F&P AIRVO 2

User Manual

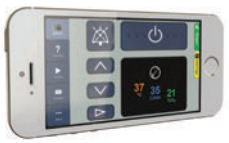
Fisher & Paykel HEALTHCARE

SECTION

BEFORE YOU START

- This User Manual is intended for healthcare professionals.
- Read this User Manual including all warnings. Failure to do so may result in injury. Keep in a safe place for future reference.
- Before the AIRVO 2 is used for the first time, it must be set up according to the instructions in the AIRVO 2 Technical Manual. The AIRVO 2 needs special precautions regarding electromagnetic compliance (EMC) therefore must be installed and put into service according to the EMC information provided in this User Manual and the Technical Manual.
- Some accessories may not be available in certain countries. Please contact your local Fisher & Paykel Healthcare representative for more information.

OTHER REFERENCES



- Refer to the AIRVO 2 User Manual for detailed instructions for use.
- Refer to all relevant accessory User Instructions.
- Watch the training videos on the AIRVO 2 website www.fphcare.com/airvo
- For troubleshooting information, please refer to the AIRVO 2 Technical Manual.
- Download the AIRVO 2 Simulator App to learn how to use the AIRVO 2.
  You can change settings, simulate faults and test your skills.
  Available from the Apple, Google Play and Windows App stores.
- Visit the Fisher & Paykel education & resources website at www.fphcare.com/education to find self-paced online courses and local training events.
- If the unit is ever used by multiple patients, the unit must be cleaned and disinfected between patients according to instructions in the Disinfection Kit Manual (900PT600).
- For further assistance, please contact your Fisher & Paykel Healthcare representative.

TABLE OF CONTENTS

1. OVERVIEW

The AIRVO 2 is a humidifier with integrated flow generator that delivers high flow warmed and humidified respiratory gases to spontaneously breathing patients through a variety of patient interfaces.

INTENDED USE

The AIRVO 2 is for the treatment of spontaneously breathing patients who would benefit from receiving high flow warmed and humidified respiratory gases. This includes patients who have had upper airways bypassed. The flow may be from 2 - 60L/min depending on the patient interface. The AIRVO 2 is for patients in hospitals and long-term care facilities.

⚠WARNINGS

- The unit is not intended for life support.
- Appropriate patient monitoring must be used at all times. Loss of therapy will occur if power is lost.
- Nasal delivery of respiratory gases may generate flow-dependent dynamic positive airway pressure. This must be taken into account where positive airway pressure could have adverse effects on a patient.

To avoid burns:

- Use only interfaces, water chambers and breathing tubes specified in this user manual.
- Do not use accessories beyond the maximum periods of use specified in this manual.
- Before using oxygen with the unit, read all warnings in the “Oxygen” section of this manual.
- Never operate the unit if:
  - the heated breathing tube has been damaged with holes, tears or kinks,
  - it is not working properly,
  - the case screws have ever been loosened.
- Do not block the flow of the air through the unit and breathing tube.
- Locate the unit in a position where ventilation around the unit is not restricted.
- Never block the air openings of the unit or place it on a soft surface such as a bed or couch/sofa, where the filter area may be blocked. Keep the air openings free of lint, hair etc.

To avoid electric shock:

- Do not store or use the unit where it can fall or be pulled into water. If water has entered the unit enclosure, disconnect the power cord and discontinue use.
- Never operate the unit if:
  - it has been dropped or damaged,
  - it has a damaged power cord or plug,
  - it has been dropped into water.
- Avoid unnecessary removal of the power cord from the rear of the device. If removal is necessary, hold the connector during removal. Avoid pulling on the power cord.
- Return the unit to an authorized service center for examination and repair, except as outlined in this manual.

To avoid choking, or inhalation of a foreign object:

- Ensure an air filter is fitted when operating your unit.
- Never drop or insert any object into any opening or tube.

Miscellaneous:

- Prior to each patient use, ensure that the auditory alarm signal is audible by conducting the alarm system functionality check described in the Alarms section.
- Humidity output will be compromised below 18°C (64°F) and above 28°C (82°F).
- To prevent disconnection during use, especially during ambulatory use, use only heated breathing tubes specified in this manual.
- Do not use the AIRVO 2 system in the vicinity of an MRI device.
- The unit is not suitable for use in the presence of a flammable, anesthetic mixture with air or oxygen or nitrous oxide.
- The AIRVO 2 is not a sealed system. Follow hospital infection control guidelines to reduce risk of cross-contamination
- Use of accessories or power cables not specified by Fisher & Paykel Healthcare could result in increased electromagnetic emissions, decreased electromagnetic immunity and/or improper operation.
- Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

AIRVO 2 AND ACCESSORIES

		Optiflow™ interfaces (20-pack)										
		Optiflow™ Junior		Optiflow™+					Optiflow™				
		OPT316/OJR416 (infant)	OPT318/OJR418 (pediatric)	OPT942 (small)	OPT944 (medium)	OPT946 (large)	OPT970 (Direct Trache)	OPT980 (Mask Adapter)	OPT842 (small)	OPT844 (medium)	OPT846 (large)	OPT870 (Direct Trache)	RT013 (Mask Adapter)
Tube & Chamber kits (10-pack)	900PT501			●	●	●	●	●	●	●	●	●	●
	900PT531	●	●										
	AirSpiral™												
	900PT551			●	●	●	●	●	●	●	●	●	●
	900PT561	●	●	●	●	●	●	●					
	900PT562	●	●	●	●	●	●	●					

Cleaning and Disinfection	
900PT600	Disinfection Kit
900PT601	Disinfection Filter (2-Pack)
900PT602	Cleaning Sponge-Stick (20-Pack)
900PT603	Clean Storage Cover (20-Pack)

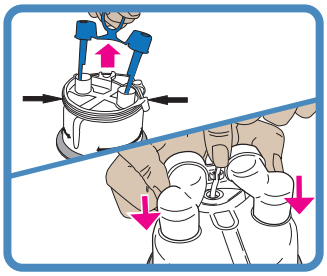
Miscellaneous	
900PT405	Pole mounting tray
900PT411	UPS mounting kit
900PT420	Mobile Pole Stand (extendable)
900PT421	Mobile Pole Stand
900PT422	Oxygen inlet extension kit
900PT426	Plastic Basket
900PT427	Oxygen bottle holder
900PT427L	Oxygen bottle holder (large)
900PT428	Pole Clamp
900PT912	Filter holder
900PT913	Air filter (2-Pack)
OPT012/WJR112	Wigglepads for Optiflow Junior (20-pack)

Some products may not be available in your country. Please contact your local Fisher and Paykel Healthcare representative.

2. SETTING UP AIRVO 2

1. BEFORE YOU BEGIN

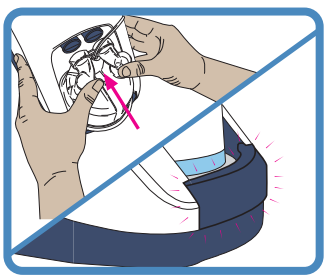
The AIRVO 2 should be fixed on a pole mounting tray (900PT405) below patient head height. Position the device so the power cord connection to the power supply is easily accessible and able to be disconnected. Open the packaging of the tube & chamber kit (heated breathing tube, MR290 auto-fill chamber and adapter).



2. INSTALL WATER CHAMBER

Remove the blue port caps from the chamber by pulling the tear tab upwards then remove the bracket holding the water supply tube.

Fit the supplied adapter over the two vertical ports on the chamber and push on fully then clip the water supply tube into position.



Fit the water chamber to the unit by pressing down the finger guard and sliding the chamber on, carefully aligning with the blue chamber port ends.

Push the chamber on firmly until the finger guard clicks into place.

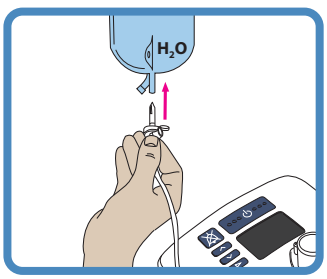
⚠ *WARNINGS*

To avoid burns:
- Do not start the unit without the water chamber in place.
- Do not touch the heater plate, water chamber or chamber base during use.
- The water in the chamber becomes hot during use. Exercise caution when removing and emptying the chamber.

To avoid electric shock:
- When handling the unit with the water chamber in place, avoid tilting the machine to prevent any chance of water entering the unit enclosure.
- Empty all the water from the water chamber before transporting the unit.

⚠ *CAUTIONS*

To ensure optimal therapy (MR290 only):
- Do not use the auto-fill MR290 chamber if it has been dropped or been allowed to run dry this could lead to the chamber over filling.



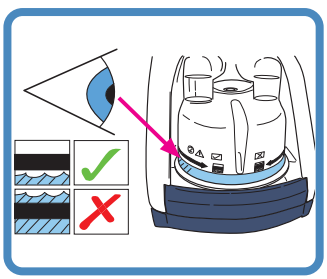
3. CONNECT WATER BAG

Attach the sterile water bag to the hanging bracket 20cm (8”) above the unit, and push the bag spike into the fitting at the bottom of the bag. Open the vent cap on the side of the bag spike. The chamber will now automatically fill to the required level and maintain that level until the water bag is empty.

To ensure continual humidification, always ensure that the water chamber and/or water bag are not allowed to run out of water.

⚠ *CAUTION*

Adding substances other than water can adversely affect the humidifier and delivered therapy.

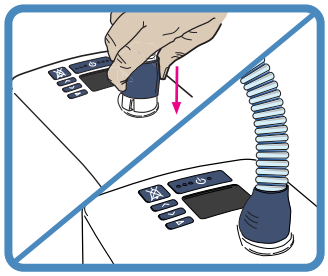


Check that water flows into the chamber and is maintained below the maximum water level line. If the water level rises above the maximum water level line, replace the chamber immediately.

MR290: Flow setting vs usage time (2-litre sterile water bag, at 37 °C target temperature)													
L/min	2	5	10	15	20	25	30	35	40	45	50	55	60
hrs	378	151	75	50	37	30	25	21	18	16	15	13	12

⚠ *CAUTIONS*

To ensure optimal therapy (MR290 only):
- Do not use the MR290 chamber if the water level rises above the maximum water level line as this may lead to water entering the patient’s airway.



4. INSTALL HEATED BREATHING TUBE

One end of the heated breathing tube has a blue plastic sleeve. Lift the sleeve and slide the connector onto the unit. Push the sleeve down to lock.

⚠ *WARNINGS*

To avoid burns:

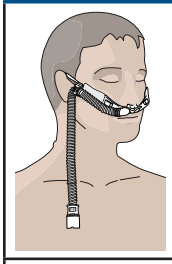
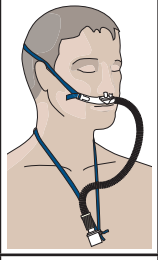
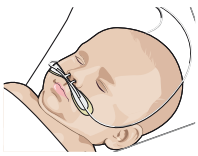
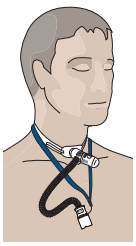
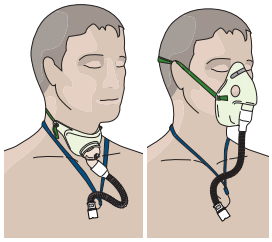
- Do not modify the breathing tube or interface in any way.
- Do not allow the breathing tube to remain in direct contact with skin for prolonged periods of time. The healthcare professional shall assess the conditions for safe contact, such as duration and skin condition.
- Do not add heat above ambient levels to any part of the breathing tube or interface e.g. by covering with a blanket or by heating with infrared radiation, an overhead heater, or an incubator.
- Do not use an insulating sleeve or any similar accessories which are not recommended by Fisher & Paykel Healthcare.

⚠ *CAUTIONS*

- Position the heated breathing tube away from any electrical monitoring leads (EEG, ECG/EKG, EMG, etc), to minimize any possible interference with the monitored signal.

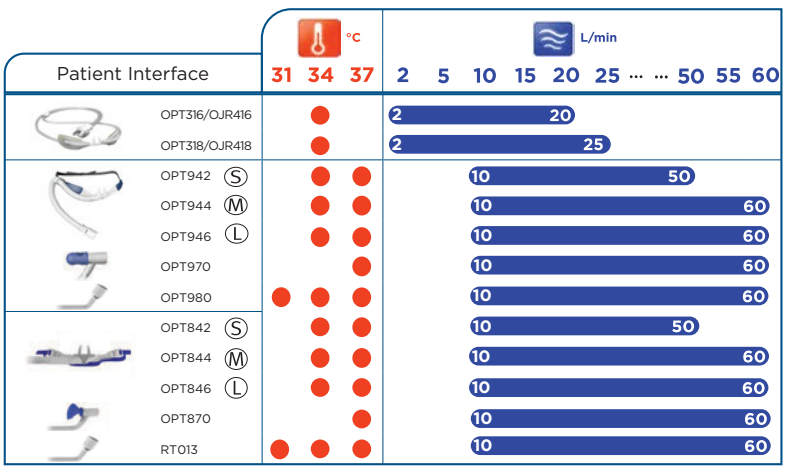
5. SELECT PATIENT INTERFACE

The AIRVO 2 can be used with a variety of patient interfaces. Read the separate user instructions for the patient interface that will be used, including all warnings.

Nasal cannula			Tracheostomy interface	Mask interface adapter
				
Optiflow™+ OPT942 OPT944 OPT946	Optiflow™ OPT842 OPT844 OPT846	Optiflow™ Junior/Junior 2 OPT316/OPT318/ OJR416/OJR418 (Refer to "Using AIRVO 2" - "Junior Mode")	OPT970 / OPT870	OPT980 / RT013 (with mask) Note that the OPT980/RT013 Mask Interface Adapter is designed to be used with vented masks only. Do not use sealed masks.

All patient interfaces are Type BF applied parts.

The following table shows the target dew-point temperature settings and target flow settings able to be used with these interfaces.



Low temperature ambient conditions may prevent the unit from reaching a 37 °C target temperature setting at high target flow settings. In these cases, consider decreasing the target flow setting.

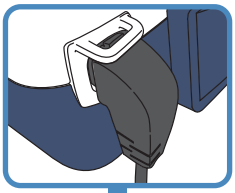
At altitude, the maximum flow rates achievable may be lower than those in the above table, by approximately 5 L/min per 1000 m (3000 ft).

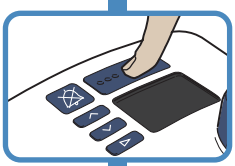
⚠ *WARNINGS*

To avoid burns:

- Do not modify the breathing tube or interface in any way.
- Do not use any patient interfaces not listed here.

3. USING AIRVO 2





1. SWITCH ON UNIT

Plug the unit's power cord into the mains/utility power socket. The connector at the other end of the power cord should be well secured to the rear of the unit.

⚠ *WARNINGS*

To avoid electric shock:

- Ensure that the unit is dry before plugging into the mains/utility power socket.

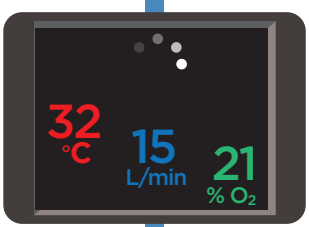
Switch on the unit by pressing the On/Off button for 5 seconds.

2. CHECK DISINFECTION STATUS

The unit will show you whether it is safe for use on a new patient.

This AIRVO 2 is safe for use on a new patient.

This AIRVO 2 has not been cleaned and disinfected since last use.
This AIRVO 2 is NOT safe for use on a new patient.



3. WARM-UP

The unit will begin to warm up. You will see numbers showing the current output dew-point temperature, flow and oxygen values. These numbers will pulse until they approach their target settings.

This screen is called the "Summary screen".

4. JUNIOR MODE

If the patient will be using an Optiflow Junior nasal cannula (OPT316/OJR416/OPT318/OJR418), you must activate Junior Mode. Do not use Junior mode for other patient interfaces.

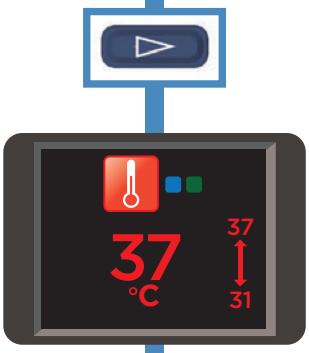
Junior Mode limits the target settings to: 34 °C and 2 - 25 L/min, in increments of 1 L/min.

To activate Junior Mode:

Hold the Mode button for 5 seconds.

New target settings
The target settings for dew-point temperature and flow will be changed automatically. The colorful icons in the corners of the screen indicate that this unit is in Junior Mode.

To deactivate Junior Mode, follow the same procedure: hold the Mode button for 5 seconds.



5. CONFIGURE TARGET SETTINGS

Press the Mode button to view target settings.

These settings are locked by default.

TARGET DEW-POINT TEMPERATURE

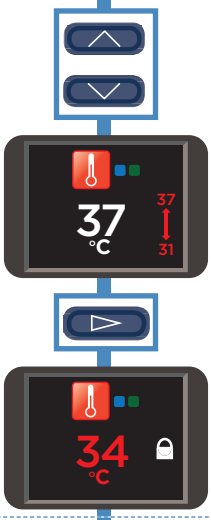
You can set the AIRVO 2 to three target dew-point temperature settings:

- 37°C (98.6°F)
- 34°C (93°F) [if compliance at 37°C is a problem]
- 31°C (88°F) [for face masks only].

You may not have access to all settings, if:

- the unit is in Junior Mode (limited to 34 °C),
- the unit was initially set up with tighter limits.

The AIRVO 2 will return to its default setting (37°C) after every disinfection cycle.



To change the target dew-point temperature setting:

Hold the Up and Down buttons for 3 seconds to "unlock" the setting.

The lock will disappear and be replaced by an arrow showing the minimum and maximum accessible settings. Press the Up and Down buttons to choose the new setting.

When you have finished, press the Mode button to 'lock' the setting again.

The lock will reappear.

Press the Mode button to move on to the next screen.

TARGET FLOW

You can set the AIRVO 2 to flows between 10 L/min and 60 L/min, in increments of 1 L/min (10-25 L/min) and 5 L/min (25-60 L/min).

You may not have access to all settings, if:

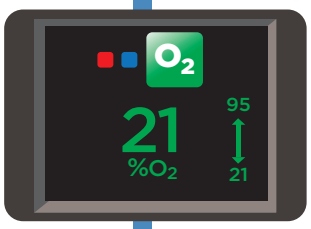
- the unit is in Junior Mode (limited to 2 - 25 L/min, in increments of 1 L/min),
- the unit was initially set up with tighter limits.

The AIRVO 2 will remember its target flow setting when you switch it off.

To change the target flow setting:

Follow the same sequence of steps as above in "To change the target dew-point temperature setting".

Press the Mode button to move on to the next screen.



OXYGEN

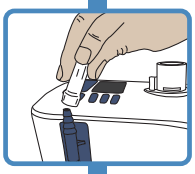
You can connect up to 60 L/min of supplementary oxygen from a regulated supply to the AIRVO 2. The AIRVO 2 contains an oxygen analyzer to help you determine the oxygen fraction you are delivering to the patient. Your unit may have been initially set up with tighter limits.

Use continuous oxygen monitoring on patients who would desaturate significantly in the event of disruption to their oxygen supply.

⚠ *WARNINGS*

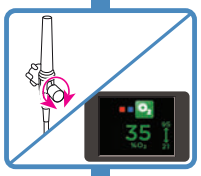
Before using the AIRVO 2 with oxygen, read all of the following warnings:

- The use of oxygen requires that special care be taken to reduce the risk of fire. Accordingly, for safety it is necessary that all sources of ignition (e.g. electrocautery or electrosurgery) be kept away from the unit and preferably out of the room in which it is being used. Oxygen should not be used while smoking or in the presence of an open flame. The unit should be located in a position where ventilation around the unit is not restricted.
- A spontaneous and violent ignition may occur if oil, grease or greasy substances come in contact with oxygen under pressure. These substances must be kept away from all oxygen equipment.
- Ensure that the AIRVO 2 is switched on before connecting oxygen.
- Oxygen must only be added through the special oxygen inlet port on the back of the unit. To ensure that oxygen enters the unit correctly, the oxygen inlet port must be fitted properly to the filter holder and the filter holder must be fitted properly to the unit. The power cord connector should also be well secured.
- Do not connect supplementary oxygen to the AIRVO 2 at flow rates higher than the AIRVO 2 target flow rate, as excess oxygen will be vented into the surroundings, or 60 L/min.
- The oxygen concentration delivered to the patient can be affected by changes to the flow setting, oxygen setting, patient interface or if the airpath is obstructed.
- When finished, turn off the oxygen source. Remove the output of the oxygen source from the oxygen inlet port on the back of the unit. The oxygen flow must be turned off when the unit is not operating, so that oxygen does not build up inside the device.
- The oxygen analyzer within the AIRVO 2 uses ultrasonic measurement technology. It does not require in-field calibration. It is designed for use with pure oxygen - connecting any other gases or mixtures of gases will cause it to function incorrectly.



CONNECT OXYGEN

Connect the output from the oxygen source to the oxygen inlet port on the side of the unit. Make sure you push the oxygen tube firmly onto this connection port.



ADJUST OXYGEN

Adjust the level of oxygen from the oxygen source, until the desired oxygen fraction is displayed onscreen. It may take the reading several minutes to settle. You can set the oxygen fraction between the maximum and minimum values displayed above and below the arrow.

Real-time O_2 measurement is displayed when O_2 > 25% and O_2 < 95%. However, note that oxygen fractions below 25% and above 95% will be displayed as 21% and 100% respectively.

If the oxygen fraction exceeds 95%, the oxygen reading will pulse red and the device will beep.

⚠ *WARNINGS*

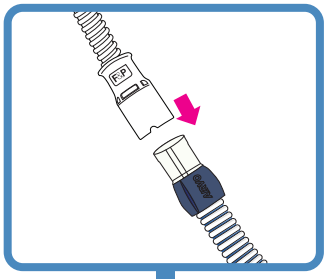
- Note that if the patient's peak inspiratory demand exceeds the flow delivered by the unit, the fraction of oxygen inspired by the patient will be lower than the value shown onscreen, due to the additional entrainment of ambient air.
- Check that suitable blood saturation levels are achieved at the prescribed flow.

Press the Mode button to return to the Summary screen.

6. CONNECT YOUR PATIENT

Wait until the “Ready for use” symbol is displayed on the Summary screen.

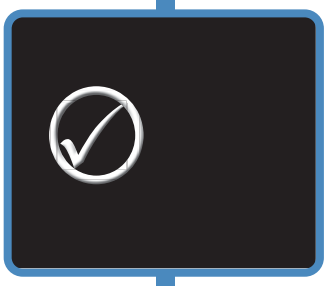
“Ready for use” symbol



Connect the patient interface to the heated breathing tube.

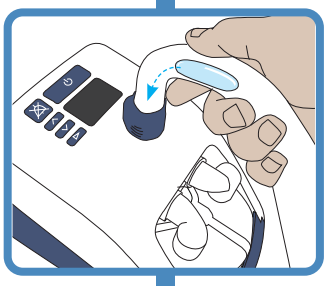
Monitor the flow and oxygen values displayed on the Summary screen. Adjust the level of oxygen from the oxygen source as necessary.

When the patient first uses the unit, the air will feel warm. This is normal. The patient should continue to breathe normally through the nose and/or mouth, or tracheostomy.



7. DURING USE

If the “Ready for use” symbol has been displayed for 2 minutes and no button has been pushed in this time, a screensaver will be launched.



CONDENSATE MANAGEMENT

The unit must be placed below head height and flat, this allows condensate to drain towards the water chamber, away from the patient.

If excess condensate accumulates in the heated breathing tube, disconnect the patient interface from the heated breathing tube, drain the condensate by lifting the patient end of the tube, allowing the condensate to run into the water chamber.

At higher target flow rates, it may be necessary to first reduce the target flow rate to 30 L/min or below, to ensure the condensate drains into the water chamber.

Minimize local sources of cooling acting on the heated breathing tube, such as a fan to cool the patient, or an air-conditioning unit/vent.

If condensate persists, consider turning the target temperature down. Note, a lower target temperature will decrease the humidity output of the unit, decreasing the level of condensation.

Note: The temperature and humidity level delivered to the patient will also be reduced.

8. AFTER USE

Switch off the unit by pressing the On/Off button.

ALARMS

The AIRVO 2 has visual and auditory alarms to warn you about interruptions to your patient's 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 SIGNALS

	Symbols	Meaning
Visual alarm signal		
		Alarm condition.
		Audio paused.
Auditory alarm signal		
3 beeps in 3 seconds. Repeated every 5 seconds.		Press this button to mute the auditory alarm for 115 seconds. The auditory alarm can be reactivated by pressing this button again.

ALARM CONDITIONS

All of the alarms listed below have been assessed as "Medium Priority". These priorities have been allocated for an operator's position within 1 meter of the device. The unit also uses an internal priority-ranking system. If multiple alarm conditions occur simultaneously, the unit will display the highest-priority alarm.

The following table lists all of the alarm conditions from highest-priority to lowest priority, their causes, possible solutions and delays. Alarm conditions that affect oxygen delivery require an immediate response to assess the patient's saturation levels. Alarm conditions that affect humidity delivery require a prompt response to assess potential drying of mucus and associated blockages.

The following alarm delays assume operation in 'Ready for use' mode.

Message	Meaning	Affects delivery of:	Delays
Fault (E###)	*The unit has detected an internal fault and has shut itself down.* Switch the unit off and then restart. If the problem persists, note the fault code and contact your Fisher & Paykel Healthcare representative.	Oxygen, humidity.	< 5 seconds
Check tube	*The unit cannot detect the heated breathing tube.* Check that the heated breathing tube is not damaged and that it is plugged in correctly. If the problem persists, then change the heated breathing tube.	Oxygen, humidity.	< 5 seconds
Check for leaks	*The unit has detected a leak in the system.* The most likely cause is that the water chamber has been removed or has not been pushed into place correctly. Check that the heated breathing tube is not damaged and that it is plugged in correctly. Check that the nasal interface is fitted. Check that the filter is fitted.	Oxygen, humidity.	< 120 seconds
Check for blockages	*The unit has detected a blockage in the system.* Check the heated breathing tube or patient interface for blockage. Check the air filter and filter holder for blockage. Check whether the unit should be in Junior Mode. If the patient will be using an Optiflow Junior nasal cannula (OPT316/OJR416/OPT318/OJR418), you must activate Junior Mode.	Oxygen, humidity.	< 10 seconds
O_2 too low	*The measured oxygen level has fallen below the allowed limit.* Check that the oxygen source is still operational and is correctly connected. Adjust the level of oxygen from the oxygen source as necessary.	Oxygen	< 20 seconds
O_2 too high	*The measured oxygen level has exceeded the allowed limit.* Check that the AIRVO flow rate has been set correctly. Adjust the level of oxygen from the oxygen source as necessary.	Oxygen	< 20 seconds

(continued) Message	Meaning	Affects delivery of:	Delays
Cannot reach target flow	*The unit cannot reach the target flow setting.* Check the heated breathing tube or patient interface for blockage. Check whether the target flow setting is too high for the patient interface being used (refer to "Setting up AIRVO 2" - "Select Patient Interface"). You will be prompted for acknowledgement. ⚠ *WARNINGS* • The oxygen concentration delivered to the patient can be affected by changes to the flow setting. Adjust the level of oxygen from the oxygen source as necessary.	Oxygen	< 120 seconds
Check water	*The chamber has run out of water.* When a chamber runs dry, the chamber float may be damaged. Replace the chamber and water bag. To ensure continual humidification, always ensure that the water chamber and/or water bag are not allowed to run out of water.	Humidity	< 30 minutes
Cannot reach target temperature	*The unit cannot reach the target temperature setting.* You will be prompted for acknowledgement. The most likely cause for this is that the unit is operating at a high flow rate in low ambient conditions. Consider decreasing the target flow setting. ⚠ *WARNINGS* • The oxygen concentration delivered to the patient can be affected by changes to the flow setting. Adjust the level of oxygen from the oxygen source as necessary.	Humidity	30 +/- 3 minutes
Check operating conditions	*The unit has detected that it is operating in unsuitable ambient conditions.* This alarm may be caused by a sudden change in ambient conditions. Leave the unit running for 30 minutes. Switch the unit off and then restart.	Humidity	60 +/- 6 seconds
[Power out]	*The unit has been disconnected from the mains/utility power socket.* No visual alarm. The auditory alarm will sound for at least 120 seconds. If power is reconnected in this time, the unit will automatically restart. ⚠ *WARNINGS* • Appropriate patient monitoring must be used at all times. Loss of therapy will occur if power is lost.	Oxygen, humidity.	< 5 seconds

ALARM LIMITS

Most alarm limits are pre-programmed. The exceptions are listed below. These alarm limits may be changed to other values by authorized personnel. Changes will be preserved during or after any power loss.

Alarm condition	Factory-set alarm limit	Possible preset values
O_2 too low	21% O_2	21 or 25% O_2
O_2 too high	95% O_2	30 – 100% O_2 in 5% increments

⚠ *WARNINGS*

- A hazard can exist if different alarm presets are used on different units within any single area, eg. an intensive care unit.
- Alarm limits set to extreme values can render the alarm system useless.

CHECKING ALARM SYSTEM FUNCTIONALITY

The functionality of the alarm system can be checked at any time when the unit is turned on.

Remove the heated breathing tube. You should see the "Check tube" visual alarm signal and hear the auditory alarm signal. If either alarm signal is absent, do not use the unit and refer to the AIRVO 2 Technical Manual for a guide on troubleshooting. If problems persist, contact your Fisher & Paykel Healthcare representative.

AUDITORY INFORMATION SIGNALS

In addition to auditory alarm signals, auditory information signals are provided. These are described below.

Melody	Meaning
Ascending sequence of 5 tones	The "Ready for use" symbol has appeared
Ascending sequence of 3 tones	Activation/deactivation of Junior Mode
Single tone every 5 seconds	Measured oxygen level ≥ 33% at turn-off
Single tone every 30 seconds	Measured oxygen level > 95%

4. REPROCESSING

The AIRVO 2, including the outlet elbow, must be cleaned and disinfected between patients according to the instructions in the Disinfection Kit Manual (900PT600). Single-patient use accessories must be disposed of between patients to prevent cross-contamination.

Reprocessing should take place as soon as possible after use. The unit utilizes warmed water and can pose a risk of bacterial colonization and patient infection if cleaning, disinfection, and replacement procedures are not followed.

Standard aseptic techniques to minimize contamination should be followed when handling the unit and accessories. This includes proper hand-washing, avoiding hand contact with connection ports, safe disposal of the use consumables, and suitable storage of the unit after cleaning and disinfection.

SCHEDULE FOR CHANGING ACCESSORIES

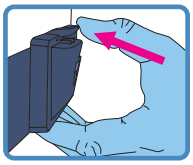
The accessories for the unit must be changed frequently to avoid the risk of infection. Parts should be replaced immediately if they are damaged or discolored; otherwise they must be replaced within the periods shown in the following table.

Maximum period of use	Part number and description	
1 week (single-patient use)	***Patient interfaces excluding Optiflow™+***	
	OPT316/OJR416	Nasal Cannula - Infant
	OPT318/OJR418	Nasal Cannula - Pediatric
	OPT842	Optiflow™ Nasal Cannula - Small
	OPT844	Optiflow™ Nasal Cannula - Medium
	OPT846	Optiflow™ Nasal Cannula - Large
	OPT870	Tracheostomy Interface
	RT013	Mask Interface Adapter - 22mm
2 weeks (single-patient use)	***Optiflow™+ patient interfaces***	
	OPT942	Optiflow™+ Nasal Cannula - Small
	OPT944	Optiflow™+ Nasal Cannula - Medium
	OPT946	Optiflow™+ Nasal Cannula - Large
	OPT970	Optiflow™+ Tracheostomy Interface
	OPT980	Optiflow™+ Mask Interface Adapter
	All tube & chamber kits	
	900PT551 / 900PT561	AirSpiral™ Heated breathing tube, MR290 auto-fill chamber and adapter
	900PT562	AirSpiral™ Heated breathing tube, MR290 auto-fill chamber and nebulizer adapter
	900PT501	Heated breathing tube, MR290 auto-fill chamber and adapter
	900PT531	Junior heated breathing tube, MR290 auto-fill chamber and adapter (for use with OPT316/318/OJR416/OJR418 only)
3 months or 1000 hours	900PT913	Air filter (or more often if significantly discolored)

Some products may not be available in your country. Please contact your local Fisher and Paykel Healthcare representative.

FILTER REPLACEMENT

After the AIRVO 2 has been switched on for 1000 hours, a prompt will appear at the start of the next disinfection cycle indicating that an air filter change is due. Follow the steps below if filter change is due:



1. Take the filter holder from the back of the unit and remove the filter.
2. Replace the old filter with a new filter (900PT913).
3. Reattach the filter holder to the unit (clip the bottom of the filter holder in first, then rotate it upwards until the top clips into place).
4. Press the Mode button to move on to the “Replace now” screen.
5. Press the Up button to select “Now”.
6. Press the Mode button to confirm.
   The hours counter will be reset to zero.

If you choose the “Later” option, the prompt will continue to appear at the start of subsequent disinfection cycles.

SERVICING

This device contains no internal serviceable parts.

Refer to the AIRVO 2 Technical Manual for a list of external spare parts.

5. TECHNICAL INFORMATION

SYMBOL DEFINITIONS

	For safety reasons, refer to the instructions for use		Class II equipment
	Caution	REF	Catalogue number
	Consult instructions for use	SN	Serial number
	Warning, hot surface	LOT	Batch code
	Manufacturer		Humidity range
	Date of manufacture		Temperature range
	Date of shelf life expiry	IP22	Protected against ingress of small objects and water drops
	Type BF applied part	EC REP	EU representative
Rx only	(USA) Federal Law restricts this device to sale by, or on the order of a physician.	CE	CE Mark
	Alarm symbol		Power on/off (standby)
	Alarm pause		Regulatory Compliance Mark (RCM)

PRODUCT SPECIFICATIONS

Dimensions	295 mm x 170 mm x 175 mm (11.6” x 6.7” x 6.9”)
Weight	2.2 kg (4.8 lb) unit only, 3.4 kg (7.5 lb) packaged in bag incl. accessories
Supply frequency	50-60 Hz
Supply voltage/current	100-115 V 2.2 A (2.4 A max†) 220-240 V 1.8 A (2.0 A max†)
Sound pressure level	Alarms exceed 45dbA @ 1 m
Auditory alarm pause	115 seconds
Expected service life	5 years
Serial port	The serial port is used for downloading product data, using F&P Infosmart™ software.
Warm-up time	10 minutes to 31 °C (88 °F), 30 minutes to 37 °C (98.6 °F) using a MR290 chamber with flow rate of 35 L/min and starting temperature 23 ± 2 °C (73 ± 3 °F)
Target temperature settings	37, 34, 31 °C
Humidity performance	>33 mg/L at 37 °C target >12 mg/L at 34 °C target >12 mg/L at 31 °C target
Maximum temperature of delivered gas	43 °C (109 °F) (in accordance with ISO 80601-2-74)
Maximum surface temperature of applied parts	44 °C (111 °F) (in accordance with ISO 80601-2-74)
Flow range (default)	10-60 L/min*
Flow range (Junior Mode)	2-25 L/min*
Maximum oxygen input	60 L/min
Oxygen analyzer accuracy	< ± 4 % (within the range 25-95% O_2) Operating conditions: 18-28 °C (64-82 °F), 30-70% RH

* Flow rates are measured in BTPS (Body Temperature/Pressure, Saturated)

† Inrush current may reach 50A

OPERATING CONDITIONS

Ambient temperature	18 - 28 °C (64 - 82 °F)
Humidity	10 - 95% RH
Altitude	0 - 2000 m (6000 ft)
Mode of operation	Continuous operation

STORAGE AND TRANSPORT CONDITIONS

AIRVO	
Ambient temperature	-10 - 60 °C (14 - 140 °F)
Humidity	10 - 95% RH, non-condensing
Tube & chamber kits	
Ambient temperature	-10 - 50 °C (14 - 122 °F)
Humidity	10 - 95% RH, non-condensing

The unit may require up to 24 hours to warm up or cool down from the minimum or maximum storage temperature before it is ready for use.

⚠ WARNING

- Do not use the unit at an altitude above 2000 m (6000 ft) or outside a temperature range of 18 - 28 °C (64 - 82 °F). Doing so may affect the quality of the therapy or injure the patient.

Designed to conform to the requirements of:
IEC 60601-1:2005 + A1:2012
IEC 60601-1-2:2014
ANSI/AAMI 60601-1:2005/(R) 2012
CAN/CSA-C22.2 No. 60601-1:2014
EN 60601-1:2006 + A1:2013
ISO 80601-2-74:2017

The unit complies with the electromagnetic compatibility requirements of IEC 60601-1-2. In certain circumstances, the unit may affect or be affected by nearby equipment due to the effects of electromagnetic interference. Excessive electromagnetic interference may affect the therapy delivered by the unit. If this should happen, try moving the unit or the location of the unit causing interference, or alternatively consult your healthcare provider. To avoid potential interference, do not place any part of the device or accessories within 30 cm (12”) of any portable or mobile radio frequency communication equipment.

Accessory equipment connected to the serial port of the device must be certified to either IEC 60601-1 or IEC 60950-1. Furthermore all configurations shall comply with the system standard IEC 60601-1-1. Anyone who connects additional equipment to the signal input part or signal output part configures a medical system and is therefore responsible for ensuring that the system complies with the requirements of the system standard IEC 60601-1-1. If in doubt, consult the technical services department or your local representative.

DISPOSAL INSTRUCTIONS

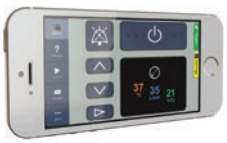
Unit Disposal Instructions
This unit contains electronics. Please do not discard with regular waste. Return to Fisher & Paykel Healthcare or dispose according to local guidelines for disposing of electronics. Dispose according to Waste Electrical and Electronic Equipment (WEEE) directive in European Union.

Consumables Disposal Instructions
Place the interface, breathing tube and chamber in a waste bag at the end of use. Hospitals should discard according to their standard method for disposing of contaminated product.

시작하기 전에

- 이 사용자 설명서는 의료 전문가용입니다.
- 모든 경고 사항이 포함된 이 사용자 설명서를 읽으십시오. 설명서를 제대로 읽지 않으면 부상으로 이어질 수 있습니다. 나중에 참조할 수 있도록 안전한 장소에 보관하십시오.
- AIRVO 2를 처음으로 사용하기 전에 AIRVO 2 기술 설명서에 나온 지침에 따라 설정해야 합니다. AIRVO 2는 전자파 적합성(EMC) 관련 특별 주의를 요하므로 본 사용자 설명서와 기술 설명서에 설명된 EMC 정보에 따라 설치하고 사용해야 합니다.
- 일부 부속품은 특정 국가에서 사용 가능하지 않을 수 있습니다. 자세한 내용은 Fisher & Paykel Healthcare의 지역 담당자에게 문의하십시오.

기타 참고 문헌



- 자세한 사용 지침은 AIRVO 2 사용자 설명서를 참조하십시오.
- 관련된 모든 부속품 사용자 지침을 참조하십시오.
- AIRVO 2 웹사이트 www.fphcare.com/airvo에서 교육 비디오를 시청하십시오.
- 문제 해결 정보는 AIRVO 2 기술 설명서를 참조하십시오.
- AIRVO 2 시뮬레이터 앱을 다운로드해 AIRVO 2 사용 방법에 대해 알아보십시오. 설정을 변경할 수 있고 오류를 시뮬레이션할 수 있으며 기술을 테스트할 수 있습니다. Apple, Google Play 및 Windows App 스토어에서 구할 수 있습니다.
- Fisher & Paykel 교육 및 리소스 웹사이트 www.fphcare.com/education 를 방문해 자기 보속 온라인 과정과 현지 교육 이벤트를 알아보십시오.
- 이 장치를 여러 환자가 사용하는 경우 다음 환자가 사용하기 전에 살균 키트 사용설명서(900PT600)의 지침에 따라 장치를 세척 및 살균해야 합니다.
- 추가 지원은 Fisher & Paykel Healthcare 담당자에게 문의하십시오.

목차

1. 개요

AIRVO 2는 다양한 환자 인터페이스를 통해 자가 호흡을 하는 환자에게 높은 유량의 가온, 가습된 호흡 가스를 전달하는 통합 흐름 생성기가 부착된 가습기입니다.

사용 목적

AIRVO 2는 높은 유량의 가온, 가습된 호흡 가스를 주입받아 자가 호흡을 할 수 있는 환자의 치료를 목적으로 합니다. 여기에는 기도 상부가 우회된 환자도 포함됩니다. 환자의 인터페이스에 따라 유량 범위는 2–60 L/min입니다. AIRVO 2는 입원 환자 및 장기 요양 시설 환자에게 사용됩니다.

AIRVO 2는 비강 삽입관을 통해 더 느리고 깊은 호흡을 가능하게 하고 폐포 환기요법을 증가시켜 호흡보조를 제공합니다. 비강 삽입관 또는 기관절개 인터페이스 모두를 사용하는 환자에 대해 AIRVO 2는 기도 수화를 제공하고 필요에 따라 보충 산소와 사용할 수 있습니다.

미 연방법은 이 장치를 의사 혹은 의사의 주문에 의해서만 판매하도록 제한하고 있습니다.

⚠경고

- 이 장치는 생명 유지에 사용되도록 고안되지 않았습니다.
- 항상 환자를 적절히 모니터링해야 합니다. 전원이 차단되면 장비가 작동하지 않습니다.
- 호흡 가스가 비강으로 전달되면 유량에 따라 달라지는 기도 양압이 발생할 수 있습니다. 기도 양압이 환자에게 부작용을 일으킬 수 있음을 반드시 고려해야 합니다.

화상을 예방하려면 다음과 같이 하십시오.

- 사용자 설명서에 명시된 인터페이스, 물통 및 호흡 튜브만 사용해야 합니다.
- 부속품을 이 설명서에 명시된 최대 사용 기간을 초과하여 사용하지 마십시오.
- 장치에 산소를 사용하기 전에 설명서 “산소” 섹션에 있는 모든 경고 사항을 읽으십시오.
- 다음과 같은 경우 장치를 조작하면 안 됩니다.
  - 가온 호흡 튜브에 구멍이나 찢어진 곳 또는 꼬인 부분이 있을 경우
  - 제대로 작동되지 않는 경우
  - 나사가 풀린 적이 있는 경우
- 장치 및 호흡 튜브를 통해 공기가 흐르는 것이 막히지 않도록 해야 합니다.
- 장치는 반드시 주변에 환기 시설이 잘 되어 있는 곳에 설치해야 합니다.
- 장치의 공기 출구를 막거나 침대나 소파처럼 푹신한 표면에 두면 안 됩니다. 이런 경우 필터 부분이 막힐 수 있습니다. 공기 출구에 보푸라기나 머리카락 등이 끼어 있지 않도록 해야 합니다.

전기 충격을 방지하려면 다음과 같이 하십시오.

- 물이 떨어지거나 스며들 수 있는 장소에 장치를 보관하거나 사용하지 않습니다. 장치 내부에 물이 들어간 경우 전원을 차단하고 사용을 중지해야 합니다.
- 다음과 같은 경우 장치를 조작하면 안 됩니다.
  - 떨어졌거나 손상된 경우
  - 전원 코드나 플러그에 손상이 있는 경우
  - 물에 떨어진 경우
- 반드시 필요한 경우가 아니면 장치 후면의 전원 코드를 뽑으면 안 됩니다. 전원 코드를 뽑아야 하는 상황이면 커넥터를 고정한 상태에서 뽑아야 합니다. 전원 코드를 잡아당기면 안 됩니다.
- 본 설명서에 설명된 경우를 제외하고, 검사 및 보수가 필요한 경우 공인 서비스 센터로 장치를 보내야 합니다.

이상 물질 흡입이나 질식 등의 문제를 방지하려면 다음과 같이 하십시오.

- 장치 조작 시 공기 필터가 잘 끼워져 있는지 확인합니다.
- 출구 또는 튜브에 어떤 물체도 떨어뜨리거나 삽입되어 있으면 안 됩니다.

기타:

- 각 환자가 사용하기 전, 경보 섹션에 기술된 경보 시스템 기능 점검을 수행하여 경보 신호가 들리는지 확인하십시오.
- 18 °C(64 °F)보다 낮거나 28 °C(82 °F)보다 높을 경우 습도 출력이 저하될 수 있습니다.
- 사용 중, 특히 보행 중 사용시 분리를 예방하기 위해 이 설명서에 명시된 가온 호흡 튜브만 사용하십시오.
- AIRVO 2 시스템을 MRI 장비 인근에서 사용하지 마십시오.
- 이 장치는 가연성 마취제 혼합물이 공기 또는 산소와 함께 존재하거나 이산화질소와 함께 존재하는 환경에서 사용하기에 적합하지 않습니다.
- AIRVO 2는 밀봉된 시스템이 아닙니다. 교차 오염의 위험을 줄이기 위해 병원의 감염 통제 가이드라인을 준수하십시오.
- Fisher & Paykel Healthcare가 지정하지 않은 부속품 또는 전력 케이블을 사용하면 전자파 방출 증가, 전자파 내성 감소 및/또는 부적절한 작동이 발생할 수 있습니다.
- 다른 장비 인근에서 또는 다른 장비와 함께 쌓아 이 장비를 사용하면 부적절한 작동이 발생할 수 있기 때문에 피해야 합니다. 그러한 사용이 필요한 경우에는 이 장비와 다른 장비가 정상적으로 작동하고 있는지 관찰해야 합니다.

AIRVO 2 및 부속품

		Optiflow™ 인터페이스(20개 들이 팩)										
		Optiflow™ Junior		Optiflow™+					Optiflow™				
		OPT316/OJR416 (유아용)	OPT318/OJR418 (소아용)	OPT942 (소형)	OPT944 (중형)	OPT946 (대형)	OPT970 (기관에 직접 삽관)	OPT980 (마스크 어댑터)	OPT842 (소형)	OPT844 (중형)	OPT846 (대형)	OPT870 (기관에 직접 삽관)	RT013 (마스크 어댑터)
튜브 및 물통 키트(10개)	900PT501			●	●	●	●	●	●	●	●	●	●
	900PT531	●	●										
	AirSpiral™ 900PT551			●	●	●	●	●	●	●	●	●	●
	900PT561	●	●	●	●	●	●	●					
	900PT562	●	●	●	●	●	●	●					

세척 및 살균

900PT600	살균 키트
900PT601	살균 필터(2팩)
900PT602	세척용 스폰지 스틱(20개)
900PT603	위생 보관 커버(20개)

기타

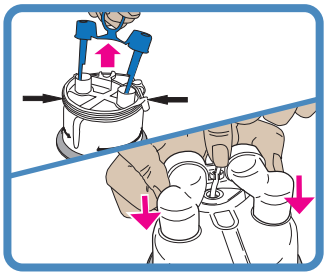
900PT405	지지대 장착 트레이
900PT411	UPS 장착 키트
900PT420	이동식 지지대 스탠드(확장형)
900PT421	이동식 지지대 스탠드
900PT422	산소 흡입구 확장 키트
900PT426	플라스틱 바구니
900PT427	산소통 거치대
900PT427L	산소통 거치대(대형)
900PT428	폴 클램프
900PT912	필터 홀더
900PT913	공기 필터(2개 들이 팩)
OPT012/WJR112	Optiflow Junior용 Wigglepad(20개)

일부 부속품은 현지 국가에서 사용 가능하지 않을 수도 있습니다. Fisher and Paykel Healthcare의 지역 담당자에게 문의하십시오.

2. AIRVO 2 설정

1. 시작하기 전

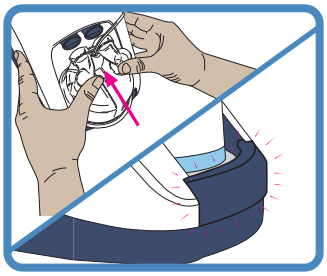
AIRVO 2는 환자 머리 높이 아래에서 지지대 장착 트레이(900PT405)에 고정되어야 합니다. 전원공급장치에 쉽게 연결하고 분리할 수 있는 곳에 이 장치를 배치합니다. 튜브 및 물통 키트(가온 호흡 튜브, MR290 자동 급수 물통 및 어댑터) 패키지를 엽니다.



2. 물통 설치

탭을 위쪽으로 뜯어내서 물통에서 파란색 포트의 뚜껑을 뗀 다음 급수 튜브를 지지하고 있는 브래킷을 제거합니다.

제공된 어댑터를 물통 위에 있는 두 개의 수직 포트 위에 맞추고 완전히 밀어 넣은 다음 급수 튜브를 제 위치에 끼웁니다.



파란색 물통 포트 끝을 조심스럽게 정렬하면서 손가락 보호대를 아래로 누르고 병을 밀어 넣어 물통을 장치에 맞춥니다.

물통 보호대가 딸깍 소리를 내면서 제자리에 고정될 때까지 물통을 확실히 밀어 넣으십시오.

⚠ *경고*

화상을 예방하려면 다음과 같이 하십시오.

- 물통을 제대로 장착한 경우에만 장치를 시작합니다.
- 사용 중 열판, 물통 또는 물통 바닥을 만지지 마십시오.
- 사용 중에 물통의 물이 뜨거워집니다. 물통에서 물을 빼낼 때 주의하십시오.

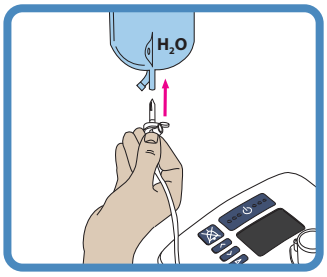
전기 충격을 방지하려면 다음과 같이 하십시오.

- 물통이 제 위치에 있을 때 장치를 사용할 경우 장치 내부에 물이 들어가지 않도록 기계가 기울어지지 않게 합니다.
- 장치를 옮기기 전에 물통에서 물을 모두 비웁니다.

⚠ *주의*

최적의 치료 효과를 얻으려면 다음과 같이 하십시오(MR290 전용).

- 바닥에 떨어졌거나 건조한 상태가 되면 자동 급수 MR290 물통을 사용하면 안 됩니다. 물통이 넘칠 수 있습니다.



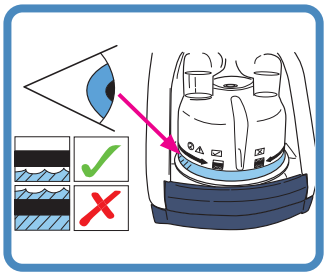
3. 물주머니 연결

장치 위 20 cm(8인치) 위에 달려 있는 브래킷에 멸균수 주머니를 부착하고 주머니 바닥의 연결부에 주머니 스파이크가 맞춰지도록 밀어넣습니다. 주머니 스파이크 측면의 배출구 뚜껑을 엽니다. 물통은 이제 특정 높이까지 자동으로 채워지고 물주머니가 빌 때까지 그 수준을 유지하게 됩니다.

지속적으로 가습 작용이 이루어지게 하려면 물통 및/또는 물주머니에 물이 떨어지지 않도록 확인해야 합니다.

⚠ *주의*

물 이외의 물질을 추가하면 가습기와 전달되는 치료 요법에 부정적영향을 미칠 수 있습니다.



물이 물통으로 흐르고 있는지, 그리고 최대 수위선까지 유지되고 있는지 확인합니다. 물 높이가 최대 수위선보다 높을 경우 즉시 물통을 교체합니다.

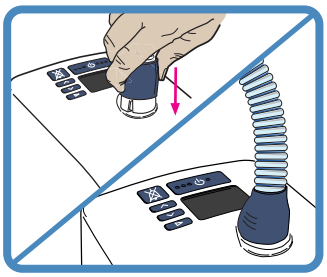
MR290: 유량 설정 대 사용 시간 (37 °C 목표 온도에서 2리터 멸균수 주머니)

L/min	2	5	10	15	20	25	30	35	40	45	50	55	60
시간	378	151	75	50	37	30	25	21	18	16	15	13	12

⚠ *주의*

최적의 치료 효과를 얻으려면 다음과 같이 하십시오(MR290 전용).

- 수위가 최대 수위 한도보다 높아질 경우 MR290 물통을 사용하지 마십시오. 환자 기도에 물이 들어갈 수 있습니다.



4. 가온 호흡 튜브 설치

가온 호흡 튜브의 한쪽 끝에는 파란색 플라스틱 슬리브가 있습니다. 슬리브를 들어 올린 다음 커넥터를 장치 위로 밀어 넣습니다. 슬리브를 밀어 내리면서 잠급니다.

⚠ *경고*

화상을 예방하려면 다음과 같이 하십시오.

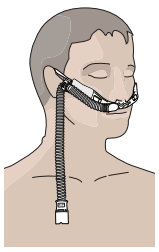
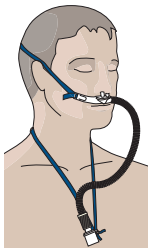
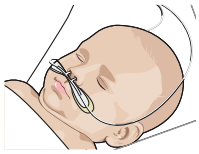
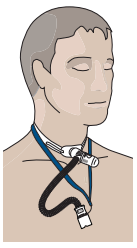
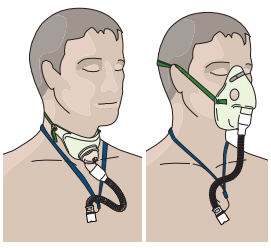
- 어떤 식으로든 호흡 튜브나 인터페이스를 변형하면 안 됩니다.
- 호흡 튜브가 장시간 피부와 직접 접촉되지 않도록 해야 합니다. 의료 전문가가 지속 시간 및 피부 상태 같은 안전한 접촉 조건을 평가해야 합니다.
- 호흡 튜브나 인터페이스의 어느 부분을 담요로 덮거나 적외선 방사, 오버헤드 히터 또는 신생아용 인큐베이터로 주변 온도보다 높은 열이 가해지지 않도록 하십시오.
- Fisher & Paykel Healthcare가 권장하지 않는 절연 슬리브 또는 유사 부속품을 사용하면 안 됩니다.

⚠ *주의*

- 모니터링된 신호의 방해 가능성을 최소화하기 위해서는 가온 호흡 튜브를 전기 모니터 전선(EEG, ECG/EKG, EMG 등)과 멀리 떨어진 곳에 배치하십시오.

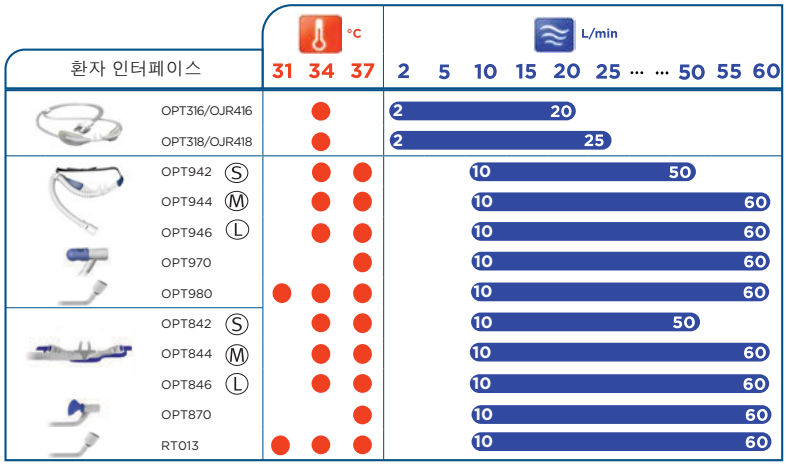
5. 환자 인터페이스 선택

AIRVO 2는 다양한 환자 인터페이스에서 사용할 수 있습니다. 사용할 환자 인터페이스에 대해서는 모든 경고 사항을 포함한 별도의 사용자 지침을 읽으십시오.

비강 삽입관			기관절개 인터페이스	마스크 인터페이스 어댑터
				
Optiflow™+ **OPT942** **OPT944** **OPT946**	**Optiflow™** **OPT842** **OPT844** **OPT846**	Optiflow™ Junior/Junior 2 **OPT316/OPT318/OJR416/ OJR418** (“AIRVO 2 사용” – “주니어 모드” 참조)	**OPT970 / OPT870**	**OPT980 / RT013** (마스크 포함) OPT980/RT013 마스크 인터페이스 어댑터는 환기 마스크와만 사용할 수 있습니다. 밀폐형 마스크는 사용하면 안 됩니다.

모든 환자 인터페이스는 타입 BF 적용 부품입니다.

다음 표에는 이러한 인터페이스에서 사용할 수 있는 목표 이슬점 온도 설정 및 목표 유량 설정이 표시되어 있습니다.



주변 환경의 온도가 낮은 경우 높은 목표 유량 설정의 37 °C 목표 온도 설정에 도달하지 못할 수 있습니다. 이러한 경우 목표 유량 설정을 낮추는 것을 고려해보십시오.

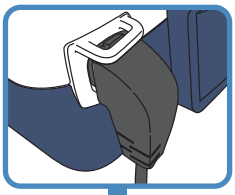
고도에서 달성 가능한 최대 유량은 상기 표에서 제시한 수치보다 1000 m(3000피트)당 5 L/min 만큼 낮을 수 있습니다.

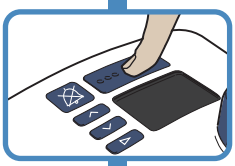
⚠ *경고*

화상을 예방하려면 다음과 같이 하십시오.

- 어떤 식으로든 호흡 튜브나 인터페이스를 변형하면 안 됩니다.
- 여기에 나열되지 않는 환자 인터페이스는 사용하면 안 됩니다.

3. AIRVO 2 사용





1. 장치 전원 켜기

장치의 전원 코드를 주전원/유틸리티 전원 소켓에 연결합니다. 전원 코드 맞은 편 끝에 있는 커넥터는 반드시 장치의 뒷면에 제대로 고정되어야 합니다.

⚠ *경고*

전기 충격을 방지하려면 다음과 같이 하십시오.

- 주전원/ 유틸리티 전원 소켓을 연결하기 전에 장치에 물기가 없는지 확인합니다.

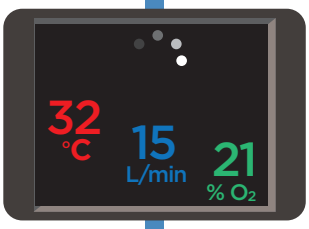
켜기/끄기 버튼을 5초 동안 눌러서 장치를 켭니다.

2. 살균 상태 확인

장치에는 새 환자에게 장치를 사용해도 안전한지 여부가 표시됩니다.

이 AIRVO 2는 새로운 환자에게 사용해도 안전합니다.

이 AIRVO 2는 이전 사용 이후로 세척 및 살균되지 않았습니다.
이 AIRVO 2는 새로운 환자에게 사용하면 안 됩니다.



3. 예열

장치가 예열됩니다. 현재 출력 이슬점 온도, 유량 및 산소 값을 나타내는 숫자가 표시됩니다. 숫자가 계속 변동하면서 목표 설정값에 접근합니다.

이 화면은 "요약 화면" 입니다.

4. 주니어 모드

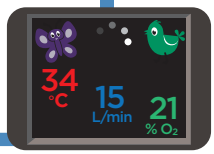
환자가 Optiflow Junior 비강 삽입관(OPT316/OJR416/OPT318/OJR418)을 사용하게 될 경우 주니어 모드를 활성화해야 합니다. 주니어 모드에서는 다른 환자 인터페이스를 사용하지 마십시오.

주니어 모드는 목표 설정을 34 °C 및 2 – 25 L/min(1 L/min 간격)으로 제한합니다.

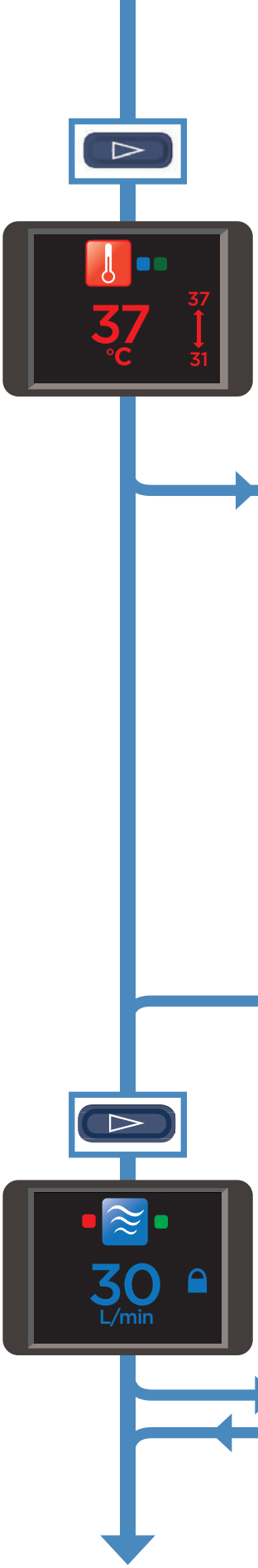
주니어 모드를 활성화하려면 다음과 같이 하십시오.

모드 버튼을 5초 동안 길게 누릅니다.

새로운 목표 설정
이슬점 온도 및 유량에 대한 목표 설정은 자동으로 변경됩니다. 화면 모서리에 있는 여러가지 색깔의 아이콘은 현재 장치가 주니어 모드임을 나타냅니다.



주니어 모드를 비활성화하려면 동일한 절차를 따릅니다.
모드 버튼을 5초간 누릅니다.



5. 목표 설정 구성

목표 설정을 보려면 모드 버튼을 누릅니다.

기본 설정에서 이러한 설정들은 잠겨있습니다.

목표 이슬점 온도

AIRVO 2를 다음과 같이 3개의 목표 이슬점 온도 설정에 맞출 수 있습니다.
- 37 °C(98.6 °F)
- 34 °C(93 °F)[컴플라이언스가 37 °C에 있을 경우 문제가 될 수 있음]
- 31 °C(88 °F)[얼굴 마스크에만 해당].

다음과 같은 경우 모든 설정에 액세스할 수 없습니다.
- 장치가 주니어 모드(34 °C로 제한됨)인 경우
- 장치의 초기 제한값이 더 엄격하게 설정된 경우

모든 살균 과정이 완료되면 AIRVO 2는 기본 설정(37 °C)으로 돌아가게 됩니다.

목표 이슬점 온도 설정을 변경하려면 다음과 같이 하십시오.

위로 버튼 및 아래로 버튼을 3초 이상 누르면 설정이 "잠금 해제" 됩니다.

잠금 표시가 사라지고 액세스 가능한 최소 및 최대 설정을 표시하는 화살표가 나타납니다. 위로 버튼 및 아래로 버튼을 눌러 새 설정을 선택합니다.

완료되면 모드 버튼을 눌러서 설정을 다시 '잠급니다'.

잠금 표시가 다시 표시됩니다.

모드 버튼을 눌러 다음 화면으로 이동합니다.

목표 유량

AIRVO 2를 1 L/min(10–25 L/min) 및 5 L/min(25–60 L/min) 간격으로 10 L/min–60 L/min 사이의 유량으로 설정할 수 있습니다.

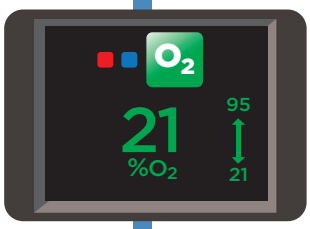
다음과 같은 경우 모든 설정에 액세스할 수 없습니다.
- 장치가 주니어 모드(2–25 L/min로 제한, 1 L/min 간격)인 경우
- 장치의 초기 제한값이 더 엄격하게 설정된 경우

AIRVO 2는 전원을 꺼도 목표 유량 설정을 기억합니다.

목표 유량 설정을 변경하려면 다음과 같이 하십시오.

위 "목표 이슬점 온도 설정을 변경하려면"의 절차를 동일하게 수행합니다.

모드 버튼을 눌러 다음 화면으로 이동합니다.



산소

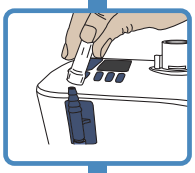
공급 조절 장치의 최대 60 L/min의 보충 산소를 AIRVO 2에 연결할 수 있습니다. AIRVO 2에는 산소 분석기가 포함되어 있으므로 환자에게 전달하고자 하는 산소 분율을 결정할 수 있습니다. 처음에는 장치의 제한값이 보다 엄격하게 설정되어 있을 수 있습니다.

산소 공급 중단으로 인해 포화도가 상당히 감소된 환자에게 지속적인 산소 모니터링을 사용하십시오.

⚠ 경고

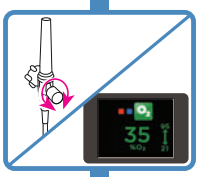
AIRVO 2에 산소를 사용하기 전에 모든 경고 사항을 읽으십시오.

- 산소 사용은 화재 위험을 줄이기 위해 특별한 주의를 기울일 것을 요구합니다. 따라서 안전을 위해 본 장치로부터 모든 인화원(예: 전기소작기 또는 전기수술기)을 멀리 하고 장치가 사용되고 있는 방 바깥으로 치우는 것이 좋습니다. 흡연 중이나 화염이 있는 곳에서 산소를 사용하지 않습니다. 장치는 반드시 주변에 환기 시설이 되어 있는 곳에 설치해야 합니다.
- 기름이나 기름이 묻은 물질이 고압의 산소와 접촉하면 급작스러운 발화를 유발할 수 있습니다. 이러한 물질은 모든 산소 장비로부터 멀리 치워야 합니다.
- 산소를 연결하기 전에 AIRVO 2의 전원이 켜져 있어야 합니다.
- 산소는 장치 뒤쪽 특별 산소 흡입 포트를 통해서만 추가할 수 있습니다. 산소가 장치에 제대로 들어가려면 산소 흡입 포트가 필터 홀더에 제대로 고정되어야 하며 필터 홀더는 장치에 제대로 고정되어야 합니다. 전원 코드 커넥터도 단단히 고정되어야 합니다.
- AIRVO 2 목표 유량보다 높은 유량에서 보충 산소를 AIRVO 2에 연결하지 마십시오. 초과 산소가 주변으로 또는 60 L/min으로 환기될 수 있습니다.
- 환자에게 전달되는 산소 농도는 유량 설정, 산소 설정, 환자 인터페이스가 변경되거나 공기 통로가 막힐 경우 영향을 받게 됩니다.
- 완료되면 산소 공급기의 전원을 끕니다. 장치 뒤쪽에 있는 산소 흡입 포트에서 산소 공급기의 출력을 제거합니다. 장치가 작동하지 않을 때는 산소가 장치 내부에 쌓이지 않도록 산소 유동을 멈춰야 합니다.
- AIRVO 2 내 산소 분석기는 초음파 측정 기술을 사용합니다. 현장 교정이 필요없습니다. 순수 산소용으로 고안되었기 때문에 다른 가스 또는 혼합 가스와 연결되면 기능 장애를 유발할 수 있습니다.



산소 연결

산소 공급기의 토출 산소를 장치 측면에 있는 산소 흡입 포트로 연결합니다. 연결 포트 위에 산소 튜브를 단단히 밀어넣습니다.



산소 조절

원하는 산소 분율이 화면에 표시될 때까지 산소 공급기에서 산소 농도를 조절합니다. 설정될 때까지 몇 분 걸릴 수 있습니다. 화살표 위와 아래에 표시되는 최대값과 최소값 사이의 산소 분율을 설정할 수 있습니다.

실시간 O_2 측정값은 O_2 > 25% 및 O_2 < 95%일 때 표시됩니다. 그러나 산소 분율이 25% 미만이거나 95%를 초과할 경우, 각각 21% 및 100%로 표시됩니다.

산소 분율이 95%를 초과하면 산소 판독값이 빨간색으로 깜빡거리고 장치에서 경보음이 울립니다.

⚠ 경고

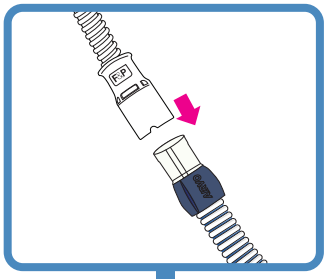
- 환자의 최고 흡입 요구량이 장치에서 전달되는 유량을 초과할 경우 주변 공기가 추가적으로 들어와 환자가 흡입하는 산소 분율이 화면에 표시된 값보다 낮을 수 있습니다.
- 설정 유량으로 적절한 혈액 포화도가 달성되는지 확인하십시오.

모드 버튼을 눌러 요약 화면으로 이동합니다.

6. 환자에 연결합니다.

요약 화면에 “사용 준비 완료” 기호가 나타날 때까지 기다립니다.

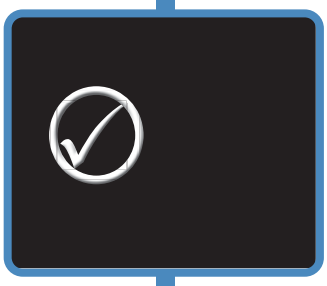
“사용 준비 완료” 기호



환자 인터페이스를 가온 호흡 튜브에 연결합니다.

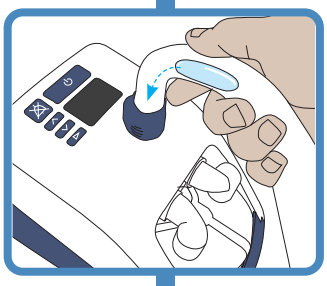
요약 화면에 나타난 유량 및 산소값을 모니터링합니다. 필요한 경우 산소 공급기에서 산소 농도를 조절합니다.

환자가 장치를 처음 사용하는 경우에는 공기가 따뜻할 것입니다. 이것은 정상적인 현상입니다. 환자는 코 및/또는 입 또는 기관절개관을 통해 계속해서 정상 호흡을 유지해야 합니다.



7. 사용 중

“사용 준비 완료” 기호가 나타난 후 2분 이상 아무런 버튼도 누르지 않으면 화면 보호기가 시작됩니다.



응축 관리

이 장치는 머리 높이 아래에 평평한 상태로 배치해야 합니다. 이로써 환자에게 떨어진 물통 방향으로 응축액을 배출시킬 수 있습니다.

응축액이 가온 호흡 튜브에 과도하게 쌓일 경우, 가온 호흡 튜브에서 환자 인터페이스를 분리하고 응축액이 물통으로 흘러 들어갈 수 있도록 환자 쪽에 있는 튜브 끝을 들어올려 응축액을 배출시킵니다.

더 높은 목표 유량에서는 응축액을 물통으로 배출시키기 위해 우선 목표 유량을 30 L/min 또는 그 미만으로 낮춰야 할 수 있습니다.

환자의 체온을 내리는 팬 또는 에어컨 장치/환기구 등 가온 호흡 튜브에서 냉각시키는 일부 원인을 최소화하십시오.

응축액이 지속된다면 목표 온도를 낮추는 방법에 대해 고려하십시오. 더 낮은 목표 온도는 장치의 습도 출력을 감소시키고 응축 수준을 줄여준다는 점을 참고하십시오.

참고: 환자에게 전달된 온도 및 습도 수준도 감소됩니다.

8. 사용 후

전원 버튼을 눌러서 장치를 끕니다.

경보

AIRVO 2는 환자 치료에 방해가 있을 경우 시각 및 소리를 통해 경보가 울립니다. 센서의 정보 및 장치의 목표 설정을 처리하고 사전에 프로그래밍된 한계와 이러한 정보를 비교하는 인공지능 경보 시스템에 의해 경보가 울립니다.

경보 신호

	기호	의미
경보 신호 표시		
		경보 조건.
		오디오 일시정지됨.
경보음 신호		
3초 안에 3번 울림. 5초마다 반복.		이 버튼을 누르면 115초 동안 경보음이 나지 않습니다. 이 버튼을 다시 누르면 경보음이 재활성화됩니다.

경보 조건

아래의 모든 경보는 “중간 순위 위험”으로 평가되는 내용입니다. 장치에서 1 m 반경 안의 작동자 위치에 대해 이러한 우선순위가 할당되었습니다. 또한 장치는 내부 우선순위 시스템을 사용합니다. 다중 경보 조건이 동시에 발생한 경우 장치는 가장 우선순위의 경보를 표시합니다.

다음 표에서는 경보가 울리는 조건의 최고우선순위부터 최저우선순위, 경보의 원인, 가능한 해결책 및 지연 등을 나열합니다. 산소 전달에 영향을 미치는 경보 조건의 경우 환자의 포화도를 평가하기 위한 즉각적인 대응이 필요합니다. 습도 전달에 영향을 미치는 경보 조건의 경우 점액 건조 가능성 및 이에 따른 폐색 여부를 판단하기 위한 즉각적인 대응이 필요합니다.

다음 경보 지연은 '사용 준비 완료' 모드 작동을 가정한 것입니다.

메시지	의미	영향 받는 전달:	지연
오류 (E###)	*내부 오류가 감지되어 장치가 종료됩니다.* 장치의 전원을 끄고 다시 시작하십시오. 문제가 지속되면 오류 코드를 기록하여 Fisher & Paykel Healthcare 담당자에게 문의하십시오.	산소, 습도.	<5초
튜브 확인	*장치에서 가온 호흡 튜브를 찾을 수 없습니다.* 가온 호흡 튜브가 손상되었는지, 제대로 연결되었는지 확인합니다. 문제가 지속될 경우 가온 호흡 튜브를 변경합니다.	산소, 습도.	<5초
누설 유량 확인	*시스템에서 누출이 감지되었습니다.* 물통이 분리되었거나 제대로 장착되지 않았을 가능성이 큽니다. 가온 호흡 튜브가 손상되었는지, 제대로 연결되었는지 확인합니다. 비강 인터페이스가 잘 끼워져 있는지 확인합니다. 필터가 잘 끼워져 있는지 확인합니다.	산소, 습도.	<120초
막힘 확인	*시스템에서 막힘이 감지되었습니다.* 가온 호흡 튜브 또는 환자 인터페이스에 막힌 곳이 없는지 확인합니다. 공기 필터 및 필터 홀더에 막힌 곳이 없는지 확인합니다. 장치가 주니어 모드여야 하는지 확인합니다. 환자가 Optiflow Junior 비강 삽입관(OPT316/OJR416/OPT318/OJR418)을 사용하게 될 경우 주니어 모드를 활성화해야 합니다.	산소, 습도.	<10초
산소 농도가 너무 낮습니다	*측정된 산소 농도가 허용 범위 아래로 떨어졌습니다.* 산소 공급기가 여전히 작동하고 제대로 연결되어 있는지 확인합니다. 필요한 경우 산소 공급기에서 산소 농도를 조절합니다.	산소	<20초
산소 농도가 너무 높습니다	*측정된 산소 농도가 허용 범위를 초과하였습니다.* AIRVO 유량이 올바르게 설정되었는지 확인합니다. 필요한 경우 산소 공급기에서 산소 농도를 조절합니다.	산소	<20초

(계속)

메시지	의미	영향 받는 전달:	지연
목표 유량에 도달할 수 없습니다	*목표 유량 설정에 도달할 수 없습니다.* 가온 호흡 튜브 또는 환자 인터페이스에 막힌 곳이 없는지 확인합니다. 사용 중인 환자 인터페이스에 대해 목표 유량 설정이 너무 높지 않았는지 확인합니다 (“AIRVO 2 설정” – “환자 인터페이스 선택” 참조). 승인을 요청하는 메시지가 나타납니다. ⚠ *경고* • 환자에게 전달되는 산소 농도는 유량 설정 변화에 영향을 받게 됩니다. 필요한 경우 산소 공급기에서 산소 농도를 조절합니다.	산소	<120초
물 확인	*물통에 물이 없습니다.* 물통에 물이 떨어지면 물통 부구가 손상될 수 있습니다. 물통 및 물주머니를 교체합니다. 지속적으로 가습 작용이 이루어지게 하려면 물통 및/또는 물주머니에 물이 떨어지지 않도록 확인해야 합니다.	습도	<30분
목표 온도에 도달할 수 없습니다	*목표 온도 설정에 도달할 수 없습니다.* 승인을 요청하는 메시지가 나타납니다. 장치가 유량이 낮은 주변 환경에서 높은 유량으로 조작되고 있을 가능성이 큽니다. 목표 유량 설정을 낮추는 것을 고려해보십시오. ⚠ *경고* • 환자에게 전달되는 산소 농도는 유량 설정 변화에 영향을 받게 됩니다. 필요한 경우 산소 공급기에서 산소 농도를 조절합니다.	습도	30 +/– 3분
작동 환경 확인	*장치가 부적합한 환경에서 작동 중입니다.* 이 경보는 주변 온도의 갑작스런 변화가 원인일 수 있습니다. 장치를 30분 동안 켜 두십시오. 장치의 전원을 끄고 다시 시작하십시오.	습도	60 +/– 6초
[전원 고장]	*장치가 주전원/유틸리티 전원 소켓으로부터 분리되었습니다.* 화면에 표시되는 경보가 없습니다. 경보음이 120초 이상 지속됩니다. 이 때 전원에 다시 연결하면 장치가 자동으로 다시 시작될 것입니다. ⚠ *경고* • 항상 환자를 적절히 모니터링해야 합니다. 전원이 차단되면 장비가 작동하지 않습니다.	산소, 습도.	<5초

경보 제한

대부분의 경보 제한은 사전 프로그래밍되어 있습니다. 예외의 경우는 아래에 나와 있습니다. 허가된 직원이 이러한 경보 제한을 다른 값으로 변경할 수 있습니다. 변경은 전원 차단 동안 또는 차단된 후에도 유지됩니다.

경보 조건	공장 설정 경보 제한	가능한 사전 설정 값
산소 농도가 너무 낮습니다	21% O_2	21 또는 25% O_2
산소 농도가 너무 높습니다	95% O_2	30 - 100% O_2 5% 단위로 증가

⚠ *경고*

- 집중 치료실과 같이 한 지역 내에서 다른 장치에 대해 상이하게 사전 설정된 경보가 사용되는 경우 위험할 수 있습니다.
- 극도의 값으로 설정된 경보 제한은 경보 시스템을 무용지물로 만들 수도 있습니다.

경보 시스템 기능 테스트

경보 시스템의 기능은 장치가 켜져 있다면 언제든지 점검이 가능합니다.

가온 호흡 튜브를 제거하십시오. “튜브 확인” 경보 표시가 보이거나 경보음이 들려야 합니다. 경보 신호가 나타나지 않는 경우 장치를 사용하지 말고 문제 해결을 위한 가이드로 AIRVO 2 기술 설명서를 참조하십시오. 문제가 지속될 경우 Fisher & Paykel Healthcare 담당자에게 문의하십시오.

정보 알림음

경보음과 더불어 정보 알림음이 제공됩니다. 이에 대한 설명은 아래에 나와 있습니다.

멜로디	의미
상행 5음계	“사용 준비 완료” 기호가 나타납니다
상행 3음계	주니어 모드 활성화/비활성화
5초마다 반복되는 단음	꺼졌을 때 측정된 산소 농도가 ≥33%
30초마다 반복되는 단음	측정된 산소 농도가 >95%, 또는

4. 재처리

AIRVO 2는 outlet 엘보우를 포함해 다음 환자에게 사용하기 전에 살균 키트 사용설명서(900PT600)의 지침에 따라 세척 및 살균해야 합니다. 단일 환자용 부속품은 다음 환자에게 사용하기 전에 처리하여 교차 오염을 방지해야 합니다.

가능하면 사용 후 바로 재처리해야 합니다. 본 장치는 따뜻한 물을 사용하므로 세척, 살균 및 교체 절차를 준수하지 않을 경우 세균에 오염될 수 있고 이로 인해 환자가 감염될 가능성이 있습니다.

장치와 부속품을 다룰 때는 오염을 최소화하는 표준 무균 기법을 사용해야 합니다. 표준 무균 기법에는 손을 제대로 씻고, 연결 포트에 손을 접촉하지 않으며, 사용된 소모품을 안전하게 처분하고, 세척과 살균 작업 후 장치를 적절한 곳에 보관하는 방법 등이 포함됩니다.

부속품 교체 일정

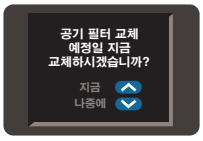
장치에 사용하는 부속품은 감염의 위험을 피하기 위해 자주 교체해야 합니다. 부속품은 손상되거나 색이 변경되면 즉시 교체해야 합니다. 적어도 다음 표에 표시된 기간 내에는 반드시 교체해야 합니다.

최대 사용 기간	부속품 번호 및 설명	
1주 (단일 환자 사용)	*Optiflow™+를 제외한 환자 인터페이스*	
	OPT316/OJR416	비강 삽입관 – 유아용
	OPT318/OJR418	비강 삽입관 – 소아용
	OPT842	Optiflow™ 비강 삽입관 – 소형
	OPT844	Optiflow™ 비강 삽입관 – 중형
	OPT846	Optiflow™ 비강 삽입관 – 대형
	OPT870	기관절개 인터페이스
	RT013	마스크 인터페이스 어댑터 – 22 mm
2주 (단일 환자 사용)	*Optiflow™+ 환자 인터페이스*	
	OPT942	Optiflow™+ 비강 삽입관 – 소형
	OPT944	Optiflow™+ 비강 삽입관 – 중형
	OPT946	Optiflow™+ 비강 삽입관 – 대형
	OPT970	Optiflow™+ 기관절개 인터페이스
	OPT980	Optiflow™+ 마스크 인터페이스 어댑터
	모든 튜브 및 물통 키트	
	900PT551 / 900PT561	AirSpiral™ 가온 호흡 튜브, MR290 자동 급수 물통 및 어댑터
	900PT562	AirSpiral™ 가온 호흡 튜브, MR290 자동 급수 물통 및 분무기 어댑터
	900PT501	가온 호흡 튜브, MR290 자동 급수 물통 및 어댑터
	900PT531	Junior 가온 호흡 튜브, MR290 자동 급수 물통 및 어댑터 (OPT316/318/OJR416/OJR418하고만 사용)
3개월 또는 1000시간	**900PT913**	공기 필터 (색이 현저하게 변한 경우 더 자주 교체)

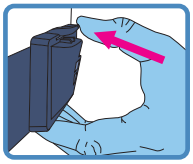
일부 부속품은 현지 국가에서 사용 가능하지 않을 수도 있습니다. Fisher and Paykel Healthcare의 지역 담당자에게 문의하십시오.

필터 교체

AIRVO 2를 1000시간 동안 켜두면 다음 살균 과정 시작 시 에어 필터 교체 시기를 나타내는 프롬프트가 나타납니다. 필터를 교체하는 시기일 경우 아래 단계를 따르십시오:



1. 장치 뒤쪽에서 필터 홀더를 잡고 필터를 제거합니다.
2. 이전 필터를 새 필터로 교체합니다(900PT913).



3. 필터 홀더를 장치에 다시 부착합니다(먼저 필터 홀더의 바닥을 끼운 다음 위 부분이 끼워질 때까지 위쪽으로 돌립니다).
4. 모드 버튼을 눌러 “지금 교체하시겠습니까” 화면으로 이동합니다.
5. 위로 버튼을 눌러 “지금”을 선택합니다.
6. 모드 버튼을 눌러 확정합니다.
   시간 카운터가 0으로 리셋됩니다.

“나중에” 옵션을 선택한 경우, 추후 살균 과정 시작 시 프롬프트가 계속 나타납니다.

수리

이 장치에 내장된 부품은 수리할 수 없습니다.

외부 예비 부품 목록은 AIRVO 2 기술 설명서를 참조하십시오.

5. 기술 정보

기호 정의

	안전을 위해 사용 지침을 참조하십시오		클래스 II 장비
	주의	REF	카탈로그 번호
	사용 지침 참조	SN	일련 번호
	경고, 표면 고온	LOT	배치 코드
	제조업체		습도 범위
	제조일		온도 범위
	유통기한 만료일	IP22	작은 이물질과 물방울의 침입으로부터 보호됨
	타입 BF 적용 부품	EC REP	EU 대리점
Rx only	미 연방법은 이 장치를 의사 혹은 의사의 주문에 의해서만 판매하도록 제한하고 있습니다.	CE	CE 마크
	경보 기호		전원 켜기/끄기 (대기)
	알람 일시정지		규정 준수 마크(RCM)

제품 규격

치수	295 mm x 170 mm x 175 mm (11.6인치 x 6.7인치 x 6.9인치)
무게	2.2 kg(4.8 lb) – 장치 무게, 3.4 kg(7.5 lb) – 부속품을 포함하여 포장된 상태
공급 주파수	50–60 Hz
전원 전압/전류	100–115 V 2.2 A (2.4 A 최대†) 220–240 V 1.8 A (2.0 A 최대†)
사운드 압력 수준	1 m 반경에서 45 dbA를 초과하는 경보
경보음 일시 중지	115초
예상 서비스 수명	5년
직렬 포트	직렬 포트는 F&P Infosmart™ 소프트웨어를 이용하여 제품 데이터를 다운로드하는 데 사용됩니다.
예열 시간	23 ± 2 °C(73 ± 3 °F)에서 시작하여 35 L/min 비율의 유량으로 MR290 물통을 사용하면 10분에 31 °C(88 °F), 30분에 37 °C(98.6 °F)까지 예열됨

목표 온도 설정	37, 34, 31 °C
습도 성능	37 °C 목표에서 >33 mg/L 34 °C 목표에서 >12 mg/L 31 °C 목표에서 >12 mg/L
전달 가스의 최대 온도	43 °C(109 °F) (ISO 80601–2–74에 의거)
적용 부품의 최대 표면 온도	44 °C(111 °F) (ISO 80601–2–74에 의거)
유량 범위(기본값)	10–60 L/min*
유량 범위 (주니어 모드)	2–25 L/min*
최대 산소 입력	60 L/min
산소 분석기 정확도	< ± 4 % (25–95% O_2 범위 내) 작동 조건: 18–28 °C (64–82 °F), 30–70% RH

***** 유량은 BTPS(체온/압력, 포화)로 측정

† 돌입전류는 50 A에 도달 가능

작동 조건

주변 온도	18 – 28 °C(64 – 82 °F)
습도	10 – 95% RH
고도	0–2000 m(6000피트)
작동 모드	연속 작동

보관 및 운송 조건

AIRVO

주변 온도	-10 – 60°C(14 – 140°F)
습도	0 – 95% RH, 비응축

튜브 및 물통 키트

주변 온도	-10 – 50 °C(14 – 122 °F)
습도	0 – 95% RH, 비응축

이 장치는 사용 준비 하기 전에 최소 또는 최대 보관 온도로부터 예열 또는 냉각시키는 데 최대 24시간이 소요될 수 있습니다.

⚠ *경고*

- 본 장치를 2000 m(6000 피트) 이상의 고도에서나 18 – 28 °C(64 – 82 °F)의 온도 범위 바깥에서 사용하지 마십시오. 만약 사용한다면, 요법의 질이 영향을 받거나 환자가 부상을 당할 수 있습니다.

다음 요건에 부합하도록 설계되었습니다.
IEC 60601–1:2005 + A1:2012
IEC 60601–1–2:2014
ANSI/AAMI 60601–1:2005/(R) 2012
CAN/CSA–C22.2 No. 60601–1:2014
EN 60601–1:2006 + A1:2013
ISO 80601–2–74:2017

이 장치는 IEC 60601–1–2의 전자파 적합성 요구사항을 준수합니다. 특정 상황에서 이 장치는 전자파 간섭 효과로 인해 주변 장비에 영향을 미치거나 주변 장비의 영향을 받을 수 있습니다. 과도한 전자파 간섭은 본 장치가 제공하는 요법에 영향을 끼칠 수 있습니다. 이러한 문제가 발생할 경우 사용 중인 장치나 간섭을 유발한 장치의 위치를 바꾸거나 의료진에게 문의하십시오. 간섭 가능성을 피하려면 장치나 부속품의 어느 부분이든 휴대용 또는 이동식 무선 주파수 통신 장비의 30 cm(12인치) 이내에 두지 마십시오.

장치 직렬 포트에 연결된 부속품 장비는 IEC 60601–1 또는 IEC 60950–1 중 하나로 승인을 받아야 합니다. 또한 모든 구성은 시스템 표준 IEC 60601–1–1에 호환되어야 합니다. 신호 입력부 또는 신호 출력부에 추가 기기를 연결하는 사람은 누구나 의료 기기를 기기 표준 IEC 60601–1–1의 요구사항을 준수하도록 구성해야 할 책임이 있습니다. 질문이 있으면 기술 서비스 부서 또는 지역 담당자에게 문의하시기 바랍니다.

폐기 지침

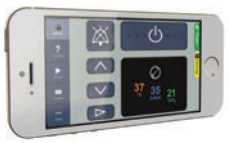
제품 폐기 방법
본 제품은 전자 부품을 포함하고 있습니다. 일반 폐기물로 분류하여 버리지 마십시오. Fisher & Paykel Healthcare에 반환하거나 전자 제품 폐기에 대한 지역별 가이드라인에 따라 폐기하십시오. EU의 폐전기 전자 제품 처리 지침(WEEE)에 따라 폐기해야 합니다.

소모품 폐기 방법
인터페이스, 호흡 튜브 및 물통을 모두 사용하고 나면 쓰레기 봉투에 넣어 처리합니다. 병원에서는 병원별 오염 제품 표준 처리 지침에 따라 처리하시기 바랍니다.

ก่อนที่คุณจะเริ่มใช้งาน

- คู่มือสำหรับผู้ใช้ฉบับนี้มีให้สำหรับผู้ที่มีอาชีพด้านการดูแลสุขภาพ
- ควรอ่านคู่มือสำหรับผู้ใช้ฉบับนี้รวมถึงคำเตือนทั้งหมด การไม่อ่านคู่มืออาจส่งผลให้เกิดการบาดเจ็บ โปรดเก็บคู่มือไว้ในที่ที่ปลอดภัยสำหรับการอ้างอิงในอนาคต
- ก่อนใช้งาน AIRVO 2 เป็นครั้งแรก ต้องมีการตั้งค่าตามคำแนะนำในคู่มือทางเทคนิคของ AIRVO 2 ต้องใช้ความระมัดระวังเป็นพิเศษเกี่ยวกับการปฏิบัติตามข้อกำหนดทางแม่เหล็กไฟฟ้า (EMC) ของ AIRVO 2 ดังนั้นจึงต้องติดตั้งและนำไปใช้งานตามข้อมูล EMC ที่ระบุไว้ในคู่มือการใช้งานและคู่มือทางเทคนิคนี้
- อุปกรณ์เสริมบางอย่างอาจไม่มีในบางประเทศ โปรดติดต่อผู้แทนจำหน่าย Fisher & Paykel Healthcare ภายในประเทศสำหรับข้อมูลเพิ่มเติม

ข้อมูลอ้างอิงอื่น ๆ



- ให้อ้างอิงตามคู่มือสำหรับผู้ใช้ AIRVO 2 สำหรับรายละเอียดคำแนะนำในการใช้งาน
- ให้อ้างอิงตามคำแนะนำในการใช้งานอุปกรณ์เสริมสำหรับผู้ใช้ที่เกี่ยวข้องทั้งหมด
- โปรดดูวิดีโอการฝึกอบรมบนเว็บไซต์ของ AIRVO 2 ที่ www.fphcare.com/airvo
- สำหรับข้อมูลในการแก้ไขปัญหา โปรดอ้างอิงคู่มือทางเทคนิคของ AIRVO 2
- ดาวน์โหลดแอป AIRVO 2 Simulator เพื่อเรียนรู้วิธีใช้ AIRVO 2 คุณสามารถเปลี่ยนแปลงการตั้งค่า จำลองข้อบกพร่อง และทดสอบทักษะของคุณ
  สามารถดาวน์โหลดได้จาก Apple, Google Play และ Windows App store
- โปรดเยี่ยมชมเว็บไซต์การศึกษาและแหล่งข้อมูลของ Fisher & Paykel ที่ https://www.fphcare.com/education เพื่อค้นหาหลักสูตรเรียนรู้ด้วยตนเองทางออนไลน์และกิจกรรมอบรมในพื้นที่เพิ่มเติม
- หากมีการใช้เครื่องกับผู้ป่วยหลายคน เครื่องนั้นต้องได้รับการทำความสะอาดและฆ่าเชื้อก่อนนำไปใช้กับผู้ป่วยคนอื่นตามคำแนะนำในคู่มือชุดอุปกรณ์ฆ่าเชื้อ (900PT600)
- สำหรับความช่วยเหลือเพิ่มเติม โปรดติดต่อผู้แทนจำหน่ายของ Fisher & Paykel Healthcare

ไทย

สารบัญ

1. ภาพรวม

AIRVO 2 เป็นเครื่องทำความชื้นที่มีเครื่องสร้างการไหลแบบผสมผสานที่ส่งก๊าซหายใจอัตราการไหลสูงที่ทำให้อุ่นและชื้นไปยังผู้ป่วยที่หายใจเองผ่านอุปกรณ์ที่สัมผัสกับผู้ป่วยหลายประเภท

วัตถุประสงค์ในการใช้งาน

AIRVO 2 มีวัตถุประสงค์เพื่อการบำบัดสำหรับผู้ป่วยที่หายใจเองที่จะได้รับประโยชน์จากการรับก๊าซหายใจอัตราการไหลสูงที่ร้อนและชื้น รวมถึงผู้ป่วยที่ผ่านการผ่าตัดบายพาสทางเดินหายใจส่วนบน การไหลอาจเป็นไปได้ตั้งแต่ 2 ถึง 60 ลิตร/นาทีขึ้นอยู่กับส่วนที่สัมผัสกับผู้ป่วย AIRVO 2 เป็นอุปกรณ์สำหรับผู้ป่วยในโรงพยาบาลและสถานที่สำหรับการดูแลระยะยาว

⚠คำเตือน

- เครื่องนี้ไม่ได้มีไว้เพื่อการช่วยชีวิต
- ต้องมีการใช้การตรวจติดตามผู้ป่วยที่เหมาะสมตลอดเวลา หากขาดพลังงานจะทำให้เกิดความเสียหายต่อการบำบัด
- การให้ก๊าซหายใจทางจมูกอาจทำให้เกิดแรงดันบวกในทางเดินหายใจที่ขึ้นกับการไหล ซึ่งต้องนำมาพิจารณาในจุดที่แรงดันบวกในทางเดินหายใจสามารถมีผลกระทบในทางไม่พึงประสงค์กับผู้ป่วย

เพื่อหลีกเลี่ยงการไหม้พอง:

- ใช้เฉพาะส่วนที่สัมผัส หม้อน้ำ และท่อหายใจตามที่ระบุไว้ในคู่มือการใช้งานฉบับนี้เท่านั้น
- ห้ามใช้อุปกรณ์เสริมเกินกว่าระยะเวลาการใช้งานสูงสุดที่ระบุไว้ในคู่มือเล่มนี้
- ก่อนใช้ออกซิเจนกับเครื่อง ให้อ่านคำเตือนทั้งหมดในหัวข้อ "ออกซิเจน" ของคู่มือนี้
- ห้ามใช้งานเครื่องหาก:
  - ท่อเครื่องช่วยหายใจแบบควบคุมความร้อนชำรุดมีรู ฉีกขาดหรือคดงอ
  - ทำงานผิดปกติ
  - สกรูของเครื่องเคยถูกขันออก
- อย่าปิดกั้นการไหลของอากาศผ่านเครื่องและท่อหายใจ
- ควรวางเครื่องในตำแหน่งที่การระบายอากาศรอบเครื่องไม่ถูกจำกัด
- ห้ามปิดกั้นทางเข้าออกอากาศของเครื่องหรือวางบนพื้นผิวที่อ่อนนุ่ม เช่น เตียงหรือโซฟาที่อาจปิดกั้นบริเวณตัวกรองได้ รักษาทางเข้าออกอากาศให้เป็นปราศจากขน เส้นผมและอื่น ๆ

เพื่อหลีกเลี่ยงไฟฟ้าดูด:

- ห้ามจัดเก็บหรือใช้เครื่องนี้ในที่ที่สามารถตกหรือถูกดึงลงไปในน้ำได้ หากน้ำเข้าตัวเครื่อง ให้ถอดสายไฟออกและหยุดการใช้งาน
- ห้ามใช้งานเครื่องหาก:
  - ตกหรือชำรุด
  - มีสายไฟหรือปลั๊กที่ชำรุด
  - ตกน้ำ
- หลีกเลี่ยงการถอดสายไฟออกจากด้านหลังของอุปกรณ์โดยไม่จำเป็น หากจำเป็นต้องถอด ให้จับขั้วต่อในขณะที่ถอด หลีกเลี่ยงการดึงสายไฟ
- ส่งคืนอุปกรณ์ไปยังศูนย์บริการที่ได้รับอนุญาตสำหรับการตรวจสอบและซ่อมแซม ยกเว้นที่ระบุไว้ในคู่มือนี้

เพื่อหลีกเลี่ยงการหายใจไม่ออกหรือหายใจเอาวัตถุแปลกปลอมเข้าไป:

- ตรวจสอบให้แน่ใจว่าได้ติดตั้งตัวกรองอากาศเมื่อใช้งานเครื่อง
- อย่าวางหรือใส่วัตถุใด ๆ ลงในช่องหรือท่อใด ๆ

เบ็ดเตล็ด:

- ก่อนใช้งานกับผู้ป่วยแต่ละคนให้ตรวจสอบให้แน่ใจว่าสัญญาณเตือนแบบเสียงสามารถได้ยินได้ โดยทำการตรวจสอบการทำงานของระบบสัญญาณเตือนตามที่ได้อธิบายไว้ในหัวข้อสัญญาณเตือน
- ความชื้นที่ออกมาจะปรับให้ต่ำกว่า 18 °C (64 °F) และสูงกว่า 28 °C (82 °F)
- เพื่อป้องกันไม่ให้เกิดการตัดการเชื่อมต่อในระหว่างการใช้งาน โดยเฉพาะอย่างยิ่งระหว่างการใช้งานกับผู้ป่วยนอก ให้ใช้ท่อช่วยหายใจแบบควบคุมความร้อนเฉพาะที่ระบุในคู่มือนี้เท่านั้น
- ห้ามใช้ระบบ AIRVO 2 ในบริเวณใกล้เคียงกับเครื่อง MRI
- เครื่องนี้ไม่เหมาะสำหรับการใช้งานในบริเวณที่มีวัตถุไวไฟ สารผสมของยาระงับความรู้สึกกับอากาศหรือออกซิเจน หรือไนตรัสออกไซด์
- AIRVO 2 ไม่ใช่ระบบที่ปิดสนิท ปฏิบัติตามแนวทางการควบคุมการติดเชื้อของโรงพยาบาลเพื่อลดความเสี่ยงต่อการปนเปื้อนข้าม
- การใช้อุปกรณ์เสริมหรือสายไฟที่ Fisher & Paykel Healthcare ไม่ได้ระบุไว้อาจส่งผลให้มีการปล่อยคลื่นแม่เหล็กไฟฟ้าเพิ่มขึ้น ภูมิคุ้มกันจากคลื่นแม่เหล็กไฟฟ้าลดลง และ/หรือการใช้งานที่ไม่เหมาะสม
- ควรหลีกเลี่ยงการใช้อุปกรณ์นี้ใกล้กับหรือซ้อนกับอุปกรณ์อื่น ๆ เนื่องจากอาจส่งผลให้อุปกรณ์ทำงานไม่ถูกต้อง หากจำเป็นต้องใช้งานในลักษณะดังกล่าว ควรสังเกตอุปกรณ์นี้และอุปกรณ์อื่น ๆ เพื่อตรวจสอบว่าอุปกรณ์เหล่านี้ทำงานเป็นปกติหรือไม่

AIRVO 2 และอุปกรณ์เสริม

ท่อและชุดอุปกรณ์หม้อน้ำ (10 ชุด)	อินเทอร์เฟซ Optiflow™ (20 ชุด)												
	Optiflow™ Junior		Optiflow™+					Optiflow™					
	OPT316/OJR416 (ทารก)	OPT318/OJR418 (เด็กเล็ก)	OPT942 (ขนาดเล็ก)	OPT944 (ขนาดกลาง)	OPT946 (ขนาดใหญ่)	OPT970 (อุปกรณ์ปรับต่อหลอดลมโดยตรง)	OPT980 (อุปกรณ์ปรับต่อหน้ากาก)	OPT842 (ขนาดเล็ก)	OPT844 (ขนาดกลาง)	OPT846 (ขนาดใหญ่)	OPT870 (อุปกรณ์ปรับต่อหลอดลมโดยตรง)	RT013 (อุปกรณ์ปรับต่อหน้ากาก)
900PT501			●	●	●	●	●	●	●	●	●	●
900PT531	●	●										
AirSpiral™												
900PT551			●	●	●	●	●	●	●	●	●	●
900PT561	●	●	●	●	●	●	●					
900PT562	●	●	●	●	●	●	●					

การทำความสะอาดและการฆ่าเชื้อ

900PT600	ชุดฆ่าเชื้อโรค
900PT601	ตัวกรองสำหรับการฆ่าเชื้อ (2 ชุด)
900PT602	แท่งฟองน้ำสำหรับทำความสะอาด (20 ชุด)
900PT603	ถุงคลุมอนามัย (20 ชุด)

เบ็ดเตล็ด

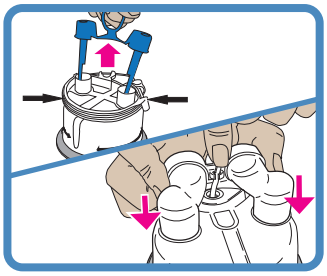
900PT405	ถาดที่ยึดติดกับเสาตั้ง
900PT411	ชุดอุปกรณ์ยึด UPS
900PT420	ขาตั้งแบบเคลื่อนที่ (ขยายได้)
900PT421	ขาตั้งแบบเคลื่อนที่
900PT422	ชุดอุปกรณ์ขยายทางเข้าของออกซิเจน
900PT426	ตะกร้าพลาสติก
900PT427	อุปกรณ์วางขวดออกซิเจน
900PT427L	อุปกรณ์วางขวดออกซิเจน (ขนาดใหญ่)
900PT428	ข้อรัดเสาตั้ง
900PT912	ฝาปิดตัวกรอง
900PT913	ตัวกรองอากาศ (2 ชุด)
OPT012/WJR112	Wigglepads สำหรับ Optiflow Junior (20 ชุด)

ผลิตภัณฑ์บางอย่างอาจไม่มีจำหน่ายในประเทศของคุณ โปรดติดต่อผู้แทนจำหน่าย Fisher & Paykel Healthcare ภายในประเทศของคุณ

2. การติดตั้ง AIRVO 2

1. ก่อนที่คุณจะเริ่มใช้งาน

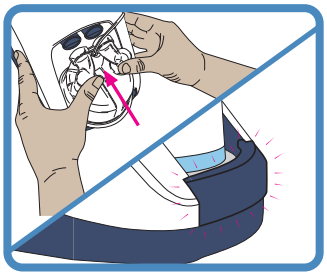
AIRVO 2 ควรยึดไว้กับถาดที่ยึดติดกับเสาตั้ง (900PT405) ต่ำกว่าความสูงของศีรษะผู้ป่วย วางตำแหน่งอุปกรณ์เพื่อให้สามารถเชื่อมต่อสายไฟเข้ากับแหล่งจ่ายไฟได้อย่างสะดวกและสามารถถอดสายไฟออกได้ เปิดบรรจุภัณฑ์ชุดท่อและชุดอุปกรณ์หม้อน้ำ (ท่อเครื่องช่วยหายใจแบบควบคุมความร้อน หม้อน้ำแบบเติมอัตโนมัติ MR290 และอะแอปเตอร์)



2. ติดตั้งหม้อน้ำ

นำฝาพอร์ตสีฟ้าออกจากหม้อน้ำโดยดึงแถบฉีกขึ้นด้านบน จากนั้นนำเหล็กฉากที่ประคองท่อจ่ายน้ำออก

เสียบอุปกรณ์ปรับต่อที่ให้มาลงบนพอร์ตแนวตั้งทั้ง 2 พอร์ตบนหม้อน้ำแล้วดันให้เข้าที่ จากนั้นเสียบท่อจ่ายน้ำให้เข้าที่



ติดตั้งหม้อน้ำเข้ากับตัวเครื่องโดยกดแผงป้องกันนิ้วลงและเลื่อนหม้อน้ำขึ้นให้ตรงกับปลายพอร์ตหม้อน้ำสีฟ้า

กดหม้อน้ำให้แน่นจนกว่าแผงป้องกันนิ้วจะเข้าที่

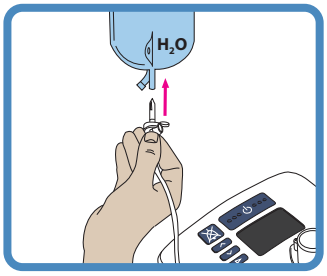
⚠ *คำเตือน*

เพื่อหลีกเลี่ยงการไหม้พอง:
- ห้ามเริ่มต้นใช้งานเครื่องที่ไม่ได้ใส่หม้อน้ำไว้ให้เข้าที่
- อย่าสัมผัสจานทำความร้อน หม้อน้ำ หรือฐานหม้อน้ำในระหว่างการใช้งาน
- น้ำในหม้อน้ำจะร้อนขึ้นในระหว่างการใช้งาน โปรดใช้ความระมัดระวังในการถอดและเทน้ำในหม้อน้ำทิ้ง

เพื่อหลีกเลี่ยงไฟฟ้าดูด:
- เมื่อถือเครื่องที่มีหม้อน้ำ พยายามอย่าเอียงเครื่อง เพื่อป้องกันน้ำไหลเข้าสู่ตัวเครื่อง
- เทน้ำทั้งหมดในหม้อน้ำทิ้งก่อนการขนย้ายเครื่อง

⚠ *ข้อควรระวัง*

เพื่อให้แน่ใจในการบำบัดที่เหมาะสมที่สุด (สำหรับ MR290 เท่านั้น):
- ห้ามใช้หม้อน้ำแบบเติมอัตโนมัติ MR290 หากมีการตกหล่นหรือถูกปล่อยทิ้งไว้จนแห้งซึ่งอาจทำให้หม้อน้ำเติมน้ำมากเกินไป



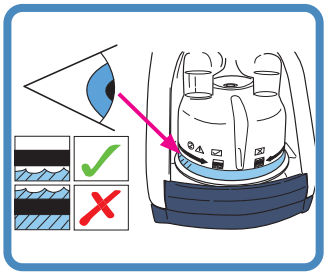
3. ต่อถุงน้ำ

ติดถุงน้ำปราศจากเชื้อที่เหล็กฉากสำหรับแขวน 20 ซม. (8 นิ้ว) เหนือตัวเครื่อง และเสียบอุปกรณ์เจาะถุงน้ำที่ใต้ถุงน้ำ เปิดฝาช่องด้านข้างของอุปกรณ์เจาะถุงน้ำ น้ำจะไหลไปเติมลงหม้อน้ำจนถึงระดับที่ต้องการโดยอัตโนมัติ และจะรักษาระดับไว้จนกว่าน้ำในถุงจะหมด

เพื่อให้แน่ใจว่ามีการทำความชื้นอย่างต่อเนื่อง ให้ดำเนินการให้แน่ใจเสมอว่าไม่อนุญาตให้น้ำในหม้อน้ำและ/หรือถุงน้ำหมด

⚠ *ข้อควรระวัง*

การเติมสารอื่นนอกเหนือจากน้ำอาจส่งผลเสียต่อเครื่องทำความชื้นและการบำบัดที่ได้รับ



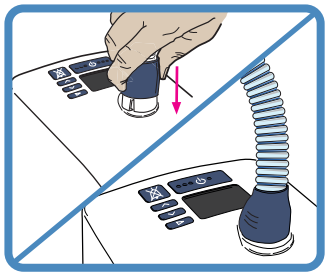
ตรวจสอบว่าน้ำไหลเข้าหม้อน้ำและอยู่ต่ำกว่าเส้นระดับน้ำสูงสุด ถ้าระดับน้ำเพิ่มขึ้นเกินขีดระดับน้ำสูงสุดให้เปลี่ยนหม้อน้ำทันที

MR290: การตั้งค่าการไหลเปรียบเทียบกับเวลาการใช้งาน (ถุงน้ำปราศจากเชื้อขนาด 2 ลิตร ที่อุณหภูมิเป้าหมาย 37 °C)

ลิตรต่อนาที	**2**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
ชั่วโมง	378	151	75	50	37	30	25	21	18	16	15	13	12

⚠ *ข้อควรระวัง*

เพื่อให้แน่ใจในการบำบัดที่เหมาะสมที่สุด (สำหรับ MR290 เท่านั้น):
- ห้ามใช้หม้อน้ำ MR290 หากระดับน้ำเพิ่มขึ้นเกินขีดระดับสูงสุด เนื่องจากจะทำให้น้ำไหลเข้าไปในทางเดินหายใจของผู้ป่วย



4. ติดตั้งท่อเครื่องช่วยหายใจแบบควบคุมความร้อน

ที่ปลายด้านหนึ่งของท่อหายใจจะมีปลอกพลาสติกสีฟ้า ยกปลอกขึ้นแล้วเสียบหัวต่อลงบนเครื่อง กดปลอกลงเพื่อล็อก

⚠ *คำเตือน*

เพื่อหลีกเลี่ยงการไหม้พอง:

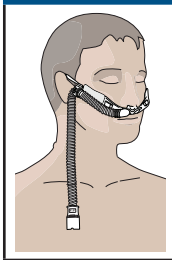
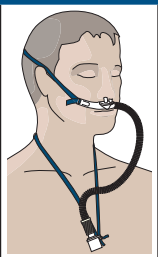
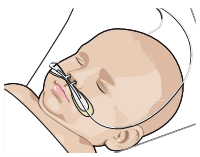
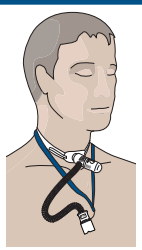
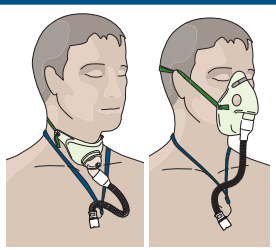
- อย่าดัดแปลงท่อหายใจหรืออุปกรณ์ที่สัมผัสในลักษณะใดก็ตาม
- อย่าให้ท่อหายใจยังคงสัมผัสกับผิวหนังโดยตรงเป็นเวลานาน บุคลากรทางการแพทย์จะต้องประเมินสภาวะต่าง ๆ สำหรับการสัมผัสที่ปลอดภัย เช่น ระยะเวลาและสภาพผิว
- ห้ามเพิ่มความร้อนที่สูงกว่าระดับอุณหภูมิโดยรอบที่ส่วนใดส่วนหนึ่งของท่อหายใจหรืออุปกรณ์ที่สัมผัส เช่น โดยการคลุมด้วยผ้าห่ม หรือโดยให้ความร้อนด้วยการฉายรังสีอินฟราเรด หรือการใช้เครื่องทำความร้อนเหนือศีรษะ หรือเครื่องอุ่น
- ห้ามใช้ปลอกหุ้มฉนวนหรืออุปกรณ์อื่นที่คล้ายคลึงกันที่ไม่ได้รับการแนะนำจาก Fisher & Paykel Healthcare

⚠ *ข้อควรระวัง*

- วางท่อเครื่องช่วยหายใจแบบควบคุมความร้อนไว้ให้ห่างจากขั้วไฟฟ้าของเครื่องตรวจติดตามเกี่ยวกับไฟฟ้า (EEG, ECG/EKG, EMG และอื่น ๆ) เพื่อลดการรบกวนสัญญาณที่ตรวจติดตามที่อาจเกิดขึ้นให้น้อยที่สุด

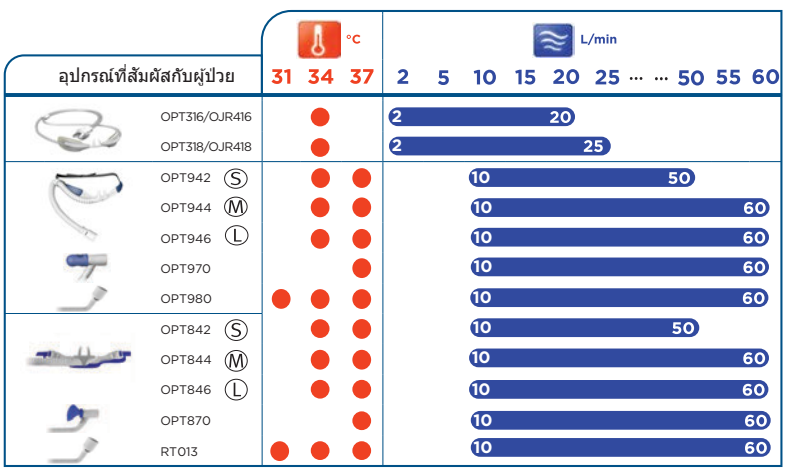
5. เลือกอุปกรณ์ที่สัมผัสกับผู้ป่วย

AIRVO 2 สามารถใช้งานกับอุปกรณ์ที่สัมผัสกับผู้ป่วยได้หลากหลายประเภท อ่านคำแนะนำในการใช้งานสำหรับผู้ใช้ที่แยกต่างหากสำหรับอุปกรณ์ที่สัมผัสกับผู้ป่วยที่จะใช้ รวมถึงคำเตือนทั้งหมด

ท่อช่วยหายใจทางจมูก			อุปกรณ์ที่สัมผัสรูเปิดท่อลมที่คอ	อุปกรณ์ปรับส่วนติดต่อหน้ากาก
				
Optiflow™+ **OPT942** **OPT944** **OPT946**	**Optiflow™** **OPT842** **OPT844** **OPT846**	Optiflow ™ Junior/Junior 2 **OPT316/OPT318/** **OJR416/OJR418** (ดูที่ "การใช้ AIRVO 2" - "โหมดสำหรับเด็ก")	**OPT970 /** **OPT870**	**OPT980 / RT013** (พร้อมหน้ากาก) โปรดทราบว่าอุปกรณ์ปรับต่ออุปกรณ์ที่สัมผัสที่เป็นหน้ากาก OPT980/RT013 ได้รับการออกแบบมาเพื่อใช้งานกับอุปกรณ์ปรับต่ออุปกรณ์ที่สัมผัสที่เป็นหน้ากากเท่านั้น อย่าใช้หน้ากากที่ปิดสนิท

ส่วนสัมผัสกับผู้ป่วยทั้งหมดเป็นชิ้นส่วนประเภทสัมผัสกับผู้ป่วยภายนอก

ตารางต่อไปนี้แสดงการตั้งค่าอุณหภูมิจุดไอน้ำกลั่นตัวเป้าหมายและการตั้งค่าการไหลเป้าหมายที่สามารถใช้ได้กับอุปกรณ์ที่สัมผัสเหล่านี้



อุณหภูมิโดยรอบที่ต่ำอาจทำให้เครื่องไม่สามารถตั้งค่าอุณหภูมิเป้าหมายได้ถึง 37 °C ที่การตั้งค่าการไหลเป้าหมายสูง ในกรณีเหล่านี้ให้พิจารณาลดการตั้งค่าการไหลเป้าหมาย

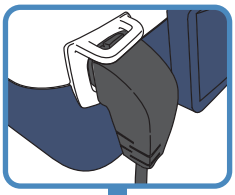
ที่ระดับความสูงจากระดับน้ำทะเล อัตราการไหลสูงสุดที่สามารถทำได้จะต่ำกว่าตารางด้านบนประมาณ 5 ลิตร/นาทีต่อ 1,000 เมตร (3,000 ฟุต)

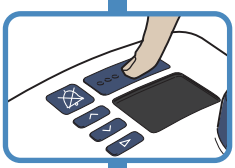
⚠ *คำเตือน*

เพื่อหลีกเลี่ยงการไหม้พอง:

- อย่าดัดแปลงท่อหายใจหรืออุปกรณ์ที่สัมผัสในลักษณะใดก็ตาม
- อย่าใช้อุปกรณ์ที่เป็นอุปกรณ์ที่สัมผัสกับผู้ป่วยใด ๆ ที่ไม่ได้ระบุไว้ในคู่มือนี้

3. การใช้งาน AIRVO 2





1. เปิดเครื่อง

เสียบสายไฟของเครื่องเข้ากับเต้ารับของแหล่งจ่ายไฟหลัก/เต้ารับของสาธารณูปโภค ขั้วต่อที่ปลายอีกด้านหนึ่งของสายไฟควรยึดติดกับด้านหลังของตัวเครื่อง

⚠ *คำเตือน*

เพื่อหลีกเลี่ยงไฟฟ้าดูด:

- ตรวจสอบให้แน่ใจว่าเครื่องแห้งก่อนเสียบปลั๊กเข้ากับเต้ารับของแหล่งจ่ายไฟหลัก/เต้ารับของสาธารณูปโภค

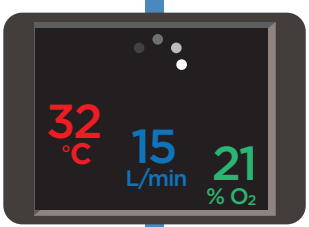
เปิดเครื่องโดยกดปุ่มเปิด/ปิดเป็นเวลา 5 วินาที

2. ตรวจสอบสถานะการฆ่าเชื้อ

เครื่องจะแสดงให้เห็นว่าปลอดภัยสำหรับการใช้งานกับผู้ป่วยคนใหม่หรือไม่

หมายความว่า AIRVO 2 เครื่องนี้ปลอดภัยที่จะใช้กับผู้ป่วยคนใหม่

AIRVO 2 เครื่องนี้ไม่ได้รับการทำความสะอาดและฆ่าเชื้อตั้งแต่การใช้ครั้งล่าสุด
หมายความว่า AIRVO 2 เครื่องนี้ไม่ปลอดภัยที่จะใช้กับผู้ป่วยคนใหม่



3. อุ่นเครื่อง

เครื่องจะเริ่มต้นการอุ่นเครื่อง คุณจะเห็นตัวเลขแสดงค่าอุณหภูมิจุดไอน้ำกลั่นตัว การไหล และค่าออกซิเจนปัจจุบัน ตัวเลขเหล่านี้จะเต้นเป็นจังหวะจนกว่าจะถึงการตั้งค่าเป้าหมาย หน้าจอนี้เรียกว่า "หน้าจอสรุป"

4. โหมดสำหรับเด็ก

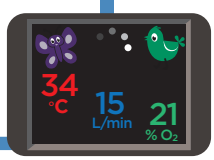
หากผู้ป่วยจะใช้ท่อช่วยหายใจทางจมูก Optiflow Junior (OPT316/OJR416/OPT318/OJR418) คุณต้องเปิดใช้งานโหมดสำหรับเด็ก ห้ามใช้โหมดสำหรับเด็กสำหรับส่วนสัมผัสผู้ป่วยอื่น ๆ

โหมดสำหรับเด็กจำกัดการตั้งค่าเป้าหมายดังนี้: 34 °C และ 2 ถึง 25 ลิตร/นาที โดยเพิ่มระดับขึ้น 1 ลิตร/นาที

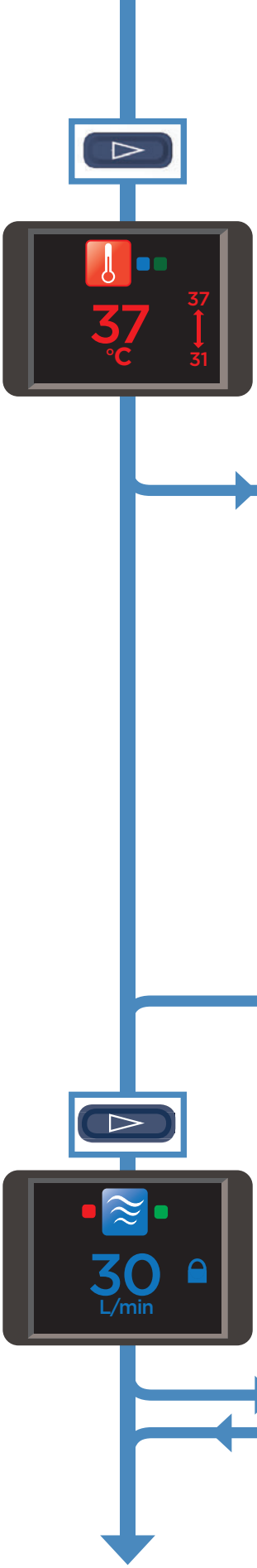
การเปิดใช้งานโหมดสำหรับเด็ก:

กดปุ่มโหมดค้างไว้ 5 วินาที

New target settings (การตั้งค่าเป้าหมายใหม่)
การตั้งค่าเป้าหมายสำหรับอุณหภูมิจุดไอน้ำกลั่นตัวและการไหลจะถูกเปลี่ยนโดยอัตโนมัติ ไอคอนสีส้มสดใสในมุมของหน้าจอเป็นสิ่งบ่งบอกว่าเครื่องนี้อยู่ในโหมดสำหรับเด็ก



หากต้องการยกเลิกโหมดสำหรับเด็กให้ทำตามขั้นตอนเดียวกัน: กดปุ่มโหมดค้างไว้ 5 วินาที



5. กำหนดการตั้งค่าเป้าหมาย

กดปุ่มโหมดเพื่อดูการตั้งค่าเป้าหมาย

การตั้งค่าเหล่านี้จะถูกล็อกตามค่าเริ่มต้น

อุณหภูมิจุดไอน้ำกลั่นตัวเป้าหมาย

คุณสามารถตั้งค่า AIRVO 2 ที่อุณหภูมิจุดไอน้ำกลั่นตัวเป้าหมายได้ 3 ค่าดังนี้:

- 37°C (98.6°F)
- 34°C (93°F) [หากมีปัญหาในการตั้งค่าให้เป็น 37°C]
- 31°C (88°F) [สำหรับหน้ากากครอบหน้าเท่านั้น]

คุณอาจไม่สามารถเข้าถึงการตั้งค่าทั้งหมดได้หาก:

- เครื่องอยู่ในโหมดสำหรับเด็ก (จำกัดที่ 34 °C)
- เครื่องได้รับการตั้งค่าด้วยขีดจำกัดที่เข้มงวดมากขึ้นตั้งแต่แรก

AIRVO 2 จะกลับสู่ค่าเริ่มต้น (37 °C) หลังจากวงจรการฆ่าเชื้อทุกครั้ง

การเปลี่ยนการตั้งค่าอุณหภูมิจุดไอน้ำกลั่นตัวเป้าหมาย:

กดปุ่มขึ้นและลงค้างไว้ 3 วินาทีเพื่อ "ปลดล็อก" การตั้งค่า

แม่กุญแจจะหายไปและจะแทนที่ด้วยลูกศรแสดงการตั้งค่าที่สามารถเข้าถึงได้แบบต่ำสุดและสูงสุด กดปุ่มขึ้นและลงเพื่อเลือกการตั้งค่าใหม่

เมื่อดำเนินการเสร็จแล้วให้กดปุ่มโหมดเพื่อ "ล็อก" การตั้งค่าอีกครั้ง

แม่กุญแจจะปรากฏขึ้นอีกครั้ง

กดปุ่มโหมดเพื่อไปยังหน้าจอถัดไป

การไหลเป้าหมาย

คุณสามารถตั้งค่าการไหล AIRVO 2 ได้ระหว่าง 10 ลิตร/นาทีและ 60 ลิตร/นาทีโดยเพิ่มขึ้นทีละ 1 ลิตร/นาที (10 ถึง 25 ลิตร/นาที) และ 5 ลิตร/นาที (25 ถึง 60 ลิตร/นาที)

คุณอาจไม่สามารถเข้าถึงการตั้งค่าทั้งหมดได้หาก:

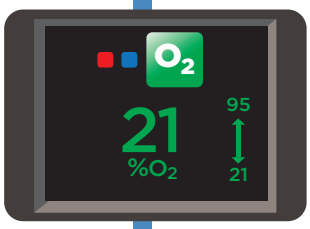
- เครื่องอยู่ในโหมดสำหรับเด็ก (จำกัดที่ 2 ถึง 25 ลิตร/นาทีโดยเพิ่มขึ้น 1 ลิตร/นาที)
- เครื่องได้รับการตั้งค่าด้วยขีดจำกัดที่เข้มงวดมากขึ้นตั้งแต่แรก

AIRVO 2 จะจดจำการตั้งค่าเป้าหมายไว้เมื่อคุณปิดเครื่อง

การเปลี่ยนการตั้งค่าการไหลเป้าหมาย:

ให้ทำตามขั้นตอนเดียวกับขั้นตอนข้างต้นในหัวข้อ "การเปลี่ยนการตั้งค่าอุณหภูมิจุดไอน้ำกลั่นตัวเป้าหมาย:"

กดปุ่มโหมดเพื่อไปยังหน้าจอถัดไป



ออกซิเจน

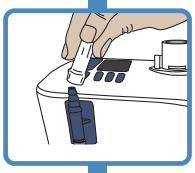
คุณสามารถเชื่อมต่อท่อออกซิเจนเสริมได้จนถึง 60 ลิตร/นาที จากแหล่งจ่ายที่มีการควบคุมไปยัง AIRVO 2 AIRVO 2 มีเครื่องวิเคราะห์ออกซิเจนเพื่อช่วยให้คุณกำหนดปริมาณออกซิเจนที่คุณกำลังส่งให้กับผู้ป่วย เครื่องของคุณอาจได้รับการตั้งค่าด้วยขีดจำกัดที่เข้มงวดมากขึ้นตั้งแต่แรก

ใช้การตรวจสอบออกซิเจนอย่างต่อเนื่องกับผู้ป่วยที่จะมีการลดระดับความอิ่มตัวอย่างมีนัยสำคัญในกรณีที่รบกวนการจ่ายออกซิเจน

⚠ *คำเตือน*

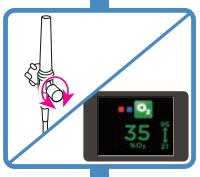
ก่อนใช้ AIRVO 2 กับออกซิเจน ให้อ่านคำเตือนต่อไปนี้ทั้งหมด:

- คุณต้องใช้ความระมัดระวังเป็นพิเศษเมื่อใช้ออกซิเจนเพื่อลดความเสี่ยงต่อการเกิดไฟไหม้ ดังนั้น เพื่อความปลอดภัยต้องกำจัดแหล่งกำเนิดประกายไฟทั้งหมด (เช่น การจี้ตัดด้วยไฟฟ้า (electrocautery) หรือการผ่าตัดด้วยไฟฟ้า (electrosurgery)) ออกจากตัวเครื่องและควรอยู่นอกห้องที่มีการใช้งาน ห้ามใช้ออกซิเจนขณะสูบบุหรี่หรือขณะอยู่ในที่ที่มีเปลวไฟ ควรวางเครื่องในตำแหน่งที่การระบายอากาศรอบเครื่องไม่ถูกจำกัด
- อาจเกิดการลุกไหม้เองที่รุนแรงขึ้นหากมีน้ำมัน จาระบี หรือสารที่มีความมันมาสัมผัสกับออกซิเจนภายใต้ความดัน ต้องเก็บสารเหล่านี้ให้ห่างจากอุปกรณ์ออกซิเจนทั้งหมด
- ตรวจสอบให้แน่ใจว่า AIRVO 2 เปิดอยู่ก่อนที่จะต่อออกซิเจน
- ต้องเพิ่มออกซิเจนผ่านทางพอร์ตออกซิเจนเข้าพิเศษที่ด้านหลังของตัวเครื่องเท่านั้น เพื่อให้แน่ใจว่าออกซิเจนเข้าไปในตัวเครื่องอย่างถูกต้อง ต้องติดตั้งพอร์ตออกซิเจนเข้าเข้ากับฝาปิดตัวกรอง และต้องใส่ตัวกรองให้พอดีกับตัวเครื่อง ควรยึดขั้วต่อสายไฟให้แน่นหนา
- อย่าต่อออกซิเจนเสริมเข้ากับ AIRVO 2 ที่อัตราการไหลสูงกว่าอัตราการไหลเป้าหมายของ AIRVO 2 เนื่องจากออกซิเจนส่วนเกินจะถูกระบายออกสู่สภาพแวดล้อม หรือ 60 ลิตร/นาที
- ความเข้มข้นของออกซิเจนที่ส่งไปยังผู้ป่วยอาจได้รับผลกระทบจากการเปลี่ยนแปลงการตั้งค่าการไหล การตั้งค่าออกซิเจน อุปกรณ์ที่สัมผัสกับผู้ป่วย หรือหากมีการกีดขวางทางเดินหายใจ
- เมื่อเสร็จแล้วให้ปิดแหล่งจ่ายออกซิเจน ถอดท่อแหล่งจ่ายออกซิเจนออกจากพอร์ตออกซิเจนเข้าที่ด้านหลังของตัวเครื่อง ต้องปิดการไหลของออกซิเจนเมื่อเครื่องไม่ทำงาน เพื่อไม่ให้ออกซิเจนรวมตัวกันภายในตัวเครื่อง
- เครื่องวิเคราะห์ออกซิเจนภายใน AIRVO 2 ใช้เทคโนโลยีการตรวจวัดด้วยคลื่นความถี่สูง ไม่จำเป็นต้องมีการสอบเทียบในสภาพแวดล้อมการใช้งาน เครื่องถูกออกแบบมาเพื่อใช้กับออกซิเจนบริสุทธิ์ - การเชื่อมต่อก๊าซอื่นหรือส่วนผสมของก๊าซอื่นจะทำให้เครื่องทำงานไม่ถูกต้อง



ต่อออกซิเจน

ต่อท่อแหล่งจ่ายออกซิเจนเข้ากับพอร์ตออกซิเจนเข้าที่ด้านหลังของตัวเครื่อง ตรวจสอบให้แน่ใจว่าคุณได้ดันท่อออกซิเจนเข้ากับพอร์ตเชื่อมต่อนี้อย่างแน่นหนา



ปรับออกซิเจน

ปรับระดับออกซิเจนจากแหล่งออกซิเจน จนกว่าตัวเลขสัดส่วนออกซิเจนที่ต้องการจะปรากฏบนหน้าจอ ซึ่งอาจใช้เวลาในการอ่านนานหลายนาที คุณสามารถตั้งค่าสัดส่วนออกซิเจนระหว่างค่าสูงสุดและต่ำสุดที่แสดงด้านบนและด้านล่างลูกศร

การวัด O_2 แบบเรียลไทม์จะแสดงขึ้นเมื่อ O_2 > 25% และ O_2 < 95% อย่างไรก็ตามโปรดทราบว่าสัดส่วนของออกซิเจนที่ต่ำกว่า 25% และสูงกว่า 95% จะแสดงเป็น 21% และ 100% ตามลำดับ

หากสัดส่วนออกซิเจนเกิน 95% การอ่านค่าออกซิเจนจะเป็นสีแดง และอุปกรณ์จะส่งเสียงบี๊ป

⚠ *คำเตือน*

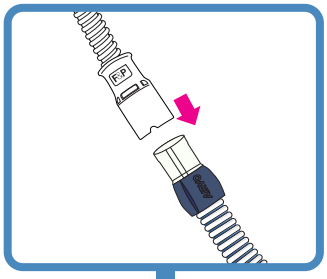
- โปรดทราบว่าหากความต้องการในการหายใจเข้าของผู้ป่วยสูงเกินกว่าอัตราการไหลที่เครื่องส่งให้สัดส่วนของออกซิเจนที่กำหนดตามผู้ป่วยจะต่ำกว่าค่าที่แสดงบนหน้าจอ เนื่องจากอากาศโดยรอบเพิ่มมาผสม
- ตรวจสอบว่าถึงระดับความอิ่มตัวในเลือดเหมาะสมที่อัตราการไหลที่กำหนด

กดปุ่มโหมดเพื่อกลับไปยังหน้าจอสรุป

6. เชื่อมต่อกับผู้ป่วย

รอจนสัญลักษณ์ "พร้อมใช้งาน" แสดงบนหน้าจอสรุป

สัญลักษณ์ "พร้อมใช้งาน"



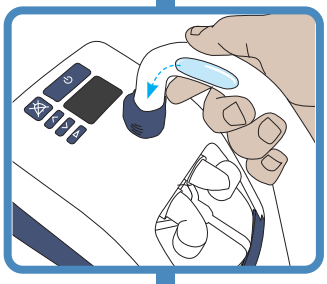
ต่ออุปกรณ์ที่สัมผัสกับผู้ป่วยเข้ากับท่อเครื่องช่วยหายใจแบบควบคุมความร้อน

ตรวจสอบค่าการไหลและค่าออกซิเจนที่แสดงบนหน้าจอสรุป ปรับระดับของออกซิเจนจากแหล่งจ่ายออกซิเจนตามความจำเป็น

เมื่อผู้ป่วยใช้เครื่องเป็นครั้งแรก อากาศจะอุ่น ซึ่งเป็นเรื่องปกติ ผู้ป่วยควรหายใจต่อผ่านทางจมูกและ/หรือปาก หรือทางรูเปิดท่อลมที่คอตามปกติ

7. ระหว่างการใช้งาน

หากสัญลักษณ์ "พร้อมใช้งาน" ปรากฏขึ้นเป็นเวลา 2 นาทีและไม่มีการกดปุ่มใด ๆ ในระหว่างนี้ หน้าจอจะพัก



การจัดการน้ำที่เกิดจากการควบแน่น

เครื่องต้องอยู่ใต้ความสูงของศีรษะและอยู่ในแนวราบ ซึ่งจะช่วยให้น้ำที่เกิดจากการควบแน่นระบายไปทางหม้อน้ำห่างจากผู้ป่วย

หากน้ำที่เกิดจากการควบแน่นส่วนเกินสะสมอยู่ในท่อเครื่องช่วยหายใจแบบควบคุมความร้อน ให้ถอดอุปกรณ์ที่สัมผัสกับผู้ป่วยออกจากท่อเครื่องช่วยหายใจแบบควบคุมความร้อน ระบายน้ำที่เกิดจากการควบแน่นโดยการยกปลายท่อของผู้ป่วยขึ้น ปล่อยให้น้ำที่เกิดจากการควบแน่นไหลเข้าไปในหม้อน้ำ

เมื่ออัตราการไหลของเป้าหมายสูงขึ้นอาจจำเป็นต้องลดอัตราการไหลของเป้าหมายเป็น 30 ลิตร / นาทีหรือต่ำกว่าก่อน เพื่อให้แน่ใจว่าท่อระบายน้ำที่เกิดจากการควบแน่นเข้าไปในหม้อน้ำ

ลดแหล่งความเย็นที่ส่งผลกับท่อเครื่องช่วยหายใจแบบควบคุมความร้อน เช่น พัดลมเพื่อให้ความเย็นแก่ผู้ป่วยหรือเครื่องปรับอากาศ/ช่องระบายอากาศ

หากยังมีน้ำที่เกิดจากการควบแน่น พิจารณาการปรับอุณหภูมิเป้าหมายลง โปรดทราบว่าอุณหภูมิเป้าหมายที่ต่ำลงจะลดความชื้นของเครื่องซึ่งลดระดับน้ำที่เกิดจากการควบแน่น

หมายเหตุ: ระดับอุณหภูมิและความชื้นที่ส่งให้กับผู้ป่วยยังจะลดลง

8. หลังการใช้งาน

ปิดเครื่องโดยการกดปุ่มเปิด/ปิด

ไทย

สัญญาณเตือน

AIRVO 2 มีสัญญาณเตือนแบบภาพและแบบเสียงเพื่อเตือนให้คุณทราบเมื่อมีการขัดขวางการบำบัดผู้ป่วย สัญญาณเตือนเหล่านี้ทำงานด้วยระบบสัญญาณเตือนอัจฉริยะซึ่งประมวลผลข้อมูลจากเซนเซอร์และการตั้งค่าเป้าหมายของเครื่อง และเปรียบเทียบข้อมูลนี้กับข้อจำกัดที่กำหนดไว้ล่วงหน้า

สัญญาณเตือน

	สัญลักษณ์	ความหมาย
สัญญาณเตือนแบบภาพ		
		เงื่อนไขสัญญาณเตือน
		หยุดเสียงชั่วคราว
สัญญาณเตือนแบบเสียง		
3 บี๊ปใน 3 วินาที ดังซ้ำทุก 5 วินาที		กดปุ่มนี้เพื่อปิดเสียงสัญญาณเตือนเป็นเวลา 115 วินาที คุณสามารถเปิดใช้งานเสียงสัญญาณเตือนโดยการกดปุ่มนี้อีกครั้ง

เงื่อนไขสัญญาณเตือน

สัญญาณเตือนทั้งหมดที่ระบุด้านล่างได้รับการประเมินเป็น "ความสำคัญปานกลาง" ลำดับความสำคัญเหล่านี้ถูกกำหนดสำหรับตำแหน่งของผู้ดำเนินการภายในระยะ 1 เมตรของอุปกรณ์ เครื่องนี้ยังใช้ระบบจัดลำดับความสำคัญภายในด้วย หากมีหลายเงื่อนไขสัญญาณเตือนเกิดขึ้นพร้อมกัน เครื่องจะแสดงสัญญาณเตือนที่มีลำดับความสำคัญสูงสุด

ตารางต่อไปนี้แสดงเงื่อนไขสัญญาณเตือนทั้งหมดตั้งแต่ลำดับความสำคัญสูงสุดจนถึงลำดับความสำคัญต่ำสุด สาเหตุ การแก้ปัญหาที่เป็นไปได้ และความล่าช้า เงื่อนไขสัญญาณเตือนที่มีผลต่อการจ่ายออกซิเจนต้องได้รับการตอบสนองโดยทันที เพื่อประเมินระดับความอิ่มตัวของผู้ป่วย เงื่อนไขสัญญาณเตือนที่มีผลต่อการให้ความชื้นต้องได้รับการตอบสนองที่รวดเร็ว เพื่อประเมินความแห้งของเสมหะและสิ่งอุดตันที่เกี่ยวข้อง

ความล่าช้าของสัญญาณเตือนต่อไปนี้คำนวณจากการคาดว่าเครื่องอยู่ในโหมด "พร้อมใช้งาน"

ข้อความ	ความหมาย	มีผลต่อการจ่าย:	การล่าช้า
Fault (ข้อบกพร่อง) (E###)	*เครื่องตรวจพบข้อผิดพลาดภายในและปิดลง* ให้ปิดเครื่องและเริ่มต้นใหม่ หากยังไม่สามารถแก้ปัญหาได้ ให้จดรหัสข้อบกพร่องและติดต่อผู้แทนจำหน่าย Fisher & Paykel Healthcare ของคุณ	ออกซิเจน ความชื้น	< 5 วินาที
Check tube (ตรวจสอบท่อ)	*เครื่องไม่สามารถตรวจพบท่อเครื่องช่วยหายใจแบบควบคุมความร้อนได้* ตรวจสอบว่าท่อเครื่องช่วยหายใจแบบควบคุมความร้อนไม่ได้ชำรุดและเสียบอยู่อย่างถูกต้อง หากปัญหายังคงมีอยู่ ให้เปลี่ยนท่อเครื่องช่วยหายใจแบบควบคุมความร้อน	ออกซิเจน ความชื้น	< 5 วินาที
Check for leaks (ตรวจสอบการรั่ว)	*เครื่องตรวจพบการรั่วไหลในระบบ* สาเหตุส่วนใหญ่คือหม้อน้ำถูกถอดออกหรือไม่ได้ใส่หม้อน้ำให้เข้าที่อย่างถูกต้อง ตรวจสอบว่าท่อเครื่องช่วยหายใจแบบควบคุมความร้อนไม่ได้ชำรุดและเสียบอยู่อย่างถูกต้อง ตรวจสอบว่าได้ติดตั้งอุปกรณ์ที่สัมผัสท่อหายใจทางจมูกแล้ว ตรวจสอบว่าได้ติดตั้งตัวกรองแล้ว	ออกซิเจน ความชื้น	< 120 วินาที
Check for blockages (ตรวจสอบสิ่งอุดตัน)	*เครื่องตรวจพบสิ่งอุดตันในระบบ* ตรวจสอบการอุดตันในท่อเครื่องช่วยหายใจแบบควบคุมความร้อนหรือในอุปกรณ์ที่สัมผัสกับผู้ป่วย ตรวจสอบการอุดตันในตัวกรองอากาศและที่ใส่ตัวกรอง ตรวจสอบว่าเครื่องควรอยู่ในโหมดสำหรับเด็กหรือไม่ หากผู้ป่วยจะใช้ท่อช่วยหายใจทางจมูก Optiflow Junior (OPT316/OJR416/OPT318/OJR418) คุณต้องเปิดใช้งานโหมดสำหรับเด็ก	ออกซิเจน ความชื้น	< 10 วินาที
O2 too low (O_2 ต่ำเกินไป)	*ระดับออกซิเจนที่วัดได้ลดลงต่ำกว่าขีดจำกัดที่อนุญาต* ตรวจสอบว่าแหล่งจ่ายออกซิเจนทำงานอยู่และเชื่อมต่ออย่างถูกต้อง ปรับระดับของออกซิเจนจากแหล่งจ่ายออกซิเจนตามความจำเป็น	ออกซิเจน	< 20 วินาที
O2 too high (O_2 สูงเกินไป)	*ระดับออกซิเจนที่วัดได้สูงเกินกว่าขีดจำกัดที่อนุญาต* ตรวจสอบว่ามีการตั้งค่าอัตราการไหล AIRVO อย่างถูกต้อง ปรับระดับของออกซิเจนจากแหล่งจ่ายออกซิเจนตามความจำเป็น	ออกซิเจน	< 20 วินาที

(ต่อ)

ข้อความ	ความหมาย	มีผลต่อการจ่าย:	การล่าช้า
Cannot reach target flow (ไม่สามารถไปถึงการไหลเป้าหมาย)	*เครื่องไม่สามารถไปถึงการตั้งค่าการไหลเป้าหมายได้* ตรวจสอบการอุดตันในท่อเครื่องช่วยหายใจแบบควบคุมความร้อนหรือในอุปกรณ์ที่สัมผัสกับผู้ป่วย ตรวจสอบหากมีการใช้การตั้งค่าการไหลเป้าหมายที่สูงเกินไปสำหรับอุปกรณ์ที่สัมผัสกับผู้ป่วย (อ้างอิงตาม "การตั้งค่า AIRVO 2" - "เลือกอุปกรณ์ที่สัมผัสกับผู้ป่วย") เครื่องจะแจ้งให้คุณทราบ ⚠ *คำเตือน* • ความเข้มข้นของออกซิเจนที่ส่งไปยังผู้ป่วยอาจได้รับผลกระทบจากการเปลี่ยนแปลงการตั้งค่าการไหล ปรับระดับของออกซิเจนจากแหล่งจ่ายออกซิเจนตามความจำเป็น	ออกซิเจน	< 120 วินาที
Check water (ตรวจสอบน้ำ)	*หม้อน้ำไม่มีน้ำ* หากหม้อน้ำแห้ง ลูกลอยหม้อน้ำอาจได้รับความเสียหาย เปลี่ยนหม้อน้ำและถุงน้ำ เพื่อให้แน่ใจว่ามีการทำความชื้นอย่างต่อเนื่อง ให้ดำเนินการให้แน่ใจเสมอว่าไม่อนุญาตให้น้ำในหม้อน้ำและ/หรือถุงน้ำหมด	ความชื้น	< 30 นาที
Cannot reach target temperature (ไม่สามารถไปถึงอุณหภูมิเป้าหมาย)	*เครื่องไม่สามารถไปถึงการตั้งค่าอุณหภูมิเป้าหมายได้* เครื่องจะแจ้งให้คุณทราบ สาเหตุส่วนใหญ่ที่เป็นไปได้คือเครื่องทำงานในอัตราการไหลที่สูงในสภาพแวดล้อมที่ต่ำ ให้พิจารณาลดการตั้งค่าการไหลเป้าหมาย ⚠ *คำเตือน* • ความเข้มข้นของออกซิเจนที่ส่งไปยังผู้ป่วยอาจได้รับผลกระทบจากการเปลี่ยนแปลงการตั้งค่าการไหล ปรับระดับของออกซิเจนจากแหล่งจ่ายออกซิเจนตามความจำเป็น	ความชื้น	30 +/- 3 นาที
Check operating conditions (ตรวจสอบสภาวะการใช้งาน)	*เครื่องตรวจพบว่ากำลังทำงานในสภาพแวดล้อมที่ไม่เหมาะสม* สัญญาณเตือนนี้อาจเกิดจากการเปลี่ยนแปลงสภาพแวดล้อมโดยฉับพลัน ปล่อยให้เครื่องทำงานเป็นเวลา 30 นาที ให้ปิดเครื่องและเริ่มต้นใหม่	ความชื้น	60 +/- 6 วินาที
[ไม่มีพลังงาน]	*เครื่องนี้ถูกตัดการเชื่อมต่อจากเต้ารับของแหล่งจ่ายไฟหลัก/เต้ารับของสาธารณูปโภค* ไม่มีสัญญาณเตือนแบบภาพ เสียงสัญญาณเตือนจะดังอย่างน้อย 120 วินาที หากมีการเชื่อมต่อพลังงานในตอนนี้ เครื่องจะรีสตาร์ทโดยอัตโนมัติ ⚠ *คำเตือน* • ต้องมีการใช้การตรวจติดตามผู้ป่วยที่เหมาะสมตลอดเวลา หากขาดพลังงานจะทำให้เกิดความเสียหายต่อการบำบัด	ออกซิเจน ความชื้น	< 5 วินาที

ไทย

ข้อจำกัดของสัญญาณเตือน

ข้อจำกัดสัญญาณเตือนส่วนใหญ่จะได้รับการตั้งไว้ล่วงหน้า ข้อยกเว้นระบุไว้ด้านล่าง ข้อจำกัดของสัญญาณเตือนอาจเปลี่ยนเป็นค่าอื่นโดยบุคคลที่ได้รับการอนุญาต การเปลี่ยนแปลงจะบันทึกไว้ในระหว่างหรือหลังจากการขาดพลังงาน

เงื่อนไขสัญญาณเตือน	ข้อจำกัดของสัญญาณเตือนที่ตั้งค่ามาจากโรงงาน	ค่าที่ได้รับการตั้งไว้ล่วงหน้าที่เป็นไปได้
O_2 ต่ำเกินไป	21% O_2	21 หรือ 25% O_2
O_2 สูงเกินไป	95% O_2	30 – 100% O_2 โดยเพิ่มขึ้น 5%

⚠ *คำเตือน*

- อาจเกิดอันตรายขึ้นได้หากมีการใช้การตั้งค่าสัญญาณเตือนล่วงหน้าที่แตกต่างกันในเครื่องอื่น ๆ ภายในพื้นที่ใดพื้นที่หนึ่ง เช่น หออภิบาลผู้ป่วยวิกฤต
- ข้อจำกัดของสัญญาณเตือนที่ตั้งเป็นค่าที่มากเกินไปอาจทำให้ระบบสัญญาณเตือนไม่มีประโยชน์

การตรวจสอบการทำงานของระบบสัญญาณเตือน

สามารถตรวจสอบการทำงานของระบบสัญญาณเตือนเมื่อใดก็ได้ที่เครื่องเปิดอยู่

ถอดท่อเครื่องช่วยหายใจแบบควบคุมความร้อนออก คุณควรเห็นสัญญาณเตือนแบบภาพให้ "ตรวจสอบท่อ" และได้ยินสัญญาณเตือนแบบเสียง หากสัญญาณเตือนอย่างใดอย่างหนึ่งไม่ทำงาน อย่าใช้เครื่องและให้อ้างอิงตามคู่มือทางเทคนิคของ AIRVO 2 สำหรับคำแนะนำในการแก้ไขปัญหา หากยังไม่สามารถแก้ปัญหาได้ โปรดติดต่อผู้แทนจำหน่าย Fisher & Paykel Healthcare

สัญญาณข้อมูลแบบเสียง

นอกจากสัญญาณเตือนแบบเสียงแล้ว ยังจัดให้มีสัญญาณข้อมูลแบบเสียงด้วย รายละเอียดเหล่านี้อธิบายไว้ด้านล่าง

เสียงดนตรี	ความหมาย
ไล่เสียงดังขึ้นตามลำดับ 5 โทนเสียง	สัญลักษณ์ "พร้อมใช้งาน" ปรากฏขึ้น
ไล่เสียงดังขึ้นตามลำดับ 3 โทนเสียง	การเปิดใช้งาน/ปิดใช้งานโหมดสำหรับเด็ก
โทนเสียงเดียวทุก 5 วินาที	ระดับออกซิเจนที่วัดได้ ≥ 33% เมื่อปิดเครื่อง
โทนเสียงเดียวทุก 30 วินาที	ระดับออกซิเจนที่วัดได้ > 95%

4. การนำเครื่องไปใช้อีกครั้ง

AIRVO 2 รวมทั้งข้องอทางออกต้องได้รับการทำความสะอาดและฆ่าเชื้อก่อนนำไปใช้กับผู้ป่วยคนอื่นตามคำแนะนำในคู่มือชุดอุปกรณ์ฆ่าเชื้อ (900PT600) ต้องมีการกำจัดอุปกรณ์เสริมชนิดใช้กับผู้ป่วยเพียงรายเดียวเมื่อใช้งานกับผู้ป่วยแต่ละรายเพื่อป้องกันการปนเปื้อนข้าม

ควรนำเครื่องไปใช้อีกครั้งหลังการใช้งานโดยเร็วที่สุดเท่าที่จะเป็นไปได้ เครื่องใช้น้ำอุ่น และอาจก่อให้เกิดความเสี่ยงต่อการเพิ่มจำนวนของแบคทีเรียและการติดเชื้อของผู้ป่วยได้หากไม่ปฏิบัติตามขั้นตอนการทำความสะอาด การฆ่าเชื้อ และการเปลี่ยนชิ้นส่วน

ควรปฏิบัติตามเทคนิคการฆ่าเชื้อมาตรฐานเพื่อลดการปนเปื้อนเมื่อต้องทำงานกับเครื่องและอุปกรณ์เสริม ซึ่งรวมถึงการล้างมืออย่างถูกต้อง การหลีกเลี่ยงการสัมผัสด้วยมือกับพอร์ตเชื่อมต่อ การทิ้งผลิตภัณฑ์สิ้นเปลืองใช้แล้วที่ปลอดภัย และการจัดเก็บเครื่องที่เหมาะสมหลังจากการทำความสะอาดและฆ่าเชื้อ

ตารางสำหรับการเปลี่ยนอุปกรณ์เสริม

ต้องเปลี่ยนอุปกรณ์เสริมสำหรับเครื่องบ่อย ๆ เพื่อป้องกันความเสี่ยงต่อการติดเชื้อ ควรเปลี่ยนชิ้นส่วนทันทีหากมีการชำรุดหรือเปลี่ยนสีหรือเปลี่ยนชิ้นส่วนเหล่านั้นภายในช่วงเวลาที่แสดงในตารางต่อไปนี้

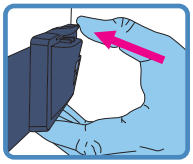
ช่วงการใช้งานสูงสุด	หมายเลขชิ้นส่วนและคำอธิบาย	
1 สัปดาห์ (ใช้กับผู้ป่วยรายเดียว)	*อุปกรณ์ที่สัมผัสกับผู้ป่วยไม่รวม Optiflow™+*	
	OPT316/OJR416	ท่อช่วยหายใจทางจมูก - สำหรับทารก
	OPT318/OJR418	ท่อช่วยหายใจทางจมูก - สำหรับเด็ก
	OPT842	Optiflow™ ท่อช่วยหายใจทางจมูก - ขนาดเล็ก
	OPT844	Optiflow™ ท่อช่วยหายใจทางจมูก - ขนาดกลาง
	OPT846	Optiflow™ ท่อช่วยหายใจทางจมูก - ขนาดใหญ่
	OPT870	อุปกรณ์ที่สัมผัสรูเปิดท่อลมที่คอ
	RT013	อุปกรณ์ปรับต่ออุปกรณ์ที่สัมผัสที่เป็นหน้ากาก - 22 มิลลิเมตร
2 สัปดาห์ (ใช้กับผู้ป่วยรายเดียว)	*Optiflow™+ อุปกรณ์ที่สัมผัสกับผู้ป่วย*	
	OPT942	Optiflow™+ ท่อช่วยหายใจทางจมูก - ขนาดเล็ก
	OPT944	Optiflow™+ ท่อช่วยหายใจทางจมูก - ขนาดกลาง
	OPT946	Optiflow™+ ท่อช่วยหายใจทางจมูก - ขนาดใหญ่
	OPT970	Optiflow™+ อุปกรณ์ที่สัมผัสรูเปิดท่อลมที่คอ
	OPT980	Optiflow™+ อุปกรณ์ปรับต่ออุปกรณ์ที่สัมผัสที่เป็นหน้ากาก
	ท่อและชุดอุปกรณ์หม้อน้ำทั้งหมด	
	900PT551 / 900PT561	AirSpiral™ ท่อเครื่องช่วยหายใจแบบควบคุมความร้อน หม้อน้ำแบบเติมอัตโนมัติ MR290 และอุปกรณ์ปรับต่อ
	900PT562	AirSpiral™ ท่อเครื่องช่วยหายใจแบบควบคุมความร้อน หม้อน้ำแบบเติมอัตโนมัติ MR290 และอุปกรณ์ปรับต่ออุปกรณ์พ่นฝอยแบบละลอง
	900PT501	ท่อเครื่องช่วยหายใจแบบควบคุมความร้อน หม้อน้ำแบบเติมอัตโนมัติ MR290 และอุปกรณ์ปรับต่อ
	900PT531	ท่อเครื่องช่วยหายใจแบบควบคุมความร้อน หม้อน้ำแบบเติมอัตโนมัติ MR290 และอุปกรณ์ปรับต่อสำหรับเด็ก (สำหรับการใช้งานกับ OPT316/318/OJR416/OJR418 เท่านั้น)
3 เดือน หรือ 1,000 ชั่วโมง	**900PT913**	ตัวกรองอากาศ (หรือบ่อยกว่านี้หากมีการเปลี่ยนสีอย่างชัดเจน)

ผลิตภัณฑ์บางอย่างอาจไม่มีจำหน่ายในประเทศของคุณ โปรดติดต่อผู้แทนจำหน่าย Fisher & Paykel Healthcare ภายในประเทศของคุณ

การเปลี่ยนตัวกรอง

หลังจากเปิด AIRVO 2 เป็นเวลา 1,000 ชั่วโมง สัญญาณแจ้งจะปรากฏที่การเริ่มต้นวงจรการฆ่าเชื้อครั้งถัดไปโดยระบุว่าครบกำหนดการเปลี่ยนตัวกรองอากาศ ให้ปฏิบัติตามขั้นตอนด้านล่างหากได้เวลาเปลี่ยนตัวกรองอากาศ:

1. นำที่ยึดตัวกรองออกจากด้านหลังเครื่องแล้วนำตัวกรองออก
2. เปลี่ยนตัวกรองตัวเก่าด้วยตัวกรองตัวใหม่ (900PT913)



3. ยึดตัวกรองเข้ากับเครื่องอีกครั้ง (หนีบด้านล่างของตัวยึดตัวกรองก่อนเป็นอันดับแรก จากนั้นให้หมุนขึ้นบนจนกว่าตัวหนีบด้านบนจะเข้าที่)
4. กดปุ่มโหมดเพื่อเคลื่อนที่บนหน้าจอ “Replace now” (“เปลี่ ยนเลยตอนน”)
5. กดปุ่มขึ้นเพื่อเลือก “Now” (“ตอนน”)
6. กดปุ่มโหมดเพื่อยืนยัน
   ตัวนับชั่วโมงจะถูกรีเซตไปที่ศูนย์

หากคุณเลือกตัวเลือก “Later” (“ภายหลัง”) สัญญาณแจ้งจะปรากฏที่การเริ่มต้นวงจรการฆ่าเชื้อครั้งหน้า

การตรวจซ่อม

ในอุปกรณ์นี้ไม่มีชิ้นส่วนภายในใด ๆ ที่จะสามารถทำการตรวจซ่อมได้

ให้อ้างอิงตามคู่มือทางเทคนิค AIRVO 2 สำหรับรายการอะไหล่ภายนอก

5. ข้อมูลทางเทคนิค

ความหมายของสัญลักษณ์ต่าง ๆ

	เพื่อความปลอดภัย โปรดดูคำแนะนำการใช้งาน		อุปกรณ์ประเภท II
	ข้อควรระวัง	REF	หมายเลขแคตตาล็อก
	ดูคำแนะนำในการใช้งาน	SN	หมายเลขลำดับ
	คำเตือน พื้นผิวร้อน	LOT	รหัสรุ่นการผลิต
	ผู้ผลิต		ช่วงความชื้น
	วันที่ผลิต		ช่วงอุณหภูมิ
	วันหมดอายุในการเก็บรักษา	IP22	ป้องกันการเข้าของวัตถุขนาดเล็กและหยดน้ำ
	ชิ้นส่วนประเภทสัมผัสกับผู้ป่วยภายนอก	EC REP	ตัวแทนสหภาพยุโรป
Rx only	(สหรัฐฯ) กฎหมายจำกัดการจำหน่าย อุปกรณ์นี้โดยแพทย์หรือตามคำสั่งของแพทย์เท่านั้น	CE	เครื่องหมาย CE
	สัญลักษณ์สัญญาณเตือน		เปิด/ปิดเครื่อง (เตรียมพร้อม)
	หยุดการแจ้งเตือนชั่วคราว		เครื่องหมายการปฏิบัติตามกฎระเบียบ (RCM)

ไทย

ข้อมูลจำเพาะของผลิตภัณฑ์

ขนาด	295 มม. x 170 มม. x 175 มม. (11.6 นิ้ว x 6.7 นิ้ว x 6.9 นิ้ว)
น้ำหนัก	2.2 กก. (4.8 ปอนด์) เฉพาะตัวเครื่อง 3.4 กก. (7.5 ปอนด์) บรรจุในถุงพร้อมอุปกรณ์เสริม
ความถี่ไฟฟ้าในการจ่าย	50-60 เฮิรตซ์
แรงดัน/กระแสไฟฟ้าของการจ่าย	100-115 โวลต์ 2.2 แอมแปร์ (สูงสุด 2.4 แอมแปร์) 220-240 โวลต์ 1.8 แอมแปร์ (สูงสุด 2.0 แอมแปร์)
ระดับความดันเสียง	เสียงสัญญาณเตือนดังเกิน 45 เดซิเบล เอ @ 1 นาที
การหยุดสัญญาณเตือนแบบเสียง	115 วินาที
อายุการใช้งานที่คาดไว้	5 ปี
พอร์ตอนุกรม	พอร์ตอนุกรมใช้ในการดาวน์โหลดข้อมูลผลิตภัณฑ์โดยใช้ซอฟต์แวร์ F&P Infosmart™
ระยะเวลาในการอุ่นเครื่อง	10 นาทีถึง 31 °C (88 °F), 30 นาทีถึง 37 °C (98.6 °F) โดยใช้หม้อน้ำ MR290 กับอัตราการไหลที่ 35 ลิตร/นาที และอุณหภูมิเริ่มต้นที่ 23 ± 2 °C (73 ± 3 °F)
การตั้งค่าอุณหภูมิเป้าหมาย	37, 34 และ 31 °C
ประสิทธิภาพในการทำความชื้น	>33 มิลลิกรัม/ลิตร ที่เป้าหมาย 37 °C >12 มิลลิกรัม/ลิตร ที่เป้าหมาย 34 °C >12 มิลลิกรัม/ลิตร ที่เป้าหมาย 31 °C
อุณหภูมิสูงสุดของก๊าซที่นำส่ง	43 °C (109 °F) (ตาม ISO 80601-2-74)
อุณหภูมิพื้นผิวสูงสุดของชิ้นส่วนที่ใช้	44 °C (111 °F) (ตาม ISO 80601-2-74)
ช่วงการไหล (ค่าเริ่มต้น)	10-60 ลิตร/นาที*
ช่วงของการไหล (โหมดสำหรับเด็ก)	2-25 ลิตร/นาที*
การนำเข้าออกซิเจนสูงสุด	60 ลิตร/นาที
ความแม่นยำเครื่องวิเคราะห์ออกซิเจน	< ± 4 % (ภายในช่วง 25-95% O_2) สภาพการใช้งาน: 18-28 °C (64-82 °F), 30-70% RH

* อัตรา F ที่ต่ำจะวัดจากค่า BTPS (อุณหภูมิร่างกาย/ความดัน ที่อิ่มตัว)

† กระแสไฟไหลเข้าเข้าอาจถึง 50 แอมแปร์

สภาวะการใช้งาน

อุณหภูมิโดยรอบ	18 ถึง 28 °C (64 ถึง 82 °F)
ความชื้น	10 - 95% RH
ความสูงเหนือระดับน้ำทะเล	0 - 2,000 เมตร (6,000 ฟุต)
โหมดการทำงาน	การทำงานต่อเนื่อง

เงื่อนไขในการจัดเก็บและขนย้าย

AIRVO

อุณหภูมิโดยรอบ	-10 - 60 °C (14 - 140 °F)
ความชื้น	10 - 95% RH, ไม่ควบแน่น

ท่อและชุดอุปกรณ์หม้อน้ำ

อุณหภูมิโดยรอบ	-10 - 50 °C (14 - 122 °F)
ความชื้น	10 - 95% RH, ไม่ควบแน่น

เครื่องอาจต้องใช้เวลานานถึง 24 ชั่วโมงในการอุ่นเครื่องหรือเย็นลงจากอุณหภูมิการเก็บรักษาขั้นต่ำหรือสูงสุดก่อนที่เครื่องจะพร้อมใช้งาน

⚠ คำเตือน

- อย่าใช้เครื่องที่ความสูงเหนือระดับน้ำทะเลมากกว่า 2,000 ม. (6,000 ฟุต) หรืออยู่นอกช่วงอุณหภูมิ 18 - 28 °C (64 - 82 °F) การทำเช่นนั้นอาจส่งผลต่อคุณภาพของการบำบัดหรือทำให้ผู้ป่วยได้รับบาดเจ็บ

ได้รับการออกแบบให้สอดคล้องกับข้อกำหนดของ:
IEC 60601-1:2005 + A1:2012
IEC 60601-1-2:2014
ANSI/AAMI 60601-1:2005/(R) 2012
CAN/CSA-C22.2 No. 60601-1:2014
EN 60601-1:2006 + A1:2013
ISO 80601-2-74:2017

เครื่องนี้สอดคล้องกับข้อกำหนดด้านความเข้ากันได้ทางแม่เหล็กไฟฟ้าของ IEC 60601-1-2 ในบางกรณีเครื่องอาจมีผลกระทบหรือได้รับผลกระทบจากอุปกรณ์ในบริเวณใกล้เคียงเนื่องจากการรบกวนทางแม่เหล็กไฟฟ้า การรบกวนทางแม่เหล็กไฟฟ้าที่มากเกินไปอาจส่งผลต่อการบำบัดของเครื่อง ในกรณีนี้ ให้ลองย้ายเครื่องไปที่ตำแหน่งอื่น หรือย้ายเครื่องที่ก่อให้เกิดการรบกวนไปไว้ที่บริเวณอื่น หรืออีกทางเลือกหนึ่งคือปรึกษาผู้ให้บริการด้านการดูแลสุขภาพของท่าน ในการหลีกเลี่ยงการรบกวนที่อาจเกิดขึ้น ห้ามวางส่วนใด ๆ ของอุปกรณ์หรืออุปกรณ์เสริมภายในรัศมี 30 ซม. (12 นิ้ว) ของอุปกรณ์เคลื่อนที่ใด ๆ หรืออุปกรณ์สื่อสารที่ส่งคลื่นความถี่วิทยุ

อุปกรณ์เสริมที่เชื่อมต่อกับพอร์ตอนุกรมของอุปกรณ์ต้องได้รับการรับรองมาตรฐาน IEC 60601-1 หรือ IEC 60950-1 นอกจากนี้การกำหนดค่าทั้งหมดจะ ต้องเป็นไปตามมาตรฐานระบบ IEC 60601-1-1 ผู้ที่ต่ออุปกรณ์เพิ่มเติมเข้ากับส่วนสัญญาณเข้าหรือส่วนสัญญาณออกจะเป็นผู้กำหนดค่าของระบบทางการแพทย์ และมีหน้าที่รับผิดชอบในการตรวจสอบว่าระบบมีความสอดคล้องตามข้อกำหนดของมาตรฐานระบบ IEC 60601-1-1 หากมีข้อสงสัยประการใด โปรด ปรึกษาฝ่ายบริการทางเทคนิคหรือผู้แทนจำหน่ายในประเทศของคุณ.

คำแนะนำในการทิ้ง

คำแนะนำในการทิ้งตัวเครื่อง
เครื่องนี้มีชิ้นส่วนอิเล็กทรอนิกส์อยู่ภายใน โปรดอย่าทิ้งรวมกับขยะทั่วไป โปรดส่งคืน Fisher & Paykel Healthcare หรือทิ้งตามข้อกำหนดของท้องถิ่นในการทิ้งชิ้นส่วนอิเล็กทรอนิกส์ ทิ้งตามข้อบังคับเกี่ยวกับเศษเหลือทิ้งจากผลิตภัณฑ์ไฟฟ้าและอิเล็กทรอนิกส์ (WEEE) ในสหภาพยุโรป

คำแนะนำในการทิ้งผลิตภัณฑ์สิ้นเปลือง
ทิ้งอุปกรณ์ที่สัมผัส ท่อหายใจ และหม้อน้ำลงในถุงขยะเมื่อสิ้นสุดการใช้งาน โรงพยาบาลควรทิ้งตามวิธีมาตรฐานในการทิ้งผลิตภัณฑ์ปนเปื้อน

SEBELUM ANDA MEMULAI

- Pedoman Pengguna ini diperuntukkan bagi tenaga medis profesional.
- Baca Pedoman Pengguna ini termasuk semua peringatan. Jika tidak dilakukan dapat menyebabkan cedera. Simpan di tempat yang aman sebagai rujukan di kemudian hari.
- Sebelum menggunakan AIRVO 2 untuk pertama kalinya, alat ini harus disiapkan sesuai petunjuk dalam Pedoman Teknis AIRVO 2. AIRVO 2 memerlukan tindakan khusus terkait dengan kepatuhan elektromagnetik (Electromagnetic Compliance [EMC]), oleh karena itu harus dipasang dan digunakan sesuai informasi EMC yang tersedia dalam Pedoman Pengguna ini dan Pedoman Teknis.
- Beberapa aksesori mungkin tidak tersedia di negara tertentu. Silakan hubungi perwakilan Fisher & Paykel Healthcare di lokasi Anda untuk informasi lebih lanjut.

RUJUKAN LAINNYA

- Lihat Pedoman Pengguna AIRVO 2 untuk petunjuk penggunaan selengkapnya.
- Baca semua Petunjuk Pengguna aksesori yang relevan.
- Saksikan video pelatihan di situs web AIRVO 2 www.fphcare.com/airvo
- Untuk informasi pemecahan masalah, lihat Pedoman Teknis AIRVO 2.
- Unduh Aplikasi Simulator AIRVO 2 untuk mempelajari cara menggunakan AIRVO 2. Anda dapat mengubah pengaturan, menyimulasikan kesalahan, dan menguji keterampilan Anda. Tersedia di Apple, Google Play dan Windows App stores.
- Kunjungi situs web edukasi & sumber daya Fisher & Paykel di www.fphcare.com/education, untuk mendapatkan kursus online dengan kecepatan yang ditentukan sendiri dan acara pelatihan lokal.
- Jika unit harus digunakan oleh beberapa pasien, maka unit harus dibersihkan dan didesinfeksi sebelum digunakan oleh pasien lain berdasarkan petunjuk dalam Pedoman Perlengkapan Desinfeksi (900PT600).
- Untuk bantuan lebih lanjut, silakan hubungi perwakilan Fisher & Paykel Healthcare di lokasi Anda.

DAFTAR ISI

1. GAMBARAN UMUM

AIRVO 2 adalah humidifier dengan generator aliran terintegrasi yang memberikan gas pernapasan hangat dan lembap beraliran tinggi bagi pasien yang bernapas spontan melalui beragam alat penghubung pasien.

TUJUAN PENGGUNAAN

AIRVO 2 digunakan untuk terapi bagi pasien yang bernapas spontan yang dapat memperoleh manfaat dari gas pernapasan hangat dan lembap serta beraliran tinggi. Termasuk di dalamnya pasien yang pernah menjalani bypass saluran napas atas. Aliran dapat berkisar antara 2 - 60 L/menit bergantung pada alat penghubung pasien. AIRVO 2 digunakan untuk pasien yang dirawat di rumah sakit dan di fasilitas perawatan jangka panjang.

⚠PERINGATAN

- Unit ini tidak ditujukan sebagai penyokong hidup.
- Pasien harus selalu dipantau dengan benar. Terapi akan terhenti jika tidak ada aliran listrik.
- Pemberian gas pernapasan melalui hidung akan menghasilkan tekanan jalan napas positif dinamis yang bergantung pada aliran. Hal ini harus dipertimbangkan bila tekanan jalan napas positif dapat menyebabkan efek merugikan pada pasien.

Untuk menghindari luka bakar:

- Gunakan hanya alat penghubung, wadah air, dan selang pernapasan yang ditetapkan dalam pedoman pengguna ini.
- Jangan gunakan aksesori melebihi periode penggunaan maksimum yang ditetapkan dalam pedoman ini.
- Sebelum menggunakan oksigen bersama unit, baca semua peringatan dalam bagian “Oksigen” pada pedoman ini.
- Jangan pernah mengoperasikan unit jika:
  - selang pernapasan yang dipanaskan mengalami kerusakan karena adanya lubang, sobek, atau terbelit,
  - tidak bekerja dengan baik,
  - sekrup selubungnya pernah dilonggarkan.
- Jangan menghalangi aliran udara melalui unit dan selang pernapasan.
- Tempatkan unit dalam posisi sedemikian rupa sehingga ventilasi di sekitar unit tidak terhalang.
- Jangan halangi celah udara pada unit atau menempatkannya di atas permukaan yang lunak seperti kasur atau sofa, karena dapat menghalangi area filter. Bersihkan celah udara dari serat kain, rambut, dll.

Untuk menghindari sengatan listrik:

- Jangan simpan atau gunakan unit di tempat yang dapat menyebabkan unit terjatuh atau masuk ke dalam air. Jika air memasuki selubung unit, cabut kabel listrik dan hentikan penggunaan.
- Jangan pernah mengoperasikan unit jika:
  - unit terjatuh atau rusak,
  - kabel listrik atau stekernya rusak,
  - unit terjatuh ke dalam air.
- Hindari melepaskan kabel listrik dari bagian belakang alat jika tidak benar-benar diperlukan. Jika memang perlu dilepaskan, pegang konektor saat melepaskannya. Hindari menarik langsung kabel listriknya.
- Kembalikan unit ke pusat servis resmi untuk diperiksa dan diperbaiki, kecuali sebagaimana dipaparkan dalam pedoman ini.

Untuk menghindari tersedak atau menghirup benda asing:

- Pastikan filter udara dipasang dengan benar saat mengoperasikan unit Anda.
- Jangan pernah menjatuhkan atau memasukkan benda apa pun ke dalam celah atau selang.

Lain-lain:

- Sebelum digunakan oleh setiap pasien, pastikan sinyal alarm audio dapat didengar dengan melakukan pemeriksaan fungsi sistem alarm yang diuraikan di bagian Alarm.
- Output kelembapan akan terganggu di bawah suhu 18 °C (64 °F) dan di atas suhu 28 °C (82 °F).
- Untuk mencegah agar tidak terlepas saat digunakan, khususnya jika pasien bergerak, gunakan hanya selang pernapasan yang dipanaskan yang ditentukan dalam pedoman ini.
- Jangan gunakan sistem AIRVO 2 di dekat perangkat MRI.
- Unit tidak cocok untuk digunakan di tempat yang terdapat campuran gas anestesi yang mudah terbakar bersama udara atau oksigen atau dinitrogen monoksida.
- AIRVO 2 bukan sistem yang tertutup. Ikuti pedoman pengendalian infeksi di rumah sakit untuk menekan risiko kontaminasi silang
- Penggunaan aksesori kabel listrik yang tidak ditentukan oleh Fisher & Paykel Healthcare dapat menyebabkan peningkatan emisi elektromagnetik, penurunan imunitas elektromagnetik, dan/atau operasi yang tidak tepat.
- Penggunaan alat ini yang ditempatkan berdekatan dengan atau ditumpuk bersama peralatan lain harus dihindari karena dapat menyebabkan pengoperasian yang tidak tepat. Jika penggunaan semacam itu harus dilakukan, maka alat ini atau peralatan lainnya harus diamati untuk memastikan bahwa keduanya dapat beroperasi secara normal.

AIRVO 2 DAN AKSESORI

		Alat penghubung Optiflow™ (kemasan isi 20)										
		Optiflow™ Junior		Optiflow™+					Optiflow™				
		OPT316/OJR416 (bayi)	OPT318/OJR418 (anak)	OPT942 (kecil)	OPT944 (sedang)	OPT946 (besar)	OPT970 (Trakeostomi Langsung)	OPT980 (Adaptor Masker)	OPT842 (kecil)	OPT844 (sedang)	OPT846 (besar)	OPT870 (Trakeostomi Langsung)	RT013 (Adaptor Masker)
Perlengkapan Selang & Wadah (Kemasan isi 10)	900PT501			●	●	●	●	●	●	●	●	●	●
	900PT531	●	●										
	AirSpiral™												
	900PT551			●	●	●	●	●	●	●	●	●	●
	900PT561	●	●	●	●	●	●	●					
	900PT562	●	●	●	●	●	●	●					

Pembersihan dan Desinfeksi

900PT600	Perlengkapan Desinfeksi
900PT601	Filter Desinfeksi (Kemasan isi 2)
900PT602	Tuas Spons Pembersihan (Kemasan isi 20)
900PT603	Tutup Penyimpanan Bersih (Kemasan isi 20)

Lain-lain

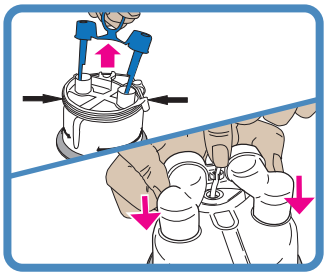
900PT405	Baki pada tiang
900PT411	Perlengkapan pemasangan UPS
900PT420	Dudukan Tiang Beroda (dapat dipanjangkan)
900PT421	Dudukan Tiang Beroda
900PT422	Perlengkapan perpanjangan saluran masuk oksigen
900PT426	Keranjang Plastik
900PT427	Pemegang botol oksigen
900PT427L	Pemegang botol oksigen (besar)
900PT428	Penjepit Tiang
900PT912	Penahan filter
900PT913	Filter udara (Kemasan isi 2)
OPT012/WJR112	Wigglepads untuk Optiflow Junior (Kemasan isi 20)

Beberapa produk mungkin tidak tersedia di negara Anda. Silakan hubungi perwakilan Fisher and Paykel Healthcare di lokasi Anda.

2. MENYIAPKAN AIRVO 2

1. SEBELUM MEMULAI

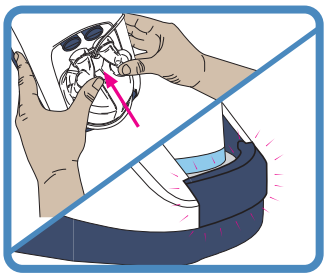
AIRVO 2 harus dipasang pada baki pada tiang (900PT405) di bawah ketinggian kepala pasien. Posisikan alat sehingga sambungan kabel listrik ke catu daya dapat diakses dengan mudah dan dapat dicabut. Buka kemasan perangkat selang & wadah (selang pernapasan yang dipanaskan, wadah air pengisian otomatis MR290, dan adaptor).



2. PASANG WADAH AIR

Lepaskan tutup porta berwarna biru dari wadah dengan menarik tab pembuka ke atas lalu lepaskan braket yang menahan selang pasokan air.

Pasang adaptor yang tersedia di atas dua porta vertikal pada wadah dan dorong sepenuhnya lalu jepit selang pasokan air ke tempatnya.



Pasang wadah air ke unit dengan menekan pelindung jari dan menggeser wadah, sejajarkan dengan ujung porta wadah berwarna biru secara hati-hati.

Dorong wadah dengan kuat hingga pelindung jari terpasang pada tempatnya.

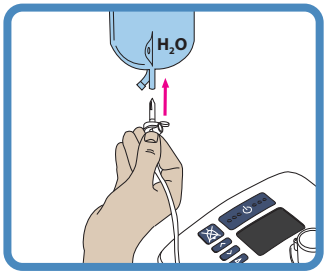
⚠ *PERINGATAN*

Untuk menghindari luka bakar:
- Jangan nyalakan unit sebelum wadah air terpasang pada tempatnya.
- Jangan sentuh pelat pemanas, wadah air, atau alas wadah selama digunakan.
- Air di dalam wadah akan menjadi panas selama digunakan. Berhati-hatilah saat melepaskan dan mengosongkan wadah.

Untuk menghindari sengatan listrik:
- Saat memegang unit dengan wadah air dalam kondisi terpasang, hindari memiringkan mesin untuk mencegah agar air tidak masuk ke dalam selubung unit.
- Kosongkan semua air yang terdapat di dalam wadah air sebelum memindahkan unit.

⚠ *PERHATIAN*

Untuk menjamin terapi optimal (MR290 saja):
- Jangan gunakan wadah isi otomatis MR290 bila pernah terjatuh atau dibiarkan hingga mengering karena dapat menyebabkan pengisian wadah yang berlebihan.



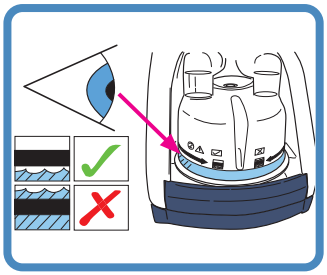
3. SAMBUNGKAN KANTONG AIR

Pasang kantong air steril ke braket penggantung 20 cm (8”) di atas unit, dan dorong bagian runcing kantong ke fitting di bagian dasar kantong. Buka tutup ventilasi di samping bagian runcing kantong. Wadah sekarang akan otomatis terisi sesuai dengan ketinggian yang dibutuhkan dan ketinggian tersebut akan terus dipertahankan hingga kantong air kosong.

Untuk menjamin kelembapan yang berkelanjutan, selalu pastikan bahwa wadah air dan/atau kantong air tidak sampai kehabisan air.

⚠ *PERHATIAN*

Menambahkan zat selain air dapat berdampak merugikan terhadap humidifier dan terapi yang diberikan.



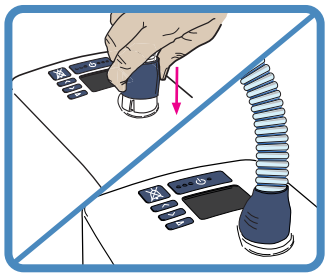
Periksa apakah air mengalir masuk ke dalam wadah dan ketinggian air dipertahankan di bawah garis ketinggian air maksimum. Jika ketinggian air naik melebihi garis ketinggian air maksimum, ganti wadah segera.

MR290: Pengaturan aliran vs waktu penggunaan (kantong air steril 2 liter, pada suhu target 37 °C)

L/menit	2	5	10	15	20	25	30	35	40	45	50	55	60
jam	378	151	75	50	37	30	25	21	18	16	15	13	12

⚠ *PERHATIAN*

Untuk menjamin terapi optimal (MR290 saja):
- Jangan gunakan wadah MR290 jika ketinggian airnya melebihi garis ketinggian air maksimum karena dapat menyebabkan air memasuki saluran pernapasan pasien.



4. PASANG SELANG PERNAPASAN YANG DIPANASKAN

Satu ujung selang pernapasan yang dipanaskan dilengkapi dengan lengan plastik berwarna biru. Angkat lengan tersebut dan geser konektor ke atas unit. Dorong lengan ke bawah untuk menguncinya.

⚠ *PERINGATAN*

Untuk menghindari luka bakar:

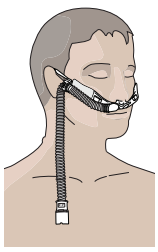
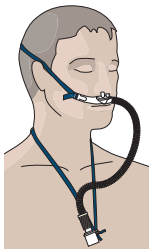
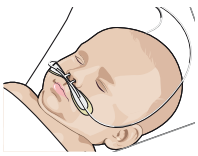
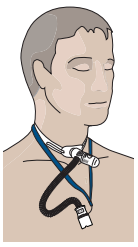
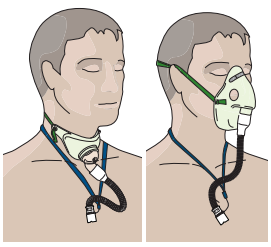
- Jangan memodifikasi selang pernapasan atau alat penghubung dengan cara apa pun.
- Jangan biarkan selang pernapasan terus bersentuhan langsung dengan kulit dalam waktu lama. Tenaga medis profesional akan menilai kondisi untuk kontak yang aman, seperti durasi dan kondisi kulit.
- Jangan menambahkan panas melebihi level ambien pada bagian mana pun dari selang pernapasan atau alat penghubung, misalnya dengan menutupinya menggunakan selimut atau dengan memanaskannya menggunakan radiasi inframerah, pemanas yang dipasang di atas, atau inkubator.
- Jangan gunakan lengan pengisolasi atau aksesori serupa yang tidak direkomendasikan oleh Fisher & Paykel Healthcare.

⚠ *PERHATIAN*

- Pasang selang pernapasan yang dipanaskan jauh dari kabel-kabel pemantauan elektrik (EEG, EKG, EMG, dll.), untuk meminimalkan kemungkinan terganggunya sinyal yang dipantau.

5. PILIH ALAT PENGHUBUNG PASIEN

AIRVO 2 dapat digunakan dengan berbagai alat penghubung pasien. Baca petunjuk pengguna terpisah untuk alat penghubung pasien yang akan digunakan, termasuk semua peringatan.

Kanula nasal			Alat penghubung trakeostomi	Adaptor alat penghubung masker
				
Optiflow™+ OPT942 OPT944 OPT946	Optiflow™ OPT842 OPT844 OPT846	Optiflow™ Junior/Junior 2 OPT316/OPT318/OJR416/ OJR418 (Lihat "Menggunakan AIRVO 2" - "Mode Junior")	OPT970 / OPT870	OPT980 / RT013 (dengan masker) Harap diperhatikan bahwa Adaptor Alat Penghubung Masker OPT980/RT013 dirancang untuk digunakan bersama masker berventilasi saja. Jangan gunakan masker tertutup.

Semua alat penghubung pasien adalah bagian bersentuhan Tipe BF.

Tabel berikut ini menunjukkan pengaturan suhu titik embun target dan pengaturan aliran target yang dapat digunakan bersama alat penghubung ini.

Alat Penghubung Pasien	°C 31	34	37	L/min 2 5 10 15 20 25 … … 50 55 60
OPT316/OJR416		●		2 — 20
OPT318/OJR418		●		2 — 25
OPT942 (S)		●	●	10 — 50
OPT944 (M)		●	●	10 — 60
OPT946 (L)		●	●	10 — 60
OPT970			●	10 — 60
OPT980	●	●	●	10 — 60
OPT842 (S)		●	●	10 — 50
OPT844 (M)		●	●	10 — 60
OPT846 (L)		●	●	10 — 60
OPT870			●	10 — 60
RT013	●	●	●	10 — 60

Kondisi ambien suhu rendah dapat menghalangi unit untuk mencapai pengaturan suhu target 37 °C pada pengaturan aliran target yang tinggi. Dalam kasus ini, pertimbangkan untuk menurunkan pengaturan aliran target.

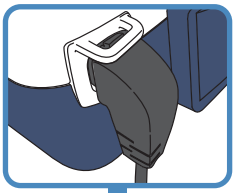
Pada ketinggian, laju aliran maksimum yang dapat dicapai mungkin lebih rendah dibandingkan yang dicantumkan pada tabel di atas, yaitu sekitar 5 L/menit per 1000 m (3000 kaki).

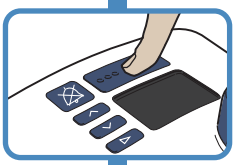
⚠ *PERINGATAN*

Untuk menghindari luka bakar:

- Jangan memodifikasi selang pernapasan atau alat penghubung dengan cara apa pun.
- Jangan gunakan alat penghubung pasien apa pun yang tidak tercantum di sini.

3. MENGGUNAKAN AIRVO 2





1. NYALAKAN UNIT

Tancapkan kabel listrik unit ke soket daya utilitas/listrik. Konektor di ujung kabel listrik yang lainnya harus terpasang dengan benar ke bagian belakang unit.

⚠ *PERINGATAN*

Untuk menghindari sengatan listrik:

- Pastikan unit dalam kondisi kering sebelum disambungkan ke soket daya utilitas/listrik.

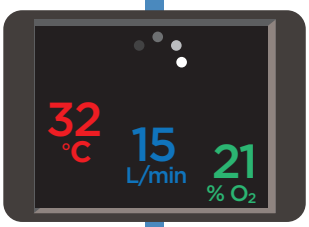
Nyalakan unit dengan menekan tombol On/Off selama 5 detik.

2. PERIKSA STATUS DESINFEKSI

Unit akan menunjukkan apakah penggunaan pada pasien baru sudah dinyatakan aman.

AIRVO 2 ini aman untuk digunakan pada pasien baru.

AIRVO 2 ini belum dibersihkan dan didesinfeksi sejak terakhir digunakan. AIRVO 2 ini TIDAK aman untuk digunakan pada pasien baru.



3. PEMANASAN

Unit akan mulai dipanaskan. Anda akan melihat angka yang menampilkan angka oksigen, aliran, dan suhu titik embun output saat ini. Angka-angka ini akan terus berubah hingga mencapai pengaturan targetnya.

Layar ini disebut “Layar Ringkasan”.

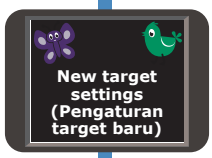
4. MODE JUNIOR

Jika pasien akan menggunakan kanula nasal Optiflow Junior (OPT316/OJR416/OPT318/OJR418), Anda harus mengaktifkan Mode Junior. Jangan gunakan mode Junior untuk alat penghubung pasien lainnya.

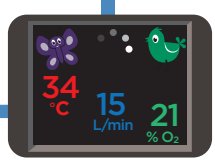
Mode Junior membatasi pengaturan target ke: 34 °C dan 2 - 25 L/menit, dalam kenaikan 1 L/menit.

Untuk mengaktifkan Mode Junior:

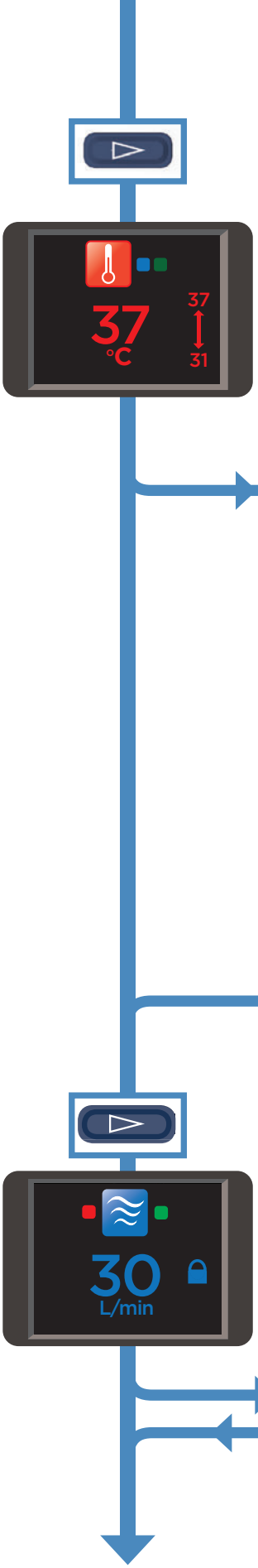
Tahan tombol Mode selama 5 detik.



New target settings (Pengaturan target baru) Pengaturan target untuk suhu titik embun dan aliran akan diubah secara otomatis. Ikon warna-warni di sudut layar menunjukkan bahwa unit ini berada dalam Mode Junior.



Untuk menonaktifkan Mode Junior, ikuti prosedur yang sama: tahan tombol Mode selama 5 detik.



5. KONFIGURASIKAN PENGATURAN TARGET

Tekan tombol Mode untuk menampilkan pengaturan target.

Pengaturan ini dikunci secara default.

SUHU TITIK EMBUN TARGET

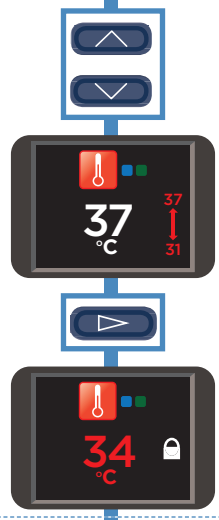
Anda dapat mengatur AIRVO 2 ke tiga pengaturan suhu titik embun target:

- 37 °C (98,6 °F)
- 34 °C (93 °F) [jika kepatuhan pada suhu 37 °C menimbulkan masalah]
- 31 °C (88 °F) [untuk masker wajah saja].

Anda mungkin tidak bisa mengakses semua pengaturan, jika:

- unit berada dalam Mode Junior (dibatasi hingga 34 °C),
- unit awalnya diatur dengan batas-batas yang lebih ketat.

AIRVO 2 akan kembali ke pengaturan defaultnya (37 °C) setelah setiap siklus desinfeksi.



Untuk mengubah pengaturan suhu titik embun target:

Tekan terus tombol Naik dan Turun selama 3 detik untuk “membuka kunci” pengaturan.

Gambar kunci akan menghilang dan digantikan dengan tanda panah yang menampilkan pengaturan minimum dan maksimum yang dapat diakses. Tekan tombol Naik dan Turun untuk memilih pengaturan baru.

Setelah selesai, tekan tombol Mode untuk ‘mengunci’ pengaturan kembali.

Gambar kunci akan muncul kembali.

Tekan tombol Mode untuk beralih ke layar berikutnya.

ALIRAN TARGET

Anda dapat mengatur AIRVO 2 untuk mengalir dengan kecepatan antara 10 L/menit hingga 60 L/menit, dengan kenaikan 1 L/menit (10-25 L/menit) dan 5 L/menit (25-60 L/menit).

Anda mungkin tidak bisa mengakses semua pengaturan, jika:

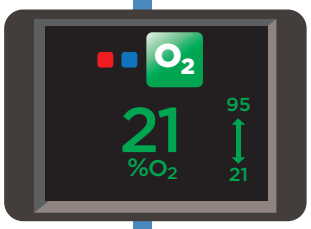
- unit berada dalam Mode Junior (dibatasi antara 2 - 25 L/menit, dengan kenaikan 1 L/menit),
- unit awalnya diatur dengan batas-batas yang lebih ketat.

AIRVO 2 akan mengingat pengaturan aliran target saat Anda mematikannya.

Untuk mengubah pengaturan aliran target:

Ikuti urutan langkah yang sama seperti di atas dalam “Mengubah pengaturan suhu titik embun target”.

Tekan tombol Mode untuk beralih ke layar berikutnya.



OKSIGEN

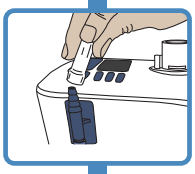
Anda dapat menyambungkan oksigen tambahan hingga 60 L/menit dari pasokan yang diatur ke AIRVO 2. AIRVO 2 dilengkapi alat penganalisis oksigen untuk membantu Anda menentukan fraksi oksigen yang Anda berikan kepada pasien. Unit Anda mungkin awalnya diatur dengan batas-batas yang lebih ketat.

Terapkan pemantauan oksigen kontinu pada pasien yang akan mengalami desaturasi signifikan jika terjadi gangguan pasokan oksigen.

⚠ *PERINGATAN*

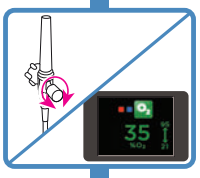
Sebelum menggunakan AIRVO 2 bersama oksigen, baca semua peringatan berikut ini:

- Penggunaan oksigen memerlukan penanganan khusus untuk mengurangi risiko kebakaran. Oleh karena itu, untuk alasan keselamatan maka semua sumber penyulutan (misalnya electrocautery atau electrosurgery) harus dijauhkan dari unit dan sebaiknya dikeluarkan dari ruangan tempat unit digunakan. Oksigen tidak boleh digunakan sambil merokok atau jika terdapat nyala api terbuka. Unit harus ditempatkan dalam posisi sedemikian rupa sehingga ventilasi di sekitar unit tidak terhalang.
- Penyulutan spontan dan hebat dapat terjadi jika minyak, lemak, atau zat berminyak bersinggungan dengan oksigen di bawah tekanan. Zat-zat ini harus dijauhkan dari semua peralatan oksigen.
- Pastikan bahwa AIRVO 2 sudah dinyalakan sebelum menyambungkan oksigen.
- Oksigen hanya boleh ditambahkan melalui porta saluran masuk oksigen khusus di bagian belakang unit. Untuk memastikan bahwa oksigen memasuki unit dengan benar, porta saluran masuk oksigen harus dipasang dengan benar ke pemegang filter dan pemegang filter harus dipasang dengan benar ke unit. Konektor kabel listrik juga harus dikencangkan dengan benar.
- Jangan sambungkan oksigen tambahan ke AIRVO 2 pada laju aliran yang lebih tinggi dibandingkan laju aliran target AIRVO 2, karena kelebihan oksigen akan dilepaskan ke ruang sekitar, atau 60 L/menit.
- Konsentrasi oksigen yang disalurkan ke pasien dapat dipengaruhi oleh perubahan pengaturan aliran, pengaturan oksigen, alat penghubung pasien, atau jika jalur udara terhambat.
- Jika sudah selesai, matikan sumber oksigen. Lepaskan output sumber oksigen dari porta saluran masuk oksigen pada bagian belakang unit. Aliran oksigen harus dimatikan jika unit tidak beroperasi, sehingga oksigen tidak terakumulasi di dalam alat.
- Alat penganalisis oksigen di dalam AIRVO 2 menggunakan teknologi pengukuran ultrasonik. Kalibrasi di lapangan tidak diperlukan. Alat tersebut dirancang untuk digunakan bersama oksigen murni - menyambungkan gas atau campuran gas lainnya dapat menyebabkan alat tidak berfungsi dengan benar.



SAMBUNGKAN OKSIGEN

Sambungkan output dari sumber oksigen ke porta saluran masuk oksigen di bagian samping unit. Pastikan Anda menekan selang oksigen dengan kuat ke porta sambungan ini.



ATUR OKSIGEN

Atur kadar oksigen dari sumber oksigen sampai fraksi oksigen yang diinginkan muncul di layar. Diperlukan beberapa menit hingga pembacaan ditampilkan di layar. Anda dapat mengatur fraksi oksigen antara nilai maksimum dan minimum yang ditampilkan di atas dan di bawah tanda panah.

Pengukuran O_2 waktu-nyata akan muncul jika O_2 >25% dan O_2 <95%. Namun demikian, harap diperhatikan bawah fraksi oksigen di bawah 25% dan di atas 95% akan ditampilkan masing-masing sebagai 21% dan 100%.

Jika fraksi oksigen melebihi 95%, pembacaan oksigen akan berkedip merah dan alat akan mengeluarkan bunyi bip.

⚠ *PERINGATAN*

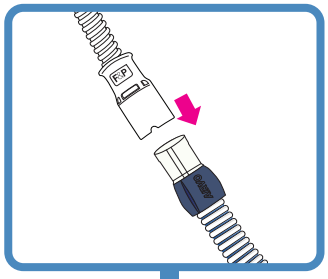
- Harap diperhatikan bahwa jika kebutuhan inspirasi puncak pasien melebihi aliran yang dikeluarkan oleh unit, fraksi oksigen yang diinspirasi oleh pasien akan lebih rendah dibandingkan nilai yang ditampilkan di layar karena adanya penangkapan udara ambien.
- Periksa apakah kadar saturasi darah yang sesuai sudah tercapai pada aliran yang diresepkan.

Tekan tombol Mode untuk kembali ke Layar Ringkasan.

6. SAMBUNGKAN KE PASIEN ANDA

Tunggu hingga simbol “Siap digunakan” ditampilkan pada Layar Ringkasan.

Simbol “Siap digunakan”



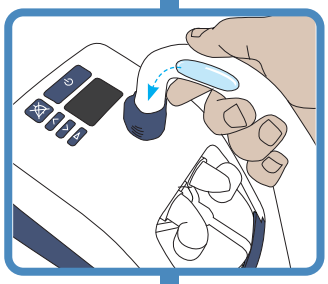
Sambungkan alat penghubung pasien ke selang pernapasan yang dipanaskan.

Pantau nilai aliran dan oksigen yang ditampilkan pada Layar Ringkasan. Sesuaikan kadar oksigen dari sumber oksigen sesuai kebutuhan.

Saat pasien menggunakan unit untuk pertama kali, udaranya akan terasa hangat. Hal ini normal. Pasien harus tetap bernapas secara normal melalui hidung dan/atau mulut, atau trakeostomi.

7. SELAMA PENGGUNAAN

Jika simbol “Siap digunakan” telah ditampilkan selama 2 menit dan tidak ada tombol yang ditekan selama jangka waktu tersebut, screensaver akan ditampilkan.



PENGELOLAAN KONDENSASI

Unit harus ditempatkan di bawah ketinggian kepala dan di atas permukaan yang rata, sehingga kondensasi dapat diarahkan ke wadah air, dan menjauh dari pasien.

Jika terlalu banyak kondensasi yang terakumulasi dalam selang pernapasan yang dipanaskan, maka lepaskan alat penghubung pasien dari selang pernapasan yang dipanaskan, keluarkan kondensasi dengan mengangkat ujung selang yang lebih dekat ke pasien, sehingga kondensasi dapat mengalir menuju wadah air.

Pada laju aliran target yang lebih tinggi, mungkin perlu menurunkan laju aliran target terlebih dahulu menjadi 30 L/menit atau lebih rendah, untuk memastikan kondensasi dialirkan ke dalam wadah air.

Minimalkan sumber-sumber pendinginan lokal yang bekerja pada selang pernapasan yang dipanaskan, seperti kipas untuk membuat pasien merasa sejuk atau unit pengondisi udara/ventilasi.

Jika kondensasi tidak kunjung hilang, pertimbangkan untuk menurunkan suhu target. Harap diperhatikan bahwa suhu target yang lebih rendah akan menurunkan output kelembapan unit, sehingga menurunkan level kondensasi.

Catatan: Suhu dan tingkat kelembapan yang disalurkan ke pasien juga akan menurun.

8. SETELAH PENGGUNAAN

Matikan unit dengan menekan tombol On/Off.

ALARM

AIRVO 2 memiliki alarm visual dan audio untuk memperingatkan Anda tentang adanya gangguan terhadap terapi pasien Anda. Alarm ini dipicu oleh sebuah sistem alarm pintar, yang memproses informasi dari sensor dan pengaturan target pada unit kemudian membandingkan informasi ini dengan batas-batas yang sudah diprogram sebelumnya.

SINYAL ALARM

	Simbol	Arti
Sinyal alarm visual		
		Kondisi alarm.
		Audio dijeda.
Sinyal alarm audio		
3 bip dalam 3 detik. Diulangi setiap 5 detik.		Tekan tombol ini untuk mengheningkan alarm audio selama 115 detik. Alarm audio dapat diaktifkan lagi dengan menekan tombol ini kembali.

KONDISI ALARM

Semua alarm yang dicantumkan di bawah ini telah dinilai sebagai “Prioritas Sedang”. Prioritas ini dialokasikan untuk posisi operator dalam jarak 1 meter dari alat. Unit juga menggunakan sistem pemeringkat prioritas internal. Jika beberapa kondisi alarm terjadi secara serentak, maka unit akan menampilkan alarm prioritas tertinggi.

Tabel berikut ini mencantumkan semua kondisi alarm mulai dari prioritas tertinggi hingga prioritas terendah, penyebabnya, kemungkinan solusi dan penundaan. Kondisi alarm yang memengaruhi pasokan oksigen memerlukan respons segera untuk mengevaluasi tingkat saturasi pasien. Kondisi alarm yang memengaruhi pasokan kelembapan memerlukan respons cepat untuk mengevaluasi potensi mengeringnya lendir dan sumbatan yang terkait.

Penundaan alarm berikut ini mengasumsikan operasi dalam mode ‘Siap digunakan’.

Pesan	Arti	Memengaruhi pasokan:	Penundaan
Fault (Kesalahan) (E###)	*Unit telah mendeteksi adanya kesalahan internal dan melakukan pemadaman mandiri.* Matikan unit lalu nyalakan kembali. Jika masalah berlanjut, catat kode kesalahannya dan hubungi perwakilan Fisher & Paykel Healthcare.	Oksigen, kelembapan.	< 5 detik
Check tube (Periksa selang)	*Unit tidak dapat mendeteksi selang pernapasan yang dipanaskan.* Periksa apakah kondisi selang pernapasan yang dipanaskan tidak rusak dan sudah disambungkan dengan benar. Jika masalah berlanjut, ganti selang pernapasan yang dipanaskan.	Oksigen, kelembapan.	< 5 detik
Check for leaks (Periksa untuk melihat adanya kebocoran)	*Unit mendeteksi adanya kebocoran di dalam sistem.* Kemungkinan penyebabnya adalah wadah air tidak terpasang atau tidak dipasang dengan benar pada tempatnya. Periksa apakah kondisi selang pernapasan yang dipanaskan tidak rusak dan sudah disambungkan dengan benar. Periksa apakah alat penghubung nasal sudah dipasang dengan benar. Periksa apakah filter sudah dipasang dengan benar.	Oksigen, kelembapan.	< 120 detik
Check for blockages (Periksa untuk melihat adanya sumbatan)	*Unit mendeteksi adanya sumbatan di dalam sistem.* Periksa apakah selang pernapasan yang dipanaskan atau alat penghubung pasien tersumbat. Periksa apakah filter udara dan pemegang filter tersumbat. Periksa apakah unit harus berada dalam Mode Junior. Jika pasien akan menggunakan kanula nasal Optiflow Junior (OPT316/OJR416/OPT318/OJR418), Anda harus mengaktifkan Mode Junior.	Oksigen, kelembapan.	< 10 detik
O_2 too low (O2 terlalu rendah)	*Kadar oksigen terukur telah merosot ke bawah batas yang diperbolehkan.* Periksa apakah sumber oksigen masih beroperasi dan sudah tersambung dengan benar. Sesuaikan kadar oksigen dari sumber oksigen sesuai kebutuhan.	Oksigen	< 20 detik
O_2 too high (O2 terlalu tinggi)	*Kadar oksigen terukur telah melebihi batas yang diperbolehkan.* Periksa apakah laju aliran AIRVO telah ditetapkan dengan benar. Sesuaikan kadar oksigen dari sumber oksigen sesuai kebutuhan.	Oksigen	< 20 detik

(sambungan)

Pesan	Arti	Memengaruhi pasokan:	Penundaan
Cannot reach target flow (Tidak dapat mencapai aliran target)	*Unit tidak dapat mencapai aliran target yang ditetapkan.* Periksa apakah selang pernapasan yang dipanaskan atau alat penghubung pasien tersumbat. Periksa apakah pengaturan aliran target terlalu tinggi untuk alat penghubung pasien yang digunakan (lihat "Menyiapkan AIRVO 2" - "Pilih Alat Penghubung Pasien"). Anda akan diminta untuk memberi persetujuan. ⚠ *PERINGATAN* • Konsentrasi oksigen yang disalurkan ke pasien dapat dipengaruhi oleh perubahan pengaturan aliran. Sesuaikan kadar oksigen dari sumber oksigen sesuai kebutuhan.	Oksigen	< 120 detik
Check water (Periksa air)	*Air di dalam wadah habis.* Jika wadah sampai kehabisan air, pelampung dalam wadah mungkin rusak. Ganti wadah dan kantong air. Untuk menjamin kelembapan yang berkelanjutan, selalu pastikan bahwa wadah air dan/atau kantong air tidak sampai kehabisan air.	Kelembapan	< 30 menit
Cannot reach target temperature (Tidak dapat mencapai suhu target)	*Unit tidak dapat mencapai suhu target yang ditetapkan.* Anda akan diminta untuk memberi persetujuan. Penyebab yang paling mungkin adalah bahwa unit beroperasi pada laju aliran tinggi dalam kondisi ambien yang rendah. Pertimbangkan untuk menurunkan pengaturan aliran target. ⚠ *PERINGATAN* • Konsentrasi oksigen yang disalurkan ke pasien dapat dipengaruhi oleh perubahan pengaturan aliran. Sesuaikan kadar oksigen dari sumber oksigen sesuai kebutuhan.	Kelembapan	30 +/- 3 menit
Check operating conditions (Periksa kondisi pengoperasian)	*Telah terdeteksi bahwa unit beroperasi dalam kondisi ambien yang tidak sesuai.* Alarm ini dapat dipicu oleh perubahan tiba-tiba dalam kondisi ambien. Biarkan unit bekerja selama 30 menit. Matikan unit lalu nyalakan kembali.	Kelembapan	60 +/- 6 detik
[Daya Mati]	*Sambungan unit ke soket daya utilitas/listrik telah dicabut.* Tidak ada alarm visual. Alarm audio akan terdengar selama setidaknya 120 detik. Jika daya disambungkan kembali pada saat ini, unit akan otomatis dinyalakan kembali. ⚠ *PERINGATAN* • Pasien harus selalu dipantau dengan benar. Terapi akan terhenti jika tidak ada aliran listrik.	Oksigen, kelembapan.	< 5 detik

BATAS-BATAS ALARM

Sebagian besar batas alarm sudah diprogram sebelumnya. Pengecualiannya dicantumkan di bawah ini. Batas-batas alarm ini dapat diubah ke angka-angka lain oleh personel yang berwenang. Perubahan akan dipertahankan selama atau setelah daya terputus.

Kondisi alarm	Batas alarm yang ditetapkan pabrik	Kemungkinan nilai-nilai preset
O_2 too low (O2 terlalu rendah)	21% O_2	21 atau 25% O_2
O_2 too high (O2 terlalu tinggi)	95% O_2	30 – 100% O_2, dalam kenaikan 5%

⚠ *PERINGATAN*

- Penggunaan preset alarm yang berbeda pada unit yang berbeda dalam area yang sama dapat berpotensi bahaya, misalnya unit perawatan intensif.
- Batas-batas alarm yang ditetapkan ke nilai ekstrem dapat menyebabkan sistem alarm tidak berguna.

MEMERIKSA FUNGSI SISTEM ALARM

Fungsi sistem alarm dapat diperiksa kapan saja saat unit dinyalakan.

Lepaskan selang pernapasan yang dipanaskan. Anda akan melihat sinyal alarm visual "Periksa selang" dan mendengar sinyal alarm audio. Jika kedua alarm tidak ada, jangan gunakan unit dan lihat Pedoman Teknis AIRVO 2 untuk panduan pemecahan masalah. Jika masalah berlanjut, hubungi perwakilan Fisher & Paykel Healthcare di lokasi Anda.

SINYAL INFORMASI AUDIO

Selain sinyal alarm audio, sinyal informasi audio juga disediakan. Sinyal tersebut diuraikan di bawah ini.

Melodi	Arti
Urutan 5 nada meninggi	Simbol "Siap digunakan" telah muncul
Urutan 3 nada meninggi	Aktivasi/deaktivasi Mode Junior
Nada tunggal setiap 5 detik	Kadar oksigen terukur ≥ 33% pada saat dimatikan
Nada tunggal setiap 30 detik	Kadar oksigen terukur > 95%

4. PEMROSESAN ULANG

AIRVO 2, termasuk siku outlet, harus dibersihkan dan didesinfeksi setiap akan digunakan oleh pasien yang berbeda, sesuai petunjuk dalam Pedoman Perlengkapan Desinfeksi (900PT600). Aksesori sekali pakai untuk satu pasien harus dibuang sebelum unit digunakan oleh pasien berikutnya guna mencegah kontaminasi silang.

Pemrosesan ulang harus segera dilakukan setelah penggunaan. Unit menggunakan air hangat dan dapat memicu risiko kolonisasi bakteri dan infeksi pasien jika prosedur pembersihan, desinfeksi, dan penggantian tidak dipatuhi.

Teknik aseptik standar untuk menekan kontaminasi harus dipatuhi saat menangani unit dan aksesori. Teknik ini meliputi mencuci tangan dengan benar, menghindari kontak dengan porta sambungan, membuang secara aman bahan habis pakai yang sudah terpakai serta penyimpanan unit yang tepat setelah dibersihkan dan didesinfeksi.

JADWAL PENGGANTIAN AKSESORI

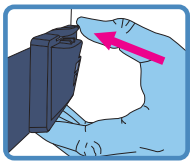
Aksesori untuk unit harus diganti sesering mungkin guna menghindari risiko infeksi. Bagian-bagian unit harus segera diganti jika mengalami kerusakan atau perubahan warna; atau harus diganti dalam jangka waktu yang diperlihatkan dalam tabel di bawah ini.

Jangka waktu penggunaan maksimum	Nomor komponen dan deskripsi	
1 minggu (sekali pakai)	***Alat penghubung pasien kecuali Optiflow™+***	
	OPT316/OJR416	Kanula Nasal - Bayi
	OPT318/OJR418	Kanula Nasal - Anak
	OPT842	Optiflow™ Kanula Nasal - Kecil
	OPT844	Optiflow™ Kanula Nasal - Sedang
	OPT846	Optiflow™ Kanula Nasal - Besar
	OPT870	Alat Penghubung Trakeostomi
	RT013	Adaptor Alat Penghubung Masker - 22 mm
2 minggu (sekali pakai)	***Optiflow™+ alat penghubung pasien***	
	OPT942	Optiflow™+ Kanula Nasal - Kecil
	OPT944	Optiflow™ + Kanula Nasal - Sedang
	OPT946	Optiflow™+ Kanula Nasal - Besar
	OPT970	Optiflow™+ Alat Penghubung Trakeostomi
	OPT980	Optiflow™+ Adaptor Alat Penghubung Masker
	Semua perlengkapan selang & wadah	
	900PT551 / 900PT561	Selang pernapasan yang dipanaskan AirSpiral™, wadah pengisian otomatis MR290, dan adaptor
	900PT562	Selang pernapasan yang dipanaskan AirSpiral™, wadah pengisian otomatis MR290, dan adaptor nebulizer
	900PT501	Selang pernapasan yang dipanaskan, wadah pengisian otomatis MR290, dan adaptor
	900PT531	Selang pernapasan yang dipanaskan Junior, wadah pengisian otomatis MR290, dan adaptor (untuk digunakan bersama OPT316/OPT318/OJR416/OJR418 saja)
3 bulan atau 1000 jam	900PT913	Filter udara (atau lebih sering jika terjadi perubahan warna yang signifikan)

Beberapa produk mungkin tidak tersedia di negara Anda. Silakan hubungi perwakilan Fisher and Paykel Healthcare di lokasi Anda.

PENGGANTIAN FILTER

Setelah AIRVO 2 dinyalakan selama 1000 jam, sebuah perintah akan muncul di awal siklus desinfeksi berikutnya yang menunjukkan bahwa filter udara sudah saatnya untuk diganti. Ikuti langkah-langkah di bawah ini jika filter sudah waktunya diganti:



1. Ambil pemegang filter dari bagian belakang unit lalu lepaskan filter.
2. Ganti filter yang lama dengan filter (900PT913) yang baru.
3. Pasang kembali pemegang filter ke unit (jepit bagian bawah pemegang filter terlebih dahulu, lalu putar ke atas hingga bagian atas terpasang pada tempatnya).
4. Tekan tombol Mode untuk beralih ke layar “Replace now” (Ganti sekarang).
5. Tekan tombol Naik untuk memilih “Now” (Sekarang).
6. Tekan tombol Mode untuk mengonfirmasi. Penghitung jam akan direset ke nol.

Jika Anda memilih opsi “Later” (Nanti), perintah tersebut akan tetap muncul di awal siklus desinfeksi selanjutnya.

SERVIS

Tidak ada komponen internal yang dapat diservis dalam alat ini.

Lihat Pedoman Teknis AIRVO 2 untuk daftar suku cadang eksternal.

5. INFORMASI TEKNIS

DEFINISI SIMBOL

	Untuk alasan keselamatan, lihat petunjuk penggunaan		Peralatan kelas II
	Perhatian	REF	Nomor katalog
	Lihat petunjuk penggunaan	SN	Nomor seri
	Peringatan, permukaan panas	LOT	Kode batch
	Produsen		Rentang kelembapan
	Tanggal produksi		Rentang suhu
	Tanggal kedaluwarsa penyimpanan	IP22	Dilindungi dari masuknya benda kecil dan tetesan air
	Bagian bersentuhan Tipe BF	EC REP	Perwakilan Uni Eropa
Rx only	Hukum Federal (AS) membatasi alat ini untuk dijual oleh, atau atas perintah dokter.	CE	Lambang CE
	Simbol alarm		Daya on/off (siaga)
	Jeda alarm		Tanda Kepatuhan Peraturan (RCM)

SPESIFIKASI PRODUK

Dimensi	295 mm x 170 mm x 175 mm (11,6” x 6,7” x 6,9”)
Berat	2,2 kg (4,8 pon) unit saja, 3,4 kg (7,5 pon) dikemas dalam kantong termasuk aksesori
Frekuensi listrik	50-60 Hz
Tegangan/arus listrik	100-115 V 2,2 A (2,4 A maks†) 220-240 V 1,8 A (2,0 A maks†)
Tingkat tekanan suara	Alarm melebihi 45dbA @ 1 m
Jeda alarm audio	115 detik
Perkiraan masa pakai	5 tahun
Porta seri	Porta seri digunakan untuk mengunduh data produk, dengan menggunakan perangkat lunak F&P Infosmart™.
Waktu pemanasan	10 menit hingga 31 °C (88 °F), 30 menit hingga 37 °C (98,6 °F) dengan menggunakan wadah MR290 dengan laju aliran 35 L/menit dan suhu awal 23 ± 2 °C (73 ± 3 °F)
Pengaturan suhu target	37, 34, 31 °C
Performa kelembapan	>33 mg/L pada target 37 °C >12 mg/L pada target 34 °C >12 mg/L pada target 31 °C
Suhu maksimum gas yang disalurkan	43 °C (109 °F) (sesuai dengan ISO 80601-2-74)
Suhu maksimum permukaan dari bagian bersentuhan	44 °C (111 °F) (sesuai dengan ISO 80601-2-74)
Rentang aliran (default)	10-60 L/menit*
Rentang aliran (Mode Junior)	2-25 L/menit*
Input oksigen maksimum	60 L/menit
Akurasi penganalisis oksigen	< ± 4 % (dalam rentang 25-95% O_2) Kondisi pengoperasian: 18-28 °C (64-82 °F), 30-70% RH

***** LAJUaliran diukur dalam BTPS (Suhu Tubuh/Tekanan, Tersaturasi)

† Arus masuk dapat mencapai 50A

KONDISI PENGOPERASIAN

Suhu ambien	18 - 28 °C (64-82 °F)
Kelembapan	10 - 95% RH
Ketinggian	0 - 2000 m (6000 kaki)
Mode pengoperasian	Operasi berkelanjutan

KONDISI PENYIMPANAN DAN PENGANGKUTAN

AIRVO

Suhu ambien	-10 - 60 °C (14 - 140 °F)
Kelembapan	10 - 95% RH, non-kondensasi

Perlengkapan selang & wadah

Suhu ambien	-10 - 50 °C (14 - 122 °F)
Kelembapan	10 - 95% RH, non-kondensasi

Unit dapat memerlukan waktu hingga 24 jam untuk pemanasan atau pendinginan dari suhu penyimpanan minimum atau maksimum sebelum siap untuk digunakan.

⚠ *PERINGATAN*

- Jangan gunakan unit pada ketinggian di atas 2000 m (6000 kaki) atau di luar rentang suhu 18 - 28 °C (64 - 82 °F). Melakukannya dapat memengaruhi kualitas terapi dan mencederai pasien.

Dirancang untuk mematuhi persyaratan:
IEC 60601-1:2005 + A1:2012
IEC 60601-1-2:2014
ANSI/AAMI 60601-1:2005/(R) 2012
CAN/CSA-C22.2 No. 60601-1:2014
EN 60601-1:2006 + A1:2013
ISO 80601-2-74:2017

Unit mematuhi persyaratan kompatibilitas elektromagnetik IEC 60601-1-2. Dalam situasi tertentu, unit dapat memengaruhi atau terpengaruh oleh peralatan di dekatnya dikarenakan efek gangguan elektromagnetik. Gangguan elektromagnetik yang berlebihan dapat memengaruhi terapi yang dihasilkan oleh unit. Jika ini terjadi, cobalah untuk memindahkan unit atau lokasi unit yang menyebabkan gangguan, atau jika tidak konsultasikan dengan penyedia layanan kesehatan Anda. Untuk menghindari potensi gangguan, jangan tempatkan bagian apa pun dari alat atau aksesori dalam jarak 30 cm (12 inci) dari alat komunikasi frekuensi radio portabel atau seluler apa pun.

Peralatan aksesori yang tersambung ke porta seri alat harus bersertifikasi IEC 60601-1 atau IEC 60950-1. Lebih lanjut, semua konfigurasi harus mematuhi standar sistem IEC 60601-1-1. Siapa saja yang ingin menyambungkan peralatan tambahan ke bagian input sinyal atau bagian output sinyal berarti ia telah mengonfigurasi sistem medis dan karenanya bertanggung jawab untuk memastikan bahwa sistem mematuhi persyaratan standar sistem IEC 60601-1-1. Jika merasa ragu, konsultasikan dengan departemen servis teknis atau perwakilan di kota Anda.

PETUNJUK PEMBUANGAN

Petunjuk Pembuangan Unit
Unit ini berisi komponen elektronik. Harap tidak membuangnya bersama sampah biasa. Kembalikan kepada Fisher & Paykel Healthcare atau buang sesuai pedoman setempat untuk membuang peralatan elektronik. Buang sesuai dengan direktif Peralatan Elektronik dan Listrik Limbah (WEEE) Uni Eropa.

Petunjuk Pembuangan Bahan Habis Pakai
Tempatkan alat penghubung, selang pernapasan, dan wadah dalam kantong sampah di akhir penggunaan. Rumah sakit harus membuangnya sesuai dengan metode standar untuk pembuangan produk terkontaminasi.

TRƯỚC KHI BẠN BẮT ĐẦU

- Hướng dẫn sử dụng này dành cho các chuyên gia chăm sóc sức khỏe.
- Hãy đọc Hướng dẫn sử dụng này bao gồm tất cả các cảnh báo. Việc không đọc tất cả các cảnh báo có thể dẫn đến thương vong. Hãy cất giữ Hướng dẫn sử dụng ở nơi an toàn để tham khảo trong tương lai.
- Trước khi sử dụng AIRVO 2 lần đầu, phải cài đặt thiết bị theo hướng dẫn trong bản Hướng dẫn kỹ thuật của AIRVO 2. Thiết bị AIRVO 2 này cần tuân thủ nghiêm ngặt quy định về điện từ (EMC) do đó thiết bị phải được cài đặt và đưa vào hoạt động theo thông tin EMC được cung cấp trong Hướng dẫn sử dụng này và Hướng dẫn kỹ thuật.
- Một số phụ kiện có thể không có sẵn tại một số nước. Vui lòng liên hệ với đại diện Fisher & Paykel Healthcare địa phương của bạn để biết thêm thông tin.

TÀI LIỆU THAM KHẢO KHÁC

- Hãy tham khảo Hướng dẫn sử dụng của AIRVO 2 để biết hướng dẫn sử dụng chi tiết.
- Hãy tham khảo tất cả các bản Hướng dẫn Sử dụng của phụ kiện có liên quan.
- Xem video đào tạo trên trang web của AIRVO 2 www.fphcare.com/airvo
- Để biết thông tin khắc phục sự cố, vui lòng tham khảo Hướng dẫn kỹ thuật của AIRVO 2.
- Tải ứng dụng AIRVO 2 Simulator để tìm hiểu cách sử dụng AIRVO 2. Bạn có thể thay đổi cài đặt, mô phỏng lỗi và kiểm tra các kỹ năng của bạn. Có trên các cửa hàng Apple, Google Play và Windows App.
- Ghé thăm website giáo dục và nguồn lực Fisher & Paykel tại www.fphcare.com/education để tìm các khóa tự đào tạo trực tuyến và sự kiện đào tạo tại địa phương.
- Nếu thiết bị đã từng được nhiều bệnh nhân sử dụng, thiết bị phải được vệ sinh và khử trùng sau mỗi lần sử dụng theo hướng dẫn trong Hướng dẫn sử dụng bộ khử trùng (900PT600).
- Để được hỗ trợ thêm, vui lòng liên hệ với đại diện của Fisher & Paykel Healthcare.

MỤC LỤC

1. TỔNG QUAN

AIRVO 2 là máy tạo độ ẩm với bộ tạo dòng được tích hợp, cung cấp khí thở được làm ẩm và ấm có lưu lượng cao cho các bệnh nhân thở tự nhiên qua nhiều loại khối giao tiếp bệnh nhân.

MỤC ĐÍCH SỬ DỤNG

AIRVO 2 được dùng để điều trị cho các bệnh nhân thở tự nhiên, những người sẽ được hưởng lợi từ việc nhận được lưu lượng khí thở được làm ẩm và ấm. Bao gồm những bệnh nhân có đường hô hấp trên được bắc cầu. Lưu lượng có thể từ 2 - 60 L/phút phút tùy thuộc vào khối giao tiếp bệnh nhân. AIRVO 2 dành cho các bệnh nhân trong bệnh viện và các cơ sở chăm sóc sức khỏe dài hạn.

Luật Liên bang Hoa Kỳ hạn chế bán thiết bị này bởi hoặc theo chỉ dẫn của bác sỹ.

⚠CẢNH BÁO

- Thiết bị này không dùng để hỗ trợ sự sống.
- Phải theo dõi bệnh nhân một cách phù hợp mọi lúc. Không thể điều trị nếu mất điện.
- Việc cung cấp khí thở qua mũi có thể tạo ra áp lực đường thở dương động phụ thuộc vào lưu lượng. Phải tính đến điều này khi áp lực đường thở dương có thể có ảnh hưởng không mong muốn đến bệnh nhân.

Để tránh bị bỏng:

- Chỉ sử dụng các bề mặt tiếp xúc, ngăn chứa nước và ống thở được quy định trong hướng dẫn sử dụng này.
- Không sử dụng các phụ kiện vượt quá thời gian sử dụng tối đa được quy định trong bản hướng dẫn này.
- Trước khi sử dụng oxy của thiết bị, hãy đọc tất cả các cảnh báo trong phần "Oxy" của bản hướng dẫn này.
- Không bao giờ vận hành thiết bị nếu:
  - ống thở làm ấm bị hỏng do có lỗ, bị rách hoặc bị xoắn,
  - thiết bị không hoạt động đúng cách,
  - bu lông ở vỏ bị lỏng.
- Không chặn luồng khí đi qua thiết bị và ống thở.
- Đặt thiết bị ở vị trí không hạn chế thông hơi xung quanh thiết bị.
- Không được chặn các khe hở khí của thiết bị hoặc đặt thiết bị trên một bề mặt mềm như giường hoặc ghế sofa, nơi khu vực bộ lọc có thể bị chặn. Giữ cho các khe hở khí không có xơ vải, tóc v.v

Để tránh bị điện giật:

- Không lưu trữ hoặc sử dụng thiết bị ở nơi có thể bị rơi hoặc bị kéo xuống nước. Nếu nước vào vỏ thiết bị, hãy rút dây nguồn và ngừng sử dụng.
- Không bao giờ vận hành thiết bị nếu:
  - thiết bị đã bị rơi hoặc hư hỏng,
  - dây nguồn hoặc phích cắm bị hư hỏng,
  - thiết bị rơi xuống nước.
- Tránh tháo dây nguồn một cách không cần thiết khỏi phần sau thiết bị. Nếu cần phải tháo, hãy giữ đầu nối trong quá trình tháo. Tránh kéo dây nguồn.
- Gửi trả thiết bị cho trung tâm dịch vụ được ủy quyền để kiểm tra và sửa chữa, ngoại trừ những trường hợp được nêu trong hướng dẫn này.

Để tránh nghẹt thở, hoặc hít phải vật thể lạ:

- Đảm bảo lắp bộ lọc khí khi vận hành thiết bị.
- Không bao giờ bỏ hoặc chèn bất kỳ vật gì vào bất kỳ khe hở hoặc ống nào.

Chú ý khác:

- Trước mỗi lần bệnh nhân sử dụng, hãy đảm bảo có thể nghe thấy tín hiệu báo động bằng âm thanh bằng cách tiến hành kiểm tra chức năng hệ thống báo động được mô tả trong phần Báo động.
- Không đảm bảo độ ẩm khi dưới 18 °C (64 °F) và trên 28 °C (82 °F).
- Để tránh bị ngắt kết nối trong quá trình sử dụng, đặc biệt trong khi di chuyển bệnh nhân, chỉ sử dụng các ống thở được làm ấm quy định trong bản hướng dẫn này.
- Không sử dụng hệ thống AIRVO 2 trong vùng lân cận của thiết bị MRI.
- Thiết bị không phù hợp để sử dụng khi có hỗn hợp gây mê dễ cháy với không khí hoặc oxy hoặc oxit nitơ.
- AIRVO 2 không phải là một hệ thống kín. Hãy tuân theo các hướng dẫn kiểm soát nhiễm trùng bệnh viện để giảm nguy cơ nhiễm chéo
- Việc sử dụng các phụ kiện hoặc dây cáp điện không được Fisher & Paykel Healthcare quy định có thể dẫn đến tăng phát xạ điện từ, giảm khả năng miễn nhiễm điện từ và/hoặc hoạt động không đúng cách.
- Nên tránh sử dụng thiết bị này liền kề hoặc xếp chồng lên nhau với các thiết bị khác vì có thể dẫn đến thiết bị hoạt động không đúng cách. Nếu cần phải sử dụng như vậy, nên để ý đến thiết bị này và các thiết bị khác để xác nhận rằng chúng hoạt động bình thường.

AIRVO 2 VÀ PHỤ KIỆN

		Ống Optiflow™ (hộp 20 chiếc)										
		Optiflow™ Junior		Optiflow™+					Optiflow™				
		OPT316/OJR416 (trẻ sơ sinh)	OPT318/OJR418 (trẻ em)	OPT942 (loại nhỏ)	OPT944 (loại trung bình)	OPT946 (loại to)	OPT970 (Trực tiếp qua khí quản)	OPT980 (Bộ chỉnh lưu lượng mặt nạ)	OPT842 (loại nhỏ)	OPT844 (loại trung bình)	OPT846 (loại to)	OPT870 (Trực tiếp qua khí quản)	RT013 (Bộ chỉnh lưu lượng mặt nạ)
Bộ ống & ngăn chứa nước (hộp 10 chiếc)	900PT501			●	●	●	●	●	●	●	●	●	●
	900PT531	●	●										
	AirSpiral™												
	900PT551			●	●	●	●	●	●	●	●	●	●
	900PT561	●	●	●	●	●	●	●					
	900PT562	●	●	●	●	●	●	●					

Vệ sinh và khử trùng	
900PT600	Bộ khử trùng
900PT601	Bộ lọc khử trùng (Hộp 2 chiếc)
900PT602	Que bọt biển vệ sinh (Hộp 20 chiếc)
900PT603	Nắp bảo quản sạch (Hộp 20 chiếc)

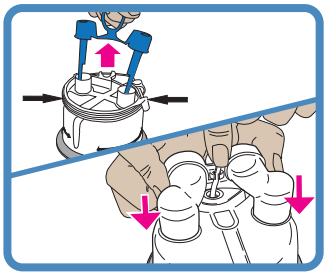
Khác	
900PT405	Khay gắn vào cọc của giá treo thiết bị
900PT411	Bộ gắn vào UPS
900PT420	Cọc của giá treo thiết bị di động (có thể kéo dài)
900PT421	Cọc của giá treo thiết bị di động
900PT422	Bộ nối oxy vào
900PT426	Giỏ nhựa
900PT427	Giá đỡ bình oxy
900PT427L	Giá đỡ bình oxy (loại to)
900PT428	Vòng kẹp cọc của giá treo thiết bị
900PT912	Bộ phận đỡ bộ lọc
900PT913	Bộ lọc không khí (Hộp 2 chiếc)
OPT012/WJR112	Wigglepads dành cho Optiflow Junior (Hộp 20 chiếc)

Một vài sản phẩm có thể không có sẵn ở quốc gia của bạn. Vui lòng liên hệ với đại diện Fisher and Paykel Healthcare tại địa phương của bạn.

2. CÀI ĐẶT AIRVO 2

1. TRƯỚC KHI BẮT ĐẦU

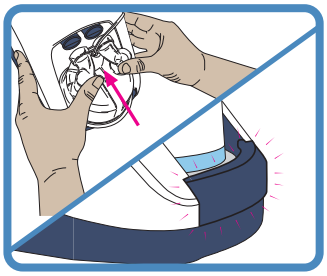
Nên cố định AIRVO 2 trên một khay gắn vào cọc của giá treo thiết bị (900PT405) thấp hơn đầu bệnh nhân. Đặt thiết bị sao cho có thể dễ dàng kết nối dây nguồn với nguồn điện và có thể ngắt kết nối. Mở bao bì của bộ ống & ngăn chứa (ống thở được làm ấm, bộ chuyển đổi và ngăn chứa nước tự làm đầy MR290).



2. LẮP ĐẶT NGĂN CHỨA NƯỚC

Tháo nắp cổng màu xanh ra khỏi ngăn chứa nước bằng cách kéo nắp lên rồi tháo tấm ngăn giữ ống cấp nước.

Lắp bộ chuyển đổi được cung cấp qua hai cổng thẳng đứng trên ngăn chứa nước và đẩy hết vào rồi sau đó kẹp ống cấp nước vào vị trí.



Lắp ngăn chứa nước vào thiết bị bằng cách ấn bảo vệ ngón tay xuống và trượt ngăn chứa nước lên, cẩn thận canh vào đúng đầu của cổng ngăn chứa nước màu xanh.

Đẩy vào thật chặt cho đến khi bảo vệ ngón tay vào vị trí với tiếng tách.

⚠ CẢNH BÁO

Để tránh bị bỏng:

- Không khởi động thiết bị khi chưa lắp ngăn chứa nước vào đúng vị trí.
- Không chạm vào tấm làm ấm, ngăn chứa nước hoặc đế của ngăn chứa nước trong quá trình sử dụng.
- Nước trong ngăn chứa nước ấm lên trong quá trình sử dụng. Thận trọng khi tháo và xả nước ra khỏi ngăn chứa.

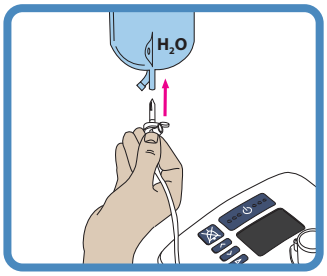
Để tránh bị điện giật:

- Khi thao tác thiết bị với ngăn chứa nước đã được lắp, tránh nghiêng máy để ngăn nước ngấm vào vỏ thiết bị.
- Xả hết nước ra khỏi ngăn chứa nước trước khi vận chuyển thiết bị.

⚠ CẨN TRỌNG

Để đảm bảo liệu pháp tối ưu (chỉ dành cho MR290):

- Không sử dụng ngăn chứa nước tự làm đầy MR290 nếu bị rơi hoặc chạy khi không có nước bên trong vì như vậy có thể dẫn đến việc làm đầy nước quá mức.



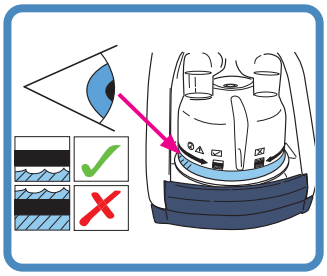
3. NỐI TÚI NƯỚC

Gắn túi nước vô trùng vào khung treo cao hơn 20 cm (8") phía trên thiết bị và đẩy mạnh đầu nhọn của túi vào bộ phận lắp ở đáy túi. Mở nắp thông hơi ở bên cạnh của đầu nhọn của túi. Ngăn chứa nước sẽ tự động làm đầy đến mức yêu cầu và duy trì mức đó cho đến khi túi nước cạn.

Để đảm bảo quá trình làm ẩm liên tục, hãy luôn đảm bảo rằng ngăn chứa nước và/hoặc túi nước không cạn nước.

⚠ THẬN TRỌNG

Việc thêm các chất khác ngoài nước có thể ảnh hưởng bất lợi đến máy tạo độ ẩm và quá trình điều trị.



Kiểm tra xem nước có chảy vào ngăn chứa nước và được duy trì dưới vạch mực nước tối đa không. Nếu mực nước tăng lên trên vạch mực nước tối đa, hãy thay thế ngăn chứa nước ngay lập tức.

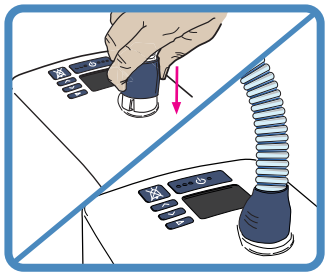
MR290: Thông số cài đặt lưu lượng so với thời gian sử dụng (Túi nước vô trùng 2 lít, ở nhiệt độ mục tiêu 37 °C)

L/phút	2	5	10	15	20	25	30	35	40	45	50	55	60
Giờ	378	151	75	50	37	30	25	21	18	16	15	13	12

⚠ CẨN TRỌNG

Để đảm bảo điều trị tối ưu (chỉ dành cho MR290):

- Không sử dụng ngăn chứa nước MR290 nếu mực nước lên cao hơn vạch mực nước tối đa vì như vậy có thể dẫn đến việc nước tràn vào đường thở của bệnh nhân.



4. LẮP ỐNG THỞ ĐƯỢC LÀM ẤM

Một đầu của ống thở được làm ấm có một ống nhựa màu xanh. Nhấc ống lên và trượt đầu nối vào thiết bị. Đẩy ống xuống để khóa.

⚠ CẢNH BÁO

Để tránh bị bỏng:

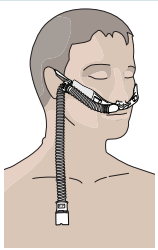
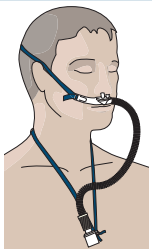
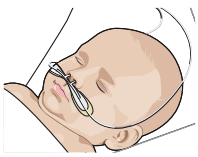
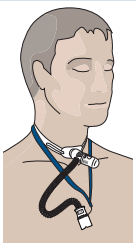
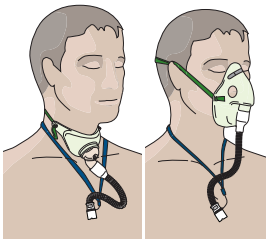
- Không chỉnh ống thở hoặc thiết bị tiếp xúc với da bằng bất kỳ cách nào.
- Không để ống thở tiếp xúc trực tiếp với da trong thời gian dài. Chuyên gia chăm sóc sức khỏe sẽ đánh giá các điều kiện để tiếp xúc an toàn, chẳng hạn như thời gian và tình trạng da.
- Không tăng nhiệt trên mức nhiệt môi trường xung quanh đối với bất kỳ phần nào của ống thở hoặc thiết bị tiếp xúc với da, ví dụ: bằng cách phủ chăn hoặc sưởi ấm bằng bức xạ hồng ngoại, máy sưởi trên không, hoặc lò ủ.
- Không sử dụng ống cách điện hoặc bất kỳ phụ kiện tương tự nào không được Fisher & Paykel Healthcare khuyên dùng.

⚠ CẨN TRỌNG

- Đặt ống thở được làm ấm tách khỏi các đầu theo dõi bằng điện (EEG, ECG/EKG, EMG ...), để giảm thiểu khả năng nhiễu tín hiệu được theo dõi.

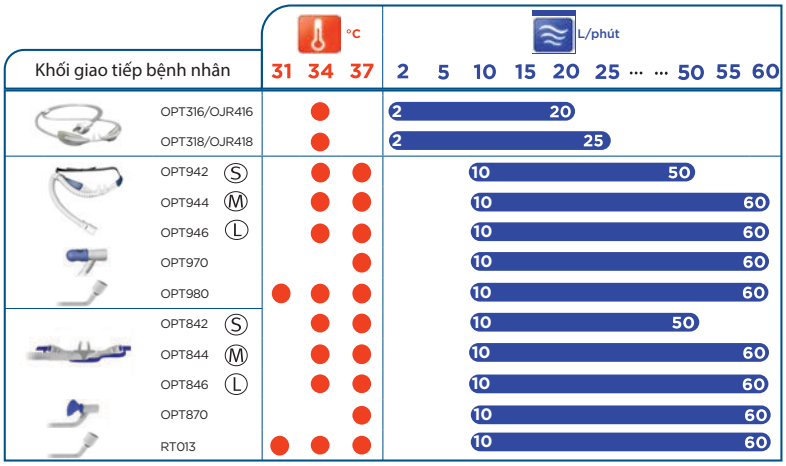
5. CHỌN KHỐI GIAO TIẾP BỆNH NHÂN

AIRVO 2 có thể được sử dụng với nhiều loại khối giao tiếp bệnh nhân. Đọc hướng dẫn sử dụng riêng biệt dành cho khối giao tiếp bệnh nhân sẽ được sử dụng, bao gồm tất cả các cảnh báo.

Canun mũi			Mở khí quản	Bộ chỉnh lưu lượng mặt nạ
				
Optiflow™+ OPT942 OPT944 OPT946	Optiflow™ OPT842 OPT844 OPT846	Optiflow™ Junior/Junior 2 OPT316/OPT318/OJR416/OJR418 (Tham khảo "Sử dụng AIRVO 2" - "Chế độ dành cho trẻ em")	OPT970 / OPT870	OPT980 / RT013 (có mặt nạ) Lưu ý rằng Bộ chỉnh lưu lượng mặt nạ OPT980/RT013 chỉ được thiết kế để sử dụng với mặt nạ có ống thông hơi. Không sử dụng mặt nạ kín.

Tất cả các khối giao tiếp bệnh nhân đều là loại áp dụng Type BF.

Bảng sau đây chỉ ra các thông số cài đặt nhiệt độ điểm sương theo mục tiêu và thông số cài đặt lưu lượng theo mục tiêu có thể được sử dụng cho các loại dụng cụ tiếp xúc với da này.



Môi trường có nhiệt độ thấp có thể khiến thiết bị không đạt được nhiệt độ theo mục tiêu 37 °C với thông số cài đặt lưu lượng theo mục tiêu ở mức cao. Trong trường hợp này, hãy cân nhắc việc giảm thông số cài đặt lưu lượng theo mục tiêu.

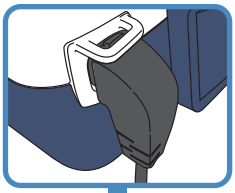
Tại những nơi có địa hình cao, mức lưu lượng tối đa có thể thấp hơn mức được nêu trong bảng trên, cứ 1000 m (3000 ft) lại giảm 5 L/phút.

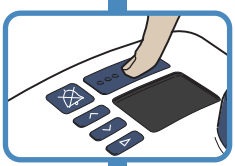
⚠ CẢNH BÁO

Để tránh bị bỏng:

- Không chỉnh ống thở hoặc thiết bị tiếp xúc với da bằng bất kỳ cách nào.
- Không được sử dụng các khối giao tiếp bệnh nhân không được liệt kê trong tờ hướng dẫn sử dụng này.

3. SỬ DỤNG AIRVO 2





1. BẬT THIẾT BỊ

Cắm dây nguồn của thiết bị vào ổ điện. Đầu nối ở đầu bên kia của dây điện phải được gắn chặt vào hông của thiết bị.

⚠ *CẢNH BÁO*

Để tránh bị điện giật:

- Đảm bảo rằng thiết bị khô ráo trước khi cắm dây vào ổ điện.

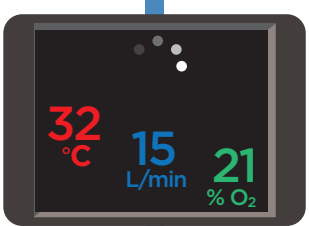
Nhấn vào nút Bật/Tắt trong vòng 5 giây để bật thiết bị.

2. KIỂM TRA TÌNH TRẠNG BỘ KHỬ TRÙNG

Thiết bị sẽ hiển thị cho bạn biết thiết bị có an toàn để sử dụng với bệnh nhân mới hay không.

Thiết bị AIRVO 2 an toàn để sử dụng với bệnh nhân mới.

Thiết bị AIRVO 2 chưa được làm sạch và khử trùng kể từ lần sử dụng cuối cùng.
Thiết bị AIRVO 2 KHÔNG an toàn để sử dụng với bệnh nhân mới.



3. KHỞI ĐỘNG

Thiết bị sẽ bắt đầu khởi động. Bạn sẽ thấy các giá trị thể hiện nhiệt độ điểm sương đầu ra hiện tại, giá trị oxy và lưu lượng. Những giá trị này sẽ tăng tới khi chúng đạt thông số cài đặt theo mục tiêu.

Màn hình này được gọi là "Màn hình tổng hợp".

4. CHẾ ĐỘ DÀNH CHO TRẺ EM

Nếu bệnh nhân sử dụng canun mũi Optiflow Junior (OPT316/OJR416/OPT318/OJR418), bạn phải kích hoạt Chế độ dành cho trẻ em. Không sử dụng Chế độ dành cho trẻ em cho các khối giao tiếp bệnh nhân khác.

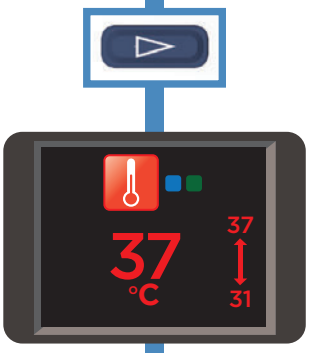
Thông số cài đặt theo mục tiêu của Chế độ dành cho trẻ em giới hạn ở mức: 34 °C và 2 - 25 L/phút, các nấc tăng 1 L/phút.

Để kích hoạt Chế độ dành cho trẻ em:

Giữ nút Chế độ trong vòng 5 giây.

Thông số cài đặt theo mục tiêu mới
Thông số cài đặt theo mục tiêu cho nhiệt độ điểm sương và lưu lượng sẽ được thay đổi tự động. Các biểu tượng nhiều màu tại góc màn hình cho thấy thiết bị này đang ở Chế độ dành cho trẻ em.

Để tắt Chế độ dành cho trẻ em, bạn cũng làm tương tự khi bật: giữ nút Chế độ trong vòng 5 giây.



5. CẤU HÌNH THÔNG SỐ CÀI ĐẶT THEO MỤC TIÊU

Nhấn nút Chế độ để xem các thông số cài đặt theo mục tiêu.

Những thông số này được khóa mặc định.

NHIỆT ĐỘ ĐIỂM SƯƠNG THEO MỤC TIÊU

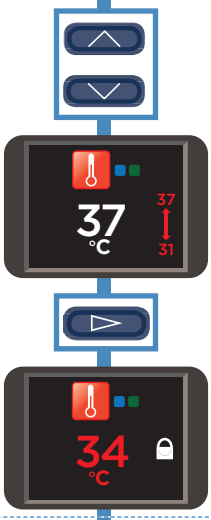
Bạn có thể cài đặt AIRVO 2 ở ba mức thông số nhiệt độ điểm sương:

- 37 °C (98,6 °F)
- 34 °C (93 °F) [nếu không thực hiện được ở mức 37 °C]
- 31 °C (88 °F) [chỉ áp dụng cho mặt nạ dưỡng khí].

Bạn có thể không truy cập được tất cả các thông số cài đặt nếu:

- thiết bị đang trong Chế độ dành cho trẻ em (giới hạn ở ngưỡng 34 °C),
- thiết bị được cài đặt ban đầu ở các mức chặt hơn.

AIRVO 2 sẽ trở về thông số cài đặt mặc định (37 °C) sau mỗi chu kỳ khử trùng.



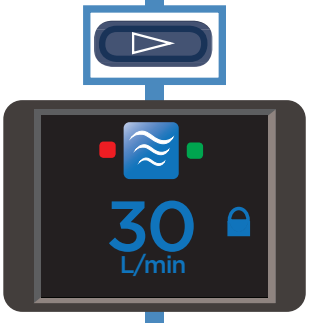
Để thay đổi thông số cài đặt nhiệt độ sương theo mục tiêu:

Giữ các nút Lên và Xuống trong vòng 3 giây để "mở khóa" thông số cài đặt.

Khóa sẽ biến mất và được thay bởi một mũi tên chỉ ra các thông số cài đặt tối đa và tối thiểu có thể thực hiện. Nhấn các nút Lên và Xuống để chọn thông số cài đặt mới.

Khi bạn xong, hãy nhấn nút Chế độ để "khóa" thông số cài đặt một lần nữa.

Khóa sẽ xuất hiện trở lại.



Nhấn nút Chế độ để di chuyển sang màn hình tiếp theo.

LƯU LƯỢNG THEO MỤC TIÊU

Bạn có thể cài đặt AIRVO 2 ở lưu lượng từ 10 L/phút tới 60 L/phút, với mức tăng là 1 L/phút (10-25 L/phút) và 5 L/phút (25-60 L/phút).

Bạn có thể không truy cập được tất cả các thông số cài đặt nếu:

- thiết bị đang trong Chế độ dành cho trẻ em (giới hạn ở ngưỡng 2 - 25 L/phút, mức tăng là 1 L/phút),
- thiết bị được cài đặt ban đầu ở các mức chặt hơn.

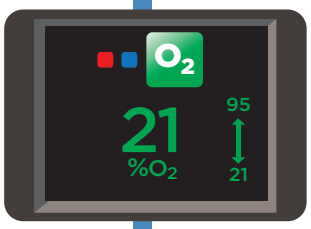
AIRVO 2 sẽ lưu thông số cài đặt lưu lượng theo mục tiêu khi bạn tắt máy.

Để thay đổi thông số cài đặt lưu lương theo mục tiêu:

Làm tương tự như các bước "Để thay đổi thông số cài đặt nhiệt độ điểm sương theo mục tiêu" phía trên.

Tiếng Việt

Nhấn nút Chế độ để di chuyển sang màn hình tiếp theo.



OXY

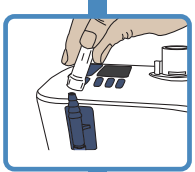
Bạn có thể kết nối lên tới 60 L/phút oxy bổ sung từ nguồn cung cấp được điều tiết tới AIRVO 2. AIRVO 2 có thiết bị phân tích oxy để giúp bạn xác định tỉ lệ oxy mà bạn đang cung cấp cho bệnh nhân. Thiết bị của bạn được cài đặt ban đầu ở các mức chặt hơn.

Sử dụng chế độ theo dõi oxy liên tục với các bệnh nhân sẽ bị khử bão hòa oxy mạnh nếu việc cung cấp oxy bị gián đoạn.

⚠ *CẢNH BÁO*

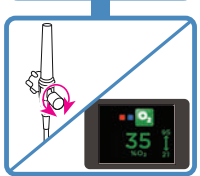
Trước khi sử dụng AIRVO 2 với oxy, vui lòng đọc tất cả các cảnh báo sau:

- Phải rất cẩn trọng trong việc sử dụng oxy để giảm thiểu nguy cơ cháy nổ. Theo đó, để đảm bảo an toàn thì cần loại bỏ mọi nguồn gây cháy (ví dụ đốt điện hoặc phẫu thuật điện) khỏi thiết bị và tốt nhất là khỏi căn phòng chứa thiết bị. Không sử dụng oxy khi hút thuốc hoặc có ngọn lửa mở. Thiết bị phải được đặt ở vị trí sao cho việc thông khí xung quanh thiết bị không bị hạn chế.
- Sự phát lửa nhanh và mạnh có thể xảy ra nếu dầu, mỡ hoặc các chất nhờn tiếp xúc với oxy trong điều kiện áp suất cao. Những chất này phải được tách xa ra khỏi các thiết bị chứa oxy.
- Hãy đảm bảo rằng AIRVO 2 được bật trước khi nối với oxy.
- Chỉ được thêm oxy qua cổng oxy vào đặc biệt ở phía sau thiết bị. Để đảm bảo rằng oxy đi vào thiết bị đúng cách, cổng oxy vào phải được lắp đúng cách vào bộ phận đỡ bộ lọc và bộ phận đỡ bộ lọc phải được lắp đúng cách vào thiết bị. Đầu nối dây nguồn cũng phải được cố định cẩn thận.
- Không nối oxy bổ sung vào AIRVO 2 ở mức tốc độ lưu lượng cao hơn mức độ lưu lượng mục tiêu của AIRVO 2, do oxy thừa sẽ bị thoát môi trường xung quanh, hoặc 60 L/phút.
- Nồng độ oxy được cấp cho bệnh nhân có thể bị ảnh hưởng bởi các thay đổi về thông số cài đặt lưu lượng, thông số cài đặt oxy, khối giao tiếp bệnh nhân hoặc nếu đường ống khí bị tắc.
- Tắt nguồn oxy sau khi sử dụng xong. Tháo đầu ra của nguồn oxy khỏi cổng oxy vào từ phía sau của thiết bị. Phải tắt dòng oxy khi thiết bị không hoạt động, như thế oxy không tích tụ trong thiết bị.
- Thiết bị phân tích oxy trong AIRVO 2 sử dụng công nghệ đo đạc siêu âm. Không cần hiệu chuẩn trong thiết bị. Thiết bị được thiết kế để sử dụng với oxy tinh khiết - việc kết nối bất cứ khí hoặc hỗn hợp khí nào khác sẽ khiến thiết bị hoạt động không đúng chức năng.



NỐI OXY

Nối đầu ra của nguồn oxy với cổng vào oxy ở sườn thiết bị. Đảm bảo rằng bạn lắp ống oxy chặt vào cổng nối này.



ĐIỀU CHỈNH OXY

Điều chỉnh mức oxy từ nguồn cấp oxy cho tới khi nồng độ oxy hiển thị trên màn hình đạt mức mong muốn. Sẽ mất vài phút để các thông số hiển thị ở mức ổn định. Bạn có thể cài đặt mức oxy ở giữa giá trị cực đại và cực tiểu hiển thị phía trên và dưới mũi tên.

Thông số đo Thời gian thực O_2 được hiển thị khi O_2 >25% và O_2 <95%. Tuy nhiên, hãy lưu ý rằng tỉ lệ oxy dưới 25% và trên 95% sẽ được hiển thị lần lượt là 21% và 100%.

Nếu tỉ lệ oxy vượt quá 95% thì thông số hiển thị của oxy sẽ báo đỏ và thiết bị sẽ phát ra tiếng bíp.

⚠ *CẢNH BÁO*

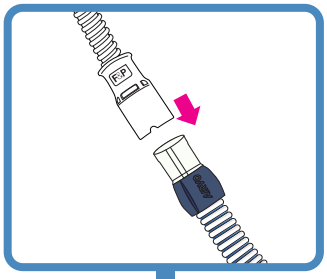
- Lưu ý rằng nếu nhu cầu hít thở cao nhất của bệnh nhân vượt quá lưu lượng mà thiết bị cung cấp thì tỉ lệ oxy mà bệnh nhân hít vào sẽ thấp hơn giá trị trên màn hình do lượng oxy thêm vào từ trong không khí.
- Kiểm tra để đảm bảo mức bão hòa oxy trong máu đang ở mức lưu lượng đã kê.

Nhấn nút Chế độ để trở lại màn hình tổng hợp.

6. NỐI VỚI BỆNH NHÂN

Đợi cho tới khi biểu tượng "Sẵn sàng sử dụng" hiển thị trên màn hình Tổng hợp.

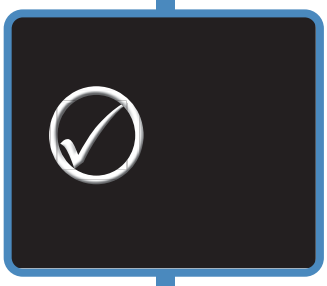
Biểu tượng "Sẵn sàng sử dụng"



Nối khối giao tiếp bệnh nhân và ống thở đã được làm ấm.

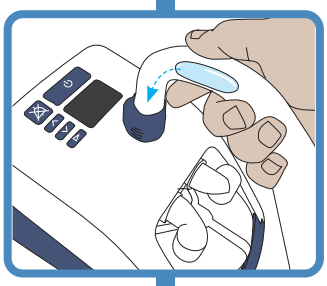
Theo dõi lưu lượng và giá trị oxy được hiển thị trên màn hình Tổng hợp. Điều chỉnh mức oxy từ nguồn oxy nếu cần.

Bệnh nhân sẽ cảm thấy không khí ấm khi lần đầu sử dụng thiết bị. Việc này là bình thường. Bệnh nhân sẽ tiếp tục thở bình thường qua mũi và/hoặc miệng, hoặc thủ thuật mở khí quản.



7. TRONG KHI SỬ DỤNG

Nếu biểu tượng "Sẵn sàng sử dụng" đã hiển thị trong 2 phút và bạn chưa nhấn nút nào khác trong khoảng thời gian này thì một trình bảo vệ màn hình sẽ được chạy.



QUẢN LÝ HƠI NƯỚC NGƯNG TỤ

Thiết bị phải được đặt ở dưới chiều cao của đầu và bằng phẳng, điều này cho phép hơi nước ngưng tụ chảy vào buồng chứa nước, xa ra khỏi bệnh nhân.

Nếu hơi nước ngưng tụ quá mức tích tụ trong ống thở đã được làm ấm, hãy tháo khối giao tiếp bệnh nhân ra khỏi ống thở đã được làm ấm, dẫn lưu nước ngưng tụ bằng cách nhấc đầu ống phía bệnh nhân để hơi nước chảy vào buồng chứa nước.

Ở mức lưu lượng cao hơn, có thể bạn cần giảm mức lưu lượng theo mục tiêu xuống còn 30 L/phút hoặc thấp hơn để đảm bảo rằng hơi nước ngưng tụ chảy vào buồng chứa nước.

Hạn chế tối đa các nguồn làm mát cục bộ tác động lên ống thở đã được làm ấm, như quạt để làm mát bệnh nhân hoặc thiết bị điều hòa/thông khí.

Nếu hơi nước tiếp tục ngưng tụ, hãy vặn nhỏ nhiệt độ theo mục tiêu. Lưu ý: hạ nhiệt độ theo mục tiêu sẽ giảm độ ẩm đầu ra của thiết bị, giảm mức ngưng tụ.

Lưu ý: Nhiệt độ và độ ẩm cấp cho bệnh nhân cũng được giảm đi.

8. SAU KHI SỬ DỤNG

Tắt thiết bị bằng cách nhấn nút Bật/Tắt.

BÁO ĐỘNG

AIRVO 2 có báo động bằng âm thanh và hình ảnh để cảnh báo bạn về các gián đoạn trong điều trị cho bệnh nhân. Những báo động này được tạo ra bởi hệ thống báo động thông minh, xử lý thông tin từ các cảm biến và thông số cài đặt theo mục tiêu của thiết bị và so sánh thông tin này với các giới hạn đã được lập trình sẵn.

TÍN HIỆU BÁO ĐỘNG

	Biểu tượng	Ý nghĩa
Tín hiệu báo động bằng hình ảnh		
		Điều kiện báo động.
		Dừng âm thanh.
Tín hiệu báo động bằng âm thanh		
3 tiếng bíp trong 3 giây. Cứ 5 giây lặp lại 1 lần.		Nhấn nút này để tắt báo động bằng âm thanh trong 115 giây. Có thể kích hoạt lại báo động bằng âm thanh bằng cách nhấn lại nút này.

ĐIỀU KIỆN BÁO ĐỘNG

Mọi loại báo động liệt kê dưới đây được coi là "Ưu tiên ở Mức Trung bình". Những ưu tiên này đã được phân bổ cho người vận hành máy ở vị trí trong vòng 1 mét so với máy. Thiết bị cũng sử dụng hệ thống xếp hạng ưu tiên nội bộ. Nếu nhiều điều kiện báo động đồng thời xảy ra thì thiết bị sẽ hiển thị báo động ở mức độ ưu tiên cao nhất.

Bảng sau liệt kê mọi điều kiện báo động từ mức ưu tiên cao nhất tới mức thấp nhất, nguyên nhân, giải pháp có thể có và độ trễ. Với các tình trạng báo động ảnh hưởng tới việc cấp oxy thì bạn cần phản ứng ngay để đánh giá mức bão hòa oxy của bệnh nhân. Với các tình trạng báo động ảnh hưởng tới việc cấp độ ẩm thì bạn phải phản ứng nhanh chóng để đánh giá khả năng dịch nhầy bị khô và các vật cản khác.

Các độ trễ báo động dưới đây sẽ xảy ra trong trạng thái "Sẵn sàng sử dụng".

Tin nhắn	Ý nghĩa	Ảnh hưởng tới sự cung cấp:	Trì hoãn
Lỗi (E###)	*Thiết bị đã phát hiện lỗi bên trong và tự tắt.* Tắt thiết bị đi và khởi động lại. Nếu lỗi vẫn xảy ra, hãy xem mã lỗi và liên hệ với đại diện của Fisher & Paykel Healthcare của bạn.	Oxy, độ ẩm.	<5 giây
Kiểm tra ống	*Thiết bị không phát hiện được ống thở đã được làm ấm.* Kiểm tra xem ống thở được làm ấm có bị hư hỏng không và ống đã được cắm đúng cách chưa. Nếu lỗi vẫn tiếp tục xảy ra, thì hãy thay ống thở được làm ấm.	Oxy, độ ẩm.	<5 giây
Kiểm tra rò rỉ	*Thiết bị phát hiện rò rỉ trong hệ thống.* Nguyên nhân có thể do ngăn chứa nước đã bị tháo ra hoặc chưa được đẩy vào vị trí đúng cách. Kiểm tra xem ống thở được làm ấm có bị hư hỏng không và ống đã được cắm đúng cách chưa. Kiểm tra thiết bị tiếp xúc với mũi đã được lắp chưa. Kiểm tra bộ lọc được lắp chưa.	Oxy, độ ẩm.	<120 giây
Kiểm tra xem có vật cản không	*Thiết bị đã phát hiện một vật cản trong hệ thống.* Kiểm tra ống thở đã được làm ấm hoặc khối giao tiếp bệnh nhân xem có vật cản không. Kiểm tra bộ lọc khí và bộ phận giữ bộ lọc khí xem có vật cản không. Kiểm tra xem thiết bị có nên để ở Chế độ dành cho trẻ em hay không. Nếu bệnh nhân sử dụng canun mũi Optiflow Junior (OPT316/OJR416/OPT318/OJR418), bạn phải kích hoạt Chế độ dành cho trẻ em.	Oxy, độ ẩm.	<10 giây
O_2 quá thấp	*Mức oxy đo được đã giảm xuống dưới giới hạn cho phép.* Kiểm tra xem nguồn cấp oxy có còn hoạt động và có được nối đúng cách hay không. Điều chỉnh mức oxy từ nguồn oxy nếu cần.	Oxy	<20 giây
O_2 quá cao	*Mức oxy đo được đã vượt quá giới hạn cho phép.* Kiểm tra xem mức lưu lượng AIRVO đã được cài đúng chưa. Điều chỉnh mức oxy từ nguồn oxy nếu cần.	Oxy	<20 giây

(tiếp tục)

Tin nhắn	Ý nghĩa	Ảnh hưởng tới sự cung cấp:	Trì hoãn
Không thể đạt tới lưu lượng mục tiêu	*Thiết bị không thể đạt được thông số lưu lượng mục tiêu.* Kiểm tra ống thở đã được làm ấm hoặc khối giao tiếp bệnh nhân xem có vật cản không. Kiểm tra xem thông số lưu lượng theo mục tiêu có cao quá so với khối giao tiếp bệnh nhân đang được sử dụng hay không (xem "Cài đặt AIRVO 2" - "Chọn Thiết bị Tiếp xúc với da"). Bạn sẽ được chỉ dẫn. ⚠ *CẢNH BÁO* • Nồng độ oxy được cấp cho bệnh nhân có thể bị ảnh hưởng bởi các thay đổi đối với thông số cài đặt lưu lượng. Điều chỉnh mức oxy từ nguồn oxy nếu cần.	Oxy	<120 giây
Kiểm tra nước	*Ngăn chứa hết nước.* Phao báo nước có thể bị hư hỏng nếu buồng hết nước. Thay ngăn chứa và túi nước. Để đảm bảo quá trình làm ẩm liên tục, hãy luôn đảm bảo rằng ngăn chứa nước và/hoặc túi nước không cạn nước.	Độ ẩm	<30 phút
Không thể đạt tới nhiệt độ mục tiêu	*Thiết bị không thể đạt thông số nhiệt độ mục tiêu.* Bạn sẽ được chỉ dẫn. Nguyên nhân cho tình trạng này có thể là thiết bị hoạt động ở mức lưu lượng cao trong điều kiện môi trường thấp. Thử giảm thông số lưu lượng theo mục tiêu. ⚠ *CẢNH BÁO* • Nồng độ oxy được cấp cho bệnh nhân có thể bị ảnh hưởng bởi các thay đổi đối với thông số cài đặt lưu lượng. Điều chỉnh mức oxy từ nguồn oxy nếu cần.	Độ ẩm	30 +/- 3 phút
Kiểm tra điều kiện hoạt động	*Thiết bị đã phát hiện rằng thiết bị đang hoạt động trong các điều kiện môi trường không phù hợp.* Báo động này có thể do sự thay đổi đột ngột điều kiện môi trường. Để thiết bị chạy trong vòng 30 phút. Tắt thiết bị đi và khởi động lại.	Độ ẩm	60 +/- 6 giây
[Mất điện]	*Thiết bị đã bị ngắt khỏi nguồn điện.* Không có cảnh báo dạng hình ảnh. Báo động bằng âm thanh sẽ kéo dài ít nhất 120 giây. Nếu nguồn được kết nối lại trong thời gian này thì thiết bị sẽ tự động khởi động lại. ⚠ *CẢNH BÁO* • Phải theo dõi bệnh nhân một cách phù hợp mọi lúc. Không thể điều trị nếu mất điện.	Oxy, độ ẩm.	<5 giây

GIỚI HẠN BÁO ĐỘNG

Hầu hết các giới hạn báo động đều được lập trình sẵn. Các giới hạn ngoại lệ được liệt kê dưới đây. Những giới hạn báo động này có thể được thay đổi sang các giá trị khác bởi người có thẩm quyền. Những thay đổi sẽ được lưu trong hoặc sau các lần mất điện.

Điều kiện báo động	Giới hạn báo động cài đặt gốc	Các giá trị cài đặt sẵn
O_2 quá thấp	21% O_2	21 hoặc 25% O_2
O_2 quá cao	95% O_2	30 – 100% O_2, mức tăng 5%

⚠ *CẢNH BÁO*

- Có thể có nguy hiểm nếu các thông số cài đặt báo động khác nhau được sử dụng trên các thiết bị khác nhau trong cùng một khu vực, chẳng hạn phòng chăm sóc tích cực.
- Giới hạn báo động được đặt ở giá trị cực hạn có thể vô hiệu hóa hệ thống báo động.

KIỂM TRA TÍNH NĂNG CỦA HỆ THỐNG BÁO ĐỘNG

Tính năng của hệ thống báo động có thể được kiểm tra bất cứ lúc nào khi thiết bị đang bật.

Gỡ ống thở đã được làm ấm. Bạn phải kiểm tra tín hiệu báo động bằng hình ảnh "Kiểm tra ống" và nghe tín hiệu báo động bằng âm thanh. Nếu thiếu một trong hai dạng tín hiệu báo động thì không sử dụng thiết bị và xem Hướng dẫn Kỹ thuật AIRVO 2 để tìm hướng dẫn giải quyết sự cố. Nếu sự cố vẫn tiếp diễn, hãy liên hệ với đại diện Fisher & Paykel Healthcare của bạn.

TÍN HIỆU THÔNG TIN DẠNG ÂM THANH

Ngoài tín hiệu báo động bằng âm thanh thì còn có tín hiệu thông tin dạng âm thanh. Những tín hiệu đó được miêu tả dưới đây.

Giai điệu	Ý nghĩa
5 âm điệu tăng dần	Biểu tượng "Sẵn sàng sử dụng" đã xuất hiện.
3 âm điệu tăng dần	Kích hoạt/tắt Chế độ dành cho trẻ em
Một âm điệu cách nhau 5 giây	Mức oxy đo được ≥33% khi tắt máy
Một âm điệu cách nhau 30 giây	Mức độ oxy đo được >95%

4. TÁI XỬ LÝ

AIRVO 2 bao gồm khuỷu đầu oxy thoát ra phải được làm sạch và khử trùng giữa những lần sử dụng cho các bệnh nhân khác nhau theo hướng dẫn trong hướng dẫn Bộ Khử trùng (900PT600). Những phụ kiện được dùng cho một bệnh nhân phải được loại bỏ giữa những lần sử dụng cho các bệnh nhân khác nhau để ngăn chặn nhiễm chéo.

Quá trình tái xử lý phải được thực hiện ngay sau khi sử dụng. Thiết bị sử dụng nước ấm và có thể tiềm ẩn nguy cơ tích tụ vi khuẩn và nhiễm trùng của bệnh nhân nếu việc làm sạch, khử trùng, và các quy trình thay thế không được tuân thủ chặt chẽ.

Khi xử lý thiết bị và phụ kiện, bạn phải tuân thủ nghiêm ngặt các kỹ thuật vô trùng tiêu chuẩn nhằm hạn chế tối đa sự nhiễm bẩn. Bao gồm rửa tay sạch sẽ, tránh tiếp xúc trực tiếp giữa tay và cổng nối, vứt bỏ các vật tư đã dùng một cách an toàn, và bảo quản thiết bị phù hợp sau khi làm sạch và khử trùng.

LỊCH THAY PHỤ KIỆN

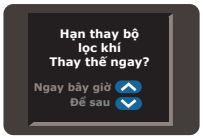
Các phụ kiện của thiết bị phải được thành thường xuyên để tránh nguy cơ bị nhiễm trùng. Các bộ phận phải được thay thế ngay lập tức nếu bị hỏng hoặc biến màu; nếu không chúng phải được thay thế trong các giai đoạn được miêu tả trong bảng sau.

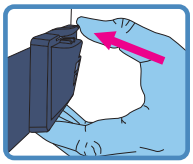
Thời gian sử dụng tối đa	Mã sản phẩm và miêu tả	
1 tuần (sử dụng cho một bệnh nhân)	***Các khối giao tiếp bệnh nhân trừ Optiflow™+***	
	OPT316/OJR416	Canun mũi - trẻ sơ sinh
	OPT318/OJR418	Canun mũi - trẻ em
	OPT842	Optiflow™ Canun mũi - Loại nhỏ
	OPT844	Optiflow™ Canun mũi - Loại vừa
	OPT846	Optiflow™ Canun mũi - Loại to
	OPT870	Khối giao tiếp mở khí quản
	RT013	Bộ chỉnh lưu lượng mặt nạ - 22 mm
2 tuần (sử dụng cho một bệnh nhân)	***Optiflow™+ khối giao tiếp bệnh nhân***	
	OPT942	Optiflow™+ Canun mũi - Loại nhỏ
	OPT944	Optiflow™+ Canun mũi - Loại trung bình
	OPT946	Optiflow™+ Canun mũi - Loại to
	OPT970	Optiflow™+ Khối giao tiếp mở khí quản
	OPT980	Optiflow™+ Bộ chỉnh lưu lượng mặt nạ
	Tất cả bộ ngăn chứa & ống	
	900PT551 / 900PT561	Ống thở đã được làm ấm AirSpiral™, bộ chuyển đổi và ngăn chứa nước tự làm đầy MR290
	900PT562	Ống thở đã được làm ấm AirSpiral™, bộ chuyển đổi máy xông khí dung và ngăn chứa nước tự làm đầy MR290
	900PT501	Ống thở đã được làm ấm, bộ chỉnh lưu và ngăn chứa nước tự làm đầy MR290
	900PT531	Ống thở cho trẻ em đã được làm ấm, bộ chỉnh lưu và ngăn chứa nước tự làm đầy MR290 (chỉ sử dụng với OPT316/318/OJR416/OJR418)
3 tháng hoặc 1000 giờ	900PT913	Bộ lọc khí (hoặc thường xuyên hơn nếu bị biến màu nghiêm trọng)

Một vài sản phẩm có thể không có sẵn ở quốc gia của bạn. Vui lòng liên hệ với đại diện Fisher and Paykel Healthcare tại địa phương của bạn.

THAY BỘ LỌC

Sau khi AIRVO 2 đã được bật trong 1000 giờ thì sẽ có cảnh báo xuất hiện ở đầu chu trình khử trùng tiếp theo để cho biết cần thay bộ lọc khí. Làm theo những bước dưới đây nếu đã đến hạn thay bộ lọc:





1. Lấy bộ phận đỡ bộ lọc ra khỏi phần phía sau của thiết bị và tháo bộ lọc ra.
2. Thay bộ lọc cũ bằng bộ lọc mới (900PT913).
3. Gắn lại bộ phận đỡ bộ lọc vào thiết bị (kẹp đáy của bộ phận giữ bộ lọc trước, sau đó xoay ngược lên cho tới khi đỉnh khớp vào vị trí).
4. Nhấn nút Chế độ để chuyển sang màn hình "Thay thế ngay".
5. Nhấn nút Lên để chọn "Bây giờ".
6. Nhấn nút Chế độ để xác nhận.
   Bộ đếm giờ sẽ được cài về 0.

Nếu bạn chọn lựa chọn "Để sau" thì cảnh báo sẽ tiếp tục xuất hiện tại đầu các chu kỳ khử trùng tiếp theo.

BẢO DƯỠNG

Thiết bị này không chứa bộ phận có thể bảo dưỡng bên trong.

Xem Hướng dẫn kỹ thuật AIRVO 2 để xem danh sách các bộ phận thay thế bên ngoài.

5. THÔNG TIN KỸ THUẬT

ĐỊNH NGHĨA BIỂU TƯỢNG

	Để đảm bảo an toàn, hãy xem hướng dẫn sử dụng		Thiết bị Loại II
	Cẩn trọng	REF	Mã hạng mục
	Tham khảo hướng dẫn sử dụng	SN	Mã seri
	Cảnh báo, bề mặt nóng	LOT	Mã đợt sản xuất
	Nhà sản xuất		Dải độ ẩm
	Ngày sản xuất		Dải nhiệt độ
	Hạn sử dụng	IP22	Bảo vệ thiết bị khỏi các vật nhỏ và giọt nước rơi vào
	Bộ phận áp dụng Loại BF	EC REP	Đại diện EU
Rx only	(USA) Luật Liên bang giới hạn bán thiết bị này bởi hoặc theo chỉ dẫn của bác sỹ.	CE	Dấu CE
	Biểu tượng báo động		Bật/tắt nguồn (chế độ chờ)
	Dừng báo động		Dấu tuân thủ quy định (RCM)

THÔNG SỐ KỸ THUẬT CỦA SẢN PHẨM

Kích thước	295 mm x 170 mm x 175 mm (11,6″ x 6,7″ x 6,9″)
Trọng lượng	2,2 kg (4,8 lb) tính riêng thiết bị, 3,4 kg (7,5 lb) đóng gói bao gồm phụ kiện
Tần số cung cấp	50-60 Hz
Dòng điện/điện áp cung cấp	100-115 V 2,2 A (tối đa 2,4 A†) 220-240 V 1,8 A (tối đa 2,0 A†)
Mức áp suất âm thanh	Báo động vượt quá 45 dbA @ 1 m
Dừng báo động âm thanh	115 giây
Tuổi thọ dự kiến của thiết bị	5 năm
Cổng nối tiếp	Cổng nối tiếp được sử dụng để tải dữ liệu về sản phẩm, sử dụng phần mềm F&P Infosmart™.
Thời gian khởi động	10 phút tới 31 °C (88 °F), 30 phút tới 37 °C (98,6 °F) sử dụng ngăn chứa nước MR290 với mức lưu lượng 35 L/phút và nhiệt độ ban đầu là 23 ± 2 °C (73 ± 3 °F)

Thông số cài đặt nhiệt độ mục tiêu	37, 34, 31 °C
Hiệu suất độ ẩm	>33 mg/L ở 37 °C theo mục tiêu >12 mg/L ở 34 °C theo mục tiêu >12 mg/L ở 31 °C theo mục tiêu
Nhiệt độ tối đa của khí được cấp	43 °C (109 °F) (tuân theo ISO 80601-2-74)
Nhiệt độ bề mặt tối đa của các bộ phận ứng dụng	44 °C (111 °F) (tuân theo ISO 80601-2-74)
Dải lưu lượng (mặc định)	10-60 L/phút*
Dải lưu lượng (Chế độ cho trẻ em)	2-25 L/phút*
Lượng oxy vào tối đa	60 L/phút
Độ chính xác của thiết bị phân tích oxy	< ± 4% (trong dải 25-95% O_2) Điều kiện hoạt động: 18-28 °C (64-82 °F), 30-70% RH

* Mức lưu lượng được đo tại BTPS (Nhiệt độ cơ thể/áp suất, bão hòa)

† Dòng điện khởi động có thể đạt tới 50 A

ĐIỀU KIỆN HOẠT ĐỘNG

Nhiệt độ môi trường	18 - 28 °C (64 - 82 °F)
Độ ẩm	10 - 95% RH
Độ cao	0 - 2000 m (6000 ft)
Chế độ hoạt động	Hoạt động liên tục

ĐIỀU KIỆN BẢO QUẢN VÀ VẬN CHUYỂN

AIRVO	
Nhiệt độ môi trường	-10 - 60 °C (14 - 140 °F)
Độ ẩm	10 - 95% RH, không ngưng tụ
Bộ ống & ngăn chứa nước	
Nhiệt độ môi trường	-10 - 50 °C (14 - 122 °F)
Độ ẩm	10 - 95% RH, không ngưng tụ

Thiết bị có thể cần tới 24 giờ để làm ấm hoặc nguội đi từ nhiệt độ bảo quản tối đa hoặc tối thiểu trước khi sẵn sàng sử dụng.

CẢNH BÁO

- Không sử dụng thiết bị ở độ cao trên 2000 m (6000 ft) hoặc ngoài dải nhiệt độ 18 - 28 °C (64 - 82 °F). Nếu không tuân thủ có thể ảnh hưởng tới chất lượng điều trị hoặc làm tổn thương bệnh nhân.

Được thiết kế để tuân thủ yêu cầu của:
IEC 60601-1:2005 + A1:2012
IEC 60601-1-2:2014
ANSI/AAMI 60601-1:2005/(R) 2012
CAN/CSA-C22.2 No. 60601-1:2014
EN 60601-1:2006 + A1:2013
ISO 80601-2-74:2017

Thiết bị tuân thủ theo yêu cầu về khả năng tương thích điện từ của IEC 60601-1-2. Trong các tình huống nhất định, thiết bị có thể ảnh hưởng tới hoặc bị ảnh hưởng bởi các tác động của nhiễu điện từ. Nhiễu điện từ quá mức có thể ảnh hưởng tới khả năng điều trị mà thiết bị cung cấp. Nếu việc này xảy ra, hãy thử di chuyển thiết bị hoặc chuyển vị trí của thiết bị gây ra nhiễu, hoặc tham khảo ý kiến của nhà cung cấp dịch vụ chăm sóc sức khỏe. Để tránh nhiễu có thể xảy ra, không đặt bất cứ phần nào của thiết bị hoặc phụ kiện trong khoảng 30 cm (12″) gần bất cứ thiết bị liên lạc tần số radio di động hoặc xách tay nào.

Phụ kiện được nối với cổng nối tiếp của thiết bị phải được chứng nhận theo IEC 60601-1 hoặc IEC 60950-1. Ngoài ra, mọi cấu hình phải tuân thủ theo tiêu chuẩn hệ thống IEC 60601-1-1. Bất cứ ai thực hiện nối thiết bị phụ vào phần tín hiệu đầu vào hoặc phần tín hiệu đầu ra sẽ là người lên cấu hình hệ thống y tế và do đó sẽ chịu trách nhiệm đảm bảo rằng hệ thống tuân thủ theo các yêu cầu của tiêu chuẩn hệ thống IEC 60601-1-1. Nếu có nghi ngờ, vui lòng liên hệ với phòng dịch vụ kỹ thuật hoặc đại diện tại địa phương của bạn.

HƯỚNG DẪN TIÊU HỦY

Hướng dẫn tiêu hủy thiết bị
Thiết bị chứa các bộ phận điện tử. Không hủy cùng với rác thông thường. Trả lại cho Fisher & Paykel Healthcare hoặc hủy theo hướng dẫn của địa phương về hủy bỏ các thiết bị điện tử. Phải hủy bỏ theo chỉ thị về Chất thải Điện và Điện tử (WEEE) tại Liên minh Châu Âu.

Hướng dẫn Hủy bỏ Vật tư đã dùng
Để thiết bị tiếp xúc với da, ống thở và ngăn chứa nước vào túi rác thải khi dùng xong. Các bệnh viện phải xử lý theo phương pháp tiêu chuẩn xử lý sản phẩm nhiễm bẩn.

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