Companion Solvent Change

Between Normal and Reversed Phase Solvents

TELEDYNE ISCO
A Teledyne Technologies Company

Chromatography Technical Note
TN09

Overview

The technical note provides instructions for swapping normal and reversed phase solvent systems on Teledyne Isco's Combi*Flash*® Companion® and Companion® 4x flash chromatography systems *without* a Solvent Selection Module.

> ☑ ***Note***
>
> These instructions do not apply to the Combi*Flash* Companion XL system.

Solvent Change: Normal to Reversed Phase

The four main steps below describe a normal to reversed phase solvent change on a Companion system and column 1 of a Companion 4x system. Refer to *Companion 4x System Differences* to change solvents on columns 2 through 4 of a Companion 4x system.

1. Prepare for the solvent change (refer to Figure 1):

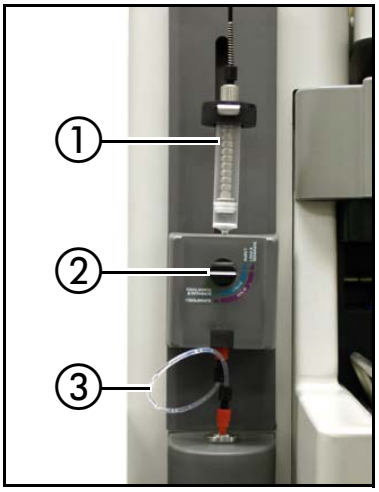

Figure 1: Prepare system for solvent changeover

① Solid sample cartridge with cap
② Operation Mode knob set to Solid Sample: Load and Separate position
③ Priming Tube in place of column

   a. Place an empty solid sample cartridge on the injection port. Be sure to attach the solid load cartridge cap to the cartridge.

      If using an adjustable cap, adjust the plunger down to the bottom of the cartridge.

   b. Turn the Operation Mode knob to the Solid Sample: Load and Separate (horizontal) position.

   c. Replace the Redi*Sep*® column with a priming tube.

2. Dry the solvent lines and system plumbing:

   a. Remove the solvent inlet lines from the solvent reservoir (Figure 2).

Figure 2: Remove inlet lines from solvent

   b. Select the Tools>Autoprime command from the PeakTrak menu (Figure 3).

      Autoprime will pump air to remove existing solvent from the system. Allow the Autoprime to finish.

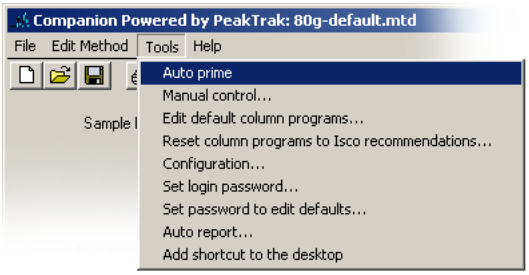

Figure 3: Tools>Autoprime menu command

> ☑ ***Note***
>
> Solvent changeover steps using the Autoprime feature may also be performed using the Tools>Manual Control menu command (Figure 4). Manual control requires the user to be present at all times.

3. Prime the system with an intermediate solvent — the reversed phase B solvent. This assumes that the B solvent is the strongest of the two solvents, typically acetonitrile (ACN) or methanol MeOH).

   a. Place both A and B solvent inlet lines in the B solvent reservoir.

b. Select the Tools>Autoprime menu command.

Repeat this step three times or until no air bubbles are seen passing through the priming tube.

4. Prime the system with the solvents for the next purification run:
   a. Place the A solvent inlet line in the A solvent reservoir, typically water. The B solvent line should remain in the B solvent reservoir.
   b. Select the Tools>Autoprime menu command. The system is ready for reversed phase operation when the Autoprime is complete.

Solvent Change: Reversed to Normal Phase

The four main steps below describe a reversed to normal phase solvent change on a Companion system and column 1 of a Companion 4x system. Refer to *Companion 4x System Differences* to change solvents on columns 2 through 4 of a Companion 4x system.

1. Prepare for the solvent change. (Refer to Figure 1 and instruction steps 1a through 1c in the previous section titled *Solvent Change: Normal to Reversed Phase*.)
2. Purge water from the system:
   a. Place both A and B solvent inlet lines in the B solvent reservoir, typically ACN or MeOH.
   b. Select the Tools>Autoprime menu command. Repeat this step three times or until no air bubbles are seen passing through the priming tube.
3. Dry the solvent lines and system plumbing:
   a. Remove the solvent lines from the solvent reservoir.
   b. Select the Tools>Autoprime menu command. Autoprime will pump air to remove existing solvent from the system. Allow the Autoprime to finish.
4. Prime the system with solvents for the next purification run:
   a. Place the solvent A inlet line in the non-polar normal phase solvent reservoir.
   b. Place the solvent B inlet line in the polar normal phase solvent reservoir.
   c. Select the Tools>Autoprime menu command. When the Autoprime is complete, the system is ready for normal phase operation.

Companion 4x System Differences

Some of the steps must be modified because of the flow path differences on columns 2 through 4 of a Companion 4x system. Whenever the solvent change step refers to the Autoprime menu command, perform the step to prime column channel 1. Then, perform the instructions below for columns 2 through 4 before continuing with the next solvent change step.

1. Ensure there is an empty solid sample cartridge on the injection port and the column has been replaced with a priming tube.
2. Select the Tools>Manual Control menu command (Figure 4).
3. Select the Solvent option from the Manual Control window.
4. Select Column 2.
5. Select the Use solid sample flow path check box. Because this box is checked, instructions referring the Operation Mode knob can be ignored.
6. Set the Flow Rate, ml/min to 50.
7. Click the Prime B button.

   For substeps that require only one Autoprime, allow the system to pump solvents for 2 minutes. For substeps that require three Autoprimes, allow the system to pump for 5 minutes.
8. Click the Stop button.
9. Click the Prime A button and stop the pump after 2 or 5 minutes accordingly.

Repeat these steps for column channels 3 and 4, selecting the appropriate column in step 4.

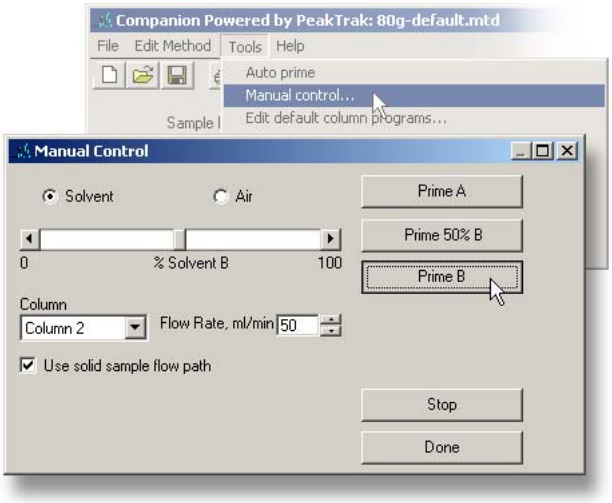

Figure 4: Tools>Manual Control menu command

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