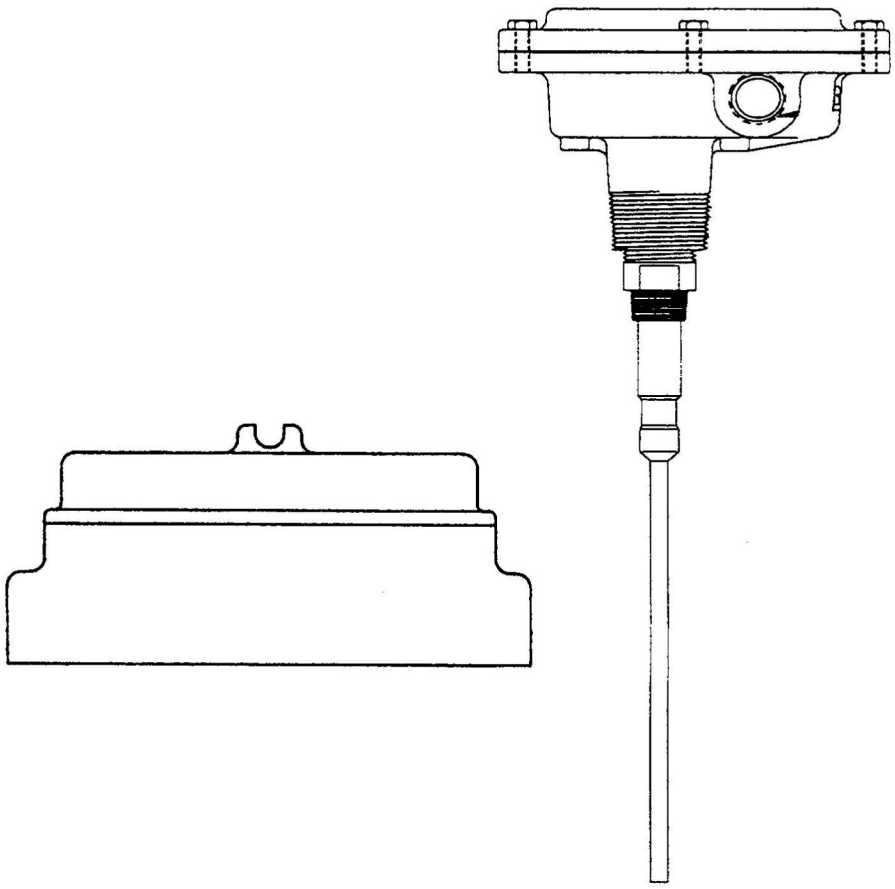
RF10000

Remote Radio Frequency Point Level Control

Installation & Operation Manual



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8/04 Rev F

LRF180024

RF-10000
Remote Radio Frequency Point Level Control
Installation and Operation Manuals
4/97 Rev. C LRF180024

Important!
Do not dispose of the carton or packing material until the unit has been inspected for damage.
If the unit is received damaged, notify the carrier or the factory for instructions.
Failure to do so may void your warranty.
Thank you!

SPECIAL NOTE

The electonics furnished with your RF10000 series level control are a newer design than what you may have purchased in prior years. The **new "Design Level 2" electronics** include the following improvements:

- **DIP switch sensitivity settings**...we now have 8 sensitivity settings versus 3 jumper selections, that were part of the original design. This feature allows you to sense a wider range of materials with one electronic unit.

- **DIP switch time delay settings**... we now have 4 time delay settings versus 3 jumper selections, that were part of the original design. This feature gives you the flexibility to change time delay from 1 second (min.) to 7 seconds (max.), depending on your process.

- **"Latched" internal calibration push-button**...A momentary push of the calibration button now initiates calibration. You no longer have to hold the button down and wait for the calibration light to illuminate.

- **"Euro style" terminal block**...which is capable of terminating two - 14 gauge wires. This "safer design" will help protect your personnel or electricians when connecting power to our unit.

These features are explained in more detail within this manual.

1.0 INTRODUCTION

The RF-10000 Series level control is a point level device used to detect the presence or absence of material at a point inside a tank, bin, or other vessel. The electronics are remote and the probe is connected by a coaxial cable.

Material coming in contact with the RF-10000's probe causes its output relay to change state, thereby indicating to the user material presence.

The RF-10000 utilizes the PRO-GUARD® principle to prevent false indications from material coating or moisture and condensation on the probe. The RF-10000 Series also has the EZ-CAL® feature which make calibration easy and accurate. This features also allows the units to be remotely calibrated through a remote module or a computer.

2.0 OPERATING THEORY

The RF-10000 is a relatively low-powered device requiring approximately 4 watts for operation. The power supply can accept 120 VAC, 240 VAC, or 24VDC input power. (All are factory selectable.) A 153.6 KHZ RF oscillator provides the signal which is directed to both the PRO-GUARD® and active sensing area of the probe. (See Figure 1.)

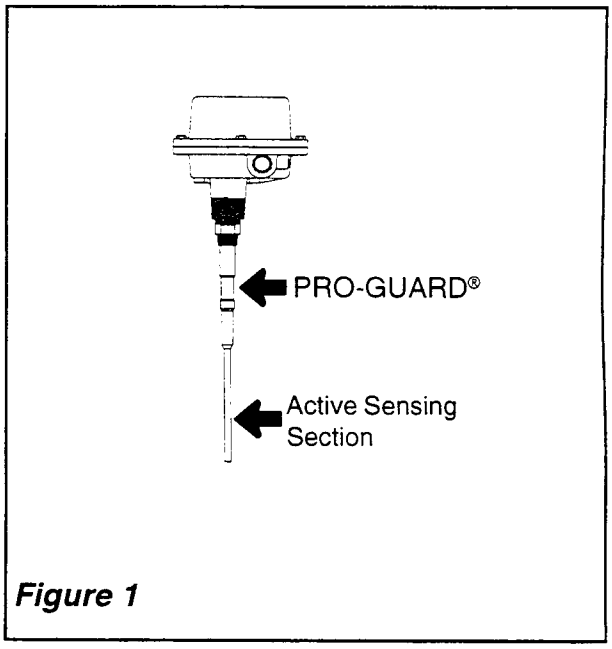


Figure 1

Detection circuitry compares the signal from the active sensing area to a reference RF signal. Since all materials have dielectric constants (relative permittivity) and conductance values different from air, the impedance of the signal changes when material touches the probe. This change causes a shift in phase of the RF signal. A phase difference between the active signal and reference signal causes output circuitry to operate.

Sensitivity selection determines how much phase shift is needed before the output relay changes state. Time delay selection determines how much time should elapse after detection until the output relay changes state. Fail-safe selection determines whether the relay energizes or de-energizes when material is present.

3.0 AVAILABLE MODELS

Various Electronic and Probe configurations can be found in the **RF "Elite" Series Guide** (LRF180019). It is critical that the Electronic Model Number and Probe Number be recorded for convenience if replacement parts are required.

4.0 SPECIAL FEATURES

All RF-10000 Series units have solid-state electronics, with pushbutton calibration, fail-safe output indication, time delay selection, polyester coated aluminum housing, and PRO-GUARD® probes.

A very important feature of the RF-10000 is the ability to ignore the effects of coatings that can adhere to the sensing probe. In most applications, a certain amount of the material that is being sensed will adhere to the sensing probe after a period of time. This can be due to the nature of the material itself or to condensed moisture that can cause dry material to bond to the probe's surface.

Bindicator's PRO-GUARD® disregards the effects of probe coating and only indicates that material is present when the actual mass of material (either dry or liquid) in the bin comes in contact with the probe.

Figure 2 shows the PRO-GUARD® probe. The drive current to the PRO-GUARD® electrode is at the same frequency and polarity as the probe. When a coating forms on the probe, the RF current from the PRO-GUARD® tends to saturate that portion of the built-up material near the wall so that little or no RF current can flow from the probe to the wall. When the actual bulk material in the bin fills to the point where the material is touching the probe, current from the probe will flow around the saturated region and indicate material presence.

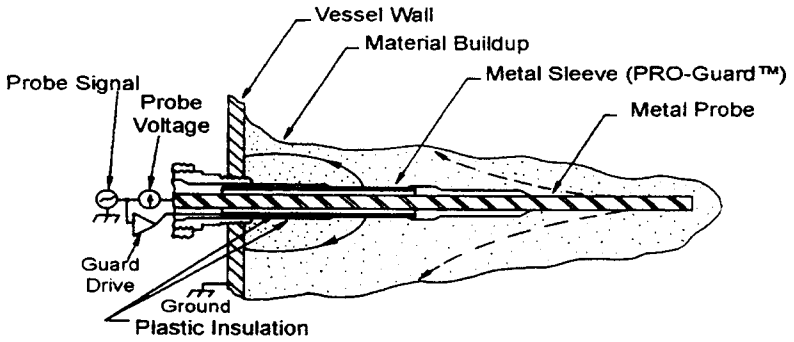


Figure 2

5.0 SPECIFICATIONS

5.1 Electronics

Line Voltage:	120VAC ± 15%, 240VAC ±15%, 50/60 Hz, 24 VDC
Power:	4 Watts
Output Relay:	DP/DT, 5 amps at 115VAC
Temperature Range:	-40° F. to + 160° F. (-40° C. to +72° C.)
*Sensitivity Settings:	See Section 6.6
Selectable Time Delay:	See Section 6.7
Calibration:	Pushbutton Electronic with Remote Capability

*Unit has a high sensitivity electronic board with .5 pf rating when "A" is in model code.

5.2 Standard Duty Probe

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT - 316 S.S. Or 1 1/4" NPT Aluminum
Probe Materials:	3l6 S. S. and Ryton®*
Probe Temperature:	-100° F. to +450° F. (-73° C. to +232° C.)
Pressure:	Up to 150 psi (10.5 kg/cm²)

*Trademark of Phillips Chemical Company, Subsidiary Phillips Petroleum

5.3 Heavy Duty Probe

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT - 316 S.S. or 1 1/4" NPT Aluminum
Probe Materials:	316 S. S. and Ryton®*
Probe Temperature:	-100° F. to + 450° F. (-73° C. to +232° C.)
Pressure:	Up to 150 psi (10.5 kg/cm²)

5.4 Flush Probe/Dome Flush Probe

Dimensions:	See Installation Drawing
Mounting:	9/32" Dia. Hole on 7 7/16" Bolt Circle - 6 Places
Probe Materials:	3l6 S. S. and Epoxy
Probe Temperature:	-30° F. to +200° F. (-34° C. to +93° C.) Continuous
	-30° F. to +250° F. (-34° C. to +121° C.) Intermittent
Pressure:	Up to 50 psi (3 kg/cm²)

Note: Not for use in liquid service

5.5 Stub Probe

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT - 316 S.S. or 1 1/4" NPT Aluminum
Probe Materials:	316 S. S. and Polysulfone
Probe Temperatures:	-30° F. to +300° F. (-34° C. to +149° C.)
Pressure:	Up to 150 psi (10.5 kg/cm²)

5.6 Food Grade Probe - Threaded Connector

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT - 316 S.S. or 1 1/4" NPT Aluminum
Probe Materials:	3l6 S. S. and Polysulfone
Probe Temperatures:	-30° F. to +300° F. (-34° C. to +149° C.) Continuous
Pressure:	Up to 150 psi (10.5 kg/cm²)

5.7 Standard Duty - Kynar® Coated*

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT Teflon®** Coated Connector
Probe Materials:	3l6 S. S. and Ryton® Coated with Kynar®
Probe Temperatures:	-100° F. to +250° F. (-73° C. to +121° C.)
Pressure:	Up to 50 psi (3.5 kg/cm²)

5.8 Heavy Duty - Kynar® Coated

Dimensions:	See Installation Drawing
Mounting:	3/4" NPT Teflon® Coated
Probe Materials:	3l6 S. S. and Ryton® Coated with Kynar®
Probe Temperatures:	-100° F. to +250° F. (-73° C. to +121° C.)
Pressure:	Up to 50 psi (3.5 kg/cm²)

5.9 Food Grade Probe - Sanitary Connector

Dimensions:	See Installation Drawing
Mounting:	Mates with Size 1 Cherry Burrel "S" Line® or Ladish Tri-Clamp®
Probe Materials:	3l6 S. S. with Polysulfone
Probe Temperatures:	-30° F. to +300° F. (-34° C. to 149° C.)

5.10 Ceramic Probe

Dimensions:	See Installation Drawing
Mounting:	1/4" NPT
Probe Materials:	304 S.S. and ceramic
Probe Temperature:	-40° F. to +1000° F. (-40° C. to 538° C.)
Pressure:	Up to 30 psi (2 kg/cm²)

*Trademark of Pennwalt
**Trademark of DuPont

Various RF models are available which have been "Listed" as complete assemblies by Underwriters Laboratories or CSA approved for use in Class I, Div. I, Groups C & D and Class II, Div. I, Groups E, F, & G atmospheres.

To be Listed by UL and approved by CSA these units must contain special intrinsic safety barriers to limit the amount of energy on the probe itself in the event of a failure in the electronics. UL, FM and CSA also requires a special assembly of the probe to the electronic housing. Because of this special probe seal, the Explosionproof Models are dimensionally different from the General Purpose Units.

The same dimensional difference exists for Coated Standard, Food, Stub, and Coated Heavy Duty. No dimensional difference exists in the Flush Probe units.

On explosionproof units, an approved conduit seal fitting must be installed within 18 inches of conduit opening.

CAUTION:When mounting explosionproof units, never adjust the orientation of the probe or probe housing by turning the housing section. This will break internal wires and permanently damage the probe.

For tightening units with threaded bin connections, the unit must be positioned by using a wrench on the bin connector. Wrench size required is 1 1/16" with open end.
For "Flush Mount" probe units, the position must be adjusted by removing the mounting bolts and moving the entire probe and housing.

6.0 INSTALLATION

6.1 Probe Location and Mounting

The probe should be located out of the direct flow of material into the vessel. Protective shields or an offset mounting procedure may be required. Please consult the factory for special mounting problems.

Note: Use caution when preparing all wires for connection to terminal block. Strip the insulation a maximum of 1/4 inch (6mm) or use insulated ferrules such as Altech 8969.0 or Altech 2206.0 to prevent shorting of conductors.

6.2 Probe Installation & Hookup

Field wiring should conform to the requirements of the National Electrical Code and any other agency or authority having jurisdiction over the installation. **On multiple installations, the coaxial cable must remain separated in individual conduits and raceways.** After mounting the probe, make sure there is a good electrical connection between the process connection and the vessel wall. **Refer to the drawings listed in Section 6.0 for proper installation and hookup and wiring instructions.**

CAUTION: When mounting explosionproof units, never adjust the orientation of the probe or probe housing by turning the housing section. This will break internal wires and permanently damage the probe.

For tightening units with threaded bin connections, the unit must be positioned by using a wrench on the bin connector. Wrench size required is 1 1/16" with open end.

For "Flush Mount" probe units, the position must be adjusted by removing the mounting bolts and moving the entire probe and housing.

6.3 Electronics Location and Mounting

Field wiring should conform to the requirements of the National Electrical Code and any other agency or authority having jurisdiction over the installation.

Note: Use caution when preparing all wires for connection to terminal block. Strip the insulation a maximum of 1/4 inch (6mm) or use insulated ferrules such as Altech 8969.0 or Altech 2206.0 to prevent shorting of conductors. Tighten screws in terminal block to 4 in/lbs.

Note: Maximum cable distance from electronics to the probe on General Purpose Units cannot exceed 75 feet (23m). Maximum cable distance from electronics to the probe on Explosion-proof Units cannot exceed 50 feet(15.24m).

6.4 Electronics Installation and Hookup

Refer to Drawings Listed in Section 6 for proper wiring and hookup instructions.

Note: Cut remote cable to appropriate length. Do not coil excess cable. Do not wrap excessive cable around electronics in or out of the enclosure.

6.5 Fail-Safe Selection

The RF-10000 is shipped from the manufacturer in the high level fail-safe condition.

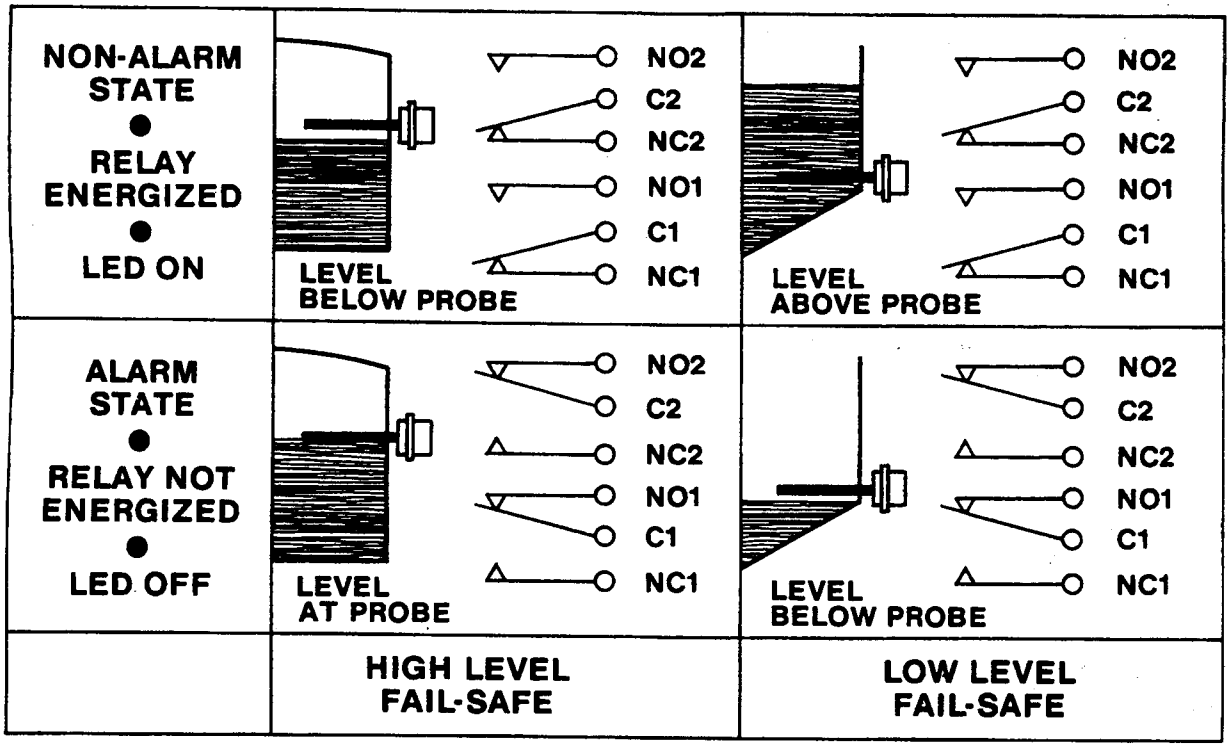
High Level Operation - If the electrical power fails, the relay turns off. This indicates material as if the tank were full.

Relay Light Logic — Relay Light on - no material present
Relay Light off - material present

Low Level Operation - If electrical power fails, the relay turns off. This indicates no material as if the tank were empty.

Relay Light Logic — Relay Light on - material present
Relay Light off - no material present

Note: If low level failsafe is desired, then clip the High Level Failsafe jumper located on the lower RF-10000 circuit board. (See Figure 3)

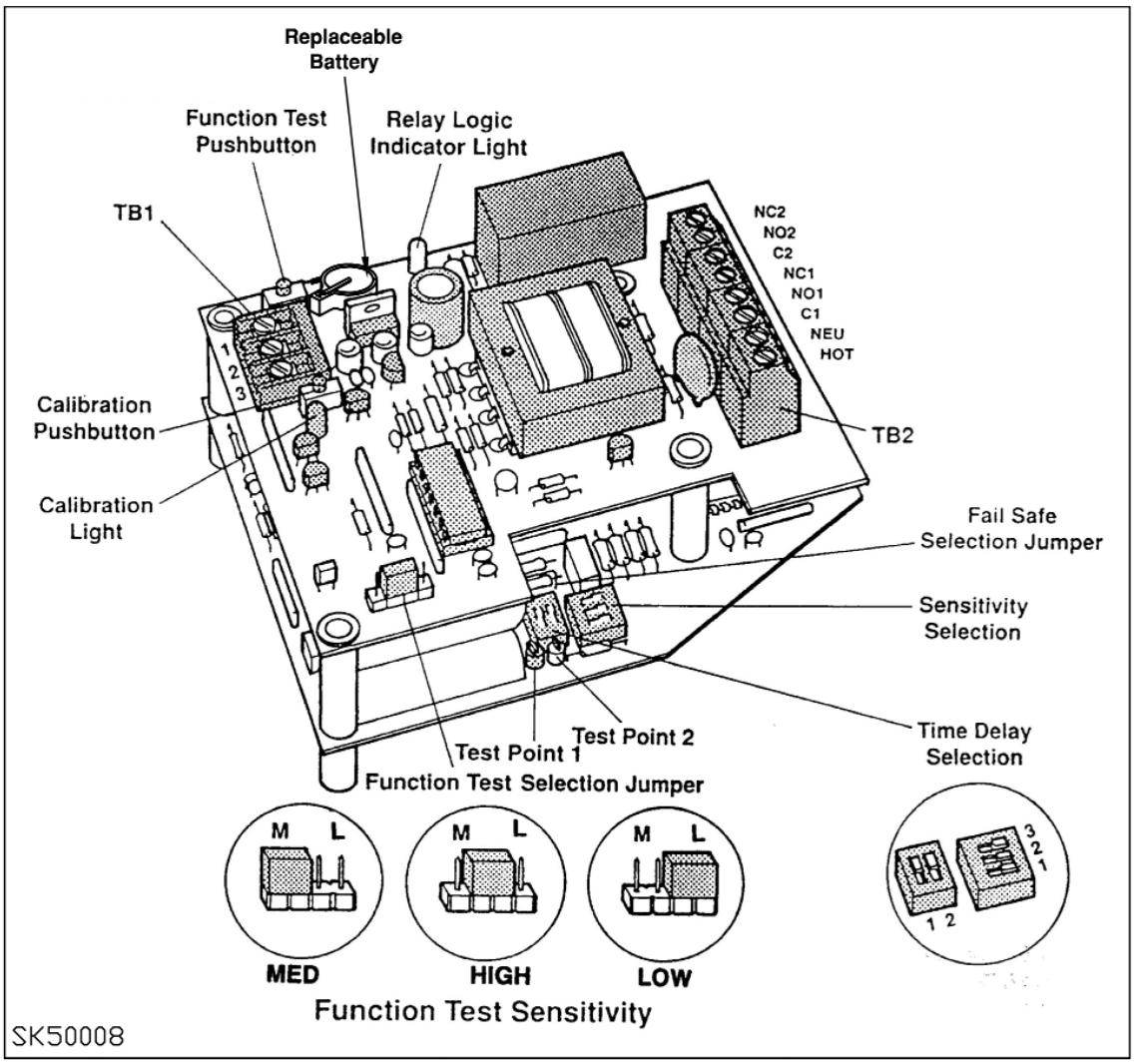


The relay contact terminals on TB 2 are labeled in the powered, unalarmed state. This status may be opposite that of other brands of level controls. Contacts as marked on TB2 are not the relays nomenclature, but are marked so contacts are in "normal" positions when unit is powered and unalarmed.

Maintenance Note

A replaceable coin-type lithium battery is used to help maintain calibration data in the RF electronic unit. Recommended maintenance is replacement after evey 3 years of operation. The battery is located on the Power Printed Circuit Board Assembly, just under the corner of the Light Printed Circuit Board Assembly. (See Figure #3) To remove, simply lift the edge of the battery and slide it from the holder. To replace, slip the new battery in under the contact arm until the new battery is firmly seated into the holder. As replacement, use ONLY lithium coin-type battery #CR1620 (Bindicator part # LUC036952).

Figure 3
(Electronic Unit with Function Test)



6.6 Sensitivity Setting

Due to variations in material characteristics, correct sensitivity selection is critical to assure proper unit operation. This can be field programmable to one of the eight predetermined settings. **(see *Figure 3*)**

High Sensitivity Hard to detect materials such as plastic pellets, light powders, dry grains

Med. Sensitivity Most dry or liquid materials such as cement, petroleum products, flour

Low Sensitivity Most liquid solutions such as aqueous solutions, acids

Note: The RF-10000 is shipped from the manufacturer in the high sensitivity condition. Selection is made by changing the DIP switch settings.

switch 1 off and switch 2 off and switch 3 off = 1 Pf High
switch 1 on and switch 2 off and switch 3 off = 1.5 Pf
switch 1 off and switch 2 on and switch 3 off = 2.0 Pf
switch 1 on and switch 2 on and switch 3 off = 3.0 Pf Medium
switch 1 off and switch 2 off and switch 3 on = 10.0 Pf Low
switch 1 on and switch 2 off and switch 3 on = 12.0 Pf
switch 1 off and switch 2 on and switch 3 on = 14.0 Pf
switch 1 on and switch 2 on and switch 3 on = 15.0 Pf Low/Low

6.7 Time Delay Selection

When the RF-10000 is used in liquid or agitated material where material movement could cause false or premature level indication, an increased time delay selection may be desirable.

Note: The RF-10000 is shipped from the manufacturer in the minimum time delay condition. Increased time delay selection is made by changing the DIP switch setting.

switch 1 off and switch 2 off = 1 second minimum
switch 1 on and switch 2 off = 2 seconds
switch 1 off and switch 2 on = 4 seconds
switch 1 on and switch 2 on = 7 seconds maximum

6.8 Calibration

CAUTION: MATERIAL MUST BE WELL BELOW PROBE BEFORE CALIBRATION PROCEDURE BEGINS.

Prior to operation, the RF-10000 must be calibrated in order to match the operating characteristics of the vessel. Unit may be calibrated either locally at the electronic unit or at a remote location if the RF-10000 was supplied with either the remote calibration module option or the remote keyswitch module option.

CAUTION: If unit is calibrated with material in contact with the probe, the unit will not calibrate.

CAUTION: ***<u>If unit is calibrated with material in contact with the probe, the unit will not calibrate.</u>***

A. ***Local Calibration*** **-** Momentarily press the calibration push-button. The green calibration light comes on when calibration is complete. Calibration is now complete. The green calibration LED should remain on. Recalibrate any unit whose green calibration light is off.
NOTE: Calibration should be completed within 5 to 30 seconds. Consult factory if calibration time is not within this range.

B. ***Remote Calibration Module*** **-**When the remote calibration module is used, press and release the push button on the module. The integral light will come on indicating that the calibration sequence has been initiated. When the light goes out, calibration is complete. (see Drawing LRF180107).

C. ***Remote Keyswitch Module*** **-**When the remote keyswitch module is used, turn the key toward the "Calibrate" position and release. The integral light will come on indicating that the calibration sequence has been initiated. When the light goes out, calibration is complete. For hookup, refer to Drawing B-LRF180108 at the back of this manual.

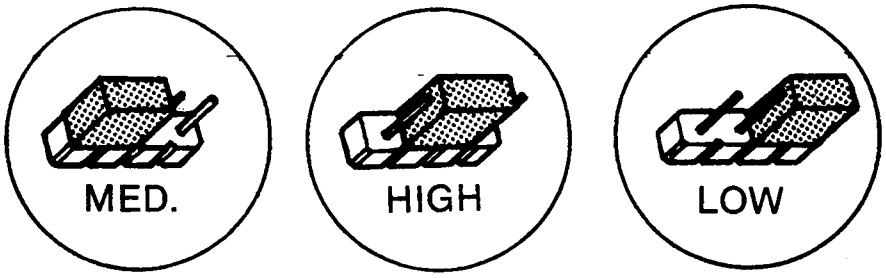
6.9 Verification

Raise and lower material level and observe relay indicating LED for verification of proper operating condition. If the unit fails to detect the material, a higher sensitivity setting may be needed. If the unit falsely indicates material presence, a lower sensitivity setting may be needed.

6.10 Function Test

Set Function test selection jumper to the same setting as the sensitivity selection. (Example: If sensitivity selection is "HIGH" - then position the function test jumper in the middle positions

If sensitivity selection was a setting between High and Medium, then set the test in the Medium position. If sensitivity selection was a setting between Medium and Low, then set the test in "Low" position.



Pushing the "function test" button or turning the optional remote keyswitch to the "Test" position will initiate a test of the unit. This test in only practical when material level is below the probe. If the unit is in calibration and capable of sensing material at the probe, the output relay will go into the "Alarm State" on units in "High Level Failsafe". On units where the High Level Failsafe jumper has been cut (unit in Low Level Failsafe), the unit will unalarm.

7.0 TROUBLE SHOOTING

7.1 Installation Errors

Probe should be located out of the direct flow of material while the vessel is being filled. **See *Figure 5.*** Unit should be mounted with the conduit opening down and located, if possible, higher than the conduit raceway. This will eliminate the possibility of moisture settling in the conduit outlet box. If the conduit is higher than the unit, provide a conduit loop under the conduit outlet box with a conduit drain fitting.

Mounting the probe in a nozzle or location where material bridges excessively may cause false indication. The probe should be mounted so material does not buildup excessively over the PRO-GUARD® area of the probe. **See *Figure 1.*** If the probe is mounted in a nozzle or nipple, the PRO-GUARD® area must be inside the vessel.

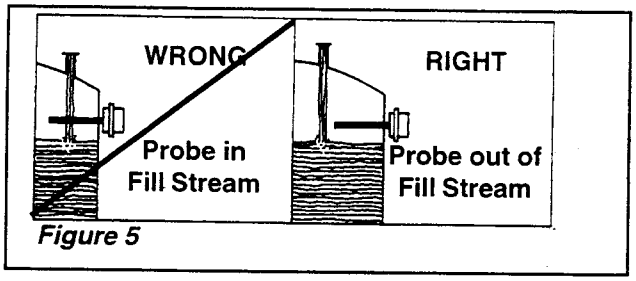


Figure 5

Vertical mounting reduces bridging problems. If material to be sensed is of a nature where a buildup will continue to grow on the probe, vertical mounting is necessary.

7.2 Application Errors

Extreme Material Buildup - Use in materials where a continually, growing buildup of a conductive material will occur should be avoided. The PRO-GUARD® will prevent false indication from material coating and condensation, but a continually, increasing buildup will eventually exceed even the PRO-GUARD® capability.

Highly Corrosive Materials - Wetted probe parts consist of 316 S.S. and Ryton (or applicable material according to selected probe.) The conduit outlet box is constructed in aluminum. If you believe the materials in contact with the probe or mounting may cause corrosion with aluminum, Ryton or 316 S.S., consult the factory.

Extremely Light and Dry Materials - Use in very light materials (less than 30 lbs./cu. ft.) and very dry, non-conductive materials (less than 3% moisture) may require higher sensitivity electronics or sensitivity attachments to the probe.

7.3 *Factory Assistance*

If attempts to locate any difficulties with the unit fail, notify your local factory representative. To help solve your problem quickly, please have as much of the following information as possible:

- Model Number
- Date Purchased
- Brief application information such as, material to be detected, approximate vessel size and location of unit(s) in the vessel.
- Brief description of the problem such as, fails to detect material, or intermittent false alarms.
- What investigation has been performed by the user and what was discovered.

If your local representative is unable to determine the cause of your difficulty, they will refer you to a factory engineer. Equipment shipped back to the factory without proper authorization will be refused and returned at the shipper's expense.

8.0 WARRANTY & PARTS

8.1 Warranty

Refer to Manufacturer's General Terms and Conditions of Sales for Warranty information.

8.2 Electronics Replacement

Replacement electronics are readily available for your RF Model. There are two methods to determine the correct Part Number of your electronic unit.

1. Call Bindicator Customer Service Department with the Model Number of your unit.They will search our database and advise you of the Part Number.

2. Find the Serial Number located on the bottom side (where the probe wires connect) of the electronic unit. The Serial Number is written with black permanent marker. The first three digits of the Serial Number are the last three digits of the Part Number. Just add the prefix LRF110 to these three numbers and you have the Part Number. Example: Serial Number reads 302-9326-05, thus the Part Number is LRF110302.

8.3 Parts List

The RF-10000 is designed to give years of unattended service. No scheduled maintenance or parts service is required.

9.0 DRAWINGS

Description	***Drawing No.***
Probe Cable Termination Extended/Lagged Assemblies	B-LRF110025
Remote Cable Termination Assemblies	B-LRF110028-C
Probe Accessories	B-LRF180106
RF Pushbutton Remote Cal. Module	B-LRF180107
RF Keyswitch Module	B-LRF180108
General Purpose Installation/Hookup Drawing DL2 E/U	B-LRF180127
Remote Probe with Type "S" Mounting	B-LRF180130
Extended, Remote Probe G/P and X/P	B-LRF180137
Remote Probe G/P with Type "A" Mounting	B-LRF180138
Remote Probe UL X/P	B-LRF180139
Remote Probe UL X/P with Type "S" Mounting	B-LRF180140
Remote FLush Probe G/P and X/P	B-LRF180141
Remote Stub Probe G/P with Type "A" Mounting	B-LRF180142
Remote Dome Flush Probe GP/XP	B-LRF180143
Lagged Remote Probe G/P and X/P	B-LRF180144
Remote Ceramic Probe	B-LRF180146
RF10000 Dimensional Electronic Enclosure	B-LRF180147
RF10000 Explosionproof Probe Installation/Hookup Dwg Design Level 2	B-LRF180148

10.0 MODEL SELECTION for Design Level 2 Units

10.1 RF-10000 Remote Unit - Electronics

RF10 - E - ___ - ___ - ___ - ___

Voltage
1 = 120VAC
2 = 240VAC
3 = 24VDC
4 = 12VDC
5 = 24VAC
6 = 48VAC

Enclosure Type
G = General Purpose NEMA 4/5 (Note 1)
X = Explosionproof NEMA 7, 9 (Note 2)
S = NEMA 4X, 304 S.S. (Consult Factory)
B = Explosionproof NEMA 7, 9 BASEEFA (Note 2)

Probe Requirement
1 = Single Probe
2 = Dual Probe

Electronics
C = Standard Sensitivity With Functional Test
D = Sensitivity Modification (.5 pf) With Functional Test
K = Standard (1pf) Sensitivity For Dome Flush Probe with Functional Test

Electronic Unit (Probe & Cable Are Separate Items)

RF-10000 Radio Frequency Type Series

Note 1: The total length of cable can not exceed 75 feet (23m) from the electronics.
Note 2: **Maximum cable distance** between electronics and probe on explosionproof units is 50 feet (15.24m).
Note 3: Order Probe and Cable as a separate item.

10.2 RF-10000 Remote Unit - Probes

RF10 - P - ___ - ___ - ___ - 1 - __ (See Note 1 Below)

Enclosure Material
1 = Bindicator Standard Enclosure

Enclosure Type
G = General Purpose
X = Explosionproof (See Note 7 and 8)
E = NEMA 4X, Epoxy
S = NEMA 4X, 304 S.S.
B = Explosionproof NEMA 7, 9 (BASEEFA)

Probes
0 = Standard
1 = Standard, Kynar® Coated
2 = Food Grade
3 = Ceramic (Specify "D" Configuration)
4 = Stub
5 = Heavy Duty
6 = Heavy Duty, Kynar® Coated
7 = Dome Flush Mount (Config,"A" & Electronics "K" Only)
(Thickness To Be Specified) - See Note 2 Below
8 = Flush (Use "A" Configuration Only)
A = Armored Food Grade (Use "A" Configuration Only)

Configuration
A = Standard With 3/4" Threaded Connector & Flush Mount.(See Notes 3 and 6)
B = Pipe Extended Probe - S.S. Parts (See Notes 4 and 6)
C = Pipe Extended Probe - Plated Parts (See Notes 4 and 6)
D = Lagged Probe - S.S. Connector/Plated Coupling. (See Notes 5 and 6)
S = Sanitary Connector

Remote Probe Assembly (Electronics & Cable Are Separate Items)

RF Remote Radio Frequency Type Series

Note 1: For 3A Sanitary Certification, add "3A" at end of the Model Code. Configuration "S" must be used and either "Type 2" Food Grade probe or "Type 4" Stub probe.
Note 2: Thickness of probe must be specified: 3/8", 1/2", 5/8" or 3/4" wall thickness.
Note 3: For 1 1/4" mounting, order LUB042397 reducer bushing with unit.
Note 4: Order Extensions as a separate item.
Note 5: Order Lagging as a separate item.
Note 6: Order Remote Cable as a separate item.
Note 7: Units have been listed as a complete assembly by UL for use in Class 1, Div 1 Groups C & D,Class II Div 1, Groups E,F and G. These probes contain intrinsic safety barriers and can only be used wth electronics which are designated explosionproof, even if the electronics are in an area that is nonhazardous.
Note 8: Consult factory to see if the specified assembly configuration is included in the agency's listing or Approval.

10.3 RF-10000 Remote Cable Assembly

Cable - Factory Assembled

RFC - ____ - ____

- Length In Feet
- Cable Type
  - A = High Temperature (+450° F.) (+232° C.)
  - B = Low Temperature (+160° F.) (+71° C.)
- Remote Cable Model Assembly

Special Note: Individual conduit is required for each cable. <u>DO NOT INSTALL MORE THAN ONE CABLE</u> in a conduit or raceway or along with other conductors. The maximum distance between the electronics and probe on explosionproof units is 50 feet (15.24m) and on general purpose units is 75 feet (23m).

10.4 RF-10000 Bulk Cable - Unterminated

Product Code	**Description**
LUC035208	Low Temperature (+160° F.) (+71° C.)
LUC035209	High Temperature (+450° F.) (+232° C.)
LRF110039	Termination Kit

10.5 RF-10000 Lagging Model Assembly

RFL - ____ - ____

- Pipe Lagging Length In INCHES
- Material Designation
  - A = Galvanized Pipe - High Temperature Cable +450°F (+232°C)
  - B = Galvanized Pipe - Low Temperature Cable +160°F (+71°C)
- Lagging Model Assembly (If over 6" pipe) (15.24 cm pipe)

10.6 RF-10000 Probe Pipe Extension Assembly

RFE - ____ - ____

- Extension Length In INCHES
- Material
  - A = Galvanized Pipe - High Temperature Cable (+300° F.) (+148° C.)
  - B = Galvanized Pipe - Low Temperature Cable (+160° F.) (+71° C.)
  - C = 316 S. S. Pipe - High Temperature Cable (+300° F.) (+148° C.)
  - D = 316 S. S. Pipe - Low Temperature Cable (+160° F.) (+71° C.)
- Extension Model Assembly

Note 1. Max. probe temperature on pipe extended models cannot exceed 300° F. (148° C.)
Note 2. Pipe extended models can mount only in a 1 1/4" NPT coupling.
Note 3. Because the pipe extended unit is mounted in 1 1/4" NPT coupling, the maximum pressure rating is 150 psi (10.5 Kgs/cm^2)

REVISIONS	DATE	CK'D	APP'D
REDRAWN ECO [illegible]			
A LRF110026 [illegible] PER ECO [illegible]	[illegible]	[illegible]	

FIGURE 1 (BOTH ENDS)

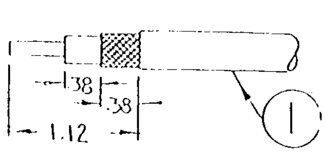


FIGURE 2

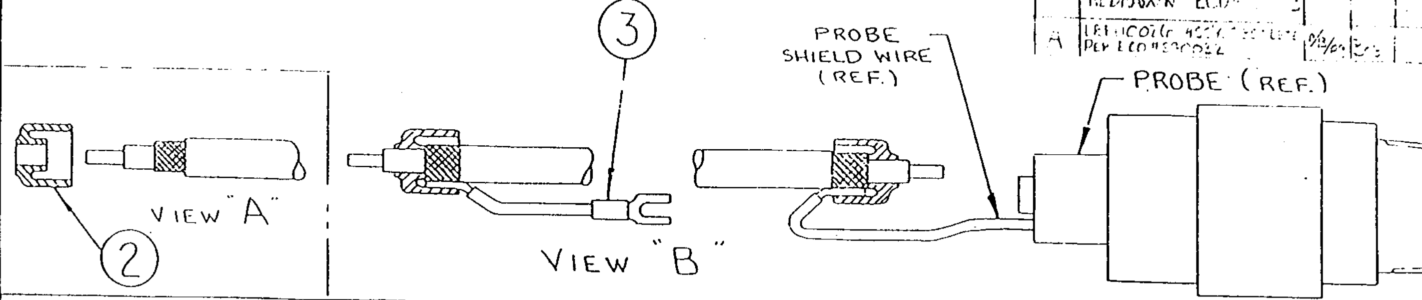


FIGURE 3 (BOTH ENDS)

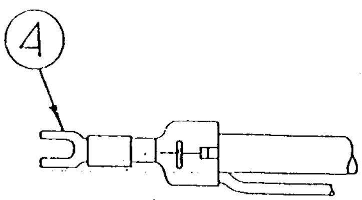
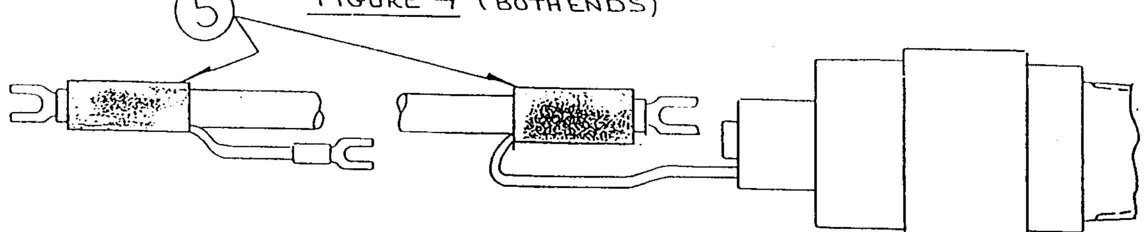


FIGURE 4 (BOTH ENDS)



INSTRUCTIONS

1) CUT CABLE (ITEM #1 OR #6) TO LENGTH SPEC. ON ORDER.
2) STRIP BOTH ENDS OF CABLE AS SHOWN IN FIGURE 1.
3) INSERT FERRULE (ITEM #2) ON THE CABLE AS SHOWN IN FIGURE 2, TYP. BOTH ENDS. INSERT SHIELD WIRE ASS'Y (ITEM #3) ON ONE END OF CABLE. CUT SHIELD WIRE COMING OUT OF PROBE TO 3½" LONG & STRIP END. INSERT THIS WIRE ON OPPOSITE END OF CABLE. CRIMP BOTH ENDS USING AMP TOOL 59500 WITH INSERT 45066-3.
4) INSERT TERMINALS (ITEM #4) ON CENTER CONDUCTOR OF CABLE. (BOTH ENDS). CRIMP USING HAND CRIMP OR RATCHET TOOL. SEE FIG. 3.
5) PLACE SHRINK TUBE (ITEM #5) OVER CABLE ENDS AS SHOWN IN FIGURE 4. HEAT SHRINK AT LESS THAN 250°F FOR AT LEAST 30 SECONDS.

ASS'Y N°	DETAILS	DESCRIPTION
LRF110025	1 THRU 5	CABLE TERMINATION ASS'Y
(B)(A) LRF110026	2 THRU 6	HI-TEMP CBL. TERM. ASSY.

CERTIFIED CORRECT FOR

BY ____________ BINDICATOR CO.
DATE
CUST. ORDER NO.
OUR ORDER NO.
REMARKS:

DET.	REQ'D.	SHT.	DESCRIPTION	MAT. OR PART
6	AR		CABLE HI STABILITY COAXIAL	UC035209
5	.166		SHRINK TUBING 2 @ 1"	UC035210
4	2		TERMINAL STA-KON	UC030340
3	1		ASSY-SHIELD WIRE	LBU022140
2	2		FERRULE	LRU032120
1	A.R.		CABLE - COAXIAL	UC035208

DO NOT SCALE
DIMENSIONS ARE IN INCHES

MATERIAL | FINISH | NEXT ASS'Y.

UNSPECIFIED TOL. DECIMALS: XX ± XXX ± ANGLES: ± 1/2° DEBURR & BREAK EDGES .005

DRAWN	CHECKED	APPROVED	PROD.
NEAL	Rond	[illegible]	[illegible]
DATE 8-MAR-89	DATE 9-MAR-89	DATE 9MAR89	DATE 3-9-89

BINDICATOR®
PORT HURON, MICHIGAN 48060

TITLE PROBE CABLE TERMINATION EXT./LAG. ASS'YS

SCALE NONE | SIZE B | PART OR DRAWING LRF110025 | PREVIOUS

REF

FIGURE 1 (TYP BOTH ENDS)

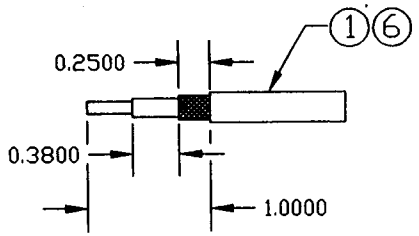


FIGURE 2A (TYP BOTH ENDS)

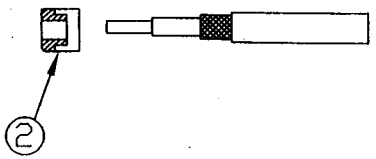


FIGURE 2B (TYP BOTH ENDS)

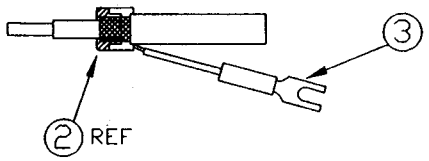


FIGURE 3 (TYP BOTH ENDS)

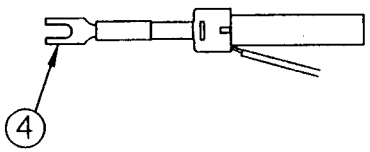


FIGURE 4 (TYP BOTH ENDS)

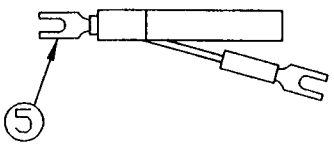


FIGURE 5

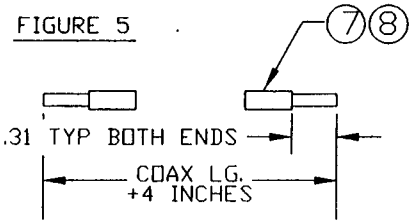
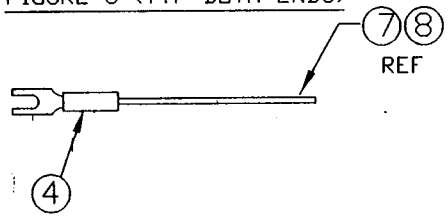


FIGURE 6 (TYP BOTH ENDS)



	REVISIONS	DATE	CK'D	APP'D
–	REDRAWN PER ECO#94-105	–	–	–
A	INSTR. 1 MODIFIED PER ECO 95-065	6/9 95 AC		

ASS'Y NO.	DETAILS	DESCRIPTION
LRF110028	1 THRU 5 & 8	CABLE TERM. ASS'Y
LRF110029	2 THRU 7	HI TEMP. CABLE TERM. ASS'Y

INSTRUCTIONS

1) CUT CABLE (ITEM 1 OR 6) TO LENGTH SPECIFIED ON ORDER.(TO BE ONLY 12" LONGER THAN CONDUIT) (A)
2) STRIP BOTH ENDS OF CABLE AS SHOWN IN FIGURE 1.
3) INSERT THE FERRULE (ITEM 2) ON THE CABLE AS SHOWN IN FIGURE 2A & INSERT SHIELD WIRE (ITEM 3) AS SHOWN IN FIGURE 2B AND CRIMP AMP. TOOL 59500 WITH INSERT 45066-3.
4) INSERT TERMINALS (ITEM 4) ON CENTER CONDUCTOR OF CABLE & CRIMP USING HAND CRIMP OR RACHET (SEE FIGURE 3).
5) PLACE SHRINK TUBE (ITEM 5) OVER CABLE END AS SHOWN IN FIGURE 4 & HEAT SHRINK UNTIL SECURE
6) CUT GROUND WIRE ITEM 7 OR 8 4" LONGER THAN YOU CUT CABLE & STRIP BOTH ENDS AS SHOWN IN FIGURE 5.
7) INSERT TERMINALS (ITEM 4) & CRIMP USING HANDCRIMP OR RACHET (SEE FIGURE 6).

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART
8	AR.		WIRE # 20 AWG GREEN	LUC035661
7	AR.		WIRE TEF GREEN	LUC035351
6	AR.		CABLE HI STABILITY COAXIAL	LUC035209
5	AR.		SHRINK TUBE	LUC035210
4	AR.		TERMINAL STAKON	LUC030340
3	2		ASS'Y SHIELD WIRE	LBU022140
2	2		FERRULE	LBU032120
1	AR.		FM- 62 COAXIAL CABLE	LUC035208

DO NOT SCALE DIM'S. ARE IN INCHES

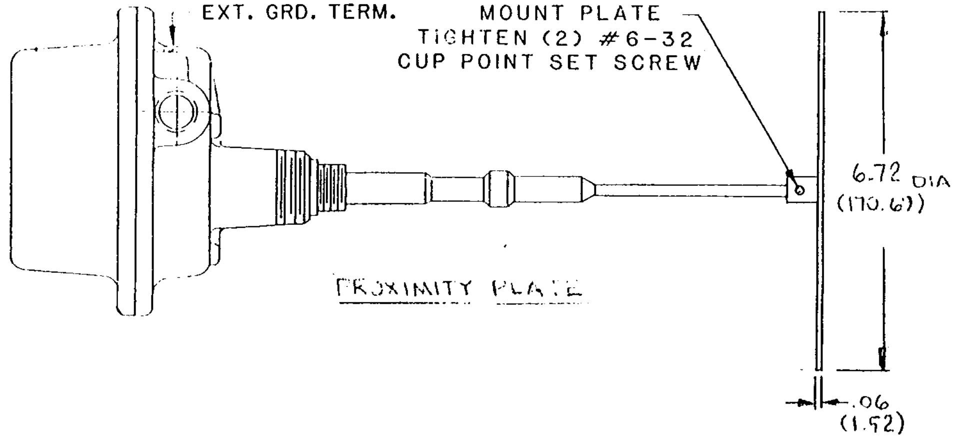
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMALS XX ±.01 XXX ±.005 ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			ARIC C.	NEAL	WJR	RB
			DATE 8/1/94	DATE 8/3/94	DATE 8/4/94	DATE 8/4/94

BINDICATOR®
PORT HURON,MICHIGAN 48060

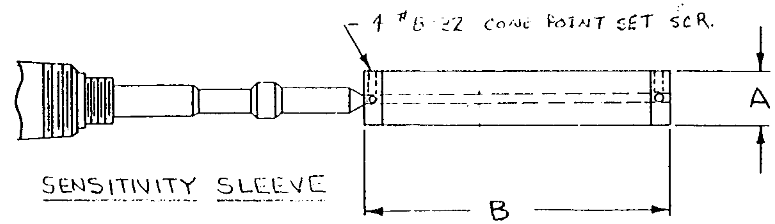
TITLE: REMOTE CABLE TERMINATION ASS'Y

SCALE	SIZE	PART OR DRAWING
FULL	B	LRF110028

REV.	CHANGE	DATE	CK'D	APP'D
A	EXT. GRD. ADDED	[illegible]	[illegible]	[illegible]
B	SPELLING [illegible]	[illegible]	[illegible]	[illegible]
C	ADDED PROBE TIP DET. E94-[illegible]	[illegible]	RUSS	[illegible]
D	WAS [illegible] PER ECN MCT 96-068	8/7/96	BI	[illegible]

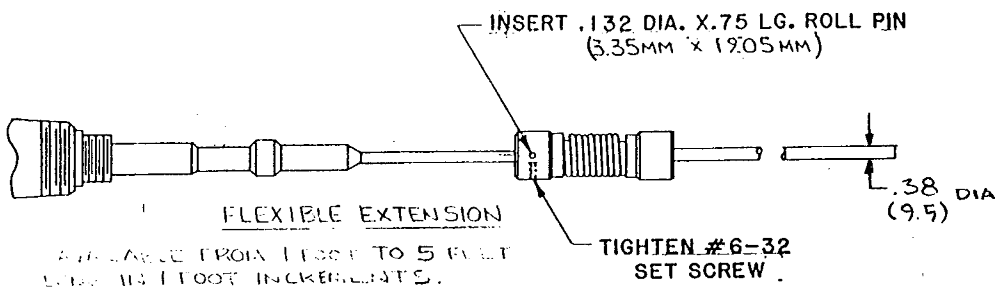


PROXIMITY PLATE



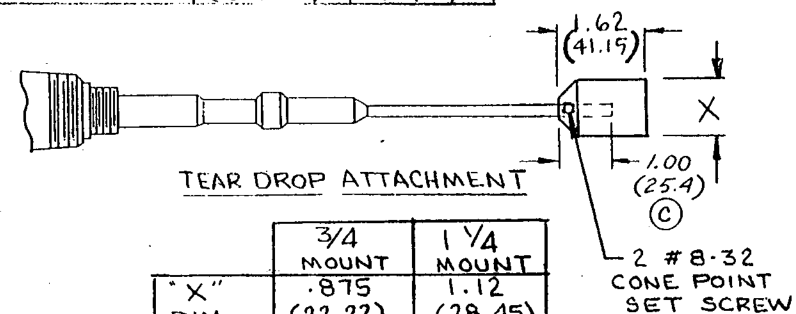
SENSITIVITY SLEEVE

DESCRIPTION	A DIA.	B DIM.	
3/4 MOUNT STD PROBE	.75 (19)	8.31 (211)	
1 1/4 MOUNT STD PROBE	1.250 (31.75)	8.31 (211)	(D)
3/4 MOUNT H.D. PROBE	.75 (19)	7.56 (192)	
1 1/4 MOUNT H.D. PROBE	1.250 (31.75)	7.56 (192)	(D)



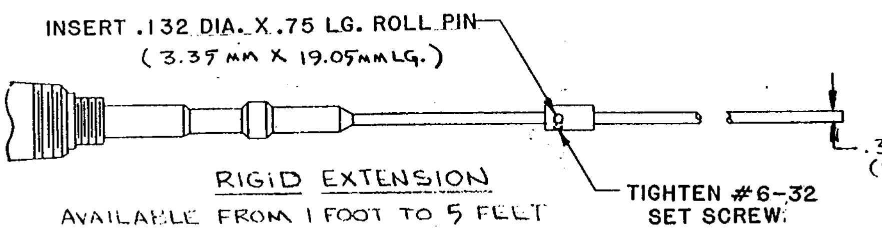
FLEXIBLE EXTENSION

AVAILABLE FROM 1 FOOT TO 5 FEET LONG IN 1 FOOT INCREMENTS.



TEAR DROP ATTACHMENT

	3/4 MOUNT	1 1/4 MOUNT
"X" DIM.	.875 (22.22)	1.12 (28.45)



RIGID EXTENSION

AVAILABLE FROM 1 FOOT TO 5 FEET LONG IN 1 FOOT INCREMENTS.

DO NOT SCALE
DIMENSIONS ARE IN INCHES

DET.	REQ'D.	SHT.	DESCRIPTION	MAT. OR PART

MATERIAL | FINISH | NEXT ASS'Y.

UNSPECIFIED TOL. DECIMALS: XX ±; XXX ±; ANGLES: ± 1/2°; DEBURR & BREAK EDGES .005

DRAWN	CHECKED	APPROVED	PROD.
BRENTON	BOB	RANDY	[illegible]
DATE 9 DEC 88	DATE 12-12-88	DATE 12 DEC. 88	DATE 12-12-88

BINDICATOR®
PORT HURON, MICHIGAN 48060

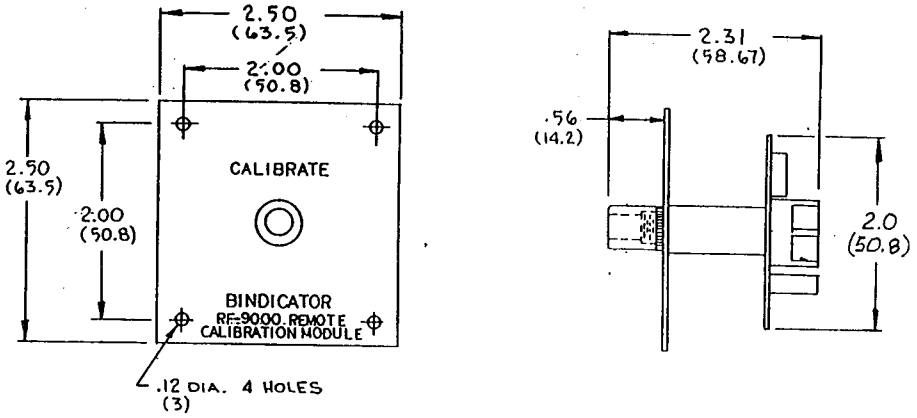
TITLE: MANUAL DRAWING PROBE ACCESSORIES

SCALE: NONE | SIZE: B | PART OR DRAWING: LRF180106

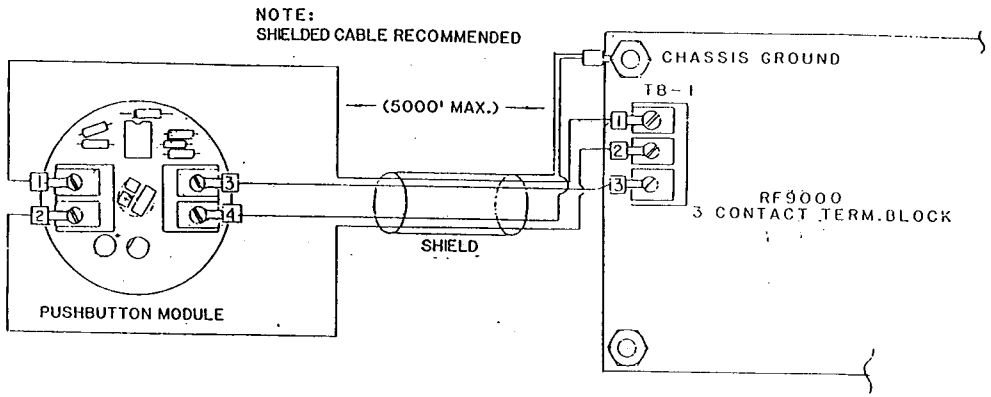
PREVIOUS | REF.

TELEDYNE POST N05868

	REVISIONS	DATE	CK'D	APP'D



OUTLINE DIMENSIONS



HOOK UP DIAGRAM

OPERATING INSTRUCTIONS:

To calibrate press and release the pushbutton on the module. The integral light will come on indicating that the calibration sequence has been initiated. When the light goes out, calibration is complete.

DO NOT SCALE
DIMENSIONS ARE IN INCHES

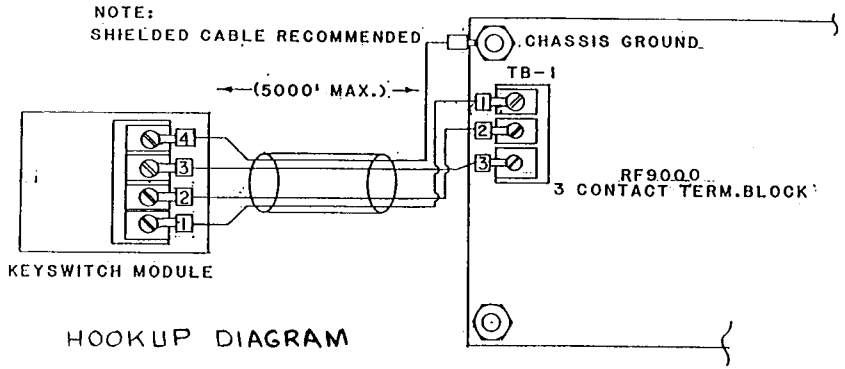
DET.	REQ'D.	SHT.	DESCRIPTION	MAT. OR PART

MATERIAL	FINISH	NEXT ASS'Y.	UNSPECIFIED TOL DECIMALS .XX ± .XXx ± ANGLES: ± 1/2° DEBURR & BREAK EDGES .005	DRAWN BRUNTON	CHECKED Bee	APPROVED RANEY	PROD.
				DATE 8 DEC 99	DATE	DATE	DATE

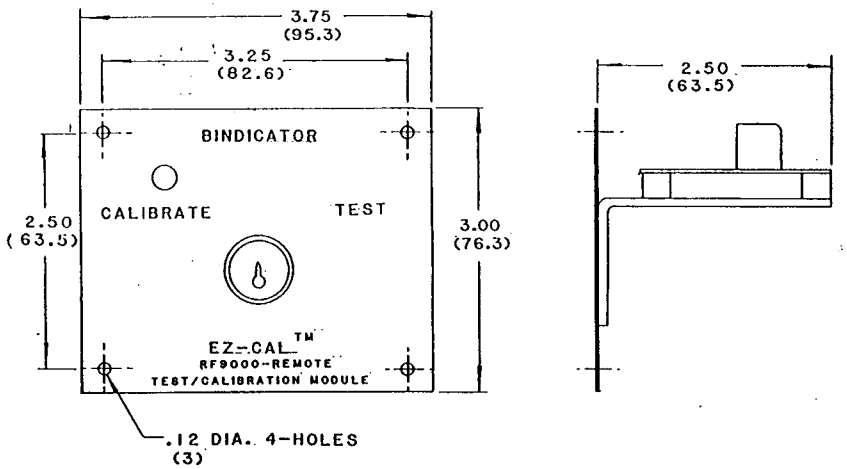
BINDICATOR®
PORT HURON, MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING RF PUSHBUTTONS REMOTE CAL. MOD.	NONE	B	LRF180107
		PREVIOUS	

	REVISION.	DATE	CK'D	APP'D



HOOKUP DIAGRAM



NOTE: BRACKETED ARE IN MILLIMETERS.

OUTLINE DIMENSIONS

OPERATING INSTRUCTIONS:

To calibrate, turn switch to "Calibrate" position and release. Red indicator light should come on indicating start of calibration. Light will go out when calibration is complete.

To test, turn switch to "Test" position and hold. If the RF-9000/10000 is in high level fail-safe mode, the RF-9000/10000 will "alarm" (1 to 6 seconds) assuming the unit was initially unalarmed (material not at probe).

If the RF-9000/10000 is in low level fail-safe mode, the unit will "unalarm" assuming the unit was alarmed initially (material not at the probe).

After testing, release the switch.

Note that the RF-9000/10000 electronics must be specially configured for testing.

DO NOT SCALE
DIMENSIONS ARE IN INCHES

DET.	REQ'D.	SHT.	DESCRIPTION	MAT. OR PART

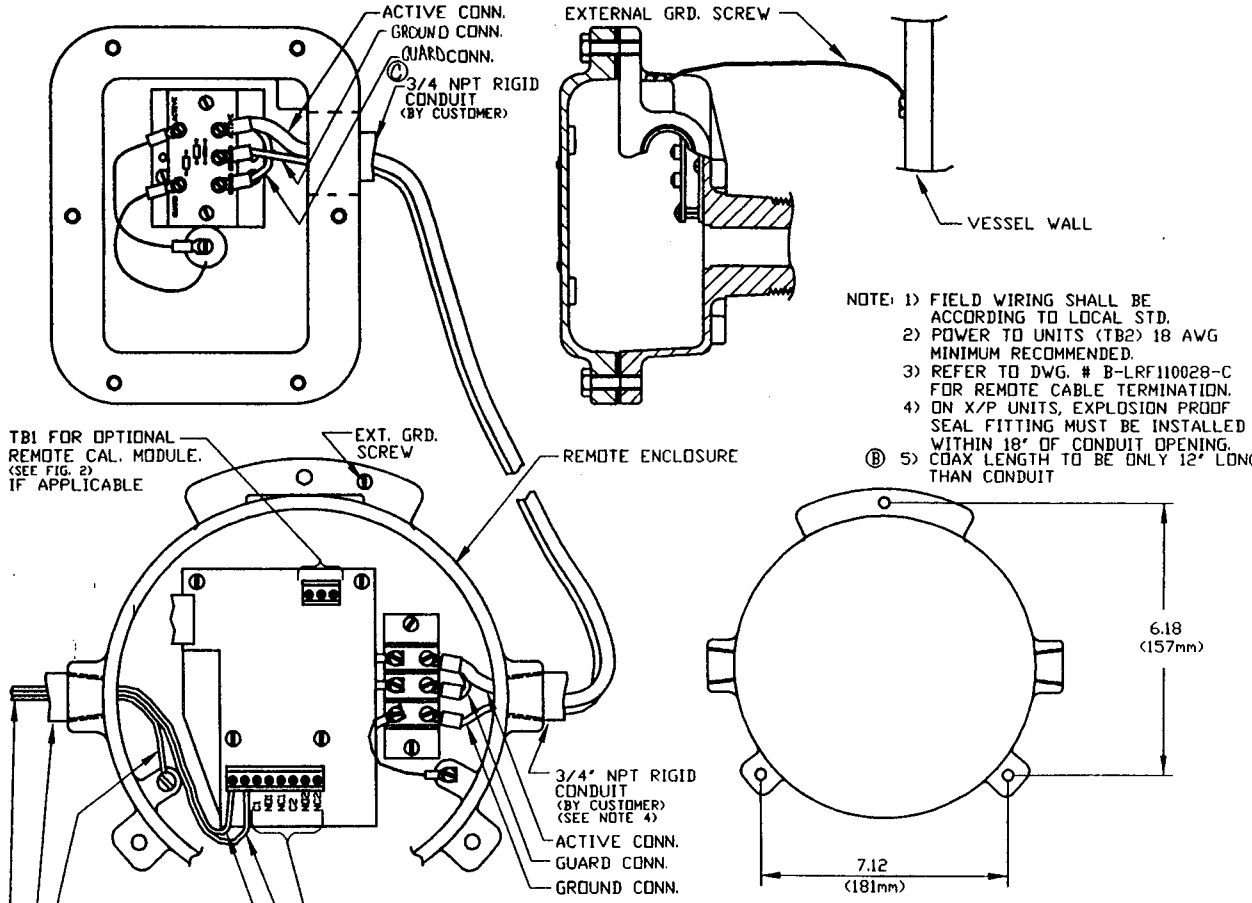
MATERIAL	FINISH		UNSPECIFIED TOL. DECIMALS: XX ±. XXX ±. ANGLES: ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
		NEXT ASS'Y.		BRENTON	BOB	RANDY	
				DATE 8 DEC 88	DATE 12-12-88	DATE 12-DEC-88	DATE

BINDICATOR®
PORT HURON, MICHIGAN 48060

TITLE: MANUAL DRAWING
R.F KEYSWITCH MODULE

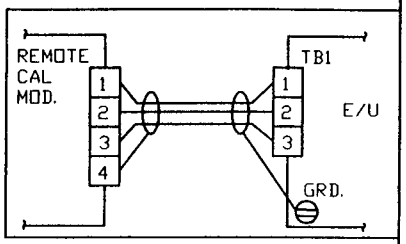
SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180108
	PREVIOUS	

REF.



NOTE: 1) FIELD WIRING SHALL BE ACCORDING TO LOCAL STD.
2) POWER TO UNITS (TB2) 18 AWG MINIMUM RECOMMENDED.
3) REFER TO DWG. # B-LRF110028-C FOR REMOTE CABLE TERMINATION.
4) ON X/P UNITS, EXPLOSION PROOF SEAL FITTING MUST BE INSTALLED WITHIN 18" OF CONDUIT OPENING.
Ⓑ 5) COAX LENGTH TO BE ONLY 12" LONGER THAN CONDUIT

	REVISIONS	DATE	CK'D	APP'D
A	SPELLING ERROR RIGID WAS RIDGID, RECOMMENDED WAS RECMMENDED.	11/12 93	JN	RB
B	NOTE 5 ADDED PER ECO 95-065 AC	6/5 95		
C	GUARD AND GROUND REVERSED PER ECO 95-111 AC	9/11 95		



REMOTE CALIBRATION MODULE (OPTIONAL)
NOTE: SHIELDED CABLE RECOMMENDED

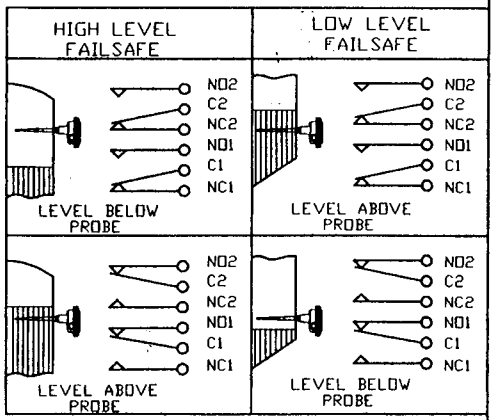


FIGURE 1

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

DO NOT SCALE DIM'S. ARE IN INCHES

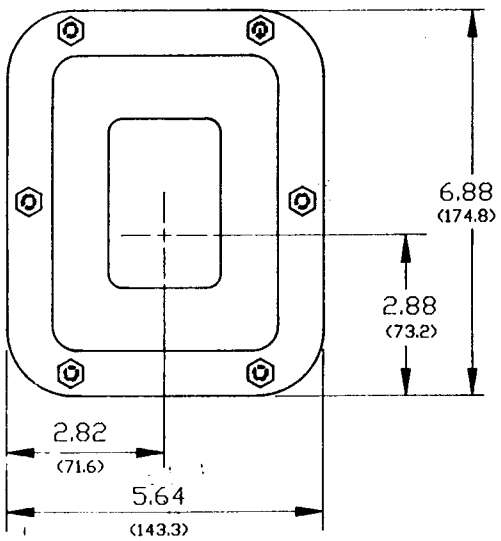
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMALS XX ± — XXX ± — ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			NEAL	SMH	RE	RB
			DATE 2/26/93	DATE 5/21/93	DATE 5/21/93	DATE 5/24/93

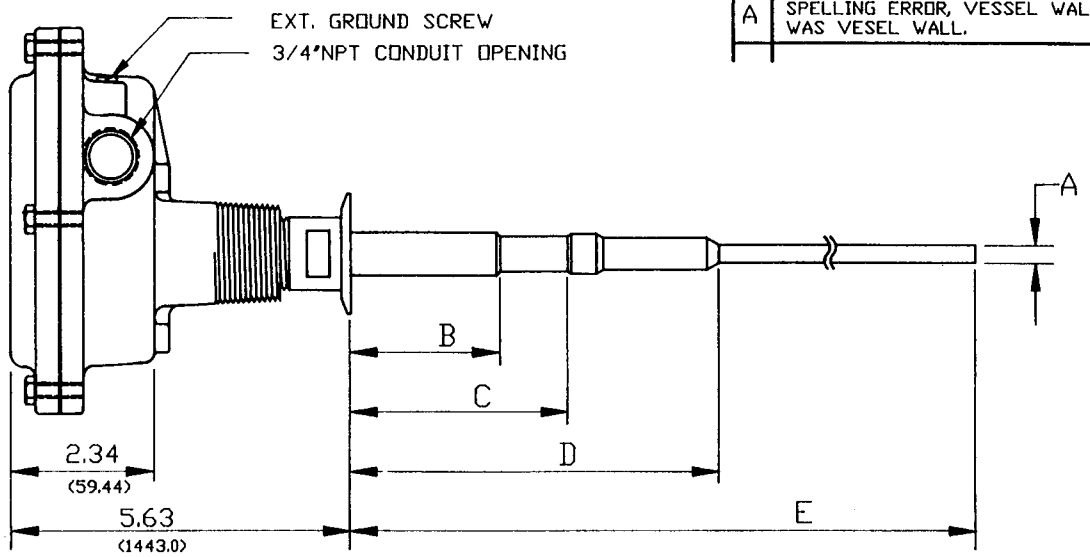
BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE
RF10000 GP REMOTE PROBE CUSTOMER INSTALLATION/HOOKUP DWG DL2 E/U

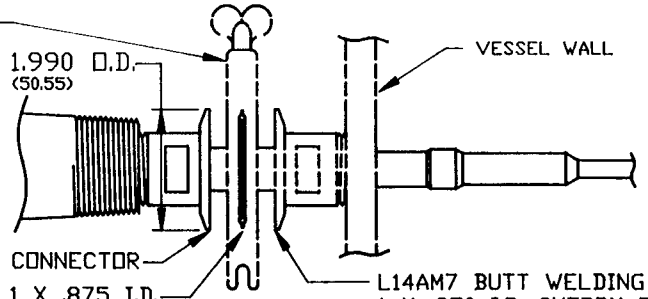
SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180127

	REVISIONS	DATE	CK'D	APP'D
A	SPELLING ERROR, VESSEL WALL WAS VESEL WALL.	11/12 93 TB		





13MHHM CAST CLAMP SIZE 1-1/2 CHERRY BURRELL 'S' OR LADISH TRI-CLAMP. (CUSTOMER SUPPLIED)



40 MP-G TEFLON GASKET SIZE 1 X .875 I.D. CHERRY BURRELL 'S' OR LADISH TRI- CLAMP. (CUSTOMER SUPPLIED)

L14AM7 BUTT WELDING FERRULE SIZE 1 X .870 I.D. CHERRY BURRELL 'S' OR LADISH TRI CLAMP. (CUSTOMER SUPPLIED)

E	14.25 (362)	14.25 (362)
D	6.00 (152.4)	2.75 (69.9)
C	3.62 (91.95)	2.00 (50.8)
B	2.38 (61.5)	1.50 (38)
A	.31 DIA. (8)	.31 DIA. (8)
APPROX DIM'S	FOODGRADE	STUB

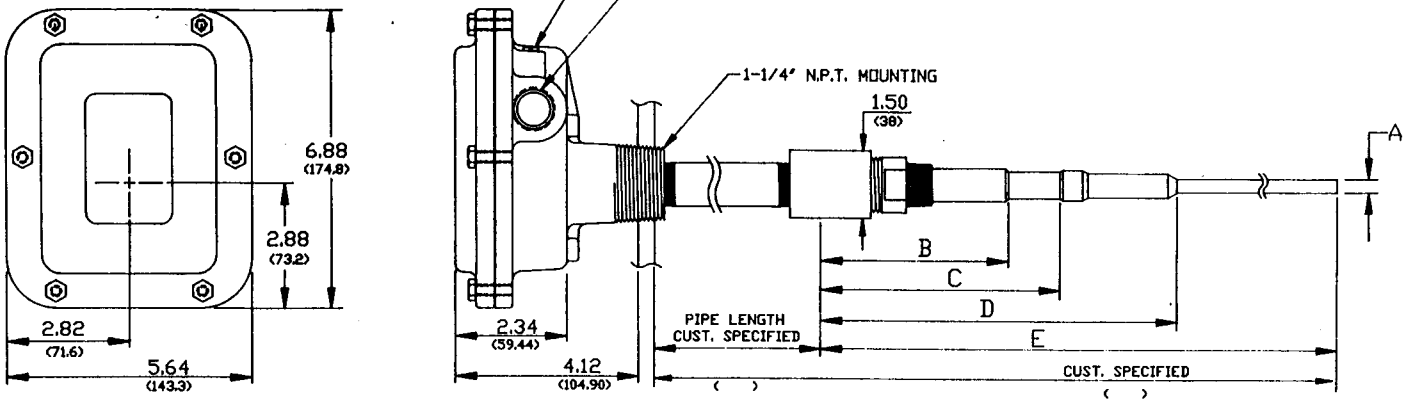
DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

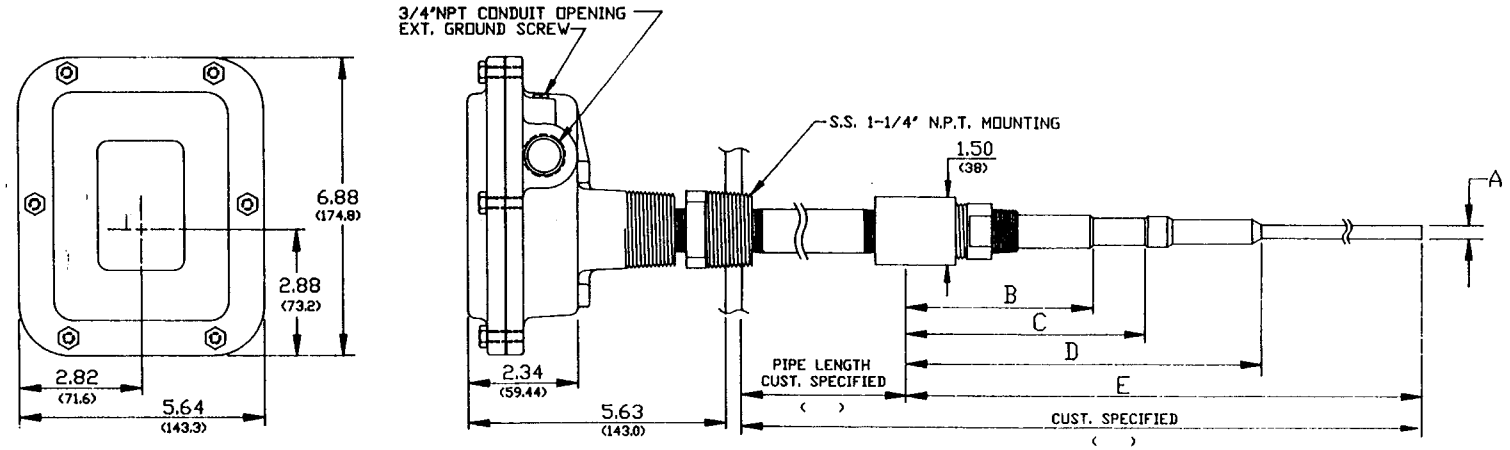
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMAL .XXX ±= XXX ±= ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			NEAL	RTR	VASHKEVICH	RB
			DATE 8/17/93	DATE 8/18/93	DATE 8/18/93	DATE 8/18/93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE PROBE W/TYPE 'S' MOUNTING	NONE	B	LRF180130



TYPE 'C' MOUNTING



TYPE 'B' MOUNTING

E	16.50 (419)	20.50 (521)	16.88 (428.75)	20.88 (530.35)	16.50 (419)
D	8.50 (216)	13.25 (336.5)	8.50 (216)	13.25 (336.5)	5.13 (130.3)
C	5.88 (149)	11.50 (292)	5.88 (149)	11.50 (292)	4.63 (117.6)
B	4.75 (121)	10.00 (254)	4.75 (121)	10.00 (254)	4.13 (105)
A	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)
APPROX DIM'S	STD. & FOODGRADE	H.D.	STD. KYNAR COATED	H.D. KYNAR COATED	STUB

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

REVISIONS	DATE	CK'D	APP'D

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL ~ FINISH ~

UNSPECIFIED TOL.. DECIMALS XX ± — XXX ± — ANGLES ± 1/2° DEBURR & BREAK EDGES .005

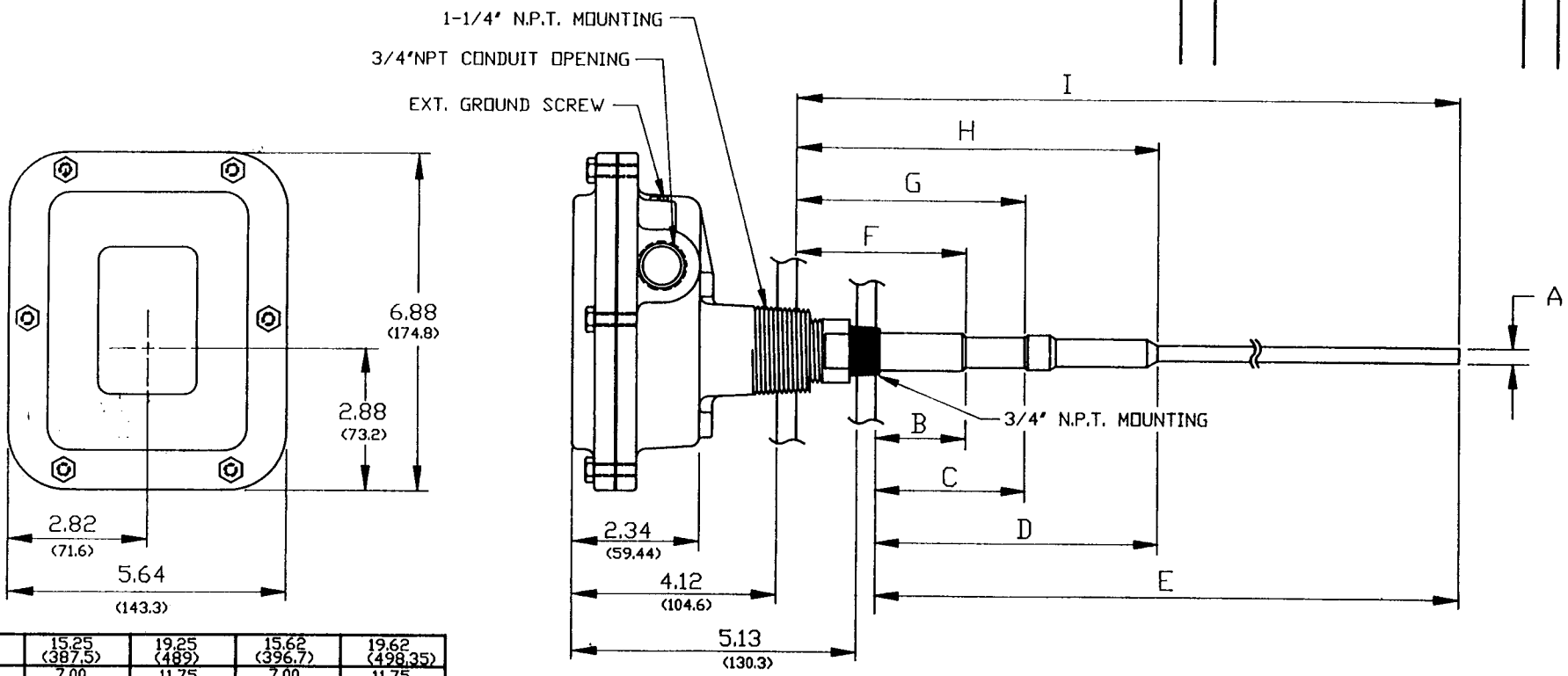
DRAWN	CHECKED	APPROVED	PROD.
NEAL	RR	BL	
DATE 10/27/93	DATE 11-3-93	DATE 11-5-93	DATE 11-5-93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE MANUAL DRAWING
EXTENDED, REMOTE PROBE G/P & X/P

SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180137

REVISIONS	DATE	CK'D	APP'D



I	15.25 (387.5)	19.25 (489)	15.62 (396.7)	19.62 (498.35)
H	7.00 (178)	11.75 (298.5)	7.00 (178)	11.75 (298.5)
G	4.5 (114.3)	10.00 (254)	4.5 (145)	10.00 (254)
F	3.38 (86)	8.50 (216)	3.38 (86)	8.50 (216)
E	14.25 (362)	18.25 (463.5)	14.62 (371.4)	18.62 (472.95)
D	6.00 (152.5)	10.75 (273)	6.00 (152.5)	10.75 (273)
C	3.50 (89)	9.00 (228.5)	3.50 (89)	9.00 (228.5)
B	2.38 (60.5)	7.50 (190.5)	2.38 (60.5)	7.50 (190.5)
A	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)	.38 DIA. (9.5)
APPROX DIM'S	STD. & FOODGRADE	H.D.	STD. KYNAR COATED	H.D. KYNAR COATED

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

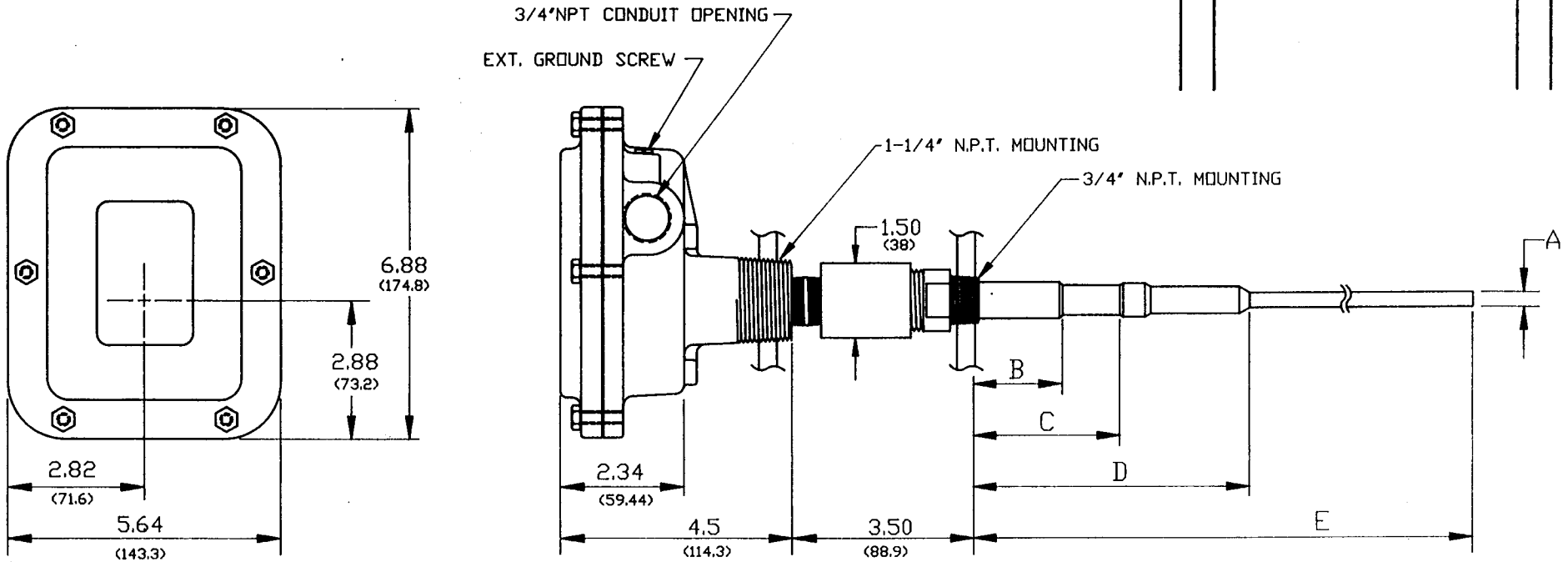
DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL	FINISH	UNSPECIFIED TOL. DECIMAL .XX ± .XXX ± ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN NEAL	CHECKED	APPROVED	PROD.
~	~		DATE 10/28/93	DATE 11-3-93	DATE 11-5-93	DATE 11-5-93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE PROBE G/P W/TYPE "A" MOUNTING	NONE	B	LRF180138

REVISIONS	DATE	CK'D	APP'D



"CAUTION"

WHEN MOUNTING EXPLOSION PROOF UNITS, NEVER ADJUST THE ORIENTATION OF THE PROBE OR PROBE HOUSING BY TURNING THE HOUSING SECTION. THIS WILL BREAK INTERNAL WIRES AND PERMANENTLY DAMAGE THE PROBE.

FOR TIGHTENING UNITS WITH THREADED BIN CONNECTIONS,THE UNIT MUST BE POSITIONED BY USING A WRENCH ON THE BIN CONNECTOR. WRENCH SIZE REQUIRED IS 1-1/16 INCH OPEN END.

E	14.25 (362)	18.25 (463.5)	14.62 (371.4)	18.62 (472.95)	14.25 (362)
D	6.00 (152.5)	10.75 (273)	6.00 (152.5)	10.75 (273)	2.63 (66.8)
C	3.50 (89)	9.00 (228.5)	3.50 (89)	9.00 (228.5)	2.25 (57.2)
B	2.38 (60.5)	7.50 (190.5)	2.38 (60.5)	7.50 (190.5)	1.75 (44.5)
A	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)
APPROX DIM'S	STD. & FOODGRADE	H.D.	STD. KYNAR COATED	H.D. KYNAR COATED	STUB

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL ~ | FINISH ~

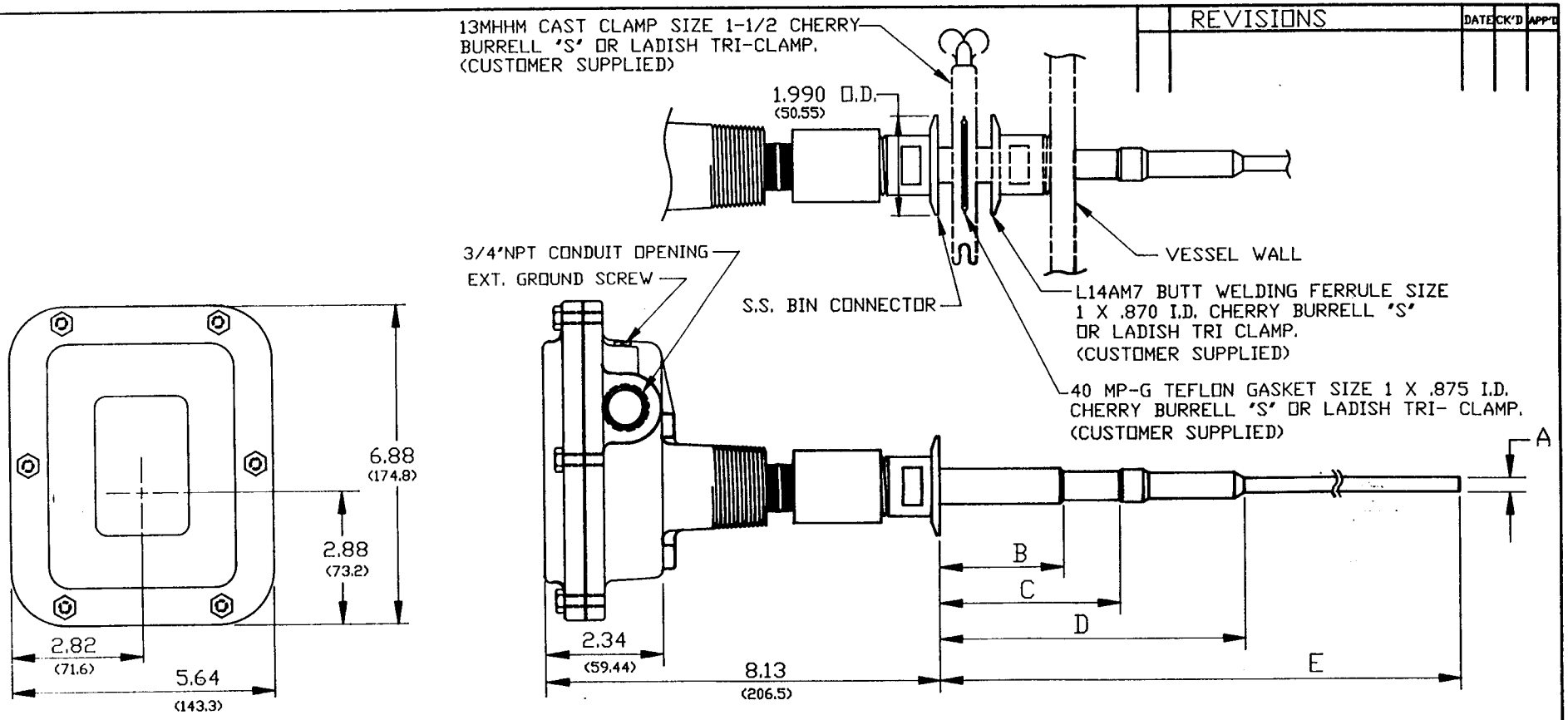
UNSPECIFIED TOL. DECIMALS: XX ±= XXX ±= ANGLES: ± 1/2° DEBURR & BREAK EDGES .005

DRAWN	CHECKED	APPROVED	PROD.
NEAL	ZR	BL	RB
DATE 10/28/93	DATE 11-3-93	DATE 11-5-93	DATE 11-5-93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE MANUAL DRAWING
REMOTE PROBE UL X/P

SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180139



REVISIONS	DATE	CK'D	APP'D

E	14.25 (362)	14.38 (362)
D	6.00 (152.5)	2.75 (69.9)
C	3.62 (91.95)	2.00 (50.8)
B	2.38 (60.5)	1.50 (38.1)
A	.31 DIA. (8)	.31 DIA. (8)
APPROX DIM'S	FOODGRADE	STUB

DO NOT SCALE DIM'S. ARE IN INCHES BRAK'TED. DIM'S ARE IN MM.

'CAUTION'

WHEN MOUNTING EXPLOSION PROOF UNITS, NEVER ADJUST THE ORIENTATION OF THE PROBE OR PROBE HOUSING BY TURNING THE HOUSING SECTION. THIS WILL BREAK INTERNAL WIRES AND PERMANENTLY DAMAGE THE PROBE.

FOR TIGHTENING UNITS WITH THREADED BIN CONNECTIONS, THE UNIT MUST BE POSITIONED BY USING A WRENCH ON THE BIN CONNECTOR. WRENCH SIZE REQUIRED IS 1-1/16 INCH OPEN END.

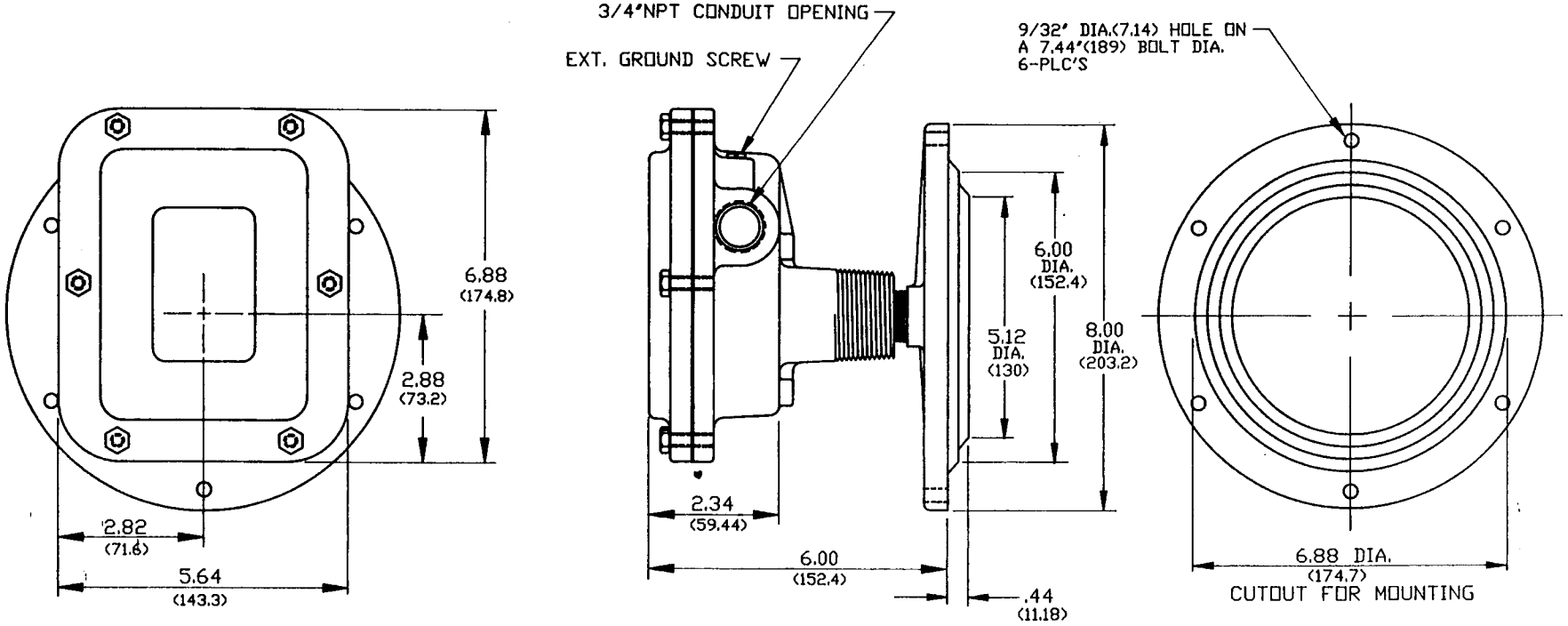
DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL	FINISH	UNSPECIFIED TOL. DECIMAL .XXX ±= .XXX ±= ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
~	~		NEAL	RR	BL	RB
			DATE 10/28/93	DATE 11-3-93	DATE 11-5-93	DATE 11-09-93

BINDICATOR®
PORT HURON, MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE PROBE UL X/P W/TYPE 'S' MOUNTING	NONE	B	LRF180140

REVISIONS	DATE	CK'D	APP'D



MOUNTING SURFACE PREPARATIONS

1. LAY OUT TWO CONCENTRIC CIRCLES ON BIN WALL AT POINT WHERE THE RF LEVEL CONTROL IS TO BE MOUNTED. ONE CIRCLE TO BE 6-7/8" DIAMETER, THE OTHER 7-7/16" DIAMETER.
2. CUT OUT 6-7/8" DIAMETER CIRCLE.
3. LAY OUT SIX EQUALLY SPACED HOLES ON 7-7/16" DIAMETER CIRCLE. DRILL OR TAP FOR 1/4" BOLTS OR CAP SCREWS.

"CAUTION"

WHEN MOUNTING EXPLOSION PROOF UNITS, NEVER ADJUST THE ORIENTATION OF THE PROBE OR PROBE HOUSING BY TURNING THE HOUSING SECTION. THIS WILL BREAK INTERNAL WIRES AND PERMANENTLY DAMAGE THE PROBE.

THE POSTION MUST BE ADJUSTED BY REMOVING THE MOUNTING BOLTS AND MOVING THE ENTIRE PROBE AND HOUSING.

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

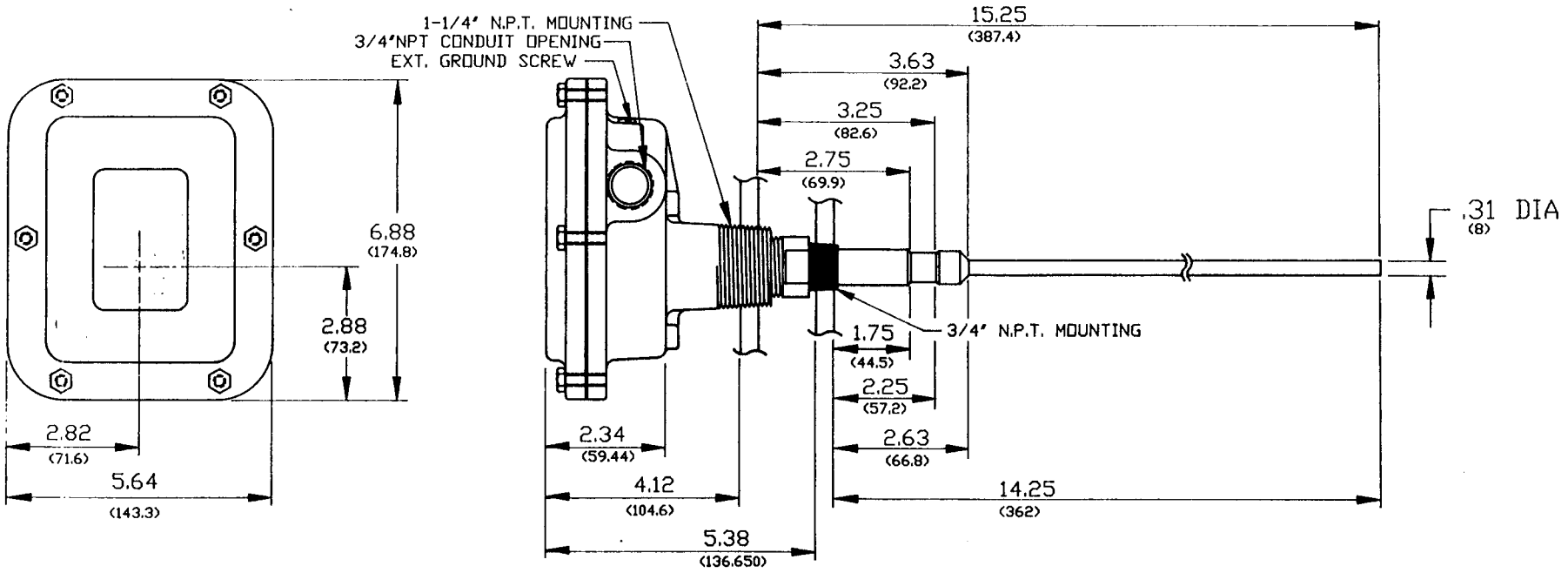
DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL	FINISH	UNSPECIFIED TOL. DECIMALS: XX ±= XXX ±= ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			NEAL	RR	BL	
			DATE 10/28/93	DATE 11-5-93	DATE 11-5-93	DATE 11-5 93

BINDICATOR®
PORT HURON, MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE FLUSH PROBE GP/XP	NONE	B	LRF180141

REVISIONS	DATE	CK'D	APP'D



DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

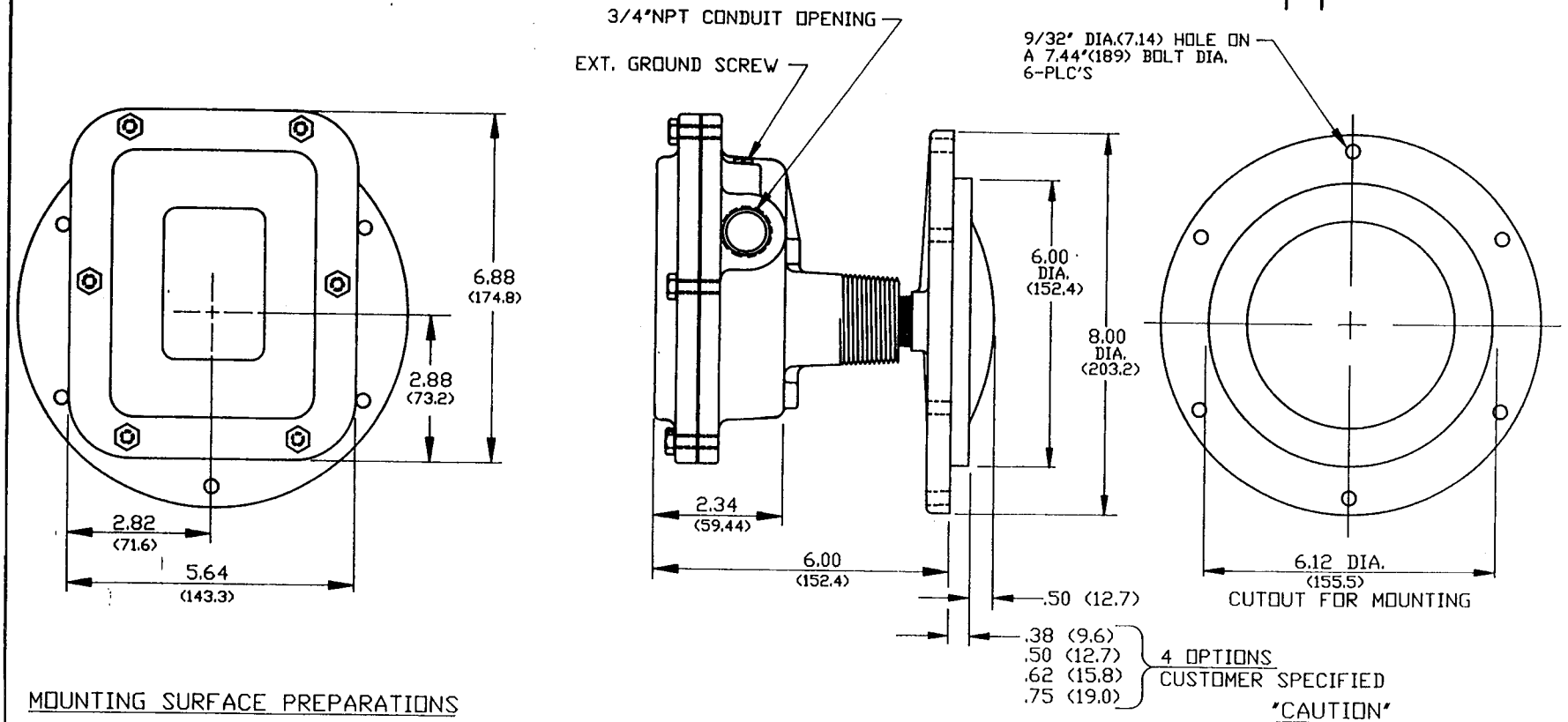
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMALS XXX ± XXX ± ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
~	~		NEAL 10/28/93	KR 11-5-93	BL 11-5-93	KB 11-5-93

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE STUB PROBE G/P W/TYPE "A" MOUNTING	NONE	B	LRF180142

REVISIONS	DATE	CK'D	APP'D



MOUNTING SURFACE PREPARATIONS

1. LAY OUT TWO CONCENTRIC CIRCLES ON BIN WALL AT POINT WHERE THE RF LEVEL CONTROL IS TO BE MOUNTED. ONE CIRCLE TO BE 6-1/8" DIAMETER, THE OTHER 7-7/16" DIAMETER.
2. CUT OUT 6-1/8" DIAMETER CIRCLE.
3. LAY OUT SIX EQUALLY SPACED HOLES ON 7-7/16" DIAMETER CIRCLE. DRILL OR TAP FOR 1/4" BOLTS OR CAP SCREWS.

"CAUTION"

WHEN MOUNTING EXPLOSION PROOF UNITS, NEVER ADJUST THE ORIENTATION OF THE PROBE OR PROBE HOUSING BY TURNING THE HOUSING SECTION. THIS WILL BREAK INTERNAL WIRES AND PERMANENTLY DAMAGE THE PROBE.

THE POSTION MUST BE ADJUSTED BY REMOVING THE MOUNTING BOLTS AND MOVING THE ENTIRE PROBE AND HOUSING.

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

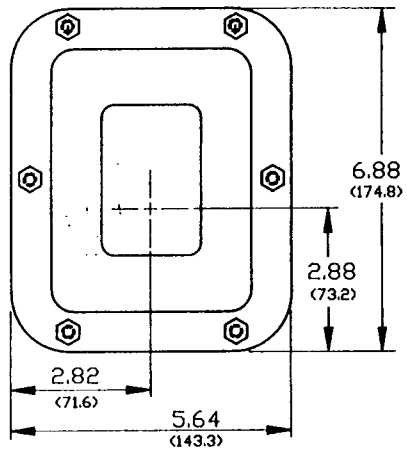
DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

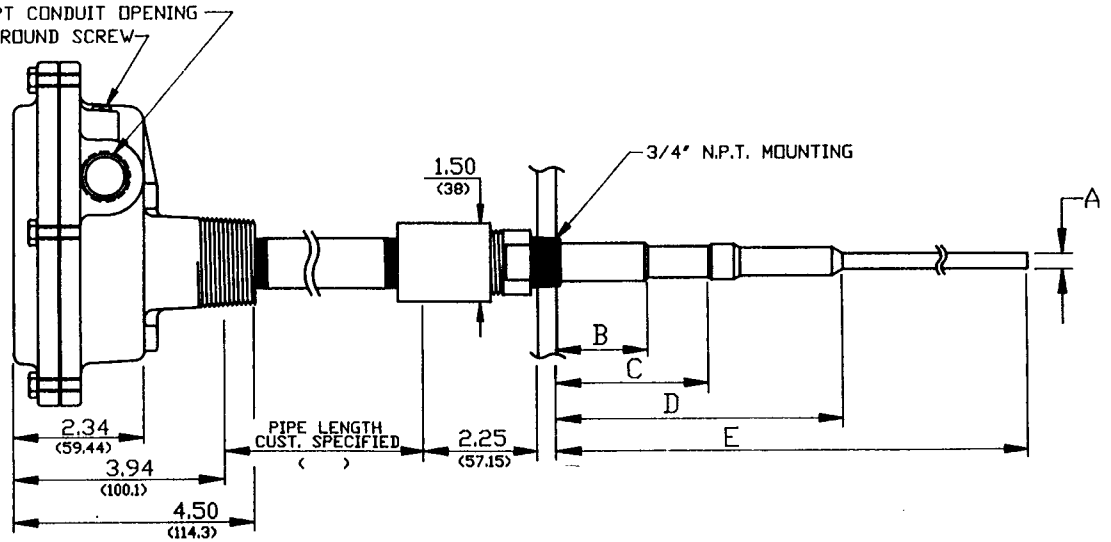
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMAL.XXX ±= XXX ±= ANGLES: + 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			NEAL	RK	BL	
			DATE 10/28/93	DATE 11-5-93	DATE 11-5-93	DATE 11.5.93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
MANUAL DRAWING REMOTE DOME FLUSH PROBE GP/XP	NONE	B	LRF180143

REVISIONS	DATE	CK'D	APP'D





E	14.25 (362)	18.25 (463.5)	14.63 (371.6)	18.63 (473.2)	14.25 (362)
D	6.00 (152.5)	10.75 (273)	6.00 (152.5)	10.75 (273)	2.63 (66.8)
C	3.5 (89)	9.00 (228.6)	3.50 (89)	9.00 (228.6)	2.25 (57.2)
B	2.38 (60.5)	7.50 (190.5)	2.38 (60.5)	7.50 (190.5)	1.75 (44.5)
A	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)	.38 DIA. (9.5)	.31 DIA. (8)
APPROX DIM'S	STD. & FOODGRADE	H.D.	STD. KYNAR COATED	H.D. KYNAR COATED	STUB

DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

MATERIAL ~ FINISH ~

UNSPECIFIED TOL. DECIMAL .XXX ± .010 .XXX ± .005 ANGLES ± 1/2° DEBURR & BREAK EDGES .005

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

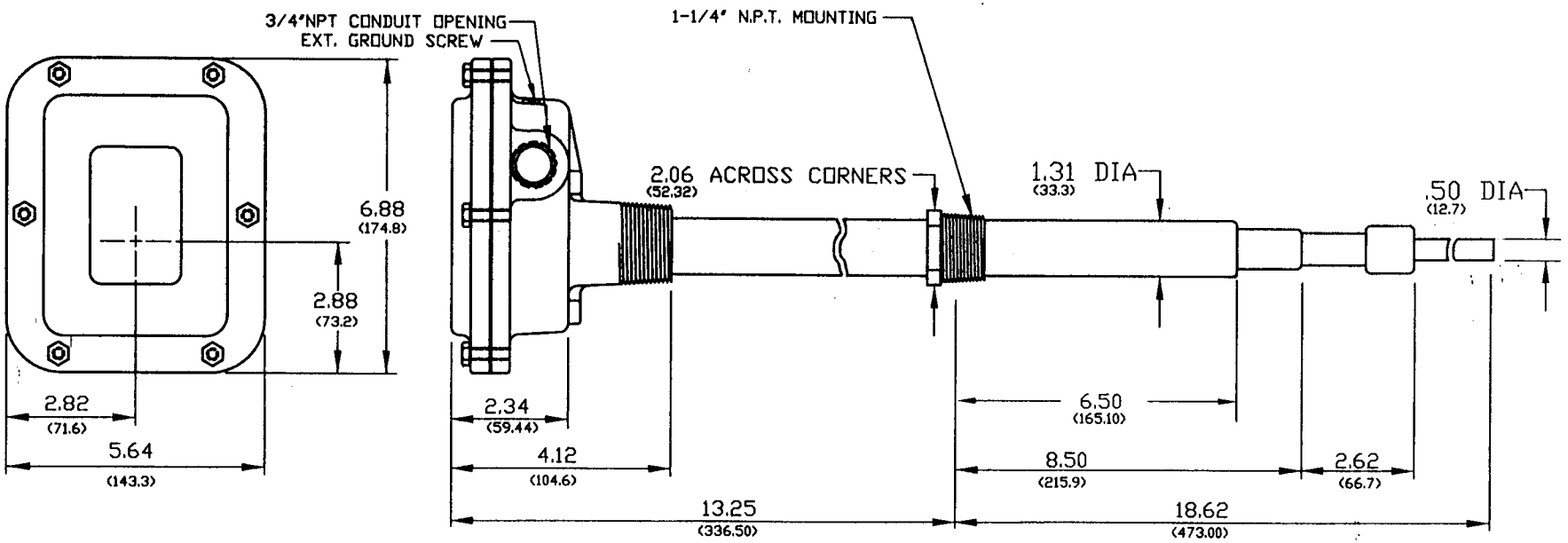
DRAWN	CHECKED	APPROVED	PROD.
NEAL	RP	BL	RB
DATE 10/27/93	DATE 11-6-93	DATE 11-5-93	DATE 11-5-93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE MANUAL DRAWING
LAGGED, REMOTE PROBE G/P & X/P

SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180144

	REVISIONS	DATE	CK'D	APP'D
A	6.50 DIMENSION ADDED PER ECO 94-134	10/10 94 AC	WJR	RB
B	METRIC DIM. TO GUARD WAS INCORRECT. IT WAS (2215.9). PER ECO#95-113	9/13 95		



DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL | FINISH

UNSPECIFIED TOL.
DECIMAL .XX ± ——
.XXX ± ——
ANGLES ± 1/2°
DEBURR & BREAK
EDGES .005

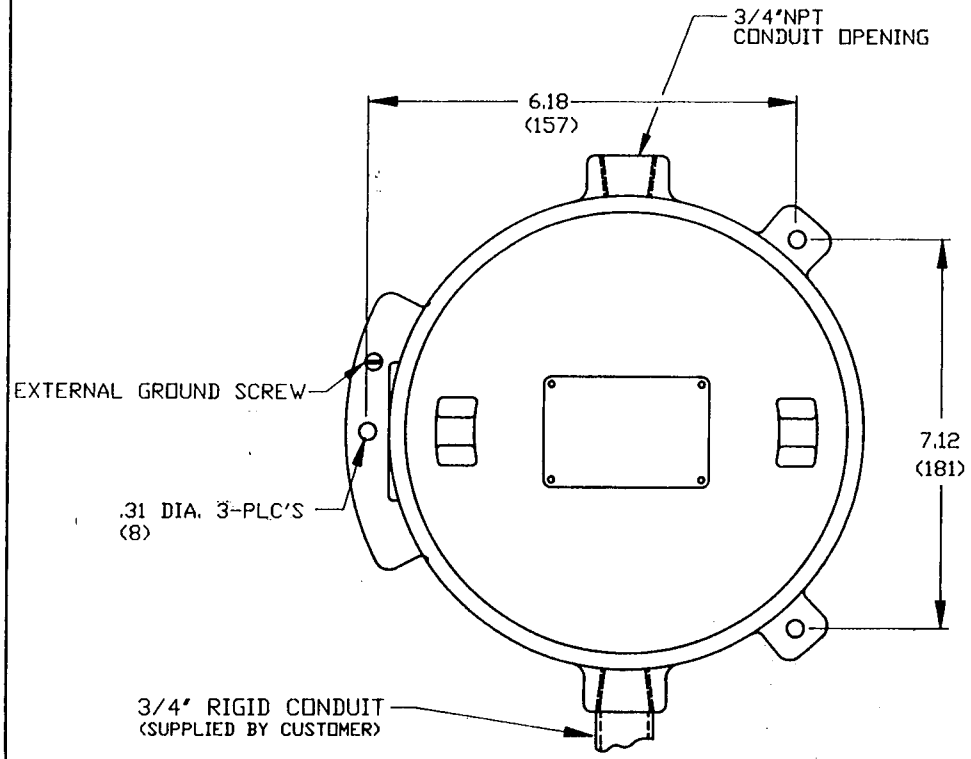
DRAWN	CHECKED	APPROVED	PROD.
NEAL	RR	BL	RB
DATE 10/28/93	DATE 11/5/93	DATE 11/5/93	DATE 11/5/93

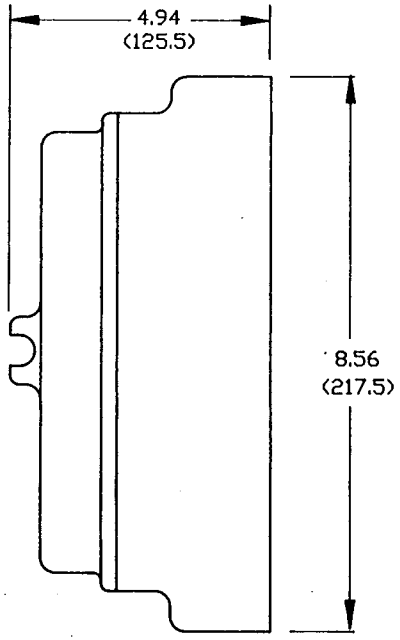
BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE
MANUAL DRAWING
REMOTE CERAMIC PROBE

SCALE	SIZE	PART OR DRAWING
NONE	B	LRF180146

REVISIONS	DATE	CK'D	APP'D





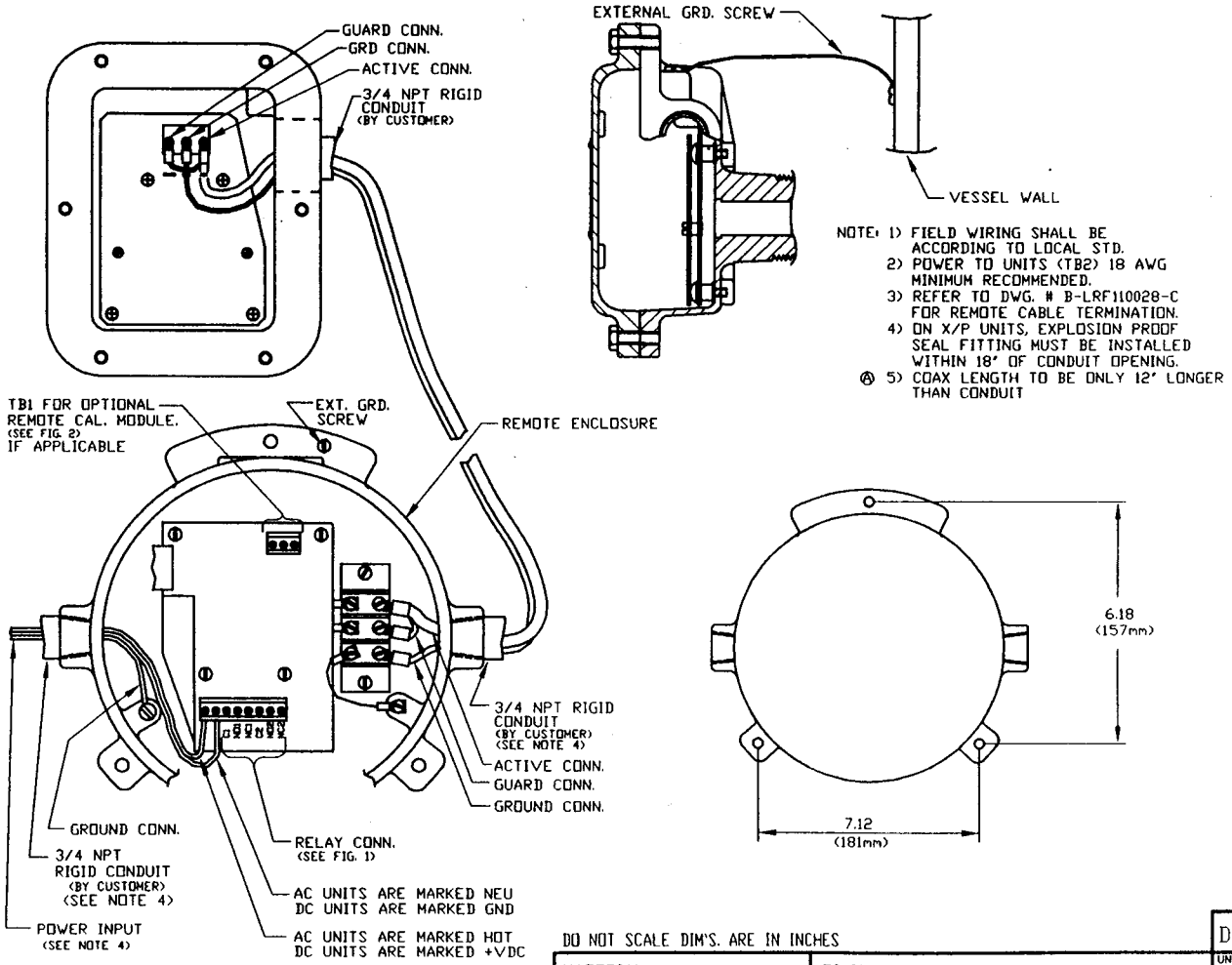
DO NOT SCALE DIM'S. ARE IN INCHES
BRAK'TED. DIM'S ARE IN MM.

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

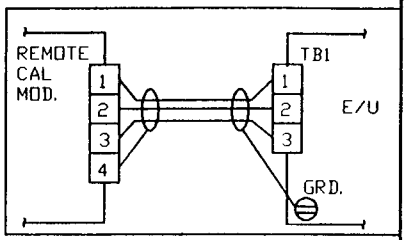
MATERIAL	FINISH	UNSPECIFIED TOL. DECIMAL .XX ± .XXX ± ANGLES ± 1/2° DEBURR & BREAK EDGES .005	DRAWN NEAL	CHECKED BOR	APPROVED RR	PROD. AB
			DATE 12/10/93	DATE 12-13-93	DATE 12-13-93	DATE 12-13-93

BINDICATOR® PORT HURON,MICHIGAN 48060	TITLE MANUAL DRAWING RF10000 ELECTRONIC ENCLOSURE	SCALE NONE	SIZE B	PART OR DRAWING LRF180147

	REVISIONS	DATE	CK'D	APP'D
A	NOTE 5 ADDED PER ECO 95-065 AC	6/5 95		



NOTE: 1) FIELD WIRING SHALL BE ACCORDING TO LOCAL STD.
2) POWER TO UNITS (TB2) 18 AWG MINIMUM RECOMMENDED.
3) REFER TO DWG. # B-LRF110028-C FOR REMOTE CABLE TERMINATION.
4) ON X/P UNITS, EXPLOSION PROOF SEAL FITTING MUST BE INSTALLED WITHIN 18" OF CONDUIT OPENING.
Ⓐ 5) COAX LENGTH TO BE ONLY 12" LONGER THAN CONDUIT



REMOTE CALIBRATION MODULE (OPTIONAL)
NOTE: SHIELDED CABLE RECOMMENDED

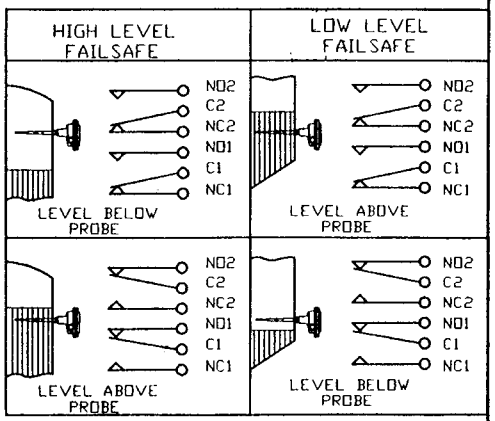


FIGURE 1

DO NOT SCALE DIM'S. ARE IN INCHES

DET.	REQD	SHT	DESCRIPTION	MAT.OR PART

MATERIAL	FINISH	UNSPECIFIED TOL. DECIMALS XX ± XXX ± ANGLES: ± 1/2° DEBURR & BREAK EDGES .005	DRAWN	CHECKED	APPROVED	PROD.
			NEAL	HEWELT	RE	RB
			DATE 12/10/93	DATE 12/13/93	DATE 12/13/93	DATE 12/13/93

BINDICATOR®
PORT HURON,MICHIGAN 48060

TITLE	SCALE	SIZE	PART OR DRAWING
RF10000 XP REMOTE PROBE CUSTOMER INSTALLATION/HOOK UP DWG DL2 E/U	NONE	B	LRF18014S

GENERAL TERMS AND CONDITIONS OF SALE

1. PAYMENT Terms of payment are Net 30 days and are effective from the actual date of invoice. If, in the Seller's opinion, the financial condition of the Buyer at any time-or any other circumstances do not justify the incurrence of production costs or shipment on the terms of payment specified, the Seller may require partial or full payment in advance.

2. F.O.B. All shipments are F.O.B. Seller's factory in Port Huron, Michigan, unless otherwise stated in the quotation.

3. QUOTATION AND PRICES Quoted prices are firm for thirty days and are subject to change without notice after expiration of this period. Orders calling for future deliveries will be invoiced according to prices in effect at the time of shipment.

4. TAXES Any applicable sales, use, revenue, excise or other taxes not specifically stated in the quotation are to be remitted by the Buyer directly to the appropriate regulatory agency.

5. EQUIPMENT WARRANTY/LIMITATION The following BINDICATOR products are warranted for a period of two years from date of shipment against defective materials and workmanship: RF Series, Mark III Yo-Yo, General Purpose Yo-Yo, Micro-Sonic Series, Eagle, Mach One, Leveldata, Tracker, and Levelite Series. All CELTEK and other Bindicator products are warranted for a period of one year from date of shipment against defective materials and workmanship. WE MAKE NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE FOREGOING IS HEREBY DISCLAIMED AND EXCLUDED FROM THIS CONTRACT. If the products are being acquired for resale, Buyer will make, in connection with any such resale, only those warranties contained herein and will indemnify us against any claims, causes of actions and judgements which arise from any representations, warranties or agreements made by or entered into by Buyer, other than those contained herein.

6. BUYER'S EXCLUSIVE REMEDY In the event of any breach of warranty, the sole and exclusive remedy of Buyer (or any person claiming through Buyer) shall be limited to the repair or replacement of defective products or parts, a our plant or at Seller's option, to the refund of the purchase price, provided that notice of such defects is given within six months after shipment. In no event will our liability include any incidental or consequential damages.

7. DELIVERY The Seller shall not be liable for loss or damage of any kind resulting from delay or inability to deliver or account of flood, fire, strike, labor troubles, riot, civil disturbances, accidents, acts or orders or regulations of civil or military authorities, shortages of materials, or any other cause or causes (whether or not similar in nature to any of these enumerated) beyond Seller's control.

8. PRODUCT CHANGES In keeping with our continuing policy of product improvement, we reserve the right to make changes in our products at any time, without incurring an obligation to change equipment previously shipped.

9. RETURN OF GOODS In no case may products or parts be returned without Seller's prior written permission. Products or parts returned under the aforementioned Equipment Guarantee must be shipped with transportation charges prepaid. All other returns must he shipped with transportation charges prepaid and will be subject to a restocking charge. Only products of standard Bindicator manufacture will be accepted for return. Products which are specially modified or produced to the Buyer's specifications will not be accepted for return.

10. CONTRACT FORMATION A binding contract shall not be effective until a written purchase order is received at Seller's office in Port Huron, Michigan and accepted in writing by an authorized employee of the Seller at its Port Huron office. The terms and conditions in our quotation or acknowledgment shall govern the contract and any different or additional terms in Buyer's purchase order, unless approved by Seller in writing, are hereby objected to

11. CONSTRUCTION Any agreement arrived at shall be considered to be a Michigan contract and shall be construed under the laws of the State of Michigan.

12. CANCELLATION Request for cancellation must be in writing and referred to Bindicator. No orders will be accepted with the understanding that they may later be cancelled. If and when cancellation is approved by Bindicator, it is with the understanding that Bindicator will he fully reimbursed by payment of cancellation charges which are to be determined by Bindicator.

13. CERTIFICATION OF NONSEGREGATED FACILITIES Our firm does not maintain facilities of a segregated nature contrary to the provision of 41 CFR 60-1.8, and further that if we have 50 or more employees and our contractual arrangements of $50,000 or more we have complied with 41 CFR 60-1.7 concerning the annual filing of a report on Standard Form 100 (EEO-I) and with 41 CFR 60 -1.40 by developing a written Affirmative Action Compliance Program.

150 Venture Boulevard
Spartanburg, SC 29306
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Internet: www.bindicator.com
Email: sales@bindicator.com