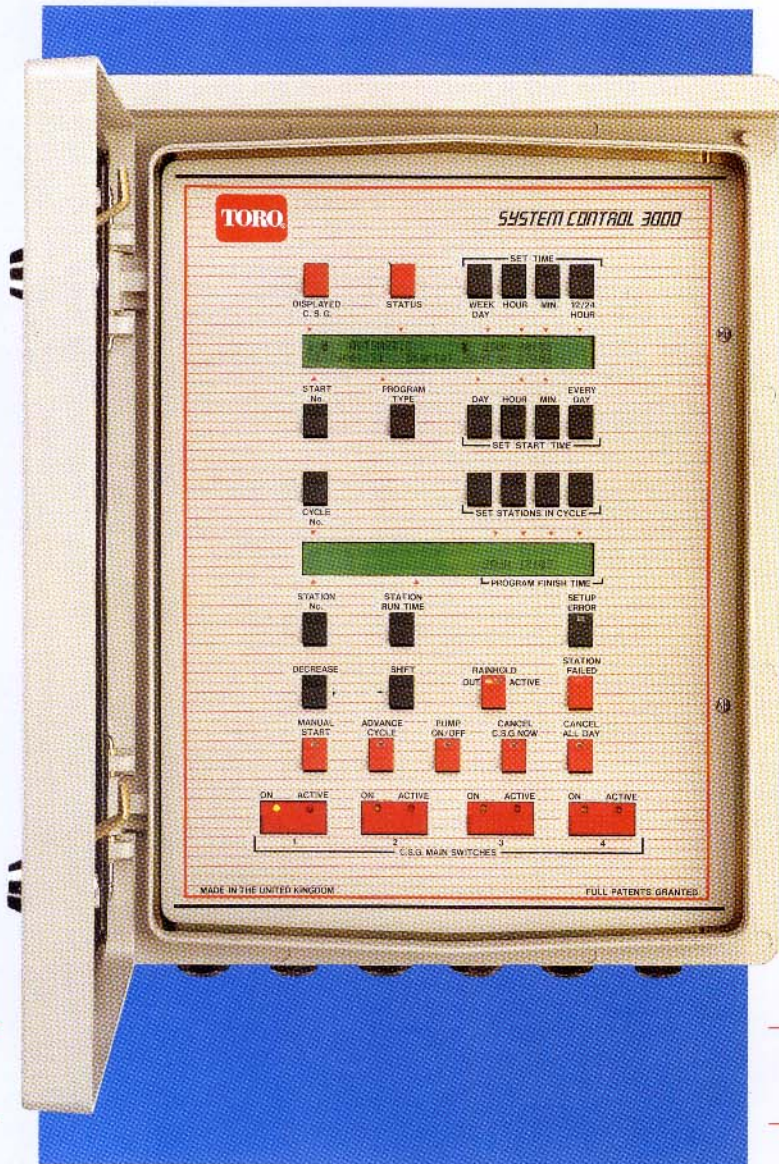


# SYSTEM CONTROL 3000

## OPERATOR'S MANUAL



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# ***Introduction***

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Your Toro System Control 3000 leads a new generation of automatic irrigation Controllers designed especially for use on golf-courses, parks and larger landscaped areas. It will enable you to set up a watering programme tailored to meet your needs through a built-in microcomputer incorporating the latest micro-electronics technology.

The SC. 3000's computer will remember your instructions for each watering station and carry them out just as you planned -automatically - for up to 14 days or longer!

This manual shows you how to set up your Controller's electronic clock, enter the automatic watering programmes you choose, change them whenever necessary, or operate your system manually.

Follow the instructions step-by-step until you are familiar with them.

By opening out this page you can use the illustrations printed overleaf to familiarise yourself with the SC.3000 Controller panel layout, the push button controls and their functions. Leave these pages open for easy reference as you read through the setting up and programming instructions.

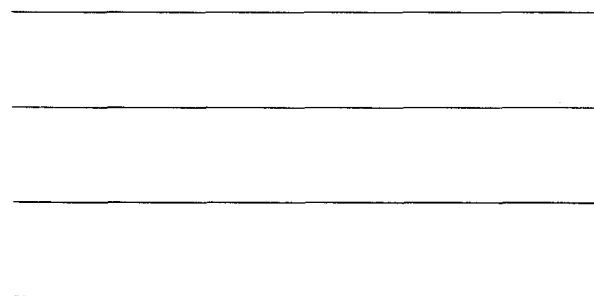
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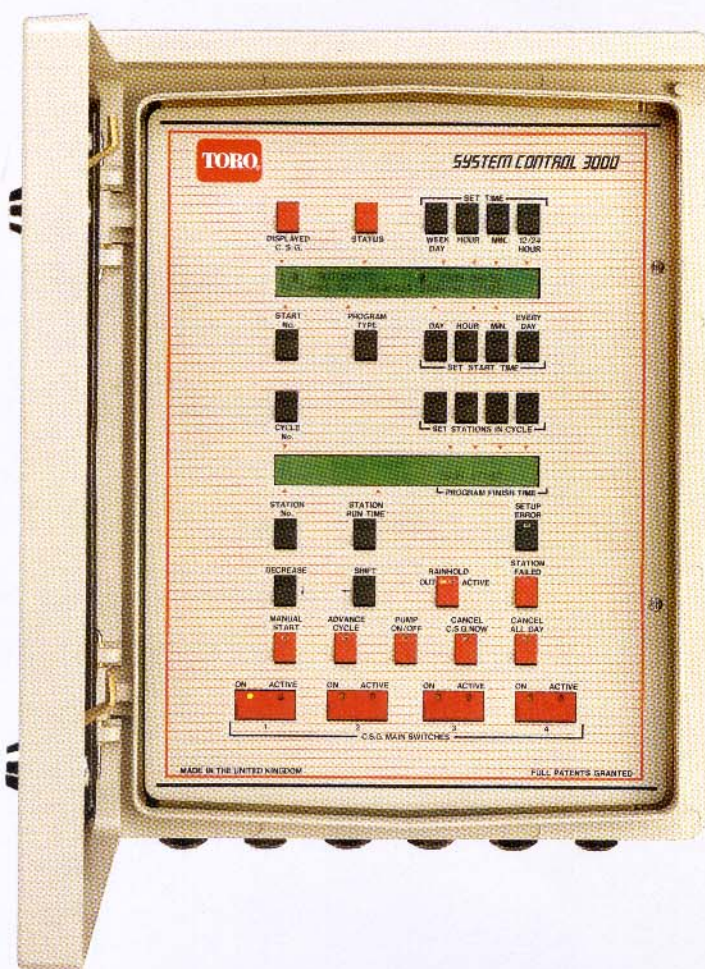




# SC3000

## Programming USE THE GREEN PUSH BUTTON CONTROLS FIRST

The following description will help you become familiar with the use of the green push button controls – use these for programming your watering sequences.....



### GROUP ONE (Top row)

The 'SET TIME' group enables you to set up the SC.3000 clock. Once set, the clock will run indefinitely providing accurate timings for your watering programme.

- **WEEKDAY BUTTON**  
press to set the day of the week
- **HOURLY BUTTON**  
press to set the right time – by the hour
- **MIN. BUTTON**  
press to set the right time – by the minute
- **12/24 HOUR BUTTON**  
press to set AM/PM or 24 hour clock mode  
(See upper display window for visual confirmation).

### GROUP TWO (Second row)

- **START No.**  
press button to set start time from 1-12  
start times per 24 hours.
- **PROGRAM TYPE**  
press button to select main watering program P1, P2 or P3 or to set Syringe S1  
THE 'SET START TIME' group enables you to programme watering sequences to the frequency you choose...Once set, they will operate a set pattern until you choose to change them...

- **DAY BUTTON**  
press to set the day on which watering commences
- **HOURLY BUTTON**  
press to set the hour at which watering commences
- **MIN. BUTTON**  
press to set the minute at which watering commences
- **EVERYDAY BUTTON**  
press to set a daily watering cycle.
- **Note:** Press hour and min buttons together to select not used start time.

### GROUP THREE (Third row)

- **CYCLE NO.**  
press button to select watering cycle or sequence.  
The 'SET STATIONS IN CYCLE' group buttons are used to set the station receiver numbers selected to run at one time on each selected cycle number.

Use the buttons from left to right, treating them as numbers 1 - 4.

### GROUP FOUR (Fourth row)

- **STATION NO.**  
press button to set receiver number
- **STATION RUN TIME**  
press button to set number of minutes each station receiver is required to operate.
- **SET-UP ERROR**  
if the warning light illuminates – press button to establish programming errors – see window display for visual check.

### GROUP FIVE (Fifth row)

- **DECREASE**  
when pressed in conjunction with any green programming button the information shown in the display windows can be reversed.
- **SHIFT**  
when pressed in conjunction with the appropriate green programming button, the shift button will move displayed tens (10) forward in units of ten digits (see display window). To reverse the display, hold both DECREASE and SHIFT buttons in conjunction with the appropriate green programming button (See display window).

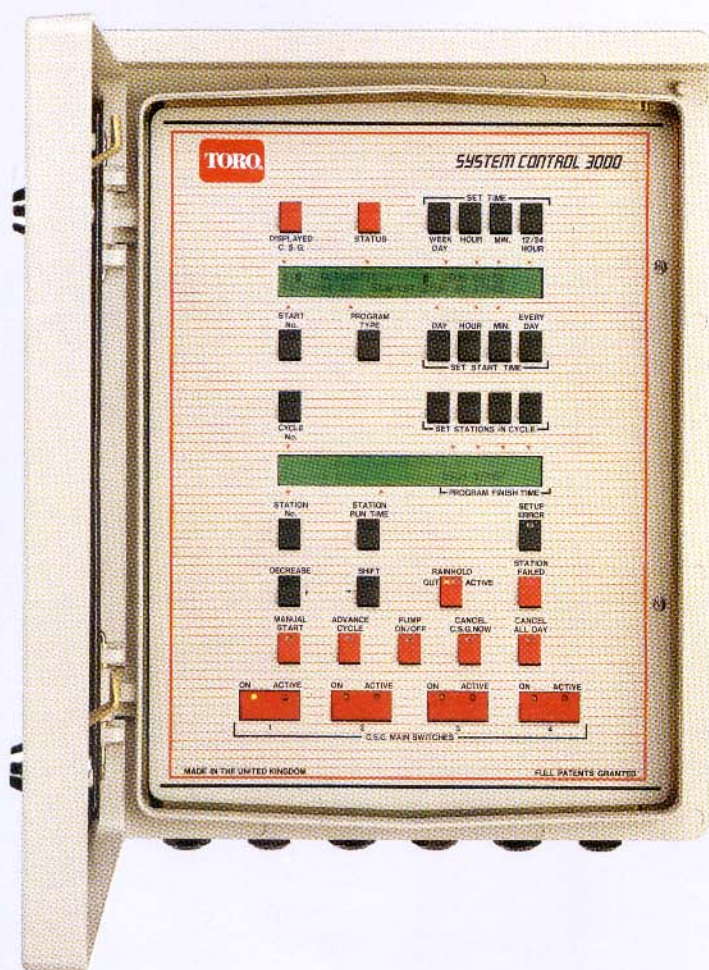
\* See contents page for full programming instructions.



# SC3000

## Operating USE THE RED PUSH BUTTON CONTROLS FOR ACTION

The following description will help you become familiar with the use of the red push button controls – use these for programming your watering sequences....



### GROUP ONE (Top row)

- **DISPLAYED CSG BUTTON**  
press to select the CSG number to be reviewed or programmed – information will be shown in top display window.
- **STATUS BUTTON**  
press to obtain 'set up program', 'Automatic' or 'System off' visual displays.

### GROUP TWO (Fifth row)

- **RAINHOLD BUTTON**  
for use if rain gauge/irrometer is fitted.  
press button to activate (yellow light will go out).  
If rainfall is detected watering will automatically be suspended (red light illuminates) when rainfall ceases the red light will go out indicating that watering has recommenced.
- **STATION FAILED BUTTON**  
warning light will illuminate when a station receiver has failed to operate. (Check test procedure to obtain further information – see Pages 8 & 9).

### GROUP THREE (Sixth row)

- **MANUAL START BUTTON**  
press to commence manual watering – use in conjunction with appropriate CSG button.
- **ADVANCED CYCLE BUTTON**  
for use when watering automatically/manually – press button to advance watering to the next cycle.
- **PUMP ON/OFF BUTTON**  
illuminated button light indicates pump operating automatically as per program – press button to activate manually controlled pump operation.
- **CANCEL CSG NOW BUTTON**  
press to stop all active operations on selected CSG.
- **CANCEL ALL-DAY BUTTON**  
press to cancel all start times for selected 24 hour period. (Watering will automatically recommence at the end of the cancellation period).

### CSG MAIN SWITCHES GROUP

Press 1 to 4 individually to select CSG's to be programmed. Once the Controller has been programmed the following information will be displayed. Yellow light on indicates CSG selected and ready for watering. Red light on indicates watering in operation.  
If the button does not illuminate the appropriate CSG has been isolated.

\* See contents page for full information of test procedures etc.

# Contents

The following information should be studied after your SC.3000 Controller has been installed in its operating position and all electrical connections are complete, as detailed in the SC.3000 Installation Leaflet.

	PAGE
Setting-up Clock Time	1
Setting-up your watering program	2 & 3
Checking your watering program	4
Special Features	5
Manual Operation	6
Shutting the System Down	7
Rainhold	7
Station Receiver Failure	8 & 9
Electrical Specifications	10
Service Assistance	10

# Setting up Clock Time

Your SC.3000 Controller clock provides you with a choice of AM or PM or 24 hours mode selection. This means you can choose to commence watering for 12 hour periods in the morning, in the evening or at any time during a 24 hours period to suit your needs.

Before programming your chosen watering cycles the Controller's clock has to be set to local real time - the time on your watch! To do this, follow these instructions.

- 1** Switch on power supply
- 2** Press red STATUS button and view upper display window.  
After a few seconds this will read  
**SYSTEM OFF** **1 DAY 00:00**
- 3** To set clock time:  
Press No. 1 CSG button (bottom left) - yellow light will illuminate  
Press STATUS button - upper display window will now read  
**SET UP PROGRAM** **1 DAY 00:00**
- 4** Press WEEK DAY button to select DAY of week  
Press HOUR button to select hour of day  
Press MIN button to select minute of hour  
Press 24 HOUR button to select the mode you wish to use - A.M. or P.M. or 24 hours. If for example the time is 12.15 hours the upper display window will now read:  
**1 (CSG) SET UP PROGRAM 1 DAY 12:15 PM or**  
**1 (CSG) SET UP PROGRAM 1 DAY 12:15**

Once this has been accomplished, the SC.3000 Controller's clock will keep correct time and needs no further adjustment.

**NOTE:**

- a. *The clock will continue to function correctly for up to 24 hours should a power failure occur.*
- b. *When familiar with the programming function you can use the DECREASE button to reverse time. The SHIFT enables you to speed the setting of minutes (in tens) or to jump 12 hours e.g. converting a.m. to p.m.*

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# Setting up your Watering Program

Using the irrigation system Design Program specified for your watering system set up the start times as follows:

- 1** Press 'DISPLAYED CSG' button to select the CSG you wish to program.  
*NOTE: CSG main switch must be on - yellow light on.*
- 2** Press 'START NO' button to select start number one.
- 3** Press 'PROGRAM TYPE' button to select the program you want - e.g. P1, P2, P3 or S1.  
Remember:  
P1, P2 & P3 station run times are 0-99 minutes adjustable in one minute increments.  
S1 (Syringe) station run times are 0.1 - 9.9 minutes adjustable in 6 second increments.
- 4** Press 'SET START TIME' DAY button to select the day on which the program is to run.
- 5** Press 'SET START TIME' HOUR button to select the hour water commences.
- 6** Press 'SET START TIME' MIN. button to select the minute (of the hour) you wish watering to commence.
- 7** Press 'EVERY DAY' button if you want the times you have previously set to operate on a daily basis or...
- 8** Should you not wish to water on a particular day, press the 'SET START TIME' HOUR and MIN buttons together and release. The window display will now show 'NOT USED'. 'NOT USED' can be repeated 'EVERY DAY' if required.

## CYCLE NUMBER & STATION RUN TIMES

- 1** Press 'CYCLE NO' button to select cycle number one.
- 2** Press 'SET STATIONS IN CYCLE' button to select the station receiver numbers you wish to run on cycle number one - select from one to a maximum of 4 receivers.  
*NOTE: If 4 station receivers selected to operate together system must be hydraulically capable of such operation.*
- 3** Press 'STATION NO' button to select station receiver number you wish to run.  
*NOTE: The station number is the same as the number on the station receiver.*
- 4** Press 'STATION RUN TIME' button to select the number of minutes you wish number one to run.  
*NOTE: As station run times are entered the program finish time will be increasing.*
- 5** Having completed the above sequences, press 'CYCLE NO' button to select cycle number 2.
- 6** Repeat as instruction No. 2.
- 7** Repeat as instruction No. 3.
- 8** Repeat as instruction No. 4.  
Repeat this sequence 1 to 4 until all stations on CSG No. 1 have been completed.

- 9** When you have completed your programming press 'STATUS' button to select AUTOMATIC before proceeding to program CSG No. 2.
- 10** Repeat the sequences detailed above until all programs are entered for CSG Nos. 1, 2, 3 & 4.

## PROGRAMMING ERRORS

- 1** If, whilst you are setting up your watering program you make an error the SC.3000's red 'SET UP ERROR' button light will illuminate.
- 2** To discover the error, press the 'SET UP ERROR' button. One of the display windows will flash, indicating the fault... Basically, the error button light will illuminate for two reasons.
  - a. station run time has not been entered - the top display window will flash. The bottom display window will show the station number which requires the auto-time to be set.
  - b. program start time has been entered incorrectly - The bottom display window will flash. Reset the start time accordingly. (Remember, a subsequent start time cannot begin operation until the previous program has been completed).

*NOTE: The error button light will not go out until all errors have been corrected.*

*All errors must be corrected before continuing with programming procedures...*



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# Checking your Watering Program

Any part of your watering program can be checked on the SC 3000's display windows without disturbing your program. Make your checks like this:

- 1** Press the 'DISPLAYED CSG' button to select the CSG you want to check...
- 2** Press 'STATUS' Button - display window will show 'SET UP PROGRAM' and display the active days...
- 3** Press DAY button of 'SET START TIME' group and cycle through the days which have been programmed for watering... (See display window)
- 4** Check station numbers by pressing 'CYCLE NO' button and cycle through station numbers programmed for that particular cycle... (See display window)
- 5** Check station run times by pressing 'STATION NO' button and cycle through station receiver run times... (see display window)
- 6** Return to 'AUTOMATIC' by simply pressing the 'STATUS' button - see top display window.

Repeat the sequences above to check CSG Nos. 2, 3 and 4. Your SC.3000 will automatically control the irrigation system commencing with the next start time...

# Special Features

## ☐ SETTING TIME OF CANCELLED DAY

This feature, unique to the SC.3000, allows you to select the time when you wish to end the 'cancelled day'. To achieve this, press the 'STATUS' button and wait until the 'SET UP PROGRAM' is displayed in the window then -

- 1 Press and hold 'SHIFT' button.  
Press 'STATUS' button and release both buttons together.  
The top display window will now read:

1 SET UP PROGRAM                      1 FRI. 11:50  
TIME OF CANCELLED DAY              00:00

- 2 Now press the 'HOUR' button (SET START TIME group) to select the hour of the day you want...
- 3 Press the 'MIN' button to select the minute of that hour.

## ☐ PUMP OPERATION

Depending on the type of your irrigation system, the appropriate pump can be programmed as follows:

- 1 Bottom display window will show:  
'PUMP HOLD ON 2 HRS' or 'PUMP HOLD ON CONTINUOUSLY'  
'PUMP RUN UP TIME FOR 0.1 MIN'.
- 2 If your system has a pressurised pumping system press the 'CYCLE NO' button to select 'PUMP HOLD ON CONTINUOUSLY' or
- 3 If your system has a non-pressured pumping system select 'PUMP HOLD ON 2 HRS' - You can also now select a pump run-up time prior to activating the sprinklers.  
(Pump run up times available are: 0:1 minute to 9:9 minutes adjustable in 6 second increments).  
Press the 'STATION RUN TIME' button to program the times you want.  
This feature ensures that the pipe network is full of water before the sprinklers operate.
- 4 Press 'STATUS' switch to automatic for normal operation.

## ☐ CONTINUOUS OPERATION

Should you want your watering program to operate on a continuous basis follow this sequence:

- 1 Press 'DISPLAYED CSG' button to select the CSG you wish to program (1-4).
- 2 Press 'STATUS' button to select 'SET UP PROGRAM' mode.
- 3 Press 'START BUTTON' to select first start number 'O'.
- 4 Press 'PROGRAM TYPE' button to select the P1, P2, P3 or S1 you wish to run continuously.
- 5 Press 'SET START TIME' day button to select the day on which the program is to run continuously.  
Press 'EVERY DAY' if program is to run every day.  
*NOTE: Program runs from midnight to midnight.  
Start No. O overrides all other start times on a selected day.*
- 6 Press 'STATUS' button selecting AUTOMATIC to commence operation.

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# Manual Operation

The following override features enable you to operate selected watering programs manually to suit your needs...

## Manual start of a selected CSG - complete cycle.

- 1 Press 'DISPLAYED CSG' button to select the CSG you want to run manually.
- 2 Press 'MANUAL START' button - this will provide immediate watering in the area or CSG you have chosen.  
To cancel the manual operation press the 'CANCEL NOW' button and your SC.3000 will return to its automatic program.

## Manual start of selected CSG - partial cycle.

- 1 Press 'DISPLAYED CSG' button to select CSG you want to run manually.
- 2 Press 'MANUAL START' button - this will provide immediate watering in the area or CSG you have chosen.  
To cancel, simply press the 'CANCEL NOW' button and the system will return to its automatic program.
- 3 Press 'ADVANCED CYCLE' button to skip cycles until you reach the cycle you wish watering to start from...

## Manual start of selected Station Receiver.

- 1 Press 'DISPLAYED CSG' button to select CSG on which station receiver(s) (up to 4 No.) are located.
- 2 Press 'STATUS' button to select 'SET UP PROGRAM'
- 3 Press 'CYCLE NO' button 'T' for test.
- 4 Press No. 1 button in 'SET STATION IN CYCLE' group to select receiver number.
- 5 Press 'STATION RUN TIME' to set running time.  
If more than one station receiver is to operate.  
Press 'No. 2' button to 'SET STATION IN CYCLE' group. To select receiver No. press 'STATION RUN TIME' to set running time.  
Repeat for No. 3 and No. 4 button if required.
- 6 Press 'MANUAL START' to begin watering.  
To cancel watering simply press the 'CANCEL NOW' button.
- 7 When the manual operation is completed press the STATUS Button to revert to automatic program.

## Manual start of Manual watering points. (Non-pressurised pump system).

- 1 Press 'PUMP ON/OFF' button - the red light will illuminate to indicate pump is running.

*NOTE: The pump will only operate for a maximum of two hours - the SC.3000 will then turn it off unless some other automatic function is programmed to take place at the end of the two hour period.*



# Shutting the System Down

- 1** Press 'STATUS' button to select 'SYSTEM OFF' - indicated in display window.
- 2** Press each 'CSG MAIN SWITCHES' 1-4 to 'OFF'. Yellow light(s) will go out indicating 'off'.  
*NOTE: Do not switch the power off - this will protect the SC 3000's battery system and eliminate battery discharge (thus stopping the time clock).*  
REVERSE THE above to re-instate your programme.

## CANCEL FEATURES

- ☐ CANCEL CSG NOW  
When this button is pressed all operations on 'DISPLAYED CSG' will stop operating immediately.  
The red indicator light will come on.  
If you wish to cancel the above simply press the button again.  
The red light will go out.
- ☐ CANCEL ALL DAY  
When this button is pressed all start times on ALL CSG's will not operate until after the selected 'TIME OF END OF CANCELLED DAY'.  
E.G. If the button is pressed after 15.00 hours 1 FRI., the light will illuminate and stay on until 15.00 hours 1 SAT. The controller display window will then indicate when the next start time is due.  
If you wish to cancel the above, simply press the button again.  
The red light will go out.

## RAINHOLD

If a rain gauge/irrometer is connected to your SC 3000 simply press the 'RAINHOLD' button to activate - the 'OUT' light will go off. If/when rainfall is detected the 'ACTIVE' light will illuminate indicating that watering has been suspended. When rain ceases, the 'ACTIVE' light will go out indicating that normal watering is being automatically resumed.  
Should you wish to isolate the rain gauge/irrometer, press the 'RAINHOLD' button, the 'OUT' light will illuminate.

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# Station Receiver Failure

In the event of a station receiver failing to operate, the 'STATION FAILED' light will come on.

To identify these receiver failures begin the following test procedure.

- 1** Press 'DISPLAYED CSG' button and select CSG when 'STATION FAILED' light is illuminated.
- 2** Press 'STATUS' button to select 'SET UP PROGRAM'.
- 3** Press 'CYCLE NO' button and select 'T' for test. Make certain that all station numbers are deleted from 'SET STATION IN CYCLE'. The display window should show ., ., ., .,
- 4** Press 'STATION FAILED' button to turn off light.
- 5** To commence test, press and hold 'DECREASE' button.
- 6** Press 'MANUAL START' button then release both buttons at the same time.

The top display window will now show -  
'1 STATION TEST                      DAY:TIME'

The bottom display window will show -  
'1 STATION RUNNING NOW'

*NOTE: The test will commence with Station Receiver No. 1 and check all station receivers in numerical order.*

- 7** When the test has identified a failed station receiver the 'STATION FAILED' light will come on. This indicates that the station receiver has failed to turn off. If both the 'STATION FAILED' and 'MANUAL START' lights come on, this indicates that the station receiver has failed to turn on.  
The No. of the failed station receiver is shown on the bottom display.
- 8** Record and note the failed station receiver No.
- 9** Press 'STATION FAILED' button to turn off light and test will continue to identify any other failures.
- 10** When 'CYCLE NO' reaches No. 99 the test is complete.
- 11** To leave the test mode press the 'STATUS' button to show 'AUTOMATIC' in the top display window.
- 12** Repeat procedure if necessary to locate faulty station receiver on CSG 2, 3 and 4. If 'STATION FAILED' light does not come on either CSG 2, 3 or 4 the system is operating correctly.
- 13** Having replaced the failed station receiver(s) re-test to satisfy yourself that the system is now operating normally...
- 14** Press 'DISPLAYED CSG' button to select the CSG on which the receiver (s) failed.
- 15** Press 'STATUS' button to select 'SET UP PROGRAM'.

- 16** Press 'CYCLE NO.' button to select 'T' Test.
- 17** Press number 1 button in 'SET STATION IN CYCLE' group and select station number to be tested.
- 18** Commence test by pressing 'MANUAL START' button and check 'STATION FAILED' light.

If you have more than one station receiver to test and recheck repeat as 6 and 7 above then press 'CYCLE NO.' button and select station - the receiver number, one before the number you wish to test, e.g., Select receiver number 29 if you wish to test receiver number 30.

Commence test by...

- 19** Press 'DECREASE' button and hold it.
- 20** Press 'MANUAL START' button then release both buttons at the same time.

The test will commence at receiver number 29 and move up in numerical order. When completed, leave the test mode by pressing the 'STATUS' button and selecting 'AUTOMATIC' in the display window.

## Station Receivers

### ☐ SETTING UP RECEIVERS NUMBERS

		10	20	40	80
		1	2	4	8
●	●	●	●	●	

#### EXAMPLE:

To select station number one,  
Screw in finger tight screws 10, 20, 40, 80, 2, 4, 8  
Screw 1 – the head of the screw to be flush with the surface of the holder...

To select station number 56  
Screw in finger tight screw 20, 80, 1, 8  
Unscrew 10, 40, 2, 4 to be flush with surface of holder.  
Cover screws with the supplied self-adhesive label - noting CSG number on label for easy reference, adding

STATION NUMBER .....

DATE OF INSTALLATION.....



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# Electrical Specifications

## SC.3000 CONTROLLER

MODEL NUMBER 199-09-04

Input: 110/120 VAC 50/60 Hz

Output to station receivers: 30 or 40 VAC 50/60 Hz

Pump: 110/120 VAC or 24 VAC

Raingauge: Input volt free N.O contacts - open circuit voltage at terminal 40 VAC

MODEL NUMBER 199-09-74

Input: 220/240 VAC 50/60 Hz

Output to station receivers 30 or 40 VAC 50/60 Hz

Pump: 220/240 VAC or 24 VAC

Raingauge: Input volt free N.O contacts - open circuit voltage at terminal 40 VAC

## STATION RECEIVERS

MODEL NUMBER 199-01

Input: up to 40 VAC 50/60 Hz

Output: 24 VAC 50/60 Hz Nominal

Quiescent current: 0.001 Amps

Surge protected.

MODEL NUMBER 199-02

Input: Up to 40 VAC 50/60 Hz

Output: 24 VAC 50/60 Hz Nominal

Quiescent current: 0.001 Amps

Surge protected.

## Service Assistance

Your Toro Distributor will be pleased to provide any necessary assistance in maintaining your SC.3000 Controller in top working condition.

It is suggested that you note his telephone number in the space below (and inside the SC.3000 cabinet) for quick, easy reference...

TORO DISTRIBUTOR.....  
TELEPHONE NUMBER .....

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## **LIMITED TWO YEAR WARRANTY**

The Toro Company warrants, to the owner, each new SC.3000 Controller and Station Receiver(s) from the date of purchase, against defects in material and workmanship for a period of two years from the date of original purchase by the owner. This warranty extends only to the Toro products mentioned above. Toro is not liable for failure of products not manufactured by it even though such products may be sold or used in conjunction with Toro products.

During such warranty period, Toro will repair or replace, at its option, any part found to be defective.

Return the defective parts to your local Toro distributor, who may be listed in your telephone directory Yellow Pages. Toro's Liability is limited solely to the replacement or repair of defective parts. There are no other express warranties. This warranty does not apply where equipment is used, or installation performed, in any manner contrary to Toro's specifications and instructions, nor where equipment is altered or modified.

**TORO IS NOT LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF EQUIPMENT OR SERVICES REQUIRED DURING PERIODS OF MALFUNCTION OR RESULTING NON-USE, PROPERTY DAMAGE OR PERSONAL INJURY RESULTING FROM INSTALLER'S NEGLIGENCE.**

Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. ALL IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR USE, ARE LIMITED TO THE DURATION OF THIS EXPRESS WARRANTY. Some areas do not allow limitations of how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from country to country.

### **CLASS B IRRIGATION CONTROLLER**

The equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the irrigation controller with respect to the receiver.
- Move the irrigation controller away from the receiver.
- Plug the irrigation controller into a different outlet so that the irrigation controller and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful.

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington DC 20402. Stock No. 004-000-0034504.



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