

BIO Series | Biological Recycle Systems/Clarifier

The popular BIO Series System utilizes fixed film bacteria in conjunction with coalescing media. Various tank sizes and flow rates are used to create retention time for the treatment of wastewater streams. Oxygen is supplied to the bacteria in the waste stream by venturi injection.



A biological wash water recycle system with enhanced design technology offering:

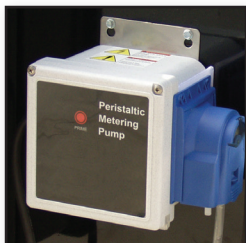
- Cone-shaped tank for easy handling of accumulated solids
- Quality recycled wash water without common odor problems
- Easy operation and maintenance that saves you time and money
- Conveniently located instrument panel and controls, CSA listed
- Heavy-duty, corrosive-resistant and UV-resistant poly-skid

System provides efficient handling of tough organic applications, such as:

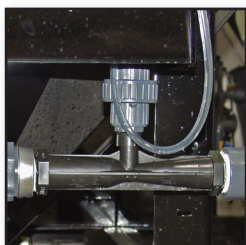
- **Golf Courses** - Designed to handle equipment wash water for various golf course configurations
- **Solid-Waste Haulers** - Able to effectively treat vehicle wash water, like that from garbage trucks
- **Food Processing Plants** - Pre-treatment of a broad range of food processing wastewater before discharging
- **Petro-Chemical** - Capable of treating waste streams containing multiple types of organic particulate matter
- Anything with organic compounds in wastewater



CSA listed NEMA-4 rated corrosion-proof control panel for safe and reliable operation



Peristaltic pump is self priming for passive automatic liquid microbe injection. This feature drastically reduces the amount of hands-on operation time required.



Mazzei® venturi air injection system sustains beneficial aerobic microbes while preventing bacteria from turning odorous and anaerobic

BIO-15-0M10 shown with ozone option, WX-0020



Model Number	Flow Rate	Clarifier Tank	Media	Sump Pump (Included)	Transfer Pump	Power Requirements	Dimensions (LxWxH)	Ship Wt.
BIO-15-0M10*	0-15 GPM	600 gallons	1,300 sq. ft.	1.0 HP	3/4 HP	230V, 1Ø, 20.0A	5ft.x8ft.x110in.	1250 lb.
BIO-15-0M30*	0-15 GPM	600 gallons	1,300 sq. ft.	1.0 HP	3/4 HP	230V, 3Ø, 15.0A	5ft.x8ft.x110in.	1250 lb.

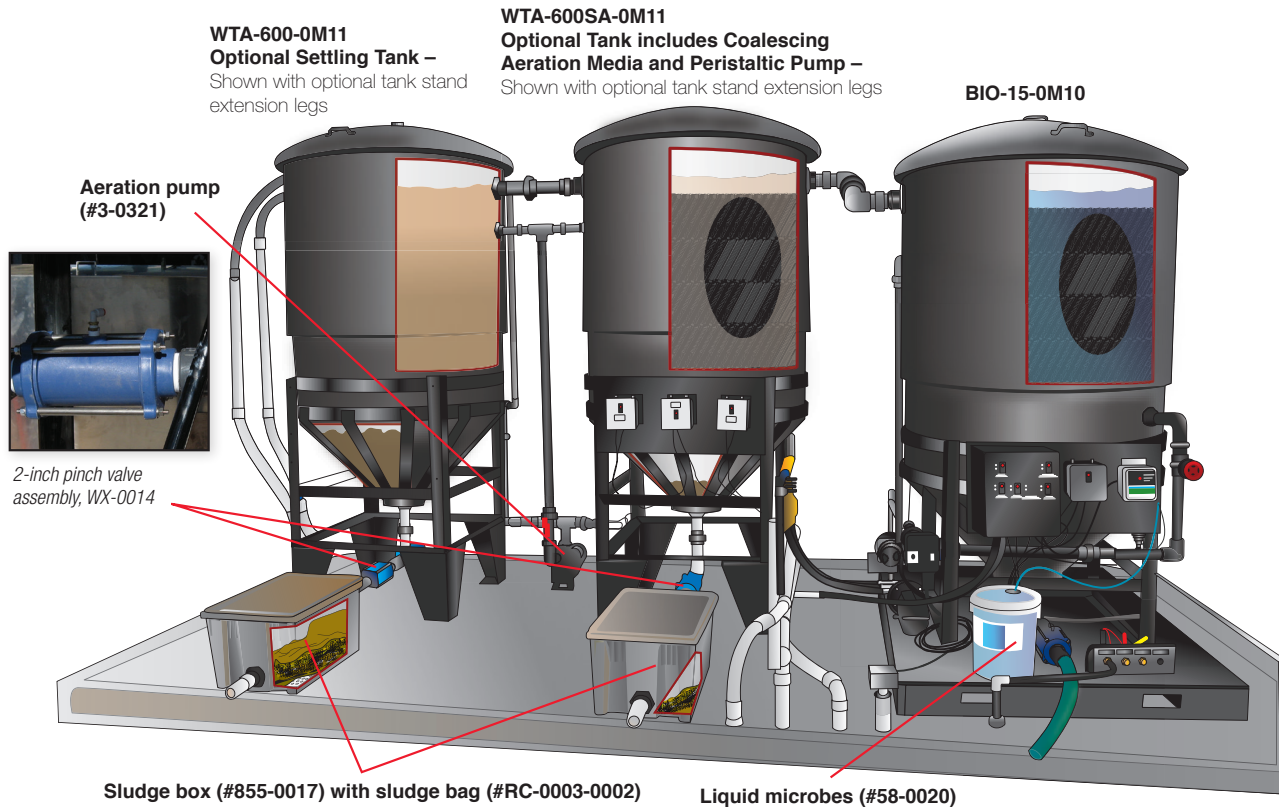
*Includes sump pump and peristaltic pump. 230/208/460V 3-phase available on all models as options.

BIO Series | Custom Biological Combination Units

Optional custom biological units are available within the BIO Series family to satisfy your specific application needs. These set-ups offer your choice of 300-gallon or 600-gallon tank(s). Please contact us for more information about available BIO Series combinations or how we can custom-build a water treatment system to meet your requirements.



Just one of several examples of a custom biological system set-up.



Options:		
Part Number	Description	Fits Models
WX-0014	Pinch valve assembly - Pinch valve, bladder style (used on cone bottom tanks), 2-in., 230VAC, single phase	BIO tanks
WX-0020	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-15-0M10
WX-0024	Recirculation option for floats - If used along with the WX-0042, water will recirculate from your product tank back to your pit	BIO-15-0M10
WX-0030	BIO sump pump swap - Customized option, converts surface-mount sump pump to submersible sump pump, 10, 230V	BIO-15-0M10
WX-0041	165-gallon product tank upgrade - For when a larger volume of usable water is needed	BIO-15 models
WX-0042	Product tank overflow - Allows product water to cycle back to collection pit	BIO-15 models
WX-0043	460V, 3Ø - Upgrades 230V model to operate at 460V, 3Ø	BIO-15 models
WX-0044	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-15 208/230V, 3Ø models
WX-0045	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-15 460V, 3Ø models
WX-0064	Magnetic drive pump - 230V, 1Ø, seal-less pump	BIO-15-0M10
WX-0065	Magnetic drive pump - 208-230V, 3Ø, seal-less pump	BIO-15-0M30
WX-0066	Magnetic drive pump - 460V, 3Ø, seal-less pump	BIO-15-0M30
WX-0101	BIO sump pump swap - Customized option, converts surface-mount sump pump to submersible sump pump, 3Ø, 230V	BIO-15-0M30
WX-0116	Floating media - Ideal for tanks with small openings, greater gestation	BIO-15-models
WX-0119	High solids media - Allows for debris to travel easily through media with vertical design	BIO-15 models
WX-0128	Hour meter - Displays the number of hours unit has been in operation	BIO-15 models

Accessories:		
Part Number	Description	Fits Models
55-0033	Air fine-bubble injector, 1½-inch - Mazzei used for aeration	BIO-15 models
55-1887	Check valve, 2-inch - Holds prime in suction line	BIO-15 models
855-0017	Sludge box - Plastic box designed to hold the sludge bags	BIO-15 models
RC-0003-0002	Biodegradable sludge bags - Designed to capture the sludge while allowing the water to flow through, 5 qty.	BIO-15 models
RC-0016-0001	Replacement media, 600-gallons - Replacement coalescing media	BIO-15 models
RC-0016-0002	Replacement high solids media, 600-gallons - Replacement coalescing media	BIO-15 models

BIO Series | Biological Recycle/Discharge Systems

This popular BIO Series Systems utilizes fixed-film bacteria in conjunction with coalescing media. Various tank sizes and flow rates are used to create retention time for the treatment of wastewater streams. Oxygen is supplied to the bacteria in the waste stream by venturi injection.

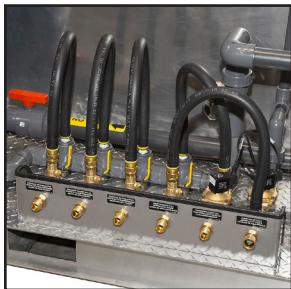


This system offers models available for either recycle or discharge operations. Each unit offers added benefits, such as:

- Lower maintenance than any recycle system on the market today
- Low operating costs
- Simple equipment operation
- CSA approved control panel which meets the requirements of the US and Canadian standards for an Industrial Control Panel



BIO-25R shown with optional waterfall filter, RC-0008-0002 and towable grass cart, RC-0004-0002



Hose connectors are clearly marked and designed for easy accessibility and quick installation



Mazzei® venturi air injection system (55-0126) sustains beneficial aerobic microbes while preventing bacteria from turning odorous and anaerobic



Pressure manifold set-up option for BIO-20R-0M11 and BIO-20R-1M11 is standard



Durable "True Union" valve



CSA listed NEMA-4 rated corrosion-proof control panel for safe and reliable operation



Slope bottom tanks are standard on all BIO-20, BIO-25 and BIO-35 models



Aeration pump (3-0397)



Transfer pump (3-0399)



BIO Series | Biological Recycle/Discharge Systems



BIO-20R-0M11

Model Number	Flow Rate	Biological Media	Tank Capacity	Material of Construction	Sump Pump (Included)	Transfer Pump	Power Requirements	Dimensions (LxWxH)	Ship Wt.
BIO-20D-0M10	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	-	230V, 10, 15.0A	8x4x4ft.	950 lb.
BIO-20D-1M10	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	-	230V, 10, 15.0A	8x4x4ft.	950 lb.
BIO-20D-0M30	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	-	230V, 30, 10.0A	8x4x4ft.	950 lb.
BIO-20D-1M30	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	-	230V, 30, 10.0A	8x4x4ft.	950 lb.
BIO-20R-0M10	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	1.5 HP	230V, 10, 25.0A	8x4x4ft. with 3x3ft. skid	1092 lb.
BIO-20R-1M10	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	1.5 HP	230V, 10, 25.0A	8x4x4ft. with 3x3ft. skid	1092 lb.
BIO-20R-0M30	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	1.5 HP	230V, 30, 15.0A	8x4x4ft. with 3x3ft. skid	1092 lb.
BIO-20R-1M30	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	1.5 HP	230V, 30, 15.0A	8x4x4ft. with 3x3ft. skid	1092 lb.
BIO-20R-0M11	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	1.5 HP	230V, 10, 25.0A	8x6x4ft.	1092 lb.
BIO-20R-1M11	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	1.5 HP	230V, 10, 25.0A	8x6x4ft.	1092 lb.
BIO-20R-0M31	0-20 GPM	2,304 sq. ft.	890 gallons	Marine aluminum	1/2 HP	1.5 HP	230V, 30, 15.0A	8x6x4ft.	1092 lb.
BIO-20R-1M31	0-20 GPM	2,304 sq. ft.	890 gallons	Stainless-steel	1/2 HP	1.5 HP	230V, 30, 15.0A	8x6x4ft.	1092 lb.
BIO-25R-0M10	0-25 GPM	3,456 sq. ft.	1,434 gallons	Marine aluminum	1/2 HP	2.0 HP	230V, 10, 25.0A	12x6x4ft.	1680 lb.
BIO-25R-1M10	0-25 GPM	3,456 sq. ft.	1,434 gallons	Stainless-steel	1/2 HP	2.0 HP	230V, 10, 25.0A	12x6x4ft.	1680 lb.
BIO-25R-0M30	0-25 GPM	3,456 sq. ft.	1,434 gallons	Marine aluminum	1/2 HP	2.0 HP	230V, 30, 15.0A	12x6x4ft.	1680 lb.
BIO-25R-1M30	0-25 GPM	3,456 sq. ft.	1,434 gallons	Stainless-steel	1/2 HP	2.0 HP	230V, 30, 15.0A	12x6x4ft.	1680 lb.
BIO-35R-0M10	0-35 GPM	6,480 sq. ft.	2,244 gallons	Marine aluminum	1/2 HP	2.0 HP	230V, 10, 25.0A	12x7x5ft.	1900 lb.
BIO-35R-1M10	0-35 GPM	6,480 sq. ft.	2,244 gallons	Stainless-steel	1/2 HP	2.0 HP	230V, 10, 25.0A	12x7x5ft.	1900 lb.
BIO-35R-0M30	0-35 GPM	6,480 sq. ft.	2,244 gallons	Marine aluminum	1/2 HP	2.0 HP	230V, 30, 15.0A	12x7x5ft.	1900 lb.
BIO-35R-1M30	0-35 GPM	6,480 sq. ft.	2,244 gallons	Stainless-steel	1/2 HP	2.0 HP	230V, 30, 15.0A	12x7x5ft.	1900 lb.

D - Designates Discharge / R - Designates Recycle

230/208/460V 3-phase available.

Power requirements reflect pump change.

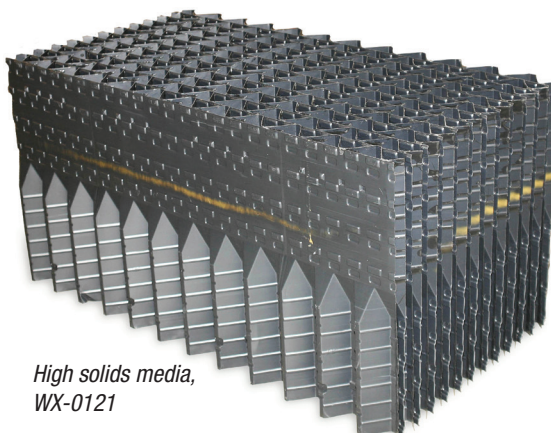
BIO Series | Options

pH Control System - WX-0037

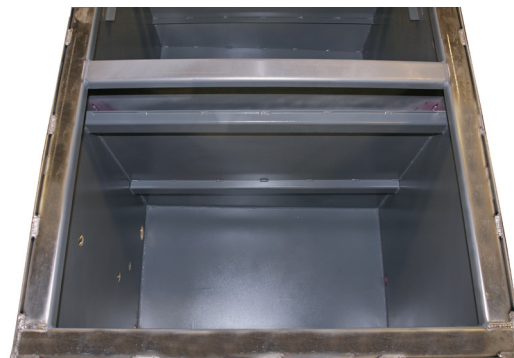
A desired pH set point is selected by the user and a pH adjustment chemical is metered into the wastewater by a peristaltic pump. The pH set point is achieved by either lowering or raising the pH level.



Magnetic drive pump,
WX-0069



High solids media,
WX-0121



Epoxy-lined tank, WX-0124

Options:		
Part Number	Description	Fits Models
WX-0005	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-25R-1M10
WX-0014	Pinch valve assembly - Pinch valve, bladder style (used on cone bottom tanks), 2-in., 230VAC, single phase	All BIO models
WX-0015	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-35R-1M10
WX-0029	550-gallon product tank expansion - For when larger volume of usable water stream is needed	All BIO models
WX-0031	Tank heater - Promotes heat for microbes, powdered from main box, additional 20A required	BIO-20R, BIO-25R & BIO-35R models
WX-0037	pH control system, 230V - For when pH adjustment is needed	Consult dealer
WX-0039	Pinch valve assembly - Pinch valve, bladder style (used on cone bottom tanks), 2-in., 120VAC, single phase	All BIO models
WX-0040	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-20D-1M10
WX-0067	Magnetic drive pump - 230V, 1Ø, seal-less pump	BIO-20D models
WX-0068	Magnetic drive pump - 208-230V, 3Ø, seal-less pump	BIO-20D models
WX-0069	Magnetic drive pump - 460V, 3Ø, seal-less pump	BIO-20D models
WX-0070	Magnetic drive pump - 230V, 1Ø, seal-less pump	BIO-20R models
WX-0071	Magnetic drive pump - 208-230V, 3Ø, seal-less pump	BIO-20R models
WX-0072	Magnetic drive pump - 460V, 3Ø, seal-less pump	BIO-20R models
WX-0073	Magnetic drive pump - 230V, 1Ø, seal-less pump	BIO-25 & BIO-35 models
WX-0074	Magnetic drive pump - 208-230V, 3Ø, seal-less pump	BIO-25 & BIO-35 models
WX-0075	Magnetic drive pump - 460V, 3Ø, seal-less pump	BIO-25 & BIO-35 models
WX-0089	Ozone - For specialized applications where sterilization of the waste stream is desired	BIO-20R-1M10 & BIO-20R-1M11
WX-0100	BIO sump pump swap - Customized option, converts submersible pump to surface-mount sump pump	BIO-20R, BIO-25R & BIO-35R models
WX-0102	pH control system, 120V - For when pH adjustment is needed	All BIO models
WX-0120	High solids media - Allows for debris to travel easily through media with vertical design	BIO-20 models
WX-0121	High solids media - Allows for debris to travel easily through media with vertical design	BIO-25 models
WX-0122	High solids media - Allows for debris to travel easily through media with vertical design	BIO-35 models
WX-0124	Epoxy-lined tank - High solid polyamide epoxy-lined tank is chemical and corrosion-resistant	BIO-20D aluminum models
WX-0125	Epoxy-lined tank - High solid polyamide epoxy-lined tank is chemical and corrosion-resistant	BIO-20R aluminum models
WX-0126	Epoxy-lined tank - High solid polyamide epoxy-lined tank is chemical and corrosion-resistant	BIO-25R aluminum models
WX-0127	Epoxy-lined tank - High solid polyamide epoxy-lined tank is chemical and corrosion-resistant	BIO-35R aluminum models
WX-0128	Hour meter - Displays number of hours unit has been in operation	All BIO models

Ozone is not available on Marine Aluminum models.

The magnetic drive pumps carry a longer manufacturers warranty.

BIO Series | Accessories

Waterfall Filter - RC-0008-0002

The Waterfall Filter is designed to separate grass clippings, leaves and other vegetation from the wastewater.

Typical applications include:

- Golf courses
- Equipment wash pads
- Municipalities
- Rental yards

The grass clippings and water are pumped from the wash catch pits to the Waterfall Filter. The Waterfall Filter is equipped with a wedge wire screen that separates the grass from the water entering the Biological Water Treatment System. The water from the pit flows through the wedge wire screen, cascades down the screen and is captured by the grass cart below. The water is then directed to the first weir of the Biological Water Treatment System and continues through the system for further treatment. The wedge wire screen is designed to be easily removed for proper maintenance and cleaning.



Model Number	Material of Construction	Wire Screen	Dimensions (LxWxH)	Ship Wt.
RC-0008-0002	Marine grade aluminum	304L stainless-steel, rated to 40-45 mesh	36x20.5x25in.	100 lb.



Submersible sump pump, 3-0216



Replacement sump pump, 3-0328



Aluminum round sump pit, 56-0069 and aluminum sump grating, 56-0070



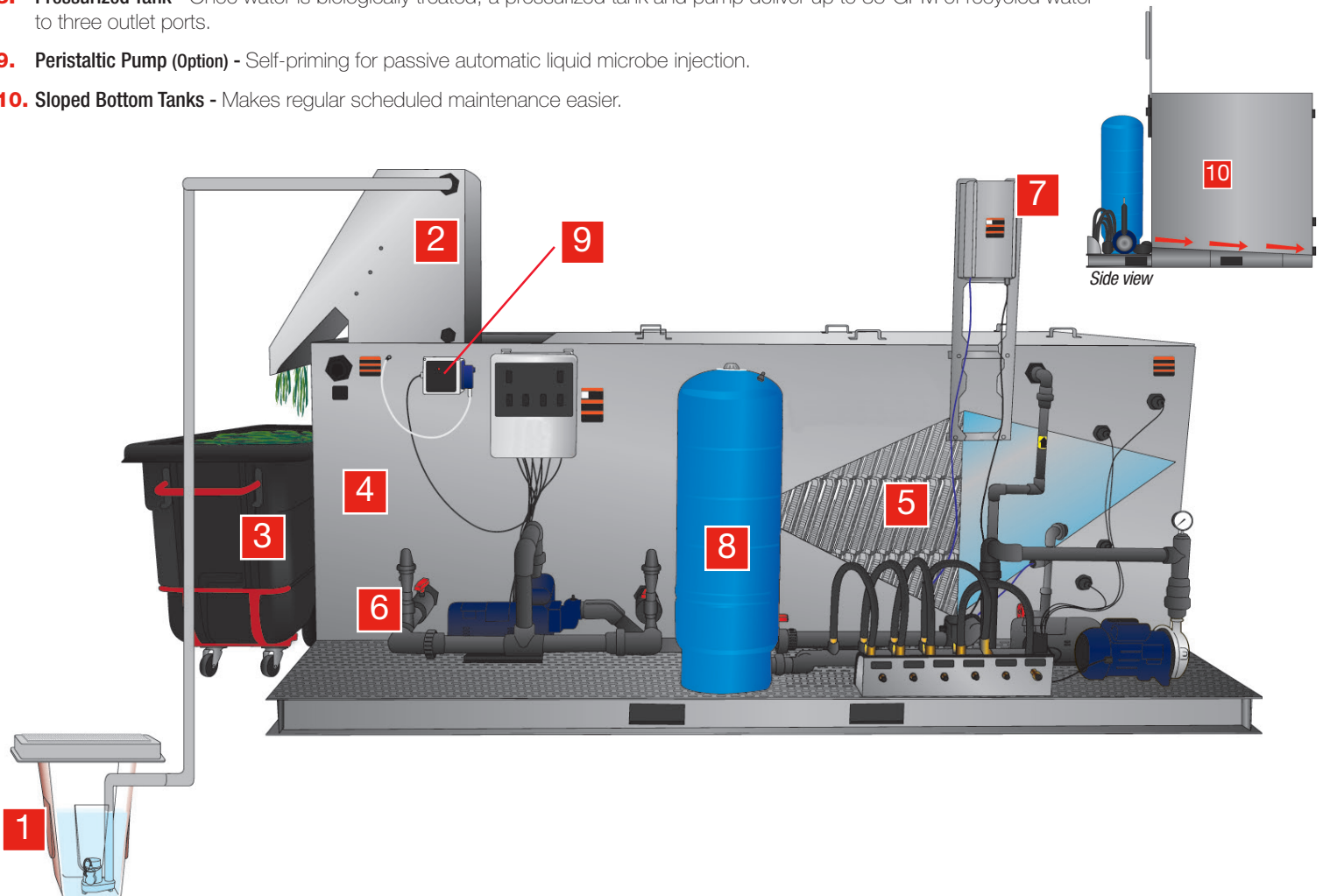
Towable grass cart, RC-0004-0002

Accessories:

Part Number	Description	Fits Models
21-0152	Tank-mount bracket - Used to mount waterfall filter RC-0008-0002 to BIO-tank, stainless-steel, for stainless-steel tanks	BIO-20, BIO-25 & BIO-35 models
21-0153	Wall-mount bracket - Used to mount waterfall filter RC-0008-0002 to wall	BIO-20, BIO-25 & BIO-35 models
21-0213	Tank-mount bracket - Used to mount waterfall filter RC-0008-0002 to BIO-tank, aluminum, for aluminum tanks	BIO-20, BIO-25 & BIO-35 models
3-0216	Submersible sump pump - Stainless-steel replacement, 1/2 HP, 230V, 1Ø, 5.0A	BIO-20, BIO-25 & BIO-35 models
3-0220	Peristaltic pump - Self-priming for passive automatic liquid microbe injection	All BIO models
3-0328	Replacement sump pump - Surface-mount, 1.0 HP, 130V, 8.0A	All BIO models
3-0397	Aeration pump - 1.5 HP, 1Ø, 115V/230V	BIO-25 & BIO-35 models
3-0398	Aeration pump - 1.5 HP, 3Ø, 208-230V/460V	BIO-25 & BIO-35 models
3-0399	Transfer pump - 2.0 HP, 1Ø, 115V/230V	BIO-25 & BIO-35 models
3-0400	Transfer pump - 2.0 HP, 3Ø, 208-230V/460V	BIO-25 & BIO-35 models
3-0401	Transfer pump - 1.5 HP, 1Ø, 115V/230V	All BIO models
3-0402	Transfer pump - 1.5 HP, 3Ø, 208-230V/460V	All BIO models
32-0918	Buck booster - Adjusts voltage on equipment, mounted on unit	All BIO models
33-0491	Trap and basket - 6-in., used on #3-0328 replacement above-ground sump pump	All BIO models
5-0200A01	Cone bottom tank bracket, 300-gallons - Powder coated bracket to mount waterfall filter RC-0008-0002	Consult dealer
55-0068	Air fine-bubble injector, 2-inch - Mazzei used for aeration	BIO-20, BIO-25 & BIO-35 models
55-0126	Mazzei venturi air injection system, 2-inch	All BIO models
56-0069	Aluminum round sump pit - Lightweight aluminum design; 4-in. NPT inlet; 2-in. x 2-in. NPT and 1-in. x ¾-in. NPT outlets, 52-gallon capacity	Consult dealer
56-0070	Aluminum sump grating - Lightweight aluminum design, cover for #56-0069 sump pit	Consult dealer
RC-0004-0001	Grass cart - Grass from the waterfall filter RC-0008-0002 is collected and dewatered and can easily be transported for disposal	All BIO models
RC-0004-0002	Towable grass cart - Grass from the waterfall filter RC-0008-0002 is collected and dewatered and can easily be transported for disposal	All BIO models
RC-0008-0002	Waterfall filter - Water flows from the system while grass and debris are separated and dropped into the grass cart, marine grade aluminum	All BIO models
RC-0009-0001	BIO system filter - Filter before pressure washer, includes filter housing, filter, mounting bracket and wrench	All BIO models
RC-0010-0120	Timed peristaltic pump, 120V - Self-priming for automatic liquid microbe injection	All BIO models
RC-0010-0208	Timed peristaltic pump, 208V - Self-priming for automatic liquid microbe injection	All BIO models
RC-0010-0230	Timed peristaltic pump, 230V - Self-priming for automatic liquid microbe injection	All BIO models

BIO Series | Process & Flow Description

- 1. Submersible Sump Pump** - Untreated wash water is introduced into the BIO system via a 1/2 HP submersible sump pump.
- 2. Waterfall Filter (Accessory #RC-0008-0002)** - Especially useful in golf course applications, water is typically pumped into a marine grade aluminum waterfall filter for effective grass and particle separation. Water flows into the system while grass and debris are separated and dropped into the grass cart.
- 3. Grass Cart (Accessory #RC-0004-0001)** - Grass from the waterfall filter is collected in the grass cart. Grass is dewatered through a specially designed stainless-steel screen in the grass cart that allows the cart to be filled with grass and debris without plugging up the screen. Water drains back into the pit and the grass can be easily transported for disposal.
- 4. Bioreaction Tank** - Untreated wastewater is pumped into the first chamber of the stainless-steel tank, where solids are precipitated and the microbes begin their work. The tank has up to 2,244 gallons of holding capacity to provide maximum treatment time for the biological microbes.
- 5. Biofilm Generative Media** - The bioreaction portion of the system houses thousands of square feet of biological media surface area where the microbe growth is maximized. Water flows through the media and around a series of baffles, changing direction countless times and maximizing contact with "hungry" microbes. The microbes then treat the water by consuming a broad range of organic constituents (such as herbicides, pesticides, oils, grease, etc.) turning them into carbon dioxide and water. To ensure proper and continued colonization, microbes are added periodically - a process called inoculation.
- 6. Aeration System** - A unique aeration system injects large amounts of oxygen into the wastewater. Generating dissolved oxygen is critical for maximizing the health and activity level of microbes and the size of the colony.
- 7. Ozone (Option)** - An ozone generator is an option for specialized applications where sterilization of the waste stream is desired (*Ozone injection is not available for aluminum tank systems*).
- 8. Pressurized Tank** - Once water is biologically treated, a pressurized tank and pump deliver up to 35-GPM of recycled water to three outlet ports.
- 9. Peristaltic Pump (Option)** - Self-priming for passive automatic liquid microbe injection.
- 10. Sloped Bottom Tanks** - Makes regular scheduled maintenance easier.

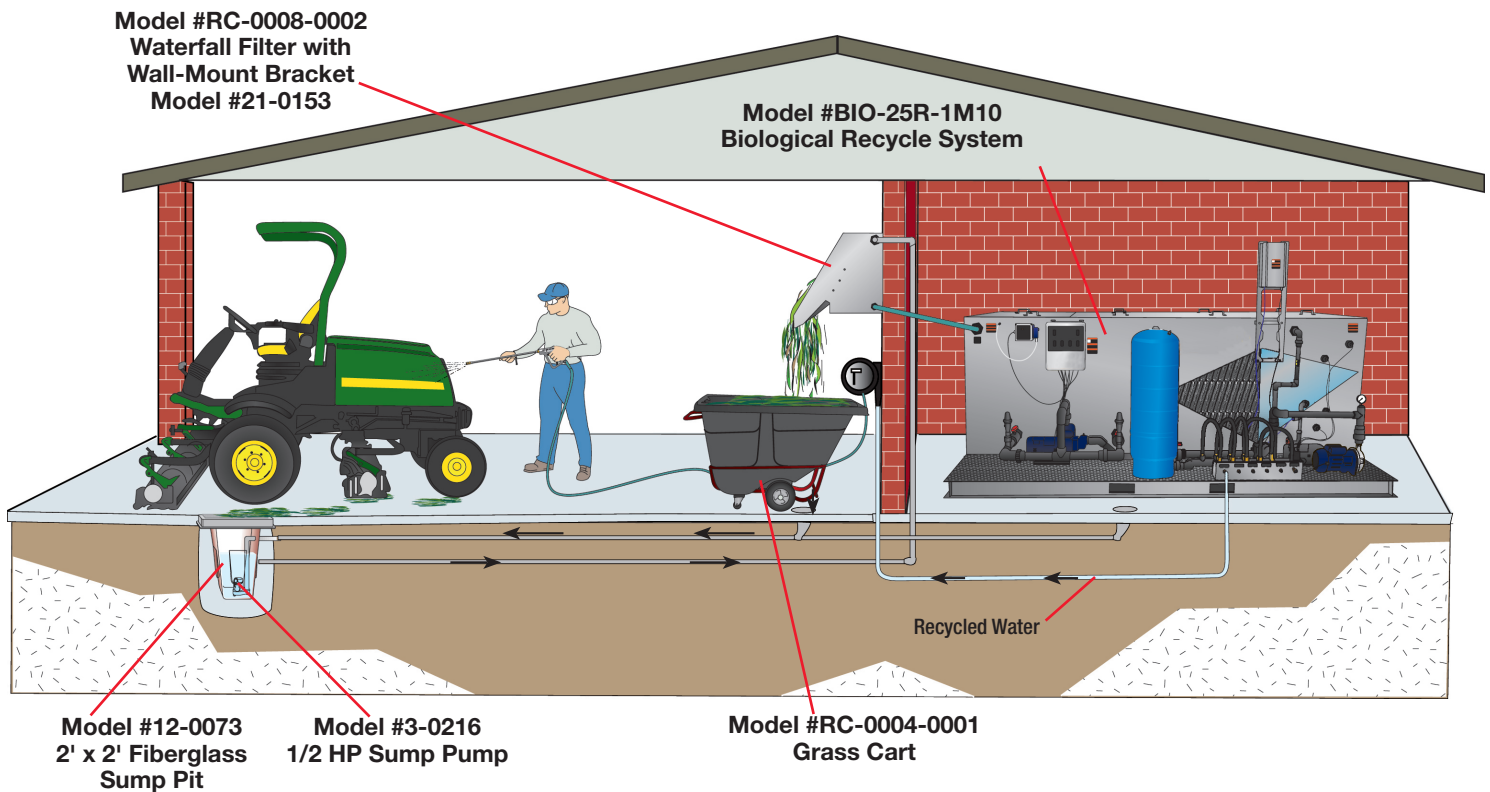


BIO Series | Sample Equipment Wash Pad Application



The BIO Series is perfect for the following applications:

- Rental Yards
- Golf Courses
- Heavy Equipment Dealers
- Trucking Facilities
- Military Bases
- Truck Rental Fleets
- Diesel Repair Facilities
- Forklift Washing Operations
- Aircraft Maintenance and Restoration
- Shipyards
- Municipalities/State DOTs
- Oil Fields
- Engine Rebuilders and Manufacturers



The Importance of a Proper Pit System

Once equipment is washed, the untreated wash water flows into your pit system. A proper pit system for your application is the first step in proper wash water treatment and a critical element in any wash water recycle system.

Consult your dealer to determine the pit system configuration that works best for your application.

Information on fiberglass pits is available in the Pit Systems Brochure.