

ABS Environmental Pty Ltd

INSTALLATION INSTRUCTIONS FOR POLYETHYLENE UNDERGROUND TANKS

**These instructions must be read in conjunction with
the typical site drawing supplied with this document.**

GENERAL

The material used in the manufacture of SPE underground tanks is high density polyethylene (HDPE)

This material is extremely strong, as well as being resistant to many corrosive liquids, but, like all engineered products, care must be taken during installation to ensure that long, trouble free operation can be expected.

ANTI BUOYANCY BALLAST

In accordance with AS1546.1 the tank walls are designed to resist the effects of underground pressures to the full depth of the wall without the need to be surrounded by concrete, however the correct backfill instructions must be followed (see notes below).

In conditions of high water table, external ballast will be required to resist the upward buoyancy forces that groundwater exhibits. The most convenient material for ballast is site poured concrete. Refer to attached drawing 0816-02 for ballast requirements and size of excavation

The ballast concrete may be placed in the most economical position, which is at the base of the excavation. Deformed steel bars must be inserted through the special openings in the lower tank ribs to lock directly to the wet concrete (refer typical installation drawing, attached figures 1 to 4 inclusive).

Concrete must be poured in accordance with "best practice" as set out by the Industry Standard. Please refer to the Concrete Manufacturers' Association Handbook.

The calculation of the volume of concrete ballast is not covered in this document. A certified civil engineer should be engaged to carry out this calculation.

LIVE SURFACE LOADS

Light duty plain unfilled polyethylene access covers are rated for 150 kg loading and not suitable for vehicular traffic. Foam filled polyethylene covers are available rated for 510kg load, but these also are not suitable for vehicular traffic as they are not finished flush at ground level. If a tank is to be positioned in a location subject to vehicular traffic, then a certified cast iron cover must be used. Such approved cast iron covers are available on request. The polyethylene pump station walls have been tested to withstand a wheel loading of 510kg. If heavier wheel loadings are to be encountered then special design consideration must be given to the surface slab, which must provide a full re-inforced bridge support to transmit slab loads to virgin ground. In this case, the services of a qualified civil engineer should be engaged to provide adequate slab designs. Loads greater than 510kg may not be allowed to be transmitted to the polyethylene station walls. Refer to attached typical installation drawing (figures 1 to 4 inclusive) showing various installation options.

TEMPERATURE

Above 50 degrees C the characteristics of polyethylene begins to change. Extreme care must be exercised when installing tanks during the summer period. After installation in the excavated hole, the tank must be stabilised to around 25 degrees C by filling with water and allowing to cool for a period of 24 hours before backfilling operations begin. Failure to do so may result in the polyethylene walls taking a deformed shape, if the backfill is allowed to rest against the polyethylene when it is too hot.

PRE-INSTALLATION CHECKS

After unloading inspect the tank skin for any damage during transportation and crane slinging. Should any minor surface damage be evident, this must be reported to us before proceeding further with the installation.

INSTALLATION

1. Refer to drawing 0816-02. The tank base must be positioned in a concrete foundation, which should include two layers of M81 reinforcing mesh. The base of the tank has special cored holes (15mm dia. for the 615 and 800 tanks and 20mm for the 1000, 1400 and 1950 tanks) to allow the installation of steel reinforcing rods or deformed bar. These bars (14mm for the smaller tanks and 18mm for the larger tanks) should now be inserted and positioned so that they lock into the wet concrete ballast and base. The tank should be positioned on support stools to allow the concrete to flow freely underneath. It should then be progressively filled with water and the concrete ballast then be poured. Note that the concrete must completely cover the steel deformed bars and lock them securely in place. If the ambient temperature is high, the tank should be left in place (filled with water) for 24 hours to allow the tank to cool before backfilling operations commence. Allow the concrete to set before proceeding further.
2. Connect the inlet pipe (**note minimum earth cover of 300 mm as per AS/NZS 3500.2.2**) together with the outlet pipe (**note minimum earth cover of 220mm as per AS/NZS1546.1**) electrical conduit and vent pipes to the sockets in the tank walls prior to pouring the backfill.
3. **Blue metal gravel backfill material** should be placed around the outside wall to ensure uniform wall loading.
 - a. **It is prohibited to use uneven backfill around the walls of the tank.**
 - b. The backfill should be even and porous, to allow the free drainage of water away from the tank wall.
 - c. If free draining of groundwater is unlikely, then concrete should be poured up the full height of the outer wall.
4. If a surface concrete slab is required at ground level it should now be poured to cover the neck of the station and the access cover should be fitted.
5. Light duty covers are polyethylene available in either plain (150 kg garden bed rated) or foam filled (510kg load rated). Medium covers are cast iron, gas tight solid top design 510 kg rated.
6. The water used to stabilise it during back filling should now be pumped out.
7. Pumps and other items may now be lowered into the station. Check to ensure that positive connections are made between the pump outlet and all internal pipes and valves.
8. Connect the electrical cables to the switchboard via the conduit entries.
9. Connect the level regulators to the switchboard.
10. Check that pumps are running freely and in a satisfactory manner.
11. Check that valves operate freely and that all pipe joints are sound.
12. Fill tank with water and operate pumps to ensure that no vibration is present when running. Check also for any leaks in pipes and valves.