FLOW METER
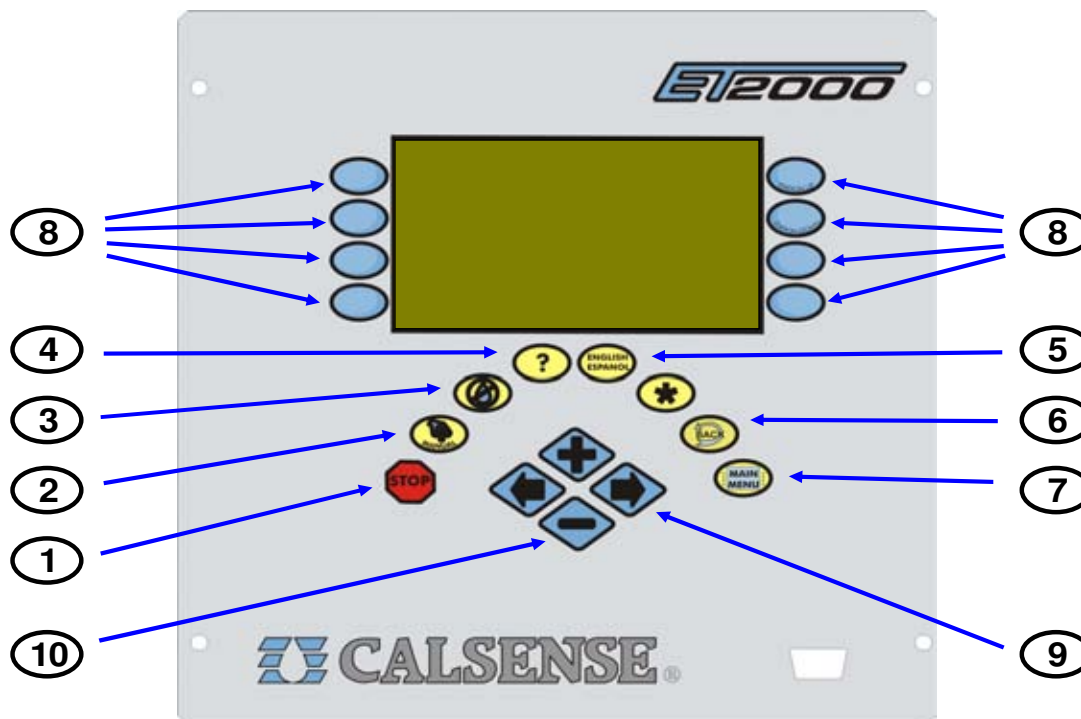
💧 **ET2000 (400 SERIES) FLOW METER, MASTER VALVE & PUMP SETUP**

1 STOP – The STOP key will stop any currently running Scheduled watering Cycle, Manual Cycle, Test Cycle, Manual Special Sequence or Master Valve override.

2 MANUAL – The MANUAL key will perform Manual Water, Test, Master Valve Override and Manual Special Sequence.

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 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. **[MAIN MENU]** 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
```
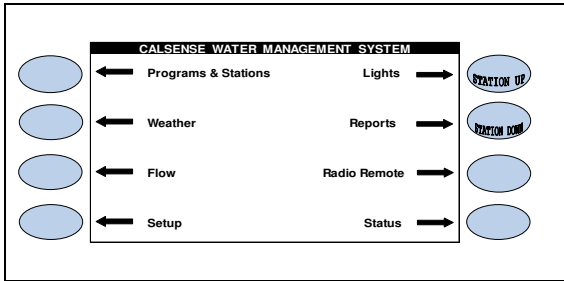
Figure 1

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

```
FLOW METER, MASTER VALVE & PUMP SETUP

                        Flow Meter    →   STATION UP

Do  You  want  to  track
    Estimated  Water  Use ?     NO        STATION DOWN


                        Master Valve  →

                        Pump Output   →
```
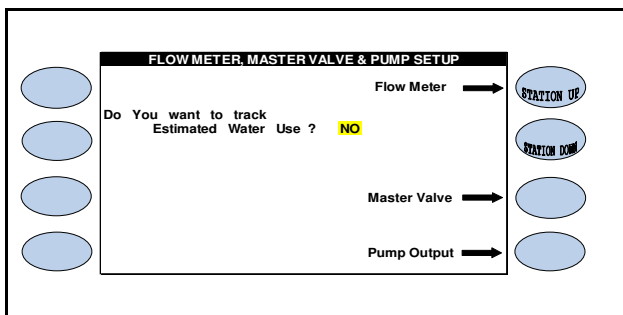
Figure 2

ESTIMATED WATER USE

The Estimated Water Use setting is set to **NO** only if there is no flow meter installed, and you want to track estimated water usage, change the setting to **YES**, return to the Station Programming screen and set the flow rate for each station (the flow rate setting appears on the Station Programming screen only when the Estimated Water Use setting is set to **YES**).

FLOW METER SETUP

From the Flow Meter, Master Valve & Pump Setup screen (Figure 2), press the FLOW METER Menu Key, the Flow Meter screen will appear (It will appear as shown in Figure 3 only after the Flow Meter In Use setting is set to **YES**).

1. **[ARROW]** Press the blue **ARROW** key to move the cursor to the desired setting, the three settings are described below.

```
                    FLOW METER

Flow Meter is in use ?  YES

Choose  the  Flow  Meter  from  a  list  OR
set  your  own  Parameters ?              STATION UP

                        CHOOSE FROM LIST   STATION DOWN

            Meter 1

CHOICE:     NOT USED

        Is  this  a  MASTER  CONTROLLER ?   NO
```
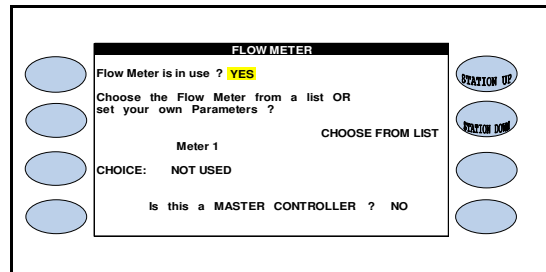
Figure 3

- **CHOOSE FROM LIST:** The first setting is the type of flow meter installed on the system. If the flow meter is a standard Calsense Flow Meter, leave the setting at CHOOSE FROM LIST (the default setting).

- **ENTER OWN PARAMETERS:** If the flow meter is a Calsense FMBX, change the setting to ENTER OWN PARAMETERS (described later on in this section).

- **NOT USED:** The next setting is the model of the flow meter installed (the default setting is NOT USED). The list of choices are shown in Figure 4.

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 4

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.
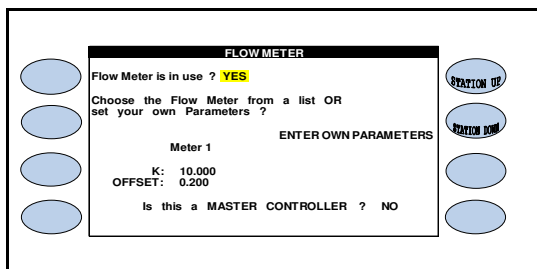
- The MASTER CONTROLLER setting will appear with NO selected (as shown in Figure 3). In most cases this setting will not change. If a system has multiple controllers on a single mainline, and more than one controller has to irrigate at the same time, one controller is designated as the master controller (and is connected to a Calsense flow meter). All other controllers have flow meter monitoring disabled. The job of the master controller is to continuously monitor for mainline breaks, no other flow monitoring features will be enabled for the master controller.

If the flow meter installed on the system is a Calsense FMBX, change the Choose Flow Meter setting to ENTER OWN PARAMETERS (the screen will appear as shown in Figure 5).

2. Press the blue **ARROW** key to move the cursor to the **CHOOSE FROM LIST** Menu key.

3. Press the **PLUS** or **MINUS** key to change it to read **ENTER OWN PARAMETERS**.

```
                    FLOW METER
Flow Meter is in use ?  YES

Choose the Flow Meter from a list OR
set your own Parameters ?
                              ENTER OWN PARAMETERS

              Meter 1

      K:    10.000
   OFFSET:  0.200
         Is this a MASTER CONTROLLER ?   NO
```
STATION UP / STATION DOWN

Figure 5

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.
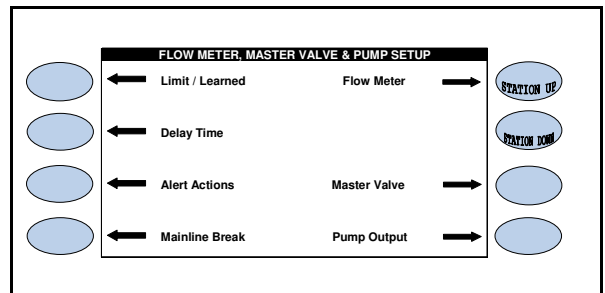
💧 FLOW METER SETTINGS

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

1. [BACK]   Press the **BACK** key to return to the Flow Meter, Master Valve & Pump screen (Figure 6).

It will appear with four new Menu key choices. These are the flow meter settings, and are available only after a flow meter has been enabled (note that the Estimated Water Use setting is no longer available as described previously).
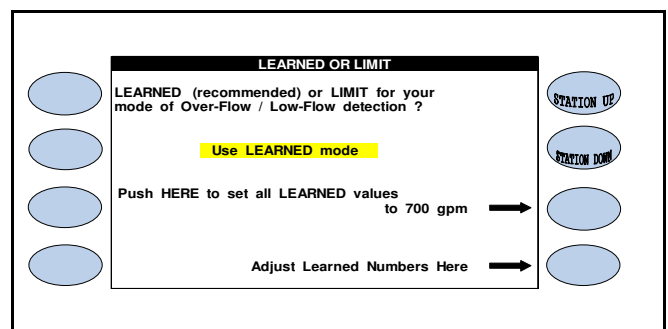
```
        FLOW METER, MASTER VALVE & PUMP SETUP
←  Limit / Learned          Flow Meter   →        STATION UP
←  Delay Time                                     STATION DOWN
←  Alert Actions            Master Valve  →
←  Mainline Break           Pump Output   →
```

Figure 6

2. Press the **LIMIT** / **LEARNED** Menu key, the learned or Limit screen will appear (as shown Figure 7). Using learned mode is recommended (the default setting).

Note: You will always want to learn the station flow rates prior to selecting the LIMIT Mode, or use the LIMIT mode if the Flow rate for each station is already known.

```
              LEARNED OR LIMIT
LEARNED  (recommended) or LIMIT for your
mode of Over-Flow / Low-Flow detection ?

          Use  LEARNED  mode

Push HERE to set all LEARNED values
                          to 700 gpm   →

            Adjust  Learned  Numbers Here   →
```
STATION UP / STATION DOWN

Figure 7

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In the learned mode the controller will learn the flow rate of each station (approximately 6 to 10 scheduled irrigation cycles are required to learn a stations flow rate). The controller will then use this learned flow rate to alert the user when HIGH FLOWS and NO FLOWS occur.

3. Press the blue **ARROW** key to move the cursor to the **PUSH HERE TO SET ALL LEARNED VALUES** Menu key.

4. Press the **PLUS** or **MINUS** key to set the desired GPM.

5. Press the **PUSH TO SET ALL LEARNED VALUES** Menu key.
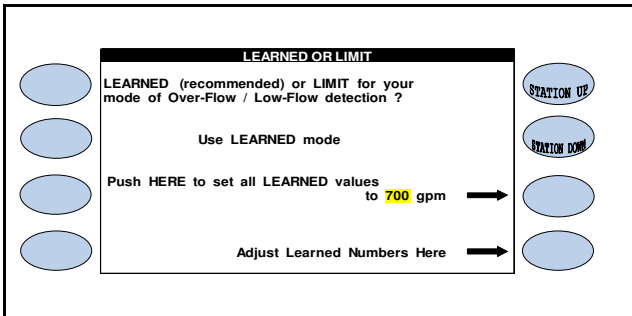
Figure 8

6. Press the blue **ARROW** key to move the cursor to the **ADJUST LEARNED NUMBERS** Menu key.

7. Press the **ADJUST LEARNED NUMBERS HERE** Menu key to access the Learned GPM for each Value screen (shown Figure 9). At this screen you can view and adjust individual station learned flow rates.

This setting is used to set or re-set all stations initial learned flow rates, <u>it must be a value higher than any station's flow rate</u>, if you do not know the station flow rates, leave the number at 700 gpm.

Figure 8

8. Press the **ARROW** key to move the cursor to the flow rate under the station that is to be adjusted,

9. Press the **PLUS** or **MINUS** key to adjust the station's flow rate.

10. Press the **BACK** key twice to return to the Flow Meter, Master Valve & Pump screen.

<u>If Using LIMIT mode</u>:

11. Press the **PLUS** or **MINUS** key to select **LIMIT**.

The screen will begin flashing "**Push HERE to set the HI and LO limits to the LEARNED +/- the trip percent**". If you have not learned the Flow rates for each station first.

12. Press the Menu key to the left of the flashing phrase.

The HI & LOW GPM LIMITS FOR EACH VALUE screen (Figure 9).

Figure 9

The Hi and Low limits will show based on the trip percent for each valve.

13. Press the blue **ARROW** key to move the cursor to the desired valve setting.

14. Press the **PLUS** or **MINUS** key to adjust the setting number.

Note: If the Station flow rates have already been learned. You can adjust the individual station HI and LOW rates by pressing the **ADJUST LIMIT NUMBERS HERE** Menu key and follow steps 13 and 14.
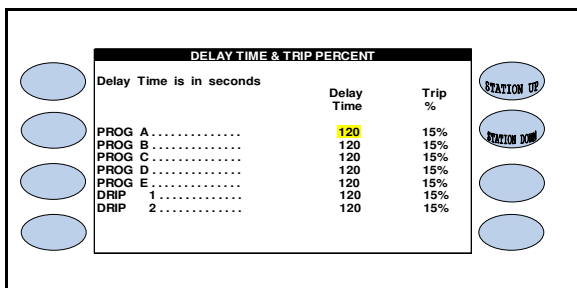
15. Press the **BACK** key.

The FLOW METER, MASTER VALVE & PUMP screen (Figure 10).
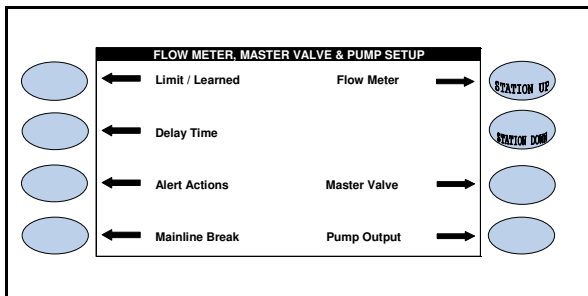
Figure 10

16. Press the **DELAY TIME** Menu key.

The DELAY TIME & TRIP PERCENT screen (Figure 11).

Figure 11

The default setting for each program is a 120 second delay time and a 15% trip percentage setting.

17. Press the blue **ARROW** keys to move the cursor to the desired setting.

18. Press the **PLUS** or **MINUS** key to change the setting.

Each program can be independently set with a delay time of 15 to 1,800 seconds and a trip percentage of 1 to 99 percent.

DELAY TIME: The amount of time the controller waits after activating a valve before taking a flow reading. This allows for an accurate flow reading, by giving time for air to be flushed from piping and the previous valve to shut down. The only restriction is that the flow delay time should not be longer than a station's run time.
TRIP PERCENT: Is the amount of increase above the learned flow rate at which the controller will alert the user to a HIGH FLOW.
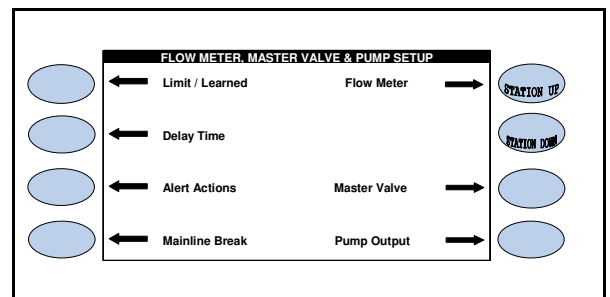
Example:

If a station flow rate equals 40 then the trip percent (15%) would equal:

34 to 46 gallons per minute

34 gpm would trip a Low Flow alert.
46 gpm would trip a High Flow alert.

19. Press the **BACK** key.

The FLOW METER, MASTER VALVE & PUMP screen (Figure 12).

Figure 12

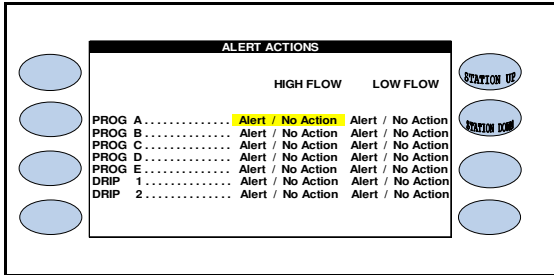20. ⬭ Press the **ALERT ACTION** Menu key.

The ALERT ACTIONS screen (Figure 13).

Figure 13

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

21. (BACK) Press the **BACK** key.

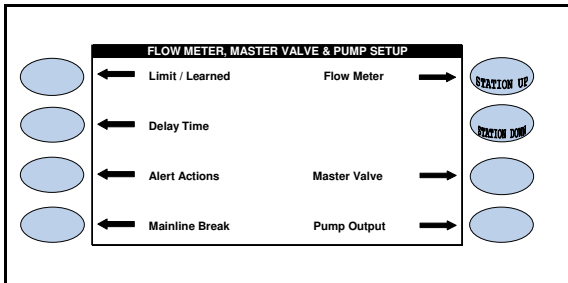The FLOW METER, MASTER VALVE & PUMP screen (Figure 14).

Figure 14

22. ⬭ Press the **MAINLINE BREAK** Menu key.

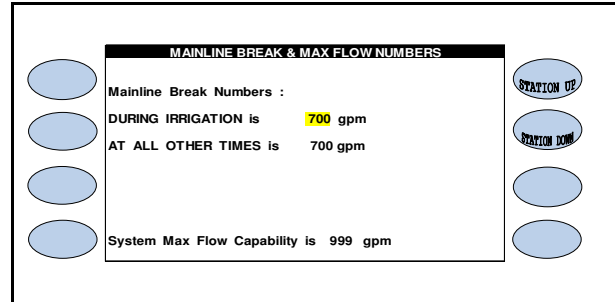The MAINLINE BREAK & MAX FLOW NUMBERS screen (Figure 15).

Figure 15

The default mainline break number will be set at 700 gpm. The "During Irrigation" number is the mainline break number used while the controller is irrigating, the All Other Times number is the mainline break number used when the controller is not irrigating. A typical mainline break setting might be slightly more than twice the flow rate of the highest flowing valve on the system.
The max Flow Capacity setting is the maximum flow capacity of the system's water meter. If multiple valves are irrigating at the same time and the flow rate is exceeded, the controller will turn off a valve(s) until the flow rate is below the maximum capacity setting. It will turn the valve back on and continue irrigating at a later time.

23. (BACK) Press the **BACK** key to return to the Flow Meter, Master Valve & Pump screen (shown Figure 16).

💧 *MASTER VALVE*

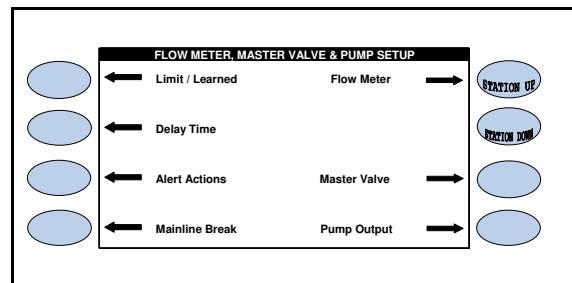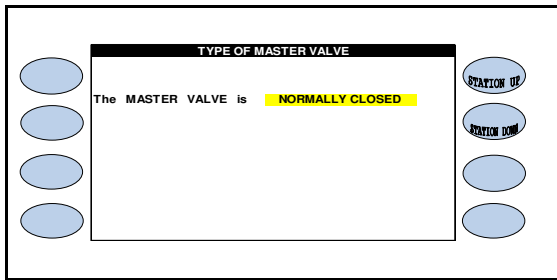From the Flow Meter, Master valve & Pump Setup screen (Figure 16).

Figure 16

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

The TYPE OF MASTER VALVE screen (Figure 17).

TYPE OF MASTER VALVE

The MASTER VALVE is   NORMALLY CLOSED

STATION UP

STATION DOWN

Figure 17

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 introduced to open it.
- **NORMALLY OPEN:** A normally open Master Valve is in the open position until voltage is introduced 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.
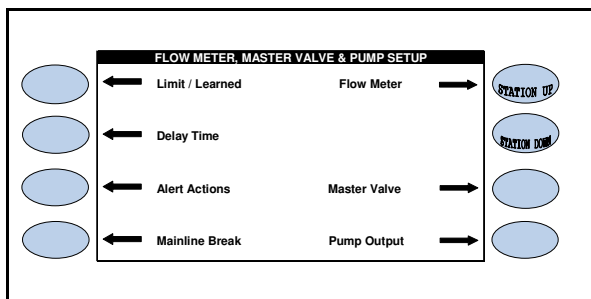
2. Press the **BACK** key to return to the Flow Meter, Master Valve & Pump screen (shown Figure 16).
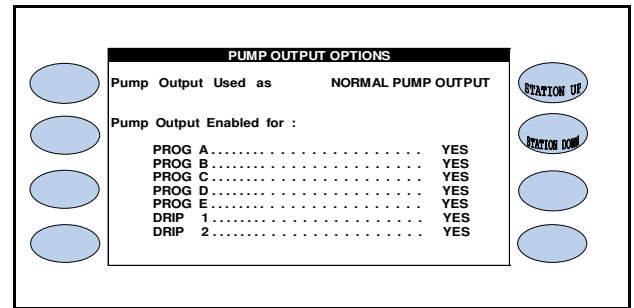
💧 *PUMP OUTPUT*

From the Flow meter, Master Valve & Pump screen.

1. Press the **PUMP OUTPUT** Menu key (Figure 18).

FLOW METER, MASTER VALVE & PUMP SETUP

← Limit / Learned   Flow Meter →   STATION UP

← Delay Time   STATION DOWN

← Alert Actions   Master Valve →

← Mainline Break   Pump Output →

Figure 18

The PUMP OUTPUT OPTIONS screen (Figure 19).

PUMP OUTPUT OPTIONS

Pump Output Used as   NORMAL PUMP OUTPUT   STATION UP

Pump Output Enabled for :   STATION DOWN

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

Figure 19

The Pump Output Used will be highlighted and the default setting will be set for NORMAL PUMP OUTPUT,

2. Press the **PLUS** or **MINUS** key.

There are three settings:

- **NORMAL PUMP OUTPUT:** If a pump is installed or if a pump is not installed and the output is used for a special purpose.
- **STEADY ALERT LIGHT:** If the pump output is to be connected to some type of signaling device such as a steady light to alert the user to a possible problem (e.g MAINLINE BREAK).

- **BLINKING ALERT LIGHT:** If the pump output is to be connected to some type of signaling device such as a blinking light to alert the user to a possible problem (e.g. MAINLINE BREAK).

3. Press the blue **ARROW** keys to move the cursor to the Pump Output Enabled setting.

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.

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4. Press the **PLUS** or **MINUS** key for any program to 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.

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