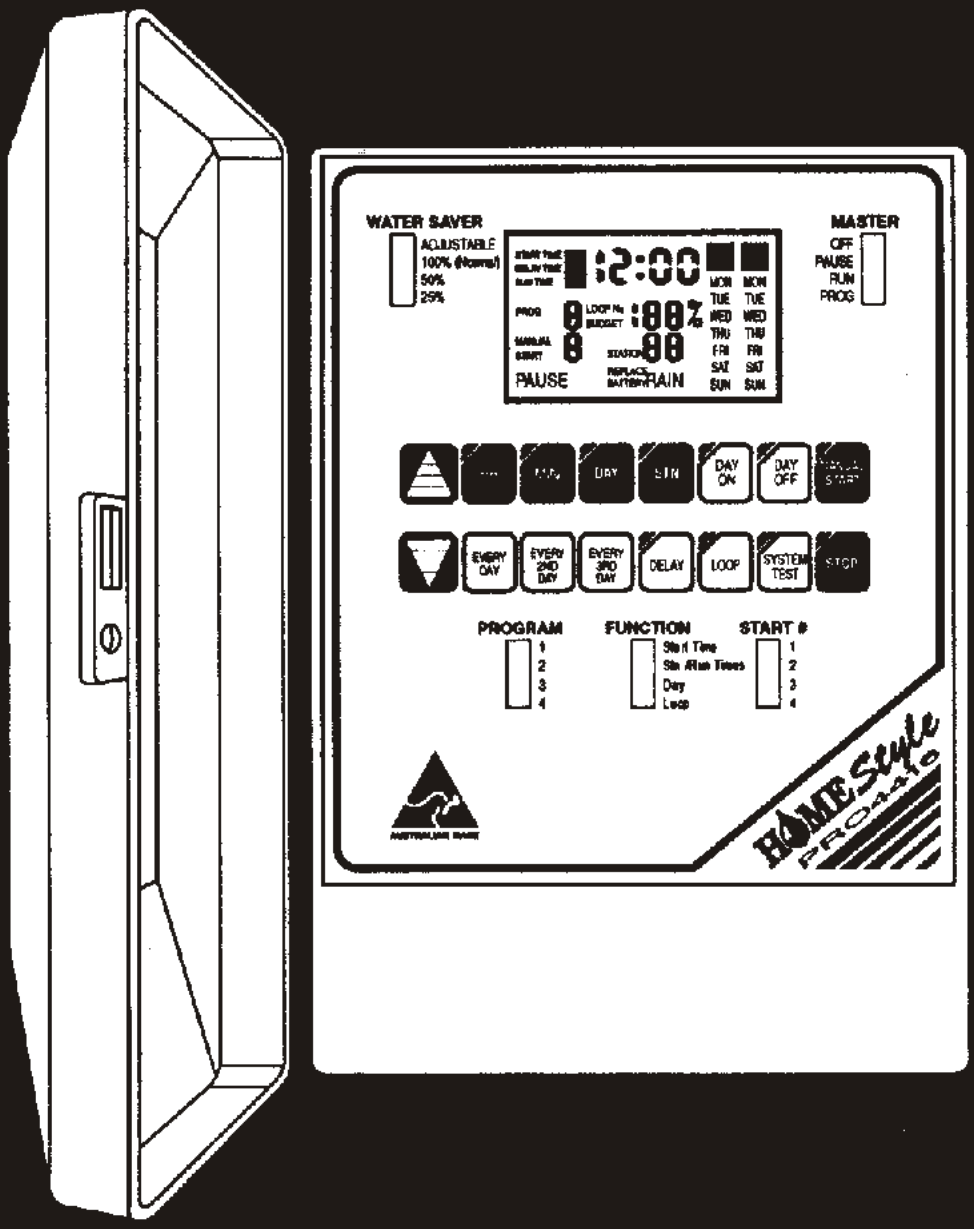
IRRIGATION CONTROLLER

6, 8, 12 & 16 STATION UNITS



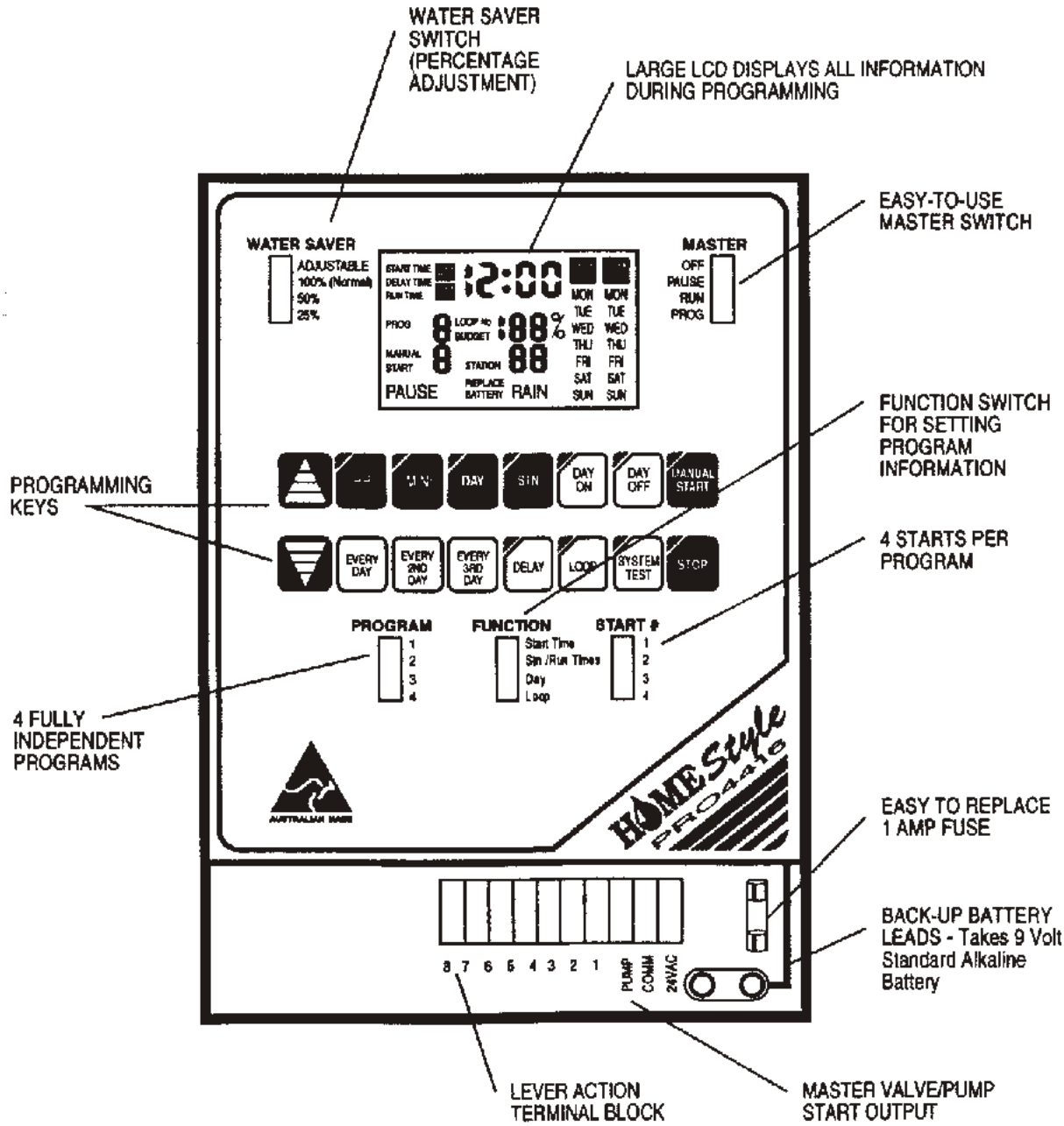
INSTRUCTION BOOK

INTRODUCTION

The PRO 4416 Irrigation Controller comes in 4 configurations:
1) 6 stations 2) 8 stations 3) 12 stations 4) 16 stations
Watering is sequential and the watering duration can be set up to 4 hours 15 minutes per station. This maximum run time can be doubled by use of the 'WATER SAVER' Switch which allows simple changes to preset watering times.
The unit has 4 fully independent programs with up to 4 start times per program. Watering days are selected using a 14 day 'ON/OFF' cycle, or the 3 quick set buttons: Every Day, Every 2nd Day, Every 3rd Day.
A large comprehensive display shows all the information required to easily set, and more importantly, to easily review set watering programs.
The Controller is constructed from high quality components that will withstand rugged use and tough Australian conditions.
Built and serviced in Australia the Controller is fully supported by a 12 month Guarantee, (see back page).

TABLE OF CONTENTS

GLOSSARY



Example: 8 Station Unit

PROGRAMMING INSTRUCTIONS

INTRODUCTION

Your Controller is specifically designed to provide the flexibility of four fully independent programs while still being easy to program. The comprehensive display has large letters and displays all the information necessary to set programs.

The important elements of programming your Controller are:

a) Set the current time and day of week
b) Decide what programs you need

NOTE: A program allows you to group a number of stations with similar watering requirements to water on the same days. These stations will water in sequential order at the start time (s) nominated on the selected days.

PROGRAMMING

Programming is simply putting the information into the Controller so the sprinklers water the way you want them to.

OTHER FUNCTIONS

The Controller also allows you to 'START' a program or a single station manually or to 'STOP' any watering cycle. You can also pause watering by moving the 'MASTER SWITCH' to 'Pause'. The 'Off' position means no watering takes place (programs are retained). The 'WATER SAVER SWITCH' allows you to easily alter programmed watering times as the seasons change without changing your programs.

SET CURRENT TIME

Move MASTER Switch to 'RUN' position.

Press 'HR' button and scroll  or 

Press 'MIN' button and scroll  or 

Note: A 12 hour clock is used and the display will show AM or PM.

SET CORRECT DAY

Press 'DAY' button until the correct day of the week is shown.
Note: the controller has a 14 day calendar and will show Week 1 and Week 2.

SET AUTOMATIC PROGRAMS

Before setting your automatic programs study the example of the watering planner shown and write down your watering requirements on the planner sheets supplied (see page 18)

Move MASTER Switch to 'PROG' position, and ensure WATER SAVER Switch is set at 100%.

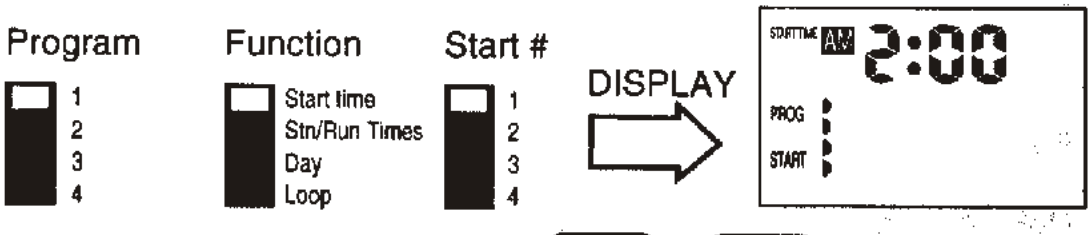
NOTE: When the power is first turned on, Program 1 has a back up program already preset to water all stations sequentially for 10 minutes each, watering every day and commencing at 2.00 am on Start 1.

Set one program at a time and work systematically through the three steps shown here.

Proceed to set PROGRAM 1.
Move PROGRAM Switch to '1'.

Set Watering Start Times:

Move FUNCTION Switch to 'START TIME' position and move START # Switch to '1'



Press 'HR' button and scroll using △ or ▽.

And if required press 'MIN' button and scroll using △ or ▽.

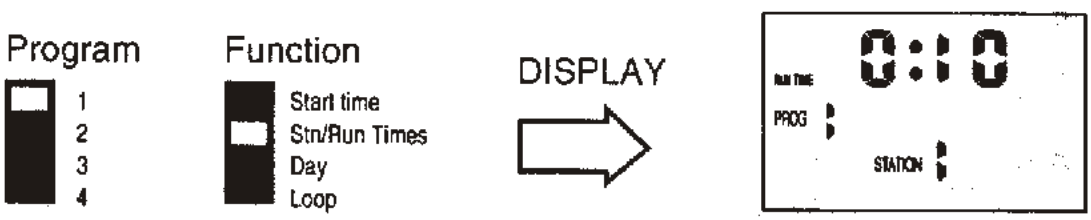
All the stations set for Program 1 will water in sequential order from the time you have set.

Should you require the stations in Program 1 to water more than once a day simply move the START # Switch to '2' and set as for START 1.

NOTE: Select from up to 4 start times a day per program. All the stations will water in sequential order for each of the start times which have been set.

Set Station Watering Durations:

Move FUNCTION Switch to 'STN/RUN TIMES' position.



To adjust the watering duration for Station 1 quickly, use the EVERY DAY

button for 10 minutes, [EVERY 2ND DAY] button for 15 minutes and [EVERY 3RD DAY] button for 20 minutes. For further adjustment press the 'MIN' button and scroll [△] or [▽]. Should you need to water in hours press 'HR' button and scroll [△] or [▽].

Now advance to station 2 by pressing the 'STN' button and set as for Station 1.

Continue to set all stations as shown.

NOTE:

- Each station in Program 1 will have a preset default duration of 10 minutes and can either be changed or set to 0:00 if not required in Program 1.
- maximum watering duration for a station is 4 hours 15 minutes.
- Each station can have a different watering duration.
- Watering will be sequential from the lowest station number.
- A station can be set into more than one program (up to a maximum of 4 programs).

Set Watering Days Required

Move FUNCTION Switch to 'DAY' position.

All the stations for program 1 will water every day of the 14 day calendar.

To adjust quickly press either [EVERY DAY] or [EVERY 2ND DAY] or [EVERY 3RD DAY] button.

If more flexible watering is required press the 'DAY' Button and the display will show 'd1'. Press the DAY ON button to set DAY 1 (Mon) 'ON', or press DAY OFF button to set DAY 1 (Mon) 'OFF'. Now proceed to advance to DAY 2 (Tue) by pressing △ and set 'ON' or 'OFF'.

Note: All 14 days must be set either **'ON'** or 'OFF'.

SET PROGRAM 2

Should you require more than one program move the PROGRAM Switch to '2' and proceed to set START TIME(s), STATION WATERING DURATIONS and WATERING DAYS.

IMPORTANT:

Once all the programs have been set move the MASTER Switch back to the 'RUN' position for automatic operation.

MASTER SWITCH POSITIONS

OFF — Use in winter or when raining. Suspends all watering cycles but retains the programmed information.

PAUSE — Suspends watering for up to 59 minutes. If the switch is moved back to the 'run' position before the 59 minutes is up, the watering cycle will continue from where it left off.
After 59 minutes if the switch is not moved back to the 'RUN' position the unit will run the watering cycle. In this mode the automatic cycles will continue to run but the manual operations will only run once.

RUN — Indicates that the controller is in the 'RUN' mode. Leave in this position for automatic operation or for manual operations. Also must be in the mode when adjusting watering durations using the WATER SAVER Switch.

PROG — Use when the programs of the controller have to be set, changed or reviewed.

MANUAL OPERATIONS

Semi Automatic Operation

To manually run a single program or a number of programs move the PROGRAM Switch to the program number required and press the 'MANUAL START' button.

The controller will stack the programs in the order selected and they will run once according to the watering durations set in the automatic schedule.

Single Station Manual

To manually run a single station press the 'STN' button until the required station is shown in the display. The station will water for 10 minutes.

To adjust the watering duration press  or  . The duration can be set from 1 minute up to 4 hours and 15 minutes in one minute increments.

System Test

To test the system press the 'SYSTEM TEST' button and the display will show station 1 and 0:02 minutes. The controller will run all stations in sequential order.

To adjust the watering duration press  or  . The duration can be set from 1 minute up to 4 hours and 15 minutes in one minute increments.

Note: To test an individual station press the 'STN' button and advance to the required station number. Again the duration can be adjusted at any time using the  or  buttons.

STOP

To stop an automatic program or a manual program press the STOP button.

AUTOMATIC BACK UP PROGRAM

An automatic preset program has been factory set in the controller as follows:

Program 1	2:00 am	START # 1
	OFF	START # 2
	OFF	START # 3
	OFF	START # 4

Each station has 10 minutes watering duration and the 14 day watering calendar has been set 'ON' to water everyday.
This ensures that watering will still occur should the battery fail or not be fitted during power failures.

Programs 2, 3 & 4 have no start or watering durations set.

BATTERY BACK UP

To maintain the clock and retain the programs during power failures fit a 9Volt standard block alkaline battery to the battery snap supplied under the bottom terminal cover. This will hold the programs for up to one week.

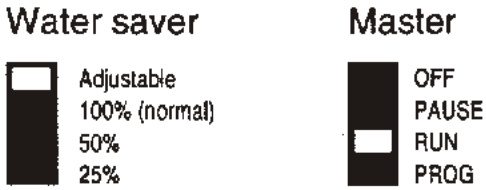
NOTE: The display has a warning indicator to let you know when the battery is low or not fitted.

WATER SAVER SWITCH

This switch conserves water, saving you money. Simply place the switch against the desired percentage and the automatic and manual watering cycles will be reduced or increased accordingly. This feature enables you to increase the maximum watering time to 8 hours and 29 minutes.

NOTE: The watering durations on all programs will be adjusted by the percentage selected.

The Adjustable operation works as follows:



Press △ or ▽ buttons.

NOTE: The percentage will be adjusted in 25% increments.

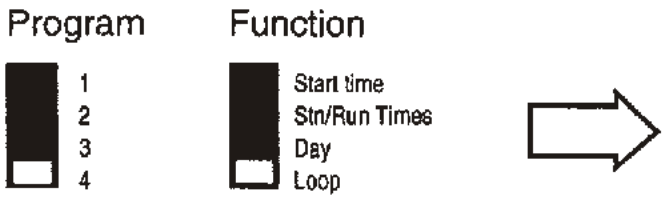
LOOPING PROGRAM

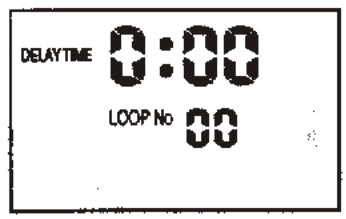
This facility allows for selected stations to have programmed repeat watering cycles up to 100 times per day with a delay between cycles.

Note: Only available in program 4 which can operate either as a standard program or as a looping program.

The set up procedure is as follows:

Move MASTER Switch into 'PROG' position.





To set the number of repeat cycles (loops)

Press the LOOP button and scroll up using △ or down using

 . There are up to 100 repeat cycles.

NOTE: Examples –
To set one loop (repeat), program as loop No. 00.
To set ten loops (repeats), program as loop No. 09.
To set hundred loops (repeats), program as loop No. 99.

* To set the delay time between repeat cycles (loops) press DELAY button and scroll  or  .

NOTE: The delay time will be in minutes/hours only and can be set from 1 minute up to 4 hours 15 minutes in one minute increments.

* The station watering durations can be set to run in either seconds/minutes (up to 4 minutes & 15 seconds) or minutes/hours (up to 4 hours & 15 minutes)

To set station watering durations to run in seconds/minutes press the MINS button and the display will show 'SE'.

To set station watering durations to run in minutes/hours press the HR button and the display will show 'HO'.

NOTE: The delay time between cycles will not be affected and will always stay in minutes/hours.

IMPORTANT: If the MASTER Switch is in the 'PROG' position and the FUNCTION Switch is moved from the 'LOOP' position and then returned to that position the watering durations will revert back to minutes/hours mode. This will occur only if the function switch is moved back to the 'LOOP' mode.

TO SET THE AUTOMATIC PROGRAM FOR LOOPING OPERATION:

1. Move FUNCTION Switch to 'DAY' position and press EVERY DAY for every day operation.
2. Move FUNCTION Switch to 'STN/RUN TIMES'. Press 'STN' button followed by 'MIN' button and scroll  or  . Press 'STN' button and advance to the next required station number and proceed as above.
   NOTE: Remember that if in 'seconds/minutes' mode by pressing 'MIN' button you are setting the duration in seconds, and by pressing 'HR' button you will be setting the duration in minutes.

   Conversely if in 'minutes/hours' mode by pressing 'MIN' button you will be setting the duration in minutes.
3. Move FUNCTION Switch to 'START TIME' position, and the Start # Switch to '1'. Now press the 'HR' button and scroll  or  to set the time when you require the looping cycle to start.

Note: The looping program will take precedence over any other program should the start times overlap. This means that no other program will be active during the looping cycle or during the delay period. The controller will stack all other programs in sequential order from 1 onward and these will still run once the looping program has been completed.

The looping program is now set to run but you need to remember to move the MASTER Switch back to the 'RUN' position to initiate an automatic cycle.

STACKING START TIMES

Should you accidentally overlap start times between programs the controller will automatically stack them in sequential program number order. The exception to this rule is if you use the looping facility in Program 4 which will get preference over any other program as explained in point 3 page 11.

All programs will still water but the start times will be shunted along.

INSTALLATION INSTRUCTIONS

MOUNTING THE CONTROLLER

- If required knock out plastic press-outs on the bottom of the controller box and clean with a sharp knife.
- Install the controller near a 240V AC mains outlet, preferably located in a house, garage or other covered area. For ease of operation, eye level placement is recommended. Drive a #8 screw into the wall, leaving about 4mm of the screw exposed. If necessary, use a toggle bolt or masonry shield.
- Hang the controller from the keyslot located in the back of the case. Make sure the head is properly seated inside the controller case. Additional screws may be inserted through the holes in the lower corners of the controller case.

ELECTRICAL HOOK-UP

WARNING

1 All electrical work must be carried out in accordance with these instructions following all applicable local, State and Federal codes, or warranty will be void.

2 Disconnect main power supply before maintenance work to controller or valves and when connecting and disconnecting field wiring and pump and master valve hook-ups.

FIELD WIRING CONNECTIONS

PREPARATION

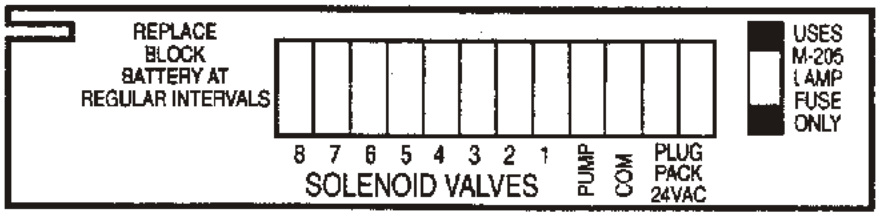
1 Prepare wires for hook-up by cutting the wires to the correct length and stripping approximately 6.0mm (1/4 inch) of insulation from end to be connected to the controller.

2 The controller is fitted with easy to use lever action terminals. Simply lift lever forward and the cable can be inserted into the aperture. Push lever back and the cable is retained. Ensure the cable is clamped and not the insulation.

3 A maximum of 1 Amp may be supplied by any output. Check the inrush current of your solenoid coils before connecting more than 2 valves or coils to any 1 station.

TERMINAL BLOCK LAYOUT

The terminal block is laid out as follows:
Example: 8 Station unit



GLOSSARY

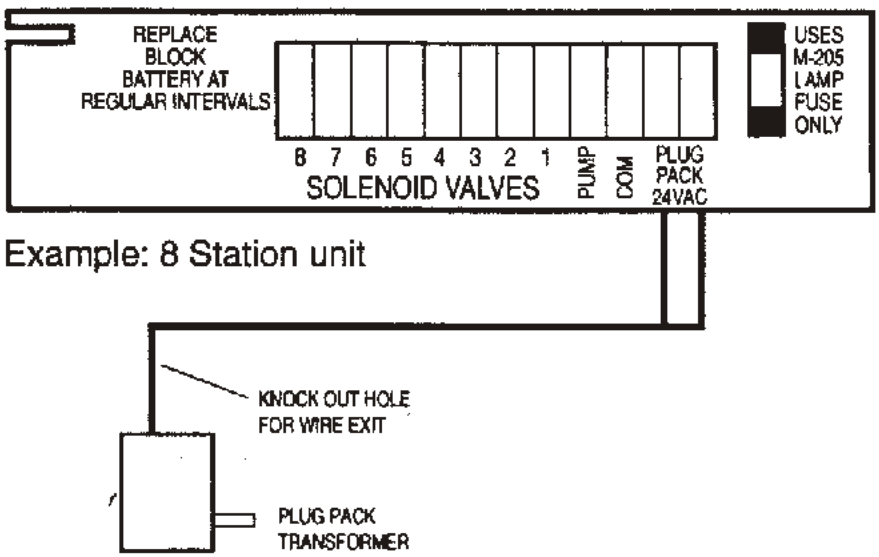
24VAC Plug Pack	Power Supply (24 Volts)
COM	Common Valve wire
PUMP	Master Valve/Pump Start active wire
1 to 8	Station (Valve) active wire connections

POWER SUPPLY CONNECTIONS

The Controller itself can run off either a 240V AC to 24V AC plugpack or an inbuilt Transformer delivering 24 VAC at 30 VA.

It is recommended that the transformer be connected to a 240V AC supply which is not also servicing or supplying motors (i.e. air conditioners, pool pumps, refrigerators, etc). Lighting circuits are suitable as a power source.

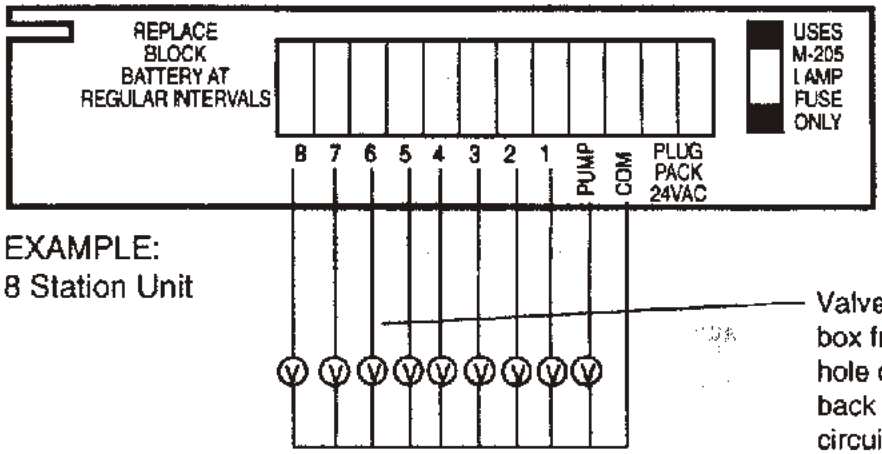
Connection to the unit is as follows:-



Example: 8 Station unit

CONNECTION OF VALVES

Up to two 24V AC Solenoid Valves can be connected to each station output and wired back to the common (C) thus:



EXAMPLE:
8 Station Unit

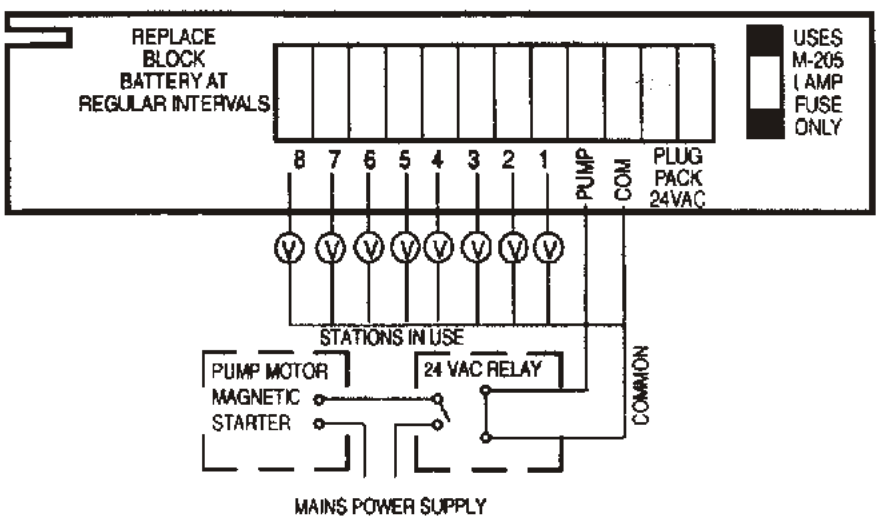
Valve wires to enter box from knock-out hole or drilled hole in back of box below circuit board.

PUMP HOOK-UP CONNECTIONS

DO NOT attempt to drive a pump starter directly from the controller. Pump start is provided by connecting one side of the coil of a suitable relay to the MASTER VALVE/PUMP START output of the Controller and the other side to the Controller COMMON.

For systems supplied with water from a PUMP, unused stations must be connected back to the last used station to eliminate the possibility of the pump running against a closed head. Failure to do so could lead to pump damage.

The diagram shows an 8 station controller.



ELECTRICAL CHARACTERISTICS

POWER SUPPLY

MAIN SUPPLY - The unit has the option to run off either a 50Hz Plugpack Transformer with an output of 24V AC 50Hz @ 1 Amp, or 220-240 VAC (50 Hz) delivering 24 VAC through a 30 VA rated Transformer.

PLUG PACK MODEL

The correct wiring installation for the 24 VAC Plug Pack is shown on page 14. The Plug Pack Model is only suitable for indoor installation.

INBUILT TRANSFORMER

The Inbuilt Transformer is already wired up and comes complete with 1 metre of lead and a 3 Pin Plug which is suitable for a normal power board. Simply insert the plug and turn on the power.

With Inbuilt Transformer the unit is suitable for outdoor installation as the Transformer is fully waterproof (encapsulated) and the housing is splash proof and UV stabilised, however, it is recommended that the unit be installed in an area which is not exposed directly to the weather such as under the eaves or a verandah.

ELECTRICAL OUTPUTS

Electrical Power Supply

- Input 24Volts AC 50Hz
- Outputs Stations 24Volts AC 50Hz, 1 Amp max.
  Master Valve/Pump Start 24Volts AC 50Hz, 1 Amp max.

NOTE:

Transformer and fuse capacity must be compatible with output requirements.

- Overload protection:- Standard 20mm 1 Amp fuse.
- Power failure:- 9 Volt block type battery retains programmed information and maintains clock.
- The output circuits should be installed and protected in accordance with wiring rules.

SERVICING THE CONTROLLER

The Controller should always be serviced by an authorized agent. The Controller is designed to be easily dismantled for service.

Follow these steps:-

1. Turn Mains power off to the Controller.
2. Disconnect 24 Volt power leads to the "PLUG PACK 24 VAC" terminals.
3. Clearly mark or identify all valve wires according to the terminals, they are connected to (1 to 16). This allows you to easily wire them back to the Controller, maintaining your valve watering sequence.
4. Disconnect valve wires from the terminal block.
5. Remove the 2 screws underneath the terminal block.
6. Slide the panel out of the box. Leave the fascia connected to the circuit board.
7. Carefully wrap the panel in protective wrapping and pack in a suitable box. Return to your service agent or the manufacturer
8. Replace your panel by reversing this procedure.

WATERING PLANNER (Example)					
STN No.	GARDEN AREA	PROGRAM No.	Station Watering Duration	Watering Start Time (s)	Frequency of Watering (14day)
1	Front Lawn	1	20 min	4.00am	Every 3rd Day
2	Front Lawn	1	20 min		
3	Front Lawn	1	20 min		
4	Front Lawn	1	20 min		
5	Flower Bed	2	10 min	5.20am	Week 1 & Week 2 Mon,Tues,Thurs,Fri.
6	Flower Bed	2	10 min		
7	Back Lawn	3	20 min	5.40am	Every 2nd Day
8	Pergola	4	5 min	6.00am & 8.00am	Every Day
9					
10					
11					
12					
13					
14					
15					
16					

Example: 8 Station Controller

WATERING PLANNER - SPRING

STN No.	GARDEN AREA	PROGRAM No.	Station Watering Duration	Watering Start Time (s)	Frequency of Watering (14day)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

YOUR GUARANTEE

The manufacturer Guarantee to the original purchaser that any product supplied by the manufacturer will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. Any product found to have defects in material or workmanship within the period of this Guarantee shall be repaired or replaced by the manufacturer FREE OF CHARGE.

The guarantor does not guarantee the fitness for a particular purpose of its products and does not make any guarantee, expressed or implied, other than the guarantee contained herein. The guarantor shall not be liable for any loss of use of the product or incidental or consequential damages including damages to other parts of any installation of which this product is part.

The guarantee shall not apply to any equipment which is found to have been improperly installed, set up or used in any way not in accordance with the instructions supplied with this equipment, or to have been modified, repaired or altered in any way without the express written consent of the company. This guarantee shall not apply to any batteries or accessories used in the equipment covered under this guarantee or to any damage which may be caused by such batteries.

If the Controller develops a fault, the product or panel must be returned in adequate packing with:

1. *A copy of your original invoice.*
2. *A description of any fault.*

It is the purchasers responsibility to return the Controller to the manufacturer or their agent by pre-paid freight.

HOLMAN INDUSTRIES
463 SCARBOROUGH BEACH ROAD OSBORNE PARK WA 6017
TELEPHONE: (618) 9204 1011 FACSIMILE: (618) 9204 1013