

# DIFFERENCE BETWEEN PRESSURE/HEAD?

INTRODUCTION TO HYDROSTATICS SERIES BY MEYERFIRE UNIVERSITY | OCTOBER 2022

## SUMMARY

**Pressure** and **Head** are two different ways to represent pressure.

- **Pressure** is a measurement of force divided by unit area. In IP, it's represented as pounds per square inch (psi). In SI, that's Kilopascals (kPa) or Bar.
- **Head** is an equivalent height of a fluid column that would produce a specific pressure. In IP, it's represented in feet of head (ft), in SI, it's represented in meters of head (m).
- As an example, a water tower is 85-ft in height (25.9 m).
  - The pressure at the bottom of the tower can be represented as having 85-ft of head, or as 36.8 psi (85 x 0.433 psi/ft).
  - In SI, the pressure at the bottom of the tower can be represented as having 25.9 meters of head, or 2.5 bar (25.9m x 0.098 bar/m)

**Gauge Pressure** is a system of pressure that does not consider atmospheric pressure.

**Absolute Pressure** does incorporate the pressure applied by the atmosphere.

**WATER SUPPLY: 20 PSI (1.4 BAR)**

**PUMP: 100-FT HEAD (30.5 M)**

**HEIGHT TO 3RD FLOOR: 35-FT (10.7 M)**

**CONVERT PUMP HEAD TO PRESSURE:**

$0.433 \text{ PSI/FT} \times 100\text{-FT HEAD} = 43.3 \text{ PSI (NET PUMP PRESSURE)}$

**PRESSURE AT PUMP DISCHARGE:**

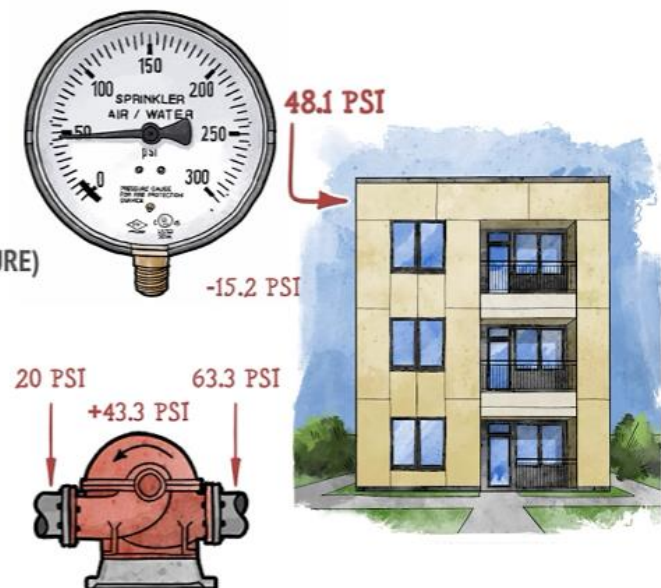
$20 \text{ PSI} + 43.3 \text{ PSI} = 63.3 \text{ PSI (AT PUMP DISCHARGE)}$

**CONVERT BUILDING HEIGHT TO PRESSURE LOSS:**

$0.433 \text{ PSI/FT} \times 35\text{-FT} = 15.2 \text{ PSI (ELEVATION LOSS)}$

**PRESSURE AT THIRD LEVEL:**

$63.3 \text{ PSI} - 15.2 \text{ PSI} = 48.1 \text{ PSI (PRESSURE AT THIRD LEVEL)}$



Worked Example of Pressure Added by a Pump and Lost Due to Elevation  
(IP Version)

## VIDEO LINK

[www.meyerfire.com/university/difference-between-pressure-and-head](http://www.meyerfire.com/university/difference-between-pressure-and-head)

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