```
LiquidCrystal lcd(8, 9, 4, 5, 6, 7);
//including numbers of interface bins

const int analogInPin = A1; //Analog input pin, connected to pressure sensor
const int analogButton = A0;  //Button

//Initialize Variables
float inputVoltage = 0;  //Voltage read from pressure sensor (in bits: 0-1023)
float volt0 = 2.5; //Initial Voltage
float volt = 0; //Voltage (converted from 0-255 to 0-5)
float pressure_psi = 0; //Pressure value calculated from voltage--in Psi
float pressure_pa = 0;  //Pressure value converted to Pa
float massFlow = 0; //Mass flow rate calculated from pressure
float volFlow = 0;  //Calculated from mass flow rate
float volume = 0; //Integral of flow rate over time

//Constants
float vs = 5; //Voltage powering pressure sensor
float rho = 1.225;  //Density of air in kg/m3
float area_1 = 0.0087969;  //surface area in m2
float area_2 = 0.0039985; //surface area in m2
float dt = 0;
int button = 0; //Value of button


void setup() {
  // put your setup code here, to run once:
  //Set up the LCD's number of columns and rows
  lcd.begin(16,2);
  lcd.print("Volume = ");
}

void loop() {
  // put your main code here, to run repeatedly:
  //Check if button is pressed, if so enter program condition
  lcd.setCursor(0,1);
  button = analogRead(analogButton);

  if(button>100 && button<150)
  {
    inputVoltage = analogRead(analogInPin); //Voltage read in (0 to 1023)
    volt = inputVoltage*(vs/1023.0);
    pressure_psi = (15/2)*(volt-2.492669);  //Pressure in Psi
    //get number that isnt exactly 2.5 becuse of calibrations that gave exact voltage
```

```
    pressure_pa = pressure_psi*6894.75729;  //Pressure in Pascals

    massFlow = 1000*sqrt((abs(pressure_pa)*2*rho)/((1/(pow(area_2,2)))-(1/(pow(area_1,2))))); //Mass
flow of air
    //use factor of 1000 so you end with units of L/s

    volFlow = massFlow/rho; //Volumetric flow of air
    volume = volFlow*dt + volume; //Total volume
    dt = 0.001;
    delay(1);

  }
  lcd.print(volume);


}
```