

**STANDARD OPERATING PROCEDURES**  
**DIVISION OF COMPARATIVE MEDICINE**  
**UNIVERSITY OF SOUTH FLORIDA**

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**TITLE:** **SurgiVet™ Anesthesia Machine**  
**SCOPE:** Research and Animal Care Personnel,  
**RESPONSIBILITY:** Facility Manager, Technical Staff, and Professional & Administrative Staff  
**PURPOSE:** To Outline the Proper Procedures for Use and Maintenance of Veterinary Inhalation Anesthesia Equipment

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**I. PURPOSE**

1. Isoflurane inhalation provides safe general anesthesia for a variety of animal species. This procedure outlines the use and maintenance of a veterinary inhalation anesthesia machine that incorporates an oxygen flowmeter, anesthetic vaporizer, and a circle re-breathing system with carbon dioxide absorption.

**II. RESPONSIBILITY**

1. The Facility Manager ensures that equipment is appropriately cleaned, maintained in good working order, and available for research personnel as requested.
2. The veterinary professional, administrative, and managerial staff ensure that all research and technical staff using this equipment are adequately trained and experienced to perform veterinary inhalant general anesthesia.
3. The veterinary and technical staff operating this equipment ensure this procedure and the manufacturer's operation manual are followed.

**III. EQUIPMENT SET- UP**

1. Check that machine is connected to oxygen supply that is turned on and has an adequate supply at 50-55 psi.
2. Check the operation of the flow meter.
3. Check that vaporizer is adequately filled.
4. Check breathing circuit configuration and connections.
5. Check the scavenger system. Charcoal canisters should be weighed and replaced as recommended by the manufacturer.
6. Check ventilator function and connections.
7. Pressure test the machine as described in the operation manual.

8. Clean machine surfaces, hoses, circuits, and masks/nosecones with chlorhexidine solution (1 ounce to 1 gallon water).

#### **IV. EQUIPMENT USE**

1. **Set the vaporizer dial (e.g., 3%) and oxygen flow rate for induction.**
2. **Oxygen flow rate** during anesthetic induction is at least twice that calculated for anesthetic maintenance, and should approximate 100 ml/kg/min.
  - a. Minimum oxygen flow rates for anesthetic maintenance using a semi-closed re-breathing circuit are approximately 500 ml/min for patients <50 lbs. body weight, and 100 ml/min for each additional 10 lbs, up to 100 lbs. body weight.
  - b. Minimal metabolic oxygen requirements are met with oxygen flow rates of 10 ml/kg/min.
3. Upon completion of anesthetic event, disconnect the patient from the circuit, turn off the vaporizer, and flush the system with oxygen. Turn off the oxygen flow meter. Turn the oxygen tanks off.

#### **V. MAINTENANCE**

1. Prior to each use:
  - a. Pressure test-
    1. Place bag & circuit on machine with pop-off valve closed and flow meter off.
    2. Occlude the circuit with finger and fill bag using the O<sub>2</sub> flush (or if placed on ventilator, use a bag as the patient's lung).
    3. Take pressure to 25cm of water or until bag is full.
    4. Pressure should hold, if not check for leaks. Leaks can be detected by using soapy water at circuit connections, valves, hoses, and bag.
    5. Set flowmeter at 200cc if pressure is still falling; the leak must be found.
  - b. Inspect circuits, hoses, breathing bags and connections.
  - c. Clean unit surfaces, circuits, hoses, breathing bags, and masks/nosecones prior to survival surgery with dilute chlorhexidine solution (1 ounce chlorhexidine to 1 gallon of water) and as often as needed to maintain cleanliness.
  - d. Inspect and change carbon dioxide absorbent canisters as needed. Absorber canisters are cleaned with mild soapy water and dried. Gasket is wiped with alcohol and dried.
  - e. Inspect and dry inhalation/exhalation valves; check domes for cracks.
  - f. Check pop-off valve to ensure smooth opening/closing (see manual for details on removal and cleaning).
  - g. Inspect gaskets (absorber & dome cap).
  - h. Inspect, clean, and dry flutter disks.
  - i. Ensure smooth flow and complete shut-off of flowmeter and needle valve (see manual for details on removal and cleaning).
  - j. Check pressure manometer to ensure needle is at "0" mark. Adjust if needed.

2. Monthly when unit is in-service or prior to use if frequency of use is less than monthly.
  - a. Ventilator supply hose, bellows housing, and bellows should be cleaned with mild soapy water (e.g., Dawn®, chlorhexidine) rinsed well and dried completely before reassembly.
  - b. Visually inspect bellows diaphragm, flutter valve, and ring seal.
3. Record date, initial, and circle the appropriate maintenance interval on the anesthetic machine hang tag to indicate that all items/actions for that interval were completed.
4. Consult operation manual for trouble shooting and corrective actions.
5. Any additional maintenance/service should be performed by authorized personnel.
6. The vaporizer should be serviced annually by an authorized service center and re-certified in writing.
7. Certification is documented by labeling the equipment with the date of certification.
8. Facility Managers are responsible for maintaining current records of Division-owned equipment inspections, calibrations, maintenance, non-routine repairs, and current inventory for their facility on the division's ***Equipment Maintenance Log (CMD#192)***.

## VII. REFERENCES

The manufacturer's operation manual provides additional information and is intended to supplement this standard operating procedure.

Approved:

Date: