Culligan®

Culligan® Sulfur-Cleer™ Automatic Water Filter Owners Guide

Thank You

And Welcome To Your New World Of Better Living With Culligan Water.

This system and its installation must comply with state and local regulations. The System is ONLY to be supplied with cold water.

The Culligan® Sulfur-Cleer™ water filters have been tested against WQA S-200 for the effective reduction of iron up to 1,000 gallons and WQA Test Protocol 04-001 and NSF/ANSI Standard 42 for the effective reduction of hydrogen sulfide as verified and substantated by test data.

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

For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing Code 248 CMR shall be adhered to. Consult your licensed plumber for installation of the system. This system and its installation must comply with state and local regulations. The use of saddle valves is not permitted.

If this is your first experience having filtered, conditioned water in your home, you'll be amazed at the marvelous difference it makes. We promise that you'll never want to be without it again.

Congratulations, too, on selecting one of the "first family" of water filters in the prestigious Culligan Sulfur-Cleer™. With Culligan's many years of knowledge and experience in water treatment, you can be confident that the model you selected has been designed and engineered to provide years of service with a minimum of care and attention.

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Culligan® 10″ Sulfur-Cleer™ Filter with Fiberglass Tank

Specifications

Control Valve	1″ 5-cycle reinforced thermoplastic
Timer	Electronic Circuit Board
Overall Conditioner Height	61″
Media Tank Dimensions (D x H)	10″ x 54″
Filter Media Type	1.5 cu. ft. CIM
Underbedding	Cullsan®, 20 lbs.
Capacity[1]	1000 gallons
Freeboard[2]	18″
Max. Clear Water (Soluble) Iron	10 ppm
Max. Hydrogen Sulfide[5]	8 ppm
Minimum Alkalinity	100 ppm
pH	7.0 - 8.5
Service Flow @ Pressure Drop (Clean Bed) Normal	5 gpm @ 4 psi
Maximum[3]	3 gpm @ 5 psi
Operating Pressure	20-60 psi
Operating Temperature	33-120° F (1-48° C)
Electrical Requirements	120 Volts/60 Hz
Power Consumption, Continuous/Maximum	7 watts/270 watts
Drain Flow, Maximum	5.5 gpm
Backwash Regeneration Time	1 - 99 minutes
Eduction	1 - 99 minutes
Fast Rinse	1 - 99 minutes

1 Capacity based on 5 gpm (10″ unit) and 10 mg/L of dissolved iron

2 Measured from top of media bed to top of surface of tank threads (backwashed and drained)

3 Max flow rates and pressure drop characteristics have not been certified by the Water Quality Association.

4 For the purposes of plumbing sizing, only the service flow rate and corresponding pressure drop may be used.

5 Hydrogen Sulfide will be reduced significantly on water containing less than 5 ppm.

The max specified flow rate at which the system will deliver treated water as certified by the Water Quality Association is defined as service flow.

Introduction

Operation

Step 1.

Service Cycle

In the service cycle, raw water enters the inlet port of the media tank. The oxidation process begins. This air/water contact oxidizes the iron and hydrogen sulfide in the water. Oxidized iron particles are trapped by the filter bed as the water passes through. Filtered water enters the lower distributor and travels up the distributor tube to the outlet port on the filter valve.

Step 2.

Aeration Operation Air Recharge Cycle

When energized, the air pump sends air through the solenoid valve into one end of the shuttle valve. Once air pressure in the shuttle valve is greater than the water supply pressure at the other end of the shuttle valve, the piston shifts to the open position. In the open position, the bleed-off port discharges excess water and old air to the drain port through a flow restrictor. Simultaneously, the air inlet port opens to provide a direct connection between the air pump and the top of the media tank. The air pump runs for a preset period of time recharging the head of air in the media tank.

Air Recharge Shut Off

The timer turns power off to the air pump and the solenoid valve at the end of the recharge cycle. The solenoid valve then closes the port between the air pump and the shuttle valve. The port between the shuttle valve and the atmosphere opens and releases air pressure. This allows water pressure to shift the piston to the closed position. With the piston in the closed position, the air recharge inlet port is closed and direct communication between the bleed off tube and the drain port is also closed.

Timer Operation

A timer controls the air recharge cycle and how frequently it occurs. The timer simultaneously energizes the air pump and the solenoid valve. After a preset amount of time, the timer shuts off the air pump and de-energizes the solenoid valve.

Solenoid Valve Operation

The solenoid valve is a three-way valve having ports that connect to the air pump, shuttle valve and the atmosphere. In the service cycle, the solenoid valve is de-energized and closes the port to the air pump, providing a positive shut-off to the pump. This prevents water from backing up into the air pump and damaging the pump. In the air recharge cycle, the solenoid valve closes the port to the atmosphere and opens the port from the air pump.

Shuttle Valve Operation

In the service position, water pressure holds the shuttle valve piston in the closed position, trapping the airhead in the media tank and closes the air recharge inlet port and drain port. During air recharge cycle, air pressure is greater than the water pressure and forces the shuttle valve piston in the open piston. The shuttle valve has an internal pressure relief valve that will relieve pressure (greater than 100 psi) that may build up in the media tank. This precautionary function protects components from failure due to excessive pressure.

Step 3.

Filter Tank Operation - Backwash Cycle

Reversing the flow of water through the filter bed and backwashing dirty water to the drain cleans the filter bed. Raw water enters the filter control valve through the inlet port and is directed down the distributor tube and out the lower distributor at the bottom of the tank, flowing upward through the multimedia filter bed toward the top of the tank into the control valve. Water is then directed through a specific flow restrictor and out the drain port to be discharged to drain.

Step 4.

Filter Tank Operation - Rinse Cycle

The rinse cycle packs the clean filter bed. Raw water enters the control valve through the inlet port and is directed downward through the filter bed into the bottom distributor, up the distributor tube into the control valve. Water is then directed through a specific flow restrictor and out the drain port to be discharged to drain.

Operation Of Aeration Pump

The Sulfur-Cleer™ system introduces air into the media tank and bleeds off the old head of air automatically. The exchange of the air into the media tank is controlled independently of the recharge frequency of the filter media tank, allowing the air to be exchanged on a more frequent basis. During an air exchange cycle, the air compressor pumps fresh air into the media tank and the air eliminator solenoid exhausts the old air.

Iron and Trace Hydrogen Sulfide

When applying the filter on water sources with only iron present or with levels of hydrogen sulfide less than 1 ppm, only backwashing will be needed to regenerate the filter. In some applications, odors may develop over time and the media bed may need to be sanitized. In general, bleach will not be required more than once per month and users generally find that it is needed no more than once every four to six months, if at all.

Hydrogen Sulfide - Over 1 PPM

When applying the filter on water sources with hydrogen sulfide levels of 1 - 5 ppm, backwashing every three days and eduction of diluted non-scented bleach on occasion may be needed. Regeneration with bleach is only necessary when hydrogen sulfide is present in the product water. Although the air compressor provides much of the action needed to reduce hydrogen sulfide, the bleach will "super oxygenate" the Culligan CIM media to enhance effectiveness. Overdosing with bleach will cause a faster breakdown of the media. Therefore, any chlorine dosing scheme involves a compromise between media life and hydrogen sulfide reduction.

Operating Conditions

The concentration limits listed below reflect the minimum or maximum individual limit that each contaminant was tested for separately without any interference of other contaminants in the influent water.

In reality, however, we know that these contaminants may be present in combination which may limit the filter's ability to remove these contaminants in higher concentrations. In some cases, individual sellers of this equipment have had success removing higher concentrations of contaminants - iron, for example - above the limitations we have listed. If you are considering the installation of this system for the reduction/removal of iron, manganese and/or hydrogen sulfide beyond the printed operating conditions below, we recommend that you consult the manufacturer for proper application. Installation of this system under these circumstances may void part(s) and/or all of the system warranty.

General Instructions — Observe all state and plumbing codes, electrical codes and drain restrictions. The system and installation must comply with all state and local laws and regulations. Most codes require an anti-syphon device or airgap.

For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing Code 248 CMR shall be adhered to. Consult with your licensed plumber for installation of this system. The use of saddle valves is not permitted.

Alkalinity — A minimum alkalinity of 100 ppm is required for efficient removal of iron and hydrogen sulfide.

Hydrogen Sulfide — Often referred to as rotten egg odor, hydrogen sulfide will be reduced significantly on water supplies containing less than 5 ppm as tested by Culligan. Consult the factory if hydrogen sulfide concentrations are greater than 5 ppm.

Iron — This system is rated for a maximum of 10 ppm of ferrous (clear water) iron. Consult the factory if iron bacteria is present.

Organic Matter (Tannins) — The presence of organic matter such as tannins will prevent the oxidation process of converting the dissolved element, such as iron or manganese, to a non-soluble precipitate or solid substance, allowing it to be filtered out. The Sulfur-Cleer™ is not designed to remove organic bound iron.

pH — The pH level of the influent water must be 7.0 - 8.5.

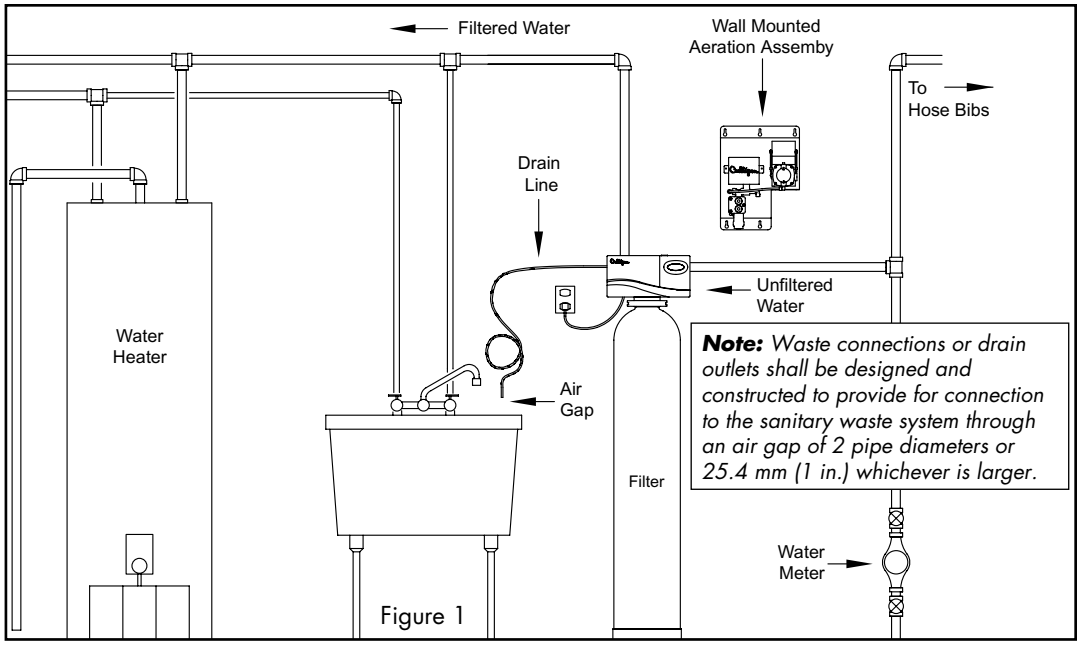


Figure 1

Power Loss

The Circuit ᵇoard is equipped with a Hi-Cap Capacitor and EEPROM memory chip. The capacitor is capable of maintaining the time, for at least two days, in the event of a power outage. The EEPROM ensures that the individual programming parameters of your filter are not lost.

If the power outage lasts long enough to drain the Hi-Cap Capacitor, the control will flash "12:00 PM" when power is returned to the control. The unit will continue to keep time from the moment power is restored, and will initiate a full regeneration at the preset regeneration time. The time of day will need to be reset in order to return the regeneration to its preset time.

If you live in an area where power outages occur with a regular frequency, a battery backup option is available for ensuring that the time of day is properly maintained. Contact your Culligan Dealer for more information.

Regeneration

To initiate a regeneration at the preset time, press the "REGEN" button. The "REG" light will light. To initiate an immediate regeneration, press and hold the "REGEN" button for at least five seconds. The "REG" will light and blink. An immediate regeneration will also occur if a power outage has lasted for more than four hours and the Immediate Regeneration option is chosen. Ask your Culligan Dealer about this feature.

A regeneration at the Time of Regeneration will occur if so signaled by the Soft-Minder meter. The "REG" enunciator on the display will also be lit.

Service

Culligan's Sulfur-Cleer™ water filter is equipped with a self diagnostic program to insure optimal operation of your water filter. Should service become necessary, a phone icon will appear in the display. If this condition occurs, call your local Culligan Dealer for assistance. The phone icon and error code will be the only items displayed when service is required on the control.

Familiarization (cont.)

Modes of Operation

Manual Regeneration

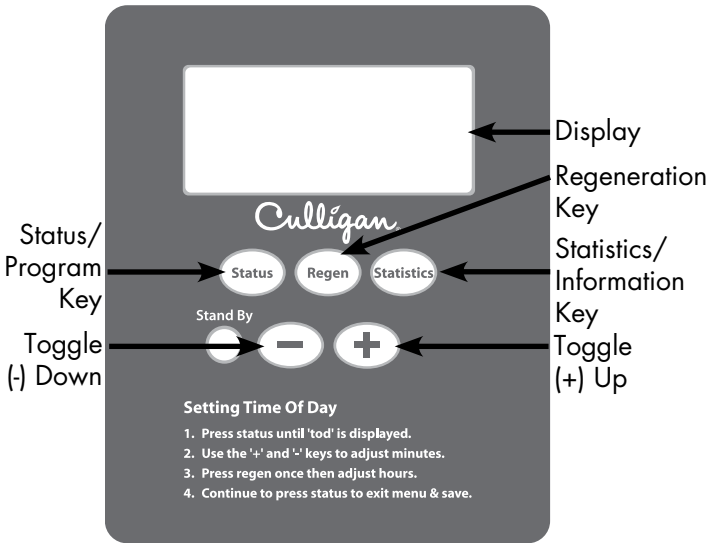
Pressing and holding the regen button for 5 seconds will initiate an immediate regeneration. The beeper is to give one beep at the start of manual regeneration (when the motor starts to turn). In delay mode, pressing and releasing the regen button will light the regen icon for regeneration to occur at the set delay time. Pressing and releasing the regen button again will turn off the regen icon.

Power Loss

The circuit board is equipped with a Hi-Cap Capacitor and EEPROM memory chip. The capacitor is capable of maintaining the time, for at least one day, in the event of a power outage. The EEPROM ensures that the individual programming parameters of your softener are not lost.

If the power outage lasts long enough to drain the Hi-Cap Capacitor, the control will flash "12:00 PM" when power is returned to the control. The unit will continue to keep time from the moment power is restored, and will initiate a full regeneration at the preset regeneration time. The time of day will need to be reset in order to return the regeneration to its preset time.

If you live in an area where power outages occur with a regular frequency, a battery backup option is available for ensuring that the time of day is properly maintained. Contact your Culligan Dealer for more information.



Display	**Back-lit LCD display.**
Program Key	Depress to enter and move through the programming steps.
Regeneration Key	Press and hold the key for five (5) seconds to initiate an immediate regeneration. When pressed during programming the time of day, this key will allow the user to toggle between the hours and minutes setting of timing program segments.
Information Key	Each time depressed, the Statistics key will display statistical information such a flow rate, time of day. Use with the Toggle Down key to display other statistical information.
Toggle (-) Down Key	In the programming mode this key will move the user through the programming function in a descending mode. If depressed for greater than three seconds, the rate at which the display scrolls through data will increase.
Toggle (+) Up Key	In the programming mode this key will move the user through the programming function in an ascending mode. If depressed for greater than five seconds, the rate at which the display scrolls through the data will increase. This key will also allow the user to manually step through the cycles of regeneration.

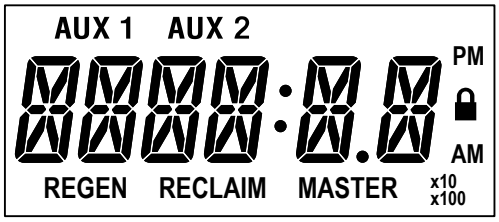
The circuit board controls all of the filter functions. These settings are programmed at the time of installation. The following is a list of all the microprocessor functions, in the event that any of the settings need to be adjusted.

Display Icons

The display is to be backlit and have the icons as shown.

Custom LCD Display

Six standard 12-segment alpha-numeric characters, a decimal separating the first and second character, a colon separating the second and third character positions.



A further description of each programming setting and the corresponding display is outlined below. For a display that has an icon that is displayed solid for the 2 second time period prior to bringing up the settings, the settings menu can be reached prior to the two second time out by pressing the "+" or "-" key.

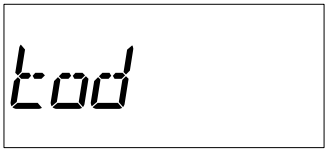
- **Beeper Setting -** Beeper Setting – This setting is used to turn the beeper on or off for each key press actuation. The display will show "bEEP X" where X is either "Y" or "N". The "Y" or "N" will be toggled with the "+" and "-" keys.

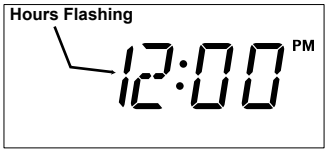
  Pressing the "Status" key will move to the next programming step.

- **Time of Day -** This setting is used to program the current time of day. When in this step, the display will first show "tod" for two seconds, then the time.

  After "tod" is displayed, "12:00 PM" will display (or the current set time if already programmed) and the minutes will flash. The minutes are adjusted with the "+" or "-" key until the correct value is displayed. Press the "Regen" key to flash the hours. Adjust with the "+" or "-" key until the correct time is displayed.

  Pressing the "Status" key will save the setting and move to the next programming step. Pressing "Regen" will move back to the minutes adjust.



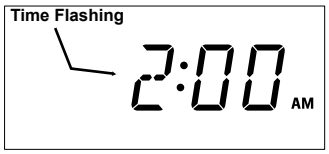


Programming (cont.)

- **Time of Regeneration -** This setting is used to program the time at which a regeneration is to occur in the delay mode. The display will first show "tor" for two seconds.

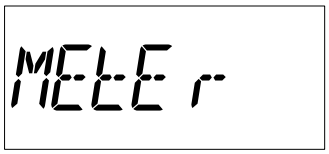
  After "tor" is shown the display will then show the default of 2:00 AM (or the current programmed time of regeneration if already set). The time can be adjusted in 30 minute increments by pressing the "+" or "-" keys.

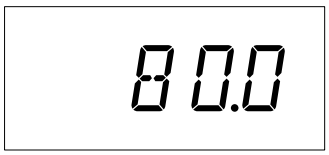
  Pressing the "Status" key will save the setting and move to the next programming step.



- **Meter Factor (Use the default of 80 for meter factor. 80 is the proper setting for the standard Culligan 1" meter.) –** This setting is used to determine the number of pulses that are to be counted to represent a set volume of water (IE: gallon or liter). This factor will be used for all flow calculations. It will only appear if a flow meter is connected to the circuit board. The display will first show "meter" for two seconds and then display the meter factor default (or the previously programmed value). Adjust the value with the "+" or "-" keys.

  Pressing the "Status" key will save the setting and move to the next programming step.





- **Regeneration Interval -** This setting is used to set the days between regenerations in time clock mode. It is also active in meter mode if the time clock backup DIPswitch # 6 is set to "on". The display will show "REGEN" icon with "dAYS" and the value to set. Adjust the value with the "+" or "-" keys.

  Pressing the "Status" key will save the setting and move to the next programming step.

  For single unit time clock mode only (Meter not connected), the following optional "day of week" setting will be available to trigger a regeneration.

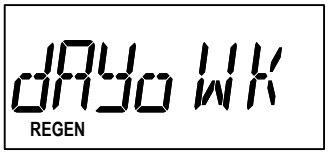
  The display will show "dAYoWK" for 2 seconds followed by "NO". The "+" or "-" key will toggle "yes" or "no" (default is NO). A "yes" response will indicate that the control is to perform a regeneration on specific days of the week.

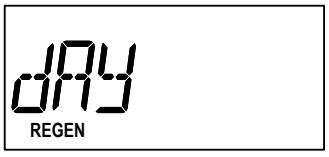
  Pressing "STATUS" will save and advance to the next step. If "NO" was chosen, then the control will only initiate regenerations based upon the interval (in number of days) and the display will show "days 03", as shown above.

  If "YES" was chosen, then the specific days of the week to regenerate will be selected as follows.

  The display will show "dAY" for two seconds followed by "SUN N". The "regen" key toggles the days of the week and the "+" and "-" keys toggle "Y or N".

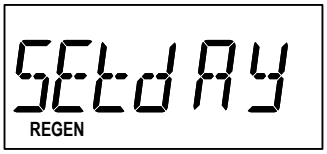
  Pressing the "STATUS" key saves and advances to the next step.





Programming (cont.)

If any of the days were set to "yes", the display will show "SETDAY" followed by "SUN". This selects the current day of the week. The "+" or "-" key toggles through the days of the week and pressing the "STATUS" key saves the setting and advances to the next programming step.

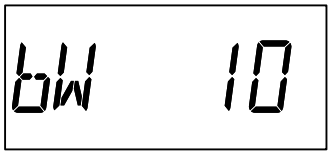


If ALL of the days were set to "no", then "days 03" will appear as shown above and the regeneration interval will be set in number of days. Pressing the "STATUS" key saves the setting and advances to the next programming step.

NOTE:

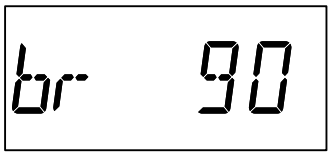
1. *If any day of the week is set to "yes", the regeneration interval in number of days ("Days 03") will no longer appear when going through the programming menu at a later time. To go back from specific day of week regeneration to interval in number of days, choose "NO" at "dAYoWK".*
2. *If a DIPswitch is changed anytime after the control has been programmed to regenerate on any specific day, all settings will revert back to default; specific days to regenerate and current day will have to be reprogrammed.*

- **Cycle 1 Time (Backwash) -** This setting is used to program the cycle 1 time that is usually backwash. The time of the cycle is kept in minutes. The display will show "bw" in the left most digits and the cycle time in the right most digits. Adjust the value with the "+" or "-" keys. Use the default value of 10 minutes, or the appropriate time to allow the drain flow to be clear.

  Pressing the "Status" key will save the setting and move to the next programming step.

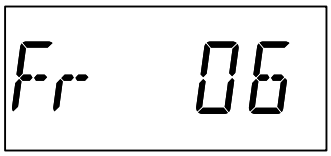
- **Cycle 2 Time (Brine Draw/Slow Rinse) -** This setting is used to set the time in minutes for cycle 2. This cycle is usually brine draw / slow rinse for softeners and a settling time for filters. The display will show "br" in the left most digits and the cycle time in the right most digits. Adjust the value with the "+" or "-" keys.

  Adjust this cycle to 90 minutes if educting diluted bleach. Adjust this cycle to 2 minutes if not educting diluted bleach.

  Pressing the "Status" key will save the setting and move to the next programming step.

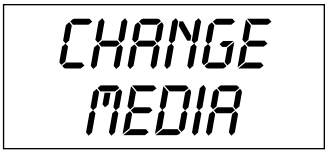
- **Cycle 3 Time (Fast Rinse/Refill) -** This setting is used to set the time in minutes for cycle 3. This cycle is usually fast rinse for softeners and filters. The display will show "Fr" followed by the cycle time for this step. Adjust the value with the "+" or "-" keys. Adjust the cycle time to 6 minutes.

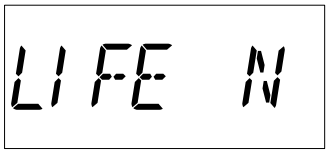
  

  Pressing the "Status" key will save the setting and move to the next programming step.

Programming (cont.)

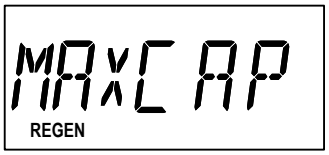
- **Filter Media Life -** This setting is available only with flow meter attached. It enables or disables an alert code (*CHANGE MEDIA*) that indicates the end of life for the filter media. The display will show "LIFE" in the left most characters and toggle between "Y" and "N" in the right most character with the "+" and "-" keys. If "NO" is selected, the alarm is disabled and the 'Maximum Capacity' setting will be treated as it normally would by triggering an immediate regen. If "YES" is selected the alert is enabled and will sound when the 'Total Flow/Life of Unit' statistic = 'Maximum Capacity' setpoint, indicating that it is time to change the filter media.

  Pressing the "Status" key will save the setting and move to the next programming step.

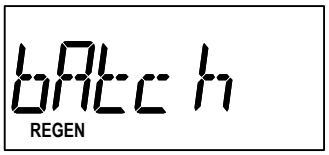
- **Maximum Capacity Set Point -** This setting is used to program a value that corresponds to the maximum capacity that can be expected from a unit before it is completely exhausted. If the unit reaches this set point an immediate regeneration will occur with dip#4 is set to delay mode and "IMMED" set in the hidden menu. This setting will only appear if a flow meter is connected to the circuit board. Adjust the value with the "+" or "-" keys. The display will show the "REGEN" icon and "MAXCAP" for two seconds and then display the "REGEN" icon, and the setting numbers to adjust.

  Pressing the "Status" key will save the setting and move to the next programming step.

- **Batch Set Point -** This setting is used to set the trip point for a regeneration when in flow meter operation. It will only appear if a flow meter is connected to the circuit board. The display will show the "REGEN" icon and "bAtch" for two seconds and then display the "REGEN" icon and the setting numbers to adjust. Adjust the value with the "+" or "-" keys.

  Pressing the "Status" key will save the setting and move to the next programming step.

- **Maintenance Interval -** This setting is active only when dip #2 is on. It used to trigger a notice indicating that a maintenance inspection for the system should occur, after counting down the programmed number of days. The display will show "MAINT" for two seconds, followed by the value to adjust. Adjust the value with the "+" or "-" keys. After the programmed number of days has counted down, the Maintenance Alert shall appear on the display (*MAINT*) every 10 seconds, for 2 seconds at a time, and the beeper shall beep every 30 seconds.

Programming (cont.)

- **Auxiliary Output #1 "ON" Time -** This setting is used to control the "ON" time of the aux1 output which turns on the compressor and vent solenoid. The aux 1 output should act independently, however, it should never be activated during a regeneration. Upon power up or immediately after a regen, the "ON" time should start. The "ON" can also be started manually. The display will show the "AUX 1" icon with "ON" and the value to be set (unit of measure is seconds). Adjust the value with the "+" or "-" keys.

  Whenever the output is energized, AUX 1 icon is to light and the led indicator on the front of the circuit board will flash

  Pressing the "Status" key save the setting and will move to the next programming step.

- **Auxiliary Output #1 Gallons to Signal (Meter Mode only) -** This setting is used to control when the aux1 output (Compressor) "ON" time actually starts. Once the programmed number of gallons has flowed, the output will turn on for the programmed amount of "ON" time. Once the "ON" time expires and the output turns off, the gallon counter will reset. The display will show the "AUX 1" icon with "GAL" and the value to be set (unit of measure is in gallons). Adjust the value with the "+" or "-" keys.

  Pressing the "Status" key save the setting and will move to the next programming step.

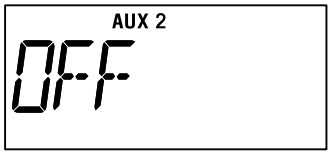
- **Auxiliary Output #1 "OFF" Time -** Always available in Time Clock mode; Available in Meter Mode only with dip#3 on. This setting is used to control the interval of time, in minutes, between the compressor "ON" times. In meter mode, this setting will not appear unless dip #3 is on (Compressor Saver feature); should the meter not see any flow, this will act as a backup.

  Note! *The range is 1 – 9999; if the setting goes over 999, then the second "F" in the display will become a number.*

  Pressing the "Status" key will save the setting and will move to the next programming step.

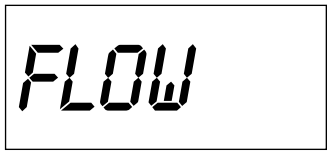
- **Auxiliary Output #2 Contact Status / Cycle Number / Cycle Time -** This setting is used to control the aux 2 output The aux 2 output is not used on the standard Sulfur-Cleer™ product, so this menu can be skipped.

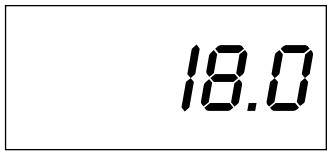
  

Statistic Functions

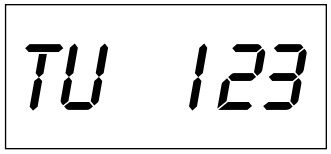
The statistical functions are reached by pressing the "Information" key. Repetitive presses of the "Statistics" key will cycle through the standard statistics mode until cycled back to time of day display. Once either of the Information menus is entered the information shown for each display is outlined below:

- **Flow Rate (Meter mode only) -** The display shall show the current flow rate of the water passing through the control. The display will first show "FLOW" for two seconds and then display the current flow rate for 10 seconds. The meter factor must be set properly for flow to be recorded accurately. This circuit board has a default meter factor of 80 which is the proper setting for use with Culligan standard 1" meter.

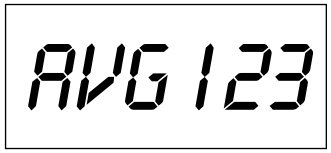




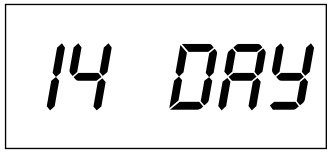
- **Today's Water Usage (Meter mode only) -** This display will show the accumulated flow of water for the current day. The value should reset to zero daily at 12:00am. The display will show "tU" with the gallon value (the x10 should appear when necessary if the amount counts past 999 gallons; rollover at 10k gallons).



- **Average Daily Water Usage -** This display will show a running 7-day average of daily water usage. The display should update daily at 12:00am. The display will show "AVG" with the gallon value (the x10 should appear when necessary if the amount counts past 999 gallons; rollover at 10k gallons).



- **Number of Regenerations in Last 14 Days -** This display will show the number of regenerations that have occurred in the last 14 days. The display will first show "14dAY" for two seconds and then display the number of regenerations that have occurred for 10 seconds. The days counter is to be updated at the programmed time of regeneration for delayed regeneration settings and at 12:00 AM (24:00) for immediate regeneration settings. The counter is not to be updated during programming of time of day if the days setting point is crossed.



- **Maintenance Interval (Only available with dip #2 on) -** This display indicates the number of days remaining of the programmed maintenance interval. When this value reaches zero, the "MAINT" alert will be activated. This setting is resettable by holding the regen key for 10 seconds while at this display, also it will clear the "MAINT" alert. The display will show "MAINT" for 2 seconds followed by the number of days remaining for 10 seconds.

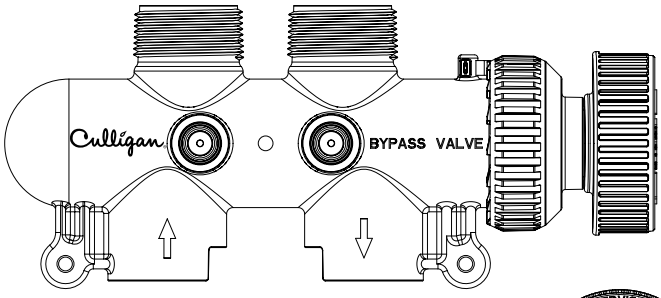
When and How to Bypass Your Water Conditioner

Normally, all water except outside lines passes through the water conditioner. There are times when the water conditioner should be bypassed, using the push-button Cul-Flo-Valv® Bypass, or a 3-way bypass valve. You should bypass:

1. If lines to outside faucets do not bypass the water conditioner, and you do not want to waste soft water on lawn sprinkling or other outside uses.
2. If you are going away on vacation and want to save salt by not having the unit recharge while you're away.

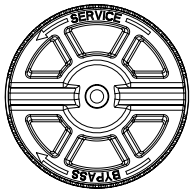
Bypass Valve

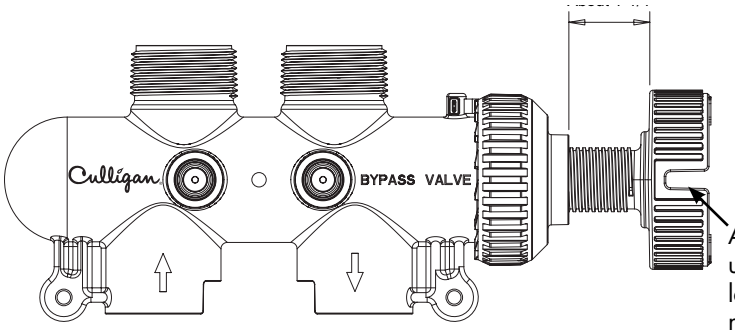
In the back of Culligan water conditioners is a Cul-Flo-Valv® Bypass. To bypass unit, simply turn the blue knob clockwise. To return to soft water service, reverse the procedure - turn the blue knob counter-clockwise.



Bypassed

To BYPASS, turn the blue knob clockwise (see directional arrow on end of knob) until the knob stops as shown. **DO NOT OVERTIGHTEN!**





A screwdriver shank may be used in the slot (arrow) as a lever for extra turning force if needed.

Soft Water

To return to SERVICE, turn the blue knob counter-clockwise (see directional arrow on end of knob) until the knob stops as shown. **DO NOT OVERTIGHTEN!**

Regeneration with Bleach

Caution! USE AND HANDLING OF HOUSEHOLD BLEACH

Bleach is a strong oxidizing agent. It can cause severe irritation or damage to eyes and skin. Observe all precautions stated on the bleach container.

- Store the bleach in a cool dry place out of reach of children and pets.
- Do not store an unmarked container or a container with any markings which could mislead someone as to its actual contents.
- Keep the bleach covered when not in use and tightly closed.

When bleach is used to regenerate the Sulfur-Cleer™, Culligan strongly recommends the dealer set-up a service contract with the customer to initiate the regeneration when required.

If a service contract is not practical, then Culligan recommends the dealer and the customer strictly abide by the following procedure when regenerating with bleach:

- The dealer must instruct the customer on the handling of chlorine and review the DANGER statements on the bleach bottle with the customer.
- The dealer must review the first aid instructions on the bleach bottle with the customer.
- The dealer must be present with the customer during the first regeneration.
- Protective eyewear and gloves are required.

See the Installation and Operation Manual or contact the Culligan Dealer for regeneration procedure with bleach.

Things to Check Before You Call for Service

If you unexpectedly experience problem water, make these simple checks before calling your Culligan dealer. One of the following conditions may be the reason for your interruption of service.

Important

If any of the following conditions is found, the water filter should be manually recharged according to instructions on page 5 after you have corrected the problem.

Power Supply

Check your power supply cord. Is it plugged fully into the electric outlet? Be certain that the outlet is not controlled by a wall switch which has been turned off. Reset conditioner to proper time of day and then plug in.

Blown Fuse

Check the house fuse or circuit breaker panel. Replace a blown-out fuse or reset an open circuit breaker.

Power Failure

Any interruption in your power supply or time changes - such as daylight savings - will disrupt your filter's recharge schedule by causing the timer to run off-schedule. Reset timer to proper time of day.

Bypass Valves

Check to see if they are in the proper position. Cul-Flo-Valv® Bypass, if used, should be in the "Service" position. If hand valves are used, see that inlet and outlet valve are opened and that the bypass valve is closed.

No Water

If you aren't getting any water flow at all, make sure your water supply is working. Open a tap ahead of the filter (outside tap) to see if you have any water pressure. If you have water pressure, check the bypass valve. If it is in the Service position, put it into the bypass and call your Culligan dealer for service.

Increased Usage

Guests, family additions, new water-using appliances, etc., all will result in more water usage and will require more capacity from your filter. You can reprogram your recharging schedule by following the directions on pages 7 and 8. Call your Culligan dealer for advice and save a service call.

Preventative Maintenance

The Culligan Sulfur-Cleer™ water filter has been designed to provide a good, consistent service life. Because of the nature of problem water, we recommend that the local Culligan dealer provide regular maintenance/service contracts for the proper operation of your systems. The water filter service begins with a multi point inspection of your water filter system in an effort to uncover any and all problems that may exist. Listed below is a recommended list of maintenance items to be inspected at a minimum of once a year (or more frequently depending on the raw water quality).

Test Water	Feed	Product
Hardness		
Iron		
Hydrogen Sulfide		
Chlorine		
TDS		
Other		
Comments:		
Bypass Valve		
Bypass in Service or Bypass?		
Condition of bypass valve		
Operation OK?		
Control Valve		
Condition of Eductor (Sulfur-Cleer™)		
Condition of Solution Valve (Sulfur-Cleer™)		
Condition of Seal Pack and Brine Piston		
Condition of Solenoid Valve		
Condition of Motor:		
Condition of Flow Control		
Condition of Switches:		
Condition of Check Valve		
Condition of Compressor	**Output PSI**	
Control settings	**Before**	**After**
Check / reset time of day		
Check time of regeneration		
Compressor setting “On Time” in seconds		
Compressor setting “Off Time” in minutes		
Backwash minutes		
Chemical Draw/Slow Rinse (Sulfur-Cleer™) minutes		
Fast Rinse minutes		
Cycle control	**Test Cycle**	**OK?**
	Backwash	
	Chemical draw	
	Slow rinse	
	Fast rinse	
Media Tank		
Freeboard inches:		
Media Condition		

Troubleshooting Guide

Complaint	Problem	Cause	Solution
Iron bleed-through or staining.	A. Inadequate backwash of filter	1. Plugged drain line flow control	1. Call your Culligan dealer for service.
		2. Insufficient water supply from well.	2. Check for minimum specified flow and pressure requirements of filter system.
		3. Plugged media tank inlet diffuser or pick-up tube.	3. Call your Culligan dealer for service.
		4. Media bed fouled.	4. Call your Culligan dealer for service.
	B. Fails to regenerate	1. Interrupted electrical service.	1. Assure continuous electrical supply (check plug, breaker, fuses, etc.).
		2. Faulty circuit board.	2. Replace circuit board.
		3. Faulty drive motor.	3. Replace drive motor.
		4. Circuit board set incorrectly.	4. Reset circuit board.
	C. Water contaminant levels are greater than limits established by Culligan.	1. It is not uncommon for local water conditions to change.	1. Call your Culligan dealer for service.
	D. Inadequate aeration	1. Loss of air through inlet check valve.	1. Call your Culligan dealer for service.
		2. Loss of air through air leak.	2. Call your Culligan dealer for service.
		3. Faulty aeration pump.	
		a. Electrical failure	a. Assure permanent electrical service (check plug, breaker, fuses, terminal block on control valve, etc.).
		b. Pneumatic failure	b. Call your Culligan dealer for service.
		c. Damp environment	c. Call your Culligan dealer for service.
		4. Air loss through high demand.	4. Call your Culligan dealer for service.
	E. Exceeding recommended filter system flow rate.	1. Service flow rate demand is higher than filter system design flow rate.	1. Call your Culligan dealer for service.
	F. Regeneration during service flow demand.	1. Time of day set incorrectly.	1. Call your Culligan dealer for service.
	G. Raw water bleeding through filter.	1. Internal control valve leak.	1. Call your Culligan dealer for service.

Troubleshooting Guide (cont.)

Complaint	Problem	Cause	Solution
Water leaking from relief valve.	A. Dirt lodged under seat of valve.	1. Pressure has exceeded rating on relief valve and caused valve to open	1. Call your Culligan dealer for service.
	B. Faulty or defective relief valve		1. Call your Culligan dealer for service.
Water is effervescent	A. This can be expected when water is aerated under pressure.	1. Water supply has been naturally aerated under well system pressure. As water is released to the atmosphere, air molecules separate from the water molecules.	1. This natural phenomenon will typically dissipate to the atmosphere in a matter of seconds. If preferred, water can be drawn and stored in an open container prior to use (i.e. fill a pitcher and store in the refrigerator for cool, fresh drinking water).
Loss of pressure	A. See complaint #1, problem A & B		
Air spurting at outside or non-filtered water fixtures.	A. Inlet check valve not sealing.	1. Improper installation location.	1. Call your Culligan dealer for service.
		2. Foreign material preventing check valve.	2. Call your Culligan dealer for service.
		3. Worn or faulty check valve.	3. Call your Culligan dealer for service.
Air spurting from filtered water fixtures.	A. Reduced pressure in distribution system.	1. Service flow demand is greater than water supply available from well pump system.	1. Repair or replace well pump system.
		2. Water flow is restricted by supply piping and/or water treatment equipment.	2. Call your Culligan dealer for service.
Loss of media through drain line.	A. New filter backwashed during first 24 hours after installation.	1. New filter media is shipped in a dry condition and must soak for 24 hours to become fully saturated before a backwash cycle.	1. Clean drain line flow control, control valve body, seals, spacers and piston assemblies
	B. Air passing through filter during backwash.	1. Excess air accumulated in media tank from aeration pump.	1. Call your Culligan dealer for service.
		2. Excess air accumulated in filter system from water supply or well pump.	2a. Repair well pump system.
			2b. If the cause was due to temporary loss of water main pressure; the problem will most likely correct itself with the return of continuous pressure.
Excessive noise during regeneration.	A. Howling or whistling noise during regeneration cycle.	1. Inadequate drain line size.	1. Call your Culligan dealer for service.
		2. Drain line is vibrating against other pipes, conduits, pipe hangers, heat ducts, floor joists,etc.	2. Call your Culligan dealer for service.

Troubleshooting Guide (cont.)

Complaint	Problem	Cause	Solution
Water is running to drain continuously.	A. Control valve is stuck in regeneration cycle.	1. Electrical service to control(s) has been interrupted.	1. Assure continuous electrical service is available. (check plug, breaker, fuse, etc.)
		2. Faulty circuit board.	2. Replace circuit board..
		3. Faulty drive motor.	3. Call your Culligan dealer for service.
		4. Foreign material lodged in piston.	4. Call your Culligan dealer for service.
Blue green staining.	A. Corrosive water condition in copper distribution piping system.	1. Low pH condition of the raw water supply.	1. Call your Culligan dealer for service.
		2. In rare occasions, highly aerated water in combination with a specific water supply can create a slightly corrosive condition.	2. Call your Culligan dealer for service.
Compressor doesn't run.		1. Compressor unplugged.	1. Plug it in.
		2. Relay settings incorrect.	2. Call your Culligan dealer for service.
		3. Bad relay.	3. Call your Culligan dealer for service.
Compressor run with excessive noise.		1. Dead head pressure is 65 psi.	1. Call your Culligan dealer for service.
		2. Dead head pressure is 65 psi.	2. Call your Culligan dealer for service.
Compressor runs continuously.		1. Incorrect relay settings	1. Call your Culligan dealer for service.
		2. Bad relay.	2. Call your Culligan dealer for service.

Performance Data Sheet

Culligan® Sulfur-Cleer™ Water Filter

Important Notice — Read this data sheet and compare the capabilities of the unit to your actual water treatment needs. Culligan recommends that you have your water supply tested to determine these needs before purchasing a water treatment unit.

Culligan knows the more informed you are about your water treatment system, the more confident you will be about its performance. It's because of this more than seventy years of commitment to our customers that Culligan is providing this Performance Data Sheet to its customers.

Manufacturer **Culligan International Company**
9399 W. Higgins Rd., Suite 1100, Rosemont, IL 60018
1-800-CULLIGAN or (847) 430-2800
www.culligan.com

Substance Reduction

Model	Substance	USEPA SDWA* MCL (MG/L)	Percent Reduction	Average Influent Concentration Level	Average Effluent Concentration Level
Sulfur-Cleer 10" Fiberglass	Hydrogen Sulfide		98.9%	8.2 mg/L	0.091 mg/L
	Iron	0.3 mg/L	98.7%	10.4 mg/L	0.14 mg/L
Sulfur-Cleer 10" Quadrahull	Hydrogen Sulfide		98.9%	8.2 mg/L	0.091 mg/L
	Iron	0.3 mg/L	98.7%	10.4 mg/L	0.14 mg/L

* United States Environmental Protection Agency Safe Drinking Water Act

Testing Conditions

Capacity: 1,000 gallons)
Temperature: 63°F - 73°F (17°C - 23°C)
Flow Rate: 5 gpm
pH: 8.0

Pressure: 20-60 psi (1.4 - 4.2 Kgf/cm^2)
Acidity: Non-Corrosive
Rated Pressure Drop @ 3 gpm: 5 psi

Operating Conditions

Water Pressure Limits: 20 - 60 psi
Temperature Limits: 33 - 120°F
Electrical Characteristics: 120V/60 Hz 7 Watts continuous

Systems tested against WQA S-200 for the effective reduction of iron, and WQA Test Protocol 04-001 and NSF/ANSI 42 for the efective reduction of hydrogen sulfide as verified and substantiated by test data.

This system has been tested according to NSF/ANSI 42 for the reduction of iron and hydrogen sulfide. The concentration of iron and hydrogen sulfide in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system as specified in NSF/ANSI 42.

Testing was performed under laboratory conditions, actual results may vary.

Performance Indicator: If water flow decreases or a noticeable odor returns, the filter should be reconditioned. If conditions do not improve, contact your local Culligan dealer. He can determine if your filter requires servicing.

Regeneration Frequency: Regeneration frequency will vary depending upon water conditions.

Refer to your Installation and Operation Instructions, Parts List and Printed Warrantees for more specific product information. To avoid contamination from improper handling and installation, your system should only be installed and serviced by your Culligan Man. Performance may vary based on local water conditions. The substances reduced by this product are not necessarily in your water.

Buyer Signature _____ Date _____

Seller Signature _____ Date _____

Important Data on Your Water Filter

It is advisable to have the salesperson or installer fill in the information below for your future reference. If this has not been done, please ask for it, as it is necessary if you contact your dealer.

Identification

Model Name _____ Catalog No. _____

Control Model No. _____ Control Serial No. _____

Date of Installation_____ Tank Serial No. _____

Settings

Time of Recharge: _____ a.m. _____ p.m.

Regeneration Interval _____ days (Time clock models)

Number of people in household _____

Water Analysis

Total Hardness _____ (gpg) Total Iron _____ (ppm)

Hydrogen Sulfide_____ (ppm)

Other _____

_____

_____

_____

Culligan Limited Warranty

Culligan® Sulfur-Cleer™ Automatic Water Filters

You have just purchased one of the finest water conditioners made. As an expression of our confidence in Culligan International Company products, your water conditioner is warranted to the original end-user, when installed in accordance with Culligan specifications, against defects in material and workmanship from the date of original installation, as follows:

For a period of ONE YEAR	**The entire conditioner**
For a period of FIVE YEARS	**The circuit board**
For a period of TEN YEARS	**The control valve body, excluding internal parts** **The conditioner tank**

If a part described above is found defective within the specified period, you should notify your independently operated Culligan dealer and arrange a time during normal business hours for the dealer to inspect the water conditioner on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by the dealer. You pay only freight from our factory and local dealer charges.

We are not responsible for damage caused by accident, fire, flood, freezing, Act of God, misuse, misapplication, neglect, oxidizing agents (such as chlorine, ozone, chloramines and other related components), alteration, installation or operation contrary to our printed instructions, or by the use of accessories or components which do not meet Culligan specifications, is not covered by this warranty. Refer to the specifications section in the Installation and Operating manual for application parameters.

Our product performance specifications are furnished with each water conditioning unit. **To the extent permitted by law, culligan disclaims all implied warranties, including without limitation warranties of merchantability and fitness for particular purpose; to the extent required by law, any such implied warranties are limited in duration to the one-year period specified above for the entire conditioner.** As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing a water conditioner. The quality of water supplies may vary seasonally or over a period of time, and your water usage rate may vary as well. Water characteristics can also differ considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product with a non-potable water source. **Our obligations under this warranty are limited to the repair or replacement of the failed parts of the water conditioner, and we assume no liability whatsoever for direct, indirect, incidental, consequential, special, general, or other damages.**

Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Consult your telephone directory for your local independently operated Culligan dealer, or write Culligan International Company for warranty and service information.

Culligan International Company
9399 W. Higgins Road., Suite 1100
Rosemont, Illinois 60018
1-800-CULLIGAN or (847) 430-2800
www.culligan.com

You Get Your Water Expert, The Culligan Man®

We're here to provide you with fast, dependable service, making sure any problems you have are taken care of. The Culligan Man has been around for over seventy years, delivering dependable service all along. That's why people say "Hey, Culligan Man!"® Because we're the water experts. And that's who you want taking care of your water.

The Culligan Promise

At Culligan, we understand that a water quality improvement system is an investment in your family's well-being. That's why our 1,350 independently operated dealers worldwide don't just sell products; they sell water quality you can count on. We stand behind our products with written limited warranties and our unequaled Culligan service. No matter where you live, you can depend on Culligan expertise to work for you — today and tomorrow.