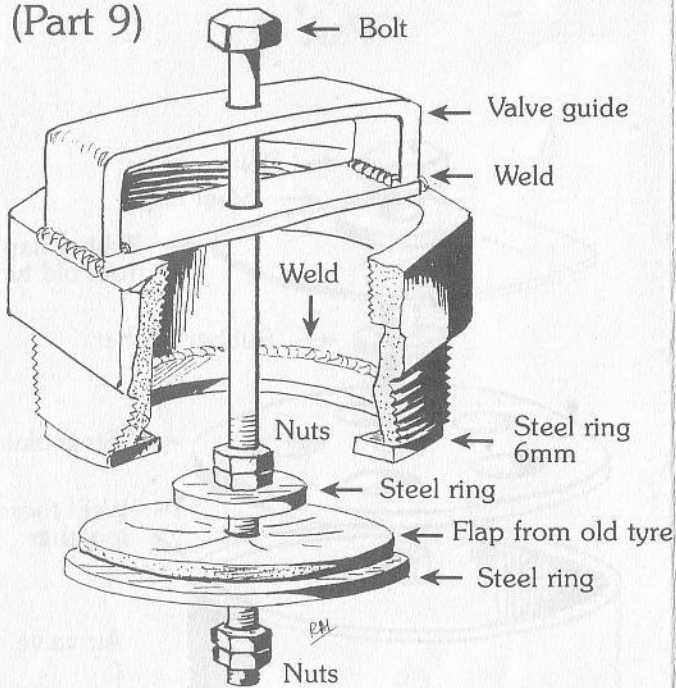


THE CHECK VALVE

(Part 9)



This is made from the reducer (part 9). The valve guide and 6mm steel ring and welded on to it. The hole in the valve guide, guide the movement of the valve. The flap is composed of a long bolt with four nuts. These nuts hold the rings and the rubber flap together.

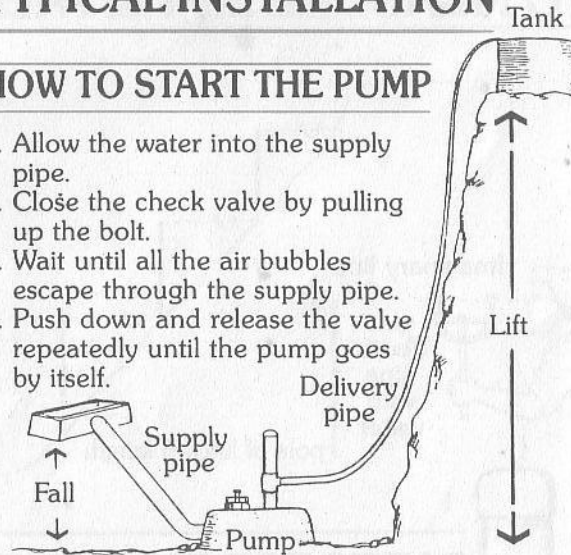
PUMP ASSEMBLY

- * Tighten the bolt and nut on the one way valve.
- * Tighten the bolt and nuts on the check valve. Allow a 15mm gap between the valve guide and the head of the nut.
- * Assemble the whole pump as pictured on **parts for the pump**.

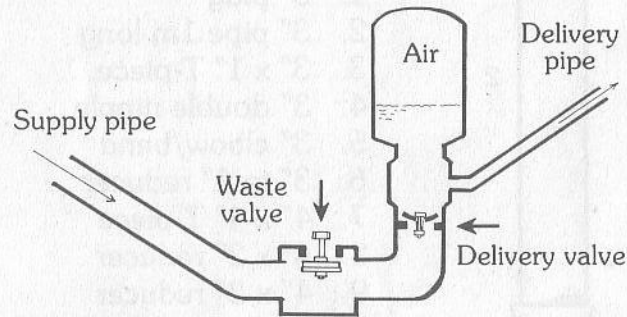
TYPICAL INSTALLATION

HOW TO START THE PUMP

1. Allow the water into the supply pipe.
2. Close the check valve by pulling up the bolt.
3. Wait until all the air bubbles escape through the supply pipe.
4. Push down and release the valve repeatedly until the pump goes by itself.



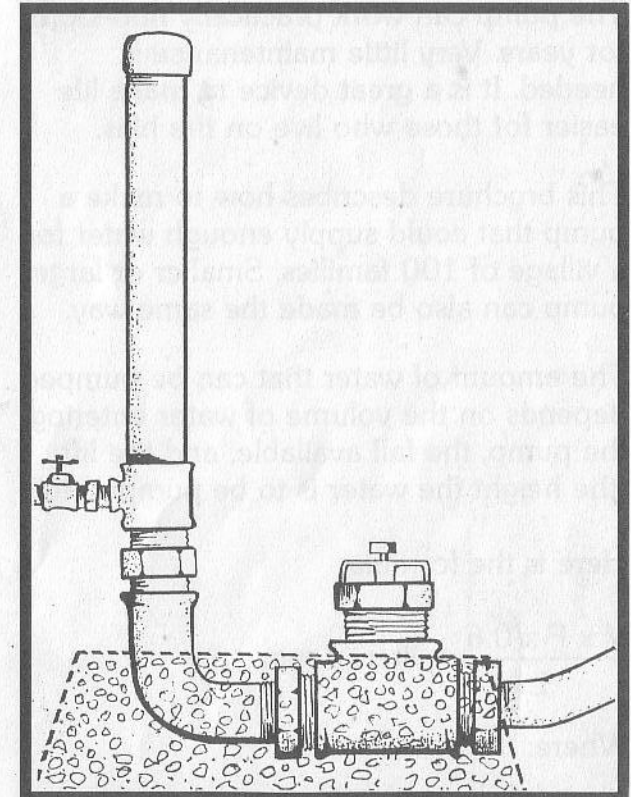
HOW THE PUMP WORKS



When the check valve is pushed down to start the pump, the water rushes down the supply pipe. In the process, the water sucks the valve up, closing it with a thud. The inertia of water still flowing in the supply pipe, charges the air chamber. The increased pressure, drives some water up the supply pipe, and when the rush of water stops, there is a small bounce back. This bounce back, causes a momentary drop of the pressure, causing the valve to drop open, and the process is repeated again.

For more information
Please contact World Vision in your country.

HOW TO MAKE A HYDRAULIC RAM PUMP



WORLD VISION
OF AUSTRALIA

A.C.N. 004 778 018

Prepared by Rus Alit

G.P.O. Box 399C

Melbourne Australia 3001

Village Technology Series No. 4

INTRODUCTION

The hydraulic Ram pump can lift water from a stream to the top of a hill without needing a person, animal or motor to drive it. It uses the power of falling water in the stream.

The pump can work practically non-stop for years. Very little maintenance is needed. It is a great device to make life easier for those who live on the hills.

This brochure describes how to make a pump that could supply enough water for a village of 100 families. Smaller or larger pump can also be made the same way.

The amount of water that can be pumped depends on the volume of water entering the pump, the fall available, and the lift (the height the water is to be pumped to).

Here is the formula:

$$\frac{V \times F \times 0.6}{L} = \text{liters / min.}$$

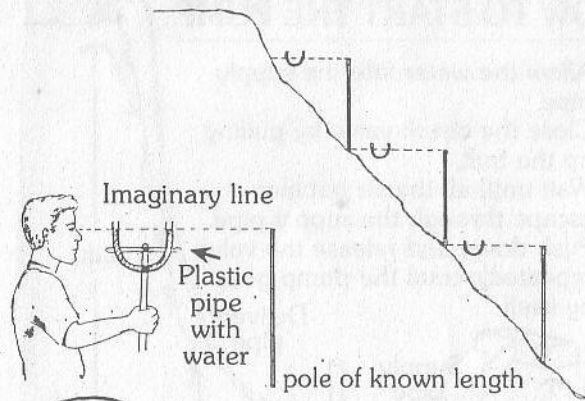
Where:

V = Volume of water entering the pump in liters / minutes

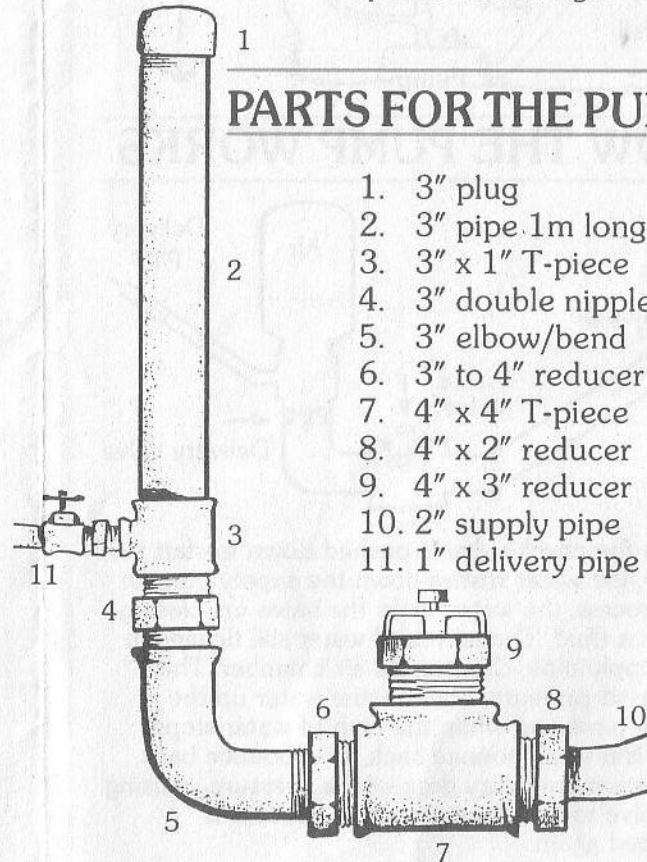
F = The different in elevation between the water intake and the pump (in meters).

L = The height (in meters) the water is to be pumped.

TO MEASURE LIFT & FALL



PARTS FOR THE PUMP

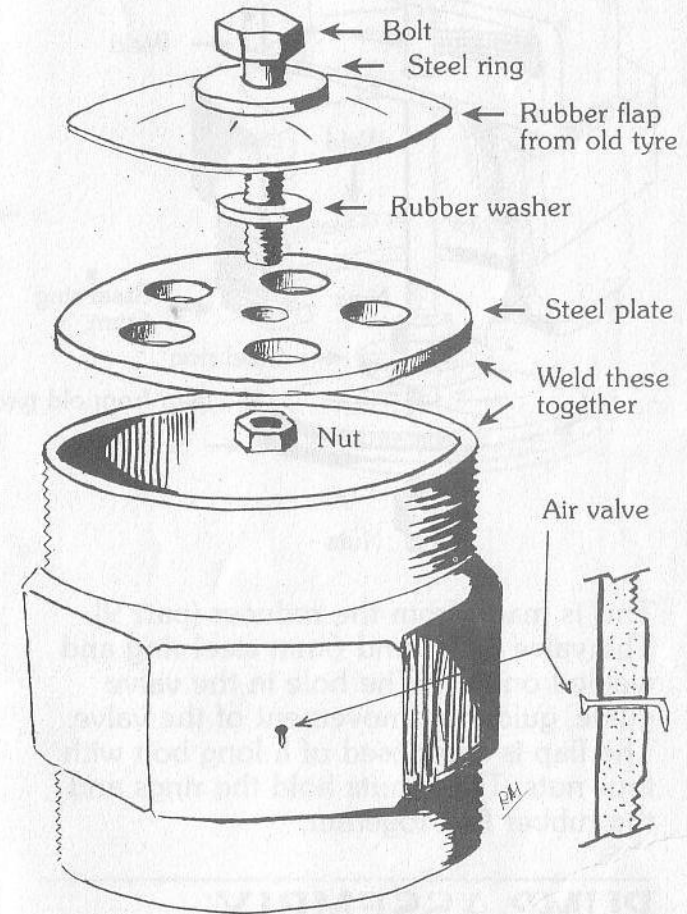


1. 3" plug
2. 3" pipe 1m long
3. 3" x 1" T-piece
4. 3" double nipple
5. 3" elbow/bend
6. 3" to 4" reducer
7. 4" x 4" T-piece
8. 4" x 2" reducer
9. 4" x 3" reducer
10. 2" supply pipe
11. 1" delivery pipe

Parts 4 and 9 are the only parts which need modification.

THE ONE WAY VALVE

(Part 4)



The one way valve is constructed from the 3" double nipple (part 4). One end of it is welded with a 6mm steel plate. Several holes are then drilled in the plate. The center hole is to hold the rubber flap, and the others are water ways.