

Checking Readiness for Operation

WARNING

Prior to each use of the device on the patient, check readiness for operation of *Evita XL* in order to confirm correct functioning of the device. If a malfunction is detected during the check, do not operate the device! Danger to the patient!

The readiness for operation check consists of the **Device Check**, the **Airtight Check**, and the test of the DC power pack option.

The following test steps are performed:

During the **Device Check**:

- Check for completeness of ventilator assembly
- Test of the back-up alarm (power failure alarm)
- Test of the expiratory valve
- Test of the Air/O₂ switchover valve
- Test of the safety valve
- Calibration of the flow sensor
- Calibration of the NeoFlow sensor (optional)
- Calibration of the O₂ sensor
- Zero calibration of the CO₂ sensor (optional)

During the **Airtight Check**

- Leakage test of the breathing circuit
- Determination of breathing circuit compliance and resistance

During the test of the DC power pack option:

- Changeover test to battery operation

The test results obtained from the Device Check and the calibration and zero-calibration values of the sensors remain stored until the next calibration, even if the device is switched off in the meantime.

WARNING

If there are changes to the breathing circuit, type of humidification, or patient category after performing the readiness for operation check, the **Airtight Check** must be repeated before using the device.

If the Airtight Check is not performed, this may lead to the following deviations:

- In the case of volume-controlled ventilation, the applied minute volume for the **Ped.** patient category may be reduced by 10 %, as compliance of the breathing circuit is not correctly taken into account. For the **Adult** patient category, the deviation is less.
- When ventilating with the NeoFlow option, the set PEEP may not be achieved because the resistance of the breathing circuit cannot be correctly taken into account. Without nebulization, the deviation may amount to up to 1 mbar (1 cmH₂O). With nebulization using a pneumatic medication nebulizer, the deviation may amount to up to 2 mbar (2 cmH₂O).
- Leakages in the breathing circuit are not detected.

Preparing the adult test lung

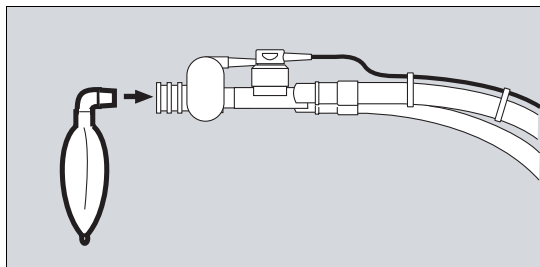
For testing the adult breathing circuit, the adult test lung "blue" (part no. 8403201), or the adult test lung "white" (part no. 8401892) can be used.

NOTE

The adult test lung "blue" (part no. 8403201) consists of a mask elbow for the Y-piece connector, a catheter connector \varnothing 7 to simulate airway resistance and a 2 L breathing bag to simulate compliance.

CAUTION

Do not use overstretched or leaky breathing bags, or test lungs with excessively low compliance. These may generate artifacts during the Device Check.

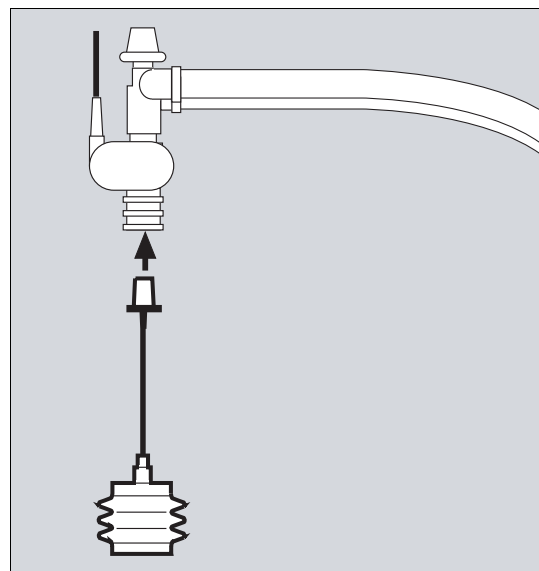


- Only connect adult test lung with the patient connection of the Y-piece when instructed to do so by *Evita XL*.

Preparing the pediatric test lung (part no. 8409742)

for use with the pediatric and neonatal breathing circuit

The test lung consists of a tracheal tube CH 12 to simulate airway resistance and a small bellows to simulate compliance.



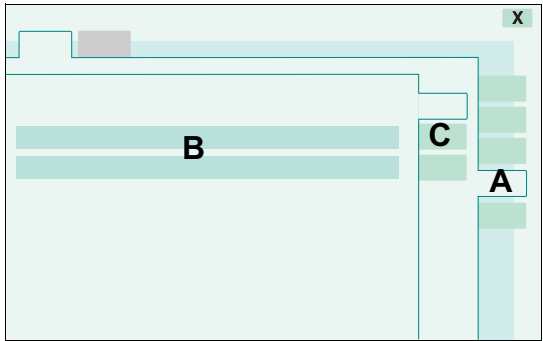
- Only insert connector in the Y-piece when instructed to do so by *Evita XL*.

Performing the Device Check

The Device Check can only be performed in standby mode.

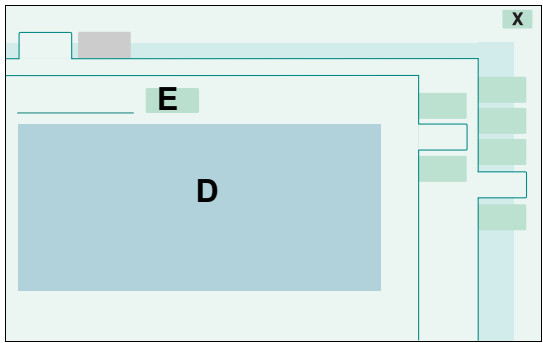
Prerequisite: The **Start / Standby** dialog window must be open.

- Touch the **Check** tab (A).



Evita XL displays the date and result (B) of the last Device Check and Airtight Check.

- Touch the **Device Check** tab (C).



Evita XL displays a list of the individual checks (D). The scope of this list depends on the options available on the ventilator.

No Device Check is possible while the ventilator is performing an automatic calibration of the flow sensor or O₂ sensor.

- In this case, wait until calibration is complete and restart Device Check.

Starting the Device Check

- Touch the **Check** button (E).

Evita XL performs the following test steps:

System

- Fit and passability of expiratory valve
- Fit of flow sensor
- Fit of neonatal flow sensor (optional)
- Type of humidification
- Completeness of breathing circuit
- Fit of temperature sensor

Function

- Test of the Air/O₂ switchover valve
- Test of the safety valve
- Gas supply
- Test of the back-up alarm (power failure alarm)

Sensors

- Calibration of the flow sensor
- Calibration of the neonatal flow sensor (optional)
- Calibration of the O₂ sensor
- Zero calibration of the CO₂ sensor (optional, see "Performing CO₂ zero calibration" on page 145)
- Position of the CO₂ sensor (optional)

Device Check procedure

Evita XL guides the user through each test step in a question-and-answer dialog format. Questions are displayed in the information field in the header bar and must be answered by touching the **Yes** or **No** buttons. The instructions for performing the test steps are displayed.

Evita XL indicates a correct result with a checkmark (✓). Faulty results are marked with **F**. Two dashes (- -) appear if a test step is not performed.

In the event of faulty results **F**:

- 1 Eliminate the cause of the problem.
- 2 Touch the **Repeat** button.

Test steps may be skipped by touching the **Next test** button if this is acceptable.

Test results

The test results obtained from the Device Check and the calibration and zero-calibration values of the sensors remain stored until the next calibration, even if the device is switched off in the meantime.

After the Device Check

- Perform an Airtight Check, see page 73.
- Test readiness for operation of DC power pack option, see page 74.

Performing the Airtight Check

The Airtight Check must be performed after the following actions:

- Device Check
- Change of the breathing circuit
- Change of breathing gas humidification

WARNING

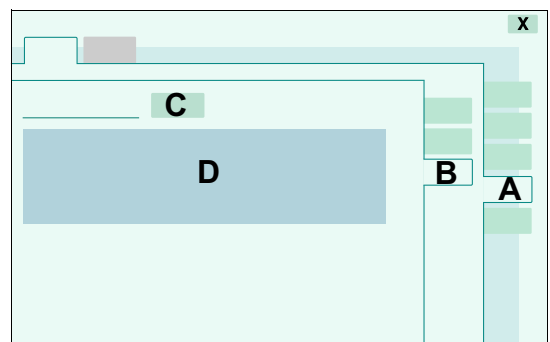
If the Airtight Check is not performed, this may lead to the following deviations:

- In the case of volume-controlled ventilation, the applied minute volume for the **▲ Ped. patient category** may be reduced by 10 %, as compliance of the breathing circuit is not correctly taken into account. For the **▲ Adult patient category**, the deviation is less.
- When ventilating with the NeoFlow option, the set PEEP may not be achieved because the resistance of the breathing circuit cannot be correctly taken into account. Without nebulization, the deviation may amount to up to 1 mbar (1 cmH₂O). With nebulization using a pneumatic medication nebulizer, the deviation may amount to up to 2 mbar (2 cmH₂O).
- Leakages in the breathing circuit are not detected.

The Airtight Check can only be performed in standby mode.

Prerequisite: The **Start / Standby** dialog window must be open.

- Touch the **Check** tab (A).
- Touch the **Airtight Check** tab (B).



Starting the Airtight Check

- Touch the **Check** button (C).

Evita XL calculates the following values (D)

- Leakage
- Compliance
- Inspiratory resistance
- Expiratory resistance

The current leakage flow is displayed continuously throughout the Airtight Check. A leakage flow of max. 300 mL/min at a pressure of 60 mbar (60 cmH₂O) is acceptable.

Evita XL uses the calculated breathing circuit compliance to automatically correct volume-controlled breaths, as well as values measured as part of flow monitoring, see "Flow measurement" on page 261.

NOTE

When changing the patient category or type of humidification, the device automatically resets the values for circuit compliance and resistance to the default values.

Testing the DC power pack option

For information on the DC power pack option, see chapter "Mains Power Supply / DC Power Supply" on page 111.

Changeover test to battery operation

- Pull out the power plug.

If the DC power pack option is available, *Evita XL* switches over to internal or external battery mode and does not interrupt operation.

If the DC power pack option is not available, the audible power failure alarm is triggered.

- Plug in the power plug again.

The device switches to mains operation. See "Behavior of *Evita XL* in the event of temporary interruption of power supply" on page 60.

After successful checking of readiness for operation, *Evita XL* is ready for use.