VERTICAL-WHEEL®
BIOREACTORS

PBS15MAG

Next Generation Single-Use Bioreactors with Revolutionary Vertical-Wheel® Technology

Benefits of PBS Bioreactors

Superior Mixing Performance

Efficient mixing with homogeneous particle suspension and low shear stress.

True Scalability

Can be used for process development that will have predictive performance in progressively larger Vertical-Wheel bioreactors, up to commercial scale.

Certified Plastic Components

Product contact materials certified to meet the requirements for USP Class VI Testing for Plastics <88> and/or ISO 10993, with complete material lot traceability.

Embedded Controller

Intuitive and reliable control system with touchscreen interface allows for customizable, secure, and remote access control and alarm reporting.

Adjustable Height Dip Tube

Allows for rapid and efficient medium exchange and cell harvesting.

Plug-and-Play

Compact design and small footprint, with simple setup and training requirements.

PBS BIOTECH®

Contact us to learn more
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Magnetic coupling between Vertical-Wheel and housing unit controls agitation speed

- Optimal for culturing cell therapy products such as MSCs or human primary cells grown on microcarriers, or hPSCs grown as aggregates
- Minimal shear forces benefit cells grown on the surface of suspended microcarriers and eliminate need for shear protectants
- Homogeneous fluid dynamic conditions result in uniformly spherical aggregates, with inverse correlation between diameter and agitation rate
- Nonstop, gentle particle suspension achieved at all volumetric scales without need for anti-foaming agents or surfactants

Technical Highlights

FEATURES	PBS15 MAG
General	
Size:	
• Width	26 in (66 cm)
• Depth	16.5 in (42 cm)
• Height	33 in (83 cm)
Weight	185 lb (84 kg)
Agitation mechanism	Driven by magnetic coupling
Agitation control range	5 – 50 RPM (±1 RPM)
Working volume range	9 – 15L
Gassing modes	Headspace overlay with an an optional microporous sparger
Installation type	Benchtop
Electrical	120V or 240V, 50-60 Hz
Peristaltic Pumps	
Media addition and harvest	Fixed-speed, uni-directional
Addition A (base, feed media, anti-foam)	Variable-speed, uni-directional
Addition B (base, feed media, anti-foam)	Variable-speed, uni-directional
Sampling	Fixed-speed, bi-directional
Controls	
Control interface	Fully-integrated touchscreen control with network connectivity capability
Control hardware/software	Industrial embedded real-time control
Data communication	Built-in data historian, remote control panel accessible over ethernet
Process Controls	
Gas control	4 mass flow controllers for air, N_2, O_2, CO_2
Gas flow rate range (accuracy)	• Air MFC: up to 2,000 mL/min (±5% of reading) • N_2 MFC: up to 2,000 mL/min (±5% of reading) • CO_2 MFC: up to 300 mL/min (±5% of reading) • O_2 MFC: up to 500 mL/min (±5% of reading)
Temperature control range (accuracy)	5°C above ambient to 40°C (±0.2°C)
Dissolved oxygen control	2-sided PID control with N_2 and O_2, or manual control
pH control	2-sided PID control with CO_2 and base addition pump, or manual control
Exhaust system	Condenser trap, 0.2 micron exhaust filter, filter oven
Safety interlocks	• Agitation with heater and door • Level with pumps, heater, and door • Pressure with gassing, pumps, and door
Sensor Types	
Agitation	Hall effect (magnetic sensing)
Temperature	Dual (redundant) Class A platinum RTD
Dissolved oxygen	Polarographic (user-added) or fluorimetric (single-use)
pH	Electrochemical (user-added or single-use)
Level	Pressure differential via precision industrial pressure sensor
Pressure	Precision industrial pressure sensor
Single-Use Bag	
Bag construction	Polyvinylidene Fluoride (PVDF)
Gamma radiation exposure	25-40 kGy
Liquid handling lines	Silicone/C-flex
Gassing lines	Silicone
Product contact materials	Meet requirements for USP Class VI Testing for Plastics <88> and/or ISO 10993
Configuration of tubing and filters	Customizable in addition to the standard configuration