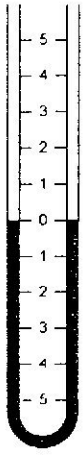

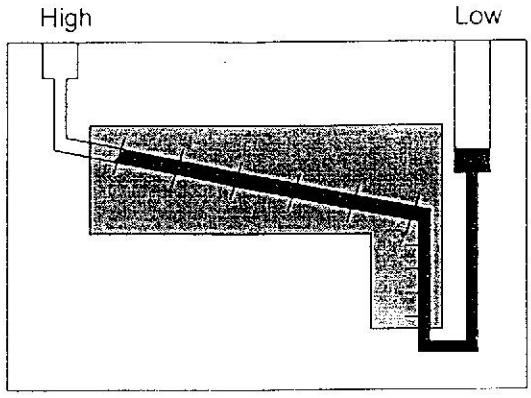

Manometer:

A manometer is a device that indicates the pressure difference between two points by the offset in height of a liquid, usually in a "U" shaped tube. Pictured above are two types of manometers. Both of these must be in the **vertical position** to produce accurate readings.

The manometer on the left is the simple type made by placing a tube in a "U" shape with a vertically aligned ruler in the center. On this device, it usually doesn't matter which side is connected to the higher pressure point. However, when calculating the pressure difference, the total distance between the left and right liquid levels must be used, which is usually **double** the reading on the built in ruler. To zero this device, liquid may be added or removed, or sometimes the ruler may be moved until liquid levels are equal and at zero.

The manometer on the right is a reservoir manometer with an inclined section for greater accuracy. On this type of manometer, readings are directly read from the built in ruler. It is **very important** however, <u>that the higher pressure point be connected to the appropriate side</u> of this type of manometer; which is usually the non-reservoir or inclined side (left side). Zeroing this device, usually involves either adjusting a plunger on the side that raises or lowers the liquid level, or sliding the ruler up/down until the liquid line is over the zero. Note, for accurate readings, the line formed by the upper most edge of the liquid and its **reflection** is used to determine the precise location of the liquid level.

It is customary to record pressure readings in whatever scale is on the marked on the manometer - but **be sure** to record the **units** of the scale (in, mm) and if it does not specify that the scale is in "inches of water", record the specific gravity of the liquid used. Also, a common abbrevation used is "W.C." (for inches <u>w</u>ater <u>c</u>olumn) and is equivalent to the pressure that supports a one-inch-high column of water at standard conditions.
A typical variation of the pressure formula is as follows:

$\Delta P = \rho g h$ or $\Delta P = \rho_{H2O}(SG)gh$