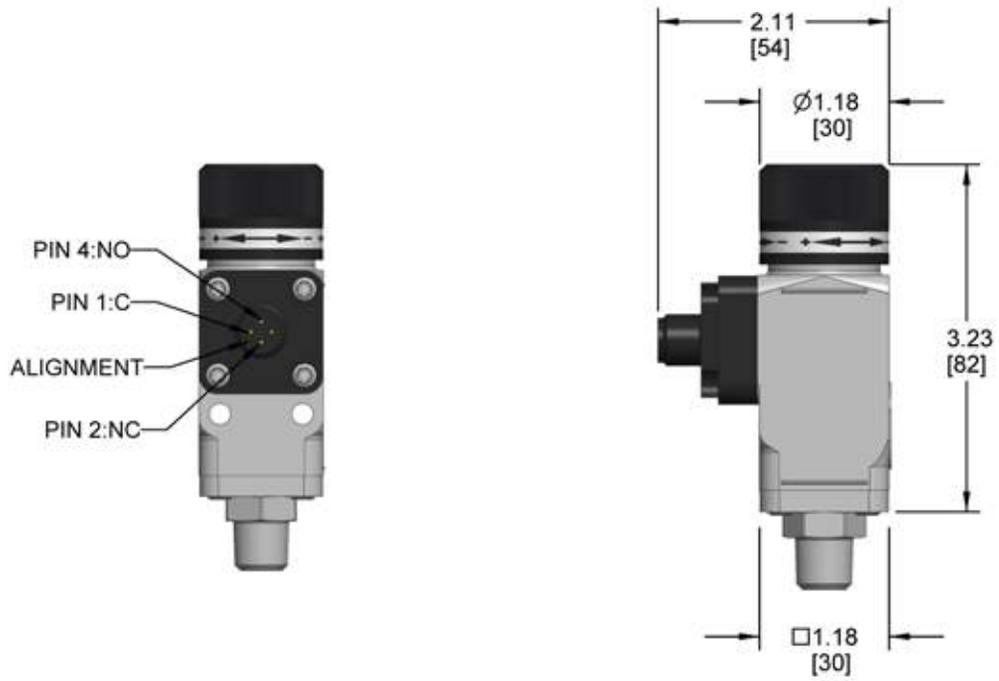
**DIN EN 175301-803 Form A**

# Dimensions

DIN EN 175301-803 Form A



M12 x 1 4-Pin



## 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.

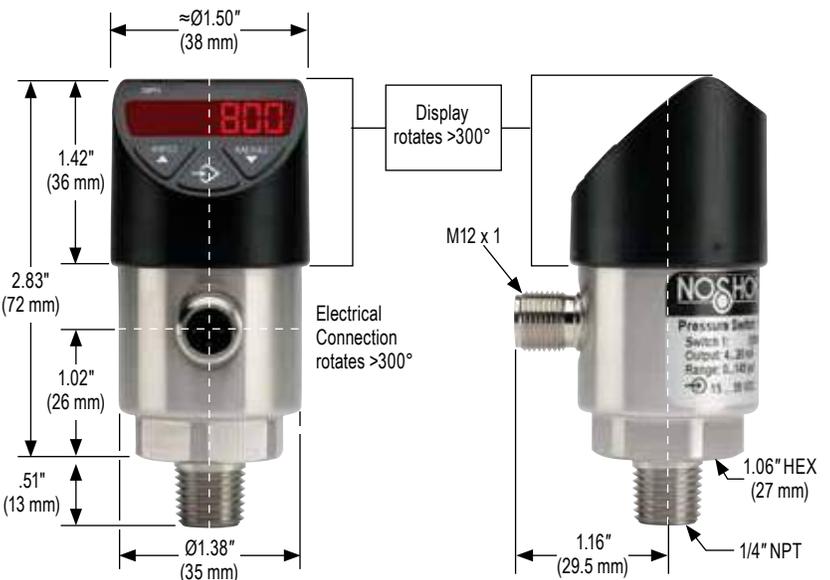
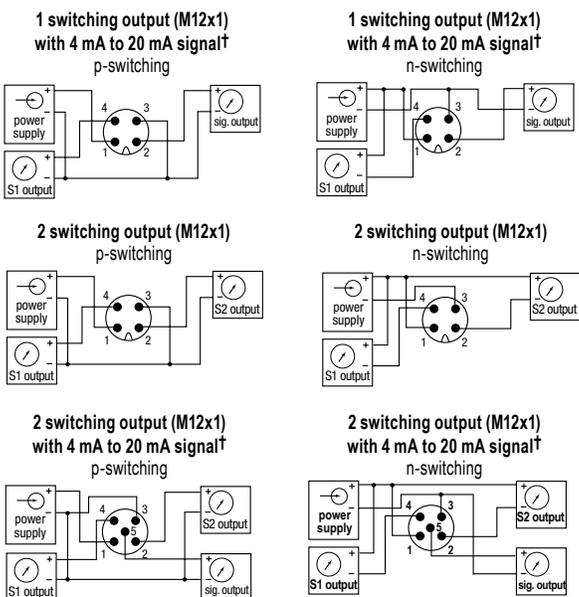
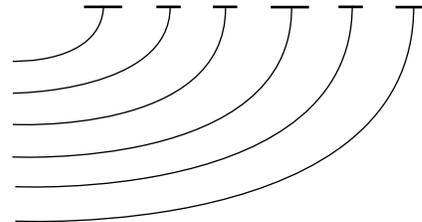
\* Available only with a M12 x 1 (5-pin) connector

\*\* 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

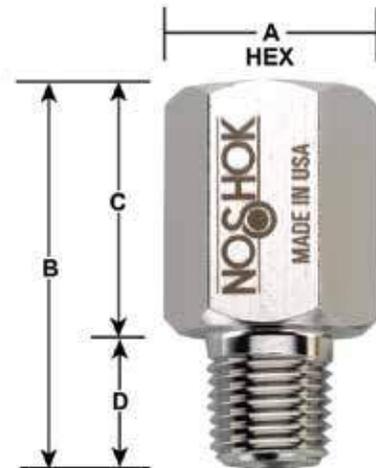
Piston-Type Snubbers Specifications

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"



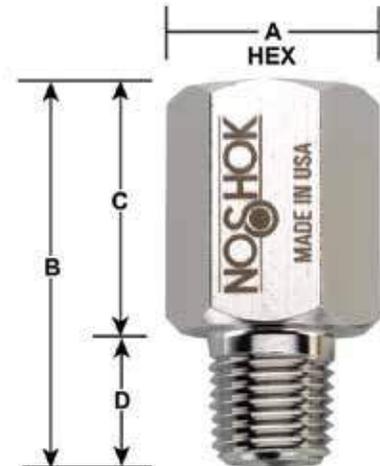
Sintered Snubbers

### 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

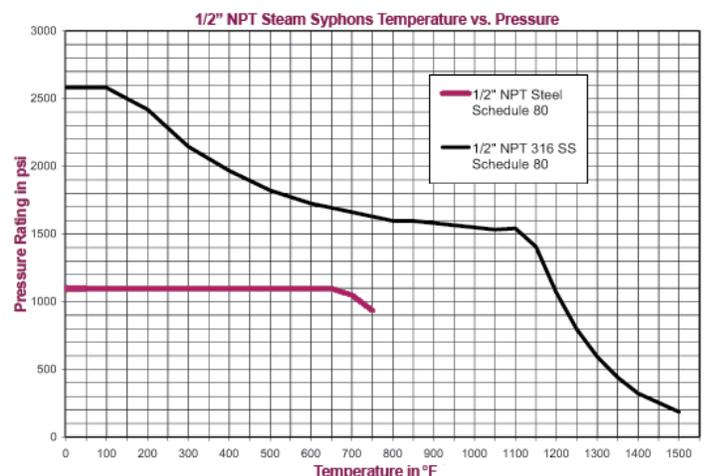
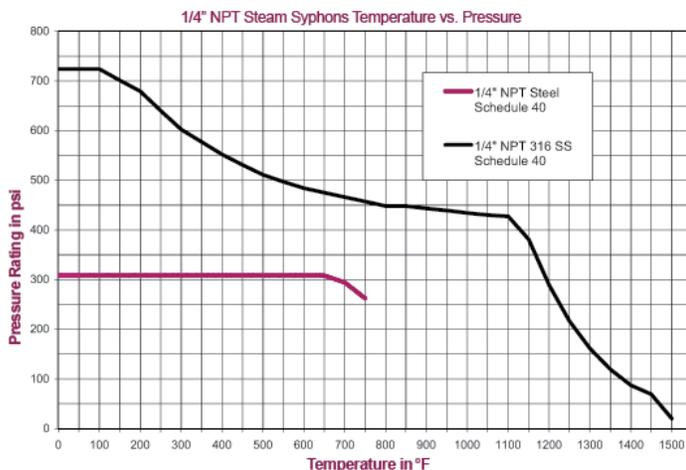


### Product Specifications

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:

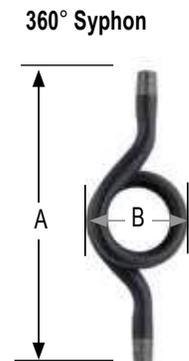
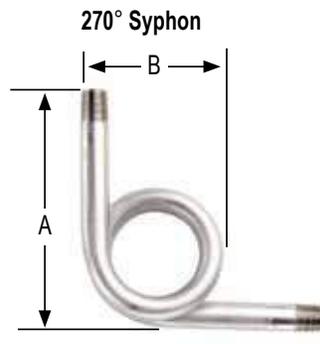
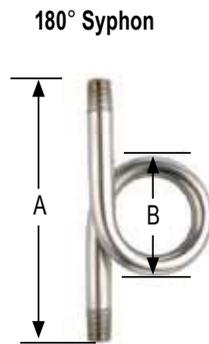
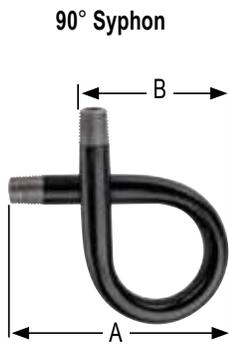


**WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

For products shown that are composed of Stainless Steel:



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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

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:**

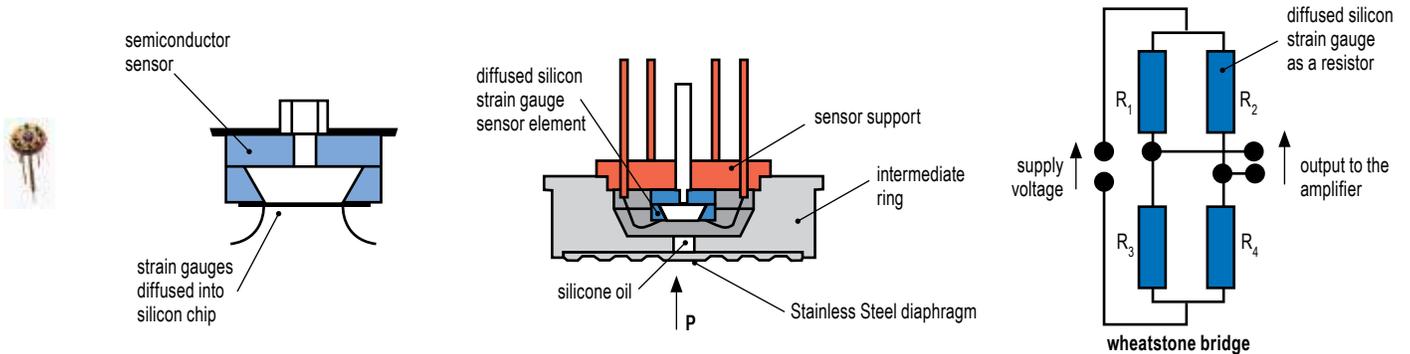
Process pulsation can occur around the discharge of pumps as well as quick operating valves. Many users assume that liquid filling a pressure gauge will fully address pulsation. Although a liquid filled gauge helps to dampen the effects of pulsation, it often does not fully address this process condition. 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:**

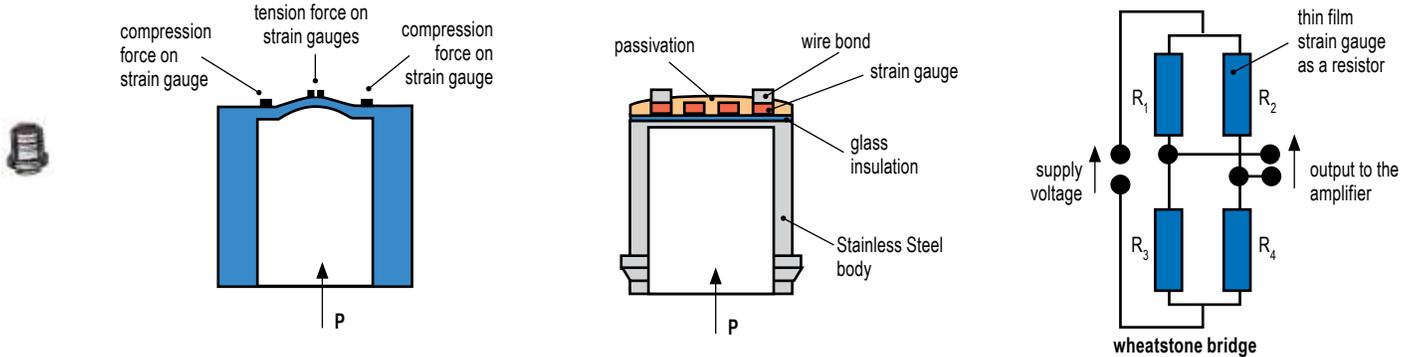
Temperature, vibration and pulsation are three process conditions that adversely affect a pressure gauge. Being aware of these three process conditions, and taking the necessary steps to address them, can help minimize accuracy errors and add to the service life of the pressure gauge.

## NOSHOK Transducer and Transmitter Pressure Sensing Technologies

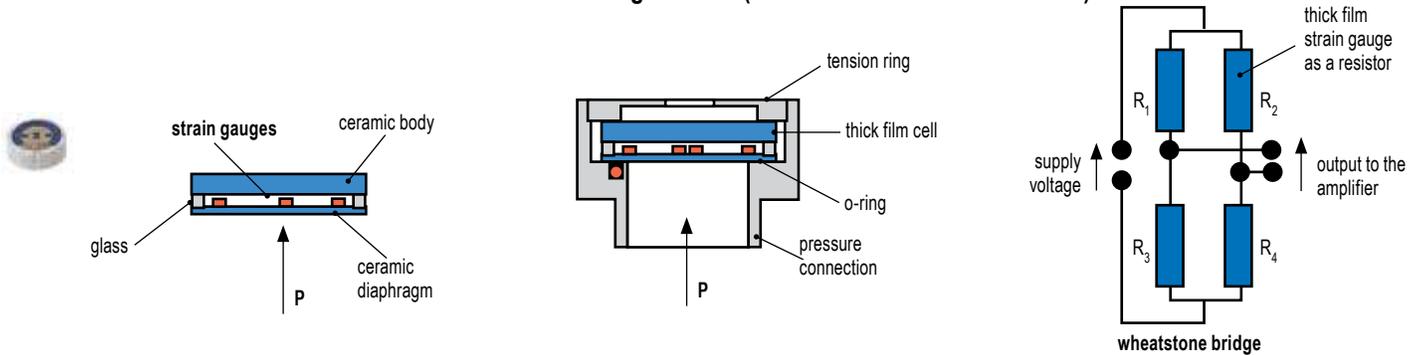
**Diffused Silicon Semiconductor Strain Gauge Sensor (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640 and 650 Series - ranges up to 0 psi to 300 psi)**



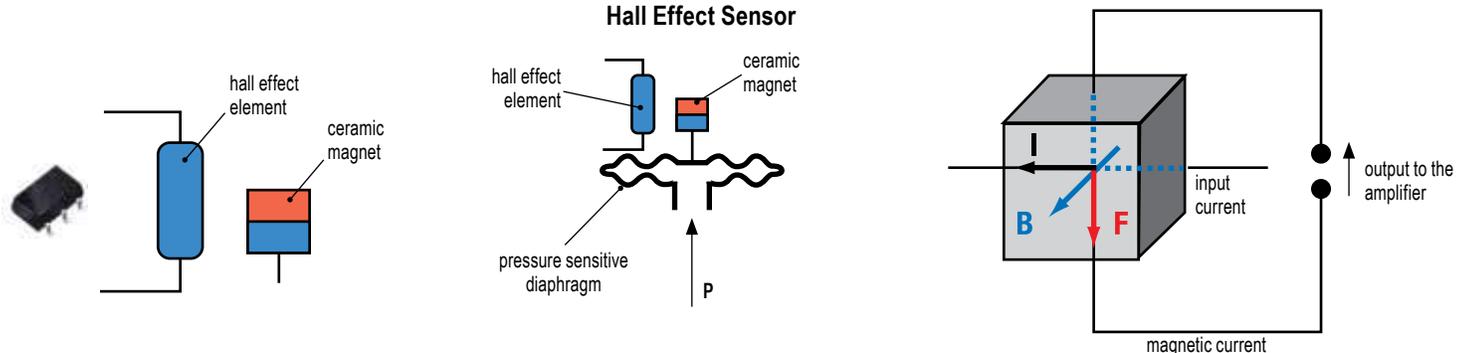
**Sputtered Thin Film Strain Gauge Sensor (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640, 650, 660, 800/810 Series - ranges 0 psi to 500 psi and higher)**

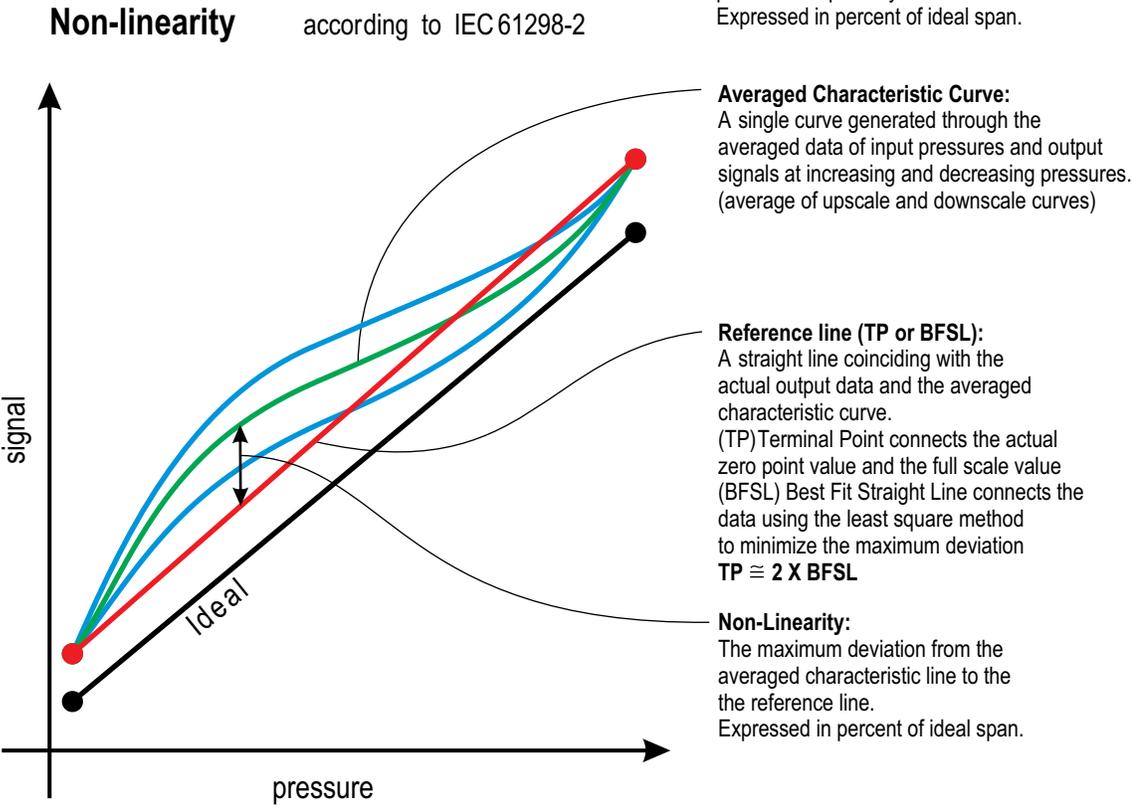
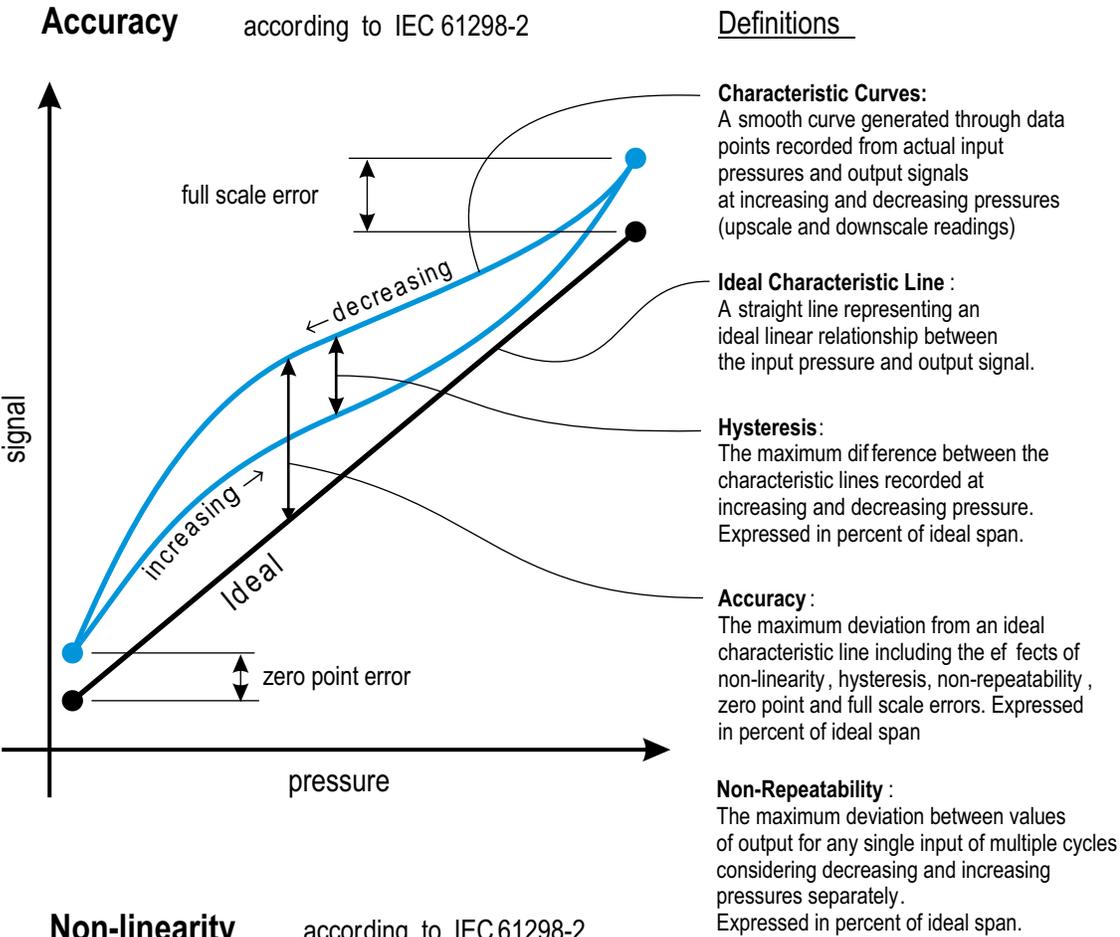


**Ceramic Thick Film Strain Gauge Sensor (used in 800/810 and 1000 Series)**

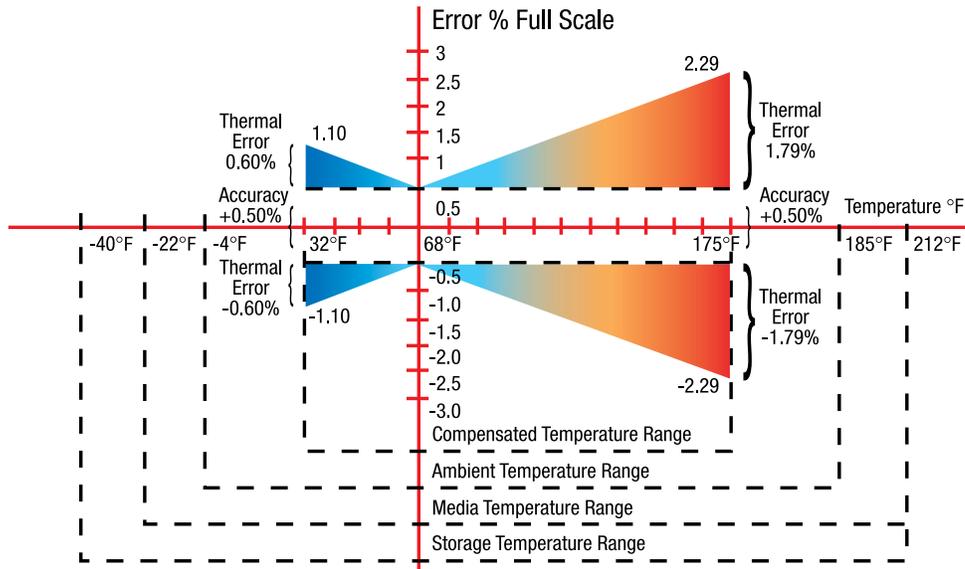


### Hall Effect Sensor





## 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.

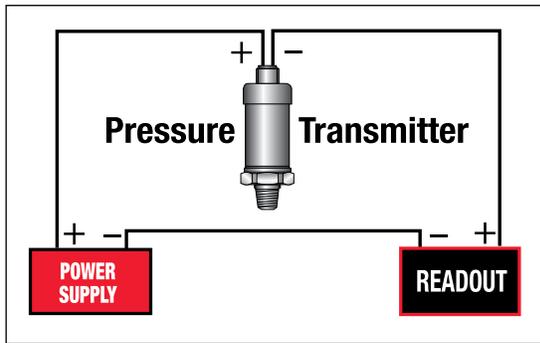
The **Compensated Temperature Range** is the thermal band over which the effect specification is guaranteed. For the 100 series, the coefficient is  $\pm 0.0167\%$  full scale per  $^{\circ}\text{F}$ . This means that over the compensated temperature range the thermal boundaries are straight lines as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

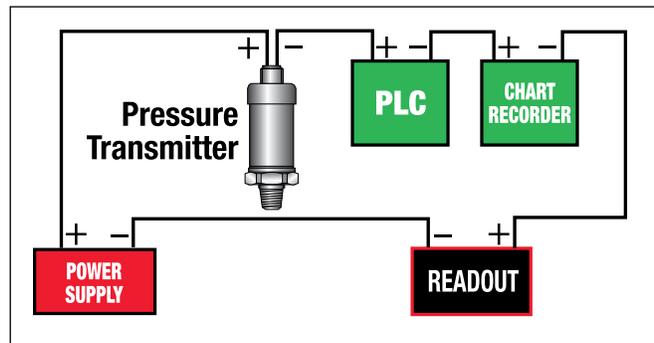
The **Media Temperature Range** is the maximum and minimum ratings of the media at the process connection.

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.

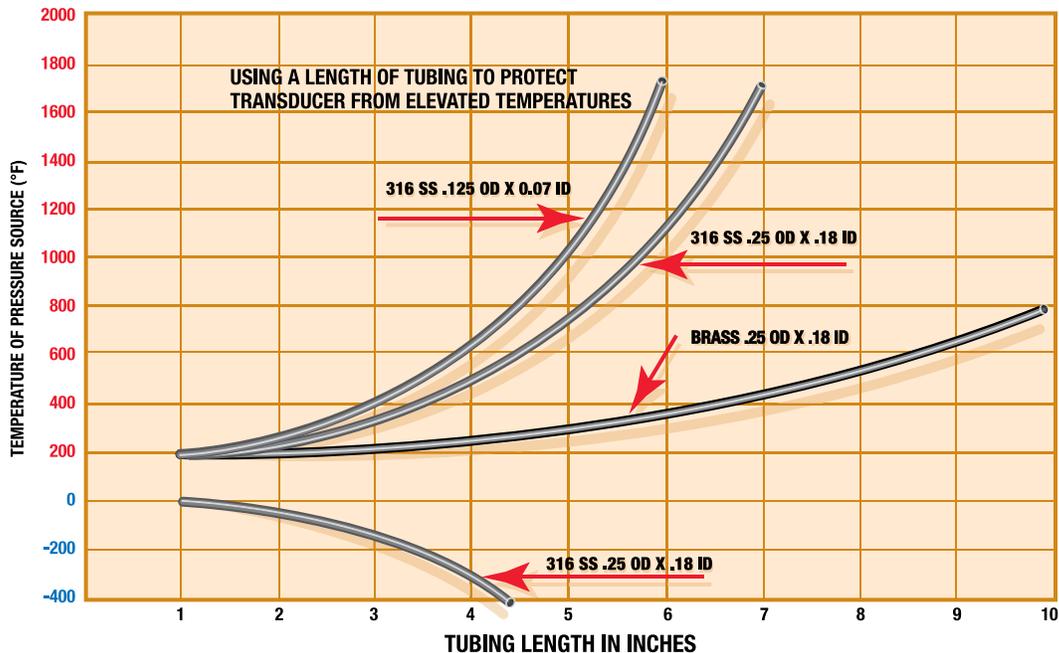
Load Limitations 4 mA to 20 mA output
$V_{min} = 10V + (.020 \times R_L)$
$R_L = \text{Loop resistance } (\Omega)$
$R_L = R_S + R_W$
$R_S = \text{Sensor resistance } (\Omega)$
$R_W = \text{Wire Resistance } (\Omega)$

## 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

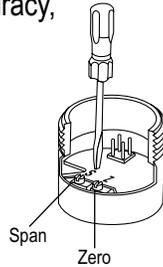
**Installation:** NOSHOK pressure transmitters/transducers may be mounted in any plane with negligible effect on performance. Although these units are designed and manufactured to withstand substantial shock and vibration, it is recommended that they be mounted in an area of minimal vibration. Always 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.

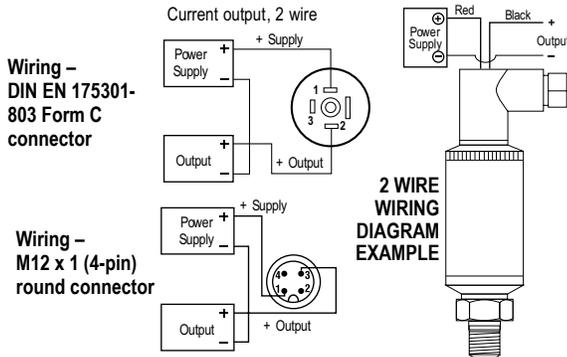
## Alignment Procedure

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



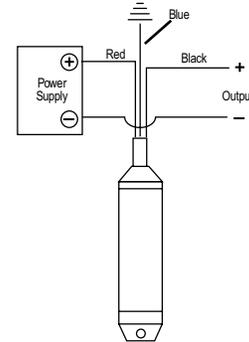
**2 WIRE  
WIRING  
DIAGRAM  
EXAMPLE**

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

100 Series	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black
4 or 6-Pin Bayonet (2 or 3)	A	B
1/2" NPT Conduit w/ Cable (6)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Red	Black

## SERIES 612 & 613

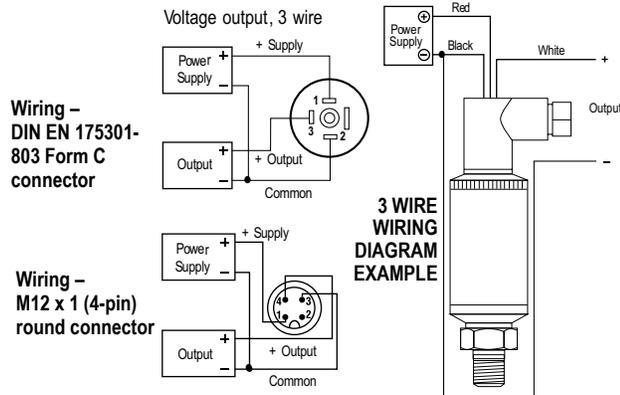
### 2 WIRE WIRING DIAGRAM EXAMPLE



**Load Limitations**  
4 mA to 20 mA Output Only  
 $V_{min} = [10V + (.020 \times R_L)] - RC$   
 $R_L = R_S + R_W$   
 $R_L$  = Loop Resistance (ohms)  
 $R_S$  = Sense Resistance (ohms)  
 $R_W$  = Wire Resistance (ohms)  
 $RC = 0.0435 \times \text{cable length (ft.)}$

612 & 613 Series	4 mA to 20 mA		
CONNECTION TYPE (CODE)	V+	V-	CASE GROUND
PUR Cable	Brown	Green	Gray
FEP Cable	Brown	White	Blue

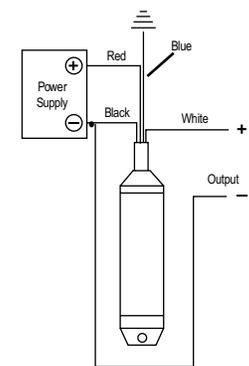
## SERIES 200



**3 WIRE  
WIRING  
DIAGRAM  
EXAMPLE**

200 Series	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black	White
4 or 6-Pin Bayonet (2 or 3)	A	B	C
1/2" NPT Conduit w/ Cable (6)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Red	Black	White

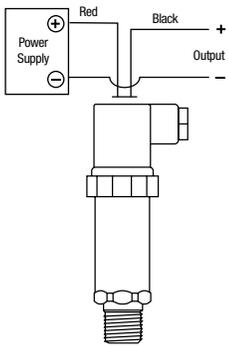
### 3 WIRE WIRING DIAGRAM EXAMPLE



**Load Limitations**  
4 mA to 20 mA Output Only  
 $V_{min} = [10V + (.020 \times R_L)] - RC$   
 $R_L = R_S + R_W$   
 $R_L$  = Loop Resistance (ohms)  
 $R_S$  = Sense Resistance (ohms)  
 $R_W$  = Wire Resistance (ohms)  
 $RC = 0.0435 \times \text{cable length (ft.)}$

612 & 613 Series	0-5 Vdc, 0-10 Vdc, 0.5 to 2.5 Vdc			
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT	CASE GROUND
PUR Cable	Brown	Green	White	Gray
FEP Cable	Brown	Green	White	Gray

## SERIES 615/616



2 WIRE WIRING  
DIAGRAM EXAMPLE

### Load Limitations

#### 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

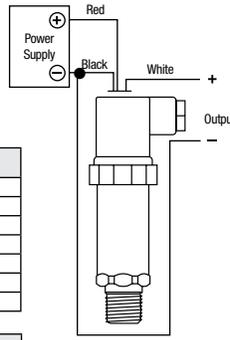
$$R_L = \text{Loop Resistance } (\Omega s)$$

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

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

615 & 616 Series (2-wire)	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form A (8 or 14)	1	2
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black
6-Pin Bayonet (3)	A	B
1/2" NPT Conduit w/ Cable (6)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Red	Black

615 & 616 Series (3-wire)	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form A (8 or 14)	1	2	3
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black	White
6-Pin Bayonet (3)	A	B	C
1/2" NPT Conduit w/ Cable (6)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Red	Black	White

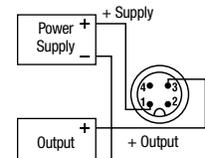


3 WIRE WIRING  
DIAGRAM EXAMPLE

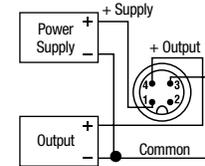
## SERIES 640

### 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

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

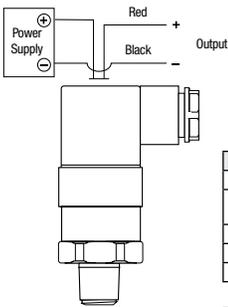
$$R_L = R_S + R_W$$

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

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

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

## SERIES 300



2 WIRE WIRING  
DIAGRAM EXAMPLE

### Load Limitations

#### 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

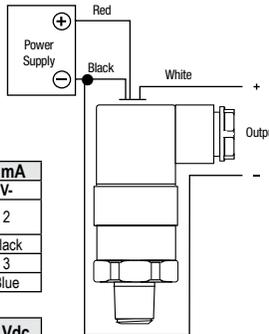
$$R_L = \text{Loop Resistance } (\Omega s)$$

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

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

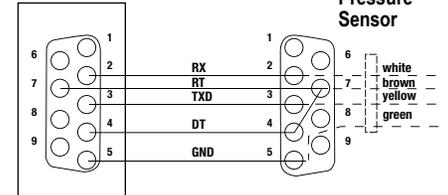
300 Series (2-wire)	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form A (8 or 14), DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Brown	Blue

300 Series (3-wire)	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form A (8 or 14), DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form A w/ Cable (1)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Brown	Blue	Black



3 WIRE WIRING  
DIAGRAM EXAMPLE

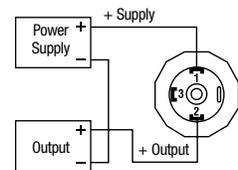
### RS 232 Interface



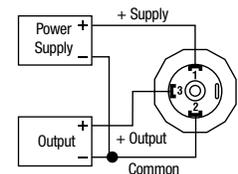
### Pressure Sensor

## 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

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

$$R_L = R_S + R_W$$

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

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

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

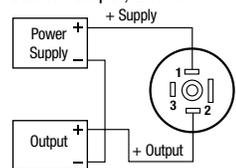
800 Series	4 mA to 20 mA 2-wire
V+	Red/1
Output	Black/2

800 Series	Voltage Output, 3-wire
V+	Red/1
Common	Black/2
Output	White/3

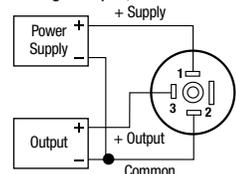
## SERIES 660

### Wiring - DIN EN 175301-803 Form C connector

#### Current output, 2 wire



#### Voltage output, 3 wire



### Load Limitations

#### 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

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

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

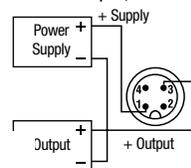
$$R_W = \text{Wire Resistance } (\Omega s)$$

660 Series (2-wire)	4 mA to 20 mA	
CONNECTION TYPE (CODE)	V+	V-
DIN EN 175301-803 Form C (7)	1	2
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black
M12 x 1, 4-Pin (25)	1	3
Integral Cable (36)	Brown	Green

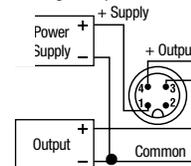
660 Series (3-wire)	1-5 Vdc, 0.1-10 Vdc		
CONNECTION TYPE (CODE)	V+	COMMON	OUTPUT
DIN EN 175301-803 Form C (7)	1	2	3
DIN EN 175301-803 Form C w/ Cable (1)	Red	Black	White
M12 x 1, 4-Pin (25)	1	3	4
Integral Cable (36)	Brown	Green	White

### 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 DIN EN 175301-803 Form A 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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