

INSTALLATION INSTRUCTIONS FOR VERTICAL FLAT BOTTOM TANKS

These instructions are to be used as a guide when installing ZCL Composites Inc. fiberglass single wall and double wall vertical flat bottom tanks. Compliance with these instructions is necessary for the proper installation of these tanks. Failure to comply will void the warranty for the tank and may cause tank failure.

- 1) Shipping & Handling Tanks shall be handled with a crane. Lift tank by lifting lugs only. Do not lift by nozzles, hold-down lugs, or any fittings other than lifting lugs. Lift using all lifting lugs or all erecting lugs provided. Use minimum 2 meter long double slings for each pair of lugs. Do not use chains or cables around the tank. Use shipping saddles for transportation and storage. Do not drop, roll or drag tanks.

- 2) Visual Inspection Observe vacuum gauge for the presence of vacuum (vacuum monitored double wall tanks only). Do not attempt to pressurize tanks. Inspect the exterior surface for the following defects and contact ZCL Composites Inc. if any damage is observed:
 - Visible fractures or impact damage on bottom, walls or ribs
 - Delaminations
 - Deep scratches, abrasions, gouges
 - Stress cracks (fine closely spaced cracks extending deep below the surface)

- 3) Foundation Vertical flat bottom tanks should be installed on a foundation of concrete designed to support the weight of the tank and its contents. This foundation shall have a smooth and continuous surface and be adequately sized to support the entire bottom of the tank. Alternatively, compacted gravel foundation may be used provided that the gravel and underlying soil have sufficient bearing capacity to prevent any settlement, which may damage the tank. Precautions must be taken to prevent erosion of the gravel around the base of the tank.

Use a minimum of two layers of 30 lb. Roofing felt between the foundation and the bottom of the tank. If any unevenness of the tank base or foundation prevents continuous support, set tank base on a bed of concrete grout 12 mm minimum thickness, or alternatively, on a soft bed of confined screened sand with appropriate measures to prevent erosion.

- 4) Erect Tank Install vent cap or other top mounted accessories before erecting the tank. Erect the tank using all of the erecting lugs located on the top of the tank. When hoisting the tank from a horizontal position, use suitable protective padding material under the bottom pivot point to prevent damage to the tank. Orient the tank as required and place it on the foundation bed.

- 5) Secure Tank Hold-down lugs and clamping plates are provided to secure the tank to the concrete foundation.

- 6) Test Tank Plug or blind all tank flanges and fittings (except vent). Fill tank with water to the top of the vent. Keep tank vented to the atmosphere at all times, do not pressurize. Inspect all fittings for evidence of leaks. Monitor visual leak indicator float on double wall tanks.

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- 7) Mount Heater Enclosure Insulated heater enclosures (optional) are shipped loose for field assembly onto the tank wall. Position the open side of the heater enclosure tightly against the tank, between the four steel mounting brackets (the tank wall is not insulated where it will be exposed within the interior of the heater enclosure). Drill four holes through the sides of the heater enclosure to mate with the holes provided in the mounting brackets. Secure the heater enclosure to the tank using the four bolts provided. Apply a foam sealant (not provided) to fill any gap between the outside of the enclosure and the tank.
- 8) Heater Start-up The heater enclosure (optional) is fitted with a catalytic gas heater. This heater is fitted with an orifice for either natural gas or propane. Ensure that the heater provided is equipped for the fuel gas that you will be using.
- Connect the heater to a pressure regulated fuel gas supply.
 - Turn on the gas supply.
 - Connect the starter cables to a 12 volt battery (or 110 volt AC).
 - Depress and hold the button on the safety shut-off valve. Continue depressing the button until it will stay depressed when released.
 - After 5 minutes, the starter cables can be disconnected.
 - Set the thermostat at 8 or higher.
 - To shut off the heater during warmer months, turn off the gas supply.
- 9) Piping Connections Commence piping connections once the vessel has been secured to the foundation. All pipe runs that connect to the vessel must be self-supporting. Flexible connectors are recommended to absorb differential settlement and thermal effects.
- 10) Venting Vertical flat bottom tanks must be provided with an unobstructed vent to ensure that the tank is positively vented to atmosphere at all times.
- 11) Static Grounding. A copper grounding wire is provided for draining off static charges from inside the vessel. This grounding wire must be connected to a suitable grounding rod driven into the earth.
- 12) Mount Ladder Attach the steel ladder (optional) to the two mounting lugs on the side of the tank with the eight bolts provided.

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