

SELF-STUDY GUIDE

o_two controlled™
ventilation



e500 Transport Ventilator Ventilation Modes

E500 Ventilation Modes

The e500 ventilator is equipped with a number of ventilation modes to enable the healthcare provider to tailor the ventilator settings to the patient's specific respiratory requirements. Ventilation could be delivered invasively (ET tube) or non-invasively (mask).

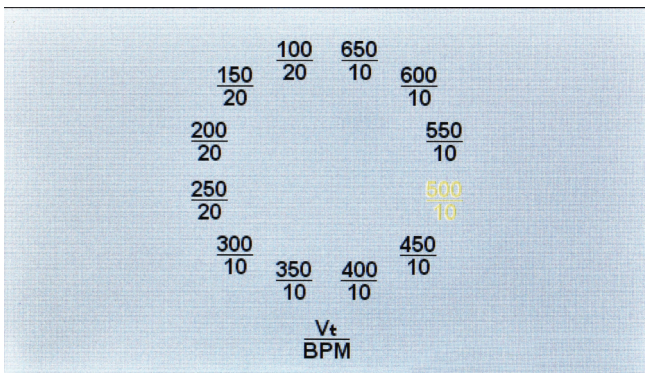
In all modes, should the patient demand more flow than set by Health care provider, he/she can inhale the required volume from ambient.

Each ventilation mode has a default setting (based on the initial patient size setting selection on startup) which will be initiated on selection of that specific ventilation mode if no changes to the settings are made.

Quick Start Mode

The default ventilation mode for “Quick Start” is SIMV.

There are 12 tidal volume/rate options on the startup screen:



Rotate the control knob to move the cursor over the required patient size select and confirm by pressing the control knob.

Note: If a patient size selection is not made and confirmed within 20 Seconds of start up, the e500 Ventilator will automatically commence ventilation in the 500/10 setting. Following startup it is easy to make setting changes to ventilation parameters, alarms or to select other ventilation modes.

The pre-set “Quick Start” defaults are based on the American Heart Association Resuscitation Guidelines recommended Tidal Volume/Ventilation Frequencies for the patient sizes indicated.

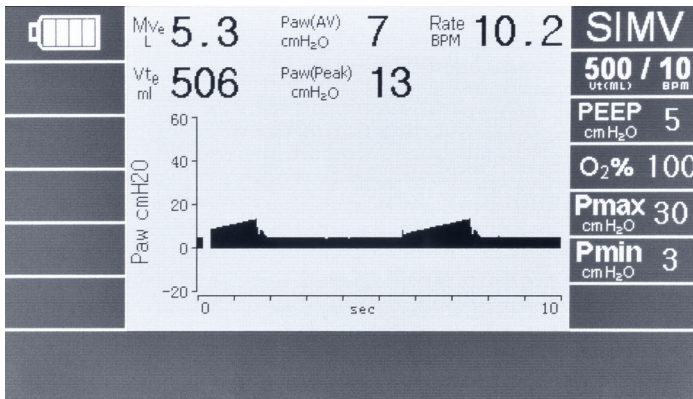
Synchronized Intermittent Mandatory Ventilation - (SIMV)

In SIMV mode the ventilator will deliver volume ventilation at the set Tidal Volume (Vt) and Rate (Figure 10).

The default trigger for this mode is 3 L/min. If trigger condition is met, the ventilator will deliver synchronized volume controlled mandatory ventilation.

In SIMV mode the selected breathing rate remains constant and the time of spontaneous breathing window will change if patient triggers the synchronized mandatory breath before the normal start of inhalation phase (beginning of Ti).

If no effort was detected during the trigger period, the ventilator will initiate mandatory ventilation at the end of trigger window. Should the patient demand more flow than set by user, he/she can withdraw the excess from ambient.



Screen display for SIMV mode

TABLE 2 - SIMV (Synchronized Intermittent Mandatory Ventilation)

PARAMETER	RANGE	DEFAULT
Tidal Volume/Rate	100/20,150/20, 200/20, 250/20, 300/10, 350/10, 400/10, 450/10, 500/10, 550/10, 600/10, 650/10	500/10 or selected by user during start-up
I:E ratio	1:2	1:2
PEEP	0, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20	5
Trig.	3 L/min	3
O₂ %	(100% or 60%)	100%
P max.	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 80	30
P min.	0, 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20	3
Manual	Refer to Manual and I-Hold section	ready

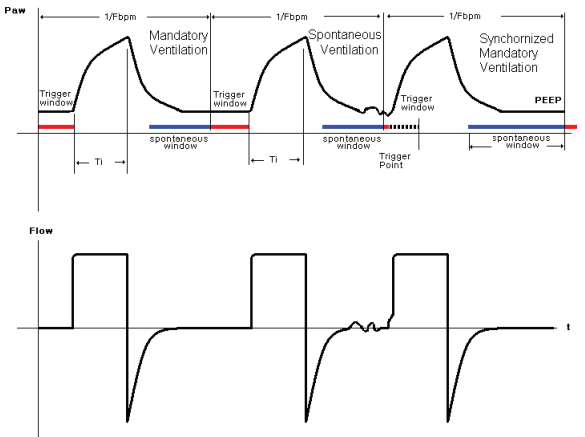


Figure 10 - SIMV waveform

CPAP (Continuous Positive Airway Pressure)

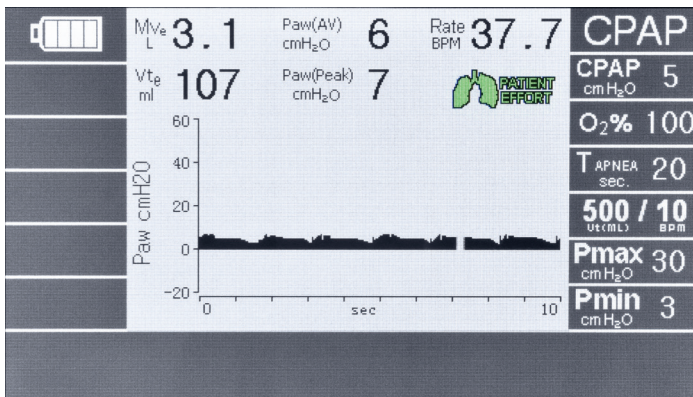
In CPAP mode, the ventilator will deliver a continuous flow rate to generate airway pressure and use the control valve to maintain CPAP levels (Figure 11).

Note: The default trigger in CPAP mode is pressure trigger (P) which is set at 2 cm H₂O below CPAP settings.

In this option the ventilator adjusts the amount of flow internally to maintain average airway pressure close to CPAP setting.

The CPAP mode is equipped with APNEA back up ventilation in which the ventilator switches to SIMV when the ventilator does not trigger patient's spontaneous breathing for a period of time (T APNEA) set by the user. The parameters of back up SIMV ventilation are settable by user.

The trigger changes from pressure trigger (P) to 3 L/min default flow trigger when the ventilator switches to APNEA back up.



Screen display for CPAP mode

TABLE 3 - Default Ventilation Setting- CPAP

PARAMETER	RANGE	DEFAULT
CPAP (cm H₂O)	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20	Carry over from PEEP of previous mode
P max.	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 80	Carry over from previous mode
P min.	0, 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20	Carry over from previous mode
O₂ %	(100% or 60%)	Carry over from previous mode
T APNEA (sec)	10, 15, 20, 25, 30, 40, 45, 50, 55, 60	20
Vt/f (A) (ml/BPM)	100/20,150/20, 200/20, 250/20, 300/10, 350/10,400/10, 450/10, 500/10, 600/10, 650/10	Carry over from previous mode

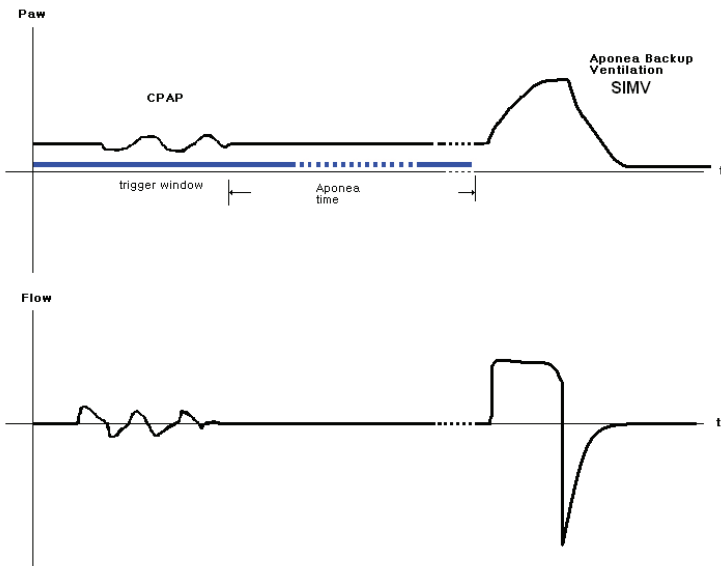


Figure 11 - SIMV waveform with pressure support

CPR Mode

The CPR mode consists of timed chest compression audible prompts coupled with automatically delivered breaths for both intubated and mask ventilated patients. There is also a visual animated display to guide the health care provider while performing CPR.

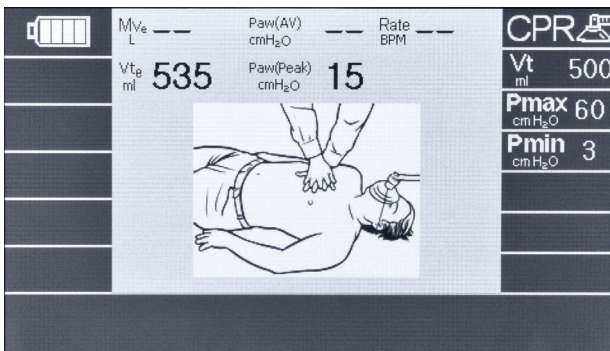
The CPR mode for masked ventilated patients is the default setting for this mode but changes can be made between the 2 sub-modes at any time.

The CPR mode for masked ventilated patients consists of 2 phases, chest compression and ventilation. 30 chest compressions over 18 seconds are synchronized with audible prompts and on screen visual animations, followed by two, 1 second, mandatory breaths within a 5 second ventilation phase. The ratio between chest compressions and ventilations is 30:2 (Figure 12a).

The CPR mode for intubated patients consists of continuous compressions indicated by an audible prompt and visual animation at a rate of 100 compressions per minute plus automatically delivered breath every 6 seconds (Figure 12b).

The ventilation in CPR mode is flow controlled ventilation. The tidal volume is user selectable. The O₂% is fixed at 100% oxygen during CRP mode.

The ventilator will automatically compensate up to 30% of the required tidal volume V_t in case a leak is detected. Beyond this limit, low Paw visual and audible alarms will be activated to warn rescuer to either re-apply the mask or increase the set tidal volume.



Screen display for CPAP mode

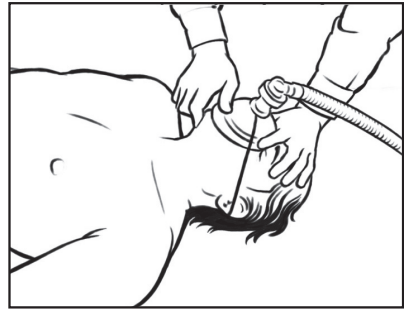
TABLE 4 - Default Ventilation Setting - CPR

PARAMETER	RANGE	DEFAULT
Tidal Volume	100,150, 200, 250, 300, 350,400, 450, 500, 550, 600, 650	Carry over from previous mode
P max.	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 80	Carry over from previous mode
P min.	0, 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20	Carry over from previous mode
O ₂ %	100%	100%

CPR FOR MASKED PATIENTS



On screen chest compressing animation



On screen ventilation animation

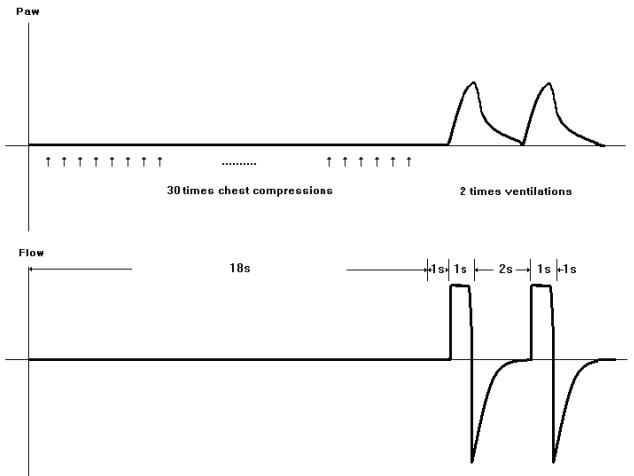
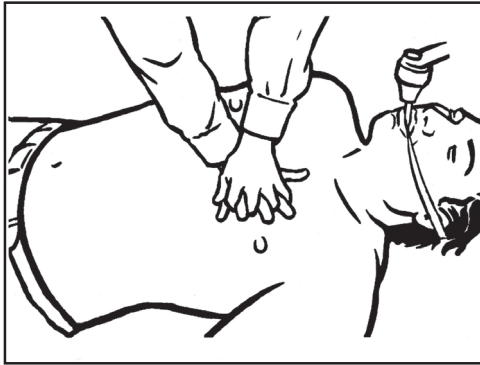


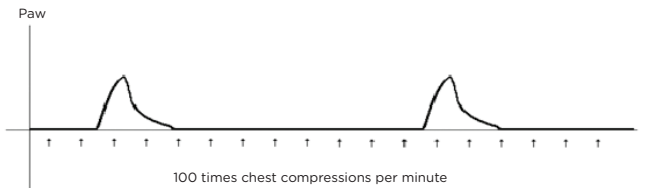
Figure 12.a - CPR waveform for masked patient



On screen intubated CPR animation

CPR FOR INTUBATED PATIENTS

Paw



Flow

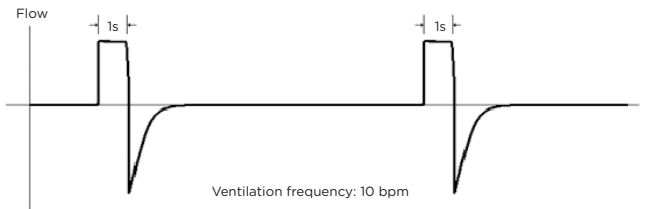


Figure 12.b - CPR waveform for intubated patient

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SERIAL Nº:	
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