



Arctangle® Loading Stations™

Product Information Sheet
01/21/16 Rev. 1.0

Uniaxial strain is achieved through selectively controlling the portion of the flexible membrane that is exposed to regulated vacuum. This is achieved through the use of a specially designed Arctangle® Loading Station™ (Fig. 1), which is comprised of a 3.3" x 5" Lexan® plate, two nylon support centering posts, and six removable nylon planar faced cylinders, or loading posts. The two centering posts are intended to support the UniFlex® or Tissue Train® plate under high vacuum and also center the plate over the six loading posts. The six loading posts provide the strain surface. The posts are positioned on the Lexan® plate such that each is centered beneath the 35 mm well bottom of a UniFlex® or Tissue Train® culture plate (Fig. 1C). When vacuum is applied to a culture plate with a Flexcell® Tension System, the membrane deforms across the loading post face only at the east and west poles creating uniaxial strain. For more information, see the Loading Station™ product webpage at <http://www.flexcellint.com/LoadingStation.htm>.

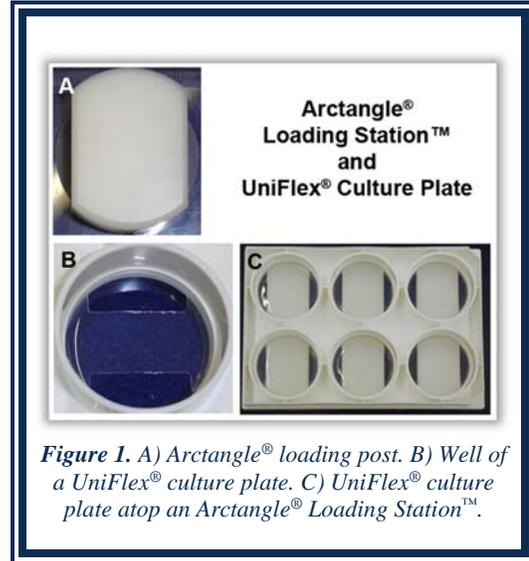


Figure 1. A) Arctangle® loading post. B) Well of a UniFlex® culture plate. C) UniFlex® culture plate atop an Arctangle® Loading Station™.

LUBRICANT APPLICATION TO LOADING STATIONS™

Once the Loading Stations™ are placed within the BioFlex® baseplate wells, lubricant should be applied to the tops and sides of the six loading posts on each Loading Station™. Use the Loctite® silicone lubricant supplied with the Loading Stations™. Use your finger to spread a thin, even layer of lubricant over the top and edge of each post in sufficient quantity to form a friction barrier. Ensure lubricant is not over-applied, as over-application will form lumps under the membrane, affecting the strain profile. For more information, see *Tech Report 110: Tension Baseplate Assembly*: http://www.flexcellint.com/documents/110_TensionBaseplateAssemblyTech.pdf, or the instructional video, *Tension BioFlex® Baseplate Assembly*, accessible on our website: <http://www.flexcellint.com/videos-instruct.htm>.

NOTE: For each new experiment, be sure to clean and re-lubricate the Loading Stations™.

LOADING STATION™ SPECIFICATIONS

Arctangle® Loading Stations™ have maximum and minimum strain capabilities with respect to vacuum level. Table 1 lists the minimum and maximum % elongations for both the UniFlex® and Tissue Train® culture plates when used with the Arctangle® Loading Stations™ and the FX-5000™ Tension System. When creating regimens, do not exceed these values in the *min%* and *max%* boxes for experiments in which the Arctangle® Loading Station™ will be used. **NOTE:** The uniaxial strain can vary by $\pm 1.5\%$ across the designated uniaxial strain region for the UniFlex® culture plate.

Table 1. Min and max achievable % elongation for the various plates used with Arctangle® Loading Stations™.

Plate	Min %	Max %
UniFlex®	1.1	12.2
Tissue Train®	1.6	20.8

ASSIGNING AND DOWNLOADING REGIMENS IN THE FX-5000™ FLEXSOFT® PROGRAM

In the FX-5000™ FlexSoft® Program, select the REGIMEN drop down menu and then ASSIGN. For the UniFlex® plate, select the **UniFlex Plate (24mm Arctangle LS)** platform option. For the Tissue Train® plate, select the **Tissue Train Plate (24mm Arctangle LS)** platform option. **NOTE:** Failing to select the appropriate **Platform** assignment will produce inaccurate elongation values. The **Platform** assignment must match the actual culture plate and Loading Station™ configuration being used for the desired strain to be applied.

ORDERING INFORMATION

6-Place Arctangle® Loading Stations™ can be purchased in a set of four (Cat. No. TT-4000A). If you already have a Flexcell® Tension System, but want to add a uniaxial strain component, UniFlex® baseplate kits (Cat. No. UFBK-4000) are available. If you want to add a 3D culture or tissue engineering component, Tissue Train® baseplate kits (Cat. No. TTBK-4000) are available. Baseplate kits include a baseplate, 4 gaskets, corresponding Loading Stations™, 4 sample plates, acrylic window, grease, and software update, if needed.

Flexcell® culture plates are protected by the following patents: US Patents 4,789,601 and 4,822,741 (International Patents DE3855631D1, DE3855631T2, EP0365536B1); US Patent 6,048,723; US Patent 6,218,178.