

The Bamford Pump Does It Suit Your Needs?

If you have a suitable site to install a Bamford Pump, consider the advantages in comparison with other pumps. If you can answer yes to the following questions, you should have a suitable site. And in answering the questions, please try to measure the figures for your site as accurately as reasonably possible!

Do you have a stream or spring from which you can take 10 litres of water a minute or more to run the pump?

Can you bring this water to the pump so that the minimum drive head of water is 1.5 metres or preferably 2 metres?

For a 1.5 metre drive head, is the delivery head less than 25 metres?

For a 2 metre drive head, is the delivery head less than 50 metres?

Can you install the necessary pipework to filter out any debris and bring a steady flow of water to the pump?

Larger water flows than the above, higher drive heads, and lower delivery heads all increase the amount of water that can be pumped. The opposite also applies, so that less water will be pumped where the available water flow is smaller, or the drive head is lower, or the delivery head is higher.

The Bamford Pump can work outside the limits given above. However, in such situations the figures for your site may need to be measured accurately to decide whether the pump will meet your needs. The low cost of the Bamford Pump also means that an installation may be economic where the desired inlet water flow is not available for the whole of the year.

The Bamford "Hi-Ram Pump ®"

The New, Simple and Economic Pump Water Powered

No electricity or external power needed
Uses energy in water flowing from creek or spring
Low Cost
Simple operation
Can raise water more than 50 metres
Can be driven by water flows below 10 litres a minute
Best suited for drive heads of 2 to 5 metres
Easy adjustment for different operating conditions
Emits little noise
Invented and manufactured in Australia
Pumps sold to at least 25 countries

Typical Applications

General farm and rural use from streams or springs
Village water supply in developing countries
Household and garden use
Pumped water storage for dry periods
Low lift from streams for livestock drinking water
To keep livestock out of streams and water supplies
Supplement more expensive reticulated water
Make use of water otherwise running to waste
To minimize use of fuel powered pumps

Available From:

The Bamford "Hi-Ram Pump ®"



The Bamford "Hi-Ram Pump ®"
Australian Patent No 741896

**Self Powered
Runs on Water
Needs No External Power**

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Hi-Ram Pump is a Registered Trade Mark

The Bamford Pump An Australian Invention

The Bamford Pump uses the energy of water going into the pump at low pressure to pump some of the water to a higher pressure. A typical use is where water from a stream drives the pump. About 5% to 10% of the water entering the pump is pumped up hill. The rest of the water overflows from the pump or enters a pipe to go downhill and rejoin the stream.

Although the principle of operation is similar to that of traditional hydraulic ram pumps, the Bamford Pump is considerably different in many ways.

The pump has a self-sustaining cycle of operation about one second long. The Bamford Pump is initially available in one size to suit a 25 mm metal drive pipe, and is the version likely to have the widest usage. Larger pumps are under development.

A drive head of 2 metres of water can give an output pressure of over 100 metres, and a drive head of 1.5 metres can give over 50 metres. As the quantity of water pumped at these heads is small, a realistic maximum output head is about 60% of these figures. About 1000 litres of water a day can be lifted 20 metres from a drive head of 2 metres and an inlet flow of 15 litres a minute.

Drive heads over 2 metres will pump more water. The pump can work with drive heads of one metre, or with inlet water flows down to about 8 litres a minute, but will pump much less water except at low output pressures.

Differences from Other Hydraulic Ram Pumps

The Bamford Pump can be quickly adjusted for different operating conditions, by using alternative tubes to control the water flow through the pump.

Although the basic pump is very simple, additional parts can be used to improve its performance.

It will work against high and low output heads, to cover a wide range of operating conditions.

The pump will operate when totally underwater, although the water entering the pump to operate it must come from a separate and higher head of water.

Surplus water leaving the pump need not spill on the ground and can be piped away for further use.

The pump emits little noise when the main working parts are non-metallic.

New drive pipe assemblies have been developed to improve the Pump's efficiency.

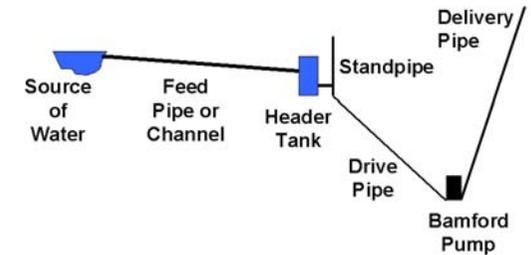
How Does the Bamford Pump Work?

The general installation of the pump is shown in the diagram. The diagram is not to scale. Further details for drive pipe construction and pump installation are supplied with each pump.

At the beginning of each operating cycle, water starts to flow down the drive pipe and through the pump waste valve. The water flow increases, until the waste valve suddenly closes and stops the flow of water. This causes a "water hammer" which briefly gives a high pressure inside the pump, forcing water into the delivery pipe through a non-return valve. The pressure in the pump then drops, and the non-return valve closes.

Water then starts to flow down the drive pipe again. Another operating cycle begins with water going through the waste valve, and so on, and so on.

General Installation



Installation of Bamford Pump and Drive Pipe

The pump and the drive pipe must operate together for the pump to work properly. The drive pipe can therefore be thought of as "half" of the pump, and successful operation depends on the use of a suitable drive pipe and on correct installation.

The drive pipe determines the size of the "water hammer" in the operating cycle. Because of its rigidity, steel pipe gives the greatest water hammer effect, which provides the most efficient operation of the pump. The use of steel pipe is recommended wherever possible.

For More Information

For those with access, the Internet Site for the pump contains more information about the pump, its operation, and its installation.

<http://www.bamford.com.au/rampump>