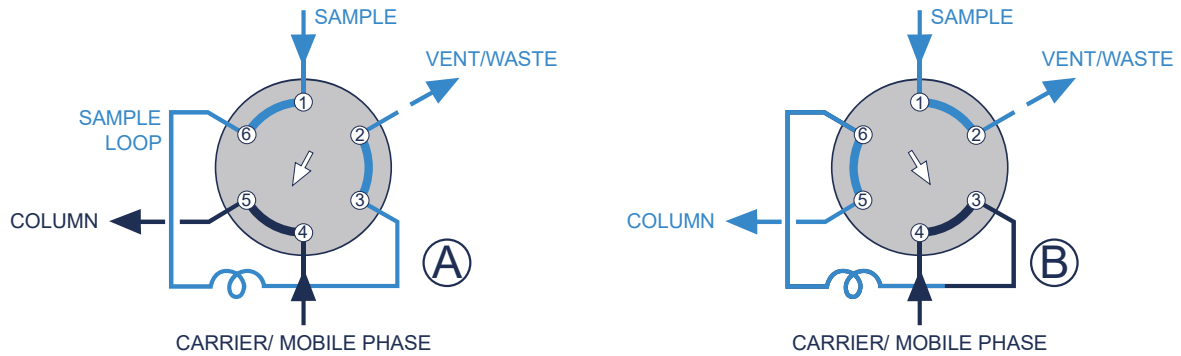




### Injection with a 6-way 2 position automatic valve

When the valve is at position A, the sample is loaded into the loop from the injection port while the mobile phase directly flows through to the column. When the valve is switched to position B, the sample in the sample loop is flushed by the mobile phase and carried onto the column. The flow direction of the mobile phase through the loop is opposite to the flow direction during the loading. This is especially critical for partial-loop injection to avoid sample dilution.

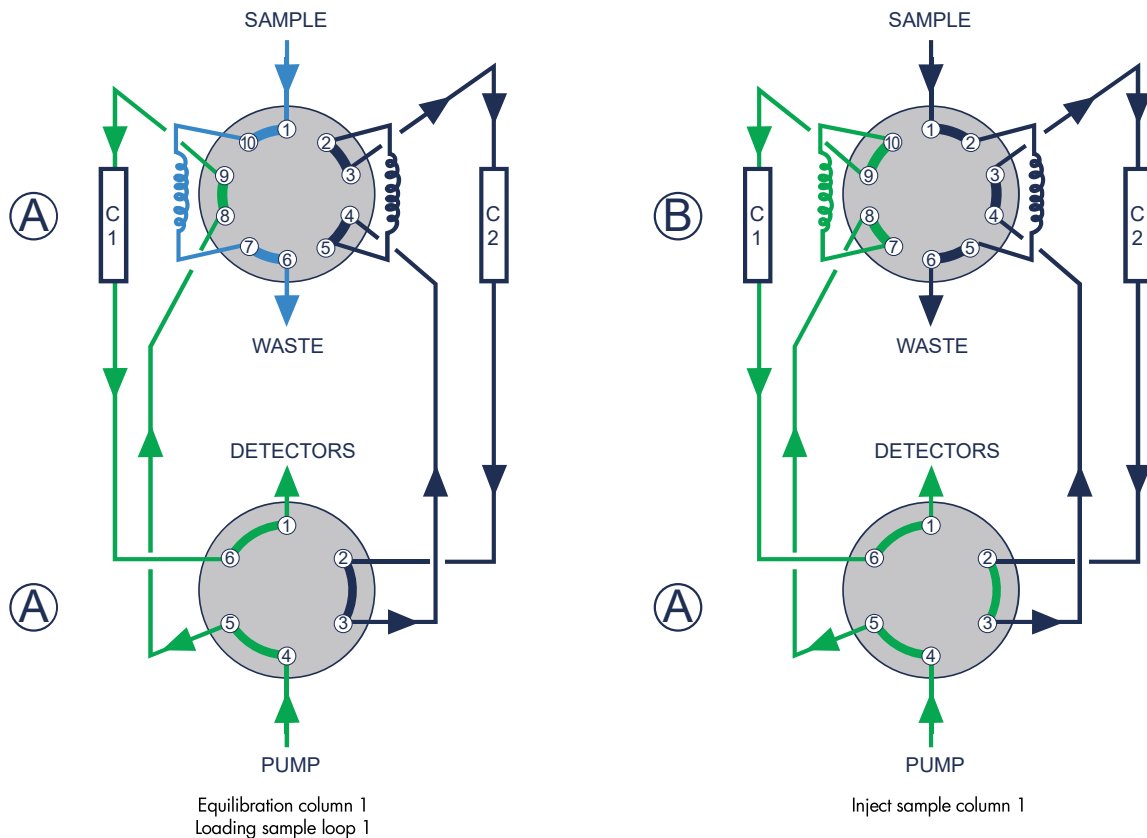


### Injection with a 10-way 2 position automatic valve on 2 different columns

With this coupling of two valves (10-way -2 position valve and switching valve) creating 2 independent fluidic lines, each of the two columns is linked to its own loop.

When valve 1 is in position A and valve 2 in position A, the sample is loaded into loop 1 from the injection port while the mobile phase directly flows through to column 1.

After the column equilibration the valve 2 switch to position B. The sample in loop 1 is flushed by the mobile phase and carried onto column 1.





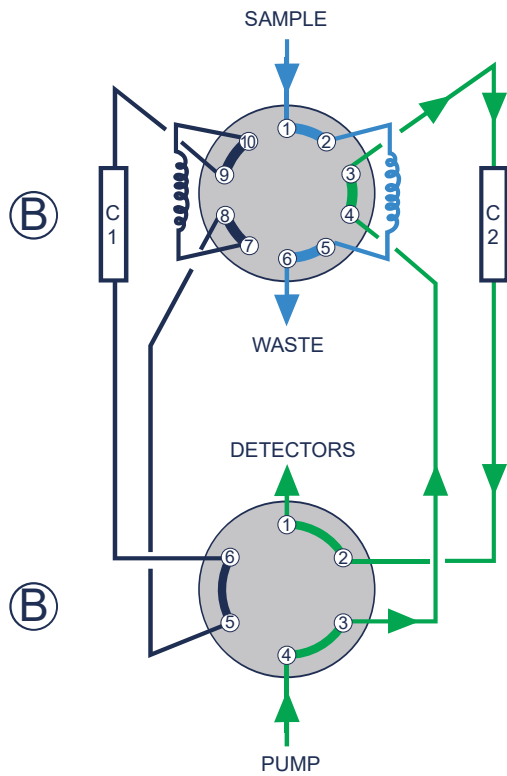
## Injection methods in Flash purification - Liquid Injection



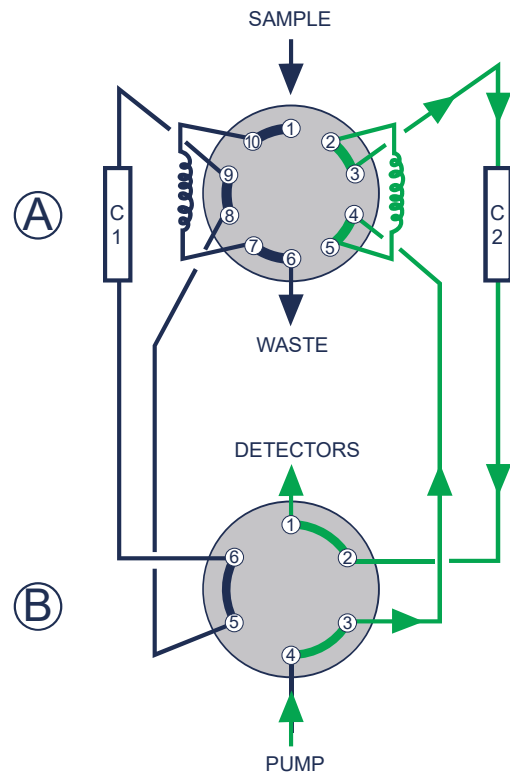
### Injection with a 10-way 2 position automatic valve on two different columns

At the opposite, when valve 1 is in position B and valve 2 is in position B, the sample is loaded into loop 2 from the injection port, while the mobile phase directly flows through column 2.

After the column equilibration, valve 2 toggles to position A. The sample in loop 2 is flushed by the mobile phase and carried onto column 2.



Equilibration column 2  
Loading sample loop 2



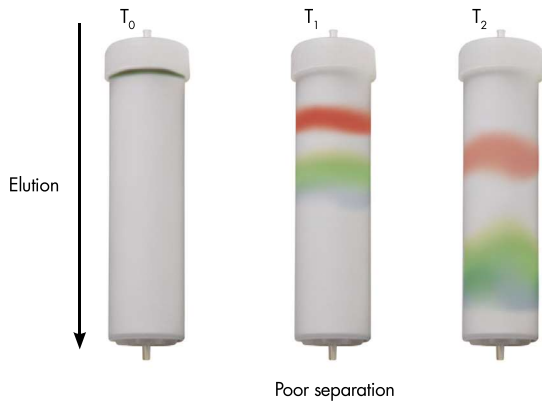
Inject sample column 2



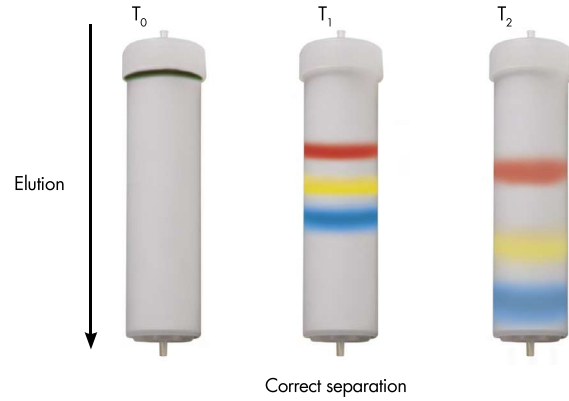


### Injection example 1: Liquid deposit

Liquid deposit on dry columns  
Starting condition to eluent (20% strong solvent)

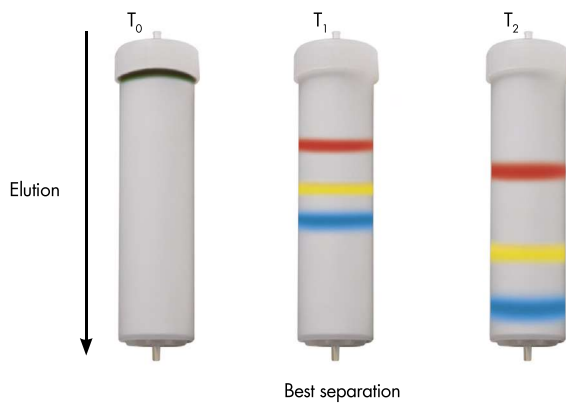


Liquid deposit on pre-conditioned columns with the same starting eluent condition



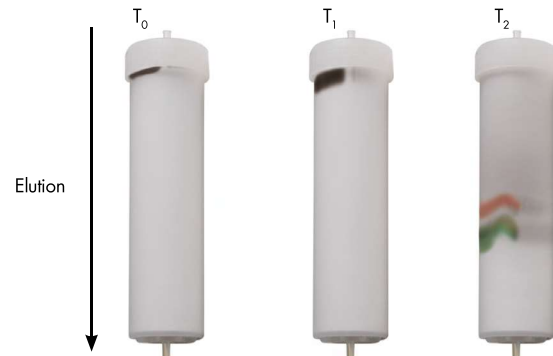
### Injection example 2: Liquid injection

Liquid injection with syringe on pre-conditioned column  
(same starting eluent condition as example 1)



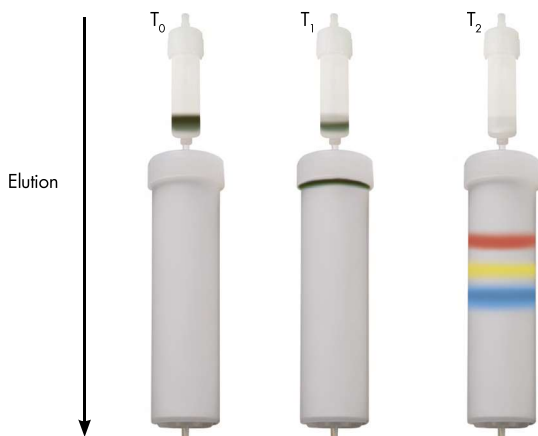
### Injection example 3: Liquid injection on dry column

System not cleaned with starting eluent condition

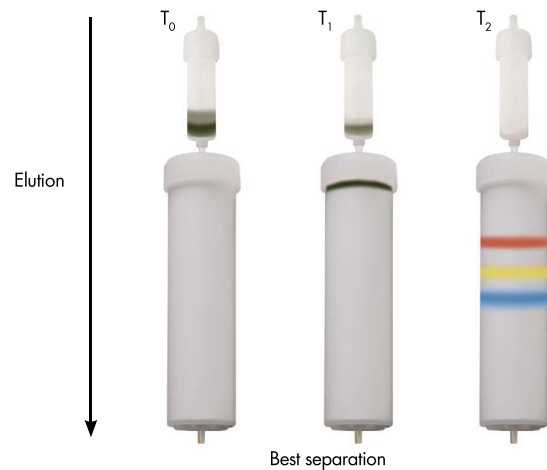


### Injection example 4: Dry-load injection on pre-conditioned column

Dry-load equilibration with 20% of strong solvent



Dry-load equilibration with 100% of weak solvent

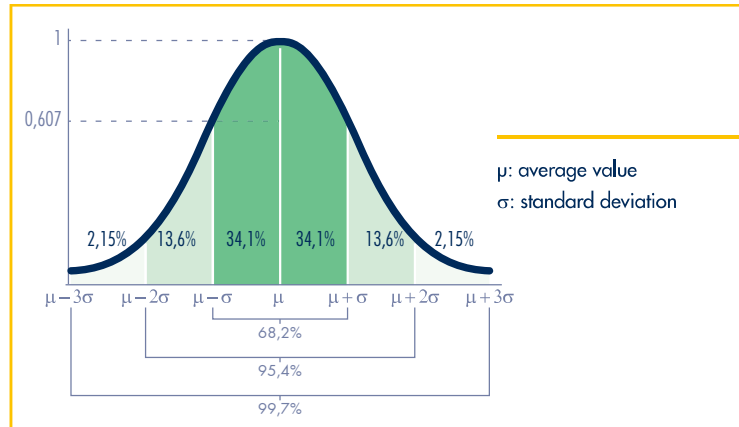




### Peak shape

A peak can be assimilated to a Laplace Gauss curve with different amounts of species (percentage of the surface) according to the standard deviation of this function.

As the goal is to get a full separation of different molecules we can easily guess that the more the peaks are separated, the more the compounds are pure.



### Peak separation

Some parameters must be enhanced to reach the best compromise between elution time (quantity of solvent) and separation (resolution).

These parameters interact, leading to a measurable separation in terms of resolution  $R_s$ .

#### DIFFERENT RESOLUTION VALUES CORRELATED TO THE PEAKS SEPARATION.

