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G1311A Quaternary Pump Purging/Priming

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Purging the Quaternary Pump

If you are using the quaternary pump for the first time, if the quaternary pump was switched off for any length of time (for example, overnight), or if the quaternary pump lines are empty, it is advisable to purge the quaternary pump before running an analysis. During purging any air bubbles are driven out of the solvent path, ensuring the quaternary pump is able to deliver solvent reliably to the system.

Which Solvents are Best?

Alcohols have the best physical characteristics for purging the quaternary pump. The surface-wetting characteristics ensure effective purging of the quaternary pump. Isopropanol is recommended for the purge procedure, however, methanol or ethanol are also excellent solvents for purging. In particular, if you have been using aqueous solvents, and the solvent lines are empty, purging first with alcohol is recommended. Because aqueous solvents have a high surface tension, a much longer time would be needed to purge the quaternary pump sufficiently if aqueous solvents were used for purging.

Always ensure the solvents you use for purging are clean.

Purging the Pump

The quaternary pump will be purged by opening the purge valve. This will redirect the solvent flow to the waste exit of the valve instead of passing through the whole system.

Purging the Quaternary Pump

- 1** Ensure that the outlet tube is connected from the purge valve to the waste container.
- 2** Open the purge valve by turning it counterclockwise for one to two revolutions.
- 3** Set the flow rate to a high value (5 ml/min) for the channel containing your organic solvent and turn on the quaternary pump.
- 4** Wait until a continuous stream of solvent comes out of the waste tube of the purge valve.
- 5** Turn off the quaternary pump at the user interface.
- 6** Repeat step 3 through step 5 for the remaining channels in use.
- 7** Close the purge valve and set the required composition and flow rate for your application.

Hints for Successful Use of the Quaternary Pump

- Place solvent cabinet with the solvent bottles always on top (or at a higher level) of the quaternary pump.
- Before operating the quaternary pump flush the vacuum degasser with at least two volumes (30 ml), especially when turned off for a certain length of time (for example, during the night) and volatile solvent mixtures are used in the channels.
- Prevent blocking of solvent inlet filters (never use the pump without solvent inlet filter). Growth of algae should be avoided.
- Check purge valve frit and column frit in regular time intervals.
- When using the quaternary pump at low flow rates (for example, 0.2 ml/min) check all 1/16-inch fittings for any signs of leaks.
- Whenever exchanging the pump seals the purge valve frit should be exchanged too.
- When using buffer application, flush the system with water before switching it off. The seal wash option should be used when buffer solutions of 0.01 Molar or higher will be used for long time periods.
- Check the pump pistons for scratches when changing the piston seals. Scratched pistons will lead to micro leaks and will decrease the lifetime of the seal.