

Flatpack Chambers

INSTRUCTIONS MODELS 485, 486



Flatpack chambers are constructed using a three-ply sandwich construction of stainless steel and mylar plastic. Two Flatpack models are available. Model 485 has a gap size of 1.83 mm and can be used for electroporation of mammalian and plant cells and bacteria, such as *E. coli*.¹ Model 486 has a gap size of 0.56 mm and is recommended for bacteria. The design of this model provides the unique combination of small sample size and field strengths in excess of 40 kV/cm. Flatpack chambers are gamma sterilized in individual packages. They are sold in sets of 50 and are used with the BTX Safety Stand and BTX generator systems listed below.

IMPORTANT: Read all Instructions, Warnings and Precautions prior to use. FOR RESEARCH PURPOSES ONLY

ELECTRICAL & TECHNICAL SPECIFICATIONS

Standard Capabilities *Depending on buffer composition, volume, and generator capability

Voltage Range:	0 - 3000 Vdc 0 - 250 Vac
Frequency:	1 MHz
Pulse Length/Time Constants Range:	10 μ sec - 10 sec
Pulse Number Range:	1-99 (depending on voltage)
Operating Temperature:	5° - 40° C
Intended Use:	Indoor Use
Relative Humidity:	20-80%
Maximum Altitude:	2000m (6562 ft)
Pollution Degree:	II
Insulation Category:	CAT I

Physical Characteristics

	Model 485	Model 486
Gap Size:	1.83 mm	0.56 mm
Maximum Volume:	1.5 ml	85 μ l
Field Type:	Homogeneous	Homogeneous

Compatibility

Generators:	ECM [®] 395, 399, 600, 630, 830, 200, 2001, T700, T720, T100, T300, T800, & T820.
Monitoring:	Enhancer 400 recommended

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The Electroporation Experts

DEFINITION OF SYMBOLS



Warning – Refer to instructions for use in order to find the nature of any potential hazard and any actions which have to be taken.



Caution – Risk of electric shock. Dangerous voltage that could result in injury or loss of life.



SAFETY GUIDELINES

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.



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 the 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.

INTENDED USE

The BTX Flatpack Chambers are intended for use with the BTX Safety Stand and the generators listed on the previous page. This document provides the information necessary for using the Flatpack Chambers with the BTX Electroporation Systems. These instructions are supplemental to the instrument operating manual. Refer to the respective instrument manual prior to using the flatpack chambers.

SAMPLE PREPARATION

The medium used represents a certain electrical resistance to the Pulse Generator. The chamber resistance is determined by the chamber geometry and the specific conductivity of the medium (or specific resistivity, which is the inverse). Additives in the ionic media can lead to a reduced field strength in the chamber.

LIMITATIONS

Each Flatpack Chamber should be filled to the maximum volume indicated to ensure the proper voltage is applied to the cell suspension. If a lesser amount is used the medium may boil at high field strengths, thereby damaging cells. Arcing between electrodes can occur at high amplitude settings if the chambers are only partially filled.

INSTRUCTIONS FOR USE



WARNING HIGH VOLTAGE. Make sure the BTX Pulse Generator is switched off before continuing.

1. Attach the safety stand cables to the output on the rear or the front panel of the generator depending on the BTX generator being used.
2. Using aseptic techniques, pipette the correct volume of cell suspension and reagents into the chamber.
3. Open the safety stand shield and place the chamber in between the metal contacts. Adjust the distance between the contacts and the chamber using the black roller, so that the chamber has good contact (Note: the adjustment will remain the same after the first time, simply insert the chamber between the contacts and remove after electroporation. Check chamber contact periodically to ensure good current flow). Close the shield.
4. Switch on the BTX pulse generator. Check that all instrument settings and connections are correct. Deliver the electroporation pulse by pressing the appropriate START or PULSE button depending on the BTX Generator being used.
5. After the pulse is delivered, remove the chamber from the safety stand. Treat the pulsed cells according to the protocol.
6. Discard the flatpack chamber in a typical biohazard container. Refer to your country's waste management organization for proper disposal practices.

TROUBLESHOOTING

Please contact BTX Technical Service at any of the numbers listed on the following page in the event of any failure.

WARRANTY

The BTX Instrument Division of Genetronics, Inc. (Genetronics) warrants that Flatpack Chambers are free of defects at time of delivery to the user. If a defect is found, product may be returned for exchange only within a period of 90 days from time of delivery from BTX or an authorized Genetronics Distributor. If any defects covered by this warranty appear within the above period, Genetronics shall have the option of repairing or replacing the product at its expense. Such repair or replacement shall be the customer's exclusive remedy for breach of warranty or for negligence. This warranty does not extend to any product which has been (a) subjected to misuse, neglect, accident or abuse, (b) repaired or altered by anyone other than Genetronics without Genetronics' express and prior approval, (c) used in violation of instructions furnished by the BTX Instrument Division of Genetronics, Inc. Manufacturer shall not be liable for any special or consequential damages or for loss, damage or expense (whether or not caused by or resulting from Manufacturer's negligence) directly or indirectly arising from use of the product sold here under either separately or in combination with any other product or from any other cause.

The above warranty shall be in lieu of and excludes all other expressed or implied warranties of merchantability, or fitness for any purpose, or otherwise. Without limiting the generality of the foregoing, Manufacturer shall not be liable for any claims of any kind whatsoever, as to the product delivered or for non-delivery of equipment, and whether or not based on negligence.

Manufacturer will correct any malfunction not caused by operator abuse at no charge for parts and labor. All service under the warranty will be made at the Genetronics, Inc. San Diego, California, USA facilities or at another location approved by Genetronics, Inc. Owner will ship product prepaid

to San Diego, California. Manufacturer will return the product, after servicing, freight prepaid to owner's address.

Warranty is VOID if the product is changed in any way from its original factory design or if repairs are attempted without written authorization by Manufacturer.

Warranty is VOID if parts or connections not manufactured by Manufacturer are used with a BTX product.

TECHNICAL & CUSTOMER SERVICE

BTX® is the ultimate resource for technical information on the use of high voltage electric fields for performing high efficiency cell fusion, embryo manipulation, gene transfer, bacterial transformation and general electroporation of molecules and drugs into cells. We constantly track and monitor all scientific publications in this area. Our Technical Service group extracts and enters pertinent information, such as results and parameters from these papers into a Database Management System. The resultant database can be accessed and searched on any combination of the field identifiers.

For technical assistance or information, contact the BTX Instrument Division of Genetronics, Inc. Technical Service group:

Phone: 1-800-597-0580 1-858-597-6006
Fax: 1-858-597-9594
E-mail: tech@genetronics.com

If outside the United States and Canada: call 858-597-6006 or contact your nearest BTX Distributor.

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For any inquiry or request for repair service, contact the BTX Instrument Division of Genetronics, Inc. Customer Service group in writing or by the following:

Phone: 1-800-289-2465 1-858-597-6006
Fax: 1-858-597-9594
E-mail: cust@genetronics.com

If outside the United States and Canada, call 1-858-597-6006 or contact your nearest BTX Distributor.

ORDERING INFORMATION

Flatpack Model	Description	Part Number
485	50 disposable flatpacks, 1.83mm gap	01-000234-01
486	50 disposable flatpacks, 0.56mm gap	01-000235-01

Accessory Model	Description	Part Number
630B	Safety Stand	01-000197-01

Meets requirements of Directive 89/336/EEC for Electromagnetic Compatibility (EC) and Low-Voltage Directive 73/23/EEC for Product Safety.