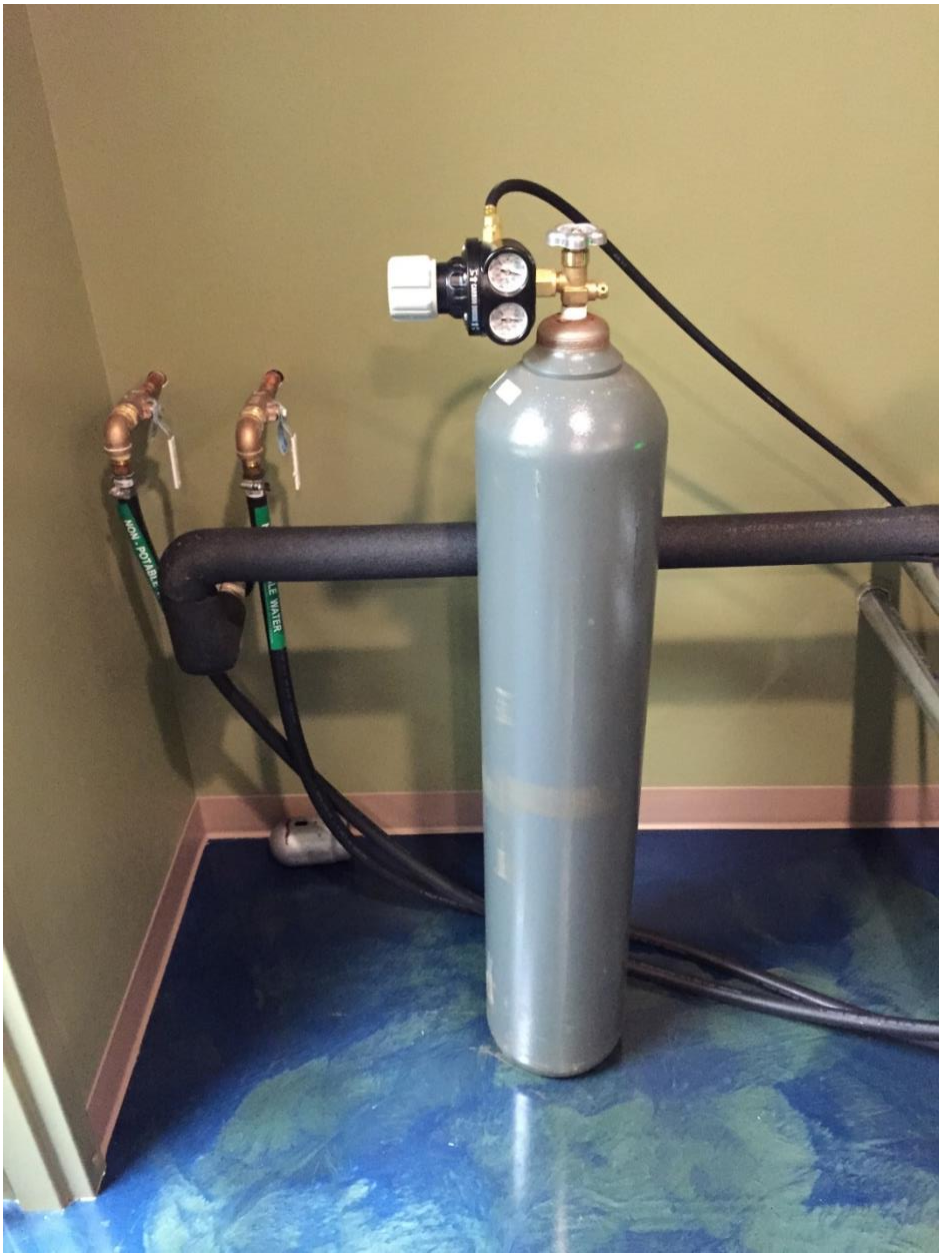
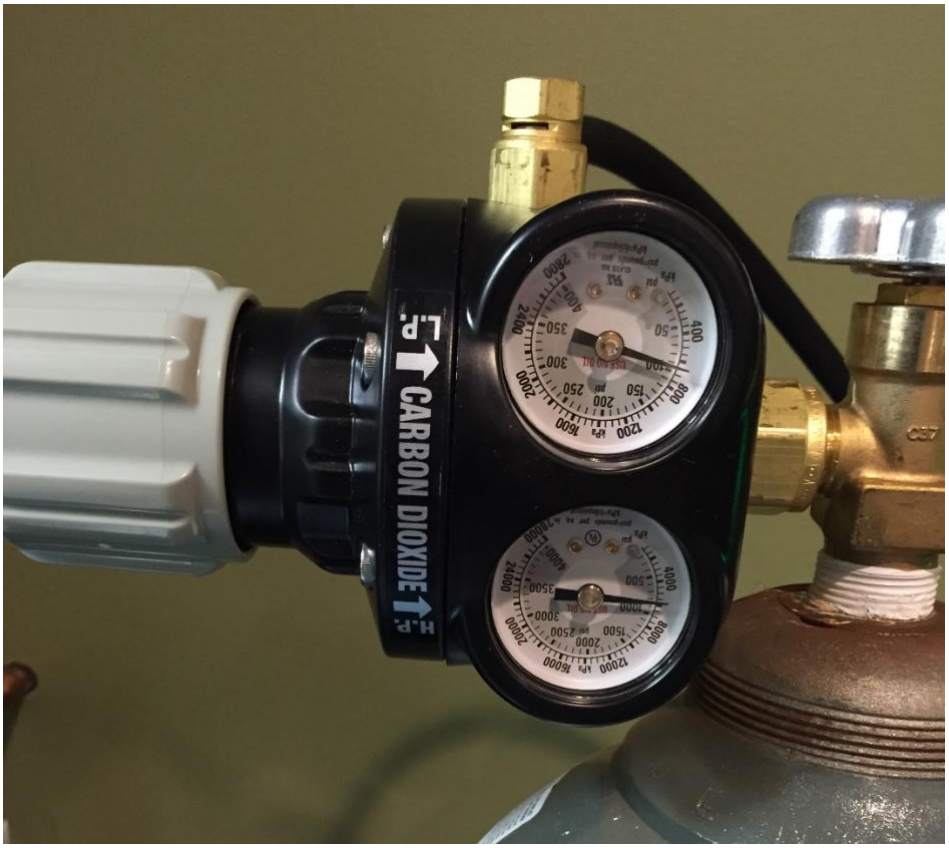
CO2 System Guide

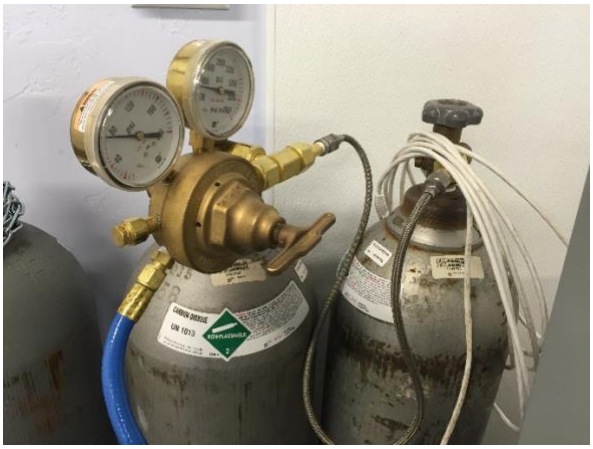
CO2 is available in bottles and dewars. Bottles have normally 700 psig pressure in them. This must be reduced to 90 psig to go into our machines. This requires a gauge on the bottle and a regulator past the gauge to set the pressure at 90 psig. A bottle is shown below with a pressure gauge and regulator. You may gang multiple bottles together. The hose attaches to the regulator and goes to the machine. At the machine the hose requires an end that is male ½" NPT. This is true for all Bio-Response Alkaline Hydrolysis Systems (Human and PET).



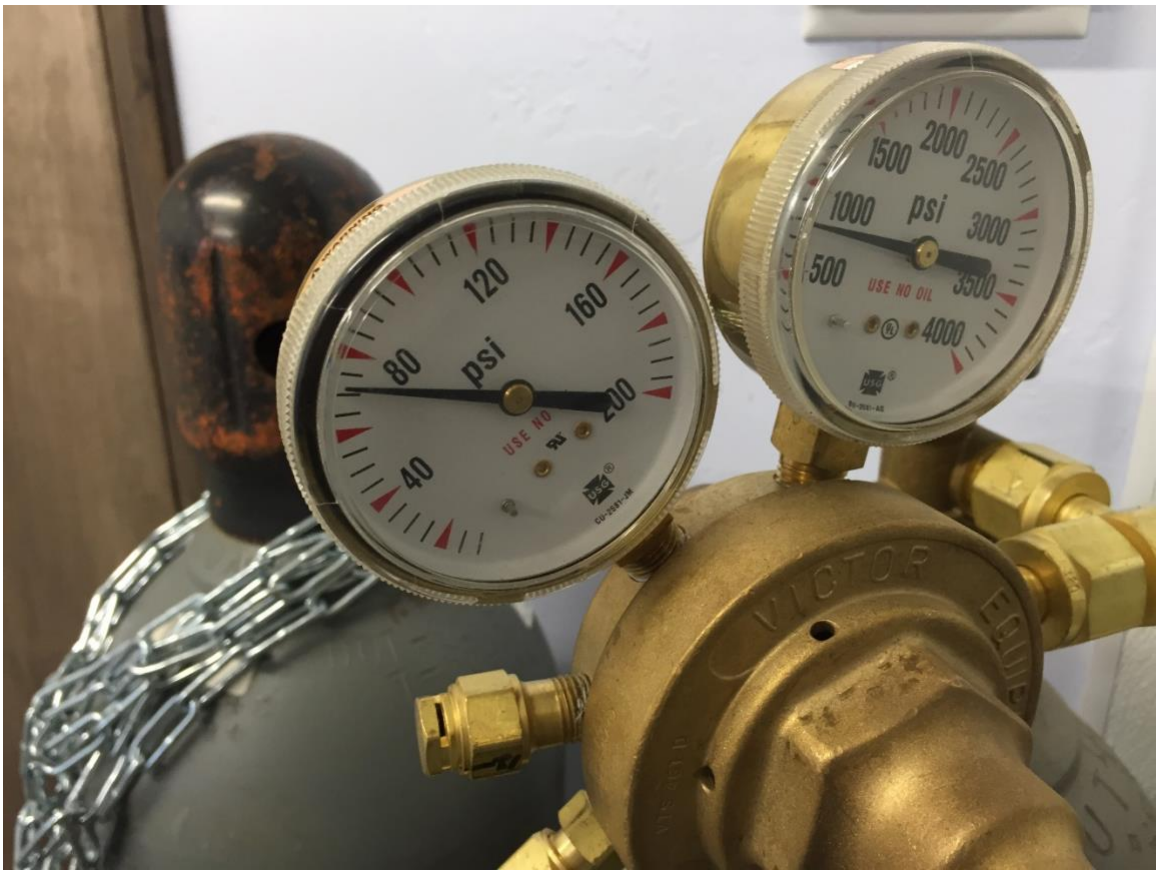
Below the gauge shows 700 psig bottle pressure (bottom gauge) and the pressure regulator is set just below 100 psig (top gauge). Never set the gauge over 90 psig especially for a high temperature AH system.



Below and on the next page are shown two bottles ganged together, with another common gauge setup. The first gauge nearest the bottle shows the bottle pressure and the second gauge shows the pressure setting. This one could be increased to 90 psig but for a PET machine, it can be set lower (depends on the valve opening going into the CO2 valve on the machine



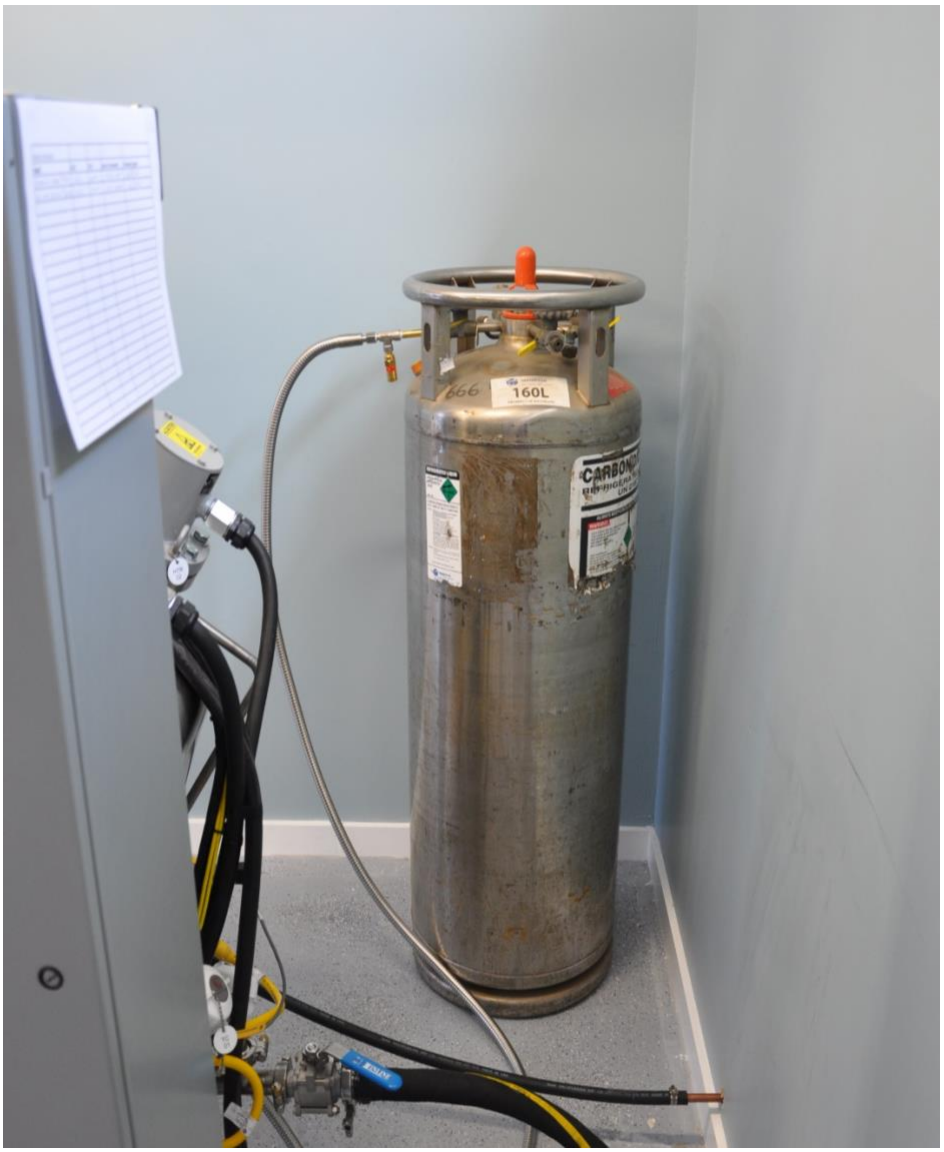
This regulator is set at 70 psig. For the HT human you can go to 90 psig.



For the Pet and Human Systems, if you run more than 3-4 cycles per week it may be time for you to switch from tanks (each tank holds 50 pounds of CO2) to a dewar. The basic dewar holds 400 pounds of CO2 however it loses 2% each day if not being used. This is because a dewar is different than a bottle. The bottle is pressurized to 700 psig and can hold the CO2 indefinitely. The dewar is only 300 psig so to maintain that pressure it has to discharge CO2 each day in a regeneration step. It makes no sense to have a dewar if you only run one or two times per week whether human or pet systems. If you run daily then you need to switch to the dewar. CO2 is much less expensive per pound if purchased in a dewar. Dewars can be swapped (like the one shown on the next page) or they can be permanently mounted outdoors and refilled on a routine basis. Most restaurants that have a soda machine use a dewar for their carbonation. Dewars are available in larger sizes also if your volume continues to increase.

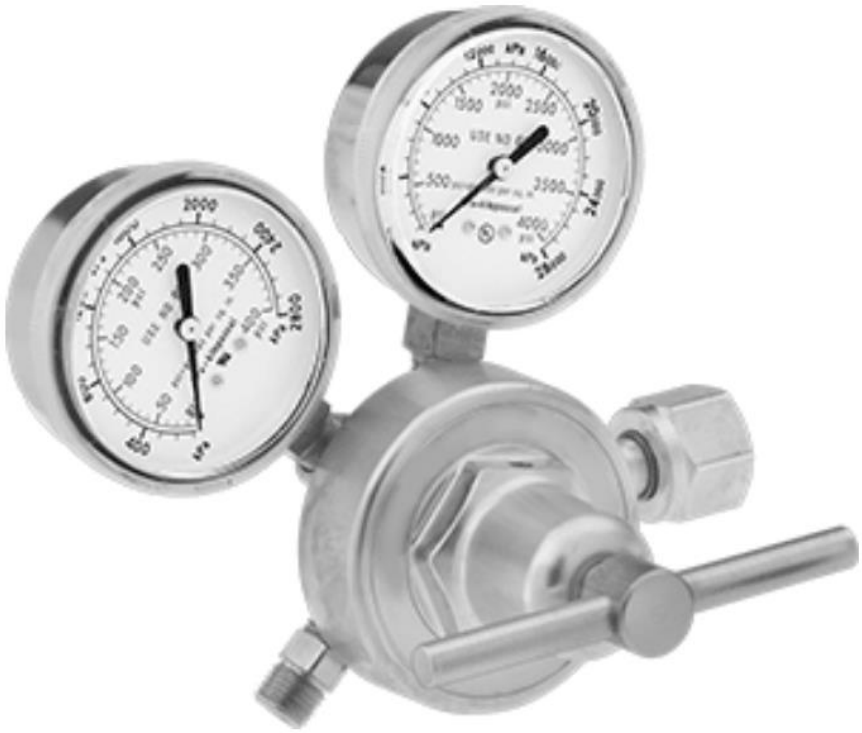
See the next page to see what a dewar looks like. You want to use the gas side, not the liquid side. You can use the same regulator and hose on the dewar as you used on the bottle. The decision to go from bottles to a dewar is simply volume related.

Below is a dewar, this one is a 400 pound dewar (holds 400 pounds of CO2). It is slightly taller than a bottle and about 18" diameter.



You can get the gas regulator at McMaster Carr: It is less than $200.

https://www.mcmaster.com/carbon-dioxide-regulators/tank-mount-pressure-regulating-valves-for-air-and-inert-gas-9/



Male Outlet × Female Inlet Single-Stage Valve With T-Handle

In Summary:

1. You need a hose with a ½" male NPT fitting at the machine end
2. You need a regulator set at 90 psig (6 bar) pressure; no more!
3. You need a bottle, or bottles ganged together, and a tank gauge with a regulator
4. You need to install a CO2 sensor in the room with the machine (for safety, if there is a leak, you cannot breathe CO2)
5. Your tank supplier can normally get the hose and gauge / regulator unit