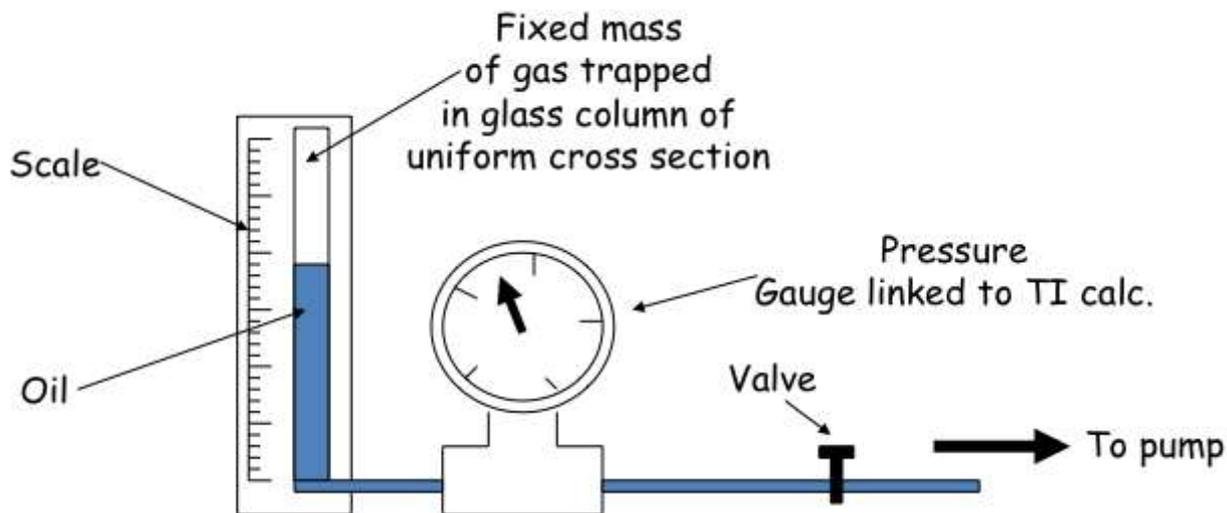


Variation of pressure and volume for a fixed mass of gas

Apparatus

Boyles law apparatus, pump, safety goggles,

Instructions:



- A sample of dry air is confined in a tall, wide glass tube by a piston of oil. The volume is found from the length of the air column, which should be clearly visible at the back of the class.
- The pressure is read from a Bourdon gauge connected to the air over the oil reservoir.
- The foot pump is attached to the oil reservoir and is used to change the pressure.
- The pump is used to increase the pressure on the column of trapped air which makes the oil rise in the column, and the valve is used to seal the apparatus when the pressure is high.
- The length of the trapped air column and the corresponding pressure are noted.
- The reading of length on the scale is 'directly proportional' to volume, so you can use the length measurements as an indication of volume as the cross sectional area is constant.

Risk Assessment

- It has been known for the glass tube to fly upwards when the gas is at maximum pressure. To prevent this, check the compression joint holding the tube and any tube supports before use. (The apparatus is filled and emptied by removing the pressure gauge.)
- Do not reduce the volume beyond what your teacher advises.
- Wear safety goggles when carrying out this experiment.

Research

- [http://tap.iop.org/energy/kinetic theory/page 40478.html](http://tap.iop.org/energy/kinetic%20theory/page%2040478.html)
- [https://en.wikipedia.org/wiki/Gresham College and the formation of the Royal Society](https://en.wikipedia.org/wiki/Gresham_College_and_the_formation_of_the_Royal_Society)
- [http://www.bbc.co.uk/history/historic figures/boyle robert.shtml](http://www.bbc.co.uk/history/historic_figures/boyle_robert.shtml)
- [http://www.schoolphysics.co.uk/age16-19/Thermal%20physics/Gas%20laws/text/Gas laws/index.html](http://www.schoolphysics.co.uk/age16-19/Thermal%20physics/Gas%20laws/text/Gas_laws/index.html)
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- <https://www.sciencehistory.org/historical-profile/robert-boyle>
- [http://www.bbc.co.uk/schools/gcsebitesize/science/triple edexcel/kinetic theory gases/kinetic theory gases/revision/1/](http://www.bbc.co.uk/schools/gcsebitesize/science/triple_edexcel/kinetic_theory_gases/kinetic_theory_gases/revision/1/)
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- <http://practicalphysics.org/thermal-expansion-air-charles-law.html>