

Installation manual

Uponor Reservoirs



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1. Intended use

Uponor water reservoirs are built and designed according to customer's needs. The reservoir body is watertight and fast and easy to install. When built, installed, and maintained properly, its lifespan can be anticipated to be up to 100 years.

Water reservoir with or without pressure boosting station is meant to store or buffer potable water where it is needed to even the water consuming peaks or changes in water flow. The water is directed from the reservoir to the network by pumping. The reservoir is usually placed underground and insulated when necessary. The raw material of the double-layer container is polyethylene meant for potable water purposes whose chemical qualities and durability are excellent and there's no risk of corrosion. The reservoir's body has been tightness-tested in the factory. The lid of the reservoir is made of qualification approved aluminum and is lockable and ventilation pipes have been secured with filters to meet the hygienic qualifications. The reservoir fills up all the qualifications of water transport, storage and distribution and meets the drinking water requirements.

2. Operating and working safety

The organization performing the installation or/and maintenance is responsible for following the respective laws, rules and regulations about the working safety and safety gear of the personnel. All employees on the installation site shall be educated or briefed into using safety equipment and gear. Personnel installing, operating, or maintaining the equipment chamber shall be qualified to operate with drinking water. The lids to reservoir and equipment chamber must always be locked and they should only be opened for operating and maintaining purposes. The light is to be switched on every time when entering the technical chamber and ventilation is to be checked before starting the operative or maintain work.

Personnel working inside the reservoir shall be qualified to operate with drinking water to ensure the checking of hazards and functionality of the safety actions. In normal circumstances there is no need to enter the water reservoir. However, when operating inside the water reservoir, it must be disinfected afterwards.

3. Delivery and acceptance check

The delivery of water reservoir is agreed between customer and supplier. The information regarding the specific date and delay terms are communicated to the customer in order confirmation.

The reservoir must be overall checked at the delivery. Flaws or damages caused by transport or storage must be documented to the consignment note. Possible flaws that are noted after the delivery must be communicated within 7 days or at the latest 7 days after the flaw has occurred.

4. Storage and transport

The reservoir is to be stored on a flat platform in its original packaging. It should always be handled with care. The reservoir might get slippery in rain and in cold weather conditions. Handling and installation of the chamber should be avoided at -20°C weather.

The reservoir or any products or pipes connected to it should never be dropped, thrown, or dragged. Note that especially during the wintertime any kind of striking or hitting the reservoir or respective products and pipes should absolutely be avoided.

Prevent any kind of connection between the reservoir and chemicals, gasoline or diesel or a source of heat. Protect the reservoir and respective products from mischief during the storage.

The reservoir, pipes and other products shall be protected from any pointy or sharp burdens during delivery or storage – note especially the transportation platforms. The transportation platform shall be clean and flat, and it should not have any pointy or sharp objects. Sliding or bending of the reservoir or its respective pipes and products shall be prevented. When binding the load, wide cargo straps shall be used. Using of cables, wires or chains is prohibited.

When implementing normal operating and maintenance work in the reservoir, all personal gear and tools shall be clean, appropriate, and according to the work in progress.

5. Before installation

Before installing the reservoir or possible connective equipment or chambers they must be checked for damages or any flaws by transportation. Usually, the customer is responsible of handling and installing at the site.

The customer is responsible of following:

- Arranging a suitable location point for the reservoir in cooperation with local authorities
- Easy access for transport equipment to site
- Arranging suitable and adequate lifting gear on site
- Arranging relevant electrical and other connective work (welding etc)
- Excavation and fill on site with suitable materials and by suitable methods.

Any work on site, including excavation and filling, shall be done in compliance with respective legislation and regulations.

Trench

If the ground on site is poorly permeable by water (for example clay), installing draining into the trench should be taken into consideration. Anchoring the reservoir against ground water's buoyancy forces is possible. Made-to-measure anchoring packages are available as an accessory.

When digging the trench, special care and consideration shall be pointed into following the site plan, working safety and qualified personnel to have the base and filling done on-site as fluently and sustainably as possible. Trench work shall be done according to respective legislation and regulations. When installing the reservoir, it is especially important to handle connected parts with care. To mitigate the risk of malfunction or other harm it is important to secure the straightness of the reservoir before and during the installation. During installation it shall be secured that the surface water doesn't have access inside the reservoir at any point (through maintenance lids for example). The eventual height difference between ground level and maintenance lids shall be at least 200 mm.



6. Lifting

There are numerous different hazards concerning lifting of the reservoir. To mitigate them, lifting should always be planned carefully. Special liftings, such as heavy liftings, lifting of a

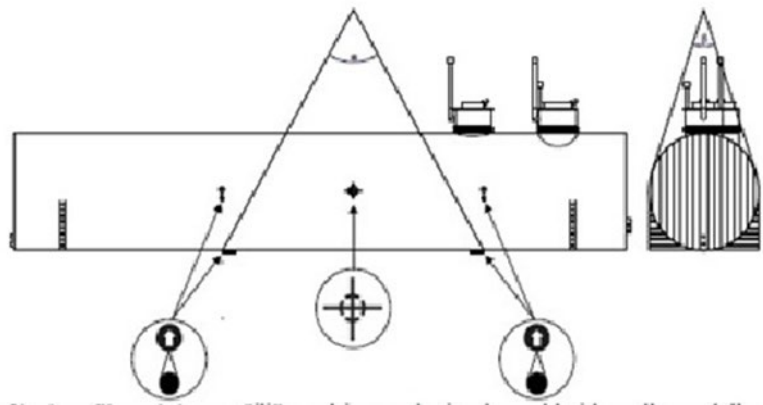
big object or joint liftings require a written plan.

The following instructions are the main guideline for lifting Uponor Technical chambers.

- Only approved, checked and intact gear and equipment shall be used in liftings
- The reservoir shall not be lifted with wires or other gear that might scratch or harm the surface
- Before start, the lifting capacity marked on the respective lifting gear shall be checked. The lifting gear shall be capable to handle the load at a minimum.
- The lifting must not be made over individual(s)
- The lifting jacks shall only be operated by specifically educated and selected personnel
- The lifting yokes are on the bottom of the reservoir. If the lifting spots have not been marked on the reservoir, they are in the ends of the mid quarters.
- To avoid damage on the surface of the reservoir the lifting should be operated with lifting belts and hanging loops made of artificial or other soft materials
- Parts attached to the reservoir body (by welding or other) should be noted and handled with care when lifting
- The weight of the reservoir and balance points shall be checked before adjusting lifting gear and lifting. If the balance point is not marked on the reservoir body, it is in the middle of the chamber (width and height wise).
- The lifting gear should be set as open- or tightening lifting around the reservoir
- A test lift shall be performed to height about half meters before the actual lift. If needed, the lifting shall be adjusted according to the balance points
- When lifting, normal instructions and principles concerning the angle of camber, the fork angle and the shape coefficient of the lifting gear are considered.

<p>The lifting yokes for the belts and hanging loops are in the bottom of the reservoir. Their spots have been marked on the body with this sign:</p>	
<p>Reservoir shall be lifted from the balance points. If there are no balance point markings, the balance point is in the middle. The balance point is marked on the sides of the reservoir with this sign:</p>	

Lift the reservoir as illustrated:



7. Commissioning

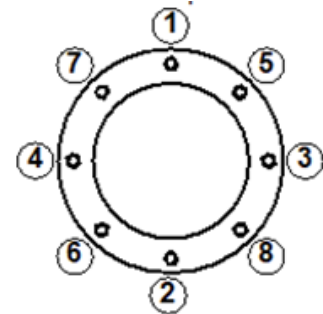
Documenting the commissioning actions is recommended.

The recommended order of bolt tightening is as in the picture:

The first tightening round shall be done by torque that is approximately half of the final tightness.

The aftertightening of the bolted connections shall be done before pressurizing and disinfection of the reservoir.

The tightness of flanges shall be checked, and the bolts tightened with a torque wrench.



Disinfection

The reservoir and all connected pipes shall be disinfected according to rules and regulations by respective authorities. The tightness of the pipes connected to the reservoir shall be verified before backfilling.

The gap between overflow and reservoir's maximum capacity is about 5% of overall capacity.

8. Maintenance

The reservoir is practically free of maintenance, and in normal situations there is no need to enter the reservoir space. The pressure boosting station attached should be kept clean and free of clutter and the chamber body as well as equipment checked visually for any flaws.

In the wintertime the maintenance lids and their surroundings shall be kept free from ice and snow. The ground frost insulation and/or thermal insulation of pipes can be done if needed according to a respective plan and concerning rules and regulations. The final landscaping is to be done by the customer.

Components and equipment shall be monitored and inspected according to suppliers' rules and recommendations.

9. Recycling

Full plastic chamber or reservoir body can be recycled as such by companies specialized in recycling plastic complexes into products, that don't require drinking water approval and allow using recycled raw materials. Up-to-date list of such companies can be viewed from local plastic manufacturers associations web pages.

10. Project specific data

Project specific data consist of e.g., type drawings, material certificates, recorded tightness studies, technical specifications, and list of spare parts for example. They are selected and delivered to customer according to selected solution.

11. Contact information

[country-specific contact info]

12. Operation journal for Uponor Reservoir

Date	Operator	Action