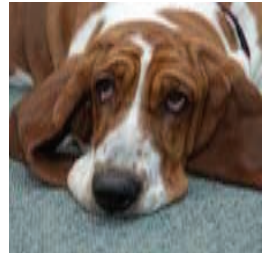




JorVet™



Use of Oxygen

Each BUSTER ICU Cage comes with an oxygen accessories kit (J-1057Q).

Contents:

- 6 x Venturi – 1 of each colour green, red yellow, white, blue and a blank (no holes)
- 1 x Nebuliser
- 1 x T piece
- 1 x Cap
- 1 x 2.1m oxygen tubing

Instructions for Use

Attach the blank Venturi (no holes) to one end of the oxygen tubing.
This then attaches to the oxygen supply.

For Nebulisation

Unscrew the top half of the nebuliser and add the chosen medication.
Keep the nebuliser vertical whilst screwing back together.
Attach the end of the oxygen tubing to the base of the nebuliser.
Attach the top of the nebuliser to the vertical arm of the T piece
Attach one of the horizontal arms of the T piece to the BUSTER ICU Cage.
Close the other horizontal arm with the cap provided.
Turn on the oxygen at sufficient flow rate to nebulise the chosen medication.

For Oxygen Therapy

Attach the appropriate coloured Venturi to the other end of the oxygen tubing.
Attach the Venturi to the vertical arm of the T piece.
Push one of the horizontal arms of the T piece into the port on the BUSTER ICU Cage.
Close the other arm of the T piece with the cap provided.
Turn on the oxygen to the appropriate flow rate.
The minimum oxygen flow rate is 2 litres per minute.

BUSTER

Rationale for Controlled Oxygen Therapy

Excess oxygen can be harmful. Like many drugs, oxygen can be associated with toxicity and excess oxygen can be harmful to lungs (pulmonary endothelium). The use of inspired oxygen greater than 60% should be avoided if possible. Decreasing the amount of supplemented oxygen at the earliest possible time should be routine practice.

Choice of Venturi

Different conditions require different levels of oxygen enrichment. For instance, an animal with fractured ribs only needs 24-28% oxygen enrichment while an animal with congestive cardiac failure requires 60% oxygen enrichment.

Each Venturi corresponds to different % enrichment. See below.

Venturi

Principals of Operation

The Venturi works in a similar fashion to a carburetor in a car engine. Oxygen is delivered into the Venturi barrel. As the oxygen passes through the barrel it draws in a calculated amount of air which mixes with the oxygen. The resulting oxygen/air mixture is then delivered into the BUSTER ICU Cage. The amount of air drawn in by each Venturi is determined by the size of the holes in the Venturi. Each Venturi delivers a constant % oxygen/air enrichment independent of oxygen flow rate.

Diagram 1

Conditions where the alveolar oxygen exchange mechanism is unaffected, but there is mechanical or physiological compromise of ventilation	Examples: Pre and post anaesthetic oxygenation of rabbits. Fractured ribs. Diaphragmatic hernia.	Choice of Venturi 24% ● 28% ○
Conditions where the alveolar oxygen exchange mechanism is compromised.	Examples: Longstanding obstructive airway disease (Chronic bronchitis) Mild lung contusion	35% ● 40% ●
Conditions where the alveolar oxygen exchange mechanism is severely compromised.	Examples: Severe lung contusion. Pneumonia Lung congestion. Congestive cardiac failure	60% ●



100%



24%



28%



35%



40%

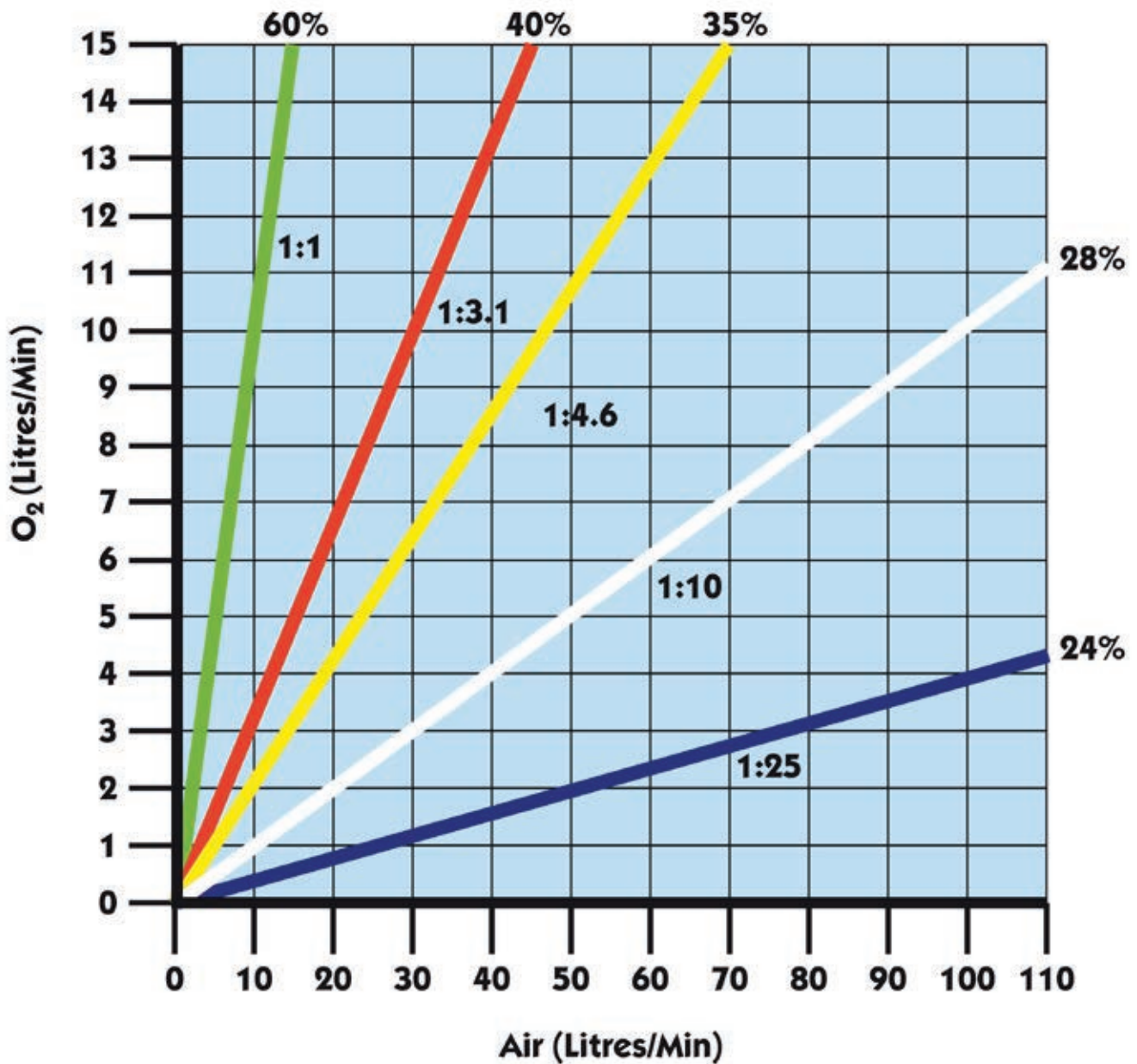


60%

Calculating Total Gas Mixture Flow Rates

The approximate volume of each BUSTER ICU Cage is as follows: Small 50 litres, Medium 120 litres and Large 460 litres. Select the Venturi for the condition using Diagram 1. Run the flow rates high initially to fill the ICU cage with oxygen enriched air at the appropriate concentration. Calculate minute tidal volume (10ml/kg x breaths per minute). Aim to change at least twice the minute tidal volume of air/oxygen mixture per minute. Calculate the oxygen flow rate using the chart below.

DIAGRAM 2



Example

24% Venturi

At the minimum O₂ flow rate of 2 litres/min, this Venturi will generate a total flow rate of 52 litres/min. To calculate the total flow rate from the same Venturi if O₂ flow is increased to say 4 litres/min, simply look for 4 litres/min on the vertical axis of the graph and follow the horizontal line until it intersects the 24% line. At this point of the intersection look to see what air flow rate on the horizontal axis is appropriate. In this case it is 100 litres/min. Add the O₂ flow rate for the final mixture flow rate. 100 (air entrained) + 4 (oxygen flow) = 104 litres/min. Similar calculations can be carried out for the remaining Venturi concentrations at varying O₂ flow rates.



Acknowledgements: Compiled by David Prydie, B VMS, CertSAO, MRCVS with the aid of Ava Firth BS DVM MVS MACVSc DipACVECC MRCVS and Flexicare Medical Ltd