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Installation and Operating Instructions

Series 505-2400
Universal Sonic™ Level Transmitter
using 405-9000-003 Electronics

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Series 505-2400
Universal Sonic™ Level Transmitter
using 405-9000-003 Electronics

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10-00-250
505-2000-003-LM

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505-9000-003 Series UniversalSonic™ Transmitter

SECTION 1 INTRODUCTION

1.1 Product Description

The Drexelbrook Series 505-2400 UniversalSonic Transmitter is a two-wire integral assembly that accurately measures continuous level up to a range of 30 feet, using ultrasonic technology. The level measurement output is a 4-20 mA current signal.

1.2 Models Available

5 0 5 - 2 4 0 0 - 0 0 X - Continuous UniversalSonic
Instrument

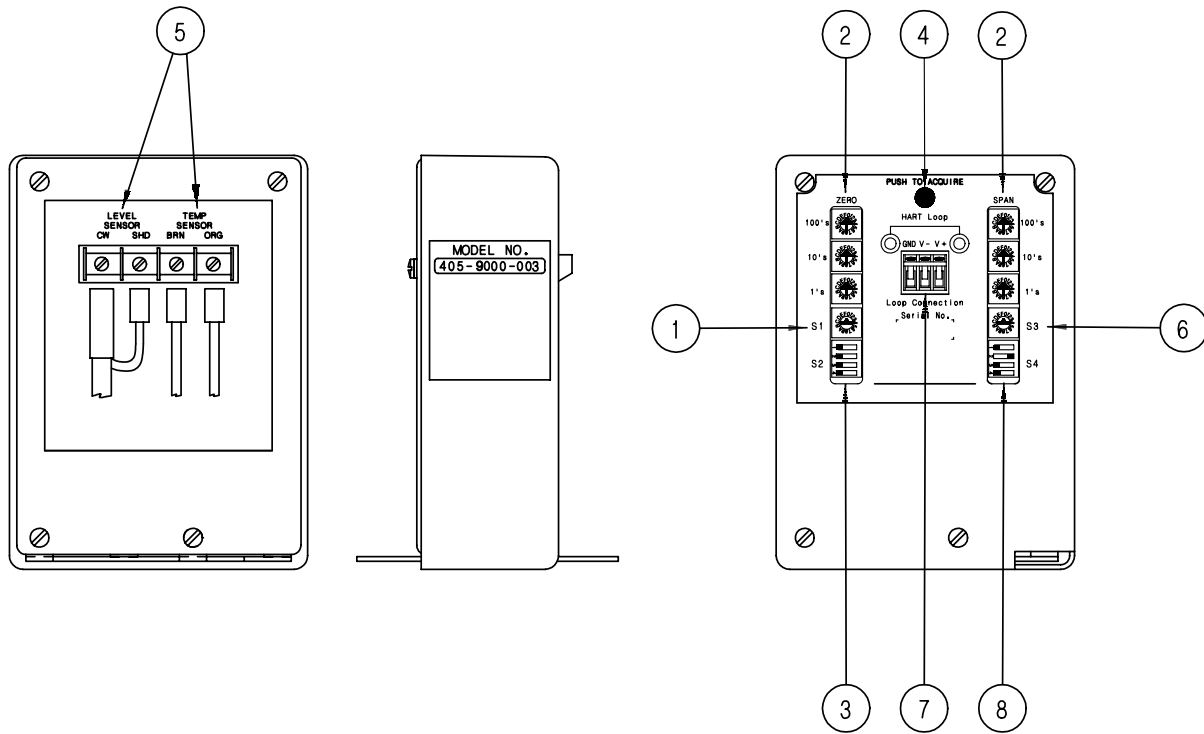
Transducer material:

2 - CPVC

6 - PFA and 316 SS

7 - PFA Sealtyte™

The diagram on the following page identifies the components of the 405-9000-003 UniversalSonic Instrument.



—Legend

- ① Rotary Switch S1
Time Delay/Rep Rate/Units Selection
see *section 3.1*
- ② Calibration Switches (Zero/Span)
see *sections 3.5 and 3.6*
- ③ Slide Switch S2
Near Zone/Lost Echo Fault /Diagnostic
see *section 3.2*
- ④ Acquire Button for Return Signal
- ⑤ Level Sensor and Temperature Sensor
Connections
see *section 2.4*
- ⑥ Rotary Switch S3
High Discrimination Mode/Gain
Adjustment
see *section 3.3*
- ⑦ 4-20 mA Loop Connections
see *section 2.4*
- ⑧ Slide Switch S4
Level/V-notch Weir Selection
see *section 3.1.4.*

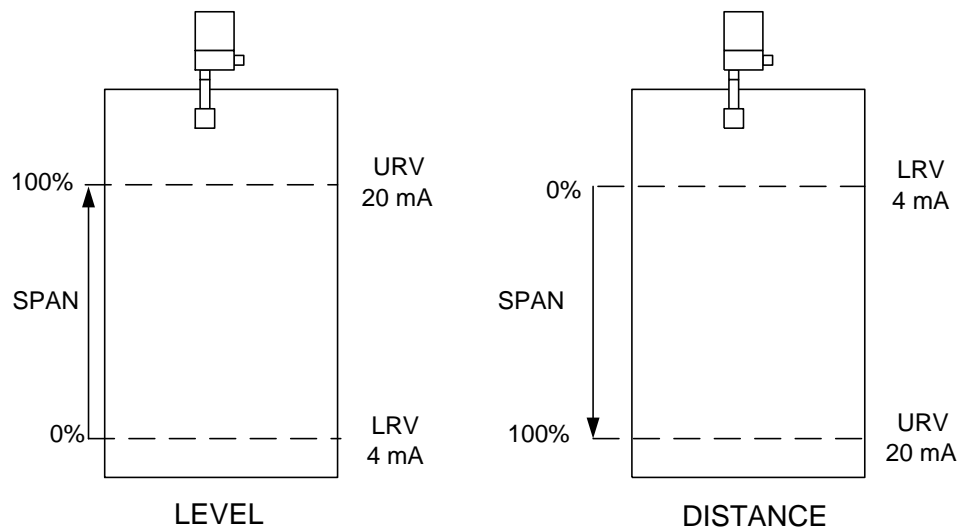
505-9000-003 Series UniversalSonic™ Transmitter

1.3 Definition of Terms

- Zero:** The point at which the output is to equal 4 mA (0% level) measured from the transducer face down (↓).
- Span:** The point at which 20 mA (100%) occurs measured from the zero point.
- Range:** Maximum distance from the transducer face.
- Near Zone:** The distance just below the transducer face where the transmitter cannot make a level measurement (12 inches).
- Lost Echo:** A condition that occurs when the ultrasonic energy is not being returned to the transducer. Loss of echo may occur when large amounts of foam are present.

1.4 Types of Output

- Level Mode:** Output increases as level increases. Level mode output is the most common type of output measurement. (Forward-acting)
- Distance Mode:** Output decreases as level increases. (Reverse-acting)
- V-notch Weir:** Output linearized for flow in a V-notch weir.
- Fault Indication:** Output goes to 3.7 or 22 mA. (field-selectable)



SECTION 2 INSTALLATION

2.1 Unpacking

Carefully remove the contents of the shipping carton and check each item against the packing list before destroying any packing material. If there is any shortage or damage, report it to the factory immediately.

2.2 Mounting the Transmitter

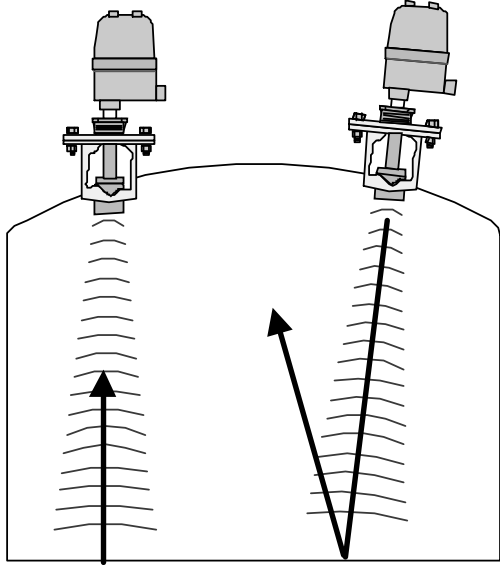
The 505-2400 Series transmitter is available with the electronic unit and transducer as a single *integral* assembly. Extended sensing element lengths and special mountings can be provided to fit specific mounting applications. Refer to Figure 2-2 for standard mounting dimensions.

- The 505-2400 Series transmitter is designed for field mounting, but it should be mounted in a location as free as possible from vibration, corrosive atmospheres, and any possibility of mechanical damage.
- For convenience when adjusting, place the electronic unit in a reasonably accessible location. Ambient temperature should be between -40°F and 160°F (-40°C to 70°C).

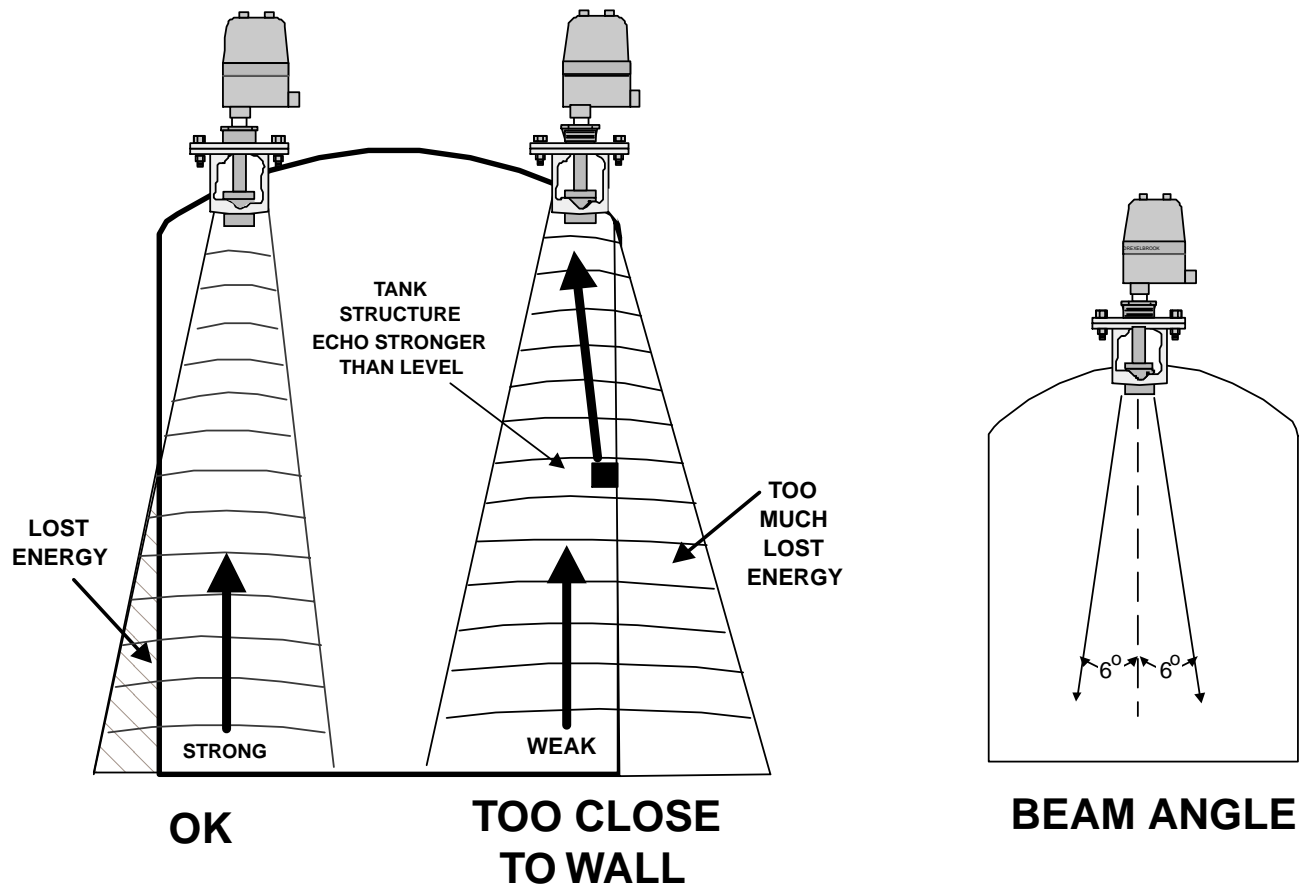
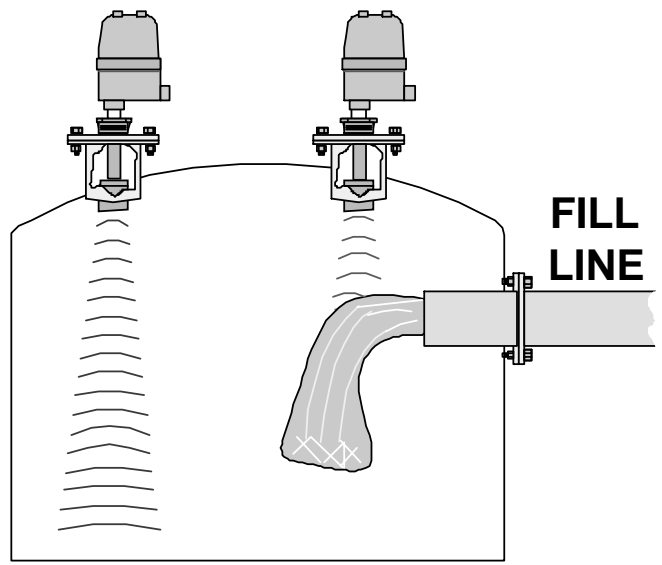
2.3 Mounting the Transducer

- The transducer axis must be mounted perpendicular to the liquid surface.
- When mounting the transducer, consideration must be given to the 12-inch Near Zone. If the level rises to within 12 inches of the sensing element face, a 3.7 or 22 mA signal will be generated. See *3.2 Slide Switch S2, Near Zone*.
- Refer to *Appendix A* for further examples of installation guidelines.

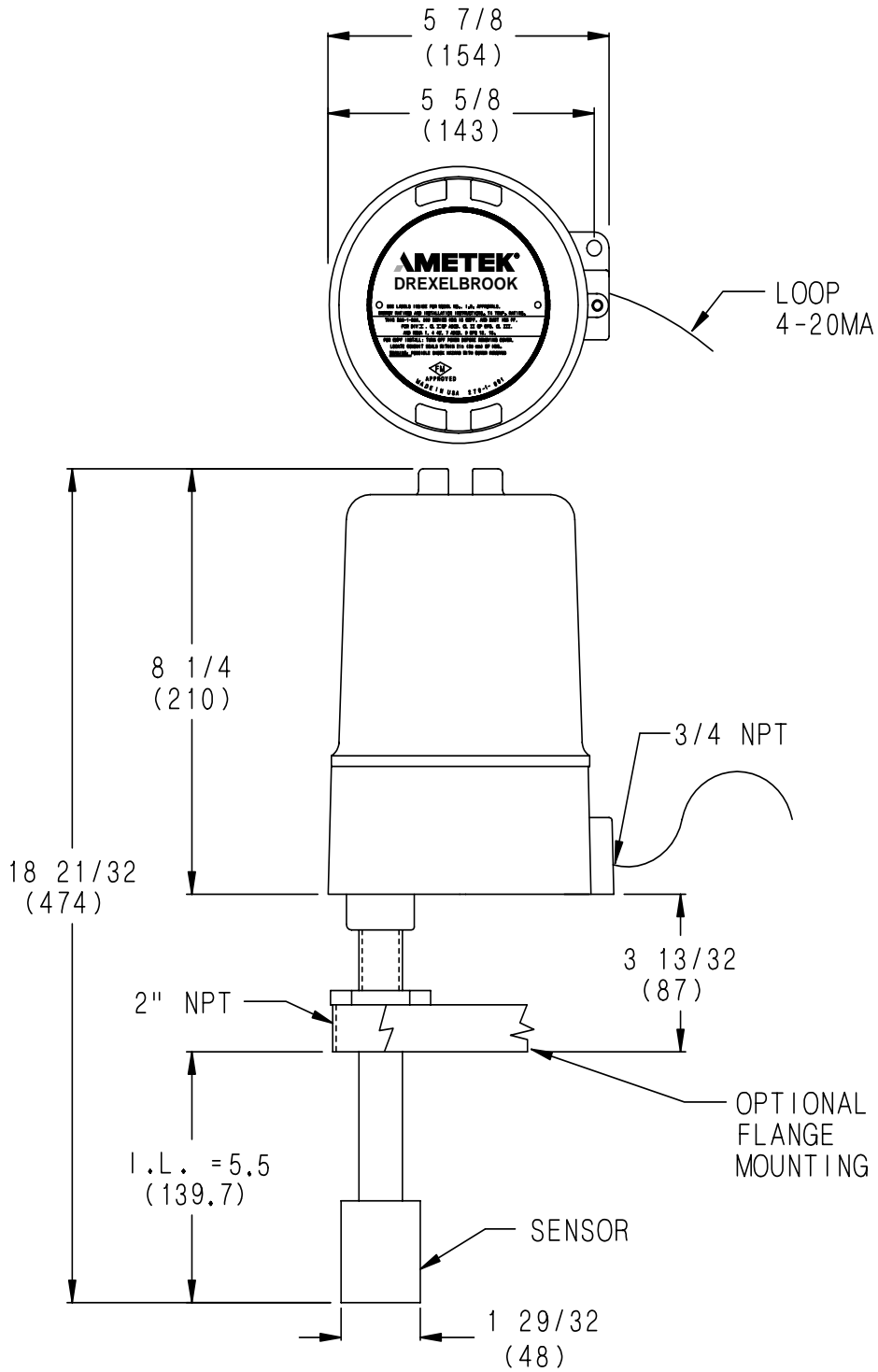
CORRECT INCORRECT



CORRECT INCORRECT



*Figure 2-1
Mounting Recommendations
(Also refer to Appendix A)*



All dimensions in inches (mm).

Figure 2-2
505-2X00 Series Mounting Dimensions
Integral Electronic Housing

2.4 Wiring the Transmitter

CAUTION

If the Series 505-2400 is located in a hazardous environment, do not open the enclosure cover or make/break any electrical connections without first disconnecting electrical power at the source. Ensure that the wiring, electrical fittings and conduit connections conform to the electrical codes for the specific location and hazard level.

Refer to Figures 2-3 for the wiring diagrams of the 505-2400 transmitter. The level measuring cable and temperature compensation wires are prewired.

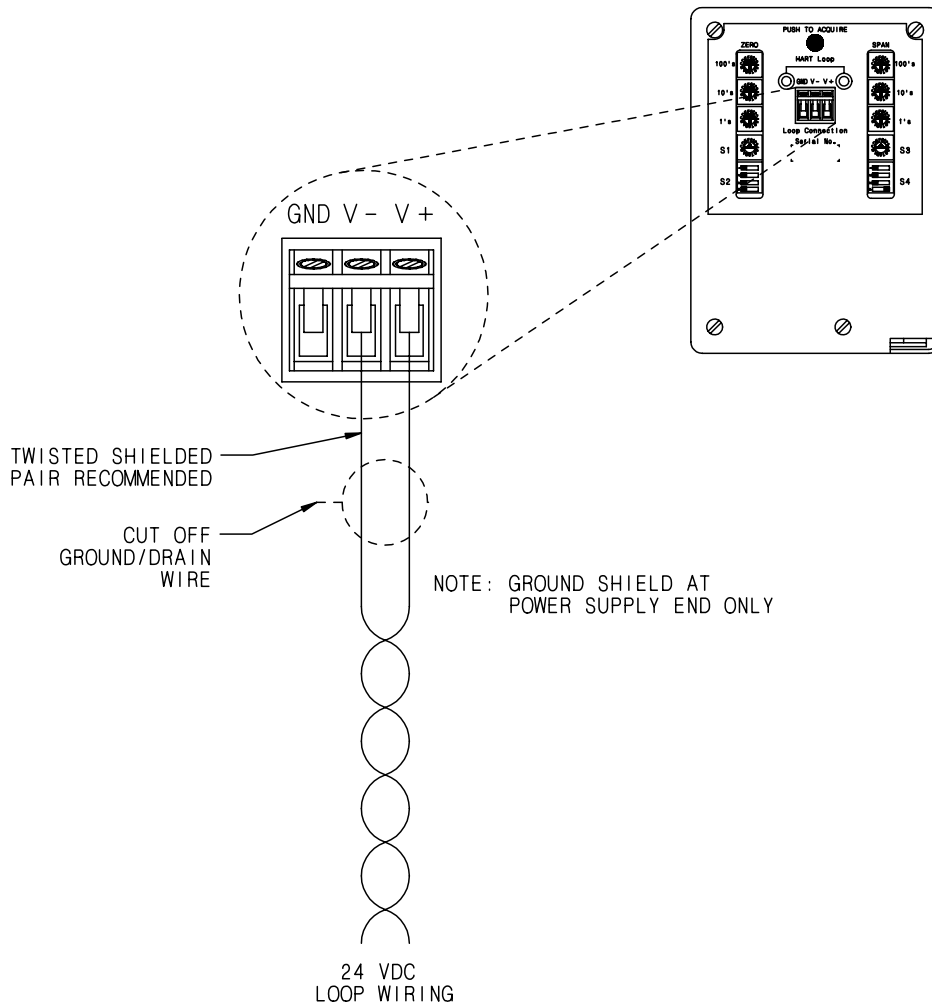
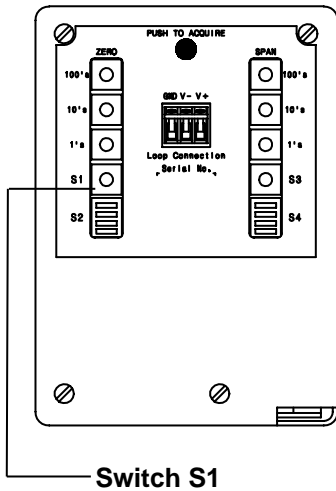


Figure 2-3
Loop Wiring

SECTION 3 ANALOG SWITCH MODE

3.1 Switch Settings

3.1.1 Rotary Switch S1



Section 3.1 describes the switches and selection of settings.

Section 3.2 describes calibrating the 405-9000-003 instrument in inches (for level measurement) using the calibration switches.

Section 3.3 describes calibrating the 405-9000-003 instrument in tenths of inches (for v-notch measurement) using the calibration switches.

—Rotary Switch S1 controls:

- repetition rate
- time delay
- selection of english (inches) or metric (centimeters) units

The unit is shipped with S1 in the default setting: switch position zero which sets no time delay, 250 msec repetition rate, and english units (inches).

—*Time Delay/Repetition Rate*

An application might require time delay or a longer repetition rate depending on the type of vessel and material being measured. For instance:

- Increasing time delay to either 15 or 45 seconds will smooth out a jumpy output signal caused by wave action or turbulence in the tank.
- Increasing the repetition rate to 400 ms is **required** any time that the tank roof is curved (domed tanks). A longer repetition rate ensures that transmitter is not affected by reflected sound waves from the curved roof.
- A lengthened repetition rate may help reduce loss of echo due to foam.

If your application is similar to one described above, change the time delay or repetition rate using a small screwdriver and switch S1. Table 3-1 details the switch settings. Each setting controls both time delay and repetition rate.

505-9000-003 Series UniversalSonic™ Transmitter

3.1.1 Rotary Switch S1 (cont.)

—Units Selection

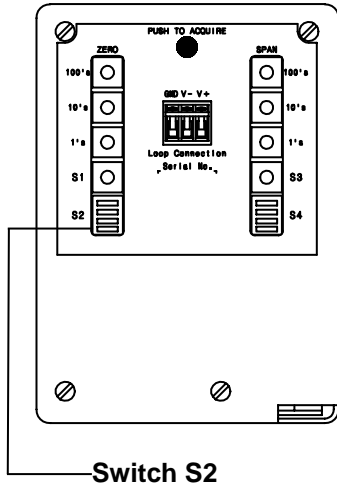
The 505-2400 UniversalSonic transmitter can be used in english or metric modes of operation.

- When S1 is in position 0-5, the zero and span calibration switches are set in **inches**.
- When S1 is in position 6-9,A,B, the zero and span switches are set in **centimeters**.

*Table 3-1
Time Delay, Repetition Rate, and
Units Selection Switch (S1) Settings*

Switch S1 Position	Time Delay	Pulse Rate	Units Selection
0	0 seconds	250 msec	english
1	15 seconds	250 msec	english
2	45 seconds	250 msec	english
3	0 seconds	400 msec	english
4	15 seconds	400 msec	english
5	45 seconds	400 msec	english
6	0 seconds	250 msec	metric
7	15 seconds	250 msec	metric
8	45 seconds	250 msec	metric
9	0 seconds	400 msec	metric
A	15 seconds	400 msec	metric
B	45 seconds	400 msec	metric
C-F	not used	not used	not used

3.1.2 Slide Switch S2



—Slide Switch S2 controls:

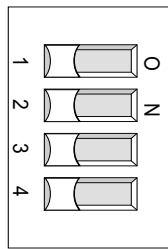
- level/distance mode (S2-1)
- near zone fault output (S2-2)
- lost echo fault output (S2-3)
- diagnostics (S2-4)

—*Level or Distance Mode*

The selection of either level or distance mode is accomplished by changing the position of the slide switch S2-1.

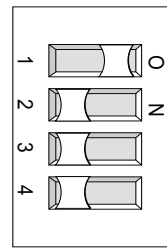
- When S2-1 is switched to the **left**, the unit will measure in the **level mode**.
- When S2-1 is in switched to the **right**, the unit will measure in the **distance mode**.

Level and distance modes are explained in sections 1.4, 3.2 and 3.3.



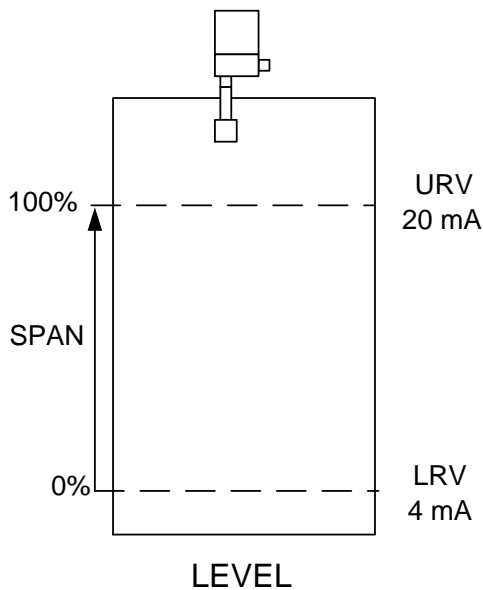
Level Mode

4 mA tank empty
20 mA tank full

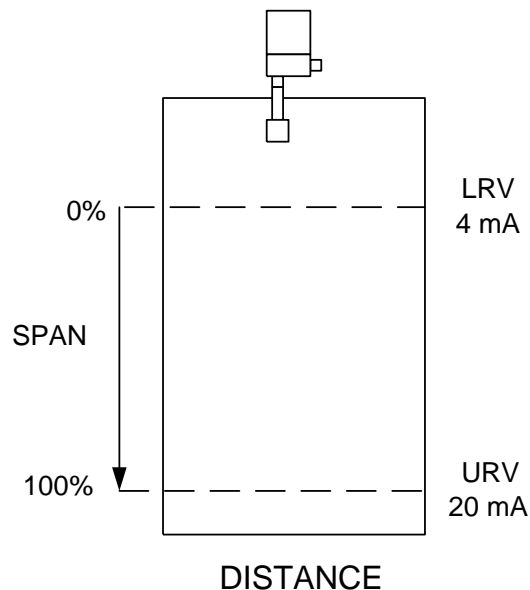


Distance Mode

4 mA tank full
20 mA tank empty



LEVEL



DISTANCE

**3.1.2 Slide Switch S2
(cont.)**

—Near Zone Fault Output

Slide switch S2-2 determines the output current of a near zone fault condition.

- When S2-2 is switched to the **left**, the unit will output **22 mA** during a near zone condition.
- When S2-2 is in switched to the **right**, the unit will output **3.7 mA** during a near zone condition.

See Table 3-2 for application information when setting near zone and lost echo switches.

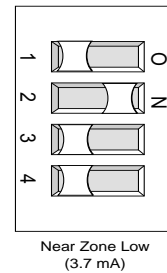
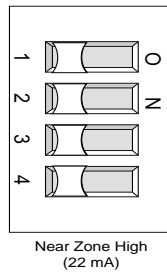


Table 3-2
*Application Notes for
Near Zone and Lost Echo Settings*

<p>Application requires Overfill Prevention (no spills)</p> <p>Material cannot go over high point</p> <p>Near Zone typically set 22 mA Lost Echo typically set 22 mA</p>	<p>Application requires Low Level Prevention (pump will not run dry)</p> <p>Material cannot go below low point</p> <p>Near Zone typically set 22 mA Lost Echo typically set 3.7 mA</p>
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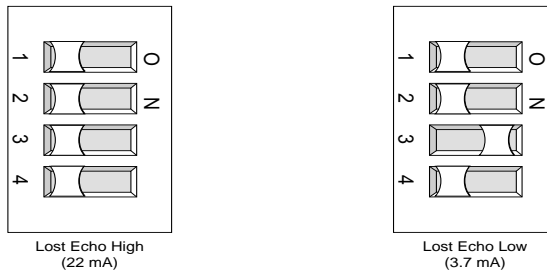
3.1.2 Slide Switch S2 (cont.)

—Lost Echo Fault Output

Slide switch S2-3 determines the output current of a lost echo fault condition.

- When S2-3 is switched to the **left**, the transmitter will produce **22 mA** output during a lost echo condition.
- When S2-3 is switched to the **right**, the transmitter will produce **3.7 mA** output during a lost echo condition.

See Table 3-2 for application information when setting near zone and lost echo switches.



—Diagnostics

Slide switch S2-4 is used for diagnostics, discussed in *Section 4 Troubleshooting*.

3.1.3 Rotary Switch S3

—Rotary Switch S3 controls:

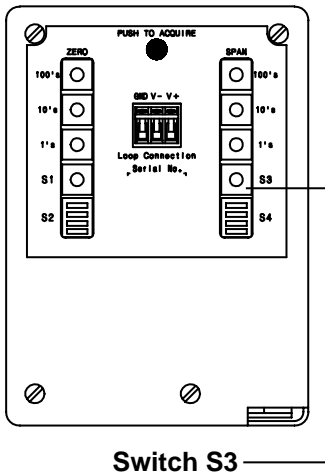
- high discrimination mode
- gain adjustment settings

—High Discrimination

Position zero on rotary switch S3 activates the high discrimination mode.

- High discrimination mode automatically reduces the effect of nuisance echos created when mounting the transducer in a nozzle or mounting the transducer inside a pipe up to 14 inches above the tank opening.
- The high discrimination mode lessens any effect from agitator blades and/or small obstructions and reduces interference caused by electrical noise.
- The high discrimination mode **should not** be used in applications where foam is present.

3.1.3 Rotary Switch S3 (cont.)



—Gain Adjustment

The step gain positions can be used to decrease the ultrasonic return signal and avoid noise interference.

For example, the power produced to shoot the 30-foot signal could possibly cause nuisance reflections from irregular sidewalls, tank obstructions, or agitator blades. By reducing the gain of the transmitter using the step gain switch positions, the effect of nuisance reflections can be eliminated.

See Table 3-3 for gain settings using rotary switch S3.

Table 3-3
High Discrimination and Gain Adjustment

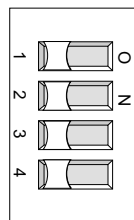
Switch S3 Position	Mode/Gain Adjustment
0	high discrimination (automatic gain control)
1	100% gain
2	84% gain
3	67% gain
4	50% gain
5	32% gain
6	17% gain
7	8% gain
8-9	not used
A-F	not used

3.1.4 Slide Switch S4

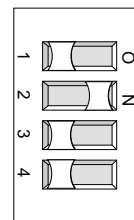
For level/distance measurement, switch S4-2 should be set to the left.

For v-notch weir measurement, switch S4-2 should be set to the right.

Switches S4-1, S4-3, S4-4 should be set to the left at all times and for both types of measurements.



Switch S4
Level/Distance
Measurement



Switch S4
V-notch Weir
Measurement

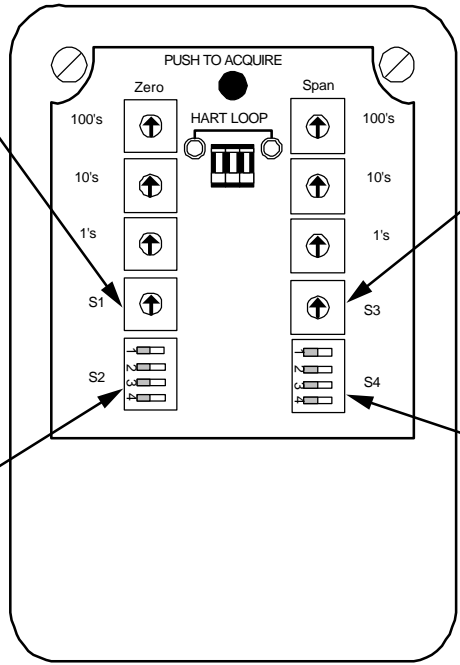
Two Wire Universal Sonic™ Switch Function Quick Reference

Rotary Switch S1

Position	Time Delay	Repeat Rate	Units
#0 =	None	250ms	Inches
#1 =	15 Seconds	250ms	Inches
#2 =	45 Seconds	250ms	Inches
#3 =	None	400ms	Inches
#4 =	15 Seconds	400ms	Inches
#5 =	45 Seconds	400ms	Inches
#6 =	None	250ms	Centimeters
#7 =	15 Seconds	250ms	Centimeters
#8 =	45 Seconds	250ms	Centimeters
#9 =	None	400ms	Centimeters
#A =	15 Seconds	400ms	Centimeters
#B =	45 Seconds	400ms	Centimeters
C - F =	Future	Future	Future

When rotary switch S1 is set on position 6, through 9, A, B, the Zero and Span settings are in centimeters.

Rotary Switch S3
 #0 = High Discrimination
 #1 = 100% Gain
 #2 = 84% Gain
 #3 = 67% Gain
 #4 = 50% Gain
 #5 = 32% Gain
 #6 = 17% Gain
 #7 = 8% Gain
 #8,9 = Future
 #A-F = Future



Slide Switch S2
 1 Left = Level
 1 Right = Distance

2 Left = Near Zone High (22mA)
 2 Right = Near Zone Low (3.5mA)

3 Left = Lost Echo High (22mA)
 3 Right = Lost Echo Low (3.5mA)

4mA forced (1L, 2R, 3R, 4R)

20mA forced (1L, 2L, 3R, 4R)

Slide Switch S4
 Slide #1 - Left
 Slide #2 - Left for level/distance measurement.
 Right for v-notch weir measurement.
 Slide #3 - Left
 Slide #4 - Left

3.2 Calibrating the 405-9000-003 Instrument for Level or Distance Measurement

Use this procedure to set the Zero and Span switches for calibration of a 405-9000-003 electronic unit when used for level or distance measurement. See *3.3 Calibrating the 405-9000-003 Instrument* for calibrating the electronic unit for v-notch weir measurement.

—*Level Mode* (*Forward-acting*)

Verify that slide switch S2-1 is set to the left. Refer to section 3.1.2.

Set the Zero calibration switches to equal the distance in inches (or centimeters) from the transducer face down to the **minimum level** (usually tank bottom—0% or 4 mA). Refer to the calibration example in Figure 3-1. For this example, the switches are set to 1-6-8 starting with the top switch.

Set the Span calibration switches to equal the distance in inches (or centimeters) from the **minimum level** to the **maximum level**—100% point or 20 mA (e.g. 1-5-6 starting with top switch).

—*Distance Mode* (*Reverse-acting*)

Verify slide switch S2-1 is set to the right. Refer to section 3.1.2.

Set the Zero calibration switches to equal the distance in inches (or centimeters) from the sensing element face to the **maximum level** (0% or 4 mA). Refer to the calibration example in Figure 3-1. For this example, the switches are set to 0-1-2 starting with the top switch.

Set the Span calibration switches to equal the distance in inches (or centimeters) from the **maximum level** to the **minimum level**—100% or 20 mA (e.g. 1-5-6 starting with the top switch).

NOTE

For linear outputs, it is possible to calibrate into the near zone. However, unit will fault when level gets within 12 inches of transducer face.

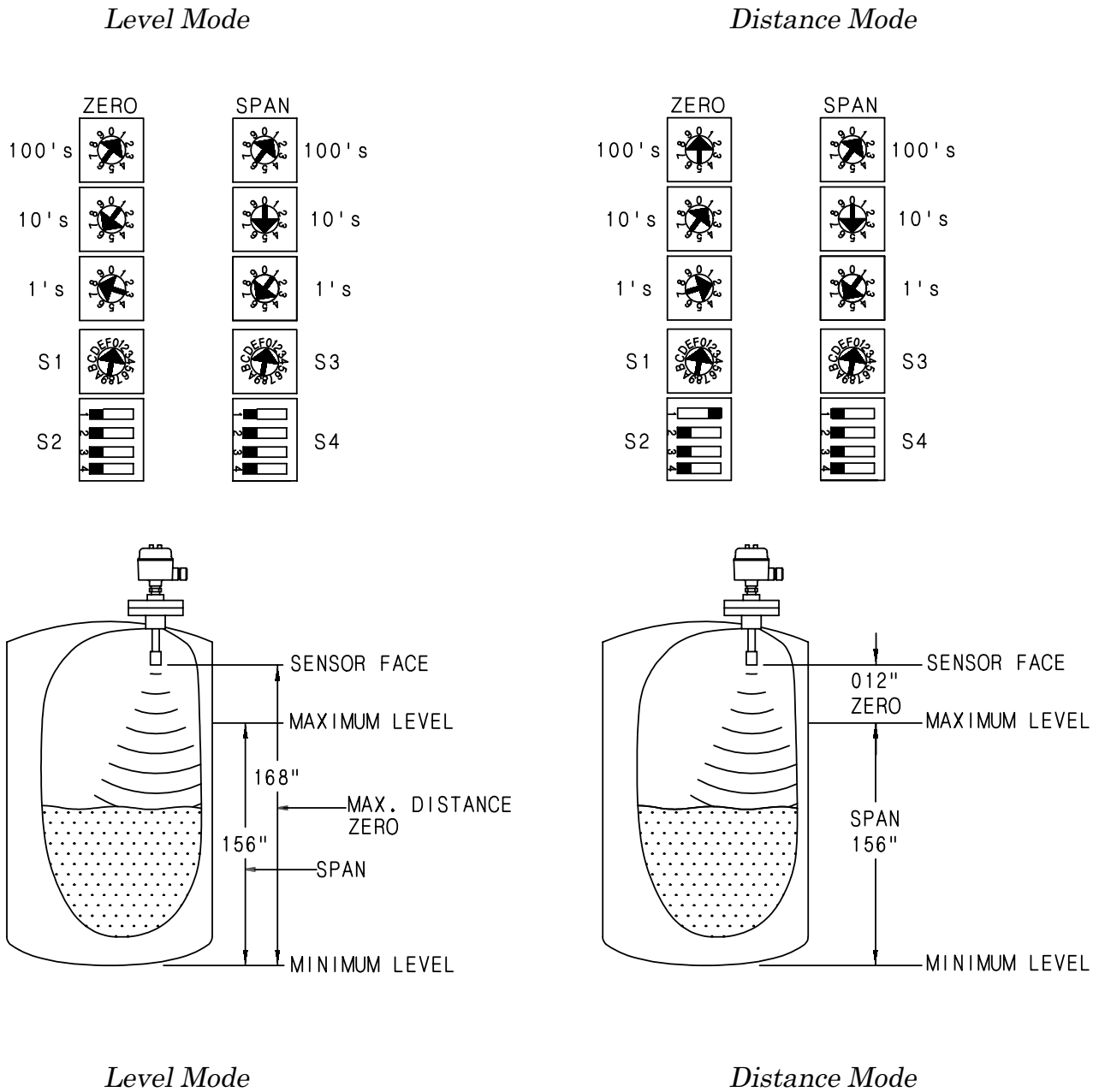


Figure 3-1
Calibration Example

3.6 Calibrating the 405-9000-003 Instrument for V-notch Weir Measurement

The 405-9000-003 instrument supports the flow equation for v-notch weir measurement. Set the instrument as follows:

- locate switch S4 on front of instrument.
- move slide switch S4-2 to the right.

—*Setting Zero*

Setting the Zero (minimum flow) and Span (maximum flow) calibration points is done using the rotary switches.

The Zero point is measured from the face of the transducer to the minimum flow point on the weir. Set the rotary switches to the nearest 1/10th inch. See Figure 3-2.

—*Setting Span*

The Span point is measured from the Zero point up to the maximum flow point on the weir. Set the rotary switches to the nearest 1/10th inch. See Figure 3-2.

NOTE

Span must be at least 12 inches less than the Zero point to allow for the 12-inch Near Zone of the transducer.

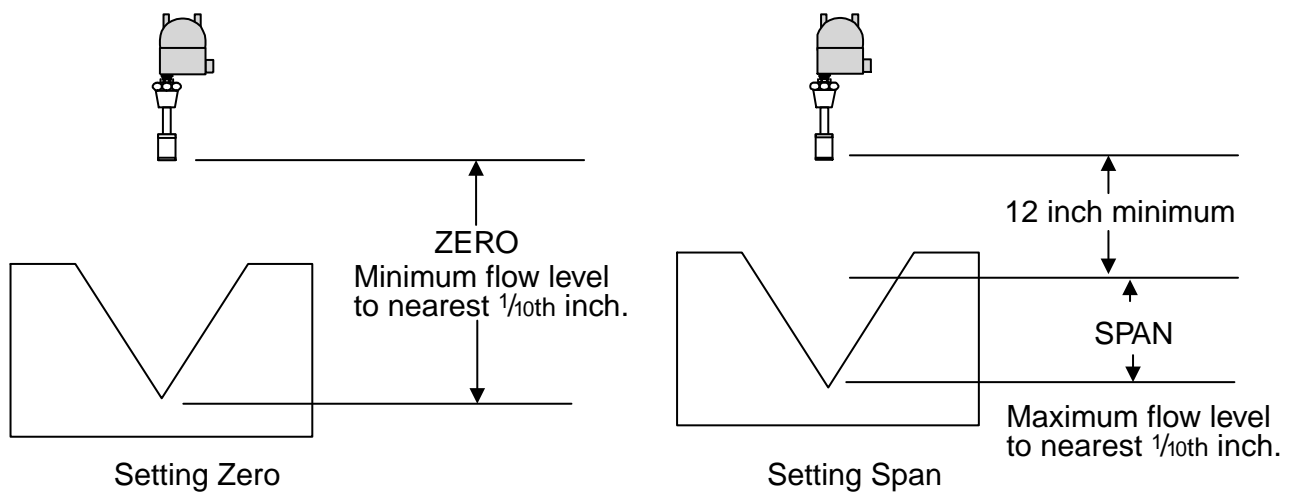
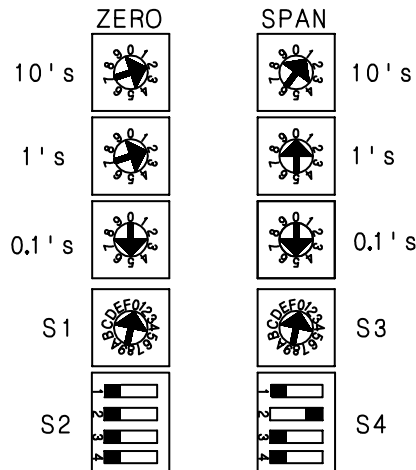


Figure 3-2
V-notch Weir Measurement

SECTION 4 TROUBLESHOOTING

The 505-9000-003 UniversalSonic instrument is designed to give years of unattended service. No periodic or scheduled maintenance is required.

4.1 Troubleshooting Procedures

If a problem should occur with the operation of the transmitter, use the following procedure for troubleshooting.

- a. Ensure wiring connections are correct.
- b. If the liquid surface has severe turbulence in the area where the ultrasonic beam hits, consider increasing damping time.
- c. Splashing of material or condensation on the transducer face could cause unreliable measurements.
- d. Any continuous ultrasonic transmitter signal/echo can be adversely affected by significant foam on the liquid level surface. If this condition exists, please consult the factory for further application review and advice.
- e. Ensure that the transducer face is not recessed into a mounting nozzle, unless high discrimination setting is used. Spurious reflections from the nozzle can cause faulty operation.
- f. To indicate a fault condition, the 4-20 signal locks to 22 mA. If output is locked at 22 mA, check that:
 - 1) the level of the material has not violated the near zone (12 inches [30 cm]) from the transducer face.
 - 2) the low calibration setting is not more than 360 inches (610 cm) or 99.9 inches (405-2100 unit).
- g. Test for 4 mA and 20 mA.

S2-1 left	S2-1 left
S2-2 right	S2-2 left
S2-3 right	S2-3 right
S2-4 right	S2-4 right
- h. If attempts to locate the difficulty fail, notify the local factory representative, or call the factory toll-free at 1-800-527-6297. To aid in troubleshooting, please complete the information on Table 5-1 before calling the factory service department.

4.2 Field Calibration

Slide switch S2-4 runs a field calibration program that allows the calibration to be optimized.

CAUTION

The field calibration procedure permanently overwrites the factory calibration.

1. Write down the current zero calibration switch settings.
2. Measure the distance from the transducer face to the tank level.
3. Using a screwdriver, enter this number (step 2) on the three zero calibration switches.
4. Place S2-4 to the right, S2-1 to the right, and rotary switch S1 to zero.
5. Connect instrument to a milliamp meter and observe the 4-20 mA loop current. A 10 mA current indicates field calibration.
6. Press and release the red ACQUIRE button.
7. Observe current.
 - If meter displays 16 mA, unit is operating normally.
 - If meter displays 18 mA, Lost Echo fault exists.
 - If meter displays 14 mA, Near Zone fault exists.
 - If meter displays 12 mA, calibration is incorrect (greater than 25% error).
8. Place the zero calibration switches, S2-1 and S2-4 to the operation mode.

4.3 Checking the Transducer

An ohmmeter test is used to check the transducer crystal. It can also be used to verify that the wires from the transducer to the sensor (on a remote system) are not reversed, shorted, or open.

Using a digital ohmmeter, a reading of 9-13K ohms should be present between CW to SHIELD.

4.4 Checking the Temperature Sensor

—Resistance Check

- a. Disconnect the temperature transducer wires (brown and orange) leading to the transducer.

4.4 Checking the Temperature Sensor (cont.)

- b. Using a digital ohmmeter, a good transducer measures 12 to 35 megohms with the positive test lead on the orange lead and the negative test lead on the brown lead (standard sensor). The negative test lead attaches to the brown and white striped wire on the high temperature sensor (703-6-1).
- c. Reverse the meter leads and an open circuit (infinite ohms) should be observed.

—Operation Check

A more precise way to check the temperature sensor is to measure the current flow while the unit is on. Refer to Figure 4-1.

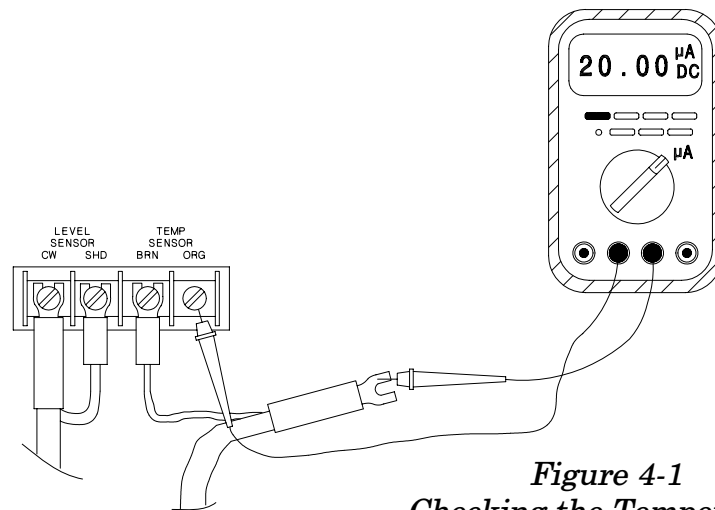


Figure 4-1
Checking the Temperature Sensor

- a. Shut power off.
- b. Loosen the screw holding the orange wire at the transmitter.
- c. Remove the orange wire.
- d. Place a multimeter (capable of measuring microamps) in series with the orange wire and empty screw.
- e. Re-apply power.
- f. The microammeter should read:
 - 273 μ amps @ 32°F
 - 293 μ amps @ 68°F
 - 311 μ amps @ 100°F

Readings outside these listed ranges indicate a failed temperature sensor. Call Factory Service at 1-800-527-6297.

4.5 Checking the Loop

Specific transmitter loop connections vary with each installation, but in generally are connected in a similar manner to the typical transmitter loop in Figure 4-1. When troubleshooting the loop connection, verify the following items.

- Loop devices are wired in series.
- There is at least 19 Vdc available for the transmitter when a loop current of 4 mA is flowing.

Refer to Figure 4-2.

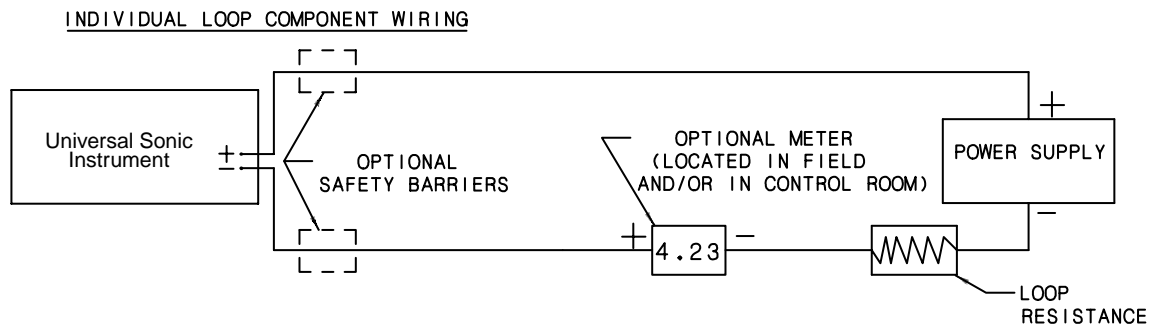


Figure 4-2
Loop Diagram

4.6 Telephone Assistance

If you have questions about your Drexelbrook equipment:

- contact your local Drexelbrook representative,
- call the Service department toll-free at 1-800-527-6297 (in US and Canada) or 1-215-674-1234 (outside North America),
- fax the following information to the Service department at 1-215-443-5117.

To expedite assistance, please provide the following information:

Instrument Model Number _____

Sensing Element Model Number and Length _____

Coax Cable Length (remote systems) _____

Original Purchase Order Number _____

Material being measured _____

Temperature _____

Pressure _____

Agitation _____

Brief description of the problem _____

Checkout procedures that have failed _____

4.7 Equipment Return

In order to provide the best service, any equipment being returned for repair or credit must be pre-approved and have a return number issued by the factory.

In many applications, sensing elements are exposed to hazardous materials.

- OSHA mandates that our employees be informed and protected from hazardous chemicals.
- Material Safety Data Sheets (MSDS) listing the hazardous materials that the transducer has been exposed to **must** accompany any repair.
- It is your responsibility to fully disclose all chemicals and decontaminate the sensing element.

505-9000-003 Series UniversalSonic™ Transmitter

4.7 Equipment Return (cont.)

To obtain a return authorization number (RA#), contact the Service department at 1-800-527-6297 (US and Canada) or 1-215-674-1234 (outside North America). Please provide the following information:

Model Number of Return Equipment _____

Serial Number _____

Original Purchase Order Number _____

Process Materials that equipment has been exposed to _____

MSDS sheets for any hazardous materials

Billing Address _____

Shipping Address _____

Purchase Order Number for Repairs _____

Please include a purchase order even if the repair is under warranty. If repair is covered under warranty, you will not be charged.

Ship equipment freight *prepaid* to:

AMETEK Drexelbrook
205 Keith Valley Road
Horsham, PA 19044
COD shipments will not be accepted.

4.8 Field Service

Trained field service personnel are available on a time-plus-expense basis to assist in start-ups, diagnosing difficult application problems, or in-plant training of personnel. Preventative Maintenance and Calibration Certification service contracts are also available to maintain plant efficiency. Contact the Service department for further information.

**SECTION 5
SPECIFICATIONS**

**5.1 Transmitter
Specifications**

—Power Requirement

Load resistance =

$$\frac{(V_{\text{SUPPLY}} - 12.0)}{0.02}$$

Minimum supply voltage is 19 volts at 4mA.

For example,

$V_{\text{SUPPLY}} = 24\text{V}$ and maximum load resistance = 600 ohms.

—Operating Temperature

-40°F to 185°F (-40°C to 85°C) (Electronics)

—Ambient Temperature Effect

±0.1% per 1°F

—Repeatability

0.1 inch (3mm)

—Resolution

0.125 inch (3mm)

—Response Time

2 seconds (approximate)

—Calibration

Zero and Span: *Level:* to nearest 1 inch (1 cm)

V-notch: to nearest 0.1 inch

Near Zone: 12 inches (0.3 meter)

Minimum Span: 3 inches (7.62 cm)

Maximum Span: 30 feet (9 meters) (405-2400 unit)

—Output

2-Wire Signal Loop: 4-20 mA DC (isolated)

—Linearity

0.5% of full scale for spans less than 3 feet.

0.25% of full scale for spans more than 3 feet.

—Temperature Compensation

Automatic (separate temperature sensor is available)

—Damping

0, 15, or 45 seconds (switch mode)

5.1 Transmitter Specifications (cont.)

—*Lost Echo*

22 mA or 3.7 mA
field selectable

—*Near Zone*

22 mA or 3.7 mA
field selectable

—*Pulse Repetition Rate*

250 or 400 msec (field-selectable)

—*Fail Safe*

22 mA

—*Approvals*

FM, CSA, and CE Mark
for Explosionproof installations in indoor and outdoor hazardous locations in Class 1, Groups A,B,C,D; Groups E, F, and G; Class III using Enclosure type 1,4,4X,12, and 13.

5.2 Transducer Specifications

—*Sensor*

Material: CPVC, PFA, PFA Sealtyte
Pressure: -10 to 50 PSI

—*Operating Temperature*

-40°F to 160°F (CPVC Sensor)
-40°F to 200°F (PFA Sensor)

—*Enclosure*

Explosionproof Housing

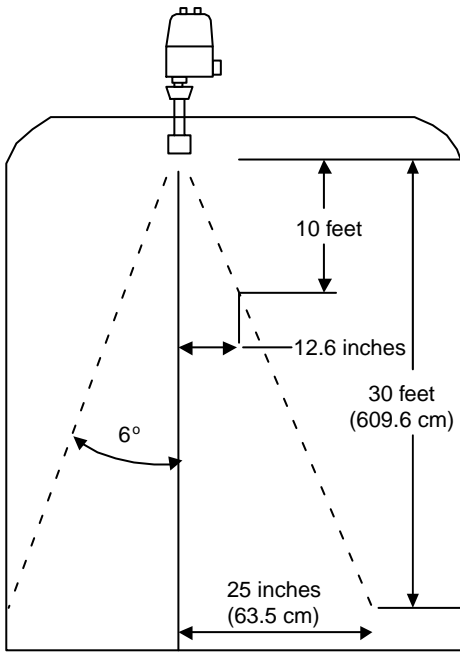
—*Beam Angle*

Conical, 12° typical, 3db down

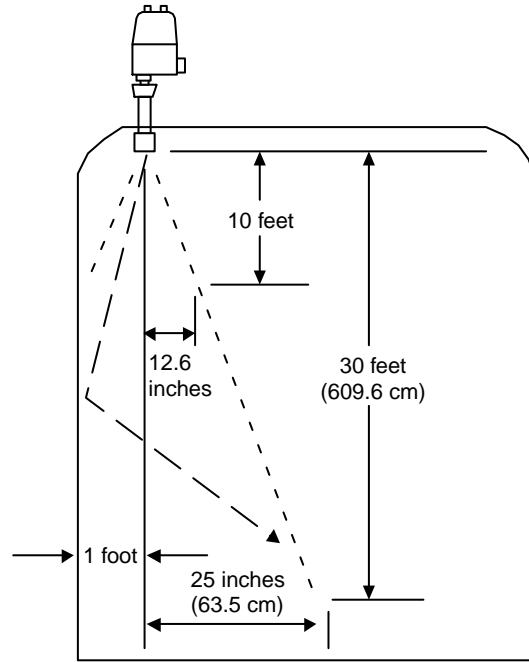
505-9000-003 Series UniversalSonic™ Transmitter

APPENDIX A INSTALLATION EXAMPLES

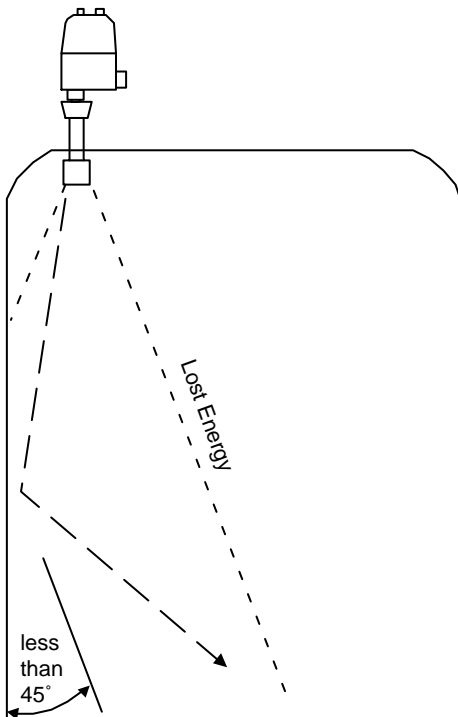
The following pages give examples of various ultrasonic installations. These installation guidelines are useful for optimal performance of the 405-9000-003 UniversalSonic instrument.



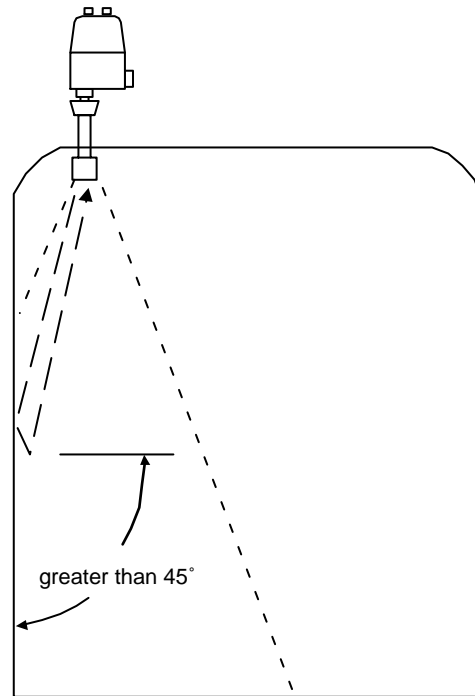
When there are no obstructions within the beam area, there is no chance of false echoes or readings.



Smooth wall in beam with no other obstructions will not cause false echoes.

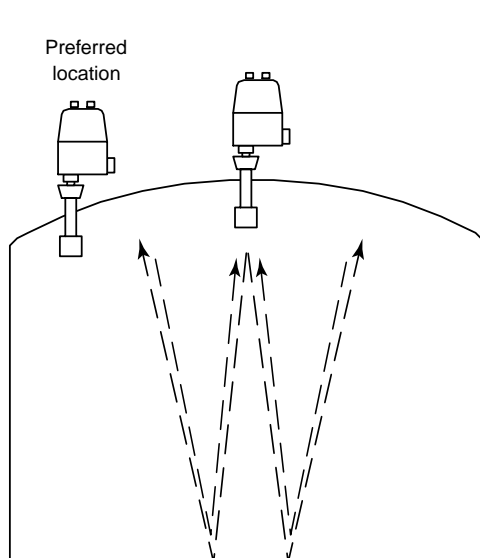


Protrusions from the wall at an angle less than 45 degrees does not cause false echoes.

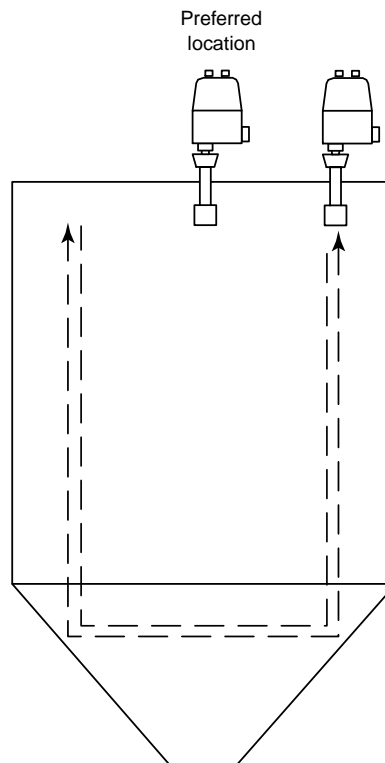


Protrusion from the wall at an angle greater than 45 degrees may cause false echoes.

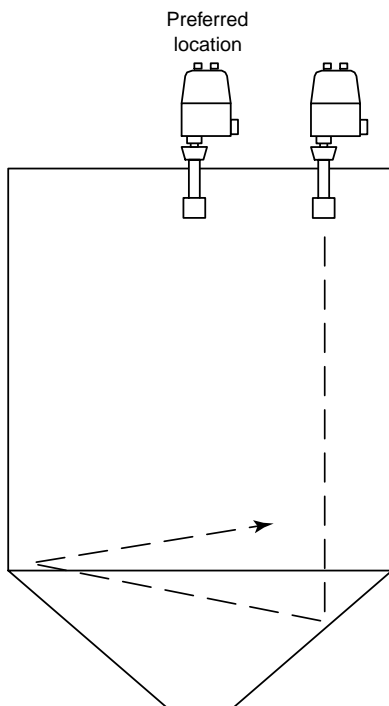
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When mounted in the center of domed roof tanks reflected echoes can be redirected back to the transducer. Use 240 mSec. pulse repeat rate to allow these echoes to subside before transmitting the next pulse and/or move the transducer to another location.



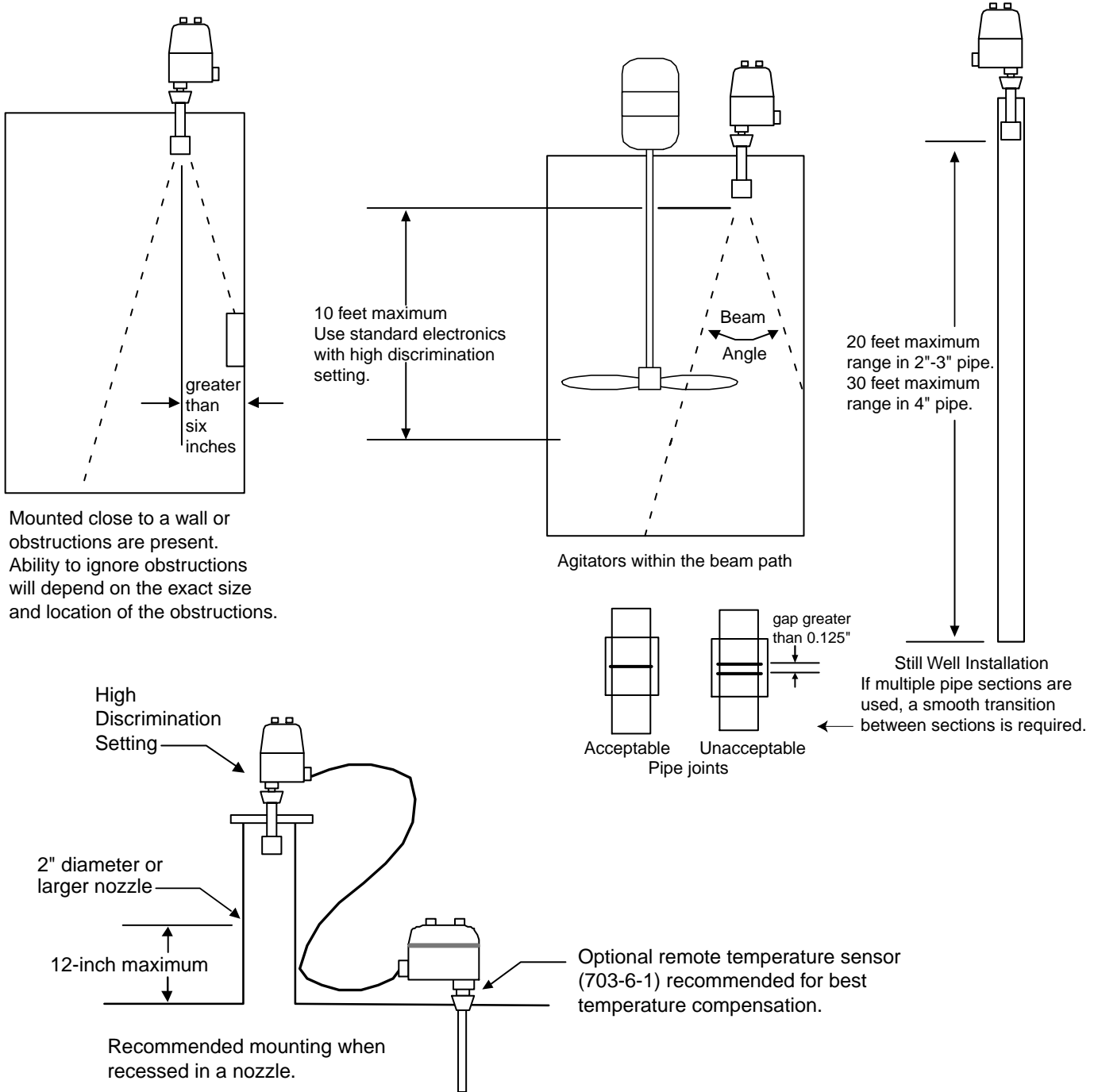
When mounted off center in conical bottom tanks, reflected echoes can be redirected back to the transducer. Use 240mSec. pulse repeat rate to allow these echoes to subside before transmitting the next pulse and/or move the transducer to another location.



When mounted off center in conical bottom tanks, reflected echoes can reflect away from the transducer in the conical bottom resulting in a lost echo. Move the transducer to the center of the bin for best results.

Automapping using High Discrimination Setting

This technology allows the system to ignore many objects in the beam which cause false reading with other units.



AMETEK[®]
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