



Material:

Item-no.	Qty.	Description
DM503-2A	1	Vacuum pump, electric 12, two stages
C1520-1M	1	Vacuum hose, plastics, D=6 mm, L=100 cm
DM520-2G	1	Bell jar 7 l
DM540-1A	1	Dasymeter
DE722-2B	1	Barometer "inno"

Purpose

Demonstration of buoyancy in gases.

Preparation

- place the Dasymeter inside the bell jar
- set the counterweight so that the beam is complete horizontal
- turn on the barometer and place it behind the Dasymeter inside the bell jar
- close the bell jar with the lid, the tap must remain open
- connect the bell jar via the hose with the vacuum pump
(make sure that the hose is firmly connected)

Experiment

The barometer shows the air pressure in the vessel, which is initially equal to the air pressure in the environment.

The vacuum pump is switched on;
observe the ball and the barometer.



Result

As the pressure in the bell jar drops, the ball begins to lower. Why?

If there is air in the recipient, the buoyancy is greater.
But we suck the air out - so the buoyancy is less.

For gases the size of the buoyancy is equal to the weight of the gas volume displaced -
at air about 0.013 N per liter of displaced air under normal conditions.

Attention

When the pump is switched off, the tap on the lid of the bell jar must be closed immediately, otherwise the pump's oil will be sucked into the vacuum vessel!

Note

This device is also called gas scale or dasymeter
(derived from Greek dasys = tight and metron = measure).

The buoyancy in air must be taken into account for precise weighing.

BUOYANCY IN AIR

MED 17.10

Of course this experiment can also be carried out without a barometer.

However without the display of the barometer the attempt is not so clearly understandable for the student.

