

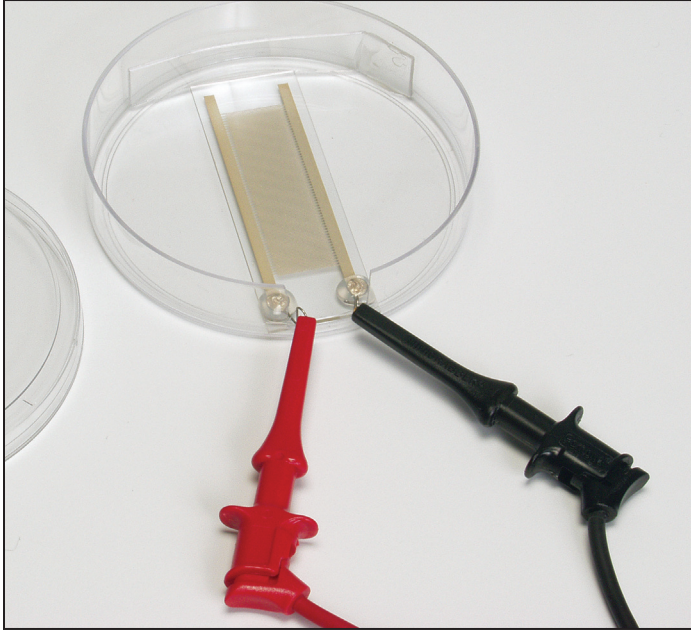
Meander Fusion Chamber

USER'S MANUAL

BTX[®]

HARVARD APPARATUS

The Electroporation Experts



INTRODUCTION

The BTX Meander Fusion Chamber is a microslide with a novel design specifically used for electro cell fusion of plant or mammalian cells. The chamber is constructed of a conductive metal alloy which has been deposited in a finger-like projection array on a glass microscope slide. This method of manufacturing creates a highly precise working area. The configuration is designed to give direct viewing of a surface area. This can be used for viewing dimer formation during alignment while under a microscope. The gap size is set at 0.2 mm.

IMPORTANT: Read all Instructions, Warnings and Precautions prior to use.

FOR RESEARCH PURPOSES ONLY

Sample Preparation

Refer to the BTX Applications and ECM[®] 2001 Instrument Operating Manual for further information. The medium used for electrofusion represents a certain electrical resistance to the power supply. The chamber resistance is determined by the chamber geometry and the specific conductivity of the medium (or specific resistivity, which is the inverse). Non-ionic media such as 0.3 M mannitol, 0.3 M sucrose or 1.1 M sorbitol is recommended. Highly ionic media such as PBS is NOT recommended.

Order No.	Model	Description
45-0107	454	Meander Fusion Chamber, pkg. of 4

Meander Fusion Chamber

GENERAL INFORMATION

Warranty

BTX/Harvard Apparatus warrants this BTX Meander Fusion Chamber for a period of 90 days from date of purchase. At its option, BTX/Harvard Apparatus will repair or replace the item if it is found to be defective as to workmanship or material. This warranty does not extend to damage resulting from misuse, neglect, or abuse, normal wear and tear, or accident. This warranty extends only to the original customer purchase.

IN NO EVENT SHALL HARVARD APPARATUS 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. If a defect arises within the 90 day warranty period, promptly contact: **BTX/Harvard Apparatus, 84 October Hill Road, Holliston, Massachusetts 01746-1388** using our toll free number **1-800-272-2775 (Outside the U.S. call 1-508-893-8999)**. Goods will not be accepted for return unless an RMA (Return 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 or 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.

Note: BTX electrodes are not recommended for use with power supplies or cables from other manufacturers. Such use is completely at the customer's own risk as it may result in damage, create unsafe conditions and will immediately void the 90 day warranty.

IMPORTANT: Read all Instructions, Warnings and Precautions prior to use.

Technical & Customer Service

BTX® is the ultimate resource for technical information on the use of high voltage bacterial transformation and general electroporation of molecules and drugs into cells. We constantly track and monitor scientific publications in this area. Our Technical Service group extracts and enters pertinent information, such as results and parameters from these papers into a Protocol database. This database is available via the BTX website. Please visit www.btxonline.com. For technical assistance, additional information or an inquiry/request for repair service, contact BTX/Harvard Apparatus Technical Support/Customer Service Group at:

BTX®

A Division of Harvard Apparatus

84 October Hill Road

Holliston, MA 01746-1388 U.S.A.

Toll Free: 1-800-272-2775 (U.S. only)

Phone: 1-508-893-8999

Fax: 1-508-429-5732

E-mail: techsupport.btx@harvardapparatus.com

Internet: www.btxonline.com (click on customer service)

If outside the United States and Canada: call **1-508-893-8999** or contact your nearest BTX Distributor. A complete list of distributors is on our website.

GENERAL SAFETY INFORMATION

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazard, use this product only as specified. Only qualified BTX personnel should perform service procedures.

To Prevent Hazard or Injury:

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.

DO NOT OPERATE WITH SUSPECTED FAILURES

If you suspect there is damage to the product, have it inspected by qualified BTX service personnel.

DO NOT CONTACT ELECTRODES

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

AVOID EXPOSURE TO CONTACT

Do not insert fingers or try to remove electrode or sample during pulsing sequence.

WEAR PROPER EYE PROTECTION DURING ELECTROPORATION

DO NOT OPERATE IN AN EXPLOSIVE ENVIRONMENT

DO NOT OPERATE IN WET/DAMP CONDITIONS

Safety Terms and Symbols:

Terms that appear in this manual:



WARNING. Warning statements identify conditions or practices that could result in injury or loss of life.



CAUTION. Caution statements identify conditions or practices that could result in damage to these products or other property.

Symbols that may appear on the products:



Danger
High
Voltage



Attention
Refer to
Manual



Protective
(Earth)
Terminal



Functional
Ground
Terminal

Meander Fusion Chamber

OPERATION: GETTING STARTED

WARNING HIGH VOLTAGE

Make sure the BTX electroporator is switched off before continuing.

1. Connect the corresponding red and black banana plug ends of the micrograbber banana plug cables (45-0216) to the red and black voltage output of the BTX electroporator.
2. Attach the red and black terminal ends of the micrograbber cable (45-0216) by depressing the micrograbber handle down to expose the micrograbber hook and attach this to the connectors on the meander fusion chamber. Release the handle and the hook will retract to secure the connection.
3. For the ECM 2001CE model, connect the coaxial metal connectors of the black and red banana cables to the back of the ECM 2001CE unit. Connect the micrograbber black and red adapters (45-0087) to the matching black and red banana plugs. Attach the red and black terminal ends of the micrograbber cable by depressing the micro-grabber handle down to expose the micrograbber hook and attach this to the electrode ends on the meander fusion chamber. Release the handle and the hook will retract to secure the connection.
Warning: Make sure the generator is turned off prior to connecting any cables to it.
4. Tape the cable to the microscope stage to act as a strain relief and to avoid movement of the slide and its wires.
5. Pipette one drop of cell suspension and reagents to the Meander Chamber field. Alternatively, the entire working area (corresponding to a single gap size) may be filled. The recommended volume of cells and reagents is 5 to 20 μ l. Top with a cover slip.
6. Switch on the electroporator. Check that all instrument settings are correct. Deliver the alignment or electroporation pulses by pressing the appropriate START or PULSE button depending on the ECM electroporator being used.
7. After each experiment clean the chamber with warm distilled water or 70% ethanol and let air dry. The chamber may occasionally be wiped with a soft tissue to remove dirt.

APPENDIX A: SPECIFICATIONS

Meander Fusion Chamber Electrical & Technical Specifications

Standard Capabilities*:

Voltage Range	0 to 480 VDC; 0 to 16 VAC
Frequency	1 MHz
Pulse Length/Time Constants Range	1 μ sec to 99 msec
Pulse Number Range	1 to 99 (depending on voltage)
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:

Gap Size	0.2 mm
Electrode Material	Silver
Field Type	Inhomogeneous

Compatibility:

Generators	ECM® 630, 830 and 2001
Monitoring	The Enhancer 3000® Monitoring System recommended

**Depending on buffer composition and generator capability*

APPENDIX B: REPLACEMENT PARTS

Order No.	Model	Description
45-0107	454	Meander Fusion Chamber, pkg. of 4*
45-0216		Coaxial Connection Cable, Banana Plug to Micrograbber, 3.1 m (10 ft)
45-0059	VIP3000SC	The Enhancer 3000® Monitoring System

**Requires 45-0216 Coaxial Connection Cable*

APPENDIX C: TROUBLESHOOTING

Please contact BTX Technical Service at any of the numbers listed below in the event of any failure.

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84 October Hill Road

Holliston, MA 01746-1388 U.S.A.

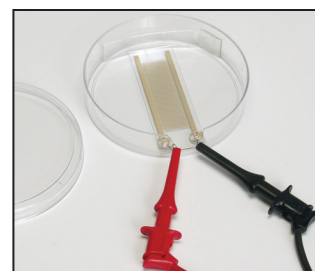
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Internet: www.btxonline.com (click on customer service)



45-0107

CAUTION
FOR RESEARCH USE ONLY
NOT FOR CLINICAL
USE ON PATIENTS

WEEE/RoHS Compliance Statement

EU Directives WEEE and RoHS

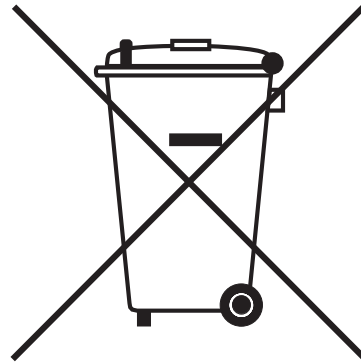
To Our Valued Customers:

We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation.

The European Union (EU) has enacted two Directives, the first on product recycling (Waste Electrical and Electronic Equipment, WEEE) and the second limiting the use of certain substances (Restriction on the use of Hazardous Substances, RoHS). Over time, these Directives will be implemented in the national laws of each EU Member State.

Once the final national regulations have been put into place, recycling will be offered for our products which are within the scope of the WEEE Directive. Products falling under the scope of the WEEE Directive available for sale after August 13, 2005 will be identified with a "wheelie bin" symbol.

Two Categories of products covered by the WEEE Directive are currently exempt from the RoHS Directive – Category 8, medical devices (with the exception of implanted or infected products) and Category 9, monitoring and control instruments. Most of our products fall into either Category 8 or 9 and are currently exempt from the RoHS Directive. We will continue to monitor the application of the RoHS Directive to its products and will comply with any changes as they apply.



- **Do Not Dispose Product with Municipal Waste**
- **Special Collection/Disposal Required**

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