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Above Ground Storage Tanks

ABOVE GROUND STORAGE TANKS

The following handling and installation instructions are intended to help customers install tanks properly and efficiently.

Handling and installation instructions are only recommendations. They do not relieve the purchaser from full responsibility for proper inspection, handling, and installation. Improper handling or installation, which results in damage or tank failure, is the sole responsibility of the purchaser. Failure by the customer to comply with the handling or installation instructions will void the tank warranty. Unknown situations or conditions are also the burdens of the purchaser.

The presence of EDWARDS FIBERGLASS personnel or an authorized representative at the installation site does not relieve the purchaser of their responsibilities.

INSPECTION

At the time of delivery, the customer shall be responsible for inspecting the tank for damage during transit. Both the inside and the outside of the tank must be inspected. If damage has occurred it should be noted on the delivery receipt prior to signing acceptance, whether it be an EDWARDS FIBERGLASS truck or an outside truck the factory should be immediately contacted prior to unloading or acceptance. The customer accepts all future responsibility for a damaged tank if the procedures set forth are not allowed.

Minor damage can be repaired at the delivery site. By customer/ or EFI with touch-up gel-coat if needed.

INHERENT CHARACTERISTICS

In the manufacturing process, resin/ gel coat may adhere to the steel lugs. This interface between steel and resin/ gel coat does not bond, which allows for separation between the two dissimilar materials. This separation is cosmetic in nature ONLY, and in no way affects the structural integrity or operation of the tank.

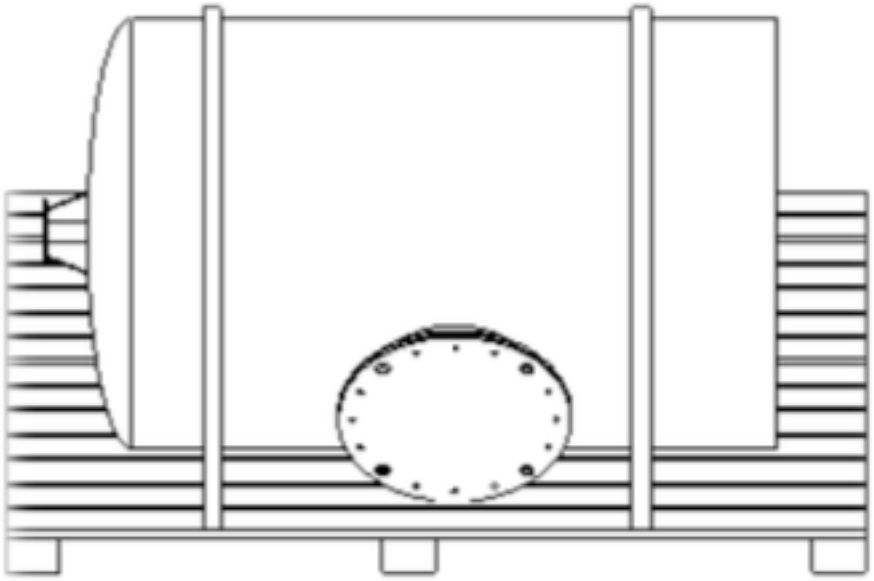
For minor cracks in the insulation case, an exterior expandable caulk may be used. None of the inherent characteristics are considered damaged.

EDWARDS FIBERGLASS tanks are designed to withstand normal handling. Note the following handling precautions.

1. NEVER roll or slide a tank. Lift the tank using a crane or other approved method.
2. Operators of hoist equipment should follow proper rigging procedures at all times. NEVER allow the tank to swing out of control.
3. Do not drop or allow hard impact from tools, spreader bars, etc.
4. Avoid the use of equipment inside the tank that could scratch or damage the inner corrosion barrier.
5. NEVER use cables or chains around the outside of the tank. (only Lifting Lugs)
6. NEVER lift tank by using fittings. Use designated lifting lugs.
7. If tanks are being stored prior to installation, be sure to lay on them padded surface and tie-down securely, not resting on any fittings or manways. The tank must be set on dome knuckle and bottom knuckle leaving the belly of the tank free.

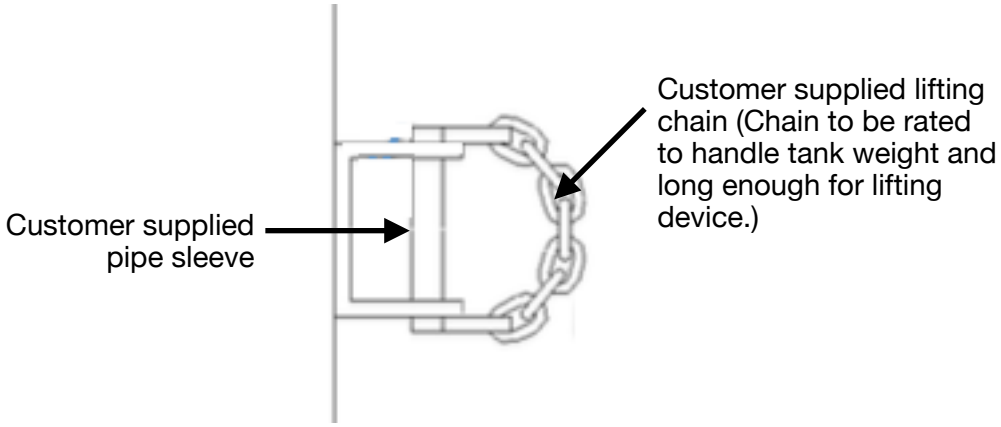
HANDLING TANKS SHIPPED HORIZONTALLY

Small tanks shipped by common Carrier are palletized to facilitate Handling by forklift. To remove the tank, Pull on the bottom of the skid. DO NOT PULL ON THE TANK.



LIFTING/HANDLING LUGS

The lugs are designed for an equal load on both ear tabs of the lug. EDWARDS FIBERGLASS recommends using a pipe spacer between the ear tabs to achieve equal load and a lifting chain to allow the tank to easily rotate from horizontal to vertical.

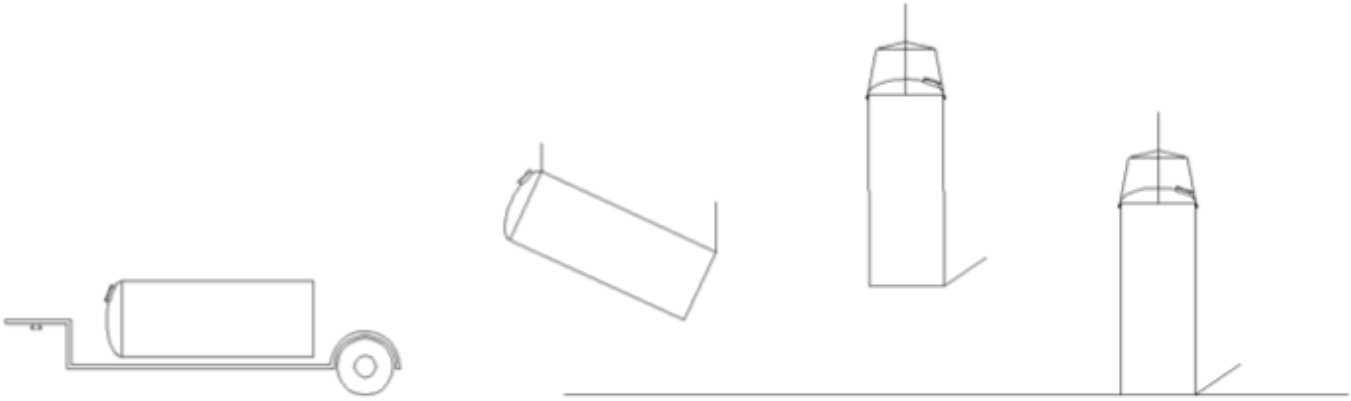


FLAT BOTTOM TANKS

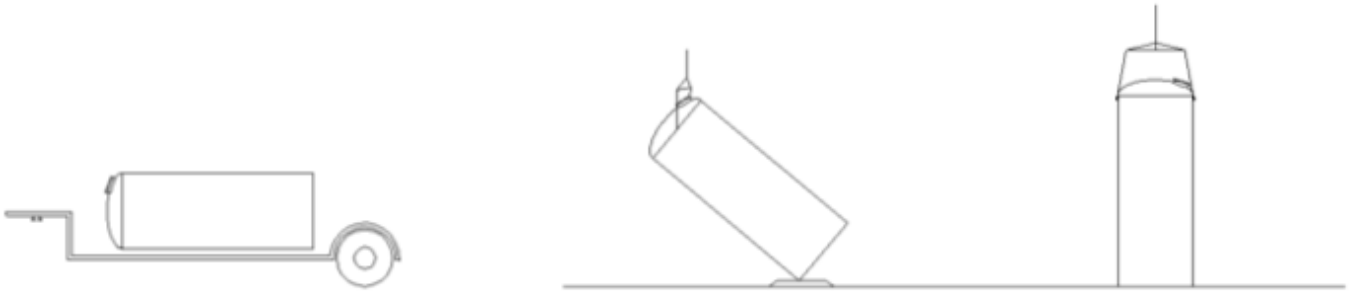
Larger tanks shipped by EDWARDS FIBERGLASS trucks and specially built trailers require a spreader bar and slings attached to the appropriate lifting lugs to unload tanks. Use a guideline to keep the load under control.

Use a spreader bar and lines attached to appropriate lifting lugs to hoist the tank to an upright position and place the tank on its foundation. Control the tank with guidelines to ensure the tank is gently set on its base.

Recommended Method



Alternative Method

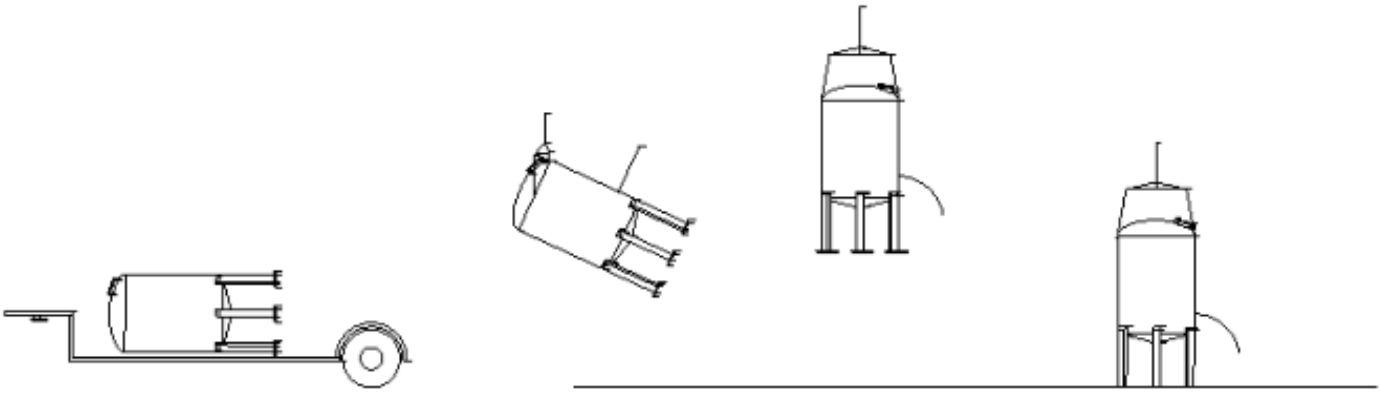


CAUTION: When a tail hook is unavailiable and the tank must rest on a pivot point, proper care should be taken to protect the pivot point by means of excessive padding.

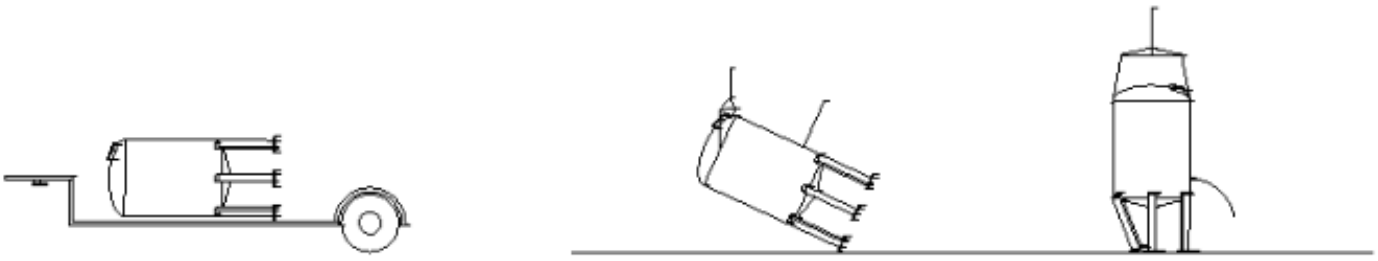
DISHED OR CONE BOTTOM TANKS

NOTE: When standing a tank with legs, DO NOT pivot the tank on legs. Lift the entire tank. Rotate to a vertical position. Set straight down on all legs.

Proper Method



Improper Method



Horizontal Tanks Proper Method

TANK BOTTOM SUPPORT PAD

EDWARDS FIBERGLASS flat bottom and slope bottom tanks require continuous bottom support structure with sufficient strength to support the combined weight of the tank and its contents, with a reasonable factor of safety, is acceptable. Design for bearing strength of the support pad is the responsibility of the purchaser. The support pad must exceed tank diameter by 6” minimum, and be flat within +/-1/16”.

INSTALLATION NOTE: The support pad must be clean and free of all foreign objects prior to settling the tank in space.

TANK BOTTOM BUFFER PAD

Liquid grout such as non-Si, epoxy, etc. can be used under standard flat bottoms. EDWARDS FIBERGLASS recommends a buffer pad between the tank support and tank bottom: flexible elastomer or a minimum of two layers of 30-pound roofing felt. When applying the roofing felt, be sure there are no overlaps or wrinkles causing ridges under the bottom. It is the responsibility of the purchaser to see that tanks are properly installed. If any void is visible from the outside edge of the tank to the center of the tank or if you can bounce on the inside of the tank and the bottom moves up and down grout will be needed. EDWARDS FIBERGLASS must approve any deviation from the above-outlined procedure or it will void your warranty.

FITTING CONNECTIONS

Flexible pipe connections should be used wherever possible. If rigid piping must be used, be certain it is self-supporting. If rigid piping is used and is not self-supporting, and results in damage to a tank fitting, your warranty will be void. CAUTION: METALLIC FITTINGS MUST NOT BE USED ON FRP NIPPLES OR COUPLINGS.

EDWARDS FIBERGLASS recommends that you do not use raised face flanges. If raised face flanges must be used, a flange spacer MUST BE USED when bolting FRP flanges to raised face flanges. Use only full-face gaskets. DO NOT over-torque the flange bolts.

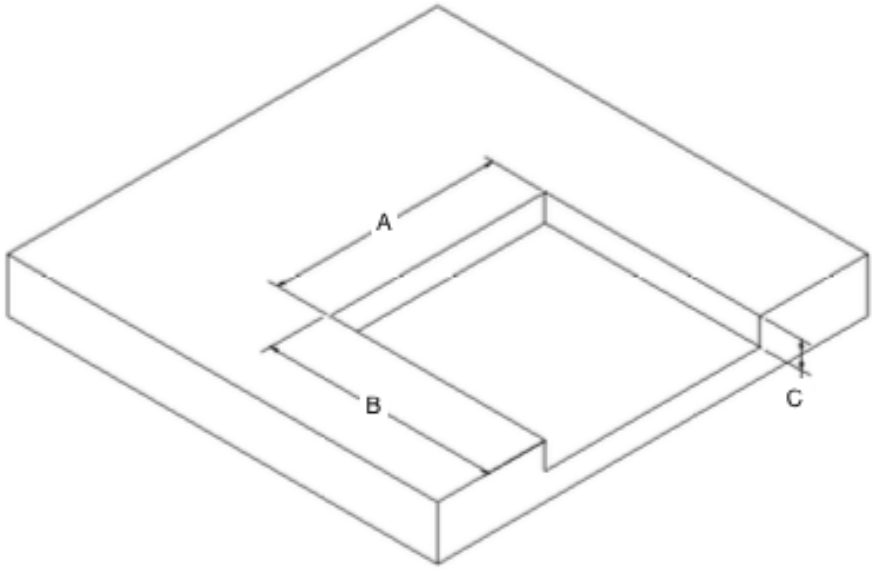
WATER FILL TESTING

EDWARDS FIBERGLASS recommends that each tank be water-filled (hydro tested) for a minimum of 24 hours at atmospheric pressure after the tank is installed and prior to use.

SIDE BOTTOM FLANGE PAD CUT OUT:

Caution: When installing any EDWARDS FIBERGLASS tank with a side bottom flange, your pad cut-out dimensions must conform to the specifications as detailed below. Any deviation without the written consent of EDWARDS FIBERGLASS may cause serious damage and will void the warranty.

Consult the factor if you have any questions. (660) 826-3815



Note: Dimension B is taken from the sidewall of the tank

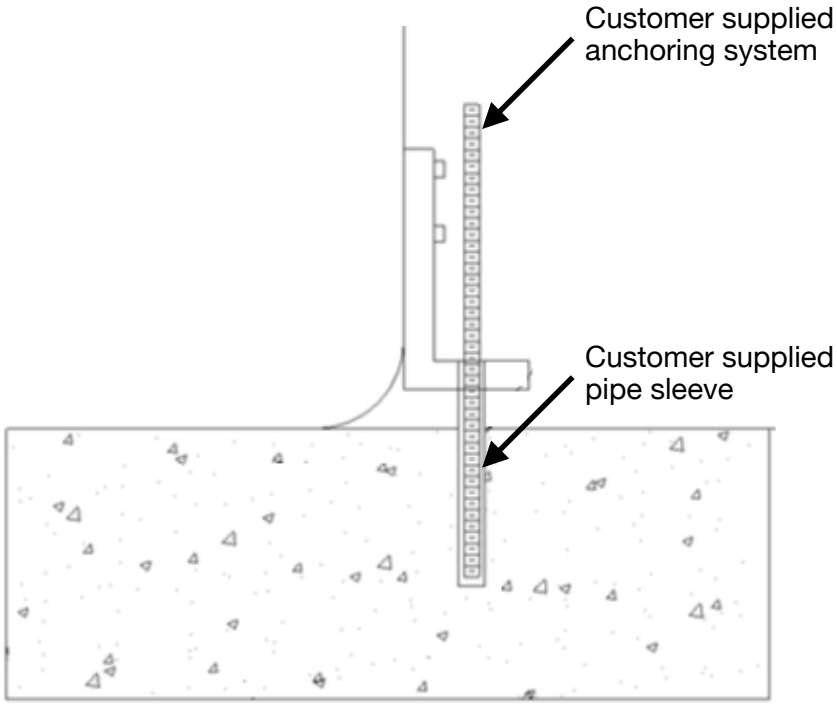
Drain Size	A	B*	B**	B***	C
2”	11	8	9	10-1/2	3-3/4
3”	11	8	9	10-1/2	4-1/4
4”	11	8	9	10-1/2	5-1/4
6”	13	8	9	10-1/2	6-1/4
8”	15	8	9	10-1/2	7-1/2
10”	18	8	9	10-1/2	8-3/4
12”	21	8	9	10-1/2	10-1/4

* Tank Diameter < 120”
** Tank Diameter 120” to 144”
*** Tank Diameter > 144”

HOLD DOWN LUGS – Standard

The required hold down lugs are supplied as standard equipment on all EDWARDS FIBERGLASS tanks. Anchor bolts and hold-down hardware are supplied by the customer.

Preferred Method of Anchor Installation



Edwards Fiberglass recommends the use of two nuts on the top of the lug. When the tank is EMPTY, hand tighten the first nut onto the top of the lug. Hand tighten the second “JAM” top nut onto the bottom nut. Then, using two wrenches lock the bottom nut onto the top nut. Do not adjust after the tank is filled.

Do not over tighten hold down lugs.

INSTALLATION NOTE: Do not locate or pre-set anchor holes/bolts in the tank pad before receipt of the tank. EDWARDS FIBERGLASS will not be responsible for pre-set anchor holes/bolts.

DISHED BOTTOM *or* CONE BOTTOM TANKS

The pad surface must be smooth and level. Consideration must be given to the concentrated nature (4-12 points) of the loading, the magnitude of which could require footings beneath each leg to spread the load over a larger area. The design of footings is the responsibility of the purchaser.

The tank is designed to rely upon firm even support at each of its legs. In order to allow for uneven pads, floors, and legs, the floor pads on each leg may require shims to insure uniform support. Once uniformly supported, the floor plates are to be anchored. Consult the factory if you have any questions. (660-826-3915)

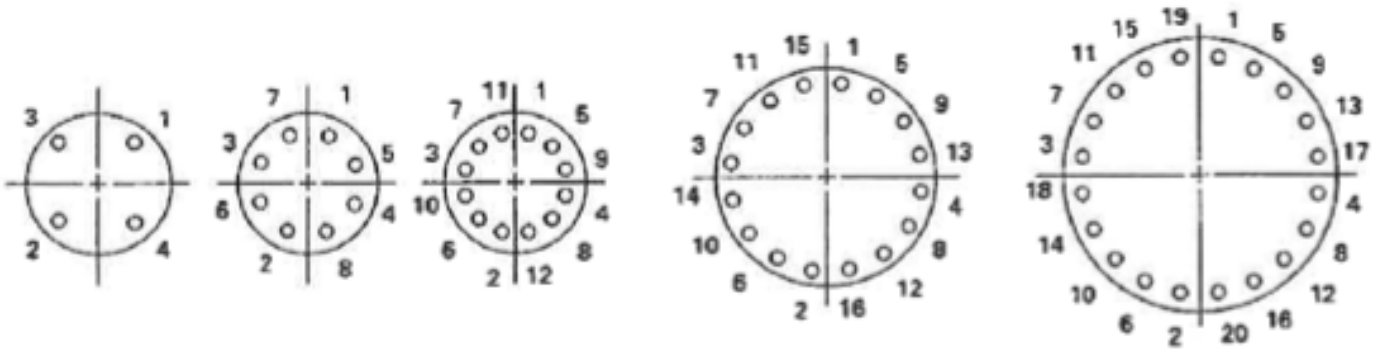
HORIZONTAL TANK INSTALLATION

Installation of horizontal tanks is much the same as the dished bottom tank. Tanks are supplied with the required number of FRP support saddles.

The tank is designed to rely upon firm even support at each of its saddles. In order to allow for uneven pads and floors, the saddles may require shims to insure uniform support. Once uniformly supported, the saddles are to be anchored. Some horizontal tanks may be designed to have concrete poured inside the tank saddles. If this is the case, EFI will supply rebar-lined saddles with doors for concrete to be poured. In this case, please refer to the design calculations.

Caution: Modification of saddles in any way voids your warranty.

FLANGE BOLT TIGHTENING



Bolt Torquing Sequence		
Recommended Bolt Torques for Hand Layup Flanges		
Pipe Size	Bolt Dia.	Torque ft-lb
2	5/8	25
3	5/8	25
4	5/8	25
6	3/4	25
8	3/4	25
10	7/8	25
12	7/8	25
14	1	30
16	1	30
18	1-1/8	35
20	1-1/8	35
24	1-1/4	40
Manways	3/4	30

General Notes:
(a) With Feipro C5A thread lubricant or equal.
(b) For machine-made pipe falanges, see manurfacturer's instructions.