

User Guide and Operating Manual

RC² – Rodent Circuit Controller
922100



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User/Owner Responsibility

User/Owner Responsibility

PLEASE READ THIS MANUAL BEFORE OPERATING THE ANESTHESIA MACHINE.

The VetEquip *RC² – Rodent Circuit Controller* 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.

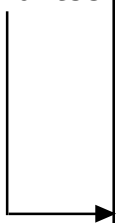
You should never pay for anything less than premium products and services.

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 *RC² – Rodent Circuit Controller* 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.
- Use only oxygen regulated to 50-55 psi as the carrier gas. 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.
- Filling Vaporizer ~ See page 12 for complete instructions on proper filling of the vaporizer. Vaporizer should not be filled unless the System Pressure reads zero ("0").



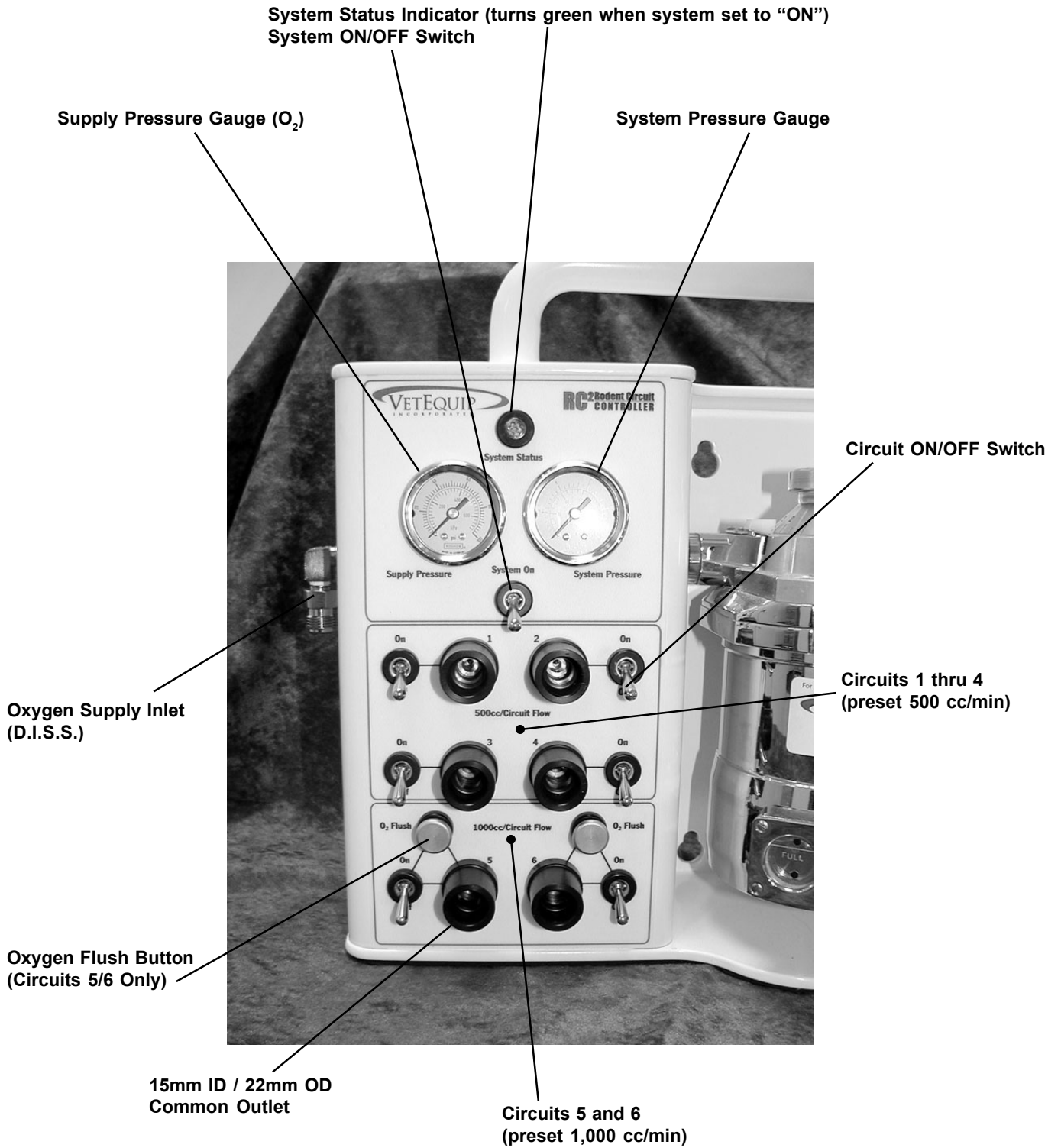
The vaporizer on the *RC² – Rodent Circuit Controller* is specific to this system and **MUST NOT** be used as a component on any other anesthesia system or device.

All specifications are for standard systems.

Operational Characteristics	RC2 - Rodent Circuit Controller (922100)
Inlet Gas Supply:	Male Oxygen DISS
Oxygen Flush Volume: Circuits 5-6 only	15-35 liters per minute @ 55 psi.
Circuit Delivery Volume (preset):	Circuit 1-4: 500 cc/min \pm 10% Circuit 5-6: 1,000 cc/min \pm 10%
Gas Pressure Requirements:	50-55 psi.
Gauge Ranges Supply System	0-100 psi 0-15 psi
Controls	
System Master Controller:	ON/OFF Toggle Switch - allows piped-in gas to charge system
System Status Indicator:	Green indicates system ON
Supply Pressure Gauge:	Indicates operating pressure of incoming gas (normal: 50-55 psi)
System Pressure Gauge:	Indicates system pressure (normal: 6 psi)
Circuit Controllers: (Circuits 1-6)	ON/OFF Toggle Switch - allows pre-set flow of O ₂ and anesthetic gas to individual circuits 1 thru 6.
Patient Circuit Outlets: (Circuits 1-6)	Standard 15mm patient circuit ports used to connect to non-rebreathing system
O ₂ Flush: (Circuits 5-6)	Momentary switch delivers 100% O ₂ to corresponding patient circuit outlet
Physical Properties	
Overall Dimensions (in.):	11.75 (w) x 12.50 (h) x 6.25 (d)
Weight:	Approx. 22.5 lbs.
Material: Chassis & Vaporizer: Hardware:	Aluminum Stainless Steel
Finish:	Heat-treated enamel

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

Component Identification



Theory of Operation

“Traditional” anesthesia machines require the operator to calculate a needed flowrate based on the circuit load, then carefully adjust a flowmeter to meter oxygen through a vaporizer that delivers a specific concentration of anesthetic vapor. Each time a circuit is added or removed from the system, the operator must recalculate the flowrate and re-adjust the flowmeter.

The **RC² – Rodent Circuit Controller** completely eliminates the need to calculate flowrates and flowmeter adjustments by incorporating advanced pneumatic components to deliver preset flows of anesthetic gas to 6 independent patient circuits. Because each circuit is controlled simply by an ON/OFF switch, the **RC² – Rodent Circuit Controller** allows the operator to quickly and conveniently add (activate) or remove (deactivate) circuits without the cumbersome need to recalculate the flowmeter setting; regardless of how many circuits are on or off, the flowrate in each active circuit is automatically controlled and adjusted by internal pneumatic components to consistently and accurately deliver the preset flowrate to the remaining active circuits.

Circuits 1 thru 4 are preset to 500 cc/min flow and circuits 5 and 6 are preset to 1,000 cc/min. Circuits 5 and 6 have higher flowrates to accommodate larger animals or may be used for quick induction in the supplied chambers.

By having circuits preset, several things are accomplished:

1. Activating or deactivating one circuit will not affect the other circuits;
2. Accurate, known volumes of metabolic oxygen are delivered to each patient;
3. Waste anesthetic gases can be reduced or eliminated by precluding the tendency to leave flowmeters at high levels;
4. Elimination of cumbersome flow calculations and flowmeter adjustments;
5. Increased accuracy of delivered anesthetic gases.

Operational Flowchart



1. The **RC² – Rodent Circuit Controller** is supplied with oxygen via conductive hose from the oxygen source; this could be a large or small tank in close proximity to the work area or piped-in from a central supply location. In all circumstances, the supply pressure must be between 50-55 psi and can be verified by the Supply Pressure gauge on the **RC² – Rodent Circuit Controller**. The Supply Pressure gauge is only active when the “System ON” switch is in the “ON” position.
2. Oxygen flows through a series of internal regulators to the precision vaporizer, where it picks up anesthetic vapor. The gas mixture is then channeled to 6 independent circuits preset to deliver 500 cc/min to circuits 1 thru 4 and 1,000 cc/min flow to circuits 5 and 6.
3. Anesthetic gas is **ONLY** distributed into a patient circuit when that circuit’s switch is in the “ON” position.
4. For circuits 5 and 6, an oxygen flush feature is provided to deliver a large volume of 100% oxygen in a short period of time. This feature overrides the delivery of anesthetic vapor regardless of the position of the “ON/OFF” switch for that circuit.
5. A patient circuit or induction chamber is connected to the outlets as needed. Always observe appropriate scavenging techniques.

Pre-Operative Check and Operation

For veterinary use only.

Personnel operating the *RC² – Rodent Circuit Controller* 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 the oxygen supply line output is regulated to 50-55 psi. Attach supply line to the D.I.S.S. inlet on the left side of the *RC² – Rodent Circuit Controller*.
2. Ensure gas supply is turned on and is of sufficient quantity for the procedure(s).
3. Test oxygen flush valve by depressing and holding the button for 3 seconds. Oxygen should flow rapidly from the common outlet on circuits 5 and 6 ONLY. When the oxygen flush button is released, flow should cease immediately with the button immediately returning to the "OFF" position.



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. To have the valve repaired, contact VetEquip or a VetEquip-authorized service facility before using this machine.

4. Fill the vaporizer with the appropriate anesthetic agent. See page 12 for special filling instructions. Refer to vaporizer instruction manual for complete instructions.



The vaporizer on the *RC² – Rodent Circuit Controller* is specific to this system and **MUST NOT** be used as a component on any other anesthesia system or device.

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. Check oxygen supply to ensure it is adequate for the day's procedures. Supply pressure must be regulated to 50-55 psi.



CAUTION

Do not use if supply pressure is outside this range. Damage from over-pressure will void warranty.

2. Fill the vaporizer with the appropriate liquid agent, according to instructions in the vaporizer manual and page 12 of this manual.



WARNING

Improper filling of the vaporizer can result in serious injury. See page 12 of this manual and follow all listed procedures.

3. Examine all circuit components for damage or defects. Replace as needed. Ensure all connections are appropriate and leak-free.
4. Ensure all circuit switches are in the "OFF" position. Set the "System On" switch to the "ON" position. The "System Status" indicator should show green, the "Supply Pressure" gauge should read 50-55 psi and the "System Pressure" gauge should indicate approximately 6.0 psi \pm 0.5 psi.



CAUTION

If the system pressure reads less than 4 psi or greater than 7 psi, switch System "OFF" and contact VetEquip.

DO NOT USE with the "System Pressure" outside of this range.

Filling Vaporizer



The vaporizer on the *RC² – Rodent Circuit Controller* is specific to this system and **MUST NOT** be used as a component on any other anesthesia system or device.



WARNING

It is **EXTREMELY IMPORTANT** to ensure that the “System Pressure” gauge reads “0” psi before attempting to fill the vaporizer. Any attempt to open the fill port while the vaporizer is under **ANY** pressure will result in agent being violently expelled from the fill port, splashing liquid agent on the clothes, skin or eyes, and resulting in gross pollution of the room. If this occurs, vacate the room immediately and seek first aid and medical attention as needed.



CAUTION

Proper filling technique for the vaporizer is extremely important on the *RC²*. Consult your vaporizer operators manual for appropriate techniques on filling your vaporizer and practice the following procedures listed below.

1. Depressurize the system and vaporizer as follows:
 - A) Turn the vaporizer dial to “0%”;
 - B) Set the “System On” switch to the “OFF” position;
 - C) Vent circuits 1 through 6 by setting each circuit switch to the “ON” position;
 - D) Verify that “Supply Pressure” and “System Pressure” gauges read “0” psi;
2. Fill the vaporizer as instructed in your vaporizer operators manual;
3. Return circuit switches one through six to “OFF” position.

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 **RC² – Rodent Circuit Controller**.

Do not use harsh or abrasive cleaners. Wipe with a damp cloth to clean. The **RC² – Rodent Circuit Controller** is coated with a baked-on finish that will withstand most cleaning/disinfectant solutions. If a solution is to be used, it is recommended you initially test its effect on an inconspicuous spot of the finish.

Circuit Switches and Oxygen Flush: These valves require no daily maintenance.

Patient Circuits and Tubing: These products are considered disposable and will deteriorate with age and use. They should be inspected prior to each use for kinks, holes and general wear. Replace when necessary.

Induction Chambers: Do not use alcohol or ammonia on chambers. Use warm water and soap for initial cleaning. Nolvasan solution or Cidex diluted to manufacturer's recommendations may then be used as a disinfectant. Check daily for condition of gasket and replace as needed.

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