

COMMON SENSE MANUAL

Second Edition

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CONTROLLER FEATURES

- up to 80 Crop Zones
- 4, 8, or 12 valve control
- up to 16 crops
- Manual Mode- waters according to a preset program at the touch of a key
- Auto Mode- automatic time-based watering
- Remote Mode- automatic environment driven irrigation controlled from a Boom Spooler or GO-1
- Daily Programming - direct jog capability
- Flexibility- Daily Delay Multipliers which allow you to modify the time between waterings/mistings to match changing environment conditions.

ORIENTATION

This section should help you get to know the basic hardware components of Boom control and programming: the keypad, the screen, and magnets.

KEYPAD

CSC Controller Module Keypad

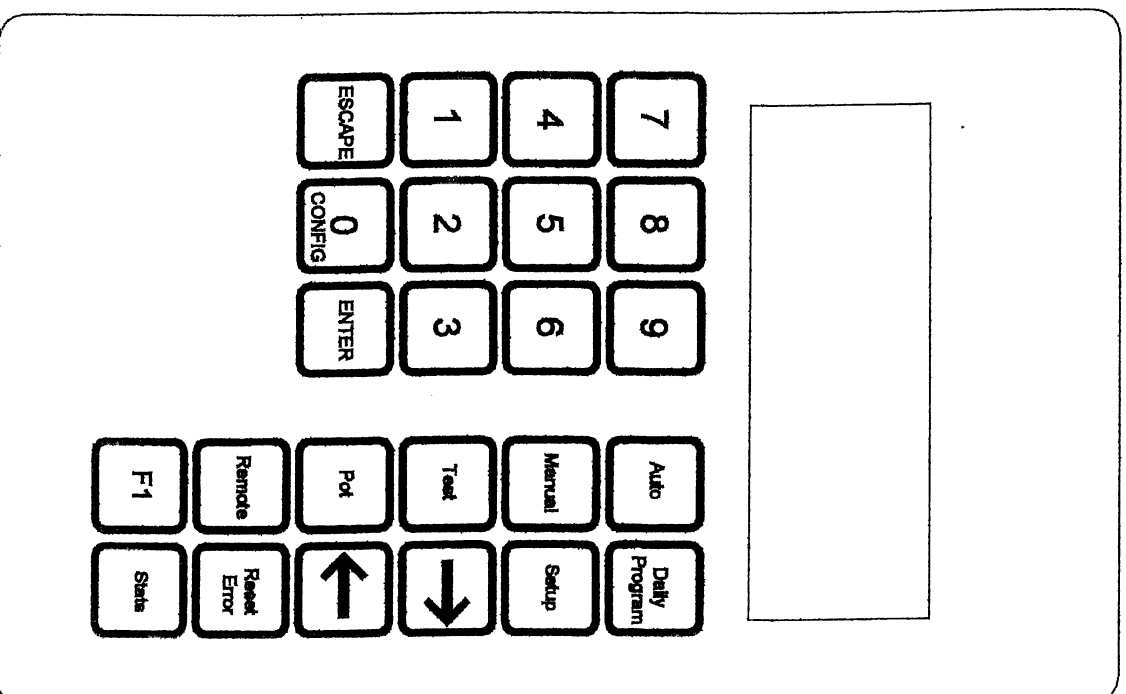


Figure 1—Common Sense Controller Module Keypad

Main Editing Keys

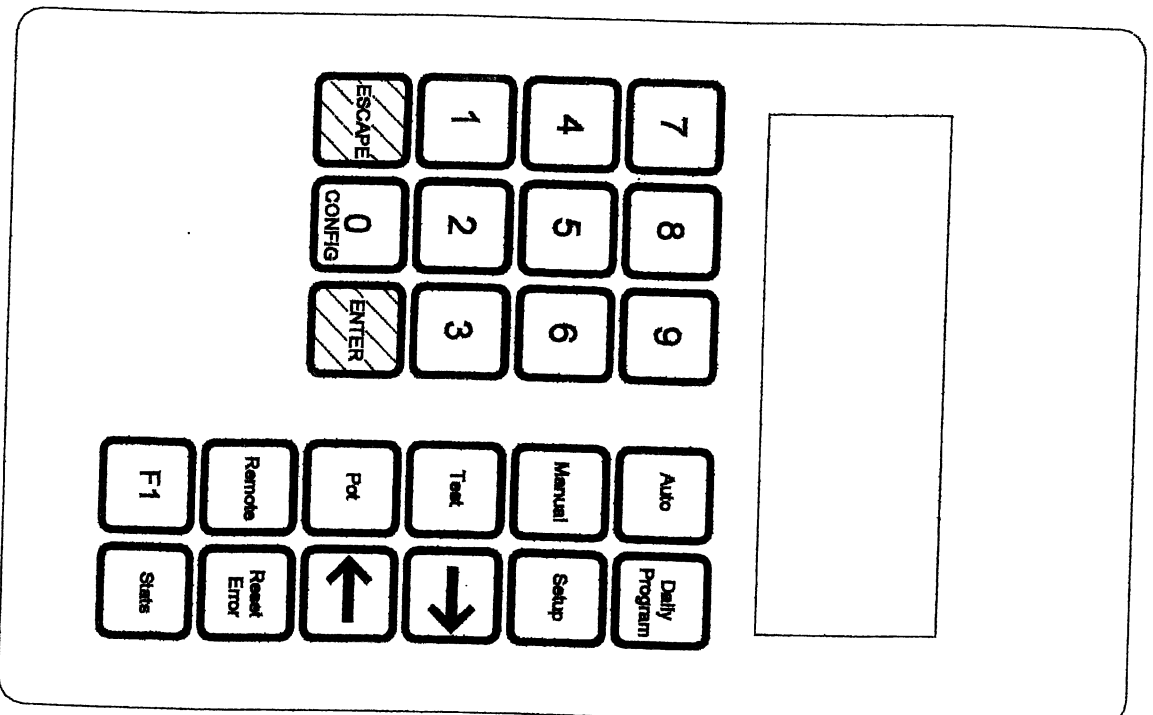


Figure 2—Main Editing Keys

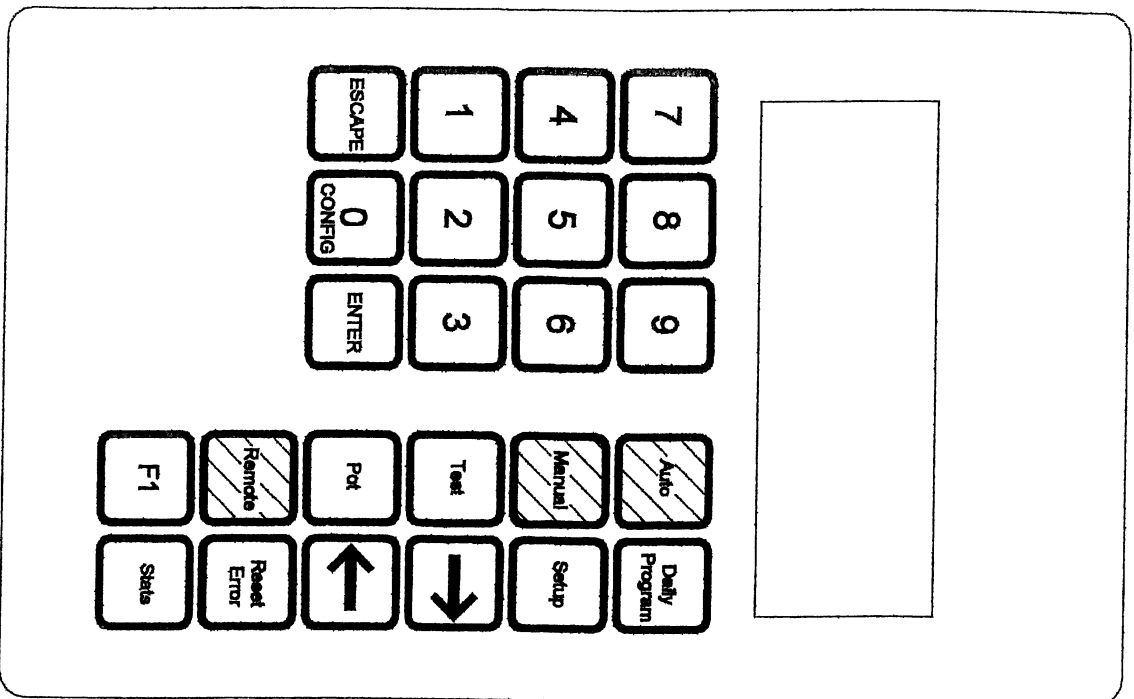


Press this key to save entered information and move to another screen



- 1) Press This Key to Exit a screen without saving anything.
- 2) Press This Key to exit a screen loop (a series of screens that keeps repeating). Press [ENTER] first to save information and move to a screen in the loop where you don't plan to enter anything, *then* press [EXIT] to leave the loop.

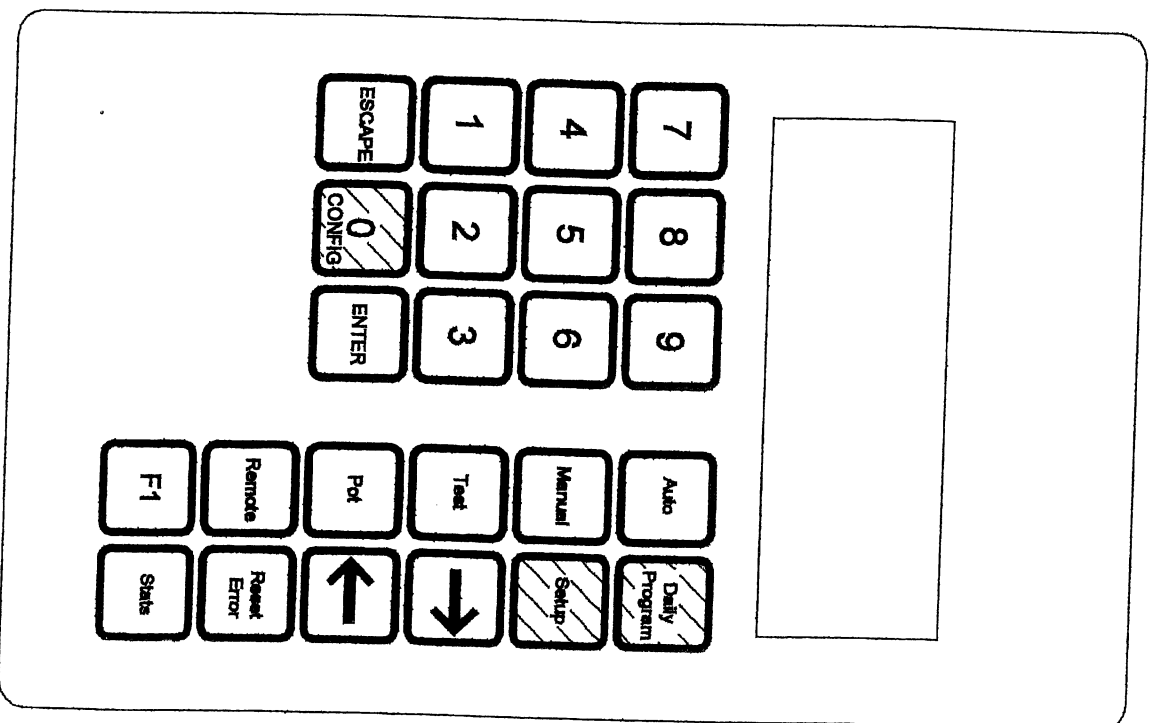
Main Mode Keys



Press one of these to enter the corresponding mode (mode roughly means method of operation).

Figurs 3—CSC Mode Keys

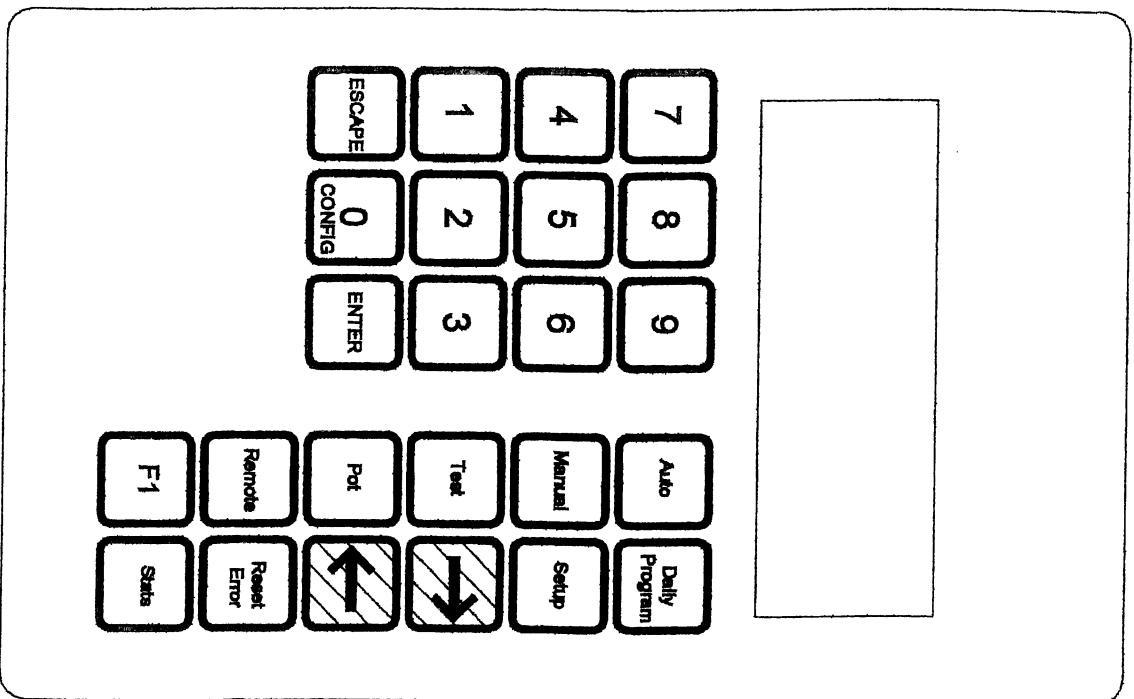
Menu Keys



First Press
the desired
Mode Key;
then press
one of
these Menu
Keys to
enter the
corresponding
menu for
that mode.
These
menus are
generally
different for
each mode.

Figure 4—CSC Menu Keys

Arrow Keys

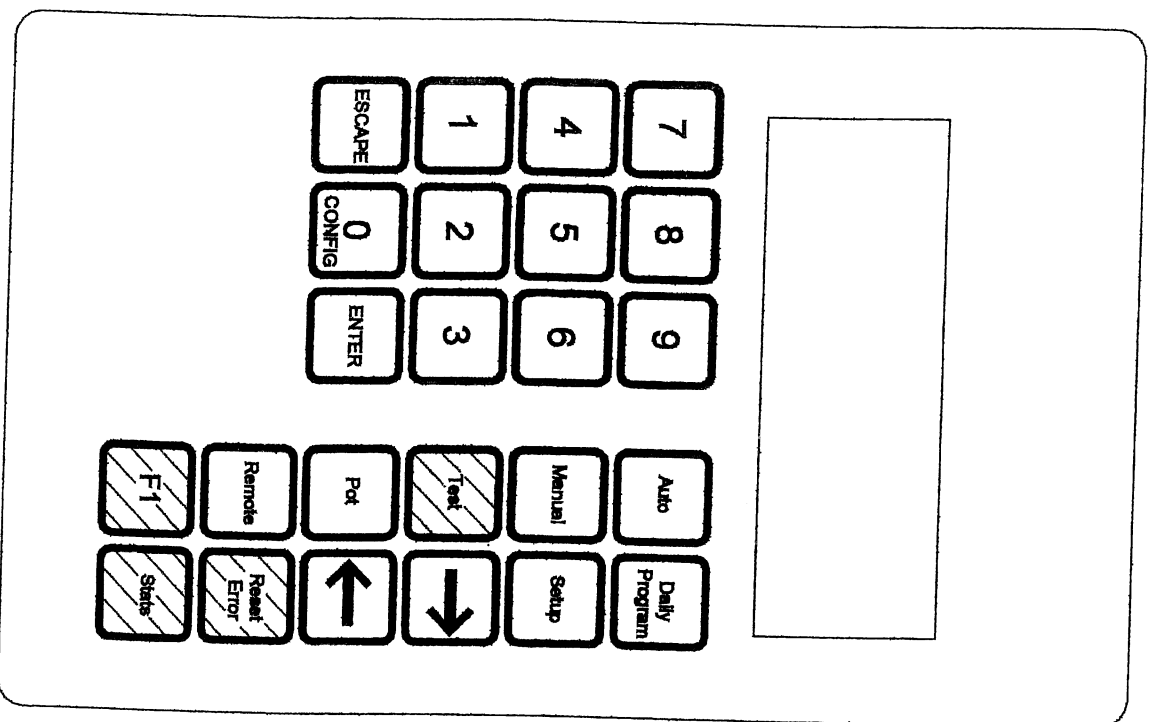


Use these
Keys to:

- 1) Move between fields in a screen.
- 2) Show additional Information that doesn't initially fit on the screen.

Figure 5—CSC Arrow Keys

Miscellaneous Keys



Press this key to access the 'Test Mode' (actually a menu of procedures for testing your boom equipment).



Press This key to access the screen where valve delay (the amount of time between when the magnet sensor senses a magnet and the valves turn on to water the plants) is determined.



Press this key to clear an alarm and allow the boom to continue working.



Shows a journal of what the boom has done since you last cleared the stats, *and* what the boom is doing at this moment.

Figure 6—Misc Keys

MAGNETS AND MAGNET READERS

Magnets are used as boundary markers for zones, and as out-of-range markers. All of the magnets which delineate zones are located on one rail, to be read by the forward and reverse sensors on the corresponding side of the boom. The out-of-bounds magnets are located at the ends of the bay on the other rail, and the boom has a sensor just for them.

SCREENS

The screens are very basic, generally containing few software components.

There is the menu type, containing only menu options denoted by numbers which are accessible only through pressing those numbers:

- 1) STATISTICS
- 2) CROP STATUS
- 3) ERRORS
- 4) CLR STATS/ERRORS

Figure 7—Stats- Central Menu

Then there is the type which has no menu or options but instead contains labeled data-entry 'fields'

```
START CROP ZONE: 01
END CROP ZONE: 01
VALVES      34
TOT ZONES: 02 CROP: 01
```

Figure 8—Crop 01 Edit Location Screen

- Besides data-entry fields, these may exhibit three types of information on their bottom lines:
- Software Location information- tells which crop one is editing/displaying (see above bottom right).
- Configuration information- tells, for instance, how many zones the boom is configured to have (See above bottom left & below bottom right).
- Directions- relevant pointers on what to do in a particular screen (See below middle two lines).

```

CROP : 02
ENTER CROP # TO
EDIT
TOTAL CROPS : 02

```

Figure 9—the ‘Choose a Crop to Edit’ Screen

TUTORIALS

These tutorials are intended to help you acquire a knowledge of the basic skills necessary for everyday operation of this equipment.

TUTORIAL 1: GETTING ACQUAINTED WITH THE BOOM/USER INTERFACE

This Tutorial is designed to help you get a feeling for how the keys interact with the screen, and how screens are structured.

Press any “Mode” button (Manual, Auto, or Remote- it doesn’t matter) and then press



to access the Configuration Menu (Config menu).

1	}	SET CLOCK
2	}	CROP ZONE DEFULTS
3	}	SPEED DEFAULTS
4)	NUMBER OF CROPS

There are four options on this screen, each leading to a new menu or screen. You select one by pressing the number key for that option. Press 1 to select "SET CLOCK".

DAY 1 09:32

ENTER NEW DAY/TIME

There should be a dark blank 'flashing' alternately with the 1. That means that you may enter a number into the space that is currently holding 1. Press

2

to 'tell' the controller that it is on day 2 of its 7 day schedule (totally arbitrary choice). The blank should still be flashing in that spot. This is useful if you have made a mistake, e.g. pressing [4] instead of [2], and need to correct it. But in this case, just move on by pressing the right pointed arrow key:

→

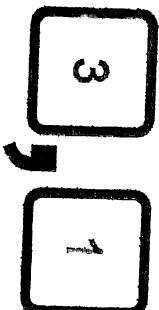
The blank should be 'over' (alternating in the space with) the first digit of the time (in this case, "0"). Assume that it is 2:31 p.m., which is 14:31 in military time. Press

1, 4

Note that the blank shifts back over the first digit (now a "1") in the hour space. To move to the minutes space, press the right-pointing arrow key:

→

Press [3], [1] to enter the time.



When you have done this, you are finished with this screen. Press



to save the data you have entered and exit the screen. You should be back here:

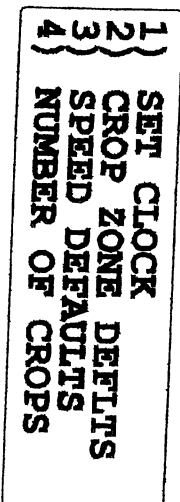


Figure 10— The CONFIG menu

If you want to go back and program the time to match your actual local time, go ahead.

TUTORIAL 2: Basic Boom Configuration

This Tutorial is designed to show you how to complete the basic configuration process which is the same for each mode.

Beginning

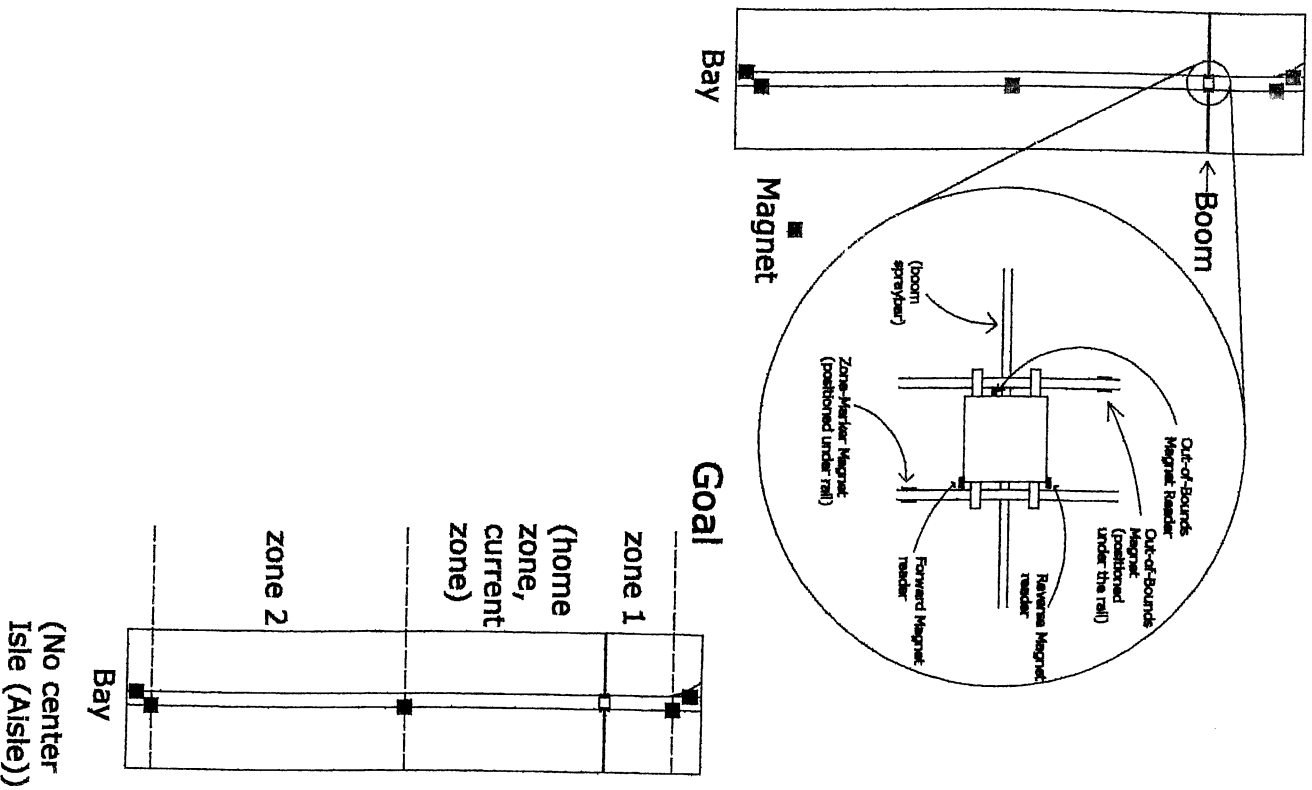


Figure 14—Tutorial 2 Overview

Note that there are three zone magnets, and two spaces between them. Each of these spaces is called a "crop zone" (controller lingo). So the bay has two crop zones total. Also note that this boom has only two spray bars, each of which has a separate valve. So the boom has two "Valves" (in controller lingo) - see APPENDIX 6: BAY LAYOUT on page 50 for a more thorough overview of bay layout

Press any "Mode" button (Manual, Auto, or Remote- it doesn't matter) and then press



to access the Configuration Menu (Config menu).

- 1) SET CLOCK
- 2) CROP ZONE DEFPTS
- 3) SPEED DEFAULTS
- 4) NUMBER OF CROPS

Press

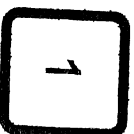


You should be looking at this screen:

- 1) TOTAL CROP ZONES
- 2) HOME & CURRENT
- 3) CENTER ISLE
- 4) CLEAR CROP ZONES

Figure 12--The "CROP ZONE DEFAULTS" sub-menu

Press

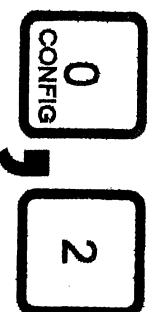


Now you should be looking at this screen:

TOTAL CROP ZONES : 02
TOTAL NUMBER OF
CROP ZONES (1-80)

Figure 13—TOTAL CROP ZONES screen

Press



To enter "02" as the "TOTAL (NUMBER OF) CROP ZONES"

Press



That should take you back to this screen:

1) TOTAL CROP ZONES
2) HOME & CURRENT
3 } CENTER ISLE
4) CLEAR CROP ZONES

Figure 14—The "CROP ZONE DEFAULTS" sub-menu

You've set up the bay hardware to have two crop zones; You've told the boom that it has two crop zones total; If you have followed the installation instructions, zone 01 is at the end of the bay where the sweep is (call this the "back end" of the bay), and the zone numbers increase in the forward direction (towards the "front end" of the bay).

Now it is time to program the Home and Current Zones; first, quick definitions:

Home Zone: the zone that the boom goes to when it has nothing to do.

Current Zone: the zone that the boom is in right now.

You should be here:

```

1 ) TOTAL CROP ZONES
2 ) HOME & CURRENT
3 ) CENTER ISLE
4 ) CLEAR CROP ZONES

```

Figure 15—The “CROP ZONE DEFAULTS” sub-menu

Press

2

Now you should be here:

```

HOME : 01
CURRENT : 01
ASSIGN A CROP ZONE
TOTAL CROP ZONES : 02

```

In a bay with more crop zones, you might want to put the Home Zone near the middle, so it can go anywhere in the bay quickly. In this case, set it as Zone 1.

The Current Zone is obviously Zone 1 (see tutorial overview graphic). Set it at Zone 1, and then press

ENTER

- and that brings you back here:

```

1 ) TOTAL CROP ZONES
2 ) HOME & CURRENT
3 ) CENTER ISLE
4 ) CLEAR CROP ZONES

```

What about option 3, “CENTER ISLE”? If you have an aisle cutting widthwise (perpendicular to the boom rails) across the bay, and there are no plants in it, then you probably don’t want to water it. Make sure you position magnets on either side and make a mental note on which number Zone it is in. Designating this ‘crop zone’ as a Center Aisle prevents the boom from watering it.

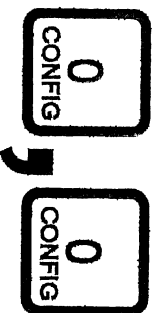
Note: This tutorial bay has no center Isle (Aisle).

This is the "CENTER ISLE" screen:

```

CENTER ISLE: 00
00 = NONE
ASSIGN A CROP ZONE
TOTAL CROP ZONES: 02
  
```

Press



to enter "00" which tells the boom that there is no Center Isle (see screen above).

Then press



once, and press



twice (to exit out of the Crop Zone Defaults menu and the Config menu).

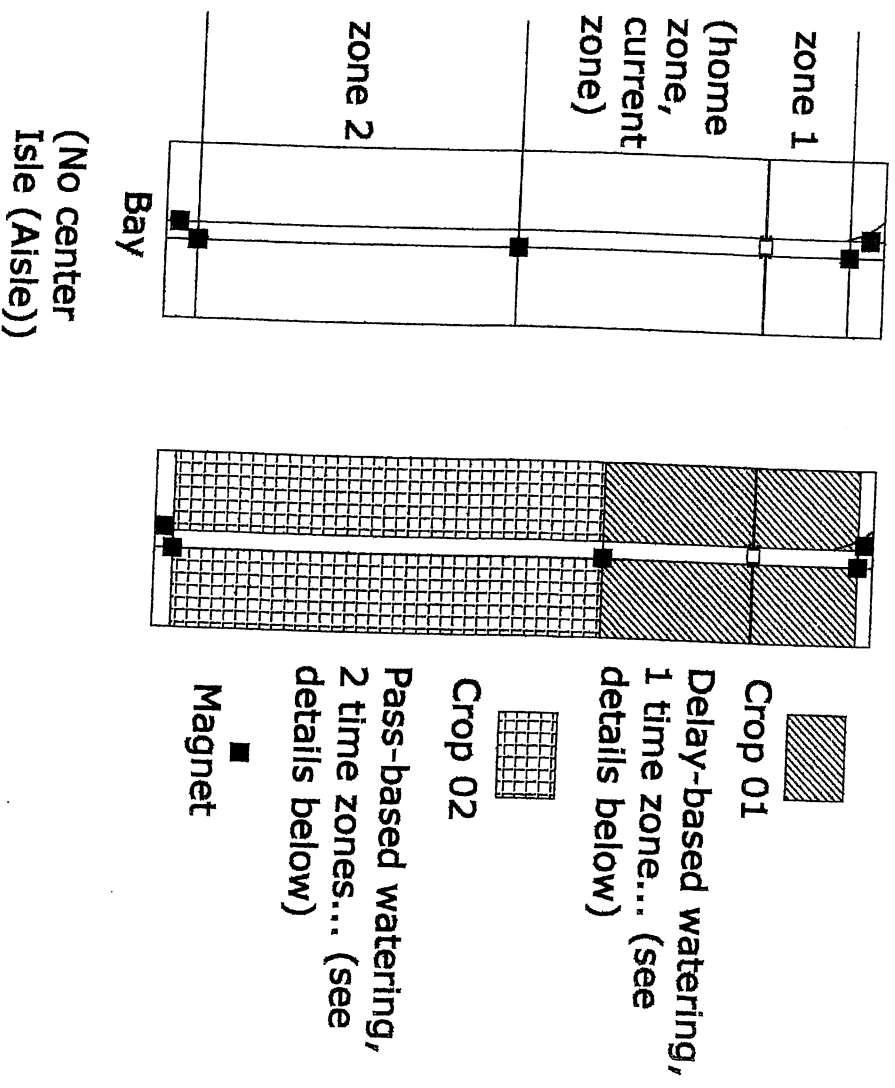
And you're done!

TUTORIAL 3: Programming Crops into the Controller

This Tutorial is designed to teach you to place and edit crops. Crop locations are the same across all modes, and are remembered between modes (when you change them in one mode, they change in all modes). It is also designed to teach you the basics of programming crop irrigation settings in Auto Mode.

Beginning

Goal



(No center Isle (Aisle))

Figure 16—Overview of Tutorial 3

(Detailed Goals- part of the overview shown above)

Crop 01

Delay-based misting

Scheduled for all 7 days of schedule

Priority Level 1

1 Time Zone: 08:00- 18:00 hrs

Delay of 10 minutes between passes

Jog Speed (Pass Speed) = 08

Crop 02

Pass-based watering

Scheduled for all 7 days of schedule

Priority Level 2

2 time zones: 1) 08:00-11:00 hrs; 2) 14:00-17:00 hrs

1st time zone- 08 passes

2nd time zone- 06 passes

Jog speed = 06

Translation:

I want the boom to do one misting pass at speed 8 over crop 01 every 10 minutes between 8 a.m and 6 p.m.

I want the boom to do eight watering passes at speed 6 over crop 02 beginning at ~8:00 a.m. I also want it to do 6 watering passes over crop 02 beginning at ~2:00 p.m.

Steps

The hardware should be set up, and the boom configured, as shown above left. (This beginning configuration is precisely the result of tutorial 2)

Press:



to enter Auto Mode

Press: