

TRYTON™

AUTOCLAVABLE BIOREACTORS

EXPERIENCE AND INNOVATION

Utilizing its expertise in fermentation and automated systems, DCI-BIOLAFITTE introduces its TRYTON™ series, a new generation of autoclavable bioreactors. TRYTON™ represents the state of the art response to the evolution of biotech processes. It is perfectly suited to laboratory environments and current methods of process development.

BENEFITS

- ❑ Ergonomic, modular and compact system
- ❑ Delivery time less than six weeks
- ❑ Control of all process parameters insuring optimal culture conditions
- ❑ Six interchangeable vessels, working volume 2, 5 or 8 litres, for microbial or cell culture
- ❑ Easy maintenance
- ❑ Graphical user friendly control system based on the proven LabWindows™ process control language from National Instruments
- ❑ Software package for fermentation process optimization
- ❑ Connection and supervising up to 12 bioreactors via Ethernet™ network
- ❑ Software complies with 21 CFR PART 11 (complies with GAMP rev 4 by with the addition of a standard PLC)

TECHNICAL SPECIFICATIONS

VESSEL

- ❑ Available sizes : 2/3L, 5/7L, 8/10L – Other sizes on request
- ❑ Material and finish :
 - Borosilicate glass vessel, autoclavable
 - 14404 (316L) Ra ≤ 0.8 µm stainless steel head plate
- ❑ Temperature control via vessel jacket equipped with protection bracket on inlet and outlet
- ❑ Removable head plate equipped with two lifting handles and locked with four screws
- ❑ Vessel height / diameter ratio : ~ 2

AGITATION

- ❑ The agitation is equipped with two Rushton turbines (microbial culture) or one HTPG4™ impeller (cell culture)
- ❑ Mechanical or magnetic coupling
- ❑ Number of removable baffles : 2
- ❑ Adjustable speed 40 - 1500 RPM (microbial culture) or 10 - 400 RPM (cell culture)

AERATION

- ❑ Adjustable air flow via rotameter or mass flow
- ❑ Gas inlet with 0,2 µm absolute filter, aeration tube (microbial culture) or stainless steel sparger 50 µm (cell culture)
- ❑ Condenser on gas outlet
- ❑ Supplementary gas lines for O₂, N₂, CO₂ or NH₃ gases (mass flow meter or rotameter and solenoid valve)

ACCESSORIES AND PRODUCT LINES

- ❑ Up to four fixed speed peristaltic pumps and two external variable speed peristaltic pumps for fed-batch and continuous culture applications
- ❑ Three inlets (12 mm) for probes and sensors
- ❑ Thermowell for temperature probe
- ❑ Inoculation tube for sterile addition
- ❑ Sample and harvest tube (sterile sampling system)
- ❑ Three ports for optional mounting of reagent injection and gas outlet condenser
- ❑ Septum port for sterile addition
- ❑ Three reagent addition kit plus holder for flask



INSTRUMENTATION AND AUTOMATION

- ❑ Digital Display Control Unit "DDCU" is based on a real time processor with a fast Ethernet connection to the user interface.
- ❑ User interface is provided by a tablet PC including touch screen, keyboard, mouse pad and Windows™ Professional operating system
- ❑ Up to 16 Highly flexible control loops for all process parameters: temperature, speed control, pH, po₂, anti-foam, gas flow rates, weight or level and optical density
- ❑ Control types include : P&ID, digital on/off and others – cascade mode for advanced control strategies

NEPTUNE™ CONTROL SOFTWARE

"BASIC" VERSION

- ❑ Graphical representation of system, updated in real time
- ❑ Data logging and archiving with trends and graphs - Data can be exported via standard file format for use in reports or for further analysis
- ❑ Color printing of curves, events and alarms
- ❑ Audit trail module
- ❑ Alarm monitoring

"ADVANCED" VERSION

- ❑ Calculation module to allow users to define additional calculations and apply control based on those calculations - Also adds set point profile feature

"EXPERT" VERSION

- ❑ Sequence module for process strategy optimization

QUALIFICATION AND VALIDATION

- ❑ Comprehensive test and documentation program designed to ease and support validation

TRYTON™ SELECTION GUIDE

Company:
Date:

Indicate your selection here \rightarrow

Code	Volume	C1	C2
T2	2/3 L		
T5	5/7 L		
T8	8/10 L		

Code	Type	C1	C2
C	Cell culture		
F	Microbial culture		

Code	Main Power Supply
A	115 VAC / 50 / 60 Hz
B	230 VAC / 50 / 60 Hz

(1) Four pumps maximum

Indicate your selection here \rightarrow

Code	Options	C1	C2
02	Agitation with magnetic coupling		
04	Holder for reagent flask		
27	Sterile sample system		
28A	O ₂ line with rotameter		
28B	O ₂ line with rotameter and solenoid valve		
29A	CO ₂ or NH ₃ line with rotameter		
29B	CO ₂ or NH ₃ line with rotameter and solenoid valve		
30	N ₂ line with rotameter		
31	Condenser on gas outlet		
32	Fixed speed peristaltic pump ⁽¹⁾	Qty:	
33	Variable speed peristaltic pump	Qty:	
40	Mass flow meter on inlet gas line		
42	pO ₂ measurement / control		
45A	Weight measurement / control		
49	Color printer		
50	pH measurement / control		
51	Optical Density measurement		
52	Gas Analyser (O ₂ , CO ₂)		
60B	Supervision software in "Advanced" version		
60C	Supervision software in "Expert" version		

Refer to our accessories catalogue for additional equipment (reagent flasks, scales, spin filters ..).

SYSTEM DIMENSIONS

Overall dimensions

Volume	Length (L)	Depth (D)	Height (H)	Weight (empty)
2 L	600 mm	350 mm	800 mm	40 kg
5 L	700 mm	350 mm	800 mm	50 kg
8 L	800 mm	350 mm	800 mm	60 kg



Vessel dimensions for autoclave

Item	Vessel 2L	Vessel 5L	Vessel 8L
A	370 mm	485 mm	600 mm
B	445 mm	585 mm	725 mm
BF: Bottle 250ml	470 mm	585 mm	700 mm
BF: Bottle 500ml	520 mm	660 mm	800 mm
C	250 mm	395 mm	540 mm
D	255 mm	345 mm	435 mm
E	254 mm	270 mm	286 mm

