



TOTALLY SAFE WATER

**MOVING BED
BIO REACTOR
(MBBR) SYSTEM
WASTEWATER
TREATMENT
PLANT**

**OPERATION &
MAINTENANCE
MANUAL**





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A WORD ABOUT YOUR CWT-MBBR AEROBIC WASTEWATER TREATMENT SYSTEM

HOW IT WORKS

The Canwest Tanks Moving Bed Bio-Reactor (CWT-MBBR), Wastewater Treatment System that you have purchased produces high quality water suitable for various disposal methods. It is used to enhance your on-site wastewater disposal system. With a minimum amount of maintenance, you can directly contribute to a cleaner, safer environment.

All wastewater treatment systems of this type work by using aerobic bacteria that occurs naturally. By pumping air into the system, the bacteria grow on the surface of the media and thrive in much larger amounts than would occur naturally. The overpopulation of bacteria speeds up the process of breaking down domestic wastewater, making it safe for release into the environment.

The result of this process is a clear, odorless discharge, which meets or exceeds effluent quality standards.

PROCESS DESCRIPTION

Wastewater enters a pretreatment/settling tank like conventional septic tanks. In this tank, debris and settleable solids settle to the bottom, and start to break down the organic portion of the wastewater anaerobically.

The effluent enters the CWT-MBBR Wastewater Treatment System from the primary tank where it is exposed to an oxygen rich environment. In this oxygen rich environment, a colony of bacteria, called the biomass, develops and is capable of digesting (breaking down) biodegradable waste into carbon dioxide sludge and water. This is a continuous process if the biomass is supplied with incoming wastewater and oxygen. The CWT-MBBR is a specially designed containment device that houses a moving bed media specifically designed to treat organic wastewater. An external air compressor is connected to the tanks to provide the necessary air to the system. There are no moving mechanical parts or filters in the CWT-MBBR. In this system, conditions are favorable only to attached growth bacteria.

This means that the most common disadvantages of other types of systems are eliminated. No rising sludge, floating sludge or washouts can occur.

In addition to treating for BOD reduction, our system also provides for a significant benefit in nitrification and denitrification. Wastewater nitrification of the ammonia and denitrification of nitrates occur within the bacteria masses. A 50%+ removal rate of total nitrogen is common without any type of recirculation or cycling of the blower.

The result of this process is a clear, odorless discharge, which meets or exceeds all effluent quality standards.



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SPECIFICATIONS FOR CWT MOVING BED BIO REACTOR

MEETING ANSI/NSF INTERNATIONAL STANDARD 40, CLASS 1

GENERAL SPECIFICATIONS

The advanced wastewater treatment system described by these specifications is a Canwest Tanks & Ecological System Ltd. CWT-MBBR Wastewater Treatment System

Model CWT-MBBR Various Sizes

This device consists of a Media Container, Moving Bed Media, Air Diffusion System, Having specially designed discharge outlet, blower assembly, and control/alarm panel. Treatment Plant meets NSF/ANSI Standard 40, Class 1 and NSF/ANSI Standard 245

Operating Conditions

The MBBR units have a design flow range of 500 - 1500 gallons per day average daily flow (ADF) of domestic raw sewage waste with BOD5 of 300 mg/l..

Construction

CONSTRUCTION OPTIONS

FIBERGLASS

The tanks shall be constructed of ¼ inch minimum thickness fiberglass. The tank shall be molded of fiberglass reinforced polyester resin manufactured by the lay-up and spray technique to assure that the interior has a smooth resin rich finish.

CONCRETE

The tanks shall be constructed of CONCRETE. The top, bottom, and outer walls of all concrete tanks shall be 3" thick plus or minus 1/4" and constructed of concrete with a minimum compressive strength of 3000 psi. The top, bottom and side walls shall also be reinforced uniformly and completely with 10-gauge steel wire on 6" centers both ways fiber mesh reinforcement at a minimum of 1.2 pounds per yard Harborlight or equal.

POLYETHYLENE TANKS

The tanks shall be constructed from HDLPE. The thickness of the tank wall will be 1/4" or more.



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PRIMARY TANK/ TRASH TANK / SETTLING TANK

A primary tank shall be provided as shown on the plans to receive the incoming flow. The pretreatment tank shall provide 24-hour hydraulic detention at the ADF rate. The primary tank shall be designed to collect large incoming solids. This shall be accomplished by extending the inlet pipe downward below the trash floatable zone and above the settling zone. The discharge pipe shall also be extended downward to draw pretreated sewage from the median zone, keeping both floatable and settle-able solids out of the reactor tank.

REACTOR TANK

The reactor tank shall be sized to hold MBBR media and provide enough time for aeration treatment.

AIR DELIVERY SYSTEM

Air delivery system shall be constructed of schedule 40 PVC pipe. Air ports shall be designed for non-clogging and shall be maintenance free.

Aeration Blower: Provide one aeration blower system with sufficient capacity to furnish the treatment unit air requirements.

DISINFECTION (OPTIONAL)

A disinfection system using Ultraviolet light shall be included in the treatment system to achieve disinfection of the final effluent. The Ultraviolet Light, which have been NSF tested, are manufactured for, and installed by Canwest Tanks & Ecological Systems Ltd.

ELECTRICAL CONTROLS

An electrical control panel shall be furnished with each compressor and pumps if required.

Included in the panel shall be a pressure switch alarm system that will sound an alarm upon loss of air supply as well as high water. System shall be ANSI/NSF International certified utilizing

UL rated components in an indoor/outdoor NEMA 3R painted steel enclosure.



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PIPING

All necessary piping and valves inside the plant shall be PVC. At the exterior wall of the plant, as shown on the plans, properly sized inlet and outlet connections will be included. The manufacturer shall not be responsible for piping or valves outside the plant. The contractor or owner shall be responsible for necessary piping and valves between all systems.

WORKMANSHIP AND EXPERIENCE

All workmanship and materials shall be of the highest quality. The waste treatment plant shall be the product of an experienced manufacturer actively engaged in manufacturing and research and development of sewage treatment systems. NSF International test documents shall be available upon request of the designers.

HOMEOWNER CARE AND OPERATION INSTRUCTIONS

CWT-MBBR Moving Bed Bio Reactor Wastewater Treatment System has been designed and built to provide long term, reliable and efficient service.

Once the unit has been installed, (see Installation Instructions) on page 9 the unit will operate continuously within the operating ranges.

Please reference the system's Data plate that is located on the tank, air pump and the alarm panel in the event that a problem arises, or service is required.

The following should be accomplished as checks for system failure:

Daily - Observe the warning device, which comes on when the power to the air pump has been interrupted or when the air supply system has malfunctioned or when there is a high-water level in the treatment plant. If the alarm is activated check for a blown fuse or thrown circuit breaker. Check the air pump to be sure it is operating. Once accustomed to the soft humming sound of a properly operating unit, any unusual noise is an indication of malfunction. If an unusual noise is detected or total failure is observed, call your local Maintenance Provider for service.



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Weekly - Check the treatment plant for offensive odor. If such a condition should develop, call an authorized Dealer / Maintenance Provider.

Every 3 Months

- **The air filter on the air pump should be cleaned.** Rinse with warm water if necessary. (See Installation Instructions) on page 9. Do not use oil or other solvents.

Every 6 Months

- Inspect and make any necessary adjustments to mechanical and electrical components.
- Inspect effluent quality's color, turbidity, and check for any odor.
- Take a sample from the reactor tank to check the sludge level described in the "Solids Removal" section on page 6.
- **The homeowner must be notified in writing if any improper operation is observed and cannot be corrected at the time of service.**

ITEMS NOT PERMITTED IN SYSTEM

Note: - To keep maintenance to a minimum and ensure high effluent quality the following items should not be permitted to enter the system

Strong disinfectants or bleachers, other than small amounts normally utilized in day-to-day cleaning and laundry (be conservative). Laundry detergents recommended for use are low phosphates and biodegradable.

- Discharge from water softener. Any type of oils, greases, or other chemical wastes. Disposable baby diapers and wipes.
- Sanitary napkins, condoms or other similar items. Hair, bandages, rags or string.
- Latex, plastic or metallic objects.
- Coffee grounds or cigarette butts. Mud or sticks.
- Paper towels, napkins or Kleenex Tidy Bowl type products. Beer waste or any other rich liquids.
- Garbage disposal should be used sparingly, not as a method of disposing of all solid food waste. To ensure good plant operation, waste should be disposed of in the garbage container.

The CWT - MBBR Moving Bed Bio Reactor Wastewater Treatment System is designed to handle domestic wastewater and nothing else should go into it.



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OPERATION

1. The proper operation of this, as with other home-based sewage systems, depends on proper organic loading and on the life of the microorganisms inside the system.

CWT cannot be responsible for the on-site operation of a system, other than the mechanical and structural workings of the plant itself.

We likewise cannot control the amount of harsh chemicals or other harmful substances that may be discharged into the system by the occupants of a household, we can only provide a comprehensive owner's manual that outlines substances that should be kept out of the system.

2. Hydraulic overloading (flows more than design flow) may cause the sewage treatment system not to perform to the fullest capabilities.
3. Ants have been known to be destructive to the air pump. Regular care should be taken to prevent infestation of ants near the system. Damage or destruction by ants is not covered under the manufacturer's warranty.
4. Your State or Local Health Department may require other pieces of equipment to function separately or in conjunction with equipment manufactured by CWT-MBBR Moving Bed Bio Reactor Wastewater Treatment Systems. CWT-MBBR is not responsible for the mechanical or electrical safety of equipment it does not manufacture or supply with its CWT-MBBR Wastewater Treatment System. Care should be used in evaluating the electrical or mechanical safety of equipment manufactured by others. This may include but not be limited to electrical control panels or air pumps. If electrical service has not been installed for checking air distribution system during installation, and if an extension cord is used to test the air pump, **never** leave the extension cord plugged in. Remove it after testing is completed.

All electrical work performed by the installer or others must be in accordance with the National Electrical Code and all Provincial & Municipal regulations.

SOLIDS REMOVAL

Determination of the need for solids removal can be done through a simple test. A one-quart sample should be pulled from the reactor tank and can be done so through the opening on the top. Allow the sample to settle in a clear one-quart jar for 30 minutes. If the solids content exceeds 25 percent of the total volume after settling the treatment unit should be pumped out. Call your local authorized sewage disposal service to have the tank contents pumped out and disposed of properly.

The method of pumping out should be as follows:

- Remove all the solids from the Clarifier and primary trash tank.
- **Never pump the MBBR Media from the Reactor**



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- The air pump should be in the off position.
- Remove sludge from the bottom of the tank.
- Leave some sewage from the middle of the Primary tank to make the new process start immediately.

After the pump-out process is complete, fill the tank with fresh water to normal operating level. This is extremely important in areas where high water table is a concern, as this will prevent the tanks from floating up due to high buoyancy.

Refer to the Installation Instructions on page 9 to get the treatment plant back into operation.

Should any indication of improper operation be observed at any point in time, contact your local distributor.

PLEASE NOTE:

THE COST ASSOCIATED WITH PUMPING

THE TREATMENT SYSTEM IS NOT COVERED UNDER WARRANTY.

IT IS PART OF NORMAL MAINTENANCE AND OPERATIONS.

SEASONAL USE GUIDELINES

**CWT-MBBR MOVING BED BIO REACTOR
WASTEWATER TREATMENT SYSTEM**

These guidelines are for conditions as outlined below and apply for systems that are not in use for periods of time indicated. Site conditions not covered by the following must be forwarded to CWT for recommended guidelines to meet the particular site conditions.

1. System not in use for less than one month.
Electrical power is left on and there are no frost conditions.
 - Leave the air pump on and system running.
2. System not in use for more than one month.
Electrical power is turned off and there are not frost conditions.
 - Remove all materials and liquid from tank.
 - Refill with clean water.
 - Turn off the air pump.



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SAMPLE REQUIREMENTS

The CWT-MBBR Moving Bed Wastewater Treatment System properly operated and maintained should provide the following effluent quality as per NSF Report:

Biological Oxygen Demand 5-day average (BOD5) of less than 10 mg/1 (or ppm); Suspended Solids (SS of less than 10 mg/1 (or ppm), as per NSF results pH of 6.0 to 9.0.

Dissolved oxygen 1.5 to 3.0 mg/1 (or ppm).

TAKING EFFLUENT SAMPLES

Samples must be taken in the effluent discharge line or an effluent pump chamber or after the disinfection device. We recommend allowing the effluent to flow through the discharge pipe for a minimum of two minutes before taking the sample. This will allow any solids to be flushed out that might have accumulated in the discharge pipe.

SAMPLING SHOULD BE TAKEN BY A LOCAL CERTIFIED TESTING LABORATORY OR BY FOLLOWING THEIR PROCEDURES. THE FOLLOWING RECOMMENDED GUIDELINES MAY BE USED IF LOCAL PROCEDURES ARE NOT AVAILABLE.

1. Biochemical Oxygen Demand (BOD)

Samples for BOD analysis may degrade significantly during storage between collection and analysis, resulting in low BOD values. Minimize reduction of BOD by analyzing the sample promptly or by cooling it to near freezing temperature during storage. However, even at low temperatures, keep the holding time to a minimum.

Grab Samples:

If analysis is begun within two hours of collection, cooling is unnecessary.

If analysis is not started within two hours of sample collection, keep sample at or below 4 C from the time of collection. Begin analysis within six hours of collection; when this is not possible because the sampling site is distant from the laboratory, store at or below 4 C and report length and temperature of storage to the Lab. In no case, start analysis more than 24 hours after grab sample collection. When samples are to be used for regulatory purposes, make every effort to deliver samples for analysis within six hours of collection.

2. TOTAL SUSPENDED SOLIDS (TSS)

Use resistant-glass or plastic bottles, provided that the material in suspension does not adhere to container walls. Begin analysis as soon as possible, because of the impracticality of preserving the sample. Refrigerate sample at 4 C to minimize microbiological decomposition of solids.

3. AMMONIA NITROGEN

Most reliable results are obtained on fresh samples. Destroy residual chlorine immediately after sample



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collection to prevent its reaction with ammonia. If prompt analysis is impossible, preserve samples with 0.8-ml concentration H₂SO₄ /L samples and store at 4 C. The pH of the acid-preserved samples should be between 1.5 and 2. Some wastewater may require more concentration H₂SO₄ to achieve this PH. If acid preservation is used, neutralize samples with NaOH or KOH immediately before making the determination.

INSTALLATION INSTRUCTIONS

ONLY FOR USE BY CERTIFIED, LICENSED INSTALLERS

1. Prepare an excavation, having a diameter approximately one foot larger than the tank and a depth that will allow approximately three inches of the inspection port to extend above normal ground level. Backfill with a six-inch layer of Pea gravel if otherwise unable to provide a smooth, level, compact base.
2. Utilizing lifting lugs provided, place the plant in the excavation so that the inlet and outlet line up with the sewer piping. The inlet line should slope down toward the plant and the outlet line should slope down away from the plant. The plant should be level.
3. Position inlet and outlet lines and make connections as necessary, depending upon the construction materials. The inlet line should be inserted and glued into the inlet elbow and the discharge line should be inserted and glued into the outlet coupling. Note: Fill the tank with water until water flows from the discharge before backfilling. Backfill around plant, up to the bottom of the discharge connections.
4. Do not install the air pump(s) in a low-lying area where water may accumulate.
The air pump should be installed near the control panel and within one hundred feet of the tank.
Air pumps can be installed outdoors or in a clean, well-ventilated area, such as a mechanical room, garage, etc. **If the linear air pump is to be installed in an additional enclosure, the enclosure must be approved by CWT in writing.**
5. Mount the control panel in an area such that the alarm can be heard and be readily observed.
All electrical work shall be done according to local code requirements.
6. The control panel is rated for indoor and outdoor use and contains a fuse or circuit breaker for the air pump. An electrical malfunction in the air pump or wiring to the air pump will cause the fuse to blow or circuit breaker to trip. The control panel also contains a pressure switch and visual and audible alarm. Loss of air pressure caused by the air pump system malfunction will cause the alarm to sound to illuminate.



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7. Connect the pressure air tubing to the 1/8" barb-fitting in the air piping system.
8. Install 3/4" schedule 40-PVC piping between air pump and treatment unit.
A minimum of 12 inches ground cover is recommended.
9. Turn the power on to control panel. Air pump should start.
10. Check air piping joints for leakage using a soapy water solution.
Repair if necessary and then carefully backfill airline and inlet and discharge piping and cover plant to grade level.
11. Re-check the water level in the tank.
12. Plant is ready to receive incoming sewage. No special start-up procedures are required. The process is naturally occurring and does not require any special additives.
13. Test alarm circuit by momentarily squeezing air tubing and allowing air pressure to decrease. This should take a few minutes. Alarm should occur. Release air tubing and alarm should stop.
14. Close cover to control panel, and lock if necessary.
15. **WARNING: CONTROL PANEL CONTAINS HIGH VOLTAGE AND MUST ONLY BE INSTALLED AND SERVICED BY QUALIFIED PERSONNEL.**

TROUBLE SHOOTING GUIDE

AIR SUPPLY MALFUNCTION

1. Check to be sure that the air system is working properly. This will be evident in the reactor as the liquid will be forcefully agitated. A septic (rotten egg) odor could mean that the system is not getting enough air. If the air system is not working, partially working, or working very little (slight bubbles), check the following:
 - a. Check to be sure the air pump is working.
 - Check timer if one is used.
 - Bypass timer temporarily connect directly to source.
 - Check the electrical source.
 - If the electrical source is okay, check the service guide on pump unit for troubleshooting information.
 - Wash air filter on pump.
 - Consult manufacturer for servicing information.



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- b. Check for broken or cracked air lines both outside and inside the tank.
- c. Ants will destroy an air pump. Check to see if there is an ant nest around the air pump.
- d. Air pumps should be protected from rising water.
- e. Always check to see if inlet and outlet lines are correctly installed.

DESIGN OVERLOAD

1. The system could be hydraulically overloaded (there is too much water going through the system for the size of the system).
2. The system could be biologically overloaded (there is too much waste for the size of the system).

IMPROPER INSTALLATION OR SETTLING

1. Manufacturers installation procedures are Important, read and follow them very carefully.
2. Where settling is common, approximately 2 inches of sand should be placed and tamped in the bottom of the hole.
3. Proper installation is the first step in preventing call backs for service problems.

NO HARSH CHEMICALS SHOULD BE PUT INTO THE SYSTEM

1. Water in the reactor tank should be relatively clear in both the reactor and Clarifier. Blue or gray/blue water indicates heavy use of detergents or other chemicals.
2. Water in the Clarifier zone should be clear. Water is discharged into the discharge tee at a minimum of 6-8 inches below water surface. You MAY not be able to see clear water by looking into the Clarifier as scum will form on top of liquid. Samples must be taken at the Pump Chamber.
3. Oils Fats and grease should be kept to a minimum. Grease tends to form in white balls.

TROUBLESHOOTING ELECTRICAL SYSTEM

1. Air pump does not run:
 - a. Check main service for power.
 - b. Check and/or replace breaker with same rating as is in control panel.



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2. Alarm does not occur when air pump is off:
 - a. Malfunctioning pressure-switch – replace.
 - b. Malfunctioning light or buzzer – replace.
3. Alarm occurs continuously even when air pump is running:
 - a. Air-leak in main air system or air tubing to pressure switch – repair leak or replace air line.
 - b. Oversensitive Pressure Switch, adjust sensitivity.
 - c. Malfunctioning pressure switch - replace.

Note: All replacement parts are available from your local dealer

CAUTION: Electrical shock or hazard may occur if the unit is not serviced properly. The manufacturer recommends that a licensed electrician be called when electrical problems occur.

COMPONENT REPLACEMENT PROCEDURE

1. Air Pump – Follow same procedure as outlined in the “Installation Instructions”.
2. Pressure Switch – Turn all power off to control panel. Remove screws securing pressure switch as well as connectors and tubing. Reverse procedure to install new pressure switch.
3. Buzzer – Turn all power off to control panel. Remove screw attaching buzzer to back plate as well as connectors. Reverse procedure to install new buzzer.
4. Lamp-holder – Turn all power off to control panel. Remove lock nut securing lamp-holder to door as well as connectors. Remove lamp-holder. Install new lamp-holder with gaskets furnished. Continue with reverse procedure.
5. Lamp – Turn all power off to control panel. Remove red lamp cover from front of control panel. Remove and replace lamp which is a push in type. Replace lamp cover and cover gasket.
6. Buzzer Switch – Turn all power off to control panel. Remove rubber boot on switch. Remove hex nut from switch on panel front as well as connectors on switch. Reverse procedure to install new switch.

GENERAL COMMENTS

1. Only factory approved equipment can be used for replacement on individual treatment systems.
2. If the decision is made to pump out a system, be sure to contact a licensed waste hauler.
3. If a chronic problem develops and all items listed have been checked, consult with the manufacturer.



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4. Taking pictures of systems when troubleshooting will help document activity in the field.
5. Keep good records.

MATERIALS OF CONSTRUCTION

- A. Reactor Tank Fiberglass
Cover Fiberglass
Media Container Polyethylene
- B. Reactor Tank Concrete
Cover Concrete
Media Container Polyethylene
- C. Reactor Tanks Polyethylene
Cover Polyethylene
Media Container Polyethylene

These are standard production units. Other configurations are available upon request.



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ELECTRICAL REQUIREMENTS

Model	Air blower	Measured OperatingWatts	Electrical Requirements
CWT-MBBR500	FujiMac 100 - or - ET 100A	105 watts	115 volt - single phase
CWT-MBBR 600	FujiMac 100 - or - ET 100A	105Watts	115 volt - single phase
CWT-MBBR 800	FujiMac 100 - or - ET 100A	105 Watts	115 volt - single phase
CWT-MBBR 1000	FujiMac 200 - or - ET 200A	195 Watts	115 volt - single phase
CWT-MBBR 1500	FujiMac 300 - or - ET 300A	275 Watts	115 volt - single phase



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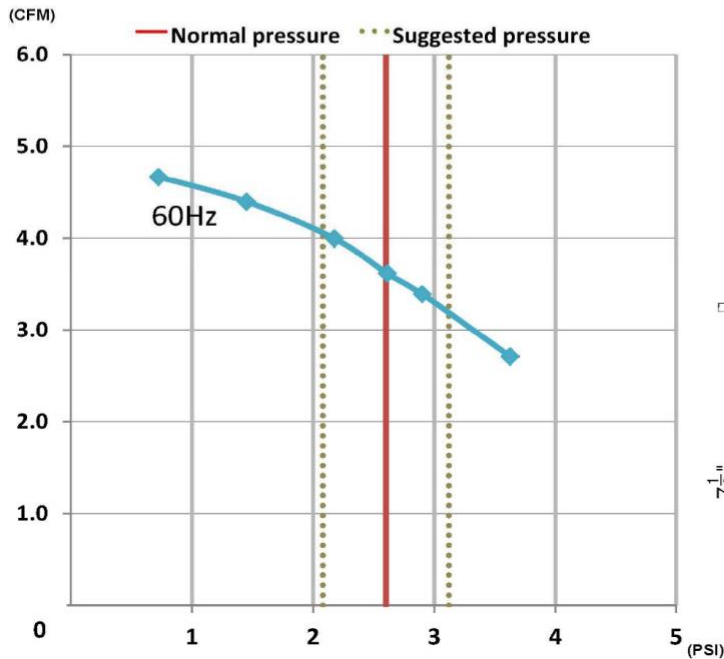
APPENDIX A
AIR BLOWER SPECIFICATION FUJIMAC & BLUE DIAMOND
ET SERIES

FujiMAC 100R II

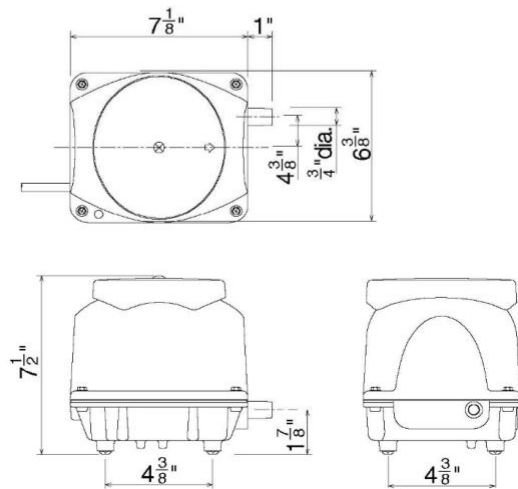


Specifications

Model	MAC100RII
Rate Voltage	120V
Air Flow	3.5CFM
Pressure	2.6PSI
Outlet Pipe	13mm(external dia. 18mm)
Weight	5.0kg
Power Consumption	74w
Noise Level	40db



Dimensions

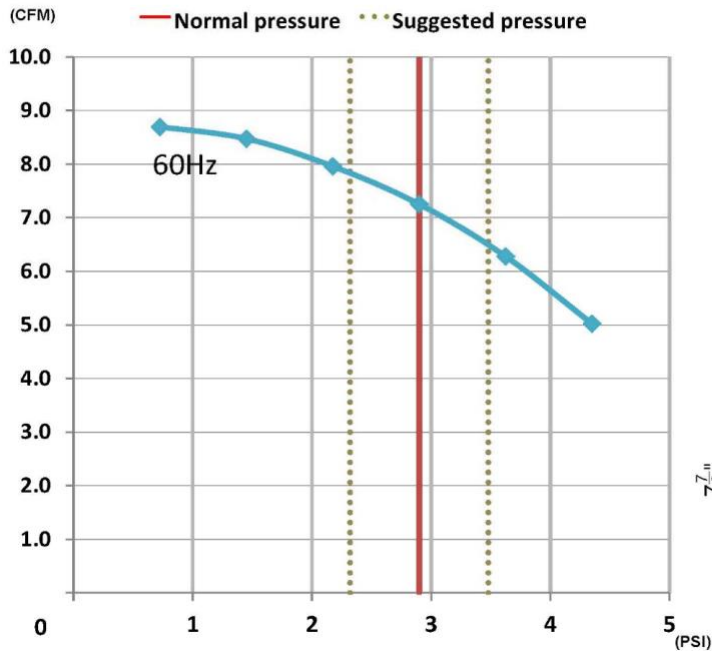


FujiMAC 200R II

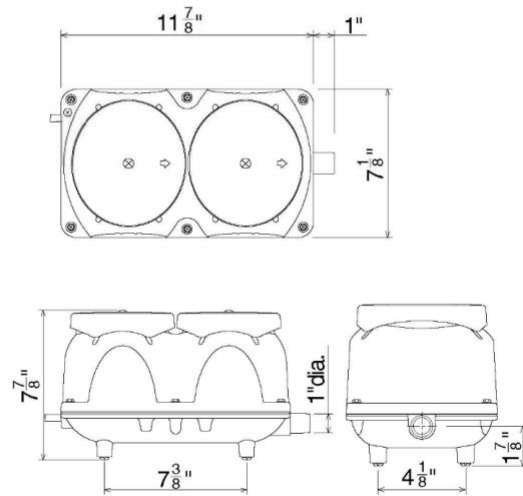


Specifications

Model	MAC200RII
Rate Voltage	120V
Air Flow	7.1CFM
Pressure	2.9PSI
Outlet Pipe	20mm(external dia. 26mm)
Weight	9.0kg
Power Consumption	155w
Noise Level	43db



Dimensions



FujiMAC 300R II

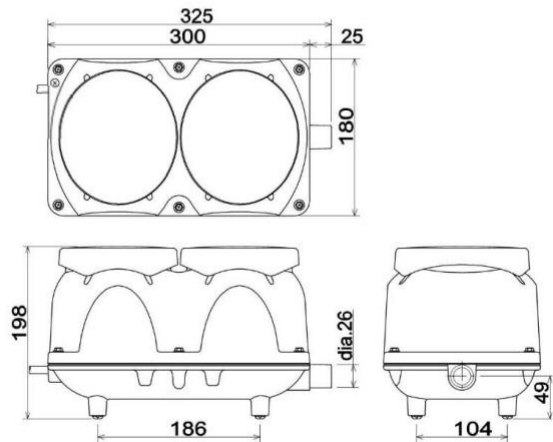
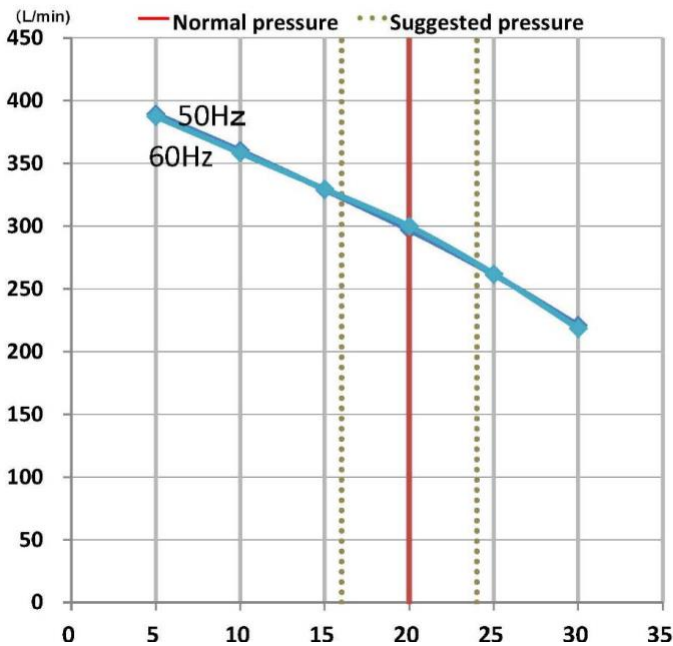


Specifications

Model	MAC300RII
Rate Voltage	230V-240V
Air Flow	300L/min
Pressure	20kPa
Outlet Pipe	20mm(external dia. 26mm)
Weight	9.0kg
Power Consumption	250w
Noise Level	50db

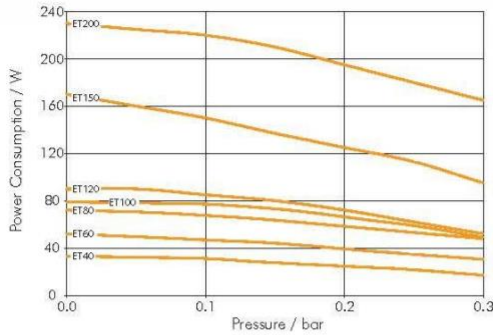


Dimensions



Air

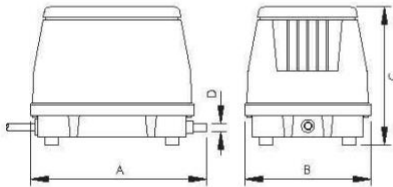
envir-o® ET series



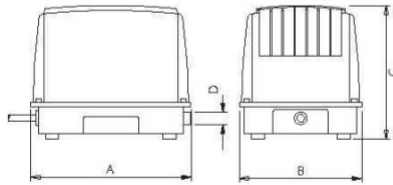
Model no.	Performance	Power consumption (w)	Noise level (db)
	Flow (cfm/min) @ Pressure (bar)		
ET40	1.41 @ 0.15	30	40
ET60	2.12 @ 0.15	55	40
ET80	2.83 @ 0.10	85	40
ET100	3.53 @ 0.10	105	45
ET120	4.24 @ 0.10	125	45
ET150	5.30 @ 0.15	130	45
ET200	7.06 @ 0.15	195	45

Dimensions

ET30, ET40, ET150 & ET200



ET60, ET80, ET100 & ET120



Other models in the envir-o® range



Model no.	Weight kg	Dimensions mm (inches)			
		A	B	C	D
ET40	4.3	220 (8.66)	155 (6.10)	190 (7.48)	14 (0.55)
ET60	6.0	203 (7.99)	165 (6.49)	153 (6.02)	18 (0.70)
ET80	7.0	210 (8.26)	185 (7.28)	171 (6.73)	18 (0.70)
ET100	8.5	238 (9.37)	196 (7.71)	177 (6.96)	18 (0.70)
ET120	9.5	265 (10.43)	215 (8.36)	198 (7.79)	18 (0.70)
ET150	9.0	256 (10.07)	200 (7.87)	222 (8.74)	18 (0.70)
ET200	9.0	256 (10.07)	200 (7.87)	222 (8.74)	18 (0.70)

Connections

ET40 - Plain, horizontal, connection 14.0mm (0.55") OD also supplied with screw in barbed connector 10.0mm (0.39") OD

ET60, ET80, ET100, ET120 - Plain, horizontal, connection 18.0mm (0.71") OD also supplied with screw in barbed connector 12.0mm (0.47") OD

ET150, ET200 - Plain, horizontal, connection 18.0mm OD

Accessories

Elbow connector (included)



Large brass barbed connector 18.0mm and 20.0mm (optional)

Please note - it is important that you ensure the motor specification stated and the range of materials offered in the pump are compatible with the performance, environmental limitations and chemical resistance requirements of the application.

For further information or details of our extensive range of pumps, contact our technical sales office who will be pleased to help you select the most suitable pump for your application.

Air

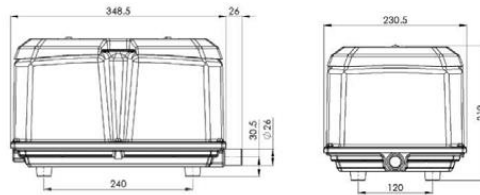
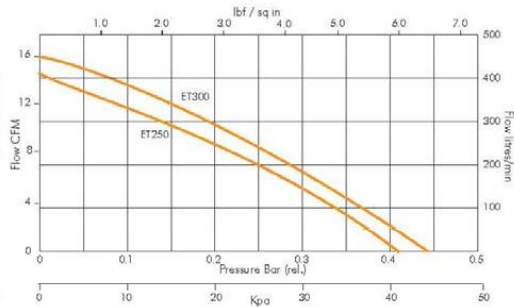
envir-o® ET double series



✓ Using the same technology as the envir-o® ET series but with two pump blocks for high flow.

Model no.	Performance	Power consumption (w)	Noise level (db)
	Flow (cfm/min) @ Pressure (bar)		
ET250	8.80 @ 0.20	221	40
ET300	10.60 @ 0.20	275	40

Model no.	Weight kg	Dimensions mm (inches)			
		A	B	C	D
ET250	17.5	348.5 (13.72)	230.5 (9.07)	219 (8.62)	17.5 (1.02)
ET300	18.0	348.5 (13.72)	230.5 (9.07)	219 (8.62)	17.5 (1.02)

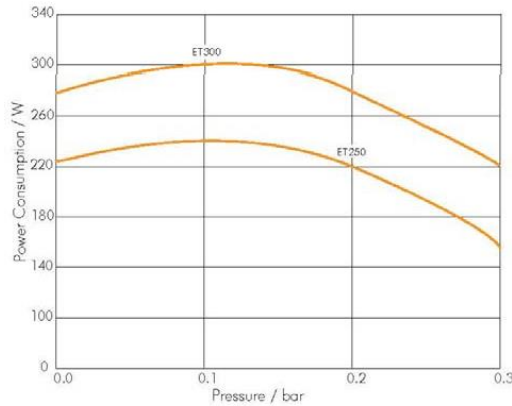


Connections

ET250, ET300 - Outlet connector 26mm (1"), also supplied with a straight rubber connector which can be used to increase pipe size to 29mm (1") ID

Accessories

Elbow connector (included)





TOTALLY SAFE WATER



APPENDIX B LIMITED WARRANTY



Canwest Tanks & Ecological Systems Ltd.

LIMITED WARRANTY

Canwest Tanks & Ecological Systems Ltd. (“Canwest”) provides a limited warranty on the parts in each treatment device for a two (2) year period. All warranty issues shall be resolved through and by Canwest, whose decisions will be final and binding.

Subject to the terms and conditions of this limited warranty, Canwest warrants that the parts included in each treatment device will be free from defects in material and workmanship for a two (2) year period from the earlier of either the date of installation treating household wastewater OR thirty (30) days after purchase from Canwest or a Canwest authorized dealer.

To the extent permitted by law, there are no implied warranties, including, without limitation, any warranty of fitness for any particular purpose, that a device or its parts will be durable for any period of time, or that a device or its parts are of merchantable quality. In jurisdictions that do not allow limitations on implied warranties, or on how long an implied warranty lasts, the above limitation may not apply to you if Canwest sold the device that you purchased in such a jurisdiction.

Canwest’s sole obligation under this warranty is as follows: Canwest shall fulfill this warranty by, in Canwest’s sole discretion, repairing or exchanging any component part, F.O.B. Canwest’s factory that in Canwest’s judgment shows evidence of defects, provided said component part has been paid for and is returned through an authorized dealer, transportation prepaid. The claim under this limited warranty must clearly specify the nature of the defect. The claim must be accompanied by proof of purchase and be received by Canwest within the two (2) year period stated above.

The limited warranty does not cover treatment processes/devices/parts that: (a) have been flooded by external means, (b) have been disassembled, altered, modified or repaired by unauthorized persons, (c) were improperly installed, (d) have been subjected to external damage, (e) have been damaged by any cause including due to altered or improper wiring or overload protection, (f) have damage caused by accident, fire, misuse, neglect, unusual physical or electrical stress, improper or lack of maintenance or use outside of Canwest’s published guidelines (whether published before or after your purchase of the device), (g) have serial numbers or date tags that have been removed or altered, (h) have any parts that were not supplied or manufactured by Canwest, (i) are limited life components or parts that have been subject to normal wear and tear, such as seals, gaskets and coatings (unless they are found by Canwest to have been non-functional or broken upon purchase).

This limited warranty applies only to the treatment process/device and does not include any of the house wiring, plumbing, drainage, or disposal system. Canwest is not responsible for any delay or damages caused by defective devices, parts, components or material, or for loss incurred because of interruption of service, or for any other special or consequential damage or expenses arising from the manufacture, sale, or use of a process/device.



TOTALLY SAFE WATER

Canwest reserves the right to revise, change or modify the construction and design of the treatment process/device for household wastewater or any component part or parts thereof without incurring any obligation to make such changes or modifications in previously sold equipment.

Canwest also reserves the right, in making replacements of component parts under this warranty, to furnish a component part which, in its judgment, is equivalent to the part being replaced.

The maximum liability of Canwest under this limited warranty is expressly limited to the lesser of the price you have paid for the device/process or the cost of repair or replacement of the parts/components that are found by Canwest to be defective. Under no circumstances will Canwest be responsible to you for any other direct or consequential damages caused by the device or process or the failure of the device or process to perform, including but not limited to lost profits, lost income, labor charges, delays in production, and/or idle production, which damages are caused by a defect in material and/or workmanship in its parts. This limitation of liability applies whether damages are sought, or a claim made, under this limited warranty or as a tort claim (including negligence and strict product liability), a contract claim, or any other claim. This limitation of liability cannot be waived or amended by any person and is effective even if you have advised Canwest or an authorized representative of Canwest of the possibility of such damages. Some jurisdictions do not allow the exclusion of limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you if Canwest sold the device that you purchased in such a jurisdiction.

The warranty is expressly in lieu of any other express or implied warranty, excluding any warranty of merchantability or fitness and of any other obligation on the part of Canwest. This warranty gives you specific legal rights, and you may also have other rights which may vary between the Canadian Provinces or legal jurisdictions as well as from state to state in the USA.

(2023)