

NV10

Neonatal Ventilator

COMEN Share with the World



Shenzhen Comen Medical Instruments Co., Ltd.

Add: Floor 10, Floor 11 and Section C of Floor 12 of Building 1A & Floor 1 to Floor 5 of Building 2, FIYTA Timepiece Building, Nanhuan Avenue, Matian Sub-district, Guangming District, Shenzhen, Guangdong, 518106, P.R. China
Tel: +86-755-2640 8879 Fax: +86-755-2643 1232 Website: en.comen.com E-mail: info@szcomen.com

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Increase NIV Confidence Further than Ever

COMEN NV10 includes a complete NIV set with specialized ventilation tools for neonates and children, expanding the ventilation strategies to protect each spontaneous breath. It offers a robust ventilation system and elevates oxygenation level at all stages.



HFNC + ROX

ROX index to optimize ventilation strategy.



nCPAP

+ Apnea Auto-relief

Preset compulsory pressure-controlled ventilation after apnea detected



DuoVent

Increase mean airway pressure (MAP) while maintain free breath.



2 Sync SNIPPV

+ Back Up Vent

Selectable synchronization method to catch the breath at all times.



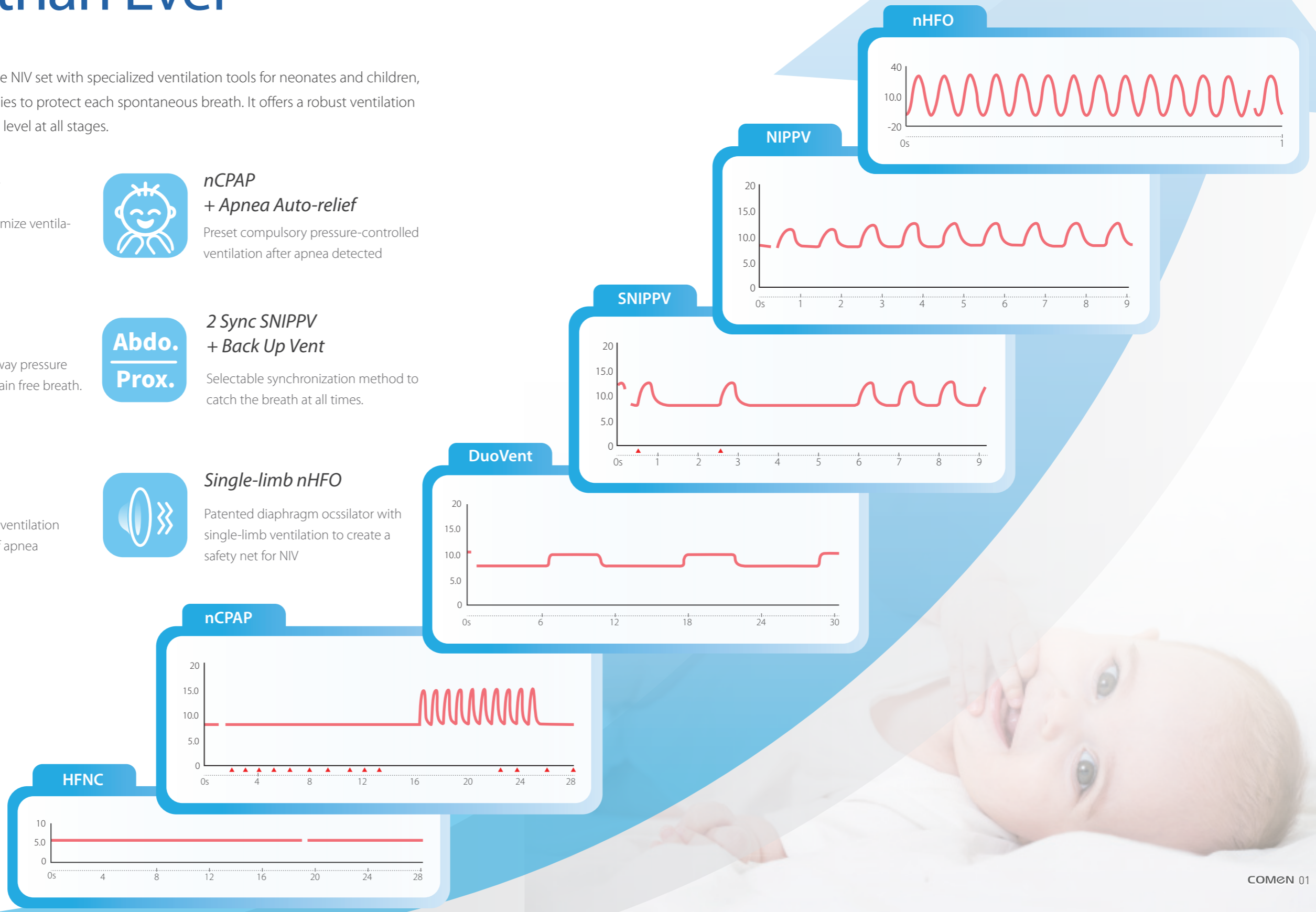
NIPPV

Sustained alveolar ventilation during episodes of apnea



Single-limb nHFO

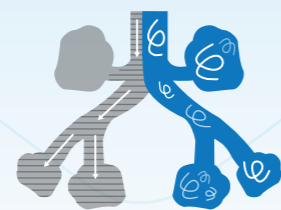
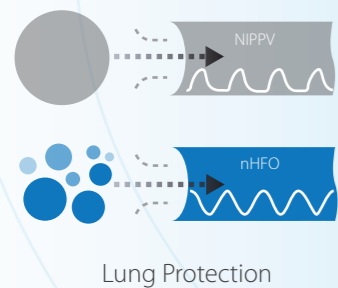
Patented diaphragm oscillator with single-limb ventilation to create a safety net for NIV



Oscillation Therapy Revolution

Multiple Beneficial of nHFO Raise Profile in Clinical Research and Practice

The advantages of noninvasive high-frequency oscillation encompass enhanced carbon dioxide elimination, reduced dead space during ventilation, and effective treatment of persistent pulmonary hypertension (PPHN) when used with nitric oxide. There is a growing amount of academic research focusing on the benefits of noninvasive high frequency ventilation in newborn.



■ NV10 nHFO Mode
■ Other Ventilation Mode

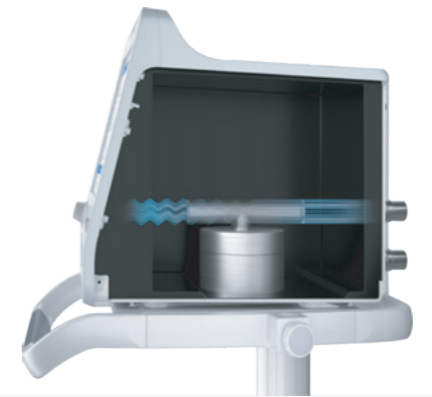
Minimization of Work of Breath in Every Detail



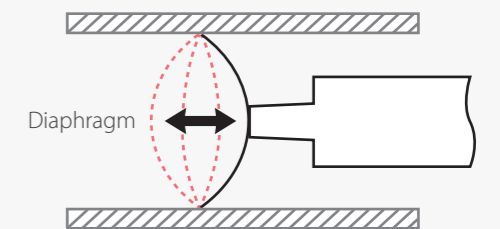
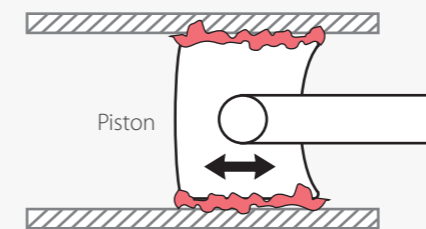
A single-limb setup, as opposed to a dual-limb configuration with a Y-piece and doubled tubing cavity, effectively reduces dead space, thereby decreasing the work of breath of patients.

Unique Oscillator Design

The generation mechanisms on the market today are diaphragm oscillation piston type, bi-directional jet and high frequency flow-interrupter with expiration assist. NV10 adopts the most recognized method, diaphragm oscillation, and applied Comen's unique and advance design which provide a quieter and more powerful oscillator increasing the service life of the product every time through material upgrading in an original way.

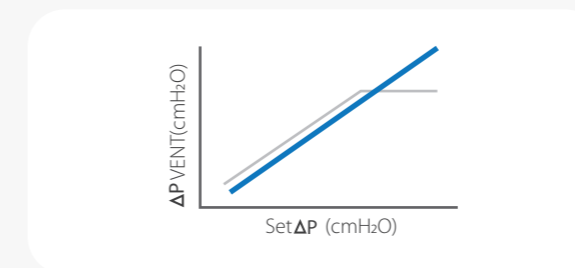


1. Friction cancellation



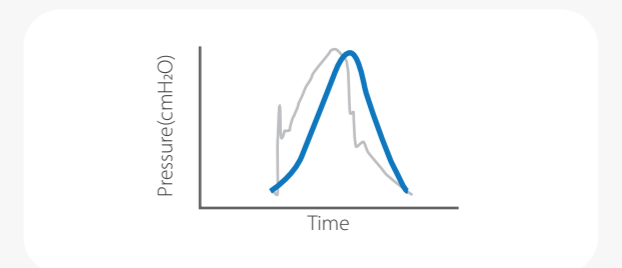
Diaphragm oscillation enables the NV10 to achieve higher frequency by reducing friction against cavity wall, making it suitable for use in neonates with lower body weights and patients with lower lung compliance.

2. Linear amplitude



Compared with flow interrupter oscillator (—), Diaphragm oscillator have a linear relationship between real pressure difference and set pressure. The higher amplitude allows for better removal of trapped carbon dioxide from the lungs.

3. Smooth sine wave



Compared with square waveform (—) oscillation, Diaphragm oscillation (sine waveform) is able to help the patients get used to the high frequency ventilation. It also improves the patient's tolerance.

4. Patented noise reduction

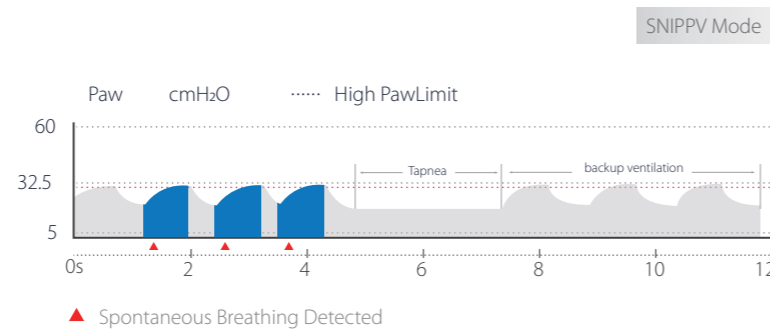
< 45 dB

The NV 10 leverages a unique patented rolling motion design and finely-tuned weight distribution within the oscillator to minimize operational noise.

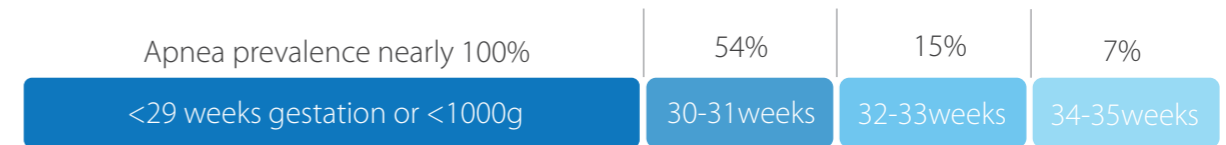
Sensitively Respond to Patients Every Breath

2 Sync Modes with Unique Algorithm

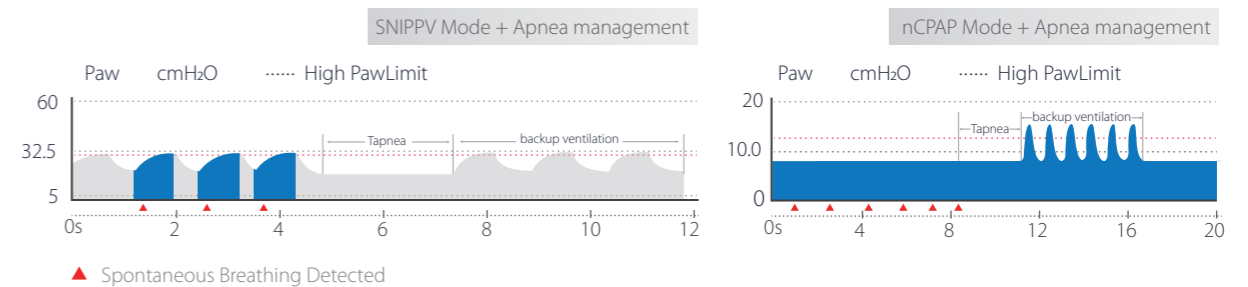
By providing sensitive abdominal and pressure sensors with unique algorithm, the NV10 can detect a patient's weak breathing in extreme situations. Timeliness and synchronization of patient ventilation is maximized.



Apnea Management



Data indicates that preterm infants with a gestational age of less than 29 weeks have an asphyxia risk nearing 100%. The NV10's NCPAP mode employs dual methods with a variety of parameters to closely monitor a patient's respiratory condition, ensuring timely detection of any signs of apnea from all monitored parameters.



Targeted Pressure as Needed

Leakage Compensation System

The NV 10 is equipped with a leakage compensation system up to 100% flow rate increment, ensuring that patients receive the set pressure in the event of leakage.



Sensor Type	NAVA	Abdominal Sensor	Pressure Sensor	Flow Sensor
Principle	Neuro signal ordering	Muscle movement	Pressure Difference	Flow generated
Cost	\$\$\$	\$	\$ \$	\$ \$ \$
React Speed	🚀🚀🚀🚀	🚀🚀🚀	🚀🚀	🚀
Patient Experience	☹️	☹️	😊	😊

The abdominal sensor is designed for quick response and cost-effectiveness. The pressure sensor minimizes false activations due to the newborn's restlessness. Both sensors are non-invasive, ensuring reduced discomfort for patients.

Tailor your NIV Strategies with VentGuide assisted

VentGuide, a set of indicators derived from multi monitoring parameters that can be seen as the early warnings for ventilation failure, helping medical staff to adjust strategies earlier.

Manage Oxygenation Level at Hand with Continuous Real-time Parameters Monitored



NV10 provides a customizable dashboard to monitor respiratory parameters at all times.

ROX Index

$$ROX = SpO_2 / FiO_2 \times RR$$

Oxygen Saturation Index (OSI)

$$OSI = \frac{FiO_2 \times MAP \times MAP \times 100}{SpO_2}$$

S/F

$$SpO_2 / FiO_2 = \frac{SpO_2}{FiO_2}$$

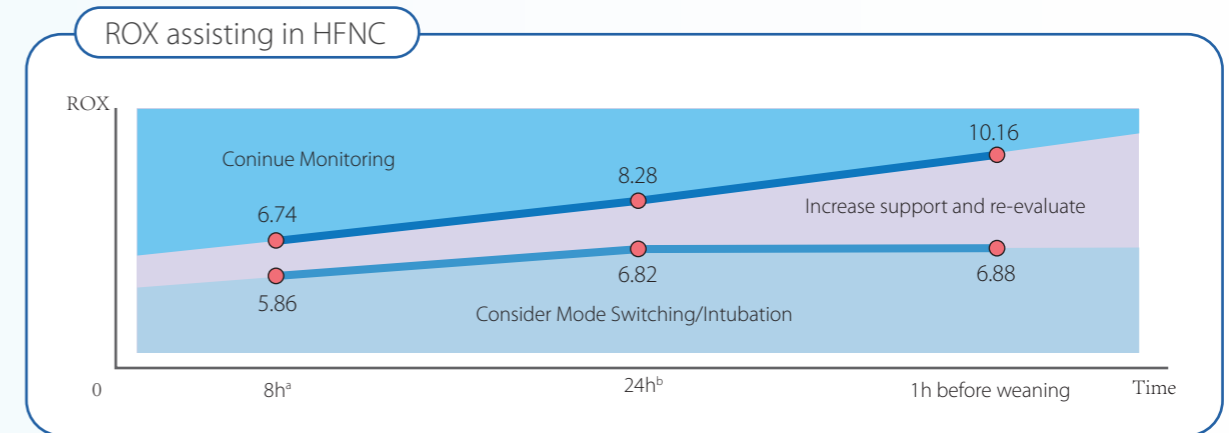
Respiratory Severity Score (RSS)

$$RSS = MAP \times FiO_2$$

HFNC+ROX Index: Dynamic assessment of the ROX index helps in the early identification of the risk of HFNC failure and the day-to-day clinical decision-making on when to perform stronger ventilation strategies.

Respiratory status index: Automatically calculate and display oxygenation parameters (OSI, S/F, RSS), continuous real-time monitoring respiratory status, effectively prompt the severity of hypoxic respiratory failure and predict adverse outcomes of patients.

Early Waning for Extra Attention, Intervene Faster to Keep NIV Successful



a-Source: Eur J Pediatr, 181(11):3977-3983 (2022)

b-Source: J Korean Acad Nurs, 53(4), 468-479 (2023)

The interpretation of ROX should be based on the patient's condition and clinical application

Hypoxic respiratory failure diagnostic and severity index

Application	Benefits
<p>Oxygen saturation index (OSI)</p> <p>Mild Medium Severe</p> <p>5 7.5 12.5</p> <p>Source: Neonatology, 107(3), 161-166 (2015)</p>	<ul style="list-style-type: none"> Replace invasive Oxygenation Index (OI) index to predict the severity of respiratory failure
<p>SpO2/FiO2 (S/F)</p> <p>Mild Medium Severe</p> <p>450 355 220</p> <p>Source: Muniraman HK, J Pediatr Intensive Care, (2022)</p>	<ul style="list-style-type: none"> Replace invasive PaO2/FiO2 (P/F)
<p>Respiratory Severity Score (RSS)</p> <p>Mild Medium Severe</p> <p>3.5 6.8 10.2</p> <p>Source: Pediatric Pulmonology 48:364-369 (2013)</p>	<ul style="list-style-type: none"> When Oxygenation is 88%-94%, provide a simple estimation of OI

All COMEN, with Well-Rounded Consideration

COMEN provide its own brand of ventilation accessories, protecting gas flow in every step. Fine-tuned structure with carefully selected material, increase comfortness, reducing dead space and work of breath (WOB).

Patient Interface



NV Flow

- Flow driver w/ nasal prongs or masks
- Applicable for nCPAP/(S)NIPPV/nHFO
- Sensible for synchronization



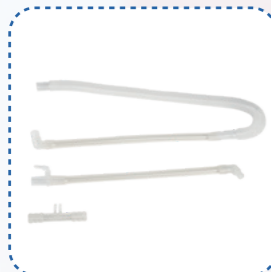
Nasal prongs and masks

- Effective seal and minimize leaks while prevent nasal injuries
- Ergonomically design and soft silicon for best position and comfort



Headgear

- Prevent nasal damage: Prong/mask are fixed by straps horizontal to nostrils, reducing upward pulling force on the infant's nose.



Neo.flow

- Soft, anatomically curved cannula to lower airflow resistance and has a tendency for reduced nasal trauma

Breathing Circuit

RN2-201H

RN2-101H

Disposable heated neonatal breathing circuit with disposable humidification chamber

Disposable neonatal breathing circuit (water cup included) with disposable humidification chamber

- Single limb and dual-limb adaptable
- Optimal structure with less dead space



Humidification

CM-V20-001 /CM-V21-001R

Reusable neonatal humidification chamber
Disposable neonatal humidification chamber (Auto feeding)



HT50/HT30

Non-invasive heated humidifier

Invasive heated humidifier

- Less condensation
- Sensible detection of small air flow
- Easy operation

