Installation of the 2 position/10 port valve into the 1100 series thermostatted column compartment

In this note the installation of an 2 PS/10 PT column switching valve into the Agilent 1100 Series thermostatted column compartment (G1316A TCC) is described.

The upgrade can be installed in any Agilent 1100 Series thermostatted column compartments (G1316A TCC).

Starting August, 2002, the 2 PS/10 PT column switching valve was introduced as G1316A option#057 (factory installed in G1316A TCC) or as upgrade kit G1316-68709.

General Information

System Requirements

Table 1 Required Firmware and Software Revisions

	Revision
G1316A TCC	A.05.04 and higher
Control Module G1323B	B.03.11 and higher
Agilent ChemStation	A.09.03 and higher

The required firmware for the G1316A TCC and the G1323B control module can be downloaded from the Agilent web

http://www.chem.agilent.com/scripts/cag_firmware.asp

Performance Specifications

Table 2 Performance Specifications

No change on the specifications of the G1316A TCC	
Liquid contacts:	Stainless steel (stator) and PEEK (stator-face and rotor seal)
Port size:	Accepts 10-32 male threaded fittings for 1/16-inch tubing
Flow passage diameters:	Stator and stator face seal - 0.61 mm (.024"), rotor seal-0.46 mm (.018")
Volume in flow passages:	Stator (includes stator face seal)-2.2 µl/hole, rotor seal-0.4 µl/groove
Maximum pressure:	41 MPa (408 bar, 6000 psi)

Delivery Checklist

Make sure all parts and materials have been delivered. The delivery checklist is shown in Table 3 on page 3. Please report missing or damaged parts to your local Agilent Technologies sales and service office.

Table 3 Delivered Parts

Order/part No.	Description	Quantity
G1316-68709	2PS/10 PT Valve kit	1
includes:		
0101-1343	2PS/10 PT valve	1
G1316-68711	Capillary kit *	1
G1316-90100	Technical Note	1

* for details see Table 4 on page 9.

Theory Of Alternating Column Regeneration

- High sample throughput
- Increased productivity
- High efficiency

Alternating column regeneration provides an elegant way to increase the sample throughput. Laboratories running large quantities of samples on LC and LC/MS can easily increase efficiency by using this valve application.

Gradient elution is widely used for fast separation of complex samples in LC. Since gradient elution requires the column to regenerate before subsequent runs, an automated column regeneration system will save valuable analysis time. Agilents' 2-position/10-port valves allow the simultaneous analysis of one sample on one LC column while a second, identical column is flushed (or backflushed) and equilibrated by an additional regeneration pump. At the end of the run, the valve switches to the second position and the next sample is separated on the previously flushed and equilibrated column, while the first column is flushed and equilibrated by the regeneration pump.

Often up to 50% of analysis time is required to equilibrate columns. Using alternating column regeneration saves time, for higher sample throughput.

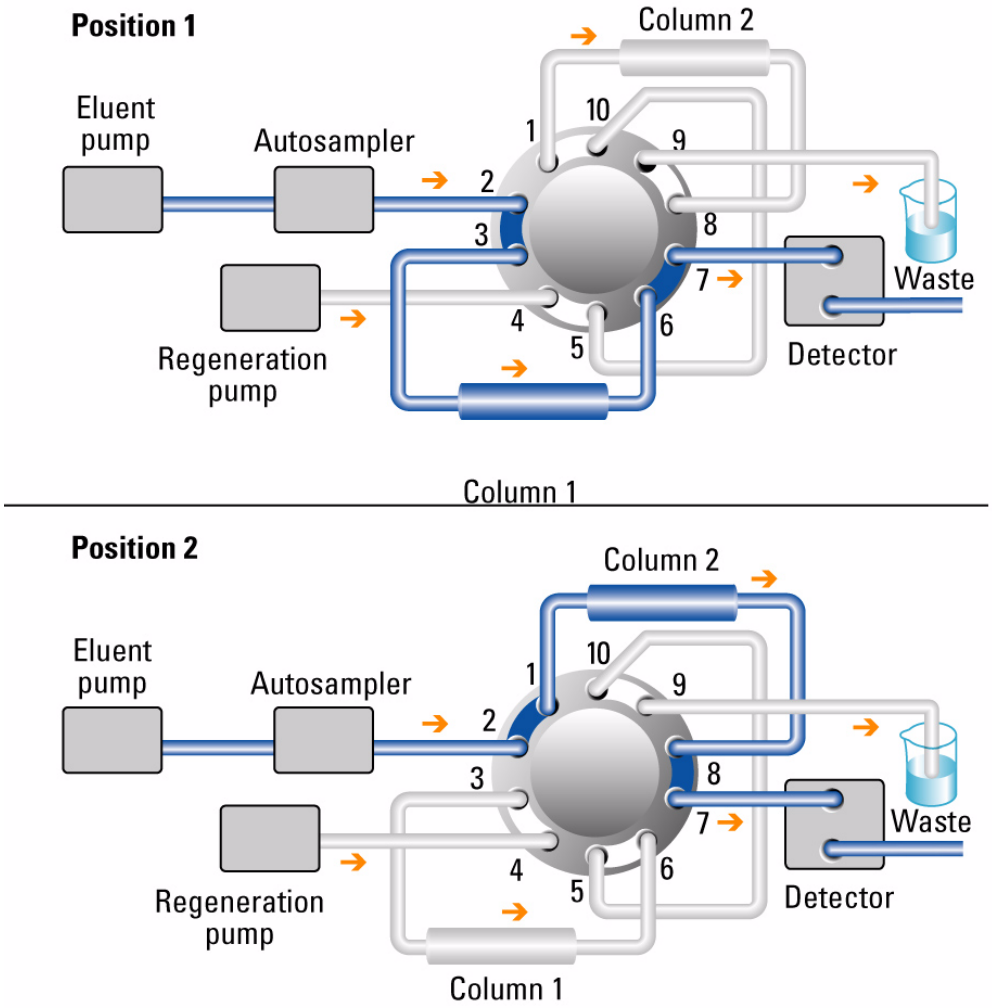

Figure 1 Alternating Column Regeneration

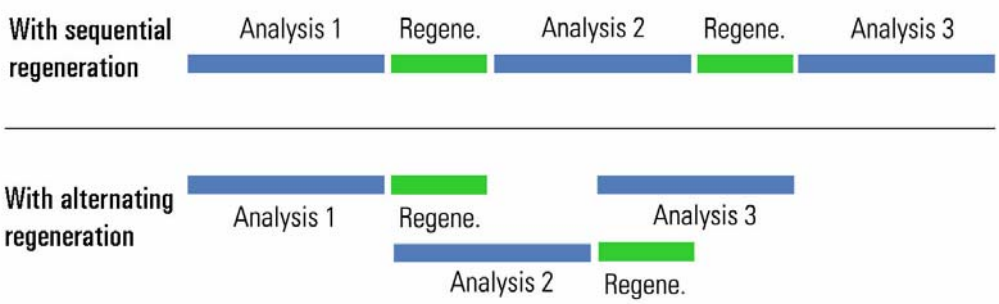

Figure 2 Comparison of cycle times with and without column regeneration

Installation

The installation is divided into the following steps:

1 Installation of the 2 PS/10 PT column switching valve.

2 Updating firmware of the G1316A TCC (if required) and the G1323B control module (if required).

3 Re-installation of the G1316A TCC into the stack.

4 Check for proper operation/configuration.

Tools required:

Pozi-driv #2

Stage 1: Installing the 2 PS/10 PT column switching valve

1 Remove the standard 6-port valve as described in the G1316A TCC Reference Manual, section *Removing the Column Switching Valve* (if installed).

2 Install the 2 PS/10 PT column switching valve as described in the G1316A TCC Reference Manual, section Installing the *Column Switching Valve*.

Stage 2: Upgrading the firmware to actual revision

The new 2 PS/10 PT column switching valve requires specific firmware revisions (see *"System Requirements"* on page 2). Therefore a firmware update might be necessary.

3 Update the G1316A TCC firmware as described in the user interface.

4 Update the G1323B control module as described in the user interface.

Stage 3: Reinstallation of the G1316A TCC

1 Reinstall the G1316A TCC into the stack.

2 The capillary connections may be done later as required (see *Figure 1* on page 5 and *"Capillary Kit"* on page 9).

Stage 4: Check of the proper operation

ChemStation (A.09.03 or above)

1 On the ChemStation you should get the screen below.

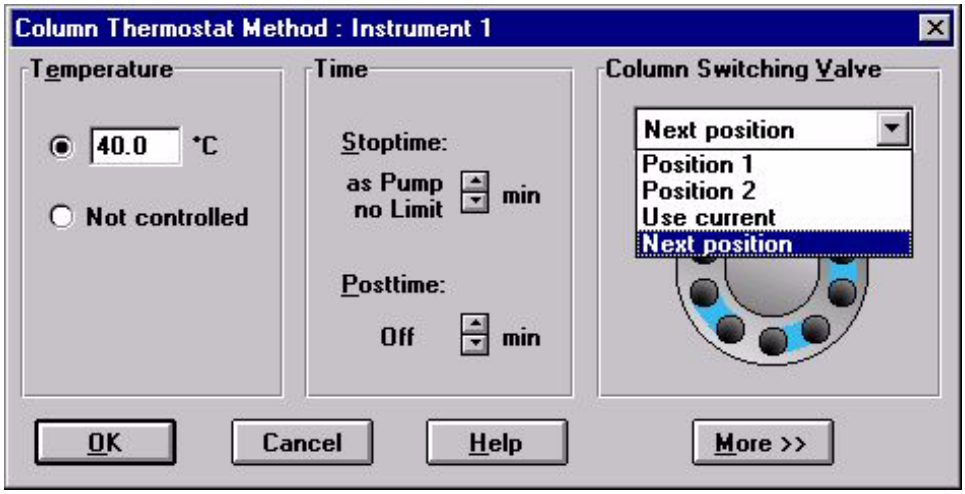

Figure 3 ChemStation screen

2 If the above screen is not visible, use the following command to activate (type into the ChemStation command line):

```
PRINT SENDMODULE$(LTHM,"vt 2")
```

As reply the module sends: **RA 0000 OPT "THERMO, 10Port2Pos"**

NOTE If you re-covert to the standard 6-port valve, then you must change the screen using the command steps below.

3 Type into the ChemStation command line:

```
PRINT SENDMODULE$(LTHM,"vt 1")
```

As reply the module sends: **RA 0000 OPT "THERMO, CSV"**

4 Re-enter above screen. It should show now the correct figure.

Control Module G1323B

1 On the Control module you should get the screen below.

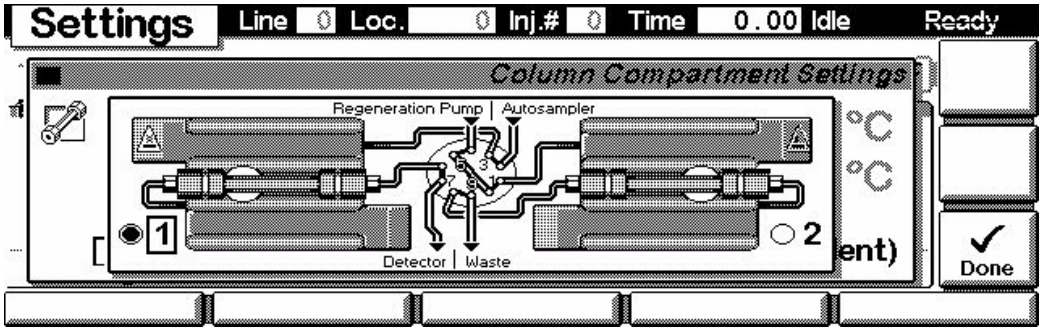

Figure 4 Control module screen

2 If the above screen is not visible, use the following command to activate (press **Views > System > Tests > Col Comp > m.m > Command**):

3 Type into the instruction line:

```
vt 2
```

As reply the module sends: **RA 0000 OPT "THERMO, 10Port2Pos"**

4 press **Execute**.

5 Re-enter above screen. It should show now the correct figure.

NOTE If you re-covert to the standard 6-port valve, then you must change the screen using the command steps below.

6 Type into the instruction line:

```
vt 1
```

As reply the module sends: **RA 0000 OPT "THERMO, CSV"**

Capillary Kit

The below table shows the capillaries/fittings from the capillary kit G1316-68711 used for the *"Theory Of Alternating Column Regeneration"* on page 4. It also gives the connection points.

Table 4 Capillary Kit (G1316-68711)

From	To	ID [mm]	Length [mm]	Qty [EA]	Part number	Remark
Capillaries						
ALS *	Valve (port 2)	0.17	700	1	5065-9932	
Valve (port 3)	TCC 3 µl (In)	0.17	105	1	5021-1816	
TCC† 3 µl (Out)	Column 1	0.17	105	1	5021-1816	
Column 1	Valve (port 6)	0.17	105	1	5021-1816	for short column
Column 1	Valve (port 6)	0.17	200	1	5065-9931	for short column
Valve (port 7)	Detector (In)	0.17	280	1	5021-1818	
Valve (port 1)	TCC 6 µl (In)	0.17	105	1	5021-1816	
TCC† 6 µl (Out)	Column 2	0.17	105	1	5021-1816	
Column 2	Valve (port 8)	0.17	105	1	5021-1816	for short column
Column 2	Valve (port 8)	0.17	200	1	5065-9931	for short column
Valve (port 5)	Valve (port 10)	0.17	105	1	5021-1816	
Regeneration pump	Valve (port 4)	0.25	800	1	5065-9930	
Valve (port 9)	Waste	0.6	2000		5062-2463	PTFE
Ferrules, screws, fingertight fittings, etc.						
1/16" fittings and ferrules				1	5062-2418	10/pk
fingertight fitting long				1	0100-1816	
fitting screw long				10	G1156-22401	
fitting screw extra long				10	G1156-22402	
front ferrule				1	5180-4108	10/pk
back ferrule				1	5180-4114	10/pk
Peek tubing 1/16"		0.18	1500	1	0890-1763	
Plastic tubing cutter				1	8710-1930	
Hex key 3/32"				1	8710-2462	
Socket wrench				1	8710-2391	

* ALS - Autosampler

† TCC - Thermostatted Column Compartment (heat exchanger: 3 µl left or 6 µl right)

Operating

For operation information refer to the help-system on the user-interface and the application note "*High throughput HPLC - Alternating column regeneration with the Agilent 1100 Series valve solutions*" (publication number 5988-7831EN), see http://www.chem.agilent.com.

Installation of the 2 position/10 port valve into the 1100 series thermostatted column compartment
Operating

G1316-90100

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