FLIGHT MEDICAL

B-Lev Mode

Biphasic Ventilation

Bi-Phasic Ventilation B-LEV

- Bi-Phasic Ventilation (B-Lev) is a time cycled pressure mode. The ventilator cycles between two different baseline pressures, based on time.
- In this mode the patient is able to breathe spontaneously at both high and low pressure baselines. Pressure support can be added during the low pressure baseline period to improve comfort.

B-LEV MODE
Bi-Phasic Ventilation

- B-Lev mode is also known as
  - -Bi-Phasic
  - -APRV
  - -PeV+
  - -Bi Vent
  - -Bi Level

Bi-Phasic Ventilation B-LEV

How does B-Lev work?

The ventilator applies CPAP (P High) for a prolonged time (T High) to maintain adequate lung volume and alveolar recruitment,

followed by a time cycled release phase to a lower set pressure (P low) for a short period of time (T low) or (release time) –where most of the Co2 removal and ventilation occurs

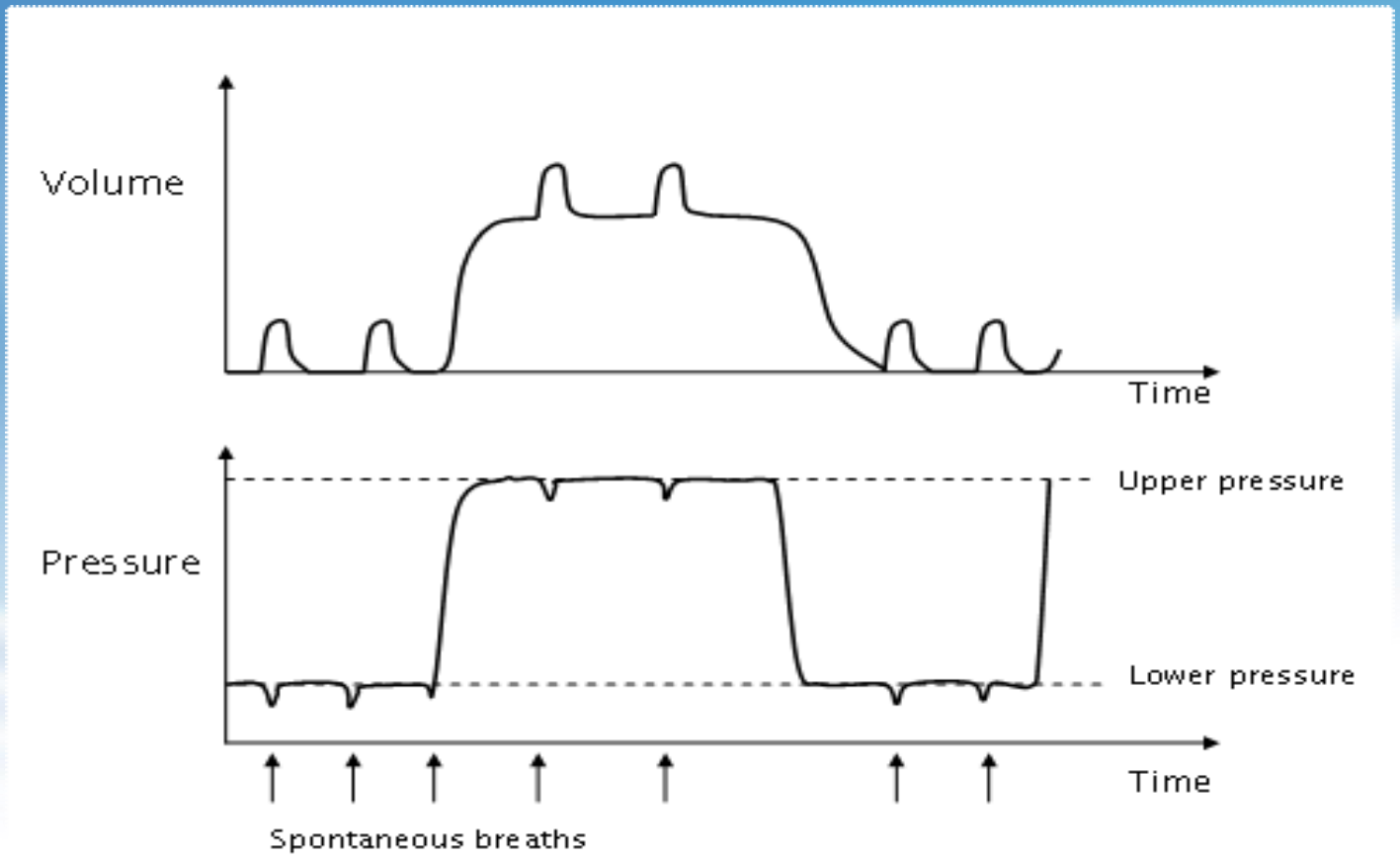
Bi-Phasic Ventilation B-LEV

- .How does B-Lev work?

When the patient triggers a pressure support breath during the pressure low period (P low), the transition from pressure low to pressure high (P high) occurs 1 second from the end of inspiration.

Flight 60 has an active exhalation valve that allows the patient to breathe spontaneously throughout the entire respiratory cycle

Bi-Phasic Ventilation B-LEV



Bi-Phasic Ventilation B-LEV

- Advantages of Bi-Phasic Ventilation
  - Decreased atelectasis
  - Preservation of spontaneous breathing
  - Improved oxygenation (stabilizing collapsed alveoli)
  - Ventilation to dependent lung regions
    (with spontaneous breathing)
  - Patient ventilator synchrony (comfort)
  - Improved Hemodynamics (Spontaneous breathing augments cardiac filling)

Bi-Phasic Ventilation B-LEV

- Disadvantages of Bi-Phasic Ventilation
  - Risk of Volutrauma: due to spontaneous breathing during high pressure (with concomitant generation of large tidal volumes and large negative pleural pressure swings)
  - Increased Work of Breathing
  - Increased Energy Expenditure Related to Spontaneous Breathing

How to set up Bi-Phasic on the Flight 60

- In B-Lev the following controls are required:
  - P Low — The Low Pressure Baseline
  - P High — The High Pressure Baseline
  - T Low — The Low Pressure Baseline Period
  - T High — The High Pressure Baseline Period
  - PSV — The Pressure Support Level

How to set up Bi Phasic on the Flight 60

To Set Up B-Lev

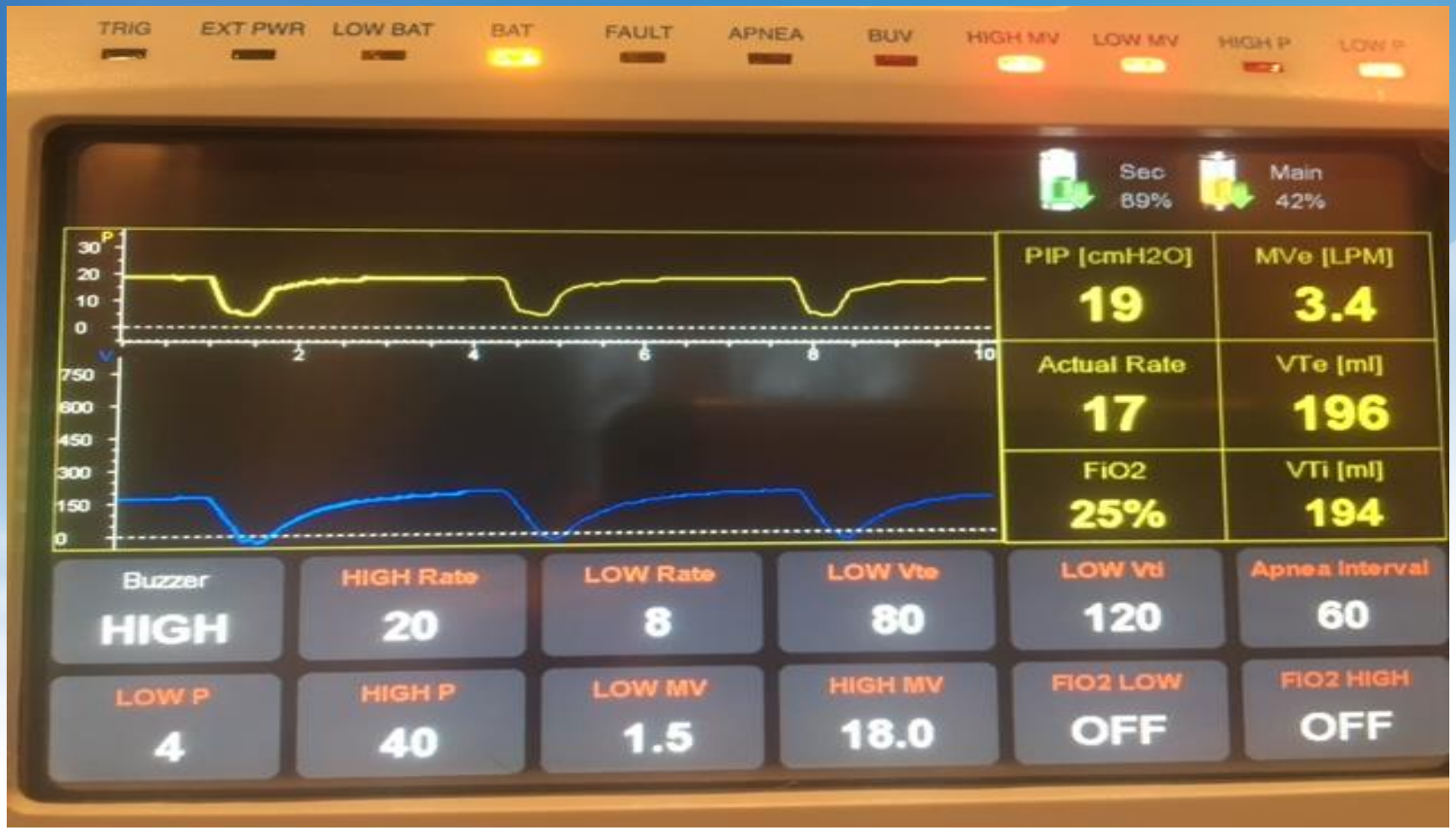
Step 1	Press modes button
Step 2	Select B Lev & press enter
Step 3	Set Parameters
Step 4	Set Alarms

Bi Phasic Parameter Screen

Setting Alarms in Bi Phasic

- High rate / Low rate
- Low Vte / Low Vti
- Apnea Interval
- Low / High MV
- Low / High Fio2
- P High – *Pressure Limit, alarm
- P Low - * Pressure Limit, alarm

Alarm Screen Bi Phasic Mode



Initial Bi Phasic Settings

- Note: Follow Physicians orders / Hospital Protocols

-P High P High at the $P_{plateau}$ (or desired Pmean +3 CM H20)

If you are switching to B Lev from different mode, then P High can be set at previous mean airway pressure.

Try to keep P High < 35 cm H20

-T High At 4.5-6 seconds *This is the inspiratory rate. Rate should be 8-12 bpm maximum*

Initial Bi Phasic Settings

- Note: Follow Physicians orders / Hospital Protocols

- P Low at 0.5 to optimize expiratory flow

The large pressure ramp allows for tidal ventilation in short expiratory times

- T Low at 0.5 – 0.8 seconds

Expiratory time should be short enough to prevent derecruitment & long enough to obtain suitable Vt. Target Vt is between 4-6 ml/Kg

Bi- Phasic Ventilation

- **References**

- Airway pressure release ventilation as a primary ventilatory mode in acute respiratory distress syndrome. Acta Anaesthesiol Scand. 2004 Jul;48(6):722-31 [MEDLINE]
- Other approaches to open-lung ventilation: Airway pressure release ventilation. Crit Care Med. 2005 Mar;33(3 Suppl):S228-40 [MEDLINE]
- Airway pressure release ventilation and biphasic positive airway pressure: a systemic review of definitional criteria. Intensive Care Med 2008;34(10):1766-1773 [MEDLINE]
- Comparison of APRV and BIPAP in a mechanical model of ARDS (abstract). Respir Care 2010;55(11): 1516
- Airway pressure release ventilation: what do we know? Respir Care. 2012 Feb;57(2):282-92 [MEDLINE]

Thank you

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