Ten Do's and Don'ts for Vacuum Systems

1. Never assemble glassware to lateral bars on your racks. Instead, use vertical bars to hold the finger clamps supporting your manifold and traps.
2. When starting-up a new vacuum line or one that has been exposed to air, it is best not to overfill the dewar. New or exposed systems have considerable amounts of water that is adsorbed in the glass. Thus, it is best to fill your trap-dewars to about 1/3 capacity and wait another half-hour or so until you fill the dewar all the way to the top. This avoids pressure spikes that occur when the liquid N2 boils-off and the condensate is collected too high in the trap.
3. Never use cryogenic traps on a leaking vacuum system. Oxygen and other materials can be trapped as a liquid or solid. Which in turn can clog the vacuum throughput and present catastrophic conditions from pressure build up as the materials return to gas and increases volumetric pressures by factors of x600 or greater.
4. Restrict the use of silicone greases to traps only and avoid using the substance on adapter joints, stopcocks and orings. Silicone grease has a very short life span[1] and tends to polymerize through out a vacuum system. This makes cleaning a system very difficult when it comes to repairs. In addition, silicon dust can cause sensitive electronic equipment to fail. Instead, use **Apezion M** grease for joints and orings and use **Apezion N** for glass stopcocks. Both have longer lasting properties, the latter is more expensive but provides a lubricant for rotating stopcock plugs.
5. If you frequently empty traps, silicone grease is an economic alternative. However, users should remove old grease and apply a new coating as often as possible. This will help avoid having your glass joints becoming permanently seized together.
6. When cleaning glassware in a base-bath, never soak joints that are connected together. Base baths can chemically fuse the two inter-locking pieces into one permanent piece.
7. When shutting down a system, always vent your traps before you turn-off your mechanical pump. This will avoid the back-streaming of pump oil into your system and allow the volatiles in your trap to boil-off without dangerous pressure build-up.
8. Hi-vacuum glass stopcocks should always have indexed numbers that match the plug to the barrel. These parts should not be interchanged.
9. Tygon and rubber hose tend to weld onto glass. To avoid accidents consider hose adapters that allow you to attach a hose to removable glass components otherwise always use razor blades to cut away old hoses.
10. Glass breaks only when two combined effects take place: Force & Flaws. It is important to always consider ways to reduce these effects. Over time flaws are inevitable. So use extra care on older glassware.

[1] Dow Corning silicone grease has a product shelf-life (in the tube) of about 18 months. When exposed to light or vacuum the grease can degrade in about two-weeks.