

RAM PUMP: AN APPROPRIATE TECHNOLOGY

Ram pumps are powered by falling water, and therefore do not need external energy input from fuel or electricity. This makes them particularly suited to isolated sites, areas susceptible to pollution, or developing countries where fuels are not easily or cheaply available. They can be used for pumping water wherever there is a fall of 2 metres or more, and a flow rate of more than 1 litre per second. There are specialist pumps available for other circumstances.

Ram pumps are simple, with just three moving parts. They are very reliable, and are well suited to being maintained and repaired by local technicians in developing countries. Some designs are available, such as the DTU pumps, which are capable of being manufactured using cheap and easily sourced materials, in local workshops such as garages and agricultural workshops.

RAM PUMPS AT SUNSEED

Sunseed has a ram pump installed on the village irrigation line. It supplies two dryland sites and many of the village houses with water for domestic use. The first pump was a prototype installed in 1988 by the university of Warwick as part of ongoing development of ram pumps that they are conducting. The current pump is a newer "S2" pump, designed by their Development Technology Unit, and has been in operation since 1996.

FURTHER INFORMATION

Sunseed Desert Technology aims to develop, demonstrate and communicate accessible, low-tech methods of living sustainably in a semi-arid environment. Sunseed Desert Technology is the Spanish project of the Sunseed Trust Ltd (UK reg. charity 1098353) and a registered Spanish Association (no. 162660). We also practice organic gardening and are a field trial site for low-tech research into tree nurseries and soil regeneration. Hundreds of people work with us as paying volunteers every year.

Further information, including volunteering opportunities at Sunseed, can be obtained from the following addresses:

Sunseed Desert Technology (SDT)
Apdo. 9, 04270 Sorbas, Almería, Spain

Sunseed Web-Site:
www.sunseed.org.uk

email: sunseedspain@arrakis.es

tel. (00 34) 950 52 57 70

As a registered charity, donations are always appreciated, especially if requesting further information.

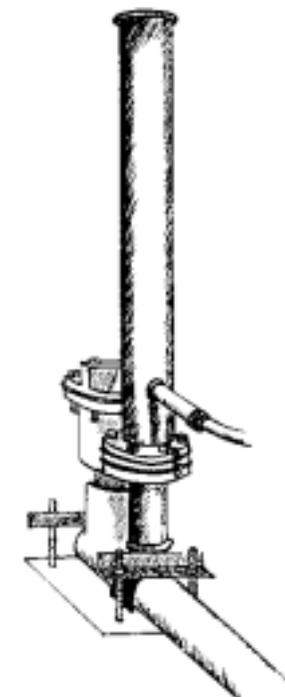
Thank you for your interest.

SDT.MP.05(E): October 2004



**Sunseed
Desert
Technology**

www.sunseed.org.uk



RAM PUMPS

**For reliable, low-tech water
supplies**

INTRODUCTION

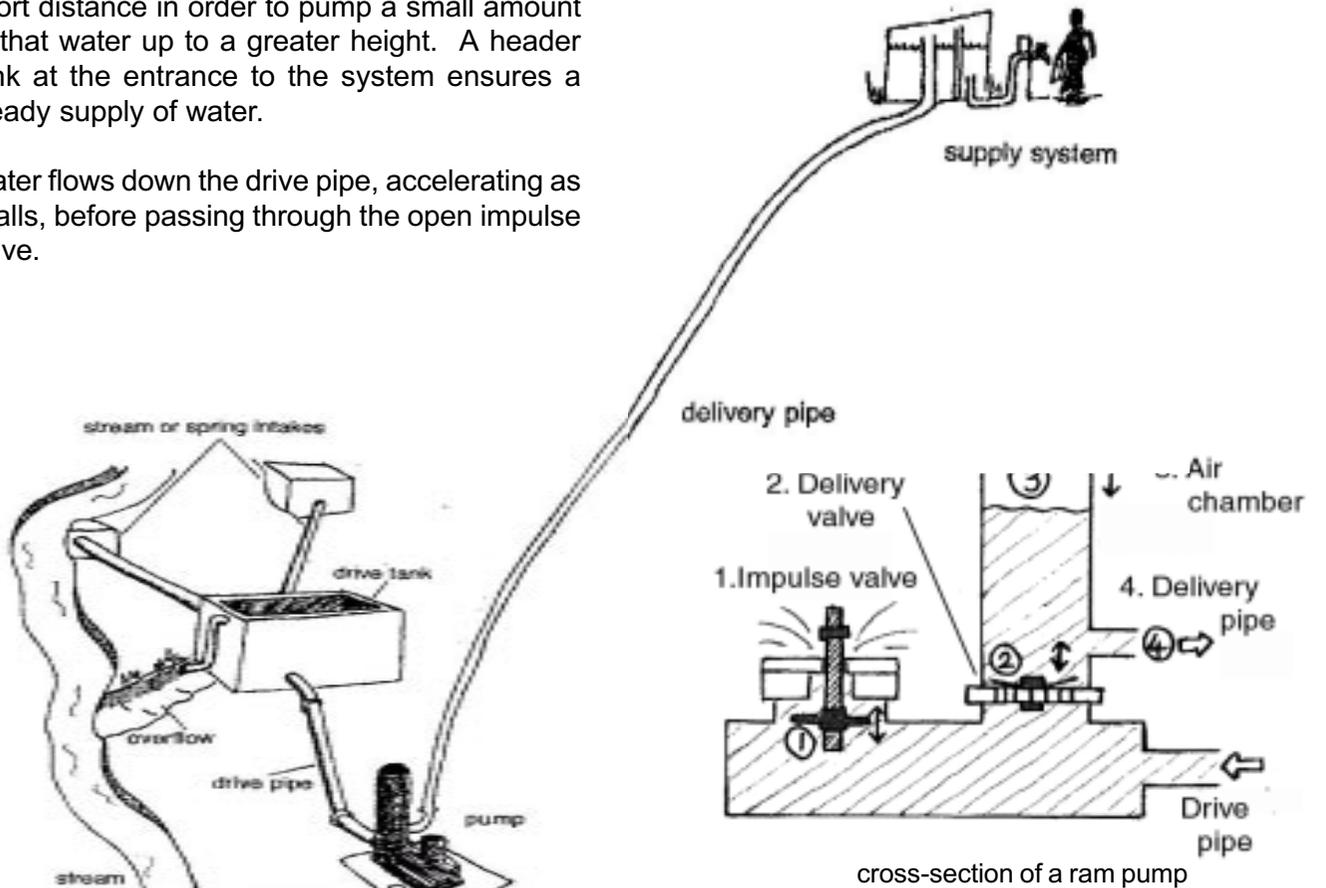
The hydraulic ram pump was invented at the turn of the 19th Century by the Montgolfier Brothers (who were also the inventors of the hot air balloon). It became less used at the beginning of this century, when electric and diesel powered pumps gained popularity. In recent years, however, rising energy costs and growing environmental awareness have led to renewed interest in ram pumps and designs that are cheaper and easier to make have been developed.

Conventional ram pumps, whilst very effective, robust and long-lasting, are difficult for countries in the developing world to import or manufacture. To address this problem, the Development Technology Unit at the University of Warwick has been developing low-cost designs that can be made in a simple workshop anywhere in the world.

HOW THE RAM PUMP WORKS

The ram pump uses the energy that is created when a relatively large volume of water falls a short distance in order to pump a small amount of that water up to a greater height. A header tank at the entrance to the system ensures a steady supply of water.

Water flows down the drive pipe, accelerating as it falls, before passing through the open impulse valve.



When the water reaches a high enough speed, it causes the impulse valve to slam shut. The moving water is suddenly stopped, causing a surge in pressure. Once this pressure has risen high enough, it forces open the delivery valve, allowing water to pass into the delivery pipe. As it does so, the pressure falls until the delivery valve closes, the impulse valve reopens and the whole cycle begins again.

