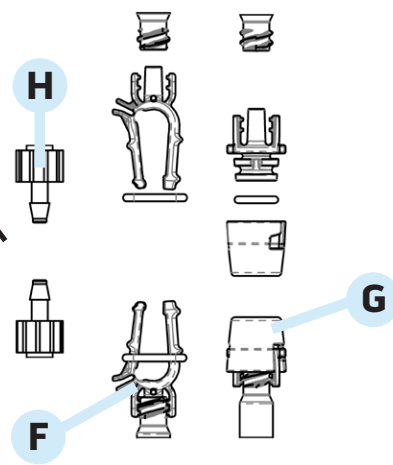


Chamber is divided into:
 -Reservoir compartment (left)
 -Sample compartment (right)

All connection points on chamber are Luer-compatible for easy, tool-less setup.

Chamber includes three sets of interchangeable sample fixtures:
 -Barbs for tubes
 -Grips for strips
 -Platens for discs



Chamber Specifications

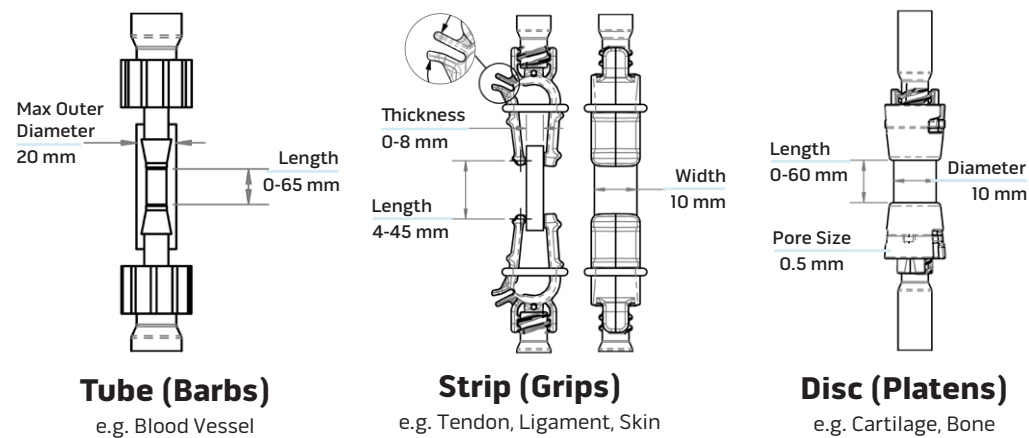
Sample Compartment Dimensions (W x D x H).....	24.5 x 21.2 x 102.1 mm
Sample Compartment Volume.....	47 mL
Reservoir Compartment Dimensions (W x D x H).....	24.5 x 31.6 x 102.1 mm
Reservoir Compartment Volume.....	73 mL
Total Bioreactor System Volume.....	140 mL
Chamber Weight (Empty).....	325 g
Pressure Limit.....	300 mmHg

Stand Specifications

Single Chamber Stand	
- Dimensions (W x D x H).....	175 x 165 x 275 mm
- Weight.....	1.35 kg
6 Chamber Stand	
- Dimensions (W x D x H).....	430 x 305 x 450 mm
- Weight.....	3.1 kg

1 Selecting fixtures

Select appropriate fixture set for sample-specific application.



2 Sterilizing and cleaning

Clean components that contact cell culture media with a solution of soap and deionized water. Rinse with a solution of 70% ethanol or 10% bleach. Rinse with deionized water.

All components can be sterilized via steam or ethylene-oxide. Loosen all fittings and remove doors and seals prior to sterilization (recommended autoclave cycle of 121°C for 30 minutes, for up to 10 autoclave cycles).

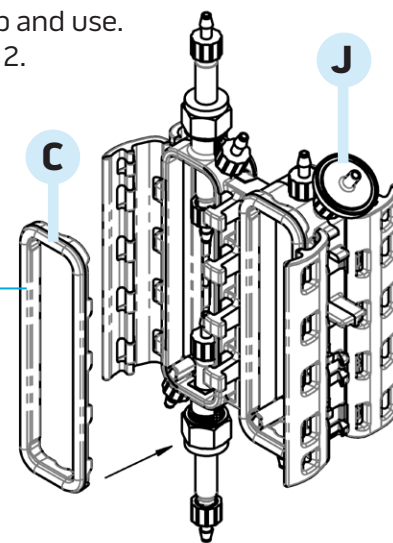
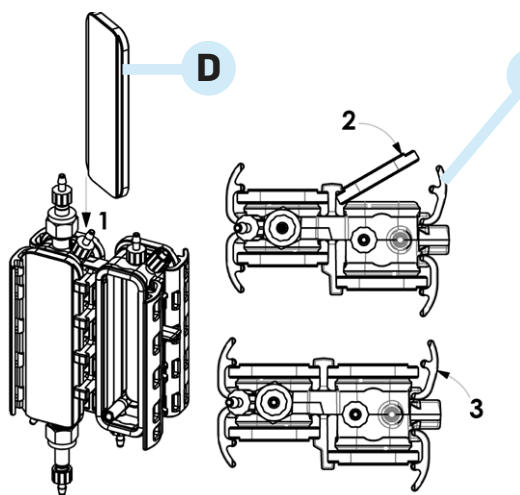
! Do not expose filter to liquids during use or sterilization. Components are not compatible with gamma radiation.

3 Setting up chamber

- Follow aseptic handling procedures during setup and use.
- Attach tubing as shown in diagram on page 2.
- Mount fixture set to shafts.
- Tighten all fittings to prevent leaking.
- Attach filter to reservoir.

Install door seals.

Ensure lip is tight around chamber walls.



Install doors.

- Position window with indented edges facing away from chamber.
- Slide door down central chamber groove to prevent seal from rolling over.
- Push door against seal and pull door hinge up until door snaps in place.

4 Inserting sample

Loosen shaft lock assembly and adjust shaft length while mounting sample to appropriate fixture set. Tighten shaft lock when sample is mounted.

- Barbs: carefully push ends of tubular sample over nozzle (tie in place with suture thread if needed).
- Grips: using fingers or forceps, press clamp open at hinge, insert sample, and release (O-ring can be adjusted on clamp to change gripping force).
- Platens: place sample on lower platen and adjust upper shaft until sample is secured between platens.



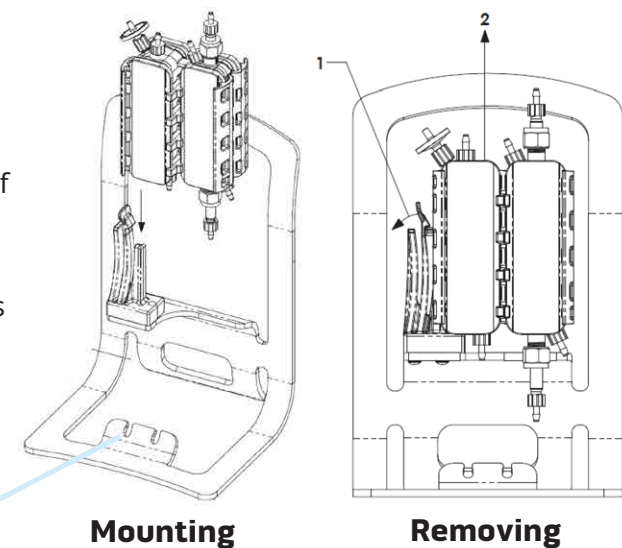
Autoclavable syringe is supplied with chamber to fill and drain media through three tubing ports. Port on top of chamber can be used to bleed air that gets trapped in sample compartment or tubing.

5 Mounting and removing chamber from stand

To mount, slide groove on reservoir side of chamber onto stand mount until latch clicks.

To remove, pull back on latch and slide chamber groove off of stand mount.

Stand can be positioned vertically, horizontally, or on its side. Caution should be taken to prevent filter from getting wet by positioning it higher than fluid at all times.



Notches stabilize tubing during transport or use.

Single chamber stand is recommended for sample mounting and transport of chamber from flow hood to 6 chamber stand in incubator.

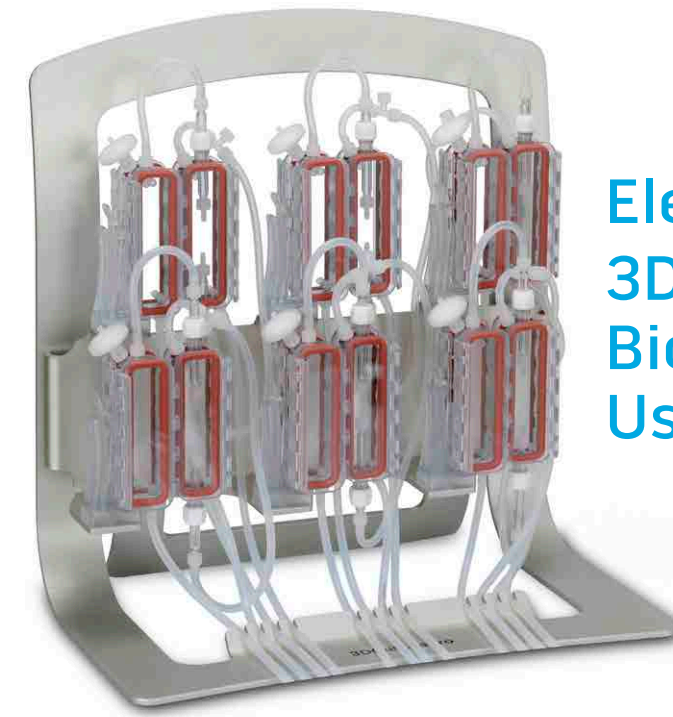
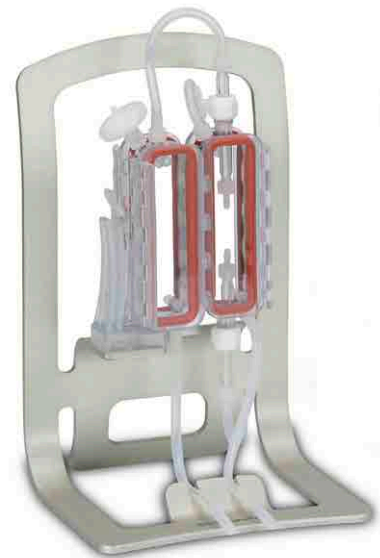
6 Perfusing through chamber

Culture media is intended to flow in path shown by blue arrows and numbers on diagram (page 2). Customer can alter tubing to meet application-specific flow needs.

Flow rate is determined by inner diameter of pump cassette tubing. Tubing supplied with chamber is compatible with Ismatec pump cassettes (Ismatec SA, Switzerland). Additional tubing sizes are available from vendor to modify flow rate range. Chamber can be used with customer-supplied pumps or pump assembly offered by ElectroForce(below).

Pump Specifications

Dimensional Envelope (W x D x H).....	210 x 356 x 216 mm
Weight.....	7.7 kg
Flow Range, 2.79 mm ID (Pump Tubing).....	1.1-110 mL/min, 3-300 RPM



ElectroForce®
3DCulturePro™
Bioreactor
User Guide

Document Number: 740095-0010
Revision: A

Item	Qty.	Description
------	------	-------------

Contact ElectroForce to replace

A	1	Bioreactor chamber body with integrated reservoir
B	2	Chamber shaft
C	4	Door seal
D	4	Chamber Door
E	4	Door latch
F	2	Grip fixture (clamp and O-ring)
G	2	Platen fixture (cap, adapter, and O-ring)

Contact vendor to replace

H	14	Hose barb, 3.175 mm (1/8") male Luer Value Plastics, Inc. (MTLL230-JIA) Note: Additional barb sizes available from vendor
I	2	Shaft lock assembly (back and front ferrule, nut) Swagelok (T-8M2-1; T8M3-1; T-8M4-1)
J	1	Gas filter for reservoir, 0.2 µm pore size Cole-Parmer (02915-08) Note: Filters must be replaced if they get wet
K	3	Assembly for draining/filling fluid and bleeding air (tee joint, cap) Value Plastics, Inc. (FTLT-6005); Cole-Parmer (45513-56)
L	2.11 m	Silicone tubing, 3/175 mm (1/8") ID, 6.35 mm (1/4" OD) Cole-Parmer (96105-00)
M	1	PharMed BPT tubing, 2-stop, 2.79 mm ID Ismatec, IDEX Health & Science GmbH (SC0736) Note: Additional tubing sizes available from vendor

Can I use my own fixtures?

All connection points are Luer-compatible so customer-supplied fixtures can be attached using standard Luer adapters.

How long will the chamber last?

The chamber can be used for up to ten (10) 30 minute autoclave cycles at 121°C. However, the chamber may need to be replaced earlier depending on individual handling procedures.

How much media should I use and how often should I change it?

The sample should be covered in media and the reservoir compartment should contain enough media to support continual flow. Total media volume in the reservoir and frequency of changing media should be assessed depending on the type of cell culture and the metabolic rate of the cells (Freshney, 2010).

Where can I find protocols for 3D cell culture?

There are many protocol variations depending on the sample type. One reference for appropriate aseptic technique, 3D animal cell culture, and sample processing is Freshney, 2010.

Where can I learn more about using the system?

An online training video for the 3DCulturePro™ bioreactor chamber can be found at www.tainstruments.com. As additional resources become available, they will be added to the 3DCulturePro™ product webpage.

Where can I get replacement parts for the chamber?

Some of the chamber parts can be purchased from individual vendors (see 3DCulturePro™ Bioreactor Chamber Parts table). To order a replacement chamber, replacement fixtures, or additional stands, please contact us at electroforce@tainstruments.com or call us at 1-866-946-8378 or 1-952-278-3070.

What should I do if my sample is contaminated?

Appropriate aseptic techniques should be followed to prevent contamination from occurring. To learn about prevention of contamination, checking for contamination, and disposal of contaminated cultures, please reference Freshney, 2010.

What should I do if the chamber is leaking?

If the leak is occurring at the location of a tubing connector, inspect all components for damage and check that all fittings are tight and that the tube snugly fits over the barb. If the leak is occurring from the chamber body, make sure the door seal is sitting properly over the chamber wall so that it is not rolled up in any way and inspect the doors and door hinges for damage. The chamber may also need to be replaced depending on its extent of use and the number of autoclave cycles.

Reference

Freshney RI. October 2010. *Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications*. 6th ed. Hoboken, New Jersey: John Wiley & Sons, Inc.

Above & Beyond Support

Receive industry-leading assistance from application specialists.

- Experts in tissue engineering, medical device testing, and material science
- Unlimited phone technical support

Americas, Europe & Asia

TA Instruments
ElectroForce Systems Group
9625 West 76th Street, Suite 150
Eden Prairie, Minnesota 55344
T: 952 278 3070 • F: 952 278 3071
E: electroforce@tainstruments.com



Contact our technical support staff at
electroforce@tainstruments.com or call us at 866.946.8378



Your success. Our mission.™

Cells have a profoundly different relationship with the microenvironment if they are cultured in a monolayer versus three dimensional space. A 3D culture system more closely mimics the in vivo environment, promoting cellular responses that do not otherwise occur during 2D culture. To ensure adequate delivery of nutrients and growth factors vital to cellular survival, such systems should incorporate flow of culture media through the bioreactor.

The 3DCulturePro™ bioreactor was developed to provide a reproducible and reliable solution for 3D tissue culture with perfusion flow. The system supports multiple research applications and customers.

- Biologists moving into 3D cell culture
- Biomedical researchers transitioning to flow culture
- Pharmacologists and drug development researchers in need of in vitro test beds for basic research or ex vivo drug delivery systems
- Medical device engineers looking to validate their product in a pre-clinical, in vitro test system



This product is intended for research use only.
Not intended for clinical or diagnostic use.
Not for human use.

TA Instruments - ElectroForce® Systems Group
9625 West 76th Street, Suite 150 • Eden Prairie, Minnesota 55344 USA
NA Toll Free: 1-866-835-1800 • International: 1-952-278-3070

The content of this user guide is subject to change without notice.
The most recent user guide can be accessed at
www.tainstruments.com

Find out more about our comprehensive biomedical
product line at www.tainstruments.com



©2015 TA Instruments. Patent rights issued and/or pending in the United States and other countries. TA Instruments, the TA logo, ElectroForce and WinTest are registered trademarks of TA Instruments. 11015

Your success. Our mission.™