

Aboveground Double-wall Storage Tank Installation & Testing Instructions



Highland Tank

Scope

These instructions apply to stationary, factory-assembled, aboveground double-wall vertical and horizontal steel tanks for the storage of stable, flammable and combustible liquids at normal atmospheric pressure. Because tank installation is a specialized craft, it is assumed that those using these instructions will have knowledge of, and possess the skills and equipment necessary to, install this type of aboveground steel storage tank properly and safely. These instructions concern only the handling and testing of the tank upon arrival at the site and its placement and are not intended to address piping, utility hookup, and other details pertaining to installation of the tank.

Instructions

1.0 Tank Site

1.1 The foundation for the tank must be designed to support the tank plus 100% of the weight of the maximum amount of product the tank will be storing. The foundation may be comprised of concrete, asphalt, gravel or other stable material and must include provisions in its design to prevent tank movement. The foundation design must also include provision for draining surface water away from the tank to minimize corrosion.

1.2 For tank installations without cathodic corrosion protection, a static electricity grounding system should be installed for the tank in accordance with applicable electrical and fire code standards. Tanks must be grounded to protect them from lightning damage.

1.3 For tank installations with cathodic corrosion protection, consult applicable standards (i.e., National Association of Corrosion Engineers) to provide that tank with appropriate protection from static electricity without disruption of corrosion protection.

1.4 Consult the National Fire Protection Association NFPA, the Uniform Fire Code, or the International Fire code and your local fire marshal and building inspectors for all applicable codes and restrictions such as spacing from buildings, property lines, public ways, etc.

1.5 Tanks located in areas subject to flooding must be protected against floatation with hold down straps.

1.6 Aboveground tanks should not be located above underground utilities or directly beneath overhead power lines.

1.7 The tank shall be protected from vandalism and accidental damage in accordance with all applicable codes.

2.0 Tank Handling

2.1 *Do not handle or install tank without having knowledge and experience in procedures involved with proper and safe installation of an aboveground tank used for storage of stable, flammable and combustible liquids. Reliance on skilled, professional installers is an important factor in avoidance of tank damage and system failures.*

2.2 Equipment for handling the tank shall be of adequate size to lift and set the tank. *Do not drop or drag the tank.*

2.3 Tanks shall be carefully handled using cables or chains of adequate length and size attached to the tank lifting lugs provided.

2.4 *Do not handle or move the tank unless it is empty.*

2.5 This is a stationary tank. *Do not use this tank for transport of any product.*

3.0 Testing

3.1 Air Pressure Test Procedure for HORIZONTAL, Aboveground, Type I, Double-Wall Tank

3.1.1 Install test piping as shown in Figure 1. Temporarily plug, cap or seal off remaining tank openings to hold pressure. If tank is equipped with a long-bolt manway for emergency venting, clamp lid as required with C-clamps; tighten securely and/or if equipped with standard emergency vents, remove emergency vents and cap openings to hold tank pressure as required.

CAUTION: The regulated air supply test pressure used for this test is not to be less than 3 psig (21 kPa) nor more than 5 psig (35 kPa). Use only calibrated diaphragm type air pressure gauges with a zero to 10 psig dial span. Set pressure relief valve in test air supply line at 4.5 psi.

CAUTION: Do not leave pressurized tank unattended.

WARNING: Do not stand in front of tank heads or fittings when pressurizing tank.

3.1.2 Close valves A and B. Open valve C.

3.1.3 Connect regulated test air supply line to test piping as shown in Figure 1.

CAUTION: Check to see regulated test air supply line pressure is properly set before proceeding.

3.1.4 Slowly open valve A to pressurize the primary tank. Pressure gauge 1 should indicate test air pressure of 3 psig minimum to 5 psig maximum.

3.1.5 Close valve A. Disconnect regulated test air supply line from test piping.

3.1.6 Hold test pressure in primary tank for 1-hour minimum. A steady drop in pressure reading for gauge 1 indicates there may be a leak in the primary tank.

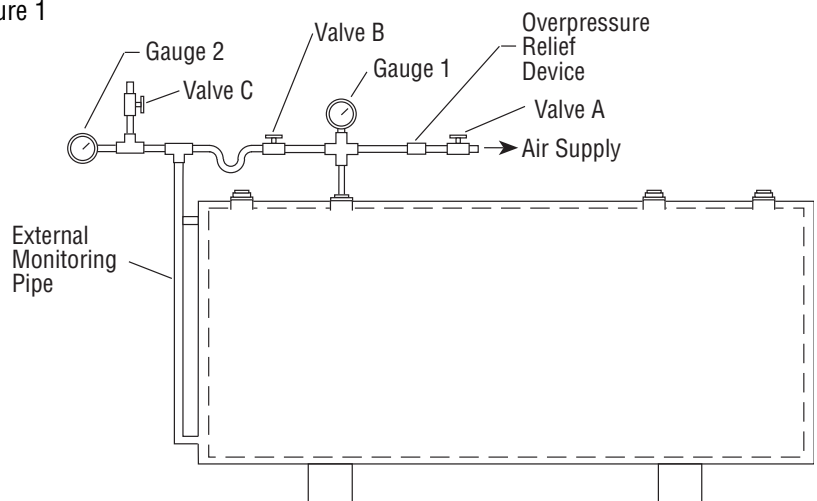
3.1.7 If no leaks are found, then close valve C and slowly open valve B to pressurize the interstitial space between the double walls of the tank.

WARNING: Do not apply air pressure to the interstitial space between the walls of a double-wall tank without air pressure in the primary tank. Do not apply air pressure to the interstitial space that is higher than the air pressure in the primary tank. Damage to the tank may result. Pressure gauge 1 will indicate a slight drop in test pressure when valve B is opened, but should hold steady at the lower pressure. If test pressure drops below minimum requirements of 3 psi, close valve B, reconnect air supply line and slowly open valve A to increase pressure in primary tank to 3 psig minimum and 5 psig maximum. When the required pressure is indicated on gauge 1, close valve A, disconnect test air supply line. Open valve B to equalize pressure in the primary tank and the interstitial space. Gauge 1 and gauge 2 should have the same pressure reading.

3.1.8 Close valve B. Hold test pressure in interstitial space for 1-hour minimum. A steady drop in pressure gauge 2 indicates there may be a leak in the outer wall.

3.1.9 Apply approved leak test solution to tank exterior surfaces, welds, fittings, etc. Check for leaks. **NO LEAKS ARE ALLOWED.** If leaks are found, notify the tank manufacturer. If no leaks are found, testing of the tank is complete.

Figure 1



3.1.10 Open valve B, then slowly open valve A to release test air pressure from primary tank and interstitial space at the same time.

3.1.11 With tank depressurized, remove test piping, temporary plugs, caps and seals. Reinstall emergency relief vents, etc. If tank is equipped with an emergency vent long-bolt manway, remove C-clamps.

3.2 Air Pressure Test Procedure for VERTICAL, Aboveground, Type I, Double-Wall Tank or rectangular tanks other than Fireguard®

3.2.1 Install test piping. Temporarily plug, cap or seal off remaining tank openings to hold pressure. If tank is equipped with a long-bolt manway for emergency venting, clamp lid as required using C-clamps.

CAUTION: The regulated test air supply pressure used for this test is not to be less than 1-1/2 psig (10 kPa) nor more than 2-1/2 psig (17 kPa). Use only calibrated diaphragm type air pressure gauge with a zero to 3 psig dial span. Set over pressure relief device in test air supply line at 2 psi.

CAUTION: Do not leave pressurized tank unattended.

WARNING: Keep away from tank top and fittings when pressurizing tank.

3.2.2 Close valves A and B. Open valve C.

3.2.3 Connect regulated test air supply line to test piping as shown on Figure 2.

CAUTION: Check to see regulated test air supply line pressure is properly set before proceeding.

3.2.4 Slowly open valve A to pressurize the primary tank. Pressure gauge 1 should indicate test air pressure of 1-1/2 psig minimum to 2-1/2 psig maximum.

3.2.5 Close valve A. Disconnect regulated test air supply line from piping.

3.2.6 Hold test pressure in primary tank for 1-hour minimum. A steady drop in pressure reading for gauge 1 indicates there may be a leak in the primary tank.

3.2.7 Apply approved leak test solution to tank roof welds, fittings, etc. Check for leaks. NO LEAKS ARE ALLOWED. If leaks are found, notify the tank manufacturer.

3.2.8 If no leaks are found, then close valve C and slowly open valve B to pressurize the interstitial space between the double walls of the tank.

WARNING: Do not apply air pressure to the interstitial space between the walls of a double-wall tank without air pressure in the primary tank. Do not apply air pressure to the interstitial space that is higher than the air pressure in the primary tank. Damage to the tank may result.

CAUTION: Pressurization of the space between the walls of large diameter tanks may result in bulging of the bottom to the tank. Should the tank move, immediately open valve C. In large diameter tanks it is possible to lift the tank by pressurizing the space between the bottoms. Secure tank accordingly before testing. Pressure gauge 1 will indicate a slight drop in test pressure when valve B is opened, but should hold steady at the lower pressure. If test pressure drops below minimum requirements of 1.5 psi. close valve

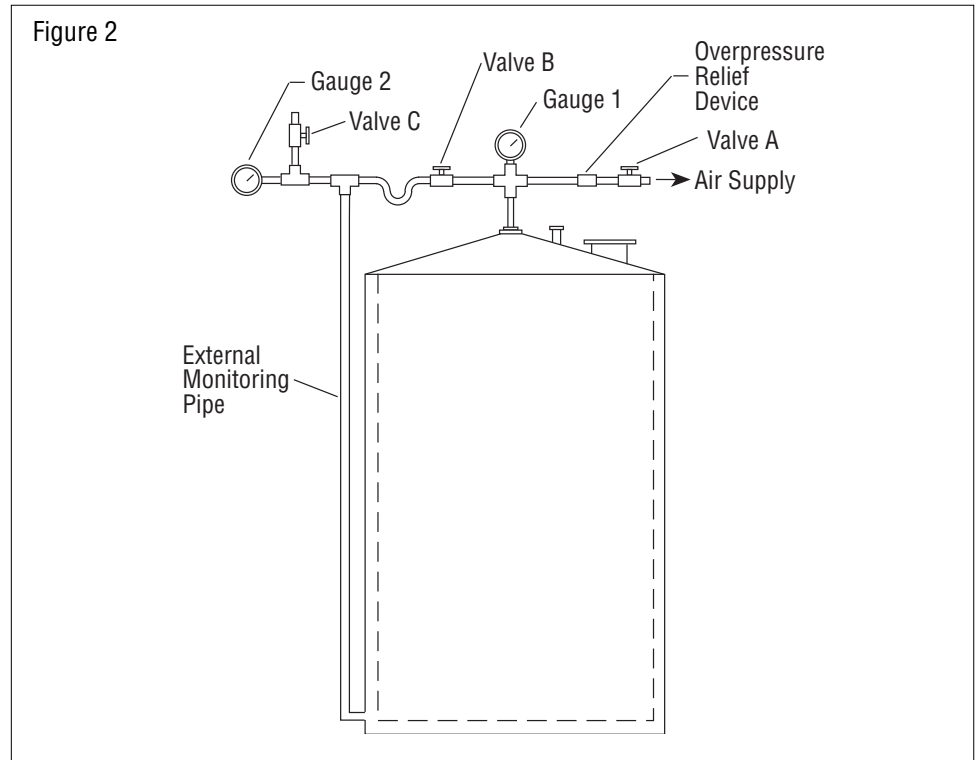
B, reconnect air supply line and slowly open valve A to increase pressure in primary tank (1.5 psig minimum and 2.5 psig maximum). When the required pressure is indicated on gauge 1, close valve A, disconnect test air supply line. Open valve B to equalize pressure in the primary tank and the interstitial space. Gauge 1 and gauge 2 should have the same pressure reading.

3.2.9 Close valve B. Hold test pressure in interstitial space for 1-hour minimum. A steady drop in pressure gauge 2 indicates there may be a leak in the interstitial space.

3.2.10 Apply approved leak test solution to tank exterior surfaces, welds, fittings, etc. Check for leaks. NO LEAKS ARE ALLOWED. If leaks are found, notify the tank manufacturer. If no leaks are found, testing of the tank is complete.

3.2.11 Open valve B, then slowly open valve A to release test air pressure from primary tank and interstitial space at the same time.

Figure 2



3.2.12 With tank depressurized, remove test piping, temporary plugs, caps and seals. Reinstall emergency relief vents, etc. If tank is equipped with an emergency vent long-bolt manway, remove C-clamps.

4.0 Tanks

4.1 Install all permanent piping and fittings using compatible non-hardening thread sealant material.

4.2 All unused tank openings must be properly sealed using metal threaded pipe plugs, flanges or caps using compatible non-hardening thread sealant material.

4.3 Do not modify tank structure in any way.

5.0 Labeling

5.1 Tanks shall be labeled in accordance with all applicable codes.

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