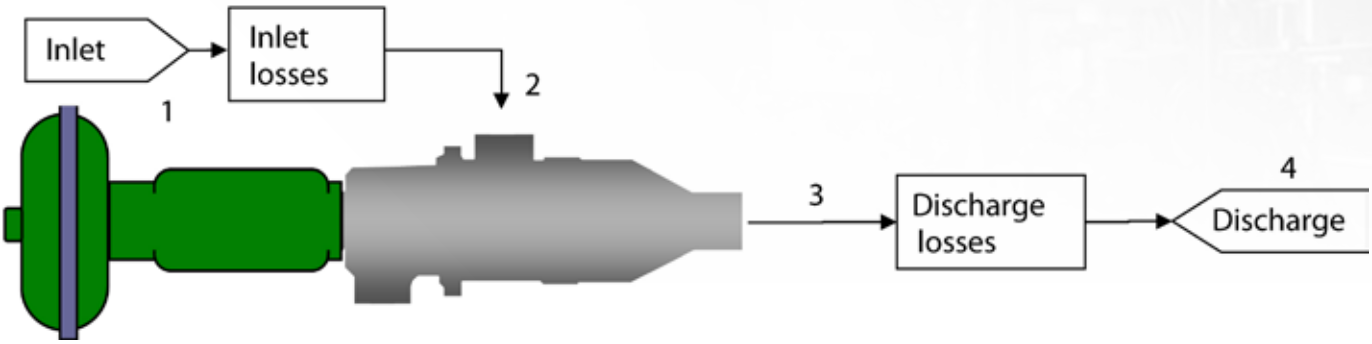
# EZ Heater Water Pressure Calculation

The EZ heater is a low pressure drop device that has little if any impact on the pressure of the water in the pipe during normal operation. Generally, the pressure at the inlet and discharge of the heater is able to be calculated if either the inlet water pressure or the final discharge pressure is known.

Any system utilizing an EZ heater can be modeled as follows:




1. This is the pressure at the source of the water. This could represent a pump discharge, city water pressure, or the pressure in a main water header supplying water to a variety of users.
2. This is the pressure at the EZ heater inlet. In most cases this pressure is the same or close to the pressure at "3"
3. This is the pressure at the EZ Heater Discharge. In most cases this pressure is the same or close to the pressure at "2"
4. This is the pressure at the final point of use for the water.

The boxes labeled "Inlet losses" or "discharge losses" indicate the sum of all the pressure drops due to piping friction, valves, elevation changes, pressure drops through orifices or nozzles, etc. that are present in the system.

If the pressure at #2 or #3 is known, the heater can be sized with no further pressure calculations required.

If the pressure at either #1 or #4 is known, then some additional work is required. The first thing to remember is that the operating pressure drop from #1 to #4 will always equal the available pressure drop in the system.

## For example:

Suppose the pressure at #1 is city water at 45 psig. #4 represents an open tank with a pressure of 0 psig. That means the pressure drop in the entire system will equal 45 psig. The pressure at #2 and #3 will be determined by the restriction each section of pipe provides to the system. If the inlet piping is straight, short and has no valves, etc. and the discharge piping has a control valve and lots of bends, etc. the pressure at #2 will be close to 45 psig. On the other hand, if the discharge piping is straight, short and has no valves, etc. and the inlet piping has a control valve and lots of bends, etc. the pressure at #2 will be close to 0 psig.

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