Medical Gas E-Training

Oxygen Bed Head Terminal Unit

- This is an oxygen outlet.
- It is coloured white and labelled O2 or Oxygen
- To get oxygen out of a terminal unit you have to insert an ‘Oxygen’ flowmeter.
- Oxygen flowmeters have a WHITE control knob

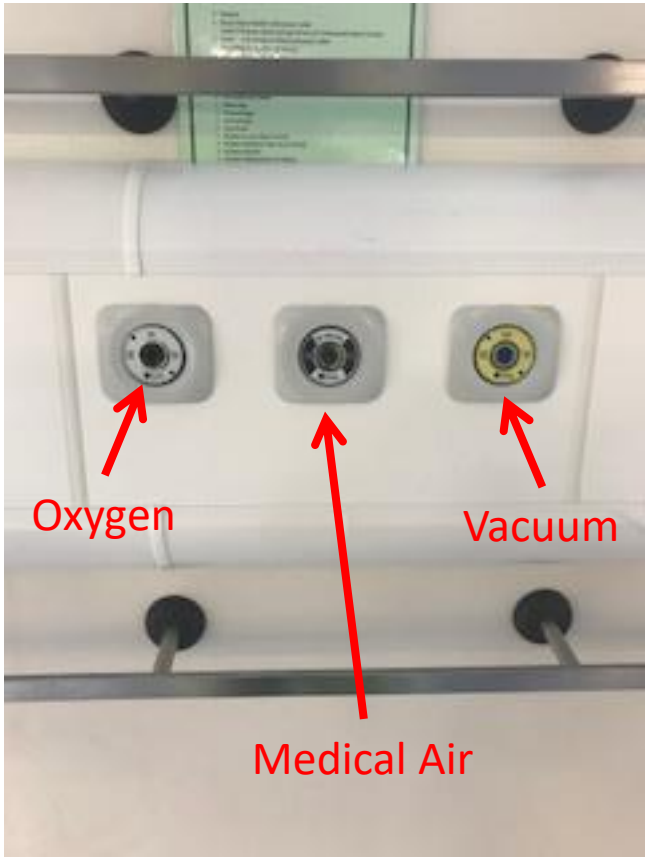
Medical Air

- This is a Medical Air outlet.
- It is coloured Black & White and labelled Air 400 kPa or MA4
- This Air is delivered at 4 Bar pressure
- To get Medical Air out of a terminal unit you have to insert a Medical Air flowmeter.
- Medical Air flowmeters have a BLACK control knob

Vacuum (Suction)

- This is a Suction outlet.
- It is coloured Yellow and labelled ‘Vac or Vacuum’
- To get Vacuum out of a terminal unit you have to insert a ‘ Vacuum’ controller.
- Vacuum controllers normally have a YELLOW colour on the body or on the gauge of the unit

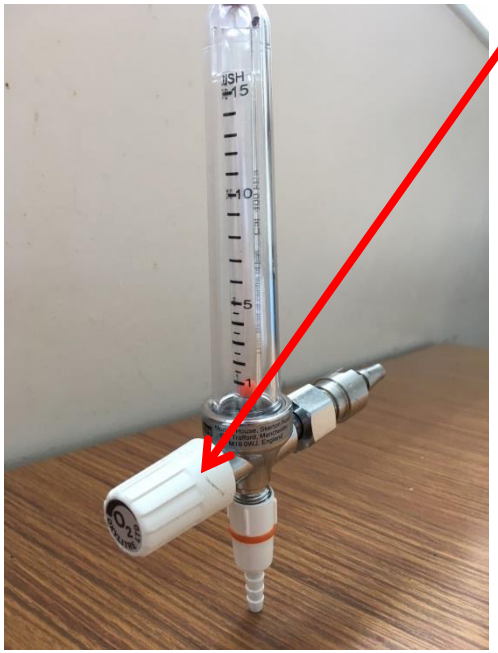
Medical Gas Terminal Units
Typical Layout



- This is a typical layout of how the medical gases at a bed head are installed across the site.
- Oxygen outlets are usually the first gas outlet on the left and air is always in the middle
- This is the Standard Layout that is adopted across the NHS.
- This standard layout has been designed to reduce the risk of errors.

Flow Meters for Wall Terminal Units

Flow Regulator Control knob

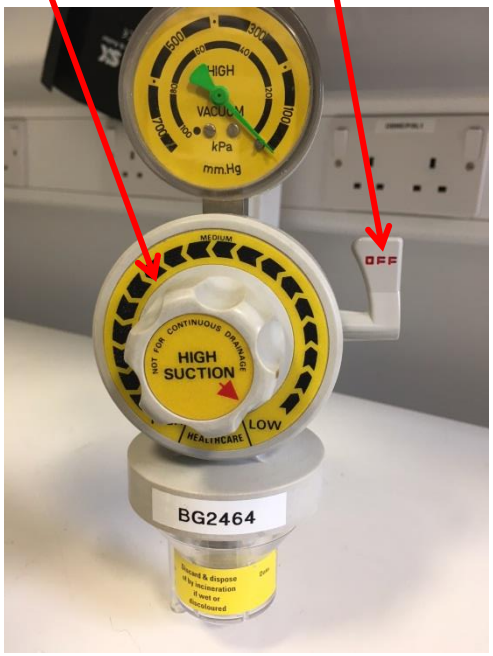


Oxygen

Medical Air

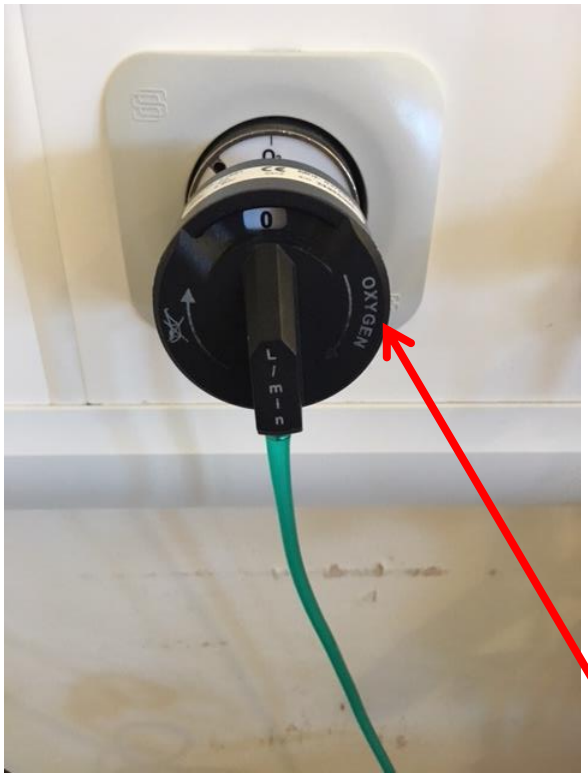
Flow Regulator Control

On / Off Valve



Suction

Flow Meters for Wall Terminal Units



In specialised areas some oxygen flowmeters have very low flow settings. These are selected by turning the dial to the prescribed oxygen flow setting.

BEWARE THAT THESE **<u>OXYGEN</u>** FLOW METERS ARE COLOURED ***BLACK*** (NOT WHITE) BUT ARE STILL MARKED AS **<u>OXYGEN</u>**

Using a Terminal Unit

Indexed probe prevents you inserting into the incorrect Terminal Unit

To insert the flowmeter into the terminal unit, push in the flowmeter until you feel the probe click into place.

To remove, push in the bezel and withdraw flowmeter

Terminal Unit Bezel

Medical Air wall terminals

- Medical air is primarily used to administer nebulised drugs.
- Connecting air to a patient instead of oxygen is a serious error.
- To prevent this, always double check the gas you have connected to is correct.
- The Air flowmeters are stored away from wall terminal units to prevent connecting air instead of oxygen to patients in error.
- After using a Medical Air wall outlet, remove the Medical Air flowmeter from the outlet and store it in the designated location.
- This prevents your colleague from connecting air instead of oxygen in an emergency.

Oxygen Cylinders

- **ALL** oxygen cylinders have a completely **WHITE COLLARS**.
- Sometimes the bodies of the Cylinders can be different but they are commonly Black or White.
- It is the colour of the **COLLAR** that is important and it is this which denotes which gas is in the cylinder.
- The collar also has a label on it which states the type of gas in the cylinder.
- At LHCH all oxygen cylinders that are for ward use have Integrated flowmeters and valves, apart from those on 'Resuscitation Trolley's'

Note: they may be covered in a coloured plastic mesh, e.g. yellow or orange (as shown)

Using Oxygen Cylinders Safely

1. Identify the cylinder, ensure it is oxygen?

ALL oxygen cylinders have a completely **WHITE COLLARS**.

Label says Oxygen!

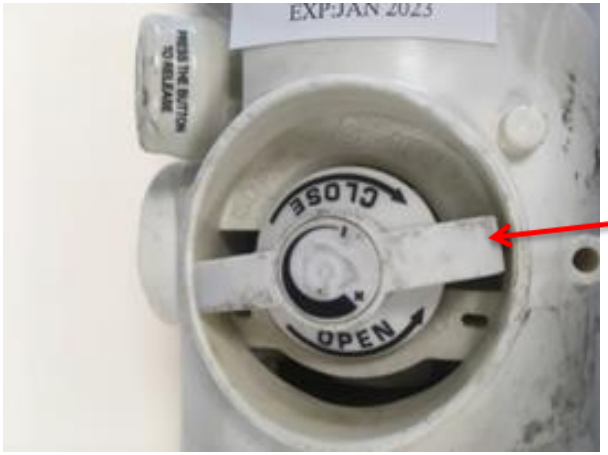
Using Oxygen Cylinders Safely

2. Confirm the contents are adequate for the length of time required by the patient at the prescribed rate of flow.?

The pressure gauge should preferably be in green zone.

Using Oxygen Cylinders Safely

3. Turn the cylinder on-



Do this away from the patient –
Do it slowly.
Turn the knob anticlockwise-two full turns

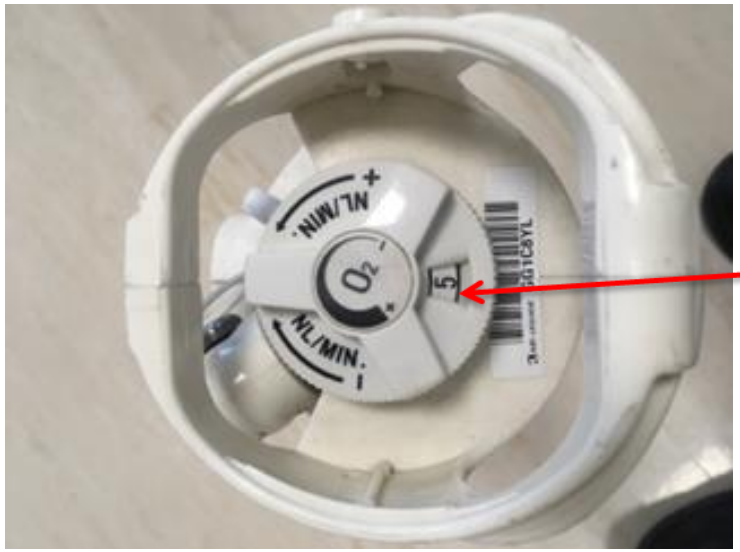
Using Oxygen Cylinders Safely

4. Connect the oxygen tube to the nozzle

This is the nozzle to connect the green oxygen tubing

Using Oxygen Cylinders Safely

5. Turn the oxygen flow to the intended flow rate on the dial (Litres per minute)



Once the flowmeter is on, you should hear the hissing sound, see the bag inflating and the gas flow should be felt at the other end.

If not, the cylinder is not on or is empty.

Using Medical Air Cylinders Safely

1. Identify the cylinder, ensure it is Medical Air?

ALL Medical Air cylinders have **BLACK & WHITE COLLARS**.

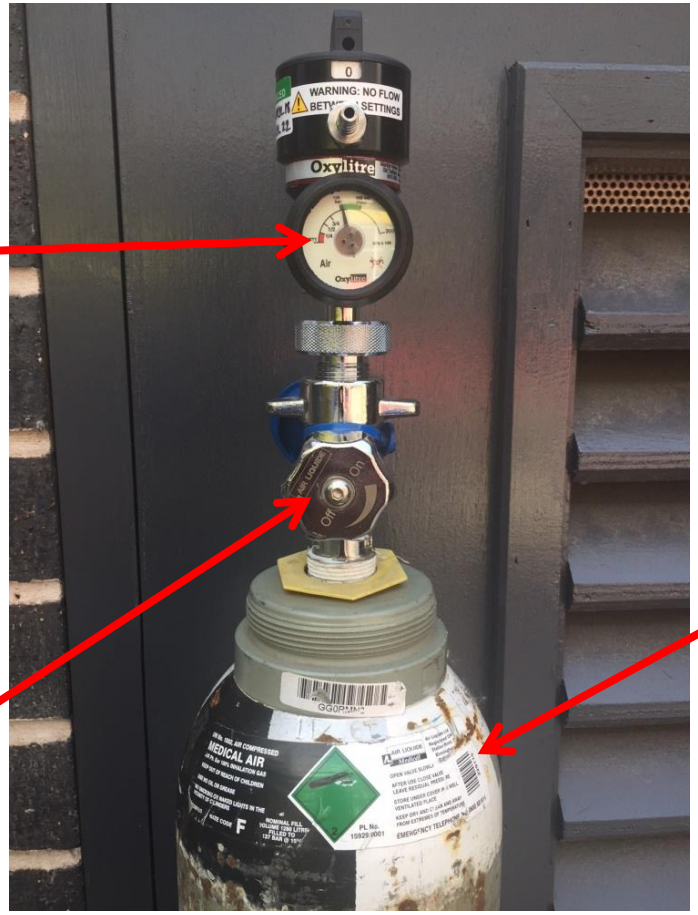
Label says Medical Air

Medical Air Cylinders

- **ALL** Medical Air cylinders have **WHITE & BLACK COLLARS**.
- Sometimes the bodies of the Cylinders can be different but they are commonly Black or Green.
- It is the colour of the **COLLAR** that is important and it is this marking that denotes which gas is in the cylinder.
- The collar also has a label on it which states the type of gas in the cylinder.
- They come in two sizes:
  - E cylinder –small / thin
  - F cylinder- large / wide

Medical Air Cylinder Controls

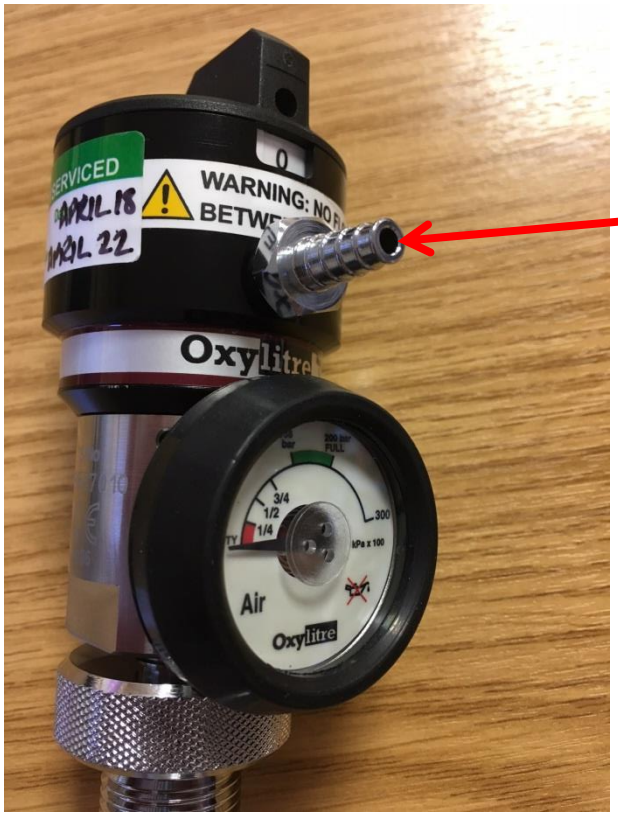
Cylinder contents gauge. The pressure gauge should preferably be in green zone.



Cylinder valve, turn slowly anti-clockwise to switch on

Black & White collar denotes the cylinder is Medical Air

Medical Air Cylinder Controls

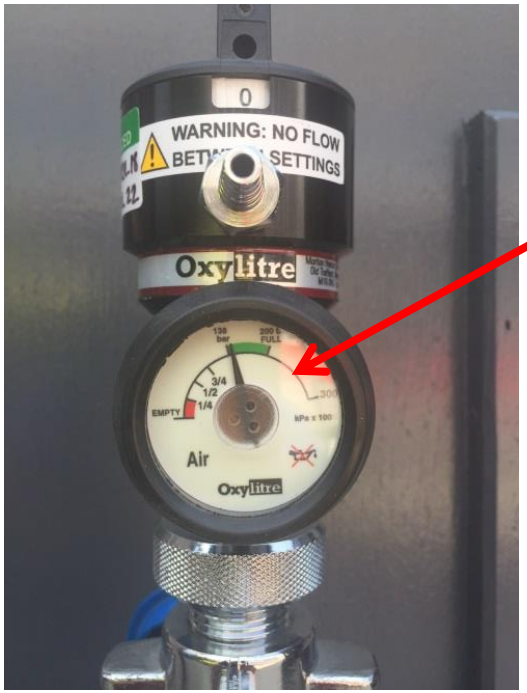


Nozzle to attach the tube to

Flow Rate Indicator on the top in Litres per minute.

Using Medical Air Cylinders Safely

2. Confirm the contents are adequate for the length of time required by the patient at the prescribed rate of flow.?



The pressure gauge should preferably be in green zone.

Using Medical Air Cylinders Safely

3. Turn the cylinder on-

Do this away from the patient –
Do it slowly.
Turn the knob anticlockwise until fully open

Using Medical Air Cylinders Safely

4. Connect the green tube to the nozzle

This is the nozzle to connect the tubing to.

Using Medical Air Cylinders Safely

5. Turn the Medical Air flow to the intended flow rate on the dial in Litres per minute.

Once the flowmeter is on, you should hear the hissing sound and the gas flow should be felt at the other end.

If not, the cylinder is not on or is empty.

Using Medical Air Safely

- **If the medical air flow meter doesn't have an air guard it one should be fitted immediately. Contact Medical Engineering on ext. 1571.**
- **If you are removing the air guard to connect to a system that doesn't facilitate it you must ensure it is refitted immediately after use.**

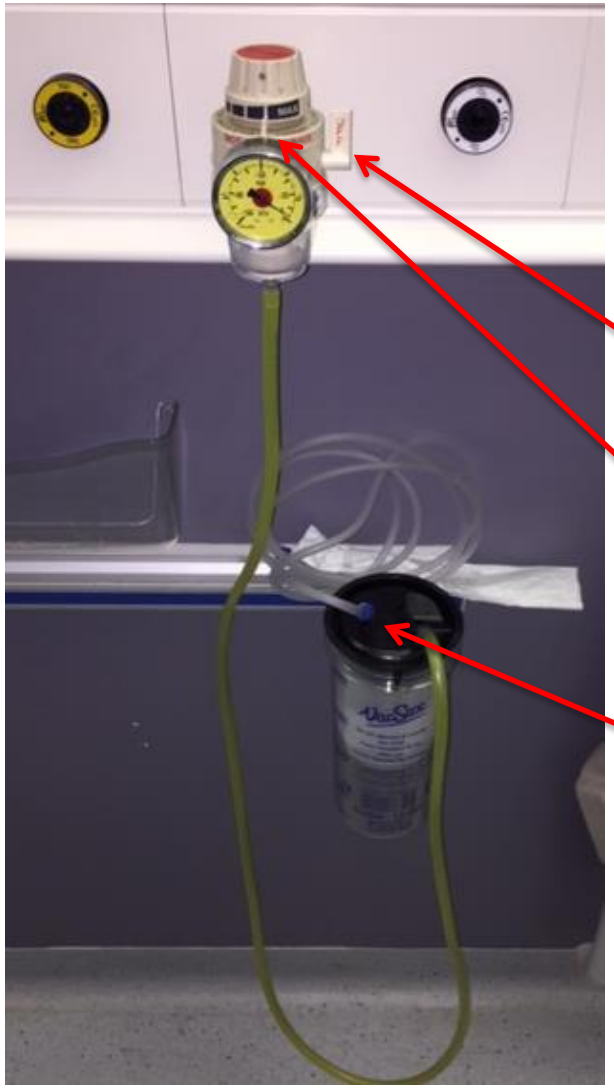
If in doubt do not use medical air without getting further advice from your ward / department leader

Using Medical Air Safely

- You must ensure that every medical air flow meter in your department has an air guard fitted to it, this simple flap device ensures that you are aware that you are using medical air.

2 examples are shown below:

Vacuum (Suction)



Connect Flow Meter to Terminal Unit

Connect tube to the bottom of unit

Enable Suction by Turning to ‘ON’

Adjust suction pressure with knob

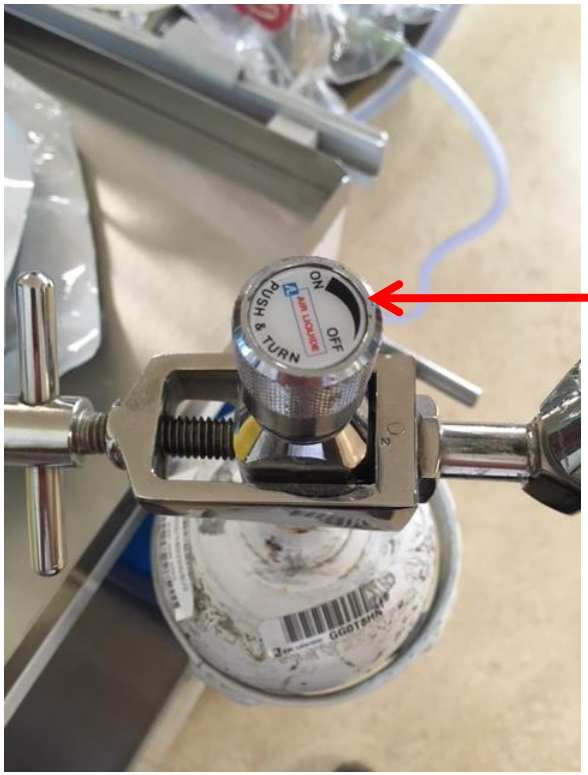
Connect the patient’s tube here

Ensure you use the correct level of suction (High/Low)

Resuscitation Trolley – Oxygen Cylinder

- The oxygen cylinder on the resus trolley is used for both oxygen and for suction
- These are checked daily by the ward staff to ensure they are full and all the equipment is present and connected correctly.

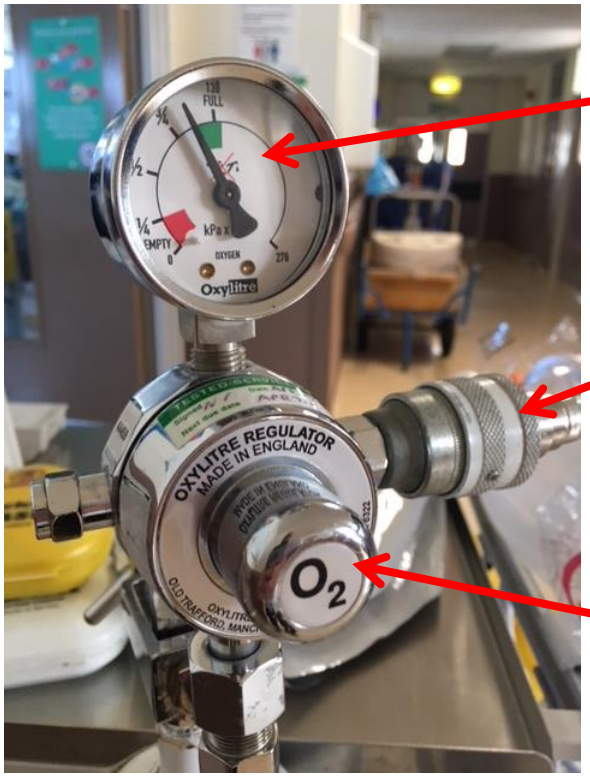
Resuscitation Trolley – Oxygen Cylinder



The oxygen cylinder is located at the rear of the trolley. The cylinder has a valve that should be pushed down and turned fully anti-clockwise to open the cylinder

ALWAYS ENSURE YOU HAVE GAS FLOWING

Resuscitation Trolley – Oxygen Cylinder

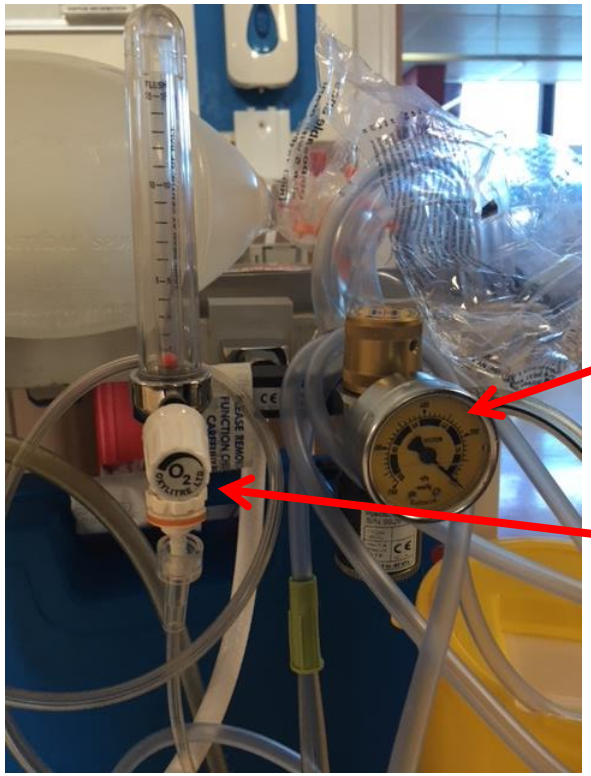


Oxygen cylinder gauge – this should preferably be in the green before use

Indexed Schrader valve for connection of outlets

The regulator on this type of cylinder will be identified as OXYGEN or O2.

Resuscitation Trolley – Oxygen Cylinder



This Vacuum is a venturi type suction device, operated by the oxygen cylinder so you will hear oxygen flow from the bottom of the device when it is operating.

The Oxygen flow meter is operated by turning the control knob anti-clockwise until the prescribed flow is attained.
If the bobbin is not freely floating at the desired flow rate, the oxygen might not be reaching the patient

Cylinder Storage

- When not in use all cylinders should be stored safely in designated cylinder stands or brackets.
- Most wards have FULL and EMPTY cylinder brackets. This ensures empty cylinders are separate to full cylinders and that the portering team know what to replace to maintain ward stock levels.
- When in-use cylinders should not be left freestanding.

How to Obtain replacement Medical Gas Cylinders

- Call Portering Team on **<u>1045</u>** or Bleep **<u>2755</u>**

Medical Gases- General Safety

- Always handle with care
- Keep upright/supported to prevent falling
- If valve breaks, the sudden release of compressed gas can turn the cylinder into a lethal projectile
- Ensure that you use the dynamic risk assessment 'TILE' Task →Individual → Load → Environment before moving cylinders
- Change or clean tubing/masks/attachments as per policy
- Ensure hand hygiene when handling medical equipment
- Seek infection control advice regarding isolated/high risk patients

RN/HCA responsibilities

- Oxygen should always be prescribed
- Critical care to ward transfers- first observations should be undertaken by RN
- Bedside handovers should include the checking of oxygen usage
- Nebulizers should be given via portable nebulizer machine
- Ensure every time obs undertaken by HCA/RN on a patient receiving oxygen, a point check is completed with the flow meter connection.

Key Points to Remember

- Oxygen Terminal Units and Cylinders have all **WHITE** collars
- Medical Air terminal Units and Cylinders have **BLACK & WHITE** collars.
- **ALWAYS** double check your patient is connected to the correct gas and at the correct flowrate.
- **ALWAYS** check you have gas flowing.