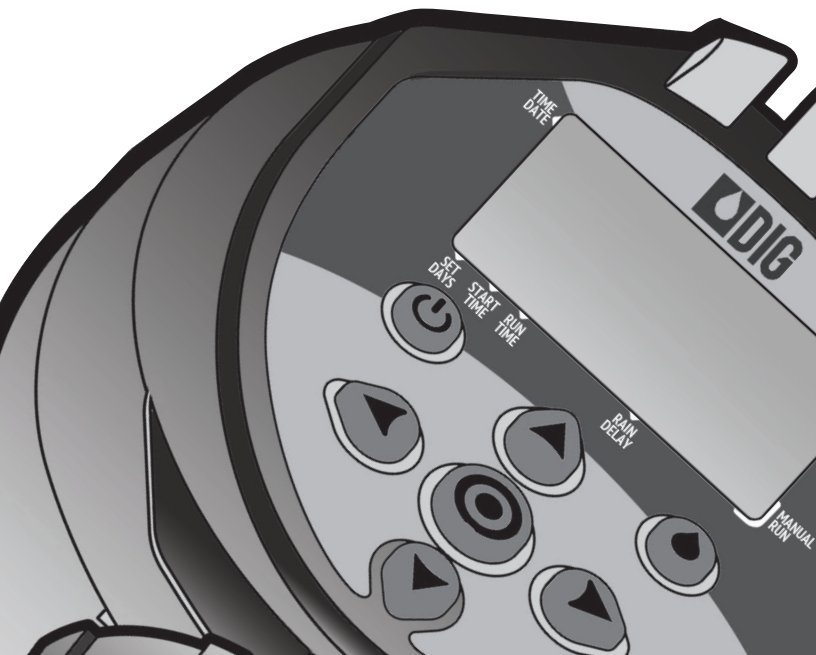




water matters

400A Series Single Station Irrigation Battery Operated Controller

400A-MVA



I N S T R U C T I O N M A N U A L

TABLE OF CONTENTS

1.	Introduction	1
2.	About the 400A MVA battery operated controller	1
3.	Component identification	1
4.	LCD display and controls	2
5.	Installing the batteries	3
6.1	Changing actuator adapters	4
6.2	Manual valve actuator installation	6
7.	Programming	8
8.	Setting current time and date	8
9.	Setting watering day schedules	10
10.	Setting/deleting watering start times	13
11.	Setting watering run time (duration)	15
12.	Setting rain delay – optional feature	16
13.	Manual watering	17
14.	Connecting a rain sensor	19
15.	Changing the batteries	20
16.	Maintenance, troubleshooting and repairs	21
17.	Warranty	23
18.	Technical assistance	24
19.	To order replacement or spare parts	25

1. INTRODUCTION

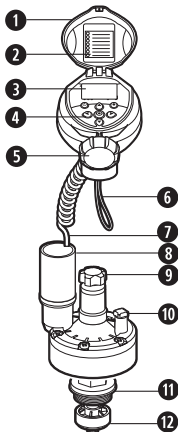
Thank you for purchasing DIG's 400A MVA Single-Station Battery Operated Controller. This manual describes how to get the 400A series controller up and running quickly. After reading this manual and becoming familiar with the basic functionality of the controller, use the manual as a reference for less common tasks in the future.

2. ABOUT THE 400A MVA BATTERY OPERATED CONTROLLER

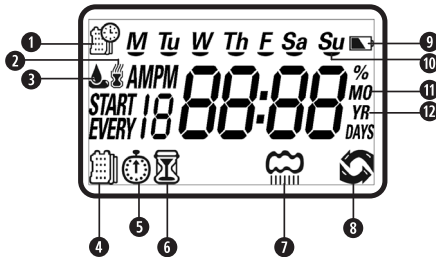
The 400A MVA Controller employs the latest irrigation programming features to allow for complete control of any irrigation system. It is a single-station battery operated controller with a factory pre-assembled actuator to convert a 3/4" Champion or Orbit manual brass anti-siphon valve. It also includes a 1" adapter and seat washer to fit 1" Champion or Orbit manual brass valves, 3/4" and 1" Rain Bird manual plastic valves, or 3/4" and 1" Orbit plastic valves. The controller has a rain sensor connection, and is powered by two AA batteries that can last up to three years, using name brand alkaline batteries. The controller is enclosed in a compact, waterproof housing to protect it from the elements.

3. COMPONENT IDENTIFICATION

1. Controller cover
2. Quick reference label
3. LCD Display displays the icon-based applications/ programs
4. Seven-button programming keypad:
Use for programming, system on/off, manual run and reviewing program
6. Rain sensor yellow wire connection
7. Collapsible 36" solenoid wire
8. DC Solenoid
9. Manual flow control
10. External bleed screw
11. 3/4" adapter
12. 3/4" seat washer



4. LCD DISPLAY AND CONTROLS



LCD Display

1. **Time and Date Icon** – Indicates current time and day is displayed
2. **Sensor Icon** – Appears when a rain sensor is active or when yellow wire loop has been cut and watering is halted
3. **Watering Icon** – Appears when valve is open
4. **Set Watering Days Icon** – Choose either specific days, odd/even days, every X hours, or up to once every 30 days
5. **Start Time Icon** – Up to four start times per day available
6. **Run Time Icon** – Watering duration from 1 minute to 5 hours and 59 minutes
7. **Rain Delay Icon** – Delay irrigation setting from 1 to 99 days with automatic restart
8. **Manual Run Icon** – Appears when manual button is pushed
9. **Battery Level Indicator** – Flashes when batteries are low and need to be replaced
10. **Day of the Week Underscore** – Shows which day of the week the controller will operate
11. **Represents Month**
12. **Represents Year**

Control Buttons



Select programming mode



Changes operating status to Auto or OFF



Start/stop a manual cycle



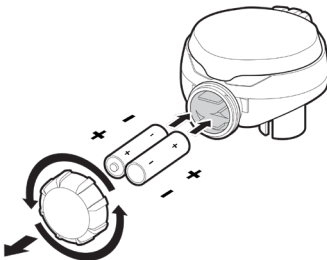
Move left/right to select a value



Raise/lower the selected value

5. INSTALLING THE BATTERIES

1. Open the battery compartment cap by turning it counter-clockwise.
2. Install two fresh, brand name AA alkaline batteries (not included) and note the proper direction of the positive and negative orientation on the underside of the controller.
3. Insert and screw the battery cap clockwise. Make sure to securely tighten the cover firmly by hand only. The controller display appears with a day, PM, and the hour digit flashing. The controller is ready to be installed and programmed.



6.1 CHANGING ACTUATOR ADAPTERS

The 400A MVA controller is factory set to fit a 3/4" brass manual anti-siphon valve. To install the controller with actuator on a 1" manual anti-siphon valve, the 3/4" seat washer and adapter must be removed and replaced with the 1" adapter and seat washer, which are included in this box.

1. Turn the actuator so that the seat washer and the 3/4" threaded adapter face up.

2. Using pliers, or a 5/16" wrench, remove the seat washer screw by turning counter clockwise and pull off the 3/4" seat washer assembly (see Figure A).

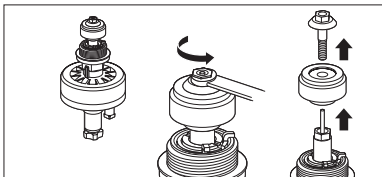


FIGURE A

3. Push the 3/4" threaded adapter down towards the actuator to ease the tension on the retainer clip (see Figure B).

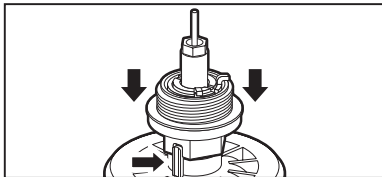


FIGURE B

4. Next, place your thumb on one side of the retainer clip and with a pair of pliers grip the other side of the retainer clip and pull outwards, away from your thumb, and upwards, removing it from the base of the 3/4" threaded adapter. Then, remove the adapter (see Figure C).

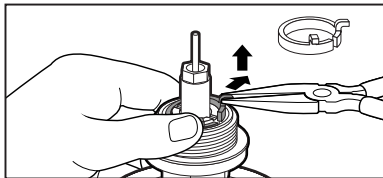


FIGURE C

5. Install the 1" threaded adapter by pushing it onto the actuator stem and making sure the notch on the adapter lines up with the notch on the stem of the actuator (see Figure D).

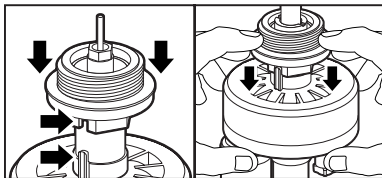


FIGURE D

6. Spread the retainer clip with your thumbs and push the retainer into the adapter until it clicks (see Figure E).

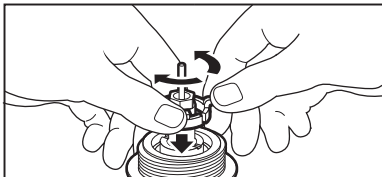


FIGURE E

7. Install the 1" seat washer assembly as shown. Insert the seat washer screw into the bottom of the actuator stem and tighten turning clockwise (see Figure F).

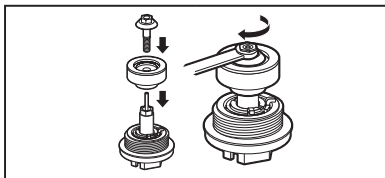


FIGURE F

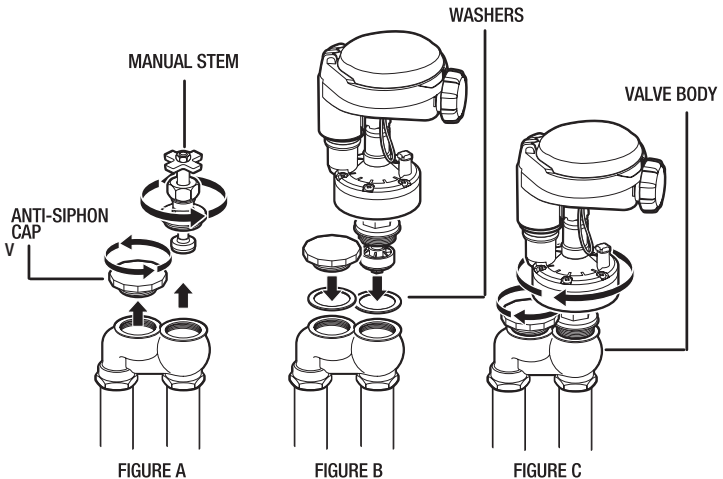
NOTE: Do not over-tighten.

6.2 MANUAL VALVE ACTUATOR INSTALLATION

Rated operating pressure: 20 to 125 PSI

Recommended operating pressure: 20 to 80 PSI

1. Shut off main water supply.
2. Remove the manual stem from the existing valve and temporarily remove the anti-siphon cap (Figure A).
3. Replace any existing worn washers with the new ones provided (Figure B).
4. Install the actuator into the manual anti-siphon valve body by turning the actuator clockwise. Tighten firmly, but do not over tighten (Figure C). Re-install anti-siphon cap.



5. Turn actuator flow control knob clockwise until it stops (Figure D).
6. Turn on main water supply.
7. Activate the solenoid through the controller manual button, a click will be heard indicating the valve is open (The manual symbol will appear on the display).
8. Turn the actuator flow control knob counter clockwise to allow flow and check the system to make sure that the sprinklers or the drip system is working properly (Figure E).

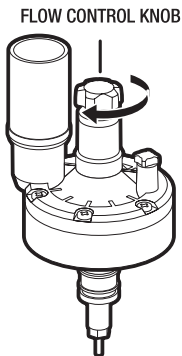


FIGURE D

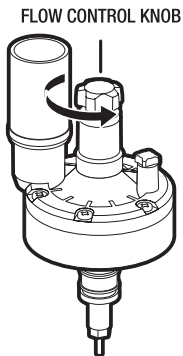


FIGURE E





9. De-activate the solenoid through the controller's manual button, a faint click will be heard and the valve will close. (The manual symbol will disappear and water flow will stop). If flow continues, turn flow knob clockwise, one full turn at the time until flow is stopped, and the valve is shut off.
10. Repeat steps 7 and 9 and make sure that flow is turned on and off.

Note: Turn the flow control knob clockwise to decrease flow, counter-clockwise to increase flow. For low-flow drip systems below 60 gallons per hour, flow control knob should be turned no more than 1 to 3 turns up (counter-clockwise) from the fully closed position.

11. The unit is now ready to be programmed.

7. PROGRAMMING

The 400A MVA controller can be programmed to operate on any day of the week, odd days or even days. In cyclical mode, the 400A can also operate from every 1 hour up to every 12 hours or from once a day up to every 30 days. The 400A has four start times per day and durations from 1 minute up to 5 hours and 59 minutes.

This section explains the programming features, and the steps necessary to assign irrigation schedules. To program the controller use the  to select the desired programming mode, the  to make the entry flash and the   buttons to change the value.

NOTE: Only a flashing value can be changed.

NOTE: If the last data entered stops flashing, press  again to resume programming and repeat the steps.

8. SETTING CURRENT TIME AND DATE

The controller can display the time in either a 12 or 24 hour format. To change the time format, from the home screen:

1. Press the  button for three seconds until the  display switches format (AM/PM disappears).









SETTING THE CURRENT TIME AND DATE

To enable the controller to operate properly, the current time and date must be set.

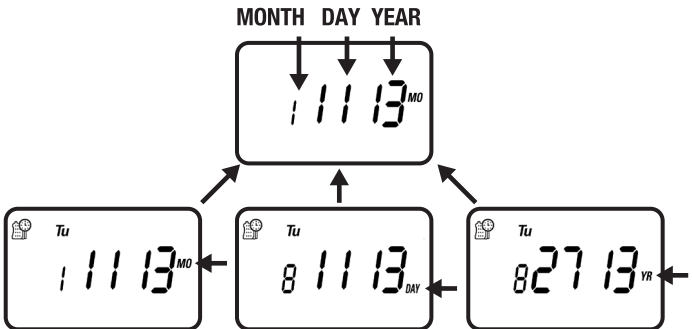
1. Press the  button, until the  icon appears along with the time and the day of the week.






2. If the current time has not been set or needs to be updated press  and the hour digit starts flashing.
3. To set the current hour, press  or  (note AM and PM designations).
4. To set the minutes, press  again and the minute digit starts flashing. Press the  or  to set the current time in minutes.



5. Repeat the steps to set the current date including, month, day and year. When the date is selected and updated, the day of the week will be updated at the same time to correspond with the date.



Press  to proceed to the next step, SET DAYS  or to review the program.

Press  to move backward.

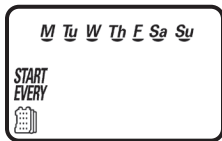
9. SETTING WATERING DAY SCHEDULES







Option 1 – Setting Specific Days of the Week:



This setting determines which days the 400A MVA controller will operate. Choose either watering on specific days of the week, EVEN/ODD days or cyclical from daily up to once every 30 days. The controller's default setting is to water on all specific days of the week.

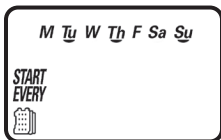
For example, if you want to water every Tuesday, Thursday and Sunday:

1. Press the  button until the  icon and the days of the week appear on the screen.



2. Press  once and **M** (for Monday) starts flashing.
3. Press,  and underscore under **M** (Monday) disappears. Monday is de-selected.
4. Press  twice and **W** (for Wednesday) starts flashing.
5. Press  and the underscore under **W** (Wednesday) disappears. Wednesday is de-selected.
6. Press  twice and **F** (Friday) starts flashing.
7. Press  and the underscore under **F** (Friday) disappears. Friday is de-selected.

- Press  and the underscore under **Sa** (Saturday) starts flashing.
- Press  and the underscore under **Sa** disappears. Saturday is de-selected.








- Press the  button to proceed to the next step START TIME  or to review the program.

Option 2 – Setting Even or Odd Days:

To select **EVEN** days, **ODD** days refer to the example.

Example: setting the controller to water on ODD days

- Press the  button until the  icon and the days of the week appear.
- Press  and  to skip all the days of the week (underscore must be removed beneath all days).
- Press  and **EVEN** appears flashing.










- Press  and **ODD** appears flashing.





5. Press the  button to proceed to the next step START TIME  or to review the program.

Option 3 – Setting every X hours:

Example: setting the controller to water every 7 hours









1. Press the  button until the  icon and the days of the week appear.
2. Press  and  to skip all the days of the week (underscore must be removed beneath all days).
3. Press  and EVEN appears flashing.
4. Press  again and 1:00 hour appears flashing. To select the number of hours between watering to 7 hours, press  until 7:00 appears on the display.



- Press the  button to proceed to the next step START TIME  or to review the program.




Option 4 – Setting every X days:



Example: setting the controller to water every 10 days:

1. Press the  button until the  icon and the days of the week appear.
2. Press  and  to skip all the days of the week (underscore must be removed beneath all days).
3. Press  and EVEN appears flashing.
4. Press  again and 1 hour appears flashing.
5. Press  again and 1 DAY appears flashing. To select the number of days between watering to 10 days, press  until 10 appears on the display.



To set the controller back to specific days mode:

1. Push the  button until – *START EVERY* and the  icon appear at the bottom left of the screen.
2. Push the  until the days of the week appear at the top of the screen.

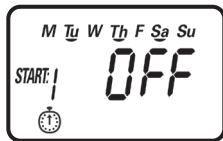
Press the  button to proceed to the next step START TIME  or to review the program.







10. SETTING WATERING START TIMES

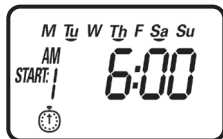
The 400A MVA controller can have up to four separate irrigation start times per day. (Note: if the controller is set to water every X hours, only one start time is available to be programmed.)


To set a start time,

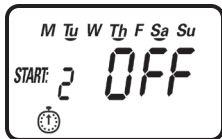
1. Press the  button until the  icon appears. START 1, displays OFF or the last start time programmed in START 1 appears.






2. Press  and OFF (or the first start time programmed) begins flashing.
3. To set the desired first start time hour (note AM and PM designations), press  or .
4. Press  and the minutes start flashing.
5. Press  or  and set the desired start time minutes.





6. Press  again, the second start time and OFF or the last start time programmed appear flashing. Repeat the steps to set the second, third, and if needed, the fourth start time. During programming, if you are set to water on specific days of the week, the screen also shows which days the controller will operate with an underline.



To delete a start time:

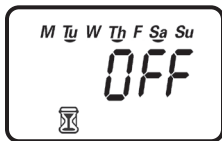
1. Press  until START 1 appears.
2. Press  until the start time appears that you want to delete.
3. Press  until the word OFF appears.

Press the  button to proceed to the next step RUN TIME  or to review the program.




11. SETTING THE WATERING RUN TIME (DURATION)

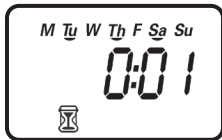
This setting determines the length of time the 400A MVA controller will allow the valve to remain open (duration is from 1 minute up to 5 hours and 59 minutes). For example, setting watering run time to 10 minutes on certain days of the week will program the controller to turn the water on for 10 minutes on each of the days chosen and at every start time selected. (Note: if the controller is set to water every X hours, the maximum duration is 59 minutes)




To set the watering run time :

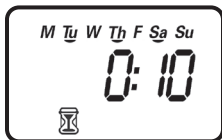


1. Press the  button until the  icon appears and OFF or the last run time setting appears. (OFF will appear if duration is set to 0)

2. Press the  button, and 0:00 (or the last run time programmed) appears with hours flashing.
3. To set a desired watering run time in hours, press  or  and select the number of hours.



4. If only watering duration in minutes is required, press  to skip the hour digit, and the minutes will start flashing.
5. To set the desired watering duration in minutes (example of 10 minutes), press  or  to select minutes. When programming the watering duration, if you are set to water on specific days of the week, the screen will also show the days the controller will operate with an underline.



At this point the controller's normal programming is concluded.

Press the  button to proceed to the next step RAIN DELAY  or to review the program or to exit.

To view a video that covers the programming of the 400A series, please visit www.digcorp.com

12. SETTING RAIN DELAY – OPTIONAL FEATURE



The Rain Delay setting is used to temporarily suspend all irrigation for a defined number of days. For example, during rainy weather regularly scheduled programs can be turned off from 1-99 days. At the end of the designated period, regularly scheduled programming will resume automatically.

To set a temporary suspension of the program:



1. Press the  button until the  icon and OFF appear.



2. Press the  button and OFF starts flashing.

3. To set the desired temporary suspension of the program (1-99 days), press  or .



4. The temporary suspension of the program can be cancelled at any time by re-entering Rain Delay screen and changing the setting to OFF. (Press  or  until OFF appears.)






Note: OFF appears in between numeric value of 99 and 1.

Press the  button to review the program or to exit.


13. MANUAL WATERING

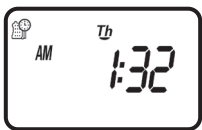
The manual mode allows the user to test the system and water for a specified run time set in watering duration. The controller will automatically stop watering at the end of the defined irrigation period. The originally programmed irrigation schedule continues to function at the times assigned. The sensor condition is disregarded in this mode.

To start a manual run,

1. Press the  button, and the  icon and  icon appears. ON appears momentarily and then the last watering duration is displayed with  . The controller will open the valve and in 5 seconds a count down of the remaining irrigation duration appears, showing when the controller will close the valve.



2. Press the  button to end manual run.
3. After 5 seconds the display will revert to the current time screen.



To activate a manual watering without the use of the controller – turn the solenoid a 1/4 turn counterclockwise. To stop, tighten the solenoid clockwise by hand only – do not over tighten (figure 8a). Manual watering can also be achieved by turning the external bleed screw counterclockwise to start and clockwise to stop (figure 8b).

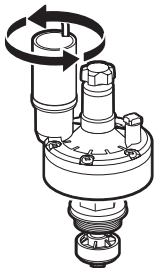


FIGURE 8A

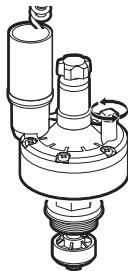


FIGURE 8B

14. CONNECTING A RAIN SENSOR

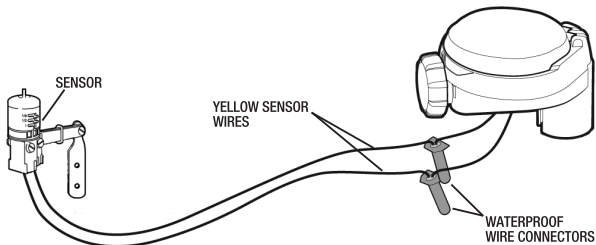
Most "normally closed" rain sensors can be connected to the 400A controller. The function of the sensor is to prevent automatic watering by the set program due to excessive rainfall.

To connect the sensor to the controller, please follow these steps:

1. Cut the yellow wire loop that exits the controller in the middle of the loop.
2. Strip approximately a 1/2" of insulation from the end of each wire.
3. Splice one yellow wire to each of the wires coming from the sensor.
Use waterproof wire connectors to secure the connections.
4. When the sensor is active and preventing automatic operation, the ☔ icon will appear on the display.



The  icon will only appear when sensor is active or if the wire has been cut.



Recommended rain sensors are the Rain Bird RSD and Hunter Mini-Clik

15. CHANGING THE BATTERIES

The 400A MVA controller's batteries can last up to three years when using name-brand AA alkaline batteries. Actual battery life will depend on the sensitivity of the installed batteries to temperature ranges experienced by the controller as well as the number of valve operations programmed per day. To ensure proper operation, it is recommended that the 400A MVA controller be checked regularly and the batteries replaced once the low battery indication starts flashing.




The 400A MVA controller is designed to maintain the current time settings for up to 60 seconds with the batteries removed.

To change the batteries, see section 5.

Note: If the batteries are dead or drained, manual operation can also be accomplished by turning the solenoid counterclockwise, or by turning the external bleed screw counterclockwise. This will cause the valve to open. Both must be turned clockwise to close the valve.

16. MAINTENANCE, TROUBLESHOOTING AND REPAIRS

To restore the controller to the **default** settings

1. Press the  button until the **START EVERY** is displayed and the  icon appears on the bottom left of the screen.
2. Press and hold down the  for three seconds.
3. The screen returns to the home screen (clock) and all the default settings are restored. The current time and date is retained.

PROBLEM: Controller fails to open automatically or manually

CAUSE: No water pressure

SOLUTION: Open main water supply valve

CAUSE: Flow control knob is turned down

SOLUTION: Turn flow control knob clockwise to open

PROBLEM: Valve/actuator functions via the manual mode only but not automatically

CAUSE: Controller is set to OFF mode

SOLUTION: Verify that the controller does not show OFF in current time mode

CAUSE: AM/PM not set correctly in current time mode

SOLUTION: Check current time, change AM/PM if necessary

CAUSE: AM/PM not set correctly in start time mode

SOLUTION: Check start time(s), change AM/PM if necessary

CAUSE: Rain delay is preventing watering

SOLUTION: Set rain delay to off

CAUSE: Yellow sensor wires have been cut

SOLUTION: Re-connect sensor wires together with waterproof connector

CAUSE: Sensor is installed and is in a state that prevents watering

SOLUTION: Check sensor and wire splices and verify sensor is normally closed

PROBLEM: The display is blank

CAUSE: No buttons have been pushed in the previous 15 minutes

SOLUTION: Push any button

PROBLEM: Valve fails to close

CAUSE: Solenoid is loose

SOLUTION: Tighten solenoid by turning it clockwise to the right

CAUSE: Valve is installed backwards

SOLUTION: Check flow arrow and verify arrows points away from water source

CAUSE: Debris is blocking solenoid port

SOLUTION: Shut off water supply, unscrew and remove solenoid, then open water supply and flush out solenoid port, re-install solenoid

CAUSE: Flow control knob is too far open

SOLUTION: Turn flow control knob clockwise to the right

CAUSE: Drip System flow rate is below minimum flow rate

SOLUTION: Increase system flow rate by adding or changing drippers

PROBLEM: Rain sensor does not prevent watering

CAUSE: Rain sensor is normally open, malfunctioning, or not wired correctly

SOLUTION: Verify that sensor icon appears on display when pin is pushed down & check all wire splices

PROBLEM: Controller waters more than once per day

CAUSE: More than one start time has been programmed

SOLUTION: Change start time 2,3, and 4 to OFF (page 15)

17. WARRANTY

DIG CORPORATION warrants these products to be free from defects in material and workmanship for a period of three years from date of purchase. This warranty does not cover damage resulting from accident, misuse, neglect, modification, improper installation or subjection to line pressure in excess of 125 lbs. per square inch for anti-siphon valves, in-line valves and for actuators. This warranty shall extend only to the original purchaser of the product for use by the purchaser.

The obligation of DIG CORPORATION under this warranty is limited to repairing or replacing at its factory this product which shall be returned to the factory within three years after the original purchase and which on examination is found to contain defects in material and workmanship. **DIG CORPORATION SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND; THE SOLE OBLIGATION OF DIG BEING LIMITED TO REPAIR OR REPLACEMENT OF DEFECTIVE PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

Unattended use for prolonged periods without inspection to verify proper operation is beyond the intended use of this product, and any damage resulting from such use shall not be the responsibility of DIG CORPORATION. There are no warranties, which extend beyond the description on the face hereof. In the case of purchase of the product for use other than, for irrigation purposes, DIG CORPORATION hereby disclaims any implied warranties including any warranties of merchantability and fitness for a particular purpose. In the case of the purchase of the product for personal, family or household purposes, DIG CORPORATION disclaims any such warranties to the extent permitted by law. To the extent that any such disclaimer or implied warranties shall be ineffectual, then any implied warranties shall be limited in duration to a period of three years from the date of the original purchase for use by the purchaser. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

In order to obtain performance under this warranty, the unit must be returned to the factory, along with proof of purchase indicating original date of purchase, shipping prepaid, addressed as follows:

DIG CORPORATION, 1210 Activity Drive, Vista, CA 92081. Repaired or replaced units will be shipped prepaid to the name and address supplied with the unit returned under warranty. Allow four weeks for repairs and shipping time. Repair of damaged units not otherwise within warranty may be refused or done at a reasonable cost or charge at the option of DIG CORPORATION.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

18. TECHNICAL ASSISTANCE

Should you encounter any problem(s) with this product or if you do not understand its many features, please refer to this operating manual first. If further assistance is required DIG offers the following customer support:

DIGPRO™ Technical Service USA

DIG's Technical Service Team is available to answer questions in English and Spanish from 8:00 AM to 5:00 PM (PST) Monday-Friday (except holidays) at 800-344-2281.

Questions can be e-mailed to questions@digcorp.com or faxed to 760-727-0282.

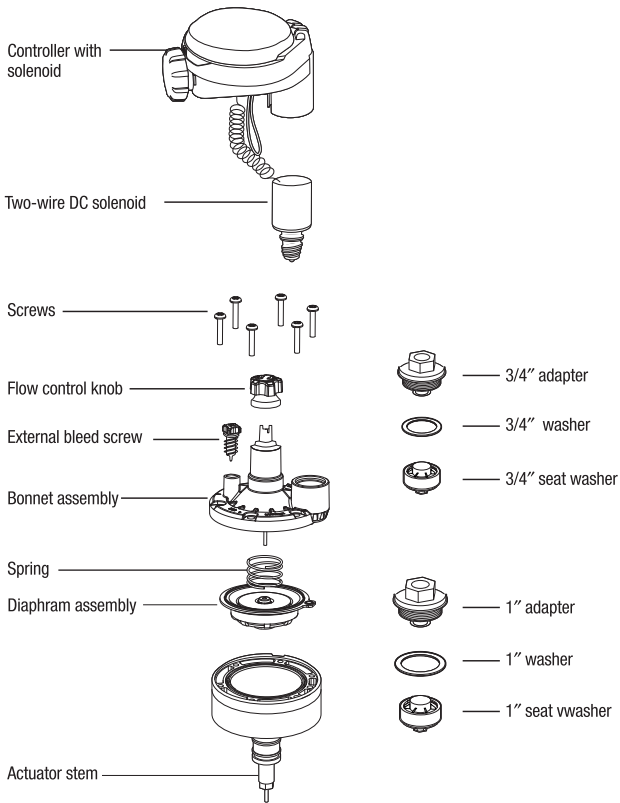
Specification documents, videos and manuals are available for download at www.digcorp.com.

Customer Assistance Outside the USA

Contact your local distributor.

19. TO ORDER REPLACEMENT OR SPARE PARTS: PLEASE ORDER ONLINE AT WWW.DIGCORP.COM

We at DIG Corporation understand that most dealers do not carry spare parts. For your convenience, if you need one of these parts, please order online at www.digcorp.com.





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