



Drinking Water Unit Tech Tips

Sanitary Protection of Drinking Water Storage Tanks: Tanks For Use Inside a Building – Plastic Tank Example

Region 8 EPA requires all finished water storage tanks to have vents, overflow, hatches, and recommends drains for sanitary protection:

A tank inside a building has different requirements than an outdoor tank. As with all drinking water storage tanks, EPA requires that a tank inside a building has an air vent, overflow, and hatch, and recommends a drain. Plastic tanks, like fiberglass tanks and others are manufactured for many purposes and may not come equipped with these sanitary protection components. If not, they need to be retrofitted. This tech tip uses a plastic tank example to discuss the sanitary protections needed for a tank in a building to ensure contamination cannot enter finished water. These sanitary protections also prevent implosion and explosion damage from sudden tank draining or overfilling.

A basic poly tank when it arrives.



Drain

- A tank may be considered an Indoor Tank if it is inside a building which has no openings in the roof or walls that could allow organisms, rain, snow, or wind to enter, and there is no sunlight access to the tank through windows or other openings.
- If it is in a building that meets this definition, the tank does not have to be opaque to prevent algal growth.

All tanks are required to have:



- A hatch with a watertight gasket.
- A screened overflow to release water and protect the tank from damage.
- An air vent separate from the overflow to allow air flow into and out of the tank as water levels fluctuate.
- A drain is recommended to allow cleaning and removal of potentially microbe-laden sediment.



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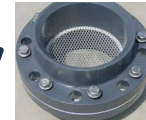
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Vent installation

Step 1: Install a bulkhead fitting on the top flat area. Alternatively, some tanks come with a vent opening in their hatch that can be used as the site for a properly constructed vent.



Step 2: Install a "U" pipe on the bulkhead fitting such that it is downturned and at least 2 ft above ground (outdoors) or 8" above the floor (indoors).



Step 3: Install a #24-mesh screen between two flanges on the vent or at the end of the pipe.

The downturned vent with a #24-mesh screen keeps dust and insects that may harbor disease out of the tank.



Hatch



- For an above-ground plastic tank in a building, the hatch must be equipped with a neoprene gasket that seals the hatch lid tight against the plastic tank.
- There is no height requirement as water is not likely to pool around the hatch in a building.
- The building must be locked and free of holes to prevent animal entry, so birds and other animals do not nest around the hatch.



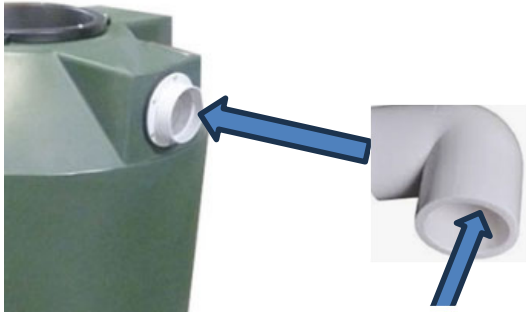
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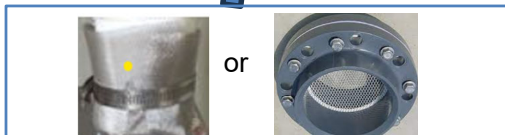
Overflow installation



Step 1: Install a bulkhead fitting on the side of the tank with a 90° fitting facing downward. It should be above the water level and below the air vent.

Step 2: Connect a vertical pipe such that it is 2 ft off the floor.

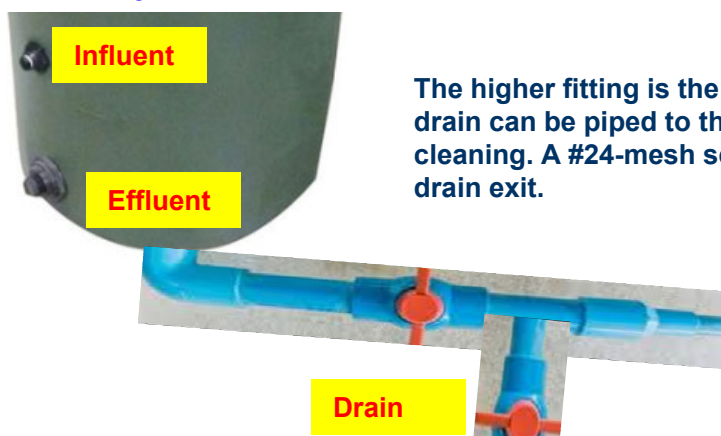
Step 3: Install a #24-mesh screen on the end of the pipe.



Step 4: Install a splash plate so that overflow water does not splash onto electrical panels. Install a floor drain to direct overflow water out or route the overflow outside through a wall. Overflows routed outside must meet all outdoor overflow criteria. **EPA recommends not directly connecting a tank overflow to drain.**

Install a camera or other redundant alarms to alert operators when the tank is overflowing.

Drain



The higher fitting is the influent. The lower fitting is the effluent. The drain can be piped to the effluent; keep the valve shut unless cleaning. A #24-mesh screen between two flanges is fitted over the drain exit.

Alternatively, the tank could be placed on 4x4 posts to allow room for a drain to be installed on the bottom. This will allow tank cleaning every 3 to 5 years without having to vacuum the water out.