

SAV2500 VENTILATOR OPERATIONS MANUAL



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PRODUCT PROFILE

Congratulations on your purchase of the SurgiVet SAV 2500 Anesthesia Ventilator! This ventilator is designed to be easy to use and extremely effective in the area of anesthesia ventilation.

The ventilator includes an external pressure relief control. The external pressure relief control is designed for small animal ventilation with safe limits built into the unit. SurgiVet is the only manufacturer to offer an external pressure relief control, which assures a safe patient pressure is always immediately available. These features make the SAV 2500 one of the safest ventilators being manufactured today.

Most electronically controlled ventilators are not functional for areas that may suffer electrical failures. This is not the case with the SAV 2500. The SurgiVet ventilator system comes standard with a manual breath button, pneumatically controlled for electrical failures or transport.

Three simple control knobs set flow rate, breaths-per-minute and length of inspiratory cycle. The ventilator can be made portable by adding an optional five base caster assembly or a universal ventilator mounting assembly.

If SurgiVet can be of any assistance with your ventilator or anesthesia needs, please call us TOLL FREE at (888) 745-6562 (U.S. Only).

ANESTHESIA VENTILATOR PARTS LIST

The **SAV 2500** Anesthesia Ventilator includes all parts as follows:

- 12" Ventilator Hose
- Bellows Assembly (already attached to ventilator)
- Test Lung
- 48" Supply Hose
- Transformer
- 22 mm x 15 mm Adapter (already attached to ventilator)
- 30 mm to 19 mm Purple Adapter (already attached to ventilator)
- 3' Oxygen Hose with DISS Female Ends
- Oxygen Y-piece for connection into oxygen system

CAUTIONS AND WARNINGS

PLEASE READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING YOUR ANESTHESIA VENTILATOR.

A TEST LUNG HAS BEEN PROVIDED TO ALLOW THE USER THE OPPORTUNITY TO BECOME FAMILIAR WITH ALL CONTROLS AND FUNCTIONS OF THIS VENTILATOR.

- Incorrect use of this equipment can cause serious patient injury. It is the responsibility of the user to understand all functions and the need to maintain this equipment to manufacturer's specifications and directions.
- SurgiVet shall not be responsible for any unauthorized repair or modifications to the equipment or accessories or damages caused by unauthorized opening of the ventilator.
- DO NOT USE THIS UNIT IN THE PRESENCE OF FLAMMABLE ANESTHETICS.
- ELECTRIC SHOCK HAZARD IF VENTILATOR CASE IS REMOVED.
- Anesthesia machines used with ventilators must be checked regularly and be **LEAK FREE**. A leaking machine can cause the ventilator not to perform to specifications and represents possible patient injury.
- The ventilator is designed to be powered with medical grade oxygen or medical grade air.
- The ventilator is for **VETERINARY USE ONLY**.

*****IF COMPRESSED AIR IS GOING TO BE USED, PLEASE CONTACT SURGIVET PRIOR TO USE AT (888) 745-6562. (U.S. Only)*****

BECOMING FAMILIAR WITH THE VENTILATOR CONTROLS:

Important Features You Should Know

SAFETY PRESSURE RELIEF – Located on back panel

Acts as a safety feature that allows individual pressure limits to be set with each patient. When closed it is pre-set at 60 cm H₂O (± 5 cm H₂O). It may be opened if very delicate controls of pressures are required such as ventilating an extremely small patient. Note: Normal operational position for this valve is closed.

BREATH/MINUTE CONTROL

Increases or decreases the number of breaths per minute (4-40 BPM).

INSPIRATORY TIME CONTROL

Increases or decreases the length of the inspiratory cycle and allows you to meet varying ventilatory demands. Less Time = Less Volume.

INSPIRATORY FLOW CONTROL

Controls the delivered volume to the patient.

ON/OFF SWITCH

Powers ventilator on or off.

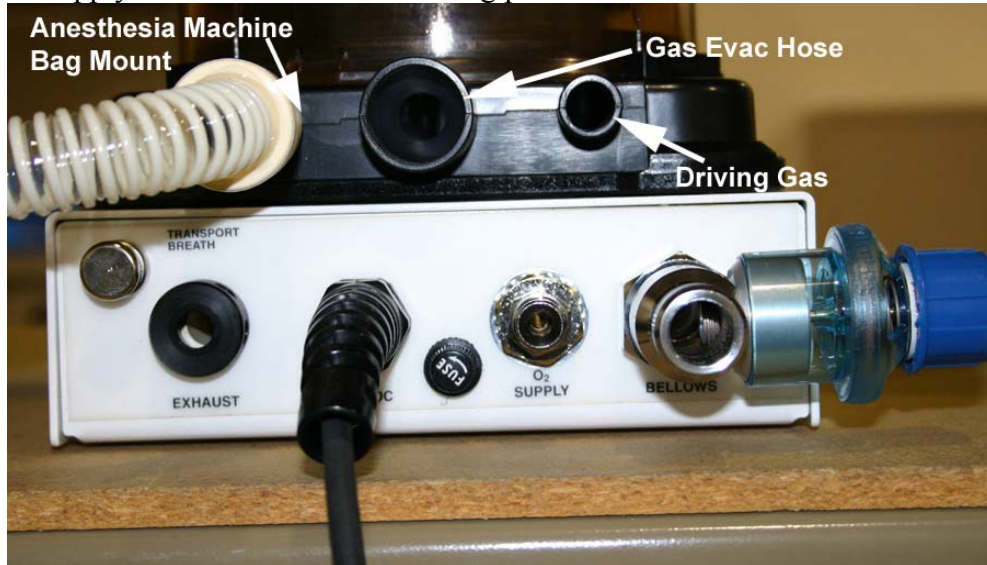
PNEUMATIC MANUAL BREATH – (Located on the back panel, labeled “Transport Breath”)

Electricity is not needed for this function. This allows the ventilator to deliver a breath if electrical failure occurs or you wish to give a manual breath. **CAUTION:** **This will allow stacked breaths if used when electronic controls are active.**

SETTING UP THE VENTILATOR

Verify that all hoses and adapters are present. Locate the bellows assembly on the ventilator. Refer to the Ohmeda Bellows Assembly Manual to familiarize yourself with the connections and operation of the bellows assembly.

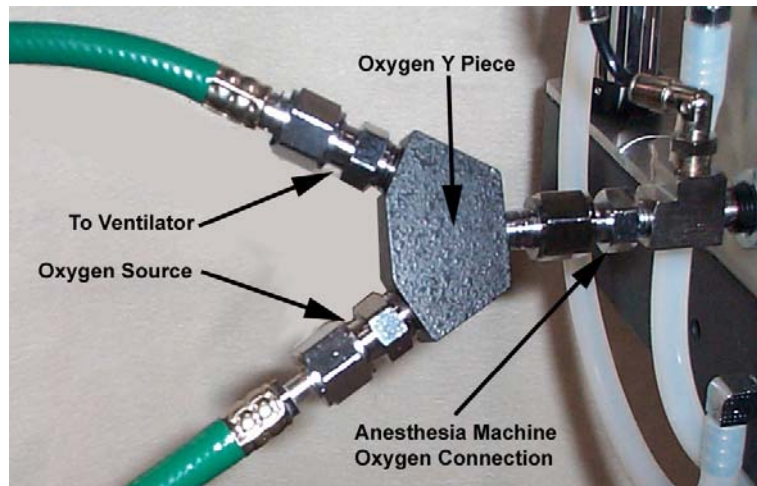
Locate and remove the breathing bag from the anesthesia machine. Take one end of the 48" supply hose and attach it to the bag port of the anesthesia machine.



Connect the other end of the 48" supply hose to the back port on the ventilator bellows labeled 22mm.

Take the 12" ventilator hose and connect one end to the back port labeled Bellows and the other end to the reducing adapter on the back of bellows port labeled 17mm.

Attach the 3' green oxygen supply hose to the port labeled O2 supply on the back of the ventilator. Connect the other end of the oxygen hose to an oxygen supply that delivers 50-55 PSI. If using the Oxygen Y piece that was provided with your ventilator you can configure your machine and ventilator as shown in the following picture.



Connect the ventilator power cord to the power converter. Plug the converter into an electrical outlet.

Attach any standard rebreathing circuit (minus the breathing bag) on the anesthesia machine. Attach Test Lung to the patient end of the breathing circuit.

Attach 19mm evac hose to the Gas Evac Port on the bellows assembly and attach other end of 19mm evac hose to a proper evacuation system, either active or passive.

Turn the pop-off valve on the anesthesia machine to the closed position.

SLOWLY turn the oxygen supply on.

SurgiVet suggests performing a leak test on the anesthesia machine before attempting to use the ventilator. If there are any questions on performing a leak test, call SurgiVet technical support at (888)745-6562 (U.S. Only).

THE ANESTHESIA VENTILATOR IS NOW READY FOR TESTING.

TESTING THE VENTILATOR

When all hoses are attached, oxygen is on, and test lung connected, you are now ready to familiarize yourself with the ventilator and simulate having a patient attached to the anesthesia machine.

TO BEGIN TESTING:

1. Turn the Flow Control valve counter clockwise, "Off". (DO NOT OVER TIGHTEN).
2. Turn the Inspiratory Control knob mark to 12:00 o'clock (center).
3. Set the Rate (Breaths per minute) at 10.
4. Close the pop-off valve on the anesthesia machine.
5. Slightly press the flush valve on the anesthesia machine until the bellows reach the top of the bellows housing. (When using ascending bellows, it is necessary to first raise the bellows before turning on the ventilator).
6. Adjust your flowmeter on your anesthesia machine to 1.5 LPM.
7. Turn the **ON/OFF** switch **ON**.
8. The ventilator will now start cycling, but will not inflate the test lung. Slowly open the flow control valve $\frac{1}{4}$ turn at a time between each breath until the test lung starts to inflate, resembling an actual lung. This flow should resemble a natural inhalation cycle from a healthy patient. You will now be delivering 10 breaths per minute with an adequate flow.

9. Most users recommend ventilating to pressure or CO₂ and not to volume. If you choose to ventilate to volume, you must remember that a certain amount of volume is lost to circuit compliance. If the bellows show a volume of 400 ml being delivered, you must realize that you may only be delivering 300 to 320 ml.

Should you decide to ventilate to pressure, most anesthesiologists recommend a pressure of 15 to 18 cm H₂O as read from the patient pressure manometer located on the anesthesia machine. If you are satisfied with the flow and you want to increase patient pressure, simply increase the Inspiratory Time. If you want to decrease the patient pressure, decrease the Inspiratory Time. This is a unique feature of the SurgiVet ventilator.

NOTE: You can adjust volume by time or by flow.

10. Practice adjusting the ventilator flow rate and time until you gain the confidence and knowledge of general operation.

SPECIAL NOTE:

The SAV 2500 is equipped with an external patient pressure relief valve located on the back right corner of the ventilator. The purpose of this valve is to allow the user to limit the maximum ventilatory pressure delivered to the patient. We recommend only using this relief valve in cases where you feel extremely sensitive to ventilation.



This valve can be adjusted by holding the manual breath button down continuously. NOTE: Make sure the unit is set up like it was for testing. You will notice that the pressure will relieve at approximately 60 cm H₂O. Start opening the relief valve and observe the pressure manometer. When the manometer falls to the desired maximum pressure stop adjusting the valve and decrease the inspiratory time. Regardless of the situation, the maximum ventilatory pressure should not exceed the limits you have adjusted with the relief valve.

CAUTION:

If the flow rate is too high, or the inspiratory cycle is too long, you may create a high circuit pressure. Watch the Patient Pressure Manometer on your anesthesia machine and be prepared to adjust these controls accordingly so dangerous pressures will not be obtained.

Remember, you want the mechanical breath as close to the patient's natural breath as possible. This is always the goal of ventilation.

When you have the ventilator set where you feel comfortable and the settings in the start-up positions, begin adjusting the Inspiratory Time control to the left and then to the right. Notice how the length of the inspiratory cycle is increased or decreased.

NOTE: Again, always monitor the Patient Pressure Manometer on your anesthesia machine and be prepared to adjust the settings on the ventilator controls.

Practice with the ventilator using the Test Lung until you feel confident, the more you understand about the ventilator, the more you will be able to do with this system.

Always make sure your anesthesia machine is pressure tested and leak free. A leaking machine will alter the performance of the ventilator.

GENERAL OPERATION

With the ventilator attached to the patient and the Inspiratory Time and Breaths/Minute at the desired position, you only need to start turning the Inspiratory flow until the desired volume is reached. REMEMBER TO TURN THE INSPIRATORY FLOW CONTROL SLOWLY UNTIL YOU BECOME FAMILIAR WITH THE VENTILATOR.

The breaths-per-minute can be changed by simply turning the Breaths/Minute control. Either increase or decrease the number of breaths.

CLEANING AND STERILIZATION

The ventilator supply hose does come in contact with the breathing gases and should be cleaned on a regular basis. USE ONLY A MILD SOAP WHEN CLEANING.

The bellows housing and bellows will need to be disassembled and cleaned on a regular basis.

Please refer to the Ohmeda Bellows Assembly Manual for cleaning and sterilization of bellows for the ventilator.

DO NOT USE ALCOHOL.

DO NOT USE STEAM STERILIZATION.

DO NOT USE ETO.

*****IF THERE ARE ANY PROBLEMS OR CONCERNS WITH THE EQUIPMENT
OR ACCESSORIES PLEASE CALL SURGIVET TOLLFREE AT
(888) 745-6562. (U.S. Only)*****

MAINTENANCE OF DIAPHRAGM

The diaphragm located under the bellows should be checked on a routine basis to make sure it seals properly. A small black rubber gasket on the bottom side of the diaphragm should be inspected and replaced if needed.

NOTE: Be sure not to pinch the diaphragm when placing the rim back on the housing.