# FlowMax™ 110 Installation Manual

*P/N 016-0159-596 Rev E      05/15*

# OPERATION

Turn on Console by depressing ON.

> **NOTE:** This Console is equipped with a Power Down feature. The Power Down feature turns OFF the Console if no flow is sensed and no key is depressed for 2 minutes.
>
> The power down time may be changed or disabled completely by using the following procedure:
>
> 1.   Hold the ▲ key for five seconds. "P . . 2" will be displayed.
>
> 2.   Depressing the ◀ key will advance the number of minutes before powerdown ("P . 15", "P . 30", etc.) up to 480 minutes ("P480").
>
>      Depressing the ◀ key after the "P480" option will advance the display to "PoFF". When "PoFF" is selected, the console will remain on continuously until power is removed.
>
> 3.   Depressing the ◀ key again will cycle the display back to "P . . 2".
>
> 4.   After making selection, press ▲ to continue.

METER CAL is the only number that must be entered for Console operation.

## DISPLAY  TITLES

| | | |
|---|---|---|
| SUb | -- | Sub-Total Volume (Volume Increments) |
| uoL | -- | Total Volume (Volume Increments) |
| bCh | -- | Batch Volume (Volume Decrements from pre-entered number) |
| FLo | -- | Flow Rate (vol/min) |
| CAL | -- | Meter Cal |

## ENTERING  DATA

Toggle to the desired display title by depressing key labelled ▲ . Depress ENTER key, display will flash "E". Enter data one digit at a time, starting with the left digit.

Increment the digit by momentarily depressing key labelled ▲ . Then depress ◀ to shift digit one place to the left. Continue this sequence until all digits are entered. Depress the ENTER key to complete ENTER sequence. Display will stop flashing.

See following page for example.

**EXAMPLE:** To enter number "123":

1. Depress ENTER key. Display will flash "E".

2. Depress 2 times key labelled ▲

3. Depress 1 time key labelled ◀

4. Depress 2 times key labelled ▲

5. Depress 1 time key labelled ◀

6. Depress 3 times key labelled ▲

7. Depress ENTER key.

Display can be reset to "0" by entering "0" using method shown above.


## CALCULATING "METER CAL"

The Flow Meter calibration number is stamped on the tag attached to each Flow Meter. Write down this number for future reference when programming the Console computer.

To convert original METER CAL from gallons to desired units of measure (oz, lbs, or liters per area), see METER CAL CONVERSIONS. Write down this calibration number for future reference when programming the Console.


## METER CAL CONVERSIONS

To convert the METER CAL number simply divide the original number (number printed on Flow Meter label) by the desired conversion factor.

**FOR EXAMPLE:**

$\dfrac{\text{Original METER CAL No.}}{128}$ = METER CAL No. for displays in Fluid Ounces

$\dfrac{\text{Original METER CAL No.}}{3.785}$ = METER CAL No. for displays in Liters

$\dfrac{\text{Original METER CAL No.}}{\text{Weight of one gallon}}$ = METER CAL No. for displays in Pounds

**LIQUID CONVERSIONS**
U.S. Gallons x 128 = Fluid Ounces
U.S. Gallons x 3.785 = Liters
U.S. Gallons x 0.83267 = Imperial Gallons
U.S. Gallons x 8.34 = Pounds (Water)

# BATTERY BACK-UP (optional)

Console can be operated using a 9 volt battery for a limited number of hours (4 hours of operating time typically), and allow memory to be saved for several weeks if Console is not in use.

To install, remove 4 screws holding back cover, and connect battery cable to a 9 volt battery. Lay battery on top of foam and replace cover. Larger 12 VDC battery may be connected to existing power cable to increase life.



BACK SIDE OF FLOW
MAX 110 MONITOR
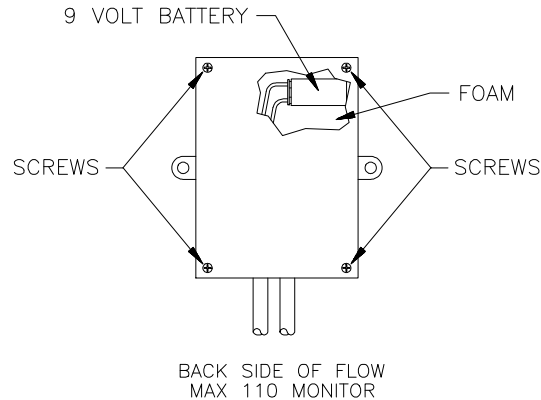
# INSTALLATION

**1)** Install Flow Meter in flow line.
**2)** Mount Console to rigid mount.
**3)** Route, secure, and connect Power Cable.
**4)** Route, secure, and connect Flow Cable.
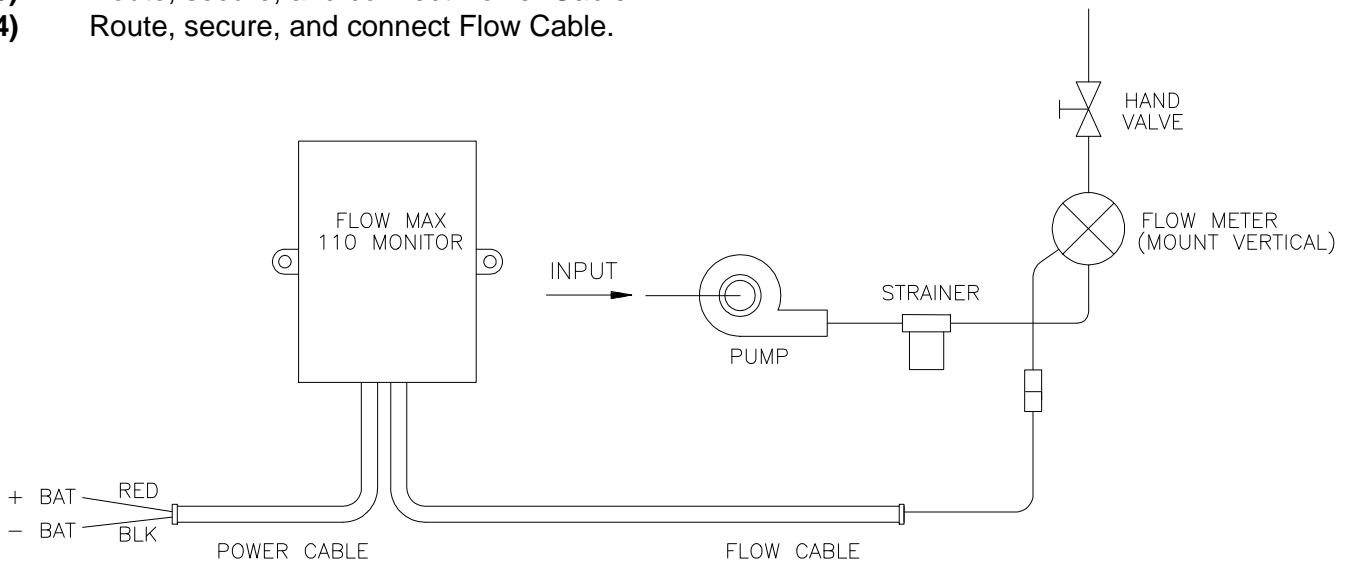


**TYPICAL SYSTEM**

# APPENDIX 1
# PROCEDURE TO TEST FLOW METER CABLE

Disconnect cable from Flow Sensor.  Hold Flow Sensor cable so that the keyway is pointing in the 12 o'clock position:

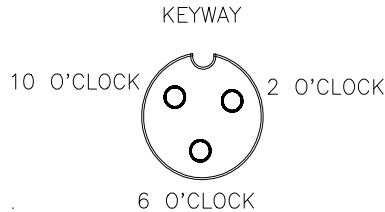KEYWAY

10 O'CLOCK          2 O'CLOCK

6 O'CLOCK

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**PIN  DESIGNATIONS**
2 o'clock socket location is ground.
10 o'clock socket location is power.
6 o'clock socket location is signal.

**VOLTAGE READINGS**
1)  2 o'clock socket to 6 o'clock socket = +5 VDC.
2)  2 o'clock socket to 10 o'clock socket = +5 VDC.

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**PROCEDURE TO CHECK CABLE:**

**1)**     Enter a METER CAL number of one (1).

**2)**     Select TOTAL VOLUME display (VOL).

**3)**     With small jumper wire (or paper clip), short between the 2 o'clock and 6 o'clock sockets with a "short-no short" motion.  Each time a contact is made, the TOTAL VOLUME should increase by increments of 1 or more counts.

**5)**     If TOTAL VOLUME amount shown in display does not increase, remove the section of cable and repeat test at connector next closest to Console.  Replace defective cable as required.

**6)**     Perform above voltage checks.

**7)**     If all cables test good, replace Flow Sensor.

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**NOTE:**  After testing is complete, re-enter correct METER CAL numbers before application.

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# RAVEN INDUSTRIES

## Limited Warranty

### What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Flow Control Product under normal use, maintenance, and service.

### How Long is the Coverage Period?

Raven Applied Technology Division products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is non-transferrable.

### How Can I Get Service?

Bring the defective part and proof of purchase to your Raven Dealer. If your Dealer agrees with the warranty claim, the Dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

### What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discression, repair or replace the defective part and pay for return freight.

### What is not Covered by this Warranty?

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit or other special damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty