Tissue Organ Bath System - 750TOBS

The vertical organ bath with its double-walled glass chamber is the traditional experimental set-up that has been used extensively to investigate the physiology and pharmacology of smooth muscle (vascular and non-vascular) and other tissue preparations, through measurement of contractile force while bathed in an appropriate physiological buffer at 37° C. The advantages of these studies are that the preparations can be subjected to pharmacological agents while excluding the influence of systemic processes that occur in intact animals. The results of these organ bath systems are generally more consistent, repeatable and lend themselves for screening and the measurement of concentration response curves (CRCs).

The most common application of the organ bath assay is in cardiovascular research, using isolated aorta rings, heart tissue (papillary muscle, left ventricles) or arteries. For studying gastro-intestinal effects, preparations of ileum and colon are often used, but also gastric antral muscle and sphincter may be studied. Respiratory effects can be studied in isolated tracheal rings, phrenic diaphragm preparations, pulmonary arterial smooth muscle and even lung parenchyma. Other smooth muscle preparations that are used in organ bath research are urinary bladder, penile muscle strips and prostate.

Because of these inherent qualities and the versatility in use, the basic organ bath design has seen little change over the last few decades. Nonetheless, there are some practical drawbacks. For example, they take up much bench space, risk temperature delays and gradients with circulating water, are tough to clean, hard to automate, and non GLP compliant. To remedy these limitations DMT has now redesigned the organ bath system for the new millennium using the latest developments in material, computer and tissue engineering. We took away the heating by water, replaced it by very fast air heating, made the chambers disposable or reusable after cleaning, added automated control of filling, emptying and gassing by an embedded microprocessor and provided digital output of force and complete computer control of the instrument. All of this in a box that takes up a quarter of the space of a traditional system.

The modular design allows up to four individually mounted tissues to be studied simultaneously and independently per system. Moreover, multiple systems can be linked together (USB connection) for high throughput screening (HTS) and easily run by a single person. The convenient self-contained compact bench-top design of the DMT's Tissue Organ Bath System can be placed in any existing laboratory environment.

Features & Benefits

- **High-quality precision research instrument**
- **Organ Bath System with four chambers allows studies of four preparations simultaneously**
- **Ideal for work requiring a higher throughput**
- **Sample holder facilitate the use of larger organ segments >500µm**
- **The segments are viable for more than 12 hours**
- **Built-in heating, electronic valves for simultaneous rapid removal of buffer, analogue and serial output of force**
- **Quick to set up and easy to use**

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Specifications:

Chamber

Chamber size(s):	5, 10, 20 or 50ml
Chamber material:	Glass
Chamber heating:	Heated air circulation (built-in - patent pending)
Temp. range:	<50° C
Temp. resolution:	0.1° C
Temp. stability:	+/- 0.1° C
Chamber suction:	Manual or automatic via software
Chamber aeration:	Individually via precision needle valve(s)
Chamber filling:	Manual / automatic via software
Chamber filling method:	Drain/fill or continuously (overflow)

Transducer

Force range:	+/- 200/ 400/ 800/ 1600mN (user selectable)
Output resolution:	0.1mN (using filtered signal)
Transducer calibration:	Semi automatic (via software)

Reservoir

Reservoir volume:	4 x 900ml
Reservoir heating:	Electronically (built-in)
Inlet pressure:	1.5 bar
Safety valve:	10 bar
Temp. range:	<50° C
Temp. resolution:	0.1° C
Temp. stability:	+/- 0.2° C
Analogue output(s):	4 x BNC / 2.5V FS (filtered signal) or BNC / raw / 300V/mN (unfiltered signal)
Data communication:	USB (2.0)
Voltage:	100 to 240 VAC (AUTO) 50/60Hz

Tissue Organ Bath with open front panel:

Change all tubes in less than a minute!

Organ Bath Chamber:

The organ bath chambers are available with a volume of 5, 10, 20 or 50ml.

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