



Material:

Item-no.	Qty.	Description
DS615-1P	1	Metal plate for MBC system, 50 x 35 cm
C6100-1B	1	Syringe, 100 ml, glass
C6100-5H	1	Holder for syringe 100ml, "inno"
C7445-6S	1	Hose, silicone, D=6/9 mm, L=100 cm
DM120-1D	1	Balance weights, set, 10 mg - 200g
DE722-2D	1	Manometer, differential, "inno"

Purpose

Demonstrating overpressure and underpressure with a digital manometer.

Preparation

- place the magnetic holder for the 100 ml syringe as show on the image
- pull the piston out of the syringe and remove the plastic balls from the inside, afterwards insert the piston again
- place the syringe in the holder and carefully fasten it with the plastic screw
- place the Manometer on the metal panel
- draw the syringe up to 50 ml and connect it with the silicone hose to the Manometer
- turn the Manometer on and set the measuring range to "100 hPa", afterwards tare with the rotary knob (set to 0)



Experiment 1

Place a 100 g weight on the piston plate of the syringe and read off the measured air pressure.

The diameter of the piston is 31 mm which results in an area of 7.54 cm².



$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

$$p = \frac{F}{A}$$

$$1P = \frac{N}{m^2}$$

$$100 \text{ hPa} = \frac{N}{cm^2}$$

Experiment 2

Place a 5 g weight on the piston plate of the syringe and compare the air pressure with the result from the 1st experiment.

Of course the pressure can be calculated again.

Note

The calculated pressure will most likely be a bit higher than the measured one.

One of the reasons for this is the friction inside the syringe.



Experiment 3

By pressing the piston down or pulling it up we can create over pressure or under pressure, we can see the result on the Manometer.



Measuring with a digital Manometer

The pressure is displayed very precisely.

However if you do not have a completely static value (as in 3rd experiment) you will not get a clear display. In this case, the fluctuating decimals should not be taken into consideration.