LAB1ST

Bioreactor

BROCHURES

Laboratory and Processing Equipment

CONTENT

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Bioreactor

A bioreactor usually refers to a vessel system in which a chemical process is carried out that involves organisms or biochemically active substances derived from such organisms.

These bioreactors are commonly cylindrical, ranging in size from liters to cubic meters.

PRODUCT DESCRIPTION

PRODUCT DISPLAY

BIOREACTOR

2022

It's also designed to grow cells or tissues in the context of cell culture. These devices are being developed for use in tissue engineering or bioprocess engineering.

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Industry

Bio-reaction has enjoyed rapid development over these years and is playing an increasingly important role in today's world. The scalability, sustainability, and diverse application enable bioreaction technology to be applied in plenty of industries, such as cannabis, food, medical, chemical, biopharmaceutical, biological, and cell science industries.

By the advantage of advanced technological portfolios and sophisticated machines, we are here to satisfy the following bioprocess and applications globally.

Vaccines

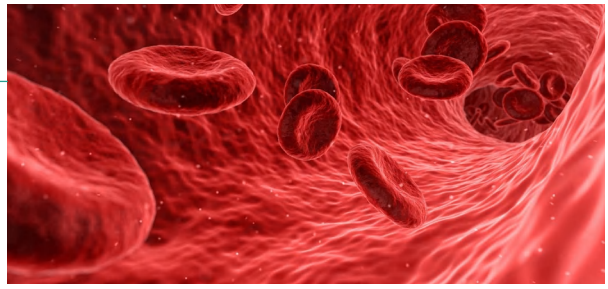
> The bioreaction process has witnessed a drastic growing demands in the worldwide market due to the pandemic of Covid-19. Bioreactor has helped fasten the speed of release and prodictoon of vaccines the world needs.

Biopharmaceuticals

> The introduction of improved techniques like infusion and perfusion, automation and digital handling has made new possibilities for the biopharmaceutical industry.

Cell Science

> New breakthroughts are realized or forcoming in the field of bioreaction due to the possible leaping progress of cell science. The drug and stem cell-based technologies become promising and approaching with easier access.



LAB1ST

What We Offer

Lab1st offers you not only with scalable range of glass and stainless steel bioreactors, but also with multi-parallel and multi-step bioreactors. Based on our thorough understanding of bioreactors, rich experience for scaling up benchtop fermentors to processing system, and excellent control system for temperature, rpm, PH, DO, antifoam, feeding, aeration and pressure, you will benefit from our turnkey solution service.

Whether you're sourcing one bioreactor or multiple systems for research or production, the answer to your requirements almost certainly lies in the versatility and reliability of our world-class BR100-M, BR100-C, BR500-M and BR500-C series bioreactors.

Controller Tower

There are many different types of bioreactors available in the market today and choosing the right bioreactor system is crucial for cell culture and microbiology research success. The choice of bioreactor system to use highly depend on the type of products to be produced, the desired product, the process of culture, and the product density. Lab1st offers different types of vessels, controlling towers (controllers), suited for your cell cultivation as well as microbial fermentation in different applications and scales.

General Features

We provide 8 basic controllers to meet the basic needs of most customers. These 8 basic controllers are suitable for cell culture and microbial culture respectively and can control one or two reactors simultaneously.

Large Touch Screen:

> Easy-to-read 10 inch integrated touchscreen monitor

> Real time multiple curves display; More curves can be displayed in turn if necessary;

Data Storage and Protection

> Data transfer: USB disk * 1, RS485 *1 or 2

> Data protection: Overlimit alarm function; The real-time curve can be restored as it is when power is cut off and restarted.
Three password permissions: operator (OPE), team leader (MON), and administrator (SYS).

> All alarm issues can be recorded and consulted.

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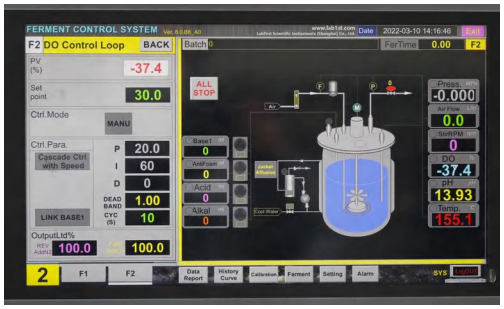

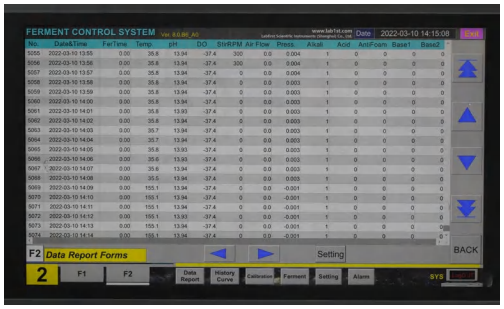

Multiple Control Function

> Associated control: temperature, stirring speed, pH, dissolved oxygen, defoaming, air flow, tank pressure, feed amount and other direct parameters.

> Remote monitoring: Suitable for smartphone, tablet, laptop and PC for instant remote monitoring

> Step control: Users can switch directly between manual control and step control and set at least 10-step control program for temperature, agitation, PH, DO and feeding.

* Air intake is achieved by rotermeters.

Smart PID control

> Temperature, stirring speed, Ph, DO and other parameters in the tank can be controlled by subsection curve setting according to the process requirements

> Temperature Control: Adopt PID automatic control mode; SS316L jacket base for electric heating and cold water for cooling

> Dissolved oxygen control: equipped with DO electrode and shielded conductor, DO is associated with stirring motor speed, feeding, air flow and tank pressure and other parameters.

> PH value control: Intelligent PID system control bulti-in control peristaltic pumps for acid-alkali adjustment, with high control precision.

> Antifoam control: Foams are automatically detected and the peristaltic pump is controlled to add defoamer in proportion to time.

BR100-M(C) Controller

BR100-C(M) series Benchtop bioreactor is one of the lightest and most compact of all similar bioreactors available in the market.

The control tower has at least four built-in peristaltic pumps which are configurable for automated fluid addition.

On the basis of standard controllers, we provide controllers with different functions for microbial research (M) and animal / plant cell culture (C) respectively.

Meanwhile, you can choose single channel (C1, M1) and double channel (C2, M2) controllers to meet your different needs.

In addition, it's available in flexible configuration to suit your needs.

For instance, you can customize sterilization in place (SIP) or autoclave sterilization, magnetic or mechanical driven, adding illumination to realize plantcell culture.

BR100-M1

For microbial fermentation
Control one glass vessel (1L to 15L)
4 built-in peristaltic pumps
Autoclave sterilization
Gas supply: 2 deep gas inlets (Air, O2)
PT100 sensor for PH, DO, Temperature and Foam

BR100-M2

For microbial fermentation
Control two glass vessels (1L to 15L)
8 built-in peristaltic pumps
Autoclave sterilization
Gas supply: 2 deep gas inlets (Air, O2) for each vessel
PT100 sensor for PH, DO, Temperature and Foam

BR100-C1

For cell cultivation
Control one glass vessel (1L to 15L)
4 built-in peristaltic pumps
Autoclave sterilization
Gas supply: 1 overlay with 4 deep gas inlets
PT100 sensor for PH, DO, Temperature and Foam

BR100-C2

For cell cultivation
Control two glass vessels (1L to 15L)
8 built-in peristaltic pumps
Autoclave sterilization
Gas supply: 1 overlay with 4 deep gas inlets for each vessel
PT100 sensor for PH, DO, Temperature and Foam

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Technical Data

Control Unit	BR100-M1	BR100-M2	BR100-C1	BR100-C2
Digital controller, colored touch screen	●			
Control Capabilities				
Temperature, DO, agitation speed	●			
Adding acid/alkali/CO2 to control PH	●			
Rotameter	●			
Low noise stirring motor	●			
Peristaltic pump	4pcs	8pcs	4pcs	8pcs
	For PH (acid/alkali), deform, feeding			
Process Data Recording				
Temperature control	Process sequence control		Process sequence control, closed loop system	
	Electric heating sleeve with bottom water to control heating / cooling		Recirculating pump and heat exchanger for cooling/heating	
PH control	Range: 2~12(±0.01), display: 0~14 (±0.01), PID, auto control, autoweighing, system calibration			
DO control	Range: 0~150%, ±3%, International eletrode and shielded wire detection			
Defoam control	Defoaming electrode, mechanical compression defoaming blade			
	Automatic foam detection, peristaltic pump automatically add defoamer in proportion to time			
Agitation control	Servo motor, PID control, stepless speed regulation			
Gas supply control	1 line(Air/O2), Rotamater		4 lines(Air/O2/CO2/N2),Rotameter	
Culture Vessel				
PH electrode, cable	●			
DO electrode, cable	●			
Temperature sensor Pt 100	●			
Foam electrode, cable	●			
Options				
Gas mixing options (Air, O_2, CO_2, N_2)	○		——	
Cleanliness detection	○			
Online live cell detection	○			
Automatic vessel pressure control	○			
Top Aeration	○			
TMFC (Thermal Mass Flow Controller)	○			
CO2 detection	○			
Redox	○			
Exhaust detection analysis	○			
Liquid Level	○			

	BR100-M1	BR100-M2	BR100-C1	BR100-C2
Options				
Filling weighing system		○		
Methanol and ethanol content online detection		○		
Additional feed pump		○		
Variable speed pump		○		
Upper controller		○		
Utility				
Electrical	100 – 120/208 – 240 (± 10 %) V, 50/60 Hz, 10 A, Single Phase			
Water	10 psig (0.69 barg)			
Gas supply	10 psig (0.69 barg)			
Accessories	Included			
Control Tower				
Controlling	Industrial PC			
Display | Operation	Touch Panel 10“| Touch screen			
Communication	RS485			
Housing Material	SUS304			
Dimension | Weight	400×250×1500 mm | 40Kg	400×500×1500 mm | 50Kg	400×300×1500 mm | 45Kg	400×500×1500 mm | 55Kg
External Connection				
USB	1pcs, Data export			
Balance connection	1 * RS485	2 * RS485	1 * RS485	2 * RS485
Sensor type	PT100			
Areation				
Airflow	2VVM			
Filter	0.2μm			
Flowmeter	Air calibrated, 1.2bar 20°C			
Flow rate	0.5SLPM, 1.0SLPM, 2.5SLPM, 5.0SLPM, 10SLPM, 25SLPM[customizable]			
Accuracy	+/- 1% FS			
Peristaltic Pump	4pcs	8pcs	4pcs	8pcs
Constant-rate pump	60rpm			
Tube ID	0.5 mm [1/50"]	0.8 mm [1/32"]	1.6 mm [1/16"]	3.2 mm [1/8"]
Flow rate [ml/revolution]	0.06	0.15	0.66	2.43

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BR500-M(C) Controller

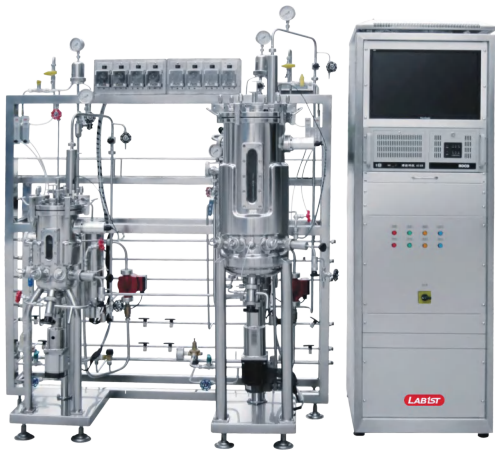
BR500-C(M) series are mainly designed for stainless steel vessels from 10L to 100L. The control tower has at least four built-in peristaltic pumps and allow SIP (sterilization in place) and optional CIP.

BR500

M1

FOR MICROBIAL FERMENTATION

- Control one stainless steel vessels (10L to 500L, Max. 400tons)
- 4 built-in peristaltic pumps
- SIP (sterilization in place)
- PT100 sensor for PH, DO, Temperature and Foam
- Gas supply: 2 deep gas inlets (Air, O2)



BR500

M2

FOR MICROBIAL FERMENTATION

- Control two stainless steel vessels (each vessel 10L to 500L, Max. 400tons)
- 8 built-in peristaltic pumps
- Gas supply: 2 deep gas inlets (Air, O2) for each vessel
- SIP (sterilization in place)
- PT100 sensor for PH, DO, Temperature and Foam

BR500 C1

FOR CELL CULTIVATION

- Control one stainless steel vessels (10L to 300L)
- 4 built-in peristaltic pumps
- Gas supply: 1 overlay with 4 deep gas inlets
- SIP (sterilization in place)
- PT100 sensor for PH, DO, Temperature and Foam

BR500 C2

FOR CELL CULTIVATION

- Control two stainless steel vessels (10L to 300L, each vessel)
- 8 built-in peristaltic pumps
- Gas supply: 1 overlay with 4 deep gas inlets for each vessel
- SIP (sterilization in place)
- PT100 sensor for PH, DO, Temperature and Foam

LABIST

Technical Data

Control Unit	BR500-M1	BR500-M2	BR500-C1	BR500-C2
Digital controller, colored touch screen		●		
Control Capabilities				
Temperature, DO, agitation speed		●		
Adding acid/alkali/CO2 to control PH		●		
Rotameter		●		
Low noise stirring motor		●		
Peristaltic pump	4pcs	8pcs	4pcs	8pcs
	Adjusting PH (acid/alkali), deform, feeding			
Process Data Recording				
Temperature control	Process sequence control		Process sequence control, closed loop system	
	Electric heating sleeve with bottom water to control heating / cooling		Recirculating pump and heat exchanger	
PH control	Range: 2~12(±0.01), display: 0~14(±0.01), PID, auto control, autoweighing, system calibration			
DO control	Range: 0~150%,±3%,International eletrode and shielded wire detection			
Defoam control	Defoaming electrode, mechanical compression defoaming blade			
	Automatic foam detection, peristaltic pump automatically add defoamer in proportion to time			
Agitation control	Servo motor, PID control, stepless speed regulation			
Gas supply control	1 line(Air/O_2), Rotamater		4 lines(Air/O_2/CO_2/N_2), Rotameter	
Culture Vessel				
PH electrode, cable		●		
DO electrode, cable		●		
Temperature sensor Pt 100		●		
Foam electrode, cable		●		
Options				
Gas mixing options(Air, O_2, CO_2, N_2)	○		——	
Cleanliness detection		○		
Online live cell detection		○		
Automatic vessel pressure control		○		
Top Aeration		○		
TMFC (Thermal Mass Flow Controller)		○		
CO2 detection		○		
Redox		○		
Exhaust detection analysis		○		
Liquid Level		○		

	BR500-M1	BR500-M2	BR500-C1	BR500-C2
Options				
Filling weighing system		○		
Methanol and ethanol content online detection		○		
Additional feed pump		○		
Variable speed pump		○		
Upper controller		○		
Utility				
Electrical	100 – 120/208 – 240 (± 10 %) V, 50/60 Hz, 10 A, Single Phase			
Water	10 psig (0.69 barg)			
Gas supply	10 psig (0.69 barg)			
Accessories	Included			
Control Tower				
Controlling	Industrial PC			
Display | Operation	Touch Panel 10"| Touch screen			
Communication	RS485			
Housing Material	SUS304			
Dimension | Weight	400×250×1500 mm | 40Kg	400×500×1500 mm | 50Kg	400×300×1500 mm | 45Kg	400×500×1500 mm | 55Kg
External Connection				
USB	1pcs, Data export			
Balance connection	1 * RS485	2 * RS485	1 * RS485	2 * RS485
Sensor type	PT100			
Areation				
Airflow	2VVM			
Filter	0.2μm			
Flowmeter	Air calibrated, 1.2bar 20°C			
Flow rate	0.5SLPM, 1.0SLPM, 2.5SLPM, 5.0SLPM, 10SLPM, 25SLPM[customizable]			
Accuracy	+/- 1% FS			
Peristaltic Pump	4pcs	8pcs	4pcs	8pcs
Constant-rate pump	60rpm			
Tube ID	0.5 mm [1/50"]	0.8 mm [1/32"]	1.6 mm [1/16"]	3.2 mm [1/8"]
Flow rate [ml/revolution]	0.06	0.15	0.66	2.43

LAB1ST

Vessel

BR-100 series vessel is Benchtop glass bioreactor for research and development applications that is available from 1L to 10L and available in flexible configuration to suit your needs. It's an ideal device in microbial, fermentation, and cell culture applications.

Glass

STRUCTURE

This Benchtop bioreactor is one of the lightest and most compact of all similar bioreactors available in the market.

SIZES

1L, 2l, 3L, 5L, 7L, 10L,15L, Its compact design entails small footprint to save space in your laboratory.

CONFIGURE

You can customize sterilization in place (SIP) or autoclave sterilization, magnetic or mechanical driven, adding illumination to realize plantcell culture.

LABIST

Standard Glass Vessel

> Equipped with an easy-to-detach condenser around the air outlet, for easy cleaning, no effusion and no contaminating bacteria

> Standard sensors port for precise measurement and control of temperature, pH, DO, Antifoam, feed, aeration and pressure

> Magnetic drive stirring for good sealing performance

> Offline sterilization

> Compact design for saving critical laboratory space

> Standard with flat or pitched-blade; other type impellers are available

> Configured one sampling port

> Equipped with filter to prevent contamination air from getting to the system

> Tempered high borosilicate glass 3.3 for vessel and SS316L for heating plate

> Perfectly suited for research and development, available in 1L, 2L, 3L, 5L, 7L, 10L and 15L

Mini Glass Vessel
Water Jacketed Heating

Glass Vessel
Electric Blanket Heating

Glass Vessel
Water Jacket Heating

Glass Vessel
Electric Band Heating

Customization

- Sterilization-in-place (SIP)
- Top magnetic or mechanical driven
- Adding illumination to realize plantcell culture

Technical Data

Culture Vessel	1L	2L	3L
H:D ratio	≈1:2	≈1:2	≈1:2
Total volume	1.1L	2.7L	3.5L
Working volume	0.8L	2.0L	2.6L
Minimal working volume	0.3L	0.7L	0.9L
Agitation speed range	5~1000rpm	5~1000rpm	5~1000rpm
Motorpower	0.18Kw	0.4Kw	0.4Kw
Impeller to vessel diameter ratio	1:2	1:2	1:2
Surface treatment	Inner vessel Ra ≤ 0.4 um, Outer surface Ra<0.6 um		
Material | Pressure	SUS316L, Borosilicat glass| | 0.10Mpa(Max 0.15Mpa)		
Lid Ports			
Sensor port	4	4	4
Gas supply port (ring sparger)	2	2	2
Inoculating port	1	1	1
Sampling port	1	1	1
Filling port	4	4	1
Spare port	——	——	1
Baffle port	2	2	2
6 flat-blade impeller	1	1	1
Mechanical defoaming impeller	1	1	1
4 pitched-blade impeller	——	——	——
Vessel dimension [W×H×D], [m] [']	0.56×0.65×0.46 22.0×25.6×18.1	0.56×0.65×0.46 22.0×25.6×18.1	0.56×0.65×0.46 22.0×25.6×18.1
System installation [W×H×D], [m] [']	1.00×0.65×0.71 39.4×25.6×28.0	1.00×0.65×0.71 39.4×25.6×28.0	1.00×0.65×0.71 39.4×25.6×28.0
Sterilization Area [W×H×D], [m] [']	Ø0.19×0.35 Ø7.48×13.8	Ø0.20×0.45 Ø7.87×17.7	Ø0.23×0.48 Ø9.1×17.7
Vessel package [W×H×D], [m] [']	0.9×1.1×0.75 35.4×43.3×29.5	0.9×1.1×0.75 35.4×43.3×29.5	0.9×1.1×0.75 35.4×43.3×29.5
Vessel package weight [Kg]	105	105	105
Vessel Configuration			
Low noise stirring motor	●		
Autoclavable sterilization | Sterilization in place	●|○		
Magnetic drive | mechanical drive	●|○		
Storage bottle [2pcs]	●		
Exhaust condenser [water cooling]	●		
Customizable blade	○		
Custom port	○		
Electrical heating | Jacketed heating	●|○		

Culture Vessel	5L	7L	10L
H:D ratio	≈1:2	≈1:2	≈1:2
Total volume	5.8L	7.9L	11.2L
Working volume	4.4L	6.0L	8.4L
Minimal working volume	1.5L	2.0L	2.8L
Agitation speed range	5~1000rpm	5~1000rpm	5~1000rpm
Motorpower	0.4Kw	0.4Kw	0.75Kw
Impeller to vessel diameter ratio	1:2	1:2	1:2
Surface treatment	Inner vessel Ra ≤ 0.4 um, Outer surface Ra<0.6 um		
Material | Pressure	SUS316L, Borosilicat glass| | 0.10Mpa(Max 0.15Mpa)		
Lid Ports			
Sensor port	4	4	4
Gas supply port (ring sparger)	2	2	2
Inoculating port	1	1	1
Sampling port	1	1	1
Filling port	2	2	2
Spare port	2	2	1
Baffle port	2	2	2
6 flat-blade impeller	1	1	1
Mechanical defoaming impeller	1	1	1
4 pitched-blade impeller	——	1	1
Vessel dimension [W×H×D], [m] ["]	0.58×0.72×0.46 22.8×28.3×18.1	0.58×0.72×0.46 22.8×28.3×18.1	0.60×0.76×0.46 23.6×29.9×18.1
System installation [W×H×D], [m] ["]	1.20×0.65×0.71 47.2×25.6×28.0	1.20×0.72×0.71 47.2×28.3×28.0	1.20×0.76×0.71 47.2×29.9×28.0
Sterilization Area [W×H×D], [m] ["]	Ø0.27×0.50 Ø10.6×19.7	Ø0.27×0.60 Ø10.6×23.6	Ø0.28×0.65 Ø11.0×2.56
Vessel package [W×H×D], [m] ["]	0.9×1.1×0.75 35.4×43.3×29.5	0.9×1.1×0.75 35.4×43.3×29.5	1.0×1.1×0.85 39.4×43.3×33.5
Vessel package weight [Kg]	110	115	130
Vessel Configuration			
Low noise stirring motor	●		
Autoclavable sterilization | Sterilization in place	●|○		
Magnetic drive | mechanical drive	●|○		
Storage bottle [2pcs]	●		
Exhaust condenser [water cooling]	●		
Customizable blade	○		
Custom port	○		
Electrical heating | Jacketed heating	●|○		

LAB1ST

Stainless steel

PRODUCT DESCRIPTION

BR500 Series Vessel

Fermenters/Bioreactors

Multi-Level System

BR500 series vessel is a fully stainless steel fermenter/bioreactor, standard with the capacities from 10L to 500L (300L for cell culture), or more for pilot and production scale. It standards with SIP function and have port for CIP that you can implement system upgrade at any time.

Furthermore, customized bioreactors are available for engineering solutions up to 400ton. As part of the comprehensive bioreactor portfolio, those stainless steel fermenters can be easily integrated as a component of multi-stage systems.

SOLUTION

BR500 series reactor features various advance design and assembly to facilitate the fermentation and culture process. It also comes with a vessel design that eliminates blind spots while increases oxygen retention rate, a lifting system (optional) for the vessel lid for easy cleaning of the reactor vessel and a LED light for convenient viewing inside the culture tank.

Standard Stainess Steel Vessel

> Available from 10L to 500L, up to 70% working volume (Larger volume available).

> Batch, fed-batch, continuously-batch, semi-continuous and high-density batch systems.

> Sterilization-In-Place (SIP), equipped with high temperature steam pipeline.

> Standard sensor ports for precise measurement and control of temperature, pH, DO, Antifoam, feed, aeration and pressure.

> Optional Clear-In-Place (CIP), one port for cleaning device is provided at the top of the tank.

> Jacket vessel allows hot water and cooler to adjust the temperature.

> Standard with mechanical stirring, special stirring shaft material and precision processing. it has ideal dynamic balance performance with proper ratio of upper and lower shaft.

> Standard with flat or pitched-blade- impellers; other type impellers are available.

> Material: SS316L vessel is designed to eliminate blind spots; Surface treatment: mirror polishing; Tank accuracy≤0.4um, external surface accuracy < 0.6um.
> Large angle observation mirror for liquid level in the tank, which is resistant to corrosion, high temperature (<150°C) and high pressure (>0.3mpa) to facilitate observation of fermentation liquid level at different heights.
> Equipped with filter to prevent contamination air from getting to the system.
> Equipped with tail gas discharge condenser, specially designed tail gas discharge pipeline, slope ≥3°, no accumulation of liquid and no bacteria.
> The ventilation adopts deep-layer ventilation and is equipped with a detachable annular air distributor, which is convenient for cleaning and maintenance.

Customization | Display

Fermentor with cover lifter

Function: With a cover lifter, people can raise the cover 500mm by electric or by pneumatic system, which allows for a thorough cleaning of the tank.

Magnetically driven fermentor

Function: Top or bottom magnetic agitation drive is suitable for less viscous liquids.

Airlift fermentor

Function: Fully stirred by gas/air, suitable for specific objects, such as beer fermentation.

Auto sterilization fermentor

Function: Realize fully automatic sterilization process and save manpower.

> Solid Fermentor.
> Adding illumination to realize plantcell culture.
> Available for GMP-regulated processes.
Interchangeable impellers for addressing user's requirement.
> Interchangeable impellers for addressing user's requirement.

LAB1ST

Scalability

From laboratory research to production

Lab1st offers a wide range of standard stainless steel vessel capacities from 10L to 500L; Moreover, larger reactors up to 2000L are also available. As a manufacturer, there is no limit for us to produce larger vessels, even in tons of equipment.

We know that it's an essential step to transfer from R&D research to production of cell cultivation as well as microbial fermentation. We hope to extend our success by applying our successful experimental operations to mass production, which will bring us great benefits, and our upfront investment is justified.

The bioreactor system includes not only a reactor but also a controller. In order to match with it, we have configured special controllers for the larger volume of the reactor to adapt to the practical application. More detailed information about larger size bioreactor, please contact us directly.

10L	50L	500L	2000L	Larger

Technical Data

Culture Vessel	10L	15L	20L
H:D ratio	1:2.2~2.8	1:2.2~2.8	1:2.2~2.8
Total volume	13	18	27
Working volume	9.8L	13.5L	20.3L
Minimal working volume	3.3L	4.5L	6.8L
Agitation speed range	5~1000rpm	5~1000rpm	5~1000rpm
Motorpower	0.75	1	1
Impeller to vessel diameter ratio	≈1:2.2~2.8	≈1:2.2~2.8	≈1:2.2~2.8
Lid Ports			
Sensor port	4	4	4
Gas supply port (ring sparger)	2	2	2
Inoculating port	1	1	1
Sampling port	1	1	1
Filling port	4	4	3
Spare port	——	——	——
Baffle port	——	——	——
6 flat-blade impeller	2	2	1
Mechanical defoaming impeller	1	1	1
4 pitched-blade impeller	——	——	2
Vessel dimension [W×H×D], [m] ["]	0.8×1.8×0.8 31.5×70.9×31.5	0.8×1.9×0.8 31.5×74.8×31.5	0.9×2.0×0.8 35.4×78.7×31.5
System installation [W×H×D], [m] ["]	1.5×1.8×0.8 59.1×70.9×31.5	1.5×1.9×0.8 59.1×74.8×31.5	1.5×2.0×0.8 59.1×78.7×31.5
Vessel weight [Kg]	130	160	200
Vessel Configuration			
Low noise stirring motor	●		
Sterilization in place	●		
Mechanical drive | Magnetic drive	●|○		
Storage bottle [2pcs]	●		
Customizable blade	○		
Vessel passivation	○		
Custom port	○		
Cover lifting	○		

Culture Vessel	30L	50L	100L
H:D ratio	1:2.2~2.8	1:2.2~2.8	1:2.2~2.8
Total volume	34	58	132
Working volume	25.5L	43.5L	99L
Minimal working volume	8.5L	14.5L	33L
Agitation speed range	5~1000rpm	5~800rpm	5~700rpm
Motorpower	1	0.75	1.5
Impeller to vessel diameter ratio	≈1:2.2~2.8	≈1:2.2~2.8	≈1:2.2~2.8
Lid Ports			
Sensor port	4	5	5
Gas supply port (ring sparger)	2	2	2
Inoculating port	1	1	1
Sampling port	1	1	1
Filling port	4	4	5
Spare port	——	——	——
Baffle port	——	——	——
6 flat-blade impeller	2	2	2
Mechanical defoaming impeller	1	1	1
4 pitched-blade impeller	1	1	1
Vessel dimension [W×H×D], [m] ["]	0.9×2.3×0.9 35.4×90.6×35.4	1.0×2.6×0.9 39.4×102×35.4	1.0×2.6×1.0 39.4×102×39.4
System installation [W×H×D], [m] ["]	1.5×2.3×0.9 59.1×90.6×35.4	1.5×2.6×0.9 59.1×102×35.4	1.5×2.6×1.0 59.1×102×39.4
Vessel weight [Kg]	240	300	360
Vessel Configuration			
Low noise stirring motor		●	
Sterilization in place		●	
Mechanical drive | Magnetic drive		●|○	
Storage bottle [2pcs]		●	
Customizable blade		○	
Vessel passivation		○	
Custom port		○	
Cover lifting		○	

Standardvessel: upto500L,(300Lforcellculture); Largervessel: upto400tons

LAB1ST

Cascade System Customization

Comparing cultures in identically-sized, parallel and stepped multistage bioreactors allow you to find out more process information in a shorter timeline.

PARALLEL MULTISTAGE

Multiple parallel experiments can be set up to evaluate different culture strains and the effect of process parameters, such as temperature, feeding, DO, gassing rates and so on.
The technology ensures optimum scalability of your processes, as the design of the bioreactors means that functionality translates well into larger systems.

STEPPED MULTISTAGE

Multi-step bioreactor system is composed of different sizes stainless steel fermentors whose volume is arranged from small to large.
They are controlled in one integrated controller. Any fermentors of this system also could be used separately. Furthermore, Its seed-transfer pipeline are sterilized separately.

LAB1ST

Accessories


Angle set valve


Angle seat valve


Angle seat valve


Solenoid valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Diaphragm valve


Tank bottom valve


Tank bottom valve


Tank bottom valve


Hydrophobic device

Impeller A

Impeller B

Impeller C

Impeller D

Impeller E

Impeller F

Impeller G

Peristaltic pump

PH sensor

DO sensor

Eletrode sheath

Transmitter

Feding needle

Heating rods

Strainer

Filter element