Let's Fight against COVID-19 together!

VENTILATOR

Product Profile
CIMM Group has been a foreign runner in China to start business abroad more than 20 years ago when China has started the open up policy. CIMM has been developed into a multinational entity engaged in EPC contracting, manufacturing R&D and international trade, and has business in more than 70 countries around the world.

CIMM has created an industry platform “Ark of China” to help Chinese SMEs for doing business globally. The chairman of CIMM Group Dr. Ma is the vice-chairman of China SME association, and with the CIMM’s international channel and network, CIMM has provided a lot of support for international trade, investment and cooperation between Chinese company and international company.

At the outbreak of the epidemic, Chinese people are in serious shortage of protection equipment. Ark of China CIMM group has been one of the first company reacted immediately to get international medical supplies from abroad, and CIMM is the appointed company by the government to support the medical institutions and factories to import and export medical supplies. We have a list of well reputed supplier of mask, protection overalls, disinfection and medical protection equipment can be supplied from China to the world.

Now Ark of China CIMM Group has become the largest and most professional ventilator equipment export platform and service provider in the world. We are protecting people’s health in epidemic areas all over the world.

As the country firstly suffering from the diseases, we could feel the suffering people now are undertaking, the Pandemic has become a problem every people in the world are facing, it is a war with the diseases, CIMM will work together with international friend to fight against the war.
ICU Invasive Ventilator

Product Description

A high-end ventilator featured with 1080P HD wide screen, combines an intuitive customized UI with powerful assistive tools and modules.

Operate with Ease

In the modern busy clinical environment, ease of use is a fundamental requirement for all medical devices. With this in mind, the new SV800/SV600 ventilators enable clinicians to set and deliver ventilation therapies quickly and easily via the intelligent ergonomic design and flat user interface.

Intelligent Decision Making

Ventilation modes and decision-supporting tools like SBT are developed on the basis of clinical needs and professional guidelines to help free up medical personnel’s time on device operation and focus more on their patients.
### Technical Data

#### Basic specification
- **Display:** 10.4 TFT touch screen
- **Type:** pneumatically driven, electronic control
- **Gas supply:** medical O₂, medical air
- **Pneumatic system:**
  - **Safe pressure:** ≤125cmH₂O
  - **Power supply:** AC 110-240V, 50-60Hz
- **Battery:** Lithium battery, backup for more than 2 hours
- **Weight (net):** 16KG
- **Dimension:** (H)400X(W)303X(L)250mm

#### Monitoring specification
- **VTI, VTE, MV, MVspn**
- **Fspn, Frequency, I : E**
- **Ppeak, Pmean, Pplat, Pmin, PEEP**
- **FiO₂**
- **Compliance, Resistance**
- **Waveform:** P-T, F-T, V-T, V-F loop
- **Loops:** P-V loop, V-F loop

#### Ventilation specification
- **Tidal volume:** 20~2500ml
- **Ventilation mode:** VCV, VCV+Sigh, PCV, PRVC, SIMV+VCV, SIMV+PCV, SIMV+PRVC, SPONT(CPAP/PSV), BIPAP, APRV NIV/CPAP, NIV/PCV
- **IE:** 1:10~10:1
- **Inspiratory time:** 0.1 ~ 12s
- **Pause time:** 0~50%
- **Pressure trigger sensitivity:** (PEEP-20 to 0cmH₂O)
- **Flow trigger sensitivity:** 1 ~ 20LPM
- **PEEP/CPAP:** 0 ~ 50cmH₂O
- **Poupp:** 0 ~ 7cmH₂O
- **Pinsp:** 5 ~ 70cmH₂O
- **Phigh:** 21 ~ 100%
- **Plow:** 0 ~ 70cmH₂O
- **O₂ suction:** 100% O₂ ventilation for 2 mins
- **Ins.Hold:** 15s Max
- **Exp.Hold:** 15s Max
- **Manual ventilation Waveform Freeze:** Yes
- **Nebulization:** 0-60 minutes adjustable
- **CO₂(optional)**
- **ETXO2(optional)**
- **Optional:**
  - Air compressor
  - Humidifier
  - Support arm
### Technical Data

#### Ventilation modes
- VCV (A/C)
- PCV (A/C)
- PRVC
- SIMV (VCV)+PSV
- SIMV (PCV)+PSV
- SIMV (PRVC)+PSV
- SPONT/CPAP+PSV
- BIVENT+PSV
- NIV/CPAP
- NIV-T
- NIV-S/T

#### Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal Volume</td>
<td>20-2000 ml</td>
</tr>
<tr>
<td>Respiration Rate</td>
<td>1-80 bpm</td>
</tr>
<tr>
<td>Tinsp</td>
<td>0.2-9 s</td>
</tr>
<tr>
<td>Tslope</td>
<td>0.2 s</td>
</tr>
<tr>
<td>Tpause</td>
<td>0-4 s</td>
</tr>
<tr>
<td>I:E Ratio</td>
<td>1:10-4:1</td>
</tr>
<tr>
<td>FiO2</td>
<td>21%-100%</td>
</tr>
<tr>
<td>Trigger Sensitivity</td>
<td>Pressure (-20-0 cm H2O, above PEEP)</td>
</tr>
<tr>
<td>Flow (0.5-20 LPM)</td>
<td></td>
</tr>
<tr>
<td>PEEP</td>
<td>0-35 cm H2O</td>
</tr>
<tr>
<td>Psupport</td>
<td>0-70 cm H2O</td>
</tr>
<tr>
<td>Pinsp</td>
<td>5-70 cm H2O</td>
</tr>
</tbody>
</table>

#### Special Procedures
- Apnea Ventilation
- Smart Suction
- Manual Breath
- Insp/Exp Hold
- ETCO2 Measurement
- Nebulization
- Waveform Freeze
- Ppeak, Pplat, Pmean, Pmin, PEEP
- Vti, Vte, MV, MV spont
- ftotale, fspont, I:E
- Pressure-Time, Flow-Time, Volume-Time waveforms
- Pressure- Volume, Volume- Flow, Flow- Pressure loops
- FiO2, ETCO2
- Compliance (C), Resistance (R), MVleak
- RSBI, WOB, PEEPI
# Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scope</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAP</td>
<td>4cm H2O-30cm H2O (no lower than EPAP and max inspiratory pressure)</td>
<td>±2cm H2O</td>
</tr>
<tr>
<td>Max. IPAP</td>
<td>4cm H2O-30cm H2O (no lower than inspiratory pressure)</td>
<td>±2cm H2O</td>
</tr>
<tr>
<td>EPAP</td>
<td>CPAP mode: 4cm H2O-20cm H2O Other modes: 4cm H2O-25cm H2O</td>
<td>±2cm H2O</td>
</tr>
<tr>
<td>Ramp time</td>
<td>0 min ~60 min</td>
<td>±10% of the set value</td>
</tr>
<tr>
<td>Ramp pressure</td>
<td>4cm H2O-20cm H2O (no higher than respiratory pressure)</td>
<td>±10% of the set value</td>
</tr>
<tr>
<td>Tidal volume</td>
<td>20 ml ~ 2500 ml</td>
<td>±(20+20% of set value) (ATPD)</td>
</tr>
<tr>
<td>Backup Ti</td>
<td>0.2 s ~ 4.0 s</td>
<td>±(0.1 of set value+10%) s</td>
</tr>
<tr>
<td>Pressure rising grade</td>
<td>Grade1~6</td>
<td></td>
</tr>
<tr>
<td>Backup BPM</td>
<td>1 BPM ~ 60 BPM</td>
<td>±(1 BPM+10% of set value)</td>
</tr>
<tr>
<td>Inspiratory impedance</td>
<td>1cm H2O@30L/Min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6cm H2O@60L/Min</td>
<td></td>
</tr>
<tr>
<td>Expiratory impedance</td>
<td>1cm H2O@30L/Min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6cm H2O@60L/Min</td>
<td></td>
</tr>
<tr>
<td>Max ultimate pressure</td>
<td>30cm H2O</td>
<td>±1cm H2O</td>
</tr>
<tr>
<td>Alarm volume</td>
<td>60 dB ~ 70 dB</td>
<td>±5dB</td>
</tr>
<tr>
<td>Oxygen concentration</td>
<td>21 ~ 100% (for ST-30K, ST-30H only)</td>
<td>±8%</td>
</tr>
</tbody>
</table>
Most advantages of HFNC

I. It can heat and humidify the gas to 37 °C and 44mg / L, reduce the consumption of heat and water, keep the airway mucociliary function in the best state, facilitate the drainage of secretion, and reduce the incidence of pulmonary infection.

II. China’s diagnosis and treatment plan clearly points out that for severe and critical cases, HFNC can be used for treatment when the patients cannot relieve respiratory distress or hypoxemia after receiving standard oxygen therapy.

III. Standard oxygen therapy improves the limited use of oxygen cooperation. Improve the stable and higher oxygen concentration than the standard oxygen therapy. The oxygen concentration does not change with the change of the patient's breathing state, which can meet the needs of patients’ self-help breathing.

IV. The secretion in the lung is sticky, which affects the ventilation effect. High flow airflow can reach or exceed the maximum inspiration flow rate of patients' active inspiration, reduce inspiration resistance and respiratory work, and reduce oxygen consumption.

V. There are not enough professional doctors who have acknowledgement on how to operate the invasive ventilators. But High flow oxygen ventilators are very easy to operated with the Nasal Cannula and pre-setting parameters and fixed oxygen concentration.

VI. The most widely used in Wuhan hospitals for 95% of mild and moderate Coronavirus patients.

VII. The best treatment performance ventilators in Wuhan hospitals.

VIII. 95% doctors like these ventilators because it can reduce the risk of infection to doctors.

IX. This ventilator not just improve and support the breathing but can also prevent the coronavirus.

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scope</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen concentration</td>
<td>21%~100%</td>
<td>±5%</td>
</tr>
<tr>
<td>Flow</td>
<td>10L/min~70L/min (high flow mode)</td>
<td>±5L/min (25L/min ~70L/min)</td>
</tr>
<tr>
<td></td>
<td>2L/min~25L/min (low flow mode)</td>
<td>±2L/min (2L/min ~25L/min)</td>
</tr>
<tr>
<td>Temperature</td>
<td>31°C~37°C</td>
<td>±2°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>2L/min ~70L/min</td>
<td>&gt;10mg/L</td>
</tr>
<tr>
<td></td>
<td>37°C, ≤40L/min</td>
<td>&gt;33mg/L</td>
</tr>
<tr>
<td>PE drop</td>
<td>70L/min</td>
<td>&lt;2cmH2O</td>
</tr>
<tr>
<td>PI drop</td>
<td>70L/min</td>
<td>&lt;2cmH2O</td>
</tr>
<tr>
<td>Humidifier compliance</td>
<td>Humidifier compliance is not affected by the water chamber.</td>
<td>&lt;10mL/kpa</td>
</tr>
<tr>
<td>Leakage</td>
<td>70L/min</td>
<td>&lt;10mL/min</td>
</tr>
</tbody>
</table>
## High Flow Heated Respiratory Humidifier

<table>
<thead>
<tr>
<th>Model</th>
<th>HUMID-BM</th>
<th>HUMID-BH</th>
<th>HUMID-BHR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td>220VAC+ 22V,50±1Hz</td>
<td>220VAC+ 22V,50±1Hz</td>
<td>220VAC+ 22V,50±1Hz</td>
</tr>
<tr>
<td><strong>Flow setting range</strong></td>
<td>Low Flow Mode: 2-25 L/Min temp: 34°C</td>
<td>High Flow Mode: 10-80 L/Min</td>
<td>High Flow Mode: 10-60 L/Min</td>
</tr>
<tr>
<td><strong>Temperature Control</strong></td>
<td>31°C, 34°C, 37°C</td>
<td>31°C, 34°C, 37°C</td>
<td>31°C, 34°C, 37°C</td>
</tr>
<tr>
<td><strong>Oxygen % Measure</strong></td>
<td>21%-100%</td>
<td>21%-50%</td>
<td>21%-50%</td>
</tr>
<tr>
<td><strong>FiO2 Control</strong></td>
<td>Manual titration control</td>
<td>Auto proportional valve control</td>
<td>Manual titration control</td>
</tr>
<tr>
<td><strong>Alarm Parameters</strong></td>
<td>Low oxygen concentration alarm</td>
<td>High oxygen concentration alarm</td>
<td>Low oxygen concentration alarm</td>
</tr>
<tr>
<td><strong>Recommended Ambient Temp</strong></td>
<td>18-28°C</td>
<td>18-28°C</td>
<td>18-28°C</td>
</tr>
<tr>
<td><strong>Standards</strong></td>
<td>IEC/EN 6060-1, IEC/EN 60601-1-2; ISO 8185</td>
<td>IEC/EN 6060-1, IEC/EN 60601-1-2; ISO 8185</td>
<td>IEC/EN 6060-1, IEC/EN 60601-1-2; ISO 8185</td>
</tr>
<tr>
<td><strong>Package</strong></td>
<td>L330 x W245 x H315 mm</td>
<td>L390 x W245 x H315 mm</td>
<td>L330 x W245 x H315 mm</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>HOSPITAL</td>
<td>HOSPITAL</td>
<td>HOME CARE</td>
</tr>
</tbody>
</table>
**ICU Ventilator**

### Electrical Interface
- Nurse call, USB, NET, RS232, VGA

### Interface Type
- Main patient outlet: ISO 22M/15F
- Oxygen inlet: DISS or NIST male

### Display
- Size: 15.6 in diagonal
- Type: Active matrix color TFT LCD
- Resolution: SVGA resolution, 1366 x 768

### Controls
- **Ventilation modes:**
  - Spn-CPAP, PC-CMV, PC-ACV, PC-SIMV, PC-Dual PAP, PC-AMV, PC-APRV, PC-MMV, VC-CM-V, VC-ACV, VC-SIMV

- **Special functions:**
  - Manual breath, O2 therapy, standby, screen-lock, inspiratory hold, expiratory hold, sigh, ATC, PCVR, PPS, Compliance, p0.1, calibrate, nebulizer, O2 suction.

- **Patient types:** adult/pediatric/Neonate
- **Patient height:** adjustable

### Monitoring
- **Real-time waveforms:**
  - Paw, Flow, Volume, EtCO2, SPO2
- **Optional:**
  - CO2, SPO2 (related parameters)
- **Loops:**
  - P-V, V-Flow, Flow-P
- **Trends:**
  - 1s, 5s, 1min, 10min, 30min, 60min
- **Tidal volume:** 10 to 2000ml
- **PEEP/CPAP:** 0 to 30 cmH2O
- **Oxygen:** 21 to 100%
- **I:E ratio:** 1:10 to 4:1
- **Inspiratory time(TI):** 0.2 to 5s

### Electrical and gas supplies
- **Input voltage:** 100 to 120 V ~ ±10%, 50/60HZ Ac or 24VDC ±10%
- **Power consumption:** 50W typical
- **Protection class:** Class I
- **Backup battery:**
  - Time 2 hours typical with one internal battery/2 batteries can be stored/hot swappable
- **Oxygen supply:** 280 to 600kPa (41 to 87psi), 120L/min
- **Low pressure:** Oxygen ≤ 15L/min, max. 600hPa for low pressure

### Alarms
- **Operator-adjustable:**
  - Low/high minute volume, low/high pressure, low/high tidal volume, low/high rate, apnea time, low/high oxygen
- **Optional:** low/high CO2, low/high SPO2
- **Special alarms:**
  - Oxygen concentration, disconnection, loss of PEEP, exhalation obstruction, flow sensor, power supply batteries, gas supply

### Physical dimensions
- **Weight:** < 45.3kg
- **Dimension(WxHxD):** Approx. 600x402x415mm
**Technical Data**

### Technique Specifications

**Physical specifications**
- Dimensions: 45*55*140cm
- Weight: 65kg
- Casters: Front wheels with lock
- Screen: 12.1 inch touch screen
- Display: Colour LCD
- Display graphics: Waveforms of P-T, F-T, V-T
- Loops: P-V, F-V, F-P

**Pipeline Supply**
- Gas configuration: O2, Air
- Pipeline input range: 280-600kPa

**Air Compressor Specifications**
- Power: AC 220V±10%, 50Hz±2%
- Output pressure: 0.4±0.1MPa
- Noise: ≤50dB

**Battery Power**
- Battery Type: Lead-acid 12V, 4Ah
- Run-time: Typical 180 mins+

### Ventilator Specifications

#### Modes of Ventilation
- VCV, APNEA, SIMV, SIMV/PSV, MANUAL, CPAP, PSV, PCV, BIPAP, SIGH, ARPV, NIV

#### Ventilator Parameter
- Tidal Volume range: 20-2000ml
- Pressure range: 5-80 cmH2O
- Inspiration Rate Range: -100bpm (1-40bpm under SIMV)
- Inspiration time: 0.2-12s
- Pressure control/Pressure support: 0-80cm H2O

### Inspiration plateau
- OFF, 1-50%

### PEEP
- Type: Integrated, Electronic control
- Range: OFF, 3-40 cm H2O

### Parameter monitoring
- VT, Vte, Ppeak, Pmean, Pplateau, PEEP, NIF, FlowMax, FlowEMax, Freq T, FreqSp, FreqM, Mvsp, Mvleak, Vtdeep, Ptdpeep, RVr
- PAT, OCT, FiO2, CO2 (Optional)

### Alarm Limits
- Visual: No tidal volume, MV, Paw, FiO2 limitation
- Audio: No tidal volume, MV, Paw, FiO2 limitation

### Pre-setting Functions
- Language: English
- Self-test: AUTOMATIC
- Typical function
- Auxiliary Suction function: Optional
- O2 remedy: Up to 60 L/min
- Nebulization

### Environmental Conditions
- Operating Temp: 5°C - 40°C
- Storage Temp: -10°C - +40°C
- Humidity: ≤80%
- Atmosphere pressure: 960 hPa-1040 hPa
9 Multi-function ICU Invasive and Noninvasive Ventilator

- Suitable for adult and child
- For various treatment environments such as emergency room, operating theater, ambulance, patient transfer and first-aid
- Unique invasive and non-invasive ventilation modes to meet the different patients’ needs
- Inspiration halt, convenient for sucking phlegm
- Oxygen mixing technique to adjust oxygen concentration and meet the oxygen therapy need
- Alarm and monitoring system which meet the international safety standard
- TFT screen, displaying various respiration parameters and waveforms
- With built-in battery and on-vehicle power connector for A/C and D/C power supply
- PEEP valve, humidifier, trolley, supporting arm and other accessories as optional

Main parameters

| Applications | Adult, child |
| Control mode | Pneumatic driven and electric controlled, time switch, pressure limit, volume control, apnea ventilation |
| Ventilation modes | AC, SIMV, SPONT, SIGH, NIPPV, manual |
| Respiratory rate | 4bpm – 80bpm |
| Tidal volume | 0, 50ml~1500ml |
| I:E ratio | 1:0.3, 1:0.5, 1:0.7, 1:1, 1:1.5, 1:2; 2.5, 1:3, 1:3.5, 1:4 |
| Trigger sensitivity | -2kPa~2kPa, continuously adjustable |
| Oxygen concentration | 48-100% |
| Display mode | LCD screen display |
| Waveform | Airway pressure waveform display |

Monitoring parameters

- Tidal volume, Minute volume, Respiratory rate, Peak airway pressure

Alarm parameters

- Upper airway pressure limit
- Lower airway pressure limit
- Low battery alarm
- Power supply failure
- Silence for alarm

Note: This machine can be a portable one with oxygen cylinder.
## Technical Data

### Ventilation mode
- IPPV, A/C, PCV, SIMV, SPONT/CPAP, PSV, SIGH, MA, NUAL

### Ventilator parameter
- **Tidal volume (Vt)**: 0 ~ 2000 ml
- **Frequency (Freq)**: 1 min ~ 100 min
- **Oxygen concentration**: 21 % ~ 100 %
- **1:E**: 4:1 - 1:8
- **PPEP**: 0 cmH2O ~ 40 cmH2O
- **Flow trigger sensitivity (Ftr)**: 0.5 L/min ~ 30 L/min
- **Pressure control (PC)**: 5 cmH2O ~ 80 cmH2O
- **Pressure support (PS)**: 0 cmH2O ~ 80 cmH2O
- **SIGH**: (off) 1/00 ~ 5/100
- **Apnea ventilation**: OFF, 5 s ~ 60 s
- **Pressure limit**: 20 cmH2O ~ 100 cmH2O

### Monitoring parameter
- **Frequency (Freq)**: 0/min ~ 100/min
- **Tidal volume (Vt)**: 0 mL ~ 2500 mL
- **MV**: 0 L/min ~ 99 L/min
- **Airway pressure**: 0 cmH2O ~ 100 cmH2O
- **Dynamic lung compliance testing**: 1 mL/cmH2O ~ 1000 mL/cmH2O
- **ETCO2 concentration**: 0 mmHg ~ 152 mmHg (0% ~ 20%)
- **Oxygen concentration**: 15% ~ 100%

### Packing size
- **Main engine**: L560 • W560 • H605 mm
- **G.W.**: 40 KG, N.W.: 22 KG
- **Air compressor**: L683 • W687 • H1140 mm
- **G.W.**: 100 KG, N.W.: 65 KG

### Alarm and protection
- **AC power failure alarm**: Power failure or no connection
- **Internal backup battery low voltage alarm**: ≤ 11.3 ± 0.3 V
- **No tidal volume**: No tidal volume within 6 s
- **High minute volume alarm**: 5 L/min ~ 99 L/min
- **Low minute volume alarm**: 1 L/min ~ 30 L/min
- **High airway pressure alarm**: 2 cmH2O ~ 100 cmH2O
- **Low airway pressure alarm**: 0 cmH2O ~ 20 cmH2O
- **High oxygen concentration alarm**: 19% ~ 100%
- **Low oxygen concentration alarm**: 18% ~ 99%
- **Continuous pressure alarm**: (PEEP + 1.5 cmH2O) over 16 s
- **Suffocation warning**: 5 ~ 60 s
- **Fan error**: Show on screen
- **Oxygen deficit**: Show on screen
- **The maximum limited pressure**: < 12.5 kPa

### Working condition
- **Gas source**: O2, Air
- **Pressure**: 280 kPa ~ 600 kPa
- **Voltage**: 220v ± 22v
- **Power frequency**: 50 Hz ± 1 Hz
- **Input power**: 900 VA (With air compressor)
  250 VA (Without air compressor)

### Oscillogram
- **P·T (Pressure·Time)**
- **F·T (Flow·Time)**
- **V·T (Volume·Time)**
- **ETCO2 (End-Tidal CO2·Time)**
- **P·V Loop (Pressure·Volume·Loop)**
- **F·V Loop (Flow·Volume·Loop)**
- **P·F Loop (Pressure·Flow Loop)**
# Technical Specification

## General Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient type</td>
<td>Adult &amp; pediatric patients</td>
</tr>
<tr>
<td>Dimensions (H<em>W</em>D)</td>
<td>50cm<em>65cm</em>50cm</td>
</tr>
<tr>
<td>Weight</td>
<td>42kg</td>
</tr>
<tr>
<td>Power</td>
<td>220-240V/50-60Hz (well grounded)</td>
</tr>
<tr>
<td>Backup power</td>
<td>At least 30 minutes, nominally between 2 to 4 hours</td>
</tr>
<tr>
<td>Display</td>
<td>10.4 inch TFT display</td>
</tr>
</tbody>
</table>

## Ventilator

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal volume</td>
<td>Adjustable range:50-1500 ml, Display range:0-2000 ml</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>1-99 bpm</td>
</tr>
<tr>
<td>Inspiratory pressure limit</td>
<td>10-60 cmH20</td>
</tr>
<tr>
<td>Ventilator models</td>
<td>Manual, Spontaneous, Standby, Assist/Control (A/C), Intermittent Positive Pressure Ventilation (IPPV), Synchronized Intermittent Positive Pressure</td>
</tr>
<tr>
<td>Minute volume</td>
<td>≥18L/min BTPS</td>
</tr>
<tr>
<td>Trigger Sensitivity</td>
<td>Pressure: -10-10 cmH20</td>
</tr>
<tr>
<td>SIMV Rate</td>
<td>1-20 bpm</td>
</tr>
<tr>
<td>Inspiratory time</td>
<td>0.1-2.0 s</td>
</tr>
<tr>
<td>PEEP</td>
<td>0-10 cmH20</td>
</tr>
<tr>
<td>Oxygen &amp; AIR inlet pressure range</td>
<td>280-600 kpa</td>
</tr>
<tr>
<td>O2 concentration</td>
<td>45-100%</td>
</tr>
<tr>
<td>SIGH</td>
<td>1-8 per 100 breaths (tidal volume set at 1.5x)</td>
</tr>
</tbody>
</table>

## Other Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>Tidal volume, minute volume, control frequency, spontaneous respiration rate, airway pressure, 1:E, Inhalation &amp; exhalation status, inspiratory trigger, inhaled oxygen concentration, PEEP, airway resistance, lung compliance &amp; more</td>
</tr>
<tr>
<td>Alarm</td>
<td>Audible and/or visual for ventilation volume, tidal volume, oxygen concentration, asphyxia, airway pressure, intubation disconnection, low oxygen, power failure &amp; more, also features a alarm query function</td>
</tr>
</tbody>
</table>
High-flow Oxygen Therapy with Nasal Insufflation

The three pillars of efficient TNI

TNI Flow
The flow rate can be accurately determined, according to the patient’s individual ventilation demand. In combination with the TNI applicator, the TNI Flow generator guarantees a stable air flow during inspiration and expiration independent of the environment and pneumatic systems.
- Flow volume: 10–50 l/min
- Increments of 0.5 l/min

Oxygen
O2 addition can be titrated according to the patient’s O2 deficit.
- Supply from any external O2 source
- Up to 20 l/min

Humidification
The level of humidification and the temperature of therapy air can be adjusted by the patient according to comfort.
- Dew point: 30–37°C DP
- Increments of 1°C DP

The flow rate should be significantly higher than the inspiratory demand. CO2 elimination increases by raising the flow rate.

Applicator sizes cover different flow rates. The higher CO2 washout required, the larger the applicator size needed.

Oxygenation remains efficient if the oxygen supply is simultaneously increased with the flow rates.

34–37°C DP is recommended for optimal humidification of the respiratory tract.
BPAP Noninvasive Ventilator

**Y-25T / Y-30T**

**Technical Specification**

**Model Comparison**

<table>
<thead>
<tr>
<th>Model</th>
<th>IPAP</th>
<th>EPAP</th>
<th>CPAP mode</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Water capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y-25T</td>
<td>4–25 hPa</td>
<td>4–25 hPa</td>
<td>4–20 hPa</td>
<td>170 mm × 180 mm × 118 mm</td>
<td>1.5 kg</td>
<td>350 mL</td>
</tr>
<tr>
<td>Y-30T</td>
<td>4–30 hPa</td>
<td>4–25 hPa</td>
<td>4–20 hPa</td>
<td>290 mm × 180 mm × 134 mm (with humidifier)</td>
<td>2.5 kg (with humidifier)</td>
<td></td>
</tr>
</tbody>
</table>

**General Info**

- Dimensions: 170 mm × 180 mm × 118 mm
- Weight: 1.5 kg
- Water capacity: 350 mL at recommended water level

**Ramp**

- Ramp time ranges from 0 to 60 minutes

**Humidifier**

- Settings: off, 1 to 5 (95°F to 167°F / 35°C to 75°C)
- Output: No less than 10 mg H2O/L

**SpO2**

- Range: 0 to 100%

**Pulse Rate**

- Range: 40 to 240 BPM

**Sound Pressure Level**

- <30 dB, when the device is working at the pressure of 10 hPa

**Storage**

- SD card can record patient data and fault information

**AC Power Consumption**

- 100–240 V AC, 50/60 Hz, Max 2 A

**Key Parameters**

- Target VT: On/Off 150–1500 mL
- Reslux: Patient, Off, 1–3
- I Sens.: 1–8
- E Sens.: 1–8
- Res Rate: 3–40 BPM
- Ti: 0.3–3.0s
- Rise Time: 1–4
Non-Invasive Ventilator

- Upgraded design with high flow
- User-friendly design, easy to control
- Intuitive interface & 3.5-inch LED screen
- Multi-parameter clearly shown
- Synchronous recording of pulse rate & blood oxygen

YH-825/830

Volume pressure ventilation mode to meet your demand timely
- Precise VGPS mode
- Real-time tracking of tidal volume of every breath
- More accurate monitoring of tidal volume changes
- Regulating the inhalation step by step following user’s inhalation
- To meet users’ target tidal volume

Upgraded waveform parameter monitoring
- The absorption waveform can be shown
- Current pattern: CPAP, S, T, ST, VGPS
- Inspiratory pressure: 4-30 cmH2O
- Expiratory pressure: 4-30 cmH2O
- Respiratory rate: 5-50bpm
- Respiratory ratio: 10-70%
- Leakage volume: 20-99.9rpm
- Tidal volume: 50-1500ml
- Minute ventilation: 0-50pm
- Oxygenation: 70-100%
- Pulse rate: 25-250bpm
- Humidifier gear: 0-6 level adjustable
- Ramp: 0-45min

Ventilation setting
- Inspiratory pressure: 4-25/30 cmH2O (1 step=0.5 cmH2O)
- Expiratory pressure: 4-25/30 cmH2O (1 step=0.5 cmH2O)
- Therapy setting: 4-20 cmH2O (1 step=0.5 cmH2O for CPAP mode)
- Ramp: 0-45min (interval:5min)
- Respiratory rate: 5-50bpm (interval:1 time/min)
- Respiratory ratio: 10-70% (interval:1%)
- Insp RiseTime: 1-5level (1 step=1level, rise speed drops from 1-5)
- Inspiratory sensitivity: 1-5level (1 step=1level, tigger sensitivity drops from 1-5)
- Exspiratory sensitivity: 1-5level (1 step=1level, tigger sensitivity drops from 1-5)
- Tidal volume: 50-1500ml (onely for VGPS, interval=50ml)
Expert Consensus on Use and Management of High-flow Nasal Canula for Novel Coronavirus Pneumonia Patients

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SARS-CoV-2 infection can cause Novel Coronavirus Pneumonia (NCP), which may leads to several complications including hypoxemia and dyspnea in severe and critical patients. Therefore, proper respiratory support treatment is urgently needed in such cases. For acute hypoxic failure, high-flow nasal canula (HFNC) has great advantages compared to traditional oxygen therapy. It can reduce intubation rate and 90-day mortality rate, and has played an important role in the treatment of MERS-CoV pneumonia and H1N1 pneumonia. HFNC also plays a vital role in the treatment of severe and critical NCP patients. At present, the pandemic is still developing. Medical staff not from all respiratory or critical care units may not be familiar with the operation of HFNC. Training is required in the use of HFNC and subsequent disinfection treatment. The Respiratory Therapy Group of Chinese Thoracic Society has organized experts to discuss some common problems in the application of HFNC in the NCP treatment process and formed this expert consensus. This expert consensus takes the commonly used HFNC devices as examples to make explanation.

In order to enable frontline medical staff to quickly master the use and disinfection of HFNC, to benefit patients and to avoid the risk of virus transmission. This expert consensus starts with the principle and parameter setting of HFNC and the use and disinfection of different high-flow oxygen inhalation devices, aims at standardizing the use of HFNC in NCP patients and providing guiding suggestions for whether the machines and breathing tube are connected correctly and whether the parameters (temperature, flow rate and oxygen concentration) are set reasonably, and dynamically adjusted according to the subjective feelings, vital signs and test results of patients.

It is recommended to use disposable breathing tube and nasal cannula, and not recommended for routine replacement unless there is obvious pollution. The nasal cannula should be less or equal to 50% of the diameter of patient’s nostril. Whether the connectors are correctly worn will directly affect the diffusion distance of exhaled air. The humidification water in the humidifier of the device needs to be externally connected. The humidification water should be sterilized and distilled water. It is recommended to use automatic water injection. If the non-automatic water injection humidifier is applied, it should be repolished regularly and timely to prevent the temperature from being too high.

- In order to reduce the dispersion of aerosol and the generation of droplets, it is suggested to operate in a certain sequence: 1. Starting; 2. Setting initial parameters; 3. Wearing nasal cannula; 4. Air supply. When stopping using HFNC, shut down the machine first or lower the air flow to zero before removing the nasal cannula. When HFNC is stopped, the patient should continue oxygen supply therapy. According to the needs of the patient, required devices such as nasal catheter oxygen inhalation, non-invasive/ invasive ventilator machine or tracheal intubation should be prepared in advance.
- The device failure alarm should be promptly checked and dealt with. If the failure cannot be eliminated, it is needed to replace the machine in time or apply other respiratory support methods.

- When the HFNC therapy is stopped, oxygen source should be turned off first, then shut down the HFNC machine. Disposable breathing tube, humidifier and nasal plug connectors should be destroyed as medical waste. The surface of the machine should be wiped and disinfected with 75% ethanol. The internal components of the machine should be disinfected with a specific disinfecting agent and the air filter cotton should be replaced.

The definition, principle and physiological mechanism of HFNC

HFNC refers to an oxygen therapy that continuously provides patients with adjustable and relatively constant inhalation oxygen concentration 0.21 – 1.0, temperature (31 – 37°C) and humidity through high-flow nasal plug (0 – 80 L/min, depending on brand and model).

HFNC mainly comprises four parts: an air oxygen mixer, a heating and humidifying module, a connecting pipeline and a nasal plug connector. The air oxygen mixer mixes air and oxygen in a turbine/fan according to a pre-set oxygen concentration, and the turbine accelerates to generate high-speed airflow after mixing. The heating and humidifying module warms and humidifies the high-speed airflow, then delivers the air to the patient in a constant temperature, humidity and flow rate through a connecting pipeline and a nasal plug connector, thus playing a role of breath support (Fig. 1).

HFNC has the following advantages: (1) It provides stable and higher oxygen inhalation concentration than common nasal catheter. The oxygen inhalation concentration does not change with the change of patient’s respiratory state and can meet the needs of patient for spontaneous respiration; (2) The high-flow airflow can reach or exceed the maximum flow rate of the patient’s active inspiratory lower the resistance and work load, and reduce oxygen consumption; (3) The air can be heated and humidified to 37°C and 44 mg/L, thus reducing the consumption of heat and water in patients with respiratory distress to keep the airway mucociliary function in an optimal state, and facilitating secretion drainage to reduce the occurrence of pulmonary infection. (4) High-flow airflow scour the dead cavity of the upper airway to reduce anatomical dead cavity and improve patient ventilation; (5) High-flow airflow provides a certain level of positive airway pressure with the functions of opening alveol, increasing lung volume, improving ventilation, etc. (6) HFNC does not need a completely closed circuit. It has no obvious facial pressure and is convenient for eating and communication, and with high patient compliance.

Figure 7 mxaBiend2

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Summary

As a new oxygen therapy, HFNC provides a new choice of respiratory support for severe and critical NCP patients. Based on practically, this expert consensus has taken widely used HFNC as examples to explain the indications, contraindications, use process and post-disinfection measures of HFNC.

Since severe and critical patients are progressing rapidly, when using the HFNC, the patient’s condition should be closely monitored, and the therapy protocol should be adjusted timely in order to obtain better curative effect.

References

1. Diagnosis and Treatment of Pneumonia Infected by 2019-nCoV (Trial Version 5); General Office of National Health Council and State Administration of Traditional Chinese Medicine Office.
6. WHO. Clinical management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected; interim guidance.
Ventilator Products

Mask Products

- N95 Medical Protective Mask (Without valve)(Sterile)
- Disposable Medical Mask (Non-sterile and Sterile)
- KN95 Medical Protective Mask (Without valve) (Non-sterile)
- Medical surgical mask (sterile)
- KN95 Medical Protective Mask (Without valve) (Non-sterile)
- Isolation Mask
European Mask Factory Construction

- 1,000 SQM Facility
- 2 Production Lines
- 3-Layers Surgical Masks Line: 100,000 daily capacity
  - N95 Masks Line: 30,000 daily capacity

Croatian Medical Equipments Co Ltd
Company Certificate

Wholesale of Class I, II, and III medical equipments; Domestic trade agents; Sales of disinfectants (excluding hazardous chemicals); Sales of labor protection products.

Warning: It is illegal to export PPE without this qualification. Now many enterprises in China are exporting PPE without this qualification, so there is a huge risk to do business with such enterprises.
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