FLOW METER
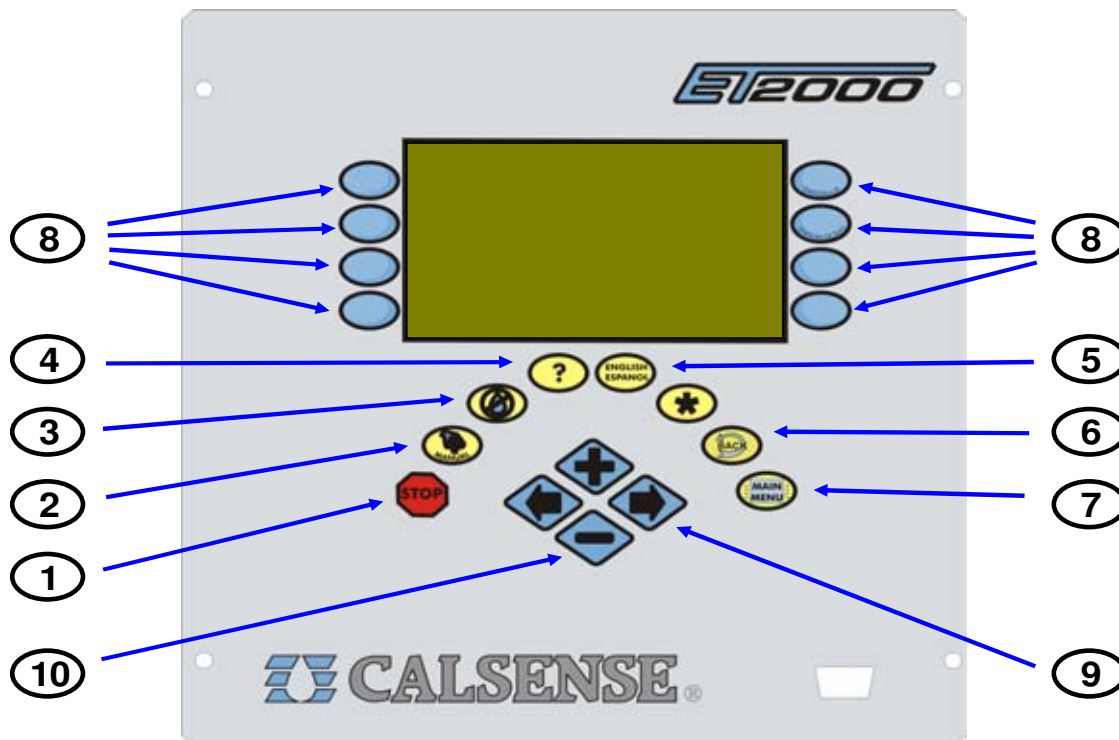
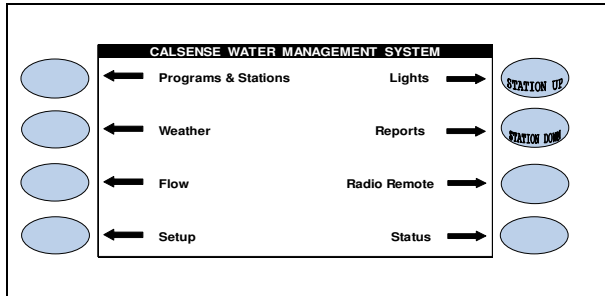💧 *ET2000 (500 SERIES) FLOW METER, MASTER VALVE & PUMP SETUP*

1 STOP – The STOP key will stop any currently running Scheduled watering Cycle, Manual Cycle, Test Cycle, Manual Programs.

2 MANUAL – The MANUAL key will perform Manual Water, Test, Master Valve Override and Manual Program 1 & 2, Walk-thru, Use Hold over.

3 NO WATER – The NO WATER key will turn the controller Off and set No Water Days.

4 ? – The ? key is used to access the controller's Help screens.

5 ENGLISH / ESPANOL – The ENGLISH / ESPANOL key allows you to toggle the displayed text between English and Spanish.

6 BACK – The BACK key will go back to the previous screen.

7 MAIN MENU – The MAIN MENU key is used to access the different program features of the controller.

8 MENU KEYS – MENU keys select the different features of commands in the different screens and are adjacent to the left and right side of the controller's display screen. The text in the screen will point towards the MENU key that needs to be pressed.

9 LEFT / RIGHT ARROW KEYS – The LEFT / RIGHT ARROW keys move the highlighted cursor around the different screens when setting up or editing the controller's features and options.

10 PLUS / MINUS KEYS – The PLUS / MINUS keys increase or decrease values or answer Yes or No questions in the different screens.

making **water work**

since 1986

FLOW METER, MASTER VALVE & PUMP SETUP

1. Press the **MAIN MENU** key.

2. Press the **FLOW** menu key (Figure 1).

```
CALSENSE WATER MANAGEMENT SYSTEM

Programs & Stations          Lights          STATION UP

Weather                      Reports         STATION DOWN

Flow                         Radio Remote

Setup                        Status
```

Figure 1

The FLOW METER, MASTER VALVE & PUMP screen (Figure 2).

```
FLOW METER,  MASTER VALVE & PUMP

                             Flow Meter          STATION UP

                                                 STATION DOWN

Master Valve                 Mainline Capacity

Pump                         On-at-a-Time
```
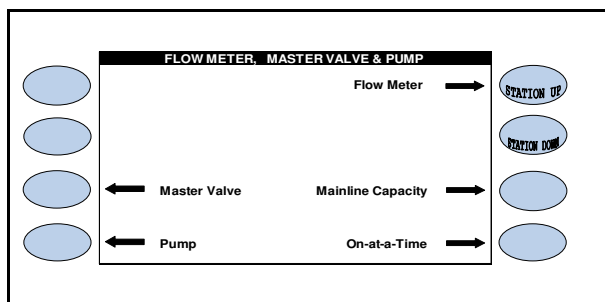
Figure 2

FLOW METER SETUP

From the Flow Meter, Master Valve & Pump screen (Figure 2).

1. Press the **FLOW METER** Menu key.

The FLOW METER screen (Figure 3).

```
FLOW METER

Is a Flow Meter in use ?    NO              STATION UP

                                            STATION DOWN
Do you want to track estimated
  water use for Reports?  NO
```
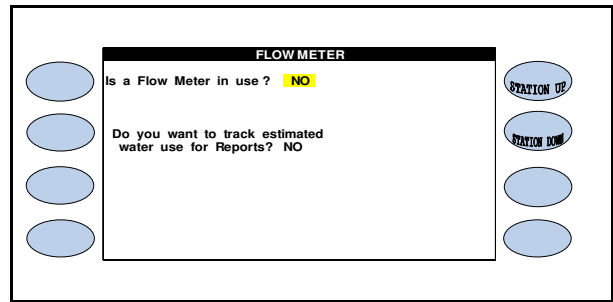
Figure 3

2. Press the **PLUS** or **MINUS** keys to change the IS A FLOW METER IN USE ? to YES.

The Flow Meter screen will appear (It will appear as shown in Figure 4 only after the Flow Meter In Use setting is set to YES).

```
FLOW METER

Is a Flow Meter in use ?    YES             STATION UP
Use your own K & Offset ? NO
            METER 1                         STATION DOWN

SIZE:  FM-1

(Expected Flow Rates can be
automatically learned.)          Learn Expecteds
```
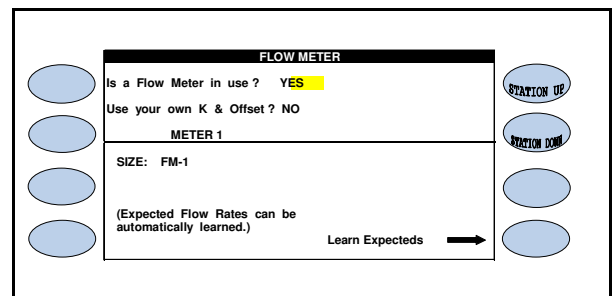
Figure 4

3. Press the blue **ARROW** key to move the cursor to the USE YOUR OWN K & OFFSET setting, this is set to NO as the default.

FMBX FLOW METER SETUP

If the flow meter installed on the system is a Calsense FMBX, change the Use your own K & Offset to YES, (The screen will appear as shown in Figure 5). If it is not an FMBX Flow Meter, move to the regular flow meter portion of this guide.

FLOW METER

Is a Flow Meter in use ?   YES

Use your own K & Offset ? YES

METER 1

K: 10.000
OFFSET: 0.200

(Expected Flow Rates can be automatically learned.)

Learn Expecteds ➡

STATION UP

STATION DOWN
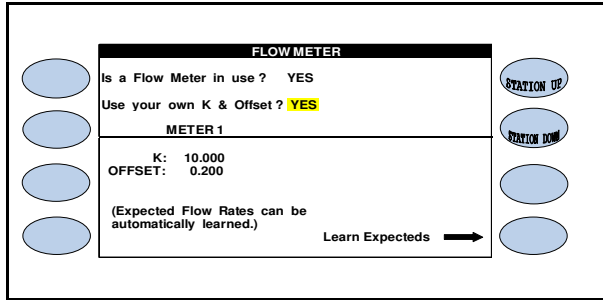
Figure 5

1. Press the blue **ARROW** keys to move the cursor to the K: setting.

2. Use the **PLUS,** or **MINUS** keys to change the number.

3. Press the blue **ARROW** keys to move the cursor to the OFFSET: setting.

4. Use the **PLUS,** or **MINUS** keys to change the number.

Note: The two settings that must be set are the K value and the Offset. Follow the instructions that are in the Specifications Section of this manual, or call Calsense at 1-(800)-572-8608 for assistance.

💧 *REGULAR FLOW METER SETUP*

If the answer to Use your own K & Offset is NO.

1. Press the blue **ARROW** keys to move the cursor to the SIZE setting.

2. Press the **PLUS ,** or **MINUS** keys to change the flow meter type.

Refer to the chart below to choose the correct flow meter type (Figure 6).

MODEL NUMBER	SIZE	
FM-1	1"	PLASTIC FLOW METER
FM-1B	1"	BRASS FLOW METER
FM-1,25B	1 ¼"	BRASS FLOW METER
FM-1.5	1 ½"	PLASTIC FLOW METER
FM-2	2"	PLASTIC FLOW METER
FM-3	3"	PLASTIC FLOW METER

Figure 6

Note: Most Calsense Controllers are connected to only one flow meter, which is why the choice of flow meter model heading in the example screens shows only Meter 1. If the controller has the (-F) option installed (use of multiple flow meters), there will be three headings, Meter 1, Meter 2 and Meter 3, and a choice of model for each flow meter installed.

💧 *LEARN EXPECTEDS*

After you have entered the appropriate Flow Meter(s).

1. Press the LEARN EXPECTEDS Menu key (Figure 7).

FLOW METER

Is a Flow Meter in use ?   YES

Use your own K & Offset ? NO

METER 1

SIZE: FM-1

(Expected Flow Rates can be automatically learned.)

Learn Expecteds ➡

STATION UP

STATION DOWN
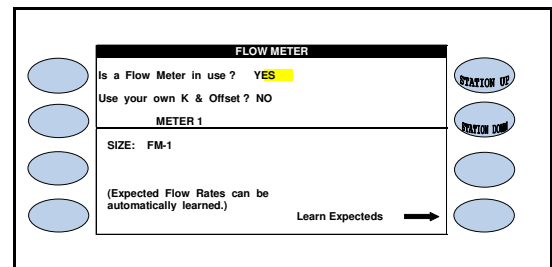
Figure 7

The LEARN THE EXPECTED FLOW RATES screen (Figure 8).

LEARN THE EXPECTED FLOW RATES

At the next program start , turn on each station and use the measured flow to set the expected flow rate.

Learn The Expected Flow Rates for:

PROG A	NO
PROG B	NO
PROG C	NO
PROG D	NO
PROG E	NO
DRIP 1	NO
DRIP 2	NO

STATION UP

STATION DOWN

Figure 8

- **LEARN EXPECTEDS:** This allows you to learn the expected flow rate for each station assigned to a program. Once the flow rate has been successfully recorded in the controller the entry on the screen will default back to no. The expected flow rate will not be changed again until this entry is changed to YES for a particular program.

💧 *LINE FILL & VALVE CLOSE TIMES*

After the flow meter has been enabled at the Flow Meter screen as described on the previous page,

1. Press the **BACK** key twice.

The FLOW METER, MASTER VALVE & PUMP screen (Figure 9).

FLOW METER, MASTER VALVE & PUMP

← Line Fill & Valve Close Times   Flow Meter →

          Flow Checking →

← Master Valve   Mainline Capacity →

← Pump   On-at-a-Time →

STATION UP

STATION DOWN
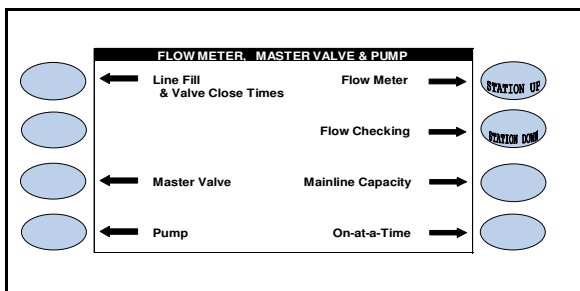
Figure 9

The Line Fill and Valve Close times are used to allow each valve time to stabilize before checking flow for that particular station within a program.

2. Press the **LINE FILL & VALVE CLOSE TIMES** Menu key.

The LINE FILL & VALVE CLOSE TIMES screen (Figure 10).

LINE FILL & VALVE CLOSE TIMES

	Line Fill	Valve Close
PROG A	60	60
PROG B	60	60
PROG C	60	60
PROG D	60	60
PROG E	60	60
DRIP 1	60	60
DRIP 2	60	60

(times are in seconds)

STATION UP

STATION DOWN
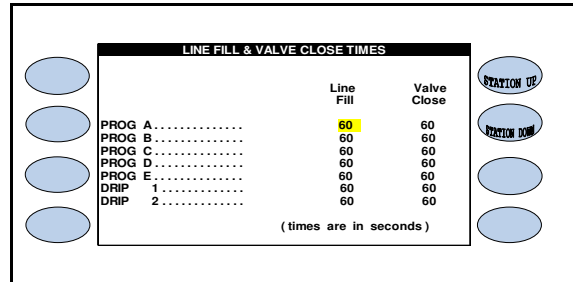
Figure 10

LINE FILL TIMES: The delay time in seconds that the controller will wait to check flow rates on a station allowing the flow to stabilize.

VALVE CLOSE TIMES: The delay time in seconds that the controller will wait to check flow on the very next valve allowing time for the previous valve to close.
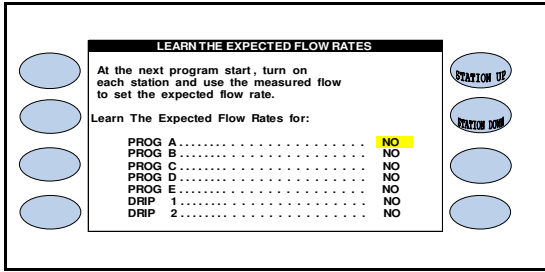
3. Press the blue **ARROW** keys to move the cursor to the PROGRAM A LINE FILL TIME.

4. Use the **PLUS** or **MINUS** keys to set the desired seconds.

Use this same method to change the VALVE CLOSE TIME for program A and then repeat these steps for each program on the list.

5. Press the **BACK** key to return to the Flow Meter, Master Valve & Pump screen (Figure 11).

💧 *MASTER VALVE*

From the FLOW METER, MASTER VALVE & PUMP screen

1. ⬭ Press the **MASTER VALVE** Menu key.

```
        FLOW METER,  MASTER VALVE & PUMP
⬭  ←  Line Fill                Flow Meter   →   STATION UP
         & Valve Close Times
⬭                              Flow Checking  →   STATION DOWN
⬭  ←  Master Valve           Mainline Capacity →  ⬭
⬭  ←  Pump                    On-at-a-Time    →   ⬭
```
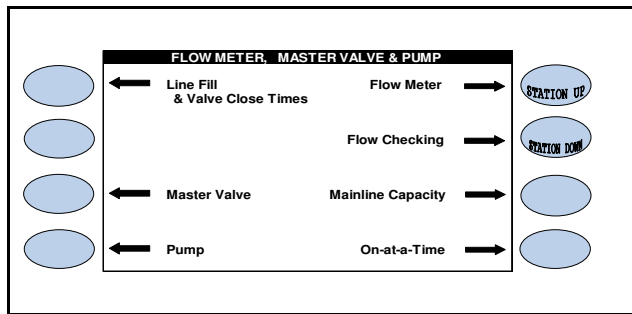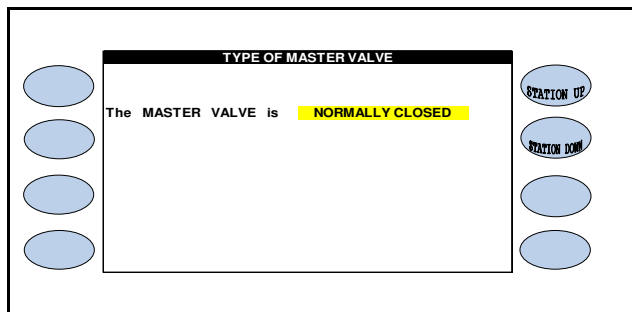
Figure 11

The TYPE OF MASTER VALVE screen (Figure 12).

```
              TYPE OF MASTER VALVE
⬭                                              STATION UP
     The  MASTER VALVE  is      NORMALLY CLOSED
⬭                                              STATION DOWN
⬭                                              ⬭
⬭                                              ⬭
```

Figure 12

The Master Valve default setting is for a normally closed Master Valve. There are two (2) settings,

- **NORMALLY CLOSED:** A normally closed master Valve is in the closed position until voltage is applied to open it.
- **NORMALLY OPEN:** A normally open Master Valve is in the open position until voltage is applied to close it.

Note: Be sure to select the correct type of Master Valve installed, if it is incorrect the Master Valve will close whenever a station is irrigated and no water will flow.
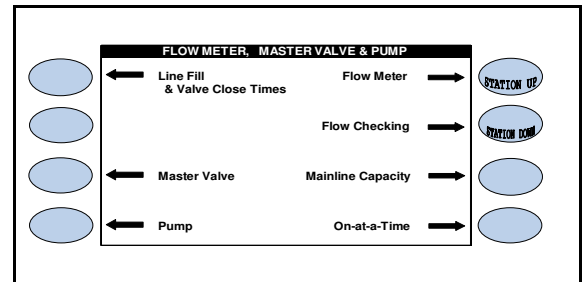
1. 🔙 Press the **BACK** key to return to the FLOW METER, MASTER VALVE & PUMP screen.

💧 *PUMP*

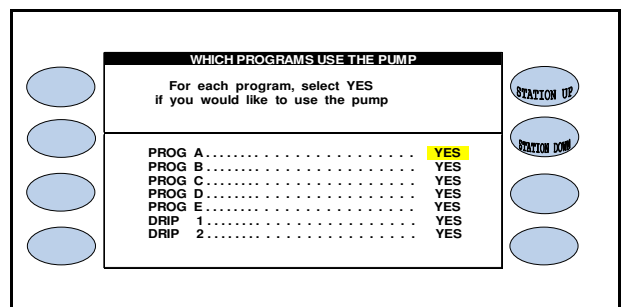From the FLOW METER, MASTER VALVE & PUMP SETUP screen,

1. ⬭ Press the **PUMP** Menu key (Figure 17).

Note: If you are using a pump for any one of your valves you will have to set the controller to recognize that there is a pump in use and on which program it will be used on.

```
        FLOW METER,  MASTER VALVE & PUMP
⬭  ←  Line Fill                Flow Meter   →   STATION UP
         & Valve Close Times
⬭                              Flow Checking  →   STATION DOWN
⬭  ←  Master Valve           Mainline Capacity →  ⬭
⬭  ←  Pump                    On-at-a-Time    →   ⬭
```

Figure 13

The WHICH PROGRAMS USE THE PUMP screen (Figure 14).

```
           WHICH PROGRAMS USE THE PUMP
⬭         For each program, select YES        STATION UP
       if you would like to use the pump
⬭                                             STATION DOWN
       PROG A.......................    YES
⬭      PROG B.......................    YES
       PROG C.......................    YES
       PROG D.......................    YES
⬭      PROG E.......................    YES
       DRIP  1......................    YES
       DRIP  2......................    YES
```

Figure 14

2. ✛ Press a blue **ARROW** key to move the cursor to the Program desired.

Note: The default setting is set to YES on all programs. This means that the controller's pump output will be activated whenever a station on any program is activated.

3. Press the **PLUS** or **MINUS** key to change any program.

Note: Set the Pump Output Enabled setting to NO. If the Pump Output Enabled setting is set to NO on a program, the pump output will not activate when a station on that program is activated.

4. Press the **BACK** key.

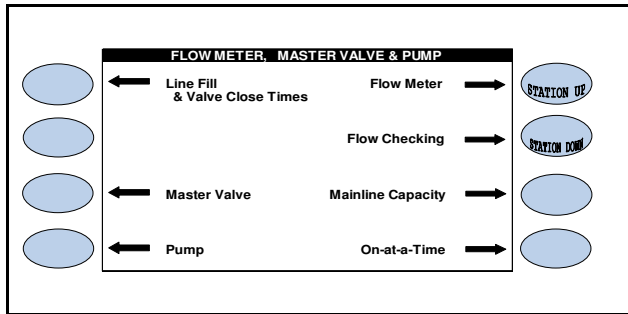The FLOW METER, MASTER VALVE & PUMP screen (Figure 15).

FLOW METER, MASTER VALVE & PUMP

Line Fill & Valve Close Times ← → Flow Meter → STATION UP

Flow Checking → STATION DOWN

Master Valve ← Mainline Capacity →

Pump ← On-at-a-Time →

Figure 15

💧 *MAINLINE CAPACITY*

System capacity is defined by the max amount of water that your system can operate at during irrigation. This is often dictated by the size of the Mainline.

From the FLOW METER, MASTER VALVE & PUMP screen.

1. Press the **MAINLINE CAPACITY** Menu key. (Figure 15).

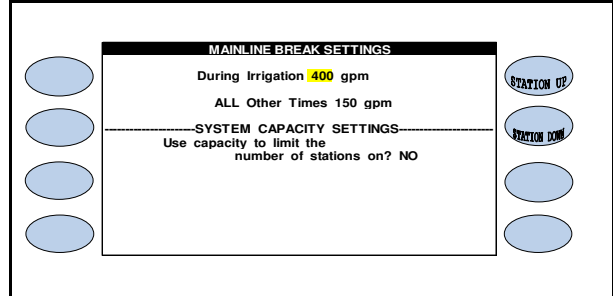The MAINLINE BREAK SETTINGS screen (Figure 16).

MAINLINE BREAK SETTINGS

During Irrigation 400 gpm

ALL Other Times 150 gpm

------SYSTEM CAPACITY SETTINGS------
Use capacity to limit the
number of stations on? NO

STATION UP

STATION DOWN

Figure 16

2. Press a blue **ARROW** keys to move the cursor to the DURING IRRIGATION gpm.

3. Press the **PLUS** or **MINUS** keys to change the number.

Use the same method to change the ALL OTHER TIMES number.

- **DURING IRRIGATION:** The during irrigation number is the mainline break number used while the controller is irrigating.

- **ALL OTHER TIMES:** The all other times number is the mainline break number used when the controller is not irrigating.

- **USE CAPACITY TO LIMIT THE NUMBER OF STATIONS ON ?:** If you want to Use capacity to limit the number of stations on change to YES.

This will open up the portion of the screen dealing with Capacity without Pump (Figure 17).

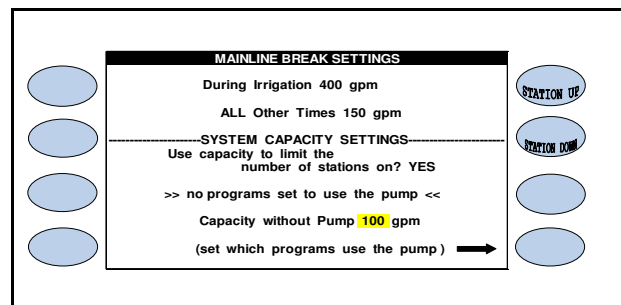4. Press the **PLUS** or **MINUS** key to change the limit number.

MAINLINE BREAK SETTINGS

During Irrigation 400 gpm

ALL Other Times 150 gpm

------SYSTEM CAPACITY SETTINGS------
Use capacity to limit the
number of stations on? YES

>> no programs set to use the pump <<

Capacity without Pump 100 gpm

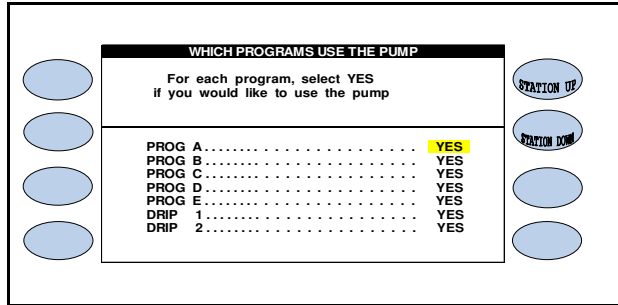(set which programs use the pump) →

STATION UP

STATION DOWN

Figure 17

If you did not select which SET WHICH PROGRAMS TO USE PUMP in the pump section of this manual then Press the **SET WHICH PROGRAMS TO USE THE PUMP** Menu key (Figure 17). To take you to the WHICH PROGRAMS USE THE PUMP screen (Figure 18).

WHICH PROGRAMS USE THE PUMP

For each program, select YES
if you would like to use the pump

PROG A	YES
PROG B	YES
PROG C	YES
PROG D	YES
PROG E	YES
DRIP 1	YES
DRIP 2	YES

Figure 18

5.   Press a blue **ARROW** key to move the cursor to the Program desired.
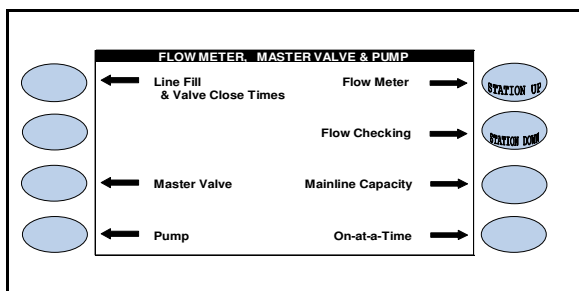
The default setting is set to YES on all programs, which means that the controller's pump output will be activated whenever a station on any program is activated.

6.   Press the **PLUS** or **MINUS** keys to change any program entry.

Note: Set the Pump Output Enabled setting to NO. If the Pump Output Enabled setting is set to NO on a program, the pump output will not activate when a station on that program is activated.

7.   Press the **BACK** key twice.

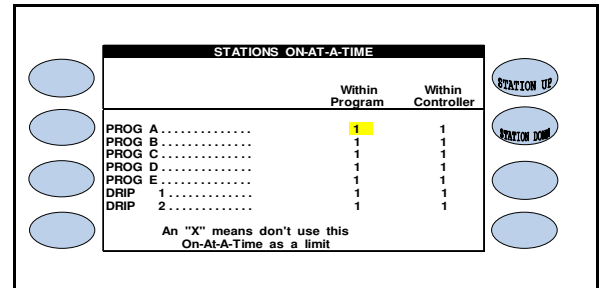The FLOW METER, MASTER VALVE & PUMP screen (Figure 19).

FLOW METER, MASTER VALVE & PUMP

Line Fill & Valve Close Times	Flow Meter
	Flow Checking
Master Valve	Mainline Capacity
Pump	On-at-a-Time

Figure 19

ON – AT – A – TIME

From the FLOW METER, MASTER VALVE & PUMP screen,

1.   Press the **ON-AT-A-TIME** Menu key (Figure 19).

The STATIONS ON-AT-A-TIME screen (Figure 20).

STATIONS ON-AT-A-TIME

	Within Program	Within Controller
PROG A	1	1
PROG B	1	1
PROG C	1	1
PROG D	1	1
PROG E	1	1
DRIP 1	1	1
DRIP 2	1	1

An "X" means don't use this
On-At-A-Time as a limit

Figure 20

On-at-a-time is defined as how many stations you want to run simultaneously within a program and also within a controller.

2.   Press a blue **ARROW** key to move the cursor to the Program and Within Program setting desired.

The default setting is set to 1 on all programs.

3.   Press the **PLUS** or **MINUS** keys for any number to change the setting.

WITHIN PROGRAM: This section allows you to choose the amount of valves that you want to set as a limit to come on at a time within a program.

WITHIN CONTROLLER: This section allows you to choose the amount of valves that you want to set as a limit to come on at a time within the controller.

Example:		
	Within Program	Within Controller
Program A	1	2
Program B	1	2

This scenario allows the user to set up one (1) valve on at a time for Programs A and B. The controller will allow both Programs to have one (1) valve each run simultaneously for a total of two (2) on within controller.

4. Press the **BACK** key.

The FLOW METER, MASTER VALVE & PUMP screen (Figure 21).

Figure 21

💧 *FLOW CHECKING*

From the Flow Meter, Master Valve & Pump Setup screen,
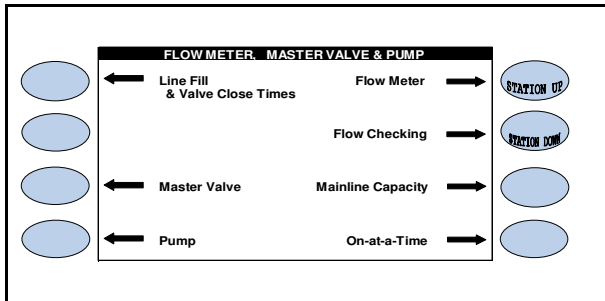
1. Press the **FLOW CHECKING** Menu key (Figure 21).

Note: Flow checking allows you to have the controller compare the flow of each station during irrigation to the learned expected flow and alert you of any problems.

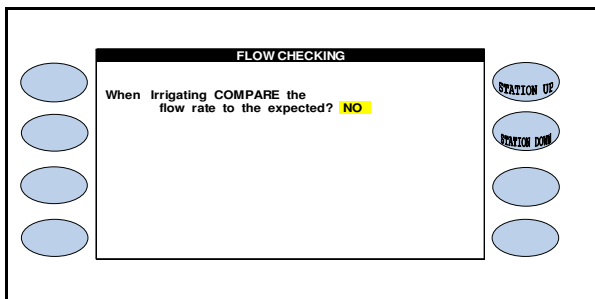The FLOW CHECKING screen (Figure 22).

Figure 22

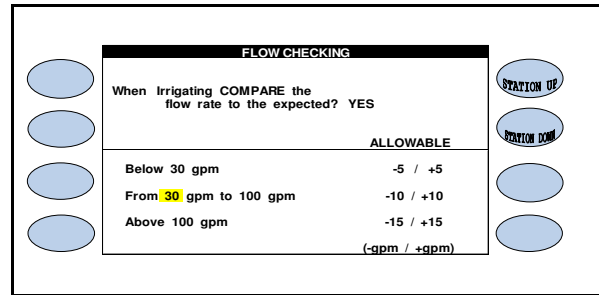This will open up the ALLOWABLE portion of the screen (Figure 23).

Figure 23

2. Press the blue **ARROW** keys to change the Allowable settings.

The default settings are:

BELOW:	-5 / +5
FROM / TO:	-10 / +10
ABOVE:	-15 / +15

3. Press the **PLUS** or **MINUS** key for any number to change the setting.

BELOW: This section allows you to set your lowest water flow measurements from your flow meter. It lets you set the range at which you want to be alerted.

FROM / TO: This section allows you to set the fluctuation limits for the full range of flow. In this box you want to enter the normal operating range of water flow. Then in the (-) and (+) blocks enter the normal fluctuation range.

ABOVE: This section allows you to set your highest water flow measurements from your flow meter. It lets you set the range at which you want to be alerted.

4. Press the **BACK** key to return to the FLOW METER, MASTER VALVE & PUMP screen (Figure 24).

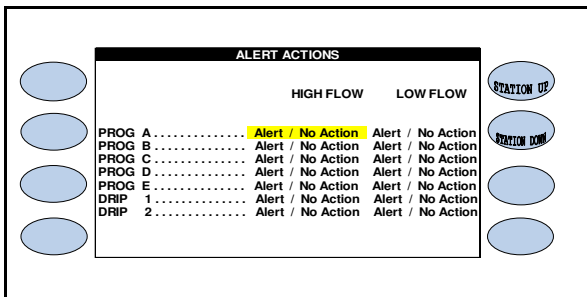*Note:* Notice that the Alert Actions option has now been added to this screen.
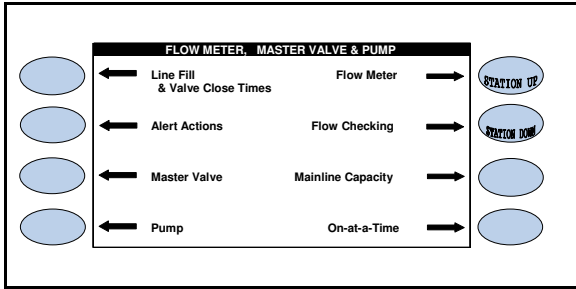
Figure 24

💧 *ALERT ACTIONS*

From the FLOW METER, MASTER VALVE & PUMP screen.

1. ⬭ Press the **ALERT ACTIONS** Menu key (Figure 24).

The ALERT ACTIONS screen (Figure 25).

Figure 25

The Alert Actions setting defaults with Alert / No Action set for all programs. There are three possible settings:

- **Alert / No Action:** An alert is displayed on the screen but the valve continues to irrigate.

- **Alert / Shut-Off:** An alert is displayed on the screen and the value is shut off.

- **No Alerts:** No alert is displayed and the valve continues to irrigate.

2. Press the blue **ARROW** keys to move the cursor to the Program HIGH FLOW and LOW FLOW settings.

3. Press the **PLUS** or **MINUS** key to change the settings.

4. Press the **BACK** key to return to the FLOW METER, MASTER VALVE & PUMP screen.

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2075 Corte del Nogal, Suite P, Carlsbad CA 92011
1-(800)-572-8608   FAX: 1-(760)-438-2619
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