Installation, Programming and Operating Instructions

Features
- Operates up to 6 valves with Master Valve
- Independent program for each valve
- Operates on two 9-volt alkaline batteries
- Weekly or Cyclical program
- Up to four start times per day per each valve in a weekly mode
- Station run time from 1 minute to 12 hours in 1 minute increment
- Watering Schedule 7-day weekly program or cyclical from once a day to once a month
- Simple, four button programming
- Water budgeting from -90% to +90% in 10% increments
- Optional manual operation of one valve or sequentially of all valves
- Withstands harsh climatic condition
- Controller can be mounted on the valve or on the valve box wall
- Rain delay up to 30 days
- 100% Waterproof when submerged in water
- Operation of remote valve is up to 150' using 12 gauge wire
- Allows up to two valves to operate simultaneously
- Used only with DIG's 337-xxx dry latching solenoid and valve
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INTRODUCTION

Thank you for purchasing DIG’s six station Controller. The current controller you selected is the most advanced in DIG’s line of battery-operated controllers.

Please take the time to read through the enclosed instructions and follow them step-by-step. If you have any questions, please call our customer service line 1-800-344-6641.

1. CONTROLLER PARTS IDENTIFICATION

1. Top Cover
2. Controller Display
3. Bottom Cover
4. Battery Compartment Cover

2. BATTERY INSTALLATION

Rotate the battery compartment cover handle to the 11 o’clock position to remove the cover (see drawing). Install two 9-volt alkaline batteries onto terminal clip and insert into battery compartment and reinstall the cover. The controller display will briefly appear and then the six drops above the icon of the valve number will appear with each droplet blinking momentarily and shutting off, followed by the blinking time of “12:00” – the controller is now ready to be programmed.

IMPORTANT: To replace the battery compartment cover, insert it with the handle in the “11” o’clock position and then rotate the cover 1/8” to the right to avoid possible cover guide pin breakage.

3. VALVES OR WALL MOUNTING

3.1. VALVE MOUNTING

If the mounting plate [2] is attached to the controller, remove it.
1. Insert the mounting coupling [1] into the mounting plate, aligning the words “top”, which are stamped on both the coupling, and the plate.
2. Press the mounting plate, with the mounting coupling inserted, against the irrigation controller back and slide upward.

3.2. WALL MOUNTING

The controller mounting plate [2] can be mounted on a wall using two screws (not included), in which case mounting coupling [1] is not used. Please be aware that the length of the controller connecting cable limits the distance between the controller and the solenoid.
MODEL 560.000 controller has six numbered wires from 1 to 6 representing the valve number, and one wire with the letter M representing master valve. 

**NOTE:** If you install a master valve, it will open automatically with valve 1 thru 6. No special programming needed.

### 5. CONTROLLER INSTALLATION WITH 337.000 SOLENOID

337.000 solenoid converts most two way AC valve solenoids with 3/4"-20 thread, and, with the use of P00-997 or 998 adapters can convert Rainbird solenoid valve series GB, DV, PE and G valves.

1. Shut off the main line to the valve.
2. Remove AC solenoid and plunger from the valve.
3. Remove the "O" rings (if used) from the valve solenoid thread.
4. Place "O" ring #2 on center of threaded bayonet adapter. See Figure 4 on page 4.
5. Thread DIG solenoid adapter into female solenoid port of valve.
6. After installing the solenoid adapter to the valve, remove solenoid from bayonet adapter and make sure "O" ring #1 is properly in place and install the solenoid with a 90° clockwise turn.
7. Turn water supply on and pressurize the system, making sure that the valve is operating correctly (the valve will open momentarily and shut off)
8. Use the manual lever on the solenoid to test the valve by turning it to the left to open the valve and to the right to close the valve. See Figure 3 on page 3. If the valve opens and closes, turn lever to automatic and connect the wires from the controller to the wires from the solenoid using a waterproof connector. See Figure 2 above
9. Connect the controller wires with the designated valve (#1, thru 6) to the valve solenoid wires, making sure that each color-coded wire (white, red, and black) from the controller designated valve # will be connected to the same color-coded wires from the solenoid. See Figure 2 above.
10. Program the controller (see programming #13 on

<table>
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6. SOLENOID PARTS IDENTIFICATION

- 04-001 Solenoid
- 03-055 "O" ring #1
- 03-061 Puppet
- 00-000 Puppet holders
- 03-058 Bayonet adapter
- 03-056 "O" ring #2

7. INSTALLATION WITH MODEL 337.075-100-150-200 DC SOLENOID WITH

Your solenoid valve can be installed in line directly to PVC pipe fittings, (inlet female pipe thread, outlet female pipe thread). See detail of Figure 6 and Figure 7 on page 5.

NOTE: Wrap all fittings with Teflon tape. Do not use thread paste on valve as this will damage the valve and void your warranty.

IMPORTANT: Make sure flow direction arrow is pointed away from water source. Never use the controller unit as a handle for tightening the valve to the pipe.

1. Shut off the main line to the valve.
2. Before installing the valve [5] in the irrigation system, flush the main line if debris is present, then remove the solenoid [1] from the valve with a 90° counter-clockwise turn. Be careful not to lose the seal (O-Ring #2) [3]. See Figure 9 on page 6.
3. Install the valve in the irrigation system, paying attention to the correct water flow direction, as indicated by the arrow [4]. See Figure 9 on page 6.
4. After installing the valve [5], assemble the solenoid with a 90° clockwise turn. Be sure to place the seal (O-Ring #1) [3] in its proper location. See Figure 9 on page 6.
5. Turn water supply on and pressurize the system, making sure that the valve is operating correctly (the valve will open momentarily and shut off)
6. Use the manual lever on the solenoid to test the valve by turning it to the left to open the valve and to the right to close the valve. If the valve opens and closes, return lever to automatic position and connect the wires from the controller to the wires from the solenoid using a waterproof connector. See Figure 2 on page 3.
7. INSTALLATION WITH MODEL 337.075...continued

7. Connect the controller wires with valve (#1 thru 6) to the solenoid wires, making sure that each color-coded wire (white, red, and black) from the controller will be connected to the same color-coded wires from the solenoid using a waterproof connector. See Figure 2 on page 3.

9. Program the controller (see programming #13 on page 8).

Figure 6 – 337.075, 3/4" and 337.100, 1" Installation Detail

Figure 7 – 337.150, 1-1/2" and 337.200, 2" Installation Detail

8. MANUAL-MECHANICAL OPERATION

The valve can be opened and closed independent of controller operation. Manual operation is useful when immediate irrigation is required, without the delay of controller programming. See Figure 8.

The 3-position manual lever [A] is located on the solenoid manual lever, and functions as follows: Open [1], Automatic Operation [AUTO], Closed [2].

**IMPORTANT:** For automatic operation, the valve handle must be in the middle [AUTO] position.

Figure 8
10. ASSEMBLY OF MODEL 336.013

Your DIG valve actuator comes factory assembled to fit 3/4" Champion and Orbit manual antisiphon brass valves. Included in the package, you will find adaptors to fit 1" Champion, Orbit manual antisiphon brass valves. See Figure 10.

NOTE: Please select proper adaptor.

10.1 ASSEMBLE PROPER ADAPTOR (IF REQUIRED)

1. Remove main screw with a pair of pliers by turning counter clockwise.
2. Remove 3/4" seat washer and then 3/4" adaptor, by turning counter clockwise and pulling away.
3. Replace actuator with proper adaptor and seat washer. Make sure O-Ring #3 is in place.
4. Replace main screw. Tighten firmly, but do not over tighten.

NOTE: Take care not to lose O-Ring #3
11. INSTALLATION OF MODEL 336.013

1. Shut off the main line to the valve.

2. Remove the manual stem from your existing valve. If you are converting an anti-siphon valve, temporarily remove the anti-siphon cap (see A, Figure 11 below).

3. Replace any existing worn washers with the new ones provided.

4. Install actuator into valve (see B, Figure 11) using a wrench, tighten firmly, but do not over tighten, and mount the controller on top.

5. Rotate actuator clockwise until completely closed (see C, Figure 11 below).

6. Turn water supply on and pressurize the system, making sure that the anti-siphon valve is operating correctly (the anti-siphon valve will open momentarily and shut off).

7. Use the manual lever on the solenoid to adjust the flow on the anti-siphon valve by turning to the left to open the valve and rotate actuator counter clockwise until all sprinklers/sprayers are working evenly.

8. Turn manual lever from the left side “on” to the right side position “off” to close the valve and if the valve opens and closes correctly, turn lever to automatic and connect the wires from the controller to the wires from the solenoid using a waterproof connector.

9. Connect the controller wires with valve (#1 thru 6) to the solenoid wires, making sure that each color-coded wire (white, red, and black) from the controller will be connected to the same color-coded wires from the solenoid using a waterproof connector.

10. Program the controller (see programming # 13).

   NOTE: If water continues to flow, turn actuator slowly clockwise 1/4 turn. Repeat steps 5-8 if necessary.

12. PARTS IDENTIFICATION 336.000

   ![Diagram of parts](image)
13. PROGRAMMING

This chapter will explain the features, use of buttons and the programming. To program the controller use the left button to move down to select the desired programming mode, the right button to enter the mode and the plus minus buttons to change the value.

**Note: the only time you can change any character thru the program is when the character being changed is blinking**

DIG controllers are programmed with the aid of four buttons:

- Programming step selector – used to select the desired programming mode (includes clock setting mode)
- Data increment button (Decrease) – Lowers the value of the selected parameter (when hours selected are from 06:00 to 05:00)
- Data increment button (Increase) – Raises the value of the selected parameter (when hours selected are from 06:00 to 07:00)
- Next step button – used to select the parameter to be changed (hour, minute, etc.). Only a blinking parameter can be changed

14. SETTING CURRENT TIME AND DAY OF THE WEEK

To enable the controller to operate the system at the correct times, the current time and current day of the week must first be set. Steps below explain how to set the day and time,

Press the hour digit will blink. Use the + or –, to set the current hour (note: use of AM and PM designations). Press the minutes digit blink, set the current minute using + or –. Press A blinking arrow will appear in the upper portion of the display. Use the + or – to move the arrow to current day. Press to proceed to the next step.

**Note: If the last data entered stops flashing, press the again to resume programming.**

15. TIME FORMAT (SWITCHING BETWEEN AM/PM AND 24 HOUR)

The default time format is AM/PM. There is also a 24 hour time format option that can be switched between the two formats

Press several times until appears.
Press hour digit will blink. Use the + or – simultaneously. the clock reading switches from AM /PM to a 24 hour time display or vice versa.

**Note: You can switch the time display format at any step in the programming process.**
16. VALVE SELECTION

This model operates from 1-6 valves, each valve is independently programmed. First select the desired valve, and then schedule as follows:

Press \( \rightarrow \) until \( \rightarrow \) appears.

Press \( \downarrow \). A blinking arrow appears at the bottom of the display. Move the arrow to the desired valve number by pressing \( + \) or \( - \). Press \( \rightarrow \) to proceed to the next step.

17. SETTING THE WATERING TIME (DURATION)

This setting determines the length of time that the valve will remain open.

Press \( \rightarrow \) until \( \rightarrow \) appears. Press \( \downarrow \), the hour/minute digits blink. Set the desired number of hours by pressing \( + \) or \( - \). Press \( \downarrow \) again, the minute digits blink. Set the desired number of minutes by pressing \( + \) or \( - \). Press \( \rightarrow \) to proceed to the next step.

18. SELECTING WATERING DAYS

This setting determines which days the controller will operate. Choose either "A. Watering according to the days of the week" or "B. One-time irrigation or cyclical irrigation".

Press \( \rightarrow \) until \( \rightarrow \) appears. Press \( \downarrow \). A blinking arrow appears at the top of the display, under Monday. At this stage you can set one of two options:
a) Watering according to the days of the week,
b) One time only watering or cyclical watering.

A. WATERING ACCORDING TO THE DAYS OF THE WEEK.

To select a watering according to the days of the week, move the blinking arrow to the desired day of the week by pressing \( \downarrow \). Press the \( + \). The arrow under the selected day stops blinking, and in a few seconds moves one position to the right, and blinks under the next day of the week. You can select additional days of the week in the same manner.

Press \( \rightarrow \) to proceed to the next step.

To cancel a scheduled watering day: Press \( \downarrow \) and move the arrow under the selected day. Press \( \rightarrow \) under the selected day, the arrow will disappear and the blinking arrow will move one position to the right, and appear at the next day of the week. Cancel additional scheduled irrigation days in the same manner.

Press \( \rightarrow \) to proceed to the next step.
18. SELECTING WATERING DAYS...continued

B. ONE-TIME IRRIGATION OR CYCLICAL IRRIGATION

This option is used to program the controller to operate the irrigation system one time only, for the irrigation period as set in watering time (durations).

Press ⊗ until ⊘ appears. Press ⊗ several times (for all the days of the week) until ⊘ appears, and ⊘ ⊘ ⊘ ⊘ ⊘ ⊘ blinks on the display.

CYCLICAL IRRIGATION

This option is used to program the controller to operate the system in a cyclical manner. Once every 1-30 days, for the irrigation period and is followed by the one-time irrigation period.

Press ⊗ until ⊘ appears. Press ⊗ several times (to advance all the days of the week) until ⊘ appears, and ⊘ ⊘ ⊘ ⊘ ⊘ ⊘ blinks on the display. With the display blinking, press + or −. The number of days between watering appears on the display.

For example, if “every 30 days” appears, watering will take place once every thirty days, for the irrigation period as set in duration. To change the number of days press + or −.

Press ⊗ to proceed to the next step.

19. SETTING A START TIME

In this step, up to 4 separate irrigation start times per valve can be programmed in the weekly mode (watering according to the days of the week).

Press ⊗ until START appears. The word OFF (or the last start time entered) appears. Press ⊗ the word OFF blinks. Press + or − to set the desired start time hour (note AM and PM). Press ⊗ the minute will blink. Press + or − to set the desired start time minute. Press ⊗ to set START I and repeat the same steps for start times number 2, 3, and 4 as needed.

To cancel one of the start times select it by pressing ⊗. The hour digit blinks. Press the + or − until the word OFF appears. To program another valve, select the valve number and repeat the above steps.
20. SETTING A START TIME FOR A CYCLICAL OR ONE-TIME WATERING
(WITH OPTION TO DELAY VALVE START TIME)

This program is used to pre-set the valve start time (only one start time available) and the number of
days to delay the valve start time, the number of day(s) to delay option will appear on the display
to the right of the irrigation start time above the word “days”.

In this feature 0 days = program starts today; where 1 = program starts tomorrow, etc. (up to 30
days delay).

Press until START l appears or the last opening
time entered appears on the display. Press . The
hours and the AM/PM digits blink. Set the desired
opening hour by pressing the + or - (note: AM
and PM designations appear to the left of the hour
digits). Press . The minute digits blink. Repeat the
same step for setting the minutes and the number of
days to delay watering (optional).

21. MANUAL OPERATION VIA THE CONTROLLER

This option operates all the valves for the defined irrigation period. The valves will automatically
close at the end of the irrigation period. Note that the originally programmed irrigation schedule
continues to function at the times set.

NOTE: In order to use semi-auto feature, the controller must be programmed with: Current
day and time, duration, watering day and start time.

There are two ways to use the semi-automatic feature:

METHOD #1 is from the "now" screen. Press and hold the + button for a few seconds. A water
droplet under valve 1, water droplet for master valve and the icon appear in the display not
blinking and the rest of the valves icon droplet are blinking. Valve one will open and continue to
water for the pre-programmed duration then a countdown of the remaining irrigation duration
appears. Press + and continue opening the rest of
the valves. If you want to stop watering before the full
duration, simply press the + button and scroll to the
remainder of the valves until “now” and time of the
day appear.

METHOD #2: Press until appears. Press + to
open the valve (to select other valve please see Valve
Selection #16 on page 11). The word ON is displayed
and a water droplet with the letter M (Master Valve)
appears below ON. After 15 seconds, a count down of the
remaining irrigation duration appears. To close the
valve press , OFF will appear and the valve will
close.

To close the valve manually before the end of
the manual cycle press until ON appears again. Press
- to close the valve. Up to two valves can be
operated simultaneously in this manner by simply
repeating the above steps for the second valve.
22. SEQUENTIAL MANUAL OPERATION VIA THE CONTROLLER OF ALL THE VALVES

This option allows all the valves to operate sequentially, one after the other (to select other valves please see Valve Selection #16 on page 9).

Press + until - appears, when no icon is blinking on the display. Press and hold down + for 5 seconds. Valve number 1 will open and operate for the programmed time. When valve number 1 closes, valve number 2 opens and so forth until the last valve has opened. All the valves designated to open will blink.

At any time you can influence the process pressing + to close the current valve and open the next one.

Important: You can only exit this screen after all the valves have opened.

23. "RAIN OFF" (SHUTDOWN)

This option is used to temporarily suspend the controller operation, while it is raining. The irrigation schedule remains stored in the controller memory, but is not implemented until the suspension is canceled. The suspension option disables all the valves connected to the controller.

Press - until - appears. Press - and hold down - for 5 seconds. - appears blinking alongside the word "RAIN OFF". The controller is now suspended. To restore control to the controller, press - appears, and then press and hold down the - until the - disappears.

RAIN OFF can be used while a valve has been activated.

If an attempt is made to operate a valve manually while the controller has been suspended, or when a valve is meant to open sequentially, the word "rain" appears, and the valve will not open.

24. BUDGET

You can extend or shorten the time durations for all valves simultaneously by specifying a percentage increase or decrease for all the valves.

Press - until - appears, wait until no digit is blinking. Press + - simultaneously. 00+-% is displayed. Press -, the 00 blinks. Press + or - to increase or decrease the percentage as necessary (in increments of 10% up to 90%). +% or -% are permanently display on the main - display accordingly.

Important: Budget feature cannot be assigned to an individual valve. Budget will effect all stations equally.
25. WAIT MODE

When two valves are currently open, and a third valve is scheduled to open, the third valve enters into wait mode. A blinking icon appears above the number of the waiting valve. When one of the first valve two valves closes, the waiting valve opens. During “manual” operation of a waiting valve via the controller, the letter “W” (Wait) appears on the display. The valve opens when another valve closes.

26. MISSING A PROGRAM DATA

During “manual” operation via the irrigation controller “no Prog” appears on the display (see section# 21 MANUAL OPERATION), indicating that no time duration has been set for the specific valve. In this case, opening of the valve is disabled.

27. BLINKING LOW BATTERY WARNING

When the batteries are low, a blinking battery icon appears. In this state, the batteries still enable valve operation, but must be promptly replaced.
After replacing the batteries, press any button to resume controller operation.
Programmed data is retained if batteries are replaced within a 30 second time period
Hint: simply replace one battery at a time.

28. PERMANENT LOW BATTERY WARN-
29. MAINTENANCE, TROUBLESHOOTING AND REPAIRS

- Batteries should be removed if the irrigation controller will not be operated for a prolonged period.
- Under normal usage, batteries (alkaline) will last for one year.
- It is good operating practice to replace old batteries with new ones at the start of the irrigation season.
- Recommended operating water pressure range: 7-120 psi.
  Operating pressure range 7-150 psi.

PROBLEM
Valve does not open during automatic operation or during “manual” operation via irrigation controller
  CAUSE: Manual Lever not in AUTO position
  SOLUTION: Place Manual Lever in AUTO position
  CAUSE: Weak batteries
  SOLUTION: Replace batteries

PROBLEM
No display
  CAUSE: Weak batteries
  SOLUTION: Replace batteries

PROBLEM
Valve does not close despite clicks heard during activation
  CAUSE: Manual Lever not in AUTO position
  SOLUTION: Place Manual Lever in AUTO position
  CAUSE: O-Ring #2 is missing between the valve and the valve coupling
  SOLUTION: Install a new O-Ring #2
  CAUSE: Outlet flow may be too low (minimum flow .5 gpm or 30 gph)
  SOLUTION: Increased flow rate by adding drip emitters or micro sprinkler
  CAUSE: Valve is installed backwards
  SOLUTION: Reverse valve
  CAUSE: Solenoid orifice is blocked
  SOLUTION: Flush and clear port

PROBLEM
Water leakage from the solenoid-valve coupling connection
  CAUSE: O-Ring #1 is missing (see figure 2, item 3)
  SOLUTION: Install a new O-Ring #1