ATI-5007B

Liquid Sensing Cable

INSTRUCTIONS

Installation and Maintenance of the ATI-5007B Liquid Sensing Cable

(formerly AMC-5007)

IMPORTANT

Please read these installation and operating instructions completely and carefully before starting. Failure to do so will void warranty.

filename:
ATI.MAN.5007B

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1 - WARRANTY

The ATI-5007B Liquid Sensing Cable is warranted against defects in material and workmanship for a period of one (1) year from date of shipment. During the warranty period, *Armstrong Technologies Inc. (ATI)* will repair or replace components that prove to be defective in the opinion of ATI. ATI is not liable for auxiliary interfaced equipment, or consequential damage. This warranty shall not apply to any product, which has been modified in any way, which has been repaired by any other party other than a qualified technician or authorized ATI representative, or when such failure is due to misuse or conditions of use.

1.1 - LIABILITY

All ATI products must be installed and maintained according to instructions. Only qualified technicians should install and maintain the equipment. ATI shall have no liability arising from auxiliary interfaced equipment, for consequential damage, or the installation and operation of this equipment. ATI shall have no liability for labour or freight costs, or any other costs or charges in excess of the amount of the invoice for the products.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE THEREOF.

1.2 - MODIFICATIONS AND SUBSTITUTIONS

Due to an ongoing development program, ATI reserves the right to substitute components and change specifications at any time without incurring any obligations.

1.3 - PRODUCT RETURN

All products returned for warranty service will be by prepaid freight and they will only be accepted with an R.G.A. number issued by ATI. All products returned to the client will be freight collect.

WARNING

USING ELECTRICALLY OPERATED EQUIPMENT NEAR GASOLINE OR OTHER COMBUSTIBLE VAPOURS MAY RESULT IN FIRE OR EXPLOSION, CAUSING PERSONAL INJURY AND PROPERTY DAMAGE. CHECK TO ASSURE THE WORKING AREA IS FREE FROM SUCH HAZARDS DURING INSTALLATION OR WHEN PERFORMING MAINTENANCE, AND USE PROPER PRECAUTIONS.

2 - PRODUCT INFORMATION

NOTE: This manual must be returned to the owner or manager after installation of the sensor(s).

2.1 - LIQUID SENSING CABLE

Sensor Warranty Period ……..…….....	1 year
Operating Temperature ……...…….....	Water: 0 to +60 °C (+32 to +140 °F) Petrol: -40 to +60 °C (-40 to +140 °F)
Operating Pressure ……..…..…….....	Ambient atmospheric pressure

Note:

All *Armstrong Technologies Inc.* products must be installed and maintained according to instructions, to ensure proper operation. Only qualified technicians should install and maintain the equipment.

3 - PRODUCT DESCRIPTION

3.1 - GENERAL DESCRIPTION

The ATI-5007B Liquid Sensing Cable detects leaks of petroleum along the full length of the cable. Pliable material broadens leak detection coverage for use in and around all storage tanks, piping, sumps, dispensers, monitoring wells, etc. The petroleum sensing cable is available in standard lengths or in coiled rolls that can be cut on site to fit any length.

The ATI-5007B Liquid Sensing Cable features:

- Fast response to diesel fuel
- Pliable material to broaden leak detection coverage
- Wear resistant
- Reusable (see section 5.2.1)
- Quick recovery
- Intrinsically safe (when connected through an approved I.S. barrier, or to an ATI liquid monitor).

3.1.1 - SENSOR SPECIFICATIONS

DETECTABLE LIQUIDS	Gasoline, diesel, waste oil, and other petroleum products along full length. Water (conductive liquids) at one point. (Contact factory for more information if required)
SENSOR	Immersion type cable consisting of a fully reversible liquid hydrocarbon sensitive element
RESPONSE TIME	Gasoline — under 5 minutes Diesel — under 15 minutes (Dependant on conditions and temperature) Waste oil — depends on conditions and temperature
REPEATABILITY	Possible, even after repeated immersions
OPERATING TEMPERATURE	Water: 0 to +60 °C (+32 to +140 °F) Petroleum: -40 to +60 °C (-40 to +140 °F)
STORAGE	10 YEARS @ -40 to +60 °C (-40 to +140 °F)

3.1.2 - APPLICATIONS

APPLICATION	TYPE	MONITORING LOCATION	MONITORED PRODUCT
Underground Storage Tanks	Steel single-wall Steel/F.R.P. double-wall	Observation well	Petroleum products along full length. Water at one point.
		Containment liner	
		Sump	
	Double wall	Interstitial space	
Pump Sumps	Steel	Bottom of sump	
	F.R.P.	Bottom of sump or along side wall	
Dispenser Sumps	All	Bottom of sump, around dispenser and piping	
Aboveground Storage Tanks	Single/double wall	Below tank or around tank (Direct bury or inside perforated pipe)	
Containment Piping	Double-wall	Bottom of sump	

4 - INSTALLATION

Follow the general guidelines in this section for proper locations and installation of connection housings and sensing cables.

Although different practices can be followed, the proper method of installation and use of approved mounting hardware and sealing fittings is highly recommended to ensure sound and durable installation from sensors to monitor. (Refer to FIGURE 1)

When compressing the liquid-tight fitting, avoid over-tightening as it may damage the sensing cable. Only tighten enough to prevent cable from slipping.

To comply with local municipal, provincial, or federal electrical regulations and for safety reasons, ALL cables must pass through conduit seals installed between the hazardous and non-hazardous areas.

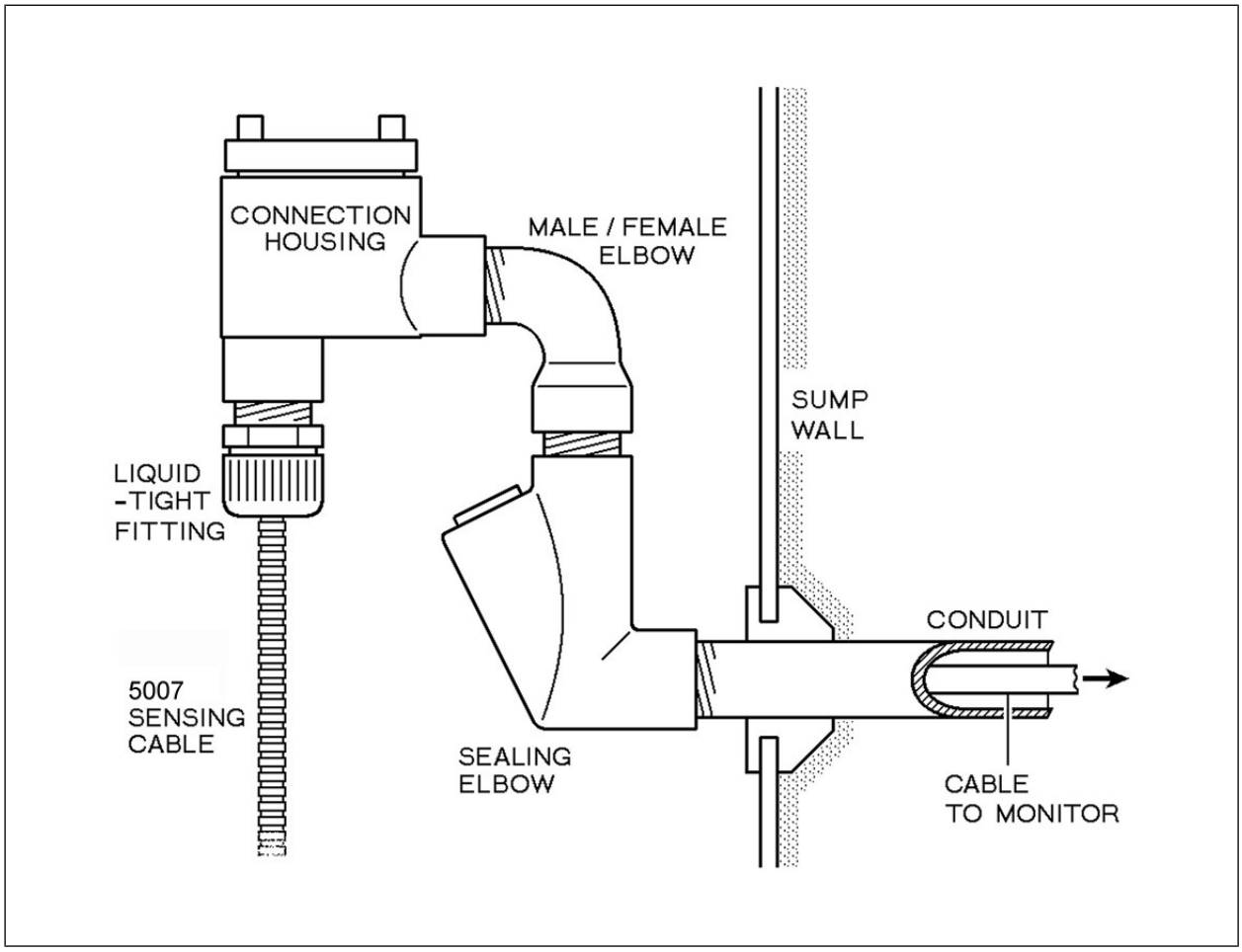

FIGURE 1: Typical conduit wiring housing installation.

4.1 - DISPENSER & PUMP SUMPS

For best overall coverage, the cable should be laid along the walls at the bottom of the spill collection area of the sumps (see installation layouts in Figure 2).

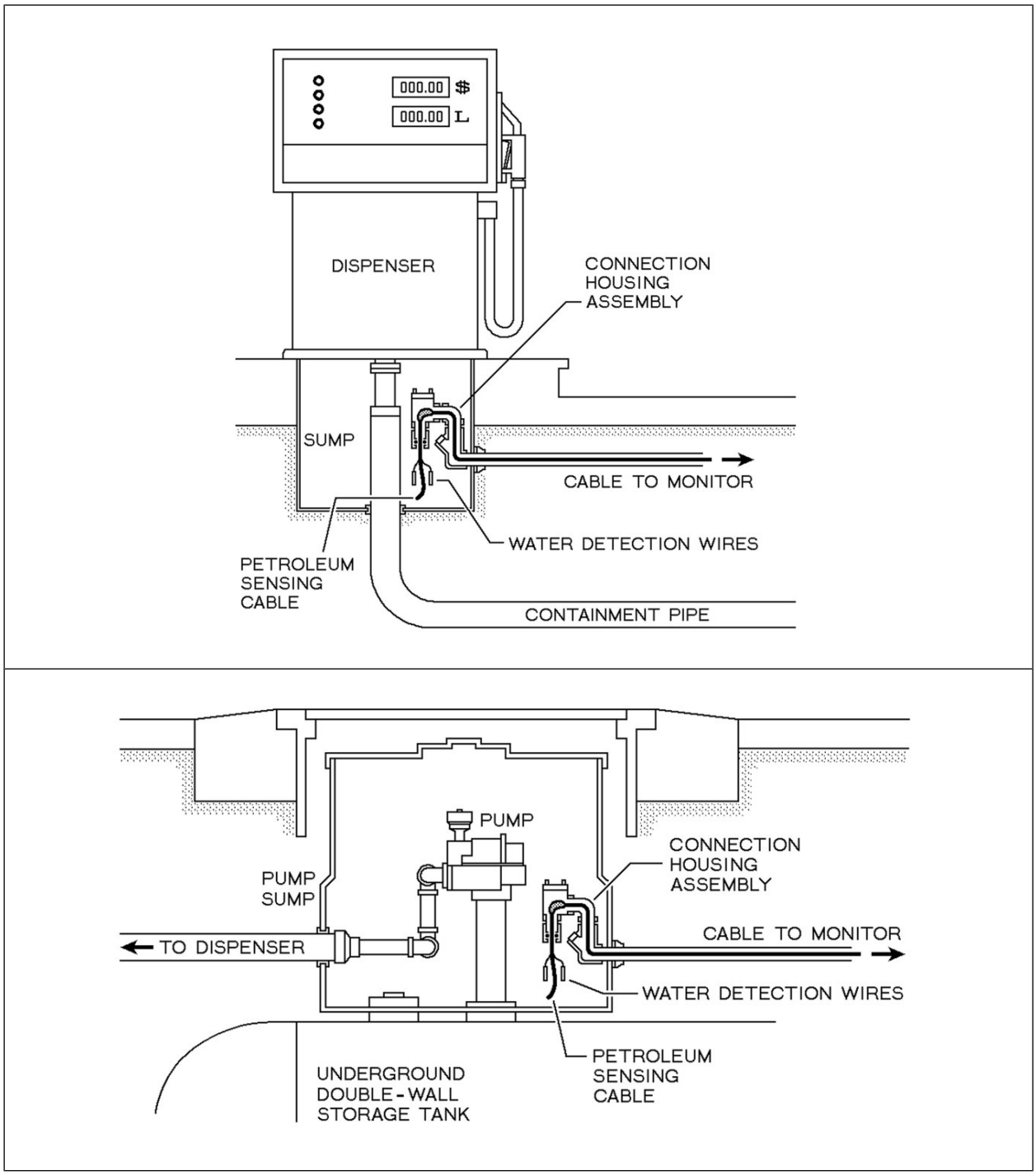

FIGURE 2: Sensing cable installation in dispenser and pump sumps.

4.2 - CONTAINMENT PIPING

When the application requires the running of a petroleum sensing cable within a secondary containment pipe, refer to the following drawing.

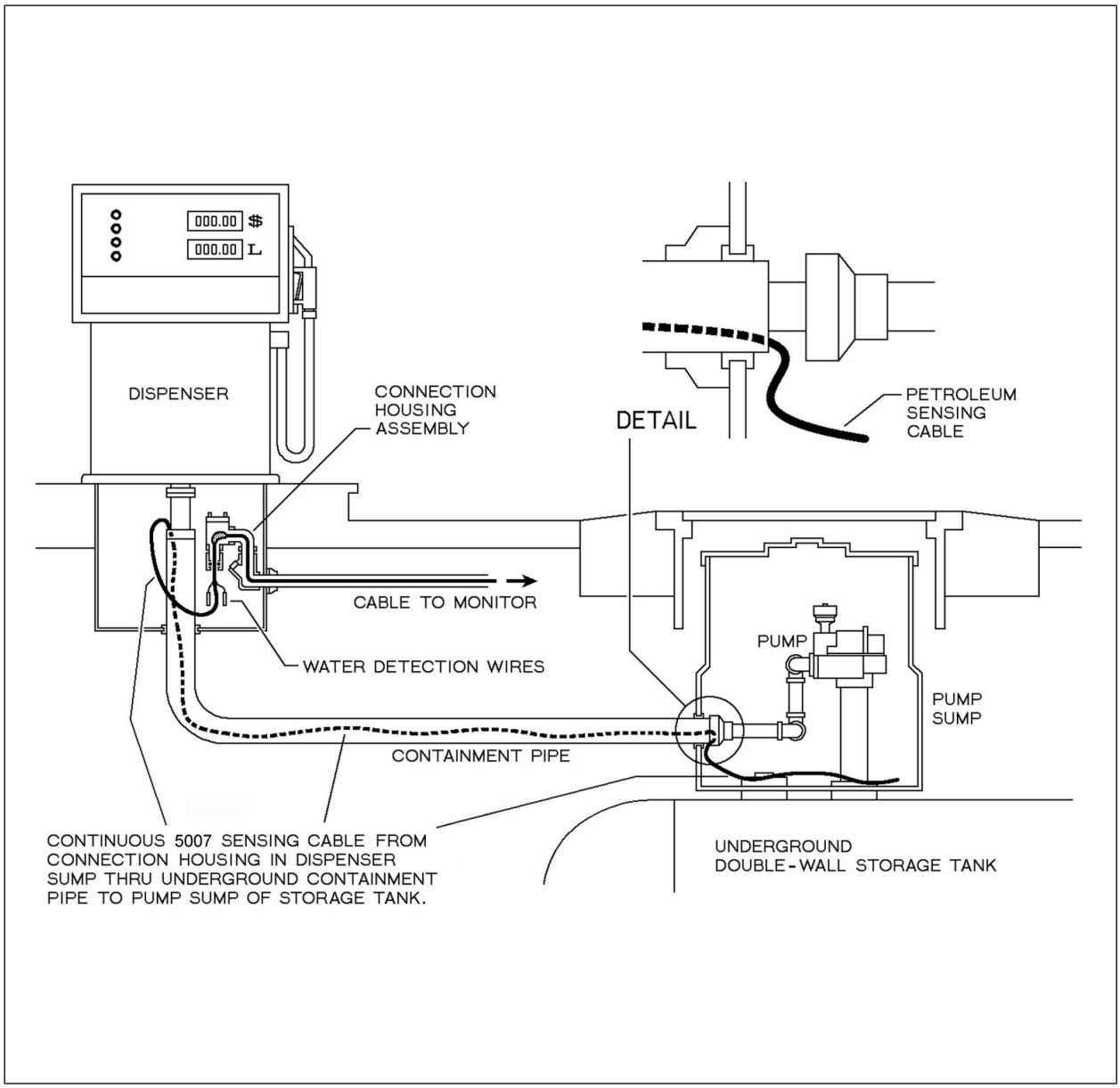

FIGURE 3: Sensing cable installed in containment pipe.

4.3 - OBSERVATION WELLS

Refer to Figure 4 (at right) for following installation instructions.

One factor when installing a sensing cable in an observation well is water. Although the cable is impervious to water, verify that the end of the sensing cable is properly sealed (Refer to section 4.3.3 STEP 2, in Assembly Procedure, section 4.3).

A light weight (approximately 3 to 5 grams) can be attached to the end of the sensing cable to ensure that the cable end reaches the bottom of the well and is held there by the weight..

Drop in an extra foot of wire so that it will coil at the bottom of the well to provide maximum detection.

MAKE SURE THE WEIGHT IS MADE OF A MATERIAL THAT WILL NOT CORRODE OR DECOMPOSE IN WATER OR LIQUID.

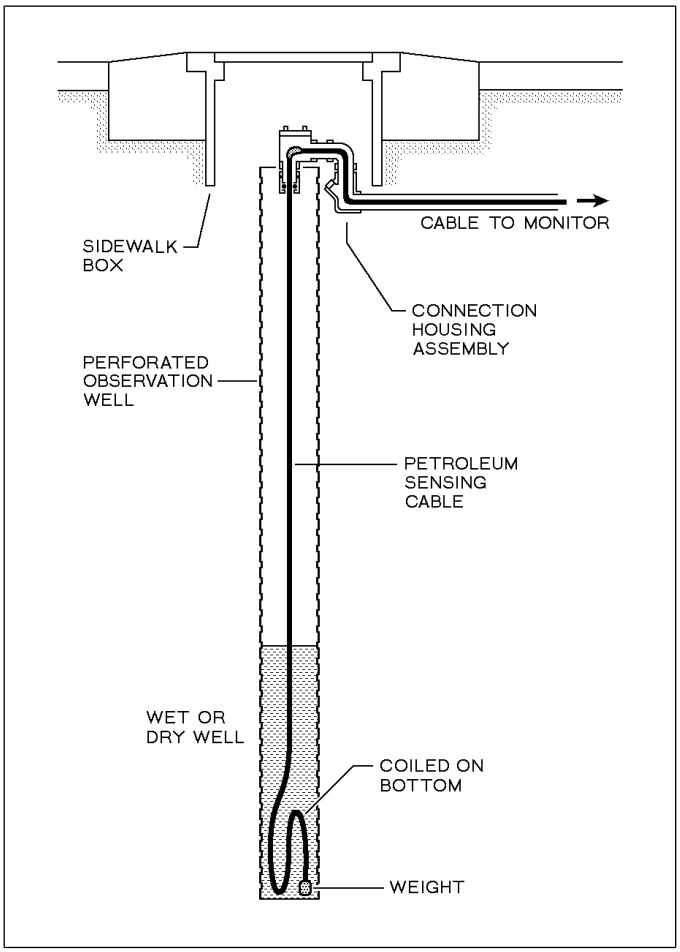

FIGURE 4: Cable in observation well.

4.4 - STORAGE TANKS

4.4.1 - DOUBLE-WALL TANKS

Refer to Figure 5 (next page) for this application.

For the most reliable detection of petroleum within the interstitial space of a storage tank, the ATI-5007B sensing cable should be pulled down so that the end is a minimum of 1-foot from the bottom center of the tank.

When using a fish wire to pull the sensing cable through the annular space, ensure that the cable is not overly stretched as this may tear the outer semi-conductor covering or damage the ends of the petroleum sensing cable.

4.4.2 - SINGLE-WALL TANKS

Please consult local regulations pertaining to this type of installation.

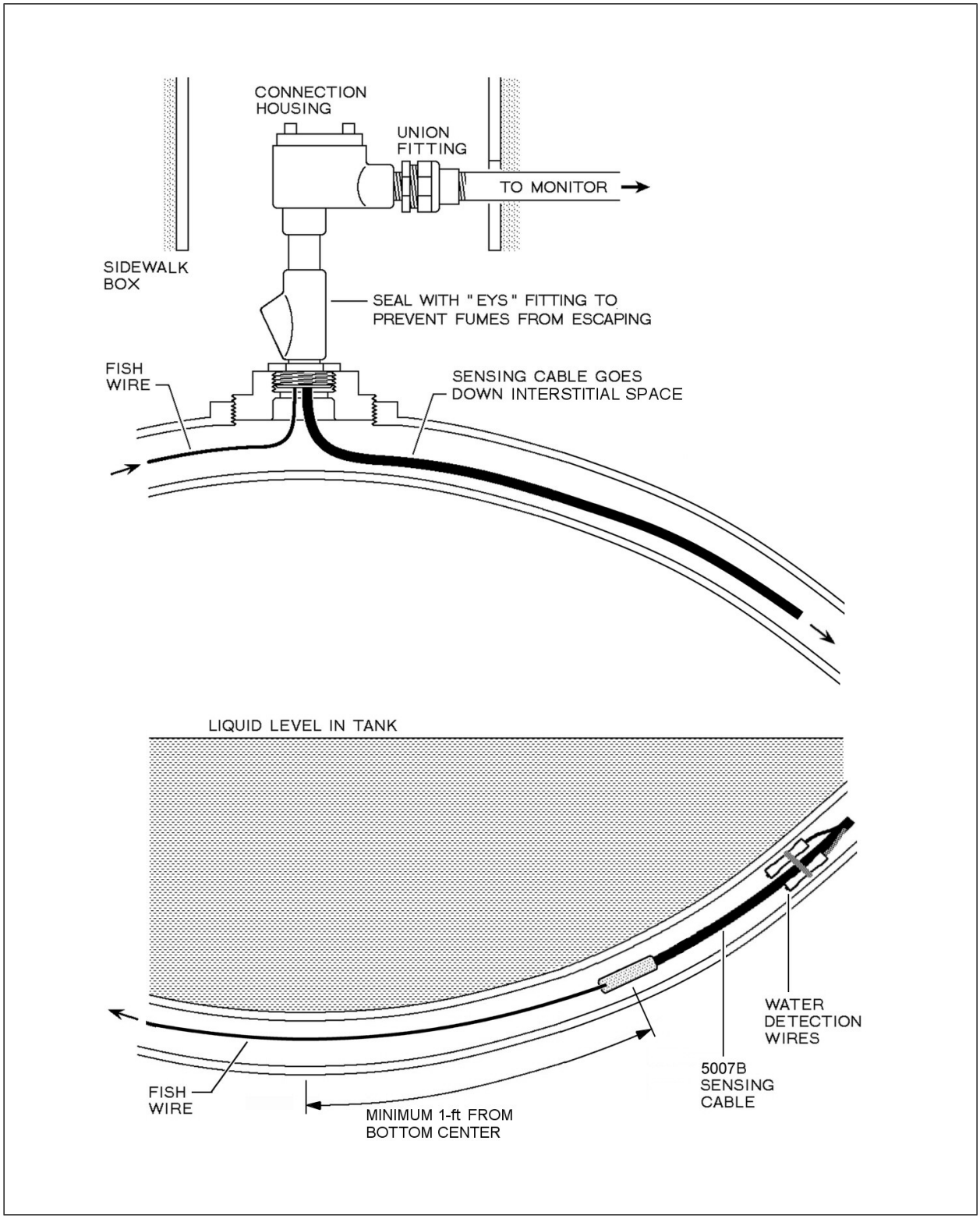

FIGURE 5: Cable installed in interstitial space of tank.

5 - PREVENTIVE MAINTENANCE

5.1 - SENSOR VERIFICATION

When verifying the Liquid Sensing Cable, connect a digital multimeter (set for resistance) to each pair of wires (BLACK/RED and GREEN/WHITE). The resistance for the BLACK & RED wire pair should read as an open circuit and is used for water detection. The GREEN and WHITE wire pair should read as a low resistance of less than 4 Meg ohms and is used for petroleum sensing.

MEASURE THE RESISTANCE OF EACH SENSING CABLE UPON RECEIPT TO VERIFY ITS INTEGRITY BEFORE INSTALLATION, THEN REPEAT THIS PROCEDURE AFTER INSTALLATION.

5.2 - TROUBLESHOOTING

If any unusual multimeter readings are obtained (other than those described in the Sensor Verification section), some wires may be shorted or the sensor may have been damaged during installation. **Remember to use caution when installing each ATI-5007B petroleum sensing cable to prevent damage.**

When verifying each sensor with a digital multimeter, make sure the readings obtained agree with the following sensor data.

5.2.1 - LIQUID SENSOR DATA

	PETROLEUM SENSING CABLE	WATER DETECTION WIRES
Normal:	Circuit closed (N/C) Low resistance < 4 Meg	Circuit open (N/O)
Alarm ON:	Circuit open (N/O) High resistance > 18 Meg	Circuit closed (N/C) Low resistance < 1 Meg

If any sensors in sumps show frequent alarm conditions, check the bottom of the sumps for contaminants. When minor contaminants are continually present, the sensing cable should be mounted 1 to 2 inches above the normal level of contaminant.

Sensor cable left contaminated or submerged in gasoline after the initial alarm will take longer to recover. In oil products or byproducts (i.e.: diesel), the sensor cable should be washed in a mild detergent and dried to aid in the recovery.

No guarantee is implied regarding recovery in various oil products.