RESMED

VS Ultra™ & VS Integra™

Patient manual

English

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1 Introduction

This manual is provided with the device you have received, a medical ventilator in the VS range. It does not in any way replace the clinical manual supplied to your physician or HME provider.

There are two models:

- the VS Ultra™, which is **blue**
- the VS Integra™, which is **red**.

These devices are designed to provide ventilation for dependent and non-dependent patients, with a mask or tracheotomy. However, the illustrations and text in this manual refer solely to the use of a mask.

1.1 Definitions

This manual contains special terms and icons that appear in the margins. Their purpose is to draw your attention to specific or important information.

CAUTION
Explains special measures for the safe and effective use of the device.

WARNING
Alerts you to possible injury.

Note: *Is an informative or helpful note.*

1.2 User/Owner Responsibility

The user or owner of this system is solely responsible and liable for any injury to persons or damage to property resulting from:

- Operation which is not in accordance with the operating instructions supplied
- Maintenance or modifications carried out unless in accordance with authorised instructions and by authorised persons.

Please read this manual carefully before use.

1.3 Medical Information

Purpose of your ventilation device

VS Ultra and VS Integra devices are designed for both adults and children, in the home or clinical environment.

The VS Integra and VS Ultra can both be used with single circuit, but only the VS Ultra model can be used with double circuit.

Warnings

- This manual must be read and understood in full before the device is used.
- The advice contained in this manual does not replace the instructions given by your physician (or HME provider), who will already be familiar with the operation of the device through the clinical manual provided.
- The device settings must be made by competent and trained staff under a doctor's supervision.
- The device must be used with the accessories recommended by the manufacturer or your prescribing physician. The use of inappropriate accessories is likely to affect the operation of the device.
- In the case of externally visible faults, cease using the device.
- In the event of functional problems (e.g. you find it difficult to breathe or trigger an inspiratory phase), contact your HME provider.
- Do not open the device casing. Repairs and internal servicing should only be performed by an authorised service agent.

The above are general warnings. Other specific warnings and notes will be found throughout the text of the manual.

2 Description of the device

2.1 Components

The picture below shows the set of components available from your HME provider:

- Your device 1
- The power cable 2
- The circuit 3
- An interface (mask or tracheotomy) 4
- The travel bag 5 .

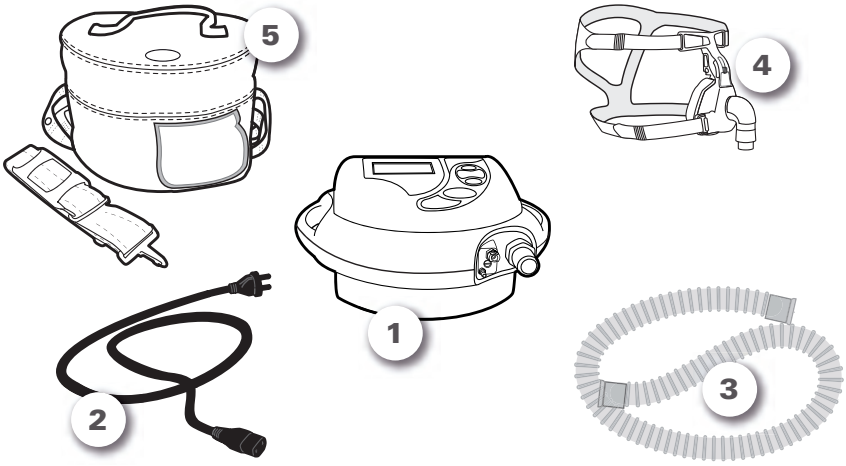


Figure 1: Components available from your HME provider.

2.2 Your device

Front view

The device comprises:

- A control panel (1)
- An area for connecting the circuit (2).

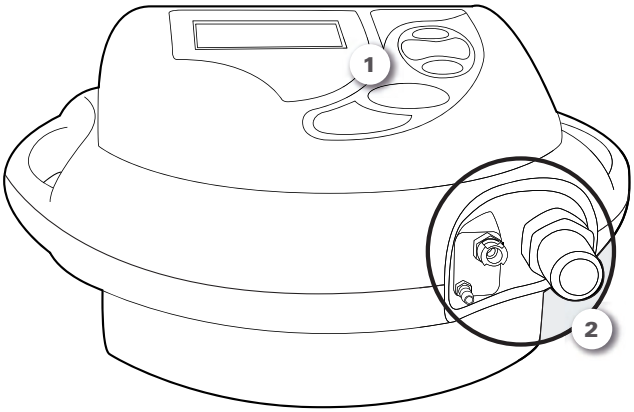


Figure 2: Front view of the device.

The control panel comprises a screen and a keypad.

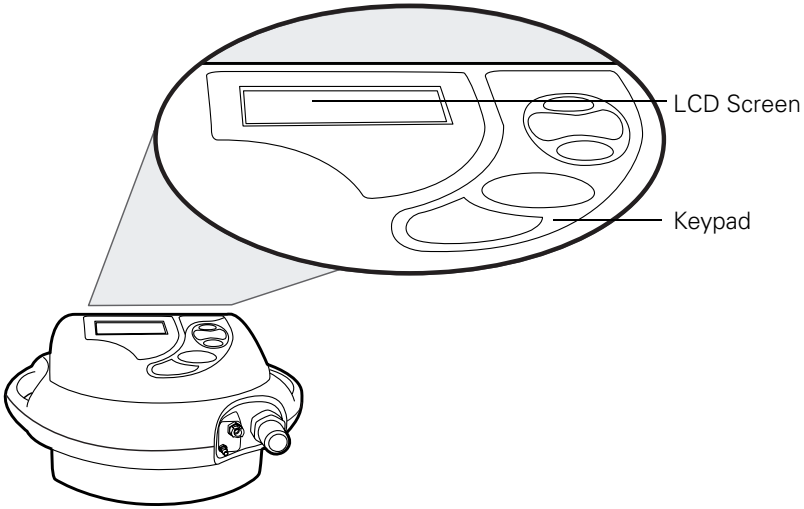


Figure 3: Device control panel.

The circuit connection area comprises:

- An air outlet
- Single circuit support with exhalation and pressure line connection.

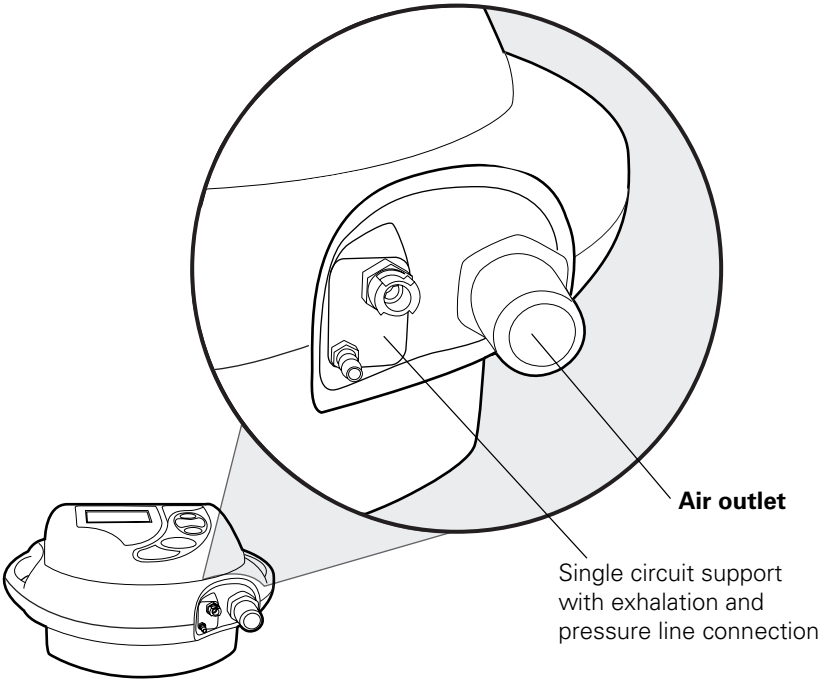


Figure 4: Detailed view of single circuit support with exhalation and pressure line connection.

There is a different type of circuit support for double circuit (see next Figure).

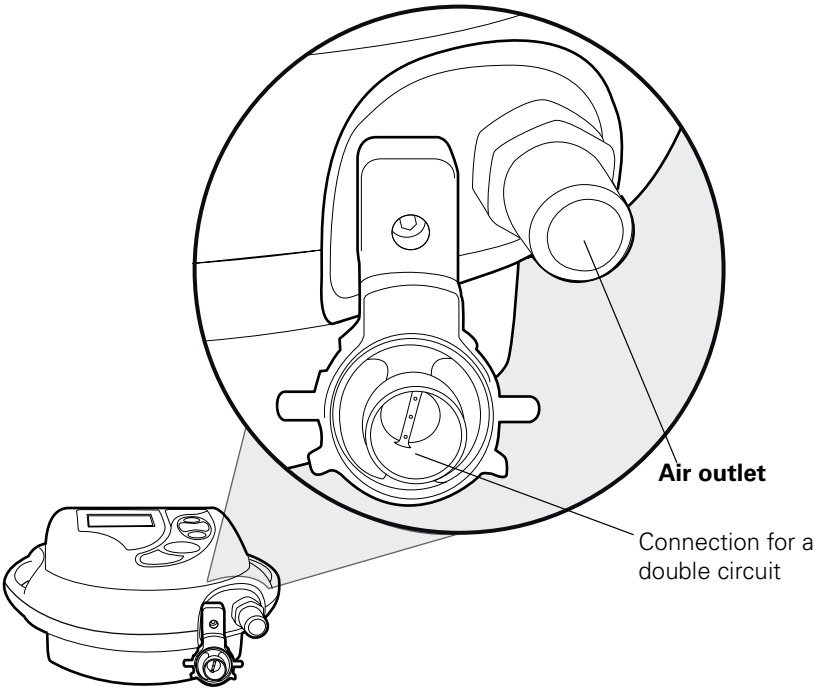


Figure 5: Detailed view of connection for a double circuit.

Rear view

On the rear of the device, take particular note of the location of the following:

- The power supply socket (1)
- The fastening clip for the power connection (2)
- The anti-dust filter (3). You will have to replace this filter (see "Cleaning and Maintenance" on page 21).

CAUTION

Never block the exhaust vents. Two places on the rear of the device are marked with the symbol .

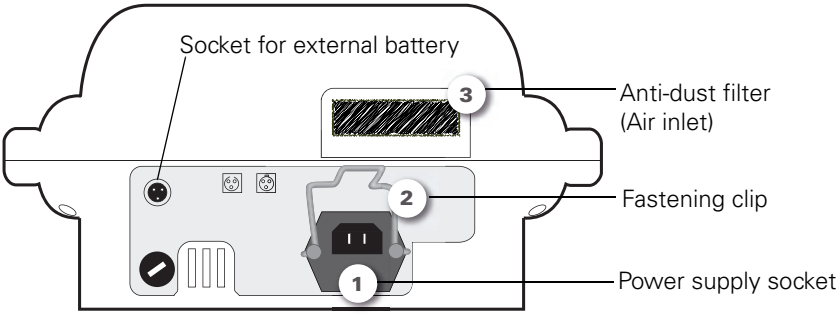
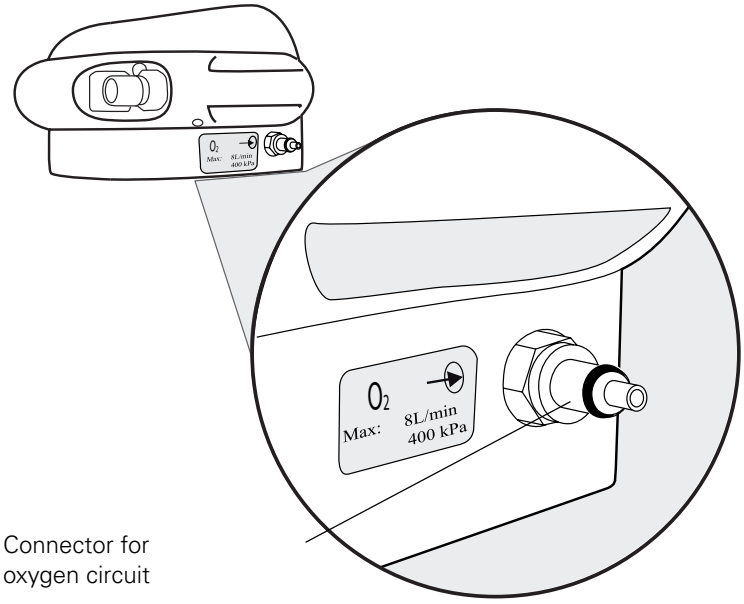


Figure 6: Rear view of device.

Side view

Some device models are fitted with a metal connector for attaching an oxygen supply (see next Figure).

For instructions on connecting the oxygen source to the device, see "Connecting supplemental oxygen (optional)" on page 18.



Connector for
oxygen circuit

(Symbol O_2 →)

Figure 7: Metal connector for optional O2 pressure.

2.3 Circuit

Depending on the ventilation mode prescribed by your physician, you will be using one of the following:

- Single circuit
- Single circuit with expiratory valve
- Double circuit

To determine the type of circuit prescribed for you and how to connect it to the device, see "Connecting the circuit" on page 12.

2.4 Accessories

Other components in your circuit system may include an antibacterial filter, a humidification system and a water trap. For further details, read the instructions provided with the individual accessories used in your system.

Some ResMed accessories are available as optional extras with this device:

- An external battery
- An oxygen coupling for connecting a supplemental flow of oxygen to the device
- A remote alarm (accessory not described in this manual).

External battery (optional)

An **external battery** increases the utilisation period away from a mains power supply, and also provides a back-up supply in the event of a power outage.

This accessory comprises:

- The external battery (1), attached to its holder (2)
- The cable connecting the device to the external battery (3).

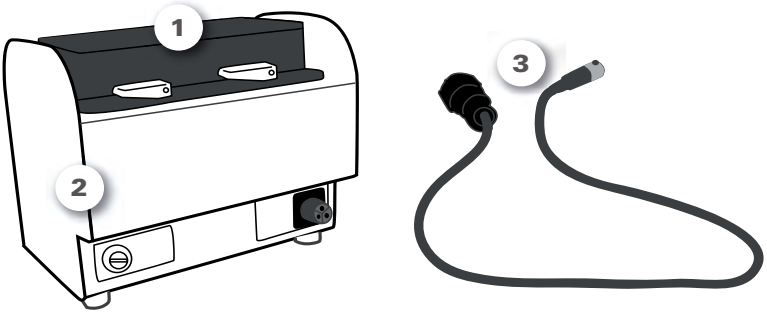


Figure 8: External battery in its holder and cable connecting the device to the external battery.

The external battery allows use of the device at home, outside, in a vehicle or when sitting in a wheelchair. It comes with a travel bag.

For more details, see "Connection of external battery (optional)" on page 16.

Coupling for supplemental oxygen flow (optional)

The oxygen coupling is used to connect a supplemental flow of oxygen to the device.

Figure 9: Oxygen coupling.

For instructions on connecting a supplemental oxygen flow to the device, see "Connecting supplemental oxygen (optional)" on page 18.

2.5 Device control panel

The device control panel comprises an LCD screen and a keypad.

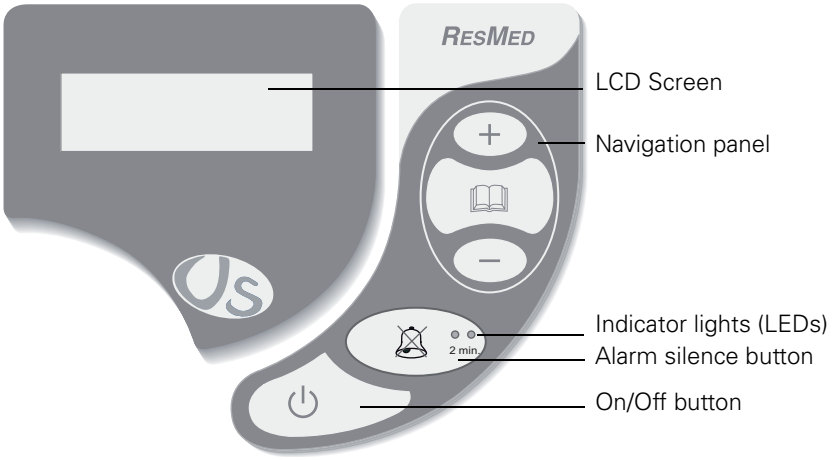


Figure 10: Front view.

The buttons on the keypad are listed in the table below.
The keypad consists of buttons and LED indicator lights.

Table 1: Buttons on device control panel.

Button	Function
On/Off button	Used to switch the device on and off.
Alarm silence button	Used to silence the audible alarm. Either the orange or red LED will start flashing, depending on the type of alarm.
Menu button	Displays your ventilation program settings (button used by your installation technician).
Adjustment buttons	For adjusting your ventilation program settings (buttons used by your installation technician).

3 Connection procedures

Place the device on a flat surface. Ensure the area is dust-free, and cleared of any objects that could block the dust filter.

CAUTION
Be careful not to place the device where it could be knocked over or where someone is likely to trip over the power cord.

3.1 Connecting to a power supply

1. Plug the power cable into the rear of the device (1) (see Figure below).

2. Remember to push down the fastening clip to hold the power cord in place. This will prevent accident disconnection of the power supply (2).

3. Plug the cable into the mains power supply (3).

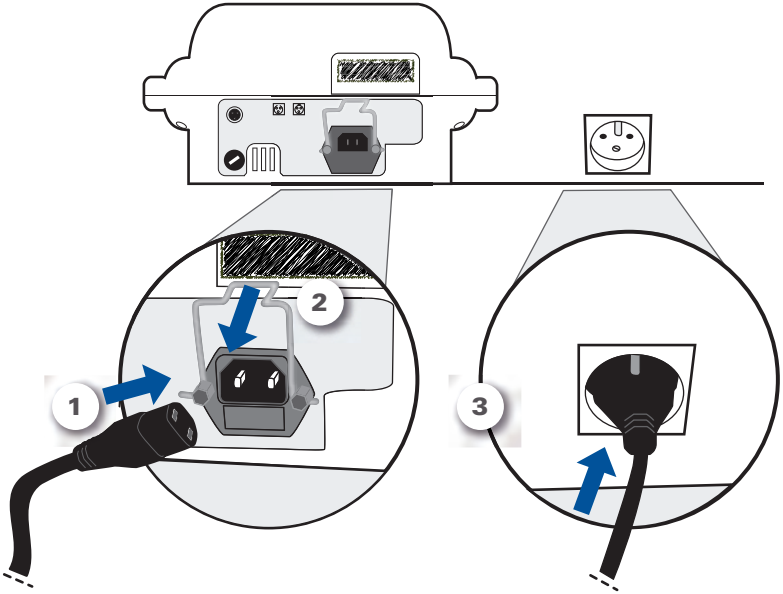


Figure 11: Connection to mains power supply.

Your device is now in **standby mode**.

Notes:

- If your device is fitted with a rechargeable built-in battery (available as an optional extra with the VS Integra), it can be used without a mains power supply, with the battery lasting **2 – 4 hours**, depending on your settings.
- The battery recharges automatically when the device is connected to the mains supply.

CAUTION
Ask your HME provider whether your device has a built-in battery.

3.2 Connecting the circuit

Connect the single circuit to the air outlet at the front of the unit:

- For instructions on connecting a single circuit, see "Option 1 – Single circuit".
- For instructions on connecting a single circuit with expiratory valve, see "Option 2 – Single circuit with expiratory valve and pressure line" on page 13.
- For instructions on connecting a double circuit, see "Option 3 – Double circuit" on page 15.

CAUTION
Only the air circuit supplied by your HME provider may be used with your device. A different type of air circuit may reduce the effectiveness of your treatment.

Option 1 – Single circuit

1. Connect one end of the horizontally-ribbed tube firmly to the air outlet, as shown in the Figure below (1):

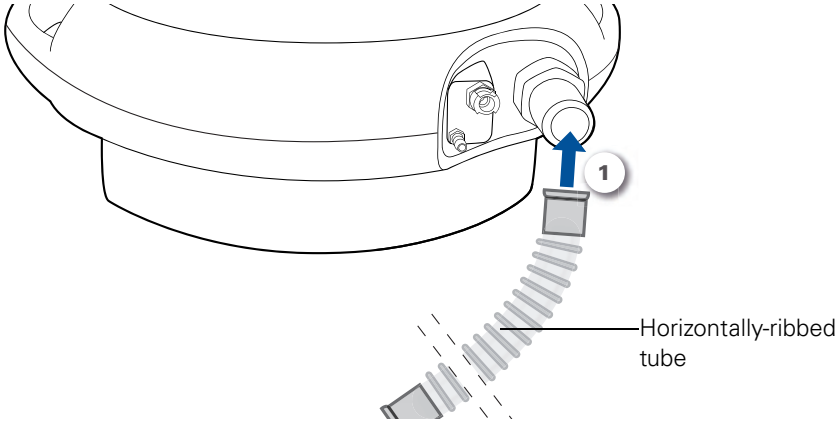


Figure 12: Connection of single circuit to the device.

Now that your circuit is connected to the device, you can connect the mask to the other end of the circuit.

Option 2 – Single circuit with expiratory valve and pressure line

(see illustrations overleaf)

1. Connect the air outlet firmly to one branch of the horizontally-ribbed tube (1).

2. Then connect the expiratory valve tube (**the only one fitted with a white connector**) into the valve control (2), then turn the connector slightly to the right to make the connection secure.

3. Finally, connect the other tube (**with no connector fitted**) to the pressure line (3).

Note: *Your circuit configuration may not include a pressure tap tube, so this third step will not apply in your case.*

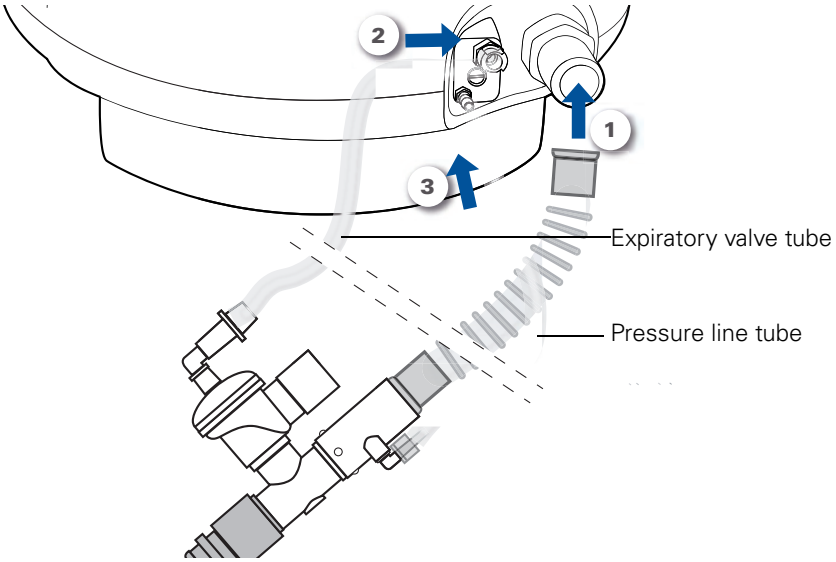


Figure 13: Connection of single circuit with expiratory valve and pressure line. See the next Figure for a detailed view of the connection panel.

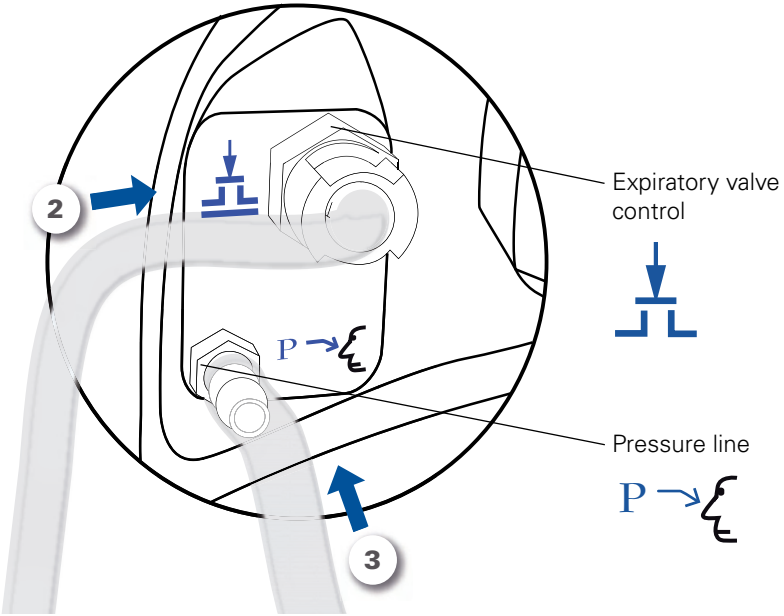


Figure 14: Detailed view of circuit connections to the single circuit support.

Now that your circuit is connected to the device, you can connect the mask to the other end of the circuit.

Option 3 – Double circuit

1. Firmly connect one limb of the circuit to the air outlet (1).
2. Then connect the other limb (2).

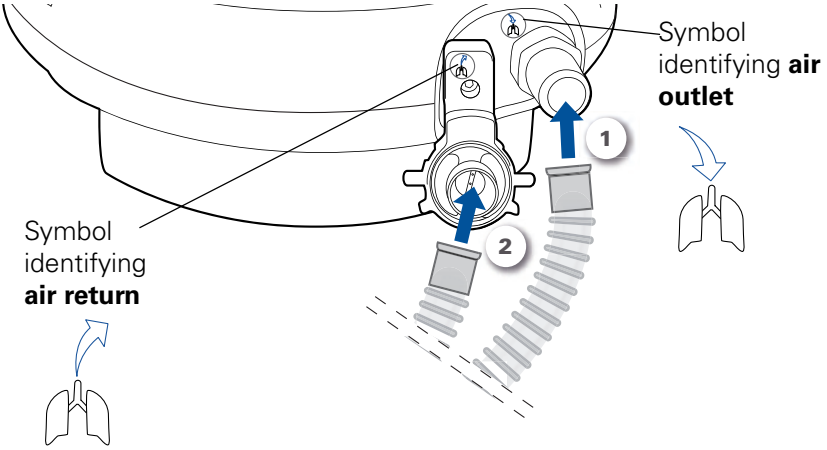


Figure 15: Connection of a double circuit.

Note: *In most cases, your circuit configuration will not be exactly as shown in this illustration. It may also include a humidification system, antibacterial filter or water trap. Contact your HME provider if you have any doubts about connecting your circuit.*

Now that your circuit is connected to the device, you can connect the mask to the other end of the circuit.

3.3 Connecting the mask

Refer to the instructions given by your physician or HME provider.

CAUTION
It is essential to use only the mask supplied by your physician or HME provider.

3.4 Example of fully-assembled system

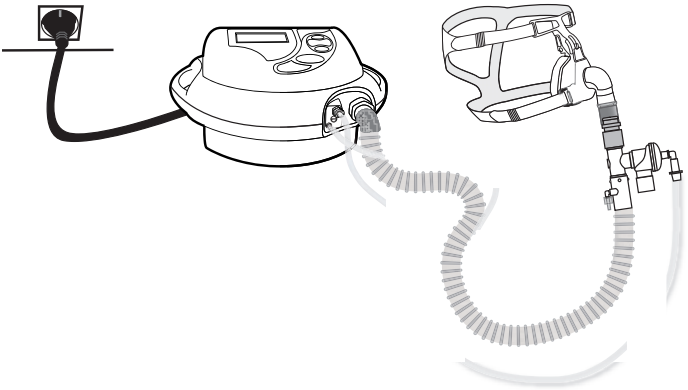


Figure 16: Example of fully-assembled system (single circuit with expiratory valve and pressure line).

If your system does not have any accessories (external battery, supplemental oxygen), **you can now switch your device on**, see "Switching on and shutting down" on page 19.

3.5 Connecting accessories

Any accessories must be attached before the device is switched on.

Connection of external battery (optional)

To connect the external battery:

1. Connect the black plug to the battery holder (1).
2. Connect the other end to the socket on the rear of the device (2).

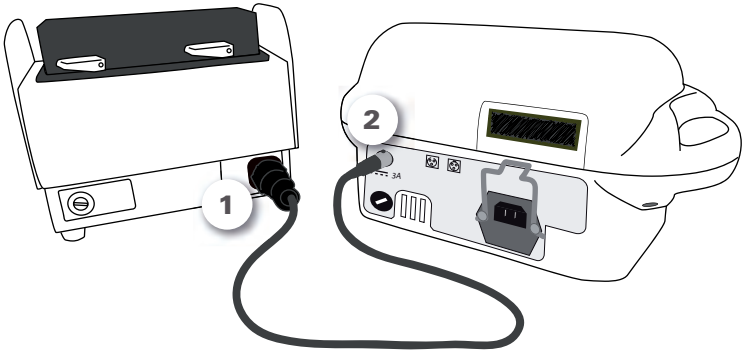


Figure 17: Connection of the external battery to the device.

This Figure is a detailed view of the connection of the cable to the device 2.

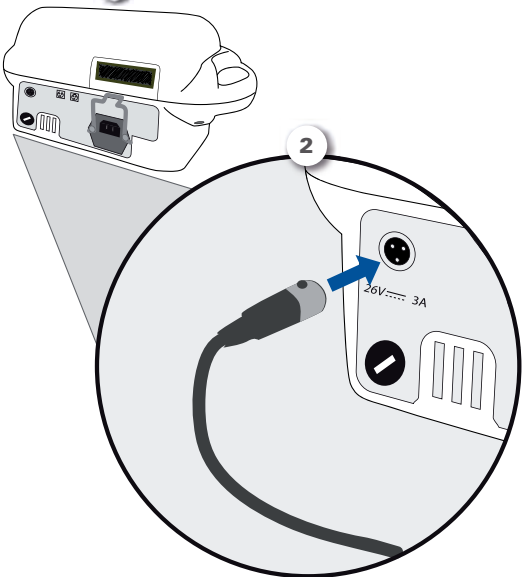


Figure 18: Detailed view of connection to the device.

CAUTION

To remove the connection cable (see next Figure):
Press on the black retention pin on the cable connector 1.
Still holding it down, pull the cable towards you 2.

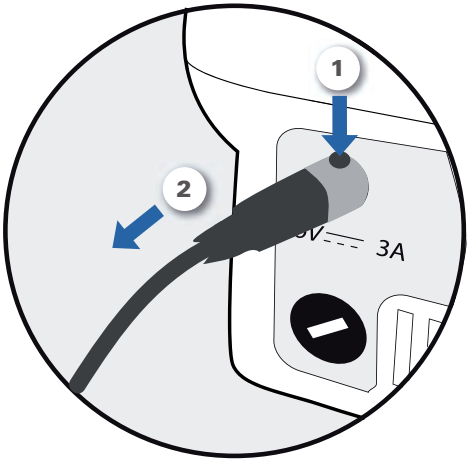


Figure 19: Removing the cable from the external battery.

Connecting supplemental oxygen (optional)

The instructions in this section apply only to the connection of supplemental oxygen to your device. Refer to the instructions given by your HME provider or installation technician for starting up the supplemental oxygen flow.

CAUTION

Before connecting the oxygen flow, always ensure that the oxygen supply has been turned off.

If your oxygen flow becomes disconnected by accident:

- Connect the end of the oxygen coupling to the metal connector on the device.
- When you hear it click into place, the coupling is correctly connected to the device.

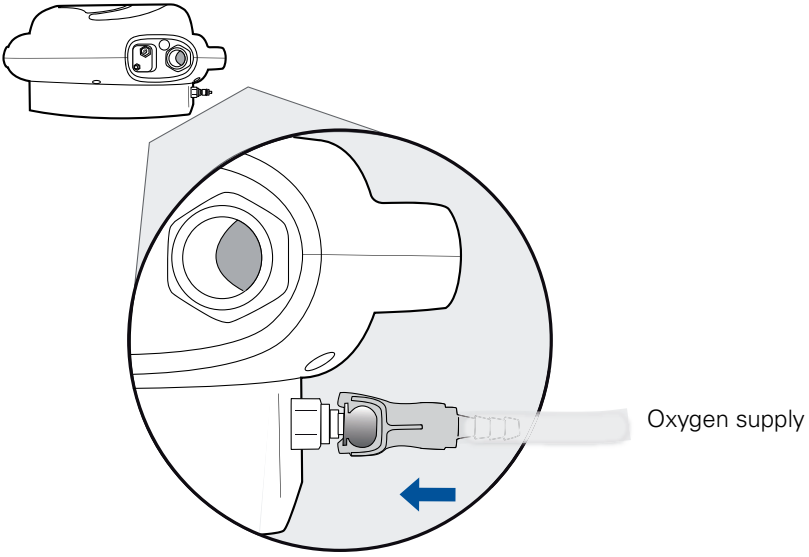


Figure 20: Oxygen coupling for connection to the metal connector on the device.

4 Switching on and shutting down

4.1 Standby

When your device is connected to the mains power supply, it goes into standby mode. The screen display shows:

- The date
- The time
- The types of power supply: mains power supply and built-in battery . The arrow ▶ points to the type of power supply currently in use.

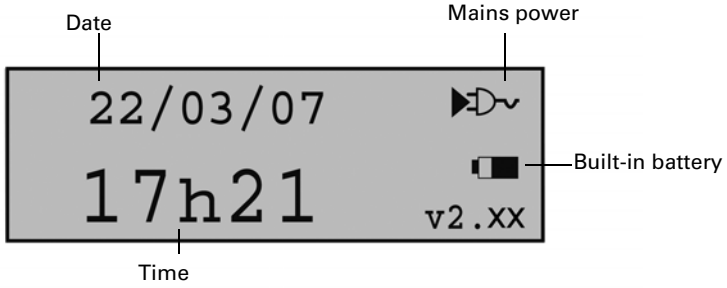


Figure 21: Standby screen.

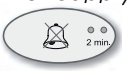
4.2 Starting up

To start up the device:

1. Press and hold the On/Off button for **2 seconds.**
2. The device will start up, then run its self-test.
3. On completion of the self-test, the device will start delivering therapy.

4.3 Shutting down

To shut down the device, press the button for **2 seconds**. The device will go into standby mode.

***Note**: If you disconnect the device from the mains power supply a continuous alarm will sound. Press the Alarm silence*  *button to confirm that you wish to shut down the device.*

5 Cleaning and Maintenance

We recommend that you maintain your device and accessories regularly.

CAUTION

If you use the following accessories:

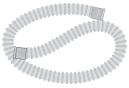
- Mask
- Humidifier
- Antibacterial filter
- Water trap,

follow the instructions provided in the manuals for each accessory, and the instructions of your physician or HME provider.

CAUTION

Do not use bleach, chlorine, alcohol, or aromatic-based solutions (including all scented oils), or moisturising or antibacterial soaps. These solutions may cause hardening and reduce the life of the plastic components.

Table 2: Frequency of maintenance.

Component	Frequency	Maintenance
Circuit 	Weekly.	Follow specific recommendations from your HME provider.
Mask	Before first use, then weekly.	Clean the mask in warm soapy water, rinse well and dry thoroughly.
Mask headgear	Monthly.	Wash the headgear in warm soapy water.

Component	Frequency	Maintenance
Exterior of the device	Monthly.	Wipe with a damp cloth and soapy water **Caution:** Never place the device in contact with liquid.
Anti-dust filter	Monthly.	Pull the filter out of its housing and replace with a new filter.

WARNING
To avoid any risk of electric shock, never immerse the device or power cable in water. Always unplug the device before cleaning and be sure that it is dry before plugging it back in.

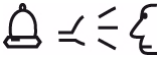
CAUTION
Do not attempt to open the device casing. Repairs and internal servicing should only be performed by an authorised service agent.

6 Troubleshooting

Alarms will alert you to any problems with your device. The instructions in this section will help you to identify the cause of the problem. If the fault persists or cannot be identified, do not try to open the device, and **contact your HME provider.**

An alarm will activate an audible signal. If you know which alarm has been triggered, consult the table below, otherwise contact your HME provider.

Table 3: Table of alarms (not an exhaustive list).

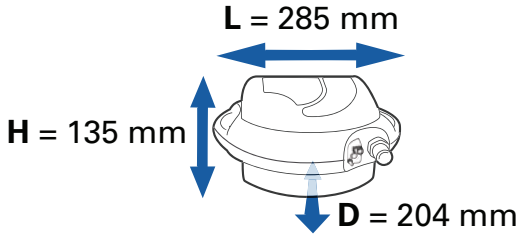
Alarm	Cause	Solution
Mains alarm	The mains power cable has been disconnected.	Reconnect the mains power cord.
External power supply alarm	The external power supply cable has been disconnected. This alarm can only be triggered if an external battery is connected to your device.	Reconnect the external power supply cable.
Low battery alarm	The charge level of the built-in battery is low (15% or less).	Connect the device to a mains power supply **without delay** to recharge the built-in battery.
Flat Battery alarm	The built-in battery is flat (charge level less than 5%).	Recharge the built-in battery **immediately** by connecting the device to the mains supply.
 Disconnection alarm	A component in your circuit is wrongly connected or disconnected.	Reconnect the circuit.

Alarm	Cause	Solution
Low pressure alarm (LP)	This alarm also indicates a wrongly connected or disconnected circuit.	Reconnect the circuit.
High pressure alarm (HP)	A component in your circuit is blocked.	Clean, empty or replace the components of your circuit. Contact your HME if this alarm is activated too often.

7 Technical Specifications

CE-marked device: CE 0197

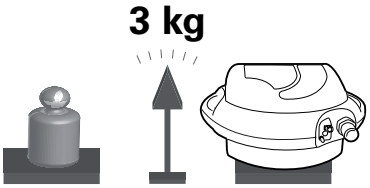
7.1 Dimensions



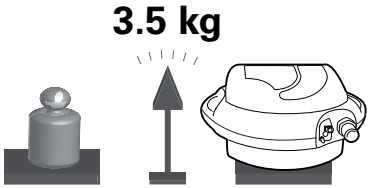
L: Length
H: Height
D: Depth

7.2 Weight

VS Integra model (red) without battery option



VS Ultra model (blue) or VS Integra (battery option)



7.3 Power supply

Mains power
230/100 VAC; 50-60 Hz; 52 VA, 630 mA.

External power supply
26 VDC; 3 A maximum.

Built-in battery (option for VS Integra)
NiMh 24 V; 2.2-2.7 Ah

Battery life of built-in battery (option for VS Integra)
2 – 4 hours, depending on settings.

Extra battery life with external battery (optional accessory)
1.5 – 4 hours, depending on settings**.**

7.4 Transport

Transport temperature
-10°C to +50°C

Relative humidity
10% to 90%

CAUTION
This device is fragile and must be kept dry.

8 Appendix

Travelling with your ventilator

For long journeys it is advisable to carry your device in its travel bag, with the following accessories:

- The power cable
- The circuit and its accessories
- The mask
- The oxygen coupling (if you use the supplemental oxygen option).

If you use an external battery, place in its travel bag:

- The battery in its holder, and
- The connection cable.

If you intend to travel by air with the device, ask your HME provider about the required formalities.

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