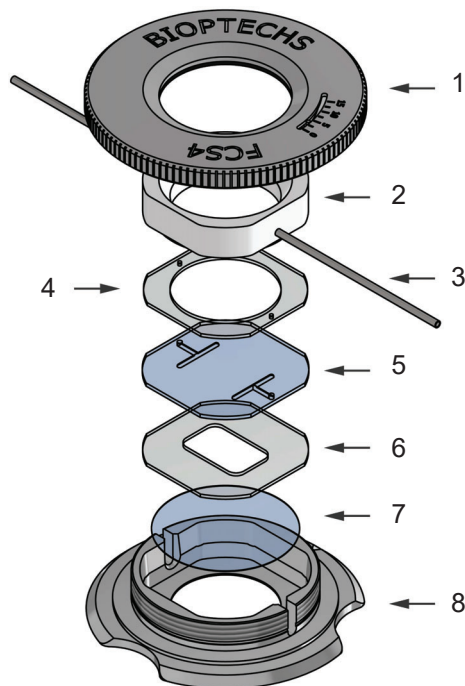


## FCS4 Chamber - Non heating - Flow Cell

### Description:

The FCS4 Chamber is a non-heating, parallel plate flow cell where cells are grown on a 40mm glass coverslip. This coverslip is then incorporated into a perfusable fluid optical cavity that is compatible with all modes of microscopy, and its geometry can be easily defined by the user. This optical chamber is secured into a stage adapter the stage of the microscope where it can be perfused with media or remain static. Media that comes into one of the ports on the side of the chamber, emerges in a fluid optical path where the media is precisely directed over the specimen. The media is collected within the optical cavity and directed out of the chamber on the other side. The flow characteristics of the media while in the optical cavity, are easily modified by selecting gaskets of varying geometry that direct the flow. A fluid pathway is formed by separating the Micro-aqueduct slide from the coverslip containing specimens (cells, tissues, etc) with a single silicone gasket. This gasket can be any thickness from 50 micron to 1mm and any internal geometry you choose or create. This arrangement allows the user to define the flow characteristics. Therefore, users are not limited by the geometry of the optical cavity instead users select or create it. Fluid access to this flow channel is made through two 14ga (0.083" OD) tubes protruding from the sides of the chamber. These tubes provide fluid connection to two perfusion holes in the Micro-aqueduct slide that interface two "T" shaped grooves cut into the inner surface of the Micro-aqueduct slide. The "T" groove allows the media to seek the path of least resistance and become nearly laminar before flowing across the cells.

### Exploded view:



- 1) **FCS4 Top**  
(Contains Compression Gauge)
- 2) **Perfusion / Pressure Piece**
- 3) **Perfusion Tubes (14 gauge - 0.083")**
- 4) **Microaqueduct Slide Gasket**
- 5) **Microaqueduct Slide**  
An optical surface which integrates perfusion  
High-volume laminar flow
- 5) **Internal Perfusion Gasket**  
This gasket can have any internal geometry  
Standard thicknesses from .1mm to 1mm  
Allows you to define the volume and flow  
characteristics of the chamber
- 6) **40mm coverslip**  
Surface where your cells are grown
- 7) **FCS4 base**  
Designed to assure parallel uniform closure,  
eliminate leaks, & broken coverslips  
Dovetail mounted to scope for stability  
No tools for assembly

### Loading the Chamber

1. Sample should be prepared on 40mm Coverslip (#7) prior to assembly if required by experiment.  
*Pro Tip:* The use of Culture Cylinders to aid in cell adherence will significantly shorten timeframe, and restrict cells to desired location on coverslip. If using a gel to aid in affixing a sample on coverslip try to only apply gel to the opening area of the internal gasket. This will aid in sealing, along with preventing excess material being deposited into base of chamber.
2. Place 40mm coverslip (#7) with sample, facing upward into FCS4 base
3. Select internal gasket (#6) desired by flow profile, and thickness, align gasket for desired flow and place into FCS4 base (#8)
4. Place Microaqueduct slide (#5) with T grooves facing down and align properly for perfusion
5. Place and align upper gasket (#4) with perfusion holes onto holes of microaqueduct slide in FCS4 base
6. Place perfusion / pressure piece (#3) into FCS4 base (#8) aligning perfusion tubes with reliefs in FCS4 base
7. Thread top (#1) onto FCS4 base (#8) (righty tighty, lefty loosy)
8. Tighten the top (1) until gauge on top reads 8 to 12 in lbs (rotations force onto the optical stack)
9. It is best to perfuse media through inflow tubing (#3) up to chamber first to purge air from inflow.