INSTRUCTION MANUAL

BRAC SYSTEMS

Model W-125

Model W-200

Model W-325

WARNING!!!

Water that has been recycled through the BRAC SYSTEM is not intended for drinking purposes! For this reason, do not install a permanent connection to the grey waterspout (faucet). This outlet is only provided so you can connect a garden hose temporarily to water your garden, or to prime the system pump. Do not use a sprinkler or spray directly onto your vegetables with grey water. Always clearly mark any grey water outlet. BRAC SYSTEMS, and its Representatives or Distributors are absolved of any responsibility, either real or intended, for the misuse of grey water by the consumer.

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Congratulations on the purchase of your new **BRAC SYSTEM**. The **BRAC SYSTEM** can help you save up to 40% on your annual water and sewage bills. With these savings, your **BRAC SYSTEM** could pay for itself within the first five years, and you will help to save the environment and provide a better future for the generations to come.

When integrated into the plumbing of your home, the **BRAC SYSTEM** captures the water used in your showers, bathtubs, and clothes washing machine, and recycles it to flush your toilets. **(See figure 1.)**

The grey water from your bath and laundry enters the **BRAC SYSTEM** through the grey water inlet pipe, where it passes through a filter, and collects in the lower portion of the **BRAC SYSTEM** tank. A 3" overflow pipe connected to your sewer line prevents the tank from overfilling.

A clean water inlet pipe, controlled by a float and valve, assures a minimum level of water in the tank, preventing the pump from running dry, and your toilets from running out of water.

The collected water is drawn through a foot valve by a ½ hp pump with a pressure tank, which provides grey water at pressure to the grey water outlet and the irrigation/priming faucet, supplying grey water to your toilets and garden.

The filter is easily accessed for cleaning, and a cleanout valve is provided for flushing the tank. **(See figure 2.)**

Only a licensed plumber should install the **BRAC SYSTEM**. We recommend that your plumber also install a fresh water bypass and shutoff valve to provide backup clean water to your toilets in the event of a power failure, or should your system require removal for servicing.

Laundry option: While laundry water is suitable for reuse, the presence of lint may increase the frequency of filter cleanings required. Research and testing has shown that in the average household, with each member taking an average of one shower per day, sufficient quantities of greywater are generated by bathing alone to match the amount of average flushes per day in the same household. So you may choose to omit capturing the laundry water when installing your system. You may also consider installing both a traditional drain alongside a greywater drain to the Brac System behind your washing machine. This will allow you to include or exclude your laundry water from greywater collection simply by moving the hooked drain hose behind your washer from one hole to the other.

GREY WATER FAQ

What is greywater?

Greywater is the water generated from the use of the shower, bathtub, hand sink, laundry, kitchen sink, and dishwasher.

Is greywater different from wastewater?

Yes. Household wastewater, also known as sewage, is composed of two distinct sources:

- "blackwater" is wastewater contaminated by feces or urine, and includes wastewater arising from toilet, urinal, or bidet.

- "greywater" is the remaining wastewater coming from the laundry, bathroom and kitchen.

Why should I reuse greywater?

Greywater is a significant water resource, provided it is managed in an environmentally responsible manner, and public health and the health of the household are protected.

By capturing greywater and using it in an appropriate manner as an alternative to your water supply, you can reduce your water consumption. Your water account will reflect this reduction in water use and there will also be positive environmental outcomes.

Is it safe to reuse greywater ?

Yes, if used in an appropriate way. Greywater can contain disease-causing microorganisms such as bacteria, protozoa, viruses and parasites. It may also contain fats, oils, detergents, soaps, salt, nutrients, food and hair derived from household and personal cleaning activities. These constituents can pose both health and environmental risks.

However, the public health risks associated with onsite reuse of domestic greywater are considered low, as the source of the contamination would be from the immediate family. Other sources of transfer of pathogens around the immediate family are considered a higher risk, such as direct contact or sharing of food and utensils. Similarly, the risk of environmental damage from the careful use of greywater is low.

How can I reduce the risks associated with greywater reuse?

The following measures will reduce the health and environmental risks associated with the use of greywater;

- do not use sprinklers to distribute greywater;
- use subsurface irrigation systems;
- do not spray greywater directly onto food plants;
- do not put greywater on lawns where children are likely to play;
- do not irrigate with greywater during periods of wet weather;

- do not allow greywater to enter the stormwater system;
- make sure greywater does not create a nuisance, for example through odours or ponding.

Do I need a plumber?

If your greywater system requires connection to the sewage system, i.e. to the pipes below your sinks, shower or bath, a licensed plumber must do this work.

If you intend to intercept greywater before it enters the sewage system, i.e. before it enters the drain hole of a sink, you can do this yourself. This may be a simple setup in which you bucket water from a sink, or direct the water from your washing machine to your garden.

Can greywater from all parts of the house be reused?

Kitchen

Kitchen wastewater could be heavily polluted with food particles, oils, fats, and other wastes. It can also contain high concentrations of microorganisms. It is often polluted with detergents and cleaning agents, particularly those from dishwashers, which are very alkaline and may be harmful to soils and plants by altering their characteristics in the long term.

For these reasons kitchen greywater is not recommended for use.

Bathroom

Chemical constituents of bathroom greywater include soap, shampoo, hair dyes, toothpaste and cleaning chemicals. Greywater from hand basins is more polluted than bath or shower greywater, but is much lower in volume. Some of these contaminants act as plant nutrients and can be beneficial in the garden, but others can adversely affect plants or soil structure.

Concern is often expressed about people urinating in showers and baths and the associated health aspects of using greywater in the garden. However, urine in a healthy person is sterile. While some bladder infections may pass microorganisms in urine, the potential for these organisms to survive and cause infection is considered remote.

Greywater from the bathroom is suitable for reuse.

Laundry

Greywater from the laundry improves in quality from wash water to first rinse water to second rinse water. Bacterial loads in laundry greywater are not usually high, except when diapers are washed. Chemical contaminants of the wash cycle water are soap, salt, sediment and organic material.

If used for garden watering, the wash cycle water can damage plants and soils and create bad odours.

Rinse water contains a much lower pollutant load and the use of this water poses a much lower threat to the environment and to the public health. Domestic pets, which are washed in the laundry tub, can be a further source of contamination for greywater.

Greywater from the laundry, particularly rinse water is suitable for reuse.

Can I store greywater on my property before I use it?

It is recommended that untreated greywater is not stored for more than 24 hours. When the immediate reuse of greywater is notpractical, for instance during periods of wet weather, greywater should be directed to the sewer system.

What is a greywater treatment system?

A treatment system will remove the bacterial load and chemical pollutants from greywater so that it can be stored. However, satisfactory treatment tends to be neither simple nor cheap. Treatment processes can include filtering, settling of solids, anaerobic or aerobic digestion, chemical removal of pollutants, and disinfection.

My neighbour is reusing greywater, is my property still safe?

Appropriate reuse of greywater is not considered a health threat to neighbouring properties.

What are the environmental risks associated with reusing greywater?

Soil or plants can process many of the contaminants in greywater if the system is not overloaded, including organic material, nutrients, salt and sediment. Nutrients can even be beneficial in moderate concentrations, for example, on lawns but not on native plants.

Some greywater contaminants are not capable of being treated or degraded in the soil. Principal among these is salt, which can comprise up to 30 % of some laundry detergents and can cause soil degredation.

How much greywater do households generate?

The amount of greywater generated by a household will vary greatly depending on the number of occupants, their age, and their water usage patterns.

As a general rule of thumb, the average detached household generates approximately 110,000 litres of greywater per year from the bathroom and laundry. This is equivalent to 300 litres of water per day.

How can I improve greywater quality by using different types of soaps, detergents etc.?

The choice of cleaning products can reduce the environmental impact of greywater. Common washing powders contain sodium salts as bulking agents that produces a saline (salty) greywater. Some detergents and powder cleansers contain boron that can be toxic to plants in high concentration. It is recommended that for clothes washing you select products low in sodium: either liquid concentrates or powdered products that use potassium salts. There are websites that list the sodium content of a range of laundry products.

INSTALLATION GUIDE

Your **BRAC SYSTEM** requires connection to your home's sewer system, and should only be installed by a licensed plumber. This installation guide is intended for information purposes only.

Installation Connections

(To be performed by a licensed plumber)

Grey water inlet pipe: 3“ ABS-DWV drain pipe fitting. Water to be recycled enters the **BRAC SYSTEM** here, from your showers, bathtubs, and laundry.

Ventilation pipe: 3“ ABS-DWV drain pipe fitting. This pipe provides air ventilation to the system.

The grey water inlet and ventilation pipes can be distinguished from each other as follows: The inlet pipe is connected to the filter housing, which drains from the upper half to the lower half of the **BRAC SYSTEM** tank; the ventilation pipe is simply a connector ventilating the upper section of the tank to the outside.

Grey water outlet: A 3/4“ male threaded fitting. Grey water flows out of the **BRAC SYSTEM** under pressure, to provide water to your toilets.

Fresh water inlet: A 3/4“ male threaded fitting. Fresh potable water enters the **BRAC SYSTEM** here, to provide a backup volume of water, should your bathing and laundry activities periodically fail to provide the minimum volume of water necessary to operate the system.

The threads of the grey water outlet and fresh water inlet should be wrapped several times with Teflon tape before connecting.

Priming and irrigation faucet: This faucet accepts a standard garden hose connector, to provide water at pressure for use in your garden. This faucet is also used to prime the system pump, and to release pressure from the system prior to servicing the pump.

Overflow: 3“ ABS-DWV drain pipe fitting. Connects to sewer line.

Cleanout valve: 1” PVC ball valve, female threaded. Used to drain the tank. Connects to sewer line. To prevent damage during shipping, the ball valve may have been removed, and if so, will be placed in the bag with the extra filter. It must be reinstalled prior to system installation. (see “plumbing notes” attachment)

(see figure 3)

Fittings and materials referred to in this document may be subject to change.

Further discussion and diagrams of plumbing particulars, such as the bypass, cross connection contamination prevention, and backflow prevention, are included in a separate

attachment entitled “Plumbing Notes”. Please give the Plumbing Notes to your plumber, as well as this manual, while he or she is evaluating your site pre-installation.

OPERATING INSTRUCTIONS

Before you take your BRAC SYSTEM into service, you must observe a few simple steps:

Float adjustment **(See figure 4.)**

To avoid damage to the fresh water inlet valve during transport, your **BRAC SYSTEM** is shipped with the float disabled. It must be adjusted for the system to function properly.

How the float works.

The float controls the fresh water inlet valve, insuring that a minimum amount of water is always in the system, allowing the system to operate without running the pump dry. It is independent of the greywater components of the system. The float level ONLY controls the MINIMUM level of water in the tank. If your water usage habits always provide more than the minimum level of water, the fresh water inlet system may never need to open during normal operation.

The float connects to the fresh water inlet valve via a control rod. The valve arm is captured between two brass adjustment rings, which can be adjusted up and down the rod with the use of a Phillips head screwdriver. When pulled down, the valve arm opens the fresh water inlet valve, and fresh water flows into the lower section of the tank. When pushed up, the valve arm closes the valve, stopping the flow of fresh water. The upper brass stop controls the level at which the valve opens, and the lower brass stop controls the level at which the valve closes.

The lower brass stop is factory-adjusted, and we recommend that you do NOT change the position of the lower stop. **The upper stop requires adjustment before operating the system.**

To adjust the upper stop:

Loosen the upper stop locking screw.

Pull up on the rod until the lower stop engages the control arm into the upper position.

Lower the rod slightly, so that the lower stop is not pressed tightly against the control arm. (Do not pinch the control arm between the stops, but leave no more than a half inch of space between the two stops.)

Tighten the locking screw on the upper stop.

After adjustment, test the free operation of the inlet valve by pulling up and pushing down on the control rod manually. Fresh water should flow into the lower tank when the rod is pushed

down, and stop when it is pulled up. The rod should also spin freely, and not catch on the control arm. Also, check the level of the water in the lower tank after a short period, to insure that the level is at or above the “MIN” (minimum) mark on the tank, and that the tank does not continue to fill with fresh water well above this mark. (* Due to minor variations in the manufacturing process, your plumber should verify that the “MIN” mark on the tank is sufficiently high enough to prevent the foot valve from sucking air. If your plumber feels that the minimum level should be higher, ask him or her to mark a new minimum level on your tank for you.)

If you notice the control rod binding in the stainless steel guide attached to the deck, preventing it from raising and lowering freely, contact your **BRAC SYSTEMS** distributor for assistance.

While we do not recommend changing the factory minimum water level setting, the minimum level can be raised by sliding both stops down the rod, and lowered by sliding both stops up the rod.

WARNING: Lowering the minimum water level below the factory setting will cause your system to malfunction, and could damage the pump.

Priming the Pump **(See figure 5.)**

Before plugging in your system to the electrical outlet, the pump must be primed with water. To prime the pump connect a hose to the irrigation faucet, holding the top end of the hose above the top of the tank. Open the irrigation faucet. Slowly pour water down the hose until no more water flows down the hose. Close the irrigation faucet. The pump is now primed. Remove the hose from the irrigation faucet.

The pump may also need to be primed if your toilets were flushed several times during a tank-cleaning operation. The need for this re-priming can be prevented by turning off the water supply behind each toilet during a tank cleaning.

Timesaving Tip: If the recommended fresh water bypass has been installed (see additional “Plumbing Notes” insert in your included materials), the system can be easily and instantly primed by opening the fresh water bypass ball valve and the greywater line ball valve. This will force household potable water through the greywater outlet and into your pump and pressure tank. Hold a bucket under the irrigation/priming faucet, and open the faucet valve to release any trapped air. When water begins to flow out of the faucet, your system pump is now primed. Close the bypass valve for normal operation.

ROUTINE MAINTENANCE

As we are unable to determine the number of family members in each particular household, we recommend that you inspect and clean the filter every week. If you realize that the build up of residue in the filter does not warrant cleaning the filter every week, we recommend that you decrease the frequency of inspecting and cleaning of the filter by three days at a time, (every ten days, every thirteen days, every sixteen days, and so on…), until you determine the proper time interval for your particular situation.

Cleaning the filter (See figure 6.)

1. Remove the tank lid.

2. Remove the screw cap from the filter housing.

3. Carefully remove filter from housing.

4. If necessary, soak filter in a 50% water and 50% vinegar solution and then rinse with water.

5. Replace filter in filter housing.

6. Apply a thin layer of petrolium jelly to the rubber o-ring on the screw cap, and replace cap.

7. Replace tank lid.

If the filter is damaged, or has to be replaced for some other reason, please use the extra filter, which has been supplied by **BRAC SYSTEMS.** We recommend that you purchase new filters from your distributor, so that you always have an extra filter on hand.

Cleaning the tank (See figure 7.)

The same principal used for determining the time interval of cleaning the filter holds true for the cleaning of the tank. Under normal circumstances, it should be sufficient to clean the tank once a year. Initially, we recommend that you inspect and clean the tank every three months until you have determined the proper cleaning interval.

IMPORTANT: Do not use the bath, shower or laundry while cleaning the tank!!

1. Unplug the pump.

2. Turn off fresh water supply.

3. Make sure that the clean-out valve is connected to your sewer pipe.

4. Open clean-out valve and empty tank.

5. Close clean-out valve.

6. To clean out the bottom of the tank add a minimum of five litres of vinegar and let soak for ten minutes.

7. Open fresh water supply to rinse out the bottom of the tank, at the same time opening the clean-out valve to remove the residue. Let this continue for five minutes until the bottom of the tank is clean.

8. Close clean-out valve, and with the fresh water supply running, allow the tank to fill until the float valve turns off the fresh water.

9. Plug in the pump.

After cleaning the tank, please flush each toilet once to ensure proper function.

If the toilets are flushed during the cleaning process of the tank, it could be possible that the pump will have to be re-primed. Please follow the instructions as provided in the installation guide. (To prevent the need to re-prime the pump, we recommend that you also shut off the water supply to each toilet, located behind and below the toilet tank, usually to the left. Remember to turn the supply to each toilet back on after the tank-cleaning procedure is complete.)

During the cleaning process of the tank please do a visual inspection of all fittings, connections and the tank to ensure there are no leaks anywhere.

Since it only takes approximately thirty minutes to clean the tank, no one in the household should be inconvenienced by not being able to use the toilet. (Remember there is always one flush left in each toilet tank).

Prevention of bacterial growth and odors

To prevent the growth of bacteria in your **BRAC SYSTEMS** tank, and the emission of odors from your toilet, we suggest that you drop a tri-chlor based tablet, such as the Lysol Brand Continuous Action Toilet Bowl Cleaner tablet into the bottom of your **BRAC SYSTEMS** tank approximately every eight weeks. A more effective and economical alternative is to purchase bulk tri-chlor tablets from a pool supply store. As of this printing, an investment of approximately CDN$40 provides enough tablets for six to eight years of protection. Some jurisdictions require that grey water be dyed blue or green before it is routed into the greywater plumbing. In this case, you should add an inexpensive dying toilet tablet to the Brac tank along with the tri-chlor tablet. If dying your grey water is not required by local codes, you may still want to use a dye tablet in your toilet tanks directly, to improve the visual appeal of your toilet water.

Use of the tri-chlor tablets will result in toilet water that has a slightly chlorinated “pool water” odor. When this odor disappears, it is time to add a new tablet.

Before using the tri-chlor tablets, please read all hazard warnings and cautions on the packaging. Generally, do not touch the tablets with bare skin, or breathe any dust from the tablets.

Procedure for using/replacing tablets:

- Remove the lid of your Brac tank.
- Unscrew and remove the cap from the filter housing.
- Remove the sediment filter.
- Using scissors, cut open the pouch containing the tablet, if necessary.

- Holding the tablet by the pouch, and being careful not to touch the tablet, drop the tablet through the filter housing into the bottom of the tank.
- Replace filter, filter housing cap, and tank lid.
- Dispose of empty pouch carefully. Do not touch any tablet residue or breathe any residual dust.
- Repeat this procedure as necessary, when a faint odor of chlorine is no longer present in your toilet water, or through the filter housing when the filter is removed.

Foaming issues

Depending on the hardness of your water, you may experience some amount of foaming in your toilet tanks, generated as the gray water, which contains residual amounts of soap and detergents, squirts into the overflow tube. Over time, this foam will result in a soap scum forming above the water line of your toilet tank.

This foam/scum presents no functional issues, and will not be noticed unless the cover of the toilet tank is removed. While foaming could be controlled with the introduction of any number of chemical de-foaming agents, the application of such agents would add considerably to the complexity of the Brac System, as well as adding one more chemical into your sewage outflow.

Since this issue does not affect all customers, and varies greatly among those it does affect, Brac Systems has decided not to address this issue chemically. We believe that using the following cleaning procedure makes the most sense. The frequency of cleanings will depend entirely upon the hardness of your water, the amount of foaming you are experiencing (if any), and your own tolerance for soap scum in your toilet tank.

Procedure:

- Shut off the water supply to the toilet.
- Flush the toilet to empty the toilet tank.
- Remove the tank lid, and clean off any soap scum residue inside the tank with a scrub sponge. Use a standard bathroom cleaner for tough soap scum.
- Turn the water to the toilet back on to refill tank.
- Flush the toilet once or twice to flush out any loosened residue that remains in the tank.
- Replace tank lid.

TROUBLESHOOTING GUIDE

Pump runs continuously, or with only brief pauses. Level of water in lower tank is at or above “Minimum” level:

- Irrigation faucet is in use.
  - Normal condition. Hose pressure is provided by the pump and pressure tank.
- Toilet leaking.
  - check toilet flapper valves. A leaking toilet will cause the pump to run continuously.

Pump runs continuously, or with only brief pauses. Water level in lower tank is below “Minimum” level:

No fresh water supply.

- Unplug pump to prevent damage to pump.
- Make sure that the float level in your tank is set properly, and that the float level stop was adjusted after shipping.
- Check fresh water connections to the tank, and make sure that all the valves are open.

If all valves are open, and there is still no fresh water supply, let the water in your your plumber.

Lower tank is full, and draining out of overflow pipe.

Fresh water inlet valve stuck open.

- Check float adjustment and valve operation. Raising the rod should close the valve, and pushing it down should open it. Ensure that the rod slides freely through the steel guide collar. Contact your **BRAC SYSTEMS** dealer if the rod is binding.

Bathing and laundry water use outstrips toilet use.

- Normal condition. Confirm by flushing toilets several times, without running any showers, baths, or laundry, and observing that the water level in the tank drops, and does not immediately rise again.

Float level control rod is binding in the guide collar, preventing the valve from opening and closing freely.

- Contact your **BRAC SYSTEMS** dealer.

There is a small amount of water on the deck under the clean water inlet valve.

- While the clean water inlet valve is open, a drop or two of clean water may drip onto the deck. This condition is normal, and should occur only while the valve is open, and fresh water is entering the tank. The drips should evaporate, and any hard water deposits can be easily removed from the deck with a clean cloth dampened with vinegar.

- If the valve is dripping constantly, even when closed, contact your **BRAC SYSTEMS** dealer.

I have tried all of the above solutions, but my pump continues to run constantly.

- Your pump may be faulty. Unplug the pump, and immediately contact your **BRAC SYSTEMS** dealer for assistance.

BRAC SYSTEMS
CONSUMER WARRANTY

1. Your warranty is valid for a period of 2 years, from date of purchase.
2. This coverage applies against failure, due to factory defects and workmanship. Should the unit fail it will be repaired or replaced F.O.B. our factory without charge, provided that the unit is returned to our factory prepaid.
3. This warranty does not include labour or service charges incurred by removing or reinstalling the unit and damage caused by abuse or a faulty installation.
4. The company shall not be responsible for or have any obligation whatsoever for direct or indirect loss, consequential damage or otherwise inconvenience arising from any failure of the equipment.

IMPORTANT NOTICE
TO THE CONSUMER

If you require any additional information or warranty service with the product you have purchased, please call 1-514-856-2722, before advising or returning the product to the original point of purchase.

This product is warranted two (2) years from date of purchase.

All warranty claims must be directed to the factory. The product will be repaired or replaced at our option. Units covered under warranty will be returned to sender freight “prepaid”. Units no longer on warranty will be returned to sender freight “collect”.

Please be advised that 99% of system problems are caused by an improper installation. By simply contacting our customer service department, we will be pleased to help you with any questions you may have.

Thank you for choosing Brac Systems, the product purchased has been designed to give you years of trouble free service.

All of us at Brac Systems, are committed in building the highest quality product available, and to give our customers the satisfaction they deserve.

The **BRAC SYSTEMS** Team

YOU CAN MAKE A DIFFERENCE

COMPLETE THIS INFORMATION AND RETURN TO BRAC SYSTEMS

Consumer name
_____
Consumer address
_____

_____
Consumer telephone and/or email address
_____
Dealer or distributor name
_____
Dealer or distributor address
_____
BRAC SYSTEMS MODEL Serial number Purchase date
_____ _____ _____

IMPORTANT : Your warranty is null and void if you do not return the above information within thirty (30) days of purchase.

_____
Consumers signature

Mail to:
Brac Systems
3571 Ashby
Montreal, Quebec
H4R 2K3 CANADA