

Appendix A Probes

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MTG-Probe Specification

Specifications	
Enclosure (probe):	NEMA 4, IP68
Input Power:	28 VDC +/-10%
Probe Length:	Up to 24 feet (7.3m) <i>Consult factory for lengths over 24 feet.</i>
Accuracy:	0.010 inches (0.2540mm) inventory mode 0.001 inches (0.0254mm) leak-detection mode
Linearity:	+/- 0.01% of full scale or +/- 0.010 inches (0.254mm), whichever is greater
Repeatability:	+/- 0.001% of full scale or +/- 0.00025 inches (.00635mm), whichever is greater
Temperature Measurement:	6 temperature-sensing devices
Temperature Accuracy:	+/- 0.9° F from 14° F to +185° F +/- 0.5° C from -10° C to +85° C
Temperature Measurement Resolution:	+/- 0.01° F (.00556° C)
Temperature Sensing Range:	-40° to 150° F (-40° C to 66° C)
Operating Temperature Range:	-40° to 160° F (-40° C to 71° C)
Probe Output:	Digital over 2 wires
Distance to Monitor:	Probe cable must be EC-2 (Belden #8761) up to 1,000 feet (305m). <i>Consult factory for lengths over 1,000 feet.</i>
Pressure Rating:	Up to 500 psi (35Kg/cm ²)(float-dependent)
Floats:	Specs based on 4-inch standard (UF-4)
Compatible Controllers:	OEL8000II
MTG includes:	4-inch NPT urethane float kit Cap Splice kit Cable assembly
Accessories:	SL-34 Swage lock (probe-head isolation for chemical applications) SSF-4 3.85-inch (97.79mm) stainless-steel float kit SSF-2 1.83-inch (46.48mm) stainless-steel float kit UF-4 3.85-inch (97.79mm) urethane float kit UF-3 2.85-inch (72.39mm) urethane float kit
Approvals:	UL-listed, CUL-listed, CE-listed

*Note: Current published specifications are subject to change without notification.
Verify specifications with manufacturer.*

TABLE OF THERMAL COEFFICIENTS OF EXPANISON

PRODUCT	US THERMAL COEFFICIENT X 10 ⁻⁵
Aviation Gas	75
Regular Unleaded	70
Premium	70
Leaded	70
Gasohol	69
Kerosene (fuel oil #1)	50
Jet Fuel	47
Motor Oil	47
Fuel Oil #4	47
Gear Oil,90W	47
Hydraulic Oil	47
Transmission Fluid	47
Turbine Oil	47
Washer Fluid	47
Used Oil	47
Diesel (fuel oil #2)	45
Ethylene Glycol	37
Water	12

OMNTEC MTG* – Probe Installation

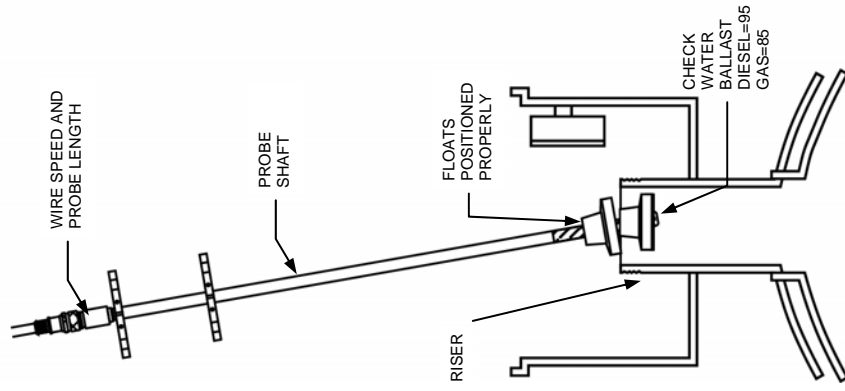
- Note: Before Probe Installation**
1. Take a level reading at the probe riser with a gauge stick and record the information for system set-up.
 2. Record wire speed and probe length on top of probe for system set-up

CAUTION
Floats must not be allowed to drop down shaft during installation. May result in damage to probe. Floats must slowly be lowered to the base of the shaft before insertion.

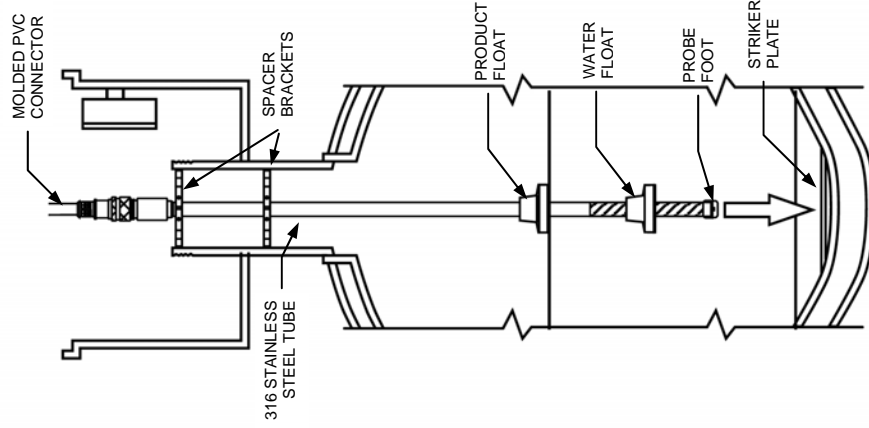
CAUTION
Probe must be lowered slowly until the probe foot touches the tank bottom. Sudden impact may result in damage to probe or tank.

CAUTION
EXTENSION CABLE from MTG probe to OEL8000II must be OMNTEC EC-2 or BELDEN #8761

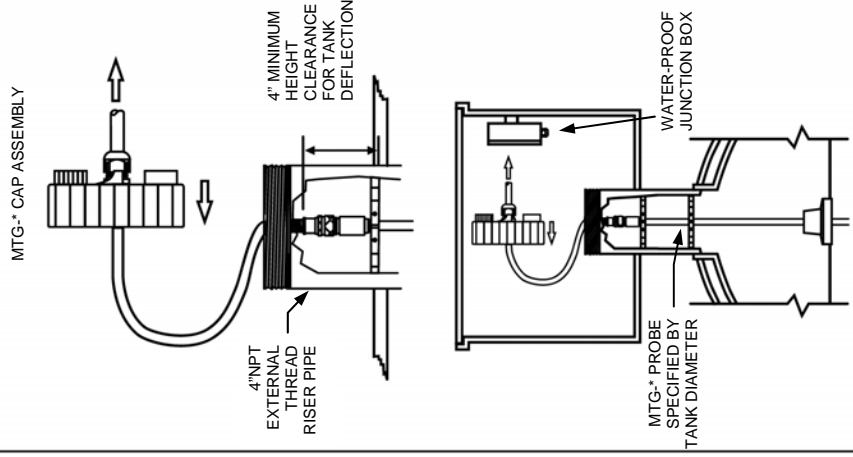
1 INSERT PROBE INTO RISER



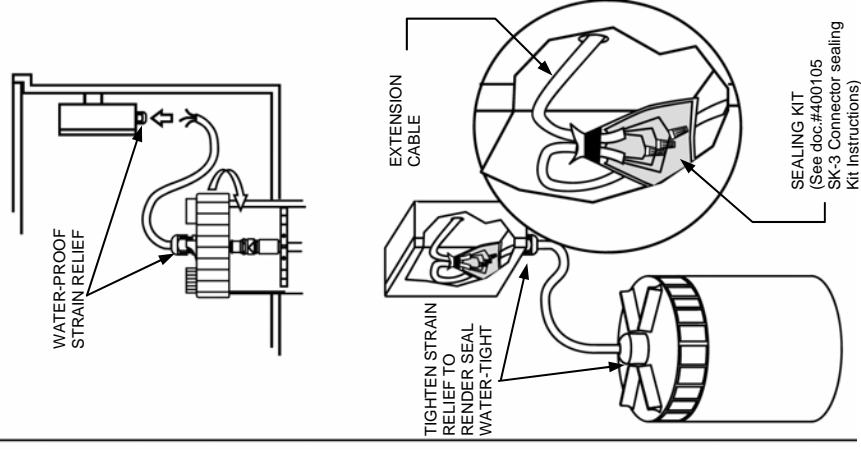
2 LOWER PROBE INTO TANK



3 FIT WIRE INTO RISER CAP



4 TIGHTEN CAP AND WIRE INTO JUNCTION BOX



OMNTEC MTG* – Probe 2" Installation

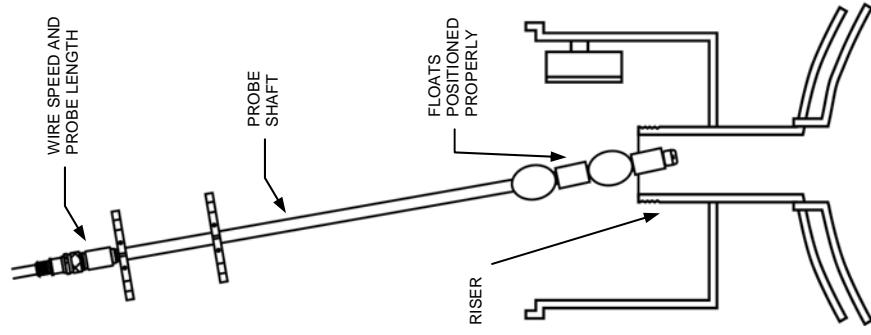
Note: Before Probe Installation
 1. Take a level reading at the probe riser with a gauge stick and record the information for system set-up.
 2. Record wire speed and probe length on top of probe for system set-up

CAUTION
 Floats must not be allowed to drop down shaft during installation. May result in damage to probe. Floats must slowly be lowered to the base of the shaft before insertion.

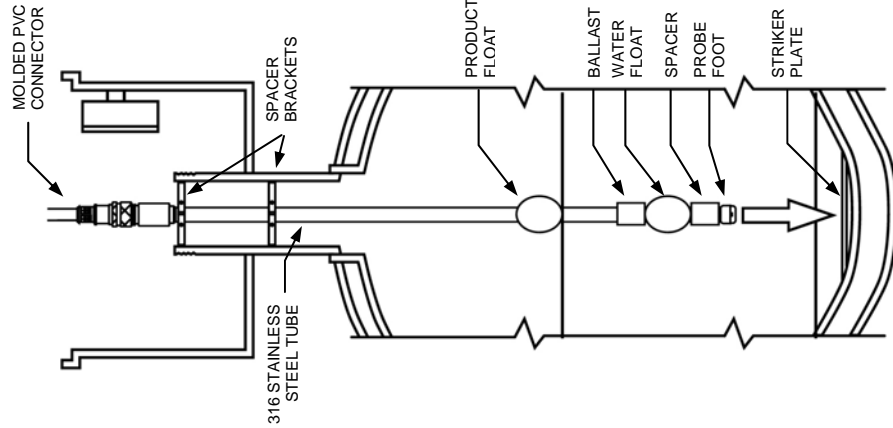
CAUTION
 Probe must be lowered slowly until the probe foot touches the tank bottom. Sudden impact may result in damage to probe or tank.

CAUTION
EXTENSION CABLE from MTG probe to OEL8000II must be **OMNTEC EC-2** or **BELDEN #8761**

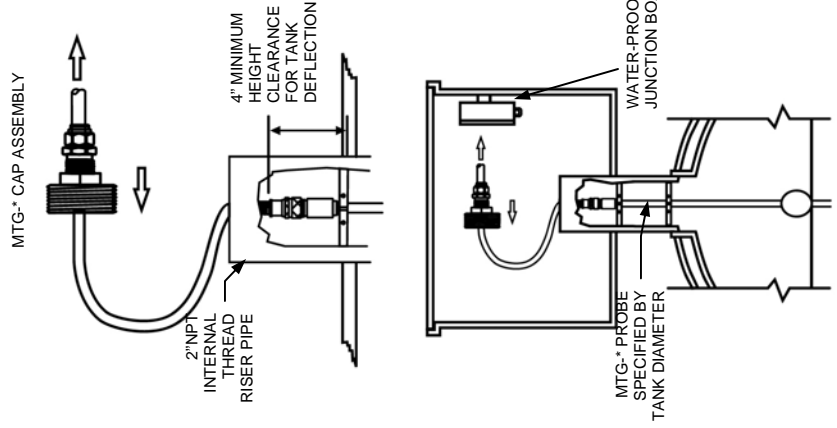
1 INSERT PROBE INTO RISER



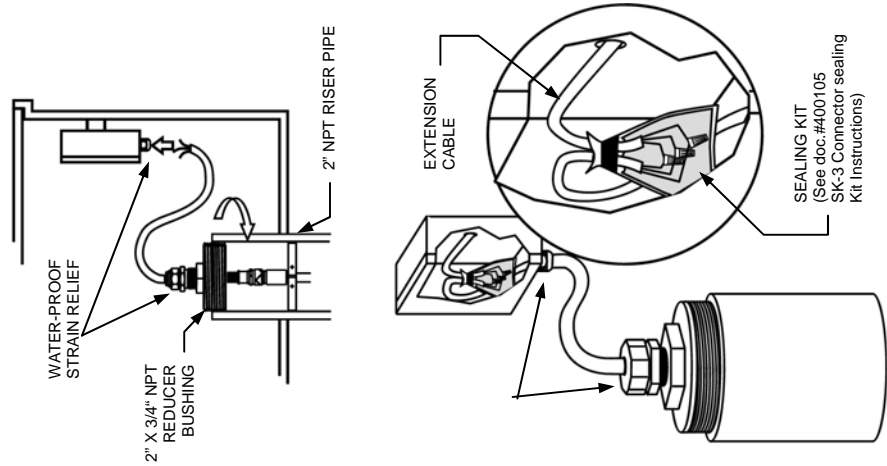
2 LOWER PROBE INTO TANK



3 FIT WIRE INTO 2" RISER CAP



4 TIGHTEN CAP AND WIRE INTO JUNCTION BOX



Doc.200117

OMNTEC MTG* – Probe Installation for Corrosive Chemical Applications

Note: Before Probe Installation

1. Take a level reading at the probe riser with a gauge stick and record the information for system set-up.
2. Record wire speed and probe length on top of probe for system set-up

CAUTION

Floats must not be allowed to drop down shaft during installation. May result in damage to probe. Floats must slowly be lowered to the base of the shaft before insertion.

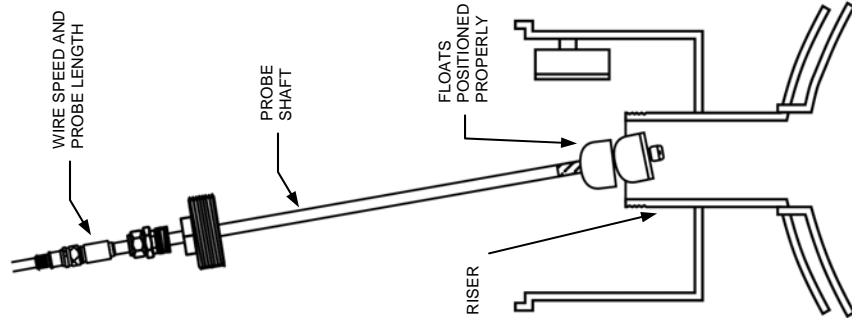
CAUTION

1. Probe must be lowered slowly until the probe foot touches the tank bottom. Sudden impact may result in damage to probe or tank.
2. Lift probe up at least 1" to allow for tank deflection

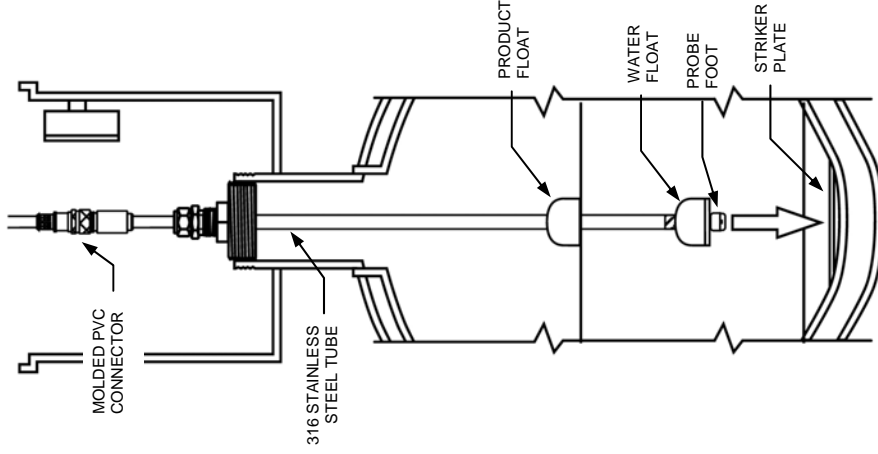
CAUTION

EXTENSION CABLE from MTG probe to OEL8000II must be **OMNTEC EC-2** or BELDEN #8761

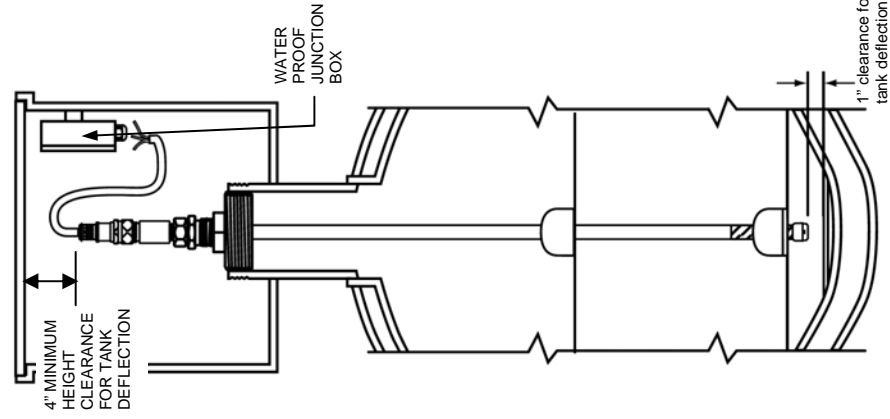
1 INSERT PROBE INTO RISER



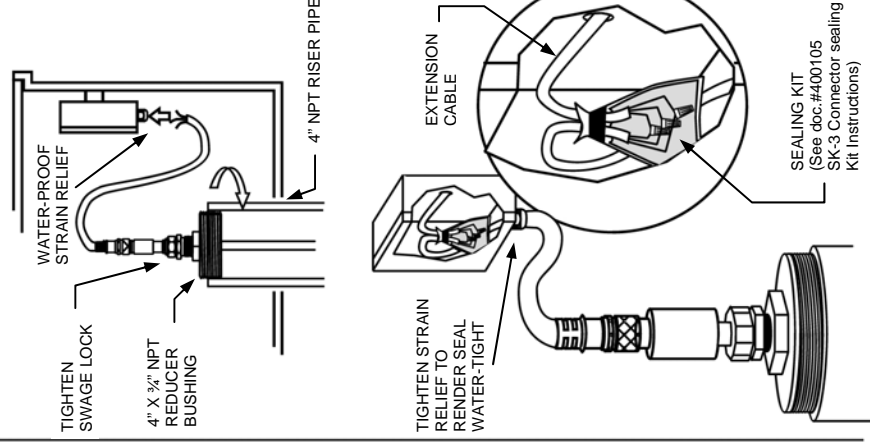
2 LOWER PROBE INTO TANK



3 CHECK MINIMUM CLEARANCE



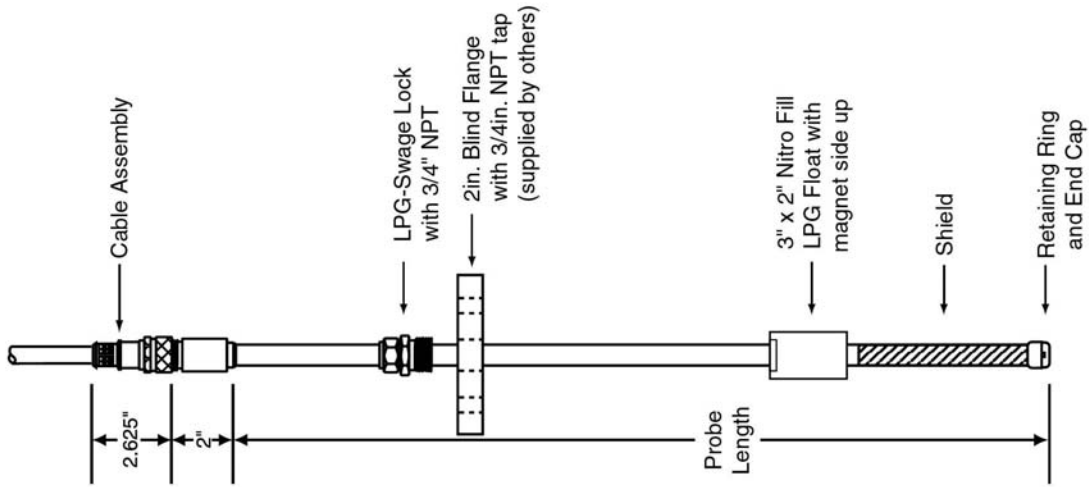
4 TIGHTEN FITTINGS AND WIRE INTO JUNCTION BOX



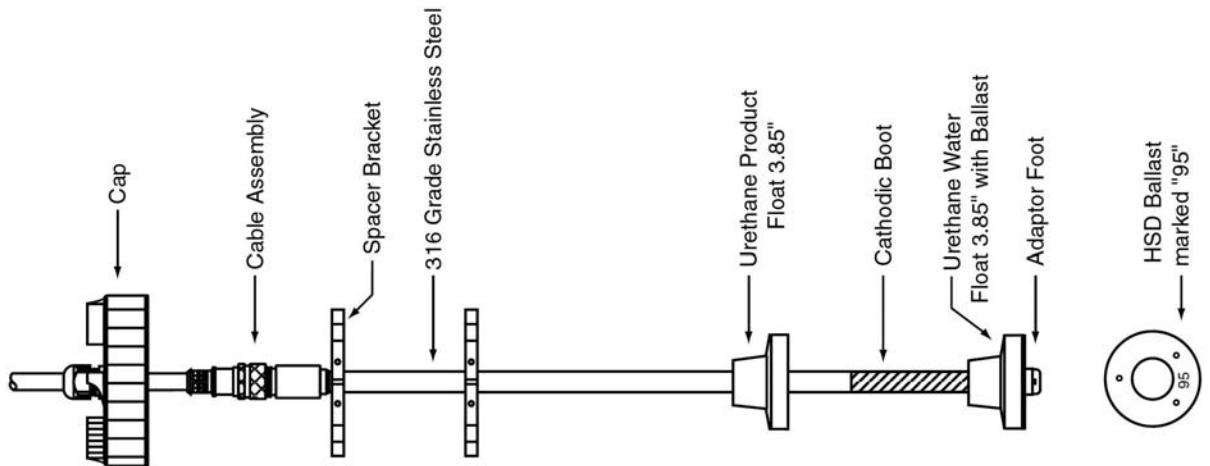
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MTG and LPG-MTG Parts List

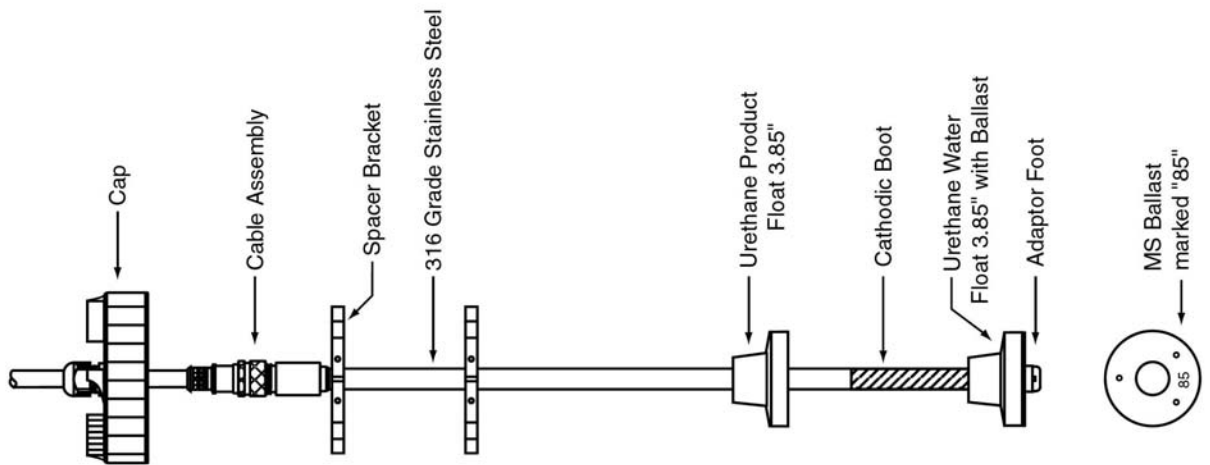
LPG-MTG



MTG with HSD Float Kit



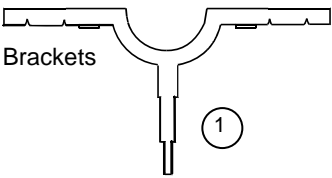
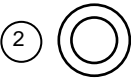
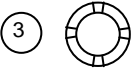
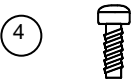
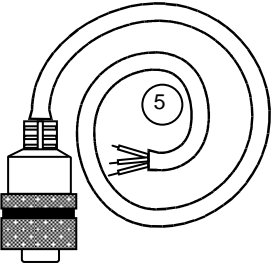

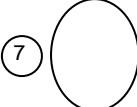


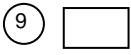
MTG with MS Float Kit



Doc. 200139

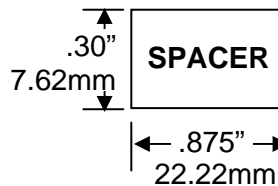
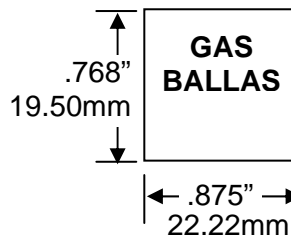
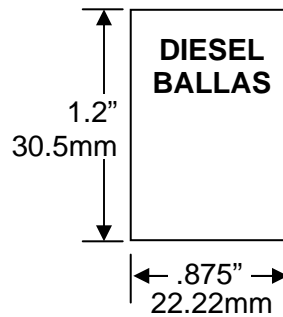
MTG-STK-* Stick Probe Pre-Assembly Drawing

MTG-STK-* STICK PROBE

- Part: Spacer Brackets
QTY: 4 
- Part: Foot Adaptor
QTY: 1 
- Part: Foot
QTY: 1 
- Part: Screws
QTY: 4 
- Part: 6' Extension Cable
QTY: 1 
- Part: Cathodic Boot
QTY: 1 
- Part: Stainless Steel Float
QTY: 2 
- Part: Ballast (see chart for size)
QTY: 1 
- Part: 2" cap
QTY: 1 
- Part: Spacer
QTY: 1 

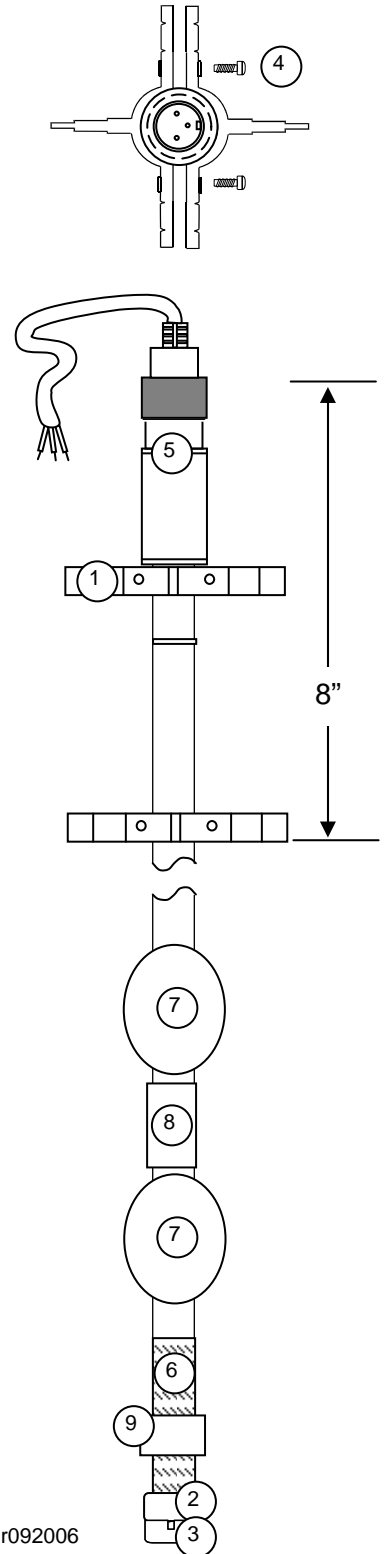
Installation Instructions

1. Install spacer brackets as shown on right. Lower spacer should be placed 8" from the top of the probe. The upper spacer should be placed as high as possible, just below the head of the probe.
2. Install one of the 2"SS floats
3. Install ballast
4. Install the other 2" SS float



For **SSF-2**
2" 316 Stainless steel floats

TOP VIEW

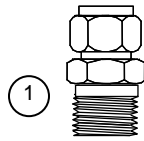


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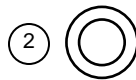
MTG-420-4 Stick Probe Pre-Assembly Drawing

MTG-STK-* STICK PROBE

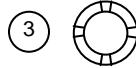
Part: Swage Lock
QTY: 4



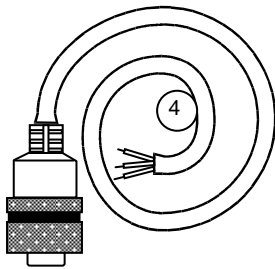
Part: Foot Adaptor
QTY: 1



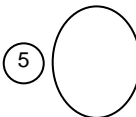
Part: Foot
QTY: 1



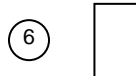
Part: 6' Extension Cable
QTY: 1



Part: Stainless Steel Float
QTY: 2

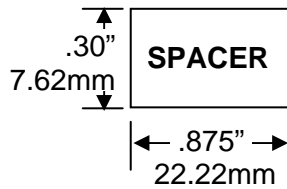


Part: Metal Spacer
QTY: 1

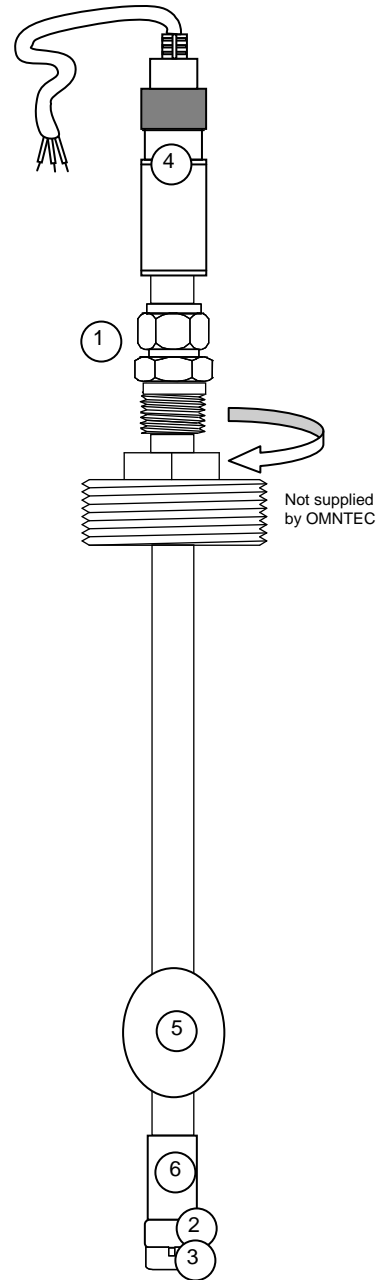


Installation Instructions

1. Install swage lock as shown on right
2. Install 2" x 3/4" reducer bushing (supplied by others)
3. Install 2" SS float
4. Install spacer
5. Install foot adaptor (foot adaptor locks onto the foot)
6. Install foot
7. Attach yellow extension cable to head of probe



For SSF-2
2" 316 stainless steel

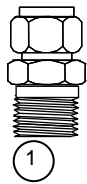


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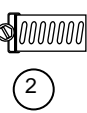
MTG-STK-* Stick Probe Pre-Assembly Drawing

MTG-* STICK PROBE PARTS

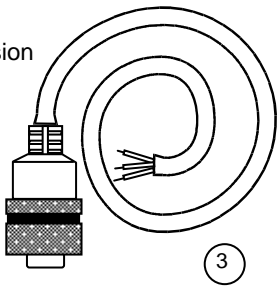
Part: Swage Lock
QTY: 1



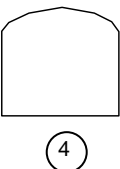
Part: Hose Clamp
QTY: 2



Part: 6' Extension Cable
QTY: 1



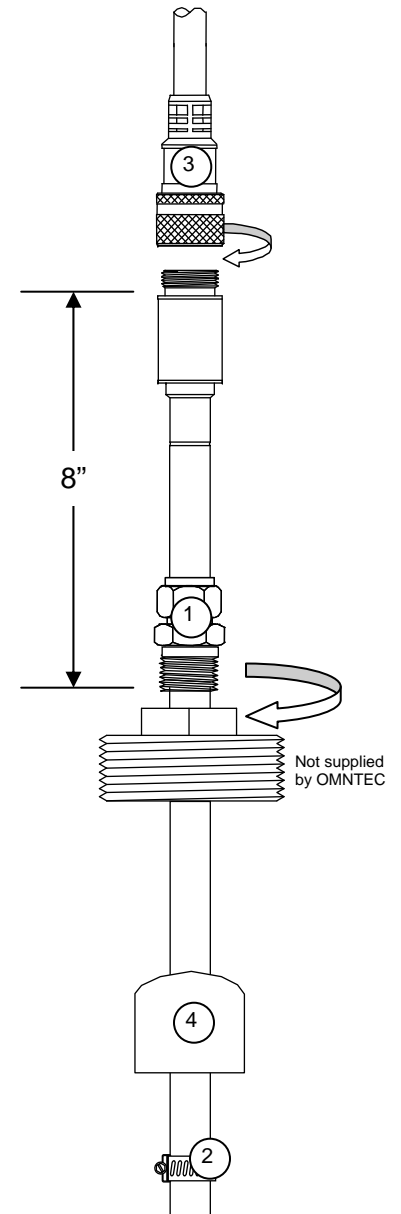
Part: SSF-4
3.75" 316 Stainless Steel Product Float
QTY: 1



Installation Instructions

1. Install swage lock as shown on right
2. Install 4" x 3/4" reducer bushing (supplied by others)
3. Install the SSF-4 product float
4. Install hose clamp
5. Attach yellow extension cable to head of probe
6. See Installation of MTG-* Probe instruction sheet (document #200118)

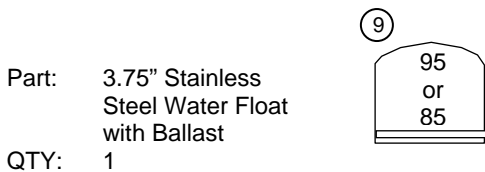
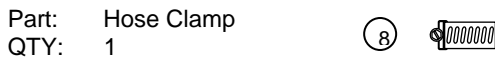
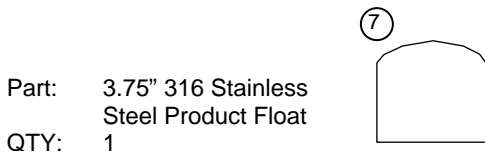
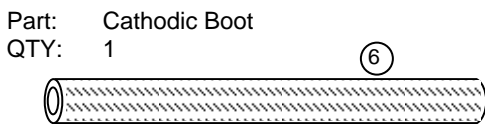
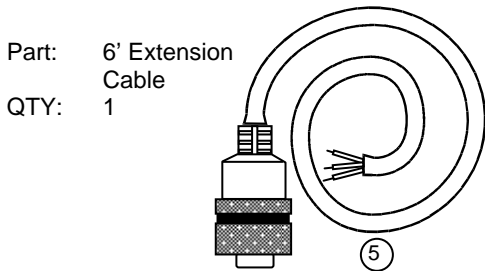
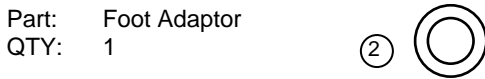
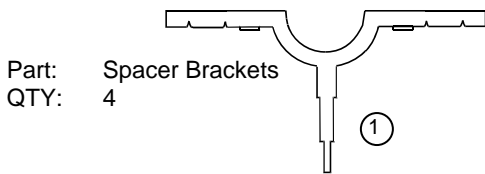
For **SSF-4**
3.75" 316 stainless steel float



Doc. 200120

MTG-* Stick Probe Pre-Assembly Drawing (with tied down water float)

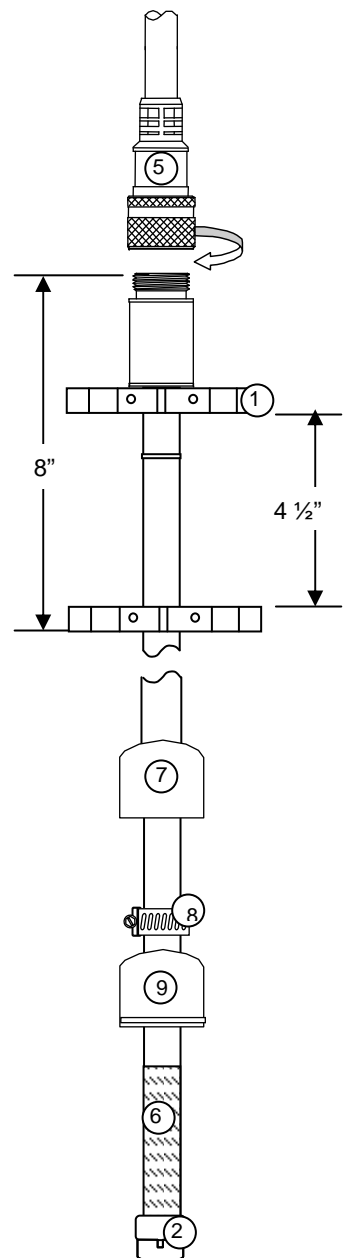
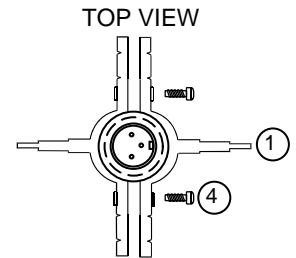
MTG-* STICK PROBE PARTS



Installation Instructions

1. Install spacer brackets as shown on right. Lower spacer should be placed 8" from the top of the probe. The upper spacer should be placed as high as possible, just below the head of the probe.
2. Install the 3.75" product float
3. Install hose clamp (ties down water float)
4. Install the 3.75" water float
5. Install cathodic boot
6. Install foot adaptor (foot adaptor locks onto the foot)
7. Install foot
8. Attach yellow cable to head of probe
9. See installation Instruction Sheet

For SSF-4
3.75" 316 stainless steel floats
(with tied down water float)



Doc. 200137

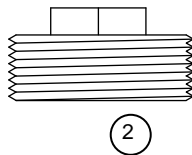
DataStik Series 7255 Flex Probe w/SS-4 Single Float and SL-34 Swage Lock Pre-Assembly Drawing

DataStik Series 7255 Flex Probe

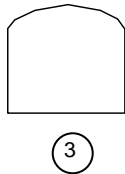
Part: SL-34 Swage Lock
 QTY: 1



Part: 4" X 3/4" reducer bushing (supplied by others)
 QTY: 1



Part: SSF-4 3.75" 316 Stainless Steel Product Float
 QTY: 1



Part: Stainless steel weight
 QTY: 1



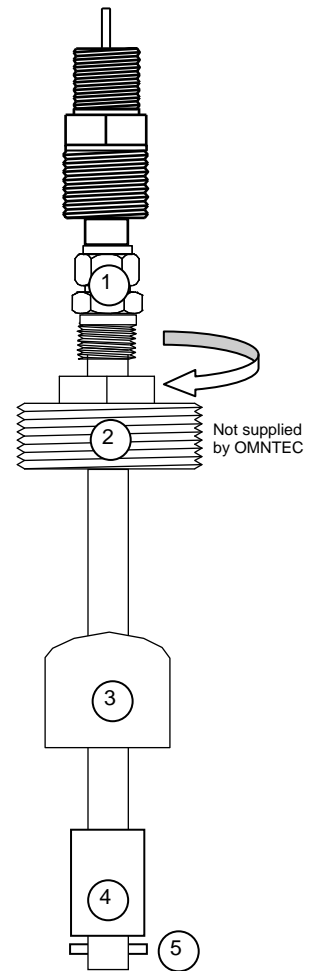
Part: Stainless steel pin
 QTY: 1



Installation Instructions

1. Install swage lock as shown on right
2. Install 4" x 3/4" reducer bushing (supplied by others)
3. Install the SSF-4 product float
4. Install weight
5. Install pin

For SSF-4
 4" 316 stainless steel float




Doc. 600101

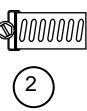
MTG-* STK Stick Probe Pre-Assembly Drawing

MTG-* STICK PROBE PARTS

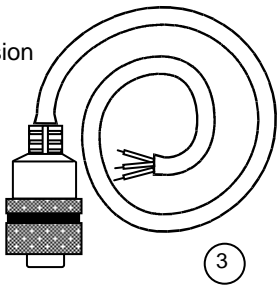
Part: Swage Lock
QTY: 1



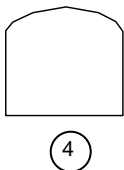
Part: Hose Clamp
QTY: 2



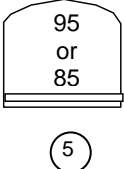
Part: 6' Extension Cable
QTY: 1



Part: SSF-4
3.75" 316 Stainless
Steel Product Float
QTY: 1



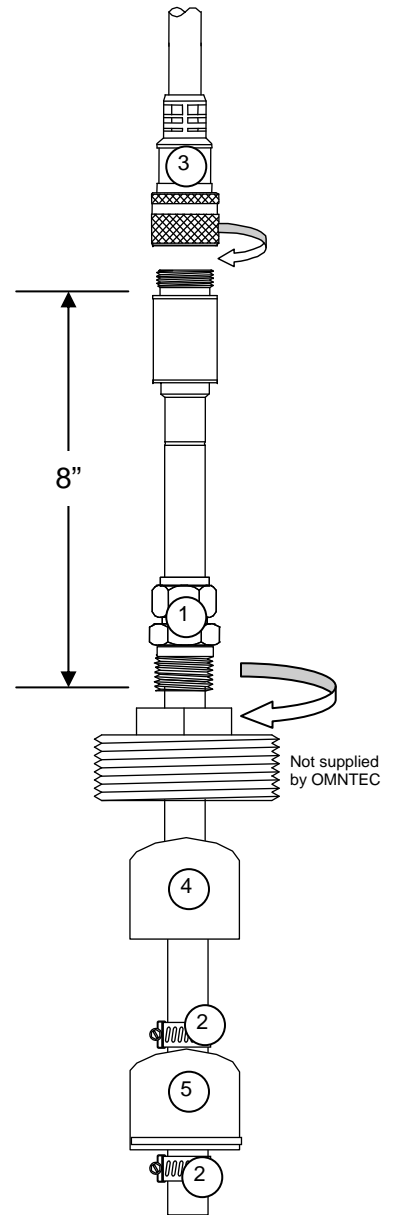
Part: SSF-4
3.75" 316 Stainless
Steel Water Float
with Ballast
QTY: 1



Installation Instructions

1. Install swage lock as shown on right
2. Install 4" x 3/4" reducer bushing (supplied by others)
3. Install the SSF-4 product float
4. Install one hose clamp followed by the ssf-4 water float. Then install second hose clamp
5. Attach yellow extension cable to head of probe
6. See Installation of MTG-* Probe instruction sheet (document #200118)

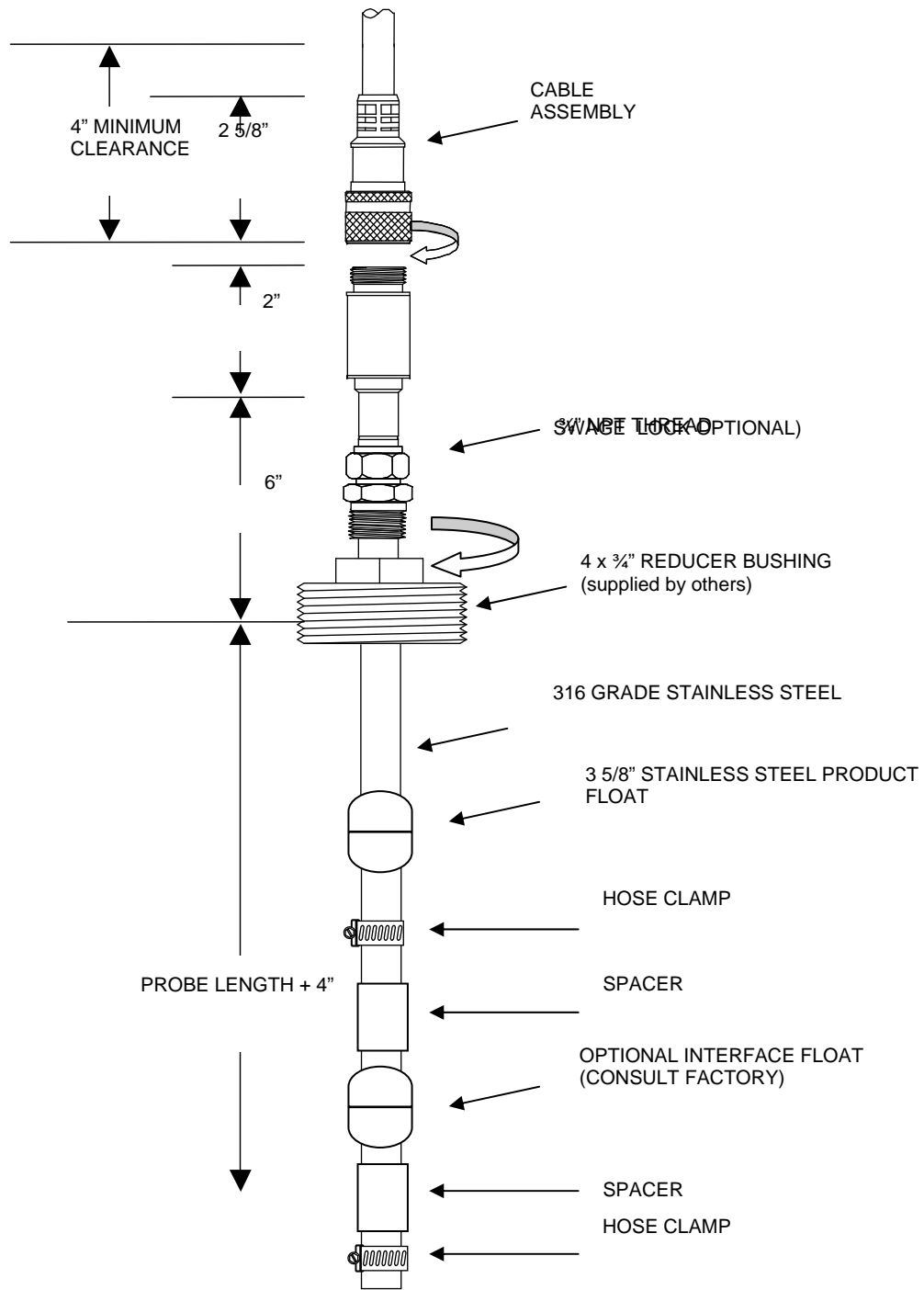
For **SSF-4**
3.75" 316 stainless steel floats
with tied down water float



Doc. 200112

Magnetostrictive Stick Probe

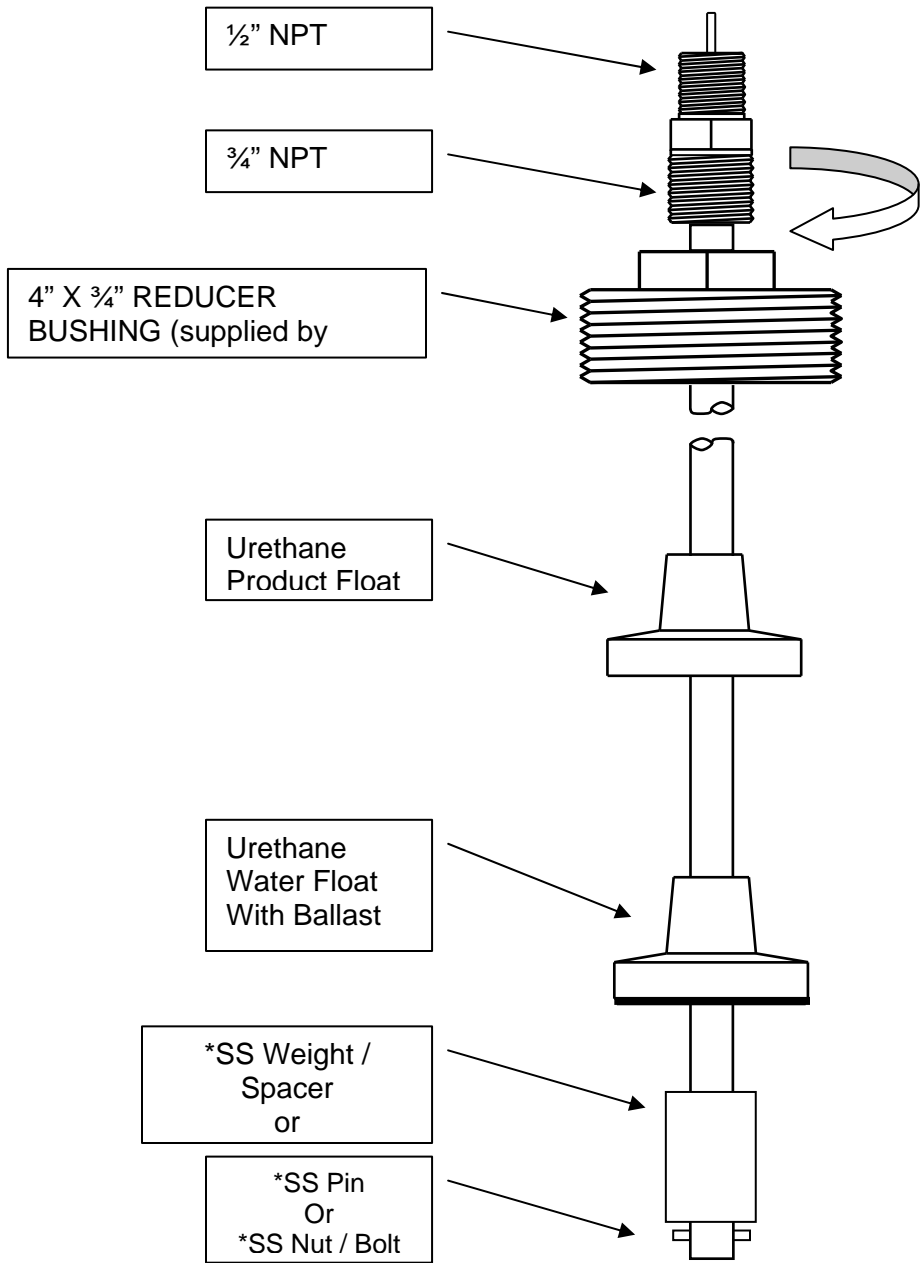
for use with SSF-2 316 stainless steel floats
Chemical Applications



Doc. 200105

OMNTEC **MTG-F with UF-4**

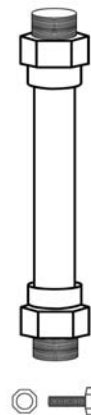
3.75" Float Installation for Flex Probe



- Step 1:** Remove Pin
- Step 2:** Install reducer assembly
- Step 3:** Install product float (float without ballast)
- Step 4:** Install water float** (float with ballast)
- Step 5:** Install weight
- Step 6:** Install pin

***Magnetostrictive probes can be ordered without water float capability.*

PVC spacer and stainless steel nut / bolt



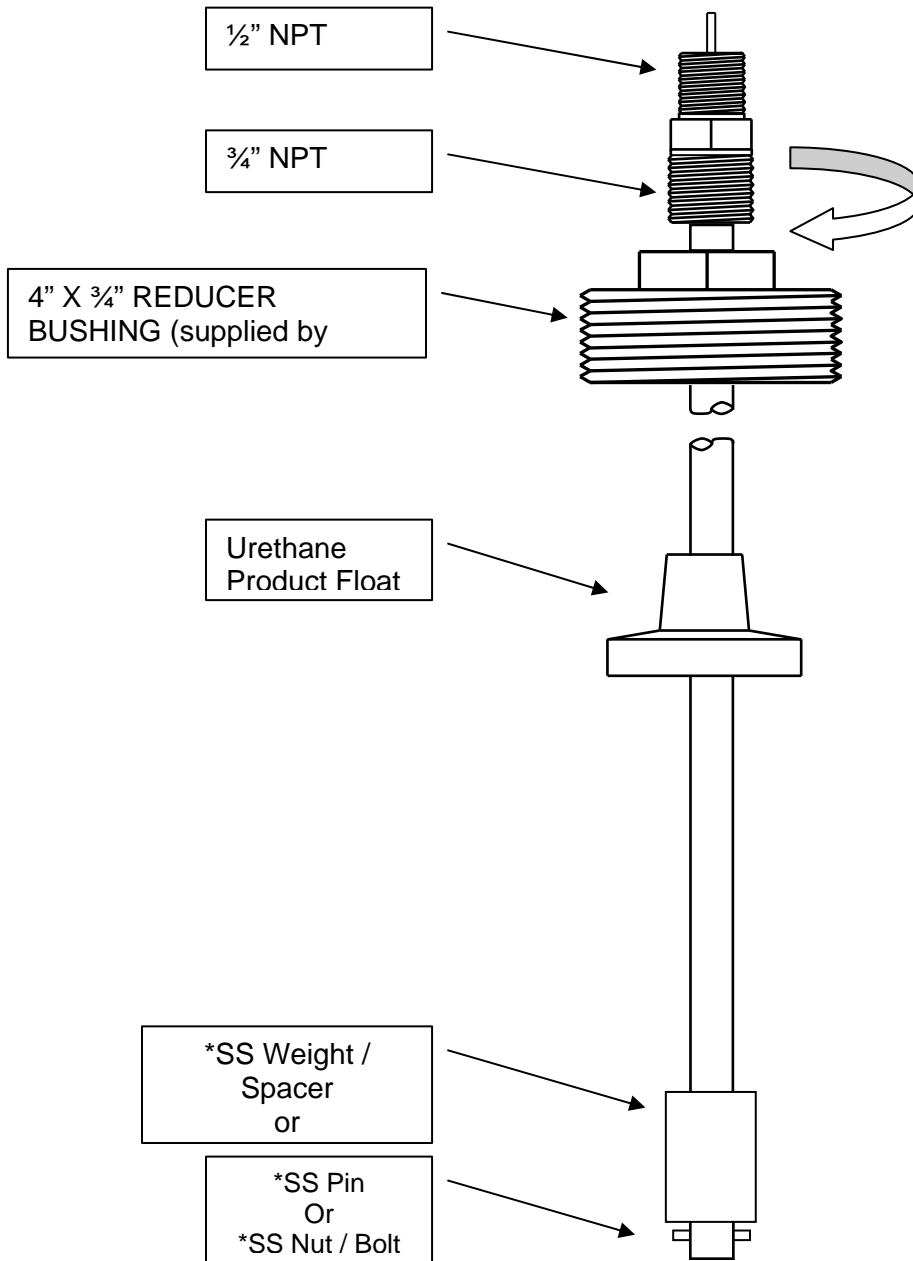
*PVC spacer and stainless steel nut / bolt for probes 10' or less. Anything larger use stainless steel weight / spacer and pin.

Doc. 200110

OMNTEC

MTG-F with UF-1-3

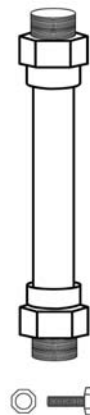
2.85" One Float Installation for Flex Probe



- Step 1:** Remove Pin
- Step 2:** Install reducer assembly
- Step 3:** Install product float (float without ballast)
- Step 4:** Install weight
- Step 5:** Install pin

***Magnetostrictive probes can be ordered without water float capability.*

PVC spacer and stainless steel nut / bolt

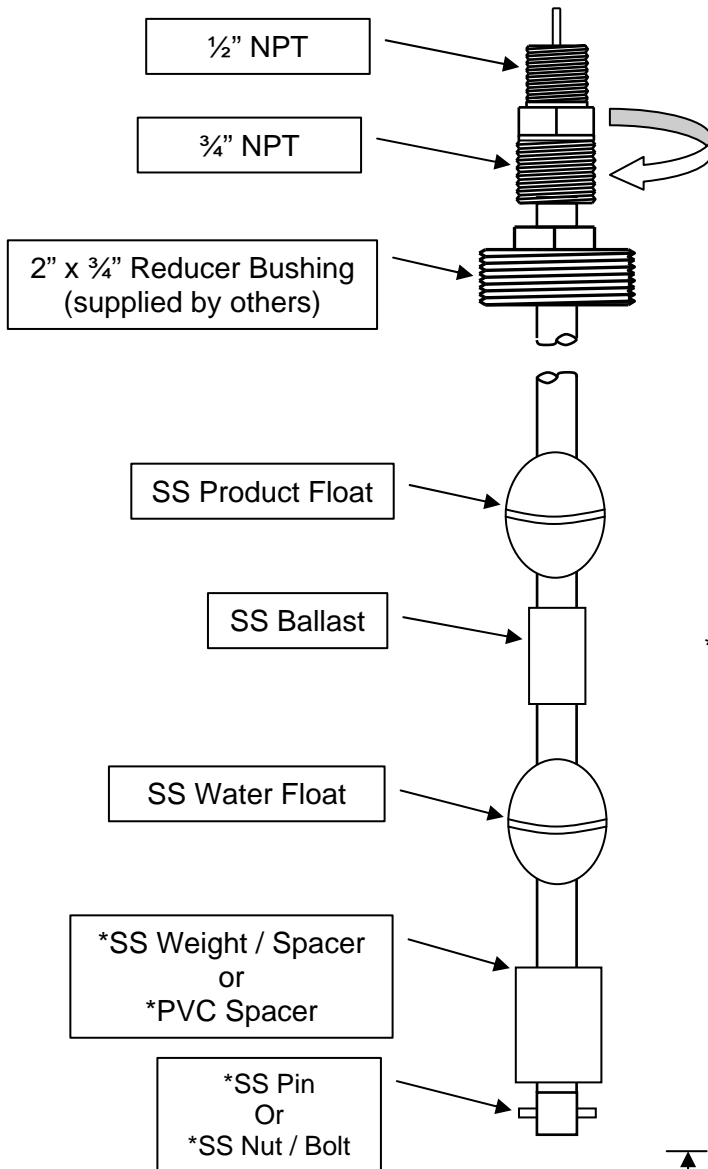


*PVC spacer and stainless steel nut / bolt for probes 10' or less. Anything larger use stainless steel weight / spacer and pin.

Doc. 200127

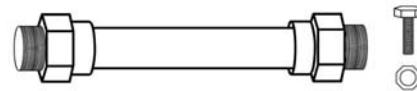
OMNTEC **MTG-F with SSF-2**

2" Float Installation for Flex Probe

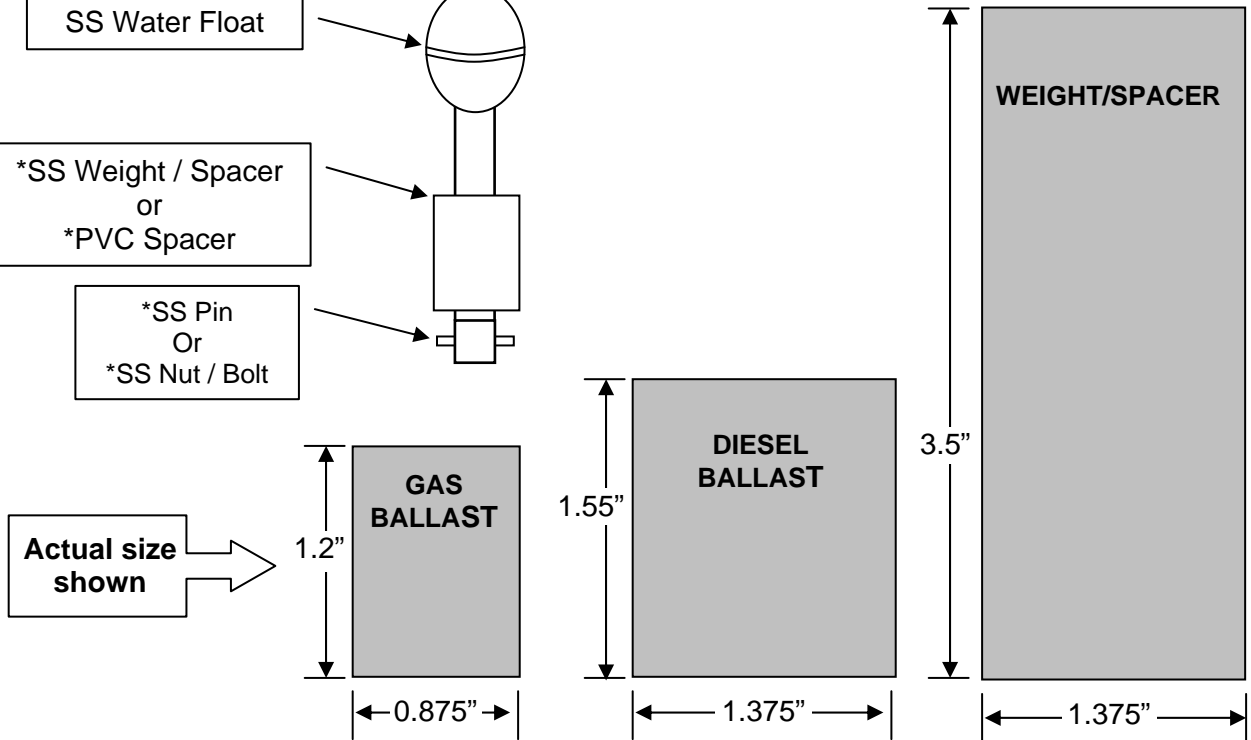


- Step 1:** Remove Pin
- Step 2:** Remove Spacer
- Step 3:** Install Product Float
- Step 4:** Install Ballast
- Step 5:** Install Water Float
- Step 6:** Install Spacer
- Step 7:** Install Pin

PVC Spacer and Stainless Steel Nut / Bolt



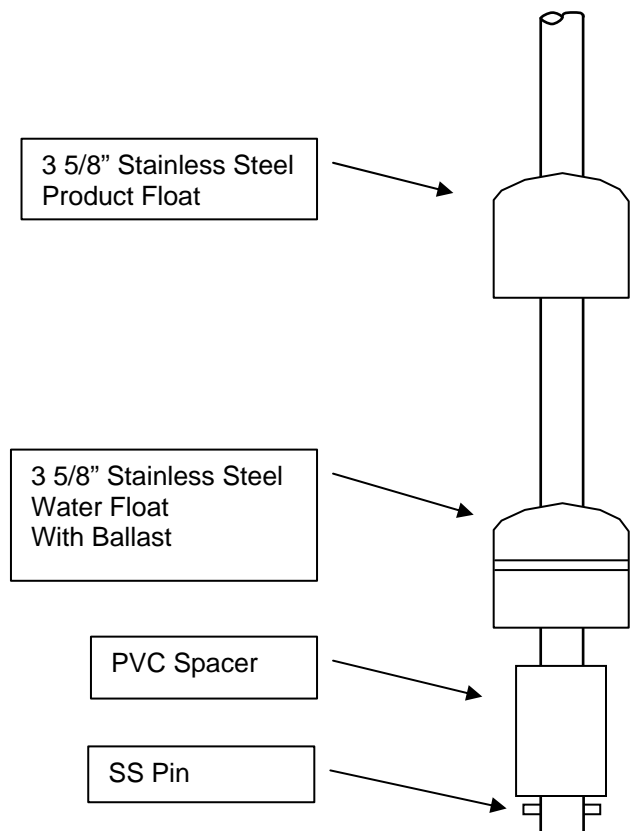
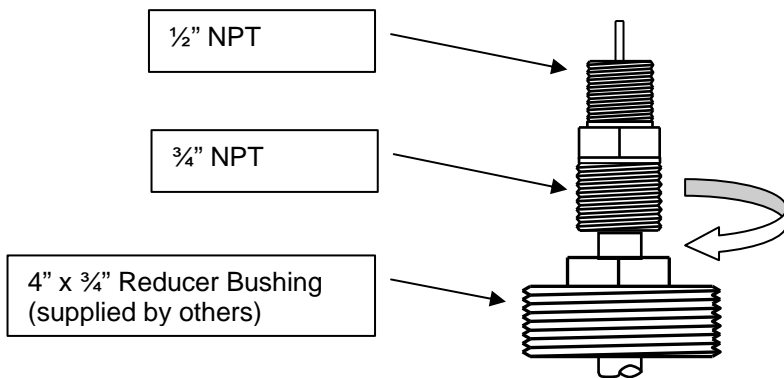
*PVC spacer and stainless steel nut / bolt for probes 10' or less. Anything larger use stainless steel weight / spacer and pin.



Doc. 200109

SSF-3 Float Installation for Flex Stick Probe

SSF-3 Float Installation for Flex Probe



- Step 1:** Remove Pin
- Step 2:** Remove Spacer
- Step 3:** Install product float
(float without ballast)
- Step 4:** Install water float
(float with ballast)
- Step 5:** Install Spacer
- Step 6:** Install pin

Doc. 200108



OMNTEC Mfg., Inc.
 Also provides the
 following products:

OEL8000II
 Tank Gauging Systems

LU-series
 High Level and Liquid Leak Detection Systems

LPD-series
 Product distinguishing Leak Detection Systems

OWS
 Oil / Water Separator Leak Detection Systems

PT and ELPT Systems
 Pressure transducers and controllers for A.G. storage tanks
 up to 100ft

MTG-Flex Probes
 Flexible Magnetostrictive Probes to monitor up to 50ft
 Storage Tanks

MTG-420-D
 4-20mA Magnetostrictive Gauging Probes

AD-1
 Auto Dialers

Custom Systems, Pump Control,
 Chemical Applications and more!

Call our sales department to learn more.
 631-981-2001

<http://www.OMNTEC.com>



Installation Instructions for the



Flex Probe

OMNTEC Mfg., Inc.
 1993 Pond Rd.
 Ronkonkoma, NY 11779
www.OMNTEC.com
 Doc.200130

Doc. 200130

IMPORTANT INSTALLATION INSTRUCTIONS

IMPORTANT! READ FIRST!

Unpacking the Flex Probe:

- DO NOT cut the tie wraps holding the flex probe together. These will be cut during installation in a predetermined order.
- Always keep the coils parallel. DO NOT lift one coil separately from the others. NEVER twist one coil 90° from the other coils.
- DO NOT bend the top 2ft of the probe.
- DO NOT assemble the weight and floats. This will be done during installation into the riser. See installation instructions.
- Mishandling of the Flex Probe will violate the warranty for this product.

Assembly of the Flex Probe:

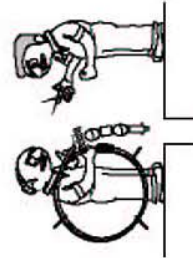
- Equipment (follow the following instructions. The equipment must be installed in the following order):

- 4" x 3/4" female NPT thread adapter fitting (supplied by end user)
- Product Float
- Ballast
- Water Float
- Stainless Steel Weight (with machined recess down)
- Stainless Steel Pin

1. Carry the flex probe in the coil over your shoulder and the other components separately to the top of the tank. Do not unwrap the flex probe.
2. Cut only the tie wrap at the end of the probe with a hole in the plug. Leave all other tie wraps intact.
3. Install the adapter, product float, ballast, water float, weight and pin on to the end of the probe in order as listed.
4. Holding the weighted end with the coil over your shoulder, slowly feed the probe into the riser, cutting the remaining tie wraps, one by one as you go. Do not cut all the tie wraps at once. They have been sequentially marked so that you will know which ones to cut. Start with #1 at the end of the probe.
5. Feed the weight while uncoiling the probe. Do not drop it the full length of the probe or it may damage the probe. The weight must always hang down, not horizontal.
6. Do not twist the probe during installation. Always keep the coils parallel.
7. Do not let the coil become less than 40" in diameter while uncoiling.
8. The top of the probe has electronic components. Do not bend the top 2 feet of the probe.
9. Do not lift the probe by its electrical cable.
10. Thread and tighten the 4" x 3/4" adapter to the top of the probe and mount in the riser.



Carry the probe over your shoulder - do not cut tie wraps



Assemble components and install according to these Assembly Instructions

BE SURE...

The tie wraps are numbered and should only be cut in order and during installation.



The coil should never be less than 40" in diameter while uncoiling.



Feed the weight while uncoiling. The weight must always hang down, not horizontal.



DO NOT...

Do not lift one coil separately. Always keep coiled parallel.



Do not cut the tie wraps holding the flex probe together before installation.



Do not twist.



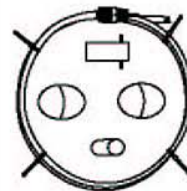
Do not lift the probe by its electrical cable.



Do not bend the top 2ft of the probe.



EQUIPMENT



- (1) Product Float
- (1) Water Float
- (1) Weight (with machined recess down)
- (1) Pin
- (1) Flex probe with numbered tie wraps
- (1) Stainless steel ballast

Customer supplied:

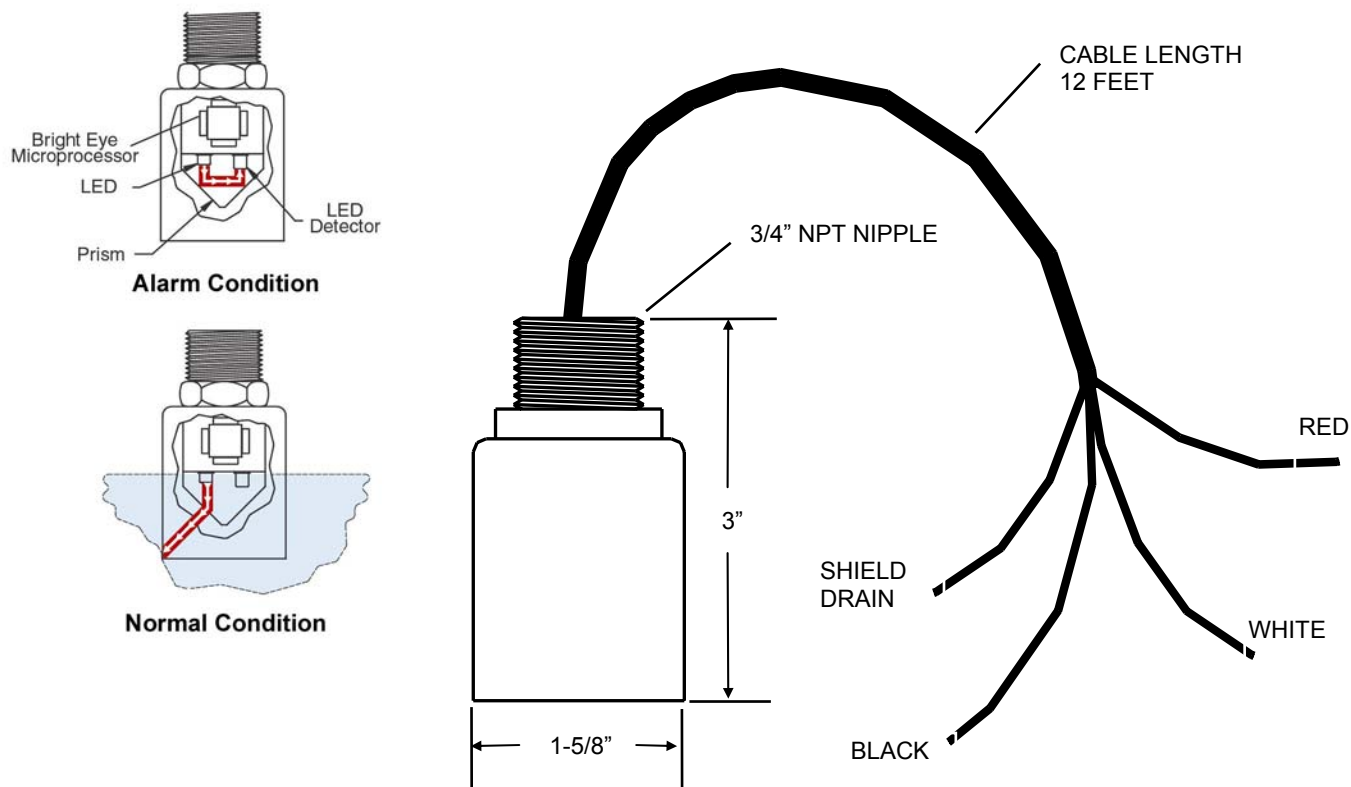
- (1) 4" x 3/4" female NPT thread adapter fitting

Appendix B Sensors

B.1	OEL8000II SENSOR INSTALLATION WORKSHEET	B-3
B.2	BX-LSR-PVC.....	B-5
B.3	BX-UT WIRING INSTRUCTIONS	B-6
B.4	HOW TO EXTEND BX-LF-1 & LF-1 SENSORS	B-7
B.5	BX-LF-1.....	B-8
B.6	BX-PDWL	B-9
B.7	HI-LEVEL/LO-LEVEL LF-2 (<i>WITH TWO BX-UT'S</i>)	B-10
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B.9	BX-LF-2-SL-ESSO.....	B-12

OMNTEC**BX-LSR-PVC**

Non-product distinguishing Optic Sensor

Principles of Operation**BX-LSR-PVC SPECIFICATIONS****U.L. LISTED 5L04**

Intrinsically safe Class I, Group D Hazardous Locations when connected in accordance with control drawing nos.OEL2CD-O

OPERATING TEMPERATURE

-15° TO +140° F

POWER

12 VDC @ 1.4 mA

WEIGHT

1/2 pound

PRINCIPLES OF OPERATION

LIQUIDS (ex: fuel, water) – photo Optic
 DRY CONDITION – Normally closed light beam
 ALARM CONDITION – Opens (refracts) normally closed light beam

SENSOR CABLE

Shielded 22 AWG UL-E118830 CM
 Maximum length 2000 feet

RESPONSE TIME

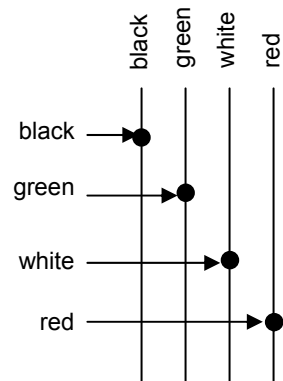
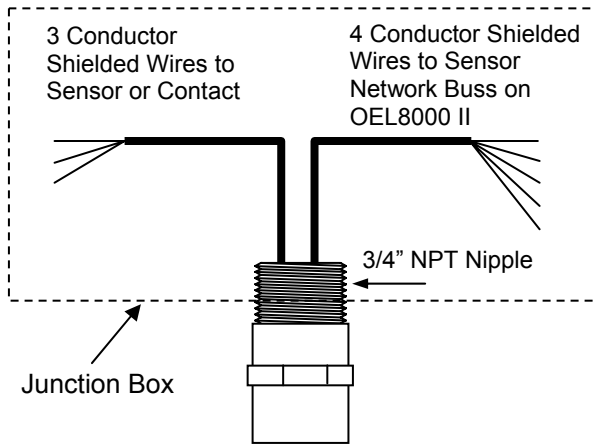
Immediate

MATERIAL OF CONSTRUCTION

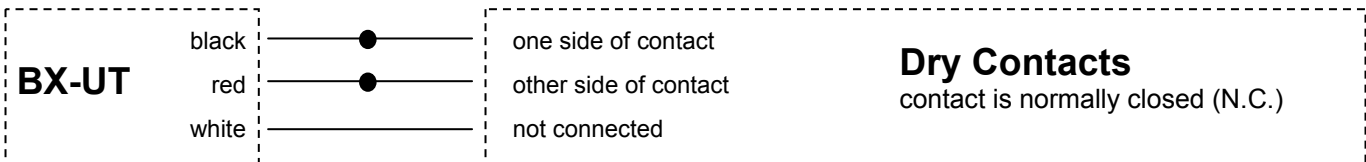
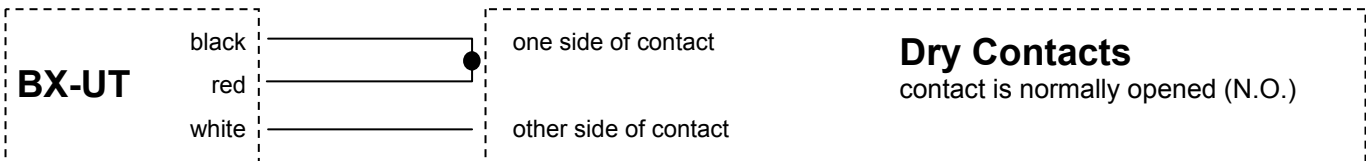
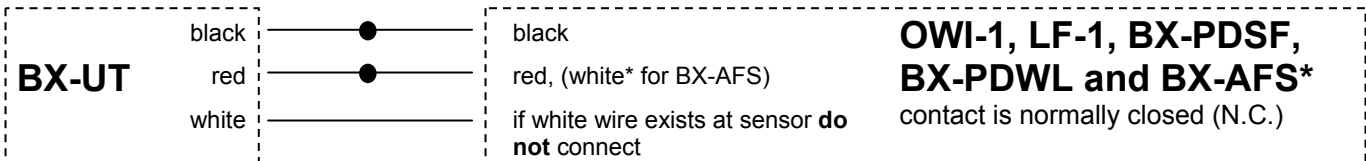
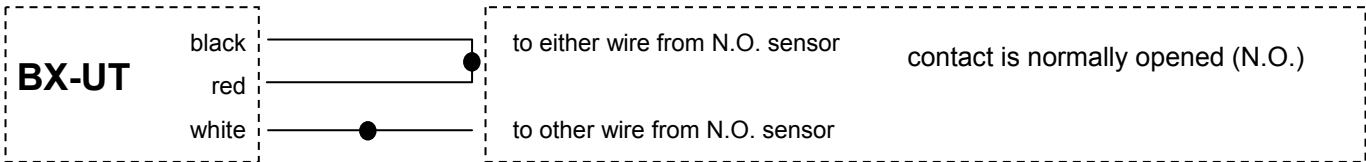
PVC

Doc. bx-lsr-pvc

OMNTEC BX-UT Wiring Instructions

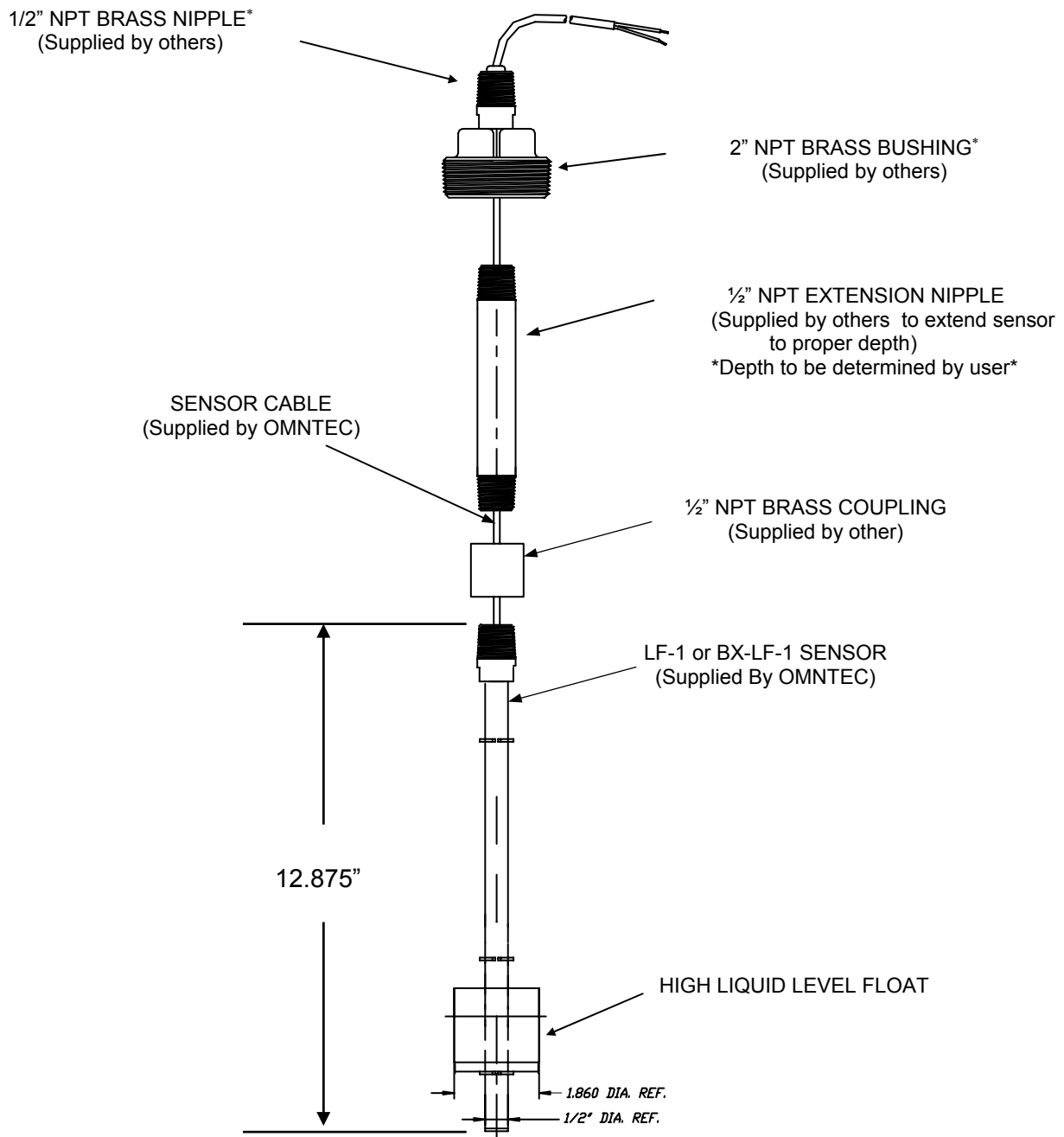


Wire connections from BX-UT-1 to OEL8000II network – all drains should be twisted



HOW TO EXTEND BX-LF-1 & LF-1 SENSORS

TYPICAL 2" FITTING ASSEMBLY



***WARNING-** It is the installer's responsibility to select a thread sealant that is compatible with the product being stored and that all NPT fittings are fastened properly to assure liquid tight seal for proper sensor operation.

Doc. 400122



BX-LF-1

Liquid Level Float Sensors

- > Stainless Steel or Brass Mountings
- > 1 Actuation Level
- > Lengths to 72 inches
- > U.L. Recognized, CSA Listed

LF series float sensors have multiple options including material of construction, mountings and float sizes. This allows for the LF sensor to be extremely versatile in a wide range of applications such as water, oils, chemicals and corrosive liquid.

Specifications	BUNA N	Stainless Steel
Operating Temperature	Water: to 180 F Oil: -40 F to +230 F	-40 F to +300 F
Stem & Mounting Material	Brass	316 Stainless Steel
Max Length (Lo)	120" (305 cm)	
Float Stops*	Beryllium Copper	316 Stainless Steel

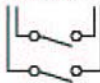
* Units greater than 72" overall length are supplied with collars with setscrews (made of same material as stem and mounting) in place of float-stop rings. Collars are optional on units less than 72" overall length. Units requiring 316SS float stops must be special ordered with 316SS collars instead of grip rings. In some instances the use of concentration of chlorine and other corrosive compounds in the media require the use of collar type float stops. Consult factory for details.
 LF-1 switches are U.L. Approved for Class I, Division 2, Groups A, B, C, D hazardous locations. FM Approved explosion proof junction box must be installed for Class I, Division I, Group D hazardous locations.

Current published specifications are subject to change without notification. Verify specifications with manufacturer.

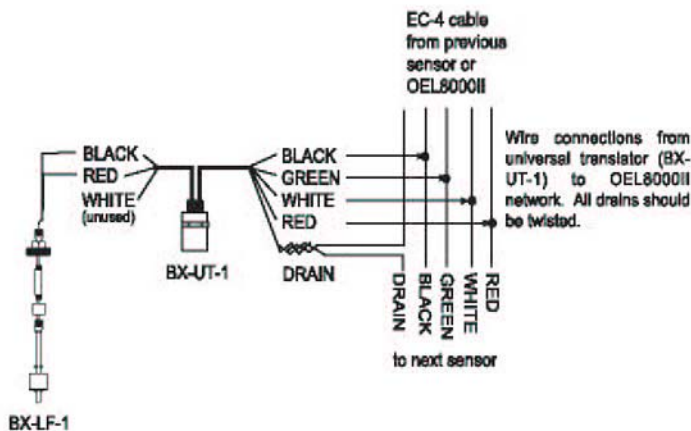
Group 1
Switch (N.O. or N.C.):
SPST: 20 VA



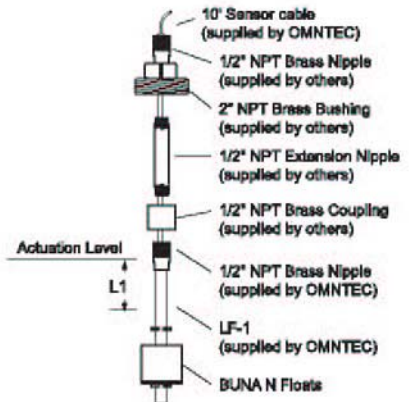
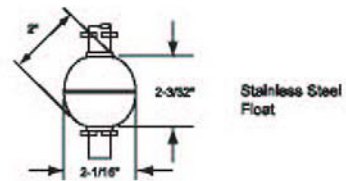
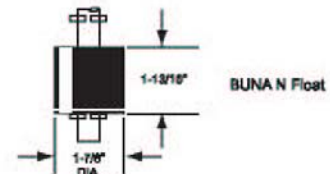
Group 2
Switch (N.O. or N.C.):
SPST: 20 VA



For clarity, only two actuation levels are shown in each group diagram.



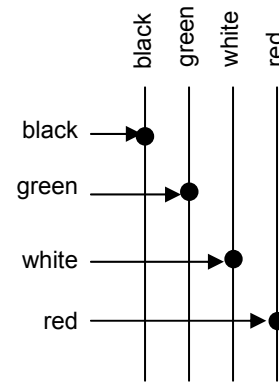
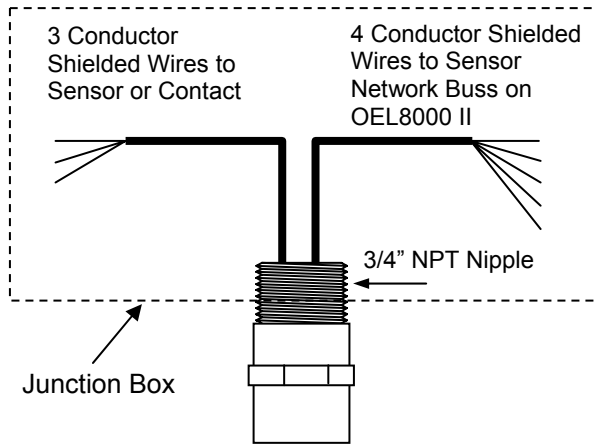
Liquid Float Sensor for High Level (Normally Closed)



- * Consult factory for materials other than stainless steel and BUNA N.
- * Consult factory for compatible controllers.

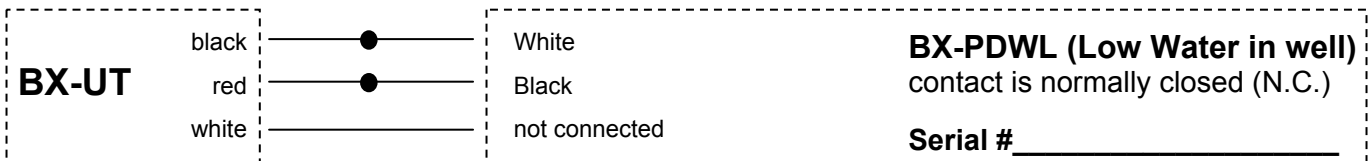
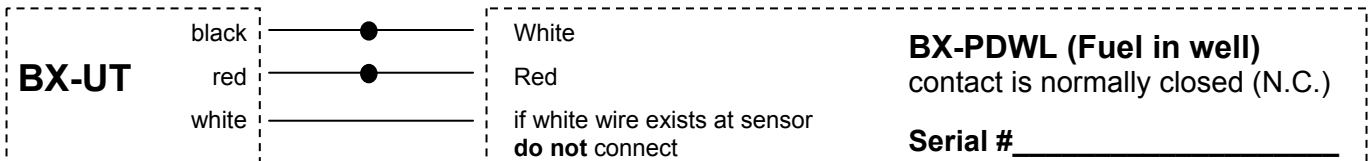
OMNTEC BX-PDWL

BX-PDWL wiring instructions for Low Water in Well and Fuel in Well

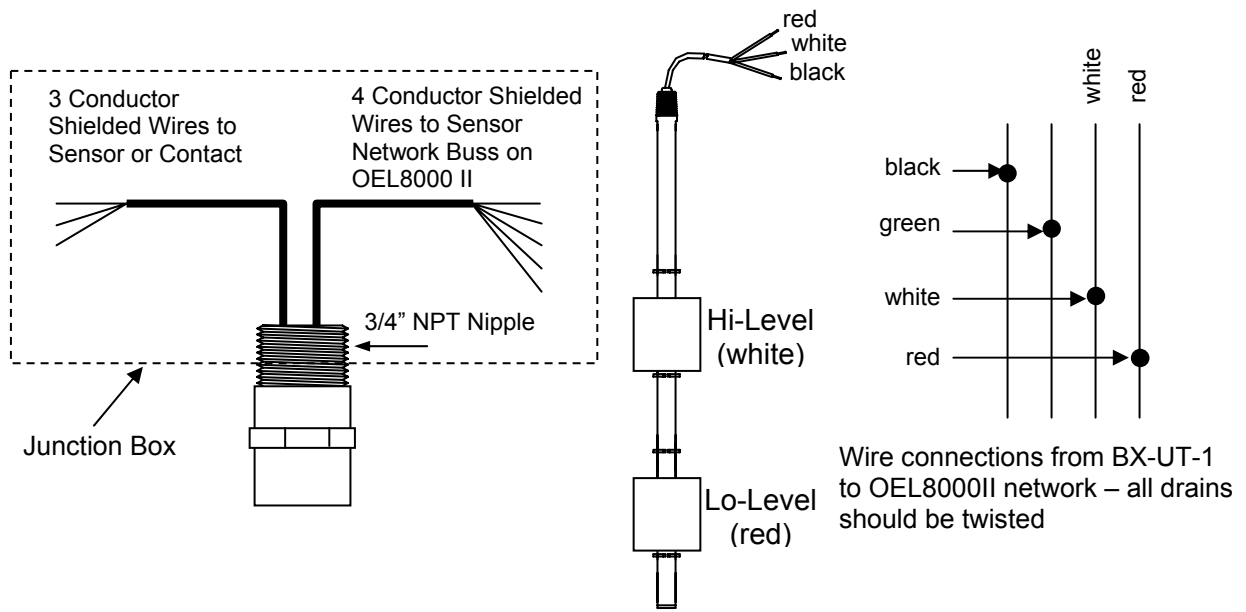


Wire connections from BX-UT-1 to OEL8000II network – all drains should be twisted

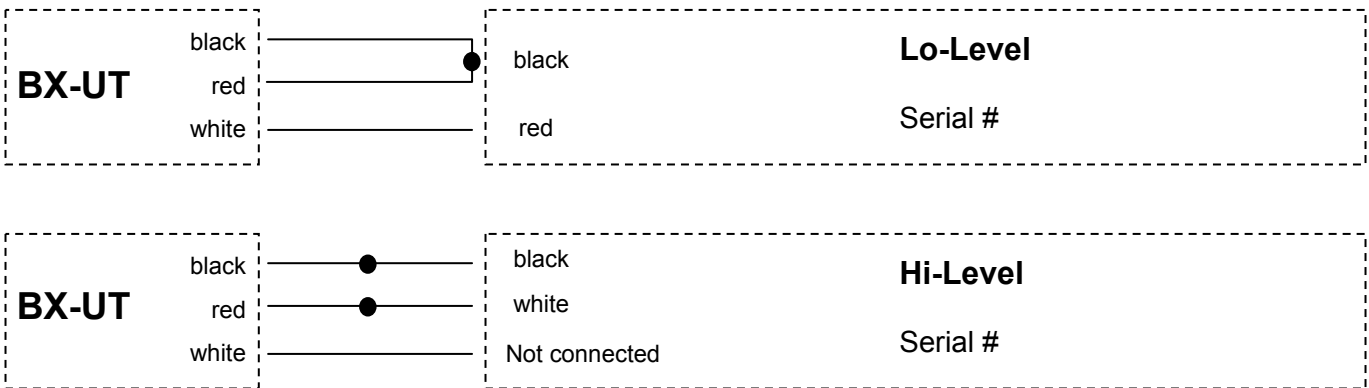
Wiring Instructions



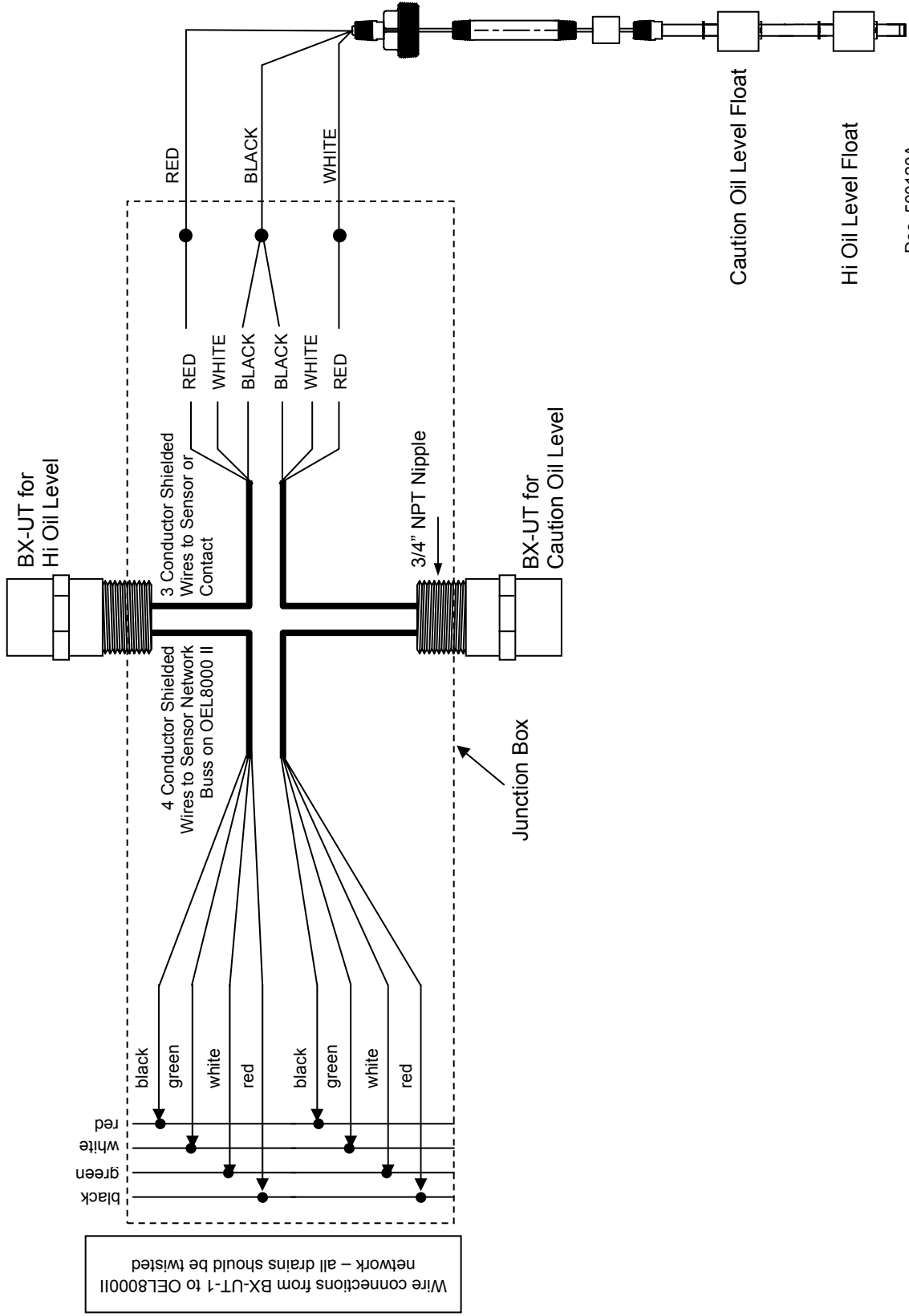
OMNTEC Hi-Level/Lo-Level LF-2 (with two BX-UT's)



Wiring Instructions

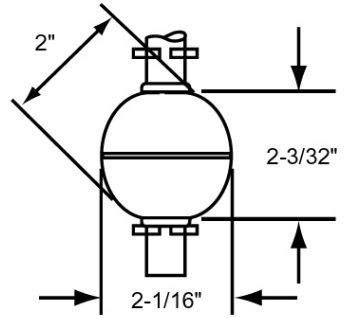
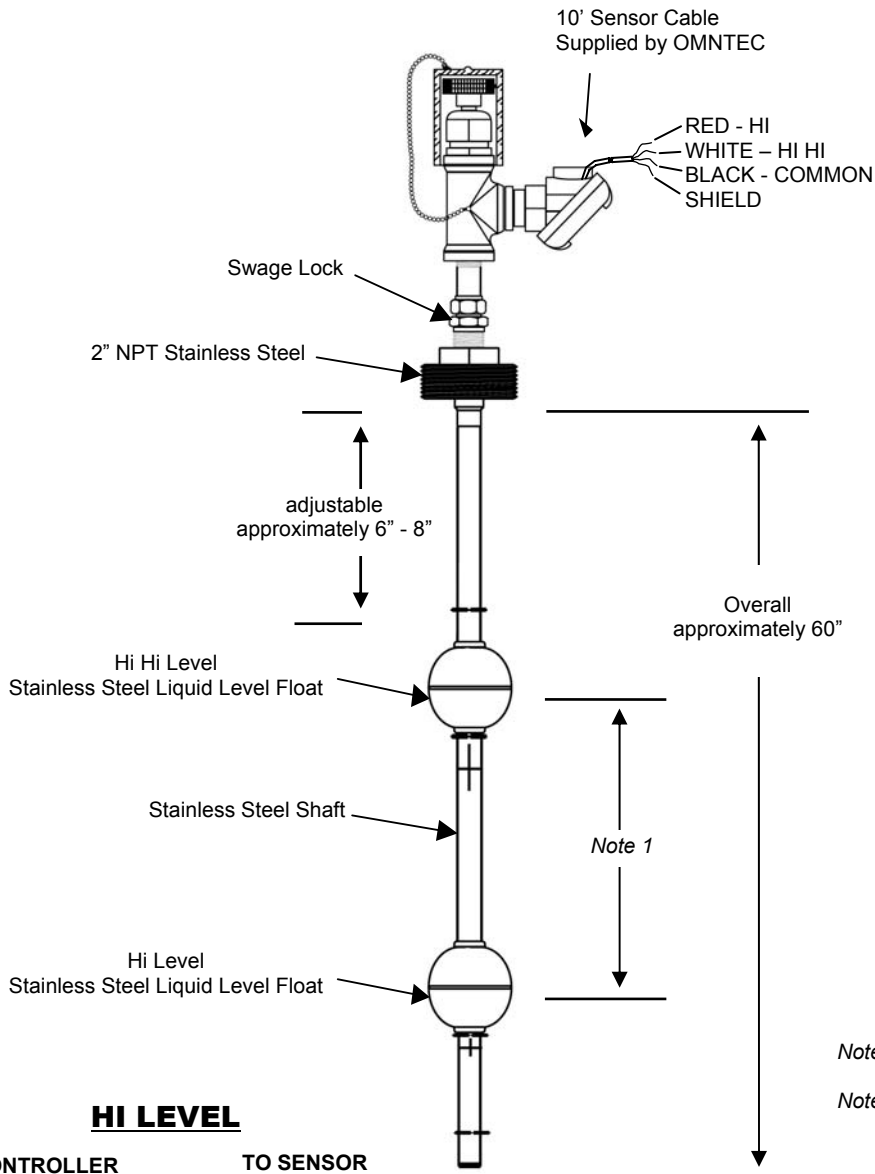


Doc. lf-2 with 2 bx-ut



Doc. 500120A

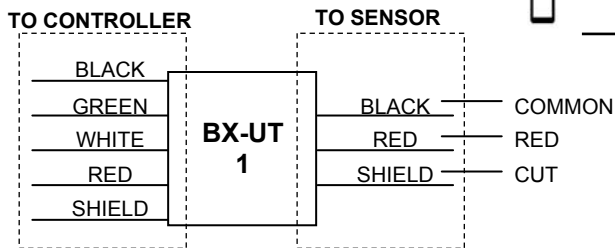
OMNTEC BX-LF-2-SL-ESSO



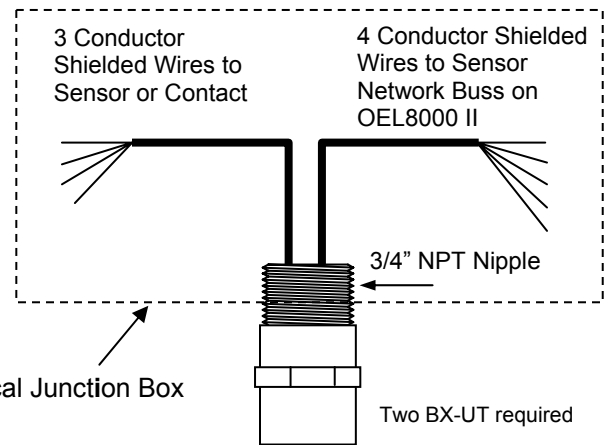
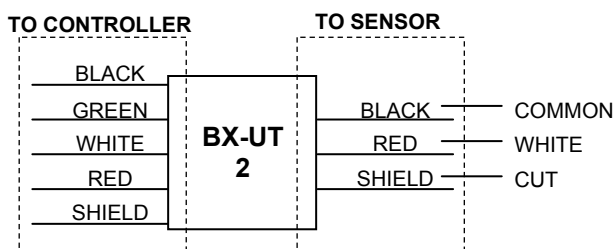
Note 1: Specified by customer

Note 2: Make all height adjustments prior to conduit installation

HI LEVEL



HI HI LEVEL



Doc. bx-lf-2-ss-sl-esso

Appendix C Connector Sealing Kits

C.1	SK-3 CONNECTOR SEALING KIT	C-3
C.2	SK-4 CONNECTOR SEALING KIT	C-4

SK-3 CONNECTOR SEALING KIT

READ THIS FIRST!!!

Failure to use OMNTEC SK-3 kits will void warranty. All work must be performed by qualified installers familiar with intrinsically safe design principles. Read the OEL8000II Installation Manual pertaining to installation and safety requirements. You must comply with the National Electrical Code and all of the federal, state, & local codes & regulations concerning the installation. You can cause DEATH or SERIOUS PERSONAL INJURY to yourself & others, & extensive property damage. Be alert at all times to using proper installation procedures.

ASSEMBLY INSTRUCTIONS

Use the SK-3 connector sealing kit to create a water-tight seal for wiring splices. Wet wires can affect system's performance & cause it to fail.

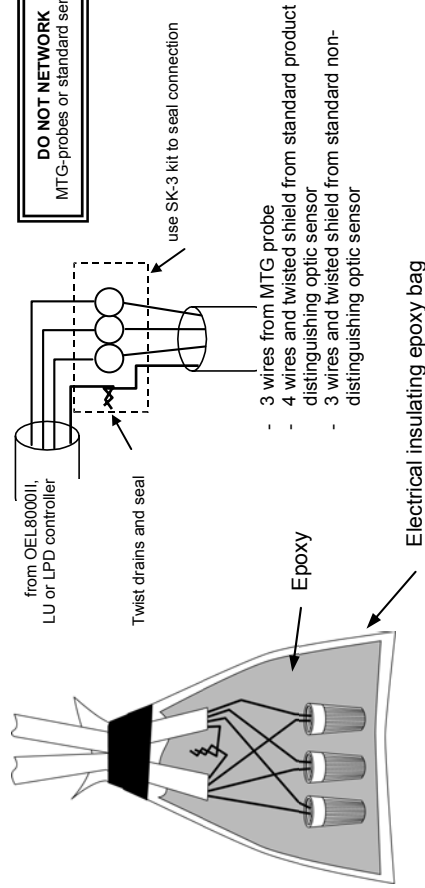


WARNING

Remove all power to controller & to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock/explosion hazard that can result in death, personal injury, or property damage.

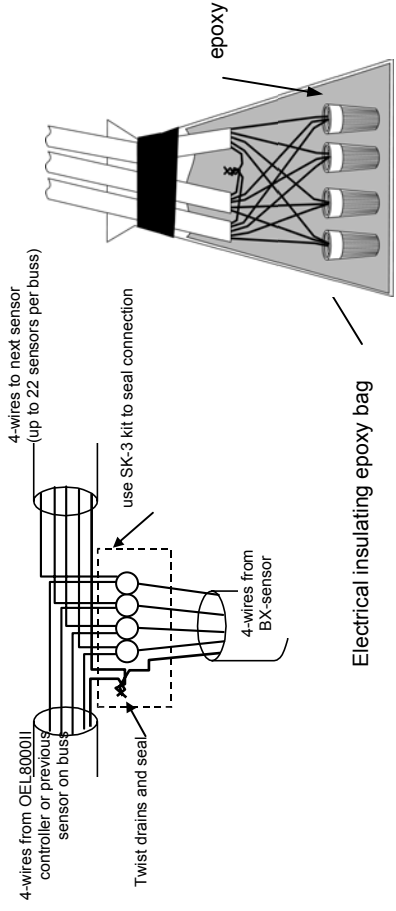
for MTG Probes and standard sensors

1. Remove 1" of outer insulation from each cable. (be sure to strip back approximately 1/4" of insulation from individual wires.)
2. Before inserting wires into wire nut twist together. Insert twisted wires into wire nut (supplied in SK-3 kit) and twist to insure a proper connection. For MTG probes and standard sensors there will be two wires in each wire nut. MTG-probes should have three wire nuts in each epoxy bag. Standard sensors will have 3 or 4 wire nuts and all drains twisted.
3. Squeeze the insulating epoxy packet until the center barrier is completely broken. This is necessary to provide enough room to get all of the wire nuts sealed.
4. Thoroughly mix the two resins by squeezing either side of the packet about 25 times. The mixture will become warm.
5. Move the mixture to one end of the packet.
6. Cut a "V" in the other end and insert the connector into the packet.
7. Make certain that the cable jacket is in the epoxy
8. Work the resin mixture around the connector and cable jacket.
9. Secure the resin packet around the cables with electrical tape.



for BX sensors

1. Refer to document #500129 for bus termination instructions.
2. Remove 1" of outer insulation from each cable. (be sure to strip back approximately 1/4" of insulation from individual wires.)
3. Before inserting wires into wire nut twist together. Insert twisted wires into wire nut (supplied in SK-3 kit) and twist to insure a proper connection. A BX-sensor can have up to three wires in each wire nut. The drains should be twisted together.
4. Squeeze the insulating epoxy packet until the center barrier is completely broken. This is necessary to provide enough room to get all of the wire nuts sealed.
5. Thoroughly mix the two resins by squeezing either side of the packet about 25 times. The mixture will become warm.
6. Move the mixture to one end of the packet.
7. Cut a "V" in the other end and insert the connector into the packet.
8. Make certain that the cable jacket is in the epoxy
9. Work the resin mixture around the connector and cable jacket.
10. Secure the resin packet around the cables with electrical tape.



Doc.400105

SK-4 CONNECTOR SEALING KIT

READ THIS FIRST!!!

Failure to use OMNTEC SK-4 kits will void warranty. All work must be performed by qualified installers familiar with intrinsically safe design principles. Read the OEL8000II Installation Manual pertaining to installation and safety requirements. **You must comply with the National Electrical Code and all of the federal, state, & local codes & regulations concerning the installation. You can cause DEATH or SERIOUS PERSONAL INJURY to yourself & others, & extensive property damage.** Be alert at all times to using proper installation procedures.

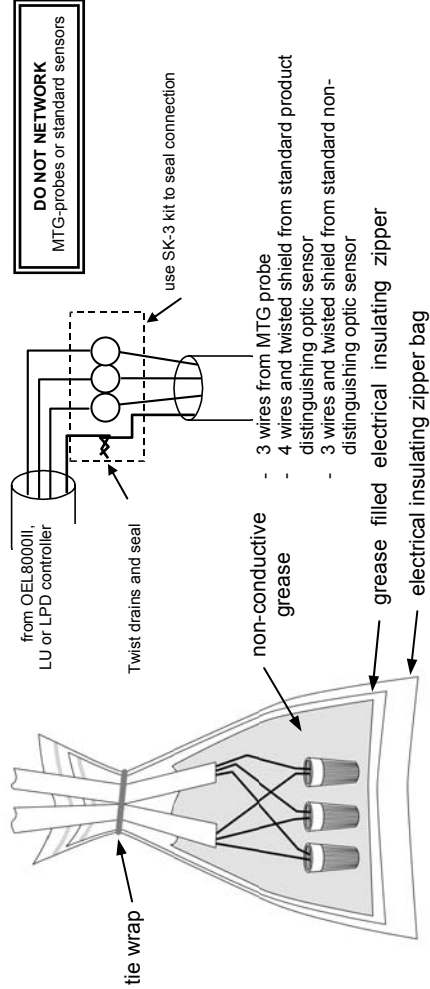
Use the SK-4 connector sealing kit to create a water-tight seal for wiring splices. Wet wires can affect system's performance & cause it to fail.



WARNING
Remove all power to controller & to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock/explosion hazard that can result in death, personal injury, or property damage.

for MTG Probes and standard sensors

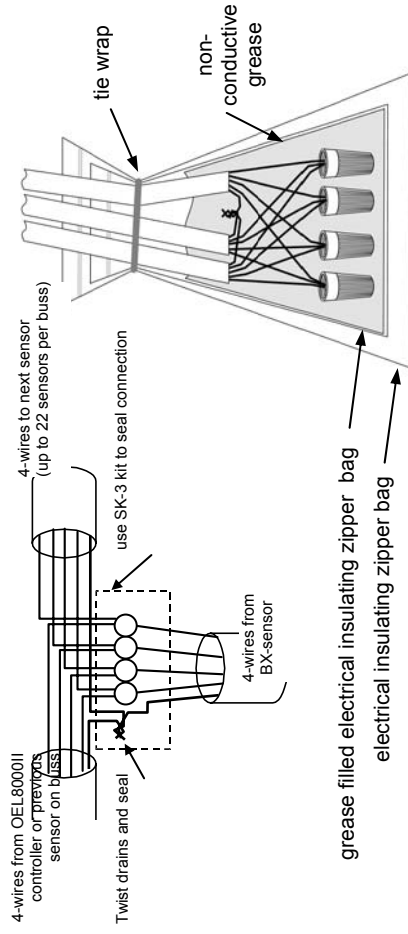
10. Remove 1" of outer insulation from each cable. (be sure to strip back approximately ¼" of insulation from individual wires.)
11. Before inserting wires into wire nut, twist together. Insert twisted wires into wire nut (supplied in SK-4 kit) and twist to insure a proper connection. For MTG probes and standard sensors there will be two wires in each wire nut. MTG-probes should have three wire nuts in each non-conductive grease bag. Standard sensors will have 3 or 4 wire nuts and all drains twisted.
12. Cover cable assembly with zipper bag filled with non-conductive grease. Move grease in bag to ensure all wire nut cavities are filled. Make certain cable jacket is in non-conductive grease.
13. Close grease filled zipper bag.
14. Cover cable assembly with second larger zipper bag.
15. Close second zipper bag.
16. Secure bags to cable assembly using small tie wrap.
17. Finish wiring assembly by cutting and removing loose tail of tie wrap.



ASSEMBLY INSTRUCTIONS

for BX sensors

11. Refer to document #500129 for bus termination instructions.
12. Remove 1" of outer insulation from each cable. (be sure to strip back approximately ¼" of insulation from individual wires.)
13. Before inserting wires into wire nut twist together. Insert twisted wires into wire nut (supplied in SK-4 kit) and twist to insure a proper connection. A BX-sensor can have up to three wires in each wire nut. The drains should be twisted together.
14. Cover cable assembly with zipper bag filled with non-conductive grease. Move grease in bag to ensure all wire nut cavities are filled. Make certain cable jacket is in non-conductive grease.
15. Close grease filled zipper bag.
16. Cover with second larger zipper bag.
17. Close second zipper bag.
18. Secure bags to cable assembly using small tie wrap.
19. Finish the wiring assembly by cutting and removing the loose tail of the tie wrap.



Appendix D OEL8000II Controller

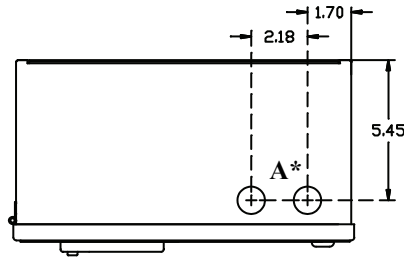
D.1	OEL8000II SPECIFICATION	D-3
D.2	OEL8000II KNOCKOUTS.....	D-4
D.3	OEL8000II ISOLATED GROUNDING.....	D-5
D.4	OEL8000II SYSTEM CONTROL DRAWING.....	D-6
D.5	MOTHERBOARD REPLACEMENT.....	D-7
D.6	INTRINSICALLY SAFE BARRIER COVER	D-8
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D.8	POWER SUPPLY CONNECTIONS.....	D-10
D.9	OEL8000II TERMINATION DIAGRAM	D-11
D.10	OEL8000II WIRING DIAGRAM – 1 TANK SYSTEM.....	D-12

OEL8000II Specification

Specifications																	
Optional Features:	36-character thermal printer Low-voltage programmable remote annunciators programmable remote time-out on high-level alarm flashing caution output Fax/Modem CITLD upgradable																
Input Power:	100-240 VAC +/- 10% 50/60 Hz 50 watts																
Power to Sensors:	12 VDC @ 125 mA max																
Power to Probe:	28 VDC																
Audio-visual Controls:																	
Display:	4-line by 40-character backlit LCD																
Audible alarm:	85 dB piezoelectric horn																
Printer:	36-character thermal																
Key pad:	20-key oil-resistant tactile																
System status:	3 LEDS (OK, fault, alarm)																
Relay Outputs (optional):	120 VAC @ 5 amp resistive SPDT, 24 maximum																
Low-voltage Outputs (optional):	12 VDC																
Fax/Modem (optional):	14,400 baud																
Operating Temperature:	20 to 140° F (-7° C to 60° C)																
Compatible Sensors:	BX-series sensors																
Bx-Series Sensor Cable:	Shielded 22 AWG with drain wire (OMNTEC EC-4) Maximum length 2,000 feet(610m)																
Compatible Probes:	MTG-4* (1219mm) MTG-6* (1829mm) MTG-8* (2438mm) MTG-10* (3048mm) MTG-F-* Series (Flex)																
	<i>* Number signifies shaft length and corresponds to tank diameter. Contact representative for additional lengths. Consult factory for special applications (floats, wells, vapors, etc.).</i>																
MTG Probe Cable:	OMNTEC EC-2 (Shielded Belden #8761) Low inductance: equal to or less than .2 microhenries per foot Maximum length 1,000 feet (305m) <i>Consult representative for longer wire runs.</i>																
Accessories:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">RAS Series</td> <td style="width: 50%; border: none;">Remote annunciators</td> </tr> <tr> <td style="border: none;">IB-RAS</td> <td style="border: none;">Remote annunciator interface board</td> </tr> <tr> <td style="border: none;">PS-102</td> <td style="border: none;">Thermal printer</td> </tr> <tr> <td style="border: none;">MDR-2</td> <td style="border: none;">14,400-baud fax/modem</td> </tr> <tr> <td style="border: none;">IB-RB-2</td> <td style="border: none;">Relay card (4 SPDT relays per card)</td> </tr> <tr> <td style="border: none;">IB-12V</td> <td style="border: none;">Low-voltage interface board</td> </tr> <tr> <td style="border: none;">IB-C420</td> <td style="border: none;">4-20mA output board</td> </tr> <tr> <td style="border: none;">IB-NET</td> <td style="border: none;">Ethernet interface board</td> </tr> </table>	RAS Series	Remote annunciators	IB-RAS	Remote annunciator interface board	PS-102	Thermal printer	MDR-2	14,400-baud fax/modem	IB-RB-2	Relay card (4 SPDT relays per card)	IB-12V	Low-voltage interface board	IB-C420	4-20mA output board	IB-NET	Ethernet interface board
RAS Series	Remote annunciators																
IB-RAS	Remote annunciator interface board																
PS-102	Thermal printer																
MDR-2	14,400-baud fax/modem																
IB-RB-2	Relay card (4 SPDT relays per card)																
IB-12V	Low-voltage interface board																
IB-C420	4-20mA output board																
IB-NET	Ethernet interface board																
Weight:	20 lb. (9kg)																
Approvals:	UL-listed, CUL-listed, CE-listed, CCOE																
<i>Note: Current published specifications are subject to change without notification. Verify specifications with manufacturer.</i>																	

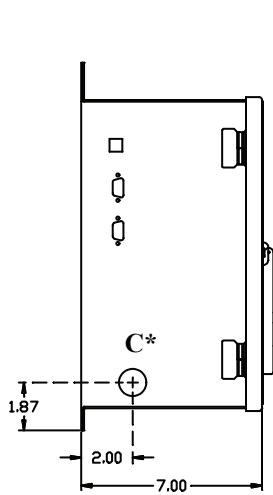
OEL8000II Knockouts

****Knockouts in enclosure are the only ones to be used.**
Drilling enclosure VOIDS warranty.**

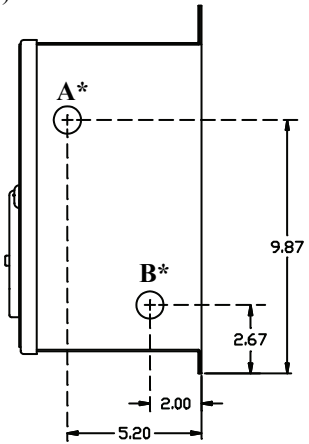
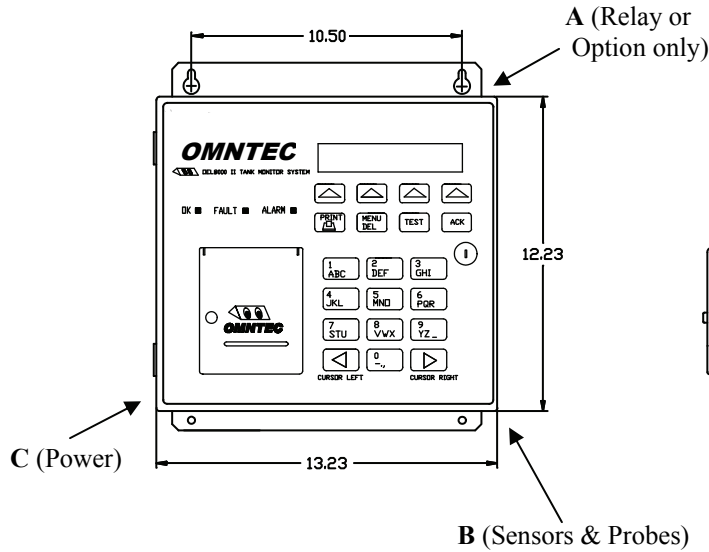


Top panel knockouts – conduit entry for Relay and Option boards

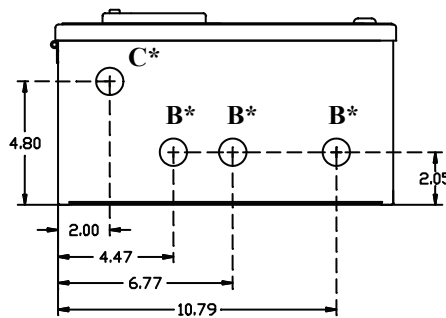
There are two entry points for each type of wire A (relay & option board) B (sensors & probes) Knock out C is power, they are NOT interchangeable



Left side panel knockout – conduit entry for controller's AC power line



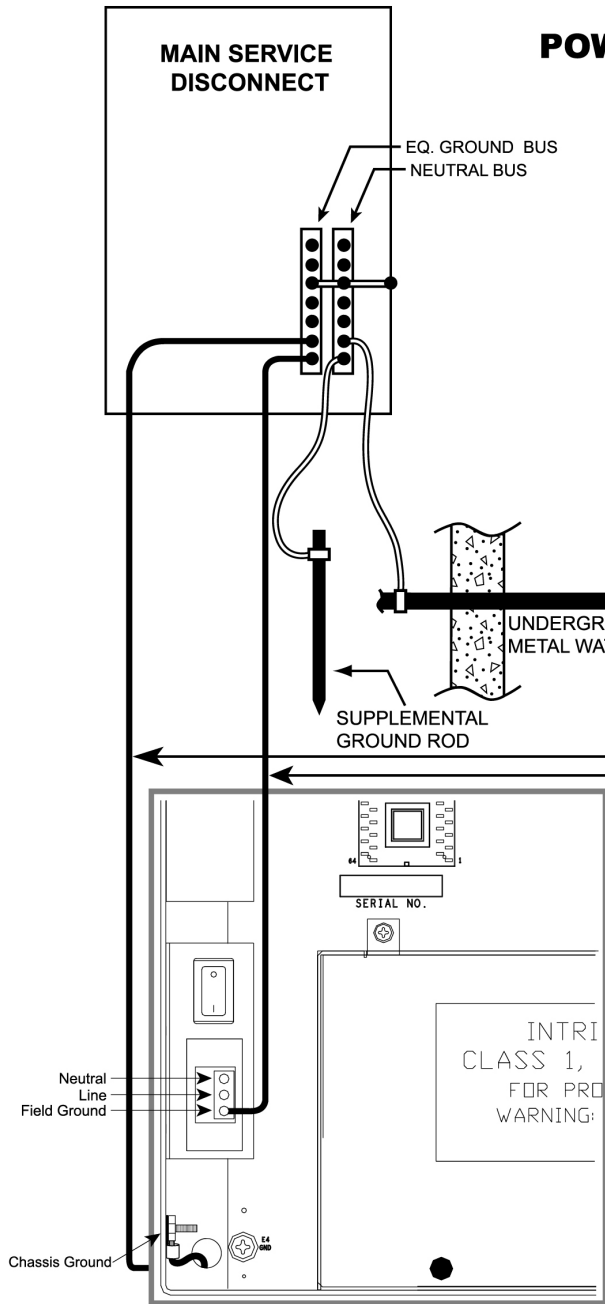
Right side panel knockouts –
 A) conduit entry for Relay and Option boards
 B) conduit entry for sensors and probes



Bottom panel knockouts –
 C) conduit entry for controller's AC power line
 B) conduit entry for sensors and probes

****Also see grounding on next page. Separate grounds MUST be run for chassis and system****

OMNTEC OEL8000II Isolated Grounding



POWERING OEL8000II VIA MAIN PANEL OR SUB PANEL

This product must be properly grounded. Each OEL8000II requires a 12-gauge earth ground wire as well as a 12 gauge field ground wire. Grounding provides a path of least resistance for electric current to reduce the risk of electric shock. Grounding is required to protect the OEL8000II from external electrical noise generating devices. Ground must be 1 ohm (or less) resistance to earth ground. To establish good earth ground pull the wire through the rigid metal conduit and connect it directly to the ground bar of the MAIN service disconnect, not a sub-panel. Do NOT rely on the metal conduit as a ground.

EARTH GROUND
12 AWG

ISOLATED GROUND
12 AWG IN METAL CONDUIT
AS PER NEC 250.146 (D)
FOR ISOLATED RECEPTACLES

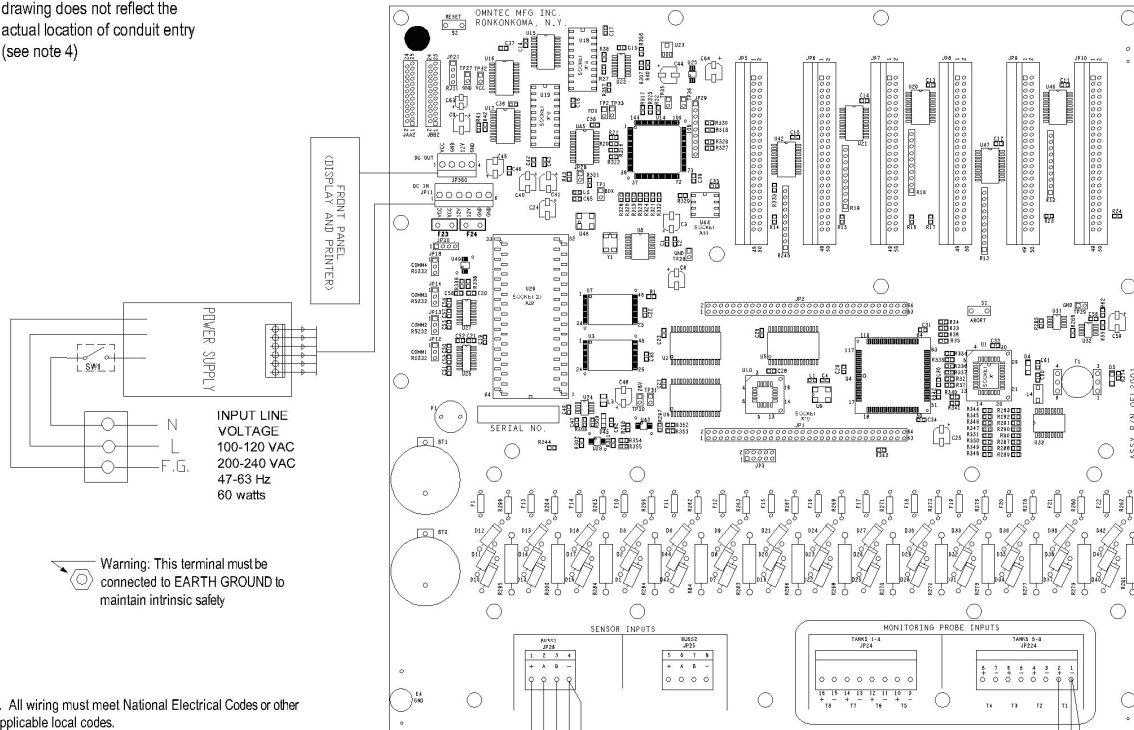
WARNING:
Failure to properly ground the
equipment can cause injury or
damage to the equipment.

**DO NOT USE WIRE NUTS ON GROUND WIRES.
USE COMPRESSION CONNECTORS ONLY.**

Note: Current published specifications are subject to change without notification. Verify specifications with manufacturer.

OEL8000II SYSTEM CONTROL DRAWING

IMPORTANT: This control drawing does not reflect the actual location of conduit entry (see note 4)



1. All wiring must meet National Electrical Codes or other applicable local codes.
2. System earth ground must be connected to terminal F.G. to insure intrinsic safety and must be less than 1 ohm with respect to earth ground.
3. Optional remote required #22 AWG low voltage communication wire minimum.
4. See installation instructions for proper conduit entry.

NON-HAZARDOUS LOCATION

CLASS I, GROUPS C AND D OR
CLASS I, ZONE 0, GROUP IIB
ZONE 0, GROUP IIB
HAZARDOUS LOCATIONS

1. The intrinsically safe field wiring shall be installed in accordance with NEC (NFPA 70, article 504) and ANSI/ISA-RP126 and CEC Part I, Appendix F
 2. Sensor to control unit cable will be a minimum of #22 AWG multiconductor with shield and drain PVC jacketed UL-118830 CM. Cable length will be limited to 2000 feet maximum. Must use Belden#9940 or equivalent. Maximum number of sensors to connect is 22 per bus.
 3. For MTG probe cable lengths up to 1000 ft you must use OMNTEC EC-2 (Belden #8761 shielded cable).
 4. Cable capacitance shall be less than 60 pf per foot. Cable inductance shall be less than 0.2 uH per foot for all cables.
 5. For MTG probe cable lengths 1000 ft to 1500 ft you must use OMNTEC EC-2-EX (Belden #9182 shielded cable).
 6. Each Patriot probe shall be provided with grounded shield cable.
- * The following sensors are classified as Bright Eye series sensors:
 BX-LS, BX-LWF, BX-L12, BX-L20, BX-LV, BX-LM*, BX-PDWF, BX-PDS, BX-PDWS, BX-UT, BX-RES, BX-LF*, BX-OWI-1, BX-OWI-2, BX-OWP, BX-VS
 * - denotes number of levels ** - denotes number of floats

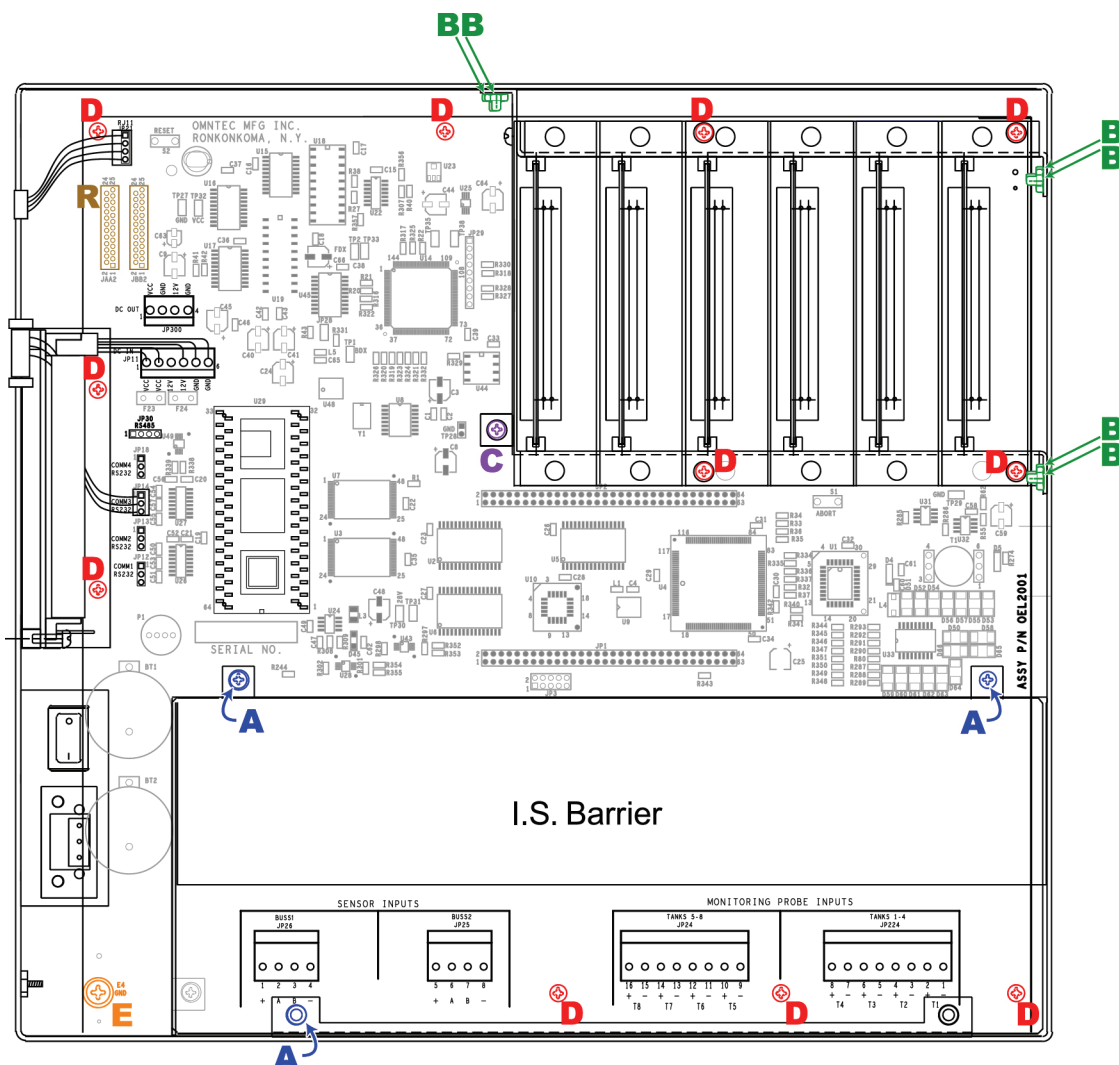
22 SENSORS PER BUS

PATRIOT
 Model 7100 & 7102 Transducer
 U.L. listed Intrinsically Safe for use in Hazardous Locations: Class I, Group C & D Class II, Group E, F, & G Class III

Appareillage Connexe;
 Avertissement: La Substitution De composants peut compromettre La Sécurité intrinsèque

12-19-00
 CDOEL8000II.dwg

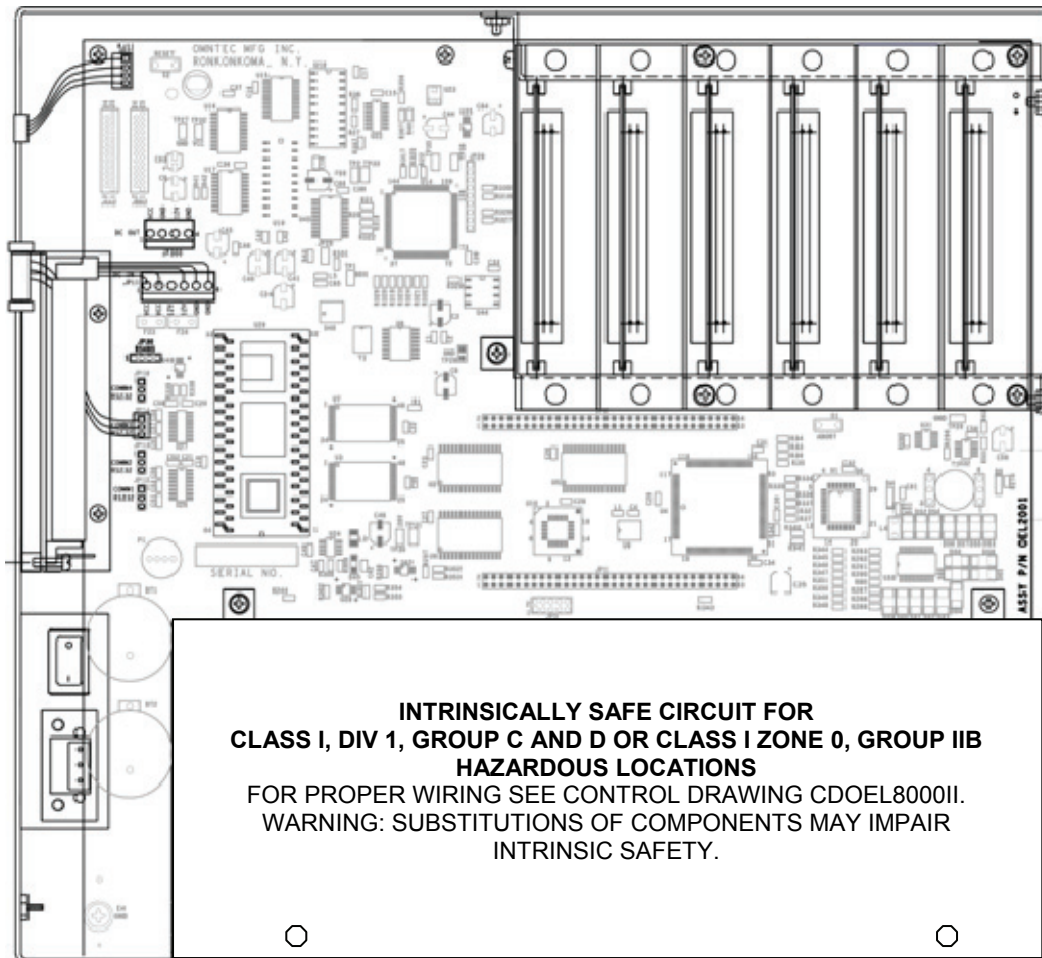
OMNTEC MFG		
OEL8000II SYSTEM CONTROL DRAWING		
A	CDOEL8000II	Q
TOLERANCE: XX = ±0.10 .XXX = ±0.05		
SCALE: 1/1		SHT 1 OF 1

OMNTEC**Motherboard Replacement****Instructions for replacing the motherboard in the OEL8000II**

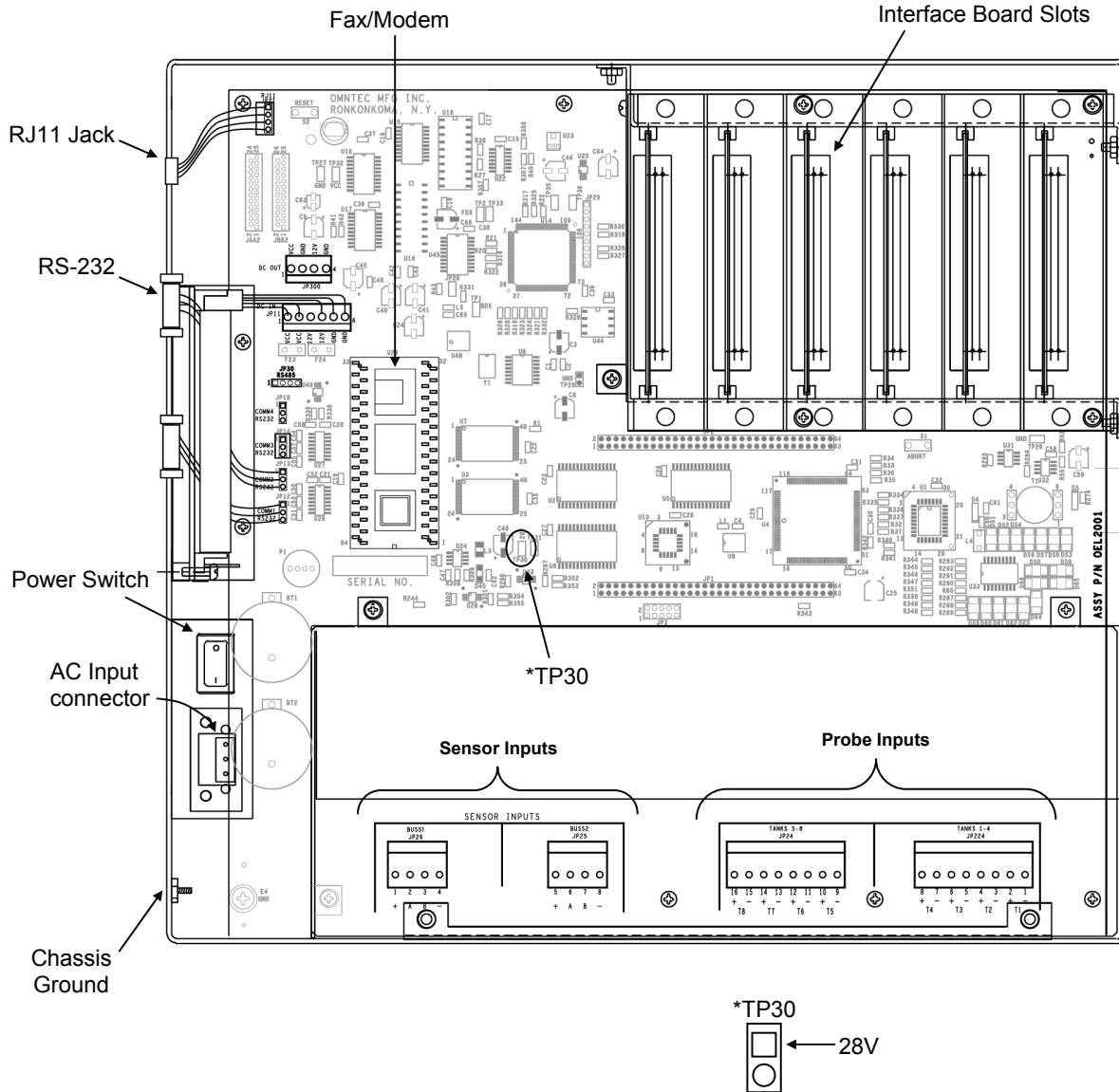
1. Turn off power to the system
2. Remove any interface boards from the board holder.
3. Remove the I.S. Barrier by removing the 3 screws labeled “A” above (Torx screws).
4. Remove ¼ nuts holding the interface board holder to the motherboard. These are the 6 nuts labeled “B”. Remove screw labeled “C” and remove interface board holder.
5. Remove all connectors attached to the motherboard. Make note of the position of the com port and modem port cables.
6. Remove the 11 screws labeled “D”.
7. Remove the ground screw, “E”.
8. Remove the old motherboard.
9. Before installing the new motherboard first attach the ribbons, “R”, to the board.
10. Place the new motherboard in the unit and replace the screws starting with “E” and working your way back to the “A” screws. Be sure the connectors are oriented properly.
11. Test Remote Annunciator
12. If not working clear RAM
13. To clear RAM press and then release reset button. When activity appears on LCD screen press and hold down #5 key until LCD screen tells to release.

Doc. 500152

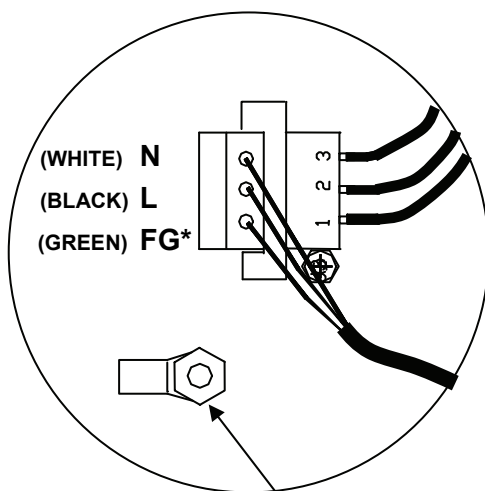
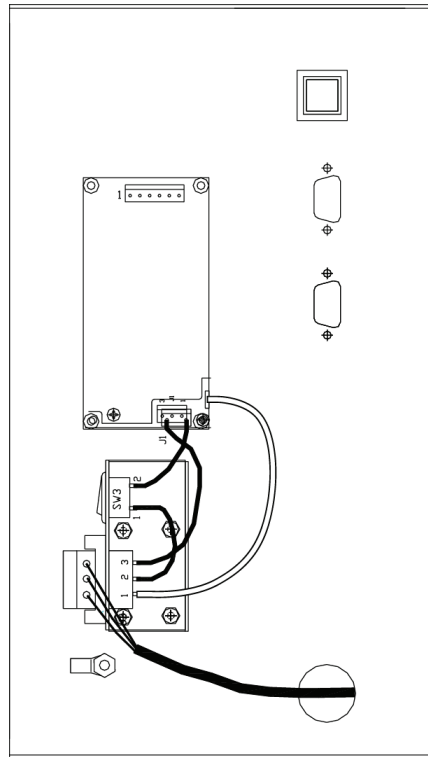
IS Barrier Cover



Components and Connections



Power Supply Connections



***Field ground must be grounded to Main panel. See section 2.28.**

Warning: This terminal must be connected to EARTH GROUND to maintain intrinsic safety

OEL8000II Terminatin Diagram

Customer:

PO#:

EL#:

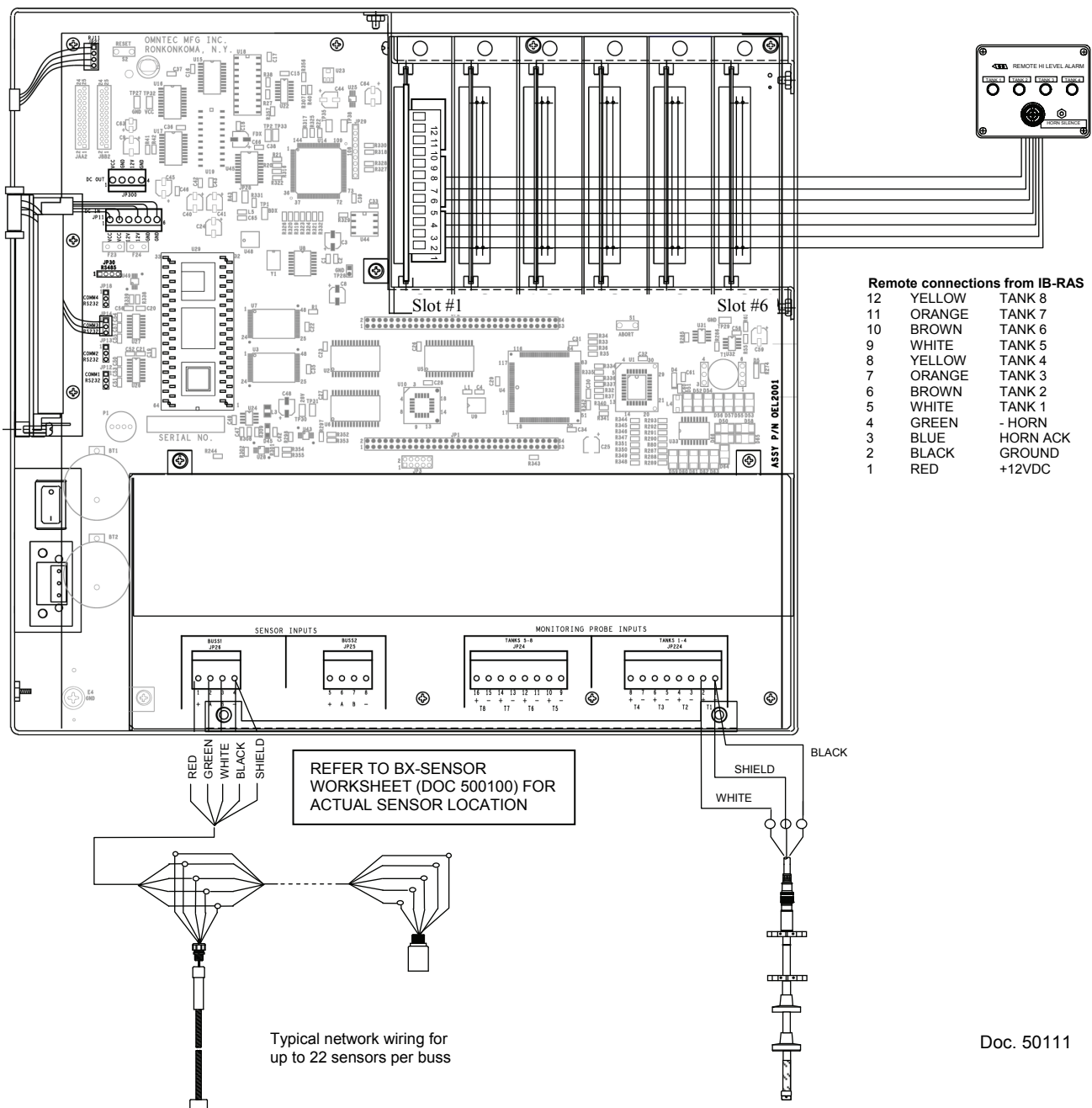
M/F:

Sensors:

OEL8000II GAUGING PROBE WIRE TERMINATIONS

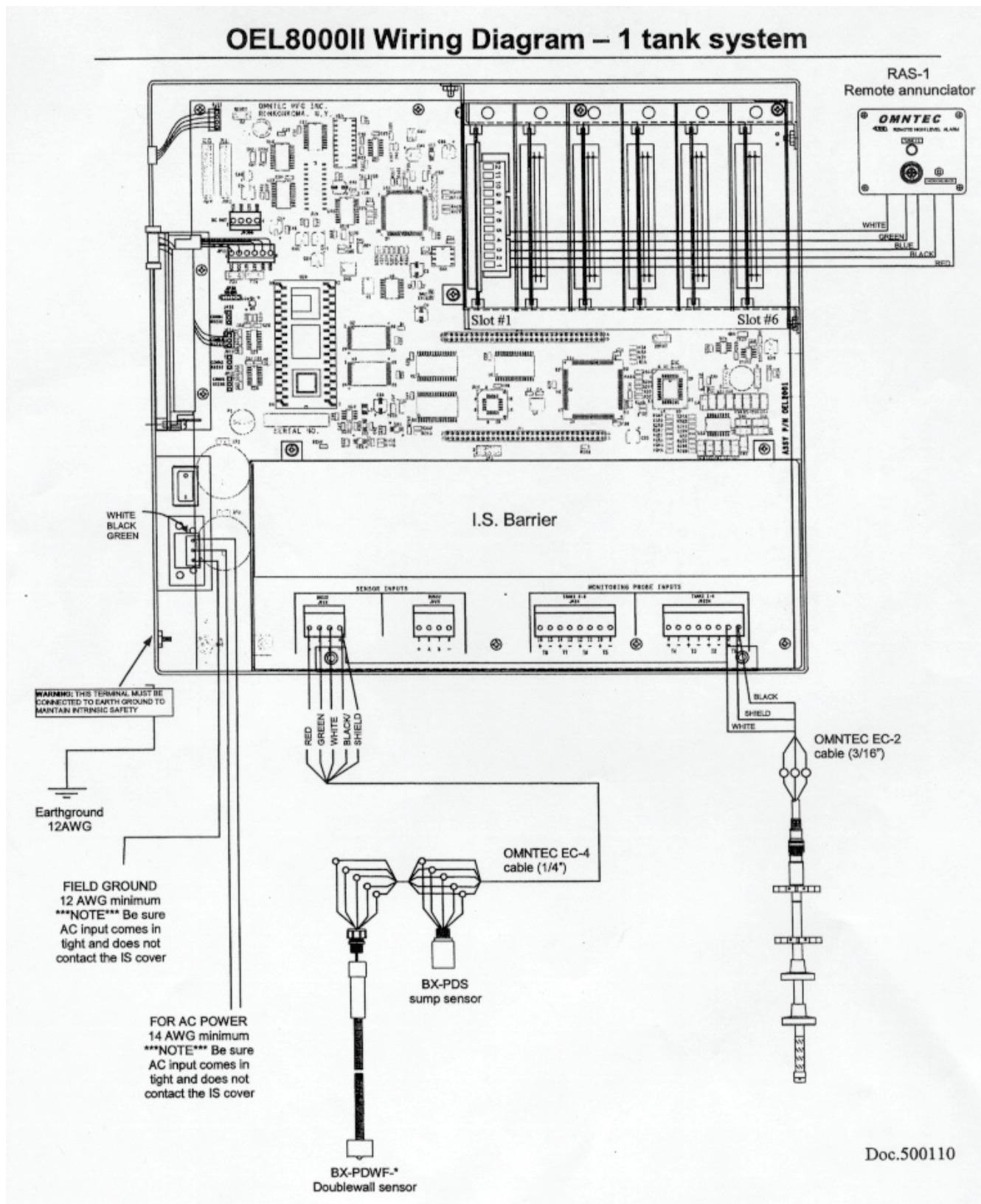
Belden 8761 for runs up to 1000 ft – Belden 9182 for runs 1001-1400 ft

PROBE	COLOR	TANK	PART NO.	Product
PROBE #1	+	WHITE	# 1	MTG
	-	BLK & SHLD		
PROBE #2	+	WHITE	#2	MTG
	-	BLK & SHLD		
PROBE #3	+	WHITE	#3	MTG
	-	BLK & SHLD		
PROBE #4	+	WHITE	#4	MTG
	-	BLK & SHLD		
PROBE #5	+	WHITE	#5	MTG
	-	BLK & SHLD		
PROBE #6	+	WHITE	#6	MTG
	-	BLK & SHLD		
PROBE #7	+	WHITE	#7	MTG
	-	BLK & SHLD		
PROBE #8	+	WHITE	#8	MTG
	-	BLK & SHLD		



Doc. 50111

OEL8000II Wiring Diagram – 1 tank system



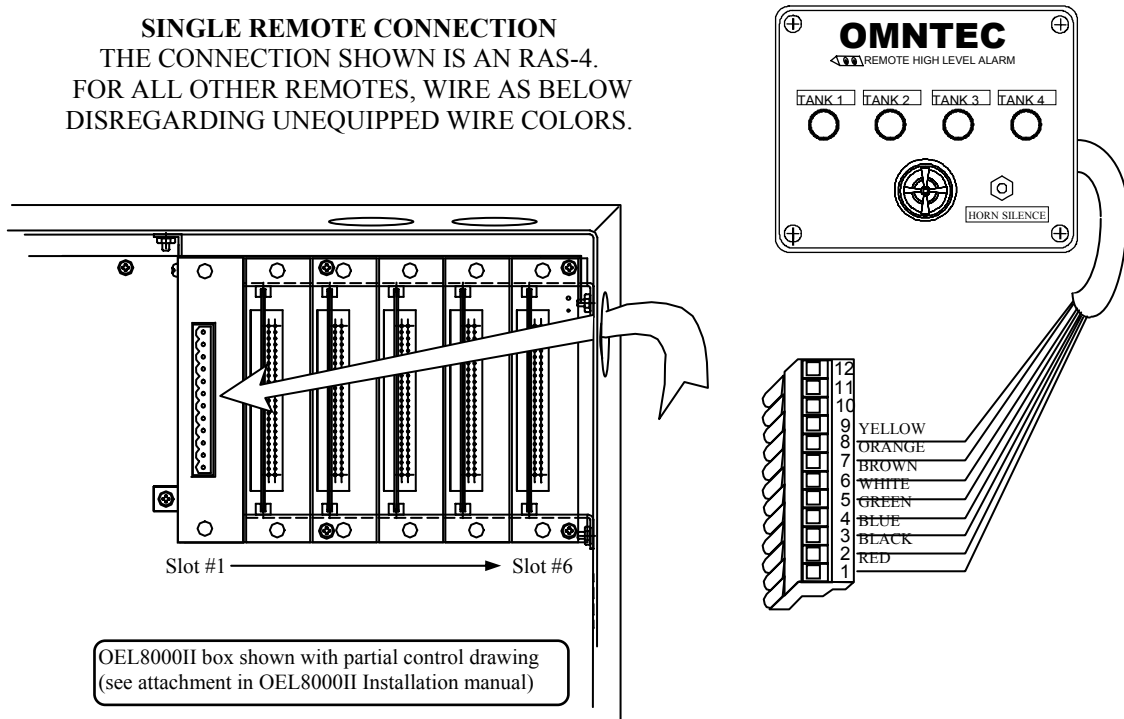
Appendix E Remote Annunciator

E.1	OEL8000II REMOTE ANNUNCIATOR INSTALLATION	E-3
E.2	RAS—SERIES REMOTE HIGH LEVEL ALARM	E-4

OEL8000II Remote Annunciator Installation

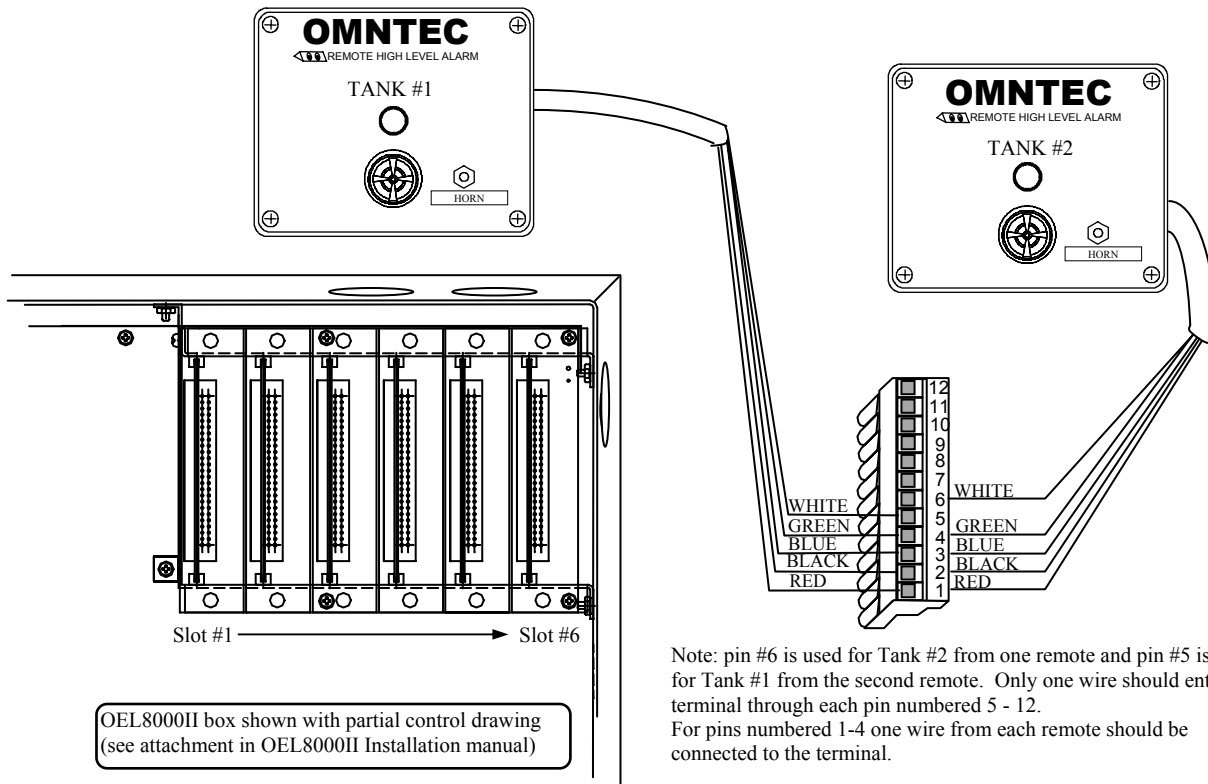
When used with IB-12V low voltage board, OEL8000II software version must be 5.3 or greater

SINGLE REMOTE CONNECTION
 THE CONNECTION SHOWN IS AN RAS-4.
 FOR ALL OTHER REMOTES, WIRE AS BELOW
 DISREGARDING UNEQUIPPED WIRE COLORS.



MULTI-REMOTE CONNECTION

SHOWN BELOW IS A TYPICAL CONNECTION OF TWO RAS-1 REMOTES

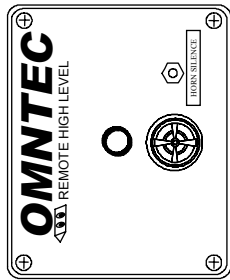


Note: pin #6 is used for Tank #2 from one remote and pin #5 is used for Tank #1 from the second remote. Only one wire should enter the terminal through each pin numbered 5 - 12. For pins numbered 1-4 one wire from each remote should be connected to the terminal.

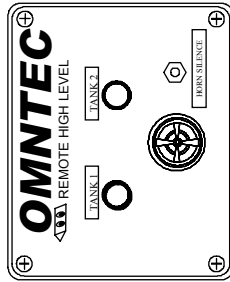
RAS—Series Remote High Level Alarm

***NOTE:** RAS-series remote annunciators require IB-RAS interface boards when installed with the OEL8000II

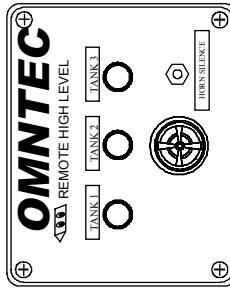
RAS-1



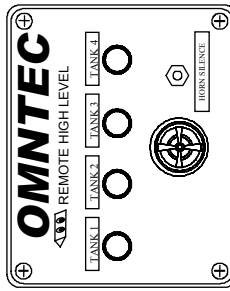
RAS-2



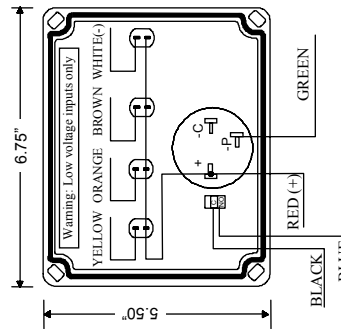
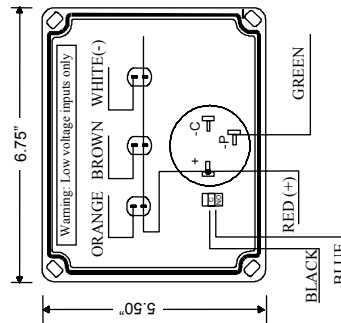
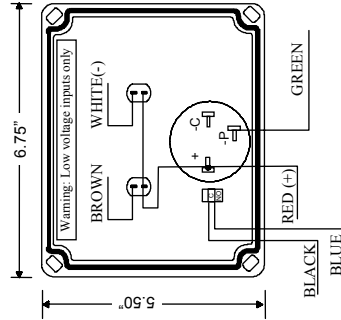
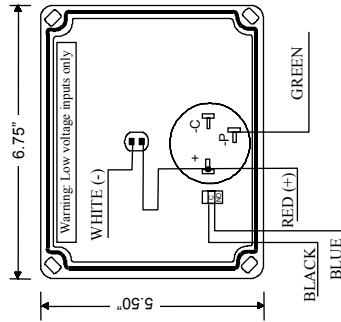
RAS-3



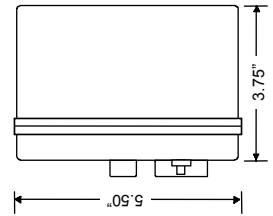
RAS-4



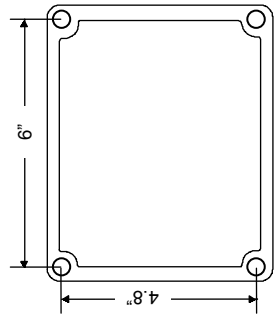
INTERNAL WIRING COLOR CODE



SIDE VIEW



MOUNTING DIMENSIONS



SPECIFICATIONS

Audible Alarm	95 dB pulsing horn
Red Light	Liquid-high-level alarm
Response Time	Immediate
Power Input maximum	12VDC @200mA
Wire	from controller
Weight	22 AWG minimum
Enclosure	1 lb. NEMA 4X

Note: It is recommended that knockouts be placed in the bottom of the enclosure

Appendix F Interface Boards

IB-NET-2 ETHERNET BOARD.....	F-2
IB-12V LOW VOLTAGE INTERFACE BOARD INSTALLATION.....	F-17
IB-C420 PROGRAMMING	F-19
IB-RB2 RELAY INTERFACE BOARD INSTALLATION.....	F-21
RS-485 INSTALLATION	F-24

IB-NET-2 ETHERNET BOARD

IB-NET Board (with E-mail) Installation and Setup

The IB-NET card is used to allow the OEL8000II ATG to communicate remotely over a network or internet connection.

With the IB-NET Board the user can remotely:

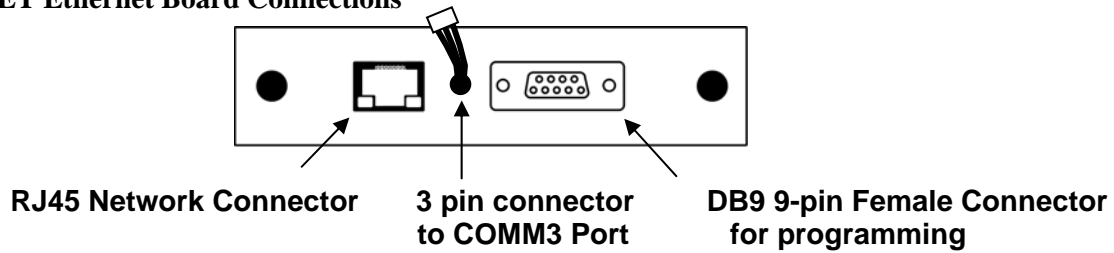
- Display Tank Inventory
- Display Tank alarms
- Program the ATG
- Remote Front Panel View of the ATG

The OEL8000II ATG can:

- Send E-mails on Alarms, Drops, Shift Change and VLD Results.
- Send Alarm, Drop, Shift Change and VLD Results to a remote computer running OmntecPC or another Remote Program.

Table of Contents	Page No.
1. IB-NET Ethernet Board Connections	F3
2. Insert IB-NET interface board into designated card slot in OEL8000II	F3
3. To configure your IB-NET Ethernet board for the first time	F3
4. Using ONMTECPC To Program the Network Settings	F3
5. Connecting to an OEL8000II through a Network Connection	F8
6. Troubleshooting	F9
7. Testing the IP Connection to the OEL8000II(with Ethernet connection), Using Hyper-Terminal	F10
8. Testing the IP Connection to the OEL8000II Without an Available Network Connection	F10
9. Finding you Networks IP Addresses, Mask and Gateway	F11
10. Programming E-Mail Callout on OEL8000II	F15
Appendix 1. IB-NET / NETWORK SITE INSTALLATION QUESTIONNAIRE	F15
Appendix 2. OEL8000II Versions for IB-NET control.	F16

1. IB-NET Ethernet Board Connections



2. Insert IB-NET interface board into designated card slot in OEL8000II

3. To configure your IB-NET Ethernet board for the first time

Your IB-NET Ethernet card is defaulted to the following settings:

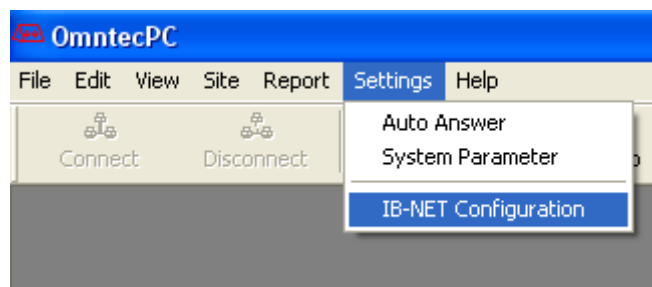
IP Address	-	192.168.100.200
IP Mask	-	255.255.255.0
Def Gateway	-	192.168.100.1
Port	-	4001

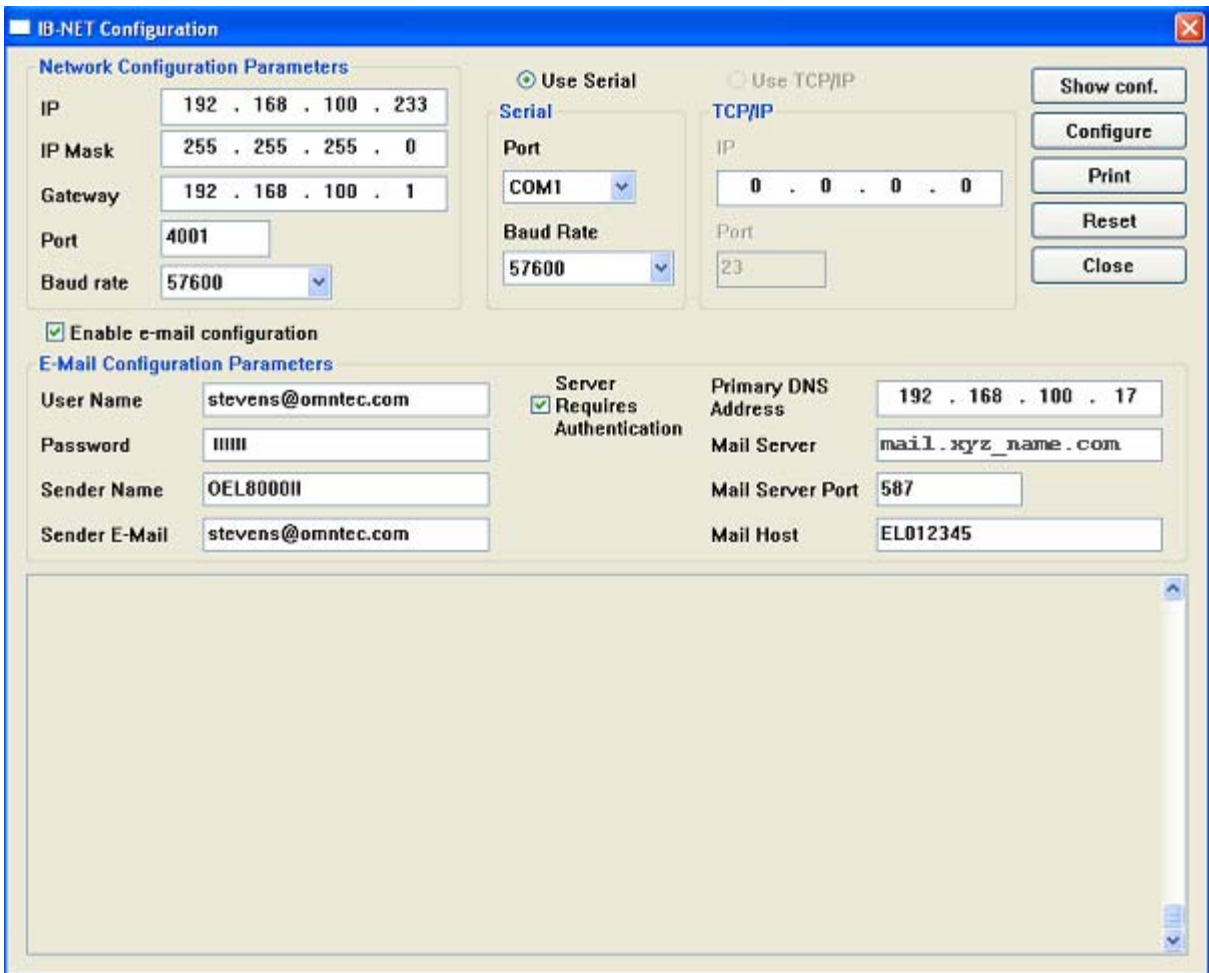
The card must be programmed with the unique Ethernet settings for you network.

1. Plug the IB-NET Ethernet board into an open OEL8000II card slot.
2. Connect a 9-pin D-type one to one cable, from the IB-NET Ethernet board's 9-pin connector to the workstation's serial port. Disconnect the 3-pin cable from the COMM 3 port if connected.

4. Using ONMTECPC To Program the Network Settings

1. Run the OMNTECPC program.
2. Select 'IB-NET Configuration' from the 'Settings' menu.





3. To program the IB-NET with E-mail parameters select the “**Enable e-mail configuration**” check box.

NOTE:

- 1) If you do not have the E-mail parameters and wish to program the IB-NET card for normal communications uncheck the “**Enable e-mail configuration**” box if it is checked, before selecting the ‘Configure’ button.
 - 2) All the E-mail setting boxes must be filled in. If not a programming error might occur.
4. Type in the network settings for:
 - IP Address (example: 192.168.100.200)
 - IP Mask (example: 255.255.255.0)
 - Def Gateway (example: 192.168.100.1)
 - Port (example: 4001)
 - Baud Rate (Range 300 to 57600) defaults at 57600. Serial output to the OEL8000II. **

**Note: The COMM port of the OEL8000II must also be set for the same Baud Rate set here.

5. Make sure the COMM port setting (‘**Connect Using**’) is set for the COMM port connected to the IB-NET card.
6. Set the ‘Serial– Baud Rate’ box to 57600 baud.

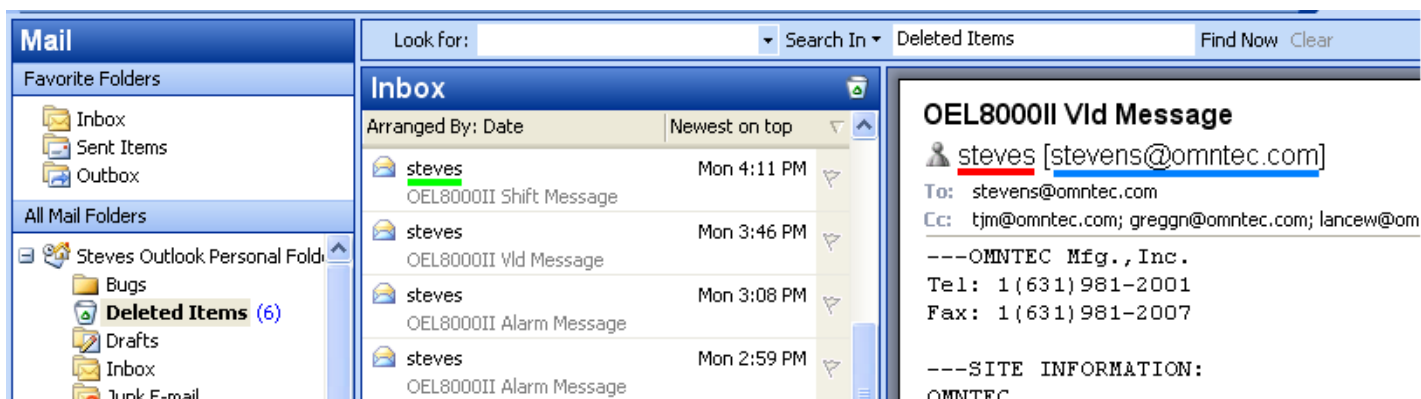
7. Next enter your E-mail settings.

THE FOLLOWING EMAIL PARAMETERS ARE PROVIDED BY YOUR EMAIL PROVIDER

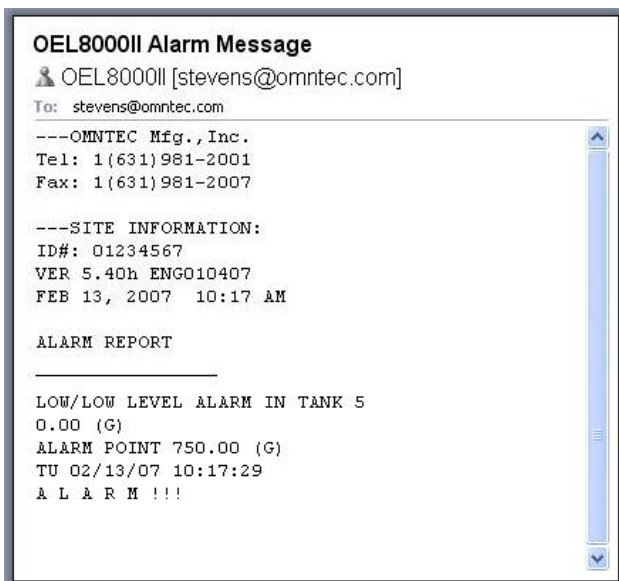
Username: Email address provided for the ATG
Password: Password associated with the above username.
Primary DNS address: E-MAIL Domain Address.
Mail Server: Email server address.
Mail Server Port: Email server port number.
Server Requires Authentication: Check the authentication box if authentication is required by your provider.

USER SELECTABLE EMAIL PARAMTERS

Mail Host: Incoming E-mail Header displayed in receivers INBOX. **See GREEN Underlined, Below.**
Sender Name: Text string that will be sent in E-mail header. **See RED Underlined Word.**
Sender E-mail: Senders (ATG) email address. Will be sent in E-mail header. **See BLUE Underlined Word.**



INCOMMING E-MAIL. Shows where the three user selectable parameters are displayed



Sample Email from an OEL8000II

8. Press the '**Configure**' button. The commands to the IB-NET card will be shown on the screen. The word 'OK' will follow each command. The last line will say 'Saving Data and Exiting'. If you see the word 'ERROR' following any of the commands or if an error message window pops up, press the 'Reset' button (wait for the reset commands to

- display). *Change the baud rate to 115200 (Reset default value).* Press the ‘Configure’ button again. If the configuration was not successful, check the cable connections and repeat steps 4-6.
9. Press the ‘**Show Conf.**’ (show configuration settings) button and make sure that the inputted data was set properly. See the highlighted items in the tables below.
 10. Exit from the window, the IB-NET board is now set for use.
 11. Disconnect the 9-pin cable and re-connect the 3-pin serial connector to the COMM3 port on the left side of the OEL8000II’s motherboard (RED wire on top).

CHECK THE SETTINGS ENTERED

General configuration	
ag-server	: disable
auto-dialout	: enable
auto-dialout-login	: disable
auto-discovery	: enable
auto-discovery-port	: 1020
auto-dialin	: disable
boot-messages	: enable
broadcast-timer	: 10
def-gway	: 192.168.100.1
dns	: enable
hostname	: SocketEthernetIP
inactivity	: disable
inactivity-timeout	: 300
ip-escape-monitor	: enable
ip-escape-string	: +++inet
login	: enable
operation-mode	: normal
pri-dns	: 192.168.100.17
raw-mode	: enable
sec-dns	: 0.0.0.0
tcp-keepalive	: 3
telnet	: enable
telnet-port	: 23
tftp	: enable
serial-escape-monitor	: enable
serial-escape-string	: +++inet
udp-inactivity	: enable
udp-inactivity-timeout	: 300
udp-terminate-monitor	: enable
udp-terminate-string	: +++inet
watchdog	: enable

IP configuration	
dhcp-client	: disable
ip-address	: 192.168.100.233
ip-mask	: 255.255.255.0

```

+-----+
|                                     |
|                               Serial configuration                               |
|                                     |
+-----+
| auto-dialin                      : disable                                |
| auto-dialin-host                  : 127.0.0.1                              |
| auto-dialin-port                  : 23                                    |
| auto-dialin-protocol              : telnet                                |
| auto-dialin-trig-mode             : dtr-char                              |
| auto-dialout                      : enable                                |
| auto-dialout-port                : 4001                                |
| auto-dialout-protocol            : telnet                                |
| baud-rate                        : 57600                                |
| buffer-datasize                   : 0                                    |
| buffer-time                       : 0                                    |
| connect-state                     : dialing                               |
| connect-type                      : direct                               |
| data-bits                         : 8                                    |
| dialout-monitor                   : none                                  |
| echo-command                      : disable                               |
| flow-control                      : none                                  |
| host-interaction-mode             : disable                               |
| inactivity                        : disable                               |
| inactivity-timeout                : 300                                  |
| login-string                      :                                     |
| message                           : enable                               |
| parity                            : none                                  |
| raw-dialin                        : enable                               |
| raw-dialout                       : enable                               |
| serial-escape-monitor             : enable                               |
| serial-escape-string              : +++inet                             |
| stop-bits                         : 1                                    |
+-----+

```

```

+-----+
|                                     |
|                               SMTP configuration                               |
|                                     |
+-----+
| authentication                  : enable                                |
| username                        : stevens@omntec.com                            |
| password                        : xyz123                                    |
| smtp-server-name                : mail.xyz_name.com                            |
| smtp-server-port                : 587                                    |
| host-name                       : EL012345                                    |
| from-address                    : stevens@omntec.com                            |
| from-address-identity            : OEL8000II                                |
| to-address1                       :                                     |
| to-address2                       :                                     |
| to-address3                       :                                     |
| to-address4                       :                                     |
| to-address5                       :                                     |
| cc-address1                       :                                     |
| cc-address2                       :                                     |
| cc-address3                       :                                     |
| cc-address4                       :                                     |
| cc-address5                       :                                     |
| reply-to-address                  :                                     |
| subject                           :                                     |
+-----+

```

5. Connecting to an OEL8000II through a Network Connection

If the OEL8000II tank gauge is connected to a sites network (from a router or hub) with an IB-NET card, the user can poll the OEL8000II for site data from a computer also inside his network using OmntecPC or a terminal program.

If the customer wishes to communicate to the OEL8000II from an outside site (home or main office) there are two ways to make the connection:

1. The OEL8000II’s IB-NET card can be connected to a public IP connection. Program the IB-NET card with a public IP Address received from your service provider.
2. If your OEL8000II is connected inside a network through a router, communication to the OEL8000II from outside your network is still possible if you setup your router for ‘Port Forwarding’ to the OEL8000II.
 - a. Program your IB-NET card for an address within your network.
 - b. From your router’s configuration screen, find the Port Forwarding screen. Set the OEL8000II’s IP address and port number in the ‘Port Forwarding’ window.
 - c. Exit from the router configuration program. You should now be able to connect to the OEL8000II by using the routers IP Address with the IB-NET cards Port Number.

LINKSYS Etherfast® Cable/DSL Router BEFSR41v4

Applications & Gaming | Setup | Security | **Applications & Gaming** | Administration | Status

Port Range Forwarding | Port Triggering | UPnP Forwarding | DMZ | QoS

Port Range Forwarding

Port Range					
Application	Start	End	Protocol	IP Address	Enabled
dvr	8100	to 8100	Both	192.168.1.10	<input checked="" type="checkbox"/>
omntec	4001	to 4001	Both	192.168.1.5	<input checked="" type="checkbox"/>
	0	to 0	Both	192.168.1.0	<input type="checkbox"/>
	0	to 0	Both	192.168.1.0	<input type="checkbox"/>
	0	to 0	Both	192.168.1.0	<input type="checkbox"/>
	0	to 0	Both	192.168.1.0	<input type="checkbox"/>
	0	to 0	Both	192.168.1.0	<input type="checkbox"/>

Port Range Forwarding

Port Range Forwarding can be used to set up public services on your network. When users from the Internet make certain requests on your network, the Router can forward those requests to computers equipped to handle the requests. If, for example, you set the port number 80 (HTTP) to be forwarded to IP Address 192.168.1.2, then all HTTP requests from outside users will be forwarded to 192.168.1.2. It is recommended that the computer use static IP address.

Save Settings | Cancel Changes

CISCO SYSTEMS

6. Troubleshooting

If the Ethernet communications are not working, check the following items to make sure that the Ethernet card is setup correctly.

- Make sure that the IB-NET card is programmed properly for your network settings. See Section 4 or 5 above.
- Make sure that the IB-NET card is connected properly. See Section 3 above.
- Turn unit power off and check that the daughter board on the IB-Net bd is seated properly. (Push down)
- Make sure that the OEL8000II is programmed properly for the Ethernet card. Check COMM3 Baud rate.
- RJ-45 Cable length must not exceed 90 meters (295 feet). 150 feet is recommended as a maximum length.

Test Procedure – Normal Connection

12. Turn off the power to the OEL800II when installing the Network Card.
13. Plug in board in any open slot, and attach the network and serial cables.
Connect the 3-pin connector to the OEL8000II's serial port labeled 'COMM3 RS232', with the red wire on top. If there already is a 3-pin connector on the COMM3 port, move the old connection to the 'COMM2 RS232' port. Make sure that the IB-NET board is plugged in all the way.
14. Turn on Power to OEL8000II.
15. Look at LCD display, After 'Check For Optional Modem' message, look for 'NETWORK CARD FOUND, SLOT#' (Previously Found) or 'NETWORK CARD MOVED TO, SLOT#' (First Time Found). The OEL8000II recognizes the IB-NET card. If the IB-NET board is not found by the OEL8000II, the card will not be reset properly and call-outs on alarms will not be sent. If the IB-NET board is not found on Turn-on try checking to see if the board is inserted properly. Recycle power to the unit and check again for the network board message.
16. Look at the network card. With the network cable plugged in, the bottom Green LED will be on steady (Network Link LED), and the top Green/yellow LED will be blinking (Activity LED). Also there is a blinking Red LED on the top of the Ethernet Card (Ethernet Card Working) on some older boards.

Note: If the Green LED's are off (with the network line connected) the board is in 'reset mode' (not recognized by the OEL8000II) or the IB-NET board is not getting power from the unit, or the network line is bad. The reset line will turn off when the board is found during turn on (or in INT BRD selection in the OEL Setup).

17. The OEL800II communication settings must be set to: Baud: 57600, Data Bits: 8, Parity: None on COMM3.
(See the *Installation Manual, Section 4 Programming COMM Setup*)
18. If the above procedures check OK, and the system still does not communicate, check the network card settings.
19. The user must program the Ethernet Board to match the setting of there individual network system.

The default Network settings for the board are:

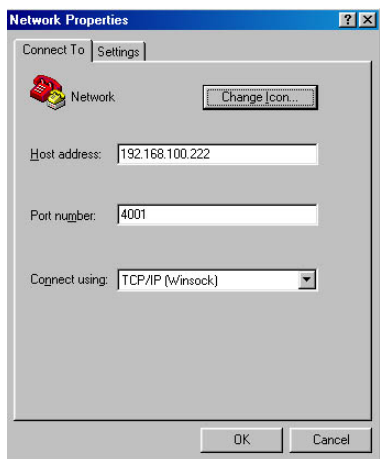
IP ADDRESS:	192.168.100.200 (Unique address for OEL8000II only)
IP MASK:	255.255.255.0
DEF-GATEWAY:	192.168.100.1
PORT:	4001

See the "Configure your IB-NET Ethernet Board" sections above for the procedure to set the IB-NET card network settings.

20. After the IB-NET card's settings are verified, retest the communications.

7. Testing the IP Connection to the OEL8000II(with Ethernet connection), Using Hyper-terminal

21. Open Hyper-terminal
22. Hyper-terminal setup. Select 'File->Properties' from the menu.
23. Enter IP Address and Port number of the IB-NET card, and select TCP\IP from 'Connect using' selection.



24. Exit Setup.
25. Select 'Disconnect' from the menu bar or 'Call->Disconnect' from the menu. Next, select 'Call' from the menu bar or 'Call->Call' from the menu. The bottom-left message bar should now show 'Connected 00:00' if Hyper-terminal connected to the unit. If the bottom-left message bar is showing 'Connecting' the IP address was not found.
26. If the message bar shows 'Connected 00:00', type in a control command to the OEL8000II (example 'I20100'). The response data should immediately display on the screen.

8. Testing the IP Connection to the OEL8000II Without an Available Network Connection

From your computer's network port, a direct connection can be made to the OEL8000II IB-NET card , through a specially wired Network cable.

Network Test Connection Cable from a PC to the IB-NET Card. Use standard 8 pin modular connectors.

8 PIN MODULAR	8 PIN MODULAR
1	3
2	6
3	1
4	4
5	5
6	2
7	7
8	8

CONNECTION

1. Connect the computers network port to the OEL8000II IB-NET card's RJ-45 port.

Note: The IP addresses of the PC and the Network Card have to have the same addressing in the first two parts.

Example: PC - **192.168.100.083**
 IB-NET - **192.168.100.200**

TEST

1. Open Hyper-terminal
2. Hyper-terminal setup. Select 'File->Properties' from the menu.
3. Enter IP Address and Port number of the OEL8000II's IB-NET card, and select TCP/IP from 'Connect using' selection.
4. Select 'Disconnect' from the menu bar or 'Call->Disconnect' from the menu. Next, select 'Call' from the menu bar or 'Call->Call' from the menu. The bottom-left message bar should now show 'Connected 00:00'
5. Send a OEL8000II remote command (example 'I20100'). The response data should immediately display on the screen.

Setting your Computer's IP Address

If above communication cannot be established, check the computers IP settings.

Check the "Local Area Settings Properties – Internet Protocol (TCP/IP)" window in your computer. If "Obtain an IP address automatically" is set, select the "Use the following IP address:" box and enter an IP address, IP mask, and IP gateway to OEL8000II's IB-NET board.

The last number of the IP address must be different then the IP address of the IB-NET board (192.168.100.**200**).

9. Finding you Networks IP Addresses, Mask and Gateway

If you do not know your networks IP Configuration, you can use a computer on that network to search for the networks IP Addresses, Subnet Mask and Default Gateway.

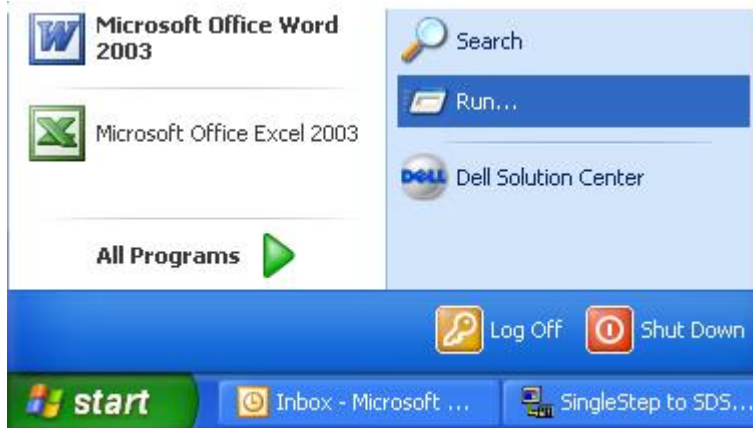
From your computers 'command prompt' we can view your computers IP settings. To get to you computer command prompt, go to one of the following '**start**' menu selections:

'START -> All Programs -> Accessories -> Command Prompt'

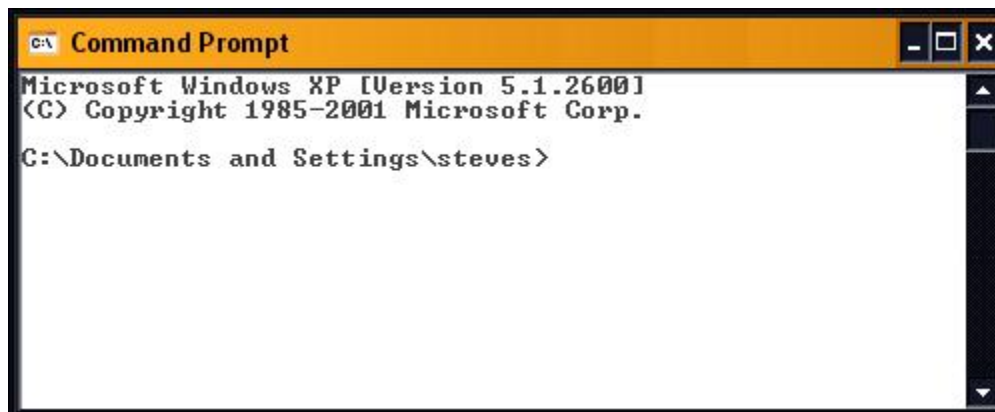


Or

'START -> Run', and type in 'CMD' in the window.

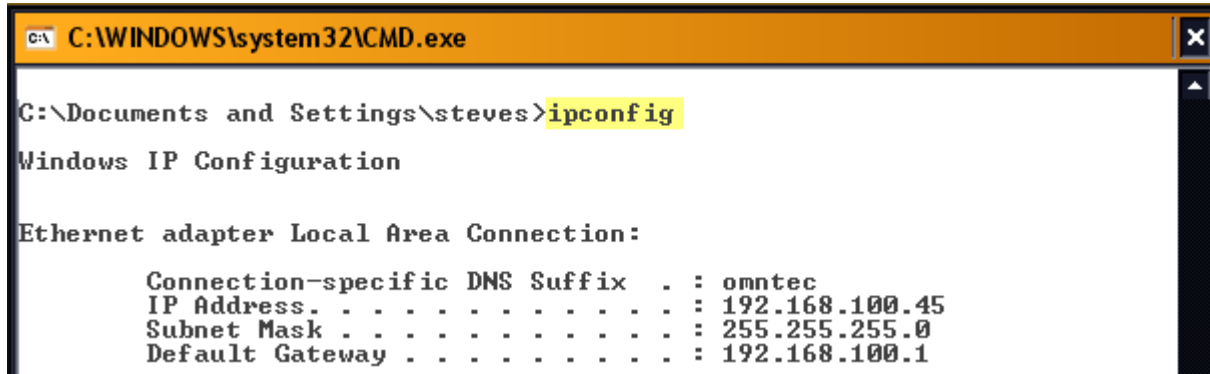


The following command prompt window will open:



In the command prompt window we can type in the command 'ipconfig' which will show that computer IP settings. These settings will be used in programming the IB-NET card, only the last number in the IP Address has to be changed to address the new instrument (the OEL8000II).

Type in 'ipconfig' and press the 'Enter key' to view the IP Configuration Data:



```
C:\WINDOWS\system32\CMD.exe
C:\Documents and Settings\steves>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : omntec
    IP Address . . . . . : 192.168.100.45
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.100.1
```

The OEL8000II's IB-NET card must have a unique address in your network. If you know which addresses are free to use in your network, use the above settings with a new address and use these numbers to program into the IB-NET card.

```
IP Address - 192.168.100.XXX (XXX = the new address for the IB-NET card)
IP Mask - 255.255.255.0
Def Gateway - 192.168.100.1
```

If you do not know the usable addresses used in your network, use the following commands to find the addresses used in your network.

The 'net view' command allows us to see all the network users server names.

The 'ping' commands allows us to find out what network address the above server names are set to.

```

C:\WINDOWS\system32\CMD.exe

C:\Documents and Settings\steves>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : omntec
    IP Address . . . . . : 192.168.100.45
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.100.1

C:\Documents and Settings\steves>net view
Server Name                Remark
-----
\\DARLEN
\\MLT5008BB
\\SERVER
\\SERVE
\\STEVE
\\IAR
\\IJM
\\UADIM
The command completed successfully.

C:\Documents and Settings\steves>ping darlen

Pinging darlenew.Omntec.local [192.168.100.62] with 32 bytes of data:

Reply from 192.168.100.62: bytes=32 time<1ms TTL=128
Reply from 192.168.100.62: bytes=32 time<1ms TTL=128
Reply from 192.168.100.62: bytes=32 time<1ms TTL=128
Reply from 192.168.100.62: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.62:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

```

Use the 'Ping' command to find out the IP addresses of all the names in your Network.

Select an address for the IB-NET card that is not in the above list.

Note: Not all addresses are useable in your network.

If the IP Mask equals 255.255.255.0 then all 256 addresses (ex. 192.168.100.0 to 192.168.100.255) are available. If the last number in you IP mask is not '0' then some addresses cannot be used. Ask your IP provider what addresses as free to use on your network.

10. Programming E-Mail Callout on OEL8000II

1. Go into SETUP mode by selecting MORE and entering security code 000000.
2. Press MORE 3 times and select COMM.
3. Select MODEM.
4. Select IP MODEM.
5. Select E-MAIL.
6. Select AUTODIAL.
7. Enter E-Mail addresses (up to 8).
8. After entering all E-Mail addresses press BACK.
9. Select which events will trigger E-Mail callout (DROP, VLD, ALARM, or SHIFT)
When an event type is selected you will be prompted which E-Mail #'s to call*.
10. After selecting event and E-Mail #'s to call press BACK and then MENU to exit SETUP mode.

*Example: Selecting ALARM and then entering 1 2 3 will send an E-Mail to addresses 1, 2, & 3 programmed in step 7 above upon alarm.

Appendix 1

IB-NET / NETWORK SITE INSTALLATION QUESTIONNAIRE

Before installing your IB-NET board, the following questions and information should be gathered.

1. **Do you have an Omntec ATG installed at the site?**
2. Is the ATG an **OEL8000** or an **OEL8000II**?

The OEL8000II is designed to work with the IB-NET card.

The OEL8000 cannot be used with the IB-NET card. A modified card could be designed to work with the OEL8000 with a limited set of remote commands and no callouts or email.

3. What is the **distance** between the OEL8000II ATG and the sites network router or hub? There is a 90meter length limit for RJ45 cable. Design in a hub if a longer cable length is needed
4. **Does the network cable have to go through any walls or special routing** to get from the router/hub to the OEL8000II ATG. Any Drilling through wall or cable routing issues should be preformed before a technician is called to install the IB-NET card.
5. **Is there an open port in the sites router or hub for the OEL8000II network cable?**
The OEL8000II requires one open network port to plug into the OEL8000II's IB-NET card.
6. **A network address, mask and gateway is needed to program the IB-NET card.**
This information must be provided before the installation. The OEL8000II ATG must

be assigned a unique address on the sites network.

The sites IT provider / technician should be able to provide this information.
See Chapters 3 and 4 for more detail if necessary.

7. What is the firmware version of the OEL8000II?

The version number is listed on most OEL8000II printouts. If not press the green 'TEST' button on the console and look for the version number.

Version 5.02 and higher is recommended for OEL8000II network communications.
Version 5.55 and higher is needed for OEL8000II Email callouts.

8. Router setup, to allow remote communication of the ATG on the internet.

The routers port forwarding selection should be set to allow the Omntec ATG to communicate over the internet, using the router address with the IB-NET cards port number.

See 'Connecting to an OEL8000II through a Network Connection', Chapter 5.

To allow the site's router to be modified remotely over the Ethernet the site router's firewall must be turned off and the router must be set to allow remote programming. These changes must be programmed from routers local control computer.

Appendix 2

OEL8000II Versions for IB-NET Control

The following versions of the OEL8000II firmware is compatible with IB-NET functions.

Version 4.31. First version with IB-NET controls.

Version 5.02 and higher is recommended for OEL8000II network communications. Updated Routines

Version 5.55 and higher is needed for OEL8000II with **Email** callouts.

IB-NET Card Version

IB-NET Version 2.03.

IB-NET-2 Version 3.06 (needed for **Email** support)

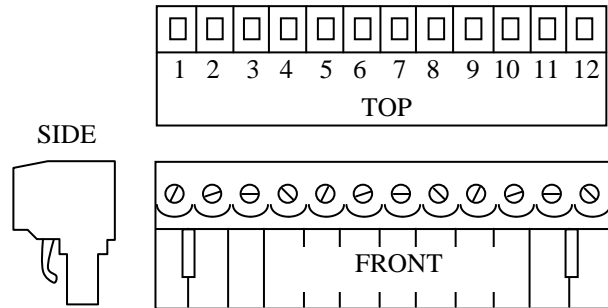
IB-12V Low Voltage Interface Board Installation

1. Attach wires to the top of the removable connector.

IB-12V in an energized unalarmed state, when used with RAS series remotes:

1	+12V	Red		
2	Ground	Black		
3	Horn Ack	Blue		
4	- Horn	Green		
5	Output 1	White	*Event 1	Alarm 1
6	Output 2	Brown	Event 2	Alarm 2
7	Output 3	Orange	Event 3	Alarm 3
8	Output 4	Yellow	Event 4	Alarm 4
9	Output 5	White	Event 5	Alarm 5
10	Output 6	Brown	Event 6	Alarm 6
11	Output 7	Orange	Event 7	Alarm 7
12	Output 8	Yellow	Event 8	Alarm 8

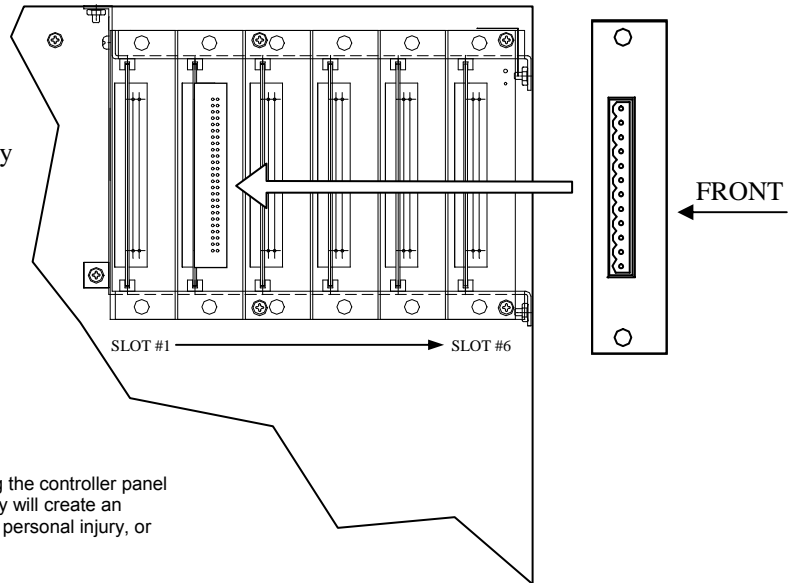
*Event-see



2. Insert IB-12V interface board into designated card slot in OEL8000II.

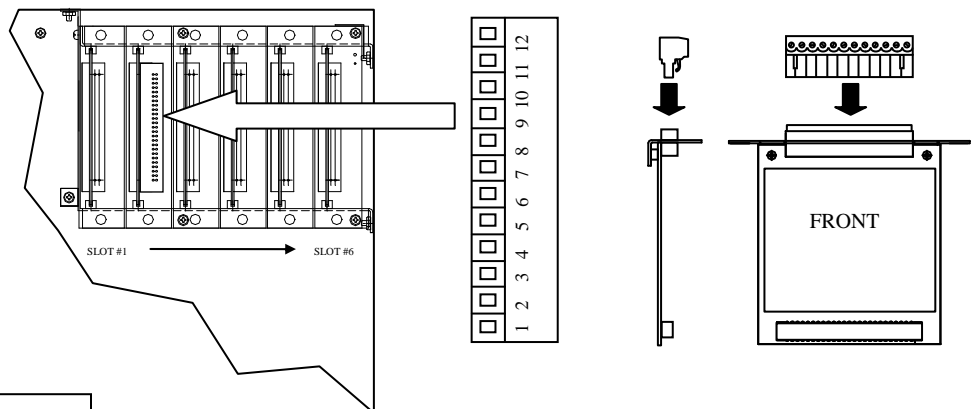
NOTE: Once a slot is configured for a specific board it can not be changed to accept a different board. *Consult factory to re-configure a board slot.

To program 12 volt events refer to the OEL8000II IB-12V programming sheet low voltage board.



Remove all power to the controller and to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

3. Attach removable connector to IB-12V (The IB-12V should already be inserted into the card slot in the OEL8000II).



Note: See Appendix E – Remote Annunciator for related annunciator installation.

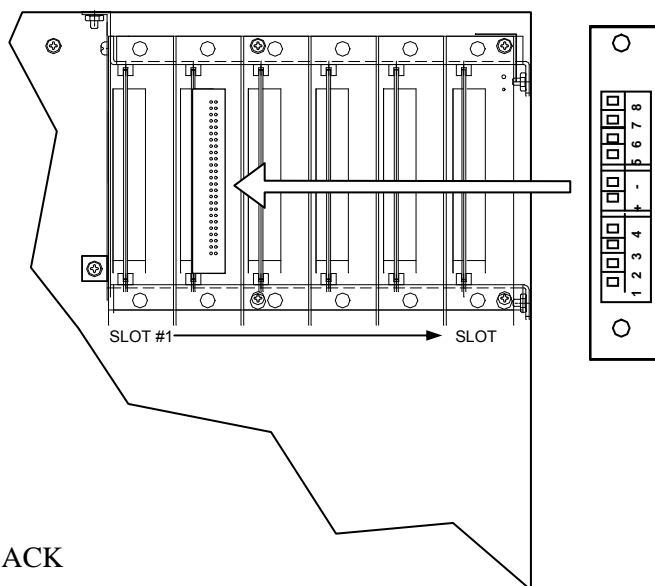
1. Power OFF
2. Insert IB-C420 (as shown)
3. Power ON
4. Enter "SETUP" via. Front keypad
5. Enter security code (default code is 000000)
6. Select "MORE" 3 times
7. The screen options will read:


```
COMM  | INT BRD  |          | MORE
```
8. Select "INT BRD"
9. Screen options:


```
SLCT BRD | PROG BRD  | PRINT          | BACK
```
10. Pressing "SLCT BRD" will scroll through listed options. When the "4-20mA" option is selected press "PROG BRD"
11. The screen will display which slot the board is in and identify the board. Options on this screen are:

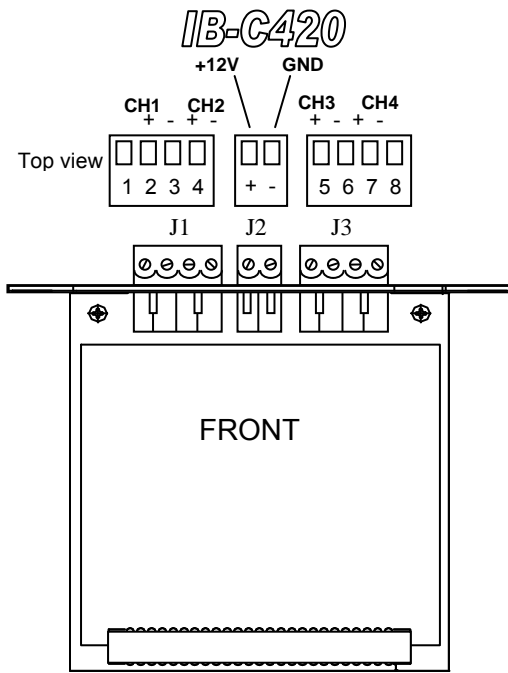

```
CHAN#  | PROG CHN |          | BACK
```
12. Pressing "CHAN #" will toggle through channel 1 – 4. Refer to the IB-C420 wiring diagram for proper channel number.
13. Select "PROG CHN"
14. Screen options:


```
ASGN CHNL | CAL 20mA | CAL 4mA      | BACK
```
15. Select "ASGN CHNL"
16. You will the have the option to program either a MTG-probe (Magnetostrictive) or a PT-sensor (Pressure Transducer)
 - i) Select "MAG TANK" to program an MTG-probe
 - (1) Scroll through to select tank number
 - (2) Select "Volume" or "Height"
 - (3) IB-C420 boards are factory calibrated. Press the "MENU" button to return to the main menu. For further calibration instructions consult factory.
 - ii) Select "PT TANK" to program a PT-sensor
 - (1) Select "Volume" or "Height"
 - (2) IB-C420 boards are factory calibrated. Press the "MENU" button to return to the main menu. For further calibration instructions consult factory

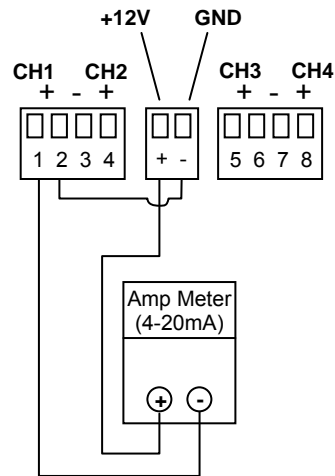


OMNTEC **IB-C420**

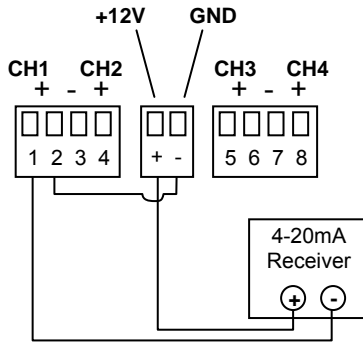
1	Channel 1 “+”	J1		
2	Channel 1 “-”			
3	Channel 2 “+”			
4	Channel 2 “-”			
+	+12V	J2	For non-isolated 4-20mA output	
-	Ground			
5	Channel 3 “+”	J3		
6	Channel 3 “-”			
7	Channel 4 “+”			
8	Channel 4 “-”			



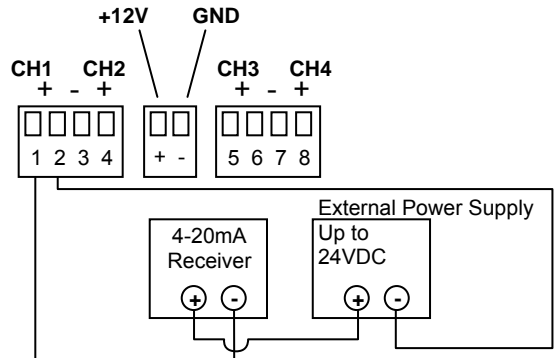
Test Procedure
(Channel 1 is shown)



Non-Isolated Installation
(Channel 1 is shown)



Isolated Installation
(Channel 1 is shown)



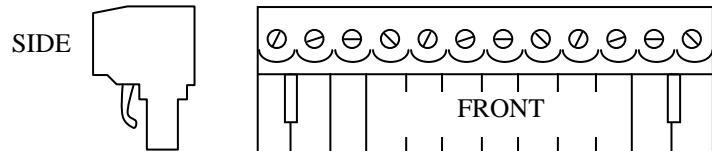
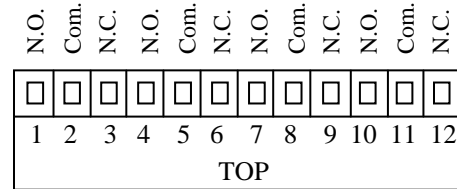
OMNTEC IB-RB2 Relay Interface Board Installation

Dry contacts rated at 120VAC @ 5 amps resistive

1. Attach wires to the top of the removable connector.

IB-RB2 In an energized unalarmed state:

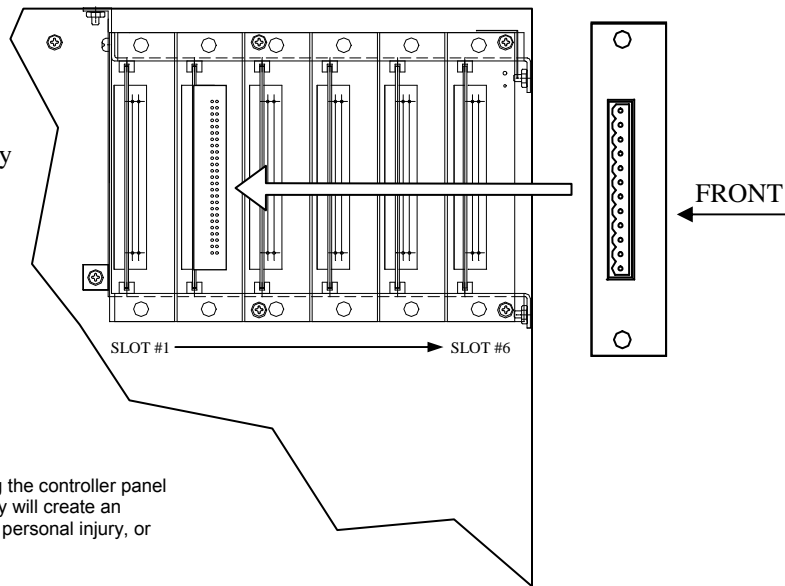
- | | |
|----------------------|----|
| 1 - Normally Open | |
| 2 - Common | R1 |
| 3 - Normally Closed | |
| <hr/> | |
| 4 - Normally Open | |
| 5 - Common | R2 |
| 6 - Normally Closed | |
| <hr/> | |
| 7 - Normally Open | |
| 8 - Common | R3 |
| 9 - Normally Closed | |
| <hr/> | |
| 10 - Normally Open | |
| 11 - Common | R4 |
| 12 - Normally Closed | |



2. Insert IB-RB2 interface board into designated card slot in OEL8000II.

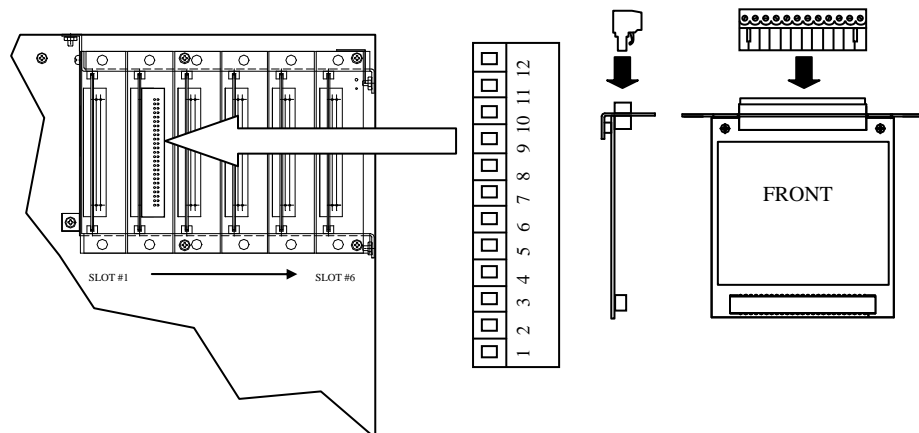
NOTE: Once a slot is configured for a specific board it can not be changed to accept a different board. *Consult factory to re-configure a board slot.

To program relay trigger points refer to the OEL8000II Installation Manual.



Remove all power to the controller and to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

3. Attach removable connector to IB-RB2
(The IB-RB2 should already be inserted into the card slot in the OEL8000II).

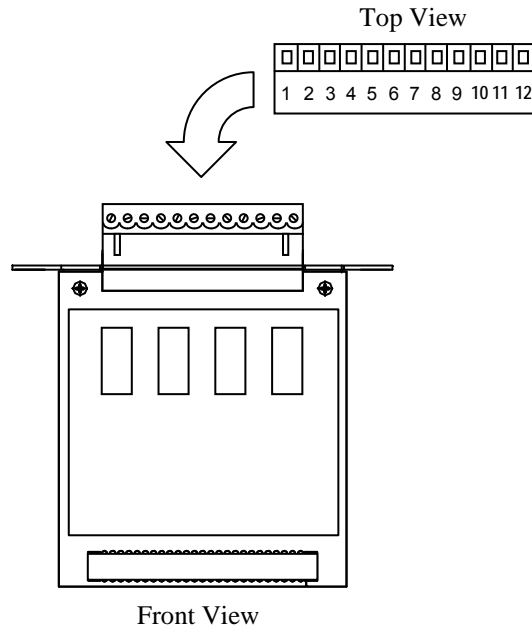


Doc. 500109

1. Power OFF
2. Insert IB-RB board (as shown)
3. Power ON
4. Enter “SETUP” via. Front keypad
5. Enter security code (default code is 000000)
6. Select “MORE” 3 times
7. The screen options will read: COMM | INT BRD | | MORE
8. Select “INT BRD”
9. Screen options: SLCT BRD | PROGBRD| PRINT | BACK
10. Pressing “SLCT BRD” will scroll through a list of interface boards. Press “PROG BRD” to program the selected “RELAY” board.
11. The screen will display which slot the board is in and identify the board. Options on this screen are:
SLCT OUT | PROGOUT | CLR OUT | BACK
12. Pressing “SLCT OUT” will toggle through outputs 1 – 4. CLR OUT will clear programmed output for the selected board.
13. Select “PROG OUT”
14. Screen options: TANK | SENSOR | | BACK
 - TANK
 - TANK#1 | SLCT COND | ENBL/DIS | BACK
 - 1st. - TANK#1 – select tank
 - 2nd. - SLCT COND – select condition to set as output activator source
 - 3rd. - ENBL/DIS – enable or disable selected condition
 - 4th. - BACK or MENU to return to Main Menu and accept parameter changes
 - SENSOR
 - 1st. - Options for Sensors will change according to sensor type. The sample listed below is for a product distinguishing sensor.
NEXT SNSR | ENBL/DIS | W/F | BACK
 - 2nd. - NEXT SNSR – Select sensor
 - 3rd. - W/F – Select Water or Fuel
 - 4th. - ENBL/DIS – Enable or disable selected option
 - 5th. - Select BACK or MENU to return to Main Menu and accept parameter changes

IB-RB2 Relay Interface Board

Dry contacts rated at 120VAC @ 5 amps resistive



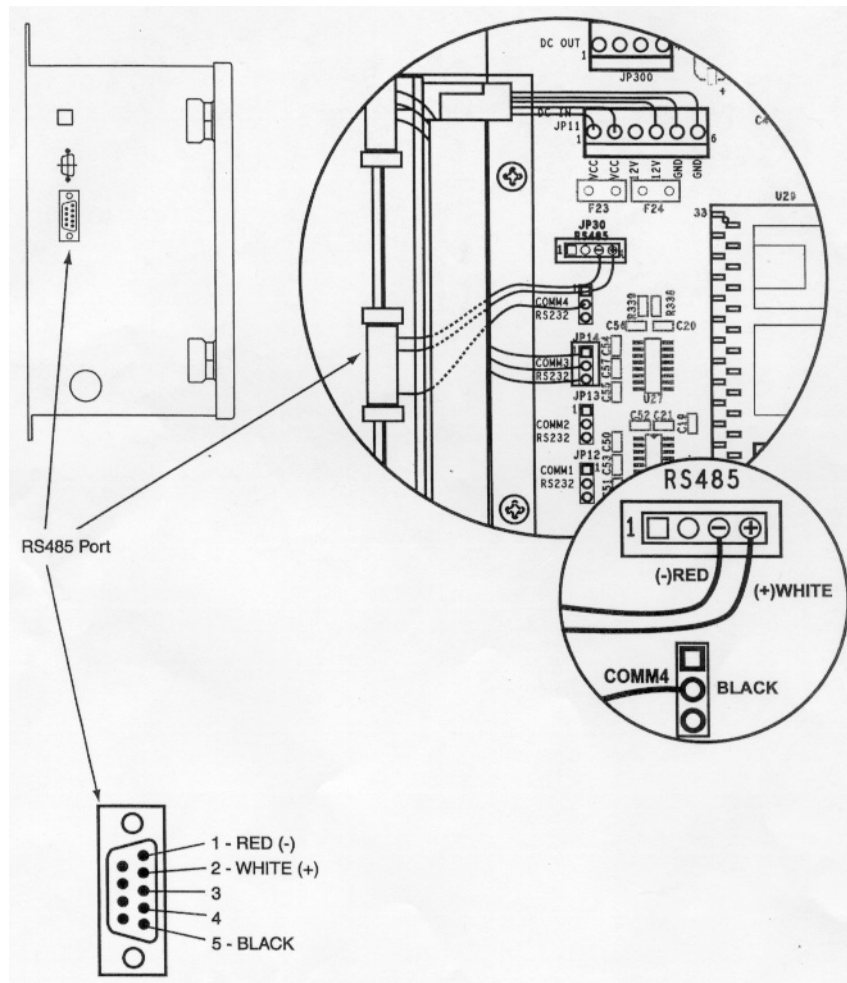
IB-RB2 Wiring Diagram

EL#: _____

Slot# _____

Date: _____

In an energized unalarmed state		Relay #	Programmed
1	Normally Open	1	
2	Common		
3	Normally Closed		
4	Normally Open	2	
5	Common		
6	Normally Closed		
7	Normally Open	3	
8	Common		
9	Normally Closed		
10	Normally Open	4	
11	Common		
12	Normally Closed		



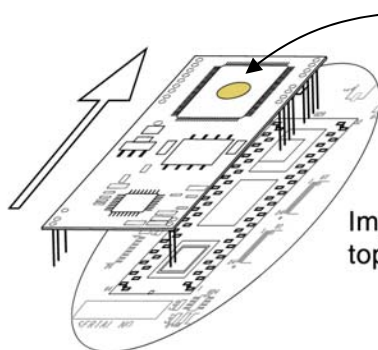
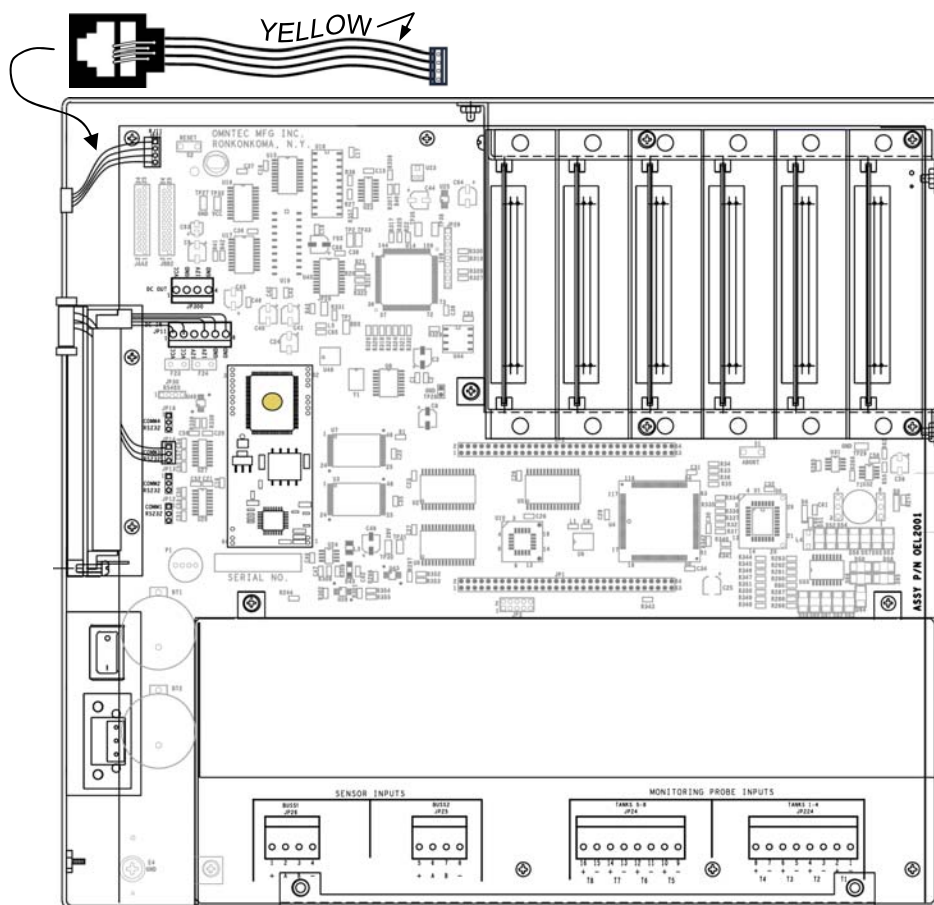
Appendix G Modem

G.1 MODEM INSTALLATION G-3

Appendix G Modem

G.1 MODEM INSTALLATION G-3

1. Power down system. *Be sure power is OFF
2. Install the modem with the yellow dot on the upper half of the modem.
3. Remove knockout and install RJ11 jack. The yellow wire should be on top when the connector is attached to the RJ11 port on the motherboard.
4. Power up system



Important: Be sure the yellow dot is on the top of the modem. **DO NOT** install up-side down.

Doc. 500130

Appendix H NYC Fire Dept. Conditions of Approval

NYC FIRE DEPT. CONDITIONS OF APPROVAL H-3

NYC Fire Dept. Conditions of Approval

Certificate of Approval No. 4988

1. The above referenced leak detection device shall be Underwriters Laboratories Inc. listed and OMNTEC Mfg., Inc. shall retain follow up service requirements of Underwriters Laboratories.
2. The installation and use of leak detection device shall comply with applicable New York City Fire Code, rules and regulations. Manufacturer's and Underwriters Laboratories Inc. / Ken Wilcox Associates, Inc.'s safety requirements and limitations shall be complied with.
3. The control panel must be provided with a cylinder lock and it shall be the end user's responsibility that the panel be locked at all times to prevent unauthorized personnel from gaining access.
4. The approved equipment shall be permanently tagged, labeled or inscribed with the Certificate of Approval number by the manufacturer. **NOTE:** Product must already be identified with Certificate of Approval number before it arrives at New York City job site.
5. Equipment shall have secured and shall maintain all required approvals and shall meet all applicable Federal and State requirements. The use of this system shall be limited to the indicated intent and has not been approved for other uses of applications.
6. The Certificate of Approval is being issued upon condition that the material or equipment's technology does not violate any patent, trade name, trade secret or other intellectual right.
7. The Fire Department Certificate of Approval does not constitute an endorsement or recommendation of your product by the Fire Department, but is a certification that your product, as represented, meets the standards as of the date of issuance.
8. The Fire Department's conditions of approval shall be enumerated in the installation manuals and brochures that will be provided to New York City buyers, users and installers.
9. The Fire Department reserves the right to withdraw this approval at any time in the event there is a reasonable doubt that the product does not operate or perform as required by code, the conditions of this resolution or as represented in your application.
10. As the manufacturer of this equipment, you should be aware that any end user who fails to comply with the condition as outlined in the acceptance will be subject to enforcement action which may include fines and imprisonment.