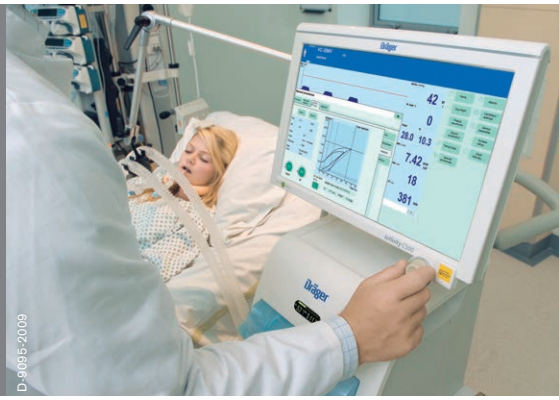
Evita Infinity® V500
Option Low Flow PV Loop

Protective ventilation – The way respiratory therapy is carried out has a significant influence on the patient's well being, the course of treatment and the associated costs. Appropriately tailored ventilation can help to shorten the need for mechanical ventilation[1)] and reduce mortality[2)].



LUNG RECRUITMENT AND SETTINGS OPTIMIZATION

The Low Flow PV Loop in the Evita Infinity® V500 serves as an automatic lung recruitment maneuver and can be used to optimize ventilator settings[7)]. You can set start pressure, maximum pressure, flow rate down to 2 l/min and maximum volume, to maintain complete control over the entire procedure.

EQUIVALENT TO GOLDEN STANDARD

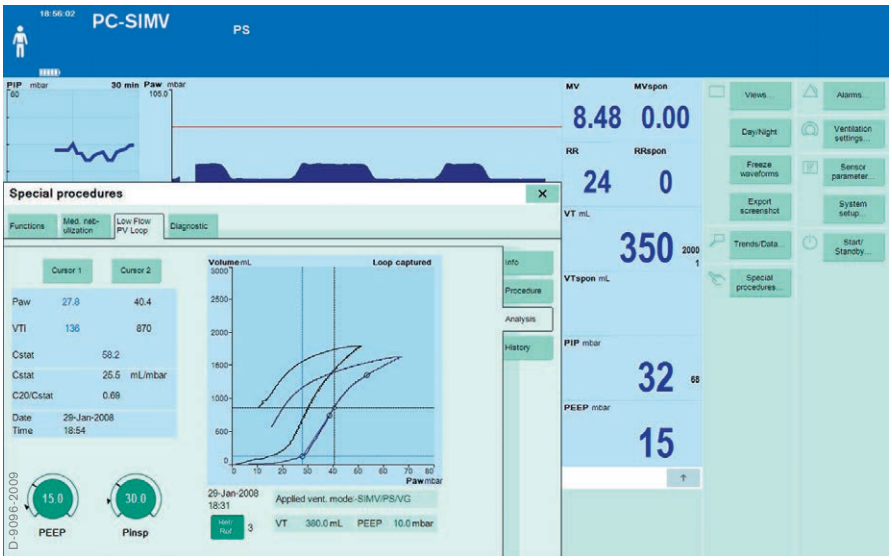
By slowly filling and emptying the lung with a constant flow, only the elastic properties of the respiratory system are recorded. The plotted quasi-static PV loop corresponds to the gold standard of a super syringe measurement[3)4)] – conveniently carried out with the same equipment at the bedside. Inflection points are plotted on the PV loop if it is sufficiently similar to a typical sigmoidal shape to avoid interobserver variability[5)].

GRAPHICAL IDENTIFICATION

Two cursors can be placed on the PV loop to individually measure pressure, volume and static compliance for both inspiratory and expiratory limb. The analysis of the PV loop may be helpful to:

- choose the right PEEP level to avoid cyclic recruitment and de-recruitment.
- adjust inspiratory pressure or tidal volume to avoid overstretching of alveoli.

While setting these directly on the maneuver page, graphical help lines and the displayed inflection points illustrate how the new setting fits to the lung properties recorded earlier.



VOLUME HISTORY

Up to ten loops can be stored as reference and individually measured with the cursors. As the ventilation settings prior to the start of the maneuver influence the PV loop's shape[6], the major settings at the start of the maneuver are recorded to serve as indication of the "volume history" of the lung.

TECHNICAL DATA

Low Flow PV Loop	
Low Flow Setting	2 to 15 l/min
Pstart	0 to PEEP
Vlimit	0 to 2.0 l
Plimit	0 to 80 mbar/cmH_2O

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2) The Acute Respiratory Distress Syndrome Network: Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the acute respiratory distress syndrome. N Engl J Med. 2000 May 4;342(18):1301-8.

3) Blanc Q, Sab JM, Philit F, Langevin B, Thouret JM, Noel P, Robert D, Guérin C. Inspiratory pressure-
volume curves obtained using automated low constant flow inflation and automated occlusion methods in ARDS patients with a new device. Intensive Care Med. 2002 Jul;28(7):990-4. Epub 2002 Jun 12.

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5) Harris RS, Hess DR, Venegas JG. An objective analysis of the pressure-volume curve in the acute respiratory distress syndrome. Am J Respir Crit Care Med. 2000 Feb;161(2 Pt 1):432-9.

6) Nishida T, Suchodolski K, Schettino GP, Sedeek K, Takeuch M, Kacmarek RM.
Peak volume history and peak pressure-volume curve pressures independently affect the shape of the pressure-volume curve of the respiratory system. Crit Care Med. 2004 Jun;32(6):1358-64.

7) Takeuchi M, Goddon S, Dolhnikoff M, Shimaoka M, Hess D, Amato M, Kacmarek R. Set Positive End-expiratory Pressure during Protective Ventilation Affects Lung Injury. Anesthesiology, V 97, No 3, Sep 2002

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