AIR PRESSURE IN THE VACUUM VESSEL (BELL JAR)

MED 16.13

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
DE722-2B	1	Barometer "inno"

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Purpose
Explanation of the change in air pressure inside a vessel during evacuation

Preparation
- turn on the Barometer and place it inside the bell jar
- seal the bell jar with the lid, the tap on the lid has to be open
- connect the bell jar to the vacuum pump with the silicone hose; make sure that the hose is connected firmly

Experiment
The barometer shows the air pressure in the vessel, which is initially equal to the air pressure in the environment.
Switch the pump on and observe the barometer display.

Explanation
The vacuum pump sucks the air out of the interior of the bell jar.
As there are fewer and fewer air particles in the vessel the air pressure also drops, which can be seen on the display. If there is no longer any change in pressure we switch the pump off.

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

Note
The pump does not manage to suck out the air in the vessel completely! Depending on the performance of the pump the value should be below 30 hPa. Assuming that the normal ambient air pressure is around 1000 hPa, 97% of the air has been sucked out at a residual pressure of 30 hPa.

We know from experience that more than 95% of the air must be extracted during the "bell test (sound transmission in a vacuum)" in order to prevent sound transmission.

If you are working with a large vacuum vessel (in this case 7 liter volume), we strongly recommend using a two-stage electric vacuum pump.