In all calculations of tank duration, one must first convert the pressure in the tank into liters so that one can see how fast a particular flowrate will deplete the tank.

E cylinder of gas

Calculation of the duration of an E cylinder uses the following formula. First you will convert the pressure into liters so that you can figure the time set liter per minute will deplete the tanks

pisg = read the monometer
.28 factor for a E tank
flow rate= set flow rate on the flometer

$$\text{duration of tank} = \frac{\text{pisg x .28}}{\text{flow rate in lpm}}$$

your answer will be in minutes so first you subtract 15 minutes for the time taken in changing out tanks, if the resulting number is more than 60 minutes [1hour] then you divide the minutes by 60 to get the number of hours of duration

$$\frac{\text{duration in minutes - 15 minutes}}{60}$$
to get duration in hours

EXAMPLE:

Your E tank holds 2200 psig and you must use 15 lpm for a non-rebreather mask. How much time do you have before you need to change tanks?

$$\text{duration of tank} = \frac{\text{pisg x .28}}{\text{flow rate in lpm}}$$

$$\text{duration of tank} = \frac{\text{2200 x .28}}{\text{15 lpm}}$$

$$\text{duration of tank} = \frac{\text{616 liters of gas}}{\text{15 lpm}}$$

duration of tank = 41 minutes

we must subtract 15 minutes for changing the tanks so there is only 26 minutes left in this tank

H cylinder of gas

The formula for calculation of the duration of a cylinder of 02 is almost identical to that of the e cylinder but because the H tank is about 10x the size of the E cylinder, one uses a different factor

pisg = read the monometer
3.14 factor for a H tank
flow rate= set flow rate on the flometer

$$\text{duration} = \frac{\text{pisg x 3.14}}{\text{flow rate in lpm}}$$

your answer will be in minutes so first you subtract 15 minutes for the time taken in changing out tanks, if the resulting number is more than 60 minutes [1hour] then you divide the minutes by 60 to get the number of hours of duration

$$\frac{\textbf{duration in minutes - 15 minutes}}{\textbf{60}}$$

to get duration in hours

EXAMPLE:

Your H tank hold 2200 psig and you must use 15 lpm for a non-rebreather mask. How much time do you have before you need to change tanks?

$$\text{duration of tank } = \frac{\text{pisg x 3.14}}{\text{flow rate in lpm}}$$

$$\text{duration of tank } = \frac{\text{2200 x 3.14}}{\text{15 lpm}}$$

$$\text{duration of tank } = \frac{\text{6908 liters of gas}}{\text{15 lpm}}$$

duration of tank = 460 minutes

we must subtract 15 minutes for changing the tanks so there is only 445 minutes left in this tank
which is 445/60 or 7.4 hours of gas in the tank.

---

duration of a cylinder of liquid 02 LOX

Calculation of the duration of a cylinder of liquid 02 is in two parts:[a] find the gas remaining then [b] calculate duration.

$$\textbf{[A] gas remaining} = \frac{\textbf{weight x 860}}{\textbf{2.5 lb/L}}$$

$$\textbf{[B] duration of gas} = \frac{\textbf{gas remaining}}{\textbf{lpm}}$$

Example
Your liquid 02 tank weighs 10 pounds. At a liter flow of 3 lpm what is the duration of the tank?

[A]   gas remaining = 10 x 860   =   8600 /2.5
                                        2.5 lb/L
        gas remaining = 3440 liters

[B]   duration = 3440 liters   = 1146 minutes or 1146   = 19 .1 hrs
                      3 lpm   60

Once you have your duration in hours for simplicity's sake, you might want to convert the hours into hours and minutes

for instance, in the last example you ended up 19.1 hours. This is awkward so you might be better off finding out how many hours and minutes you have rather than in minutes or in fractions of an hour.

If you take the .1 x 60 you will see that .1 hours is 24 ------------so 19.1 hours is 19 hours and 24 minutes

---