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$_{\text{plateau}}$ (or desired P$_{\text{mean}}$ +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 and biphasic positive airway pressure: a systemic review of definitional criteria. Intensive Care Med 2008;34(10):1766-1773 [MEDLINE]
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• Airway pressure release ventilation: what do we know? Respir Care. 2012 Feb;57(2):282-92 [MEDLINE]
Thank you