Network Irrigation Controller
"NIC"
Jobbing w/ Magnets

Version A.28

CHEAT SHEET

CHERRY
CREEK
SYSTEMS
Greenhouse Equipment Specialists

Key Concepts
*** Read this First! ***

It is advisable that this order is followed when working through the manual and setting up your boom:

1. Key Concepts
2. Initial Power Up
3. Diagnostics
4. Setup

The **Network Irrigation Controller** (hereafter NIC) was designed to provide flexibility and control while maintaining a simple menu-based programming system. While still sophisticated, the NIC still attempts to tailor to the grower. Through the various programmable speeds along with left and right solenoid control, the NIC allows operators to manipulate water usage and time needed when watering crops. The controller's advanced memory features allow an array of customized options for programming. Growers will find the ease of use and the accuracy of the controller reassuring, as it can be taught to anyone with very little training.

The NIC can hold up to **14 different Time Zones**, each containing a specific start and end time. These Time Zones can all be run simultaneously or separately and can be programmed with individual, customized time delays (*Intervals*).

After the time zones are established each one may be programmed with "***Jobs"***. The NIC is able to store up to 60 "Jobs" for each direction, in each Time Zone. Each job within a Time Zone can have its own speed as well as solenoid valve pattern giving you a vast array of watering options.

As you set up your NIC for the first time, read through each section of this manual before implementing the steps described therein. This will help eliminate unnecessary confusion and frustration. If you need help with terms, please refer to the definitions section at the end of this manual.

Time Zone:

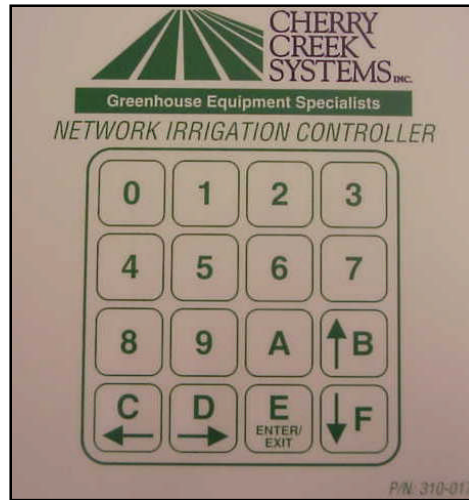This is a given period of time. Your NIC uses a 24 hour format:

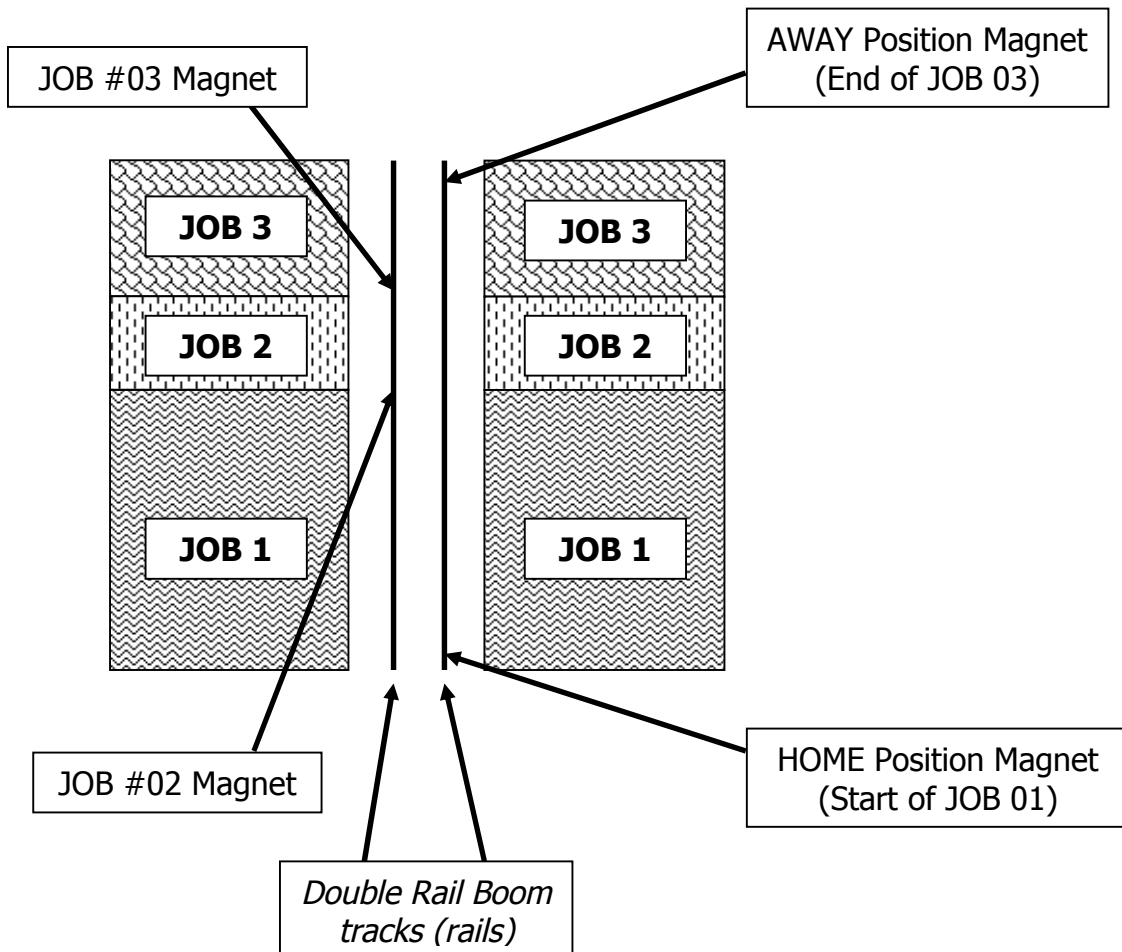|	
1:00 PM = 13:00	10:00 AM = 10:00
12:00 AM = 00:00	10:00 PM = 22:00

Keypad:

0-9 = Data Entry
E = Enter or Exit
B = Up / Increase
F = Down / Decrease
C = Left / Forward
D = Right / Back

Jobbing:

Basically, there are 4 steps:

1. Set-up Home Position (Home stop)
2. Set-up Away Position (Away stop)
3. Set-up the number of Jobs to be executed (number of Job magnets)
4. Give the Boom the Crop watering instructions
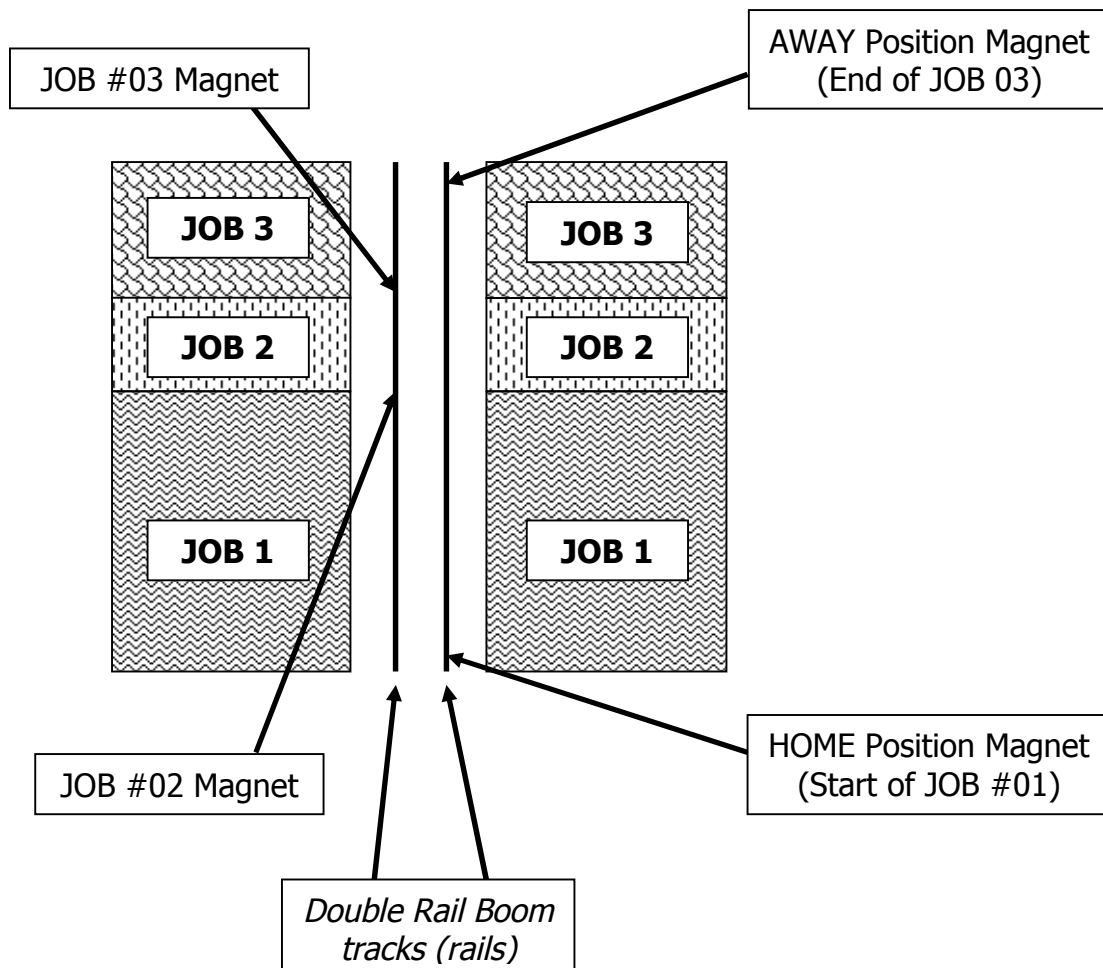
Operations

Manual Mode Programming (Jobs)

(Main, 2, 1)

** There are up to **60 JOBS** that can be programmed in the **Manual Mode** **

In order to function properly, the Number of JOBS programmed must correspond with the Number of Job magnets on the rail. If this is not done, the "JOB COUNT ERROR" will appear on the screen and stop the Booms operation until corrected. JOB 01 starts at the Home Magnet and end when the Boom sees the first JOB Magnet (JOB 02 Magnet). JOB 02 starts at the first JOB magnet and ends at the next JOB Magnet.....et cetera.....

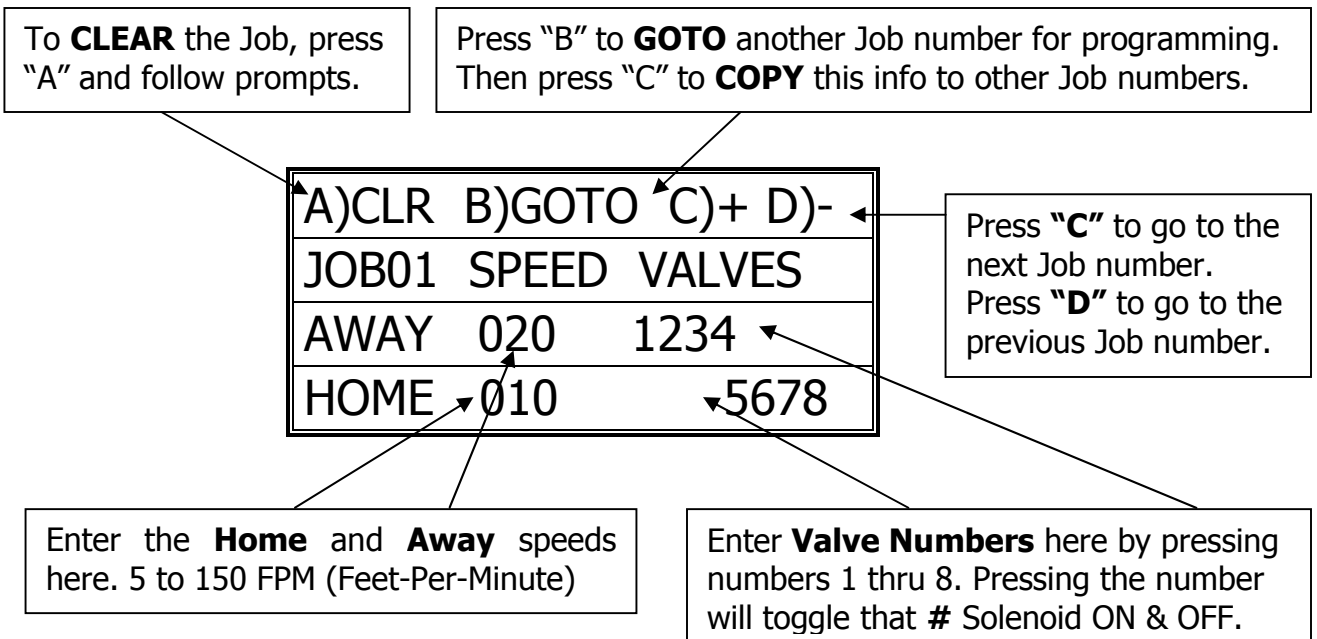<u>*As shown in drawing below:*</u>

AWAY Position Magnet
(End of JOB 03)

JOB #03 Magnet

JOB 3   JOB 3

JOB 2   JOB 2

JOB 1   JOB 1

JOB #02 Magnet

HOME Position Magnet
(Start of JOB #01)

Double Rail Boom tracks (rails)

1. From the Main Menu press 2 for Manual. The following screen will appear:

| MANUAL MODE: |
| ENTER 1 FOR JOBS |
| ENTER 7 TO BEGIN |
| ENTER E TO EXIT |

2. Press "1" to enter the Jobs Programming screen.
3. The black cursor will scroll thru the screen by pressing "F" to move forward, and "D" to move back.

Exploded view of the **Manual Mode Programming** *Screen:*

To **CLEAR** the Job, press "A" and follow prompts.

Press "B" to **GOTO** another Job number for programming. Then press "C" to **COPY** this info to other Job numbers.

A)CLR B)GOTO C)+ D)-
JOB01 SPEED VALVES
AWAY 020 1234
HOME 010 5678

Press **"C"** to go to the next Job number.
Press **"D"** to go to the previous Job number.

Enter the **Home** and **Away** speeds here. 5 to 150 FPM (Feet-Per-Minute)

Enter **Valve Numbers** here by pressing numbers 1 thru 8. Pressing the number will toggle that **#** Solenoid ON & OFF.

4. Program the Job as desired per the user application and press "F" to scroll to the next Job for programming. If, for example, only JOB #01 is needed, the cursor must toggle to the next Job (DO NOT program that next Job), then **press "E" to go to the Pass Count** menu. If the cursor is not toggled to the next Job screen, that last Job programmed will not be saved and will not run. This will also result in a "JOB COUNT ERROR" and stop the operation of the Boom until the problem is fixed.

```
┌─────────────────────────────┐
│ NUMBER  OF  JOBS  03        │
├─────────────────────────────┤
│ ENTER THE PASS COUNT        │
├─────────────────────────────┤
│ THEN F KEY TO ENTER         │
├─────────────────────────────┤
│ TOTAL PASS COUNT 005        │
└─────────────────────────────┘
```

5. Enter the Number of **Passes** that the Boom needs to run over the crop. Remember that a Pass is defined by the user in the Set-Up menu. The actual number of Passes that the Boom will make back and forth is effected by the users definition of a "PASS".
The **Pass Count** can be set from 001 to 099 passes. Depending on the application, it is common to assign 2 to 10 passes to saturate the crop below the Boom.

6. Press "F" to Save and Exit back to the Manual Mode main menu.

Manual Mode Run (Jobs)
(Main, 2, 7)

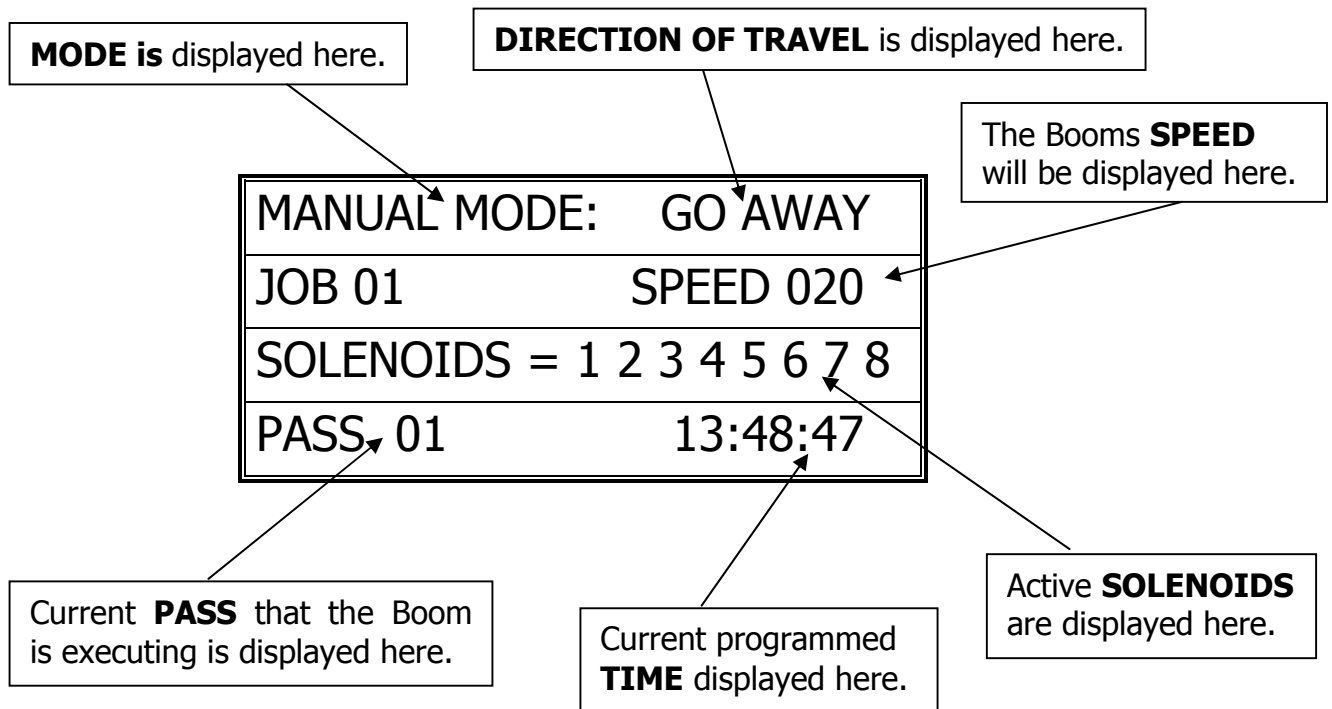1. From Main menu press 2 for Manual. The following screen will appear:

```
┌─────────────────────────────┐
│ MANUAL  MODE:               │
├─────────────────────────────┤
│ ENTER  1  FOR  JOBS         │
├─────────────────────────────┤
│ ENTER  7  TO  BEGIN         │
├─────────────────────────────┤
│ ENTER  E  TO  EXIT          │
└─────────────────────────────┘
```

2. Make sure that the Boom is started (BEGIN) when the **Home Magnet Reader** is under the Home Magnet. To locate the boom at the home position, go into the Diagnostics menu and send the Boom Home, the Boom will stop under the Home magnet, ready for its next command.

3. Press **"7" to BEGIN the Manual Mode Run**. The screen will show the following information during the Irrigation Cycle:

(NEXT PAGE)

*Exploded view of the **Manual Mode Run** Screen:*

MODE is displayed here.

DIRECTION OF TRAVEL is displayed here.

The Booms SPEED will be displayed here.

```
MANUAL MODE:    GO AWAY
JOB 01              SPEED 020
SOLENOIDS = 1 2 3 4 5 6 7 8
PASS 01             13:48:47
```

Current PASS that the Boom is executing is displayed here.

Current programmed TIME displayed here.

Active SOLENOIDS are displayed here.

7. **Press "0" to SUSPEND** the Booms Manual Mode Run.
   Press "0" again to RESUME the Booms operation.
8. **Press "E" to STOP** the Boom and Exit to the Manual Mode menu.

Auto Zones (Time Activated Programming)
(Main, 1, enter 1-E)

Auto Zone = A specific period of time that will activate the   Booms operation as programmed.

Jobs = Number of Jobs that the programmed Auto Zone will execute.

Start Time = Time that the Boom will Start this Zones Auto Program execution.
.
Stop Time = Time that the Boom will Stop this Zones Auto Program execution.

Interval = Amount of minutes between Pass execution.

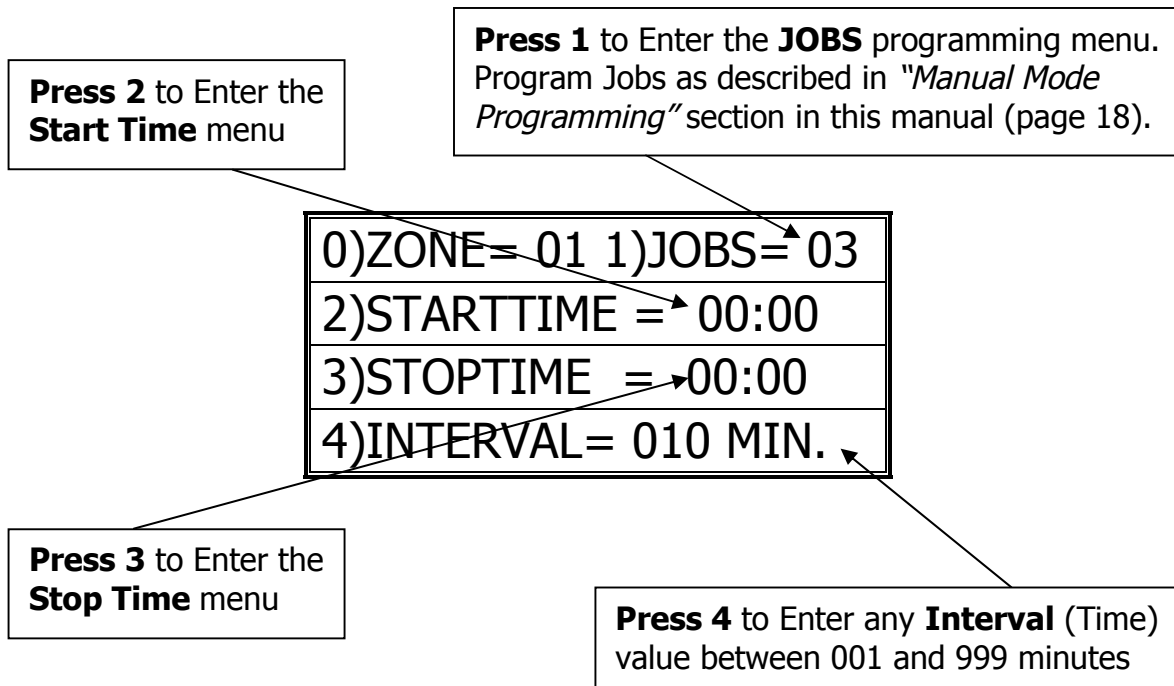*Pass* = Starts at Home, goes to Away, then turns around and comes back Home.
   * *Unless programmed differently by the user under the Set-Up menu.*

1. From the Main Menu Press 1 (AUTO)

ENTER AUTO ZONE NUMB
1 THRU E TIME ZONE #
TO ENTER AUTO MODE
PRESS THE F KEY

2. Enter the Auto Zone Number 1 thru E (14 Zones total) to be programmed. The following screen will appear:

*Exploded view of the **Auto Zone** Main Menu:*

Press 1 to Enter the **JOBS** programming menu. Program Jobs as described in *"Manual Mode Programming"* section in this manual (page 18).

Press 2 to Enter the **Start Time** menu

0)ZONE= 01 1)JOBS= 03
2)STARTTIME = 00:00
3)STOPTIME = 00:00
4)INTERVAL= 010 MIN.

Press 3 to Enter the **Stop Time** menu

Press 4 to Enter any **Interval** (Time) value between 001 and 999 minutes

3. Press "1" to Enter the *"Job Programming"* menu. Program Jobs as described in *"Manual Mode Programming"* section in this manual (page 18).
4. Press "2" to program a Start Time and then press "3" to program a Stop Time for this Auto Zone. Program time in 24 hour format. The following programming screen will appear:

TIME VARIABLE = 00:00
ENTER 24 HOUR FORMAT
F = ENTER NEW TIME
NEW TIME VAR. = 17:43

5. Press "F" to Save and Exit to the Auto Zone menu.

6. Press "4" to enter the *Interval Menu*. The user will program the **Interval Time and the Pass Count** in this menu.
   The following programming screen will appear:

PASS INTERVAL = 000 MIN
CHANGE TIME = 0 TO 9
ENTER TIME = F KEY
NEW INTERVAL = 045 MIN

7. Enter needed *Interval Time* (001 to 255 min.). Press "F" to Save and Exit.

NUMBER OF JOBS 03
ENTER THE PASS COUNT
THEN F KEY TO ENTER
TOTAL PASS COUNT 002

8. Enter the *Pass Count* desired for this Auto Zone (000 to 099 passes).
9. Press "F" to Save and Exit to the *Auto Zone Menu*. Press "0" to enter another Auto Zone program (1-E).

ENTER AUTO ZONE NUMB
1 THRU E TIME ZONE #
TO ENTER AUTO MODE
PRESS THE F KEY

10. Press "0" to enter another Auto Zone program (1-E).

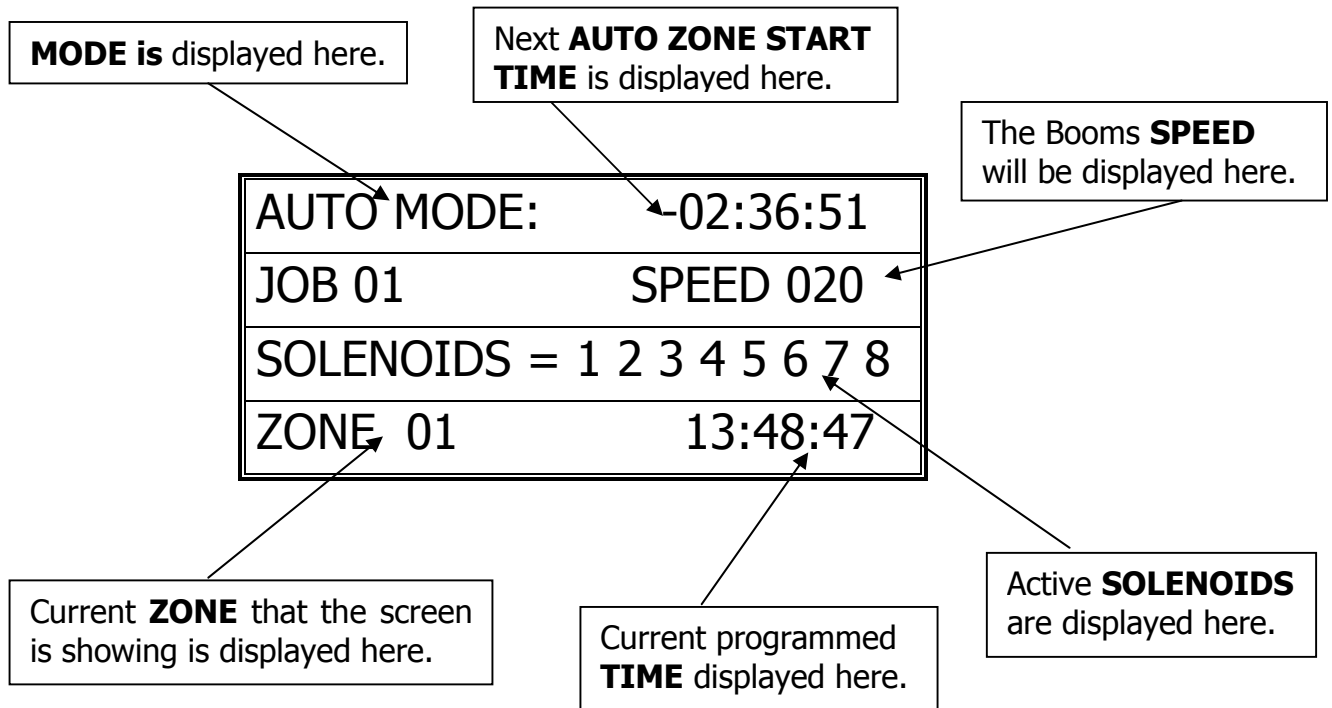11. Once all needed Auto Zones are programmed, press "F" in Auto Zone Main Menu to enter the **Auto Mode Run** *Menu*.

TO CHANGE ACTIVE
ZONES 1 3 56 8 ABC E
PRESS KEYS 1 THRU E
0 KEY EXIT, F KEY RUN

Toggle the **ACTIVE AUTO ZONES** On & Off by pressing the 1 thru E keys
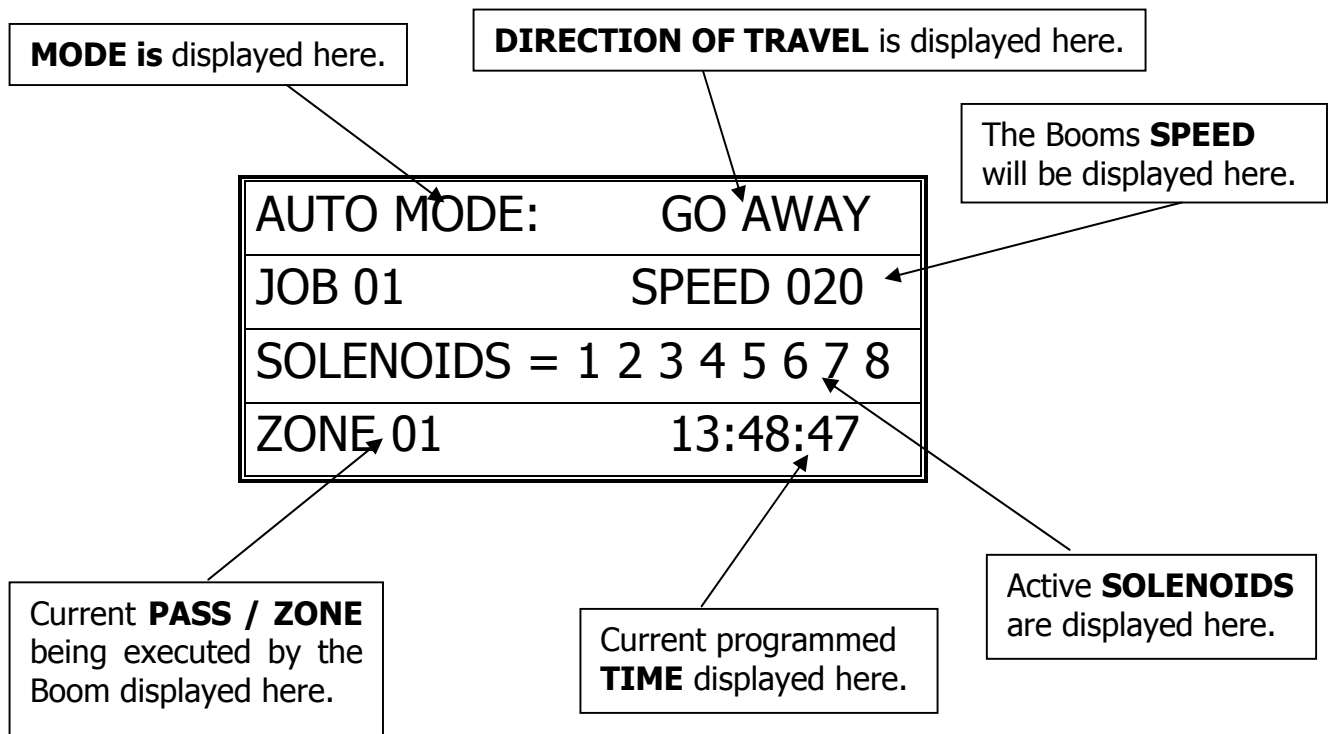
Program all needed Auto Zones before Pressing "F" to enter the Auto Mode Menu

12. Enter the number of Auto Zones desired (1 thru E) and press "F" to **RUN**.

*Exploded view of the **Auto Mode <u>Idle</u>** Screen:*

MODE is displayed here.	Next **AUTO ZONE START TIME** is displayed here.

The Booms **SPEED** will be displayed here.

```
AUTO MODE:        -02:36:51
JOB 01            SPEED 020
SOLENOIDS = 1 2 3 4 5 6 7 8
ZONE 01              13:48:47
```

Current **ZONE** that the screen is showing is displayed here.

Current programmed **TIME** displayed here.

Active **SOLENOIDS** are displayed here.

*Exploded view of the **Auto Mode <u>Run</u>** Screen:*

MODE is displayed here.	**DIRECTION OF TRAVEL** is displayed here.

The Booms **SPEED** will be displayed here.

```
AUTO MODE:        GO AWAY
JOB 01            SPEED 020
SOLENOIDS = 1 2 3 4 5 6 7 8
ZONE 01              13:48:47
```

Current **PASS / ZONE** being executed by the Boom displayed here.

Current programmed **TIME** displayed here.

Active **SOLENOIDS** are displayed here.

13. ***Press "0" to SUSPEND*** the Booms Auto Mode Run.
   Press "0" again to RESUME the Booms operation.
14. ***Press "E" to STOP*** the Boom and Exit to the Auto Mode menu.

*** *Before calling Tech Service, please try to RESET the Controller first. This will sometimes solve problems and is an easy step to correcting the problem before calling Tech Service. If the NIC is "locked-up", this will usually work to get the Controller functional again. Otherwise contact CCSI.* ***

One way to RESET the controller is to press the RESET button on the board (shown in the Mother Board diagram on the "Wiring Diagrams" pages). If there is not a button, there will be two pins; jump them together with the tip of a flathead screwdriver and that will RESET the controller as well. Another way of resetting it is by pressing 0 and F simultaneously. The NIC will stop the present operation and ask for a four-digit code. If you press (7638), the NIC will perform a software reset. All information will be lost, including all setup information. If you press (4273), the NIC will perform a hardware reset. Again, all information will be lost. If the wrong code is entered or E is pressed, the NIC will resume operation where it left off.

<u>**Note:**</u> *Resetting this way is helpful if you are having difficulty making the remote keypad respond.*

TECHNICAL ASSISTANCE: *If you have any questions regarding the use of this program or any other Cherry Creek Systems Product please call us at ………………………………………*

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