ATI-5016A

Petroleum Sensing Cable

INSTRUCTIONS

Installation and Maintenance of the ATI-5016A Petroleum Sensing Cable

IMPORTANT

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

filename:
ATI.MAN.5016A

Revised: 11/17/2011

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1 - WARRANTY

The ATI-5016A Petroleum 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 - PETROLEUM SENSING CABLE

Sensor Warranty Period ……..…….	1 year
Operating Temperature ……...…….....	-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-5016A Petroleum 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-5016A Petroleum Sensing Cable also features:

- Pliable material to broaden leak detection coverage
- 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 (Contact factory for more information if required)
SENSOR	Immersion type cable consisting of a fully reversible liquid hydrocarbon sensitive element
RESPONSE TIME	Gasoline — under 3 minutes Diesel — under 10 minutes (Dependent on conditions and temperature) Waste oil — depends on conditions and temperature
REPEATABILITY	Possible, even after repeated immersions
OPERATING TEMPERATURE	Petroleum: -40 to +60 °C (-40 to +140 °F)
STORAGE	10 YEARS @ -65 to +60 °C (–85 to +140 °F)

3.2 - APPLICATIONS

APPLICATION	TYPE	MONITORING LOCATION	MONITORED PRODUCT
Underground Storage Tanks	Steel single-wall Steel/F.R.P. double-wall	Observation well	Petroleum products
		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	
Above-ground 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

4.1 - LOCATION AND MOUNTING

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.

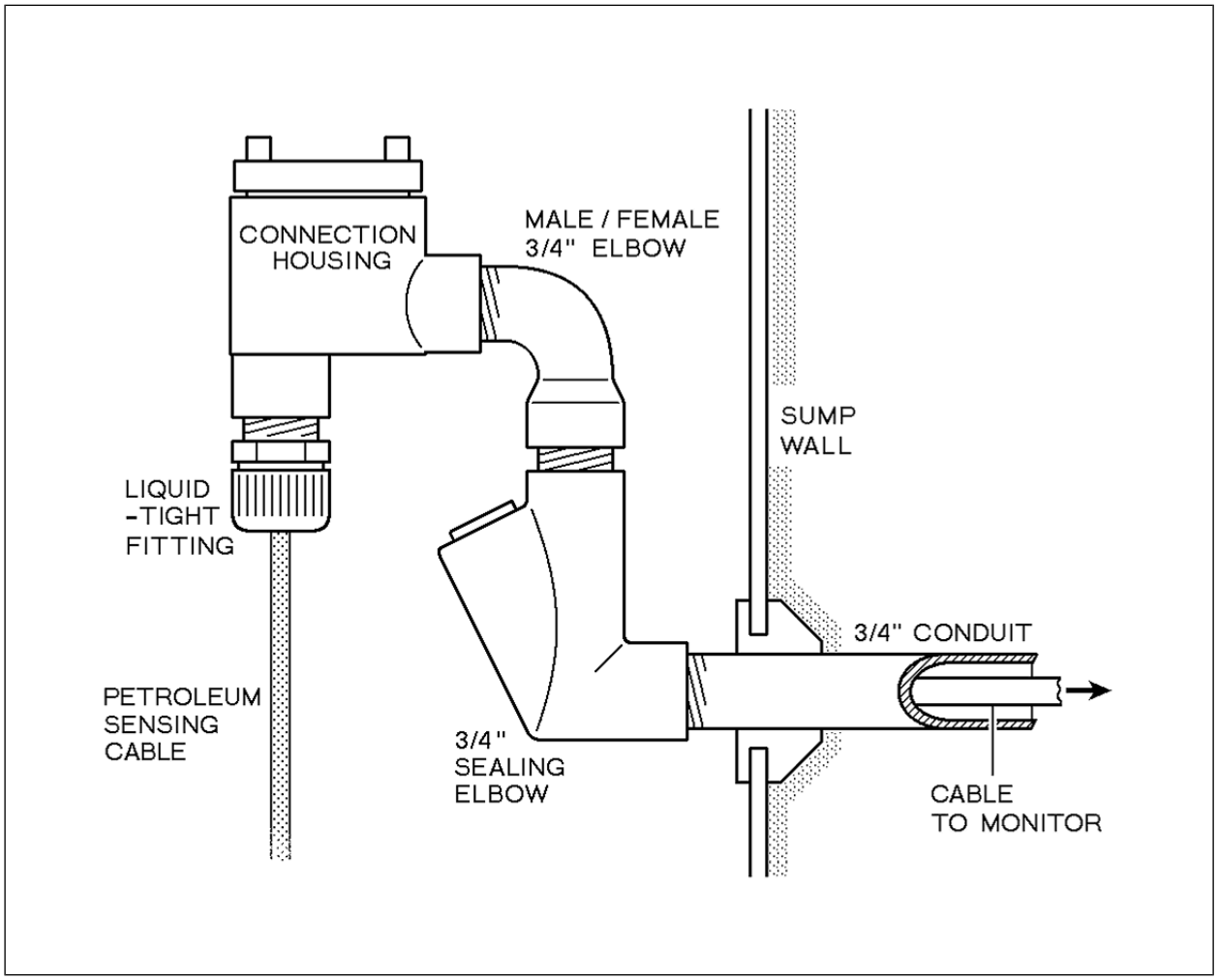

FIGURE 1: Typical conduit wiring housing installation.

4.2 - 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).

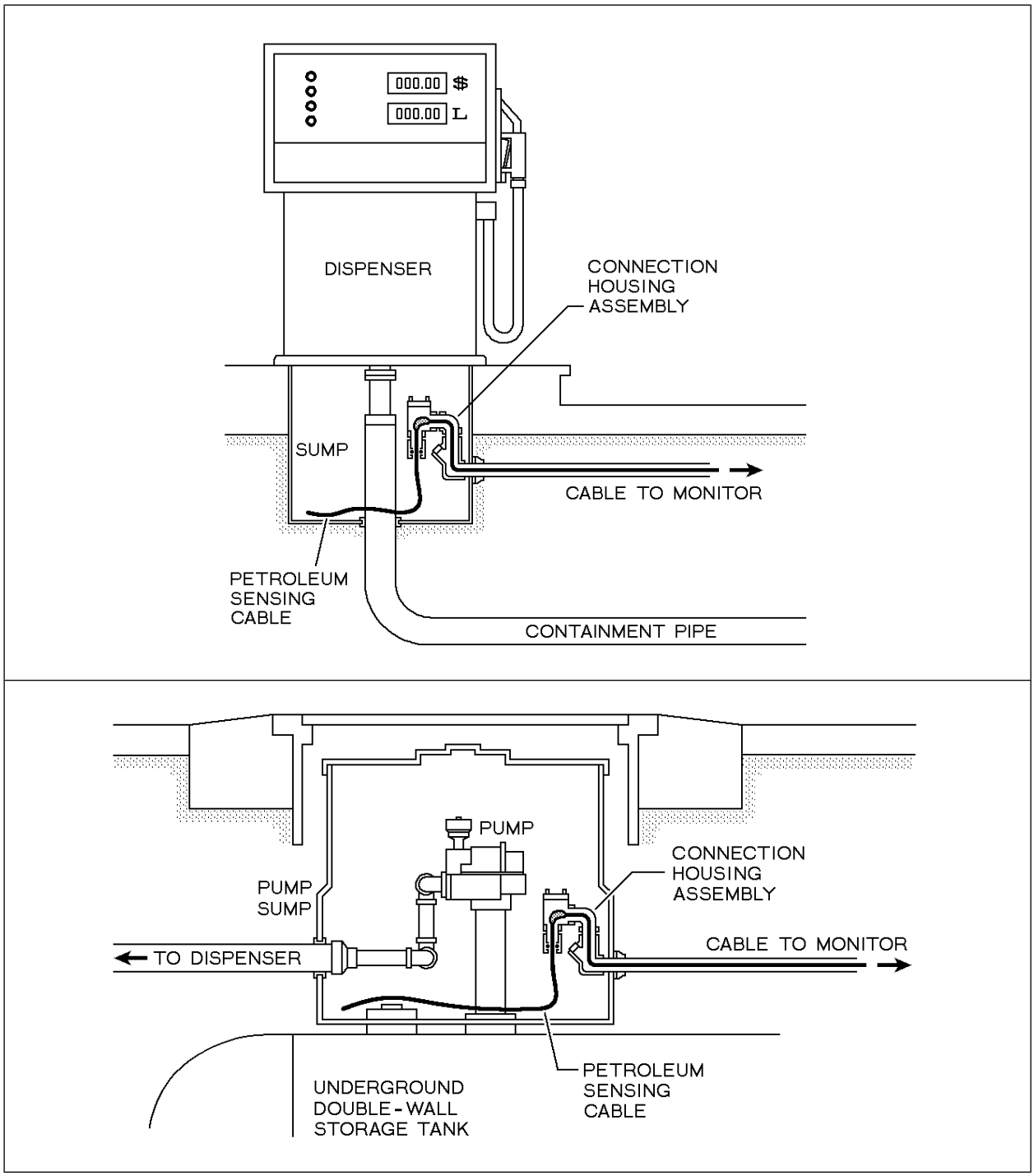

FIGURE 2: Sensing cable installation in dispenser and pump sumps.

4.3 - CONTAINMENT PIPING

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

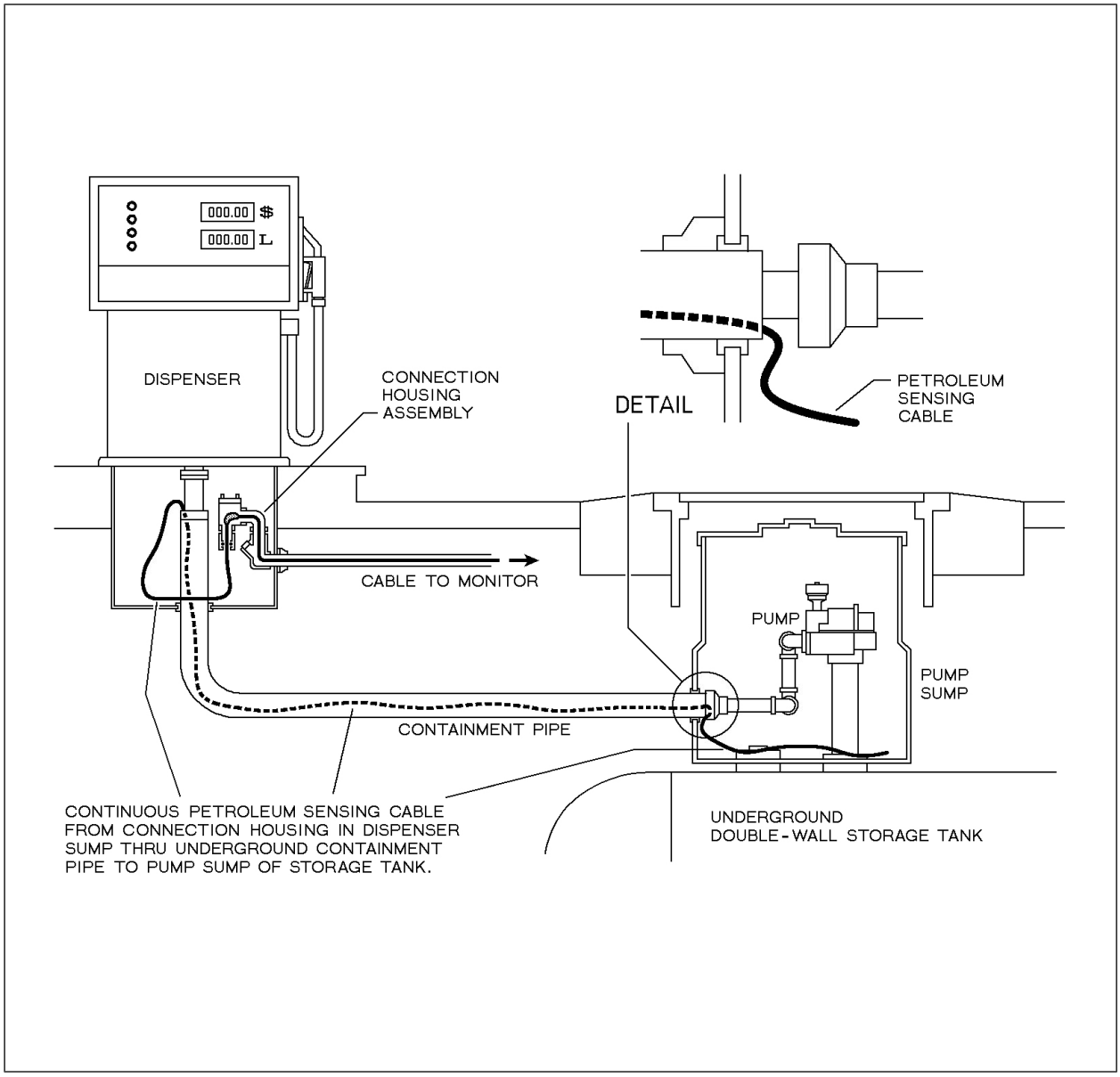

FIGURE 3: Cable installed in containment pipe.

4.4 - OBSERVATION WELLS

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

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 PETROLEUM.

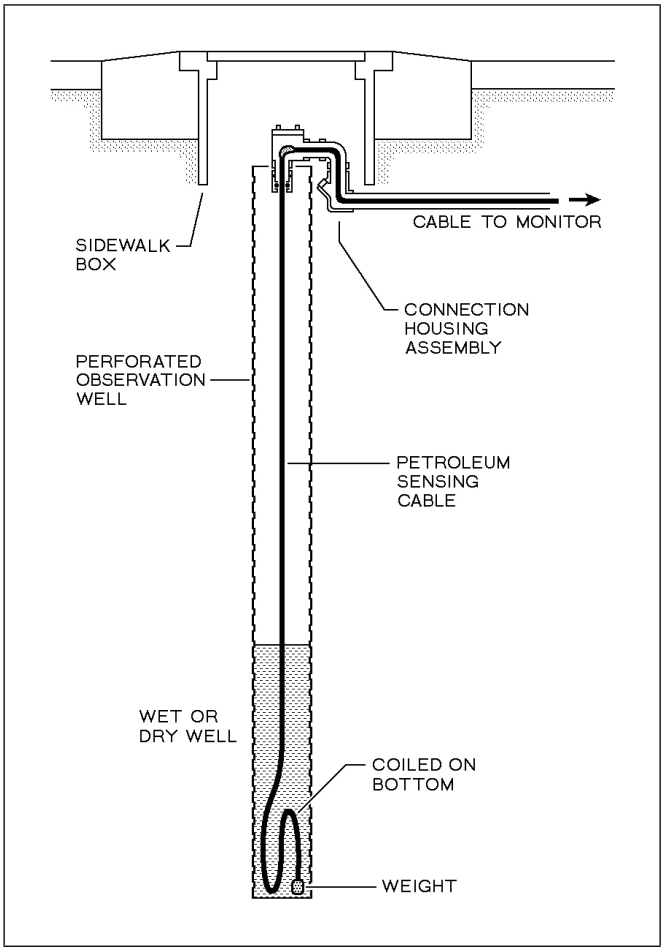

FIGURE 4: Cable in observation well.

4.5 - STORAGE TANKS

4.5.1 - 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-5016A sensing cable should extend to the lowest part 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.

4.5.2 - SINGLE-WALL TANKS

Please consult local regulations pertaining to this type of installation.

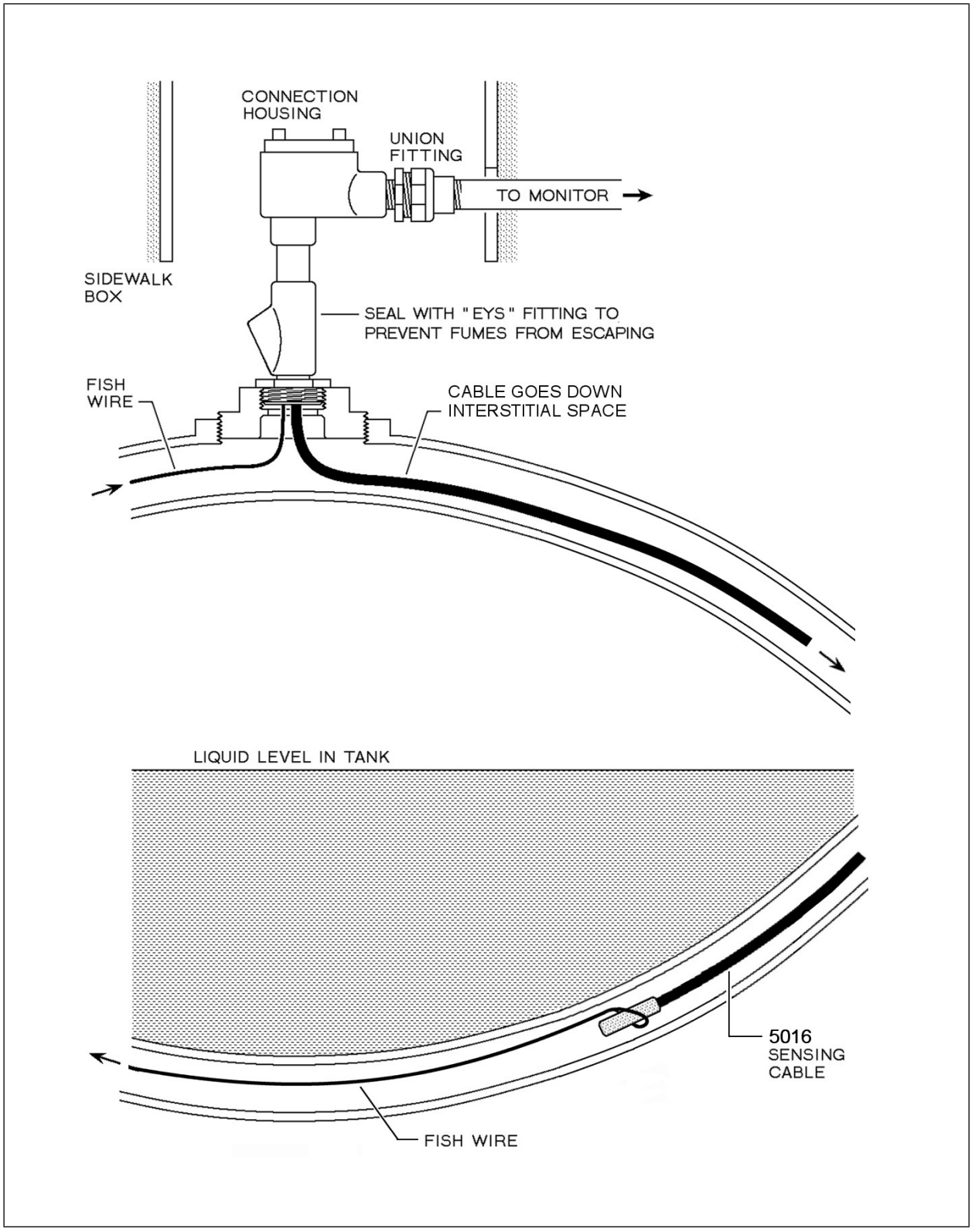

FIGURE 5: Cable installed in interstitial space of tank.

4.6 - WIRING TO MONITORS

CAUTION

All cable entry must be through the bottom of the monitor enclosure only. Other entry locations will allow foreign materials to enter the enclosure, possibly causing damage to the internal components.

Mount the sensors in the desired locations for the detection of petroleum.

Each sensor should be on a separate cable but more than one cable can be run through the same conduit. The cabling of the petroleum sensors must be installed through conduit sealing fittings and conduit.

On the liquid circuit, each ATI-5016A sensor connects to the terminals of one zone (channel). A water (or Normally Open) sensor and a petroleum sensor **MUST NOT** be connected to the same terminals, as shown in FIGURE 6. For more details on liquid sensor wiring and programming, please refer to the instruction manuals for the monitors used.

5 - PREVENTIVE MAINTENANCE

5.1 - SENSOR VERIFICATION & TESTING

When verifying the petroleum sensing cable, connect a digital multimeter (set for resistance) to the BLACK and RED wires.

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

5.1.1 - SENSOR TESTING PROCEDURE

Connect a multimeter to the BLACK and RED wires and apply LIGHTER FLUID on a small section of the cable. **Do NOT immerse the entire cable.** Resistance should quickly increase until it becomes an open circuit. Allow the lighter fluid to evaporate and resistance to return to normal before installing the sensor.

CAUTION: The sections of sensing cable on either side of the testing point should NOT touch each other. The testing surface must be non-conductive.

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-5016 petroleum sensing cable to prevent damage.**

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

5.2.1 - PETROLEUM SENSOR DATA

Status:	Normal	Alarm ON
Circuit:	Normally Closed (N/C)	Circuit open
Resistance:	Low resistance < 4 Meg	High resistance > 18 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.