

Industrial storage tanks – User’s guide

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Roplast S.r.l.
Via Castegnate, 86
24030 Terno d’Isola (BG)
ITALIA

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Dear Customer,

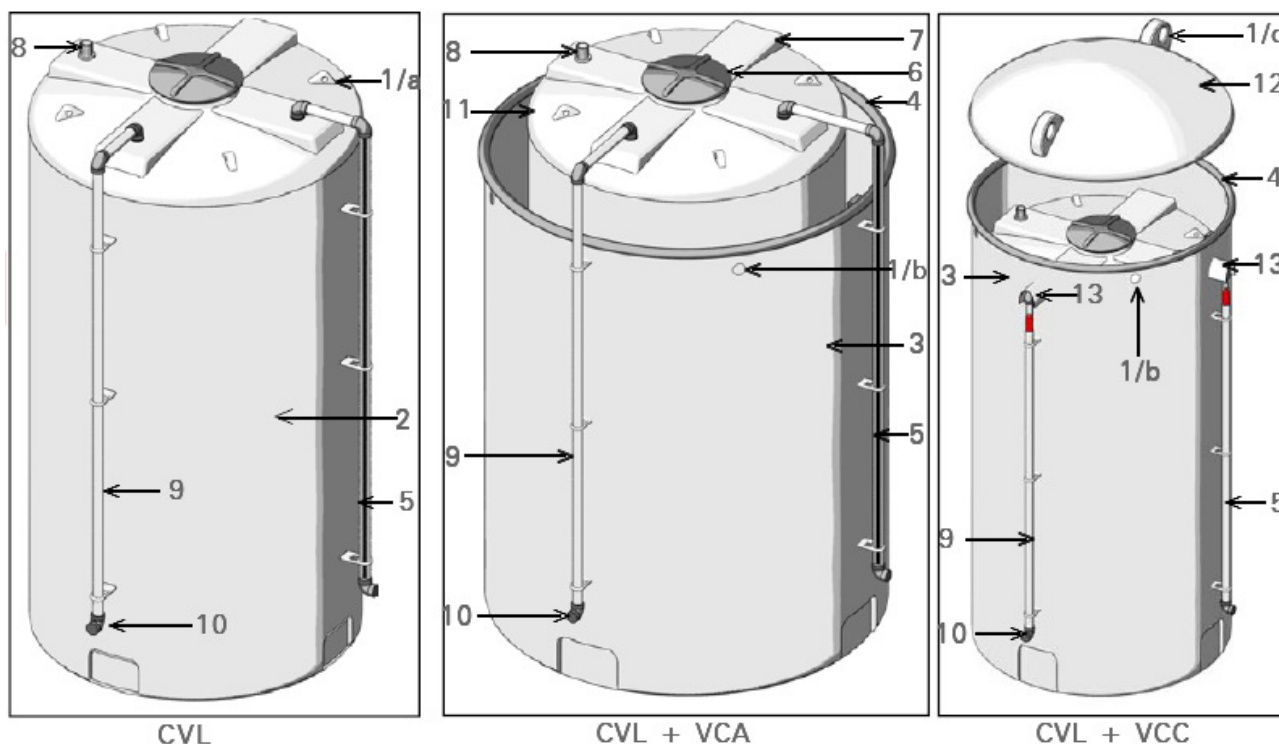
First of all thank you for having chosen a Roplast product.

Before unloading, handling, installing and using our rotational moulded storage tanks, please read this manual carefully.

In case of doubt or of use in unusual circumstances contact our technical department (+39 035 494.40.04).

Detailed instructions for the application and use of the accessories are available on Internet.

1. NAMES OF THE PARTS



1/a. Eye-bolt (not on all models) for lifting and moving the tank when empty.

1/b. Eye-bolt of the outer cylinder for lifting with the empty tank inside.

1/c. Eyebolt on rainproof cover for handling and attachment with belts in case of wind.

2. Storage tank.

3. Outer safety cylinder.

4. Reinforced rim of outer cylinder (depending on required height may be made of a tube in black PE or made directly when moulded).

5. Float level indicator.

6. Screw cap with built-in vent (on request without).

7. Upper crosspiece (reinforcement of top and support surface for any accessories).

8. Threaded stub pipe for connection of tube for filling from above.

9. Pipe for filling tank from below.

10. Connector for filler tube of the product into the tank.

11. Spacer block between tank and outer cylinder.

12. Rainproof cover laid on top.

13. Rain cover for accessories going through the containment cylinder.

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2. TRANSPORT AND HANDLING

The most complicated and delicate part of the operation is transport. The storage tanks are usually shipped pre-assembled and positioned on the lorry horizontally (see fig.1) or vertically (see fig. 2) depending on the size of tank being transported.

ATTENTION



Many of the optional accessories ordered with the storage tanks are packaged in separate boxes or containers.

If the storage tank is in a horizontal position, as often happens, the forklift truck "A" must insert the long forks under the storage tank "C". The forklift truck "B" (fitted with normal length forks) should position itself at the bottom of the storage tank (see fig. 3).

When the forklift trucks are in this position, truck "A" should raise its forks and simultaneously move forward. The rear truck, acting as a "pivot", lowers its forks so as to make the storage tank rotate long its axis, thereby straightening.

Once in a vertical position the storage tank must be used using the hoisting eye-bolts present on all tanks of larger dimensions.

WARNING



For no reason lift or move the storage tank by raising it from the bottom or placing the forks at the sides of the storage tank (see fig. 4). This would cause the storage tank to overturn or break.



Fig.1



Fig.2

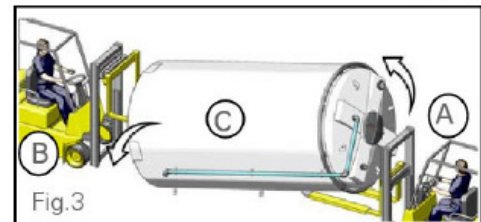


Fig.3



Fig.4

As said, lifting or handling should be performed by threading hoisting cables fitted with hooks and lifting beam through the eye-bolts, (see fig. 5) and then using a crane or overhead crane to move it (see fig. 6). If the storage tank has an outer cylinder (VCA and VCC) use the eye-bolts of the cylinder and not of the storage tank (see fig. 5).

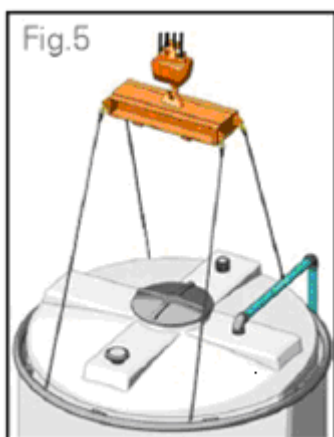


Fig.5

with outer cylinder



Fig.6

without outer cylinder

WARNING



Use forks at least 2m long.

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3. INSTALLATION ABOVE GROUND

Installation of the storage tanks does not require special solutions but the following recommendations should be observed.

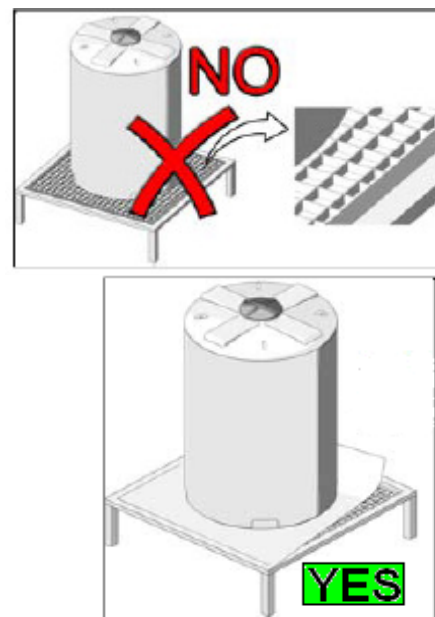
Support surface

The first thing to do is to make sure that the support structure of the storage tank is able to withstand the weight of the storage tank when filled to maximum capacity (especially when supported on a slab floor).

The support surface of the storage tank should be as level as possible and free of any projecting, rough or sharp parts which could damage or pierce the storage tank.

When under stress (full/empty, hot/cold) the storage tank undergoes slight dilations so that the bottom “rubs” on the support surface. A couple of sheets of PE film (0.2 – 0.4 mm thick) facilitate these movements, especially if the support surface is not slippery.

The storage tank should be positioned on a flat surface and should not be placed on structures such as grills or perforated counters which could ruin its support base (see figure alongside); in the case of elevated structures provide a flat sheet.



Deformation of the bottom of the storage tank

Given its softness it’s normal for the storage tank to deform slightly when empty (see drawings 1, 2, 3).

The deformation varies in relation to the dimensions of the storage tank, the production cycle and moulding conditions, so that even storage tanks made with the same mould may be different sizes and have different bowings.

Once positioned vertically and filled, the deformations disappear and the bottom will rest completely on the ground, “flattened” by the weight of the liquid. (see fig. 4).



Fig.1



Fig.2



Fig.3

Deformation of the storage tank wall

Unlike the bottom, in the part next to the support surface, the vertical wall will assume the shape shown in figure 4, that is to say the bottom part will tend to widen slightly (in a “pear” shaped deformation).

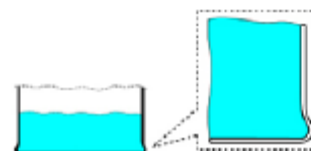
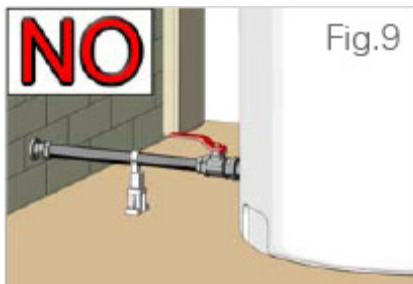
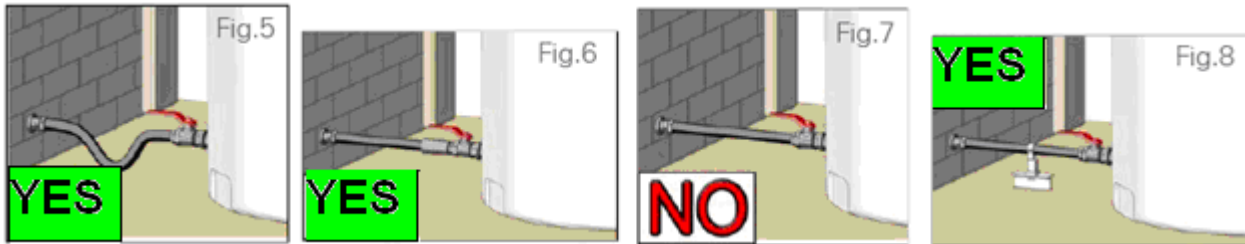


Fig.4

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Connections

As regards the connections, flexible piping should be provided able to compensate the thermic and mechanical dilations of the storage tank (see figs. 5-9).



Accessories

The storage tank can be fitted with numerous accessories supplied by Roplast or purchased directly by the customer from other suppliers; in some cases installation of the same may entail a further installation or connection operation: see the instructions for Roplast accessories on the site and follow the instructions provided by the manufacturer for accessories from other suppliers.

System testing

After positioning and connecting the pipes to the storage tank, before filling it with the liquid for which it was purchased, it must be CHECKED FOR ANY LEAKS present in the system or breakages in the tank itself or its accessories caused by improper transport. This is done by filling the storage tank with water and allowing it to circulate through the system to check the pipes.

Once the system has been checked and proven to be water tight, dispose of the test water according to the local regulations in force.

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4. INSTALLATION UNDERGROUND

EXCAVATIONS (refer to fig. 7)

Prepare a hole considering about 50cm deeper than the container for the laying plan. If envisaged, also calculate the height of the inspection manhole (max 20 cm).

PREPARATION OF THE LAYING PLAN OF THE TANK

- lay about 20 cm of drainage material (breccia or gravel); if necessary connect this layer to a drain;
- add 10 cm of sand (wetting it so that it gets into the spaces between the drainage material and becomes compact);
- repeat the above operation until a height of 30 cm of sand over the rainage layer has been reached;
- leave the bottom to settle and, if necessary, level off;
- place the tank on the bottom perfectly level;
- connect the intakes with flexible pipes;
- **FILL THE TANK** (this operation is crucial to prevent crushing during the subsequent phase of filling the hole).

FILLING THE HOLE (refer to fig. 8)

The filling of the hole between the outer wall of the tank and the perimeter of the hole must be performed as evenly as possible with horizontal layers of wet sand, leaving time for natural settling between one layer and another.

Care should be taken to avoid filling in one side of the hole at a time as this could cause crushing of the tank.

Towards the top, use lightweight material such as expanded clay, if necessary mixed with cement and laid on a metallic mesh placed horizontally, placing the weight on the ground or surrounding structure and not on the tank. Remember to provide a central hole for the inspection manhole.

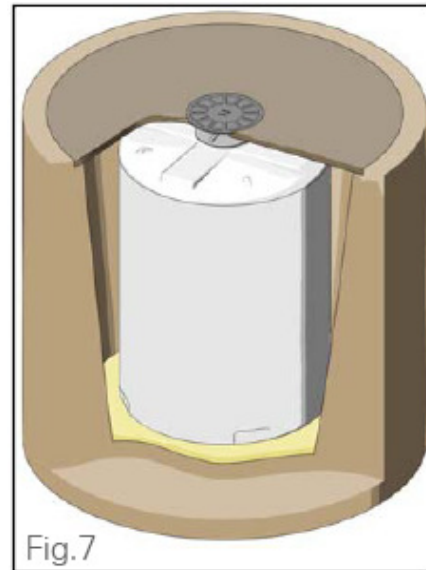


Fig.7

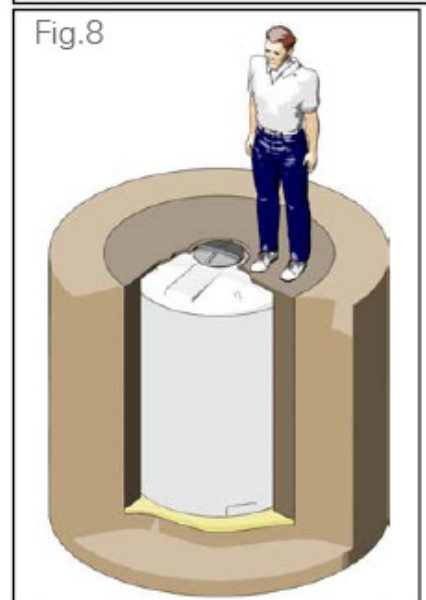


Fig.8

WARNINGS



- Follow these instructions carefully, complying with current legislation and the technical building regulations in force. Remember, in addition, that the storage tank is not a load-bearing structure able to support weights or withstand pressure.
- If a suitable brick support structure is not provided, the storage tank installed underground as described above cannot bear the weight of a layer of inert material or flooring and the area where it is located may not be considered trafficable.

WARNING



- For the underground positioning of storage tanks see the provisions of community directives and national legislations (for Lombardy- resolution no. 49784 dated 28/03/85 and 52097 dated 07/05/85).
- Underground cisterns may only contain rain water or drinking water. Any pollutant liquid (water, chemical products etc.) may not be stored in underground cisterns if these do not have a control system for leaks (double wall with monitoring system).

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5. OPERATING CONDITIONS AND PRODUCTS WHICH CAN BE STORED IN THE STORAGE TANKS

Rotation moulded storage tanks can be used to store products compatible with PE (polyethylene) at room temperature. Check the chemical compatibility table in the dedicated section on the site www.roplast.it paying attention to the operating temperatures and concentrations.

If intended for use as a process storage tank, check with our technical department. The filling temperature may reach 60° (peak) and running temperature 40° / 45°; check the dedicated section on the site to see what thickness the storage tank should be (lightweight, standard or various reinforced versions) depending on the operating conditions.

WARNING

Always check that there is a vent hole (built into the cover or with dedicated passwall, if piped) and make sure it is not obstructed, since the storage tanks are only to be used at hydrostatic pressure.

Even minimal pressure or negative pressure can cause serious damage to the storage tank and be the cause of serious danger or accidents.

6. GENERAL RECOMMENDATIONS

1. Staff responsible for handling loads must wear protective gloves.
2. When hoisting or moving the storage tank or any part of the same, have the area itself cleared and provide a sufficiently large safety area around it so as to avoid damage to persons or things within the range of manoeuvre. The storage tank should only be moved when empty.
3. During moving operations take care to prevent the storage tank from oscillating.
4. Do not lay tanks one on top of another during storage.
5. After delivery the storage tank should not be left in a horizontal position for more than 48 hours.
6. Roplast will not be liable for damages or injury to persons or things caused by products purchased by customers and then fitted by the same to the storage tanks.
7. The storage tanks have been made for storing powder, granules and liquids except for:
 - products not compatible with PE (see the chemical compatibility table on the site www.roplast.it);
 - generally speaking aromatic solvents and organic based compounds;
 - in the cases provided for by law or regulations (e.g. inflammable materials except as specifically authorised by the Fire Brigade);
 - liquids at temperatures of over 60°C;
8. In the case of installation in very windy locations, the empty or almost empty storage tank could move and fall or overturn and cause serious damage. In such cases devise a system for blocking it to the ground.
9. Before installing a storage tank find out what permits are needed.
10. Most products considered pollutant must be stored using storage tanks inserted in outer safety cylinders to prevent dispersion into the environment in the case of accidental leakage of the products from the tanks.
11. Some products require the application of an extraction system of the fumes generated during filling of the storage tank.
12. Roplast storage tanks should not be made to work in pressure or, worse still, negative pressure. Some tankers used to fill storage tanks work with a pressurised decanting system (2/3 atm). In the case of a “fluid hammer” this could

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damage the storage tank if air at such pressure were introduced by mistake. Therefore, if filling systems of this type are used, please contact our technical department first.

13. If the outside of the storage tank needs to be cleaned, use a high pressure water jet with detergent and maximum washing temperature of 40°C.
14. Internal cleansing of the tank when empty should be performed by specialised staff wearing all the PPE (Personal Protective Equipment) needed in relation to the product which was previously contained in it, after checking the quality of the air with appropriate instrumentation, blocking all the intakes of liquids and arranging adequate internal aeration.
15. Despite being made from recyclable material, in the event of disposal the storage tank should be consigned to a consortium to remove any traces of pollutant product remaining inside it.
16. In rotation moulding production tolerances are quite ample so wait until the tank has been installed on site before fitting all the piping needed for functioning of the storage tank.
17. Even the same model of storage tank may vary in dimension.
18. Never walk on the top of the tank or rest heavy items on it.
19. Before emptying the storage tank always check that the vent cap is open and not obstructed to prevent implosion while emptying.
20. Always wear personal protective equipment in conditions where such is required.
21. Make sure that the workplace is well-aired, well-lighted, dry and clean. Remove any puddles or water or oil stains where present.
22. Never use petrol, diesel oil or other inflammable liquids as cleansers; use non-toxic, non-inflammable commercial solvents instead.
23. Do not perform servicing on the storage tank with the control panel manned except by qualified staff assisting with the operations to be conducted.
24. A fluid leaking out of a very small hole may be almost invisible and at sufficient pressure to penetrate under the skin; in such cases use a piece of cardboard or wood to check for leaks.
25. Warnings and danger signs must be provided and installed by the Customer.
26. Do not place the storage tank near sources of heat.
27. If fitted, check the functioning of the clapet valve used to prevent the storage tank from going into negative pressure, adopting the necessary precautions. The function of the clapet valve is to allow air into the storage tank, when it is emptied during use.
28. Do not modify or add devices to the storage tank without written authorisation from Roplast or after a technical inspection by Roplast certifying the modification made in the operation description.
29. If the storage tank is inserted in an outer cylinder, in the event of there being liquid in the cylinder (e.g. rain) the storage tank will tend to float if empty or with only a little liquid inside it. The thrust when floating is marked and sufficient to rip pipes and connections. If a storage tank with outer cylinder is placed outdoors it should therefore be fitted with a rainproof cover or, alternatively, with an automatic drainage system of the rainwater from the cylinder.

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30. If, by accident, the storage tank should leak liquid into the cylinder this will fill until the level of liquid is the same in both vessels (the communicating vessels” principle). When emptying the system, first empty the outer area between the perimeter of the tank and the cylinder using a suction pump, and then the storage tank to avoid float thrusts.
31. The system must be tested with water which should subsequently be disposed of according to local regulations in force.

7. WARRANTY

Roplast storage tanks are guaranteed for 12 months from the date of delivery save agreement otherwise. The duration of the warranty may in any case vary in relation to the local laws in force in the country where the tank is installed.

The warranty covers manufacturing defects only and obviously extends to all the optional accessories ordered.

The warranty does not cover:

- aesthetic defects;
- damage caused by transport;
- damage caused by improper installation;
- damage caused by installation of components not supplied by Roplast;
- damage caused by improper use of the storage tank;
- damage caused by use of products not agreed to by Roplast.

The warranty lapses in the case of:

- improper installation;
- filling of the storage tank with a type of product not approved by Roplast in advance;
- addition of components not supplied by Roplast;
- modification of parts of the storage tank or any of its components;
- failure to observe the laws of the country where installation is performed;
- lack of or insufficient maintenance;
- breakages caused by external agents;
- damage caused blows or falls;
- unauthorised repairs;
- failure to pay even a minimal part of the product price;
- resale of the product to third parties.

It is understood that Roplast will not be held liable for any direct or indirect damage to third parties (things, persons or animals) caused by the leakage of products from the storage tank, and that the same is not covered by the warranty.

The Court of Bergamo shall have exclusive jurisdiction for any disputes.