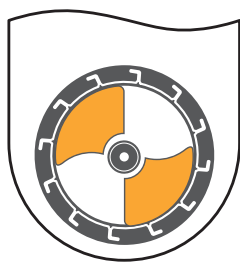


VERTICAL-WHEEL®  
BIOREACTORS



# PBS80MAG

## 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.



Contact us to learn more

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[www.pbsbiotech.com](http://www.pbsbiotech.com)



### 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

## PBS80MAG

#### General

##### Size:

- Width
- Depth
- Height

36.5 in (93 cm)  
25 in (63 cm)  
63.5 in (161 cm)

##### Weight

490 lb (223 kg)

##### Agitation mechanism

Driven by magnetic coupling

##### Agitation control range

2 – 34 RPM ( $\pm 1$  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<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>

##### Gas flow rate range (accuracy)

- Air MFC: up to 10,000 mL/min ( $\pm 5\%$  of reading)
- N<sub>2</sub> MFC: up to 10,000 mL/min ( $\pm 5\%$  of reading)
- CO<sub>2</sub> MFC: up to 2,000 mL/min ( $\pm 5\%$  of reading)
- O<sub>2</sub> MFC: up to 10,000 mL/min ( $\pm 5\%$  of reading)

##### Temperature control range (accuracy)

5°C above ambient to 40°C ( $\pm 0.2^\circ\text{C}$ )

##### Dissolved oxygen control

2-sided PID control with N<sub>2</sub> and O<sub>2</sub>, or manual control

##### pH control

2-sided PID control with CO<sub>2</sub> 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