Agilent

Agilent InfinityLab LC Series

Manual Injectors

User Manual

Notices

Document Information

The information in this document also applies to 1260 Infinity II and 1290 Infinity II modules.

Document No: SD-29000235 Rev. C
Edition: 10/2024

Copyright

Warranty

The material contained in this document is provided "as is," and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

U.S. Government Restricted Rights. Software and technical data rights granted to the federal government include only those rights customarily provided to end user customers. Agilent provides this customary commercial license in Software and technical data pursuant to FAR 12.211 (Technical Data) and 12.212 (Computer Software) and, for the Department of Defense, DFARS 252.227-7015 (Technical Data - Commercial Items) and DFARS 227.7202-3 (Rights in Commercial Computer Software or Computer Software Documentation).

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Contents

In This Guide

This manual covers the following Agilent InfinityLab LC Series modules:

- Agilent 1260 Infinity III Manual Injector (G1328C)
- Agilent 1260 Infinity III Bio-inert Manual Injector (G5628A)

1 Introduction

This chapter gives an introduction to the module and instrument overview.

Overview of the 1260 Infinity III Manual Injector (G1328C)

Sample is loaded into the external 20-µL sample loop through the injection port at the front of the valve. The valve has a ceramic stator and PEEK injection seal. PEEK is compatible with pH 0-14, incompatible with some concentrated mineral acids. A make-before-break passage in the stator ensures flow is not interrupted when the valve is switched between the INJECT and LOAD positions, and back again (see also Needles on page 29 and Flow Connections (G1328C) on page 23).

The valve is mounted on a steel mounting pole, and can be installed at the left- or right-hand side of the LC system.

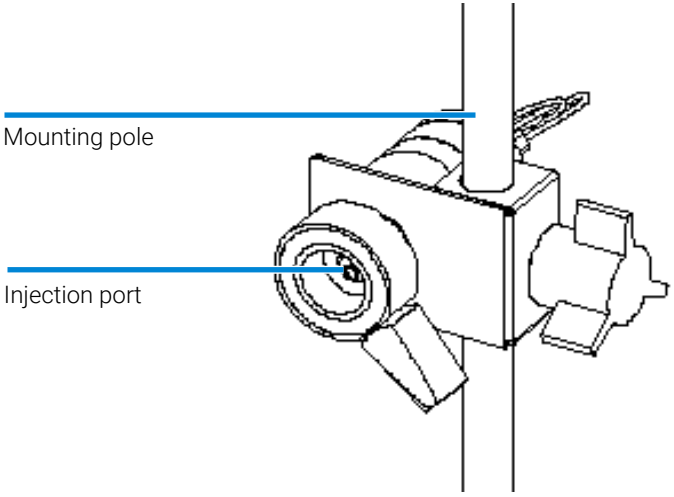


Figure 1: The manual injector installed to the mounting pole

Product Description of the 1260 Infinity III Manual Injector (G1328C)

Convenient modular accessory, dimensioned to match the footprint of all Agilent 1260 Infinity III modules. Stack to create a compact, affordable manual injection liquid chromatography. The Agilent 1260 Infinity III Manual Injector is compatible with up to 600 bar operating pressure.

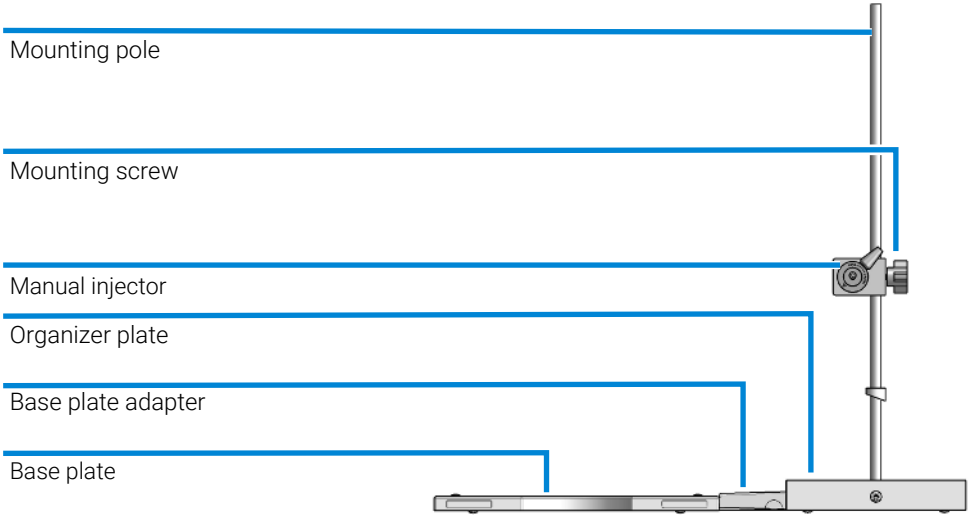


Figure 2: Overview of the manual injector

Features of the 1260 Infinity III Manual Injector (G1328C)

- Lowest bench space requirements and highest flexibility with an external base
- Long valve life, up to 600 bar operating pressure
- High instrument uptime through proven parts, for example ceramic rotor faces

Overview of the 1260 Infinity III Bio-inert Manual Injector (G5628A)

The Agilent 1260 Infinity III Bio-inert Manual Injector (G5628A) can be used for manual operation or use of large injection volumes. It offers a standard injection volume of 20 µL (optional 5 µL to 5 mL) and ensures highest injection accuracy.

It uses a Bio-inert 6-port sample injection valve. Sample is loaded into the external 20 µL sample loop through the injection port at the front of the valve. The valve has a PEEK injection seal. A make-before-break passage in the stator ensures that flow is not interrupted when the valve is switched between the INJECT and LOAD positions, and back again.

The valve is mounted on a steel mounting pole, and can be installed at the left- or right-hand side of the LC system.

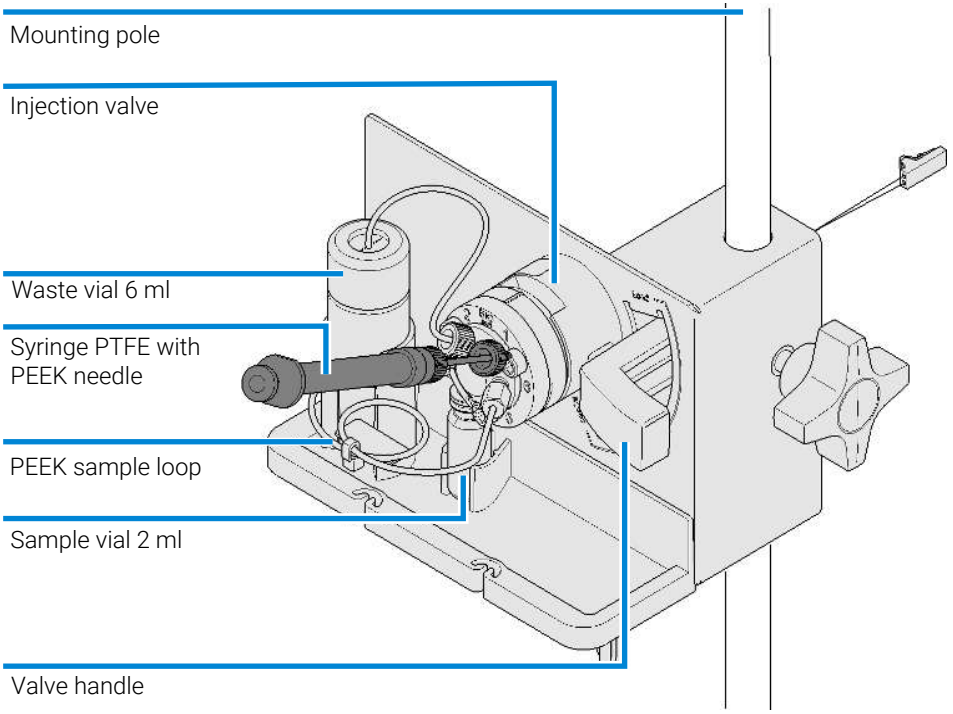


Figure 3: Agilent 1260 Infinity III Bio-inert Manual Injector

Product Description of the 1260 Infinity III Bio-inert Manual Injector (G5628A)

Convenient modular accessory, dimensioned to match the footprint of all Agilent 1260 Infinity III modules. Stack to create a compact, affordable manual injection liquid chromatography. The Agilent 1260 Infinity III Bio-Inert Manual Injector is compatible with up to 600 bar operating pressure.

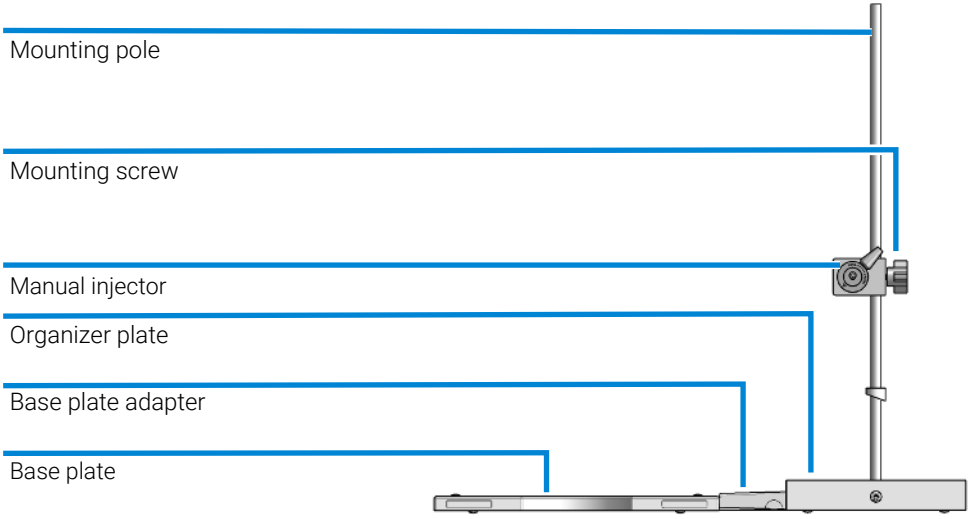


Figure 4: Overview of the manual injector

Features of the 1260 Infinity III Bio-inert Manual Injector (G5628A)

- Lowest bench space requirements and highest flexibility with an external base
- Long valve life, up to 600 bar operating pressure
- High instrument uptime through proven parts, for example ceramic rotor faces

2 Installing the Manual Injector

Unpacking the Manual Injector

Damaged Packaging

If the delivery packaging shows signs of external damage, please call your Agilent Technologies sales and service office immediately. Inform your service representative that the instrument may have been damaged during shipment.

CAUTION

"Defective on arrival" problems

If there are signs of damage, please do not attempt to install the module. Inspection by Agilent is required to evaluate if the instrument is in good condition or damaged.

- Notify your Agilent sales and service office about the damage.
- An Agilent service representative will inspect the instrument at your site and initiate appropriate actions.

Delivery Checklist

Delivery Checklist (G1328C)

Ensure all parts and materials have been delivered with the manual injector. The delivery checklist is shown in Table 1 on page 14. To aid in parts identification, please see Manual Injector (G1328C) on page 56. Please report missing or damaged parts to your local Agilent Technologies sales and service office.

Table 1: Manual injector checklist (G1328C)

Description	Quantity
5067-4191 (Manual Front Loading Injector Valve, 600 bar) A 20 µL sample loop is connected between Ports 1 and 4. The valve is supplied with a start cable, Hex Keys (×2), Mounting Screws (×2) Vent Lines(×2), Needle Port Cleaner (×1), Long Nuts (×3), Extra Long Nut (×1), Ferrules (×4) and a mounting bracket.	1
5001-3738 (Mounting pole, stainless steel)	1

Description	Quantity
G1328-87600 (Capillary 0.17 x 500 mm S/SL)	1
G1328-44121 (Base plate)	1
5042-8553 (Organizer plate)	1
5042-8576 (Catch tube cap)	1
5190-1501 (Valve syringe, fixed needle, 50 µL)	1
5043-1428 (Adaptor for Base plate)	2
5030-6527 (Tubing assembly)	1
5188-8056 (Manual Injector ERI Start-Cable)	1
User Manual on installation medium (part of the shipment - not module specific)	1

Delivery Checklist (G5628A)

Ensure all parts and materials have been delivered with the manual injector. The delivery checklist is shown in Table 2 on page 15. To aid in parts identification, please see Manual Injector (G5628A) on page 57. Please report missing or damaged parts to your local Agilent Technologies sales and service office.

Table 2: Bio-inert manual injector checklist (G5628A)

Description	Quantity
G5628-60100 (Bio-inert Manual injector Handling kit, incl. valve, leak tray, connector cable)	1
5001-3738 (Mounting pole, stainless steel)	1
G5667-81005 (Capillary PK/ST 0.17 mm x 500 mm, RLO/RLO (Bio-inert))	1
G1328-44121 (Base plate)	1
5042-8553 (Organizer plate)	1
5042-8576 (Catch tube cap)	1
5190-1506 (Syringe, 50 µL, PTFE Luer lock)	1
0101-1239 (Sample loop 20 µL)	1
5190-0924 (PEEK Luer lock needle AY)	1
5043-1428 (Adaptor for Base plate)	2
5188-8056 (Manual Injector ERI Start-Cable)	1
User Manual on installation medium (part of the shipment - not module specific)	1

Description	Quantity
5063-6527 (Tubing assembly)	1
5062-8541 (PEEK Fittings long 1/16, 10/pk)	1
5188-2758 (Septum, preslit, PTFE/silicone, for 16 mm caps, 100/Pack)	1
G4280-87304 (Waste capillary)	1
9301-1377 (Screw Top Vial, 6 mL, clear glass, flat bottom, 100/Pack)	1
9301-1379 (Screw Cap, 16 mm, w/o septum, for 6 mL vials, 100/Pack)	1

Installing the Manual Injector

This procedure shows the installation of the Agilent 1260 Infinity III Manual Injector (G1328C) as an example. The procedure is the same for the Agilent 1260 Infinity III Bio-Inert Manual Injector (G5628A)

CAUTION

"Defective on arrival" problems

If there are signs of damage, please do not attempt to install the module. Inspection by Agilent is required to evaluate if the instrument is in good condition or damaged.

- Notify your Agilent sales and service office about the damage.
- An Agilent service representative will inspect the instrument at your site and initiate appropriate actions.

NOTE

The manual injector can be installed at the left- or right-hand side of the instrument stack.

1 Place the baseplate on the bench.

2 Place the Base Plate Adaptor on the connectors of the organizer plate.

3 Connect the organizer plates with the base plate.

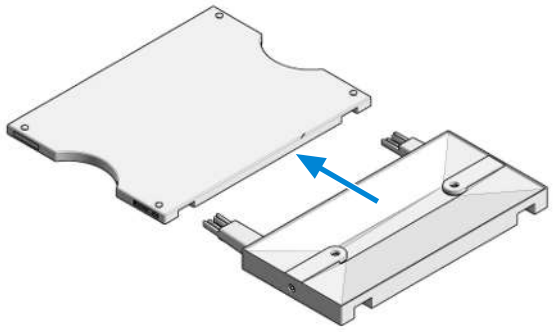


Figure 5: Connecting the organizer plates

4 Place (1.) and screw (2.) the mounting pole into one of the two holes in the organizer plate.

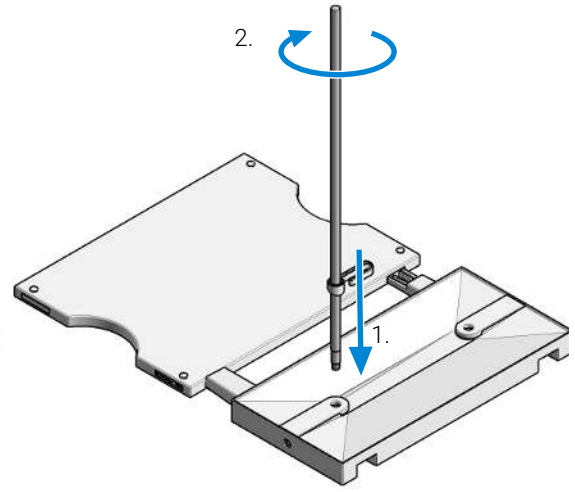


Figure 6: Installing the mounting pole

5 Slide the manual injector onto the mounting pole (1.) and tighten the mounting screw (2.).

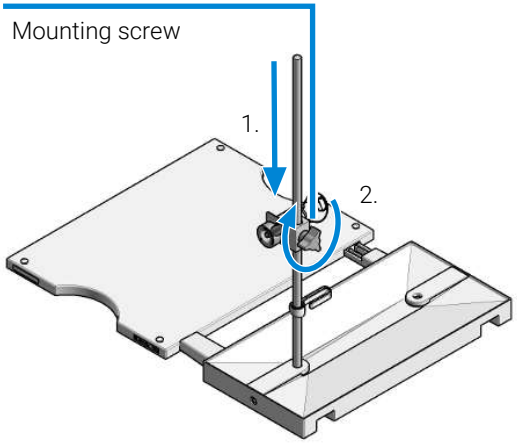


Figure 7: Installing the manual injector

6 Install other system modules on top of the manual injector baseplate (see following figure).

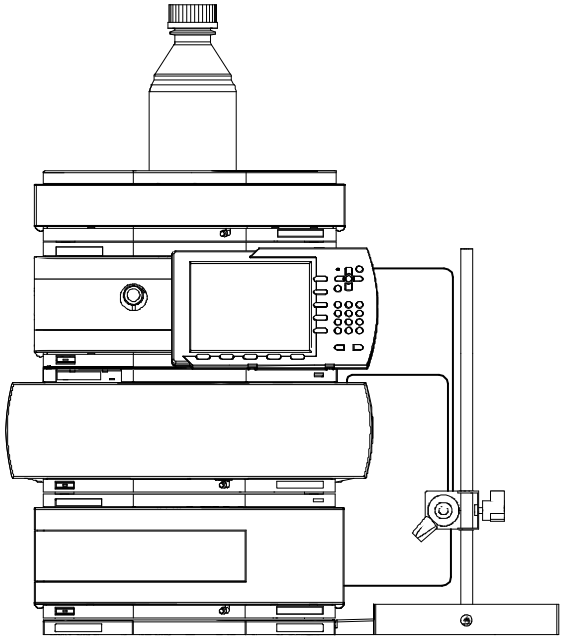


Figure 8: Installing the system

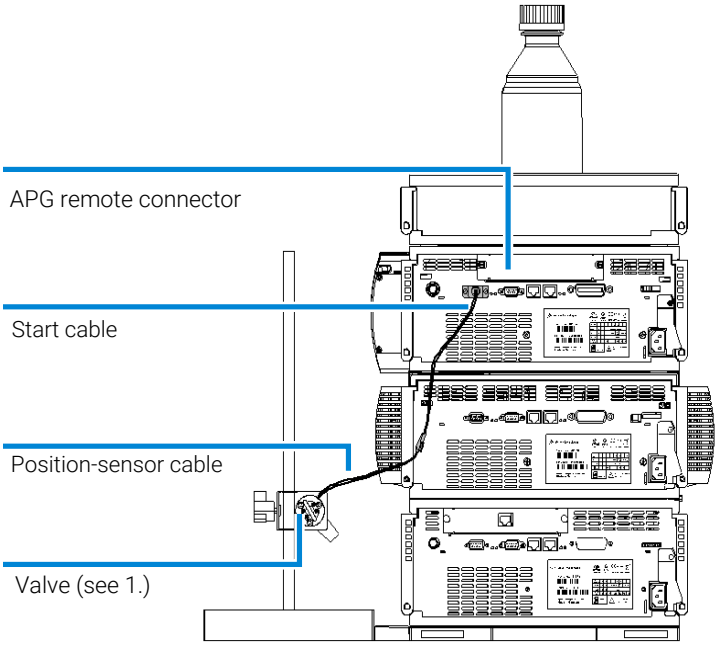


Figure 9: Installing the start cable

7 Connect the capillaries to the manual injector (see Flow Connections (G1328C) on page 23).

Flow Connections

Flow Connections (G1328C)

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.**

CAUTION

Prevent siphoning

- The outlets of the two vent capillaries (ports 5 and 6) and the needle port must be at the same level to prevent siphoning (see Figure 11 on page 24).

1 Connect the pump outlet capillary to port 2.

2 Connect the column-compartment inlet capillary to port 3.

3 Connect the sample loop between ports 1 and 4.

4 Connect one vent capillary (supplied with valve) to port 5 and one to port 6.

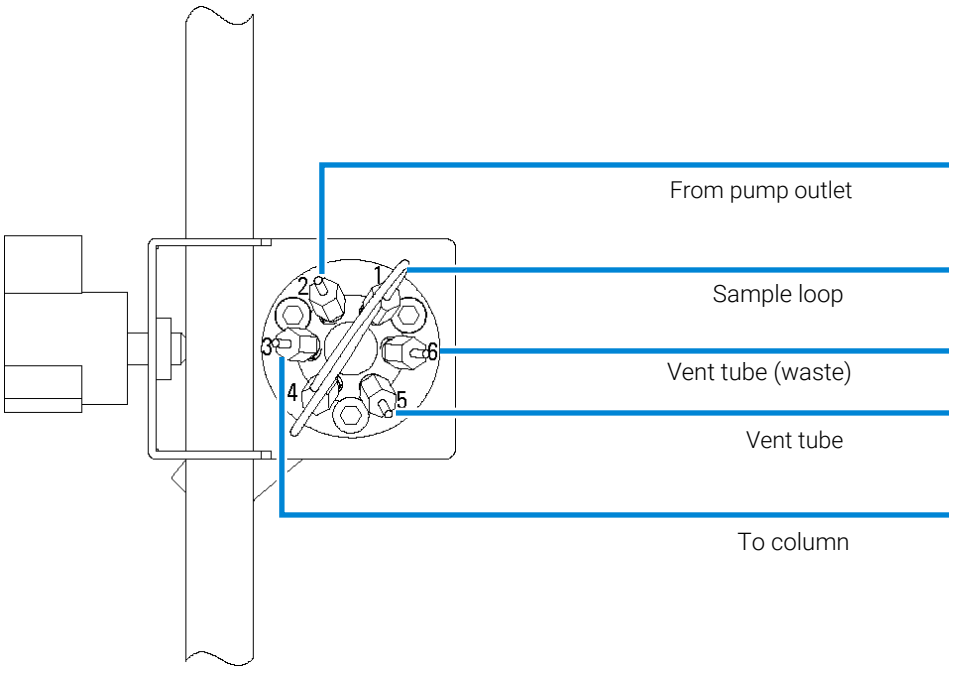


Figure 10: Flow connections

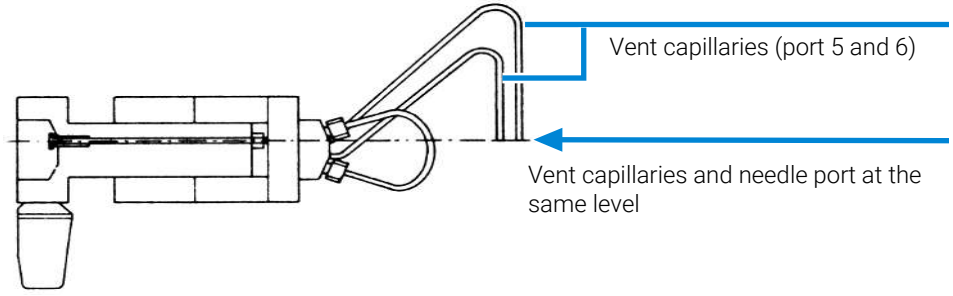


Figure 11: Vent capillaries

Flow Connections (5628A)

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.**

1 Connect the pump outlet capillary to port 5.

2 Connect the column-compartment inlet capillary to port 4.

3 Connect the sample loop between ports 3 and 6.

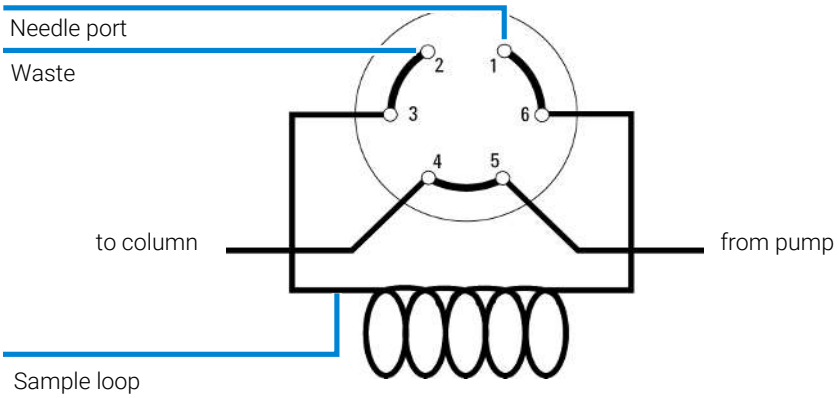


Figure 12: LOAD position

Leak Drainage

WARNING **Leaking injector fittings**

In the event of a leak, solvent will drop into the leak channel in the baseplate, from where it is channelled to the front and back of the baseplate.

— **Check the manual injector fittings periodically for signs of leakage.**

NOTE The example below shows the leak drainage for the Agilent 1260 Infinity III Manual Injector (G1328C). The principle is the same for all Agilent Manual Injectors.

1 Connect a silicon tube to the nozzle of the leak drainage.

2 Route the other end of the tube into the waste.

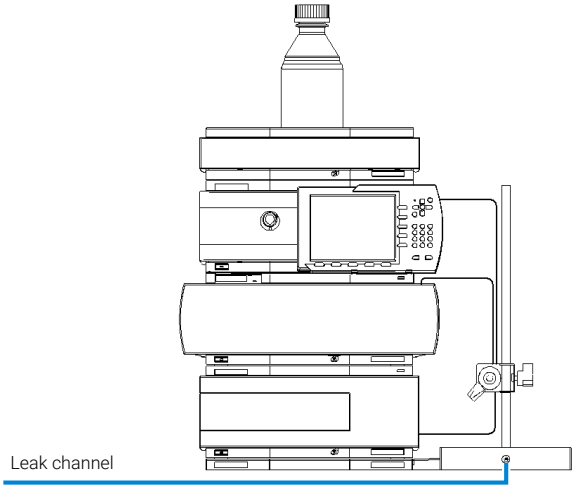


Figure 13: Leak drainage

3 Using the Manual Injector

How to use the manual injector.

Preparing the Module

Warnings and Cautions

WARNING **Ejection of mobile phase**

When using sample loops larger than 100 µL, mobile phase may be ejected from the needle port as the mobile phase in the sample loop decompresses.

- **Please observe appropriate safety procedures (for example, goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the solvent vendor, especially when toxic or hazardous solvents are used.**

WARNING **Splashing of solvent**

- **When using the Needle Port Cleaner, empty the syringe slowly to prevent solvent from splashing back at you.**
- **Please observe appropriate safety procedures (for example, goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the solvent vendor, especially when toxic or hazardous solvents are used.**

CAUTION Potential damage to the valve

- Rinse the valve with water after using buffer solutions to prevent crystals from forming, which can cause scratches on the rotor seal.

See Flushing the Manual Injector on page 36.

Information on Injection Seal Material

The manual injector is supplied with a PEEK injection seal. PEEK is compatible with pH 0-14, incompatible with some concentrated mineral acids (see Injection Valve Assembly (600 bar) on page 59).

Needles

CAUTION

Needle can damage valve

— Always use the correct needle size.

Use needles with 0.028-inch outer diameter (22 gauge) x 2-inch long needle, without electro-taper, and with 90° point style (square tip).

Injecting Sample

LOAD Position

In the LOAD position (see Figure 14 on page 30), the pump is connected directly to the column (ports 2 and 3 connected), and the needle port is connected to the sample loop. At least 2 to 3 sample-loop volumes (more if better precision is required) of sample should be injected through the needle port to provide good precision. The sample fills the loop, and excess sample is expelled through the vent tube connected to port 6.

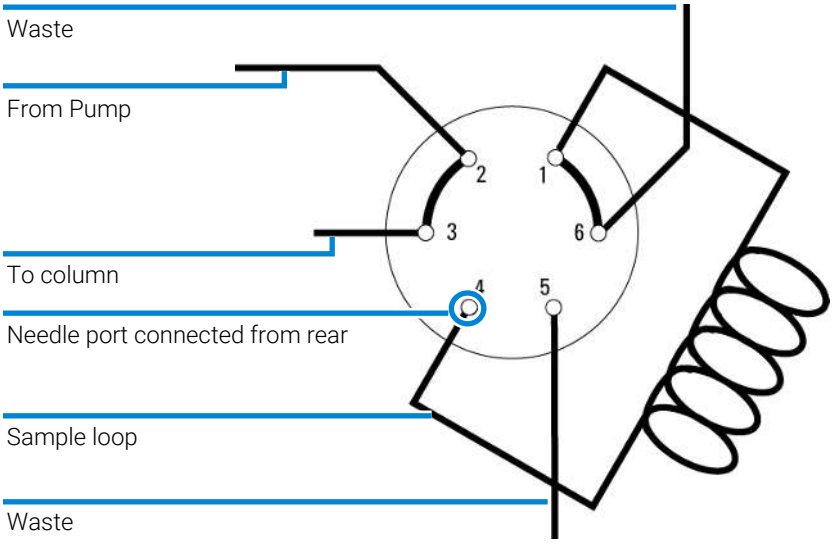


Figure 14: LOAD position

INJECT Position

In the INJECT position (see Figure 15 on page 31), the pump is connected to the sample loop (ports 1 and 2 connected). All of the sample is washed out of the loop onto the column. The needle port is connected to the vent tube (port 5).

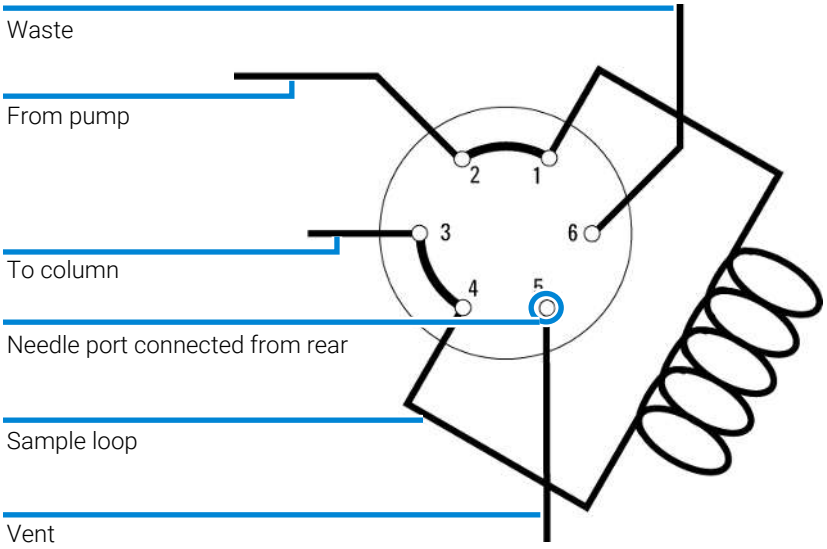


Figure 15: INJECT position

Complete Loop Filling

In complete-filling, the volume of sample injected is set by the volume of the loop (this includes the valve passages). This method produces the highest precision.

- 3 x when loop <= 100 µL
- 2 x when loop = 100 – 500 µL
- 1.5 x when loop > 500 µL

At least 2 to 3 sample-loop volumes (more if better precision is required) of sample should be injected through the needle port to provide good precision.

The sample fills the loop, and excess sample is expelled through the vent tube connected to port 6.

An excess of sample is needed because mobile phase near the wall of the loop is displaced slowly due to the laminar flow effect.

1. Turn the handle to the LOAD position
2. Insert the syringe into the needle port. You should feel slight resistance as the needle passes through the needle seal before it stops against the stator face.
3. Load the sample slowly onto the loop. Repeat this step for higher precision.
4. Leave the syringe in and turn the handle to INJECT.

Partial Loop Filling

If you only have small quantities of sample, this is the method of choice. In the partialfilling method the volume of sample injected is set by the syringe. In this method, no more than half a loop volume of sample should be loaded into the loop. For example, load no more than 1 mL into a 2 mL loop. With larger than half the loop volume, some of the sample is lost out Vent Line 6. This is because sample flows down the center of the loop at twice the average velocity due to the laminar flow effect.

1. In INJECT, use the Needle Port Cleaner to flush out the needle port with about 1 mL of mobile phase to flush out contamination from the earlier injection. This liquid will exit out Vent Line 5.
2. Insert the syringe into the needle port. You should feel slight resistance as the needle passes through the needle seal before it stops against the stator face.
3. Load the sample slowly onto the loop.
4. Leave the syringe in and turn the handle to INJECT.

4 Maintenance

This chapter provides general information on maintenance of the module.

Overview of Maintenance

Table 3: Overview of repair procedures

Notes	Typical Frequency	Time Required
See Flushing the Manual Injector on page 36	After using aqueous buffers or salt solutions	5 minutes
See Exchange the Injection Valve Seal (G1328C) on page 38	After approximately 10000 to 20000 injections, or when the valve performance shows indication of leakage or wear	10 minutes
See Position-Sensing Switch (G1328C) on page 46 (G1328C only)	When cable is damaged or when no start signal is sent when switching to the inject position	10 minutes
See Exchange the Injection Valve Stator Face (G5628A) on page 52 (G5628A only)	When visibly scratched, or when the valve performance shows indication of leakage or wear	10 minutes

Flushing the Manual Injector

CAUTION

Damage through crystal formation

The use of aqueous buffers or salt solutions can lead to crystal formation which may cause scratches on the injection seal.

— Always rinse the valve with water after using aqueous buffers or salt solutions.

1 Switch the valve to the INJECT position.

2 Use the pump to flush the sample loop and seal grooves.

3 Use the needle-port cleaner (supplied with the valve) and syringe to flush the needle port and vent capillary.

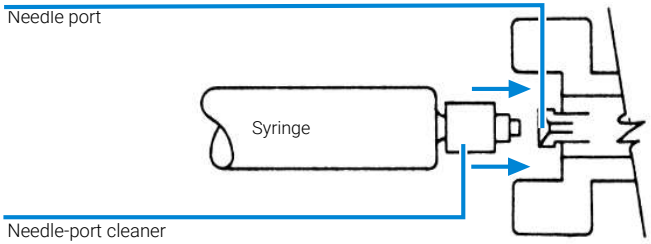


Figure 16: Needle-port cleaner

Cleaning the Manual Injector

The manual injector base should be kept clean. Cleaning should be done with a soft cloth slightly dampened with water or a solution of water and a mild detergent.

Exchanging the Injection Valve Seal

Exchange the Injection Valve Seal (G1328C)

When

- Poor injection volume reproducibility
- Leaking injection valve

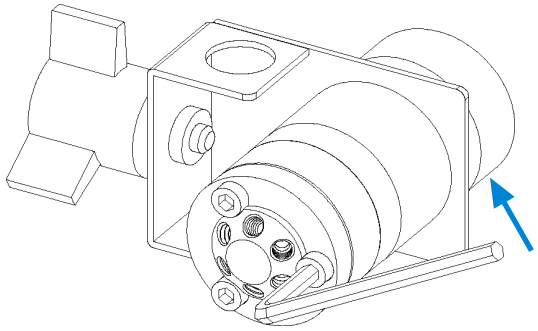
Tools required

Qty.	p/n	Description
1		Hexagonal key, 9/64

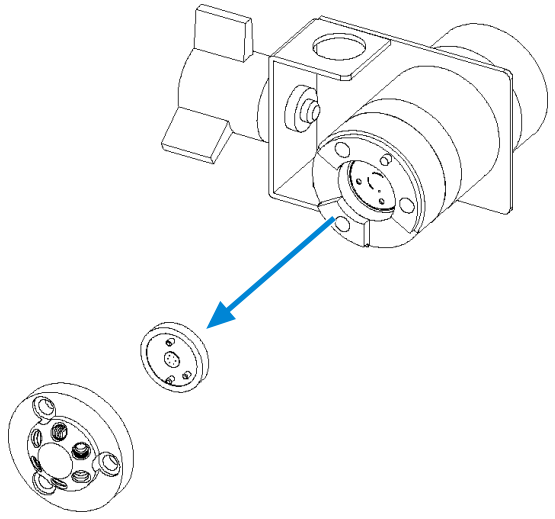
Parts required

Qty.	p/n	Description
1	5068-0052	Rotor Seal (PEEK)

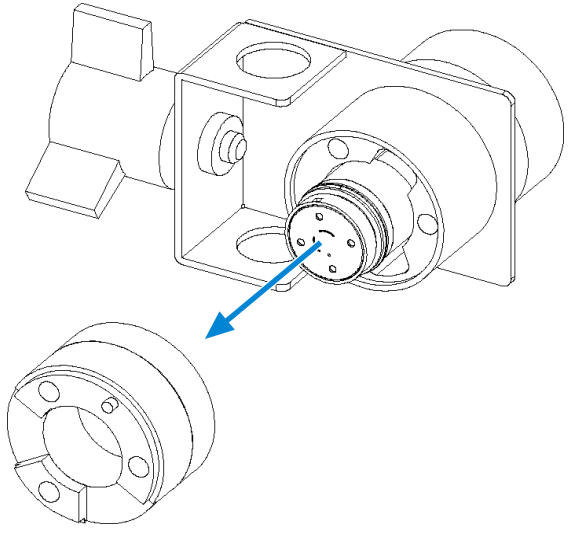
1 Loosen the three stator screws.



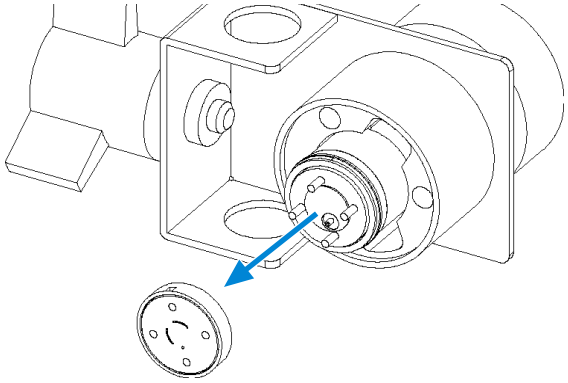
2 Remove the stator head.



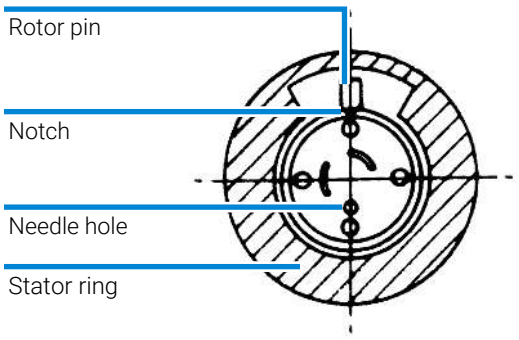
3 Remove the stator ring.



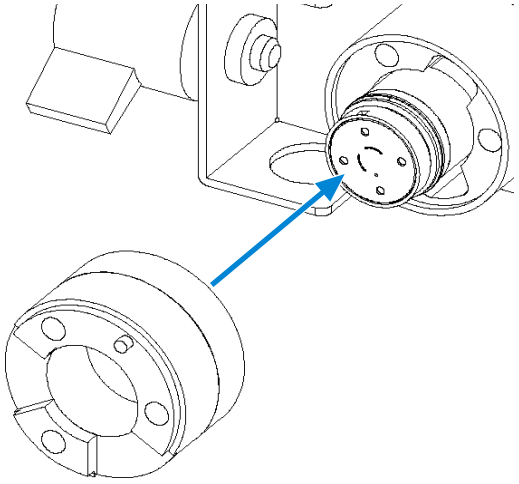
4 Remove the seal.



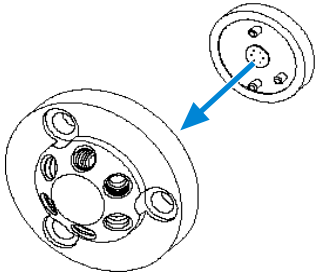
5 Install the new seal. Ensure the seal is positioned as shown.



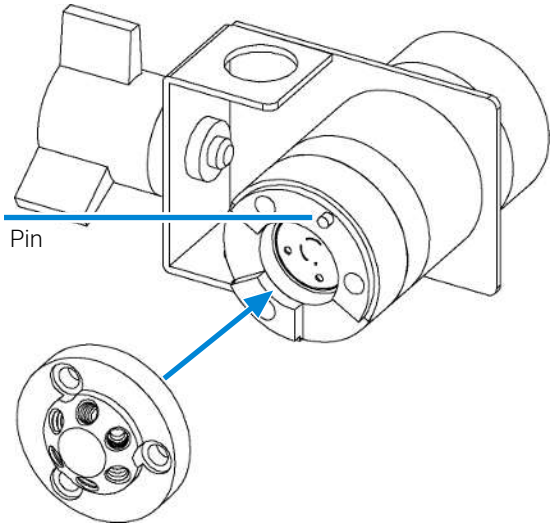
6 Install the stator ring. Ensure the pin in the stator ring is aligned with the hole in the valve body and the position sensoring switch is back in place.



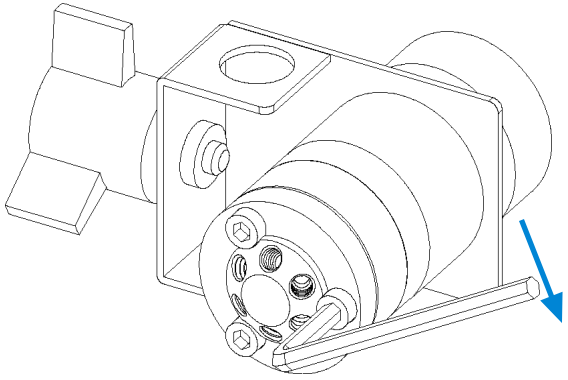
7 Insert the stator face onto the stator head.



8 Install the stator head onto the valve. Ensure the pin in the stator ring is aligned with the hole in the stator head.



9 Secure the stator head in place with the stator screws. Tighten each screw alternately ¼-turn until the stator head is secure.



Exchanging the Injection Valve Seal (G5628A)

When

- Poor injection volume reproducibility
- Leaking injection valve

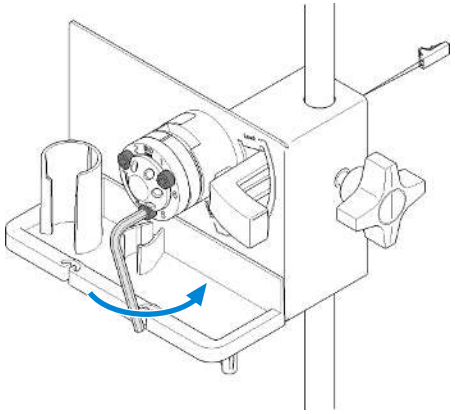
Tools required

Qty.	p/n	Description
1		Hexagonal key, 9/64

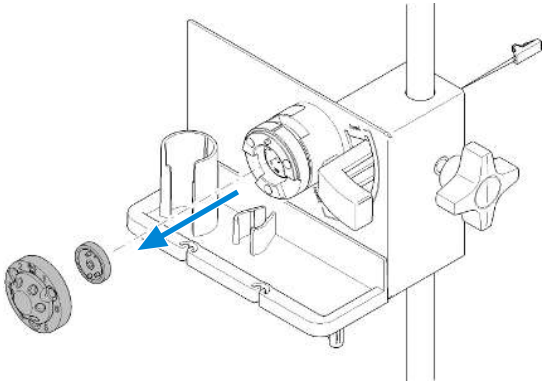
Parts required

Qty.	p/n	Description
1	5068-0082	Rotor Seal 600 bar Manual Injector

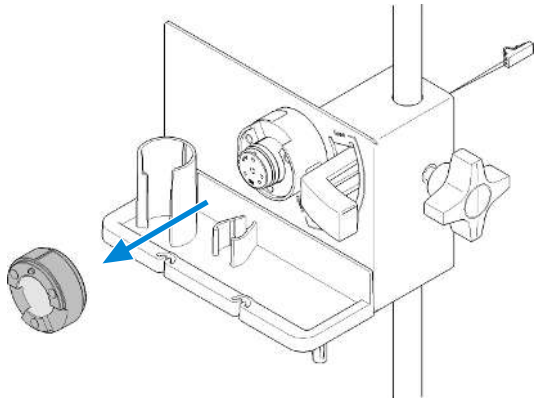
1 Loosen the three stator screws and remove the stator head.



2 Remove the stator head and stator face.



3 Remove the stator ring and rotor seal.



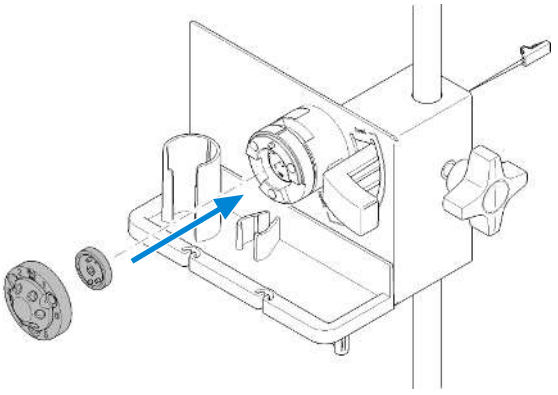
4 Install the new rotor seal.

NOTE Beware of correct orientation. The rotor seal grooves must be visible.

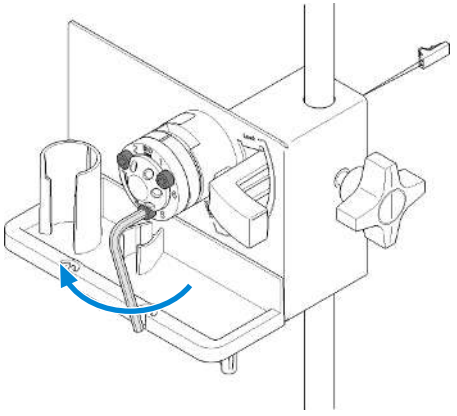
5 Install the stator ring, stator head and stator face onto the valve.

NOTE

Ensure the pin in the stator ring is aligned with the hole in the stator head.



6 Secure stator head in place with the stator screws. Tighten each screw alternately ¼-turn until the stator head is secure.



Position-Sensing Switch (G1328C)

When

- No start signal when switching to the inject position

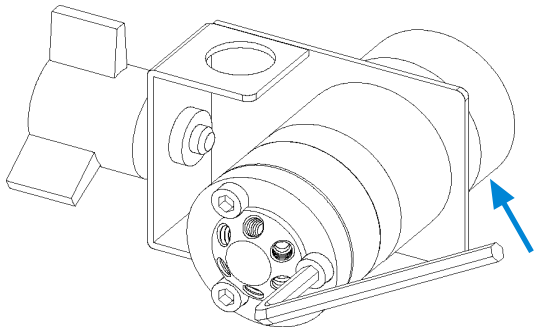
Tools required

Qty.	p/n	Description
1		Hexagonal key, 9/64

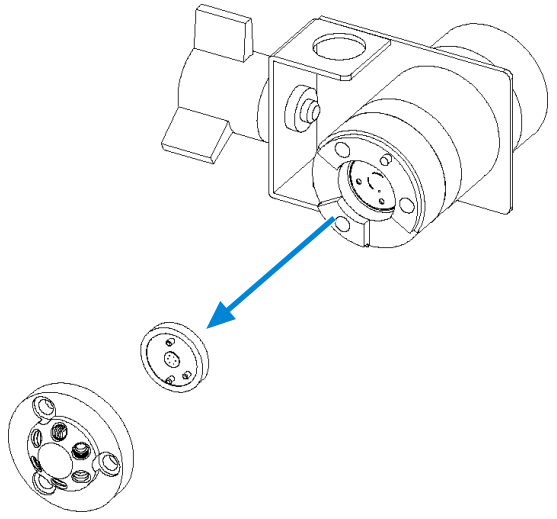
Parts required

Qty.	p/n	Description
1	0490-1849	Position-sensing switch

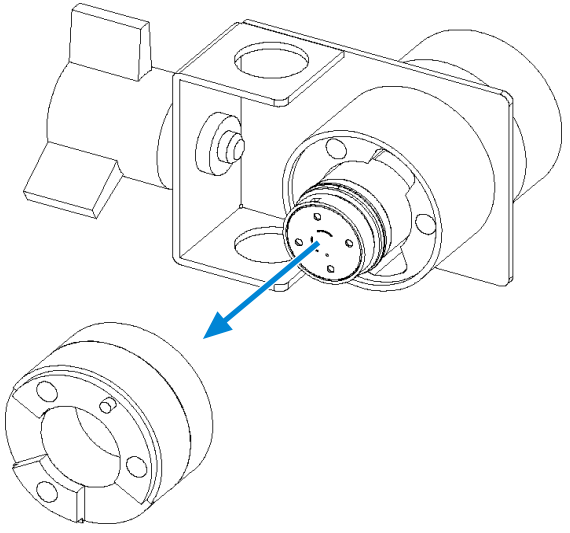
1 Loosen the three stator screws.



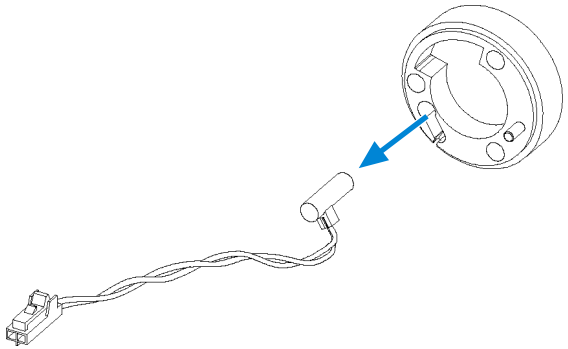
2 Remove the stator head.



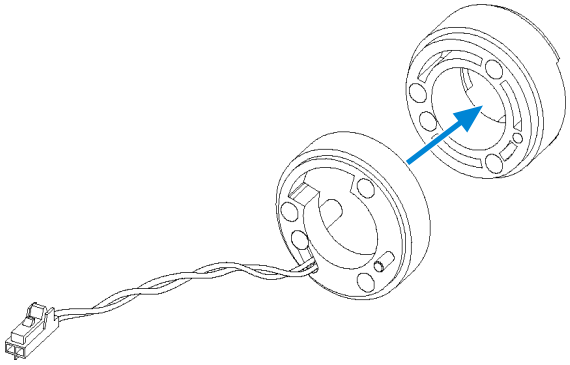
3 Remove the stator ring.



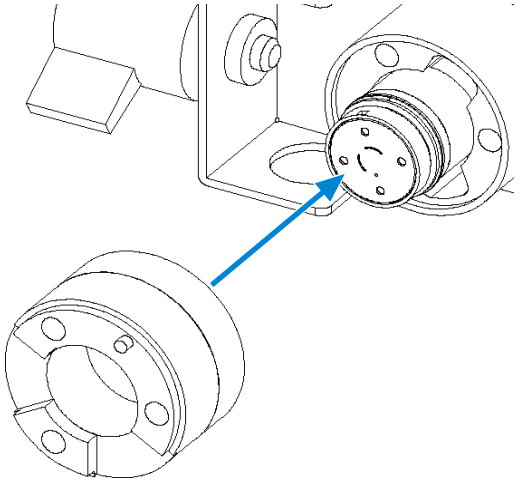
4 Disconnect the sensor cable from the start cable. Pull the sensing switch out of the stator ring.



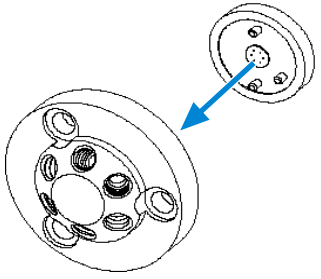
5 Insert the new sensing switch into the stator ring.



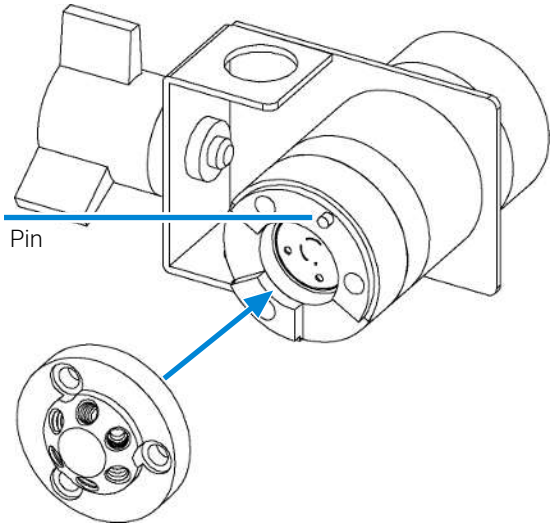
6 Install the stator ring. Ensure the pin in the stator ring is aligned with the hole in the valve body and the position sensoring switch is back in place.



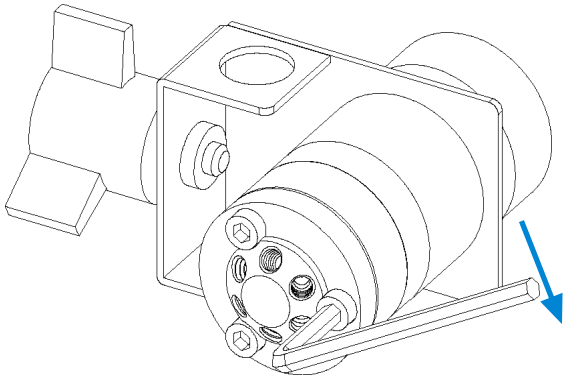
7 Insert the stator face onto the stator head.



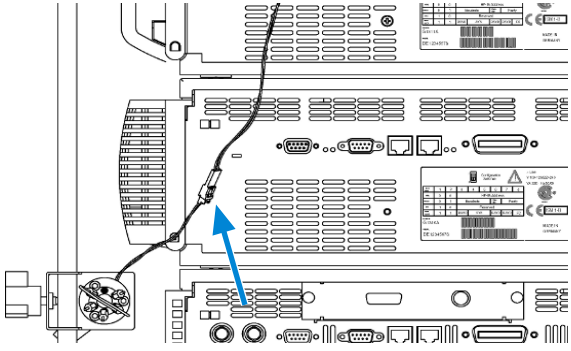
8 Install the stator head onto the valve. Ensure the pin in the stator ring is aligned with the hole in the stator head.



9 Secure the stator head in place with the stator screws. Tighten each screw alternately ¼-turn until the stator head is secure.



10 Reconnect the sensor cable to the start cable.



Exchange the Injection Valve Stator Face (G5628A)

When

- When visibly scratched, or when the valve performance shows indication of leakage or wear.

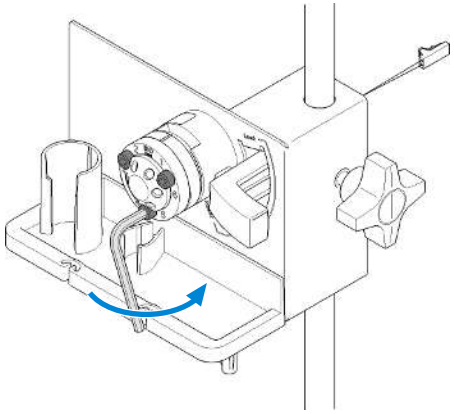
Tools required

Qty.	p/n	Description
1		Hexagonal key, 9/64

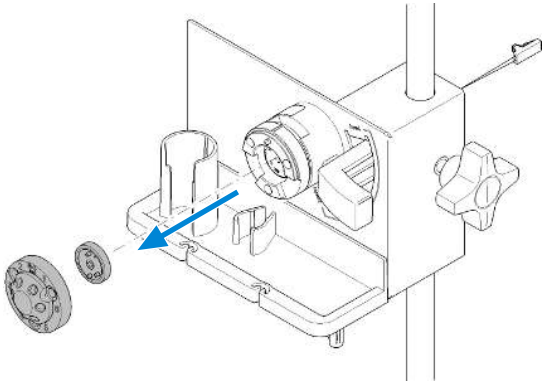
Parts required

Qty.	p/n	Description
1	0100-1851	Stator face assy (2pos/6port, 600 bar, Bio-inert)

1 Loosen the three stator screws and remove the stator head.



2 Remove the stator head and stator face.

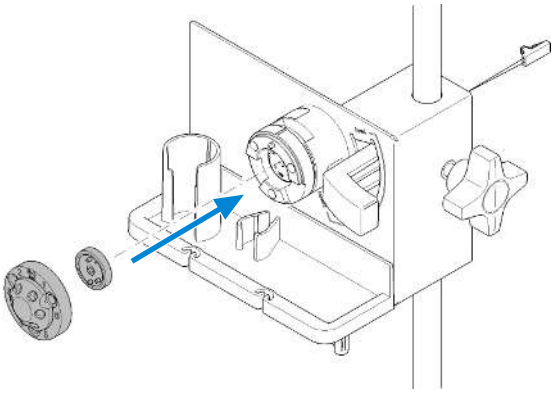


3 Insert the new stator face onto the stator head.

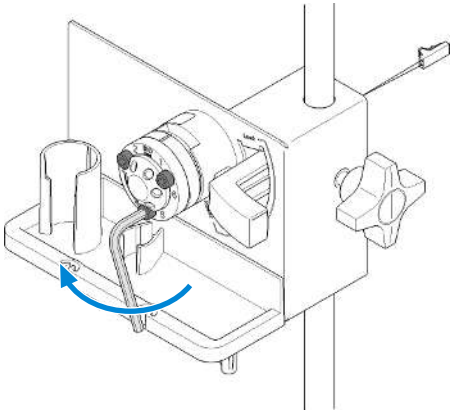
4 Install the stator ring, stator head and stator face onto the valve.

NOTE

Ensure the pin in the stator ring is aligned with the hole in the stator head.



5 Secure stator head in place with the stator screws. Tighten each screw alternately ¼-turn until the stator head is secure.



5 Parts and Materials for Maintenance

This chapter provides information on parts for maintenance.

Manual Injector

Manual Injector (G1328C)

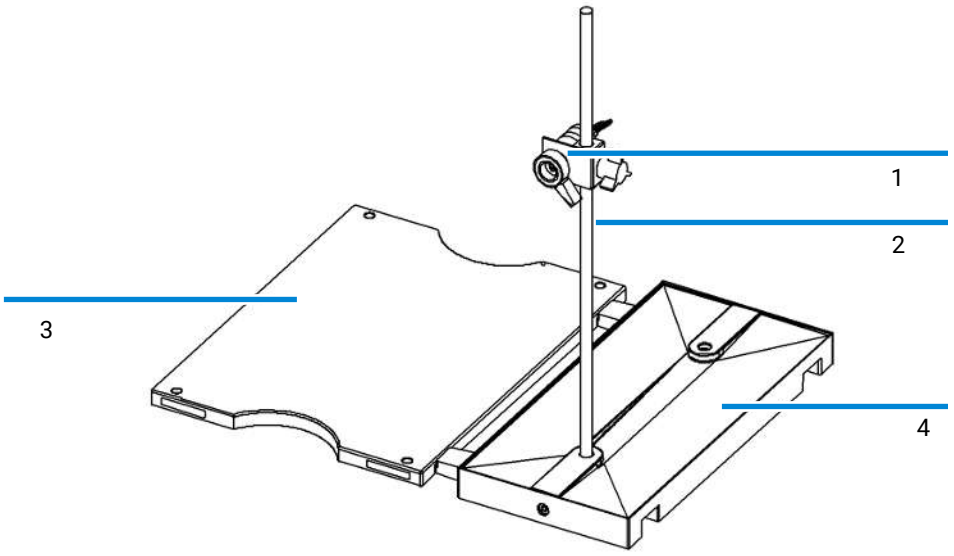


Figure 17: Manual injector

#	Qty.	p/n	Description
1	1	5067-4191	Manual Front Loading Injector Valve, 600 bar
2	1	5001-3738	Mounting pole, stainless steel
3	1	G1328-44121	Base plate
4	1	5042-8553	Organizer plate
	1	5042-8576	Catch tube cap
	1	5190-1501	Valve syringe, fixed needle, 50 µL
	1	G1328-87600	Capillary 0.17 x 500 mm S/SL
	1	0100-1677	Start cable
	1	5188-8056	Manual Injector ERI Start-Cable

For details of the manual injector valve, see Injection Valve Assembly (600 bar) on page 59.

Manual Injector (G5628A)

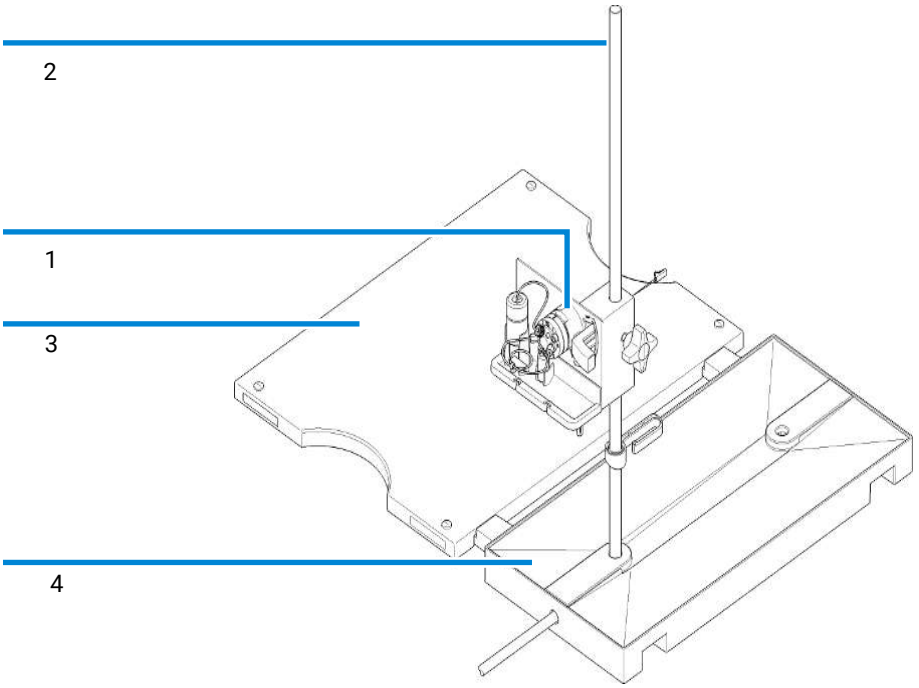


Figure 18: Manual injector (G5628A)

#	Qty.	p/n	Description
1	1	5067-4158	Bio-inert 6-port sample injection valve
2	1	5001-3738	Mounting pole, stainless steel
3	1	G1328-44121	Base plate
4	1	5042-8553	Organizer plate
	1	G5667-81005	Capillary PK/ST 0.17 mm x 500 mm, RLO/RLO (Bio-inert)
	1	5188-8056	Manual Injector ERI Start-Cable

#	Qty.	p/n	Description
	1	G4280-87304	Waste capillary
	1	9301-1379	Screw Cap, 16 mm, w/o septum, for 6 mL vials, 100/Pack
	1	9301-1377	Screw Top Vial, 6 mL, clear glass, flat bottom, 100/Pack
	1	5188-2758	Septum, preslit, PTFE/silicone, for 16 mm caps, 100/Pack
	1	5190-1506	Syringe, 50 µL, PTFE Luer lock
	1	0101-1239	Sample loop 20 µL
	1	5062-8541	PEEK Fittings long 1/16, 10/pk
	1	5190-0924	PEEK Luer lock needle AY
	1	5042-8576	Catch tube cap

For details of the manual injector valve, see Bio-Inert Injection Valve Assembly (600 bar) on page 61.

Injection Valve Assembly

Injection Valve Assembly (600 bar)

5067-4191 (Manual Front Loading Injector Valve, 600 bar) with start cable (complete assembly), including operating instructions, needle port cleaner, vent tubes (×2) and fittings, 5/64 and 9/64-inch hex keys. Includes items 1 – 8 .

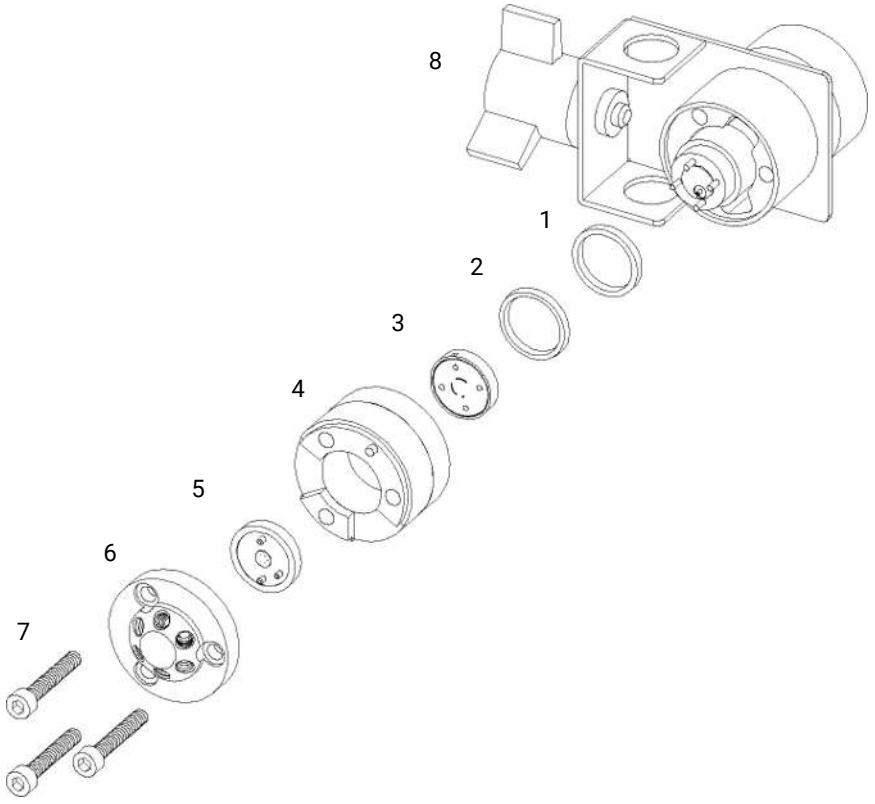


Figure 19: Injection valve assembly

#	p/n	Description
1	1535-4045	Bearing ring
2	1535-4046	Isolation seal
3	5068-0052	Rotor Seal (PEEK)
4	5068-0119	Stator ring
5	0100-1859	Stator Face Assy
6	0100-1860	Stator head
7	5068-0020	Stator Screws, 10/pack
	8710-0060	Wrench, 9/64 inch hexagonal
	0490-1849	Position-sensing switch
8	1400-3166	Ring stand, mounting bracket

NOTE

Accuracy of sample loops
The actual volume of a sample loop can differ by +/- 10 % for a 20 µL loop. Smaller loops can have a greater deviation and bigger loops a smaller one. Use partial loop filling if you must know the actual injected volume.

Sample loops stainless steel

p/n	Description
0101-1248	Sample loop 5 µL
0100-1923	Sample loop 10 µL
0100-1922	Sample loop 20 µL
0100-1924	Sample loop 50 µL
0100-1921	Sample loop 100 µL
0101-1247	Sample loop 200 µL
0101-1246	Sample loop 500 µL
0101-1245	Sample loop 1 mL
0101-1244	Sample loop 2 mL
0101-1243	Sample loop 5 mL

Sample loops PEEK

p/n	Description
0101-1241	Sample loop 5 µL

p/n	Description
0101-1240	Sample loop 10 µL
0101-1239	Sample loop 20 µL
0101-1238	Sample loop 50 µL
0101-1242	Sample loop 100 µL
0101-1237	Sample loop 200 µL
0101-1236	Sample loop 500 µL
0101-1235	Sample loop 1 mL
0101-1234	Sample loop 2 mL
0101-1230	Sample loop 5 mL

Bio-Inert Injection Valve Assembly (600 bar)

5067-4158 (Bio-inert 6-port sample injection valve) :

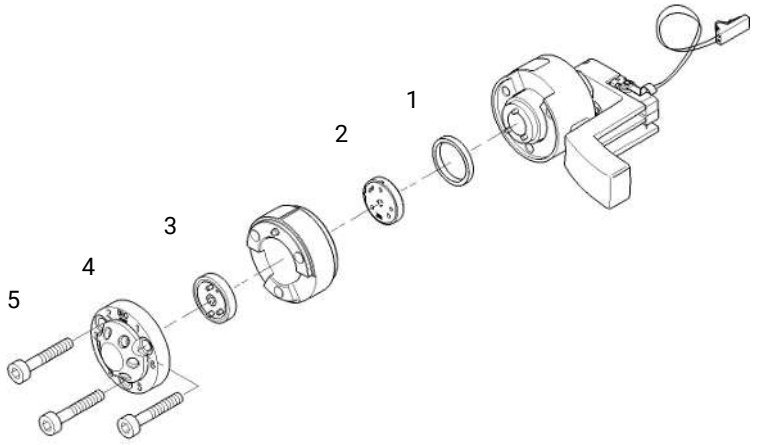


Figure 20: Injection valve assembly

#	p/n	Description
1	1535-4045	Bearing ring
2	5068-0082	Rotor Seal 600 bar Manual Injector

#	p/n	Description
3	0100-1851	Stator face assy (2pos/6port, 600 bar, Bio-inert)
4	5068-0060	Bio-inert stator head
5	1535-4857	Stator screws, 10/pk
	0100-1677	Start cable

Syringes

p/n	Description
5190-1506	Syringe, 50 µL, PTFE Luer lock
5190-1513	Syringe, 100 µL, PTFE Luer lock
5190-1527	Syringe, 500 µL, PTFE Luer lock
5190-1534	Syringe, 2.5 mL, PTFE Luer lock
5190-1457	Syringe, 10 mL, PTFE Luer lock

Accessories and Consumables

p/n	Description
5190-0924	PEEK Luer lock needle AY
5062-8541	PEEK Fittings long 1/16, 10/pk
5182-0544	Snap Top Vial, 2 mL, clear glass, 100/Pack
9301-1377	Screw Top Vial, 6 mL, clear glass, flat bottom, 100/Pack
5188-2758	Septum, preslit, PTFE/silicone, for 16 mm caps, 100/Pack
9301-1379	Screw Cap, 16 mm, w/o septum, for 6 mL vials, 100/Pack
G5667-81005	Capillary PK/ST 0.17 mm x 500 mm, RLO/RLO (Bio-inert)

6 Appendix

This chapter provides additional information on safety, legal and web.

General Safety Information

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

WARNING

Ensure the proper usage of the equipment.

The protection provided by the equipment may be impaired.

- **The operator of this instrument is advised to use the equipment in a manner as specified in this manual.**

Safety Standards

This is a Safety Class I instrument (provided with terminal for protective earthing) and has been manufactured and tested according to international safety standards.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

Before Applying Power

WARNING

Wrong voltage range, frequency or cabling

Personal injury or damage to the instrument

- **Verify that the voltage range and frequency of your power distribution matches to the power specification of the individual instrument.**
- **Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations.**
- **Make all connections to the unit before applying power.**

WARNING

Use of unsupplied cables

Using cables not supplied by Agilent Technologies can lead to damage of the electronic components or personal injury.

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

NOTE

Note the instrument's external markings described under Safety Symbols on page 69.

Ground the Instrument

WARNING

Missing electrical ground

Electrical shock

- **If your product is provided with a grounding type power plug, the instrument chassis and cover must be connected to an electrical ground to minimize shock hazard.**
- **The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.**

Do Not Operate in an Explosive Atmosphere

WARNING

Presence of flammable gases or fumes

Explosion hazard

- **Do not operate the instrument in the presence of flammable gases or fumes.**

Do Not Remove the Instrument Cover

WARNING

Instrument covers removed

Electrical shock

- **Do Not Remove the Instrument Cover**
- **Only Agilent authorized personnel are allowed to remove instrument covers. Always disconnect the power cables and any external circuits before removing the instrument cover.**

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Sales and Service Office for service and repair to ensure that safety features are maintained.

In Case of Damage

WARNING

Damage to the module

Personal injury (for example electrical shock, intoxication)

- **Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.**

Solvent Information

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.**
- **Do not use solvents with an auto-ignition temperature below 200 °C (392 °F). Do not use solvents with a boiling point below 56 °C (133 °F).**
- **Avoid high vapor concentrations. Keep the solvent temperature at least 40 °C (72 °F) below the boiling point of the solvent used. This includes the solvent temperature in the sample compartment. For the solvents methanol and ethanol keep the solvent temperature at least 25 °C (45 °F) below the boiling point.**
- **Do not operate the instrument in an explosive atmosphere.**
- **Do not use solvents of ignition Class IIC according IEC 60079-20-1 (for example, carbon disulfide).**
- **Reduce the volume of substances to the minimum required for the analysis.**
- **Never exceed the maximum permissible volume of solvents (8 L) in the solvent cabinet. Do not use bottles that exceed the maximum permissible volume as specified in the usage guideline for solvent cabinet.**
- **Ground the waste container.**
- **Regularly check the filling level of the waste container. The residual free volume in the waste container must be large enough to collect the waste liquid.**
- **To achieve maximal safety, regularly check the tubing for correct installation.**

NOTE For details, see the usage guideline for the solvent cabinet. A printed copy of the guideline has been shipped with the solvent cabinet, electronic copies are available in the Agilent Information Center or via the Internet.

Recommendations on the Use of Solvents

Observe the following recommendations on the use of solvents.

- Brown glass ware can avoid growth of algae.
- Follow the recommendations for avoiding the growth of algae, see the pump manuals.
- Small particles can permanently block capillaries and valves. Therefore, always filter solvents through 0.22 µm filters.
- Avoid or minimize the use of solvents that may corrode parts in the flow path. Consider specifications for the pH range given for different materials such as flow cells, valve materials etc. and recommendations in subsequent sections.
- Avoid the use of the following steel-corrosive solvents:
  - solutions of alkali halides and their respective acids (for example, lithium iodide, potassium chloride, and so on),
  - high concentrations of inorganic acids like sulfuric acid and nitric acid, especially at higher temperatures (if your chromatography method allows, replace by phosphoric acid or phosphate buffer which are less corrosive against stainless steel),
  - halogenated solvents or mixtures which form radicals and/or acids, for example:

    $2CHCl_3 + O_2 \rightarrow 2COCl_2 + 2HCl$

    This reaction, in which stainless steel probably acts as a catalyst, occurs quickly with dried chloroform if the drying process removes the stabilizing alcohol,
  - chromatographic grade ethers, which can contain peroxides (for example, THF, dioxane, diisopropyl ether) should be filtered through dry aluminium oxide which adsorbs the peroxides,
  - solvents containing strong complexing agents (e.g. EDTA),
  - mixtures of carbon tetrachloride with 2-propanol or THF.
- Avoid the use of dimethyl formamide (DMF). Polyvinylidene fluoride (PVDF), which is used in leak sensors, is not resistant to DMF.

Recommended Wash Solvents

- water
- ethanol

- methanol
- water/acid (especially for basic compounds)
- water/base (especially for acidic compounds)
- water/acetonitrile

NOTE For different wash solvents as mentioned above, verify that the wash solvent is suitable for the silicone wash tubing.

Safety Symbols

Table 4: Symbols

	The apparatus is marked with this symbol when the user shall refer to the instruction manual in order to protect risk of harm to the operator and to protect the apparatus against damage.
	Indicates dangerous voltages.
	Indicates a protected ground terminal.
	The apparatus is marked with this symbol when hot surfaces are available and the user should not touch it when heated up.
	Indicates flammable material used. Consult the Agilent Information Center / User Manual before attempting to install or service this equipment. Follow all safety precautions.
	Confirms that a manufactured product complies with all applicable European Community directives. The European Declaration of Conformity is available at: http://regulations.corporate.agilent.com/DoC/search.htm
	Manufacturing date.
	Product Number

SN	Serial Number
	Power symbol indicates On/Off. The apparatus is not completely disconnected from the mains supply when the on/off switch is in the Off position
	Pacemaker Magnets could affect the functioning of pacemakers and implanted heart defibrillators. A pacemaker could switch into test mode and cause illness. A heart defibrillator may stop working. If you wear these devices keep at least 55 mm distance to magnets. Warn others who wear these devices from getting too close to magnets.
	Magnetic field Magnets produce a far-reaching, strong magnetic field. They could damage TVs and laptops, computer hard drives, credit and ATM cards, data storage media, mechanical watches, hearing aids and speakers. Keep magnets at least 25 mm away from devices and objects that could be damaged by strong magnetic fields.
	Indicates a pinching or crushing hazard
	Indicates a piercing or cutting hazard.

WARNING

A WARNING

alerts you to situations that could cause physical injury or death.

- **Do not proceed beyond a warning until you have fully understood and met the indicated conditions.**

CAUTION

A CAUTION

alerts you to situations that could cause loss of data, or damage of equipment.

- Do not proceed beyond a caution until you have fully understood and met the indicated conditions.

Material Information

This section provides detailed information about materials used in the HPLC system and general information about solvent/material compatibility.

Materials Used in the Bio-inert LC System

For the Bio-inert LC system, Agilent Technologies uses highest-quality materials in the flow path (also referred to as wetted parts), which are widely accepted by life science scientists, as they are known for optimum inertness to biological samples and ensure best compatibility with common samples and solvents over a wide pH range. Explicitly, the complete flow path is free of stainless steel and free of other alloys containing metals such as iron, nickel, cobalt, chromium, molybdenum, or copper, which can interfere with biological samples. The flow downstream of the sample introduction contains no metals whatsoever.

Table 5: Used bio-inert materials

Module	Materials
Agilent 1260 Infinity III Bio-inert Pump (G5654A)	Titanium, gold, platinum-iridium, ceramic, ruby, PTFE, PEEK
Agilent 1260 Infinity III Bio-inert Multisampler (G5668A)	Upstream of sample introduction: • Titanium, gold, PTFE, PEEK, ceramic Downstream of sample introduction: • PEEK, ceramic
Agilent 1260 Infinity III Bio-inert Manual Injector (G5628A)	PEEK, ceramic
Agilent 1260 Infinity III Bio-inert Analytical Fraction Collector (G5664B)	PEEK, ceramic, PTFE
Bio-inert Flow Cells:	
G5615-60022 (Standard flow cell bio-inert, 10 mm, 13 µL, 120 bar (12 MPa) for MWD/DAD, includes 0890-1763 – 0.18 x 1500 mm PEEK capillary and 5063-6591 – PEEK fittings) (*for Agilent 1260 Infinity III DAD G7115A, and MWD G7165A*)	PEEK, ceramic, sapphire, PTFE
G5615-60005 (Bio-inert flow cell, 8 µL, 20 bar) (*for Agilent 1260 Infinity III FLD G7121A/B*)	PEEK, fused silica, PTFE
Bio-inert Heat Exchangers, Valves and Capillaries:	
G7116-60041 (Quick Connect Heat Exchanger Bio-inert) (*for Agilent 1260 Infinity III Multicolumn Thermostat G7116A*)	PEEK (steel-cladded)
Bio-inert Valve heads (G4235A, G5631A, G5632A, G5639A)	PEEK, ceramic (Al_2O_3 based)
Bio-inert Connection capillaries	Upstream of sample introduction: • Titanium Downstream of sample introduction: • Agilent uses stainless-steel-cladded PEEK capillaries, which keep the flow path free of steel and provide pressure stability up to 600 bar.

NOTE To ensure optimum biocompatibility of your Bio-inert LC system, do not include non-inert standard modules or parts to the flow path. Do not use any parts that are not labeled as Agilent "Bio-inert". For solvent compatibility of these materials, see General Information About Solvent/Material Compatibility on page 73.

General Information About Solvent/Material Compatibility

Materials in the flow path are carefully selected based on Agilent's experiences in developing highest-quality instruments for HPLC analysis over several decades. These materials exhibit excellent robustness under typical HPLC conditions. For any special condition, please consult the material information section or contact Agilent.

Disclaimer

Subsequent data was collected from external resources and is meant as a reference. Agilent cannot guarantee the correctness and completeness of such information. Data is based on compatibility libraries, which are not specific for estimating the long-term life time under specific but highly variable conditions of UHPLC systems, solvents, solvent mixtures, and samples. Information also cannot be generalized due to catalytic effects of impurities like metal ions, complexing agents, oxygen etc. Apart from pure chemical corrosion, other effects like electro corrosion, electrostatic charging (especially for nonconductive organic solvents), swelling of polymer parts etc. need to be considered. Most data available refers to room temperature (typically 20 – 25 °C, 68 – 77 °F). If corrosion is possible, it usually accelerates at higher temperatures. If in doubt, please consult technical literature on chemical compatibility of materials.

MP35N

MP35N is a nonmagnetic, nickel-cobalt-chromium-molybdenum alloy demonstrating excellent corrosion resistance (for example, against nitric and sulfuric acids, sodium hydroxide, and seawater) over a wide range of concentrations and temperatures. In addition, this alloy shows exceptional resistance to high-temperature oxidation. Due to excellent chemical resistance and toughness, the alloy is used in diverse applications: dental products, medical devices, nonmagnetic electrical components, chemical and food processing equipment, marine equipment. Treatment of MP35N alloy samples with 10 % NaCl in HCl (pH 2.0) does not reveal any detectable corrosion. MP35N also demonstrates excellent corrosion resistance in a humid environment. Although the influence of a broad variety of solvents and conditions has been tested, users should keep in mind that multiple factors can affect corrosion rates, such as temperature, concentration, pH, impurities, stress, surface finish, and dissimilar metal contacts.

Polyphenylene Sulfide (PPS)

Polyphenylene sulfide has outstanding stability even at elevated temperatures. It is resistant to dilute solutions of most inorganic acids, but it can be attacked by some organic compounds and oxidizing reagents. Nonoxidizing inorganic acids, such as sulfuric acid and phosphoric acid, have little effect on polyphenylene sulfide, but at high concentrations and temperatures, they can still cause material damage. Nonoxidizing organic chemicals generally have little effect on polyphenylene sulfide stability, but amines, aromatic compounds, and halogenated compounds may cause some swelling and softening over extended periods of time at elevated temperatures. Strong oxidizing acids, such as nitric acid (> 0.1 %), hydrogen halides (> 0.1 %), peroxy acids (> 1 %), or chlorosulfuric acid degrade polyphenylene sulfide. It is not recommended to use polyphenylene sulfide with oxidizing material, such as sodium hypochlorite and hydrogen peroxide. However, under mild environmental conditions, at low concentrations and for short exposure times, polyphenylene sulfide can withstand these chemicals, for example, as ingredients of common disinfectant solutions.

PEEK

PEEK (Polyether-Ether Ketones) combines excellent properties regarding biocompatibility, chemical resistance, mechanical and thermal stability. PEEK is therefore the material of choice for UHPLC and biochemical instrumentation.

It is stable in the specified pH range (for the Bio-Inert LC system: pH 1 – 13 , see bio-inert module manuals for details), and inert to many common solvents.

There are still some known incompatibilities with chemicals such as chloroform, methylene chloride, THF, DMSO, strong acids (nitric acid > 10 %, sulfuric acid > 10 %, sulfonic acids, trichloroacetic acid), halogens or aqueous halogen solutions, phenol and derivatives (cresols, salicylic acid, and so on).

When used above room temperature, PEEK is sensitive to bases and various organic solvents, which can cause it to swell. Under such conditions, normal PEEK capillaries are sensitive to high pressure. Therefore, Agilent uses stainless steel clad PEEK capillaries in bio-inert systems. The use of stainless steel clad PEEK capillaries keeps the flow path free of steel and ensures pressure stability up to 600 bar. If in doubt, consult the available literature about the chemical compatibility of PEEK.

Polyimide

Agilent uses semi-crystalline polyimide for rotor seals in valves and needle seats in autosamplers. One supplier of polyimide is DuPont, which brands polyimide as Vespel, which is also used by Agilent.

Polyimide is stable in a pH range between 1 and 10 and in most organic solvents. It is incompatible with concentrated mineral acids (e.g. sulphuric acid), glacial acetic acid, DMSO and THF. It is also degraded by nucleophilic substances like ammonia (e.g. ammonium salts in basic conditions) or acetates.

Polyethylene (PE)

Agilent uses UHMW (ultra-high molecular weight)-PE/PTFE blends for yellow piston and wash seals, which are used in 1290 Infinity pumps, 1290 Infinity II/III pumps, the G7104C and for normal phase applications in 1260 Infinity pumps.

Polyethylene has a good stability for most common inorganic solvents including acids and bases in a pH range of 1 to 12.5 . It is compatible with many organic solvents used in chromatographic systems like methanol, acetonitrile and isopropanol. It has limited stability with aliphatic, aromatic and halogenated hydrocarbons, THF, phenol and derivatives, concentrated acids and bases. For normal phase applications, the maximum pressure should be limited to 200 bar.

Tantalum (Ta)

Tantalum is inert to most common HPLC solvents and almost all acids except fluoric acid and acids with free sulfur trioxide. It can be corroded by strong bases (e.g. hydroxide solutions > 10 %, diethylamine). It is not recommended for the use with fluoric acid and fluorides.

Stainless Steel (SST)

Stainless steel is inert against many common solvents. It is stable in the presence of acids and bases in a pH range of 1 to 12.5 . It can be corroded by acids below pH 2.3 . It can also corrode in following solvents:

- Solutions of alkali halides, their respective acids (for example, lithium iodide, potassium chloride) and aqueous solutions of halogens.
- High concentrations of inorganic acids like nitric acid, sulfuric acid, and organic solvents especially at higher temperatures (replace, if your chromatography method allows, by phosphoric acid or phosphate buffer, which are less corrosive against stainless steel).

- Halogenated solvents or mixtures, which form radicals and/or acids, for example:

  $2\ CHCl_3 + O_2 \rightarrow 2\ COCl_2 + 2\ HCl$

  This reaction, in which stainless steel probably acts as a catalyst, occurs quickly with dried chloroform if the drying process removes the stabilizing alcohol.
- Chromatographic grade ethers, which can contain peroxides (for example, THF, dioxane, diisopropyl ether). Such ethers should be filtered through dry aluminum oxide, which adsorbs the peroxides.
- Solutions of organic acids (acetic acid, formic acid, and so on) in organic solvents. For example, a 1 % solution of acetic acid in methanol will attack steel.
- Solutions containing strong complexing agents (for example, EDTA, ethylenediaminetetraacetic acid).
- Mixtures of carbon tetrachloride with isopropanol or THF.

Titanium (Ti)

Titanium is highly resistant to oxidizing acids (for example, nitric, perchloric and hypochlorous acid) over a wide range of concentrations and temperatures. This is due to a thin oxide layer on the surface, which is stabilized by oxidizing compounds. Non-oxidizing acids (for example, hydrochloric, sulfuric and phosphoric acid) can cause slight corrosion, which increases with acid concentration and temperature. For example, the corrosion rate with 3 % HCl (about pH 0.1) at room temperature is about 13 µm/year. At room temperature, titanium is resistant to concentrations of about 5 % sulfuric acid (about pH 0.3). Addition of nitric acid to hydrochloric or sulfuric acids significantly reduces corrosion rates. Titanium is sensitive to acidic metal chlorides like $FeCl_3$ or $CuCl_2$. Titanium is subject to corrosion in anhydrous methanol, which can be avoided by adding a small amount of water (about 3 %). Slight corrosion is possible with ammonia > 10 %.

Diamond-Like Carbon (DLC)

Diamond-Like Carbon is inert to almost all common acids, bases, and solvents. There are no documented incompatibilities for HPLC applications.

Fused Silica and Quartz (SiO_2)

Fused silica is used in Max Light Cartridges. Quartz is used for classical flow cell windows. It is inert against all common solvents and acids except hydrofluoric acid and acidic solvents containing fluorides. It is corroded by strong bases and should not be used above pH 12 at room temperature. The corrosion of flow cell windows can negatively affect measurement results. For a pH greater than 12, the use of flow cells with sapphire windows is recommended.

Gold

Gold is inert to all common HPLC solvents, acids, and bases within the specified pH range. It can be corroded by complexing cyanides and concentrated acids like aqua regia.

Zirconium Oxide (ZrO_2)

Zirconium Oxide is inert to almost all common acids, bases, and solvents. There are no documented incompatibilities for HPLC applications.

Platinum/Iridium

Platinum/Iridium is inert to almost all common acids, bases, and solvents. There are no documented incompatibilities for HPLC applications.

Fluorinated Polymers (PTFE, PFA, FEP, FFKM, PVDF)

Fluorinated polymers like PTFE (polytetrafluorethylene), PFA (perfluoroalkoxy), and FEP (fluorinated ethylene propylene) are inert to almost all common acids, bases, and solvents. FFKM is perfluorinated rubber, which is also resistant to most chemicals. As an elastomer, it may swell in some organic solvents like halogenated hydrocarbons.

TFE/PDD copolymer tubings, which are used in all Agilent degassers except G1322A/G7122A, are not compatible with fluorinated solvents like Freon, Fluorinert, or Vertrel. They have limited life time in the presence of hexafluoroisopropanol (HFIP). To ensure the longest possible life with HFIP, it is best to dedicate a particular chamber to this solvent, not to switch solvents, and not to let dry out the chamber. For optimizing the life of the pressure sensor, do not leave HFIP in the chamber when the unit is off.

The tubing of the leak sensor is made of PVDF (polyvinylidene fluoride), which is incompatible with the solvent DMF (dimethylformamide).

Sapphire, Ruby, and Al_2O_3-Based Ceramics

Sapphire, ruby, and ceramics based on aluminum oxide Al_2O_3 are inert to almost all common acids, bases, and solvents. There are no documented incompatibilities for HPLC applications.

At-a-Glance Details About Agilent Capillaries

The following section provides useful information about Agilent capillaries and its characteristics.

Syntax for capillary description

Type - Material - Capillary dimensions - Fitting Left/Fitting right

Table 6: Example for a capillary description

Code provided with the part	Meaing of the code
Color code: 	Material of the product is MP35N, the inner diameter is 0.20 or 0.25 mm
Capillary	The part is a connection capillary
MP35N	Material of the part is MP35N
0.25 x 80 mm	The part has an inner diameter of 0.25 mm and a length of 80 mm
SI/SI	Left fitting: Swagelok + 1.6 mm Port id, Intermediate Right fitting: Swagelok + 1.6 mm Port id, Intermediate

To get an overview of the code in use, see

- Color: Table 7 on page 80
- Type: Table 8 on page 80
- Material: Table 9 on page 81
- Dimension: Table 10 on page 81
- Fittings: Table 11 on page 82

Color Coding Guide

Table 7: Color-coding key for Agilent capillary tubing

Internal diameter in mm		Color code
0.015		Orange
0.025		Yellow
0.05		Beige
0.075		Black
0.075	MP35N	Black with orange stripe
0.1		Purple
0.12		Red
0.12	MP35N	Red with orange stripe
0.17		Green
0.17	MP35N	Green with orange stripe
0.20 /0.25		Blue
0.20 /0.25	MP35N	Blue with orange stripe
0.3		Grey
0.50		Bone White

NOTE

As you move to smaller-volume, high efficiency columns, you'll want to use narrow id tubing, as opposed to the wider id tubing used for conventional HPLC instruments.

Abbreviation Guide for Type

Table 8: Type (gives some indication on the primary function, like a loop or a connection capillary)

Key	Description
Capillary	Connection capillaries
Loop	Loop capillaries
Seat	Autosampler needle seats

Key	Description
Tube	Tubing
Heat exchanger	Heat exchanger

Abbreviation Guide for Material

Table 9: Material (indicates which raw material is used for the capillary)

Key	Description
ST	Stainless steel
Ti	Titanium
PK	PEEK
FS/PK	PEEK-coated fused silica [1]
PK/ST	Stainless steel-coated PEEK [2]
PFFE	PTFE
FS	Fused silica
MP35N	Nickel-cobalt-chromium-molybdenium alloy

Abbreviation Guide for Capillary Dimensions

Table 10: Capillary dimensions (indicates inner diameter (id), length, and volume of the capillary)

Description
id (mm) x Length (mm)
Volume (µL)

1 Fused silica in contact with solvent

2 Stainless steel-coated PEEK

Abbreviation Guide for Fitting Left/Fitting Right

Table 11: Fitting left/fitting right (indicates which fitting is used on both ends of the capillary)

Key	Description
W	Swagelok + 0.8 mm Port id
S	Swagelok + 1.6 mm Port id
M	Metric M4 + 0.8 mm Port id
E	Metric M3 + 1.6 mm Port id
U	Swagelok union
L	Long
X	Extra long
H	Long head
G	Small head SW 4
N	Small head SW 5
F	Finger-tight
V	1200 bar
B	Bio
P	PEEK
I	Intermediate

Waste Electrical and Electronic Equipment (WEEE) Directive

This product complies with the European WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.

NOTE

Do not dispose of in domestic household waste
To return unwanted products, contact your local Agilent office, or see https://www.agilent.com for more information.

Radio Interference

Cables supplied by Agilent Technologies are screened to provide optimized protection against radio interference. All cables are in compliance with safety or EMC regulations.

Test and Measurement

If test and measurement equipment is operated with unscreened cables, or used for measurements on open set-ups, the user has to assure that under operating conditions the radio interference limits are still met within the premises.

Sound Emission

Sound Pressure

Sound pressure Lp < 70 db(A) according to DIN EN ISO 7779

Schalldruckpegel

Schalldruckpegel Lp < 70 db(A) nach DIN EN ISO 7779

Agilent Technologies on Internet

For the latest information on products and services visit our worldwide web site on the Internet at:

https://www.agilent.com

In This Book

This manual contains user information about the Agilent 1260 Infinity III Manual Injector (G1328C) and the Agilent 1260 Infinity III Bio-Inert Manual Injector (G5628A).

The manual describes the following:

- introduction to the manual injector,
- installing the manual injector,
- using the manual injector,
- maintenance of the manual injector,
- parts and materials, and
- additional information.

www.agilent.com

Edition: 10/2024

Document No: SD-29000235 Rev. C

Agilent