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 $C0_2$ 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_{Ti} (Inspiratory Tidal Volume) .004 – 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

etC0₂ (End tidal $C0_2$) High $etC0_2$ 0.1 – 15 kPa
Low $etC0_2$ 0 – 14.9 kPa

Ventilator Settings Access to Ventilator Modes and Parameter settings

Ventilation parameters: (depending on mode selected)

Basic Settings:

- **0_2** Oxygen % delivered
- **T_{insp}** (Inspiratory Time) seconds
- **f** (frequency) set breath rate
- **Ramp** (Pressure rise time) seconds - how quickly set Pinsp. or PASB is reached
- **P_{insp}** (Inspiratory Pressure) mbar
- **PEEP** (Positive End Expiratory Pressure) mbar
- **ΔP_{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

0_2 Manual calibration of 0_2 cell
Automatically done once everyday
Oxygen sensor measuring capabilities can be switched off if required

$C0_2$ For calibrating $C0_2$ when et$C0_2$ 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 ΔP_{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 0_2 to 100% for 3 minutes
*Pediatric and Neonate patient category – increases 0_2 by 25% of set $Fi0_2$ 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 0_2 ↑ 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)