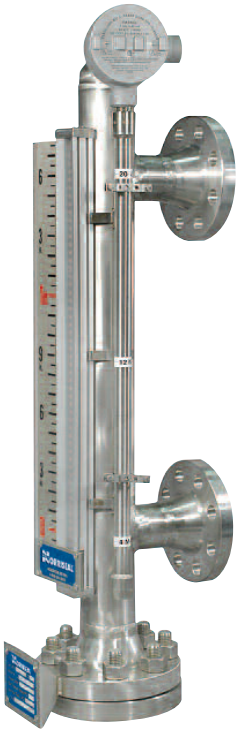
INSTALLATION, OPERATING AND MAINTENANCE MANUAL

Series 1200 Magnetic Level Gauges and Switches



Series 1200

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SECTION 2.0.0. MAGNETIC LEVEL GAUGES

2.1.0. DESCRIPTION

2.1.1. INTRODUCTION

Norriseal Series 1200 magnetic level gauges are an indirect reading liquid level indicator. The magnetic level Gauge series utilize non-magnetic 2.00-inch, schedule 40 chambers (standard) manufactured to length specifications with process connections that match those of the vessel or tank. For some high pressure, low gravity applications, a 3.00-inch schedule 40 chamber is available. The process connections may be:

1. Side mounted, threaded, flanged or socket welded
2. Top and bottom flanged mounted
3. Tank top mounted
4. Combination

A variety of mounting styles is available to suit any vessel or piping requirements. Refer to the drawing depicting magnetic level gauge mounting configurations.

2.1.2. COMPONENTS

The gauge chamber contains a magnetic float and is completely isolated from the indicator housing attached to the outside of the gauge chamber. External indicators consist of a single orange or continuous flag/ flipper models. The magnetic float maintains a magnetic bond with the external level indicator. As the level of the process medium fluctuates within the tank and Gauge chamber, the float reacts accordingly with the indicator recording the level of the fluid within the chamber.

2.1.3. CHAMBER MATERIAL

Gauges are manufactured to meet exact specifications of the process media such as operating pressure, temperature, specific gravity, etc. Standard chamber materials are 316/304 stainless steel however any non-magnetic material may be used.

2.1.4. INTERNAL FLOAT

A magnetized float is contained inside the float chamber and is designed to the requirements of the process conditions. For this reason floats are not interchangeable unless the process conditions and Gauge chambers are identical. The float moves freely inside the chamber reacting to fluctuating level changes within the adjoining vessel.

2.1.5. FLOAT SUBMERGENCE

Under normal operating conditions, the float should be submerged about 80% or more in the process fluid. It is important to note, however, that the position of the float in the media will vary with different process conditions. Float magnets are located in the upper portion of the float.

2.1.6. GAUGE RATINGS

Magnetic level Gauges can be designed for operating conditions from full vacuum service up to 5000 PSIG, 1100 degrees F, and a minimum gravities of 0.20. All magnetic Gauges with alloy chambers will have full ANSI ratings based on flange classifications. Gauges with CPVC, Kynar (PVDF) or Fiberglass shields will have 150 PSIG ratings only.

2.1.7. HYDROSTATIC TESTING

Gauge chambers are hydrostatically tested to 150% of indicated Gauge rating without floats installed. Floats are tested individually. Gauges can be field hydrostatically tested after installation at the operator's discretion.

CAUTION!

Do not conduct hydrostatic testing ofthe magnetic Gauge chamber attached to a process vessel with the float installed. If a Gauge is field tested with the float installed, the float may crush and chamber may become damaged. This procedure will void the warranty.

SECTION 2.2.0. LEVEL INDICATION

2.2.1. FLIPPER INDICATION (FS)

Norriseal offers a continuous Flipper style indicator as standard. Flag indications are industrial grade level indicators which consist of a series of ceramic flags, blue on one side, orange on the other. As the magnetic float reacts to level fluctuations, each flag or flipper will rotate 180 degrees to reveal the opposite color.

The Norriseal flipper is housed in a rugged sealed housing with a recessed glass window and rotates on a ceramic and stainless steel surface. This eliminates the flippers from sticking or hanging up. The unique design prevents all flippers from rotating in excess of 180 degrees and each flag is magnetically locked to the next. These are available with or without scales up to 20 ft.

2.2.2. FLIPPER INDICATION REFERENCE GUIDE

Orange represents liquid column, **Blue** represents vapor space.

2.2.3. FLIPPER INDICATION RETROFIT

When flipper style indicators are purchased with a Norriseal magnetic level gauge, no installation is necessary. If the indicator is removed or a retrofit kit is purchased for a Gauge already in service, however, the following steps should be noted:

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1. The mounting clamps connecting the flipper assembly to the gauge chamber are adjustable to most manufacturers' standard, (i.e. 1.50 inch to 2.50-inch pipe). If the gauge is in service and there is liquid in the tank, only the flippers adjacent to the float will rotate to orange when the indicator assembly is clamped on.
2. Run a magnet along the window of the indicator from zero to where orange is showing as noted, or
3. Drain the gauge to zero on the indicator, and then fill again. As the float rises, the level indicator will react accordingly and will be reset properly.

SECTION 2.3.0. INSTALLATION

2.3.1. INSPECTION

All magnetic level indicators are securely packed in crates to provide maximum protection of the equipment during shipment. It is important to unpack and inspect each gauge upon receipt to insure the indicator and chamber were not damaged in shipment. If you should find damaged parts, contact Norriseal immediately. All Norriseal magnetic Gauges are fully insured against damage or loss unless specified by the customer otherwise. Claims must be filed within 15 days from the date of receipt of shipment.

2.3.2. CHAMBER ORIENTATION

The ***magnetic float is packaged separately for shipment***, the Float is strapped externally to the outside of chamber which should be removed before installation. The float chamber should always be leveled vertically. If it is not leveled correctly, the float may be magnetically uncoupled from the level indicator during operations.

2.3.3. CONNECTION VALVES

Valves should be installed between the process vessel and level gauge to allow for isolation, draining, and cleaning purposes. (See section 2.6.2. on Maintenance for more details on cleaning and maintenance procedures). Standard block valves can be ordered with the gauge or separately from Norriseal. Ball check valves are not necessary for magnetic level Gauges. If certain valve specifications are required, please advise Norriseal accordingly.

2.3.4. FLOAT ORIENTATION

The internal magnetic float has a preferred orientation vertically which is inscribed at the top of the float. Install the float properly by taking note of the correct orientation through the chamber flange connection. If the float is installed into the chamber inverted, it will not couple with the external indicator correctly, resulting in improper level indication. Floats that are installed in Gauges with inverted chamber construction will contain a loop at the top of the float for installation and removal purposes. ***Internal floats should be installed after any hydrostatic field tests of the chamber and connecting vessel are complete.***

2.3.5. CHAMBER GASKETS

Standard magnetic level Gauges are supplied with 0.125-inch composition gaskets. If this type of gasket is not compatible with the process media, appropriate gaskets should be used in replacement of those shipped with the gauge.

2.3.6. FLANGES AND CONNECTIONS

Process connections and vent/drain flanges are designed to meet each customer's specifications. All flange boltholes straddle the centerline unless otherwise specified. Both male and female threaded connections and socket weld connections are available. ***DO NOT WELD ON GAUGE OR ON THE VESSEL WITH INDICATOR AND FLOAT INSTALLED, THIS WILL DESTROY THE MAGETIC CIRCUIT***

2.3.7. INTERFACE APPLICATIONS

Magnetic Gauges can be used to identify fluid interfaces only if the proper specific gravities have been identified at the maximum operating conditions. The float can designed to float in one media while sinking in the other. Immiscible oil over water levels is an example. Care should exercised, however, when using magnetic gauges in interface applications because rag layers may exist which are difficult to identify.

Do not install a gauge with two floats and two single indicators on one chamber for an interface. In this case the two floats may collide causing incorrect readings. Chambers can be manufactured with multiple connections for maximum process influx. The proper method is to install one Gauge per process phase, not a combination.

SECTION 2.4.0. OPERATION

2.4.1. INTRODUCTION

It is important that all instructions pertaining to entering magnetic level gauges into service be read thoroughly first before commencing with service operations. Failure to

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do so may void the warranty by subjecting the gauge to a potential safety hazard.

2.4.2. PROCEDURES

1. Check that the operating conditions, (temperature, pressure and specific gravity) are within that maximum rating of the gauge. Each gauge has a permanent nameplate indicating process specifications, serial number, tag number, etc. It is critically important to check that the specific gravity of the process media is specified at the maximum operating conditions.
2. The gauge chamber should be leveled vertically, empty, blocked in and isolated. Check to see that all drain and vent plugs are in place. Close all vent and drain valves if plugs are not used.
3. For standard gauges, install the float by removing the bottom drain flange located at the base of the gauge. The float is marked TOP to insure proper orientation. A spring is attached to the inside of the drain flange to cushion the float when the vessel is empty. Reinstall the bottom drain blind flange with a new flange gasket after the float is in place.
4. For inverted gauges, remove the top vent blind flange from the gauge chamber. Install the float by inserting a string through the float loop and lower the float into position slowly. Remove the string from the float and chamber after the float is resting on the bottom of the gauge. An auxiliary magnet may be required to recouple the indicator, (either single follower or flipper indicator), to the internal float.
5. Reinstall the blind flange with a new gasket. The gauge chamber should be isolated with no opening to atmosphere. Check to see that all drain and vent plugs are securely in place and that any vent and drain connections are closed.
6. When the Gauge is mounted and ready for placement into service, PARTIALLY OPEN THE **TOP** PROCESS CONNECTION VALVE FIRST and very **slowly** to allow initial pressure and temperature equalization between the vessel and the level Gauge. This allows the process conditions of the vessel to equalize with the Gauge slowly and reach operating conditions at a slow, even, and reasonable rate.

CAUTION!

7. *DO NOT OPEN THE **BOTTOM** PROCESS CONNECTION VALVE FIRST. IF THE BOTTOM VALVE IS OPENED FIRST WITH THE TOP VALVE CLOSED AND THE VESSEL IS UNDER PRESSURE, THE INTERNAL FLOAT WILL RISE INSTANTLY AND LODGE ITSELF INTO THE TOP OF THE CHAMBER CAUSING SEVERE DAMAGE TO THE FLOAT AND CHAMBER.*
8. After the float chamber has reached process conditions, continue to open the **TOP** process connection valve **slowly**, allowing any liquid or condensate to enter the Gauge slowly. This procedure is critically important for high pressure and temperature applications. The float and indicator may react or rise to condensate accumulation migrating through the top valve with the bottom valve closed.
9. When the Gauge chamber has attained normal operating conditions, open the **BOTTOM** process valve connection **slowly**. This will allow proper fluid entry into the Gauge chamber under normal operating conditions. The level indicator should rise vertically, thus rendering a fluid level. Flag or flipper indication will result in blue to orange rotation of the flippers as the fluid rises. At this point, installation should be complete. Allow at least 30 minutes for both top and bottom valve procedures.
10. Please note, under elevated operating conditions, the indicator may record a significant level from condensate influx through the top valve before the bottom valve is opened. If this is the condition, it is possible the indicator (and float) may readjust and fall slightly from the effects of final process equalization after the bottom valve is completely opened.

SECTION 2.5.0. REMOVAL FROM SERVICE

2.5.1. INTRODUCTION

To remove the Gauge from service, the next steps should be followed to prevent danger to personnel and damage to the Gauge when the vessel is pressurized.

2.5.2. PROCEDURES

1. Close the bottom process connection valve first to prevent further process influx to the gauge.

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2. Completely close the top process connection valve to isolate the gauge from the process conditions.
3. Attach proper vapor collection equipment to the gauge vent connection if required.
4. Open the vent valve slowly to relieve gauge pressure and allow ambient air influx.
5. Attach the proper liquid collection equipment to the drain connection is required.
6. Open the drain valve slowly to remove remaining gauge liquid.

CAUTION!

7. *Never use the vent or drain on a gauge as a pressure relief mechanism for the process system. Doing so may permanently damage parts of the gauge as well as inducing a safety hazard.*

SECTION 2.6.0. MAINTENANCE

2.6.1. INTRODUCTION

Norriseal magnetic level gauges contain a standard 0.50 inch vent and drain plug in the top and bottom of the gauge chamber to allow cleaning and removal of the process fluid if required. Socket weld vent and drain valve connections are available. Some gauges are connected to a solvent or steam line that allows ***empty gauges without floats*** to be decontaminated or blown down periodically without removing the gauge from the vessel location. Norriseal magnetic gauges should be maintained and inspected on at least an annual basis, or more frequently depending on the process system.

2.6.2. PROCEDURES

Block in the gauge chamber with the process connection valves or wait until the vessel is empty and out of service.

Close the bottom valve first and the top valve second.

Open the vent valve slowly or remove vent plug carefully to depressurize the gauge especially if the gauge has been under pressure.

Open the drain valve slowly or remove the drain plug carefully to allow any remaining fluid to drain from the chamber.

When all of the gauge fluid has been drained, carefully remove the drain flange and float from the gauge chamber. Be sure to examine the float for excessive wear and clean as required.

6. Clean the inside wall of the chamber with a "bottle brush" or similar scrubbing tool. Some processes may dictate the use of a suitable solvent for cleaning.
7. After cleaning of the chamber, replace the float and drain flange. A new flange gasket should be installed. Use gaskets compatible with the process media if replaced.
8. Check the stainless steel pipe clamps to insure they are tight and adjust the scale channel. Correctly match the zero point to process connection elevations.
9. If necessary, use a permanent magnet to attract the orange indicator until it is coupled to the float inside the chamber.

SECTION 2.7.0. TROUBLESHOOTING

2.7.1. INTRODUCTION

Norriseal magnetic level gauges are simple to install and operate. The following troubleshooting tips may be of assistance during installation and startup. Complete reading of this is required.

2.7.2. FLOAT & INDICATOR DETACHMENT

1. If detachment is a frequent problem, it could be caused by several factors, most of them resulting from improper installation of the gauge, particularly the float.
2. Check to ensure that the scale and channel assembly is fastened tight against the gauge chamber so that magnetic coupling is maintained from top to bottom of the indicator.
3. Check to ensure the internal magnetic float within the chamber is right side up. If the float was installed inverted, the single orange indicator will magnetically couple, but the actual process level will be higher that what the indicator records. All floats are clearly marked TOP. Floats designed for inverted gauges will have a loop welded at the top of the float for installation and removal purposes.
4. If the float springs mounted in the top and bottom of the gauge chamber have been removed, the float could rise past the top of the indicator and lose magnetic coupling with the indicator.
5. If the process connection dimension has been

miscalculated and the gauge length is too long, do not attempt installation because it will warp the chamber. A warped chamber will prohibit the float to move freely. This can cause float and indicator detachment.

2.7.3. DIFFERENTIAL LEVEL

This can occur during startup and is easily corrected. Under normal operating conditions, most floats are about 80% submerged in the process media. It is important to note that the position of the float in the fluid will vary with different process conditions. To attain a true level elevation, adjust the scale vertically to get an exact reading.

2.7.4. DEFECTIVE INDICATOR

If the glass indicator cover is cracked or broken, a replacement cover can be shipped within 24 hours after receipt of order. One advantage of the magnetic level gauge is the indicator assembly can be serviced without removing the gauge chamber from service. To replace the indicator cover, remove the four screws from cover plate at the top and bottom of the indicator channel. There are two red gaskets beneath each cover that require removal. Remove the two red seal strips and slide the glass plate cover out of the channel. Clean any debris or fragments. Replace the glass cover with the new glass plate by sliding into the channel again. Replace each red side and top gaskets with the top and bottom covers. If the gauge is in excess of 6 feet in length, it may be easier to remove the indicator from the channel.

2.7.5. SWITCH MALFUNCTIONING

All level switches may be wired to trip on rising or falling level. After the switch is connected to the desired alarm function, it is necessary to set the switch. This is accomplished by passing the float either manually or by filling the gauge chamber until it passes the highest switch. This will trip the switch to the desired setting so it will alarm properly with rising or falling level.

SECTION 2.8.0. PARTS LIST

2.8.1. INTRODUCTION

When ordering spare parts for the Norriseal Series 1200 magnetic level Gauge, the following information will be required.

1. Serial number of the gauge or accessory item.
2. Description of parts to be ordered.
3. Model number of the parts to be ordered, if known.
4. Original purchase order, if known.

2.8.2. CHAMBER

1. Vent plug.
2. Float chamber
3. Chamber blind flange, spring, and gasket.
4. Drain plug.
5. Internal magnetic float.

2.8.3. INDICATOR & SCALE ASSEMBLY

1. Channel assembly
2. Anodized Alum. Indicator track with single tracker follower or wide flag indication
3. Stainless Steel Indicator track with single tracker follower or wide flag indication
4. Top and bottom seals
5. Calibration scale (total inches, feet & inches, centimeters)
6. Chamber clamps
7. Identification Tag.

SECTION 3.0.0. PNEUMATIC LEVEL CONTROL

3.1.0. NONBLEED,BLOCK&BLEED SWITCHES (NS-100)

3.1.1. INTRODUCTION

NS-100 pneumatic switches are designed for use on Series 1200 magnetic gauges only. The NS-100 is a non-bleed, block and bleed pneumatic switch operates when the magnetic field of a Norriseal magnetic float passes by it, either on a rising or falling level condition. Since there is no physical interaction or connection between the switch and float, it is very important that all installation instructions be followed properly for the switch to function reliably. Please read all installation and operation instructions before beginning installation.

3.1.2. OPERATING SPECIFICATIONS

Medium: Filtered Air or Gas

Supply Pressure: VAC to 200 PSIG

Max. Temp: 200 degrees F (93C)

Air Flow: 29 SCFM @ 100 PSIG

Air Consumption: Zero SCFM

3.1.3. INSTALLATION

1. Loosen the included hose clamps completely and install them so they surround the gauge chamber. Reattach the clamp to itself, make 2 or 3 turns of the clamp's screw but do not reattach completely.

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2. Insert the top "L" shaped bracket under the top hose clamp and tighten the clamp to the gauge chamber. The top bracket is the bracket above the front label if the writing is right side up. Before tightening, you may adjust the height at which you would like the alarm to trigger. The trigger point is at the midpoint of the enclosure.

3. Since the switch should be securely fastened to the gauge chamber by the top clamp, slide the bottom hose clamp over the bottom bracket and tighten the clamp to the gauge chamber.

4. The alarm switch should be mounted so that it is level with the ground. If it is not level, loosen the hose clamps, adjust the switch's alignment, and when the switch is level, retighten the hose clamps. Improper alignment may cause the switch to malfunction.

5. The switch must also be flush and tighten against the chamber. Failure to do this results in vibration and rattling of the switch, which may in extreme circumstances cause the switch to fail.

6. No material should be present between the switch housing and the gauge chamber. Any material present can interfere with the magnetic field of the internal float and prevent proper activation of the switch.

3.1.6. OPERATION & MAINTENANCE

1. The pneumatic supply line must be connected to the connection labeled 1 OR 2 The output to the alarm or other signaling device must be connected to the connection labeled **PORT 3**.

2. **PORT 1** is the supply port that will activate the output when the float passes above the switch. Port 2 is the vent It is to be used as a HIGH LEVEL indicator.

3. **PORT 2** activates the output when the float passes below the switch. Port 1 is the vent It is to be used as a LOW LEVEL indicator.

4. All input and output connections are 1/4-inch NPT connections.

5. The muffler must remain uncovered and clean for proper non-bleeding functioning of the switch. If covered, the interior of the switch may pressurize and explode.

6. Pneumatic connections must provide air or gas that is free of particulate matter or debris. Dirty supply gas may cause the valve inside to clog and lead the switch to failure.

7. When the switch is first installed, ***it is necessary to set the switch for normal operation***. This is accomplished by passing the float pass the switch, The chamber can be filled with liquid so the float will pass the highest switch and then drained, or by manually sliding the switch pass the float in both directions. If the switch is being positioned above the float, the float must pass in the down direction before installation and conversely if the switch is positioned below the float.

SECTION 4.0.0. ELECTRONIC LEVEL CONTROL

4.1.0. ELECTRIC LEVEL SWITCHES (NS-200EX/NS-200EX2)

4.1.1. INTRODUCTION

The NS-200EX and NS-200EX2 are hermetically sealed bistable-latching switches designed for the Series 1200A gauges. The NS-200EX has single pole double throw contacts (SPDT) and the NS-200EX2 has double pole, double throw contacts (DPDT). The switch will change state when the float passes by it in a rising or falling level condition. The switch remains in a latched position until the float passes the switch in the opposite direction.

4.1.2 SPECIFICATIONS

Maximum switching voltage:
150 VDC/VAC

Maximum switching current amps:
1.0 amps (VDC/VAC)

Maximum switching wattage:
25 watts (VDC/VAC)

Minimum breakdown volts:
250 VDC

Maximum Temperature (standard):
350 degrees F

Maximum Temperature (HT option):
650 degrees F

Dead Band:
0.35 inch

4.1.3 MOUNTING

The NS-200EX/EX2 is mounted to the gauge chamber with all 316 Stainless Steel worm gear pipe clamps. Rod mounted switch assemblies are available as a factory installed option. Switch points can be changed at any time by loosening the clamps and sliding the switch vertically to the desired set point.

4.1.4 OPERATION

When the switch is first installed, it is necessary to set the switch for normal operation. This is accomplished by

passing the float pass the switch, The chamber can be filled with liquid so the float will pass the highest switch and then drained, or by manually sliding the switch pass the float in both directions. If the switch is being positioned above the float, the float must pass in the down direction before installation and conversely if the switch is positioned below the float.

4.1.5 ELECTRICAL WIRING RISING LEVEL

N/O Red Terminal 1
Closes on rising level.

C Green Terminal N

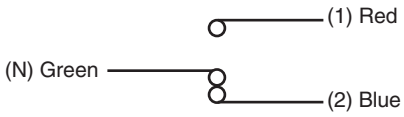
N/C Blue Terminal 2
Opens on rising level.

4.1.6 ELECTRICAL WIRING FALLING LEVEL

N/C Red Terminal 1
Opens on falling level.

C Green Terminal N

N/O Blue Terminal 2
Closes on falling level.



4.2.0. ELECTRIC LEVEL SWITCHES (NS-500EX/NS-200EX2)

4.2.1. INTRODUCTION

The NS-500EX and NS-500EX2 are hermetically sealed bistable-latching switches designed for magnetic Mag-Gauge series Gauges only. The NS-500EX has single pole double throw contacts (SPDT) and the NS-500EX2 has double pole, double throw contacts (DPDT). The switch will change state when the float passes by it in a rising or falling level condition. The switch remains in a latched position until the float passes the switch in the opposite direction.

4.2.2 SPECIFICATIONS

Maximum switching voltage:
500 VDC/VAC

Maximum switching current amps:
3.0 amps (VDC/VAC)

Maximum switching wattage:
100 watts (VDC/VAC)

Minimum breakdown volts:
1000 VDC

Maximum Temperature (standard):
350 degrees F

Maximum Temperature (HT option):
650 degrees F

Dead Band:
0.35 inch

4.2.3 MOUNTING

The NS-500EX/EX2 is mounted to the gauge chamber with all 316 Stainless Steel worm gear pipe clamps. Rod mounted switch assemblies are available as a factory installed option. Switch points can be changed at any time by loosening the clamps and sliding the switch vertically to the desired set point.

4.2.4 OPERATION

When the switch is first installed, it is necessary to set the switch for normal operation. This is accomplished by passing the float pass the switch, The chamber can be filled with liquid so the float will pass the highest switch and then drained, or by manually sliding the switch pass the float in both directions. If the switch is being positioned above the float, the float must pass in the down direction before installation and conversely if the switch is positioned below the float.

4.2.5 ELECTRICAL WIRING RISING LEVEL

N/O Red Terminal 1
Closes on rising level.

C Green Terminal N

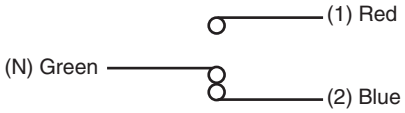
N/C Blue Terminal 2
Opens on rising level.

4.2.6 ELECTRICAL WIRING FALLING LEVEL

N/C Red Terminal 1
Opens on falling level.

C Green Terminal N

N/O Blue Terminal 2
Closes on falling level.



4.3.0. ELECTRIC LEVEL SWITCHES (NS-700EX(/2),NS 900EX(/2))

4.3.1. INTRODUCTION

The NS-700/900EX and NS-700/900EX2 are bistable-latching switches designed for magnetic Series 1200 gauges. The NS-700/900EX has single pole double throw contacts (SPDT) and the NS-700/900EX2 has double pole, double throw contacts (DPDT). The switch will change state when the float passes by it in a rising or falling level condition. The switch remains in a latched position until the float passes the switch in the opposite direction.

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4.3.2. SPECIFICATIONS	NS-700EX(/2)	NS-900EX(/2)
Maximum switching voltage:	250 VAC	250 VAC
Maximum switching current amps:	10.0 amps VAC	15.0amps VAC
Maximum switching wattage:	2500 watts VAC	3250 watts VAC
Maximum Temperature (standard):	350 degrees F	350 degree F
Maximum Temperature (HT option):	650 degrees F	650 degree F
Dead Band:	0.35 inch	0.35 inch

4.3.3 MOUNTING

The NS-700EX/900EX,(/2) is mounted to the gauge chamber with all 316 Stainless Steel worm gear pipe clamps. The switch must be mounted with TOP facing up. Rod mounted switch assemblies are available as a factory installed option. Switch points can be changed at any time by loosening the clamps and sliding the switch vertically to the desired set point.

4.3.4 OPERATION

When the switch is first installed, it is necessary to set the switch for normal operation. This is accomplished by passing the float pass the switch, The chamber can be filled with liquid so the float will pass the highest switch and then drained, or by manually sliding the switch pass the float in both directions. If the switch is being positioned above the float, the float must pass in the down direction before installation and conversely if the switch is positioned below the float.

4.3.5 ELECTRICAL WIRING RISING LEVEL

N/O Red Terminal 1(4)
Closes on rising level.

C Green Terminal 2(5)

N/C Blue Terminal 3(6)
Opens on rising level.

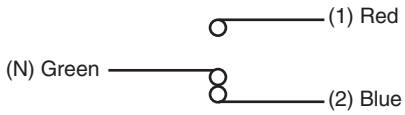
4.3.6 ELECTRICAL WIRING FALLING LEVEL

N/C Red Terminal 1(4)
Opens on falling level.

C Green Terminal 2(5)

N/O Blue Terminal 3(6)
Closes on falling level.

*(#) DPDT



Notes:

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