

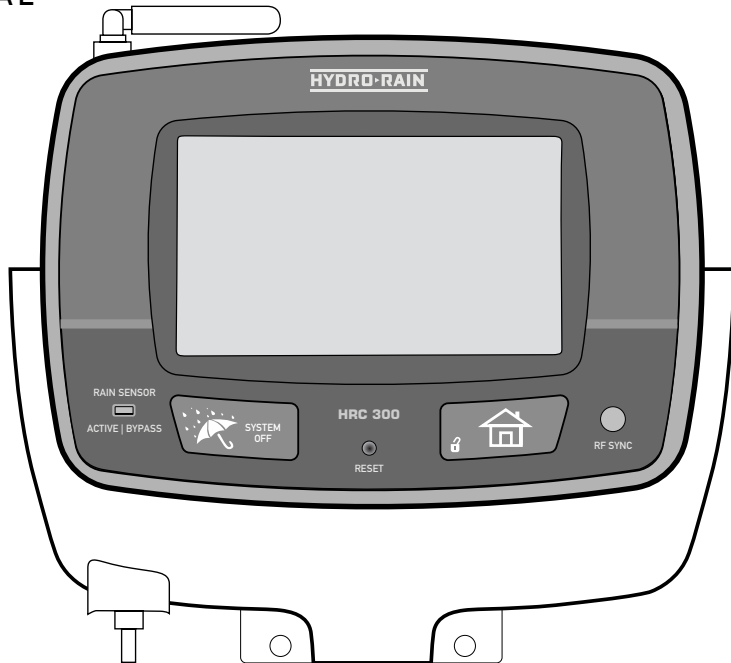
**HYDRO-RAIN®**

*Built for Speed™*

# HRC-300 SERIES

## Indoor Touch Screen Controller

### INSTRUCTION MANUAL



**Models:**

**HRC-300-06-NA**

**HRC-300-12-NA**

Model 04030-24 Rev E

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## Section 1: INTRODUCTION

Thank you for selecting the Hydro-Rain® HRC-300 Series sprinkler controller. Our designers have combined the simplicity of touch-screen programming with the flexibility and accuracy of digital electronics to give you a controller that is easy to program and extremely versatile. This convenient controller lets you run automatic or manual watering programs with a wide spectrum of features, including remote control and RF sensor operations.

Please read this manual completely before you begin programming and using the controller.

## Important Features and Capabilities

### Three Independent Programs

HRC 300 sprinkler controller's offer three independent programming functions – Programs A, B, and C offer watering flexibility across variable landscapes ie. Trees, Turf, Xeriscape, etc... Any of the watering stations can be assigned to individual or all programs. For example, stations that water your garden and flower beds could be assigned to Program A and watered daily starting at 8 a.m., while stations that water your lawn could be assigned to Program B and watered every third day starting at 5 a.m. Program C could be selected for drip or other low-flow stations.

### Simultaneous C Program

The C program is specially designed for drip or other low-flow stations that need to run for longer durations or at more frequent intervals. The HRC 300 is able to run concurrently the C program with A or B programs. See "Stacking" Feature on the next page.

### "Stacking" Feature

Occasionally you will inadvertently program one program to water prior to another program finishing its watering cycle. This could result in insufficient water flow necessary to operate the system. The HRC 300's unique logic will override human programming error and begin the next water cycle after completion of the first cycle for the A and B program. The C program will run concurrently with the A and B programs. In order to ensure sufficient available flow for the A and B programs, the C program should be reserved for low-flow zones such as drip zones.

### Docking Port

Mounting your HRC 300 to the wall is easy and convenient. The HRC 300's "docking port" is affixed to the wall and all wires are connected to it. The controllers programming unit is then conveniently slid in to the docking station. This feature allows you to walk around the yard while programming each station to meet the needs of the landscape.

### Remote Control Capabilities

The HRC 300 has an RF receiver built into its circuit board. When used in coordination with the HRC 300-12-TR (RF Transmitter) the HRC 300 programming can be overridden. This feature allows you to turn stations on and off on the spot from anywhere within range. The 433 megahertz remote frequency is approved for use in the United States, Canada, Europe and Australia, and permits an effective line-of-sight range of 300 feet (reduced to 200 feet with obstructions).

### Programming Information Stored Safely in Non-Volatile Memory

All programming information for Programs A,B, and C are

stored indefinitely in the HRC 300's non-volatile memory. Non-volatile memory means your programming won't be lost or erased when or if both primary and battery power are suspended.

### Convenient, Easy-to-Read Touch-Screen LCD Display

The HRC 300's back-lighted, touch-screen LCD display is convenient to program and easy to read under any lighting conditions. You may use either your finger or the built-in stylus to manipulate programming on the touch screen.

### Choice of Five Languages

You can easily set the LCD display to read in any of five languages: English, Spanish, French, German or Italian.

### Water Budgeting

This convenient feature provides a quick, easy way to increase or decrease the watering durations of all stations in both programs to match seasonal watering needs. You won't have to adjust each station's watering time individually.

### Rain Sensor (Optional)

An optional rain sensor can be purchased separately to prevent programmed watering for a period of time after rain falls (determined by the amount of rain and how quickly the sensors dry out). The HRC-300 series controller is RF sensor ready. The HRC-300-RS-RF wireless rain/freeze sensor transmitter is ready for immediate installation and synchronization with the controller. No additional wireless receiver is necessary.

## Push Buttons

These push buttons on the controller are used for programming and other operations:

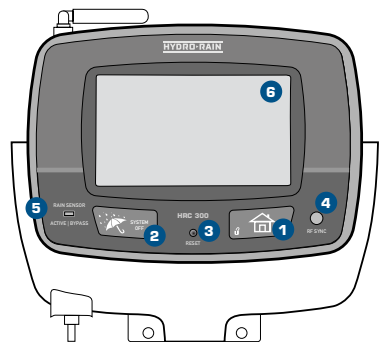


Figure 1: Front view of touch-screen controller

### 1 Home/Lock

Used to exit settings; to go into AUTO MODE, or to lock the touch screen.

### 2 System Off

A single push will open the Rain Delay screen. A second push of the button will place the entire system in OFF mode.

### 3 Reset (pin hole)

Resets the HRC 300 to factory default settings.

### 4 RF Sync

Allows the HRC 300 to synchronize with a remote transmitter or wireless rain sensor (HRC-300-12-RS) sensor.

### 5 Rain Sensor

In "Active" position the controller will monitor the rain sensor, in "Bypass" position the HRC 300 sprinkler controller will ignore the rain sensor. (This switch is for hard wired sensors only and does not effect wireless rain sensors. For wireless rain sensor bypass refer to section 4.)

### 6 Touch Screen

Use stylus or finger to set programming.

## Section 2: GETTING STARTED

### Set Language

- Press the **RESET** button. The controller will now take you through a step by step programming process.
- Press **▲** or **▼** on the touch screen to set the language of your choice (English, Spanish, French, German, Italian).
- Press **ENTER**.

### Set Current Time and Date

- Press **▲** or **▼** to set the current time. Press **ENTER**.
- Press **▲** or **▼** to set the current year. Press **ENTER**.
- Press **▲** or **▼** to set the current month. Press **ENTER**.
- Press **▲** or **▼** to set the current day of the month. Press **ENTER**.

### Determine a Watering Plan

See page 13 for instructions.

## Section 3: PROGRAMMING YOUR CONTROLLER

Walk through programming is available after pressing the **RESET** button. (If you began the programming sequence with Section 1 do not press "reset" again.)

### Program Toggle Feature

The Program Toggle Feature allows you to switch back and forth between Program A, Program B and Program C. Press **PROG. (A) (B) (C)** on the touch screen to select Program A ("A" is larger than "B") or Press **PROG. (A) (B) (C)** on the touch screen to select Program B ("B" is larger than "A" etc.). You can change the watering start times, watering days, and watering durations for each program.



Figure 2: Program Toggle Feature

### Set Start Times

- Press **▲** or **▼** to set the start time for the selected program. Press **ENTER**.

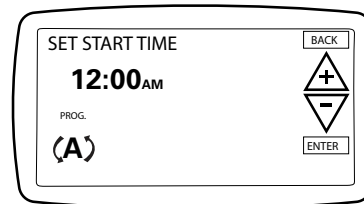


Figure 3: Set Start Times

### Set Water Days

- Press **ODD**, **EVEN**, **INTERVAL** (1-32 days using **▲** or **▼**) or the specific days of the week (**Su**, **Mo**, **Tu**, **We**, **Th**, **Fr**, **Sa**) you want the selected program to water. Press **ENTER**.

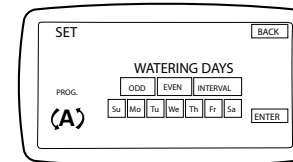


Figure 4: Set Watering Days

### Set Station Watering Durations

- Select the first station to be watered by pressing the station number (1 should be flashing) on the bottom of the touch screen or press **ENTER** to advance to the desired station. **Note: The active station, being programmed, is flashing.**
- Set the watering duration for each station by either:
  1. Selecting one of the preset watering duration minutes (**0**, **5**, **10**, **15**, **20**, **30** or **45**) on the bottom of the LCD.
  2. Using the **▲** or **▼** to enter the desired minutes.

**Note: a watering duration must be entered for each watering station or the station will not water.**

- Follow the same procedure to set the watering durations for all other stations.
- Press **EXIT**.

At this point you will see the **PROGRAMMING COMPLETE** screen. If you wish to go back and change any of the set-

tings, press **BACK**. If not, press **ENTER**. This will accept the programming and take you to the HOME/AUTO screen.

## To Set Watering Cycles:

A watering cycle consists of the activation of valves in sequence inside of a specified watering program (A, B, or C).

Using multiple watering cycles is ideal for reducing runoff and standing water. This sprinkler controller allows program A, B or C (or all) to be repeated on the days programmed.

When extra watering is needed, all programs can be set to repeat the set watering durations up to 10 times a day. In order to maximize absorption and prevent runoff, you may set a specific number of minutes or hours between the start of one cycle and the start of the following cycle. This is called the "cycle delay" and can be set from 0 minutes to 90 minutes in 10-minute increments, and from 2 hours to 23 hours in one-hour increments.

- From the HOME/AUTO screen, press **PROG.(A)(B)(C)** to enter the program review screen. Toggle to desired program.
- Press **CYCLES**.
- Press **▲** or **▼** to select the desired number of watering cycles. Press **ENTER**.
- Press **▲** or **▼** to select the desired number of minutes or hours (from 0 minutes to 23 hours) between the start time of one cycle and the start time of the following cycle. Press **ENTER**.
- Repeat this procedure for the other program, if desired.

## To Change Settings From the HOME/AUTO Screen:

Hydro-Rain® has simplified the way to make modifications to your controller programming. Just tap the setting you want changed in the HOME/AUTO screen.

- Tap the date to change the current date
- Tap the time to change the time of day
- Tap the **NEXT START** to change the time of day you want to water
- Tap the station number to modify the watering durations
- Tap **PROG** to modify the Watering Days
- Tap **CYCLES** to modify the number of watering cycles
- Press the **HOME/LOCK** button at any time to return to the HOME/AUTO screen.

## To Water in Manual Mode:

- To manually water one, some or all stations, press **MANUAL** at the top right of the HOME/AUTO screen.
- The first screen MANUAL - ALL will allow you to water all stations with the same duration (1 to 240 minutes). Select the desired duration, then press **ENTER**.
- Or, press **NEXT** for MANUAL - SELECT watering. This screen allows you to select any single station or a group of stations each with individual durations (1 to 240 minutes) using **▲** or **▼** the Quick Touch buttons. Select the desired stations and durations then press **ENTER**.
- Or, press **NEXT** again for MANUAL - PROG A watering.

This will allow you to water the stations in Program A for their pre-set durations. Press **ENTER** to begin watering.

- Or, press **NEXT** again for MANUAL - PROG B watering. This will allow you to water the stations in Program B for their pre-set durations. Press **ENTER** to begin watering.
- Or, press **NEXT** again for MANUAL - PROG C watering. This will allow you to water the stations in Program C for their pre-set durations. Press **ENTER** to begin watering.

To advance to the next station in manual mode, press **NEXT**.

Press **CANCEL** to stop the manual watering cycle.

## To Set Water Budgeting:

Water Budgeting is a quick way to adjust your set durations (10 to 200%) based on seasonal requirements.

- Press **BUDGET**.
- Press **▲** or **▼** to select the desired budget percentage. Press **ENTER**.

**Note:** If your set duration is 10 minutes and you set the water budget to 150% the duration will be 15 minutes. If you set it to 50% the duration will be 5 minutes.

## WIRELESS SENSOR ACTIVE/BYPASS

This controller communicates with the HRC-300-RS-RF wireless rain/freeze sensor.

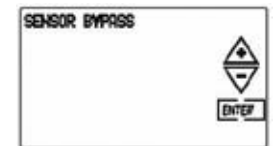
To change the communication status between the controller and the wireless sensor do the following:

- Press the **BUDGET** button on the Home/Auto Screen.
- Press the **SENSOR** button on the top right of the screen.
- Use the **▲** or **▼** to toggle the sensor communication status.

**Sensor Active**—controller will allow sensor to block watering.

**Sensor Bypass**—controller will ignore the sensor and will not allow watering to be blocked.

- Press **ENTER** when desired status is selected.



## To Lock Programming Keys:

- Push the **HOME/LOCK** button once from the Home screen. The lock icon, **🔒**, will show on the screen. To unlock the touch screen press the **HOME** button again.

## To Prevent Watering:

- To stop watering for a set period (1 to 99 days) press **RAIN DELAY** once and select the desired delay using **▲** or **▼** and then press **START**. To cancel the **RAIN DELAY** and return to **AUTO** mode press **CANCEL**.
- To stop all watering indefinitely, push the **RAIN DELAY/**

SYSTEM OFF button twice. The controller will be placed in OFF mode. To return to AUTO mode press the HOME/LOCK button.

## Section 4: INSTALLING THE HRC 300 CONTROLLER DOCKING PORT AND RF TRANSMITTER SLEEVE

**NOTE:** Before installation, please have the following tools on hand:

- Phillips screwdriver
- Wire strippers

### Installing the Sprinkler Controller in Five Easy Steps

Your new controller has been designed for easy, convenient installation. Simply slide the controller off the docking port, screw the docking port onto a wall in an appropriate location, insert the various connections into the sockets at the bottom of the docking port, and slide the controller back on. Finally, install the sleeve for the remote control device. Follow these easy steps:

#### 1. Select a Location

Select a location with the following criteria:

- Near an electrical outlet. (Avoid using an outlet controlled by a switch.)
- In a dry, indoor location, where operating temperatures are not below 32° or above 122° Fahrenheit (below 0 degrees or above 50 degrees Celsius).
- Not in direct sunlight.

- Accessible to sprinkler wires from valves.

#### 2. Mount the Docking Port

- Slide the controller off the docking port. (See Figure 5)
- Using the mounting template (included), mark the two screw locations on the wall, then drill holes at the marks for No. 8 screws. Use the expanding anchors in plaster or masonry if necessary.
- Place the docking port against the wall, aligning the two holes in the docking port with the two drilled holes.
- Secure the docking port to the wall by screwing a No. 8 screw (included) through each of the two holes.
- Do not slide the controller back onto the docking port yet.

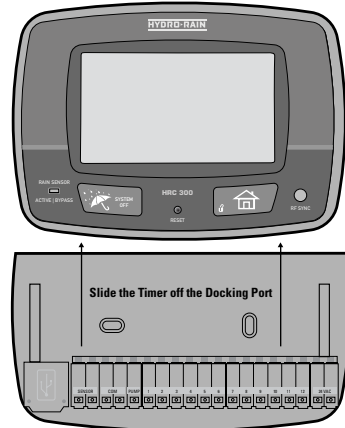


Figure 5: Mounting the Docking Port

#### 3. Connect the Transformer

- Find the two sockets at the bottom of the docking port labeled "24VAC." (See Figure 6)
- Insuring the transformer is not plugged in; insert one of the two power leads from the transformer into each terminal socket using the phillips screwdriver to depress the terminal button (this allows for wire insertion or removal).
- Plug in the transformer.

**WARNING:** Do not link two or more sprinkler controllers together with one transformer.

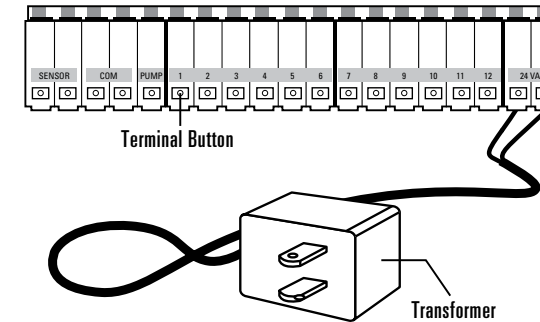


Figure 6: Connecting the Transformer

#### 4. Connect Valve Wires to Controller, Pump Start and Master Valve Terminals

##### A. Wire the Electric Valves

**NOTE:** If the distance between the sprinkler controller and valves is under 700' (210 m), use Hydro-Rain® sprinkler wire or 20 gauge (AWG) plastic jacketed thermostat wire to connect the sprinkler controller to the valves. If the distance is over 700' (210 m), use 16 gauge (AWG) wire.

- Taking the sprinkler wire, strip 1/2" (12 mm) of the plastic insulation off the end of each individual wire.
- Connect one wire from each valve (it doesn't matter which wire) to a single "common" sprinkler wire. This is usually white.

**IMPORTANT:** All wires should be joined together using wire nuts, solder and/or vinyl tape. For additional protection to waterproof connections, a Hydro-Rain® grease cap can be used.

- Next, connect the remaining wire from each valve to a separate colored sprinkler wire.
- To avoid electrical hazards, only one valve should be connected to each station.

**IMPORTANT:** The wire can be buried in the ground. However, for greater protection, wires can be pulled through conduit and buried underground. Be careful to avoid burying the wires in locations where they could be damaged by future digging or trenching. (See Figure 7)

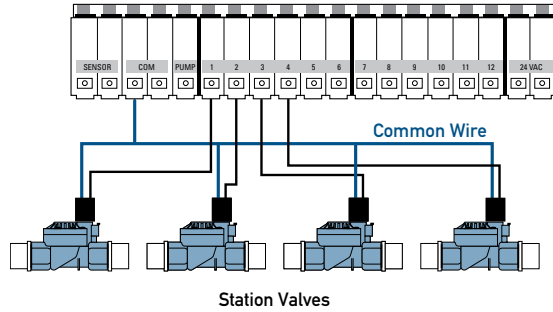


Figure 7: Connecting Sprinkler Wire

#### B. Connect Valve Wires to the Sprinkler Controller

- Strip 1/4" (6 mm) of the plastic insulation off the end of each wire.
- Determine which valve you want to connect to which station. Using a phillips screwdriver to depress the terminal button insert each sprinkler wire, excluding the "common" wire, into a separate station terminal (grey in color) by inserting the bare wire fully into the terminal under each number. (See Figure 7)
- Connect the common wire to one of the two terminals (white in color) labeled "COM."

**NOTE:** Insert only one wire into each "COM" socket. If more than two common wires are required, splice several together so only one wire runs into each of the two "COM" terminals. Protect the splice connection with a wire nut.

#### C. Connect Pump Start and Master Valve

This controller allows a master valve or pump start relay to operate whenever a station is on.

**NOTE:** If you are activating a pump from this controller, you must purchase a Pump Start Relay.

From the pump start relay (or master valve); connect one wire to the "PUMP" terminal and the other wire to the "COM" terminal.

Once all connections to the docking port are made, you may slide the controller back onto the docking port.

#### 5. Mount the Sleeve for the Remote Control Device

- Using the mounting template (included) mark the two screw locations on the wall, then drill holes at the marks for No. 8 screws. Use the expanding anchors in plaster or masonry if necessary. (The sleeve can be mounted anywhere and does not need to be next to the controller.)
- Place the remote control device sleeve against the wall, aligning the two holes in the sleeve with the two drilled holes.
- Secure the sleeve to the wall by screwing a No. 8 screw (included) through each of the two holes.
- Slide the remote control device into the sleeve.

## Section 5: DIAGNOSTICS CIRCUIT BREAKER

### Smart-Scan® Diagnostic Fault Sensing

A diagnostic fault sensor will automatically scan for the presence of a faulty solenoid or wiring short in a valve during each watering sequence. If a faulty station is detected, the sprinkler controller will move to the next working station. Smart-Scan® also detects faulty wiring for the Pump or Master Valve. Upon detection watering of faulty station is discontinued.

### Fault Notification

- Faulty Station: "FAULT" and "Station XX" is displayed. When multiple faulty stations are detected, only the last faulty station will be displayed.
- Faulty wiring for pump/master valve: "PUMP FAULT" is displayed.

### Correcting the Fault

1. First, repair the short in the wiring or replace the faulty solenoid.
2. Test the station by operating a manual watering sequence.
3. If the short is not detected after a few seconds, the fault notification message will be terminated.
4. If the message continues, a short in the wiring still exists.

### Internal Auto-Resetting Electronic Circuit Breaker

The sprinkler controller is equipped with an internal electronic self-resetting circuit breaker.

Possible causes of a circuit breaker tripping:

1. If lightning strikes nearby.
2. When the power supply has an electric spike.
3. If a station has a wiring short.

Whenever one of these conditions occurs, the electronic circuit breaker may trip, causing the station output from the sprinkler controller to be halted momentarily. The batteries will continue to activate the LCD. After a few moments, the sprinkler controller will automatically retest the circuit to see if the condition has stopped. If so, the circuit breaker will reset itself.

**Section 6:** GLOSSARY OF TERMS

TERM	DEFINITION
Budgeting	A feature used to increase or decrease all set durations according to seasonal demands
Manual Watering	An unscheduled watering cycle activated manually but controlled by the timer
Master Valve	A valve that prohibits water from reaching "Station Valves"
Program (A, B or C)	A schedule for a group of stations that determines the date and time for watering
Rain Delay	A feature that prevents the sprinkler controller from running it's scheduled watering program for a specific duration
Repeat Cycles	A feature that allows a program to be operated multiple times on the same day
Solenoid	The electrical part on a sprinkler (irrigation) valve that opens and closes the valve
Sprinkler Controller	A device that is responsible for turning an automatic irrigation system on and off
Start Time	The time the program begins watering the first station
Station (Watering Station)	An area where the watering (irrigation) is all controlled by a single control valve
Terminal	The connection point on the docking port where a wire is inserted
Watering Program	See "Program (A, B or C)"
Watering Valve (Irrigation Valve)	Used in conjunction with sprinkler controllers – a device used to control the delivery of water to lawns, plants and gardens

**Determine a Watering Plan**

1. For each watering station, write down the watering location, type of sprinkler head and types of plants to be watered.
2. Determine the best watering duration and frequency for each station.

3. Determine, based on step 2, the ideal watering option for each station.

4. Use this plan to program the controller.

Based on the preceding information, your watering program may look like this:

Station	Program	Watering Option	Days	Start Time	Duration Minutes	Location	Sprinkler	Plants
1	A	Days of Week	M, W, Sat	5:00 AM	15 min	Front Strip	Spray Heads	Grass
2	A	Days of Week	M, W, Sat		15 min	Front, North	Spray Heads	Grass
3	B	Odd/Even	Every other day	6:45 AM	30 min	Back, North	Gear Drive	Grass
4	C	Interval	Every day	8:00 AM	120 min	Garden	Drip	Flowers/Shrubs

## Section 7: TROUBLE SHOOTING

Symptom	Cause
One or more stations do not turn on	1. Faulty Solenoid
	2. Wire broken or not connected
	3. Flow control stem screwed down, shutting valve off
	4. Programming is incorrect
Stations turn on when they are not supposed to	1. Water pressure is too high
	2. More than one cycle is programmed
	3. Stations are set to water with both programs
One station is stuck on and will not shut off	1. Faulty valve
	2. Particles of dirt or debris stuck in valve
	3. Valve diaphragm faulty
All stations do not turn on	1. Transformer is defective or is not connected correctly
	2. Programming is incorrect
	3. Timer is in OFF mode
Controller will not power up	1. Transformer is defective or is not connected correctly
	2. Transformer not plugged into an operational AC outlet
	3. Timer is not all the way down on the docking port.
Stations continue to turn on and off when they are not programmed to	1. Multiple cycles are programmed.
	2. Excessive pressure
	3. Stations are set to water with both programs.
	4. Water Budgeting is set to more than 100%
Persistent Fault	1. Short in wiring or solenoids

### Help

Before returning this sprinkler controller to the store, contact Hydro-Rain® Technical Service at: 1-888-HYDRORAIN (1-888-493-7672).

### Listings

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. This Class B digital apparatus complies with Canadian ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### Hydro-Rain® Limited Three-Year Warranty

Hydro-Rain® warrants to its customers that its products will be free from defects in materials and workmanship for a period of three years from the date of purchase.

We will replace, free of charge, the defective part or parts found to be defective under normal use and service for a period of up to three years after purchase (proof of purchase required).

We reserve the right to inspect the defective part prior to replacement. Hydro-Rain® will not be responsible for consequential or incidental cost or damage caused by the product failure. Hydro-Rain® liability under this warranty is limited solely to the replacement or repair of defective parts.

To exercise your warranty, return the unit to your dealer with a copy of the sales receipt.

**SAFETY OF CHILDREN:** The controller is not intended for use by young children or infirm person without supervision. Young children should be supervised to ensure they do not play with the sprinkler controller.



**HYDRO▶RAIN®**

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