

Owner's Manual

Manual del Propietario

Manuel du Propriétaire



U.S Patent Number 8,322,362
Other/International Patents Pending

Constant Water LLC
Warrenton, VA 20187
www.constantwater.com

Constant Water is a registered trademark

For your records

The model number is located on the shipping boxes of your system.

Model Number: CW280-____W

Purchase Date: _____

Installation Date: _____

Dealer/Installer Name: _____

Dealer/Installer Phone: _____

Constant Water® recommends you keep your purchase receipt together with this Owner's Manual.

Contact Us

Have questions or comments about the Constant Water® system? Feel free to contact us:

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Version Date: 2020

WARRANTY

FULL THREE YEAR COVERAGE ON CONSTANT WATER® SYSTEM PARTS

For three years from the date of purchase, if the Constant Water® system is installed by a certified, licensed, plumbing professional, and operated and maintained in accordance with the owner's instructions furnished with the product, Constant Water® will repair or replace, free of charge, system parts that fail due to defects in materials or workmanship. This warranty is limited only to those defects in materials and workmanship of Constant Water® system components and will not apply to modifications to the home or building, or any water line connections made to the Constant Water® system.

INSTALLATION OVERVIEW

CONTROL UNIT INSTALLATION

1. Unpack all items—Check for damage.
2. Connect air hose to the Control Unit.
3. Remove battery from the Control Unit
4. Mount control unit to the wall with the screws provided –Use 4 screws
5. Reinstall the battery. Connect the system wires to the battery—Red to Positive and Black to Negative
6. Plug the Control Unit into a 110 VAC outlet. This will allow the battery to begin charging.

TANK INSTALLATION

1. Determine tank location.
2. Run plumbing lines to the tank.
3. Install a check valve (not included) between the tank and the water source--This prevents water from back flowing into the well or public water supply.

NOTE: WE RECOMMEND INSTALLING A COLD WATER LOOP OR BYPASS FOR THE CONSTANT WATER TANK

4. Connect the inlet line to the system tank.
5. Connect the air hose to the tank. **HAND TIGHT ONLY! OVERTIGHTENING THIS FITTING WILL DAMAGE THE O-RING**
6. Rotate Control Unit switch to Manual position. The tank bladder will begin filling with air. Allow the control unit to run for 3 minutes per 40-gallons of tank volume.
7. At the end of the required time—UNPLUG THE CONTROL UNIT FROM THE OUTLET
8. Connect the outlet line to the system tank.
9. Open the inlet valve to allow water to flow into the tank.
10. Plug the Control Unit back into the 110 outlet.
11. Rotate the Control Unit Switch to AUTOMATIC POSITION—You will hear air being released from the tank at the bottom of the Control Unit.

When the water stops flowing into the tank, your system is now ready for operation.

TEST SYSTEM OPERATION

AUTOMATIC OPERATION

1. Rotate the Control Unit switch to Automatic.
2. Unplug the control unit from the outlet. This simulates a loss of power to the building.

The system should activate and pressurize to 50 PSI, then shut off.

3. Open a faucet.

As water flows out, pressure in the tank will decrease. Control Unit should reactivate and begin repressurizing the tank to 50 PSI.

4. Close the faucet.

The Control Unit should deactivate when pressure reaches 50 PSI.

5. Plug the Control Unit back into the outlet.

System will deactivate. Air from the tank bladder will be released and the tank will refill.

MANUAL OPERATION

1. Rotate the Control Unit switch to Manual

The system should activate and pressurize to 50 PSI, then shut off.

2. Open a faucet.

As water flows out, pressure in the tank will decrease. Control Unit should reactivate and begin recharging the tank to 50 PSI.

3. Close the faucet.

The Control Unit should deactivate when pressure reaches 50 PSI.

4. Rotate the Control Unit switch to OFF or AUTOMATIC.

System will deactivate. Air from the tank bladder will be released and the tank will refill.



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS



To reduce the risk of electrical shock or injury to persons when in the vicinity of the system, follow basic precautions, including the following:

- Read all instructions before using the system.
- Do not allow any liquids but water from your well or your municipal water supply to enter your system.
- Do not allow children to play on or near the system. Children should be closely supervised when in the vicinity of the system.
- Do not install or store the system where it will be exposed to the weather.
- Do not tamper with the control unit cover or internal components.
- Do not repair or replace any part of the system or attempt any servicing unless specifically recommended in this manual or in published user-repair instructions that you understand and have the skills to carry out.
- See “Electrical Requirements” for grounding instructions.
- Do not place the power cord near a heater. Fire and electrical shock may occur.
- Do not use the power cord near flammable gas or combustibles such as gasoline, benzene, thinner, etc. Explosion or fire may occur.
- Do not disassemble or modify products. Fire and electrical shock may occur.
- Plug in the power cord properly. Fire and electrical shock may occur.
- Do not operate or stop the unit by inserting or pulling out the power plug. Fire and electrical shock may occur.
- Do not damage the power cord or use an unspecified power cord. Fire and electrical shock may occur.
- Do not modify power cord length. Fire and electrical shock may occur.
- Do not share the outlet with other appliances. Fire and electrical shock may occur.
- Always plug into a grounded outlet. Electrical shock may occur.
- Do not use any wall outlet where the socket is loose or damaged. Fire and electrical shock may occur.
- Unplug the unit and disconnect the internal battery if strange sounds, odors, or smoke comes from it. Unplugging the unit and disconnecting the internal battery may avoid electrical shock or fire hazard.
- Hold the plug by the head when removing the plug from the outlet socket. Failure to do so may cause fire or electrical shock.
- Do not operate with wet hands or in damp environment. Electrical shock may occur.
- Unplug the control unit and disconnect and remove the internal battery before cleaning the control unit. Failure to do so may damage the system and cause electrical shock.
- Do not clean the control unit with water. Water may enter the control unit and damage the

system. Fire and electrical shock may occur.

- If water enters the control unit, turn the control switch to OFF and unplug the system. Contact your licensed installer for repair.
- Do not block the air vents of the control unit. Overheating of the air compressor resulting in system damage, fire, or electrical shock may occur.
- Turn the control unit switch to the "OFF" position, unplug the control unit and disconnect the internal battery when not using the system for an extended period of time. The "OFF" position will prevent inadvertent activation of the system in the event of a power outage.
- The enclosed air compressor will become very hot during and immediately after use. DO NOT touch any part of this compressor with bare hands during and immediately after use.

ELECTRICAL REQUIREMENTS

OBSERVE ALL LOCAL CODES AND ORDINANCES.

DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE THE POWER SUPPLY CORD GROUNDING PRONG.

ELECTRICAL GROUND IS REQUIRED ON THIS SYSTEM.


A 110/120-volt 60 Hz, AC only, 15-amp fused and properly grounded electrical supply is required. A time-delay fuse or time-delay circuit breaker is recommended. Use a dedicated circuit, serving only this system.

DO NOT USE AN EXTENSION CORD WITH THIS SYSTEM

RECOMMENDED GROUNDING METHOD

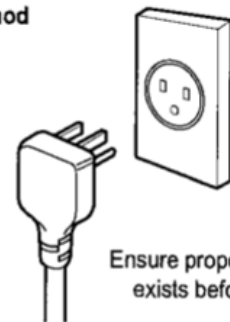
For your personal safety, this system must be grounded. This system has a power supply cord with a 3-prong grounding plug. To minimize possible shock hazard, the cord must be plugged into a mating grounding type wall receptacle and grounded in accordance with the National Electrical Code (ANSI/NFPA 70) latest edition and all local codes and ordinances. If a mating wall receptacle is not available, it is the responsibility and obligation of the customer to have a properly grounded 3-prong wall receptacle installed by a qualified electrician.

⚠ WARNING



- Electrical Shock Hazard
- Plug into a grounded, 3-prong outlet.
- Do not remove ground prong.
- Do not use an adapter.
- Do not use an extension cord.
- Failure to follow these instructions can result in death, fire, system damage, or electrical shock.

Preferred method



Ensure proper ground exists before use

Installation of your Constant Water® system

Location Requirements

The system is designed for installation anywhere in the home or building where it can connect into a COLD WATER line. Selecting the proper location for your system improves performance and minimizes noise.

Though not required, centrally locating your system within the home or building will provide more equal water pressure to water fixtures. Bathrooms or faucets located farthest from the pressure tank during system operation may experience lower, but adequate, water pressures.

You will need:

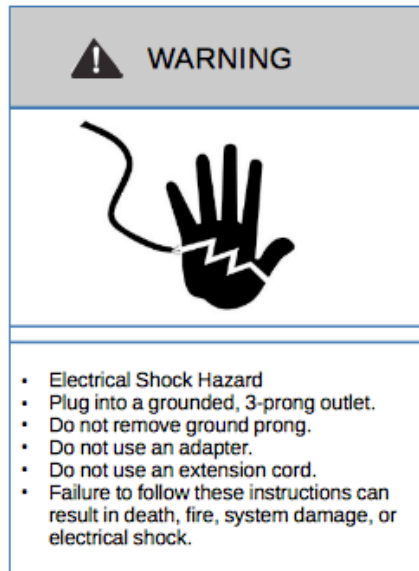
- A grounded electrical outlet located within 6 ft. (1.8 m) of the control unit.
- Care must be taken to ensure the load-bearing capacity of the installation location is sufficient for this weight. A sturdy and solid surface to support the pressure tank is required.
 - 40-gallon system 400 lbs
 - 80-gallon system 700 lbs
 - 120-gallon system 1100 lbs

Do not install the system where the ambient temperature will fall below freezing (32 degrees F/0 degrees C). Exposure to temperatures 32 degrees F/0 degrees C may result in the freezing of water inside the pressure tank. The expansive nature of freezing water can cause damage to, or rupture of, the pressure tank.

Installation Clearances

- Additional spacing should be considered for ease of installation and servicing.
- Additional clearances may be required for wall, door, and floor moldings, and to allow doors to fully open.

Electrical Requirements



The system requires connection to a grounded 110/120-volt, 60-Hz, AC-only electrical outlet within 6 feet of the control unit. To prevent circuit overload, consideration must be given to additional electrical systems or appliances that may be on the same electrical line.

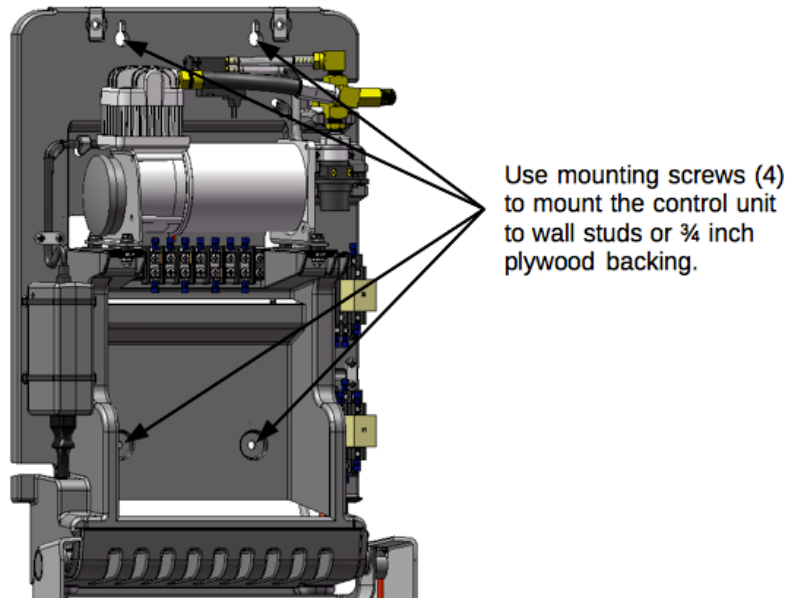
- A 110/120-volt, 60-Hz, AC-only, 15-amp, fused electrical supply is required.
- The system is equipped with a power supply cord having a 3-prong ground plug.
- To minimize possible shock hazard, the cord must be plugged into a mating, 3-prong, grounded-type outlet, grounded in accordance with local codes and ordinances. If a mating outlet is not available, it is the personal responsibility and obligation of the customer to have the properly grounded outlet installed by a qualified electrician.
- If codes permit and a separate ground wire is used, it is recommended that a qualified electrician determine that the ground path is adequate.
- Do not ground to a gas pipe.
- Check with a qualified electrician if you are not sure the system is properly grounded.
- Do not have a fuse in the neutral or ground circuit.

GROUNDING INSTRUCTIONS

- **Do not have a fuse in the neutral or ground circuit.**
- **For a grounded, cord-connected system:**

This system must be grounded. In the event of a malfunction or breakdown, grounding will reduce the risk of electrical shock by providing a path of least resistance for electric current. This system is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the appliance is properly grounded.



Installation of your Constant Water® system

Installation of the Constant Water® system should be accomplished by a licensed and insured plumbing professional.

Arrival, Unpacking, and Inspection

Inspect the carton and water system for evidence of rough handling and internal damages. If contents appear damaged, ask the driver or contact the carrier for a damage claim form to complete. Notify shipper immediately.

- Remove components from the shipping carton.
- Make a complete inspection of the system to ensure:
 - a) there is no physical damage to the system
 - b) all components are present
 - c) the system is clean and dust free
- Pipe, shut-off valves, and fittings are not provided by Constant Water®.

Location of the Constant Water® system

The Constant Water® system is designed for installation anywhere in the home or building where it can connect to a COLD WATER line. DO NOT CONNECT THE CONSTANT WATER® SYSTEM TO A HOT WATER LINE. Selecting the proper location for your system improves performance and minimizes noise.

Care must be taken to ensure the load-bearing capacity of the installation location is sufficient for this weight. A sturdy and solid surface to support the pressure tank is required.

- | | |
|---------------------|----------|
| • 40-gallon system | 400 lbs |
| • 80-gallon system | 700 lbs |
| • 120-gallon system | 1100 lbs |

The system should not be installed anywhere the ambient temperature will fall below freezing (32 degrees F/0 degrees C). Exposure to temperatures below freezing may result in the freezing of water inside the pressure tank. The expansive nature of freezing water can result in damage to, or rupture of, the pressure tank(s).

Various conditions which contribute to proper location are as follows:

- Do not locate the system where environmental conditions offer any risk of water contamination.
- Do not put any liquid other than water from your water well or public water supply into the system.
- Position the tank near the primary water supply line, and electrical outlet.
- Position so that the main water supply shut-off valve is between Constant Water® tank(s) and main water source.
- Turn off the water flow to the house/building while installing system.
- Install the Constant Water® system on a cold water line only. Water temperatures above 100°F (38°C) may damage the tank bladder.
- Allow sufficient space around the installation area for ease of servicing.
- Provide a non-switched 110/120V, 60Hz power source for the control unit.

The Constant Water® system tank can be connected to any water line in the home or building. The Constant Water® system tank should be placed as close to the building's main internal water line as possible. This will reduce the additional plumbing requirements necessary to install the system and ensure the tank is consistently full with fresh water.

When full of water, one Constant Water® tank weighs approximately 8 times its volume pounds. The Constant Water® system tank can be positioned anywhere in the home or building capable of supporting this weight. The tank must be positioned for operation in a location capable of supporting this weight.

NOTE: When full of water, each additional tank connected to the control unit weighs approximately 8 times its volume in pounds. You must ensure the surface structure under the Constant Water® system tank will support this weight.

Mount the Control Unit

The control unit weighs approximately 40 pounds and can be mounted on any surface capable of supporting its weight. If mounted on an existing studded wall surface, the mounting bolts should be positioned to fix the control unit directly to wall studs. If the control unit mounting screws cannot be attached to a wall stud due to the spacing of the wall studs, or the positioning of the control unit prevents attachment to the wall studs, a 3/4 inch piece of plywood large enough to span the wall studs should be mounted to the studs, then the control unit should be mounted to the plywood using the mounting screws.

To mount the control unit, follow the instructions below:

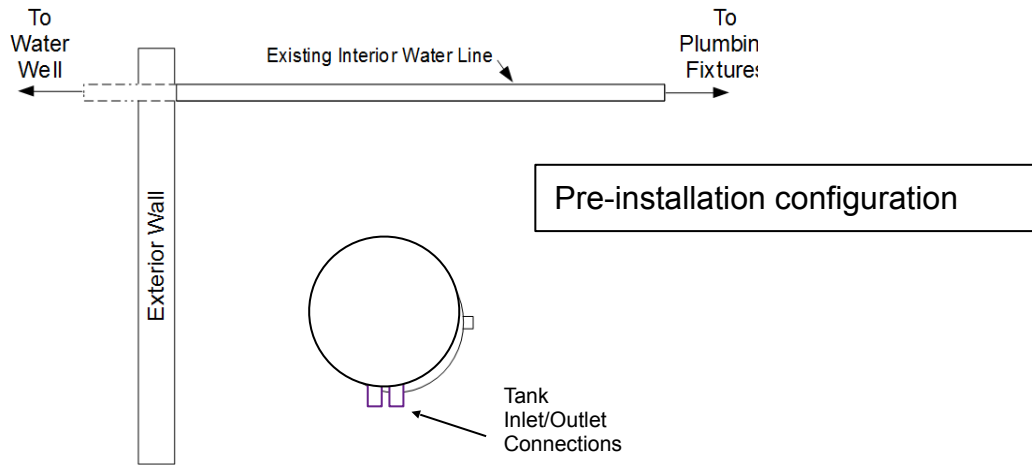
1. Ensure the control unit switch is in the OFF position
2. Open the control unit front panel.
3. Disconnect the black wire from the negative (-) battery terminal
4. Remove the battery
5. Mount the control unit as with the provided mounting screws as described and shown in the graphic above
6. Reinstall the battery
7. Connect the black wire to the negative (-) battery terminal
8. Connect the red wire to the positive (+) battery terminal

The control unit must be mounted in a position such that the air hose will reach the system tank connection without crimping the hose. A crimped air hose during system operation will reduce the air flow from the control unit to the system tank.

Prepare Existing Plumbing

Constant Water® recommends installation of the Constant Water® system be accomplished by a licensed and insured plumbing professional. The warranty will be voided if the system is not installed by a licensed and insured plumbing professional.

Some well systems contain a fair amount of sediment, and home owners may combat this sediment with a whole house filtration system. If you use a whole house filtration system in your home, connecting the Constant Water system tank(s) to the home water supply after the filtration system.



Connect System to Existing Plumbing

Installation of the Constant Water® system should be accomplished by a licensed and insured plumbing professional.

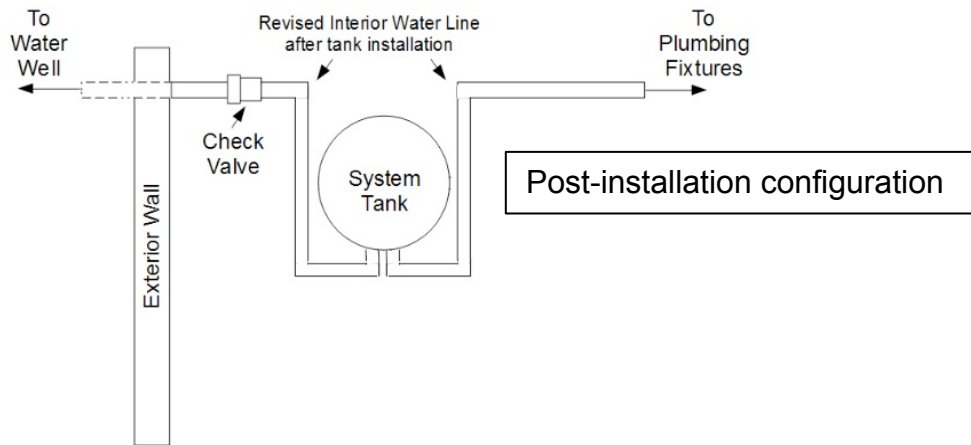
Connecting the Constant Water® tank to the existing water supply consists of cutting the existing water line and connecting the water line to the input and output sides of the Constant Water® system tank.

This installation method ensures the Constant Water® system tank is continuously full and the water remains fresh.

INSTALLATION NOTE: Either threaded connection can be designated as the input or output.

INSTALLATION NOTE: To prevent the Constant Water® system from pressurizing plumbing components prior to the system tank, a check valve should be installed on the Water In of the water line just prior to the system water tank. This will allow water to flow into the Constant Water® system tank unimpeded, but will prevent pressurized water from flowing back into the well or public water system during operation.

INSTALLATION NOTE: A tank drain fitting may be installed after the tank(s) as a means of refilling the tank externally or as an additional means of drawing water from the tank.



Connect the Air Hose(s)

Attach the air hose to the threaded connectors on the control unit and the top of the system tank. **Each end of the air hose should be checked for leaks after filling the tank with water.**

INSTALLATION NOTE: The air hose to control unit threads should have 3-5 wraps of teflon tape or be coated with teflon paste to ensure a leak proof seal.

INSTALLATION NOTE: The air hose to tank connection should be hand tight only. An internal o-ring will ensure a leak proof seal. **DO NOT OVER-TIGHTEN THIS CONNECTION.**

Preparing Constant Water® for Use

PRIOR TO MAKING THE FINAL WATER CONNECTION TO THE TANK, complete the following steps in order. Failure to complete the steps in order will result in incomplete tank filling and reduce the availability of water during system operation.

1. Confirm the Control Unit operating switch is in the "OFF" position.
2. Plug the control unit into a grounded 110/120 volt, 60 cycle outlet.
3. Move the operating switch to "MANUAL"—The system will activate and begin filling the bladder in the system tank with compressed air.

After 5 MINUTES PER 40 GALLONS OF INSTALLED SIZE:

1. UNPLUG THE CONTROL UNIT FROM THE OUTLET.
2. Make the final water connection(s) to the tank.
3. PLUG THE CONTROL UNIT BACK INTO THE OUTLET.
4. Open the water valves to allow well-pressurized water to enter the tank(s).
5. Move the operation switch to the "AUTO" position—You will hear water entering the tank and air being expelled from the tank bladder at the bottom of the control panel.

When the air is completely depleted from the bladder, the tank is full and the system is now ready for completely automatic operation.

System Use

Normal Operation

Auto Mode

Note: The CW280-XX system contains a 30% duty cycle air compressor. Compressor Duty Cycle refers to the amount of time a compressor can be operated in a given time period at 100 PSI and a standard ambient temperature of 72 degrees F. Duty Cycle is determined by $\text{Compressor On Time} / (\text{Compressor On Time} + \text{Off Time})\%$. If the Duty Cycle time is exceeded, an internal Reset Thermal Protector may activate to allow the compressor to cool to a normal operating temperature. The compressor will restart when internal Reset Thermal Protector reaches its normal operating temperature.

Select “AUTO” mode for automatic system activation during a loss of power to the home or building. This setting is the primary operating mode for homes/buildings on well water.

With “AUTO” mode selected, when a loss of power to the home/building is experienced, the system will automatically activate. You will hear a brief activation of the air compressor in the control unit (approximately 10 seconds) as the water in the tank(s) is/are being pressurized to approximately 50 psi. The compressor will shut off when the tank reaches 50 psi. As water is drawn from the system during water use in the home/building, the air compressor will activate again to repressurize the tank(s) to 50 psi, then the air compressor will automatically shut off. This cycle will continue until the water in the tank(s) is/are depleted or until the power is restored to the home/building.

When power returns to the home/building, the system will deactivate and you will hear air bleeding from the bladder through the control unit. Deactivation will take approximately 10 minutes (per tank). The system was designed to deflate slowly to ensure a complete fill of the tank without air accumulating at the top, and in the event that power loss occurs shortly after returning, the compressor won't have to completely refill the tank with compressed air. This design feature will minimize drain on the battery in the event of an immediate re-loss of power.

Manual Mode

Note: The CW280-XX system contains a 30% duty cycle air compressor. Compressor Duty Cycle refers to the amount of time a compressor can be operated in a given time period at 100 PSI and a standard ambient temperature of 72 degrees F. Duty Cycle is determined by $\text{Compressor On Time} / (\text{Compressor On Time} + \text{Off Time})\%$. If the Duty Cycle time is exceeded, an internal Reset Thermal Protector may activate to allow the compressor to cool to a normal operating temperature. The compressor will restart when the internal Reset Thermal Protector reaches its normal operating temperature.

Select “MANUAL” mode to activate the Constant Water® system for failure of the well pump or loss of the community water supply.

The Manual Mode permits activation of the system without the loss of electricity to the dwelling or building. While developed for automatic activation due to loss of electrical power to your home or business, loss of your water supply can also occur due to the failure of your well pump, or loss/contamination of the public or community provided water due to extreme weather conditions such as hurricanes, flooding, and other natural or man-caused disasters.

Off Mode

Select “OFF” mode for maintenance of the Constant Water® system or for extended absence from the home/building.

Should maintenance on your system be required, the “OFF” mode prevents activation of the system with removal or loss of power. Additionally, if you plan to be away from your home for an extended period of time, the “OFF” mode prevents your system from activating while you are away from home.

Water Tips

Understanding Water Consumption

During installation, your licensed, insured, plumbing professional should conduct a thorough inspection of your plumbing system for leaks that may waste water during a water emergency.

Faucets

Sink faucets can have flow rates of 2 gallons per minute or higher. During emergency conditions, use only the amount of water necessary to complete a task.

Leaky Faucets

Leaky faucets waste water in every condition. Check and maintain your faucets regularly to prevent water waste. Plumbing leaks in the home/building will waste the water you need during a water emergency.

Toilets

Toilets consume a great deal of water. Even modern low-flow toilets can consume 1.6 gallons per flush, and older toilets can consume 3 or more gallons per flush.

Shower and Showering

Sometimes a shower is more than a luxury, it's a necessity. To minimize your water consumption during a shower, consider the following actions:

1. TAKE A COLD SHOWER IF YOU CAN STAND IT!! A warm shower will consume significant amounts of your backup water supply as the cold water is pushed through the line before the hot water arrives at the shower head. Hot water is pushed from the hot water tank by forcing cold water into the bottom of the hot water tank.
2. If a warm shower is required (or simply desperately desired), select the shower closest to the hot water heater. Selecting the shower closest to the hot water heater will minimize the amount of cold water that must be pushed through the plumbing lines before the hot water reaches the shower head.
3. Run the shower on FULL HOT until warm water begins flowing from the shower head. Then turn off the water.

SAFETY NOTE: TO PREVENT INJURY, ALWAYS CAREFULLY TEST THE TEMPERATURE OF THE WATER BEFORE STEPPING INTO THE WATER STREAM

4. When showering, turn on the water just long enough to wet down your entire body. Then turn the water off.

5. Apply soap and wash as you would normally.
6. Turn on the water and rinse quickly. Turn the water off as quickly as possible to prevent wasting your backup water supply.
7. During power outages, avoid taking showers or using plumbing fixtures that require a sump pump. If you have no power, your sump pump may not function either.

System Care

Periodic checks will ensure your system is operating properly and ensure the maximum amount of backup water is available during an emergency.

Testing the System

1. **Testing the "AUTO" activation and pressurization:** When the control switch is in the "AUTO" position, removing power from the system should activate the system and pressurize the tank to 50 psi. The compressor will shut off when pressurization reaches approximately 50 psi. Pressurization of the full tank only takes 5-10 seconds per tank.

Draw water from a nearby faucet. As pressure in the Constant Water® system tank drops, the compressor will turn on at approximately 30 psi to repressurize the tank.

Restoring power deactivates the system and depressurizes the tank.

2. **Testing the "MANUAL" activation:** With 110/120 VAC power available to the **Constant Water®** control unit, rotate the control switch to "MANUAL" to activate the system and pressurize the system as described above. After pressurizing the tank, rotating the control switch to the "OFF" or "AUTO" position will deactivate the system and depressurize the tank as described above.

Draw water from a nearby faucet. As pressure in the Constant Water® system tank drops, the compressor will turn on at approximately 30 psi to repressurize the tank.

Restoring power deactivates the system and depressurizes the tank.

Having completed these periodic tests and inspections, you should feel comfortable knowing 40-120 gallons of water, depending on the size of the installed tank(s), will be available during an emergency.

Periodic Maintenance

Constant Water® recommends an annual inspection of all the tank fittings and connections by a licensed, insured plumbing professional. Additionally, we recommend an annual check of the Constant Water® system battery. When the fully charged battery strength falls to 16 amp hours or below, the battery should be replaced.

Leaving Home for an Extended Period

If you are planning to be away from your home/building for an extended period of time, consider placing the Constant Water® system in the "OFF" mode. Turning the Constant Water® to the "OFF" mode will prevent system activation and pressurization of the water while you are away. If a pipe or fixture leaks and the system activates while you were away, the leaks could result in the complete depletion of your emergency water supply without your use.

System Diagram

Constant Water® Control Unit Chassis Assembly Components

