




USE AND MAINTENANCE MANUAL

GRP TANKS

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IDENTIFICATION PLATE

	OMNIA RESINA MAZZOTTI	Omnia Resina Mazzotti S.r.l. Via Molinello, 10/B Bagnara di Romagna (RA) ITALY tel +39 0545 76037 fax +39 0545 76539 omniares@orm.it www.orm.it
	Type	<input type="text"/>
Serial Number	<input type="text"/>	
Construction year	<input type="text"/>	
Diameter	<input type="text"/>	
Height/Length	<input type="text"/>	
Capacity	<input type="text"/>	
Contents	<input type="text"/>	

MANUFACTURER'S IDENTIFICATION DATA

ORM Omnia Resina Mazzotti s.r.l.
Via Molinello 10/b 48010 Bagnara di Romagna (RA) ITALY
Telefono: +39 0545 76037
Fax: +39 0545 76539
E-mail: omniares@orm.it
Web: www.orm.it

NOTE

The Identification Plate must always be readable. In case it deteriorates ask a new one to the Manufacturer reporting its original data.

For any information regarding the item always refer to the Manufacturer and report the data plate.



2.GENERAL WARNINGS

MANUAL USE

The tank must be used as per hereunder given instructions: it is therefore recommended to **read them carefully** before any operation without leaving out anything of what it is written and/or illustrated.

Compliance with the mentioned standards and recommendations allows the operator to use the tank in the manner and methods allowed by the Manufacturer.

If the operator finds discrepancies between what it is described in this document and the tank, he must immediately notify it to the Manufacturer without using the tank: Mishandling might be hazardous to the operator's health or / and people standing close to the tank.



WARNING!

Instructions are part of the tank; it is therefore necessary to keep them in good conditions, in a safe place and at the operator's disposal (or at disposal of anyone authorized to use the tank) throughout tank life.

In case of sale, rent, lease or right to use the tank, instructions must go with.



IT IS A MUST TO READ THE MANUAL

The Employer (or his representative) must give the manual to the operators to read in order to avoid that **Lack of Knowledge** of all information contained in the manual **causes a risk situation with possible danger to the operator's health.**

These instructions are written to contain all relevant information for a proper operator's training and knowledge to avoid improper and dangerous tank use.

The tank use for purposes other than those provided for, or otherwise improper use thereof, does relinquish any liability of the Manufacturer Omnia Resina Mazzotti S.r.l.



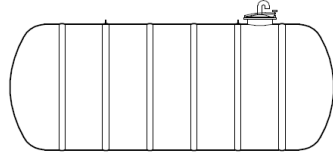
WARNING!

Tampering, replacement, modification not authorized by the Manufacturer Omnia Resina Mazzotti S.r.l. of one or more parts of the tank lead to the loss of any liability of the Manufacturer.

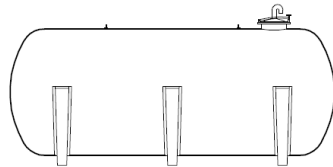
3. TECHNICAL SPECIFICATIONS

For all technical specifications and sizes refer to the layout approved by the customer and the information reported on the tank identification plate.
Hereunder tanks layout as it is described in the manual.

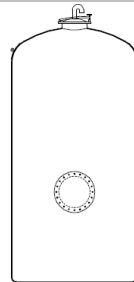
UNDERGROUND HORIZONTAL CYLINDRICAL TANKS



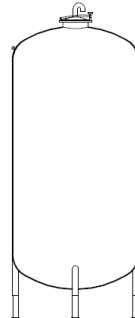
STORAGE HORIZONTAL CYLINDRICAL TANKS



FLAT BOTTOM VERTICAL CYLINDRICAL TANKS



ROUND BOTTOM VERTICAL CYLINDRICAL TANKS



4. HANDLING AND TRANSPORTATION

HANDLING

The tank must be lifted by appropriate load capacity means (eg. cranes, mobile cranes) using:

- Ropes to set in the tank eyebolts
- Special slings (eg. fabric bands)



WARNING!

The tank slinging must be carried out by using appropriate means to prevent it from falling down or moving from its original anchorage position.



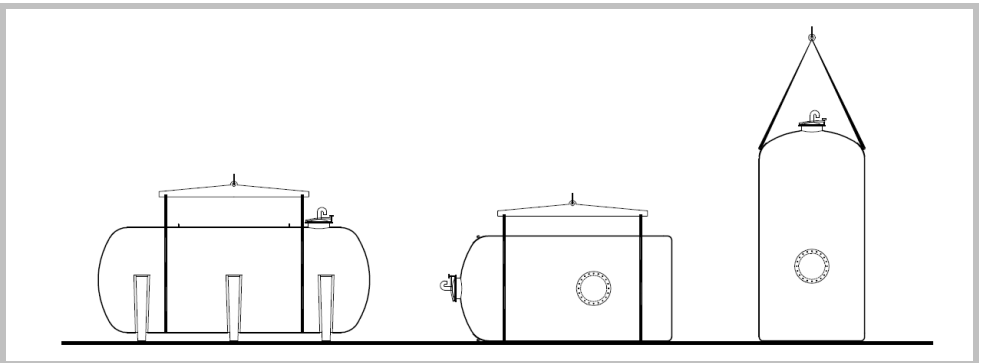
WARNING!

The choice of slinging means should be made with the utmost care, according to the load weight, nature and features, the efforts slings are subject to and according to their open angle and the slinging system you adopt.



WARNING!

Before use, check ropes and slings integrity and their load capacity related to load they have to bear.



WARNING!

People in charge of tank fixing operations have to be properly instructed. They must know how to fix loads , what kinds of slings to use and they must be able to judge if the slings they use are safe.



WARNING!

Handling and lifting operations must be carried out when tank is empty. Check that the tank inside is free of any material (rain water, other materials).

Sling the tank and check that load has a good balance. Then lift the tank just a little and slowly.

Once you have well checked the slings, you can start to lift the tank taking great care of its balance and that the tank remains in vertical position. Avoid dangerous inclinations that cause balance changes and sling stress.

If men at work are more than one, make sure that only one gives instructions to the one in charge of the slinging operations.

Lifting and handling operations must be carried out in a slow and gradual manner.

The lifted tank must not be handled with the hands, but only with ropes or hooks: it must not be pushed but only pulled. Avoid standing under the tank.



WARNING!

At the end of the operations check the integrity of the tank in all its parts and components.

TRASPORTATION

Tanks must be transported by a truck of appropriate size and load capacity. The tank must be positioned horizontally, the floor must be smooth and free of bumps which may damage the tank walls.

Use appropriate anti-rolling means (eg. chocks, stoppers, wooden boards) not to damage the tank structure and set it to the platform with fabric straps.

STORAGE

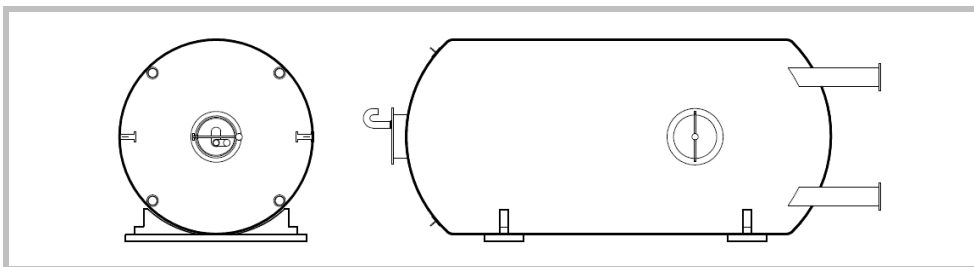
The proper ways to store the tank consist in laying it on the ground on two wooden boards at its ends. Use appropriate antirolling means (eg. Wedges, plugs, wooden boards, etc..) not to damage the structure of the tank and in case of wind fix the tank with woven straps.



WARNING!

Never place the tank in direct contact with the ground.

For a storage of more than six months check the state of the support and anti-rolling means, in the case they are deteriorated replace them. Periodically check the seals, vent valves and level indicators.



GENERALITY

The installation of an underground tank – especially when it is of big sizes - is classified as a High Risk Installation and therefore it must be performed by experienced staff and followed by a qualified technician as per provided security plan.

The way you lay the tank must also minimize the soil pressure and tank walls overload, as the tank is structurally suitable to withstand external lithostatic pressure caused by a 30 cm earthfill (measured at the top of the cylinder generatrix) and the above pedestrian traffic. Heavier load situations (caused by more earthfill and /or overload) require the realization of structural containment and support works which must be duly calculated by a qualified technician.

The following guidelines are intended only for underground tanks installation. Responsibility for any choice of action remains to the installer also according to the various possible real situations (soil type, stratum level, overloads).

EXCAVATION

Make an excavation of appropriate size (consider about 80 cm more than the tank maximum sizes).

FOUNDATION

Make a 20÷25 cm concrete base at the bottom of the excavation and then put a sand bed of about 25÷30 cm.

TANK PLACEMENT

Level and remove any bump to ensure a good tank stability and protection. Position the tank perfectly horizontal and anchor it to the concrete base by means of belts and / or bands made of suitable material for this use.



WARNING!

Do not use any anti-rolling objects as wedges, stoppers, wooden planks, etc. which could damage the structure of the tank during the subsequent phases of abutment and filling.

SPECIAL CONDITIONS

PRESENCE OF GROUNDWATER - In the case of a normally empty tank , in order to avoid that it emerges from the soil due to the hydraulic pressure, make a drainage using a draining pipe, gravel of suitable granulometry and discharge pipe.

PRESENCE OF CLAY SOIL - Line the excavation walls with a cloth made of filtering material a “nonwoven material “to prevent the clay from seeping into the interstices of the carrying drainage.

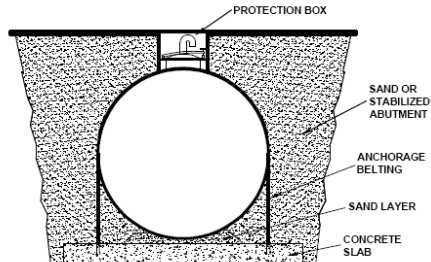
ABUTMENT PEDESTRIAN TRAFFIC



WARNING!

The tank must not be buried at a depth more than 30 cm.
Lay the tank on a sand bed thick not less than 15÷20cm.

Begin the gradual filling of the tank and **simultaneously** make the abutment, using wet sand (or stabilized) in layers of about 30 cm, taking care to compact each layer before proceeding with the laying of the next one.

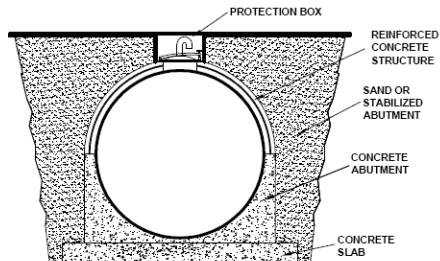


Once you have finished the backfilling, close the excavation with land thick not more than 30 cm. For bigger excavations proceed as follows:

- Up to 50 cm. bury the upper part with lightweight material (e.g. expanded clay)
- Over 50 cm. proceed as mentioned in VEHICULAR TRAFFIC

VEHICLE TRAFFIC

Fill the tank up to 1/2 of its capacity and **simultaneously** make the abutment with concrete. Make a concrete vault or slab structure (see example in figure), which conveys the loads coming from above directly to the concrete abutment, leaving the tank undamaged.



FINAL SETTING

INSPECTION MANHOLE COVERS – use a plate or other similar material box-type extension to protect the inspection manhole covers and make them accessible. In case of use of heavyweight material (e.g. cast iron or concrete) or with vehicular traffic avoid that the load falls on the tank. On the surface mark the tank presence and size.

CONNECTIONS - make connections using elastic joints and/or flexible piping to favour ground settling.

ABOVE HORIZONTAL TANKS

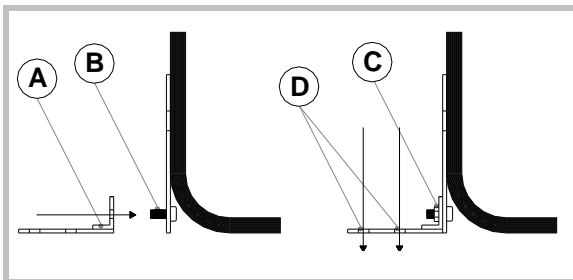
Before starting any operation of tank installation check that the ground to lay it is smooth and well levelled.

FLAT BOTTOM VERTICAL CYLINDRIC TANKS

Before starting any operation of tank installation check that the floor to lay it is smooth and well levelled.

ANCHOR BOLT FOR TANK

- Place tank on a flat and well levelled concrete base.
- Insert the bracket **(A)** on the screw welded to the tank **(B)**.
- Lock it with the supplied nut **(C)**.
- Anchor the bolt to the concrete screed by means of suitable pressure caps **(D)**.



ROUND BOTTOM VERTICAL CYLINDRIC TANKS

Before starting any operation of tank installation check that the ground to lay it is smooth and well levelled.

TANK POSITIONING AND ANCHORING

Place the tank on a flat and well levelled concrete base.

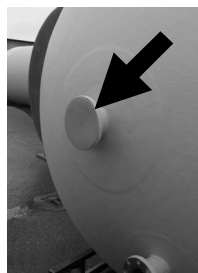
Anchor each tank leg to the concrete screed, using a suitable pressure cap, with the hole you find on the base of each leg of the tank.

If the tank has to be installed outdoor it will be necessary to find the most suitable anchoring way, taking also into consideration wind action.



WARNING!

Before starting tank operation remove nozzle protection caps.



6. INSPECTION, MAINTENANCE, DEMOLITION

INSPECTION

To safeguard operator's health, it is required to use the PPE below listed.

As it is not possible to know all tank environmental operating contexts, it is necessary to point out that task of the Employer is to require additional PPE according to production environment necessity.

PROTECTION	PPE
Head protection	Helmet with headlight
Face and eyes protection	Glasses/ face screen
Hearing protection	Earplugs
Hands and arms protection	Gloves
Feet and legs protection	Safety shoes
Body and skin protection	Overalls
Protection against falls	Safety harness and fall arrest
Extraction if necessary	Safety harness and cable relief
Respiratory protection	ABEK mask filter P2

The tank access, where workers must get into for checking or repairing or maintenance or any other plant requirements, must not be less than cm 30 x 40 cm or in any case must have a diam. not less than cm 40.

Before entering the tank, carefully check that the inside is free of any harmful gases or vapors or any harmful temperature. In case of danger wash the inside of the tank, ventilate it and or take other precautions.

WARNING!



The person in charge of the works must ensure that all valves and other devices in communication with the tanks will be blocked.

He must also intercept the piping lines with blind flanges or other equivalent means and must put on the closure or isolation devices a notice indicating the prohibition to handle it.

Workers who carry out their work inside the tank must be assisted by another employee located outside at the tank access.

When the presence of harmful gases or vapors cannot be absolutely excluded, or when access to the bottom of these places is uncomfortable, workers who enter must be equipped with safety belts, with ropes of adequate length and, if necessary, they must have an adequate equipment to allow normal breathing.

Where tanks cannot exclude gas presence, flammable or explosive fumes or dust, in addition to the measures outlined in the preceding paragraph, you should take precautions to avoid the danger of fire or explosion, such as exclusion of flames, of incandescent material, of ferrous material and equipment and footwear with nails. Where it is necessary the use of lamps, they must be safe.

In tanks deeper than 2 mt where the access to the bottom is not available, and in case it is not possible to fix a ladder to enter, you must use a portable ladder, provided that it has restraint hooks.

MAINTENANCE

No special maintenance is required, however the following operations are recommended:

- Keep the tank clean;
- Check the good conditions of all accessories (such as: o rings- hardware-vent system doors);
- Check the tank conditions (i.e. failures and losses on the shell walls, on the saddles or on the legs- transductions ect.);
- Keep the vent clean and free from fillings to ensure that the pressure inside the tank, above the free surface, does not exceed a value of 0,5 atm. Due to the development of biogas fermentation, anaerobic digestion processes ect.

DEMOLITION AND DISPOSAL

The tank is manufactured of materials which do not have special dangerous aspects for the operator during their demolition (i.e. **GRP (*)** commonly known as Fiberglass, Steel, Plastic).

In case of tank demolition and disposal, the operator shall take all necessary precautions to prevent the generation of risks associated with the equipment decommissioning.

In particular, special precautions should be taken during steps of: equipment disassembling and material separation.

The operator will have to deal with the waste (i.e. the substance or object which the holder discards, or intends to, or he is required to discard) as intended by law, so that the waste can be recovered or disposed safely for human health, and without using processes or methods which could harm the environment, in particular:

- Without causing risk to water, air, soil, plants and animals;
- Without causing a nuisance through noise or odors;
- Without adversely affecting the countryside or places of special interest, protected under law in force;

(*) *Waste code: CER 160304 inorganic wastes other than those mentioned in 160303*

7. WARRANTY AND CLAIMS

ORM warrants its products under current legislation.

Guarantee given by ORM is voided by improper tank use, where unauthorized persons intervene on the supply, or changes are made that affect the design of the same, without ORM authorization.

ORM will deemed released from any liability relating to the safety of people and the misuse of the tank.

If maintenance operations are carried out otherwise than in accordance with the instructions, or in any manner prejudicial to the integrity or change tank features.

