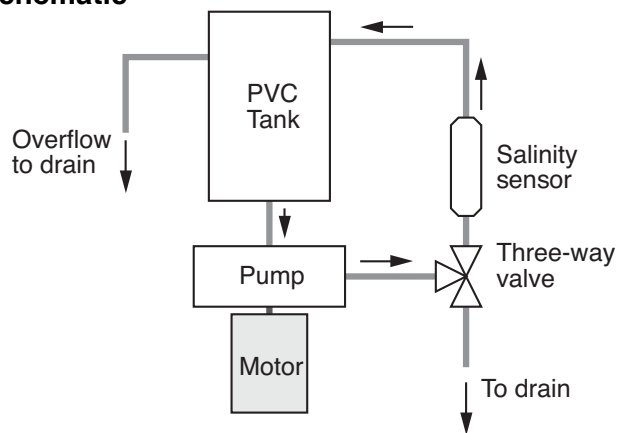


## EAS 199B: Assemble the flow loop for calibrating the salinity sensor

### I. Before you begin

- A. You need to purchase
  1. Teflon tape
  2. Power supply for the pump: 12V and minimum 1A
  3. Project box, barrier strip, and compatible switch
- B. Make sure your pump works
  1. The motor spins
  2. It pumps water
- C. Make sure that the barbed fittings are not attached to the PVC tank
- D. Make sure you have all the parts
  1. Pump
  2. PVC tank (from preceding lecture)
  3. Salinity sensor (from preceding lecture)
  4. Platform
  5. Parts supplied to you
    - a. Two nylon nipples
    - b. Five, straight, 1/4 inch barbed fittings
    - c. One, L-shaped, 3/8 inch barbed fitting
    - d. Zip ties

### II. Schematic



## **EAS 199B: Assemble the flow loop for calibrating the salinity sensor**

### **III. Mount the Pump and PVC Tank**

- A. Apply Teflon tape to threads of a nylon nipple
- B. Insert the nipple into the hole for the pump inlet. Tighten the nipple
- C. Insert a straight, 1/4 inch barbed fitting into the outlet of the pump.
- D. Hold the pump below the L bracket on the pump stand.
- E. With the nylon nipple in the big hole in the bracket, turn the PVC tank onto the nipple

### **IV. Mounting the three-way valve and salinity sensor**

- A. Connect the vertical outlet of the three-way valve to one end of the salinity sensor.  
*Orientation of the salinity sensor does not matter at this point.  
Use teflon tape to seal the threads of another nylon nipple.*
- B. Connect straight, 1/4 inch, barbed fittings to remaining open thread of the 3-way valve
- C. Connect a straight, 1/4 inch barbed fitting to the free (unconnected) end of the salinity sensor.
- D. Hold the salinity sensor and 3-way valve in position on the platform. Use a pencil to mark good locations for zip ties
- E. Drill holes for the zip ties -- check your work after the first hole is made
- F. Secure the 3-way valve and salinity sensor with zip ties.
- G. Connect the drain of the 3-way valve to a 24 inch piece of nylon tubing

### **V. Connect the PVC tank**

- A. Insert the two remaining barbed fittings on the PVC tank (Use teflon tape).
- B. Connect the plumbing with nylon tubing
  1. Outlet of the salinity sensor is connected to the inlet of the tank
  2. Overflow is connected to a 24 inch length of nylon tubing

### **VI. Electrical connections**

- A. Build the switch box

### **VII. Test**

- A. Have a one liter water bottle filled with tap water ready
- B. Have a drain bucket ready
- C. Fill the PVC tank and turn on the pump. Make sure the pump doesn't run dry