IC Series Controller
Owner's Manual

TORO ®

Sprinkler Systems

CONTROLLER COMPONENTS AND FUNCTIONS

1 DISPLAY PANEL
provides information
on your system status.

2 KEYBOARD
is used to program your irrigation system for auto-
matic operation; to operate the system manual-
ly, or to stop and start watering activity.

3 SPRINKLER SYSTEM SWITCH
OFF shuts down the system but retains program memory. ON position restores full watering system operation.
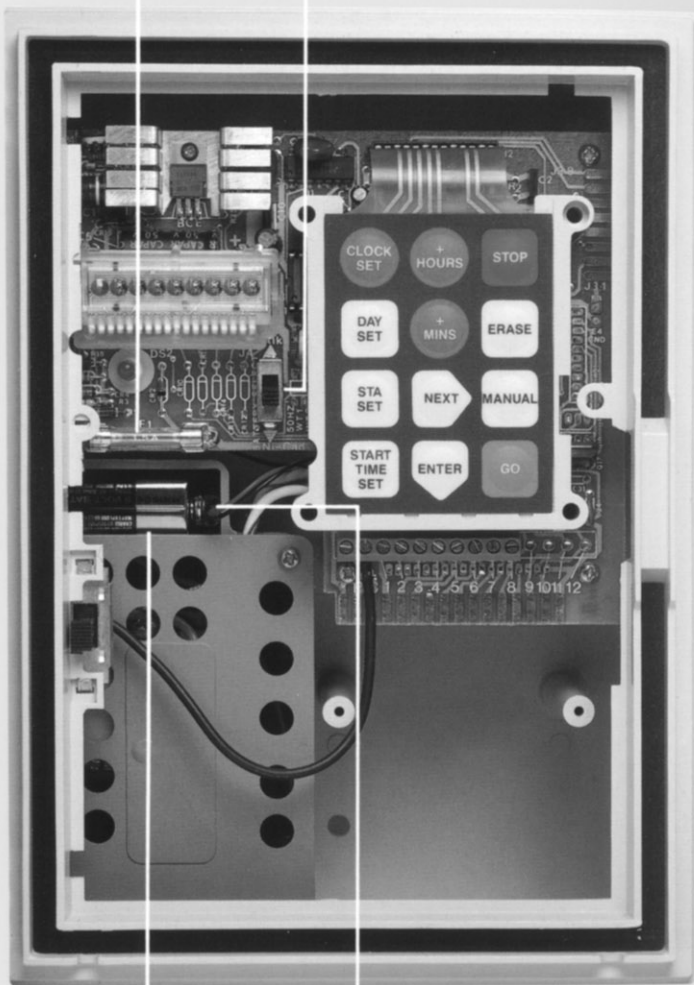
5 ACTIVE DAY INDICATOR
illuminates to indicate days programmed to water

4 FASTENER
releases the front panel to provide access to the battery compartment and safety fuse. Pull to release; press to lock.

9 SAFETY FUSE
(1.5 amp.)

7 BATTERY TYPE SELECTOR
(Alkaline or NiCad).

CLOCK SET — + HOURS — STOP
DAY SET — + MINS — ERASE
STA SET — NEXT — MANUAL
START TIME SET — ENTER — GO

1 2 3 4 5 6 7 8 9 10 11 12

6 BATTERY COMPARTMENT
for 9-volt battery.

8 BATTERY CONNECTOR

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SUBJECT   PAGE

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1 CONNECT THE CONTROLLER TO 115 V.A.C.,
60Hz power supply, in accordance with installation
instructions.

When your controller is first powered up, the readout
panel will show 0100 A 01. Before putting your Controller
into operation, the following two steps must be followed:

2 INSTALL BATTERY
A new battery will protect your controller memory
for about two hours in the event of power interruption,
and you will avoid the necessity for re-programming.

Please read the BATTERY instructions (Page 3) to learn
how to install and change batteries.

3 SET THE CLOCK TO THE CORRECT TIME
Please read the CLOCK instructions (Page 5) to learn
how to set and adjust the clock.

Once these two items have been completed, the
controller is ready for use, and you may program it
according to the programming instructions.

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A new battery will protect your controller memory for about two hours in the event of power interruption, and you will avoid the necessity for re-programming.

The IC Controller is designed to use either of the following nine-volt battery types:

Rechargeable Ni-Cad Battery (GE Type GC9 or equivalent) or Alkaline Battery (Mallory 1604 or equivalent).

OTHER BATTERY TYPES MUST NOT BE USED. THIS IS EXTREMELY IMPORTANT. YOUR IC CONTROLLER MAY NOT FUNCTION CORRECTLY UNLESS THIS INSTRUCTION IS FOLLOWED.

TO INSTALL BATTERY:

1 Release FASTENER (4) and remove the faceplate.

2 SET BATTERY TYPE SELECTOR
The battery type selector switch (7), located to the left of the keyboard, must be set according to the type of battery to be installed.

NI-CAD BATTERY - SWITCH IN **DOWN** POSITION
ALKALINE BATTERY - SWITCH IN **UP** POSITION

3 Locate the BATTERY CONNECTOR (8), taped to the transformer cover. Remove white plastic protector and connect the battery. Stow the battery in the battery compartment (6).

WARNING

⚠ **EXTREME CARE MUST BE TAKEN TO PREVENT BATTERY TERMINALS TOUCHING ANY METAL PART OF THE CONTROLLER. DAMAGE OR INJURY MAY RESULT.**

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BATTERY

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CHANGING THE BATTERY

Under normal circumstances, an alkaline battery will provide system protection for about six months, and a NiCad battery for about three years. Of course, if there are numerous power interruptions, the battery power will be used up in less time, and it should be replaced when necessary.

THE 115 V.A.C. POWER MUST REMAIN ON WHEN BATTERY IS CHANGED

This is necessary to retain controller memory. If you should lose your program, the ACTIVE DAY indicator will flash to alert you that re-programming is necessary.

WARNING

WHEN CHANGING THE BATTERY, EXTREME CARE MUST BE TAKEN TO PREVENT BATTERY TERMINALS TOUCHING ANY METAL PART OF THE CONTROLLER. DAMAGE OR INJURY MAY RESULT.

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Your IC Controller clock uses a standard AM/PM mode. The time display will be followed by an A (A.M.) or P (P.M.). Midnight will show as 1200A and noon will show as 1200P.

The display will flash on and off if a programming error is detected. Press ERASE and re-program if this occurs.

TO ADJUST CLOCK

**PRESS KEYPADS
AS FOLLOWS:**   **DISPLAY EXAMPLES**

			TIME	DAY
1	(CLOCK SET)	To enter clock program. Display shows "A" for A.M. and "P" for P.M. times.	0000A	01
2	(+ HRS)	To adjust hours. Hold pad down to advance hours to correct time.	0600P	01
3	(+ MINS)	To adjust minutes. Hold pad down to advance minutes to correct time.	0645P	01
4	[ENTER]	To place the time in the controller memory.	0645P	01
5	[GO]	To return to automatic system control	0645P	01

Your controller will now continue to maintain the correct time.

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CONTROLLER PROGRAMMING

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To simplify understanding of IC Controller programming, the procedure has been set up in a series of steps:

1 ACTIVE DAY PROGRAMMING
Programs the ACTIVE DAYS on which your system will run, and synchronizes the computer with the current day.

2 WATERING RUN TIME PROGRAMMING
Sets watering RUN TIME for each station.

3 WATERING START TIME PROGRAMMING
Sets watering START TIMES for the entire system.

Before programming your controller, it is suggested that the WATERING PLAN RECORD is used to work out and record your watering plan.

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The controller operates on a 14-day repetitive program cycle. The fourteen days are pre-coded into the controller memory according to this chart:

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

DAY CODE CHART

As each day is displayed, it may be retained as an ACTIVE watering day, or made INACTIVE if no watering is desired.

**PRESS KEYPADS
AS FOLLOWS:**   **DISPLAY EXAMPLES**

1 [DAY SET] To enter the
        DAY PROGRAM   TIME   DAY
                                              0 0

2 [NEXT] To advance to
        DAY 01   TIME   DAY
                                              0 1

PRESS EITHER:

3 [ENTER] To make Day 1   ACTIVE DAY
        ACTIVE   INDICATOR ON
     OR
     [ERASE] To make Day 1   ACTIVE DAY
        INACTIVE   INDICATOR OFF

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Move through each day by pressing NEXT, and program each day as ACTIVE or INACTIVE.

4 When you're finished, press **NEXT** as required, to reset the display to current day, according to the day code chart.

5 ⌐oo⌐ To return to automatic system control

TIME,
DAY NUMBER
AND ACTIVE STATUS

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The watering run time for each station in your irrigation system may be programmed in one of sixteen time settings:

MINUTES: 00,01,02,03,05,07,09,12,15,20,25,30, 35,40,50 or 60

Select the run time that you need for each watering station. You'll probably find it convenient to record them on your watering plan record before actually programming them into the controller.

Use the "00" setting for any station you do not want to run.

If you make an incorrect entry, press |ERASE| and start again.

PRESS KEYPADS   **DISPLAY EXAMPLES**
AS FOLLOWS:

1 | STA | To enter the STATION   0   0 0
      | SET | SET program   STA   RUN
                                          NO   TIME

2 |NEXT>   To advance to the station   1   0 0
                you wish to program.   STA   RUN
                                            NO   TIME

3 (+ MINS)   To select the desired run   1   3 5
                 time for that station.   STA   RUN
                                             NO   TIME
                 When the run time you
                 want is displayed, press...

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2 WATERING RUN TIME PROGRAMMING

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4 [ENTER] To place your selected   DISPLAY WILL
               time for Station 1 in the   FLASH ONCE
               controller memory.

               Repeat steps 2 through 4
               until a watering run time has
               been selected and entered
               for each station.

                                                    TIME,
5 [GO·] To return to automatic   DAY NUMBER
               system control   AND ACTIVE STATUS

NOTE: CHANGES MADE IN WATERING RUN TIMES
MAY ALSO AFFECT WATERING START TIMES.
ALWAYS CHECK BOTH PROGRAMS.

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Your sprinkler system may be programmed for up to four (4) watering start times in a 24-hour period set to start at any selected hour. Random minute start times are not programmable.

When programming start times, allow enough elapse time between start times for each station to cycle through its run time. If a start time becomes active before the previous cycle is finished, that start time will be postponed until the cycle in progress is completed.

TO PROGRAM WATERING CYCLE START TIMES, PRESS KEYPADS AS FOLLOWS:

DISPLAY EXAMPLES

1 [START TIME SET] To enter START TIME program. ⠀⠀⠀⠀ 0 0 0 0 A

2 ⊕(HRS) To display desired Start Time. ⠀⠀⠀⠀ 0 2 0 0 A

⠀⠀⠀⠀OR

[ERASE] To delete Start Time displayed ⠀⠀⠀⠀ 0 0 0 0 A

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WATERING START TIME PROGRAMMING

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3 [ENTER] To place the time in   DISPLAY WILL
         the controller memory   FLASH ONCE

4 [NEXT] To move to the next   0000A
         Start Time.

         Repeat steps 2 through 4
         for all required start
         times. (Four Maximum)

                                                      TIME,
5 [GO] To return to   DAY NUMBER
         automatic control.   AND ACTIVE STATUS

With the completion of these steps, you have program-
med the controller to operate your irrigation system.

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CHECKING YOUR WATERING PROGRAM

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Any portion of your watering program can be checked on the Controller display without affecting the programming.

■ To check ACTIVE DAYS, press .... | DAY SET |

Cycle through the days by pressing .... | NEXT ▷ |

Remember to return DAY setting to CURRENT DAY

To return to clock control, press .... | GO |

■ To check STATION RUN TIMES, press .... | STA SET |

Cycle through each STATION by pressing .... | NEXT ▷ |

To return to clock control, press .... | GO |

■ To check START TIMES, press .... | START TIME SET |

Cycle through all Start Times by pressing .... | NEXT ▷ |

To return to clock control, press .... | GO |

REFER TO PROGRAMMING INSTRUCTIONS TO MAKE ANY REQUIRED CHANGES.

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MANUAL SYSTEM OPERATION

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To over-ride the automatic clock control, your IC Controller is provided with a MANUAL keypad switch. MANUAL operation will enable you to start a programmed watering cycle immediately, but will not affect the program memory. Following completion of any MANUAL cycle, your Controller will return to automatic clock control.

To halt manual operation in progress, press [STOP] and then [GO] to return to automatic clock control.

Press: [MAN] To switch your controller to MANUAL OPERATION.

Note: If you wish to exit manual program and have not yet pressed [GO], press [ERASE] controller will return to automatic clock control.

You now have four options:

To start the **full watering program** immediately, press:

[GO] The programmed watering sequence will start.

OR:

To start a **portion of the watering program** immediately, press:

[NEXT] To move the display to the Station Number at which you want to begin.

[GO] To start the programmed watering sequence at the selected station.

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OR:

To operate **one selected station** immediately, press:

| NEXT | To move the display to the Station Number which you want to operate. |

| + MINS | THE RUN TIME MUST BE CHANGED. (Program memory will not be affected). |

| GO | To start watering immediately. |

OR:

To operate **each programmed station in numerical sequence,** press:

| GO | The first station will begin watering. |

| NEXT | To index through programmed stations. |

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SYSTEM SHUTDOWN

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Shutdown may be attained by pressing $\boxed{\text{STOP}}$ keypad repeatedly, until "C" or "PC" appears on the display. In the "C" mode, the system will shutdown until midnight of the same day; in the "PC" mode, shut down will be permanent.

DISPLAY EXAMPLES

	TIME	DAY
TEMPORARY SHUTDOWN	0 1 3 7 P	C
PERMANENT SHUTDOWN	0 1 3 7 P	PC

Press $\boxed{\text{GO}}$ to re-activate the watering system.

A convenient sprinkler system ON-OFF SWITCH(3) is also provided on the controller front panel for system shutoff and re-activation. Power to the irrigation valves is controlled by this switch, and the controller memory is not affected by its use.

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FUSE REPLACEMENT

A fuse is provided to protect your IC Controller circuitry.

IN CASE OF A BLOWN FUSE, DETERMINE CAUSE OF FAILURE AND TAKE CORRECTIVE ACTION BEFORE RECONNECTING POWER.

TO REPLACE FUSE:

Insure that 115 V.A.C power is OFF.

Release faceplate and locate fuse (9).

Replace fuse with 1.5 ampere, 250-volt fuse (Littlefuse 312 3A G or equivalent.)

CAUTION: USE OF ANY HIGHER-RATED FUSE IS DANGEROUS AND MAY RESULT IN SEVERE DAMAGE TO THE CONTROLLER.

If you are experiencing a controller problem, check the following possible solutions before calling a service technician:

■ DISPLAY GOES BLANK (Indicates a power loss):

Check electrical connection.

Check fuse and replace if necessary.

■ STATION AUTOMATIC WATERING DOES NOT OPERATE

This may be due to programming error. Check program.

Display will show 0100A 01 on initial power up, and when the controller memory is clear or has been erased.
Re-program as necessary.

■ WATERING WILL NOT STOP

Press | STOP |; set sprinkler system switch to OFF; disconnect power or turn off Main Valve.

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