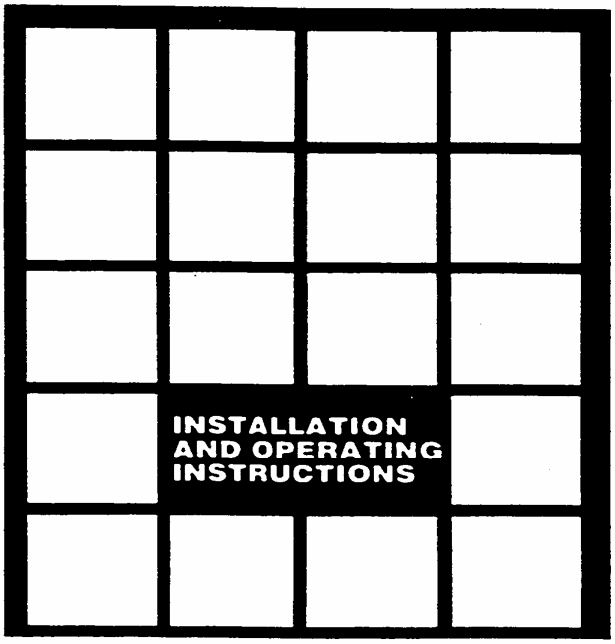
TSC-4
TSC-5
TSC-7

RAIN CLOCK™
DIGITAL SPRINKLER TIMER WITH THREE SCHEDULES

OWNER'S MANUAL



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INTRODUCTION

The TSC Rain Clock Timer has some important features you should be aware of before you begin programming. Details on how to implement these features will be described in the step-by-step instructions on the following pages.

- The TSC has the capability of watering with Three Schedules. This allows watering of grass areas more often/or on different days than shrub areas. By combining the two independent schedules, a third schedule can be used to water some areas more frequently, such as potted patio plants.
- The TSC has a 14-day cycle. After completing watering on the 14th day, the clock will automatically repeat the cycle beginning with day 1.
- The TSC has a PRESET WATERING SCHEDULE which is built into the clock at the factory. If you do not wish to establish your own watering schedule, the clock will operate each station for 10 minutes each day beginning at 8 A.M. You will only need to enter the correct time and day into the clock (see page 7).
- The TSC has two features to protect your landscape in the event of a power outage.

  — The battery backup circuit prevents your watering schedule from being lost. It will maintain your watering schedule for up to 6 hours. Install a 9 volt alkaline battery and check it periodically to assure it is still active.

  — Should the battery fail to hold your watering schedule, the PRESET WATERING SCHEDULE will water each station for 10 minutes each day, starting 8 hours after power resumes (see page 18).

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INSTALLATION INSTRUCTIONS

Location

This timer is designed for indoor installation. The power to the timer is supplied by a plug-in transformer with a 6-foot cord. Select a location inside a building and near a 110 volt A.C. electrical outlet. Your location should be completely protected from the weather.

Choose a wall location which allows 7½" on the lefthand side of the controller so the door can open fully.

Mounting

The TSC cabinet is designed so the circuit panel assembly does not have to be removed from the cabinet for mounting or electrical hookup. Four mounting holes are provided on the back of the cabinet - one keyhole type at the top center of the cabinet and three along the bottom.

Install a No. 10 screw in the mounting surface at eye level. Leave the head of the screw extended approximately 1/8". Hang the timer on the screw using the keyhole slot on the back of the cabinet.

Straighten the timer to the desired position and install additional No. 10 screws in the three mounting holes along the bottom, inside the cabinet.

Wiring

Transformer Connection - Route the transformer cord through the left wiring hole in the bottom of the timer. Refer to Figure 1 and connect the two BLUE wires to the screw terminals marked "BLU". Connect the two ORANGE wires to the terminals marked "ORN".

NOTE: It is not necessary to completely remove the screws from the terminal strip. Just loosen them enough to slip the wire under the screw head and then tighten screws securely.

CAUTION

Be sure power connections are correct before plugging in transformer. WRONG CONNECTIONS COULD RESULT IN SERIOUS DAMAGE TO THE RAIN CLOCK TIMER.

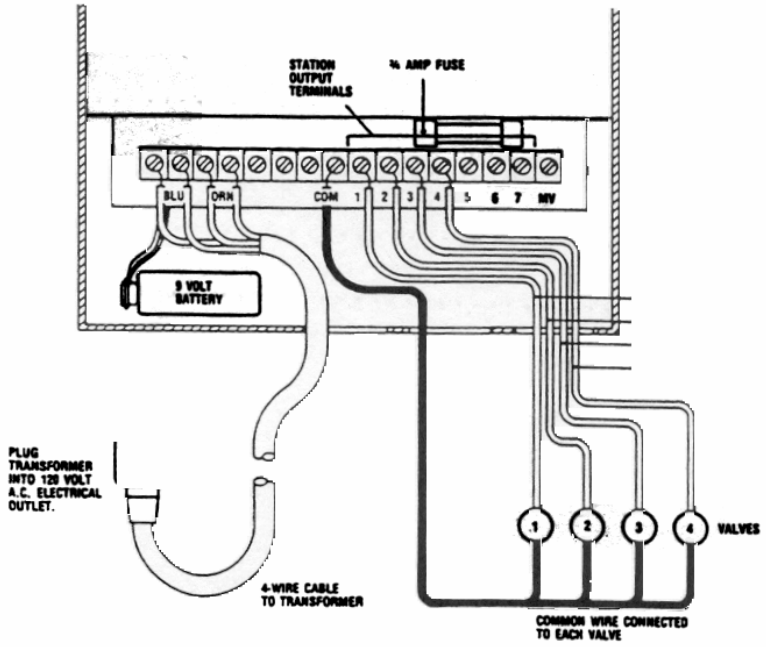


FIGURE 1

Running the Wire - Use 18 gauge "bell wire" or thermostat control cable for wiring the valves to the Rain Clock Timer. Wiring to be buried should be approved for underground use, and all splices should be sealed water tight.

Valve Wiring Procedure - Each valve is connected to the timer by two wires. The "HOT" wire is connectd to one of the station output terminals (numbered 1 through 7). The "COMMON" wire connects to one wire connecting the common wires of all valves to the controller terminal marked "COM".

Refer to Figure 1.

NOTE: For model TSC-4, only station output terminals 1 through 4 may be used. For TSC-5 use only 1 through 5 and for TSC-7 only 1 through 7.

CAUTION

Do not short-circuit a station terminal to the common terminal to create sparks for station identification. Serious Rain Clock Timer damage may result.

Number of Valves per station - A maximum of 1 valve may be connected to each station output terminal.

Pump Start/Master Valve Circuit

The TSC-5 and TSC-7 have a terminal specifically for use on pump stystems or systems using a master valve. The TSC-4 does not have this feature. For pump start, the master valve circuit must be used in conjunction with a remote pump start relay (Rain Bird RPS-1).

The "HOT" wire from the master valve or pump start relay connects to the terminal marked "MV". The "COMMON" wire connects to the system common wherever it is convenient to do so. Refer to Figure 2.

When using pump start or a master valve, total current requirement of any one station valve and the master valve circuit should not exceed 640 milliamps, 24 volt AC. Exceeding the current requirement could blow the fuse.

CAUTION

To prevent pump damage, all unused stations must be jumpered to a station being used. See Figure 2.

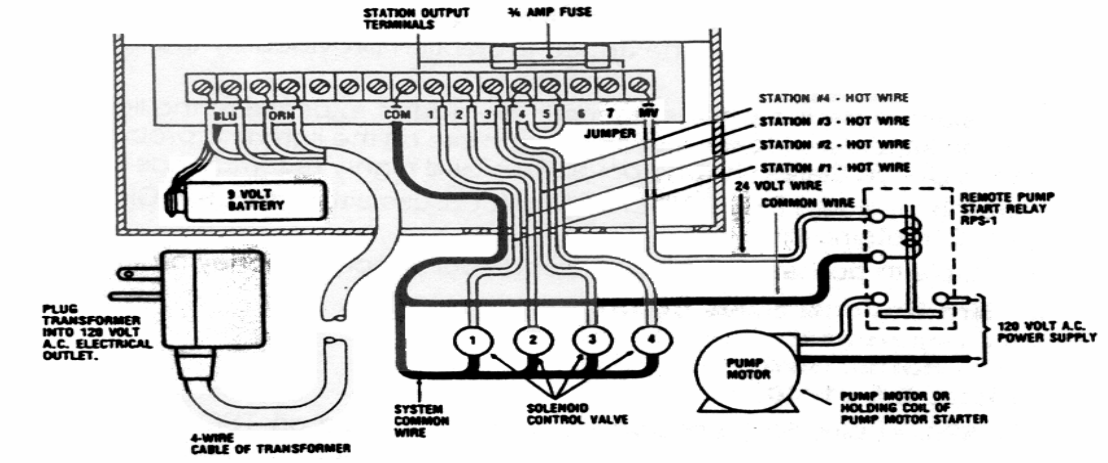
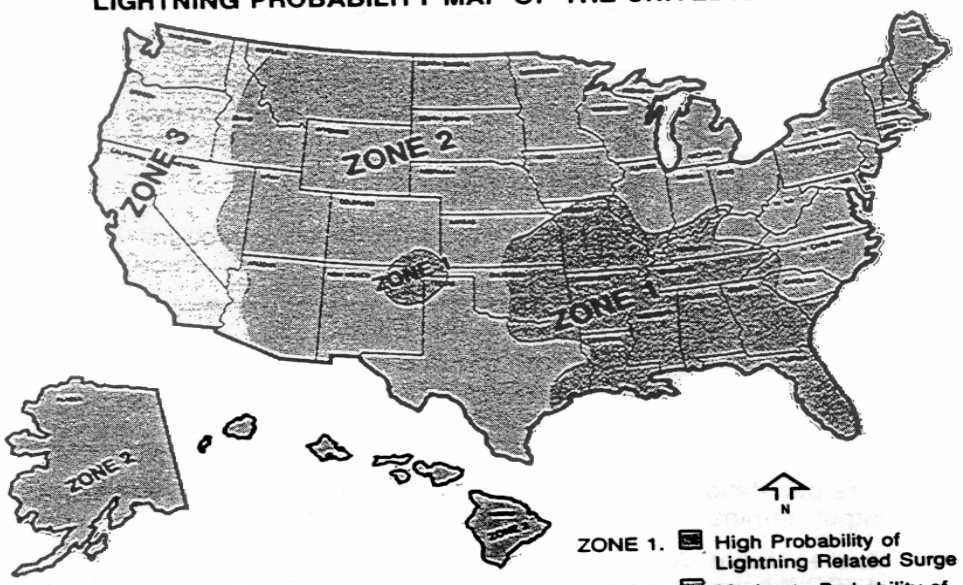


FIGURE 2

LIGHTNING PROBABILITY MAP OF THE UNITED STATES



Lightning

In certain parts of the country, lightning storms can generate high voltage electrical surges that travel to the timer along the field wires that are connected betweeen the valves and the timer. Extreme surges are known to exceed the built-in protection in most timers, including the TSC Rain Clock Timer. As such, no warranty can be made against electrical surge damage.

Added protection is available with specially designed lightning protection kits for the TSC Rain Clock Timers. The kit for the TSC-4 is called LPV-CRC4. The kit for the TSC-5 and TSC-7 is called LPV-CRC8. When this kit is properly installed and connected to an 8' copper clad grounding rod buried in the ground, this added protection will increase your timer's ability to withstand lightning induced surges. Complete installation instructions are included with the lightning protection kits.

Please remember that no matter what type of protection kit you use, or how well you install and ground it, there will always be a chance that a particularly harsh lightning storm will exceed the added protection provided by the lightning protection kit.

In order to help you decide whether to incur the added expense of the lightning protection kit, please locate your installation site on the lightning probability map of the United States shown above. Rain Bird highly recommends that an installation in the HIGH PROBABILITY AREA ☐ use either the LPV -CRC4 or LPV-CRC-8 lightning kit.

If you are unable to puchase a kit locally, send your check or money order to:

Rain Bird National Sales Corporation
Repair Department
633 W. Foothill Blvd.
Glendora, CA 91740

LPV-CRC4 $20.00 plus $2.00 postage and handling (use on TSC-4)
LPV-CRC-8 $40.00 plus $2.00 postage and handling (use on TSC-5 and TSC-7)

PROGRAMMING INSTRUCTIONS

After plugging in the Rain Clock Timer, press [SET CLOCK HOUR] flashing will stop.

Determine today's day code from the chart below. (Select from Week 1)

	MON	TUES	WED	THUR	FRI	SAT	SUN
WEEK 1	01	02	03	04	05	06	07
WEEK 2	08	09	10	11	12	13	14

TO SET CLOCK - DAY

EXAMPLE: Today is Friday (05).

Press [SET CLOCK DAY] then [CHANGE TIME ▲] or [CHANGE TIME ▼] until correct code number appears in the display.

DISPLAY WILL INDICATE 

TO SET CLOCK HOUR

EXAMPLE: Current Time of Day is 10:33 A.M.

Press [SET CLOCK HOUR] then [CHANGE TIME ▲] or [CHANGE TIME ▼] until current hour appears in the display.

To change "A" (A.M.) to "P" (P.M.) or vice versa:

press [CHANGE TIME ▲] or [CHANGE TIME ▼] until the correct letter appears in the display.

DISPLAY WILL INDICATE 

hour minutes A.M.

P.M.

TO SET CLOCK — MINUTES

Press [SET CLOCK MINUTE] then [CHANGE TIME ▲] or [CHANGE TIME ▼] until display indicates current minutes.

DISPLAY WILL INDICATE 

At this point, the Rain Clock Timer will operate on the factory PRESET WATERING SCHEDULE. It will operate all stations for 10 minutes each, each day of the week, beginning at 8:00 A.M.

If you wish to establish your own schedule, we recommend you write out your schedule on page 12 before you actually begin the programming on the following pages.

Establishing Your Own Watering Schedules

Each station can be assigned to either Schedule A or Schedule B or both A and B for increased watering frequency. Following the watering schedule you wrote on page 12, enter all information for Schedule A and then repeat steps, 1, 2, and 3 for Schedule B.

1. To Set Days of the Week to Water

EXAMPLE: To water on MONDAY of the first week (Day 01)

1.1 Press [PROGRAM A] or [PROGRAM B]

1.2 Press [WATER DAYS]

DISPLAY WILL INDICATE 

Schedule A — Monday of Week 1 — Watering will occur when "In" appears

EXAMPLE: To NOT water on TUESDAY of the first week (Day 02)

1.3 Press [WATER DAYS] then [YES/NO]

DISPLAY WILL INDICATE 

Water will not ocur when "In" does not appear

Repeat steps 1.2 and 1.3 for each of the remaining days in the 14-day cycle.

2. To Set Time of Day to Start Watering

EXAMPLE: You want to start watering at 5:00 A.M.

2.1 Press [PROGRAM A] or [PROGRAM B]

2.2 Press [WATER TIMES PER DAY]

2.3 Press [CHANGE TIME ▲] or [CHANGE TIME ▼] until display shows. 

If you wish to water more than once a day (for maximum of 3 times per day):

EXAMPLE: Second water time at 4:45 P.M.

2.4 Press [WATER TIMES PER DAY]

DISPLAY WILL INDICATE 

2.5 Press [CHANGE TIME ▼] or [CHANGE TIME ▲] until display shows: 

For a 3rd water time, repeat steps 2.4 and 2.5 above.

To remove a start time:

2.6 Press [CHANGE TIME ▼] or [CHANGE TIME ▲] until time blanks out at 12 midnight.

NOTE: If the total amount of watering time exceeds the time between starts, the start time that occurs later will be ignored. That is, if a start time occurs while a station is watering, it will not be "remembered".

3. To Set Watering Time For Each Station.

You may water any station from 1 to 60 minutes in 1 minute increments or 1 to 6 hours in 1 hour increments.

EXAMPLE To operate Station #1 for 20 minutes

3.1 Press PROGRAM A or PROGRAM B then STATION WATER TIME

3.2 Press CHANGE TIME ↑ or CHANGE TIME ↓ until display shows A 01 20 n

Schedule A | Station | Watering Time | Minutes

To change watering time units from minutes to hours or vice versa,

3.3 press WATER TIME UNITS

DISPLAY WILL INDICATE A 01 00 h

Schedule A | Station | Watering Time | Hours

EXAMPLE. Set watering time for Sta. #2 for 30 mins.

3.4 Press STATION WATER TIME

DISPLAY WILL INDICATE A 02 10 n

Schedule A | Station | Watering Time | Minutes

3.5 Press CHANGE TIME ↑ or CHANGE TIME ↓ until display indicates A 02 30 n

NOTE: If you do not want a station to operate, set the time to zero.

EXAMPLE: Station #3 not to operate:

3.6 Press STATION WATER TIME

DISPLAY WILL INDICATE A 03 10 n

3.7 Press CHANGE TIME ↑ or CHANGE TIME ↓ until display indicates A 03 00 n

Set watering times for remaining stations by repeating 3.4 and 3.5.

Programming is now complete. To return display to time of day, press SET CLOCK HOUR

USING THREE SCHEDULES

This Rain Clock Timer offers you the ultimate in flexibility for watering your yard.

The A and B schedules are independent of each other. By assigning some of your stations to A and some to B, you can water on different days and start at different times.

You can also assign any station(s) to both A and B schedules to achieve a third watering schedule. The length of watering time can be different for schedule A and schedule B for the same station.

Some areas of the country will use the A schedule for their summer watering schedule and B for the winter schedule. In this case, when using the A schedule, remove all watering start times from the B schedule (see step 2.6 on page 8). When you are ready to use the B schedule, remove all watering start times from the A schedule and add start times to the B schedule as desired (see steps 2.1-2.5 on page 8).

1. EXAMPLE: Three Schedules for Watering Flexibility

Which days to water.

DAYS TO WATER			
Day		"A"	"B"
(M)	1	Yes	No
(Tu)	2	No	Yes
(W)	3	Yes	No
(Th)	4	No	No
(F)	5	Yes	No
(Sa)	6	No	Yes
(Su)	7	No	No
(M)	8	Yes	No
(Tu)	9	No	Yes
(W)	10	Yes	No
(Th)	11	No	No
(F)	12	Yes	No
(Sa)	13	No	Yes
(Su)	14	No	No

What time to start watering.

START TIMES	
"A"	"B"
5:30 A	8:00 A
4:00 P	

How long to water each station.

WATERING TIMES			AREA OF YARD
Sta. #	"A"	"B"	
1	20 n		Lawn-sun
2	10 n		Lawn-shade
3		30 n	Shrubs
4		30 n	Flowers
5	20 n		Lawn-sun
6	2 n	4 n	Patio Pots
7		1 h	Trees

Note that there are 2 start times for schedule A and 1 start time for schedule B. Also note Station 6 is assigned to both schedules A and B for more frequent watering. The length of watering time for Station 6 on schedule B has been increased due to only 1 start time.

2. EXAMPLE: Two Schedules for Winter and Summer Watering

Which days to water

Day		DAYS TO WATER "A"	"B"
(M)	1	Yes	No
(Tu)	2	No	Yes
(W)	3	Yes	No
(Th)	4	Yes	Yes
(F)	5	Yes	No
(Sa)	6	No	Yes
(Su)	7	No	No
(M)	8	Yes	No
(Tu)	9	No	Yes
(W)	10	Yes	No
(Th)	11	Yes	Yes
(F)	12	Yes	No
(Sa)	13	No	Yes
(Su)	14	No	No

What time to start watering.

START TIMES "A"	"B"
5:30 A.M.	5:30 A.M.
4:00 P.M.	

How long to water each station

Sta. #	STATION TIMES "A"	"B"	AREA OF YARD
1	20n	10n	Lawn-sun
2	10n	5n	Lawn-shade
3	15n	10n	Shrubs
4	15n	10n	Flowers
5	20n	10n	Lawn-sun
6	2n	1n	Patio Pots
7	30n	30n	Trees

Note that schedule B is the winter schedule. Watering days are fewer and length of watering time has been reduced. As an example, we are showing two start times for the summer schedule and only one for the winter. In actual operation, however, only schedule A or schedule B would have start times entered.

3. EXAMPLE: One Schedule

You may also choose to use only one schedule. In that case, only press PROGRAM A when establishing your own watering schedule on pages 8 and 9. All times in Schedule B are factory preset to 0.

Writing Your Schedules

Before you begin to program the Rain Clock Timer for actual use, it is strongly suggested that you write out the program on the following form. This can then be saved for a permanent record.

1. Which days to water

	DAYS TO WATER	
Day	"A"	"B"
(M) 1	_____	_____
(Tu) 2	_____	_____
(W) 3	_____	_____
(Th) 4	_____	_____
(F) 5	_____	_____
(Sa) 6	_____	_____
(Su) 7	_____	_____
(M) 8	_____	_____
(Tu) 9	_____	_____
(W) 10	_____	_____
(Th) 11	_____	_____
(F) 12	_____	_____
(Sa) 13	_____	_____
(Su) 14	_____	_____

Write "Yes" to water, "No" to not water

2. What time to start watering

START TIMES	
"A"	"B"
_____	_____
_____	_____
_____	_____

Write "A" for A.M. "P" for PM

3. How long to water each station

	STATION TIMES		AREA OF YARD
Sta. #	"A"	"B"	
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____
6	_____	_____	_____
7	_____	_____	_____

Write "n" for minutes, "h" for hours.

OPERATING INSTRUCTIONS

Whenever the Rain Clock Timer is in operation (in a cycle) the display will show the station number (for the statio in operation) and the remaining time it has left to operate (time is "counting down").

While the Clock is in operation you can display—"Time of Day"—"Start Times" (for "A" or "B" schedules)—"Water Days" or "Station - and Time"—**without** interupting the actual operation of the cycle in progress.

1. Display Time of Day

Time of day may be displayed at any time be pressing

either 

or 

To get back to "Station in Operation"

Press 

Display will revert back to the schedule it had been operating before interrupted and display will indicate where it now is in the schedule.

2. Display Day of Week

Day of week may be displayed by pressing 

To get back to "Station in Operation" Press 

3. Display Watering Time for Each Station

Station water times, for either "A" or "B" schedules, may be displayed by pressing [PROGRAM A] or [PROGRAM B] then [STATION WATER TIME] Each time you press [STATION WATER TIME] the next staion will be displayed.

4. Display Time of Day to Water

(For "A" or "B" schedules)

Start times, for either "A" or "B" schedules may be displayed by pressing [PROGRAM A] or [PROGRAM B] then [WATER TIMES PER DAY]

To display all three (3) start times of the schedule press [WATER TIMES PER DAY] two (2) more times.

Each time pressed, the next start time will be displayed. (A "blank" display indicates **no** start time programmed.)

5. Display Days To Water

(For "A" or "B" schedules)

Water days, for either "A" or "B" schedules, may be displayed by pressing [PROGRAM A] or [PROGRAM B] then [WATER DAYS]

Each time you press [WATER DAYS] the next day of the 14-day cycle will be displayed.

"In" indicates a day "to operate". "Blank" indicates a day "NOT to operate".

6. Manually Start a Schedule

Press [PROGRAM A] or [PROGRAM B] then [MANUAL START]

Each station will operate in sequence for its scheduled watering time.

7. Manually Advance to Another Station

Press [MANUAL ADVANCE] the operating station will stop.

The next station in sequence will then operate for its scheduled watering time.

Each time [MANUAL ADVANCE] is pressed, the clock will advance to the next station which will operate for its scheduled watering time.

8. Manually Start a Single Station

Display schedule desired by pressing [PROGRAM A] or [PROGRAM B]

Display station desired to be operated by pressing [STATION WATER TIME]

Each time you press [STATION WATER TIME] the next station will be displayed.

Then press [SINGLE STATION] The station selected will operate for the regular scheduled time (either schedule A or B) and then shut off. The clock will then revert to its normal automatic mode.

9. Manually Cancel a Schedule

When a program is in operation it may be "cancelled" by pressing AUTO/OFF the "A" (AM) or "P" (PM) will flash in the off mode.

press AUTO/OFF again. The clock will then revert to its normal automatic mode. The "A" or "P" will stop flashing.

10. Rain Shutdown

Press AUTO/OFF Display will revert to "time of day."

DISPLAY WILL INDICATE

"A" (A.M.) or "P" (P.M.) character will blink to indicate clock is in rain shutdown condition.

NOTE! Rain shutdown continues to keep the normal clock running and programming intact, but **all** output has been interrupted.

IN CASE OF TROUBLE:

Sometimes when problems occur, they can easily be solved by carefully checking some seemingly apparent, but often overlooked possibilities. Please check here before you call a professional contractor or your Rain Bird dealer. It could save you time and money.

IF YOU'RE HAVING THIS KIND OF TROUBLE:	CHECK THESE THINGS:
1 Automatic cycle does not occur	• Check the ¾ amp fuse. (p.4) • If last digit blinks, TSC is in Rain Shutdown mode. (p. 16)
2. Entire display blinks	• 9 volt alkaline battery needs replacing (p. 5). After new battery is installed, reprogram clock (p. 8-9).
3. Last digit in display blinks	• TSC is in the Rain Shutdown mode (p. 16)
4. ¾ amp fuse blows frequently	• There is a short in the wiring between the clock and the valves. Have bare wires, non-watertight connections and/or bad valve solenoids replaced. • You may be exceeding the maximum current draw of 640 milliamps. Check the current specifications on your valve solenoids and/or your pump start relay (refer to p. 5).
5. Clock loses (gains) a few minutes every week or month	• Intermittent power fluctuations are most likely responsible. Simply reset clock (p. 7) to correct time.
6. Clock coming on at wrong time	• If entire display is flashing, the clock has lost power and is operating on the Preset Watering Schedule. Replace the alkaline battery and reprogram the clock.

PRESET WATERING SCHEDULE

The following Preset Watering Schedule will be in effect at the time you initially plug in your Rain Clock Timer. It will also take over anytime your own watering schedule is lost due to power outages.

DAYS TO WATER			
Day		"A"	"B"
(M)	1	Yes	—
(Tu)	2	Yes	—
(W)	3	Yes	—
(Th)	4	Yes	—
(F)	5	Yes	—
(Sa)	6	Yes	—
(Su)	7	Yes	—
(M)	8	Yes	—
(Tu)	9	Yes	—
(W)	10	Yes	—
(Th)	11	Yes	—
(F)	12	Yes	—
(Sa)	13	Yes	—
(Su)	14	Yes	—

START TIMES	
"A"	"B"
8:00 A.M.*	—
—	—
—	—

*If clock is set to correct time of day. Otherwise schedule will start 8 hours after power is applied.

STATION TIMES		
Sta. #	"A"	"B"
1	10 mins.	0
2	10 mins.	0
3	10 mins	0
4	10 mins.	0
5	10 mins.	0
6	10 mins.	0
7	10 mins	0

Battery Backup

Install a 9 volt alkaline battery (not included) to the snap connector in the lower left corner of the cabinet. In the event of a power failure, the battery will maintain the watering schedule in memory for up to 6 hours. It will not operate the clock or keep the correct time of day. When power resumes, the clock will resume operating where it left off.

Watering Tips

During hot weather, most lawns require 1/2" of water every other day. For clay soil, daily watering of 1/4" is preferred to reduce puddling and runoff. As weather and soil conditions can vary, ask your local nurseryman for a recommended schedule.

Place a flat-bottom pan on the lawn to measure the time your sprinkler system needs to apply the proper amount of water.

Early morning is the best time of day for watering as evaporation and wind drift are minimal and water pressure is highest.

CONGRATULATIONS! Your new TSC Digital Sprinkler Timer uses state-of-the-art technology and incorporates many outstanding features in its design. We are confident that you will find it easy to use, and that you will enjoy many years of reliable, trouble-free operation.

This instruction manual is important to you. Please read it for information on how to safely install and operate this clock for best performance.

AND THANK YOU for expressing your confidence in Rain Bird Sprinkler Mfg. Corp. through the purchase of this TSC timer. As the world's leading manufacturer of irrigation systems and components, we strive to deliver the finest quality products designed to water efficiently, to conserve water and to meet your most demanding watering needs.

RAIN BIRD®

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