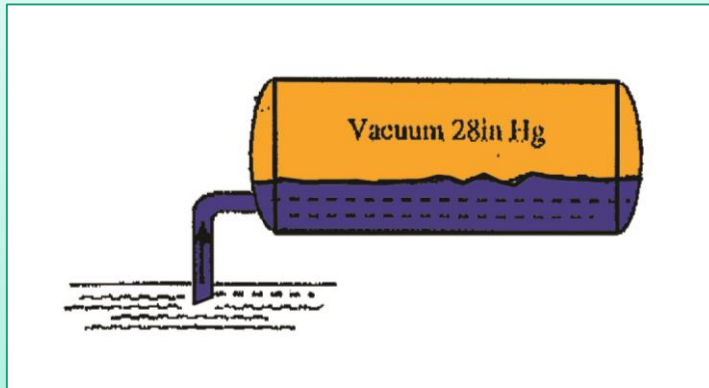


Filling time is dependent on 4 factors:

1. Vacuum in tank – Dependent on quality of pump.
2. Depth from which sucking load.
3. Fluid properties of loads – water/sewage.
4. Pipe diameter



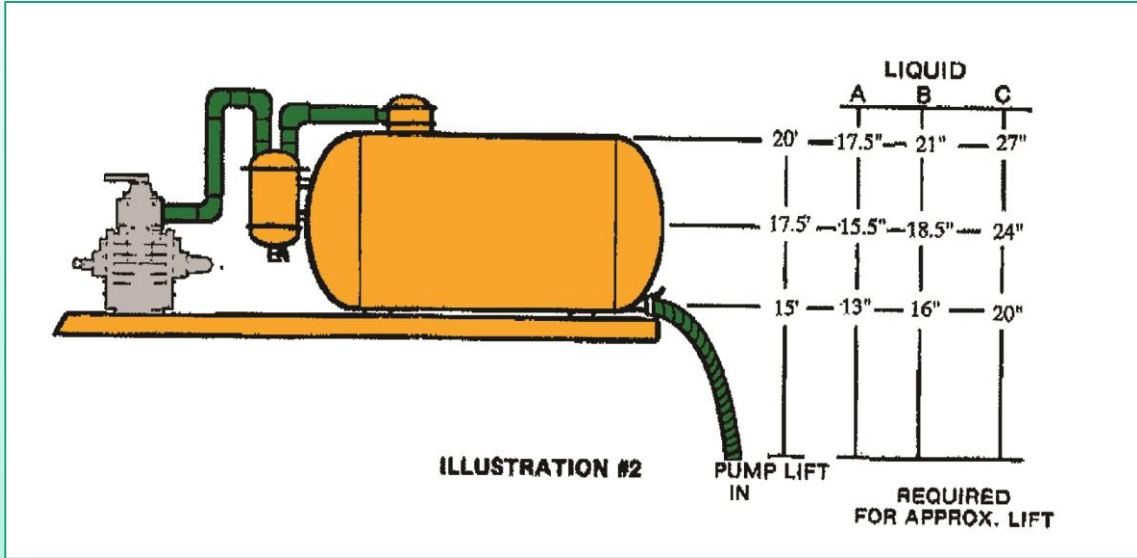
If loading water from a surface lagoon with 28inc HG vacuum the best performance that can be expected is:

Loading Times			
		1000 gallons	2000 gallons
3" dia hose	145 galls/min	7 mins	14 mins
4" dia hose	260 galls/min	4 mins	8 mins
5" dia hose	405 galls/min	2.5mins	5 mins
6" dia hose	583 galls/min	1.7 mins	3.5 mins

1" of HG Vac = 1 foot of lift (filling)

1 PSI of pressure = 2 foot of lift (discharge)

Tanker Loading



Vacuum Requirements for solid column lifting

Liquid "A" is water with specific weight of 10.0 Lbs/Gal

Liquid "B" is sludge liquid with specific weight of 12.0 Lbs/Gal

Liquid "C" is sludge liquid with specific weight of 15.0 Lbs/Gal

The vacuum requirements shown are for lifting liquids "A", "B", or "C" the designated height in feet. These liquids are given as an example. Vacuum requirements for other liquids will depend on their specific weights.

Vacuum Tankers

Performance Limitations

Once there is a vacuum showing on the gauge then loading of the tanker can begin. The speed at which the liquid load flows into the tanker is largely dependent on the following five factors.

- 1) The Amount of vacuum in the tank.
- 2) The diameter of the loading pipes.
- 3) The viscosity of the load.
- 4) The density of the load.
- 5) The depth from which the load is being drawn

The effective limit on vacuum loading is generally about 8 metres vertically down from the valve at the rear of the tanker to the surface of the liquid being removed. Depths slightly in excess of 8 metres can be tackled if the hose and is alternately pushed in and out of the liquid. This has the effect of reducing the column of liquid in the loading pipe to a series of slugs of liquid separated by pockets of air which aids the lifting effect of the vacuum.

Because the flow rate is proportional to the cross sectional area of the loading pipe the best loading rates are achievable with a full vacuum and a free flowing liquid with a density similar to that of water will be:-

For 3" (75-80mm) hose it will load at up to 140 gallons/minute (650ltr/min)

For 4" (100mm) hose it will load at up to 250 gallons/minute (1150ltr/min)

For 6" (150mm) hose it will load at up to 550 gallons/minute (2500ltr/min)

For a typical 2000 gallon tanker –

3" hose could load in 15 minutes, 4" hose could load in 8 minutes and 6" hose could load in 4 minutes.

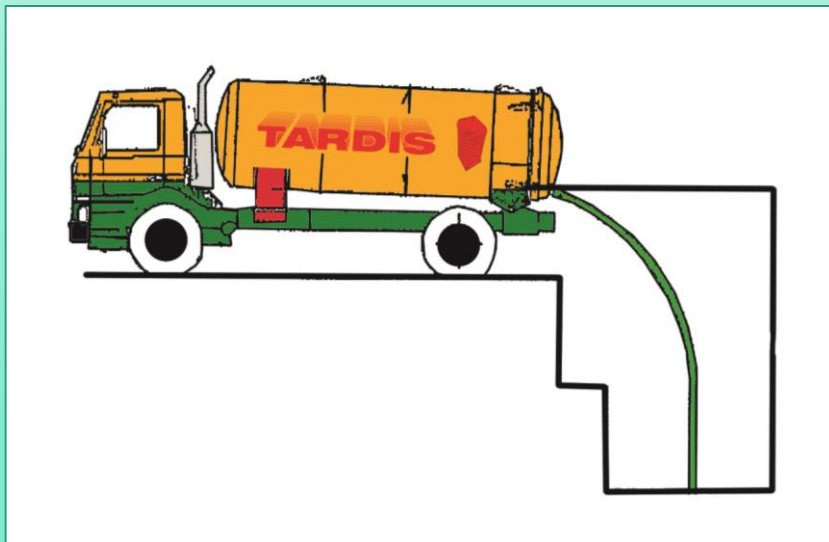


Diagram showing is the maximum depth to the surface of the liquid that can be removed or simply. 1inHg will lift water approximately 1 foot in height. (3inHg – 1mtr)