

TeachSpin's CMP Vacuum system

The TeachSpin/Janis Dewar system uses liquid nitrogen as a coolant, and insulates it from ambient temperature by means of a vacuum space between stainless-steel outer and inner walls. We have chosen to make both that "insulating space" and an interior "working space" into user-controllable volumes that can be separately or jointly controlled. We interface this Dewar to the exterior "vacuum world" using industry-standard KF25 flanges.

Users might have their own high-vacuum system to support our Dewar's needs, but we can also recommend a suite of dedicated vacuum hardware for those who wish it:

Our suggested vacuum system is based on a modern and oil-free **pumping module** from Pfeiffer, which uses a diaphragm forepump and a turbo-molecular main pump to give turnkey access to high vacuum. It is mounted on a custom-made wooden support which also houses the thermocouple-gauge readout.

The combination reaches working pressure ($< 10^{-5}$ Torr) within minutes, and requires no cooling-water connections. The pumping system is equipped with a wide-range **vacuum gauge**, and comes equipped with a sequencer for safe start-up and shut-down of the turbo pump.

Our recommended vacuum system also includes all the **plumbing** to connect the pump to the Dewar, complete with a high-vacuum valve and all the fittings needed to accommodate the vacuum gauge and the two vacuum-access ports of the Dewar.