F&P AIRVO 2

User Manual

Fisher & Paykel HEALTHCARE

SECTION

English ..... A

Español ..... B

Deutsch C

Français ..... D

Italiano ..... E

Nederlands ..... F

Português ..... G

Dansk ..... H

Suomi I

Norsk ..... J

Svenska ..... K

Bahasa Indonesian L

العربية (Arabic) ..... M

Tiếng Việt (Vietnamese) ..... N

ไทย (Thai) ..... O

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 ..... A - 2
   - Intended Use ..... A - 2
   - Warnings ..... A - 2
   - AIRVO 2 and Accessories ..... A - 3
2. Setting up AIRVO 2 ..... A - 4
3. Using AIRVO 2 ..... A - 6
   - Target dew-point temperature ..... A - 7
   - Target flow ..... A - 7
   - Oxygen ..... A - 8
   - Alarms ..... A - 10
4. Reprocessing ..... A - 12
   - Schedule for changing accessories ..... A - 12
   - Filter replacement ..... A - 13
   - Servicing ..... A - 13
5. Technical Information ..... A - 13

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)

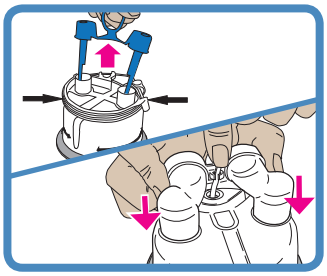
Miscellaneous	
900PT405	Pole mounting tray
900PT411	UPS mounting kit
900PT420	Mobile Pole Stand (extendable)
900PT421	Mobile Pole Stand
900PT422	Oxygen inlet extension kit
900PT426	Plastic Basket
900PT427	Oxygen bottle holder
900PT427L	Oxygen bottle holder (large)
900PT428	Pole Clamp
900PT912	Filter 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

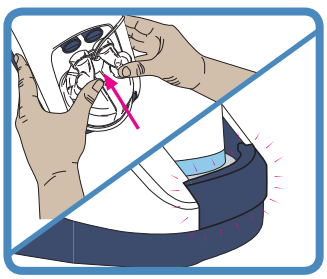
The AIRVO 2 should be fixed on a pole mounting tray (900PT405) below patient head height. Position the device so the power cord connection to the power supply is easily accessible and able to be disconnected. Open the packaging of the tube & chamber kit (heated breathing tube, MR290 auto-fill chamber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

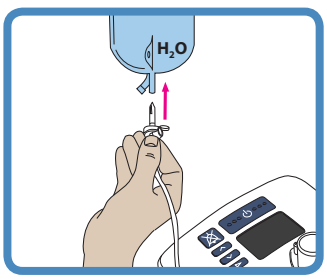
⚠ *WARNINGS*

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.



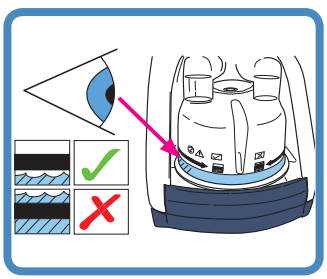
3. CONNECT WATER BAG

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.

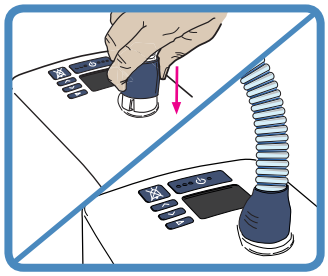


Check that water flows into the chamber and is maintained below the maximum water level line. If the water level rises above the maximum water level line, replace the chamber immediately.

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:

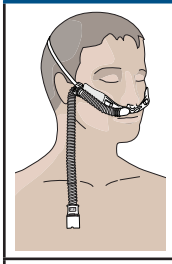
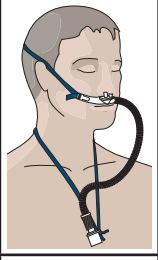
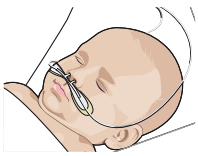
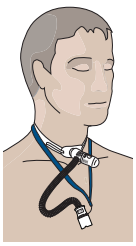
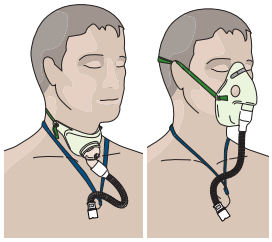
- Do not modify the breathing tube or interface in any way.
- Do not allow the breathing tube to remain in direct contact with skin for prolonged periods of time. The healthcare professional shall assess the conditions for safe contact, such as duration and skin condition.
- Do not add heat above ambient 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.

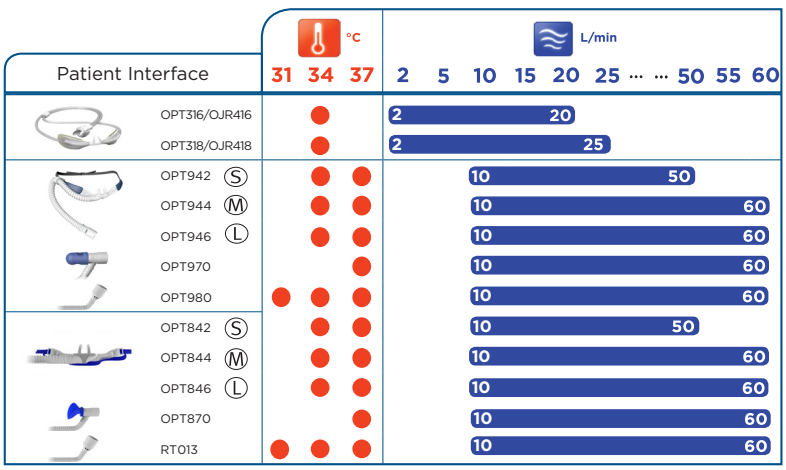
5. SELECT PATIENT INTERFACE

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.

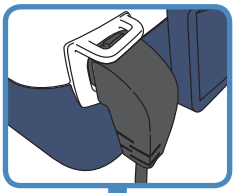
At altitude, the maximum flow rates achievable may be lower than those in the above table, by approximately 5 L/min per 1000 m (3000 ft).

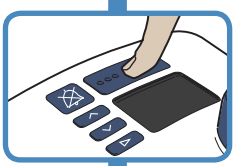
⚠ *WARNINGS*

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.

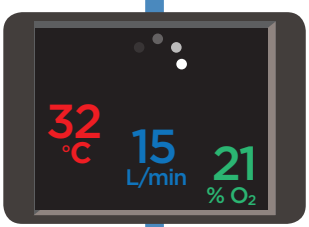
Switch on the unit by pressing the On/Off button for 5 seconds.

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.

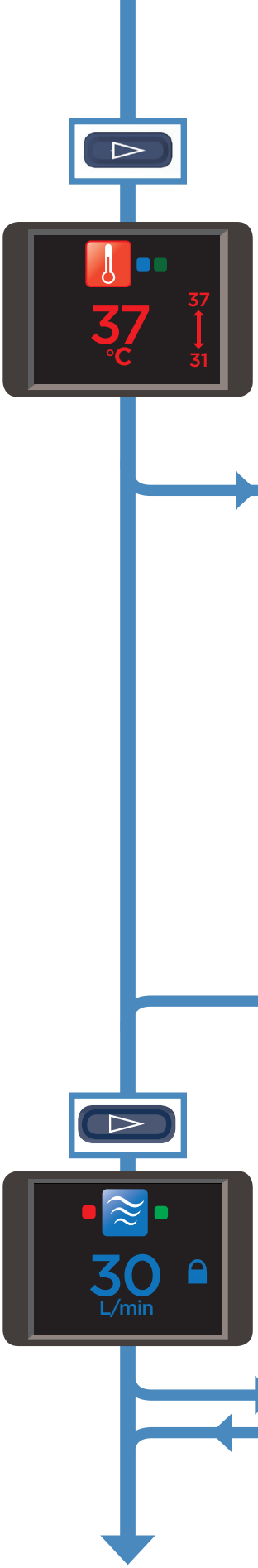
Junior Mode limits the target settings to: 34 °C and 2 - 25 L/min, in increments of 1 L/min.

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:

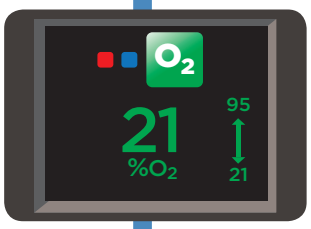
- the unit is in Junior Mode (limited to 2 - 25 L/min, in increments of 1 L/min),
- the unit was initially set up with tighter limits.

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

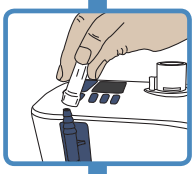
You can connect up to 60 L/min of supplementary oxygen from a regulated supply to the AIRVO 2. The AIRVO 2 contains an oxygen analyzer to help you determine the oxygen fraction you are delivering to the patient. Your unit may have been initially set up with tighter limits.

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

⚠ *WARNINGS*

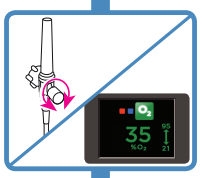
Before using the AIRVO 2 with oxygen, read all of the following warnings:

- 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*

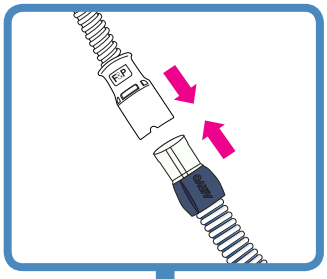
- Note that if the patient's peak inspiratory demand exceeds the flow delivered by the unit, the fraction of oxygen inspired by the patient will be lower than the value shown onscreen, due to the additional entrainment of ambient air.
- Check that suitable blood saturation levels are achieved at the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

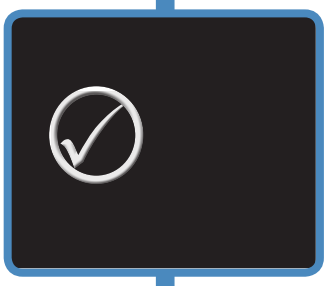
“Ready for use” symbol



Connect the patient interface to the heated breathing tube.

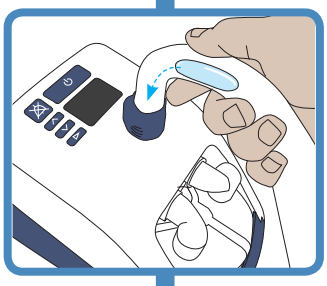
Monitor the flow and oxygen values displayed on the Summary screen. Adjust the level of oxygen from the oxygen source as necessary.

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

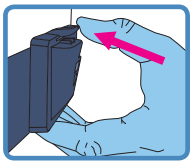
The accessories for the unit must be changed frequently to avoid the risk of infection. Parts should be replaced immediately if they are damaged or discolored; otherwise they must be replaced within the periods shown in the following table.

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/OPT318/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.