

Non-invasive ventilation (NIV) at home

Information for patients using a DreamStation
ST/AVAPs non-invasive ventilator



What is non-invasive ventilation (NIV)?

NIV is a treatment that can help you breathe more easily if your breathing problem is getting worse. NIV supports your breathing but does not take it over. It involves you using a cushioned mask that fits over your mouth and nose (Figure 1) or just your nose (Figure 2) which is connected to a ventilator machine that blows air as you breathe.



Figure 1
Full face mask



Figure 2
Nasal mask

Why do I need NIV?

When you breathe normally you take in oxygen for your body to use and breathe out the waste gas carbon dioxide. Breathing in enough oxygen and blowing out enough carbon dioxide might have become more difficult for you. NIV helps your breathing by blowing in extra air as you breathe. This helps correct your oxygen and carbon dioxide levels.

What are the benefits?

NIV improves the effectiveness of your breathing and can reduce the work of breathing for your muscles, which can make breathing easier for you. Other benefits may include improved sleep quality, reduced sleepiness in the day and less frequent morning headaches.

What are the side effects?

- The face mask may make you feel claustrophobic.
- Air may leak from around the mask and cause eye discomfort.
- If you swallow some of the air it can lead to trapped wind or bloating. If this happens, the settings on your machine may need to be changed.
- The mask may cause sore skin on your face or make your skin break down over the bridge of your nose. If you find this is a problem, you may need to try different masks or use extra liners to create a comfortable fit.
- You may find it harder to clear spit and phlegm from your throat and nose when you wear the mask. You may need to remove the mask for a few minutes to spit it out.

What are the risks?

Pneumothorax (lung collapse). This is very rare and only if the machine is set at high pressures. It is caused by an air leak from the lung which becomes trapped between your lung and chest wall. It may cause sudden sharp chest pain, which is worse when you breathe in, and breathlessness. You will need to attend your local A&E urgently if this happens.

How often should I use the NIV machine?

It is important to use your NIV every night, for a minimum of 4 hours (ideally the whole night if you can). You should also use your NIV if you sleep in the daytime. Your doctor will tell you if you need to use your NIV any more than when you are asleep.

If you are having any doubts about how often you should use your NIV, you can contact the Chest Unit or your doctor.

Do I still need to take my normal medication while using NIV?

Yes. You should take all your usual medicines unless advised otherwise by your doctor. You can take the mask off if you need to take your nebulisers, inhalers or pills.

Will I have follow-up appointments for my NIV?

You will be seen regularly in the Chest Unit to ensure your treatment is going well. You also may be seen regularly in the Sleep and Ventilation clinic

It is important that you attend all of your appointments to check that your NIV therapy is effective and to discuss any problems you may be having.

If you do not attend for your appointments, the Home Ventilation team will not be able to accept responsibility for the safety of the NIV machine or your treatment.

Remote monitoring

Some of our DreamStation devices may temporarily be fitted with a device called a modem which is able to send us information about the effectiveness of your NIV treatment. It can also tell us how often you are using it and if your mask is fitting properly. This will enable us to optimise your treatment while reducing your number of hospital visits.

The modem sends your data securely. It does not use your internet connection and so will not cost you anything when it sends us the information. We will always ask your permission first before fitting the modem.

Traveling with NIV

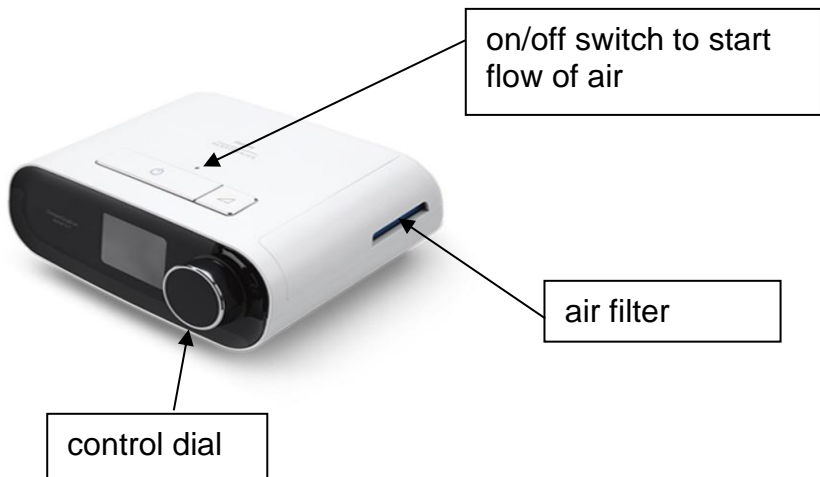
The DreamStation is suitable for use on airlines when it is operating from an AC or DC power source. It is not suitable for airline use with any modems or humidifiers installed. Please check

with the airline prior to flying if you are planning to use your DreamStation during a flight.

Please take the machine on to the plane as hand luggage, to avoid accidental damage. Do not check the NIV ventilator into the plane cargo or hold.

If you are going abroad, please contact the Chest Unit so that we can supply you with a letter for the airline and customs.

Using my Philips DreamStation ventilator



How do I turn it on and off?

Place the DreamStation ST machine on a clean flat surface (not on a carpet). Do not put it inside a bedside cabinet or anywhere the air cannot move freely around it.

- Connect the power lead to the adapter and then the adapter connector to the side of the machine. Plug the other end of the lead into the mains power socket and switch the socket on.



- When the mains power is switched on, the device will come on and show a menu screen as shown below and the button on the top of the machine will light up.



- To start the flow of air, press the on/off switch on the top of the device for 1 second.
- To stop the air blowing, press and hold the on/off button on the top of the device for three seconds.

DreamStation features to help with my treatment

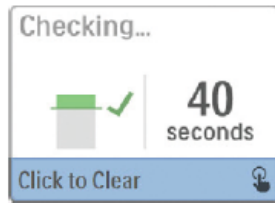
Check Mask Fit:

The 'Check Mask Fit' option on your device allows you to ensure that the mask is correctly fitted before use. This will ensure that it does not leak during the night.

Put your mask on and turn the control dial until you reach the “My Setup” option. Push the control dial.




My Setup



Check Mask Fit Screen

The device will deliver a test pressure for 40 seconds. A green bar indicates good mask fit, while a red bar indicates there is a leak and the mask needs adjusting (which you can do while the time is counting down). After the test has finished, normal therapy will start. A green tick indicates that the mask is fitting well. A red “X” indicates that there is a leak and the mask needs adjusting.

Ramp

The DreamStation has an optional ‘Ramp’ feature. If enabled, it reduces the air pressure produced by the machine while you are initially trying to go to sleep. The pressure will then gradually increase until your prescription setting is reached, by which time you will hopefully have already fallen asleep. If the ramp function is enabled on your device and you wish to activate it, first turn on your machine, adjust your mask so that it is not leaking, and then press the ‘Ramp’ () button on the top of the device.

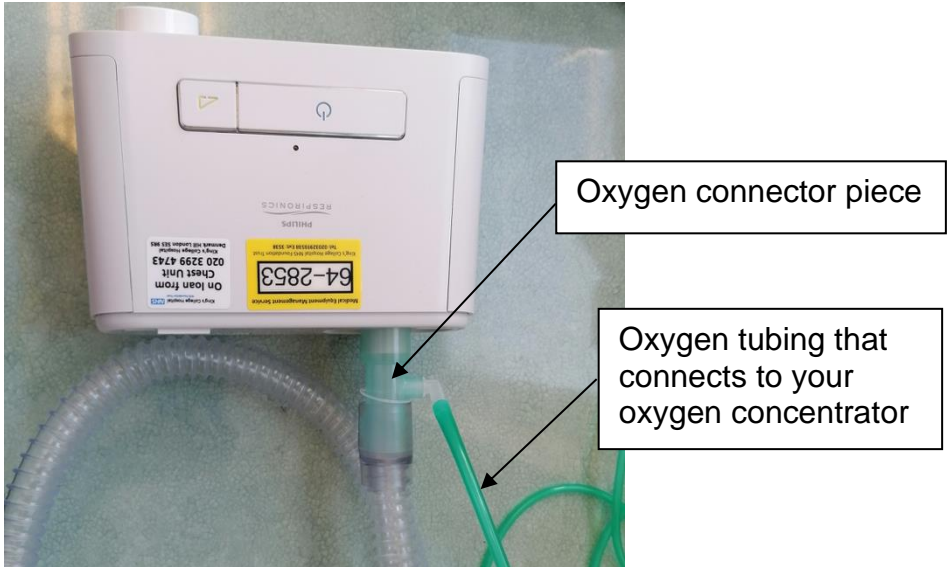
Will I need to use oxygen with my NIV?

Some patients will need additional oxygen therapy alongside the NIV treatment at night. If you are deemed in need of oxygen, our Home Oxygen team will arrange for an oxygen concentrator machine to be delivered to your home.

We will show you how to connect oxygen to your DreamStation NIV machine before you leave hospital. One end of the oxygen tubing should be attached to a connector piece that we will provide

you (see below), and the other end should be attached to your oxygen concentrator.

Your oxygen concentrator should be set at litres per minute when connected to your NIV machine.



Will I need to use a humidifier as well?

We might decide that breathing damp (humidified) air will help you if you have a productive sticky cough (you cough up phlegm/mucus) or a dry mouth.

Humidifier

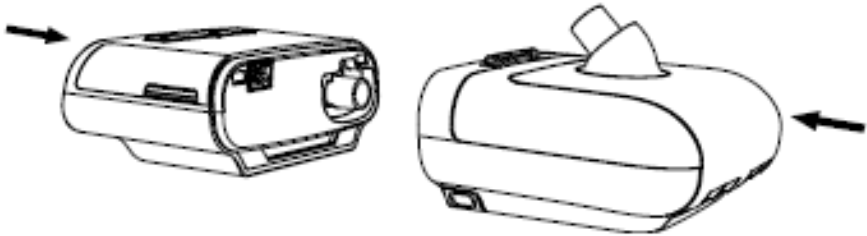


Water Chamber



Attaching the humidifier to your NIV machine

Line up the back of the DreamStation device to front of the heated humidifier. Make sure the air outlet port on DreamStation device lines up with the air inlet port on the humidifier (as shown in the diagram below).



Slide the two units together until they click into place. Make sure that the CPAP device and the humidifier are completely seated against each other.

Filling the humidifier with water

1. Remove the water chamber from the humidifier by releasing the lid (pull the release latch on top of the humidifier) and swing it completely open.
2. Remove and rinse the chamber with water and put it on a flat surface.
3. Fill it no higher than the maximum fill line with either boiled water that has cooled down or distilled water.
4. Carefully replace the water tank into the humidifier and close the humidifier lid until the latch clicks shut.
5. Attach your tubing to the air outlet port on the humidifier.

Warning: The humidifier must be level for proper operation. Do not place the humidifier directly onto carpet, fabric or any other flammable materials. Take precautions to protect furniture from water damage.

Important

- Do not fill the chamber while it is still inside the humidifier.
- Only use water that you have first boiled then cooled (or distilled water) to kill any bacteria.
- Change the water in your humidifier every day to prevent mould and bacteria growth. Any remaining water in the morning should be disposed of.
- Do not put any chemicals or additives into the water as these may irritate your airway or damage the water tank.
- Warning: be very careful of the heater plate, heated water or tank pan.
- Do not attend your NIV review appointments with water in the humidifier chamber.
- If you are getting moisture or water inside your mask and tubing, the humidifier is set too high. Turn the dial down to a lower setting.

Adjusting the humidification level

While the device is switched on and blowing air, the heat of the humidifier can be adjusted.

Rotate the control dial on the front of the DreamStation device and the number in the bottom corner of the screen will change (the higher the number, the more humid the air you breathe).



Humidity setting indicator

Looking after my DreamStation NIV machine

Machine care

Keep the DreamStation machine clean and dust free.

If you are using a humidifier:

- You can wash the chamber in warm soapy water in the top drawer of a dishwasher.
- If you get a build-up of lime scale, you can fill the chamber with one part lemon juice to nine parts boiling water and leave to soak for three to four hours. Make sure that the solution is rinsed off thoroughly before re-using.

One of the Chest Unit team can show you how to clean the different parts of your machine and give you any new or replacement parts you may need.

Mask care

Always wash your face before putting on your mask to remove facial oils and make-up. Do not put moisturiser on your face at night as this may stop the mask from sealing.

If you look after your mask it should last a year. If it breaks or starts to leak a lot, contact the Chest Unit for a new one.

Daily

- Take the mask cushion or nose pillows off the straps. Clean with warm soapy water, rinse and leave to dry.
- Do not use alcohol on the mask as this can damage it.
- Do not put it in the dishwasher or very hot water.

Weekly

- Take off the straps, wash in warm soapy water and leave to dry.

Tubing care

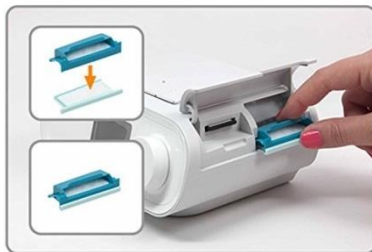
Clean the tubing before you first use it.

Weekly

- Detach the flexible tubing from the NIV machine.
- Gently wash the tubing with warm water and a mild detergent.
- Rinse well.
- Hang it over a chair or the back of a door to drip dry.
- Check the tubing regularly for holes. These can cause a High Flow Alarm to sound.

Filter care

The air filter at the side of the machine prevents dust from entering the machine. You should clean it every two weeks and replace it every 6 months or if it becomes damaged.



- Disconnect the device from the power source.
- Remove the filter (as shown in the diagram above).
- Remove any visible dust by tapping it on a hard surface.
- Take the reusable filter to a sink, turn it upside down, and run warm tap water through the white middle portion of the filter to rinse away any debris.
- Shake the filter to remove as much water as possible.
- Allow the filter to air dry completely before reinstalling it. If the filter is damaged, replace it with a new one from the Chest Unit.

Caution: Never install a wet filter into the device. You must ensure sufficient drying time for the cleaned filter.

Important: Do not let the filter get blocked with dust because this will affect how well the DreamStation works.

What do I do if I have problems with my mask?

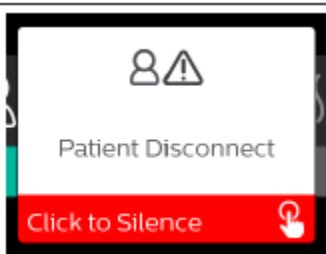
Generally, it is ok to have small leaks. You can make some small changes to stop big leaks.

- If your mask leaks, pull the mask cushion directly away from your face and set it gently back into place. This allows the cushion to create a new seal on your face.
- If you have leaks around your eyes, adjust the side straps.
- If you have leaks around your lips or chin, adjust the lower straps.
- If you can feel too much pressure on the bridge of your nose, loosen the side straps.
- If you get a sore on the bridge of your nose, please contact the Chest Unit for advice.

What do I do if the alarm sounds?

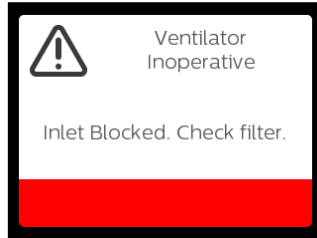
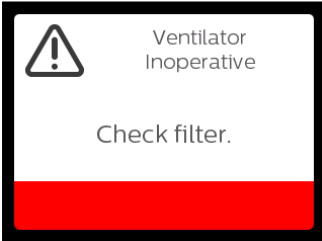
The alarm may sound for a few reasons. A message will be displayed on the screen telling you what the fault is. To temporarily silence an alarm press the control dial. The alarm is silenced for 60 seconds and then sounds again if the cause of the alarm has not been corrected.

1. Patient Disconnect Alarm. There may be a large leak around your mask, a crack in the tubing or the tubing may have come away from the machine.

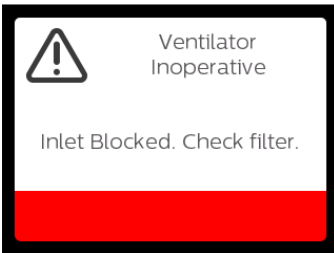


Try re-fitting your mask and making sure it is on securely. Check all tubing is connected and there are no holes or cracks in the tubing.

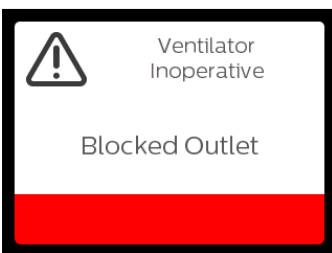
2. Filter alarms: The filter may be blocked with dust, affecting the flow rate of the device. Remove the filter and clean, or replace with a new filter.



3. Inlet blocked: Check device air inlet is not obstructed. Check air filter(s) are installed properly and clean; replace if needed.



4. Outlet blocked: Check tube is not crushed or folded restricting the airflow. Check mask is attached properly and without any obstruction.

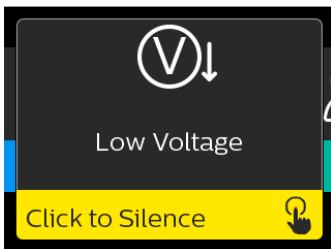


5. Low pressure alarm. This could be caused by a large leak, blockage (possibly by your head falling forwards and therefore blocking the flow of air), or a device malfunction. Check your mask and filters, and nothing is blocking the tubing. If you are also using a humidifier, check for water in the tubing. Try tilting your head back to allow the air to flow freely. If your mouth is open and you wear a nose mask, try wearing your chin strap.



6. Power Disconnect Alarm. The machine will stop operating and the screen will turn off. There will not be an error message on the machine. Remove your mask. Check your power connections. Make sure there is power at the outlet or power source.

7. Low voltage alarm. Remove power from the device. Confirm a compatible Philips Respironics power supply is attached. Switch to compatible power supply.



If you are unable to solve why your DreamStation is alarming, please contact the Chest Unit.

Who can I contact with queries and concerns?

Before you go home, someone from the NIV team or Chest Unit will show you how to fit your mask and how to use your DreamStation device.

If you have any problems with your machine at home, please contact the Respiratory Physiologists.

Chest Unit King's College Hospital

Tel: 020 3299 4743, option 3

Email: kch-tr.CPAPkings@nhs.net

Chest Unit Princess Royal University Hospital (PRUH).

Tel: 01689 863104

Your DreamStation NIV settings

Machine model -----

Serial number -----

IPAP (cmH₂O) -----

EPAP (cmH₂O) -----

Ti (secs) -----

Back up rate (bpm) -----

Mode -----

Rise time -----

Mask -----

Oxygen rate (L/min) -----

PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. They can also pass on praise or thanks to our teams.

PALS at King's College Hospital, Denmark Hill, London SE5 9RS

Tel: 020 3299 3601

Email: kch-tr.palsdh@nhs.net

PALS at Princess Royal University Hospital, Farnborough
Common, Orpington, Kent BR6 8ND

Tel: 01689 863252

Email: kch-tr.palspruh@nhs.net

If you would like the information in this leaflet in a different language or format, please contact our Communications and Interpreting telephone line on 020 3299 4826 or email kch-tr.accessibility@nhs.net