

# 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 **Three Year Warranty** applies to our 300, 500, 660, 760, and 900 Series liquid filled gauges; 10 and 20 Series liquid filled sanitary gauges; 1000 Series digital gauge; 1000, 1100, 1200, and 1300 Series liquid filled differential gauges; 100, 200, 300, 612, 613, 615/616, 621/622, 623/624, 625/626, 627, 640, 650, 660 and 800 Series transmitters & transducers; and 500, 800, 810 Series electronic switch products.

Our **One Year Warranty** applies to our 100, 200, 400, 640, 740, and 800 Series dry gauges; 10 and 20 Series dry sanitary gauges; 1000, 1100, 1200, and 1300 Series dry differential 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.

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



### DIAL INDICATING PRESSURE GAUGES

ABS & Steel Case, Dry:	
100 SERIES .....	6-9
Low Pressure Diaphragm:	
200 SERIES .....	10-13
Brass Case, Liquid Filled:	
300 SERIES .....	14-17
All Stainless Steel, Dry & Liquid Filled:	
400/500 SERIES .....	18-21
Process:	
600/700 SERIES .....	22-23
Precision Test:	
800 SERIES .....	24-25
ABS & Stainless Steel Case, Liquid Filled:	
900 SERIES .....	26-29



# TABLE OF CONTENTS

## DIFFERENTIAL PRESSURE GAUGES

<b>Piston Type:</b> 1000 SERIES .....	30-31
<b>Diaphragm Type:</b> 1100 SERIES .....	32-33
<b>Membrane Type High Static Pressure:</b> 1200 SERIES .....	34-35
<b>Membrane Type Nominal Static Pressure:</b> 1300 SERIES .....	36-37
<b>Dial Layouts:</b> 1000, 1100, 1200 & 1300 SERIES .....	38-39

## SANITARY PRESSURE GAUGES

<b>Fractional:</b> 10 SERIES .....	40-41
<b>Heavy-Duty:</b> 10 SERIES .....	42-43

## DIAL INDICATING PRESSURE GAUGE OPTIONS & ACCESSORIES

Panel Mounting Flanges, Cases & Cover Rings, Lenses, Maximum Indicating Pointer, Set Pointers, Rubber Case Protectors, Recalibrators & Adjustable Pointers, Overpressure Protection, Ammonia Refrigeration Gauges, Liquid Filling Options, Special Connections, Reid Vapor Test Gauges, Receiver Gauges, Metric Dials & Customized Special Dials, Certified Calibration, Magnetic Spring Contact Switch .....	44-47
Options & Accessories by Gauge Series .....	48-51
Gauge Fill Options .....	51
Accuracy/Standard Dial Configurations .....	52-57

## DIGITAL PRESSURE GAUGE

<b>Digital Gauge:</b> 1000 SERIES .....	58-59
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## INDUSTRIAL PRESSURE & LEVEL TRANSMITTERS & TRANSDUCERS

<b>Current Output:</b> 100 SERIES .....	60-62
<b>Voltage Output:</b> 200 SERIES .....	62-63
<b>Submersible Level:</b> 612 SERIES .....	64-65
<b>Cage-Protected Submersible Level:</b> 613 SERIES .....	66-67
<b>High Accuracy:</b> 615/616 SERIES .....	68-69
<b>Precision:</b> 640 SERIES .....	70-71
<b>Micro-sized:</b> 660 SERIES .....	72-73
<b>Electronic Indicating Pressure Transmitter/Switch:</b> 800/810 SERIES .....	74-75

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



## OEM TRANSMITTERS & TRANSDUCERS

Compact:	
300 SERIES .....	76-77
High Volume:	
650 SERIES .....	78-79

## HAZARDOUS LOCATION PRESSURE & LEVEL TRANSMITTERS

Explosion-Proof:	
621/622 SERIES .....	80-81
Non-Incendive:	
623/624 SERIES .....	82-83
Intrinsically Safe:	
625/626 SERIES .....	84-85
Intrinsically Safe Submersible Level:	
627 SERIES .....	86-87
Intrinsically Safe Hammer Union:	
628 SERIES .....	88-89

## SANITARY PRESSURE TRANSMITTERS

ASME-BPE Sanitary Clamp:	
11 SERIES.....	90-91

## PRESSURE SWITCHES

Mechanical Miniature Low Pressure:	
100 SERIES .....	92-93
Mechanical Compact SPDT:	
200 SERIES .....	94-95
Mechanical Compact SPDT with Adjustable Hysteresis:	
300 SERIES .....	96-97
Mechanical Heavy-Duty:	
400 SERIES .....	98-99
Electronic Mag-Switch:	
500 SERIES .....	100-101
Electronic Indicating Pressure Transmitter/Switch:	
800/810 SERIES .....	102-103

## ALL PRESSURE MEASUREMENT INSTRUMENTATION OPTIONS & ACCESSORIES

Certified Calibration, Piston-Type Snubbers, Sintered Snubbers, Pigtail Steam Syphons, Swivel Adaptors.....	104-107
Reference Information.....	108-119
Frequently Asked Questions .....	120-122
Canadian Registration Numbers .....	123



# ABS & Steel Case, Dry



## 100 SERIES

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

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

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

##### b. Static Pressure

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

### APPLICATIONS

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

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

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

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

ORDERING INFORMATION								
GAUGE SIZES	15	1-1/2"	20	2"	25	2-1/2"	40	4"
CASE TYPES	100	ABS, bottom connection	120	Steel case panel mount				
	110	ABS, back connection	148	Square ABS, panel mount (2" only)				
PRESSURE RANGES	30vac	-30 inHg vacuum to 0 psi	30/300	-30 inHg to 0 to 300 psi	200	0 psi to 200 psi	2000	0 psi to 2,000 psi
	30/15	-30 inHg to 0 to 15 psi	15	0 psi to 15 psi	300	0 psi to 300 psi	3000	0 psi to 3,000 psi
	30/30	-30 inHg to 0 to 30 psi	30	0 psi to 30 psi	400	0 psi to 400 psi	5000	0 psi to 5,000 psi
	30/60	-30 inHg to 0 to 60 psi	60	0 psi to 60 psi	600	0 psi to 600 psi	6000	0 psi to 6,000 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	Other ranges available on request					
SCALE OPTIONS***	psi	psi single scale	psi/kPa	psi/kPa dual scale	psi/kg/cm²	psi/kg/cm² dual scale	psi/bar	psi/bar dual scale
CONNECTION SIZES	1/8	1/8"NPT	SST	SAE J1926-3.7/16-20 Adjustable	1/4	1/4"NPT		
OPTIONS	PMC	Panel Mount Clamp	SSC	Stainless Steel Case	LL	Polycarbonate Lens	ST	Stainless Steel Tagging
	SSB	Polished Stainless Steel Bezel	CRC	Chrome Case	GL	Glass Lens*	CPO	Brass Sintered Orifice 20 Micron
	BLRF	Black Rear Flange	FAC	Flat Sided ABS Case	SG	Safety Glass Lens*	BP1	Brass Press Fit Orifice 0.1 mm
	BLFF	Black Front Flange – ABS Case	BCR	Black Cover Ring**	HL	Homalite Lens*	BP3	Brass Press Fit Orifice 0.3 mm
	CFF	Chrome Front Flange – ABS Case	SSCR	Stainless Steel Cover Ring**	SP	Red Set Pointer**	BP8	Brass Press Fit Orifice 0.8 mm
	SBFF	Black Front Flange – Steel Case	CCR	Chrome Cover Ring**	MIP	Maximum Indicating Pointer		
	SCFF	Chrome Front Flange – Steel Case	PCCR	Polished Chrome Cover Ring**	SDM	Silicone Dampened Movement		
	BSC	Black Steel Case	CAR	Chrome Adapter Ring*	LM	Laser Marking		

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

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

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

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

\*\*\* Other scales available on request

## EXAMPLE

20 - 110 - 100 - psi - 1/4 - BSC

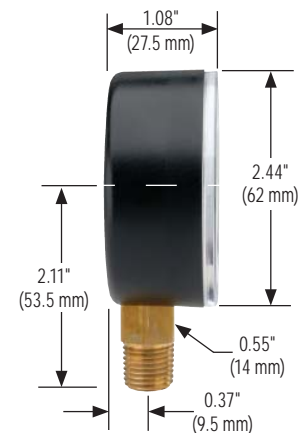
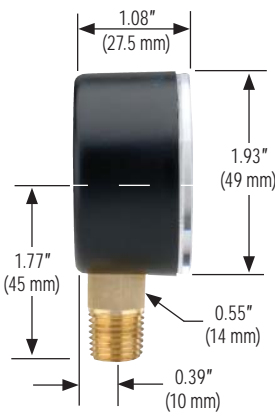
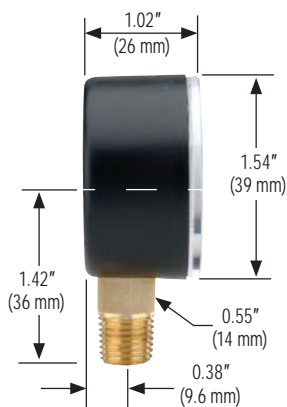
Gauge size .....2"

Case type .....ABS, back connection

Pressure range & scale option .....0 psi to 100 psi

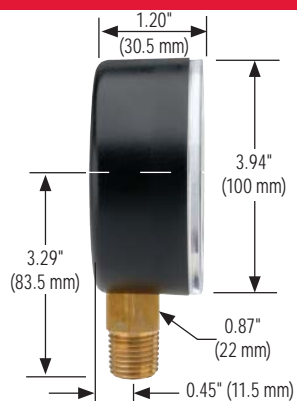
Connection size .....1/4" NPT

Option..... Black Steel Case

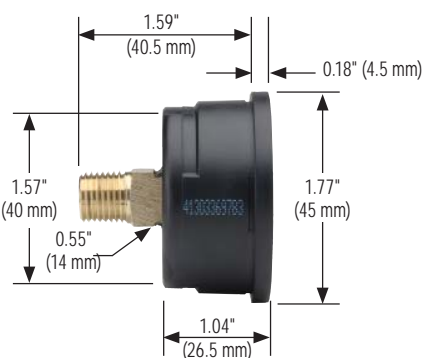


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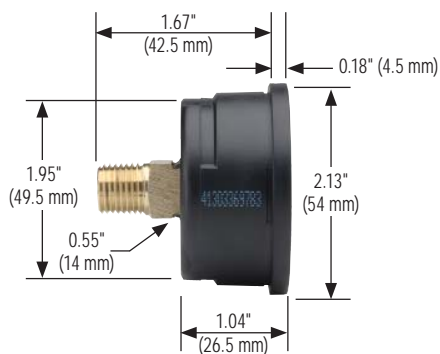
40-100



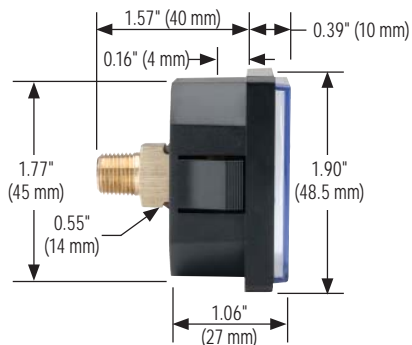
15-110



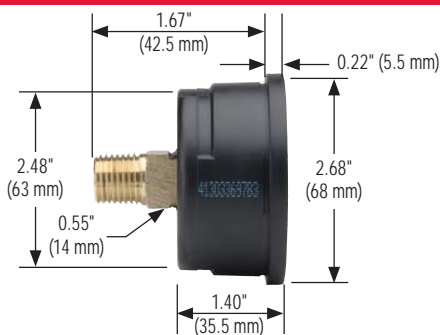
20-110



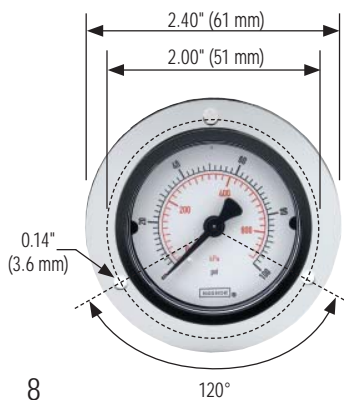
20-148



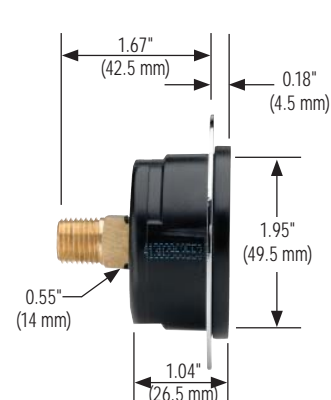
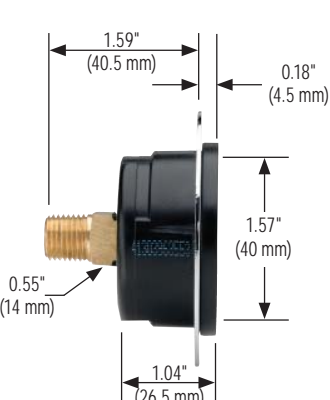
25-110



15-110 Front Flange

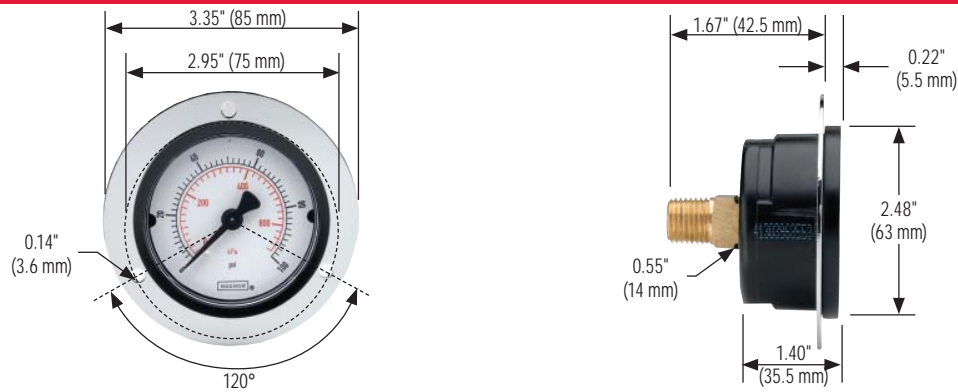


20-110 Front Flange

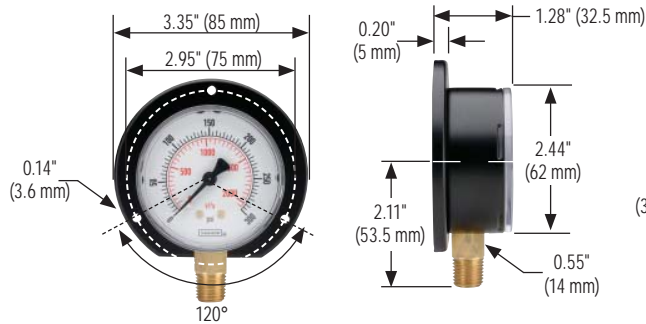




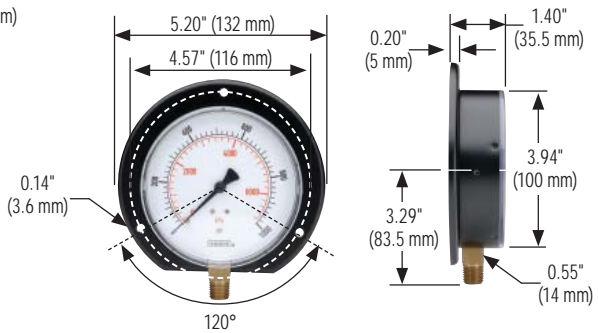
## 25-110 Front Flange



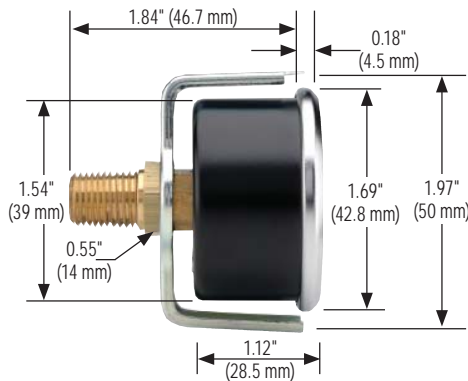
## 25-100 Rear Flange



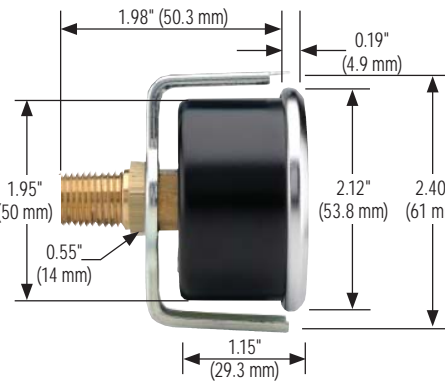
## 40-100 Rear Flange



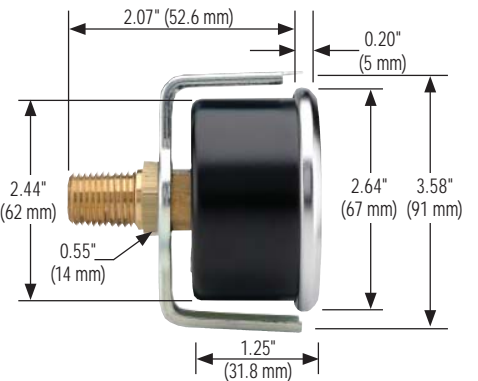
## 15-120 Chrome Bezel With U-Clamp



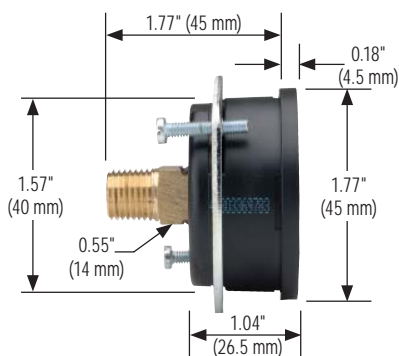
## 20-120 Chrome Bezel With U-Clamp



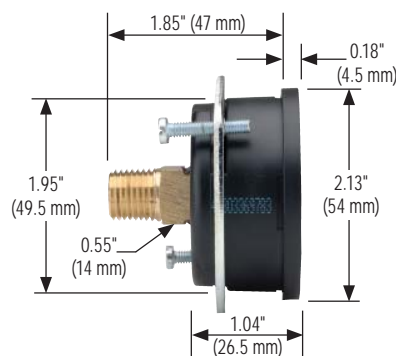
## 25-120 Chrome Bezel With U-Clamp



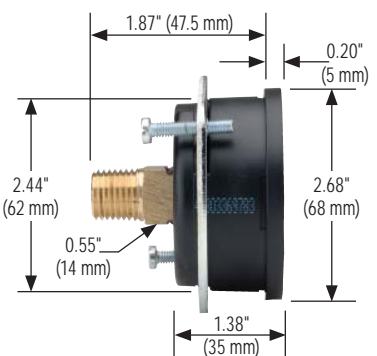
## 15-110 Panel Mount Clamp



## 20-110 Panel Mount Clamp



## 25-110 Panel Mount Clamp



# Low Pressure Diaphragm



## 200 SERIES

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

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

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

##### b. Static Pressure

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

### APPLICATIONS

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

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

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

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

ORDERING INFORMATION												
GAUGE SIZES		25	2-1/2"		40	4"						
CASE TYPES	200	Steel, bottom connection (304SS for 4")				216	ABS, back connection					
	206	ABS, bottom connection				224	ABS, panel mount					
	210	Steel, back connection				234	Gas pressure test kit**					
PRESSURE RANGES	15 inH <sub>2</sub> O Vac	-15 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	100 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O		100 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 100 oz/in <sup>2</sup>		60 mbar	0 mbar to 60 mbar		
	30 inH <sub>2</sub> O Vac	-30 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	160 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 160 inH <sub>2</sub> O		160 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 160 oz/in <sup>2</sup>		100 mbar	0 mbar to 100 mbar		
	60 inH <sub>2</sub> O Vac	-60 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	200 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O		20 oz/in <sup>2</sup> /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		160 mbar	0 mbar to 160 mbar		
	100 inH <sub>2</sub> O Vac	-100 inH <sub>2</sub> O to 0 inH <sub>2</sub> O	10 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 10 oz/in <sup>2</sup>		32 oz/in <sup>2</sup> /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		250 mbar	0 mbar to 250 mbar		
	10 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 10 inH <sub>2</sub> O	15 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 15 oz/in <sup>2</sup>		3 psi	0 psi to 3 psi		400 mbar	0 mbar to 400 mbar		
	15 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 15 inH <sub>2</sub> O	30 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 30 oz/in <sup>2</sup>		5 psi	0 psi to 5 psi		600 mbar	0 mbar to 600 mbar		
	30 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 30 inH <sub>2</sub> O	35 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 35 oz/in <sup>2</sup>		10 psi	0 psi to 10 psi					
	60 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 60 inH <sub>2</sub> O	60 oz/in <sup>2</sup>	0 oz/in <sup>2</sup> to 60 oz/in <sup>2</sup>		40 mbar	0 mbar to 40 mbar					
CONNECTION SIZE		1/4	1/4" NPT									
OPTIONS	BLRF	Black Rear Flange		GL	Glass Lens*		OP	Over Pressure Protection		CCR	Chrome Cover Ring	
	SSRF	304SS Rear Flange		SG	Safety Glass Lens*		SSBU	Stainless Steel Bezel & U-Clamp		LM	Laser Marking	
	BLFF	Black Front Flange†		PL	Acrylic Lens		BBU	Black Bezel & U-Clamp		ST	Stainless Steel Tagging	
	SSFF	304SS Front Flange		RL	Recalibrator Lens		BCR	Black Cover Ring		BP3	Brass Press Fit Orifice 0.3 mm	
	CFF	Chrome Front Flange†		SP	Red Set Pointer		SSCR	Stainless Steel Cover Ring		BT3	Brass Threaded Orifice 0.3 mm	
	SSC	Stainless Steel Case		MIP	Maximum Indicating Pointer							

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

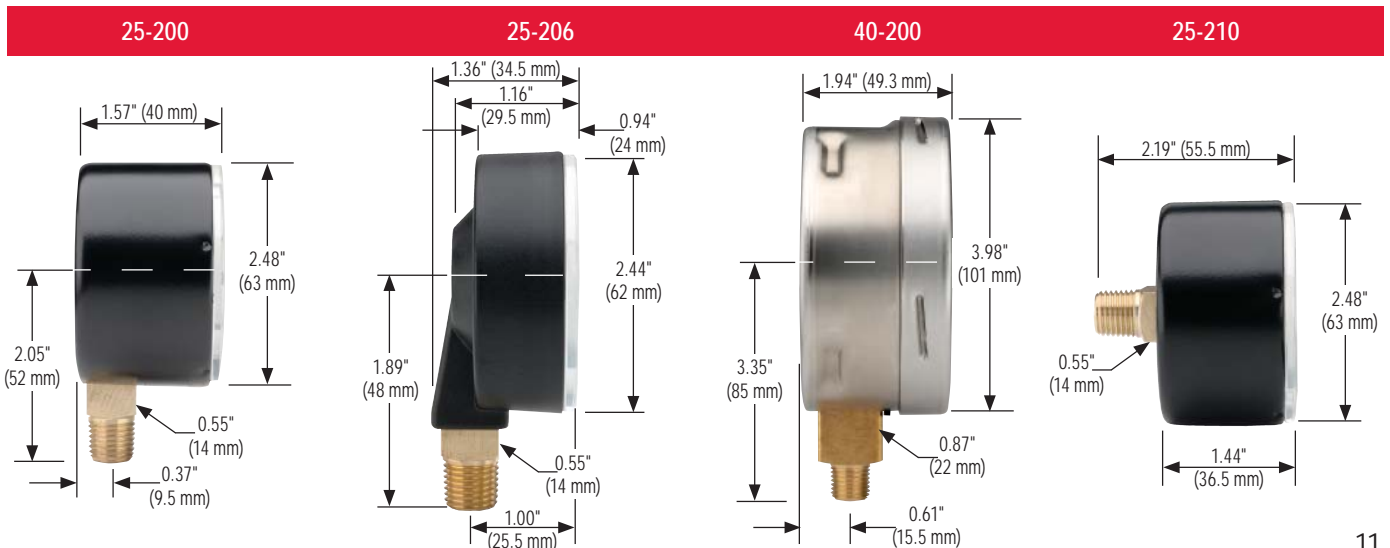
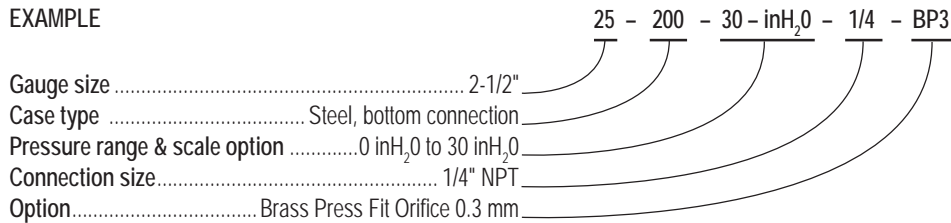
NOTE: Refer to 200 Series Options & Accessories chart on page 51 for availability by part number.

\* A steel, stainless or chrome cover ring must be additionally ordered when lenses other than acrylic are utilized on all 200 Series

\*\* Only available in 2-1/2" size, 20 oz/35 inH<sub>2</sub>O

† Not available on 25-200 model

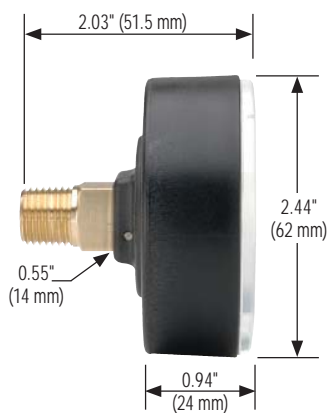
## EXAMPLE



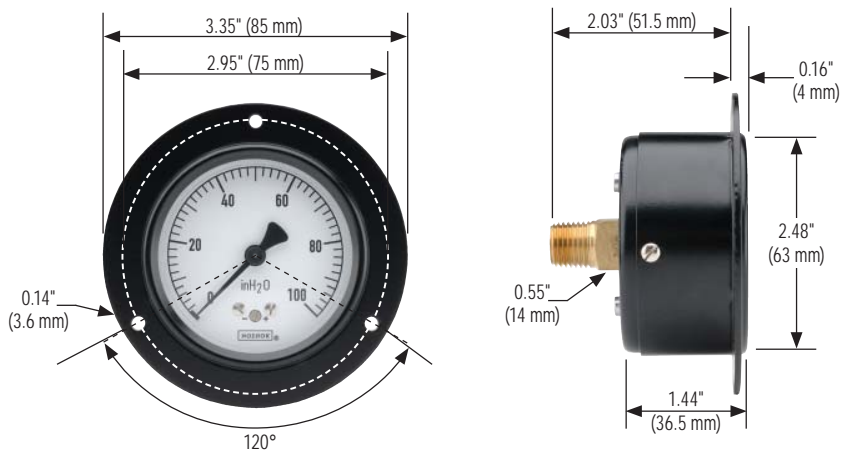
# Dial Indicating Pressure Gauges

## Dimensions

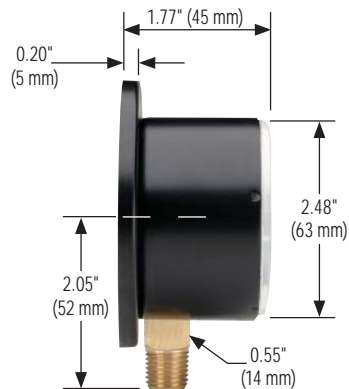
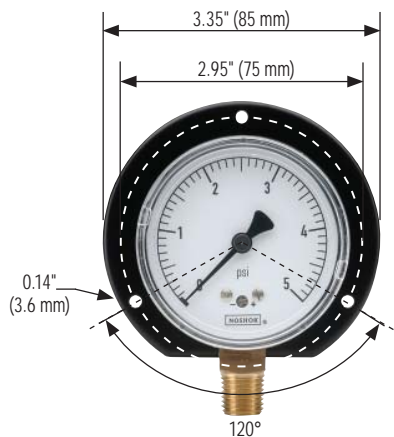
25-216



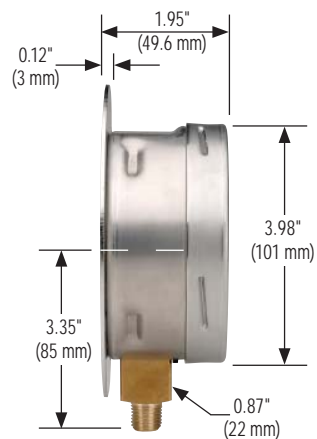
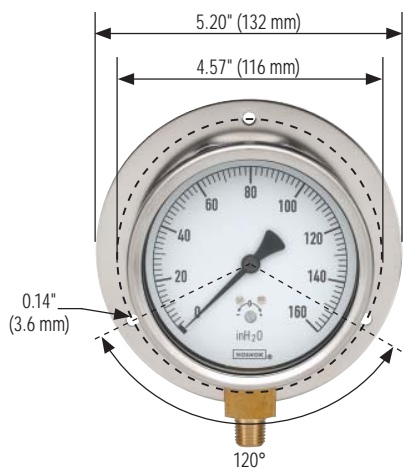
25-210 Front Flange



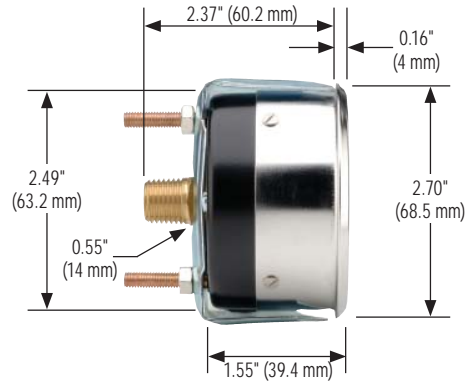
25-200 Rear Flange



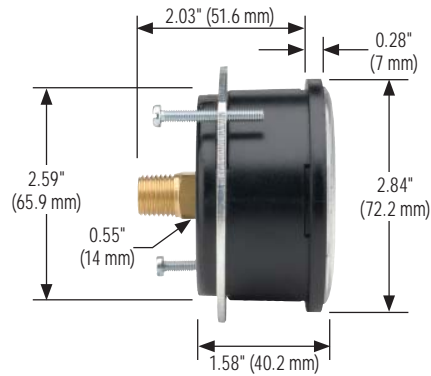
40-200 Rear Flange



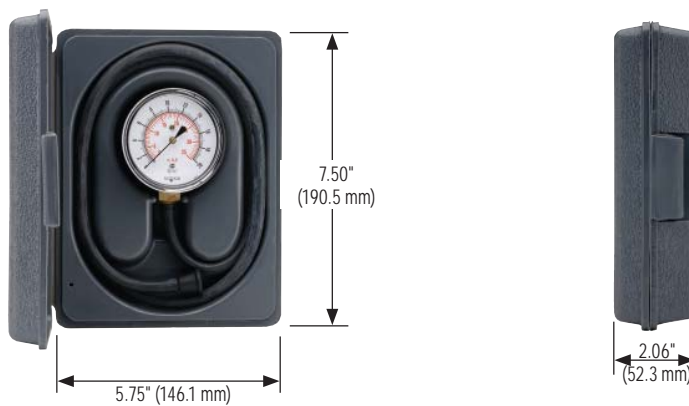
## 25-210 Triangular Bezel w/U-Clamp



## 25-224 with Panel Mount Clamp



## 25-234





## Brass Case, Liquid Filled



## 300 SERIES

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

## OPERATING SPECIFICATIONS

## 1. Working Pressure Limitations

## a. Dynamic Pressure

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

## b. Static Pressure

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

## APPLICATIONS

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

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

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

\* 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.

ORDERING INFORMATION											
GAUGE SIZES	25	2-1/2"		40	4"						
CASE TYPES	300	Brass, bottom connection		310	Brass, back connection						
PRESSURE RANGES	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			
SCALE OPTIONS	psi	psi single scale		psi/kPa	psi/kPa dual scale		psi/kg/cm²	psi/kg/cm² dual scale		psi/bar	psi/bar dual scale
CONNECTION SIZES	1/4	1/4" NPT		1/2	1/2" NPT		SST	SAE J1926-3:7/16-20 Adjustable			
OPTIONS	CFF	Chrome Front Flange		RF	Rear Flange		GLO	Glass Lens Overlay		ST	Stainless Steel Tagging
	CFFN	Chrome Front Flange w/o holes		CCR	Chrome Cover Ring		SGO	Safety Glass Overlay		BT3	Brass Threaded Orifice 0.3 mm
	BFF	Brass Front Flange		CBU	Chrome Bezel & U-Clamp		AR	Adapter Ring		BT4	Brass Threaded Orifice 0.4 mm
	BLFF	Black Front Flange		MIP	Maximum Indicating Pointer		LM	Laser Marking		BT8	Brass Threaded Orifice 0.8 mm
	SSRF	304SS Rear Flange		LL	Polycarbonate Lens						

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

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

## EXAMPLE

40 - 300 - 3000 - psi - 1/4 - BP3

Gauge size .....4"

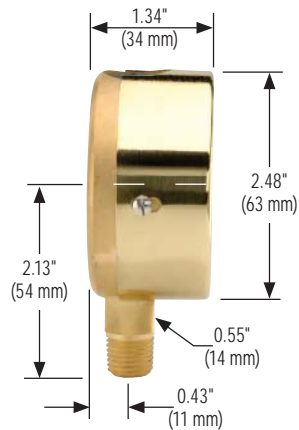
Case type ..... Brass, bottom connection

Pressure range & scale option .....0 psi to 3,000 psi

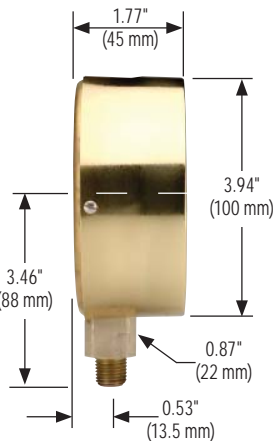
Connection size ..... 1/4" NPT

Option..... Brass Press Fit Orifice 0.3 mm

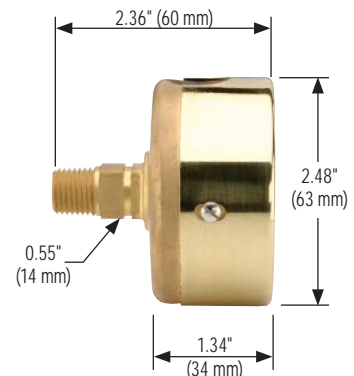
25-300



40-300

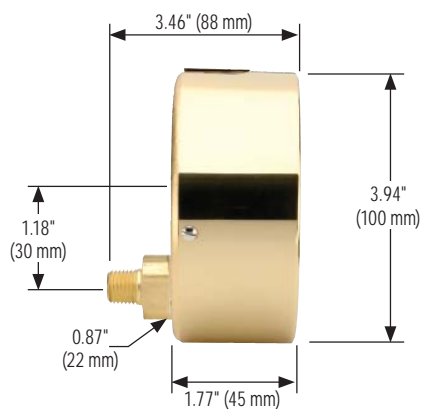


25-310

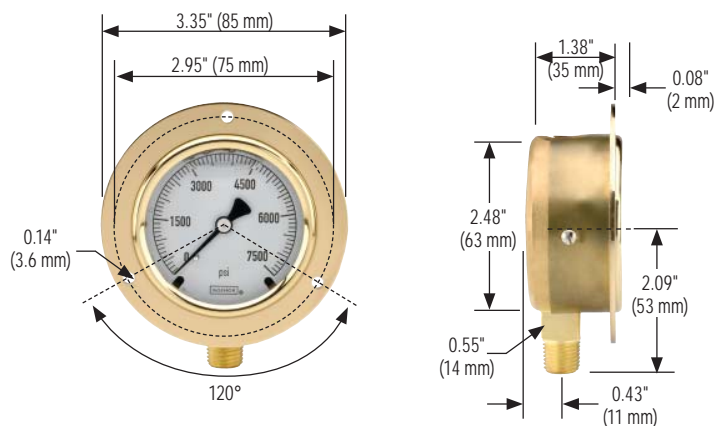


# Dimensions

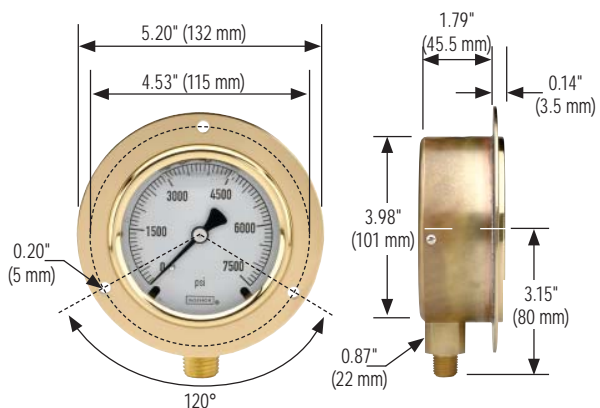
40-310



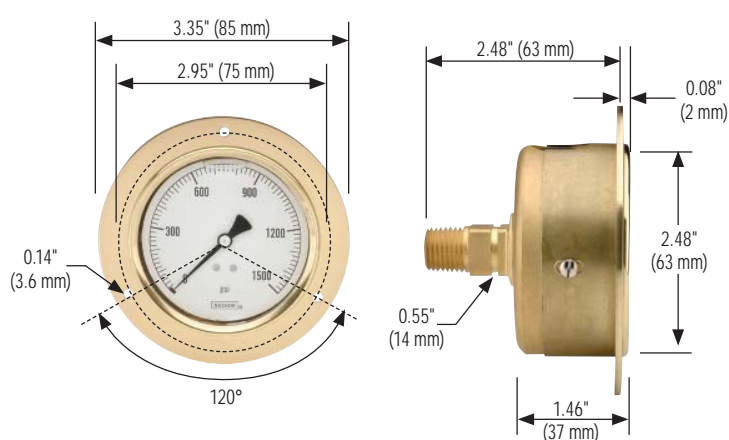
25-300 Front Flange



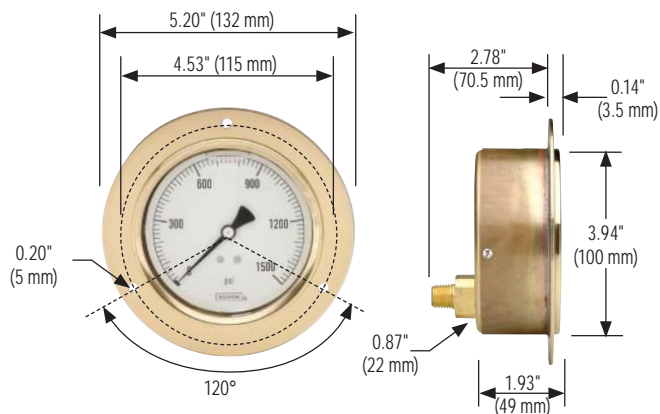
40-300 Front Flange



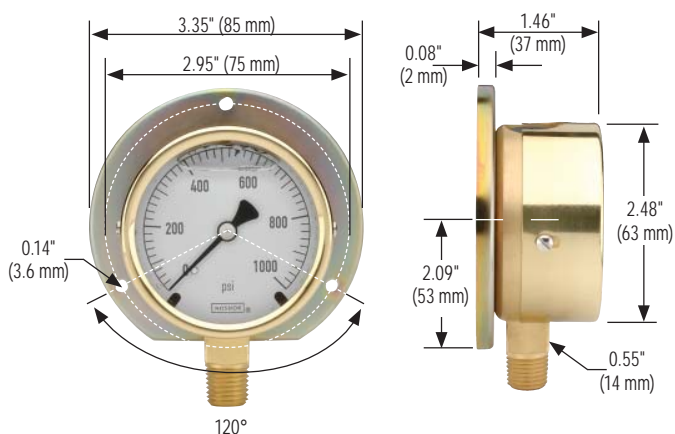
25-310 Front Flange



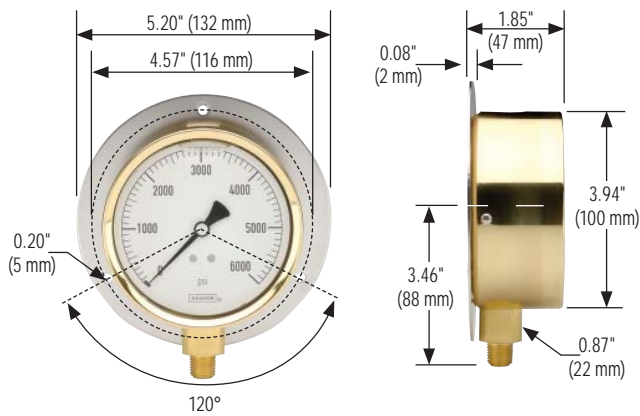
40-310 Front Flange



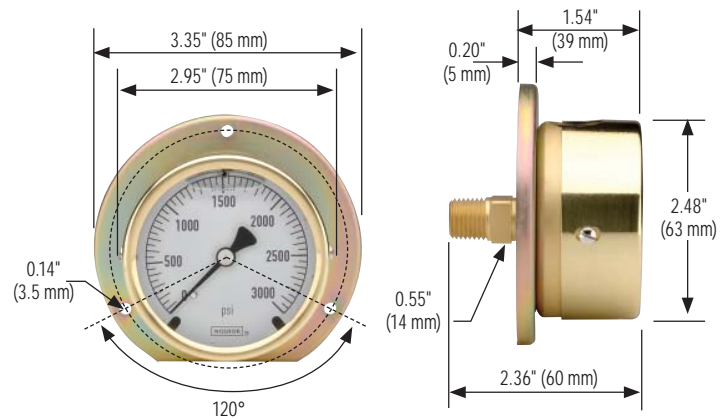
25-300 Rear Flange



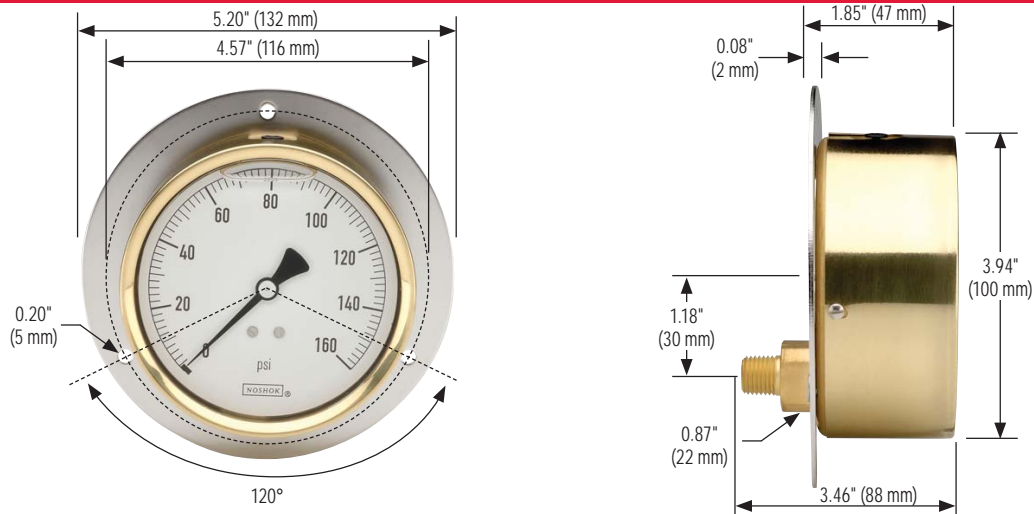
## 40-300 Rear Flange



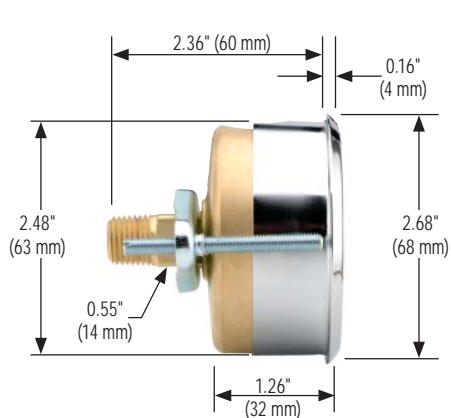
## 25-310 Rear Flange



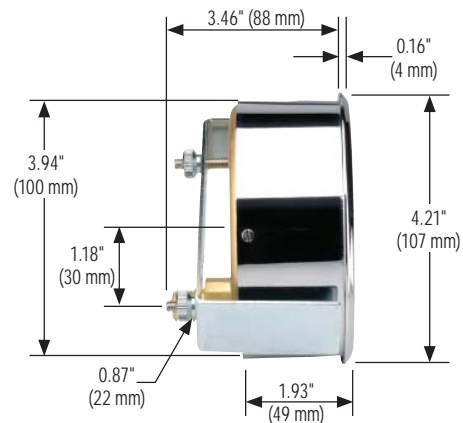
## 40-310 Rear Flange



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



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



## All Stainless Steel, Dry &amp; Liquid Filled



## 400/500 SERIES

- Corrosion-resistant fillable dry or liquid-filled gauge
- Vacuum and compound ranges through 0 psi to 100,000 psi
- 1-1/2", 2-1/2", 4 and 6" gauge sizes
- Stainless steel case
- 316 stainless steel wetted parts
- ECE-R110 Certification for CNG/LNG Pressure Gauge Component (Part number 25-410-300-psi/bar only)

## OPERATING SPECIFICATIONS

## 1. Working Pressure Limitations

## a. Dynamic Pressure

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

## b. Static Pressure

The working pressure, where no sharp fluctuations occur, should be limited to 90% 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 52-56.

	SERIES	SPECIFICATIONS
Pressure ranges	400/500 Series (all)	Vacuum and compound ranges through 0 psi to 100,000 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 (Optional 316 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



# 400/500 SERIES ORDERING INFORMATION DIMENSIONS

ORDERING INFORMATION				
GAUGE SIZES	15 1-1/2"	25 2-1/2"	40 *** 4"	60 *** 6"
CASE TYPES	400 All SS, dry/fillable, bottom connection	410 All SS, dry/fillable, back connection	502 SS case, solid front, liquid filled, bottom connection**	
	401 All SS, dry, bottom connection	411 All SS, dry, back connection		
	402 SS case, solid front, dry, bottom connection**	500 SS case, liquid filled, bottom connection	510 SS case, liquid filled, back connection	
PRESSURE RANGES	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 psi to 15 psi	160 0 psi to 160 psi	6000 0 psi to 6,000 psi	
	30/30† -30 inHg to 0 psi to 30 psi	200 0 psi to 200 psi	10000 0 psi to 10,000 psi	
	30/60† -30 inHg to 0 psi to 60 psi	300 0 psi to 300 psi	15000 0 psi to 15,000 psi	
	30/100† -30 inHg to 0 psi to 100 psi	400 0 psi to 400 psi	20000 0 psi to 20,000 psi	
	30/160† -30 inHg to 0 psi to 160 psi	600 0 psi to 600 psi	30000 0 psi to 30,000 psi	
	30/200† -30 inHg to 0 psi to 200 psi	800 0 psi to 800 psi	40000 0 psi to 40,000 psi	
	30/300† -30 inHg to 0 psi to 300 psi	1000 0 psi to 1,000 psi	60000 0 psi to 60,000 psi	
	15 0 psi to 15 psi	1500 0 psi to 1,500 psi	80000 0 psi to 80,000 psi	
	30 0 psi to 30 psi	2000 0 psi to 2,000 psi	100000 0 psi to 100,000 psi	
	60 0 psi to 60 psi	3000 0 psi to 3,000 psi		
SCALE OPTIONS	psi psi single scale psi/kPa psi/kPa dual scale	psi/kg/cm² psi/kg/cm² dual scale psi/bar psi/bar dual scale		
CONNECTION SIZES	1/8 1/8" NPT 1/4 1/4" NPT	1/2 1/2" NPT 9/16-18 9/16"-18 UNF 2B high pressure cone*	SST SAE J1926-3:7/16-20 Adjustable	
OPTIONS	SSFF 304SS Front Flange	SSFR 304SS Flange Ring	SP Red Set Pointer	
	SSRF 304SS Rear Flange	FR Flange Ring	LM Laser Marking	
	SSBU Stainless Steel Bezel & U-Clamp	AP Adjustable Pointer	ST Stainless Steel Tagging	
	SPMC 304SS Panel Mount Clamp	SG Safety Glass Lens	ST5 Stainless Steel Threaded Orifice 0.5 mm	
	PMC Steel Panel Mount Clamp	MIP Maximum Indicating Pointer	ST8 Stainless Steel Threaded Orifice 0.8 mm	

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

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

\* Connection size for pressures 30,000 psi and above. Equivalent to F250C Parker Autoclave.

\*\* 6" solid front, safety case and blowout back is standard for pressures 80,000 psi and above.

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

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

## EXAMPLE

40 - 500 - 600 - psi - 1/2 - MIP

Gauge size .....4"

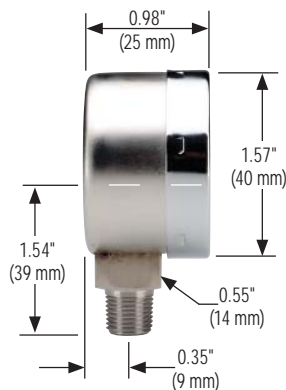
Case type ..... SS case, liquid filled, bottom connection

Pressure range & scale option .....0 psi to 600 psi

Connection size..... 1/2" NPT

Option..... Maximum Indicating Pointer

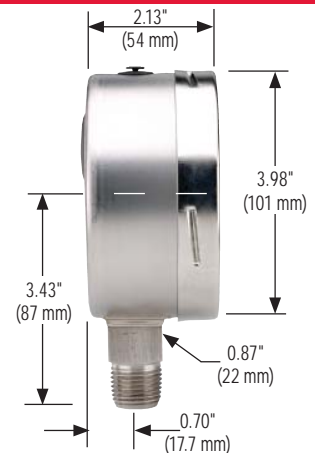
15-401



25-400/500

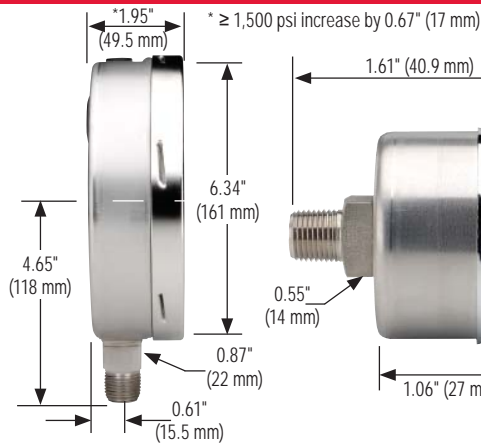


40-400/500

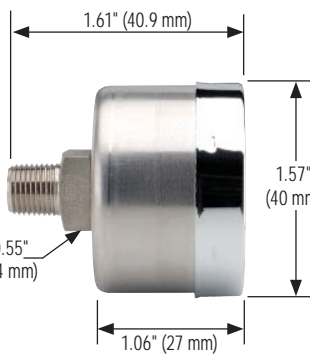


# Dimensions

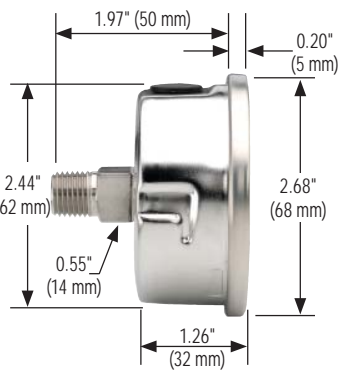
60-400/500



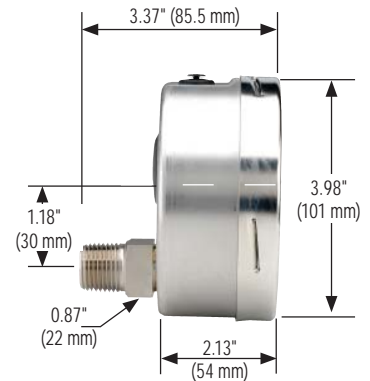
15-411



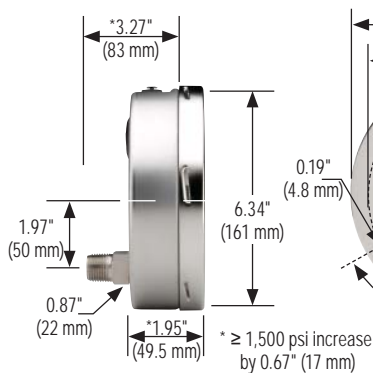
25-410/510



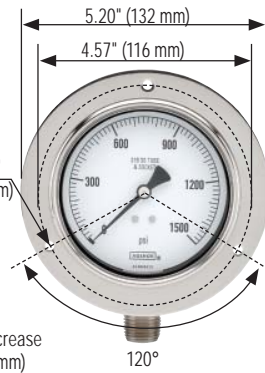
40-410/510



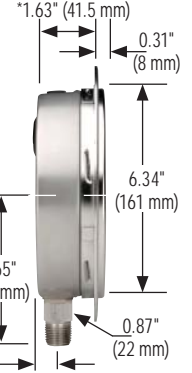
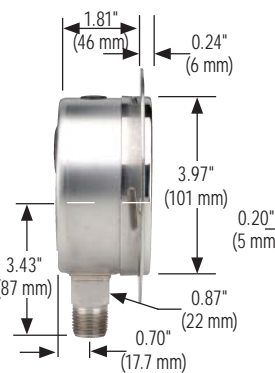
60-410/510



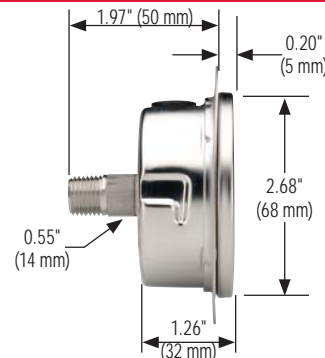
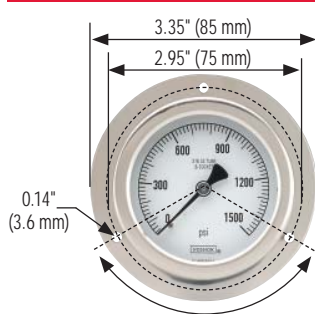
40-400/500 Front Flange



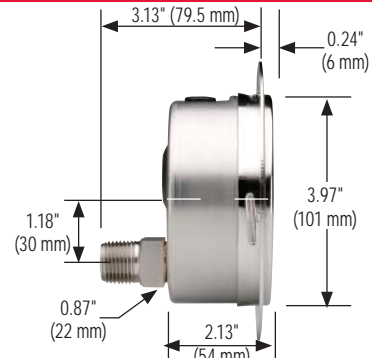
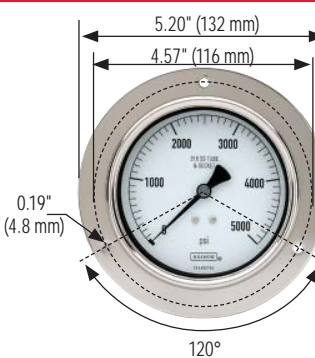
60-400/500 Front Flange



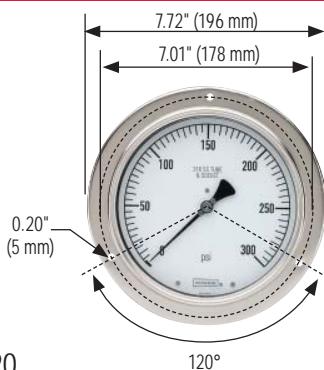
25-410/510 Front Flange



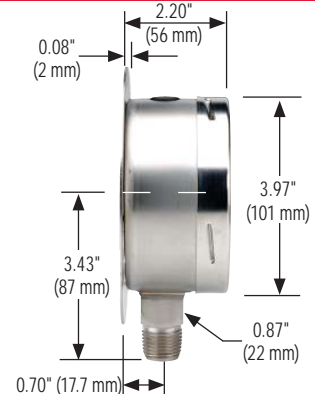
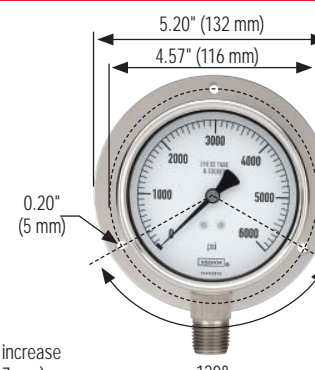
40-410/510 Front Flange



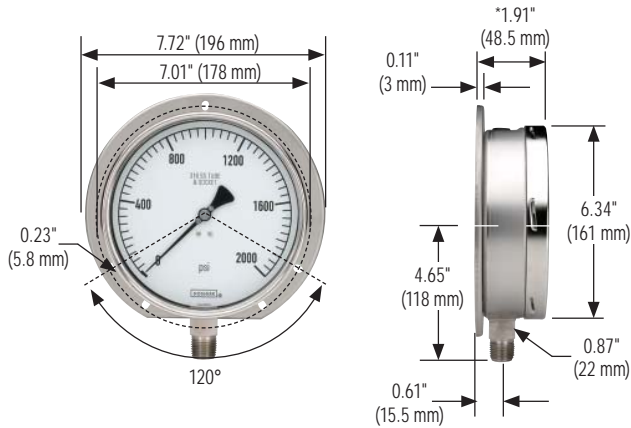
60-410/510 Front Flange



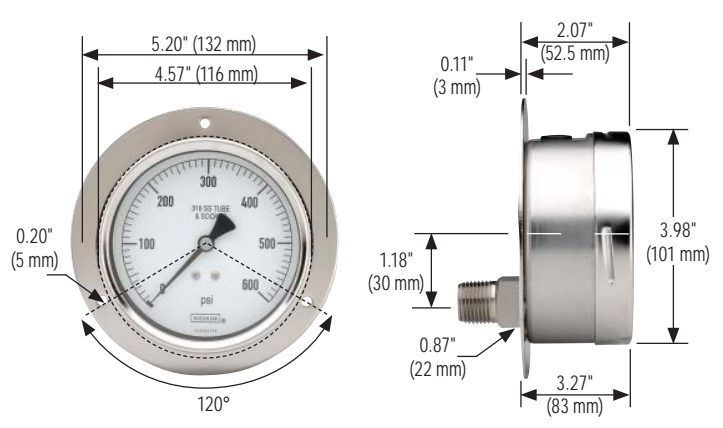
40-400/500 Rear Flange



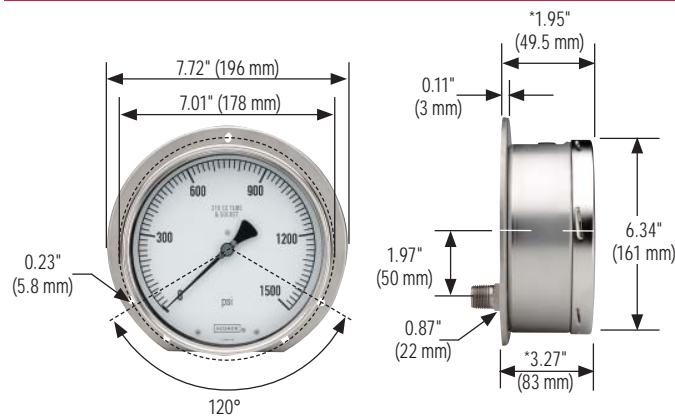
60-400/500 Rear Flange



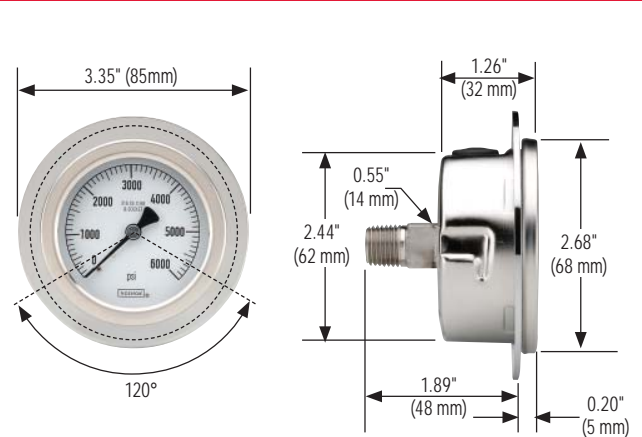
40-410/510 Rear Flange



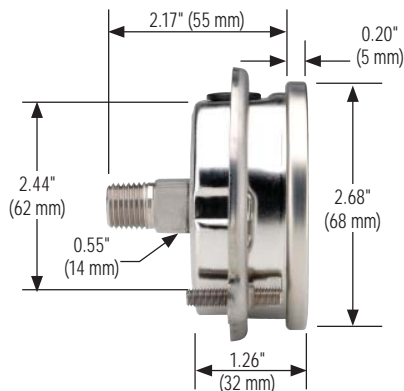
60-410/510 Rear Flange



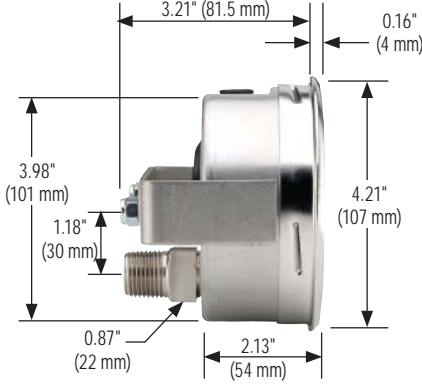
25-410/510 Flange Ring



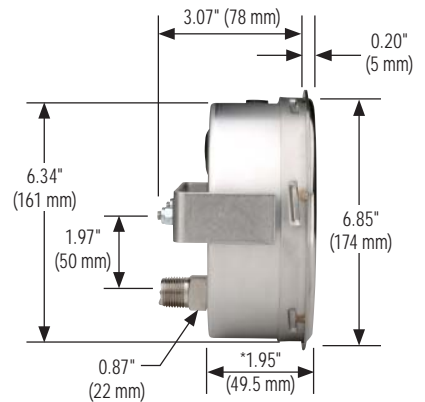
25-410/510 Panel Mount Clamp



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



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



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

# Dial Indicating Pressure Gauges

## Process



## 600/700 SERIES

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

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

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

##### b. Static Pressure

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

### APPLICATIONS

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

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

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

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

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

ORDERING INFORMATION									
GAUGE SIZES	45 4-1/2"								
CASE TYPES	640	Brass, dry, bottom connection			660	Brass, liquid filled, bottom connection			
	740	SS, dry, bottom connection			760	SS, liquid filled, bottom connection			
PRESSURE RANGES	30vac	-30 inHg to 0 psi			30/300	-30 inHg to 0 to 300 psi			300 0 psi to 300 psi
	30/15	-30 inHg to 0 to 15 psi			15	0 psi to 15 psi			400 0 psi to 400 psi
	30/30	-30 inHg to 0 to 30 psi			30	0 psi to 30 psi			5000 0 psi to 5,000 psi
	30/60	-30 inHg to 0 to 60 psi			60	0 psi to 60 psi			6000 0 psi to 6,000 psi
	30/100	-30 inHg to 0 to 100 psi			100	0 psi to 100 psi			10000 0 psi to 10,000 psi
	30/160	-30 inHg to 0 to 160 psi			160	0 psi to 160 psi			15000 0 psi to 15,000 psi
	30/200	-30 inHg to 0 to 200 psi			200	0 psi to 200 psi			
SCALE OPTIONS	psi	psi single scale			psi/kg/cm <sup>2</sup>	psi/kg/cm <sup>2</sup> dual scale			psi/bar psi/bar dual scale
CONNECTION SIZES	1/4	1/4" NPT			1/2	1/2" NPT			
OPTIONS	SG	Safety Glass Lens			CPMR	Uninstalled Chrome Panel Mount Ring			BP3 Brass Press Fit Orifice 0.3 mm
	GL	Glass Lens			OS	Overload Stop			BT3 Brass Threaded Orifice 0.3 mm
	MIP	Maximum Indicating Pointer			LM	Laser Marking			ST8 316SS Threaded Orifice 0.8 mm
	BPMR	Uninstalled Black Panel Mount Ring			ST	Stainless Steel Tagging			

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

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

## EXAMPLE

45 - 740 - 100 - psi - 1/2 - ST8

Gauge size ..... 4-1/2"

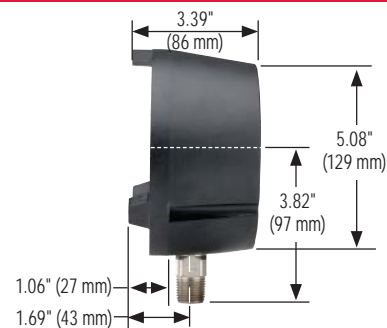
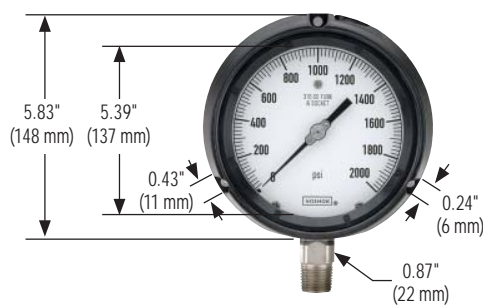
Case type ..... SS internals, dry, bottom connection

Pressure range & scale option ..... 0 psi to 100 psi

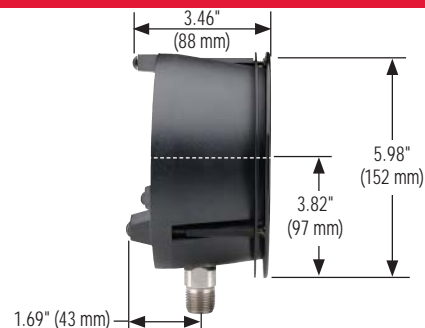
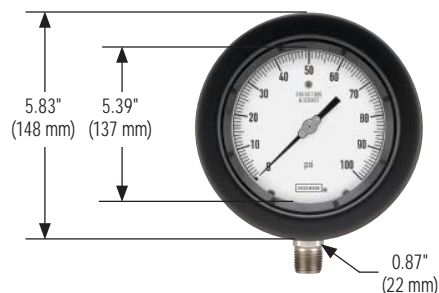
Connection size ..... 1/2" NPT

Option ..... 316SS Threaded Orifice 0.8 mm

## 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 52-56

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

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

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

## EXAMPLE

60 - 800 - 100 - psi - 1/4 - GC

Gauge size .....6"

Case type .....SS case, bottom connection

Pressure range & scale option .....0 psi to 100 psi

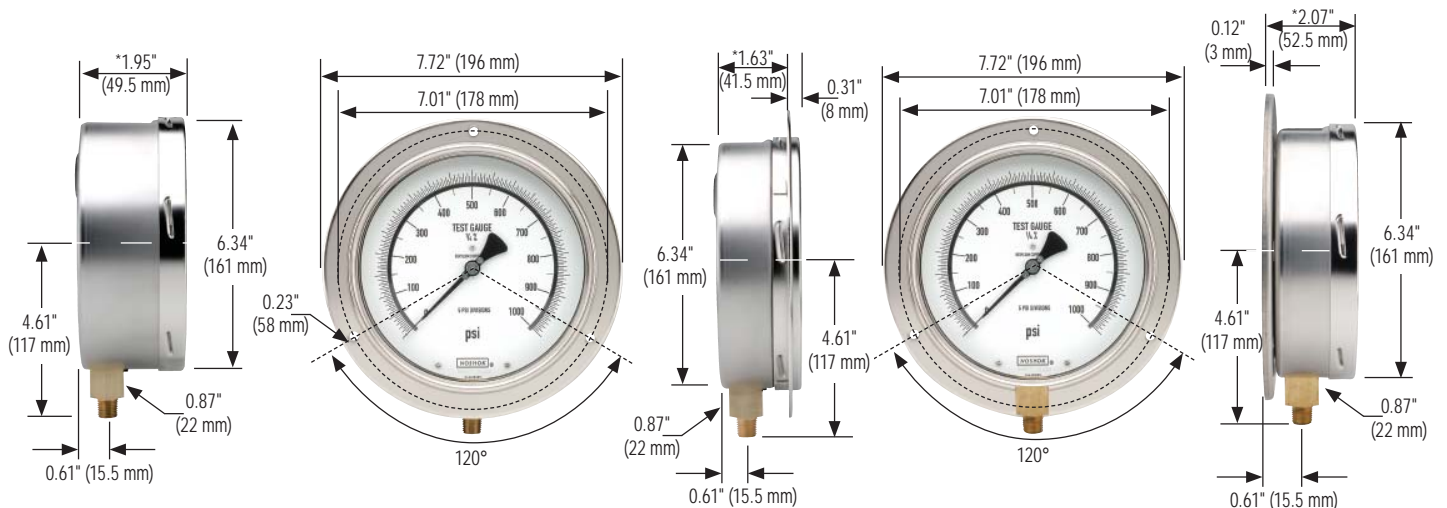
Connection size .....1/4" NPT

Option..... Gauge Carrying Case

## 60-800\*

## 60-800 Front Flange

## 60-800 Rear Flange



# ABS & Stainless Steel Case, Liquid Filled



## 900 SERIES

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

### OPERATING SPECIFICATIONS

#### 1. Working Pressure Limitations

##### a. Dynamic Pressure

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

##### b. Static Pressure

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

### APPLICATIONS

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

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

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

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

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

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

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

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

\* Includes FKM o-ring

## EXAMPLE

25 - 910 - 1000 - psi/kPa - 1/4 - PMC

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

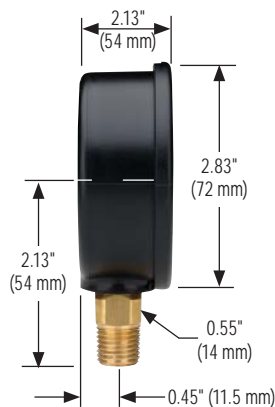
Case type ..... ABS case, liquid filled, back connection

Pressure range & scale option ..... 0 psi to 1,000 psi/kPa

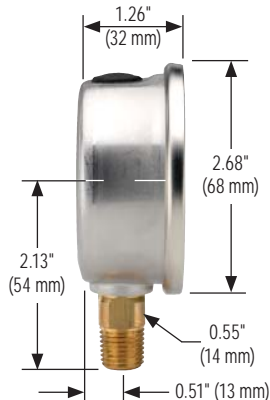
Connection size ..... 1/4" NPT

Option ..... Panel Mount Clamp

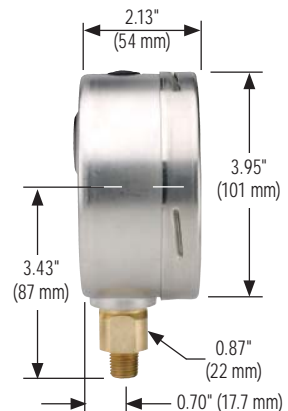
25-900



25-901

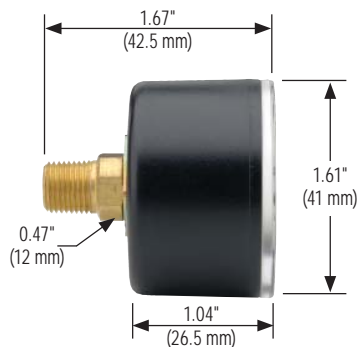


40-901

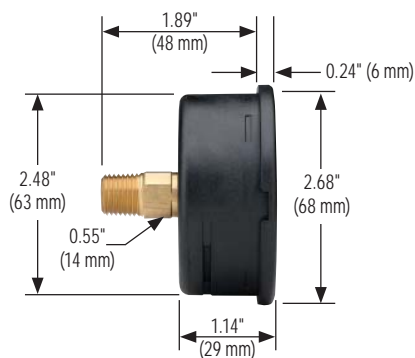


# Dimensions

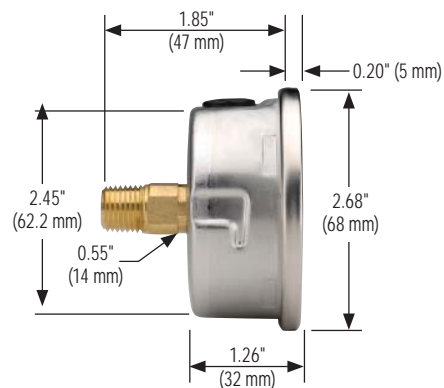
15-910



25-910

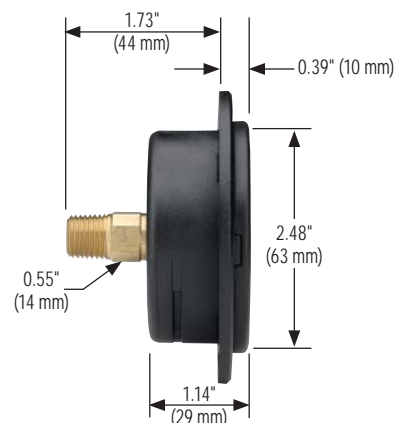
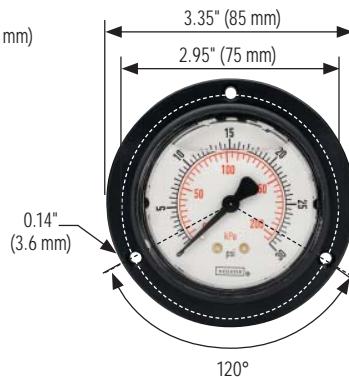
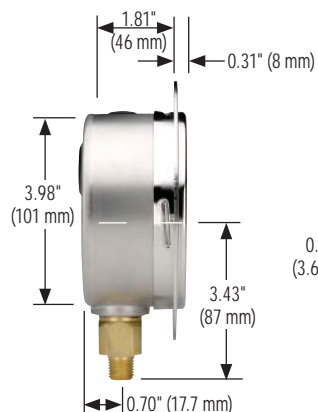
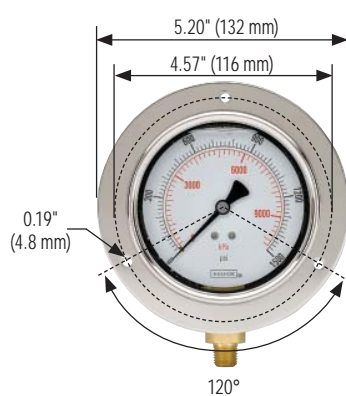


25-911



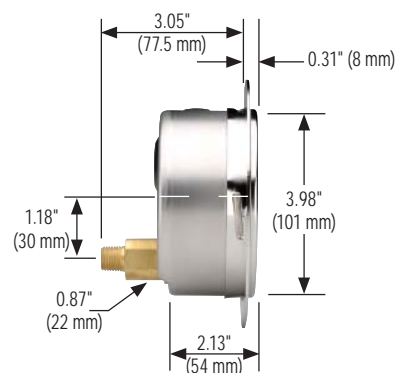
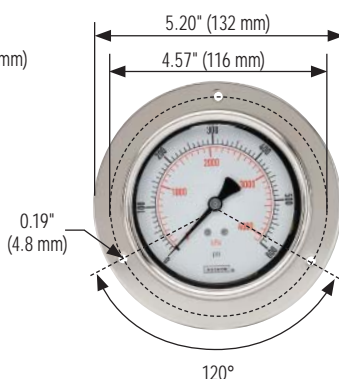
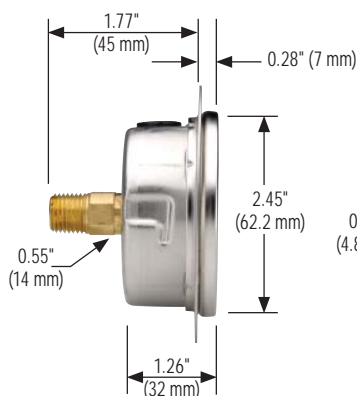
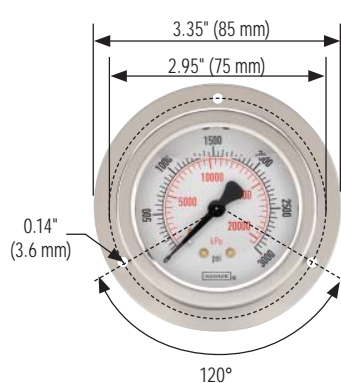
40-901 Front Flange

25-910 Front Flange



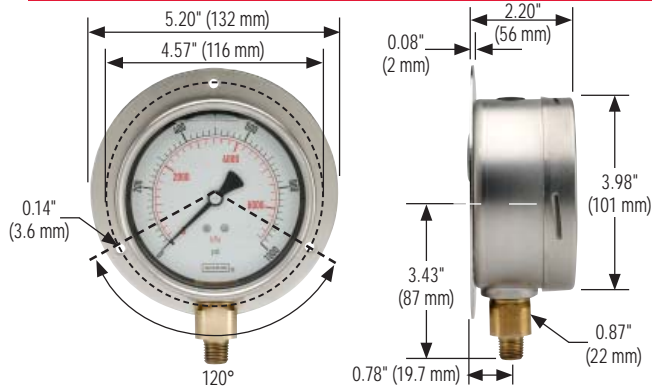
25-911 Front Flange

40-911 Front Flange

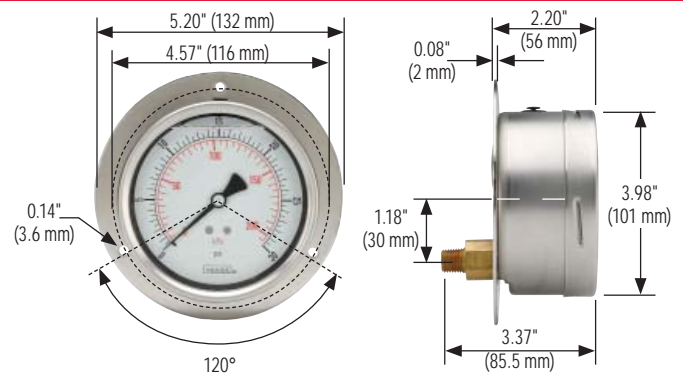




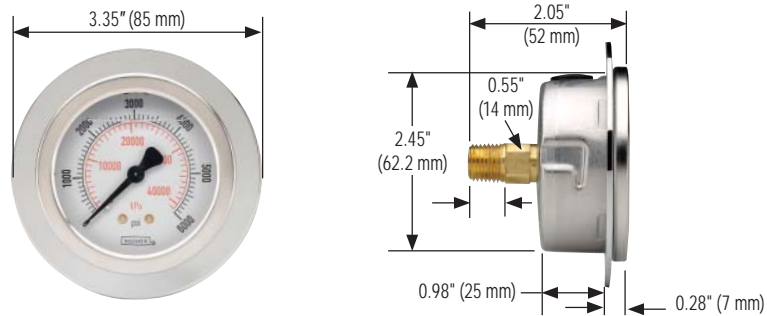
## 40-901 Rear Flange



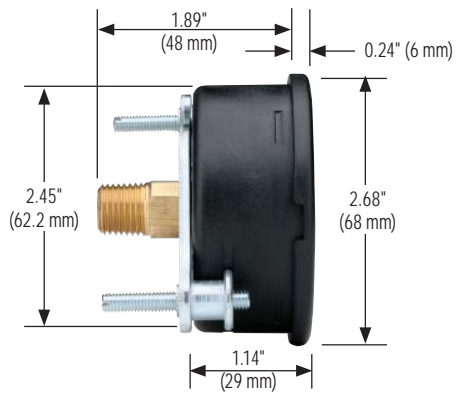
## 40-911 Rear Flange



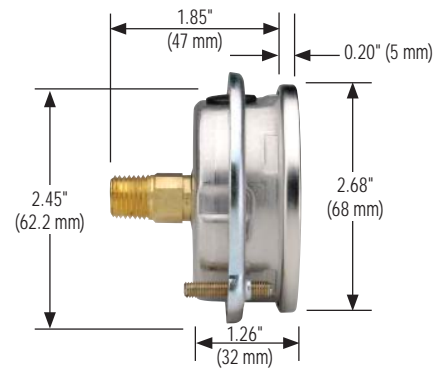
## 25-911 Flange Ring



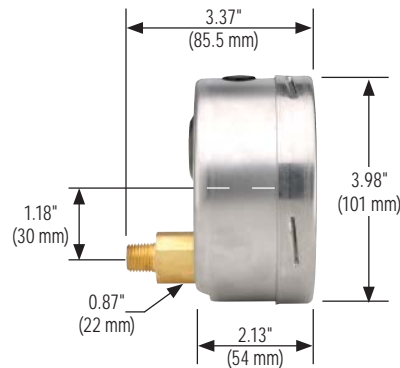
## 25-910 Panel Mount Clamp



## 25-911 Panel Mount Clamp



## 40-911



## Piston Type



## 1000 SERIES

- High working static pressure dry or liquid-filled gauge
- Ranges from 0 psid to 5 psid through 0 psid to 100 psid
- 2-1/2" and 4-1/2" gauge sizes
- Fiberglass reinforced thermoplastic case
- Standard black anodized aluminum wetted parts

### APPLICATIONS

- Back flow testing
- Heat exchangers
- Filter monitoring
- Flow indication
- Level indication

### SPECIFICATIONS

Pressure ranges	0 psid to 5 psid through 0 psid to 100 psid
Max. working static pressure	6,000 psig
Accuracy	±2% of full scale on rising pressure
Temperature ranges	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)
Measuring element	316 stainless steel and ceramic piston/magnet
O-ring material	FKM
Connection	1/4" NPT female, back connection
Sensor housing material	Black anodized aluminum
Case	Fiberglass reinforced thermoplastic
Bezel	Fiberglass reinforced thermoplastic
Lens	Acrylic
Pointer	Balanced aluminum, black finish
Dial	Aluminum, white background with black scale
Movement	Magnetic
Gauge fill fluid	Glycerin

ORDERING INFORMATION						
GAUGE SIZES & SERIES	25 - 10	2-1/2"	45 - 10	4-1/2"		
CONNECTION LOCATIONS	1	Back	2	Side		
CONNECTION SIZE	2	1/4" NPT female				
PRESSURE RANGES	P5	0 psid to 5 psid	P20	0 psid to 20 psid	P50	0 psid to 50 psid
	P10	0 psid to 10 psid	P25	0 psid to 25 psid	P60	0 psid to 60 psid
	P15	0 psid to 15 psid	P30	0 psid to 30 psid	P75	0 psid to 75 psid
SENSOR HOUSING MATERIALS	A	Aluminum, black	S	316L Stainless steel		
O-RING MATERIALS	2	FKM	3	NBR	4	EPDM
CASE MATERIAL	P	Thermoplastic				
LENSES	1	Acrylic	2	Safety glass	3	Maximum indicating pointer (MIP)
FILL FLUIDS (OPTIONAL)	GY	Glycerin	SL	Silicone	HL	Halocarbon®

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

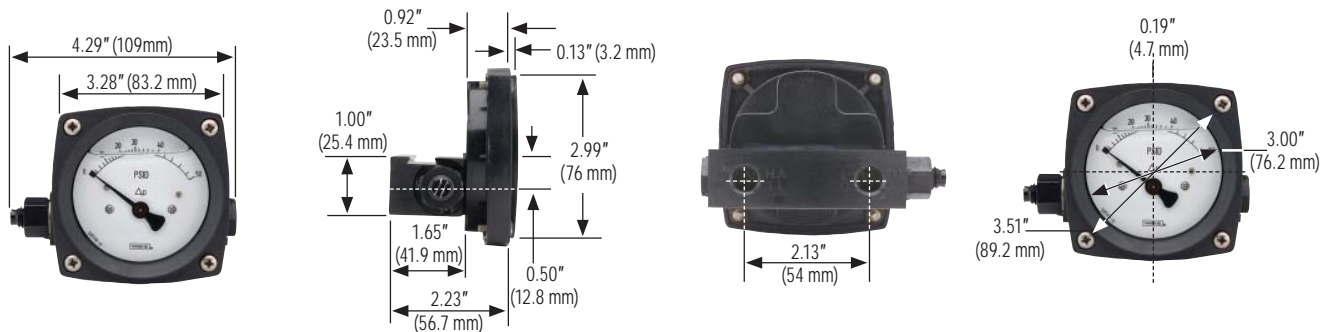
## EXAMPLE

25-10 1 2 - P5 - A 2 P - 1 - GY

Gauge size & series ..... 2-1/2" 1000 Series  
 Connection location ..... Back  
 Connection size ..... 1/4" NPT female  
 Pressure range ..... 0 psid to 5 psid  
 Sensor housing material ..... Aluminum, black  
 O-ring material ..... FKM  
 Case material ..... Thermoplastic  
 Lens ..... Acrylic  
 Fill fluid (optional) ..... Glycerin

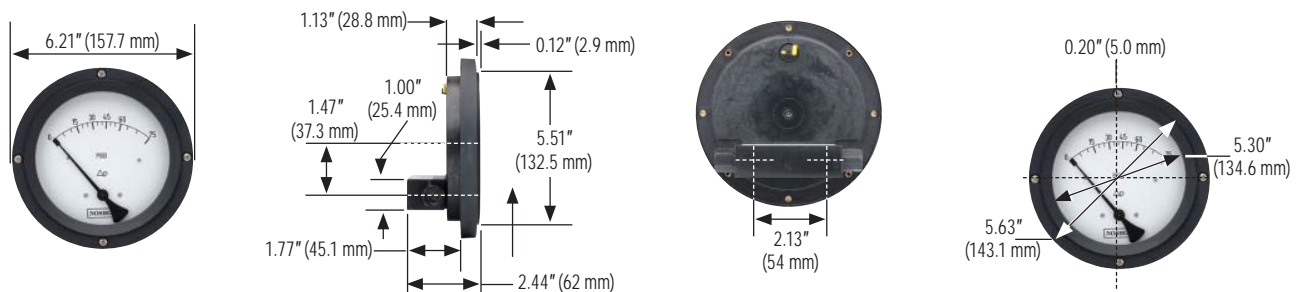
## 2-1/2" Gauge

## Panel Cut-Out Dimensions



## 4-1/2" Gauge

## Panel Cut-Out Dimensions



# Diaphragm Type



## 1100 SERIES

- Moderate working static pressure dry or liquid-filled gauge
- Ranges from 0 inH<sub>2</sub>O to 50 inH<sub>2</sub>O through 0 psid to 100 psid
- 2-1/2" and 4-1/2" gauge sizes
- Fiberglass reinforced thermoplastic case
- Standard black anodized aluminum wetted parts

### APPLICATIONS

- Back flow testing
- Heat exchangers
- Filter monitoring
- Flow indication
- Level indication

### SPECIFICATIONS

Pressure ranges	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psid to 100 psid
Max. working static pressure	3,000 psig
Accuracy	±2% full scale for ranges 0 psid to 15 psid & above ±5% full scale for ranges below 0 psid to 15 psid
Temperature ranges	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)
Measuring element	316 stainless steel and ceramic magnet
O-ring material	NBR
Connection	1/4" NPT female, back connection
Sensor housing material	Black anodized aluminum
Case	Fiberglass reinforced thermoplastic
Bezel	Fiberglass reinforced thermoplastic
Lens	Acrylic
Pointer	Balanced aluminum, black finish
Dial	Aluminum, white background with black scale
Movement	Magnetic
Gauge fill fluid	Glycerin

ORDERING INFORMATION								
GAUGE SIZES & SERIES	25 - 11	2-1/2"	45 - 11	4-1/2"				
CONNECTION LOCATIONS	0	Top & bottom	1	Back				
CONNECTION SIZE	2	1/4" NPT female						
PRESSURE RANGES	W50	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	W300	0 inH <sub>2</sub> O to 300 inH <sub>2</sub> O	P15	0 psid to 15 psid	P75	0 psid to 75 psid
	W75	0 inH <sub>2</sub> O to 75 inH <sub>2</sub> O	W400	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	P25	0 psid to 25 psid	P100	0 psid to 100 psid
	W100	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	P5	0 psid to 5 psid	P30	0 psid to 30 psid		
	W200	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	P10	0 psid to 10 psid	P50	0 psid to 50 psid		
SENSOR HOUSING MATERIALS	A	Aluminum, black	S	316L Stainless steel				
O-RING MATERIALS	2	FKM	3	NBR				
CASE MATERIAL	P	Thermoplastic						
LENSES	1	Acrylic	2	Safety glass	3	Maximum indicating pointer (MIP)		
FILL FLUIDS (optional)	GY	Glycerin	SL	Silicone	HL	Halocarbon®		

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

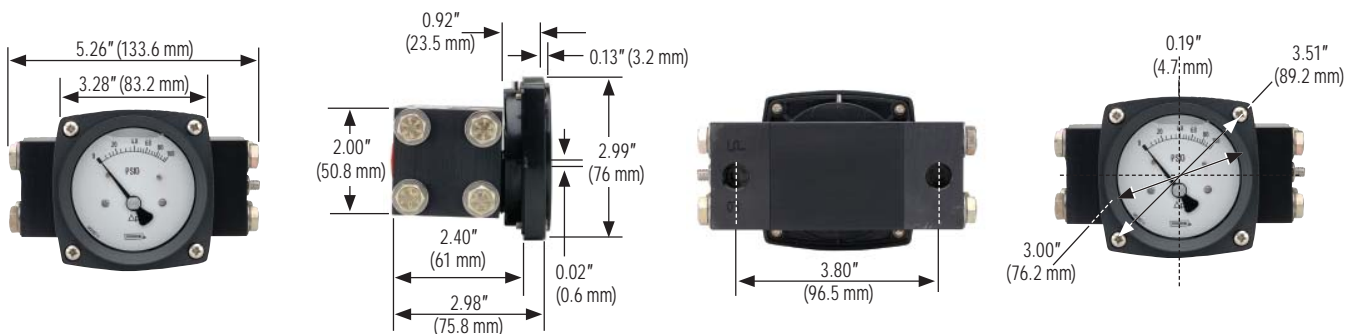
## EXAMPLE

25-11 1 2 - P75 - A 2 P - 1 - GY

Gauge size & series ..... 2-1/2" 1100 Series  
 Connection location ..... Back  
 Connection size ..... 1/4" NPT female  
 Pressure range ..... 0 psid to 75 psid  
 Sensor housing material ..... Aluminum, black  
 O-ring material ..... FKM  
 Case material ..... Thermoplastic  
 Lens ..... Acrylic  
 Fill fluid (optional) ..... Glycerin

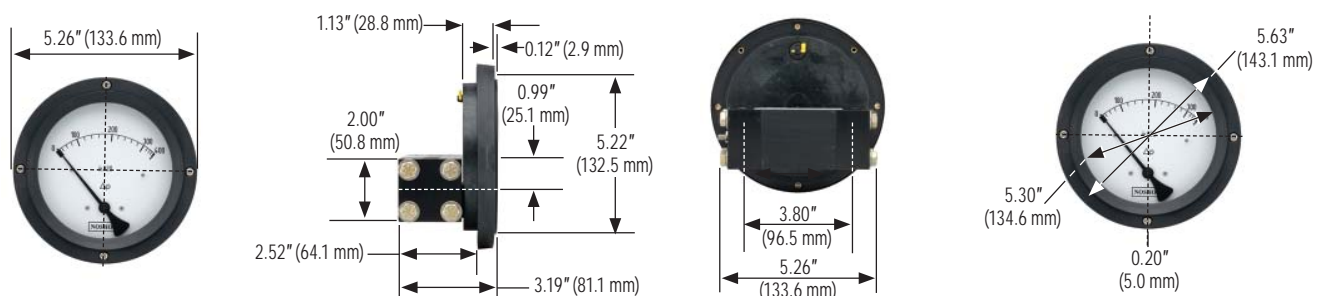
## 2-1/2" Gauge

## Panel Cut-Out Dimensions



## 4-1/2" Gauge

## Panel Cut-Out Dimensions



# Membrane Type High Static Pressure



## 1200 SERIES

- Rugged, high working static pressure dry or liquid-filled gauge
- Ranges from 0 inH<sub>2</sub>O to 100 inH<sub>2</sub>O through 0 psid to 600 psid
- 4-1/2" and 6" gauge sizes
- Standard black anodized aluminum case
- 316 stainless steel wetted parts

### APPLICATIONS

- Back flow testing
- Chemical processing
- Cryogenic systems
- Filter monitoring
- Flow indication
- Oilfield & offshore

### SPECIFICATIONS

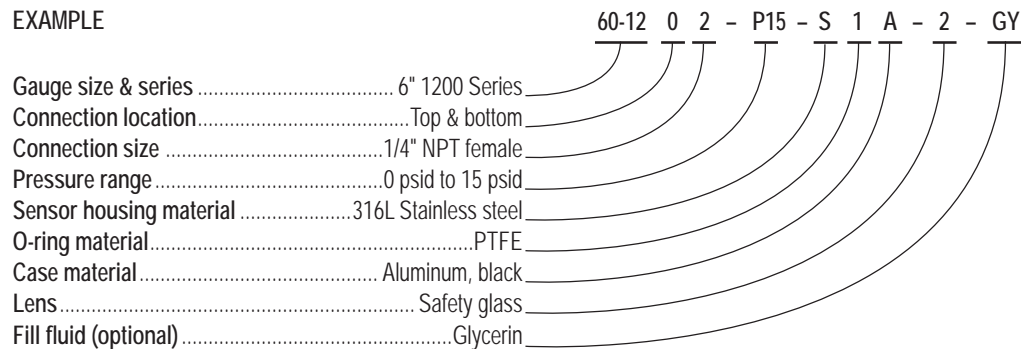
Pressure ranges	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O through 0 psid to 600 psid
Max. working static pressure	3,000 psig
Accuracy	±1% of full scale or rising pressure
Temperature ranges	Media -40 °F to 200 °F (-40 °C to 93 °C) Ambient -40 °F to 200 °F (-40 °C to 93 °C) Storage -40 °F to 200 °F (-40 °C to 93 °C)
Measuring element	Monel 500
O-ring material	PTFE
Connection	1/4" NPT female, back connection
Sensor housing material	316L stainless steel
Case	Black anodized aluminum
Bezel	316L stainless steel
Lens	Polycarbonate
Pointer	Balanced aluminum, black finish
Dial	Aluminum, white background with black scale
Movement	Stainless steel
Gauge fill fluid	Glycerin



ORDERING INFORMATION					
GAUGE SIZES & SERIES	45 - 12	4-1/2"	60 - 12	6"	
CONNECTION LOCATIONS	0	Top & bottom	1	Back	
CONNECTION SIZE	2	1/4" NPT female			
PRESSURE RANGES	W100	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	W400	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	P100 0 psid to 100 psid
	W150	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	P15	0 psid to 15 psid	P230 0 psid to 230 psid
	W200	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	P30	0 psid to 30 psid	P300 0 psid to 300 psid
	W300	0 inH <sub>2</sub> O to 300 inH <sub>2</sub> O	P60	0 psid to 60 psid	P400 0 psid to 400 psid
SENSOR HOUSING MATERIAL	S	316L Stainless steel			
O-RING MATERIAL	1	PTFE			
CASE MATERIALS	A	Aluminum, black	S	316L Stainless steel	
LENSES	1	Polycarbonate	2	Safety glass	
FILL FLUIDS (optional)	GY	Glycerin	SL	Silicone	HL Halocarbon®

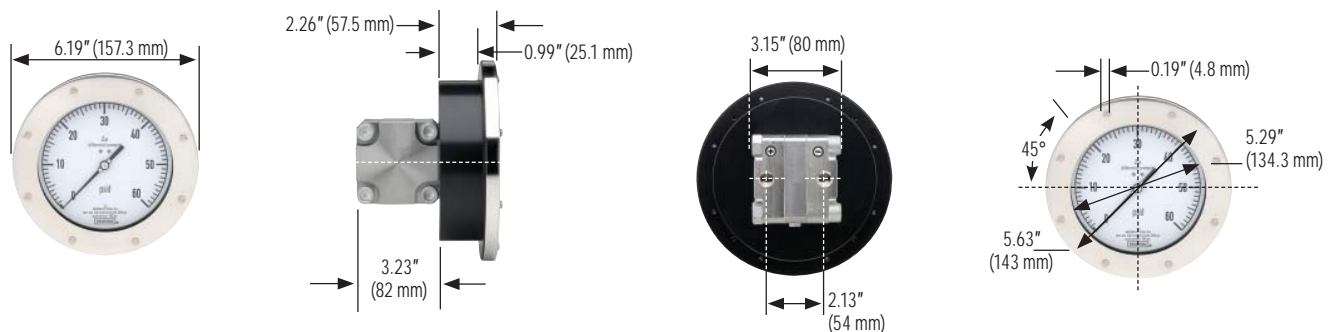
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

## EXAMPLE



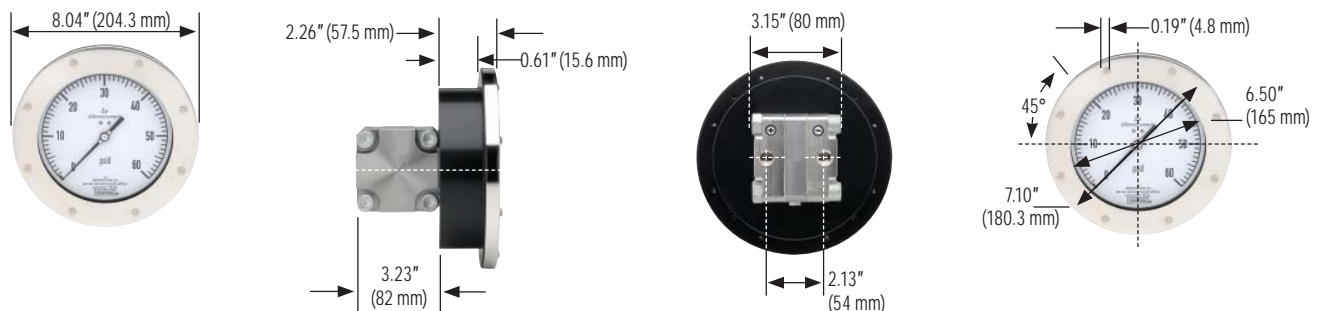
## 4-1/2" Gauge

## Panel Cut-Out Dimensions



## 6" Gauge

## Panel Cut-Out Dimensions



# Membrane Type Nominal Static Pressure



## 1300 SERIES

- Rugged, moderate working static pressure dry or liquid-filled gauge
- Ranges from 0 inH<sub>2</sub>O to 100 inH<sub>2</sub>O through 0 psid to 400 psid
- 4-1/2" and 6" gauge sizes
- Standard black anodized aluminum case
- 316 stainless steel wetted parts

### APPLICATIONS

- Back flow testing
- Chemical processing
- Cryogenic systems
- Filter monitoring
- Flow indication
- Oilfield & offshore

### SPECIFICATIONS

Pressure ranges	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O through 0 psid to 400 psid
Max. working static pressure	600 psig
Accuracy	±1% of full scale on rising pressure
Temperature ranges	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)
Measuring element	316L stainless steel – NACE compliant
O-ring material	PTFE
Connection	1/4" NPT female, dual top & bottom
Sensor housing material	316L stainless steel
Case	Black anodized aluminum
Bezel	316L stainless steel
Lens	Polycarbonate
Pointer	Balanced aluminum, black finish
Dial	Aluminum, black background with white scale
Movement	Stainless steel
Gauge fill fluid	Glycerin

ORDERING INFORMATION				
GAUGE SIZES & SERIES	45 - 13	4-1/2"	60 - 13	6"
CONNECTION LOCATIONS	0	Top & bottom	1	Back
CONNECTION SIZE	2	1/4" NPT female		
PRESSURE RANGES	W100	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	W400	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O
	W150	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	P15	0 psid to 15 psid
	W200	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	P30	0 psid to 30 psid
	W300	0 inH <sub>2</sub> O to 300 inH <sub>2</sub> O	P60	0 psid to 60 psid
			P100	0 psid to 100 psid
			P230	0 psid to 230 psid
			P300	0 psid to 300 psid
			P400	0 psid to 400 psid
SENSOR HOUSING MATERIAL	S	316L Stainless steel		
O-RING MATERIALS	1	PTFE	2	FKM
			3	NBR
CASE MATERIALS	A	Aluminum, black	S	316L Stainless steel
LENSES	1	Polycarbonate	2	Safety glass
FILL FLUIDS (optional)	GY	Glycerin	SL	Silicone
			HL	Halocarbon®

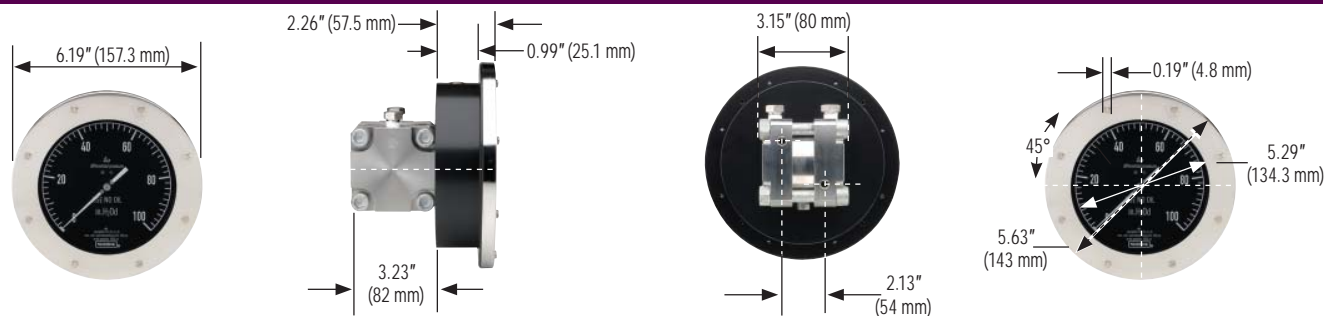
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

## EXAMPLE

	40-13	0	2	-	W100	-	S	1	A	-	2	-	GY
Gauge size & series .....	4"	1300 Series											
Connection location .....	Top & bottom												
Connection size .....	1/4" NPT female												
Pressure range .....	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O												
Sensor housing material .....	316L Stainless steel												
O-ring material .....	PTFE												
Case material .....	Aluminum, black												
Lens .....	Safety glass												
Fill fluid (optional) .....	Glycerin												

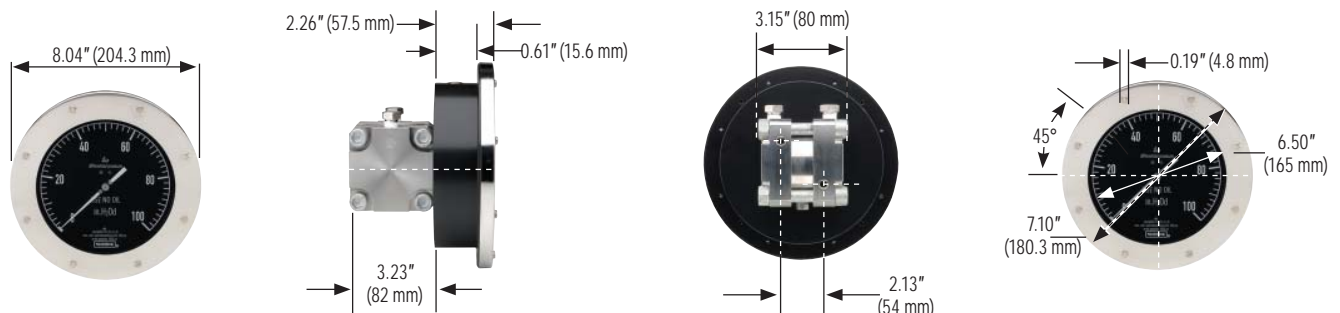
## 4-1/2" Gauge

## Panel Cut-Out Dimensions



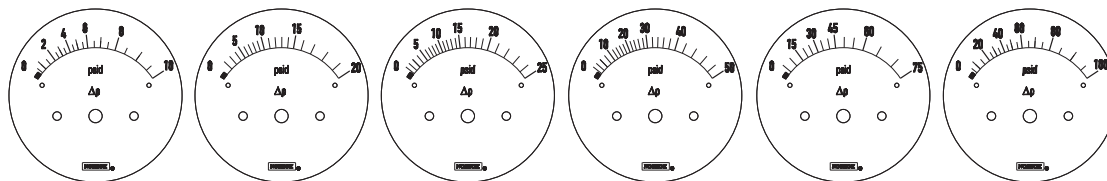
## 6" Gauge

## Panel Cut-Out Dimensions

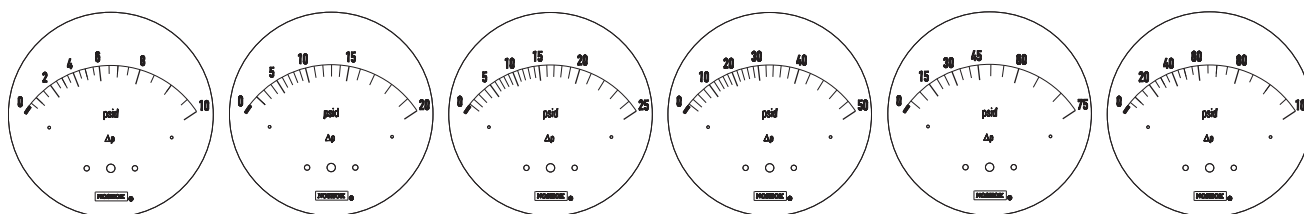


# Dial Layouts

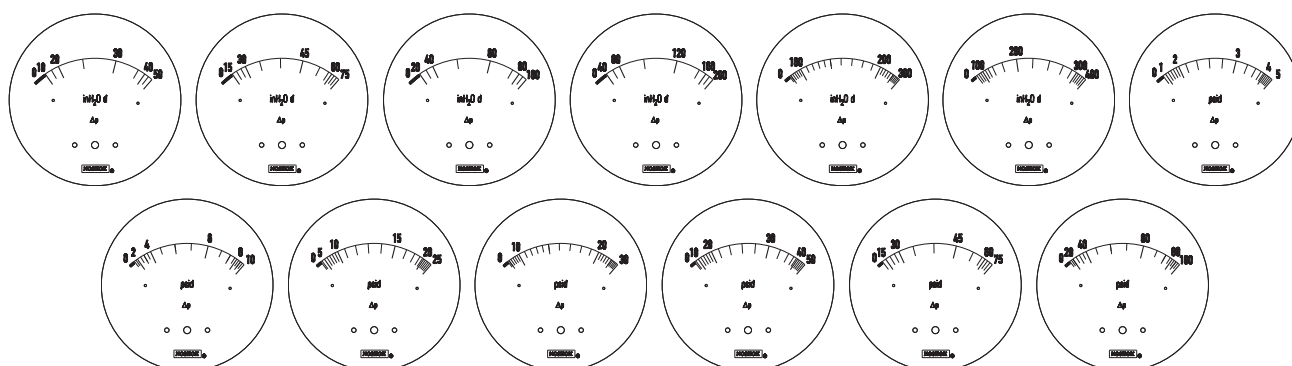
## 1000 Series 2-1/2"



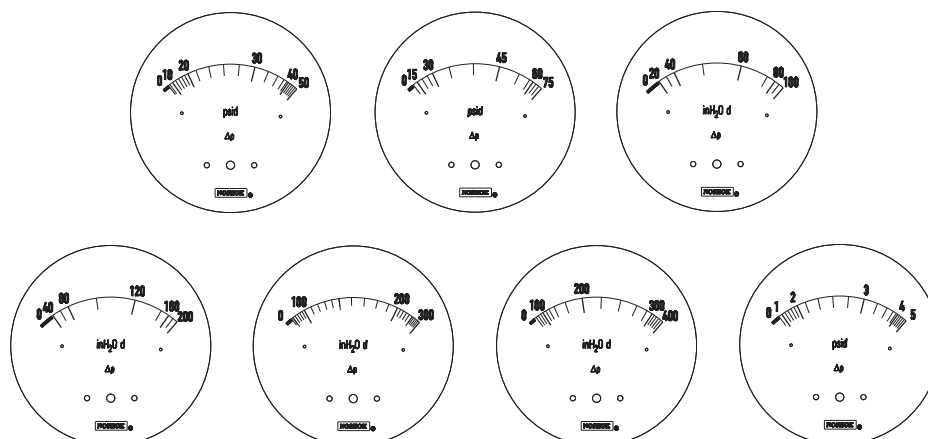
## 1000 Series 4-1/2"



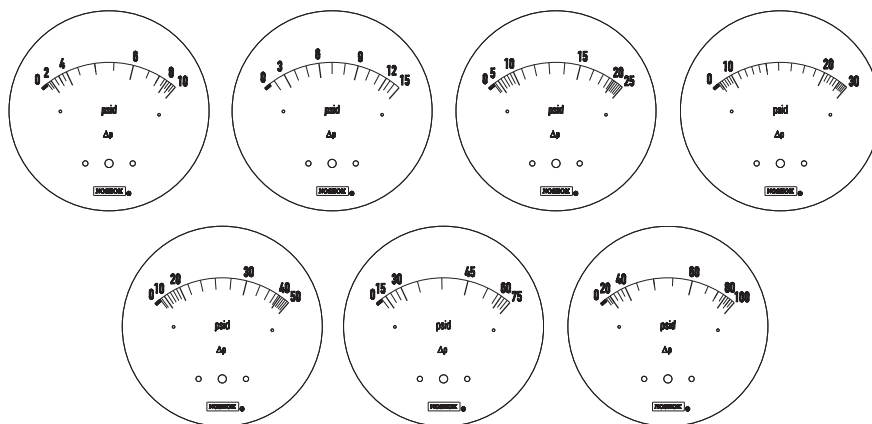
## 1100 Series 2-1/2"



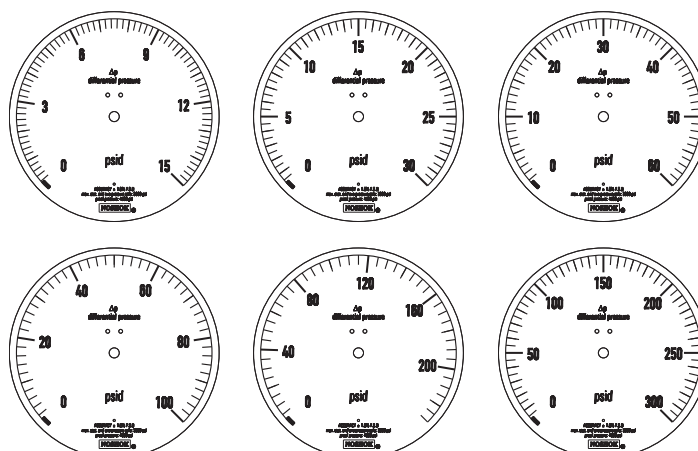
## 1100 Series 4-1/2"



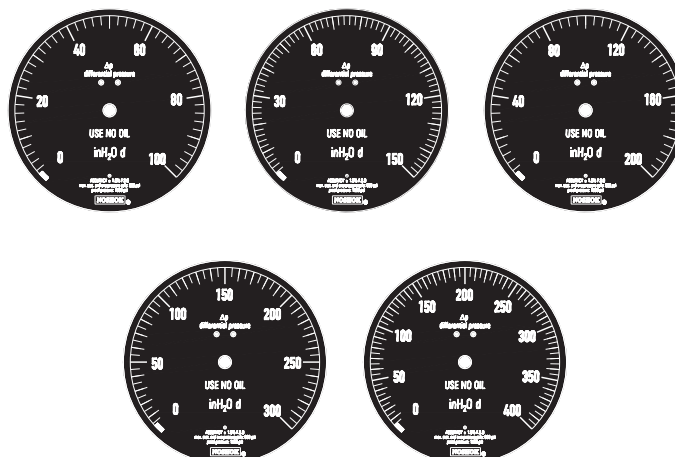
## 1100 Series 4-1/2"



## 1200 Series 4-1/2"



## 1300 Series 4-1/2"





## 10 SERIES

- 3/4" clamp, dry gauge
- Ranges from 0 psig to 30 psig through 0 psig to 600 psig
- 2" gauge size
- Electropolished stainless steel case
- 316 stainless steel wetted parts
- Meets current standards for 3A and ASME BPE-2009
- C.I.P, S.I.P and Autoclave (only dry gauges are recommended for Autoclave)

### APPLICATIONS

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

### SPECIFICATIONS

Pressure ranges	0 psig to 30 psig through 0 psig to 600 psig
Accuracy	±2.5% full scale
Temperature ranges	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)
Measuring element	316 stainless steel Bourdon tube
Connection	3/4" ASME-BPE Sanitary Clamp, 316L stainless steel Diaphragm 316L stainless steel, electropolished to 32 µin Ra or better
Case	2" Electropolished 304 stainless steel
Cover ring	Electropolished 304 stainless steel
Lens*	Polycarbonate
Pointer	Balanced aluminum, black finish
Dial	Aluminum, white background, black print
Movement	Stainless steel
Fill liquid	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.



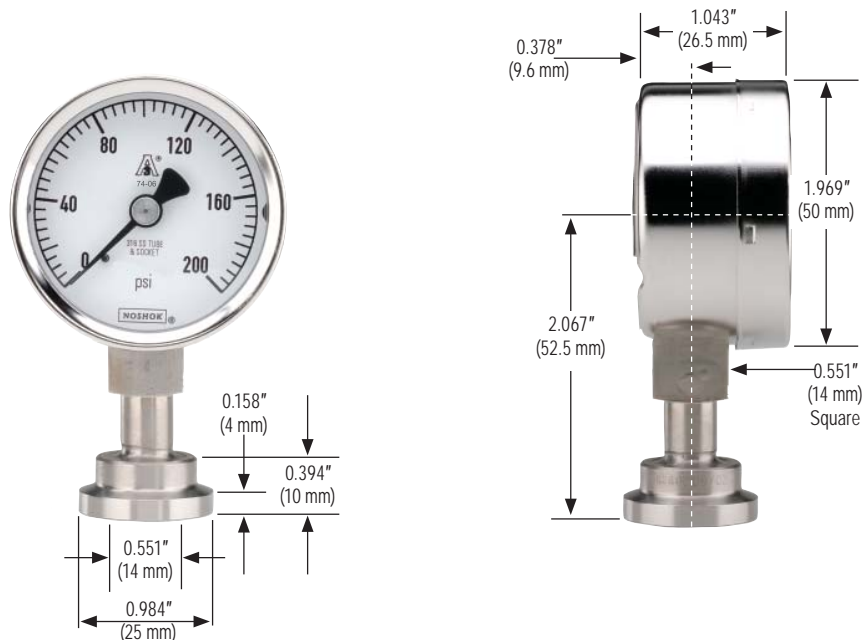
ORDERING INFORMATION			
SERIES	100	10 Series fractional	
CLAMP SIZE	06	3/4"	
FILL LIQUID	1	Glycerin Other food grade quality fill fluids available – please consult factory	
GAUGE SIZE	20	2"	
PRESSURE RANGES	43	0 psig to 30 psig	55 0 psig to 160 psig
	46	0 psig to 60 psig	58 0 psig to 200 psig
	49	0 psig 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

	100	-	06	-	1	-	20	-	43	-	3
Series .....	10 Series fractional										
Clamp size .....	3/4" ASME-BPE Sanitary										
Fill liquid .....	Glycerin (USP food grade)										
Gauge size .....	2"										
Pressure range .....	0 psig to 30 psig										
Option .....	Safety Glass Lens										

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





#### APPLICATIONS

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

## 10 SERIES

- 1-1/2" and 2" clamp, fillable dry or liquid-filled gauge
- Ranges from -30 inHg to 0 psig through 0 psig to 600 psig
- 2-1/2" and 4" gauge sizes
- Electropolished stainless steel case
- 316 stainless steel wetted parts
- Meets current standards for 3A and ASME BPE-2009
- C.I.P, S.I.P and Autoclave (only dry gauges are recommended for Autoclave)

#### SPECIFICATIONS

Pressure ranges	-30 inHg to 0 psig through 0 to 600 psig
Accuracy	2-1/2" gauge $\pm 1.6\%$ full scale 4" gauge $\pm 1.0\%$ full scale
Temperature ranges	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)
Measuring element	316 stainless steel "C" tube
Connection	1-1/2" or 2" ASME-BPE Sanitary Clamp, 316L stainless steel Diaphragm 316L stainless steel, electropolished to 32 $\mu$ m Ra or better
Case	Electropolished 304 stainless steel
Bayonet ring	Electropolished 304 stainless steel
Lens	Safety glass
Pointer	Balanced aluminum, black finish
Dial	Aluminum, white background, black print
Movement	Stainless steel
Fill liquid	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 heavy-duty, bottom connected	101	10 Series heavy-duty, back connected
CLAMP SIZES	12	1-1/2"	16	2"
FILL LIQUID	1	Glycerin	Other food grade quality fill fluids available – please consult factory	
GAUGE SIZES	25	2-1/2"	40	4"
PRESSURE RANGES	01	-30 inHg to 0 psig*	16	-30 inHg to 160 psig
	04	-30 inHg to 15 psig	19	-30 inHg to 200 psig
	07	-30 inHg to 30 psig	22	-30 inHg to 300 psig
	10	-30 inHg to 60 psig	40	0 psig to 15 psig*
	13	-30 inHg to 100 psig	43	0 psig to 30 psig
GAUGE FILLS	0	None	1	Glycerin
		(All food grade quality fill fluids)		
GAUGE OPTIONS	0	None	1	Max. Indicating Pointer
			2	Adjustable Pointer**

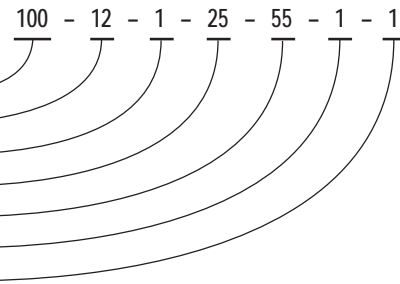
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

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

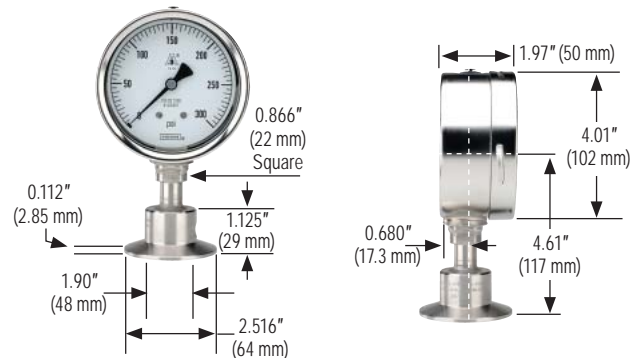
\*\* Not available on 2-1/2" gauge

#### EXAMPLE

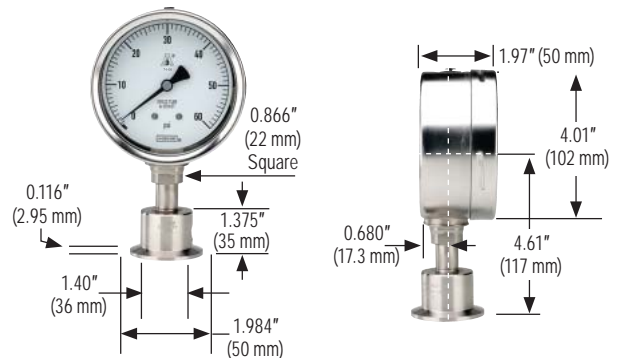
Series ..... 10 Series heavy-duty  
 Clamp size..... 1-1/2" ASME-BPE Sanitary  
 Fill liquid ..... Glycerin (USP food grade)  
 Gauge size ..... 2-1/2"  
 Pressure range ..... 0 psig to 160 psig  
 Gauge fill ..... Glycerin  
 Option ..... Maximum Indicating Pointer



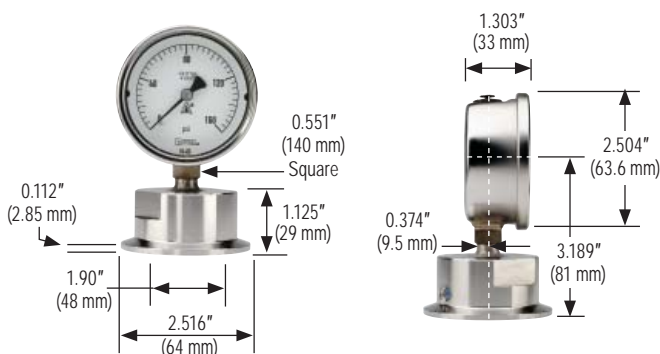
4" Gauge with 2" ASME-BPE Sanitary Clamp Connection



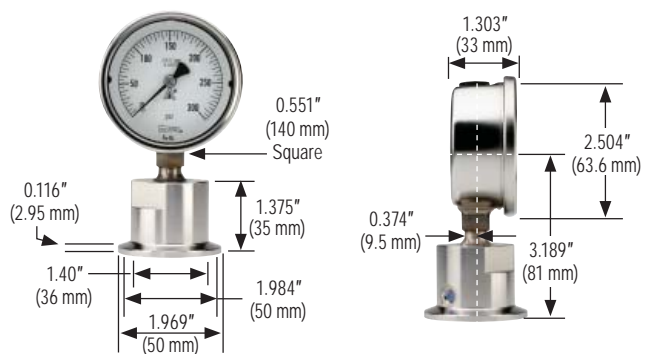
4" Gauge with 1-1/2" ASME-BPE Sanitary Clamp Connection



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



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



# Dial Indicating Gauge Options & Accessories

## PANEL MOUNTING FLANGES

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



Panel Mount Clamp  
20-110 PMC



Chrome Triangular Bezel  
with U-Clamp

## CASES & COVER RINGS

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

## LENSES

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



Cases and Cover Rings

## MAXIMUM INDICATING POINTERS (MIP)

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



Maximum Indicating Pointer

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

### SET POINTERS (SP)

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

### RUBBER CASE PROTECTORS (RCP)

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

### ORIFICES

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

### RECALIBRATORS & ADJUSTABLE POINTERS

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

### OVERPRESSURE PROTECTION

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

### AMMONIA REFRIGERATION GAUGES

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

### LIQUID FILLING OPTIONS

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

### SPECIAL CONNECTIONS

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

### REID VAPOR TEST GAUGES

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



Set Pointers



Rubber Case Protectors



Ammonia Gauges

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

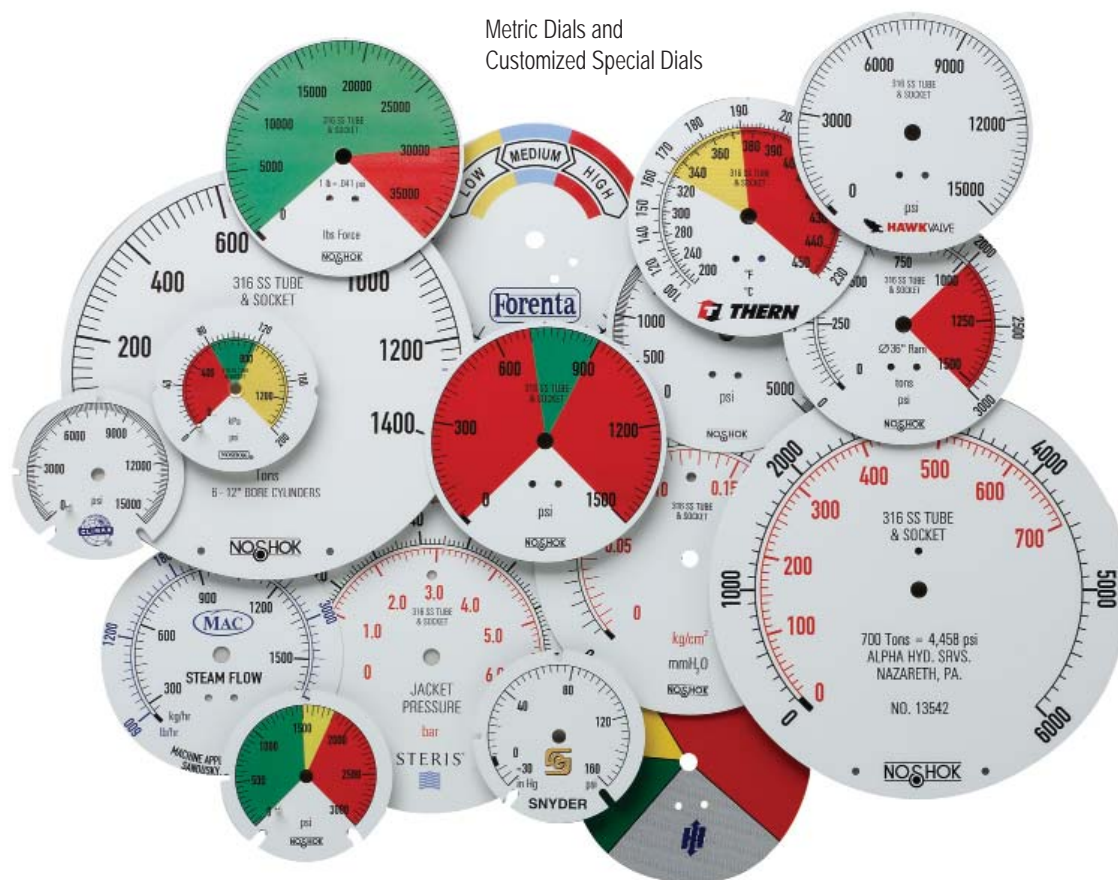
# Dial Indicating Gauge Options & Accessories

## RECEIVER GAUGES

- 3 psi to 15 psi receiver gauges are available in both 600 Series (brass) and 700 Series (316 stainless steel)

## METRIC DIALS & CUSTOMIZED SPECIAL DIALS

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



## CERTIFIED CALIBRATION

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

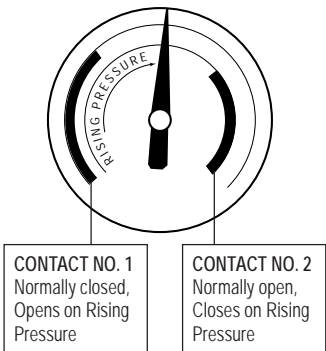


MAGNETIC SPRING CONTACT SWITCH (MSCS)

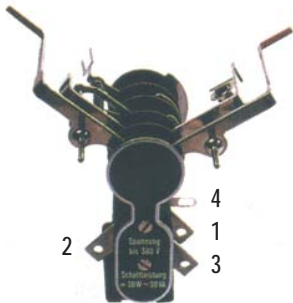
- An excellent choice when an accurate pressure switch is required in addition to a reliable pressure gauge
- Fully adjustable by the user
- These switches are actuated by the pressure gauge pointer to provide accurate field adjustment
- A removable adjustment key makes them tamper-proof
- They operate with an extremely broad power supply, AC or DC up to 250V max. (30W 50 VA), allowing them to be used virtually anywhere in the world in addition to very remote applications with only DC battery pack power available
- Standard units consist of (2) two magnetic spring switches; either one or both switches may be used:
  - Switch (1) one is normally closed
  - Switch (2) two is normally open with operation referenced on clockwise pointer motion
- Magnetic spring contact switches are available as a factory installed option on 40-400 Series, 40-410 Series, 40-901 Series dry and 40-911 Series dry
- 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

APPLICATIONS

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

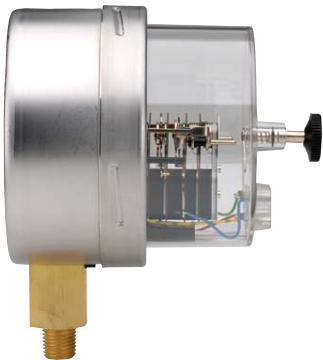
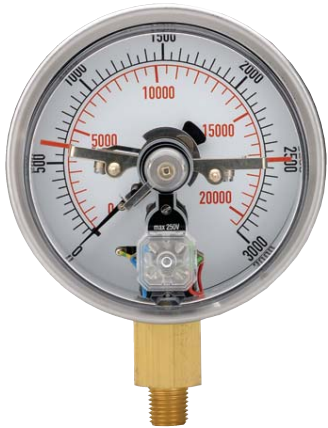


SPECIFICATIONS	
Type of power	A.C. or D.C. 24 to 250V max
Maximum amps	1.0 A
Maximum switching capacity	30 W/50 VA
Gauge accuracy	Add an additional ±2%
Minimum magnet holding force	1g
Contact pin material	Silver Tungsten
Ambient temperature limitation	0 °F to 140 °F (-18 °C to 61 °C)
Minimum full scale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



WIRING AND TERMINAL LOCATION

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














40-901 Series Gauge with  
Magnetic Spring Contact Switch

# 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

SERIES NO.	15-100	15-110	15-120	20-100	20-110	20-120	20-148	25-100	25-110	25-120	40-100
CONNECTION											
Installed Panel Mount Clamp (PMC)		•			•				•		
Uninstalled Panel Mount Clamp (15-110 PMC, 20-110 PMC, 25-110 PMC)		•			•				•		
Polished Stainless Steel Bezel (SSB)		•			•				•		
Black Rear Flange (BLRF)								•			•
Black Front Flange (BLFF) - ABS Case		•			•				•		
Chrome Front Flange (CFF) - ABS Case		•			•				•		
Black Front Flange (SBFF) - Steel Case	C			C	•			•	•		•
Chrome Front Flange (SCFF) - Steel Case	C	•		C	•			•	•		•
Black Steel Case (BSC)	C	•	STD	C	•	STD		•	•	STD	•
Stainless Steel Case (SSC)	C	•		C	•			•	•		
Chrome Case (CRC)	C	•		C	•			•	•		
Flat Sided ABS Case (FAC)		•			•				•		
Black Cover Ring (BCR)**	C	•		C	•			•	•		•
Stainless Steel Cover Ring (SSCR)**	C	•		C	•			•	•		
Chrome Cover Ring (CCR)**	C	•		C	•			•	•		•
Chrome Bezel with U-Clamp (CBU)			STD			STD				STD	
Chrome Adapter Ring (CAR)		•	•		•	•			•	•	
Glass Lens (GL)*	C	C	•	C	C	•		C	C	C	C
Polycarbonate Lens (LL)*								•	•		
Safety Glass Lens (SG)*								•	•		•
Homalite Lens (HL)*			•			•				•	
Red Set Pointer (SP)**	•	C	C	•	•	C	•	•	•	C	•
Maximum Indicating Pointer (MIP)								C	C	C	
Silicone Dampened Movement (SDM)	C	C	C	C	C	C	C	C	C	C	C
Laser Marking (LM)	•	•	•	•	•	•	•	•	•	•	•
Stainless Steel Tagging (ST)	•	•	•	•	•	•	•	•	•	•	•
Orifice - Brass Press Fit Sintered (20 Micron) (CPO)	•	•	•	•	•	•	•	•	•	•	•
Orifice - Brass Press Fit - 0.1 mm (BP1)	•	•	•	•	•	•	•	•	•	•	•
Orifice - Brass Press Fit - 0.3 mm (BP3)	•	•	•	•	•	•	•	•	•	•	•
Orifice - Brass Press Fit - 0.8 mm (BP8)	•	•	•	•	•	•	•	•	•	•	•

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

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

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

SERIES NO.	25-300	25-310	40-300	40-310
CONNECTION				
Chrome Front Flange (CFF)	•	•	•	•
Chrome Front Flange (CFFN) w/o Holes	•	•	•	•
Brass Front Flange (BFF)	•	•	•	•
Black Front Flange (BLFF)			•	•
304SS Rear Flange (SSRF)			•	•
Rear Flange (RF)	•	•		
Chrome Cover Ring (CCR)	•	•	•	
Chrome Bezel with U-Clamp (CBU)		•		•
Maximum Indicating Pointer (MIP)	•	•		
Polycarbonate Lens (LL)			•	•
Glass Lens Overlay (GLO)	•	•		
Safety Glass Overlay (SGO)	•	•	•	•
Adapter Ring (AR)		•		•
7/16" - 20 Straight Thread (SST)*	•	•	•	•
Laser Marking (LM)	•	•	•	•
Stainless Steel Tagging (ST)	•	•	•	•
Orifice - Brass Threaded - 0.3 mm (BT3)	•	•	•	•
Orifice - Brass Threaded - 0.4 mm (BT4)	•	•	•	•
Orifice - Brass Threaded - 0.8 mm (BT8)	•	•	•	•

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

SERIES NO.	15-401	15-411	25-400 25-500	25-410 25-510	40-400 40-500	40-410 40-510	60-400 60-500	60-410 60-510
CONNECTION								
304 SS Front Flange (SSFF)				•	•	•	•	•
304 SS Rear Flange (SSRF)			C	C	•	•	•	•
SS Bezel w/U-Clamp (SSBU)						•		•
Installed 304SS Panel Mount Clamp (SPMC)				•				
Uninstalled 304SS Panel Mount Clamp (25-459-1-SS-PMC)				•				
Installed Steel Panel Mount Clamp (PMC)				•				
Uninstalled Steel Panel Mount Clamp (25-459-1-PMC)				•				
Flange Ring (FR)				•				
Flange Ring 304SS (SSFR)				•				
Adjustable Pointer (AP)					•	•	STD	STD
Safety Glass Lens (SG)			•	•	•	•	STD	STD
Maximum Indicating Pointer (MIP)			•	•	•	•	•	•
Red Set Pointer (SP)			•	•	•	•	•	•
Laser Marking (LM)	•	•	•	•	•	•	•	•
Stainless Steel Tagging (ST)	•	•	•	•	•	•	•	•
Orifice - 316SS Threaded Orifice - 0.8 mm (ST8)	•	•	•	•	•	•	•	•
Orifice - 316SS Threaded Orifice - 0.5 mm (ST5)	•	•	•	•	•	•	•	•

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	DRY		LIQUID FILLED	
SERIES NO.	45-640	45-740	45-660	45-760
CONNECTION				
Safety Glass Lens (SG)	•	•	•	•
Glass Lens (GL)	•	•	•	•
Maximum Indicating Pointer (MIP)	•	•	•	•
Uninstalled Black Panel Mount Ring (BPMR)	•	•	•	•
Uninstalled Chrome Panel Mount Ring (CPMR)	•	•	•	•
Overload Stop (OS)	•	•	•	•
Laser Marking (LM)	•	•	•	•
Stainless Steel Tagging (ST)	•	•	•	•
Orifice - Brass Press Fit - 0.3 mm (BP3)	•		•	
Orifice - Brass Threaded - 0.8 mm (BT8)	•		•	
Orifice - 316SS Threaded - 0.8 mm (ST8)		•		•

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








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

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

SERIES NO.	15-910	25-900	25-910	25-901	25-911	40-901	40-911
CONNECTION							
Chrome Flange Ring (CFR)			•		•		
304 SS Polished Flange Ring (SSFR)			•		•		
Installed 304SS Panel Mount Clamp (SPMC)					•		
Uninstalled 304SS Panel Mount Clamp (25-459-1-55-SPMC)					•		
Installed Steel Panel Mount Clamp (PMC)			•		•		
Uninstalled Steel Panel Mount Clamp (25-459-1-PMC)			•		•		
SS Bezel with U-Clamp (SSBU)							•
Adjustable Pointer (AP)						•	•
Safety Glass Lens (SG)				•	•	•	•
Black Front Flange (BLFF)			•				
304 SS Front Flange (SSFF)					•	•	•
304 SS Rear Flange (SSRF)				C	C	•	•
Maximum Indicating Pointer (MIP)				•**	•**	•	•
Red Set Pointer (SP)				•	•	•	•
SAE J1926-3:7/16 - 20 Adjustable Connection* (SST)		•	•	•	•	•	•
Laser Marking (LM)	•	•	•	•	•	•	•
Stainless Steel Tagging (ST)	•	•	•	•	•	•	•
Orifice - Brass Press Fit - 0.3 mm (BP3)	•	•	•	•	•	•	•
Orifice - Brass Threaded - 0.5 mm (BT5)	•	•	•	•	•		
Orifice - Brass Threaded - 0.8 mm BT8)						•	•

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	62:38 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

300 Series Gauges: 4"

Applies to:  
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 200 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:  $\pm 1.6\%$  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> to 0.5 kg/cm <sup>2</sup>	-0.05 kg/cm <sup>2</sup> to 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> to 1 kg/cm <sup>2</sup>	-0.1 kg/cm <sup>2</sup> to 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> to 2 kg/cm <sup>2</sup>	-2 kg/cm <sup>2</sup> to 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> to 2 kg/cm <sup>2</sup>	-0.2 kg/cm <sup>2</sup> to 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> to 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> to 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> to 4 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> to 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> to 5 kg/cm <sup>2</sup>	-0.5 kg/cm <sup>2</sup> to 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:  $\pm 0.5\%$  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

## Dial Indicating Gauge Accuracy/Standard Dial Configuration

Applies to:  
800 Series Gauges

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

### PRESSURE & VACUUM CONVERSIONS

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

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

### Fill Fluid Temperature Table

Fill Fluid	Temperature Range (°F)
Glycerin*	30 – 300
Silicone 200-10	-35 – 450
Silicone 710	30 – 650
Silicone 550	-40 – 600
Silicone 510	-60 – 400
Fluorolube FS-5	-40 – 500
Silicone 200-350	0 – 300
Halocarbon® Oil 6.3	-40 – 400
Ethylene Glycol	-30 – 300
Propylene Glycol	-50 – 200
Syltherm 800	-40 – 450
Neobee M-20	-40 – 320

\* Not recommended for use on vacuum applications

### CONVERSIONS FOR HYDRAULIC RAM CAPACITY

psi x AREA = (LBS.) FORCE

$$\text{TONS} = \frac{\text{psi} \times .7854 \times D^2}{2000}$$

$$\text{psi} = \frac{\text{TONS}}{D^2 \times .0003927}$$

For further assistance with conversions please consult the factory.



Shown with  
enhanced software.

## 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



## 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, aluminum, NBR and ceramic wetted parts
- CE compliant to suppress RFI, EMI and ESD

### SPECIFICATIONS

Pressure ranges	0 psig to 30 psig through 0 psig to 10,000 psig Compound from -30 inHg to 30 psig through -30 inHg to 600 psig
Accuracy	±0.25% full scale (BFSL); ±0.5% terminal point ±1 digit
Temperature ranges	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)
Measuring element	≤750 psig stainless steel, aluminum, NBR, ceramic measuring element ≥ 1000 psig stainless steel, thin-film measuring element
Connection	1/4" NPT Male, 316 stainless steel
Case	Stainless steel
Bezel	Stainless steel triangular
Display	Liquid Crystal Display with 0.43" digits 4 digits up to 9999 with bar graph
Power requirement*	2 x 1.5V "AA" battery 4,000 hrs ("AA" 2000 mAh)
Response time	200 ms
Proof pressure	2 times full scale range, maximum 15,000 psi
Programmable functions	Adjustable through front key pad
Measuring units	bar, psi, MPa
Peak memory	min/max, display, hold
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Weight	0.88 lb.

\* Unregulated

Optional Gauge Carrying Case

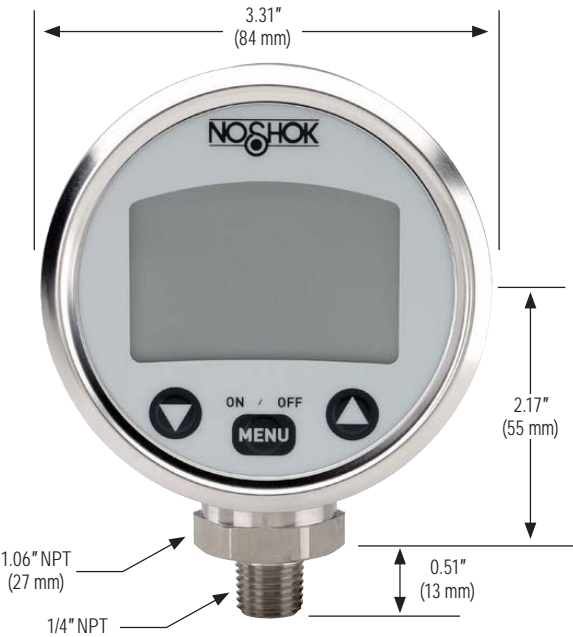
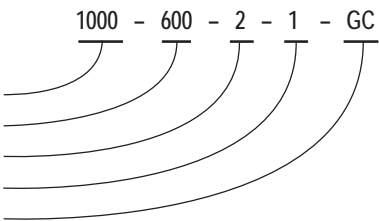


ORDERING INFORMATION				
SERIES	1000			
PRESSURE RANGES	30/145	-30 inHg to 145 psig	1450	0 psig to 1,450 psig
	75	0 psig to 75 psig	2000	0 psig to 2,000 psig
	145	0 psig to 145 psig	3000	0 psig to 3,000 psig
		psig = gauge pressure	5000	0 psig to 5,000 psig
		Other ranges available on request	6000	0 psig to 6,000 psig
			7500	0 psig to 7,500 psig
PROCESS CONNECTION	2	1/4" NPT male		
OPTIONS	1	Peak memory - standard	GC	Gauge Carrying Case
	6	Enhanced software	ST8	Threaded Orifice
			RCP	Rubber Case Protector

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

EXAMPLE

Series .....1000 Series  
Pressure range .....0 psig to 600 psig  
Process connection .....1/4" NPT Male  
Options .....Peak memory  
Options .....Gauge Carrying Case





## 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

Output signal	4 mA to 20 mA, 2-wire
Pressure ranges	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
Accuracy	±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)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Adjustment	≤ ±10% full scale for zero and span
Response time	≤ 1 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
Load limitations	≤ (Vpower supply -10)/0.020 Amp
Proof pressure	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
Burst pressure	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
Measuring element	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel for ≥500 psi
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1000 g's according to IEC 60068-2-27
Vibration	30 g's according to IEC 60068-2-6
Weight	Approximately 3.5 oz.

\* Unregulated

ORDERING INFORMATION												
SERIES	100											
PRESSURE RANGES	30vac	-30 inHg to 0 psig	5	0 psig to 5 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	10	0 psig to 10 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	15	0 psig to 15 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	25	0 psig to 25 psig	600	0 psig to 600 psig	6000	0 psig to 6,000 psig	100A	0 psia to 100 psia		
	30/100	-30 inHg to 100 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		
	30/150	-30 inHg to 150 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		
	30/200	-30 inHg to 200 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		
	30/300	-30 inHg to 300 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					
ACCURACIES	1	±0.5% full scale (BFSL)				2	±0.25% full scale (BFSL)					
OUTPUT SIGNAL	1	4 mA to 20 mA, 2-wire										
PROCESS CONNECTIONS	1	1/8" NPT male			3	SAE J1926-3:7/16-20 Adjustable			9	SAE J1926-1:7/16-20		
	2	1/4" NPT male			4	1/8" NPT female			10	G1/4 male		
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 7)				6	1/2" NPT conduit ( with 36" cable)			25	M12 x 1 (4-pin)	
	2	4-pin Bendix				7	Mini-Hirschmann (DIN EN 175301-803 Form C)			36	Integral cable 36"	
	3	6-pin Bendix										
OPTION	ST8	Threaded Orifice										

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

## EXAMPLE

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

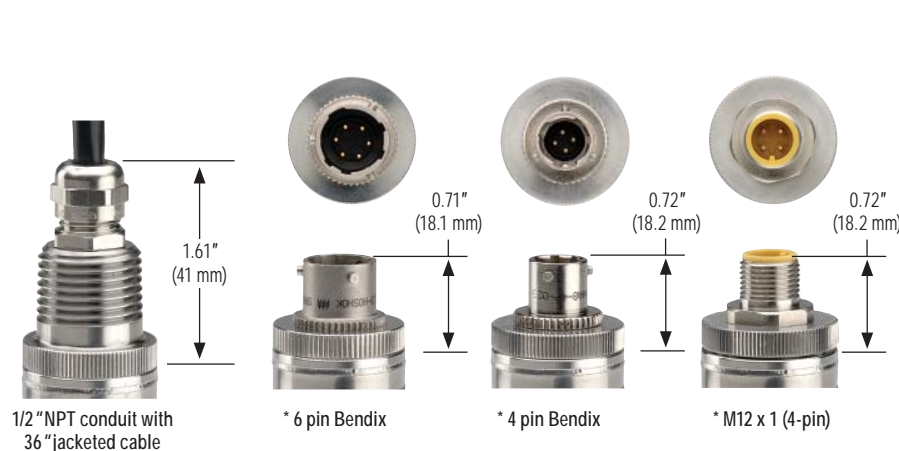
Process connection ..... 1/4" NPT Male

Electrical connection ..... Mini-Hirschmann

Option ..... Threaded Orifice

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

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



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

\* Note: Mate supplied separately or customer supplied.





## 200 SERIES

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

### APPLICATIONS

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

### SPECIFICATIONS

Output signals	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
Pressure ranges	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
Accuracy	±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)
Stability	≤ ±0.2% full scale per year, non-accumulating
Adjustment	±10% full scale for zero and span
Response time	≤ 1 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≥ 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
Proof pressure	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
Burst pressure	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
Measuring element	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel for ≥ 500 psi
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1,000 g's according to IEC 60068-2-27
Vibration	30 g's according to IEC 60068-2-6
Weight	Approximately 3.5 oz.

\* Unregulated

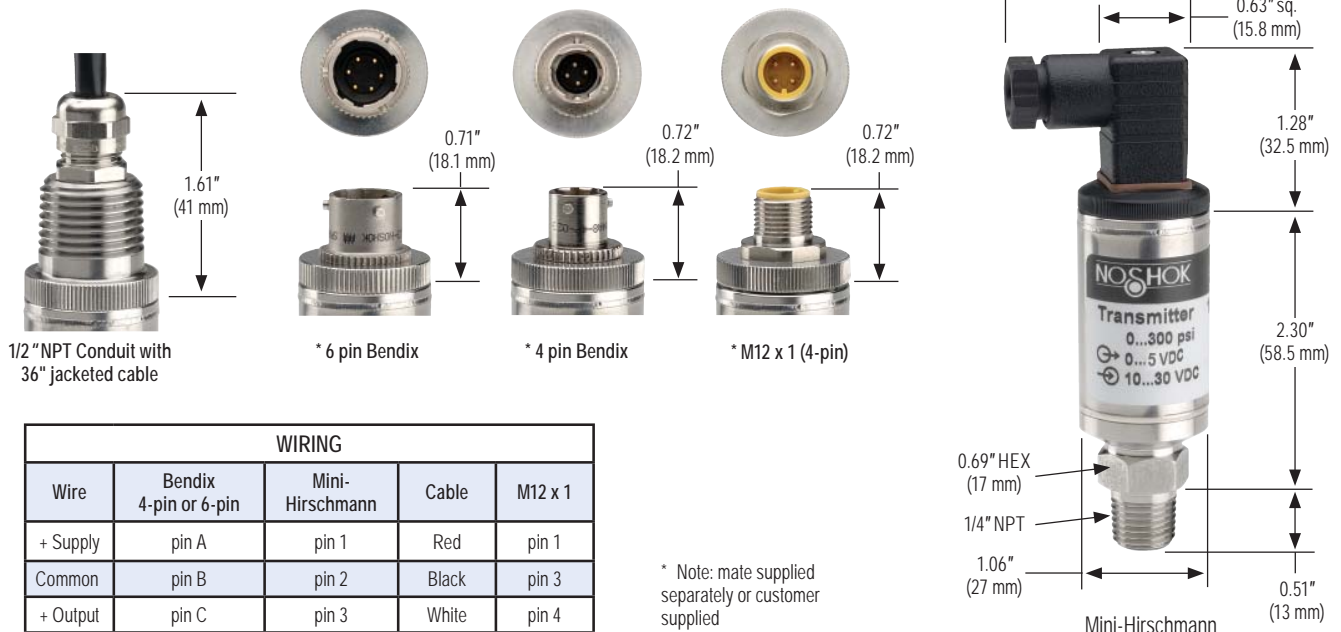
ORDERING INFORMATION															
SERIES	200														
PRESSURE RANGES	30vac	-30 inHg to 0 psig	30/300	-30 inHg to 300 psig	200	0 psig to 200 psig	3000	0 psig to 3,000 psig	15A	0 psia to 15 psia					
	30/15	-30 inHg to 15 psig	5	0 psig to 5 psig	300	0 psig to 300 psig	4000	0 psig to 4,000 psig	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							
ACCURACIES	1	±0.5% full scale (BFSL)			2	±0.25% full scale (BFSL)									
OUTPUT SIGNALS	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	
PROCESS CONNECTIONS	1	1/8" NPT male		3	SAE J1926-3:7/16-20 adjustable				9	SAE J1926-1:7/16-20					
	2	1/4" NPT male		4	1/8" NPT female				10	G1/4 male					
ELECTRICAL CONNECTION	1	36" cable (connected to option 7)				6	1/2" NPT conduit ( with 36" cable)				25	M12 x 1 (4-pin)			
	2	4-pin Bendix				7	Mini-Hirschmann (DIN EN 175301-803 form C)				36	Integral cable 36"			
	3	6-pin Bendix													
	NOTE: 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc outputs are also available in 4-wire configurations for use with other electrical systems.														
OPTION	ST8 Threaded Orifice														

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

## EXAMPLE

Series ..... 200 Series  
 Pressure range ..... 0 psig to 500 psig  
 Accuracy ..... ±0.5% full scale (BFSL)  
 Output signal ..... 0 Vdc to 5 Vdc, 3-wire  
 Process connection ..... 1/4" NPT Male  
 Electrical connection ..... Mini-Hirschmann  
 Option ..... Threaded Orifice

200 - 500 - 1 - 2 - 2 - 7 - ST8



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

\* Note: mate supplied separately or customer supplied



### APPLICATIONS

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

## 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

### SPECIFICATIONS

Output signals	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
Pressure ranges	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psig to 1,000 psig
Accuracy	± 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)
Stability	≤ ± 0.2% full scale for 1 year, non-accumulating
Response time	≤ 1 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	2 times range
Burst pressure	4 times range
Measuring element	Cap: Polyamide, 316 stainless steel with weighted nosecone Cable: Polyurethane, optional FEP or PVC with double water block
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP68
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity protection, short circuit and optional lightning protection per EN 6100-4-5; 1.5J
Shock	100 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 7 oz. with standard nosecone - cable extra

\* Unregulated



ORDERING INFORMATION								
SERIES		612						
PRESSURE RANGES	50 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	2	0 psig to 2 psig (4.6 ftH <sub>2</sub> O)	20	0 psig to 20 psig (46.2 ftH <sub>2</sub> O)	200	0 psig to 200 psig (461.3 ftH <sub>2</sub> O)
	100 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	3	0 psig to 3 psig (6.9 ftH <sub>2</sub> O)	25	0 psig to 25 psig (57.7 ftH <sub>2</sub> O)	300	0 psig to 300 psig (692.5 ftH <sub>2</sub> O)
	150 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	5	0 psig to 5 psig (11.5 ftH <sub>2</sub> O)	30	0 psig to 30 psig (69.2 ftH <sub>2</sub> O)	350	0 psig to 350 psig (807.9 ftH <sub>2</sub> O)
	200 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 200 inH <sub>2</sub> O	10	0 psig to 10 psig (23.1 ftH <sub>2</sub> O)	60	0 psig to 60 psig (138.5 ftH <sub>2</sub> O)	500	0 psig to 500 psig (1154.2 ftH <sub>2</sub> O)
	400 inH <sub>2</sub> O	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	15	0 psig to 15 psig (34.6 ftH <sub>2</sub> O)	100	0 psig to 100 psig (230.8 ftH <sub>2</sub> O)	750	0 psig to 750 psig (1733.3 ftH <sub>2</sub> O)
psig = gauge pressure      Other ranges available on request				150	0 psig to 150 psig (346.3 ftH <sub>2</sub> O)	1000	0 psig to 1,000 psig (2311.0 ftH <sub>2</sub> O)	
ACCURACIES	1	±0.25% full scale (BFSL)			2	±0.125% full scale (BFSL)		
OUTPUT SIGNALS	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		
PROCESS CONNECTIONS	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						
ELECTRICAL CONNECTIONS	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.								
OPTIONS	PT1	PT100 RTD <sup>1</sup>	CBC	Cable Clamp	FE	Filter Element		
	DC	Desiccant Cartridge	LP	Lightning Protection <sup>1</sup>	JB	Cable Junction Box		

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

<sup>1</sup> Not available for PVC cable

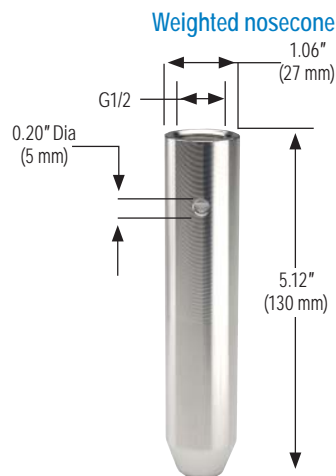
## EXAMPLE

Series .....	612 Series	612	-	5	-	1	-	1	-	N	-	50
Pressure range .....	0 psig to 5 psig											
Accuracy .....	±0.25% full scale (BFSL)											
Output signal .....	4 mA to 20 mA, 2-wire											
Process connection .....	Nosecone											
Electrical connection .....	50' of submersible polyurethane cable											



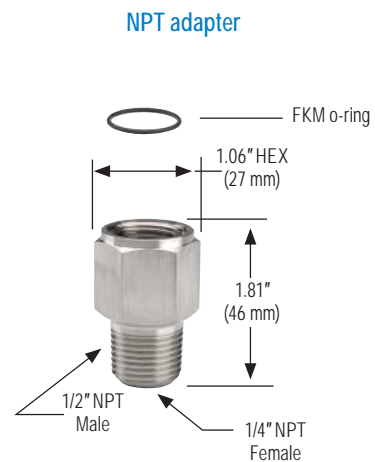
## 2-WIRE WIRING

Wiring	Cable
+ Supply	Red
+ Output	Black



## 3-WIRE WIRING

Wiring	Cable
+ Supply	Red
Common	Black
+ Output	White



## Cage-Protected Submersible



## 613 SERIES

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

## APPLICATIONS

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

## SPECIFICATIONS

Output signals	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
Pressure ranges	0 psi to 5 psi through 0 psi to 300 psi
Accuracy	± 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)
Stability	≤ ± 0.2% full scale for 1 year, non-accumulating
Response time	≤ 1 ms (between 10% and 90% full scale)
Service life	> 100,000,000 full scale cycles
Temperature measurement	Optional PT100, 4-wire per IEC 60751
Temperature ranges	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
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	2 times range
Burst pressure	4 times range
Measuring element	Cage seal: All 316 stainless steel Cable: Polyurethane, optional FEP
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP68
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity protection, short circuit and optional lightning protection per EN 6100-4-5; 1.5J
Shock	100 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 3.2 lb. - cable extra

\* Unregulated

ORDERING INFORMATION												
SERIES	613											
PRESSURE RANGES	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)		75	0 psi to 75 psi (173.25 ft/H <sub>2</sub> O)		300	0 psi to 300 psi (693 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)		100	0 psi to 100 psi (231.00 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)		150	0 psi to 150 psi (346.50 ft/H <sub>2</sub> O)				
ACCURACIES	1	±0.25% full scale (BFSL)					2	±0.125% full scale (BFSL)				
OUTPUT SIGNALS	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				
ELECTRICAL CONNECTIONS	XX	Standard polyurethane (PUR) cable NOTE: XX = length of cable in feet.					38-XX	Optional FEP cable				
OPTIONS	CBC	Cable Clamp		FE	Filter Element		LP	Lightning Protection*		PT1	PT100 RTD*	
	DC	Desiccant Cartridge		JB	Cable Junction Box		LR	Lifting Ring				

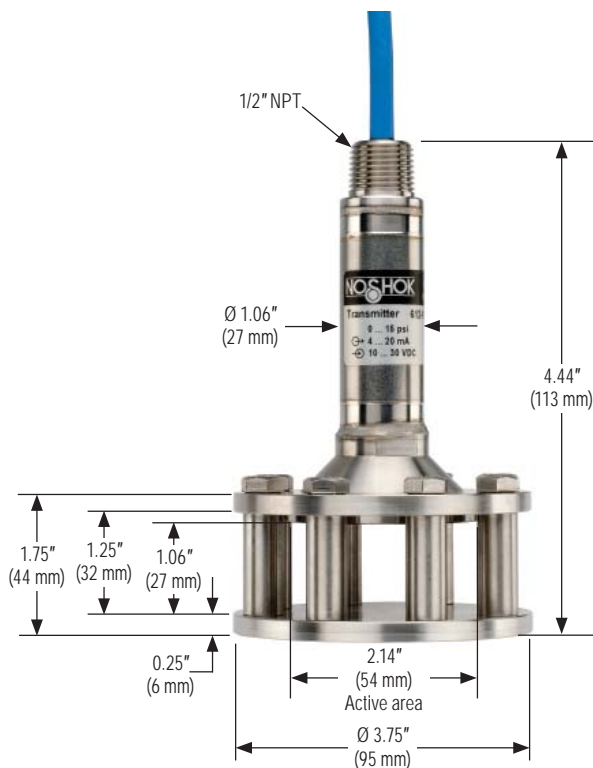
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Only available with PUR cable

## EXAMPLE

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

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



Optional Cable Clamp



Optional Cable Junction Box



Optional Filter Element



Optional Desiccant Cartridge



Optional Lifting Ring

## 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

Output signals	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc, 1 Vdc to 6 Vdc, 1 Vdc to 11 Vdc, 3-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 4-wire
Pressure ranges	Vacuum through 0 psig to 145,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
Accuracy	± 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)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Adjustment	± 10% full scale for zero and span
Response time	Less than 1 ms (between 10% and 90% full scale)
Service life	>100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	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
Burst pressure	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
Measuring element	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel for ≥500 psi
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	1,000 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 7.2 oz.

\* Unregulated

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    Note: 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			4	1 Vdc to 6 Vdc, 3-wire*					
*Ranges up to 0 psig to 60,000 psig	2	0 Vdc to 5 Vdc, 3-wire			5	0 Vdc to 10 Vdc, 3-wire					
	3	1 Vdc to 5 Vdc, 3-wire			6	1 Vdc to 11 Vdc, 3-wire*					
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.											
PROCESS CONNECTIONS	615:	2	1/4" NPT male			6	9/16" -18 UNF 2B high pressure cone** (Standard on 30,000 to 120,000 psig)			8	1/2" NPT male
	616:	11	G 1/2 B (Pressure ranges ≥ 0 psig to 30 psig)			13	G 1 B (Pressure ranges ≤ 0 psig to 30 psig)			Other connections available upon request	
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 8)			8	Hirschmann (DIN EN 175301-803 Form A)			25	M12 x 1 (4-pin)	
	3	6-pin Bendix			14	Hirschmann type with 1/2" NPT female conduit			36	Integral 36" cable	
	6	1/2" NPT conduit w/ 36" cable									
OPTIONS	ST8	SS Threaded Orifice			G1	G 1 Weld-on adapter (616 only)			G½	G 1/2 Weld-on adapter (616 only)	

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

\*\* 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 ..... 36" cable  
 Option ..... Threaded Orifice

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



### 2-WIRE WIRING

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

### 3-WIRE WIRING

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

### NOTE

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



## 640 SERIES

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

### APPLICATIONS

- Aerospace equipment
- Laboratory & test equipment
- Precision measurement

### SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; USB
Pressure ranges	Vacuum through 0 psig to 15,000 psig Absolute from 0 to 15 psia through 0 psia to 300 psia
Accuracy	±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)
Stability	≤ ±0.1% full scale; 5 psi ±0.2% full scale per year
Response time	< 300 ms (between 10% to 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	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
Burst pressure	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
Measuring element	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel for ≥500 psi
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	100 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 11 oz.

\* Unregulated



ORDERING INFORMATION										
SERIES	640									
PRESSURE RANGES	30vac	-30 inHg to 0 psig	30/300	-30 inHg to 300 psig	150	0 psig to 150 psig	3000	0 psig to 3,000 psig	30A	0 psia to 30 psia
	30/15	-30 inHg to 15 psig	5	0 psig to 5 psig	200	0 psig to 200 psig	5000	0 psig to 5,000 psig	60A	0 psia to 60 psia
	30/30	-30 inHg to 30 psig	10	0 psig to 10 psig	300	0 psig to 300 psig	6000	0 psig to 6,000 psig	100A	0 psia to 100 psia
	30/60	-30 inHg to 60 psig	15	0 psig to 15 psig	500	0 psig to 500 psig	7500	0 psia to 7,500 psig	150A	0 psia to 150 psia
	30/100	-30 inHg to 100 psig	30	0 psig to 30 psig	750	0 psig to 750 psig	10000	0 psia to 10,000 psig	200A	0 psia to 200 psia
	30/150	-30 inHg to 150 psig	60	0 psig to 60 psig	1000	0 psig to 1,000 psig	15000	0 psia to 15,000 psig	300A	0 psia to 300 psia
	30/200	-30 inHg to 200 psig	100	0 psig to 100 psig	2000	0 psig to 2,000 psig	15A	0 psia to 15 psia		
psig = gauge pressure      psia = absolute pressure      Other ranges available on request										
ACCURACIES	1	±0.05% full scale (BFSL)				2	±0.025% full scale (BFSL)			
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire analog				5	0 Vdc to 10 Vdc, 3-wire analog			
	2	0 Vdc to 5 Vdc, 3-wire analog								
PROCESS CONNECTIONS	2	1/4" NPT male				8	1/2" NPT male; other connections available upon request			
ELECTRICAL CONNECTIONS	1	54" Integral cable				25	M12 x 1 (4-pin)			
OPTION	ST8	Threaded Orifice								

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

## EXAMPLE

Series ..... 640 Series  
 Pressure range ..... 0 psig to 3,000 psig  
 Accuracy ..... ±0.05% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire analog  
 Process connection ..... 1/2" NPT Male  
 Electrical connection ..... M12 x 1 (4-pin)  
 Option ..... Threaded Orifice



## 2-WIRE WIRING

Wiring	M12	Cable
+ Supply	1	Brown
+ Output	3	Blue

## 3-WIRE WIRING

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



## 660 SERIES

- Ranges from 0 psig to 200 through 0 psig to 15,000 psig
- Current & voltage outputs available
- Stainless steel wetted parts
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

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

### SPECIFICATIONS

Output signals	4 mA to 20 mA 2-wire, 1 Vdc to 5 Vdc 3-wire; 0.1 Vdc to 10 Vdc, 3-wire
Pressure ranges	0 psig to 200 psig through 0 psig to 15,000 psig
Accuracy	±0.25% full scale (BFSL); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
Stability	≤ ±2% full scale for 1 year, non-accumulating
Response time	<2 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	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
Burst pressure	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
Measuring element	17-4PH stainless steel
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65; IP67 M12x1 electrical connection for pressure ranges 0 psig to 1,500 psig or higher
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1,000 g's according to IEC 60068-2-27
Vibration	20 g's according to IEC 60068-2-6
Weight	Approximately 1.75 oz.

\* Unregulated

ORDERING INFORMATION				
SERIES	660			
PRESSURE RANGES	200	0 psig to 200 psig	500	0 psig to 500 psig
	300	0 psig to 300 psig	1000	0 psig to 1,000 psig
			3000	0 psig to 3,000 psig
			5000	0 psig to 5,000 psig
			10000	0 psig to 10,000 psig
			15000	0 psig to 15,000 psig
psig = gauge pressure    Other ranges available on request				
ACCURACY	1	±0.25% full scale (BFSL)	3	1 Vdc to 5 Vdc, 3-wire
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire	27	0.1 Vdc to 10 Vdc, 3-wire
PROCESS CONNECTIONS	1	1/8" NPT male	2	1/4" NPT male
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 7)	7	Mini-Hirschmann (DIN EN 175301-803 Form C)
OPTION	ST8	Threaded Orifice	25	M12 x 1 (4-pin)

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

## EXAMPLE

Series	660 Series	660
Pressure range	0 psig to 500 psig	500
Accuracy	±0.25% full scale (BFSL)	1
Output signal	4 mA to 20 mA, 2-wire	1
Process connection	1/4" NPT Male	2
Electrical connection	M12 x 1 (4-pin)	25
Option	Threaded Orifice	ST8



## 2-WIRE WIRING

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

## 3-WIRE WIRING

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

## Electronic Indicating Transmitter/Switch



## 800/810 SERIES

- Compound and standard switch adjustment ranges through 0 psig to 10,000 psig
- Stainless steel wetted parts
- Current and voltage outputs available
- 3 switching output options available:
  - 2 switching outputs
  - 1 switching output and 1 analog output (4 mA to 20 mA or 0 Vdc to 10 Vdc)
  - 2 switching outputs and 1 analog output (4 mA to 20 mA)
- CE compliant to suppress RFI, EMI and ESD

## APPLICATIONS

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

## Protective Cover Option

- Made of a thermoplastic polyurethane (TPU) material which is resistant to oil, grease and abrasion
- Protects the sensor while maintaining clear viewing and rotation of the display
- The elastic properties of the material allows set point programming without having to remove the cover
- Increases environmental protection to IP67 for indoor and outdoor use



## SPECIFICATIONS

<b>Switching parameters</b>	Individually adjustable via external control keys
Number	1 or 2 (PNP or NPN)
Function	N.O./N.C.; windows - and hysteresis function freely adjustable
Contact rating	0.5 A max
Response time	<10 ms
Non-repeatability	<1% full scale
<b>Pressure ranges</b>	-14.5 psig to 30 psig through 0 psig to 9,999 psig
<b>Switch adjustment</b>	Programmable on the display
Switch point	1.0 to 100% of full scale
Hysteresis	0 to 99% of full scale
<b>Transmitter parameters</b>	
Output signal	4 mA to 20 mA or 0 Vdc to 10 Vdc; programmable and freely adjustable
Accuracy	< 0.5% full scale (BFSL) ±1 digit
Hysteresis	< 0.2% full scale (< 0.3 with pressure range < 0 psi - 230 psi)
Adjustment	20% to 100% depending on adjustment range
<b>Service life</b>	> 10,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero ± 0.07% full scale/ °F Span ± 0.07% full scale/ °F Media -4 °F to 176 °F (-20 °C to 80 °C) (Thin film sensor) -4 °F to 176 °F (-20 °C to 80 °C) (Ceramic sensor) Ambient -4 °F to 158 °F (-20 °C to 70 °C) Storage -22 °F to 176 °F (-30 °C to 80 °C)
<b>Power requirement*</b>	12 Vdc to 30 Vdc
<b>Current consumption</b>	< 50 mA (without load)
<b>Proof pressure</b>	2 times full scale for ranges vacuum through 0 psig to 1,450 psig 1.75 times full scale for ranges 0 psig to 1,500 psig through 0 psig to 10,000 psig
<b>Burst pressure</b>	2.5 times full scale for ranges vacuum through 0 psig to 1,450 psig. 1.75 times full scale for ranges 0 psig to 1,500 psig through 0 psig 10,000 psig
<b>Measuring element</b>	Stainless steel with ceramic sensor and FKM seal on ranges through 0 psig to 750 psig (other sealing materials available upon request). Stainless steel for higher pressure ranges
<b>Housing material</b>	800-stainless steel, 810-black anodized aluminum
<b>Connection</b>	800-316 stainless steel, 810-nickel-plated brass
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:1997/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>	> 10 g's according to IEC 60068-2-6
<b>Weight</b>	Approx 0.62 lb

\* Unregulated

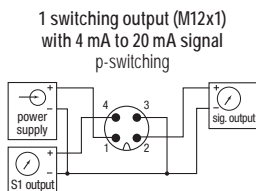
ORDERING INFORMATION					
SERIES	800	Stainless steel housing	810	Black anodized aluminum housing	
SWITCH FUNCTIONS	1	2 N.O. or N.C. (PNP or NPN)	3	1 N.O. or 1 N.C. (PNP or NPN) with 0 Vdc to 10 Vdc analog output	
	2	1 N.O. or 1 N.C. (PNP or NPN) with 4 mA to 20 mA analog output	4	2 N.O. or 2 N.C. (NPN) with 4 mA to 20 mA analog output*	
PROCESS CONNECTIONS	2	1/4" NPT male	10	G 1/4 B male	
	8	1/2" NPT male	11	G 1/2 B male	
ADJUSTABLE RANGES † (Max. working pressure)	14.5/75	-14.5 psig to 75 psig	145	0 psig to 145 psig	1450 0 psig to 1,450 psig
	14.5/145	-14.5 psig to 145 psig	300	0 psig to 300 psig	2400 0 psig to 2,400 psig
	75	0 psig to 75 psig	750	0 psig to 750 psig	3750 0 psig to 3,750 psig
ELECTRICAL CONNECTIONS	2	M12 x 1 (4-pin)	3	M12 x 1 (5-pin), 2 switch and analog output	6000 0 psig to 6,000 psig
					9000 0 psig to 9,000 psig
OPTIONS	ST8	Threaded Orifice	RB	Rotatable Base	10000 0 psig to 10,000 psig
			EH	Enhanced Software**	PC Protective Cover (IP67)

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

\* Available only with a M12 x 1 (5-pin) connector. Rotatable base is not available on this option.

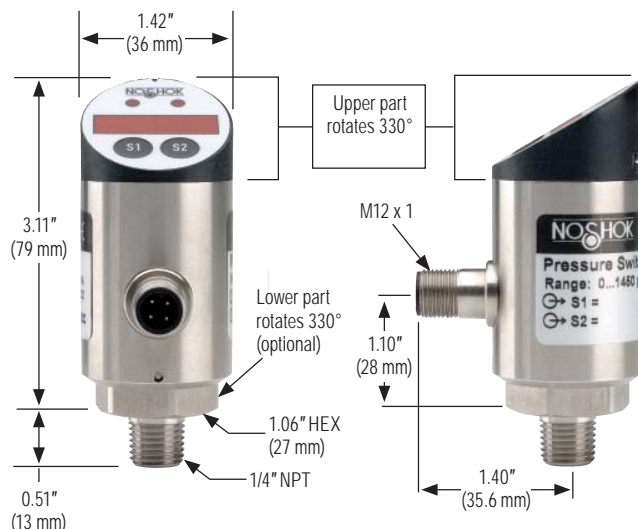
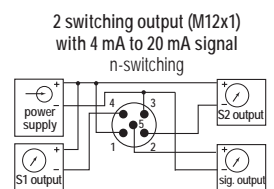
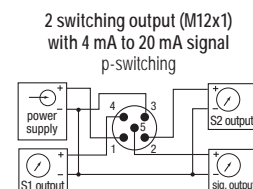
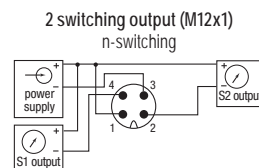
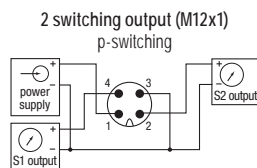
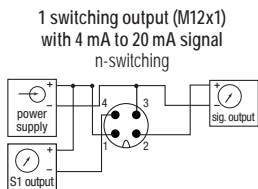
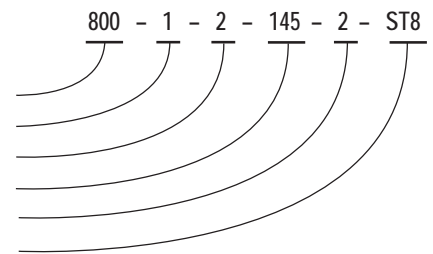
\*\* Includes minimum/maximum value memory, output dampening, switching time delay

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



## 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 145 psig  
Electrical connection ..... M12 x 1 (4-pin)  
Option..... Threaded Orifice



800 Series - Stainless Steel Housing



810 Series - Black Anodized Aluminum Housing



## APPLICATIONS

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

## 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

### SPECIFICATIONS

Output signals	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
Pressure ranges	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
Accuracy	±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)
Stability	≤ ±0.2% full scale per year, non-accumulating
Response time	≤ 4 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	2 times full scale
Burst pressure	6 times full scale
Measuring element	316 stainless steel for absolute through 150 psi 13-8PH stainless steel for ≥150 psi
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65 to IP67 depending on electrical connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	500 g's according to IEC 60068-2-27
Vibration	10 g's according to IEC 60068-2-6
Weight	Approximately 2.8 oz.

\* Unregulated



ORDERING INFORMATION										
SERIES	300									
PRESSURE RANGES	15	0 psig to 15 psig	300	0 psig to 300 psig	3000	0 psig to 3,000 psig	30A	0 psia to 30 psia		
	30	0 psig to 30 psig	500	0 psig to 500 psig	5000	0 psig to 5,000 psig	60A	0 psia to 60 psia		
	60	0 psig to 60 psig	750	0 psig to 750 psig	6000	0 psig to 6,000 psig	100A	0 psia to 100 psia		
	100	0 psig to 100 psig	1000	0 psig to 1,000 psig	7500	0 psig to 7,500 psig	150A	0 psia to 150 psia		
	150	0 psig to 150 psig	1500	0 psig to 1,500 psig	10000	0 psig to 10,000 psig	200A	0 psia to 200 psia		
	200	0 psig to 200 psig	2000	0 psig to 2,000 psig	15A	0 psia to 15 psia	300A	0 psia to 300 psia		
	psig = gauge pressure    psia = absolute pressure    Other ranges available upon request.									
ACCURACIES	1	±0.5% full scale (BFSL)		2	±0.25% full scale (BFSL)					
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire		3	1 Vdc to 5 Vdc, 3-wire		13	0.5 Vdc to 4.5 Vdc, 3-wire (ratiometric)		
	2	0 Vdc to 5 Vdc, 3-wire		5	0 Vdc to 10 Vdc, 3-wire					
PROCESS CONNECTIONS	2	1/4" NPT male		10	G 1/4 B		45	SAE J1926-3:7/16-20		
	8	1/2" NPT male		11	G 1/2 B					
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 8)				8	Hirschmann (DIN EN 175301-803 form A)		25	M12 x 1 (4-pin)
	7	Mini-Hirschmann (DIN EN 175301-803 form C)				14	Hirschmann type with 1/2" NPT female conduit		36	6' Integral cable
OPTION	ST8	Threaded Orifice (0.3 mm)								

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

## EXAMPLE

Series .....300 Series  
 Pressure range .....0 psig to 500 psig  
 Accuracy .....±0.50% full scale (BFSL)  
 Output signal .....4 mA to 20 mA, 2-wire  
 Process connection .....1/4" NPT Male  
 Electrical connection .....Hirschmann  
 Option .....Threaded Orifice

300 - 500 - 1 - 1 - 2 - 8 - ST8



Integral cable

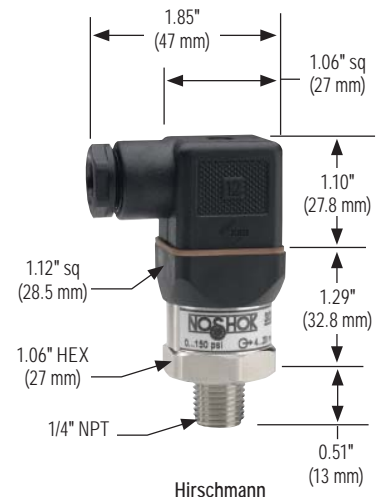


Mini-Hirschmann



\*M12 x 1 (4-pin)

\* Note: (mate supplied separately)



Hirschmann

## 2-WIRE WIRING

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

## 3-WIRE WIRING

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



## 650 SERIES

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

### APPLICATIONS

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

### SPECIFICATIONS

Output signals	4 mA to 20 mA 2-wire, or 1 Vdc to 5 Vdc 3-wire
Pressure ranges	0 psig to 100 psig through 0 psig to 8,000 psig
Accuracy	±0.50% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
Stability	±0.2% full scale for 1 year, non-accumulating
Response time	< 5 ms (between 10% and 90% full scale); restrictor port I.D. to dampen pulsations
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (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
Proof pressure	2 times full scale
Burst pressure	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
Measuring element	17-4PH stainless steel
Connection	316 stainless steel
Housing material	PBT - fiber reinforced plastic
Environmental rating	IP67 for M12x1 (4-pin) electrical connection and Metri-Pack connection; IP69K (steam jet cleaning) for cable connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	500 g's according to IEC 60068-2-27
Vibration	20 g's according to IEC 60068-2-6
Weight	Approximately 2.5 oz.

\* Unregulated

ORDERING INFORMATION										
SERIES	650									
PRESSURE RANGES	100	0 psig to 100 psig	300	0 psig to 300 psig	600	0 psig to 600 psig	1500	0 psig to 1,500 psig	5000	0 psig to 5,000 psig
	150	0 psig to 150 psig	400	0 psig to 400 psig	750	0 psig to 750 psig	2000	0 psig to 2,000 psig	8000	0 psig to 8,000 psig
	200	0 psig to 200 psig	500	0 psig to 500 psig	1000	0 psig to 1,000 psig	3000	0 psig to 3,000 psig		
	psig = gauge pressure		Other ranges available on request							
ACCURACY	1	±0.5% full scale (BFSL)								
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	13	0.5 Vdc to 4.5 Vdc ratiometric, 3-wire		
PROCESS CONNECTIONS	2	1/4" NPT male	24	7/16 - 20 2B Schrader	45	SAE J1926-3:7/16-20				
	10	G1/4B male	35	7/16 - 20 SAE with 45° flare						
ELECTRICAL CONNECTIONS	25	M12 x 1 (4-pin)	36	18" Integral cable IP67	45	AMP Superseal 1.5				
	34	Metri-Pack 150 series	39	18" Integral cable IP69K	46	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)



## 2-WIRE WIRING

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

## 3-WIRE WIRING

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



## 621/622 SERIES

- Vacuum and compound ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 100 psia
- Current and voltage outputs available
- 316 stainless steel and Elgiloy wetted parts
- Factory Mutual and Canadian Standards Association approved
- CE compliant to suppress RFI, EMI and ESD
- NACE MR0175/ISO 15156 compliant
- NSI/ISA-12.27.01-2003 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 approve 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 97/23EC.  
ANSI/ISA-12.27.01-2003, Approved single seal.

### SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc, 3-wire; 0.5 Vdc to 4.5 Vdc, 3-wire												
Pressure ranges	Vacuum through 0 psi to 15,000 psi Absolute from 0 psia to 15 psia through 0 psia to 100 psia												
Accuracy	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)												
Stability	≤±0.2% full scale for 1 year, non-accumulating												
Response time	≤1 ms (between 10% and 90% full scale)												
Service life	>100,000,000 load cycles												
Temperature ranges	<table> <tr> <td>Compensated</td><td>32 °F to 176 °F (0 °C to 80 °C)</td></tr> <tr> <td>Zero effect</td><td>±0.011% full scale/ °F</td></tr> <tr> <td>Span effect</td><td>±0.011% full scale/ °F</td></tr> <tr> <td>Media</td><td>           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)         </td></tr> <tr> <td>Ambient</td><td>           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)         </td></tr> <tr> <td>Storage</td><td>-40 °F to 221 °F (-40 °C to 105 °C)</td></tr> </table>	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)
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)												
Power requirement*	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)												
Load limitations	≤ (VPower-10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire												
Proof pressure	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												
Burst pressure	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												
Measuring element	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)												
Connection	316 stainless steel												
Housing material	316 stainless steel												
Environmental rating	IP67												
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection												
Electrical protection	Reverse polarity, over-voltage and short circuit protected												
Shock	1,000 g's according to IEC 60068-2-27												
Vibration	20 g's according to IEC 60068-2-6												
Weight	Approximately 12 oz.												

\* Unregulated

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

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

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

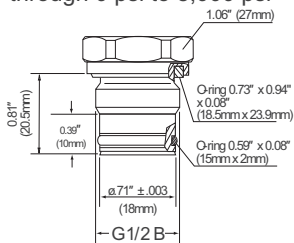
## EXAMPLE

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

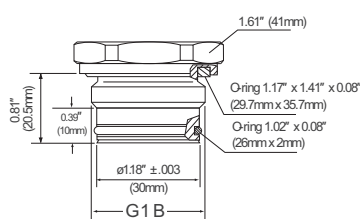
621 - 500 - 1 - 1 - 8 - 6 - ST8

## Front flush process connections

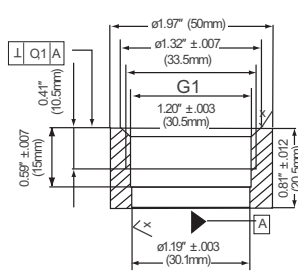
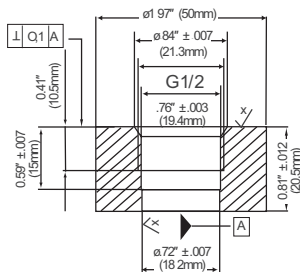
For ranges 0 psi to 30 psi through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



## Flush corresponding port weld-on adapters



## 2-WIRE WIRING

+ Supply	Red
+ Output	Black
Ground	Gray

## 3-WIRE WIRING

+ Supply	Red
Common	Black
+ Output	Brown
Ground	Gray



## 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-12.27.01-2003 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 97/23EC.

ANSI/ISA-12.27.01-2003, Approved single seal.

### SPECIFICATIONS

Output signals	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
Pressure ranges	Vacuum through 0 psig to 15,000 psig Absolute through 0 psia to 100 psia
Accuracy	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Response time	≤1 ms (between 10% and 90% full scale)
Service life	>100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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)
Load limitations	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA; ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire
Proof pressure	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
Burst pressure	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
Measuring element	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
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65 to IP67 dependent upon electrical connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protected
Shock	1000 g's according to IEC 60068-2-27
Vibration	20 g's according to IEC 60068-2-6
Weight	Approximately 12 oz.

\* Unregulated



ORDERING INFORMATION													
SERIES	623 Stainless steel threaded connection					624* 316 Stainless steel flush diaphragm							
PRESSURE RANGES	30vac	-30 inHg to 0 psig		30	0 psig to 30 psig		500	0 psig to 500 psig		6000	0 psig to 6,000 psig		
	30/30	-30 inHg to 30 psig		60	0 psig to 60 psig		1000	0 psig to 1,000 psig		8000	0 psig to 8,000 psig		
	30/60	-30 inHg to 60 psig		100	0 psig to 100 psig		1500	0 psig to 1,500 psig		10000	0 psig to 10,000 psig		
	30/100	-30 inHg to 100 psig		200	0 psig to 200 psig		2000	0 psig to 2,000 psig		15000	0 psig to 15,000 psig		
	15	0 psig to 15 psig		300	0 psig to 300 psig		3000	0 psig to 3,000 psig		15A	0 psia to 15 psia		
		psig = gauge pressure	psia = absolute pressure	Other ranges available on request			5000	0 psig to 5,000 psig		100A	0 psia to 100 psia		
		Note: 624 Series is available for pressure ranges up to 0 psig to 8,000 psig											
ACCURACY	1	±0.25% full scale (BFSL)											
OUTPUT SIGNALS	1	4 mA to 20 mA, 2-wire				3	1 Vdc to 5 Vdc, 3-wire, low power				31	0.5 Vdc to 4.5 Vdc, 3-wire, low power	
PROCESS CONNECTIONS	2	1/4" NPT male			11	G 1/2 B**							
	8	1/2" NPT male			13	G 1 B (624 Series only, <30 psig)							
ELECTRICAL CONNECTION	6	1/2" NPT male conduit with 6' integral cable											
OPTION	ST8	Threaded Orifice (623 Series only)											

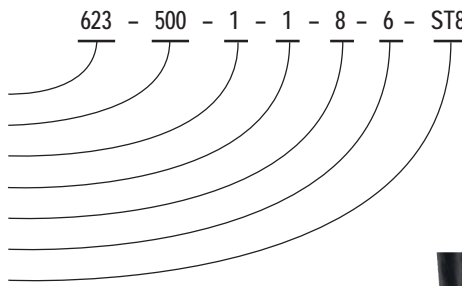
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\*Hastelloy flush diaphragm available upon request.

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

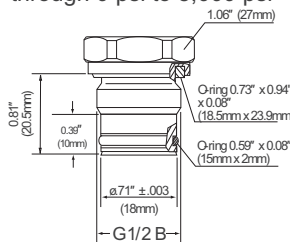
## EXAMPLE

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

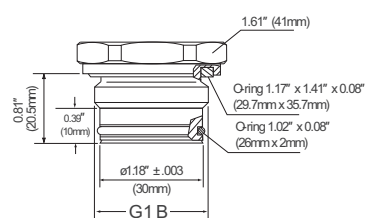


## Front flush process connections

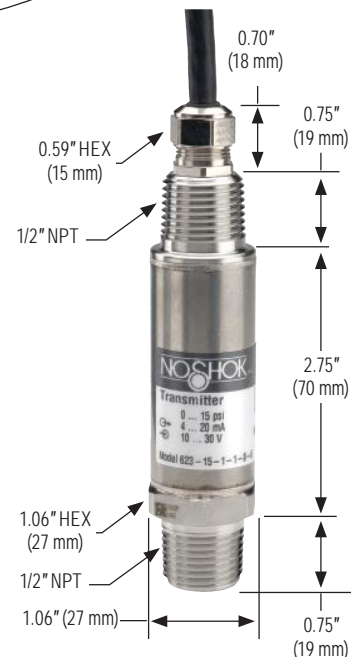
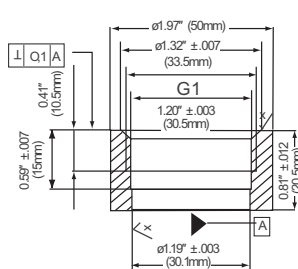
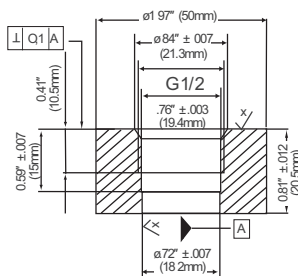
For ranges 0 psi to 30 psi  
through 0 psi to 8,000 psi



For ranges 0 to 30 psi and below



## Flush corresponding port weld-on adapters



## 2-WIRE WIRING

+ Supply	Brown
+ Output	Green

## 3-WIRE WIRING

+ Supply	Brown
Common	Green
+ Output	White



## 625/626 SERIES

- Low pressure ranges for vapor recovery applications, vacuum and compound ranges through 0 psig to 15,000 psig; absolute ranges from 0 psia to 15 psia through 0 psia to 300 psia
- Current output
- 316 and 14-4PH stainless steel wetted parts
- Factory Mutual and Canadian Standards Association approved
- CE compliant to suppress RFI, EMI and ESD
- NSI/ISA-12.27.01-2003 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 97/23EC.  
ANSI/ISA-12.27.01-2003, Approved single seal.

### SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Pressure ranges	Vacuum through 0 psig to 15,000 psig Absolute from 0 psia to 15 psia through 0 psia to 300 psia
Accuracy	±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)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Adjustment	± 10% full scale for zero and span
Response time	≤ 1 ms (between 10% and 90% full scale)
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
Load limitations	≤ (VPower-10)/0.020 Amp
Proof pressure	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
Burst pressure	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
Measuring element	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
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65 to IP67 depending upon electrical connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protected
Shock	1,000 g's according to IEC 60068-2-27
Vibration	20 g's according to IEC 60068-2-6
Weight	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	SAE J1926-3:7/16-20				
	11	G 1/2 B"								
ELECTRICAL CONNECTIONS	1	36" cable (connected to option 8)			14	Hirschmann connector 1/2 " NPT conduit - IP65				
	3	6-pin Bendix - IP65			25	M12x1 (4-pin) IP67				
	8	Hirschmann (DIN EN 175301-803 Form A)			36	Integral cable 36" - IP67				
OPTION	ST8	Threaded Orifice (625 Series only)								

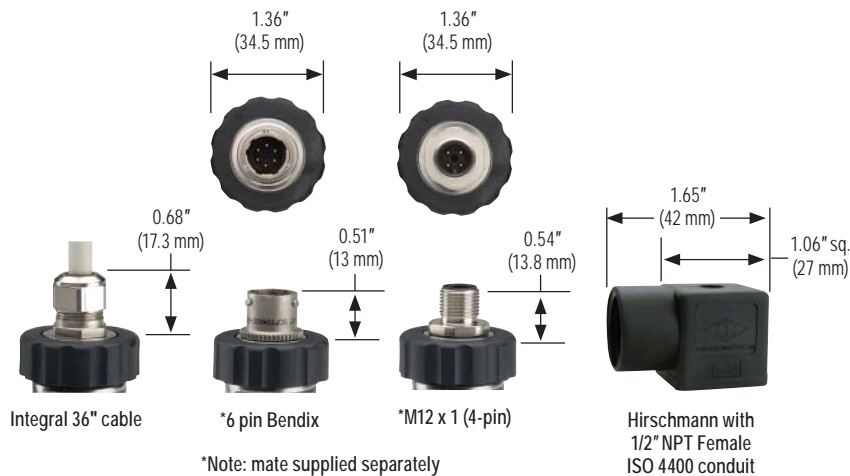
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

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

## EXAMPLE

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

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



## 2-WIRE WIRING

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

## NOTE

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



## Intrinsically Safe Submersible



## 627 SERIES

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

## APPLICATIONS

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

## SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Pressure ranges	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O through 0 psig to 350 psig
Accuracy	±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)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Response time	≤1 ms (between 10% and 90% full scale)
Service life	>100,000,000 load cycles
Temperature ranges	Compensated 32 °F to 122 °F (0 °C to 50 °C) Zero effect is ±0.011% full scale/ °F within compensated range Span effect is ±0.011% full scale/ °F within compensated range Media 15 °F to 175 °F (-10 °C to 60 °C) Ambient 15 °F to 122 °F (-10 °C to 50 °C) Storage -30 °F to 175 °F (-34 °C to 60 °C)
Power requirement*	10 Vdc to 30 Vdc (4 mA to 20 mA, 2-wire)
Load limitations	≤ (VPower-10)/0.020 Amp-(0.043 Ω x length of cable in feet)
Proof pressure	2 times range
Burst pressure	3 times range
Measuring element	Diaphragm and cap: 316 stainless steel 17-4PH stainless steel for 0 psig to 350 psig Cable: Polyurethane, optional FEP
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP68
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protected
Weight	Approximately 7 oz. with standard nosecone - cable extra

\* Unregulated

NOSHOK 627 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 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 97/23EC.

ORDERING INFORMATION				
SERIES	627			
PRESSURE RANGES	50inH <sub>2</sub> O	0 inH <sub>2</sub> O to 50 inH <sub>2</sub> O	5	0 psig to 5 psig (11.5 ftH <sub>2</sub> O)
	100inH <sub>2</sub> O	0 inH <sub>2</sub> O to 100 inH <sub>2</sub> O	10	0 psig to 10 psig (23.1 ftH <sub>2</sub> O)
	150inH <sub>2</sub> O	0 inH <sub>2</sub> O to 150 inH <sub>2</sub> O	15	0 psig to 15 psig (34.6 ftH <sub>2</sub> O)
	250inH <sub>2</sub> O	0 inH <sub>2</sub> O to 250 inH <sub>2</sub> O	25	0 psig to 25 psig (57.7 ftH <sub>2</sub> O)
	400inH <sub>2</sub> O	0 inH <sub>2</sub> O to 400 inH <sub>2</sub> O	30	0 psig to 30 psig (69.2 ftH <sub>2</sub> O)
			60	0 psig to 60 psig (138.4 ftH <sub>2</sub> O)
	psig = gauge pressure      inH <sub>2</sub> O = inches of water      ftH <sub>2</sub> O = feet of water      Other ranges available on request.			
ACCURACIES	1	±0.25% full scale (BFSL)	2	±0.125% full scale (BFSL) on ≥ 150 inH <sub>2</sub> O
OUTPUT SIGNAL	1	4 mA to 20 mA, 2-wire		
PROCESS CONNECTIONS	N	Stainless steel nosecone	W	Stainless steel weighted nosecone (1.1 lb.)
	T	NPT adapter, 1/2" NPT male outer thread with 1/4" NPT female inner thread attached to transmitter process connection with straight thread and o-ring seal		
ELECTRICAL CONNECTIONS	XX	Standard Polyurethane cable		
	38-XX	Optional FEP cable	NOTE: XX = length of cable in feet	
OPTIONS	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

Series ..... 627 Series  
 Pressure range ..... 0 psig to 350 psig  
 Accuracy ..... ±0.25% full scale (BFSL)  
 Output signal ..... 4 mA to 20 mA, 2-wire  
 Process connection ..... Stainless steel nosecone  
 Electrical connection ..... 300' of submersible Polyurethane cable

627 - 350 - 1 - 1 - N - 300



## Weighted Nosecone



## NPT Adapter



## 2-WIRE WIRING

+ Supply	Brown
+ Output	Green

## Intrinsically Safe Hammer Union



## 628 SERIES



Shown with  
optional Electrical  
Connector Cage

## APPLICATIONS

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

- 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
- NACE MR0175/ISO 15156 compliant
- Every sensor comes with a Certificate of Calibration
- Certifications pending:
  - Factory Mutual
  - ATEX
  - CE

## SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Pressure ranges	0 psig to 5,000 psig through 0 psig to 20,000 psig
Accuracy	±0.25% full scale (BFSL) (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
Stability	≤ ±0.2% full scale for 1 year, non-accumulating
Response time	< 2 m/s
Service life	> 10,000,000 load cycles
Temperature ranges	Compensated 40 °F to 140 °F (5 °C to 60 °C) Zero effect is ±0.01% full scale/ °F Span effect is ±0.01% full scale/ °F Media -40 °F to 185 °F (-40 °C to 85 °C) Ambient -40 °F to 185 °F (-40 °C to 85 °C) Storage -40 °F to 185 °F (-40 °C to 85 °C)
Power requirement*	10 Vdc to 28 Vdc
Load limitations	≤ (VPower-10)/0.020 Amp
Proof pressure	1.5 times full scale (22,500 psi maximum)
Burst pressure	3 times full scale (22,500 psi maximum)
Measuring element	Inconel X-750
Connection	Inconel X-750
Housing material	316 stainless steel
Environmental rating	IP67 depending upon electrical connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protected
Shock	100 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 6 lb.

\* Unregulated

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

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

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



ORDERING INFORMATION										
SERIES	628									
PRESSURE RANGES	5000	0 psig to 5,000 psig	6000	0 psig to 6,000 psig	10000	0 psig to 10,000 psig	15000	0 psig to 15,000 psig	20000	0 psig to 20,000 psig
ACCURACY	1	±0.25% full scale (BFSL)								
OUTPUT SIGNAL	1	4 mA to 20 mA, 2-wire								
WIRING CODE	A		E	H*						
(See Wiring Code Schematics below)	C		F							
	D		G							
PROCESS CONNECTIONS	14	2" Wing union (#1502)								
ELECTRICAL CONNECTIONS	3	6-pin Bendix (MIL-C-26482)				44	4-pin (MIL-C-5015)			
	36	Integral cable with gland								
OPTION	CH	Carrying Handle				EC	Electrical Connector Cage			

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

\* H is the standard wiring code.

### EXAMPLE

**EXAMPLE**

Series .....	628 Series
Pressure range .....	0 psig to 5,000 psig
Accuracy .....	±0.25% full scale
Output signal .....	4 mA to 20 mA, 2-wire
Wiring code .....	A
Process connection .....	2" wing union (#1502)
Electrical connection .....	6-pin Bendix
Option .....	Carrying Handle

628 - 5000 - 1 - 1 A - 14 - 3 - CH

## WIRING CODE SCHEMATICS

A	Pin A	+ Supply	E	Pin A	+ Supply	G	Pin B	+ Supply
	Pin B	- Output		Pin B	- Output		Pin C	- Output
	Pin E	Ground		Pin E	+ Shunt Cal		Pin D	Ground
C	Red	+ Supply		Pin F	- Shunt Cal	H*	Pin A	+ Supply
	Black	- Output	F	Pin A	+ Supply		Pin B	- Output
D	Red	+ Supply		Pin B	- Output		Pin D	Ground
	Black	- Output		Pin C	+ Shunt Cal		Pin E	+ Shunt Cal
	White	- Shunt Cal		Pin D	- Shunt Cal		Pin F	- Shunt Cal
	Green	Ground		Pin E	Ground			

\* H is the standard wiring code.





## 11 SERIES

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

### SPECIFICATIONS

Output signals	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
Pressure ranges	Vacuum through 0 psig to 400 psig
Accuracy	±0.25% full scale (BFS); Optional ±0.125% full scale (BFS); (Includes the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors)
Stability	±0.2% full scale for 1 year, non-accumulating
Adjustment	±10% full scale for zero and span
Response time	< 10 ms
Service life	> 100,000,000 load cycles
Temperature ranges	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)
Power requirement*	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, 1 Vdc to 11 Vdc, 3-wire)
Load limitations	≤ (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
Proof pressure	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
Burst pressure	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
Measuring element	316 stainless steel
Connection	316 stainless steel
Housing material	316 stainless steel
Environmental rating	IP65
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	1,000 g's according to IEC 60068-2-27
Vibration	15 g's according to IEC 60068-2-6
Weight	Approximately 1.1 lb.

### APPLICATIONS

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

\* Unregulated

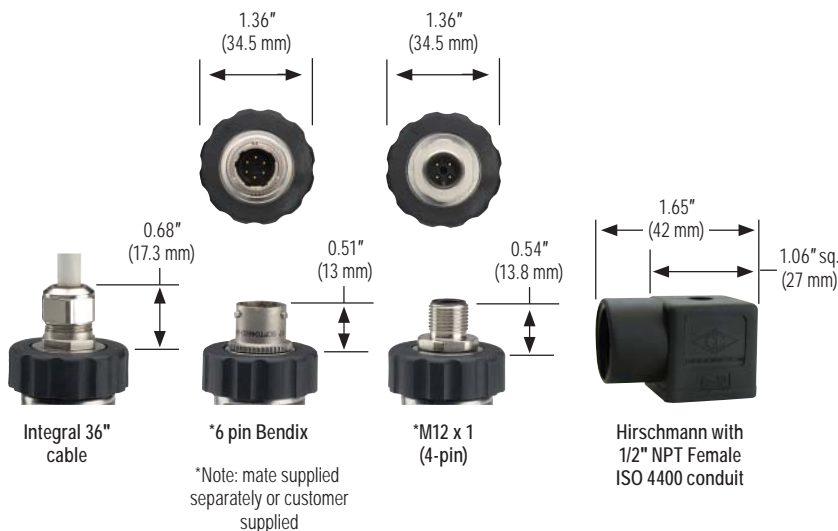
Diaphragm seal must be installed facing downward or in a vertical position for drainability.  
Do not install diaphragm seal facing in an upward position.

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

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

## EXAMPLE

Series ..... 11 Series  
 Clamp size..... 1-1/2" ASME-BPE Sanitary Clamp  
 Seal fill fluid .....FFL77 White oil  
 Transmitter.....615 Series  
 Accuracy.....±0.25% full scale (BFSL)  
 Pressure range.....0 psig to 5 psig  
 Output signal..... 4 mA to 20 mA, 2-wire  
 Electrical connection ..... Hirschmann with 36" of cable



## 3-WIRE WIRING

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

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

# Mechanical Miniature Low Pressure



## 100 SERIES

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

### APPLICATIONS

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

### SPECIFICATIONS

Switching parameters	
Number	1
Function	SPST N.O. or N.C. contact
Contact rating	Up to 42 Vdc -2A
Non-repeatability	5% of the adjusted value
Contact material	Silver-plated, optional gold-plated
Frequency	Max. 100 cycles/min
Pressure ranges	15 psig to 30 psig through 15 psig to 150 psig
Switch adjustment	Adjustment screw from 5 psig to 150 psig dependent on full scale range
Switch point	Full scale
Hysteresis	< 10% of the adjusted value
Service life	>1,000,000 load cycles
Temperature ranges	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)
Proof pressure	Full scale
Measuring element	NBR diaphragm 1/8" NPT Male brass
Housing material	Brass, optional stainless steel
Environmental rating	IP65
Weight	Approximately 0.07 lb

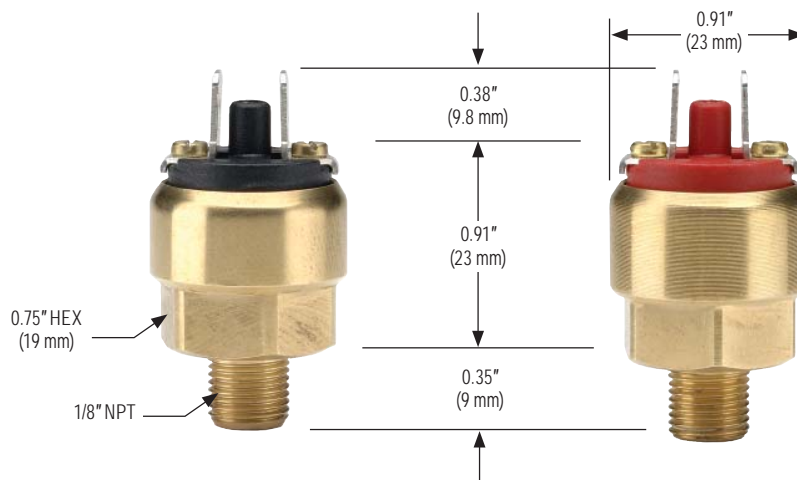
ORDERING INFORMATION			
SERIES	100		
SWITCH FUNCTIONS	1	1 Normally open	2 1 Normally closed
PROCESS CONNECTION	1	1/8" NPT male	
SWITCH ADJUSTMENT RANGES	5/30	5 psig to 30 psig	15/150 15 psig to 150 psig
ELECTRICAL CONNECTION	4	6.3 mm spade terminals	
SWITCH POINT (if required)	Specify pressure		

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

## EXAMPLE

Series .....	100 Series	100	-	2	-	1	-	15/150	-	4	-	100
Switch function .....	1 normally closed											
Process connection .....	1/8" NPT Male											
Adjustable range .....	15 psig to 150 psig											
Electrical connection .....	6.3 mm spade terminals											
Switch point .....	100 psig											

## Switching Output Schematic





### APPLICATIONS

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

## 200 SERIES

- Switch adjustment ranges from 3 psig to 30 psig through 450 psig to 4,600 psig
- Zinc-plated steel with NBR diaphragm (< 225 psig); steel piston with NBR seal (> 225 psig) wetted parts
- SPDT single changeover contact configuration
- RoHS compliant

### SPECIFICATIONS

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



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

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

EXAMPLE

200 - 1 - 2 - 150/425 - 4

Series .....

Switch function.....

Process connection .....

Adjustable range .....

Electrical connection .....

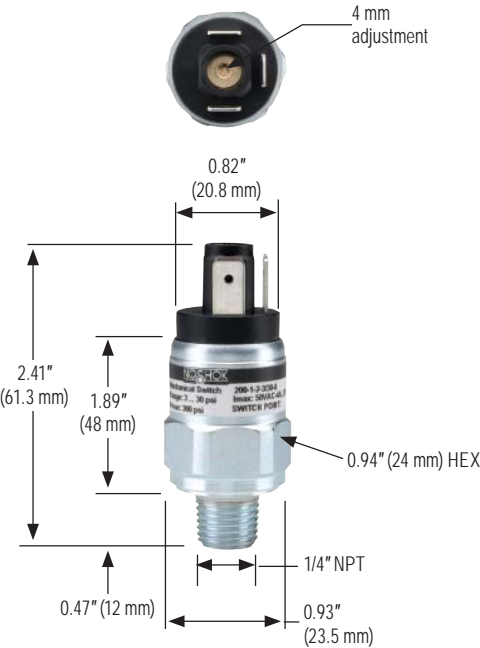
200 Series

Single changeover contact

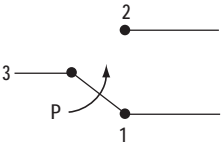
1/4" NPT Male

150 psig to 425 psig

6.3 mm spade terminals



Switching Output Schematic



# Mechanical Compact SPDT with Adjustable Hysteresis



## 300 SERIES

- Switch adjustment ranges from 3 psig to 30 psig through 450 psig to 4,600 psig
- Standard zinc-plated steel with NBR diaphragm (< 225 psig); steel piston with NBR seal (> 225 psig) wetted parts
- SPDT single changeover contact configuration
- RoHS compliant

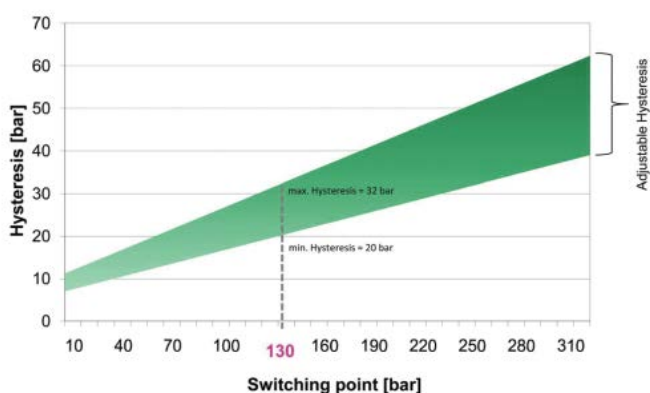
### SPECIFICATIONS

Switching parameters	
Number	1
Function	SPDT, micro switch
Contact rating	Up to 28 Vdc 2A Up to 125 Vac 4A Up to 250 Vac 4A
Non-repeatability	±2% of full scale adjustment range
Contact material	Silver-plated
Frequency	Max. 100 cycles/min
Media	Diaphragm type, compressed air or not corrosive liquids Piston type, self lubricating fluids such as hydraulic oil or grease
Pressure ranges	3 psig to 30 psig through 450 psig to 4,600 psig Diaphragm type: 870 psi max.; Piston type: 5,000 psi max.
Switch adjustment	
Switch point	Full scale
Hysteresis	Adjustable, see charts below
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 diaphragm < 225 psig; steel piston with NBR seal > 225 psig 1/4" NPT zinc-plated steel standard connection, others available on request
Housing material	Zinc-plated steel
Environmental rating	IP65
Weight	Approximately 0.2 lb.

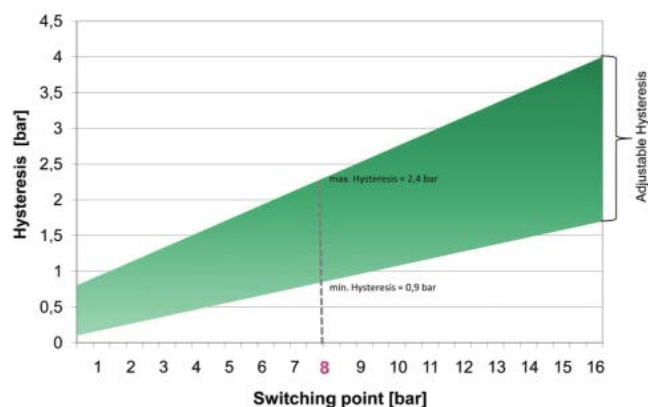
### APPLICATIONS

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

Adjustable Hysteresis (piston type)



Adjustable Hysteresis (membrane type)

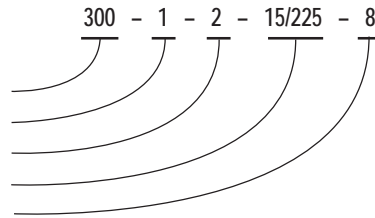


ORDERING INFORMATION					
SERIES	300				
SWITCH FUNCTION	1 Single changeover contact, SPDT				
PROCESS CONNECTION	2 1/4" NPT male				
SWITCH ADJUSTMENT RANGES (Max. working pressure)	3/30	3 psig to 30 psig (870 psig)		150/1700	150 psig to 1,700 psig (5,000 psig)
	7/115	7 psig to 115 psig (870 psig)		150/2300	150 psig to 2,300 psig (5,000 psig)
	15/225	15 psig to 225 psig (870 psig)		300/2900	300 psig to 2,900 psig (5,000 psig)
	150/425	150 psig to 425 psig (5,000 psig)		300/3600	300 psig to 3,600 psig (5,000 psig)
	150/1150	150 psig to 1,150 psig (5,000 psig)		450/4600	450 psig to 4,600 psig (5,000 psig)
ELECTRICAL CONNECTIONS	1 36" Cable (connected to option 8)		8 Hirschmann (DIN EN 175301-803 form A)		

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

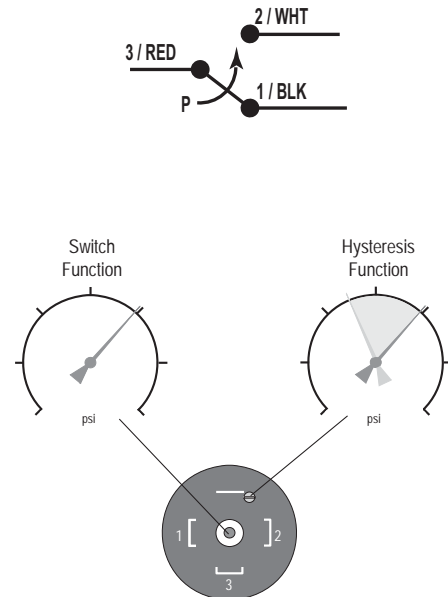
## EXAMPLE

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



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

## Switching Output Schematic





### APPLICATIONS

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

## 400 SERIES

- Switch adjustment ranges from 0 to 300 psig through 0 to 5,000 psig
- Standard zinc-plated steel with NBR diaphragm (< 225 psig); steel piston with NBR seal (> 225 psig) wetted parts
- SPDT single changeover contact configuration
- CE compliant to suppress RFI, EMI and ESD

### SPECIFICATIONS

<b>Switching parameters</b>	
Number	1
Function	SPDT, micro switch
Contact rating	Up to 28 Vdc Max 4A Up to 250 Vac Max 3A
Non-repeatability	±2% of full scale of adjustment range
Contact material	Silver-plated, self-cleaning
Frequency	Max. 200 cycles/min.
Media	Diaphragm type, compressed air or non-corrosive liquids Piston type, self-lubricating fluids such as hydraulic oil or grease
<b>Pressure ranges</b>	
	0 psig to 300 psig through 0 psig to 5,000 psig Adjustment knob from 3 psig to 4,600 psig dependent on full scale range
<b>Switch adjustment</b>	
Switch point	Full scale
Hysteresis	Diaphragm type, 1% to 11% of adjustment range full scale Piston type, 2% to 8% of adjustment range full scale
Service life	>1,000,000 load cycles
<b>Temperature ranges</b>	
	Media 14 °F to 176 °F (-10 °C to 80 °C) Ambient 14 °F to 176 °F (-10 °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
<b>Measuring element</b>	
	NBR diaphragm ≤ 230 psig Stainless steel piston with NBR seal ≥ 500 psig 1/4" NPT and 7/16-20 SAE zinc-plated steel connections standard, others available on request
Housing material	Zinc-plated steel
<b>Environmental rating</b>	
	IP65 for Hirschmann IP67 for M12 x 1
<b>Electromagnetic rating</b>	
	CE compliant to EU Standard 73/23/EEG 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					
SERIES	400				
SWITCH FUNCTION	1 Single Pole Double Throw (SPDT)				
PROCESS CONNECTIONS*	2	1/4" NPT male	19	G 1/4 B female	
	5	1/4" NPT female	45	SAE J1926-3:7/16-20	
	10	G 1/4 B male			
SWITCH ADJUSTMENT RANGES † (Max. working pressure)	3/30	3 psig to 30 psig (300 psig)	150/1700	150 psig to 1,700 psig (5,000 psig)	
	7/115	7 psig to 115 psig (300 psig)	150/2300	150 psig to 2,300 psig (5,000 psig)	
	15/225	15 psig to 225 psig (300 psig)	300/2900	300 psig to 2,900 psig (5,000 psig)	
	150/425	150 psig to 425 psig (5,000 psig)	300/3600	300 psig to 3,600 psig (5,000 psig)	
	150/1150	150 psig to 1,150 psig (5,000 psig)	450/4600	450 psig to 4,600 psig (5,000 psig)	
ELECTRICAL CONNECTIONS	1	36" Cable (connected to option 8)	8	DIN EN 175301-803 Form A	
	2	M12 x 1 (4-pin)	46	Hirschmann with LED status indicator	

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

\* Note: Stainless steel connection available, consult factory

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

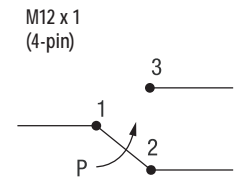
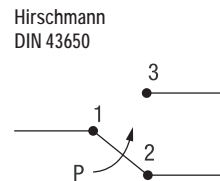
## EXAMPLE

Series .....400 Series  
 Switch function.....Single pole double throw  
 Process connection .....1/4" NPT Male  
 Adjustable range .....3 psig to 30 psig  
 Electrical connection .....Hirschmann

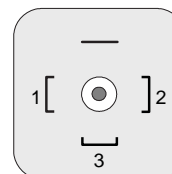
400 - 1 - 2 - 3/30 - 8



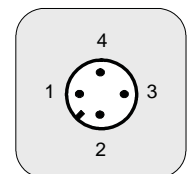
## Switching Output Schematic



Hirschmann  
DIN 43650



M12 x 1 (4-pin)





### APPLICATIONS

- HVAC
- Hydraulics & pneumatics
- Pumps and compressors
- Stamping & forming presses
- Transportation

## 500 SERIES

- Vacuum ranges through 0 psig to 10,000 psig
- Standard copper alloy wetted parts
- Normally open (N.O.) or normally closed (N.C.) switching functions
- CE compliant to suppress RFI, EMI and ESD

### SPECIFICATIONS

<b>Switching parameters</b>	
Number	1 or 2
Function	N.O. or N.C., p-switching or n-switching
Contact rating	Max. 100 mA (max. 30 Vdc)
Non-repeatability	≤ 1% of full scale
<b>Pressure ranges</b>	
Vacuum ranges through 0 psig to 10,000 psig	
<b>Switch adjustment</b>	
Switch point	Adjustment screw Switching point - 5 ...100% of full scale
Hysteresis	≤ 5% of full scale
<b>Service life</b>	
>1,000,000 load cycles	
<b>Temperature ranges</b>	
Compensated 32° to 175 °F / 0° to 80 °C	
Zero ± 0.06% full scale/ °F	
Span ± 0.06% full scale/ °F	
Media -5° to 175 °F (-20° to 80 °C)	
Ambient -5° to 175 °F (-20° to 80 °C)	
Storage -22° to 175 °F (-30° to 80 °C)	
<b>Power requirement*</b>	
10 Vdc to 30 Vdc	
<b>Proof pressure</b>	
30 psi & lower	5x
60 psi	4x
150 psi & higher	2x
<b>Measuring element</b>	
Copper alloy	
316 SS > 600 psi	
1/4" NPT brass connection standard	
<b>Housing material</b>	
Brass through 350 psi	
Aluminum anodized 600 psi and higher	
<b>Environmental rating</b>	
IP67 for M12 x 1	
<b>Electromagnetic rating</b>	
CE compliant to EMC norm EN 61326:1997/A1:1998	
RFI, EMI and ESD protection	
<b>Weight</b>	
0.2 lb. on ≤400 psi, 0.6 lb. on ≥600 psi	

\* Unregulated



ORDERING INFORMATION				
SERIES	500			
SWITCH FUNCTIONS	1	1 N.O. (PNP)	3	2 N.O. (PNP)
	2	1 N.C. (PNP)	4	2 N.C. (PNP)
PROCESS CONNECTIONS	1	1/8" NPT male	2	1/4" NPT male
PRESSURE RANGES	30vac	-30 inHg to 0 psig	150	0 psig to 150 psig
	15	0 psig to 15 psig	250	0 psig to 250 psig
	30	0 psig to 30 psig	350	0 psig to 350 psig
	60	0 psig to 60 psig	600	0 psig to 600 psig
	100	0 psig to 100 psig	750	0 psig to 750 psig
			1000	0 psig to 1,000 psig
ELECTRICAL CONNECTIONS	2	M12x1 (4-pin)	1500	0 psig to 1,500 psig
			2000	0 psig to 2,000 psig
OPTIONS	BT8	Threaded Orifice	3000	0 psig to 3,000 psig
		Note: M12 mating connectors & cord sets are available as separate options.	5000	0 psig to 5,000 psig

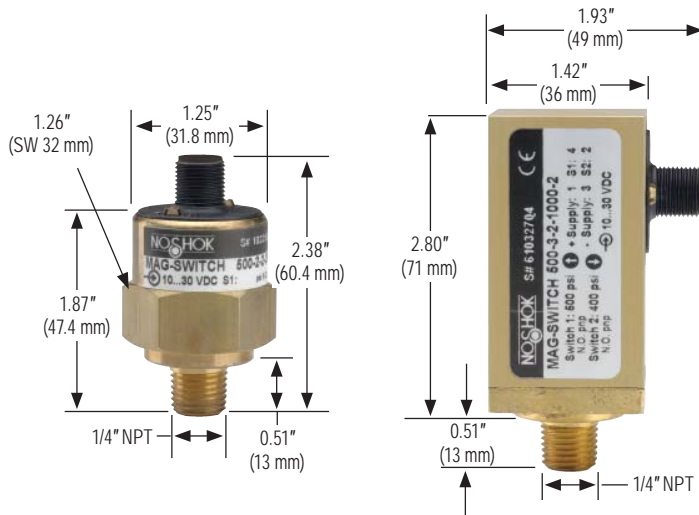
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

## EXAMPLE

Series ..... 500 Series  
Switch function..... 2 N.O. (PNP)  
Process connection ..... 1/4" NPT Male  
Adjustable range ..... 0 psig to 750 psig  
Electrical connection ..... M12 x 1 (4-pin)  
Option..... Threaded Orifice

500 - 3 - 2 - 750 - 2 - BT8

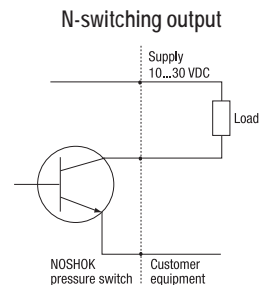
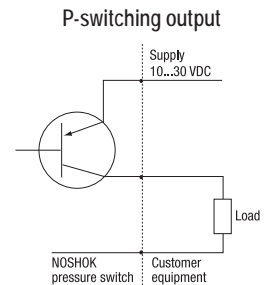
Additional  
Ordering  
Information  
Switch Set  
Point(s)  
(please specify)



400 psi & lower

600 psi & higher

## Switching Output Schematic

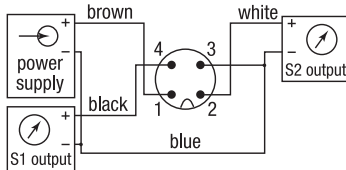
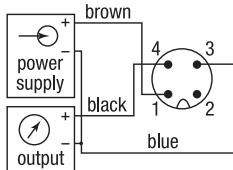


## Connection table for M12x1 (4-pin) connector

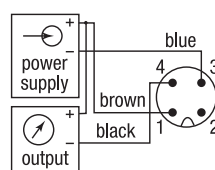
Function	Connector M12 x 1 (4-pin)
Power supply: +	1 brown
Power supply: -	3 blue
Switching output: S1	4 black
Switching output: S2	5 white

## Wiring Diagrams

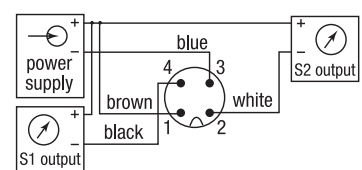
P-switching, cable or connector  
1 switching output



N-switching, cable or connector  
1 switching output



2 switching outputs





## 800/810 SERIES

- Compound and standard ranges through 0 psig to 10,000 psig
- Stainless steel wetted parts
- Current and voltage outputs available
- 3 switching output options available:
  - 2 switching outputs
  - 1 switching output & 1 analog output (4 mA to 20 mA or 0 Vdc to 10 Vdc)
  - 2 switching outputs & 1 analog output (4 mA to 20 mA)
- CE compliant to suppress RFI, EMI and ESD

### APPLICATIONS

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

#### Protective Cover Option

- Made of a thermoplastic polyurethane (TPU) material which is resistant to oil, grease and abrasion
- Protects the sensor while maintaining clear viewing and rotation of the display
- The elastic properties of the material allows set point programming without having to remove the cover
- Increases environmental protection to IP67 for indoor and outdoor use



### SPECIFICATIONS

<b>Switching parameters</b>	Individually adjustable via external control keys
Number	1 or 2 (PNP or NPN)
Function	N.O./N.C.; windows - and hysteresis function freely adjustable
Contact rating	0.5 A max
Response time	<10 ms
Non-repeatability	<1% full scale
<b>Pressure ranges</b>	-14.5 psig to 30 psig through 0 psig to 9,999 psig
<b>Switch adjustment</b>	Programmable on the display
Switch point	1.0 to 100% of full scale
Hysteresis	0 to 99% of full scale
<b>Transmitter parameters</b>	
Output signal	4 mA to 20 mA or 0 Vdc to 10 Vdc; programmable and freely adjustable
Accuracy	< 0.5% full scale (BFSL) ±1 digit
Hysteresis	< 0.2% full scale (< 0.3 with pressure range < 0 psi - 230 psi)
Adjustment	20% to 100% depending on adjustment range
<b>Service life</b>	> 10,000,000 load cycles
<b>Temperature ranges</b>	Compensated 32 °F to 176 °F (0 °C to 80 °C)
	Zero ± 0.07% full scale/ °F
	Span ± 0.07% full scale/ °F
	Media -4 °F to 176 °F (-20 °C to 80 °C) (Thin film sensor)
	-4 °F to 176 °F (-20 °C to 80 °C) (Ceramic sensor)
	Ambient -4 °F to 158 °F (-20 °C to 70 °C)
	Storage -22 °F to 176 °F (-30 °C to 80 °C)
<b>Power requirement*</b>	12 Vdc to 30 Vdc
<b>Current consumption</b>	< 50 mA (without load)
<b>Proof pressure</b>	2 times full scale for ranges vacuum through 0 psig to 1,450 psig 1.75 times full scale for ranges 0 psig to 1,500 psig through 0 psig to 10,000 psig
<b>Burst pressure</b>	2.5 times full scale for ranges vacuum through 0 psig to 1,450 psig. 1.75 times full scale for ranges 0 psig to 1,500 psig through 0 psig 10,000 psig
<b>Measuring element</b>	Stainless steel with ceramic sensor and FKM seal on ranges through 0 psig to 750 psig (other sealing materials available upon request). Stainless steel for higher pressure ranges.
<b>Housing material</b>	800-stainless steel, 810-black anodized aluminum
<b>Connection</b>	800-316 stainless steel, 810-nickel-plated brass
<b>Environmental rating</b>	IP65
<b>Electromagnetic rating</b>	CE compliant to EMC norm EN 61326:1997/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>	> 10 g's according to IEC 60068-2-6
<b>Weight</b>	Approx 0.62 lb

\* Unregulated

ORDERING INFORMATION				
SERIES	800	Stainless steel housing	810	Black anodized aluminum housing
SWITCH FUNCTIONS	1	2 N.O. or N.C. (PNP or NPN)	3	1 N.O. or 1 N.C. (PNP or NPN) with 0 Vdc to 10 Vdc analog output
	2	1 N.O. or 1 N.C. (PNP or NPN) with 4 mA to 20 mA analog output	4	2 N.O. or 2 N.C. (NPN) with 4 mA to 20 mA analog output*
PROCESS CONNECTIONS	2	1/4" NPT male	10	G 1/4 B male
	8	1/2" NPT male	11	G 1/2 B male
ADJUSTABLE RANGES † (Max. working pressure)	14.5/75	-14.5 psig to 75 psig	145	0 psig to 145 psig
	14.5/145	-14.5 psig to 145 psig	300	0 psig to 300 psig
	75	0 psig to 75 psig	750	0 psig to 750 psig
			1450	0 psig to 1,450 psig
			2400	0 psig to 2,400 psig
			3750	0 psig to 3,750 psig
			6000	0 psig to 6,000 psig
			9000	0 psig to 9,000 psig
			10000	0 psig to 10,000 psig
ELECTRICAL CONNECTIONS	2	M12 x 1 (4-pin)	3	M12 x 1 (5-pin), 2 switch and analog output
OPTIONS	ST8	Threaded Orifice	RB	Rotatable Base
			EH	Enhanced Software**
			PC	Protective Cover (IP67)

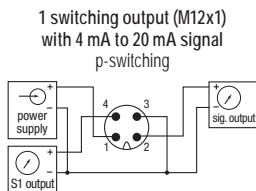
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

\* Available only with a M12 x 1 (5-pin) connector. Rotatable base is not available on this option.

\*\* Includes minimum/maximum value memory, output dampening, switching time delay

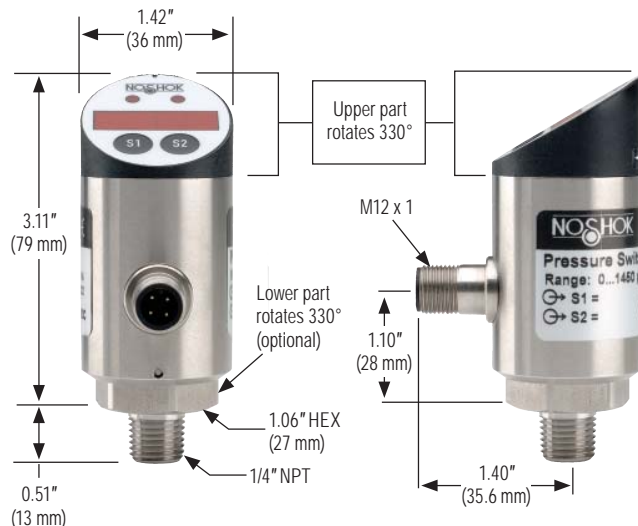
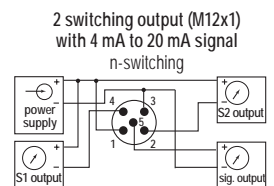
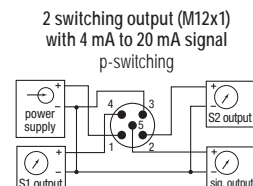
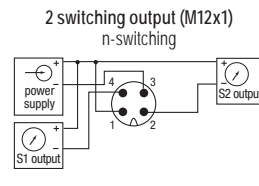
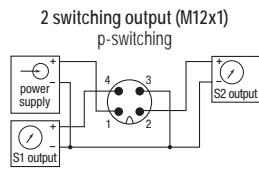
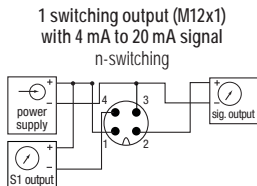
† Please specify switch set point(s), rising or falling pressure, and switch hysteresis (if applicable)

## EXAMPLE



800 - 1 - 2 - 145 - 2 - ST8

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 145 psig  
Electrical connection ..... M12 x 1 (4-pin)  
Option ..... Threaded Orifice



800 Series - Stainless Steel Housing



810 Series - Black Anodized Aluminum Housing

# 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"

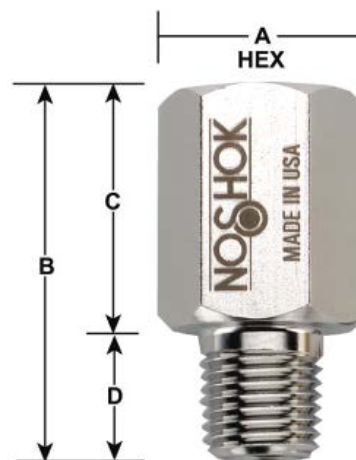
**Options & Accessories**  
Piston-Type Snubbers Specifications

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

## 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"



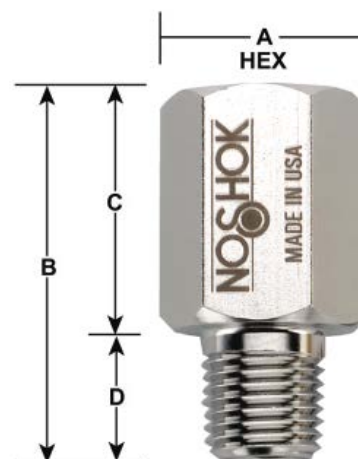
Sintered Snubbers

### 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

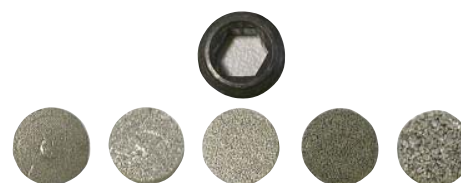
Note: The "X" in the part number denotes the Disc option (example: 1135-C).  
See chart below for Disc options.

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

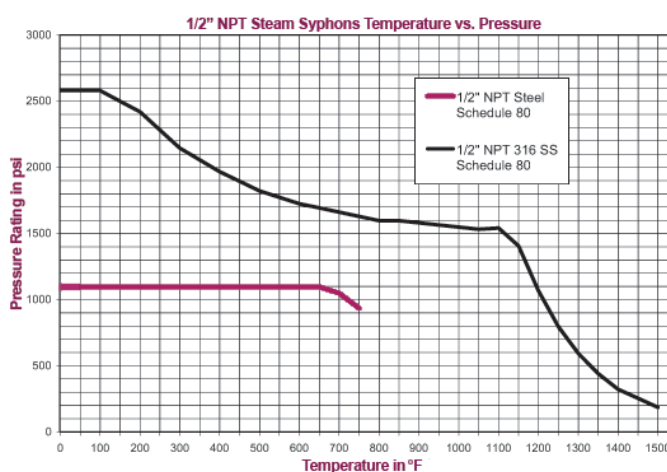
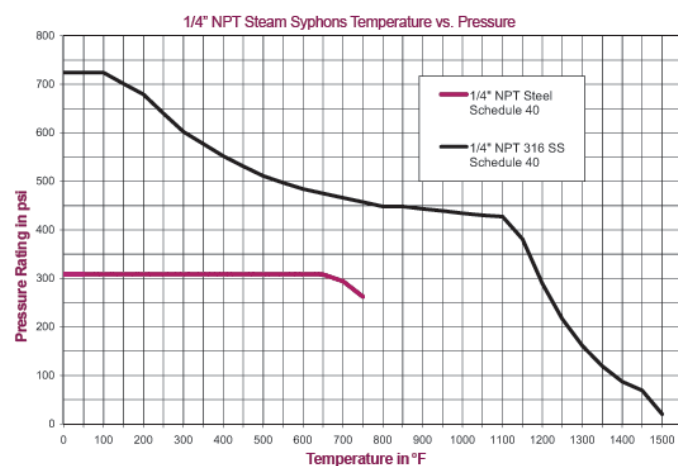


### Product Specifications

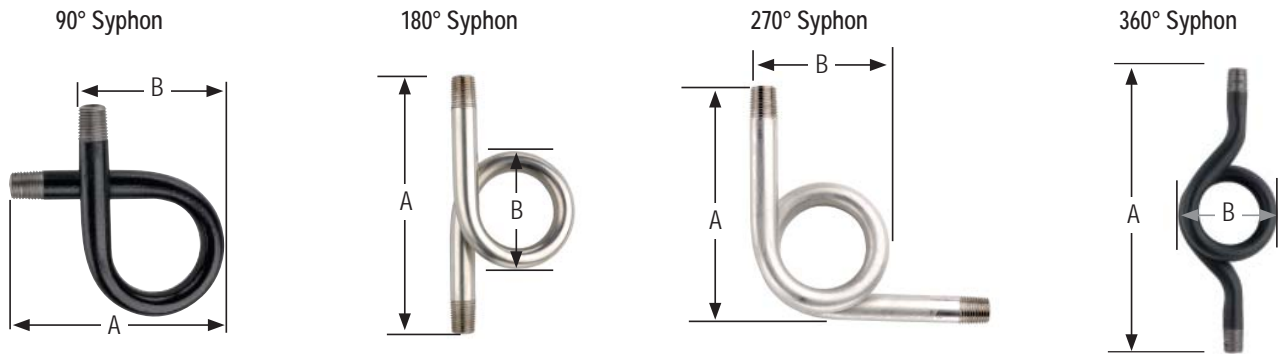
PART NO.	COIL STYLE	SIZE	MATERIAL
1225	90°	1/4" NPT	Welded steel, schedule 40
1250		1/2" NPT	Welded steel, schedule 80
2225		1/4" NPT	Welded 316SS, schedule 40
2250		1/2" NPT	Seamless 316SS, schedule 80
1025	180°	1/4" NPT	Welded steel, schedule 40
1050		1/2" NPT	Welded steel, schedule 80
2025		1/4" NPT	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



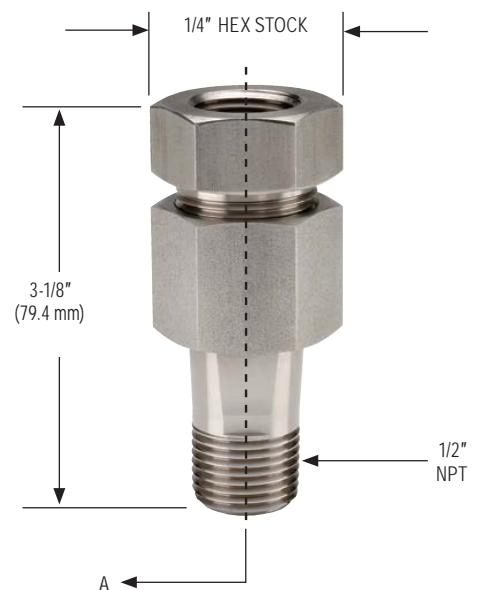




CONNECTION SIZE			1/4" NPT	1/2" NPT
90°	A	IN MM	4.25 107.95	6.5 165.1
	B	IN MM	2.625 66.675	4.0 101.6
180°	A	IN MM	5.5 139.7	8.875 225.425
	B	IN MM	2.5 63.5	4.0 101.6
270°	A	IN MM	4.5 114.3	7.5 190.5
	B	IN MM	2.625 66.675	4.0 101.6
360°	A	IN MM	7.25 184.15	12.0 304.8
	B	IN MM	2.625 66.675	4.125 104.775

### 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.



## Gauge Configurations for High Temperature Applications

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

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

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

For more information, contact NOSHOK at 440.243.0888

## Process Conditions That Affect Pressure Gauge Accuracy & Performance

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

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

### **Temperature Influence:**

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

### **Vibration Influence:**

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

### **Pulsation Influence:**

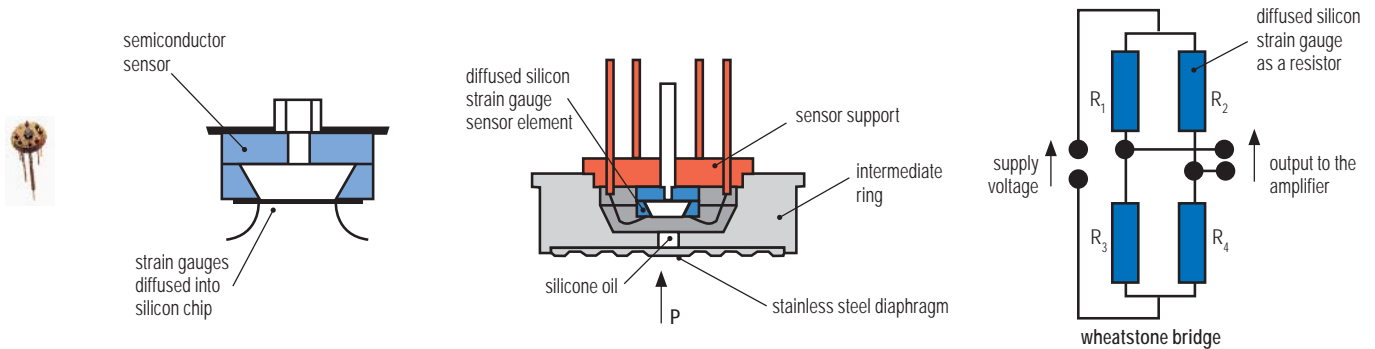
Process pulsation can occur around the discharge of pumps as well as quick operating valves. Many users assume that liquid filling a pressure gauge will fully address pulsation. Although a liquid filled gauge helps to dampen the effects of pulsation, it often does not fully address this process condition.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

### **Summary:**

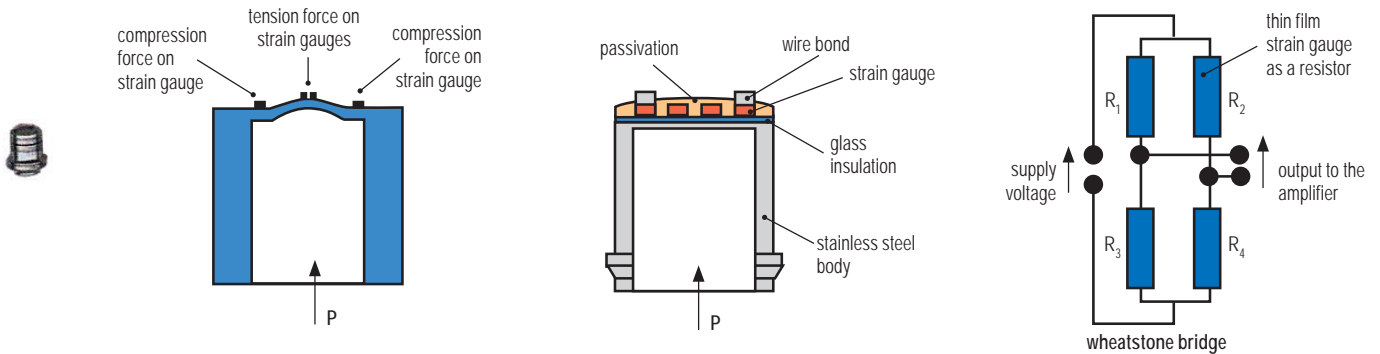
Temperature, vibration and pulsation are three process conditions that adversely affect a pressure gauge. Being aware of these three process conditions, and taking the necessary steps to address them, can help minimize accuracy errors and add to the service life of the pressure gauge.

## NOSHOK Transducer and Transmitter Pressure Sensing Technologies

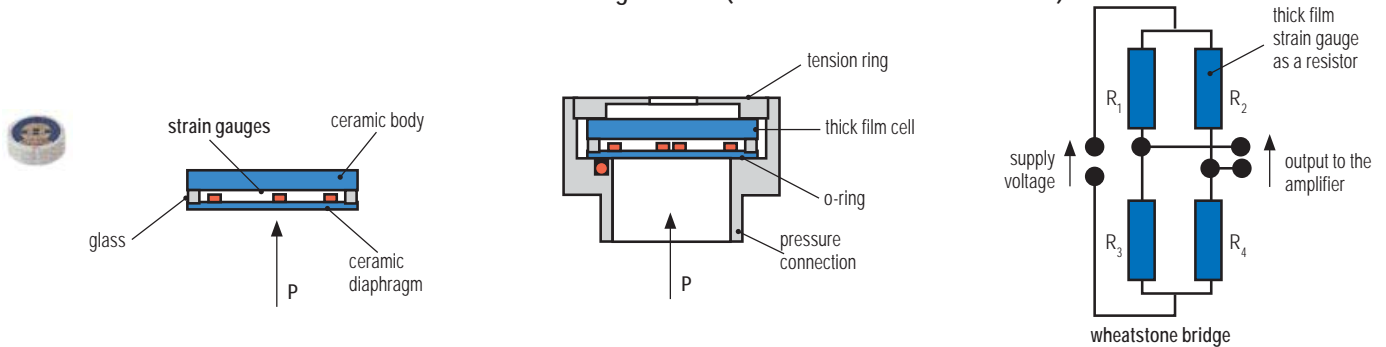
**Diffused Silicon Semiconductor Strain Gauge Sensor** (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640 and 650 Series - ranges up to 0 psi to 300 psi)



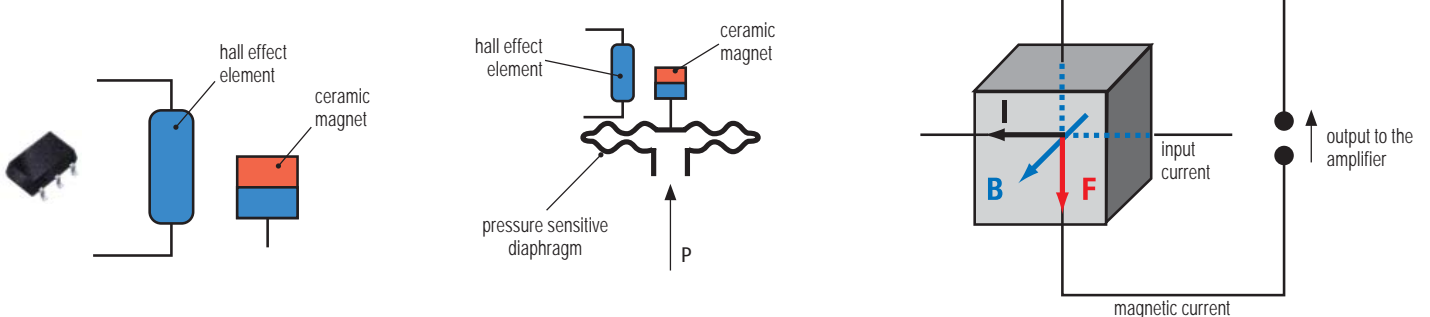
**Sputtered Thin Film Strain Gauge Sensor** (used in 100, 200, 612, 613, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640, 650, 660, 800/810 Series - ranges 0 psi to 500 psi and higher)



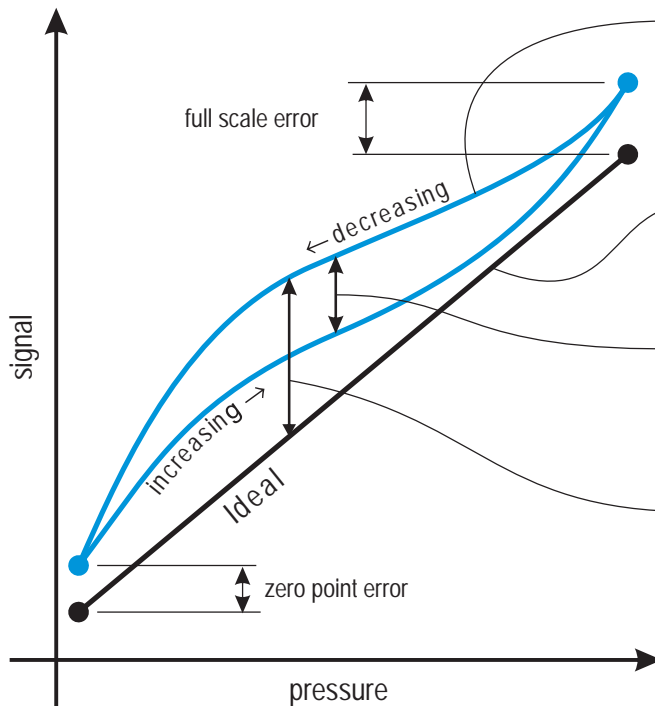
**Ceramic Thick Film Strain Gauge Sensor** (used in 800/810 and 1000 Series)



### Hall Effect Sensor



## Accuracy according to IEC 61298-2



## Definitions

### Characteristic Curves:

A smooth curve generated through data points recorded from actual input pressures and output signals at increasing and decreasing pressures (upscale and downscale readings)

### Ideal Characteristic Line :

A straight line representing an ideal linear relationship between the input pressure and output signal.

### Hysteresis:

The maximum difference between the characteristic lines recorded at increasing and decreasing pressure. Expressed in percent of ideal span.

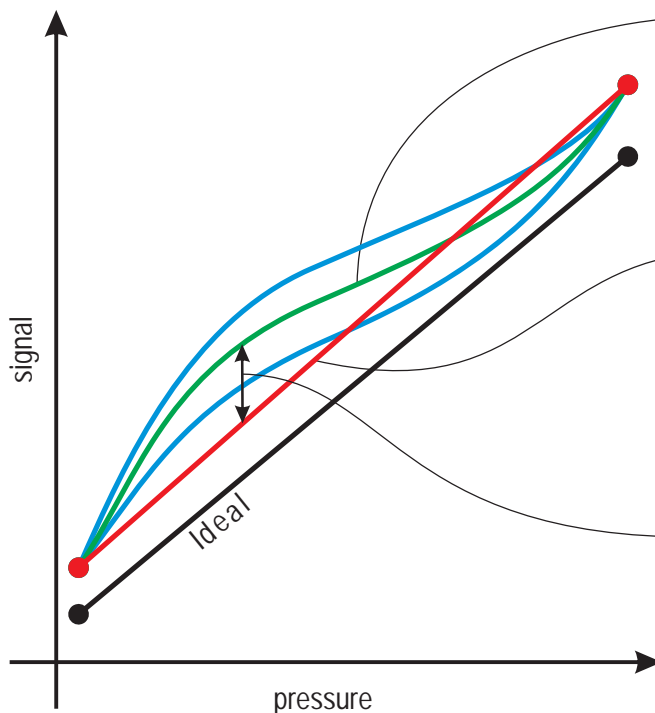
### Accuracy :

The maximum deviation from an ideal characteristic line including the effects of non-linearity, hysteresis, non-repeatability, zero point and full scale errors. Expressed in percent of ideal span

### Non-Repeatability :

The maximum deviation between values of output for any single input of multiple cycles considering decreasing and increasing pressures separately. Expressed in percent of ideal span.

## Non-linearity according to IEC 61298-2



### Averaged Characteristic Curve:

A single curve generated through the averaged data of input pressures and output signals at increasing and decreasing pressures. (average of upscale and downscale curves)

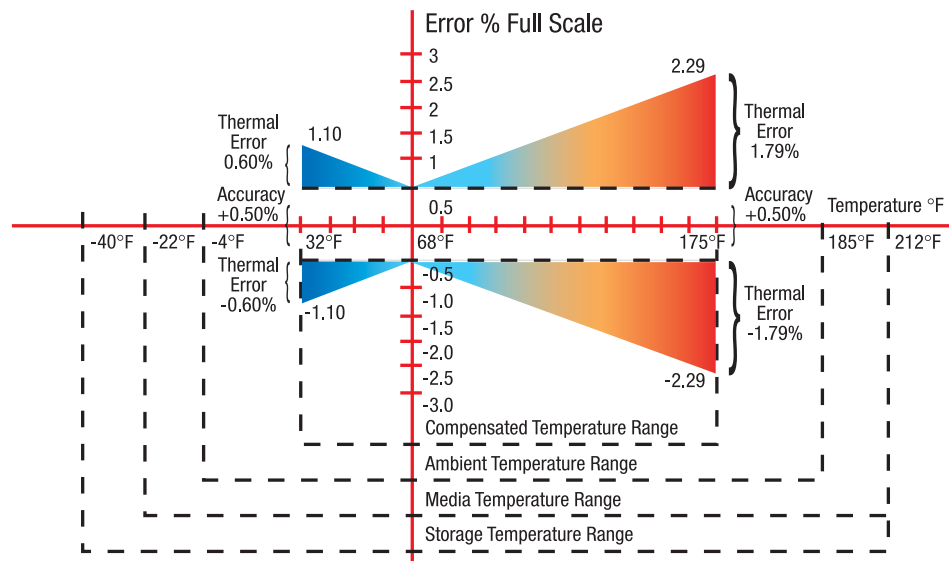
### Reference line (TP or BSFL):

A straight line coinciding with the actual output data and the averaged characteristic curve.  
(TP) Terminal Point connects the actual zero point value and the full scale value  
(BSFL) Best Fit Straight Line connects the data using the least square method to minimize the maximum deviation  
**TP  $\cong$  2 X BSFL**

### Non-Linearity:

The maximum deviation from the averaged characteristic line to the reference line. Expressed in percent of ideal span.

## 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".

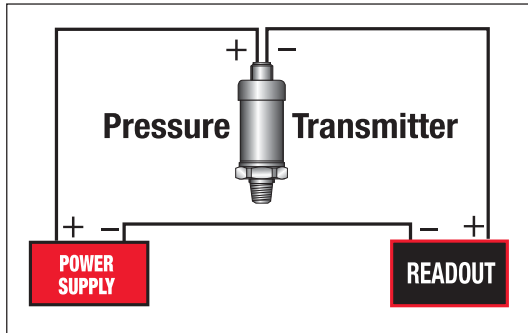
The **Ambient Temperature Range** is the maximum and minimum ratings over which the transducer will output a correct signal.

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

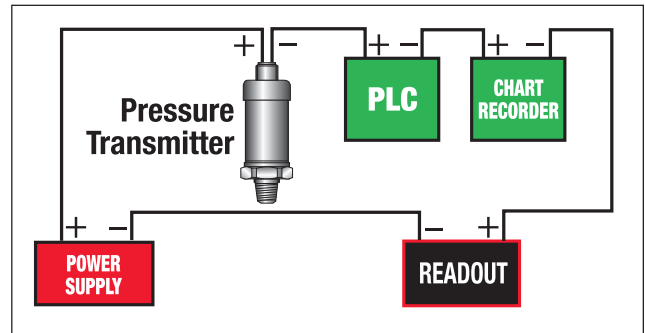
The **Storage Temperature Range** is the maximum and minimum ratings for no damage on the shelf.



## 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,  $V_{\text{transmitter}} = 10 \text{ Vdc}$

$V_{\text{wiring}} = \text{Resistance of the wiring (handbook data)} \times 20 \text{ mA maximum current flow in the circuit}$ . 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:

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

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  $V_{\text{min}} = 20.012 \text{ Vdc}$ . 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.

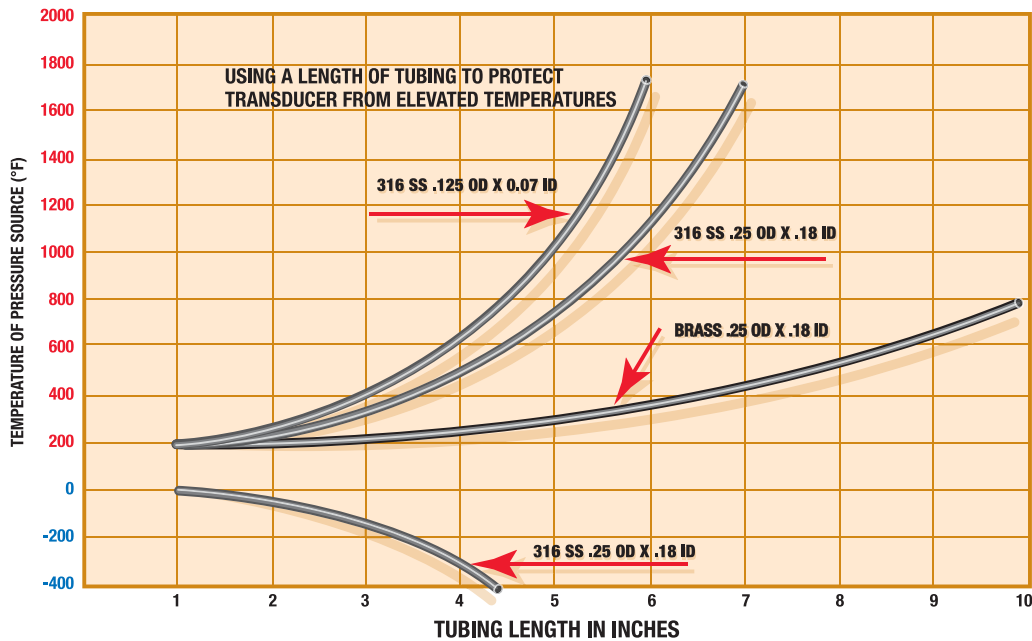
Load Limitations 4 mA to 20 mA output
$V_{\text{min}} = 10\text{V} + (.020 \times R_L)$
$R_L = \text{Loop resistance } (\Omega)$
$R_L = R_S + R_W$
$R_S = \text{Sensor resistance } (\Omega)$
$R_W = \text{Wire Resistance } (\Omega)$

## 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

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

#### *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

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 $\Omega$ s-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 a 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 its electronic products with a 3-year warranty that is the best in the market.
- Products provide significant performance and application flexibility at competitive prices addressing the needs of the OEM and the user alike.
- As a privately owned and run business, NOSHOK employees focus on continually improving customer satisfaction.

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

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

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

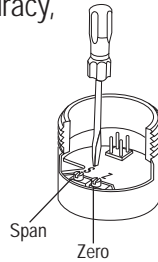
**Installation:** NOSHOK pressure transmitters/transducers may be mounted in any plane with negligible effect on performance. Although these units are designed and manufactured to withstand substantial shock and vibration, it is recommended that they be mounted in an area of minimal vibration. Always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

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

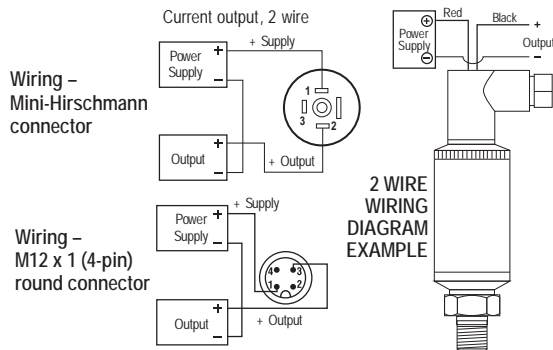
### Alignment Procedure

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

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



### SERIES 100



#### Load Limitations

4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

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

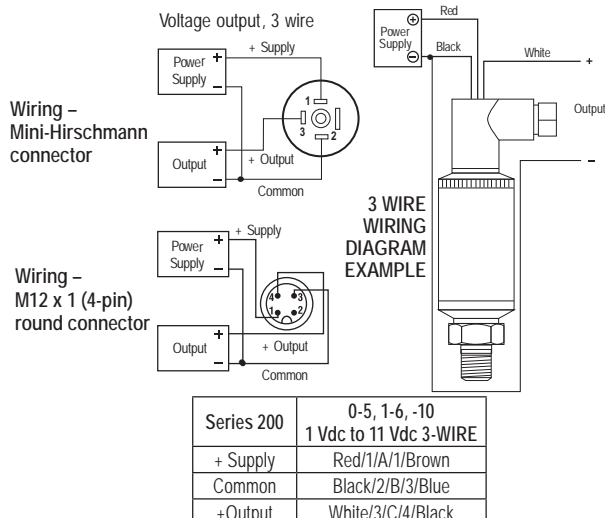
$$R_S = \text{Sense Resistance } (\Omega s)$$

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

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

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

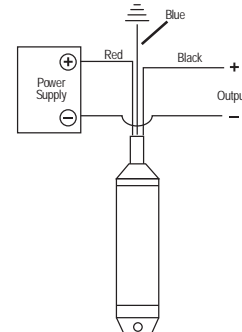
### SERIES 200



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

### SERIES 612 & 613

#### 2 WIRE WIRING DIAGRAM EXAMPLE



#### Load Limitations

4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

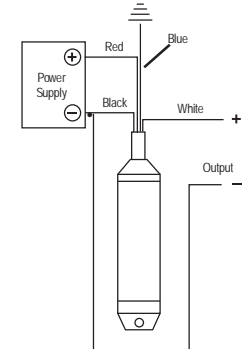
$$R_L = \text{Loop Resistance } (\Omega s)$$

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

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

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

#### 3 WIRE WIRING DIAGRAM EXAMPLE



#### Load Limitations

4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

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

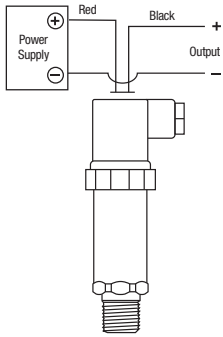
$$R_S = \text{Sense Resistance } (\Omega s)$$

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

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



## SERIES 615/616



2 WIRE WIRING  
DIAGRAM EXAMPLE

Load Limitations 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

$R_L$  = Loop Resistance ( $\Omega$ s)

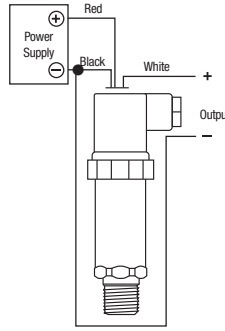
$R_S$  = Sense Resistance ( $\Omega$ s)

$R_W$  = Wire Resistance ( $\Omega$ s)

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

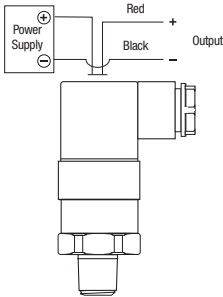
Series 615/616	Voltage Output
+ Supply	Red/1/A/1/1/Brown
Common	Black/2/B/2/3/Blue
+Output	White/3/C/3/4/Black

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



3 WIRE WIRING  
DIAGRAM EXAMPLE

## SERIES 300



2 WIRE WIRING  
DIAGRAM EXAMPLE

Load Limitations 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

$R_L$  = Loop Resistance ( $\Omega$ s)

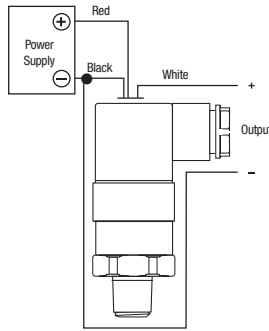
$R_S$  = Sense Resistance ( $\Omega$ s)

$R_W$  = Wire Resistance ( $\Omega$ s)

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

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

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

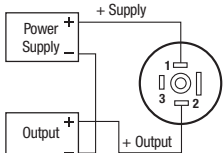


3 WIRE WIRING  
DIAGRAM EXAMPLE

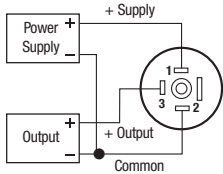
## SERIES 660

Wiring - Mini-Hirschmann  
connector

Current output, 2 wire



Voltage output, 3 wire



Load Limitations 4 mA to 20 mA Output Only

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

$$R_L = R_S + R_W$$

$R_L$  = Loop Resistance ( $\Omega$ s)

$R_S$  = Sense Resistance ( $\Omega$ s)

$R_W$  = Wire Resistance ( $\Omega$ s)

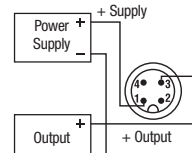
Series 660	4 mA to 20 mA 2-wire
+ Supply	Brown/1/1/1/Brown
+Output	Green/2/3/Blue

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

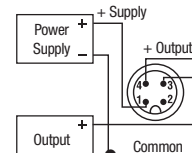
Example: Brown/1/1 = Applicable color wire/  
din plug number M12 x 1 pin number/M12  
integral cable color wire

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

Current output, 2 wire



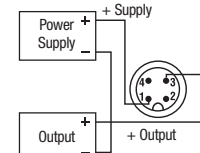
Voltage output, 3 wire



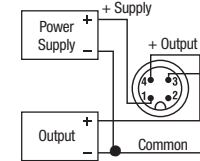
## SERIES 640

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

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

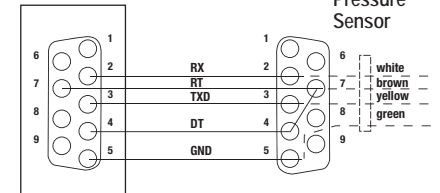
$$R_L = R_S + R_W$$

$R_L$  = Loop Resistance ( $\Omega$ s)

$R_S$  = Sense Resistance ( $\Omega$ s)

$R_W$  = Wire Resistance ( $\Omega$ s)

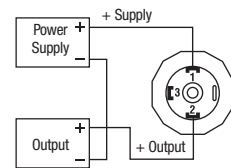
RS 232 Interface



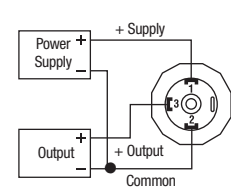
Pressure  
Sensor

## 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

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

$$R_L = R_S + R_W$$

$R_L$  = Loop Resistance ( $\Omega$ s)

$R_S$  = Sense Resistance ( $\Omega$ s)

$R_W$  = Wire Resistance ( $\Omega$ s)

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

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

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

**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.

## Frequently Asked Questions - Dial Indicating Pressure Gauges

**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® 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® 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.

**Q. What is the difference between a transducer and transmitter?**

- A. When these terms originated there was a distinctive difference between the two. A transmitter was referred to as an instrument with a current output signal (i.e. 4 mA to 20 mA) and a transducer was referred to as an instrument with a voltage signal (i.e. 3 mV/V, 0 Vdc to 10 Vdc etc.). As time has progressed these terms are now commonly interchanged for reference to current, voltage and digital output signals.

**Q. What is the difference between the proof pressure and burst pressure specifications?**

- A. Proof pressure which is higher than the full scale pressure point is the limit that you can go to without affecting the performance and calibration of the transducer. The burst pressure on the other hand is the limit that you can go before there is pressure chamber rupture and damage. An overload limit specification used sometimes means that proof and burst ratings are identical.

**Q. Will the series 1800 Attachable Loop Indicator work with transmitters not made by NOSHOK?**

- A. The series 1800 indicator will work with any brand that has the same pin connections and style Hirschmann connector and sufficient power supply voltage to drive all instruments in the loop. The series 1800 will use 3 Vdc to operate.

**Q. What does RFI, EMI and ESD mean related to pressure transducers and transmitters?**

- 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

## NOTES

[illegible]

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.



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## NOTES

[illegible]

## NOTES

[illegible]

# NOTES



A decorative background featuring a large, light gray stylized letter 'W' and a large, light gray stylized letter 'C' that overlap. The page is filled with horizontal lines for writing, with some lines intersected by the decorative shapes.

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# Quality Policy

NOSHOK

is committed to providing  
a high degree of value and continually  
improving processes to improve customer  
satisfaction by focusing on customer  
requirements for the design, manufacture and  
distribution of pressure, temperature, and  
force measurement instruments along with  
needle and manifold valves including  
custom manifold systems for  
industrial applications.

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.

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