

## Specifications

**Input:** 120 VAC 50/60 Hz  
**Output:** 24 VAC 50/60 Hz  
**Fuse:** 1.5 Amp, Fast Blow

### **Maximum Load Per Station and Pump / Master Valve**

Three Solenoid Valves Per Output 0.75 Amps @ 24 VAC @ 140° F  
Plus Three Solenoid Valves on Pump (MV) 0.75 Amps @ 24VAC @140° F  
Maximum 1.5 Amps

**Battery Type and Back-up Duration:** 9-Volt Alkaline-12 hours

**Enclosure:** 9" H x 8-3/4" W x 3-1/4" D

## Warranty

Aqua Conserve, Inc., will repair or replace at no charge any Aqua Conserve Product that fails under normal use within three (3) years of the original purchase date. See complete warranty for details.

For any warranty questions, please call:  
Toll Free (877) 922-2782.

## **For Questions or Customer Service Contact:**



2900 Adams Street, Suite A-25  
Riverside, California 92504  
Toll Free: (877) 922-2782  
Fax: (951) 352-4345

Visit us on the web: [www.aquaconserve.com](http://www.aquaconserve.com)

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# ET-8B, 12B & 15B Indoor/Outdoor Irrigation Controller User's Guide

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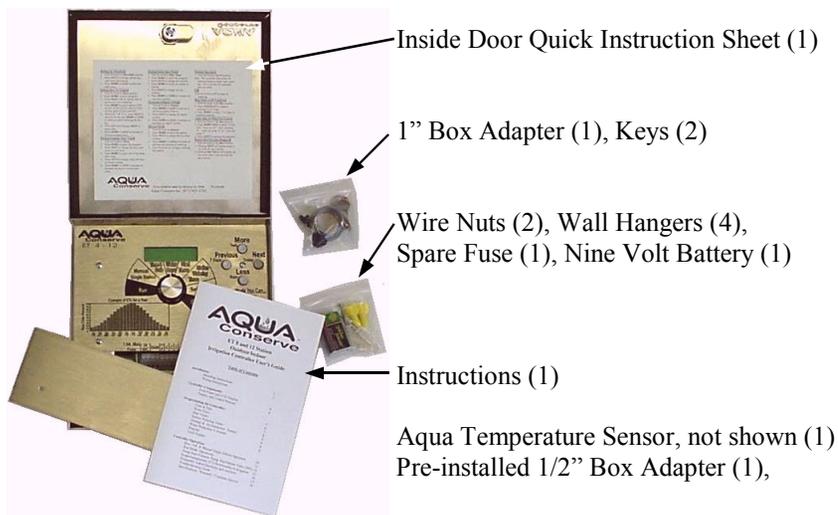
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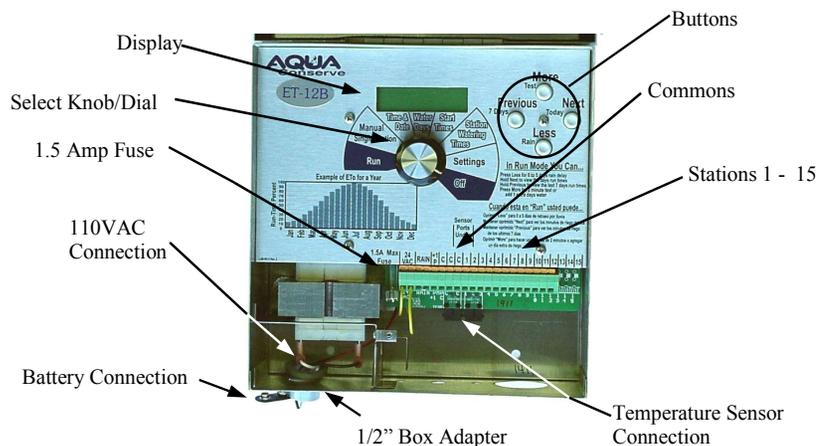


Each ET Controller is provided with:



### Installation: Mounting Instructions

- Step 1** Place two screws 4-3/4 inches apart horizontally in a wall where the controller will be mounted. The screw heads should not be seated.
- Step 2** Hang the controller on the screws.
- Step 3** Place the remaining screw through the lower hole in the controller back housing and screw the housing down.



If you are having a problem with the controller, check the list below. If the problem cannot be resolved or you would like assistance, call Aqua Conserve at our toll free (877) 922-2782 or visit our Website at [www.aquaconserve.com](http://www.aquaconserve.com).

PROBLEM	CAUSES	SOLUTIONS
Display is blank	Blown fuse No power to controller	Replace fuse Check transformer Check wires Check breaker
Display Says "Fuse/Power Fault" "Check P. Adapter"	Controller does not have 110 VAC	Check transformer Check wires Check breaker
Display is frozen	Power trouble	Remove battery, turn power off/on
Time of day is blinking	Power loss	Reset time of day
Rain sensor not working	Poor connection Low rain	Check wiring Verify operation
Display Says "Fuse/Power Fault" "Check Station?"	Station overload Short in valve wire More than three valves connected	Check valve wiring Replace solenoid if defective Connect three valves per station
Did not Irrigate	Accumulating  Skipping days  Controller in OFF Rain delay set (D?)	Could turn accumulation off (Though not advised) Could turn accumulation off (Though not advised) Set dial to RUN position Use "LESS" key to remove rain delay. Verify display says ON or shows a temperature.
Ran shorter than entered minutes	Not summer Bad solenoid	Controller is making normal seasonal changes Replace bad solenoid
Ran longer than entered minutes	Hot day Accumulated run-time	Wait for a cooler day and check operation Could turn accumulation off
Watering does not turn off	Valve problem	Check solenoid / valve
Watering starts at wrong time	Programs overlapping Multiple start times	Move start times Check for multiple "Start Times"
Pump does not display	Normal display Bad valve	Because the pump has many uses, it may not display Check valve / solenoid
"Internal Read Error"	Power Fluctuation	Remove power including battery, hold down "Next" and "Previous" while you apply power.

### How Does My ET-8B, 12B & 15B Controller Adjust Run-Times?

The ET-8B, 12B & 15B Controllers come loaded with historic ET information for your area. (You will need to enter the correct area in the region settings as part of the initial programming of the controller). The controller uses historic information to automatically make adjustments to the watering run-times that you otherwise would have to make manually.

### How Can I Do a Quick Test of Each Station?

See section “Add An Extra Day of Water / Test Mode” on page 11.

### How Can I Determine the Daily Run-Time for Each Station?

See section “Daily/Weekly Run-Time Data/Display” on page 11.

### How Can I Apply More Water to My Lawn if it Looks Dry?

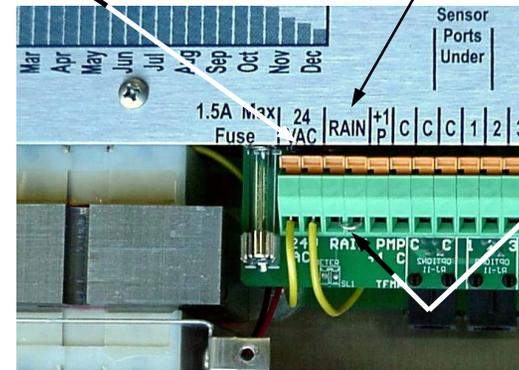
First check your irrigation system to see that it is operating properly.

1. Start your inspection by turning on the test mode feature on your controller and observing the sprinkler heads of each of the stations of your irrigation system.
2. Check for broken sprinklers that will result in a large amount of leakage around the sprinkler head or a geyser of water. Broken sprinklers often cause loss of water pressure and result in poor coverage by other sprinklers. It is important that repairs be made to the irrigation system as soon as possible and before changing the controller settings.
3. Sometimes dry spots are caused by clogged or tipped sprinklers. Use appropriate cleaning procedures for the sprinkler heads you have. All heads should be perpendicular to the irrigated surface. A simple check might locate uniformity problems that should be corrected.
4. Plant interference is another common cause of dry spots. This problem can be corrected by pruning or trimming the plants around the sprinkler head or preferably raising the sprinkler head.
5. If it has been unseasonably warm and your irrigation system is performing properly, you may need to add additional days of watering (Page 11) to improve your landscape’s appearance. As a last resort you may need to adjust the run-time duration (page 8).

### How Can I Further Increase My Water Savings?

Use a rainfall shutoff or the rain delay feature when it rains or when the soil is wet. Lowering the summer run-time minutes will also save water applied during the year. Check to make sure water is being applied uniformly to all of the landscape and not being applied outside the landscape boundaries.

**Step 1** If the wires from the transformer are not connected, press down on the lever and insert a wire into each connection hole marked 24VAC.

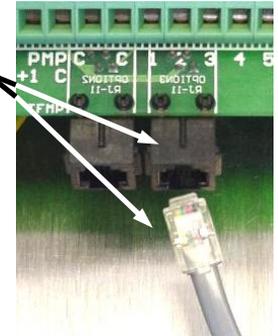


**Note:** If you are installing an Aqua Rain sensor leave the jumper installed.

If you do not connect a rain sensor, a jumper must be installed across the rain terminals.

**Step 2** Connect the common and station valve wires. By pressing down on the corresponding white lever and inserting the wire into each hole.

**Step 3** Plug the temperature Sensor connector (similar to a telephone line connector) into either socket which is located on the underside side of the board. For additional information, please refer to the instructions that came with the Aqua Temperature Sensor.



**Step 4** Connect 110VAC power to the black and white Power Transformer wires using the wire nuts. (Note: This should be performed by a person licensed to make the connection)

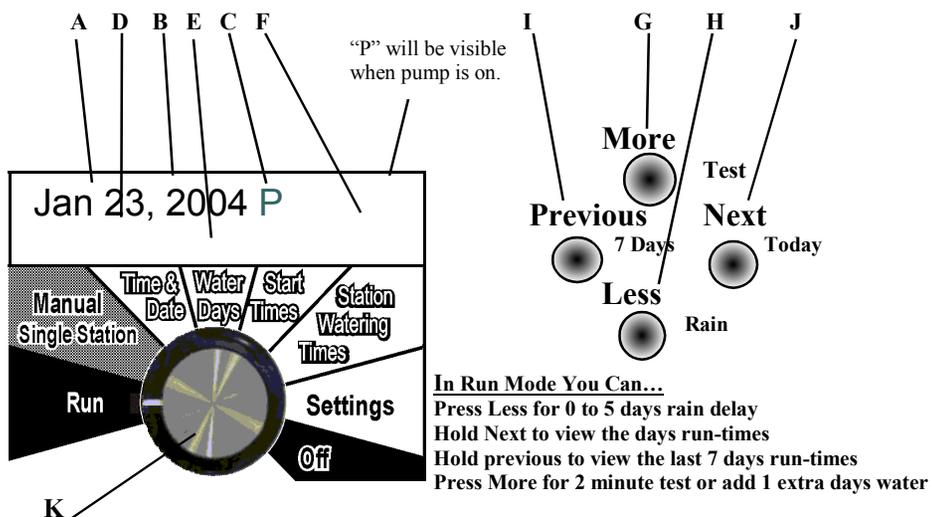
**Step 5** Install the 9 volt battery.



**Step 6** You are now ready to program the controller.

- A. Month
- B. Date
- C. Year
- D. Time of Day
- E. AM or PM
- F. On, Temp or d# Watering enabled or temperature or rain delay days.

**NOTE: If temperature sensor is installed, the “On” display will change to display the current temperature shortly after start-up.**



- G. More/Test Increases the value of a flashing item. It can also be used to run a two minute test, or add an extra day's water.
- H. Less/Rain Decreases the value of a flashing item. It can also be used to delay watering from 1 to 5 days, in the event of rain, wet landscape or maintenance.
- I. Previous Moves to the previous selectable item. It can also be used to view the last 7 day's run-times.
- J. Next Moves to the next selectable item. It can also be used to view the days' run-time.
- K. Knob/Dial For selecting programming options.

**NOTE: The flashing portion of the display can be changed by pressing the More or Less buttons. To change something that is not flashing, press the Previous or Next button until the desired item flashes.**

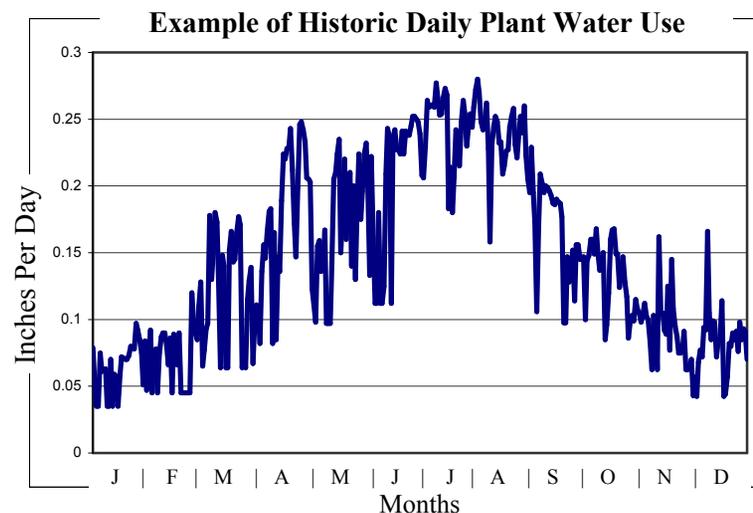
Evapotranspiration, also expressed as “ET,” is the rate of plant water loss due to (1) soil evaporation and (2) plant transpiration.

ET is important because it can be used to determine the amount of water that is lost by your landscape each day. Our goal is to use technology to apply the optimum amount of water to your landscape. Any less, your plants will not be as healthy. Any more, you will be wasting water and washing away nutrients.

ET is affected by changes in temperature, humidity, solar radiation (sunshine) and wind. Aqua Conserve has programmed the historical plant water use data for your geographical region into each ET controller. This will enable the controller to automatically adjust your watering run-times to match the changes in ET rates for your geographical location.

The temperature sensor increases the accuracy of the ET calculations. It allows the use of the actual daily temperature instead of historical averages. This allows the controller to adjust the watering run-times on a daily basis.

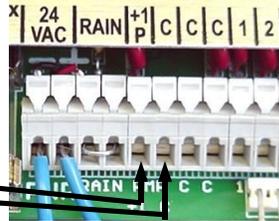
The graph below is an example of daily plant water use for a year. Note that the highest water use is in the summer months when the landscape uses about 1/4” of water each day. The lowest water use is in the winter months. The ET-8B, 12B & 15B controllers automatically adjust your watering run-times to match the Historic Daily Plant Water Use.



The Pump Start feature can be used to start a well or booster pump, open a master valve, activate an additional station, or to run a drip line simultaneously with the other stations.

**Pump Start or Master Valve:**

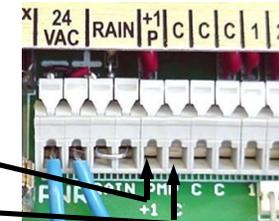
If your location requires the operation of a pump or if you have a master irrigation valve, these can be activated via the “Pump / Master Valve” feature. Connect one wire to the +1 / P terminal. Connect the other wire to one of the Common (C) terminal. The pump/master valve will turn on when any valve is operating. Do not assign the pump “P” valve run-time on any program (A, B, C, or D). **Note:** While the pump is in operation, “P” will appear in the upper right corner of the display.



**Using the Pump as an Additional Irrigation Station:**

If your system requires using the pump start for an additional station.

Connect one wire to the +1 / P terminal. Connect the other wire to one of the Common (C) terminal.

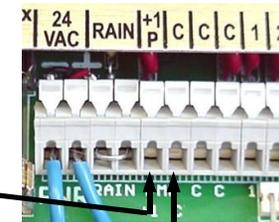


To program the pump start feature as an additional station, program the “P” station like a numbered valve. While the Pump is in operation, “P” will appear in the upper right hand corner.

**Drip Line:**

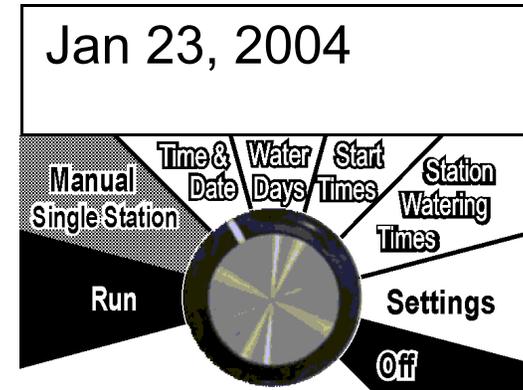
You can operate a drip line when other valves are also in operation.

Connect one wire to the +1 / P terminal. Connect the other wire to one of the Common (C) terminal.



To program the pump start feature to run at the same time other valves are in operation, set “P” valve in program A, B and C to 0 minutes run duration. Then set “P” valve in program D for the desired run-time duration. The run-time duration in program "D" can only be set in 5 minute increments for a maximum of 495 minutes or about 8.25 hours.

This setting adjusts the current time and date.



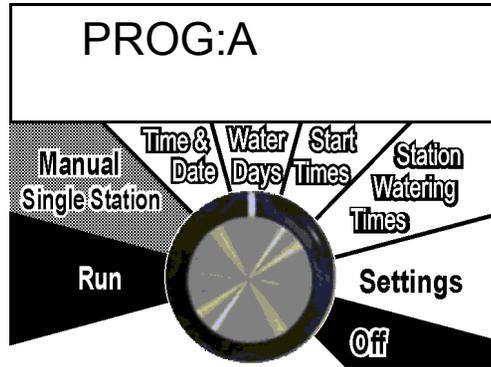
Set the dial to **Time & Date**.

The **Month** setting will flash on the display.

1. Press **More** or **Less** to increase or decrease the month until you reach the current month.
2. Pressing **Next** will move to the **Day** setting, which will flash. Press **More** or **Less** to increase or decrease the day until you reach the current date.
3. Pressing **Next** will move to the **Year** setting, which will flash. Press **More** or **Less** to increase or decrease the year until you reach the current year.
4. Pressing **Next** will move to the **Hour** setting, which will flash. Press **More** or **Less** to increase or decrease the hour. Set the hour to the actual (current) time.
5. Pressing **Next** will move to the **Minutes** setting, which will flash. Press **More** or **Less** to increase or decrease the minutes. Set the minutes to the actual (current) time.

This setting adjusts the days' that the controller will water.

**NOTE:** Before programming your ET-8B, 12B or 15B Controller, you should contact your local Water District to determine if there are any watering restrictions in your area.



1. Set the dial to **Water Days**. **PROG: A** will flash.
2. Pressing **Next** will make the second line flash.
3. Pressing **More** one or more times will cause “**Every Odd Day**”, “**Every Even Day**”, “**S.M.T.W.T.F.S**”, “**Skip 1 Day**”, or “**Off**” in the second line to flash.

4. If you want to water every day of the week, press **More** until “**S.M.T.W.T.F.S**” in the second line flashes.

If you only want to water certain days of the week, press **Next** or **Previous** until the day you wish to change flashes. To delete the day, press **Less**. The letter will be replaced with a “-”. To restore a day, press **More** while the “-” is flashing. The “-” will be replaced by the day.

5. If you select “**Skip 1 Day**”, you can select 1 to 30 days between watering, by pressing **Next** to select this option and **More** or **Less** to change the days.

If you want to **water every third day**, set the controller to “**Skip 2 Day**”. The controller will begin to water the next day and will water every third day.

6. To exit “**S.M.T.W.T.F.S**” or “**Skip 1 Day**”, press **Next** until **PROG:A** flashes, or set the dial to another setting.

If you are only going to use Program “**A**”, you do not have to program any settings for Programs “**B**” or “**C**” or “**D**” and can proceed to setting your Start Times. If you are going to set Programs **B** and/or **C** and/or **D** press **Next** until the desired **PROG:A, B, C** or **D** is flashing then press **More** to select **PROG:B** or **PROG:C** or **PROG:D** and repeat Steps 2 through 5.

The Run Mode provides special features when the dial is set in the **Run** position.

**Add An Extra Day of Water / Test Mode:** Pressing the **More/Test** button will allow you to add an extra day of water if your landscape is dry or test the operation of the controller.

1. Press the **More/Test** button until the message “**2 Min Test**” flashes. If you continue to press the **More/Test** button, the display will cycle between “**2 Min Test**”, “**Auto Run All**”, “**Auto Run Prog. A**”, “**Auto Run Prog. B**”, “**Auto Run Prog. C**”, “**Auto Run Prog. D**”.
2. If you press **Next** when the “**2 Min Test**” is displayed, each station will water for 2 minutes. If you press **Next** when the “**Auto Run All**” is displayed, all programmed stations will water for the full summer minutes. If you press **Next** when the “**Auto Run Prog...**” is displayed, each station in the selected program will water for the full summer minutes.
3. You can cancel any test/add extra water run by setting the dial to **OFF**, then back to **Run**.

**Rain Delay:** The Rain Delay feature allows you to delay watering from 1-5 consecutive days in the event of rain, maintenance or for any other reason that watering needs to be delayed. Watering will be suspended for 24 hours for each day selected.

1. With the dial in the **Run** position press the **Less/Rain** button.
2. Press **More** to increase the number of days you wish to delay watering. Press **Less** to decrease the number of days. The delay can be from 1 to 5 days.
3. Press **Next** to activate the rain delay and return to **Run** mode.
4. To clear the rain delay feature, enter the rain delay screen and decrease the days to 0, then press **Next** to return to **Run** mode.

**NOTE:** When a rain delay has been activated, the controller display will flash the number of rain delay days (d1, d2, d3, d4, or d5) in the lower right-hand corner of the display while the dial is in the Run Position. *The rain delay days flash to remind you a rain delay is in effect.*

### Daily/Weekly Run-Time History/Display:

1. With the dial in the **Run** position, holding down the **Next** button will display the total run-time for each station programmed for that day.
2. With the dial in the **Run** position, holding down the **Previous** button will display the last seven days' run-times.

### Controller Operation

**Run** Leave the dial here for normal operation.

1. Set the dial to **Run**. The display will show the date, time and an “On” indicator in the lower right corner. If an Aqua Temperature Sensor is installed the “On” will change to the current temperature shortly after start-up.

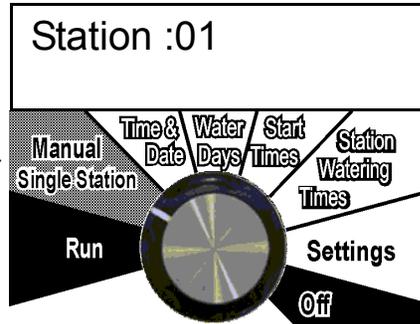
**OFF** Setting the dial to the **OFF** position will turn the controller off. No watering will occur. This position can also be used to stop watering while you are testing the controller or if you wish to stop in the middle of watering.

1. Set the dial to **Off**. The display will read Aqua Cons Inc. and the controller’s firm-ware version.

**IMPORTANT NOTE: THE CONTROLLER MUST BE IN THE RUN POSITION FOR NORMAL WATERING TO OCCUR.**

### Manual Single Station

This feature is used to water a single station for an adjustable period of time. The Manual setting can run a single station for 1 to 99 minutes.



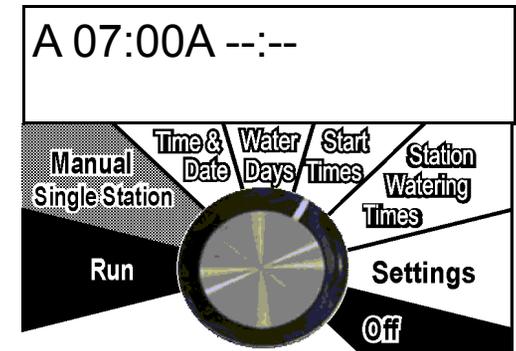
1. Set the dial to **Manual**. “**Station: 01**” will flash. This indicates the station number that has been selected.  
Press **More** or **Less** to change the station number.
2. Press **Next** to make the run-time minutes “**00**” flash.  
Press **More** to increase the number of minutes. Press **Less** to decrease the number of minutes you wish to water.
3. Set the dial to **Run** to begin the manual watering of the selected station.
4. To manually operate another station leave the controller in the **Run** mode and press **Previous** or **Next** until the desired station is flashing and repeat steps 2 through 3.

**Note:** This must be done before the station stops watering.

This setting allows the user to set up to four (4) watering start times.

These Start Times are shown as a time such as 07:00 or - - : - - if no time is set.

Each program, A , B, C or D can have up to four (4) watering Start Times.



1. Set the dial to **Start Times**, A will flash. Select the desired program (A, B, C or D) by pressing **More** or **Less**.
2. Pressing **Next** will cause the **Hour** setting to flash.  
Pressing **More** or **Less** will change the hour setting.
3. Pressing **Next** will cause the **Minute** setting to flash.  
Pressing **More** or **Less** will change the minute setting.
4. Repeat Steps 2 through 4 to set the watering start times for each program.

**Note:** Start#1 cannot be deleted. However, if you need to delete start times 2, 3 or 4.

1. Set the minutes to :00
2. Then change the hour just past 12:00PM
3. The time display will then change to - - : - - indicating no start time.

**NOTE: For slopes, clay soils, bare soil surfaces and deeper watering applications, you may want to use two or more separate start times or soak times to reduce water runoff or collection in low-lying areas.**

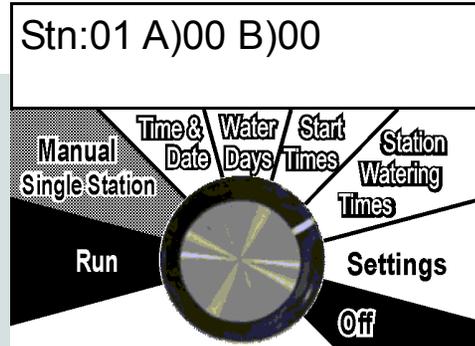
If the program A, B, C or D says “**Program has no WATERING DAYS**”, you will need to set the days you want to irrigate (see page 6).

This setting allows you to adjust the run times for each station.

You should always set the controller for the **SUMMER** run-time minutes.

**IMPORTANT NOTE:** Regardless of the time of year, set the controller for the **SUMMER** run-time minutes. The controller will automatically make adjustments based upon historical plant water use data. See page 13 of this Users' Guide for an explanation on plant water use (ET). If you are not sure how many minutes to enter, four methods are listed below.

Native Plants often require less water so the minutes can be set lower. You can water for up to 99 minutes to operate a drip line. You can use the "P" station with program "D" to water for over 8 hours of drip irrigation (see page 12).



- Use the Summer Run-Time Schedule that was previously used.
- Use Aqua Conserve website: [www.aquaconserve.com](http://www.aquaconserve.com) for Regional July settings. Click on "Watering Scheduling Guide" and select your region.
- Use Local Water District recommendations.
- For new construction, check with the Landscape Contactor/Builder.

1. Set the dial to **Run-Time**. **Stn:01** will flash.  
Press **More** or **Less** to select the station you wish to change.
2. Pressing **Next** will flash the minutes for the program (Program A watering minutes).  
**Only enter minutes on the programs you want to water!**  
  
Press **More** or **Less** to increase or decrease the minutes until the summer run-time minutes are displayed
3. Pressing **Next** will flash the minutes for the program (Program B watering minutes).  
  
Press **More** or **Less** to increase or decrease the minutes until summer run-time minutes are displayed.  
  
You can continue steps 2 through 3 for programs C & D and steps 1, 2 and 3 for station 02 and the remaining stations.

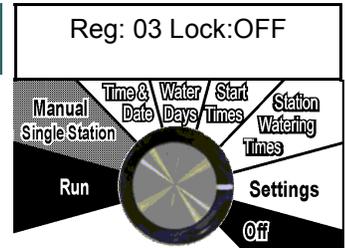
### Establishment Feature

The establishment feature is used when you plant new sod, seeds or plants and want to give extra water while the sod, seed or plants establish roots. The minutes entered will be in addition to the normally programmed minutes. After the roots are established the controller will revert back to entered minutes automatically.

1. Set the dial to **Station Watering Times**, hold down the **Next** and **Previous** buttons.  
Press **More** or **Less** to select the Station to adjust.
2. Pressing **Next** will allow you to set the percentage of additional watering time.
3. Pressing **Next** will set 0 to 60 days for the additional water to be applied.

This setting will allow you to select the geographical region, lock settings into the controller, accumulate short run-times and adjust the ET run-time percentage.

**YOU MUST SET THE REGION FOR THE CONTROLLER TO CORRECTLY ADJUST WATERING TIMES**



### Region Selection:

The controller will automatically use historical weather data with daily temperature for the selected region for future watering adjustments. Each region represents different run-time adjustments throughout the year. On hot days the controller may run up to 120% of the entered minutes.

1. Set the dial to the **Settings** position. The **Reg: 03** will flash.
2. Press **More** or **Less** to increase or decrease the Region number.

**NOTE: If the Region is set to "Adj:Off" (Region 0) the controller will not make automatic adjustments. If you program a station to water for 10 minutes it will water for 10 minutes all year long.**

### Regions:

Reg. 1: So. CA Inland to Desert	Reg. 11: Phoenix, AZ	Reg. 27: Las Cruces, NM
Reg. 2: Cal Low Desert	Reg. 16: Reno, NV	Reg. 31: Seattle, WA
Reg. 3: CA Central Valley	Reg. 17: Las Vegas, NV	Reg. 41: Logan, Utah
Reg. 4: No. CA Inland to Central Valley	Reg. 21: Denver, CO	Reg. 51: San Antonio, TX
Reg. 5: Cal High Desert	Reg. 22: Northern CO	Reg. 52: Dallas/Ft Worth, TX
Reg. 6: California Coastal	Reg. 26: Albuquerque, NM	

### Lock Feature:

This feature reduces the possibility of unauthorized people making changes to the program(s). **Lock:ON** will prevent changing **Water Days**, **Start Times** and **Station Run-Times**. You can view the settings, but you cannot change the settings until the display shows **Lock:OFF**.

1. Press **Next** will cause **Lock:OFF** to flash.
2. Pressing **Less** will turn the **Lock:OFF**.
3. Pressing **More** will turn the **Lock:ON**.

### Accumulation Feature:

To eliminate cool month watering run-times that are too short to benefit the landscape, the controller will store run-times until 50% of the scheduled summer watering time has been accumulated. It will then water for this duration.

With the Accumulation Feature in the **"ON"** position the controller will skip watering days until at least 50% water time has accumulated.

With the Accumulation Feature in the **"OFF"** position, the controller will water as scheduled.

1. Press **Next** will cause Accumulate **"ON"** to flash.
2. Pressing **Less** will turn the Accumulation feature **"OFF"**.
3. Pressing **More** will turn the Accumulation feature **"ON"**.

**Water Reduction % (WR%) Feature:** (See your water district for local WR% watering requirements). The WR% reduces the watering times for all programs a percentage. For example if an WR% is 80%, a summer setting of 10 minutes will water 8 minutes in the summer.

1. Press **Next** will cause **WR%100** to flash.
2. Press **More** or **Less** to increase or decrease the percentage from 100% to 80%.