



Glass-Lined Storage Tank Installation & Maintenance Procedures

NOTE

The information contained in this manual is intended for use by qualified professional installers, service technicians or gas suppliers. Consult your local expert for proper installation or service procedures.

Installation:

The water storage tank **MUST** be installed using dielectric connections. Failure to do so will void the manufacturer's warranty. Installation of the tank without dielectric connections can cause the rapid failure of the storage tank due to electrolysis. For this reason, it is imperative that dielectric connections be utilized.

The tank should be installed in such a manner that should the tank or any of its connections leak, the resulting flow of water will not cause damage.

Follow the Dielectric Protection instructions in these procedures to verify that the dielectric connections are installed properly. If electrical continuity exists between the tank and its piping, the connections **MUST** be fixed.

Manway Installation (Applies to Tanks with Manways):

- Manway covers and gaskets are shipped in place so they will not be lost in shipment. The bolts are not tightened completely so that the tank can be opened and cleaned prior to service. Once the manway bolts are fully torqued, the gasket often cannot be reused. Replacement gaskets are available.
- The gaskets may shift due to vibration in transit.
- For final assembly of the manway, the gaskets **MUST** cover the surface of the ring 100% and project slightly on each side of the ring. The bolts should be tightened before the tank has pressure, and then re-tightened when the tank is at operating pressure.
- Only the gasket should be used. Do not use glues or materials such as Permatex to assist the gasket seal. These can cause the gasket to creep under pressure, and make later installation of a new gasket very difficult.

NOTE: Anodes are, in many cases, shipped loose and need to be installed/tightened correctly before start-up. If rigid anodes are shipped in place, they **MUST** be inspected and tightened before pressurizing the vessel.

Maintenance:

A new tank installation should have a regular inspection program set up initially. The first inspection should be within the first three months of operation. Once the tendency to accumulate sediment has been established, the inspection program can be modified to suit the water conditions. Typical inspection programs flush the tank at six-month intervals and clean the tank in yearly intervals.

Deliming solvents or acid-type flush agents are not recommended for use in lined storage tanks. These chemical cleaners are usually designed for use in non-potable systems such as heating boilers. These chemicals may be aggressive and cause damage to the tank lining and deteriorate the magnesium anodes supplied in glass-lined storage tanks.

WARNING: HOT WATER WILL BE RELEASED UNDER PRESSURE. AVOID CONTACT WITH THE HOT DISCHARGE WATER TO PREVENT THE RISK OF SEVERE SCALD INJURY.

Flushing the Storage Tank:

Since the mineral accumulation is occurring in an unfired tank it will be in a soft sediment form. Much of this soft sediment can be removed by a regular flushing of the lower portion of the tank.

To flush the tank, follow these steps:

1. Turn off the electricity and gas supply to the water heater piped to the storage tank.
2. Turn off electrical power to the circulating pump.
3. Close the valve on the hot water outlet on the top of the storage tank.
4. Ensure that the drain located on the bottom of the tank is routed to a floor drain with adequate capacity to allow the tank to be flushed.
5. Open the drain valve and allow the incoming cold water to flush the soft sediment out the bottom of the storage tank. Use extreme caution, as the water exiting the tank drain may be very hot. Avoid contact with the hot discharge water to prevent the risk of severe scald injury.

6. Observe the color of the water initially discharged from the tank drain. This water will generally be milky or slightly discolored by the sediment discharge. Allow the drain to run until the water runs clear.
7. Close the drain valve on the tank.
8. Open the hot water outlet valve on the top of the tank.
9. Open an adjacent hot water tap to purge any air that may have entered the storage tank during the draining process. Close the hot water tap if no air discharge is observed.
10. Turn on electric power to the water heater and circulating pump.
11. Turn on the gas supply to water heater.
12. Observe heater and piping to ensure all components are functioning properly.

Cleaning the Storage Tank:

The mineral accumulation in an un-fired tank will be in a soft sediment form that can be removed by a regular cleaning of the lower portion of the tank. Many tanks will have a hand hole or a larger manway to allow access to the interior of the tank for complete removal of accumulated sediment. The opening will be in the bottom portion of a vertical tank and on the end of a horizontal tank.

To clean the tank, follow these steps:

1. Turn off the electricity and gas supply to the water heater piped to the storage tank.
2. Turn off electrical power to the circulating pump.
3. Close the valves on the hot water outlet on the top of the storage tank and the cold water supply to the system.
4. Ensure that the drain located on the bottom of the tank is routed to a floor drain with adequate capacity to allow the tank to be drained.
5. Open the drain valve and open a vent to allow the air to enter the tank (manually opening the relief valve will usually accomplish this). Use extreme caution, as the water exiting the tank drain may be very hot. Avoid contact with the hot discharge water to prevent the risk of severe scald injury.
6. Allow the tank to drain completely.
7. Remove the cover over the manway or hand hole (if equipped). Remove the bolt(s) securing the tank access opening. Use a flashlight to observe the sediment collected in the tank.
8. Use hand tools to remove all sediment from the interior of the tank. Use care not to damage the interior lining of the storage tank.
9. Use a water hose to flush the remaining sediment from the interior surfaces of the tank and ensure that all debris is removed. Scale or sediment allowed to reach the potable system can foul valves, pumps, strainers and other water fixtures. Ensure that the tank interior is clean before refilling the vessel.
10. Install a new gasket on the manway or hand hole to prevent any possible leaks. Tighten the gasket properly to prevent leaks.

CAUTION: OVER TIGHTENING CAN RESULT IN CUTTING THE GASKET AND ALLOWING A WATER LEAK TO OCCUR.

11. Close the drain and open the cold water supply and hot water outlet. If the relief valve was used for a vent, ensure that it is now closed. Open the closest hot water valve to allow the air in the tank to vent as water enters the vessel. Close the valve opened for a vent when water flows from the valve.
12. Check the manway or hand hole and all related piping for any water leaks.
13. Turn on electric power to the water heater and circulating pump.
14. Turn on the gas supply to water heater.
15. Observe heater and piping to ensure all components are functioning properly.

Magnesium Anode Rod Inspection:

Glass-lined storage tanks have magnesium anodes to cathodically protect the lining and minimize corrosion. Aggressive water conditions in some areas of the country may accelerate the deterioration of the anodes. The anodes should be periodically removed and inspected to determine if replacement is necessary.

The tank **MUST** be valved off from the system and fully drained to remove an anode for inspection. Storage tanks have multiple anodes installed in threaded tappings along the length of the tank or on top of the tank. Adequate service clearance is required to allow removal of an anode. The anodes should be replaced when more than six inches of the core wire is exposed at either end of the rod.

Dielectric Protection:

Inspect each dielectric coupling at each tank connection for corrosion and proper operation. This is done when the tank is empty using an Ohm meter, which must indicate there is no continuity between the tank and the system piping. Should the electrical isolation between the tank and its piping or structure fail, electrolysis will occur and the resulting damage will eventually destroy the tank. This check **MUST** be repeated at least every 18 months with no water in the tank to ensure proper operation of the dielectrics. Clean or replace dielectric fittings as required.

Immersion Heating Coil:

If the tank has a coil, it should be removed every twelve months for inspection to determine lime build-up on copper tubes. If build-up is excessive, the coil should be cleaned by immersion in 20% inhibited muriatic acid solution.

NOTE: For the sake of convenience, it is suggested that the Magnesium Anode Rod Inspection and the Dielectric Protection procedure be handled at the time of the yearly tank draining for cleaning purposes.