

Preferred Utilities

TG-VLM-P-2 AND TG-VLM-P-4 Continuous Vacuum Leak Monitoring System

CONTINUOUS INTERSTITIAL TANK MONITORING METHOD (PRESSURE/VACUUM)

Certification:

Leak rate of 0.1 gph with PD=100.0% and PFA=0% "Test Procedures for Tightness Testing Using A Vacuum Monitor On A Double- Walled Tank Interstice with or without The Addition Of A Liquid Sensor" - Standard Test Procedures for Evaluating Release Detection Monitoring Methods: Volumetric and Non-volumetric Tank Tightness Testing - USEPA May 2019 section 4.5.3.

Operating Principle:

System uses vacuum generated by a vacuum pump to continuously maintain and monitor up to 2 zones (TG-VLM-P-2) OR 4 zones (TG-VLM-P-4). The console has a learn function that is used during setup to determine the "commission" time to establish 7 inch HG vacuum on the interstice. The "commission" time to establish the vacuum during the learn process is stored by the console and is used to determine if there is an equivalent 0.1 gph leak when the vacuum needs to be re-established. Replenishment of vacuum begins once vacuum reaches 4 inch HG. System has a float valve that is designed to detect the presence of liquid between the interstice and the vacuum pump.

Alarm Condition:

System alarms when the loss of vacuum to 4 inch HG in the interstice cannot be replenished to 7 inch HG within 200% of the initial "commission" time. The time to alarm is determined based on the size of the interstice and drop time (time required for vacuum to reach 4 inch HG from 7 inch HG). The float valve located between the interstice and the vacuum pump shuts the flow of air from the vacuum pump to the interstice in the presence of liquid, therefore causing an alarm due to the system not being able to replenish the vacuum within 200% of "commission" time.

Applicability:

Double-walled piping or double-walled tank with an interstice up to 2,400 gallons (max volume to declare a tight test within 30 days), storing gasoline, gasohol, diesel, heating oil #2, kerosene, aviation fuel, motor oil, water. Storage of biodiesel blends B6-B20 meeting ASTM D7467 and biodiesel B100 meeting ASTM D6751 would also produce a system alarm if the system threshold is exceeded. Responses to these fuels were not determined but would be expected to be very similar to the system's response when storing diesel.

<u>Interstitial Volume</u>	<u>Time To Alarm with a 0.1 gal/hr leak</u>	<u>Time to Declare a Tight Test with no vacuum loss</u>
(Gallons)	(hours)	(hours/minutes)
5	19m	1h 30m
10	*38m	3h
20	*1h 16m	6h
50	*3h 10m	15h
100	*6h 20m	30h
200	*12h 40m	60h
500	*31h 40m	150h
1000	*63h 20m	300h
2000	*126h 40m	600h
2400**	*152h	720h (30 days)

*The time to alarm are estimates based on the evaluation utilizing a 5 – gallon interstice with a drop time of 14 minutes and a learned commission time of 2 minutes 31 seconds.

**maximum volume allowed in order to allow for a passing test within 30 days

Manufacturer's Specifications:

Alarm will activate when interstitial vacuum decreases from 7 inch HG to 4 inch HG and the system is unable to replenish

the vacuum within 200% of the "commission" time.

Volume of monitored interstitial space must not exceed 2,400 gallons to satisfy 30-day release detection requirement.

Calibration:

The system must be programmed by a factory trained technician or under the direction of the manufacturer. Maintenance schedule – Biannually - check solenoid, transmitter, and pump operation, test the alarm horn and strobe, inspect tubing, fittings, and any connections, check tubing for condensate, drain any liquid that is in the liquid stop valve.

Change the filter on the suction side of the vacuum pump that is in the control panel annually.

Comments:

The system described herein was tested with a 5-gallon vessel to simulate an interstice.

Float valve was tested with water, gasoline, and diesel. Valve activated with 2.6 inches water and at 2.7 inches for diesel and gasoline.

Vacuum line for the interstitial should be located at the lowest point (s) of the zone.

A difference in elevation of 8 foot or greater between the float valve and the low point (s) of the interstitial space may prevent the float valve from activating if the pressure from the column of liquid from intrusion is able to exceed or offset the 7 inch HG established by the vacuum pump.

This system may not be compatible with all secondarily contained tanks and/or piping. Always consult with the tank and/or piping manufacturer and the manufacturer's applicable recommended installation practices before installing this system, or damage may be caused to the tank or piping by its use.

Preferred Utilities
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