RESMED

AUTOSET CS™ 2

USER'S MANUAL

English

ResMed.com

TABLE OF CONTENTS

INTRODUCTION

AUTOSET CS2

The AUTOSET CS 2™ flow generator has been designed to be reliable, comfortable and easy to use. You can observe your treatment and make adjustments to settings using a keypad and LCD screen.

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.

DEFINITIONS

The WARNING heading alerts you to possible injury.

The CAUTION heading explains special measures for the safe and effective use of the device.

MEDICAL INFORMATION

INTENDED USE

The AUTOSET CS2 is indicated to stabilise the ventilation of adult patients exhibiting central sleep apnoea (CSA), mixed sleep apnoea and periodic breathing, with or without obstructive sleep apnoea. It is intended for home and hospital use.

CONTRAINDICATIONS

The AUTOSET CS2 is not a life support ventilator and may stop operating with power failure or in the unlikely event of certain fault conditions.

ASV therapy is contraindicated in patients with chronic, symptomatic heart failure (NYHA 2-4) with reduced left ventricular ejection fraction (LVEF ≤ 45%) and moderate to severe predominant central sleep apnoea.

Before using the AUTOSET CS2, tell your doctor if you have any of the following conditions:

• acute sinusitis or otitis media
• epistaxis (severe nose bleeds) causing a risk of pulmonary aspiration
• conditions predisposing to a risk of vomiting into mask
• impaired ability to clear secretions
• hypotension or significant intravascular volume depletion
• pneumothorax or pneumomediastinum
• recent cranial trauma or surgery.

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

WARNINGS

- The AUTOSET CS2 is NOT a life support ventilator.
- Before putting patients on ASV, each patient should be assessed for heart failure. In case of signs and symptoms of heart failure an objective assessment of LVEF should be performed.
- The entire manual should be read before using the AUTOSET CS2.
- Advice contained in this manual should not supersede instructions given by the prescribing physician.
- The AUTOSET CS2 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 AUTOSET CS2.
- The AUTOSET CS2 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.
- 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 AUTOSET CS2 can be set to deliver pressures up to 20 cmH$_2$O. In the unlikely event of certain fault conditions, pressures of up to 40 cmH$_2$O for up to 0.7 seconds are possible.
- The AUTOSET CS2 is not suitable for use in the vicinity of flammable anaesthetics.
- If oxygen is used with the AUTOSET CS2, 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 AUTOSET CS2 if there are obvious external defects or unexplained changes in performance.
- Do not open the AUTOSET CS2 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 a course of therapy with the AUTOSET CS2:

- drying of the nose, mouth or throat
- bloating
- ear or sinus discomfort
- eye irritation
- skin rashes
- chest discomfort.

QUICK SETUP GUIDE

1   Attach the air tubing and pressure sensor tube to the AUTOSET CS2 and mask (page 11).
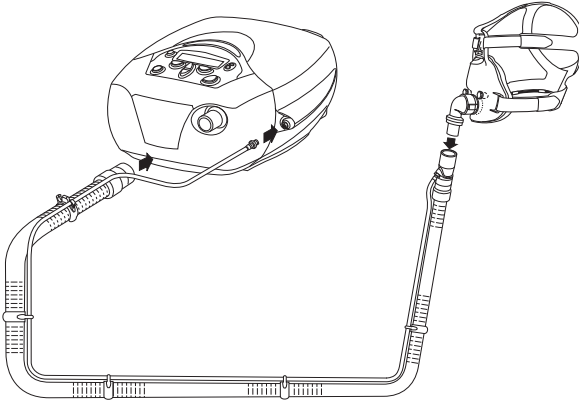
2   Attach a humidifier if required (page 13).

3   Switch on the AUTOSET CS2. Make sure the mask is unblocked.

4   Select the mask setting (page 26).

5   Perform the Air Circuit Learn function (page 26) at first-time use, or if you are adding or removing a component of the system (eg a humidifier or anti-bacterial filter).

6   Fit the mask and commence breathing into it. The SMARTSTART function should trigger treatment to commence within the first couple of breaths. If not, press the **Start/Stop** key once to commence treatment (page 21).

NOTE   *You can observe treatment progress (eg mask leak) via the Treatment screens (page 29).*

7   Remove your mask to stop treatment. If SMARTSTOP is enabled, treatment will stop automatically. If the SMARTSTOP function has been disabled, press the **Start/Stop** key once.

THE AUTOSET CS2 SYSTEM

AUTOSET CS2 COMPONENTS

The AUTOSET CS2 flow generator is supplied with air tubing and a power cord.

Masks are supplied separately, as you and your clinician have to decide which mask is best for you. Masks that can be used with AUTOSET CS2 are listed on page 10.

Some people experience dryness of the nose, mouth and throat while using the AUTOSET CS2 system, especially during winter. Others may experience sneezing and/or a runny or blocked nose during the first few weeks of AUTOSET CS2 treatment. In many cases, these symptoms of nasal irritation can be resolved with a humidifier. See page 14 to connect a humidifier to the AUTOSET CS2.
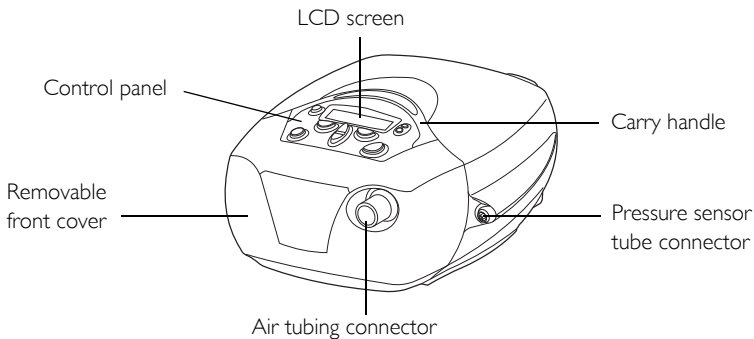
Figure 1: AutoSet CS2 flow generator

The control panel allows you to adjust settings on the flow generator, and the LCD screen displays information about your treatment. See "Control Panel Functions" on page 22.
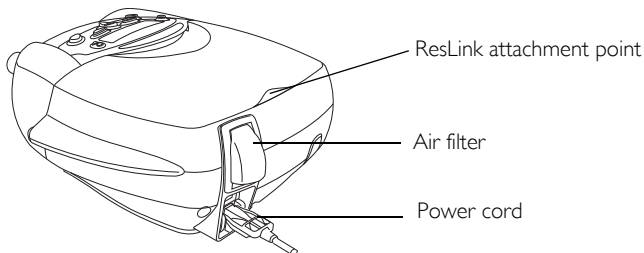
Figure 2: Rear of AutoSet CS2

The AUTOSET CS2 can run on AC or DC power. See page 11 to see how to connect the power cords and use the locking device. See page 17 to connect a RESLINK™. See page 36 to replace the air filter.

Proximal cuff   Tube clip   Pressure sensor tube   Luer connector

**Connect this end
to the mask**   Air tubing   **Connect this end
to the flow generator**

Figure 3: Air tubing fully assembled

All necessary air tubing components are packed with the AUTOSET CS2:

- a 2-metre length of air tubing
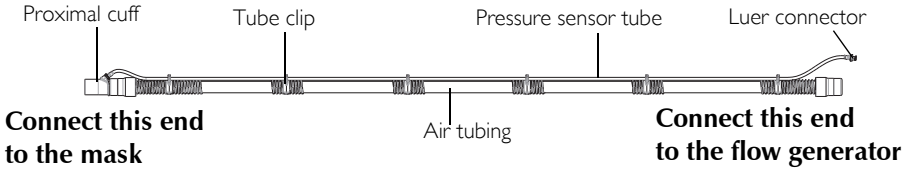- a pressure sensor tube (to measure pressure at the mask) with Luer connectors
- tube clips (to hold the pressure sensor tube onto the air tubing)
- a Proximal cuff (a special connector that attaches the pressure sensor tube into the main air tubing so that you only need to make one attachment to the mask).

The air tubing is supplied with the Proximal cuff connected. Attach the tube clips evenly along the air tubing. Press the pressure sensor tube into the tube clips, and screw the Luer connectors together at the Proximal cuff. Make sure the pressure sensor tube is not kinked, obstructed or twisted.

NOTE *ResMed recommends the following tubing products for use with the AutoSet CS2: replacement air hose (only) PN 14948; replacement air delivery system (hose, sensor line, clips, proximal cuff) PN 26909.*

MASKS

The following mask systems (supplied separately) are recommended for use with the AUTOSET CS2 system. Please refer to the table on page 26 to set up your mask correctly for use with the AUTOSET CS2.
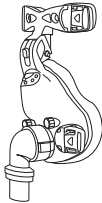
ULTRA MIRAGE™
FULL FACE MASK
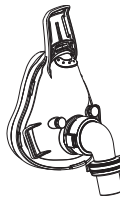
MIRAGE™ FULL FACE
MASK SERIES 2
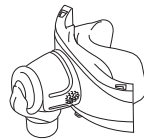
MIRAGE VISTA™
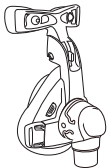
MIRAGE ACTIVA™

ULTRA MIRAGE™
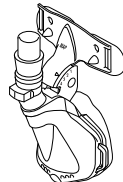
PAPILLON

Your clinician can explain the features of the masks available, and will discuss the mask that best suits your needs.

10

ASSEMBLING THE AUTOSET CS2 SYSTEM

Complete the following steps to assemble the AUTOSET CS2 system. Make sure the area around the unit is clean (dust free) and clear of bedding, clothes and any other potential blockages.

To add a humidifier see page 14.

⚠ **WARNING**

Use only the air tubing system supplied with the AUTOSET CS2 system.

---

1   **Connect the power cord**

Place the flow generator on a table near the head of your bed.

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 page 18). ResMed recommends using the AC power cord supplied with the unit. In the absence of this cord, a standard AC power cord may be used.

The customised ResMed power cord 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.
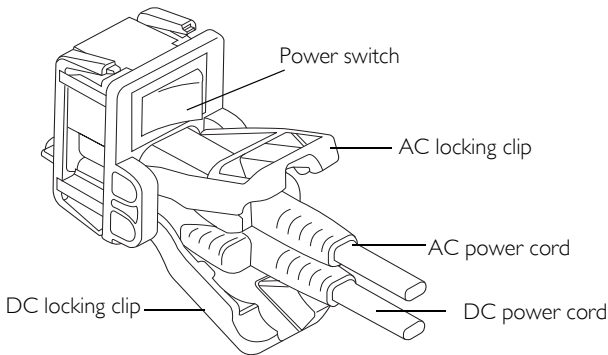
Plug the free end of the power cord into a power outlet.

⚠ **CAUTION**

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

NOTE *The AUTOSET CS2 can also function when mounted on a wall (unless the HumidAire 2i or HumidAire 2iC is attached). The preferred position is with the air tubing at the bottom, so that there are no bends in the tubing.*

2   **Connect air tubing**

Connect the air tube firmly onto the air outlet at the front of the unit.

Air tubing connector

Pressure sensor tube connector
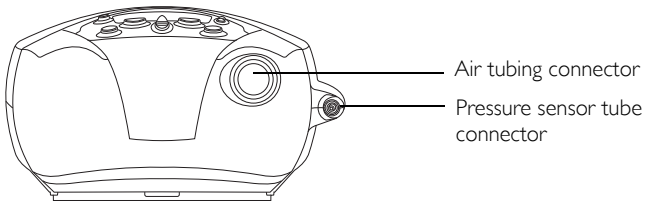
Figure 4: Front view of AutoSet CS2

To attach the pressure sensor tube to the unit, screw the Luer connector onto the socket on the side of the unit.
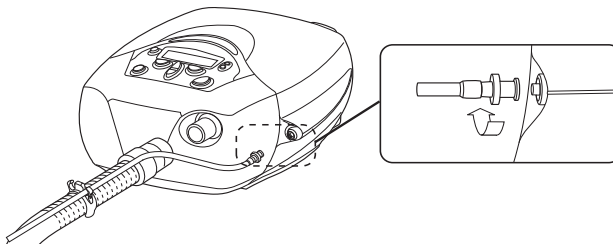
Figure 5: Twisting the Luer lock connectors together

WARNING

Use care when handling the air tubing. Be particularly careful when attaching the Luer connector to the AUTOSET CS2. If you kink or excessively twist the sensor tube, it may affect the protection offered by the mask pressure alarm system.

3 **Attach the mask to the air tubing.**

The mask system should already be assembled. If it is not, please refer to the user instructions supplied with the mask.

Connect the mask system to the free end of the air tubing.

Proximal cuff
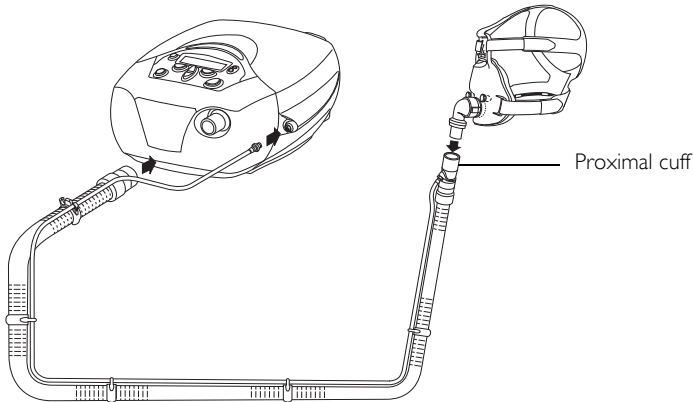
Figure 6: Assembling the AutoSet CS2 system

HUMIDIFIERS

A humidifier may be required if you are experiencing dryness of the nose, throat or mouth. The following ResMed humidifiers are compatible with the AUTOSET CS2:

HUMIDAIRE™
heated humidifier
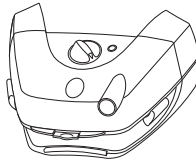
HUMIDAIRE 2i™
heated humidifier
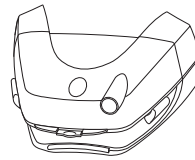
HUMIDAIRE 2iC™
passover humidifier

HUMIDIFIER ACCESSORY (HUMIDAIRE ONLY)

Medium air tubing
(52cm)

Figure 7: Humidifiers compatible with the AutoSet CS2

When using a humidifier, stop the AUTOSET CS2 by using the **Start/Stop** key or by removing the mask to trigger the SMARTSTOP function. Do not switch the AUTOSET CS2 off at the power switch or the power source while it is running, as this could result in condensation in the motor.

THE AUTOSET CS2 SYSTEM

CONNECTING A HUMIDIFIER

NOTE *After connecting or removing a humidifier, always perform the Air Circuit Learn function (see page 26).*

⚠️ **WARNING**
When using a humidifier, position it so that it is lower than your head will be during sleep, and at the same level or lower than the AUTOSET CS2.

HUMIDAIRE 2i™ AND HUMIDAIRE 2iC™

The HUMIDAIRE 2i™ provides heated humidification, and the HUMIDAIRE 2iC™ provides passover humidification.

To attach the HUMIDAIRE 2i or HUMIDAIRE 2iC, remove the AUTOSET CS2 front cover and attach the humidifier docking station and water chamber. Please refer to the *HUMIDAIRE 2i* or *HUMIDAIRE 2iC User's Manual* for details. No other accessories are required for use. Once you have performed the Air Circuit Learn function the AUTOSET CS2 is ready for use. See "Starting Treatment" on page 21.
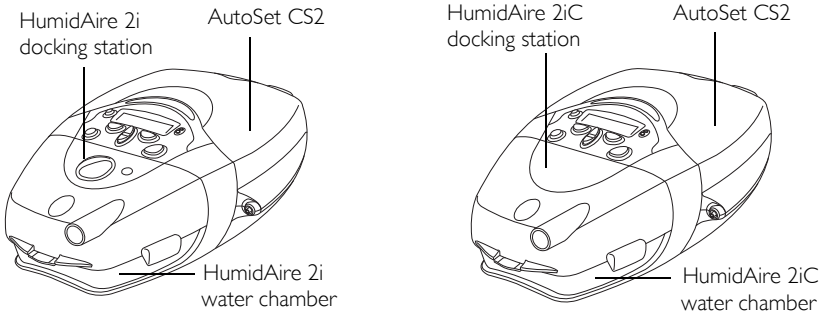
Figure 8: HumidAire 2i and Humidaire 2iC attached to the AutoSet CS2
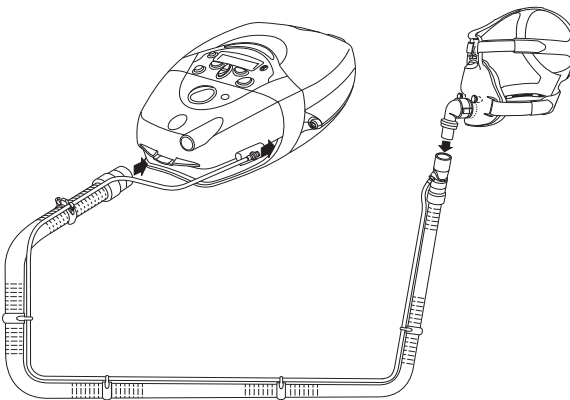
Figure 9: HumidAire 2i attached to AutoSet CS2 and mask

HUMIDAIRE

You will need a Medium size (52cm) air tube to connect the AUTOSET CS2 unit to the HUMIDAIRE™ (see Figure 7).

1   Make sure both the HUMIDAIRE and the AUTOSET CS2 are turned off.

Fill the HUMIDAIRE with water as described in the humidifier manual. Place the filled water chamber inside the HUMIDAIRE.

2   Gently detach enough of the tube clips to release the end of the pressure sensor tube from the AUTOSET CS2 air tubing.

Connect the AUTOSET CS2 air tubing to the left connector port on the humidifier, and the medium (52cm) air tubing to the right connector port. Close the HUMIDAIRE lid.
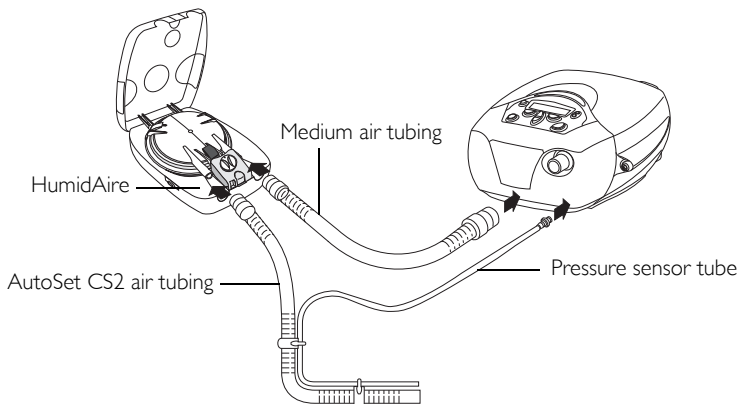
3   Place the AUTOSET CS2 on top of the HUMIDAIRE. Do not place the AUTOSET CS2 unit underneath the humidifier. (This is to avoid water spilling into the unit.)
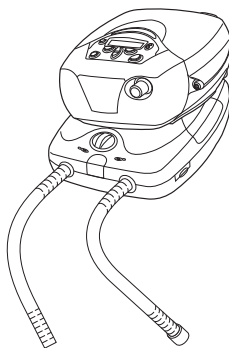
4   Connect the free end of the medium air tubing to the AUTOSET CS2.

Connect the pressure sensor tube by twisting the Luer lock onto the AUTOSET CS2 (see page 12).
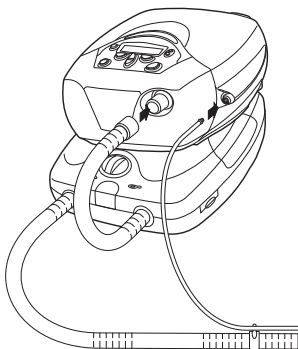
5   Connect the mask system to the free end of the long air tubing. The final assembly should look like this:
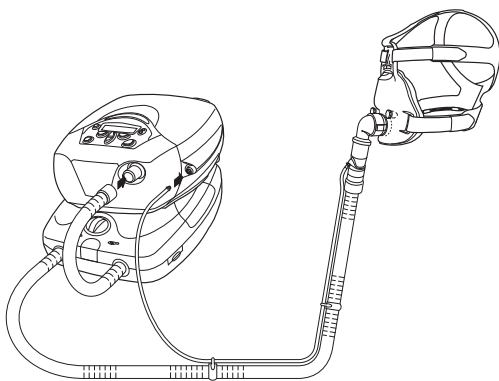
6   Switch on the HUMIDAIRE and the AUTOSET CS2.

⚠ **WARNING**
Make sure that the power cords and plugs are in good condition and the equipment is not damaged.

7   **Perform the Air Circuit Learn function** (see page 26).

For information about filling and maintaining your humidifier, refer to the *HumidAire User's Manual*.

The AUTOSET CS2 is now ready for use with the HUMIDAIRE. See "Starting Treatment" on page 21.

⚠ CAUTION

- **Be very careful not to allow water to enter the AUTOSET CS2** as this could affect therapy and/or damage the device.
- **Do not tip the HUMIDAIRE while it is connected to the AUTOSET CS2**. If water enters the AUTOSET CS2 device, turn off the main power switch at the back of the unit and unplug it from the power outlet. Return the unit to your equipment supplier for checking.
- Set up the HUMIDAIRE and the AUTOSET CS2 unit so that the tubing to the mask runs higher than the machines. This will prevent condensation build-up.
- If condensation appears in the mask, turn the humidifier settings down.

RESLINK™

The **RESLINK™** is a device that records data onto a SmartMedia™ card during your therapy. The card can be returned to your clinician so that they can observe your progress and adjust flow generator parameters if necessary. The **RESLINK** connects to the back of **AUTOSET CS2** as shown. For full details on using the **RESLINK**, please refer to the *ResLink User's Manual*.
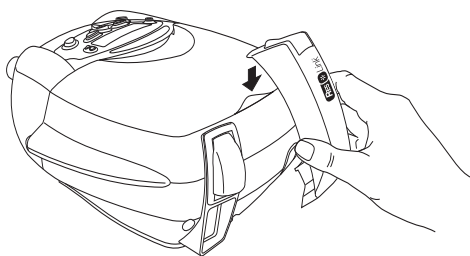
ANTI-BACTERIAL FILTER

Your clinician may recommend that you use an anti-bacterial filter. A filter should be placed in the air tubing between the mask and the flow generator. If using a humidifier, place the filter between it and the flow generator (see Figure 10 below).

Typically, the filter should be replaced daily. Check the filter instructions for full details.

Whenever a filter is added, removed or replaced you must run the Air Circuit Learn function (see "Learn Circuit" on page 26).

NOTE *Only hydrophobic anti-bacterial filters should be used with a* HUMIDAIRE 2i *or* HUMIDAIRE 2iC.

Anti-bacterial filters
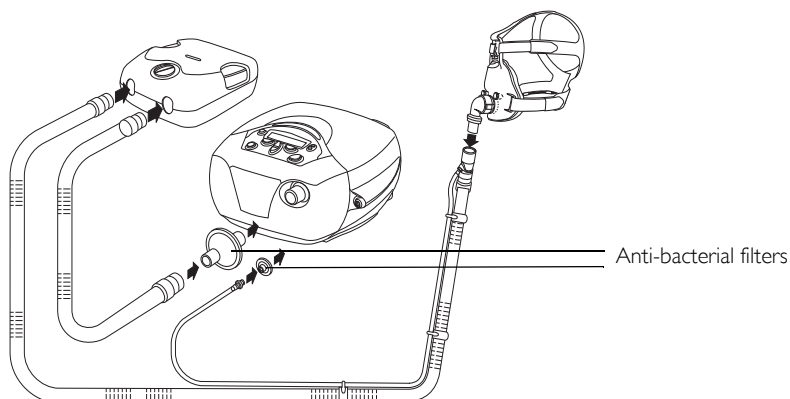
Figure 10: Inserting anti-bacterial filters

USING DC POWER TO RUN THE AUTOSET CS2

The AUTOSET CS2 can be run on DC current in case of power failure or for portable use. ResMed supplies a convertor that allows a 12V battery to be connected to the DC input of the AUTOSET CS2. The converter can also be plugged in to a power source in a car or plane. When using DC current, 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 AUTOSET CS2. The DC converter is a separate accessory that can be purchased through your ResMed distributor.

The humidifer heater will be automatically disabled when the AUTOSET CS2 is operating from the DC supply.

Power consumption of the AUTOSET CS2 varies with treatment settings. A typical current of between 2.5A and 3.0A will be drawn from a 12V battery during use. 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.

⚠ CAUTION

The AUTOSET CS2 uses 30V DC power. Only connect the AUTOSET CS2 to DC power using the ResMed DC-DC convertor specified for this application.

USING SUPPLEMENTAL OXYGEN

If oxygen is being added at the mask, the oxygen tube is attached to the mask port. Refer to your mask manual for full instructions.

Up to 15 L/min of oxygen can be added at the mask when using an AUTOSET CS2 system.

Oxygen tube
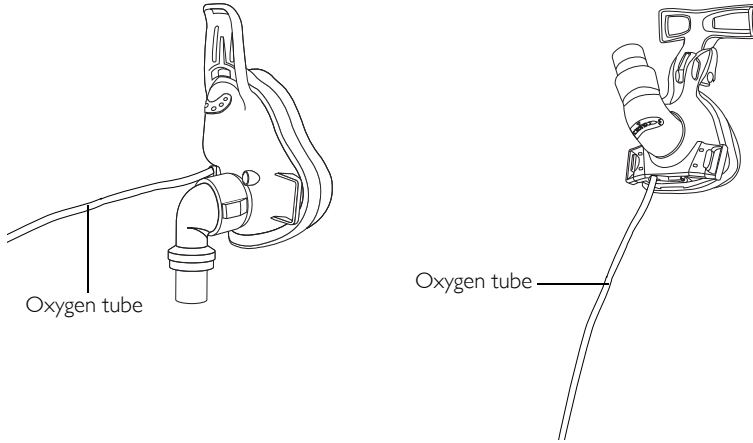
Oxygen tube

Figure 11: Oxygen tube attached to Mirage FFMS2 and Ultra Mirage masks

⚠ WARNINGS

- If oxygen is used with this device, the oxygen flow must be turned off when the device is not operating.
  Explanation: When the device is not in operation, and the oxygen flow is left on, oxygen delivered into the ventilator tubing may accumulate within the device enclosure and create a risk of fire.
- Always begin AUTOSET CS2 therapy before the oxygen supply is turned on.
- Always turn the oxygen supply off before stopping AUTOSET CS2 therapy.
- Oxygen supports combustion. Oxygen should not be used while smoking or in the presence of an open flame.

Using the AutoSet CS2

> ⚠ **WARNING**
> Before starting therapy with a new mask, select the correct mask type in the Settings menu (page 26). When adding or removing a new component such as a mask, humidifier or anti-bacterial filter, perform the Air Circuit Learn function (page 26).

Starting Treatment

When the system is fully assembled, press the power switch at the back of the AutoSet CS2 to ON. The Welcome screen will be displayed while the flow generator is warming up. Allow the unit to warm up for approximately 30 seconds before placing the mask on your face.


```
WELCOME
▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
```

Figure 12: Welcome screen

Once the AutoSet CS2 has warmed up, breathing into the mask should start therapy immediately. If not, press the **Start/Stop** key once to commence treatment.

The AutoSet CS2 restarts in the mode in which it stopped.

Stopping Treatment

If SmartStop is enabled, treatment will stop automatically when you remove your mask. If the SmartStop function has been disabled, press the **Start/Stop** key.

Standby Mode


```
AUTOSET CS2
menu
```
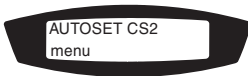
Figure 13: Standby screen

Once you have stopped treatment, the AutoSet CS2 will be in standby mode. In standby you can:

- press the power switch at the back to OFF to turn off the flow generator
- commence treatment again by breathing into the mask or pressing the **Start/ Stop** key
- enter any of the menus by pressing the **Left** key.

When in standby mode, a gentle (non-therapeutic) flow of air will still be present.

NOTE *If the SMART DATA - AUTO APPEAR option is set to ON, the screens available under the Results menu will be displayed automatically for approximately 20 minutes after your session is completed.*

CONTROL PANEL FUNCTIONS

The control panel of the AUTOSET CS2 has a keypad that allows you to:

- start or stop treatment
- adjust settings on the flow generator
- mute or stop alarms
- view treatment data.
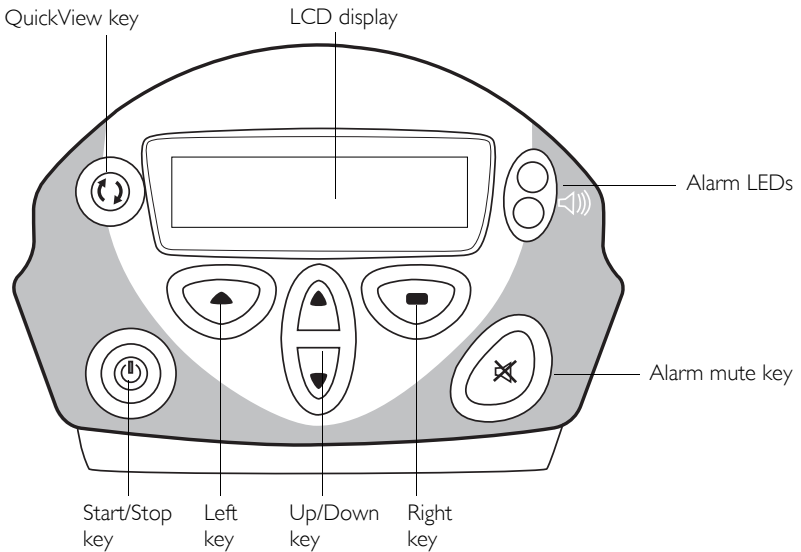
Figure 14: The AutoSet CS2 control panel

LCD SCREEN

Displays information about flow generator settings, alarms and treatment. The LCD screen is backlit whenever any key is pressed. The lighting will turn off automatically when no button has been pressed for 2 minutes, or can be set to stay on (see "Options menu" on page 28).

An alarm message will overwrite any other message on the screen. The original screen will reappear when any key is pressed.

START/STOP KEY

- Press the key once to start or stop treatment.

UP/DOWN KEY

- Moves backwards and forwards within a menu and between menus.
- Increases and decreases values of parameters — press once to adjust in single increments; hold down to move quickly through the values.

LEFT KEY (GREEN)
- Enters a menu.
- Confirms and applies settings.
- Performs the function indicated by the text above it in the LCD (eg 'enter', 'change').

RIGHT KEY (RED)
- Performs the function indicated by the text above it in the LCD (eg 'exit').
- Cancels operations.
- Extended hold: exits to the top level of the menu.

QUICKVIEW KEY

Takes you immediately to the Treatment screens, with information on your current therapy. See "Treatment Screens" on page 29.

ALARM LEDS AND ALARM MUTE

The Alarm LEDs are lights that indicate that an alarm has been triggered. Alarms can be muted by pressing the **Alarm mute** key once. The Alarm LEDs will remain lit for as long as the alarm is being triggered. See "The Alarms" on page 31.

ADJUSTING SETTINGS

By using the **Left**, **Right** and **Up/Down** keys you can adjust some aspects of your treatment. The settings can be seen in the LCD display.

The settings are arranged into five menus:

Table 1: Menus and adjustments for AutoSet CS2

Settings	Alarms	Results*	Options	Servicing
Ramp (CPAP mode only): change time	Sound level: LOW, MED, HIGH	Mask fit	Smart data: Auto appear— on/off*	SN (serial number)
Mask type: change type	LOW PS	Average Pressure	Backlight: Auto/ on	PCB (printed circuit board)
Learn circuit: run		Usage	Language: English/ French/ German/Italian/ Spanish/Swedish/ Portuguese/ Dutch	SW (software version)
SmartStop: off/on				
Leak alert: off/on				

* These menus appear only if at least one Smart Data option has been enabled by the clinician.

To change a setting, press the **Up/Down** key until you arrive at the menu you require.

- Press the **Left** key to enter the menu, then use the **Up/Down** key again to scroll through the options.

- Once you find the option you require, press the **Left** key to select the function that is displayed in the bottom left of the screen eg 'change', 'yes'.
- Use the **Up/Down** key to alter the parameters, and press the **Left** key when you have the setting you require.
- Press the **Right** key to exit from the menu.

EXAMPLE

You wish to change the sound level for the alarms.

SETTINGS		
enter	↓	exit

Press 'down' arrow on Up/Down key to move to next menu

ALARMS		
enter	↕	exit

Press Left key to enter menu options

SOUND LEVEL: LOW		
change	↕	exit

LOW PS: ON		
	↑	exit

1. Press Left key to select 'change'.
2. Press Up/Down key to reach setting
3. Press Left key to enter setting
4. Press Right key to exit

RESULTS		
enter	↕	exit

OPTIONS		
enter	↕	exit

SERVICING		
enter	↑	exit
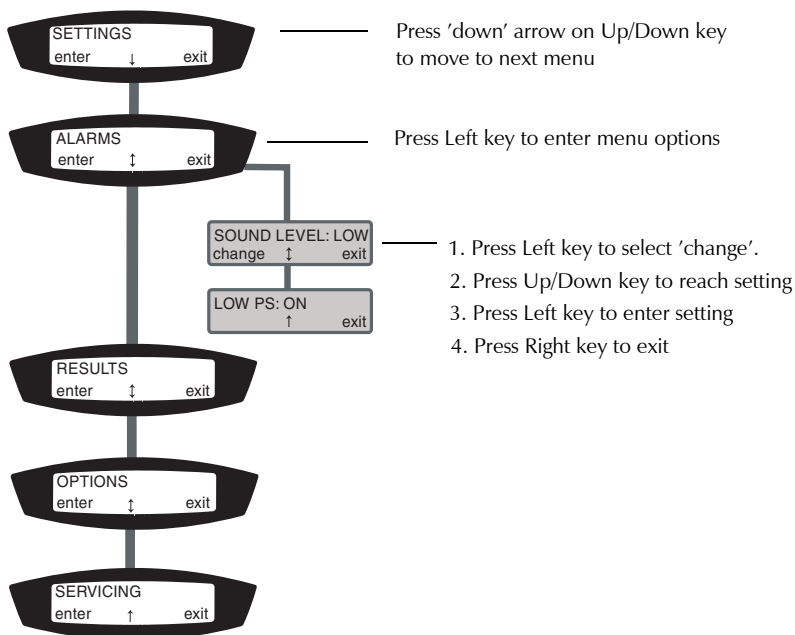
Figure 15: Using the keys to adjust settings

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MENUS

The options available in the Settings menu will depend on the therapy you are receiving, set by your clinician.

AUTOSET CS2
menu

SETTINGS
enter ↕ exit

ASV-CS MODE

CPAP MODE

MASK:FULL FACE
change ↕ exit

RAMP: 20min
change ↕ exit

LEARN CIRCUIT?
yes ↕ exit

MASK: FULL FACE
change ↕ exit

SMARTSTOP:OFF
change ↕ exit

LEARN CIRCUIT?
yes ↕ exit

LEAK ALERT:OFF
change ↕ exit

SMARTSTOP:OFF
change ↕ exit

ALARMS
enter ↕ exit

LEAK ALERT:OFF
change ↕ exit

SOUND LEVEL:LOW
change ↕ exit

LOW PS:ON
↕ exit

RESULTS
enter ↕ exit

These menus appear only if at least one Smart Data option has been enabled by the clinician.

MASK FIT: ***⁻ ⁻
good ↕ exit

AVG PRESS: 10.4
↕ exit

USAGE:4.56hrs
↕ exit

OPTIONS
enter ↕ exit

SMART DATA
enter ↕ exit

AUTO APPEAR: OFF
exit

BACKLIGHT:AUTO
change ↕ exit

LANGUAGE:ENGLISH
change ↕ exit

SERVICING
enter ↕ exit

SN: 1234567890123
4567 ↕ exit

PCB: 123456789012
↕ exit

SW: SX245-0117
↕ exit

Figure 16: Navigating the Patient menu.

SETTINGS MENU

You will only see the options relevant to your therapy. In CPAP (Continuous Positive Airway Pressure) mode, the clinician sets a pressure that will be constant throughout treatment. In ASV-CS mode, AUTOSET CS2 continually measures your breathing and regulates the air pressure accordingly.

MASK

Select the type of mask that you will be using (you will only need to adjust this if you have more than one mask). The following table shows the setting that should be selected for each mask type. If your mask type is not mentioned below, please contact your clinician. Not all mask types can be used with the AUTOSET CS2.

Option in Settings menu	Use setting with:
Vista	VISTA™
Ultra	ULTRA MIRAGE™
Full Face	MIRAGE™ FULL FACE MASK SERIES II ULTRA MIRAGE FULL FACE MASK
Activa	ACTIVA™
Papillon	Papillon

Table 2: Selecting mask options in the Settings menu

LEARN CIRCUIT

The Air Circuit Learn function takes approximately 20 seconds to run. It allows the unit to 'learn' what pressure it needs to build in to its calculations, based on the components in the system. Select LEARN CIRCUIT every time you add or remove a component (eg mask, humidifier) or move to a significantly different altitude.
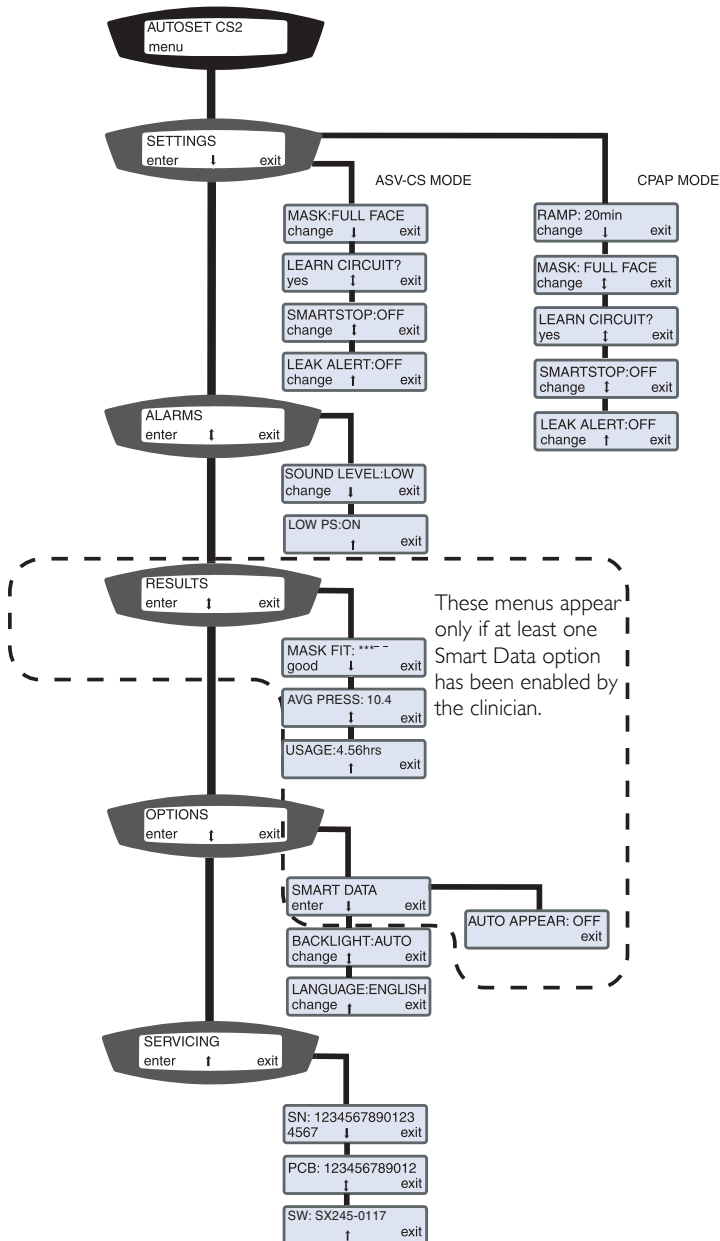
To run this function:

1. Set up the entire AUTOSET CS2 system (flow generator, mask, humidifier etc) as you wish to use it.
2. Make sure that the mask is unobstructed so air can flow from the mask to the flow generator.
3. Turn on the AUTOSET CS2 at the power switch.
4. Move through the menus until you reach LEARN CIRCUIT and select 'yes' by pressing the **Left** key.
5. A message will remind you to check that the airflow from the mask is clear. Select 'start' with the **Left** key.
6. A progress screen is displayed while the Air Circuit Learn function is running.

7. When the function is complete, a screen will appear saying that the circuit has been learned successfully. The next menu item is then displayed. Commence treatment as described in "Starting Treatment" on page 21.

If there is a problem with the circuit, a screen saying 'Invalid circuit' will be displayed instead of the progress screen. Check that all the connections between the pieces of equipment are secure. You may need to return to the previous chapter of this manual to check that you have set up the system correctly.

SMARTSTOP

Turn the **SMARTSTOP** function on or off. When **SMARTSTOP** is on, the **AUTOSET CS2** will automatically turn itself off when the mask is removed.

NOTE *The unit will automatically 'SmartStart' whenever you start to breathe into the mask.*

LEAK ALERT

Turn Leak Alert on or off. Leak Alert sounds an alarm when you have a high leak from your mask. You can then adjust the mask on your face to remove the leak.

If Leak Alert is turned off, an extra leak alert message will be displayed at the end of a session if high leak occurred. The message will be displayed until a key is pressed.

RAMP (CPAP MODE ONLY)

Ramp time is the length of time taken for the air pressure to build up to the maximum pressure set by your clinician. This setting allows you to increase or decrease the ramp time in 5-minute intervals.

If you find that you are still awake when the air pressure starts to build, you may wish to increase the Ramp time.

ALARMS MENU

SOUND LEVEL

You can change the sound level of the alarms in the Alarms menu. Choose low, medium (MED) or high level to suit your needs.

LOW PS

If the clinician has enabled the Insufficient Pressure Support alarm, LOW PS will show in this menu item. See "Insufficient pressure support alarm" on page 33.

RESULTS MENU

This menu has a series of screens showing information about your most recent treatment session. If enabled by your clinician the following data may be viewed:

- Mask fit
- Average Pressure
- Usage

MASK FIT

Gives a rating of how well the mask was fitting during your last session on the AUTOSET CS2. The stars indicate how good the fit was (more stars = better fit).

Star rating	Definition
*****	Excellent
****–	Very good
***——	Good
**———	Adjust mask
*———	Adjust mask
HIGH LEAK	Adjust mask

AVERAGE PRESSURE

Provides information on the average air pressure during your most recent session on the AUTOSET CS2.

USAGE

Tells you how long the AUTOSET CS2 was in use during your most recent session.

OPTIONS MENU

The Options menu allows you to change:

- Smart Data (Auto Appear)
- Backlight
- Language

SMART DATA

If the SMART DATA - AUTO APPEAR option is set to ON, the screens available under the Results menu will be displayed automatically for approximately 20 minutes after your session is completed. After this time the data will still be available in the Results menu.

If you want to turn off AUTO APPEAR, select 'enter' in the SMART DATA screen by pressing the **Left** key. The AUTO APPEAR screen will be displayed. Select 'change' by pressing the **Left** key and you will switch from ON to OFF (similarly, you can turn it from OFF to ON). Your clinician may also turn off AUTO APPEAR.

BACKLIGHT

On: Display a permanent backlight for the LCD.

Auto: Backlight turns off if no button has been pressed for two minutes.

LANGUAGE

Change the language of the LCD display. Languages available are: English, French, German, Italian, Spanish, Portuguese, Swedish, Dutch.

SERVICING MENU

This menu displays the following information:

- SN – the flow generator's serial number
- PCB – the flow generator's PCB number (PCB — printed circuit board)
- SW – the version of software currently installed on the flow generator.

TREATMENT SCREENS

There are three Treatment screens displayed in the AUTOSET CS2 LCD. The LCD will display the Treatment screens when treatment commences, and during treatment if no key is pressed for 20 minutes.

Press the **QuickView** key at any point within a menu to display Treatment Screen 1. You can return to your original screen if you press the **QuickView** key again within 20 minutes.

Press the **Right** key to move from a Treatment screen to the Standby screen.

If an alarm is triggered while you are in the Treatment screens, the arrow will flash. Press the **Down** key until you reach the alarm message.

Scroll through the screens in the usual way, using the **Up/Down** key.

Treatment mode   Pressure

```
ASV-CS 5.0--15.0
▐▐▐▐▐▐▐▐▐▐        ↓      exit
```
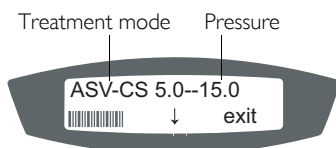
Figure 17: Treatment Screen 1

Leak   Respiratory rate

```
LK:18L/min   RR:12
APNEA    ↕   VT: 428
```

Apnoea / Hypopnoea
(if present)   Tidal volume

Figure 18: Treatment Screen 2

Minute ventilation   Target ventilation

```
MV:6.2    TARG:5.8
            ↑       exit
```
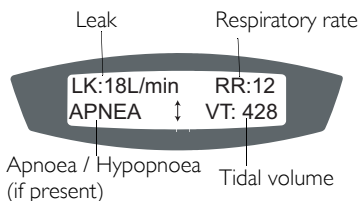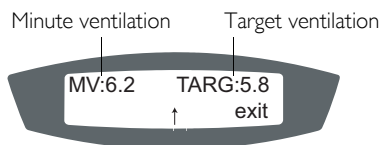
Figure 19: Treatment Screen 3

NOTE *TARG is not a relevant parameter in CPAP mode.*

THE ALARMS

The AUTOSET CS2 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 and pressure sensor tube have 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. Unless the alarm requires you to turn the power off, you can press any key again to remove the alarm message from the LCD screen. If the problem is still present, the alarm will sound and display again after one minute. The Alarm LED will remain lit for as long as the problem is present.

All menus remain available during an alarm.

We recommend that you test the audible alarm once a week. To do this, hold down the **Mute** key while the AUTOSET CS2 is starting up. If the alarm is functioning correctly it will beep twice.

LCD message	Alarm type	Action
LOW PRESSURE! Check circuit	Low mask pressure alarm	Check tube connections.
LCD turns off	Power fail alarm	Turn off AutoSet CS2 at power switch.
HIGH PRESSURE! Turn power off	High pressure alarm	Turn off AutoSet CS2 at power switch.
HIGH AVG PRESS! Turn power off	High pressure alarm	Turn off AutoSet CS2 at power switch.
HIGH LEAK! Check circuit	High leak alarm	Adjust the mask.
LOW PS! Check circuit	Insufficient Pressure Support alarm	Check tubing. Run LEARN CIRCUIT.
FLOW BLOCKED! Turn power off	Flow Blocked alarm	Turn off AutoSet CS2. Check air circuit. Turn on AutoSet CS2.

LOW MASK PRESSURE ALARM

TRIGGERED BY:

- pressure sensor line is blocked or disconnected
- air pressure at the mask has fallen below a set level
- mask is removed and SmartStop has been disabled.

IF A LOW PRESSURE ALARM SOUNDS:

1. Check that the air tube and sensor tube are connected properly.
2. Turn the AUTOSET CS2 off and on again at the power switch. If the alarm persists, return the unit to ResMed for servicing.

WILL CLEAR WHEN:
- the low pressure condition is fixed
- treatment is stopped by pressing the **Start/Stop** key.

POWER FAIL ALARM

TRIGGERED BY:
- power failure
- machine is disconnected or switched off while delivering treatment.

IF A POWER FAIL ALARM SOUNDS:
- The flow generator stops delivering air pressure.

WILL STOP:
- when the **Alarm Mute** key is pressed, or
- after 2 minutes, or
- when power is restored.

⚠ **CAUTION**
Remove the mask from your face if the power fails.

HIGH PRESSURE ALARM

TRIGGERED BY:
- the mask pressure exceeds the set trigger level (25 cmH$_2$O) for more than 700 milliseconds.

IF A HIGH PRESSURE ALARM SOUNDS:

1. The treatment will stop.
2. Turn power off.
3. Check that the air tube and sensor tubes are connected properly.
4. Turn power back on.
5. Remove mask and perform Air Circuit Learn function.
6. Try using the flow generator one more time.
7. 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.

NOTE *The alarm system is designed to ignore coughing. However, if a cough is especially intense and prolonged, it may trigger the high pressure alarm.*

WILL STOP WHEN:
- the AUTOSET CS2 is turned off.

HIGH LEAK ALARM

TRIGGERED BY:
- high mask leak (greater than 30 L/min) for more than 20 seconds.

IF A HIGH LEAK ALARM SOUNDS:
- Adjust the mask to minimise leak.

WILL STOP WHEN:

- the mask leak has been rectified.

NOTE *The High Leak alarm can be turned off in the Leak Alert option in the Settings menu.*

INSUFFICIENT PRESSURE SUPPORT ALARM

TRIGGERED BY:

- air pressure at the mask has failed to reach an expected level for 3 breaths
- the Air Circuit Learn function (page 26) has not been run after adding a new component (eg new mask, humidifier) to the system.

IF AN INSUFFICIENT PRESSURE SUPPORT ALARM SOUNDS:

- check that the pressure sensor tubing is not kinked
- check that the pressure sensor tubing is properly connected
- run LEARN CIRCUIT.

WILL STOP WHEN:

- the pressure sensor tubing is unobstructed and properly connected to the flow generator and mask
- treatment is stopped (**Start/Stop** key or SMARTSTOP)
- the AUTOSET CS2 is turned off.

FLOW BLOCKED ALARM

TRIGGERED BY:

- blockage in air circuit

IF A FLOW BLOCKED ALARM SOUNDS:

1. The treatment will stop.
2. Turn power off.
3. Check whether there is a blockage in the air circuit.
4. Remove blockage.
5. Turn power back on.
6. If the Flow blocked alarm activates repeatedly, discontinue use and return to ResMed for servicing. If the alarm does not recur, then continue to use as normal.

WILL STOP WHEN:

- blockage is removed.

CLEANING AND MAINTENANCE

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

DAILY

1. Disconnect the air tubing and pressure sensor tube and hang them 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 and pressure sensor tube from the AUTOSET CS2 unit and the mask.
2. Remove the pressure sensor tube and Proximal cuff from the air tubing.
3. Wash the mask system according to the instructions supplied with it.
4. Wash the air tubing and Proximal cuff in warm water using mild detergent. Rinse thoroughly, hang and allow to dry.
5. Before next use, assemble the mask and headgear according to the mask user instructions.
6. Reconnect the pressure sensor tube to the air tubing, then connect both to the Proximal cuff. Attach the Proximal cuff to the mask.
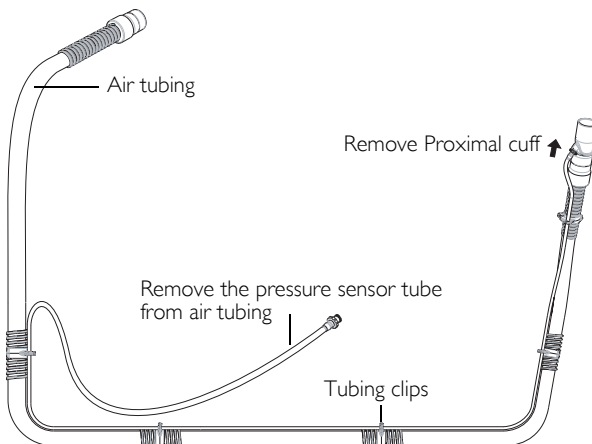

Figure 20: Undoing the air tubing assembly for cleaning

⚠ 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 AUTOSET CS2. These solutions may cause hardening and reduce the life of the product.
- Do not wash or dry the mask frame at a temperature above 80ºC (176ºF). Exposure to higher temperatures may reduce the life of the product.
- Do not hang the air tubing and pressure sensor tube 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. Open the power cord locking clip and remove the cord. 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 full instructions below.

⚠ 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

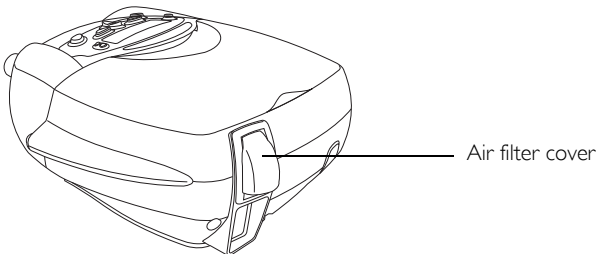Do not attempt to open the AUTOSET CS2. There are no user serviceable parts inside. Repairs and internal servicing should only be performed by an authorised service agent.

AIR FILTER

Inspect the air filter every month and check if it is blocked by dirt or contains holes.

Air filter cover

The filter should be replaced every 6 months, or more often if the flow generator is operating in a dusty environment.

⚠ **WARNING**

Do not wash the air filter once it has become soiled. The air filter is not washable or reusable.

FITTING THE FILTER

- Remove the filter cover at the back of the flow generator.
- Remove and discard the old air filter.
- Insert a new filter, the blue tinted side facing towards you.

NOTE *Match the cut corner of the filter with the shape of the casing.*

- Replace the air filter cover. The blue tinted side of the filter should be facing out.

HYPOALLERGENIC AIR FILTER

The ResMed hypo-allergenic filter is a standard filter to which an electrostatic filter has been bonded to capture very small particles. The filter is intended for those users of ResMed flow generators who will benefit from enhanced filtering of the air delivered during treatment.

Inspect the air filter every month and check if it is blocked by dirt or contains holes.

The filter should be replaced every three months, or more often if the flow generator is operating in a dusty environment.

Fit as described above.

SERVICING

This product (AUTOSET CS2) should be inspected by an authorised ResMed Service Centre 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 Authorised ResMed Service Centre.

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 flow generator.

Problem	Possible cause	Solution
Insufficient air delivered from flow generator	Air filter is dirty.	Replace air filter.
	Air tubing is kinked or punctured.	Straighten or replace tubing.
Flow generator operating erratically, ie, switching on and off, pressure varying at random	Water may have entered the air tubing.	Remove the water from the air tubing.
Pressure rises inappropriately	You are talking, coughing, voluntarily breath-holding (eg while rolling over in bed), or intentionally breathing in an unusual manner.	Avoid talking with the mask on, and breathe as normally as possible.
	Severe mask leak or mouth leak (greater than 30 L/min).	Correct your leak condition.
Alarm stays on continuously	Blockage in air circuit.	Ensure there is no barrier to the passage of air.
	Internal malfunction.	Return the device to your equipment supplier for service.
No LCD display	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.
FAULT message displayed on LCD	Internal malfunction.	Return the device to your equipment supplier for service.
System Error 7 message	Device power-on has been interrupted by breathing into the mask during warm up.	Turn the flow generator off and on again. Do not place mask on face during warm up (30 seconds). Select LEARN CIRCUIT (page 26). If the error is not cleared, contact your equipment supplier for service.
	Internal malfunction.	Return the device to your equipment supplier for service.

GLOSSARY

Alarms: When more than one alarm is activated at the one time, the highest priority alarm will be displayed.

Backlight: The backlight turns off if no button has been pressed for two minutes. It can also be kept permanently on by selecting *Auto* in the *Backlight* screen of the *Options* menu.

bpm: breaths per minute

L/min: litres per minute

Mean: The average value of the monitored parameter.

Minute ventilation: A measure of the respiratory rate × tidal volume.

Proximal cuff: A connector between the air tubing and the mask. The pressure sensor tubing attaches to the Proximal cuff so that pressure at the mask can be detected and monitored.

SmartStart: A feature that starts the AUTOSET CS2 automatically when you breathe into the mask.

SmartStop: A feature that stops the AUTOSET CS2 automatically when you remove the mask. You can turn SmartStop on or off in the *Settings* menu.

Tidal volume: The volume of air, in litres, breathed in or out in one breath.

TECHNICAL SPECIFICATIONS

DIMENSIONS (H x W x D)
142 x 248 x 293mm (5.6" x 9.8" x 11.5")

WEIGHT
Flow generator with cover: 3.7kg
Flow generator with HUMIDAIRE 2I (empty): 4.2kg

ENVIRONMENTAL CONDITIONS
Operating temperature: +5°C to +40°C
Storage and transport temperature: -20°C to +60°C
Humidity — operating, storage and transportation: 10%–95% non-condensing

HOUSING CONSTRUCTION
Injection moulded plastic

AIR TUBING
1 x 2m

AIR FILTER
Synthetic fibre

PATIENT CONNECTION PORT
22mm taper, compatible with EN 1281-1:1997 Anaesthetic & Respiratory Equipment
- Conical Connectors

POWER SUPPLY
AC Input range: 110–120 V and 220–240 V; 50–60 Hz; 60 VA
DC: 30V (via ResMed DC/DC converter)

PERFORMANCE
Operating pressure range: 4–20 cmH$_2$O

SOUND PRESSURE LEVEL
<30 dB (tested in accordance with the requirements of ISO 17510-1)

BATTERY TYPE
Lithium

ALARM SPECIFICATIONS
All alarms comply with EN 475 for Medium priority alarms: 3 beeps (935 Hz) repeated
at intervals of 25 seconds; yellow LED flashes.

- HIGH MAXIMUM MASK PRESSURE ALARM
  Stops air delivery at 25 cmH$_2$O >700 msec.
- HIGH MEAN MASK PRESSURE ALARM
  Stops air delivery when mean mask pressure exceeds 15 cmH$_2$O (averaged over
  approx 1 minute).
- LOW MASK PRESSURE ALARM
  Mask pressure is less than 3 cmH$_2$O for longer than 5 seconds while the patient is
  using the AUTOSET CS2.

- INSUFFICIENT PRESSURE SUPPORT ALARM

  Is triggered if for 3 breaths in a row the maximum mask pressure achieved at inspiratory to expiratory transition is either <87.5% of the absolute mask pressure targetted at that point, or < absolute mask pressure targetted minus 1 cmH$_2$O, whichever is the lower.
- HIGH LEAK ALARM

  Leak exceeds 30 L/min for more than 20 seconds.
- FLOW BLOCKED ALARM

  Flow is less than 6 L/min for more than 20 seconds.

IEC 601-1 CLASSIFICATIONS

Class II, Type CF

Class II medical electrical equipment provides protection against electric shock either by double insulation or reinforced insulation and does not require a protective earth.

Table 3: Displayed values

| Value	Range	Accuracy	Display Resolution
Proximal cuff			
Pressure	-3 to 40 cmH$_2$O	0.5 cmH$_2$O	0.1 cmH$_2$O
Mass flow sensor			
Leak	0–99 litres per minute	+/- 12 litres per minute	1 litre per breath
Respiratory rate	8–30 breaths per minute	+/- 10%	1 breath per minute
Tidal volume	0–4500 millilitres	+/- 10%	1 millilitre
Minute ventilation	0–40 litres per minute	+/- 10%	0.1 litres per minute
Target MV	0–40 litres per minute	+/- 10%	0.1 litres per minute

Table 4: Maximum low impedance flow at stated pressures

Pressure (cmH$_2$O)	Flow (L/min)
4.2	217
8.6	218
13.0	219

PRESSURE VARIATION
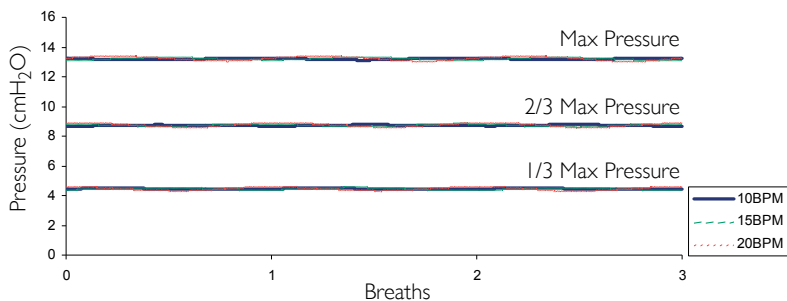
PRESSURE VOLUME CURVE
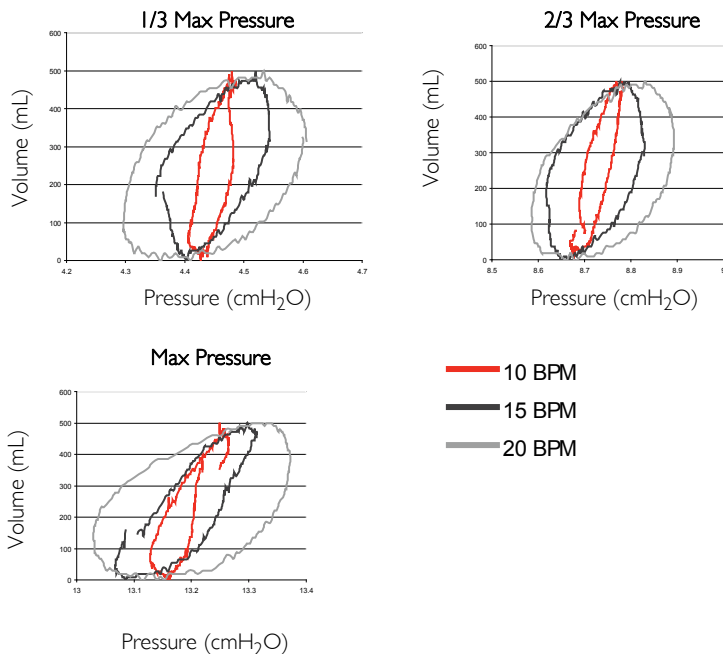
NOTE *The manufacturer reserves the right to change these specifications without notice.*

GLOSSARY OF SYMBOLS

Read this Operating Manual before using

⚠ Type CF equipment

♥ AC switch

⊡ Class II

□ **Environmental information**

WEEE 2002/96/EC is a European Directive that requires the proper disposal of electrical and electronic equipment. This device should be disposed of separately, not as unsorted municipal waste. To dispose of your device, you should use appropriate collection, reuse and recycling systems available in your region. The use of these collection, reuse and recycling systems is designed to reduce pressure on natural resources and prevent hazardous substances from damaging the environment.

If you need information on these disposal systems, please contact your local waste administration. The crossed-bin symbol invites you to use these disposal systems. If you require information on collection and disposal of your ResMed device please contact your ResMed office, local distributor or go to www.resmed.com/environment.

GUIDANCE AND MANUFACTURER'S DECLARATION — ELECTROMAGNETIC EMISSIONS AND IMMUNITY

Guidance and manufacturer's declaration – electromagnetic emissions

The AutoSet CS2 is intended for use in the electromagnetic environment specified below. The customer or the user of the AutoSet CS2 should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR11	Group 1	The AutoSet CS2 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 AutoSet CS2 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 AutoSet CS2 should not be used adjacent to or stacked with other equipment.
If adjacent or stacked use is necessary, the AutoSet CS2 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 immunity of the AutoSet CS2.

Guidance and manufacturer's declaration – electromagnetic immunity

The AutoSet CS2 is intended for use in the electromagnetic environment specified below. The customer or the user of the AutoSet CS2 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% U_t (>95% dip in U_t) for 0.5 cycle 40% U_t (60% dip in U_t) for 5 cycles 70% U_t (30% dip in U_t) for 25 cycles <5% U_t (>95%dip in U_t) 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 AutoSet CS2 requires continued operation during power mains interruptions, it is recommended that the AutoSet CS2 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: U_t 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 AutoSet CS2 is intended for use in the electromagnetic environment specified below. The customer or the user of the AutoSet CS2 should assure that it is used in such an environment.

Immunity test	IEC60601-1-2 test level	Compliance level	Electromagnetic environment – guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the AutoSet CS2, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	$d = 1.17 \sqrt{P}$
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.5 GHz	10 V/m	$d = 0.35 \sqrt{P}$ 80 MHz to 800 MHz $d = 0.70 \sqrt{P}$ 800 MHz to 2.5 GHz 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] Interference may occur in the vicinity of equipment marked with the following symbol:

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 AutoSet CS2 is used exceeds the applicable RF compliance level above, the AutoSet CS2 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the AutoSet CS2.

[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 AutoSet CS2

The AutoSet CS2 is intended for use in an environment in which radiated RF disturbances are controlled. The customer or the user of the AutoSet CS2 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the AutoSet CS2 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 $d = 0.70 \sqrt{P}$
0.01	0.17	0.04	0.07
0.1	0.37	0.11	0.22
1	1.17	0.35	0.70
10	3.69	1.11	2.21
100	11.70	3.50	7.00

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™, ResTraxx™	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.

Warranty is void on product sold, or resold, outside the region of original purchase. Warranty claims on defective product must be made by the initial consumer at the point of purchase.

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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