






# ESP-MC, ESP-SAT, ESP-SITE SAT CONTROLLERS

## Addendum Operations Guide

We have made some improvements to the ESP-MC, ESP-SAT and ESP-SITE SAT controllers, which are not documented in the Installation and Operating Instructions.

These changes apply to all controller units shipped after January 15, 1998.

### 1. Station Delay per Program.

*(Note: On ESP-SAT and ESP-SITE SAT controllers this function is only available in stand-alone mode)* The function is activated by moving the dial to the TEST PROGRAM position and then simultaneously pressing the  and  buttons. The display will briefly show DELAY after which you will be prompted for a delay time. Select the program you want to delay by pushing  button. Enter the time by using  and  buttons to select the time you want. The delay time can be set from 0 seconds (the default) to 9 hours. The delay time is set in 1-second increments between 1-second and 5-minutes and the delay time is set in 1-minute increments between 5-minutes and 9-hours.


### 2. Display Station Operation during MAXICOM Control.

When operating under MAXICOM control the satellite controller will display what station is in operation when MAXICOM is in control of the satellite. The display will alternate between "CENTRAL", "CONTROL", "CHAN ##" and "STA ##" with the ## showing the actual channel or station numbers that are currently operating. This function will operate in AUTO or OFF dial position only.

### 3. Fuse Detection.

The controller display will show the word "FUSE" if a fuse is missing, blown or the red and brown wires with their connector is not attached to the output board.

### 4. MAXICOM Mode in the OFF Position.

If a satellite controller is connected to MAXICOM and the  switch is in the MAXICOM position the satellite controller will remain linked to the CCU with the main dial in any position. If the dial is set in OFF position, the CCU will still remain linked to the controller. If controller loses the CCU link, it will return to the STAND-ALONE mode function depending on the current dial position.

This change applies to all controller units shipped after January 4th, 2000.

## Rain Bird RASTER™

### Introduction

Rain Bird's new RApid Station TESt Routine (RASTER™) lets you diagnose and troubleshoot field wiring, solenoid, and controller problems quickly and easily.

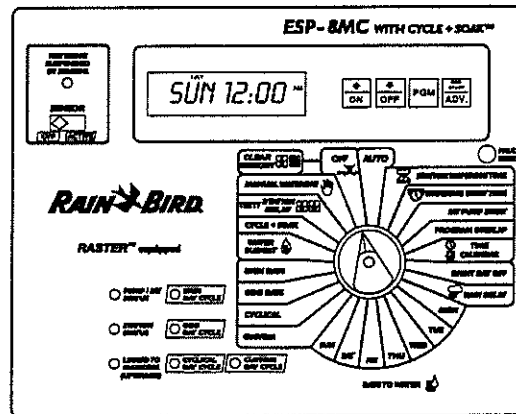
The RASTER™ sends an electronic signal to each valve on the controller and then displays the valve's current operating condition in the easy-to-read digital display.

The RASTER™ tests and displays three different valve operating conditions:

- Open — Indicates an open circuit between the controller and the valve.
- Short — Indicates a short circuit between the controller and the valve.
- Fail — The controller was unable to send the test signal to the valve. This indicates a possible problem with the controller's internal circuitry.

The RASTER™ is a fast and easy way to make sure the controller's master valves and all station valves are operating properly.

The new RASTER™ feature is available on the Rain Bird ESP-MC, ESP-SAT, ESP-SITE SAT, ESP-LX+ controllers.

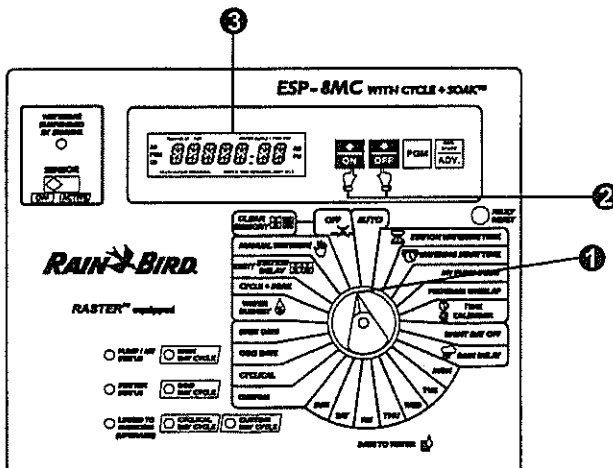


### RASTER™ Operation

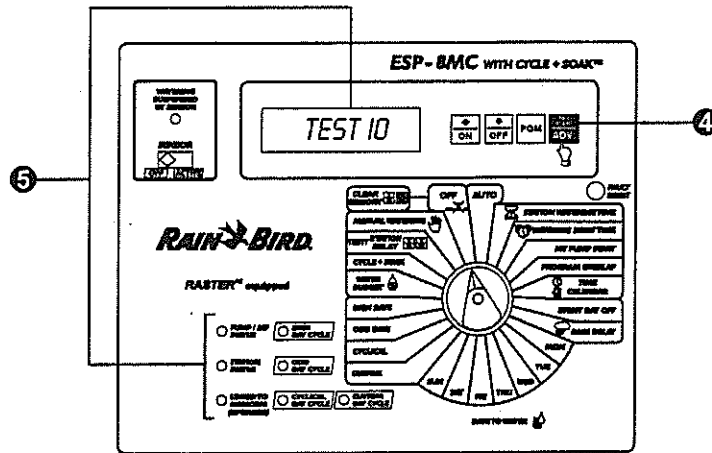
Use the following procedure to perform the RASTER™ on the master valves and all other controller station valves.

#### Beginning the RASTER™

- ① Turn the Programming Dial to "OFF."
- ② Press and release the "ON" and "OFF" buttons at the same time.
- ③ The display will look like this.



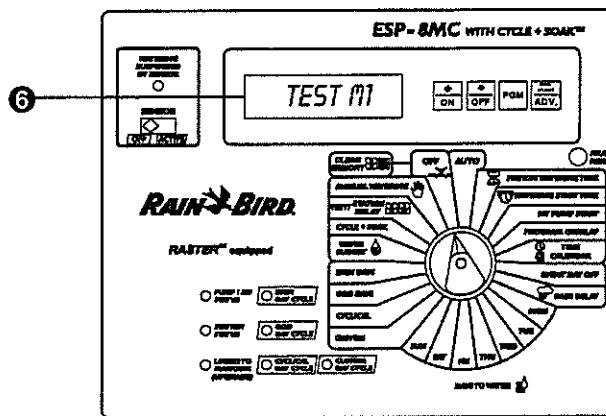
- ④ Press the "MAN START/ADV" button to begin the RASTER™.
- ⑤ The display shows "TEST IO" and the Indicator lights on front panel flash once as the RASTER™ confirms the proper operation of the controller's front panel lights.



NOTE: If the front panel is not connected to the output board or the controller is disconnected from the main power the display will show the message "NO OUT".

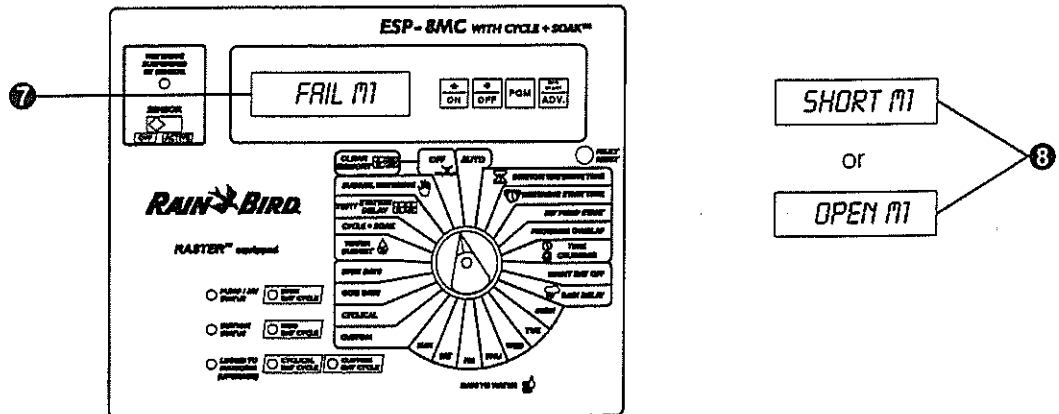
The RASTER™ then automatically begins the test on the controller's master valves and each station valve, beginning with the master valve 1.

- ⑥ The display shows "TEST M1" and "TEST M2" as the RASTER™ begins to check the operation of the master valves (an automatic valve installed on the mainline pipe upstream from the station valves).



- ⑦ If the display shows "FAIL M1" or "FAIL M2" the controller was unable to send the test signal to the master valve, indicating a possible problem with controller's internal circuitry. Call Rain Bird Technical Assistance at 800-247-3782, or contact your local Rain Bird distributor for service.
- ⑧ If the display shows "SHORT M1," or "OPEN M1" or "SHORT M2," or "OPEN M2" there may be a faulty circuit between the controller and the master valve. (On irrigation systems not equipped with a master valve, the "OPEN M1" or "OPEN M2" indicator is normal and requires no service.)

See "Troubleshooting Open and Shorted Valves" on page 6 for more information on identifying and repairing open and shorted valve circuits.



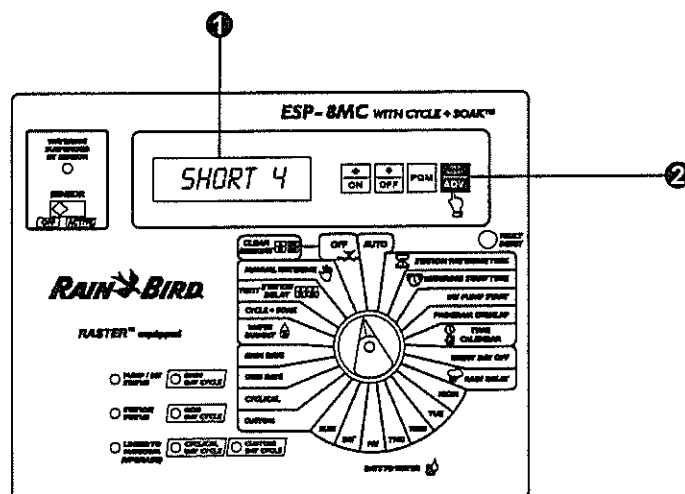
## Station Valve Testing

After testing the master valves, the RASTER™ automatically tests each valve station, in numerical order, from lowest to highest.

- ① The display shows the valve's operating condition (FAIL, OPEN, or SHORT), followed by the station number (up to 40 stations, depending on controller model). This sample display indicates there is a short on valve station number 4.
- ② The RASTER™ displays the condition of each valve being tested for 10 seconds, and then moves to the next valve. You can press "MAN START/ADV" (or any other magenta button) at any time to advance to the next station to be tested.



NOTE: Any controller station that does not have a valve connected to it will display an OPEN signal. For example, if you have a 12-station controller and only have stations 1 through 10 connected to valves, stations 11 and 12 will show "OPEN" on the RASTER™. This is normal and does **not** indicate any problem with the controller or system valves.



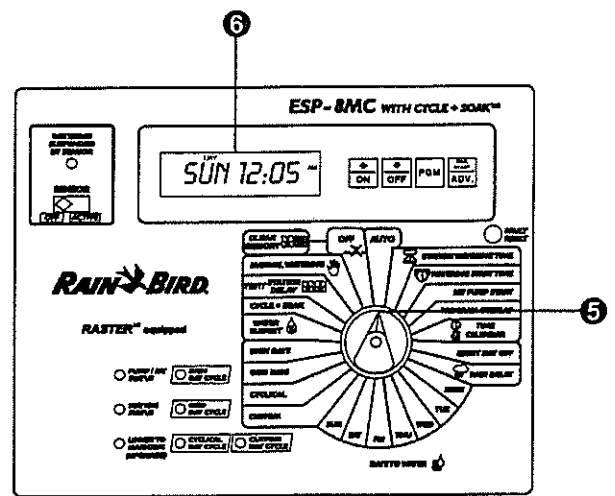
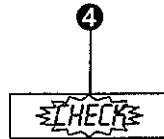
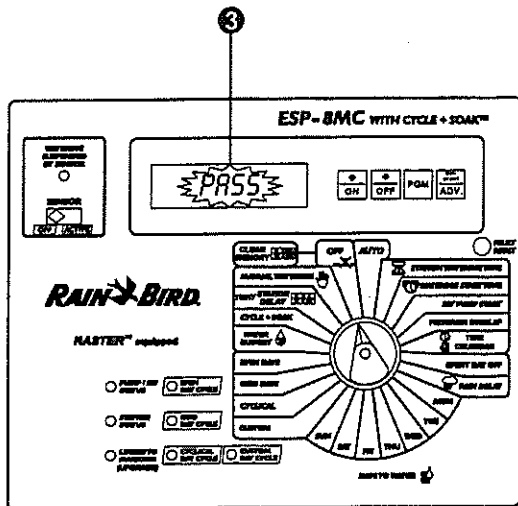
- ③ If the master valves and all station valves pass the RASTER™, the display flashes "PASS" for 10 seconds.
- ④ If the RASTER™ detected a problem on the master valves or any station valve, the display flashes "CHECK" for 3 seconds and then displays the valve's problem condition (FAIL, OPEN, or SHORT) and station number or master valve.

Each problem valve will flash in the display for five seconds. Press "MAN START/ADV" at any time to display the next problem valve detected.

If any valve displays "FAIL," call Rain Bird Technical Assistance at 800-247-3782, or contact your local authorized Rain Bird distributor to service your controller.

Any valve displaying "OPEN" or "SHORT" should be checked for field wiring or other circuit problems. See "Troubleshooting Open and Shorted Valves" on page 6 for more information on identifying and repairing open and shorted valve circuits.

- ⑤ Turn the Programming Dial from "OFF" to "AUTO" (or any other dial position) at any time to exit RASTER™ mode.
- ⑥ The controller returns to normal operation.



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## Troubleshooting Open and Shorted Valve Circuits

### Open Circuits

When the RASTER™ shows an "OPEN" valve circuit, it indicates a complete break in the current flow between the controller and the valve.



NOTE: The RASTER™ will display an "OPEN" indicator if no valve solenoid is connected to the controller station. This is normal and the system does **not** need service.

These are the most common causes of open circuits:

- A malfunctioning valve solenoid
- Field wires that have been cut or pulled loose
- Loose wire connections on the controller's terminal strip or at the valve solenoid
- A damaged component on the controller's internal circuit board

### Short Circuits

When the RASTER™ shows a "SHORT" test result, it indicates an unintended re-routing of the current flow somewhere between the controller and the valve.

These are some of the most common causes of short circuits:

- A shorted valve solenoid
- Nicked or "skinned" field wires
- Loose or corroded wire connections on the controller's terminal strip or at the valve solenoid
- A malfunctioning component on the controller's internal circuit board

### Troubleshooting Opens and Shorts

Use the following procedure to troubleshoot any valve identified as "OPEN" or "SHORT."

- ① Make sure the problem valve's station wires are securely connected on the controller's terminal strip.
- ② If the wires were securely connected, move the problem station's wires to a station that passed the RASTER™ and re-start the test.
- ③ If the "OPEN" or "SHORT" moves to the new station, check the problem valve's solenoid and field wiring.
- ④ If the "OPEN" or "SHORT" reoccurs on the original station, the controller's internal circuitry may need service.