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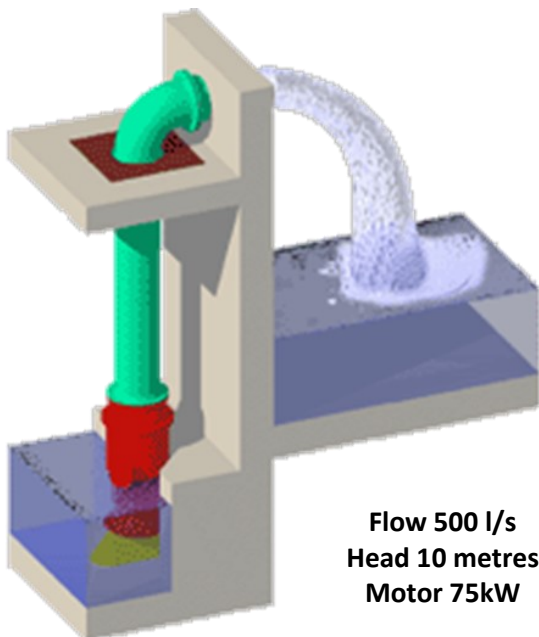
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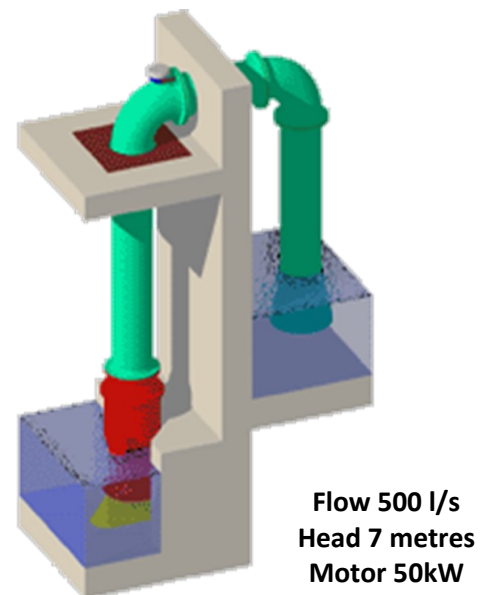


SIPHON BREAKER VALVES

Are you doing this ...



When you could be doing this ...



The two illustrations above are for exactly the same application. The first shows a typical installation with a free discharge; the second takes advantage of siphonic recovery, and in so doing offers a significant reduction in pump head and power.

The concept of siphon assistance has been around for centuries, but is often overlooked in pumping applications. By submerging the outlet of the discharge pipe, the pump static head is reduced simply to the difference between the sump water level and the discharge surface water level.

Traditionally this method has been widely used in the Land Drainage industry but can equally be used in many other applications. All that is required is a slight modification to the pipework design, and the installation of a siphon breaker valve. The benefits are recouped whenever the plant is running.

TAKE ADVANTAGE OF NATURE

How does it work?

The siphon breaker valve is a small paddle operated butterfly valve designed to automatically control the priming and de-priming of the siphonic discharge. It is mounted on top of the discharge pipework siphon loop.

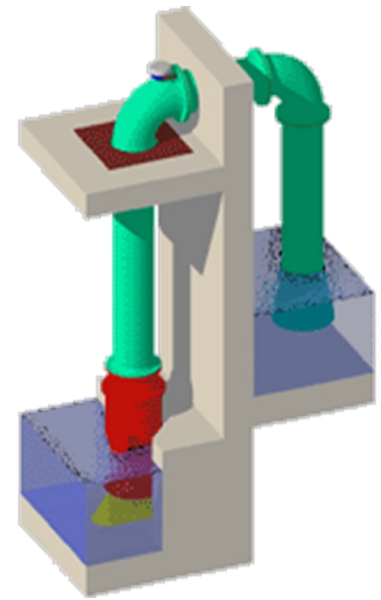
With the pump stopped the valve is held open by the weight of the operating paddle.

On pump start-up the valve allows air to discharge from the top of the siphon.

As the pipe fills, flow acting upon the paddle closes the valve. The siphon designed into the system is now established.

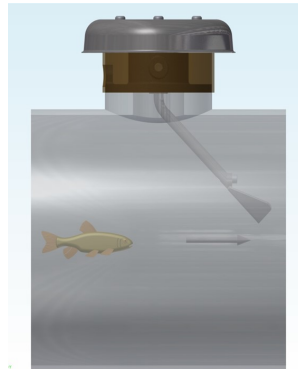
The flow of water in the forward direction maintains pressure on the paddle and keeps the valve closed, thus maintaining the siphon.

When the pump stops, the reverse flow acts on the paddle and opens the valve thereby destroying the vacuum in the pipe and preventing continuing reverse flow through the pump.



Advantages of a siphonic system

- The savings on power consumption can be considerable, as the head reduction will result in a proportional decrease in power absorbed.
- The complete absence of any valves, other than the siphon breaker, results in capital cost savings and enable automatic, maintenance-free operation.
- The prime mover cannot be overloaded.
- The siphon-breaker valves are supplied in three sizes: 100, 150 and 200mm diameter, covering pipe sizes between 200-1200mm diameter.



Features

The Fish Friendly variant of the proven Bedford Pumps Ltd Siphon Breaker Valve incorporates a streamlined profile paddle which results in safer passage for migrating eels passing along the piped system.

Other features include:

- Heating element to prevent freezing the closed position.
- Provision for a proximity switch to indicate when the valve is open / closed.
- A close fitting bowl-shaped cowl as standard, or vent pipe extension silencer / if required.

Design of a siphon system

Each pump must have its own discharge main. The invert of the siphon must be slightly above the flood level otherwise water can flow back irrespective of the siphon breaker.

For the few seconds of start-up the pump head is from the level in the suction well to the soffit (top) of the siphon pipe.

The flow velocity in the siphon must be approx. 1.8 m/s to maintain prime, otherwise the rising water will simply "weir" over the invert. This flow velocity must be achieved against the start-up level.

