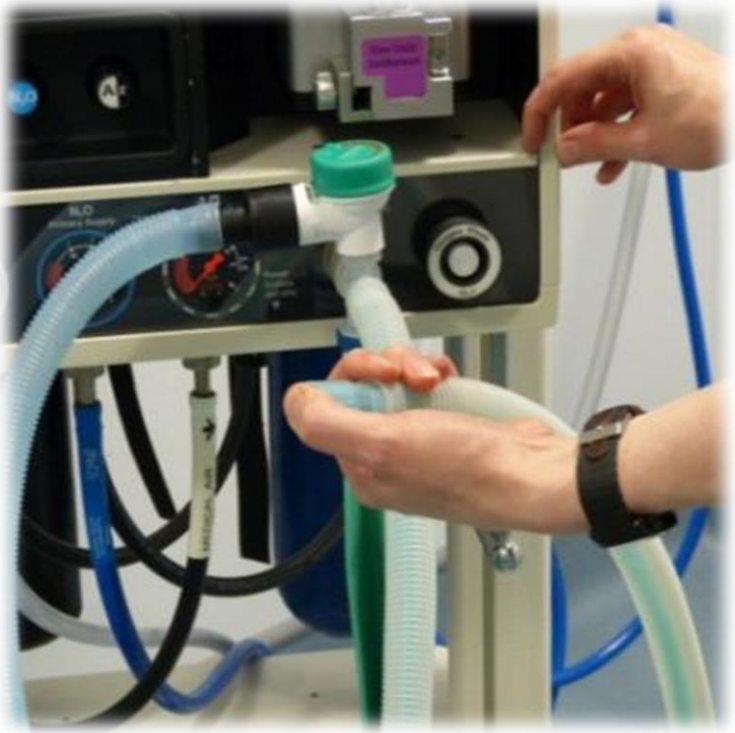
Checking a Breathing System



Disclaimer

A series of booklets has been developed by the Clinical Skills Lab team (staff, recent graduates and students) from the School of Veterinary Sciences, University of Bristol, UK. Please note:

- Each booklet illustrates one way to perform a skill and it is acknowledged that there are often other approaches. Before using the booklets, students should check with their university or college whether the approach illustrated is acceptable in their context or whether an alternative method should be used.
- The booklets are made available in good faith and may be subject to changes.
- In using these booklets, you must adopt safe working procedures and take your own risk assessments, checked by your university, college etc. The University of Bristol will not be liable for any loss or damage resulting from failure to adhere to such practices.

University of BRISTOL

University of BRISTOL

Equipment list:

Checking a Breathing System

Equipment for this station:

- Breathing systems
  - Circle
  - T-Piece
  - Bain (and plunger of a 5ml syringe or red adapter)
  - Parallel Lack
  - Mini Lack
- Anaesthetic machine – fully set up and checked

Considerations for this station:

- Do not use the anaesthetic machine unsupervised

Anyone working in the Clinical Skills Lab must read the 'CSL_I01 Induction' and agree to abide by the 'CSL_I00 House Rules' & 'CSL_I02 Lab Area Rules'

Please inform a member of staff if equipment is damaged or about to run out.

University of BRISTOL

Clinical Skills:

Checking a Breathing System

Perform a visual check of the breathing system – look for damage and signs of wear.

The anaesthetic machine should be fully checked and the oxygen cylinder turned on (or the pipeline connected).

Connect the breathing system to the common gas outlet and the scavenging system.

Shut the Adjustable Pressure Limiting (APL) valve by turning it fully clockwise. This picture shows the valve in the **closed** position.

'Shut' is equivalent to 'high pressure'; gas will not escape from the breathing system to the scavenging system until the pressure of the gas in the system exceeds the valve pressure.

Cover the end of the tube that would connect to the endotracheal (ET) tube of a patient with your thumb.

Fill the reservoir bag with oxygen by either pressing the oxygen flush button, or setting the oxygen flowmeter to approximately 4L/min until the bag is full.

With the end of the breathing system still covered with your thumb, squeeze the reservoir bag. Listen to ensure there are no leaks. You should not hear any gas escaping.

University of BRISTOL

Clinical Skills:

Checking a Breathing System

7

With the end of the tube still covered, open the APL valve by turning it anti-clockwise. This sets the valve to 'low pressure' meaning gas in the breathing system will escape to the scavenging system.

This picture shows the valve in the **open** position.

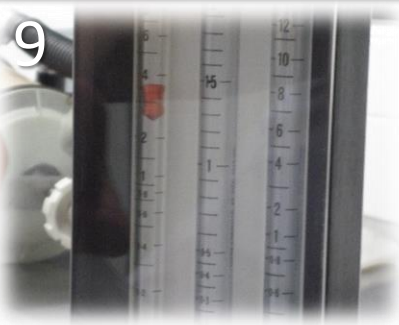
8

Still covering the end of the breathing system, squeeze the reservoir bag and make sure that the gas travels to the scavenging system.

For most breathing systems, all the checks would now be complete.

Ensure the flowmeter is off, but leave the breathing system connected and the oxygen cylinder/pipeline on, ready for use.

9



Additional steps for a Bain system:

It is essential that the inner limb of the Bain is checked.

Set the oxygen flowmeter to any specific number e.g. 3 or 4L/min (remember what you set it to, as you will be observing a change).

10

11

Occlude the inner limb either with the plunger of a 5ml syringe or the red adapter (it specifies which side to use for a Bain). When the inner inspiratory limb is occluded, a dip in the oxygen flow is observed (red arrow in photo above). There will be an audible escape of gas from the non-return pressure relief safety valve on the back bar. If there is a leak in the circuit these changes will not happen. Remove the plunger/adapter from the inner limb - the O_2 bobbin will 'jump' and then return to the previously set volume. Turn the flowmeter off but leave the system connected and the oxygen cylinder/pipeline on, ready for use. Check that the APL valve is in the **open** position.

University of BRISTOL

Resetting the station:

Checking a Breathing System

1. Disconnect the breathing system
2. Check that the anaesthetic machine, vaporiser(s), oxygen and nitrous oxide cylinders* are all turned off
3. Check oxygen and nitrous oxide flow meter* have all been turned off, and read zero
4. Unplug oxygen & nitrous pipeline*
5. Leave the work space clean and tidy

* N.B. Nitrous oxide and pipeline gases are **not** currently available in the CSL

Station ready for the next person:

Please inform a member of staff if equipment is damaged or about to run out.

University of BRISTOL

I wish I'd known:

Checking a Breathing System

- During an anaesthetic, ensure the breathing system doesn't get kinked – this will obstruct gas flow to the patient.
- During an anaesthetic, ensure the breathing system doesn't get twisted – this will twist the endotracheal tube and could damage the patient's trachea.