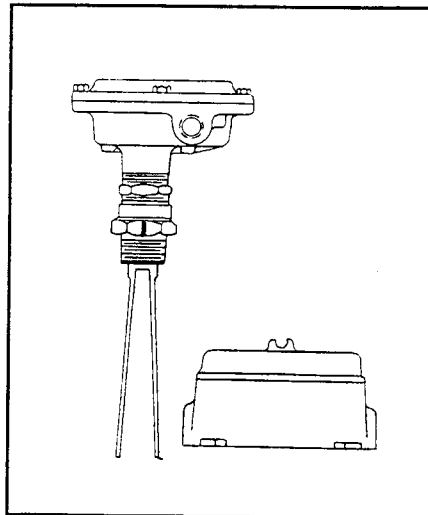
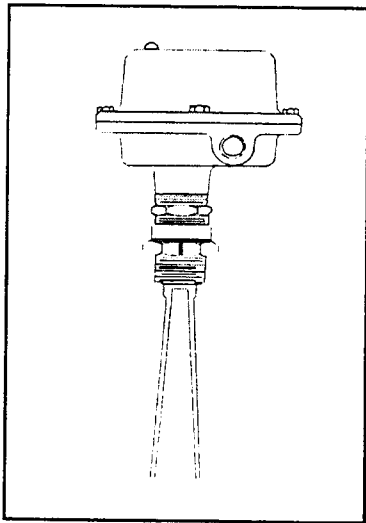


# LP100 & LP200

## Pulse Point with Test Feature

*Installation & Operation Manual*



BINDICATOR  
150 Venture Boulevard  
Spartanburg, SC 29306  
Phone: (864) 574-8960, Fax: (864) 578-7308  
Customer Service: (800) 778-9242  
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email: [sales@bindicator.com](mailto:sales@bindicator.com)



**LP100 & LP200**  
**Pulse Point with Test Feature**  
Installation and Operation Manual  
10/97 Rev. A LVP180004

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**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!*



## 1.0 INTRODUCTION

The Pulse Point is an electronic level control designed for use in powders and granular solids. The Pulse Point uses a vibrating “tuning fork” to sense the presence of material.

Features of the Pulse Point include:

- Various models, mounting configurations, and fork coatings available to suit almost any application
- No calibration required
- External self-test feature
- Adjustable time delay
- Selectable fail-safe operation (high or low level)
- Indicator LED’s show operating status

The Pulse Point is manufactured of high quality materials and is designed for years of reliable service.

### ***1.1 Description of Available Models***

The Pulse Point LP-100 series are integral units which have the electronics and tuning fork in the same enclosure. The fork may be pipe extended up to 10 feet. Refer to Section 9 for details of the various LP-100 models.

The Pulse Point LP-200 series are remote units which have the electronics and tuning fork in separate enclosures. The fork may be pipe extended up to 10 feet. The maximum distance between fork and electronics is 100 feet with low-temperature cable and 50 feet with high temperature cable. (Note: For proper operation factory-supplied cable must be used to connect fork and electronics.) Refer to Section 10 for details of the various LP-200 models.

## 2.0 INSTALLATION

The following precautions should be observed when installing and operating the Pulse Point:

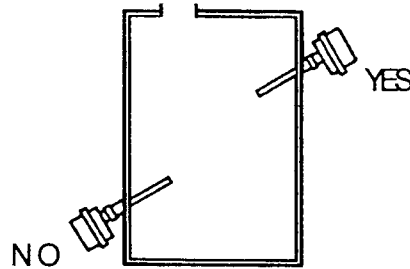
- The tuning fork assembly is a precision device - handle it carefully.
- Remove power from the unit before making any adjustments  
**CAUTION: Very high voltage is present on the fork terminals!**
- Do not allow moisture to enter the electronics enclosure. Conduit should slope downward from the Pulse Point housing. Install drip loops. Seal conduit with silicone rubber product.
- All wiring must conform to NEC requirements or local electrical codes.

## 2.1 Location and Mounting

The Pulse Point fork must be located at the position where level indication is desired. The fork may be mounted through the top or side wall of the vessel. To ensure reliable operation, observe the following guidelines when choosing the mounting location:

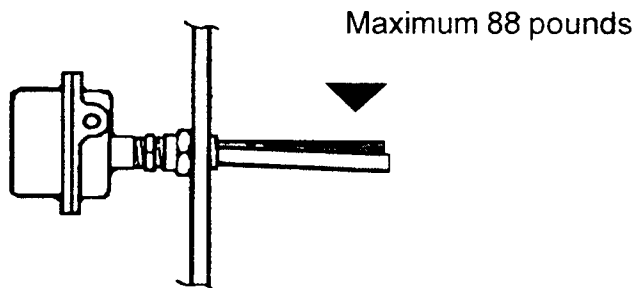
- Avoid locations where high levels of vibration are present.
- The fork assembly must be horizontal or pointing downward. DO NOT mount the fork pointing upward. (See Fig. 1)

**Figure 1**



- The maximum allowable downward force on the fork assembly is 88 pounds. (See Fig. 2)

**Figure 2**



- Calculate the maximum solids head height above a horizontally mounted fork as follows:

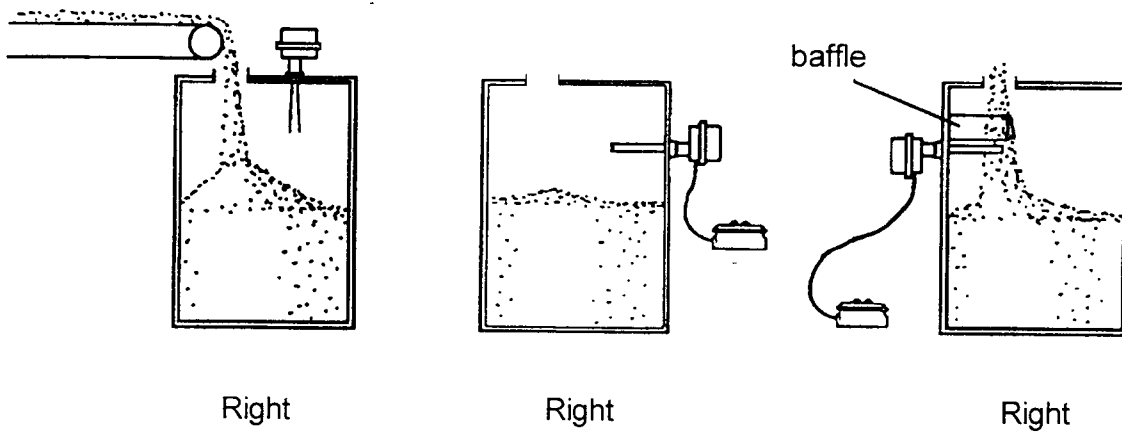
$$\text{Maximum height of material (in ft.)} = \frac{2200}{\text{bulk density (lbs/ft}^3\text{)}}$$

For example, if the material weighs 50 lbs/ft<sup>3</sup>, the maximum allowable height of material above the fork is:

$$\frac{2200}{50} = 44 \text{ feet}$$

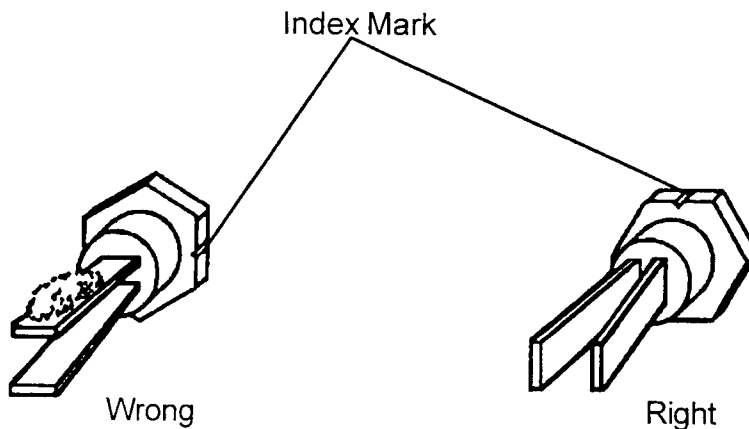
- Do not mount the fork directly in the flow of material. If necessary, use a baffle to protect the fork from falling material. The baffle should be placed 6 to 8 inches above the fork so that material will not become packed between the fork and the baffle. (See Fig. 3)

**Figure 3**



- If the fork is mounted horizontally, it must be positioned so that the material will not accumulate on top of or between the tines. There is an index mark on the mounting nut to assist in proper positioning of the fork. (See Fig. 4)

**Figure 4**



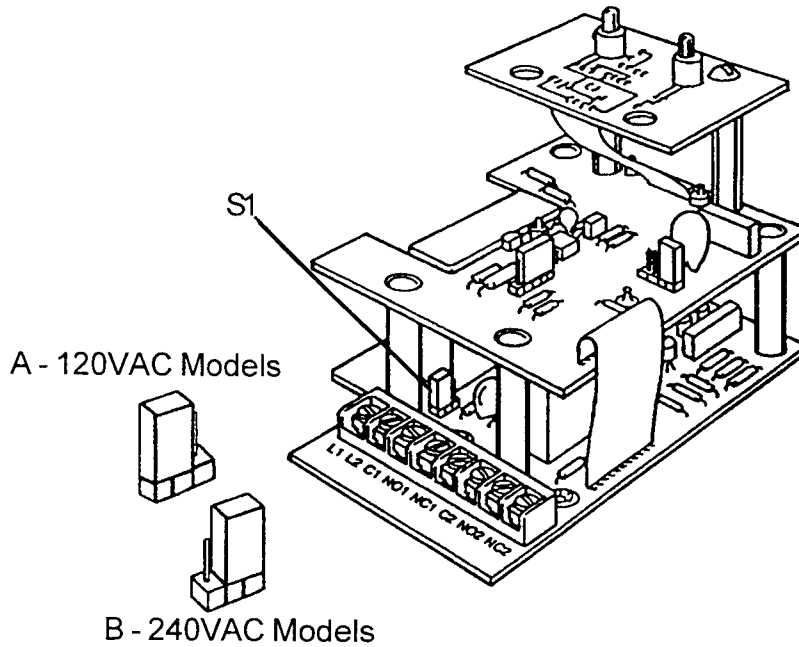
## 2.2 Electrical Connections

Electrical connections to the Pulse Point are shown in drawing LVP1E0004 (LP-100 units) or LVP1E0005 (LP-200 units). All wiring must be completed in accordance with applicable electrical codes.

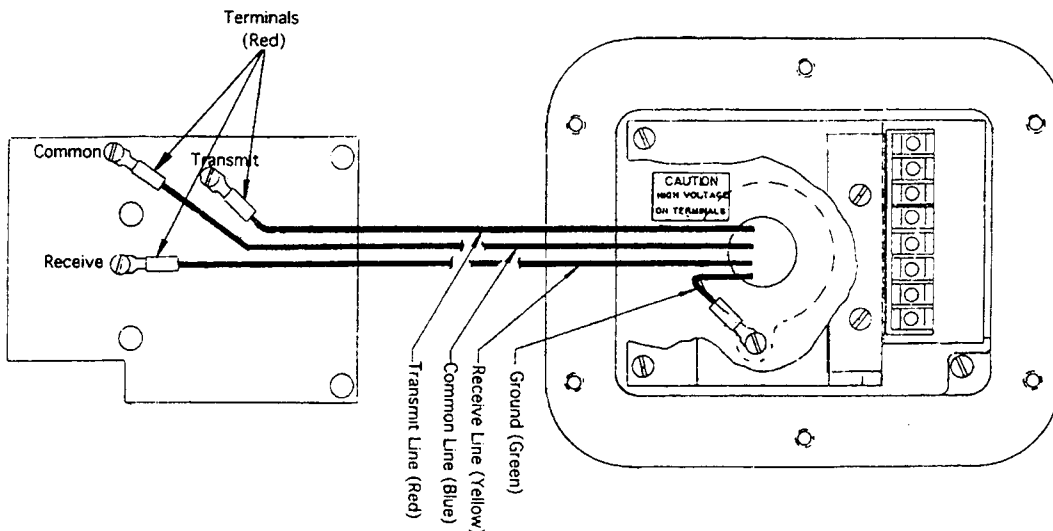
The markings at TB-1 on the circuit board indicate the status of the relay contacts when the unit is operating in non-alarm condition.

Before applying power to the unit, make sure the "Power Select" jumper S-1 is in the proper position (120VAC or 240VAC) depending on the primary power source. (See Fig. 5)

**Figure 5**

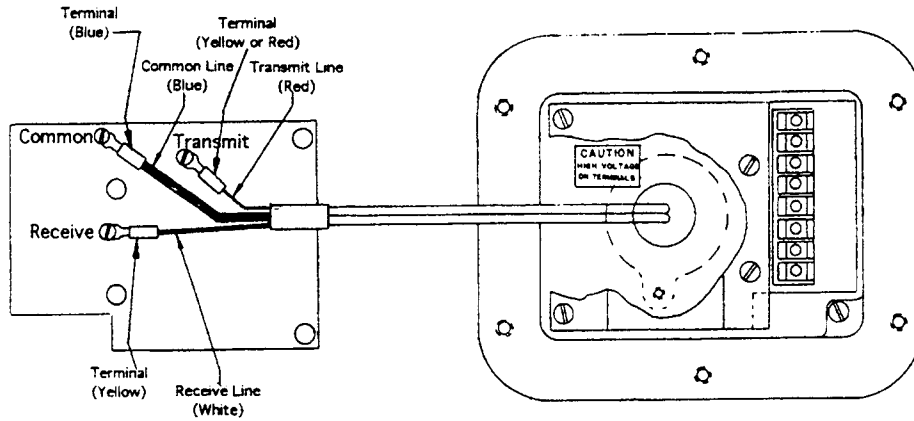


## 2.3 Hook-up Sensing Unit to Integral GP Electronics



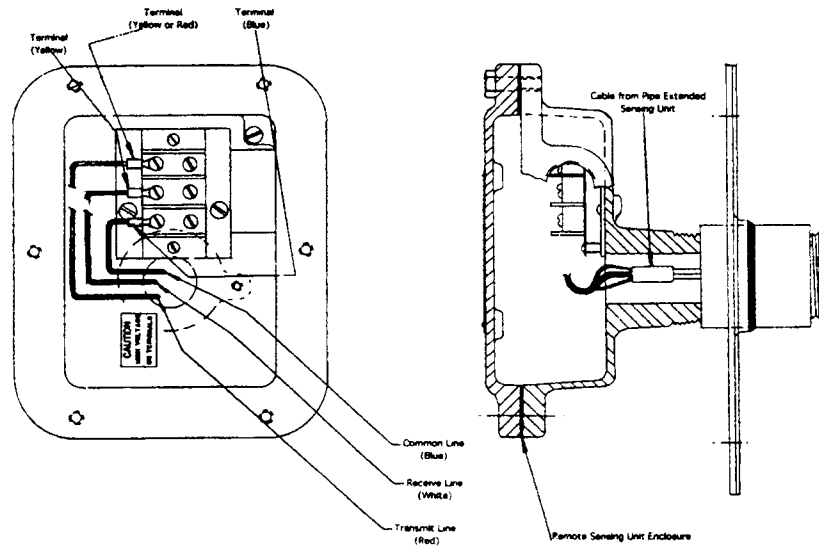


## 2.4 Hook-up Sensing Unit to Pipe Extended Integral GP Electronics (Low Temperature Cable)

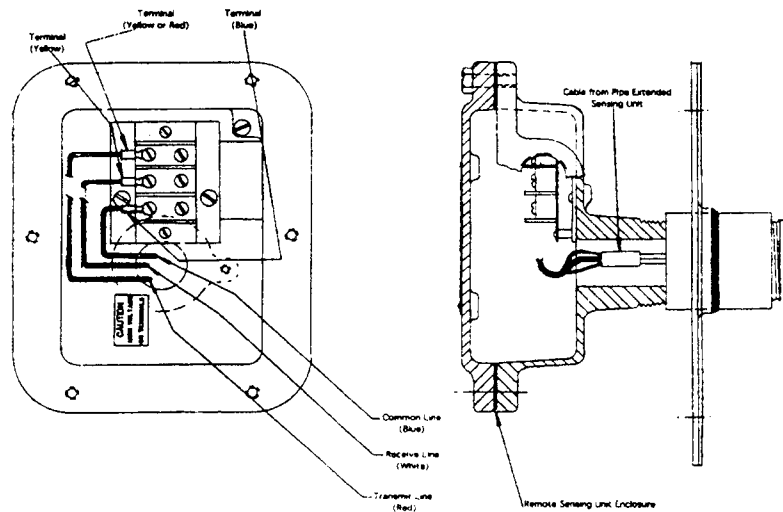


Hook-up of Extended Fork to Electronics of Integral Pulse Point with Low Temperature Cable

## 2.5 Hook-up Sensing Unit to Remote GP Electronics



## 2.6 Hook-up Sensing Unit to Pipe Extended Remote GP Electronics (Low Temperature Cable)



### 3.0 OPERATION

The Pulse Point does not require calibration. When power is applied to the unit, the tines of the fork will begin vibrating (if the fork is not impeded by contact with material or some other object). The green LED will be lighted whenever power is applied to the unit. The status of the red LED will be determined by the selected fail-safe mode and whether or not the fork is allowed to vibrate. (Refer to Section 4.1)

### 4.0 USER OPTIONS

The Pulse Point allows the user to control several operating characteristics to suit individual applications.

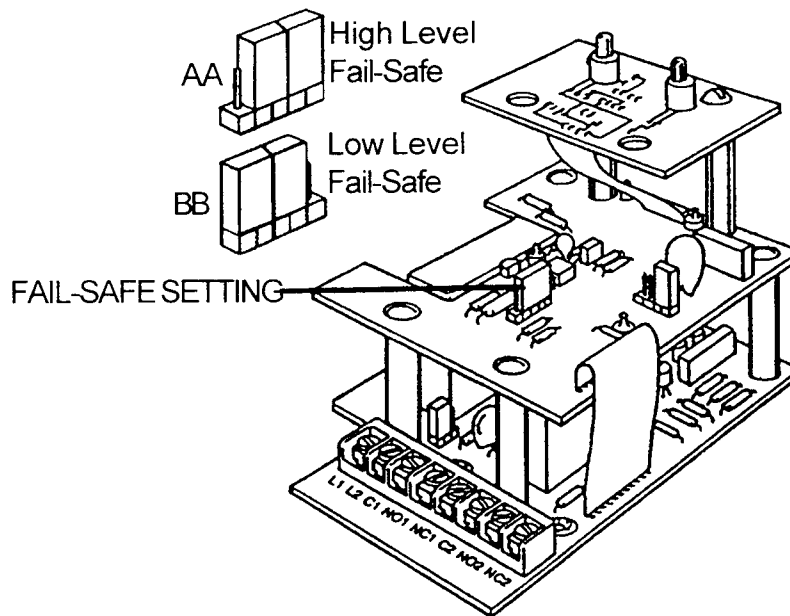
#### 4.1 Fail-Safe Selection

The output relay on the Pulse Point is energized when the unit is operating in non-alarm state. This is known as “fail-safe” operation; the Pulse Point will give an alarm indication in the event of power failure.

Fail-safe operation may be selected for high-level (HLFS) or low-level (LLFS) applications by placing jumpers S-102 as shown in Fig. 6. The chart below shows the various operating conditions which will exist in each of the fail-safe modes:

<u>Fork Status</u>	<u>Fail-Safe Mode</u>	<u>Relay Status</u>	<u>Red LED</u>
Vibrating	HLFS	Energized	Off
Not vibrating	HLFS	Not energized	On
Vibrating	LLFS	Not energized	On
Not vibrating	LLFS	Energized	Off

Figure 6



Note: Both fail-safe jumpers must be in either position “A” or “B”.

### 4.2 Time Delay Selection

“Time delay” is the interval between change of fork status (vibrating or not vibrating) and change of output relay status (alarmed or not alarmed).

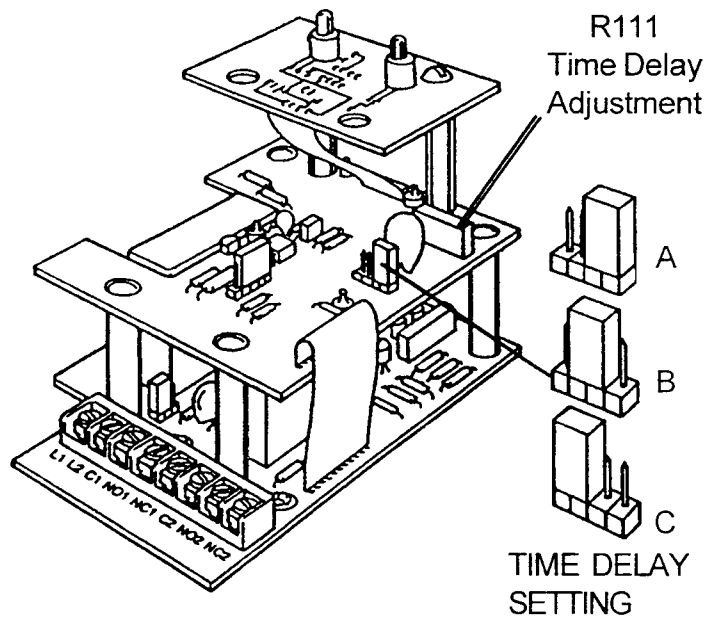
There are three modes of time delay operation as selected by jumper S-101 (See Fig. 7):

- “A” - delay between start of fork vibration and relay change
- “B” - delay between stoppage of fork vibration and relay change
- “C” - delay between both start and stoppage of fork vibration and relay change

Potentiometer R111 adjusts the time delay interval. Minimum time is zero seconds (R111 fully counter-clockwise), maximum time is 25 seconds (R111 fully clockwise).

Note: Pulse Point units are shipped from the factory with S-101 in position “C” and R111 adjusted for zero time delay.

Figure 7



### 4.3 External Self-Test

The External Self-Test feature allows the operator to test the Pulse Point unit without removing the enclosure cover. A magnetic fob is held close to the electronics enclosure (See Fig 8). This causes the circuit to duplicate a “buried fork” condition.

The External Self-Test feature operates only when the fork is not covered with material.

Figure 8



## 5.0 TROUBLESHOOTING

The following section may be used as a troubleshooting guide in the unlikely event that problems are found with operation of the Pulse Point:

### Symptom

### Possible Cause

Green LED not lit

No primary power to unit. Verify proper voltage at L1/L2.

Jumper S-1 not set properly. Refer to Section 2.2.

Fork vibrates, but unit won't alarm

Make sure problem is not just a long time delay. Test by turning R111 fully counter-clockwise to set time delay to zero.

Verify proper setting of fail-safe jumpers S-102.  
Refer to Section 4.1.

### **5.1 Factory Assistance**

Contact your local factory representative if additional assistance is needed. Please provide the following information:

- Model number
- Date purchased
- Application information (type of material, mounting configuration, etc.)
- Description of problem

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

## 6.0 THEORY OF OPERATION

The Pulse Point is an electronic level control designed for use in powders and granular solids. The Pulse Point uses a vibrating “tuning fork” to sense the presence of material.

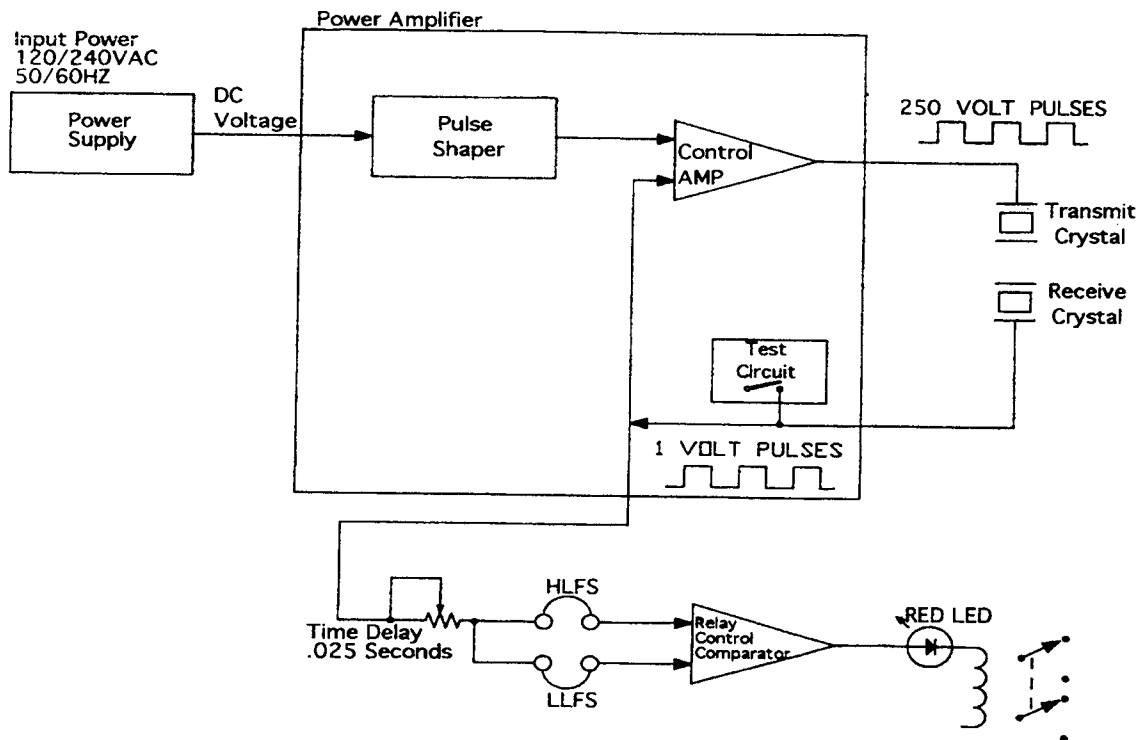
The tuning fork contains two piezoelectric crystal assemblies: one “transmit” and one “receive.” Piezo crystals convert electrical signals to mechanical movement, and vice versa. High-voltage pulses applied to the transmit crystal cause the tines of the fork vibrate. This vibration is mechanically coupled to the receive crystal which produces a small electrical signal (one-volt pulses). The receive crystal will produce low voltage pulses as long as the fork is vibrating.

If the fork stops vibrating, as it does when in contact with material in the vessel, the receive pulses stop. The electronics recognizes this loss of signal and causes the output relay to change state.

A block diagram of the Pulse Point circuit is shown in Fig. 9. The power supply converts 120- or 240-VAC primary power to the various DC voltages required. The pulse shaper and control amplifier produce the high-voltage pulses required by the transmit crystal. The low voltage pulses from the receive crystal are fed back to the control amplifier to help sustain vibration of the fork. The receive signal is also applied to the relay comparator through the time delay circuitry and the fail-safe select jumpers. The relay comparator senses when the fork has stopped vibrating and causes the relay to change state.

The test circuit simulates a loss of receive signal, thus effectively exercising all portions of the Pulse Point circuit.

**Figure 9**



## 7.0 WARRANTY

Refer to Manufacturer's General Terms and Conditions of Sale for warranty information

## 8.0 REPLACEMENT PARTS

### Electronics

<u>Part Number</u>	<u>Description</u>
LVP110000	LP100 Standard Electronic Unit - 120VAC
LVP110001	LP100 Standard Electronic Unit - 240VAC
LVP110013	LP200 Standard Electronic Unit - 120VAC
LVP110014	LP200 Standard Electronic Unit - 240VAC

### Tuning Forks

<u>Part Number</u>	<u>Description</u>
LVP110100	Standard - 316 SS
LVP110101	Standard - 316 SS - Rilsan® Coated Tines
LVP110102	Standard - 316 SS - Teflon® Coated Tines
LVP110103	Standard - Hastelloy "C"
LVP110104	Standard - Liquid/Solid Interface
LVP110107	Extended - 316SS (Low Temp. Cable)
LVP110108	Extended - 316SS - Rilsan® Coated (Low Temp. Cable)
LVP110109	Extended - 316SS - Teflon® Coated (Low Temp. Cable)
LVP110110	Extended - Liquid/Solid Interface (Low Temp. Cable)
LVP110112	Extended - 316SS (High Temp. Cable)
LVP110113	Extended - 316SS - Rilsan® Coated (High Temp. Cable)
LVP110114	Extended - 316SS - Teflon® Coated (High Temp. Cable)
LVP110115	Extended - Liquid/Solid Interface (High Temp. Cable)

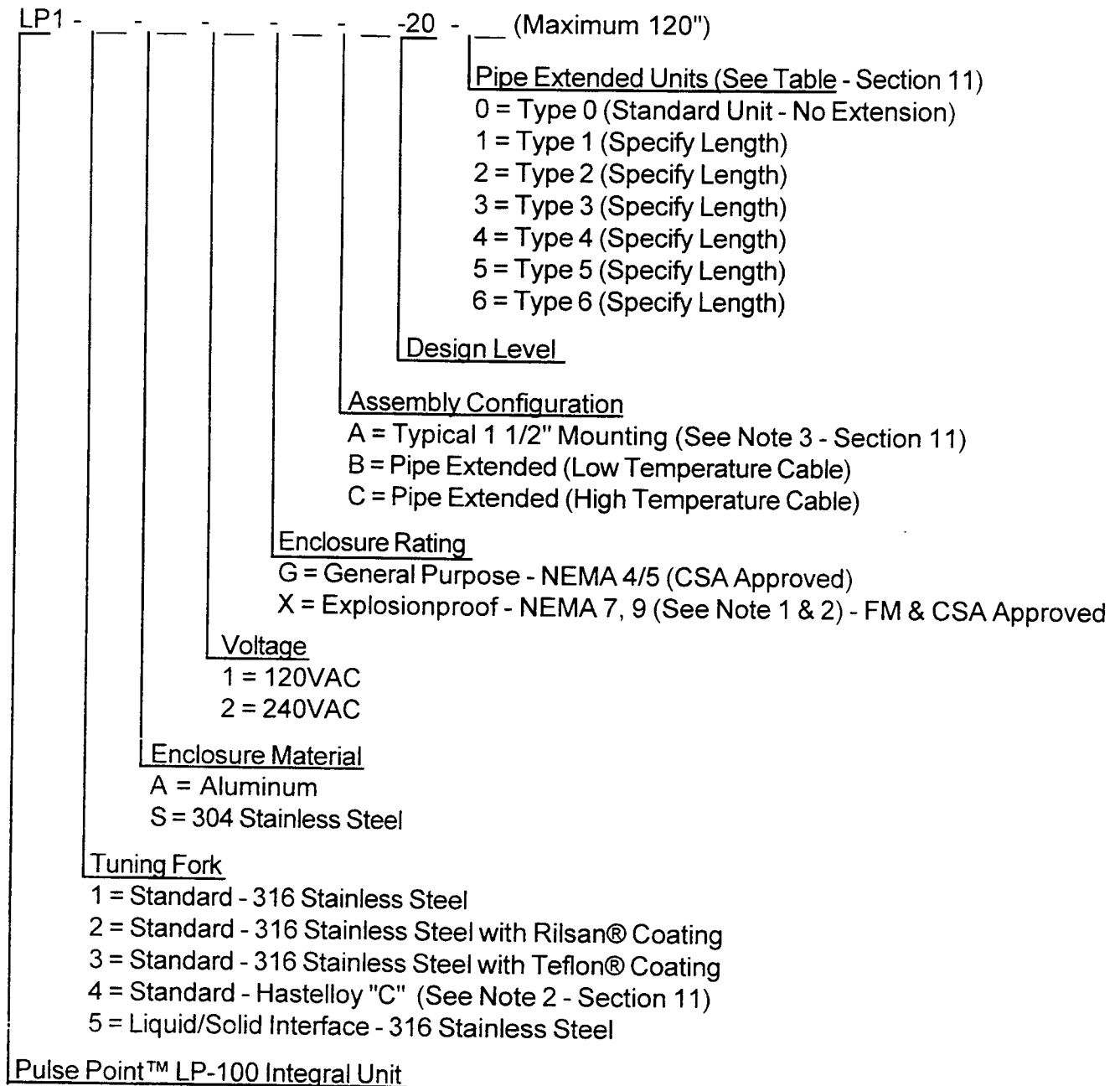
### Fobs

<u>Part Number</u>	
LVP130054	Test FOB for Integral Pulse Point
LVP130055	Test FOB for Remote Pulse Point

Rilsan® - Registered Trademark of Rilsan, Inc.

Teflon® - Registered Trademark of E.I. Dupont

## 9.0 MODEL SELECTION - PULSE POINT LP-100 INTEGRAL

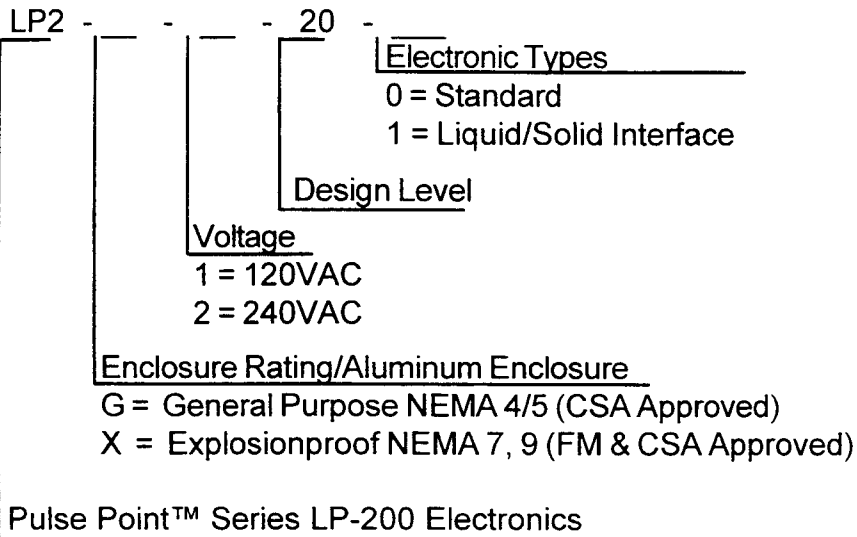


### Notes:

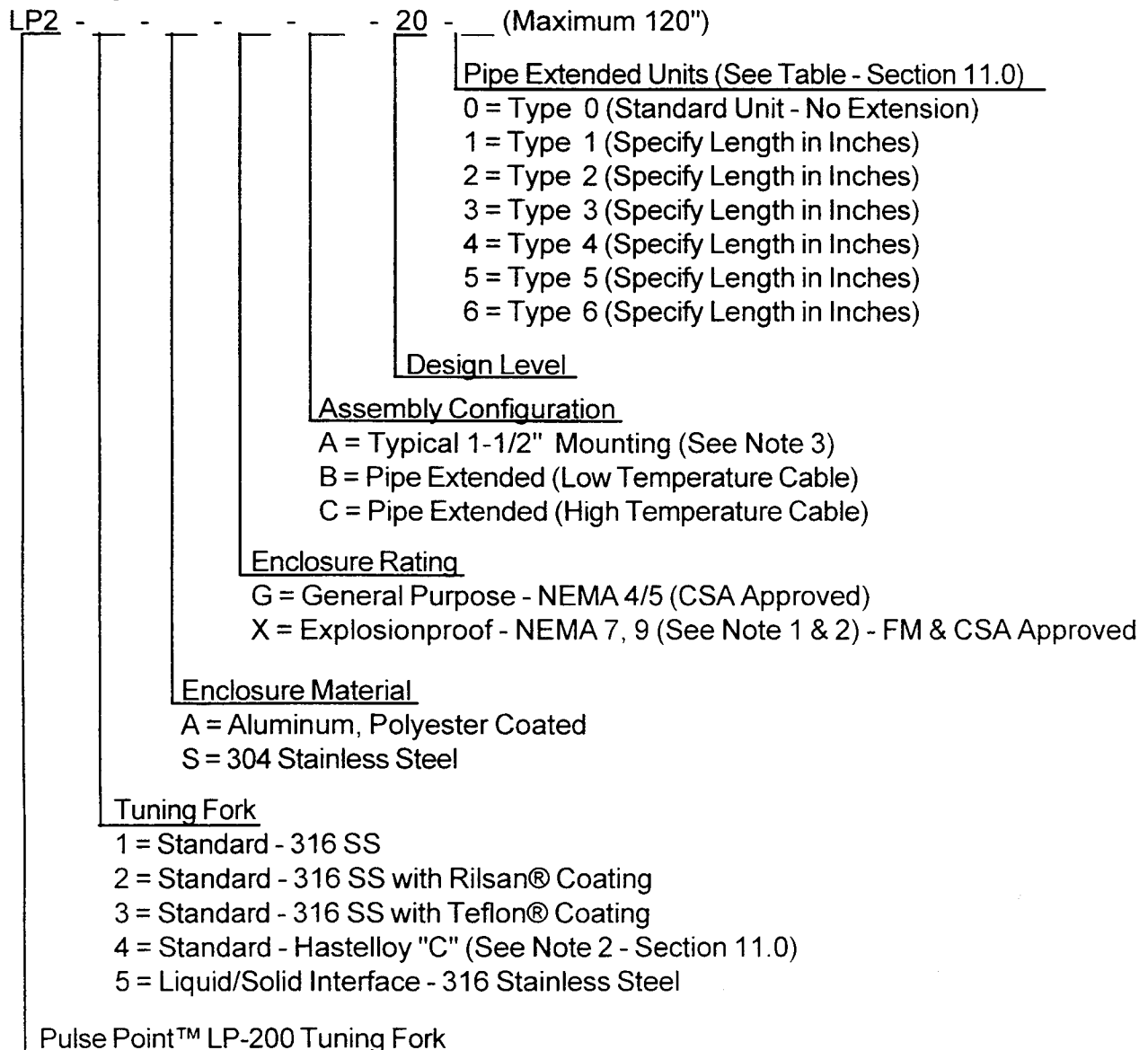
- Note 1: Available Only In Aluminum Enclosure and Type "A" Assembly Configuration
- Note 2: Not available in pipe extended models.
- Note 3: For Direct Replacement of Roto-Bin-Dicator® Control, order a mounting plate (LVP110059 - Mild Steel or LVP110060 - Stainless Steel)
- Note 4: Remote Cable to be ordered as a separate item. Length to be specified.  
 (Low Temperature - 100 Ft. Maximum. High Temperature - 50 Ft. Maximum)

## 10.0 MODEL SELECTION - PULSE POINT LP-200 REMOTE

### Remote Electronics



### Tuning Fork





## 11.0 MOUNTINGS & REMOTE CABLE

### Pulse Point™ Mounting Type Table

<u>Type Number</u>	<u>Description</u>
Type 0	No Extension - Standard Unit
Type 1	Mild Steel Mounting Plate And Gasket Galvanized Pipe - Specify Length In Inches
Type 2	304 S.S. Mounting Plate And Gasket 304 S.S. Pipe - Specify Length In Inches
Type 3	304 S.S. Mounting Plate And Gasket 316 S.S. Pipe - Specify Length In Inches
Type 4	3" Mild Steel 150# ASA Flange Galvanized Pipe - Specify Length In Inches
Type 5	3" 304 S.S. 150# ASA Flange 304 S.S. Pipe - Specify Length In Inches
Type 6	3" 316 S.S. 150# ASA Flange 316 S.S. Pipe - Specify Length In Inches

#### *Mounting Plates*

<u>Part Number</u>	<u>Description</u>
LVP110059	1 1/2" NPT Mild Steel Mounting Plate
LVP110060	1 1/2" NPT 304 Stainless Steel Mounting Plate

#### *Remote Cable*

<u>Part Number</u>	<u>Description</u>
LVP110007	Remote Cable ,Terminated - Low Temperature
LVP110008	Remote Cable, Terminated - High Temperature
LUC035603	Remote Cable, Bulk - Low Temperature*
LUC035604	Remote Cable, Bulk - High Temperature* (two required)

\*Termination Kits must be ordered as a separate item.

#### *Termination Kits*

<u>Part Number</u>	<u>Description</u>
LVP110009	Termination Kit - Low Temperature
LVP110010	Termination Kit - High Temperature

**12.0 DRAWINGS** *(see the following pages)*

A-LVP1E0010	Pulse Point LP-100 & LP-200 - Specification Sheet
B-LVP1E0000	Pulse Point LP-100 Integral - Outline Drawing
B-LVP1E0001	Pulse Point LP-100 Integral Extended - Outline Drawing
B-LVP1E0002	Pulse Point LP-200 Remote - Outline Drawing
B-LVP1E0003	Pulse Point LP-200 Remote Extended - Outline Drawing
B-LVP1E0004	Pulse Point LP-100 Integral - Hook-up Drawing
B-LVP1E0005	Pulse Point LP-200 Remote - Hook-up Drawing
B-LVP110007	Pulse Point LP-200 Remote - Cable Termination, Low Temp
B-LVP110008	Pulse Point LP-200 Remote - Cable Termination, High Temp
A-LVP1P0007	Conversion of Integral Pulse Point to Pipe Extended Unit (2 pages)

FUNCTION: Point Level Switch

MEDIUM: Granular solids and powder

MAXIMUM PARTICLE SIZE: 9/16 dia.

MINIMUM BULK DENSITY DETECTED: Less than 2 lbs/cu ft.

METHOD: Vibrating Tuning Fork, Piezo Crystal Activated

POWER: 120/240VAC, 50/60 Hz, 5VA

RELAY CONTACT: 5A DPDT, 125VAC or 28VDC

OPERATING TEMP: Electronics -40° F. to +140° F. (-40° C. to +60° C.)  
Probe -55° F. to +212° F. (-48° C. to +100° C.)

\*The maximum limit on low temp cable is 140° F.  
The maximum limit on high temp cable is 212° F.

OPERATING PRESSURE: Maximum 150 psi on vibrating membrane. Limit to 20 psi if bin mounting plate is used.

MATERIALS: Integral housing and remote probe housing  
A. Die cast aluminum  
B. Investment cast stainless steel (optional)  
Remote Electronics Housing  
A. Cast aluminum  
Probe  
A. 316 stainless steel  
B. Hastalloy "C" (optional)  
Pipe Extensions  
A. Galvanized  
B. Stainless steel

MOUNTING: Horizontal or vertical. 1-1/2 NPT; 8" bin mounting plate, or 3" 150 # flange.

RANGES: 10 ft. (3 m) maximum extension on extended units  
100 ft. (30 m) maximum low temp cable remote distance  
50 ft. (15 m) maximum high temp cable remote distance

Maximum solids head height above horizontally mounted sensor (ft) = 2200/bulk density (lbs/ft<sup>3</sup>).

Example: 44 ft. at 50 lbs/ft<sup>3</sup>

FIELD-PROGRAMMABLE TIME DELAY: On, off, both on and off (0-25 seconds)

FIELD-SELECTABLE FAIL-SAFE: Maximum or minimum

SYSTEM APPROVALS: CSA and FM approval.

A	FM & CSA ADDED PER ECO# 93-080	9/27/93	Buc	RE
SYM.	REVISIONS	DATE	CK'D	APP'D



**BINDICATOR**  
PORT HURON, MICHIGAN 48060

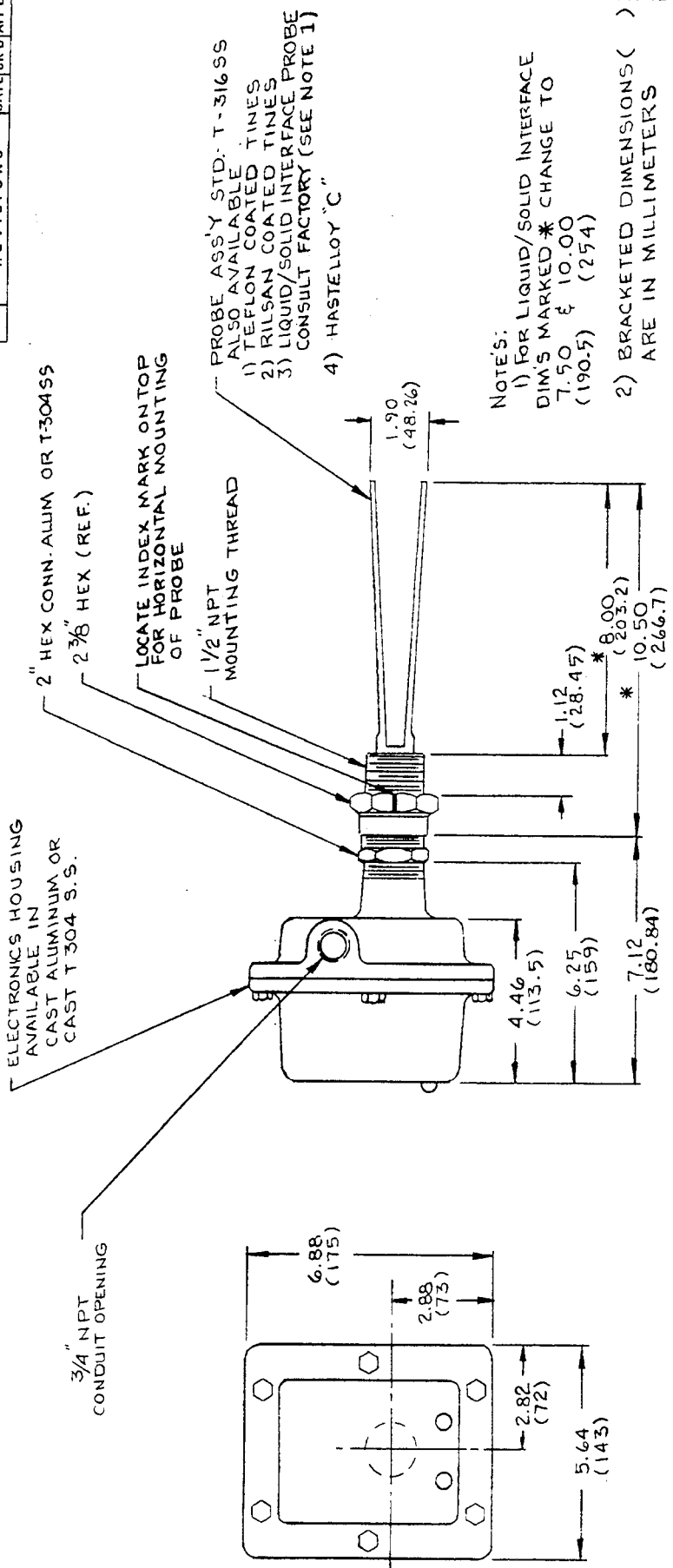
DRAWN BRENION	CHECKED RK	APPROVED E	PROD. T
DATE 1 SEPT 88	DATE 1 SEPT 88	DATE 9-1-88	DATE 9-1-88

TITLE  
PULSE POINT 100 & 200 SPECIFICATION SHEET

SIZE  
A

PART OR DRAWING  
LVP1E0010

REVISIONS	DATE	CHK'D	APP'D



PROBE ASS'Y STD. T-316 SS  
ALSO AVAILABLE  
1) TEFLON COATED TINES  
2) RILSAN COATED TINES  
3) LIQUID/SOLID INTERFACE PROBE  
CONSULT FACTORY (SEE NOTE 1)  
4) HASTELLOY "C"

NOTES:  
1) FOR LIQUID/SOLID INTERFACE  
DIM'S MARKED \* CHANGE TO  
7.50 & 10.00  
(190.5) (254)  
2) BRACKETED DIMENSIONS ( )  
ARE IN MILLIMETERS

**FACTORY MUTUAL**  
Certified Product  
No Modifications Permitted  
Without Reference to  
**FACTORY MUTUAL**

DO NOT SCALE DIMENSIONS ARE IN INCHES		DET. RECD. SHT		DESCRIPTION		MATERIAL	
MATERIAL		UNSPECIFIED TOL. DECIMALS: XX ± .		DRAWN BRENNER		CHECKED BOS	
FINISH		ANGLES: XX ± .		DATE 16 JUNE 88		APPROVED DATE 17 JUL 88	
TITLE CUSTOMER OUTLINE DRAWING PULSE POINT, 100 INTEGRAL		NEXT ASSY.		SCALE NONE		PART OR DRAWING LVP1E000	
BINDER PORT HURON, MICHIGAN 48060		DEBURR & BREAK EDGES .005		SIZE B		PREVIOUS LVP1E000	

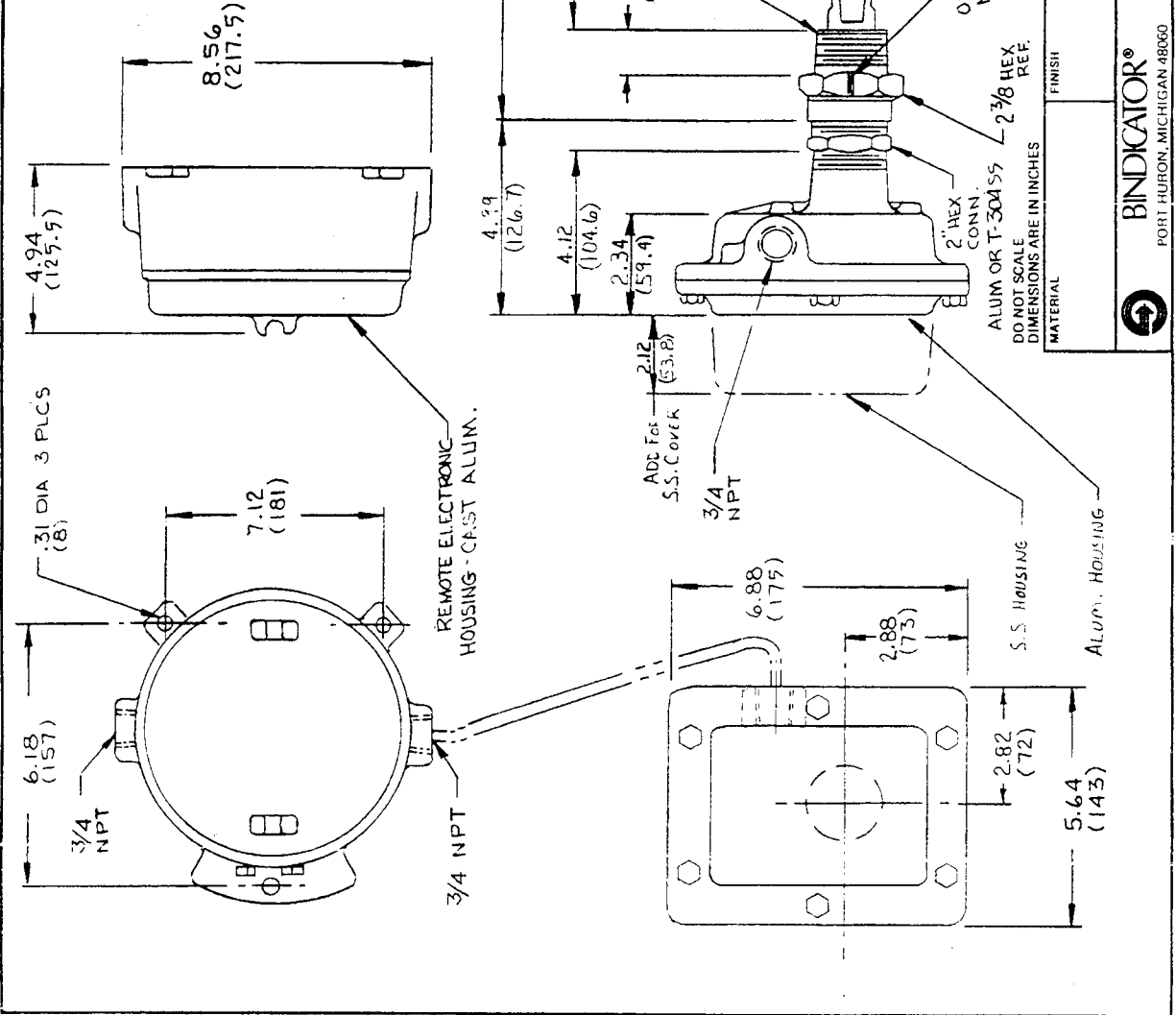
REF.

TUDYME R031 102/88



REVISIONS		DATE	CK'D	APP'D
A	FLAT COVER ADDED (E.D. #20-0030)	1/3/91	(N)	(N)

**NOTE'S**  
 1) FOR LIQUID/SOLID INTERFACE DIM'S MARKED \* CHANGE TO 7.50 & 10.00 (190.5) (254)  
 2) BRKTD. DIM'S ( ) ARE IN MM



PROBE ASS'Y STD: T 316 SS  
 ALSO AVAILABLE  
 1) TEFLON COATED TINES  
 2) RILSAN COATED TINES  
 3) LIQUID/SOLID INTERFACE PROBE  
 CONSULT FACTORY (SEE NOTE1)  
 4) HASTELLOY C

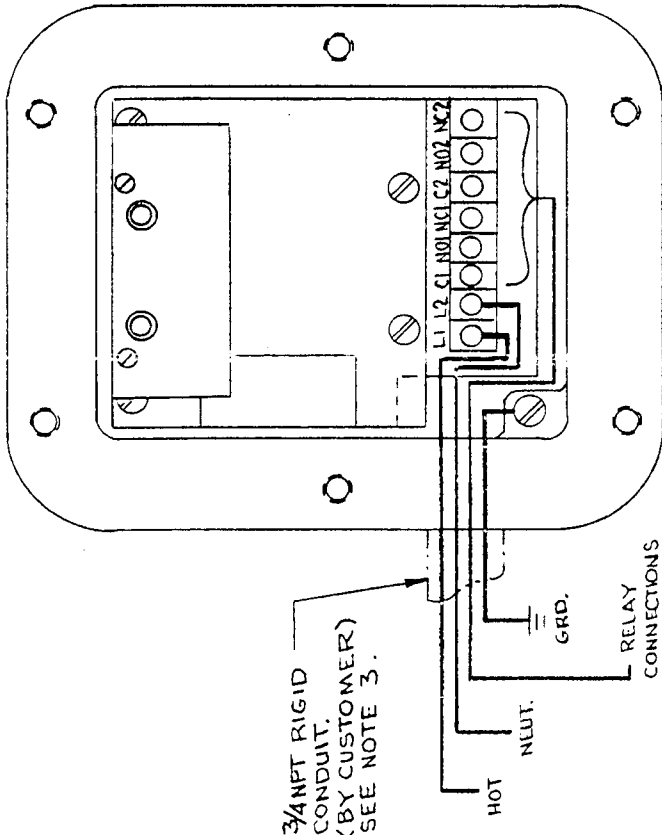
DET.	RECD.	SHT.	DESCRIPTION	MAT. OR PART
UNSPECIFIED TOL	DRAWN	CHECKED	APPROVED	FINISH
DECIMALS: XX.XX	BRENTON	DOB	(Signature)	PROB
ANGLES: ± 1/2°	DATE	DATE	DATE	DATE
DEBURR & BREAK EDGES DOB	11 JUNE 88	6-17-88	11-30-88	12-29-88
NEXT ASSY.	SCALE	SIZE	PART OR DRAWING	PREVIOUS
	None	B	LVPIE002	
TITLE CUSTOMER OUTLINE DRAWING				
PULSE POINT 200 REMOTE				

**BINDICATOR®**  
 PORT HURON, MICHIGAN 48060

REF.

TELEPHONE POST N0528





- NOTES:**
- 1) FIELD WIRING SHALL BE ACCORDING TO LOCAL STANDARDS.
  - 2) POWER TO UNITS 18 AWG MINIMUM RECOMMENDED.
  - 3) ON EX/P UNITS, EXPLOSION PROOF SEAL FITTING MUST BE INSTALLED WITHIN 18" OF CONDUIT OPENING.
  - 4) CAUTION: HIGH VOLTAGE ON PROBE TERMINALS LOCATED ON BOTTOM OF ELECTRONIC MODULE.

VIEW LOOKING INTO HOUSING WITH COVER REMOVED.

FACTORY MUTUAL  
Certified Product  
No Modifications Permitted  
Without Reference to  
FACTORY MUTUAL

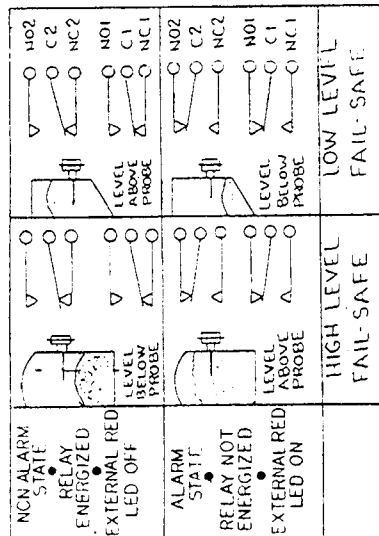


FIG. 1 (RELAY CONNECTIONS)

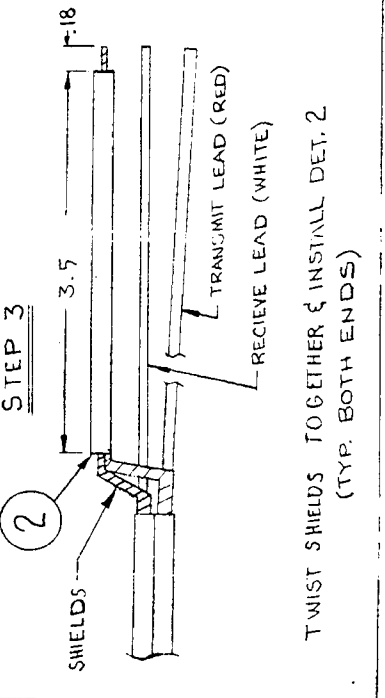
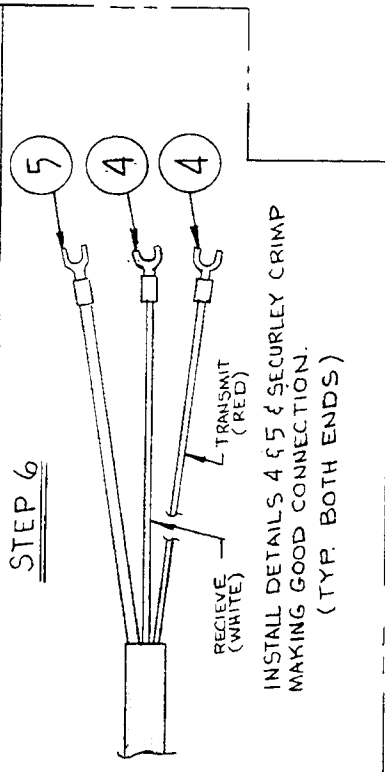
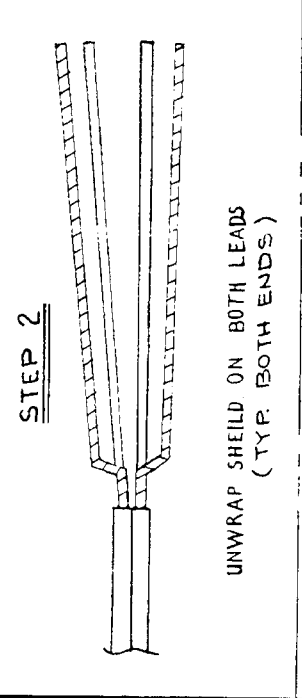
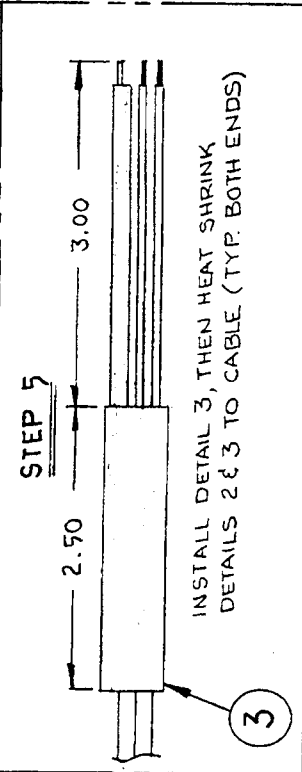
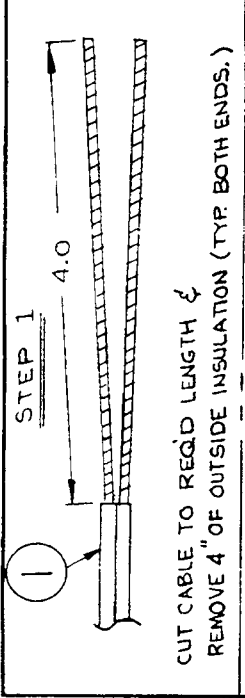
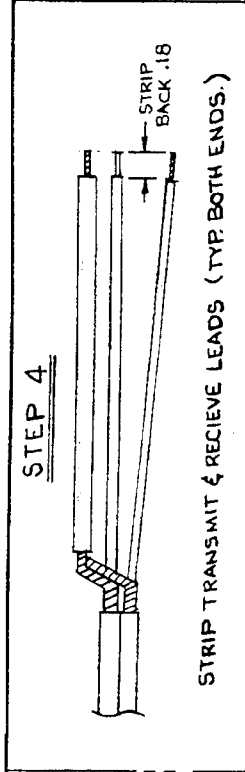
DO NOT SCALE DIMENSIONS ARE IN INCHES

DET.	RECD.	SHT.	DESCRIPTION	MAT. OR PART
UNSPECIFIED TOL. DECIMALS .XX	DRAWN	CHECKED	APPROVED	PROD.
ANGLES ±1/2°	BRENTON	DATE	DATE	DATE
DEBURR & BREAK EDGES .005	DATE	DATE	DATE	DATE
NEXT ASSY.	22 AUG 88	22 AUG 88	27 JUL 85	15 JUL 85
			SIZE	PART OR DRAWING
			B	LVPIE0004
			SCALE	PREVIOUS
			NONE	
TITLE			CUSTOMER HOOK UP PULSE POINT 100	
FINISH			BINDERATOR® PORT HURON, MICHIGAN 48860	





REVISIONS	DATE	CK'D	APP'D
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DO NOT SCALE DIMENSIONS ARE IN INCHES

MATERIAL FINISH

UNSPECIFIED TOL. DECIMALS: XX.XX ±.005

ANGLES: ±1/2°

DEBURR & BREAK EDGES: .005

RECV. ASSY.

SCALE: NONE

TITLE: REMOTE CABLE TERMINATION - LOW TEMP

PULSE POINT

SIZE: B

PART OR DRAWING: LVP110007

PREVIOUS

REF.

5	2	SPADE LUG AMP 52955	LUC035610
4	4	SPADE LUG AMP 51874	LUC035609
3	42FT	SHRINK TUBE 1/4"	LUC032170
2	58FT	SHRINK TUBE 1/8"	LUC032170
1	AR	CABLE, BELDEN 8416	LUC035603

DET. RECD. SHT. DESCRIPTION MAT. OR PART

DRAWN: BRENTON

CHECKED: JVC

DATE: 17 JULY 88

DATE: 23 AUG 88

APPROVED: [Signature]

DATE: 23 AUG 88

PROJ. [Signature]

DATE: 23 AUG 88

- NOTES:
- 1) MAXIMUM CABLE LENGTH = 100 FT.
  - 2) ALL HEAT SHRINKING SHOULD BE AT LESS THAN 250°F FOR AT LEAST 30 SEC.
  - 3) ALL CRIMPS MAY BE DONE WITH A HAND CRIMP OR RATCHET TOOL.



CONVERSION OF INTEGRAL PULSE POINT TO PIPE EXTENDED UNIT

REVISIONS

DATE CK'D APP'D

NOTE: This can only be done on general purpose NEMA 4 units.  
Do not pipe extend an explosion proof NEMA 7/NEMA 9 unit!

Use following procedure to convert an integral Pulse Point unit to a Pipe Extended unit.

1. Disconnect power from unit.
2. Remove the cover and the electronic assembly from the housing. Disconnect wires from fork to the electronics.
3. Remove white aluminum bushing and fork assembly from the hub on the housing.
4. Remove white aluminum bushing from fork assembly. Use caution when handling fork. Do not squeeze lines together! Do not drop the fork!
5. Attach 1 1/2" to 1 1/4" stainless steel reducer bushing(LVPI30024) to fork assembly.
6. Cut a length of shielded cable (Belden 8416)(LUC035603) 6 inches longer than planned pipe length. Shielded cable **MUST** be used.
7. Terminate one end of the cable per (Sheet #2). This end will connect to the electronic assembly.
8. Strip insulation from opposite end of cable ACCORDING to steps #1., #2., and #3. from sheet #2.
9. Place a 6 inch length of 1/4" shrink tube(LUC032750) on shielded cable.
10. Cut the 4 wires on the tuning fork assembly to 3 inches long.
11. Remove 3/8" of insulation from each fork assembly wire. Remove 3/8" of insulation from each shielded cable center conductor. Place 2 inches of 1/8" shrink tube(LUC032770) on each fork assembly wire.
12. Twist wires from fork assembly to wires from shielded cable and solder the connections. Connect as follows:  
Red wire from fork to red wire on cable.  
Yellow wire from fork to white wire on cable.  
Blue wire from fork to both shield wires on cable.
13. Cut length of green single conductor wire(LUC035661) to same length as shielded cable. Strip and connect (as in step #11.) to green wire from fork assembly. Strip other end of green wire and install ring terminal(LUC035182).

14. Position 1/8" shrink tube over each soldered connection and apply heat. Position 1/4" shrink tube (from step #9. above) over connections and apply heat.

15. Install pipe (1 1/4" stainless steel, schedule 40, threaded NPT both ends) onto fork assembly.

16. Thread mounting plate(LARI10190) on pipe extension.

17. Thread lower housing assembly onto mounting plate.

18. Connect wires to electronic assembly as follows:  
Red wire to Transmit terminal.  
White wire to Receive terminal.  
Shields (blue fork terminal) to Common terminal.  
Green wire to Ground screw in housing.

19. Install electronic assembly into lower housing and replace gasket and cover. Procedure is complete.

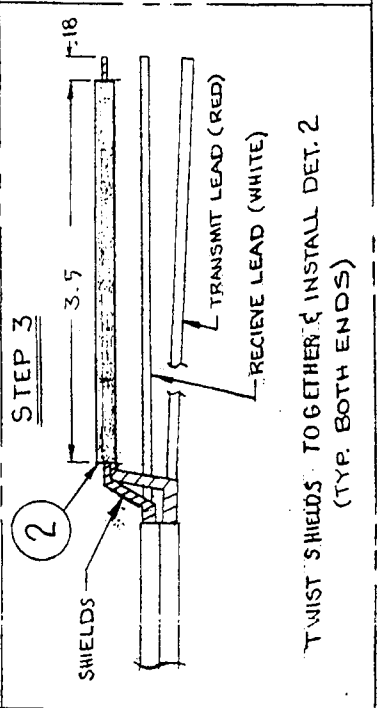
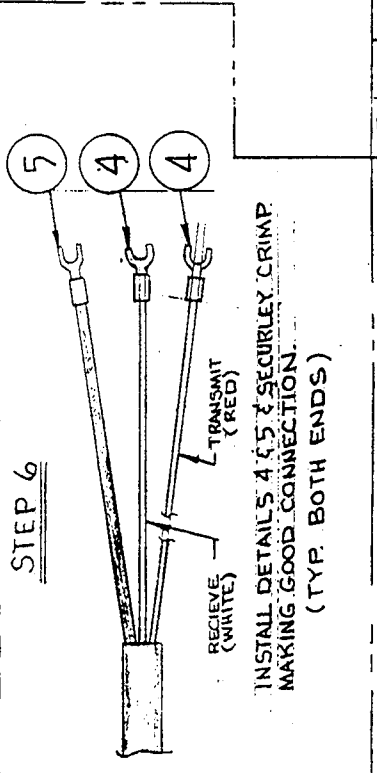
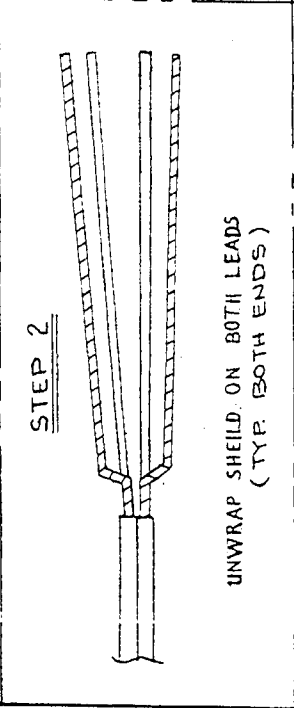
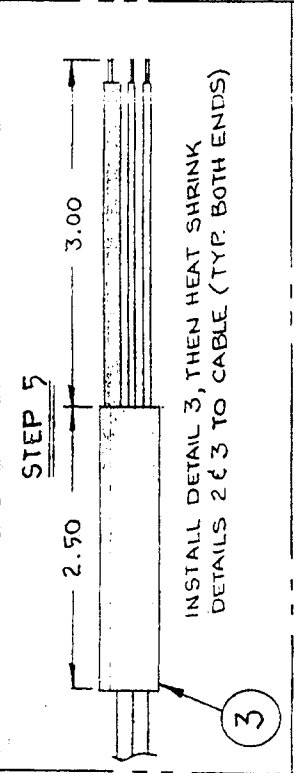
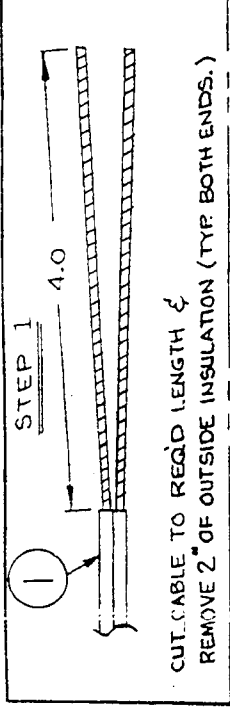
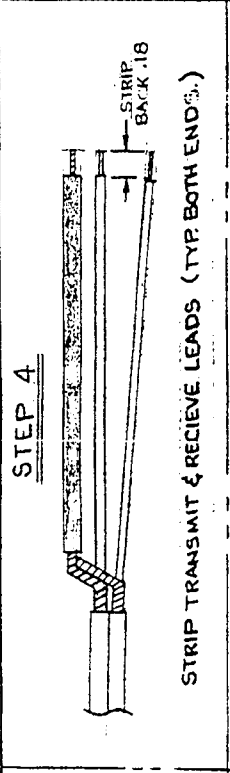
LIST OF MATERIALS

Indicator Part No.	Description	Quantity	Specification
LVPI30024	1 1/2" TO 1 1/4" S.S. Reducer	1	304 S.S.
LARI10190	Mounting Plate w/ full coupling	1	302 S.S.
LARI30380	Gasket for mounting plate	1	fiber Gasket
LUB040490	1 1/4" 304 SS NPT, SCH 40 pipe	As Req'd	Pipe, threaded
LUC035603	Shielded Cable	As Req'd	Belden 8416
LUC035609	Fork Terminal	2	AMP 51874
LUC035610	Fork Terminal	1	AMP 52955
LUC035182	Ring Terminal	1	Waldom S-1003
LUC032770	1/8" Shrink Tube	1 ft.	Alpha 1/8, 221 black
LUC032750	1/4" Shrink Tube	1 ft.	Alpha 1/4, 221 black
LUC035661	Green Wire	1 ft.	Alpha 3053 green #20

DO NOT SCALE DIMENSIONS ARE IN INCHES

MATERIAL	FINISH	UNSPECIFIED TO DECIMALS: XX 1/2" ANGLES: XXX 1/2" DIMENSIONS: XXXX 1/8" BREAK EDGES: .005	DET.	RECD.	BY	DATE	DESCRIPTION	CHECKED	APPROVED	MAT. OR PART
			WAS	BY	DATE	DATE	DATE	DATE	DATE	DATE
NEXT ASSTY.			SCALE			SIZE			PREVIOUS	
TITLE			CONVERSION OF INTEGRAL PULSE POINT			SCALE			NONE	
PORT HURON, MICHIGAN 48060			TO PIPE EXTENDED UNIT			PART OR DRAWING			LVPI30007	

REVISIONS	DATE	CK'D	APP'D
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**NOTES:**

- 1) MAXIMUM CABLE LENGTH = 100 FT.
- 2) ALL HEAT SHRINKING SHOULD BE AT LESS THAN 250°F FOR AT LEAST 30 SEC.
- 3) ALL CRIMPS MAY BE DONE WITH A HAND CRIMP OR RATCHET TOOL.

DO NOT SCALE DIMENSIONS ARE IN INCHES

5	SPADE LUG AMP 52955	RECD. SHT.	DESCRIPTION	MAT. OR PART
4	SPADE LUG AMP 51874	UNSCHEM'D TO		
3	SHRINK TUBE 1/4"	DETAILED TO		
2	SHRINK TUBE 1/8"	DETAILED TO		
1	CABLE BELDEN 8416	DETAILED TO		

DRWN	CHKD	APPRD	FRD
UN/C.H	M/S/M/C/H	G/C	AS
DATE	DATE	DATE	DATE
10/13/93	10-14-93	10/20/93	10-20-93
SCALE	PART OR DRAWING	SIZE	PREVIOUS
NONE	B	LVPIP0007	

TITLE: CONVESSING OF INTEGRAL PULSE POINT TO PIPE EXTENDED UNIT

**BINDICATOR®**  
PORT HURON, MICHIGAN 48950

REF. SHT. 2 OF 2



## 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, at 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 be 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 be fully reimbursed by payment of cancellation charge: 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.

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