

**Dräger**

Evita 4 edition



# Evita 4/4edition – Short guide

The Evita 4 *edition* is identical to the Evita 4. Both devices have identical components, options and functionalities. This refers to all electrical, electronic and pneumatic components as well as to the trolley, the installed software and the available options. The terms "Evita 4" and "Evita 4 *edition*" are used synonymously.

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# Evita 4/4 edition – System overview

# Evita 4/4 edition – Short guide

This Evita 4/4 edition short guide is intended for informational purposes only. It is not a replacement or substitute for the Instructions for Use. The completion of this guide does not relieve you from reading and understanding the current versions of the instructions for use associated with the relevant device. It is also not a replacement for mandatory instructions or training courses.

# Evita 4/4 edition – System overview

## Control panel



# Evita 4/4 edition – System overview

## Back panel



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# Evita 4/4edition – Operating concept

# Evita 4/4 edition – Operating concept

## On-screen controls

The lower half of the screen contains touch-sensitive coloured screen keys. Touching these controls with the fingertip is equivalent to pressing key.

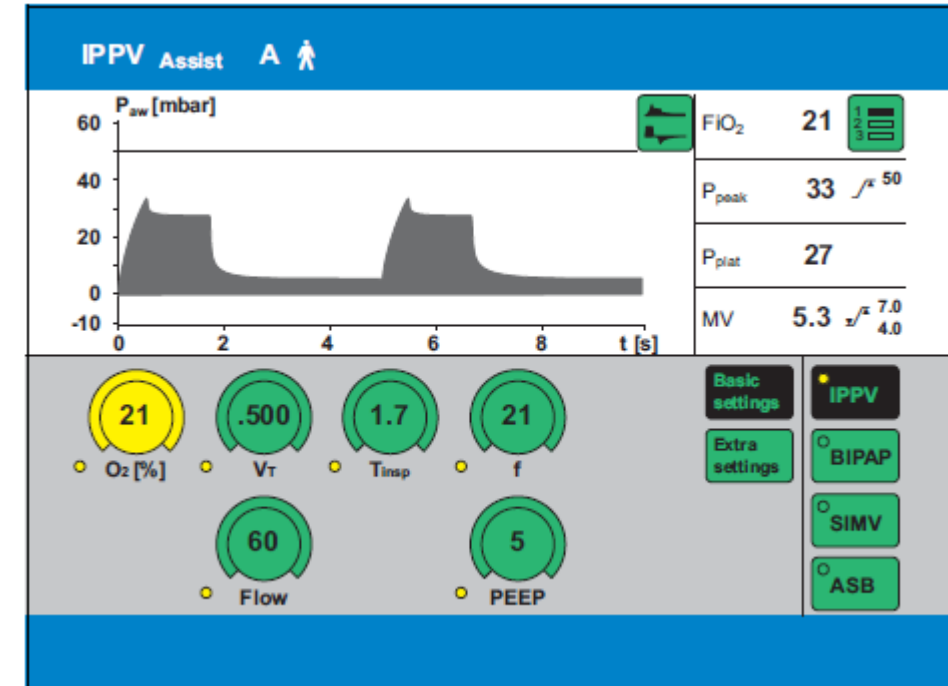
The colour displays the status of the "control" and "LEDs":

green = usable

white = not usable

yellow = adjust/confirm

black = effective function/display



BIPAP: trademark used under license  
In the USA BIPAP is called SIMV+



# Evita 4/4 edition – Operating concept

## Screen keys for selecting functions without confirmation

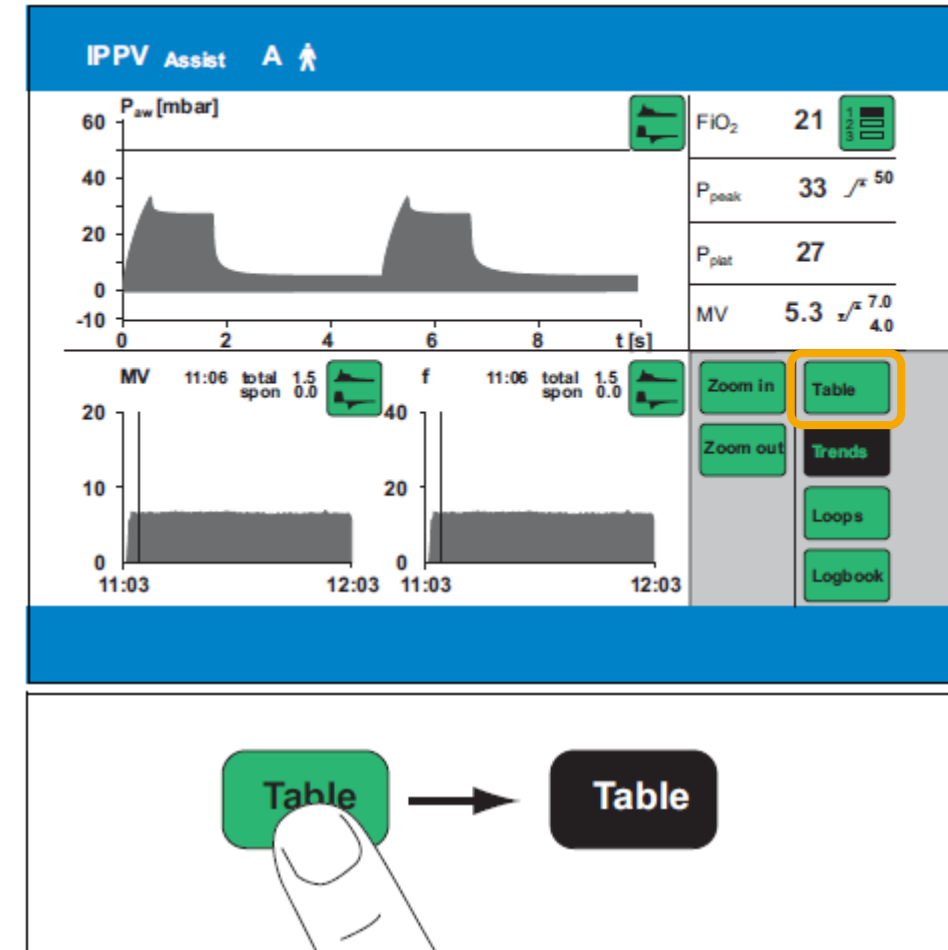
e. g. for:

- paging through the system on-screen
- for changing the menu
- for switching over displays

Example:

Press the **Table** key = select display.

The key goes black to show that the function is active.



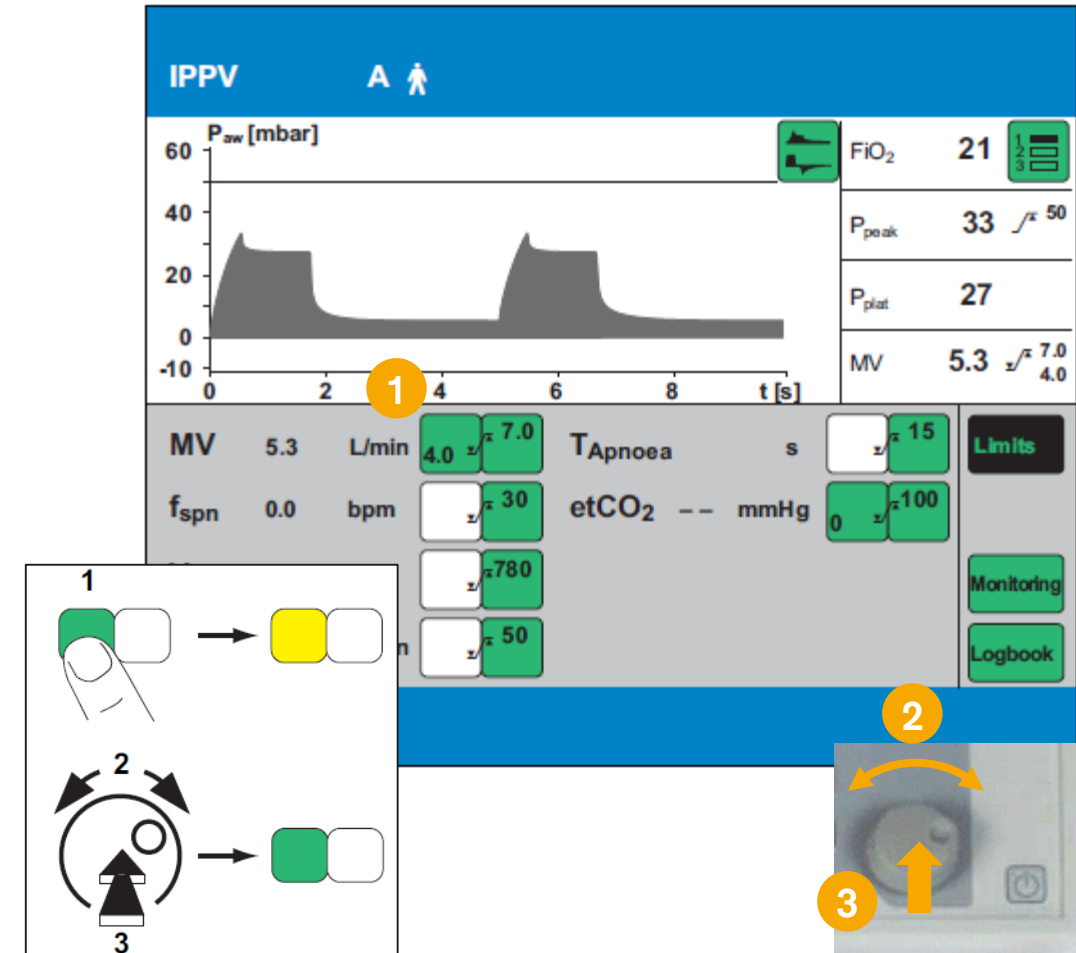
# Evita 4/4 edition – Operating concept

## Screen keys for function selection, adjustment and confirmation

1. Touch the relevant **screen key** for the alarm limits, e. g.: MV  
The colour changes from green to yellow = setting function is set
2. Turn the **rotary knob** = adjust the alarm limit  
The value is displayed in the screen key
3. Confirm by pressing the **rotary knob** = the colour changes from yellow to green, and the set alarm limit is confirmed and effective.

To cancel the setting:

- Touch the screen key again  
or
- touch another screen key



# Evita 4/4 edition – Operating concept

## Screen knobs for setting parameters

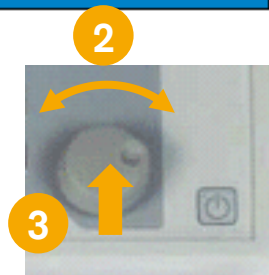
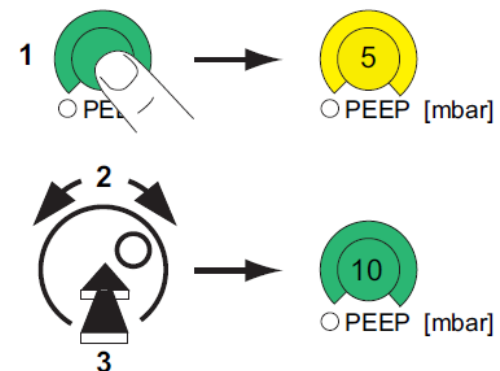
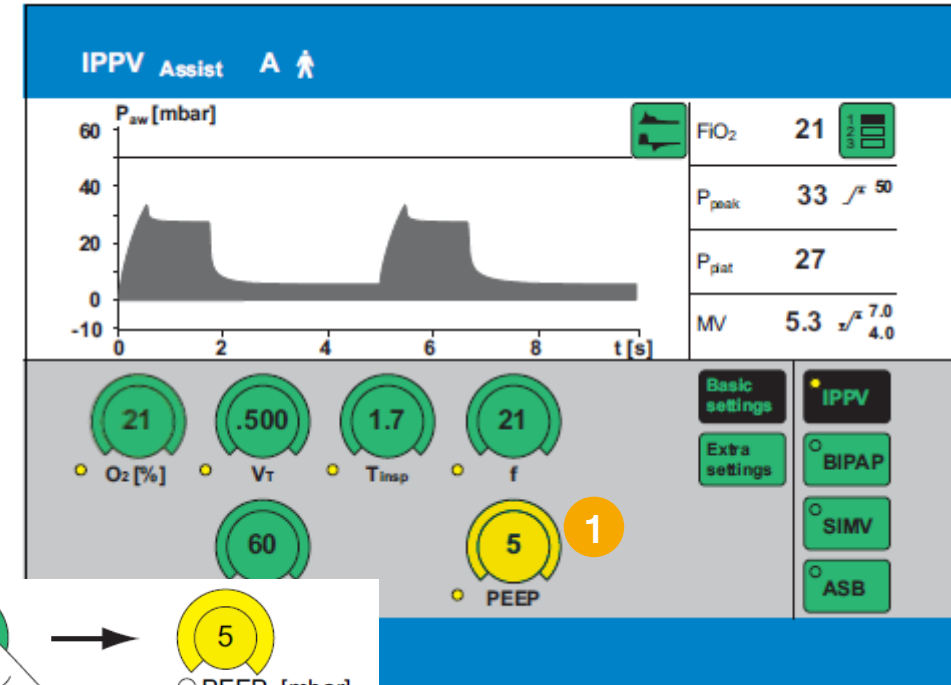
e. g. »PEEP« screen knob

1. Touch the »PEEP« screen key:  
It changes the colour from green to yellow = setting function selected
2. Turn the **rotary knob** to adjust the setting  
The value is displayed in the key
3. Confirm by pressing the **rotary knob**. The key changes the colour from yellow to green, and the setting is validated and takes effect

While pressure values, such as Pmax, are being set, they are displayed in the Paw (t) curve as a dashed black line.

To cancel the setting:

- Touch the screen key again  
or
- touch another screen key

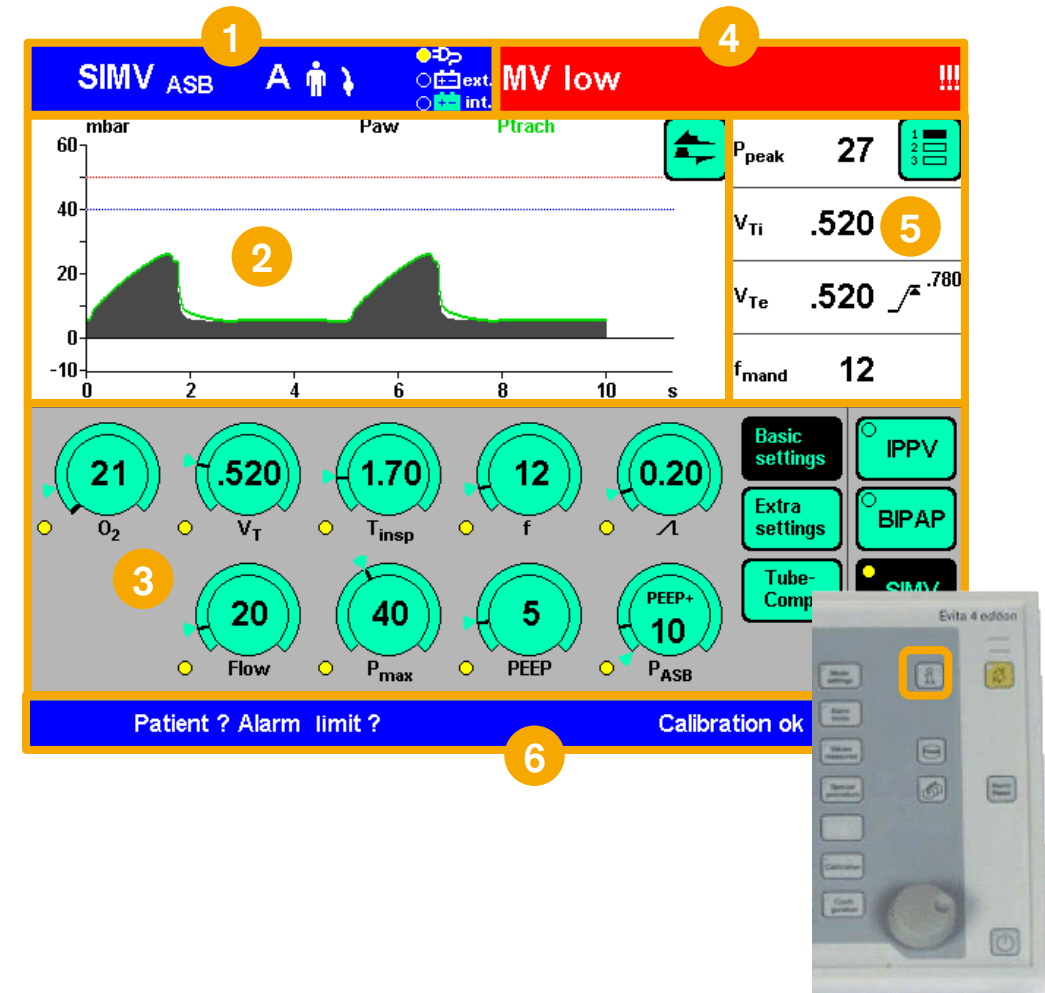


# Evita 4/4 edition – Operating concept

## Screen pages

All the screen pages have the same structure:

1. The **active ventilation mode** is displayed on the left-hand side of the top line (indicated by its abbreviation, e. g. SIMV);  
The **patient mode** is indicated by a symbol, e.g.: adults;  
In the case of spontaneous breathing activity by the patient, a lung symbol is briefly displayed as indicator.
2. **Curves** are displayed in the upper left-hand quarter of the screen.
3. The lower half of the screen shows **curves** and **measured values** or **screen keys** – depending which screen page is selected.
4. **Alarms** are displayed on the right of the top line.
5. **Measured values** are displayed in the upper right-hand quarter of the screen.
6. **Help functions** appear in the bottom line of the screen. On the right, Evita 4/4 edition provides setting instructions. On the left, Evita 4/4 edition provides information on the current status – this information can be accessed by pressing key »i«.



# Evita 4/4 edition – Operating concept

To select other **curves**, touch the key and touch the screen key corresponding to the desired curve

To select other **measured value combinations** touch the screen key repeatedly

To select another ventilation mode press **Mode settings**

To set the alarm limit press **Alarm limits**

For displaying the **ventilation status** press the key

The **Values measured** screen page displays the measured values in table format, the trend curve, loops, logbook.  
Tables, trend, loop and logbook are selected by the right-hand block of screen keys.

The **Special procedure** screen page displays and performs the special measuring procedures Intrinsic PEEP, Occlusion pressure P 0.1  
The desired special procedure is selected by the appropriate screen key on the right.

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## **Evita 4/4 edition – Preparation**

# Evita 4/4 edition – Preparation Language

## Before using for the first time set the language of the screen texts

To switch on the machine press **power switch** on the back panel until it clicks into position.

Evita 4/4 edition runs through its self-test procedure, wait until the 10-second test phase is complete.

After the self-test:

1. Switch Evita 4/4 edition to **Standby**: press the key for about 3 seconds
2. Switch off the standby alarm tone with the **Alarm Reset** key
3. Press the **Configuration** key.
  - Touch the **System Defaults** screen key.
  - Touch the **Language/Units** screen key.
    - Touch the **Language** key and select the desired language and confirm. The selected language is now active.



# Evita 4/4 edition – Preparation

## Device check

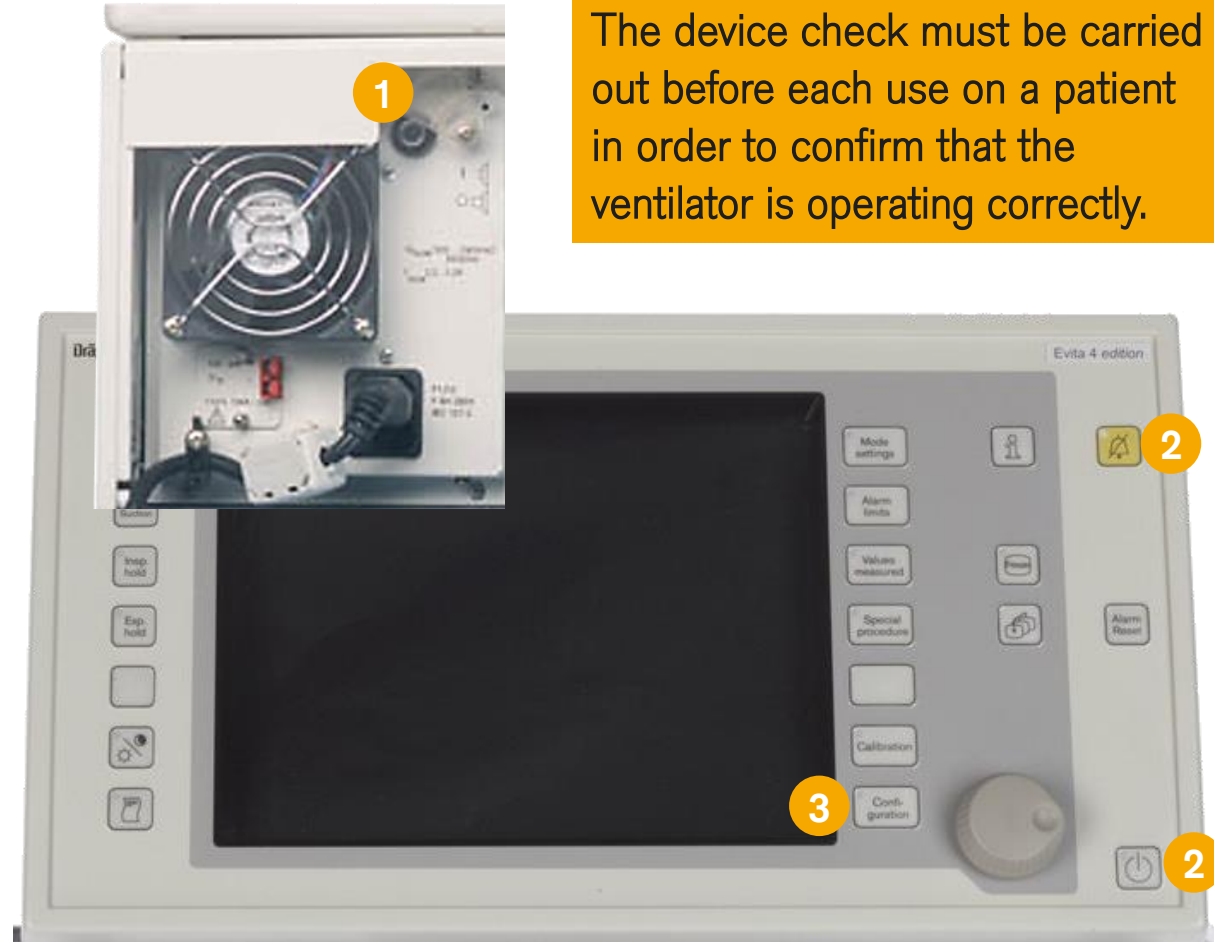
### Perform the Device check

Evita 4/4 edition supports this device check by means of a built-in checklist that guides the user through the test in a dialogue mode.

For testing the adult breathing circuit, the adult test lungs 8403201 or MP02400 can be used. The adult test lung must not be plugged into the patient connection of the Y-piece until requested by Evita 4/4 edition.

### Performing the device check:

1. Switch on the machine: press **power switch** on the back panel until it clicks into position. Evita 4/4 edition runs through its self-test procedure. Wait until the 10-second test phase has been completed.
2. Switch off the standby alarm tone with the **Alarm Reset** key.
3. After the self-test press the **Configuration** key and touch the **System Defaults** screen key.





# Evita 4/4 edition – Preparation

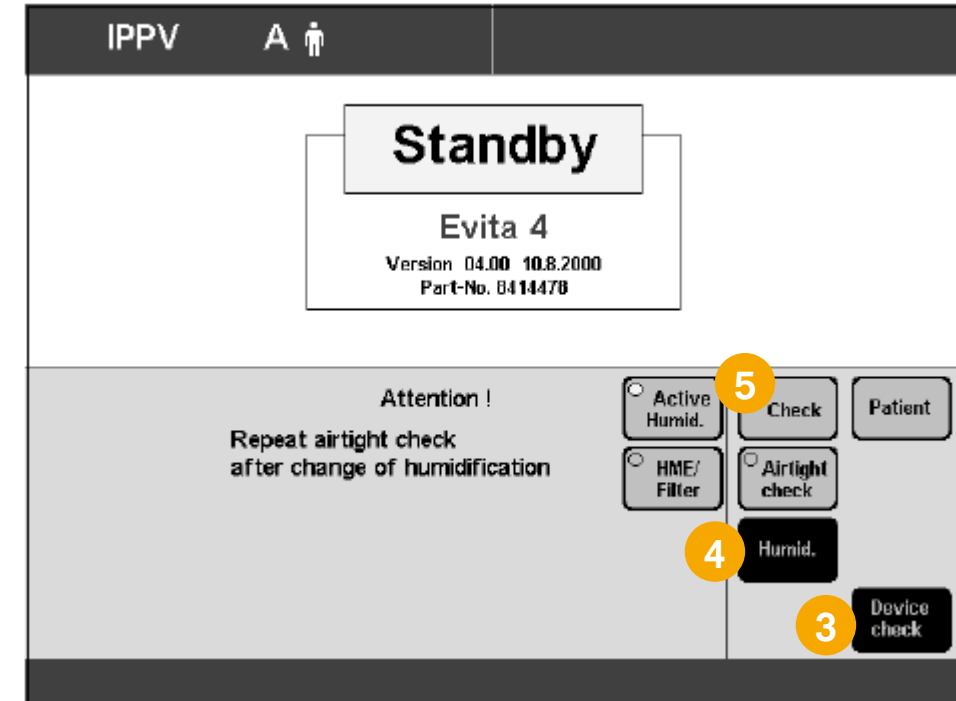
## Device check

### Perform the Device check

3. Touch the System **Device check** key.
4. Before starting the check, touch the **Humid.** key to enter the type of humidifier selected (Active humidifier or HME/Filter) and confirm the selection by pressing the **rotary knob**
5. To start the check procedure press the **Check** screen key.

Evita 4/4 edition starts running through the dialogue-oriented check. The check procedure is semi-automatic. During the device check, the user is instructed by Evita 4/4 edition to perform specific actions on the device.

After successful completion of the device check, and checking the optional DC power supply unit, Evita 4/4 edition is ready for operation.



# Evita 4/4 edition – Preparation

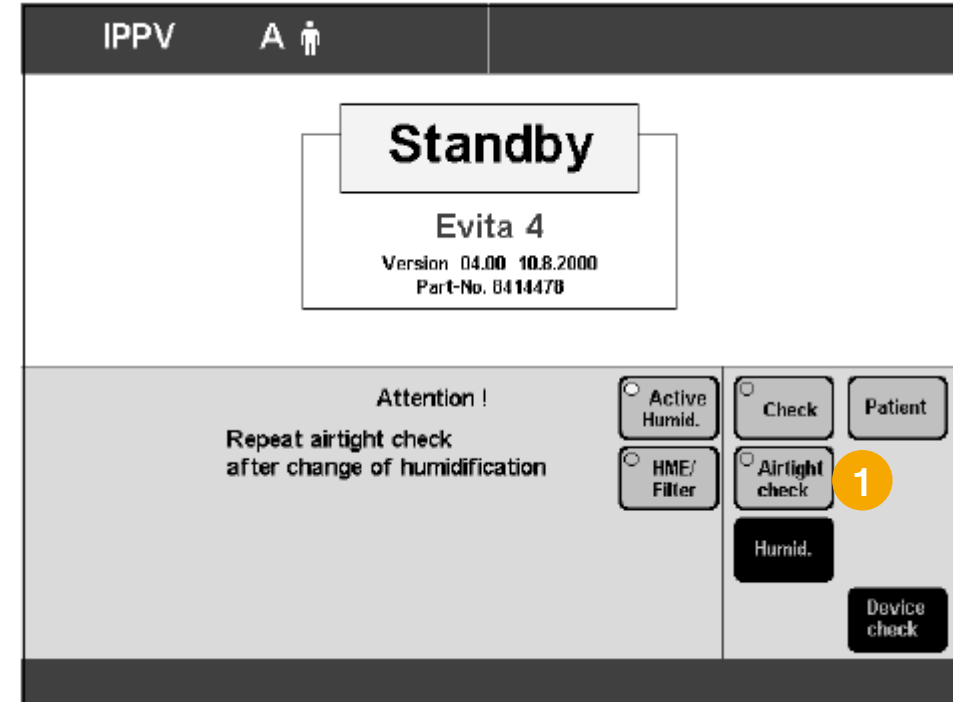
## Check hose system

### Checking the hose system for leaks

The hose system is tested for leaks during the device check but must also be monitored independently of the device check, e. g. after changing the hose system.

1. Touch the **Airtight check** screen key

When changing the patient mode, hose system or type of humidifier always perform the leak test!



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# Evita 4/4 edition – Starting up

# Evita 4/4 edition – Starting up

## Start ventilation

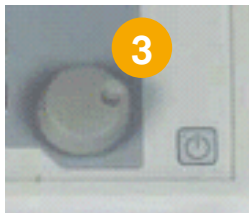
1. To select a patient mode touch the key for:
  - **Adults** = adult patients or
  - **Paed.** = children or
  - **Neo.** = neonates (when using the NeoFlow option) or
  - **prev. patient** = previous patientWith this information, Evita 4 defines the adjustment ranges and the start-up values of the ventilation parameters.

2. Touch the **Ideal Body Weight** key to enter the patient weight [kg]

3. Turn the **rotary knob** to adjust the setting and confirm by pressing the **rotary knob**

To start ventilation press the rotary knob again.

Evita 4/4 edition starts ventilation with the ventilation mode configured by the user. The machine is factory-set to **IPPV** (Intermittent Positive Pressure Ventilation). Evita 4/4 edition displays the **Mode settings** screen page. The user can check and correct the settings on the screen.

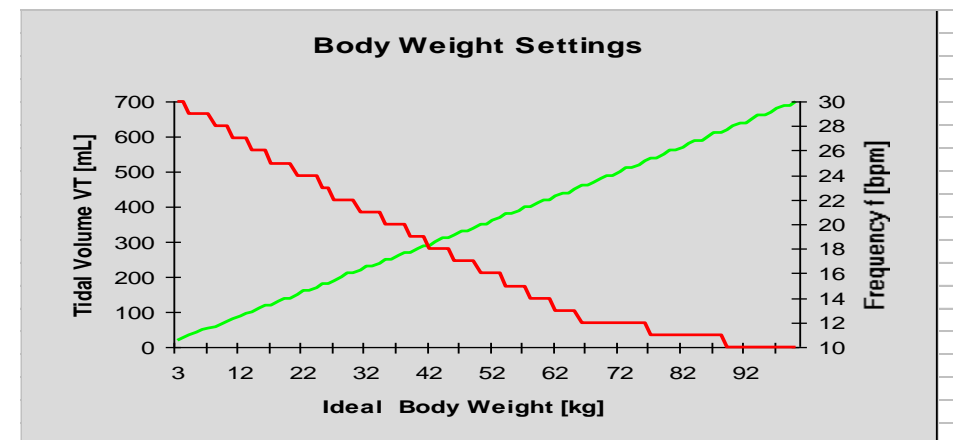
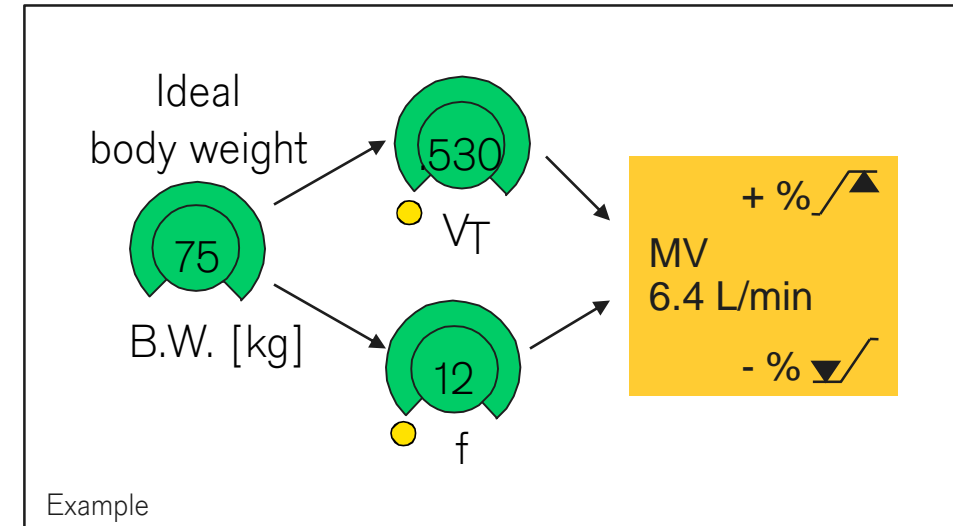


# Evita 4/4 edition – Starting up Ideal Body Weight (IBW)

## Ideal Body Weight – automatic adjustment

The following parameters are automatically set:

- $\text{FiO}_2$ , PEEP, I:E, etc. (pre-configured, independent of IBW)
- MV, VT, RR, Ti (based on IBW)
- MV alarm
  - upper alarm limit
  - target volume
  - lower alarm limit
- Additional alarm limits

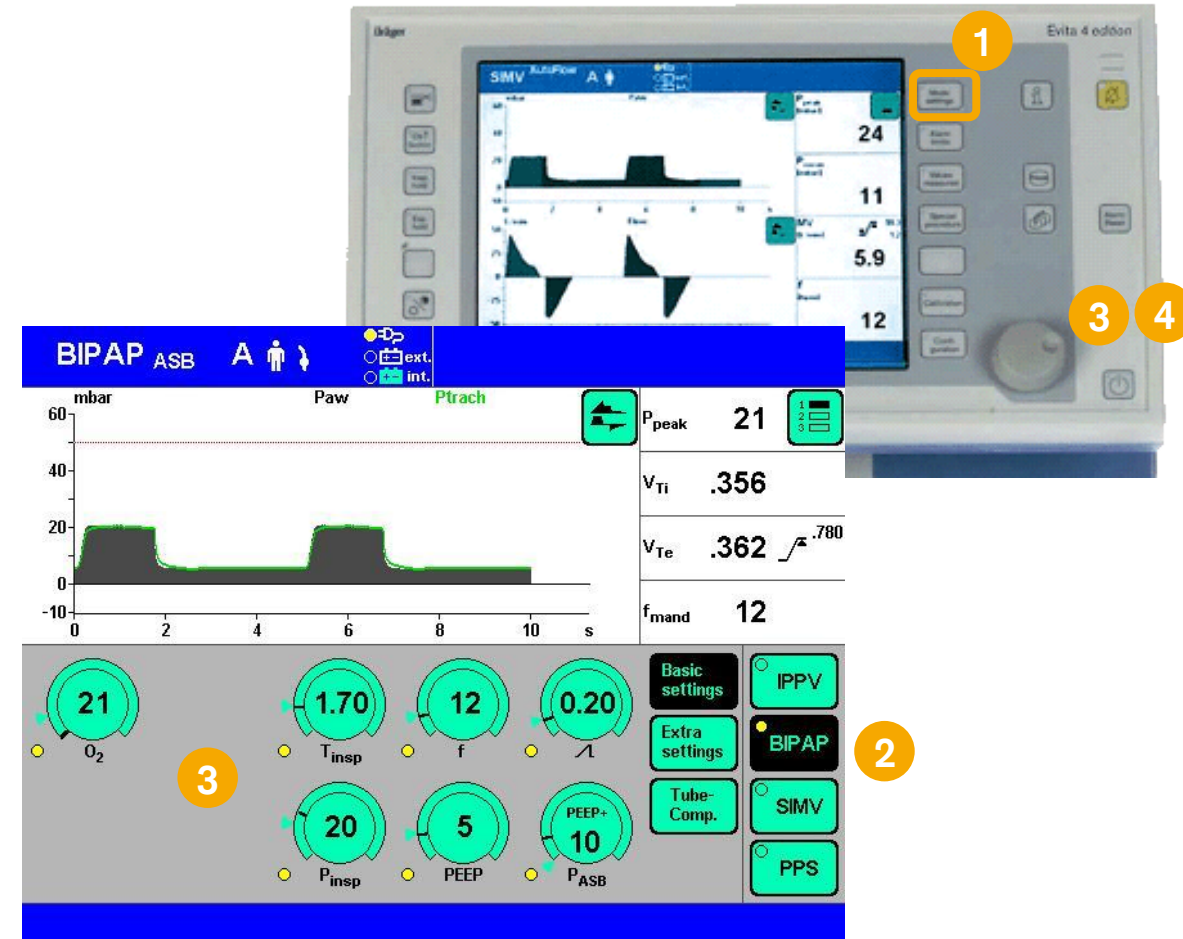


# Evita 4/4 edition – Starting up

## Change ventilation mode

### Change ventilation mode

1. To select another ventilation mode press Mode settings
2. Touch the relevant screen key
3. Adjust value by turning the rotary knob
4. Confirm the setting by pressing rotary knob.



04

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## Evita 4/4 edition – Alarms

# Evita 4/4 edition – Alarms

## Setting alarm limits

1. Press key **Alarm limits**  
The display screen displays all the adjustable alarm limits
2. Touch the relevant **screen key**; the key changes the colour from green to yellow.
3. Set the alarm limit by turning the **rotary knob**; confirm by pressing the **rotary knob**. The new alarm limit will now be effective.

The lower alarm limits do not have to be set for the airway pressure Paw, which is automatically coupled with the PEEP setting.

The alarm limits do not have to be set for the O<sub>2</sub> concentration. These limits are automatically coupled to the O<sub>2</sub> concentration setting.

The screenshot shows the Evita 4 edition monitor interface. The top part of the screen displays a graph of airway pressure (Paw) in mbar over time. Below the graph, there are several parameters and their values:

- IPPV Assist A (with a person icon)
- FiO<sub>2</sub> 21
- P<sub>peak</sub> 31 / 50
- P<sub>plat</sub> 22 / 50
- MV 5.89 / 8.00
- MV 5.89 L/min, 4.50 / 8.00
- T<sub>Apnoe</sub> 4 s, 15
- f<sub>spn</sub> 0 bpm, 30
- T 39 °C, 30 / 60
- V<sub>Ti</sub> .500 L, 750
- Paw [mbar] 31 mbar, 50

At the bottom of the screen, there are two buttons: "Limits" and "Monitoring". A legend at the bottom explains the symbols for lower and upper alarm limits:

- Lower alarm limit:  $\nabla / \wedge$
- Upper alarm limit:  $\wedge / \nabla$

Numbered callouts on the image indicate: 1. The 'Alarm limits' key on the physical device. 2. The 'Limits' button on the screen. 3. The rotary knob on the physical device.



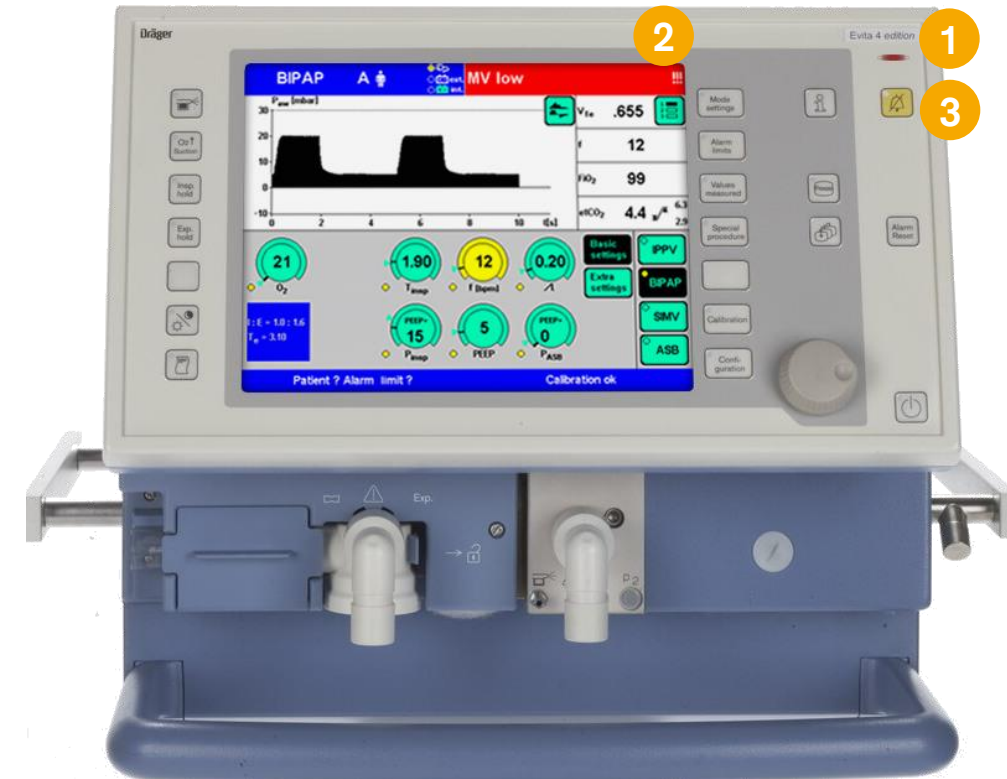
# Evita 4/4 edition – Alarms

## In the event of an alarm

1. The red or yellow lamp flashes.
2. The alarm message is displayed in the right-hand corner of the top line of the screen.

**Remedy the fault;** once the fault has been remedied, the alarm tone is switched off. Caution and advisory messages disappear automatically. Warning messages (!!!) are displayed in the colour of the status line and must be acknowledged:

3. Press Alarm Reset key.
4. The message is erased from the screen. However, it is stored in Evita 4/4 edition and can be displayed with the logbook function in the Alarm limits screen page



04

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## **Evita 4/4 edition – Cleaning, disinfection, and sterilization**

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

## Safety information on reprocessing

### WARNING

Risk of infection or damage to device

Clean, disinfect, and sterilize the device and accessories using validated processes.

### CAUTION

Risk of infection

If reusable medical devices are not reprocessed, there is an increased risk of infection to both hospital staff and patients.

Clean and disinfect reusable medical devices after each use.

Protective clothing, eye protection etc. must be worn.

## Observe the hospital hygiene regulations!

– Reprocess the device after every patient.

Recommendation:

– Change the breathing circuit and expiration valve every 24 hours. Keep replacement systems ready.

### CAUTION

The screen is made of Plexiglas. Do not treat with alcohol or agents containing alcohol. Danger of cracking.

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

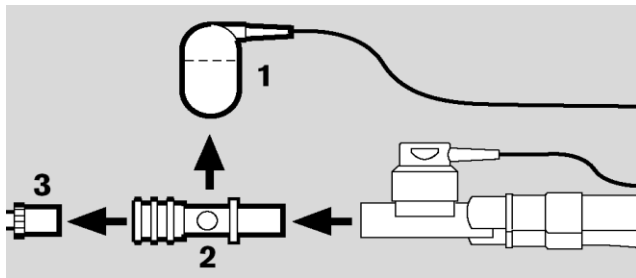
## Dismantling

Before dismantling

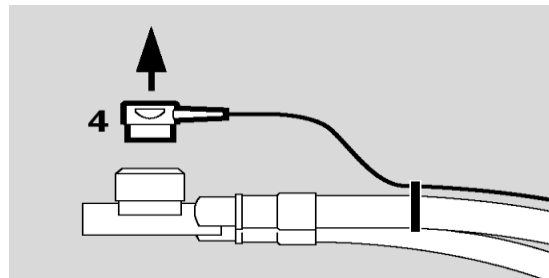
- Switch off the ventilator and humidifier, and remove their power plugs.
- Drain the water traps and ventilation hoses.
- Drain the water container of the humidifier.

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

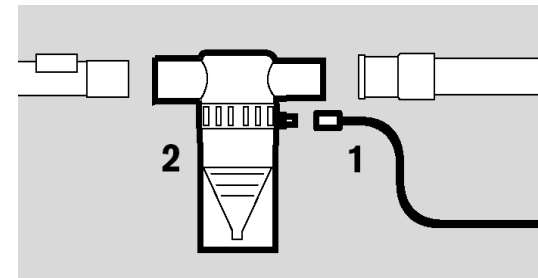
## Disassembling



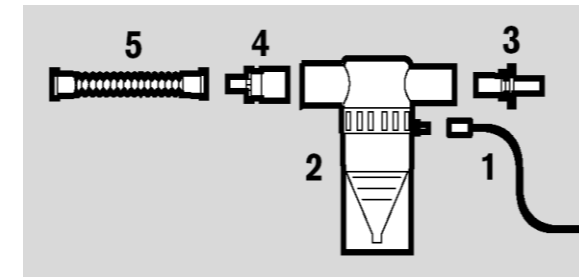
**CO<sub>2</sub> sensor (optional):** (1) Remove from the cuvette. Unplug the connector from the back of the unit.; (2) Remove the cuvette of the CO<sub>2</sub> sensor from the Y-piece.; (3) Remove the catheter cone from the cuvette; Prepare the CO<sub>2</sub> sensor for wipe disinfecting; Reprocess the reusable cuvette e. g. in a washer-disinfector (do not use rinse aid); The disposable cuvette cannot be reprocessed and must be disposed of.



**Temperature sensor:** (1) Remove from the Y-piece or from the mounting of breathing circuit; Do not pull the cable; Unplug the connector from the back of the Evita 4/4 edition; Prepare the temperature sensor for wipe disinfecting.



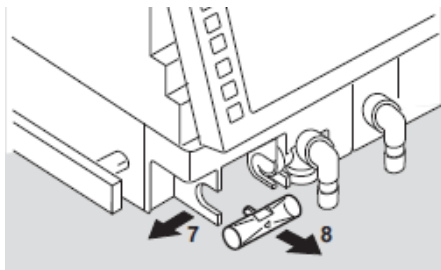
**Nebulizer (optional):** (1) Remove the nebuliser hose from the nebuliser and from the port on the device; (2) Remove the medication nebuliser from the adult breathing circuit.



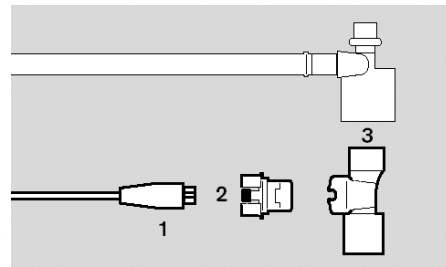
**Nebulizer (optional):** (1) Remove the nebuliser hose from the nebuliser and from the port on the device; (2) Dismantle the medication nebuliser from the paediatric hose system; (3) Remove the catheter connector from the inlet; (4) Remove adapter from the outlet. (5) Remove corrugated hose from the adapter; Dismantle and reprocess the medication nebuliser in accordance with its specific Instructions for Use. Reprocess the adapter parts in a washer-disinfector.

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

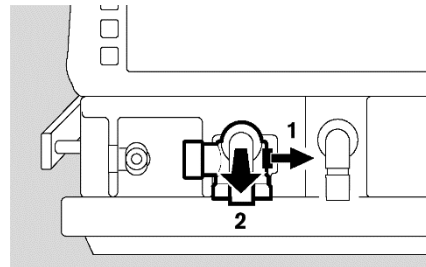
## Disassembling



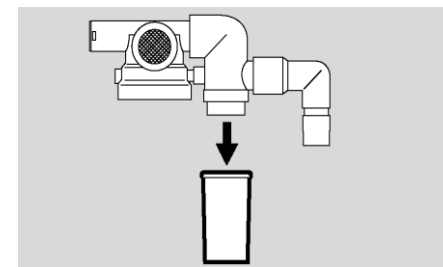
**Flow sensor:** Open flow sensor flap; (7) Push the flow sensor to the left as far as it will go and (8) pull out; Reprocess the flow sensor in accordance with its instructions for use; Inspect visually for residues of dried mucus, medication aerosols, or fluff, especially on the measuring wires and their pins. If there are visible deposits that were not removed during reprocessing, dispose of the flow sensor.



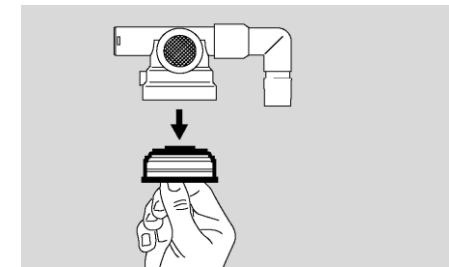
**Neonatal flow sensor:** Unplug sensor connector at the back of Evita 4/4 edition; Disconnect the flow sensor cable (1) from the neonatal flow sensor; Press the buttons (2) on both sides while pulling the flow sensor insert (3) out of its housing. Pull housing out of the Y-piece.



**Expiration valve:** Push the catch (1) to the right while at the same time pulling out the expiratory valve (2).



**Reusable expiration valve:** If using the reusable expiratory valve, remove flow sensor sleeve and the optional collection container from the water trap.



**Reusable expiration valve:** Only strip down the expiration valve if badly soiled: unscrew the stopper by hand and remove together with the diaphragm; Do not disassemble the expiration valve any further; The expiration valve is reprocessed in a washer-disinfector; Prepare the expiration valve for hot steam sterilization; Place the open expiration valve in the basket so that it cannot be damaged by other parts.

Dispose of disposable expiration valves in the same way as infectious special waste.

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

## Reprocessing procedures

### Classification of medical devices

For reprocessing, medical devices and their components are divided by type of application and the resulting risk:

- Uncritical medical devices: surfaces accessible to users and patients, e.g., device surfaces, cables
- Semicritical medical devices: parts conducting breathing gases, e.g., breathing hoses, masks

### Uncritical medical devices

Manual disinfection and simultaneous cleaning

Perform manual disinfection preferably with disinfectants based on aldehydes or quaternary ammonium compounds. For choosing the appropriate disinfectant, observe country-specific lists of disinfectants. Strictly observe the manufacturer's instructions for using disinfectants. The composition of disinfectants may change.

Procedure:

- Remove dirt immediately with a wipe soaked in disinfectant.
- Perform surface disinfection (scrub-and-wipe disinfection).
- After the contact time has elapsed, remove disinfectant residues.

### Semicritical medical devices

Manual cleaning

Perform manual cleaning preferably under running water and with commercially available cleaning agents (pH value  $\leq 12$ ).

Procedure:

- Wash off surface dirt under running water.
- Use cleaning agents in accordance with the manufacturer's instructions. Make sure that all surfaces and interior spaces which must be cleaned are reached. If necessary, use suitable brushes.
- Rinse items thoroughly under running water until cleaning agent residues are no longer discernible.
- Check items for visible dirt and damage. If necessary, repeat manual cleaning.

# Evita 4/4 edition – Cleaning, disinfection, and sterilization

## Reprocessing procedures

### Manual disinfection

Perform manual disinfection preferably with disinfectants based on aldehydes or quaternary ammonium compounds. For choosing the appropriate disinfectant, observe country-specific lists of disinfectant. Strictly observe the manufacturer's instructions for using disinfectants. The composition of disinfectants may change.

Procedure:

- Immerse items in disinfectant.
- After the contact time has elapsed, rinse items thoroughly under running water until disinfectant residues are no longer discernible.
- Check items for visible dirt and damage. If necessary, repeat manual disinfection.
- Thoroughly shake out residual water. Allow items to dry completely.

### Machine cleaning and disinfection

Perform machine cleaning and disinfection using a washer-disinfector in accordance with EN ISO 15883, preferably with a cart for anesthesia accessories and ventilation accessories.

Procedure:

- Observe instructions for use of the washer-disinfector.
- Securely position items in the basket. Make sure that all interior spaces and surfaces are completely flushed and that water can drain off freely.
- Use suitable cleaning agent.
- Select suitable program, preferably anesthesia program. Cleaning must be carried out at 40 °C to 60 °C (104 °F to 140 °F) for at least 5 min. Thermal disinfection must be carried out at 80 °C to 95 °C (176 °F to 203 °F) and with corresponding contact time.
- Carry out final rinsing with deionized water.
- Immediately remove items from the washer-disinfector.
- Check parts for visible dirt and damage. If necessary, repeat program or perform manual cleaning and disinfection.
- Allow items to dry thoroughly.

### Sterilization

Sterilization frees semicritical medical devices from living microorganisms and dries residual water in the items' interior spaces. Only sterilize cleaned and disinfected items.

For sterilization, use a vacuum steam sterilizer (in accordance with DIN EN 285), preferably with fractionated vacuum.



# Evita 4/4 edition – Reprocessing list

Applicable to non-infectious patients.

The reprocessing list contains approximate values only. The instructions of the hospital's infection control officer responsible have priority.

Components which can be reprocessed	Recommended reprocessing intervals	Pre-cleaning	Machine cleaning and disinfection	Manual cleaning	Manual disinfection	Sterilization
Ventilation hoses	Per patient/weekly	Yes	Yes	Possible	Possible	Yes
Y-pieces						
Water traps <sup>1)</sup>						
Collection jars						
Expiratory valve (reusable)	Per patient/weekly <sup>2)</sup>	Yes	Yes	Possible	Possible	Yes
Diaphragm						
Collection jar of the water trap						
Co2 sensor (optional)	Per patient	No	No	Outside	Outside <sup>3)</sup>	No
Reusable cuvette of the CO2 sensor	Per patient/if soiled	Yes	Yes <sup>4)</sup>	Yes	Yes	Yes
Test filter for CO2 sensor	If soiled	No	No	Yes	Yes <sup>5)</sup>	No
Temperature sensor	Per patient/weekly <sup>2)</sup>	No	No	Outside <sup>6)</sup>	Outside <sup>6)</sup>	Yes
Flow sensor	Per patient/weekly	According to the correspondence instruction for use				
Breathing gas humidifier	Per patient/weekly	According to the correspondence instruction for use				
Medication nebulizer <sup>1)</sup>	According to the correspondence instruction for use					
Parts for adapting	Per patient/weekly	Yes	Yes	Possible	Possible	Yes
Bacterial filter	According to the correspondence instruction for use					

1) Keep spring-loaded valves (water trap, pneumatic medication nebuliser) open during reprocessing.  
 2) Nebulisation may lead to increased deposits making it necessary to exchange the parts more often.  
 3) Wipe disinfection, e.g., with 70 % ethanol. Do not disinfect CO2 sensor by immersing.

4) Only cleaning agent, and no rinse aid, must be used for automatic cleaning of the cuvette. Otherwise, there is a risk of cracks developing.  
 5) Wipe disinfection, e.g., with 70 % ethanol. Avoid residues on the test filter.  
 6) For additional information, see "Manually reprocessing the breathing gas temperature sensor"

# Thank you

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