

Landis Hydraulic Ram Homestead Water Pumps for Sale

This is an improved version of the Harry Landis hydraulic ram pump that we have been selling for several years. It is new, and made entirely of welded steel and stainless steel. All bolts and fasteners are also stainless steel. It has a much improved check valve for more flow, better rubber seats, 2 inch drive line connection, and a snifter valve to ensure that there is always an air cushion in the expansion tank. The previous version relied on the bladder in the expansion to maintain the air cushion, but in some cases after a number of years the bladder ruptured and so the expansion tank needed to be replaced. Now with the snifter you can if necessary use other types of tank without bladders, such as 20 lb propane cooking gas tanks. But if you have one available, we still recommend an expansion tank with a bladder for double assurance.

Hydraulic ram pumps have been used for over 200 years to pump water to a storage reservoir using no energy source other than that available from a small dam or falling water. Generally they can pump water to a height of 10 times or more the height of the fall.

Click [HERE](#) to see the Wikipedia entry on hydraulic ram pumps

Traditionally, hydraulic ram pumps have used a waste (clack) valve much like the valves in a car engine to close the drive pipe and generate the pressure pulse which pumps the water to the storage reservoir. The main cause of failure or reduced efficiency in these pumps has been the wearing of the valve guide due to metal against metal movement, sometimes aggravated by silt or grit in the water, as well as uneven wear on the valve seat, leading to incomplete sealing and loss of pressure.

We have seen homemade hydraulic ram pumps made with plastic fittings, but they never work very well because the plastic flexes, which makes the efficiency poor, and generally fail in a short time as the plastic pieces break from the repeated stress.

This design is a considerable improvement over traditional hydraulic ram pumps, as it basically eliminates these two causes of failure and poor operation. In this design, the valve and guide is replaced by a polished glass ball which closes against a thick rubber seat. The ball rests in a sort of cage, and when the flow of water past it is sufficient, it is carried upward against the rubber seat, thus stopping the flow, and causing a pressure increase in the drive pipe. As this pressure increase opens the check valve beneath the ballast tank, water flows into the ballast tank until the pressure pulse is dissipated. The check valve then closes, the ball drops, and the cycle repeats. Since the ball is round, it will wear evenly, so it will always seal well against the rubber seat.

Harry Landis built the first pump of this style 20 years ago for a farm in Guatemala which had no electricity. It had a 5 foot dam on a spring which supplied all the farm's water needs. Previously, there were two standard type ram pumps, which worked adequately, but required regular maintenance and valve replacement. After some 5 years of repairing and working with these pumps, Harry Landis came up with this new design. His first such ram pump is still working there, as well as several other similar ones which replaced the originals. Together, they pump around 2800 gallons per day to a storage tank about 25 feet above the pumps. One of this new version for sale in this listing is installed there now. It pumps about .7 gallons per minute (1000 gallons/day) to a storage tank 20 feet above the dam. This is almost twice the amount as the previous version pumped in the same installation. The water fall over the dam is only 49 inches. Click [HERE](#) to see a YouTube video of it running.

You can also see a bit more about the farm on their website www.fıncaixobel.com. They are now a hotel, restaurant and tourist destination as well as a working farm. We have built quite a few of these over the years. The largest pumped 3 GPM to a storage tank 230 feet above a waterfall 40 feet high.

This one should be good for falls up to around 60 feet, and should be able to pump water to at least 10 times the height of the fall. The higher the fall and the lower the storage tank, the more water it will pump. The overall energy efficiency of this pump should be at least 65%.

The ballast tank is just a standard expansion tank, available for around \$25 from Home Depot or similar suppliers. They generally come with either 1/2 inch or 3/4 inch male fittings, so you will also need a 3/4 inch tee and possibly a reducing bushing. We recommend the 3/4 inch tank if you have a choice, as the larger nipple will slightly increase the pump efficiency. The output of the pump comes out the middle of the tee. A short pipe nipple (1/2 or 3/4") in the middle of the tee can be connected to plastic hose or pipe to conduct the pumped water to your storage tank.

The pump also has a heavy steel flange for connection to the drive pipe to make installation and removal easy. The flange takes a 2 inch standard steel or galvanized drive pipe coupling.

We can also offer a little advice and assistance on how best to install it. Basically all you will usually need is 42 feet (two lengths) of 2 inch steel pipe for the drive pipe and 1/2 inch or larger metal or plastic delivery line to your storage tank. Check the calculator to be sure, since in some low flow situations small diameter drive pipe is better than large. And the optimal length may also not be the same for all installations. The pump speed can be adjusted to optimize efficiency by raising or lowering the ball cage with the threaded stainless shaft. Normally about 1/2 to 1 cycle per second works best.

If your water is dirty or silty, you will want a settling pool ahead of the drive pipe to keep the silt out of the pump. And a screen to keep out fish and snails is also a good idea. You will want to reduce the pressure in the ballast tank to a little less than the pressure in the delivery line. That will be about 1/2 PSI for each foot that the storage tank is above the ram. These generally come pressurized to about 30 or 40 PSI. And if you are in an area subject to freezing, you will also want to take related precautions. In severe freezing climates you may want to take it out of service for the winter. The flange and bolts make this easy to do.

Harry Landis created a thread on this pump on permies.com, which is a website dedicated to permaculture. We hope to have users of these pumps share their experiences and questions there. **Click [HERE](#) to see the thread.**

The Landis hydraulic ram pump performance calculator is [HERE](#) and the instructions for the calculator are [HERE](#)

Dimensions (without tank or tee) 13" (33 cm) X 7" (18cm) X 11" (28 cm)

Weight 18 lb (8KG)

Tank and tee are NOT included.

Cost is \$350 and buyer pays shipping, duty and taxes. Payment can be made [HERE](#)









