



pressure in gases

DM400-3D Pressure flask 1000 ml

consisting of:

C3040-6H Flask, flat bottom, 1000 ml, SB 29/32

Height = approx. 200 mm

C7320-4B Stopper, silicone, 26/32/30 mm, 1 hole

C7320-4C Stopper, silicone, 26/32/30 mm, 2 holes

C6230-2G Stopcock, three-way, glass

Ground glass stopcock, 3 tubes with hose fittings, 80x8 mm



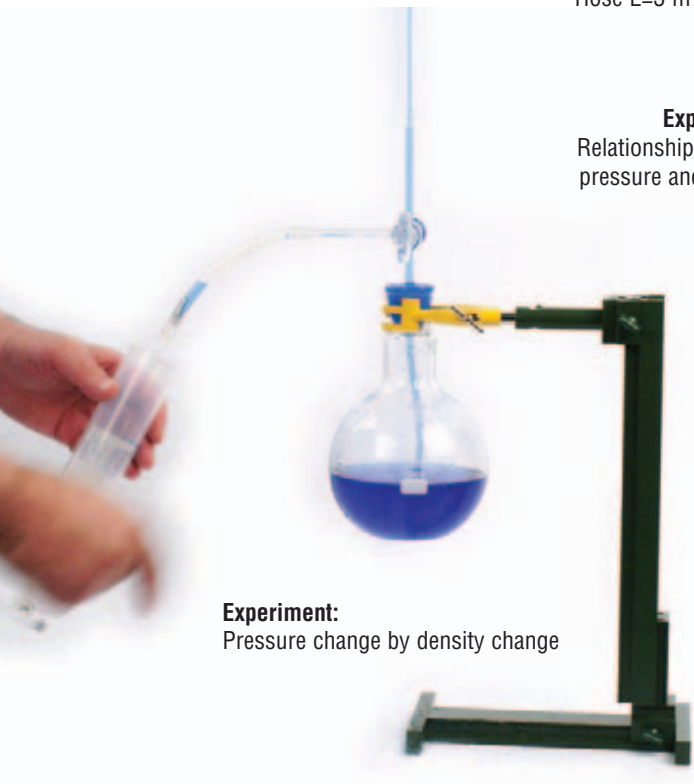
DM470-1S Hose levelling instrument

For comparing the relative height of two points; 2 cylindrical levelling tubes with connector tube and transparent scale connected by a silicone hose

Levelling tubes: 26x200 mm,
Hose L=3 m

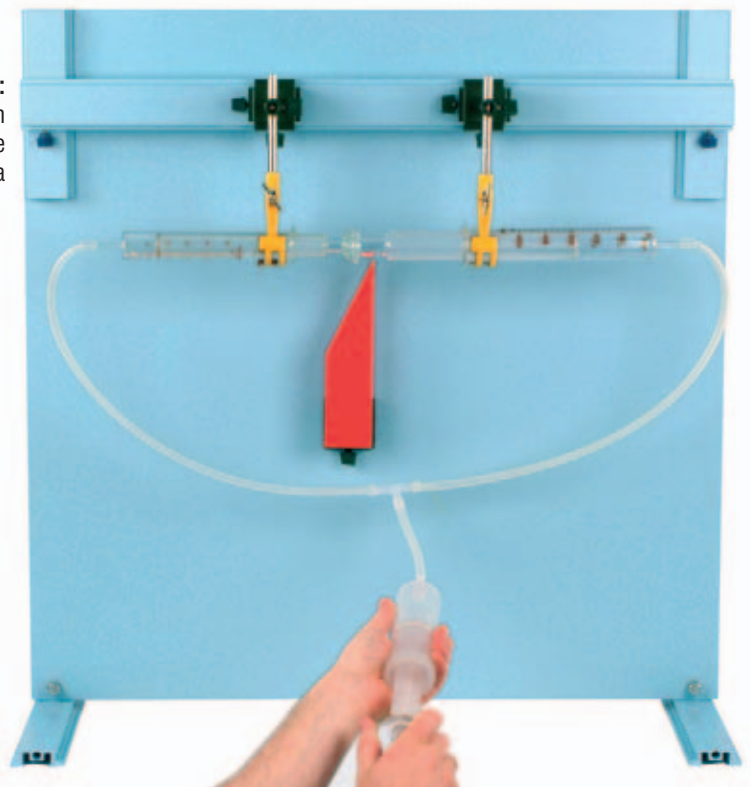


Experiment: Level measurement using the hose levelling instrument



Experiment:
Pressure change by density change

Experiment:
Relationship between
pressure and surface
area



pressure in gases



Experiments
Pressure change by temperature change



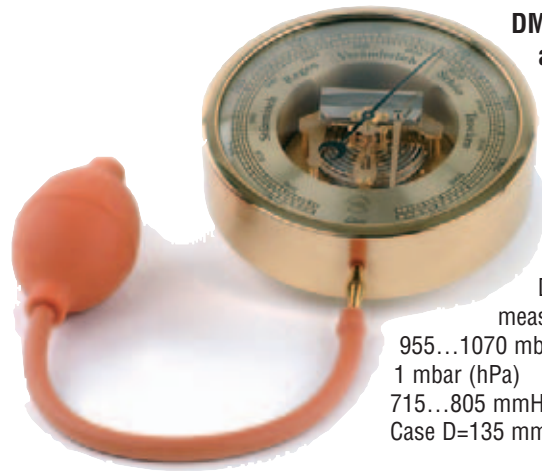
Experiment:
Rise in pressure - rise in temperature



DM113-1H Syringe sampler with plunger 150 ml, plastic
With tapped hole for c-hook DS102-3S
Dimensions: D=46 mm, L=205 mm
C7320-6S Rubber stopper 36/44/40 mm, with hole closed at one end
C7416-1B Pinchcock, Mohr, large
C7445-7S Hose, silicone, D=7/9 mm, L=100 cm



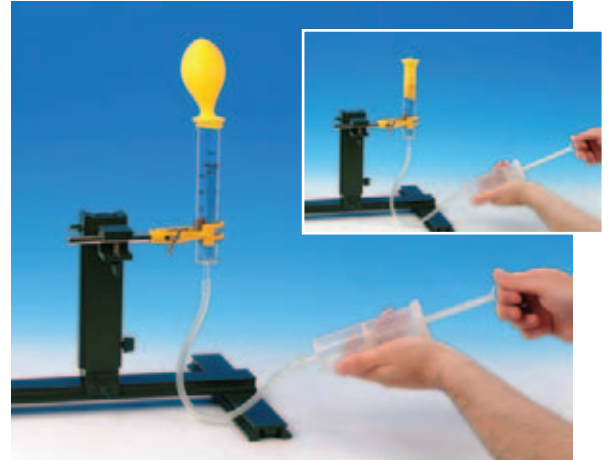
mechanics of gases - air pressure



DM570-1B Barometer, aneroid

For measuring air pressure; the glass plate at front allows observation of the workings of the aneroid barometer; double-chamber design, metal case with glass cover and rubber bulb
Double scale with the measuring ranges:

955...1070 mbar (hPa); graduations: 1 mbar (hPa)
715...805 mmHg; graduations: 1 mmHg
Case D=135 mm; weight: approx. 650 g



Experiment: Over- and underpressure



Experiment: Measuring air pressure using a barometer



DM571-2V Barometer and vacuum gauge "handy"

Microprocessor-controlled hand multimeter for absolute pressure and vacuum, with sturdy external sensor for gaseous or liquid media; LC display, H=15 mm, "data hold" function, maximum - minimum storage, RS 232 interface, accuracy +/- 1 % for the entire measuring range, automatic shutdown

Measuring range: 1500/1 mbar, 150/0.1 kPa, 1125/1 torr, 1125/1 mm/Hg, 1125/1 kmicron, 44.3/0.02 inches/Hg, 21.75/0.01 psi
Power supply: 9V battery
Sensor dimensions: D=30mm, L=55 mm, 175 g
Instrument dimensions: 180x72x32 mm;
Weight: 220 g



DE722-2B Barometer "inno"

Digital device for magnetic mounting, used to measure gas pressure; the 26 mm LED display allows readings to be taken even from a distance; set screw for setting to zero
Accuracy: 1 hPa ; max. pressure: 2 bar; measurement error: max. 1.5%; sensor inputs are not suitable for use with aggressive media

Power supply: 4 x 1.5 V mignon cells (included), or external power supply 6 V/500 mA; case: plastic, ABS
Dimensions: approx. 160x120x45 mm
Weight: approx. 400 g

Recommended accessories:

With the s-shaped assembly platform P3120-4A (height: 245 mm) the barometer "inno" is easily converted into a table model.
P3120-6N 6 V/500 mA transformer as an external power supply for 230 V AC/50 -60 Hz mains outlet



Experiment: Boyle's (Mariotte's) Law



mechanics of gases - air pressure



C6123-1G Water jet pump, glass

Glass model for demonstrating the functioning of a water jet pump,
2 hose fittings
Water connection D=15 mm, suction connection D=8 mm, L=315 mm

C6123-1M Water jet pump, plastic

Material: transparent plastic, water connection D=12 mm, suction
connection D=9-11 mm, L=190 mm



Experiment: Measuring underpressure using the water jet pump



Experiment:
Effect of air
pressure - flat-
bottom cylinder

DM481-2C Cylinder, flat bottom,

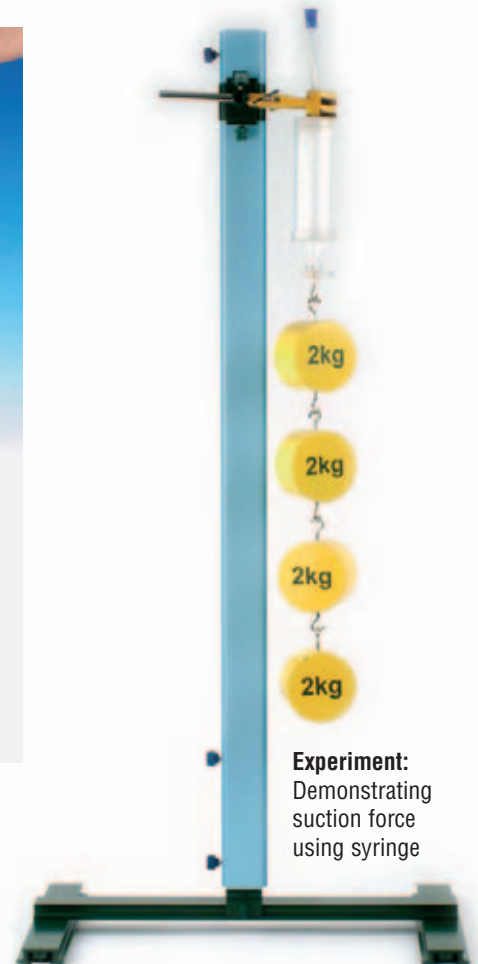
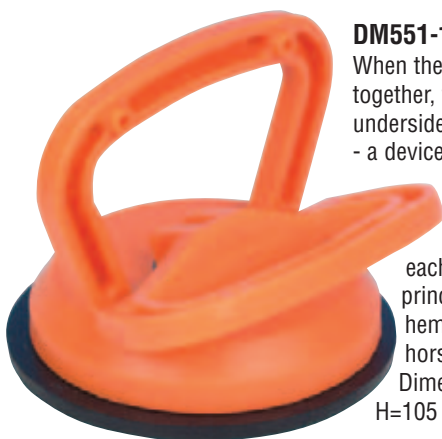
400x60 mm,
acrylic
Virtually
unbreakable
acrylic cylinder
with base and
smooth upper
edge, H=400 mm,
D=60/54 mm



Experiment:
Demonstrating suction
force using the suction
pad

DM551-1M Suction pad

When the two handles are pressed
together, the rubber pad on the
underside sticks to smooth surfaces
- a device ideal for demonstrating
the "force" of air pressure
in an impressive way; two
pads "sucking" against
each other demonstrate the
principle of the Magdeburg
hemisphere: not even 16
horses can pull them apart!
Dimensions: D=118 mm,
H=105 mm



Experiment:
Demonstrating
suction force
using syringe



mechanics of gases - air pressure



DM500-1F Vacuum pump, rotary vane, one-stage
DM500-2F Vacuum pump, rotary vane, two-stage



DM500-2A Vacuum pump, rotary vane, two-stage



DM500-2S
 Vacuum pump, rotary vane, two-stage

Pump type	DM500-1F	DM500-2F	DM500-2A	DM500-2S
Nominal suction capacity	2,5 m ³ /h	2,5 m ³ /h	1,5 m ³ /h	1,8 m ³ /h
Suction capacity	2,0 m ³ /h	2,0 m ³ /h		
Ultimate vacuum	10 Pa	1 Pa	1 Pa	0,67 Pa
Ultimate vacuum w/ gas ballast			10 Pa	6,7 Pa
Stages	1	2	2	2
Suction connector	Hose Fitting 6 mm	Hose Fitting 6 mm	Flange KF16	Flange KF16
Voltage source		220(240)V / 50(60)Hz		
Motor power	120 W	120 W	290 W	150 W
Speed	2750 rpm	2750 rpm	1340 rpm	
Noise level	60 dB(A)	58 dB(A)	59 dB(A)	
Oil volume	450 ml	450 ml	300 ml	
Dimensions	30x15x24 cm	30x15x24 cm	32x17x20 cm	12x28x17 cm
Weight	6,5 kg	6,5 kg	13 kg	8,7 kg



Hose for vacuum pump DM500-1F and -2F:

C7445-6V Vacuum hose, D=6 mm, L=100 cm

Accessories for vacuum pumps DM500-2A and -2S:

- DM502-1S** Clamping ring DN 16
Ring for ensuring the vacuum-tight connection of two DN 16 flanges with centring ring DM502-1D
- DM502-1D** Sealing and centring ring DN 16
Centring ring for ensuring the vacuum-tight connection of two DN 16 flanges with clamping ring DM502-1S
- DM502-2S** Adapter flange with straight hose fitting
Adapter between DN 16 flange and vacuum hoses 5-6 mm in Diameter
- DM502-3S** Adapter flange with 2 hose fittings
Adapter between DN 16 flange and vacuum hoses 3-4 mm and 5-6 mm in Diameter
- DM502-1B** Blind flange DN 16
Vacuum-tight end piece for small flange DN 16
- DM502-1Z** Vacuum gauge
For mounting on small flange DN 16, with fitting on the side for vacuum hoses 5-6 mm in Diameter, measuring range: 0 ... -100 kPa, D=100 mm
- DM502-1T** T-connector DN 16 with air bleed valve
T-connector for small flanges DN 16, with air bleed valve on the side

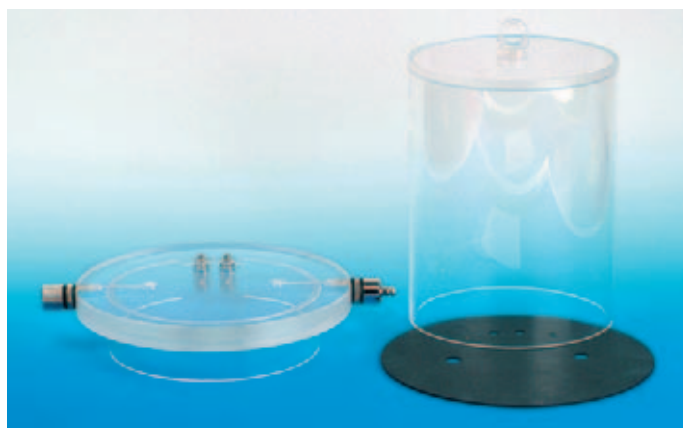


mechanics of gases - air pressure



DM520-1G Vacuum chamber 7 l

For performing experiments with an approximate vacuum without requiring a vacuum or air pump plate; acrylic chamber with metal tube connector (D=9 mm), hose fitting and ball valve; removable lid (210x10 mm) with ring handle; air bleed valve and two 4 mm jacks for routing electricity through the chamber
Dimensions: D=200 mm, H=260 mm



DM520-1R Bell jar 7 l

For performing experiments with an approximate vacuum; acrylic cylinder with non-removable lid and ring handle
Dimensions: D=200 mm, H=260 mm

DM510-1T Vacuum plate, stable acrylic bottom plate for bell jar DM520-1R, with metal intake and suction valve, hose fitting (D=9 mm); plate equipped with two 4 mm jacks for routing electricity through the jar
Dimensions: D=260 mm, H=60 mm

DM510-1P Rubber pad, For use as a sealing layer between the vacuum plate DM510-1T and bell jar DM520-1R;
Dimensions: 250x2 mm



DM590-1D Metal can with stopper and tube

For demonstrating the effect of atmosphere pressure; can D=100 mm, H=160 mm, with hole (D=31 mm), rubber stoppers 30/38/37 mm, acrylic tube 80x8/5 mm

DM590-2D Metal cans, set

3 replacement cans for DM590-1D, D=100 mm, H=160 mm, without stoppers and tube



DM530-1B Bubble burster with hose fitting

For demonstrating the existence and effect of air pressure; acrylic cylinder closed on one side, nut for rubber rings, metal tube connector (D=7 mm)
Dimensions: D=110 mm, H=60 mm

DM530-1P Cellophane film, set of 10
10 pieces of cellophane film, approx. 25x25 cm

DM530-1R Rubber bands, wide, set of 2,
2 Rubber bands, D=80 mm, W=10 mm



Experiment: Effect of air pressure - bubble burster



Experiment:
Effect of air pressure - metal can

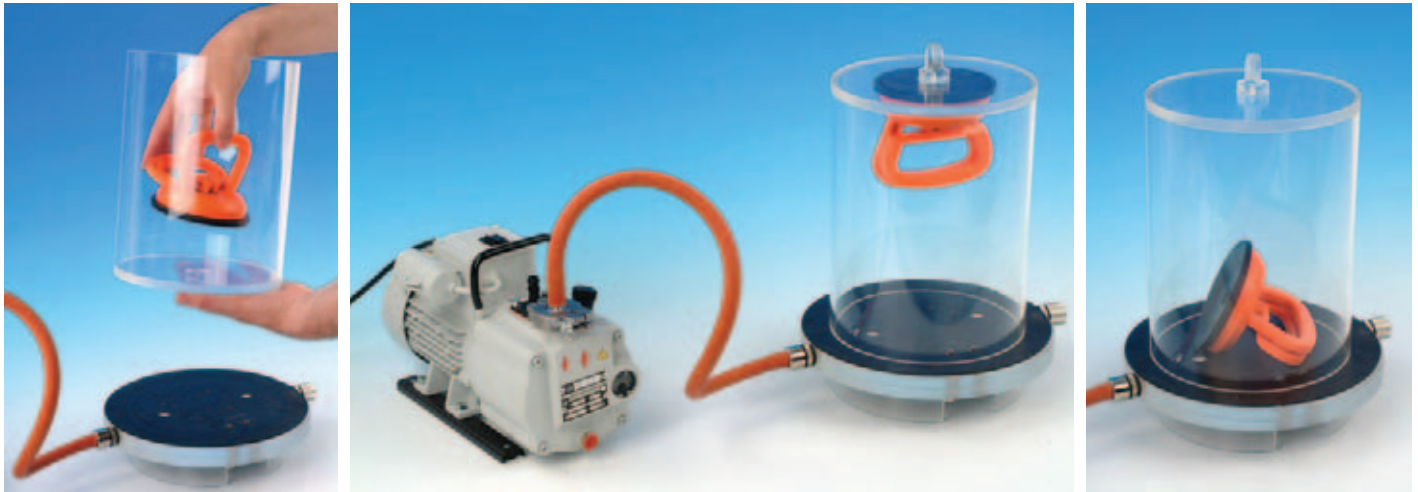
DM500-3A Vacuum hand pump with pressure gauge

Mechanical air pump with pressure gauge, for removing air from small volumes, built-in air bleed valve
Suction capacity: 35 ml per stroke
Ultimate vacuum: 12hPa
Dimensions: approx. 250x200x52 mm

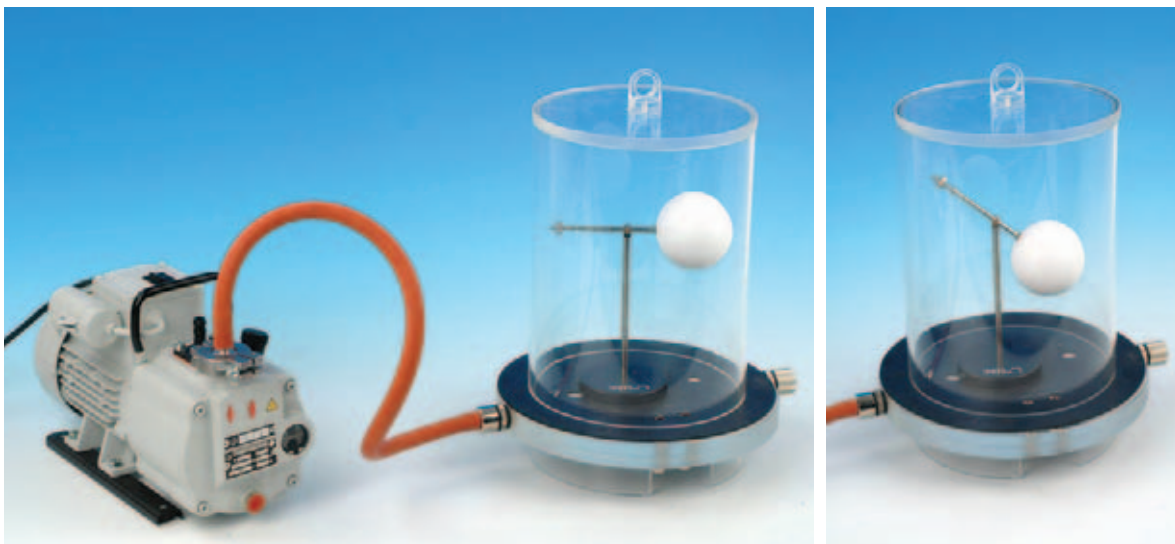




mechanics of gases - air pressure



Experiment: Effect of air pressure - suction pad



Experiment:
effect of air
pressure -
dasymeter

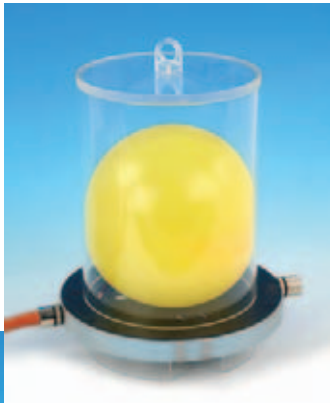


DM550-1M Magdeburg hemispheres, pair
For demonstrating the effect of atmospheric pressure (historical experiment by Guericke); 2 plastic half-spheres with handles, fitted with rubber sealing gasket, with stopcock
Diameter: 100 mm



DM540-1A Dasymeter
For demonstrating buoyancy in air; beam balance with Styrofoam ball (D=70 mm) and adjustable counterweight, with base
Dimensions: 160x80x190 mm

mechanics of gases - air pressure



Experiment:
Effect of air pressure -
balloon

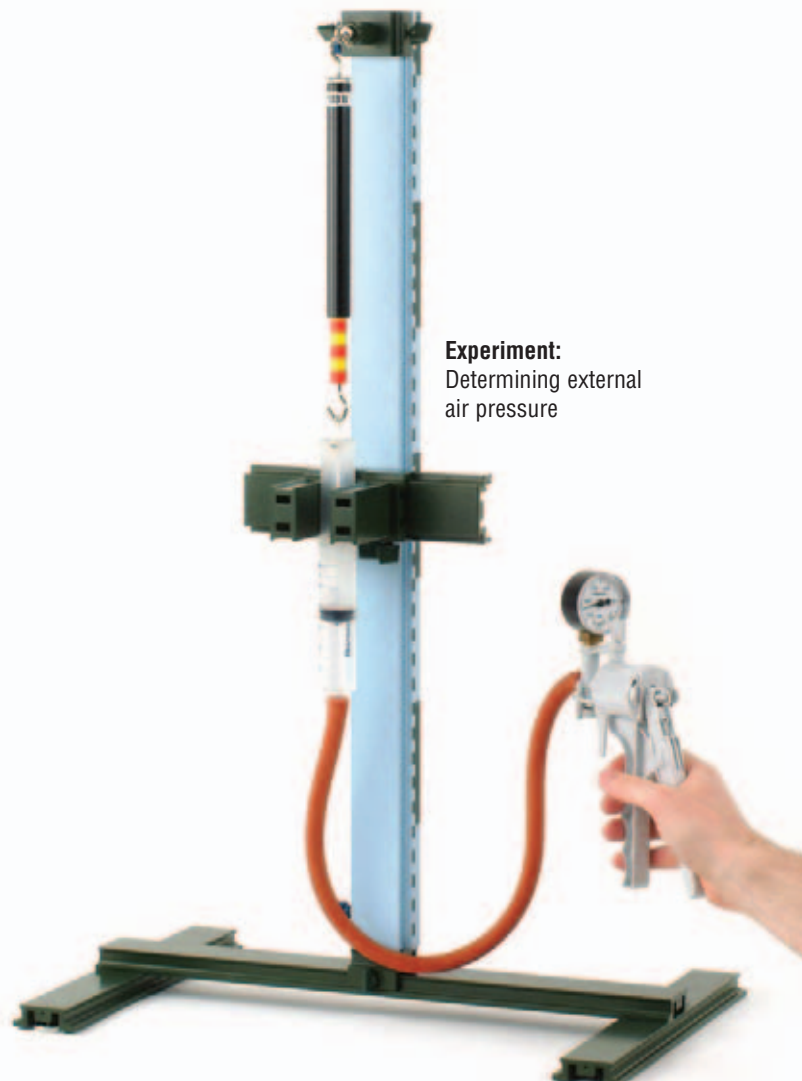


DM340-8B Balloons, set
Set of 10 coloured balloons

DM114-1S Syringe sampler with plunger 60 ml, with suspension loop
Material: plastic; weight: D=30 mm, L=160 mm



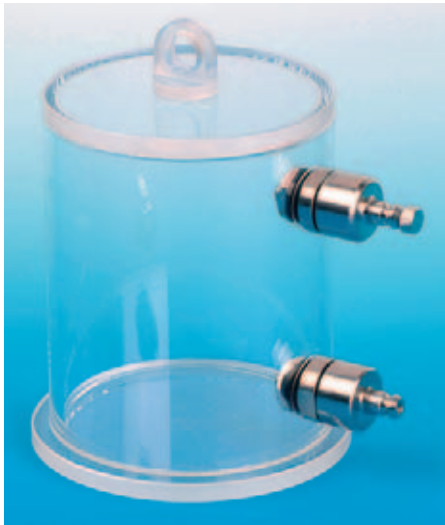
Experiment: Effect of air pressure - syringe



Experiment:
Determining external
air pressure

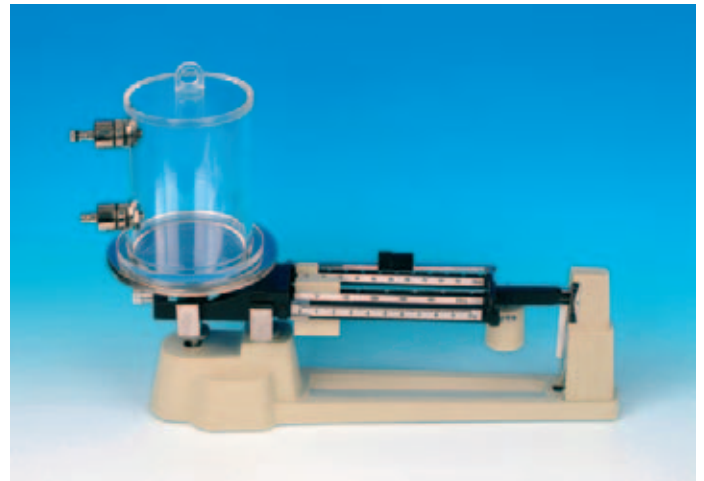


mechanics of gases - air pressure



DM540-1R Cylinder for measuring weight of air

For measuring the weight of air; acrylic cylinder with non-removable floor, lid with ring handle, two metal ball valves (suction and pressure valve) on the side; Volume: 1 litre, H=127 mm, D=110 mm



Experiment: Determining the weight of air



DW130-1K Electric bell

With connecting leads and two 4 mm jacks for connection to the jacks in the lid of the 7 litre vacuum chamber

DM520-1G and of the vacuum plate DM510-1T
Voltage source: approx. 8V AC



Experiment: Transmission of sound in a vacuum



DW275-1M Sound level meter "inno"

Digital device for magnetic mounting, used to measure acoustics; the 26 mm LED display allows readings to be taken even from a distance

Measuring range: 30 ... 120 dB, A or C weighting selectable
SLOW-FAST: response time adjustment
FLOAT-PEAK: peak value display, with reset button
Power supply: 4 x 1.5 V mignon cells (included) or external power supply 6 V/500 mA; case: plastic, ABS
Dimensions: approx. 160x120x45 mm
Weight: approx. 450 g

DW270-1M Sound level meter "handy"

Handheld precision device for measuring acoustics; condenser microphone, 3fi-digit LCD display, H= 18 mm, 2 weighting filters: A (corresponding to the human ear) and C (technical weighting); slow and fast response times, recording of maximum value, easy to calibrate
Measuring range: 30...80/50...100/80...130 dB (indicator displays when beyond or below range); resolution: 0.1 dB
Power supply: 9 V battery
Dimensions: 225x70x28 mm;
Weight: 250 g



mechanics of gases - air pressure



C1577-1T Pipette, volumetric, 25 ml

Glass model of a "wine thief";
L=approx. 520 mm

C6030-1A Pipette, angular

Sharply angled glass tube (D=8/5mm), L=250+100mm

C7445-7S Hose, silicone,

D=7/9 mm, L=100 cm



DT715-1B Boyle-Mariotte apparatus

For determining the relationship between pressure and volume of gases at a constant temperature; acrylic graduated cylinder, piston with rubber gasket, manometer gauge, D=100 mm; piston length: approx. 150 mm



Experiment:

Determining the air pressure in a balloon

Experiment:

Volumetric pipette

Model pumps

Large acrylic working models, each with a sturdy piston, screw-on cylinder lid and an easily visible ball valve for clearly recognizing the workings of the pump; for mounting on vat DM340-2W

DM580-2S Suction pump,

working model, acrylic
Displacement: D=32mm, H=90 mm
Dimensions: 200x45x220 mm

DM580-2D Pressure pump,

working model, acrylic
Displacement: D=32mm, H=120 mm
Dimensions: 200x45x220 mm

DM340-2W Vat with drain connector

Acrylic, D=200 mm, H=65 mm

