

Gas Laws Accessories Kit

PS-2938



Included Items	Included Items	Included Items
Bottle (500 mL)	Stopcock (2)	Quick release Connector (2)
Tubing (0.5 m)	Balloon ¹	Tubing Connector (2)
#6 Rubber Stopper (2-hole)	¹ Caution: The balloon used in this product contains natural rubber latex which may cause allergic reactions.	

Required Items	Required Items
PASCO Interface*	Data Acquisition Software*

*See the PASCO catalog or the PASCO web site at www.pasco.com for more information

Recommended	Model
STEM Module: Airbag	PS-2983 (spiral bound) PS-2974 (flash drive) PS-2985 (download)

Recommended
Advanced Chemistry Sensor (PS-2172) OR
Chemistry Sensor (PS-2170) OR
Absolute Pressure and Temperature Sensor (PS-2146)

Other items and consumables are described in the STEM Module: Airbag.

Introduction

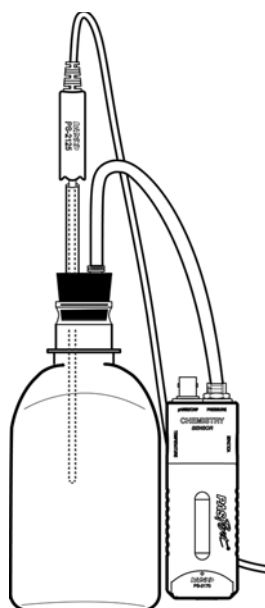
The Gas Laws Accessories Kit is ideal for changing, measuring and monitoring properties of gases such as temperature, amount of gas, volume, and pressure as they relate to empirical gas laws. A sample bottle is included to provide a constant volume container. A balloon is also included so that the volume of the gas can be changed.

Data from the sensors (not included) can be recorded and displayed with a PASCO data collection system (interface and software). See the *STEM Module: Airbag* for more information.

Suggested Activities

Pressure and Temperature

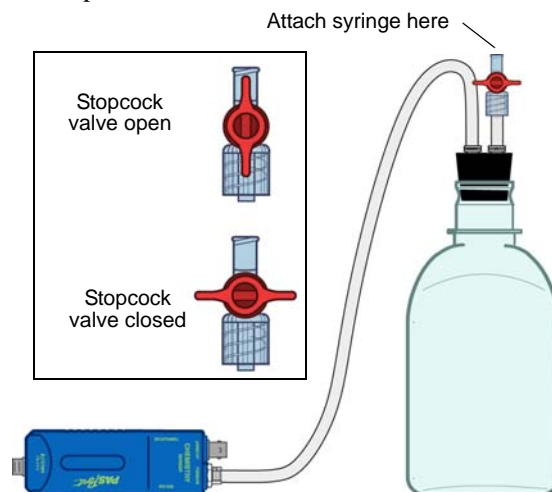
1. Connect tubing between a Pressure Sensor and one hole of the #6 2-hole rubber stopper.
2. Insert a Stainless Steel Temperature Probe into the other hole of the stopper.
3. Insert the rubber stopper into the sampling bottle.
4. Immerse the bottle in hot and cold temperature baths and observe the effects on the pressure as the temperature changes.



Pressure and Volume

1. Connect tubing between a Pressure Sensor and one hole of the #6 2-hole rubber stopper.
2. Connect a stopcock to the other hole of the rubber stopper.
3. Insert the rubber stopper into the sampling bottle.
4. Attach a syringe to the stopcock.

5. With the stopcock valve open (parallel to the stopcock), change the volume of the syringe and observe the effects on the pressure in the bottle.

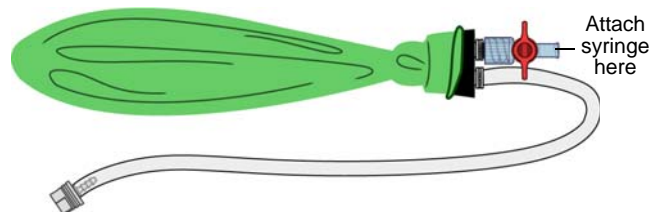


Pressure and Moles

1. Connect tubing between a Pressure Sensor and one hole of the #6 2-hole rubber stopper.
2. Connect a stopcock to the other hole of the rubber stopper. Set the stopcock valve to open.
3. Insert the rubber stopper into the sampling bottle.
4. Attach a syringe to the stopcock.
5. Use the syringe to add a sample of gas to the bottle, and then close the stopcock valve.
6. Repeat the procedure of adding samples of gas and observe the effects on the pressure.

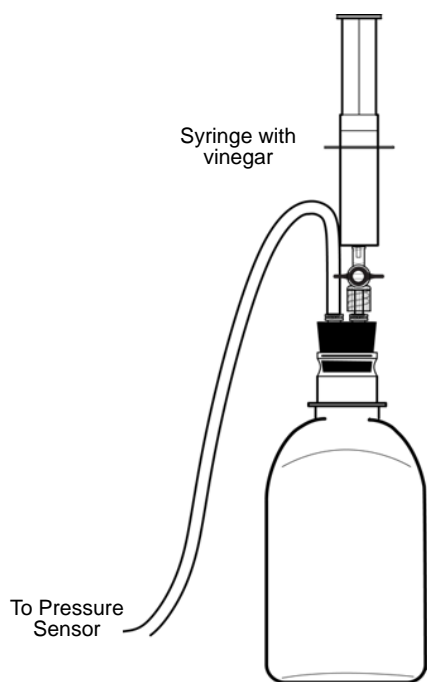
Variable Volume

1. Connect tubing between a Pressure Sensor and one hole of the #6 2-hole rubber stopper.
2. Connect a stopcock to the other hole of the rubber stopper. Set the stopcock valve to open.
3. Insert the rubber stopper into the balloon.
4. Attach a syringe to the stopcock.
5. With the stopcock valve open, change the volume of the syringe and observe the effects on the pressure.



Gaseous Reactions

1. Connect tubing between a Pressure Sensor and one hole of the #6 2-hole rubber stopper.
2. Connect a stopcock to the other hole of the rubber stopper.
3. Add some sodium bicarbonate to the sampling bottle and insert the rubber stopper into the bottle. Set the stopcock valve to closed.
4. Fill the syringe with a small amount of vinegar.
5. Attach the syringe to the stopcock. Set the stopcock valve to open, inject the vinegar into the bottle, and then close the stopcock valve.
6. Observe the effects of the gaseous reaction on the pressure.



Technical Support

For assistance with any PASCO product, contact PASCO at:

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Web www.pasco.com

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