North East Assisted Ventilation Service (NEAVS)

Support guide

Please note that during office hours (Monday – Friday 08:30 – 18:00) the department is staffed. Please leave a message if unable to speak to a person and someone will call you back. **Telephone – 0191 2823153**

The Team
Consultants

Dr Ben Messer, Dr Tom Payne-Doris, Dr Hilary Tedd, Dr Tony De Soyza and Dr Nick Lane

Nurse Consultant

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Nurses Specialists

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Advanced Specialist Physiotherapist

Kathy George

Health Care Assistants

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Admin team

Jennifer Mair, Louise Latimer, Melinda Elvin, Sophie McKenna

- **Monday to Friday 08:30 - 18:00**
  - **01912823153**
    - **Option 1 – Admin team**
    - **Option 2 – Health Care Assistant team**
    - **Option 3 – Clinical team**
- **Out of hours**:
  - Urgent equipment replacement only
    - 0191 2823153 (ask for home ventilation on-call)

@ email: **nuth.home.ventilation@nhs.net**

Introduction

This resource pack has been designed as a practical guide to help and assist you to look after a ventilated patient, under the care of the North East Assisted Ventilation Service.

All of these patients will have their own ventilator and correct circuits / interface at home.

This pack is designed as a support tool, and does not replace any medical device or clinical skill competency based training.

Contents

Long Term Ventilation Terminology

- **Invasive Ventilation** = ventilation delivered via a tracheostomy (or endotracheal tube)

- **Non-Invasive Ventilation** = ventilation delivered via mask

- **CPAP** = Continuous positive airway pressure

- **Bi-Level** = Delivers both IPAP and EPAP

- **IPAP** = Inspiratory positive airway pressure

- **EPAP** = Expiratory positive airway pressure

- **Exhalation port or active exhalation valve** = Intentional leak to allow patient to breath out and expel carbon dioxide

- **Wet circuit** = a circuit attached to a humidifier

- **Dry circuit** = no humidifier is used

- **HME** = heat moister exchange only found in dry invasive circuits. Example:
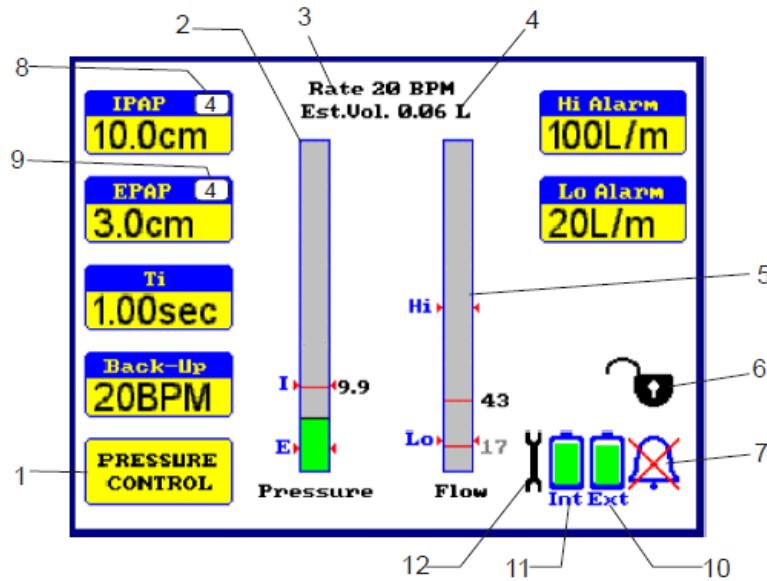
Ventilator Modes

- **CPAP –** Continuous Positive Airway Pressure
- **ST (PS)** – Spontaneous Timed (or Pressure Support)
    - Patient receives a minimum number of breaths per minute
    - Spontaneous breath is determined by the patient
    - Breaths are patient triggered and patient cycled
    - If patient doesn't breath within set rate, a back-up breath will be delivered

- **PC (PAC)** – Pressure Control (or Pressure Assist Control)
    - Ensures patient receives a set inspiratory time
    - Delivers assisted and mandatory breaths
    - Identical to ST but all breaths have a fixed inspiratory time (Ti)
    - Patient triggered
    - Machine cycled
    - If patient doesn't breath within set rate, a back-up breath will be delivered
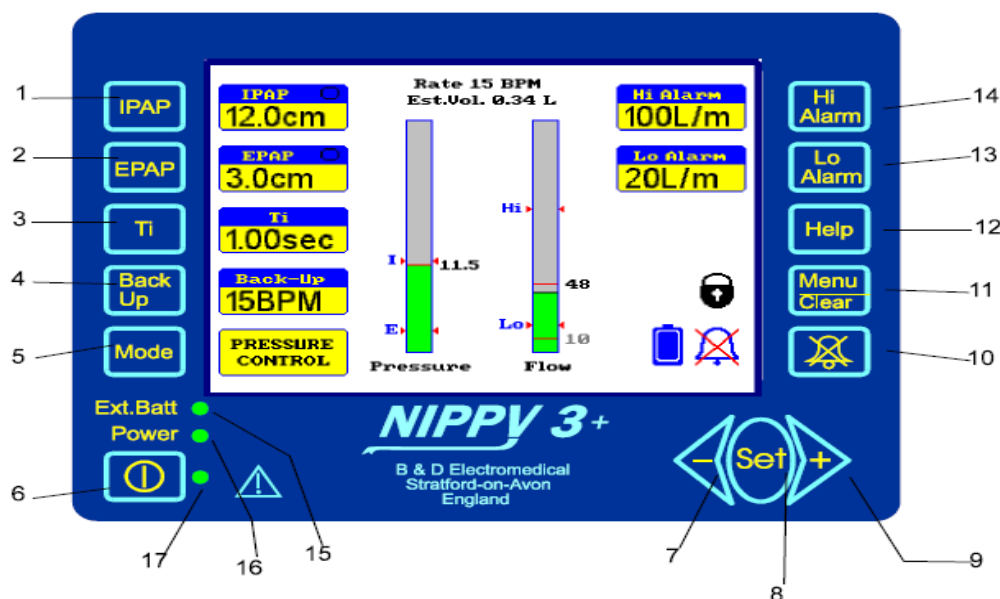
NIPPY 3+ Ventilator

NIPPY 3+ ventilator display

1. Mode	Ventilation mode	2. Pressure bar	Indicates airway pressure – should be similar to IPAP
3. Rate	Number of total breaths per min	4. Volume in litres	Estimated inspiratory volume (not accurate in single limb)
5. Flow bar	Airway flow – changes constantly. Turns red in alarm conditions	6.Locked/ unlocked	Settings/ kepad locked or unlocked
7.Alarm Silence	Indicates alarm silenced	8.Insp trigger	Flashes with each inspiration
9.Exp Trigger	Flashes with each expiration (not active in all modes)	10.External Battery	Indicates level of charge (if attached)
11.Internal battery	Indicates level of charge	12.Service Spanner	Black – service due Red – Fault –contact team

NIPPY 3+ ventilator display

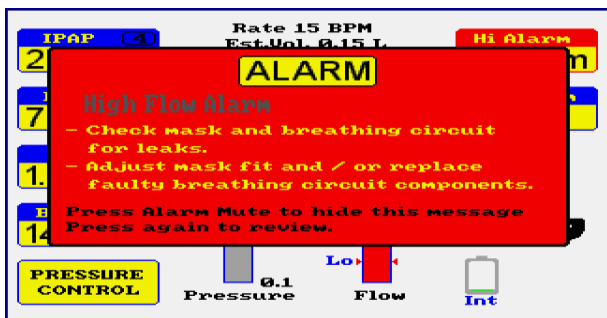| 1. IPAP	Size of the breath in	2. EPAP	Air coming towards you as you breathe out
3. Ti	Length of breath in	4. Back up	Minimum number of breaths the ventilator will ensure you take per min.
5. Mode	Type of ventilation	6. On/off	Turn the device on (one push) Turn the device off (two separate push and hold)
7. Minus	Reduces selected parameter	8. Set	Confirm parameter changes
9. Plus	Increases selected parameter	10. Alarm Silence	Silence the alarm for 2 mins
11. Menu	Opens sub-menus	12. Help	Displays help messages
13. Lo alarm	Minimum threshold the ventilator should blow before alarming	14. Hi Alarm	Maximum threshold the vent should blow before alarming
15. Ext. Battery	Indicates running on battery if flashing	16. Power	Indicates that external power is connected
17. Start	Ventilator is running		

NIPPY 3+ alarms

All alarms should be tested **before** use. Please note the device is 'silenced' for the first 1 minute of operation.

High flow / disconnection alarm (to alert in the event of leak or disconnection)

To check – Turn the ventilator on and let the air flow freely from the mask. After 15 seconds the ventilator will display the graphic below with a continuous alarm. This is a pass.
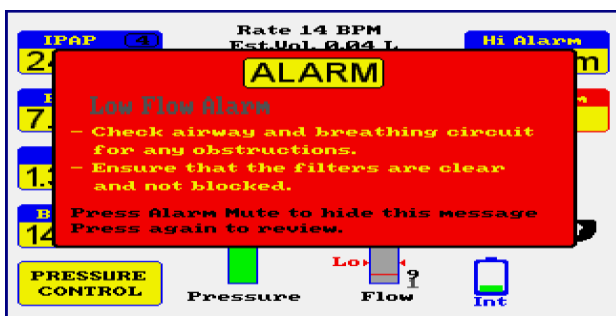
To fix – push the alarm silence (silence lasts for 2 minutes). Check the mask for unintentional leaks. If there are none, check the tubing from the ventilator to the mask. If either the mask or tubing are damaged, please contact for replacements.

Low flow alarm (to alert in the event of blockage or obstruction)

To check – Turn the ventilator on & occlude the end of the tubing (not the mask). After 15 seconds the ventilator will display the graphic below with a continuous alarm. This is a pass.

To fix – remove the object blocking the tube. This may be either internal or external. Should you require a new tube please contact for replacements
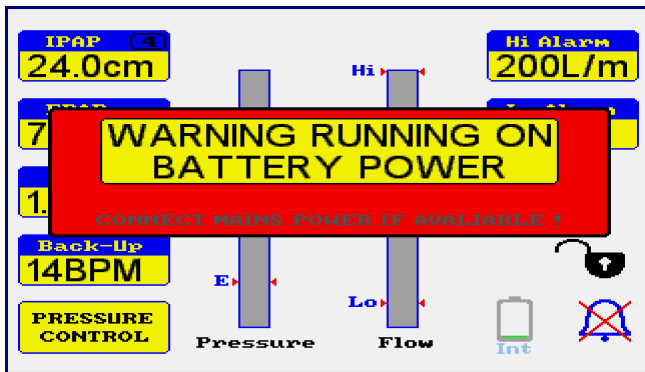
Power fail alarm (to alert in the event of mains power failure)

There is an intermittent alarm to notify you if the ventilator begins to run on internal battery, either in the event of a power failure or if the device has been disconnected from the main supply.

Please note that the ventilator should be plugged in to the mains supply at all times.

To Check – without the patient connected, whilst the ventilator is running, disconnect it from the mains supply. If the graphic below is displayed, and intermittent alarm will sound and the battery LED will flash. This is a pass.
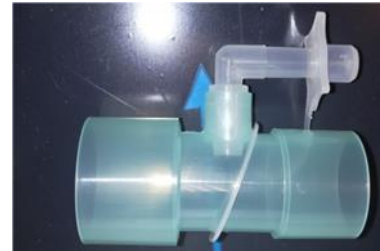
To resolve – ensure mains power is connected. If the ventilator shuts down when disconnected from the mains, please ensure it has been plugged in for 24 hours. If it continues to shut down despite this, then please contact the team for a replacement.
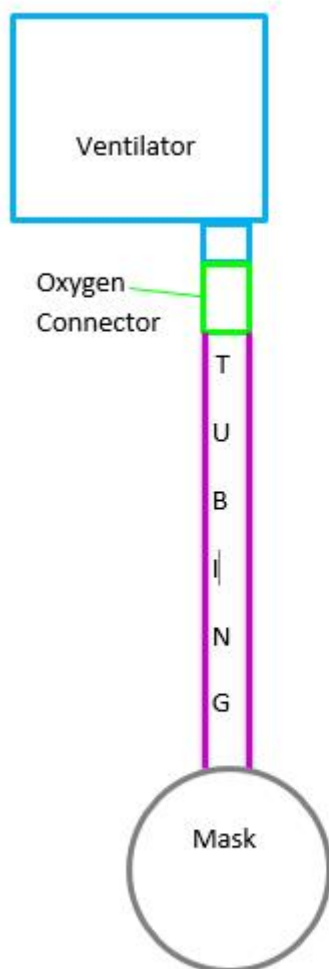
Supplementary oxygen and the NIPPY 3+ ventilator

If supplementary oxygen is required as well as NIV, this can easily be added into the NIPPY by placing a green oxygen connector between the ventilator and the

Safety note - Do not leave oxygen running through a switched off ventilator

DO NOT ADD OXYGEN HERE

Ventilator

Oxygen Connector

T
U
B
I
N
G

Mask

Resmed Stellar 150

The Resmed Stellar is used for non-invasive ventilation. It has the option for dual modes and an integral (detachable) humidifier

If the screen is not lit up, depress the rocker switch on the back of the device and the machine will go through its start up. Press the start/stop button to commence ventilation

Dial

Alarm Silence

To lock/unlock press dial and together.
The press dial again

Stop/start button

(Press here to start and stop ventilation and confirm by pressing dial)

Connect tubing here

You cannot swap between programmes when ventilator is delivering flow (therapy)

How to change between programmes:
1. Stop therapy – switch off using start/stop button
2. Press dial twice
3. Turn dial to select program
4. Press dial
5. Switch machine back on – start therapy

Alarms: the only alarm is a mask off/disconnection alarm – check mask

Supplementary oxygen and the Resmed Stellar

o Oxygen is usually entrained using a device specific oxygen connector at the back of the ventilator
o The connector clicks into the port.
o To remove push down silver spring

o If there is not connector available entrain in the same way as the NIPPY Ventilators using the green connector illustrated
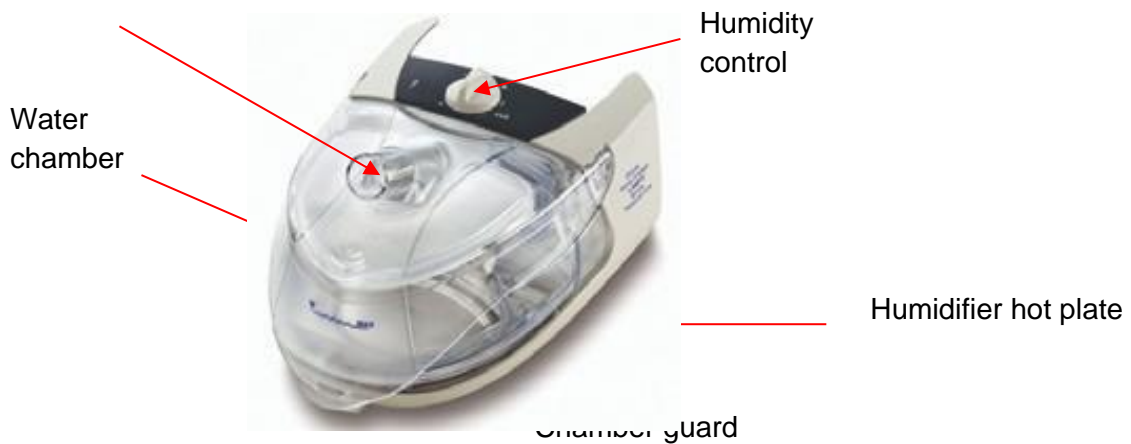

Safety note - Do not leave oxygen running through a switched off ventilator

Resmed Stellar 150 Humidifier (H4i)

- **The humidifier will only work when the Stellar is connected to a mains supply**
- <u>**The Stellar should not be moved around when the humidifier is connected**</u>

Long hose from the humidifier
To the mask

Humidity control

Water chamber

Humidifier hot plate

Chamber guard

Filling the chamber
- Open the cover and remove the chamber and fill with sterile (or cool boiled) water to line
- Replace the chamber in the humidifier and close the lid (ensure it clicks into place)

Starting your treatment
- Turn the humidity control dial to three (III)
- Adjust the control dial up or down to find setting most suited to you
- The O setting switches heated humidification off
- Setting of six (IIIIII) delivers maximum humidification
- The indicator light will brighten when the device is heating and dim when set temperature is reached

Detaching humidifier
- Unplug from mains
- Remove water chamber
- Release catch on underpart of ventilator
- Remove humidifier from the ventilator

> **Safety note - Do not move a patient when on a humidifier- always detach the humidifier**

Non-Invasive Humidification

Not all non-invasive ventilated patients require humidification at home.

If a patient has their own humidifier they should be encouraged to bring it to hospital.

If humidification is required urgently in an acute illness, a Fisher & Paykel humidifier may be used. Example illustrated:

To change from invasive to face mask setting – press and hold this button

Safety note - Do not move a patient when on a humidifier