Orbit® WaterMaster®

Installation Manual / User's Manual
Sprinkler Controllers by Orbit®

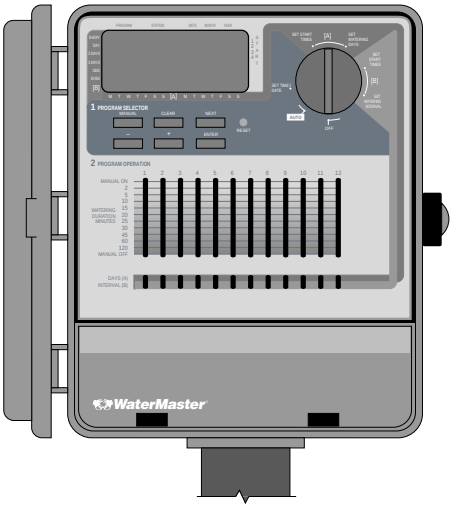
Manuel d'installation / Manuel d'utilisation
Programmateurs d'arrosage par Orbit®

Manual de Instalación / Manual del usuario
Controladores para sistemas de aspersión Orbit®

Manuale d'installazione / Manuale d'uso
Programmatore per irrigazione Orbit®

Installationshandbuch / Benutzerhandbuch
Orbit® Controller für Bewässerungssysteme

Manuel d'installation / Manuel d'utilisation
Programmateurs d'arrosage par Orbit®



MODELS

57004, 57006, 57008, 57122, 57254, 57256, 57258, 57252, 57606, 57012, 57344, 57346, 57348, 57342, 94028, 94002, 94004, 94006, 94008, 91024, 91026, 91028, 91016, 91012, 94022, 94024, 94026,

WT 7/8 versions

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FRANÇAIS

ESPAÑOL

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section 1

Introduction

Thank you for selecting an Orbit® sprinkler controller. Orbit® designers have combined the simplicity of mechanical switches with the accuracy of digital electronics to give you a controller that is both easy to program and extremely versatile. The Orbit® controller provides convenience and flexibility, letting you run a fully automatic, semi-automatic, or a manual watering program for all your watering needs.

Please read this manual completely before you begin to program and use the controller. A few of the most notable design features include:

At-a-Glance Simplicity
By turning the rotary dial to one of seven settings you can review programming or easily make changes.

Arm Chair Programmable
By inserting two AA alkaline batteries you can program the controller prior to installing it in its permanent location.

Automatic Electronic Circuit Breaker w/Fail Safe
An electronic circuit breaker protects the controller's power supply. If the circuit breaker trips, it will reset automatically. In most cases, there is no loss of data or watering cycles.

Smart-Scan® Diagnostic Fault Sensing
A diagnostic fault sensor skips over any station that has a short in the solenoid or wiring. If the controller senses a short in a station, it skips the faulty station and moves on to the next programmed station. The controller displays FAULTY and identifies the faulty station number.

Pump Start or Master Valve Connection
If a pump will be included in the sprinkler system, a terminal is provided to send a signal to the relay to activate the pump (note section on pump connection in the *Installation Manual*). This terminal will also activate a master valve.

Language Overlays
Available in Spanish, French, Italian, German and English.

1. Digital Display
An extra large LCD (Liquid Crystal Display) shows the time of day and indicates many of the programming settings. The display is completely interactive with all other controls.

2. Programming Buttons
The controller has seven push buttons for setup and program entry. Working in conjunction with the rotary dial, the buttons are used to set the time of day, watering time, watering days, start times, and other functions.

3. Duration Slide Switches
The vertical slide switches set the number of minutes a station is on when the controller is operated in automatic mode. The slide switches also set any individual station to always on, always off, or on with duration when the controller is operated in manual mode.

4. Program Slide Switches
The program slide switches assign each station to one of three programs: Program A (14 day cycle), Program B (interval cycle), or Programs A and B combined.

5. Rotary Selector Dial
The heart of the controller is the rotary selector dial. This dial makes it easy to see which function is currently selected and/or in which mode the controller is set to operate.

6. Reset Button
The reset button clears all your programming but does not remove the factory installed fail-safe program. To prevent an accidental reset, the button is recessed into the panel and must be pressed with a small pointed object such as a pen or pencil tip.

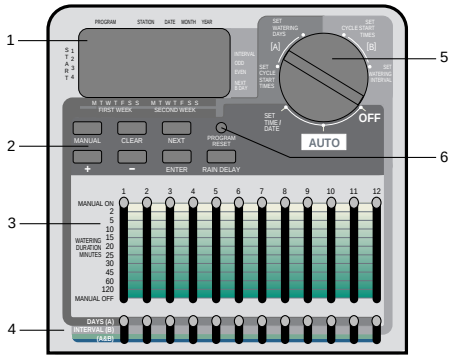


FIGURE 1: Features of the Controller

Notable Programming Features

Two Watering Programs—Summary
The controller gives you the option of using any or all of these independent programs. Note that each station can independently be set to either A or B or both A and B programs.

Program A—Days
Any or all days in a two week schedule can be set to water. This program lets you schedule selected stations to water on specific days of the first and second weeks. At the end of the two weeks, Program A repeats continuously.

Program B—Interval, Odd, Even
Provides two options: One for odd or even day watering and another for an interval ranging from every day to every 28th day. This feature is designed to meet the growing needs and restrictions imposed by local governments and to conserve water.

The controller automatically calculates odd and even days (by date) for each month and makes adjustments for leap years to provide true odd and even watering. An interval of "1" will water every day, an interval of "2" will water every other day, and so on.

Program A+B—Combined
This setting allows the stations to water under a combination of the A and B programs. This feature is especially useful for new grass (for watering up to 8 times per day) and allows greater flexibility in scheduling watering. If both the A and B programs are scheduled to water on a specific day, the station will water multiple times per day.

Start-Time Stacking
The controller has the intelligence to "stack" start times that might overlap. If you enter two or more start times that overlap (in the same or in different programs), the controller will not activate two stations at the same time. Instead, the controller activates the first program cycle and then activates the next program cycle(s) in sequence after the first program finishes its preset watering duration.

The controller will not stack to the next calendar day. This prevents the controller from violating an odd or even day watering schedule.

Manual and Semi-Automatic Modes
The controller gives you a number of manual and semi-automatic modes for flexibility in watering. You can override the controller's automatic programming in a variety of ways.

User-Selectable Rain Delay
Unique watering delay button cancels program for 24, 48, or 72 hours (user-selectable), then resumes automatically.

Getting Started

Programming the controller can be accomplished in just a few basic steps. Before you begin programming, it is important to install the batteries, set the time of day and date, and determine a watering plan.

Install the Batteries

The controller requires two AA alkaline batteries to keep the program in memory in case of AC power loss. In a typical installation, fully charged batteries should provide sufficient power for approximately one year of protection. Therefore, we recommend changing the batteries annually.

- Remove the battery cover by sliding it to the left.
- Insert two AA alkaline batteries into the battery compartment.
- Return the battery cover to its closed position.

Weak or missing batteries can cause the time, date, and program to be erased after a power failure. If this happens, you will need to install fully charged batteries and reprogram the controller.

Note: *Batteries alone will not operate the valves in your sprinkling system. The 24-volt transformer must be plugged in and have power to operate your system normally.*

Set the Time of Day and Date

If this is the first time the controller has been programmed, you should press the small recessed button labeled **RESET.** Pressing **RESET** does not affect the factory installed fail-safe program **[See Figure 2].**

FIGURE 2: Programming Keys

Do not press the **RESET** button again unless you want to completely remove all your programming.

- Turn the rotary dial to the **SET TIME/DATE** position.
- **12:00 AM** will appear in the display with three arrows pointing to the year, month, and day.
- Press and hold the **+** button to advance the clock to the correct time of day. Use the **–** button to go in reverse **[See Figure 3].** When the correct time of day is reached, press the **ENTER** button to lock in the time.

To increase or decrease more rapidly, hold down either the **+** or **–** buttons until the display goes into rapid advance mode.

- A cursor will appear below the arrow for the year, month, and date when programming **[See Figure 4].**
- Use the **+** and **–** buttons to set the correct year, then press **ENTER.**
- Use the **+** and **–** buttons to set the correct month, then press **ENTER.**
- Use the **+** and **–** buttons to set the correct day of the week, then press **ENTER.**

The display will show the correct time and day of the week.

FIGURE 3: LCD Display with Surrounding Information

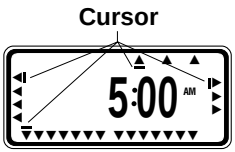


FIGURE 4: LCD Display with Cursors Showing

After the time of day, date, and year are set, this procedure does not need to be entered again for any other programming.

Caution: *If a watering schedule is not entered into the controller, the factory installed fail-safe program will turn on each station every day for 10 minutes. To avoid accidental station activation, either turn the rotary switch to* **OFF** *or enter a watering schedule.*

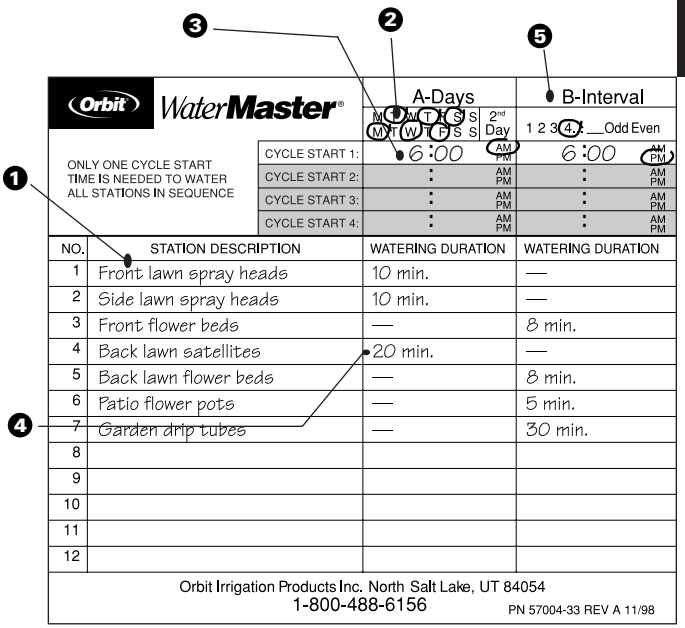
Determine a Watering Plan

To help you visualize how best to program the controller, it might be helpful to make a watering plan on paper. This will help you establish which days and times you want to water.

Use the sticker inside the controller door to help determine and record your watering plan.

Sample Watering Plan

Before programming the controller, we suggest that you fill out the watering plan sticker inside the door. Below is a sample watering plan for your reference.



❶ Briefly describe each station and its location.

❷ In the A-Days Program column, circle the desired watering days.

❸ Enter the cycle start time for Program A. Generally, only one cycle start time is required for Program A.

❹ Enter the watering duration for each station assigned to Program A.

❺ In the B-Interval Program column, fill in the desired interval (1 to 28) or circle odd or even. Repeat steps 3-4 for the B-Interval Program.

The controller has three programs that control a variety of watering plans. Depending on your needs, you can use one or all programs.

Enter the Watering Schedule in Any Order

You have the option of entering your watering schedule in whatever order you like. This feature makes it very easy to review and change your watering schedule. Your settings can be changed at any time—while you're setting up the initial schedule or even after years of operation.

Start Times for Program A or B

Note: *A cycle start time is the time of day that the program begins watering the first station, and all other programmed stations will then follow in sequence. There are not separate start times for each station. Cycle start times do not correspond to specific stations. If you enter more than one cycle start time, all stations programmed to operate will water again (in sequence).*

The way you set the cycle start time is the same for all programs. To set the cycle start times for each program you will be using, do the following:

- Turn the rotary selector to set the **CYCLE START TIMES** position in the program that you want to set up. The display will show an **A** or **B** depending on which program you have selected. The display will show —— : —— and a blinking cursor will appear in **START 1** location **[See Figure 5].**
- Set the time you want to begin watering for cycle start time 1 using the **+** or **–** buttons, then press the **ENTER** button. For additional cycle start times, simply press **NEXT** to advance to the next cycle start time and repeat this procedure by using the **+** and **–** buttons to enter the time and then press **ENTER.** Generally, only one cycle start time is required for each program (A, B).

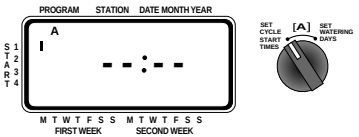


FIGURE 5: LCD Display with Start Time

Note: *You cannot set a cycle start time for each station. Stations can be assigned to either Program A or B or both A and B. Each program can have up to four cycle start times. Stations assigned to either program will turn on sequentially according to the cycle start times assigned. Generally only one cycle start time is required for each program (A, B).*

Program A Setup

Program A is a two-week daily schedule. Watering may be scheduled for each of the 14 days. After 14 days, the A program continues to repeat itself—there is no need to reselect the watering days. To set the watering days, **[Note Figure 6]**

- Set start times as outlined in the previous column (Start Times for Program A or B).
- Turn the rotary selector to **SET WATERING DAYS.** The cursor (—) will blink above the current day in the first week. Any or all days in the two-week schedule can be programmed to water.
- To program a day to water, press **ENTER.** An arrow will be displayed above programmed days and the cursor will move to the next day. To advance to a specific day, press **NEXT.** To clear a day, press **NEXT** until the cursor is above that day, then press **CLEAR.**

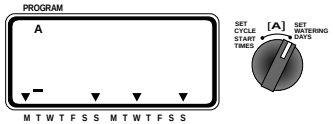


FIGURE 6: Program A Setup for Two-Week Schedule

Program B Setup

Program B is used to water an interval from 1 to 28 or on odd or even days. An interval of 1 will water every day; an interval of 2 will water today and then every other day, etc. The odd or even schedule is based on the date. If the time of day and the date are set correctly, the controller will only water on even or odd days. If selected, the controller has leap-year compensation to ensure conformance to the odd or even schedule.

To set the watering interval,

- Set start times as outlined in the previous column (Start Times for Program A or B).
- Turn the rotary selector to **SET WATERING INTERVAL.** The cursor will blink to the right of the word **INTERVAL. [Note Figure 7.]**

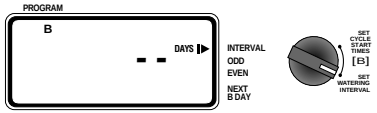


FIGURE 7: Program B Setup for Fixed Schedule

- When selecting an interval of days, press the + or – buttons to the desired interval. (Example: If you want to water once every ten days, the interval will be set for 10.) To program the interval, press **ENTER.**
- To select either odd or even day watering, press **NEXT.** This moves the cursor to the odd or even setting. Then press **ENTER.**

- To clear a schedule, press the **NEXT** button to move the cursor to the schedule and then press **CLEAR.** To enter a new schedule, press the **NEXT** button to move to the desired schedule and then press **ENTER.**

Note: *If an interval of "3" is entered today, the controller will water for the first time today and then again every third day.*

Note: *The controller will* ***NOT*** *water on the first day the program is entered or modified if the start time(s) have already passed.*

Program B Interval Countdown

If the interval watering selection is used for Program B, the controller displays the number of days until the next interval watering day. The controller will display a number in the lower right corner labeled **NEXT B DAY.** For example, if the display shows "1" as the next B day, the interval watering program will water tomorrow **[See Figure 8].** A "0" indicates that the B program will water today.

FIGURE 8: Program B Interval Countdown

Set Watering Durations and Program Assignments for A or B

The way you set the watering duration is the same for all programs. To set the duration for each program you will be using, do the following—

- Select the watering duration for the stations by sliding each switch to its desired time from 2 to 120 minutes.
- To skip a station, move the station's slide switch to the **MANUAL OFF** position at the bottom of the slide.
- Set the program slide switch for each station that you want to assign to Program A or B or A and B **[See Figure 9].**

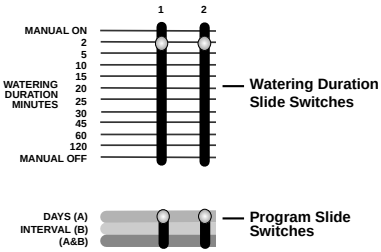


FIGURE 9: Slide Switches

Reviewing and Changing Your Program

The Orbit® controller lets you easily review a complete watering plan. For example, to review Program A watering cycle start times, simply turn the rotary selector to the **CYCLE START TIMES** position in Program A and check the times that have been entered. Using the **NEXT** button, you can advance through the schedule without fear of disturbing any programming.

If you want to change the cycle start times, watering days, or watering intervals, simply follow the directions for that program modification.

After reviewing or changing a watering schedule, remember to turn the rotary selector back to **AUTO** if you want the controller to automatically follow your plan.

Ready for Automatic Operation

After programming is complete, turn the rotary selector to **AUTO [See Figure 10].** The controller is now fully programmed and ready to use in the automatic mode. In automatic mode, each station will operate sequentially, starting with Program A.

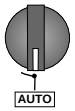


FIGURE 10: Ready for Automatic Operation

section 4

Semi-Automatic & Manual Operation

The Orbit® controller has the ability to override the automatic program without disturbing the preset program.

1. Manual Operation—Using Slide Switches

You can override the automatic program and operate the controller manually by using the watering duration slide switches **[See Figure 11].** If a manual operation is started during an automatic program cycle, the automatic program cycle will be cancelled.

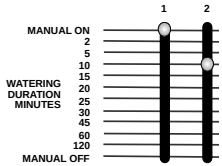
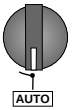


FIGURE 11: Manual Watering

A. Manual On—One Station

- Turn the rotary selector to the **AUTO** position.



- Turn on any individual station by moving that station's watering duration slide switch to the **MANUAL ON** position (fully up). The display blinks back and forth between the water drop and the time of day.

The rotary selector must stay in **AUTO** for this operation to take effect.

Only one station can be active at a time. The last station set to the **MANUAL ON** position will be active (watering).

When a station is turned on manually, the display will show **ON** inside a water drop. The display also shows the number of the station that is activated **[See Figure 12].**

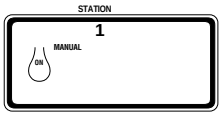


FIGURE 12: Manual Operation Display

B. Manual Off—One Station or Multiple Stations

- Turn off any individual station or stations by moving the watering duration slide switch to the **MANUAL OFF** position (fully down). **[See Figure 13.]**

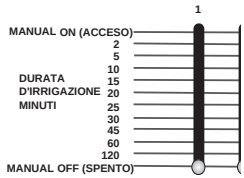


FIGURE 13: Duration Slide Switch Set to Manual Off

Leave the rotary selector in the **AUTO** position for the **MANUAL OFF** to affect individual stations.

Turning the rotary selector to the **OFF** position will turn all stations and all programming off. This turns all watering off and is essentially used as a system shut down.

To resume automatic watering—

- Turn the rotary selector to the **AUTO** position and make sure the duration slide switch or switches are set for the specific watering durations.

C. Manual Timed Watering for One Station

You can set any single station to go on manually for a specific amount of time from 2 to 120 minutes. This is a two-step process using the watering duration slide switch.

- First move the watering duration slide switch to the **MANUAL ON** (fully up) position, then back to any duration position. For example, if you want to water a specific station for 15 minutes, push the slide switch to the **MANUAL ON** position then back to the 15 minute position **[See Figure 14.]**

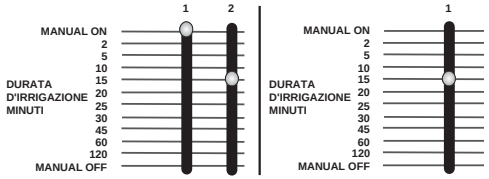


FIGURE 14: Manual Watering Station 1 Using the Slide Switch

If more than one station is set for manual duration, the controller will activate only the last station you set.

For example: You set station 2 to **MANUAL ON** for 30 minutes. Then you immediately set station 6 to **MANUAL ON** for 20 minutes. The controller will only activate station 6 for 20 minutes—your last input. **[See Figure 15.].**

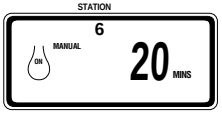


FIGURE 15: Manual Timed Watering

At the completion of the manual watering duration set on the slide switch, the controller reverts to the automatic mode.

Watering can be turned off at any time by pushing the slide switch to **MANUAL OFF.** (Remember to push the slide switch back from **MANUAL OFF** to a duration if you are using this station in the automatic watering schedule.)

Note: *If a manual operation is started during an automatic program cycle, the automatic program cycle will be cancelled.*

Semi-Automatic Mode

In addition to the manual modes previously discussed, the controller also lets you override the programmed watering schedule temporarily without adjusting the water duration slide switches.

By using the semi-automatic mode, you won't need to remember to return the duration slide switches to their normal positions.

A. All Stations Cycle Once

This can be especially helpful if you happen to experience unusually warm weather and you want to have all stations activate one time for their normal duration as set on the slide switches.

To turn on all stations once in sequence (rotary selector in **AUTO**) press the **MANUAL** button once (a blinking **ALL** is displayed), and then press **ENTER.** **[See Figure 16.]**

FIGURE 16: Watering All Stations Once

The display will show the first station number that is activated and will count down the minutes assigned to the watering duration slide switch. All stations will activate once in sequence (except those that are set to the **MANUAL OFF** position) for the durations set on the watering duration slide switches. Any station set to the **MANUAL OFF** position will not water.

Note: *After* **MANUAL** *has been pushed, if* **ENTER** *is not pushed within 60 seconds, the display will return to the time of day.*

- To interrupt or discontinue this cycle, press the **CLEAR** button once.
- At the completion of this function, the controller reverts back to your normal automatic watering plan.

Note: *If a manual operation is started during an automatic program cycle, the automatic program will be cancelled.*

(All stations cycle once, A program only.)

- To activate each station assigned watering durations for the A program only, press the **MANUAL** button, followed by the **NEXT** button. This will select stations with assigned watering durations in the A program only. To initiate this semi-automatic watering, press **ENTER.**

(All stations cycle once, B program only.)

- To activate each station assigned watering durations for the B program only, press the **MANUAL** button followed by pressing the **NEXT** button two distinct times. This will select only those stations with assigned watering durations in the B program only. To initiate this semi-automatic watering, press **ENTER.**

(All stations cycle once, AB program only.)

- To activate each station assigned watering durations for the AB program only, press the **MANUAL** button followed by pressing the **NEXT** button three distinct times. This will select only those stations with assigned watering durations in the AB program only. To initiate this semi-automatic watering, press **ENTER.**

Note: *After the* **MANUAL** *button has been pushed, if a selection is not made within 60 seconds the display returns to the time of day.*

- To halt or discontinue semi-automatic or manual watering, press the **CLEAR** button once. The controller will revert to your original automatic watering program.

Using the User-Selectable Rain Delay Mode

To stop automatic watering for 24, 48, or 72 hours, use the **RAIN DELAY** mode button.

- With the rotary dial set to **AUTO,** press the **RAIN DELAY** button once. The controller will force a 24-hour interruption of all scheduled watering. After 24 hours, the controller will automatically return to its initial watering schedule.
- To increase the rain delay to 48 or 72 hours, simply press the **RAIN DELAY** button again until the desired delay time is displayed. Press **ENTER.**
- To cancel the rain delay mode, press **CLEAR [See Figure 17].**

Note: *While in rain delay mode, the controller will display the remaining hours (counting down) to the end of the accepted delay alternating with the current time and date. No other button besides* **CLEAR** *will be accepted while the controller is in the rain delay mode.*

FIGURE 17: Display Showing Rain Delay

Complete System Shut Down

To shut the system down, turn the rotary dial to the **OFF** position. The controller remains programmed but will not water.

Smart-Scan® Diagnostic Fault Sensing

A diagnostic fault sensor is built into the electronics of the controller. This feature will automatically scan for the presence of a faulty solenoid or wiring short in each station as part of each watering sequence. If the controller senses a short in a station, it will skip the faulty station and move to the next working station. The controller displays faulty and the faulty station number **[See Figure 18].** If a short is detected in the pump/master control valve terminal, a "P" is displayed under the station number and the watering cycle is discontinued. Only the last station detected as having a wiring short will be displayed to the controller.

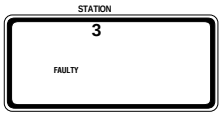


FIGURE 18: Display Showing Station Fault

At the next scheduled watering sequence, the controller will attempt to water the faulty station once more. If a short is not detected, the controller will continue to water the station and the faulty message will be eliminated from the display.

In order to cancel the faulty message from the display:

1. First repair the short in the wiring or replace the faulty solenoid.
2. Test the station by operating a manual watering sequence.
3. If the short is not detected after a few seconds, the FAULTY message will be terminated.
4. If the message continues, a short in the wiring still exists.

The FAULTY message can also be eliminated from the display by turning the rotary dial.

Internal Auto-Resetting Electronic Circuit Breaker

The controller is equipped with an internal electronic circuit breaker. Unlike a mechanical circuit breaker, the internal circuit breaker has the advantages of being more temperature stable, having a higher degree of sensitivity, and resets automatically. In combination with the diagnostic fault sensing, the internal electronic circuit breaker adds real value to your controller. The batteries will maintain program data in the event of a circuit breaker trip. We recommend that you replace the batteries annually.

The internal circuit breaker will "trip" whenever the controller receives a high current spike. This might occur in the following situations:

1. If lightning strikes nearby.
2. When the power supply has an electric spike.
3. If a station has a wiring short.

Whenever one of these conditions occurs, the electronic circuit breaker may "trip" causing the station output from the controller to be halted momentarily. The batteries will continue to store the program information and activates the LCD. After a few moments, the controller will automatically retest the circuit to see if the condition has stopped. In most cases, the problem causing the current spike has stopped (lightning strike stopped, power supply spike over, or the diagnostic fault sensor has switched to a non-faulty station). If so, the electronic circuit breaker will reset itself. It is **NOT** necessary to reset the controller manually.

section 5

Installation of Indoor Mount Controller

Install the controller in 5 easy steps—

1. Choosing a Controller Location
2. Mounting the Controller
3. Installing the Batteries
4. Connecting the Transformer
5. Connecting Valve Wires to Controller

1. Choosing a Controller Location

- Select a location near a standard electrical outlet. Avoid using an outlet controlled by an On/Off switch.
- The controller should not be exposed to the weather or operate at temperatures below 14 degrees or above 113 degrees Fahrenheit (-10 degrees or above 45 degrees Celsius). Avoid direct sunlight.
- Installation works best in a garage or protected area. The controller should not be mounted outdoors.

2. Mounting the Controller

- A mounting template is provided to assist you in mounting the controller.
- Screw a No. 8 screw at eye level leaving the screw head extended out from the wall about 1/8" (3 mm). Use expanding anchors in plaster or masonry if necessary.
- Slip the keyhole slot in the back of the controller over the extended screw.
- Screw a No. 8 screw through each of the two holes at the bottom of the box into the wall **[See Figure 19].**

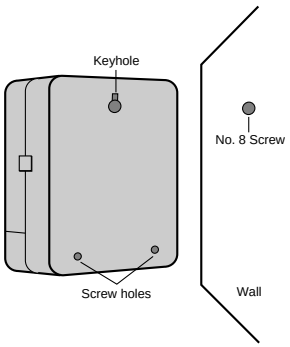


FIGURE 19: Mounting the Controller

3. Install the Batteries

The controller requires two AA alkaline batteries to keep the program in memory in case of AC power loss. In a typical installation, fully charged batteries should provide sufficient power for approximately one year of protection. Therefore, we recommend changing the batteries annually.

- Remove the battery cover by sliding it to the left.
- Insert two AA alkaline batteries into the battery compartment.
- Return the battery cover to its closed position.

Weak or missing batteries can cause the time, date, and program to be erased after a power failure. If this happens, you will need to install fully charged batteries and reprogram the controller.

Note: *Batteries alone will not operate the valves in your sprinkling system. The 24-volt transformer must be plugged in and have power to operate your system normally.*

4. Connecting the Transformer

- With the cover off, find the two terminal holes labeled "24 VAC." Make sure the transformer is not plugged in. Insert one of the two power leads from the transformer into each terminal. It doesn't matter which lead goes into which terminal.
- It may be necessary to open the terminal to allow for wire insertion or removal. To do this, simply press upward on the tab located on top of the terminal **[See Figure 8, Page 4].**
- Plug in the transformer **[See Figure 20].**
  Warning: *Do not link two or more controllers together with one transformer.*
- Slide the cover back on until it snaps.

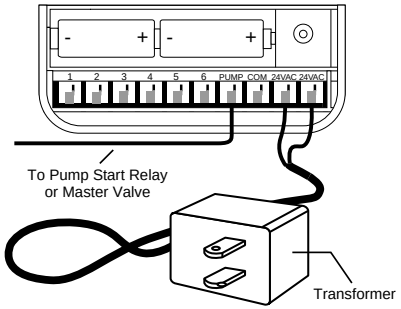


FIGURE 20: Connecting Pump Start, Master Valve and Transformer

section Installation of Weather-resistant indoor-outdoor Controller

All our Weather-resistant Indoor/Outdoor controllers can run at temperatures between 35 and 140 degrees Fahrenheit (0 to 60degrees Celsius). Storage temperature is -4 to 149F (-20 to 65C).

Direct sunlight can easily increase temperatures inside the Controllers so chose a shaded location.

The controllers are weather-resistant to UL-50 and ETL® Listed, but should not be placed in areas where continuous water could cause damage.

Caution: *Do not open the Controller when it is raining.*

To make installation easier the Controller has a removable door. Remember to leave at least 7ins (18cm) to the left of the controller box for the door to swing open after installation.

Check the model number of your timer: various models are configured differently to meet national requirements, look for the section covering the model number on your controller. The model number can be found on the back of the housing, together with other useful information.

Models 57396, 57392, 57384, 57386, 57388, 57382

are for installation in Australia, New Zealand, and South Africa using the fitted line cord.

Models 57606, 57012

are for 110/117VAC operation and are suitable for either wall-hanging installation using the line cord fitted or permanent installation. You need to decide which type of installation you are going to use. Ensure that you have the appropriate electrical power available at the location you intend to use. If used outdoors with the line cord, a suitable weatherproof power outlet must be available.

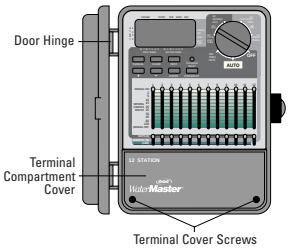


FIGURE 21: Outdoor Timer, Showing Terminal Cover

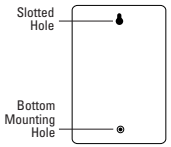


FIGURE 22: Back of Timer Box

Installation using the fitted line cord

- Use the mounting template provided to assist you in preparing the mounting location: choose a flat, clean surface.
- Using the upper mark on the template, insert a No. 8 screw (included) at eye level leaving the screw head about 1/8th inch (3mm) out from the wall. (Use expanding anchors in plaster or masonry if necessary).
- Using the lower mark on the template, affix a No. 8 screw (included), again leaving the head protruding.
- Slip the slotted keyhole in the back of the Controller over the extended upper screw and allow the lower screw to recess into the lower hole in order to prevent the Controller from swinging. [See Fig. 22].
- The line cord may now be inserted into the power outlet.
- Proceed to section 7.

Installation using permanent wiring

Preparing the Controller for Permanent Installation

- Before commencing to install the controller you must remove the fitted line cord and replace with the pigtail wires provided.
- Take off the terminal compartment cover by unscrewing the two screws and pulling the plastic cover forward. [See figure 21], this reveals the AC Power Cover [Figure 23].
- Remove the rubber weather plug from the hole in the center and unscrew the one fixing screw, pull the plastic cover forward to reveal the AC wiring.
- Use a punch to create a hole in the blind Bottom Mounting Hole on the back of the controller box [Figure 22: Bottom Mounting Hole].
- Loosen the screw on the cord restraint and the three screws on the terminal block and remove the line cord completely.
- Feed the three wires of the pigtail through the exit nipple, under the strain relief, and cross to the terminal block. Fasten the wires to the terminal block ensuring that the black wire is connected to the Live terminal marked L, the white wire is connected to the Neutral terminal marked N, and the green wire is connected to the Earth terminal marked E. Ensure that the terminal screws and the strain relief screw are all firmly tightened. Check that the wires are clear of any obstruction and will not be trapped by the AC Power Cover when it is replaced.
- Replace the AC Power Cover and screw tight, do not force into place, if resistance is met check that no wires are trapped.

The Controller is now ready for permanent installation; follow all the instructions for the following models to complete the installation.

Models 57344, 57346, 57348, 57342
International Models 94024, 94026, 94028, 94022

All the above listed models are designed for permanent installation only. Local building and electrical codes usually require that an approved electrical conduit and electrical fittings be used to connect exterior wall-mounted equipment to AC power. Please check local codes. Any permanent connection should be made by a licensed electrical contractor in accordance with the requirements of the National Electrical Code and other state and local codes.

- Take off the terminal compartment cover of the controller by unscrewing the two screws and pulling the plastic cover forward. [Figure 21].
- Remove the rubber weather plug from the screw hole.
- Use the mounting template provided to assist you in preparing the mounting location: choose a flat, clean surface.
- Using the upper mark on the template, insert a No. 8 screw (included) at eye level leaving the screw head about 1/8th inch (3mm) out from the wall.

(Use expanding anchors in plaster or masonry if necessary).

- Slip the slotted keyhole in the back of the controller box over the extended screw [Figure 22].
- Push a No. 8 screw (included) through the Bottom Mounting Hole [Figure 22] in the controller box and tighten until the box is held firmly to the wall, but do not over-tighten.

The Controller has separate compartments for the AC line power input and the low voltage outputs. You must keep the input power and the low voltage in their separate places when wiring the controller box.

The controller has a built in transformer that must be connected to an AC line voltage source. Check the back of the controller box for power requirements. This connection should be made by a licensed electrical contractor in accordance with the requirements of the National Electrical Code and other state and local codes.

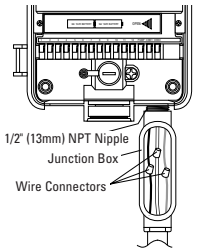


FIGURE 23: AC Wiring Using Junction Box

Wiring the AC input:

Caution: *do not connect the controller to one phase of a there-phase power system used by a pump or other electrical equipment.*

The controller has a nipple-mounted external power connection [Figure 23]. Use this 1/2 inch (13mm) NPT nipple to connect the controller to a standard electrical junction box that should be UL Listed (or equivalent) or comply with IEC or EN standards (or equivalent).

- Turn off the AC power at the AC circuit breaker and apply an appropriate safety lockout. Verify that the power has been turned off to the installation site using an AC voltmeter set for the correct measurement range.
- Use power feed wire of 14 gauge (AWG) minimum with a temperature rating of 155 degrees Fahrenheit (68 degrees Celsius) or higher.
- Install the conduit and associated fittings. Connect the AC electrical power wiring to the source by following all the right codes and local standards.
- Connect the junction box (not included) to the NPT nipple [Figure 23].
- Connect the source power conduit to the entrance of the junction box, following all the appropriate codes.
- Connect the source wires to the wires extending from the controller.
- Take care to follow the correct color code. For USA: connect the Green for Ground, Black for Live, and White for Neutral. Often the source ground may be bare copper conductor rather than green wire. For Europe: Live is Brown and Neutral is Blue, there is no ground connection required. Be sure that all wires are connected to the proper source wire.
- Make sure all connections are made with code-approved insulated connectors.
- Be sure to place a weatherproof gasket and lid on the junction box.

Installing Valves, Pump Starts & Master Valves

1. Wiring the Electric Valves

- If the distance between the controller and valves is under 700' (210 m), use WaterMaster® sprinkler wire or 20 gauge (AWG) plastic jacketed thermostat wire to connect the controller to the valves. If the distance is over 700' (210 m), use 16 gauge (AWG) wire. The wire can be buried in the ground; however, for more protection wires can be pulled through PVC pipe and buried underground. Be careful to avoid burying the wires in locations where they could be damaged by digging or trenching in the future.

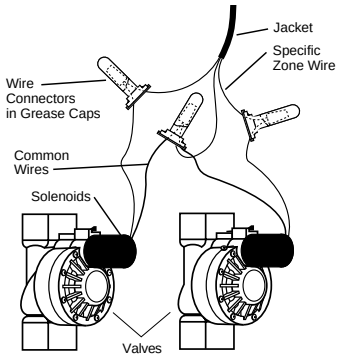


FIGURE 23: Connecting Controller Wires to Valves

- Each valve has two wires. One wire is to be connected as the common. The common wires for all the valves can be connected together to one common wire going to the controller. The other valve wire is to be connected to the specific station wire that will control that valve **[See Figure 23].**
- All wires should be joined together using wire nuts, solder, and/or vinyl tape. For additional protection to waterproof connections, a WaterMaster® grease cap can be used.
- To avoid electrical hazards, only one valve should be connected to each station.

2. Connecting Valve Wires to the Controller

- Remove the terminal compartment cover.
- Strip 1/4" (6 mm) of the plastic insulation off the end of each wire.
- Determine which valve you want to connect to which station. Connect each valve wire to its station terminal (labeled 1-12) by inserting the bare wire fully into the terminal.
- It may be necessary to open the terminal to allow for wire insertion or removal. To do this, simply press upward on the tab located on top of the terminal **[See Figure 24].**
- Connect the common wire to the terminal labeled **COM [See Figure 24].**

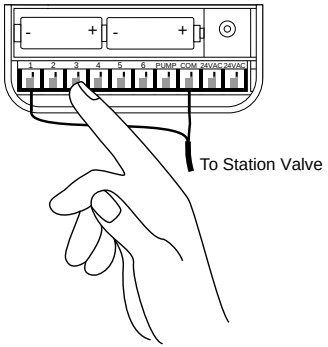


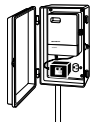
FIGURE 24: Connecting Valve Wires

Note: *Only one wire can be installed into each terminal. If more than two common wires are used in your system, splice several together so only one wire runs into each of the* **COM** *terminals. Protect the splice connection with a wire nut.*

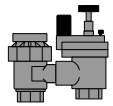
OTHER QUALITY PRODUCTS AND ACCESSORIES

Automatic Rain Shut-Off
For automatic rain shut-off, contact your Orbit® dealer to purchase an Orbit® Model 57091 (94060) automatic rain shut-off switch. The rain shut-off easily connects to the controller and prevents overwatering during rainy periods.

Weather Resistant Controller Box
Allows outdoor installation of most brands of indoor mount controllers.
UL® listed.



Automatic Valves
Durable, non-corrosive plastic construction. Automatic valves are available in anti-siphon or straight valves with safe, low voltage.



Automatic Converters
Durable non-corrosive plastic construction. Converts most brands of plastic or brass valves to automatic.

Grease Caps
Protects low voltage wires from corrosion or shorts.

Remote Control Transmitter and Receiver
Control your sprinklers with the touch of a button up to 200' (60 m) from your sprinkler controller.

TROUBLESHOOTING

Possible Causes of Problems

One or more stations do not turn on:
1. Faulty solenoid.
2. Wire broken or not connected.
3. Flow control stem screwed down, shutting valve off.
4. Programming is incorrect.

Stations turn on when they are not supposed to:
1. Water pressure is too high.
2. More than one start time is programmed.

One station is stuck on and will not shut off:
1. Faulty valve.
2. Particles of dirt or debris stuck in valve.
3. Valve diaphragm faulty.

All stations do not turn on:
1. Transformer defective or not connected.
2. Programming is incorrect.
3. Circuit breaker has been tripped.

Controller will not power up:
1. Circuit breaker has been tripped.
2. Transformer not plugged into an operational AC outlet.

Stations continue to turn on and off when they are not programmed to:
1. More than one start time is programmed with overlapping schedules.
2. Excessive pressure.

Circuit breaker trips repeatedly:
1. Short in wiring or solenoids.

Help

Before returning this controller to the store, contact Orbit® Technical Service at: **1-800-488-6156, 1-801-299-5555**

Listings

The controller is tested to UL-1951 (Models 57004, 57006, 57008, 57122) and UL-50 (Models 57606, 57012) standard and is ETL® listed. Appropriate international models are CSA® and CE® approved.

Trademark Notice

The information in this manual is primarily intended for the user who will establish a watering schedule and enter that schedule into the controller. This product is intended to be used as an automatic timer controller for activating 24 VAC irrigation valves, as described in this manual.

WaterMaster® by Orbit® Limited Two Year Warranty

Orbit® Irrigation Products, Inc. warrants to its customers that its WaterMaster® products will be free from defects in materials and workmanship for a period of two years from the date of purchase. We will replace, free of charge, the defective part or parts found to be defective under normal use and service for a period of up to two years after purchase (proof of purchase required). We reserve the right to inspect the defective part prior to replacement. Orbit® Irrigation Products, Inc. will not be responsible for consequential or incidental cost or damage caused by the product failure. Orbit® liability under this warranty is limited solely to the replacement or repair of defective parts.

To exercise your warranty, return the unit to your dealer with a copy of the sales receipt.

1-800-488-6156
1-801-299-5555
www.orbitonline.com

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57004-24 Rev D