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**Recommendations for packaging, loading, transport
and installation of welded non-pressurized
thermoplastic tanks.**

General

This instruction gives practical examples of methods for handling tanks.

Protection and support of tanks during transport

Small tanks (up to 6m³) can be packaged by shrink wrapping onto a pallet to facilitate ease of handling by fork lift truck. Larger tanks are not normally packaged.

Nozzles can be closed with simple flange blanks, but at least one nozzle should be kept open for ventilation.

No tank should be loaded or transported in ambient temperature below 5°C without prior consultation with the manufacturer.

Loading

The surface of the transporting vehicle should be inspected for sharp-edged objects or differences in level that could damage the tank during transport.

There are different methods for loading tanks dependent upon their size.

Small tanks (upon 6m³) are usually loaded by hand or for lift truck (see fig 1.)

Small tanks are normally transported in vertical position and should be adequately secured to resist horizontal and vertical movement. Fiber ropes or strapping should be used for this purpose. The use of wire ropes or chains is prohibited.

Loading of larger tanks is usually carried out using an independent or vehicle mounted crane.

Lifting of the tank requires the use of a lifting or spreader beam (see fig 2). This weight tested horizontal beam has a central crane attachment and two adjustable tank lifting points and therefore prevents the damage which can be caused to tank covers by central lifting slings.

In cases where a lifting beam is not available, a single webbing strap (min. 75 mm wide) with chocking action, which is positioned around the tanks cylinder approximately 1/3rd down from the top, can be used to lift the tank. It is essential that care is taken to avoid strain on connections and to ensure that the strap is kept tight during the lifting operation.

Larger tanks are usually transported in the horizontal position and extreme care should be during the loading process if the rotation of the tan from the vertical to the horizontal plane uses the tanks base as a fulcrum (see fig 3.) This practice should be avoided if at all possible. Fiber ropes or strapping should be used for this purpose. The use of wire ropes or chains is prohibited.

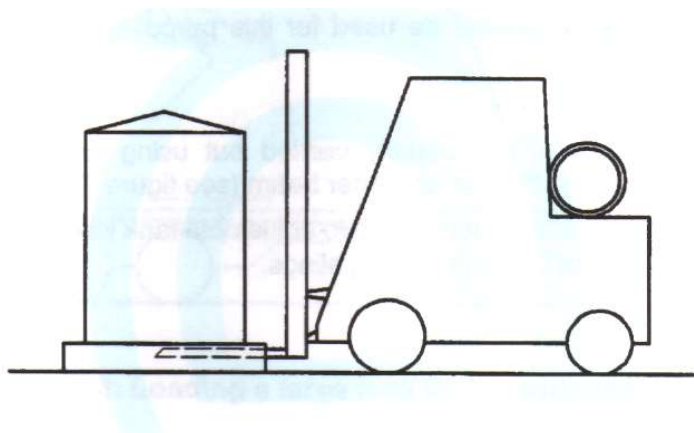


Fig 1. Correct lifting position using a pallet

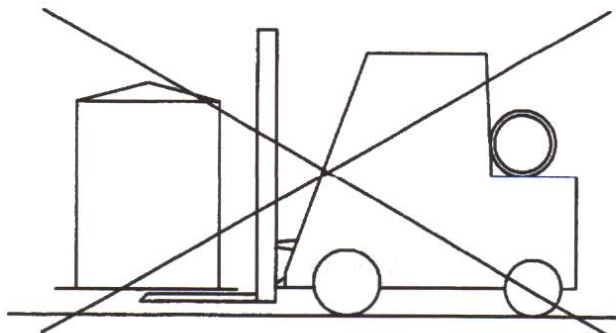


Fig 2. Incorrect handling, lifting directly.

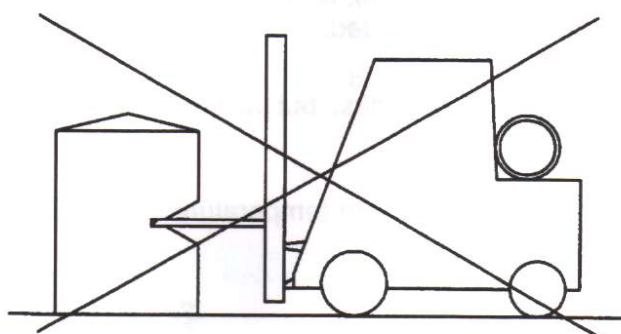


Fig 3. Incorrect handling, pushing tank along the floor with forks.

It is recommended that two cranes are used to load tanks of volumes greater than 30 m³. In the following example one crane is vehicle mounted and one is independent. (see fig 4.)

The independent crane uses the lifting beam attached to the lifting lugs of the tank. The vehicle mounted crane is attached to the tank using a webbing strap.

These tanks should be supported on felt or carpet lined tank support brackets arranged to reduce deformation of the tank during transport. The following aspects should also be considered.

1. Position of fittings of the tank
2. Stability and shape of the structure
3. Distribution of load
4. Other mechanical loading
5. The mode of transport.

The tank should be adequately secured to resist horizontal and vertical movement during transport. Fiber ropes or strapping should be used for this purpose. The use of wire ropes or chains is prohibited.

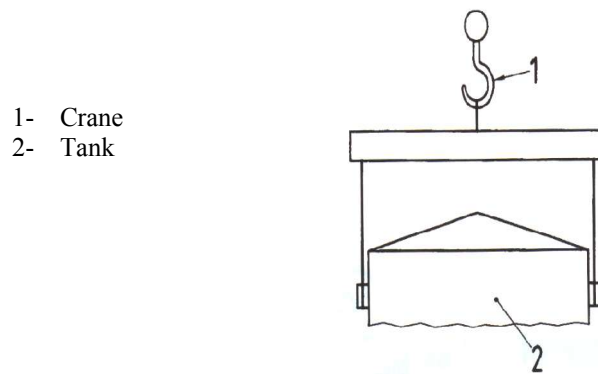


Fig 4. Lifting a tank using a horizontal beam.

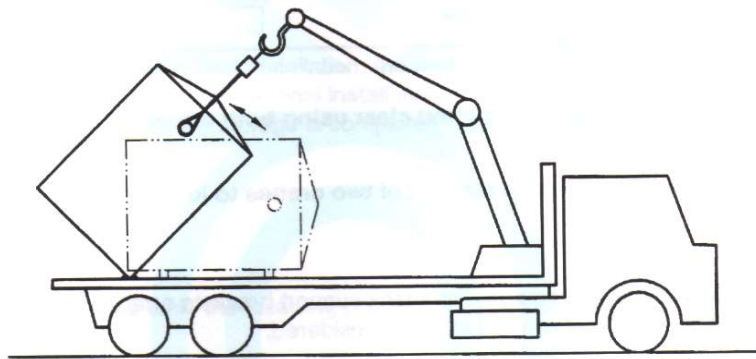


Fig 5. Loading a large tanks in the horizontal position.

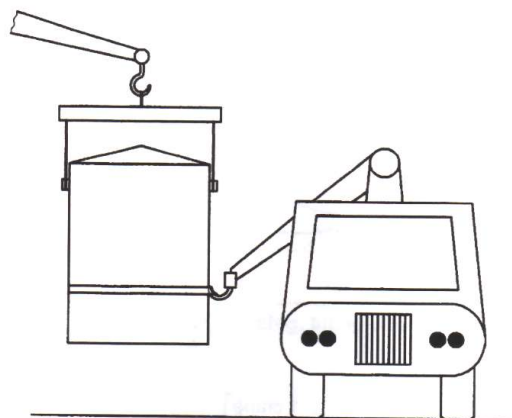


Fig 6. Two cranes used to „top and tail” the tank to restrain any swinging motion.

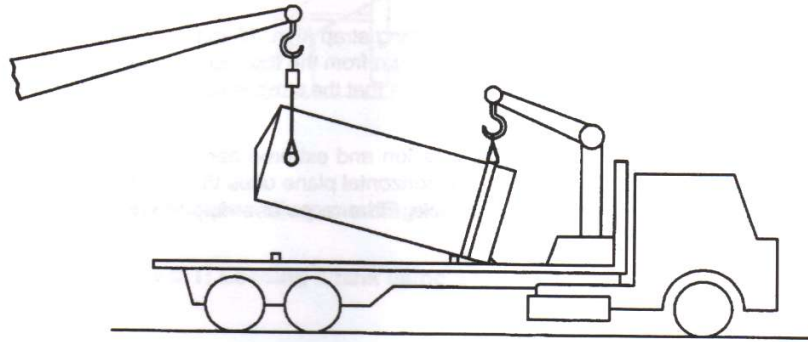


Fig 7. The tank is lifted using both cranes.

Transport

Once a tank has been correctly loaded and secured the following guidelines should be observed. Avoid shock loading of the tank by high speeds on poor road surfaces and stresses included by these actions can cause premature failure of the tank.

Attention should be paid to particular requirements of modes of transport, e.g. rail, as more stringent packaging requirements may be imposed and to individual countries' allowable vehicle load widths.

Offloading

On arrival at the installation site it is recommended that a representative of the purchaser carries out an inspection of the tank prior to offloading to ascertain any damage or movement of the tank during transportation. Any comments should be recorded.

The offloading sequence is the reverse of the loading sequence and therefore all guidelines given for the loading of the tanks also apply in the offloading of the tank.

Installation

The tanks should be installed on a designed continuous horizontal flat surface, e.g. a concrete base. If the installation surface is rough or uneven, then the installation of the tank can not take place. There should be no unstable material placed between the tank base and the installation surface, e.g. sand, as the gradual loss of this layer will cause uneven stressing of the tank base. If intermediate storage is required prior to final installation, the tank should be stored in a vertical position, on flat level ground and secured to prevent wind damage. On final installation of this tank care should be taken to ensure that any rainwater which has entered the tank during storage is completely drained prior to lifting the tank.

Pipework

When connecting up pipework to the tank, the following points should be observed:

- Allowance should be made for expansion of the tank and pipework in order to avoid additional stress.
- It should be ensured that pipework and tank connections are aligned and positioned properly to avoid unnecessary strain on the connections. Particular attention should be paid to the correct bolting of the flanges
- All valves and pipework running to and from the tank should be supported correctly

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- Any additional equipment generating vibrations (pumps, stirrers etc.) should be installed on the tank with appropriate damping devices.

Information to be given to people, who are responsible for correct delivery, unloading and installing:

REMEMBER:

- **do use proper equipment when offloading**
- **do not roll tanks off the transport vehicles**
- **do not lift tanks by their nozzles**
- **do provide a solid flat base to sit the tank upon**