Livestock-Powered Water Pumps

What is a livestock-powered water pump?

The most common livestock-powered pumping system is the nose pump. Nose pumps are simple devices consisting of a cast-iron body with integrated water bowl, and a cast-iron lever arm. When cattle go to drink from the bowl, they must push the lever arm out of the way with their nose to reach the water. Movement of the lever arm causes a rubber diaphragm to move back and forth, creating suction to draw water to the device from a remote source.

Typical Nose Pump

How much water can a nose pump deliver?

Nose pump in use

One nose pump can typically meet the needs of about 25 to 35 cow-calf pairs. Each stroke of the lever arm delivers about 0.5 litres (0.1 Imperial Gallons) of water to the bowl. Nose pumps can lift water a vertical distance of about 8 metres (m) or 26 feet (ft) if they are located immediately adjacent to the water source. However, the amount of lift decreases with the distance the water has to travel through a pipe to get to the pump, in a ratio of about 1:10 for 25 millimetre (mm) or 1 inch (in) diameter pipe. That is, for every 10 m that water has to travel through a 25 mm diameter pipe to get from the water source to the nose pump, the vertical distance the pump can raise the water will reduce by about 1 m. The amount of effort required to operate the pump increases with lift and/or distance.

What are the advantages of using nose pumps in a pasture watering system?

Nose pumps tend to be one of the more economical ways of conveying water from the source to a remote site. Since the animals themselves supply the power for pumping, there is no need for power at the site. Nose pumps are small and light so they can easily be moved from one water source to another in intensive rotational grazing systems.

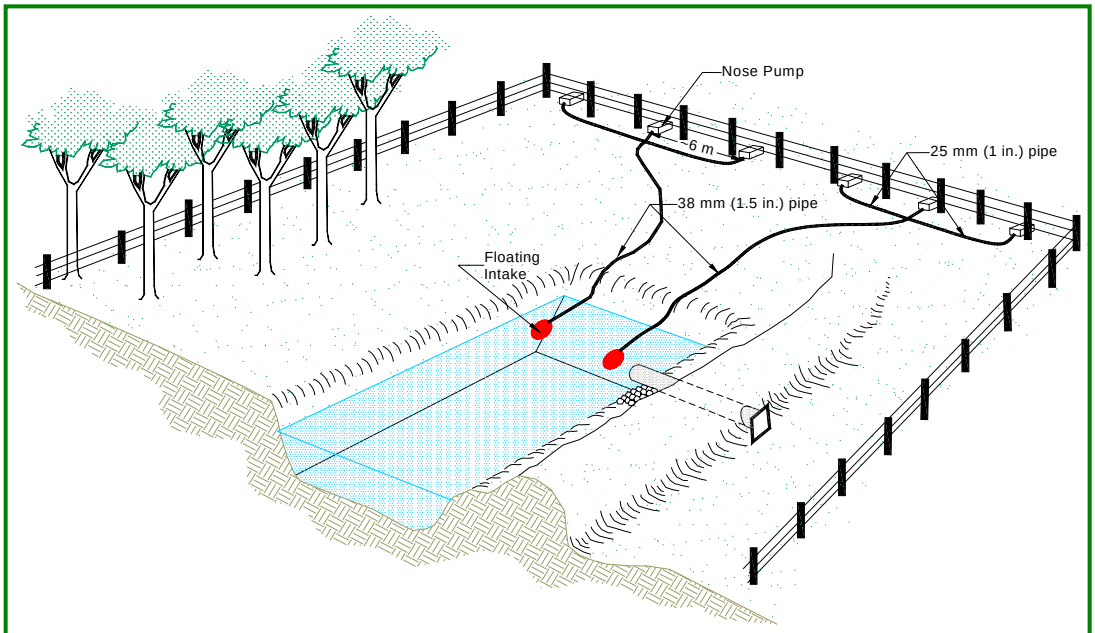
What are the disadvantages of using nose pumps in a pasture watering system?

Animals must be trained in the use of nose pumps, but manufacturers and producers report that most animals learn to use the systems fairly quickly, and animals also learn from each other. Young calves (<350-400 pounds) may not be able to operate nose pumps, and they are not suitable for watering sheep. An innovative way of ensuring that nose pumps can provide water for young calves is to place a pan beneath the drinking bowl of the pump assembly; the pan will collect water spilled from the drinking bowl enabling calves to drink as well.

What other considerations are there in using nose pumps in a pasture watering system?

Nose pumps should be securely anchored to a solid stand or fence to ensure that the lever arm can be operated without moving the entire assembly. Animals should be trained in the use of nose pumps *before* they go out to pasture, and animals should not be trained during periods of stress such as hot weather or immediately prior to calving.

The following sketch illustrates a typical nose pump watering system which provides a protected riparian zone around a water source (in this case, a dugout). A single floating intake serves three nose pumps through a 38 mm (1½ in.) header pipe which splits into a manifold consisting of 25mm (1 in.) diameter pipes serving each individual nose pump.



Typical Nose Pump Installation at a Dugout

The Bigger Picture

Nose pumps are only one of many options available to producers wishing to manage their rangelands and provide improved water quality for their livestock while protecting their water supplies. For further information on livestock water systems, contact your local AAFC-PFRA office, or call the toll-free telephone line at 1-800-667-7644.

Sources of information for this Fact Sheet included: *The Stockman's Guide to Range Livestock Watering From Surface Water Sources*, available from the Prairie Agricultural Machinery Institute, http://www.pami.ca/pami_publications.htm#stockman_guide; Pasture Water Systems for Livestock, Agdex 400/716-3, Alberta Agriculture, Food and Rural Development; AAFC-PFRA Water Quality Fact Sheet "Alternatives to Direct Livestock Watering".

UNIT CONVERSIONS

1 US gallon = 3.785 litres (l)	1 metre (m) = 3.28 feet (ft.)	1 inch (in.) = 25 millimetres (mm)
1 Imperial Gallon = 4.546 litres (l)	1 kilometre (km) = 1,000 metres = 0.62 miles	

Updated February, 2008

Également disponible en français sous le titre *Pompes à eau actionnées par les animaux*

Canada