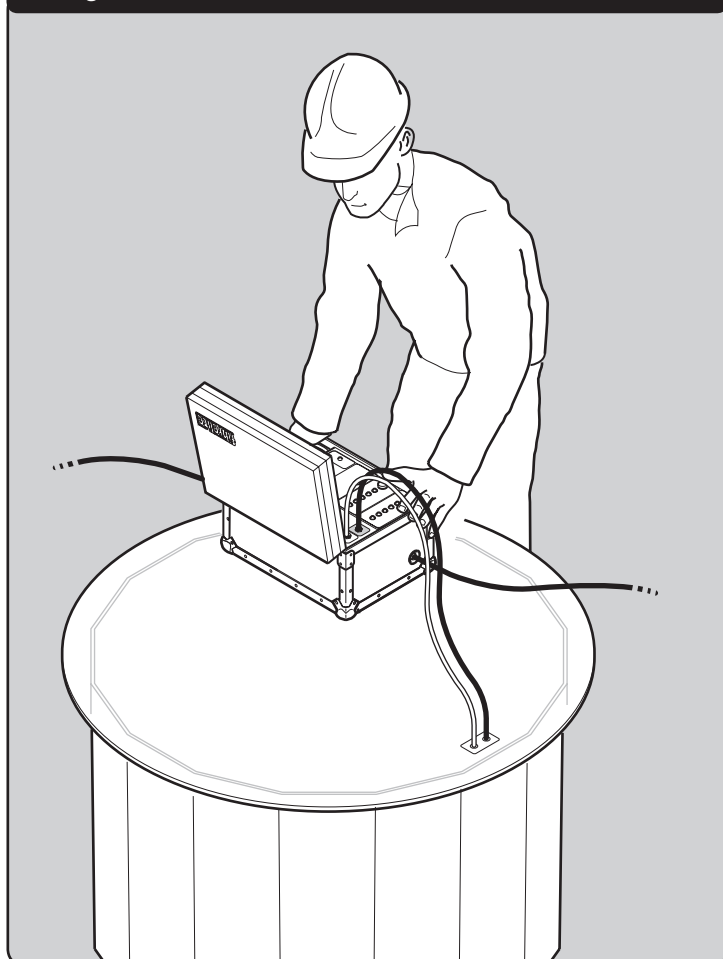




### Arrangement



### Scope of Equipment

The Chamber Testing System (CTS) has been designed to evaluate the integrity of Fibrelite chamber systems during installation and subsequently during the life of the station.

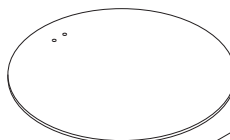
The main elements of the equipment are a range of test plates and a test module. The function of the test plates is to seal the chamber either by direct contact with the chamber or corbel. The test module, which is connected directly to the test plates with two tubes, one withdraws air from within the chamber thus creating a controlled vacuum which is monitored via the second tube to determine the integrity of the chamber system under test.

The module tests the structural integrity and liquid tightness of the chamber, by creating a vacuum within the chamber to simulate the effect of ground water pressure acting on the outer walls of the chamber.

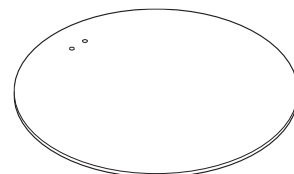
A reduction in vacuum indicates a fail. A leak detection process is then conducted to locate the leak and fix the problem. The system is re-tested until a pass is achieved, which gives the contractor assurance that the installation is liquid tight.

### Equipment Kit

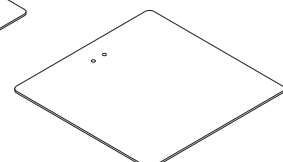
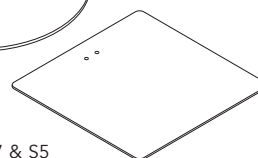
FL90 & FL100 Corbel  
Test Plate with  
Gasket Seal



S8, S14, S15 & S16 Sump  
Test Plate with Gasket Seal

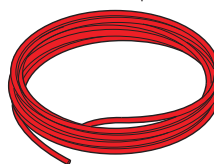


S7 & S5  
Chamber  
Test Plates with  
Gasket Seal

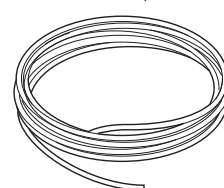


FL76 Corbel Test  
Plate with Gasket  
Seal

1 x Red Pipe



1 x Clear Pipe



1 x Black Pipe



Soapy water or liquid  
dye in bottle  
(not supplied)



110V or 220V  
Electronic  
Test Module

We've got you covered

UK Office: T: + 44 (0) 1756 799 773

USA Office: T: + 1 800 422 2525

Malaysia Office: T: + 603-7847 1888

F: + 44 (0) 1756 799 539, E: enquiries@fibrelite.com

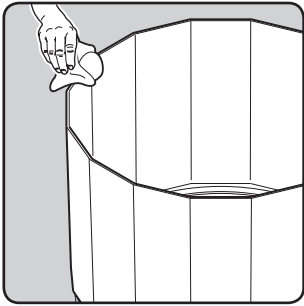
F: + 1 (800) 421 3297, E: enquiries@fibrelite.com

F: + 603-7846 7788, E: enquiries@fibrelite.com

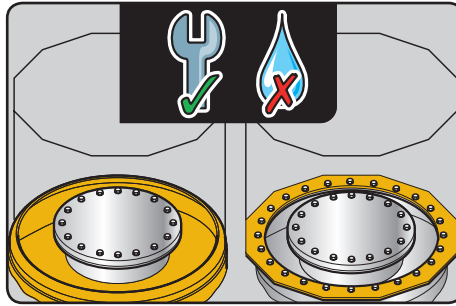
## Stage : 1 Testing the chamber/sump

**FIBRELITE**   
PART OF OPW A DOWER COMPANY

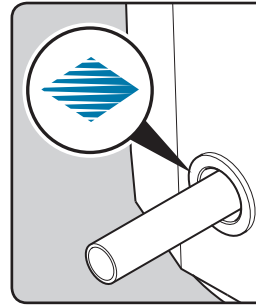
**NB:** Do not trim the sump – until you have successfully completed the chamber test. This may result in an uneven surface on the top edge of the chamber, preventing the test.



**1a.** Clean inside of sump and ensure it is completely dry.

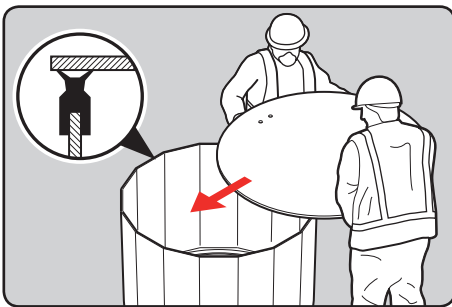


**1b.** Ensure manway lid connection is tight and all pipework is sealed. If the chamber is bolted to a tank upstand, ensure the bolts are tightened to the correct torque.

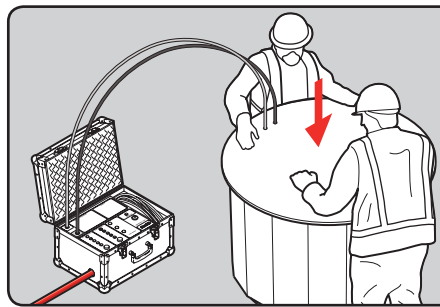


**1c.** Ensure pipework penetrating chamber wall is fitted and sealed with Fibrelite entry boots.

**NB:** Electrical cables can be fitted after this stage. But we recommend a corbel test is performed before backfilling to check the conduit penetration joints into the sump wall.



**1d.** Fit the gasket seal to the top of the chamber. Using 2 people, lift the chamber test plate on top of the chamber. Ensure the seal is in position.



**1e.** Using 2 people, put pressure on top of the plate to create a seal as the test begins. Once a vacuum is achieved (25% test progress), pressure can be removed.

**NB:** Once a test is completed or brought to a premature end the power to the module must be disconnected and left for a minute whilst all the vacuum from the sump is evacuated prior to a re-test.

**PROCEED TO STAGE 2**

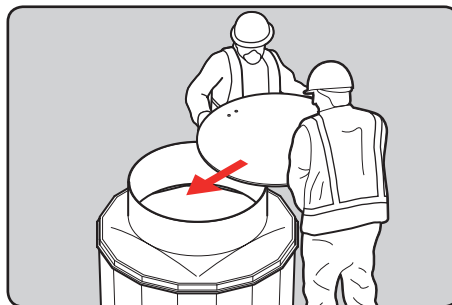
**KIWA approved tank chambers S8, S14, S15 & S16 are to be subjected to a vacuum depth setting of 1.2m at the chamber test stage. All other tank chamber models are to be tested at 0.6m vacuum depth setting. The corbel of all chamber systems must only be tested at a vacuum depth setting of 0.6m depth setting or irreparable damage to the corbel may occur**

## Stage : 2 Testing the corbel

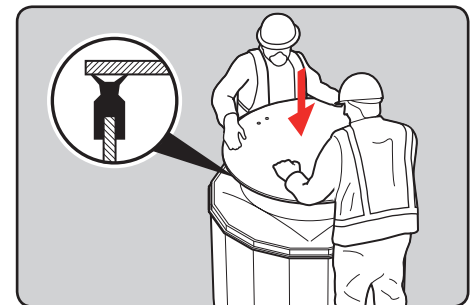
The second test is only conducted after the successful completion of Stage 1. **WARNING !!** The corbel **MUST ONLY** be tested at 0.6m otherwise irreparable damage may occur to the corbel. Do not back-fill around the sump until the corbel has been fitted and Stage 2 testing has been successfully completed.



**2a.** Trim material off the sump, if required



**2b.** Seal and fix the corbel in position, allow 12 hours cure time for the sealant before testing.



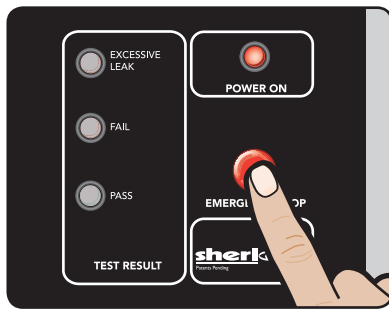
**2c.** Fit the seal to the top of the corbel. Lift the test plate onto the top of the corbel. Ensure the seal is in position.

**2d.** Put pressure on the top of the test plate when the test begins, until a vacuum has been achieved. (25% test progress)

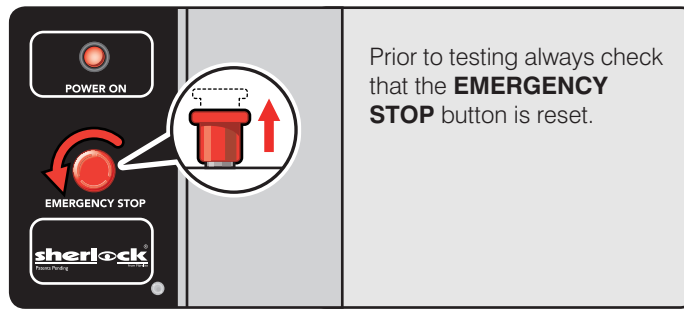
**PROCEED TO STAGE 3**

## Stage : 3 Operating the electronic Sherlock module

### Operating the emergency stop button

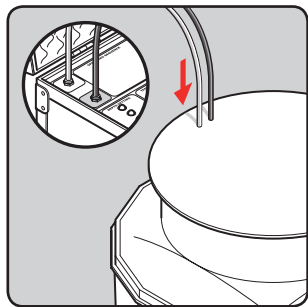


**1.** To stop operation of the test module press the EMERGENCY STOP button. The button will remain depressed until released.

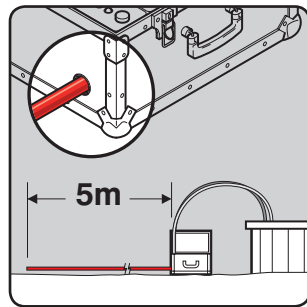


**2.** To restart twist the button clockwise to release the button. This will also reset the programme within the test module.

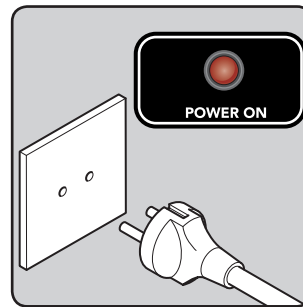
### Setting up the equipment



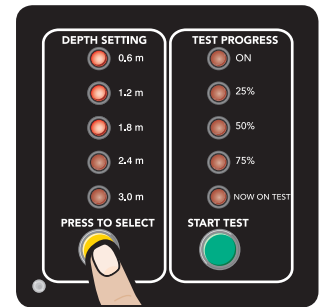
**3a.** Open the Sherlock Vacuum Testing box and connect the black and clear tubes from the box to the test plate. Push firmly into the valves on the module and the test plate.



**3b.** On active installations, firstly vent the chamber for at least 10 minutes then connect the red exhaust pipe to the side of the box, extend the pipe a full 5 metres away from the module, 4.2 metres from site boundary and as high as possible to exhaust any vapour away from the chamber.

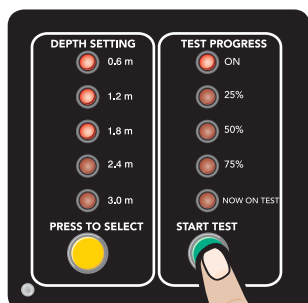


**3c.** Using the electrical plug supplied with the module connect to a 110 or 220 volt 50/60 Hz electrical supply. The POWER ON light will be illuminated after a test sequence of all lights.

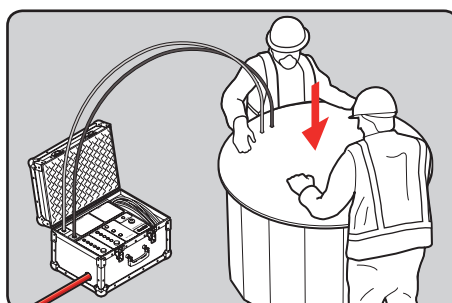


**3d.** Select a depth setting, by pressing the yellow button, until the desired depth is selected. The usual setting is 1.2 m.

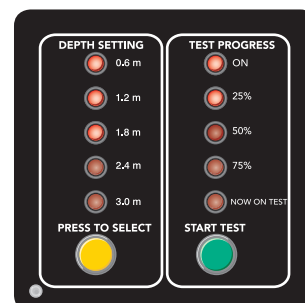
**The corbel must only be tested at a depth setting of 0.6m**



**3e.** Press Green button to start the test.



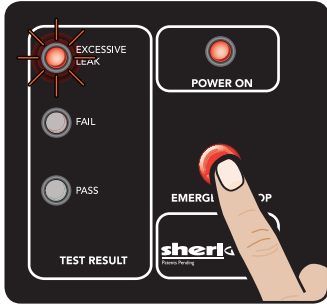
**3f.** Apply pressure to the test plate by 2 people holding it down to create a seal while the vacuum is being created. When on test remove your hands.



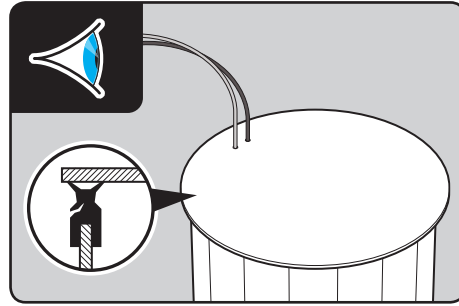
**3g.** As a vacuum is being pulled, the test progress lights will indicate if a vacuum is being created successfully.

## Stage : 4 Test Results

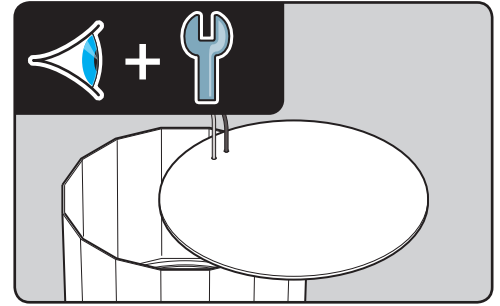
### Excessive Leaks



4. If the excessive leak light flashes, stop the test by pressing emergency stop button.

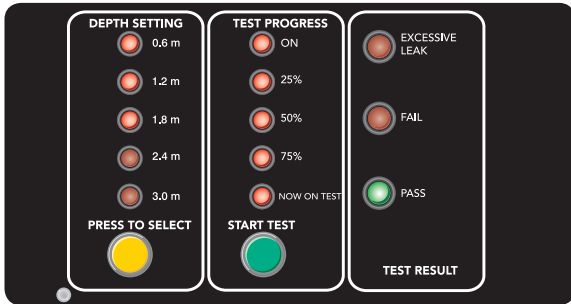


4a. Check test plate and test seal are correctly fitted and not damaged.  
Check the valves are sealing correctly.

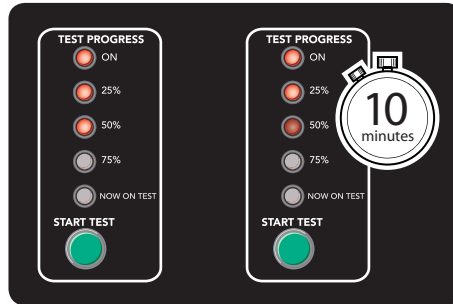


4b. Check all joints, pipework, manway lid and pipe entry seals within the sump are tight.

### Detecting Minor Leaks

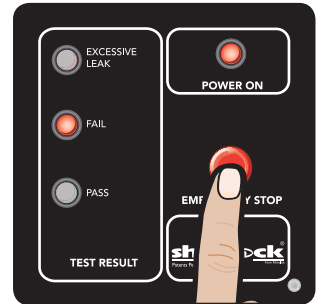


5. Only when there are minor or small leaks in the chamber system will the test proceed. The progress of the test is indicated by the TEST PROGRESS lights which indicate the percentage of vacuum achieved. When the NOW ON TEST light is illuminated the pre-set vacuum level has been reached for the selected depth and at this point the chamber system is sealed. The test module will then commence a period of monitoring and evaluation of the vacuum level and this may take up to 15 minutes before a TEST RESULT is indicated.



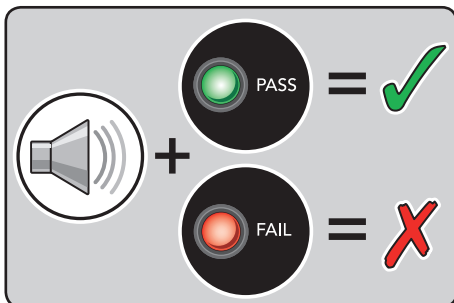
5a. If the TEST PROGRESS lights do not proceed to complete, for example the 25% light is illuminated but within 10 minutes the 50% light fails to illuminate, there is a large leak in the chamber system.

Stop the test by pressing the stop button. First repeat Stage 4a and 4b then refer to Stage 9.

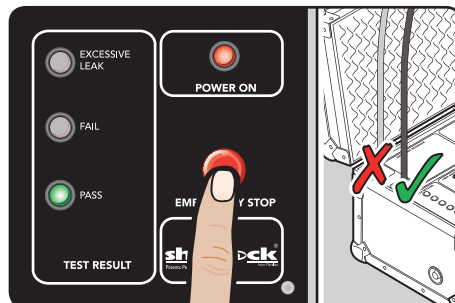


5b. Stop the test by pressing the stop button. First repeat Stage 4a and 4b then refer to Stage 9.

## Stage : 5 Testing the corbel

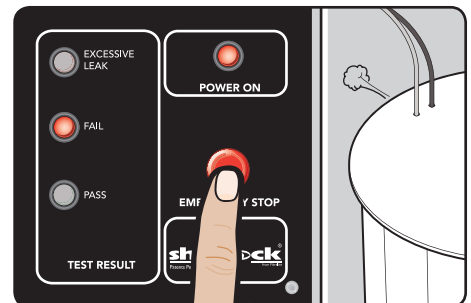


6. The TEST RESULT is indicated by an audible signal and illumination of either the PASS or FAIL light.



7. If the PASS light is illuminated switch off the module by depressing the EMERGENCY STOP button.

Disassemble the equipment ready for the next test.

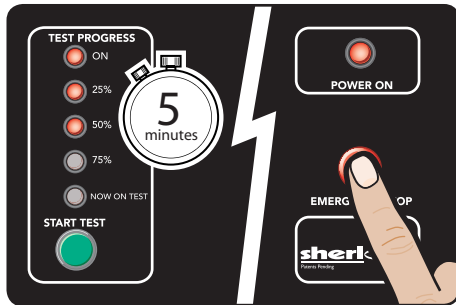


8. If the FAIL light is illuminated there is a very small leak in the chamber system, proceed as follows.

**NB:** Always remove the black port vacuum pipe first to exhaust the vacuum.

## Stage : 5

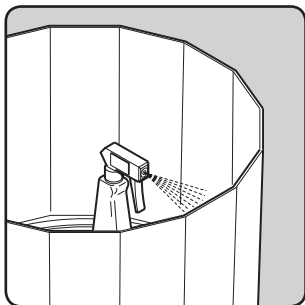
### Completed test results - Pass or Fail - (Continued)



**8a** On new installations the vacuum created within the chamber during the test can cause small movements of the seals and chamber. These are sometimes sufficient to reduce the vacuum level to a point where a FAIL is indicated.

To establish if this has occurred or there is a small leak proceed as follows. Check pipe seals and and:

Observe the TEST PROGRESS lights and if the 25%, 50% and 75% lights are illuminated and remain illuminated for a further 5 minutes, stop the test and exhaust the vacuum from the chamber by disconnecting the black port vacuum pipe. Re-connect the pipe and repeat the test, there is almost certainly no leak and a PASS result should be obtained on the repeat test.

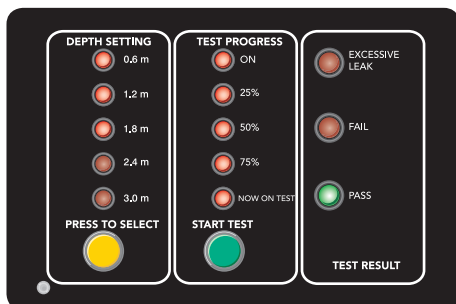


**8b.** Spray soapy water or if necessary pour a small amount of water into the sump to cover the manway lid joints and retest. Bubbles will indicate where the leak is. If no bubbles appear, stop the test and pour more water into the sump to cover the pipe entry fittings. Retest.

If no bubbles appear. Stop the test. Pour more water into the sump to cover all potential leak paths and re-test. Bubbles will indicate where the leak is. Stop the test, pump out the water and fix the leak path. Retest for a final check with no water. If using sealant, ensure the sealant has cured before re-testing. Ensure you follow the safety note, when using water during vacuum testing. Only test the chamber to a maximum depth setting of 1.2m. Only test the corbel to a maximum depth setting of 0.6m.

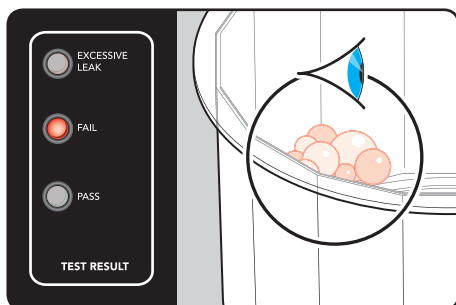
#### Check List

1. Check manway lid joint is tight (tighten bolts)
2. Check pipework on the manway lid (tighten fittings and seal)
3. Check pipe entry seals on sump wall (tighten the screws & clips)
4. Check conduit seals.
5. Check joints on internal pipework are connected or welded correctly.
6. Ensure corbel is sealed on both inside and outside joint.

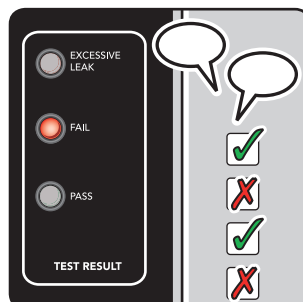


**8c.** If the test is being carried out on an existing installation proceed as follows:

1. Examine the chamber unit for physical evidence of a leak and repair if found.
2. Check all joints are sealed, as per 8b. checklist.
3. Spray soapy water onto all joints.
4. Repeat test. Pass indicates the installation is liquid tight.



**9.** If a fail is still indicated. Observe evidence of leak path through the Perspex plates (bubble). Fix the leak and retest.



**10.** If there remains a minor leak which cannot be located evaluate the consequences on that particular installation. It may not prove critical.

For assistance contact the Fibrelite Technical Dept.

Telephone : +44 (0) 1756 799773

**NB:** Once a test is completed or brought to a premature end the power to the module must be disconnected and left for a minute whilst all the vacuum from the sump is evacuated prior to a re-test.

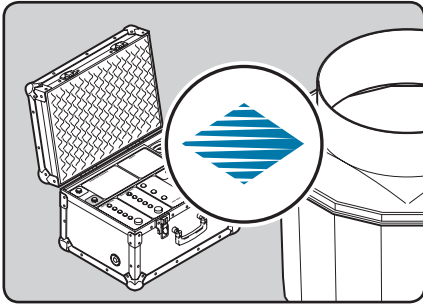


## Stage : 6 Maintenance

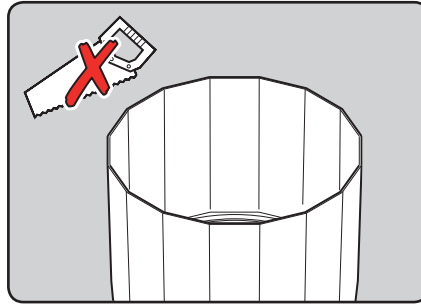
It is recommended that on an annual basis the Test Module is re-calibrated by Fibrelite Composites Limited.

The date of calibration is shown on a plate attached to the base of the Test Module. Compliance CE Mark This unit complies with EU Directives. 89/336/CEE amended by 92/31/CEE 'Electromagnetic Compatibility'. 73/23/CEE 'Electric Device for implementation with set voltage limits'. The CE Mark confirms compliance of the product to the above regulations.

## Stage : 7 Safety



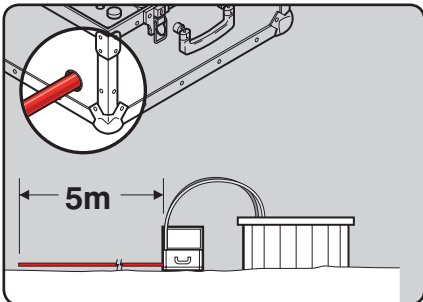
**1.** The Chamber Testing System must only be used on chamber systems manufactured by Fibrelite Composites Limited.



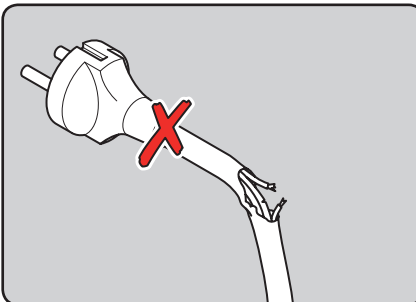
**2.** On new installations testing must occur before cutting the top edge of the chamber or extension, to its final height. This is necessary to ensure an effective seal with the test plate.



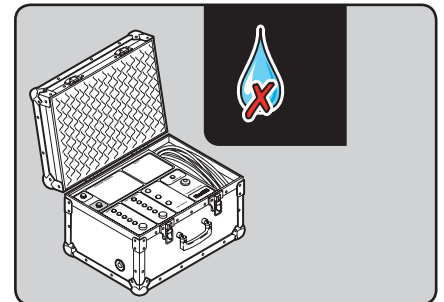
**3.** On ACTIVE sites it is essential that all regulations and best working practices are observed for manholes in order to ensure all liquids and potential for vapour to occur, are eliminated prior to commencing the test.



**4.** On ACTIVE installations the Chamber Testing Module must be located at least 5 metres from categorised equipment and tank openings. The module exhaust port must be extended a full 5 metres from the module and 4.2 metres from site boundary by using the red pipe provided.



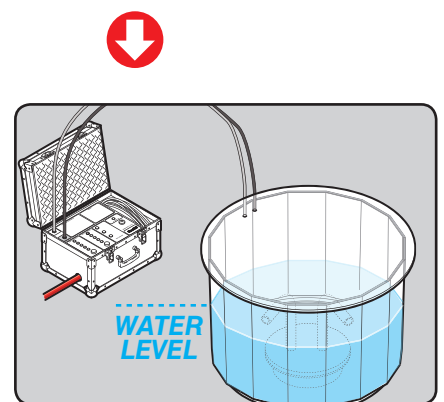
**5.** The Chamber Testing Module must only be connected to a 110V 50-60 Hz electrical supply. Minimum rated power input is 250 watts and maximum current is 3 amperes. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person, in order to avoid a hazard.



**6a.** Water must not be allowed to enter the Chamber Testing Module.



**7.** Entry into the chamber during the vacuum testing procedure is absolutely forbidden. During the vacuum testing procedure the oxygen level within the chamber will be reduced.



**6b.** Ensure there is a sufficient clearance space between the water level (above the pipework joints) and the test ports on the test plate.