

Whole House Neutralizing System

Whole House Calcite Backwashing Filter WH-CALCITE-BW



- 1. Read all instructions carefully before operation.
- 2. Avoid pinched o-rings during installation by applying NSF certified lubricant to all seals (provided with install kit.)
- 3. This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Tierl Technical Support: 1-855-378-9116

| READ THIS PAGE FIRST BEFORE STARTING INSTALLATION | |
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TIER1_WH_CALCITE_BW_948 TIER1_WH_CALCITE_BW_1054

TIER1_T1W_WH_CALCITE_BW_948 TIER1_T1W_WH_CALCITE_BW_1054

READ THIS PAGE FIRST

BEFORE STARTING INSTALLATION

- Read this manual thoroughly to become familiar with the device and its capabilities before installing or operating your water filter. Failure to follow instructions in this manual could result in personal injury or property damage. This manual will also help you to get the most out of your filter.
- This system's installation must comply with all state or local regulations. Check with your local public works department for plumbing and sanitation codes. In the event the codes conflict with any content in this manual the local codes should be followed. Consult your licensed plumber for installation of this system.
- This water filter is designed to operate on pressures of 30 psi to 125 psi. If the water pressure is higher than the maximum use a pressure reducing valve in the water supply line to the filter.
- This unit is capable of operating at temperatures between 40°F and 110°F (4°C - 43°C). Do not use this water filter on hot water supplies.
- Do not install this unit where it may be exposed to wet weather, direct sunlight, or temperatures outside of the range specified above.

INSTALL NOTES & SAFETY MESSAGES Watch for the following messages in this manual:

NOTE

Do not remove or destroy

the serial number. It must be

referenced on request

for warranty repair or

replacement

Disassembly while under

pressure can result in flooding.

ELECTRICAL SHOCK HAZARD!

Unplug the unit before

removing the cover or accessing any internal control ports.

CAUTION!

WARNING!

- Avoid pinched o-rings during installation by applying (provided with install kit) NSF certified lubricant to all seals.
- Filters are commonly exposed to high levels of iron, manganese, sulfur, and sediments. Damage to pistons, seals, and or spacers within the control valve are not covered in this warranty due to the harsh environment.
- It is recommended to regularly inspect and service the control valve on an annual basis. Cleaning and or replacement of piston, seals, and or spacers may be necessary depending on how harsh the conditions are.
- Do not use water that is microbiologically unsafe without adequate disinfection before or after this system.
- This publication is based on information available when approved for printing. Continuing design refinement could cause changes that may not be included in this publication. The manufacturer reserves the right to change the specifications referred to in this literature at any time, without prior notice.

NOTE: used to emphasize installation, operation or maintenance information which is important but does not present a hazard.

CAUTION: used when failure to follow directions could result in damage to equipment or property.

WARNING: used to indicate a hazard which could cause injury or death if ignored.

SPECIFICATIONS

MODEL SPECIFICATIONS

| MODEL MEDIA | | FLOW RATE USGPM | | | MINERAL | PIPE SIZE | | |
|---------------------|-------|-----------------|------|----------|---------|-----------|-----------|-----------------|
| MODEL CU FT | CU FT | SERVICE | PEAK | BACKWASH | RATING | TANK SIZE | INCHES | SHIP WEIGHT LDS |
| NEUTRALIZING FILTER | | | | | | | | |
| CALCITE-BW-948 | 1.00 | 5.0 | 8.0 | 4.0 | - | 9 X 48 | 3/4" - 1" | 120 |
| CALCITE-BW-1054 | 1.50 | 8.0 | 10.0 | 5.0 | - | 10X54 | 3/4" - 1" | 155 |

OPERATING CONDITIONS

| Working Temperature | 34-110°F (1-43°C) (Do not subject the unit to freezing temperatures) | | | |
|---------------------|--|--|--|--|
| Working Pressure | 30-125 PSIG (137-861 kPa) | | | |
| Voltage | 120V / 60 Hz | | | |

- At the stated service flow rates, the pressure drop through these devices will not exceed 15 psig.
- The manufacturer reserves the right to make product improvements which may deviate from the specifications and descriptions stated herein, without obligation to change previously manufactured products or to note the change.
- Do not use water that is microbiologically unsafe without adequate disinfection before or after the system.
- Peak flow rates intended for intermittent use only (10 minutes or less) and are for residential applications only. Do not use peak flow rate for commercial applications or for a continuous rate when treated water supplies are geothermal heat pump, swimming pool, etc.
- For satisfactory operation, the pumping rate of the well system must equal or exceed indicated backwash flow rate.
- All units come with plastic bypass.

WATER AND TIME CONSUMED DURING REGENERATION

| UNIT SIZE | BACKWASH MINUTES | RAPID RINSE MINUTES | TOTAL TIME OF REGENERATION | TOTAL WATER CONSUMED DURING REGENERATION (GAL) |
|-----------|---------------------|------------------------|-------------------------------|--|
| 948 | 10 | 10 | 20 | 80 |
| 1054 | 10 | 10 | 20 | 100 |

SPECIFICATIONS

SYSTEM DIMENSIONS

| MODELS | A (INCHES) | B (INCHES) |
|--------|------------|------------|
| 948 | 55.5 | 9 |
| 1054 | 61.5 | 10 |



BASIC PRINCIPLES

The success of the installation will depend, to a great extent, on advanced planning and preparation. Careful attention to the location of the unit, accessibility to electrical and drain facilities, and the availability of the proper tools will ensure a professional-looking installation.

Of utmost importance is the assurance that the filter has been properly applied and meets all specifications.

APPLICATION

Correct application is directly associated with the performance and life expectancy of any water filter. It is important, therefore, to understand how your Water Filter functions and to know its capabilities and limitations so that a correct application can be made.

By following the guidelines and recommendations set forth in this manual, you can be certain your filter is applied correctly.

NOTES

Automatic Water Filter with Neutralizing Media will neutralize slightly acid water (pH 5.2 to >6.8) and thus help to prevent unsightly brown or green stains due to corrosion of household plumbing.

If the water to be treated has a pH less than 5, a high hardness, or a high carbon dioxide level, this might not be applicable; a solution feeder should be used. Because this filter adds hardness, it should be used prior to a softener.

BASIC PRINCIPLES

CONTROL VALVE RENEGERATION SEQUENCE

The regeneration cycle goes through 3 steps.

- 1. Backwash (minimum 30 psi inlet pressure required): During the backwash cycle, water flows upwards through the bed, expanding the media and carrying any contaminants trapped within it to the drain.
- 2. **Rapid Rinse:** During the rapid rinse cycle, water flows downwards through the bed, settling the media and carrying any precipitated contaminants trapped within it to the drain.
- **3. In-Service Position:** The unit then returns to the In-Service position. While this happens water continues to enter the tank.



CAUTION!

Do not use where the water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.

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UNPACKING/INSPECTION

Be sure to check the entire unit for any shipping damage or parts loss. Also note damage to the shipping cartons. Contact the transportation company for all damage and loss claims. The manufacturer is not responsible for damages in transit. Small parts, needed to install the filter, are in a parts box. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.



BEFORE INSTALLATION



Inspecting and Handling*

Inspect the equipment for any shipping damage. If damaged, notify the transportation company and request a damage inspection. Damage to cartons should also be noted.

Handle the filter unit with care. Damage can result if it is dropped or set on sharp, uneven projections on the floor.

Do not turn the filter unit upside down.

To Ensure this Product Functions Properly:

Your feed water line size to the unit must be a minimum of 3/4 inch with an operating pressure of no less than 30 psi and no more than 125 psi.

MECHANICAL:

Do not use petroleum based lubricants such as petroleum jelly, oils or hydrocarbon based lubricants. Use only 100% silicone lubricants (grease packet provided in parts kit). All plastic connections should be hand tightened only. Teflon tape may be used on connections that do not use an O-ring seal. Do not use pliers or pipe wrenches except where indicated by Nut shape (eg. pipe adapters) All plumbing must be completed according to local codes. Soldering connections should be done before connecting any pieces to the pipe as excessive heat can damage them.

Tools Required for Installation:

NOTE: We recommend installation only be completed by a competent installer or plumbing professional to insure this product is installed in accordance with local plumbing codes.

► Two adjustable wrenches

- Additional tools may be required if modification to home plumbing is required.
- Plastic inlet and outlet fittings are included with the filter. To maintain full valve flow, 3/4" or 1" pipes to and from the filter fittings are recommended. You should maintain the same, or larger, pipe size as the water supply pipe, up to the filter inlet and outlet.





- Some codes may also allow PVC plastic pipe.
- ALWAYS install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the filter for repairs if needed, but still have water in the house pipes.
- **5**/8" OD drain line is needed for the valve drain.

NOTE

All government codes and regulations governing the installation of these devices must be observed.



If the around from the electrical panel or breaker box to the water meter or underground copper pipe is tied to the copper water lines and these lines are cut during installation of the Noryl bypass valve and/or poly pipe, an approved grounding strap must be used between the two lines that have been cut in order to maintain continuity. The length of the grounding strap will depend upon the number of units being installed and/or the amount of copper pipe being replaced with plastic pipe. See Fig. 1.

NOTE

Check your local electrical code for the correct clamp and cable size.

NOTE

If a severe loss in water pressure is observed when the filter unit is initially placed in service, the filter tank may have been laid on its side during transit. If this occurs, backwash the filter to "reclassify" the media.

*NOTE

Due to transportation and climatic conditions all connections including the valve to the tank need to be checked at time of installation and tightened if necessary.

PREPARATIONS





Unplug the riser tube, carefully position the valve over it and turn the valve into the threads in the fiberglass tank, tightening securely into tank. **Note:** Ensure that the internal O-ring in the valve fits securely over the riser tube. Silicone grease (part # 92360) or other food grade lubricant may be applied to the O-ring to ease installation of the riser tube.



Lube the bottom Valve Orings with the grease supplied, Attach the Upper Basket. Unscrew the spill cap. Carefully Slide the D-Tube inside the Valve and Screw the Valve inside the Tank such that the power cord doesn't get caught between the valve and the tank.



DO NOT use petroleum based lubricants as they will cause swelling of O-ring seals.



Make sure that the unit is de-pressurized before conducting this task.

NOT

Some medias like those used in NU Models are sacrificial and deplete faster depending on inlet water conditions and usage. The media replenishment is more frequent in high water usage and more acidic water cases. The dome hole models are available and supplied in which the dome hole is available for a quick addition or replenishment of media in the tank.



PREPARATIONS

INSTALLATION STEPS

Determine the best location for your water filter system, bearing in mind the location of your water supply lines, drain line and 120 volt AC electrical outlet. Subjecting the system to freezing or temperatures above 110°F will void the warranty.

Please notice the inlet and outlet labels on the valve as shown here to determine the position of the equipment

Facts to Remember When Planning Your Installation

- Inlet Outlet
- 1. All installation procedures must conform to local and state plumbing codes.
- 2. Outside faucets used to water lawns and gardens should not supply untreated water, replace untreated water with feed water to the unit. If necessary to do this please install check valve. A new water line is often required to be connected to supply untreated water to the inlet of the water filter and to the outside faucets.
- 3. Make sure the bypass is attached well to the control valve. Connect the straight or elbow connectors to the bypass with red clips. Connect the inlet and outlet of the water filter to the plumbing of the house. The control valve must not be submitted to temperatures above 43°C (110°F). When sweat fittings are used, to avoid damaging the control valve, solder the threaded copper adapters to the copper pipe and then, using Teflon tape, screw the assembly into the bypass valve. Do not use pipe thread compound as it may attack the material in the valve body.
- 4. Apply Teflon Tape and O-rings to the fittings.
- 5. Connect Filter to the house plumbing. Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.
- **6. Drain Line connection:** Using Teflon tape, screw the 1/2" hose barb and attach o-ring into the drain port in the valve. Attach drain hose to the hose barb and tighten securely with a hose clamp. Run the drain line to a floor drain or a laundry drain. Complete any necessary plumbing.
- 7. Using the Allen Key (included), place the unit in the bypass position. Slowly turn on the main water supply. At the nearest cold treated water tap nearby remove the faucet screen, open the faucet and let water run a few minutes or until the system is free of any air or foreign material resulting from the plumbing work.
 - 8. Make sure there are no leaks in the plumbing system before proceeding. Close the water tap when water runs clean.

INSTALLATION

Connect Filter to the house plumbing. Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.



STARTUP INSTRUCTIONS



1. Connect the transformer to the valve. Plug the 12-volt transformer into a 120 VAC 60 Hz outlet.

Familiarize with Button Configuration:



Key Pad Configuration:



This function is to enter the basic set up information required at the time of installation. This function is to accept the values if changed and advance to the next page in

the menu. These buttons are used to increase or decrease the value of the settings while in the programming mode.



3. Power and Program the Valve

REMAIN DAYS 03 Attach the Transformer cable to the valve and plug in the transformer to the 110V Power outlet. you will notice the two screens on right will alternate. 1. Press MENU key to advance to TIME OF DAY. TIME OF DAY will flash. **2.** Press the UP or DOWN key (\blacktriangle) to adjust the TIME OF DAY. Press & hold the UP or DOWN key (\bigstar) **(v**) to quickly advance the hour and minutes. When desired time is displayed press SET to advance to the DAYS setting. DAYS will flash.

3. Press the UP or DOWN key (\blacktriangle) (\blacktriangledown) to adjust the DAYS (Min 1.Max 199). When desired clays is displayed press SET (∎)

KEYPAD



MANUAL REGENERATION

Manual Regeneration Using Keypad

Press "Setting Key" Once for Delayed Regenerations or Hold for 5 Seconds for Immediate Regeneration

Below is the sequence of Regeneration cycles

- 1. Backwash
- 2.Brine
- 3. Rinse
- 4. Brine Refill



Manual Regeneration

To start an immediate regeneration turn the knob clockwise from the service position (9:00) to the 10:00 position. Within a few seconds the an immediate regeneration will begin. Using the knob you can manually advance to the next position. Pressing any button will also advance to the next position.

For Delayed Regeneration, Press Settings Button Once



TROUBLESHOOTING GUIDE

| Problem | Cause | Correction |
|---|---|--|
| 1. Filter bleeds taste and odor or sediment | A. Bypass valve is open B. Electrical service to unit has been interrupted C. Defective or stripped media bed D. Quality of water has worsened E. Filter capacity too small F. Filter not backwashing enough G. Excessive water usage - calendar clock models | A. Close bypass valve B. Assure permanent electrical service (check fuse, plug or switch) C. Replace media D. Have water sample analyzed to determine any change E. Replace with larger unit or add another filter F. Be sure flow control is not clogged or drain line restricted. Be sure water pressure has not dropped and that pump has sufficient capacity G. Increase frequency of regeneration. Make sure there are no leaks in toilets or sinks |
| 2. Filter fails to regenerate | A. Electrical service to unit has been interrupted B. Timer is defective C. Power failure D. Timer motor does not run | A. Assure permanent electrical service (check fuse, plug or switch) B. Replace timer C. Reset time of day D. Replace defective motor |
| 3. Filter regenerates every day | A. Faulty gear train | A. Check the mechanical linkage on the timer control to eliminate possible binding in the gear train |
| 4. Loss of water pressure | A. Iron or turbidity build-up in filter B. Filter not regenerating often enough C. Not enough water volume or pressure to backwash properly | A. Clean control and treat bed with Iron Out. Increase frequency of regeneration B. Increase frequency of regeneration C. Correct water supply problem |
| 5. Loss of media through drain line | A. Air in water system B. Backwash rate too fast | A. Assure that well system has proper air eliminator control. Check for dry well condition B. Check drain flow control for proper flow rates |
| 6. Drain flows continuously | A. Foreign material in control B. Timer motor stopped or jammed | A. Remove piston assembly and inspect bore. Remove foreign material and check control in various regeneration positions B. Replace timer motor |



Familiarize with Button Configuration:

Key Pad Configuration:



This function is to enter the basic set up information required at the time of installation.



This function is to accept the values if changed and advance to the next page in the menu.

These buttons are used to increase or decrease the value of the settings while in the programming mode.



PROGRAMMING LEVELS

There are 3 levels to the valve program. Master options and Factory options are typically adjusted at the factory. These options link the PCB function with the type of control valve and should not be tampered with. Advanced options are used to configure the unit when the valve is assembled to the tank so that it can function as the proper size and intended system operation. Settings are the final options chosen when the unit is installed to a specific location.

| PROGRAM LEVEL | USER ACCESS |
|------------------|--|
| MASTER (III) | These settings are programmed by the factory. The settings are important for the operation of the valve that should only be changed by a qualified person. |
| FACTORY (II) | These settings are programmed by the factory and should be adjusted when the valve is assembled into a unit or system. It contains important settings so the valve will operate properly for the type of system it is intended for. The settings should only be changed by qualified person. |
| USER SETTINGS(I) | These settings are programmed when the unit is installed. The settings should only be adjusted by a qualified person. |

MAIN DISPLAY OPTIONS

The main display page according to the regeneration mode setting. The display will alternate between the time of day, remaining gallons, and remaining days.



MASTER OPTIONS (LEVEL III)



VALVE TYPE

The valve must be designated as either SOFTENER or FILTER. This change will determine what options are available in the Factory Settings.

METER RATIO

The meter ratio calibrates the pulse from the flow meter into gallons. This value is factory set and should not be changed.

DELAY SETTINGS

The delay settings are used to precisely stop the motor / piston in the correct position. This value is factory set and should not be changed.

CAUTION:

The values in this page are for illustration purpose and can be changed by the factory without notice. Please contact Customer Service to confirm proper settings.

FILTER

VALVE





FACTORY OPTIONS (LEVEL II)

Press UP or DOWN key 🔺 🔻 Hold until you hear a beep (3 seconds).

Press UP or DOWN key (To change value.

Press **SET** key (**■**) accept change and advance to next page.

SOFTENER MODE



FILTER MODE



CAUTION:

The values in this page are for illustration purpose and can be changed by the factory without notice. Please contact Customer Service to confirm proper settings.

USER SETTINGS (LEVEL I)

Press **SET** key

Press UP or DOWN key

to change value.

Press SELECT to accept change and advance to next page.





FILTER MODE



CAUTION:

The values in this page are for illustration purpose and can be changed by the factory without notice. Please contact Customer Service to confirm proper settings.

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TECHNICAL SUPPORT

QUESTIONS?



For questions about your Tier1 whole home water system product installation or performance troubleshooting, please call Tier1 Technical Support at **1-855-378-9116** Monday - Friday, 8 am - 5 pm central time or send an email to support@tier1water.com.



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