VELA™ ventilator
NPPV
NOTE: The VELA™ ventilator quick tips card is not intended as a replacement for the operator’s manual. You must become completely familiar with the operator’s manual before using the VELA ventilator.

VELA noninvasive positive-pressure ventilation (NPPV) modes

- **NPPV A/C** – NPPV with assist control ventilation
- **NPPV/SIMV** – NPPV with synchronized intermittent mandatory ventilation
- **NPPV CPAP PSV** – NPPV and continuous positive airway pressure (demand breath) with pressure support ventilation

### Primary breath controls

<table>
<thead>
<tr>
<th>Displayed control</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>Breaths per minute</td>
<td>2 to 80 BPM</td>
</tr>
<tr>
<td>Vt</td>
<td>Tidal volume</td>
<td>50 to 2,000 mL</td>
</tr>
<tr>
<td>Insp Pres</td>
<td>Inspiratory pressure</td>
<td>1 to 100 cmH₂O</td>
</tr>
<tr>
<td>Peak Flow</td>
<td>Peak inspiratory flow</td>
<td>10 to 140 L/min</td>
</tr>
<tr>
<td>Insp Time</td>
<td>Inspiratory time</td>
<td>0.3 to 10 sec</td>
</tr>
<tr>
<td>Insp Pause</td>
<td>Inspiratory pause</td>
<td>OFF, 0.1 to 2 sec</td>
</tr>
<tr>
<td>PSV</td>
<td>Pressure support</td>
<td>OFF, 1 to 60 cmH₂O</td>
</tr>
<tr>
<td>PEEP</td>
<td>Positive end-expiratory pressure</td>
<td>0 to 35 cmH₂O</td>
</tr>
<tr>
<td>Flow Trig</td>
<td>Inspiratory flow trigger</td>
<td>1 to 20 L/min</td>
</tr>
<tr>
<td>%O₂</td>
<td>Percentage of oxygen*</td>
<td>21 to 100%</td>
</tr>
<tr>
<td>NPPV Pinsp</td>
<td>NPPV inspiratory pressure</td>
<td>0 to 40 cmH₂O</td>
</tr>
<tr>
<td>NPPV PSV</td>
<td>NPPV pressure support ventilation</td>
<td>OFF, 1 to 40 cmH₂O</td>
</tr>
</tbody>
</table>

*Used only when connected to a high pressure oxygen source
Advanced breath controls in NPPV modes

- **PC Flow Cycle** – sets the percentage of peak inspiratory flow that terminates the inspiratory phase of a PC breath.
- **PSV Cycle** – sets the percentage of peak inspiratory flow that terminates the inspiratory phase of a PSV breath.
- **Bias Flow** – sets the continuous flow through the patient breathing circuit.
- **PSV Tmax** – controls the maximum inspiratory time of a pressure-supported breath.

<table>
<thead>
<tr>
<th>Advanced control</th>
<th>Range</th>
<th>Primary control</th>
<th>NPPV A/C</th>
<th>NPPV SIMV</th>
<th>NPPV CPAP PSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Flow Cycle</td>
<td>5 to 70%</td>
<td>Insp Time</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>PSV Cycle</td>
<td>5 to 70%</td>
<td>NPPV PSV</td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Bias Flow</td>
<td>10 to 20 LPM</td>
<td>Flow Trig</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>PSV Tmax</td>
<td>0.3 to 3 sec</td>
<td>NPPV PSV</td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

Leak compensation

In NPPV modes, the default setting is on. Leak compensation is up to 40 LPM, in addition to the bias flow (10 to 20 LPM, default 10 LPM).

VELA NPPV CPAP PSV set-up – for traditional noninvasive bilevel ventilation

To set up **VELA NPPV CPAP PSV**:

1. Press the **MODE** bar to access the **MODE SELECT** window.
2. Press **NPPV CPAP PSV**.

![Image of VELA NPPV CPAP PSV menu]

- **Volume A/C**: Displays the volume settings.
- **Pressure A/C**: Displays the pressure settings.
- **NPPV A/C**: Displays the NPPV settings.
- **NPPV SIMV**: Displays the SIMV settings.
- **NPPV CPAP PSV**: Displays the CPAP and PSV settings.
- **Mode Select**: Allows selecting different modes.
- **Set**: Allows setting the parameters.
- **Accept**: Accepts the selected settings.
- **Menu**: Accesses additional settings.

- **VOLUME A/C**: Displays the volume settings.
- **Pressure**: Displays the pressure settings.
- **NPPV A/C**: Displays the NPPV settings.
- **NPPV SIMV**: Displays the SIMV settings.
- **NPPV CPAP PSV**: Displays the CPAP and PSV settings.
- **Mode Select**: Allows selecting different modes.
- **Set**: Allows setting the parameters.
- **Accept**: Accepts the selected settings.
- **Menu**: Accesses additional settings.
VELA NPPV CPAP PSV set-up (continued)

3. Set primary breath controls parameters:
   a. Set the **PEEP** to the desired pressure value. This setting is equivalent to **CPAP/EPAP** pressure.

![Image of VELA NPPV CPAP PSV set-up](image)

   b. Set the **NPPV PSV** to the desired pressure value. This setting is the pressure value plus the set **PEEP** value that equals the ordered peak inspiratory pressure (Ppeak) (e.g., if PEEP = 5 cmH\textsubscript{2}O and NPPV PSV = 5 cmH\textsubscript{2}O, then Ppeak = 10 cmH\textsubscript{2}O).

![Image of VELA NPPV CPAP PSV set-up with different settings](image)

   c. Set the **O\textsubscript{2}** and flow trigger levels.

4. Set the advanced settings:
   a. Press **ADV SETTING** to access the **ADVANCED SETTINGS** window.
   b. Press **NPPV PSV** to access the PSV (flow) Cycle and PSV Tmax controls.
   c. Set the **PSV Cycle**. Generally, set it at 45 to 50% to facilitate the transition to exhalation.
   d. Set the **PSV Tmax**. A setting between 1 and 1.5 seconds provides backup termination if large leaks occur during the **PSV Cycle**.
5. With NPPV CPAP PSV, the APNEA MODE backup settings only appear in the MODE SELECT window. Set the APNEA MODE backup:

a. Press Apnea Settings.

b. In APNEA MODE, press Volume or Pressure.

c. Set the primary breath controls for the APNEA MODE backup.

6. Set the alarms:

a. Press LIMITS to access the ALARM LIMITS window.

b. Press the desired alarm, and using the data dial, change the setting.

c. To accept the new alarm setting, press ACCEPT. To restore the previous setting, press CANCEL.

d. Press LIMITS to exit the ALARM LIMITS window.

7. Press Mode Accept to begin ventilation with the new settings.
VELA monitoring options

The three screens that enable monitoring include:

- **Main** – displays 5 user-definable parameters plus 3 waveforms.
- **Monitors** – displays 15 user-definable parameters.
- **Trends** – displays up to 24 hours of monitored data, 4 histograms and 11 monitored values—all user defined.

To select the desired screen, press the **NPPV A/C** screen to access the **SCREEN SELECT** window.

Patient interface/mask

Specific to NPPV and a dual limb circuit:

- Has no exhalation ports—Is not a mask designed for CPAP or OSA
- Features labeling for noninvasive ventilation use.
- Eliminates ported masks or “whisper valves,” as leakage is not necessary for proper operation.

Mask fit

To ensure proper fit:

- Use the mask sizing template, which usually comes with the mask, to ensure the correct size.
- Do not overtighten the mask or headgear, as that can lead to pressure areas.
- Ensure that the facial contours are optimized to prevent leaks (e.g., dentures are in place, and facial hair is minimal).