



## **OWNER'S MANUAL**

### **FOR ALL GREENSAND SYSTEMS**

THIS MANUAL IS TO BE LEFT WITH THE OWNER OF THE EQUIPMENT FOR REFERENCE AND PURPOSES AND TECHNICAL GUIDANCE. IT IS STRONGLY RECOMMENDED THAT QUALIFIED DEALER SERVICE PERSONNEL BE CONTACTED IN THE EVENT OF AN UNKNOWN INTERRUPTION OF SERVICE OR APPARENT PRODUCT MALFUNCTION. AN ANNUAL PREVENTATIVE MAINTENANCE INSPECTION BY A WATER DEPOT PROFESSIONAL IS RECOMMENDED TO ENSURE TROUBLE-FREE AND CONTINUOUS OPERATION.

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## Introduction

This manual is about a control valve to be used on Iron and Sulphur filters. Proper water testing and the right application are critical. This manual is set up to help in the operation of this product.



## Specifications

### ECONO SERIES GREENSAND- IRON & SULPHUR FILTERS 5600 TIME CLOCK VALVE

PART NUMBER	DESCRIPTION
WD GSND08	8" x 44" GREENSAND FILTER, 0.75 cu. ft
WD GSND10	10" x 44" GREENSAND FILTER, 1.0 cu. ft.

\* ALL LISTED GREENSAND FILTERS INCLUDE SERIES WS1 CONTROL VALVE AND POTASSIUM PERMAGANATE FEEDER WITH FLOAT

SPECIFICATIONS	WD GSND08	WD GSND10
MINERAL TANK SIZE	8" x 44"	10" x 44"
MEDIA CU. FT	0.75 cu. ft	1.0 cu. ft.
OPERATING PRESSURE	40-100 PSI	40-100 PSI
OPERATING TEMPERATURE	40°-120°F	40°-120°F
PIPE SIZE	3/4"	3/4"
SHIPPING WEIGHT	100 lbs	160 lbs
SERVICE FLOW RATE	4 US GPM	5 US GPM
FLOW RESTRICTOR #		

### PLATINUM SERIES AIR BIRM – IRON & SULPHUR FILTERS 5000 ELECTRONIC TIMER



PART NUMBER	DESCRIPTION
WD GSNDP10	10" x 44" GREENSAND FILTER, 1.0 cu. ft.

\*ALL LISTED GREENSAND FILTERS INCLUDE CHROME SWEAT JACKETS, SERIES 5000 CONTROL VALVE, POTASSIUM PERMAGANATE FEEDER WITH FLOAT

SPECIFICATION	WD GSNDP10
MINERAL TANK SIZE	10" x 44"
MEDIA CU. FT. BIRM	1.0 cu. ft.
OPERATING PRESSURE	20-125 PSI
OPERATING TEMPERATURE	40°-110°F
PIPE SIZE	1"
SHIPPING WEIGHT	160 lbs
SERVICE FLOW RATE	5 US GPM
FLOW RESTRICTOR #	

# PLATINUM

## Platinum Control Valve Function and Cycles of Operation

This glass filled Noryl<sup>1</sup> (or equivalent) fully automatic control valve is designed as the primary control center to direct and regulate all cycles of a Greensand or filter.

The control valve is compatible with a variety of regenerants. The control valve is capable of routing the flow of water in the necessary paths to regenerate or backwash water treatment systems. The injector regulates the flow of regenerants. The control valve regulates the flow rates for backwashing, rinsing, and the replenishing of treated water into a regenerant tank, when applicable.

The control valve uses no traditional fasteners (e.g. screws); instead clips, threaded caps and nuts and snap type latches are used. Caps and nuts only need to be firmly hand tightened because radial seals are used. Tools required to service the valve include one small blade screw driver, one large blade screw driver, pliers and a pair of hands. A plastic wrench is available which eliminates the need for screwdrivers and pliers. Disassembly for servicing takes much less time than comparable products currently on the market. Control valve installation is made easy because the distributor tube can be cut ½" above to ½" below the top of tank thread. The distributor tube is held in place by an o-ring seal and the control valve also has a bayonet lock feature for upper distributor baskets.

The AC adapter power pack comes with a 15 foot power cord and is designed for use with the control valve. The AC adapter power pack is for dry location use only. The control valve remembers all settings for two hours if the power goes out. After two hours, the only item that needs to be reset is the time of day; all other values are permanently stored in the nonvolatile memory. The control valve does not need batteries.

The control valve's unique design and electronics allow to select the regeneration cycle sequence, as well as the cycle times. The regeneration cycles available are shown below:

- Backwash
- Downflow Draw
- Rinse
- Fill/Regenerant Refill (must be in pre-regeneration)
- Filtering (this cycle is utilized when regenerant is added just prior to the control valves scheduled regeneration). The cycle time entered should be long enough to dissolve the regenerant being used.  
Note: The control valve is in service during this cycle.
- End (will complete regeneration process and return control valve to service position)
- For Greensand applications we recommend setting up unit as a filter.

Table 1

Regeneration Cycles Filtering Downflow Regenerant Refill After Rinse
1 <sup>st</sup> Cycle: Backwash
2 <sup>nd</sup> Cycle: Regenerate Draw
3 <sup>rd</sup> Cycle: Backwash
4 <sup>th</sup> Cycle: Rinse
5 <sup>th</sup> Cycle: Fill
6 <sup>th</sup> Cycle: End

The control valve operates as a Time Clock. Time Clock operation only or DIR and Time Clock.

The control valve does not have a meter, the valve can only act as a time clock, and day override should be set to any number and gallon capacity should be set to off.

The control valve can also be set to regenerate immediately or at the next regeneration time by changing the Regeneration Time Option. There are three choices for settings:

1. "NORMAL" means regeneration will occur at the preset regeneration time.

The user can initiate manual regeneration. The user has the option to request the manual regeneration at the delayed regeneration time or to have the regeneration occur immediately:

1. Pressing and releasing the REGEN button. "Regen Today" will flash on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the REGEN button. This method of manually initiating regeneration is not allowed when the system is set to "on 0", i.e. to immediately regenerate when the gallon capacity reaches zero.
2. Pressing and holding the REGEN button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing NEXT and REGEN buttons simultaneously for 3 seconds.

The WD 5000 control valve consist of the following components:

- |  |   |
|--|---|
| 1. Drive Assembly  | 6. Drain Line Flow Control and Fitting Assembly |
| 2. Drive Cap Assembly, Main Piston and Regenerant Piston | 7. Water Meter or Meter Plug                    |
| 3. Spacer Stack Assembly                                 | 8. Mixing Valve (optional)                      |
| 4. Injector Cap, Screen, Injector Plug and Injector      | 9. Installation Fitting Assemblies              |
| 5. Re. II Flow Control Assembly or Refill Port Plug      | 10. Bypass Valve (optional)                     |

Note: Refer to Figure 6 for control valve identification.

<sup>2</sup> See Installer Display Settings, Softener System Setup and Filter System Setup for explanations of Day Override and Gallon Capacity

## Drive Assembly

The drive assembly consists of the following parts:

- Drive Bracket
- Printed Circuit (PC) Board
- Motor
- Drive Gears
- Drive Gear Cover

The drive bracket holds the PC board, the motor, the drive gears and the drive gear cover in place.

The PC board receives and retains information, displays the information, determines when to regenerate and initiates regeneration. The display shows different types of information in the initial system set up (for softeners or filters), installer display settings, diagnostics, valve history or user display settings.

The PC board powers the motor. The PC board's two-prong jack connects wires to the direct current (DC) motor. The motor is held in place on the drive bracket by a spring-loaded clip and a small bulge in the plastic, which fits in one of the slots on the motor housing. The motor turns drive gears that drive the piston to cycle positions for backwashing, regeneration, rinsing, refill or service. The motor is fully reversible (turns both ways) and changes direction of rotation to change the direction of piston motion. The motor is easily replaced if necessary.

There are three drive gears held in place by the drive gear cover. All three drive gears are the same size. A reflective coating is applied to the gears. As the center drive gear turns a light shines on the coating and a light sensing diode determines if a light pulse was returned. The PC board counts the pulses and determines when to stop driving the motor.

## **Drive Cap Assembly, Main Piston and Regenerant Piston**

The drive gears turn the main gear of the drive cap assembly, which moves the piston. The screw-driven, horizontally moving piston stops at specific positions to direct the flow of water to backwash, regenerate, rinse or re. ll. The PC board determines the position of the piston by counting pulses produced when the piston is moved. An optical sensor looking at one of the reduction drive gears generates these pulses. Each cycle position is defined by a number of pulses. The counter is zeroed each time the valve goes to the service position. The PC board finds the service position by noting the increase in current delivered to the motor when the mechanical stop at the service position is reached. This method of controlling piston position allows for greater flexibility and requires no switches or cams (U.S. Patent 6444127).

One of three main pistons is always used:

1. A 1.25" diameter downflow piston is used when the WD 5000 control valve is used as a downflow softener, regenerating filter or non-regenerating filter.
2. A 1.25" diameter upflow piston is used when the WD 5000 control valve is used as an upflow softener.

If the control valve is used as a softener or a regenerating filter, a regenerant piston must be attached to the main piston. If the control valve is to be used on a system that does not require a regenerant to be added, the regenerant piston must be removed.

## **Spacer Stack Assembly**

The spacer stack assembly provides the necessary flow passage for water during the different cycles. The all-plastic spacer stack assembly (U.S. Patent 6402944) is a one-piece design which allows the stack to be removed using your fingers.

The exterior of the stack is sealed against the body bore with self lubricating EPDM o-rings, while the interior surface is sealed against the piston using slippery self cleaning directional (one-way) silicone lip seals. The lip seals are clear in color and have a special slippery coating so that the piston does not need to be lubricated.

## Platinum Greensand Filter System Setup

In Filter System Setup choose the time for the cycles selected in Cycle Sequence and specifies other operating parameters for the system. The upper and lower limits of the allowable values for the cycles are as follows:

\*Note: Recommended to be setup as a filter.

Cycle Options	Units	Lower/Upper Limit	Default
Backwash	Minutes	1 to 120	8
Rinse (fast)	Minutes	1 to 120	4
dn Brine (combination of regenerant and slow rinse)	Minutes	1 to 180	60
UP Brine (combination of regenerant and slow rinse)	Minutes	1 to 180	60
*Fill	Minutes	0.01 to 20.00	0.95
Service	Minutes	1 to 480	240

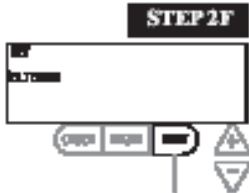
\*Note: Fill is in minutes. Set to 3 minutes (1.5 gallons) 1 min = 0.5 gallon

Since no time is associated with the END cycle, the END cycle will not appear in the Filter System Setup sequence.



### STEP 1F

**Step 1F** – Press NEXT and ▲ simultaneously for 3 seconds and release. If screen in Step 2F does not appear in 5 seconds the lock on the valve is activated. To unlock press ▲, NEXT, ▼, and CLOCK in sequence, then press NEXT and ▼ simultaneously for 3 seconds and release.



### STEP 2F

**Step 2F** – Choose FILTERING using the ▼ or ▲ buttons. Press NEXT to go to Step 3F. Press REGEN to exit Filter System Setup.



### STEP 3F

**Step 3F** – Select the time for the first cycle (which in this example is BACKWASH) using the ▲ or ▼ button. Press NEXT to go to Step 4F. Press REGEN to return to previous step.



### STEP 4F

**Step 4F** – Select the time for the second cycle (which in this example is dn BRINE) using the ▼ or ▲ button. Press NEXT to go to Step 5F. Press REGEN to return to previous step.  
NOTE: The display will flash between cycle number and time, and brine direction (dn or UP).



### STEP 5F

**Step 5F** – Select the time for the third cycle (which in this example is RINSE) using the ▲ or ▼ button. Press NEXT to go to Step 6F. Press REGEN to return to previous step.



### STEP 6F

**Step 6F** – Select the gallons for the fourth cycle (which in this example is FILL) using the ▲ or ▼ button. Press NEXT to go to Step 7F. Press REGEN to return to previous step.



**Step 7F** –Set Volume Capacity using the ▼ or ▲ button. If value is set to:

- “OFF” means regeneration will be based solely on the day override set (see Installer Display/Settings Step 3I); or
- as a number (allowable range 20 to 250,000) regeneration initiation will be based off the value specified. Increment increase is 20 for the range 20 to 2,000, 100 for the range of 2,000 to 10,000, 500 for the range 10,000 to 50,000 and 2,000 for the range of 50,000 to 250,000.

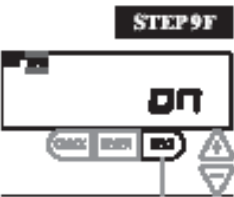
See Table 9 for more detail. Press NEXT to go to Step 8F. Press REGEN to return to previous step.  
Note: "OFF" setting is recommended – use calendar override to set regeneration day.



**Step 8F** – Set Regeneration Time Options using the ▼ or ▲ button. If value is set to:

- “NORMAL” means regeneration will occur at the present time:
- “on 0” means regeneration will occur immediately when the gallons capacity reaches 0 (zero); or
- “NORMAL + on 0” means regeneration will occur at one of the following:
  - the present time when the gallons capacity falls below the reserve or the specified number of days between regenerations is reached whichever comes first; or
  - after 10 minutes of no water usage when the gallon capacity reaches 0 (zero).

See Table 9 for more detail. Press NEXT to go to Step 9F. Press REGEN to return to previous step.  
Note: "Normal" setting is recommended.

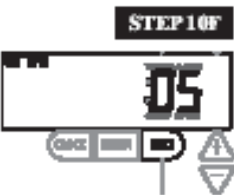


Displays 9F, 10F and 11F are unique to the V3353HR WD 5000 PC Board w/Relay. See WD 5000 Front Cover and Drive Assembly diagram. If using a CLK V3353HS WD 5000 PC Board proceed to Step 12F.

**Step 9F:** Set Relay operation using the ▼ or ▲ button. The choices are:

- Set Time on: Relay activates after a set time at the beginning of a regeneration and then deactivates after a set period of time. The start of regeneration is defined as the first backwash cycle, Dn brine cycle or UP brine cycle which ever comes first.
- Set Gal on: Relay activates after a set number of gallons has been treated and then deactivates after a set period of time or after the meter stops registering flow, whichever comes first.
- Off: If set to Off, Steps 10F and 11F will not be shown.

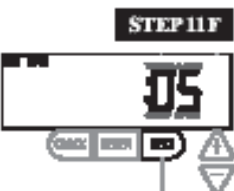
Press NEXT to go to Step 10F. Press REGEN to return to previous step.



**Step 10F:** Set Relay Actuation Time or Gallons using the ▼ or ▲ buttons. The choices are:

- Relay Actuation Time: After the start of a regeneration the amount of time that should pass prior to activating the relay. The start of regeneration is defined as the first backwash cycle, Dn brine cycle or UP brine cycle which ever comes first. Ranges from 1 second to 200 minutes.
- Relay Actuation Gallons: Relay activates after a set number of gallons has passed through the meter when the valve is in the Service mode. Ranges from 1 to 50 gallons.

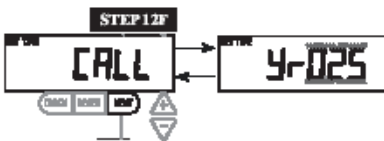
Press NEXT to go to Step 11F. Press REGEN to return to previous step.



**Step 11F:** Set Relay Deactivate Time using the ▼ or ▲ buttons.

- If Set Time on is selected in Step 9F the relay will deactivate after the time set has expired. Ranges from 1 second to 200 minutes.
- If Set Gal on is selected in Step 9F the relay will deactivate after the time set has expired or after the meter stops registering flow, whichever comes first. Ranges from 1 second to 20 minutes.

Press NEXT to go to Step 12F. Press REGEN to return to previous step.



**Step 12F:** Set the Service Call Indicator by using the ▼ or ▲ buttons. Range is in ¼ of a year increments from 0.25 to 9.75 years. Selecting OFF will disable this feature. Press NEXT to exit Filter System Setup. Press REGEN to return to previous step.

RETURN TO NORMAL MODE



### Platinum Filter Setting Options

Gallons Capacity	Regeneration Time Option	Day Override	Result
OFF	NORMAL	Any Number	Reserve capacity not automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached.
Any Number	NORMAL on 0	Any Number	Reserve capacity not automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.

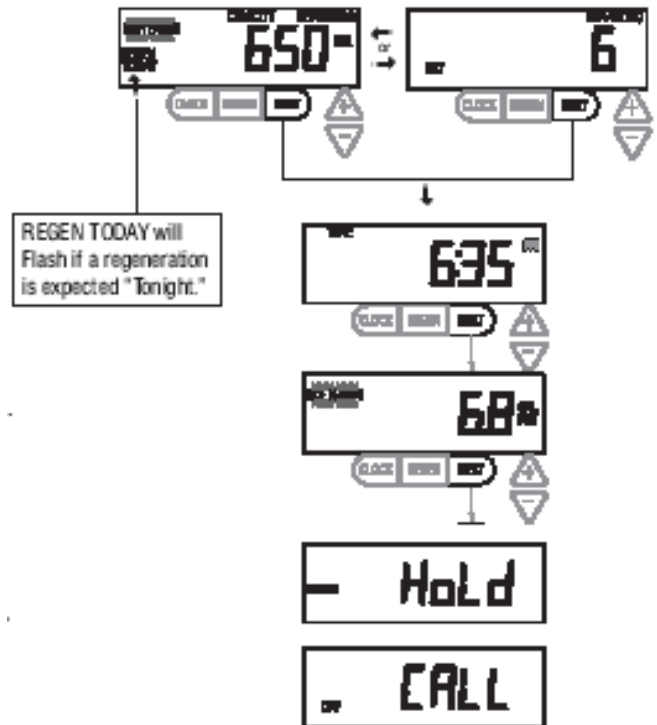
### User Display Settings

#### General Operation

When the system is operating, one of five displays may be shown. The displays normally rotate, however pressing NEXT will pause on the selected display for 5 minutes. Pressing NEXT will alternate between the displays. One of the displays is always the current time of day. The second display is one of the following: days remaining or volume remaining. Days remaining is the number of days left before the system goes through a regeneration cycle. Capacity remaining is the gallons that will be treated before the system goes through a regeneration cycle. Pressing the ▼ button while in the Capacity Remaining display will decrease the capacity remaining in 10 gallon increments and will also increase the volume used impacting the recorded values in Diagnostics Steps 3D, 4D and 5D and Valve History, Step 4VH. The third display shows the current treated water flow rate through the system. The fourth display will show either dP or hold if the dP switch is closed. The fifth display indicates the user should call for service. The fifth display will not appear if OFF is selected in Step 13S of Softener System Setup or Step 12F of Filter System Setup. To clear the Service Call reminder, press the ▲ and ▼ buttons simultaneously while CALL is displayed.

If the system has called for a regeneration that will occur at the preset time of regeneration, the words REGEN TODAY will appear on the display.

If a water meter is installed, the word "Softening" or "Filtering" flashes on the display when water is being treated (i.e. water is flowing through the system).



## Regeneration Mode

Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when a household is asleep. If there is a demand for water when the system is regenerating, untreated water will be used.

When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.



## Manual Regeneration

Sometimes there is a need to regenerate the system sooner than when the system calls for it, usually referred to as manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry.

To initiate a manual regeneration at the preset delayed regeneration time, when the regeneration time option is set to "NORMAL" or "NORMAL + on 0", press and release "REGEN". The words "REGEN TODAY" will flash on the display to indicate that the

System will regenerate at the preset delayed regeneration time. If you pressed the "REGEN" button in error, pressing the button again will cancel the request. Note: If the regeneration time option is set to "on 0" there is no set delayed regeneration time so "REGEN TODAY" will not activate if "REGEN" button is pressed.

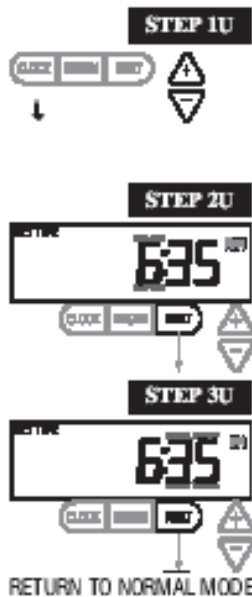


To initiate a manual regeneration immediately, press and hold the "REGEN" button for three seconds. The system will begin to regenerate immediately. The request cannot be cancelled.

Note: For softeners, if the brine tank does not contain salt, fill with salt and wait at least two hours before regenerating.

## Set Time of Day

The user can also set the time of day. Time of day should only need to be set after extended power outages or when daylight saving time begins or ends. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset.



**Step 1U:** Press CLOCK.

**Step 2U:** Current Time (hour): Set the hour of the day using ▼ or ▲ buttons. AM/PM toggles after 12. Press NEXT to go to Step 3U.

**Step 3U:** Current Time (minutes): Set the minutes of the day using ▲ or ▼ buttons. AM/PM toggles after 12. Set Time of Day. Press REGEN to return to previous step.

## Power Loss

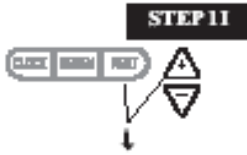
If the power goes out for less than two hours, the system will automatically reset itself. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset. The system will remember the rest.

## Error Message

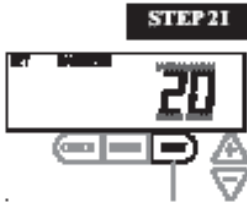
If the word "ERROR" and a number are alternately flashing on the display contact the for help. This indicates that the valve was not able to function properly.



## Installer Display Settings



**Step 1:** Press NEXT and ▲ simultaneously for 3 seconds.



**Step 2:** Hardness: Set the amount of hardness in grains of hardness as calcium carbonate per gallon using ▼ or ▲ buttons. The default is 20 with value ranges from 1 to 150 in 1 grain increments. Note: The grains per gallon can be increased if soluble iron needs to be reduced. **THIS DISPLAY WILL SHOW "-Na-" if "FILTER" IS SELECTED IN STEP 2F** or is "AUTO" is not selected in Set Volume Capacity in Softener System Setup. Press NEXT to go to step 3. Press REGEN to exit Installer Display Settings.



**Step 3:** Day Override: When volume capacity is set to "OFF", sets the number of days between regenerations. When volume capacity is set to AUTO or to a number, sets the maximum number of days between regenerations. If value set to "OFF", regeneration initiation is based solely on volume used. If value is set as a number (allowable range from 1 to 28) a regeneration initiation will be called for on that day even if sufficient volume of water were not used to call for a regeneration. Set Day Override using ▼ or ▲ buttons:

- number of days between regeneration (1 to 28); or
- "OFF"

See Table 8 for more detail on softener setup and Table 9 for more detail on filter setup. Press NEXT to go to Step 4. Press REGEN to return to previous step.

Note: Recommended calendar override – 2 to 5 days.



**Step 4:** Next Regeneration Time (hour): Set the hours of day for regeneration using ▼ or ▲ buttons. AM/PM toggles after 12. The default time is 2:00 AM. This display will show "on 0" if "on 0" is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup. Press NEXT to go to Step 5. Press REGEN to return to previous step.



**Step 5:** Next Regeneration Time (minutes): Set the minutes of the day for regeneration using ▼ or ▲ buttons. This display will not be shown if "on 0" is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup. Press NEXT to exit Installer Display Settings. Press REGEN to return to previous step. To initiate a manual regeneration immediately, press and hold the "REGEN" button for three seconds. The system will begin to regenerate immediately. The control valve may be stepped through the various regeneration cycles by pressing the "REGEN" button.

**Table 4  
Platinum Greensand Setting Options**

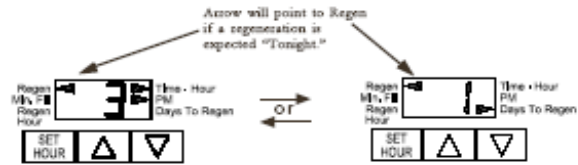
Gallons Capacity	Regeneration Time Option	Day Override	Result <sup>8</sup>
AUTO	NORMAL	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve Capacity at the next Regen Set Time.
AUTO	NORMAL	Any number	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached.
Any number	NORMAL	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0.
oFF	NORMAL	Any number	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached.
Any number	NORMAL	Any number	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0 or the specified number of days between regenerations is reached.
AUTO	On 0	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because regeneration will always occur when gallons capacity reaches 0.
Any number	On 0	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because regeneration will always occur on 0.
AUTO	NORMAL on 0	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve capacity at the next Regen Set Time or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
AUTO	NORMAL on 0	Any number	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
Any number	NORMAL on 0	Any number	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.

<sup>8</sup>Reserve capacity estimate is based on history of water usage.

\*Potassium Permanganate Feeder information located at the back of this manual.

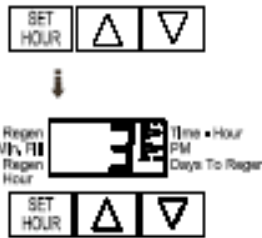
# GENERAL OPERATION ECONO SERIES

When the system is operating one of two displays will be shown: time of day or days until the next regeneration. Pressing UP or DOWN will toggle Between the two choices.



## TO SET TIME OF DAY

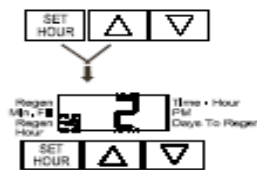
In the event of a power outage, time of day needs to be reset. All other information will be stored in memory no matter how long the power outage. Please complete the steps as shown the right. To access this mode, press SET HOUR



1. Accessed by pressing SET HOUR
2. Adjust to the nearest hour using UP or DOWN. An arrow points to PM during p.m. hours.
3. Press SET HOUR to complete and return to normal operation.

## TO SET TIME OF REGENERATION

For initial set-up or to make adjustments, please complete the steps as shown to the right. Access this mode by pressing SET HOUR and UP simultaneously for 3 seconds



1. Accessed by pressing SET HOUR and UP simultaneously for 3 seconds.
2. Adjust time of regeneration hour using the UP or DOWN. An arrow points to PM during p.m. hours. Simultaneously press SET HOUR and DOWN to return to normal operation.

## MANUAL REGENERATION

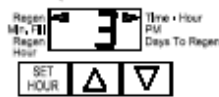
**NOTE:** For softeners, if brine tank does not contain salt, fill with salt and wait at least 2 hours before regeneration.

If you need to initiate a manual regeneration, either immediately, or tonight at the preprogrammed time (typically 2 a.m.), complete the following steps.

### For Immediate Regeneration:

Press and hold UP and DOWN simultaneously until valve motor starts (typically 3 seconds)

Arrow will point to Regen if a regeneration is expected "Tonight"

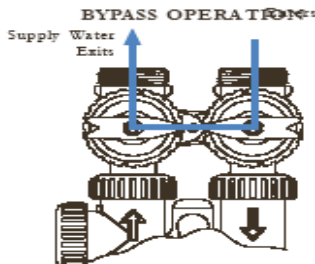
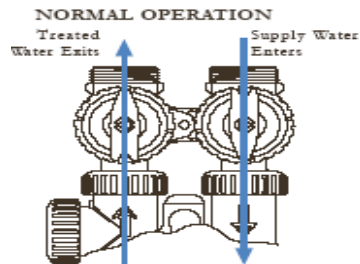


**For Regeneration Tonight:**  
Press and release UP and DOWN simultaneously (notice that arrow points to Regen).

If the display shows "E1," "E2" or "E3" (for error), call a service technician



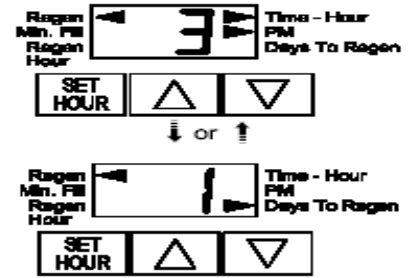
To shut off water to the system, please position arrow handles as shown in the bypass operation diagram below. If your valve doesn't look like the diagram below, contact your service technician for instructions on how to shut off water.



# User Displays/ Settings

## General Operation

When the system is operating one of two displays will be shown. Pressing UP or DOWN button will alternate between the displays. One of the displays is always the current time of day (to the nearest hour). The second display is the days remaining until the next regeneration. If the days remaining is equal to one, regeneration will occur at the next preset regeneration time. The user can scroll between displays as desired.



If the system has called for a regeneration that will occur at the preset time of regeneration, the arrow will point to Regen.

## Regeneration Mode

Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when a household is asleep. If there is a demand for water when the system is regenerating, untreated water will be used.



When the system begins to regenerate, the display will change to indicate the cycle of the regeneration process (see Table 3) that is occurring and an arrow will also point to Regen. The system will run through the steps automatically and will reset itself to provide treated water when the regeneration is completed.

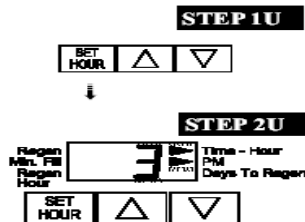
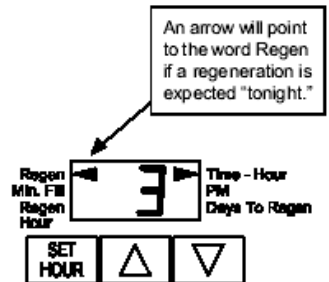
## Manual Regeneration

Sometimes there is need to regenerate the system, sooner than when the system calls for it, to as a manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry day.

To initiate a manual regeneration at the preset delayed regeneration time, simultaneously press UP + DOWN buttons together and release. The arrow will point to the word Regen if a regeneration is expected "tonight". To cancel the regeneration simultaneously press UP + DOWN buttons and release.

To initiate a manual regeneration immediately, simultaneously press UP + DOWN buttons together for three seconds. The system will begin to regenerate immediately. The request cannot be cancelled.

Note: For softeners, if brine tank does not contain salt, fill with salt and wait at least two hours before regenerating.



## Set Time of Day

**STEP 1U** – Press SET HOUR

**STEP 2U** – Current time: Set the clock to the closest hour by using the UP and DOWN button. An arrow points to PM after 12. After a power outage, the time of day will need to be reset. Press SET HOUR to exit.

## Power Loss

If the power goes out current time of day will need to be reset. If the power goes out while the system is regenerating, the cycle picks up where it was interrupted when the power returns. Note: The display will flash if a power outage has occurred.

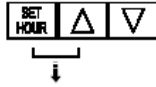
## Error Message

If "E1," "E2" or "E3" appears on the display contact the OEM for help. This indicates that the valve did not function properly.



## Installers Displays & Settings (1-99 Days between Regeneration option)

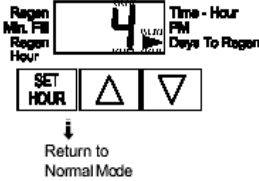
### STEP 11D



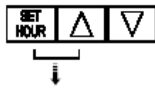
### STEP 21D



### STEP 31D



### STEP 117



### STEP 217



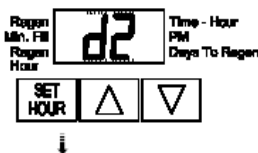
### STEP 317



### STEP 417



### STEP 517



**STEP 11D** – From normal mode, press SET HOUR + UP buttons simultaneously seconds and release.

**STEP 21D** – Regeneration Time: Set the clock to the hour the regeneration should occur by using the UP or DOWN buttons. An arrow points to PM after 12. Press SET HOUR to go to STEP 31D.

**STEP 31D** – Days to Regen: Set the number of days between regenerations. The allowable range is 1 to 99. Press SET HOUR to exit Installer Displays & Settings.

## Installer Displays & Settings (7 day option)

**STEP 117** – From normal mode, press SET HOUR + UP buttons simultaneously seconds and release.

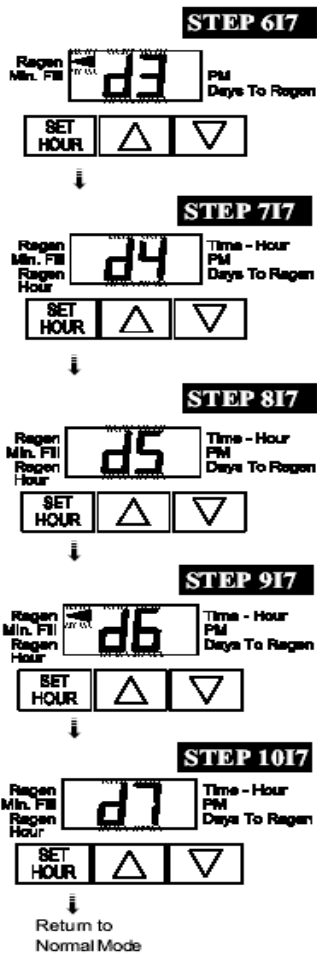
**STEP 217** – Regeneration Time: Set the clock to the hour the regeneration should occur by using the UP or Down buttons. An arrow points to PM after 12. Press SET HOUR to go to STEP 317.

**STEP 317** – Current Day of Week: Set the current day of the week by using the UP or DOWN buttons (see chart below for date codes). Press SET HOUR to go to STEP 417.

Display	Day Of Week
d1	Sunday
d2	Monday
d3	Tuesday
d4	Wednesday
d5	Thursday
d6	Friday
d7	Saturday

**STEP 417** – Sunday Regeneration: To regenerate on Sunday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen a regeneration will not occur on Sunday. Press SET HOUR to go to STEP 517.

**STEP 517** – Monday Regeneration: To regenerate on Monday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Monday. Press SET HOUR to go to Step 617



**STEP 617** - Tuesday Regeneration: To regenerate on Tuesday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Tuesday. Press SET HOUR to go to STEP 717.

**STEP 717** – Wednesday Regeneration: To regenerate on Wednesday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Wednesday. Press SET HOUR to go to STEP 817.

**STEP 817** – Thursday Regeneration: To regenerate on Thursday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Thursday. Press SET HOUR to go to STEP 917

**STEP 917** – Friday Regeneration: To regenerate on Friday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Friday. Press SET HOUR to go to STEP 1017.

**STEP 1017** – Saturday Regeneration: To regenerate on Saturday use the UP or DOWN button until the arrow points to Regen. If the arrow does not point to Regen regeneration will not occur on Saturday. Press SET HOUR to exit Installer Display & Settings.  
 NOTE: If all arrows are turned off in d1-d7, Days to Regen in the User Displays will always read 7 and regeneration will never occur.

## System Instructions

The control valve offers multiple procedures that allow the valve to be modified to suit the needs of the installation. These procedures are:

- System Setup
- Installer Displays & Settings (either 1-99 Days Between Regeneration option or 7-Day option)
- User Displays

These procedures can be accessed in any order. Details on each of the procedures are provided below and on the following pages.

When in operation, normal user displays show the time of day or days remaining before regeneration. When stepping through a procedure if no buttons are pressed within five minutes the display returns to a normal user display. Any changes made prior to the five minute time out are incorporated.

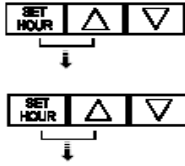
To quickly exit Installer Displays & Settings or OEM Setup simultaneously press SET HOUR + DOWN. Any changes made prior to the exit are incorporated.



To reinitialize the control valve check to make sure the valve is in the User Display. Then simultaneously press SET HOUR + DOWN or unplug power source plug (black wire) on the circuit board, and plug back in.

## System Setup

### STEP 1SS



**STEP 1SS** – From normal mode, press SET HOUR + UP buttons simultaneously 3 seconds and release. Then press SET HOUR + UP buttons 2 seconds and release.

### STEP 2SS



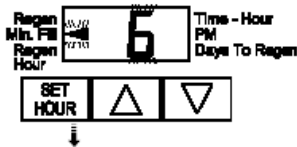
**STEP 2SS** – Choose the desired program by pressing the UP or DOWN buttons. Press SET HOUR button to go to Step 3SS.

### Regeneration Cycles and Times for Different

Program	All times Minutes				
	C1 1 <sup>st</sup> Backwash	C2 Regenerate	C3 2 <sup>nd</sup> Backwash	C4 Rinse	C5 Fill
P0	3	50	3	3	1-99
P1	8	50	8	4	1
P2	8	70	10	6	1
P3	12	70	12	8	1
P4	10	50	Skipped	8	1
P5	4	50	Skipped	4	1
P6	12	6	Skipped	12	1
P7	6	Skipped	Skipped	4	Skipped
P8	10	Skipped	Skipped	6	Skipped
P9	14	Skipped	Skipped	8	Skipped

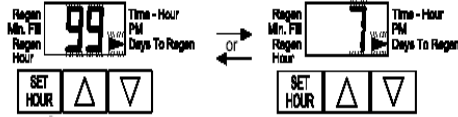
Note: During regeneration the display will show C1, C2, etc. If the cycle is skipped, that cycle number will not be displayed.

### STEP 3SS



**STEP 3SS** – If program P0 through P6 was selected, enter in the minutes of fill using the UP or DOWN buttons. The allowable values vary from a low of 1 to a high of 99. If program P7, P8 or P9 was selected, dashes will appear for minutes of fill. Press SET HOUR button to go to Step 4SS. Note: For each minute of fill 0.5 gallons of water is added to the solution tank. With salt (sodium chloride) this equates to approximately 1 ½ pounds of salt per minute of fill.

### STEP 4SS

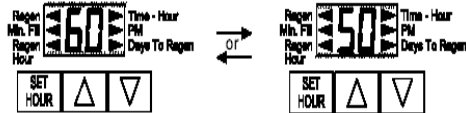


**STEP 4SS** - Use UP or DOWN buttons to switch between:

- 1-99 Days Between Regen; or
- 7-Day

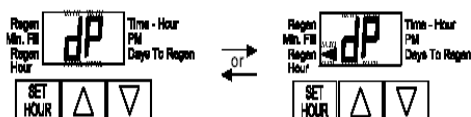
Press SET HOUR button to go to Step 5SS.

### STEP 5SS



**STEP 5SS** – Use UP or DOWN buttons to switch between 60 Hz or 50 Hz option. Supply your own transformer if using 50 Hz option. Press SET HOUR button to go to Step 6SS.

### STEP 6SS



**STEP 6SS** – If a differential pressure switch is installed and

- a regeneration will occur immediately if no arrow points at Regen Hour; or
- regeneration will occur at the delayed regeneration hour if an arrow points at Regen Hour.

Return to  
Normal Mode

Use UP or DOWN buttons to switch between the two choices. If a differential switch is not installed the settings in this display are ignored. Press SET HOUR to exit OEM system setup.



Note: A regeneration will be initiated or scheduled after the control has received a signal for five minutes.

- A. Differential pressure switch connection
- B. Motor wire connection
- C. Transformer wire connection

# Platinum and Econo Potassium Permanganate Feeder

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Water Depot Potassium Permanganate Feeder Assembly incorporates a non-pressurized storage tank and innovative grid design along with our dependable 464 float valve. The attractive 10"x16" tank is made of tough blow molded high density poly-ethylene, and contains an ultraviolet inhibitor (UVI) for increased resistance to sunlight\*. It has a Potassium Permanganate capacity of five gallons. Feeders are available in blue, almond, or black and can be ordered in two, four or six ounce delivery capacities.

The black injection molded cover is securely fastened with three stainless steel safety screws to prevent access by children and pets (As with all chemicals, the potassium permanganate chemical tank should be placed safely away from children or pets). Chemical warning and drain caution labels are affixed to the unit.

The unique polypropylene felt grid pad retains even the finest grade of undissolved Potassium Permanganate above the grid. This permits efficient use of our assembly with all grades of Potassium Permanganate. Two and four ounce feeders have a grid



platform height of 7 5/8 inches. The unit is shipped fully tested and assembled in individual cartons. Shipping weight is seven pounds. Please consult the factory for further information.

## IRON AND MANGANESE REMOVAL:

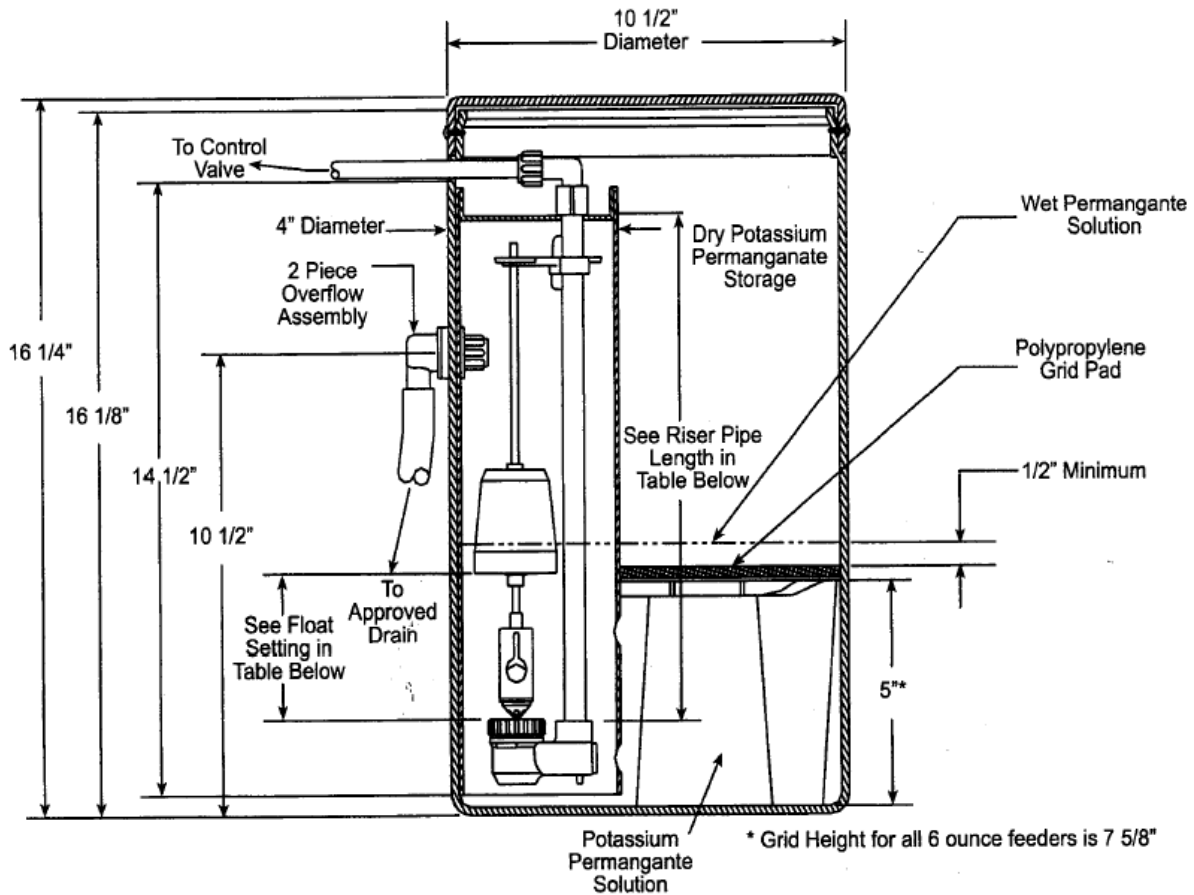
A recommended dose of 2 ounces of Potassium Permanganate per cubic foot of MTM or Manganese Greensand is suggested for regeneration. Correct water

Temperature is important to properly dissolve Potassium Permanganate. At 50°F (10°C) four ounces of Potassium Permanganate can dissolve in one gallon of water. At room temperatures (72°F – 22°C) eight ounces will dissolve in one gallon of water.

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\*Please note: Black HDPE tanks do not require UVI. Black colored HDPE is naturally resistant to sunlight.

## Potassium Permanganate Feeder



Set valve at P-3

**Note:** In general, an 8" Greensand would use 2 oz, a 10" Greensand would use 2 oz. The amount may vary according to the conditions. Where condition requires, you may use up to 4 oz. with a 10" tank (float setting 4").

Important: Always remove the elastic on Float. The elastic is on all units for shipping purposes only.

## Black Potassium Feeder

### Platinum

Potassium Used	Gallons of Solution	Float Setting	Fill Setting (on valve)
2 oz	3/4 Gallon	2 1/2 inches	2 minutes

### Econo

Potassium Used	Gallons of Solution	Float Setting	Fill Setting (on back of valve)
2 oz	3/4 Gallon	2 1/2 inches	6 lb setting