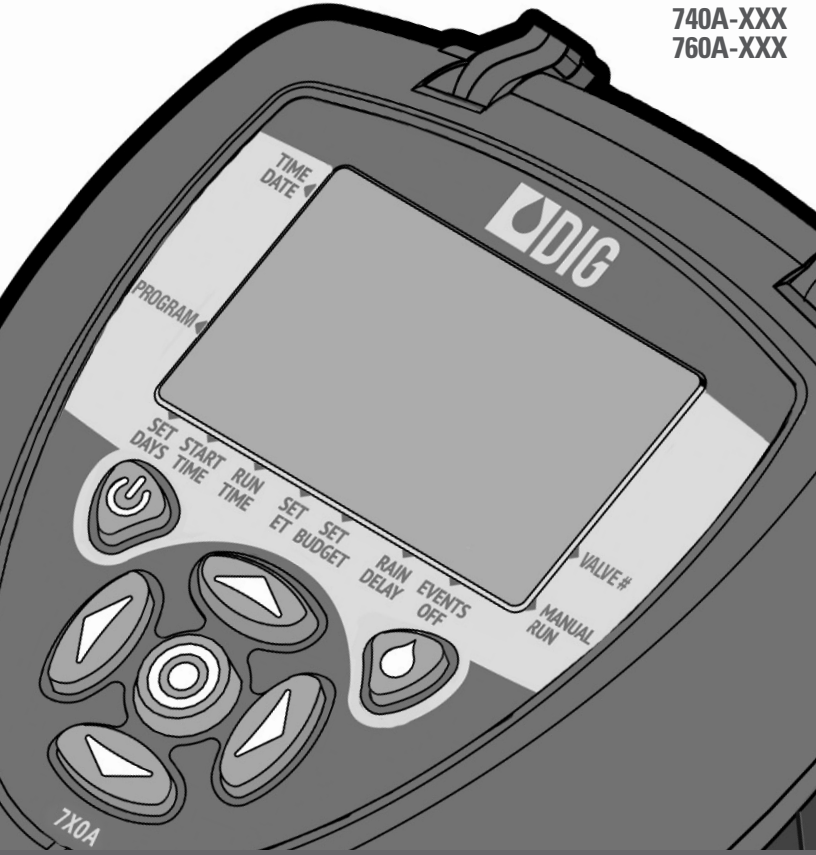
Two, Four and Six Station Battery Operated Controllers

720A-XXX
740A-XXX
760A-XXX



INSTRUCTION MANUAL

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INTRODUCTION

Thank you for purchasing one of DIG's 7X0A Series, Two, Four or Six Stations Battery Operated Controllers. This manual describes how to get the controller up and running quickly. Please read this manual and become familiar with the basic functionality of the controller, then save and use the manual as a reference for less common tasks in the future.

1. ABOUT THE CONTROLLER

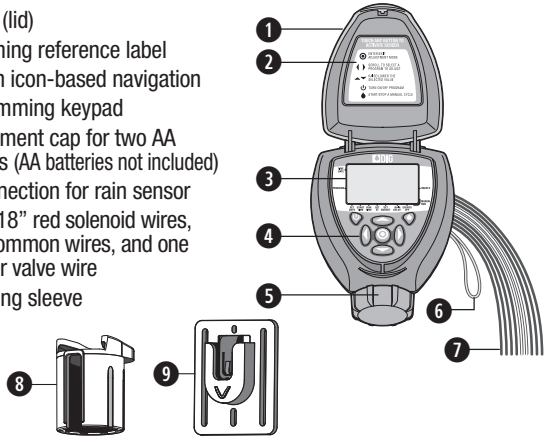
The 720A, 740A and 760A battery operated controllers employ the latest irrigation programming features to allow for complete control of any irrigation system. The controllers operate two, four or six stations and include a master valve and rain sensor. The controllers are powered by two AA alkaline batteries that can last up to one year using name brand alkaline batteries, depending on the number of programs and valves in use. The 720A, 740A and the 760A controllers are enclosed in a rugged, compact, waterproof housing (IP68) to protect them from the elements and to ensure a long, trouble-free life.

Features:

- Operates up to six stations, master valve, and a sensor
- Four independent programs with five start times per each valve
- Watering frequencies including weekly, odd, even, and cyclical
- SimpleSmart™ historical ET feature for spray heads and drip irrigation automatically adjusts irrigation schedules monthly
- Can operate any number of valves at the same time
- Upon insertion of the batteries, the controller follows a start-up sequence to test that each solenoid is closed
- Irrigation suspension (rain mode) with automatic restart of up to 99 days
- Monthly water budget up to 200% in 5% increments
- Daily and monthly programming restriction options to comply with city and municipal watering restrictions
- After 15 minutes the controller screen turns off automatically to conserve energy
- Manual operation by valve or by program
- Program On/Off button allows the user to turn off the controller and reactivate it as desired
- Utilizes RoHS compliant components

2. COMPONENT IDENTIFICATION

1. Controller cover (lid)
2. Quick programming reference label
3. LCD display with icon-based navigation
4. 5 button programming keypad
5. Battery compartment cap for two AA alkaline batteries (AA batteries not included)
6. Yellow wire connection for rain sensor
7. Two, four or six 18” red solenoid wires, two 18” white common wires, and one 18” black master valve wire
8. Solenoid mounting sleeve
9. Wall/valve box mounting plate



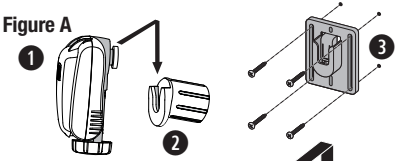
3. VALVE OR WALL MOUNTING

The controller can be mounted directly on top of any of the valves installed or mounted into the valve box.

3.1 VALVE MOUNTING:

1. Slide the controller mounting boss ❶ into the solenoid sleeve ❷ to secure and set it in the desired position on top of the solenoid (Figure A).

Figure A



NOTE: After mounting the sleeve to the solenoid, turning the solenoid sleeve counter clockwise will turn the valve on, and turning the solenoid sleeve clockwise will turn it off.

3.2 WALL MOUNTING:

1. Place the mounting plate ❸ on the wall and secure using 4 screws (not included).
2. Slide the controller mounting boss ❹ into the mounting plate to secure (Figure B).

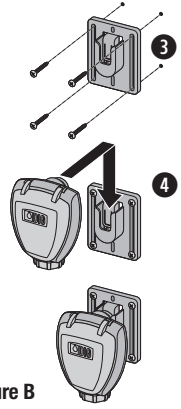


Figure B

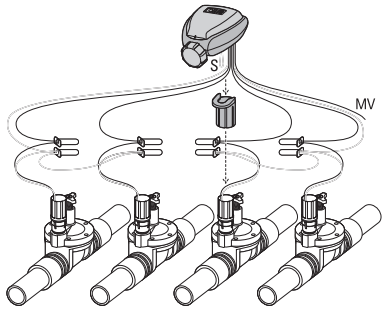
4. CONTROLLER WIRE CONNECTION

The 720A, 740A and the 760A controllers have a set of red wires numbered for each valve as well as one black wire for master valve, two white wires for common, and one looped yellow wire “S” for a rain sensor connection.

4.1 CONNECTING THE WIRES:

1. Connect each numbered red wire to a corresponding red DC solenoid wire (DIG model #S305DC DC latching solenoid recommended).

Figure C



2. Connect each white solenoid wire to one of the two common white wires from the controller using waterproof splice connectors (Figure C).

NOTE: If a master valve is installed and set to active, it will operate and open with the first valve and will close with the last valve.

WARNING: Do not strip the master valve or sensor wires unless using a master valve or rain sensor.

3. After installation, test each valve via the solenoid by turning the solenoid one or two turns counterclockwise to open and clockwise to close. If a valve remains open via a manual operation, you may need to examine the solenoid and the adapter used to see that they are installed correctly. Make sure the adapter and the solenoid are firmly secured but not over tightened.

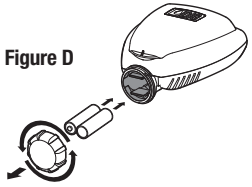
WARNING: If using valves with built-in internal manual bleed levers: make sure the lever is in the auto (closed) position. Do not move the manual lever after installing the adapter and solenoid.

WIRE DISTANCES	
Wire gauge	**Maximum wire length**
14 AWG	100 feet

5. BATTERY INSTALLATION

1. Turn the battery compartment cap counterclockwise to open.
2. Install two, fresh, brand name, AA alkaline batteries (not included) and note the proper positive and negative orientation on the underside of the controller body (Figure D).
3. Insert and screw the battery cap clockwise to close. Make sure to secure the cap tightly by hand only. The controller display will appear with day, PM, and the hour digit flashing. The controller is now ready to be programmed.

Figure D



NOTE: Upon insertion of the batteries, the 720A, 740A, and 760A controllers will follow a start-up sequence in which they send an off pulse to each of the attached solenoids to verify that each of them is closed. This is delineated by all of the valves appearing on the display, flashing. As a pulse is sent, each valve will stop flashing, and, if they are not programmed, disappear from the display. After the start-up sequence has finished, the time will appear on the display and programming can proceed.

6. INSTALLATION RECOMMENDATIONS

6.1 S305 DC SOLENOID ONLY INSTALLATION:

1. Shut off the main water supply.
2. Remove the existing AC solenoids from each valve (if applicable).

NOTE: If adapting to an IRRITROL valve, remove the AC solenoid but leave the existing solenoid adapter installed.

3. Select the appropriate solenoid adapter associated with the valve used (Figure E).



A	B	C	D	E	F	G
30-920 BERMAD 200, HIT 500, DOROT 80, GRISWOLD 2000, DW and BUCKNER VB valves	**30-921** RAIN BIRD DV, DVF, PGA, PEB (1" only), GB, EFB-CP, BPE, PESB (1" only) and ASVF valves	**30-922** HUNTER ASV, HPV, ICV, PGV, SRV, IBV and ASVF valves	**30-923** WEATHERMATIC 12000, 21000, 8200CR valves	**30-924** IRRITROL series 100, 200B, 205, 217B, 700, 2400, 2500, 2600 and TORO series 220, P220 valves	**30-925** SUPERIOR series 950, HUNTER HBV and TORO series 252 valves (1.5" and larger)	**30-926** RAIN BIRD series PEB and PESB (1.5" and 2" only) valves

Figure E

NOTE: DIG has seven adapters available that will fit most valves. The three most widely used models are included with each controller.

4. Screw the selected adapter into the valve solenoid cavity until hand tight. If necessary, tighten with pliers, but do not over tighten.
5. Thread the S305DC solenoid into each valve adapter and tighten by hand only (Figure F).
6. Open the main water supply valve and pressurize the main line; the valve may discharge water momentarily but should then close by itself.
7. Test each valve via the solenoid by turning the solenoid counterclockwise one or two turns to open, or until you hear or see water flowing through the valve, and turn it back clockwise to close (Figure G).
8. Mount the controller using the solenoid mounting and connect the wires: refer to section 4.1 on page 3 for wire connection steps.
9. Test each valve via the controller: refer to section 10.1 on page 27 for how to perform a manual run.

Figure F

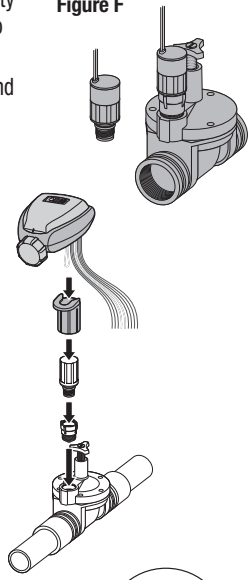
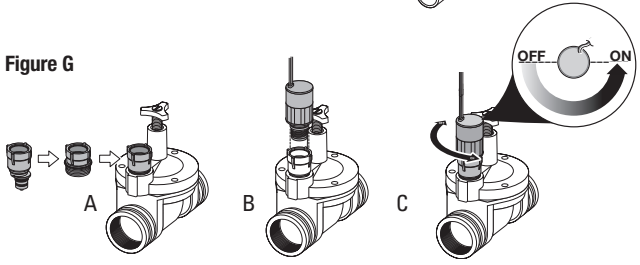


Figure G



6.2 IN-LINE VALVE INSTALLATION:

Operating pressure when used with DIG in-line valves: 10-150 PSI (.7 to 10.5 bar)

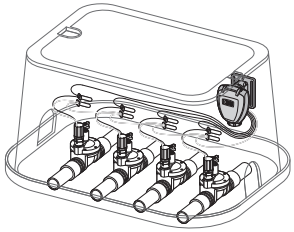
Recommended operating pressure: Up to 80 PSI (5.5 bar)

NOTE: Wrap all fittings with Teflon tape. Do not use pipe cement on the valve as this will damage the valve and void the warranty. Make sure when wrapping fittings with Teflon tape that no excess gets into the internal assembly. Tighten the fittings with a wrench but do not over tighten.

1. Shut off main water supply.
2. Install a manual ball or gate valve onto the PVC pipe upstream of the valve manifold. Use Teflon tape to wrap all male threads with 4-6 layers of Teflon tape.
3. Turn water supply on to flush the line and then shut the water off using the ball or gate valve. If PVC glue is used, make sure to allow for adequate curing time before opening the water supply line.
4. Make a manifold and install up to six inline valves and mount the controller to the valve box or the solenoid (Figure H and I).
5. Mount the controller using the solenoid mounting and connect the wires: refer to section 4.1 on page 3 for wire connection steps.
6. Test each valve via the controller: refer to section 10.1 on page 27 for how to perform a manual run.

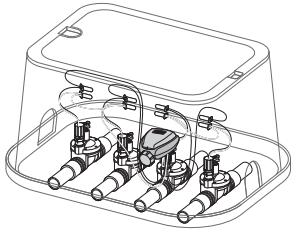
BELOW GROUND INSTALLATION WALL MOUNTING

FIGURE H



BELOW GROUND INSTALLATION VALVE MOUNTING

FIGURE I



6.3 ANTI-SIPHON VALVE INSTALLATION:

Operating pressure when used with DIG anti-siphon valves: 20-120 PSI (1.4 to 10.5 bar)

Recommended operating pressure: 20-80 PSI (1.4 to 5.5 bar)

The 720A, 740A and the 760A controllers can be installed on top of DIG's 3/4" and 1" anti-siphon valves with model S305 DC solenoids.

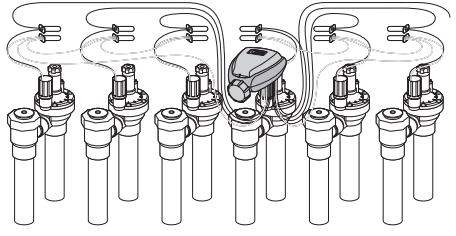
NOTE: Wrap all fittings with Teflon tape. Do not use pipe cement on the valve as this will damage the valve and void the warranty. Make sure when wrapping fittings with Teflon tape that no excess gets into the internal assembly. Tighten the fittings with a wrench, but do not over tighten.

WARNING: Make sure the anti-siphon valves are installed at least 6 inches higher than the highest sprinkler head on the system or back-drainage may occur.

1. Flush main line until water runs clear before installation.
2. Shut off main water supply.
3. Make a manifold and install up to six anti-siphon valves with an attached 7X0A series controller to the PVC pipe manifold using 3/4" PVC male adapters (Figure J) or 3/4" schedule 80 nipple.
4. Mount the controller using the solenoid mounting and connect the wires: refer to section 4.1 on page 3 for wire connection steps.
5. Test each valve via the controller: refer to section 10.1 on page 27 for how to perform a manual run.

NOTE: The arrow on the anti-siphon valve body indicates the direction of water flow.

FIGURE J



6.4 DC ACTUATOR INSTALLATION:

Operating pressure: 20-150 PSI (1.4 to 10.5 bar)

Recommended operating pressure: 20-80 PSI (1.4 to 5.5 bar)

The 720A, 740A and the 760A controllers can be installed on top of DIG's 3/4" actuator valve model 305DC-013.

NOTE: If using a 1" anti-siphon, follow the steps in section 6.4.1 on how to change to a 1" adapter for the actuator.

1. Shut off main water supply.
2. Remove the manual stem from the existing valve and temporarily remove the anti-siphon cap (Figure K).
3. Replace any existing worn washers with the new ones provided (Figure L).
4. Install the actuator into the manual anti-siphon valve body by turning the actuator clockwise. Tighten firmly, but do not over tighten (Figure M).
5. Turn the actuator flow control knob clockwise until it stops (Figure N).
6. Turn the main water supply on and pressurize the valve.
7. Mount the controller using the solenoid mounting and connect the wires: refer to section 4.1 on page 3 for wire connection steps.

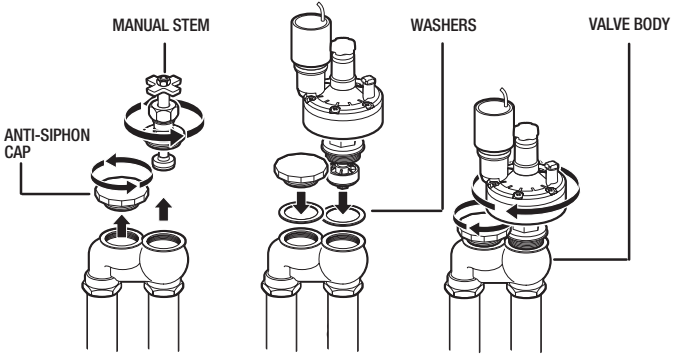


Figure K **Figure L** **Figure M**

8. Test each valve via the controller: Press once, then press ◀ or ▶ and select the valve number. Press again to start a manual run. A click will be heard, indicating that the valve is open (On the display, will appear on the lower right, will appear on upper left, and the valve running will appear with an underscore under the valve number blinking).
9. Turn the actuator flow control knob counter clockwise to allow flow and check the system to make sure that it is working properly (Figure O).
10. Press the again to deactivate the solenoid through the controller's manual button. A faint click will be heard and the valve will close. (The and will disappear and water flow will stop).
    If flow continues, turn the flow knob clockwise, one full turn at a time until flow is stopped, and the valve is shut off.

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

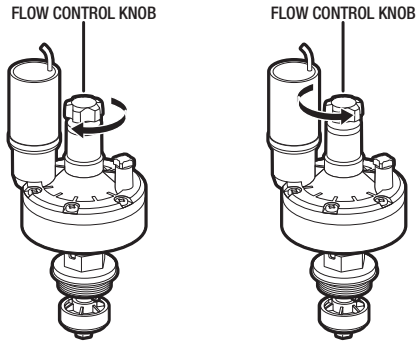


Figure N **Figure O**

6.4.1 CHANGING TO A 1” ADAPTER:

The valve actuator is factory set to fit a 3/4” brass manual anti-siphon valve. To install the controller on an actuator with 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 with the actuator (Figures P1-P6).

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 it counterclockwise and pull off the 3/4” seat washer assembly (Figure P1).
3. Press the 3/4” threaded adapter down towards the actuator to ease the tension on the retainer clip (Figure P2).

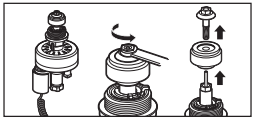


Figure P1

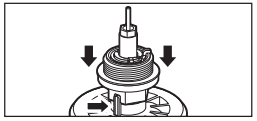


Figure P2

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. Pull away and upwards from your thumb, removing the clip from the base of the 3/4” threaded adapter. Then, remove the adapter (Figure P3).
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 (Figure P4).

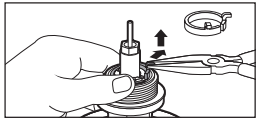


Figure P3

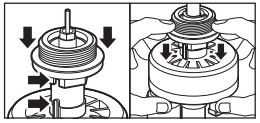


Figure P4

6. Spread the retainer clip with your thumbs and push the retainer into the adapter until it clicks (Figure P5).
7. Install the 1” seat washer assembly as shown. Insert the seat washer screw into the bottom of the actuator stem and tighten by turning clockwise (Figure P6). Do not overtighten.

Figure P5

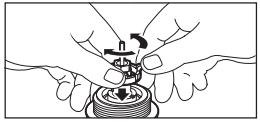
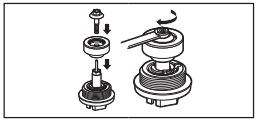
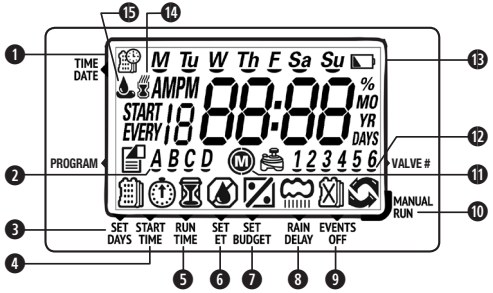


Figure P6



7. LCD DISPLAY ICONS & SYMBOLS IDENTIFICATION



1. **Time and Date** – Indicates current time and day
2. **Program with underscore** – Indicates which programs are selected and active
3. **Set Watering Days** – Indicates the scheduling setting
4. **Start Time** – Indicates the start time setting
5. **Run Time** – Indicates the run time setting
6. **Smart Program** – Indicates the SimpleSmart™ programming setting or that a SimpleSmart™ program is active
7. **Monthly Budget** – Indicates the monthly budget setting or that monthly budgeting is active
8. **Rain Delay** – Indicates the rain delay setting or that a rain delay is active
9. **Events Off** – Indicates the Events Off setting or that Events Off is active.
10. **Manual Run** – Indicates the manual run screen or that a valve or program is being run manually
11. **Master Valve** – Indicates that the Master Valve is active
12. **Valves with underscore** – Indicates which valves are active
13. **Battery Indicator** – Flashes when batteries need to be replaced
14. **Sensor** – Indicates that a rain sensor is connected and active
15. **Watering** – Indicates that a valve is open and running

8. CONTROL BUTTONS IDENTIFICATION

TOUCH ANY BUTTON TO ACTIVATE SCREEN

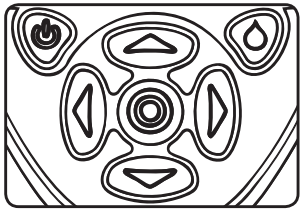
Modify/Save a setting

Scroll Left/Right to select a setting ◀ or ▶

Raise/Lower the selected value ▲ or ▼

Turn On/Off program ⏻

Start/Stop a manual cycle



NOTE: The ⏻ button will stop and prevent all watering until the system is turned back on by pressing the ⏻ button again. If the button is pressed while modifying a specific program, only that program will be turned off until it is turned back on.

9. PROGRAMMING

The following sections explain the programming features and the steps necessary to assign irrigation schedules. To program the controller, use the ◀ or ▶ buttons to select the desired setting, press ◎ to make the entry flash (editable) and ▲ or ▼ to change the value. Only a flashing value can be changed. Press ◎ again to finish changing a value and stop the entry from flashing.

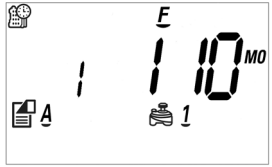
9.1 SETTING TIME AND DATE:

9.1.1 SETTING THE CURRENT TIME AND DATE

NOTE: For the controller to operate properly, the current time and date must be set.

1. Press ◎ to allow the time to be changed (the hours digits will flash).
2. Use ▲ or ▼ to change the hour (***AM/PM*** can be changed by increasing or decreasing the hour).
3. Press ▶ to allow the minutes to be changed and change the minutes using ▲ or ▼.
4. Continue pressing ▶ and using ▲ or ▼ to set the current month, the day, and the year.
5. Press ◎ to confirm your changes.





9.1.2 TO CHANGE THE TIME FORMAT

NOTE: The controller can display the time in either a 12 or 24 hour format.

1. On the main screen (the screen with the current time on it), press and hold the ▼ button for three seconds until the display switches formats (***AM/PM*** will either appear or disappear depending on which format was set previously).

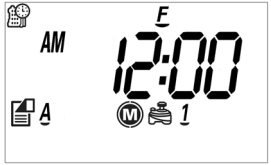


Master valve

The master valve can also be turned on and off from this screen. If the master valve is enabled, it will automatically open immediately with the first valve and close immediately with the last valve during all operations.

9.1.3 TO TURN THE MASTER VALVE ON OR OFF:

1. On the main screen, press and hold the ▲ button for three seconds until Ⓜ appears (or disappears) below the hour digits of the time.



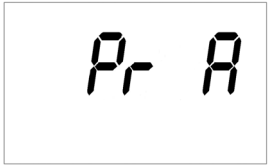
Press ▶ to continue to the next step and choose a program.

9.2 SELECTING A PROGRAM:

The 720A, 740A and the 760A controllers have 4 different programs available for programming (A to D). Each program has its own individual schedule, start times, and durations. This setting will determine which program will get modified in sections 9.3, 9.4, and 9.5.

9.2.1 CHANGING WHICH PROGRAM WILL BE MODIFIED:

1. Press ◎ to allow the program letter to be changed (A to D). The program letter will begin to flash.
2. Press ▲ or ▼ to select which program to modify.
3. Press ◎ to confirm the changes.



NOTE: As a shortcut, it is not necessary to use the ◎ button to make changes on this screen; simply press ▲ or ▼ to select a program.

NOTE: If you press ⏻ while on this screen or the screens featured in section 9.3, 9 .4, and 9.5, it will turn only the selected program off and not prevent the whole controller from watering like when pressed in any of the other screens.

Press ▶ to continue to set the watering frequency for the chosen program.

9.3 SETTING A FREQUENCY:

This setting determines which days the 720A, 740A or 760A controller will operate. The controller has the ability to water on specific days of the week, even or odd days of the month, or cyclical daily (from 1 to 30 days). Each program has its own schedule. The controller's default setting is to water on all specific days of the week.

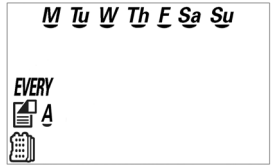
9.3.1 OPTION 1 – WATERING ON SPECIFIC DAYS OF THE WEEK:

1. Press ◀ or ▶ until you see 📅 in the bottom left corner of the display. By default, all days are set to water on program A, and programs B through D are set to ***OFF***.

NOTE: Immediately above 📅 will be the 📝 icon which will let you know which program you are programming.

2. Press ◎ and ***M*** (Monday) will begin to flash.
3. Press ▼ to turn watering off for that day and ▲ to turn it on for that day.

NOTE: An underline is shown under days that are scheduled to water.



4. Advance through the days of the week using ◀ or ▶ and repeat step 3 for each day.
5. Press ◎ to confirm your settings.

9.3.2 OPTION 2 – WATERING ON EVEN OR ODD DAYS:

1. Press ◀ or ▶ until you see 📅 in the bottom left corner of the display.
2. Press ◎ to modify this setting.
3. Press ◀ or ▶ until ***EVEn*** appears flashing on the display. Press ▲ or ▼ to select ***Odd***.
4. Press ◎ to confirm your settings.



9.3.3 OPTION 3 – WATERING ONCE EVERY X DAYS (CYCLICAL WATERING):

1. Press ◀ or ▶ until you see in the bottom left corner of the display.
2. Press ◎ to modify this setting.
3. Press ◀ or ▶ until ***1 DAY*** appears flashing on the display.
4. Press ▲ or ▼ to set the frequency (from 1 to 30 days).
5. Press ◎ to confirm your settings.



NOTE: To get from one option to any of the other options, press ◎ to modify and then simply press ◀ or ▶ until the option desired appears on the display, then follow the above steps for whichever option you would like to set.

Press ▶ to continue on to setting start times for the chosen program.

9.4 SETTING START TIMES:

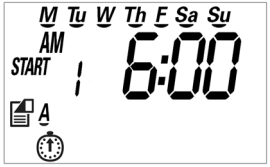
The 720A, 740A and 760A controllers can have up to five separate irrigation start times per day per program.

9.4.1 TO SET A START TIME:

1. Press ◀ or ▶ until you see in the bottom left corner of the display.
2. Press ◎ to modify this setting.

NOTE: By default, start time 1 on program A is set to 6:00 AM and programs B through D are set to ***OFF***.

3. Press ▲ or ▼ to modify the hour.
4. Press ▶ and then ▲ or ▼ to modify the minutes.
5. Press ◎ to confirm your changes.



9.4.2 TO SET ADDITIONAL START TIMES:

9.4.2.1 OPTION 1 – SCROLLING THROUGH EACH START TIME:

1. Press ◎ to modify this setting.
2. Press ◀ or ▶ consecutively until the number next to ***START*** changes (this is the number of the start time).
3. Press ▲ or ▼ to change the time.
4. Repeat steps 2 and 3 until finished setting all desired start times.
5. Press ◎ to confirm your settings.

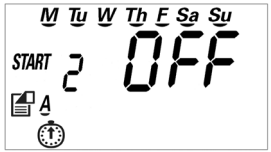
9.4.2.2 OPTION 2 – SETTING EACH START TIME INDIVIDUALLY:

1. As a shortcut, before pressing ◎ to modify this setting, press ▲ or ▼ to change the number next to ***START***. This can also be used to view all start times that have been set.
2. Press ◎ when the desired start time appears.
3. Modify the start time, then press ◎ to confirm your settings.

9.4.2.3 TO DELETE A START TIME:

1. Navigate to the start time that will be deleted using Option 1 or Option 2 above.
2. Press ◎ to modify this setting.
3. Press ▲ or ▼ on the hour digit until the display shows ***OFF*** (***OFF*** appears between 11:00 PM and 12:00 AM).
4. Press ◎ to confirm your settings.

Press ▶ to continue on to setting run times.



9.5 SETTING WATERING RUN TIMES:

This setting determines the length of time each valve on the 720A, 740A and 760A controllers will remain open to allow watering during operation.

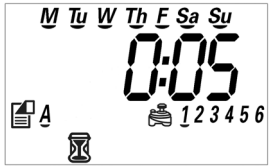
For example, setting a run time of 10 minutes on valve 1 will allow the controller to run valve 1 for 10 minutes on each start time during each day the program is active. Depending on which model obtained, up to 2, 4, or 6 valves will be available to set for each program.

9.5.1 TO SET WATERING RUN TIMES:

1. Press ◀ or ▶ until you see ⧗ shown on the bottom of the display.
2. Press ◎ to modify this setting.

NOTE: By default, the run time of valve 1 on program A is set to 5 minutes (0:05) and programs B through D are set to ***OFF***. The valve currently being looked at is underlined on the display near the 🚿 icon centered below the run time.

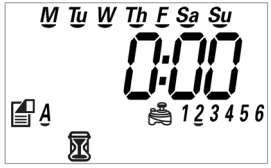
3. Press ▲ or ▼ to set the hours.
4. Press ▶ and then ▲ or ▼ to set the minutes.
5. Press ◎ to confirm your settings.



9.5.2 TO SET RUN TIMES FOR THE REST OF THE VALVES:

9.5.2.1 OPTION 1 – SCROLLING THROUGH EACH VALVE:

1. Press ◎ to modify this setting.
2. Press ◀ or ▶ consecutively until the number of the valve to be changed is underlined.
3. Use ▲ or ▼ to set the hours and minutes.



4. Repeat steps 2 and 3 until all desired valve run times are set.
5. Press ◎ to confirm your settings.

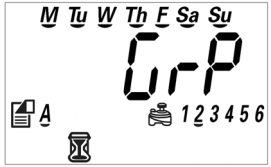
9.5.2.2 OPTION 2 – SETTING EACH VALVE INDIVIDUALLY:

1. As a shortcut, before pressing ◎ to modify this setting, press ▲ or ▼ to change which valve is being looked at (the underline will move under the valve number). This can also be used to view all valve run times.
2. Press ◎ when the desired valve run time appears.
3. Modify the run time, then press ◎ to confirm your settings.

The 720A, 740A and 760A controllers also have the option to group valves together so that they run simultaneously.

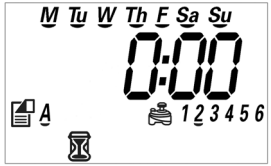
9.5.3 TO SET THE VALVES TO GROUP TOGETHER:

1. Navigate to the valve duration that you would like to group using Option 1 or Option 2 above.
2. Press ◎ to modify this setting.
3. Press ▲ or ▼ on the hours digit until ***GrP*** appears.
4. Press ◎ to confirm your settings.



NOTE: Grouping is done in sequence. The valve that has ***GrP*** as its run time will operate with the closest valve before it that contains a run time. Valve 1 cannot be set to ***GrP***. For example: if valve 1 is set to a run time of 0:01, valve 2 is off, and valve 3 is set to ***GrP***, valve 3 will operate simultaneously with valve 1.

9.5.4 TO TURN OFF A VALVE:



1. Navigate to the valve run time that will be turned off using Option 1 or Option 2.
2. Press ◎ to modify this setting.
3. Press ▲ or ▼ until the duration displays ***0:00***.
4. Press ◎ to confirm your settings.

NOTE: This section (section 9.5) is the last of the program specific sections. Sections 9.6, 9.7, 9.8, and 9.9 are all global settings that affect all programs regardless of which program is currently selected. Sections 9.2, 9.3, 9.4, and 9.5 should be repeated until all programs desired are set before continuing on to section 9.6.

Press ▶ to continue onto setting the SimpleSmart™ option.

9.6 SETTING THE SIMPLESMART™ OPTION (SET ET):

NOTE: The SimpleSmart™ setting does not function in the same way as the previous settings; it is programmed to function individually by valve instead of by program.

Example: If program A has valve 1 active and program B has valve 1 active, then setting a SimpleSmart™ preset for valve 1 will affect valve 1 of program A as well as valve 1 of program B.

The 720A, 740A & 760A series controllers include the SimpleSmart™ setting. This setting includes twenty preset programs for sprays and drip irrigation based on three years of historical evapotranspiration (ET) from various climate regions.

9.6.1 HOW THE 720A, 740A & 760A SERIES CONTROLLERS OPERATE USING HISTORICAL EVAPOTRANSPIRATION (ET):

After programming the schedule, start times, and durations for each valve, a preset SimpleSmart™ program can be selected for an individual valve for spray or drip irrigation systems (See CHART A below and choose from the region description).

Selecting a SimpleSmart™ program will set the controller to water a predetermined number of minutes per month. The amount of water is pre-programmed into the controller and is determined by which program is selected and which month it is.

NOTE: The SimpleSmart™ setting will not affect valves that have an initial run time of 0:00.

CHART A - SELECTING HISTORICAL ET PROGRAM

PROGRAM	REGIONS	IRRIGATION METHOD
SP01	Cool Mediterranean	Drip Systems
SP02	Cool Mediterranean	Sprinkler Systems
SP03	Humid Continental	Drip Systems
SP04	Humid Continental	Sprinkler Systems
SP05	Warm Mediterranean	Drip Systems
SP06	Warm Mediterranean	Sprinkler Systems
SP07	Humid Sub-Tropical	Drip Systems
SP08	Humid Sub-Tropical	Sprinkler Systems
SP09	Highlands	Drip Systems
SP10	Highlands	Sprinkler Systems
SP11	Dry Inland Valleys	Drip Systems
SP12	Dry Inland Valleys	Sprinkler Systems
SP13	Tropical Wet & Dry	Drip Systems
SP14	Tropical Wet & Dry	Sprinkler Systems
SP15	Tropical Wet	Drip Systems
SP16	Tropical Wet	Sprinkler Systems
SP17	Semi-Arid	Drip Systems
SP18	Semi-Arid	Sprinkler Systems
SP19	Arid	Drip Systems
SP20	Arid	Sprinkler Systems

Example: If program A has valve 1 set at a run time of 0:01 and program B has valve 1 set at a run time of 0:00, then setting a SimpleSmart™ program for valve 1 will not include program B's valve 1 because it is off. If program B's valve 1 was intended to be included in the program calculation, then program B's valve 1 needs to be set to a nonzero run time before setting the SimpleSmart™ option. Changing a run time of the valve while a SimpleSmart™ program is active will turn off the SimpleSmart™ program and it will have to be reactivated each time a run time is manually adjusted.

NOTE: If using one of the SimpleSmart™ presets we recommend evaluating the plants' health for the first month and making adjustments to the system as needed. If an adjustment or fine tuning of the SimpleSmart™ programming is required, this adjustment can be made for each month in the Seasonal Adjustment (%) Setting (see section 9.7).

Example: The user entered watering run time will be adjusted monthly based upon the forecast ET pattern for the selected region.

By selecting SP02, the controller may adjust the programmed run time of valve 1 from 10 minutes per program, to 3 minutes or less per program. This reduces the irrigation run time by 7 minutes, providing a water savings of 70% for the month of January.

9.6.2 TO ACTIVATE THE SIMPLESMART™ ET FEATURE:

1. Press ◀ or ▶ until you see 🔥 on the bottom of the display.
2. Press ◎ and ***OFF*** will begin flashing for valve 1.
3. Press ▲ or ▼ to select one of the twenty preset programs (see Chart A on page 21).
4. Press ◎ to confirm your settings.





9.6.3 TO ACTIVE THE SIMPLESMART™ ET FEATURE FOR MULTIPLE VALVES:

9.6.3.1 OPTION 1 – SCROLLING THROUGH EACH VALVE:

1. Press ◎ to modify this setting.
2. Press ◀ or ▶ consecutively until the number of the valve to be changed is underlined.
3. Use ▲ or ▼ to change the program.
4. Repeat steps 2 and 3 until all desired valves are set.
5. Press ◎ to confirm your settings.

9.6.3.2 OPTION 2 – SETTING EACH VALVE INDIVIDUALLY:

1. As a shortcut, before pressing ◎ to modify this setting, press ▲ or ▼ to change which valve is being looked at (the underline will move under the valve number). This can also be used to view all valve SimpleSmart™ programs.
2. Press ◎ when the desired valve appears.
3. Modify the SimpleSmart™ program, then press ◎ to confirm your settings.

9.6.4 TO TURN OFF A VALVE'S SIMPLESMART™ PROGRAM:

1. Navigate to the program that will be turned off using Option 1 or Option 2 above.
2. Press ◎ to modify this setting.
3. Press ▲ or ▼ until the display shows ***OFF***.
4. Press ◎ to confirm your settings.



NOTE: Turning off the SimpleSmart™ program does not necessarily mean that the controller will not water. The controller automatically remembers what run time was previously set for each valve and it will return to that previously set value upon turning the SimpleSmart™ program off.

Press ▶ to continue on to setting the Seasonal Adjustment option.

9.7 SETTING SEASONAL ADJUSTMENT (MONTHLY BUDGET):

The Seasonal Adjustment percentage feature can be utilized to alter the programmed watering run time on a monthly basis.

NOTE: This setting affects all programs and all valves.

This setting features two options:

A. It can be used as an adjustment to the programmed run time by altering the programmed watering run time on a monthly basis.

B. It can be used to modify the total run time setting of the SimpleSmart™ programming per month by percentage.

9.7.1 TO SET THE SEASONAL ADJUSTMENT:

1. Press ◀ or ▶ until % appears on the bottom of the display.



NOTE: You can review all monthly budgeting settings by pressing ▲ or ▼ .

2. Press ◎ and the percentage will begin to flash.
3. Press ▲ or ▼ to set the desired seasonal adjustment percent (5%-200%).

NOTE: For example, if a 20 minute run time is programmed and the monthly budget is changed from 100% to 50%, the run time will now run for only 10 minutes during the selected month.

4. Press ◀ or ▶ to change the number of the month on the left in order to change the rest of the months.
5. Press ◎ to confirm your settings.

Press ▶ to proceed to the Rain Delay Setting.



9.8 RAIN DELAY MODE:

This setting is used to prevent the controller from watering by program for a specified number of days. All previously set schedules will be retained and all programmed watering will resume after the set delayed time is completed.

NOTE: This setting affects all programs and all valves.

9.8.1 TO SET THE RAIN DELAY:

1. Press ◀ or ▶ until you see ☔ on the bottom right of the display.



2. Press ◎ and ***OFF*** will begin flashing.
3. Use ▲ or ▼ to modify this setting (from 1-99 days, ***OFF*** appears in between 99 and 1).
4. Press ◎ to confirm your settings.



Press ▶ to proceed to the Events Off Setting.

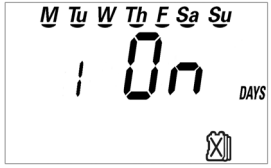
9.9 EVENTS OFF SETTING:

This setting allows the user to program the controller to not water during specific months of the year or on specific days of the week during those months.

NOTE: This setting affects all programs and all valves.

9.9.1 TO TURN OFF SPECIFIC DAYS WITHIN A MONTH:

1. Press ◀ or ▶ until you see ☒ on the bottom right of the display. You can review all events off settings by pressing ▲ or ▼ , this will change the month shown.



2. Press ◎ and ***M*** will begin flashing.

3. Continuously press ◀ or ▶ until the desired month is selected and DAYS is displayed on the right side of the screen. The number of the month is on the left (1 = January, 12 = December).
4. Press ▶ until the desired day of the week flashes.
5. Press ▼ to remove the underline under the day of the week.

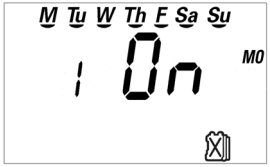
NOTE: During the selected month, watering will not occur on the days of the week without the underline.

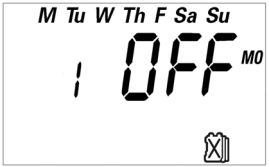
6. Press ◎ to confirm your settings.

9.9.2 TO TURN OFF AN ENTIRE MONTH:

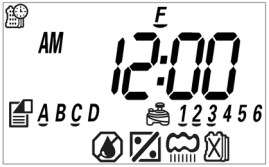
1. Press ◎ and ***M*** will begin flashing.
2. Press ▶ until reaching the desired month and ***MO*** is displayed on the right side of the screen. ***On*** will be flashing.
3. Press ▼ and ***OFF*** will appear. The selected month is now turned off and no watering will occur for the entire month.
4. Press ◎ to confirm your settings.

The controller is now fully programmed.





Here is an example of the home screen showing all the icons of the programs that are currently set and active, which are the SimpleSmart™, Monthly Budget, Rain Delay, and Events Off settings. If ***OFF*** appears on this screen, programmed watering will not occur until ⏻ is pressed (the display will change to the current time).



NOTE: Valves and programs with set schedules appear on the main screen. If the valve or program is underlined, it means it is scheduled to run today.

10. MANUAL WATERING

The manual mode can be used to test the system functionality to ensure that it is operational. At the end of any manual run, the controller will automatically close all valves at the end of the defined irrigation period. Manual runs will not affect any of the regularly scheduled programs and they will operate as normal.

10.1 TO START A MANUAL RUN ON A SINGULAR VALVE:

1. Press the 💧 button and the 🔄 icon will appear in the bottom right. Valve 1 will be flashing.
2. Use ◀ or ▶ to select a valve.
3. Press 💧 again and the number of the valve will display along with the word ***On***. The display will then switch to a timer.
4. By default, the valve will run for 5 minutes. To change this length, press ▲ or ▼ while the valve is running to add or remove time.
5. Allow the countdown to finish or press 💧 again to end the manual run and shut the valve off.

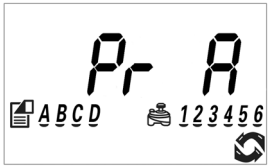




It is also possible to manually run an entire program. This will run each of the valves that have a run time set for whichever program chosen.

NOTE: For example, if program A has valve 1, 3, and 5 active for run times of 0:01, 0:03, 0:05, and program A is chosen for a manual run, the manual run will operate valves 1, 3, and 5 in sequence for run times of 0:01, 0:03, and 0:05 respectively.

10.2 TO START A MANUAL RUN ON A PROGRAM:



1. Follow sections 9.2 – 9.6 to set up a program.
2. Press the button.
3. Use or until a program is flashing to select a program.
4. Press the button again and the letter of the program will display along with the word ***On***. The display will then switch to a timer.
5. The timer will run for the time that is set in the program for that specific valve, after which the rest of the valves will run in sequence. To change this length, press or while the valve is running to add or remove time.
6. Allow all the timers for each valve to finish or press again to end the manual run and shut any remaining valves off.

11. CONNECTING A RAIN SENSOR

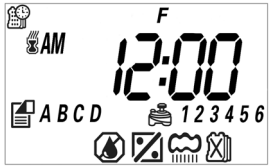
Most “normally closed” rain or soil moisture sensors can be connected to the 720A, 740A or 760A controllers. The function of the sensor is to prevent automatic watering by the set program due to excessive rainfall or when the soil is too moist.

11.1 TO CONNECT THE SENSOR TO THE CONTROLLER:

1. Cut the middle of the external loop of yellow wire.
2. Strip approximately 1/2” of insulation from the end of each wire.
3. Splice one yellow wire to each of the wires coming from the sensor.

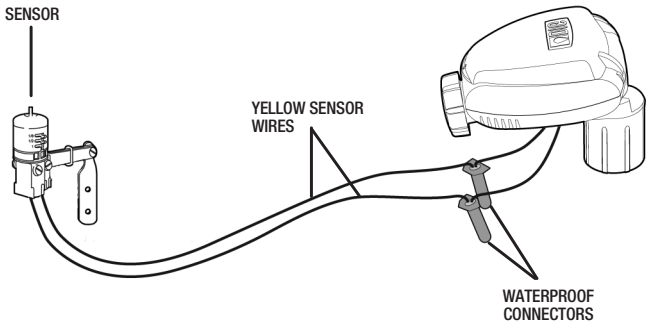
NOTE: Use waterproof wire connectors to secure the connections.

4. Follow the sensor manufacturer’s instructions for calibrating the sensor.
5. When the sensor is active and preventing automatic operation, a icon will appear on the display.



NOTE: The icon will only appear when the sensor is active (the controller will not water).

Figure S



Recommended rain sensors are the Rain Bird RSD and Hunter Mini-Clik. Recommended soil moisture sensor is the Irrometer WEM-B.

12. MAINTENANCE, TROUBLESHOOTING & REPAIRS

12.1 TO RESTORE THE CONTROLLER TO THE DEFAULT SETTINGS:

1. Press ◀ or ▶ until the icon appears in the bottom left of the screen.
2. Press and hold ▲ for three seconds.
3. The screen will return to the home screen with all default settings restored. The current time and date is retained.

12.2 TROUBLESHOOTING:

Problem: Valve is not opening automatically or manually

Cause 1: No water Pressure

Solution: Open main water supply valve

Cause 2**:** Faulty Solenoid

Solution: Replace solenoid

Cause 3: Flow control handle is turned down

Solution: Open flow control knob/handle on valve

Problem: Valve functions in manual mode but not automatically

Cause 1: Controller is set to OFF mode

Solution: Verify that controller does not show OFF on home screen

Cause 2: Program is set to OFF mode

Solution: Verify that each program does not show OFF on the Watering Frequency screen

Cause 3**:** AM/PM not set correctly on current time

Solution: Check AM/PM of current time, change if necessary

Cause 4: AM/PM not set correctly on start time

Solution: Check AM/PM on start times, change if necessary

Cause 5: Rain Delay is active

Solution: Set Rain Delay to OFF

Cause 6: Yellow rain sensor wires have been cut

Solution: Reconnect rain sensor wires with a waterproof connector

Cause 7: Installed rain sensor is preventing watering

Solution: Check sensor and wire splices. Verify that a normally closed rain sensor is used

Problem: The display is blank

Cause 1: No buttons have been pressed in the previous 15 minutes

Solution: Press any button

Cause 2: Batteries are dead

Solution: Insert new batteries

Problem: Valve fails to close

Cause 1: Valve is installed backwards

Solution: Check flow arrows and verify arrows point away from water source

Cause 2: Debris is blocking solenoid port

Solution: Shut off water supply, unscrew and remove solenoid, then open the water supply to flush out solenoid port. Reinstall solenoid afterwards

Cause 3: Solenoid is not fully closed

Solution: Turn solenoid clockwise to fully closed position

Cause 4: Solenoid or adapter O-rings are damaged or twisted

Solution: Turn off the water supply. First, turn the solenoid counter-clockwise to remove and inspect the O-ring, then turn it counter-clockwise and repeat the inspection. Clean any debris or replace the O-ring as necessary

Cause 5: Static main line pressure is too low

Solution: Verify that static main line pressure is above 10 PSI

Problem: Rain sensor does not prevent watering

Cause 1: Rain sensor is normally open, malfunctioning, or not wired correctly

Solution: Verify that sensor icon appears on display when pin is pressed down (updates once per minute), check all wire splices

Problem: Controller waters more than once per day

Cause 1: More than one start time has been programmed

Solution: Check all programs for start times not wanted and set them to OFF

Problem: Valve opens at unscheduled times and/or days

Cause 1: Current time and/or date are not set correctly

Solution: Verify and re-set current time and date

Cause 2: Incorrect start times are set

Solution: Check all programs and start times and verify that they are set at the desired time or date

For more troubleshooting assistance, please visit www.digcorp.com or call 760-727-0914.

13. TECHNICAL ASSISTANCE

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

TECHNICAL SERVICE USA

- DIG's Technical Service Team is available to answer questions in from 8:00 AM to 5:00 PM (PST) Monday-Friday (except holidays) at 760-727-0914.
- Questions in English and Spanish can be emailed to: questions@digcorp.com or faxed to 760-727-0282.
- Specification documents and manuals are available for downloading in English and Spanish at www.digcorp.com.

14. 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 the product recommendation. 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.



1210 Activity Drive
Vista, CA 92081-8510, USA



www.digcorp.com
email: dig@digcorp.com

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