VACUUM LEAK DETECTOR
AND
CONTROLLER

INSTRUCTION MANUAL

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Table of Contents

1.0 Introduction

Thank you for purchasing Vacuum Leak Detector and Controller. The detector is designed to work with most double wall containers or double wall with internal liner (triple wall). It has been specifically designed for use with underground double wall fiberglass tanks.

2.0 Theory of operation

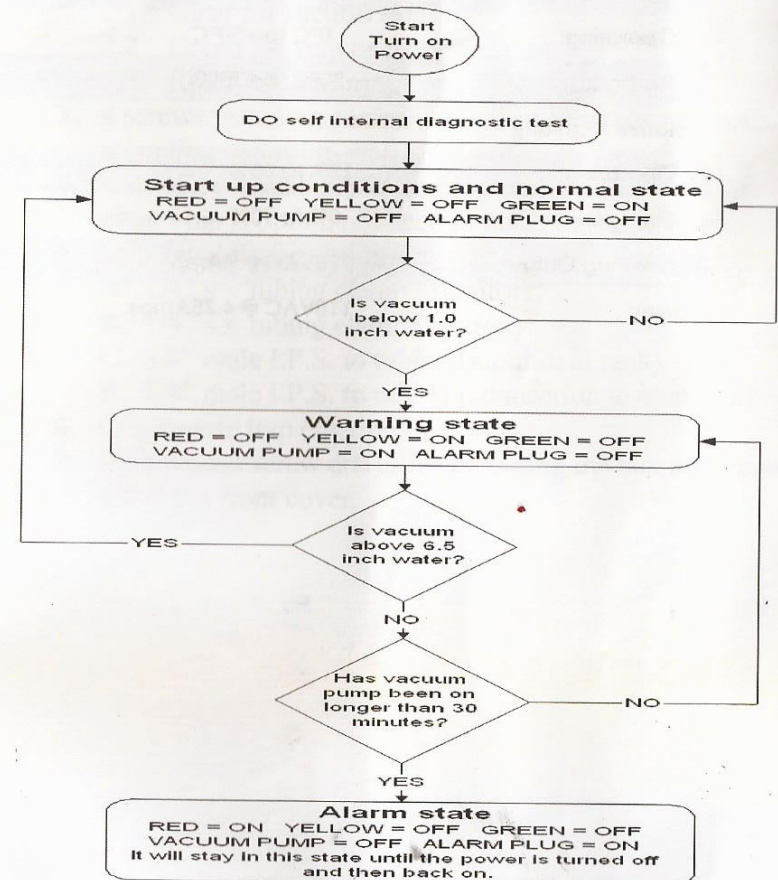Below is a simple flow chart of the controller logic. See figure 1.

Figure 1: Controller Flow Chart

Note: It will remain in the alarm state until the power is turn off.

3.0 Specifications

Readout:	2 digit LED
Range:	0.0 - 9.9 inch H_2O
Resolution:	0.5% of Range
Accuracy:	+/- 3% of full scale
Size:	8.5"H x 7.3"W x 5.1"D
Weight:	4.2 lbs.(1.9Kg)
Temperature Range	
Operating:	0°C to +50°C
Storage:	-20°C to +70°C
Relative Humidity	
Operating:	15% to 85%
Storage:	0% to 90% non-condensing
Alarm Plug Output:	110VAC @ 4Amps
Power:	110VAC @ 4.25Amps

4.0 What comes in the box
1. Instruction manual
2. Vacuum leak detector and controller
3. Mounting hardware

5.0 What other parts and tools do I need
1. Vacuum check valve (suction line)
2. Enough P.V.C. tubing to run from the tank to the detector. Tubing size should be 1/4" ID. It is also recommended that three different colors be used.
   2.1 Clear for suction side
   2.2 Green for vent or pump exhaust
   2.3 Red for monitoring
3. 4 screws fastening control to wall or other nut and bolts mounting control to wall or any other surface.
4. Secondary visual and/or audible alarm with a 110VAC plug. This is option not need to make the panel work.
5. Suggested fitting and inserts
   A. 1/4" s.s. tubing clamp (monitor)
   B. 1/4" s.s. tubing clamp (suction)
   C. 3/8" male I.P.S. to tubing (monitor at tank)
   D. 1/4" male I.P.S. to tubing (connection to vent line)
6. Condensate trap (suction line)
7. Phillip head screw driver for mounting the box and opening to the front cover.
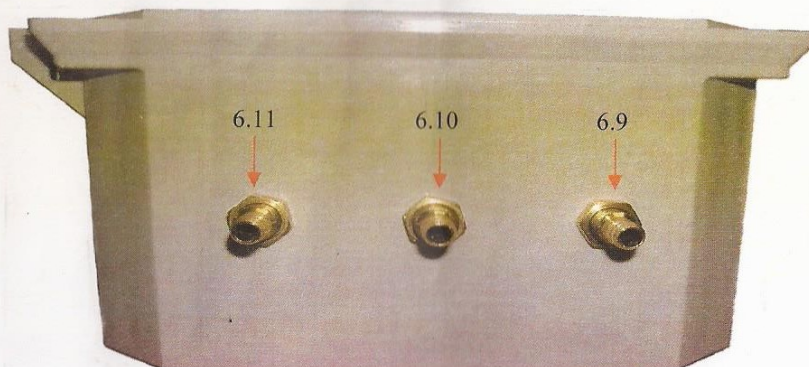
Figure 2. Front Face Plate

Figure 3. Bottom View of Controller

6.0 Getting to know your detector

Section 6.1 to 6.8 refer to figure 2

6.1 **Power Switch** - Turns the detector on and off .

6.2 **Main Fuse** - The main power for the detector. Fuse should be rated 1/4 Amp.

6.3 **Alarm Fuse** - A separate fuse just for the alarm plug. Max current for the fuse should be 4 Amps.

6.4 **Com Port** - For future to connect to a computer or to change constants in the processor.

6.5 **Alarm LED(RED)** - This is a visual indication that the detector has gone into alarm state.

6.6 **Warning LED(YELLOW)** - This is a visual indication that detector has gone into warning state.

6.7 **OK LED(GREEN)** - This is a visual indication every thing is normal.

6.8 **Meter Display** - This display the current measured value between the lining of the tanks. It is measured in inch water.

Section 6.9 to 6.11 refer to figure 3

6.9 **Monitor line** - This is connection for the tubing. This has been reference as Red tubing.

6.10 **Suction line** - This is connection point for the vacuum line, reference as clear tubing

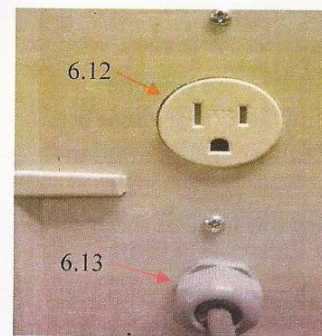6.11 **Vent line** - This is connection for the waste line, referenced as green tubing.

Section 6.12 to 6.13 refer to figure 4

6.12 **Alarm Plug** - Universal 110 volt plug. Maximum Amperage is 4. It is only on during the alarm stage.

6.13 **Power cord** - plugs into any standard 110 volt receptacle. Provides power to the controller.

Figure 4. Side view

7.0 Installation instructions

1. Mount the main controller on a wall as close to the tank as possible using hardware provided and any additional nut or bolts needed (not furnished).
2. Mount the auxiliary visual and/or audible alarm on the same wall, or remotely in the supervisor's office. This step is optional.
3. Cut a 5' length off the clear P.V.C tubing and set aside for later use.
4. Snake the small (red, green, and clear) tubing through a 1" semi-rigid P.V.C tubing (not furnished), pipe or electrical conduit. Be sure that there are no sharp edges. Allow small tubing to protrude 2 to 5 feet past encasement on each end.
5. Lay completed tube, from step 4, in a trench from the area of the control panel to the tank. Make sure the tubing pitches down 3 or 4 degrees toward the tank.
6. Connect the small green tubing to the vent line on the bottom of the controller.
7. Connect the small red tubing to monitor on the bottom of the controller.
8. With the spare clear tubing from step 3 cut off 5" of tubing. On one end of the tubing connect vacuum check valve. The other end connect it to suction line on bottom of the controller. Make sure that you have the check valve going the right direction.
9. On the other side of the check valve connect the rest of the clear tubing.
10. If needed mount the condensate trap.
11. Cut clear tubing from the check valve to the operate length to the condensate trap. Making sure that there are no kinks in the line. Connect clear tubing to the condensate trap.
12. Attach the clear tubing coming from the tank to other side of the condensate trap.
13. Connect the small green tubing to the vent line with the fitting provided. Tank installer is to provide suitable tee in vent line for this purpose.
14. Connect the small red tubing to the "bull" of the tee mounted on the tank. This is the vacuum monitoring line.
15. Connect the small clear tubing to the tubing projecting out of the small tee. This clear tubing is marked "TANK END", and this end is reamed slightly to fit over the tubing coming out of the tank. Secure the soft clear tubing and the semi-rigid tubing with a clamp.
16. Plug in the controller.
17. Loosen the two screws on the cover to open door.
18. Turn on power. The controller will do its internal test.
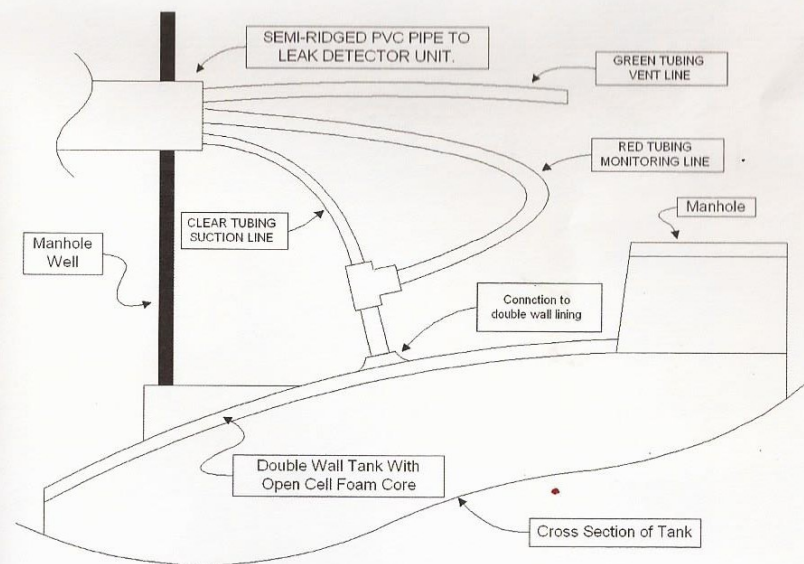
Once done it should go directly into warning stage. Goto chapter 2 "Theory operation" for controller logic.

19. Optional: If you would like to test alarm plug. Temporarily remove the clear tubing from the suction side. Wait about 30 minutes for the alarm LED to light. At that point the alarm plug should be hot. After testing turn off controller. Reinstall clear tubing on suction side. Turn on controller.
20. Reinstall two screws on door.