The NIOV™ System

Uniquely designed to provide ambulatory ventilation
The NIOV System is uniquely designed to provide positive pressure that significantly increases tidal volume and improves ventilation.

- **Delivers Pressure and Volume**
  Improving ventilation by augmenting patient’s own breath

- **Relieves Dyspnea**
  Shown to reduce dyspnea, allowing improved activity and exercise endurance \(^1,2\)

- **Increases Oxygenation**
  Increasing tidal volume as it delivers supplemental oxygen, elevating SpO\(_2\) \(^1,2\)

- **Reduces Breathing Effort**
  Shown to reduce respiratory muscle effort \(^1\)

- **Facilitates Activity**
  1 lb, palm-sized, battery powered device with unique nasal pillows interface

- **Proven Clinical Results**
  Clinical research and clinician feedback have shown our device to be clinically impactful \(^1-9\)

---

“I do believe this ventilator is revolutionary and will turn the COPD community upside down... giving them hope for their future and a brighter tomorrow.”

Lynn McCabe, RRT
RCP Supervisor
Pulmonary Rehabilitation
Sharp Memorial Hospital
The NIOV System’s clinically effective technology

The NIOV System delivers tidal volumes of up to 1,150 mL by providing positive inspiratory pressure with a maximum pressure up to 18 cmH₂O (8–12 cmH₂O is typical). The amount of pressure and volume provided is determined by patient breath effort and lung mechanics. The NIOV System detects a patient’s spontaneous breathing via sensor ports located in the nasal interface and delivers synchronized volumes of air and oxygen with mean FiO₂ levels of 0.43. NIOV can be customized to each patient’s respiratory and activity requirements. Patients are able to select from three clinician programmed activity settings that best meet their needs.

CLINICAL APPLICATION

NIOV — a continuum of care solution

IN HOME REHABILITATION
The NIOV System has the potential to reduce the number of exacerbations and hospital admissions in patients with respiratory insufficiency. Using the NIOV System, these individuals increased their exercise tolerance, improved their 6-minute walk test (6MWT), and reduced their respiratory muscle activity. Combining a portable design with advanced ventilatory performance, the NIOV System has been shown to facilitate the performing of activities of daily living, enhancing quality of life.

EARLY HOSPITAL MOBILIZATION
The NIOV System can be used to assist patients in ICU settings to transition from complete bedrest to achieving early mobility milestones such as sitting, standing, and walking. Clinical research suggests that for patients with respiratory insufficiency, early rehabilitation during acute critical illness may minimize ICU acquired weakness and improve patient centered outcomes.
## DEVICE TECHNICAL SPECIFICATIONS

### Physical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>1 lb (0.5 kg)</td>
</tr>
<tr>
<td>Height</td>
<td>3.1&quot; (7.9 cm)</td>
</tr>
<tr>
<td>Width</td>
<td>7.5&quot; (19.1 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>1.3&quot; (3.2 cm)</td>
</tr>
<tr>
<td>Mounting</td>
<td>Belt clip, Pole mount</td>
</tr>
</tbody>
</table>

### Features

- **Delivered Gas:** Oxygen, with entrained air
- **Flow Delivery:** Closed loop proportional valve
- **Breath Sensing:** Proximal, in patient interface
- **Breath Rate:** 2 to 40 breaths/minute, based on patient’s spontaneous breathing
- **Internal Battery Duration:** 4 hours, nominal use
- **Internal Battery Charge Time:** 90% recharged within 2.5 hours
- **Alarm Types:** Audible and Vibrating
- **User Interfaces:** Push buttons, LEDs, Color LCD Touchscreen

### Patient Accessible Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>On, Off</td>
</tr>
<tr>
<td>Volume Delivery Settings</td>
<td>Low, Medium, High</td>
</tr>
<tr>
<td>Trigger Sensitivity</td>
<td>0 to 9 (-0.01 to -0.34 cm H₂O)</td>
</tr>
<tr>
<td>Alarm Loudness</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Vibrating Alarm</td>
<td>On, Off</td>
</tr>
<tr>
<td>LCD Brightness</td>
<td>1 to 5</td>
</tr>
</tbody>
</table>

### Clinician Programmable Settings

- **Breath Timeout:** 12 breaths/minute or 3 LPM
- **Volume Delivery:** 50 to 250 mL, in 10 mL increments
- **Inspiratory Delivery Time:** 10 to 40% of breath period

### Monitors

- **Breath Rate:** To 50 breaths/minute
- **O₂ Flow:** 0.0 to 10.0 LPM
- **Device Run Time:** Displayed in hours and minutes

### Clinician Programmable Alarms

<table>
<thead>
<tr>
<th>Alarm Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breath Timeout Period</td>
<td>20 or 60 seconds</td>
</tr>
<tr>
<td>High Breath Rate</td>
<td>5 to 120 breaths/minute</td>
</tr>
<tr>
<td>Low Breath Rate</td>
<td>0 to 119 breaths/minute</td>
</tr>
</tbody>
</table>

### Fixed Alarms

- **Low Source Pressure**
- **High Source Pressure**
- **Low Battery**
- **Critically Low Battery**
- **Low Delivery Pressure**
- **High Delivery Pressure**
- **High Circuit Pressure**
- **High PEEP Pressure**
- **Critical Temperature**
- **Temperature Fault**
- **System Fault**

### Supply Gas Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen</td>
<td>41-87 PSIG</td>
</tr>
<tr>
<td>Supply Gas Connector</td>
<td>DISS #1240, per CGA V-5</td>
</tr>
<tr>
<td>O₂ Supply Hose Lengths</td>
<td>18&quot; (optional), 36&quot; (optional), 72&quot; included, 120&quot; (optional)</td>
</tr>
</tbody>
</table>

### AC Battery Charger Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>100 to 240 VAC</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>50 to 60 Hz</td>
</tr>
<tr>
<td>Input Current</td>
<td>0.3 A maximum</td>
</tr>
<tr>
<td>Charge Status Indicator</td>
<td>Red/Green LED</td>
</tr>
</tbody>
</table>

### Environmental Specifications

- **Operating Temperature:** 5° to 40° C (41° to 104° F)
- **Operating Humidity:** 10% to 95% relative
- **Storage Temperature:** -20° to 60° C (-4° to 140° F)
- **Storage Humidity:** 10% to 95% relative

### Product Safety

- **Electrical Safety:** IEC 60601-1
- **Biocompatibility:** ISO 10993-1
- Not made with natural rubber latex

---

**References**

1. AJRCCM 2013; 188(9):334-342
2. Chest 2012 Poster Presentation
3. Respiratory Therapy 2012; 54-55
4. COPD 2013 Poster Presentation
5. AARC 2011 Poster Presentation
7. ATS 2010 Poster Presentation
8. Respiratory Therapy 2013; 37-40
9. AJRCCM 2009; 180(3): 212-221

---

Breathe Technologies
Technical Support and Customer Service
United States: 1-877-698-1326
www.breathetechnologies.com
175 Technology Drive, Suite 100
Irvine, CA 92618 USA

PM-00-0057-A ©2013 NOV is a trademark of Breathe Technologies, Inc.