

Cap-Level[®] II

Installation and Operation Manual

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IMPORTANT!

DO NOT DISPOSE OF THE CARTON
OR PACKING UNTIL 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!

Cap Level®II

Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page No.</u>
1.0	INTRODUCTION	1
2.0	THEORY	1
3.0	SPECIFICATIONS	2
4.0	MODEL CODE	3
5.0	APPLICATION CONSIDERATIONS	4
6.0	INSTALLATION	5
6.1	Mounting -Refer to "Installation Drawings"	5
6.2	Stilling Well Installation - Optional	5
7.0	ELECTRICAL HOOKUP	6
8.0	CALIBRATION	6
8.1	Analog Output Calibration	8
8.2	Alarm/Pump Control Relay Calibration	9
9.0	RELAY LOGIC TRUTH TABLE	11
10.0	OUTPUT DAMPENING ADJUSTMENT	12
11.0	SPARE PARTS	12
12.0	DRAWINGS	12

1.0 INTRODUCTION

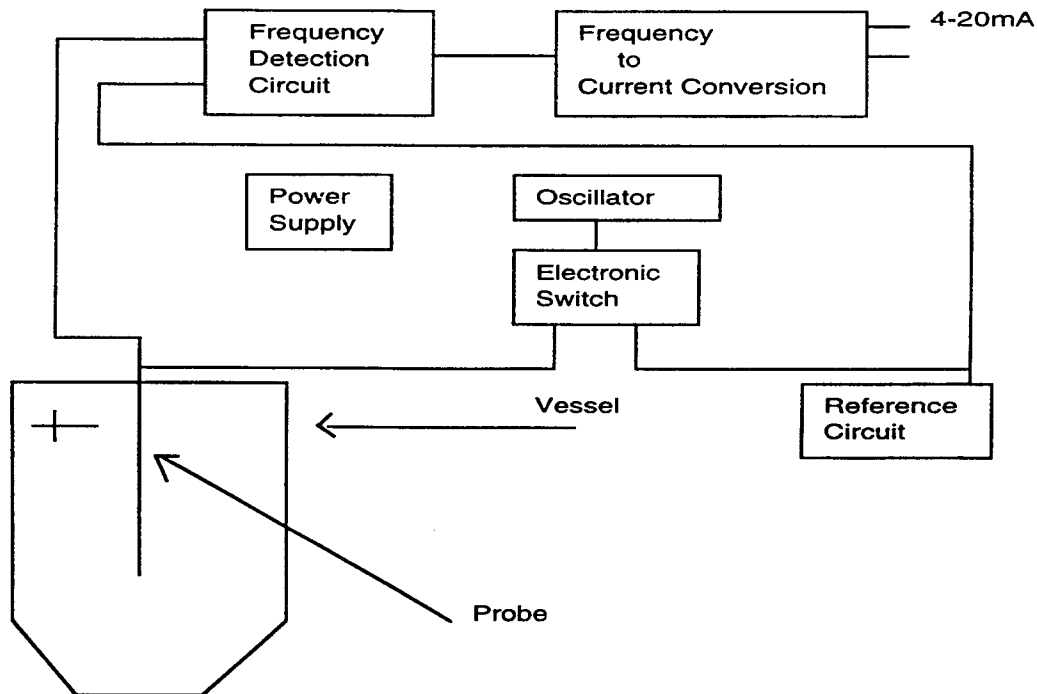
Cap Level II is an RF Capacitance level transmitter designed for process level measurement in a variety of media. The Cap Level II in addition to continuous level measurement, is capable of producing alarm or control outputs with its two optional output relays. This feature allows direct control of pumps, valves, or alarms without any external hardware while allowing remote monitoring of the result. These features provide a low cost solution to level measurement and control which should prove a valuable asset for years to come.

If at any time during installation or operation of this instrument you should require assistance, please contact your Bindicator Representative or an Applications Engineer.

2.0 THEORY

A high frequency oscillator is alternately switched between a very stable reference capacitor and the probe. The probe capacitance will vary depending upon how much material is in contact with the probe and this will cause a change in frequency of the oscillator. This difference in oscillator frequency is directly proportional to the level of material surrounding the probe. (This **patented** technique of constantly using a stable reference capacitor provides excellent temperature stability.)

The change in probe frequency is converted to a voltage and then the 4-20mA output signal. The voltage signal is used for relay logic and activation.



3.0 SPECIFICATIONS

Electronics Specifications:

Supply Voltage: 120VAC, 240VAC 50/60 Hz; 24VDC (+ 15%)

Power Consumption: 8 Watts

Analog Output: 4-20Ma into 400Ω Maximum (Non-Isolated)

Relay (s) Output: SPDT, 3 Amps @ 120VAC

Operating Temperatures: -40° F. to +160° F. (-40° C. to +71° C.)

Calibration: Analog - Coarse And Fine Zero/Span, non-interacting. Relays - Hi, Low Setpoints And Hysteresis Set As Percentage Of Span

Relay Deadband (Hysteresis): 2.5% Of Span Minimum, 100% Maximum

Accuracy: 1% FS With Constant Dielectric

Enclosure: NEMA 4 or NEMA 7/9 Aluminum With Corrosion Resistant Polyester Coating

Probe Specifications:

Length: As Specified - Types A, B, M 167" (4175mm) Maximum; Types D, E, H, I 1200" (36000mm) Maximum

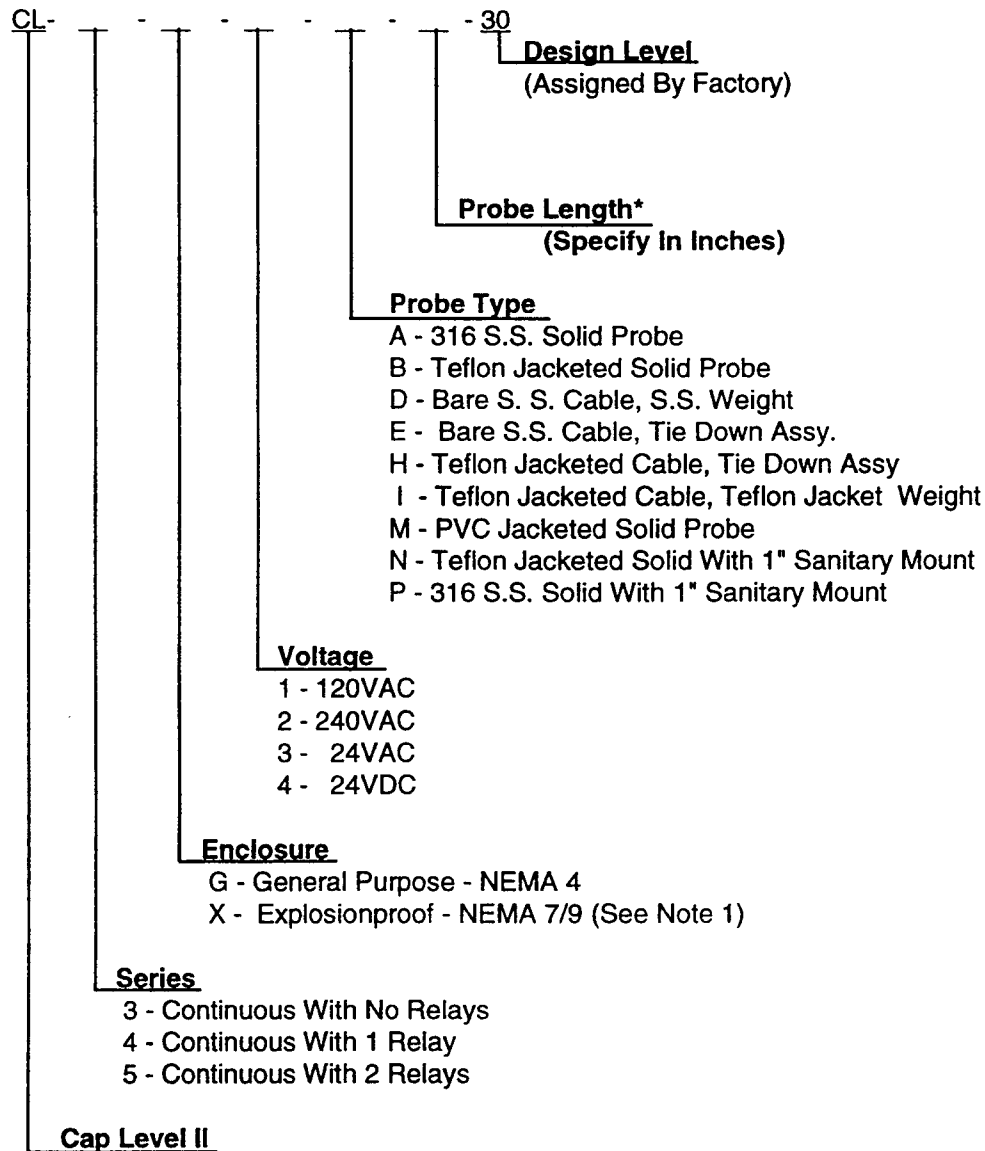
Probe Type	Mount Standard*	Material (Maximum)	Pressure (Maximum)	Temperature (@ 0 PSI)
A	3/4" NPT	316 S.S.	50 PSI (3.51kg/cm ²)	250° F. (121° C.)
B	3/4" NPT	Teflon/S.S.	50 PSI (3.51 kg/cm ²)	250° F. (121° C.)
D	1 1/4" NPT	316 S.S.	Atmospheric	250° F. (121° C.)
E	1 1/4" NPT	Teflon/S.S.	Atmospheric	250° F. (121° C.)
H	1 1/4" NPT	Teflon/S.S.	Atmospheric	250° F. (121° C.)
I	1 1/4" NPT	Teflon S.S.	50 PSI (3.51 kg/cm ²)	250° F. (121° C.)
M	3/4" NPT	PVC/S.S.	50 PSI (3.51 kg/cm ²)	140° F. (60° C.)
N	1" Sanitary	Teflon/S.S.	50 PSI (3.51 kg/cm ²)	250° F. (121° C.)
P	1" Sanitary	316 S.S.	50 PSI (3.51 kg/cm ²)	250° F. (121° C.)

*All probes are available with flange mounting. Types B and I are available with Teflon faced flanges.

Probe Application:

Probe Types A, D, E and P - Non-conductive materials only. Consult factory when mounting in fiberglass or lined vessels.

4.0 MODEL CODE



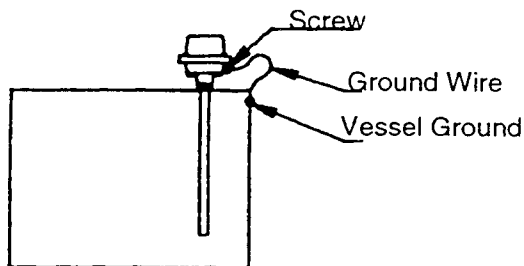
Notes:

1. For use with "Type B" Probe only.

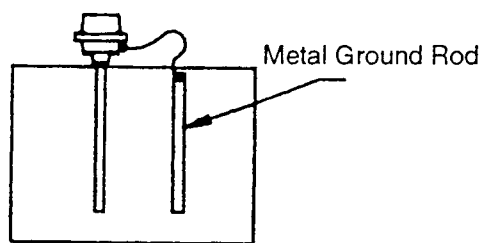
5.0 APPLICATION CONSIDERATIONS

In order to insure the successful operation of the Cap Level II, the following application considerations should be addressed before installing or operating the unit.

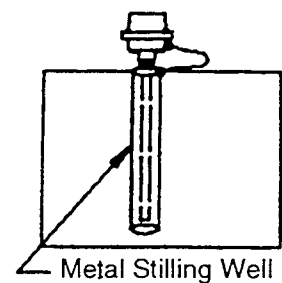
- A. The unit received should be compatible with the process including: pressure, temperature, material of construction, and area classification.
- B. If the media is conductive, the probe specified must be jacketed with either Teflon or PVC. Media with conductivity equal to or greater than that of tap water is considered conductive. **Bare metal probes will not function properly in conductive media.**
- C. Since the sensor measures capacitance, the dielectric of the media will effect its operation. Materials with a Dielectric (Ke value) constant below 5, probe lengths below 3 ft., horizontal cylindrical or eccentric shaped vessels, non-metallic vessels, and jacketed sensors in these applications may require a stilling well, ground rod or other grounding device. Consult factory if you are unsure of action required.
- D. Proper grounding of the transmitter enclosure to the vessel wall is important. Capacitance devices use this wall as part of the measuring circuit. In lined or plastic vessels, a metal rod or stilling well may be required to provide a ground reference for the probe.



METAL TANK
(Preferred Method)



LINED OR FIBER-GLASS TANK
(Preferred Method)

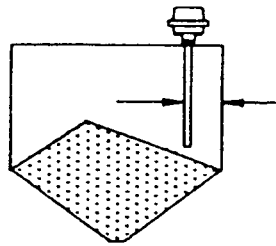


ALTERNATE METHODS
Attaching External Ground To Outer
Wall on Lined Tanks (or) to Metal
Plate On Outside of Fiber Glass
Tanks May Also Be Used.

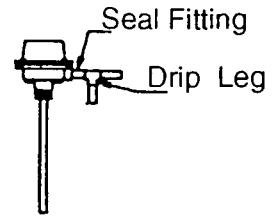
- E. A constant dielectric value is very important when using this type of transmitter. The dielectric constant can change due to the following factors: changing or adding other materials; density or moisture content changes of dry materials; changes in media temperature. These changes can cause significant changes in instrument accuracy and performance. Recalibration is sometimes required in these circumstances.
- F. Raising and lowering of the material level **will be required** for calibration.
- G. Conductive media which leaves a coating on the probe may cause an error in output. Non-conductive materials generally do not cause this type of error.
- H. Nonconductive media, which may be contaminated with water or other conductive media, will require a jacketed probe.

6.0 INSTALLATION

Mounting/Location Considerations:



Place Unit Far Enough From Wall to Eliminate Build-Up



Drip Leg and/or Seal Tite Fitting Recommended

- A. Sensing rods should be located parallel to the vessel wall. If this is not possible, such as in horizontal cylinders, a stilling well may be required. This is especially true with non-conductive liquids such as solvents.
- B. Probes should be mounted as close to metal tank walls as possible, however, avoid situations where material build-up between probe and vessel walls could occur.
- C. Beware of agitators or any obstruction that may contact the sensing probe. Probes should not contact anything except the process media. Exception: On probes over 10 ft. or in highly agitated materials, a non-metallic support should be considered to avoid probe damage or erratic operation.
- D. Make sure there is enough "head room" for mounting and required calibration and wiring.

6.1 Mounting- Refer to "Installation Drawings":

- A. All probes **except** "E" and "H" Tie Down types:
 - 1. Mount sensor to appropriate process connection with care to prevent damage to probe or electronics housing.
 - 2. Tighten to connection using flats on stainless process connector only. On flanged units, rotate with the flange. **Rotation of the enclosure on its mount can damage the process seal and will void the pressure rating !**
 - 3. We strongly recommend that a ground strap be run from the external ground screw to the vessel wall or other metal object supplying a ground to the process media (this is also true in non-metallic tanks).
- B. Type "E" and "H" Tie Down types:
 - 1. A mounting point for the tie-down must be located directly below the selected process connection location. This may be on the bottom of the vessel or on a bracket mounted on the side wall of the tank.
 - 2. Drill a 5/8" hole at this location for assembly of the tie-down. Caution: in some applications pull force on the cable can exceed 500 lbs. Verify that the tie-down location will support this load.
 - 3. Mount the probe and assemble the tie-down as indicated on the Installation Drawing. **The tie-down must be assembled as indicated to avoid any connection of cable directly with the tank.**
 - 4. Observe cable tension while filling and emptying vessel. Jacking assembly should be adjusted to provide a reasonably taut cable under loaded and unloaded conditions. Check cable regularly and tighten as required.

6.2 Stilling Well Installation- Optional:

This is only required in special cases. See "Application Considerations" or consult the factory.

- A. The stilling well (concentric ground) must be metal and be compatible with the process media. The pipe should be 2" nominal or larger and be equal to, or greater than the probe length. In addition, a vent hole must be made in the upper portion of the well to allow for pressure equalization as the material level rises. The vent hole is internal to the tank only.
- B. Construct and install the well inside of the vessel, providing a connection on the well compatible with the unit's process connection
- C. Install the sensing probe in the center of the well. The probe should not be allowed to move or contact the pipe wall. If necessary, a standoff of non-metallic construction may be required to limit movement. In general, rigid sensors are preferred for this type of mounting.

7.0 ELECTRICAL HOOK-UP (Refer To “Wiring Diagram” and “Relay Logic Table)

The Cap Level II is capable of a variety of control capabilities including; monitoring via analog output (std.), high/ low alarming, single or dual pump control, and single pump control and alarm using the optional relay outputs. Determination of hook-up will be based upon requirements. Refer to the “Relay Logic Truth Table” and “Wiring Diagram” for specific relay wiring information.

A. Analog (4-20 mA) hook-up

1. Connect signal wiring to TB 2 (+,-) using a shielded twisted pair of 22 AWG or larger (Belden 8761 or equivalent). Connect shield to enclosure ground only. The shield should not be connected at any other location.
2. Run signal wire to receiver in a conduit dedicated to signal wiring only. **Do not run in conduit with AC power.** Length of run should not exceed 1000 ft. See specifications for output capabilities.
3. This unit supplies the loop power for transmitter operation. **Do not connect the analog output to any device designed for loop-powered transmitters.**

B. Relay hook-up

1. Connect control/ alarm wiring to relay terminals using 14 AWG or according to local standards. **Power for switching should be from circuit other than that powering Cap Level II.** Powering from Cap Level II will negate failsafe features resulting in lack of control/ alarm capabilities in the event of power loss.
2. **In general, where an alarm or pump start is initiated by a contact closure, wire as follows to the appropriate relay:**

For Hi or Low Alarm	<u>use</u>	NC and C terminals
For Pump Control	<u>use</u>	NO and C terminals

- C. Power Connection- Connect power to terminals marked “HOT” and “NEU” only. For DC Powered units: “HOT”= Positive, “NEU”= Common. A Green GRD screw is located in the enclosure bottom for electrical ground connection.
- D. Conduit- Conduit must meet local or company standards. **In addition, it is imperative that a drip loop or leg be installed just prior to connection to enclosure. Units rendered inoperative due to water damage will void the warranty.**

Caution: Do not connect to any powered control device (pump, conveyor, valve) until all calibration has been complete and wiring verified. Damage or injury could result.

8.0 CALIBRATION

In order to calibrate the Cap Level II for maximum accuracy and performance the following will be required:

- A. Ability to move tank contents from the desired 0% and 100% points on the sensor.
- B. Prior knowledge of desired analog output span, alarm points (both relay on and off points, including hysteresis), and/ or pump on and off points.
- C. A 7/16" wrench for cover removal, DVM, small screwdriver, and needle nose pliers.
- D. Figure 1 and Figure 2 should be referred to for position of test points and adjustments during all subsequent calibration procedures.

Figure 1 - Cap Level II Upper Board

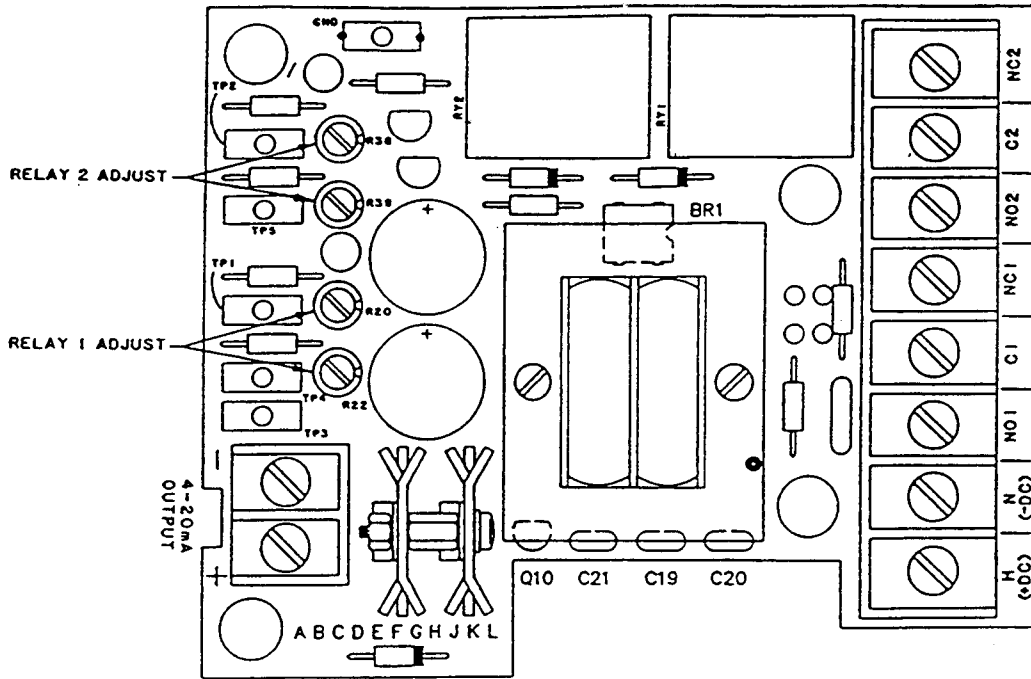
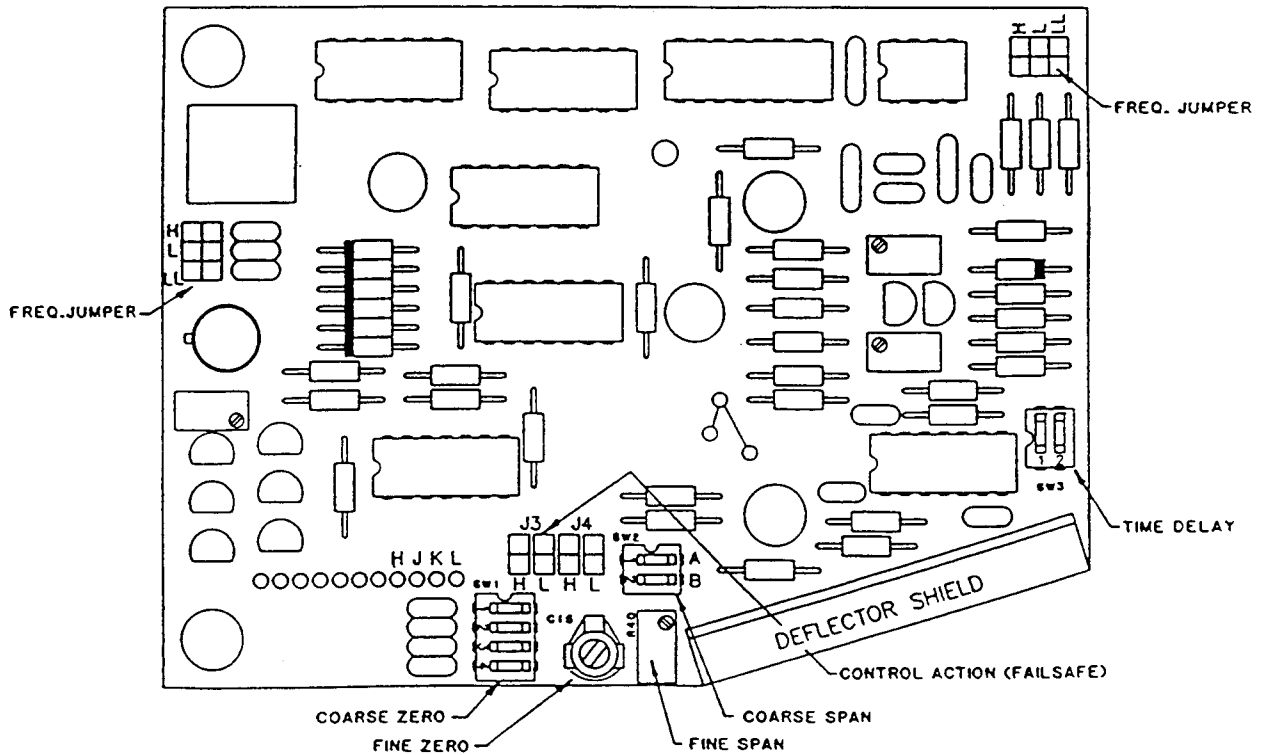


Figure 2 - Cap Level II Lower Board



8.1 Analog Output Calibration:

During the following procedure, it may be necessary to move the "Frequency Jumpers" on the lower board to bring the unit into calibration range. This will be indicated by the inability to adjust to the required voltages at TP3 and GRD. Once the jumpers are moved, recalibration will be required. **If the voltages in any step are to high and cannot be reduced through Coarse or Fine adjustment, move both jumpers to the next lower position and recalibrate starting at ZERO Calibration. If to low, increase and recalibrate.**

A. Zero Calibration

1. Lower vessel contents to cover the bottom 1" of probe or to the desired 0% point (do not cover more than the bottom 5% of probe under any conditions).
2. If this is a new installation, verify that the "Frequency Jumpers" on the bottom board are both in the "H" position. If this procedure is being performed to verify a previous calibration, leave the jumpers as positioned. **Note: There are 2 Frequency Jumpers and both must be in like positions for proper operation.**
3. **Connect the DVM** to GND and TP3 on the upper board.
4. Adjust for near 0.00 VDC using the "**Coarse Zero**" switches on the lower board. Order or combination of switch position is not critical.
5. Adjust the "**Fine Zero**" capacitor on the lower board for 0.00VDC.
6. If unit will zero proceed to Span Calibration., if not, retry above steps. If this fails, verify the following: Is probe contacting any metal object in the mount or tank? Is the probe bare metal and being used in a conductive material? Is there water in the enclosure ? If the answer is yes, remedy the situation or contact the factory.

B. Span Calibration

1. Leave the DVM on test points as above.
2. Fill the vessel to the desired 100% point (See "Alternate Span Calibration" below if 100% is not obtainable).
3. Adjust for near 2.00 VDC using the "**Coarse Span**" switches on the lower board.
4. Adjust the "**Fine Span**" potentiometer on the lower board for 2.00 VDC.
5. If the unit adjusted as indicated, analog output calibration is complete. The output will now be 4mA at 0% and 20mA at 100%. If the unit would not span, retry above steps. If this fails, contact the factory for instructions.

C. Alternate Span Calibration (Vessel less than 100%)

1. Leave the DVM on test points as above.
2. Fill the vessel to at least 75% of desired span. Determine the liquid level as a percentage of desired full scale span and multiply this times 2.00VDC to get the proper span voltage.

$$\frac{\text{Vessel Level}}{\text{Desired Span}} \times 2.00\text{VDC} = \text{Span Voltage}$$

3. Adjust the "Coarse Span" switches on the lower board for near the derived "Span Voltage".
4. Adjust the "Fine Span" potentiometer for the exact span voltage derived in Step 2. Calibration is now complete. The output at 100% tank level will be 20mA at TB 2. If the unit will not span, retry. If this fails, contact the factory for instructions.

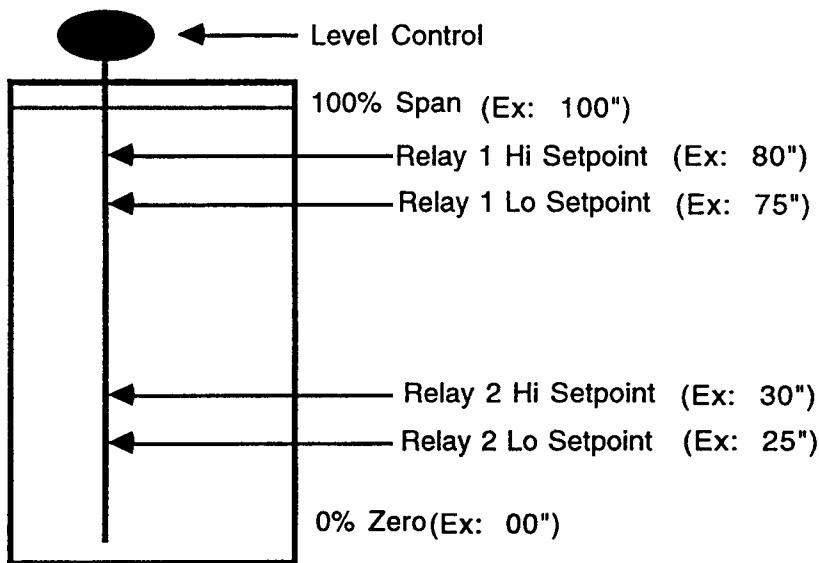
8.2 Alarm/ Pump Control Relay Calibration:

The following instructions apply to CL4 (1 relay) and CL5 (2 relay) model Cap Level II. Only analog output is possible on the CL3 version. To upgrade an existing CL3, consult the factory. **The Analog Output Calibration must have been performed previously and the calibration points known to continue. Movement of the vessel contents is not required for this procedure.**

Instructions given will provide for:

1. **Pump Control**- No external latching devices required. *Each relay* is capable of controlling 1 pump in either a “pump-up” or “pump down” configuration.
2. **Alarming (Hi/Hi,Lo/Lo, or Hi/Lo)**- Relay energized in non-alarmed condition. Alarm condition and/or power loss at Level Tracer will close contacts and provide alarm indication (failsafe). Deadband/hysteresis for each relay independently set.

The following represents calibration points required for Relay Calibration.



A. Step 1 - Set-Point Selection

Determine Hi and Lo setpoints for each relay. All relays will have two setpoint values. The minimum difference between setpoints is 2.5% of calibrated span. **Enter all values in inches.**

<u>Enter Values</u>	<u>Relay 1</u>	<u>Relay 2</u>
Span (Full)	_____	_____
Hi Setpoint	_____	_____
Lo Setpoint	_____	_____

B. Step 2 - Calculate Setpoint Voltage

Calculate setpoint voltages as a percentage of span using values from Step A. Resulting Hi and Lo voltages must deviate by minimum 2.5% or .05 VDC.

$$\text{Hi Voltage} = \frac{\text{Hi Setpoint}}{\text{Span}} \times 2.00 \text{ VDC}$$

$$\text{Lo Voltage} = \frac{\text{Lo Setpoint}}{\text{Span}} \times 2.0 \text{ VDC}$$

<u>Enter Values</u>	<u>Relay 1</u>	<u>Relay 2</u>
Hi Voltage	_____	_____
Lo Voltage	_____	_____

C. Step 3 - Determine Logic/ Failsafe Required

1. If the relay is being used for **Hi Level Alarming or Pump-Up Control**, enter “L” below for that relay.
2. If the relay is being used for **Lo Level Alarming or Pump-Down Control**, enter “H” below for that relay.

<u>Enter Choice</u>	<u>Relay 1</u>	<u>Relay 2</u>
L or H	_____	_____

D. Step 4 - Setting Logic/Failsafe

1. **Relay 1- Set Jumper “J4”** on the lower board to the Logic/Failsafe chosen above (L or H) for Relay 1.
2. **Relay 2- Set Jumper “J3”** on the lower board to the Logic/Failsafe chosen above (L or H) for Relay 2.

The logic failsafe setting just completed has determined whether the relay will energize or deenergize at the selected setpoints. If the reverse logic is required (example: an open contact is required to start a pump or initiate an alarm), use the opposite jumper position (L vs. H).

E. Step 5 - Setting Set Point Values

Refer to Line B, Step 2 for Set Point Voltages required in this step. All Test Points and Adjustments for this step are located on the top board.

1. **Relay 1-** Set voltage at “TP1” and “GRD” to the **Hi Voltage** in Step 2 by adjusting “R20”.

Set voltage at “TP4” and “GRD” to the **Lo Voltage** in Step 2 by adjusting “R22”.

2. **Relay 2-** Set voltage at “TP2” and “GRD” to the **Hi Voltage** in Step 2 by adjusting “R38”.

Set voltage at “TP5” and “GRD” to the **Lo Voltage** in Step 2 by adjusting “R39”.

Calibration of the Alarm/ Pump control is complete.

9.0 RELAY LOGIC TRUTH TABLE

The following table provides relay actuation vs. level position for standard hook-ups. Please consult this table for problem analysis or verification of relay operation.

Level	Contact Status		Pump/AlarmCondition		LED
Pump-Down/Lo Alarm Logic Jumper = H	NO - C	NC - C	Pump NO - C	Alarm NC - C	
Above Hi Set Point	Make	Break	On	Off	On
Level Falling	Hold Last	Hold Last	On	Off	On
At Low Set Point	Break	Make	Off	Alarmed	Off
Level Rising	Hold Last	Hold Last	Off	Alarmed	Off
At Hi Set Pt.	Make	Break	On	Off	On
Power Loss	Break	Make	Off	Alarmed	Off

Level	Contact Status		Pump/AlarmCondition		LED
Pump-Up/Hi Alarm Logic Jumper = L	NO - C	NC - C	Pump NO-C	Alarm NC-C	
Below Lo Set Pt.	Make	Break	On	Off	On
Level Rising	Hold Last	Hold Last	On	Off	On
At Hi Set Pt.	Break	Make	Off	Alarmed	Off
Level Falling	Hold Last	Hold Last	Off	Alarmed	On
At Lo Set Pt.	Make	Break	On	Off	On
Power Loss	Break	Make	Off	Alarmed	Off

10.0 OUTPUT DAMPENING ADJUSTMENT

All Cap Level IIs include this feature to eliminate erratic output due to turbulence. To change dampening value use Switch "SW3" on lower board.

<u>Position</u>	<u>Time Constant</u>
1 & 2 OFF	0 SEC.
2 ON	1 SEC.
1 ON	2 SEC.
1 & 2 ON	3 SEC.

11.0 SPARE PARTS

Please consult the factory for spare/replacement parts required on this unit. Model Number must be known for repair.

12.0 DRAWINGS

Number	Description
SCL2E0024	Cap Level II Wiring Diagram
SCL2E0008	Installation Dwg. - T-316 S.S. Bare Probe Assy.
SCL2E0009	Installation Dwg. - Teflon Jacketed Probe Assy.
SCL2E0012	Installation Dwg. - S.S. Cable & Jacking Probe W/ Tie Down
SCL2E0014	Installation Dwg. - SS Cable w/Teflon Coating & Jacking Assy w/Tie Down
SCL2E0015	Installation Dwg. - Cable & Weight
SCL2E0035	Installation Dwg. - Teflon Coated Cable & Weight
SCL2E0036	Installation Dwg. - w/PVC Jacketed Probe Assy.
SCL2E0037	Installation Dwg. - Type "B" Probe w/Teflon Faced Flange Mounting
SCL2E0038	Installation Dwg. - Type "I" Probe w/ Teflon Faced Flange
SCL2E0039	Installation Dwg. - Bare Probe w/ Sanitary Style Process Connection
SCL2E0040	Installation Dwg. - Teflon Coated Probe w/Sanitary Style Process Connection
SCL2E0042	Installation Dwg. - Explosionproof w/ Teflon Jacketed Probe Assy.

REVISIONS		DATE	BY	APP'D
B	REDRAWN	02/18/90	RE	RE
C	VIEW ADDED FOR 24VDC PER ECO# 94-006	1/23/94	BOB	BOB

POWER TO UNIT WIRING

NOTE:
 RECOMMENDED HOOKUP WIRE
 14 AWG OR AS REQUIRED BY
 LOCAL STANDARDS.
 FOR C.S.A. APPROVED UNITS USE TYPE
 TV 75 OR T 94.

CAUTION:
 SIGNAL WIRING CONNECTED IN THIS BOX MUST BE
 RATED AT LEAST 300V.
 ATTENTION TO LABELING OF SIGNALIZATION BACKSIDE
 PANELS IS CRITICAL. DO NOT CONVERT FOUR TERMINAL
 PAU WIRING 300V.

CAUTION:
 DO NOT CONNECT 24 VDC LINE VOLTAGE TO THE 8 POST
 POSITION TERMINAL BLOCK. THE WIRE CERTAIN ALL WIRING
 CONNECTIONS ARE MADE ACCORDING TO THIS WIRING
 DIAGRAM. INCORRECT WIRING WILL DAMAGE P.C. BOARDS AND
 VOID THE WARRANTY.

24 VDC
 OUTPUT RELAY
 CONNECTIONS

GRD. IN
 SCR. IN
 ENCL.

4/20 MA. OUTPUT WIRING
 MINIMUM #22 AWG & CONDUCTOR SHELDED
 CABLE RECOMMENDED.

REMOTE
 INDICATING
 DEVICE

TB2
 E/U
 GND.

24 VDC INSTALLATION

POWER TO UNIT WIRING

NOTE:
 RECOMMENDED HOOKUP WIRE
 14 AWG OR AS REQUIRED BY
 LOCAL STANDARDS.
 FOR C.S.A. APPROVED UNITS USE TYPE
 TV 75 OR T 94.

CAUTION:
 SIGNAL WIRING CONNECTED IN THIS BOX MUST BE
 RATED AT LEAST 300V.
 ATTENTION TO LABELING OF SIGNALIZATION BACKSIDE
 PANELS IS CRITICAL. DO NOT CONVERT FOUR TERMINAL
 PAU WIRING 300V.

CAUTION:
 DO NOT CONNECT 240 VAC LINE VOLTAGE TO THE 8 POST
 POSITION TERMINAL BLOCK. THE WIRE CERTAIN ALL WIRING
 CONNECTIONS ARE MADE ACCORDING TO THIS WIRING
 DIAGRAM. INCORRECT WIRING WILL DAMAGE P.C. BOARDS AND
 VOID THE WARRANTY.

240 VAC
 OUTPUT RELAY
 CONNECTIONS

GRD. IN
 SCR. IN
 ENCL.

4/20 MA. OUTPUT WIRING
 MINIMUM #22 AWG & CONDUCTOR SHELDED
 CABLE RECOMMENDED.

REMOTE
 INDICATING
 DEVICE

TB2
 E/U
 GND.

24 VAC INSTALLATION

POWER TO UNIT WIRING

NOTE:
 RECOMMENDED HOOKUP WIRE
 14 AWG OR AS REQUIRED BY
 LOCAL STANDARDS.
 FOR C.S.A. APPROVED UNITS USE TYPE
 TV 75 OR T 94.

CAUTION:
 SIGNAL WIRING CONNECTED IN THIS BOX MUST BE
 RATED AT LEAST 300V.
 ATTENTION TO LABELING OF SIGNALIZATION BACKSIDE
 PANELS IS CRITICAL. DO NOT CONVERT FOUR TERMINAL
 PAU WIRING 300V.

CAUTION:
 DO NOT CONNECT 240 VAC LINE VOLTAGE TO THE 8 POST
 POSITION TERMINAL BLOCK. THE WIRE CERTAIN ALL WIRING
 CONNECTIONS ARE MADE ACCORDING TO THIS WIRING
 DIAGRAM. INCORRECT WIRING WILL DAMAGE P.C. BOARDS AND
 VOID THE WARRANTY.

240 VAC
 OUTPUT RELAY
 CONNECTIONS

GRD. IN
 SCR. IN
 ENCL.

4/20 MA. OUTPUT WIRING
 MINIMUM #22 AWG & CONDUCTOR SHELDED
 CABLE RECOMMENDED.

REMOTE
 INDICATING
 DEVICE

TB2
 E/U
 GND.

240 VAC INSTALLATION

POWER TO UNIT WIRING

NOTE:
 RECOMMENDED HOOKUP WIRE
 14 AWG OR AS REQUIRED BY
 LOCAL STANDARDS.
 FOR C.S.A. APPROVED UNITS USE TYPE
 TV 75 OR T 94.

CAUTION:
 SIGNAL WIRING CONNECTED IN THIS BOX MUST BE
 RATED AT LEAST 300V.
 ATTENTION TO LABELING OF SIGNALIZATION BACKSIDE
 PANELS IS CRITICAL. DO NOT CONVERT FOUR TERMINAL
 PAU WIRING 300V.

CAUTION:
 DO NOT CONNECT 120 VAC LINE VOLTAGE TO THE 8 POST
 POSITION TERMINAL BLOCK. THE WIRE CERTAIN ALL WIRING
 CONNECTIONS ARE MADE ACCORDING TO THIS WIRING
 DIAGRAM. INCORRECT WIRING WILL DAMAGE P.C. BOARDS AND
 VOID THE WARRANTY.

120 VAC
 OUTPUT RELAY
 CONNECTIONS

GRD. IN
 SCR. IN
 ENCL.

4/20 MA. OUTPUT WIRING
 MINIMUM #22 AWG & CONDUCTOR SHELDED
 CABLE RECOMMENDED.

REMOTE
 INDICATING
 DEVICE

TB2
 E/U
 GND.

120 VAC INSTALLATION

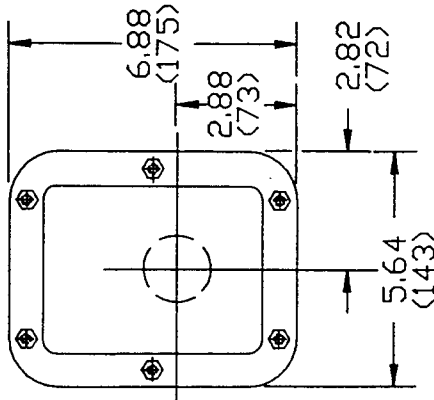
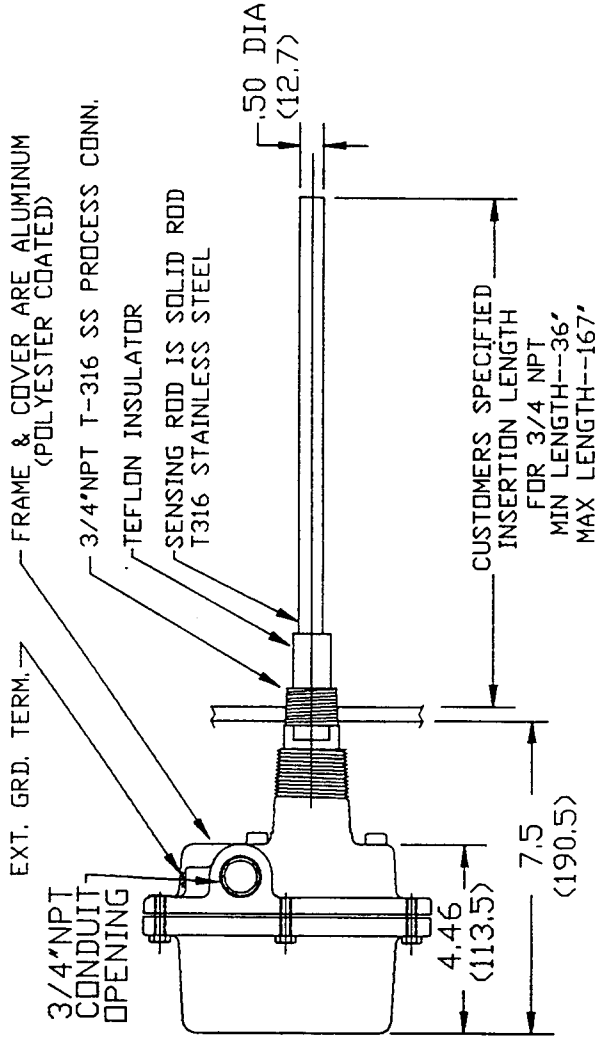
DET. REQD/SHT	DESCRIPTION	MATOR PART
UNDESIGNED TEL. DECIMAL BOX #4 ANGLES + 1/2" DEBURR & BREAK EDGES JOB	DRAWN JS	PROD. RE
DATE 1/18/90	CHECKED JN	DATE 1/20/94
SCALE NONE	DATE 1/20/94	PART OR DRAWING SCL2E0024
TITLE CAP-LEVEL II WIRING DIAGRAM		
MATERIAL FINISH		
DO NOT SCALE DIM'S. ARE IN INCHES		
BINDICATOR® PORT HURON, MICHIGAN 48060		

DATA BLOCK

PROBE LENGTH AS REQUIRED
 MOUNTING: 3/4" NPT STANDARD,
 WITH TEFLON INSULATOR

REV	DATE	BY	APP'D
A	89-0070	WJ	CM RB
B		SEPT. 6/91	RR RB
A		APRIL 10/92	BOB RB

REVISIONS
 EXT. GRD. TERM. ADDED PER ECO
 REVISED DATA BLOCK, OPTIONAL-
 1-1/4 MOUNTING REMOVED.
 II & III DESIGNATION REMOVED
 FROM TITLE ECO #92-054 EP



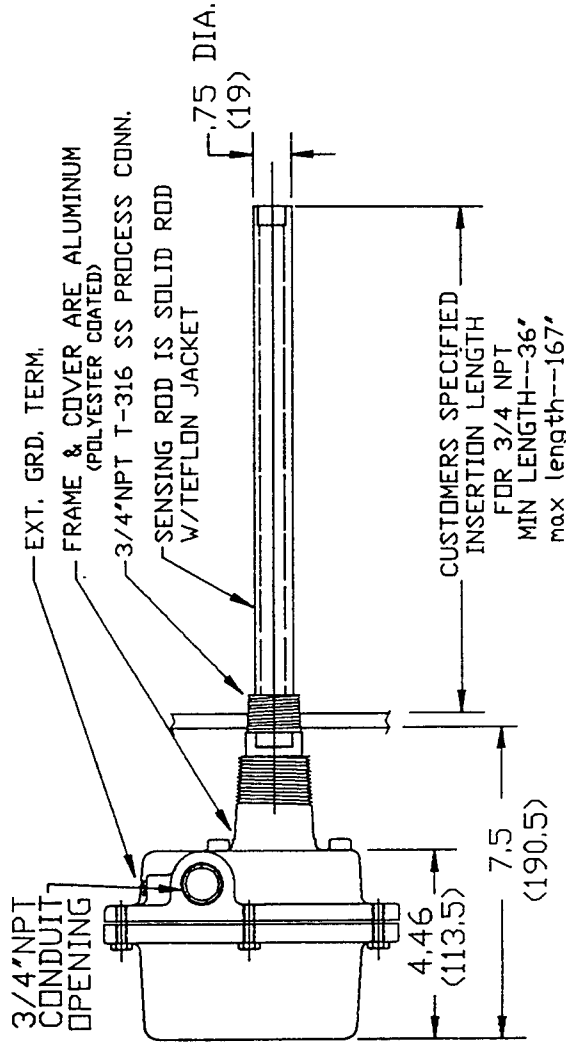
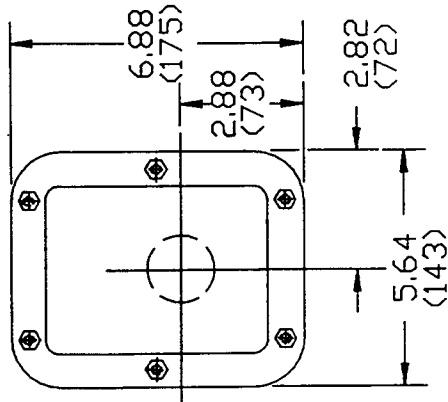
REF "A" TYPE PROBE

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

DET. REQ'D	UNSPECIFIED TOL DECIMALS	DRAWN S. BIDEHM	CHECKED JS	APPROVED RE	MATERIAL PART
	ANGLES 1/2' BREAK EDGES .005	DATE 13 APR 87	DATE 5/13/87	DATE 5/13/87	PROB PF
			SCALE NONE	SIZE B	PART OR DRAWING SCL2E008
			TITLE INSTALLATION DWG.-CAP LEVEL W/T316 BARE PROBE ASSY		
MATERIAL	FINISH	BINDICATOR® PORT. HURON, MICHIGAN 48060			

DATA BLOCK

PROBE LENGTH AS REQUIRED
 MOUNTING: 3/4" NPT STANDARD,
 PROBE MATERIALS: S.S. SENSING PROBE,
 WITH TEFLON JACKET



DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

REF: "B" TYPE PROBE

REVISIONS		DATE	BY	APP'D
A	EXT. GRD. TERM. ADDED PER ECO #99-0070	10/96	RR	RB
B	REVISED DATA BLOCK, OPTIONAL-1-1/4 MOUNTING REMOVED.	SEPT. 6/96	RR	RB
C	II DESIGNATION REMOVED FROM TITLE ECO #92-054	APRIL 10/96	RR	RB

DET. REQ'D	REQ'D SHIT	DESCRIPTION	MAT. OR PART
UNSPECIFIED TO DECIMALS	DRAWN S. BOEHRM	CHECKED JS	APPROVED RE PF
ANGLES 1/2" BREAK EDGES	DATE 13 APR 87	DATE 5/13/87	DATE 5-13-87
TITLE INSTALLATION DRG - CAP LEVEL V/PROBE ASSY - TEFLON JACKET	SCALE NONE	SIZE B	PART OR DRAWING SCL2E009

MATERIAL FINISH

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 PORT HURON, MICHIGAN 48060

DATA BLOCK

PROBE LENGTH: AS REQUIRED
 MOUNTING: 1-1/4" NPT STANDARD
 PROBE MATERIALS: BARE S.S. CABLE, JACKING ASSY,
 T-316 SS TIE DOWN ASSY.

REVISIONS

REV	DATE	BY	APP'D
A	11/28/87	JEELON	SB/PF
B	09-0070	GRD.	RB
C	EPDXY	REMOVED FROM DATA BK.	RB
D	TIE-DOWN ASSY	CHANGE (ECC090-0060)	RB
E	DESIGNATION	REMOVED FROM TITLE BLOCK PER ECC #92-034	RB

JACKING ASSY - 316 S.S.
 ADJUSTING NUT-(5' ADJUSTMENT)

FRAME & COVER ARE ALUMINUM
 (POLYESTER COATED)

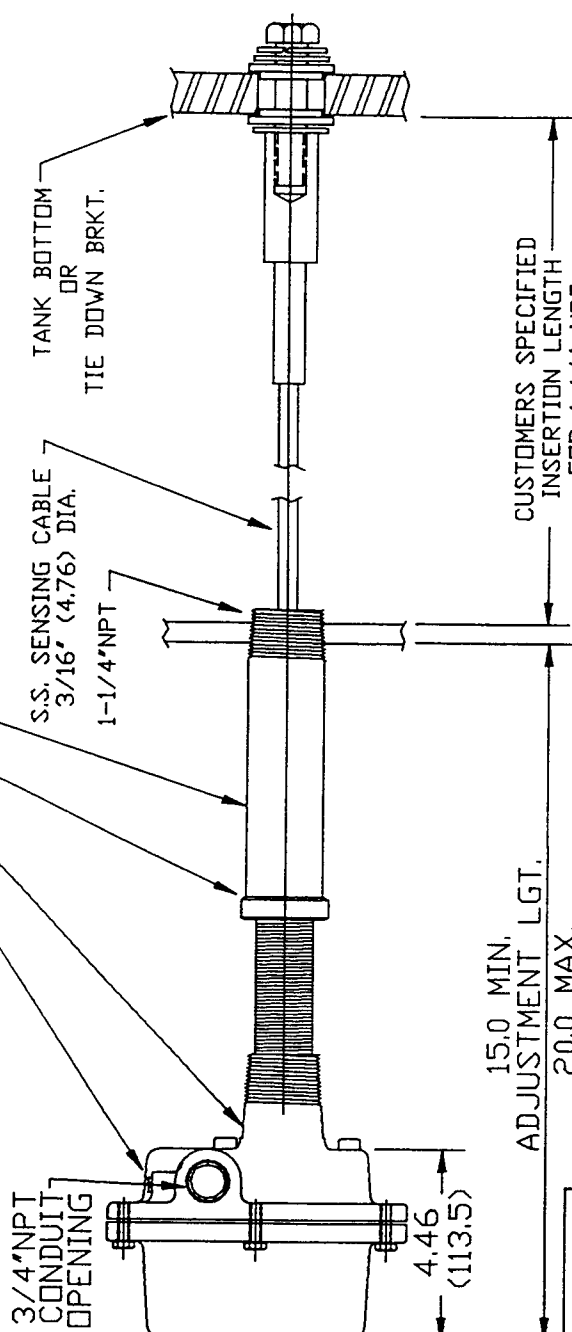
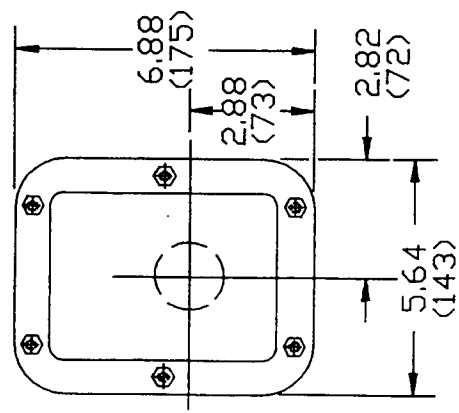
EXT. GRD. TERM.

3/4" NPT
 CONDUIT
 OPENING

S.S. SENSING CABLE
 3/16" (4.76) DIA.

1-1/4" NPT

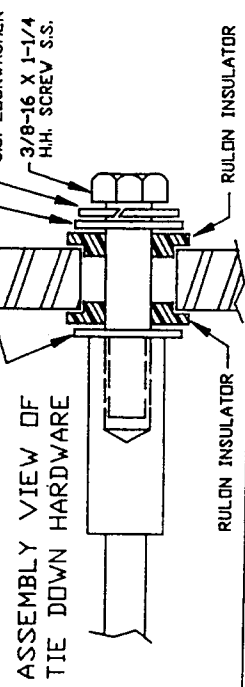
TANK BOTTOM
 OR
 TIE DOWN BRKT.



15.0 MIN.
 ADJUSTMENT LGT.
 20.0 MAX.
 ADJUSTMENT LGT.

CUSTOMERS SPECIFIED
 INSERTION LENGTH
 FOR 1-1/4 NPT
 MIN LENGTH--36"
 MAX LENGTH--1200"

TANK BOTTOM OR TIE DOWN BRKT.
 [RECOMMENDED THICKNESS OF BRKT--
 1/4 - 3/8 , 5/8 DIA HOLE REQUIRED.]



ASSEMBLY VIEW OF
 TIE DOWN HARDWARE

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

REF: "E" TYPE PROBE

DET. REQ'D	SHIT	DESCRIPTION	MAT. OR PART
UNSPECIFIED TO	DRAWN	CHECKED	APPROVED
DECIMALS	S. BOEHM	J.S.	P.F.
ANGLES/2'	DATE	DATE	DATE
BREAK POINTS	13APR87	5/13/87	5/13/87

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 PORT HURON, MICHIGAN 48060

TITLE INSTALLATION DRG - CAP LEVEL SCALE
 SS CABLE & JACKING PROBE W/TIE DOWN NONE B
 PART DR. DRAWING
 SCL2E0012

DATA BLOCK

PROBE LENGTH: AS REQUIRED
 MOUNTING: 1-1/4" NPT STANDARD
 PROBE MATERIALS: SS CABLE W/TEFLON COATING,
 T-316 SS TIE DOWN & JACKING-
 ASSEMBLY.

REV	EXT. GRD. TERM. ADDED PER ECO	DATE/CHK'D	APP'D
A	89-0070	1/10/87	RB
B	T-316 SS TIE DOWN ASSEMBLY, WAS TEFLON ASSEMBLY.	5/27/87	RR RB
C	II DESIGNATION REMOVED FROM TITLE ECO #92-054	11/15/87	BOB RB

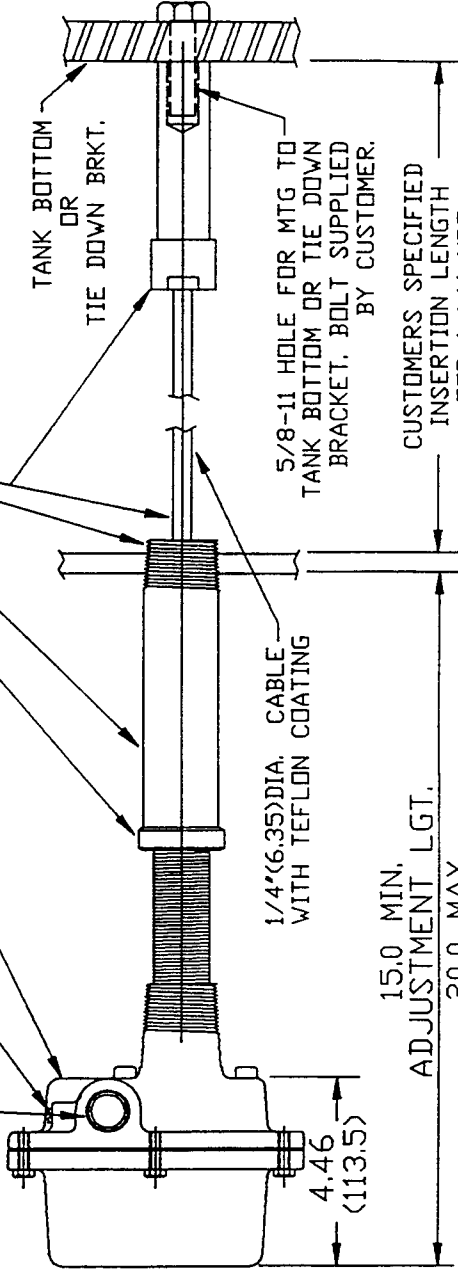
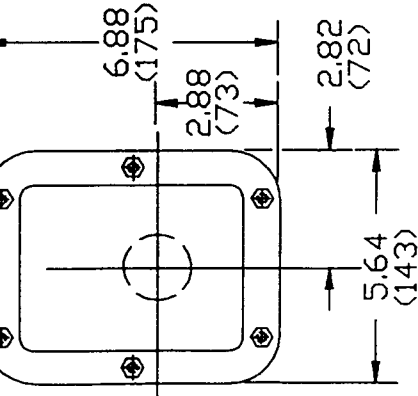
FRAME & COVER ARE ALUMINUM
 (POLYESTER COATED)
 ADJUSTING NUT-(5" ADJUSTMENT)
 JACKING ASSY - 316 S.S.

EXT. GRD. TERM.

3/4" NPT
 CONDUIT
 OPENING

1-1/4" NPT

S.S. SENSING CABLE W/TEFLON COATING
 & T-316 SS TIE DOWN



15.0 MIN.
 ADJUSTMENT LGT.
 20.0 MAX.
 ADJUSTMENT LGT.

CUSTOMERS SPECIFIED
 INSERTION LENGTH
 FOR 1-1/4 NPT
 MIN LENGTH--36"
 MAX LENGTH--1200"

5/8-11 HOLE FOR MTG TO
 TANK BOTTOM OR TIE DOWN
 BRACKET. BOLT SUPPLIED
 BY CUSTOMER.

TANK BOTTOM
 OR
 TIE DOWN BRKT.

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

REF: "H" TYPE PROBE

DET. REQ'D	DESCRIPTION	MAT. OR PART
UNSPECIFIED TO DECIMALS	DRAWN S. BOEHM	CHECKED RE
ANGLES/2	DATE 13 APR 87	DATE 5/15/87
SCALE	SCALE NONE	SIZE B
LEVEL	LEVEL NONE	PART OR DRAWING SCL2E0014
COATING	COATING NONE	
TIE DOWN	TIE DOWN	

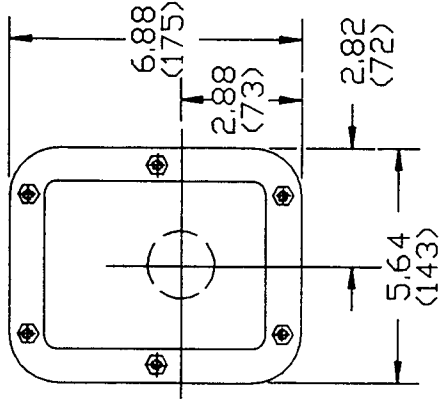
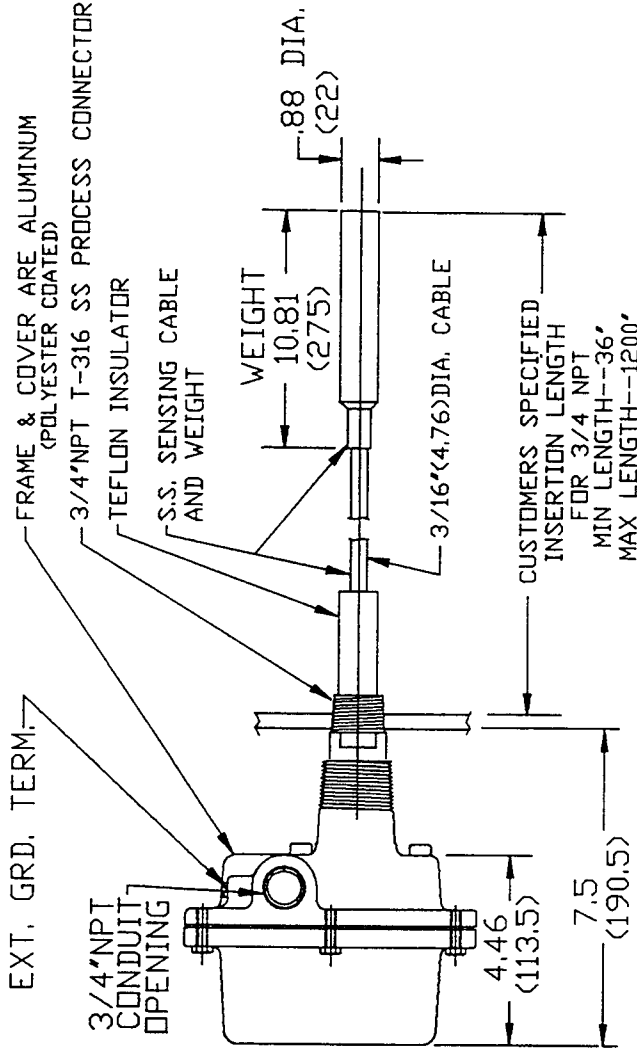
BINDICATOR®
 PORT HURON/MICHIGAN 48060

INSTALLATION DRG - CAP
 SS CABLE W/TEFLON COATING
 & JACKING ASSY W/TIE DOWN

DATA BLOCK

PROBE LENGTH: AS REQUIRED
 MOUNTING: 3/4" NPT STANDARD,
 PROBE MATERIALS: BARE S.S. CABLE
 WITH TEFLON INSULATOR

REVISIONS		DATE	CHK'D	APP'D
A	EXT. GRD. TERM. ADDED PER ECO 89-0070	1/20/87	RB	RB
B	PROBE REDESIGNED PER ECO 90-0047	5/13/87	RB	RB
C	II DESIGNATION REMOVED FROM TITLE ECO #92-054	APRIL 10/92	BOB	RB



NOTE: BRACKETED DIM'S ARE IN MILLIMETERS.

REF: "D" TYPE PROBE

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

DET. REQ'D	UNSPECIFIED TOL.	DESCRIPTION	MATERIAL	PART
SH	DECIMALS	DRAWN	CHECKED	APPROVED
HT	ANGLES/2'	DATE	DATE	DATE
HT	INCHES/16'	13 APR 87	5/13/87	5/13/87
TITLE INSTALLATION DRG - CAP LEVEL			SCALE	PART OR DRAWING
CABLE & WEIGHT			NONE	B
				SCL2E0015

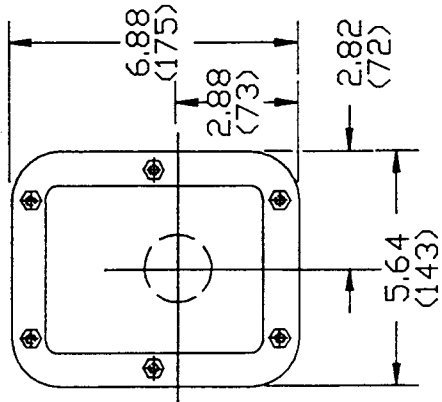
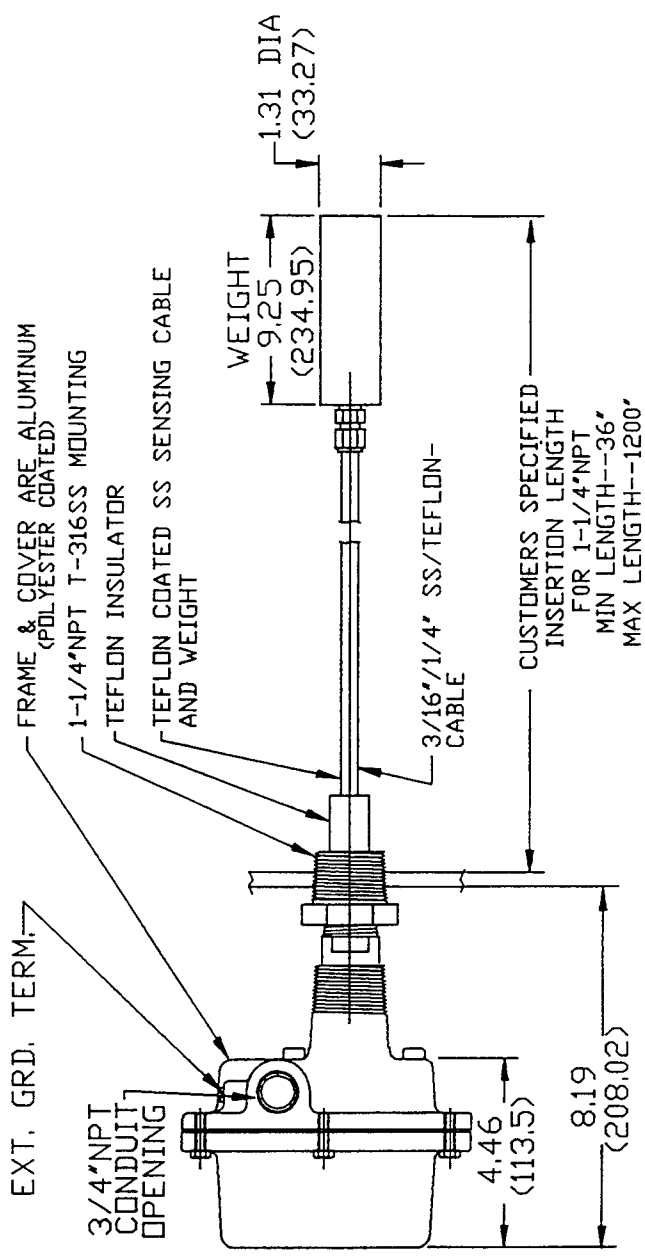


DATA BLOCK

PROBE LENGTH: AS REQUIRED
 MOUNTING: 1-1/4"NPT
 PROBE MATERIALS: TEFLON COATED S.S. CABLE,
 TEFLON INSULATOR, &
 TEFLON COATED S.S. WEIGHT

REVISIONS

REV	DESIGNATION	REMOVED FROM	DATE	CHK'D	APP'D
A	II	ECCM92-054	EP 10/92	APR	BOB RB



NOTE: BRACKETED DIM'S ARE IN MILLIMETERS.

REF: "I" TYPE PROBE

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

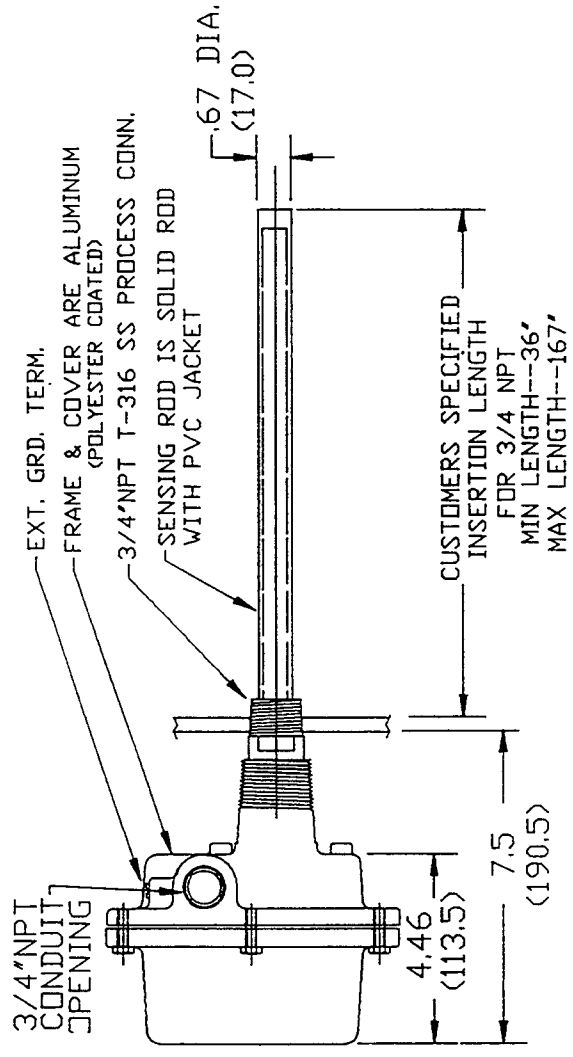
DET. REQ'D	UNSPECIFIED TOL	CHECKED	DESCRIPTION	MAT. OR PART
	DECIMALS	RB	EDUNKE BERGER	APPROVED PROD. PF
	ANGLES/2°	DATE	DATE	DATE
	PROB. EXES 2/85	14-SEPT-90	14-SEPT-90	14-SEPT-90
		SCALE	SIZE	PART OR DRAWING
		NONE	B	SCL2E0035

TITLE INSTALLATION DWG. CAP LEVEL
 TEFLON COATED CABLE & WEIGHT

BINDICATOR®
 PORT HURON, MICHIGAN 48060

REVISIONS		DATE (DD/YY)	APP'D
A	II. DESIGNATION REMOVED FROM TITLE ECD 92-054	EP	RB

DATA BLOCK
 PROBE LENGTH: AS REQUIRED
 MOUNTING: 3/4" NPT STANDARD,
 PROBE MATERIALS: S.S. SENSING PROBE,
 WITH PVC JACKET



REF: "M" TYPE PROBE

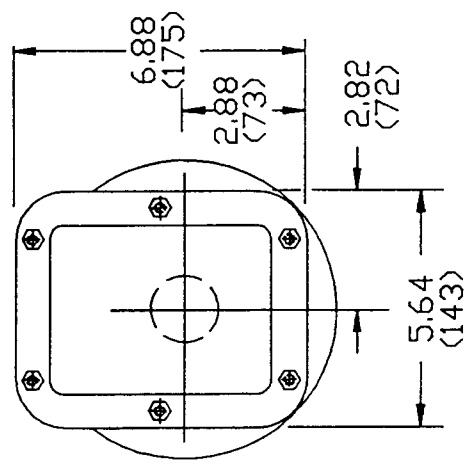
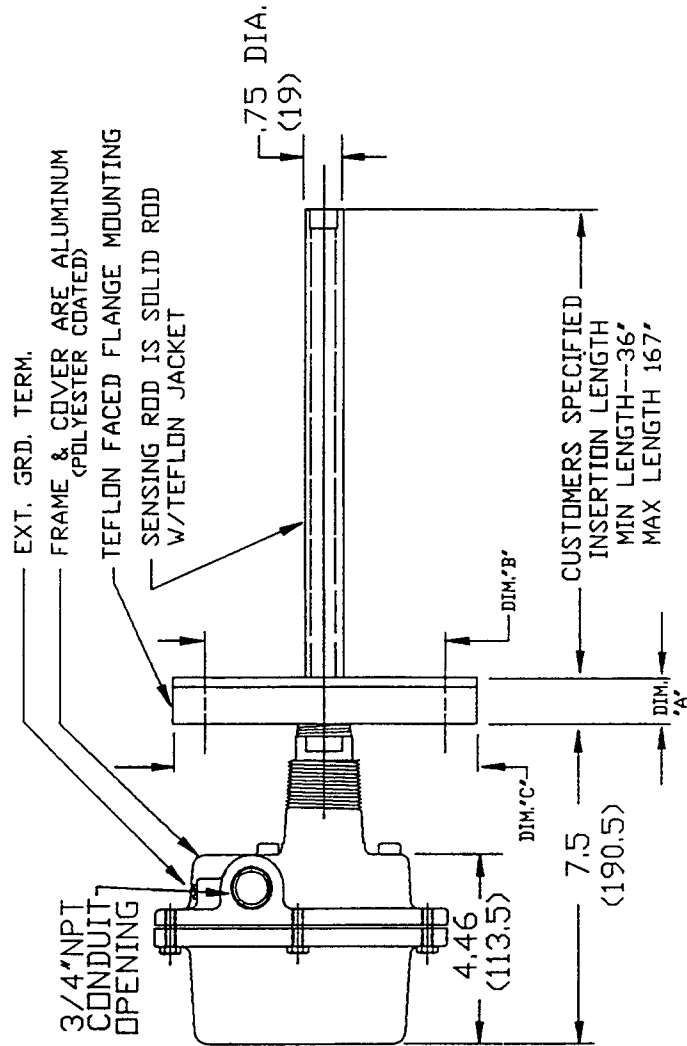
DO NOT SCALE DIM'S. ARE IN INCHES
 BRAK'TED. DIM'S ARE IN MM.

DET. REQ'D SHI	DESCRIPTION	MAT. OR PART
UNSPECIFIED TO DECIMALS	CHECKED BY	APPROVED BY
ANGLES 1/2' BREAK EDGES 3X	DATE 14-SEPT-90	DATE 14-SEPT-90
	SCALE NONE	PART OR DRAWING SCL2E0036
TITLE INSTALLATION DRG. CAP LEVEL WITH PVC JACKETED PROBE ASSY.		

MATERIAL FINISH
BINDICATOR®
 PORT HURON, MICHIGAN 48060

REVISIONS		DATE	BY
A	DESIGNATION REMOVED FROM TITLE ECD #92-054	APRIL 10/92	RB

DATA BLOCK
 PROBE LENGTH: AS REQUIRED
 MOUNTING: TEFLON FACED FLANGE
 PROBE MATERIALS: S.S. SENSING PROBE,
 WITH TEFLON JACKET



**REF. "B" TYPE PROBE
 (WITH TEFLON FACED FLANGE MTG.)**

DO NOT SCALE DIMS. ARE IN INCHES
 BRACKETED DIMS ARE IN MM.

FLANGE SIZE	THICKNESS	BOLT CIRCLE DIAMETER	BOLTS	FINISH	MATERIAL	DET. REQ'D	SHIT	TOL	UNSPECIFIED	DECIMALS	DRAWN	CHECKED	DESCRIPTION	MAT. OR PART	
1-1/2"-150#	.88 (22.35)	3.88 (98.55)	5 (127.0)	4	1/2"						REGENTIN	RB	APPROVED	PROD.	
2"-150#	.94 (23.87)	4.75 (120.7)	6 (152.4)	4	5/8"						DATE	DATE	DATE	DATE	
3"-150#	1.12 (28.45)	6.0 (152.4)	7.0 (177.8)	4	5/8"						11-SEPT-90	14-SEPT-90	14-SEPT-90	14-SEPT-90	
4"-150#	1.12 (28.45)	7.5 (190.5)	9.0 (228.6)	8	5/8"						SCALE	SIZE	PART OR DRAWING		
TITLE INSTALLATION DWG.- CAP LEVEL WITH TEFLON FACED FLANGE MOUNTING														B	SCL2E0037

DATA BLOCK

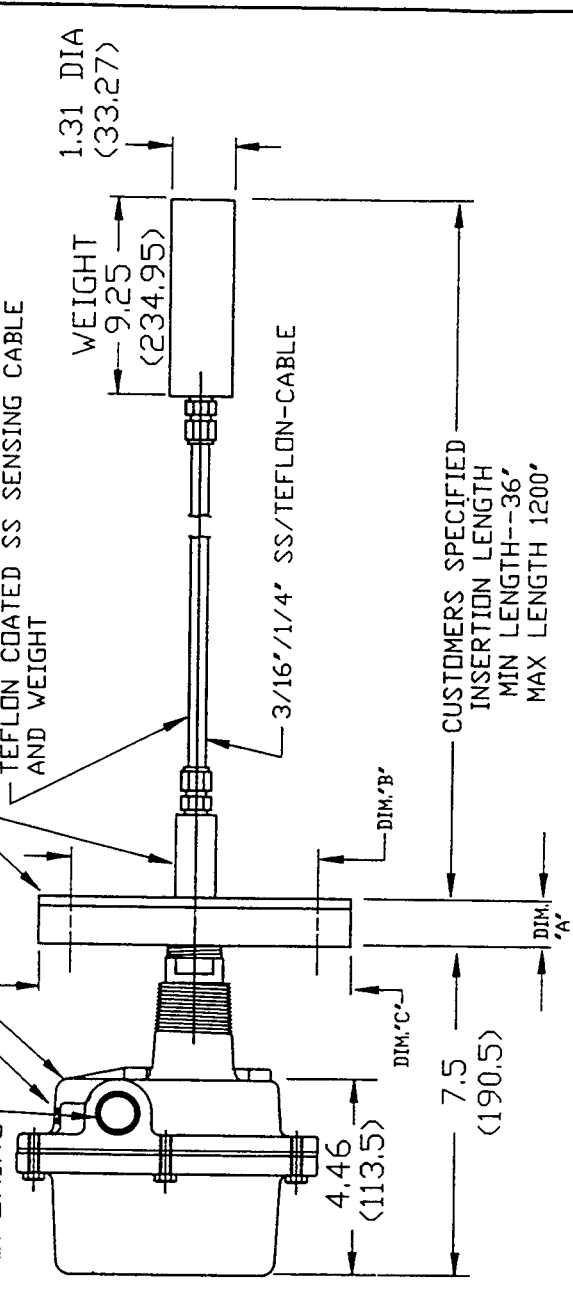
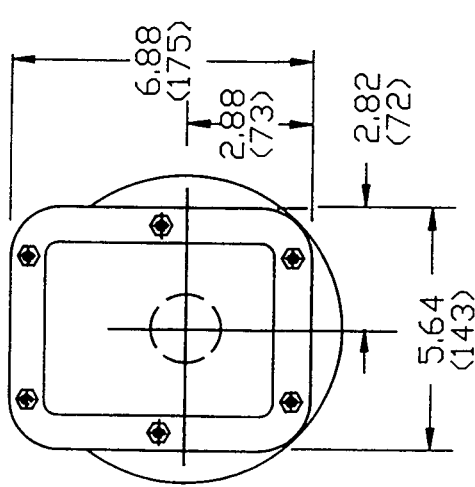
PROBE LENGTH: AS REQUIRED
 MOUNTING: TEFLON FACED FLANGE
 PROBE MATERIALS: TEFLON COATED S.S. CABLE,
 TEFLON INSULATOR,&
 TEFLON COATED S.S. WEIGHT.

REVISIONS		DATE	CK'D	APP'D
A	II DESIGNATION REMOVED FROM TITLE ECD #92-054	APRIL 10/92	BOB	RB
B	UPDATED LENGTHS FOR NEW ELECTRONICS & MECHANICAL CONFIGURATION, ECD #93-055.	7/1 91	208	L

EXT. GRD. TERM.

FRAME & COVER ARE ALUMINUM (POLYESTER COATED)
 TEFLON FACED FLANGE MOUNTING
 TEFLON INSULATOR
 TEFLON COATED SS SENSING CABLE AND WEIGHT

3/4" NPT CONDUIT OPENING



CUSTOMERS SPECIFIED INSERTION LENGTH
 MIN LENGTH--36"
 MAX LENGTH 1200"

REF: "I" TYPE PROBE
 (WITH TEFLON FACED FLANGE MTG.)

DO NOT SCALE DIMS. ARE IN INCHES
 BRAK'TED. DIMS ARE IN MM.

FLANGE SIZE	THICKNESS	BOLT DIM.'A'	BOLT DIM.'B'	CIRCLE DIM.'C'	DIAMETER DIM.'C'	BOLTS NO.	SIZE
1-1/2"-150#	.88 (22.35)	3.88 (98.55)	5 (127.0)	4	1/2"		
2"-150#	.94 (23.87)	4.75 (120.7)	6 (152.4)	4	5/8"		
3"-150#	1.12 (28.45)	6.0 (152.4)	7.0 (177.8)	4	5/8"		
4"-150#	1.12 (28.45)	7.5 (190.5)	9.0 (228.6)	8	5/8"		

MATERIAL FINISH
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 PORT HURON, MICHIGAN 48060

DET.	REQD	SHT	DESCRIPTION	MATOR	PART
UNSPECIFIED	TOL	DRAWN	CHECKED	APPROVED	PROD.
DECIMALS	REGENITIN	RB	E	DIMEN/ENGINEER	PF
ANGLES/2°	DATE	DATE	DATE	DATE	DATE
BRAK' EDGES	008	14-SEPT-90	14-SEPT-90	14-SEPT-90	14-SEPT-90
TITLE INSTALLATION DWG.- CAP LEVEL WITH TEFLON FACED FLANGE MOUNTING				SCALE	PART OR DRAWING
				NONE	B
				SCL2E0038	

DATA BLOCK

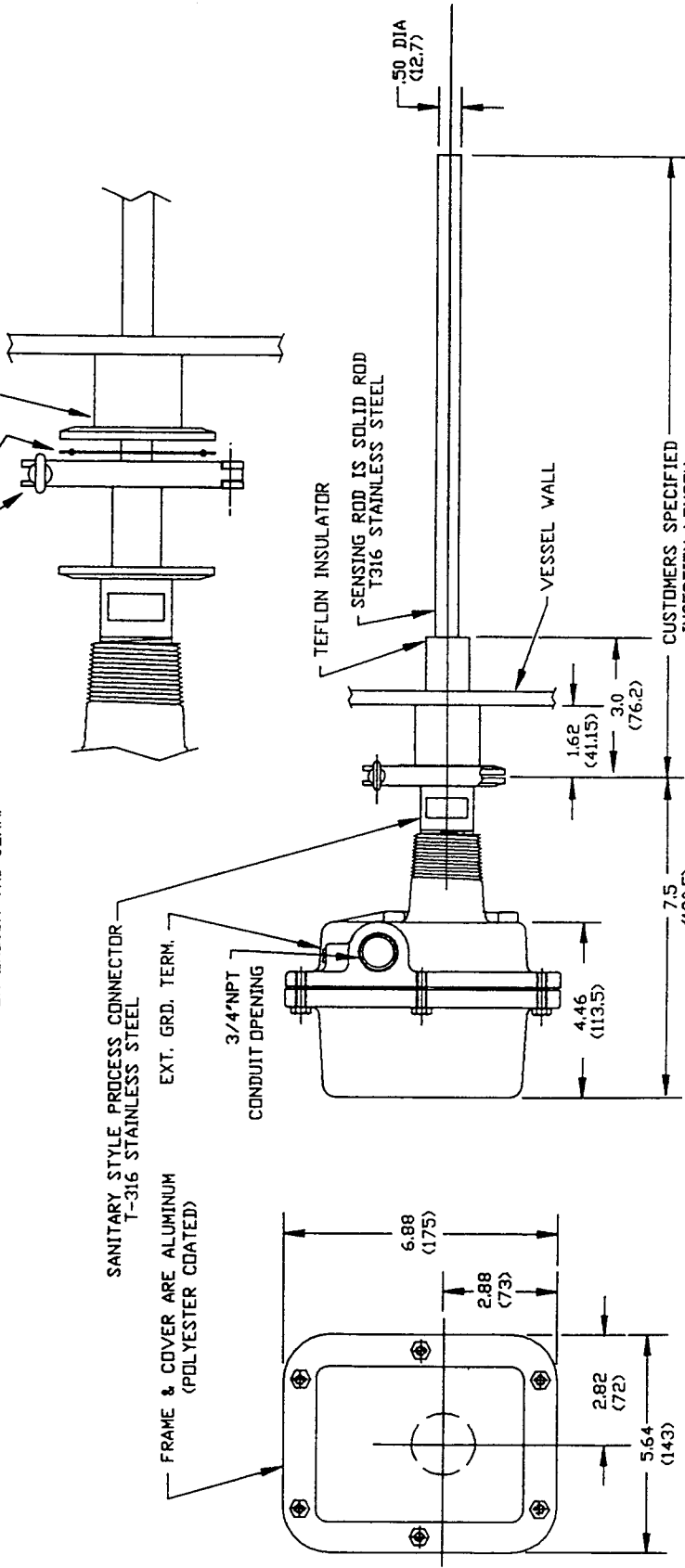
PROBE LENGTH AS REQUIRED
 MOUNTING: 1" SANITARY STYLE PROCESS-
 CONNECTOR, T-316 S.S.
 PROBE MATERIALS: 316 SS SENSING PROBE
 WITH TEFLON INSULATOR

SUPPLIED BY CUSTOMER

- L14AM7 BUTT WELDING FERRULE SIZE 1 X .875 ID
 CHERRY BURELL 'S' DR LADISH TRI-CLAMP
- 40 MP-G TEFLON GASKET SIZE 1 X .875 ID
 CHERRY BURELL 'S' DR LADISH TRI-CLAMP
- 13 MHHM CAST CLAMP SIZE 1-1/2 CHERRY BURELL-
 OR LADISH TRI-CLAMP

REVISIONS

REV	DATE	DESCRIPTION
A	APRIL 10/90	II DESIGNATION REMOVED FROM TITLE ECO #92-054



REF "P" TYPE PROBE

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

DET. REQDSHT	DESCRIPTION	MAT. DR PART
UNSPECIFIED TOL DECIMALS	CHECKED DATE	APPROVED DATE
REGAIN ANGLE	DATE	DATE
ANGLES 1/2° BREAK EDGES	DATE	DATE
	SCALE	PART OR DRAWING
	NONE	B
TITLE-INSTALLATION DWG.-CAP LEVEL		SCL2E0039
BARE PROBE W/SANITARY STYLE PROCESS CONN.		

MATERIAL FINISH
 BINDICATOR®
 PORT HURON, MICHIGAN 48060

DATA BLOCK

PROBE LENGTH: AS REQUIRED

MOUNTING: 1" SANITARY STYLE PROCESS-CONNECTOR, T-316 S.S.

PROBE MATERIALS: S.S. SENSING PROBE WITH-TEFLON INSULATOR

SUPPLIED BY CUSTOMER

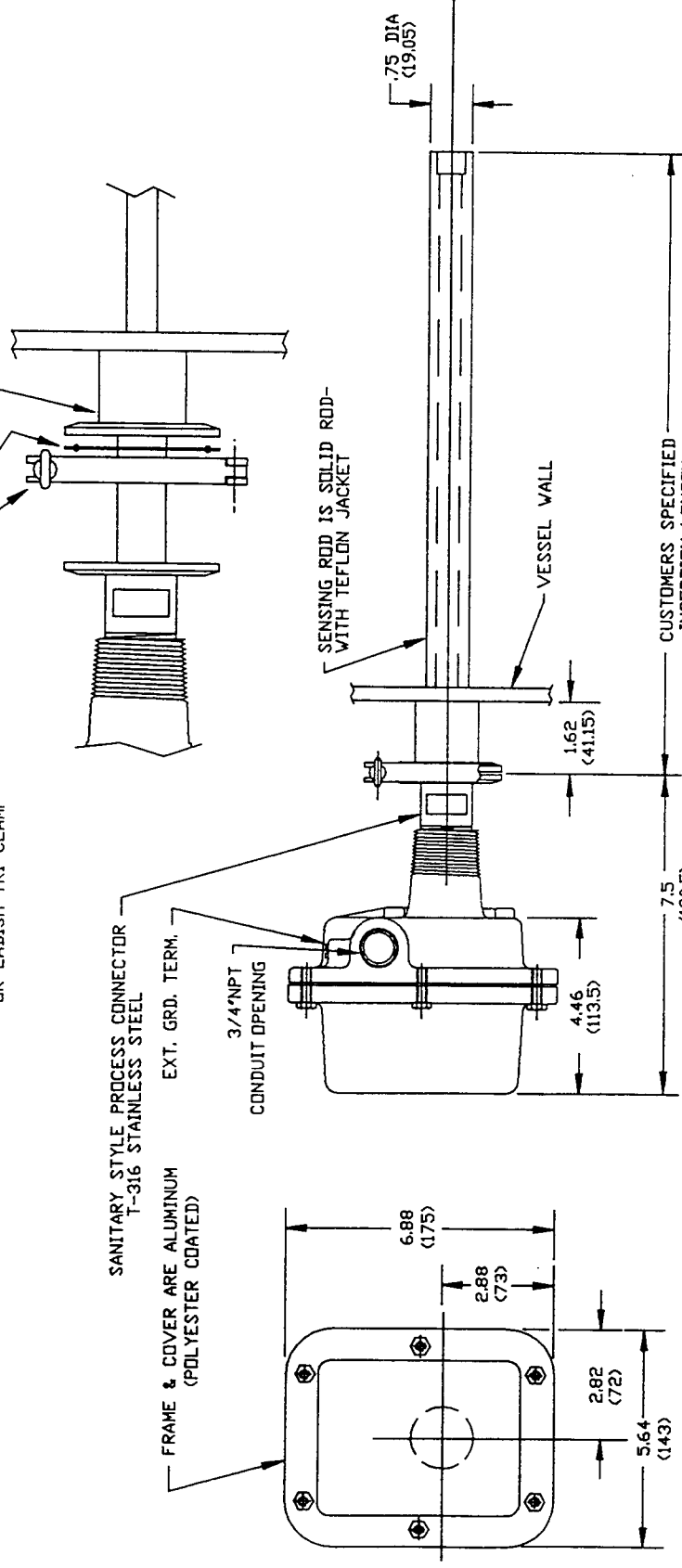
L14AM7 BUTT WELDING FERRULE SIZE 1 X .870 ID CHERRY BURELL *S* OR LADISH TRI-CLAMP

40 MP-G TEFLON GASKET SIZE 1 X .875 ID CHERRY BURELL *S* OR LADISH TRI-CLAMP

13 MHHM CAST CLAMP SIZE 1-1/2 CHERRY BURELL-OR LADISH TRI-CLAMP

REVISIONS

REV	DESCRIPTION	DATE	BY
A	II DESIGNATION REMOVED FROM TITLE ECD #92-054	APRIL 10/92	BOB RB



REF "N" TYPE PROBE

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

DET. REQ'D	REQUISIT	DESCRIPTION	MAT. OR PART
UNSPECIFIED TO	DRAWN	CHECKED	APPROVED
DECIMALS	REVISION	ANGLE/F	RB
ANGLES 1/2	DATE	DATE	DATE
BROOK EDGE	DEC-90	10-24-90	10-24-90
	SCALE	SIZE	PART OR DRAWING
	NONE	B	SCL2E0049
TITLE INSTALLATION DWG.-CAP LEVEL			
TEF. COATED PROBE V/SANITARY STYLE PROCESS CONN.			

MATERIAL FINISH

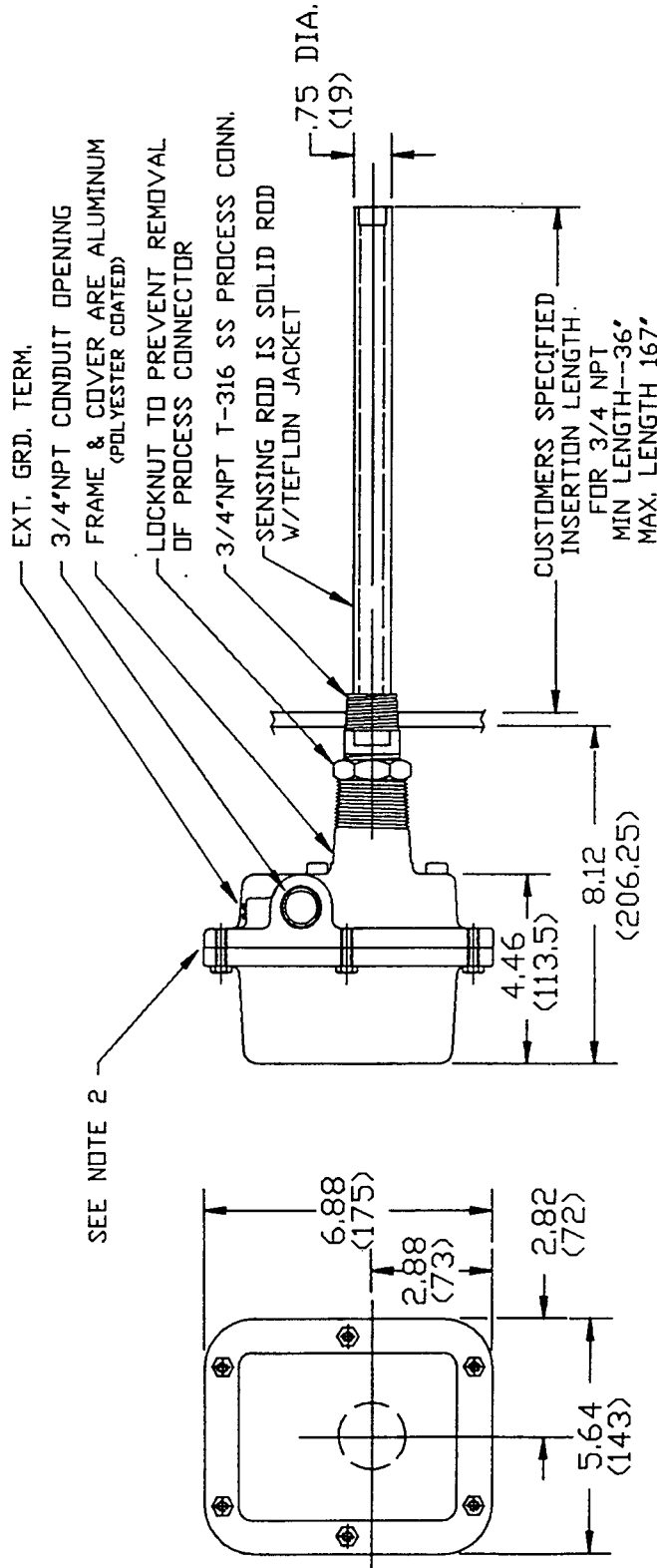
BINDICATOR®
PORT HURON, MICHIGAN 48060

DATA BLOCK

PROBE LENGTH: AS REQUIRED
 MOUNTING: 3/4"NPT
 PROBE MATERIALS: S.S. SENSING PROBE,
 WITH TEFLON JACKET

REVISIONS

REV	DESCRIPTION	DATE	BY
A	II DESIGNATION REMOVED FROM TITLE ECD #92-054 EP	APR 10/98	RB



SEE NOTE 2

- NOTE:
 1-INSTALL PER N.E.C. OR LOCAL AUTHORITY,
 C.S.A. APPROVAL FOR CLASS 1, DIV. 1,
 GROUPS C & D.
 2-INSTALL ALL COVER SCREWS AND TIGHTEN.
 (MAX. FLANGE GAP .0039 (0.1MM))

DO NOT SCALE DIM'S. ARE IN INCHES
 BRACKETED DIM'S ARE IN MM.

REF: 'B' (EX/PR) TYPE PROBE

DET. REQD SHIT	DESCRIPTION	MATERIAL PART
UNSPECIFIED TO DECIMALS	CHECKED US	APPROVED ED. D.
DATE DEC-3-90	DATE 12/5/90	DATE 12/5/90
ANGLE 1/2" PER ANGLE 200	SCALE NONE	PART OR DRAWING SIZE B
TITLE INSTALLATION DWG. CAP LEVEL, EX/PR WITH TEFLON JACKETED PROBE ASSY.		SCL2E0042

MATERIAL FINISH

BINDICATOR®
 PORT HURON, MICHIGAN 48060

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-1) and with 41 CFR 60-1.40 by developing a written Affirmative Action Compliance Program.



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