SMART OXYGEN™

Using Oxygen For Animal Therapy - The Smart Way

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The Smart Oxygen kit includes the following components required for both nebulisation and delivery of oxygen:

- Venturi (x 6) – green, red, yellow, white, blue and a blank opaque (no holes)
- Nebuliser
- Double male connector
- 2m oxygen tube

INSTRUCTIONS FOR USE

1. Connect the blank opaque Venturi (no holes) to one end of theoxygen tube.
2. Attach this to the oxygen supply.
3. Insert one end of the double male connector to the Smart Oxygen inlet.

For Nebulisation

4. Unscrew the top half of the nebuliser and add the medication.
5. Keep the nebuliser vertical whilst screwing back together.
6. Attach the open end of the oxygen tube to the base of the nebuliser.

7. Attach the top of the nebuliser to the double male connector, fitted to the Smart Oxygen inlet.
8. Turn on the oxygen at the required flow rate to nebulise the medication.

For Oxygen Therapy

4. Attach the relevant colour Venturi to the end of the oxygen tube.
5. Attach the Venturi to the double male connector.
6. Turn on the oxygen to the required flow rate (minimum of 2 litres per minute).

IMPORTANT POINTS TO BE AWARE OF REGARDING OXYGEN THERAPY

- Excess oxygen can be harmful.
- As with many drugs, oxygen can lead to toxicity and too much oxygen can be harmful to lungs (pulmonary endothelium).
- A maximum of 60% oxygen in the air-oxygen mixture is recommended. • It is best practice to decrease the amount of supplemented oxygen as soon as possible.
- Increased oxygen in the environment has potential for fire risks so ensure that adequate precautions are taken before, during and after the use of Smart Oxygen.

INSTRUCTIONS FOR USE

HOW THE VENTURI WORKS

- Oxygen flows into the Venturi chamber.
- As the oxygen passes through the chamber it draws in air which then mixes with the oxygen
- The larger the size of the holes in the Venturi, the more air is drawn in.
- The ratio of oxygen to air in the mixture is consistent for each Venturi regardless of the oxygen flow rate.
- The resulting mixture then flows into the Smart Oxygen.

WHICH VENTURI TO USE

- Oxygen requirements vary depending on the particular ailment, for example, an animal with fractured ribs only needs 24-28% oxygen in the mixture, whereas an animal with congestive heart failure requires 60% oxygen.
- Each Venturi delivers a different amount of oxygen, increaseing from 24% through to 60% as shown opposite.

CONDITIONS	EXAMPLES	VENTURI
• Mechanical or physiological impairment of ventilation • Alveolar oxygen exchange mechanism is unaffected	• Rabbit preoxygenation and post-operative oxygenation • Ruptured diaphragm • Rib fractures	24% 28%
• Alveolar oxygen exchange mechanism is impaired	• Chronic bronchitis • Mild pulmonary contusion	35% 40%
• Alveolar oxygen exchange	• Broncopneumonia • Severe pulmonary contusion • Congestive heart failure mechanism is severely impaired	60%

HOW TO CALCULATE THE TOTAL AIR-OXYGEN FLOW RATES

The Smart Oxygen measures approximately 46cm x 30cm x 30cm which gives a total volume of about 42 litres.

- Select the relevant Venturi for the condition.
- Calculate minute tidal volume as follows: 10ml/kg x breaths per minute.
- To ensure that adequate air-oxygen is replenished into the Smart Oxygen, aim for an in-flow of at least twice the minute tidal volume per minute.

Example

For a 10kg animal breathing 12 times per minute, this gives a minute tidal volume of 1200ml per minute (or 1.2l/min). Twice that is 2.4l/min.

From the table opposite, using a 35% Venturi gives a 4.6:1 ratio of air:oxygen.

The minimum oxygen flow is 2l/min.

The following equations give the total flow and oxygen flow:

Total flow = (air component + oxygen component) x oxygen flow

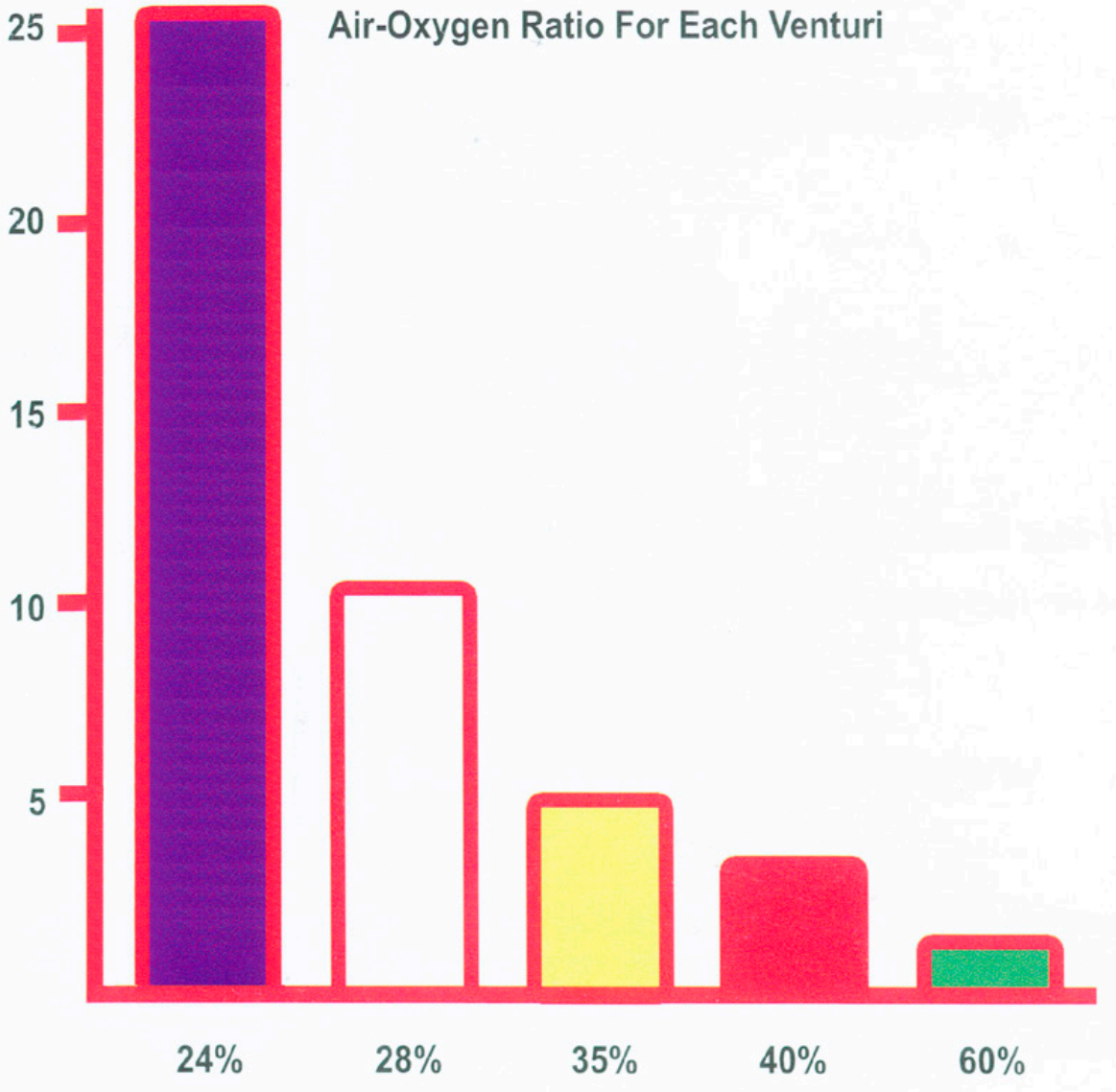
Oxygen flow = Total flow / (air component + oxygen component)

Using the example figures, the total flow will be:

(4.6 + 1) x 2
= 11.2l/minTo fill the Smart Oxygen initially it will therefore take:

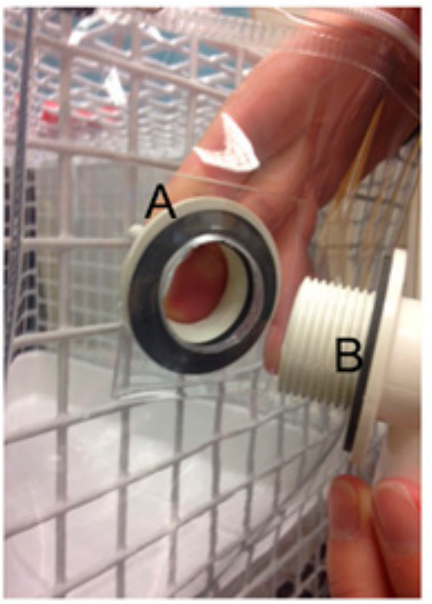
42l / 11.2l/min = 3min45s (Volume of Smart Oxygen / total flow)

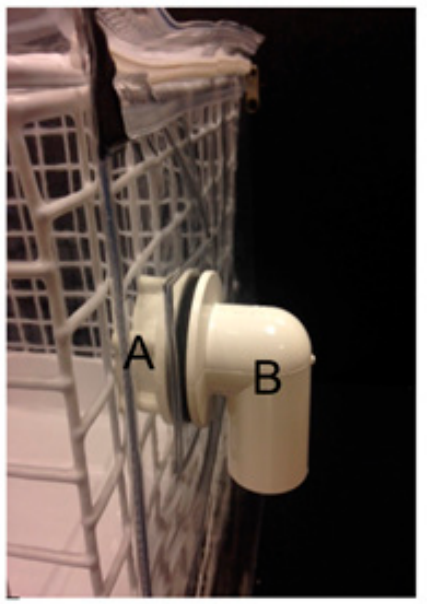
Ventur	Air-oxygen Ratio	Air Component + Oxygen Component
24%	25.3:1	26.3
28%	10.3:1	11.3
35%	4.6:1	5.6
40%	3.0:1	4.0
60%	1.0:1	2.0



Instructions for fitting the Smart Oxygen bulkhead:

The bulkhead has to be attached prior to use.
Ensure a washer is on each piece of the bulkhead illustrated as A and B.
Slide A of the bulkhead between the PVC cover and the basket to the opening.
Insert B of the bulkhead into the opening in the PVC and align with A.
Screw A and B together resulting with the connector pointing down.
Always leave the basket inside the PVC cover.





Cleaning instructions

Wipe cover with a damp sponge and disinfectant following the instructions provided by the disinfectant manufacturer. Some disinfectants may cause discolouration/ depreciation of the PVC. Do not use cleaners containing acid or solvents.