

**HARVARD**  
APPARATUS

total solutions for  
**Anesthesia  
& Surgery**



**Anesthesia**

**Animal Surgery**

**Physiological Monitoring**

**Temperature Control**

**Ventilation**



# Introduction

## HARVARD APPARATUS

Harvard Apparatus, your global partner for respiration and surgical research, has compiled the latest advances in small animal surgery and developed a simple, easy-to-use Anesthesia and Surgery short catalog. This new brochure offers a sampling of our comprehensive surgical lines along with the latest and most innovative products required in a pre-clinical surgical suite, from anesthesia machines, to surgical instruments.

We have drawn upon our many decades of experience in small animal and surgery research to produce this helpful tool for our valued customers, allowing them to search for all major product requirements quickly and effectively. Our expert team, both your local sales and technical support representatives look forward to working with you and finding the best products to meet your specific needs.

Harvard Apparatus designs, manufactures and distributes an extensive range of bioscience products. With global reach and local service, make Harvard Apparatus your first choice for all your respiration needs.

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# Non-Rebreathing Systems for Rodents



**72-3011**  
Basic Table Top  
Anesthesia  
Machine

(Vaporizer not included)

## Basic Table Top Anesthesia Machine

The Basic Table Top Anesthesia Machine is an extremely compact anesthesia machine, 8 in x 8 in x 13 in (L x W x H), making it ideal for locations where space is limited. Four models are available which differ only by the type of flowmeter supplied.

**Vaporizer must be ordered separately.**

Order #	Product
72-3011	Table Top Research with 0.2 to 4 LORUM O <sub>2</sub> Flowmeter
72-3012	Table Top Research with 0 to 1000 cc O <sub>2</sub> Flowmeter
72-3013	Table Top Research with Dual O <sub>2</sub> Flowmeters 0.2-4 LORUM and 0-1000 cc
72-3014	Table Top Research with N <sub>2</sub> O and O <sub>2</sub> Flowmeter and Failsafe

## Vaporstick Anesthesia Machine

The Vaporstick is a utility unit designed to supply oxygen to non-rebreathing systems, intensive care units and nebulizers. The flowmeter adjusts from 0.2 to 4 LORUM for accurate patient settings. A flush valve is included for fast immediate oxygen. The unit is mounted on a stable spider base (5 legs) and a post assembly. By adding your choice of options, you can customize the Vaporstick to suit your research anesthesia requirements. Z-bracket and endcaps are included.

**Vaporizer must be ordered separately.**

Order #	Product
72-3007	Vaporstick Anesthesia Machine with O <sub>2</sub> Flowmeter
72-3009	Vaporstick with O <sub>2</sub> and N <sub>2</sub> O Flowmeters and Failsafe

### Optional Accessories

72-3010	Freestanding CO <sub>2</sub> Absorber System
72-3018	Single O <sub>2</sub> E-Cylinder Regulator and Double Tank Holder
72-3020	Dual E-Cylinder O <sub>2</sub> Tank Yokes Holder and Regulator
72-3017	Add-On Mayo Tray
72-3049	Z-Bracket Universal Vaporizer Mounting Bracket



72-3011 Basic Table Top Anesthesia Machine shown with the Harvard Apparatus 683 Small Animal Ventilator (on page 11)

# Non-Rebreathing Systems for Rodents



## Classic T3 Anesthesia Vaporizers

Harvard Apparatus offers new anesthetic vaporizers. These vaporizers, from the two most popular manufacturers of vaporizers in the world, Cyprane and Ohmeda (formerly Ohio Medical). They come with a full warranty and annual maintenance and offer a lifetime of service. Isoflurane and Sevoflurane specific vaporizers are available. The vaporizer manifold is included with the vaporizer.

All vaporizers are designed to be unaffected by pressure, temperature and flow rate to give you accurate levels of agent concentrations. The vaporizer provides accurate delivery of anesthetic agent in the following ranges: from 0.25% - 5% in 1/4 increments up to 3% then 1/2 increments up to 5%. Simply choose the anesthetic agent desired.

### Specifications

Inlet Flow Compensation	50 mls to 10 liters/min with minimal change in output concentration
Temperature Range Compensation	15°C to 35°C (59°F to 95°F)
Calibration	21°C (69.8°F)
Accuracy	±15% (within above flow and temperature range)
Duration of Use	Approximately 1.0 ml of liquid anesthetic is required to provide 200 ml of vapor
Liquid Capacity	125 ml liquid capacity, with 35 mls absorbed by wick
Dimensions (H x W x D) & Weight:	
Funnel Fill	18.4 cm x 12.7 cm x 14 cm (7.25 in x 5 in x 5.5 in); 7.27 kg (16 lbs)
Key Fill	18.4 cm x 12.7 cm x 15.2 cm (7.25 in x 5 in x 6 in); 7.25 in x 5 in x 6 in 16 lbs

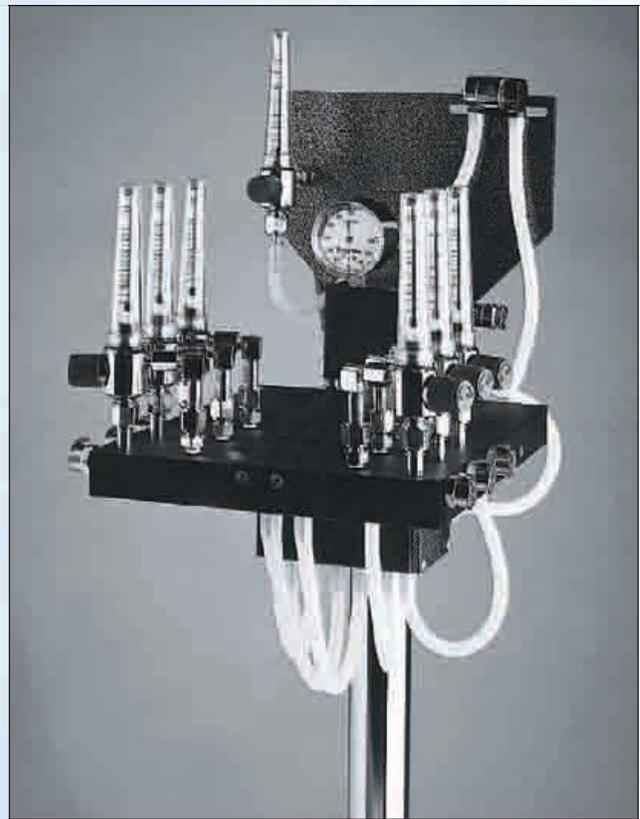
### Order # Product

72-8132	T3 Isoflurane Funnel-Fill Vaporizer*
72-7995	T3 Sevoflurane Funnel-Fill Vaporizer*
72-7997	T3 Isoflurane Key-Fill Vaporizer*
72-7996	T3 Sevoflurane Key-Fill Vaporizer*

### Vaporizer Accessories

72-3051	Filler Adapter for Key-Fill Vaporizer - Isoflurane
72-3053	Filler Adapter for Key-Fill Vaporizer - Sevoflurane
72-3054	Anti-Spill Device - Isoflurane
72-3056	Anti-Spill Device - Sevoflurane
72-3043	Male Endcap - Outlet
72-3044	Female Endcap - Inlet

\*Note: Vaporizer Endcaps are not included with the Vaporizer. If you are only purchasing a Vaporizer, you must also purchase the Endcaps.



## Multi-Station Research Anesthesia System

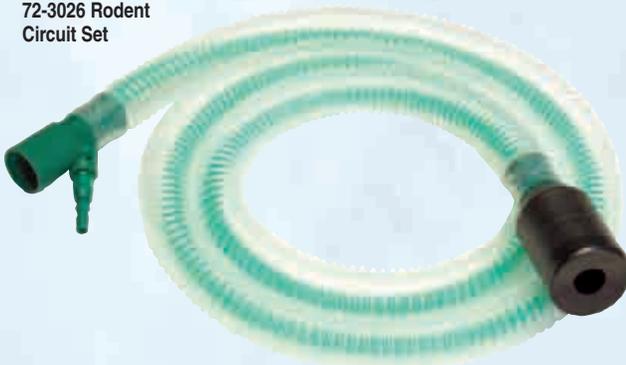
The Multi-Station Research Anesthesia System is the latest technology for rodent and small animal anesthesia. The multi-station unit offers a base unit with multiple stations, each individually controlled. The master flowmeter and auxiliary flowmeters all receive the same gas supply. The master flowmeter combined with an anesthetic vaporizer, Series T3, see left, are used to set the maximum percentage of anesthetic agent delivered to each station. Using the auxiliary flowmeters, the percentage of anesthetic agent can be diluted using the fresh gas supply from the auxiliary flowmeter. Using an easy-to-follow flow chart, each individual station can deliver a different percentage of anesthetic agent as needed, without effecting any other station.

### Order # Product

72-3023	Lab Animal 2 Station Multi-Station Research System, 2 animal
72-3024	Lab Animal 4 Station Multi-Station Research System, 4 animal
72-3025	Lab Animal 6 Station Multi-Station Research System, 6 animal
72-3026	Circuit Set, Rodent (hose, mask and uncut diaphragm)
72-3027	Mask, Rodent (no diaphragm)
72-3028	Rodent Mask Diaphragm Small (7/16 in DIA)
72-3029	Rodent Mask Diaphragm Medium (9/16 in DIA)
72-3030	Rodent Mask Diaphragm Large (3/4 in DIA)

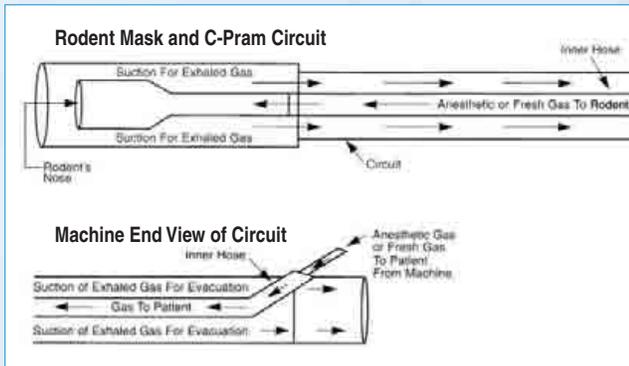
# Anesthesia Circuits

72-3026 Rodent Circuit Set



## Rodent Circuit Mask

Developed in conjunction with leading research facilities, the Rodent Circuit is the most effective, user-friendly mask for rodents. Available with 3 different size diaphragms, the mask easily fits most rodents. With the use of a C-Prax circuit shown, to the left, the mask is designed to deliver and evacuate the gas through dual tube design. Traditionally, the open mask system has caused problems because of the contamination of waste gas to the staff and the patient rebreathing CO<sub>2</sub>. These problems are avoided with the Rodent Circuit and mask design. When combined with in-house suction or the Lab Animal Evacuation System or F/Air canister, see page 9, there is minimal risk of untoward anesthetic agent exposure for the researcher. Inlet tubing: 6.25 mm (0.25 in) ID, silicone tubing. Outlet from rodent circuit is a 22 mm (0.866 in) respiratory fitting. Respiratory Adapters are available to connect the rodent circuit outlet to tubing of various sizes from 6 to 15 mm ID, see page 10.



Order #	Product
72-3026	Rodent Circuit Set, hose, mask and uncut diaphragm
72-3027	Rodent Mask, (no diaphragm)
72-3028	Diaphragm for Rodent Mask, Small (7/16 in DIA)
72-3029	Diaphragm for Rodent Mask, Medium (9/16 in DIA)
72-3030	Diaphragm for Rodent Mask, Large (3/4 in DIA)

## Anesthetic Manifold

These Manifolds permit the flow of gas to multiple anesthetic devices from only one vaporizer. One side of the Manifold directs the delivery of fresh gas while the other side directs the waste gas collection. Stopcocks, available separately, may be added to the circuit for increased control over the gas flow. Two stopcocks are required for each set of ports.

These manifolds can also be used with the rodent circuit and induction chamber to initially anesthetize and maintain without disconnecting the circuit. Requires tubing with ID of 8 mm (0.25 in).

*\*Not suggested for multiple animals, see lab animal multi-station on page 4.*

Order #	Product
60-5242	Manifold with 4 Ports for 2 Anesthetic Devices
60-5243	Manifold with 6 Ports for 3 Anesthetic Devices
60-5244	Manifold with 8 Ports for 4 Anesthetic Devices
60-5245	Stopcock for use with Manifolds, pkg. of 2



60-5244 Manifold with 8 Ports



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# Anesthesia Regulators & Flowmeters



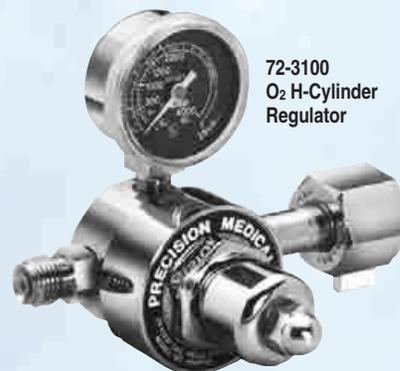
**72-3112**  
0-3 Liters/Minute  
O<sub>2</sub> Flowmeter



**72-3104**  
O<sub>2</sub> Regulator with  
0-15 L/M Flowmeter



**72-3020**  
Dual E-Cylinder O<sub>2</sub>  
Tank Yokes Holder  
and Regulator



**72-3100**  
O<sub>2</sub> H-Cylinder  
Regulator



**72-3099**  
O<sub>2</sub> E-Cylinder  
Regulator

## Regulators, Flowmeters and Hoses

Many accessories to connect a gas source (O<sub>2</sub> or N<sub>2</sub>O) to an anesthesia machine are available. Regulators are specific for the type of gas and tank size (small, E-cylinder or large, H-cylinder) used. All regulators terminate in a gas specific male DISS fitting. E-cylinder regulators attach to tank using a yoke and can only be used with E-size tanks with a post block.

### Order # Product

<b>72-3099</b>	O <sub>2</sub> Regulator for E-Cylinder (Includes O <sub>2</sub> Hose)
<b>72-3100</b>	O <sub>2</sub> Regulator for H-Cylinder (O <sub>2</sub> Hose ordered separately)
<b>72-3103</b>	O <sub>2</sub> Regulator for E-Cylinder with 0 to 15 LORUM Flowmeter (Includes O <sub>2</sub> Hose)
<b>72-3104</b>	O <sub>2</sub> Regulator for H-Cylinder with 0 to 15 LORUM Flowmeter
<b>72-3102</b>	N <sub>2</sub> O Regulator for H-Cylinder
<b>72-3018</b>	Single O <sub>2</sub> E-Cylinder Regulator & Double Tank Holder
<b>72-3020</b>	Dual E-Cylinder O <sub>2</sub> Tank Yokes Holder and Regulator
<b>72-3112</b>	0 to 3 LORUM O <sub>2</sub> Flowmeter <sup>1,2</sup>
<b>72-7458</b>	O <sub>2</sub> Regulator for H-Cylinder with 0 to 3 LORUM Flowmeter
<b>72-3113</b>	0 to 5 LORUM O <sub>2</sub> Flowmeter <sup>1,2</sup>
<b>72-3114</b>	0 to 15 LORUM O <sub>2</sub> Flowmeter <sup>1,2</sup>
<b>72-3115</b>	O <sub>2</sub> Hose, 10 ft <sup>3</sup>
<b>72-3116</b>	O <sub>2</sub> Hose, 15 ft <sup>3</sup>
<b>72-3117</b>	O <sub>2</sub> Hose, 20 ft <sup>3</sup>
<b>72-3118</b>	N <sub>2</sub> O Hose, 10 ft <sup>3</sup>
<b>72-3119</b>	N <sub>2</sub> O Hose, 15 ft <sup>3</sup>
<b>72-3120</b>	N <sub>2</sub> O Hose, 20 ft <sup>3</sup>

1. Replacement flowmeters for anesthesia machines are available, call for details

2. Flowmeter with Female DISS inlet and Male DISS outlet

3. Connectors on both ends are Female DISS

# Anesthesia Induction Chambers



## Induction Chamber

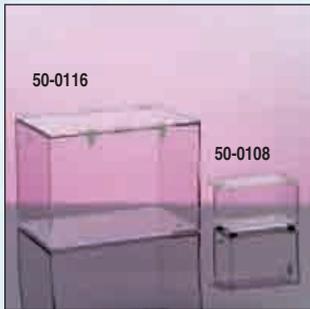
This cylindrical acrylic chamber is ideal for anesthetizing small animals such as rodents, guinea pigs, and birds. It has two, 1/4 inch barbed hose fittings, one for gas delivery and one for gas scavenging. The gas delivery barb directs the flow of anesthetic gas towards the bottom of the chamber. The chamber has a routed top that ensures a perfect fit. There are no corners, so cleaning is easy. Includes 10 ft of 0.25 in ID tubing.

## Dimensions

Inner, H x Dia	20.3 x 20.3 cm (8 x 8 in)
Small	8.89 x 13.3 cm (3.5 x 5.25 in)
Large	20.3 x 20.3 cm (8 x 8 in)
Overall, H x Dia	30.5 x 27.9 cm (12 x 11 in)
Small	17.8 x 17.8 cm (7 x 7 in)
Large	30.5 x 27.9 cm (12 x 11 in)
Barbs	Accepts, ID x OD, 6 x 8 mm (1/8 x 1/4 in) tubing

## Order # Product

<b>72-7110</b>	Induction Chamber, Small
<b>60-5246</b>	Induction Chamber, Large



## Anesthetizing Boxes

These anesthetizing boxes are constructed of 6 mm (1/4 in) thick, transparent plastic, with all joints securely cemented. The transparent plastic allows the animal to be under constant observation. Two 4.8 mm (3/16 in) nylon tubing connectors

are cemented on opposite ends of the box, one at the top and the other at the bottom. These connectors are for introducing and removing the gas.

These boxes are available in two sizes: small and large. The small box is

for rodents. The top slides open lengthwise on machined grooves. The large box is for larger animals such as rabbits and cats. Its top has three hinges for easy opening. Two fasteners squeeze the top down against a rubber gasket to seal the joints.

The small box measures, H x W x D, 10.7 x 25.7 x 11 cm (4 x 10 x 4.5 in). The large box measures, H x W x D, 29 x 44 x 29 cm (11.5 x 19.5 x 11.5 in).

*\*Note: Boxes must be cleaned with an acrylic approved cleaner - not alcohol.*

## Order # Product

<b>50-0108</b>	Anesthetizing Box, Small
<b>50-0116</b>	Anesthetizing Box, Large



## Portable Down Draft Table

Our downdraft table provides an effective way to protect workers from exposure to anesthetics, chemicals, and debris particles. Various filters are available to provide the safest surgical environment possible.

Tables are available with a single speed blower unit or with accessories to vent the system outdoors.

Optional accessories include shelving and an anodized aluminum cart.

## Specifications

Total Dimensions:	64.8 x 76.2 cm (25.5 x 30 in)
Tabletop	61 x 76.2 cm (24 x 30 in)
Work Area	43.2 x 61 cm (17 x 24 in)
Sidewalls	7.6 cm (3 in) out from perforated tabletop
Weight	20.4 kg (45 lbs) for tabletop 10.4 kg (23 lbs) for blower (without filter)
Material	Stainless Steel
Airflow	90 ft/min average velocity at surface; 50 ft/min average velocity 3" above tabletop surface
Voltage	110 VAC only
Autoclavable	Yes

## Order # Product

<b>72-6201</b>	Portable Down Draft Table with Blower
<b>72-6202</b>	Portable Down Draft Table with Vent
<b>72-6205</b>	Aluminum Cart
<b>72-6206</b>	Potassium Permanganate Filters, pkg. of 2
<b>72-6207</b>	Carbon Filters, pkg. of 2

# Anesthesia Evacuation

34-0388  
Fluovac System



## Fluovac Anesthetic Scavenging System

The Harvard Apparatus Fluovac System, incorporating the Fluosorber Canister (not included), combines small animal anesthesia with operator safety. The Fluovac provides a sensible answer to waste anesthetic gases in the operating room. This system was specifically designed to deliver anesthetic gases through a central mask and simultaneously remove excess waste gases by suction from the outer mask. The Fluovac is quiet and is a must for all veterinary operating theaters. Economical and easy to use. Each Fluovac system includes a size 1 mask suitable for anesthetizing small rodents.

### Specifications

Overall Dimensions, H x W x D	180 x 275 x 300 mm (7.1 x 10.8 x 11.8 in), case only
Weight (inc. Fluosorber)	8 kg (17.6 lbs)
Weight (exc. Fluosorber)	7 kg (15.4 lbs)
Power	110 VAC, 60 Hz; 240 VAC, 50 Hz, 37 Watts

**IMPORTANT: The Fluovac must only be used with non-flammable gases**

### Order # Product

34-0388	Fluovac, 110 VAC, 60 Hz
34-0387	Fluovac, 240 VAC, 50 Hz
34-1030	Fluovac, 240 VAC, 50 Hz base unit only, no masks

34-0415  
Fluosorber  
Canister



## Fluosorber Canister

The Fluosorber consists of a canister containing activated carbon, which absorbs anesthetic gas extremely efficiently.

This canister is used with the Fluovac System to scavenge anesthetic waste from the working environment. It is quick and simple to attach to the Fluovac base unit. The Fluosorber's capacity to scavenge is measured by weight: Simply pre-weigh canister and change once it has increased 200 grams. During manufacturing each Fluosorber is tested to ensure an

air flow of 60 liters per minute with a flow resistance not exceeding 2.0 cmH<sub>2</sub>O. When exhausted, the Fluosorber is sealed in the special bags provided and can then be completely incinerated. Supplied in cases of 6 canisters.

### Specifications

Active Canister Weight	1200 g (2.65 lbs)
Exhausted Weight	1400 g (3.1 lbs)

### Order # Product

34-0415	Fluosorber, 6 canisters
---------	-------------------------



## NEW Portable Scavenged Anesthesia Table

Harvard Apparatus have developed a simple, easy to use portable scavenged anesthetic operating table for mice. Simply connect the anesthetic delivery tube to your anesthetic supply. Then connect the exhaust mount to your Fluovac Scavenging System (22 mm bore scavenge tubing). This will give you an inexpensive, portable, down-draft operating table. Tables can also be created for rats. Please ask for details.

### Order # Product

34-1411	Portable Scavenged Anesthesia Platform
34-0909	22mm Bore Tubing to Connect to Fluovac

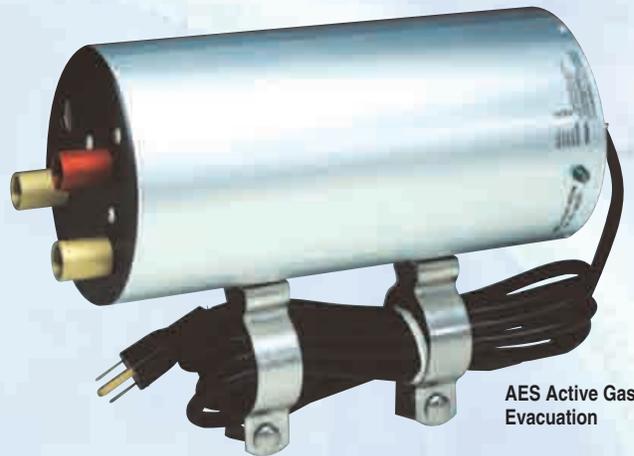
# Anesthesia Evacuation

## Anesthesia Evacuation Active Gas Evacuation System (AES)

The Anesthetic Evacuation System (AES) will safely and actively remove waste gas associated with everyday inhalation anesthesia. It can be mounted on the pole of the Vaporstick, see page 3. It can also be used as a freestanding unit and simply placed on the benchtop. Two standard 19 mm (0.75 inch) inlets and one exhaust port allows easy hook-up to existing equipment. A 12 foot grounded electrical cord and lightweight tubing, allows for machine maneuverability.

The waste gas from the pop-off valve on most rebreathing anesthesia machines is collected by passive flow to the AES. This allows for safe operation of the anesthesia machine with little or no vacuum exposure. Using a push blower, the AES actively removes the waste gas from the unit. The blower has the capacity of moving 12 cubic feet/minute through up to 150 feet of tubing to an outside vent or fume hood. The on/off switch illuminates a green light when the unit is activated. The 'on' light assures the operator that the unit is functioning.

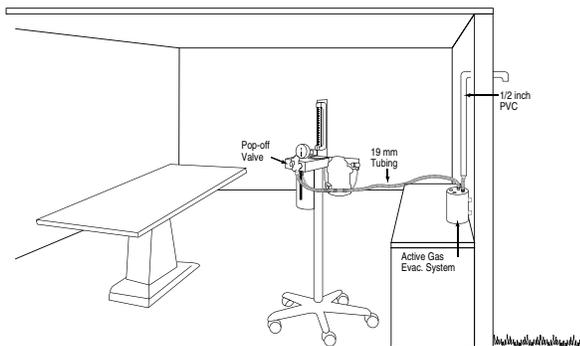
The Anesthetic Evacuation System includes a 3 inch and a 10 foot length of 19 mm ID hose and a 12.5 mm (0.5 inch) PVC Adapter. Additional lengths of tubing may be required and are available as an option along with an adapter to interconnect the 19 mm outlet tubing. An optional outlet line ceiling plate is available when connection to an outside wall is not convenient. Unit is 14 in. tall, 5 in. in diameter and weighs 5 lbs.



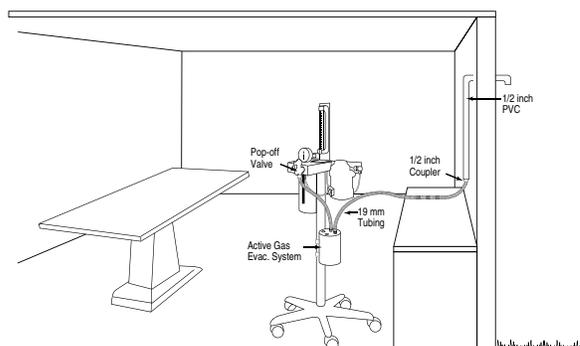
AES Active Gas Evacuation

Order #	Product
72-3064	AES Active Gas Evacuation, 110 VAC 60 Hz
72-3065	AES Active Gas Evacuation, 220 VAC 50 Hz

Setup Showing AES Mounted to Wall



Setup Showing AES Mounted to Pole of Anesthesia Machine



## F/AIR Filter Canister

This filter canister is the sensible answer for the removal of excess halogenated gases from the operating room environment. It can remove 50 grams of pure halogenated anesthetic gases. It is convenient to use and does not require a venting hood. Simply pre-weigh canister noting the starting weight on the side of the canister. Monitor weight throughout the procedure and discard once canister has gained 50 grams. Once used, the canister is then simply disposed of in regular trash. A connector for tubing is sold separately, see below. The canister is 15.2 cm (6 in) high with a diameter of 8.3 cm (3-1/4 in). Weight of active component is 200 grams.

Order #	Product
60-0979	F/AIR Filter Canister, pkg. of 1
72-1294	Case of 8 F/AIR Filter Canisters
60-5251	Connector for Tubing for F/AIR Filter Canister

# Anesthesia Masks & Adapters



## Cat Ventilation/Anesthesia Masks

Fitted with a standard 15 mm (3/5 in) taper for connection to anesthesia machines. They are available in three sizes and are supplied individually or as a convenient set containing one mask of each size.

The mask diameters are 25 mm (1 in), 38 mm (1-1/2 in), and 50 mm (2 in) for the small, medium and large size masks respectively.

Order #	Product
59-8201	Cat Ventilation/Anesthesia Mask, Small
59-8202	Cat Ventilation/Anesthesia Mask, Medium
59-8203	Cat Ventilation/Anesthesia Mask, Large
59-8204	Set of 3 Masks, one of each size



## Respiratory Adapters

These polypropylene adapters are used to connect different tubing sizes together in respiratory circuits.

Order #	Product
72-2889	6 to 22 mm (0.24 to 0.87 in), pkg. Of 10
72-2890	8 to 22 mm (0.31 to 0.87 in), pkg. of 10
72-2891	10 to 22 mm (0.39 to 0.87 in), pkg. of 10
72-2892	12 to 22 mm (0.47 to 0.87 in), pkg. of 10
72-2893	15 to 22 mm (0.59 to 0.87 in), pkg. of 10
72-2894	18 to 22 mm (0.71 to 0.87 in), pkg. of 10



## Canine Ventilation/Anesthesia Masks

These masks provide a convenient way of providing artificial ventilation or administration of anesthetic gases to dogs. They are constructed of rugged transparent polycarbonate. One end has a standard 15 mm (3/5 in) taper for connection to anesthesia tubing, while the other end has a soft flexible rubber diaphragm that molds itself to the contours of a dog's snout.

Two sizes are available. The small mask has an unstretched diaphragm opening of 2.5 cm (1 in), while the large mask has an unstretched opening of 4.4 cm (1-3/4 in).

Order #	Product
72-8206	Canine Ventilation/Anesthesia Mask, Small
72-8203	Canine Ventilation/Anesthesia Mask, Large
72-8207	Replacement Diaphragm for Small Mask

# Ventilation

## HARVARD APPARATUS

Harvard Apparatus manufactures a complete range of ventilators accommodating animals from prenatal mice up to large dogs, in both volume and pressure controlled models. For a complete range and technical specifications, please contact your local Harvard Apparatus office or distribution partner.



MiniVent, MicroVent & MidiVent



683/687 Small Animal Ventilator



Inspira Advanced Safety Ventilator



Large Animal Volume Controlled Ventilator

### NEW MiniVent, MicroVent & MidiVent

Ideal for neonatal, adult and obese mice. These valveless piston pumps are adjustable from 60-400 breaths per minute. 30-350  $\mu$ l stroke volume. Now available with gating, ideal for imaging applications. Contact Technical Support for additional details on this option.

#### Order # Model Product

73-0043	845	MiniVent Ventilator, 115 VAC
73-0044	845	MiniVent Ventilator, 230 VAC
73-3591	848	MicroVent Ventilator, 115 VAC
73-3590	848	MicroVent Ventilator, 230 VAC
73-4120	849	MidiVent Ventilator, 115 VAC
73-0044	849	MidiVent Ventilator, 230 VAC

### 683/687 Small Animal Ventilator

Ideal for small animal ventilation 0.5-30 cc tidal volume adjustment, 18-150 strokes per minute respiratory rate. Ability to monitor PEEP (Positive End Expiratory Pressure) ideal for animals 250-10 kg.

#### Order # Product

55-0000	Model 683, Small Animal Volume Controlled Ventilator
55-0001	Model 687, Mouse Volume Controlled Ventilator

### NEW Inspira Advanced Safety Ventilator

NEW features include Inspiratory Hold and Alarm Mute options—Ideal for ventilation during imaging. Harvard's first ventilator that can ventilate from mice (15 g) to cats (10 kg) with the same machine! Available in volume and pressure controlled versions. Advanced features include airway pressure monitoring, assist mode, programmable sigh breaths and adjustable I:E ratio.

#### Order # Product

55-7058	Inspira Volume Controlled Ventilator
55-7059	Inspira Pressure Controlled Ventilator
55-7061	Inspira Volume Controlled Ventilator with Inspiratory Hold
55-7062	Inspira Pressure Controlled Ventilator with Inspiratory Hold

### Large Animal Volume Controlled Ventilator

This is the workhorse of the Harvard Apparatus Volume Controlled Ventilators. The volume adjustment is made on the piston shaft, and that therefore accurate volume adjustment cannot be made while the ventilator is running (I:E % can be varied). Air/gas valving is by the four port system with separate ports for gas inlet, gas outlet (to animal), and ventilator exhaust.

#### Order # Product

55-0715	Model 613, 115 VAC, 60 Hz
55-0723	Model 613A, 230 VAC, 50 Hz

# Ventilation

**NEW**



## NEW Anesthesia Ventilation Adaptation Kit

Ventilation using gaseous anesthesia can lead to under or overpressure of your ventilator gas supply. With this simple kit you can visually see the re-breathing bag either inflate, if you have your gas flow rate set too high, or deflate if it is too low. This kit includes a 500cc

re-breathing bag, t-piece, tube mount and tubing. It also includes a Venturi style scavenging adapter for exhaust gases, suitable for placement on our Fluosorber canisters, see page 9.

### Order # Product

**34-1389** Anesthesia Ventilation Adaptor Kit\*

*\*Note: Kit includes: 10-1354 – 23-22mm adaptor, 10-1382 – T-piece, 34-0400 – tube mount, 34-0825 – silicone tubing (5m), 34-1053 – re-breathing bag 500cc, 34-1081 – Venturi style 22mm scavenging adapter with side arm*



## Anesthesia Connection Kits

This apparatus is intended to be used for connecting an anesthesia system to an animal ventilator in physiological and pharmacological research laboratories. Each kit contains the necessary connectors and tubing to properly connect the ventilator to the anesthesia system.

- **Direct connection of anesthesia to ventilator for delivery to animal via intubation or tracheotomy (see tracheal/intubation cannulas on right)**
- **Removes pressurized gas to waste port – the introduction of pressurized gas into a ventilator will damage the system and over-inflate the animal's lungs. The connection kits depressurize the incoming gas to atmospheric pressure for safe delivery**

Two kits are available, one for the Inspira Advanced Safety Ventilators and Rodent Ventilator Model 683, and another for the MicroVent, MiniVent, MidiVent and Model 687 Ventilator for mouse ventilation.

*NOTE: Waste gas will contain anesthetic gas and MUST be connected to an evacuation system.*

### Order # Product

**73-3076** Anesthesia Connection Kit for Inspira and the 683 Ventilators  
**73-3077** Anesthesia Connection Kit for MicroVent, MiniVent, MidiVent and Model 687 Ventilators

**NEW**



## NEW Intubation Platform

Harvard Apparatus is proud to introduce its brand new intubation platform. This has been specifically designed to allow the optimal insertion of tracheal cannula prior to artificial ventilation. The intubation platform comes with an adjustable incisor noose, to allow proper animal positioning. The incline of the board can then be adjusted to the optimal angle to allow you to see the correct placement of the cannula.

The intubation platform is available in 3 different models from mice to large rats with the angle being fully adjustable and locked into place by a simple thumb screw.

Order #	Product	Dimensions of Platform
<b>34-1415</b>	Intubation Platform for Mouse	130 x 50 mm (5.1 x 2 in)
<b>34-1416</b>	Intubation Platform for Small Rat	200 x 100 mm (7.9 x 9.3 in)
<b>34-1417</b>	Intubation Platform for Large Rat	300 x 150 mm (11.8 x 5.9 in)



Tracheal Cannula with Luer Adapter



Tracheal Cannula with Y-Adapter

## Tracheal and Intubation Cannulae

**Tracheal Cannulae** are used in a tracheotomy for general ventilation or respiratory mechanics studies. The outside diameter of the cannula must ensure a tight fit to the inside diameter of the animal's trachea.

Luer Y-Adapter and Cannulae Only available.

**Intubation Cannulae** are used in chronic studies where the animal will be intubated. The outside diameter of the cannula must ensure a tight fit to the animal's trachea. Luer Y-Adapter and Cannulae Only available.

We offer a full line tracheal and intubation cannulae. Please contact our technical support department for complete details.



Our technical support specialists are eager assist you with product selection & questions, call today!

**1-800-272-2775 & 508-893-8999**

# Non-Invasive Pulse Oximetry



## NEW MouseOx™ Pulse Oximeter

Harvard Apparatus introduces the NEW MouseOx™ to its range of products which can provide real-time, continuous measurements of multiple physiological signals from awake and anesthetized animals. Measurement parameters include Arterial O<sub>2</sub> Saturation, Pulse Strength, Breath Rate, Blood Flow and Effort to Breathe. All of these measurements are done via a non-invasive sensor that was specially developed to provide accurate measurements for heart rates up to 900 BPM.

The MouseOx™ is ideal for monitoring subjects during surgery to prevent hypoxia during surgery and titrate mechanical ventilation. In addition, the MouseOx™ monitors the depth of anesthesia, titrates supplemental oxygen, sets alarms and monitors in real-time every breath. The complete system involves animal restrainer, sensor and software for data acquisition. The software utilizes WinDaq Waveform Browser. Built-in statistics and filtering capabilities expand the system's flexibility. The waveform and real-time data point for each parameter measured is shown on the software.

### Order # Product

#### Standard Systems

<b>72-9703</b>	MouseOx™ 120V with Sensor Variety Pack*
<b>72-9704</b>	MouseOx™ 230V with Sensor Variety Pack*
<b>72-9847</b>	MouseOx™ 120V with All Sensor Pack
<b>72-9848</b>	MouseOx™ 230V with All Sensor Pack

\*Note: Customer must specify which sensor packs at time of order - see list of sensors and clips to the right for selection.

MRI



Throat Clip



Collar Clip



### Order # Product

#### Sensors and Clips

<b>72-9852</b>	All Sensor Pack with Commutator
<b>72-9853</b>	X-Small, Collarclip with Blank Clip for Awake Mice 1-10g, pkg. of 5
<b>72-9854</b>	Small, Collarclip with Blank Clip for Awake Mice, 10-40g and Rats, 5-30g, pkg. of 5
<b>72-9855</b>	Medium, Collarclip with Blank Clip for Awake Mice, 40-100g and Rats, 30-100g, pkg. of 5
<b>72-9856</b>	X-Small, Throatclip with Blank Clip for Anesthetized Mice, 1-10g, pkg. of 5
<b>72-9857</b>	Small, Throatclip with Blank Clip for Anesthetized Mice, 10-40g and Rats, 5-30g, pkg. of 5
<b>72-9858</b>	Medium, Throatclip with Blank Clip for Anesthetized Mice, 40-100g, Rats, 30-100g, pkg. of 5
<b>72-9859</b>	Mouse Thigh Sensor, Anesthetized Mice, pkg. of 5
<b>72-9860</b>	Large, Collarclip with Blank Clip, Awake Rat, 100-250g, pkg. of 5
<b>72-9861</b>	X-Large, Collarclip with Blank Clip, Awake Rat, 250-350g, pkg. of 5
<b>72-9862</b>	2X-Large, Collarclip with Blank Clip, Awake Rat, > 350g, pkg. of 5
<b>72-9863</b>	Large, Throatclip with Blank Clip, Anesthetized Rat, 100-250g, pkg. of 5
<b>72-9864</b>	X-Large, Throatclip with Blank Clip, Anesthetized Rat, 250-350g, pkg. of 5
<b>72-9865</b>	2X-Large, Throatclip with Blank Clip, Anesthetized Rat, > 350g, pkg. of 5
<b>72-9866</b>	Rat Foot Sensor, pkg. of 5

For additional accessories & configuration options, please contact our technical support dept.

# Capnograph & NIBP Systems

**NEW**



## NEW Capnograph for Small Rodents

### Basic Capnography Function

The capnograph is equipped with a built-in highly sensitive infrared spectroscopy CO<sub>2</sub> sensor. The sensor is pressure and temperature compensated. The very low volume of the sensor, the optimized system volume and the application of a micro-pump allows very accurate monitoring of respiratory CO<sub>2</sub> concentration on small animals.

### Extended Functions (optional)

The Capnograph can be equipped with two additional sensors. A pressure sensor for measuring tracheal pressure and a pneumotach with differential pressure transducer for measuring respiratory airflow. These sensors are mounted directly on the tracheal or intubation cannula and connected to the control unit, this serves to minimize the dead space.

The tracheal pressure and the respiratory flow are important signals to monitor mechanical ventilation when using a respirator. This aids avoidance or barotraumatic ventilation and indicates the efficiency of the ventilation.

### Order # Product

<b>73-3809</b>	Capnograph Type 340, 115-230 VAC, 50/60 Hz
<b>73-3816</b>	Flow and Pressure Sensor for Mouse
<b>73-3817</b>	Flow and Pressure Sensor for Rat

## Non-Invasive Blood Pressure Measurement - NIBP

Harvard Apparatus NIBP system provides an easy and reliable method of obtaining systemic blood pressure and other cardiovascular parameters in rodents, without invasive catheterization. With accurate measurements from conscious and anesthetized animals, this device should be a standard within any pre-clinical laboratory.

With automatic cuff inflation, steady and consistent results are achievable.

A wide array of transducers, tail cuffs, and holders are available for use with small mice and rats up to 500g rats. Please contact our technical support department for assistance.

Order #	Model	Product
<b>76-0173</b>	LE5001	Basic Unit for N.I.B.P. with RS-232 Serial Port. Includes SeDaCom software. Cuff and Transducer have to be ordered separately.
<b>76-0174</b>	LE5002	Standard Unit for N.I.B.P. with Memory and RS-232 Serial Port. Includes SeDaCom Software. Cuff and Transducer have to be ordered separately.
<b>76-0175</b>	LE5007	Complete Unit for N.I.B.P. with Scheduled Data Acquisition (up to 12 Animals) Memory and RS-232 Serial Port. Includes SeDaCom Software. Cuff and Transducer have to be ordered separately.



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# Temperature Control



## Homeothermic Temperature Control

The Harvard Apparatus Homeothermic Blanket System allows for precise temperature management during surgery and recovery. With user defined alarms and simple operation, this unit is a must for every pre-clinical and veterinary operating suites.

Control temperature is adjusted using a rotary encoder and is constantly visible along with the actual temperature on the display panel. Temperature is measured using a rectal feedback probe 1.5mm OD, which is small enough for mice. Three sizes of blankets are available for use with the smallest rodent up to dogs. Special circuitry eliminates electrical

noise, thus permitting sensitive recordings to be made while using this device. Temperature loss is one of the major contributory factors leading to loss of subjects in small animal surgery. The Harvard Apparatus Blanket System ensures temperature loss is not a concern.

Blanket System	115 VAC, 60 Hz	230 VAC, 50 Hz	Dimensions
Small System	50-7220-F	50-7221-F	150 x 200 mm
Medium System	50-7222-F	50-7223-F	450 x 700 mm
Large System	50-7224-F	50-7225-F	600 x 900 mm



## NEW Portable Digital Thermometer

Temperature monitoring is essential especially in small rodents. This portable, rugged Digital Thermometer is perfect for measuring rectal temperatures from mice to large rodents. This thermometer can measure in Celsius, Fahrenheit, or Kelvin. The thermometer has an accuracy of 0.1 Celsius. It comes with backlight for dark environments and 1.5 mm OD probe.

Order #	Product
34-1401	Portable Digital Thermometer including Probe
34-1402	Replacement Temperature Probe



## Small Animal Recovery Chamber/Warming Cabinet

This chamber was designed specifically as a post-operative recovery unit for small animals. It can also be adapted for a fluid warming cabinet. The casing is ABS plastic and has a clear door manufactured from Perspex. Optional dividers can be added to create two compartments.

The operating temperature of the sensor is adjustable from approx. 16°C to 45°C. The unit can be boosted with fan assistance if required. Temperature is indicated on a digital display. There is a clear vertical panel to observe the animals.

Order #	Product
34-0932	Small Animal Recovery Chamber/Warming Cabinet, 115 V
34-0516	Small Animal Recovery Chamber/Warming Cabinet, 230 V
34-0934	Divider (Creates 2 Compartments within Warming Chamber)

# Operating Tables



## Large Animal Operating Table

The Harvard Apparatus large animal operating tables can lift a weight of up to 150 kg (330 lbs) from 490 mm (19.3 in) to a height of 970 mm (38.2 in). This minimizes operator lifting injuries within a veterinary or pre-clinical operating theater environment. These tables are available in heated and non heated models. All table surfaces are made from the finest quality AISI-316 stainless steel and measure 1,200 x 600 mm (47.2 x 23.6 in). Other table surfaces are available, including rubber and laminate. Each table comes with locking castors and remote handheld operating device.

All heated tables come with power sockets to provide a power source for other equipment, and a digital heater controller to control the table surface temperature.



Order #	Product
34-1020	Large Operating Table Fixed Top, Heated Surface, 115 VAC, 60 Hz
34-1019	Large Operating Table Fixed Top, Heated Surface, 230 VAC, 50 Hz
34-1022	Large Operating Table Tilt Mechanism, Heated Surface, 115 VAC, 60 Hz
34-1021	Large Operating Table Tilt Mechanism, Heated Surface, 230 VAC, 50 Hz
50-1361	Large Operating Table Tilt Mechanism, & Accessories*, 115 VAC, 60 Hz
50-1387	Large Operating Table Tilt Mechanism, & Accessories*, 230 VAC, 50 Hz
34-0924	Large Operating Table Base Only, 115 VAC, 60 Hz
34-0306	Large Operating Table Base Only, 230 VAC, 50 Hz
34-0307	Large Operating Table Stainless Steel Top Only
34-0312	Large Operating Table Tilt Mechanism Only

*\*Note: Accessories include stainless steel instrument tray, removable vertical rods and tying cleats.*



## Heated Small Animal Operating Table

Harvard Apparatus manufactures a range of small animal heated tables ideal for rodent surgery. They can be heated by a constant power supply, and maintain a constant surface temperature, or can be connected to our Homeothermic blanket system for optimal temperature control. Other options, including cork surface heated tables are also available. Please contact our technical support department for additional information.

Order #	Product
50-1239	Heated Small Animal Operating Table, 115 VAC, 60 Hz
50-1247	Heated Small Animal Operating Table, 230 VAC, 50 Hz



Our technical support specialists are eager assist you with product selection & questions, call today!

**1-800-272-2775 & 508-893-8999**

# Surgical Instruments

## Surgical Instruments

Harvard Apparatus introduces its new range of surgical instruments. Manufactured in Germany, our range of surgical instruments offer exceptional quality and value. Harvard Apparatus offers additional savings in value and convenience by offering kits comprised of items used together. For individual items or to receive additional information on our extensive surgical instrument range, please contact our technical support department.



### Minor Surgery Surgical Kit

This convenient Surgical Kit is ideally suited for basic procedures and minor surgery.

#### The Minor Surgery Surgical Kit consists of:

- 72-8350** Scalpel Handle No. 3
- 72-8360** Scalpel Blades No. 10, Sterile
- 72-8441** Eye Scissors, 11.5 cm, Curved, Special Cut
- 72-8906** Blumenthal Bone Rongeurs, Curved, 15.5 cm
- 72-8450** Universal Clothing Scissors
- 72-8393** Operating Scissors, 14.5 cm Sharp/Blunt, Straight
- 72-8676** Kuehne Cover Glass Forceps. 10 cm, Angled
- 72-8696** Jeweller's Forceps No. 5, 11 cm, with Extra Delicate Points
- 72-8912** Probe 14.5 cm Double Ended, 1 mm Diameter

#### Order # Product

- |                |                            |
|----------------|----------------------------|
| <b>72-8940</b> | Minor Surgery Surgical Kit |
|----------------|----------------------------|



### Rat Surgical Kit

This Rat Surgical Kit is an ideal starting point for surgical procedures commonly performed on laboratory rats.

#### The Rat Surgical Kit consists of:

- 72-8372** Disposable Scalpels with plastic handle No. 11, sterile box of 10
- 72-8696** Jeweller's Forceps No. 5, 11.0 cm, with Extra Delicate Points
- 72-8503** Vannas Eye Scissors 8.5 cm Straight, Spring Action
- 72-8604** Graefe Iris Forceps Serrated 10.0 cm Curved Points, 0.7 mm
- 72-8440** Eye Scissors 11.5 cm Straight, Special Cut
- 72-8919** Barraquer (Colibri) Eye Specula, Large
- 72-8844** Olsen-Hegar Needle Holder with Scissors. 11.5 cm
- 72-8912** Probes 14.5 cm Double Ended, 1 mm Diameter

#### Order # Product

- |                |                  |
|----------------|------------------|
| <b>72-8942</b> | Rat Surgical Kit |
|----------------|------------------|



### Deluxe Major Surgical Kit

This convenient Surgical Kit is ideally suited for more extensive procedures and major laboratory animal surgeries.

#### The Deluxe Major Surgical Kit consists of:

- 72-8350** Scalpel Handle, No. 3
- 72-8360** Scalpel Blades No. 10, Sterile
- 72-8362** Scalpel Blades No. 11, Sterile
- 72-8508** Vannas Eye Scissors, Spring Action Model Tübingen, 8.5 cm, Straight
- 72-8899** Olsen-Hegar Needle Holders with Scissors with Tungsten Carbide Inserts, 14.0 cm
- 72-8440** Eye Scissors, 11.5 cm, Straight, Special Cut
- 72-8696** Jeweller's Forceps, 11.0 cm, No. 5, with Extra Delicate Points
- 72-8598** Graefe Iris Forceps, Serrated, 7.0 cm, Curved, Points 0.5 mm
- 72-8394** UltraEdge Operating Scissors, 14.5 cm Sharp/Blunt, Straight
- 72-8450** Universal Clothing Scissors
- 72-8905** Friedman Bone Rongeurs, Delicate
- 72-8547** Adson Tissue Forceps, 12.0 cm, 1x2 Teeth
- 72-8919** Barraquer (Colibri) Eye Specula, Large
- 72-8912** Probes, 14.5 cm, Double Ended, 1 mm, Diamond

#### Order # Product

- |                |                           |
|----------------|---------------------------|
| <b>72-8941</b> | Deluxe Major Surgical Kit |
|----------------|---------------------------|



### Mouse Surgical Kit

This Mouse Surgical Kit is an ideal starting point for surgical procedures commonly performed on laboratory mice.

#### The Mouse Surgical Kit consists of:

- 72-8372** Disposable Scalpels with Plastic Handle No. 11, Sterile, Box of 10
- 72-8696** Jeweller's Forceps No. 5, 11.0 cm with Extra Delicate Points
- 72-8503** Vannas Eye Scissors, 8.5 cm Straight Spring Action
- 72-8604** Graefe Iris Forceps Serrated, 10.0 cm, Curved Points 0.7 mm
- 72-8426** Eye Scissors 10.5 cm, Straight
- 72-8918** Barraquer (Colibri) Eye Specula, Small
- 72-8826** Derf Needle Holders, 12.0 cm
- 72-8912** Probe, 14.5 cm Double Ended, 1 mm Diameter

#### Order # Product

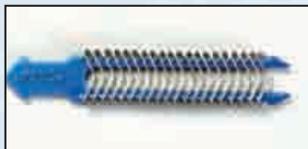
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| <b>72-8943</b> | Mouse Surgical Kit |
|----------------|--------------------|

# Surgical Instruments & Accessories

34-0554



34-0556



## Autoclip® Wound Clip System

This Autoclip® wound closure system provides a rapid, easy to use method to securely close wounds. When the wound is healed, simply remove the clip using the handy removal forcep. A convenient starter set is offered for first time buyers which includes an Autoclip® applicator, Autoclips®, and removal forcep. The stainless steel Autoclips® are 9 mm in size. Instruments and wound clips are supplied non-sterile, but may be autoclaved.

### Order # Product

<b>34-0557</b>	Autoclip® Starter Set, Includes 34-0554 Applicator, 34-0556 Removal Forcep, 100 x 9 mm clips, in a Handy Plastic Case
<b>34-0554</b>	Autoclip® Applicator for 9 mm Clips
<b>52-3748</b>	Autoclips®, 9 mm, Stainless Steel, Pkg. of 100
<b>34-0556</b>	Autoclip® Removal Forcep



## Glass Bead Dry Sterilizer

This compact unit provides a quick and easy way to sterilize surgical instruments. The stainless steel, central well is filled with dry glass beads that are heated to 500°F. Simply insert an instrument into the beads and, within 15 seconds, the submerged portion of the instrument is sterilized. It's that easy! This unit is supplied ready to use. Replacement glass beads

are available separately. This product is a must for any laboratory doing small animal surgery. It is recommended that you replace the beads every six months.

### Order # Product

<b>61-0183</b>	Glass Bead Dry Sterilizer, 120 VAC
<b>61-0185</b>	Replacement Glass Beads, 1.5mm OD, 10 oz. Bag

**NEW**



## NEW Biopsy Ear Punch

The New Biopsy Ear Punch, from Harvard Apparatus, has a dual cutting edge that cuts rather than tears, causing minimal trauma. This is an ideal tool for biopsy collection or marking of laboratory rodents ears. It is available with or without handy tube holder allowing hands free sample collection. Different gap sizes are available for mouse (1.5 mm) and rat (2.5 mm) ears.

### Order # Product

<b>34-1061</b>	Biopsy Punch with 1.5mm Gap
<b>34-1175</b>	Biopsy Punch with 1.5mm Gap with Tube Holder
<b>34-1197</b>	Biopsy Punch with 2.5mm Gap
<b>34-1198</b>	Biopsy Punch with 2.5mm Gap with Tube Holder



**NEW**

## NEW Stylique® Cordless Trimmer

The Stylique® cordless Trimmer is ideal for use on small laboratory animals. The slim pencil shape and narrow blade design allows accurate and precise fur removal – perfect for prepping animals for surgical procedures. On larger animals, use this trimmer on more delicate

areas such as the feet, face and ears. Blade is made of high carbon precision ground steel. The trimmer comes complete with Size 30 Blade, 1-AA Battery, Blade Guard, Oil, Built-in Cleaning Brush and Instructions.

### Order # Product

<b>72-9065</b>	Stylique® Cordless Trimmer
<b>72-9066</b>	Replacement Blade, Size 30, 3/8 in

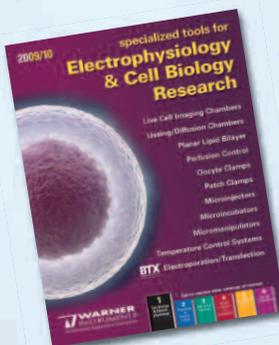
# NEW Catalogs

## Other Catalogs from Harvard Apparatus



### 2010 BTX Electroporation Catalog

BTX offers a comprehensive line of instruments and accessories for both electroporation and electrofusion of mammalian, bacterial, yeast, fungi, insect and plant cells and tissues. BTX specializes in providing research tools for novel cutting edge applications such as adherent cell electroporation, high-throughput cloning, in vivo gene delivery, in ovo gene delivery, and in & ex utero gene delivery.



### 2009 Warner Electrophysiology and Cell Biology Catalog

For the electrophysiological, cellular, and neurological sciences. Our extensive product line includes voltage and current clamp amplifiers for whole-cell and patch applications. Bessel filters, chambers for imaging and recording systems, perfusion control systems and

steppers, solution heating systems, microscope translation tables, microelectrodes and holders, and glass capillary tubing, plus now includes electroporation and transfection systems from BTX.



### 2009 Behavioral Research Catalog

Panlab/Harvard Apparatus offers high quality equipment for the biological sciences. For over 30 years, our team covers all stages of development - from design to manufacturing, software to hardware, technical and scientific support. Panlab/Harvard Apparatus is your reliable source for the most comprehensive solutions to your

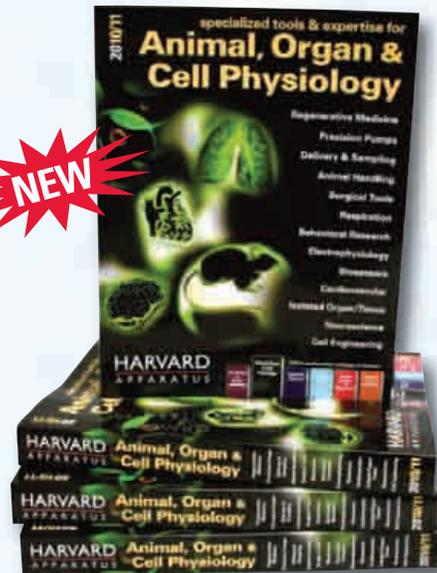
application needs. Our offerings include

the following application areas: video tracking, activity/exploration, sensory motor, analgesia, memory, anxiety, metabolism, non-invasive blood pressure, and isolated physiology systems. Our team is ready to adapt, improve or develop new or pre-existing lines to meet our customer's changing requirements.



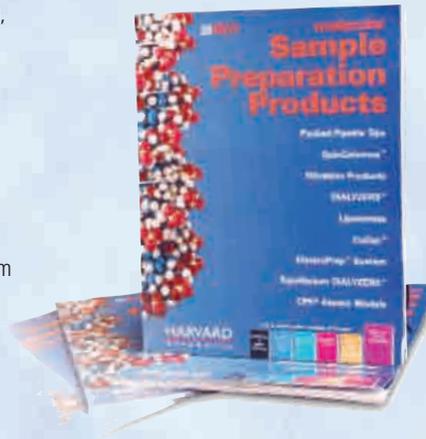
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**1-800-272-2775 & 508-893-8999**



### 2010 Animal, Organ & Cell Physiology

This catalog features a broad range of products, including our legendary line of infusion and perfusion pumps, ventilators and anesthesia systems, surgical instruments and equipment for small to larger animals, and isolated organ and tissue systems for all levels of research and education. These products are designed to help you achieve better research results in less time.



### 2010 Molecular Sample Prep Catalog

This NEW Catalog lists the most innovative sample preparation technologies and CPK models. Harvard Apparatus offers a broad range of products for various applications at sample sizes of 5µl to 5ml that can be used for separating small or large molecules, e.g., nucleosides from proteins, desalting

samples, concentrating biomolecules, cleaning up samples for mass spectrometry and for binding studies. These Advanced Products include packed tips, spin columns, filtration plates, disposable or re-usable dialysis products and equilibrium dialyzers, ElectroPrep systems and a full line of CPK Models offered exclusively by Harvard Apparatus. The patented 96-Well Dispo-Equilibrium Dialysis Plates are already the system of choice for accurate binding studies.

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