

North American Sensors Corp. Pressure Switches Inc.



Products that make sense

Mission Statement

It is the mission of North American Sensors Corporation to manufacture innovative products for all industries. Our hope is that these products will continually create a benchmark of quality and customer satisfaction. Through these self imposed standards, we will continually strive to surpass industry expectations concerning product and personal performance. All of these pursuits will be conducted with the ultimate goal of becoming the industry leader in sensor manufacturing and technology.

Manufacturer's Warranty

North American Sensors Corporation warrants its products to be free from defects in material and workmanship when subjected to normal use and service for a period of one year from the date of purchase. This warranty is applicable only to product components that are stationary and not subject to normal wear. This warranty does not apply to products that have been subjected to electrical or chemical damage due to improper use, accident, negligence or abuse. Electrical damage to solid state components, relays, reedswitches or other components will not be covered. Also excluded are products that have been modified or altered, or have electrical cables that have been cut during installation. If anyone other than authorized personnel of NASC attempts to repair the device, this warranty is null and void.

NASC is responsible under this warranty for the repair or replacement of the defective product or components as deemed necessary upon inspection by NASC service personnel. NASC assumes no responsibility for consequential damages to personal or real property, or for injury to any person.

This warranty supersedes all warranties expressed or implied. The suitability of NASC products for a particular application and the implied warranty of merchant ability is excluded from warranty coverage. This warranty may not be expanded or altered other than in writing by an officer of NASC.

Defective products must be shipped to NASC prepaid and insured to the address below within 30 days of the original malfunction. All returned goods must be labelled with a Return Goods Authorization number obtained from NASC customer service. Also include the part number, serial number, name and contact number of someone capable of answering questions regarding the use, operation and liquid contamination of the product, a return shipping address and a description of the problem. All returns will be handled as quickly as possible and the preceding information will help to expedite the return or replacement of the product.





North American Sensors Corp.

Quality Pressure, Level, and Temperature Solutions

BLG Series

Bilge/Sump Level Switches

NASC's bilge switches are designed to be installed in ships bilges, tanks and industrial sumps, where it would be bolted to an adjoining structure. Custom configurations are available upon request. Specifications regarding this model may change without notice.

BLG100/25SSS-X*



Standard Features:

- Clear polycarbonate Slosh Shield
- 316SS Stem, Float and Brackets
- 25 VA Form C Hermetically Sealed Reed Switch
- 4C 18AWG PVC Jacketed Cable
- Water Tight Seal
- Made in the USA

BLG150/25SSS-X*



BLG150/25SSS

- Manual Lift/Test Mechanism

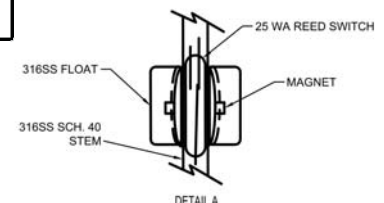
Max Temp	250F
Max PSIG	120
Float SG	0.68
Watt Rating	25 AC/DC
Max Volts	120 AC/DC

BLG225/25SSS-X*



Standard Features:

- 316SS Slosh Shield
- 316SS Stem, Float and Brackets
- 25 VA Form C Hermetically Sealed Reed Switch
- 4C 18AWG PVC Jacketed Cable
- Water Tight Seal
- Manual Lift/Test Mechanism
- Made in the USA

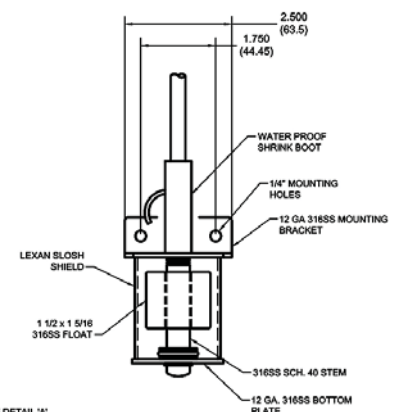
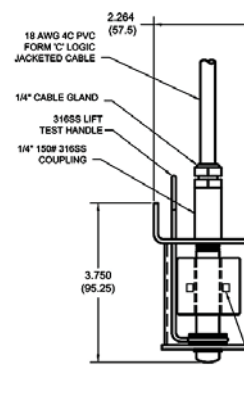


-X Options
STO Cable 16AWG 4C
Custom Lengths of Cable

*All switches can also be supplied with 100VA form 'C' hermetically sealed reed switch.

Note:

The actuation point will vary depending on the temperature and the specific gravity of the individual liquid being detected.





Bilge/Sump Level Switches

NASC's ABS Type approved bilge switch is designed to be installed in ships bilges, tanks and industrial sumps, where it would be bolted to an adjoining structure. Custom configurations are available upon request. Specifications regarding this model may change without notice. The **(BLG250/25SSS switch is the only ABS type approved bilge level switch manufactured in the US.)**

BLG250/25SSS

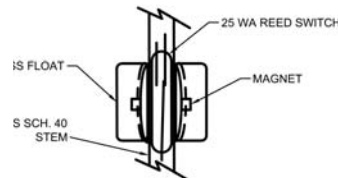
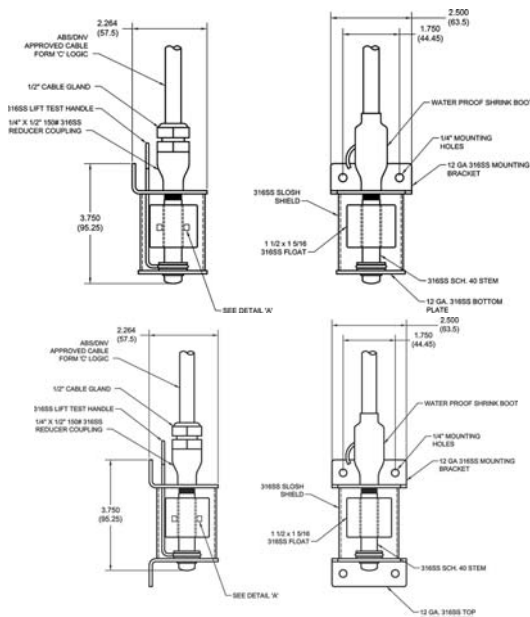


Standard Features:

- 316SS Slosh Shield
- 316SS Stem, Float and Brackets
- 25 VA Form C Hermetically Sealed Reed Switch
- ABS Approved Cable, 6 ft. Standard
- Water Tight Seal
- Manual Lift/Test Mechanism
- ABS Type Approved
- Made in the USA



Max Temp	250F
Max PSIG	120
Float SG	0.68
Watt Rating	25 AC/DC
Max Volts	120 AC/DC



Wiring Logic
Switch Rated SPDT 25VA
Red - N.O.
Black - N.C.
White - Common
Green - Ground

For a more rugged design, our BLG250/25SSS-B has a double bracketing system and the slosh shield is tig welded to the brackets and stem.

The ground wire on this switch should not be used as part of the circuit and should only be used when a ground is not available to the switch.

*All switches can also be supplied with 100VA form 'C' hermetically sealed reed switch.

Note:

The actuation point will vary depending on the temperature and the specific gravity of the individual liquid being detected.





Bottle Switches (External Mount Level Switches)

NASC's line of brass bottle switches are designed to be installed externally to ship tanks and industrial tanks. It may also be bolted to an adjoining structure. Custom configurations are available upon request. Specifications regarding this model may change without notice.



BTL100/25BBS
BTL 100/25BBN

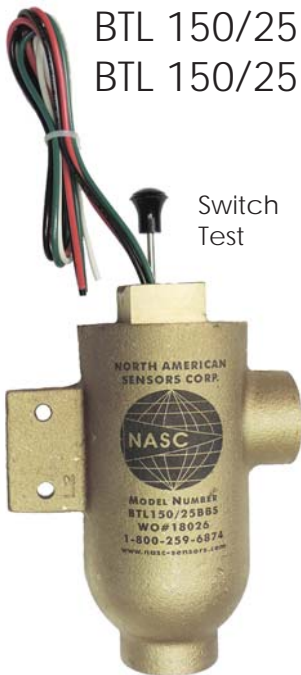
Standard Features:

- All Brass Bottle
- Brass Pipe Plug and Stem
- 316SS Float or Buna Float
- External Mounting Tab
- 18AWG PVC Jacketed 4C Wire
- Hermetically Sealed SPDT Reed Switch
- Made in the USA



Wiring Logic
Switch Rated SPDT 25VA
Red - N.O.
Black - N.C.
White - Common
Green - Ground

The ground wire on this switch should not be used as part of the circuit and should only be used when a ground is not available to the switch.



BTL 150/25BBS
BTL 150/25BBN

Switch
Test

Standard Features:

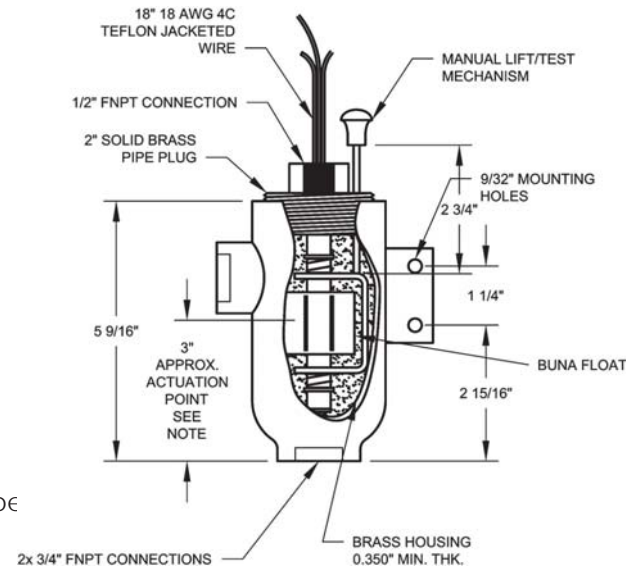
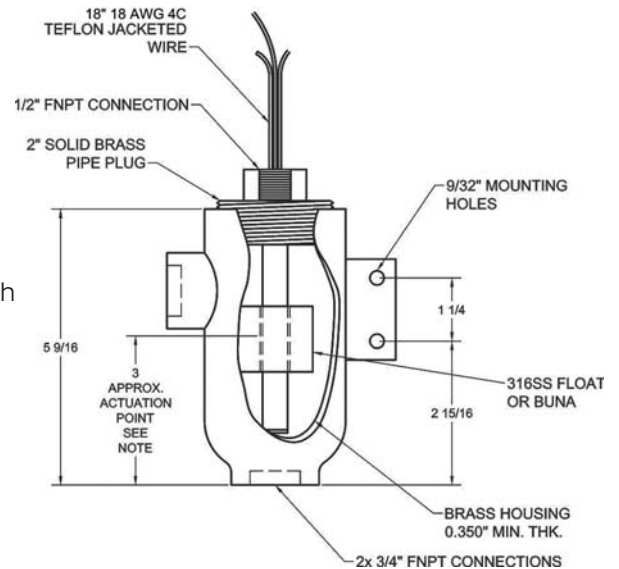
- All Brass Bottle
- Brass Pipe Plug and Stem
- 316SS Float or Buna Float
- External Mounting Tab
- 18AWG PVC Jacketed 4C Wire
- Hermetically Sealed SPDT Reed Switch
- 316SS Lift/Test Mechanism and Rod Wipe
- ABS Type Approved



BTL100/25BBS or BTL100/BBN can be supplied with a 100VA from 'C' hermetically sealed reed switch.

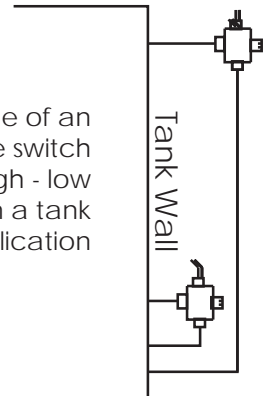
Note:

The actuation point will vary depending on the temperature and the specific gravity of the individual liquid be detected.



Max Temp	175F
Max PSIG	50
316SS Float SG	0.64
Buna Float SG	0.48
Watt	25
Rating*	AC/DC

Example of an external bottle switch used as high - low level alarms in a tank gauging application





Bottle Switches (External Mount Level Switches)

NASC's line of stainless steel bottle switches are designed to be installed externally to ship tanks and industrial tanks. It may also be bolted to an adjoining structure. Custom configurations are available upon request. Specifications regarding this model may change without notice.

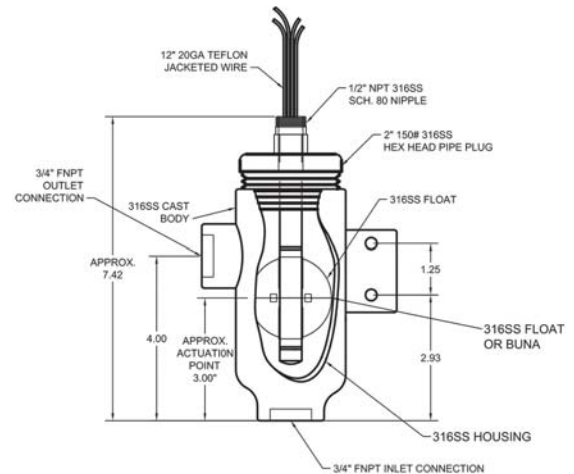
BTL 400/25SSS



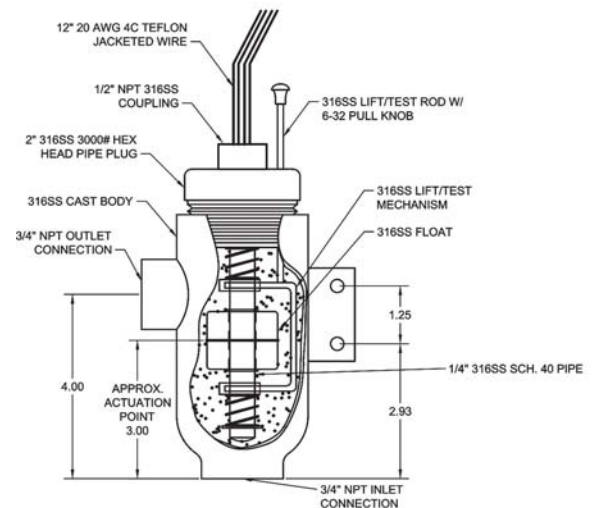
Standard Features:

- All 316 Stainless Steel
 - Body
 - Stem & Connections
 - 316SS Float or Buna Float
 - External Mounting Tab
- Interchangeable Parts for Easy Maintenance
- 20 AWG PVC Jacketed 4C Wire
- Hermetically Sealed SPDT Reed Switch
- Made in the USA

Max Temp	175F
Max PSIG	50
316SS Float SG	0.60 - 0.69
Watt Rating*	25 AC/DC



BTL 450/25SSS BTL 450/25SSN



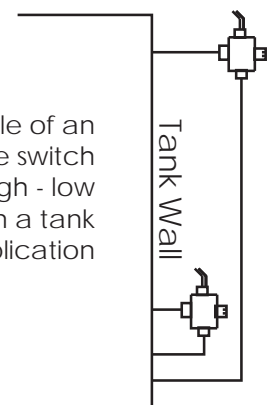
BTL400/25SSS is available with a 100VA from 'C' hermetically sealed reed switch.

Note:

The actuation point will vary depending on the temperature and the specific gravity of the individual liquid be detected.

Max Temp	175F
Max PSIG	50
316SS Float SG	0.64
Buna Float SG	0.48
Watt Rating*	25 AC/DC

Example of an external bottle switch used as high - low level alarms in a tank gauging application





Bottle Switches (External Mount Level Switches)

BTL Series

Nasc's line of stainless steel bottle switches are designed to be installed external to marine and industrial tanks to provide a level alarm. It may also be bolted to an adjoining structure for remote mounting. Custom configurations are available upon request. Specifications regarding this model may change without notice.

BTL 500/10SSN

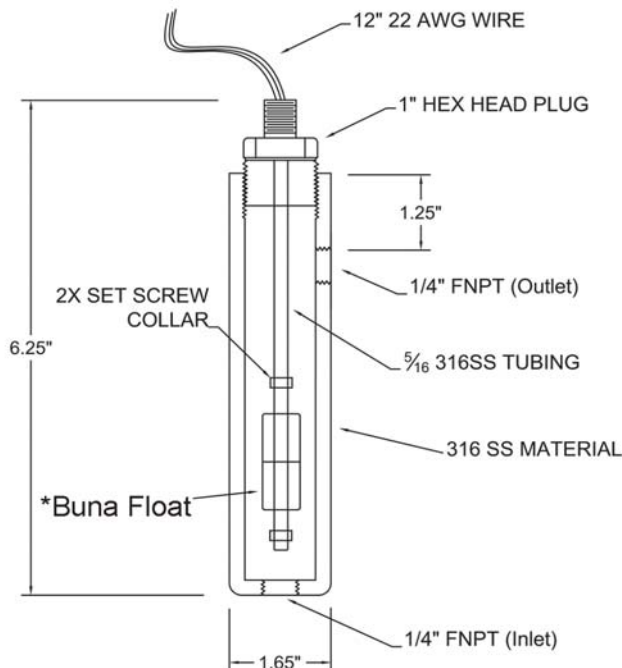


Standard Features:

- 316 Stainless Steel Body
- 316 Stainless Steel Stem & Connections
- Buna Float
- Interchangeable Parts for Easy Maintenance
- 3 # 22 AWG PVC Jacketed Wire
- Hermetically Sealed SPST Reed Switch
- Made in the USA



Example of a low and high level alarm on a level gauge.



**N.O. available upon request

Wiring Logic
Switch Rated SPST 10VA
Black - N.C. **
White - Common
Green - Ground

The ground wire on this switch should not be used as part of the circuit and should only be used when a ground is not available to the switch.

Max Temp	175F
Max PSIG	50
*Buna Float SG	0.45
Watt Rating*	25 AC/DC

*Stainless steel float available.
BTL500/SSS

Note:

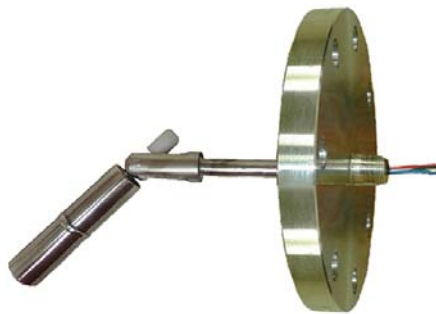
The actuation point will vary depending on the temperature and the specific gravity of the individual liquid be detected.



Side Mount Level Switches

NASC's SLS300 is a side mount level switch & actuates at the location it is mounted. Designed to be used in tanks where the top of the tank is inaccessible. We offer this switch with either a 25VA or 100VA reed switch. Specifications regarding this model may change without notice. Consult factory for custom configurations.

SLS300/25SS/4SS



SLS300/25SSS



Options Available:

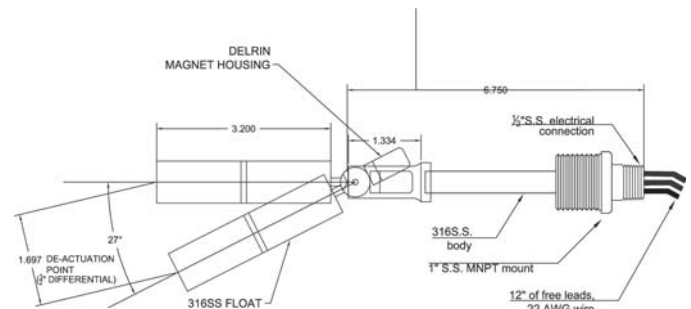
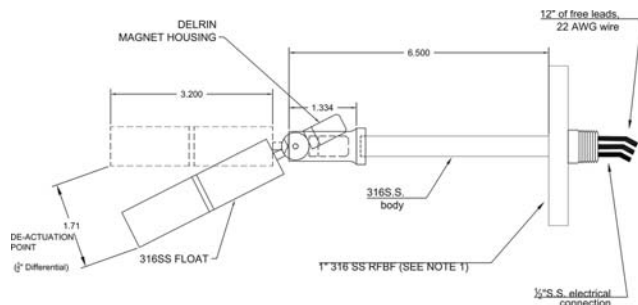
Mounting: 1" - 3" MNPT or 1" - 4" Flanged.

Note:

1. The actuation point will vary depending on the temperature and the specific gravity of the individual liquid being detected.
2. This product is to be used with an approved NEMA 4X terminal box that is connected to the electrical side of the switch.

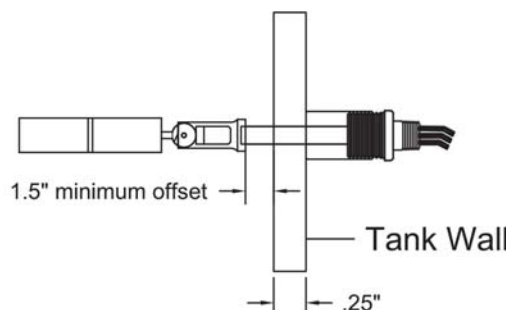
Standard Features:

- Precision machined body
- 22 AWG PVC jacketed 4C wire
- 316SS Float
- Delrin Magnet Holders
- Hermetically Sealed SPDT Reed Switch
- Made in the USA



Wiring Logic
Switch Rated SPDT 25VA
Red - N.O.
Blue - N.C.
White - Common
Green - Ground

The ground wire on this switch should not be used as part of the circuit and should only be used when a ground is not available to the switch.



Max Temp	300F
Max PSIG	150
316SS Float SG	0.7
Watt Rating*	25 AC/DC

SLS300/25SSS can be supplied with a 100VA from 'C' hermetically sealed reed switch.



Side Mount Interface Level Switches

NASC's SLS90 is designed to interface between two different liquids (i.e., oil & water). The 0.95 specific gravity float enables this unique design to sense when heavier liquids collect in the bottom of storage tanks. Custom configurations are available, consult the factory for more information. Specifications regarding this model may change without notice.

SLS90/25SSS



Max Temp	250F
Max PSIG	150
316SS Float SG	0.95
Watt Rating*	25 AC/DC

SLS90/25SSS can be supplied with a 100VA from 'C' hermetically sealed reed switch.

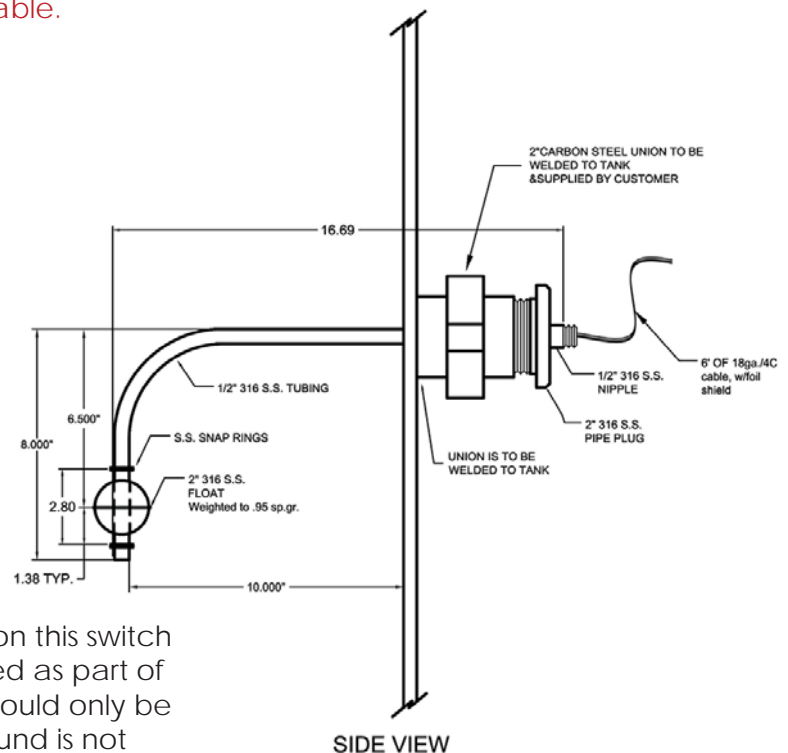
Flange connections from 3" and above available.

Standard Features:

- All 316 Stainless Steel
 - 1/2" .065 Wall Tubing Stem
 - 2" Hex Head Pipe Plug
 - 316SS Float
- 18 AWG/4C Foil Shielded Cable
- Hermetically Sealed SPDT Reed Switch

Note:

1. The actuation point will vary depending on the temperature and the specific gravity of the individual liquid being detected.
2. This product is to be used with an approved NEMA 4X terminal box that is connected to the electrical side of the switch.



Wiring Logic
Switch Rated SPDT 25VA
Red - N.O.
Black - N.C.
White - Common
Green - Ground

The ground wire on this switch should not be used as part of the circuit and should only be used when a ground is not available to the switch.



Custom Level Switch Ordering Form

Product P/N:	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	QTY
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Example P/N: MLS-S50-T1000-SSW-NLT-C50/W18-505-(IL=20", L1=18", L2=4")/O-25-C

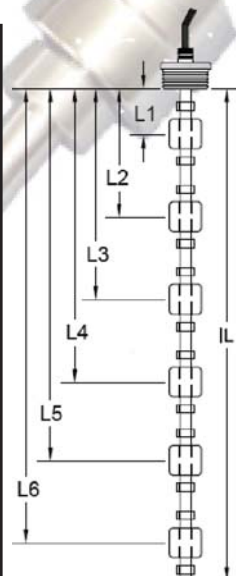
Please fill in all boxes below. A part number will be generated from your selections.

① Sensor Type: MLS = Multi-Level Switch CLS = Single-Level Switch GMLS = Guarded Multi-Level Switch GCLS = Guarded Single-Level Switch	② Material of Construction: <table border="1"> <tr> <th>Material Type</th> <th>Series (Stem Type)</th> </tr> <tr> <td>B = Brass</td> <td>25 = Ø1/4" Piping</td> </tr> <tr> <td>S = Stainless Steel</td> <td>50 = Ø1/2" Tubing</td> </tr> <tr> <td>P = PVC</td> <td>70 = Ø3/4" Tubing</td> </tr> <tr> <td>PP = Polypropylene</td> <td>100 = Ø1" Tubing</td> </tr> </table>	Material Type	Series (Stem Type)	B = Brass	25 = Ø1/4" Piping	S = Stainless Steel	50 = Ø1/2" Tubing	P = PVC	70 = Ø3/4" Tubing	PP = Polypropylene	100 = Ø1" Tubing	③ Switch Mounting: <table border="1"> <tr> <th>Threaded Connection</th> <th>Flanged Connection</th> </tr> <tr> <td>T1000 = 1" MNPT</td> <td>R = Raised Face</td> </tr> <tr> <td>T1250 = 1-1/4" MNPT</td> <td>F = Flat Face</td> </tr> <tr> <td>T1500 = 1-1/2" MNPT</td> <td>CS = Carbon Steel</td> </tr> <tr> <td>T2000 = 2" MNPT</td> <td>SS = Stainless Steel</td> </tr> <tr> <td>T3000 = 3" MNPT</td> <td>F1 = 1" F2 = 2"</td> </tr> <tr> <td></td> <td>F3 = 3" F4 = 4"</td> </tr> <tr> <td></td> <td>F5 = 5" F6 = 6"</td> </tr> <tr> <td></td> <td>F7 = 7" F8 = 8"</td> </tr> </table>	Threaded Connection	Flanged Connection	T1000 = 1" MNPT	R = Raised Face	T1250 = 1-1/4" MNPT	F = Flat Face	T1500 = 1-1/2" MNPT	CS = Carbon Steel	T2000 = 2" MNPT	SS = Stainless Steel	T3000 = 3" MNPT	F1 = 1" F2 = 2"		F3 = 3" F4 = 4"		F5 = 5" F6 = 6"		F7 = 7" F8 = 8"
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④ Float Protection: SSW = S.S. Stilling Well PSW = PCV Stilling Well NFP = No Float Protection	⑤ Lift Test: NLT = No lift test mechanism LT = Lift test (only avail. on T3000 & F3-8 connections)																													

⑦ Float Type:									
Float ID #	Form	Series	Material	S.G. (±.02)	Max Press.	Max Temp.	Float OD	Float ID	Height
302	Cyl.	25	316 S.S.	.825	250psi	300°F	.905"	.355"	1.59"
501	Cyl.	50	316 S.S.	.68	225psi	300°F	1.60"	.58"	1.385"
502	Ball	25	316 S.S.	.76	700psi	300°F	1.19"	.355"	1.115"
503	Ball	50	316 S.S.	.60	750psi	300°F	2.06"	.58"	2.0"
701	Ball	75	316 S.S.	.49	300psi	300°F	3.60"	.93"	3.53"
505	Cyl.	50	Buna-N	.48	150psi	180°F	1.88"	.875"	1.75"
506	Cyl.	50	Buna-N	.43	150psi	180°F	1.25"	.60"	1.75"
1001	Ball	100	316 S.S.	.45	75psi	300°F	7.10"	1.12"	7.0"

Please call for details when ordering speciality floats for interface detection.

⑨ Number of Switch-points: *IL = Overall length of unit in inches (bottom of switch mount to end of stem) _____ in L1 = switch-point 1 at _____ in L2 = switch-point 2 at _____ in L3 = switch-point 3 at _____ in L4 = switch-point 4 at _____ in L5 = switch-point 5 at _____ in L6 = switch-point 6 at _____ in *Note: A minimum of 2" is required between IL and L1. Switching Position: O = Switch open in dry position C = Switch closed in dry position D = SPDT



⑧ Float Stops: 1 = Setscrew collars (Standard) 2 = E-clips (available only for 1/4" pipe)
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⑩ Switch ID#:					
Switch ID #	Switch Watts (VA)	Contact	Contact Position	Max Volts	Max Amps
25	25VA	SPST/SPDT	N.O./N.C.	250AC/DC	1.0A
100	100VA	SPST/SPDT	N.O./N.C.	120AC	3.0A

⑪ Common Leads: S = Each switch has an independent common. C = Each switch has a shared common

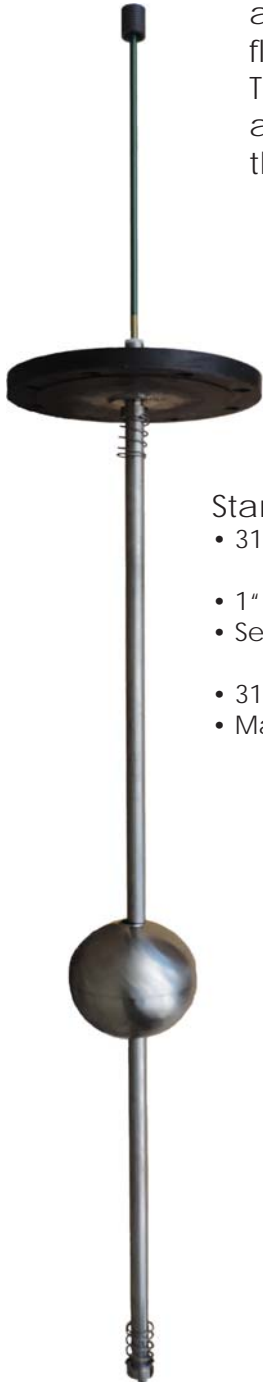
For more information on custom level switches, please call 1-800-259-6874 or send an email to sales@mepinc.com.



Mechanical-Magnetic Level Indicator

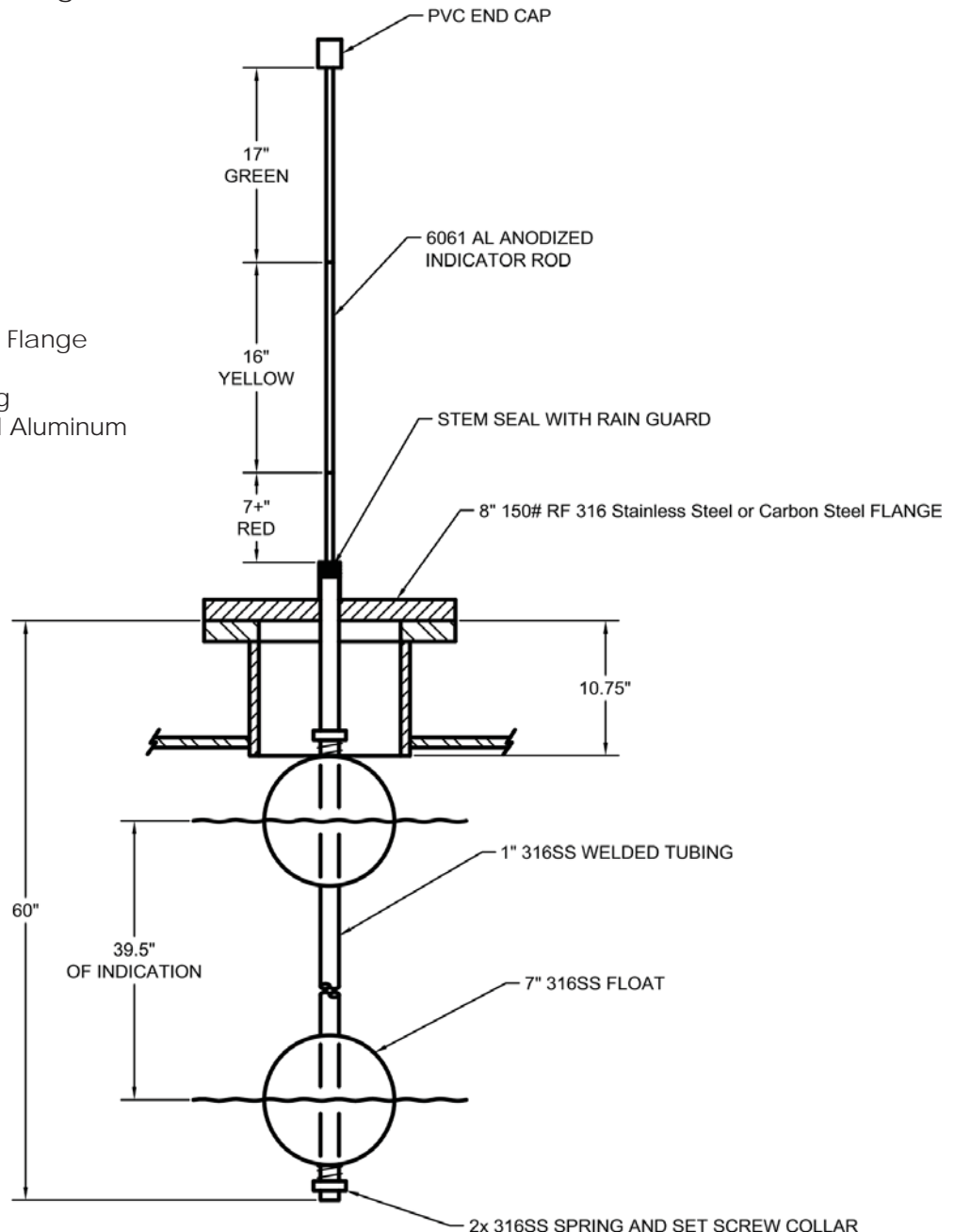
DS150

The model DS150 'dipstick' gauge is a mechanical-magnetic level gauge that is designed for high level indicating applications where a non-electrical gauge is required. This gauge works by lifting the internal stock, which has a magnet housing on the bottom, that interlocks with the magnet inside the float. Stick is assembled in different colored (red, yellow, and green) sections. The integral rain cap on top of stick is PVC. Custom configurations are available, consult the factory for more information. Specifications regarding this model may change without notice.



Standard Features:

- 316SS or Carbon Steel Flange (8" Standard)
- 1" 316SS Stem/Housing
- Segmented Anodized Aluminum Stick/Indicator
- 316SS 7" Float
- Made in the USA



Model Code (Example: DS150/L39-M8FSS-F7SS-1SS)
Specify DS150/L(Length in inches)/M(Mounting type)



Series 575 Pressure Transmitter

Two wire 4-20mA output transmitters offering superb chemical and corrosion resistance. Gauge or Absolute pressure is detected using a four active arm strain gauge bridge sensor, fuse to a high-purity ceramic diaphragm. Ranges from 100mbar to 600 bar or scaled to customers requirements.



Operating Specifications

Wetted Materials	316L S.S., Alumina ceramic & Viton
Standard Ranges	See Ordering Chart for Options
Safe over-range pressure	1.5 x rated range
Burst Pressure	3 x rated range minimum
Output—span	16mA +/- 1% span
Output—zero	4mA +/- 1% span
Non-linearity, hysteresis & Repeatability	0.25% of span (best fit straight line)
Compensated	-0 to +80 deg C
Operating Temp.	-20 to +125 deg C
Thermal zero shift	+/- 0.04% span per deg C
Thermal Span	+/- 0.015% reading per deg C
Long Term Stability	0.1% per 12 month typical
Supply	10 to 32VDC
Load Resistance	1.1kΩ max @ 32VDC supply

Key Features

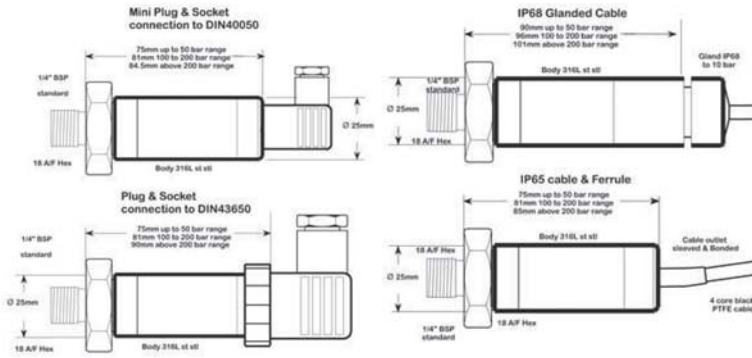
- All Stainless Steel Housing
- Rugged Construction
- Wide Pressure Ranges Available
- 4 - 20mA Output
- Excellent Linearity
- Long Term Stability
- Wide Temperature Range
- Excellent Corrosion Resistance
- Units can be factory scaled
- ABS Type Approved





Series 575 Pressure Transmitter

Dimensional Specifications



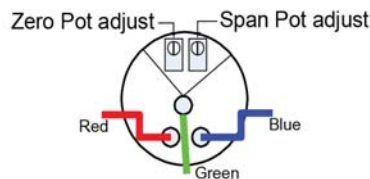
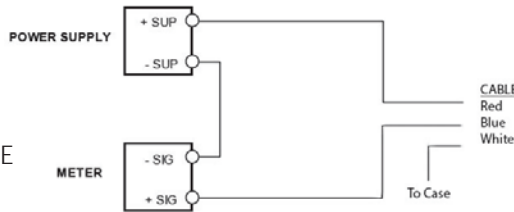
Wiring Diagram

DIN43650

PIN 1 = -/BLUE

PIN 3 = +/RED

FLAT PIN: TO CASE



NASC North American Sensors Corp

EX IIC T4 YOM 0518

INTRINSICALLY SAFE PRESSURE TRANSDUCER

EEx ia IIC T4 (Tambient max = +90°C) Sira 02ATEX2386X

Type: PTR575

Serial No:

Ui = 28V Ci = 60nF Pi = 0.84W

Ii = 120mA Li = 0

How to Order

(Example: Part Number PTR575G/T7/20B/Q/C/V/300)

PTR575*G / T7 / 20B / Q / C / V / Set * Range

Process Connection	
T1	Submersible (flush diaphragm)
T2	1/4" BSP w/ Delrin Nose Cone
T7	1/2" NPT (male)
T29	3/4" BSP (flush diaphragm)
T40	1/4" NPT (female)
T41	1/4" NPT (male)
T42	1/4" BSP (male)
T44	1/2" BSP (female)
T45	1/2" BSP (male)

Range	10B	10bar
0.1B	0.1 bar	20B
0.4B	0.4 bar	50B
1B	1 bar	100B
2B	2 bar	200B
3B	3 bar	400B
5B	5 bar	500B

Cable Outlet	
C	IP65 crimped cable & length (ft.)
D	IP65 mini DIN40050 plug & socket
H	IP65 DIN43650 plug & socket
I	IP68 glanded cable & length (ft.)
Q	Cable outlet DIN43650 w/4-20mA adjustable pots

Accuracy Class	
A	NL&H < ± 0.1%/span BFSL
B	NL&H < ± 0.15%/span BFSL
C	NL&H < ± 0.25%/span BFSL

O-ring Material	
V	Viton
E	EPDM
H	HNBR
K	Kalrez

* PTR575A (Atmospheric, Zero offset ranges available.)



Series 525 Pressure Transmitter

Two wire 4-20mA output transmitters offering superb chemical and corrosion resistance. Gauge or Absolute pressure is detected using a four active arm strain gauge bridge sensor, fuse to a high-purity ceramic diaphragm. Ranges from 100mbar to 50 bar or scaled to customers requirements. Standard cable length is 10', custom cable lengths available.



Operating Specifications

Wetted Materials	316L S.S., Alumina ceramic & Viton
Standard Ranges	See Ordering Chart for Options
Safe over-range pressure	1.5 x rated range
Burst Pressure	3 x rated range minimum
Output—span	16mA +/- 1% span
Output—zero	4mA +/- 1% span
Non-linearity, hysteresis & Repeatability	0.25% of span (best fit straight line)
Compensated Operating Temp.	-0 to +80 deg C (32 to 176F)
Thermal zero shift	-20 to +125 deg C (-4 - 257F)
Thermal Span	+/- 0.04% span per deg C
Long Term Stability	+/- 0.015% reading per deg C
Supply	0.1% per 12 month typical
Loop Resistance	10 to 32VDC
	1.1k Ω max @ 32VDC supply

Key Features

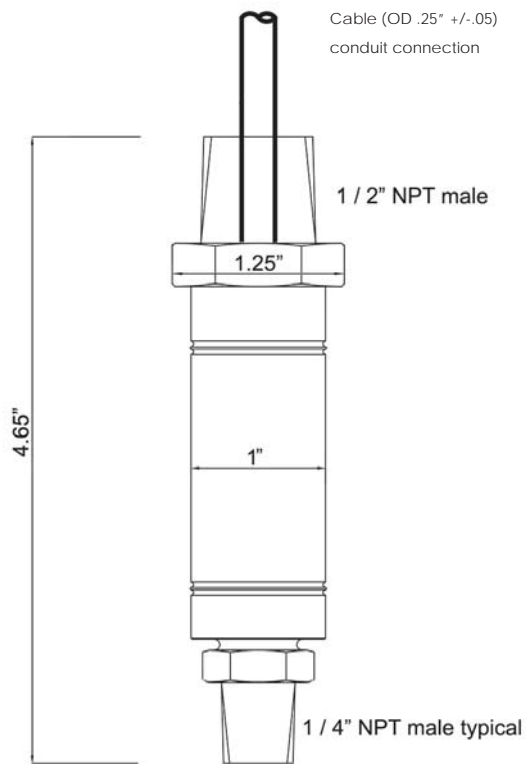
- All Stainless Steel Housing
- Rugged Construction
- Wide Pressure Ranges Available
- 4 - 20mA Output
- Excellent Linearity
- Long Term Stability
- Wide Temperature Range
- Excellent Corrosion Resistance
- Units can be factory scaled
- ABS Type Approved





Series 525 Pressure Transmitter

Dimensional Specifications



How to Order

(Example: Part Number PTR525G/T7/20B/I30/C/V/300)

PTR525*G / T7 / 20B / I30 / C / V / Set * Range

Process Connection	
T1	Submersible (flush diaphragm)
T2	1/4" BSP w/ Delrin Nose Cone
T7	1/2" NPT (male)
T29	3/4" BSP (flush diaphragm)
T40	1/4" NPT (female)
T41	1/4" NPT (male)
T42	1/4" BSP (male)
T44	1/2" BSP (female)
T45	1/2" BSP (male)

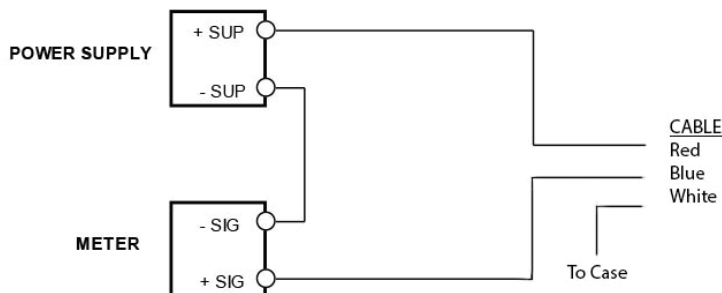
Range	3B	3 bar
0.1B	0.1 bar	5B
0.4B	0.4 bar	10B
1B	1 bar	20B
2B	2 bar	50B

Cable Outlet	
C	IP65 crimped cable & length (ft.)
I	IP68 glanded cable & length (ft.) or conduit connection

Accuracy Class	
A	NL&H < $\pm 0.1\%$ /span BFSL
B	NL&H < $\pm 0.15\%$ /span BFSL
C	NL&H < $\pm 0.25\%$ /span BFSL

O-ring Material	
V	Viton
E	EPDM
H	HNBR
K	Kalrez

Wiring Diagram



North American Sensors Corp



IICG



16

0518

INTRINSICALLY SAFE PRESSURE TRANSDUCER
EEx ia IIC T4 (Tambient max = +90°C) Sira 02ATEX2386X
Type: PTR525

Serial No:

Ui = 28V Ci = 60nF Pi = 0.84W
Ii = 120mA Li = 0

* PTR525A (Atmospheric, Zero offset ranges available.)



Series 150 Pressure Transmitter

The PTR150 is a compact & robust transmitter, providing pressure measurement in the range of 1 to 200 bar. All ranges are available in gauge or absolute format to suit customer requirements. An all laser welded stainless steel construction ensures media isolation. The product is designed to meet the tough environmental conditions experienced by modern day applications.



Key Features

- Compact and rugged construction
- Cost effective
- 1% total error band (-40°C to 105°C)
- High immunity to EMC: 100V/m
- 5V supply: 0.5 to 4.5V ratiometric output
- 8 to 30V supply: 4-20mA or 1 to 5V output
- Packard, M12 or Mini DIN connectors

Operating Specifications

Output Type		0.5 to 4.5V	4-20mA	1 - 5V
Non-linearity, Hysteresis & Repeatability	5 bar - 200 bar < 5 bar	V0.5% FS <1.00% FS		
Thermal Error	5 bar - 200 bar < 5 bar	V0.5% FS <1.00% FS		
Stability		<0.25% / Year		
Operating Temperature		-40°C to +105°C		
Proof Pressure		3 x FS		
Burst Pressure (absolute)		Lesser of 10 x FS or 100 bar		
Burst Pressure (gauge)		5 x FS		

Wetted Materials	304L & 316L SS, AL ₂ O ₃
Pressure/Temperature Cycles	>1.8*10 ⁶ Cycles (0 to FS at 8Hz; -40°C to + 105°C)
Thermal Shock	250 Cycles (105°C to -40°C, 0.5hr soaks at temp)
Vibration	144 hours (10 to 50Hz, 0g sinusoidal, 3 axes)
EMC Compatibility	100 V/m (80MHz to 1 GHz)
Humidity	250 hours (85°C and 90% to 95% RH)
Weight	<100g

Output Type	0.5 to 4.5V	4-20mA	1 - 5V
Supply Voltage	5 ± 0.5V	8 to 30V	8 to 30V
Supply Current	<5mA	N/A	<5mA
Output current	0.45mA Max (Sink of Source)	N/A	0.45mA Max (Sink of Source)
Response Time	<1mS	<1mS	<1mS
Reverse Polarity Protection	N/A	Yes	Yes

How to Order

(Example: Part Number PTR150G/T41/20B/MD/MA/300psi)

PTR150G / T41 / 20B / MD / MA / ^{Set}Range

Pressure Datum	
G	Gauge
A	Absolute
S	Sealed

Process Connection	
T40	1/4" NPT (female)
T41	1/4" NPT (male)
T42	1/4" BSP (male)

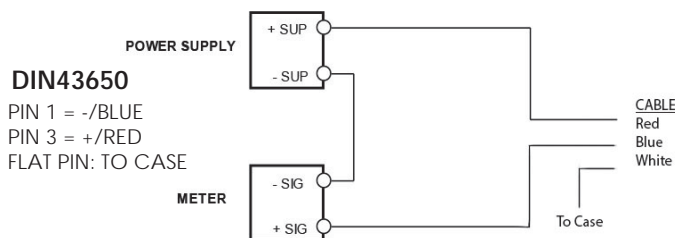
Range	10B	10bar
0.1B	0.1 bar	20B
0.4B	0.4 bar	50B
1B	1 bar	100B
2B	2 bar	200B
3B	3 bar	400B
5B	5 bar	500B

Electrical Connection	
P	Packard Metripak
MD	DIN40050
M12	4 pin
16	150mm Integral Harness
122	300mm Integral Harness
175	1800mm Integral Harness

Output Type	
45	0.5-4.5V (5V Excitation)
5V	1.5V (8 to 30V Excitation)
mA	4-20mA (8 to 30V Excitation)

* Other process connections available

Wiring Diagram





Pressure Transmitters

Hammer Union Pressure Transmitter

This is a 4-20mA output Hammer-Lug Union pressure transmitter. It is ATEX certified for use in Hazardous areas. IP68 rated and is EMC compliant to CE standards. It is available in the 1502 and 2202 union. The option of secondary containment for users that may experience high velocity pressure spikes is available upon request please contact us if you require this additional feature.



Key Features

- Ranges to 15,000psi (1000 bar)
- 0.25% accuracy
- 4-20mA two wire output
- IS - ATEX certified
- Full RFI/EMC immunity compliance
- Sour service standard -
Materials comply with NACE MR-DI-75 Revision 03
- Fused ceramic technology
- Shock and vibration tested

Applications

- Drilling instrumentation
- Mud logging systems
- MWD surface sensing
- Wellhead monitoring
- BOP control systems
- Subsea control systems
- Production testing
- Process systems
- Well Cementing

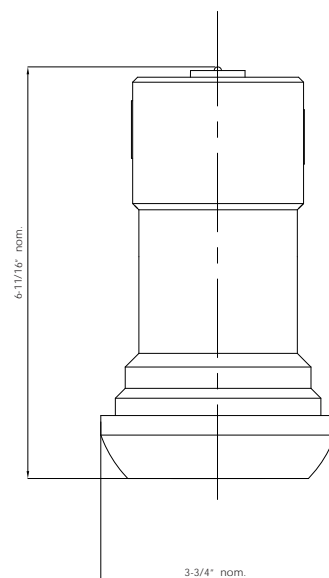
Input Specifications

Pressure Range	0 - 15,000psi (1000bar)
Over Pressure	x1.5 of calibration pressure
Burst Pressure	x2.5 for 15,000 psi (1000 bar) range, > x3 on all other ranges
Reverse Polarity Protection	Yes
Electrical Excitation	12 to 28Vdc
Pressure Media	Fluids compatible with Duplex Stainless Steel UNS 32205/ UNS31803 (SAF2205) to EN 1.4462, Ceramic (AL2O3), Inconel X750 and Perfluoroelastomer

Output Specifications (@ Ambient Temperature)

Span	16 mA
Residual Unbalance	4mA
Zero Setting Error	± 1%/Span
Span Set	±1%
Lead Driving	800 ohm @ 28Vdc supply
Long Term Stability	±0.1%/Span
Non-linearity	See NLH
Hysteresis	See NLH
Repeatability	See NLH
Combined NLH (+repeat)	<±0.25%/Span BFSL

Dimensional Specifications



Manufactured for NASC by RM&C



Pressure Transmitters

Hammer Union Pressure Transmitter

Environmental Performance	
Operating Temperature	-22°F to +194°F
Compensated Temperature	14°F to +194 °F
Storage Temperature	-22°F to 212°F
Process Temperature	194°F max
Thermal Zero Shift (TZS)	±0.01%/Span/°F typical
Thermal Span Shift (TSS)	±0.01%/°F typical
IP Rating	68



Physical Characteristics	
Pressure Port	1502 Male sub hammer Lug Union Units are directly compatible with WECO® 2"-1502 and 2202
Materials of Construction	Duplex Stainless Steel UNS 32205/UNS31803 (SAF2205) to EN 1.4462
Method of Installation	Hammer Lug Union
Electrical Connection	500Vac
Electrical Connection	6-Pin connector to MIL-C-24682 (10-6 POL)



Physical Characteristics	
Pressure Port	1502 Male sub hammer Lug Union Units are directly compatible with WECO® 2"-1502 and 2202
Materials of Construction	Duplex Stainless Steel UNS 32205/UNS31803 (SAF2205) to EN 1.4462
Method of Installation	Hammer Lug Union
Electrical Connection	500Vac
Electrical Connection	6-Pin connector to MIL-C-24682 (10-6 POL)

Approvals	
Intrinsic Safety	EEx ia IIC T4 (max temperature = 194°F)
EMC	Compliant to latest EMC standards.

Model Code Logic

W / 9 / 420 / 8 / X / X / XXXXP

Position	Code	Description
1: Pressure Ref. (Sealed Gauge)	W	Hammer Union Pressure Transmitter
2: Series	9	Basic submersible sensor with drain wire adaptor
3: Output	420	4-20mA
4: Pressure Port	8	2" Hammer Union Male-Sub
5: Secondary Pressure Containment	0	None
6: Electrical Connector	0	MIL C 24682
7: Pressure Range (psi)	350P	0-5,000 PSI
	400P	0-6,000 PSI
	700P	0-10,000 PSI
	1000P	0-15,000 PSI



Manufactured for NASC by RM&C



Hydrostatic Level Transmitter

460 Hydrostatic Level Transmitter

With thousands of marine liquid level transmitters installed on all classes of ships, from military vessels to tankers, the design of the Series 460 marine level transmitter draws on NASC's comprehensive marine application experience. Fully compliant with the latest IEC and marine industry standards, the Series 460 rugged construction provides reliable and accurate monitoring of liquids in the harsh environments of shipboard tanks. The Measuring principle of pressure in the Series 460 hydrostatic level transmitter is a diaphragm and L.V.D.T. sensor with power and signal linearization via a remote mounted transmitter. This combines excellent responsiveness and long term stability. The liquid level transmitter has the sensitivity needed to accurately measure shallow tanks but will resist a five times nominal range overload without damage. The all welded level sensor is manufactured from high grade alloys specifically selected for their stability and corrosion resistance. A wide choice of fittings and the remotely mounted amplifier maximizes installation flexibility and serviceability. The Series 460 is maintenance free and contains no active electronic components. A factory sealed cable is supplied with a heavy-duty outer sheath of cross linked polymers, suitable for continuous immersion in sea water, fuels and hydrocarbons. An optional performance cable permits use of the sensor with extreme temperatures limits of -50°C to -148°C.



Key Features

- Designed and constructed specifically for marine applications with relevant industry body and type application and approvals.
- Full range of connections and sensor mounting options for side-of-tank or IP68 submersible installation.
- Compatible with all common marine liquids and cargo applications: seawater, fuel and lubricating oil, bilge water etc.
- Wide span with a high measurement accuracy, long term stability and exceptional pressure overload resistance.
- Remote transmitter provides ease of access for routine calibrations checks
- Robust construction gives reliable operation and low maintenance cost.

Specifications			
Calibrated Spans	From 0 - 300 H ₂ O to 0 - 50m H ₂ O	Diaphragms	Hastelloy C276
Range Adjustment	3:1 turndown of normal range	Sensor Cable	Heavy duty TPE vented
Zero Adjustment	± 10% of calibrated span	Sensors Operating Temperature	-40°C to 105°C (-40°C to +55°C for IS models)
Overload	Minimum of 50 meters or 5 x nominal range	Electronics Housing	IP65 GRP (NEMA 4) with internal RFI screen (IP67 optional)
Nominal Ranges	1, 2, 4, 8, 16, 32 and 50 meters H ₂ O	Electronics Operating Temperature	-40°C to +55°C
Signal Output	4-20mA DC2 wire	Accuracy	Better than ± 0.25% FRO
Power Supply	12- 35 DC	Temperature Coefficient	Less than 0.02@ per °C shift zero and range
Maximum Load	1000 ohms at 30V	Sensor Body	316L stainless steel



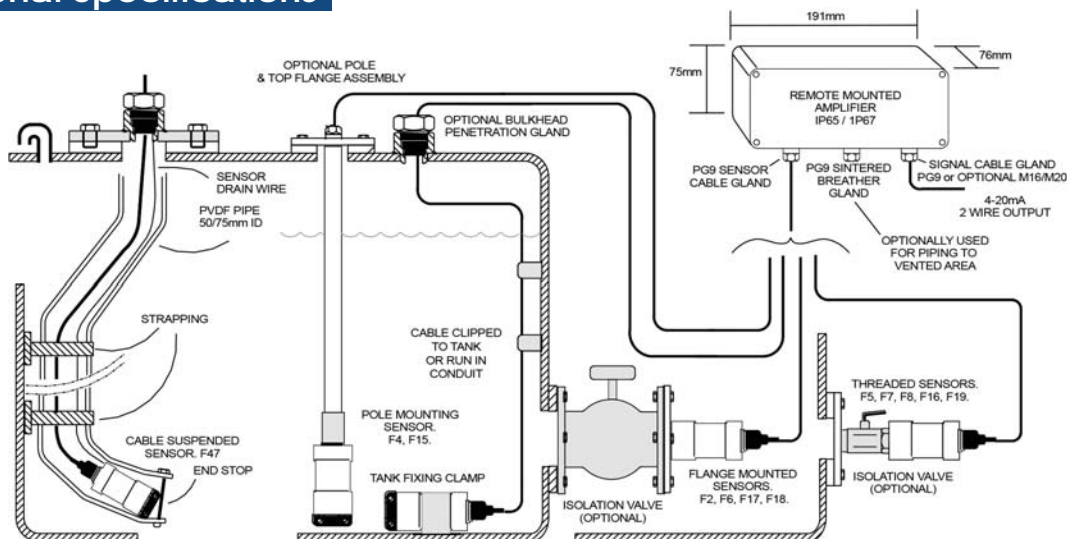
Hydrostatic Level Transmitter

Model Code Logic

460 / F47 / H8 / P / DW 3 / 7.5 / M20 / IS

Position	Code	Description
1: Transmitter	460	Sensor with RT168 remote transmitter 4-20mA output
2: Process Connection	F47	Basic submersible sensor with drain wire adaptor
	F2	DN25 PN16 flanged mounting
	F3	Tank fixing clamp
	F4	Pole adaptor fitting threaded 1/2" BSP female
	F5	Threaded process connection 1/2" BSP Male
	F6	1" ANSI 150lb flanged mounting to BS1560
	F7	1/2" NPT male
	F8	3/4" BSP female running nut
	F15	Welded pole assembly
	F16	3/4" BSP female running nut NRV plunger
3: Transmitter Maximum Pressure	H1	1m H ₂ O
	H2	2m H ₂ O
	H4	4m H ₂ O
	H8	8m H ₂ O
	H16	16m H ₂ O
	H32	32m H ₂ O
	H50	50m H ₂ O
4: Cable	P	Standard 3m cable length
	X	Custom cable length on request (specify length X meters)
5: Cable Length	DW X	Drain wire length in meters (F47 model only)
6: Range	X	Transmitter 4-20mA configured range in X m H ₂ O
7: Remote Electronics Cable Gland	9	PG9 cable gland for signal cable (standard)
	M16	M16 cable gland for signal cable (optional)
	M20	M20 cable gland for signal cable (optional)
8: Approvals	IS	Hazardous area installation (ATEX IS approved)
	NA	Safe area installation

Dimensional Specifications





Density Transmitter

290 Density Transmitter

NASC has designed and developed the Series 290 as a density transmitter specifically for use in the onshore and offshore oil and gas market. It is the first fluid density transmitter that is fully submersible for use on drilling mud, slurry, cement and completion fluids. This density transmitter is rugged yet accurate, providing reliable measurement in the mixing or holding tanks and return sumps. The Series 290 transmitter measures density as a function of differential pressure. Each unit has two pressure sensitive diaphragms mechanically separated by a fixed distance on a mounting pole. The distance between the transmitters two diaphragms provide a value of the liquids specific gravity. The diaphragms are protected by enclosure cages to prevent damage from the mechanical impact or debris. These are easily removable for cleaning. The density measurement is made online in real time and is fully compensated for changes in fluid temperature.



Specifications

Construction: Body assembly 316L Stainless steel with diaphragms Hastelloy C276.

Mounting: Submersed in tank.

Measuring range (Factory calibration)

- 6.67 to 20 pounds / US Gallon
- 0.8 to 2.4 SG / 0.8 to 2.4 kg/l

Customer specific calibration within this range on request.

Minimum density measurement:

- 6.25 Pounds / US Gallons
- 0.75 SG / 0.75 kg/l

Sensor capillary fill fluid: Silicon oil

Operating temperature -10° to 80° C

Hazardous area rating (option) EEx ia IIC T6

Key Features

- Density transmitter for drilling mud, slurry, cement and completion fluids.
- Designed to be installed in mixing recirculation and storage tanks.
- Simple and flexible pole mounting installation from the top of the tank.
- Remote transmitter suitable for installation in hazardous area.
- Robust and reliable construction for arduous duty and extended service.
- Sensors protected by stainless steel cage easily removed for cleaning.
- Temperature compensated measurement with low thermal sensitivity.
- 2 Wire 4-20mA output signal calibrated to suit the application.

Amplifier Module

Construction: Wall mount GRP enclosure

Enclosure rating: IP65 (IP67 option) / NEMA 4X

Power supply: 12 to 35 Vdc

Signal output: 4 to 20mA dc. 2 wire

Performance

Accuracy $\pm 0.25\%$ of set span

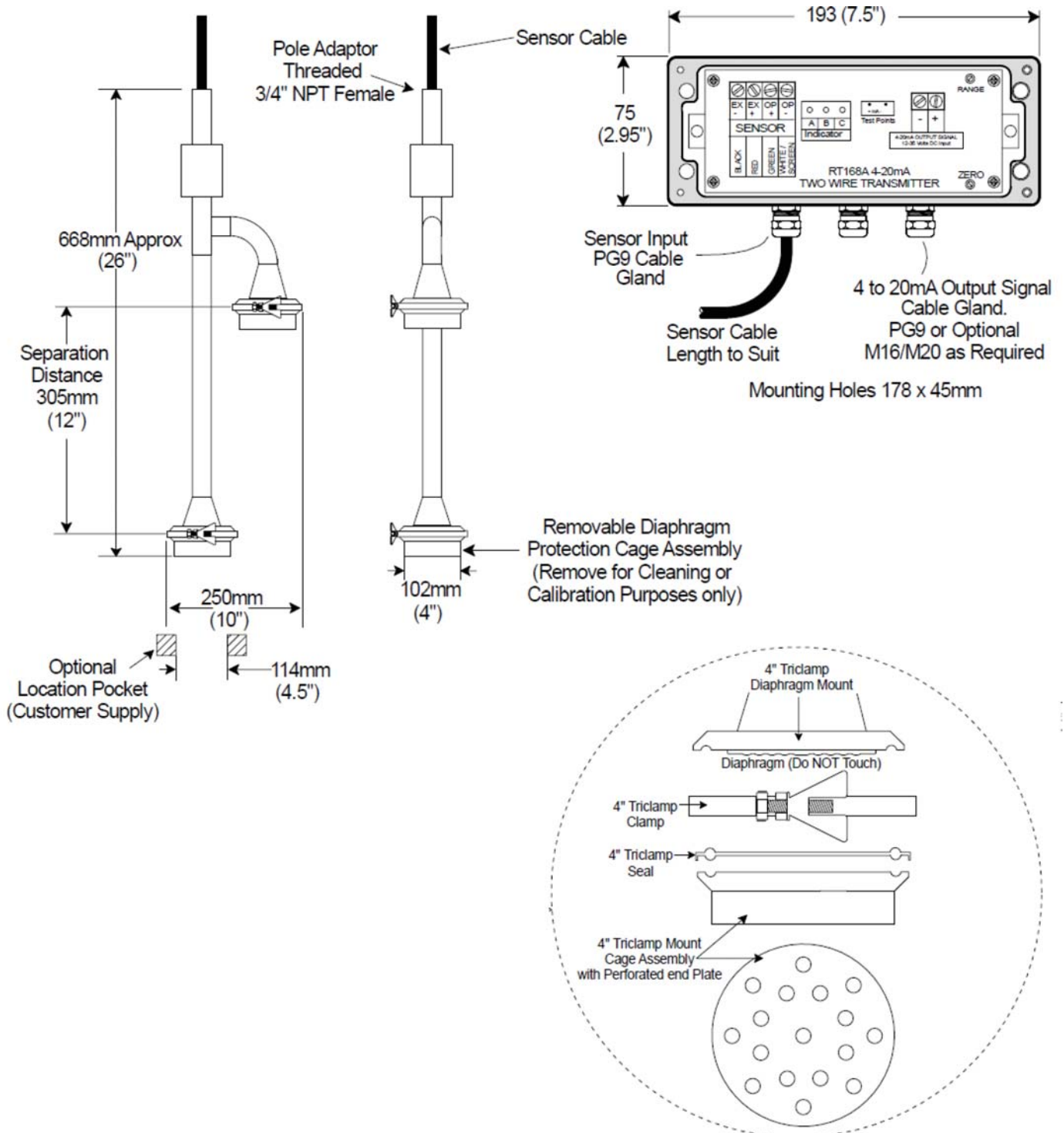
Temperature coefficient: $\pm 0.02\%$ set span / °C



Density Transmitter

Series 290

Dimensional Specifications





Resistance Temperature Detectors

RTD Series



These RTDs are specifically designed for use in two different process temperature ranges and they provide accurate and repeatable temperature measurement through a range of -328° to 1112°F (-200° to 600°C). Low range wire wound RTDs -328° to 400°F (-200° to 204°C) and low range thin film RTDs -40° to 400°F (-40° to 204°C) are constructed using silver plated copper internal leads, teflon, and other suitable wire insulations with potting compounds to resist moisture penetration. High range RTDs -328° to 1112°F (-200° to 600°C) are constructed with nickel internal leads inside swaged MgO insulated cable to allow higher temperature measurements at the RTD element and to provide higher temperature lead protection along the sheath.

- 1) RTD type (low temp/high temp, accuracy and element type)
- 2) Sheath diameter
- 3) Element connection (2, 3 or 4 wire)
- 4) Sheath length (insertion length)
- 5) Fittings/no fittings/sheath bend options
- 6) Electrical connections and terminations
- 7) Wire type and terminations

View our detailed literature online on how to order, email or call for customer support. Custom built assemblies with non-standard specifications are available upon request.

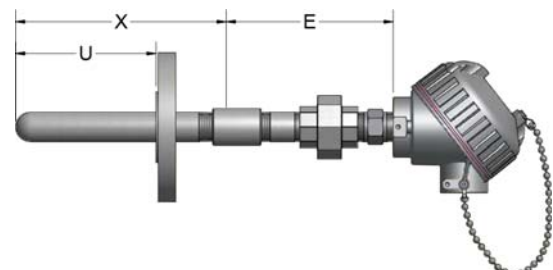
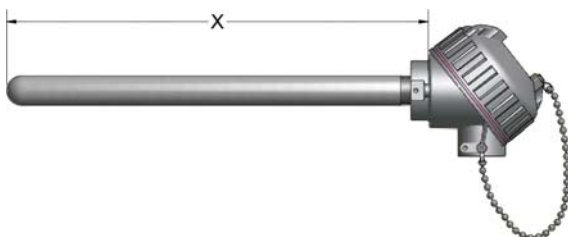
Sensing element materials and temperature limits:

Platinum : -450°F to 1200°F

Nickel : -150°F to 600°F

Copper : -100°F to 300°F

Nickel/Iron : 32°F to 400°F



***Please call for complete model code and description.**



Thermocouples



The millivolt potential that is created in the thermocouple conductors differs depending on the materials used. Some materials make better thermocouples than others because the millivolt potentials created by these materials are more repeatable and well established. These thermocouples have been given specific type designations such as Type E, J, K, N, T, B, R and S. The type of T/C used also depends on temperature monitored and environment.

As a general rule, industrial thermocouples can be made to withstand higher temperatures and come in a wider variety of thermocouple types. MgO thermocouples are flexible and have a wider selection of measurement junction configurations.

An MgO thermocouple consists of a thermocouple element encased in a metal sheath and hard-packed with magnesium oxide mineral insulation. Thermocouple sheaths are fully annealed and can be formed into different configurations (minimum bend radius is twice the outer diameter of the sheath).

The measuring junction can also be sealed from the environment, reducing the potential for contamination issues.

How to Order (see order form on line, email or call for application assistance)

- 1) Type of thermocouple (J, K, T, etc.) and single or duplex element
- 2) Sheath diameter
- 3) Sheath material
- 4) Measuring junction (grounded, ungrounded, etc.)
- 5) Fittings/ no fittings/ sheath bends
- 6) Sheath terminations
- 7) Electrical transitions
- 8) Lead wire materials, transitions and length

Type	Application Information
------	-------------------------

E	Recommended for continuously oxidizing or inert atmospheres. Sub-zero limits of error not established. Highest thermoelectric output of the common thermocouple types.
J	Suitable for vacuum, reducing or inert atmospheres, oxidizing atmospheres with reduced life. Iron oxidizes rapidly above 1000°F so only heavy gauge wire is recommended for high temperature.
K	Recommended for continuous oxidizing or neutral atmospheres. Mostly used above 1000°F (538°C). Subject to failure if exposed to sulfur. Preferential oxidation of chromium in positive leg at certain low oxygen concentrations causes "green rot" and large negative calibration drifts most serious in the 1500 - 1900°F (816 1038°C) range.
N	Can be used in applications where Type K elements have shorter life and stability problems due to oxidation and the development of "green rot".
T	Usable in oxidizing, reducing, or inert atmospheres as well as vacuum. Not subject to corrosion in moist atmospheres.
R & S	Recommended for high temperature. Must be protected in a non-metallic protection tube and ceramic insulators. Type R is used in industry, Type S in the laboratory
B	Same as R & S but has a lower output. Also, has a higher maximum temperature and less susceptible to grain growth.

***Please call for complete model code and description.**



Thermocouples

Table 1: Thermocouple Types, Temperature Ranges, Limits of Error

Standard				Special	
Type	Materials	Temperature Range	Limits Of Error	Temperature Range	Limits Of Error
J	Iron/Constantan	32 to 559F (0 to 293C)	4F (2.2C)	32 to 527F (0 to 275C)	2F (1.1C)
		550 to 1400F (293 to 760C)	0.75%	527 to 1400F (275 to 760C)	0.40%
		-328 to -166F (-200 to -110C)	2%		
K	Chromel/Alumel	-166 to 32F (-110 to 0C)	4F (2.2C)	32 to 527F (0 to 275C)	2F (1.1C)
		32 to 559F (0 to 293C)	4F (2.2C)	527 to 2282F (275 to 1250C)	0.40%
		559 to 2282F (293 to 1250C)	0.75%		
T	Copper/Constantan	-328 to -89F (-200 to -67C)	1.50%		
		-89 To 32F (-67 to 0C)	1.8F (1C)		
		32 to 271F (0 to 133C)	1.8F (1C)	32 to 257F (0 to 125C)	0.9F (.05C)
		271 to 662F (133 to 350C)	0.75%	257 to 662F (125 to 350C)	0.40%
E	Chromel/Constantan	-328 to -89F (-200 To -67C)	1%		
		-274 to 32F (-170 to 0C)	3.1F (1.7C)		
		32 to 644F (0 to 340C)	3.1F (1.7C)	32 to 482F (0 to 250C)	1.8F (1C)
		644 to 1652F (340 to 900C)	0.50%	482 to 1652F (250 to 900C)	0.40%
N	Nicrosil/Nisil	32 to 559F (0 to 293C)	4F (2.2C)		
		559 to 2300F (293 to 1260C)	0.75%		
R	Platinum/Platinum- 13% Rhodium	32 to 1112F (0 to 600C)	2.7F (1.5C)	32 to 1112F (0 to 600C)	1.1F (0.6C)
		1112F to 2642F (600 to 1450C)	0.25%	112F to 2642F (600 to 1450C)	0.10%
S	Platinum/Platinum-10% Rhodium	32 to 1112F (0 to 600C)	2.7F (1.5C)	32 to 1112F (0 to 600C)	1.1F (0.6C)
		1112F to 2642F (600 to 1450C)	0.25%	112F to 2642F (600 to 1450C)	0.10%
B	Platinum/Platinum-30% Rhodium	1472 to 3092F (800 to 1700C)	0.50%	1472 to 3092F (800 to 1700C)	



Thermowells



A thermowell acts as a barrier between a process medium and the sensing element of a temperature measuring device. It protects against corrosive process media, as well as media contained under pressure or flowing at a high velocity. A thermowell also allows the sensing element to be removed from the application while maintaining a closed system.

Our thermowells are available in 316S.S. and 304S.S.. Other materials available upon request.

How to Order

- 1) Process connection: Flanged, threaded, limited space, socket-weld or weld-in type.
- 2) Style: Stepped, straight, tapered, lag, lag straight or lag tapered.
- 3) Bore(inches): .260, .375, .385, .390, .515, .702 or special.
- 4) Material: Brass, C.S., 304 S.S., 316 S.S., Monel, titanium, hastelloy C, etc.
- 5) Stem length (inches): L or U dimension

View our detailed literature on line on how to order, email or call for customer support.

