University Animal Care Committee Standard Operating Procedure		
Document No: 14.7	**Subject: Anesthetic Machine Setup for use in the Large Animal MRI**	
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Location: Queen's University

Responsibility: Principal Investigators, Research Staff, Veterinary Staff

Purpose: The purpose of this Standard Operating Procedure (SOP) is to describe how to setup an anesthetic machine for use in the MRI

1. **Introduction and Definitions:** Anesthetic setup is an important factor before any surgical procedure. The safety of the patient and personnel must be considered. Proper maintenance of the machine and the equipment should be done on a yearly basis by a qualified technician

Abbreviations: Animal Care Services **ACS**, Principal Investigator **PI,** subcutaneous **SC**, intravenous **IV**, intraperitoneal **IP,** intramuscular **IM**, per os **PO,** per rectum **PR**

2. **Materials:**
   - Oxygen (H-tank)
   - Anesthetic machine (serviced within the last year)
   - Non-Rebreathing system
   - Reservoir bag (appropriate size patient)
   - ~16ft oxygen line
   - Scavenging system (f/air canister)

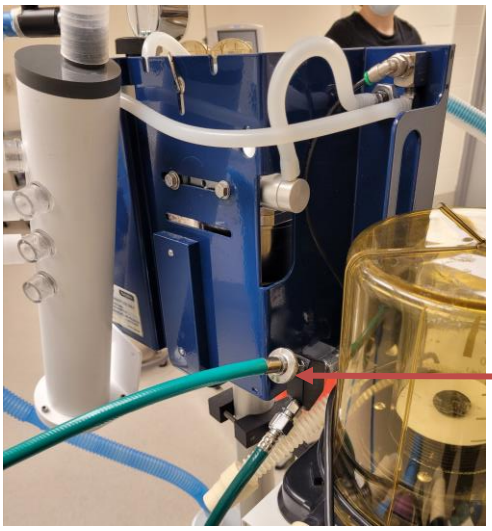
3. **Procedures:**

<u>Set up Oxygen source and Oxygen flow rate for the patient:</u>

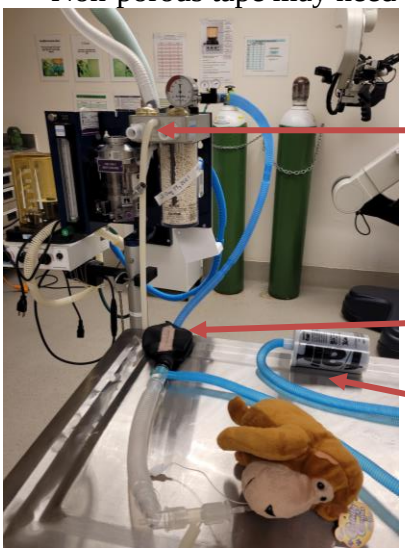
- To calculate oxygen flow take the weight of the patient (kg) x 200 mL/kg/min . Change the mL/min to L/min to match the oxygen flow meter unit. Flow should be a minimum of 2L/min.
- Decide how long the patient will be under anesthesia and approximate how much oxygen will be needed for the procedure. (Calculate how many litres are needed per hour and multiply how many hours the surgery is expected to take).
- Turn on the Oxygen tank in the room adjacent to the MRI machine. Check the psi on the H-tank, a full tank will contain 2200 psi. To calculate the approximate amount of oxygen in litres contained in the tank you multiply the psi x 3. (eg. If the H-tank reads 1500psi there is approximately 4500L remaining). Ensure there is enough oxygen remaining for the procedure.

Set up the Anesthetic Machine:

- Connect the oxygen tank to the fresh gas inlet connection on the back of the anaesthetic machine.



- Attach the MRI specific non-rebreathing tubing to the anaesthetic machine. It attaches into the oxygen port at the front of the machine between the rebreathing system connections.
- The scavenge will need to be securely attached to a f/air canister
- The pop-off valve for this system is located near the rebreathing bag. Notice the rebreathing bag has tape placed on it, this is to ensure that the monitor can visually see the rising and falling of the bag during the MRI.
- Non-porous tape may need to be used to securely attach the exhaust to the f/air canister.

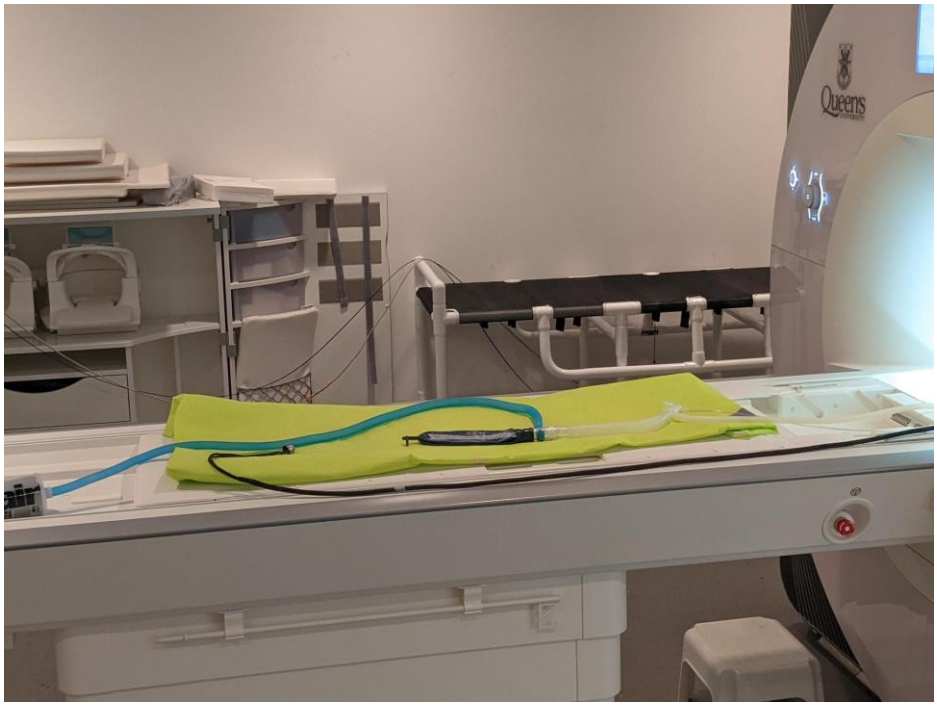


- Check Isoflurane levels to ensure that the machine is full.
- Pressure check the machine prior to moving it into the MRI to ensure that there is no leaking anesthetic gases.
    - Plug the end of the F-circuit tubing securely
    - Close the pop-off valve on the machine-Circuit
    - By turning on the flow meter fill the anesthetic machine with oxygen until the system pressure reads between 15-20 cm/H2O
    - If the system can hold the pressure without dropping we can be confident there is no leak in the system

- Once completed the non-rebreathing circuit can be fed through the bore which separates the anesthetic machine and the MRI machine and taken to the patient.

Before personnel uses an anesthetic machine they should be properly trained by a senior staff member to ensure all steps provided are understood.

System set-up in the MRI



Anesthetic line running through the MRI bore

Monitoring equipment running through the MRI bore

References: Kim Moore, Brittney Armitage-Brown

Revised: