

Safety Stands

USER'S MANUAL



- 45-0207 (Model 630B)** Cuvette Safety Stand
- 47-0208** Extended Capacity Flatpack Safety Stand
- 47-0203** AgilePulse MAX Cuvette Safety Stand
- 47-0209** AgilePulse MAX Extended Capacity Flatpack Safety Stand
- 47-0610N** AgilePulse PLUS Extended Capacity Flatpack Safety Stand

BTX[®]

a division of **Harvard Bioscience, Inc.**

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A Message from BTX

Thank you for investing in a Safety Stand.

Since its founding in 1983, the main focus of BTX has been in the area of applying controlled electric fields for genetic engineering applications. Because of this, we quickly established a reputation as the technological leader in the fields of electroporation and electrofusion. Our systems have been installed in many prestigious institutes around the globe where they are used successfully for high efficiency transfection, transformation and cell fusion applications. We offer a variety of waveforms, electrodes and chamber options to provide you with the best tools to achieve your goals.

We are vested in your success. To that end, the BTX technical support team constantly tracks published literature for any reference to electroporation and electrofusion. We extract the pertinent experimental conditions and yields from these papers to help us in our efforts to help you. In addition to tracking publications, we are available to you for support at any time for advice in experimental design, product recommendations, troubleshooting, and any other relevant technical advice.

We thank you again for your investment and we look forward to assisting you in any way we can.

Finally, please read this manual carefully before operating. If you have any questions about the unit or about particular applications, please contact us:

BTX

84 October Hill Road
Holliston, MA 01746 USA

Toll Free: 1-800-272-2775

International Callers: 508-893-8999

Fax: 508-429-5732

Web: www.btxonline.com

Email: support@hbiosci.com

For any customers outside the US or Canada, please call your local BTX dealer or call us directly.



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Warranty Information

FOR RESEARCH USE ONLY

BTX

84 October Hill Rd
Holliston, MA 01746, USA

Phone: 1-508-893-8999

Fax: 1-800-429-5732

Web: www.btxonline.com

Warranty

BTX warrants this Safety Stand for a period of 90 days from the date of purchase. At its option, BTX will repair or replace the unit if it is found to be defective as to workmanship or materials. This warranty does not extend to equipment which has been (a) subjected to misuse, neglect, accident or abuse, (b) repaired or altered by anyone other than BTX without

BTX express and prior approval, (c) used in violation of instructions furnished by BTX. This warranty extends only to the original customer purchaser. IN NO EVENT SHALL BTX BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR USE, OR OF ANY OTHER NATURE. Some states do not allow this limitation on an implied warranty, so the above limitation may not apply to you. Without limiting the generality of the foregoing, BTX shall not be liable for any claims of any kind whatsoever, as to the equipment delivered or for non-delivery of equipment, and whether or not based on negligence. Warranty is void if the instrument is changed in any way from its original factory design or if repairs are attempted without written authorization by BTX. Warranty is void if parts, connections, or power supplies not manufactured by BTX are used with the BTX Safety Stand. If a defect arises within the warranty period, promptly contact BTX, 84 October Hill Road, Holliston, Massachusetts, USA 01746-1388 using our toll free number 1-800-272-2775 (US Only) or 508-893-8999. (E-mail: support@hbiosci.com). Goods will not be accepted for return unless an RMA (Returned Materials Authorization) number has been issued by our customer service department. The customer is responsible for shipping charges. Please allow a reasonable period of time for completion of repairs, replacement and return. If the unit is replaced, the replacement unit is covered only for the remainder of the original warranty period dating from the purchase of the original device. This warranty gives you specific rights, and you may also have other rights, which vary from state to state.

Out of Warranty Service

Proceed exactly as for Warranty Service above. If our service department can assist you by phone or other correspondence, we will be glad to help at no charge. Repair service will be billed on the basis of labor and materials. A complete statement of time spent and materials used will be supplied. Shipment to BTX should be prepaid. Your bill will include return shipment freight charges. Disassembly by the user is prohibited. Service should only be carried out by experienced BTX technicians.

Repair Facilities and Parts

BTX stocks replacement and repair parts. When ordering, please describe parts as completely as possible, preferably using our part numbers. If practical, enclose a sample photo or drawing.

Caution Notice

The BTX Safety Stand is intended for laboratory use only and can be used in research and development applications. These systems have been designed to meet the standards for electromagnetic compatibility (EMC) and safety. This product should not be used in the presence of a flammable atmosphere such as an anesthetic mixture with air, oxygen, or nitrous oxide.

Safety Information

Please read the following safety precautions to ensure proper use of your Safety Stand. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

To Prevent Hazard or Injury

Make Proper Connections

Make sure all connections are made properly and securely. Any signal wire connections to the unit must be no longer than three meters.

Observe All Terminal Ratings

To avoid fire or shock hazard, observe all ratings and markings on the product or in this manual before using the device.

Avoid Exposed Circuitry

Do not touch any electronic circuitry inside of the product. Do not insert fingers or try to remove electrode or sample during pulsing sequence.

Do Not Operate with Suspected Failures

If damage is suspected on or to the product do not operate the product. Contact qualified service personnel to perform inspection.

Place Product in Proper Environment

Review the operating manual for guidelines for proper operating environments. Do not operate in wet/damp conditions.

Wear proper eye protection during electroporation

Arcing Can Occur at High Voltages

An unfavorable combination of parameters such as high voltage settings and a small sample volume with a highly conductive medium might lead to flashover between the electrodes (ARC) and/or explosive evaporation of the medium. Reduce voltage or pulse length to avoid repeating this condition.

Observe all Warning Labels on Product

Read all labels on product to ensure proper usage.

High Voltage Risk

These BTX Safety Stands are designed to connect to a high voltage power supply adjustable to 3,000 V. High voltage power supplies present a serious risk of personal injury if not used in accordance with design and/or use specifications, if used in applications on products for which they are not intended or designed, or if they are used by untrained or unqualified personnel.

- The user must read this manual carefully before the instruments are placed into operation.
- Removing the cover will void the warranty.
- Do not connect or disconnect the high voltage cable with the high voltage enabled.
- To connect or disconnect the cable, turn line power off and unplug line (mains) cord.
- Do not touch the electrode tip while the waveforms are being applied.

If there are any questions about the operation of this equipment, call BTX Customer service at 1-800-272-2775, or 1-508-893-8999.

Caution Notice

The BTX Safety Stand is intended for laboratory use only and can be used in research and development applications. These systems have been designed to meet the standards for electromagnetic compatibility (EMC) intended for laboratory equipment applications as well as the applicable safety requirements for electrical equipment for measurement, control, and laboratory use. The unit itself does not generate waste, but may be used to treat samples that are hazardous. Please use appropriate PPE and ensure disposal in accordance with local regulations and practices.

This product should not be used in the presence of a flammable atmosphere such as an anesthetic mixture with air, oxygen, or nitrous oxide.



Caution



Caution Risk of Electric Shock

Introduction

The BTX Safety Stand is a safety device for use with BTX disposable cuvettes and flatpack chambers. Its unique design ensures that no current can be delivered unless the lid is closed, therefore protecting the user from high voltages. Up to two cuvettes can be electroporated at once, thus decreasing experimentation times. Please refer to the Product Compatibility table below for compatible BTX electroporators and accessories.

Product Compatibility					
BTX Safety Stand Item #	45-0207	47-0208	47-0203	47-0209	47-0610N
Compatible BTX Generators	ECM 399 ECM 630 ECM 830 ECM 2001* Gemini X2 *When used with F/F adapters, Item 45-0088, Sold separately	ECM 399 ECM 630 ECM 830 ECM 2001** Gemini X2 **When used with included F/F adapters, Item 45-0088	AgilePulse MAX ECM 2001+	AgilePulse MAX ECM 2001+	AgilePulse PLUS
Compatible BTX Cuvettes	All 1 mm, 2 mm, and 4 mm gap BTX cuvettes	All 1 mm, 2 mm, and 4 mm gap BTX cuvettes	All 1 mm, 2 mm, and 4 mm gap BTX cuvettes	All 1 mm, 2 mm, and 4 mm gap BTX cuvettes	All 1 mm, 2 mm, and 4 mm gap BTX cuvettes
Compatible BTX Flatpacks	45-0109 45-0110	45-0109 45-0110 47-0206	45-0109 45-0110	45-0109 45-0110 47-0206	45-0109 45-0110 47-0206

Note: For compatibility with older models, please contact BTX Technical Support.

Operation: Getting Started



Warning High Voltage

Make sure the BTX electroporator is switched off before continuing.

1. Attach the safety stand cables to the output on the rear or the front panel of the electroporator depending on the BTX electroporator being used. For AgilePulse MAX, AgilePulse PLUS, and ECM 2001+, also connect interlock cable to front panel of electroporator. For ECM 399, ECM 630, ECM 830, and Gemini electroporators, connect safety stand cables directly to generator high voltage output ports. For Legacy ECM 2001 connect safety stand cables to HV output cables using F/F adapters.
2. Using aseptic technique, pipette the correct volume of cell suspension and reagents into the cuvette or flatpack chamber. If using a cuvette or 10 ml flatpack chamber (Item 47-0206), replace the cap.
3. Open the safety stand shield and place the cuvette or flatpack chamber between the metal contacts. Adjust the distance between the contacts using the black roller. (Note: the adjustment will remain the same after the first time, do not readjust the roller with every cuvette. However, check contact periodically to ensure good current flow). Close the safety stand shield.
4. Switch on the BTX electroporator. Check that all instrument settings and connections are correct. Deliver electroporation pulse protocol by pressing the appropriate START or PULSE button depending on the BTX electroporator being used.
5. After the pulse delivery is complete, remove the cuvette or flatpack chamber from the safety stand. Use a pipette to remove the pulsed cells. Treat the pulsed cells according to the protocol.
6. Discard the cuvette, pipette and/or flatpack chamber in a biohazard container. Refer to your local institution's environmental health and safety regulations for proper disposal practices.
7. Unplug safety stand from electroporator. Clean plastic lid with ethanol and deionized water as needed. Please contact Technical Support for guidance regarding cleaning procedure for safety stand metal electrode contacts.

Specifications

Standard Capabilities:

Voltage Range	0 to 3000 VDC; 0 to 250 VAC
Frequency	0.2 to 2.0 MHz
Pulse Length/ Time Constants Range	10 μ s to 10 s

Other Specifications:

Storage Temperature	-10 to 70°C
Operating Temperature	5 to 40°C
Intended Use	Indoor Use Only
Relative Humidity	20 to 80%
Maximum Altitude	2,000 m (6,562 ft)
Pollution Degree	II
Insulation Category	CAT I

Physical Characteristics:

Overall Dimensions

(45-0207, 47-0203) L x W x D
12.7 x 10.2 x 17.8 cm (5 x 4 x 7 in)

Overall Dimensions

(47-0208, 47-0209) L x W x D
12.7 x 10.2 x 19.0 cm (5 x 4 x 7.5 in)

Weight

1 kg (2.3 lb)

Ordering Information

Safety Stands		
45-0207	Cuvette Safety Stand (Model 630B)	1 Ea
47-0208	Extended Capacity Flatpack Safety Stand	1 Ea
47-0203	AgilePulse MAX Cuvette Safety Stand	1 Ea
47-0209	AgilePulse MAX Extended Capacity Flatpack Safety Stand	1 Ea
47-0610N	AgilePulse PLUS Extended Capacity Flatpack Safety Stand	1 Ea
Replacement Parts		
45-0213	Replacement Acrylic Safety Stand Cover (for 45-0207 and 47-0203)	1 Ea
45-0215	Metal Replacement Kit (for 45-0207 and 47-0203)	1 Kit
Accessories and Adapters		
45-0208	Cuvette Rack (Model 660)	1 Ea
45-0088	F/F adapters, red and black, for 4 mm diameter banana cables and pin tips	1 Kit
45-0217	Banana to banana cables, red and black, 10 ft length	1 Kit
47-0097	Adapter, AgilePulse PLUS Generator to AgilePulse MAX Stands	1 Ea
Consumables		
45-0134	BTX Cuvettes Plus, 1 mm gap, 90 µl, Sterile, Gray cap, individually wrapped, with transfer pipettes	Pkg. of 10
45-0124	BTX Cuvettes Plus, 1 mm gap, 90 µl, Sterile, Gray cap, individually wrapped, with transfer pipettes	Pkg. of 50
45-0140	BTX Cuvettes Plus, 1 mm gap, 90 µl, Sterile, Gray cap, bulk wrapped in packages of 100 cuvettes per pkg.	Pkg. of 100 x 24
45-0135	BTX Cuvettes Plus, 2 mm gap, 400 µl, Sterile, Blue cap, individually wrapped, with transfer pipettes	Pkg. of 10
45-0125	BTX Cuvettes Plus, 2 mm gap, 400 µl, Sterile, Blue cap, individually wrapped, with transfer pipettes	Pkg. of 50
45-0141	BTX Cuvettes Plus, 2 mm gap, 90 µl, Sterile, Blue cap, bulk wrapped in packages of 100 cuvettes per pkg.	Pkg. of 100 x 24
45-0135	BTX Cuvettes Plus, 4 mm gap, 800 µl, Sterile, Yellow cap, individually wrapped, with transfer pipettes	Pkg. of 10
45-0125	BTX Cuvettes Plus, 4 mm gap, 800 µl, Sterile, Yellow cap, individually wrapped, with transfer pipettes	Pkg. of 50
45-0141	BTX Cuvettes Plus, 2 mm gap, 800 µl, Sterile, Yellow cap, bulk wrapped in packages of 100 cuvettes per pkg.	Pkg. of 100 x 24
45-0109	Flatpack Chambers, 1.83 mm gap, 1.5 ml volume	Pkg. of 50
45-0110	Flatpack Chambers, 0.56 mm gap, 80 ml volume	Pkg. of 50
47-0206	Flatpack Chambers, 4 mm gap, 10 ml volume	Pkg. of 10
47-0002	BTXpress Cytoporation Medium T Low Conductivity Electroporation Medium, 500 ml bottle	1 Ea
45-0801	BTXpress Electroporation Solution, 2 ml bottle, up to 20 reactions	1 Ea
45-0802	BTXpress Electroporation Solution, 5 ml bottle, up to 50 reactions	1 Ea
45-0805	BTXpress Electroporation Solution, 10 ml bottle, up to 100 reactions	1 Ea
45-0803	BTXpress Electroporation Solution Kit, 50 reactions in 2 mm gap cuvettes	1 Kit
45-0804	BTXpress Electroporation Solution Kit, 20 reactions in 4 mm gap cuvettes	1 Kit
45-0806	BTXpress Electroporation Solution Kit, 100 reactions in 2 mm gap cuvettes	1 Kit
45-0807	BTXpress Electroporation Solution Kit, 40 reactions in 4 mm gap cuvettes	1 Kit

Contact Us

US & Canadian Customers

phone 508.893.8999

fax 508.429.5732

e-mail support@hbiosci.com

website www.btxonline.com

International Customers

To locate a distributor
near you, please visit our
website at www.btxonline.com



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