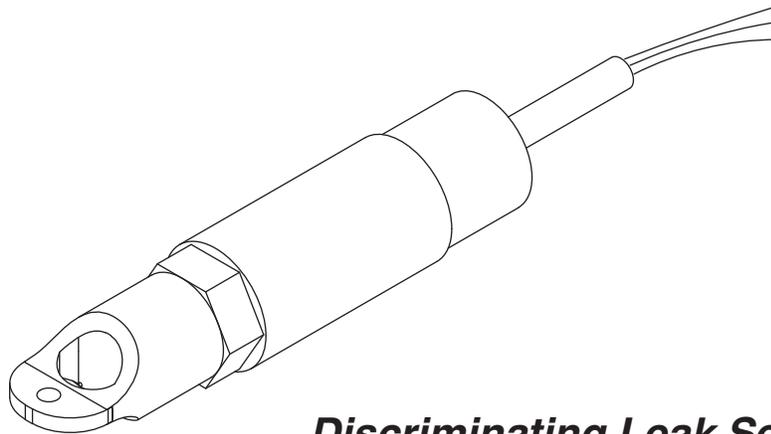


ES825-200F/XF Leak Sensors Installation Instructions

Sensor Model

- ES825-200F
 ES825-200XF (Extended Temperature)



***Discriminating Leak Sensor
w/Supervised Wiring and
Fault Detection, 24 VDC***

**For use with the
following consoles:**

LC2000	TMS2000
TMS3000	TMS4000/4000M
<p>NOTE: ES825-200 SERIES SENSORS ARE NOT COMPATIBLE WITH Wireless DATA ACQUISITION MODULE (WiDAM) USED IN CONJUNCTION WITH WIRELESS CONSOLES. REFER TO THE ES825-400 SERIES.</p>	

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 WEBSITE: www.pneumercator.com
 PNEUMERCATOR TECHNICAL SUPPORT
 1 (800) 209-7858

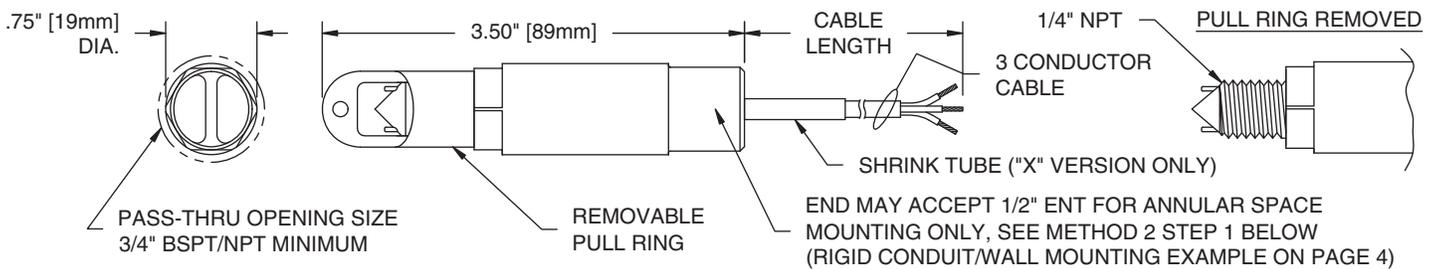
PRODUCT DESCRIPTION: Model ES825-200F is a solid-state, electronic, product distinguishing leak sensor utilizing both electro-optical and conductivity technologies to detect and differentiate between hydrocarbon-based liquids and water in secondary containment applications. The "X" version includes all the features of the standard ES825-200F, with operation over an extended temperature range. The sensors contain no moving parts, are unaffected by vapors, and due to their compact size are ideal for interstitial spaces. When connected with a LC2000 or TMS series controller, they support Pneumercator's FAULT-DETECT supervised wiring technology, which automatically detects sensor or field wiring faults.

APPLICATIONS: Sensors can be installed for leak detection in containment, manway and piping sumps, dry annular space in double-wall tanks, dispenser pans or turbine enclosures.

SPECIFICATIONS:

MODEL NO.	WETTED MATERIALS	OPERATING TEMP.	CABLE	TECHNOLOGY
ES825-200F *	POLYSULFONE, POLYPROPYLENE, 316 SS, PVC, EPOXY	-4°F TO +176°F (-20°C TO +80°C)	22 AWG, 3-CONDUCTOR, PVC JACKET, 25' [7.6m] LONG	ELECTRO-OPTIC & CONDUCTIVITY, NO MOVING PARTS
ES825-200XF *	POLYSULFONE, POLYPROPYLENE, 316 SS, FEP (TEFLON®) & EPOXY	-40°F TO +176°F (-40°C TO +80°C)	22 AWG, 3-CONDUCTOR, FEP (TEFLON®), 20' [6.1m] LONG	

* Approved for UL Class I, Div 1, Groups C and D hazardous locations when used in conjunction with the TMS series controllers.



INSTALLATION: Sensor may be suspended by its cable, placed on the containment or sump floor, or thru-wall mounted via a 1/4" FNPT opening. Two methods are available when installing in a dry annular space. The first uses a fish tape and pull string, the second uses a section of 1/2" ENT Flex Conduit attached to the sensor. Pneumercator recommends that sensor should be installed in an area where there is MINIMAL exposure to ambient light.

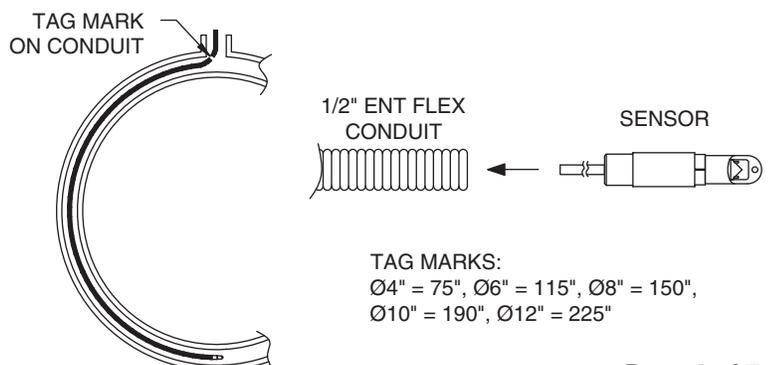
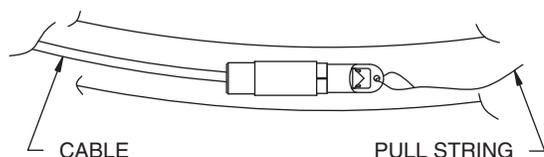
ANNULAR (INTERSTITIAL) SPACE MOUNTING EXAMPLE

METHOD 1

1. If tank has an existing pull string, skip steps 2 & 5.
2. Insert Fish Tape through annular space.
3. Attach Pull String to sensor.
4. Tag pull string and cable each 16 feet (for tank diameter up to 10 feet) from sensor.
5. Attach fish tape to pull string.
6. Pull sensor through annulus.
7. Match tag mark on cable and pull string.
8. Sensor now positioned on the bottom centerline of tank.

METHOD 2

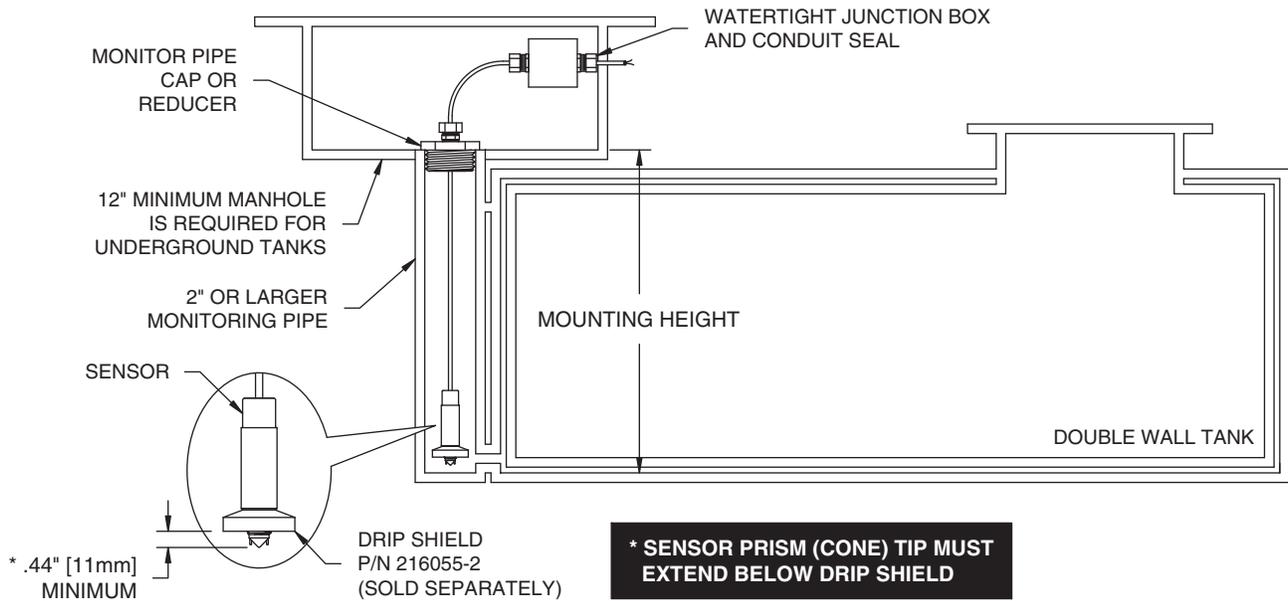
1. Pull sensor cable through Flex Conduit. If flex conduit does not expand over sensor's back end as required, add 1-3 slits. Insert back end and apply electrical tape or equivalent.
2. Tag conduit at the distance for your tank dia.
3. Feed sensor through annulus.
4. Stop when tag mark is at the top of annulus.
5. Sensor now positioned on the bottom centerline of tank.



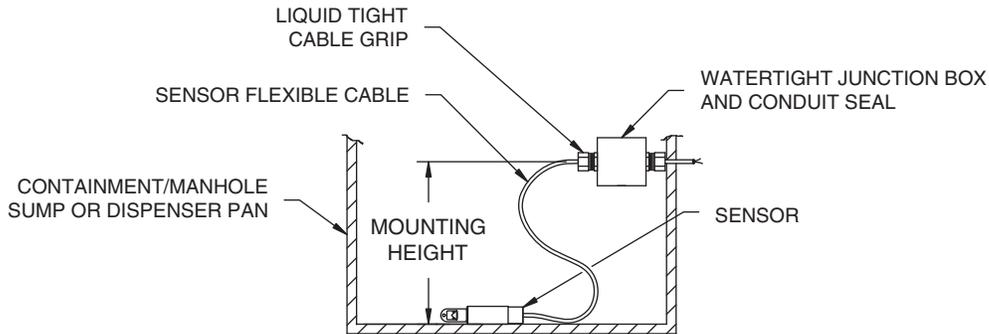
TAG MARKS:
 Ø4" = 75", Ø6" = 115", Ø8" = 150",
 Ø10" = 190", Ø12" = 225"

INSTALLATION CONT'D:

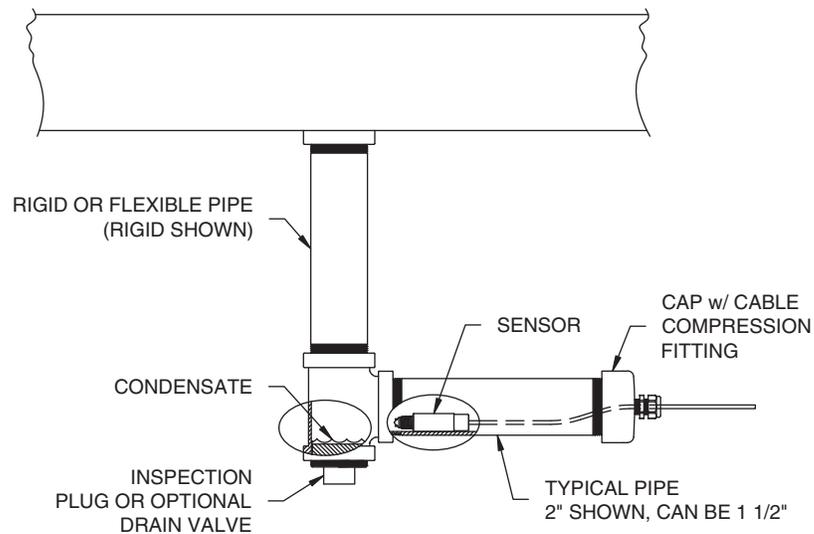
MONITOR PIPE/VERTICAL MOUNTING EXAMPLE



SUMP/DISPENSER PAN/HORIZONTAL MOUNTING EXAMPLE



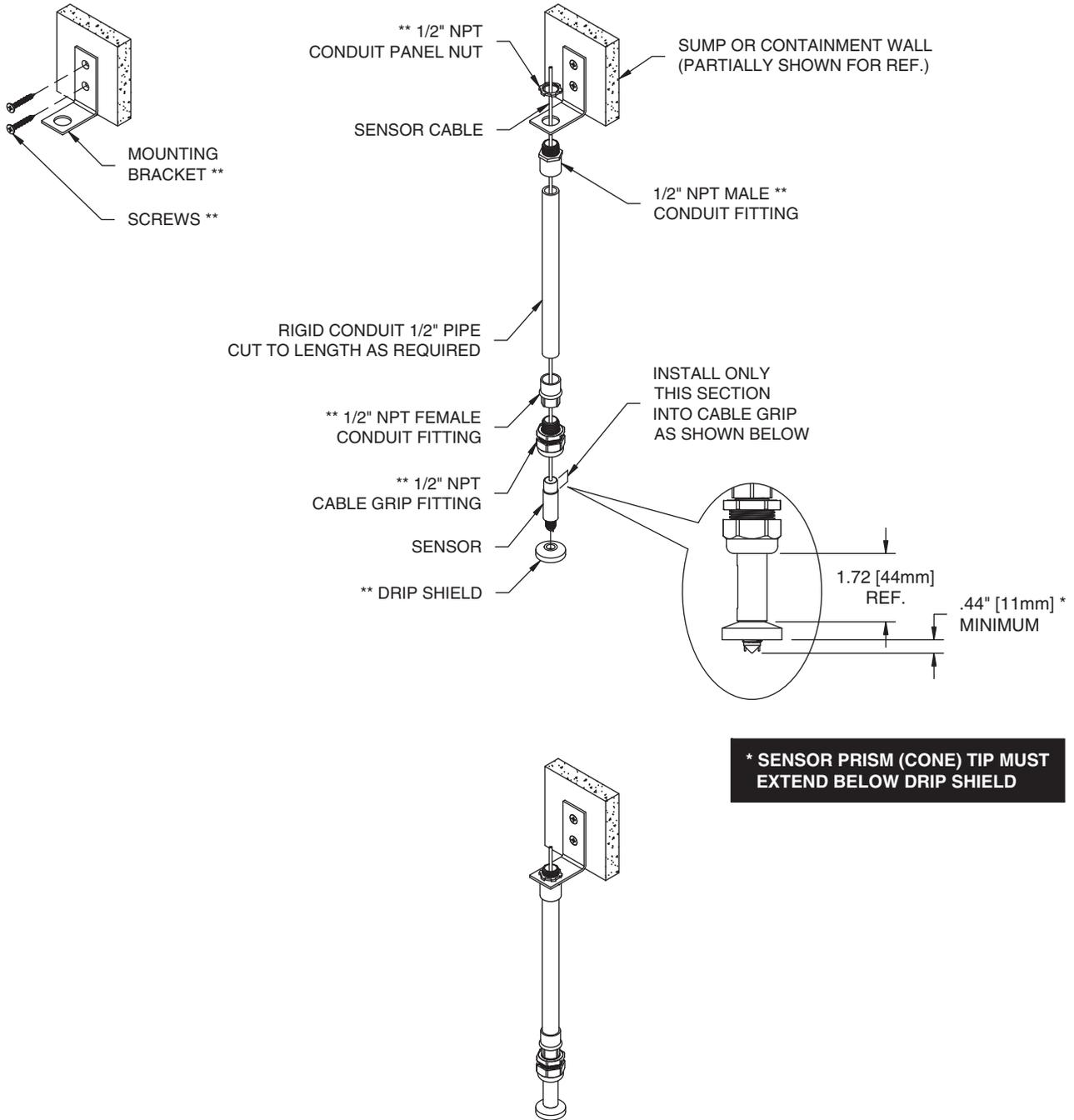
PIPING SUMP/HORIZONTAL MOUNTING EXAMPLE



INSTALLATION CONT'D:

RIGID CONDUIT/WALL/VERTICAL MOUNTING EXAMPLE

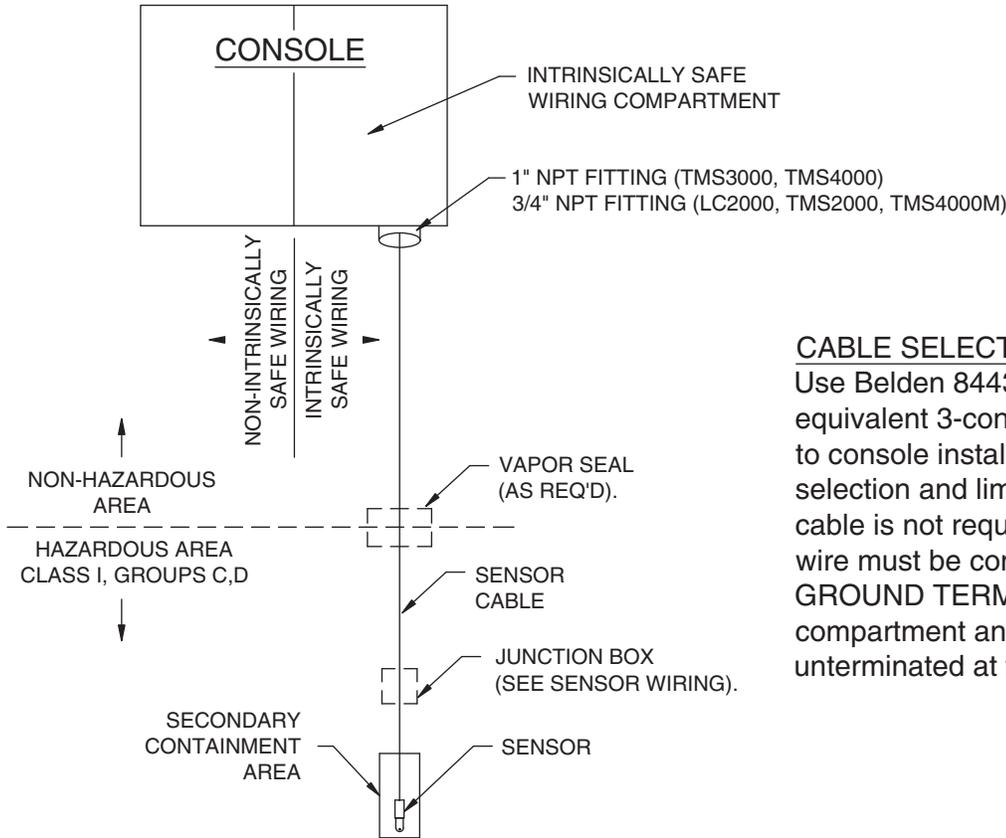
KIT P/N 10736-2 (SOLD SEPARATELY; ITEMS DENOTED BY **)



WIRING:

⚠ WARNING

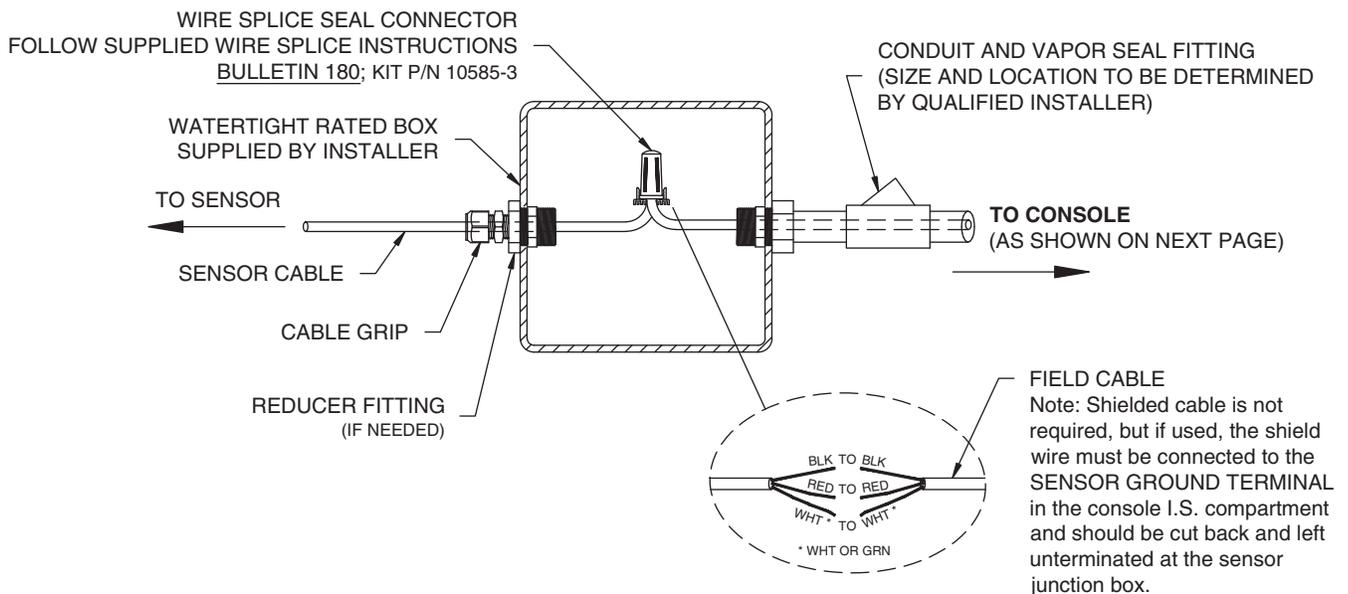
Refer to console installation manual for WARNINGS and CAUTIONS before proceeding. FAILURE TO COMPLY MAY RESULT IN PERSONAL INJURY, PROPERTY LOSS AND EQUIPMENT DAMAGE.



CABLE SELECTION:

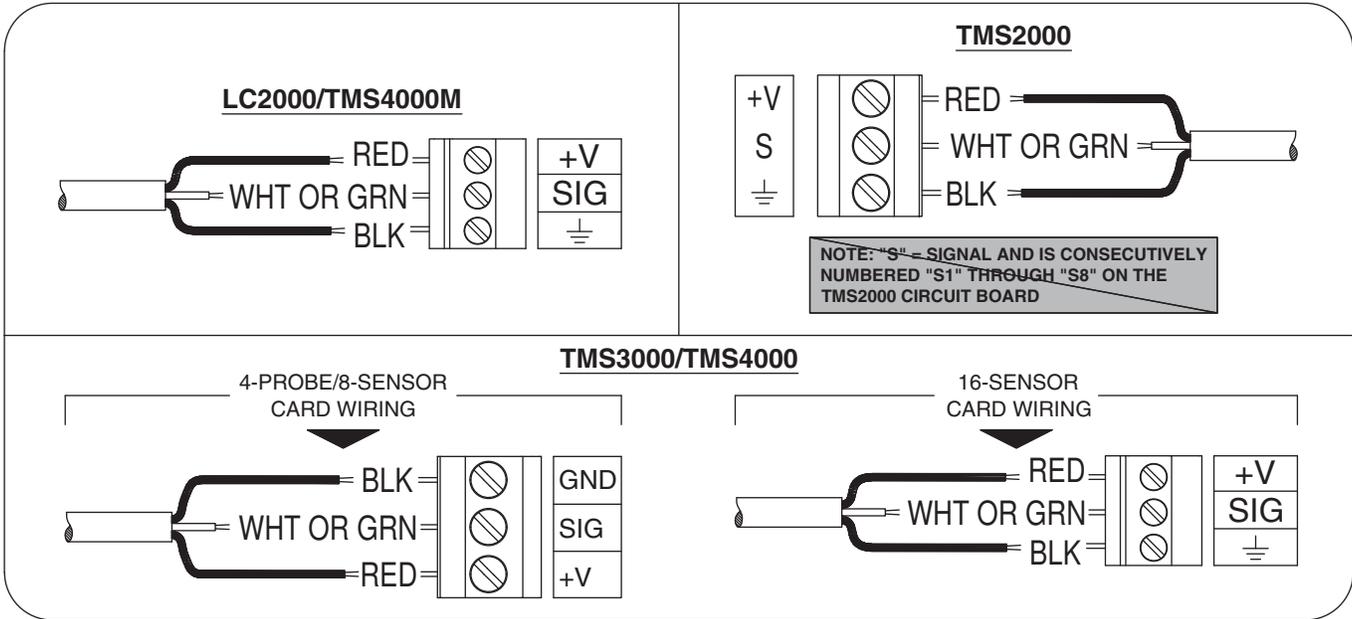
Use Belden 8443, or Alpha 1173C or any equivalent 3-conductor, 22 AWG cable, refer to console installation manual for more cable selection and limitation information. Shielded cable is not required, but if used, the shield wire must be connected to the SENSOR GROUND TERMINAL in the console I.S. compartment and should be cut back and left unterminated at the sensor junction box.

TYPICAL WIRING FOR SENSOR



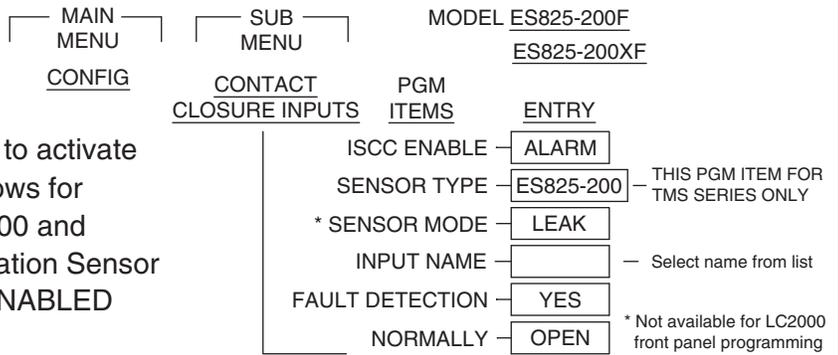
WIRING CONT'D:

Unless otherwise specified, 24 AWG/0.2 MM² MIN.
18 AWG/1.0 MM² MAX.



LC2000/TMSCOMM SOFTWARE

PROGRAMMING: Configure the console to activate the installed sensor(s). Programming is as follows for Models LC2000, TMS2000, TMS3000, TMS4000 and TMS4000M. In addition, the LC2000 Discrimination Sensor Enables Dip Switches (see below) **MUST** be **ENABLED** where applicable.



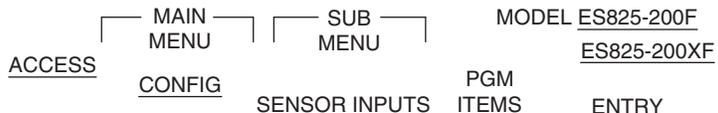
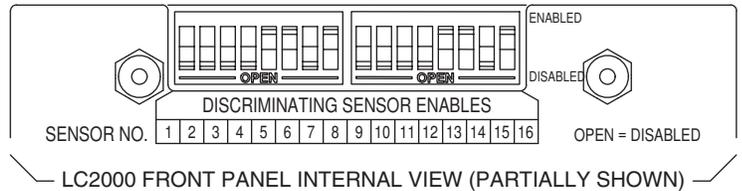
LC2000 FRONT PANEL PROGRAMMING: Configure the LC2000 to activate the installed sensor(s). In addition, the Discrimination Sensor Enables Dip Switches **MUST** be **ENABLED** where applicable. Sensor Mode can only be changed on the LC2000 using TMSComm.

PROGRAM Mode LED Indicators	
SENSOR	OFF = DISABLED, ON (2 Fast Blinks) = ALARM, ON (3 Slow Blinks) = RELAY
NO/NC	OFF = NC, ON = NO
FAULT DETECT	OFF = DISABLED, ON = ENABLED

MODEL ES825-200F
ES825-200XF

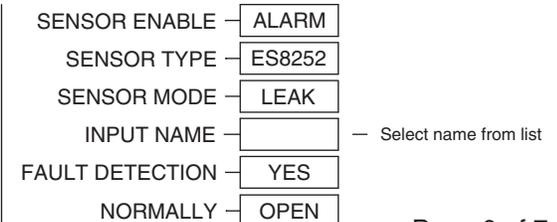


ENABLE THE CORRESPONDING DIP SWITCH FOR EACH DISCRIMINATING ES825-200 SERIES SENSOR

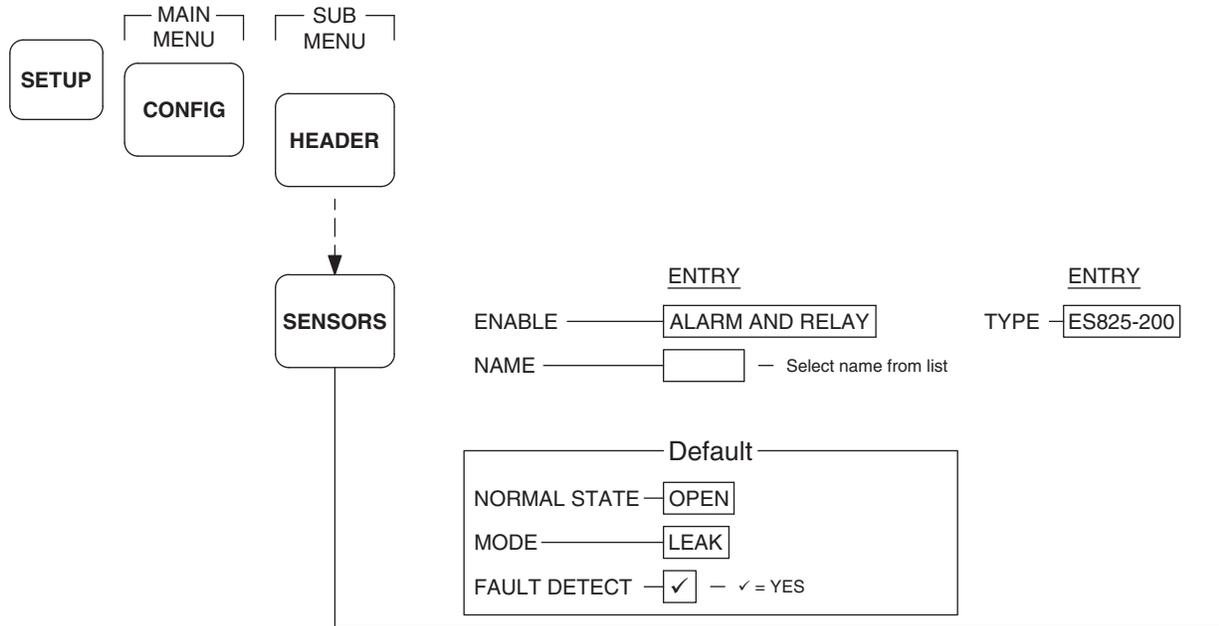


TMS SERIES FRONT PANEL PROGRAMMING:

Configure the TMS to activate the installed sensor(s). Programming is as follows for Models TMS2000 and TMS3000.



TMS4000/4000M FRONT PANEL PROGRAMMING: Configure the TMS to activate the installed sensor(s).



MAINTENANCE PROCEDURES: It is recommended practice to annually test sensor(s) to ensure proper operation.

1. Confirm that sensor is wired to the appropriate programmed input(s).
2. Place sensor in cup/container of water or fuel.
If testing in ambient light:
 - a) Container **MUST** be non-reflective.
 - b) Cover container with a rag/cloth.
3. While in water or fuel, confirm the TMS/LC2000 displays a water alarm or oil alarm for fuel on the corresponding sensor input. Place in both WATER and FUEL to fully test ES825-200 sensor.
Possible Errors include:
 - a) Error 22: Sensor Fault. Check for loose connections or broken wires.
4. Dry sensor with a rag/cloth.

WARRANTY: Contact Pneumercator for official warranty policy.

⚠ WARNING

DO NOT LEAVE SENSOR IN THE ALARM STATE FOR PROLONGED PERIODS AS DAMAGE MAY OCCUR WHICH IS NOT COVERED BY WARRANTY.