GILMAN RAM PUMP & ENTERPRISES

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UNDERSTANDING HYDRAULIC RAM PUMPS — PART 1

What Is a Hydraulic Ram Pump?

A beginner’s introduction to the hydraulic ram pump, its major components, operation, and early inventors.

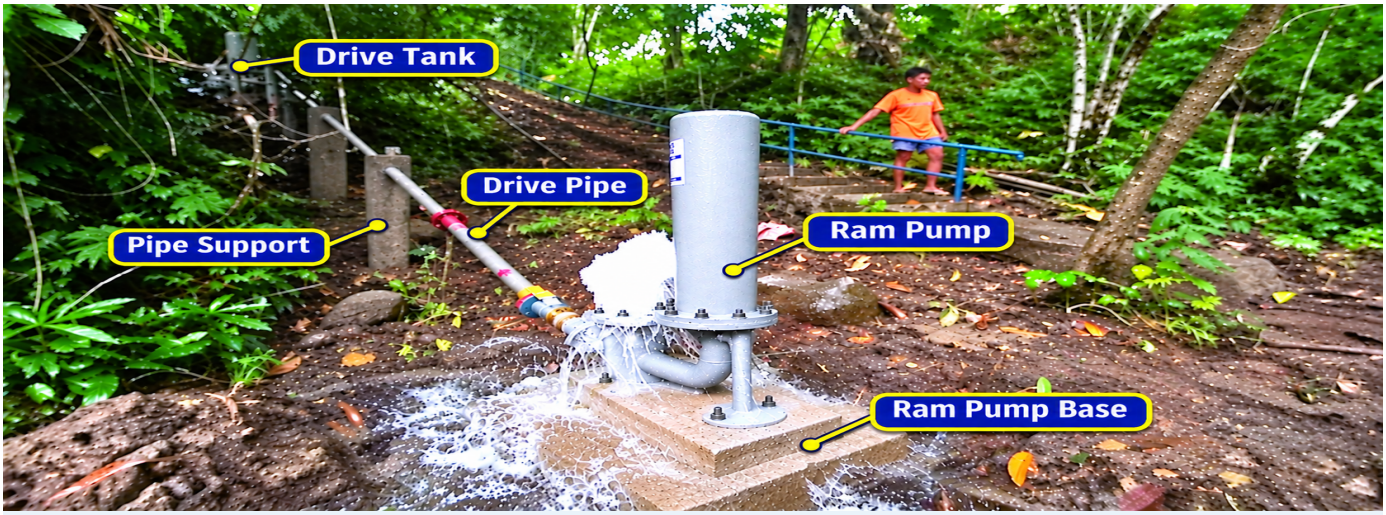


Figure 1. Actual hydraulic ram pump installation and its major components.

1. DEFINITION

A hydraulic ram pump, commonly called a ram pump, is a self-acting water pumping machine that uses the energy of flowing water to lift a portion of that water to a higher elevation. It operates automatically without an electric motor or fuel-powered engine.

2. HOW IT WORKS

Water enters from a drive tank through a drive pipe. The impulse valve closes suddenly, producing a pressure surge called water hammer. A delivery check valve admits some of the pressurized water into an air chamber, which helps push it through the delivery pipe to a higher elevation. The cycle repeats while sufficient flow and drive head are available.

3. EARLY HISTORY

In 1772, English inventor John Whitehurst developed a manually operated precursor. In 1796, French inventor Joseph Michel Montgolfier developed an automatic hydraulic ram pump using a self-acting valve.

4. WHY IT MATTERS

Ram pumps can provide continuous, off-grid water delivery for hillside homes, farms, irrigation, and remote communities, without fuel or electricity.



DID YOU KNOW?

Joseph Michel Montgolfier was also one of the Montgolfier brothers, pioneers of hot-air balloon flight in 1783.

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