

Servo-u

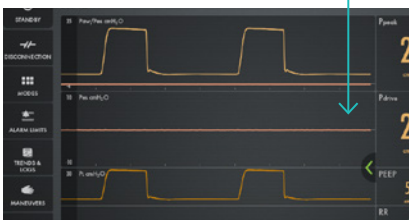
Transpulmonary pressure

Workflow

1. Insert the Y sensor module and connect the esophageal balloon catheter to the pressure connection line.



2. Check that all connections to the catheter have been tightly mounted. Open the 3-way port to air and check that the Pes waveform is on zero line.



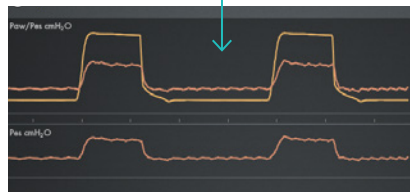
Attach the syringe and pull carefully out any air from the balloon.

3. Insert the esophageal balloon catheter and inflate the balloon according to instructions for use provided by the manufacturer.



Sidam Nutrivent Adult multifunction nasogastric catheter.

4. Verify cardiac oscillations on the Pes waveform which indicates an adequate position.

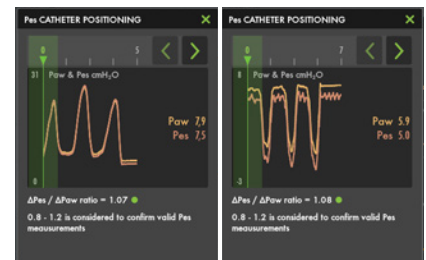


5. Open the Pes catheter positioning window. Tap START to initiate an expiratory hold, and wait for a beep. Perform gentle and slow chest compressions, or observe patients spontaneous breaths.



6. Check the result of the positive or negative pressure occlusion test. The Δ Pes / Δ Paw range within 0.8 – 1.2 is considered to be valid for accurate Pes measurement. The closer the value is to 1 the more precise the Pes monitoring will be.

Redo the test if results are not within the range, text on the screen explaining possible reasons why the test failed.



7. Check monitored PL parameters and make ventilatory changes or other interventions if needed.
8. Deflate the balloon when the monitoring period has been completed.

Tap and hold on the waveforms to access screen layout.

Note: An incorrectly placed or inflated esophageal balloon catheter will cause inaccurate Pes measurements.



Pes & PL values on the Servo-u screen



PL_{ei} – End-inspiratory transpulmonary pressure

The difference between end-inspiratory airway pressure and end-inspiratory esophageal pressure.

ΔP_{Pes} – Delta esophageal pressure

The largest positive esophageal pressure deviation during inspiration compared with the value at the end of expiration. For spontaneous breathing it is calculated as the largest negative pressure deviation for Pes during inspiration compared with the value at the end of expiration.

PL_{drive} – Transpulmonary driving pressure

The difference between the end-inspiratory transpulmonary pressure and the end-expiratory transpulmonary pressure at zero flow condition.

For spontaneous breathing it is calculated as the maximum inspiratory transpulmonary pressure minus the end-expiratory transpulmonary pressure.

PL_{ee} – End-expiratory transpulmonary pressure

The difference between PEEP and end-expiratory esophageal pressure.

Recommended values

Ventilated ARDS patients¹



1. Mauri T, Yoshida T, Bellani G et al Esophageal and transpulmonary pressure in the clinical setting: meaning, usefulness and perspectives. Intensive Care Med. 2016 Sep;42(9):1360-73

2. Bertoni et al. Monitoring Patient Respiratory Effort During Mechanical Ventilation: Lung and Diaphragm-Protective Ventilation. Critical Care (2020) 24:106