

Rheodyne Tech Tip 1: Avoiding Pressure Transients

Air in the sample loop can cause instantaneous system pressure drop that eventually returns to a normal level. Air causes the pressure to drop when the injector moves from the LOAD to the INJECT position. When large sample loops (>100 μL) are partially loaded, air present in the needle port tube is pushed into the sample loop (see [Figure 1](#)). Air can also enter the sample loop from siphoning, which occurs when the vent line is higher than the injection port. In either case, upon injection, the system pressure collapses the air bubble, causing pressure to drop momentarily. A pressure drop in the system caused by air results in changes in retention time, artifact peaks, and affects column performance.

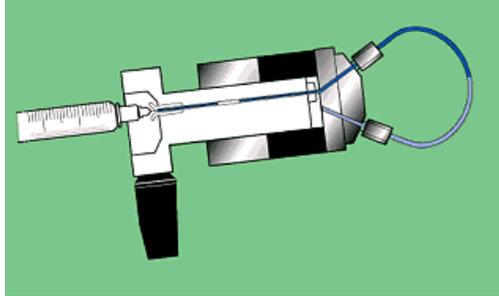


Figure 1. Air (white) present in the needle port tube is pushed by the syringe during loading into the sample loop.

Pressure drops can be avoided by removing the air in the needle port tube. Do this by flushing about 1 mL of mobile phase with a luer syringe with needle port cleaner. Keep the needle port tube filled with mobile phase by occasional flushing. Adjust the vent line(s) so that the outlet is at the same horizontal level as the needle port (see [Figure 2](#)). For additional injection troubleshooting, refer to the Rheodyne® [Troubleshooting Guide](#).

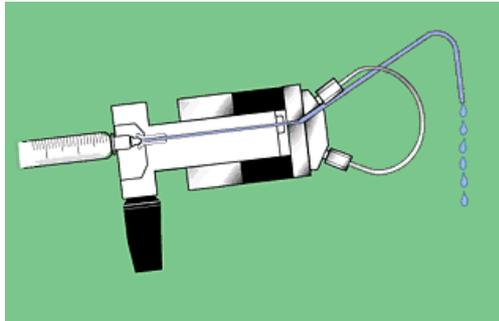


Figure 2. Pathway of the flushing mobile phase using the needle port cleaner when the injector is in INJECT.