

# VetFlo®

## Traditional Anesthesia System

# User's Guide





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# Part 1: VetFlo® User's Guide

VetFlo® is an easy-to-use small animal and rodent anesthesia system.  
**VetFlo® is not designed, intended or authorized for use in human applications.**

## Included Equipment

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Anesthesia Stand  
Vaporizer (packaged separately)  
Inlet Flowmeter (1-1000cc or 200-4000cc)

(Multi-channel system has two, four or six outlet flowmeters, depending on # of channels)



Inlet and outlet silicone tubing assemblies

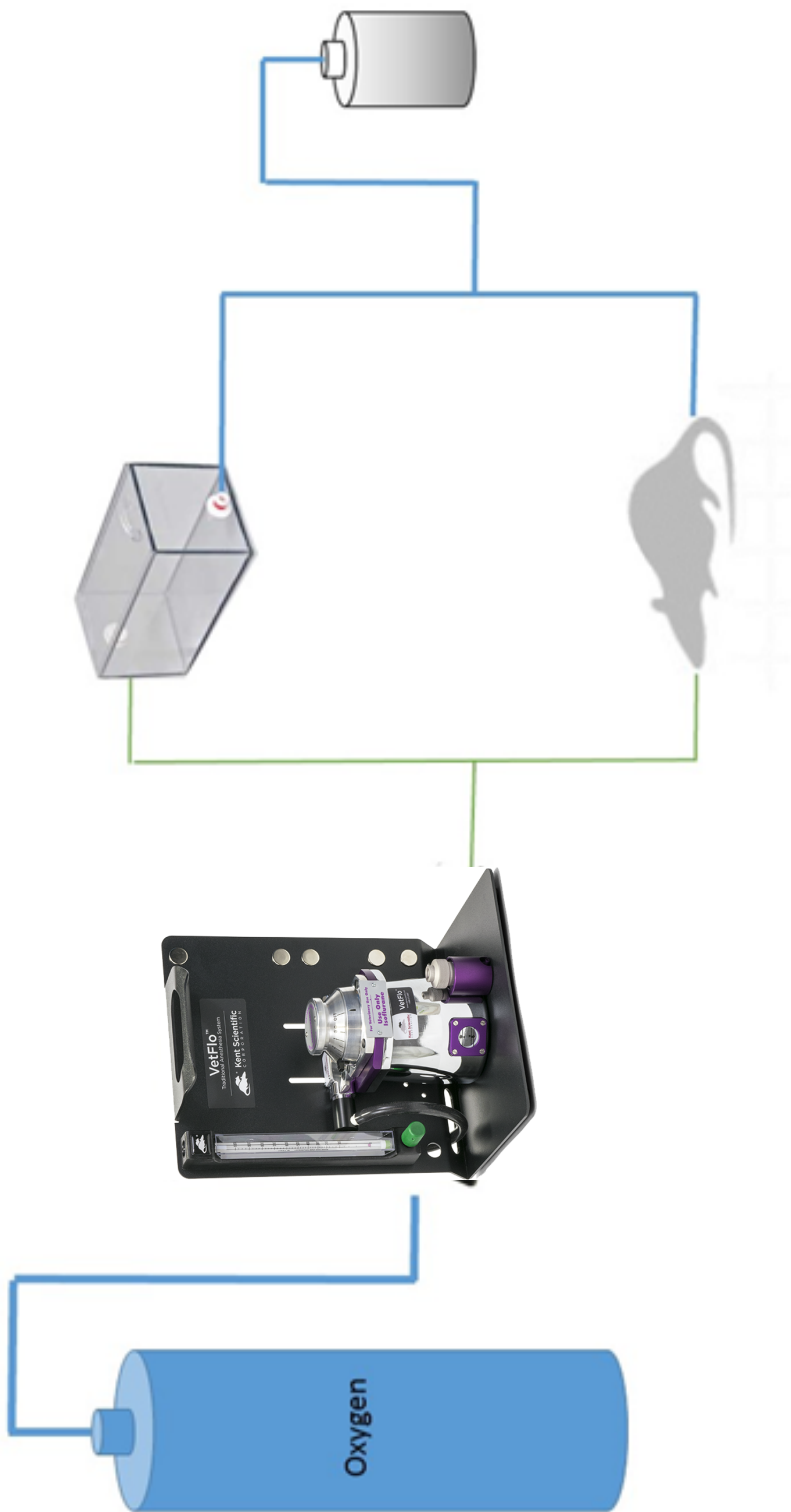


Oxygen tubing and connector with  
tightening wrench



Gas filter charcoal canister

*Operational Flow Chart and System Assembly*



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## *Mounting the Vaporizer to the Anesthesia Stand*

1. Place the vaporizer on the stand. Align the two outer holes on the back of the vaporizer with the two slots in the anesthesia stand.
2. From the back of the vaporizer, align the spacer block holes with the holes on the back of the vaporizer.
3. Using the two screws and washers, secure the vaporizer to the stand. Be sure that the washer is placed between the spacer block and the black knob on the screw.
4. Facing the front of the stand and vaporizer, take the tubing on the left and insert it over the port on left side of the vaporizer. Securely position both tubes as far over the port as possible.
5. Repeat for the tubing on the right.



Multi-Channel Stand  
and Vaporizer

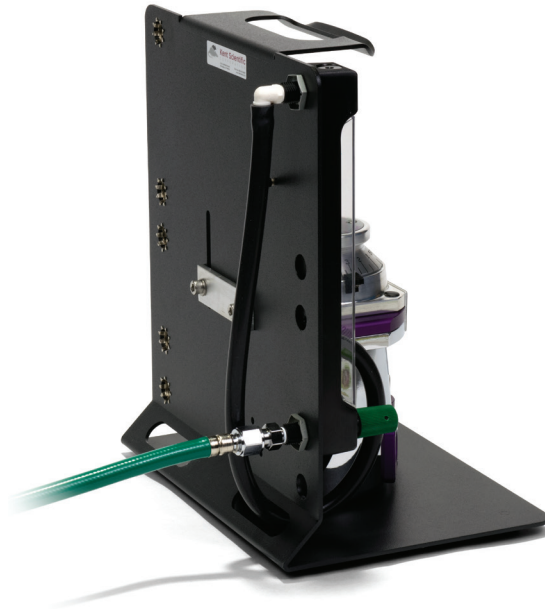


Single Channel Stand  
and Vaporizer

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## *Single Channel Assembly*

1. Connect oxygen tubing to the inlet port tubing, located on the back of the anesthesia system. Use the included wrench to tighten the hose connection.



2. Connect the Vaporizer Outlet tubing to the vaporizer.



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3. Connect the Expiratory Scavenging tubing to the charcoal canister.



4. Using the Inspiratory T tubing assembly, connect the main line to Vaporizer Outlet Tubing. Connect the main branch of the Expiratory T tubing assembly to the Expiratory Scavenging tubing on the charcoal canister. The canister may be positioned upright or on its side.



5. If you are using a Kent Scientific induction chamber, connect the Induction Chamber Adapter to the induction chamber.

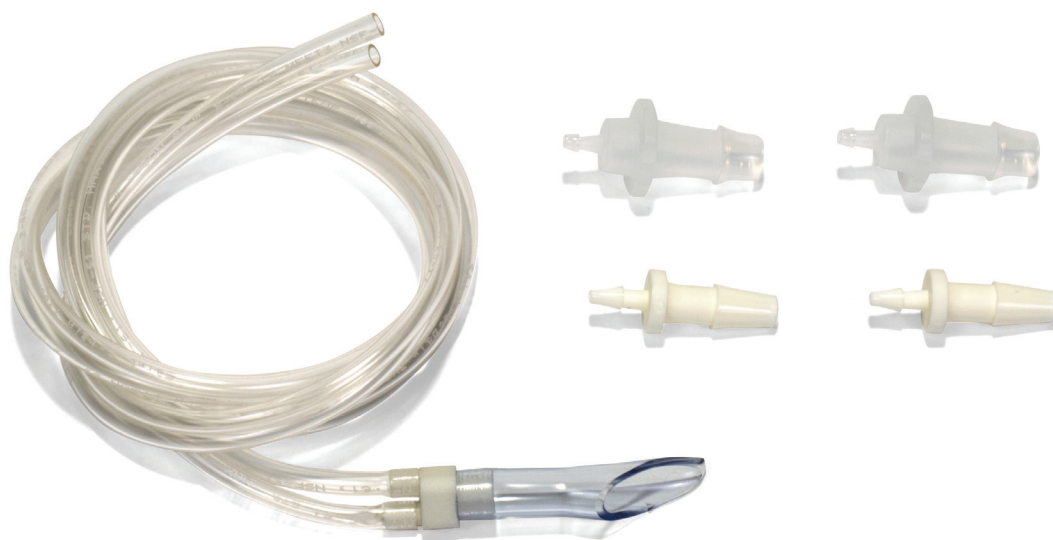




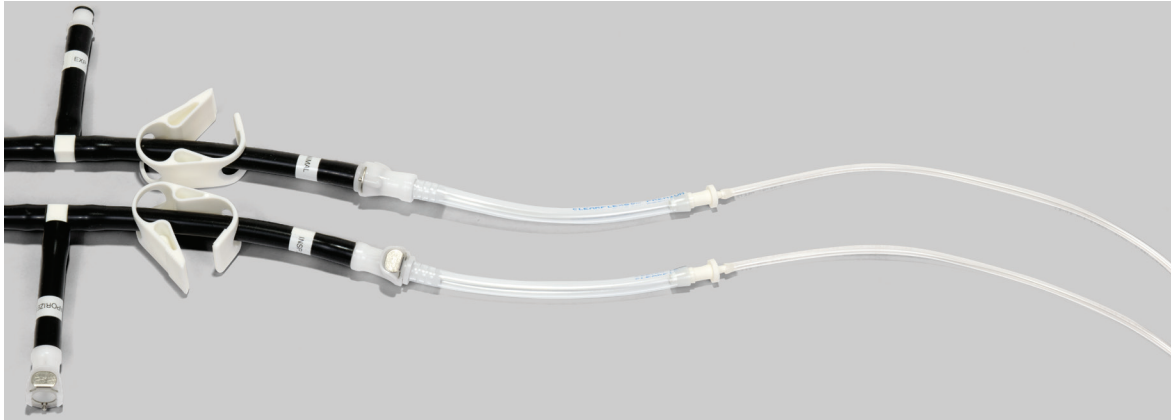
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6. Connect the Induction Chamber Adapters to the one branch of the Inspiratory Y tubing, and the other to the Expiratory T tubing.



7. Assemble the Facemask. Select the white connectors and insert them into the Facemask tubing.



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8. Connect the Facemask using the Tubing Adapters to the remaining branches on the Inspiratory and Expiratory T tubing.

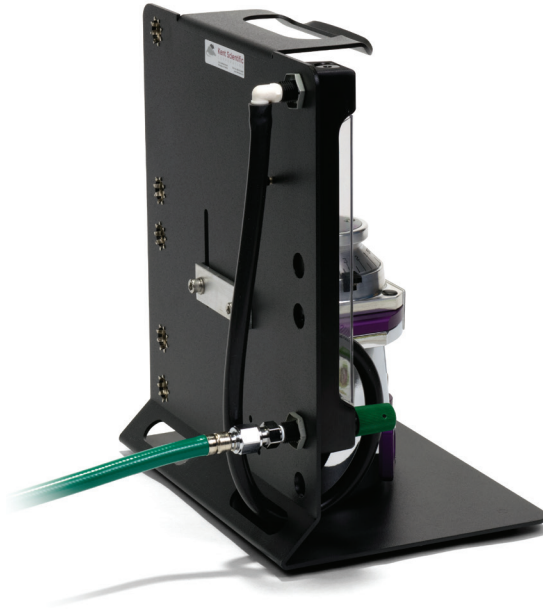


Overview of typical set-up

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## *Multi-Channel Assembly*

1. Connect the oxygen tubing to the oxygen port, located on the back of the anesthesia stand.



2. Attach charcoal canister at the back of the VetFlo stand.

Note: Due to higher flow requirements of a multi-channel system, the included exhaust tubing has a larger diameter compared to the single-channel system.



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3. The main flowmeter (located on the left) controls the flow into the multi-channels. Each channel has a designated flow meter so they can be controlled individually.



4. Locate the tubing assembly for each channel. Each is numbered and corresponds to the numbered flow meters above.



5. See Single Channel Assembly instructions to set up individual channels.

## Part 2: Getting Started

Please refer to your facility's standard operating procedures for animal anesthesia for setting recommendations.

### ***Multi-Channel Assembly***

#### *General Procedure for the Use of a Single Channel Anesthesia System*

##### **Prior to beginning:**

- 1) Ensure that there is a sufficient quantity of compressed gas for the procedure.
- 2) Ensure that there is a sufficient quantity of anesthetic in the vaporizer (refer to separate vaporizer manual).

##### **Instructions for use:**

- 1) Check all connections and ensure that click-clamps are open on both inlet and outlet lines connected to the induction chamber, and closed on both lines to the anesthesia circuit.
- 2) Turn on the oxygen supply and set flow to desired rate on the flowmeter.
- 3) Place animal in the induction chamber, and close the lid tightly.
- 4) Turn on the vaporizer and adjust the anesthetic concentration as desired.
- 5) Once the animal has reached a moderate plane of anesthesia (lying on side, rhythmic breathing pattern), remove the animal from the induction chamber and place it on the nose cone.
- 6) Open click-clamps to the nose cone. Close click-clamps to the induction chamber.
- 7) Reduce the oxygen flow as needed.
- 8) Reduce the anesthetic concentration as needed to maintain desired plane of anesthesia.
- 9) Monitor the animal throughout the procedure, and adjust anesthetic concentration and oxygen flow as needed.
- 10) At the conclusion of the procedure, turn off the isoflurane vaporizer. Animal can be maintained on oxygen until it wakes, if desired.
- 11) Turn off oxygen flow, and return animal to recovery cage.

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## ***Maintenance***

### **Anesthesia System Maintenance**

1. Before each use, inspect all fastenings and tubing for signs of wear or deterioration.

### **Charcoal Canister Maintenance**

1. Before first use of charcoal canister, weigh the canister and record the weight on the side label.
2. Periodically weigh the canister. When the canister weighs 50g more than the initial recorded weight, replace the canister.

### **Vaporizer Maintenance**

1. Refer to the manufacturer's manual for maintenance instructions specific to the vaporizer included in your system.
2. We recommend that all standard vaporizers be certified annually.

## Part 3: Theory of Operation

Please refer to your facility's standard operating procedures for animal anesthesia for setting recommendations.

### *About Anesthesia and Anesthetics*

Anesthesia is the controllable and reversible loss of consciousness induced by chemical intoxication of the central nervous system. The goal of anesthetic administration is to prevent the perception of painful stimuli without undue depression of Anesthesiological functions. Characteristic features of the anesthetic state include lowered sensitivity to outside stimuli (including pain), relaxation, and diminished motor response.

In general, the safest anesthetics are inhalants used with the proper delivery and scavenging systems. The most commonly used currently available inhalant anesthetics are isoflurane, sevoflurane, and desflurane. All three have applications in animal research due to their rapid onset and offset with minimal side effects. They are the currently recommended inhalant anesthetics.

All three of these agents require a precision vaporizer for delivery to the animal. An induction chamber can be used for mice or rats. Anesthetic concentrations from the vaporizer are typically limited to 5 percent. Since isoflurane, sevoflurane, and desflurane are very rapid acting inhalant anesthetics, death can result if the animal is not observed closely or if the concentration is too high.

One advantage of the agents is that they are not metabolized and therefore have little or no toxic effect. Another is that they are relatively insoluble in blood, and therefore are "blown-off" quickly, providing a quick recovery. Although very similar to one another, each of the agents has slightly different effect and mechanisms of action, yet the anesthetic result is nearly identical.

For safety, waste gas scavenging systems are required when using these agents. Precision vaporizers provide precise, controlled levels of anesthesia administration to the patient, offering a margin of safety for the animals. Using gas anesthetics at full concentration out of the bottle quickly results in overdosing the animal and can kill very quickly. Precision vaporizers are part of an anesthetic machine and serve to mix inspiratory gases, such as air or oxygen, with the anesthetic in a precisely-controlled concentration. Animal researchers who routinely incorporate surgery or the use of anesthetics in their animal experiments should consider purchasing an anesthesia machine. Kent Scientific has a selection of single- and multiple channel complete anesthesia systems to choose from, as well as new and remanufactured vaporizers.



## Part 4: General Information

Thank you for purchasing a VetFlo. We truly appreciate your business.  
We strongly advise that you read and study this Owner's Manual to appreciate fully all the features, benefits, and capabilities of the VetFlo®.

### **Contact Information**

Kent Scientific Corporation  
1116 Litchfield Street  
Torrington, Connecticut 06790  
E-mail: [sales@kentscientific.com](mailto:sales@kentscientific.com)

Toll-Free: 888-5RATTUS (888-572-8887)  
Outside US: 860-626-1172  
Fax: 860-626-1179  
Internet: [www.kentscientific.com](http://www.kentscientific.com)

### **Disclaimer**

Kent Scientific Corporation makes no representations or warranties, expressed, statutory or implied, regarding the fitness or merchantability of the components of this system for any particular purpose. Further, Kent Scientific Corporation is not liable for any damages, including but not limited to, lost profits, lost savings, or other incidental or consequential damages arising from ownership or use of these products, or for any delay in the performance of its obligations under the warranty due to causes beyond its control. In no case shall Kent Scientific Corporation's financial obligation extend beyond the cost of or replacement of the Kent product in question. Kent Scientific Corporation also reserves the right to make any improvements or modifications to these products described in this manual at any time, without notice of these changes. All brand and product names used in this manual are the trademarks of their respective owners.

**This product is not designed, intended or authorized for use in human applications.**

### **Product Warranty**

The VetFlo has a one (1) year warranty including all parts and labor charges. The vaporizer includes a 3-year warranty. This warranty does not cover damage by any cause including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modifications or repair by the user, harsh environments, misuse, neglect, abuse, accident, incorrect line voltage, fire, flood, other natural disasters, or normal wear and tear. Changes or modifications not approved by Kent Scientific Corporation could void the warranty. The foregoing is in lieu of all other expressed warranties. Kent Scientific Corporation does not assume or authorize any party to assume for it any other obligation or liability.



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## ***Satisfaction Guarantee***

Should you experience difficulty with the VetFlo®, our Technical Support Group will assist you in trouble-shooting and determining if the product needs to be returned to our facility. We will issue you a Return Manufacturer Authorization (RMA) number before the product is shipped back for repair. It is at the discretion of the manufacturer to replace or repair a defective part or product. Please call Customer Service at 888-572-8887 to obtain a Return Manufacturer Authorization number. Shipments without a RMA number will not be accepted. Please note that after our 30-day return policy period ends, we will be happy to assist you with your application, but cannot issue any credit or refund for a returned VetFlo®.

Prior to shipment, please clean and decontaminate the product of any chemical, biological, or isotopic contamination. Please include a completed Product Return Form with the shipment. The form can be found at the end of this user's guide. For additional copies, call Kent Scientific Customer Service at 888-572-8887.

## Product Return Form - Complete Steps 1 through 4



**Kent Scientific**  
CORPORATION

860.626.1172 / toll-free: 888.572.8887 / fax: 860.626.1179  
1116 Litchfield Street, Torrington, CT 06790 / [www.kentscientific.com](http://www.kentscientific.com)

**1**

Product Name: \_\_\_\_\_ Serial #: \_\_\_\_\_ RMA#: \_\_\_\_\_  
(in subject line of email)  
Product Name: \_\_\_\_\_ Serial #: \_\_\_\_\_  
Product Name: \_\_\_\_\_ Serial #: \_\_\_\_\_

**2**

Prior to returning equipment that may be contaminated with biohazardous materials, potentially biohazardous materials, or radioactivity; the user must first decontaminate the equipment being returned. The decontamination procedure will include the following, as appropriate:

**RETURNS WILL NOT BE ACCEPTED WITHOUT THIS INFORMATION**

Place an "X" next to the appropriate box

☐ This equipment has not been used in an area which would result in any biohazard or radioactive exposure.

☐ This equipment was appropriately decontaminated\* from any biohazardous materials with: \_\_\_\_\_



\*Example: Autoclave, 10% bleach, Ethylene Oxide, formalin, etc. (Please note that it is the user's responsibility to confirm that the method of decontamination used is appropriate). Instruments must be decontaminated externally and internally, if needed.

☐ This equipment was appropriately decontaminated and tested for radioactivity by: \_\_\_\_\_

\*Example: Wipe test with results ( $^3\text{H}$ ,  $^{14}\text{C}$ ,  $\alpha$ -emitters), Geiger counts, etc.

**3**

If you are expecting a return or replacement shipped to you, please indicate the shipping address:

Institution: \_\_\_\_\_

Department: \_\_\_\_\_

Address Line 1: \_\_\_\_\_

Address Line 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Country: \_\_\_\_\_ Telephone: \_\_\_\_\_ ☐

**4**

Name: (print) \_\_\_\_\_ Telephone: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Return Product To: Kent Scientific Corporation  
1116 Litchfield Street  
Torrington, CT 06790 USA  
Attn: Returns/RMA #

Returns using a Kent Scientific account should be sent "standard ground" service only. Written permission is required to use any service other than standard ground. Unless prior written authorization is obtained, the sender will be responsible for additional costs associated with the shipment if it is not sent by standard ground.

**BEFORE SHIPPING THE PRODUCT: Fax or Email the completed form to 860-626-1179, [sales@kentscientific.com](mailto:sales@kentscientific.com)**





**Kent Scientific**  
C O R P O R A T I O N

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