

## XGI-8 Gas Anesthesia System.

The XGI-8 anesthesia system is used in conjunction with the IVIS Spectrum to anesthetize mice undergoing bioluminescent or fluorescent whole body imaging. It consists of the following components:



1. The XGI-8 anesthesia module
  - Is the main device that controls the delivery of anesthesia to either the induction chamber or the 5 station manifold located in the IVIS Spectrum.
  - It consists of the isoflurane vaporizer, the evacuation pump, the oxygen on/off valve and flow meter, flow meters to regulate isoflurane to either the induction chamber or the 5 station manifold.
2. The Induction chamber
  - A clear plastic chamber, where animals are anesthetized prior to being placed at the nose cones of the 5 station manifold inside the IVIS Spectrum.
3. The 5 Station Manifold
  - Located inside the IVIS Spectrum.
  - It provides isoflurane /oxygen to up to 5 mice at a time to maintain the required plane of anesthesia.
  - There are 5 clear plastic mouse inhalation nose cones and 5 black rubber stoppers that are used in conjunction with the 5 station manifold.
  - Light baffles can also be attached to the manifold to reduce extraneous bioluminescence from adjacent mice.
4. F-Air canisters
  - These are isoflurane absorbing charcoal filters.
  - There are 2 canisters, one scavenges isoflurane from the induction chamber, the other scavenges isoflurane from the manifold in the IVIS Spectrum.
  - These canisters must be weighed BEFORE and AFTER each imaging session and the information noted in the log book.
  - Canisters MUST BE discarded once the initial weight has increased by 50 grams.
5. XIC-3 Animal Isolation Chamber
  - Provides biological isolation of anesthetized mice during imaging.
  - Isolation occurs by filtering (HEPA filters) the gas mixture going into and coming out of the chamber. This prevents contamination of the interior of the XIC-3 chamber from potential pathogens.
  - The XIC-3 chamber is RECOMMENDED for use with immune-deficient mice e.g. SCIDs or nudes.
  - The XIC-3 chamber MUST BE used for mice treated with bacteria or BSL-2 or -3 pathogens, and disinfected appropriately after use.

## Operating the XGI-8 Anesthesia System.

Before turning on the XGI-8 anesthesia machine it is important to check/do the following:

1. Weigh the F-Air canisters and note their respective weights in the log book which you MUST sign and DATE each time you image live animals.
  2. The F-Air canister MUST BE REPLACED if the canister weight has increased by 50 grams from its original weight. The weight of the new canister MUST BE noted on the outside of the canister using an indelible pen e.g. sharpie marker, and in the log book.
  3. Check the level of isoflurane in the vaporizer. CAREFULLY READ and FOLLOW the vaporizer filling protocol BEFORE adding isoflurane to the vaporizer.
  4. Position the nose cones and light baffles on the 5 station manifold. It is very IMPORTANT to REMEMBER to stopper the manifold ports that are not going to be used.
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5. **Turn on** the “EVACUATION PUMP” switch [1] (located on the front upper left of the XGI-8). Confirm that the flow is greater than 6 liters per minute (lpm) i.e. check where the silver ball is located in the flow meter.
  6. Slowly open/turn the valve on the oxygen regulator. The oxygen regulator is a 50 psi PRESET regulator, you DO NOT have to adjust the flow from the regulator.
  7. **Turn ON** the **gas flow** to the **IVIS Spectrum imaging chamber**. The switch is **located** on the **front of the IVIS**.
  8. Turn the **GREEN OXYGEN HANDLE** [2] located on the front (lower left corner) of the XGI-8 to the **ON** position.
  9. Make sure the turn dial on the **vaporizer** [3] is **set to 0%** i.e. move the dial from the OFF setting to 0% by pushing down on the black release tab.
  10. **Turn ON** the **IVIS Manifold, “IVIS Flow on/off”** [4] toggle switch i.e. raise the toggle switch located in the front upper center area of the XGI-8. **Adjust the flow** using the manifold rotameter to **0.25 lpm**.
  11. **Turn ON** the **Induction Chamber, “CHAMBER on/off”** [5] toggle switch i.e. raise the toggle switch located in the front upper right area of the XGI-8. **Adjust the flow** using the manifold rotameter to **1.5 lpm**.
  12. **Turn OFF** the toggle switch to **BOTH [4 AND 5] THE IVIS MANIFOLD AND THE INDUCTION CHAMBER. DO NOT adjust the rotameters.**
  13. Rotate the dial on the **vaporizer** [3] to the appropriate **setting** for animal induction, typically **2.5%**
  14. Place the animals in the induction chamber [6]. Close the chamber and ensure the clasp is secure.
  15. **Turn ON** the **Induction Chamber, “CHAMBER on/off”** [5] toggle switch. The first time you do this it will seem to take some time to induce the animals because the induction chamber and tubing need to fill with the agent.
  16. **Turn ON** the **IVIS Manifold, “IVIS Flow on/off”** [4] toggle switch. Allow time for the anesthesia gas to reach the manifold nose cones prior to removing the mice from the induction chamber. This can take from 2-5 minutes.
  17. **Turn OFF** the **Induction Chamber, “CHAMBER on/off”** [5] toggle switch before removing the mice from the induction chamber
  18. Quickly place mice at the nose cones in the IVIS. **Make sure that the un-used manifold ports resealed with the black rubber stoppers.**
  19. To minimize anesthesia exposure, keep the induction chamber lid closed and latched when not moving or replacing mice.
  20. When you are **done imaging**, **TURN** the **VAPORIZER** [3] to the **OFF** position.
  21. **Turn ON** the **Induction Chamber, “CHAMBER on/off”** [5] toggle valve for 5 minutes to allow pure oxygen to flow through the induction chamber.
  22. **After purging** the induction chamber with oxygen, **turn OFF** the **Induction Chamber, “CHAMBER on/off”** [5] toggle switch.
  23. **Turn OFF** the **oxygen** supply at the **regulator. Turn ON** all toggle [4 AND 5] switches to **DEPRESSURIZE** the **XGI-8** system. This complete when the silver balls in all the rotometers are at the bottom of their respective tubes.
  24. Once the flow had stopped through the rotometers, turn OFF all toggle switches [2, 4 AND 5].
  25. **Turn OFF** the **EVACUATION PUMP** [1].
  26. **Turn the gas flow switch on the front of the IVIS to OFF.**
  27. **CLEAN** the induction chamber and IVIS.
  28. **WEIGH** the F-Air canisters and record the weights in the log book.



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**XGI-8**  
XENON Gas Anesthesia System

**1**

PUMP  
on/off

EVACUATION  
PUMP

IVIS  
Flow  
on/off

**4**

IVIS  
MANIFOLD

CHAMBER  
on/off

**5**

INDUCTION  
CHAMBER

**3**

For Veterinary Use Only  
**Use Only Isoflurane**

**Matrix**  
by HANSEN

RECOMMENDED MAINTENANCE

**2**  
OXYGEN

USE IN WELL  
VENTILATED  
AREAS  
ONLY

**6**