

U/HPLC System Shutdown & Reactivation Advice

INTRODUCTION

Before any extended period of inactivity, it is important to follow the appropriate shutdown procedure to prevent damage to the LC system. This limits the potential for aggressive mobile phase constituents to corrode system components and also eliminates the risk of microbial growth. Similarly, following an appropriate start-up protocol, after a period of system inactivity or storage, will ensure the system is fit for purpose and help avoid unnecessary system downtime.

SYSTEM SHUTDOWN PROCEDURE

The following steps should be considered:

1. Clean and store the column as recommended by the manufacturer; the storage solvent is usually specified on the column QC certificate. An example column cleaning procedure can be found in Avantor ACE Knowledge Note AKN0004.
2. Replace the column with a zero dead volume (ZDV) connector.
3. Flush the system at a low flow (generally half the normal flow rate employed) with the current solvents and method to remove any sample remaining on the system.
4. If the system has been used with buffer solutions, replace the buffer bottle with pure HPLC grade water and purge the channel for 5 minutes. Flush the entire system for at least 30 minutes to fully remove buffer salts.
5. If aggressive organic media has been used, replace the solvent bottle with a non-aggressive organic solvent (e.g. ethanol, methanol, IPA) and purge the channel for 5 minutes. Flush the entire system for at least 30 minutes.
6. Mix a 50:50 solution of water/organic solvent (e.g. methanol, ethanol, IPA) and insert all solvent and wash solution lines. Purge all channels for at least 5 minutes and then flush the entire system for at least 30 minutes. Ensure the autosampler needle is also flushed with this 50:50 solution.
7. Turn off the power to all modules in the system and empty the waste container.

SYSTEM REACTIVATION

1. Install a ZDV connector, replacing any column present in the system.
2. Turn on the power to all modules in the system. **Do not** turn on the detector lamp if the room is cold.
3. *Prepare a new cleaning solution of 50:50 water/organic solvent (e.g. methanol, ethanol, IPA) and insert all solvent and wash solution lines. Prime/purge all channels for at least 5 minutes and then flush the entire system for at least 30 minutes.
4. Check to see if the needle wash and seal wash need replacing.
5. Check system performance and autosampler accuracy by performing a minimum of six injections of caffeine, paraben or acetone, or other system suitability standard, and check %RSD values for peak area and retention time.

*If the system was not shut down in the manner described on page 1, then it may be necessary to additionally perform steps 3-5 from the shutdown procedure.

RECOMMENDATIONS

If the system has been shutdown for an extended period, the following additional checks can be made:

1. Perform leak test/valve test.
2. Perform pressure test - verify system pressure is consistent with pressure readings from before system shutdown and that no pressure fluctuations are observed.
3. Perform oven temperature accuracy test.
4. Check flow rate accuracy.
5. Measure dwell volume and dispersion (see Avantor ACE Knowledge Notes AKN0001 and AKN0017)
6. Perform detector lamp intensity test and check baseline for low noise and drift.
7. Check detector cell cleanliness by performing an intensity test (refer to LC system user manual).

These tests (including step 5 from System Reactivation) can also be performed at any time to check instrument function and performance. It is recommended to perform these tests annually and keep a record of the results.