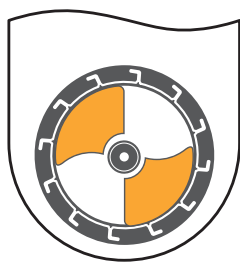**VERTICAL-WHEEL®**
BIOREACTORS

PBS80MAG

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

Benefits of PBS Bioreactors

Superior Mixing Performance
Gentle yet complete particle suspension with minimal shear forces in a homogeneous mixing environment.

True Scalability
Similar hydrodynamic conditions can be achieved across all bioreactor volumes, from benchtop to clinical and commercial scale.

Embedded Controller
Intuitive touchscreen interface allows for customizable, secure, and remote access control and alarm reporting.

Adjustable Height Harvest Valve
Unique bottom-up design allows for rapid and efficient medium exchange and cell harvesting.

Certified Plastic Components
Product contact materials certified to be animal-derived component free and to meet the requirements for USP Class VI Testing for Plastics <88> and/or ISO 10993, with complete material lot traceability.

PBS BIOTECH®

Contact us to learn more
+1 805-482-7272
www.pbsbiotech.com

Vertical-Wheel impeller is fully contained within U-shaped, single-use vessel and rotated by magnetic coupling

- Optimal for culturing human cell therapy products such as MSCs or primary cells grown on microcarriers, or PSCs grown as cell 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

- Process conditions and results can be recreated across all volumetric scales, enabling truly scalable manufacturing of cell therapy products

Technical Highlights

FEATURES	PBS80MAG
General	
Size:	
• Width	36.5 in (93 cm)
• Depth	25 in (63 cm)
• Height	63.5 in (161 cm)
Weight	490 lb (223 kg)
Agitation mechanism	Driven by magnetic coupling
Agitation control range	2 – 34 RPM (±1 RPM)
Working volume range	45 – 80L
Gassing modes	Headspace overlay with an optional microporous sparger
Installation type	Stand-alone (caster-mounted)
Electrical	120V or 240V, 50-60 Hz
Peristaltic Pumps	
Media addition and harvest	Variable-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 10,000 mL/min (±5% of reading) • N_2 MFC: up to 10,000 mL/min (±5% of reading) • CO_2 MFC: up to 2,000 mL/min (±5% of reading) • O_2 MFC: up to 10,000 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