

Loading methods

Gravity loading through manhole

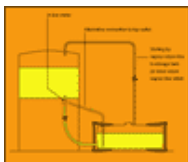
The cargo flows freely from an overhead storage tank through the manhole into the tank container.



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'Closed system' gravity loading through top or bottom outlets

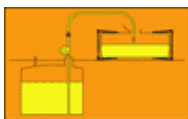
The cargo flows into the tank container under gravity, the vapours are vented back to the storage tank via the airline connection.



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Pumped loading through manhole

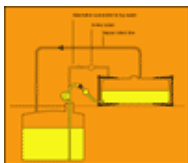
The cargo is pumped from the storage tank through the manhole into the tank container.



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'Closed system' pumped loading through top or bottom outlet.

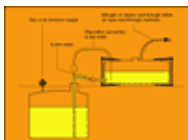
The cargo is pumped into the tank container, with vapours vented back to the storage tank via the air line connection.



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Pressure loading through top or bottom outlet

The cargo is loaded by top pressure in the storage tank. For sensitive or hazardous cargo, vapours are vented via the air-line connection to a vent tank or back to the storage tank.

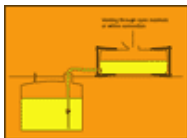


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Discharge methods

Gravity discharge

The cargo flows freely through the bottom outlet to low-level storage tanks. Ensure adequate venting to prevent damage caused by vacuum.

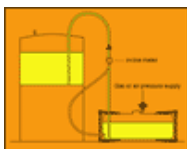


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Pressure discharge

The cargo is discharged through the top or bottom outlets by top pressure in the tank container.

Products carried under an inert gas blanket are normally discharged using nitrogen or another inert gas as the pressure medium. The maximum working pressure of the tank must under no circumstances be exceeded.

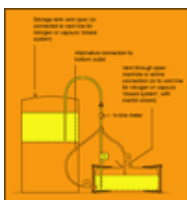


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Pumped discharge

The suction side of a suitable pump may be connected to the top or the bottom outlets or to a hose via the manhole to pump the cargo to higher level storage tanks. Air or gas must be allowed into the tank container to replace the cargo being discharged. Depending on the nature of the cargo this can be achieved by opening the manlid or air-line connection, or by connection to an inert gas supply.

When using a high capacity pump it is recommended that a vacuum safety valve is incorporated in the suction line to protect the tank from vacuum collapse.



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Methods

The choice of method of loading and discharge will depend upon the relative position of the storage tanks and upon the hazard rating or nature of the cargo.

Cargoes which are not hazardous or noxious and which do not require protection from oxygen or water vapour may be loaded by any of the methods shown:

Noxious or hazardous cargoes

Loading or discharge through the top or bottom outlet may be necessary. To create the totally closed system any air, gas or vapour displaced by the liquid must be returned to the storage tank through the vapour return line fitted between the airline connection and the storage tank.

Cargoes which must not be contaminated by oxygen or water vapour should be loaded through the top or bottom outlet.

The tank should be purged of air before loading and the cargo should be carried under a blanket of inert gas. Cargoes which foam or are susceptible to oxidation should be loaded through the bottom outlet, or if this is not possible, through the top outlet and syphon pipe.

Measurement of cargo

The quantity loaded can be measured on a flow meter, by using a diprod, or by means of a weighbridge. With hazardous cargoes and 'closed system' loading diprods should not be used.

Check the complete system

All equipment from the main product storage tanks through to the tank container, including valves, hoses, pumps, gauges, connections, vapour return lines etc, should be regarded as 'total systems' exposed to the same cargo characteristics, (viscosity, corrosivity, temperature and pressures), and must be thoroughly checked for suitability and condition.