FLOW METER
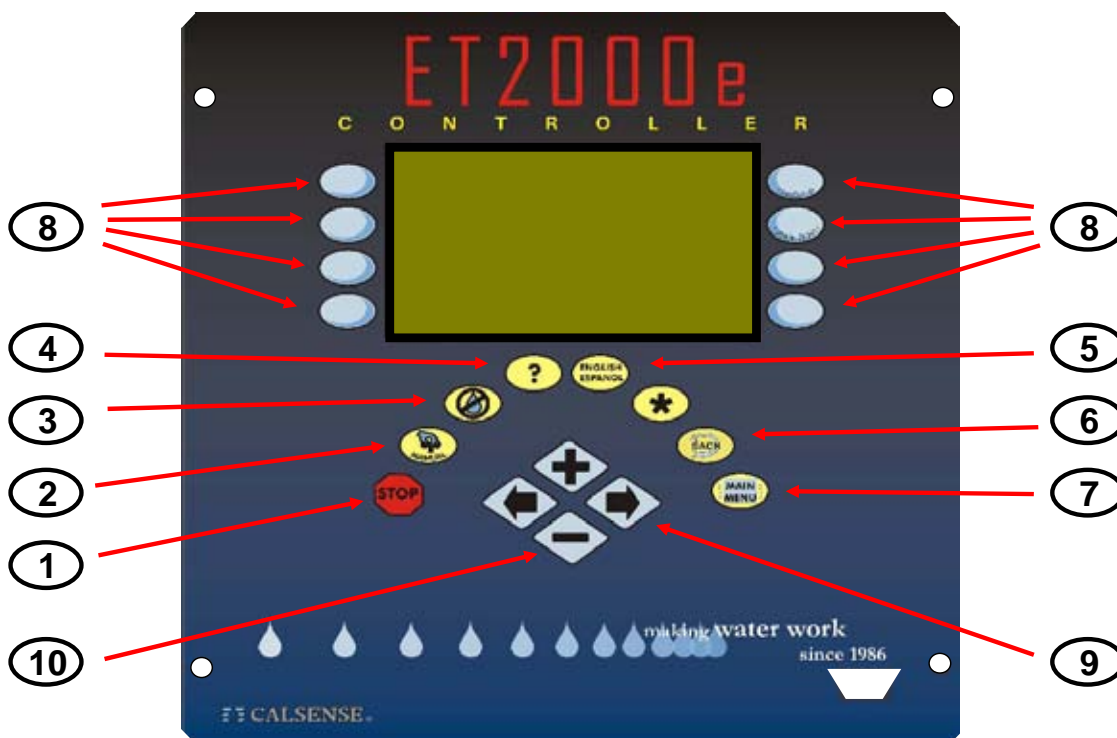
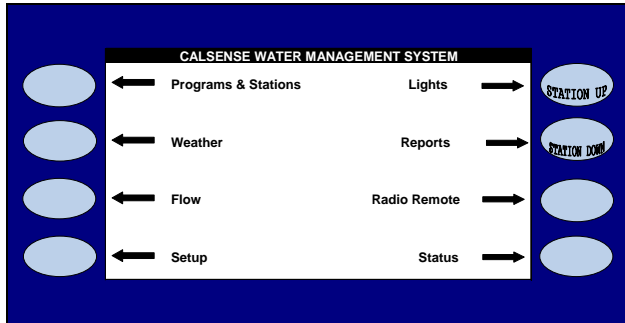💧 *ET2000e FLOW METER, MASTER VALVE & PUMP SETUP*

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.
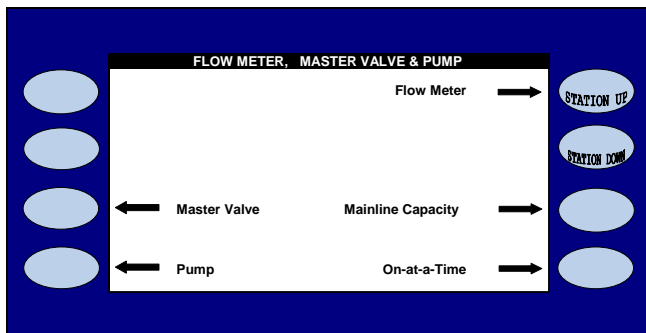
💧 *FLOW METER, MASTER VALVE & PUMP SETUP*

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

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

CALSENSE WATER MANAGEMENT SYSTEM

Programs & Stations	Lights
Weather	Reports
Flow	Radio Remote
Setup	Status

STATION UP
STATION DOWN

Figure 1

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

FLOW METER, MASTER VALVE & PUMP

Flow Meter

Master Valve   Mainline Capacity
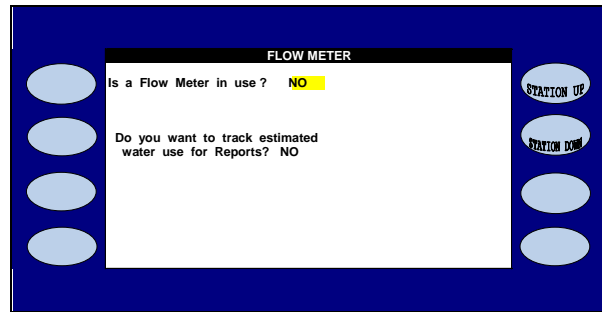
Pump   On-at-a-Time

STATION UP
STATION DOWN

Figure 2

💧 *FLOW METER SETUP*

From the Flow Meter, Master Valve & Pump screen (Figure 2).
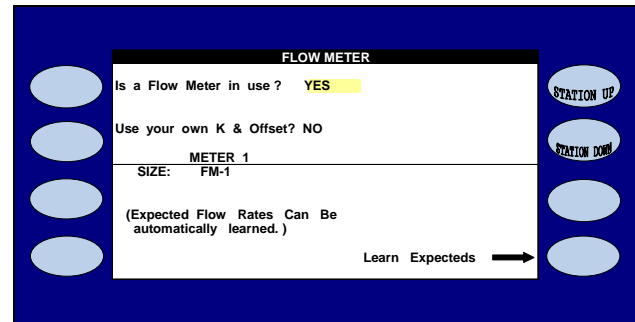
1. Press the **FLOW METER** Menu key.

The FLOW METER screen is displayed (Figure 3).

FLOW METER

Is a Flow Meter in use ?   NO

Do you want to track estimated water use for Reports? NO

STATION UP
STATION DOWN

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).
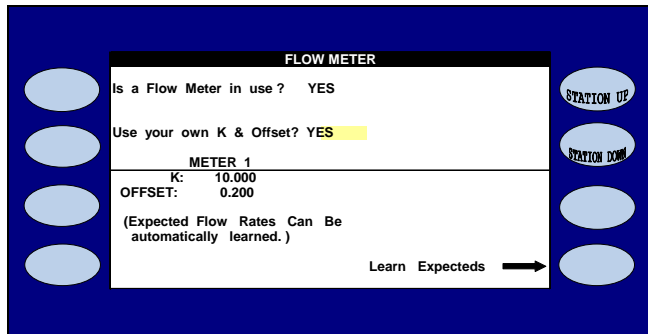
FLOW METER

Is a Flow Meter in use ?   YES

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 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).

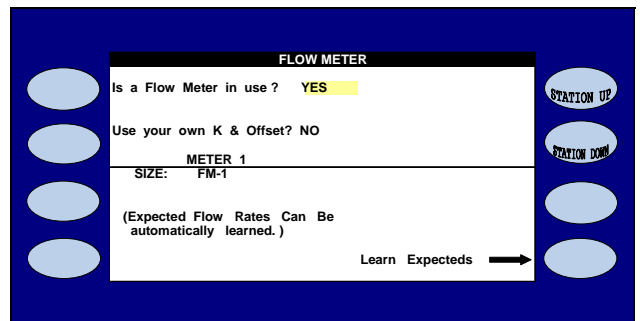| MODEL NUMBER	SIZE
FM-1	1" PLASTIC FLOW METER
FM-1B	1" BRASS FLOW METER
FM-1.25B	1 ¼" BRASS FLOW METER
FM-1.5	1 ½" PLASTIC FLOW METER
FM-1.5B	1 ½" BRASS FLOW METER
FM-2	2" PLASTIC FLOW METER
FM-2B	2" BRASS FLOW METER
FM-3	3" PLASTIC FLOW METER

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 is displayed (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
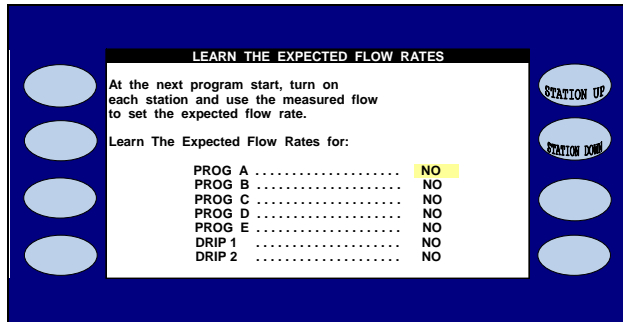DRIP 2 .... NO

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. ![BACK]   Press the **BACK** key twice.

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

FLOW METER, MASTER VALVE & PUMP

← Line Fill   Flow Meter →
   & Valve Close Times

                    Flow Checking →

← Master Valve   Mainline Capacity →

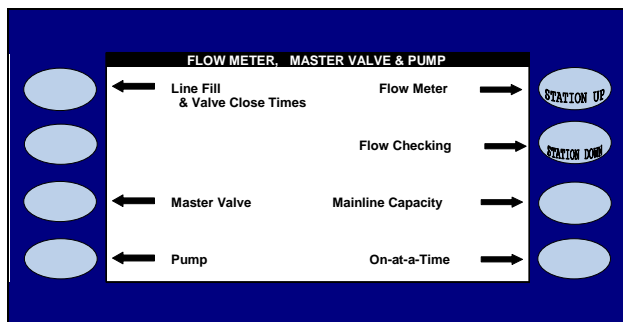← Pump   On-at-a-Time →

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 is displayed (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

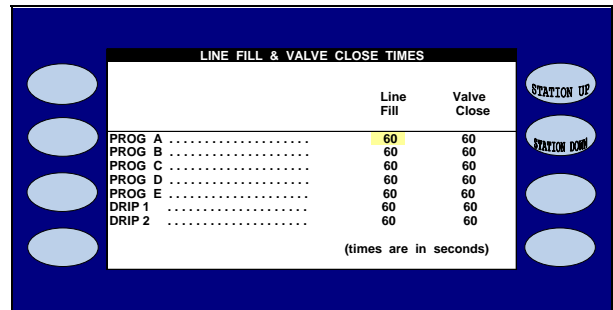**(times are in seconds)**

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. ![ARROW]   Press the blue **ARROW** keys to move the cursor to the PROGRAM A LINE FILL TIME.

4. ![ARROW]   Use the **PLUS** or **MINUS** keys to set the desired seconds.
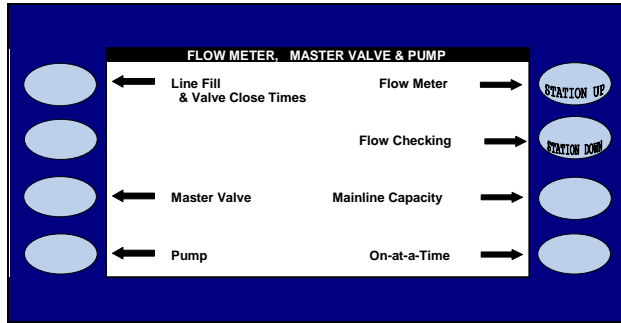
Use this same method to change the VALVE CLOSE TIME for program A and then repeat these steps for each program on the list.

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

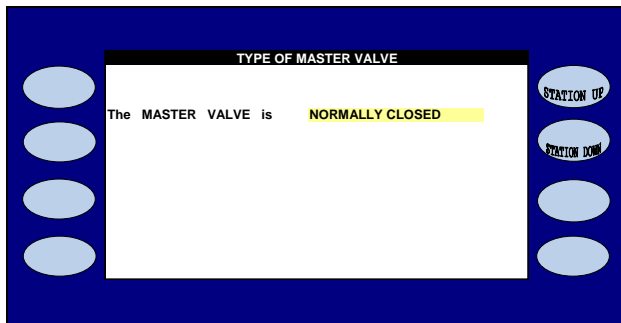## 💧 *MASTER VALVE*

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 is displayed (Figure 12).

```
              TYPE OF MASTER VALVE

  The  MASTER  VALVE  is      NORMALLY CLOSED       STATION UP

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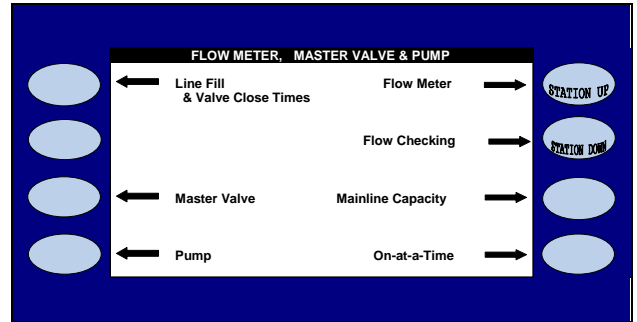
1. 🔙 Press the **BACK** key to return to the FLOW METER, MASTER VALVE & PUMP screen.

💧 *PUMP*

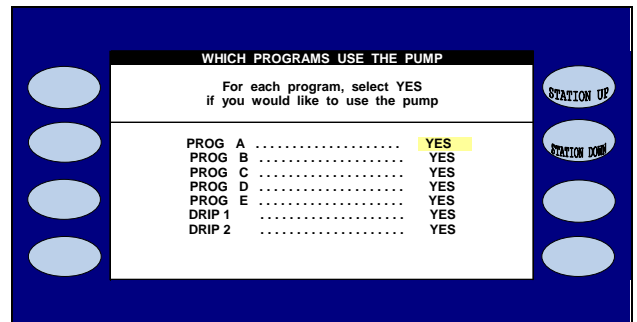From the FLOW METER, MASTER VALVE & PUMP SETUP screen,

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 is displayed (Figure 14).

```
           WHICH  PROGRAMS  USE  THE  PUMP
              For  each  program,  select  YES       STATION UP
              if  you  would  like  to  use  the  pump

        PROG  A  ....................  YES            STATION DOWN
        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.

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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 is displayed (Figure 15).

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
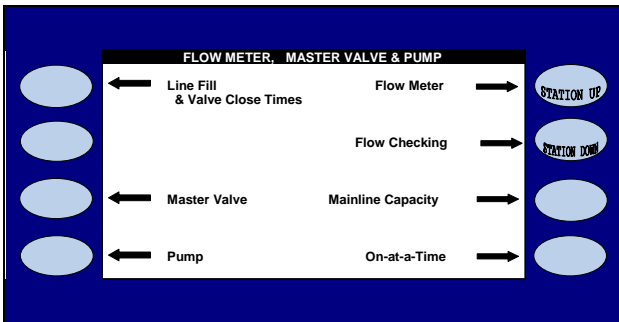
Figure 15

💧 *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 (Figure 15).

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

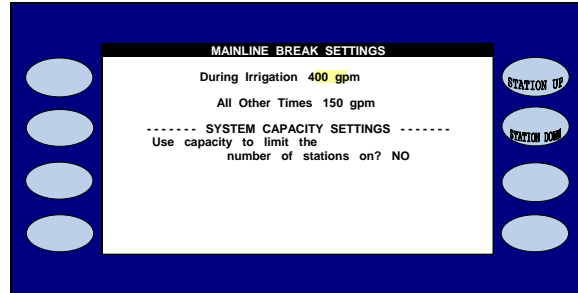The MAINLINE BREAK SETTINGS screen is displayed (Figure 16).

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).

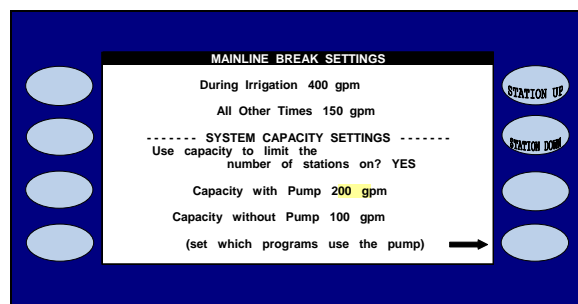4. Press the **PLUS** or **MINUS** key to change the limit number.

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

Capacity with Pump **200 gpm**

Capacity without Pump 100 gpm

(set which programs use the pump) →

STATION UP
STATION DOWN

Figure 17

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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).
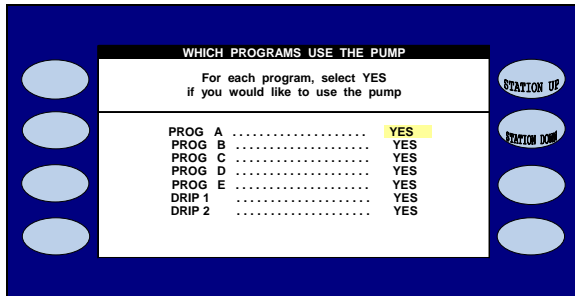
Figure 18

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 is displayed (Figure 19).
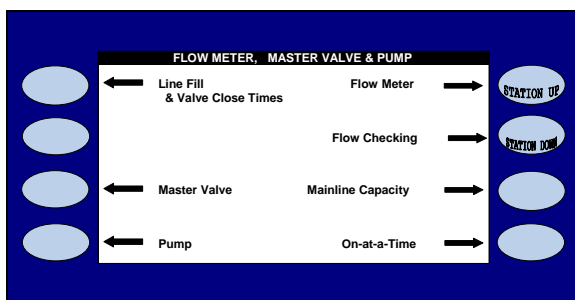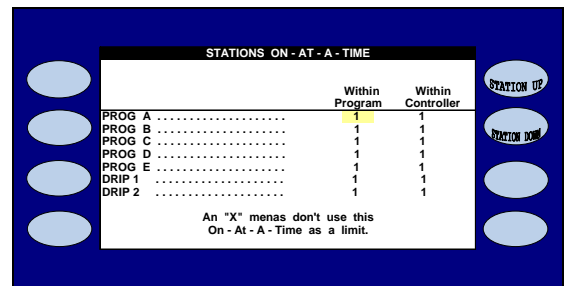
Figure 19

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 is displayed (Figure 20).

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

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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.

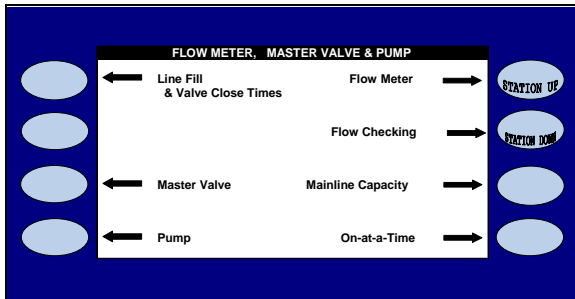The FLOW METER, MASTER VALVE & PUMP screen (Figure 21).

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.
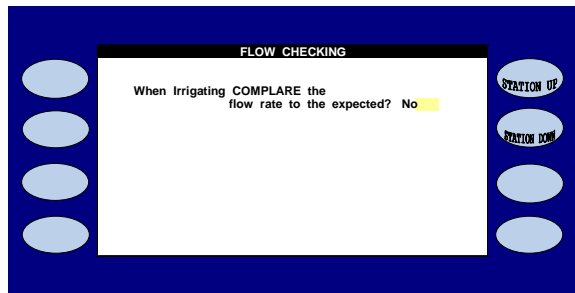
The FLOW CHECKING screen is displayed (Figure 22).

Figure 22

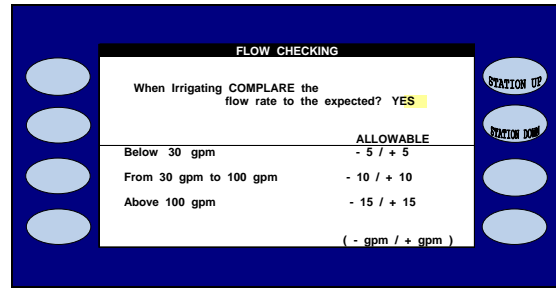This will open up the ALLOWABLE portion of the screen (Figure 23).

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 enter the fluctuation range for the low end of your normal operating flow. Use the (-) and (+) entries to set the range.

Example:

If you set the below limit at 30 gallons per minute.

Then set your (-) limit at 5, and your (+) limit at 5.

You will be alerted if the pressure at the low end of the scale fluctuates by more than five gallons per minute in either direction.

That is less than 25 gpm or more than 35 gpm

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 range of fluctuation that you deem normal.

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Example:

If you set the limit at 30 gpm to 100 gpm.

Then set your (-) limit at 10, and your (+) limit at 10.

You will be alerted if the pressure at the middle of the scale fluctuates by more than ten gallons per minute in either direction.
That is less than 20 gpm or more than 110 gpm

Above: This section allows you to enter the fluctuation range for the high end of your normal operating flow. Use the (-) and (+) entries to set the range.

Note: You will want to set this allowable range up a little wider due to the amount of water flow.

Example:

If you set the above limit at 100 gallons per minute.

Then set your (-) limit at 15, and your (+) limit at 15.

You will be alerted if the pressure at the high end of the scale fluctuates by more than fifteen gallons per minute in either direction.

That is less than 85 gpm or more than 115 gpm

4. **BACK**   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).
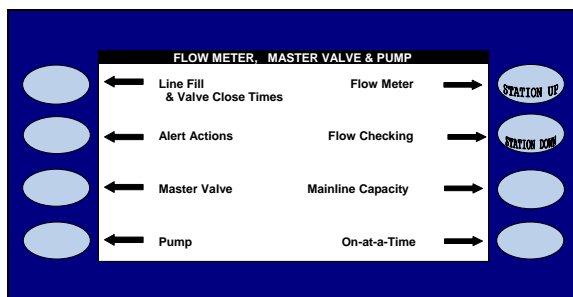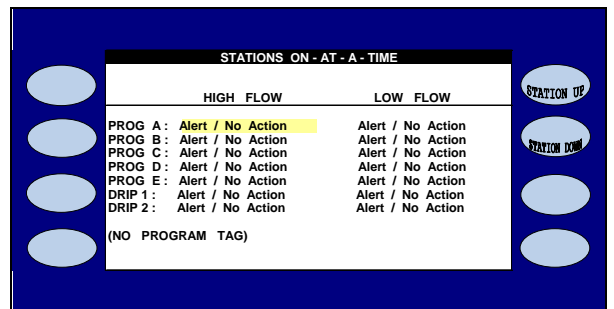
Figure 24

ALERT ACTIONS

From the FLOW METER, MASTER VALVE & PUMP screen.

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

The ALERT ACTIONS screen is displayed (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. **BACK**   Press the **BACK** key to return to the FLOW METER, MASTER VALVE & PUMP screen.

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