EUTHANEX®
SMARTBOX®

ADVANCING HUMANE EUTHANASIA
FOR SMALL RESEARCH ANIMALS

E-Z SYSTEMS®
SMALL ANIMAL ANESTHESIA AND EUTHANASIA EQUIPMENT

E-Z SYSTEMS®

SMALL ANIMAL ANESTHESIA AND EUTHANASIA EQUIPMENT

The E-Z Family of Products

E-Z ANESTHESIA
SMALL ANIMAL ANESTHESIA EQUIPMENT

EUTHANEX®
SMARTBOX®

E-Z TRAK®
FACILITY MANAGEMENT SYSTEM

E-Z COVERS®

For over 30 years, E-Z Systems has specialized in aiding biomedical researchers and facilities with our family of products. Cutting edge equipment for the Humane Euthanasia of Small Laboratory Animals with Euthanex®, Small Animal Anesthesia with E-Z Anesthesia®, Facility Management Software with E-Z Trak®, and Custom, Autoclavable Rack Covers with E-Z Covers®.

Euthanex has led the industry with innovative 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 the 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 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.

Table of Contents

EUTHANEX®
SMARTBOX™

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 to deliver them to centralized locations. Cages would remain unaffected until optimal numbers are reached for an efficient euthanasia cycle.

Research Staff

Research staff would utilize a lab control or manual unit for quicker procedures and smaller quantities.
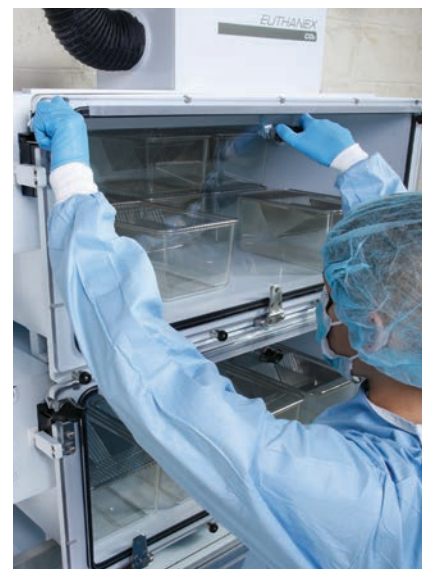
2. How much control do you want your operators to have?

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 as well as labor and time efficiency.
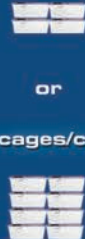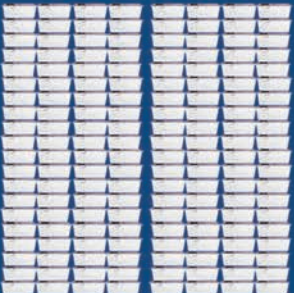
Lab

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.

Manual Single Cage	Automated Lab Control Unit & Prodigy	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
	1-4 cages/cycle	4 cages/cycle or 8 cages/cycle	20 cages/cycle	40 cages/cycle		
1 cage/cycle	or or 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 will 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. See below and pages 26-29 for more information 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 pages 28 & 29.

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 pages 26 & 27.

SMARTBOX®

Most Advanced - Simple to Use

Auto CO$_2$ vs. Manual Euthanasia

Twelve 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.
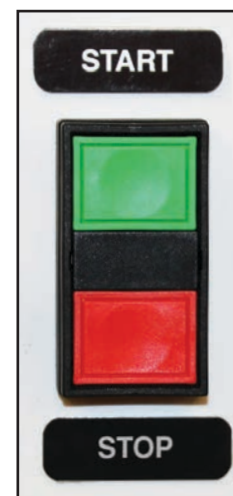
The SMARTBOX Auto CO$_2$ systems incorporate cutting edge technology to ensure they are as safe and user-friendly as possible. The programs are preset to be compliant with your facility and AVMA's guidelines without relying upon its operator. The operator merely needs to select the program and push start. 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 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.

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.

Touch and Go...It's that E-Z

NEW!

SMARTBOX®

Touch Screen Prodigy & Chamber Systems

The latest addition to our SMARTBOX family. Operators now have individual control of each chamber allowing simultaneous selection of different species. The new triple chamber system features a 7" color touch screen. The innovative touch screen allows administrators to program unlimited species types and users. The administrators now have the power to add secondary CO_2 charges and dwell periods for any species that may require longer exposure. Individual users can be assigned independent passwords, and the administrator can grant access to specific species type. This feature is appealing when the entire facility has access to the SMARTBOX system. The new controller also includes Wi-Fi for simple remote access. Optional bluetooth pressure transducer module for monitoring tank pressure is available.

Prodigy

See pages 20 & 21.

Chamber System Controller

See page 8.

M1-TSFM-2

See page 9.

EUTHANEX®
SMARTBOX

Automated CO$_2$

SMARTBOX® Touch Screen Chamber Systems

The latest addition to our SMARTBOX family. Operators now have individual control of each chamber allowing simultaneous selection of different species. The innovative 7" touch screen allows administrators to program unlimited species types and users. The administrators now have the power to add secondary CO$_2$ charges and dwell periods for any species that may require longer exposure. Individual users can be assigned independent passwords, and the administrator can grant access to specific species type. This feature is appealing when the entire facility has access to the SMARTBOX system. The new controller also includes Wi-Fi for simple remote access. Optional bluetooth pressure transducer module for monitoring tank pressure is available.

Already have a SMARTBOX system? The new touch screen controller can easily retro-fit to your existing system. Please call us for more details.

At start of cycle, doors automatically lock and will not unlock until CO$_2$ evacuation is complete. The clear polycarbonate doors provide visibility while the front-loading, swing-down design offers easy cage access. Airtight, gasket-sealed doors prevent 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*

- • Independent level operation increases efficiency
- • Touch screen controller facilitates easy operation and includes training videos
- • 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 on facility requirements
- • Password-protected presets ensure only authorized personnel can make program changes
- • Input unlimited species and users
- • Limit user access to designated species
- • Electronically monitored safety system prevents operation when chamber doors are not properly closed
- • Doors automatically lock during operation and unlock after evacuation
- • Gas is fully evacuated if system shuts down before cycle completion
- • Log program records users and all activities performed
- • Gas tank monitoring option available

Integrated flow meter

M1-TSFM-1 includes:
SMARTBOX Touch Screen Control Box, M1 Chamber, Exhaust Blower, 8' of 4" Exhaust Tubing and Thimble.

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

M1-TSFM-2 includes:
SMARTBOX Touch Screen Control Box, two M1 Chambers, Exhaust Blower, 8' of 4" Exhaust Tubing and Thimble.

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

M1-TSFM-3 includes:
SMARTBOX Touch Screen Control Box, three M1 Chambers, Exhaust Blower, Stainless Steel Mobile Cart, 8' of 4" Exhaust Tubing and Thimble.

Accommodates up to 60 shoebox mouse cages or 12 standard rat cages.

Optional Accessory

EA-300 Tank Talker Wireless Tank Monitor

- Works in conjunction with SMARTBOX Touch Screen controllers
- Easy setup
- Connects to wifi for email alert features
- Remotely access your tank levels

Automated CO$_2$

SMARTBOX® Variable Flow Rack Systems

The MSVF-4 and MSVF-8 Multi-Level Rack Systems are the most advanced and versatile large-scale 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.

MSVF-4 Multi-Level Selection 4 Chamber Rack
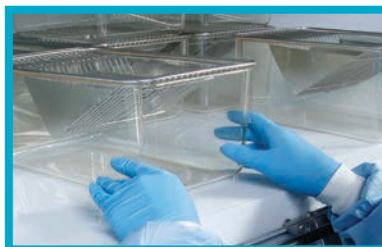
Accommodates up to 80 shoebox mouse cages or 16 standard rat cages.

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 and visual alert
- Automatically adjusts flow rates when new cycles are initiated

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®
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Automatic Gas Swichover

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.

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 larger 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-6500 Euthanex Four Tank Micro-Manifold Assembly allows for continuous operation of the SMARTBOX system when cylinders need to be replaced – two are in use while the other two are replenished.

EA-6500

EA-300 Tank Talker Wireless Tank Monitor Option

Avoid gas shortages and IACUC guideline violations with the Euthanex Tank Talker. Tank Talker is a wireless monitor for single tank or tank farms that will email alerts to the facility manager when gas is running low.* The monitor also alerts with audible and visual alarms. Tank Talkers work with any gas cylinder and integrates with the SMARTBOX® Touch Screen Systems.

Must be connected to Wi-Fi for email alert feature.

Wireless Pressure Transducer

Don't Let Your Facility Run Dry!

Features

- Works in conjunction with SMARTBOX touch screen controllers
- Easy setup
- Connects to Wi-Fi for email alert features
- Remotely access your tank levels
- Will adapt to existing regulators (Regulator not included)
- 1/4" NPT thread

- Monitors two gas sources simultaneously
- Fully adjustable alarm settings
- Email alerts notify user of the location and remaining pressure
- Visual and audio alarm displayed on SMARTBOX screen

Automated CO$_2$

SMARTBOX® Fixed Flow Chamber Systems
Keeping it E-Z...

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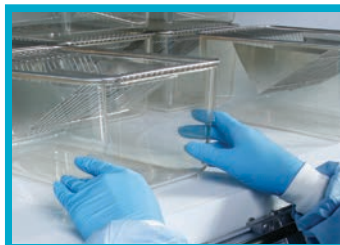
Accommodates up to 20 shoebox mouse cages or 4 standard rat cages.

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)

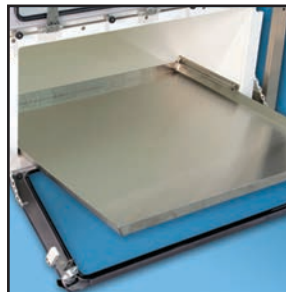## Integrated FM-1 Fixed Flow System Meter

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

M1-SBFF Optional Accessories
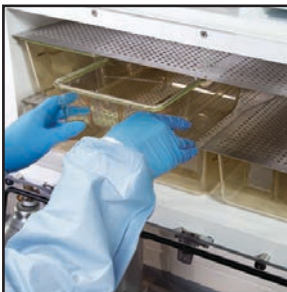
EA-1315 Shelf Divider Panels

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)*

Automated CO$_2$

SMARTBOX® Fixed Flow Top Access Chamber

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

Warranty & Service

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.

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 the 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

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)

Dimensions: 20.75"L x 16"W x 10.5"H

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.

EA-285

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)
Dimensions: 25.5"L x 16"W x 12"H

TT-8200
Tabletop Chamber

Developed for Euro-Style cages. Accommodates up to 10 US standard shoebox mouse cages or 2 US standard rat cages.

TT-8200 includes:
SMARTBOX Side Control Box, Tabletop Chamber, Exhaust Blower,
8 feet of 4" Exhaust Tubing, two 4" Hose Clamps
Dimensions: 27.5"L x 19"W x 13.75"H

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®
SMARTBOX™

Automated CO$_2$

SMARTBOX® Prodigy

EA-33000TS SMARTBOX® Prodigy

The SMARTBOX Prodigy from Euthanex surpasses the competition. The Prodigy allows administrators to program an unlimited number of cages and flow rates. The EA-33000TS will automatically calculate the cage volume. An unlimited number of password-protected users adds even more flexibility. Each user can only see the cages authorized by the administrator. Users can connect up to 3 cages at one time. The touch screen display shows the cycle, cycle time, and total time remaining.

PROGRAM OUT THE RISK

Features

- **Compliant with AVMA Guidelines**
- Touch screen control displays flow, cage type, stage, and time left
- Program unlimited number of cages
- Administrator sets each cage flow rate percentage and times
- Prodigy automatically calculates your cage type and total volume
- Automatically controls flow rates
- Treats animals at individual cage level

- Humanely euthanize up to 3 cages at a time
- Secondary charge and dwell for neonates
- Designed for investigators to retrieve animals quickly
- Unlimited number of users
- Password protection allows user-level permissions
- Users can only access their permitted cages

EA-33000-TS

Available with EZ-1032-C Wall Plate Kit for easy mounting.

EA-550 Heated PSI Regulator

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.

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.
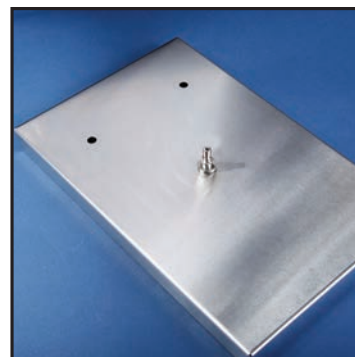

EP-IL60 Inline Regulator

0 - 60 PSI Output

For use with house gas supply - not for use with cylinders. Provides consistent set pressure.

EP-1130 Connection Hose

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

Euthanex Lids

Available in various sizes and shapes to fit most manufacturer's cages. See page 25.

EUTHANEX®
SMARTBOX

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 output. 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
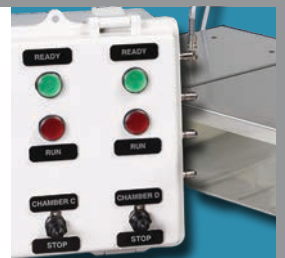
EA-32002C
Lab Control Unit

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 gives 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.

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

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)

EP-IL60 Inline Regulator

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

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.

### EA-550 Heated PSI Regulator

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.

EUTHANEX®
SMARTBOX®

Automated CO$_2$
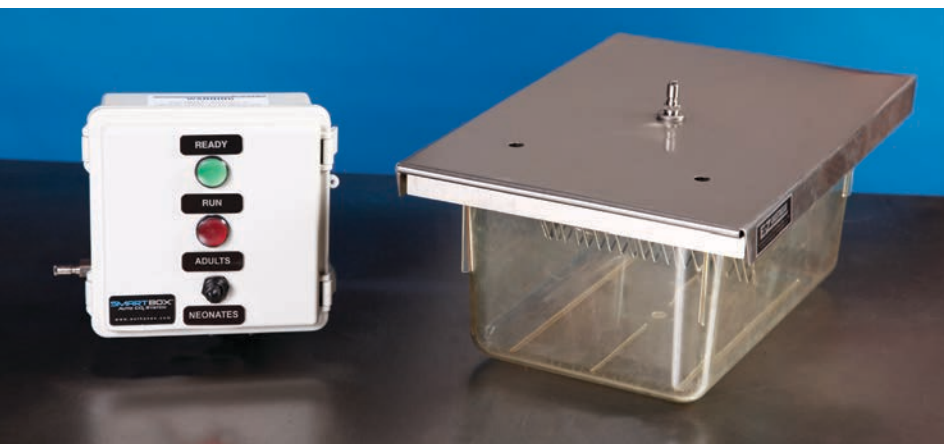
SMARTBOX® Lab Control Units

Our EA-31000 and EA-32000 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.
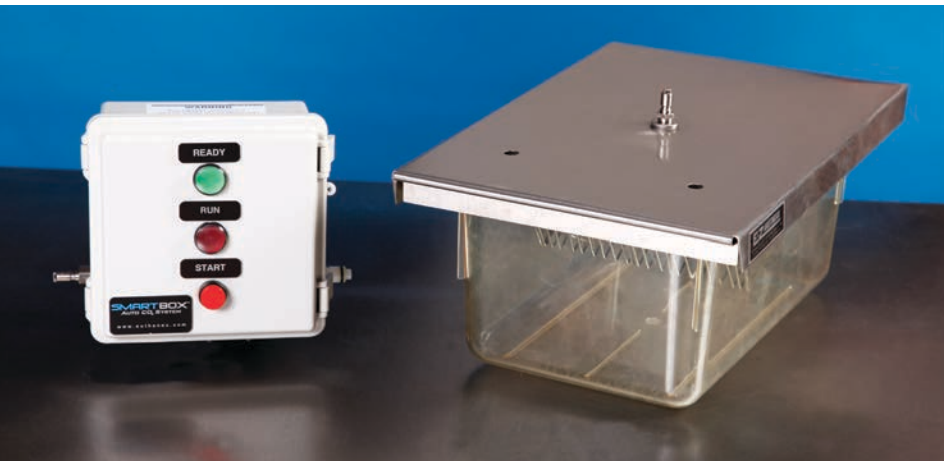
EA-31000
Lab Control Unit

One gas output, one preset time

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 preset times

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

EA-1130
Connection Hose

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

Requires flow meter or regulator for gas control.

Manual CO$_2$

Lids & Induction Chambers

In the1980s, 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-20028   Small Lid (16" x 10")
E-20030   Square Lid (13" x13")
E-20032   Medium Lid (20.5" x 11")
E-20033   High Density Lid (17" x 13.5")
E-20034   Large Lid (23" x 16.5")
E-20035   Thoren Rat Lid (24" x 12.5")
E-20039   Opti Mouse Lid (Pie shaped)
E-20040   Opti Rat Lid (Pie shaped)

E-20029 Lid Storage Bracket

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

EP-1130 Connection Hose

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

Sure-Seal Induction Chambers

Features

- Positive seal gasket ensures there is no gas leakage
- Simple locking snap latch
- Constructed of heavy-duty, clear acrylic plastic
- Non-skid bottom

EZ-177   Sure-Seal Mouse Chamber 4"L x 4"W x 4"H
EZ-178   Sure-Seal Mouse/Rat Chamber 9"L x 4"W x 4"H
EZ-1785   Sure-Seal Large Mouse/Rat Chamber 11.25"L x 7"W x 6"H
EZ-179   Sure-Seal Guinea Pig/Rabbit Chamber 18"L x 12"W x 12"H

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

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

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

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

The Tamper-Proof Tank Regulators incorporate a flow meter and connect directly to the CO_2 cylinder. The flow meter can be 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.
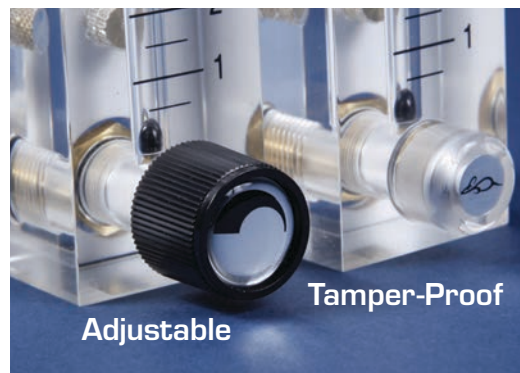
Flow Meters

Euthanex offers an exclusive line of non-compensated flow meter that allow our customers peace of mind that the flow being displayed is accurate regardless of the variance of incoming pressure. We offer a full line of flow meters that ranges from .5 to 400 LPM, adjustable or Tamper-Proof, and a variety of different mounting methods. Use the questions below to determine which is right for you.

Do I need to adjust the flow?

A - Adjustable - We recommend adjustable flow meters when a variety of cage sizes are being used. Allows the user to adjust the flow based on the cage's displacement size for faster results.

T - Tamper-Proof- These flow meters are set for a single flow rate, ideal for facilities that are working with one cage size. Tamper-Proof Flow Meters take the guess work away, and prevent the user performing the procedure incorrectly. We also offer these units with dual meters to accommodate two cage sizes.

C - Calibration- Available for all the flow ranges we offer. Calibration flow meters do not have an adjustment dial. These flow meters allow the user to verify flow from various pieces of equipment. Includes Euthanex Lid Stem and hose barb.

Adjustable   Tamper-Proof

Which flow range do I need?

512 - Describes the flow rate range .5 to 12 LPM. Ideal for single cages varying from mouse to guinea pig.

1050 - Describes the flow rate range 10 to 50 LPM. Ideal for single or double SMARTBOX® chamber systems.

How many flow meters?

S - Single flow meter performs one cage at a time.

D - Dual Flow meters performs two cages at a time. Also ideal when using Tamper-Proof flow meters. It allows for two preset flow rates.

How do I need these mounted?

TS - Tabletop Stand - Stand allows the user the flexibility to postion the meter in the ideal location. The TS includes a stand as well as both output and input hoses with quick disconnect fittings for easy connection to our lids or induction chambers.

DISS - DISS Fitting – Connects directly to point of use CO$_2$ source with a standard male DISS 1080 fitting. We also offer male DISS fitting in 1/8" and 1/4" NPT. The DISS includes an output line with quick disconnect fitting for easy connection to our lids or induction chambers.
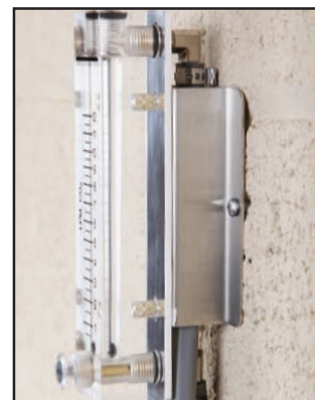
BR - Wall Bracket - Unsure of the fitting coming from the wall? No problem. The wall bracketed flow meter attaches to the wall via two 1/4" screws. We provide you an open input hose with clamp that simply slides over the spicket and clamps the hose in place. The wall bracket is ideal for forged turrets that are non-removable. The BR includes a wall bracket as well as both input and output hoses with a quick disconnect fitting for easy connection to our lids or induction chambers.


| Tabletop Stand | Diss Fitting | Wall Bracket |

Flow Meter Ordering Guide

EXAMPLE: 512 - T1 - DISS = .5-12LPM, Tamper-Proof, Single, Diss connection

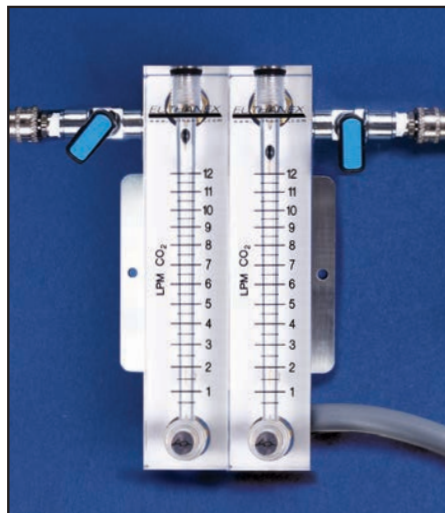Range   Class/ Number   Mounting

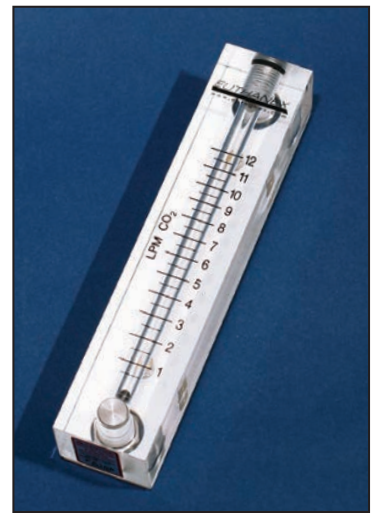| Flow Rate Ranges	Class of Flow Meter	Number of Flow Meters	Mounting
512 Range .5-12 LPM	**A** Adjustable flow meter for manual control of flow rate	**1** Single Flow Meter	**TS** Tabletop Stand for easy placement
1050 Range 10-50 LPM	**T** Tamper-Proof flow meter, preset. *(only available for .5-12 LPM range)*	**2** Two Flow Meters	**BR** Wall Bracket bolts directly to wall and provides an additional input hose and clamp for easy installation. This is an excellent option for piped in applications where a forged or unrecognizable connection point exists.
			DISS Connects directly to point of use CO_2 source with a standard DISS 1080 fitting
			C Calibration Flow Meter *(available in all flow rate ranges)*
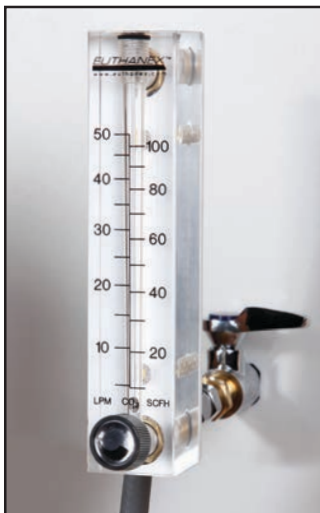
1050-A1-DISS   **512-A1-TS**   **512-T2-BR**   **512-C**

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)*

EZ-1336-C Mobile Cart

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


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)

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.
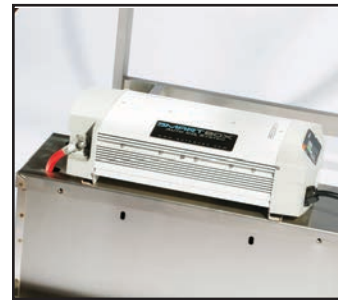
EA-1040 Mobile Battery Back-Up

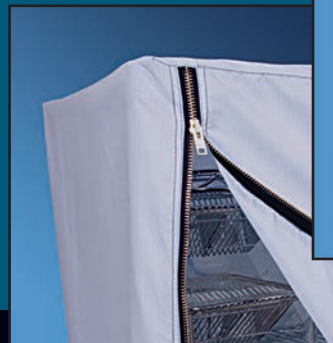High capacity battery powers Tabletop Chamber without connecting to wall power source for a truly mobile system.

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.

Order forms available at www.e-zcovers.net.

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