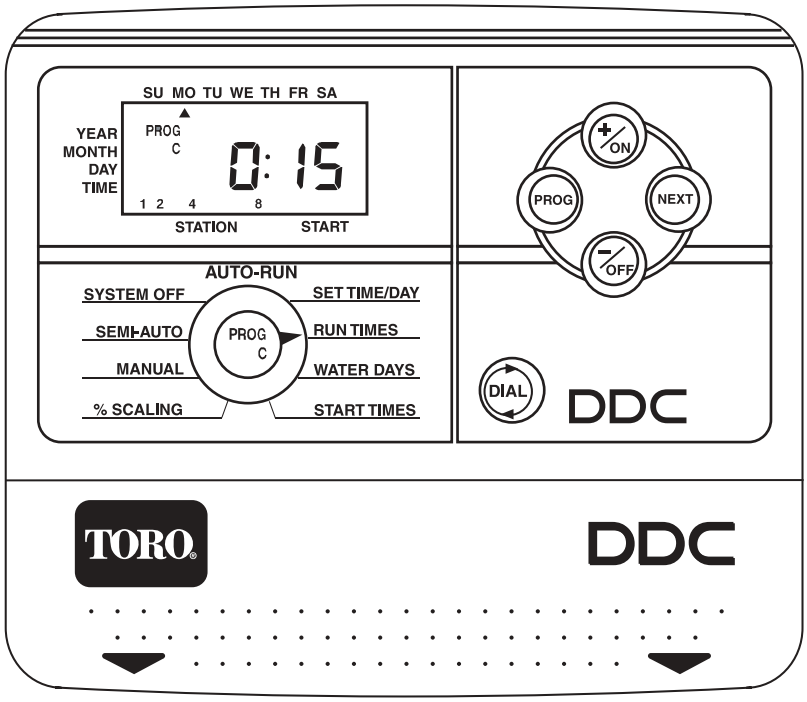
TORO Count on it.

DDC™ Series
Dial Digital Controller



INSTALLATION AND OPERATING INSTRUCTIONS

TORO **Count on it.**

Thank you for choosing the Toro DDC (Digital Dial Controller) irrigation controller. The DDC incorporates the lates programming technology in an easy-to-use, "digital dial" display.

The following instructions will help you get started. As you follow the simple steps, please pay attention to the important NOTES, which will give you helpful hints and programming advice to maximize the feature capability of the DDC.

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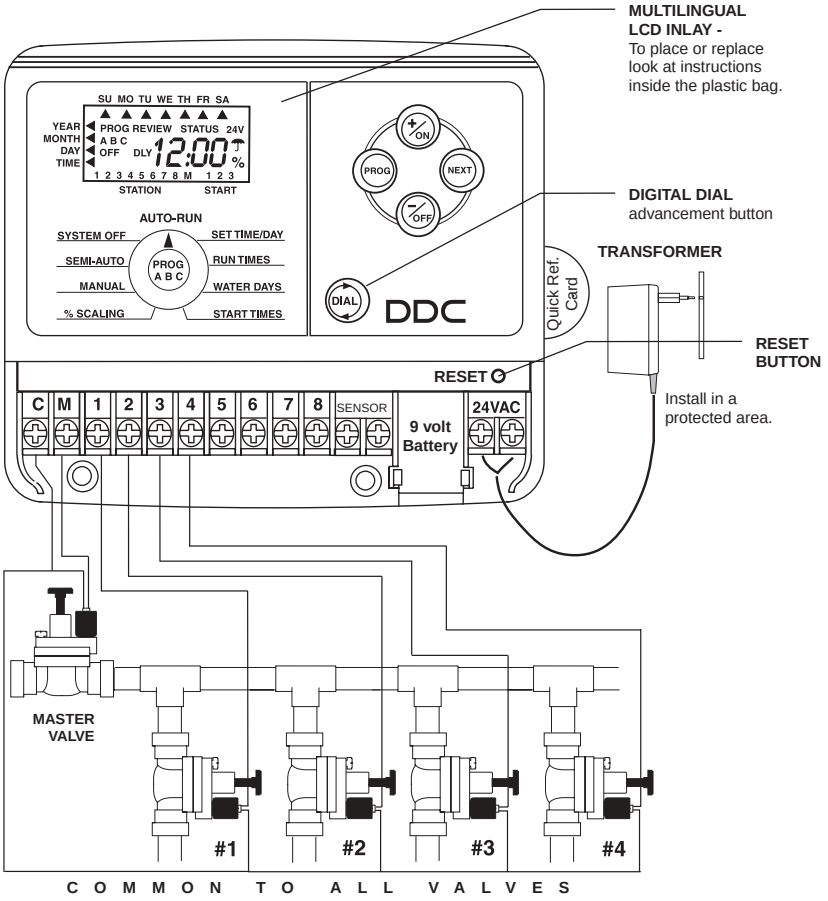
INSTALLATION INSTRUCTIONS:

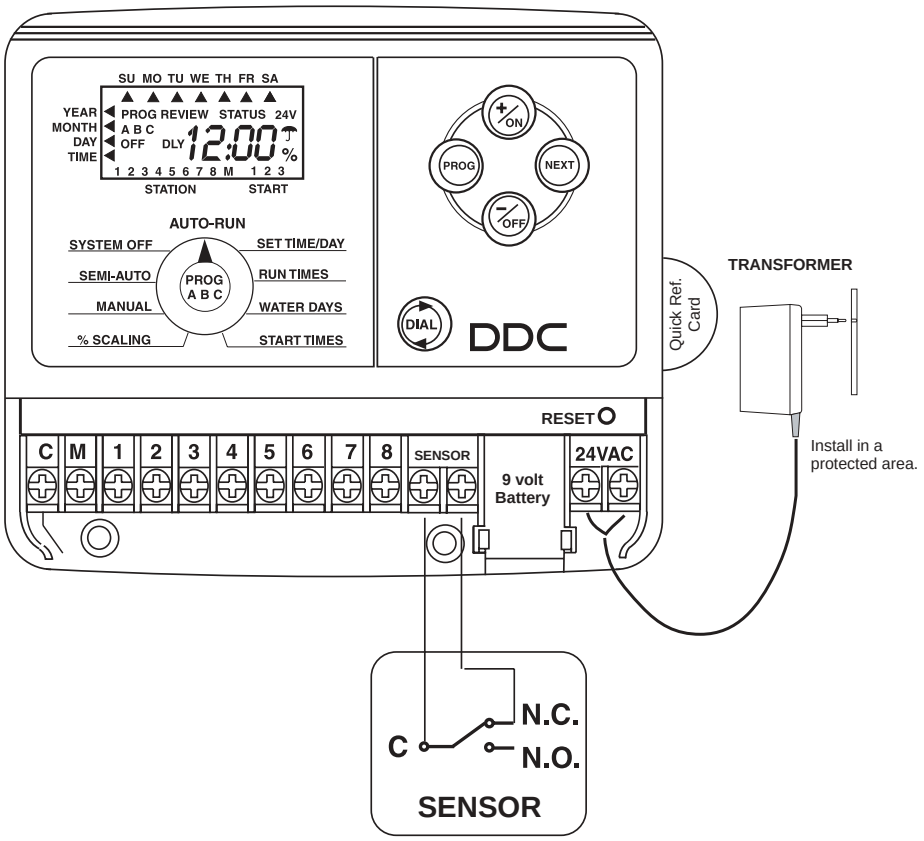


Remove the lower cover of the DDC controller. Place the unit on the wall using the top screw slot. Level the controller, then insert screws into the two lower screws holes under the terminal block. Connect the solenoid wires to the terminal block. Connect one wire from the solenoid to its respective station number on the terminal block and the other wire to the C-common terminal. Finally, connect the transformer wires to the 24 VAC terminal.

9 VDC battery. The 9 volt battery compartment is located between the sensor terminal and the 24VAC terminal. The 9 volt battery powers the LCD display in the absence of AC power and allows “Arm Chair Programming”. Program information is retained during power outages by an on-board lithium battery.

Note: Only after all the wiring is completed and checked should the transformer be plugged into AC power.

Sensor connection and operation:

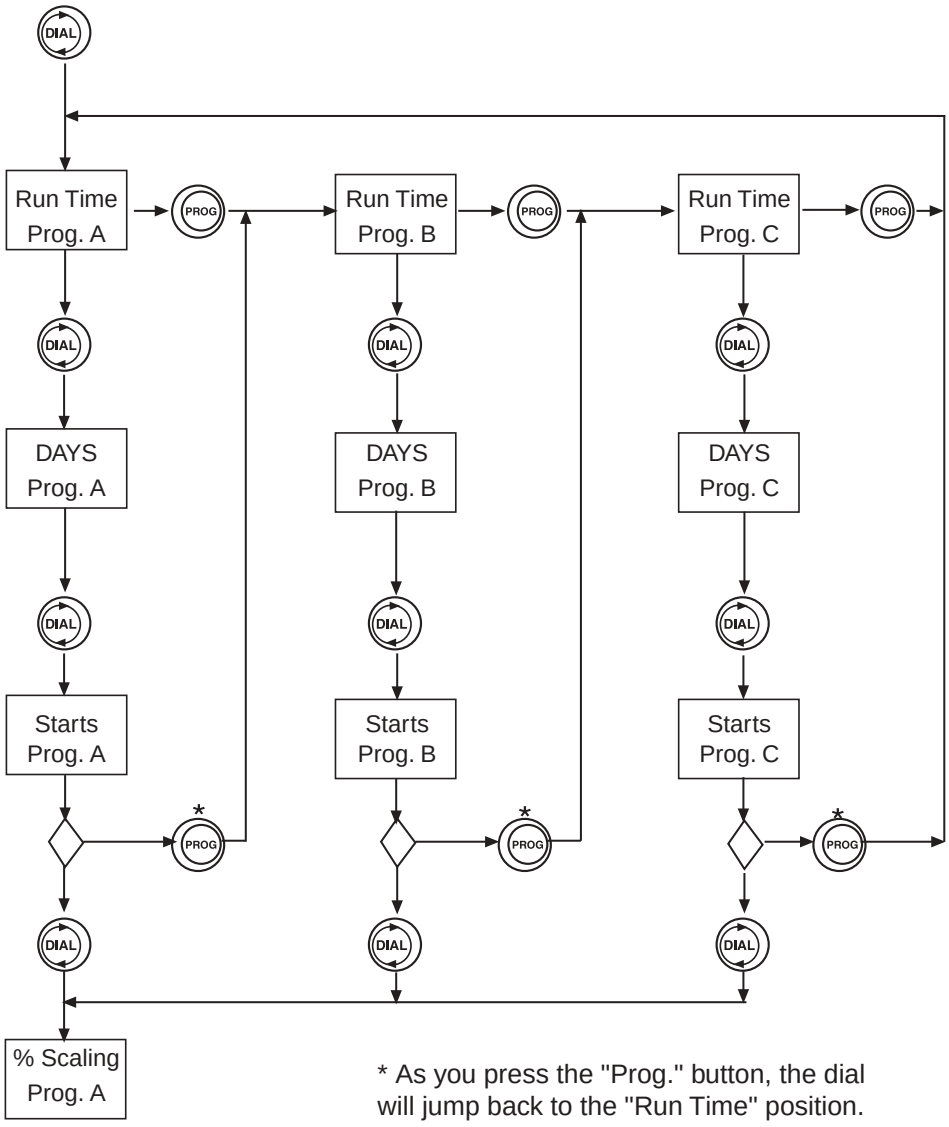


To connect a rain sensor, remove the jumper wire from the sensor terminal and connect one wire of the Toro Rain Switch to the C-common terminal and the other wire to the N.C. (normally closed) terminal. As soon as the Rain Switch contacts change from the N.C. position to the N.O. (normally open) position, irrigation will be suspended. Irrigation will resume as soon as the Rain Switch dries and its contacts return to the N.C. position.

When irrigation is suspended due to the Rain Switch, the display shows: **OFF**

NOTE: When using the Toro Rain Switch, follow the Basic Connection Installation Instructions.

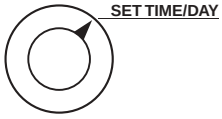
Block Diagram presentation of the programming sequence of the 3 irrigation parameters: Run Time, Days and Starts for each program.



* As you press the "Prog." button, the dial will jump back to the "Run Time" position.

PROGRAMMING:

It is recommended to press the RESET button to clear the memory.
Press DIAL to advance to SET TIME/DAY



Dial Position: SET TIME/DAY

Set the current YEAR, MONTH, DAY & TIME.

Set the YEAR with +/ON or -/OFF

Press NEXT

Set the MONTH with +/ON or -/OFF

Press NEXT

Set the DAY with +/ON or -/OFF

Press NEXT

Set the TIME with +/ON or -/OFF

Press NEXT if you wish to go back to YEAR setting.

NOTE: If you press and hold either +/ON or -/OFF continuously, the digits will advance more quickly.

Press DIAL to advance to RUN TIME

Dial Position: RUN TIME

The DDC has 3 independent programs: A, B & C. Program A has an initial start-up program with each station set for a 5 minute run time and a 0400 (AM) start time. This initial program can be erased by following the "Program Erase" function described on page 10 or it can be modified by following these programming steps.

Press PROG to select the program to be set.

Press +/ON or -/OFF to set the desired RUN TIME for the first station. Run time is in one minute increments from 1 minute to 4 hours.

Press NEXT to advance to next station.
Continue to assign stations to a program by entering RUN TIMES for those stations. Unselected stations in a program will remain OFF.

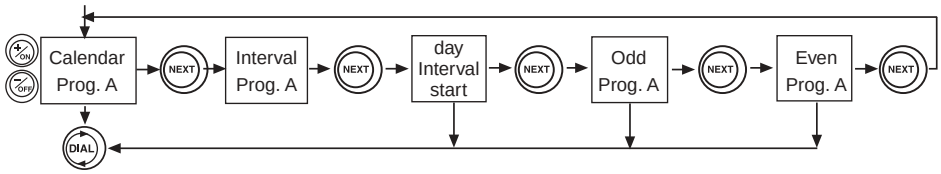
Enabling/Disabling MASTER VALVE

After the last station is the MASTER VALVE position. The display will show "ON". To disable the master valve/pump start for this program, press -/OFF. Press +/ON to resume master valve/pump start operation.

NOTE: To turn off a station which has previously been programmed, press both +/ON and -/OFF buttons and hold them for a few seconds.

Use this option if you have a station with RUN TIME and you want this station to be OFF or if you have a start time and you want to cancel it (set it to OFF).

Dial position: WATER DAYS



There are 4 choices for your days selection:
CAL - Select days of the week. (All days are ON as the default)
Int - Select days interval, 1-7 days, and the 1st day to start the interval
Odd - Irrigation on Odd days (31st day is skipped)
En - Irrigation on Even days.

In CAL position: Press +/ON for operating day or -/OFF to skip the day. Press NEXT for Interval selection or DIAL for next programming step.

In "Int" position: Press +/ON or -/OFF to select the watering day interval. Press NEXT to select the 1st day to start the watering (using the +/ON or -/OFF buttons).

In Odd position: Press NEXT to select Even days or DIAL.

In Even position: Press NEXT if you wish to go back to CALENDAR. Press DIAL to advance to START TIME.

Dial position: START TIMES

3 start times per day are available for each program. (A, B or C)

Press +/ON or -/OFF to set the first start time.

Press NEXT for start 2 and use +/ON or -/OFF to set the time.

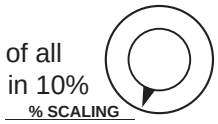
After setting start times, you can Press PROG to start entering data for another program. The Dial position will automatically move back to the RUN TIME position for that program.

Note: Start times are stacked to avoid operating more than 2 solenoids at a **time and exceeding the power output of the transformer.**

Note: To reset the START TIME back to OFF press +/ON and -/OFF buttons until display shows OFF.

Press DIAL to advance to the “% Scaling” position.

Dial position: % SCALING (Seasonal adjust)



In this dial position you can increase or decrease the RUN TIME of all stations in that program by percentage scaling from 0% to 200% in 10% increments.

Press PROG to select the program you wish to scale.

Press +/ON or -/OFF to change.

The Initial RUN TIME represents 100%. The controller will record the change, i.e., if a program was scaled down to 80%, next time you enter this dial position the display will show 80%.

To set a program to "OFF"
If you wish to stop irrigation of a program, set percentage scaling to 0%.
The display will show that program is OFF.
To resume normal operation of that program, Dial to "% SCALING" and increase the percentage to your desired value. Increasing to 100% will set RUN TIME to its original value.

Press PROG to select the program.

Press DIAL to advance to MANUAL.

Dial position: MANUAL

The MANUAL mode allows immediate customized irrigation on one or more zones. You can set an individual RUN TIME for each of the stations you wish to start manually. The controller has a "programmable manual" function, so if you manually operate more than one station, they will open in sequence.

Press +/ON or -/OFF to set the station RUN TIME.

Press NEXT to advance to next station.

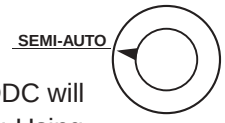
To turn ON the 1st station in the sequence:

Press DIAL to AUTO-RUN position.

Press -/OFF (in AUTO-RUN position) to turn OFF the sequence.
All stations with a manually programmed RUN TIME will be displayed. Operating stations will flash and the display will show the remaining RUN TIME of the station (count down).

Press DIAL to advance to SEMI-AUTO.

Dial Position: SEMI-AUTO



The SEMI-AUTO mode allows the immediate start of an entire program (A, B or C). When using the SEMI-AUTO feature, the DDC will essentially override the normal start time and begin immediately. Using SEMI-AUTO does not affect the previously scheduled run times. They will begin as programmed once the SEMI-AUTO feature has completed its cycle.

Press PROG to select the program you wish to operate.

The display will show all the stations programmed in the selected program

Press NEXT if you wish to select a different station as the 1st station.

Press +/ON to turn ON the sequence.

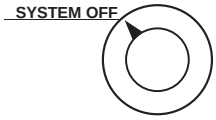
Press NEXT to skip from a station that is currently irrigating to the next one in the sequence.

Press -/OFF to turn OFF the sequence (before it is completed).

The display will show the remaining RUN TIME of each operating station.

Press DIAL to advance to SYSTEM OFF.

Dial Position: SYSTEM OFF



3 main functions can be performed in this dial position.

ALL PROGRAMS OFF - Irrigation is suspended for all programs. It will remain suspended as long as the DIAL stays in this position.

OFF

Press NEXT to set next function OR Press DIAL to advance to AUTO-RUN

RAIN DELAY: - Irrigation is delayed for the selected number of days.

DLY ☂ Press +/ON or -/OFF to select the number of days.

The display will show the umbrella, DLY=DELAY and the day the irrigation will resume (Flashing).

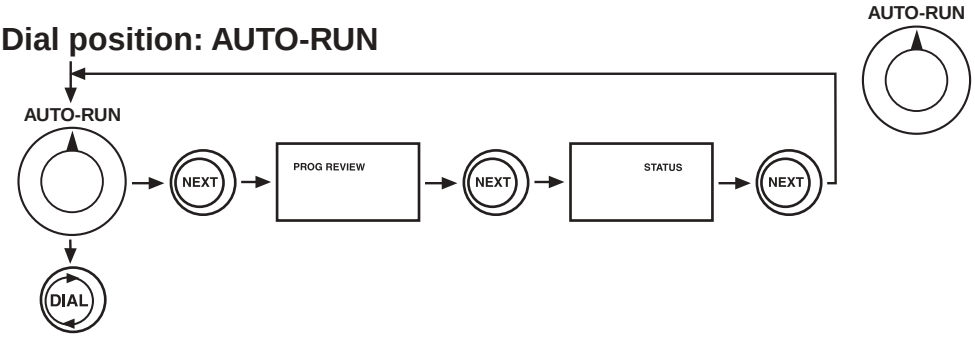
Press NEXT to set next function OR Press DIAL to move to AUTO-RUN

PROGRAM ERASE – You can erase all program information for a selected program. This can be done for any selected program.

PE

Press NEXT to select the program to erase.
Press +/ON to erase. PE will flash 5 times.

Dial position: AUTO-RUN



The AUTO-RUN position is used to provide information regarding the controller's operation as well as for reviewing all data stored in the irrigation programs.
The following is a list of information you can observe on the display:

- Current Time & Day
- A program(s) in OFF position
- Information regarding the operating station: program, station and start times
- Active Rain Delay
- If irrigation is suspended due to SENSOR input
- Circuit breaker cut off the operation of a station(s)
- Power failure indication

To turn OFF the working cycle, press DIAL to SEMI-AUTO and press -/OFF.
If you wish to review what data you have in each program:

Program Review: Press NEXT to **PROGRAM REVIEW**. Press PROG to select the program. Press +/ON to start the review.

Status: If you wish to have a complete status report on the operating station: Press NEXT to **STATUS.**

Remaining station **RUN TIME** will be displayed as well as the operating program.

Press NEXT to return to **AUTO-RUN** position.

Note: During programming, the dial will return to the AUTO-RUN position automatically after 3 minutes of inactivity.

Self Diagnostic Circuit Breaker

The Toro DDC controller will detect a short circuit caused by a defective solenoid or a short in the valve wiring. As soon as the short is detected, that station is turned OFF. The next station in the watering sequence is turned ON and the shorted station number icon together with OFF will start flashing.

NOTE: If the short is in the master valve, only OFF will start flashing.

Verification of a short circuit can be done in the SEMI-AUTO dial position
Press NEXT to the flashing station.
Press -/OFF to stop the flashing.
Press +/ON to turn ON the station.

If the flashing appears once again, check your wiring to this particular station. If the wire connection is fine, the cause of the short is the solenoid, which should be replaced.

NOTE: The 9 VDC battery must be installed for the proper operation of the diagnostic circuit breaker.

About the DDC memory

This controller is equipped with "on board" back up battery that will keep the program memory for a few years in case power is not available.
If you wish to program the controller without connecting it to AC power, install the 9 volt alkaline battery.
The 9 volt battery will turn on both displays and programming is possible.

Power failure indication

During a power failure the “24V” will start flashing and will continue until AC power is restored or the 9 volt battery is exhausted. A blank display indicates that there is no AC power and the 9 volt alkaline battery, if installed, is dead.

Electrical Specifications:

Input power:

- 120 VAC, 50/60 Hz
  (Plug-in transformer, CUL approved)
- 230 VAC, 50/60 Hz
  (Plug-in transformer, CE Mark)
- 240 VAC, 50/60 Hz
  (Plug-in transformer, SAA)
- 60 W (0.50 amps) maximum

Station Output Power:

- 24 VAC
  6 VA (0.25 amps) per station maximum
  6 VA (0.25 amps) pump start/master valve
  12 VA (0.50 amps) total load

CUSTOM WATERING PLAN

3 Program Controller

Date: _____

		Program A	Program B	Program C
Station	**Description**	**Duration**	**Duration**	**Duration**
1				
2				
3				
4				
5				
6				
7				
8				

	Program A			Program B			Program C		
Irrig. Days	Su Mo Tu We Th Fr Sa			Su Mo Tu We Th Fr Sa			Su Mo Tu We Th Fr Sa		
Days Cycle		Odd	Even		Odd	Even		Odd	Even
Start 1									
Start 2									
Start 3									

Electromagnetic Compatibility

Domestic: This 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 FCC 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. 004-000-00345-4.

International: This is a CISPR 22 Class B product.

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