Troubleshooting Guide for AIRVO

This Troubleshooting Guide is intended for technical users, including clinical/biomedical engineers and technical personnel, of the AIRVO™ 2 humidifier. It applies to all AIRVO 2 humidifiers from lot numbers **140910** and above.
If this troubleshooting guide does not resolve your issue, please contact your local Fisher & Paykel Healthcare representative.

D.1 AIRVO does not turn on

A. Press and hold the ON/OFF button for at least 2 seconds.

B. Is the AIRVO 2 plugged into mains power?

C. Is the power cord securely inserted into the back of the AIRVO 2?

D. Is the power cord damaged?
- If yes, replace the damaged cord. See **Section 5.1** for a **900PT410xx** replacement power cord.
- If no, try using another power cord.

E. Connect the AIRVO 2 into another power outlet.

F. Connect a different electrical device into the same power outlet. Turn on the device to confirm that the power outlet is working.

G. The AIRVO 2 may be 'on' with a broken display.
Turn the AIRVO 2 on without the heated breathing tube and check that the audible alarm activates.

D.2 Power out (black screen)

The auditory alarm will sound for at least 120 seconds.

The most likely cause is a dislodged or disconnected power cord.

A. Please follow the instructions in **Section D.1**.
Note: Press "audio pause" button to permanently silence the alarm ( ).
The device will not automatically restart.

D.3 "Check tube"[Fig. 1] or "E38"

A. Is the heated breathing tube attached correctly?
- Even if it appears to be, unplug and reconnect the heated breathing tube.

B. Is the heated breathing tube visibly damaged?
- Check the electrical pins and the tube itself.

C. Try using a new heated breathing tube.

Figure 1

D.4 "Check for blockages"[Fig. 2] or "E121"

D.4.1 WATER CHAMBER AND NON-RETURN VALVE

A. Have the silicone flaps of the non-return valve, found inside the left-hand chamber port, been displaced[Fig. 3]?
   - If yes, return them to the correct position using a non-sharp tool, such as a pair of non-sharp tweezers[Fig. 5].

   Note: If the Non-return valve is damaged or missing, replace with part **900PT911**. Upon replacement, ensure the spine is sitting vertically[Fig. 5]. If placed horizontally, this may cause the bottom flap to open due to gravity[Fig. 4]. This may cause both "Check for leaks" and "Check for blockages" warnings.

B. Is the MR290 water chamber overfilled above the black line?
   - If yes, replace with a new water chamber. Contact your local Fisher & Paykel Healthcare representative about the faulty chamber.

D.4.2 HEATED BREATHING TUBE

A. Is the heated breathing tube visibly blocked or kinked[Fig. 6]?

D.4.3 PATIENT INTERFACE AND AIRVO MODE

A. Is the patient interface visibly blocked or kinked?

B. Should the unit be in Junior mode[Fig. 7]?
   - If the AIRVO is in Default mode and the 900PT531 Junior tube is used with the OPT316 and OPT318 cannula interfaces it may generate a "Check for blockages" alarm.

   See **Appendix E** for identification of the Default and Junior Tube and Chamber Kits, according to their labels.

C. Are you using an unsuitable cannula?
   - The OPT312 and OPT314 cannot be used with the AIRVO 2.

   See the User Manual for information regarding patient interfaces.

D.4.4 AIR FILTER

A. Is the air filter significantly discolored/dirty?
   - Replace with part **900PT913**.

   Note: A prompt[Fig. 8] for filter change will occur at the start of the Disinfection Cycle once the AIRVO 2 has counted 1,000 hours of use. Choose 'Now' or 'Later'[Fig. 9] by using the "up" or "down" buttons and press the "mode" button (▷) to confirm. Selecting 'Now' will zero the counter. Selecting "Later" will activate the prompt at the start of the next Disinfection Cycle.

B. Is there a foreign object blocking the air filter or filter holder?

D.4.5 CONDENSATION

Please see **Section D.12**.

D.4.5 ALTITUDE

A. The myAIRVO 2 is designed to operate at an altitude below 2,000 meters.

Figure 2

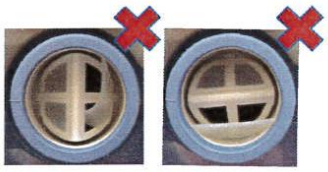


Figure 3 Figure 4

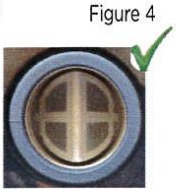


Figure 5

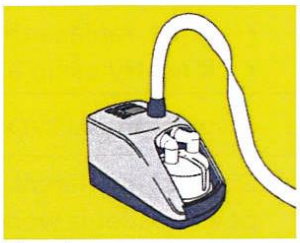


Figure 6

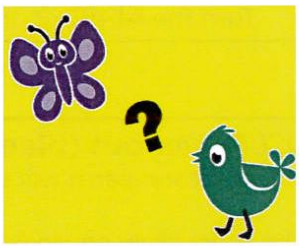


Figure 7

Figure 8

Figure 9

D.5 "Check for leaks"[Fig. 10] or "E122"

The most likely cause is a missing water chamber or the existing chamber has not been pushed into place correctly.

Figure 10

D.5.1 WATER CHAMBER

A. Is the water chamber fitted correctly? Even if it appears to be:
- Remove the water chamber.
- Push the chamber on firmly, until the finger guard "clicks" into place[Fig. 11].

⚠ Warning: The heater-plate and base of the water chamber may be hot.

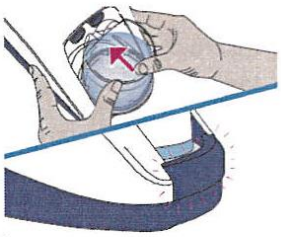


Figure 11

D.5.2 HEATED BREATHING TUBE

A. Is the heated breathing tube attached to the device correctly?
Even if it appears to be:
- Disconnect the heated breathing tube.
- Check that the black O-ring is in place[Fig.12].
  If the O-ring is damaged or missing, replace with part **900PT408**.
- Reconnect the heated breathing tube.

B. Confirm that the heated breathing tube is not visibly damaged.

Figure 12

D.5.3 PATIENT INTERFACE

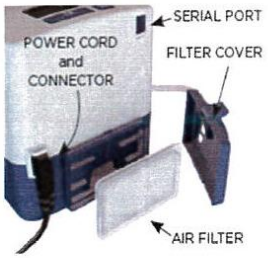
A. Is the patient interface correctly fitted to the heated breathing tube?
- Even if it appears to be, disconnect and reconnect the patient interface. It should make a "click" sound when it is connected properly.

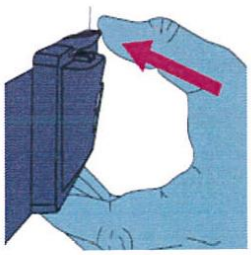
B. Should the unit be in Default (adult) mode?
- If the AIRVO is in Junior mode and the 900PT501 Default tube is used with the OPT842/44/46/70 or RT013 interfaces, it may generate a "Check for leaks" alarm.

See **Appendix E** for identification of the Default and Junior Tube and Chamber Kits, according to their labels.

D.5.4 AIR FILTER & FILTER COVER

A. Is the air filter and filter cover (at the back of the device) correctly fitted, as per the User Manual?





D.6 "O_2 too low" Fig. 13

The measured oxygen level has fallen below the allowed limit.

A. Adjust the level of oxygen from the oxygen source as necessary, i.e. increase the oxygen flow rate through the oxygen flow meter.

B. Is the oxygen source (wall or cylinder flow meter) turned on?

C. Is the oxygen source empty or faulty?

D. Is the "AIRVO 2 oxygen inlet kit" Fig. 14 installed correctly, as per the instructions included with part **900PT422** and confirmed that there are no kinks in the "AIRVO 2 oxygen inlet kit" oxygen tubing?

E. Is the oxygen source tubing correctly and securely fitted to the AIRVO 2?

F. Allow the device to sufficiently warm up; rapid changes in temperature can affect the sensor.

G. Is the minimum oxygen limit set to 25%?
- A prompt will appear with an option to change this lower limit to 21 %.

Select "Yes" or "No" by using the "Up" and "Down" buttons. Press the "mode" button (▷) to confirm selection Fig. 15.
See **Section 2 - Advanced Settings** to change this lower oxygen limit.

Figure 13


Figure 14

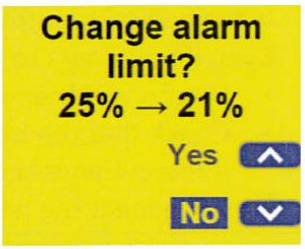


Figure 15

D.7 "O_2 too high" Fig. 16

The measured oxygen level has risen above the allowed limit.

A. Adjust the level of oxygen from the oxygen source as necessary, i.e. decrease the oxygen flow rate through the oxygen flow meter.

B. See **Section 2 - Advanced Settings** to change this lower oxygen limit.

Figure 16

D.8 "Cannot reach target flow" Fig. 17

A. Press the "mode" button (▷) to continue normal operation at a lower (maximum achievable) flow rate.

B. Is the target flow setting too high for the patient interface?
- Check the swing tag/User Manual for the appropriate flow range for each patient interface.

Note: If the AIRVO 2 cannot reach the target flow setting, it will automatically select a maximum achievable flow rate and prompt the user to press the "mode" button (▷) to confirm.

C. Follow steps in **Section D.4** — "Check for blockages".

D. Is the altitude above 2,000 m?
The AIRVO 2 is designed to operate at an altitude below 2,000 meters.

Figure 17

D.9 "Cannot reach target temperature" Fig. 18

The most likely cause is operating the AIRVO 2 at a high flow rate in a cold room. Consider decreasing the target flow setting.

A. Press "mode" button (▷) to continue.
Note: The humidity level may be compromised.

B. Is the ambient room temperature below 18 °C (64 °F)?
- If yes, proactive management of condensation may be required.
See **Section D.12** on prevention and management of condensation.

Figure 18

D.10 "Check water" Fig. 19

A. Is the water bag empty?
If yes, refill or replace the water bag and press the "mode" button (▷) to reset the alarm.

B. Is the water chamber empty?
- If yes, replace the water chamber as it may be damaged.

⚠ Warning: The heater-plate and base of the water chamber may be hot.

C. Is there a kink in the fluid line, preventing water from flowing into the chamber?

D. Open the vent cap near the water bag spike. This allows the pressure to equalize, letting the water flow into the water chamber.

Figure 19

D.11 "Check operating conditions" Fig. 20

This alarm may be caused by a sudden change in ambient room temperature, e.g. storing the unit in a cold place, then using it in a warm place.

A. Is the ambient room temperature less than 10 °C (50 °F) or greater than 30 °C (86 °F)?

B. Leave the unit running for 30 minutes.
Switch the unit off, then restart.

Figure 20

D.12 Condensation

D.12.1 PREVENTION OF EXCESSIVE CONDENSATION

A. Is the AIRVO 2 being used in ambient conditions between 18 – 28 °C (64 - 82 °F)?
   - If the room is less than 18 °C (64 °F), condensation is more likely to occur.

B. Is there a local source of cooling acting on the heated breathing tube?
   - A fan to cool the patient,
   - An air-conditioning unit, vent or an open window?
   - Are you able to remove or minimize these sources of cooling, e.g. redirect the fan, cooling the patient, away from the heated breathing tube?

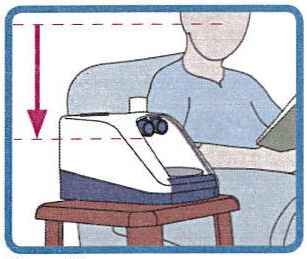


Figure 21

D.12.2 CONDENSATION MANAGEMENT

A. Implement a system to check the heated breathing tube for condensate regularly.

B. Is the AIRVO 2 placed below head height[Fig. 21]?
   - This will allow condensate to drain towards the water chamber, away from the patient.

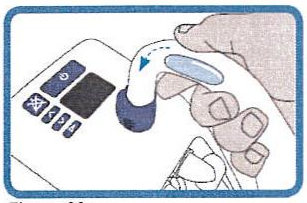


Figure 22

C. If condensation is present, drain it back into the water chamber[Fig. 22]:
   - Disconnect the patient interface from the heated breathing tube.
   - Drain the tube 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.

D. If condensate persists, consider turning the target temperature down.
   - A lower target temperature will decrease the humidity output of the AIRVO 2, decreasing the level of condensation.

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