

Vortex Inhibitors - What are they and who needs them?

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As the name suggests this specialised pipefitting prevents initiation of vortices within a tank when the contained liquid is being extracted and assists in **maximizing, effective tank capacity.**

How does it work? Like most effective things in life, it's simple in concept and in use. Fitted internally to a tank's Cold Feed Outlet Pipe this fitting ensures, with no requirement for great inherent strength, moving or maintainable parts, liquid is drawn from a wide area within the vessel, dramatically reducing the entrance flow velocity and hence the initiation of surface vortices. This allows the maximum possible drawdown of the liquid's surface level.

The sketch opposite advises the optimum design parameters for a cost effective Vortex Inhibitor unit.

Why is it beneficial to prevent vortex formation?

Air entrainment and its resultant choking effect on full flow discharge is eliminated whilst potential damage to booster pump equipment, through over speeding, is safeguarded.

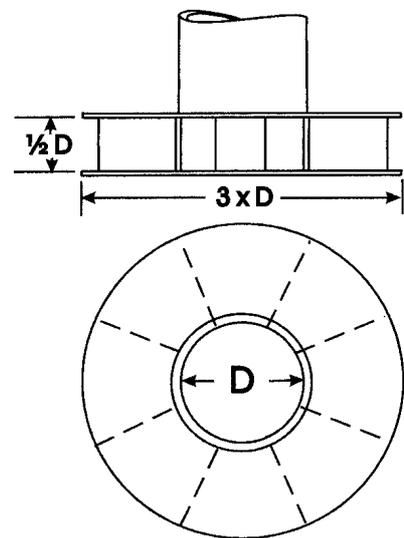
By converting linear flow to radial flow it prevents a straight stub pipe from drawing liquid from a localised area within the tank, thus minimising the risk of vortex formation.

Generally, discharge rates from water tanks under gravity conditions are lower than those that feed booster pump sets and the need to draw down to the last drop of water is not a very likely occurrence. Consequently, Vortex Inhibitors are not required for this more general application. However for flow velocities exceeding, say 1 m/s, or where a booster pump is employed, it is highly desirable to protect the downstream system by the fitting of a Vortex Inhibitor.



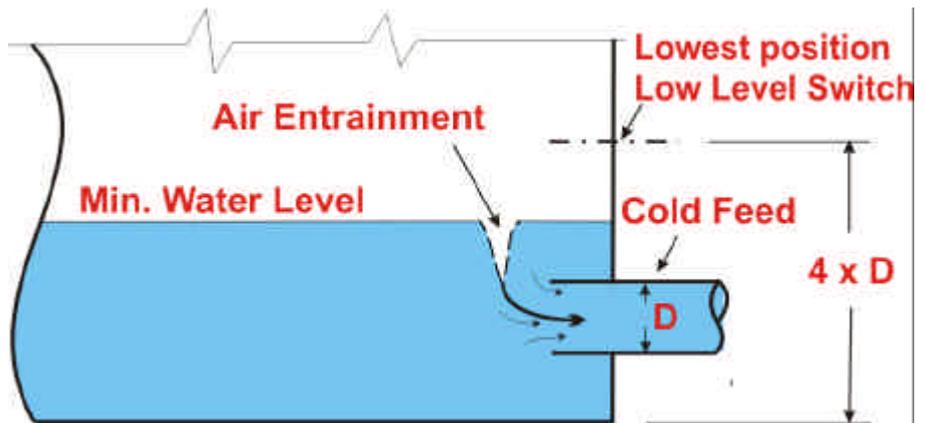
The design parameters of the Vortex Inhibitor ensure the flow velocity at its entrance is **6 x less** than the pipe flow velocity, which it feeds.

These units are available from specialised fittings manufacturers however they are easily constructed from plastic pipe and sheet at a fraction of the cost for an equally effective result.

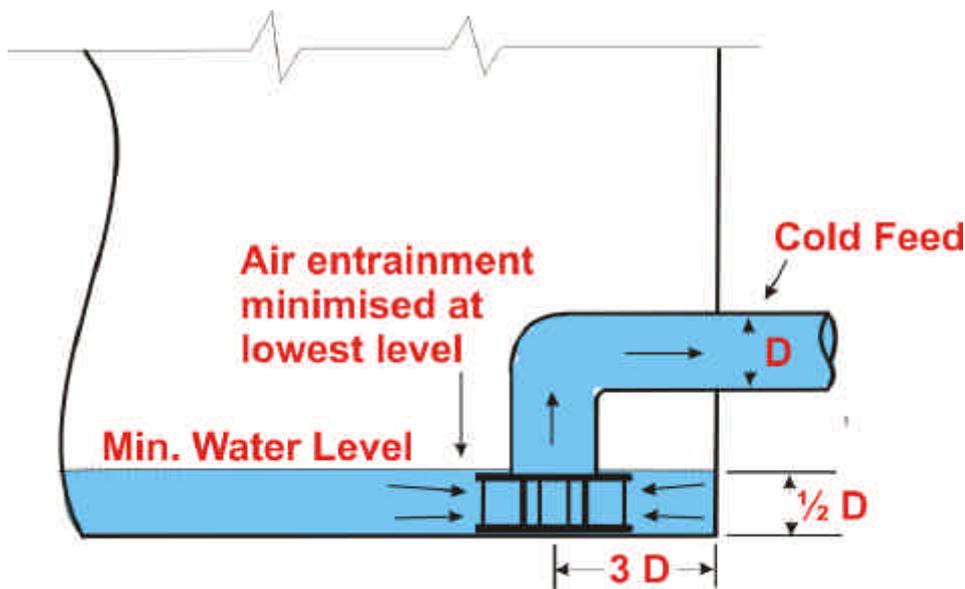


Vortex Inhibitor

With a conventional side entry Cold Feed Stub Pipe the minimum draw down level should be at least 1 pipe diameter above the soffit of the pipe and for the positioning of a Low Level Pump Cut Off Switch, 2 pipe diameters.



In other words, the lowest practical drawn down level for a side entry connection to a booster pump set ensure no air entrainment is 4 pipe diameters above the tank base.



The installation of a Vortex Inhibitor to this outlet pipe will increase the tanks actual effective water depth by 3.5 x Outlet Pipe diameters. This might not seem a vast improvement but for conventional water storage use, a tank could be sized 12% to 17% smaller for any given capacity and would provide considerable cost and space savings.

Where additional actual capacity is desired or a necessity, (Sprinkler Tanks require it as a mandatory fitting) an effective 15% to 20% greater capacity is obtained.

Vortex Inhibitors are an effective method of maximising a tanks' capacity or providing the option of reducing its size whilst providing a more dependable and secure operational system.

Note: The information advised is for guidance only.