

## *FLOTEC INC*

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In order to utilize the system's benefits, you should follow the instructions listed below. The TCS transfill system maximizes your refill potential by utilizing a series of high pressure supply cylinders in a cascading order to incrementally build pressure in the empty tank so that your highest pressure supply cylinder can be used to maximum benefit. It is helpful to number the supply cylinders in order to remember which of your supply cylinders is the most highly pressurized. The number tags should be easy to move from tank to tank and we recommend the tanks be numbered with number one as the lowest pressure tank. When you begin to fill the empty tank with your first supply cylinder, the tank will fill with pressurized gas until the pressure inside both the supply cylinder and the tank is equal. This new pressure will slightly lower the supply cylinder's pressure with each fill. The decrease in pressure of the final supply cylinder in the TCS transfill system will be very small because the difference in pressure between the tank being filled and the pressurized supply cylinder will be nearly negligible by the end of the pressurization process. Thus the TCS transfill system ensures the highest pressure fills per pressurized supply cylinder.



**Figure 1**

Figure 1 shows a three supply tank system with one outlet. The greater the number of supply tanks the better utilization of the gas supply because the supply tanks can be drained to lower pressures while maintaining a higher final pressure in the tank being filled.

1. Label the pressurized supply cylinders with numbers in order to easily identify the order of use. The lowest pressure supply tank should be labeled one, the second lowest, two and so on.
2. Attach the empty tank to the outlet fill hose and open its tank valve.
3. In some cases, FDA guidelines require that the tank be vented and evacuated prior to refilling. This is done using the venting valve. It is oriented to face the wall to reduce the possibility of injury from debris ejected during the venting process. If you use a vacuum pump for evacuation, it may be connected to the vent port after venting.
4. When you have attached the tank you wish to pressurize to the system, open the supply manifold master shutoff valve.
5. Next, begin to pressurize the empty tank by shutting the evacuation/venting valve, opening the supply manifold valve attached to the first pressurized supply tank.
6. Once the two tanks are equal in pressure, close the first supply manifold valve and open the second supply manifold valve, then continue with each valve until you have equalized with the highest pressure supply tank. Be sure to close each successive valve before opening the next fill valve to avoid equalizing the supply tanks. This will reduce the effectiveness of the system. Note that there is a filtered restrictor to control the fill rate to maintain a safe rate of fill to prevent excessive heating of the gas, which can cause oxygen fires. This will extend the equalization time during filling. If this time interval increases significantly, the filter orifice may need replacement.
7. Close all valves (including the supply manifold master shutoff valve) and remove the now pressurized tank.
8. When your highest pressure supply tank depletes to below your highest desired fill pressure rotate a fresh tank into the highest numbered tank and renumber the supply tanks accordingly.

For additional information and tips for using Transfill systems visit the following URLs.

See also P/N 810-7007-001 Rev “C”, 810-7007-002 Rev “A”, 810-7008-001 Rev “B”

<http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm070270.pdf>

<http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/PublicHealthNotifications/ucm062088.htm>