

or

Refer EARLY to KIDSNTS for advice - 0300 200 1100

- Air and Oxygen consumption may greatly vary between ventilators, even with the same settings.
- Gas consumption should be accurately calculated with allowances made for delays during the journey & any additional requirements to drive the ventilator itself (known as the 'base flow').
- The air & oxygen requirements for any transfer should be calculated (using the relevant formula below) in Litres/minute of flow multiplied by the journey duration in minutes (including any transfer times to and from ambulance and/or aircraft. This figure should be doubled to allow for any unexpected delays or patient condition changes.
- This calculation should then be reviewed against the actual consumption once established on the ventilator.

Oxygen Consumption Calculations for Hamilton T1 Ventilator - L/min - for PC & VC

Neonate Mode

[(ExpMinVol (L/min) x 2*) + 3 L/min#] x [(O2% - 20.9) ÷ 79.1]

Paediatric/Adult Mode

• <8kgs IBW / 70cms height</p>

[(ExpMinVol (L/min) x 2*) + 4 L/min#] x [(O2% - 20.9) ÷ 79.1]

• > 8kgs IBW / 70cms height

[ExpMinVol (L/min) + 4 Lmin#] x [(O2% - 20.9) ÷ 79.1]

- ExpMinVol = Tidal Volume x Rate.
- 2* is the factor added to account for compressible volume with smaller tidal volumes in patients ≤ 8kgs.
- # Base flow is fixed at 3L/min for Neonate mode and 4 L/min for Paediatric/Adult mode.

Oxygen & Air Consumption Calculations for Leoni Ventilator - L/min

SIMV/SIPPV

- MinVol = Tidal Volume x Rate = Total flow of both gases/min
- O2 Flow = MinVol x [(O2% 20.9) ÷ 79.1]
- Air Flow = Total Flow O2 Flow

<u>HFOV</u>

- MinVol (Flow) is always 7L/min = Total gas flow L/min
- O2 Flow L/min = MinVol x [(O2% 20.9) ÷ 79.1]
- Air Flow L/min = Total Flow O2 Flow

<u>CPAP</u>

- MinVol (Flow) is always 12L/min = Total gas flow L/min
- O2 Flow L/min = MinVol x [(O2% 20.9) ÷ 79.1]
- Air Flow L/min = Total Flow O2 Flow

Oxygen Consumption Calculations for Hamilton T1 Ventilator - L/min - CPAP/NIV

- MinVol* = Tidal Volume x Rate = Total flow of both gases/min
- O2 Flow L/min = MinVol x [(O2% 20.9) ÷ 79.1]
- Air Flow L/min = Total Flow O2 Flow

*Needs to be estimated for the purpose of gas calculations BUT then MUST be recalculated once established on ventilator as significant leak may exist.

Oxygen Consumption Calculations for HiFlow on Hamilton T1 & Leoni Ventilators

- Set Flow = Total gas flow L/min
- O2 Flow L/min = Set Flow x [(O2% 20.9) ÷ 79.1]
- Air Flow L/min = Total Flow O2 Flow

All KIDSNTS Ambulances have a combination air & oxygen cylinders.

<u>KIDS Team</u> = 1.5 F size Air & 1.5 HX Oxygen "plumbed" in plus a spare full HX Oxygen. Trolley = 1 x E Air & 1 x E Oxygen.

<u>NTS Team</u> = 1.5 F size Air & 1.5 HX Oxygen "plumbed" in plus a spare full F Air. Incubator = 1 x E Air & 1 x E Oxygen.

All ambulances also have 2 x CD Oxygen Cylinders.

