

## F&P 950™ Respiratory Humidifier

### USER INSTRUCTIONS



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## Indications for use

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The F&P 950 Respiratory Humidifier, when used with approved accessories, is intended to provide heat and humidity to medical gases for patients who require respiratory support. It is intended to be used in a critical care environment by qualified trained personnel, under the direction of a physician and within the limits of its stated technical specifications.

## Operating principle

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The F&P 950 Respiratory Humidifier provides heat and humidity to medical gases by passing the gas through a heated water chamber and heated breathing tubes.

The amount of heating is controlled based on the gas temperature measured at different parts of the humidifier.



## Package contents

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**F&P 950 Heaterbase**  
(e.g. 950ANZ)



**Power cord**

### ACCESSORIES TO COMPLETE THE F&P 950 RESPIRATORY HUMIDIFIER



**F&P 950 Sensor Cartridge**  
(e.g. 950S01)



**Equipment mount**  
(e.g. 900MR030)



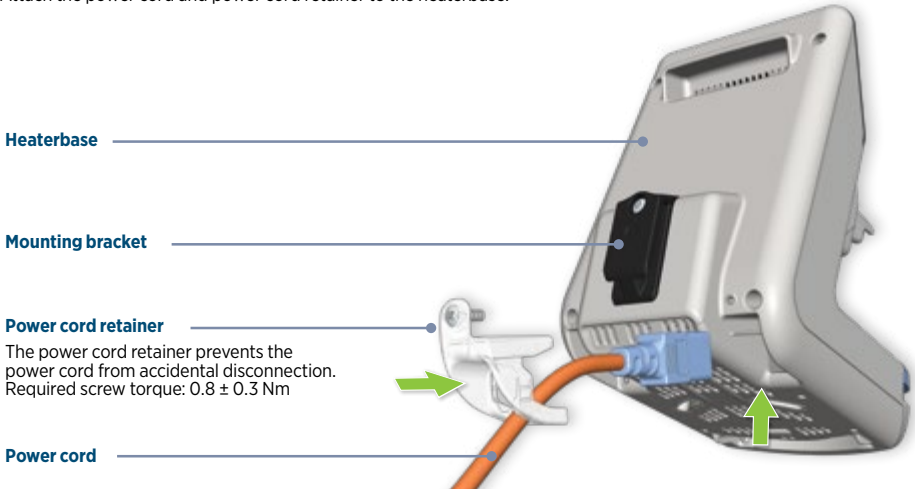
**F&P 950 Expiratory Heater Wire Adapter**  
(e.g. 950X00)



**F&P 950 Breathing Circuit Kit**  
(e.g. 950A81, 950N80)

## F&P 950 Respiratory Humidifier set-up

Attach the power cord and power cord retainer to the heaterbase.



Attach the sensor cartridge to the heaterbase.



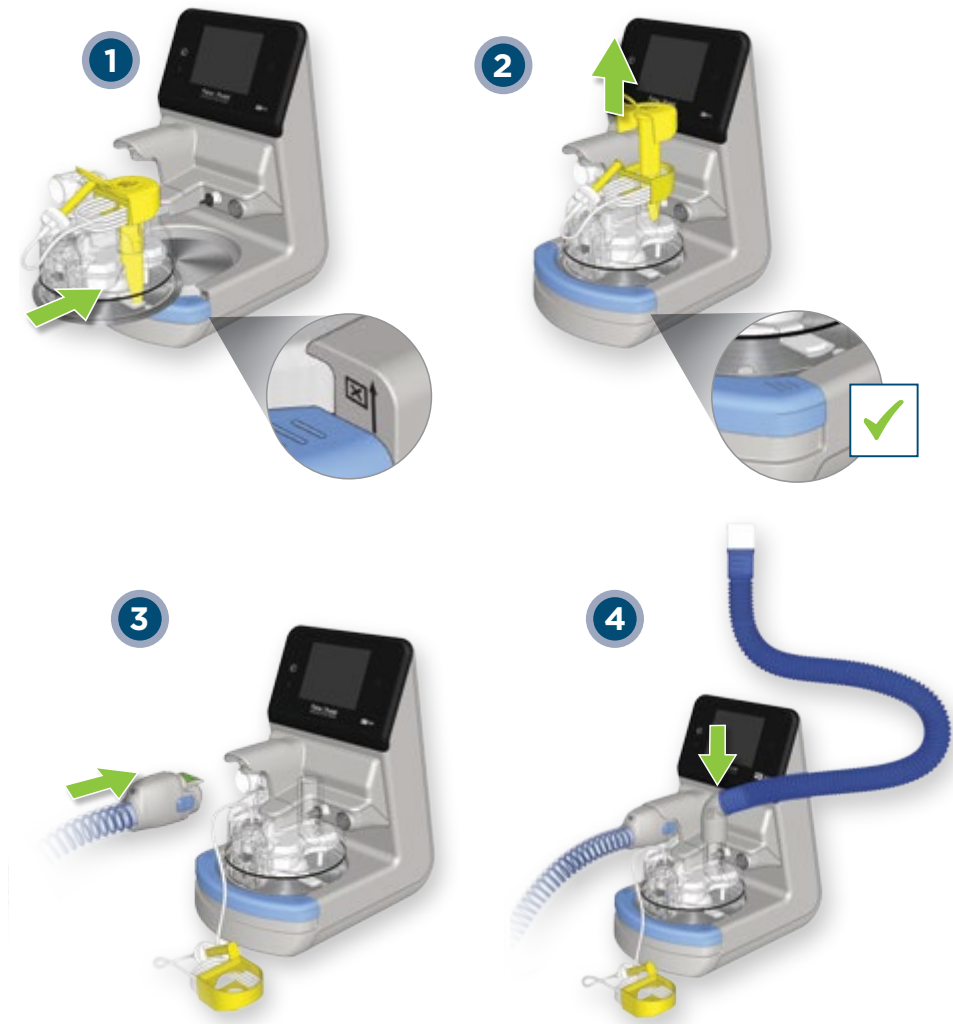
### WARNING

The heaterbase must be mounted on an equipment mount capable of supporting 4 kg. Failure to comply may result in damage to the equipment mount and heaterbase and potentially cause serious patient harm.

**NOTE:** Ensure the heaterbase does not block access to the power supply outlet.

## F&P 950 Respiratory Humidifier set-up

Set up the breathing circuit as described in the user instructions provided with the selected circuit kit.



When turning on the humidifier, an audible single beep sound should be heard.

## Adult user interface

### SCREEN NAVIGATION



### ADULT MODE SELECTION

When an adult breathing circuit is connected, the F&P 950 Respiratory Humidifier can provide humidity in Invasive, Mask, and Optiflow™ modes. The operating principles for each of these modes are specified below:

#### Invasive

**Invasive mode** is intended for patients whose upper airways have been bypassed by either a tracheostomy or endotracheal tube. In this mode of operation the humidifier targets delivery of optimal humidity to the patient at 37 °C, 100% RH.

#### Mask

**Mask mode** is intended for patients whose upper airways have not been bypassed, but are receiving gas via a face mask or similar. In this mode of operation the humidifier targets delivery of humidity to the patient at 31 °C, 100% RH, or the lower temperature selected as described in "comfort settings" on the next page.

#### Optiflow

**Optiflow mode** is intended for patients who require respiratory therapy through an Optiflow interface. In this mode of operation the humidifier targets delivery of optimal humidity to the patient at 37 °C, 100% RH, or the lower temperature selected as described in "comfort settings" on the next page.

Mode selection can be accessed via the drop-down menu button.



## Adult user interface

### COMFORT SETTINGS

In Mask and Optiflow modes it is possible to change the target temperature to provide conditions which may be more comfortable to encourage patient compliance.



The available comfort settings are:

Mode	Default	Medium	Low
Invasive	37 °C	-	-
Mask	31 °C	29 °C	27 °C
Optiflow	37 °C	35 °C	33 °C

The humidifier will reset to the default set-point if the mode is changed or the humidifier is turned off and back on. It is possible for service personnel to change the default set-point for Mask and Optiflow modes in the service menu.



## Neonatal user interface

### SCREEN NAVIGATION



### NEONATAL MODE SELECTION

When a neonatal breathing circuit is connected, the F&P 950 Respiratory Humidifier can provide humidity for neonatal respiratory support. The operating principle for this mode is specified below:



#### Neonatal

**Neonatal mode** is intended for neonatal patients who require respiratory support. In this mode of operation the humidifier targets delivery of optimal humidity to the patient at 37 °C, 100% RH.

Neonatal mode is automatically selected when a neonatal breathing circuit is connected.



## Alarms

### ALARM SIGNALS

The F&P 950 Respiratory Humidifier has visual and audible alarms to warn about interruptions to treatment. These alarms are generated by an intelligent alarm system, which processes information from the sensors and target settings of the unit and compares this information to pre-programmed limits.

#### Alarm type

#### Text or animation tutorial

Demonstrates solution – see “alarm conditions” table on the next page.

#### Mute/unmute alarm

2 minutes.



### ALARM CONDITIONS

All possible alarm conditions are listed on the following pages, and all are classified as medium priority.

As the F&P 950 Respiratory Humidifier does not include patient monitoring, these alarms are considered technical indicators of humidifier performance. It is possible to have multiple alarm conditions occur simultaneously; under these conditions the humidifier uses an internal ranking system to display the highest-ranked alarm.

All alarms have been designed to be detectable within one meter of the humidifier, with the alarm signal being three beeps repeated every five seconds.

### CHECKING ALARM SYSTEM FUNCTIONALITY

To check alarm functionality, remove the heated breathing tube at any time while the humidifier is powered on **but not connected to a patient**. This action should activate the “Disconnection” visual and audible alarms. If either signal is absent, do not use the humidifier. Contact your servicing department for assistance.

In the event of an unexpected shutdown, the humidifier shall resume the operating mode and alarm settings (except algorithm-based alarms) prior to the reset if the interruption is for less than or equal to 30 seconds.

## Alarms

ALARM CONDITIONS	REQUIRED ACTION	DELAY
<p><b>The Disconnection alarm</b> activates when the humidifier detects a disconnection of the inspiratory circuit.</p>	Connect inspiratory circuit and fully insert the chamber for complete connection.	< 10 seconds
<p><b>The No Water alarm</b> activates when the humidifier detects that the chamber is empty or almost empty of water.</p> <p>The time-to-alarm signal generation is dependent on operating mode set-point and flow rates as these determine the water evaporation rate.</p>	Replace the empty water bag.	< 60 minutes*
<p><b>The Low Temperature alarm</b> activates when the humidifier detects a low temperature condition at the patient end or chamber outlet for a continuous period of time.</p> <p>The alarm threshold is 2 °C below the set-point temperature.</p> <p>The time-to-alarm signal generation is dependent on the flow rates.</p>	Check the humidifier is receiving flow within the range stated in this user instruction.	> 10 minutes
<p><b>The High Temperature alarm</b> activates when the humidifier detects a high temperature condition at the patient end or chamber outlet.</p> <p>The alarm threshold is a patient end temperature of &gt; 43 °C.</p>	<p>Check the humidifier is receiving flow within the range stated in this user instruction.</p> <p>Check connections to the flow source.</p>	< 10 seconds
<p><b>The Cartridge Disconnection alarm</b> activates when the humidifier detects that the sensor cartridge is not electrically connected.</p>	Connect the sensor cartridge.	< 10 seconds
<p><b>The Tube Fault alarm</b> activates when the humidifier detects a potential fault in the breathing circuit.</p>	Replace the breathing circuit when safe to do so.	< 10 seconds
<p><b>The Out of Range alarm</b> activates when the humidifier detects that the patient end or chamber outlet temperature, averaged over a 5 minute period, differs from its respective set-point by more than 2 °C</p>	Check the humidifier is receiving flow within the range stated in this user instruction.	< 10 seconds

\*For flow rates < 1L/min the alarm will be delayed by > 90 minutes upon start-up.

## Alarms

ALARM CONDITIONS	REQUIRED ACTION	DELAY
<p><b>The Service Required alarm</b> activates when the humidifier detects a potential fault that requires the humidifier to be serviced.</p>	<p>Turn off the humidifier as soon as appropriate, remove from service, and contact a technician.</p>	<p>10 seconds to 5 minutes</p>
<p><b>The Caution Indicator LED light</b> illuminates when the humidifier detects that there is a potential fault with the humidifier and the screen is not operational.</p>	<p>Turn off the humidifier as soon as appropriate, remove from service, and contact a technician.</p>	<p>&lt; 10 seconds</p>
<p><b>The Cartridge Authentication alarm</b> activates when the humidifier does not recognize the sensor cartridge. If this occurs, the user may choose to press "Accept" to acknowledge that the sensor cartridge is not Fisher &amp; Paykel Healthcare approved. A sensor cartridge authentication failure icon will appear at the bottom right of the display.</p>	<p>To remove the sensor cartridge authentication failure icon, contact technician to replace sensor cartridge as soon as appropriate.</p>	
<p><b>The Cartridge Service Life alarm</b> activates when the humidifier detects the sensor cartridge has exceeded the recommended service life.  The sensor cartridge should be replaced at the next opportunity that it is safe to do so (when not in use by a patient).</p>	<p>Press "Pause Alarm" button to dismiss the alarm screen.  Contact technician to replace sensor cartridge as soon as appropriate.</p>	<p>7 years from the date of manufacture or after 15,000 hours of use.  If the alarm is paused, it will reappear 4 hours later.</p>

## Alarms

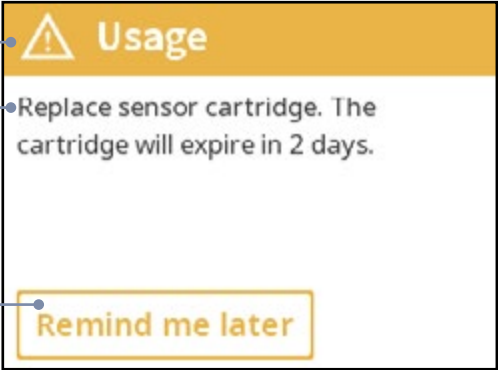
### INFORMATION SIGNALS

Notification type

Text or animation tutorial

Demonstrates solution – see “information signals” table below.

Mute/unmute alarm

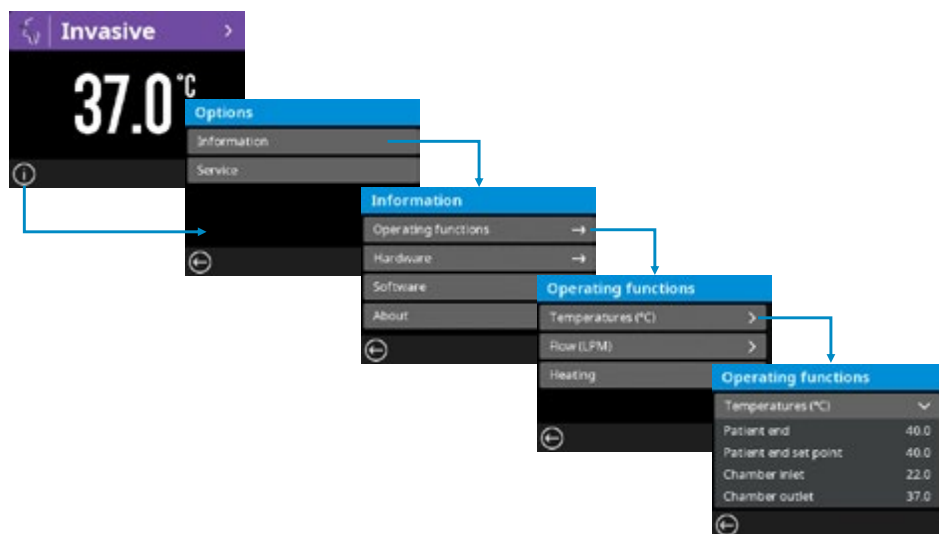


INFORMATION SIGNALS	POSSIBLE ACTIONS	DELAY
<p><b>The Cartridge Service Life warning</b> activates when the humidifier detects the sensor cartridge is approaching the end of its recommended service life.</p> <p>At this point the sensor cartridge has one month of service life remaining and a sensor cartridge should be made available for replacement.</p>	<p>Press “Remind me later” button to dismiss the warning screen.</p> <p>Contact technician to replace sensor cartridge as soon as appropriate.</p>	<p>30 days prior to expiry and will reappear every 24 hours, or every 8 hours if less than 7 days remaining.</p>

## Information and service menus

### OPTIONS SCREEN

The "Options" screen contains additional information about the humidifier and can be accessed by pressing the "Information" button. Tapping on each option enables navigation through the screens.



The servicing functions are password protected and should only be accessed by technical personnel. Refer to the Product Technical Manual (PTM-Z85005) for more information.

**NOTE:** The readings displayed in the Operating Functions page under the Information directory are additional information for troubleshooting purposes only. These values are not intended to be used to specify patient treatment or for patient diagnosis.

## Cleaning and maintenance

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### CLEANING

Clean the heaterbase, sensor cartridge, or expiratory heater wire adapter using a cloth dampened with either isopropyl alcohol or neutral detergent. Always disconnect the humidifier from the power supply before cleaning.

#### NOTES:

- Do not immerse or autoclave the heaterbase, sensor cartridge, or expiratory heater wire adapter.
- Do not spray liquid into the vents or onto electrical connectors. Failure to comply may result in irreparable damage to the humidifier.

### ROUTINE MAINTENANCE

A full technical description, including routine maintenance and service data, is contained in the Product Technical Manual (PTM-Z85005) available from your supplier or Fisher & Paykel Healthcare.



**WARNING:** The Product Technical Manual must be followed for all servicing and maintenance of the humidifier. Failure to comply may impair performance of the humidifier or compromise safety (including potentially causing serious harm).

## Warnings, cautions, and notes

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### WARNINGS

- This product is only designed and verified for use with accessories and spare parts approved by Fisher & Paykel Healthcare. Unauthorized accessories or spare parts which are used with the humidifier may impair performance of the humidifier, or compromise safety (including potentially causing serious patient harm), or result in increased electromagnetic emissions, or decreased electromagnetic immunity, resulting in improper operation.
- This product is designed for the delivery of air and/or oxygen. It is not suitable for the delivery of flammable anesthetic gas mixes or Heliox gas. Failure to comply may impair performance of the humidifier or compromise safety (including potentially causing patient harm).
- The humidifier should always be level and positioned lower than the patient. Failure to comply may impair performance of the humidifier or compromise safety (including potentially causing serious patient harm).
- Visually inspect components and accessories for damage before use and replace if damaged. Use of damaged components or accessories may impair performance of the humidifier or compromise safety (including potentially causing serious harm).
- Appropriate patient monitoring (e.g. oxygen saturation) must be used at all times. Failure to monitor the patient (e.g. in the event of an interruption to gas flow) may result in serious harm or death.
- Do not touch the electrical connectors and the patient simultaneously. Failure to comply may result in serious harm.
- Operation of the humidifier outside of the recommended operating conditions (as described in these user instructions) may impair performance of the humidifier or compromise safety (including potentially causing patient harm).
- Monitor circuit condensate every six hours to prevent occlusion or build-up of fluid. Drain as required. Failure to comply may impair performance of the humidifier or compromise safety (including potentially causing serious patient harm).
- Remove any sources of ignition, such as: cigarettes, an open flame, or materials which ignite easily at high oxygen concentrations.
- Follow the instructions of the oxygen device provider; keep oxygen regulators, cylinder valves, tubing, connections, and all other oxygen equipment away from oil, grease, or greasy substances. Spontaneous and violent ignition may occur if these substances come into contact with oxygen under pressure.
- California residents please be advised of the following, pursuant to Proposition 65: This product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. For more information, please visit: [www.fphcare.com/prop65](http://www.fphcare.com/prop65)
- The operation of high frequency surgical apparatus, or shortwave, or microwave equipment in the vicinity of the humidifier may adversely affect its performance. If this occurs, the humidifier should be removed from the vicinity of such devices.



### CAUTIONS

- Ensure that Invasive mode is set for patients who have bypassed airways. Prolonged exposure to reduced humidity will result in patient harm including decreased mucociliary clearance, atelectasis, or pneumonia.
- Do not touch the hot surface of the heater plate, chamber base, or probes. Failure to comply may result in a skin burn.









































## Warnings, cautions, and notes

### NOTES

- Use USP sterile water for irrigation, or equivalent. Adding other substances may have adverse effects.
- The F&P 950 Respiratory Humidifier contains an embedded software system licensed to Fisher & Paykel Healthcare by Microsoft.  
The license contains certain restrictions that are relevant to the use of the F&P 950 Respiratory Humidifier.  
Visit [www.fphcare.com/microsoftlicensing](http://www.fphcare.com/microsoftlicensing) for more information about such restrictions.

### Symbol definitions

						
Follow instructions for use - safety	Consult instructions for use	Manufacturer	Date of manufacture	Catalogue reference number	Batch code	Serial number
						
Type BF Applied Part	Class II equipment	Alternating current	Standby (On/Off)	IP Classification	Storage temperature limits	Storage humidity limits
						
USB 2.0	WEEE (Waste Electrical and Electronic Equipment)*	European representative*	CE Marking 93/42/EEC*	Regulatory Compliance Mark*	Raise finger guard	Rx only For USA: prescription only
						
Fragile, handle with care	Keep dry	Recyclable	Caution	Urgent alarm	Warning hot surface	Information screen
						
Alarm pause	Invasive mode	Mask mode	Optiflow mode	Neonatal mode	Sensor cartridge authentication failure	Sensor Cartridge service life warning
						
Accept	Cancel	Back arrow				

\* symbol displayed on select models

## Technical specifications

### PRODUCT SPECIFICATIONS

	ADULT	NEONATAL
SPECIFICATION	VALUE	VALUE
Dimensions (heaterbase only)	240 mm (D) x 154 mm (W) x 253 mm (H)	240 mm (D) x 154 mm (W) x 253 mm (H)
Weight (heaterbase and power cord only)	3.45 kg	3.45 kg
Supply frequency	50/60 Hz	50/60 Hz
Supply voltage	<small>REF</small> 950AXX <sup>1</sup> 230V <small>REF</small> 950JXX <sup>1</sup> 115V <small>REF</small> 950GXX <sup>1</sup> 100V	<small>REF</small> 950AXX <sup>1</sup> 230V <small>REF</small> 950JXX <sup>1</sup> 115V <small>REF</small> 950GXX <sup>1</sup> 100V
Power rating	350 VA	350 VA
Sound pressure level	Alarms exceed 45 dbA @ 1 m	Alarms exceed 45 dbA @ 1 m
Auditory alarm pause	120 seconds	120 seconds
Humidity performance (except in the event of a humidifier alarm or power failure or electromagnetic disturbance)	<b>Invasive mode (37 °C):</b> > 33 mg/L <b>Mask mode (31 °C):</b> > 12 mg/L <b>Optiflow mode (37 °C):</b> > 12 mg/L	<b>Neonatal mode (37 °C):</b> > 33 mg/L
Maximum temperature of delivered gas	43 °C	43 °C
Operating flow range (at 22 °C room temperature)	<b>Invasive mode:</b> 5 – 60 L/min <b>Mask mode:</b> 5 – 120 L/min <b>Optiflow mode:</b> 5 – 70 L/min	<b>Neonatal mode:</b> 0.5 – 40 L/min See breathing circuit user instructions for specific flow ranges.
Time to reach set temperature (gas flow is required)	< 30 minutes	< 30 minutes
Maximum surface temperature of the breathing circuit (applied part section)	44 °C	44 °C
Temperature measurement accuracy	± 2 °C	± 2 °C
Component service life	Heaterbase: 7 years	Heaterbase: 7 years

<sup>1</sup>XX represents the country code

## OPERATING CONDITIONS

ADULT		NEONATAL
SPECIFICATION	VALUE	VALUE
Room temperature	18 – 26 °C	20 – 26 °C
Incoming gas temperature	Minimum = Room temperature Maximum = 10 °C above room temperature (at 30% relative humidity)	Minimum = Room temperature Maximum = 10 °C above room temperature (at 30% relative humidity)
Operator position	<1 m from heaterbase	<1 m from heaterbase
Atmospheric pressure:	Minimum of 70 kPa (equivalent to a maximum altitude of 3000 m)	Minimum of 70 kPa (equivalent to a maximum altitude of 3000 m)

## STORAGE CONDITIONS

ADULT		NEONATAL
SPECIFICATION	VALUE	VALUE
Temperature	-20 – 60 °C	-20 – 60 °C
Humidity	10% – 95% relative humidity non-condensing	10% – 95% relative humidity non-condensing

Dispose of according to standard hospital procedure and national regulations for electrical and electronic equipment.

Note that a lithium cell battery is included in the sensor cartridge.

**Manufacturer** 🏢 Fisher & Paykel Healthcare Ltd, 15 Maurice Paykel Place, East Tamaki, Auckland 2013, PO Box 14 348 Panmure, Auckland 1741, New Zealand Tel: +64 9 574 0100 Fax: +64 9 574 0158 Email: info@fphcare.co.nz Web: www.fphcare.com Importer/ Distributor **Australia** (Sponsor) Fisher & Paykel Healthcare Pty Ltd, 19-31 King Street, Nunawading, Melbourne, Victoria 3131. Tel: +61 3 9871 4900 Fax: +61 3 9871 4998 **Austria** Tel: 0800 29 31 23 Fax: 0800 29 31 22 **Benelux** Tel: +31 40 216 3555 Fax: +31 40 216 3554 **Brazil** Fisher & Paykel do Brasil, Rua Sampaio Viana, 277 cj 21, Paraíso, 04004-000, São Paulo – SP, Brazil Tel: +55 11 2548 7002 **China** 代理人/售后服务机构:费雪派克医疗保健(广州)有限公司, 广州高新技术产业开发区科学城科丰路31号G12栋301号 电话: +86 20 32053486 传真: +86 20 32052132 **Denmark** Tel: +45 70 26 37 70 Fax: +46 83 66 310 **Finland** Tel: +358 94 1590 355 Fax: +46 83 66 310 **France**  Fisher & Paykel Healthcare SAS, 10 Av. du Québec, Bât F5, BP 512, Villebon-sur-Yvette, 91946 Courtaboeuf Cedex, France Tel: +33 1 6446 5201 Fax: +33 1 6446 5221 Email: c.s@fphcare.fr **Germany** Fisher & Paykel Healthcare GmbH & Co. KG, Deutschland, Österreich, Schweiz, Wiesenstrasse 49, D 73614 Schorndorf, Germany Tel: +49 7181 98599 0 Fax: +49 7181 98599 66 **Hong Kong** Tel: +852 2116 0032 Fax: +852 2116 0085 **India** Tel: +91 80 2309 6400 **Ireland** Tel: 1800 409 011 Fax: +44 1628 626 146 **Italy** Tel: +39 06 7839 2939 Fax: +39 06 7814 7709 **Japan** Tel: +81 3 5117 7110 Fax: +81 3 5117 7115 **Korea** Tel: +82 2 6205 6900 Fax: +82 2 6309 6901 **Norway** Tel: +47 21 60 13 53 Fax: +47 22 99 60 10 **Russia** Tel. and Fax: +7 495 782 21 50 **Spain** Tel: +34 902 013 346 Fax: +34 902 013 379 **Sweden** Tel: +46 8 564 76 680 Fax: +46 8 36 63 10 **Switzerland** Tel: 0800 83 47 63 Fax: 0800 83 47 54 **Taiwan** Tel: +886 2 8751 1739 Fax: +886 2 8751 5625 **Turkey** İthalatçı Firma: Fisher Paykel Sağlık Ürünleri Ticaret Limited Şirketi, İletişim Bilgileri: Ostim Mahallesi 1249. Cadde No:6, Yenimahalle, Ankara, Türkiye 06374, Tel: +90 312 354 34 12 Fax: +90 312 354 31 01 **UK** Fisher & Paykel Healthcare Ltd, Unit 16, Cordwallis Park, Clivemont Road, Maidenhead, Berkshire SL6 7BU, UK Tel: 0800 132 189 Fax: +44 1628 626 146 **USA/Canada** Tel: 1800 446 3908 or +1 949 453 4000 Fax: +1 949 453 4001

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For patent information, see www.fphcare.com/ip

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