



CARESCAPE™ R860 Ventilator SBT Mode and Weaning Tools

Quick Reference Guide





Notice

The materials contained in this document are intended for educational purposes only. This document does not establish specifications, operating procedures or maintenance methods for any of the products referenced. Always refer to the official written materials (labeling) provided with the product for specifications, operating procedures and maintenance requirements.

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Note! Always refer to the User Reference Manual before use. Refer to the User Reference Manual for information on all warnings and precautions.

Any time a patient is mechanically ventilated, a clinician’s goal is to liberate them from the ventilator. Often times, clinicians are assessing if the condition which caused a patient to be mechanically ventilated has resolved, and if they have the ability to sustain spontaneous breathing without the assistance from the mechanical ventilator.¹ There have been a number of evidence-based clinical practice guidelines that have been published to help a clinician assess a patient’s ability to be liberated from the mechanical ventilator.¹ A spontaneous breathing trial (SBT) is a strong indicator to determine successful liberation from the ventilator.¹ Weaning parameters have also been used to predict a patient’s ability to be weaned and extubated.¹ The CARESCAPE R860 ventilator offers both a spontaneous breathing trial mode and lung mechanics tools to help assess a patient’s ability to be liberated from the ventilator.

Weaning Parameters Used to Predict Potential for Successful Ventilator Liberation¹

Predictor	Value
Evaluation of ventilatory drive <ul style="list-style-type: none"> • P0.1 	> -4 cm H ₂ O
Ventilatory muscle capabilities <ul style="list-style-type: none"> • Vital capacity • Maximum Inspiratory Pressure (MIP or NIF) 	> 10 mL/kg < -30 cm H ₂ O
Ventilatory performance <ul style="list-style-type: none"> • Minute ventilation • Maximum voluntary ventilation • Rapid shallow breathing index • Respiratory rate 	< 10 L/min > 3 times \dot{V}_E < 105 < 30/min

Performing a Spontaneous Breathing Trial



1. Select **Current Mode**.
 2. Select **SBT**.
 3. If desired, select the following features:
 - Tube Comp
 - Leak Comp
 - Trigger Comp
 4. Set the **Stop Criteria Limits**:
 - RR Low, RR High
 - MVexp Low, MVexp High
 - Apnea Time
 5. Select **Time** and select a duration.
 6. Select **Start SBT**.
 7. The SBT general message is displayed with the procedure countdown timer and progress bar.
- Note:** The progress bar fills in proportionally to the amount of time the SBT procedure has been running.
8. An alarm message designates successful completion of Spontaneous Breathing Trial.
 9. Ventilator resumes previous ventilation mode.

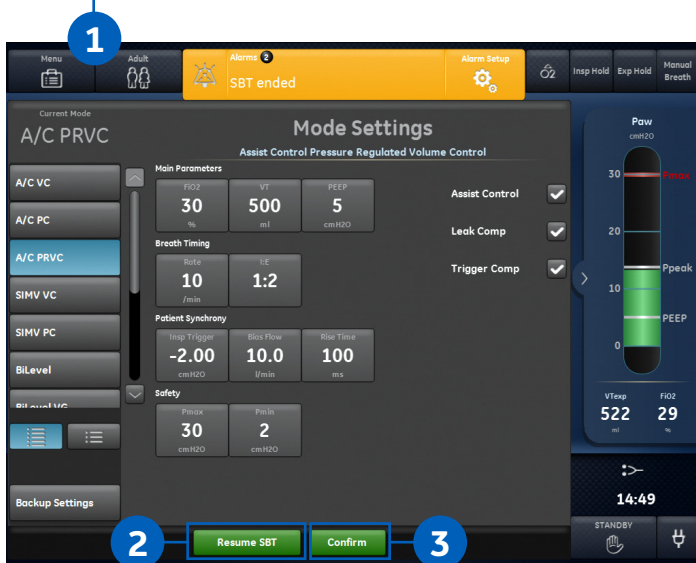


Resuming Ventilation After Stop Criteria Limits Have Been Reached



Note: When stop criteria limits are reached, you can either resume the Spontaneous Breathing Trial or return the patient to the previous ventilation mode. An alarm message designates that stop criteria limits are reached.

1. Select **Current Mode**.
2. Select **Resume SBT** to resume the Spontaneous Breathing Trial.
3. Or select **Confirm** to end the Spontaneous Breathing Trial and continue ventilation in the current ventilation mode.



Reviewing Spontaneous Breathing Trial Data



1. Scroll to **Clinical Decision Support Workspace**.
2. Select **SBT**.
3. If desired, select **Guide** and select one of the following data to plot on the timeline.
 - RR
 - MVexp
 - VTexp
 - RSBI
 - EtCO2
 - VCO2
4. Select the **SBT timeline cursor** and select a time period.
5. Position the **SBT cursor** to highlight the desired time period on the timeline.
6. Review the SBT trends data in the trends list.
7. Move the **SBT trends list cursor** as needed to view specific data points.

Lung Mechanics Used for Weaning



P0.1 Measurement

P0.1 is a respiratory measurement used to evaluate the patient's readiness to be weaned from the ventilator. P0.1 measures the airway occlusion pressure at 0.1 seconds after the beginning of an inspiratory effort against an occluded airway. P0.1 helps to assess respiratory drive and inspiratory effort.

Taking a P0.1 Measurement

1. Select **Menu**.
2. Select **Lung Mechanics**.
 - P0.1, Negative Inspiratory Force, and Vital Capacity will appear on the same menu.
3. Select **Start**, next to P0.1 procedure.
4. The P0.1 measurement will display along with a timestamp.
5. The P0.1 procedure will end when the measurement is complete or when **Stop** is selected. If the measurement is not available, a red X will display indicating a failure.





Negative Inspiratory Force (NIF)

Negative Inspiratory Force is a weaning measurement that is used to evaluate the patient's readiness to be weaned from the ventilator. NIF is used to determine the patient's ability to take a deep breath and to generate a cough strong enough to clear secretions.

Taking a NIF Measurement

1. Select **Menu**.
2. Select **Lung Mechanics**.
 - P0.1, Negative Inspiratory Force, and Vital Capacity will appear on the same menu.
3. Select **NIF Time**.
 - Use the Trim Knob to select a NIF time up to 30 seconds.
4. Instruct the patient to fully exhale.
5. Select **Start** and instruct the patient to fully inhale.
6. The most negative airway pressure is recorded and displayed along with a timestamp.
7. The procedure will end when the measurement is complete or when **Stop** is selected. If the measurement is not available, a red X will display indicating a failure.



Lung Mechanics Used for Weaning



Vital Capacity

Vital Capacity is the maximum volume of air exhaled after a maximum inhalation.² On the CARESCAPE R860 Ventilator, Vital Capacity is the measurement of a patient's largest exhaled tidal volume over a 30-second period. During the Vital Capacity measurement, Inspired Pressure (P_{insp}) and Pressure Support (PS) are set to zero. When the measurement is complete P_{insp} and PS return to the previous setting.

Taking a Vital Capacity Measurement

1. Select **Menu**.
2. Select **Lung Mechanics**.
 - P0.1, Negative Inspiratory Force, and Vital Capacity will appear on the same menu.
3. Select **Start**, next to Vital Capacity procedure.
4. Instruct the patient to fully inhale and exhale.
WARNING: *The patient will not be mechanically ventilated during the Vital Capacity procedure.*
5. During the procedure, inspired Tidal Volume (VT_{insp}) and expired Tidal Volume (VT_{exp}) for each breath will display in the splitscreen view.
6. When complete, the largest expired tidal volume is recorded and displayed along with a timestamp.
7. The procedure will end when the measurement is complete or when **Stop** is selected. If the measurement is not available, a red X will display indicating a failure.



Conclusion

Protocol-directed daily screenings can be an effective way to wean patients from the ventilator. The Weaning from Mechanical Ventilation Task Force recommends a spontaneous breathing trial as “the major diagnostic test to determine whether patients can be successfully extubated.”³ The CARESCAPE R860 ventilator provides the SBT Mode and Lung Mechanics measurements to help assess if a patient can be liberated from the ventilator.

References

1. Hess DR, Kacmarek RM. Chapter 16/Ventilator Liberation. In: Essentials of Mechanical Ventilation. 4th ed. New York, NY: McGraw-Hill Education; 2019:168-171.
2. Oakes DF. Chapter 8/Pulmonary Function Testing. In: Clinical Practitioner’s Pocket Guide to Respiratory Care. 3rd ed. Old Town, ME: Health Educator Publications; 1994:8-5.
3. Eur Respir J 2007; 29: 1033–1056 DOI: 10.1183/09031936. 00010206 Copyright_ERS Journals Ltd 2007.



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