

VPAP™ III ST-A

Reorder number: 248107/1 05 02

USER'S MANUAL

English

RESMED

VPAP™ III ST-A

Reorder number: 248107/1 05 02

USER'S MANUAL

English

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INTRODUCTION

DEFINITIONS

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



WARNING

Alerts you to possible injury.



CAUTION

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

Note: *Is an informative or helpful note.*

USER/OWNER RESPONSIBILITY

The user or owner of this system shall have sole responsibility and liability 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.

MEDICAL INFORMATION

WHAT THE VPAP™ III ST-A IS FOR

The VPAP™ III ST-A system is intended to provide non-invasive ventilation for patients with respiratory insufficiency or obstructive sleep apnoea (OSA), in the hospital or home.

CONTRAINDICATIONS

The VPAP III ST-A should not be used if you have an insufficient respiratory drive to endure brief interruptions in non-invasive ventilation therapy. The VPAP III ST-A is not a life support ventilator and may stop operating with power failure or in the unlikely event of certain fault conditions.

If you have any of the following conditions, tell your doctor before using the VPAP III ST-A:

- acute sinusitis or otitis media
- epistaxis causing a risk of pulmonary aspiration
- conditions predisposing to a risk of aspiration of gastric contents

- impaired ability to clear secretions
- hypotension or significant intravascular volume depletion
- pneumothorax or pneumomediastinum
- recent cranial trauma or surgery.



WARNINGS

- The entire manual should be read before using the **VPAP III ST-A**.
- Advice contained in this manual should not supersede instructions given by the prescribing physician.
- The **VPAP III ST-A** should be used with masks and accessories recommended by ResMed or the prescribing physician. Use of incorrect masks and accessories may adversely affect the function of the **VPAP III ST-A**.
- The **VPAP III ST-A** is designed for use with masks that allow exhaled gases to be flushed out through vent holes. Exhaled gases will be rebreathed if the mask is worn with the machine turned off, or the vent holes are occluded. If this occurs over prolonged periods, suffocation may occur.
- In the event of power failure or machine malfunction, remove the mask.
- At low EPAP pressures, the flow through the mask vent holes may be inadequate to clear all exhaled gases, and some rebreathing may occur.
- The air flow for breathing produced by this device can be as much as 6°C (11°F) higher than the temperature of the room. Caution should be exercised if the room temperature is warmer than 32°C (90°F).
- The **VPAP III ST-A** can be set to deliver pressures up to 30 cmH₂O. In the unlikely event of certain fault conditions, pressures up to 40 cmH₂O are possible.
- The **VPAP III ST-A** is not suitable for use in the vicinity of flammable anaesthetics.
- The **VPAP III ST-A** should not be used with anaesthetised patients, whose breathing depends on artificial ventilation.
- If oxygen is used with the **VPAP III ST-A**, the oxygen flow should be stopped when the device is not operating. If oxygen flow continues when the device is not operating, oxygen may accumulate within the device and create a risk of fire.
- Do not use the **VPAP III ST-A** if there are obvious external defects, unexplained changes in performance or unusual noises.
- Do not open the **VPAP III ST-A** case. There are no user serviceable parts inside. Repairs and internal servicing should only be performed by an authorised service agent.



CAUTIONS

You should report unusual chest pain, severe headache or increased breathlessness to your physician. An acute upper respiratory tract infection may require temporary discontinuation of treatment.

The following side effects may arise during the course of therapy with the **VPAP III ST-A**:

- drying of the nose, mouth or throat

- bloating
- ear or sinus discomfort
- eye irritation
- skin rashes
- chest discomfort.

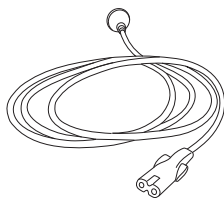
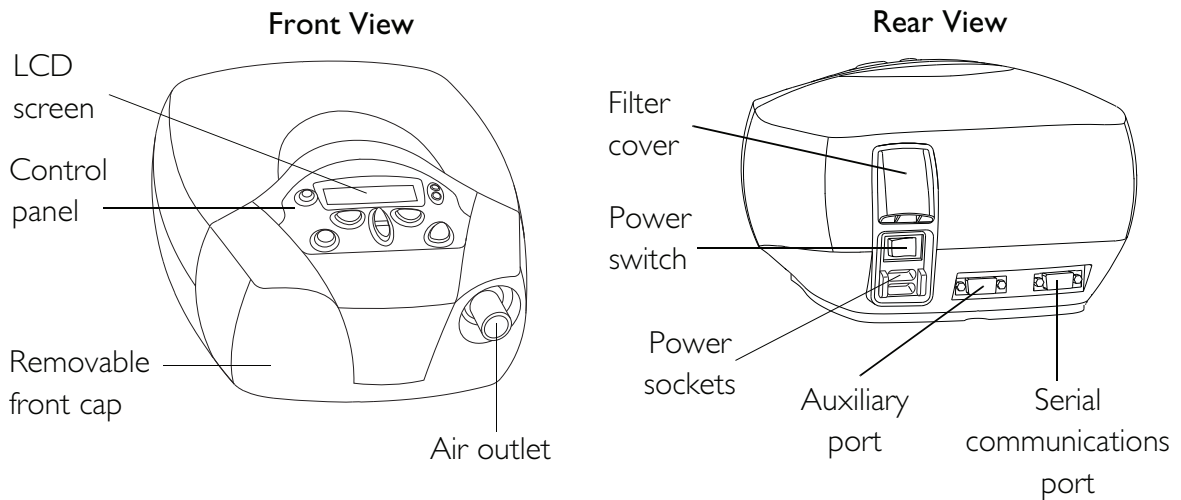
The above are general warnings and cautions. Further specific warnings, cautions and notes appear next to the relevant instructions in the manual.

THE VPAP III ST-A SYSTEM

VPAP III ST-A COMPONENTS

Please identify and familiarise yourself with the following components of the VPAP III ST-A unit:

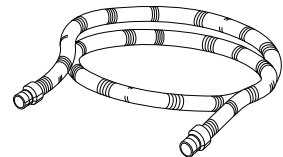
VPAP III ST-A Unit



Power cord



Carry bag



Air tubing (2m)



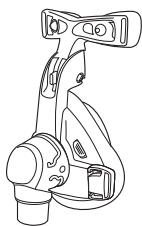
WARNING

- Do not connect any device to the auxiliary port. Although your health care provider may connect specially designed devices to the auxiliary port of the VPAP III ST-A unit, connection of other devices could result in injury, or damage of the unit.
- In the home environment the only device that may be connected to the communications port is a modem that is locally approved. Locally approved modems may also be connected in the clinical environment.
- In the clinical environment any PC that is used with the VPAP III ST-A system must be at least 1.5m (5ft) away from, or at least 2.5m (8ft) above the patient. It must also comply with IEC 60950 or equivalent.

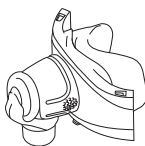
MASKS

You will also need a **ResMed mask system** (supplied separately).

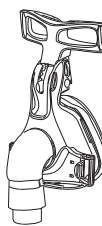
The following ResMed mask systems are recommended for use with the VPAP III ST-A:



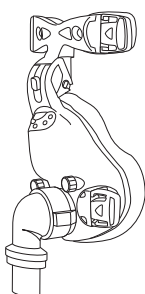
MIRAGE ACTIVA™
NASAL MASK



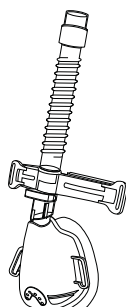
MIRAGE VISTA™
NASAL MASK



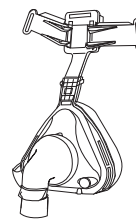
ULTRA MIRAGE™
NASAL MASK



ULTRA MIRAGE™
FULL FACE MASK



MIRAGE™ MASK

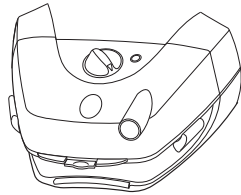


MODULAR MASK

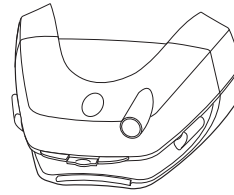
Note: ResMed VPAP III ST-A has been designed and manufactured to provide optimum performance using ResMed vented mask systems. Other mask systems may be used, however performance and data outputs may be affected. To select an appropriate setting for another mask system, find the closest match to a ResMed mask in the “Mask Flow/Pressure Characteristics” on page 38.

HUMIDIFIER

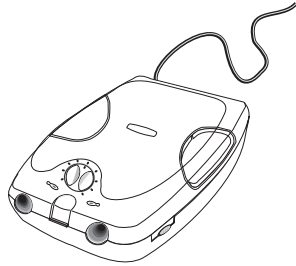
A humidifier may be required if you are experiencing dryness of the nose, throat or mouth. The **VPAP III ST-A** is compatible for use with the following humidifiers:



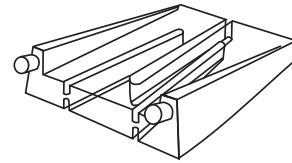
HUMIDAIRE 2i™ heated humidifier



HUMIDAIRE™ 2iC passover humidifier



HUMIDAIRE™ heated humidifier



ResMed PASSOVER humidifier



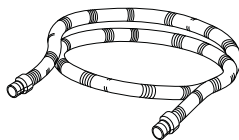
WARNING

Only the HumidAire 2i, HumidAire 2iC, HumidAire heated humidifier and the ResMed Passover are compatible for use with the VPAP III ST-A. Please refer to Warnings on page 2.

ACCESSORIES

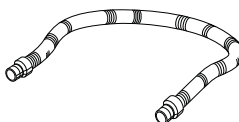
The following accessories are available for use with the **VPAP III ST-A**:

VPAP III ST-A ACCESSORY



Air tubing
(3m)

HUMIDIFIER ACCESSORY (HUMIDAIRE AND RESMED PASSOVER ONLY)



Medium air tubing
(52cm)

PREPARING FOR USE

SETTING UP THE VPAP III ST-A

- 1 Place the **VPAP III ST-A** unit on a flat surface near the head of your bed. If the unit is placed on the floor, ensure that the area is free from dust and clear of bedding, clothes or any other objects that could block the air inlet.



CAUTION

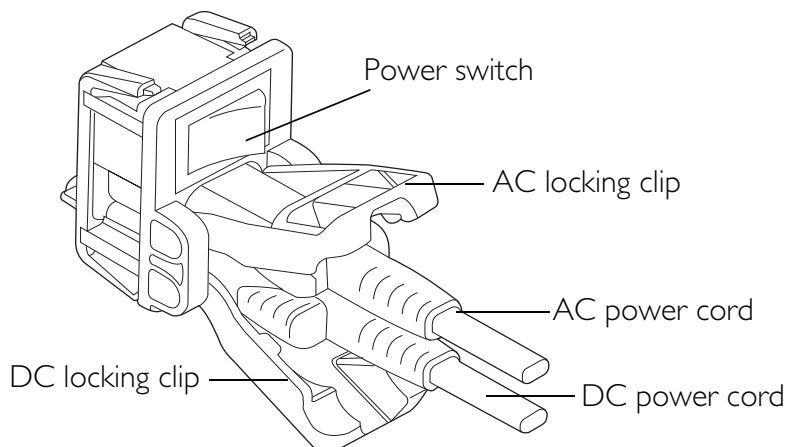
Be careful not to place the device where it can be bumped or where someone is likely to trip over the power cord.

2 Connect the power cord

There are two sockets at the rear of the flow generator — the top one for an AC (standard mains electricity) and the lower one for a DC (backup) power cord (see “Using DC Power to Run the VPAP III ST-A” on page 28).

ResMed recommends using the AC power cord supplied with the unit.

If the customised ResMed power cord is supplied, it can be held in place with the locking clips. To insert the locking clip, pinch the free ends together and fit the pins into the holes on both sides of the socket. Insert the power cord into the socket. Push the locking clip down so that the groove holds the power cord in place.



Plug the free end of the power cord into a power outlet.

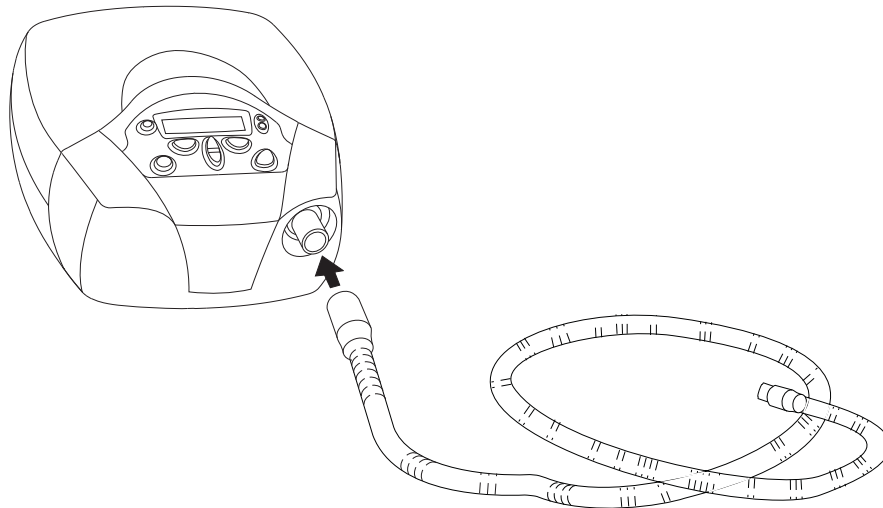


WARNING

Make sure the power cord and plug are in good condition and the equipment is not damaged.

The air filter cover protects the device in the event of accidental liquid spillage onto the device. Ensure that the air filter and air filter cover are fitted at all times.

- 3 Connect one end of the air tubing firmly onto the air outlet of the unit.

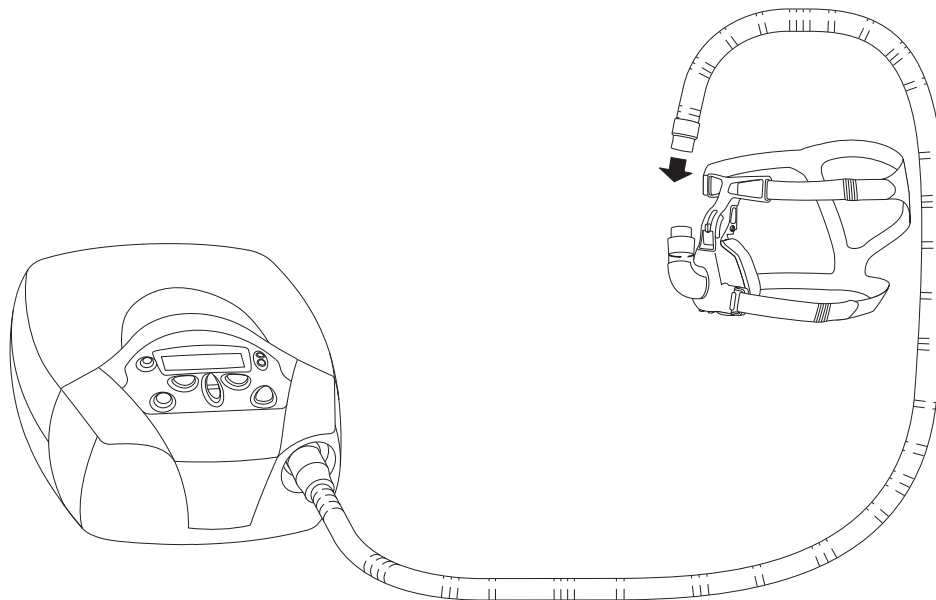


WARNING

Only ResMed air tubing should be used with your flow generator. A different type of air tubing may alter the pressure you actually receive reducing the effectiveness of your treatment.

-
- 4 Assemble your mask system according to the mask user instructions.

-
- 5 Connect your mask system to the free end of the air tubing.



The **VPAP III ST-A** is now ready for use. To start treatment, see “Operating Instructions” on page 21.

HUMIDIFIER USE

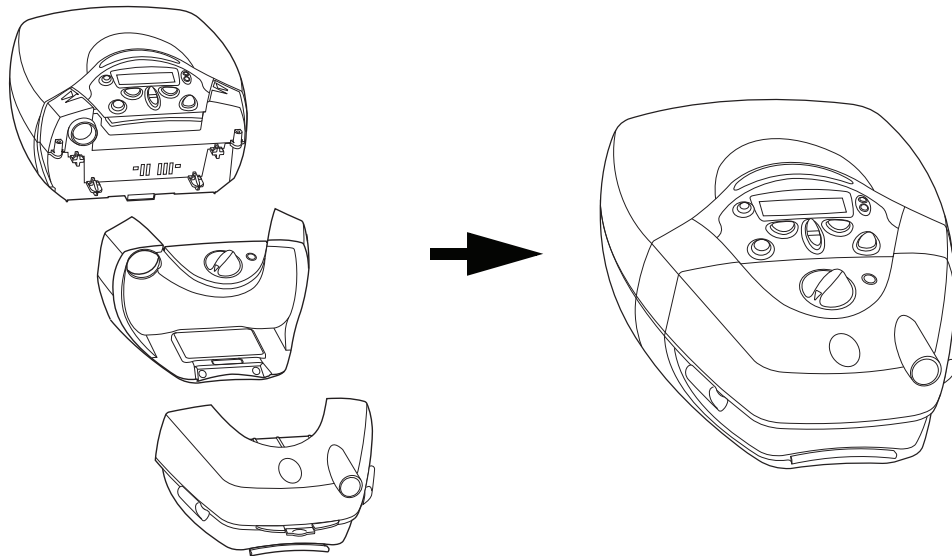


WARNING

When using a humidifier, position it lower than you, and at the same level or lower than the VPAP III ST-A.

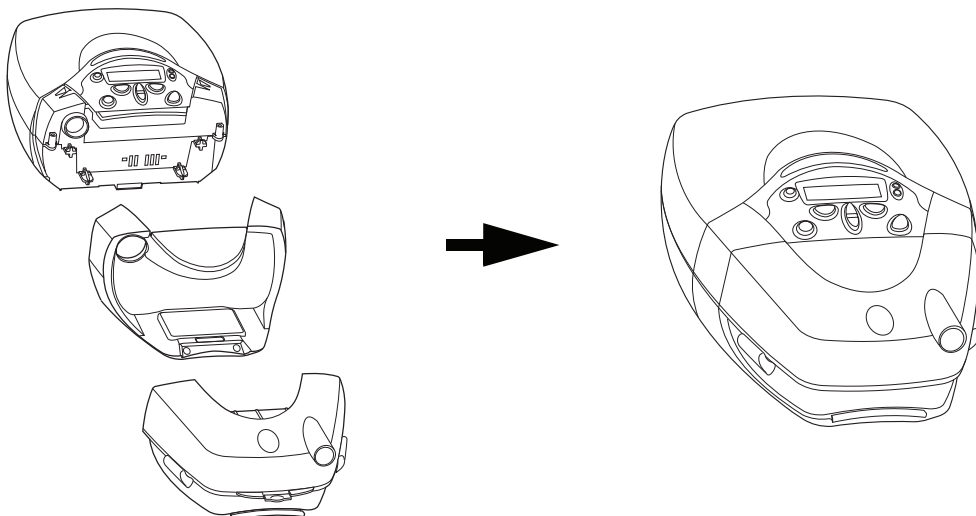
HUMIDAIRE 2i™

The HUMIDAIRE 2i™ attaches to the front of the VPAP III ST-A to provide heated humidification. No other accessories are required for its use. The VPAP III ST-A automatically detects the presence of the HUMIDAIRE 2i. No menu changes are required. Please refer to the *HumidAire 2i User's Manual* for details.



HUMIDAIRE™ 2iC

The HUMIDAIRE™ 2iC attaches to the front of a VPAP III ST-A unit to provide passover humidification. No other accessories are required for its use. Please refer to the *HumidAire 2iC User's Manual* for details.

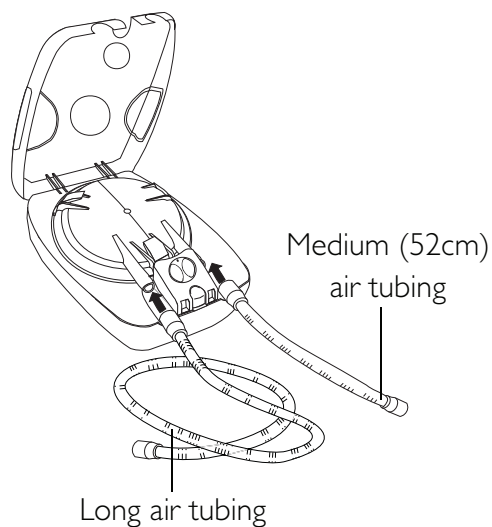


HUMIDAIRE AND PASSOVER

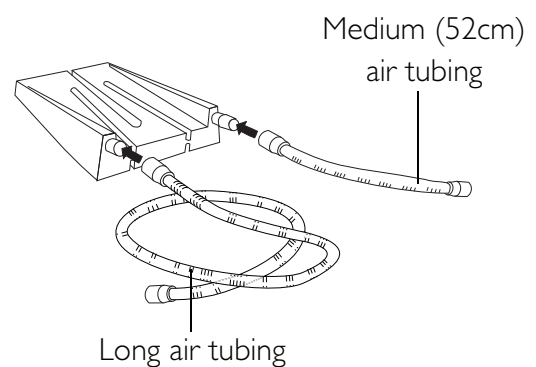
Medium size (52cm) air tubing is a necessary accessory for connecting the VPAP III ST-A unit to the HUMIDAIRE and ResMed PASSOVER humidifiers.

To set up the VPAP III ST-A with the HUMIDAIRE or ResMed PASSOVER:

- 1 Fill the HUMIDAIRE or PASSOVER with water as described in the humidifier manual.
- 2 **HumidAire Users** Place the filled water chamber inside the HUMIDAIRE. Connect the medium (52cm) air tubing to the right connector port, and the long air tubing (2m or 3m) to the left connector port on the humidifier. Close the HUMIDAIRE lid.
ResMed Passover Users Connect the medium (52cm) air tubing to the right connector port, and the long air tubing (2m or 3m) to the left connector port on the humidifier.

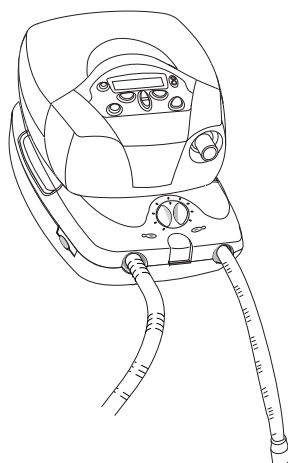


HumidAire

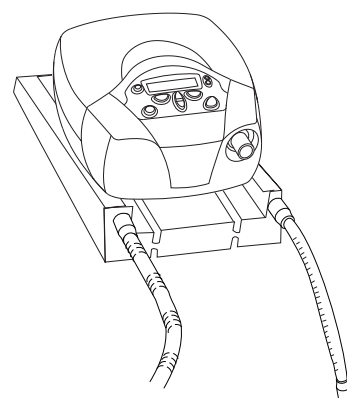


ResMed Passover

- 3 Place the VPAP III ST-A on top of the HUMIDAIRE or PASSOVER. Do not place the VPAP III ST-A unit underneath the humidifier. (This is to avoid water spilling into the unit.)

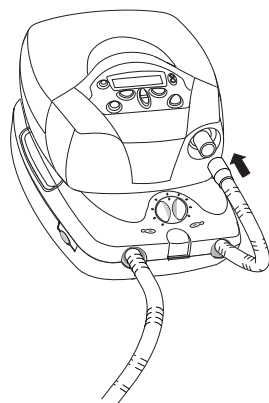


HumidAire

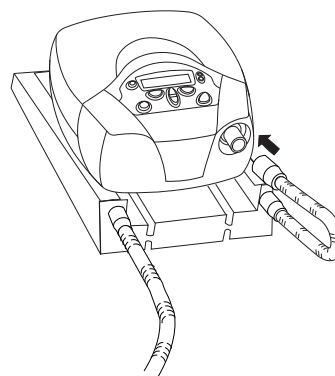


ResMed Passover

- 4 Connect the free end of the medium air tubing to the air outlet of the **VPAP III ST-A**.

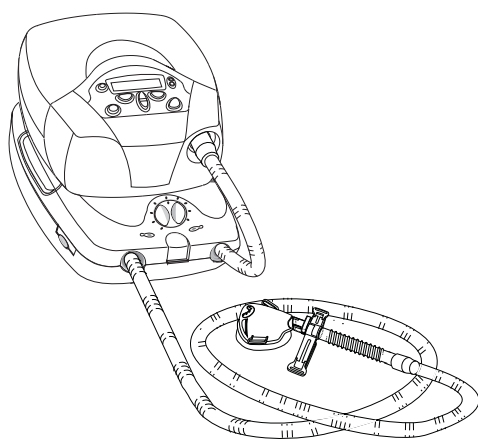


HumidAire

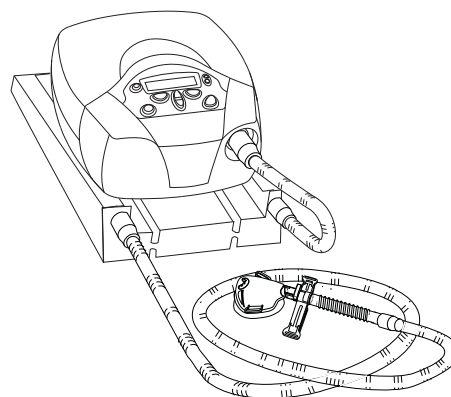


ResMed Passover

- 5 Connect the mask system to the free end of the long air tubing. The final assembly should look like this:



HumidAire



ResMed Passover

- 6 **HumidAire Users** Plug the **HUMIDAIRE** power cord into a power outlet.

- 7 Connect the power cord to the socket at the rear of the **VPAP III ST-A**. Plug the other end of the power cord into a power outlet.



WARNING

Make sure that the power cord and plug are in good condition and the equipment is not damaged.

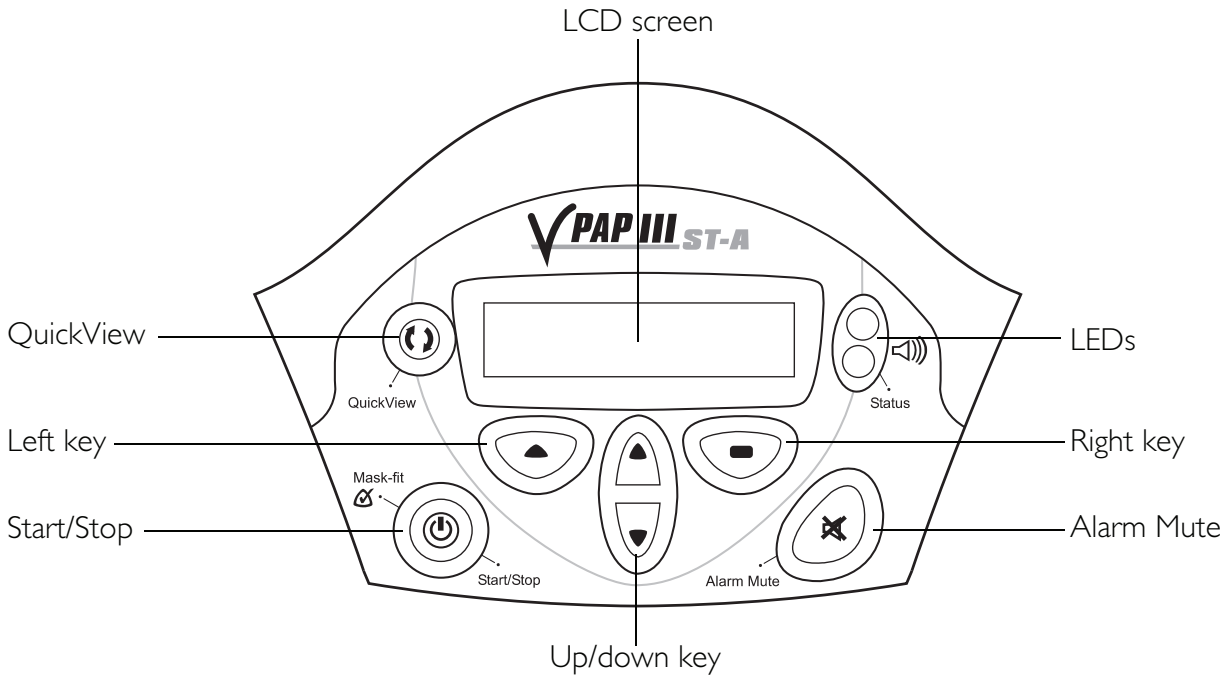
- 8 Navigate to the humidifier setting (if available) in the **VPAP III ST-A** menu. See “Detailed Menu” on page 16.

The **VPAP III ST-A** is now ready for use with the **HUMIDAIRE** or the **ResMed PASSOVER**. To start treatment, see “Operating Instructions” on page 21.

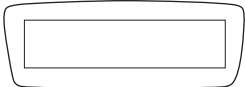




FEATURES OF THE VPAP III ST-A




LCD SCREEN AND KEYPAD

The control panel of the **VPAP III ST-A** includes an LCD screen and keypad.



The **VPAP III ST-A** control panel has the following displays and keys:

Display or Key	Function
LCD Screen 	<ul style="list-style-type: none"> Displays various VPAP III ST-A information including the menus, treatment screens and alarm conditions.
LEDs 	<ul style="list-style-type: none"> Displays the status of the device when active.
Start/Stop 	<ul style="list-style-type: none"> Starts or stops treatment. Extended hold for at least 3 seconds starts the Mask-Fitting feature.
Up/Down 	<ul style="list-style-type: none"> Allows you to scroll through the VPAP III ST-A menus, submenus and setting options.
Left 	<ul style="list-style-type: none"> Performs the function indicated by the guiding text displayed above it on the LCD screen. Guiding text includes menu, enter, change and apply.

Display or Key	Function
Right 	<ul style="list-style-type: none"> Performs the function indicated by the guiding text displayed above it on the LCD screen. Guiding text includes exit and cancel.
Alarm Mute 	<ul style="list-style-type: none"> Press once to mute alarms. If the problem is still present, the alarm will sound again after two minutes. See “The Alarms” on page 23.
QuickView 	<ul style="list-style-type: none"> Clinical menu function key. Clinical use only.

To assist you in adjusting the **VPAP III ST-A**, the keypad and LCD are equipped with a backlight. The LCD backlight comes on when the unit is turned on or when you press a key, and turns off after 2 minutes. Your clinician may have set the LCD backlight to be on continually. The keypad backlight is on at all times when the **VPAP III ST-A** is powered.

The green treatment LED is clinician selectable and may be on during therapy.

USING THE MENUS

The **VPAP III ST-A** unit provides a set of functions which are arranged in menus and submenus. Via the LCD screen, the menus and submenus allow you to view and change the settings for a particular function. You can access the menus regardless of whether the **VPAP III ST-A** is in standby mode or delivering therapy.

After the Welcome screen appears and device self-checks are complete, the **VPAP** (or Ramp) screen appears.

RAMP SCREEN

If your clinician has set a maximum ramp time, the Ramp screen is displayed after the Welcome screen. On the Ramp screen, you can immediately set a ramp time. Ramp time is the period during which the pressure increases from a low pressure to the prescribed treatment pressure. See “Ramp time” on page 23.

Ramp time can be altered in 5 minute increments (from OFF to a maximum ramp time set by your clinician) by using the **Up/Down** key.

MENU TYPE

Depending on the type of menu that your clinician has set for your machine, either a *standard* menu or a *detailed* menu appears.

STANDARD MENU

The standard menu allows you to view details about the time used and the current software version of your **VPAP III ST-A**. The Used (time) screen displays the total number of hours for which the device has been used. It also displays the number of days the **VPAP III ST-A** was used out of the total number of days available for use.

Figure 1 summarises the **VPAP III ST-A** standard menu series.

- To access the **VPAP III ST-A** menus:
Press the **Left** key (menu) while the **VPAP** (or Ramp) screen is displayed.
- To scroll through items within the menu:
Press the **Up/Down** key
- To exit out of the menu:
Press the **Right** key (exit)

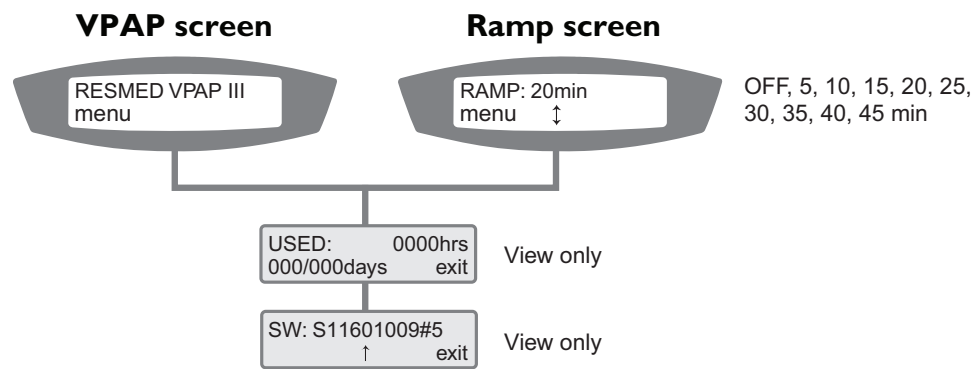


Figure 1: **VPAP III ST-A** Standard Menu Series

DETAILED MENU

The detailed menu allows you to view and change settings such as mask type, tube length and the humidifier used. You can also view the serial number and current software version of your **VPAP III ST-A**.

Figure 2 summarises the **VPAP III ST-A** detailed menu series.

- To access the **VPAP III ST-A** menus:
Press the **Left** key (menu) while the **VPAP** (or Ramp) screen is displayed.
- To scroll through items within a menu or submenu:
Press the **Up/Down** key.
- To enter a submenu:
Press the **Left** key (enter).
- To change a setting option for a function:
 1. Press the **Left** key (change).
 2. Press the **Up/Down** key until the desired setting option appears.
 3. Press the **Left key** (apply) to select the setting option.
- To exit without changing options:
Press the **Right** key (cancel).
- To exit out of a menu or submenu:
Press the **Right** key (exit).

Note: You can return to the **VPAP** (or **Ramp**) screen at any time by holding the **Right** key for at least 3 seconds.

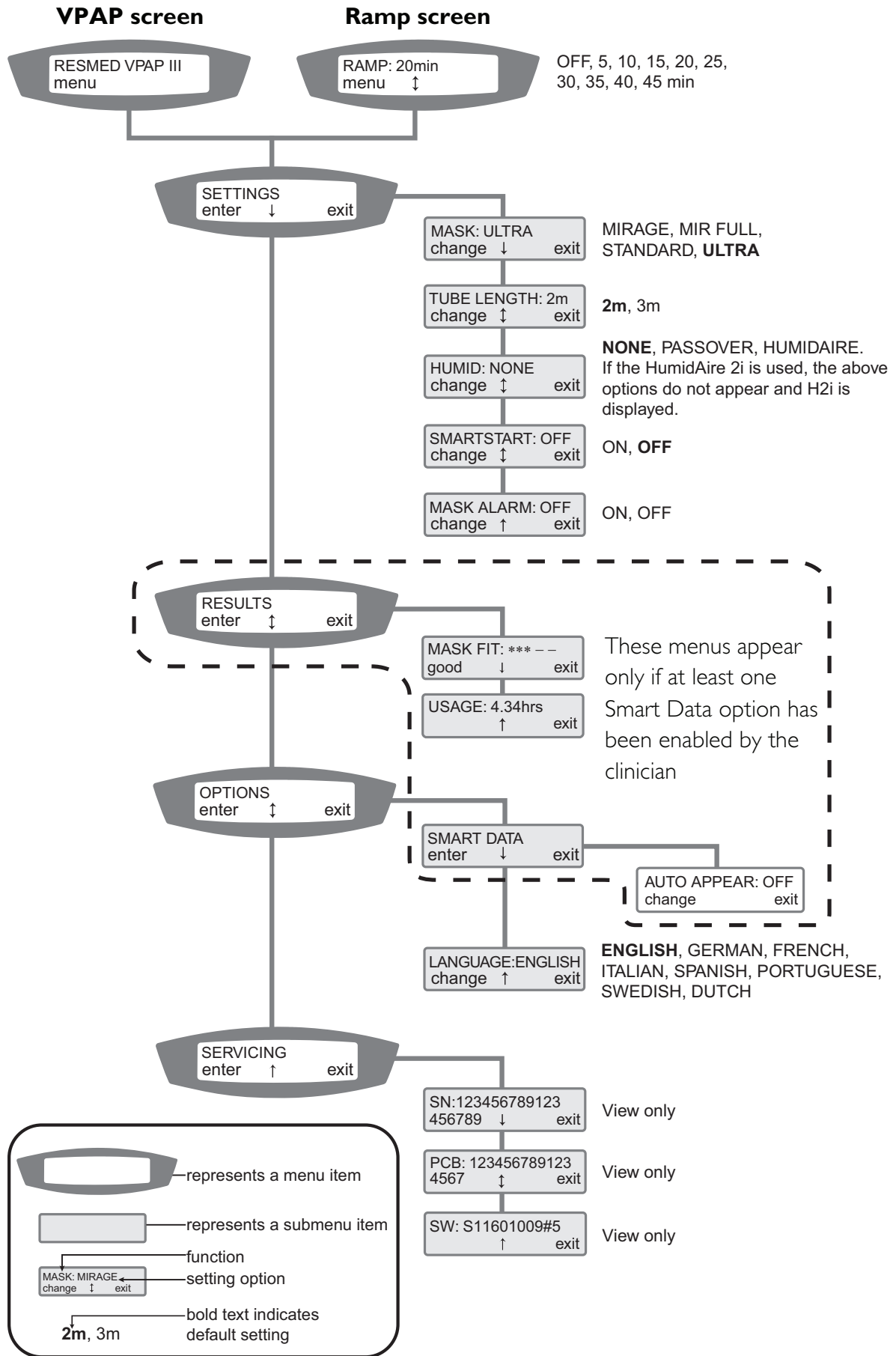


Figure 2: VPAP III ST-A Detailed Menu Series

MENU FUNCTIONS (DETAILED MENU ONLY)

The **VPAP III ST-A** menu functions are summarised in Tables 1–4 below with a brief description of what each function does and the available setting options. To access these functions, see “Detailed Menu” on page 16.

SETTINGS MENU

The Settings Menu allows you to view and change certain operating features of the **VPAP III ST-A** unit.

Table 1: Settings Menu Functions

Function	Function Description	Setting Options
Mask	Selects your mask type.	MIRAGE, MIR FULL (Ultra Mirage Full Face), STANDARD (Vista, Modular), ULTRA (Ultra Mirage)
Tube Length	Selects the length of air tubing connecting your mask to the VPAP III ST-A.	2m / 3m
Humidifier	Selects the type of humidifier to be used with the VPAP III ST-A.	NONE, PASSOVER, HUMIDAIRE If the HumidAire 2i is used, the above setting options do not appear and H2i is displayed.
SmartStart™	Turns the SmartStart function on or off. See “SmartStart™” on page 23.	ON/OFF
Mask Alarm	Turns the Mask Alarm signal on or off. If enabled, the Mask Alarm feature will alert you when a high mask leak is detected. An audible tone will sound and a high leak message will appear on the LCD screen.	ON/OFF

Note: If you select “Mir Full” as the mask option, SmartStop is automatically disabled. SmartStart may not work with a Ultra Mirage Full Face Mask due to safety features of the mask.

When Mask Alarm is set to ON, SmartStart/Stop automatically reverts to OFF. SmartStop cannot be used with Mask Alarm because if a high leak occurs, SmartStop will stop treatment before the Mask Alarm signal is activated.

RESULTS MENU

Note: These menus appear only if at least one Smart Data option has been enabled by the clinician. See the VPAP III Smart Data Diary for further details.

Table 2: Results Menu

Function	Function Description	Setting Options
Mask Fit (Smart Data)	Displays a star rating corresponding to the mask leak from the previous session.	View only
Usage (Smart Data)	Displays usage hours from the previous session.	View only

OPTIONS MENU

Table 3: Options Menu

Function	Function Description	Setting Options
Smart Data – Auto Appear	The Smart Data menu is displayed only if one or more of the options have been set to ON by the clinician. If Auto Appear is set to ON, the Smart Data screens are displayed upon powering up of the device. If Auto Appear is set to OFF, Smart Data is displayed in the Results menu only.	ON/OFF
Language	Selects the language the VPAP III ST-A uses for all its display text. English is the default language.	English, German, French, Italian, Spanish, Portuguese, Swedish, Dutch.

SERVICING MENU

Table 4: Servicing Menu

Function	Function Description	Setting Options
Serial Number (SN)	Displays the serial number for the VPAP III ST-A.	View only
Printed Circuit Board (PCB)	Displays the printed circuit board number.	View only
Software*	Displays the current software version installed in the VPAP III ST-A.	View only

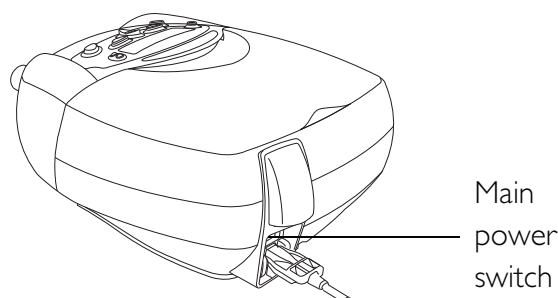
* This item also appears in the Standard Menu.

OPERATING INSTRUCTIONS

STARTING TREATMENT

The **VPAP III ST-A** unit should be assembled beside your bed with the air tubing and mask system connected. See “Setting Up the VPAP III ST-A” on page 9.

- 1 Turn the main power switch at the back of the unit to on (I).



When the **VPAP III ST-A** is turned on, a welcome message is displayed on the LCD screen. The **VPAP** (or Ramp) screen then appears.

Note: *If you have the HumidAire 2i attached, please refer to the HumidAire 2i User's Manual for operating instructions.*

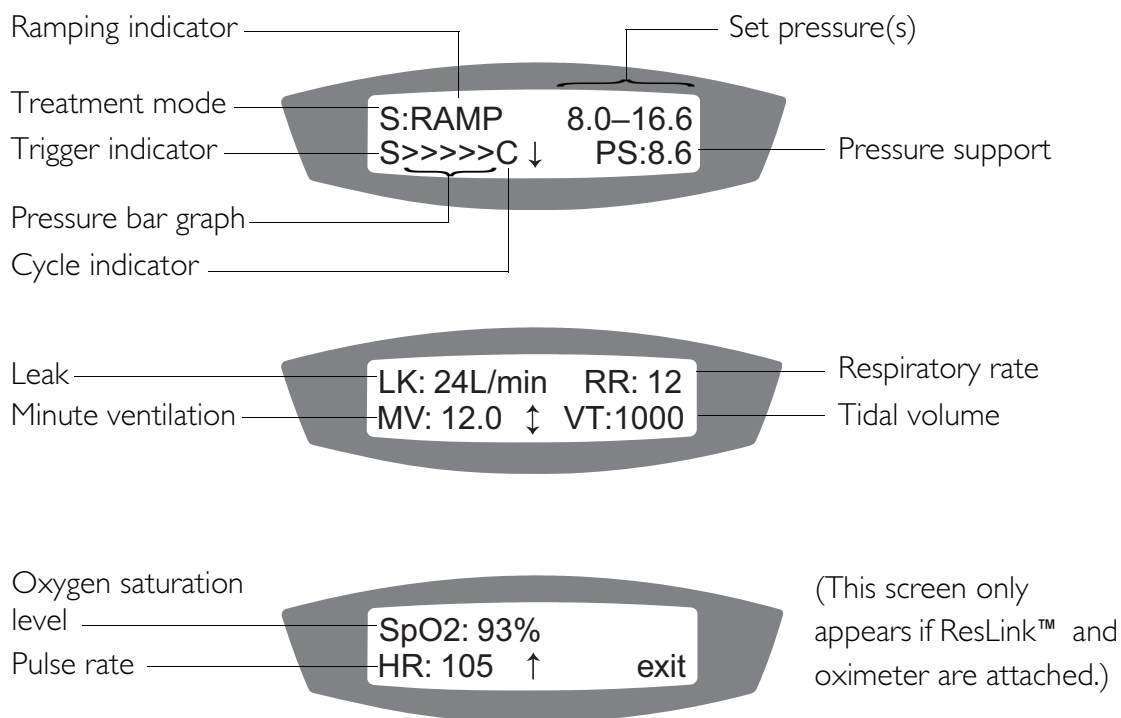
- 2 Fit your mask as described in the mask user instructions.
- 3 Lie down and arrange the air tubing so that it is free to move if you turn in your sleep.



CAUTION

- Do not leave long lengths of air tubing around the top of your bed. It could twist around your head or neck while you are sleeping.
- Make sure the area around the flow generator is dry and clean. It should also be clear of bedding, clothes and other potential blockages.

- 4 To start treatment, press the **Start/Stop** key
or
 if your clinician has enabled the SmartStart function, simply breathe into the mask and treatment will begin.
 After starting treatment, you can display one of the treatment screens below. Press the **Up/Down** key to switch between views.



The treatment screens contain the following information:

Treatment mode: Mode of treatment set by your clinician. Options include: CPAP, Spontaneous, Spontaneous/Timed and Timed.

Ramping indicator: Appears if the VPAP III ST-A is in ramp mode. This disappears once the ramp time has elapsed.

Set pressure(s): In CPAP mode, this displays the set treatment pressure (centimetres of water). In other modes, it is exhalation and inhalation pressures (centimetres of water).

Pressure support: The difference between exhalation and inhalation pressures (centimetres of water).

Trigger indicator: How the VPAP III ST-A changes the pressure when you are inhaling. "S" (Spontaneous) indicates a patient-triggered change and "T" (Timed) indicates a device-triggered change.

Cycle indicator: How the VPAP III ST-A changes the pressure when you are exhaling. "C" (Spontaneous) indicates a patient-cycled change and "T" (Timed) indicates a device-cycled change.

Pressure bar graph: Graphical display of the changing pressure.

Leak: Current mask leak (litres per minute).

Respiratory rate: Number of breaths per minute.

Minute ventilation: Volume of air inhaled per minute (litres per minute). It is the product of respiratory rate and tidal volume.

Tidal volume: Volume of air inhaled per breath (millilitres per breath).

Oxygen saturation level: Percentage of oxygen in your blood stream (only appears if RESLINK™ and oximeter are attached).

Pulse rate (HR): Measured in beats per minute (only appears if RESLINK and oximeter are attached).

If the non-vented mask alarm has been disabled by your clinician, the following screen is displayed after starting therapy. To exit this screen, press any key to display the treatment screens, or stop treatment.



RAMP TIME

Ramp time is a feature which can be enabled by your clinician. If you have difficulty falling asleep with full pressure, select a ramp time. The airflow will start very gently while you fall asleep. The pressure will slowly increase to full operating pressure over the selected ramp time. The clinician has set a maximum ramp time; you may select any value up to the maximum.

SMARTSTART™

The **VPAP III ST-A** has a function called SmartStart which can be enabled by your clinician. If SmartStart is enabled, **VPAP III ST-A** will start automatically when you breathe into the mask and will stop automatically when you take your mask off. This means you do not have to press the **Start/Stop** key to begin or end treatment.

STOPPING TREATMENT

To stop treatment at any time, remove your mask and press the **Start/Stop** key **or**

if your clinician has enabled the SmartStart function, simply remove your mask and treatment will end (SmartStop is not applicable with the "Mir Full" mask setting).

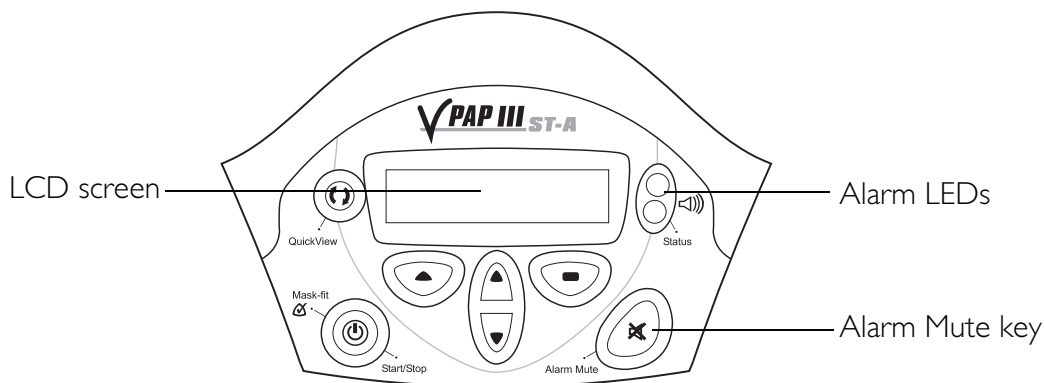
THE ALARMS

The **VPAP III ST-A** unit is fitted with alarms to alert you to changes that will affect your treatment. The most common reason for an alarm to sound is because the system has not been properly assembled. Check that the air tubing has been properly attached to the flow generator and mask (and humidifier if used).

You can mute an alarm by pressing the **Alarm Mute** key once. If the problem is still present, the alarm will sound again after two minutes. An Alarm LED will remain lit for as long as the problem is present.

To test the alarm, hold down the **Alarm Mute** key for 3 seconds. On release of the **Alarm Mute** key, the alarm should sound and the LED should flash for 10 seconds and then stop. ResMed recommends testing the alarm each week.

All menus remain available during an alarm. Treatment screens are not viewable during an alarm condition.



ALARMS TROUBLESHOOTING

When an alarm has been activated, the bottom line of the LCD screen will display either alarm information or recommended instructions for you or your clinician.

Note: The alarm actions listed below are based on having the appropriate alarm settings for your therapy. When an alarm is activated, confirm the alarm settings with your clinician.



CAUTION

Remove the mask from your face if the power fails.

Warning Signal	Cause	Action
<p>The flow generator stops delivering air pressure. Sound: Two alternating tones sounding continuously LCD: LCD turns off LED: Red flashing Alarm: Power fail</p>	<ul style="list-style-type: none"> Power failure. Machine is disconnected or switched off while delivering treatment. 	<p>Alarm will stop: when the Alarm Mute key is pressed, or after 2 minutes, or when power is restored.</p>
<p>The flow generator stops delivering air pressure. Sound: Single intermittent tone LCD: CHECK TUBE LED: Yellow flashing Alarm: System fault</p>	<ul style="list-style-type: none"> Air tubing disconnected from the HumidAire 2i/2iC. Hardware failure. 	<ol style="list-style-type: none"> Check that the air tubing is connected properly to the HumidAire 2i/2iC. Check that the HumidAire 2i/2iC or front cover is connected properly to the flow generator. Turn the VPAP III ST-A off and on again at the power switch. <p>If the alarm persists, return the unit to ResMed for servicing.</p>
<p>Sound: Single intermittent tone LCD: PRESSURE ERROR! LED: Yellow flashing Alarm: Over pressure</p>	<p>Treatment pressure delivered above a set level.</p>	<ul style="list-style-type: none"> Return the VPAP III ST-A for servicing. DO NOT USE THE VPAP III ST-A DEVICE.

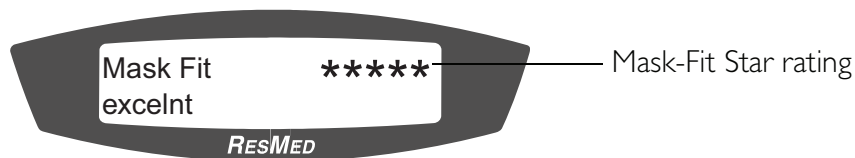
Warning Signal	Cause	Action
Sound: Single intermittent tone LCD: IPAP LOWER ALARM LED: Yellow flashing Alarm: Overuse	VPAP III ST-A is operating outside device specifications.	Continue using and contact your clinician about this alarm. Device settings may require adjustment.
Sound: Single intermittent tone LCD: SENSOR ERROR! LED: Yellow flashing Alarm: System Fault	Hardware error.	<ul style="list-style-type: none"> • Return the VPAP III ST-A for servicing. • DO NOT USE THE VPAP III ST-A DEVICE.
Sound: Single intermittent tone LCD: SYSTEM ERROR Call service! LED: Yellow flashing Alarm: System Error	Component failure.	<ul style="list-style-type: none"> • Return the VPAP III ST-A for servicing. • DO NOT USE THE VPAP III ST-A DEVICE.
Sound: Single intermittent tone LCD: HIGH LEAK!!! LED: Yellow flashing Alarm: Mask off	High mask leak for more than 20 seconds.	Adjust the mask to minimise leak. See "Using the Mask-Fitting Feature" on page 27.
Sound: Single intermittent tone LCD: LOW PRES ALARM LED: Yellow flashing Alarm: Low mask pressure	<ul style="list-style-type: none"> • Air pressure at the mask has fallen below a set level • Mask is removed and SmartStop has been disabled. 	<ol style="list-style-type: none"> 1. Check that the air tubing is connected properly. 2. Turn the VPAP III ST-A off and on again at the power switch. If the alarm persists, return the unit to ResMed for servicing.
Sound: Single intermittent tone LCD: HIGH PRES ALARM LED: Yellow flashing Alarm: High mask pressure	Mask pressure exceeds alarm setting.	<ol style="list-style-type: none"> 1. The treatment will stop. 2. Turn power off. 3. Turn power back on. 4. Try using the flow generator one more time. 5. If the high pressure alarm activates repeatedly, discontinue use and return to ResMed for servicing. If the alarm does not recur, then continue to use as normal.

Warning Signal	Cause	Action
<p>Sound: Single intermittent tone</p> <p>LCD: LOW MV ALARM</p> <p>LED: Yellow flashing</p> <p>Alarm: Low minute ventilation</p>	<p>Minute ventilation level has dropped below a set limit.</p>	<p>Contact your clinician.</p>
<p>Sound: Single intermittent tone</p> <p>LCD: NVENT ALARM</p> <p>LED: Yellow flashing</p> <p>Alarm: Non-vented mask</p>	<ul style="list-style-type: none"> • Connection of a non-vented mask. • Mask expiratory flow port (vent) may be blocked. • Use of supplemental oxygen with a vented mask. 	<ul style="list-style-type: none"> • Ensure your mask has an expiratory flow port (vent). • Ensure your mask expiratory flow ports (vents) are not blocked. • Contact your clinician.

USING THE MASK-FITTING FEATURE

The **VPAP III ST-A** Mask-Fitting feature can be used to help you fit your mask properly. The mask-fitting feature delivers air pressure for a three-minute period, prior to starting treatment, for checking and adjusting your mask fit to minimise leaks. If a Ramp time is selected, the mask can be adjusted at a pressure closer to the prescribed pressure. To use the mask-fitting feature:

- 1 Fit your mask as described in the user instructions.
-
- 2 Hold down the **Start/Stop** key for at least 3 seconds until air pressure delivery starts. The following display will appear on the LCD screen indicating that the Mask-Fitting feature is in operation. The flow generator will ramp to the Mask-Fit pressure and will remain at this pressure for 3 minutes. A Mask-Fit star rating is also displayed. See “Definitions of Mask-Fit Star Rating” on page 27.



Notes

- The Mask-Fit star rating display disappears after 3 minutes.
- The Mask-Fitting feature can only be started from the VPAP (or Ramp) screen.
- The Mask-Fit pressure is the set treatment pressure or 10 cmH₂O, whichever is greater.

- 3 Adjust your mask, mask cushion and headgear until you have a secure and comfortable fit.

Once you have a secure and comfortable fit, check your Mask-Fit star rating on the LCD screen. Definitions of the Mask-Fit star ratings are presented in Table 5.

Note: If there is another person nearby to check your Mask-Fit star rating, you can adjust your mask, mask cushion and headgear while lying down.

- 4 After 3 minutes, treatment will begin. Definitions of the Mask-Fit star ratings are presented in Table 5.
 - If you do not wish to wait 3 minutes, hold down the **Start/Stop** key for at least 3 seconds and treatment will begin immediately.
 - If you press the **Start/Stop** key for less than 3 seconds, the unit will return to standby mode (the **VPAP** or Ramp screen is displayed).

Table 5: Definitions of Mask-Fit Star Rating

Star rating	Definition
*****	Excellent
*****	Very good

Star rating	Definition
***—	Good
**—	Adjust mask
*—	Adjust mask
HIGH LEAK	Adjust mask

USING DC POWER TO RUN THE VPAP III ST-A

The **VPAP III ST-A** can be run on DC in case of power failure. ResMed supplies a convertor that allows a 12V battery to be connected to the DC input of the **VPAP III ST-A**. When using DC, power is turned on and off via the switch on the connector to the power source, not the power switch at the back of the **VPAP III ST-A**. The DC converter is a separate accessory that can be purchased through your ResMed distributor.

The humidifier heater will be automatically disabled when the **VPAP III ST-A** is operating from the DC supply.

Power consumption of the **VPAP III ST-A** varies with treatment settings. Adequate battery type and sizing is required before operation on DC, and it is recommended that ResMed's Technical Services division be contacted for information on your specific application.

HELPFUL HINTS

STARTING OUT

MOUTH LEAKS

If using a nasal mask, try to keep your mouth closed during treatment. Air leaks from your mouth can decrease the effectiveness of your treatment. If mouth leaks are a problem, a full face mask or chin strap may help. Contact your clinician or equipment supplier for further details.

MASK FITTING

The flow generator delivers the most effective treatment when the mask is well fitted and comfortable. Treatment can be affected by leaks, so it is important to eliminate any leaks that may arise.

If you have problems trying to get a comfortable mask fit, contact your sleep clinic or equipment supplier. You may benefit from a different size or style of mask.

You can also use the Mask-Fitting feature to help you fit your mask properly. See "Using the Mask-Fitting Feature" on page 27.

Before wearing your mask, wash your face to remove excess facial oils. This will allow a better fit and prolong the life of the mask cushion.

NASAL IRRITATION

DRYNESS

You may experience dryness of the nose, mouth and/or throat during the course of treatment, especially during winter. In many cases, a humidifier may resolve this discomfort. Contact your clinician for advice.

RUNNY OR BLOCKED NOSE

You may experience sneezing and/or a runny or blocked nose during the first few weeks of treatment. In many cases, nasal irritation can be resolved with a humidifier. Consult your clinician for advice.

TRAVELLING WITH THE VPAP III ST-A

INTERNATIONAL USE

Your **VPAP III ST-A** flow generator has an internal power adapter that enables it to operate in other countries. It will operate on power supplies of 100–240V and 50–60Hz. No special adjustment is necessary, but you may need a plug adapter for the power outlet.

CLEANING AND MAINTENANCE

You should regularly carry out the cleaning and maintenance described in this section.

DAILY

1. Disconnect the air tubing and hang it in a clean, dry place until next use. Do not hang the air tubing in direct sunlight as it may harden and crack over time.
2. Clean the mask according to the mask user instructions.
3. If you are using a humidifier, clean it according to the instructions in the manual.

WEEKLY

1. Remove the air tubing from the **VPAP III ST-A** unit and the mask.
2. Wash the mask system according to the instructions supplied with it.
3. Wash the air tubing in warm water using mild detergent. Rinse thoroughly, hang and allow to dry.
4. Before next use, assemble the mask and headgear according to the mask user instructions.
5. Reconnect the air tubing to the air outlet and mask.
6. Test the alarm. See “The Alarms” on page 23.



CAUTION

- Do not use bleach, chlorine-, alcohol- or aromatic-based solutions (including all scented oils), moisturising or antibacterial soaps to clean the cushion, mask, air tubing or the **VPAP III ST-A**. These solutions may cause hardening and reduce the life of the product.
- Do not wash or dry the mask frame at a temperature above 80°C (176°F). Exposure to higher temperatures may reduce the life of the product.
- Do not hang the air tubing in direct sunlight as the tubing may harden over time and eventually crack.

PERIODICALLY

1. The mask and air tubing are subject to normal wear and tear. Inspect them regularly for damage.
2. Clean the exterior of the flow generator with a damp cloth and mild detergent.
3. Inspect the air filter to check if it is blocked by dirt or contains holes. See “Replacing the Air Filter” on page 32.



WARNING

Beware of electric shock. Do not immerse the flow generator or power cord in water. Always unplug the flow generator before cleaning and be sure that it is dry before reconnecting.



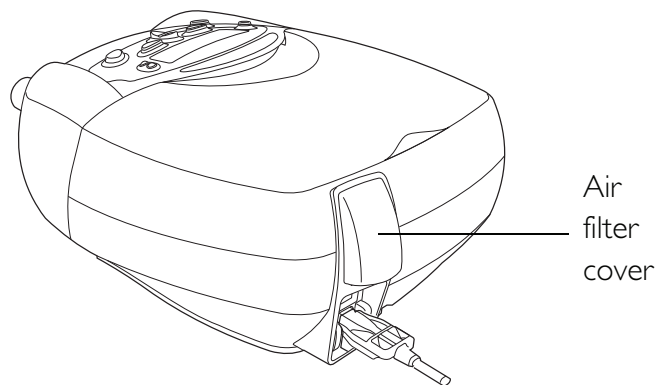
CAUTION

Do not attempt to open the VPAP III ST-A. There are no user serviceable parts inside. Repairs and internal servicing should only be performed by an authorised service agent.

REPLACING THE AIR FILTER

Inspect the air filter every month to check if it is blocked by dirt or contains holes. With normal use of a VPAP III ST-A unit, the air filter needs to be replaced every six months (or more often if your unit is in a dusty environment). To replace the air filter:

1. Remove the air filter cover at the back of the VPAP III ST-A.



2. Remove and discard the old air filter.
3. Insert a new filter with the blue tinted side facing out.
4. Replace the air filter cover.



WARNING

Do not wash the air filter. The air filter is not washable or reusable.

Note: The air filter should be inspected once a month.

SERVICING

This product (VPAP III ST-A) should be inspected by an authorized ResMed Service Center 5 years from the date of manufacture. Prior to this, the device is intended to provide safe and reliable operation provided that it is operated and maintained in accordance with the instructions provided by ResMed. Applicable ResMed warranty details are provided with the device at the time of original supply. Of course, as with all electrical devices, if any irregularity becomes apparent, you should exercise caution and have the device inspected by an Authorized ResMed Service Center.

If you feel that your unit is not performing properly, see “Troubleshooting” on page 33.



CAUTION

Inspection and repair should only be performed by an authorised agent. Under no circumstances should you attempt to service or repair the flow generator yourself.

TROUBLESHOOTING

If there is a problem, try the following suggestions. If the problem cannot be solved, contact your equipment supplier or ResMed. Do not attempt to open the unit.

Problem	Possible Cause	Solution
<i>No display.</i>	Power not connected or switch at back is not on.	Ensure the power cable is connected and that the switch at the back of the unit is in the ON position.
<i>Insufficient air delivered from the VPAP III ST-A.</i>	Ramp Time is in use.	Wait for air pressure to build up.
	Air filter is dirty.	Replace air filter.
	Air tubing is kinked or punctured.	Straighten or replace tubing.
	Air tubing not connected properly.	Check air tubing.
	Mask and headgear not positioned correctly.	Adjust position of mask and headgear.
	Plug(s) missing from access port(s) on mask.	Replace plug(s).
	Pressure required for treatment may have changed.	See your clinician to adjust the pressure.
<i>The VPAP III ST-A does not start when you breathe into the mask.</i>	Power cord not connected properly.	Connect power cord firmly at both ends.
	Power outlet may be faulty.	Try another power outlet.
	The VPAP III ST-A unit not switched on.	Switch power switch at rear of the VPAP III ST-A to ON.
	SmartStart not on.	Enable SmartStart.
	Mask Alarm has been enabled; SmartStart has automatically been disabled.	Disable Mask Alarm to enable SmartStart.
	Breath is not deep enough to trigger SmartStart.	Take a deep breath in and out through the mask.

Problem	Possible Cause	Solution
	There is excessive leak.	Adjust position of mask and headgear. Plugs may be missing from ports on mask. Replace them. Air tubing not connected properly. Connect firmly at both ends. Air tubing kinked or punctured. Straighten or replace.
VPAP III ST-A unit does not stop when you remove your mask.	SmartStart/Stop is disabled. Use of a Ultra Mirage Full Face Mask.	Enable SmartStart/Stop. SmartStop does not work with a full face mask.
SmartStart is enabled but the flow generator does not stop automatically when you remove your mask.	Incompatible humidifier or mask system being used.	Use only equipment as recommended and supplied by ResMed.
Displays error message: SYSTEM ERROR Call service!	Component failure.	Return your VPAP III ST-A for servicing.
Excessive motor noise.	Component failure.	Return your unit for servicing.
Display error message: High leak in last session.	You have experienced excessively high leak levels during the night.	Check that your air tubing is connected properly and that your mask does not leak excessively. Use the mask-fitting feature to help you to fit your mask properly. If this message appears again, contact your clinician.

SYSTEM SPECIFICATIONS

Dynamic pressure characteristics

IPAP: 2 cmH₂O to 30 cmH₂O (measured at the end of standard 2m air tubing)

EPAP: 2 cmH₂O to 25 cmH₂O (measured at the end of standard 2m air tubing)

Maximum single fault pressure: 40 cmH₂O

Dynamic flow characteristics

130 L/min at 2 to 30 cmH₂O

Sound pressure level: <30 dB (tested in accordance with the requirements of ISO 17510-1:2002)

Dimensions (L x W x H): 270mm x 230mm x 141mm

Weight: 2.3kg

Air outlet: 22mm taper, compatible with EN 1281-1:1997 Anaesthetic & Respiratory Equipment - Conical Connectors

Pressure measurement: Internally mounted pressure transducer

Flow measurement: Internally mounted flow transducer

Power Supply: AC 100–240V, 2.2A ~ 50–60Hz; DC 24V, 2A

Housing Construction: Flame retardant engineering thermoplastic

Environmental Conditions

Operating Temperature: +5°C (41°F) to +40°C (104°F)

Operating Humidity: 10%–95% non-condensing

Storage and Transport Temperature: -20°C (-4°F) to +60°C (140°F)

Storage and Transport Humidity: 10–95% non-condensing

Electromagnetic Compatibility

Product complies with all applicable electromagnetic compatibility requirements (EMC) according to IEC60601-1-2, for residential, commercial and light industry environments. For further details, see “Guidance and Manufacturer’s Declaration — Electromagnetic Emissions and Immunity” on page 39.

Air Filter: Two-layered, powder-bonded, polyester non-woven fiber

Air Tubing: Flexible plastic, 2m or 3m length

IEC 60601-1 Classifications

Class II (double insulation)

Type CF

Continuous operation

This flow generator is not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide entrained in the flow generator airpath.

Table 6: Displayed values

Value	Range	Accuracy	Display Resolution
Pressure sensor at air outlet			
Pressure	-5 to 30 cmH ₂ O	±0.5 cmH ₂ O	0.1 cmH ₂ O
Flow sensor in flow generator*			
Leak	0–120 L/min	**	1 L/min
Tidal volume	100–3000 mL	**	1 mL
Respiratory rate	6–60 BPM	±0.5 BPM	1 BPM
Minute ventilation	0.6–60 L/min	**	0.1 L/min

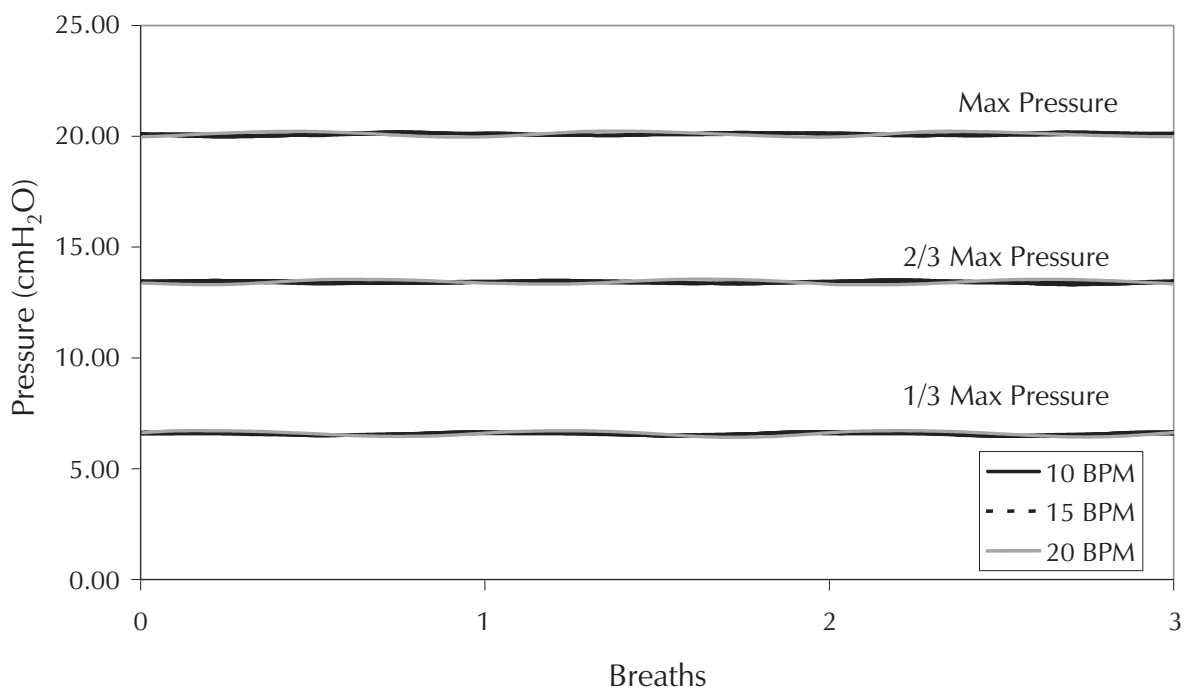
* Results may be inaccurate in the presence of leaks.

** The displayed values are estimates. They are provided for trending purposes only.

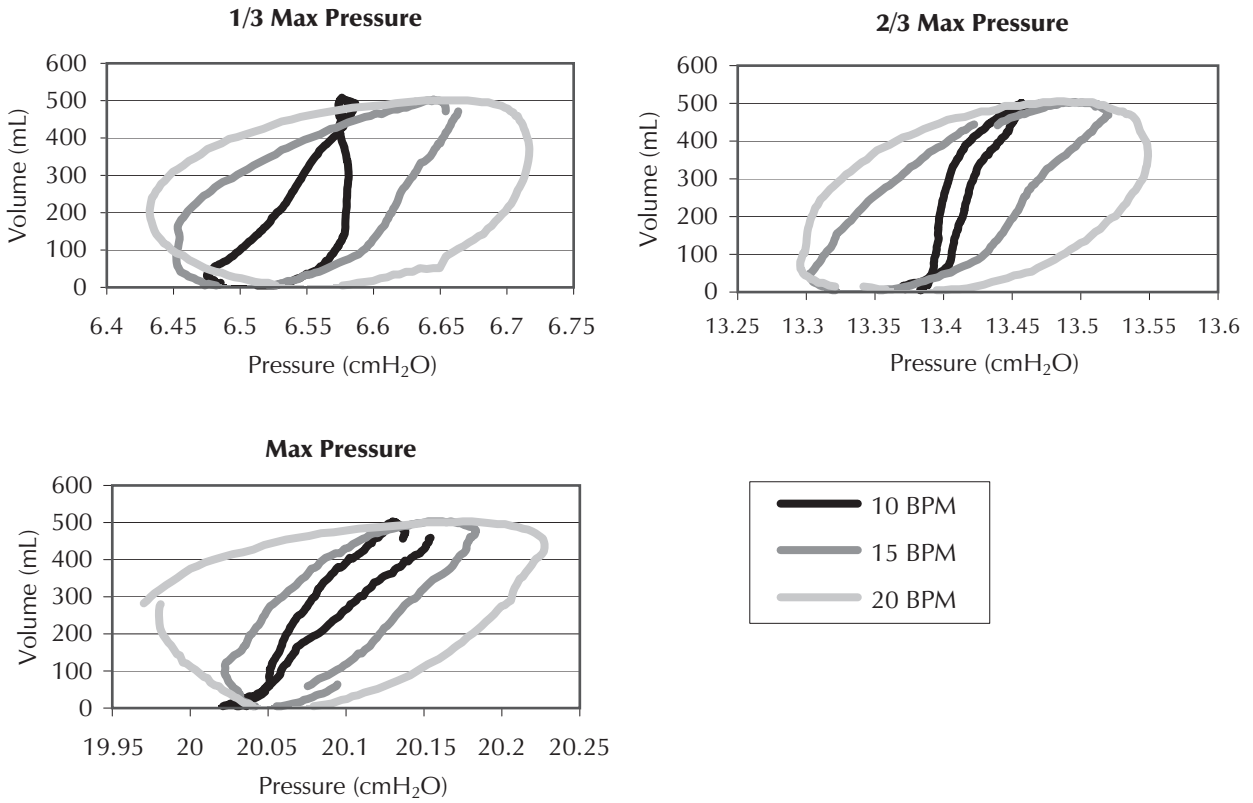
Table 7: Maximum low impedance flow at stated pressures

Pressure (cmH ₂ O)	Flow (L/min)
6.6	180
13.2	250
20.0	261

PRESSURE VARIATION





PRESSURE VOLUME CURVE

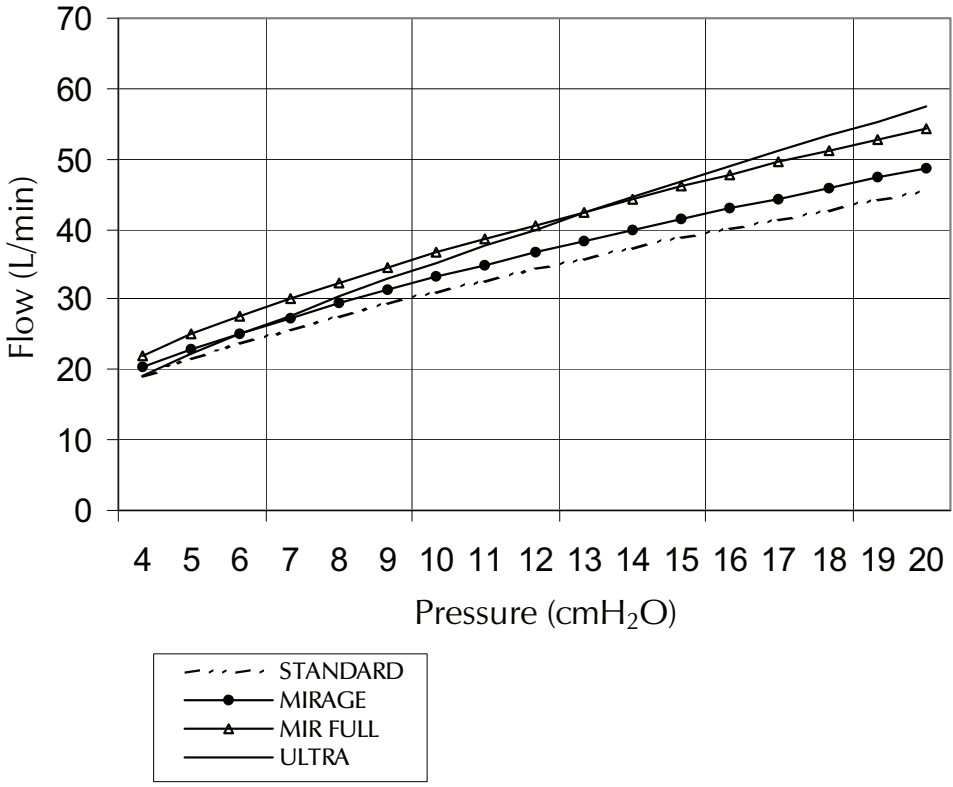


Note: The manufacturer reserves the right to change these specifications without notice.

SYMBOLS WHICH MAY APPEAR ON THE PRODUCT

-  Attention, consult accompanying documents
-  Class II equipment
-  Type CF equipment
-  Start/Stop
-  Mask-Fit
-  Alarm LEDs
-  Alarm Mute
-  QuickView
-  AC switch only

MASK FLOW/PRESSURE CHARACTERISTICS



GUIDANCE AND MANUFACTURER'S DECLARATION — ELECTROMAGNETIC EMISSIONS AND IMMUNITY

Guidance and manufacturer's declaration – electromagnetic emissions

The VPAP III ST-A is intended for use in the electromagnetic environment specified below. The customer or the user of the VPAP III ST-A should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR11	Group 1	The VPAP III ST-A uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The VPAP III ST-A is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage Fluctuations/Flicker Emissions IEC 61000-3-3	Complies	

Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed and put into service according to EMC information provided in this document.

Warnings: The VPAP III ST-A should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the VPAP III ST-A should be observed to verify normal operation in the configuration in which it will be used.

The use of accessories (eg humidifiers) other than those specified in this manual is not recommended. They may result in increased emissions or decreased immunity of the VPAP III ST-A.

Guidance and manufacturer's declaration – electromagnetic immunity

The VPAP III ST-A is intended for use in the electromagnetic environment specified below. The customer or the user of the VPAP III ST-A should assure that it is used in such an environment.


Immunity test	IEC60601-1-2 test level	Compliance level	Electromagnetic environment –guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV Not Applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines. IEC 61000-4-11	<5% Ut (>95% dip in Ut) for 0.5 cycle 40% Ut (60% dip in Ut) for 5 cycles 70% Ut (30% dip in Ut) for 25 cycles <5% Ut (>95% dip in Ut) for 5 sec	< 12V (>95% dip in 240V) for 0.5 cycle 96V (60% dip in 240V) for 5 cycles 168V (30% dip in 240V) for 25 cycles <12V (>95% dip in 240V) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the VPAP III ST-A requires continued operation during power mains interruptions, it is recommended that the VPAP III ST-A be powered from an uninterruptible power source
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment

NOTE: Ut is the a.c. mains voltage prior to application of the test level.

(Continued next page)

Guidance and manufacturer’s declaration – electromagnetic immunity (Continued)

The VPAP III ST-A is intended for use in the electromagnetic environment specified below. The customer or the user of the VPAP III ST-A should assure that it is used in such an environment.

Immunity test	IEC60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC 61000-4-6</p> <p>Radiated RF IEC 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>10 V/m 80 MHz to 2.5 GHz</p>	<p>3 Vrms</p> <p>10 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the VPAP III ST-A, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> <p>$d = 1.17 \sqrt{P}$</p> <p>$d = 0.35 \sqrt{P}$ 80 MHz to 800 MHz</p> <p>$d = 0.70 \sqrt{P}$ 800 MHz to 2.5 GHz</p> <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 

NOTE 1: At 80 MHz and 800MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the VPAP III ST-A is used exceeds the applicable RF compliance level above, the VPAP III ST-A should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the VPAP III ST-A.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 10 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the VPAP III ST-A

The VPAP III ST-A is intended for use in an environment in which radiated RF disturbances are controlled. The customer or the user of the VPAP III ST-A can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the VPAP III ST-A as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150kHz to 80MHz $d = 1.17 \sqrt{P}$	80 MHz to 800 MHz $d = 0.35 \sqrt{P}$	800MHz to 2.5 GHz $d = 0.35 \sqrt{P}$
0.01	0.17	0.04	0.04
0.1	0.37	0.11	0.11
1	1.17	0.35	0.35
10	3.69	1.11	1.11
100	11.70	3.50	3.50

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

LIMITED WARRANTY

ResMed warrants that your ResMed product shall be free from defects in material and workmanship for the period specified below from the date of purchase by the initial consumer. This warranty is not transferable.

Product	Warranty Period
ResMed humidifiers, ResControl™, ResLink™	1 Year
ResMed flow generators	2 Years
Accessories, mask systems (including mask frame, cushion, headgear and tubing). Excludes single-use devices.	90 Days

Note: *Some models are not available in all regions.*

If the product fails under conditions of normal use, ResMed will repair or replace, at its option, the defective product or any of its components. This Limited Warranty does not cover:

- a) any damage caused as a result of improper use, abuse, modification or alteration of the product;
- b) repairs carried out by any service organization that has not been expressly authorized by ResMed to perform such repairs;
- c) any damage or contamination due to cigarette, pipe, cigar or other smoke;
- d) any damage caused by water being spilled on or into a flow generator.

To make a warranty claim, the initial consumer must return the defective product to the point of purchase, freight prepaid.

This warranty is in lieu of all other express or implied warranties, including any implied warranty of merchantability or fitness for a particular purpose. Some regions or states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

ResMed shall not be responsible for any incidental or consequential damages claimed to have occurred as a result of the sale, installation or use of any ResMed product. Some regions or states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from region to region.

For further information on your warranty rights, contact your local ResMed dealer or ResMed office.

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