University Hospitals of Leicester
NHS Trust

How to use a Trilogy Evo ventilator for breathing support (information for carers)

Respiratory Physiology Unit

Information for carers and family

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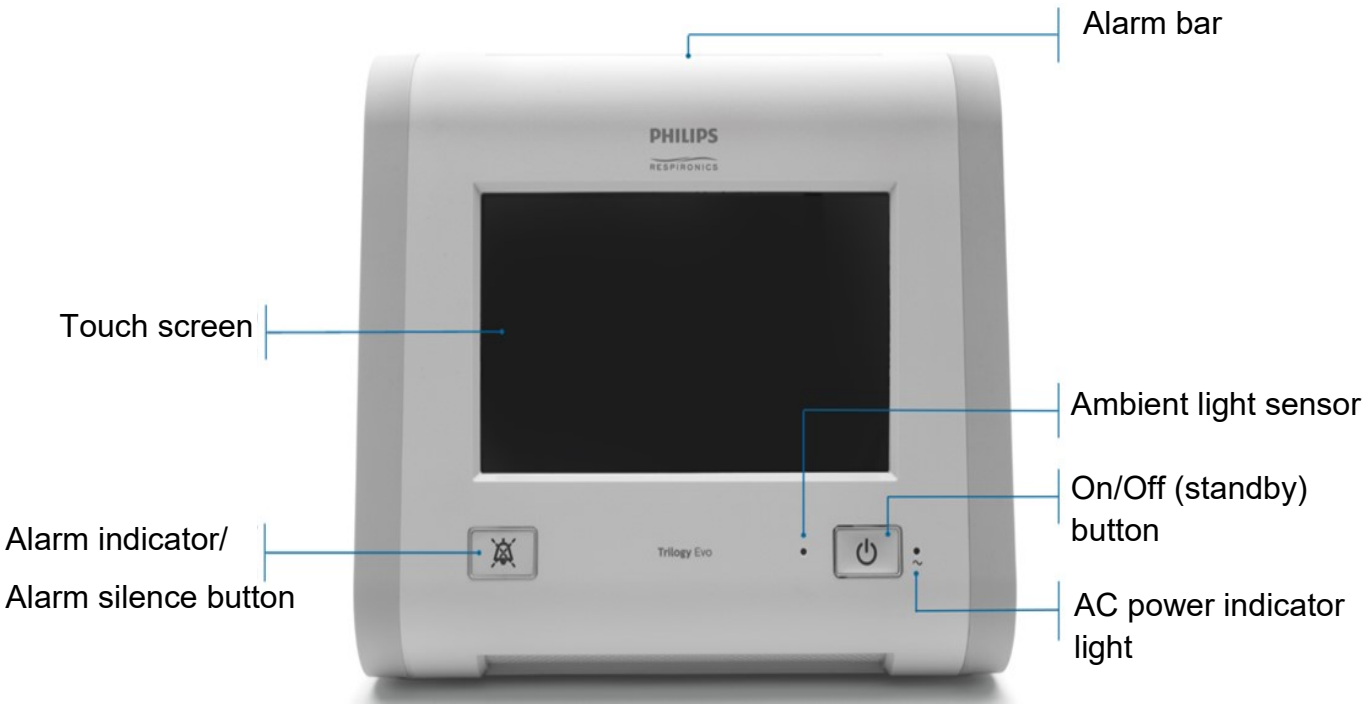
Trilogy Evo

Your doctor has asked us to help your breathing by using a piece of equipment, called a ventilator. The ventilator you have been given is called a Trilogy Evo.

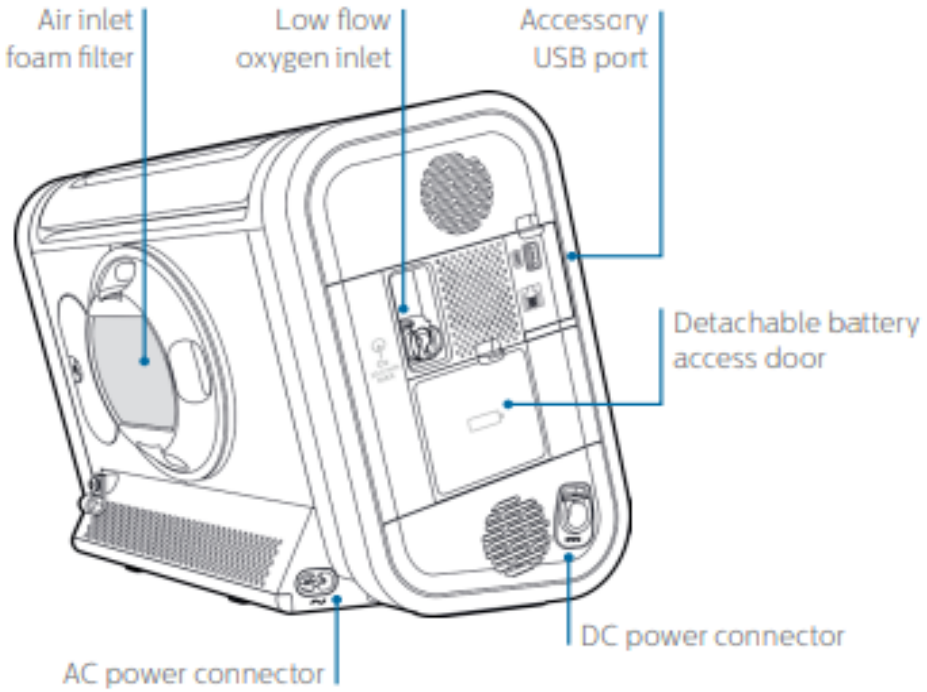
Parts of the Trilogy Evo (front view)



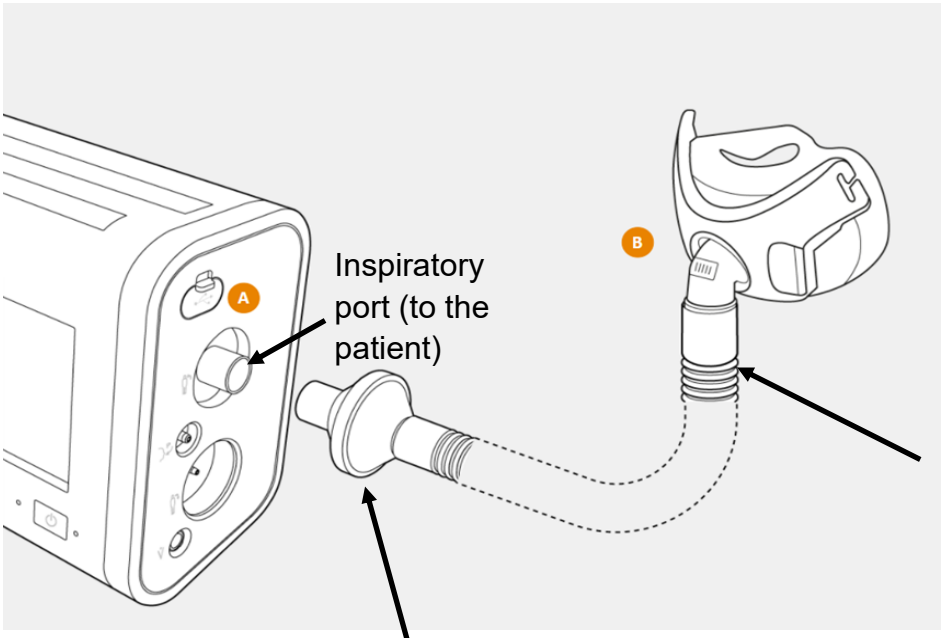
Health information and support is available at www.nhs.uk or call 111 for non-emergency medical advice

Visit www.uhleicester.nhs.uk for maps and information about visiting Leicester's Hospitals
To give feedback about this information sheet, contact uhl-tr.informationforpatientsmailbox@nhs.net

Parts of the Trilogy Evo (rear and side views)



Attaching the circuit to a face mask

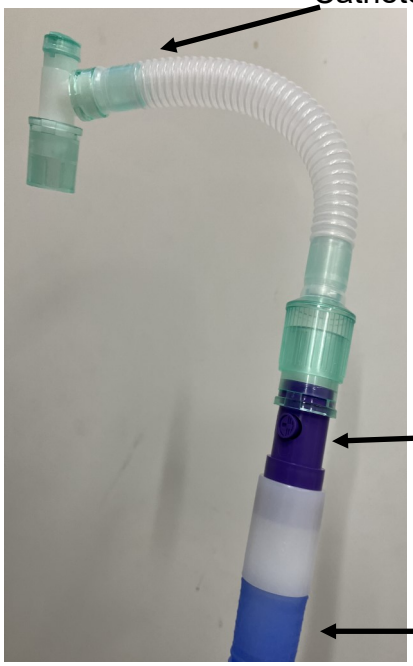


A. Attach the bacterial filter to the inspiratory port.

B. Attach the tubing to a nasal or face mask

Attaching the circuit to a tracheostomy

Many of the patients who use the Trilogy Evo will be ventilated through a tracheostomy tube. The set up of the circuit is similar to a mask but they will always need a way to breathe out. This is usually done through a connection called an expiratory port. This is attached to the circuit at the patient end between the circuit and the catheter mount.



All patients with a tracheostomy tube need to have some form of humidification. This is to make sure the air they are breathing is not dry.

Moist air helps to keep the mucous in the airway loose. This makes it easier for the patient to cough and clear mucous. It helps to prevent a chest infection.

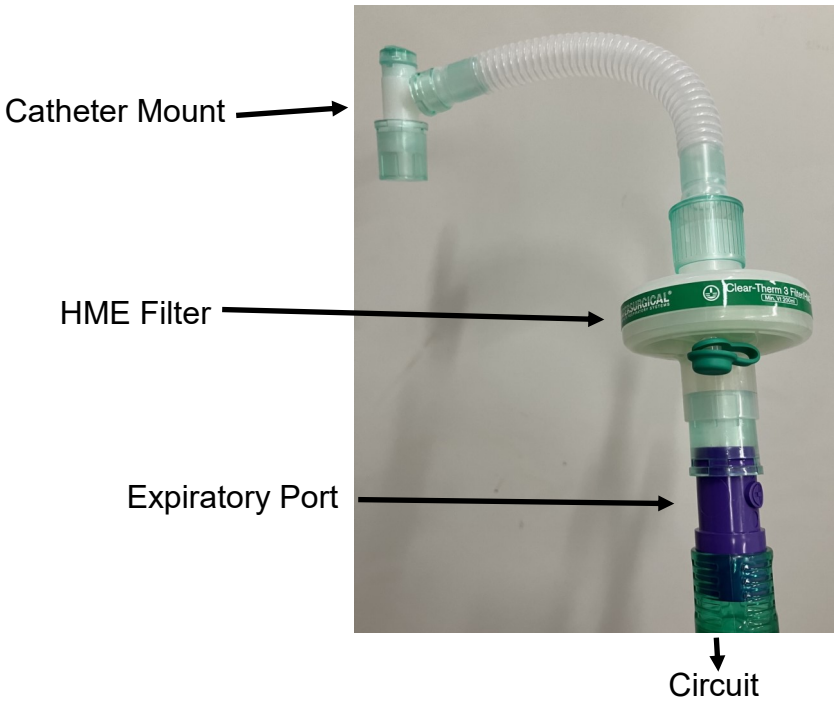
When at home, patients should have a warm water humidifier as part of the circuit. This is known as a **Wet Circuit**. A picture of the set up of this is on page 4.

The warm water humidifier gives the best form of humidification for the patient.

It is bulky and difficult to carry around if the patient wants to move about or go out of their home.

A different kind of humidifier, known as an HME (heat moisture exchange) can be used in this case.

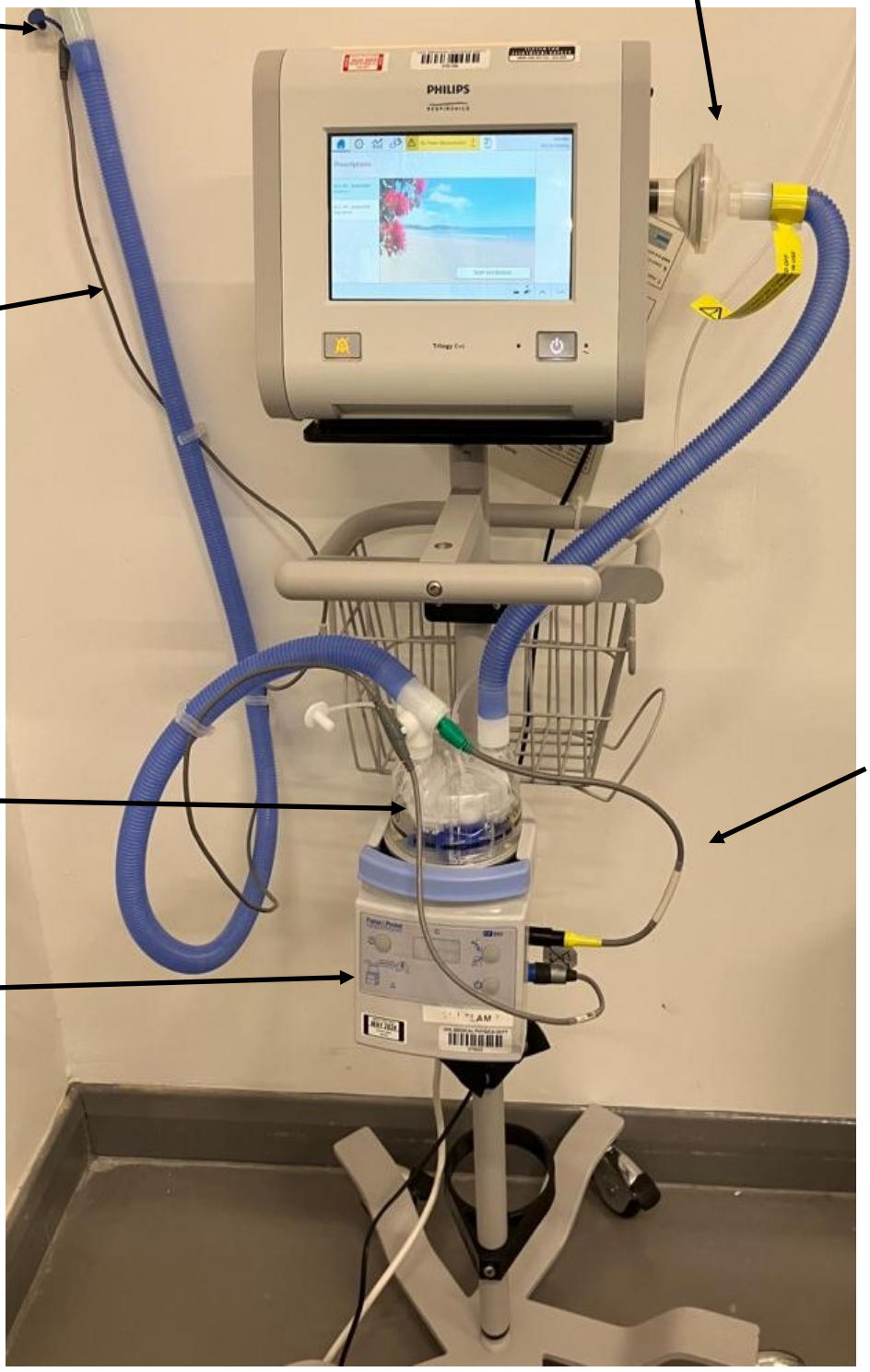
It is smaller and looks a bit like a filter. It is attached to the circuit between the expiratory port and the catheter mount.



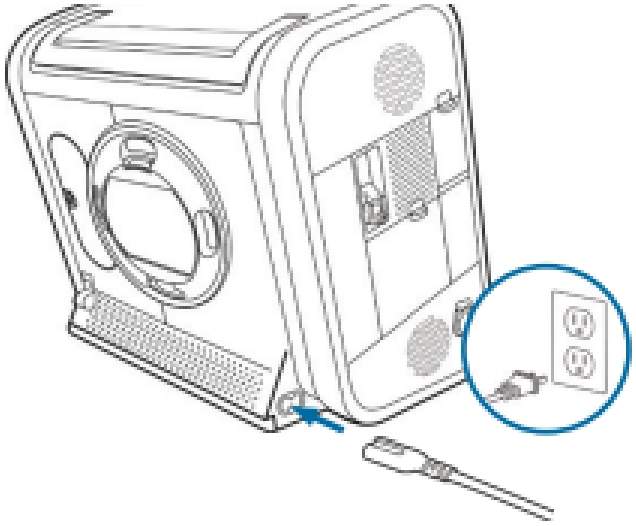
Warm water humidified circuit (Wet circuit)

Circuit going to the patient.

It is attached either to a mask or to an expiratory port and catheter mount if the patient is ventilated through a tracheostomy tube



How to get started

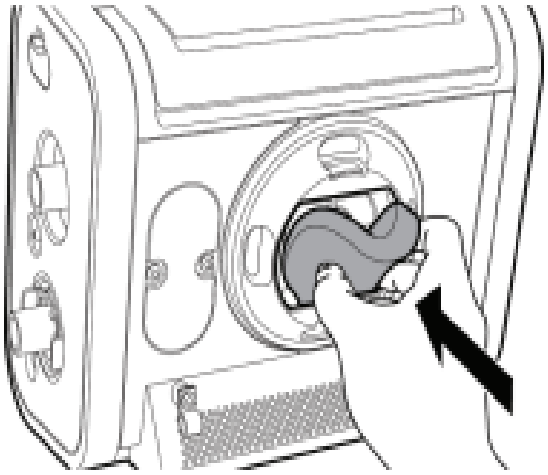


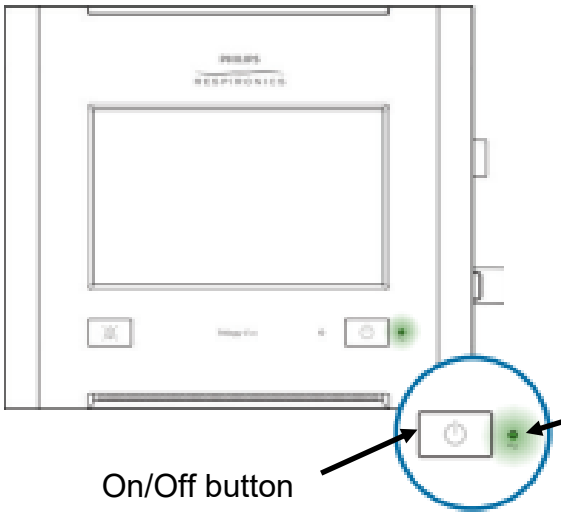
1. Plug in the machine

- The Trilogy Evo works on mains electricity. It also has a battery in case there is a power cut.
- It should be left plugged in so that the battery is always fully charged.

2. Make sure the filter is in place

- The Trilogy Evo has 2 filters at the back of the machine.
- One is a black sponge like filter. This should be washed every month. It should be replaced every 6 months. Please ensure it is completely dry before replacing.
- Behind the black sponge filter is a blue/ white bacterial filter. This should be replaced every month (please do **not** wash).



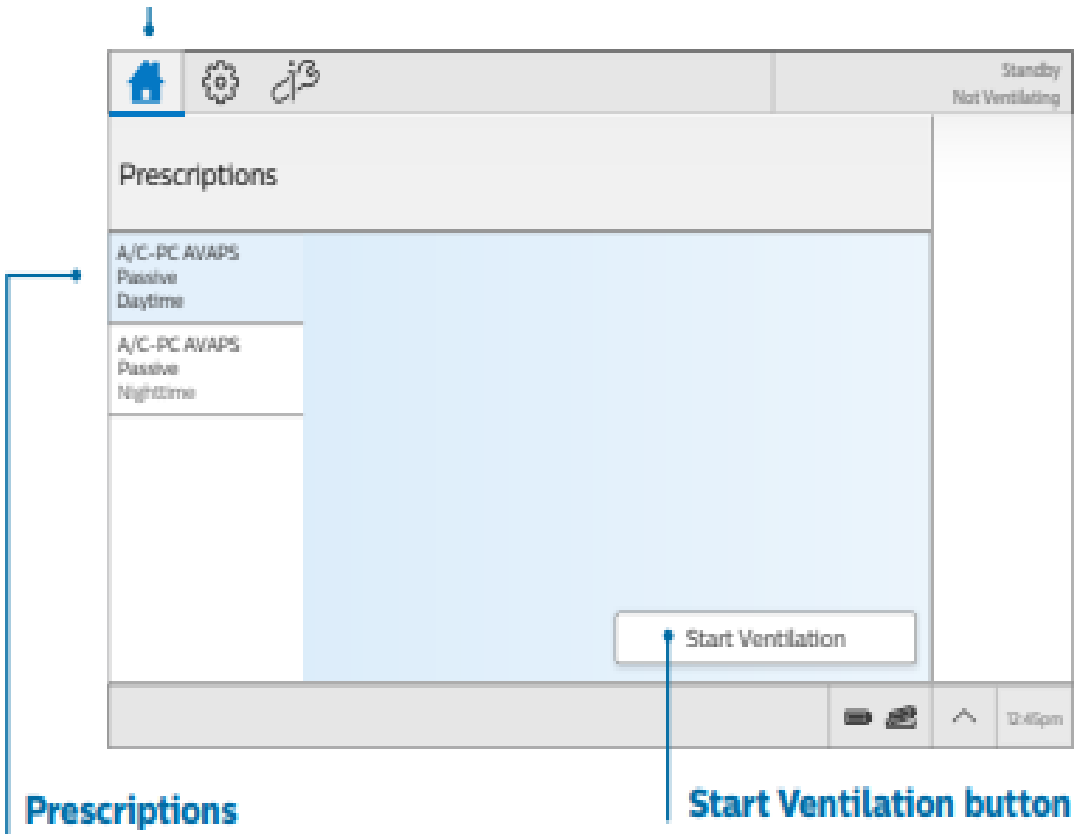


3. Starting the Trilogy Evo

- To turn the machine on, press the On/Off button on the bottom right of the machine.
- If the machine is not plugged in and is starting on battery power, a notice will appear at the top of the screen. There will also be a beep every 30 seconds. Tap the reset picture beside the notification to acknowledge.
- The green light beside the On/Off button will be lit up when the machine is plugged into mains power.

Home standby window

The Home standby window shows after the ventilator has been turned on.



The therapy prescriptions will be listed here for you to choose.

4. Choose your prescription

Choose the prescription setting you wish to start with by touching the prescription on the screen.

This will turn blue to show it has been selected.

5. Tap on "start ventilation" to begin therapy

Check that you have the correct circuit for the prescription you choose. Your healthcare provider will talk you through this.

6. Stopping therapy

To stop ventilation, press the ON/OFF button on the front panel. Then tap standby or power off when it appears on the screen.

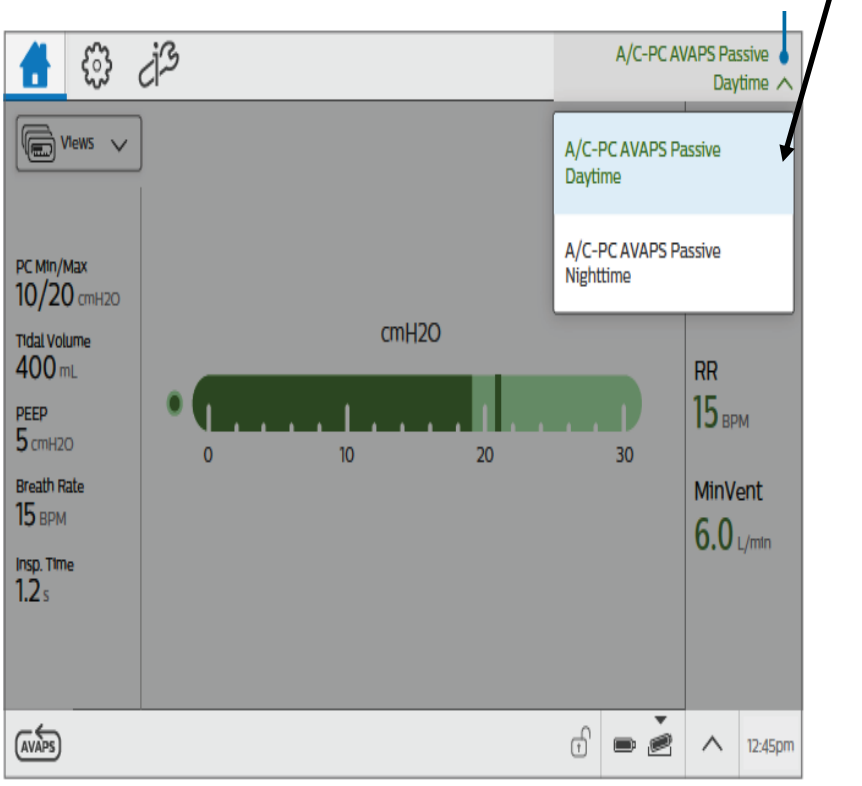
Changing the ventilator prescription

You may have more than 1 prescription in use, for example a day time and night time prescription.

There are 2 ways to change the prescription on the Trilogy Evo when the ventilator is in use.

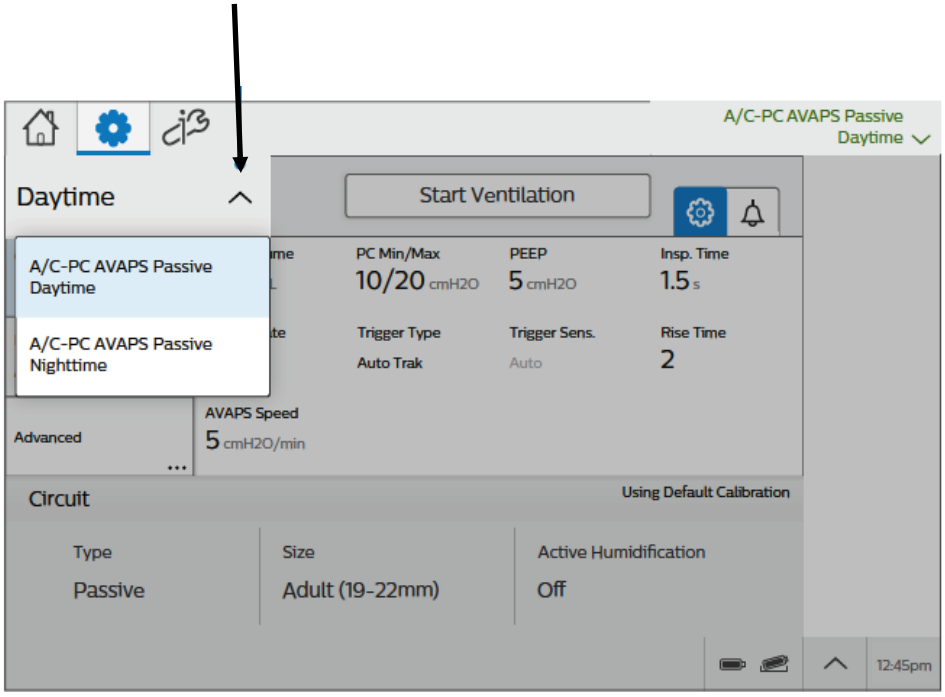
Option 1.

In the home window, tap the prescription drop-down arrow to access the prescription menu. Then select a prescription to switch therapy.



Option 2.

From the settings window, tap the drop-down arrow. Choose your new prescription and then tap “Switch Therapy”.



Note:

- The circuit settings must be the same as the current prescription.
- If a different circuit such as a wet circuit rather than a dry circuit is needed, the ventilator should be put into the standby mode and the circuit changed.
- The new prescription can then be chosen from the home screen and the start ventilation button pressed.
- If the patient is ventilator dependent, a separate ventilator may be used for each different circuit.
- When the screen is on the Home page, the display will have a picture background.
- We usually set a different picture for each different prescription setting.
- When a picture is shown this also indicates that the ventilator settings are locked to avoid any accidental changes to the prescription settings.

Ventilator alarms

If the alarm sounds a message will pop up on the screen. This explains the cause of the alarm. Please read the message and where possible act to resolve the issue.

The priority of the alarm will be indicated by its colour

- Red = High priority
- Yellow = Medium/Low priority
- Grey = System message

If you are using a face mask, the most common alarm you will hear is when the mask does not have a good seal around the face and there is air leaking. A message will come up on the screen saying “high flow alarm”. Moving the mask to make sure there is no leakage should silence the alarm.

On pages 10 to 11 are some of the most common alarms and what to do about them.

If there are any alarms that you cannot resolve please take a note of what message is on the screen and contact the ventilation team for advice.

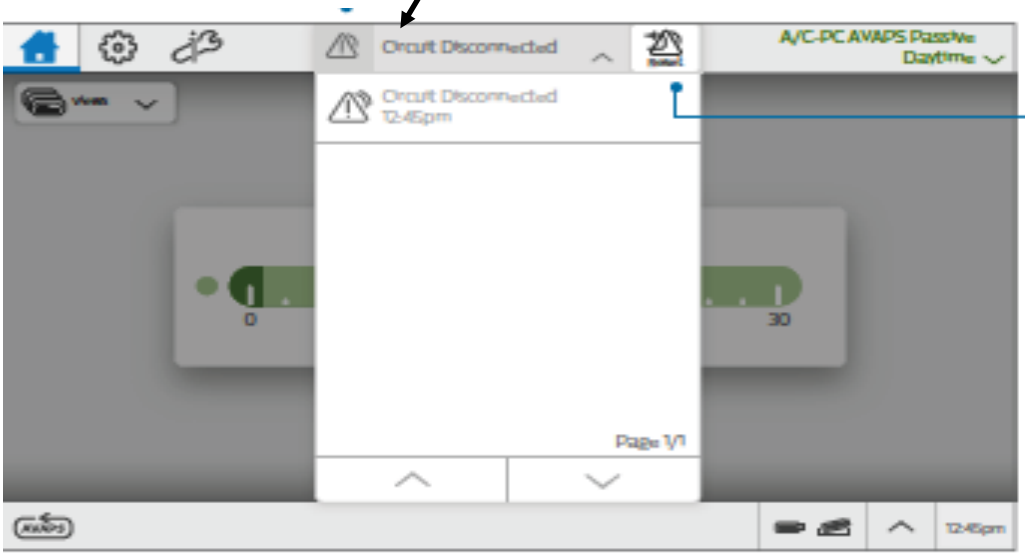
Alarm silence

The alarm can be silenced for 2 minutes by pressing the alarm silence button on the bottom left corner of the machine. This will give you time to find and sort the problem.

If you resolve the problem and want to reset the alarm before the 2 minutes is up, press the alarm ‘Reset’ button.

Resetting an alarm

Reconnect the circuit. When the alarm condition resolves. The alarm message will turn grey.



To clear the alarm message, tap the alarm reset icon.

High priority alarms

Alarm	Device action	What to do
Ventilator Inoperative (not working)	Ventilator **stops working**. The alarm will flash red and sound all the time.	Swap patient onto the spare ventilator. Contact the home ventilation team as soon as possible.
Ventilator service required	The ventilator will continue to work but a message will appear on screen to remind the user that the machine is due a service.	Contact the home ventilation team to arrange a service.
Obstruction	The ventilator detects an obstruction in the patient's breathing. The ventilator automatically opens the active exhalation valve and will continue to work.	Check • the exhalation port is in place. • the circuit: is it kinked or pinched? • the bacterial filter and HME filter. Are either of them blocked? If so replace with new ones.
High expiratory pressure	The pressure the patient is breathing out is greater than the target pressure set. The ventilator will continue to work.	• Check the circuit. Is it kinked? • Check is the exhalation port blocked? Note: the alarm may sound due to the patient having a fast breath rate. If this is the case contact the ventilation team.
Apnoea	Time between 2 breaths that have been started by the patient is more than the alarm settings. The alarm will automatically resolve when 2 patient breaths are detected that occur within the set interval. The ventilator will continue to work.	Check • Is the circuit connected to the patient? • Is there a leak or disconnect? • Is the circuit kinked or pinched? If the alarm continues notify the ventilation team
Circuit disconnected	The patient is not connected to the ventilator breathing circuit or there is a large leak. The alarm stops when the circuit is reconnected or the excessive leak is fixed. The ventilator continues to work.	Check • Is the circuit connected to the patient? • Is the circuit connected to the ventilator? • Is there a large unplanned leak?
Low MinVent (low minute ventilation)	The amount of ventilation the patient is getting in a minute is less than or equal to the alarm setting **or** no breath has occurred in the last 15 secs The ventilator will continue to work.	Check the patient • Is the circuit kinked or pinched? • Does the circuit have a leak or is it disconnected? • Is the bacterial filter blocked or not connected –if so replace. • Remove excess water from the tubing
Low respiratory rate	The patient's respiratory rate is less than or equal to the low respiratory alarm setting **or** no breath has occurred for 15 secs The ventilator will continue to work.	Check the patient • Is the circuit connected? • Is the circuit kinked or pinched? • Does the circuit have a leak?

Medium priority alarms

Alarm	Device action	What to do
Rebreathing detected	The ventilator detects possible re-breathing of exhaled gases. The alarm automatically stops when the problem is resolved. The ventilator continues to work.	Check the patient. • Is the exhalation port attached? • Is the exhalation port partially blocked? If so, replace. If problem not fixed please contact the Ventilation Team.
Low inspiratory pressure	The amount of pressure delivered when breathing in is less than the target pressure set for the patient. The ventilator will continue to work.	Check • Is the circuit connected properly? • Does the circuit have a leak? • Is the circuit kinked or pinched? If the patient has a tracheostomy: • Has the tracheostomy become dislodged?
Low Tidal Volume	The estimated amount of air breathed out (tidal volume) is less than or equal to the low tidal volume alarm set.	Check • Is the circuit kinked or pinched? • Is the exhalation port connected? • Is the exhalation port blocked or clogged? If the patient has a tracheostomy: • Is there a large leak around the tracheostomy? If so is this due to patient's position. Readjust the position. • Has the tracheostomy been dislodged? If so then follow emergency guidelines • If patient has a cuffed tracheostomy in, check the cuff pressure and inflate as needed to recommended pressure.
High Respiratory Rate	The respiratory rate is greater than the alarm setting.	Check the patient: • Is this consistently raised? • I the patient in respiratory distress? Any concerns call for help.

Low Priority Alarms

Alarm	Device	What to do
Inlet filter blocked	The inlet filter becomes blocked. The ventilator will continue to work but the delivery of treatment is reduced.	Remove any filter and replace. (The foam air inlet filter can be rinsed and reused when dry.)

Adding oxygen through the ventilator

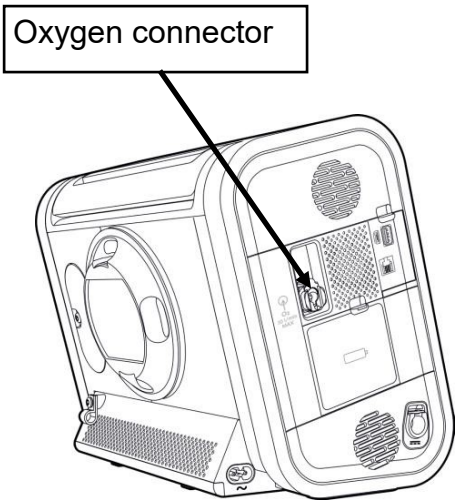
Some patients may need to use more oxygen while using the ventilator.

If you have been asked to use oxygen through the ventilator, you should connect your oxygen tubing to the white connector on the left hand side of the ventilator.

Please make sure you:

1. Turn the ventilator on before turning the oxygen on.
2. Turn the oxygen off before turning the ventilator off.
3. **Do not** leave the oxygen running when the ventilator is off.

Please note: You should only use more oxygen through the ventilator if this has been prescribed by your doctor.



Humidification

Some patients who use the Trilogy Evo can develop a very dry feeling in their nose and mouth. If you have any symptoms of dryness, please contact your ventilation team for advice.

Internal battery

All Trilogy Evo ventilators have an internal battery. This is automatically charged as long as the ventilator has been left plugged in. If there is a power cut this would run the ventilator for at least 4 hours. An alarm will sound to let you know that the ventilator is now running on battery power.

Click-in battery

You will also be given a click-in battery. This slots in behind the panel on the left hand side of the ventilator. During ventilation, you can check how much time remains in each battery (this is an estimate based on current usage). To do this, press the battery icon in the tool bar at the bottom right of the screen.

Once a month you should run the ventilator on battery power until fully run down. This will extend the life of the battery. If the battery does not hold at least 4 hours of charge, then please contact the department.

You are eligible to register for the national grid's priority services register. This can be done online by searching for the '**National Grid - Priority Services Register**' or visit: https://www.nationalgrid.co.uk/customers-and-community/priority-services/priority-services-register/

Being on the register lets you have closer contact with you regarding power cuts. This is 24 hours a day, so they will call anytime if there are power cuts in the local area.

You can report a power cut by calling **105** or **0800 678 3105.**

If you are ventilator dependent, and you have any concerns regarding battery life during a power cut, and the ventilation team are unavailable, please call **999.**

Care of the Trilogy Evo

Clean the outside of the machine at least weekly with a damp, lint free cloth.

Contact details

If you have any problems or concerns please contact the complex care ventilation team

Contact details: **0116 258 3283**

Respiratory Physiology appointment enquiries call: **0116 258 3420**

Equipment or mask enquiries call**: 0116 258 3419**

Email: **uhl-tr.RPUSupport@nhs.net** for any non-urgent ventilation queries

Please note:

We do not work at the weekends or overnight. In the case of equipment failure, the respiratory support team may be contacted at the weekend and bank holidays from 8am to 6pm on: **07977 582194**

Overnight, a message can be left on the answer machine on **0116 258 3419** and we will get back to you as soon as possible.

اگر آپ کو یہ معلومات کسی اور زبان میں درکار ہیں، تو براہِ کرم مندرجہ ذیل نمبر پر ٹیلی فون کریں۔
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