

## 9 Maintenance

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This chapter provides general information on maintenance and repair of the detector.



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## Introduction to Maintenance

The module is designed for easy maintenance. Maintenance can be done from the front with module in place in the system stack.

### NOTE

There are no serviceable parts inside.

Do not open the module.

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## Warnings and Cautions

### WARNING

#### Toxic, flammable and hazardous solvents, samples and reagents

The handling of solvents, samples and reagents can hold health and safety risks.

- When working with these substances observe appropriate safety procedures (for example by wearing goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the vendor, and follow good laboratory practice.
  - The volume of substances should be reduced to the minimum required for the analysis.
  - Do not operate the instrument in an explosive atmosphere.
- 

### WARNING

#### Eye damage by detector light



Eye damage may result from directly viewing the UV-light produced by the lamp of the optical system used in this product.

- Always turn the lamp of the optical system off before removing it.
- 

### WARNING

#### Electrical shock

Repair work at the module can lead to personal injuries, e.g. shock hazard, when the cover is opened.

- Do not remove the cover of the module.
  - Only certified persons are authorized to carry out repairs inside the module.
-

**WARNING**

**Personal injury or damage to the product**

**Agilent is not responsible for any damages caused, in whole or in part, by improper use of the products, unauthorized alterations, adjustments or modifications to the products, failure to comply with procedures in Agilent product user guides, or use of the products in violation of applicable laws, rules or regulations.**

- Use your Agilent products only in the manner described in the Agilent product user guides.
- 

**CAUTION**

**Safety standards for external equipment**

- If you connect external equipment to the instrument, make sure that you only use accessory units tested and approved according to the safety standards appropriate for the type of external equipment.
-

# Overview of Maintenance

The following pages describe maintenance (simple repairs) of the detector that can be carried out without opening the main cover.

**Table 13** Simple Repairs

Procedures	Typical Frequency	Notes
Deuterium lamp exchange	If noise and/or drift exceeds your application limits or lamp does not ignite.	A VWD test should be performed after replacement.
Flow cell exchange	If application requires a different flow cell type.	A VWD test should be performed after replacement.
Cleaning flow cell parts cleaning or exchange	If leaking or if intensity drops due to contaminated flow cell windows.	A pressure tightness test should be done after repair.
Leak sensor drying	If leak has occurred.	Check for leaks.
Leak handling system replacement	If broken or corroded.	Check for leaks.

## Cleaning the Module

To keep the module case clean, use a soft cloth slightly dampened with water, or a solution of water and mild detergent.

### **WARNING**

**Liquid dripping into the electronic compartment of your module can cause shock hazard and damage the module**

- Do not use an excessively damp cloth during cleaning.
  - Drain all solvent lines before opening any fittings.
-

# Exchanging a Lamp

**When** If noise or drift exceeds application limits or lamp does not ignite

**Tools required** **Description**  
Screwdriver, Pozidriv #1 PT3

**Parts required** **p/n** **Description**  
G1314-60100 Deuterium lamp

**Preparations** Turn the lamp OFF.

## WARNING

**Injury by touching hot lamp**

**If the detector has been in use, the lamp may be hot.**

→ If so, wait for lamp to cool down.

## NOTE

If you want to use the Agilent DAD lamp instead of the VWD lamp, you have to change the lamp settings in the VWD Configuration to lamp type 2140-0590. This ensures that the DAD lamp's filament heating is operated like in the DAD.

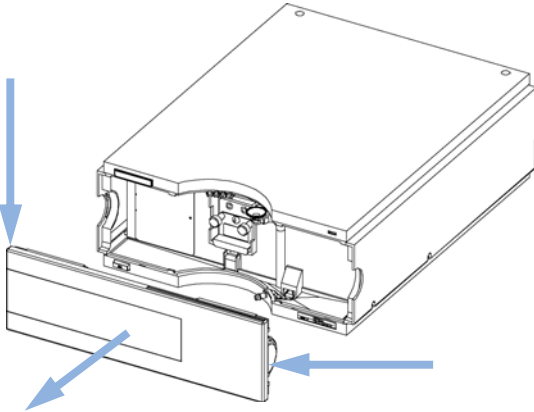
## NOTE

The specification are based on Deuterium lamp (p/n G1314-60100) and may be not achieved when other lamp types or aged lamps are used.

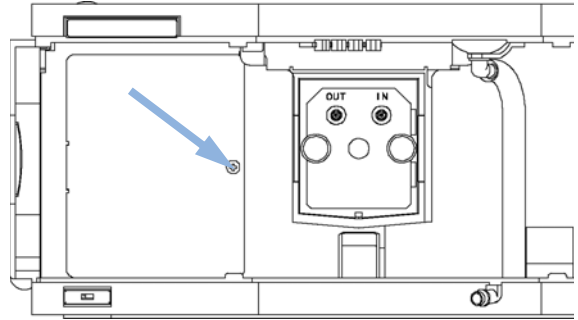
## 9 Maintenance

### Exchanging a Lamp

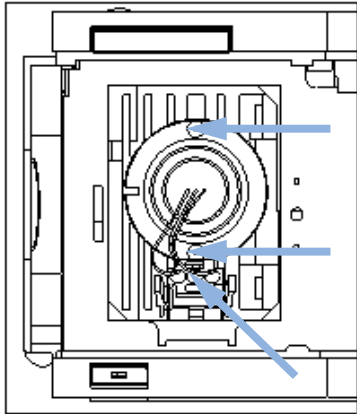
- 1** Press the release buttons and remove the front cover to have access to the lamp area.



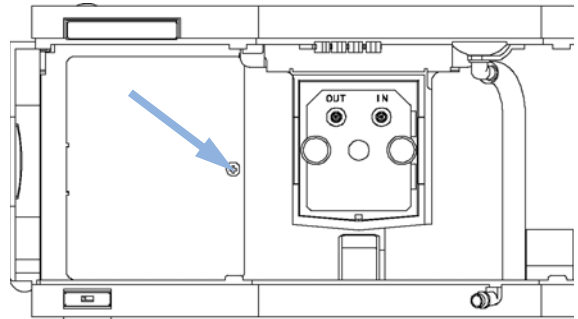
- 2** Unscrew the lamp cover and remove it.



- 3** Unscrew, disconnect and replace the lamp. Insert, fix and reconnect the lamp.

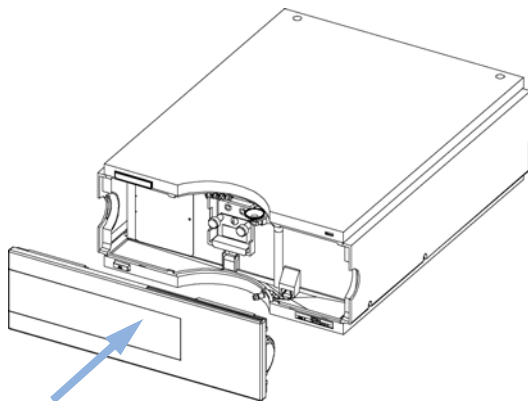


- 4** Replace the lamp cover.





**5** Replace the front cover.



**Next Steps:**

- 6** Reset the lamp counter as described in the User Interface documentation.
- 7** Turn the lamp ON.
- 8** Give the lamp more than 10 min to warm-up.
- 9** Perform [“Wavelength Verification-Calibration”](#) on page 104 to check the correct positioning of the lamp.

# Exchanging a Flow Cell

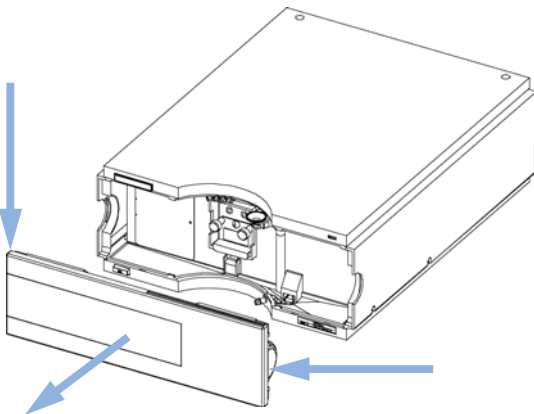
**When** If an application needs a different type of flow cell or the flow cell needs repair.

**Tools required**      **Description**  
Wrench, 1/4 inch

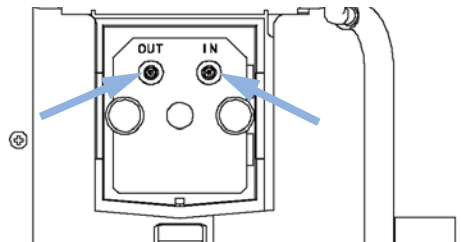
Parts required	#	p/n	Description
	1	G1314-60086	Standard flow cell, 10 mm, 14 µL, 40 bar
OR	1	G1314-60081	Micro flow cell, 5 mm, 1 µL, 40 bar
OR	1	G1314-60083	Semi-micro flow cell, 6 mm, 5 µL, 40 bar
OR	1	G1314-60082	High pressure flow cell, 10 mm, 14 µL, 400 bar

**Preparations** Turn the lamp OFF.

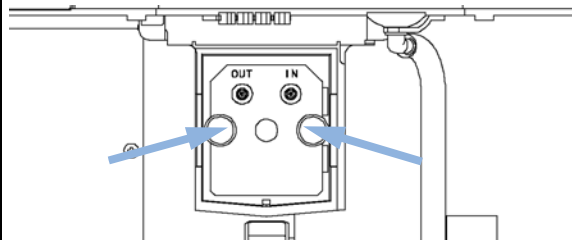
**1** Press the release buttons and remove the front cover to have access to the lamp area.



**2** Disconnect the inlet and outlet capillaries.



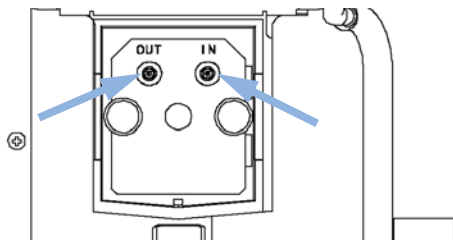
- 3** Unscrew the thumb screws parallel and remove the flow cell.



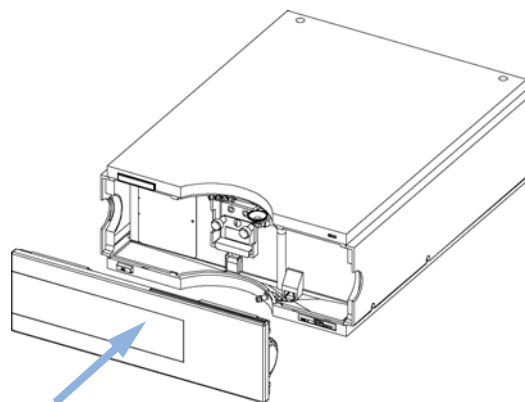
**NOTE**

If you want to maintain flow cell parts, see [“Repairing the Flow Cells”](#) on page 124 or the information provided with your flow cell.

- 4** Press the flow cell completely into the slot and tighten the cell screws (both parallel) until the mechanical stop. Reconnect the inlet and outlet capillaries to the flow cell.



- 5** Replace the front cover.



**Next Steps:**

- 6** To check for leaks, establish a flow and observe the flow cell (outside of the cell compartment) and all capillary connections.
- 7** Insert the flow cell.
- 8** Perform [“Wavelength Verification-Calibration”](#) on page 104 to check the correct positioning of the flow cell.
- 9** Replace the front cover.

## Repairing the Flow Cells

**When** If the flow cell needs repair due to leaks or contaminations.

**Tools required**

**Description**

Wrench, 1/4 inch

Wrench, 4 mm hexagonal

Toothpick

**Parts required**

**Description**

See [“Standard Flow Cell 10 mm / 14 µL”](#) on page 135

See [“Micro Flow Cell, 5 mm / 1 µL \(only for support\)”](#) on page 136

See [“Semi-micro Flow Cell 6 mm / 5 µL”](#) on page 140

See [“High Pressure Flow Cell 10 mm / 14 µL”](#) on page 141

**Preparations**

- Turn off the flow.
- Remove the front cover.
- Remove the flow cell, see [“Exchanging a Flow Cell”](#) on page 122.

### NOTE

The shown cell parts will differ depending upon the flow cell type. For detailed parts schematics, refer to above mentioned pages.

### Disassembling the Flow Cell

- 1 Unscrew the cell screw using a 4-mm hexagonal wrench.
- 2 Remove the SST rings using a pair of tweezers.

### CAUTION

Scratched window surfaces by tweezers

Window surfaces can easily be scratched by using tweezers for removing the windows.

→ Do not use tweezers to remove windows

- 3 Use adhesive tape to remove the peek ring, the window and the gasket.
- 4 Repeat step 1 through step 3 for the other window (keep the parts separate - otherwise they could be mixed!).

### Cleaning the Flow Cell Parts

- 1 Pour isopropanol into the cell hole and wipe clean with a piece of lint-free cloth.
- 2 Clean the windows with ethanol or methanol. Dry it with a piece of lint-free cloth.

#### NOTE

Always use new gaskets.

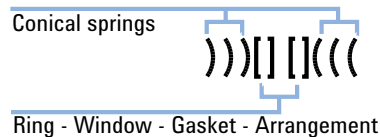
### Reassembling the Flow Cell

- 1 Hold the flow cell cassette horizontally and place gasket in position. Ensure both cell holes can be seen through the holes of gasket.

#### NOTE

The semi-micro #1 and #2 gaskets (items 6 and 7, “[Semi-micro Flow Cell 6 mm / 5 µL](#)” on page 140) look very similar. Do not mix them up.

- 2 Place the window on gasket.
- 3 Place the peek ring on the window.
- 4 Insert the conical springs. Make sure the conical springs point towards the window. Otherwise tightening the cell screw might break the window.



**Figure 38** Orientation of conical springs

- 5 Screw the cell screw into the flow cell and tighten the screw.
- 6 Repeat the procedure for the other cell side.

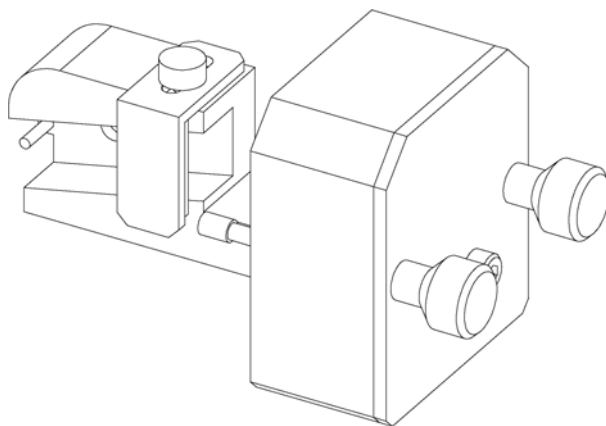
### Next steps

- 1 Reconnect the capillaries.
- 2 Perform a leak test. If OK, insert the flow cell.
- 3 Perform “[Wavelength Verification-Calibration](#)” on page 104 to check the correct positioning of the flow cell.
- 4 Replace the front cover.

## Using the Cuvette Holder

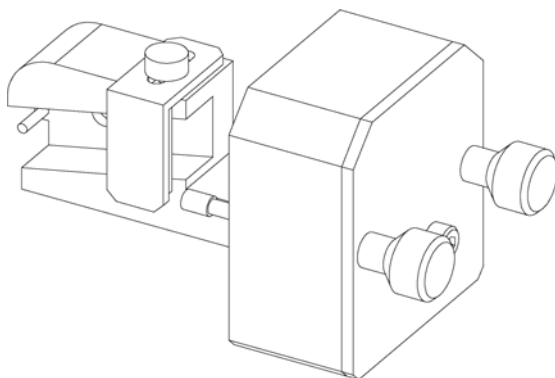
This cuvette holder can be placed instead of a flow cell in the variable wavelength detector. Standard cuvettes with standards in it, for example, National Institute of Standards & Technology (NIST) holmium oxide solution standard, can be fixed in it.

This can be used for wavelength verifications.

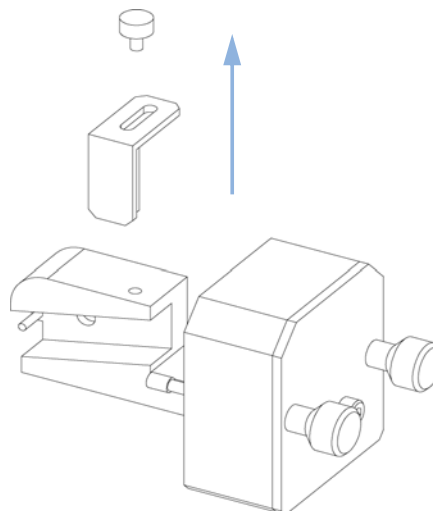


Parts required	#	p/n	Description
	1	G1314-60200	Cuvette Holder
	1		Cuvette with the “standard”, e.g. NIST certified holmium oxide sample

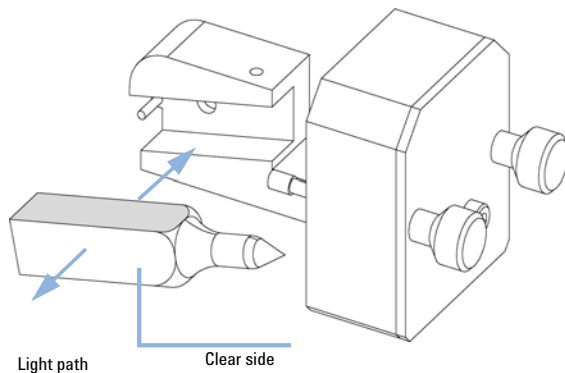
- 1** Locate the cuvette holder on the desk.



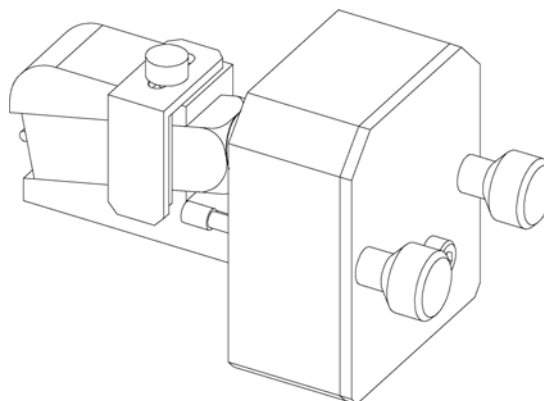
- 2** Unscrew the bracket.



- 3** Insert the cuvette with the sample into the holder. The clear side of the cuvette must be visible.



- 4** Replace the bracket and fix the cuvette.



**Next Steps:**

- 5** Install the cuvette holder in the instrument.
- 6** Perform your Wavelength Verification/Calibration (see ["Wavelength Verification-Calibration"](#) on page 104) to check the correct position of the cuvette holder.

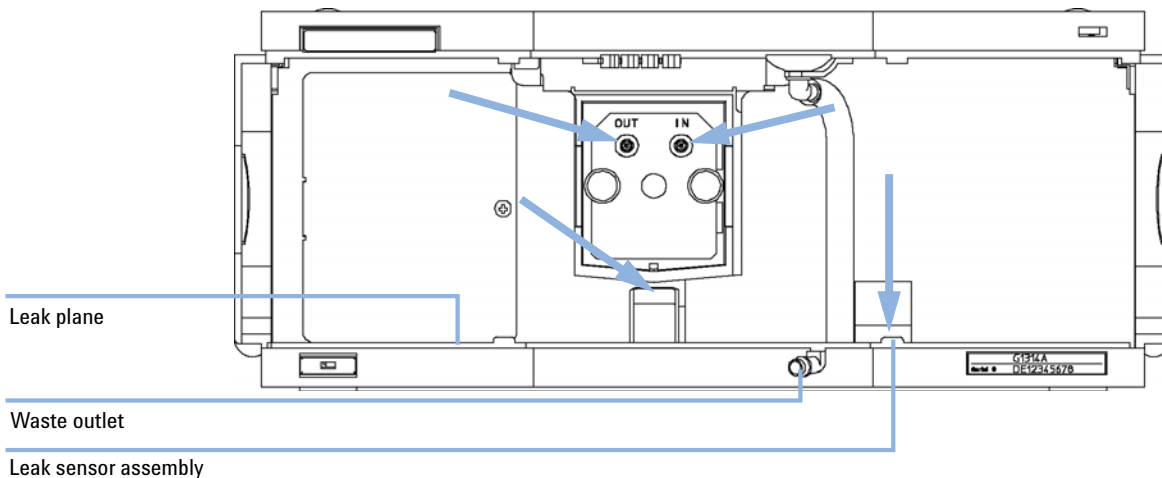
## Correcting Leaks

**When** If a leakage has occurred in the flow cell area or at the capillary connections.

**Tools required**

Description
Tissue
Wrench, 1/4 inch

- 1 Remove the front cover.
- 2 Use tissue to dry the leak sensor area.
- 3 Observe the capillary connections and the flow cell area for leaks and correct, if required.
- 4 Replace the front cover.



**Figure 39** Drying the Leak Sensor



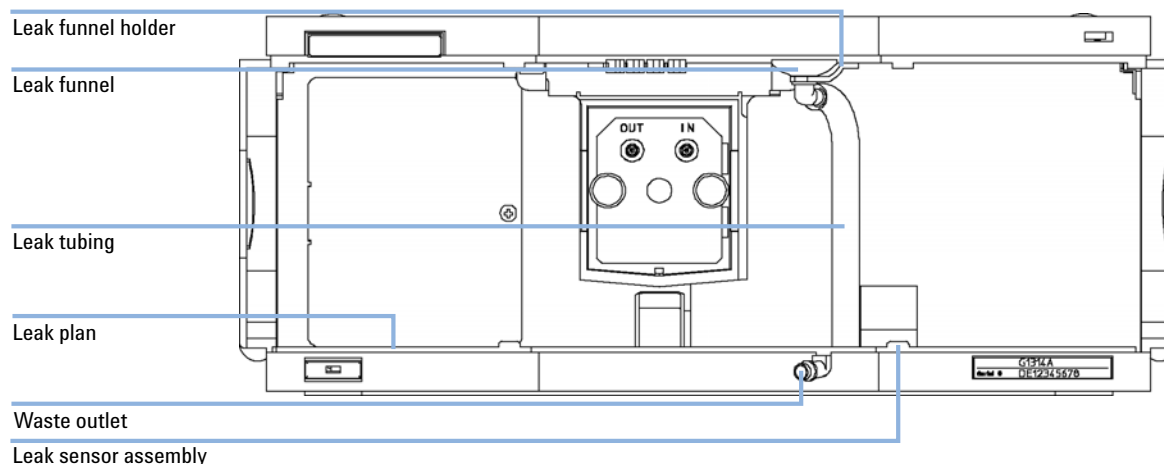
## Replacing Leak Handling System Parts

**When** If the parts are corroded or broken.

**Tools required** None

Parts required	#	p/n	Description
	1	5041-8389	Leak funnel holder
	1	5061-3356	Leak funnel
	1	5062-2463	Corrugated tubing, PP, 6.5 mm id, 5 m

- 1 Remove the front cover to have access to the leak handling system.
- 2 Pull the leak funnel out of the leak funnel holder.
- 3 Pull the leak funnel with the tubing out of its location.
- 4 Replace the leak funnel and/or the tubing.
- 5 Insert the leak funnel with the tubing in its position.
- 6 Insert the leak funnel into the leak funnel holder.
- 7 Replace the front cover.

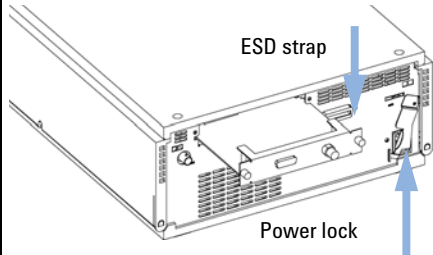
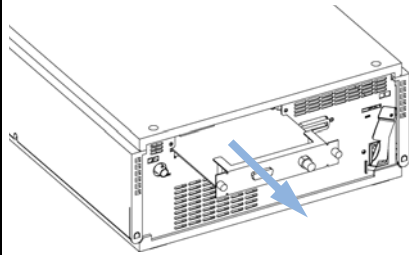


**Figure 40** Replacing Waste Handling System Parts

# Replacing the Interface Board

**When** When defective or for installation of the board or for all repairs inside the detector.

Parts required	#	p/n	Description
	1	G1351-68701	Interface board (BCD) with external contacts and BCD outputs
OR	1	G1369B or G1369-60002	Interface board (LAN)
OR	1	G1369C or G1369-60012	Interface board (LAN)

<p><b>1</b> Install the ESD strap. Move the power lock across the power inlet.</p> 	<p><b>2</b> If required, unscrew and remove the interface board. Place the board on the ESD kit.</p> 
<p><b>Next Steps:</b></p> <p><b>3</b> If required, insert the interface board and fix the screws.</p> <p><b>4</b> Remove the ESD strap.</p> <p><b>5</b> Reinstall the module into the stack.</p>	

## Replacing the Module's Firmware

<b>When</b>	<p>The installation of newer firmware might be necessary</p> <ul style="list-style-type: none"> <li>• if a newer version solves problems of older versions or</li> <li>• to keep all systems on the same (validated) revision.</li> </ul> <p>The installation of older firmware might be necessary</p> <ul style="list-style-type: none"> <li>• to keep all systems on the same (validated) revision or</li> <li>• if a new module with newer firmware is added to a system or</li> <li>• if third part control software requires a special version.</li> </ul>
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<b>Tools required</b>	<b>Description</b>
	LAN/RS-232 Firmware Update Tool
OR	Agilent Diagnostic Software
OR	Instant Pilot G4208A

<b>Parts required</b>	<table> <tr> <th>#</th><th>Description</th></tr> <tr> <td>1</td><td>Firmware, tools and documentation from Agilent web site</td></tr> </table>	#	Description	1	Firmware, tools and documentation from Agilent web site
#	Description				
1	Firmware, tools and documentation from Agilent web site				

<b>Preparations</b>	Read update documentation provided with the Firmware Update Tool.
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**To upgrade/downgrade the module's firmware carry out the following steps:**

- 1 Download the required module firmware, the latest LAN/RS-232 FW Update Tool and the documentation from the Agilent web.
  - [http://www.chem.agilent.com/scripts/cag\\_firmware.asp](http://www.chem.agilent.com/scripts/cag_firmware.asp).
- 2 For loading the firmware into the module follow the instructions in the documentation.

*Module Specific Information*

**Table 14**    Module Specific Information (G1314B/C)

	G1314B VWD	G1314C VWD SL
Initial firmware	A.06.02	A.06.02
Compatibility with 1100 / 1200 series modules	yes, all modules should have the firmware from the same set.	
Conversion to / emulation of G1314A or G1314B	possible, if required	



## 10 Parts and Materials for Maintenance

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Micro Flow Cell 3 mm / 2 $\mu$ L	138
Semi-micro Flow Cell 6 mm / 5 $\mu$ L	140
High Pressure Flow Cell 10 mm / 14 $\mu$ L	141
Cuvette Holder	142
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Kits	144

This chapter provides information on parts for maintenance.



## Overview of Maintenance Parts

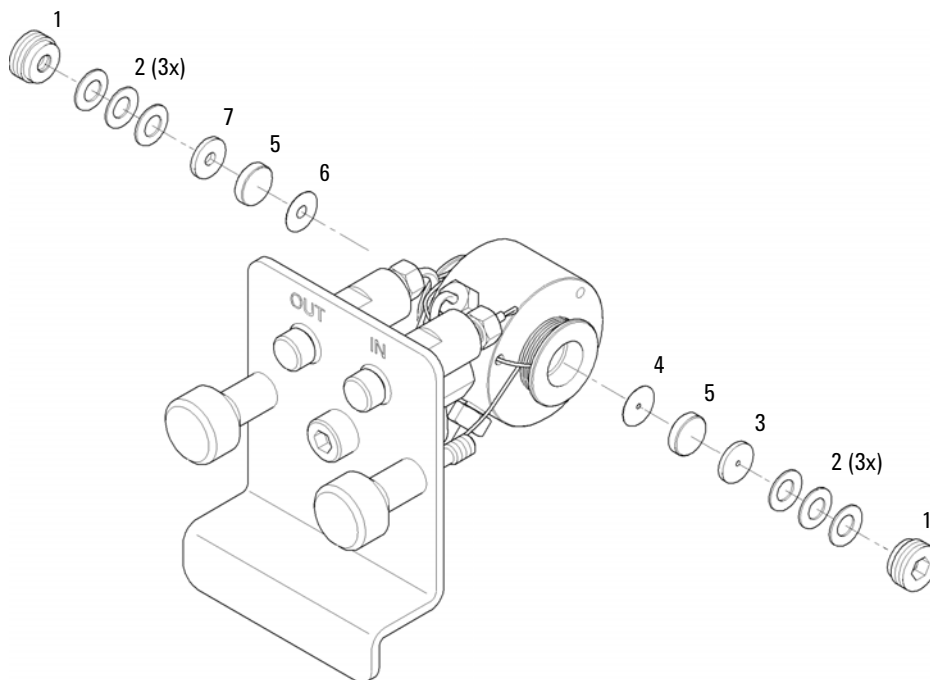
p/n	Description
5181-1516	CAN cable, Agilent module to module, 0.5 m
5181-1519	CAN cable, Agilent module to module, 1 m
G1351-68701	Interface board (BCD) with external contacts and BCD outputs
G1369C or G1369-60012	Interface board (LAN)
G4208-67001	Instant Pilot G4208A (requires firmware B.02.08 or above)
G1314-60100	Deuterium lamp
G1314-60086	Standard flow cell, 10 mm, 14 µL, 40 bar
G1314-60081	Micro flow cell, 5 mm, 1 µL, 40 bar
G1314-60082	High pressure flow cell, 10 mm, 14 µL, 400 bar
G1314-60083	Semi-micro flow cell, 6 mm, 5 µL, 40 bar
G1314-60200	Cuvette Holder
5067-4691	Front Cover
	Leak handling parts

For leak handling parts, see [“Leak Parts”](#) on page 143.

## Standard Flow Cell 10 mm / 14 $\mu$ L

Item	p/n	Description
	G1314-60086	Standard flow cell, 10 mm, 14 $\mu$ L, 40 bar
	5062-8522	Capillary column - detector PEEK 600 mm lg, 0.17 mm i.d., 1/16 inch o.d.
	G1314-65061	Cell Repair Kit, includes 2x Gasket #1, 2x Gasket #2, 2x Window Quartz
1	G1314-65062	Cell screw kit
2	79853-29100	Conical spring kit, 10/pk
3	G1314-65066	Ring #2 kit (IN small hole, i.d. 1 mm) PEEK, 2/pk
4	G1314-65064	Gaskets #2 IN (small hole i.d. 1 mm), KAPTON 10/pk
5	79853-68742	Window quartz kit, 2/pk
6	G1314-65063	Gasket #1 kit (OUT large hole, i.d. 2.4 mm) KAPTON, 2/pk
7	G1314-65065	Ring #1 kit (OUT large hole, i.d. 2.4 mm) PEEK, 2/pk

- 1 Cell screw
- 2 Conical springs
- 3 Ring #2 IN
- 4 Gasket #2 IN
- 5 Quartz window
- 6 Gasket #1 OUT
- 7 Ring #1 OUT



**Figure 41** Standard Flow Cell 10 mm / 14  $\mu$ L

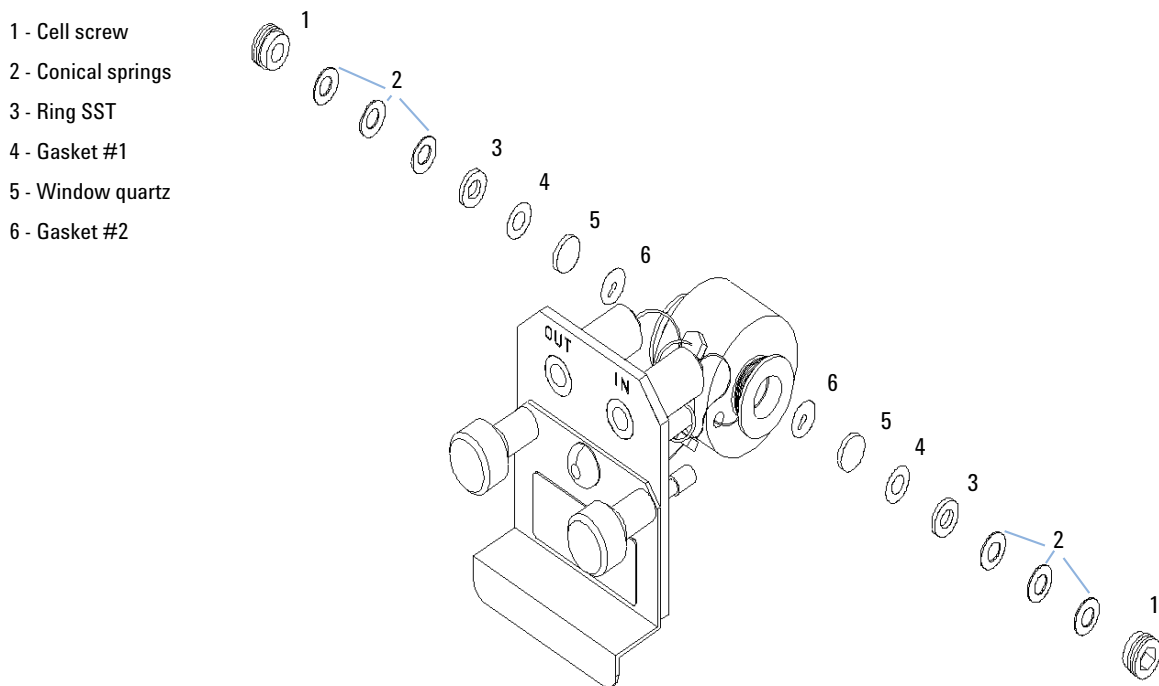
## 10 Parts and Materials for Maintenance

### Micro Flow Cell, 5 mm / 1 µL (only for support)

## Micro Flow Cell, 5 mm / 1 µL (only for support)

Item	p/n	Description
	G1314-60081	Micro flow cell, 5 mm, 1 µL, 40 bar
	5021-1823	Capillary column – detector SST 400 mm lg, 0.12 mm i.d.
1	G1314-20047	Cell screw
	G1314-65052	Cell kit micro, comprises: two windows, two gaskets #1 and two gaskets #2
2	79853-29100	Conical spring kit, 10/pk
3	79853-22500	Ring SST, 2/pk
5	79853-68742	Window quartz kit, 2/pk
4	79853-68743	PTFE gasket (round hole i.d. 2.5 mm, o.d. 8 mm), (10/pk)
6	G1314-65053	Gasket #2, PTFE, quantity=10





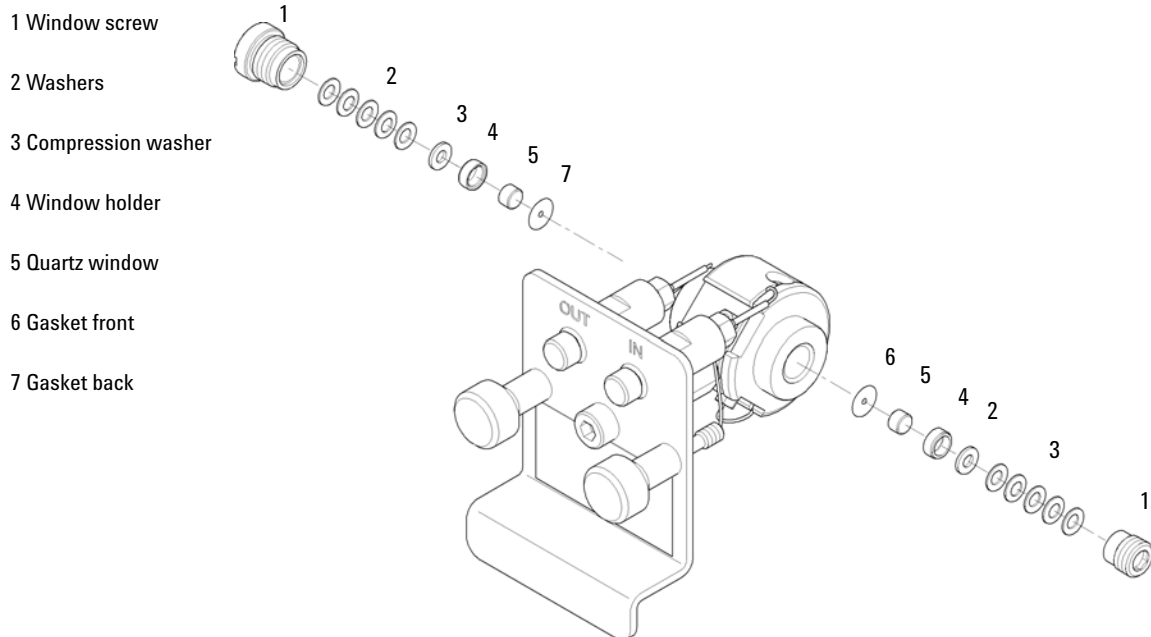
**Figure 42** Micro Flow Cell (5 mm, 1  $\mu$ L, 40 bar)

## 10 Parts and Materials for Maintenance

### Micro Flow Cell 3 mm / 2 µL

## Micro Flow Cell 3 mm / 2 µL

Item	p/n	Description
	G1314-60087	Micro flow cell, without I.D. tag, 3 mm, 2 µL, 120 bar
	5021-1823	Capillary column – detector SST 400 mm lg, 0.12 mm i.d.
1	79883-22402	Window screw
2	5062-8553	Washer kit (10/pk)
3	79883-28801	Compression washer
4	79883-22301	Window holder
5	1000-0488	Quartz window
6	G1315-68710	Gasket FRONT (PTFE), 1.3 mm hole, inlet side (12/pk)
7	79883-68702	Gasket BACK (PTFE), 1.8 mm hole, outlet side (12/pk)
	G1314-87301	Capillary IN (0.12 mm, 310 mm lg)
	G1314-87302	Capillary OUT (0.17 mm, 120 mm lg)
	G1315-68713	Cell repair kit semi-micro, includes window screw kit, Gasket Kit BACK, Gasket Kit FRONT and 4 mm hexagonal wrench
	79883-68703	Window screw kit, includes 2 quartz windows, 2 compression washers, 2 window holders, 2 window screws and 10 washers



**Figure 43** Micro Flow Cell 3 mm / 2  $\mu$ L

## 10 Parts and Materials for Maintenance

### Semi-micro Flow Cell 6 mm / 5 $\mu$ L

Item	p/n	Description
	G1314-60083	Semi-micro flow cell, 6 mm, 5 $\mu$ L, 40 bar
	5021-1823	Capillary column – detector SST 400 mm lg, 0.12 mm i.d.
1	G1314-20047	Cell screw
	G1314-65056	Semi-micro cell kit, includes two quartz windows, one gasket #1, one #2 and two PTFE gaskets.
2	79853-29100	Conical spring kit, 10/pk
3	79853-22500	Ring SST, 2/pk
4	79853-68743	PTFE gasket (round hole i.d. 2.5 mm, o.d. 8 mm), (10/pk)
5	79853-68742	Window quartz kit, 2/pk
6		Semi-micro #1 gasket (long hole 1.5 x 3.5 mm), PTFE
7		Semi-micro #2 gasket (long hole 2 x 4 mm), PTFE

1 - Cell screw

2 - Conical springs

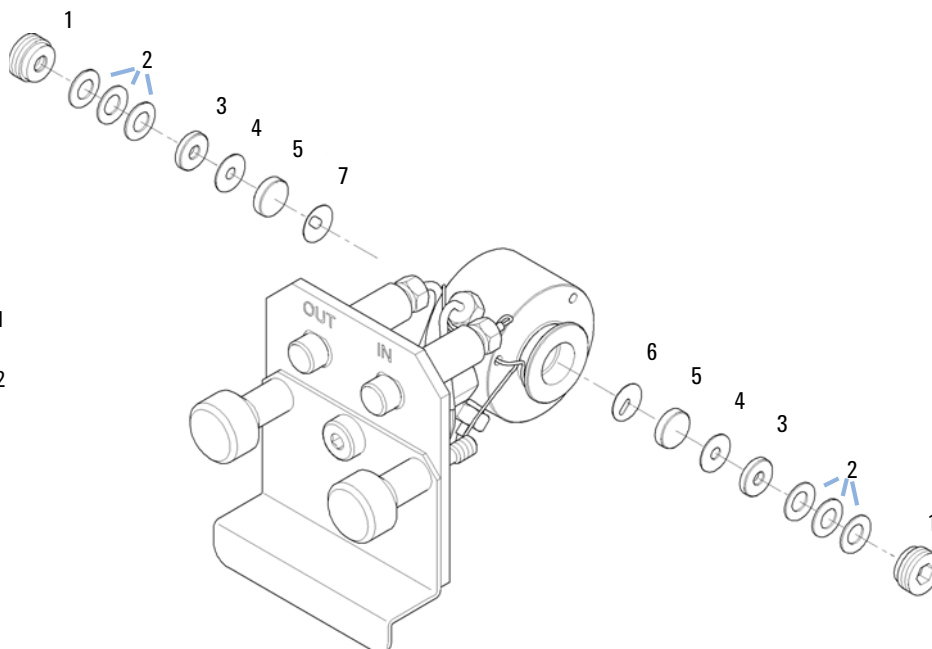
3 - Ring SST

4 - PTFE gasket

5 - Quartz window

6 - Semi-micro gasket #1

7 - Semi-micro gasket #2

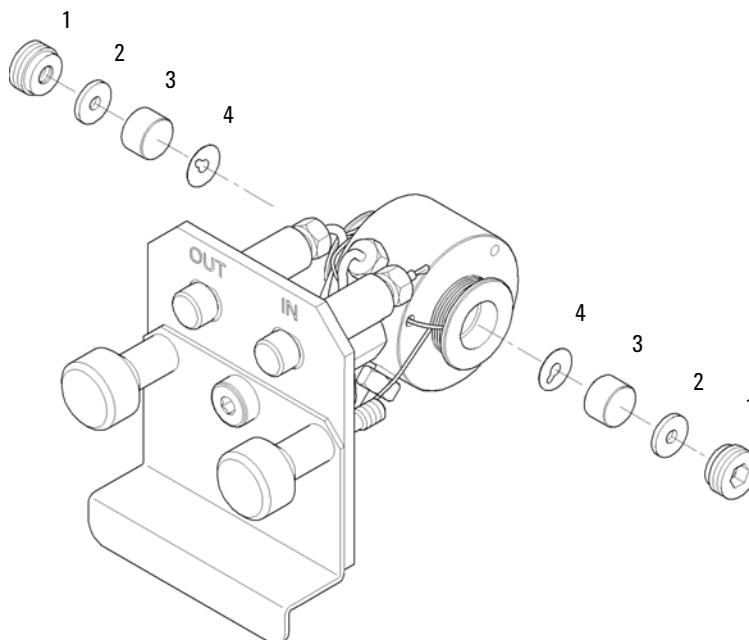


**Figure 44** Semi-micro Flow Cell 6 mm / 5  $\mu$ L

## High Pressure Flow Cell 10 mm / 14 $\mu$ L

Item	p/n	Description
	G1314-60082	High pressure flow cell, 10 mm, 14 $\mu$ L, 400 bar
	G1315-87311	Capillary column – detector 380 mm lg, 0.17 i.d., (includes ferrule front 1/16", ferrule back 1/16" and fitting 1/16").
1	G1314-20047	Cell screw
	G1314-65054	Cell kit Agilent, comprises: two windows, two KAPTON gaskets and two PEEK rings
2		Ring PEEK kit
3		Window quartz kit
4		Gasket kit, KAPTON

- 1 - Cell screw
- 2 - Ring PEEK
- 3 - Quartz window
- 4 - Gasket KAPTON

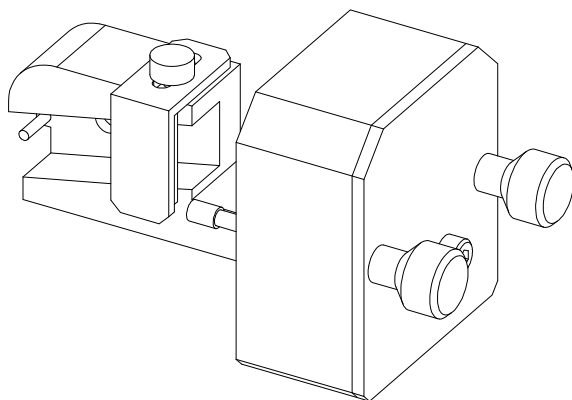


**Figure 45** High Pressure Flow Cell 10 mm / 14  $\mu$ L

## Cuvette Holder

For information the use of the cuvette holder, refer to [“Using the Cuvette Holder”](#) on page 126.

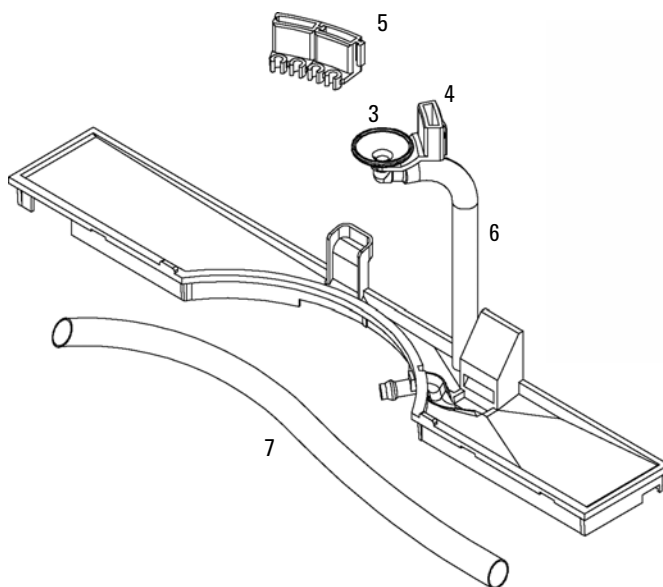
p/n	Description
G1314-60200	Cuvette Holder



**Figure 46**   Cuvette Holder

## Leak Parts

Item	p/n	Description
3	5041-8388	Leak funnel
4	5041-8389	Leak funnel holder
5	5041-8387	Tube clip
6	5062-2463	Corrugated tubing, PP, 6.5 mm id, 5 m
7	5062-2463	Corrugated tubing, PP, 6.5 mm id, 5 m



**Figure 47** Leak Parts

# Kits

## HPLC System Tool Kit

HPLC System Tool Kit (p/n G4203-68708) contains some accessories and tools needed for installation and maintenance of the module.

## Accessory Kit

Accessory kit (p/n G1314-68755) contains some accessories and tools needed for installation and repair of the module.

p/n	Description
0100-1516	Fitting male PEEK, 2/pk
5062-8535	Waste accessory kit, PEEK capillary 0.25 mm i.d., 1/16 o.d., 500 mm long plus 2 MT PTFE tubing i.d. 0.8 mm, 1/16 o.d.
5063-6527	Tubing assembly, i.d. 6 mm, o.d. 9 mm, 1.2 m (to waste)
5181-1516	CAN cable, Agilent module to module, 0.5 m





## 11 Identifying Cables

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This chapter provides information on cables used with the Agilent 1260 Infinity modules.



# Cable Overview

**NOTE**

Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations.

**Analog cables**

p/n	Description
35900-60750	Agilent module to 3394/6 integrators
35900-60750	Agilent 35900A A/D converter
01046-60105	Analog cable (BNC to general purpose, spade lugs)

**Remote cables**

p/n	Description
03394-60600	Agilent module to 3396A Series I integrators  3396 Series II / 3395A integrator, see details in section <a href="#">“Remote Cables”</a> on page 150
03396-61010	Agilent module to 3396 Series III / 3395B integrators
5061-3378	Agilent module to Agilent 35900 A/D converters (or HP 1050/1046A/1049A)
01046-60201	Agilent module to general purpose

**BCD cables**

p/n	Description
03396-60560	Agilent module to 3396 integrators
G1351-81600	Agilent module to general purpose

### CAN cables

p/n	Description
5181-1516	CAN cable, Agilent module to module, 0.5 m
5181-1519	CAN cable, Agilent module to module, 1 m

### LAN cables

p/n	Description
5023-0203	Cross-over network cable, shielded, 3 m (for point to point connection)
5023-0202	Twisted pair network cable, shielded, 7 m (for point to point connection)

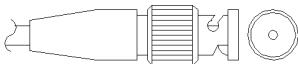
### External Contact Cable

p/n	Description
G1103-61611	External contact cable - Agilent module interface board to general purposes

### RS-232 cables

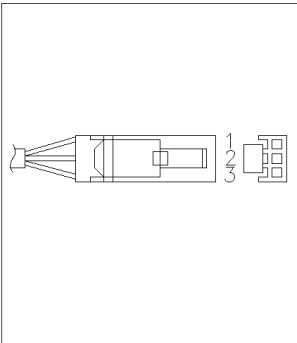
p/n	Description
G1530-60600	RS-232 cable, 2 m
RS232-61600	RS-232 cable, 2.5 m Instrument to PC, 9-to-9 pin (female). This cable has special pin-out, and is not compatible with connecting printers and plotters. It's also called "Null Modem Cable" with full handshaking where the wiring is made between pins 1-1, 2-3, 3-2, 4-6, 5-5, 6-4, 7-8, 8-7, 9-9.
5181-1561	RS-232 cable, 8 m

# Analog Cables

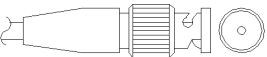


One end of these cables provides a BNC connector to be connected to Agilent modules. The other end depends on the instrument to which connection is being made.

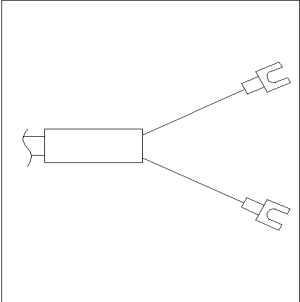
## Agilent Module to 3394/6 Integrators

p/n 35900-60750	Pin 3394/6	Pin Agilent module	Signal Name
	1		Not connected
	2	Shield	Analog -
	3	Center	Analog +

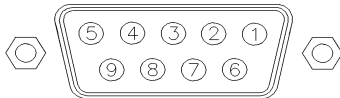
## Agilent Module to BNC Connector

p/n 8120-1840	Pin BNC	Pin Agilent module	Signal Name
	Shield	Shield	Analog -
	Center	Center	Analog +

Agilent Module to General Purpose

p/n 01046-60105	Pin	Pin Agilent module	Signal Name
	1		Not connected
	2	Black	Analog -
	3	Red	Analog +

# Remote Cables



One end of these cables provides a Agilent Technologies APG (Analytical Products Group) remote connector to be connected to Agilent modules. The other end depends on the instrument to be connected to.

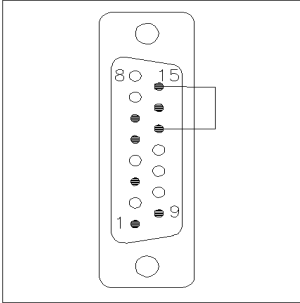
## Agilent Module to 3396A Integrators

p/n 03394-60600	Pin 3396A	Pin Agilent module	Signal Name	Active (TTL)
	9	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	3	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	5,14	7 - Red	Ready	High
	1	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low
	13, 15		Not connected	

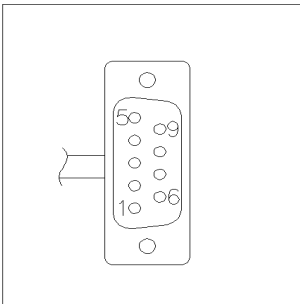
## Agilent Module to 3396 Series II / 3395A Integrators

Use the cable Agilent module to 3396A Series I integrators (p/n 03394-60600) and cut pin #5 on the integrator side. Otherwise the integrator prints START; not ready.

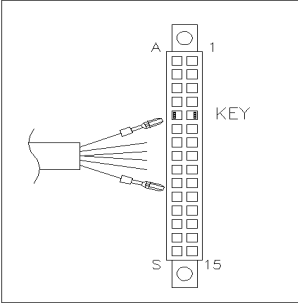
## Agilent Module to 3396 Series III / 3395B Integrators

p/n 03396-61010	Pin 33XX	Pin Agilent module	Signal Name	Active (TTL)
	9	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	3	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	14	7 - Red	Ready	High
	4	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low
	13, 15		Not connected	

## Agilent Module to Agilent 35900 A/D Converters

p/n 5061-3378	Pin 35900 A/D	Pin Agilent module	Signal Name	Active (TTL)
	1 - White	1 - White	Digital ground	
	2 - Brown	2 - Brown	Prepare run	Low
	3 - Gray	3 - Gray	Start	Low
	4 - Blue	4 - Blue	Shut down	Low
	5 - Pink	5 - Pink	Not connected	
	6 - Yellow	6 - Yellow	Power on	High
	7 - Red	7 - Red	Ready	High
	8 - Green	8 - Green	Stop	Low
	9 - Black	9 - Black	Start request	Low

**Agilent Module to General Purpose**

p/n 01046-60201	Wire Color	Pin Agilent module	Signal Name	Active (TTL)
	White	1	Digital ground	
	Brown	2	Prepare run	Low
	Gray	3	Start	Low
	Blue	4	Shut down	Low
	Pink	5	Not connected	
	Yellow	6	Power on	High
	Red	7	Ready	High
	Green	8	Stop	Low
	Black	9	Start request	Low

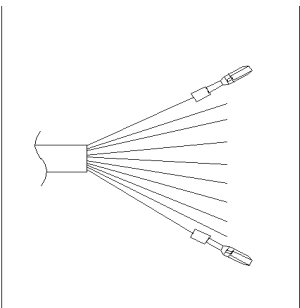


# BCD Cables

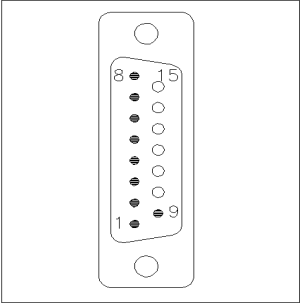


One end of these cables provides a 15-pin BCD connector to be connected to the Agilent modules. The other end depends on the instrument to be connected to

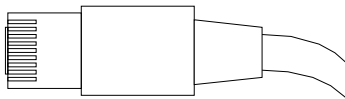
## Agilent Module to General Purpose

p/n G1351-81600	Wire Color	Pin Agilent module	Signal Name	BCD Digit
	Green	1	BCD 5	20
	Violet	2	BCD 7	80
	Blue	3	BCD 6	40
	Yellow	4	BCD 4	10
	Black	5	BCD 0	1
	Orange	6	BCD 3	8
	Red	7	BCD 2	4
	Brown	8	BCD 1	2
	Gray	9	Digital ground	Gray
	Gray/pink	10	BCD 11	800
	Red/blue	11	BCD 10	400
	White/green	12	BCD 9	200
	Brown/green	13	BCD 8	100
	not connected	14		
	not connected	15	+ 5 V	Low

Agilent Module to 3396 Integrators

p/n 03396-60560	Pin 3396	Pin Agilent module	Signal Name	BCD Digit
	1	1	BCD 5	20
	2	2	BCD 7	80
	3	3	BCD 6	40
	4	4	BCD 4	10
	5	5	BCD0	1
	6	6	BCD 3	8
	7	7	BCD 2	4
	8	8	BCD 1	2
	9	9	Digital ground	
	NC	15	+ 5 V	Low

# CAN/LAN Cables



Both ends of this cable provide a modular plug to be connected to Agilent modules CAN or LAN connectors.

## CAN Cables

p/n	Description
5181-1516	CAN cable, Agilent module to module, 0.5 m
5181-1519	CAN cable, Agilent module to module, 1 m

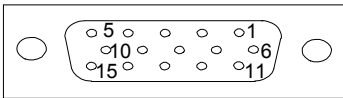
## LAN Cables

p/n	Description
5023-0203	Cross-over network cable, shielded, 3 m (for point to point connection)
5023-0202	Twisted pair network cable, shielded, 7 m (for point to point connection)

# RS-232 Cable Kit

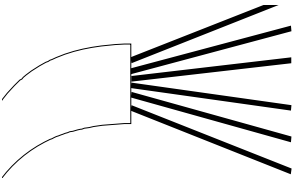
p/n	Description
G1530-60600	RS-232 cable, 2 m
RS232-61600	RS-232 cable, 2.5 m Instrument to PC, 9-to-9 pin (female). This cable has special pin-out, and is not compatible with connecting printers and plotters. It's also called "Null Modem Cable" with full handshaking where the wiring is made between pins 1-1, 2-3, 3-2, 4-6, 5-5, 6-4, 7-8, 8-7, 9-9.
5181-1561	RS-232 cable, 8 m

# External Contact Cable



One end of this cable provides a 15-pin plug to be connected to Agilent modules interface board. The other end is for general purpose.

## Agilent Module Interface Board to general purposes

p/n G1103-61611	Color	Pin Agilent module	Signal Name
	White	1	EXT 1
	Brown	2	EXT 1
	Green	3	EXT 2
	Yellow	4	EXT 2
	Grey	5	EXT 3
	Pink	6	EXT 3
	Blue	7	EXT 4
	Red	8	EXT 4
	Black	9	Not connected
	Violet	10	Not connected
	Grey/pink	11	Not connected
	Red/blue	12	Not connected
	White/green	13	Not connected
	Brown/green	14	Not connected
	White/yellow	15	Not connected

## 11 Identifying Cables

### External Contact Cable

