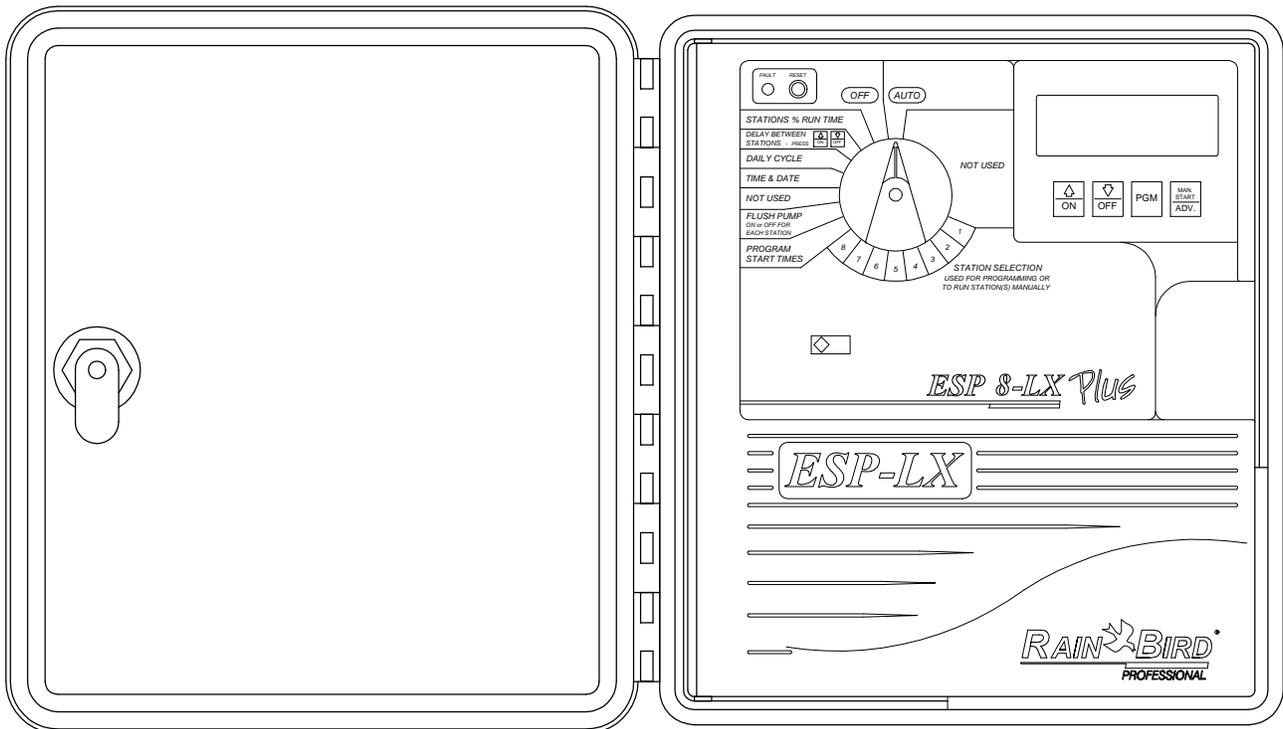


# HOULE

FARM EQUIPMENT MANUFACTURER

## *Rain Bird ESP-LX+ Controller Adapted To Houle's Flush System*



## *Installation, Programming and Operation Guide*

# WARNINGS

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A CIRCUIT BREAKER OR CUTOFF SWITCH IS TO BE PROVIDED IN THE FIXED WIRING TO ISOLATE THE CONTROLLER.

MEMORY IS RETAINED BY A BATTERY WHICH IS TO BE DISPOSED OFF IN ACCORDANCE WITH LOCAL REGULATIONS.

TO PREVENT ELECTRICAL SHOCK, MAKE SURE ALL SUPPLY POWER ARE OFF BEFORE CONNECTING MAIN POWER WIRES. ELECTRICAL SHOCK MAY CAUSE SEVERE INJURIES OR DEATH.

ALL ELECTRICAL CONNECTIONS AND WIRING RUNS MUST BE MADE ACCORDING TO LOCAL BUILDING CODES.

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# IMPORTANT

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*Before entering an automatic program, the general setting section of this manual must be read, understood and programmed accordingly. See pages 2 and 3.*

# INTRODUCTION

## Rain Bird Controller

This Rain Bird controller has been originally designed for sprinkler systems. J. Houle & Fils Inc. uses this controller to operate a flush system. Some functions of the controller are not used and the stickers and instructions have been adapted to the operation of a flush system.

### PROGRAMS:

Up to 4 flushing programs (A, B, C and D) can be entered. Each program can be set to start up to 6 times a day for a maximum of 24 automatic flush sequence a day.

### STATIONS: (Flush valves)\*

The controller has several stations. Each station is connected to an air valve which control a flush valve. When a flush valve has run for its programmed time, the controller shuts off its air valve and turns on the next one in the programmed sequence. When flush valves are fed by a flush pump, the flush pump feature must be set to "ON" for each station. This way, the controller will start the flush pump at the same time as each station is activated.

\*NOTE: In some cases, stations can be other equipment than flush valves, such as pumps or individual delay between two stations.

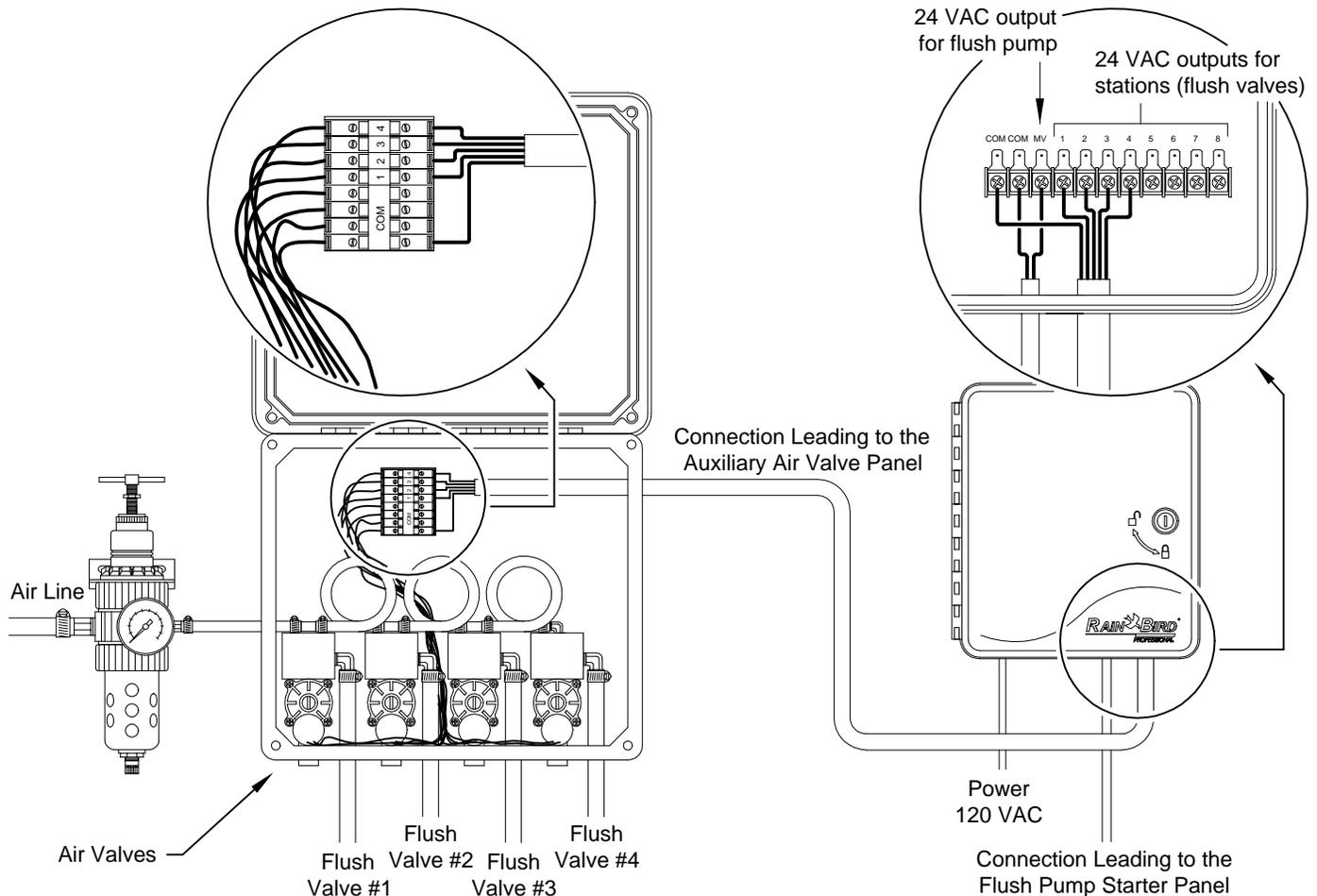
## Installing Battery

The 9-Volt rechargeable battery supplied with the controller provides power to maintain the current time and date during a power shortage. Program information is maintained independently of battery power. So if a prolonged power shortage outlast the life of the battery, you will only have to update the time and date after power is restored. To connect the battery, open the face panel and connect the two-wire battery clip to the battery.

## Wiring Instructions

### TYPICAL FLUSH SYSTEM:

Each station must be wired to its corresponding terminal inside the auxiliary air valve panel. (COM to COM, 1 to 1, 2 to 2, etc...)  
The flush pump starter panel must be wired to "COM" and "MV" in the Rain Bird controller.

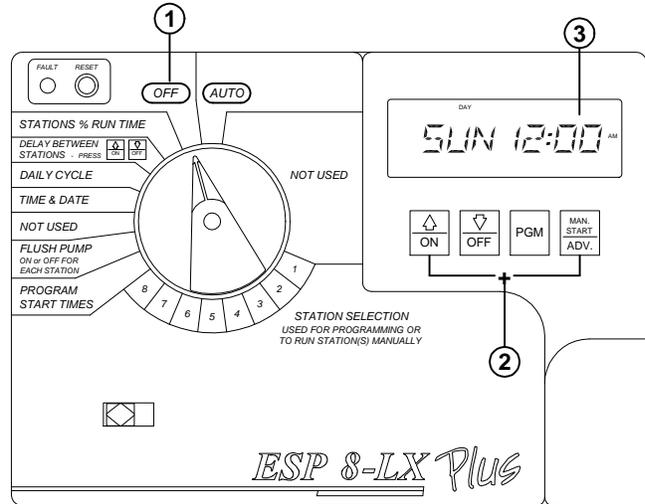


# GENERAL SETTINGS

## Clear Memory

Once installed, to ensure you begin with a fresh controller, clear the complete memory.

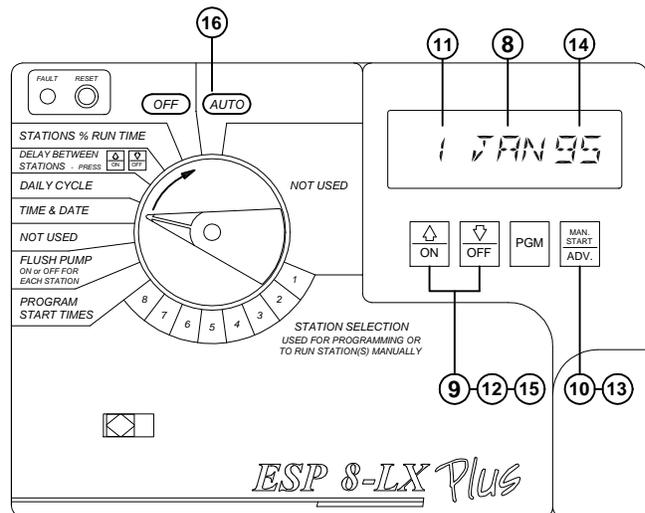
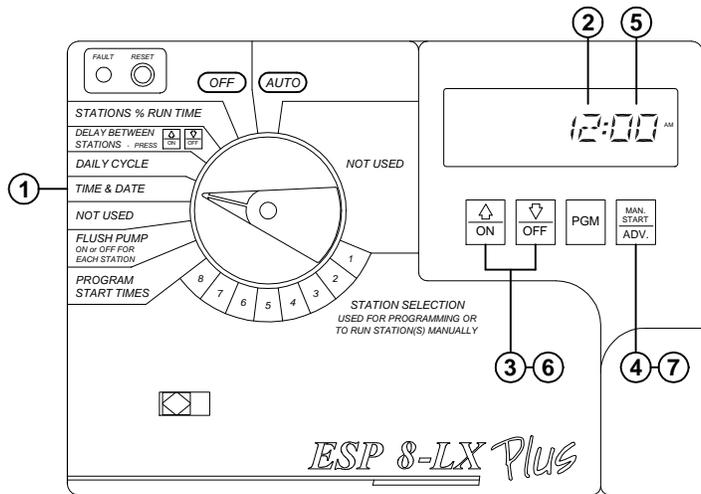
- 1) Turn the dial to "OFF".
- 2) Hold down  and  for about 7 seconds until the display reads **INIT5 Y5** and begins to scroll.
- 3) When the minutes in **SUN 12:00** flash in the display, the existing program settings have been cleared.



## Set Time and Date

Before you can program the controller, you must set its internal clock to the correct time and date.

- 1) Turn the dial to "TIME & DATE".
- 2) The hour digits in the display are now flashing.
- 3) Press  or  to set the current hour.
- 4) Press  to confirm.
- 5) The minutes digits in the display are now flashing.
- 6) Press  or  to set the current minute.
- 7) Press  to confirm.
- 8) A new display appears, showing the day, month and year. The month is now flashing.
- 9) Press  or  to set the current month.
- 10) Press  to confirm.
- 11) The day number is now flashing.
- 12) Press  or  to set the current day.
- 13) Press  to confirm.
- 14) The year is now flashing.
- 15) Press  or  to set the current year.
- 16) You have finished setting the time and date. Turn the dial to "AUTO".



## Set Flush Pump On or Off

For each station (flush valve), the flush pump option must be set to "ON" or "OFF" according to the following:

- A) When a flush valve is fed by a flush pump, its flush pump option must be set to "ON", this mean that any time the station operates, the flush pump output also turns on.
- B) When a flush valve is fed by a flush tank, its flush pump option must be set to "OFF".

1) Turn the dial to "FLUSH PUMP on or off for each station".

2) The display shows the station number and *MV ON* or *MV OFF*. The station number flashes.

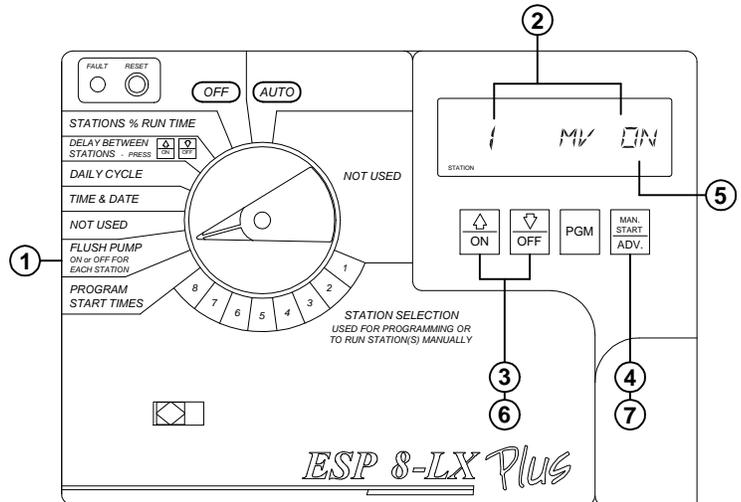
3) Press  or  to select the station number you want to set.

4) Press  to confirm.

5) The *ON* or *OFF* is now flashing.

6) Press  for ON or  for OFF.

7) To set another station, press . Repeat steps 2 to 7 for each station you want to set.



## Outputs (Stations) Used to Operate a Transfer Pump or as a Delay

### Output programmed to operate a transfer pump:

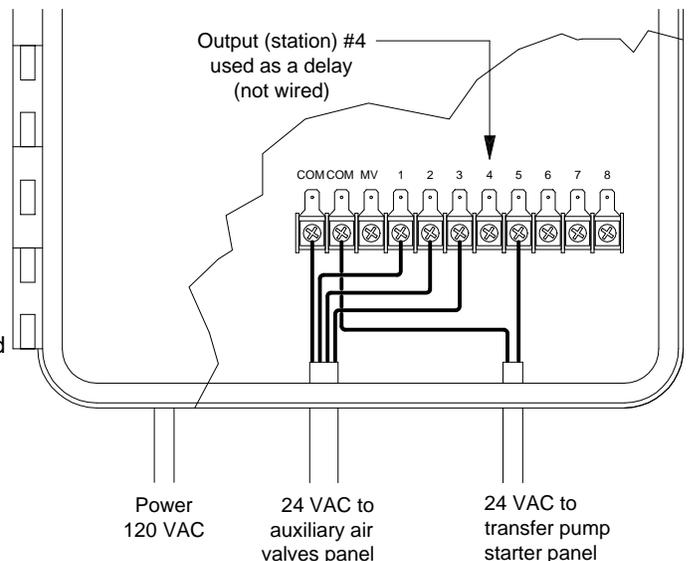
Stations can be used to operate any type of equipment. If you need to control a transfer pump, simply connect this pump starter panel to a station and program a run time for that station.

### Output used as a delay between 2 stations:

**Holding area flush system:** A delay can be programmed right after the running of the flush valves to allow fibers to sediment before starting the transfer pump. This way, the transfer pump transfers the bottom dirtiest liquid and leaves the top cleanest liquid for the next flush. To program a sedimentation time, you must enter a run time to a station without wiring it as shown on the drawing. This way, the program will go through sequence and the non-wired output will become a time delay. In this example, the flush valves of stations 1, 2 and 3 run first in sequence, then the system rest during the run time of station 4, and finally the transfer pump of station 5 runs.

**Barn flush system:** A delay can be programmed between the running of groups of flush valves to allow time for the manure separator system to process and empty the flush liquid into the reception pit before the running of the next group of flush valves. The programming of this delay is the same principle as explained above for holding area flush system.

**IMPORTANT:** When an output (station) is used to operate a transfer pump or as a delay, the flush pump must be set to off. Follow instructions at top of this page.



# ENTERING AN AUTOMATIC FLUSH PROGRAM

Before entering an automatic program, the general setting section of this manual must be read, understood and programmed accordingly. See pages 2 and 3.

Up to 4 programs can be entered (A, B, C and D) and each program contains 5 different settings:

## Set Daily Cycle

This feature lets you determine at which frequency the selected program must start. It must be adjusted on an every day cycle. See page 4.

## Set Station Run Time

This feature lets you determine how long each station will run for a selected program. See page 5.

## Set Program Start Times

This feature lets you program up to 6 start times per day for each program. See page 5.

## Set Delay Between Stations

This delay feature lets you program a pause between the end of a station operation and the beginning of the next station operation. This delay applies to all stations of the same program. See page 6.

## Set Stations Percentage Run Time

This feature lets you increase or decrease the programmed run time of all stations of a same program by a selected percentage. See page 6.

## Set Daily Cycle

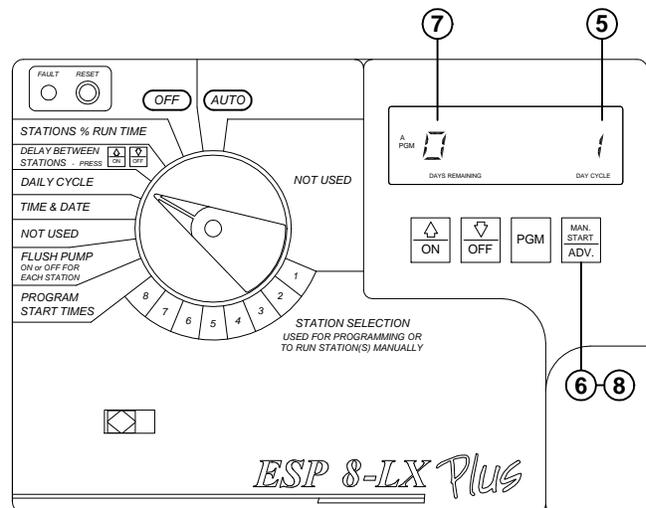
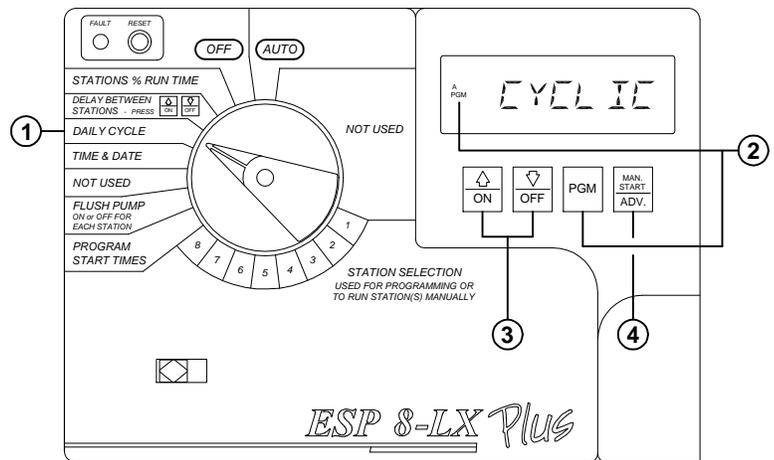
Each program can operate in one of four daily cycles:

- A. CUSTOM starts programs on the day you select.
- B. CYCLICAL starts programs on a selected daily interval. (For example, every day, or every other day, etc...)
- C. ODD starts programs only on odd-numbered days of the month.
- D. EVEN starts programs only on even-numbered days of the month.

For Houle equipment, it is mandatory to set daily cycle to CYCLICAL on a every day cycle.

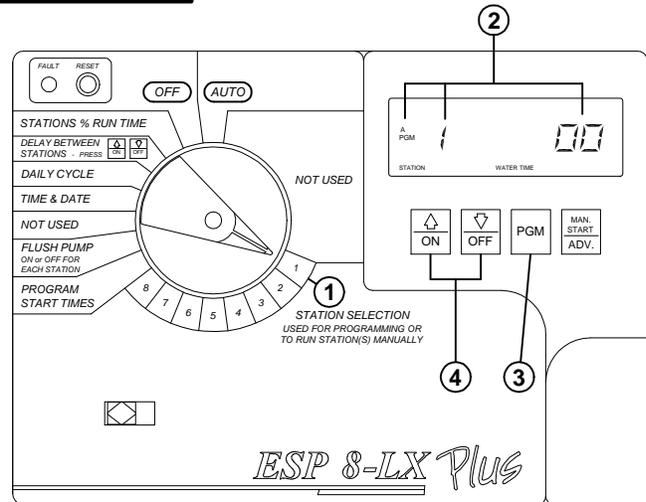
### CYCLICAL:

- 1) Turn the dial to "DAILY CYCLE".
- 2) The display shows the currently selected program (  $\frac{AB}{PGM}$  /  $\frac{CD}{}$  ). Press [PGM] until the program you want is displayed.
- 3) Press  $\uparrow$  [ON] or  $\downarrow$  [OFF] until  $\overline{CYCL}$   $\overline{II}$  appears in the display.
- 4) Press  $\square$  [MAN. START ADV.] to confirm.
- 5) The display shows the day cycle set to 1 which means the program will start every day.
- 6) Press  $\square$  [MAN. START ADV.] to confirm.
- 7) The display shows the days remaining set to 0 which means the program will be allowed to run starting today.
- 8) Press  $\square$  [MAN. START ADV.] to confirm.
- 9) Repeat steps 1 to 8 for each program. (A, B, C and D)



## Set Station Run Time for Each Program

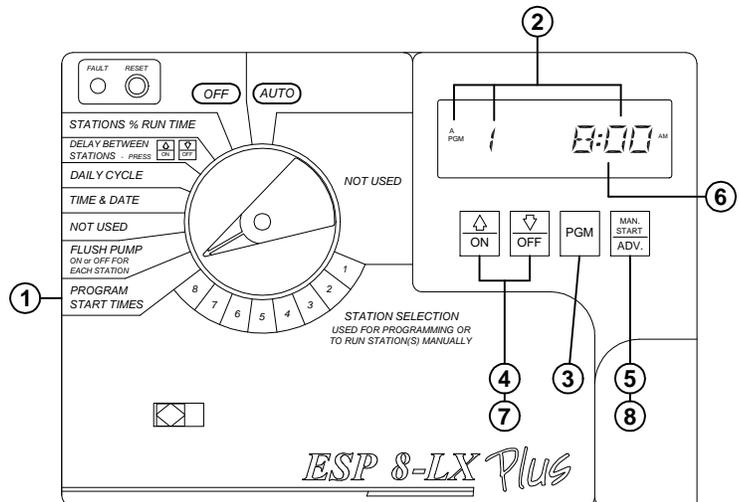
- 1) Turn the dial to select the station you want to program.
- 2) The display shows the program (  $\begin{matrix} A \\ B \\ PGM \\ C \\ D \end{matrix}$  ), the station number and the currently set run time. If the station has been included in another program, *USE* appears in the display.  
  
If *USE* appears, you can still set a run time for the station unless the station has been previously assigned to program D. Stations assigned to program D cannot be shared with any other program.
- 3) Press **PGM** until the program you want is displayed.
- 4) Press **ON** or **OFF** to set the length of time you want the station to run. Repeat steps 1 to 4 for all stations. If you do not want to include a station in the program, set the run time to zero.



## Set Program Start Times

You may assign up to six start times to a program per day. A program may start on any quarter hour. Start times apply to the entire program, not to an individual station.

- 1) Turn the dial to "PROGRAM START TIMES".
- 2) The display shows the program (  $\begin{matrix} A \\ B \\ PGM \\ C \\ D \end{matrix}$  ), the number of the start time and the start time itself. The start time number is now flashing.
- 3) Press **PGM** until the program you want is displayed.
- 4) Press **ON** or **OFF** to select one of the six start time numbers for the program.
- 5) Press **MAN. START ADV.** to confirm.
- 6) The start time is now flashing.
- 7) Press **ON** or **OFF** to set the start time. Start times are available in 15 minutes intervals throughout the day. To eliminate a start time, select *OFF* setting between 11:45 pm and 12:00 am.
- 8) If you want to set additional start times, press **MAN. START ADV.** and repeat steps 2 to 7 to set the next start time.



## Set Delay Between Stations

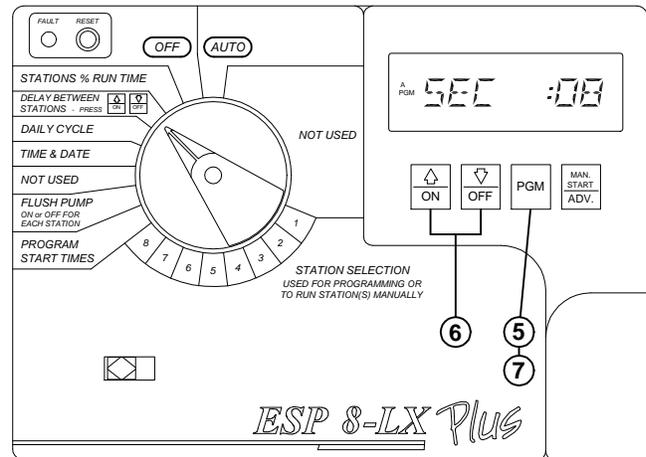
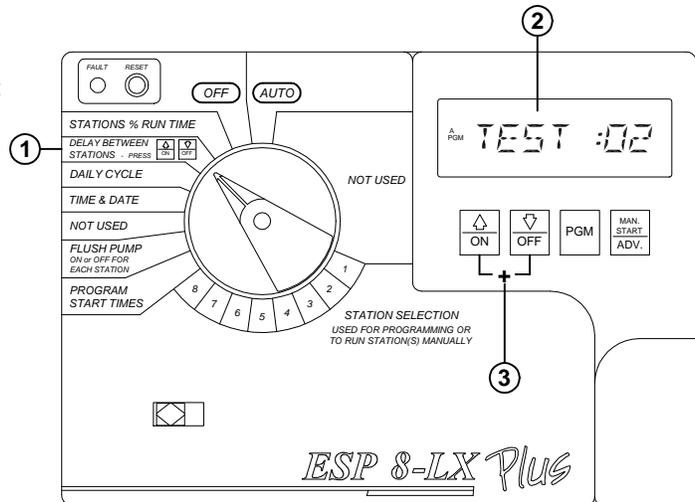
The station delay feature lets you program a pause between the end of one station operation and the beginning of the next station operation. You may set a delay from one second to nine hours. A station delay setting applies to all stations of the same program.

- 1) Turn the dial to "DELAY".
- 2) The display shows *TEST :02*.
- 3) Press  and  simultaneously.
- 4) *DELAY* appears in the display momentarily, followed by the delay time.
- 5) Press  until the program you want is displayed.
- 6) Press  or  to set the delay time. To cancel station delay, set the delay time to zero.

Note: The display initially shows the delay time in seconds *SEC*. When you advance past 59 seconds, the display changes to *MIN* for minutes and seconds. When you advance past 60 minutes, the display changes to *HR* for hours and minutes.

- 7) To set delays for additional programs, press  until the program you want is displayed and repeat step 6.

Note: During the delay between stations, the flush pump will be turned off.

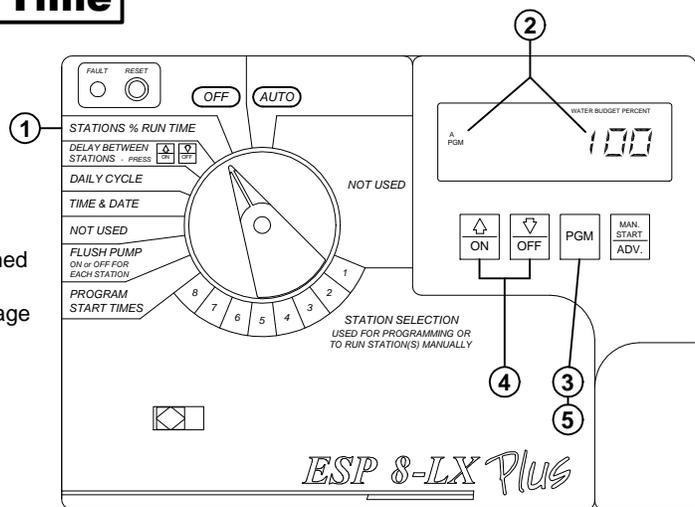


## Set Stations Percentage Run Time

The "STATIONS % RUN TIME" feature lets you increase or decrease the run time of all stations on a program by a selected percentage. You can set the percentage from 0% to 300%, in increments of one percent. Each program can have a different percentage. Default setting is 100%.

Percentage settings are calculated on the normal programmed run times for each station. For example, if a station is programmed to run for 10 minutes, and you set the percentage to 80%, the station will run for 8 minutes (80% of 10). If you set the percentage to 120%, that same station will run for 12 minutes (120% of 10).

- 1) Turn the dial to "STATIONS % RUN TIME".
- 2) The display shows the selected program ( $\frac{AB}{CD}$ ) and its current percentage. The default is 100%.
- 3) Press  until the program you want is displayed.
- 4) Press  or  to set the percentage.
- 5) To set percentage to another program, press  until the program you want is displayed and repeat step 4.

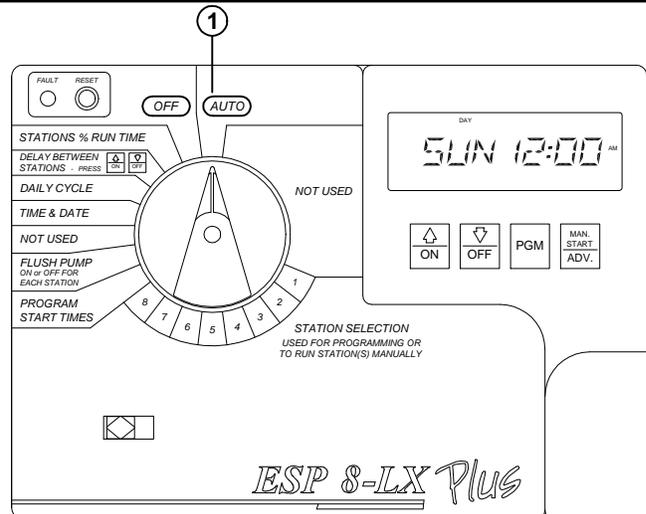


# OPERATING THE CONTROLLER

## Run Program(s) Automatically

- 1) Turn the dial to "AUTO". The controller runs the stations according to the programs you have set.
- 2) To stop an automatic program in process, simply turn the dial to "OFF" for three seconds. Then turn the dial back to "AUTO".

Note: To temporarily suspend all programs, turn the dial to "OFF". When you want the programs to be active again, simply turn the dial back to "AUTO".

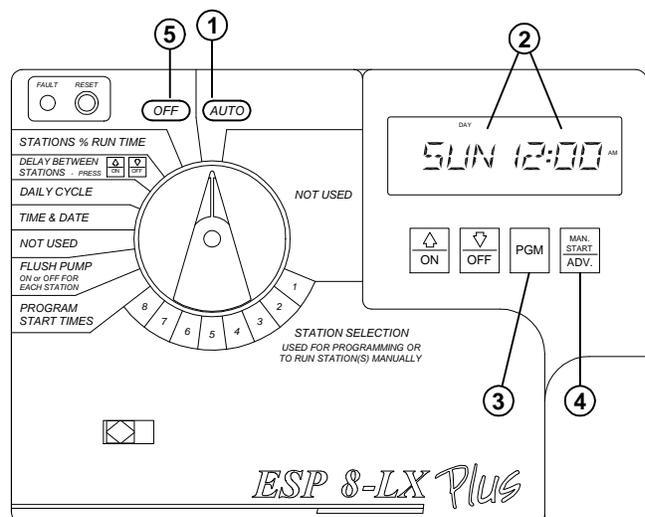


## Run Program(s) Manually

- 1) Turn the dial to "AUTO".
- 2) The display shows the day of the week and time of day.
- 3) Press **PGM** until the program you want is displayed.
- 4) Press **MAN. START ADV.** to start the selected program.

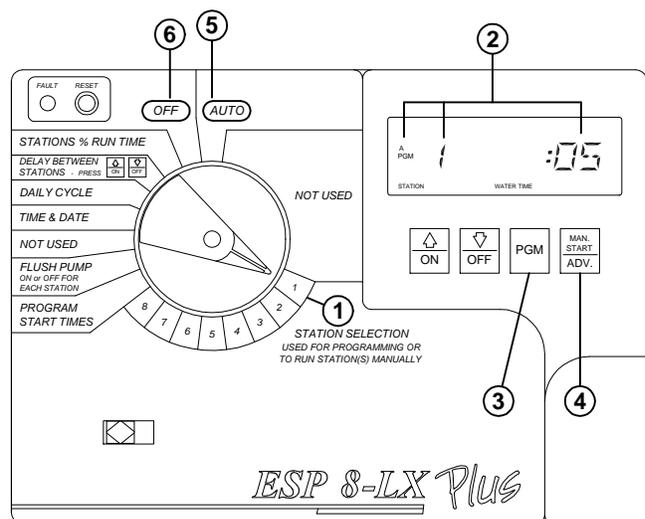
If you want to run additional programs, repeat steps 3 and 4. Each program you select will run when the previous program has ended. You can stack all four programs to run in sequence.

- 5) To stop a manual program in process, simply turn the dial to "OFF" for five seconds. Then turn the dial back to "AUTO".



## Run Station(s) Manually

- 1) Turn the dial to select the station you want to operate.
- 2) The display shows the currently selected program (A B PGM CD), the station number and the station running time. If the station is not used in the current program but is used in another program, the word **USE IT** will appear in the display instead of the run time.
- 3) Press **PGM** until the display shows a run time for the station.
- 4) Press **MAN. START ADV.** to operate the selected station. If you want to run additional stations, repeat steps 2 to 4. Each station you select will run when the previous station has ended.
- 5) After selecting all stations you want to run, turn the dial to "AUTO". The stations you have selected will operate for their programmed run times and then shut off automatically.
- 6) To stop a manual program in process, simply turn the dial to "OFF" for five seconds. Then turn the dial back to "AUTO".









**J. Houle & Fils Inc.**