Evita XL

Initial Start Up
After ventilator has completed a self test, put the machine into Standby.
Select Standby on the touch screen and confirm by pressing the rotary dial
The alarm will continue to alarm until you press ‘Alarm Reset’ on the top of the touch screen this also
must then be confirmed by pressing the rotary dial.

Patient Selection: The Evita XL’s are set up to start in Adult patient category to change the category
select ‘New Patient’ on the touch screen and confirm by pressing the rotary dial
Now you can select any patient type. Adult, Pediatric, and Neonate then confirm selection by pressing
the rotary dial

Set up Ventilator with Mode and parameter settings. Once completed ventilation can be started by
selecting ‘Start’ on the touch screen then confirm selection by pressing the rotary dial

Using NeoFlow Sensor
The neo. Flowsensor can be used in both Neonatal and Pediatric patient categories. It is recommended
not to be used on patients more than 10kgs due to the sensitivity (increased risk of ‘auto cycling’) and
the restriction it will cause when using larger volumes and pressures.

Calibration: Select NeoFlow Sensor (touch screen)
Press Start
Follow instructions on screen top left

Deactivating NeoFlow Sensor: Select NeoFlow Sensor (touch screen)
Press OFF then confirm by pressing rotary dial

Modes of Ventilation

BIPAP (Biphasic Intermittent Positive Airway Pressure)
Is synchronised Pressure Control Ventilation. The machine allows the patient to spontaneously breath
at anytime in the breath cycle. This is achieved by giving more flow or opening up the exhalation
valve, which ever is needed to maintain the set Inspiratory Pressure and PEEP. ASB (pressure support)
can also be added to assist patient’s efforts during the expiratory phase.
Please Note: * When setting an ASB pressure it is set above PEEP. (eg ASB 5 cmH2O with
PEEP of 5 patient’s total pressure is 10)

SIMV AutoFlow
Is synchronised Volume Ventilation. Autoflow helps to reduce Peak Airway Pressures that are caused
by a fixed set flowrate. The flowrate automatically adjusts to deliver the set tidal volume using the
least amount of pressure. Any spontaneous breaths above the set Respiratory Rate can be pressure
supported with set ASB (pressure support).

CPAP/ASB (Assisted Spontaneous Breathing)
Is CPAP/Pressure Supported Ventilation. If there is no ASB set then CPAP mode. If ASB is set, then
when the patient triggers the ventilator the breath is supported. The patient determines there own
breath rate and inspiratory time.
Please Note: * When setting an ASB pressure it is set above PEEP. (eg ASB 5 with PEEP of 5
patient’s total pressure is 10)

* In Neonate Ventilation, if ASB Mode is selected then a Inspiratory Time is set.
This is a maximum you will allow the ventilator to be in inspiration. Adult maximum is 4
seconds and Pediatric is 1.5 seconds. These are non-adjustable.
**APRV (Airway Pressure Release Ventilation)**

Is pressure ventilation using inverse I:E ratio. You set long periods of high pressure with short periods of low pressure. The patient can spontaneously breath at anytime during the cycle. The inspiratory and expiratory pressure remains constant by adding flow or opening the exhalation valve. The concept behind the short period to drop to a low pressure is to help with CO$_2$ removal.

**BIPAP Assist**

Is synchronised Pressure Control Ventilation. If the patient triggers above the set breath rate, then every triggered breath is delivered with the same settings as the mandatory breath.

**Hard Key Controls**

**Alarm Silence** Can silence an alarm for 2 minutes

**Alarm Limits** Access to setting alarms

- **MV** (Minute Ventilation) High MV 0.1 – 41 L/min
  Low MV 0.01 – 40 L/min
- **$P_{aw}$** (Peak Airway Pressure) 10 – 100 mbar will discontinue inspiration and exhalation valve will open for exhalation
- **$V_T$** (Inspiratory Tidal Volume) 0.04 – 4 L will limit the volume being taken or delivered
- **$f_{spn}$** (spontaneous frequency) 5 – 120 bpm Monitors spontaneous breaths only
- **$T_{Apnoea}$** (Apnea Time) 5 – 60 seconds if reached ventilator will switch over to apnea ventilation
- **etCO$_2$** (End tidal CO$_2$) High etCO$_2$ 0.1 – 15 kPa
  Low etCO$_2$ 0 – 14.9 kPa

**Ventilator Settings** Access to Ventilator Modes and Parameter settings

Ventilation parameters: (depending on mode selected)

**Basic Settings:**

- **$O_2$** Oxygen % delivered
- **$T_{imp}$** (Inspiratory Time) seconds
- **$f$** (frequency) set breath rate
- **Ramp** (Pressure rise time) seconds - how quickly set Pinsp. or PASB is reached
- **$P_{imp}$** (Inspiratory Pressure) mbar
- **PEEP** (Positive End Expiratory Pressure) mbar
- **$\Delta P_{ASB}$** (Assisted Spontaneous Breathing Pressure) mbar - this is pressure support and must be added to the PEEP value for a total pressure reading.
- **$V_T$** (tidal volume) litres
- **$T_{HIGH}$** (Time at high pressure setting) seconds
- **$T_{LOW}$** (Time at low pressure setting) seconds
- **$P_{HIGH}$** (High Pressure) mbar
- **$P_{LOW}$** (Low Pressure) mbar

**Extra Settings:**

- **ATC** Automatic Tube Compensation
  Based on % of compensation and tube size the ventilator does a mathematical calculation to determine airway pressure at the tracheal level

**Apnea Ventilation**

Neonatal patient category: set frequency and pressure
Adult and paediatric patient category: set frequency and tidal volume

*Please Note: Once ventilator has switched to Apnea Ventilation, it will remain in Apnea Ventilation until you are able to ‘Alarm Reset’.*
Flow Trigger Sensitivity
Adjusted 0.3 - 15L/min

Sensor Parameter

Flow  Manual Calibration of flow sensor
      Automatically done once everyday
      Flow sensor measuring capabilities can be switched off if required

O₂  Manual calibration of O₂ cell
     Automatically done once everyday
     Oxygen sensor measuring capabilities can be switched off if required

CO₂  For calibrating CO₂ when eCO₂ is monitored via the ventilator
     End tidal measuring capabilities can be switched off if required

NeoFlow
For calibrating NeoFlow sensor when it is used (ideally only used on patients ≤ 10 kgs)
When selected follow instruction at the top left of the screen
NeoFlow sensor measuring capabilities can be switched off if required

System Setup
Allows access to the Evita XL configuration
All the Evita XL’s are configured the same
It also provides access to the service menu when repairs are made

Start/Standby
Provides access to standby if ventilator is ventilating
From Standby provides access to:

  New Patient  Selection of patient category (Neonatal, paediatric, or Adult)
  Tube/Mask   Selection of non-invasive ventilation via the mask option
  Humidifier  Selection for HME when used to humidify
  Check       Pre-use checks carried out prior to release of ventilator for patient use (These checks are done by the ventilator technicians)

Right hand on screen Controls

Main  If ventilating brings user to the screen which displays selected waveforms, mode of ventilation, set parameters and selected measured parameters

If in standby it brings the user to the main standby screen which has access to new patient, tube/mask, humidifier, and check

Data

Values

  Customised Table  Displays measured values in the order they appear on carevue and also displays current mode and settings
  Table 1 and Table 2  Displays measured values in Drager configuration and also displays current mode and settings

Logbook  Records all alarms and changes made to ventilator and also displays current mode and settings

Trend  Displays selected parameter trends
**Special procedure**

**Additional Function**

**Inspiration Hold**  
Can be held for a maximum of 15 seconds  
Insp. Hold key can be used as a manual breath button in all modes except CPAP without $\Delta P_{ASB}$. If used to activate a breath, the ventilation will be delivered with the current ventilation parameters.

**Expiration Hold**  
Can be held for a maximum of 15 seconds

**Nebuliser**  
This key will activate the nebuliser to function during the inspiratory phase only.

**Suction procedure**  
* Adult patient category- increases $F_{iO_2}$ to 100% for 3 minutes  
* Pediatric and Neonate patient category – increases $F_{iO_2}$ by 25% of set $F_{iO_2}$ for 3 minutes  
The ventilator waits for a disconnection. Once there is a disconnection then upon reconnection the ventilator continues for 2 minutes of increased oxygen.  
*Please note: If $< 4$ mbar of PEEP is set then the ventilator automatically applies 4 mbar when $F_{iO_2} \uparrow$  
Suction Key is depressed.

**Diagnostics**

- **P 0.1**  
  Can be an indicator of neuro-muscular breathing drive

- **PEEPi**  
  (intrinsic PEEP) Can measure pressure trapped in the lungs (eg. Air trapping, hyper-inflation)

- **NIF**  
  (Negative Inspiratory Force) Measures patient’s maximum inspiratory effort which can be used as an indicator for weaning and/or extubation

**NewFlow sensor** (See Sensor Parameters)

**Flow sensor** (See Sensor Parameters)

**$O_2$ Suction** (See Special Procedure – Additional Function)

**Insp. Hold** (See Special Procedure – Additional Function)