

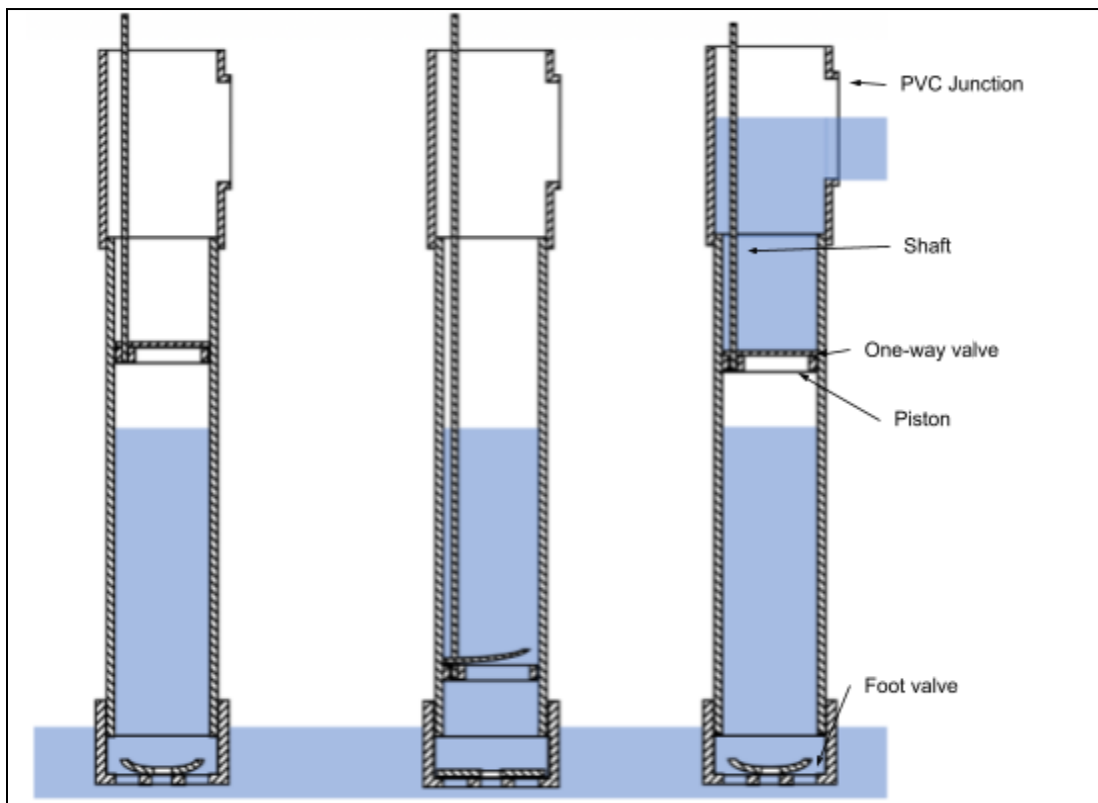
Hand Pump

Stage - 2

Description :

Hand pumps are manually operated pumps. They use human power and mechanical advantage to allow the easy transfer of fluids from one location to another effectively. The specific application of our pump would be to transfer water from a well, which is below ground, to a bucket or some other means of storage, above the ground.

The **piston** is connected to a **shaft**, located inside the main body of the pump, providing enough suction to overcome the effects of gravity, effectively drawing water into the main body. Once the water has made its way into the pump and is trapped by the **foot valve**, the piston on its downward stroke allows the water to travel through its large inner hole and past a **one-way valve** located on top of the piston, the one-way valve then seals the water above the piston and the upwards stroke begins, lifting the water up until it escapes out of the **PVC junction's** side exit.



Hand Pump

Reference : <https://imgur.com/a/jWOaF4e>

Applications :

- They are commonly used in rural areas to withdraw groundwater for daily needs due to shortages and difficulties in delivering the river water to every village.
- The hand-operated water pump is also widely used for agricultural purposes.
- It is one of the most economical and simple solutions for providing a collective drinking water supply in rural areas.

Approximate Cost :

Market Cost - INR 1800/-

Link: <https://www.indiamart.com/proddetail/plastic-hand-pump-11836523612.html>

Role of Team Members :

- Swapnoneel Kayal - Materials and Process Selection, Cost Analysis, Documentation
- Amshuman Sashi - Design, Components, Assembly, Final Inspection
- Rohit Sankhala - Equipment Required for Manufacturing & Finishing

References :

Web articles:-

- What is a Hand Pump? | How does a Hand Water Pump work? | Engineer Waqar
Link: <https://mechanicalboost.com/hand-pump/>
Accessed on 8/8/2022
- Hand pump
Link: https://en.wikipedia.org/wiki/Hand_pump
Accessed on 8/8/2022
- What is a Hand Pump? | Ken Black
Link: <https://www.aboutmechanics.com/what-is-a-hand-pump.htm>
Accessed on 10/8/2022
- Advantages and Disadvantages of Hand Pumps | Fanny Foudja
Link: <https://wikiwater.fr/e36-advantages-and-disadvantages#:~:text=The%20main%20advantage%20of%20hand.particular%2C%20falling%20into%20open%20wells> ,
Accessed on 12/8/2022

Video reference:

- Mechanical Basics, Working of Hand Water Pump or Hand Operated Water Pump
Link: <https://www.youtube.com/watch?v=gp4Ywytgpkk>
Accessed on 9/8/2022