EUTHANEX®

## ADVANCING HUMANE EUTHANASIA
FOR SMALL RESEARCH ANIMALS

Euthanex Corporation® is a prominent member of the E-Z Systems® family of products. E-Z Systems specializes in aiding biomedical researchers and facilities in small animal anesthesia with E-Z Anesthesia®, facility management software with E-Z Trak®, and custom, autoclavable rack covers with E-Z Covers®.

For over 25 years, Euthanex has led the industry with cutting edge equipment for the humane euthanasia of small laboratory animals using CO_2. In the late 1980s, Euthanex revolutionized humane CO_2 euthanasia with our patented Euthanex Lid System. Working with veterinarians, principal investigators, facility managers, and technicians, Euthanex continues to listen to the needs of our users to innovate and enhance the humane euthanasia process. Responding to those needs of our users, Euthanex took humane euthanasia to the next level. The new generation of SMARTBOX® Auto CO_2 Systems utilizes advanced technology to individually control each level of the euthanasia process independently and automatically with the push of a button. This advancement provides for increased efficiency and flexibility of the SMARTBOX systems and, thereby, its operators and managers.
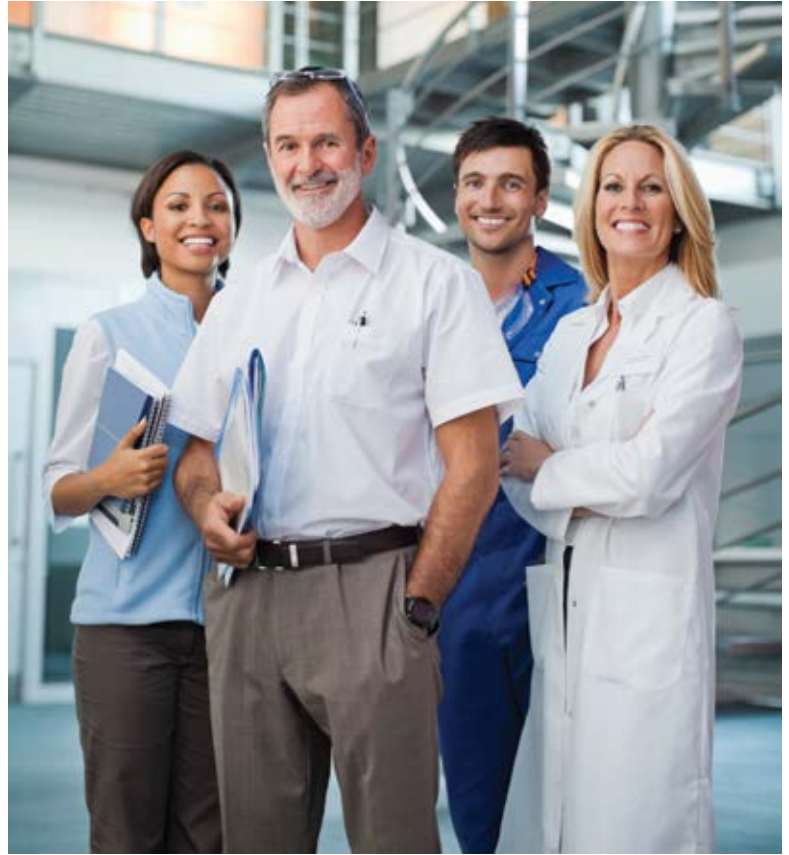
Euthanex recognizes that not every facility requires automated solutions. Euthanex offers numerous manual configurations, including our new Tamper-Proof line of preset flow meters and regulators. Our Tamper-Proof line allows users to simply turn the gas on to deliver the preset flow required. Visual indication on the equipment ensures proper flows are achieved. We now also offer easy-to-use validation kits available for facilities that require independent flow verification of equipment in-house. And, of course, our industry leading Euthanex lids and a full line of regulators.

As the pioneers of humane euthanasia equipment in the laboratory animal industry, Euthanex has decades of experience meeting the needs of our users and exceeding expectations. Our equipment is AVMA compliant and safe for personnel. The efficiency of our equipment means no wasted gas and no need for a secondary kill method. Our knowledgeable staff is fully trained and happy to assist you in selecting the right equipment for your needs. Contact our Customer Care Team today, and let us help you find the right fit for your facility.

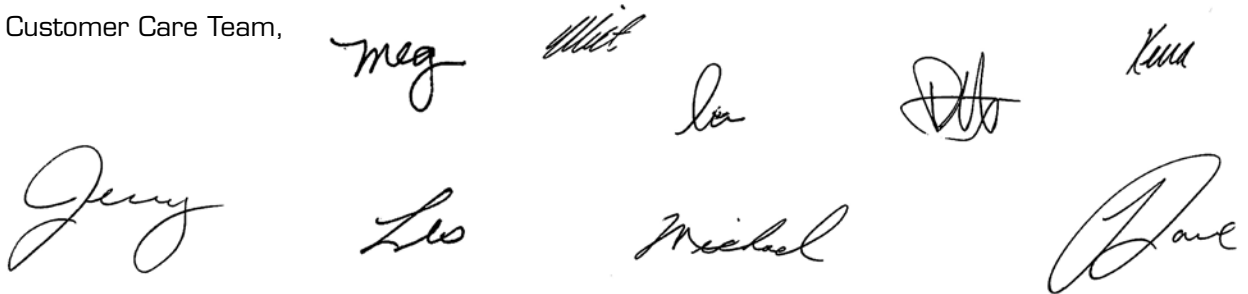The E-Z Systems Customer Care Team,

Table of Contents

EUTHANEX®

Finding Your System

Finding your system starts with a few basic questions. Review the following guide to find your perfect fit. Need assistance? Our Customer Care Team is happy to help - just give us a call.

1. Who is performing the Euthanasia?

Animal Care Staff
Animal care staff gather home cages with food and water and deliver them to centralized locations. Cages would remain unaffected until optimal numbers are reached for efficient euthanasia cycle.

Research Staff
Research staff would utilize a lab control or manual unit for quicker procedures and smaller quantities.

2. How much control do you want your operators to have?

Manual Adjustable Flow Rate Systems
Operator has control of all system variables: turning on and off gas flow, setting flow rate, and determining procedure times.

Manual Tamper-Proof Preset Flow Rate Systems
Operator has control of two system variables: turning on and off gas and determining procedure times.

Fully Automated SMARTBOX® Systems
Operator only has to push "Start."

3. Centralized Locations or Lab Locations?

Do you prefer one large system where animals are transported to, or several smaller systems where individual labs perform their own procedures?

Centralized
Euthanasia is performed in dedicated locations generally by animal care staff. Better oversight allows for increased guideline compliance. Labor and time efficiency.

Lab
Euthanasia is performed by individual users in their designated labs. Best for smaller quantities of cages and for quick procedures.

4. How many cages processed per hour?*

*Based on standard shoebox mouse cage containing adults.

Low Volume Systems

Manual Systems

7 cages/hour
Cycle Time = 1 cage/6.5 min.

EP-1305 with Lid (p.25, 28)

Automated Lab Control Units

7-28 cages/hour
Cycle Time = 1 - 4 cages/6.5 min.

EA-32000 (p.22)

Automated Tabletop Chambers

24 cages/hour
Cycle Time = 4 - 8 cages/14.5 min.

TT-8100 (p.19)

Moderate Volume Systems

Automated Single Chamber System

60 cages/hour
Cycle Time = 20 cages/17 min.

M1-SBFF-1 (p.12)

Automated Double Chamber System

120 cages/hour
Cycle Time = 40 cages/21.5 min.

M1-SBFF-2 (p.13)

High Volume Systems

Automated Four Chamber System

160 cages/hour
Cycle Time = 80 cages/20 min.

MSVF-4 (p.8)

Automated Eight Chamber System

320 cages/hour
Cycle Time = 160 cages/23 min.

MSVF-8 (p.9)

EUTHANEX®

Manual Single Cage	Automated Lab Control Unit	Automated Tabletop Chambers	Automated Single Chamber	Automated Double Chamber	Automated Four Chamber	Automated Eight Chamber
Cycle Time: 6.5 minutes	Cycle Time: 6.5 minutes	Cycle Time: 14.5 minutes	Cycle Time: 17 minutes	Cycle Time: 21.5 minutes	Cycle Time: 20 minutes	Cycle Time: 23 minutes
					80 cages/cycle	160 cages/cycle
		4 cages/cycle		40 cages/cycle		
	1-4 cages/cycle					
	or	or	20 cages/cycle			
1 cage/cycle	or	8 cages/cycle				
	or					

5. House or Bottled Gas?

Now that you have determined your system features and capacities, you need to find out how your CO_2 is going to be delivered - a house gas source or a cylinder. In order for gas to flow, there are different connections for house or cylinder sources that require specific accessories. For more information, see below and page 26 or contact our Customer Care Team.

House Gas

House gas is supplied from a centralized location - no CO_2 cylinders are present in the lab. With our larger SMARTBOX® systems, you must verify that the house system can achieve and maintain required flow rates. Contact your gas supplier to determine and ensure necessary flow rates for larger systems.

Flow Meter for House Gas

See page 31 & 32.

Bottled Gas

The bottled gas source connects CO_2 cylinders directly to the equipment and requires a regulator. This configuration provides constant high pressure output to achieve consistent flow rates. This method is independent of other labs during system operation.

Regulator for Bottled Gas

See page 28 & 29.

SMARTBOX®

Most Advanced - Simple to Use

Auto CO$_2$ vs. Manual Euthanasia

Five years ago, Euthanex introduced and patented our exclusive SMARTBOX Automated CO$_2$ system, which revolutionized large scale, humane small animal euthanasia. SMARTBOX, the most advanced, yet easiest to use system, takes the guesswork out of the euthanasia process. Am I following the current American Veterinary Medical Association (AVMA) guidelines? What flow rate do I need to be at to be AVMA compliant? How long do I need to expose the animals to CO$_2$ to avoid secondary kill methods? Are my technicians operating in a safe environment? Are my operators adhering to our facility's euthanasia protocols every time? These questions are eliminated with the advanced technology of the SMARTBOX Auto CO$_2$ line.

The SMARTBOX Auto CO$_2$ systems incorporate cutting edge technology to ensure they are as safe and user-friendly as possible. The programs are preset to be compliant with your facility and AVMA's guidelines without relying upon its operator. The operator merely needs to choose the program and push start. Chamber doors automatically lock and built-in safety measures prevent operation when doors are not properly closed.

SMARTBOX Time and Cost Savings Comparison

Time and labor savings are significant with SMARTBOX. The SMARTBOX M1 Chamber Systems can accommodate up to 20 standard shoe box mouse cages each. The average cycle time is under 20 minutes for adult mice. In 20 minutes, a manual process will complete 3 mouse cages (see manual time calculation below). As a result, it would take an technician 130 minutes to euthanize the same number of cages that a single SMARTBOX cycle performs in less than 20 minutes. This comparison does not even take into account the fact that the SMARTBOX system can be loaded, started, and then allows the technician to perform other duties during the cycle. Most facilities already using SMARTBOX have paid for their equipment purchase in less than a year with labor savings alone. Beyond cost savings, facilities using SMARTBOX systems ensure the euthanasia cycles are consistent to the AVMA Guidelines every time and virtually eliminates human error, uneasiness, and stress.

Scan for more information.

Manual Time Calculation

The manual euthanasia technique requires a trained technician to introduce CO$_2$ at specified flow rates. The 2013 AVMA Guidelines* on Euthanasia recommend a displacement rate of 10% to 30% of the total volume of the cage or chamber size. Basing the fill rate at 30%, it will take about 3.5 minutes of charge time to euthanize a standard mouse cage (7" W x 11" D x 5" H). Most facilities will also require a set exposure time after the initial charge to ensure the animals are fully euthanized. This time can be as little as 3 minutes or up to an hour, depending upon species, size, and age. As a result, a single mouse cage with up to 5 adult mice can be properly euthanized in 6.5 minutes or longer. We are not factoring in any secondary kill methods, should they be deemed necessary. (Secondary kill methods can be avoided by using proper equipment, correct flow rates, adequate exposure time, trained personnel, and adherence to established SOPs.)

*American Veterinary Medical Association. AVMA Guidelines on Euthanasia. AVMA, Schaumber, Illinois, 2013.

EUTHANEX®

Automated CO$_2$

SMARTBOX® Variable Flow Rack Systems

The MSVF-4 and MSVF-8 Multi-Level Rack Systems are the most advanced and versatile automated CO$_2$ delivery systems in the industry. They offer four separate gas levels that are controlled independently. Specific species can be designated for a single level or any combination of levels. Tiers can be programmed and cycles started while other levels are in use. The MSVF systems increase flexibility to maximize operating efficiency.

The MSVF-4 and MSVF-8 automate a three-stage euthanasia cycle by controlling flow rate and timing variables. At the start of the cycle, doors automatically lock and will not unlock until CO$_2$ evacuation is complete.

Stage One secures doors, anesthetizes animals by slowly raising the CO$_2$ concentration, and automatically adjusts gas flow to bring CO$_2$ to euthanizing concentrations.

Stage Two (Dwell Time) all CO$_2$ shuts off and utilizes the fully charged chamber to ensure proper euthanasia of all animals.

Stage Three evacuates all CO$_2$, shuts down the system once the chambers are fully purged, and unlocks the chamber doors.

Clear polycarbonate doors provide visibility while the front-loading, swing-down design offers easy cage access. The airtight, gasket-sealed doors prevent gas leakage during operation. The manifold design ensures even gas distribution. These systems accommodate the full range of rodent cages from all manufacturers. The included cart provides mobility for easy chamber cleaning.

New

MSVF-4 Multi-Level Selection 4 Chamber Rack

Accommodates up to 80 shoebox mouse cages or 16 standard rat cages

MSVF-4 includes: SMARTBOX Side Control Box, four M1 Chambers, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps, Stainless Steel Mobile Cart

Features

- *Compliant with AVMA Guidelines*
- **Independent level operation increases efficiency**
- Interactive control panel facilitates easy training and operation
- Fully automated preset times and flow rates for each species and number of chambers in use
- Automation virtually eliminates operator error and conserves CO_2 consumption
- After starting system, technician is free to do other work
- Programs can be customized based upon facility requirements
- Optional lockout features can limit access for specified time ranges (e.g. nights, weekends)
- Password-protected presets ensure only authorized personnel can make program changes
- Electronically monitored safety system prevents operation when chamber door is not properly closed
- Doors automatically lock during operation and unlock after evacuation
- Gas is fully evacuated if system shuts down before cycle completion
- Warning light indicates loss of CO_2 supply
- Automatically adjusts flow rates when new cycles are initiated

New

MSVF-8 Multi-Level Selection 8 Chamber Tandem Rack

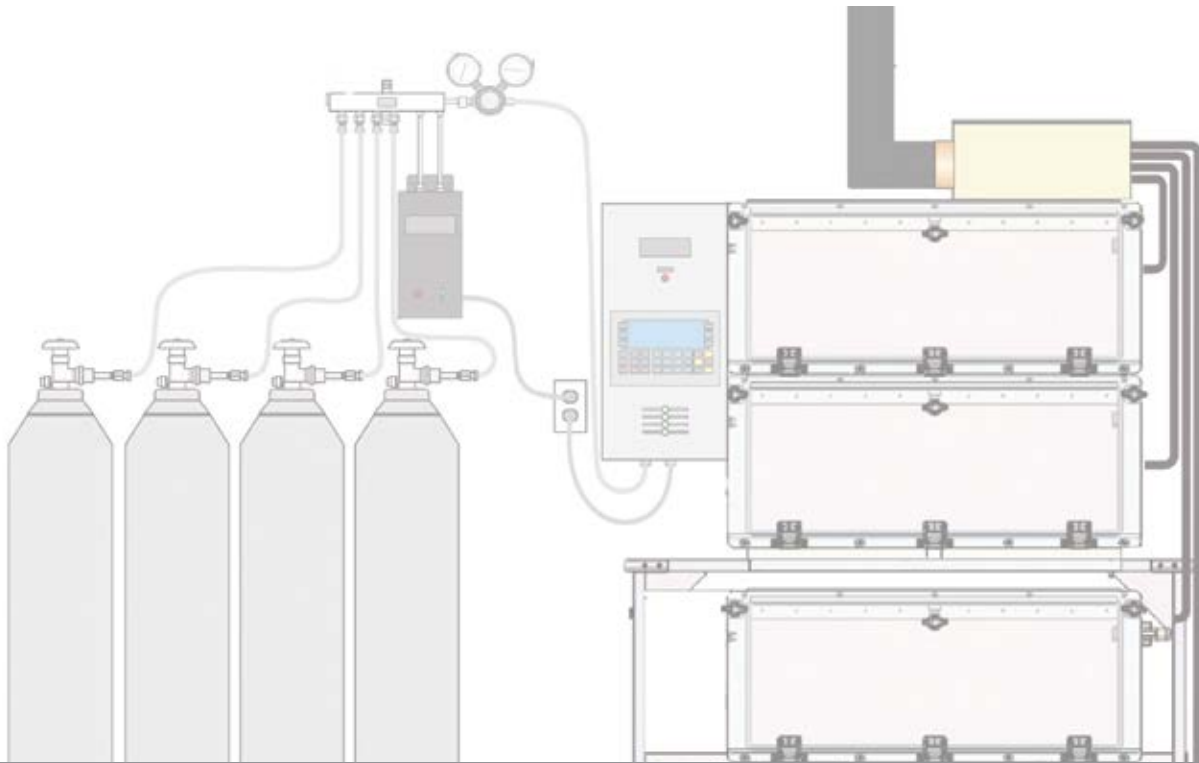

Accommodates up to 160 shoebox mouse cages or 32 standard rat cages

MSVF-8 includes: SMARTBOX Side Control Box, eight M1 Chambers, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps, Stainless Steel Mobile Cart

EUTHANEX®

Automated CO$_2$

SMARTBOX® Variable Flow Rack Systems

Tech Spotlight - Multiple CO$_2$ Cylinders

Why do I need multiple CO$_2$ cylinders?

A minimum of two cylinders are required to provide sufficient flow to the four and eight chamber SMARTBOX systems. CO$_2$ is in a liquid state. Without a minimum of two cylinders, there is not enough converted gas available to provide adequate gas flow. The EA-629 Euthanex Four Tank Micro-Manifold (p.11) allows for continuous operation of the SMARTBOX system when cylinders need to be replaced – two are in use while the other two are replenished.

EZ-538 IntelliSwitch II
### (optional accessory for any multiple tank set-up)

The fully-automatic 538 Series IntelliSwitch II™ gas switchover is a revolutionary new generation of gas management systems. The IntelliSwitch II features proprietary onboard I-Link web server technology that allows remote monitoring, secure system configuration, and e-mail notification of real-time system status and events. It is ideally suited to interchangeable service/continuous supply in analytical laboratory, chemical process, instrumentation, and critical gas supply applications. The IntelliSwitch II offers continuous gas pressure and flow control from liquid or high pressure cylinder sources. The end-user selects the mode of supply by the simple push of a button. Proprietary software logic lowers yearly gas costs by eliminating liquid cylinder vent loss and excess residual return.

MSVF Optional Accessories
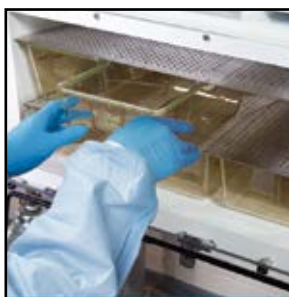
EA-1315 Shelf Divider Panels

Enable stacking of cages without wire bar lids in the M1 chamber.
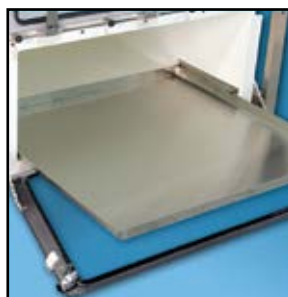
EA-5500 Stainless Steel Sliding Shelf

Allows for convenient cage loading and unloading of M1 Chamber.

VF-1130 Connection Hose

12 foot hose connects the MSVF System to the house gas source.

Stainless Steel Braided Pigtails

EA-360   36" with CGA-320 fitting
EA-680   68" with CGA-320 fitting
EA-720   72" with CGA-320 fitting

Heater Assembly
Assembled using EA-1200, EA-629, and EA-265.

EA-1200 CO_2 Gas Heater

Thermostatically-controlled CO_2 heater that prevents freeze-ups caused by high flow rates.

EA-629 Four Tank Micro-Manifold

Allows the use of up to four CO_2 cylinders simultaneously. Incorporates a check valve.

EA-265 High Flow Regulator

0 - 40 PSI Output

Designed for high flow rates, delivering CO_2 at a maximum pressure of 40 PSI.

or

EA-255 High Flow Inline Regulator

0 - 40 PSI Output

Regulator for use with MSVF-4 and MSVF-8. Does not connect directly to CO_2 cylinders.

and

EA-295 High Flow Regulator

0 - 200 PSI Output

For higher pressure when CO_2 tanks are located outside of designated euthanasia area.

EUTHANEX®

Automated CO$_2$

SMARTBOX® Fixed Flow Chamber Systems

The M1-SBFF-1 and M1-SBFF-2 Fixed Flow Chamber Systems automate a three-stage euthanasia cycle at the push of a button: charging, dwell time, and exhaust. At the start of a cycle, doors automatically lock and will not unlock until CO$_2$ evacuation is complete. Clear polycarbonate doors provide visibility while the front-loading, swing-down design offers easy cage access. The airtight, gasket sealed doors prevent gas leakage during operation. The manifold design ensures even gas distribution. These systems accommodate the full range of rodent cages from all manufacturers.

Features

- *Compliant with AVMA Guidelines*
- After starting system, technician is free to do other work
- Programs can be customized based on facility requirements
- Automation virtually eliminates operator error
- Electronically monitored safety system prevents operation when chamber door is not properly closed
- Doors automatically lock during operation and unlock after evacuation
- Two preset times - adult and neonate

M1-SBFF-1 Fixed Flow Chamber System

Two preset programs: adult and neonate.

Accommodates up to 20 shoebox mouse cages or 4 standard rat cages.

M1-SBFF-1 includes: SMARTBOX Side Control Box, M1 Chamber, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps (Cart sold separately)

EZ-1336-C Mobile Cart

Height adjustable stainless steel cart for M1 Systems. Can accommodate one to two M1 chambers. Dimensions: 49" L x 33.5" W x 43" H

M1-SBFF-2 Fixed Flow Double Chamber System

Operates either one or both chambers on a single program. Two preset programs: adult and neonate.

Accommodates up to 40 shoebox mouse cages or 8 standard rat cages

M1-SBFF-2 includes:
SMARTBOX Side Control Box, two M1 Chambers, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps (Cart sold separately)

Required Accessory (choose one):

EA-285 Electrically Heated Regulator

25 - 125 CFH Output:
Connects directly to CO_2 cylinder. Incorporated heater prevents regulator from freezing during high flow rates.
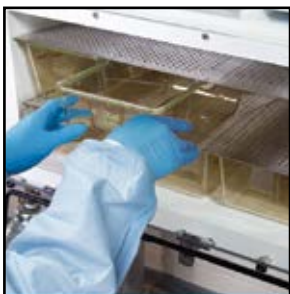
use with cylinders

or

FM-1 Fixed Flow System Meter

0 - 50 LPM, 0 - 100 CFH Output
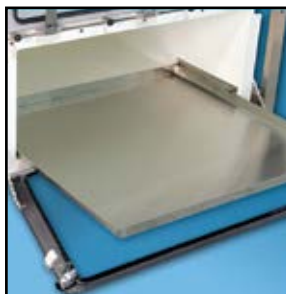For use with house gas supply with Single and Double Chamber Systems. Requires FF-1130 Connection Hose.

use with piped-in gas

M1-SBFF Optional Accessories

EA-1315 Shelf Divider Panels

Enable stacking of cages without wire bar lids in the M1 chamber.

EA-5500 Stainless Steel Sliding Shelf

Allows for convenient cage loading and unloading of M1 Chamber.

EA-1040 Mobile Battery Back-Up

High capacity battery powers the M1 system without connecting to wall power source for a truly mobile system.

EA-1002 Tank Cart Mount

Optional addition to the EZ-1336-C Mobile Cart. Allows on-board mobile transport of two 20 lb CO_2 cylinders. *Tanks not included.*

EUTHANEX®

Automated CO$_2$

SMARTBOX® Fixed Flow Chamber System

The M2-SBFF-P Fixed Flow Top Access Chamber automates a three-stage euthanasia cycle controlled by color touch screen: charging, dwell time, and exhaust. At the start of cycle, chamber lid automatically locks and will not unlock until CO$_2$ evacuation is complete. Clear polycarbonate windows provide visibility while the top-loading lid offers easy cage access. The airtight, gasket-sealed lid prevents gas leakage during operation. The manifold design ensures even gas distribution. The system includes a mobile cart for convenient loading and unloading of cages and ease of cleaning. The color touch screen provides for easy operation. This system accommodates the full range of rodent cages from all manufacturers.

Features

- **Compliant with AVMA Guidelines**
- Single flow rate based on external CO$_2$ source
- Easy-to-use, interactive color touch screen control
- After starting system, technician is free to do other work
- Presets can be customized based upon facility requirements
- Automation virtually eliminates operator error
- Electronically monitored safety system prevents operation when chamber lid is not properly closed
- Lid automatically locks during operation and unlocks following complete gas evacuation
- Automatic gas evacuation if system shuts down prior to cycle completion

Accommodates up to 62 shoebox mouse cages or 18 standard rat cages.

M2-SBFF-P Fixed Flow Top Access Chamber

M2-SBFF-P includes: SMARTBOX Side Control Box, one M2 Chamber, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps, Stainless Steel Mobile Cart

M2-SBFF-P Required Accessories

Heater Assembly
Assembled using EA-1200, EA-629, and EA-265.

EA-1200 CO_2 Gas Heater

Thermostatically-controlled CO_2 heater that prevents freeze-ups caused by high flow rates.

EA-629 Four Tank Micro-Manifold

Allows the use of up to four CO_2 cylinders simultaneously. Incorporates a check valve.

EA-265 High Flow Regulator

0 - 40 PSI Output

Designed for high flow rates, delivering CO_2 at a maximum pressure of 40 PSI.

or

EA-255 High Flow Inline Regulator

0 - 40 PSI Output
Regulator for use with MSVF-4 and MSVF-8. Does not connect directly to CO_2 cylinders.

and

EA-295 High Flow Regulator

0 - 200 PSI Output
For higher pressure when CO_2 tanks are located outside of designated euthanasia area.

Tech Spotlight - The Importance of Dwell Time

Why is there a Dwell cycle with all of the SMARTBOX programs?
Time is of equal importance as gas concentration in ensuring proper animal euthanasia. After introducing the CO_2 gas according to the recommended AVMA guidelines, the Dwell period uses the fully charged cage (or chamber) to extend the exposure of the animals to high concentrations of CO_2 without further gas input. The Dwell period allows sufficient time to completely and humanely euthanize the animals without using excessive amounts of gas and avoids the need for secondary kill methods.

EUTHANEX®

Automated CO$_2$

SMARTBOX® Isoflurane/CO$_2$ System

Designed for facilities that require isoflurane before euthanizing, the M1-ISCO Automated Isoflurane/CO$_2$ System first uses isoflurane to anesthetize animals and then administers CO$_2$ while animals are already unconscious. The M1-ISCO automates a four-stage euthanasia cycle using a full color touch screen: isoflurane anesthesia, CO$_2$ charging, dwell time, and exhaust. At the start of the cycle, the door automatically locks and will not unlock until the final gas evacuation is complete. Clear polycarbonate door provides visibility while the front-loading, swing-down design offers easy cage access. The airtight, gasket-sealed door prevents gas leakage during operation. The manifold design ensures even gas distribution. This system accommodates the full range of rodent cages from all manufacturers. The M1-ISCO uses an onboard air source for isoflurane delivery, thereby eliminating the need for dedicated air cylinders.

Features

- *Compliant with AVMA & CCAC Guidelines*
- After starting system, technician is free to do other work
- Full color touch screen
- Programs can be customized based upon facility requirements
- Automation virtually eliminates operator error
- Electronically monitored safety system prevents operation when chamber door is not properly closed
- No air cylinders required - includes onboard air source

Accommodates up to 20 shoebox mouse cages or 4 standard rat cages.

New
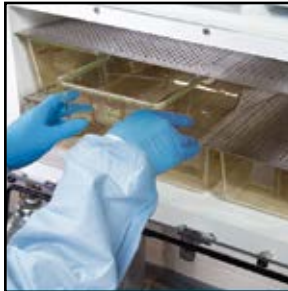
M1-ISCO Automated Isoflurane/CO$_2$

M1-ISCO includes: SMARTBOX Side Control Box, M1 Chamber, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps (Cart sold separately)

M1-ISCO
Controller Features

- Full color touchscreen
- Real time display
- Step by step process
- Full automation
- Cycle completion confirmation
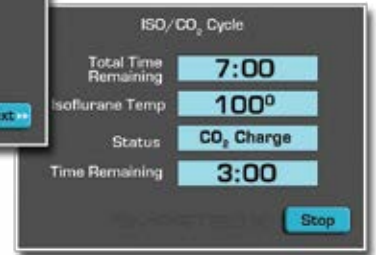
M1-ISCO Optional Accessories

EA-1315 Shelf Divider Panels

Enable stacking of cages without wire bar lids in the M1 chamber.

EA-285 Electrically Heated Regulator

25 - 125 CFH Output

Connects directly to a CO_2 cylinder. An incorporated heater prevents regulator from freezing during high flow rates.

EZ-1336-C Mobile Cart

Height adjustable stainless steel cart for M1 Systems. Can accommodate one to two M1 chambers. Dimensions: 49" L x 33.5" W x 43" H

EA-1040 Mobile Battery Back-Up

High capacity battery powers the M1 system without connecting to a wall power source for a truly mobile system.
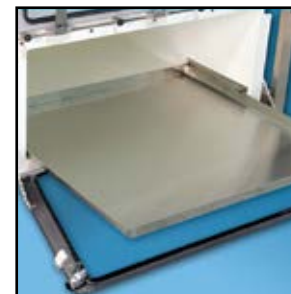
New
FF-2050-BR High Flow Adjustable Flow Meter with Bracket

0 - 50 LPM, 0 - 100 CFH Output

For use with house gas supply where high flow rates are required. Includes two 6 foot hoses with quick disconnect fittings.

EA-5500 Stainless Steel Sliding Shelf

Allows for convenient cage loading and unloading of M1 Chamber.

EA-1002 Tank Cart Mount

Optional addition to the EZ-1336-C Mobile Cart. Allows on-board mobile transport of two 20 lb CO_2 cylinders. *Tanks not included.*

EUTHANEX®

Automated CO$_2$

SMARTBOX® Tabletop Chambers

The TT-4000 and TT-8100 Tabletop Chambers automate a three-stage euthanasia cycle at the push of a button: charging, dwell time, and exhaust. At the start of a cycle, the chamber lid automatically locks and will not unlock until CO$_2$ evacuation is complete. The clear acrylic construction provides full visibility and a top loading lid promotes easy cage access. The airtight, gasket-sealed lid prevents gas leakage during operation. The manifold design ensures even gas distribution. The system accommodates the full range of rodent cages from all manufacturers.

Features

- **Compliant with AVMA Guidelines**
- Automation virtually eliminates operator error
- Lid automatically locks during operation
- After starting chamber, the technician is free to do other work
- Double throw switch allows for two different treatment times
- Programs can be customized based on facility requirements
- Operates at a fixed flow rate based on the external CO$_2$ source

Exhaust Blower included

New

TT-4000 Mini Tabletop Chamber

Accommodates up to 4 shoebox mouse cages or 1 standard rat cage

TT-4000 includes: SMARTBOX Side Control Box, Tabletop Chamber, Exhaust Blower, 8 feet of 4" Exhaust Tubing, two 4" Hose Clamps (Cart sold separately)

Tech Spotlight - Heated Regulators

Why do some regulators need heat?

CO$_2$ is stored in cylinders as a liquid. Liquid converts to gas to flow from the cylinder. This phase change results in a drop in temperature. At flows higher than approximately 15 LPM, this temperature drop can begin to affect the performance of equipment downstream from the tank. In extreme cases, this conversion can completely freeze gas regulators, tubing, and other components of your system. Adding heat at higher flows helps prevent freeze-ups.

TT-8100
Tabletop Chamber

Accommodates up to 8
shoebox mouse cages or
1 standard rat cage

*TT-8100 includes:
SMARTBOX Side Control Box,
Tabletop Chamber, Exhaust Blower,
8 feet of 4" Exhaust Tubing, two 4"
Hose Clamps (Cart sold separately)*

Required Accessory (choose one):

EA-285 Electrically Heated Regulator

25 - 125 CFH Output:
Connects directly to CO_2 cylinder.
Incorporated heater prevents
regulator from freezing during
high flow rates.

use with cylinders

or

New
EP-825-BR Mid-Flow Adjustable Flow Meter with Bracket

2 - 25 LPM Output
For use with house gas supply with
Tabletop Chambers. Bolts directly to
wall with attached mounting bracket.
Includes two 6 foot connection hoses
with quick disconnect fittings.

use with piped-in gas

TT-4000 & TT-8100 Optional Accessories

E-29000 Mobile Euthanasia Cart

Allows ease of mobility for
Tabletop Chamber and
accommodates two 20 lb CO_2
cylinders. **Tanks not included.**

EA-1040 Mobile Battery Back-Up

High capacity battery
powers Tabletop Chamber
without connecting to wall
power source for a truly
mobile system.

EUTHANEX®

Automated CO$_2$

SMARTBOX® Lab Control Units

The EA-32002C and EA-34004C Lab Control Units automate on/off gas flow at the push of a button, by delivering CO$_2$ to individual chambers or Euthanex lids. Both models are designed for small scale use by individual investigators in their laboratories. The controllers have two to four separate gas outputs (dependent upon model) allowing up to four cages to be euthanized individually or staggered. This feature increases the user efficiency when individually euthanizing a large number of animals. The EA-32002C has two separate switches that offer independent operation of each output. The EA-34004C has four separate switches that offer independent operation of each of its four outputs. Times can be set for different species or cage type. The run and ready lights easily indicate the active outputs. Operates at a fixed flow rate based upon the external CO$_2$ source.

Features

- *Compliant with AVMA Guidelines*
- **Increases efficiency by staggering cage start times**
- Treats animals at individual cage level
- Designed for investigators that need to retrieve animals quickly
- Utilizes the full range of Euthanex lids or existing induction chambers
- Minimizes operator error and excessive gas use
- Automatic shut-off saves gas and protects personnel
- Double throw switches start and stop each output
- Lights indicate cycle completion
- Controller easily attaches to wall

EA-32002C
Lab Control Unit

New

The EA-32002C has two separate switches allowing up to two cages to be individually controlled with independent operation of each gas output.

EA-32002C includes: SMARTBOX Lab Control Unit and two EA-1130 Lab Unit Hoses (Lids sold separately)

Tech Spotlight - Staggered Start Times

Principal Investigators that are doing high throughput procedures, such as bleeds or tissue collection, need complete control during the euthanasia process. The EA-32002C and EA-34004C give you that control: start each cage when you are ready and stop an individual cage at any time during the procedure while not affecting the other attached cages. Staggered starts are made possible by the individual channel design. Individual channel control allows you to effectively and efficiently use all of the output ports.

New   EA-34004C Lab Control Unit

The EA-34004C has four separate switches allowing up to four cages to be individually controlled with independent operation of each gas output.

EA-34004C includes: SMARTBOX Lab Control Unit and four EA-1130 Lab Unit Hoses (Lids sold separately)

EA-32002C & EA-34004C Accessories

New
Flow Restrictor

When used with a Euthanex lid, avoids the need to adjust the flow rate due to a change in cage number. For use with any size Euthanex lid between the lid and the lid stem.

Euthanex Lids

Available in various sizes and shapes. See page 25 for more details.

(Shown with flow restrictor installed)

New
EP-IL60 Inline Regulator

0 - 60 PSI Output
For use with house gas supply - not for use with cylinders. Provides consistent set pressure.

New
EP-1150-P Preset Regulator

0 - 50 PSI Output
Connects directly to the CO_2 cylinder. Preset at factory. Includes 6 foot hose with quick disconnect fitting.

EUTHANEX®

Automated CO$_2$

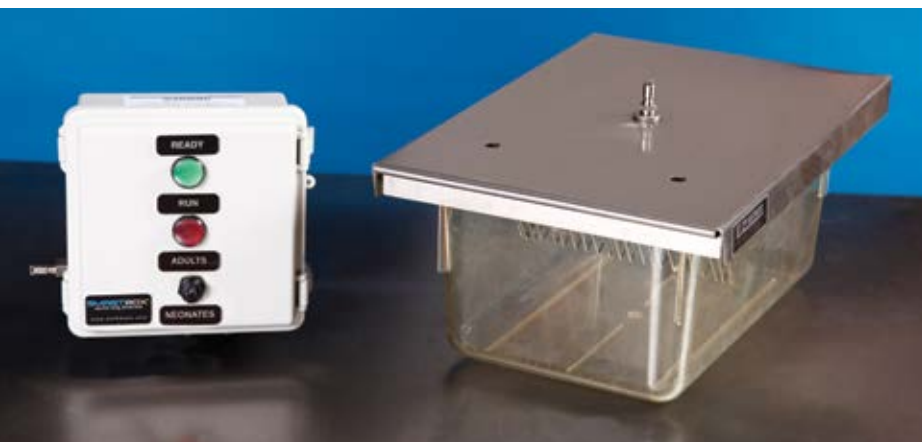## SMARTBOX® Lab Control Units

Our EA-31000, EA-32000, and EA-34000 Lab Control Units are designed for small scale use by individual investigators in their laboratories. The operator automates on/off gas flow at the push of a button, delivering CO$_2$ to an individual chamber or Euthanex lid. Includes programmable charge and dwell times. The run and ready lights visually indicate operation and completion. Advanced models offer a choice of selectable preset timings to accommodate multiple protocols. Operates at a fixed flow rate based upon the external CO$_2$ source.
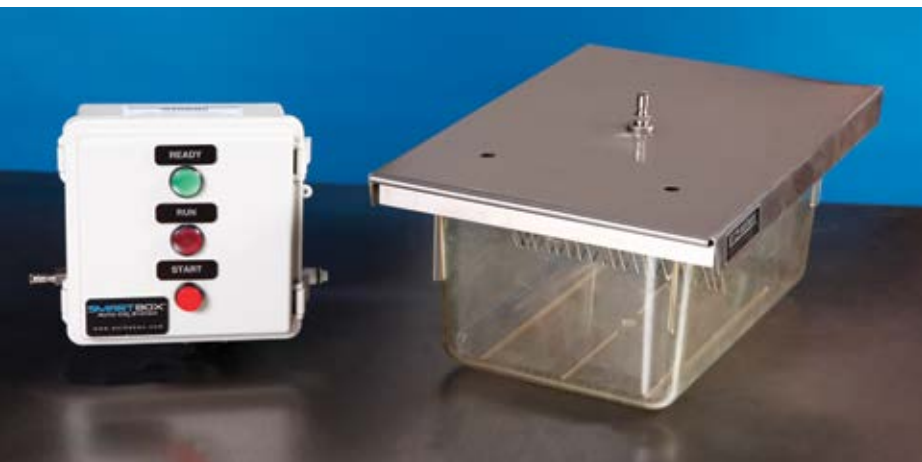
EA-31000
Lab Control Unit

One gas output, one program

EA-31000 includes: SMARTBOX Lab Control Unit and one EA-1130 Lab Unit Hose (Lid sold separately)

EA-32000
Lab Control Unit

One gas output, two programs

EA-32000 includes: SMARTBOX Lab Control Unit and one EA-1130 Lab Unit Hose (Lid sold separately)

EA-34000
Lab Control Unit

Four gas outputs, four program choices.

Selected program runs up to four cages.

EA-34000 includes: SMARTBOX Lab Control Unit and four EA-1130 Lab Unit Hose (Lids sold separately)

Lab Control Features

- **_Compliant with AVMA Guidelines_**
- Treats animals at individual cage level
- Designed for investigators that need to retrieve animals quickly
- Utilizes the full range of Euthanex lids or induction chambers
- Minimizes operator error and excessive gas use
- Automatic shut-off saves gas and protects personnel
- Lights indicate cycle completion
- Easily attaches to wall

EA-31000 & EA-32000 Accessories

Euthanex Lids

Available in various sizes and shapes. See page 25 for more details.

Also for use with EA-34000 Lab Control Unit.

EP-1305 Low Flow CO_2 Regulator

0.5 - 12 LPM Output
Incorporates flow meter and attaches directly to CO_2 cylinder. Includes 6 foot hose with quick disconnect fittings.

EP-PS50 Tamper-Proof Preset Regulator

0.5 - 12 LPM Output
Factory preset to your specific cage size. Connects directly to CO_2 cylinder. Includes 6 foot hose with quick disconnect fitting.

New
EP-5000-BR Adjustable Flow Meter with Bracket

0.5 - 12 LPM Output
Adjustable low flow meter. Mounts directly to wall. Includes two 6 foot hoses with quick disconnect fittings.

New
EP-6000-BR Tamper Proof Flow Meter

0.5 - 12 LPM Output
Factory preset to specific cage size. Bolts directly to wall with bracket. Includes two 6 foot hoses with quick disconnect fittings.

EA-34000 Accessories

Flow Restrictor New

When used with a Euthanex lid, avoids the need to adjust the flow rate due to a change in cage number. For use with any size Euthanex lid between the lid and the lid stem.

EP-1150-P New Preset Regulator

0 - 50 PSI Output
Connects directly to the CO_2 cylinder. Preset at factory. Includes 6 foot hose with quick disconnect fitting.

EP-IL60 Inline Regulator

0 - 60 PSI Output New
For use with house gas supply - not for use with cylinders. Provides consistent set pressure.

EUTHANEX®

Manual CO$_2$

Operators of manual CO$_2$ systems have the most control over the euthanasia process. The operator is responsible for turning on the CO$_2$ gas, adjusting the gas flow, determining the procedure time, and then turning off the gas when finished. The most basic manual system available consists of a tank regulator or flow meter connected to a Euthanex® lid, which is placed on top of the home cage. The new Tamper-Proof line of regulators and flow meters removes the ability for the operator to adjust the flow rate. The operator simply opens or closes the "on/off" valve to deliver the preset flow rate as determined by your facility's guidelines.

E-22000 Host Cage

Allows for treatment of large quantities of animals or exotics. Glass host cage incorporates a stainless steel insert tray. Dimensions: 20.5" L x 11" W x 12" H

Includes insert tray and E-20032 Medium Euthanex Lid.

E-20018 Single Cart System

Convenient cart with 6" wheels for easy mobility. EP-1305 Low Flow CO$_2$ Regulator offers precise control of CO$_2$.

Includes regulator, mounted timer, hose, and fittings. Euthanex lids must be purchased separately. (CO$_2$ cylinder not included)

New

Sure-Seal Induction Chambers

Constructed of heavy-duty, clear acrylic plastic with non-skid bottom. For use when home cage is unavailable.

EZ-177 Mouse Chamber 4"L x 4"W x 4"H

EZ-178 Mouse/Rat Chamber 9"L x 4"W x 4"H

EZ-1785 Large Mouse/Rat Chamber 11.25"L x 7"W x 6"H

EZ-179 Guinea Pig/Rabbit Chamber 18"L x 12"W x 12"H

Tech Spotlight - Flow Restrictors

Flow Restrictors avoid the need to adjust the flow rate due to change in cage number. Flow Restrictors are an essential accessory when connecting multiple cages to the Lab Control Unit. The Flow Restrictor is chosen based upon the specific cage volume and calculated to be within the AVMA recommended 10% - 30% fill rate. Consistent pressure is required to ensure the specified flow rate is achieved. Inline regulators are required when using a house gas source to avoid any fluctuations in pressure that may cause a variation in flow rate.

Euthanex Lids

In the 1980s, Euthanex revolutionized the humane animal euthanasia process through the use of CO_2 with our patented Euthanex Lid System. Euthanex lids allow animals to be gently euthanized through the precise control of gas introduction while they remain in their home cages, thereby minimizing added stress. The lid system is highly economical and efficient and still widely used today.

Euthanex lids are available in a range of sizes. These heavy-duty, stainless steel lids include an easy, quick disconnect lid stem for gas input and a foam gasket for a secure fit. The foam gasket seal also allows each Euthanex lid to be used on a smaller cage size. Custom lid sizes and flow restrictors are also available.

Euthanex Cage Lid Sizes (L x W)

E-20027 Super Small Lid (13" x 9.5")	E-20034 Large Lid (23" x 16.5")
E-20028 Small Lid (16" x 10")	E-20035 Thoren Rat Lid (24" x 12.5")
E-20030 Square Lid (13" x13")	E-20039 Opti Mouse Lid (Pie shaped)
E-20032 Medium Lid (20.5" x 11")	E-20040 Opti Rat Lid (Pie shaped)
E-20033 High Density Lid (17" x 13.5")	

E-20029 Lid Storage Bracket

Wall mount bracket for convenient storage of up to four Euthanex lids.

Lid Gasket Kits

Kit contains 5 foam replacement gaskets. Available in all lid sizes.

New
Flow Restrictor

When used with a Euthanex lid, avoids the need to adjust the flow rate due to a change in cage number. For use with any size Euthanex lid between the lid and the lid stem.

EP-1130 Connection Hose

Connects existing regulator or flow meter to Euthanex lid. Includes 6 foot hose with quick disconnect fitting.

EUTHANEX®

Manual CO$_2$

Flow Meter vs. Regulator

In order for the CO$_2$ gas to flow, there are different connections for house or cylinder sources. House gas is supplied from a centralized location - no CO$_2$ cylinders are present in the lab. Flow meters are used to measure CO$_2$ flow rates and integrate into the house gas system. A tank regulator cannot connect to a house gas source and must be used with cylinders. Tank regulators connect to a bottled gas cylinder to allow the CO$_2$ to flow at a consistent and usable rate.

There is no formula to convert pressure to flow rate (LPM, CFH). Unless a flow meter is incorporated into the regulator design, regulators only output in pressure units - PSI or bar. *Flow rate is the only way to be compliant with the current AVMA guidelines.*

CO$_2$ Flow Meter:

- Measures flow rate of gas in liters per minute (LPM) or in cubic feet per hour (CFH)
- Allows user to know and accurately control gas fill rate of container
- Most flow meters attach to piped-in gas source
- Does not connect directly to cylinder unless incorporated with a tank regulator

EP-5000

EP-1305

CO$_2$ Tank Regulator:

- Controls output pressure from gas cylinder (PSI, bar) to equipment
- Connects directly to gas cylinders
- Can output in flow or pressure depending upon regulator model
- Small 5 lb CO$_2$ E-tank requires a CGA-940 yoke style
- All other North American CO$_2$ tanks require a CGA-320 fitting

EP-IL60

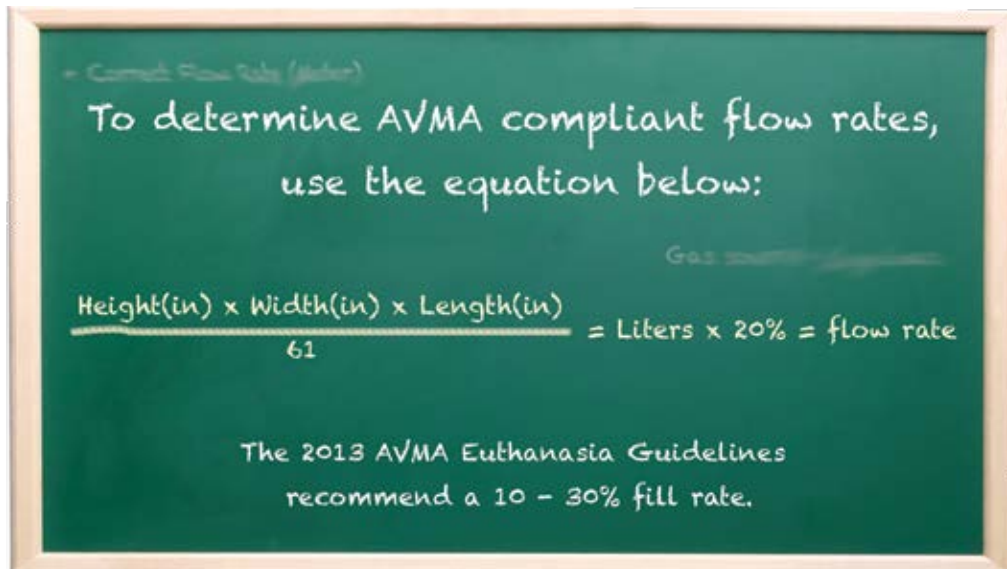## CO_2 Inline Regulator:

- Essential when a known PSI is required (e.g. when using flow restrictors with house gas)
- Controls gas pressure from building CO_2 source
- Cannot be directly connected to CO_2 cylinders

What should my flow rate be?

To determine AVMA compliant flow rates, use the equation below:

$$\frac{Height(in) \times Width(in) \times Length(in)}{61} = Liters \times 20\% = flow\ rate$$

The 2013 AVMA Euthanasia Guidelines recommend a 10 – 30% fill rate.

"...a displacement rate from 10% to 30% of the chamber volume/min is recommended" *

For more information, view our website to download the full AVMA guide.

*American Veterinary Medical Association. AVMA Guidelines on Euthanasia. AVMA, Schaumber, Illinois, 2013.

EUTHANEX®

Manual CO$_2$

CO$_2$ Regulators

Heated Regulators

Heat is important when using CO$_2$ gas at high flow rates. When CO$_2$ converts from a liquid to a gas, temperatures drop. While low flow rates do not pose a problem with a drop in temperature, high volumes of gas can cause the tank regulator and other downstream equipment to freeze. By adding heat, the gas temperature does not hinder the operation of the regulator.

EA-285 Electrically Heated Regulator

25 - 125 CFH Output

Connects directly to CO$_2$ cylinder. Incorporated thermostatically controlled heater prevents regulator from freezing during high flow rates. Includes 6 foot connection hose with quick disconnect fitting.

EA-550 Heated PSI Regulator

New

0 - 50 PSI Output

Connects directly to the CO$_2$ cylinder. Capable of handling high flow rates. Incorporated electric heater keeps unit from freezing during operation. Includes 6 foot connection hose with quick disconnect fitting.

Non-Heated Regulators
Ideal when working at individual cage level and high flow rates are not required.

EP-1305 Low Flow CO$_2$ Regulator

0.5 - 12 LPM Output

Incorporates a flow meter and attaches directly to the CO$_2$ cylinder. Includes 6 foot hose with quick disconnect fitting.

EP-IL60 Inline Regulator

New

0 - 60 PSI Output

For use with a house gas supply. Provides consistent set pressure to CO$_2$ equipment. Not for use with cylinders.

EP-IL200 Dual Preset Inline Regulator with Restrictors

New

0 - 60 PSI Output

For use with a house gas supply. Preset to distribute CO$_2$ within AVMA recommended range of 10 - 30% fill rate for industry standard mouse and rat cages. (Optional EP-2230 Hose Kit available)

Tamper-Proof Tank Regulators   New

The Tamper-Proof Tank Regulators incorporate a flow meter and connect directly to the CO_2 cylinder. The flow meter is factory preset to your specific cage size to ensure AVMA compliance. The user simply needs to turn a valve on or off to administer gas at the facility's approved flow rate. The visual indicator ensures correct gas flow rates are achieved. Designated on-site personnel may change the flow rate if guidelines or facility SOPs change.

EP-PS50 Tamper-Proof Preset Regulator

0.5 - 12 LPM Output

Factory preset to your specific cage size. Visual flow indicator ensures correct gas flow rates. Connects directly to CO_2 cylinder with CGA-320 fitting. (Optional CGA-940 Yoke fitting available) Includes 6 foot hose with quick disconnect fitting.

EP-3300 Tamper-Proof Dual Flow Regulator

0.5 - 12 LPM Output

Simultaneously operate two different size cages. Factory preset to your specific cage sizes. Visual flow indicators ensure correct gas flow rates. Connects directly to the CO_2 cylinder with CGA-320 fitting. (Optional CGA-940 Yoke fitting available) Includes two 6 foot hoses with quick disconnect fittings.

EP-1150-P Preset Regulator

0 - 50 PSI Output

Connects directly to the CO_2 cylinder. For use with equipment that requires a specific incoming pressure. Preset at factory. Includes 6 foot hose with quick disconnect fitting.

EP-2200 Dual Preset Tank Regulator with Restrictors

0 - 50 PSI Output

Preset to distribute CO_2 within AVMA recommended range of 10 - 30% fill rate for industry standard mouse and rat cages. Connects directly to the CO_2 cylinder with CGA-320 fitting. (Optional CGA-940 Yoke fitting available. EP-2230 Hose Kit also available)

Tech Spotlight - Tamper-Proof

Why Tamper-Proof?

The Tamper-Proof line allows the user to simply turn an on/off valve to start the gas at the predetermined flow rate. No adjustment is required by the operator. This preset ensures AVMA compliant flows are being used every time. The Tamper-Proof line is factory preset for your cage size and flow rate(s). Flow rate(s) may be changed on-site only by designated facility personnel with specialized tools.

Manual CO$_2$

Compensated vs. Non-Compensated Flow Meters

Compensated

Non-Compensated

Are you really AVMA compliant? If you are connecting a traditional, pressure compensated flow meter directly to the house gas supply, the flow readings may be wrong. Compensated flow meters require a specific incoming pressure to display accurate flow rates. The **actual** flow rate may vary greatly from the **displayed** flow rate if the required incoming pressure is not achieved and maintained. Incoming pressure from the house supply may vary daily due to numerous factors, such as variations in demand from lab to lab and distance from the CO$_2$ source. Labs located closer to the central cylinder farm will have a higher incoming pressure than labs farther from the source. The table below illustrates the difference between the indicated and actual flow rate of compensated flow meters when the incoming pressure varies from its required amount.

Non-Compensated flow meters will continue to give accurate readings regardless of incoming pressure fluctuations. Euthanex's Non-Compensated flow meters work with an incoming pressure range of 5 – 100 PSI. Daily variations in system pressure will not skew the flow readings. Non-Compensated flow meter readings can be trusted. Non-Compensated flow meters are available in either Tamper-Proof or adjustable configurations. *See pages 31 & 32.*

Compensated flow meters should only be used when the operating pressure is consistent – either connecting directly to an inline or a tank regulator. As a result, all Euthanex compensated flow meters are automatically coupled with regulators to ensure consistent pressure and provide accurate readings. *See pages 28 & 29.*

Formula used to calculate the data below:

$$\text{Actual Flow Rate} = \text{Indicated Flow Rate} \ \times \ \sqrt{\frac{\text{Operating Pressure}}{\text{Calibrated Pressure}}}$$

Indicated vs. Actual Flow Rates with Compensated Flow Meters		
Incoming Pressure	Indicated flow rate	Actual flow rate
5	10	3.16
10	10	4.47
15	10	5.48
20	10	6.32
25	10	7.07
30	10	7.75
35	10	8.37
40	10	8.94

Scan to view our video demonstration.

Flow Meters

Adjustable Non-Compensated

New

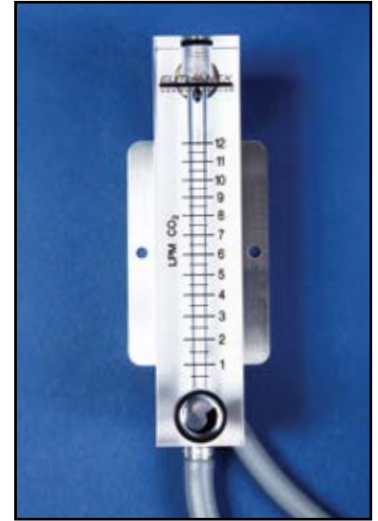### EP-5000-BR Adjustable Flow Meter with Bracket

0.5 - 12 LPM Output

Adjustable flow rate for different cage sizes. Includes bracket for ease of installation. Bolts directly to wall and includes two 6 foot hoses with quick disconnect fittings.

EP-5000 Adjustable Flow Meter with DISS

0.5 - 12 LPM Output

Manually adjust flow rate for cage sizes. Connects directly to house gas source with standard CO_2 DISS 1080 female connection (other connections available upon request). Includes 6 foot hose with quick disconnect fitting.

### EP-825-BR Mid-Flow Adjustable Flow Meter with Bracket

2 - 25 LPM Output

Manually adjustable for use with Tabletop Chambers. Bolts directly to wall with attached mounting bracket. Includes two 6 foot connection hoses.

FF-2050-BR High Flow Adjustable Flow Meter with Bracket

0 - 50 LPM, 0 -100 CFH Output

Adjustable for use with M1 SMARTBOX® Systems where high flow rates are required. Bolts directly to wall and incorporates bracket for ease of installation. Includes two 6 foot hoses with quick disconnect fittings.
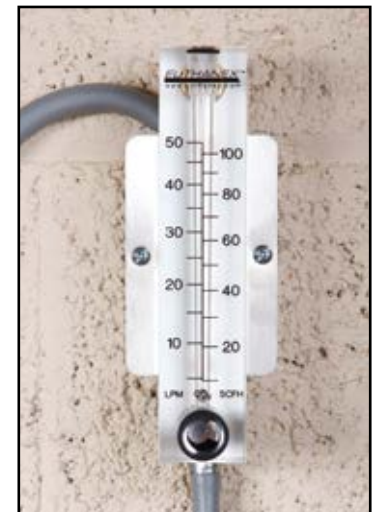
EP-1500 Adjustable Tabletop Flow Meter

0.5 - 12 LPM Output

Adjustable flow rate for different cage sizes. Tabletop stand for easy placement. Includes two 6 foot hoses with quick disconnect fittings.

Manual CO$_2$

Tamper-Proof Non-Compensated Flow Meters

The Tamper-Proof Flow Meters are non-compensated and designed for use with the house gas system. The flow meter is factory preset to your specific cage size to ensure AVMA compliance. The user simply needs to turn a valve on or off to administer gas at the facility's approved flow rate. The visual indicator ensures correct gas flow rates are achieved. Designated on-site personnel may change the flow rate if guidelines or facility SOPs change.

EP-6000-BR Tamper-Proof Flow Meter with Bracket

0.5 - 12 LPM Output

Factory preset to your specific cage size. Visual flow indicator ensures correct gas flow rate. Bolts directly to wall and incorporates bracket for ease of installation. Includes two 6 foot hoses with quick disconnect fittings.

### EP-6000 Tamper-Proof Flow Meter with DISS

0.5 - 12 LPM Output

Factory preset to your specific cage size. Visual flow indicator ensures correct gas flow rate. Connects directly to house gas source with standard CO$_2$ DISS 1080 female connection (other connections available upon request). Includes 6 foot hose with quick disconnect fitting.

EP-7000-BR Tamper-Proof Dual Flow Meter with Bracket

0.5 - 12 LPM Output

Simultaneously operate two different size cages. Factory preset to your specific cage sizes. Visual flow indicators ensure correct gas flow rates. Bolts directly to wall and incorporates bracket for ease of installation. Includes four 6 foot hoses with quick disconnect fittings.
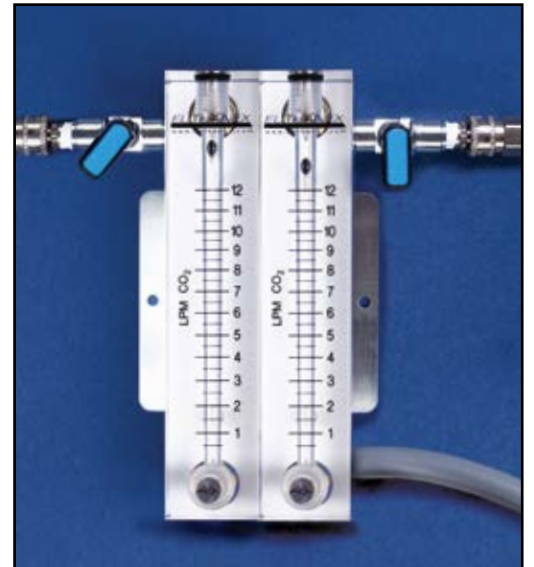
Validation Kits

Flow Rate Validation Kit

Many facilities now require annual equipment testing to ensure proper protocols are in use and compliant with their facility as well as AVMA guidelines. Euthanex recognizes the need for facilities to easily and efficiently verify equipment flow rates on-site without incurring the costs of a service visit. Euthanex now offers validation kits that will allow your staff to periodically test and confirm that the CO_2 equipment's flow rates are compliant with your facility's standards.

The validation flow meter is non-compensated, which allows it to accurately display the flow rate regardless of incoming pressure variations. Both flow meter readings should match. If there is a variation in readings, you should verify that the operating flow meter's required incoming pressure is achieved. The validation kit also includes a pressure gauge that allows you to test the equipment's incoming pressure.

Validation kits are available in several configurations. The validation kits can include non-compensated flow meters, a pressure gauge, a CO_2 sensor, and connection fittings. Please contact our Customer Care Team for more information on selecting the best validation kit to fit your facility's needs.

New

EP-5000-CAL CO_2 Calibration Flow Meter

0.5 - 12 LPM Output
Used to verify flow rates on existing CO_2 equipment. Comes with quick disconnect fitting.

Mobile Carts & E-Z Covers®

E-25000 Mobile Workstation

Heavy-duty stainless steel construction with work surface that measures 42" L x 24" W x 40" H. Locking cabinet doors and 360° swivel casters. Accommodates up to four 20 lb cylinders.

Equipment and tanks not included.

E-27000 Small Mobile Workstation

Ideal when a smaller footprint is needed. Heavy-duty stainless steel construction with work surface measuring 22" L x 21" W x 40" H. 360° swivel locking casters and locking cabinet door. Accommodates up to two 20 lb cylinders.

E-29000 Mobile Euthanasia Cart

Provides the ease of mobility for a Tabletop Chamber and accommodates two 20 lb CO_2 cylinders. Heavy-duty stainless steel construction. 33.5" L x 24" W x 36.5" H

Tanks not included.

EZ-1336-C Mobile Cart

Height adjustable stainless steel cart for M1 Systems. Can accommodate one to two M1 chambers. Heavy-duty stainless steel construction. 49" L x 33.5" W x 43" H

E-Z COVERS®

Durable, Autoclavable Custom Covers for Racks and Carts

LB-1176 Autoclavable Anti-Static Cover

Customized sizing available for your specific needs. Your choice of Velcro® or zipper closure offers full access to rack without removing the cover. Maintains its integrity through 70 autoclave cycles. Comes with a one year warranty. Call for additional information and pricing.
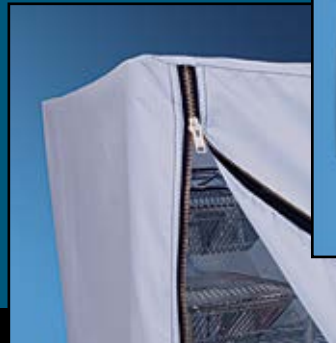
Warranty & Return Policy

Euthanex Corporation®, a product of E-Z Systems®, warrants that all items will be free from defects in material and workmanship under normal use and service for up to one year from date of purchase. Warranty does not include damage due to accident, misuse, abuse, or neglect.

Euthanex will not accept user-damaged products for any credit. Upon your request and within 60 days of the invoice date, our Customer Care Team will issue a Return Authorization number. Unauthorized returns will not be accepted for credit. A 15% restocking fee will be charged on all returns, and shipping is nonrefundable. The 15% restocking fee is waived for exchanges.

SMARTBOX® Extended Warranty

Euthanex offers parts only and technical support plans for all current SMARTBOX systems. The extended warranty provides access to our National Technical Support team 9am – 5pm EST Monday through Friday as well as complete parts coverage for the SMARTBOX systems. If on-site labor is required, the standard labor charge will be billed at a 20% discount. Please contact our Customer Care Team for more details.

On-site SMARTBOX Service Plans

For our customers in the Northeast and Mid-Atlantic areas, Euthanex offers on-site service plans for our SMARTBOX systems. The on-site service plan includes one (1) preventative maintenance/validation service visit annually based upon the original installation date. It also includes free access to our National Technical Support team 9am – 5pm EST Monday through Friday as well as remote monitoring and support service (if equipped at time of installation). In addition, full parts extended warranty of normal wear items including all electronics and mechanical parts.

Labor and consumable charges are included at no extra charge for the preventative maintenance and validation service visit. Labor charges outside of the annual visit will be billed at current retail cost. However, a 30% discount will be included on labor rates for any emergency service calls. E-Z Systems will advise of scheduled maintenance forty-five (45) days in advance.

Please contact our Customer Care Team to learn more about our service options.

EUTHANEX®