

User Guide and Operating Manual

Table Top
Laboratory Animal Anesthesia System
901806
&
Mobile
Laboratory Animal Anesthesia System
901807 / 901809

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User/Owner Responsibility

User/Owner Responsibility

PLEASE READ THIS MANUAL BEFORE OPERATING THE ANESTHESIA MACHINE.

The VetEquip *Laboratory Animal Anesthesia System* is for veterinary use only and is designed to function as specified when operated and maintained in accordance with the instructions supplied in this manual.

This equipment must be periodically checked, calibrated, maintained and/or, components repaired and replaced when necessary for equipment to operate reliably. Parts that have failed in whole or in part, exhibit excessive wear, are contaminated or are otherwise unfit for use, should be immediately discarded and replaced. To maintain the warranty, replacement parts must be installed or supplied by VetEquip, Inc. Equipment that is not functioning correctly must not be used. This equipment must not be modified by unauthorized personnel or with unauthorized components.

Receiving

Receiving

1. Examine shipping carton for signs of external damage.
2. Unpack all items. Retain and store original shipping cartons and materials for use in the event this anesthesia machine must be shipped.
3. Inspect the anesthesia machine and accessories for any sign of damage that may have occurred during shipping. If damage is discovered, immediately file a damage claim with the carrier. Notify VetEquip of the claim, and we will do all we can to assist you.
4. Compare quantities received to quantities shown on packing list. Report any discrepancies to VetEquip immediately.
5. Complete the following information:

Packed by: _____ Date: ___/___/___

Serial Number: _____

Rec'd by: _____ Date: ___/___/___

Serial Number verified: _____

VetEquip's 100% Total Satisfaction Guarantee

VetEquip's philosophy on quality can be summed up in just 3 simple points:

There is no room for mediocrity.

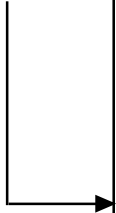
You should never pay for anything less than premium products and services.

The customer is the best judge of quality.

This philosophy is more than just a credo; it dictates how we work.

To demonstrate just how serious we are, we are pleased to extend to you our **"100% Total Satisfaction Guarantee."** What follows is the entire guarantee in all its simplicity. Read it as a reflection of the confidence we have in our quality equipment, dedicated support and outstanding service. Finally, a guarantee that let's you decide whether you're satisfied.

Guarantee



"Everything we sell is backed by a 100% 1-year money-back guarantee."

If you are not fully satisfied and delighted with the VetEquip product or service furnished to you, just call us within 1 year of delivery and we will make arrangements to issue a full and prompt refund to you.

"Everything we sell is backed by a 100% 7-year unconditional replacement guarantee."

If for any reason you become dissatisfied with your VetEquip product, at your request we will replace it without charge to you with an identical item or an item with comparable features and capabilities.



That's it!

Some guarantees guarantee products, some guarantee service and some have so much fine print, the only thing you're guaranteed is confusion.

Ours is simple - only you decide when you're satisfied!

Obtaining Warranty Service

To obtain warranty service, contact us directly. Warranty service is FOB Pleasanton, CA.

VetEquip, Inc.
P.O. Box 10785
Pleasanton, CA 94588-0785
E-mail: info@vetequip.com

USA Toll-Free: 1-800-466-6463
International: +925-463-1828
Web Site: www.vetequip.com

What This Warranty Does Not Cover

- Damages or malfunctions caused by negligence, abuse, or use not in accordance with the operating manual.
- Defects or damages caused by unauthorized service or the use of other than VetEquip supplied parts.
- Parts of the anesthesia machine that require replacement under normal use, such as rubber or latex parts or components.

Warnings & Cautions



- For veterinary use only.
- Personnel operating this *Laboratory Animal Anesthesia System* must be thoroughly familiar with the instruction manual and equipment operation prior to use with patients.
- Tampering with the anesthesia system components by unauthorized personnel voids all warranties and specifications. The prevention of tampering with the anesthesia system is the sole responsibility of the user or owner. VetEquip assumes no liability for any malfunction, failure, damage or loss to either equipment or life.
- (Model 901809) Failure to open the APL (evacuation) valve with a patient attached to the absorber assembly could result in the death of the patient.
- Before using the anesthesia system, check that it is set up properly and ensure all connections and settings are correct. For the Model 901809, perform the “10 Second Leak Test” as outlined in the “Pre-operative Check” section of this manual to verify the breathing circuit is leak-free.
- Always adhere to proper Diameter Index Safety System (D.I.S.S.) hose connections. Failure to comply will void your warranty and could compromise patient safety.
- If the oxygen flush button does not immediately return to the off position after being released or if the flow of oxygen does not immediately stop flowing from the common outlet after the oxygen flush button is released, remove the machine from service. The valve must be repaired by VetEquip or a VetEquip authorized service facility before using the machine.
- When turning off flowmeters, it is only necessary to turn the flow control knob clockwise until the ball float reaches the bottom of the tube. Excessive tightening will damage the valve seat, resulting in a leak requiring replacement of the valve.

Equipment Descriptions

The **Laboratory Animal Anesthesia System** is designed for use with small animal models – mouse to pig. Standard configuration includes a stand assembly with oxygen flowmeter, oxygen flush valve, precision vaporizer and a 10-foot oxygen hose assembly with threaded DISS connections. The standard system also includes a dual-procedure circuit; 2-liter induction chamber; breathing circuit with rat-size & mouse-size nose cones; and 2 activated charcoal filters for waste gas removal.

Table-Top - 901806

Compact and versatile. This model uses only 8" x 11" of counter space. Weight-balanced handle and non-skid feet make this unit usable virtually anywhere.

Mobile - 901807

Rugged and portable. This model utilizes sturdy casters and a built-in handle to allow easy movement between rooms or buildings. All internal connections are covered by a smooth panel, allowing easy cleaning.

Mobile with CO₂ Absorber - 901809

A carbon dioxide absorber assembly has been added to the mobile system (above). Positive sealing gaskets and molded construction virtually eliminates leakage.

Specifications

All specifications are for standard systems.

Operational Characteristics	Table Top (901806)	Mobile (901807)	Mobile w/Absorber (901809)
Oxygen Flowmeter Volume:	0-4 liters per minute @ 55 psi.	0-4 liters per minute @ 55 psi.	0-4 liters per minute @ 55 psi.
Oxygen Flush Volume:	15-35 liters per mintue @ 55 psi.	15-35 liters per mintue @ 55 psi.	15-35 liters per mintue @ 55 psi.
Gas Supply:	Oxygen male DISS connector	Oxygen male DISS connector	Oxygen male DISS connector
Gas Pressure Requirements:	50-55 psi.	50-55 psi.	50-55 psi.
Controls			
Flowmeter:	Single-turn metering valve	Single-turn metering valve	Single-turn metering valve
Oxygen Flush:	Plunger-actuated, spring-return valve	Plunger-actuated, spring-return valve	Plunger-actuated, spring-return valve
Adjustable Pressure-Limiting (APL) Valve:	None	None	Three-turn metering valve
Physical Properties			
Weight:	Approx. 32 lbs. (14.5 kg)	Approx. 56 lbs. (25.41 kg)	Approx. 64 lbs. (29.03 kg)
Dimensions:	11"w x 8"d x 14"h	19"w x 18"d x 50" h	22"w x 19"d x 50"h Base Footprint: 19"w x 18"d
Material:	Aluminum Frame; steel handle, bolts and screws; brass valves and tubing; acrylic flowmeter cover.	Aluminum Frame, steel bolts and screws; brass valves and tubing; acrylic flowmeter cover; Delrin handle.	Aluminum Frame; steel bolts and screws; injection molded polyurethane absorber head; brass valves and tubing; acrylic canister and flowmeter cover; Delrin handle and APL (evacuation) valve.
Finish:	Heat-treated enamel	Heat-treated enamel	Heat-treated enamel

Prices, terms and product specifications are subject to change without notice.

Table Top Laboratory Animal Anesthesia System

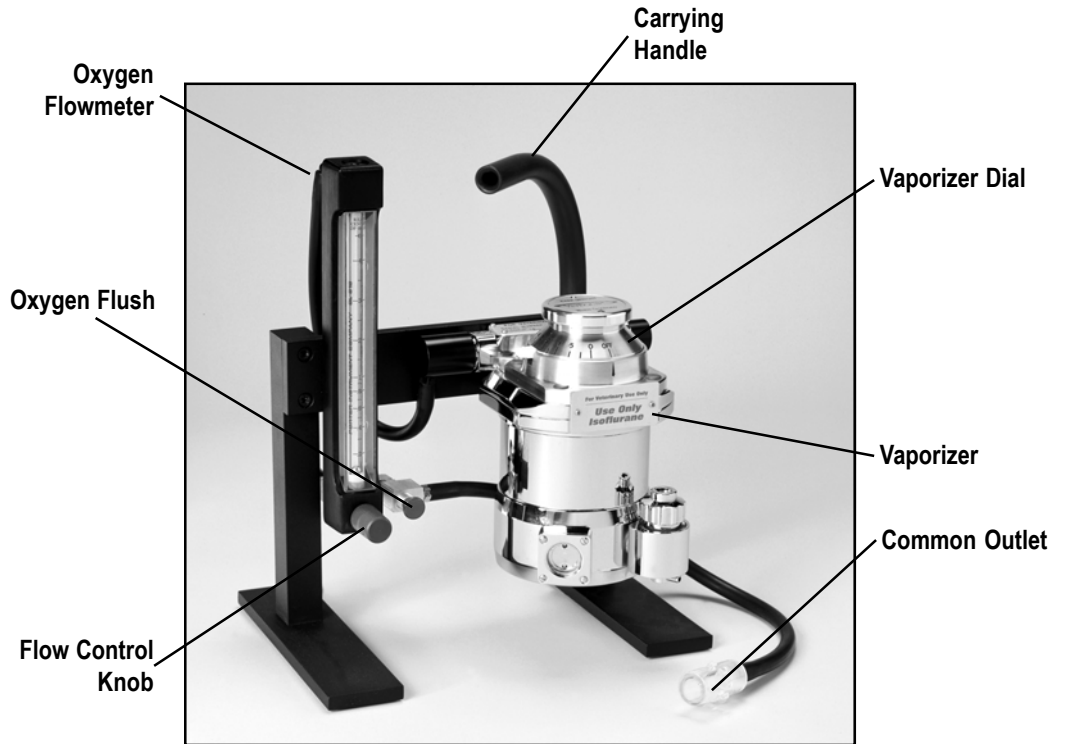
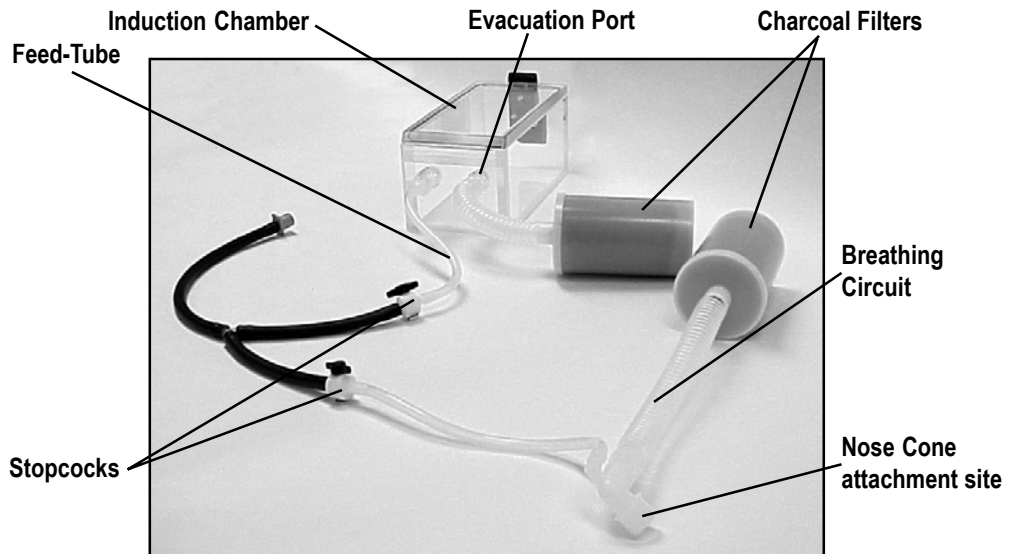


Table-Top Laboratory Animal Anesthesia System (LAAS)
901806

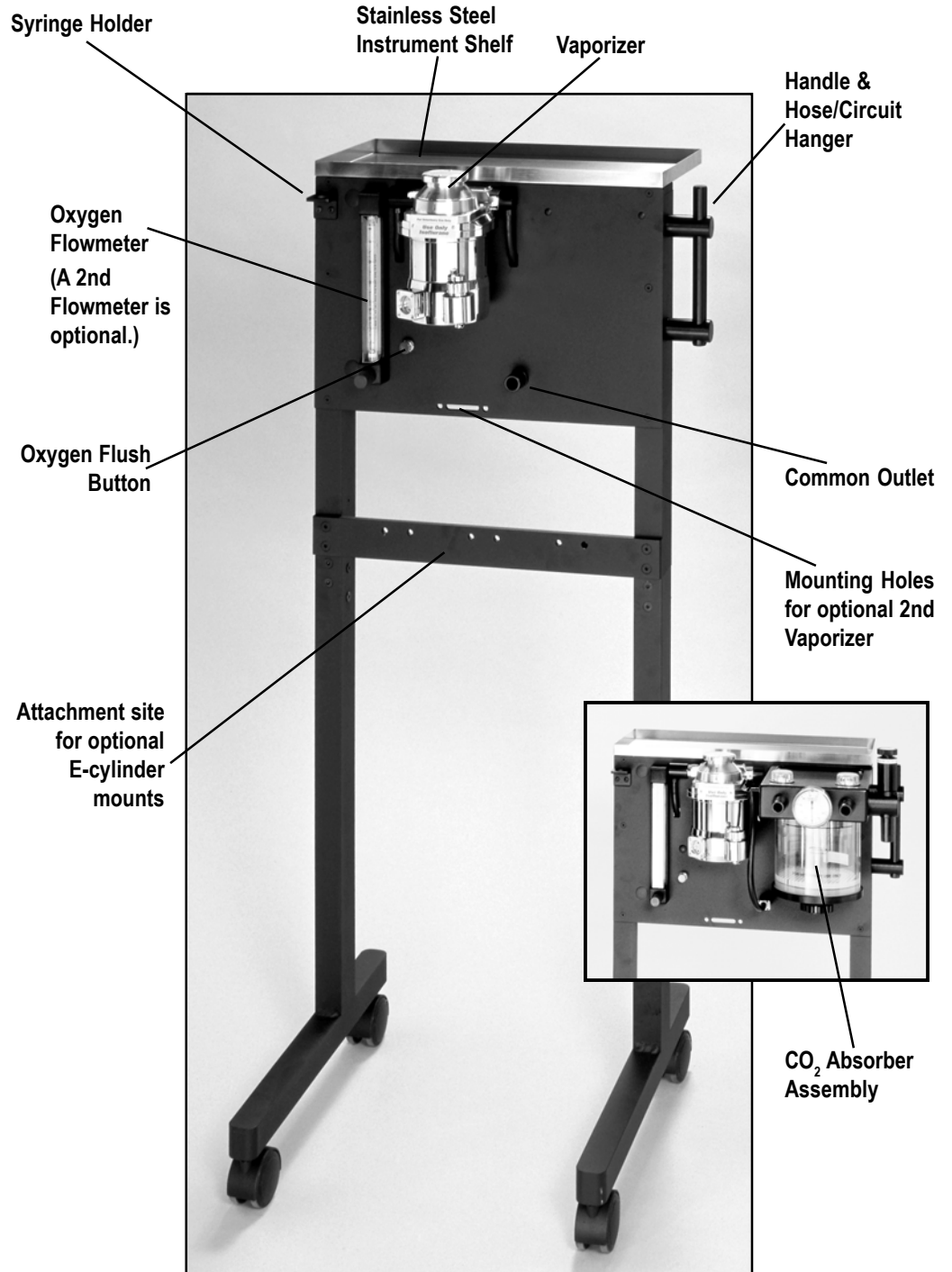
Dual Breathing Circuit



Dual-Delivery Breathing Circuit
Included with all Laboratory Animal Anesthesia Systems
991011

Component Identification

Mobile Laboratory Animal Anesthesia System



Mobile Laboratory Animal Anesthesia System (LAAS)

901807

INSET: Optional CO₂ Absorber Assembly

901750

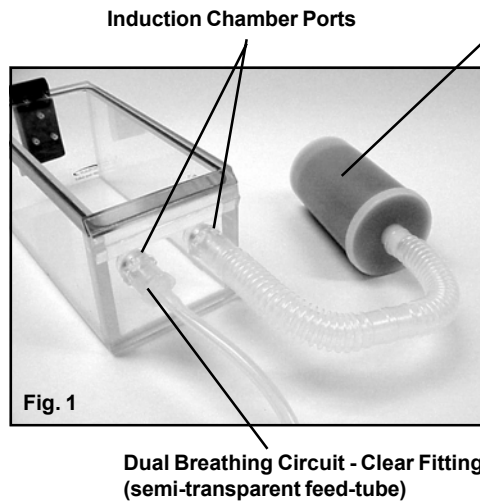
Assembly

In order to quickly and properly set-up your Table Top or Mobile Laboratory Animal Anesthesia System, please complete each step of the Assembly Procedures below. If you have any questions, concerns or comments regarding the assembly of your system or with these instructions, please call us at 800-466-6463.

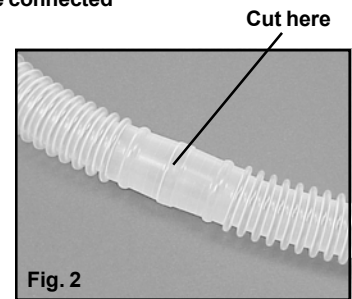
STEP 1: (Fig. 1)

Insert the clear fitting connected to the semi-transparent feed-tube of the Dual Breathing Circuit into either one of the Induction Chamber ports. Connect one end of the 22mm FlexHose to the remaining Induction Chamber port and the other end of the 22mm FlexHose to a Charcoal Filter.

NOTE: (Fig. 2) The 22mm FlexHose can be cut to your desired length by cutting the hose at the ridge in the smooth junctions.



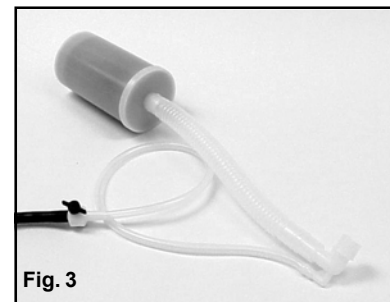
Charcoal Filter with 22mm FlexHose connected



Cut the FlexHose only at the ridge in the smooth junctions.

STEP 2: (Fig. 3)

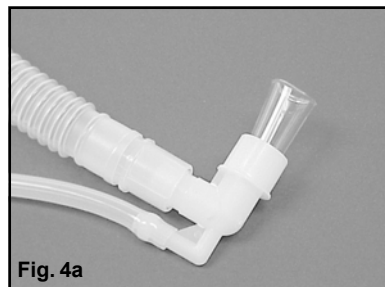
Connect the second Charcoal Filter onto the 22mm FlexHose at the end of the Patient Breathing Circuit.



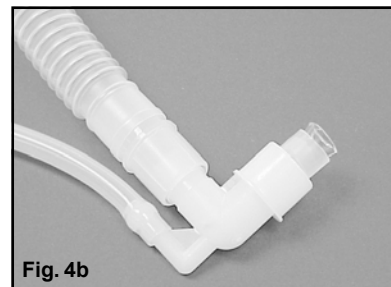
Charcoal Filter connected to Patient Breathing Circuit

STEP 3: (Fig. 4a & 4b)

Insert either the 9mm, 12mm or 14mm Cone into the Patient Breathing Circuit elbow fitting.



12/14mm Nose Cone



9mm Nose Cone

Assembly

Upon completion of STEP 3, the Dual Breathing Circuit Assembly should look similar to that shown in Fig. 5.

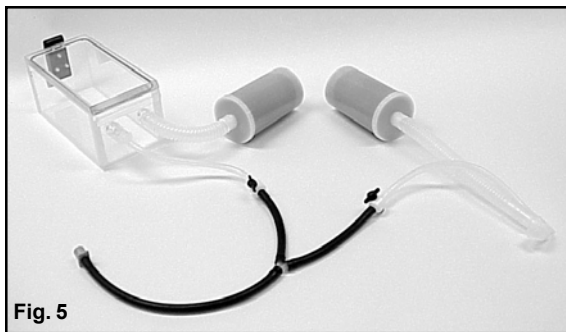


Fig. 5

Dual Breathing Circuit connected to the Induction Chamber and Charcoal Filters.

STEP 4:

Insert the blue connector of the Dual Breathing Circuit into the Common Outlet of the machine. (see Fig. 6a for the Table Top LAAS and Fig. 6b for the Mobile LAAS).

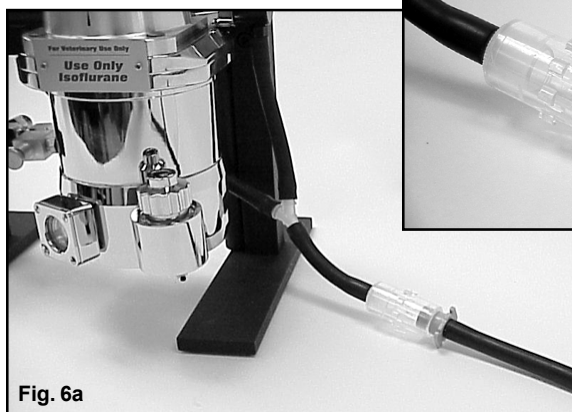


Fig. 6a

(Table Top LAAS) - Insert the blue connector (black tubing) of the Dual Breathing Circuit to the Common Outlet.

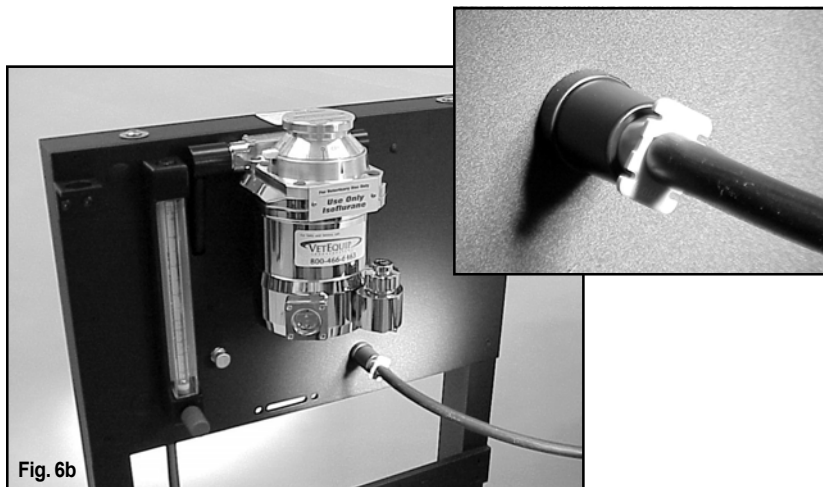


Fig. 6b

(Mobile LAAS) - Insert the blue connector (black tubing) of the Dual Breathing Circuit to the Common Outlet.

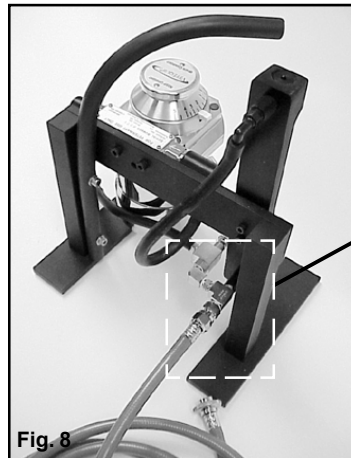
Assembly

STEP 5:

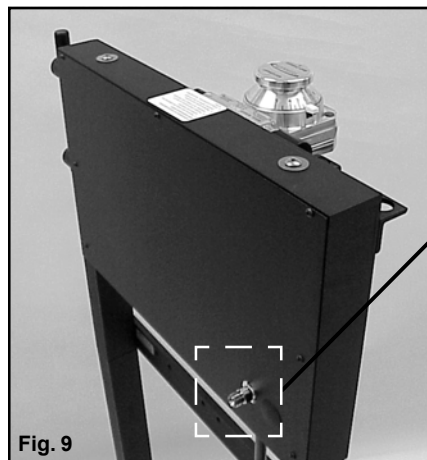
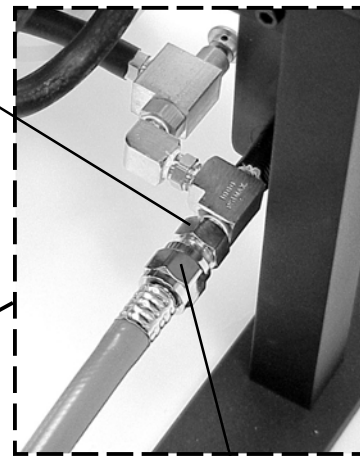
Connect the gas supply hose assembly to the rear inlet DISS fitting of the Laboratory Animal Anesthesia System. Tighten gently with an 11/16" wrench on the hose fitting and a 5/8" wrench on the DISS inlet fitting. (see Fig. 8 for the Table Top LAAS and Fig. 9 for the Mobile LAAS).

IMPORTANT:

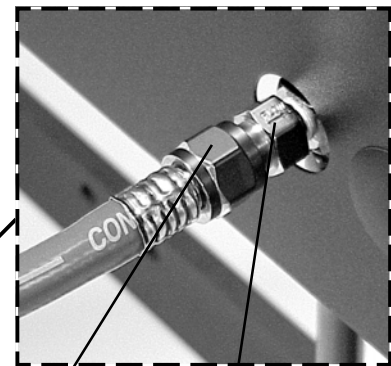
The other end of the DISS hose assembly must be connected to your tank-mounted regulator or the outlet of your in-house O₂ supply line **with an operating pressure of 55 PSI MAXIMUM. Pressure in excess of 55 PSI will cause damage to the Laboratory Animal Anesthesia System.**



(Table Top LAAS) - DISS Hose Assembly connection.



(Mobile LAAS) - DISS Hose Assembly connection.



Theory of Operation

An inhalation anesthesia system is designed to do the following:

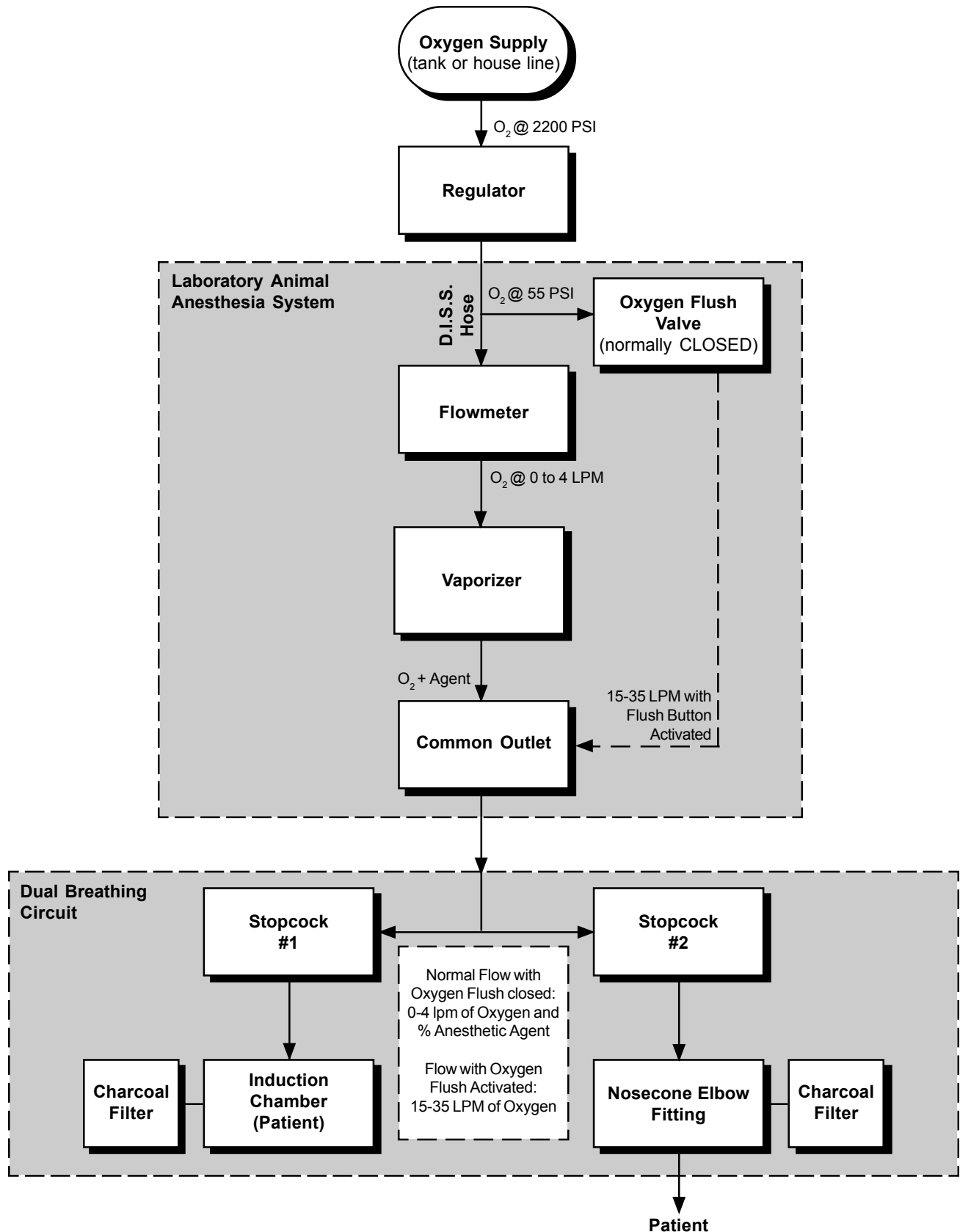
1. Change a liquid anesthetic agent into a vapor.
2. Deliver that vapor to the patient in a precisely measurable amount.
3. Sustain the patient by delivering a metabolic gas in addition to the anesthetic vapor.
4. Capture all waste gas.
5. Channel the waste gas to an evacuation system such as an activated charcoal canister or a scavenging interface.

Operational Flowchart



1. Oxygen flows from a **pressurized tank** that may be located on the anesthesia machine, in the room with the anesthesia machine, or in a remote area with the oxygen being piped through the walls.
2. A **regulator** is attached to the supply tank and reduces the pressure of the oxygen from as high as 2200 PSI down to a useable 55 PSI.
3. The oxygen flow reaches the anesthesia machine through the DISS connection and is then plumbed into two channels:
 - a. One channel goes to the oxygen **flowmeter**. By using the **flow control knob** on the flowmeter, you further reduce the 55 PSI to a flow measured in liters per minute (LPM).
 - b. The other channel goes to the **oxygen flush valve**. In the normal (closed) position, the flush valve has no flow through it. When the flush button is pushed, the oxygen flows directly into the patient circuit at a rate of approximately 15-35 LPM. This oxygen does not pass through the vaporizer.
4. The oxygen flow from the flowmeter is delivered to the inlet of the **vaporizer**. If the vaporizer is in the "OFF" position, the oxygen bypasses the vaporizer without picking up any anesthetic agent. If the **vaporizer dial** is turned to any position other than "OFF", a precise concentration of vaporized anesthetic agent is delivered through the outlet of the vaporizer to the patient circuit. The vaporizer dial is adjusted by the operator and determines the amount of anesthetic agent vapor that will be added to the oxygen flow. The amount is measured as a percentage of the total flow and can be varied from 0-5%.
5. Lines from the vaporizer and the oxygen flush valve merge through the **common outlet** and into the **dual procedure circuit**.
6. Once the gas enters the dual procedure circuit, it is bifurcated by a Y-fitting into two branches. A **stopcock** within each branch of the circuit provides independent control of each branch.
 - a. One branch goes to the **induction chamber**. When the stopcock to the induction chamber is open, the gases flow into the chamber through the **feed-tube**. Turbulence circulates the anesthetic gases throughout the chamber until it exits through the **evacuation port** on the induction chamber, flowing passively through flexible evacuation tubing (**FlexHose**) and into a **charcoal filter**.
 - b. The other channel goes to the **patient breathing circuit**. When the stopcock to the patient circuit is open, the gases flow to the **nose cone** of the breathing circuit. The gases then continue through the down-tube of the breathing circuit and into a second charcoal filter.

Operational Flowchart



Pre-Operative Check and Operation

For veterinary use only.

Personnel operating this *Laboratory Animal Anesthesia System* must be thoroughly familiar with the instruction manual and equipment operation prior to use with patients.



Tampering with the anesthesia system components by unauthorized personnel voids all warranties and specifications. The prevention of tampering with the anesthesia system is the sole responsibility of the user or owner. VetEquip assumes no liability for any malfunction, failure, damage or loss to either equipment or life.

Always adhere to proper Diameter Index Safety System (D.I.S.S.) hose connections. Failure to comply will void your warranty and could compromise patient safety.

1. Ensure gas supply line for each gas is attached to appropriate D.I.S.S. inlet on back of the flowmeter(s). Connect gas supply hose(s) to in-house supply as necessary.
2. Ensure gas supply is turned on and is of sufficient quantity for the procedure(s).



When turning off flowmeters, it is only necessary to turn the control knob clockwise until the ball float reaches the bottom of the tube. Excessive over-tightening will eventually lead to damaging of the valve seat, resulting in a leak at this point and necessitating replacement.

3. Test oxygen flowmeter for full range of operation by turning the control valve knob counter-clockwise to open and clockwise to close valve. Close valve when test is complete.
4. Test oxygen flush valve for performance by depressing and holding the button for 3 seconds. Oxygen should flush rapidly out of the common outlet. When the oxygen flush button is released, it should immediately return to the off position and the flow should immediately stop.

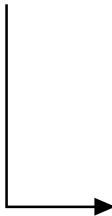


If the oxygen flush button does not immediately return to the OFF position after being released, or if the flow of oxygen does not immediately stop flowing from the common outlet after the oxygen flush button is released, remove the machine from service. Have the valve repaired by calling VetEquip or a VetEquip-authorized service facility before using this machine.

Before using the anesthesia system; check that it is set up properly, ensure all connections and settings are correct. For the Model 901809, perform the "10 Second Leak Test" as outlined in the "Pre-operative Check" section of this manual to verify the breathing circuit is leak-free.

5. Fill the vaporizer with the appropriate anesthetic agent. Refer to vaporizer instruction manual for complete instructions.

**Use
Protocol**



Every facility should have in place an inhalation anesthesia protocol / SOP. The following is an outline from which you can begin to create your own. If you need assistance writing your protocol, please call us at 800-466-6463.

1. After checking to ensure your oxygen supply tank(s) is/are open and that you have sufficient gas pressure in the line(s) from the tank(s), assemble your system and check all connections for possible oxygen leaks.

Oxygen tank to regulator (If oxygen is supplied from a free-standing tank)
If any hissing is detected, check the condition of the gasket between the tank and regulator (E-cylinder only) and tighten the regulator onto the tank.

Machine to dual delivery system

This common outlet port is a friction-fit connection. Ensure connections made are leak-free.

Dual delivery system to nose cone and chamber connection

These are friction-fit connections. Ensure connections made are leak-free.

Breathing elbow down tube and chamber outlet port to charcoal filters

Connect tubing to charcoal filter to create a leak-free connection. For proper operation, the charcoal filter must be oriented vertically, ensuring the exit holes in the bottom are not obstructed. Filter canister holders are provided for this purpose.



WARNING

Standing filters directly on a surface will impede the airflow out the bottom of canister, rendering the filter useless and causing back pressure in the breathing circuit.

2. If required, fill the vaporizer with the appropriate liquid agent, according to instructions in the vaporizer manual.
3. Open the stopcock in the chamber tubing line.
4. Close the stopcock in the nose cone line.
5. Turn the oxygen flowmeter to at least one (1) liter per minute (lpm).
6. Place animal #1 in the induction chamber and secure the lid.

NOTE

You may place as many animals in the chamber as will fit comfortably.



WARNING

The chamber is airtight. If the oxygen flowmeter on the machine is turned off, there will be NO AIRFLOW into the chamber.

NEVER leave animals in the chamber without an oxygen flow.

**Use
Protocol**

7. Turn the vaporizer dial to 2-2½%. Animal #1 should begin to lose consciousness within 2 minutes.
8. When Animal #1 has no response to rocking/jiggling the chamber, push the oxygen flush button for 20 to 30 seconds (for 2 liter chamber) to evacuate all anesthesia-saturated gas from the chamber.

NOTE

The brief oxygen flush evacuations of the chamber should not awaken already anesthetized animals.

If the stopcock to the nose cone/mask is *open* when the oxygen flush button is depressed, the resulting oxygen pressure through the nose cone may push that animal's nose out of the nose cone. Always close the stopcock to the nose cone mask before using oxygen flush.

9. Open the stopcock in the nose cone line.
10. Immediately close the stopcock in the chamber tubing line. Open the chamber and remove Animal #1.
11. Place Animal #1's nose in the nose cone.
12. Place Animal #2 in the chamber and open the stopcock in the chamber tubing line.
13. When the procedure on Animal #1 is complete, close the stopcock in the nose cone line and place Animal #1 in a recovery unit. That animal will begin to awaken in approximately 2 minutes.
14. Repeat steps 8 through 12 with Animal #2, and all remaining models, until all procedures have been completed.
15. Turn the vaporizer dial to the "OFF" position.
16. Turn off the oxygen flowmeter.
17. If a freestanding oxygen tank is used, turn off the oxygen at the tank.
18. Clean and sanitize the chamber and nose cone/mask as outlined in your procedure area cleaning protocols.

Maintenance

Annual preventive maintenance and certification by qualified personnel is recommended to ensure proper operation. General upkeep and daily maintenance will enhance the longevity of your Lab Animal Anesthesia System.

DO NOT USE PETROLEUM BASED LUBRICANTS. If you must use a lubricant, use only a silicone-based product.

Stand Assembly: Do not use harsh or abrasive cleaners. Wipe with a damp cloth to clean. The stand is coated with a baked-on enamel that will withstand most cleaning/disinfectant solutions. If a solution is to be used, it is recommended that you initially test its effect on an inconspicuous spot of the enamel.

Flowmeter(s): Do not use harsh or abrasive cleaners. Plastic flowmeter covers may be removed and cleaned with a damp cloth. The exterior of the glass flowtube may be cleaned in the same manner. Should dirt or an obstruction get inside the flowtube, contact VetEquip for assistance. The flow control requires no maintenance.

Oxygen Flush: This valve requires no maintenance.

Rubber Goods: Rubber is a natural product and will deteriorate with age and use. All rubber goods are considered disposable and should be inspected daily for presence, condition and alignment.