Oil/Grease Point Alarm for Proceptor Separators

Inlet Side

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

ADVERTENCIA: Cáncer y daño reproductivo - www.P65Warnings.ca.gov

AVERTISSEMENT: Cancer et effets néfastes sur la reproduction - www.P65Warnings.ca.gov

Proceptor

Oil or Grease Separator Point Alarm Switch

Applications
- Separators
- Sumps
- Interface Detection

Related Materials
- Wiring Diagram

Description

The Green Turtle Oil/Grease Point Alarm is specifically designed for use in Proceptor Oil or Grease Gravity type separators. The unit contains no moving parts, eliminating maintenance due to mechanical malfunction.

An integrated pulse card (PMC) is mounted directly onto the probe in an explosion proof epoxy coated housing. This allows the alarm panel electronics to be mounted up to 1 km (0.7 mile) away using inexpensive 2-conductor shielded wire. Wetted parts are 316SS and Teflon, and the alarm panel housing is Type 4 metal, providing a tough, yet economical, solution for switch point elevation alarm in Proceptor Separators.

The probe is installed in a factory mounted bracket in the access way of the tank on site. As of January 2009, the system is designed so that the probe is to be positioned in the OUTLET side of a single tank interceptor or in the DOWNSTREAM tank of a two tank interceptor. Typically, more grease or oil will accumulate on the inlet side of the system. However, if for some reason the grease or oil is pushed over or separates to a greater degree on the outlet side, the probe will detect it before it is discharged through the outlet.

Relays are included on the panel for user-supplied remote devices such as pump controls, connection to building automation systems, etc.

Operation

The probe length is determined by the distance from the desired alarm point up to the process connection of the probe head. The bottom 100mm of the probe is a Teflon-coated active capacitance probe, which is calibrated with clean water by the installer or operator. The remainder of the probe is sealed within a stainless tube so that any level changes of the upper air surface are discounted.

During waste water flows, water is gradually displaced through the separator as the oil/grease rises to the surface and accumulates.

When the tip of the probe, which is normally submerged in water, senses a decrease in capacitance from contact with the oil/grease, the alarm switch closes a relay contact and triggers an alarm light and buzzer at the panel. This is the signal for the maintenance operator to have the tank pumped out and then refill with clean water. Once the unit is refilled with clean water the alarm light will go out.

Specifications

Power Input:	100 - 240 VAC, 50/60 Hz, 150mA or 24 VDC, 250mA	
Relay:	2 X SPDT, N.O. dry, Contact 5 A @ 250 VAC and N.C. Contact 3 A @ 250 VAC, (relays trigger at same setpoint)	
Sensitivity:	.0018 pf	
Accuracy:	+/- 2 mm	
Time Delay:	Field Selectable 0 to 600 seconds	
Relay:	High or Low Selectable	
Temperature:	Controller Electronics:	- 4°F to +140°F (-20 °C to +55 °C)
	Probe Junction Box with PMC Electronics:	- 75°F to +140°F (-60 °C to +55 °C)
	Probe (wetted parts):	-75°F to +480°F (-60 °C to +260 °C)
Wetted Parts:	316SS and Teflon	
Process Connection:	3/4" NPT standard (options available)	
Pressure Rating:	max 1500 psi	
Housing:	Controller: Type 4 Metal Enclosure.	
	Probe with PMC Electronics: Epoxy Coated Cast Aluminum	
Electrical Rating:	Controller: CSA 22.2; UL61010-1	
	Probe: Explosion Proof Class 1, Div. 1, Group C & D (File #; 56812)	

Installation:

Note: Alarms are sensitive instruments and all care is taken to ensure they are shipped without damage. Please examine the instrument for possible shipping damage. **IMPORTANT:** If for any reason it is determined that parts need to be returned to the factory, please notify a Green Turtle Representative prior to shipment for a Return Authorization Number. The installation should be done by a qualified electrician with experience in wiring control systems.

1. Thread the sensing probe into the bracket of the separator access way. The elevation of the probe tip will determine the alarm point of the system. (The exposed white portion of the probe tip is the actual sensing area.) The probe length will depend on the tank model.

2. The probe is rated for Class I, Div. 1, Group C & D. If the probe is mounted in one of these designated areas, the contractor must use approved explosion proof installation techniques such as 18" sealing gland and explosion proof conduit. If the location is non-classified, then local regulations should be followed in installing proper water-tight electrical conduit.

3. Wire the probe to the main control unit using the 2-wire shielded instrument cable supplied (25 feet). Ensure vapours cannot travel up the wiring conduit from the interceptor into the alarm panel. If the main controller is mounted further than 25 feet up the line from the top of the probe, the contractor must supply an electrically approved junction box or splitter box. The contractor then must supply 2 conductor shielded (Belden 8760 or equivalent). DO NOT run these wires along side of high voltage wires. Connect the clear, black to the +/- terminals respectively at the controller. Connect the shield and Green/Yellow ground wire to secondary ground. See the electrical connection drawing in the back of the manual for further instruction. Make sure that the probe is electrically grounded to the controller box by connecting the green/yellow wire supplied to the ground stud on the sub-plate.

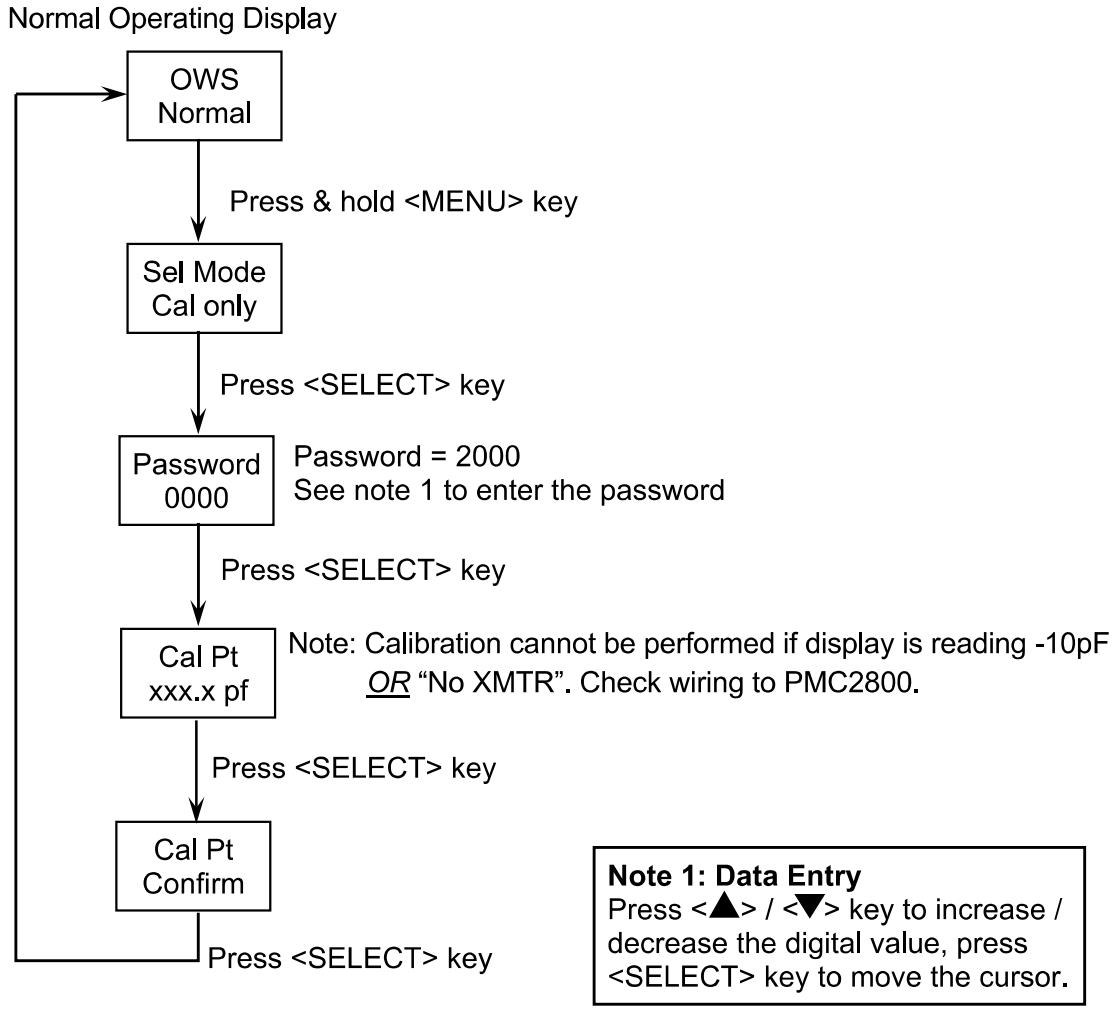
4. Connect 100 -240 VAC power to the main control unit. After powering on the unit, the STATUS LED on the 2800 circuit board should be green, indicating that power is on with no fault conditions. If the status LED is red, the unit is showing fault. Check to make sure that the probe wires are correctly wired to the controller for continuity and proper polarity.

5. Fill the separator with water up to the level of the outlet pipe. Ensure the bottom tip of the alarm probe is submerged.

6. Calibrate the alarm. See the following Calibration Procedure.

CALIBRATION PROCEDURE:

1. The controller has a factory default setting (see Controller Features in the next page) and is ready for field calibration.
2. Check to ensure the entire 4" Teflon probe tip is submerged in relatively clean water.
3. Power up the unit and let warm up for atleast 1 hour before preforming calibration.
4. Follow the flow chart to perform the calibration:

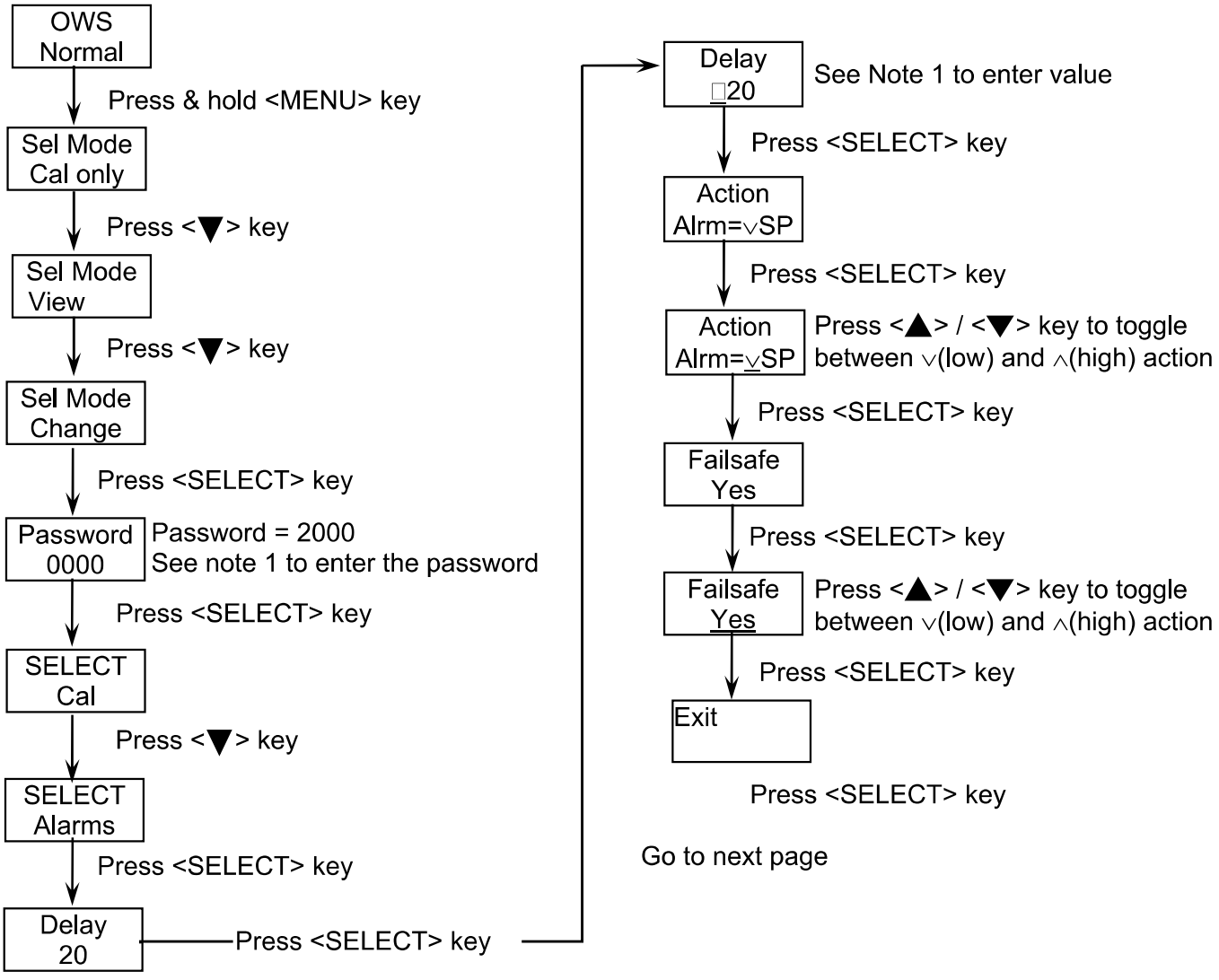


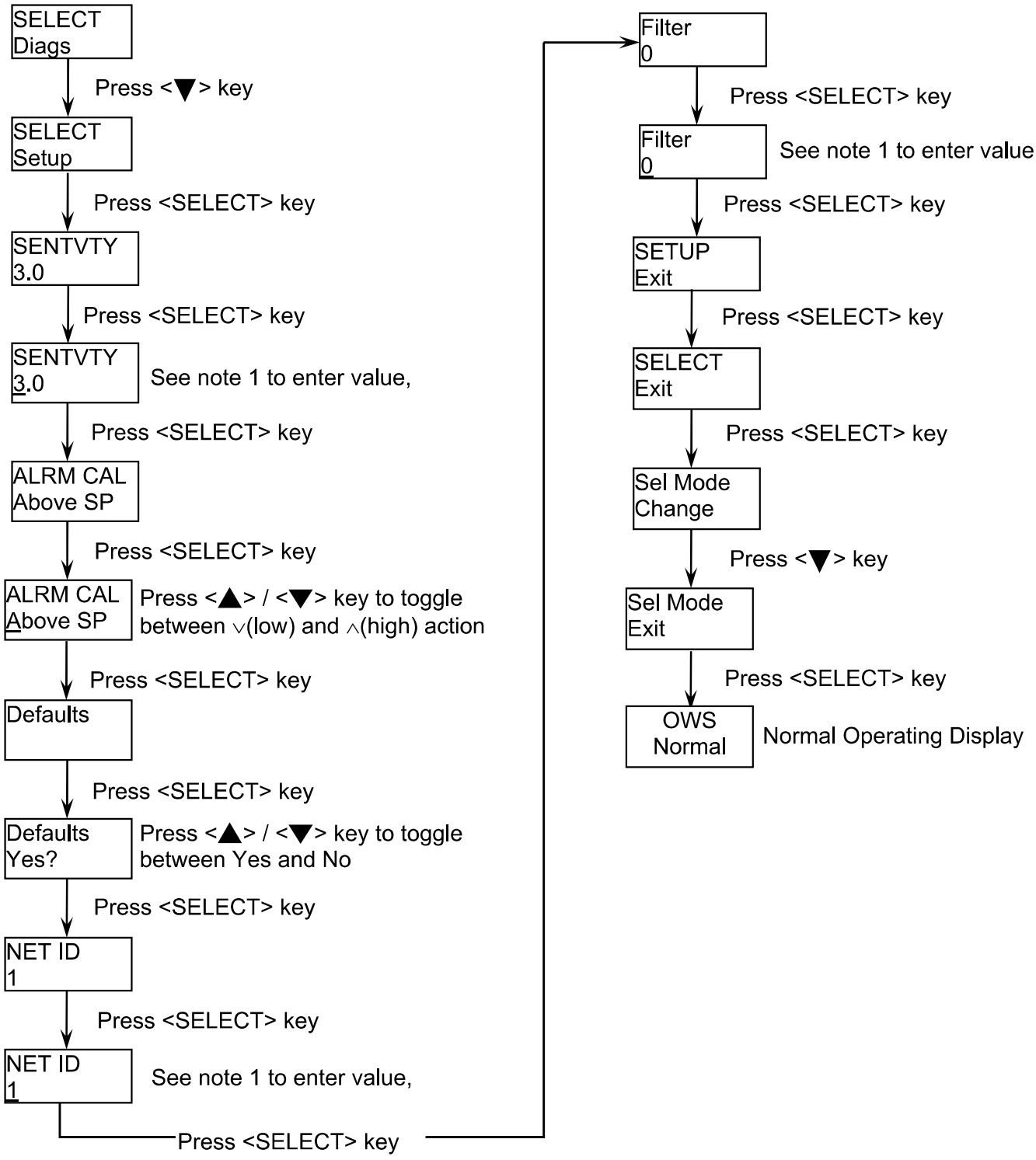
5. The unit is now calibrated and will alarm when the 4" sensing section of the probe tip is exposed to oil or grease. The alarm will also be activated if the probe is exposed to air, such as when a vacuum truck removes the liquid from the tank.

CONTROLLER DEFAULT SETTINGS:

Feature	Description	Display	Default Setting
Sensitivity	Determines the capacitive change required to cause the unit to alarm. (0.1 pF – 20 pF)	SENSTVTY	3.0 pF
Calibration Mode	To calibrate the unit during a normal condition (probe tip in water), set the ALRM Cal to Above SP. To calibrate the unit during a alarm condition (probe tip in oil), set the ALRM Cal to Below SP.	ALRM Cal	Above SP
Relay Action	High or low action. For low action, the alarm is set when the capacitance value (pF) drops below the alarm set value.	Action	Alrm= ∨SP
Relay Delay	After the control point is exceeded, the circuit holds the relay state for a pre-set time. (0 – 600 seconds)	Delay	20 seconds
Failsafe	The relay is normally (when not in an alarm condition) held in an energized state. In alarm condition, the relay is de-energized i.e. identical to when the instrument power is shut off. The rationale is that the alarm condition should match the power fail condition	Failsafe	Yes

Changes to the calibration and above default settings can be made in the change sub-menu




SELECT
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Setup
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SENTVTY
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See note 1 to enter value,
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ALRM CAL
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ALRM CAL
Above SP
Press <▲> / <▼> key to toggle
between ∨(low) and ∧(high) action
Press <SELECT> key
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Defaults
Yes?
Press <▲> / <▼> key to toggle
between Yes and No
Press <SELECT> key
NET ID
1
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NET ID
1
See note 1 to enter value,
Press <SELECT> key
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See note 1 to enter value
Press <SELECT> key
SETUP
Exit
Press <SELECT> key
SELECT
Exit
Press <SELECT> key
Sel Mode
Change
Press <▼> key
Sel Mode
Exit
Press <SELECT> key
OWS
Normal
Normal Operating Display

TROUBLESHOOTING:

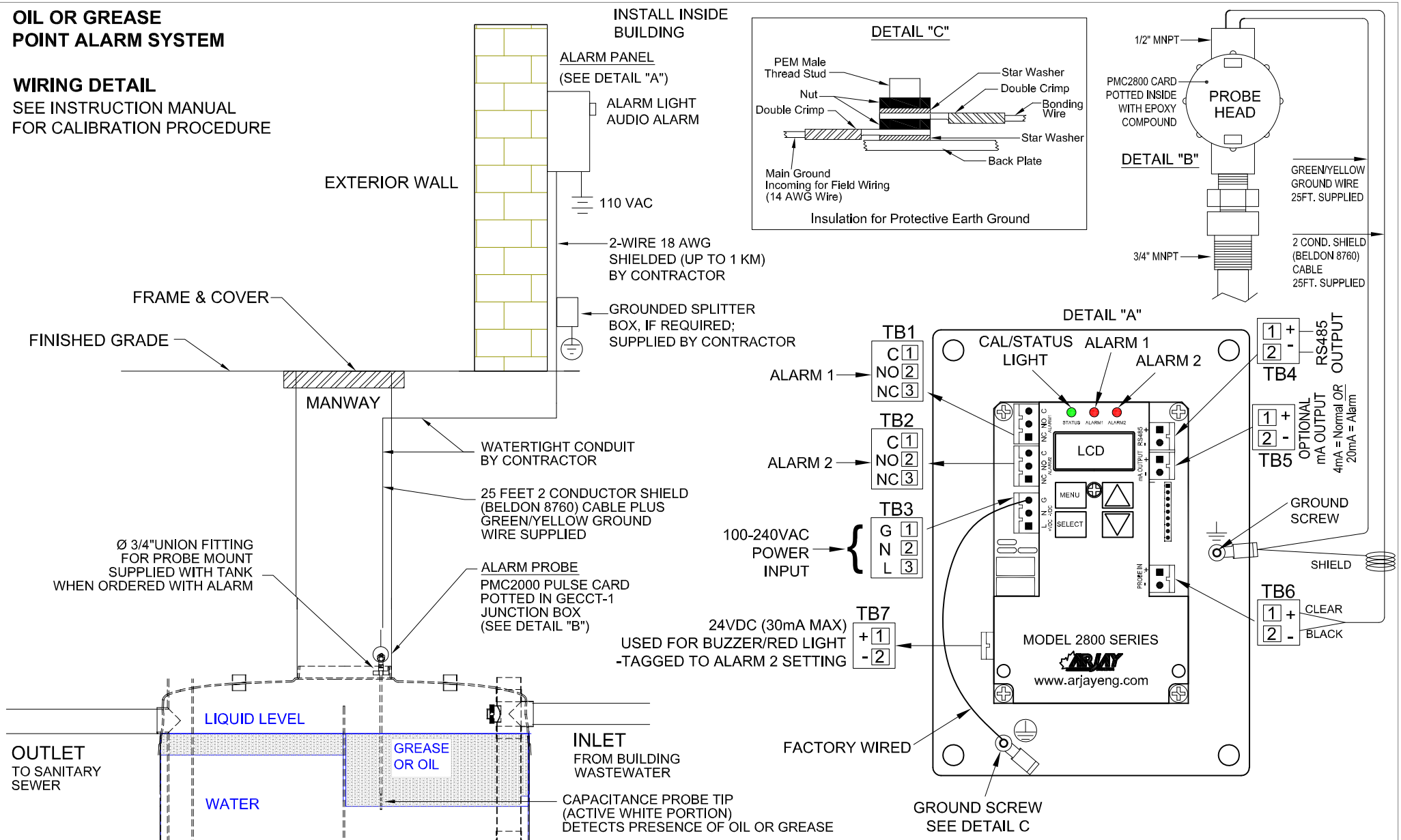
**Under normal conditions the status light on 2800 electronics (inside enclosure) should be Green. **

CONDITION	DO THIS
1. No display & status indicators on at power up	• Check power to unit • Make sure power applied is as specified for the unit. (e.g. 120VAC)
2. Status indicator is RED (Fault Condition) OR "No XMTR"	• This indicates that the controller is not receiving a signal from the probe. • Verify that the polarity of probe wires is correct as per electrical drawing. Red wire to "+", Black wire to "-". Measure 8-10 Volts DC across +/- terminals. • Make sure there is no break in the wiring between controller and probe. • If using a splitter box ensure that proper connections have been made. • Replace the probe with a spare if available.
3. False alarms	• Add some time delay to unit. • If coax cable is used from sensors to probe, make sure it is not coiled (may cause an increase in inductance). • Make sure there is no outside interference that may be causing false alarms such as an agitator, high voltage interference, or input flow to the tank affecting the probe. • Make sure separator or grease trap is filled up with water above the white Teflon (sensing area) of probe.

OIL OR GREASE POINT ALARM SYSTEM

WIRING DETAIL

SEE INSTRUCTION MANUAL
FOR CALIBRATION PROCEDURE



TITLE: PROCEPTOR SEPARATOR OIL/GREASE POINT ALARM SYSTEM			
PROJECT:	WO:		
REV	DATE	DRAWN	
1	SEPT. 11, 2006	L. SIMKINS	
2	SEPT. 19, 2006	V.H.	
3	NOV. 19, 2010	F.H.	
4	DEC. 15, 2010	F.H.	
5	MAR. 20, 2012	F.H.	
6	MAR. 22, 2012	F.H.	
7	AUG. 06, 2014	F.H.	
8	FEB. 25, 2015	F.H.	
9			
10			
DRAWN BY: L. SIMKINS			
DRAWN DATE 26/6/6			

Proceptor
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SIZE	DWG. NO.	REV.
A	ALARM-MC (INLET)	8
SCALE:NTS	DO NOT SCALE DRAWING	AUTOATTR1