

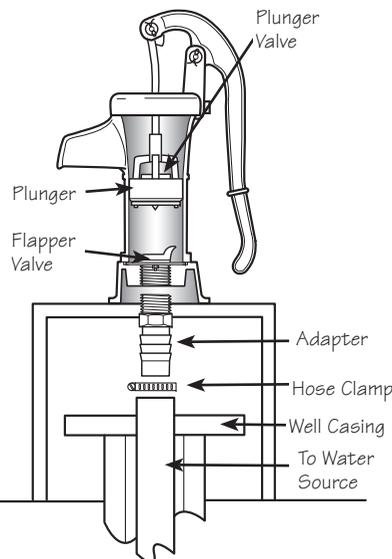
Installing and Using the Pitcher Pump

PD710

This hand pump can be used to pump water from rain barrels or ponds. It can also be used as a drinking-water pump to draw water from a well 20' deep or less. It attaches to commonly available plumbing connectors, is very easy to install and will provide decades of trouble-free use with minimal maintenance.

How it Works

The pump is based on a design that dates back more than a century. The cylinder holds a plunger set between two valves. The handle moves the plunger up and down. As the plunger moves up, it creates a vacuum — the flapper valve at the base opens and water is pulled into the cylinder. When the plunger reaches the top of the cylinder, the flapper valve closes and water is trapped in the cylinder. As the plunger goes down, the plunger valve opens and allows water to flow past the plunger, but it remains in the cylinder. Then, as the plunger is raised again, bringing with it a new cylinder-full of water, the water in the cylinder is forced out of the spout. Steady pumping of the handle creates a continuous flow of water at a rate of about 1 gallon for every 10 strokes.



Installing the Pump

To install the pump, you will need a length of 1 1/4" (inside diameter) poly pipe long enough to run from the pump to your water source. You will also need a stainless-steel hose clamp and an adapter to attach the pump to the pipe. (The adapter should be threaded on one end and barbed on the other. The diameter of the threaded end should measure 1 5/8".) Use Teflon® plumbing tape to make an airtight connection between the adapter and pump. The barbed end of the adapter will fit into the 1 1/4" poly pipe. Secure the fitting to the pipe with the stainless-steel hose clamp. If you are using the pump as a drinking water source, be sure to use plastic or copper pipe that is safe for drinking-water use.

Generally, you don't need a foot valve with this pump. However, if you use it frequently and want water without priming, you can install a foot valve at the bottom end of the pipe. A foot valve is a one-way valve that lets water in but not back out again, so it keeps the pipe full of water. The problem with it comes with cold weather when water in the pipe freezes, rendering the whole apparatus inoperable and possibly splitting the pipe. You can prevent this by drilling a 1/8" weep hole in the pipe between the foot valve and the frost line. This hole lets the water in the pipe drain slowly to a level where it doesn't freeze.

Probably the most effective way to mount the pump is to build a box that sits over (or beside) the water source and attach the pump on top of it. The pump base has three holes in it for easily securing it to a box with screws or bolts.

Pumping Water

To start the pump you will need to prime it. To prime, pour clean water into the top of the pump as you move the handle up and down. The water creates a good seal between the plunger and the cylinder wall. Keep adding water until you feel resistance on the pump handle. The resistance indicates water is being pulled up the pipe. Several more strokes should be enough to get the water to spill from the pump spout.

Freezing Weather

In freezing weather the internal flapper valve and plunger (both are made of leather) may freeze to the pump body. If you start pumping, they may tear, making the pump inoperable. If you suspect that your pump is frozen you will need to thaw it out. You can do this by:

1. Unscrewing it from the connector and bringing it into a warm spot or soaking it in a pail of hot water, or,
2. Pouring hot water into the top and letting it sit for a few minutes, or,
3. Opening the pump and freeing the individual components by hand.

Maintenance and Troubleshooting

If your pump won't work:

1. Open the pump and make sure that the flapper valve is not broken and that it is centered over the hole.
2. Check to see that the valve in the top of the plunger (a cone-shaped weight) is not stuck. If it is, manually free it.
3. Reassemble the body and ensure the bolts are tightened enough to prevent air leakage around the base.

4. Check for leaks around the joints. Tighten clamps or add Teflon® tape as needed. Replace defective connectors.
5. Make sure the pipe end is immersed in the water. (Water levels can change throughout the year, so make sure your pipe is long enough to accommodate this change.)
6. Use plenty of clean water when priming. Because the plunger is made of leather and will expand as it absorbs water, let the plunger absorb water for a few hours and try again.
7. Make sure you are not trying to lift the water more than 20' (measured from the water surface to the spout). Keep in mind that, as you move to higher elevations, the distance water can be lifted is reduced. At sea level and under ideal conditions, this pump will lift to a maximum of about 23', but higher elevations will reduce the lift. Also, if you are running the pipe horizontally, you will need to deduct one foot of lift for every 50 feet of horizontal distance.

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