

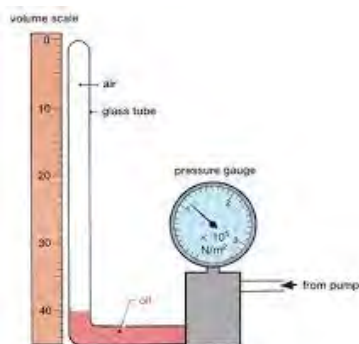
Edexcel Physics A Level

Core Practical 14

Investigate the relationship between Pressure and Volume of a Gas



Method



- A **fixed mass** of gas is trapped by oil in a **sealed tube** with fixed dimensions
- Increase the pressure of gas slowly by using the **tyre pump** to increase the pressure on the oil (so that level of oil rises and the air will compress)
- Measure pressure on the **gauge** and the volume of the **gas** from the column
- Wait 30 seconds for the **temperature** of the liquid to return to room temperature (keep the temperature constant)
- Find at least 7 data values for pressure and corresponding volume
- Obtain at least 3 repeated reading and find mean volume for each pressure value
- Plot **pressure** against $\frac{1}{\text{volume}}$ to find the relationship (should be straight line, with gradient nRT following the equation $PV=nRT$)

Safety

- Apparatus could fall over so, clamp it to the desk
- Pressure pump could be unstable under high pressure so press vertically downwards
- Tubing/joints unstable at high pressure so wear safety goggles to avoid eye damage

Evaluation

- Pressurise slowly to keep a **constant temperature** on the liquid, Boyle's law only applies at a constant temperature
- The gauge measures excess pressure - so **add atmospheric pressure** if needed

