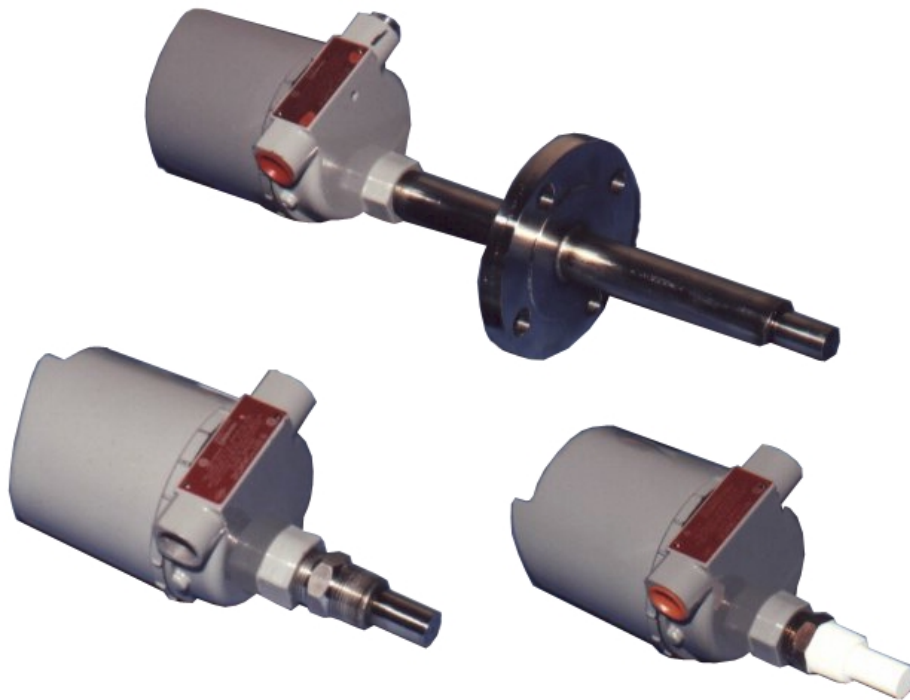




SONAC[®]/110

Liquid Level



Function

Single Point Switch for On-Off Control of Liquids.

Typical Uses

High Level Alarm or Control
Pump Control or Inlet Starvation Alarm
Flow/No Flow Indication
Low Level Alarm or Control

Primary Areas of Application

The SONAC[®]/110 provides the most reliable overflow alarm or control available.

Where liquids to be sensed constantly change physical or electrical properties. The SONAC[®]/110 principle of measurement is used with extremely small vessels or pipes and when little or no intrusion into the process is required.

Non-dedicated vessels - liquids

The device senses virtually any liquid and does not need adjustment when the density or dielectric constants are changed.

High temperature, High pressure service

The welded, all stainless steel sensor body is designed for service at temperatures to 220°F (+104°C) and pressures to 2000psig.

Fluids with foam blankets

The control ignores foam to indicate the true liquid level.

Features

Auto Test self-checking

The unique self-checking feedback loop constantly "proves" that the control is working properly and offers superior reliability in critical applications.

Really Failsafe

The SONAC[®]/110 is designed so that any electrical or mechanical failure of sensor or component will cause a change of state to the Fail Mode. Redundant circuit components are used in critical locations.

Stable, dependable performance

This sensing technique provides a wet/dry ratio of 100:1 to provide dependable performance year in and out, without periodic adjustment.

No false trips due to surge or splashing liquids

Compact

The electronic amplifier is located in an integral explosion proof housing threaded to the rear of the sensor.

Versatile power supply

The standard units are designed to accept 115 VAC, 230 VAC or low voltage DC input power.

Non-intrusive

The sensor need not extend into the vessel beyond 1/4 inch. This feature minimizes the possibility of product bridging.

Rugged

The all stainless steel, heavy duty sensor resists damage from product abrasion or corrosion. No packing glands are used.

Principle of Operation

The sensor is a magnetostictive device consisting of a diaphragm, nickel tube, magnet, drive coil and pickup coil. (See sensor typical cross section).

When 40 kHz energy is applied to the drive coil, it causes the diaphragm to vibrate at a frequency determined by the mechanical resonant system of the sensor. Electrical energy is transferred to the pickup coil when the diaphragm is free to move in gas. When the diaphragm motion is loaded by a process material less energy is transferred to the pickup coil.

The pickup coil of the sensor is connected to the input of an amplifier and the output of the amplifier to the drive coil to form a feed-back loop circuit. Any energy appearing in the output of the sensor will be fed to the amplifier, amplified and returned to the input of the sensor. This causes vibrations at 40kHz to occur in the diaphragm and furnish a signal back to the amplifier for reamplification. When the gain of the amplifier is adjusted so as to exceed the losses within the sensor continuous oscillations are produced.

If the diaphragm of the sensor is exposed to a process liquid product which offers greater mechanical resistance to the motion of the diaphragm, the transfer of energy to the pickup coil decreases. This results in a decrease in the signal feedback into the amplifier and a corresponding decrease in the signal available from the output of the amplifier. The decreased signal triggers a voltage sensitive network that controls the output relay.

A unique AUTO TEST self-checking circuit constantly verifies the integrity of the sensor circuits. The RED LED is illuminated when the product is absent at the sensor and the system is oscillating at approximately 40kHz. If the amplitude or the frequency of the sensor circuits changes the RED LED will go out. If the change of state occurs due to a level change the relay will follow and change its state. **However, if the change of state is due to a sensor failure or some other component failure, the relay will immediately transfer to the alarm condition., This foolproof feature protects the system for loss of power, major component failure or damaged sensor conditions.** The SONAC®/110 system will fail safe for all sensor or component failures except for open sensor in the low level fail safe mode.

Specifications

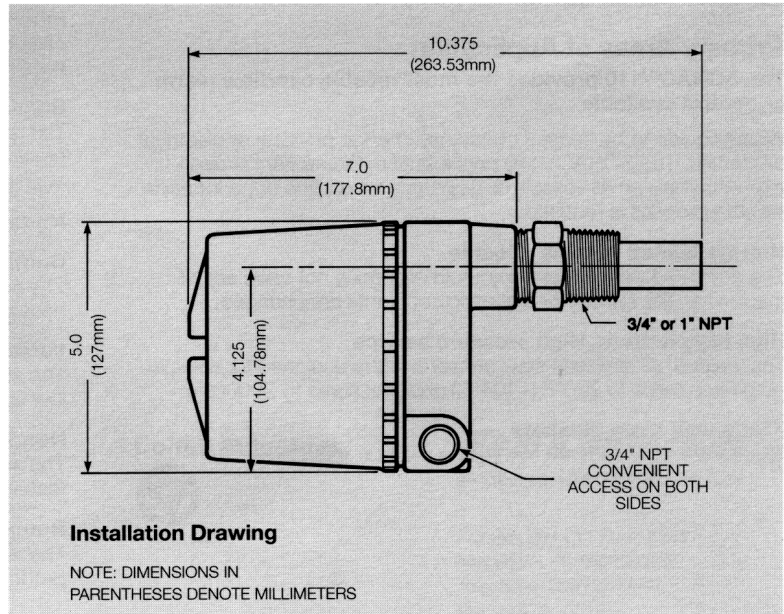
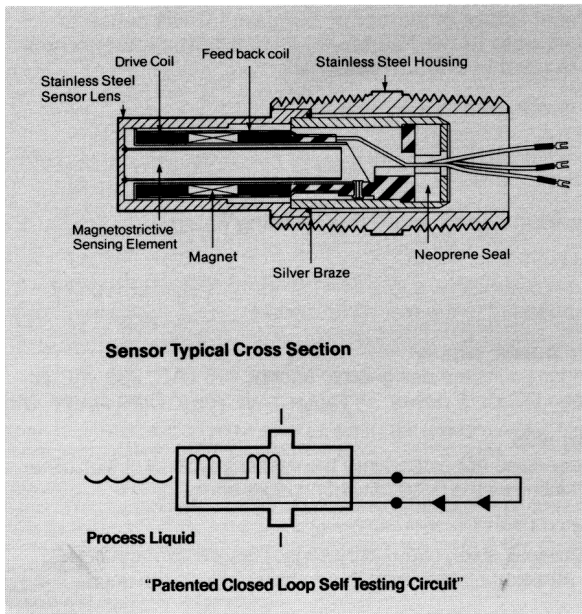
	NOMINAL	ABSOLUTE LIMITS
Input Voltage	115 VAC 230 VAC 24 VDC	90-135 VAC 180-270 VAC ±4V
Frequency, AC Power	50-60 Hz	
Delay Time Range	50 m Sec. Min. - 10 Sec. Min. Long Delay, 30 Sec. Max	
Failsafe	<ul style="list-style-type: none"> • Switch selectable - High Level or Low Level. • High Level Failsafe Position: Relay is de-energized when product is present. (wet) • Low Level Failsafe Position: Relay is de-energized when product is not present. (dry) 	
Indicators	Two light emitting diodes (LED). YELLOW - illuminated when product is energized. RED - illuminated when product is absent at sensor.	
Amplifier Temperature Rating	Ambient -40°F to +160°F	
Output	Relay, DPDT 2 Form C contacts	
Ratings	5 A at 120 VAC non-inductive 3 A at 240 VAC non-inductive 3 A at 24 VDC non-inductive	
Housing cast aluminum with fused polyester finish	Meets NEMA 4, 5, 7, 9, & 12 NEC Class I Group C, D Class II Group E, F, & G	

Liquid Level

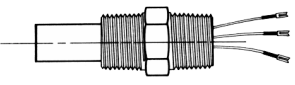
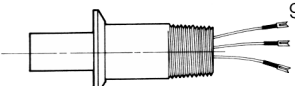
Any liquid within the temperature and pressure limitations of the sensors. All systems are factory calibrated for liquid service. Liquids that are in the process of outgassing should be avoided.

Operating temperatures sensor

See table, page 3



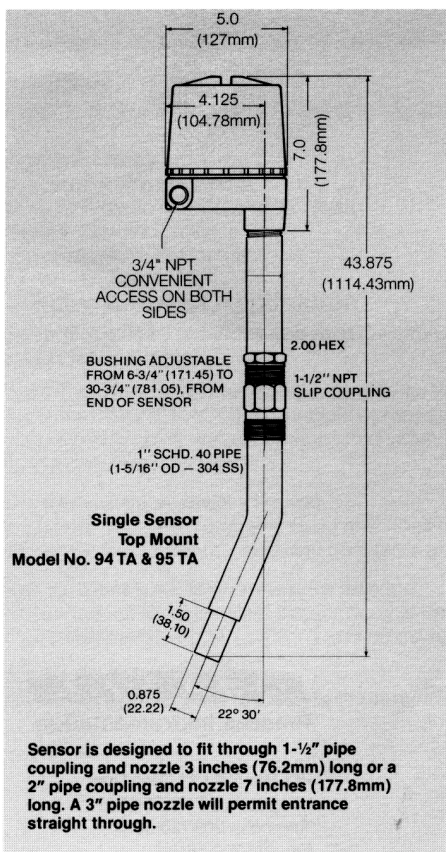
Single Sensors (Side Mounted Horizontal) Liquids

Sensor	Model No.	Type	Description
Also available in these materials or coatings: 97 - Carpenter 20 Cb ₃ 98 - Gold plated 96 - Epoxy coated 99 - Hastelloy "C" 94S - 316SS	94	General Purpose	347 Stainless Steel Temp. Range: -65°F to +220°F (-54°C to +104°C) Pressure: 2000 psi
	95	General Purpose - Sensor Sintered Teflon Coated for non-stick	347 Stainless Steel Temp. Range: -65°F to +220°F (-54°C to +104°C) Pressure: 2000 psi
	93	Sanitary - Ladish Fitting (USDA Approval for AAA Sanitary Service)	347/316 Stainless Steel Temp. Range: -65°F to +220°F (-54°C to +104°C)

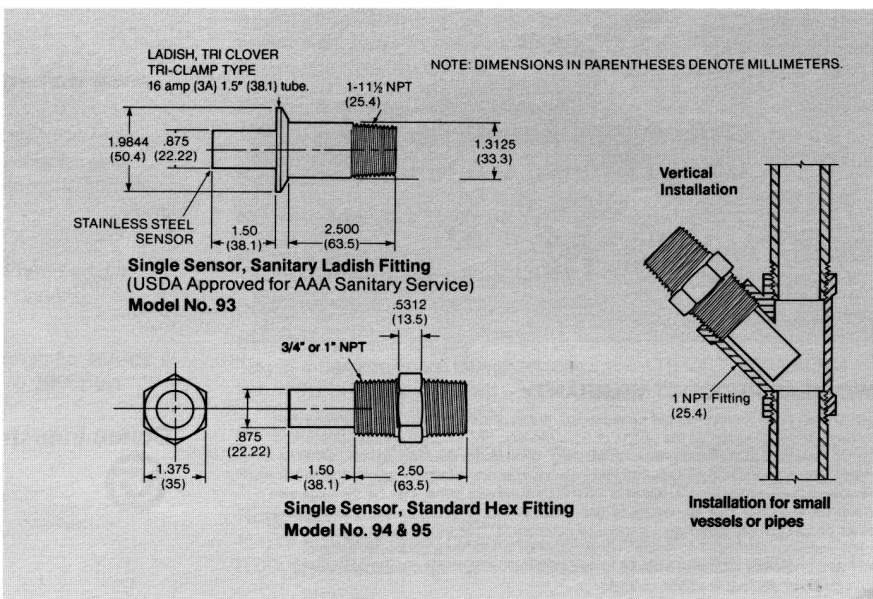
Type Analysis	C	Mn	P	S	Si	Cr	Ni	Other Elements
347 Stainless Steel	0.08%	2.00%	0.045%	0.030%	1.00%	17.00/19.00%	9.00/13.00%	Cb-Ta 10 x C min.
316 Stainless Steel	0.08%	2.00%	0.045%	0.030%	1.00%	16.00/18.00%	10.00/14.00%	

Single Sensor (Top Mounted Vertical) Liquid Service Only

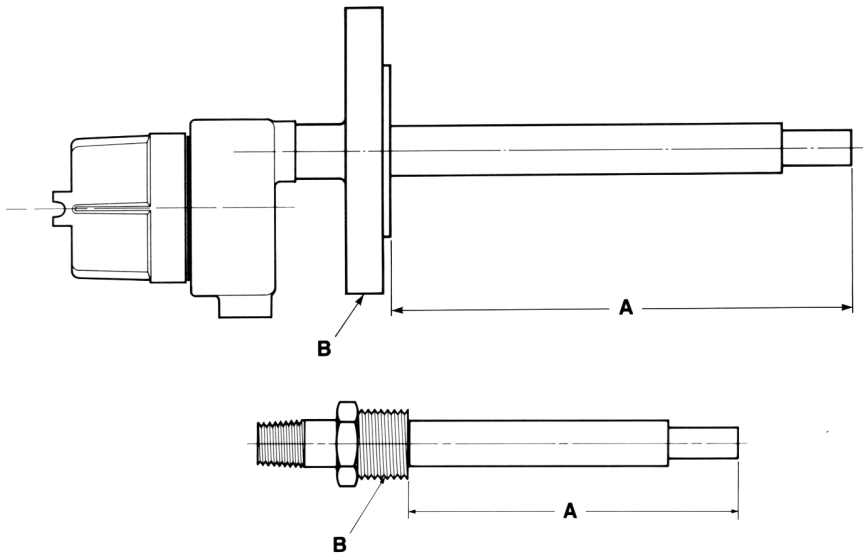
94 TA	General Purpose	347/304 Stainless Steel Field Adjustable Temp. Range: -65°F to +220°F (-54°C to +104°C) Pressure: 2000 psi
95 TA	General Purpose - Sensor Sintered Teflon Coated for non-stick	347/304 Stainless Steel Field Adjustable Temp. Range: -65°F to +220°F (-54°C to +104°C) Pressure: 2000 psi



Agency Approved



Special Options, Extended Sensors



ALWAYS IDENTIFY THESE DETAILS

Dimension "A"
Process Connection "B" Minimum size is 1 1/2 Inch
Wetted Metals, 316 SS, 304 SS, Others


LAGGING FOR TEMPERATURE

Customer Connections
SONAC®/110

GND.	NEUT	115 VAC	230 VAC	RELAY CONTACTS						LOW VOLT INPUT	+	-
				NC	C	NO	NC	C	NO			
1	2	3	4	5	6	7	8	9	10	11	12	

“Agency Approved”





Hazardous Locations
Class I Groups C and D
Class II
Groups E, F, and G
Div 1 and 2

TWO-YEAR PRODUCT WARRANTY

Delavan Inc. control products will be replaced, put in good operating condition, or the purchase price refunded, at the option of Delavan Inc., free of charges except transportation, if defective in their manufacture, labeling, packaging, or shipping, and if notice of said defect is received by Delavan Inc. within two years from the date of shipment. The cost of such replacement, repair or refund or purchase price shall be the exclusive remedy for any breach of any warranty, and Delavan Inc. shall not be liable to any person for consequential damages for injury or commercial loss resulting from any breach on any warranty. Delavan Inc. makes no warranty of fitness for a particular purpose, and makes no other warranty, express or implied, including implied warranty arising from course of dealing or usage of trade.



DELAVAN
Process Instrumentation

an L & J TECHNOLOGIES Company

5911 Butterfield Rd.
 Hillside, IL 60162
 PH: (708) 236-6000
 FAX: (708) 236-6006
 E-MAIL: sales@ljtechnologies.com